Associazione Italiana per gli studi sulla Qualità della Vita

AIQUAV Conference 2023

Quality of Life: Challenges and Opportunities in the Crossroads of the Mediterranean

Università degli Studi di Bari Aldo Moro

AIQUAV

ASSOCIAZIONE ITALIANA PER GLI STUDI
SULLA QUALITÀ DELLA VITA

AIQUAV Conference 2023 Quality of Life: Challenges and Opportunities in the Crossroads of the Mediterranean

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Antonicelli M., D'Uggento A.M., Maggino F., Marin C., Tarzia A., Trapani M. (a cura di), *AIQUAV Conference 2023 Quality of Life: Challenges and Opportunities in the Crossroads of the Mediterranean*, Associazione Italiana per gli Studi sulla Qualità della Vita, Università degli Studi di Bari Aldo Moro.

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www.uniba.it

Prima edizione: dicembre 2023

ISBN: 978-88-6629-079-7

I contributi presentati nel presente volume sono stati tutti oggetto di valutazione interna

Editing finale a cura di M. Antonicelli, A. M. D'Uggento e C. Marin

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Introduction

AIQUAV – Associazione Italiana per gli Studi sulla Qualità della Vita – is a point of reference for all those who in our country, but not only, conduct theoretical reflections and empirical research on the issue of quality of life; an increasingly crucial theme in a contemporary society strongly characterized by social imbalances, negative environmental effects, contradictions linked to economic development. On the 2023 Annual Conference, the accent will be placed on the Mediterranean, a crossroads and well-being for many populations. The conference will be held in a mixed-mode on-site/web. Both theoretical and applied contributions about well-being, opportunities but also responsibilities in the Mediterranean are solicited and welcome.
The Mediterranean has always been the theatre and crossroads of different peoples, cultures, traditions and religions. Some of the greatest civilizations of the past arose on the shores of the Mare Nostrum and have indelibly marked the course of history. Few areas in the world match the historical density, heterogeneity and complexity of social interaction that, due to geographical proximity and mobility, have emerged in the Mediterranean world. The multiple realities that distinguish it offer a privileged point of observation for tackling the study of the problem of how communities belonging to different religions, languages, ethnic groups and traditions can interact with each other over time.
The contributions that will are collected represent an opportunity to explore some of the problems related to the interrelationship between the different peoples who inhabit the Mediterranean today, both from the point of well-being of the peoples, as well as from the demographic, statistical, socio-cultural, economic and legislative.
Contributions from different disciplines were accepted and encouraged, from Sociology to Statistics, from Law to Economics, and so on.

Bari, 28/09/2023

Section I

Short papers

Proceedings of the Annual Conference AIQUAV 2023
Bari, Italy - September 21-22, 2023
ISBN: 978-88-6629-079-7

Intergenerationality, Interculture and Environment for Sustainable Tourism

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Abstract: A.R.I.P.T.Fo.R.P. (Associazione Ricerche Interdisciplinari Psicologia del Turismo-Formazione, Ricerca, Progettualità), in agreement with A.I.QUA.V. since 2022, carries out research and projects, promoting an innovative formula of Sustainable Tourism. "Intergenerational tourism" is one of the new forms of tourism, an opportunity to know each other, through a tourism-cultural experience, among participants of different generations -unrelated by family ties- and defined "Grandparents and Grandchildren" because of the climate that is established, similar to that of the family. The studies use multitheoretical and multimethod approaches proper to social psychology. From Northern Italy (PCTO modality): Sfruz (TN, since 2000), San Pellegrino Terme (BG, since 2016), Treviglio (BG, 2023)... such research/experiments have also extended to: Lazio, Sardinia, Tuscany, configuring itself as a national project.

The presentation focuses on the context of Viterbo, where the Grandparents and Grandchildren group, expression of Caritas and ACLI, has been active since 2002, in collaboration with A.R.I.P.T.Fo.R.P. Here studies have included participants from different countries over time, in favour of Interculture.

The main results obtained made it possible to identify a common pattern in the evolution of communication and relationships between participants: stages of "approach," "acquaintance," and "empathy." The Grandparents and Grandchildren of Viterbo group, with a deep value dimension, also implements the "generative creativity" represented by the "Pact between generations" for:

- local memory/culture, with artistic forms (such as amateur theater or exhibitions of the works of sculptor Roberto Bassetto) that are also found in other contexts such as Treviglio (BG, 2023);

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- The Environment with the planting of urban woods ("A Tree for Life") and the "cultivation" of products and intercultural, intergenerational, interreli- gious relations within the Caritas Solidarity Gardens.

This inspired the birth of the R.O.S.A. (Rete Orti Solidali Amici) Viterbo network inserted within the Intergenerational Values and Environmental Education Path implemented by ACLI with the contribution of the Lazio Region.

Keywords: Intergenerationality, Interculture, Environment, Sustainable Tourism.

1. Introduction

A.R.I.P.T.Fo.R.P. (Associazione Ricerche Interdisciplinari Psicologia del Turismo-Formazione, Ricerca, Progettualità), in agreement with A.I.QUA.V. since 2022, carries out research and projects, promoting an innovative formula of Sustainable Tourism.

"Intergenerational tourism" is one of the new forms of tourism, an opportunity to know each other, through a tourism-cultural experience, among participants of different cultures and generations -unrelated by family ties- and defined "Grand-parents and Grandchildren" because of the climate that is established, similar to that of the family (Albanese & Bocci, 2018, 2019).

2. Theoretical background

The research/interventions are based on a well-constructed multi-theoretical model (Albanese & Bocci, 2013), including:

- The Self Theory (Mead 1934; Markus 1977) suggests the existence of different types of Self: Private Self, Public Self, Collective Self. In a temporal perspective, it also suggests the presence of: the “past Self” -represented by the elderly within intergenerational tourism re-search/interventions-, the “present Self” -expressed by the young people teaching technological innovations– the “future Self”-expressed by the encounter/clash between generations, within inter-generational communication difficulties, mediated by new computer languages-. The integration between “past Self” and “present Self” leads to a rooted and prosperous “future Self” for the society.

- Psychosocial studies also highlighted how each person tends to identify

positive traits in his own group -in-group- and negative traits in the other group -out-group-.(Brown 1997; Sherif 1966; Tajfel 1978; 1981). The attribution of stiff features to groups and people can generate unsuccessful interactions or even cognitive and relational er-positive traits in his own group -in-group- and negative traits in the other group -out-group-.(Brown 1997; Sherif 1966; Tajfel 1978; 1981). The attribution of stiff features to groups and people can generate unsuccessful interactions or even cognitive and relational er rors. Participants end up creating rigid stereotypes that take form of associations between a categorical label and an attribute they believe to share with most members of that category. Consider, for exam- ple, expressions like: "grandfather to be scraped" or "rude nephew". In- stead, interaction between groups may help overcoming conflicts and cre- ate cooperation with a common goal.

Concerning the Theory of Social Representations (Moscovici, 1961/1976), research/interventions attention is focused on:

- the "objectification" process that translates concepts into images also through the use of metaphorical lexicon in computer-mediated communica- tion;

- the function of "familiarization" with social groups and physical-virtual spaces (for example, the use of internet environments for grandparents and the discovery of corners of highly cultural, historical and landscaping value for grandchildren);

- a relationship between "representations" and "practices", high-lighting above all the role of practices in the evolution of social representations (Albanese & Bocci 2009).

3. Contexts of the researches and timeline

A long series of research/interventions of intergenerational tourism has been repeated for more than twenty years in different geographical contexts in Italy.From Northern Italy (PCTO modality): Sfruz (TN, since 2000), San Pellegrino Terme (BG, since 2016), Treviglio (BG, 2023)... such research/experiments have also ex- tended to: Lazio, Sardinia, Tuscany, configuring itself as a national project.

In particular, we will refer to those concerning the area of Viterbo (a city located in central Italy about one hundreds km north of the capital, Rome). The city of

Viterbo and its surroundings have been recognized as particularly suitable for this kind of intervention because of their richness in historical sites (Etruscan, Roman and mediaeval), the broad diffusion of folk and religious traditions, and the astonishing geophysical endowment (given the volcanic origins of the area, important and renowned thermal sites have existed here since the ancient ages). All this constituted a valuable historical and cultural heritage for the present and future local generations.

The first experience of intergenerational tourism in Viterbo took place during the summer of 2002. Today, the intervention has reached its twenty edition, and is still ongoing.

- I Edition: 06 -13 September, 2002. Title: "Nonni e Nipoti in un contesto di vacanza termale" [Grandpartents and grandchildren in a thermal context]
- II Ed.: 03 -10 September, 2003. Title: "Nonni e Nipoti in un contesto di vacanza termale" [Grandpartents and grandchildren in a thermal con-text]
- III Ed.: august, 29 – September, 05, 2004. Title: "Nonni e Nipoti in un contesto di vacanza termale" [Grandpartents and grandchildren in a thermal context]
- IV Ed.: august, 29 –September, 05, 2005: Title: "Nonni e Nipoti alla scoperta della Città dei Papi" [Grandpartents and grandchildren discovering the City of Popes']
- V Ed.: 24-30 September 2006. Title: "Nonni e Nipoti sulle tracce di Santa Rosa" [Grandparents and grandchildren tracking down Saint Rose]
- VI Ed.: 02-9 September, 2007. Title: "Nonni e Nipoti sulle tracce degli Etruschi" [Grandparents and grandchildren tracking down the Etruscans]
- VII Ed.: August, 25 - September, 01, 2008. Title: "Nonni e Nipoti sulle tracce dei Romani" [Grandparents and grandchildren tracking down the Romans]
- VIII Ed.: 04-12 September 2010. Title: "Nonni e Nipoti alla scoperta dei borghi medioevali" [Grandparents and grandchildren discovering the medioeval towns]
- IX Ed.: August, 27 –December, 172011. Title: "Nonni e Nipoti sulle tracce dei briganti della Maremma" [Grandparents and grandchildren tracking down the 'briganti della maremma' i.e., historical bandits]
- X Ed.: July, 06, February, 02, 2013. Title: "Nonni e Nipoti tra cultura e tradizione." [Grandparents and grandchildren between culture and tradition]
- XI Ed.: April, 20, December, 30, 2013. Title: "Nonni e Nipoti a spasso nella storia" [Grandparents and grandchildren walking down the history]

- XII Ed. May, 16, 2014 - May, 30, 2015. Title: "Nonni e Nipoti a spasso nella storia: tra il 1870 e il 1971" [Grandparents and grandchildren walking down the history: 1870 – 1971]
- XIII Ed. August, 28, 2015 - August, 30, 2015. Title: Ricerca/sperimentazione "Nonni e Nipoti: Intergenerazionalità ed Expo" [Grandparents, grandchildren and the Expo]
- XIV Ed. July, 12, 2016 - December, 31, 2016. Title: "Nonni e Nipoti e la macchina del tempo" [Grandparents, grandchildren and the time ma-chine]
- XV Ed. August, 19, 2017 - December, 31, 2017. Title: "Nonni e Nipoti: la macchina del tempo" [Grandparents, grandchildren: the time machine]
- XVI Ed. July, 27, 2018 - December, 31, 2018. Title: "Nonni e Nipoti a spasso nella storia alla scoperta del Creato" [Grandparents, grandchildren walking through history to discover Creation"]
- XVII Ed. June, 8, 2019 - October, 20, 2019. Title: L'Unione fa la forza: ricerca sociale di turismo intergenerazionale interculturale [Strength in union: social research of intergenerational intercultural tourism]
- XVIII Ed. August, 25, 2020 - June, 30, 2021. Title: In-con-triAmo. Ri- cerca sperimentazione di turismo intergenerazionale [In-con-triAmo. Experimental research of intergenerational tourism]
- XIX Ed. January, 28, 2022 - November, 27, 2022. Title: Nonni e Nipoti. Percorsi Intergenerazionali Valoriali e di Educazione Ambientale [Grandparents and Grandchildren. Intergenerational Paths of Values and Environmental Education]
- XX Ed. January, 02, 2023 - December, 31, 2023. Title: Nonni e Nipoti tra Arte e Natura [Grandparents and Grandchildren between Art and Nature].

4. Aims of the studies

Intergenerational tourism is a new, promising form of alternative tourism directed at the promotion of personal, group and societal growth, as well as the endorsement of social and environmental responsibility while on holiday. In this sense, it re- spects in full many of the basic principles of sustainable tourism. The general goals of these experiences were:

- to develop a network of local associations and institutions in support of intergenerational tourism;
- to promote knowledge and awareness of local heritage and identity, as well as of the principles of social-cultural and environmental sustainability;
- to increase reciprocal knowledge and mutual understanding among participants of different ages and cultures ("grandparents" and "grandchildren") (Passafaro et Al., 2017).

5. Participants in Viterbo

Grandparents and Grandchildren group, expression of Caritas and ACLI, has been active since 2002, in collaboration with A.R.I.P.T.Fo.R.P. The studies have included participants from different countries over time, in favour of Interculture. In the first years, the Italian participants were joined by young people from Brazil, the Ivory Coast, Sri Lanka and Romania. More recently, young Africans and Af- ghans have joined the project.

Among motivations to participation, grandchildren highlight the "fun" and "the knowledge gained about villages and natural environments" in an enlarged social dimension: “the most significant experience is to be together with others, to socialize in broad terms, not just with peers."

For young people, tourist-socio-cultural nature motivations appear prominent, while for grandparents the motivation for volunteering prevails -as a form of a prosocial action- characterized by a throughout-the-year active involvement in networked entities like Caritas, Acli, Pro Loco and Elderly Community Centres. They are also interested in local history and culture. Some of them have a good geographic competence and a good propensity to use new technologies.

6. Data collection tools and strategies of analysis

In the framework of the research/interventions activated in Italy since the early 2000s – of a week period per year-, the present contribution will summarize the studies carried out in Viterbo and province for the period 2002-2023.

The rich methodological instrumentation - proposed by the A.R.I.P.T.Fo.R.P. - uses a multi-method approach.

Using different tools adopted in social psychology -questionnaires, interviews, direct observations during leisure activities and in computer labs, focus groups and free associations around the logo- we propose to analyse modes of interaction be- tween sub-groups of young and elderly people in a holiday setting.

In particular, the list of words evoked by the research participants through the associative network technique in relation to the "Grandparents and Grandchildren" logo have been analysed by the Lexical Correspondance Analysis, which made it possible to synthesise the information into main dimensions.

Moreover, the data collected during the focus group have been analysed through the Descending Hierarchical Classification. This method “quantifies” a text by extracting the most significant, underlying semantic structures, so that the differences in vocabulary refer to the different representations shared.

7. Results

7.1 Developing a network of local associations and Institutions.

None of the activities of the "grandparents-grandchildren" project would have produced the expected effects if a synergic net of cooperating private and public associations and institutions had not been set up and maintained during the whole process. These included charity and cultural associations (e.g., the Association Emmaus connected to Caritas Viterbo and ACLI Viterbo, La Luna Nuova…), public institutions (the City Council, the local Forest Rangers, scholastic institutes, universities, ARSIAL…), and private local companies (specific companies that sponsored particular initiatives). Each associations and/or institution contributed by providing either financial or logistical support, and/or ideologically supporting the initiative, thus enhancing the opportunity to increase its social visibility. The slo- gan is: "L'Unione fa la forza!" ("Unity is strength!")
Promoting knowledge and awareness of local heritage and identity.

The theme and location chosen for the first three editions (implemented in the summers of 2002, 2003, and 2004) concerned the local thermal facilities (vacation title: "Nonni e nipoti in un contesto di vacanza termale" [Grandparents and grandchildren in a thermal vacation context] and helped to increase the knowledge and awareness of their characteristics, history and relevance in the local territory.

The subsequent editions have focused on several other locally meaningful top- ics such as the historical origins of the city and its connections with the former pa- pal reign, the origin of the local patron saint and of the traditions and feast yearly dedicated to this saint, the Etruscan and Roman origins of the whole area, etc.

All the themes were explored and deepened by participants thanks to a set of coordinated activities diversified depending on the nature of the topic and included guided visits to the places and venues relevant to the theme, as well as various kinds of indoor workshops. Of the different indoor activities, the computer labora- tory is a fundamental one.

This has been organized in many editions and provides an average of five encounters (lasting one hour each), where participants are organized in couples (one grandfather or grandmother and one grandson or granddaughter) who can work together on the theme of the project, using various PC software packages and other electronic devices (e.g., a 3D printer was made available to participants in the most recent editions).

Among the other laboratory activities, those particularly appreciated by the groups involved the participation in the making of a short movie concerning the life of a local historical preacher (David Lazzaretti; Edition 2011), as well as the historical re-enactment of a trial in which a local bandit (Damiano Menichetti di Toscanella; Edition 2011) was legally prosecuted and sentenced to death in the late 1800s hundreds.

Moreover, a theatre play was written by a professional theatre writer about the

life of another local bandit (Domenico Tiburzi) and participants from the grandparents and grandchildren's group were recruited as actors. Since 2012, the play has gone on to be performed in various theatres, under the guidance of a professional director.

The groups were also involved in other activities relevant from a social and environmental point of view. For example, in the year 2012 the group participated in the creation of urban woods (today project "A tree for life" remembering Covid victims) and in 2016 the group began "to cultivate" products and relationships in the Caritas solidarity gardens for families in need. From several years, for example, solidarity gardens hosted exhibitions of the works of Italian sculptor Roberto Bassetto.

7.2 Increasing reciprocal knowledge and mutual understanding among participants of different ages and cultures.

The activities of intergenerational tourism implemented in Viterbo started from the assumption that both young people and adults have a lot to teach and could profitably exchange their knowledge if only there existed a context which would favour this kind of interaction. For example, older people have a greater knowledge of the local traditions as well as of the (personal and collective) "facts" and "events" that have taken place in the local territory over the years. Youngsters, however, have greater knowledge and greater abilities concerning the use of new technologies.

This means that grandparents have well guided the group in the physical exploration of the local territory, while grandchildren have well guided the group in the digital and technological exploration of the information concerning it. The activities of intergenerational tourism implemented in Viterbo were thus distinguished taking into account the differences of the two groups and were designed in order to provide each of them with the opportunity to play a guiding role, though in different situational contexts. Hence, during the visits to specific sites and venues, grandparents communicated to grandchildren facts and events of the past that made up the history and the "stories" of the territory.

Computer laboratories were then organized so that grandchildren showed grandparents the way in which to use new technologies to recover useful information concerning the target topic. This combination of activities was deemed crucial to establish what Allport (1954) referred to as an "equal social status" among interacting groups and likely represented one of the aspects that has contributed most to the positive outcomes recorded for the social psychological factors moni- tored so far.

Results suggest that intergenerational tourism actively contribute to reducing negative attributions between the two generational groups. Moreover, a radical change in the nature of the relationships at the dyadic level (i.e., grandparent - grandchild) during the timeframe was recorded. In particular, these relationships tend to progressively evolve from cognitive types of communicational interactions

(mainly recorded during the initial phases and directed toward exchanging basic essential information) to a more emotional one (mainly recorded during intermediate phases, in which expressions of affection and reciprocal appreciation start to accompany the information exchanged), and eventually reaching a truly empathic level (i.e., an high reciprocal emotional understanding is recorded at the end of the process). Moreover, evidence was found that the specific experience of intergenerational tourism is associated by participants with a set of positive values that include, among other things: sharing, integration, solidarity, fun and collaboration. The evolution of communication and relationships among participants has been observed also between participants of different cultures. The focus groups of different years highlight sentences as the following:

"I would like to say that we are proud of this experience of grandparents and grandchildren. I greet the whole group. We enjoyed all the activities we did together. If you organize another event we will be happy to participate. I am happy to be with young people and also with people older than me. I was very pleased to meet grandfather Renzo. I talked to him a lot as we walked. Long live Italy and the Italians. May God bless all immigrants in Italy. I thank all of you for this opportunity you have given us and I hope to meet you soon" (African participant, Edition 2018).

Some grandchildren do not have their blood grandparents close but in the Grandparents and Grandchildren group they have found a new family. A parent says: "I found a job outside Viterbo, away from home. Every now and then my head reminds me that my family is alone in Viterbo. My strength comes from that family relationship we have with the Grandparents and Grandchildren group... This family gives me strength, I feel that I'm not alone... I thank you..." (Afghan partici- pant, Edition 2023).

Value and empathic elements detected by data collection techniques leave space for "group generative creativity". Within research/interventions conducted in Viterbo those elements were expressed in terms of socio-cultural and environmen- tal sustainability.

8. Impact of the work in the community

The network in which Grandparents and Grandchildren are protagonists has given important results over time thanks to the close relationship between social psychology and social agriculture. The activated networks have favored, among otherthings:

-Installation of the wireless weather station with high technology compliant with WMO (World Meteorological Organization) standards at the Caritas Solidari- ty Gardens. To facilitate training for the gardeners, ARSIAL has made a control unit available on free loan which detects a precise measurement of the agrometeorological parameters and is specifically designed to capture the environmental measures useful for the guided fight against the cultures practiced in the Gar-

dens.

- INCREASE international experimentation of "Citizen science" (complex of activities related to scientific research in which ordinary citizens participate). The agreement between ARSIAL and Caritas for the training of horticulturalists includes adhesion to the international experimentation for bean cultivation which was launched in 2021 and further strengthened in 2022.
- School for Farmers. The School for Farmers was supported by the 2020 Com-munity Solidarity Call of the Lazio Region and implemented by the Caritas "Emmaus" ODV Association in collaboration with other entities, including ACLI Viterbo. It is an educational project that has seen a pool of experts in the chair including university professors of the Unitus -DAFNE Department- together with Grandparents and Grandchildren farmers for an interesting training course for young people passionate about agricultural work and the theme of environmental sustainability.
- Exhibition on the Agrarian Reform of Maremma by ARSIAL. Thanks to the availability of the Viterbo ACLI and the La Luna Nuova Association, the exhibition, requested by Caritas to Arsial, was made usable not only at the Caritas Solidarity Gardens but also at the Scacciaricci Palace (Viterbo old town), thus reaching, in addition to the gardeners, also high school stu- dents, resident citizens and tourists of the medieval district of San Pelle- grino.
- Competition "I Farmer of the XXI century". The La Luna Nuova Association has involved ACLI Viterbo and some gardeners from the Caritas Solidarity Gardens in the creation of the competition. The competition aims to raise awareness of the theme of social agriculture among the children of the Canevari School and the Emporio Solidale. The winning classes were rewarded with guided tours of the Solidarity Gardens and meetings at the Canevari school, thanks to the availability of the Grandparents and Grandchildren Group of Viterbo (2022-2023).
- "Farmers in Chair" (Viterbo, November 18, 2022). The event, held at the Parish of Saints Valentino and Ilario, is unique in its kind and constituted an important occasion aimed at presenting the world of agriculture -also social- in the technical-scientific and informative perspectives. The initia- tive is included in the ACLI project “Grandparents and Grandchildren. Intergenerational Paths of Values and Environmental Education” (Community Solidarity Call 2020) and was carried out in collaboration with A.R.I.P.T. Fo.R.P., Unitus, Caritas “Emmaus”…

The above mentioned inspired the birth of the R.O.S.A. network. Viterbo (Friendly Solidarity Gardens Network, of Viterbo). The network proposes the creation of solidarity gardens spread throughout the City/Province of Viterbo. The agreement for the construction was signed in 2022 by Caritas and Acli Viterbo. The network is aimed at public and private entities and individual citizens with the aim of raising awareness, expanding and animating solidarity synergies. Interested

parties include: the Botanical Garden of University of Tuscia, the Court of Viterbo, the therapeutic garden of Villa Rosa, the parishes, the Latini, Pensalfine and Michelini nurseries, the vegetable gardens of some schools and some private...

When the target is represented by schools, the project is called R.O.S.A.2 due to the potentialities deriving from the collaboration with young people. Currently, the following Comprehensive Institutes are being sensitized and supported in the creation of School Solidarity Gardens: Canevari and Fantappié, as well as the Francesco Orioli Institute of State Higher Education (Agricultural address) with a view to intergenerational collaboration between students.

The Caritas Solidarity Gardens and the R.O.S.A. network Viterbo are included in the Intergenerational Path of Values and Environmental Education. The route, created by the ACLI Viterbo with the contribution of the Lazio Region (Community Solidarity Call 2020), winds through the city of Viterbo through significant stages such as: the Fraternity Garden, the Union Theater, the Sanctuary of Santa Rosa with the Machine declared intangible heritage by Unesco, the Caritas Solidarity Gardens, the Grandparents and Grandchildren grove, the Itinerary of Faith… The itinerary is proposed as a visiting card of "Viterbo, City for Fraternity". (Albanese, Bocci & Varvaro, 2023).

9. Conclusions

The main results obtained made it possible to identify a common pattern in the evolution of communication and relationships between participants: stages of "approach," "acquaintance," and "empathy." The Grandparents and Grandchildren of Viterbo group, with a deep value dimension, also implements the "generative creativity" represented by the "Pact be-tween generations" for:

- local memory/culture, with artistic forms (such as amateur theater or exhibitions of the works of sculptor Roberto Bassetto) that are also found in other contexts such as Treviglio (BG, 2023);
- the Environment with the planting of urban woods ("A Tree for Life") and the "cultivation" of products and intercultural, intergenerational, interreligious relations within the Caritas solidarity gardens.

Summarizing, we can say that intergenerational tourism produced positive outcomes with reference to:

- the participants -with the reduction of reciprocal stereotypes, evolution of intergenerational communication, group cohesion-;
- the hosting communities -through "generative group creativity" expressed in planning on socio-cultural and environmental sustainability.

The project shows a social utility not only in the relationship and communication between generations, but also in the intercultural perspective.

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The Activity-Based Costing Approach for Improved Healthcare Quality: a Fascinating Case Study

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Abstract: The adoption of volume-to-value reimbursement schemes was motivated by the challenge of main-taining sustainable growth in healthcare spending while simultaneously reducing waste. In order to deliver value-based medical care, it is essential to possess a thorough comprehension of patient-specific cost information. The COVID-19 pandemic has highlighted the importance of understanding the specific locations and methods through which patient-level expenses are generated inside healthcare institutions, raising awareness of this requirement. Conversely, hospitals bear the primary burden of the expenses related to stroke treatment. The objective of this study is to undertake a precise examination of the expenses that hospitals accumulate while providing treatment for strokes. The activity-based costing method (ABC) was employed to determine the overall expenses related to stroke patients. We examined the operations of the neurology department at a hospital in the Apulia area of Italy and collected the pertinent data. The expenses associated with the activities were calculated based on data obtained from the hospital, including wages, material costs, and other miscellaneous expenses unrelated to patient care. We comprehensively analysed the expenses associated with hospital stays and episodes, scrutinised the cost breakdown, and compared the expenses of the diagnoses-related group (DRG) and hospitalisation expenses on a per-episode basis. The results of descriptive cost analyses provide insight into generating local cost data to facilitate value-based reimbursement strategies implemented by healthcare delivery systems.

Keywords: Activity-Based Costing, Reimbursement strategies, Healthcare quality, Stroke.

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1. Introduction

Acute cerebrovascular illness is a leading cause of mortality, and regrettably, it also results in significant handicaps for those who survive it (in Italy, it is the second leading cause of death, preceding permanent disability) [[Etges et al, 2022].

A stroke, derived from the Latin word "blow," is a sudden neurological impairment affecting a specific body part, typically an arm, leg, or speech. It occurs when a cerebral artery in the brain is blocked, leading to a cerebral infarction (80% of strokes) or when an artery ruptures, causing intracerebral haemorrhage (20% of strokes) and damage to nerve tissue. A stroke is a time-sensitive condition characterised by a sudden occurrence that necessitates immediate hospitalisation to administer the most suitable treatment.

Multiple scientific studies have demonstrated that hospitalising stroke patients in a specialised facility known as a Stroke Unit, where they receive treatment from a team of doctors, nurses, and physiotherapists with specialised training, can significantly decrease the severe consequences of a cerebral stroke [Puumalainen, Elonheimo, Brommels, 2020; Morrow, Woodbury, Simpson, Almallouhi, Simpson, 2023].

In Italy, the majority of stroke patients are still admitted to a regular neurology department or, in cases where it is not available, a general medicine department. The National Health Service has consistently provided financial compensation to the Hospital Company that provides stroke hospitalisation services, using the DRG tariff system since 1996.

However, no regulatory actions have been taken to revise the reimbursement rate for patients admitted to a neurology department that has a stroke unit. The charge of € 3,891 for the DRG 14, which covers intracranial haemorrhage or cerebral infarction, stays unchanged and covers all costs regardless of the hospital environment. The reimbursement rate stays unchanged regardless of whether stroke hospitalisation is provided inwards without a dedicated stroke unit, whether in a Neurology or Medicine department.

This study aims to conduct an economic assessment of DRG 14, utilising the stroke hospitalisation data from 2017 at the Neurology Department of the "Di Venere" Hospital in ASL Bari, where a Stroke Unit is now being established [Albergo, 2020].

2. Methods

The case study considered concerns the access of a patient, coming from Emergency, then in "urgency" and "unscheduled" suffering from suspicion/ diagnosis of stroke (intracranial haemorrhage or cerebral infarction). The application of Activity Based Costing allows us to determine the cost associated with the path followed by the patient admitted to the Department of Neurology of the Hospital "Di Venere" (ASL Bari) of Carbonara (BA) for stroke without surgery and compare the cost with the relative tariff of DRG 14 "Intracranial haemorrhage or cerebral infarction", for a first assessment of the margin/deviation.

Applying the Activity Based Costing technique allows you to analyse better the costs of every single phase of a process, meaning that the reference DRG and the entire patient path are often much more comprehensive than the period of hospitalisation discharge. The objective is to highlight the resources used and their consumption.

The main phases that characterize the patient's journey and for each individual phase the staff involved are:

PHASE A (ACCESS TO THE DEPARTMENT)	1 Doctor 1 Nurse 1 Auxiliary
PHASE B (HOSPITALIZATION AND MONITORING)	1 Doctor 1 Nurse 1 Auxiliary 1 Physiotherapist (external consultant) 1 Physiatrist (external consultant to the Department) 1 Doctor Radiologist (External consultant to the Department) 1 Radiologist Technician (External Consultant) 1 Cardiologist (Consultant outside the Department)
PHASE C (RESIGNATION OF THE PATIENT)	1 Doctor 1 Nurse

Table 1: Main stages of the patient's journey and healthcare personnel involved for each stage. Authors' elaboration.

A series of interviews were carried out with the medical staff, where the patient's path was mainly followed. In this way, we tend to give a first judgment on the efficiency of the organisation of activities; the objective is to determine the necessary resources, especially the consumption parameters. The interview with the staff leads to the breakdown into 3 phases of the process and the relative sub- phases. They were identified as:

- The "Access to the Department" Phase is divided into clinical and nursing record compilation, vital signs, ECG, ECG delivery for reporting, finding peripheral venous access, infusion therapy, catheter insertion and withdrawal ECG report.
- The Phase "Hospitalization and Monitoring" in carrying out routine venous blood sampling, tube transport, laboratory and immuno-haematological analysis, patient hygiene, vital parameters detection, administration therapies, Medical Director visit, Physiotherapy, withdrawal of sampling report, specialised psychiatric evaluation, carrying out of control, transport of test tubes, laboratory and immuno-haematological analysis, withdrawal of sampling report, ECG, delivery of ECG for reporting, ECG report collection and patient monitoring.
- The Phase "Resignation of the patient" in the Letter of resignation and hospital discharge form. For each of the sub-phases, the types of cost have been identified at "qualitative level", an essential basis for initiating the quantitative cost analysis project in the next phase; undoubtedly two essential elements are needed to do this, the time for each sub-phase devoted to the journey and the euro cost of the different services.

3. Results

PHASE SUMMARY - Total Costs	
TOTAL PHASE A	**€ 69,965**
TOTAL PHASE B	**€ 3.202,351**
TOTAL PHASE C	**€ 57,610**
TOTAL	**€ 3.329,927**

Table 2: Total costs of the three phases. Authors' elaboration.

Other costs considered were:

- Expenditure related to boiler operation and production of heat and electricity;
- Expense of water and sewer;
- Cleaning costs;
- Supervisory expenditure;
- Laundry;
- Collection and disposal of toxic and dangerous waste;
- Telephone costs;
- Catering Expenditure.

Using the ABC technique, the total cost of the patient path was € 3.810,98. From the data received the average reimbursement value of a DRG 14 is 3,673.12 €. In the case analysed against costs mapped with the ABC technique of 3,810.98 €, a higher value in terms of actual costs of 1.03% was obtained, almost an overlap. However, this should be seen because we have an average stay of 8.77 days in this department, compared with a threshold value of DRG 14 of 30 days.

4. Conclusions

Based on the previous findings, the authors intend to promote the ABC method within the healthcare system and add case studies to the scant scientific literature on this subject [Puumalainen, Elonheimo, Brommels, 2020; Cardoso et al., 2023; Albergo, 2020]

The paper's contribution will enhance the comparison between DRG reimbursement rates and the cost analysis using the ABC method.

From a managerial perspective, the results presented on specific information and the subsequent analysis of the various types of costs of the clinical path investigated illustrate how to propose reimbursement strategies to achieve increasingly sustainable health policies.

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The Carta della Natura's contribution to the analysis of pressure on costal habitat

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Abstract: Carta della Natura is a national project coordinated by ISPRA, general objective is to produce technical papers to support knowledge of Italian terrestrial ecosystems. Specific purpose is to focus attention on the state of the environment, highlighting areas of greatest natural value and those at risk of degradation.

All products (maps and associated databases) are created and managed, in a GIS tools. In this paper we aim to explain a national scale synthesis of useful elements for conservation status assessment of Italian Adriatic - Ionian coastal habitats. The study evaluate the Ionian and Adriatic habitat along coastlines taking into account the output maps realized by the "Carta della Natura" System.

The informations extracted from Maps of Habitats (different scale) are related with habitats present in the studied coastal zone. For each habitats and macrocategories are indicated the occupied area, the biotopes numbers and surface average.

To highlight threatened habitats, indexes developed on "Carta della Natura" Information System, have been investigated. Considering "Ecological Value" classes distribution, it will be select the area occupied by natural habitats that fall into "high" and "very high" classes. Comparing this information with "Environmental Fragility" classes distribution it is possible highlight a set of habitat types that present the most risk of degradation. Risky condition are due to their very high natural value and their vulnerability involving factors such as fragmentation, rarity, suitability to host threatened animal and plant species and also by an important Anthropogenic Pressure. Representative coastal habitats are included in this set.

Keywords: Intergenerationality, Interculture, Environment, Sustainable Tourism.

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1. Introduction

"Carta della Natura" is an informative system following the Italian Law on Protected Natural Areas (no. 394/1991), with a specific purpose: to assess quality and fragility status of natural environment in Italy. It combines two lines of activity: the cartographic realization to know and represent the type and distribution of Italian terrestrial ecosystems throughout the national territory (on a national, regional and local scale); and the evaluation of each territorial unit mapped to give information on the state of ecosystems and to highlight the areas of greatest natural value and those most at risk of degradation.

The Maps of Habitats are produced according to the European criteria for habitats classification [Devillers, Devillers-Terschuren, Vander Linden, 2004; European Commission, 1991]. Outputs of information system are thematic maps: Map of Landscapes Units at 1:250.000 scale and Map of Habitats at different scale (from 1:50.000 to 1:10.000)[1]. The assessment layers are realized using widely shared indexes and indicators, the output are thematic maps of Ecological Value, Ecological Sensitivity and Anthropogenic Pressure, and Environmental Fragility.

The whole system is structured at different scales of analysis. It is organized as an informative system which allows to access all the maps and associated database resources and to maintain a constant upgrade of its structure and contents.

Data from "Carta della Natura" information system are particularly useful in case of environmental evaluations, landscape planning at regional scale, designation of new protected areas or ecological network or green infrastructures planning, and whenever a shared base of quantitative and qualitative data are required.

2. Materials and methods

The starting point of the work is represented by the "Carta della Natura" information system, consisting of a set of map layers and associated database [Angelini, Augello, Bagnaia, Bianco, Capogrossi, Cardillo, Ercole, Francescato, Giacanelli, Laureti, Lugeri, Lugeri, Novellino, Oriolo, Papallo, Serra, 2009]. Map of Habitats identified units as described in the CORINE Biotopes System and PHYSIS Palaearctic [Angelini, Bianco, Cardillo, Francescato, Oriolo, 2009; Devillers, Devillers-Terschuren, Vander Linden, 2004; European Commission, 1991].

[1] https://www.isprambiente.gov.it/it/servizi/sistema-carta-della-natura/cartografia, https://sinacloud.isprambiente.it/portal/apps/storymaps/stories/e640483d4d8a47cea8c996e6fd17870d

To represent habitats of entire regions and to highlight the most significant ones at national scale, the spatial resolution imposes accuracy limits (patches > of 1 hectare) even if may produce loss of biotopes of limited extent but allows the necessary synthesis.

The assessment process aims to create quality maps that determine, for each environmental unit, following indexes: the Ecological Value, the Ecological Sensitivity and the Anthropogenic Pressure using selected indicators and applying specific algorithms. Environmental Fragility is a result of a combination of Ecological Sensitivity and Anthropogenic Pressure [Angelini, Augello, Bagnaia, Bianco, Capogrossi, Cardillo, Ercole, Francescato, Giacanelli, Laureti, Lugeri, Lugeri, Novellino, Oriolo, Papallo, Serra, 2009] The maps are related to administrative regional boundary and are the results of application of specific algorithms on selected indicators. Ecological Value means the measure of a biotope quality from the environmental point of view, defined by law as "natural value". It is calculated using specific indicators. Environmental Fragility measures the state of vulnerability of the environmental unit from the natural and environmental point of view. It is proportional both to the predisposition of suffering damage and to the disturbance due to human activities [Angelini, Augello, Bagnaia, Bianco, Capogrossi, Cardillo, Ercole, Francescato, Giacanelli, Laureti, Lugeri, Lugeri, Novellino, Oriolo, Papallo, Serra, 2009; Ceralli, Angelini, Augello, Bagnaia, Bianco, Capogrossi, Laureti, Oriolo, 2014].

Considering a biotope Ecological Sensitivity as its intrinsic predisposition to the degradation risk and Anthropogenic Pressure as disturbance caused by hu- man activities, the amount of the Environmental Fragility of a biotope is the result of the combination of these two indexes.

ISPRA created a specific algorithm for the indicators and indexes calcula- tion, [Angelini, Augello, Bagnaia, Bianco, Capogrossi, Cardillo, Ercole, Francescato, Giacanelli, Laureti, Lugeri, Lugeri, Novellino, Oriolo, Papallo, Serra, 2009] the process is structured in subsequent phases:

- Normalization of indicator values: this phase is necessary because indicators that contribute to the calculation of each synthetic index value are extremely heterogeneous. Through normalization they may be compared and processed in the same algorithm.
- Calculating the value of three indexes: ecological value, environmental sensitivity and anthropogenic pressure, processing jointly standardized indicators through the application of the TOPSIS method, known as the "Ideal Point"[20]. The choice of the TOPSIS method, based on experimental texts, allows a more articulated

distribution of the resulting values and therefore a better-defined class rank value.

- Subdivision of indices values into five classes: 'very low', 'low', 'medium', 'high' and 'very high'.

- Identification of Environmental Fragility: implemented using a double entry matrix (with ecological sensitivity and anthropogenic pressure).

The calculation of each indicator requires sets of data: some indicators use existing valid data recognized at national and/or European level, while others refer the polygon geometry, such as perimeter or area. Suitable databases are from official publication sources.

Since the assessment objective phase is to highlight the natural aspect, no indicators and indexes for biotopes of completely artificial environments, such as urban areas, industrial areas and quarries are calculated.

Habitat maps were produced for 16 regions accounting for 74.2% of Italy's territory. (Fig.1) and the National Legend for Italian Terrestrial Habitat Mapping includes 290 habitat types.

Fig.1 Progress on regional "Carta della Natura" product.

Study area was identified by extracting from maps of habitats realized at administrative Regional level a buffer of 500 meters from the coastline including all types of habitats, natural semi-natural and anthropogenic. This buffer extends for

about 2000 km from the coast of Friuli Venezia Giulia to Basilicata coast, at completed region along the Adriatic and Ionic Sea. Fig.2

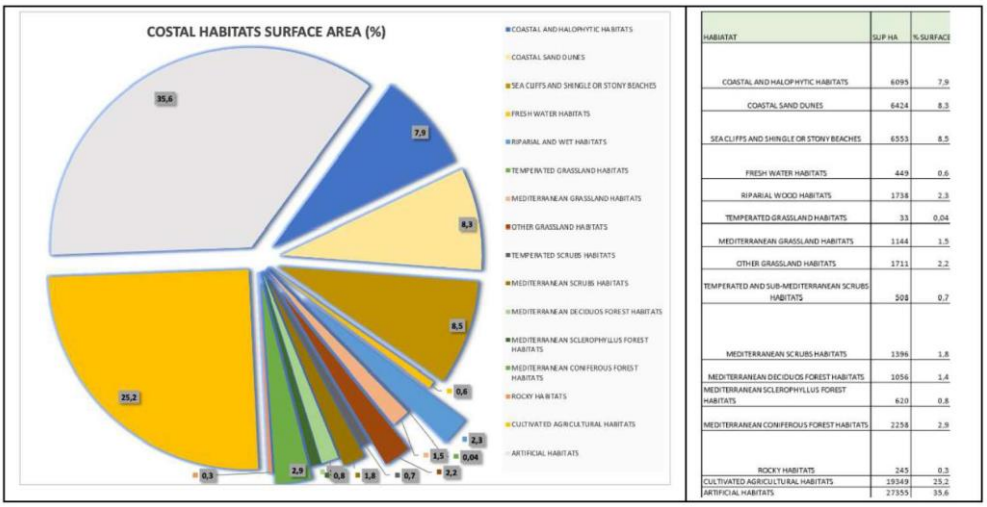
Fig.2 Study area on Adriatic and Ionic Sea

The costal habitat extract from the "Carta della Natura" information system occupies 76.934 ha and the study highlights the context of coastal ecosystems, by analyzing interactions with other natural habitats. In this case we can evaluate the habitat types; differentiating semi-natural and anthropogenic from the natural ones and, among these, those who are typical of coastal environment; the size, number of biotopes and their coverage percentage.

In a second step we extract the Ecological Values and Environmental fragility indexes of each biotope in order to highlight the natural habitats among those most at risk of degradation. Assumes the risk of degradation dependent on the extent of the Ecological Value and Environmental Fragility [Bagnaia, Ceralli, Augello, Cardillo, D'Angeli, Laureti, 2023].

3. Results

The data analysis highlights the presence of 103 types of habitats selected from the national legend of "Carta della Natura" including all type, natural antrhropogenic habitats. To get a more homogeneous view, it was necessary to aggregate habitats into macro categories. (Fig.3). Man-made habitats account for a significant portion of the study area, of about 60% and natural costal habitat occupies 25% of entire study area and other natural habitat are only 15%.



HABIATAT	SUP HA	% SURFACE
COASTAL AND HALOPHYTIC HABITATS	6095	7.9
COASTAL SAND DUNES	6424	8.3
SEA CLIFFS AND SHINGLE OR STONY BEACHES	6553	8.5
FRESH WATER HABITATS	449	0.6
RIPARIAL WOOD HABITATS	1738	2.3
TEMPERATED GRASSLAND HABITATS	33	0.04
MEDITERRANEAN GRASSLAND HABITATS	1144	1.5
OTHER GRASSLAND HABITATS	1711	2.2
TEMPERATED AND SUB-MEDITERRANEAN SCRUBS HABITATS	508	0.7
MEDITERRANEAN SCRUBS HABITATS	1396	1.8
MEDITERRANEAN DECIDUOS FOREST HABITATS	1056	1.4
MEDITERRANEAN SCLEROPHYLLUS FOREST HABITATS	620	0.8
MEDITERRANEAN CONIFEROUS FOREST HABITATS	2258	2.9
ROCKY HABITATS	245	0.3
CULTIVATED AGRICULTURAL HABITATS	19349	25.2
ARTIFICIAL HABITATS	27355	35.6

Fig.3 Percent of surface area of habitat on Adriatic and Ionian coast. Data from ISPRA 2023

In next table are listed some of the different type of natural habitat, the blue line represents the 21 different types of habitats belonging to costal environmental that occupies 25% of entire study area. (Fig.4).

CODE	HABITAT	N° Biotopes	TOT Surface (Ha)	Surface average
13	Estuaries	18	170,7	9,5
14.1	Mud flats and sand flats	54	672,6	12,5
15.1	Salt pioneer swards	61	442,1	7,2
15.21	Flat-leaved cordgrass swards	22	82,2	3,7
15.5	Mediterranean salt meadows	114	685,7	6,0
15.6	Saltmarsh scrubs	65	261,2	4,0
15.81	Sea-lavender (Limonium) salt steppes	1	1,0	1,0
16.11	Unvegetated sand beaches	223	4940,2	22,2
16.12	Sand beach annual communities	27	144,5	5,4
16.21	Shifting dunes	163	1369,3	8,4
16.22	Grey dunes	55	168,2	3,1
16.25	Dune thickets	22	71,9	3,3
16.27	Dune juniper thickets and woods	59	646,9	11,0
16.28	Dune sclerophyllous scrubs	60	1013,9	16,9
16.29	Wooded dunes	80	2825,9	35,3
16.3	Humid dune-slacks	36	327,7	9,1
17.1	Unvegetated shingle beaches	29	98,3	3,4
17.2	Shingle beach drift lines	1	16,4	16,4
18.221_m	Mediterranean sea-cliff communities	116	1337,0	11,5
19	Islets and rock stacks	7	16,6	2,4
21.1_m	Lagoons	63	3779,0	60,0
22.1_m	Fresh waters	8	53,6	6,7
24.1_m	River course	32	338,2	10,6
24.221_m	Subalpine willowherb (Epilobium fleischeri) stream community	5	18,5	3,7
24.225_m	Mediterranean gravel beds	2	6,0	3,0
24.52	Euro-Siberian annual river mud communities	1	2,2	2,2
24.53	Mediterranean river mud communities	10	30,6	3,1
31.81	Medio-European rich-soil thickets	7	51,9	7,4
31.844	Tyrrhenian broom (Cytisus) fields	6	21,1	3,5
31.87	Woodland clearings	3	11,0	3,7
31.8A	Tyrrhenian sub-Mediterranean deciduous thickets	60	295,0	4,9
31.8B2	Illyrian sub-Mediterranean deciduous thickets	14	68,7	4,9
32.11	Evergreen oak matorral	5	22,8	4,6
32.214_m	Lentisc (Pistacea lentiscus) brush	12	244,0	20,3
32.212	Thermo-Mediterranean heath-garrigues	1	1,6	1,6
32.217	Coastal Helichrysum garrigues	1	1,6	1,6
32.219	Wood clubrush (Scirpus sylvaticus) meadows	2	49,7	24,8
32.22	Tree-spurge (Euphorbia dendroides) formations	2	12,2	6,1
32.23	Diss (Ampelodesmos mauritanica)-dominated garrigues	13	61,3	4,7
32.3_m	Meso-Mediterranean silicicolous maquis	2	3,2	1,6
32.4_m	Western meso-Mediterranean calcicolous garrigues	107	1039,2	9,7
32.A	Spanish-broom (Spartium junceum) fields	16	71,2	4,4
33.6	Central Mediterranean Sarcopoterium phryganas	4	11,1	2,8
34.31	Sub-continental steppic grasslands	2	9,3	4,7
34.5	Mediterranean xeric grasslands	48	623,9	13,0
34.6	Mediterranean tall-grass steppes	23	407,1	17,7
34.75	Eastern sub-Mediterranean dry grasslands	8	16,6	2,1
34.8_m	Meso-Mediterranean silicicolous maquis	201	1342,3	6,7
37.1	Meadowsweet (Filipendula) stands and related communities	3	7,4	2,5
37.2	Mesophile pastures	3	12,6	4,2
37.4_m	Eutrophic humid grasslands	11	39,0	3,5
37.A_n	Wet reed grasslands	24	247,7	10,3
38.2	Lowland hay meadows	20	121,3	6,1
41.731	Northern Italian Quercus pubescens woods	54	431,2	8,0
41.732	Southern Italian and Sicilian Quercus pubescens woods	37	161,6	4,4
41.81	Hop-hornbeam (Ostrya carpinifolia) woods	1	1,3	1,3
41.88_m	Sub-Mediterranean mixed woods	1	1,0	1,0

Fig.4 Some of 103 natural habitats (coastal habitat types in blue) in study area with characteristic parameters. Data from ISPRA 2023

Figure 4 and 5 shows for each habitat identified by a specific Code, the total surface and number of biotopes and the surface average.

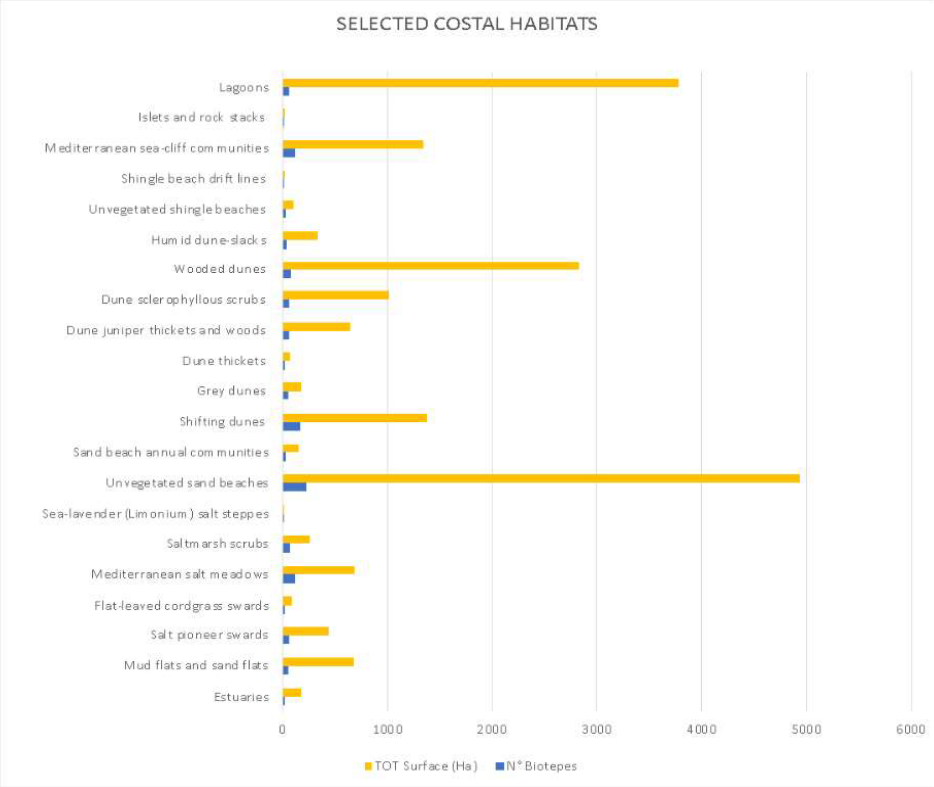


Fig.5 Comparison between surface and n. biotopes of coastal habitat in study area. Data from ISPRA 2023

The most representative costal habitat is "unvegetated sand beach" (Code 16.11) , with a low number of polygons. Surface area provides a measure of each habitat representativeness and combining total surface area with the number of biotopes of an habitat type, it is possible to obtain indication about its fragmentation, that is the inverse of average surface, as we can see in table (fig.4) typical coastal habitats, such as "Mediterranean cliff communities" (code 18.22), "Shifting dunes" (code 16.21) "Gray dunes" (code 16.22) and "Dune juniper thickets and woods" (code 16.27), are characterized by high fragmentation, with small surface area and several patches.

It is also important to notice the rarity of some habitat types, which have few polygons and very small extensions. All this data are scale-dependent and results depend on the spatial definition of habitat mapping. For this reason, it is important

here to focalize on the results on a large scale more than on specific ecological consideration.

Taking in account the Ecological value classes, extracted from regional "Carta della Natura" databases compared with all habitats, natural habitats and coastal habitats classes of values in term of percentage values of surface area occupied by classes high and very high are 29% of the study area.

Higher Ecological values classes most represented in the coastal habitat group as Code 16.27 and 16.28 and 16.29 (habitats dunes), are suitable for many different species of flora and fauna, many of which are threatened. Their value is also already recognized and depended to various levels of security and protection (protected areas, Natura 2000 network sites, Ramsar areas).

In addition to the Ecological Value, the Environmental Fragility has been considered, which provides a measure of the actual state of the risk [8] acting on environmental unit, in the study area considered about 8% of habitat are on state of risk. This analysis is extremely useful to perform actions on environmental conservation and planning and allows to identify habitats containing high value natural resources exposed to greater risk of deterioration and or loss.

Finally also analyzing the Anthropic Pressure, in spite of surface occupied (35%) by anthropic habitat along 2000 km, only few biotopes fall in very high classes of AP about 4% .

As an example along the Basilicata's cost, there are only biotipes that fall in low classes of Anthropic Pressure, but considering the Ecological Value, the Environmental Fragility, it is important to notice that habitat 16.27 (Dune juniper thickets and woods) and 16.28 (Dune sclerophyllous scrubs) is in on state of risk. Fig. 6.

Fig.6 Basilicata's coast in state of risk by Carta della Natura Index

4. Conclusion

This short paper shows the potential of the "Carta della Natura" information system which is a tool, that allows territorial and ecological large-scale analysis. This study confirm critical condition of coastal environment, that represent only 25% of study area and which status needs to enhance conservation measures.

Great presence of anthropogenic habitats reduces connectivity of natural ones on the coasts, another threat factor is the fragmentation who can lead to complete loss of natural heritage that they represent.

This assessment shows that fragility of coastal habitats stands at high classes value: it is important to evaluate the correct application of management tools for the purposes of conservation and arrest the urbanization that is the second greatest pressure and particularly affects habitats such as dunes and coastal and rocky habitats.

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Outer Space and the future of sustainability

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Abstract: Since the beginning of this century, outer space has been considered a global issue and has acquired a growing importance not only from the scientific, military, and technological point of view, but also from the economic and commercial one. The commercial exploitation of space, in fact, has undergone an acceleration and intensification in recent years, also thanks to the new technologies. Space is increasingly seen as an extension of our planet. The proposed contribution is structured as follows. The first part is devoted to the outer space issue today. Outer space is an increasingly relevant specific issue in contemporary society, presenting at the same time possibilities and risks. The second part focuses on aspects such as the commercialization of space and it makes sense for sustainability. The third part focuses on sustainability. It refers on the one hand to space sustainability; on the other hand, it is to be considered how outer space can contribute to promote the sustainable development goals.

Keywords: Outer Space; Globalization; Sustainable Development Goals; Commercialization of Space; Future; 21st Century.

1. Introduction

The outer space topic is becoming increasingly important and in fact it's now one of the global challenges (United Nations 2023a; 2003b). The exploration and

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exploitation of space has undergone an acceleration and intensification in recent years. Consequently, space is increasingly seen as an extension of our planet.

In the first section of this paper, I'm going to reconstruct the today issue of outer space. The second part focuses on aspects such as the commercial exploitation of space. The commercial purpose of space shows a rising involvement of private investors and also means the possibility of importing from space resources that are scarce on the Earth. Another relevant aspect relating the coming challenges linked to outer space is the possibility of life forms beyond our planet, both as unknown forms on Earth and as the possibility of human settlement and therefore of a human civilization outside and beyond the Earth. Finally, I will consider the links between outer space and sustainability starting from the UNO "Space2030 Agenda".

2. The outer space issue today

The space race begins during the Cold War when only the two superpowers, the United States of America, and the Soviet Union, were engaged for their supremacy (Ormrod, Dickens 2016). At that time the main purposes were scientific and military; the economic aspect was linked to them. The business was controlled by the State.

Today the situation is quite different. Since the beginning of this century, the space race has got different characters and gained both opportunities and increasing risks (World Economic Forum 2022). The importance of social and civil aspects is rising, such as the use of space for civil reasons. Also, the number of countries interested in space is increasing. A series of emerging countries compete for space: first, China, Europe but also regional i.e., medium-level countries.

The competition is no longer just scientific and military (which in any case remain) but the economic and commercial one begins to become predominant also involving a rising number of private investors.

Concerning the relation between the space race and technological innovation, the latter could be considered the driver of the space race, but at the same time the space race improves the technological innovation. Moreover, space race and technological innovation have an impact on our lives because, f.i., satellites provide a series of services (communication, Internet, other applications).

Moreover, the expansion into space and technological innovation means the military and economic and technological dominance of the strongest countries and the consolidation of their power.

Regarding satellites, Table n. 1 reports the number of satellites in orbit per main country and world regions at the end of the 2022, according to Union of Concerned Scientists database of satellites (https://www.ucsusa.org/resources/satellite- database#.XG6yv3RKiUk).

Country	*Number of Satellites*
USA	4,529
China	590
Russia	174
Rest of the World	1,425
Total	6,718

Table 1 Total number of operating satellites per countries - Source: https://www.ucsusa.org/resources/satellite-database#.XG6yv3RKiUk

Table 1 shows that USA are predominant concerning the today operating satellites and they account for more than two-thirds.

3. Commercialization of space

The second issue concerns the space commercialization and the exploitation of its resources (Stutt, 2020). This activity has already begun seeking resources, minerals, fuel sources. The commercial exploitation of space today is significant, and theshare of private investments is increasing (Di Pippo, 2022).

The use of space from a technological point of view is linked to ICT, communications satellites, surveys, commercial applications (internet services). It makes increase the global competition from an economic, commercial, and technological point of view.

The relevance of the commercialization of space is shown in the following Table n. 2, which reports the number of the USA commercial satellites. As you can see, fast 90% of the US satellites are of commercial use.

Civil	26
Commercial	3,996
Government	260
Military	247
Total	4,529

Table 2 US satellites sorted by type countries - Source: https://www.ucsusa.org/resources/satellite-database#.XG6yv3RKiUk

Let us now look at the question of the commercialization of space. Let's take as example the space tourism. The space begins to be seen as an exotic place, for the moment only for the very elite, but in perspective it could become popular thanks to more performative, faster and cheaper vehicles. This kind of tourism is tempting to investors because it allows significant profit margins. Therefore, we must ques- tion about the use we make of space, the consequences of this type of tourism and considering it a new aspect of the sustainable tourism.

Concerning the risks in the space, they are of two types. The first one is of a natural nature such as the geomagnetic storms triggered by the sun that can damage satellites, applications and machinery and therefore create operating problems with functional and economic consequences on earth (Anselmo 2014).

The second type of risk is related to a sustainable use of space, as shown in the next section.

4. Outer Space and Sustainability

This section is focused on sustainability in outer space. Sustainability is under the responsibility of all actors taking part at the space race today. The topic is crucial, so that the UNO has launched a "Space2030" Agenda, adopting a resolution in October 2021[1]. Considering sustainability in outer space refers mainly to Low Earth Orbit (LEO)[2], although such a challenge should be extended beyond LEO (Newman, Williamson, 2018).

Now we are going first to analyze space sustainability. Second it is to be considered how outer space can contribute to promote the sustainable development goals.

Space sustainability means that we should deal with the outer space in a responsible way, so that the space environment can be transmitted to the next generations in his integrity. This issue is like sustainability initiatives on Earth. In

[1]https://www.unoosa.org/oosa/oosadoc/data/resolutions/2021/general_assembly_76th_session/ares763.html

[2] «A low Earth orbit (LEO) is, as the name suggests, an orbit that is relatively close to Earth's surface. It is normally at an altitude of less than 1000 km but could be as low as 160 km above Earth –which is low compared to other orbits, but still very far above Earth's surface. Most commercial aeroplanes do not fly at altitudes much greater than approximate- ly 14 km, so even the lowest LEO is more than ten times higher than that», https://www.esa.int/ESA_Multimedia/Images/2020/03/Low_Earth_orbit#:~:text=A%20low%20Earth%20orbit%20(LEO,very%20far%20above%20Earth's%20surface.

other words, our current needs should not compromise the needs of the future society either on Earth or in space. Current space sustainability depends on several factors and involve all participants are now acting in the outer space.

There are two aspects particularly sensitive in this field. The overcrowding of orbiting objects and the orbital debris. Overcrowding is due to the intensifying traffic in the outer space, as it's shown in table 1.

The other problem concerning the proper use of space is space junk. It is mainly rejections of previous missions, broken satellites, broken applications. This space junk navigates the outer space and can create problems and pose a risk to us on earth.

The below NASA chart (Figure 1) shows the dramatic increase in orbiting objects. It shows how the situation has been evolving, i.e., increasing since the second half of the 1950s until today and more (2024).

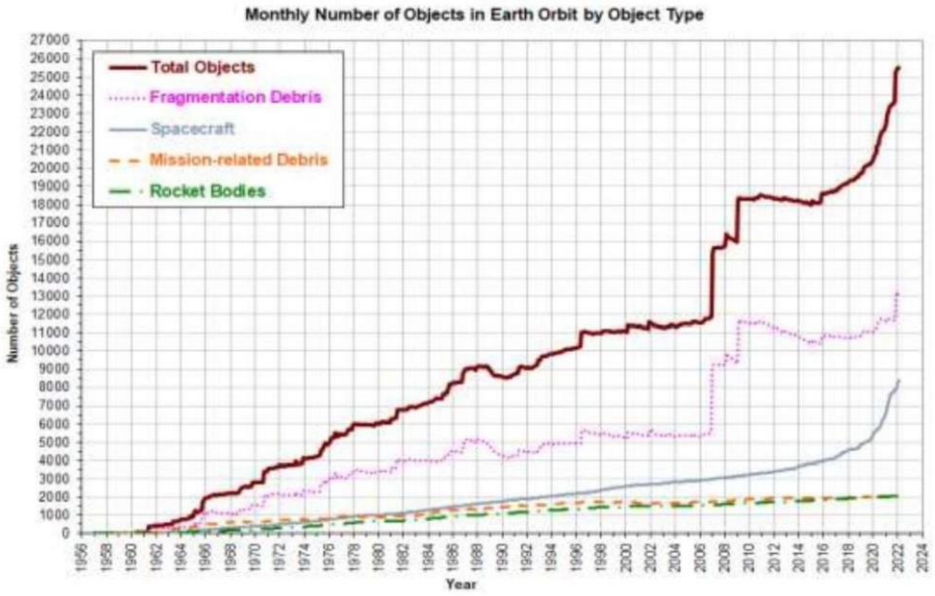

Figure 1 Number of Object in Earth Orbit by Object TypeISPRA 2023 - Source: NASA: ODPO - NASA Astromaterials Research

The problem is that pieces of this space junk collapse each other, also very fast, and in so doing they produce debris. It further increases the number of orbiting objects. According to the United Nations (2023a, p. 5) this is due to the technological innovation that makes possible on the one hand to reuse rocket and in so doing to

reduce launch costs; on the other hand, the miniaturization of electronics leads to mass production improving the number of small satellites.

Concerning the new technologies, space, and sustainability, thanks to satellite observations, it is evaluated that nearly 40% of the targets of the sustainable development goals benefit directly from space technology (United Nations, 2023a). Thanks to information and earth observation data coming from space, it is possible today to monitor meteorological trends, temperature fluctuations, water levels and consequent coastal changes on Earth.

Thanks to satellite observations, it is possible to carry on interventions related to soil management (even in case of natural disasters), trace deforestation trend; assessing changes in biodiversity; monitoring areas protected from illegal poaching and fishing; controlling the activities related to the primary sector, so that small farmers can increase crops and improve the yield of their products (Bianco 2021), manage agriculture and livestock in a more efficient and sustainable way.

All this facilitates our life and produces changes also for the benefit of many emerging countries e.g., African farmers benefit thanks to satellites in the space for faster, safer, and cheaper communications and thus better organize their activities. Everything makes our economic and social systems more efficient but also much more vulnerable to accidents, breakdowns.

This set of interventions makes possible to better adhere to the first two Sustainable Development Goals. Satellite observations can help in monitoring and mapping water cycles, courses, and pollution also to mitigate the effects of floods and droughts (Sustainable Development Goal n. 6).

Another important contribution that can come from space is linked to the promotion of health and the development of medical and pharmacological science according to the sustainable development goal n. 3. Scientific experiments in orbit allow results to be achieved thanks to the conditions in space, such as microgravity, and can lead to therapeutic advances and new discoveries.

Regarding the 4 and 5 sustainable development goals, space facilitates distance learning, thanks to new technologies, primarily thanks to internet services, which make the development of e-learning possible; furthermore, it can push young people and especially young women to undertake certain types of studies which are the most promising for the future both in terms of the demand for skilled labor and good remuneration. The gender gaps in the outer space male-dominated sector is strong and concerns space agencies, manufacturing and industry, aerospace engineering, space force and command workforces, making women's leadership particularly weak. This is the reason why UNOOSA has launched in 2020 the Space for Women Project (https://space4women.unoosa.org/).

Outer space-related science, technology and research ensures innovation and a better future for the whole society. It means that women should be considered a driving force of this change and it's the reason why they should be empowered in the outer space sector.

Outer space-related science, technology, and research can contribute in a relevant way to improve affordable and clean energy thanks to solar panels for satellites and to increase their efficiency too. So, it's easier to reach the sustainable development goals n. 6 and 7.

The space economy is booming and it's an opportunity in improving decent work and economic growth and in investing in sustainable industry and supporting innovation and infrastructure, supporting the sustainable development goal n. 8. According to Nasa (2022) its contribution to US economy is important considering the job quality and the amount of the tax revenues throughout the U.S. annually. Moreover, space technologies help in reducing inequalities connecting remote and isolated communities; in so doing, they can benefit of services, education, and work opportunities, according to the sustainable development goal n. 8.

The sustainable development goal n. 9 can be improved thanks space technology, mapping from the space possible locations to set solar panels as well as to collect space-based solar power (https://www.esa.int/gsp/ACT/projects/sps/).

Space technologies help also in monitoring heat spots in cities, in analysing air quality and climate trends, and in planning smart, sustainable urban areas, according to the sustainable development goal n. 10.

The information technologies can be profitably used in low-income countries and in developing countries, allowing for a better and more rational use of re- sources, a more in-depth control of the territory and a management of the economies and resources of the communities in such a way as to incentivize responsible consumption (goal 12), also to govern climate change and reduce social inequalities also by connecting remote and isolated communities to services, education and job opportunities (goal 13).

Thanks to information technology, the environmental conditions both on land and in the water (goals 14 and 15) can be monitored and managed as well as the social phenomena, such as population displacement and mass migration taking place in these contexts, from the management of protected natural areas to the navigation of fishing boats, monitoring illegal fishing, migrant routes, illegal activities of various kinds, as well as territorial control during and after armed conflicts (16). The role of space technology plays a crucial role today in the Russia- Ukraine war.

5. Concluding remarks

As suggested at the beginning of this short paper, outer space topic is an up to date one related to the global issues and is one of the most challenging megatrends in the 21st century. In the first section of this paper, I've reconstructed the today issue of outer space. The development of this topic is due to the today space technolo- gies. They offer both opportunities and risks. Among opportunities we must men- tion the possibility of the exploration of outer space. According to the NASA, space exploration is vital to humanity (NASA 2013). Among the risk, we have to mention the problem of the so called "space junk", i.e. the orbiting debris.

Then I have considered that outer space for its commercial potential, that is the opportunity of commercialization of materials "imported" on the Earth. In fact, the space economy is booming, and it can bring a lot of benefits to Earth.

In this paper I've stressed as positive aspect, that the outer space offers us the possibility to promote a very special global issue, sustainability, starting from the UNO "Space2030 Agenda". Space sustainability refers to Earth as well as to outer space. Generally speaking, space sustainability aims to maintain the safety and health of the space environment. Moreover, sustainability on the Earth can be im- proved from the outer space thanks to the technological innovation. In fact, observ- ing "from above", i.e., thanks to satellites, it's possible to manage where and how can be settled green technologies, in order to mitigate the negative effects of the climate change and global warming.

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Yesterday and today: changes in elderly lifestyle

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Abstract: The combined effect of a high life expectancy and the persistence of a low fertility level have contributed to the progressive increase in the elderly population: 14,2 million individuals at 1st January 2023 (24.1%). Moreover, the elderly of today are very different from the past as they live longer and in better health and living condition. Today, the age threshold defining entry into old age is shifting. The concepts of active aging and silver age identify a period of life that has gradually expanded, in which people, while aging, continue to fully participate in the various spheres of social, economic, political and cultural life. The analysis of a set of indicators related to different domains of life aims to highlight the changes that have occurred during this period of time, with regard also to gender and territorial differences. Comparing the "ederly of today, with respect to the "ederly of the past", the results show a gradual spread of active and proactive behaviours (e.g., sports practice, volunteer activities, and library enjoyment), accompanied by an improvement in lifestyles (e.g., reduction in risky alcohol consumption behaviours, increase in daily consumption of fruits and/or vegetables). There is also evidence of improvements in civic, political and cultural participation, although the advances that occurred up to 2019 were interrupted by the Covid-19 pandemic, and the recovery observed in 2022 is not enough to bring the gained advantages back to the 2019 level.

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Finally, the analysis confirms that over time the use of the Internet among people aged 65 and older has strongly increased, with a significant impact on everyday life, due to the myriad of opportunities that the Internet offers.

Keywords: elderly, lifestyle, active ageing, silver age.

1. Introduction

The combined effect of a high life expectancy and the persistence of a low fertility level have contributed to the progressive increase in the elderly population: 14,2 million individuals at 1st January 2023 (24.1%). Moreover, the elderly of today are very different from the past as they live longer and in better health and living condition (Istat, 2023).

Today, the age threshold defining entry into old age is shifting. The concepts of active aging and silver age identify a period of life that has gradually expanded, in which people, while aging, continue to fully participate in the various spheres of social, economic, political and cultural life.

The analysis of a set of indicators related to different domains of life aims to highlight the changes that have occurred over the past 25 years, with regard also to gender, territorial and educational level differences.

2. Demographic scenario: crowding the top of the population pyramid

Ageing process, in Italy, is fairly recent. Indeed, in the last century, life expec- tancy increased quickly and fertility had a plummet. These phenomena caused a radical change within the age structure of the Italian population, with a real over- turning of the age pyramid.

The current scenario is marked by a notable decline in the proportion of young- er age groups within the total population. At the same time, there is a significant increase in the percentage of elderly age groups, leading to an intergenerational imbalance that represents one of the main demographic debates. Italy has one of the lowest fertility rates in the world and one of the fastest increase of survival at the oldest age.

Concerning survival, demographic indicators clearly show that Italy is one of the European countries with the highest life expectancy for both genders. In 2022,

life expectancy at birth is estimated at 80.5 years for men and 84.8 years for women, 5.2 years more for males and 3.3 for women compared to 1997.

The phenomena mentioned above have greatly modified the age structure of resident population in Italy (Figure 1).

In 2022, the population pyramid exhibits distinct changes compared to 1997. The base of the pyramid has significantly narrowed, while the top has expanded. Notably, the younger population (0-14 years old) has decreased by almost 1 million individuals, accounting for 12.5% of the total population in the 1st generation of 2023. Conversely, the elderly population (aged 65 years and over) has surged, comprising 24% of the total population in the 1st generation of 2023, representing an increase of 4.4 million individuals since 1997.

The ageing ratio, the best indicators of the demographic balance between the elderly and the young, reveals a significant imbalance destined to increase. In 1997, there were 118.7 elderly individuals for every one hundred young people, whereas in 2023, this ratio has climbed to 193.3%. Clearly, population aging poses substantial challenges to society, and these challenges can only intensify in the coming years.

It is to be pointed out that life conditions of today's older population differ considerably from those in the 1990s. Consequently, calling "old population" those people who reach a threshold based on anagraphic age might be inadequate. In fact, the new old population reflects a heterogeneous universe of people and the characteristics related to ageing are less and less associated to those aged over 65.

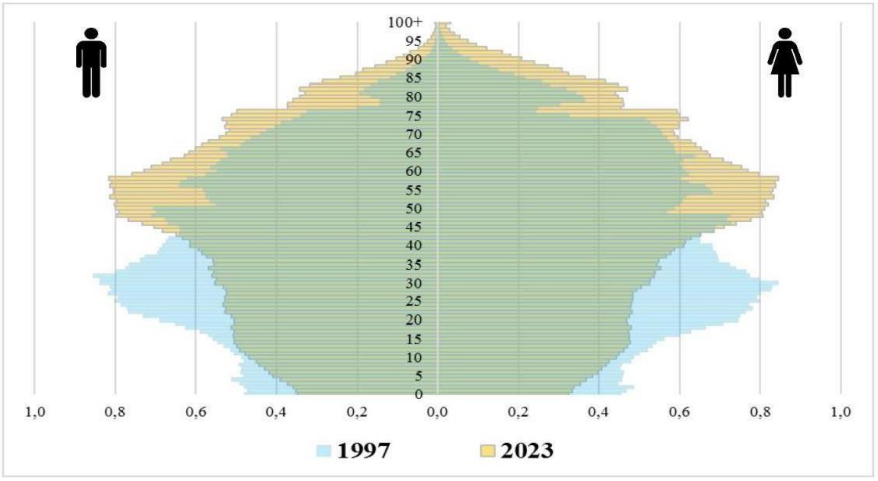

Figure 1 Resident population on 1st January - Source:ISTAT, Provisional data

Currently, the median age in Italy stands at 47 years, a notable increase from the 38-year recorded in 1997. This signifies that, in the population pyramid, nine generations (ages between 38 and 47) result "made young again", passing from the older population to the younger population over the course of 26 years. This means that nowadays, the elderly population is younger, not only because they live longer than in the past, but also and especially because their life conditions have progressively and significantly improved.

The recent term used to indicate this rejuvenation is counter ageing. This definition implies that our demographic structure is going to become younger due to several factors. Firstly, we live better and longer and, additionally, our capability are growing up. According to other opinions, it points out that the increase of immigrants in the younger demographic ages gives a contribution to the counter ageing of autochthone population.

3. Elderly of today: more participating, more active, but less satisfied

To gain a deeper understanding of the major changes that have occurred over the last 25 years with respect to the elderly population, a set of indicators calculat- ed from two Istat multipurpose surveys[1] was compared. This comparison was conducted using ratios[2], which reveal both areas of improvement and areas of worsening in today's elderly population when compared to their counterparts from 25 years ago.

Indicators calculated for this study are based on data with a time series that allows for comparison between 1997 (or around that time) and 2022 and cover various aspects of life, including health, lifestyles, cultural and social participation, satisfaction with different areas of life, and concern for the environment.

As shown in Figure 2, over the 25-year period, the indicator with the most marked improvement is regular internet use[3], which is about 34 times higher than in the past, for both age groups.

[1] The main source of the data presented in this paper is the "Aspects of daily life" Istat survey, with the exception of the data referring t o 2000, which comes from "Citizens and leisure time" Istat survey.
[2] For further methodological details, please refer to the appendix section.
[3] People who have used the internet at least once a week in the past three months.

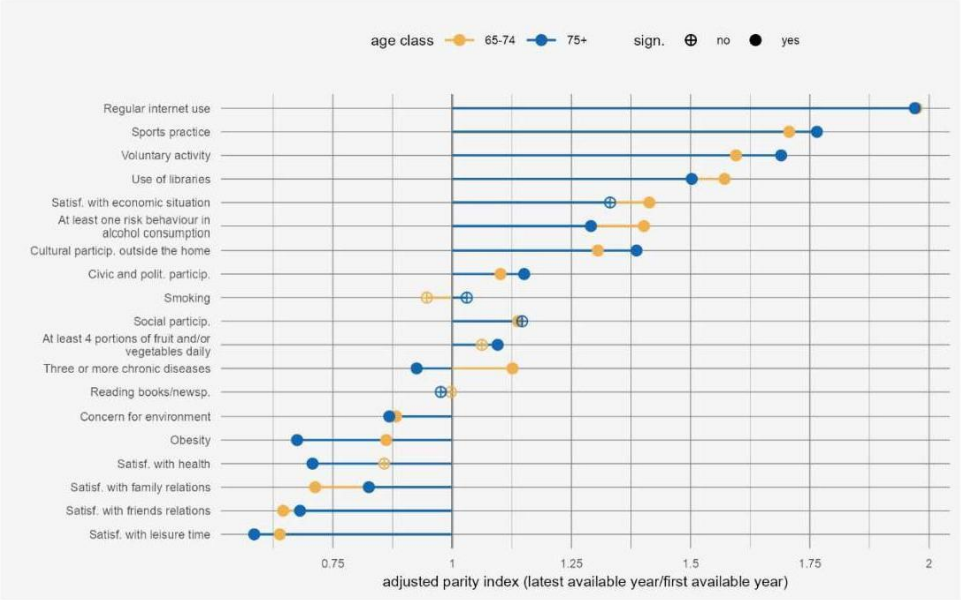

Figure 2 Comparison of Indicator ratio Between 1997 (a) and 2022 for ages groups 65-74 and 75+. Adjusted parity index.

(a) Except for the following indicators: Concern for environment (1998); Civic and political participation (1999); Use of libraries (2000); Regular internet use (2000); Obesity (2001); At least 4 portions of fruit and/or vegetables daily (2003); At least one risk behaviour in alcohol consumption (2003).

Overall, proactive behaviours related to leisure and participation reveal significant improvements. In fact, there have been positive developments in voluntary activities[4], cultural participation outside the home[5], and civic and political participation[6], particularly among the older age group (75+). Use of libraries also shows improvement, with a greater impact seen in the young elderly (65-74) group. Social participation[7] increases only for young elderly.

Some of these indicators, i.e., use of libraries, voluntary activities, social and cultural participation had reached even higher levels of participation before the Covid-19 pandemic. These advances were interrupted due to the health emergency and the recovery observed in 2022 is not enough to bring the gained advantages back to the 2019 level.

Indicators related to health and lifestyle show important progress, including the widespread of sports practice (continuously or intermittently), a decline in risky alcohol consumption behaviours[8], and, only for the oldest group, increased consumption of fruits and vegetables[9]. Looking at the differences between the two age targets, while sports practice increases more among older people, risky alcohol consumption decreases more among people aged 65-74 years. On the other hand, a concerning increase in the share of obesity is observed, particularly among the elderly population. The only indicator that shows a discordant trend by age is the one referring to multicronicity[10]. Among the younger elderly, there is a notable de- crease in the number of individuals with three or more chronic diseases. In con- trast, the older elderly group experiences an increase in the prevalence of multiple chronic conditions over the reference period. However, the gains in survival observed between 1997 and 2022, and the increase in the "oldest old", suggest that this decrease is not necessarily matched by a worsening as such, but it may be an inevitable consequence of the increase in longevity: despite facing more health challenges, the elderly people have higher and higher probability of survival. It is

[4] People who have carried out unpaid activities for voluntary organizations or groups.
[5] Istat Bes indicator, for definition details refers to https://www.istat.it/en/well-being-and-sustainability
[6] Istat Bes indicator, for definition details refers to https://www.istat.it/en/well-being-and-sustainability
[7] Istat Bes indicator, for definition details refers to https://www.istat.it/en/well-being-and-sustainability
[8]Istat Bes indicator, for definition details refers to https://www.istat.it/en/well-being-and-sustainability
[9] Istat Bes indicator, for definition details refers to https://www.istat.it/en/well-being-and-sustainability
[10] People who declare to be affected by 3 or more chronic conditions.

pointed out that, in 25 years, the population over 80 has doubled, the population over 90 has tripled, and the population over 100 and over has even quintupled.

Despite an overall improvement on most non-subjective indicators, satisfaction[11] in various aspects of life has declined, except in the economic sphere, which does show improvement for younger elderly. On one hand, satisfaction with leisure time and with friend relations worsen with high and similar intensity for the two age targets. On the other hand, satisfaction with family relationships worsens most strongly for younger older people, while satisfaction with health worsens only for older people aged 75 and older.

Looking at the historical series of indicators related to satisfaction, some considerations can be made. Satisfactions with friendship and family relationships and with leisure time follow a very similar trend in steady decline since the late 1990s for both age groups. In 2021 there is a drop in satisfaction related to the Covid-19 pandemic, which is followed by a recovery in 2022 that in the case of the younger elderly is not enough to recover the 2019 levels, while in the case of the older ones it does.

Satisfaction with health appears to be worse for people aged 75 and over. But looking at the time series, the values of high satisfaction show very fluctuating values until 2005. Since then, high satisfaction levels remain stable. Instead, the share of the elderly who are "very" or "quite" satisfied with their health remained more stable over the period under examination.

Regarding satisfaction with the economic situation, the only significant improvement concerns the young elderly, who today are often still active in the labor market or can enjoy their retirement in more active living conditions than in the past.

Finally, concerns about environmental[12] issues seem to be increasing, as reflected in the worsening of the indicator for both age groups.

Performing an analysis by gender, all indicators show concordant trends except for two indicators that show an advantage only for the male component (Figure 3). Firstly, the smoking habit shows improvement among men in both age groups but worsens for women aged 65 to 74. Secondly, multicronicity displays improvement among men aged 65 to 74 but worsens for women aged 75 and older.

For both age groups, women improve more than men in library attendance and in civic, political and social participation. Only among the elderly aged 75 and older,

[11] People very satisfied with various aspects of life.

[12] People who are concerned about at least 3 environmental issues (out of a maximum of 5 possible answers) from a list of 14 environmental issues.

women improve more than men in volunteering and cultural participation out- side the home. However, it is essential to highlight that in 1997, women were significantly less engaged in cultural, social, civic and political activities, as well as volunteering and library use, compared to men. While women have shown greater improvement over time, they have not yet reached the same levels of participation as men in these areas. So, despite progress, the gender gap persists.

An important factors to consider in the changing lifestyles of the elderly is the rise in the educational levels[13]. As a result, the increase in the elderly population is translating into a rapid increase in the population with higher educational levels. According to Istat data[14], from 2004 to 2020, the share of people aged 65 and older with at least a high school diploma more than doubled, rising from 13.2% to 27.8%. The data analyzed for this paper confirm that people with higher education- al qualifications participate more in social and cultural activities. However, it is interesting to note that participation levels of the most educated are lower in 2022 than in 1997. This implies that participation is increasing because college and high school graduates have increased, but college and high school graduates participated more 25 years ago than today.

[13] In this regard, it is crucial to recall the turning point represented by the middle school reform (1963) and the introduction of unrestricted university access (1969), the first beneficiaries of which were 65 years in 2020.

[14] Istat, Labour force survey, previous regulation (until 2020). http://dati.istat.it

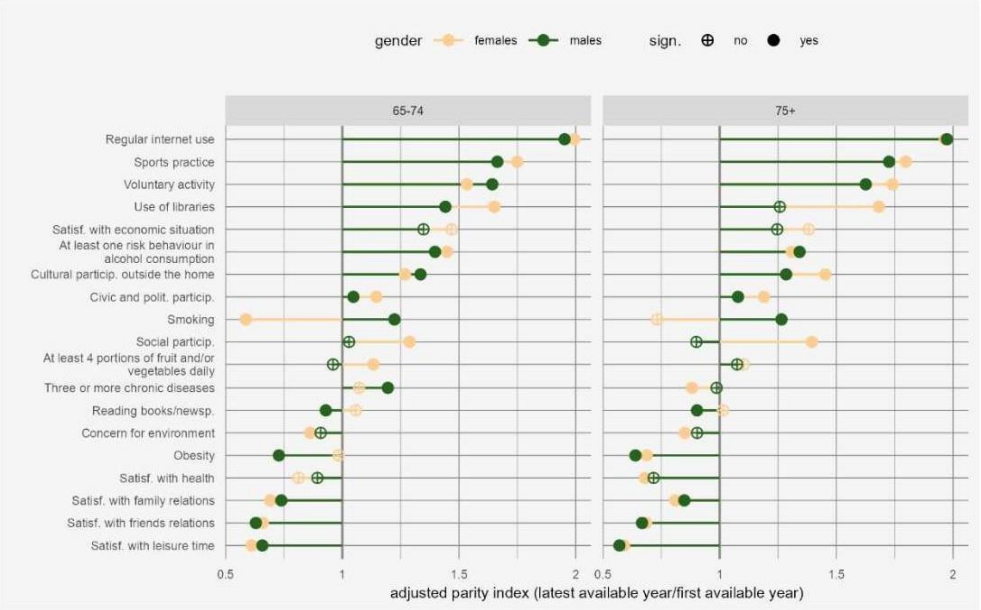

Figure 3 Comparison of Indicator ratio Between 1997 (a) and 2022 for ages groups 65-74 and 75+ by sex. Adjusted parity index.

(a) Except for the following indicators: Concern for environment (1998); Civic and political participation (1999); Use of libraries (2000); Regular internet use (2000); Obesity (2001); At least 4 portions of fruit and/or vegetables daily (2003); At least one risk behaviour in alcohol consumption (2003).

4. Conclusion

Over the past decades, Italy's population has undergone a significant aging process, driven by a rapid escalation in life expectancy, coupled with a marked decline in fertility rates.

Comparing the "elderly of today" with respect to the "elderly of the past", the results show a gradual spread of active and proactive behaviours, accompanied by an improvement in lifestyles.

In the area of social, cultural, civic and political participation, women show more marked improvements than men. Nevertheless, they still have not reached men's levels of participation, so the gender gap persists.

With regard to territorial disparities, distances between northern and southern regions remained relatively stable for most indicators.

On the other hand, today's elderly are less satisfied with friends and family rela-

tions, and with leisure time than their peers 25 years ago. This trend has only been accentuated by the Covid-19 pandemic, but the decline was evident even before the health emergency.

Finally, the analysis confirms that over time the use of the internet among people aged 65 and older has strongly increased (while remaining lower than in younger age groups) with a significant impact on everyday life, due to the myriad of opportunities that the internet offers.

As the elderly population continues to grow, accommodating policies to face up the multiple impacts of population ageing are urgently needed and require a comprehensive and multidimensional approach.

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Methodological appendix

In order to analyze the differences between the elderly of today and the elderly of the past, for each indicator the ratio between the values for the two groups have been computed (elderly of today/elderly of the past). If the indicator has a negative polarity (i.e., an increase in value implies a worsening in well-being) the inverse ra- tio has been considered. This default calculation method yields a measure that is not symmetrical around 1 and that has no upper limit, generating possible misunderstanding in graphic representations. This problem can be addressed in two ways: either graphically, using a logarithmic scale (Istat 2023), or more generally adopting an adjusted parity index (OECD 2019), in which ratios that exceed 1 are inverted and subtracted from 2. We have opted for the latter, which has the advantage to conveniently allow also the representation of ratios much greater than 1. By con-

struction, the parity index and its inverse, after the adjustment, are symmetrical with respect to the parity line (ratio=1) and so different ratios can be correctly compared. The further from 1 the adjusted parity index lies, the greater the dispari- ty between the elderly of today and the elderly of the past. An adjusted parity index value less than 1 indicates disparity in favour of the elderly of the past and a value higher than 1 indicates disparity in favour of the elderly of today. The adjusted par- ity index lies in the range 0-2 where 0 means that the virtuous behaviour pertains only to the elderly of the past, while 2 means that the virtuous behaviour pertains only to the elderly of today.

For an indicator I with positive polarity the formula for the adjusted parity index (API) reads as follows:

$$API_{today,past} = \{\frac{I_{today}}{I_{past}} \; if \; I_{today} \leq I_{past} \; 2 - \frac{I_{past}}{I_{today}} \; if \; I_{today} > I_{past}$$

Sometimes (OECD 2020) it is considered that the parity index gives no indication of a clear difference between the two groups on which it is calculated if it is within 0.03 points distance to parity. In this paper we have preferred to test the null hypothesis of no clear difference between the two groups with a standard two- sample t-test for the equality of means, with a 5% significance level (Snedecor and Cochran 1989). Since samples are usually way larger than 30, a normal approxima- tion has been applied. The null hypothesis is rejected (i.e., the values of the indica- tor for the two groups are considered statistically different) if the test statistic T is larger (in absolute value) than the quantile of order 97.5% (i.e., 1.96) of the stand- ard normal distribution, where

$$T = \frac{I_{today} - I_{past}}{\sqrt{SE^2_{today} + SE^2_{past}}}$$

and SE^2_{today}, SE^2_{past} are the squares of the sample standard errors related to I_{today} and I_{past}.

The non-moral neutrality of the BES indicators framework

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Abstract: Is the Italian framework of indicators for sustainable and equitable wellbeing -BES- morally neutral? If it is not, what morality does it promote? Since the Italian Institute of Statistics provides it, and a part of its indicators has been included in the Italian governmental economic and financial planning document, the BES affects the public debate and governmental decisions. Such an influence demands to test its moral neutrality. This article copes with this problem by proposing a prototype of moral neutrality evaluation model for indicators framework. In this model, there is moral neutrality if one of the following two conditions is satisfied. The first condition is satisfied if the indicators do not judge reality (i.e., they merely describe it). The second is satisfied if indicators contain multiple irreconcilable judgments, each guided by heterogeneous moral doctrines. The paper inquiries about the first condition by analysing the moral content of the framework's object and the modality of providing, interpreting, and using the indicators. The paper argues that it is unsatisfied since the words equitable and sustainable have moral content, the indicators have a polarity for wellbeing, and the BES indicators in the economic and financial planning document suggest a judgment on the governmental actions and intentions. Two steps are employed to test the second condition. The first concerns individualizing the most relevant criteria that differentiate moral doctrines, such as, for instance, the good prevalence over the right or vice versa. The second evaluates which criteria the indicators satisfy to check whether they fit one or many doctrines. The results suggest that the BES fits Mill's utilitarianism. Such non-moral neutrality emphasizes the necessity

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of further research, and the methodological prototype development can help to correct the framework or its use to achieve moral neutrality.

Keywords: BES, Sustainable and equitable wellbeing, Indicators framework, Moral neutrality.

1. Introduction

The Italian indicators framework of sustainable and equitable wellbeing, in Italian Benessere Equo e Sostenibile (BES), published by the Italian Institute of Statistics (ISTAT) since 2013, is rooted in 'Beyond the GDP' [ISTAT, 2023], a 'reactionary' movement following the famous report by Stiglitz, Sen, and Fitoussi [Stiglitz, Sen, Fitoussi, 2009]. Such a movement challenged what the GDP represented in normative terms, it stands against the world that the GDP maximization shaped and could shape in the future. The BES framework aspires to guide public decisions: 'The analysis presented in this volume allows to individualize the strengths and the weakness that policies should affect to guarantee that the wellbeing levels are fairly distributed and do not deteriorated over time (author's translation of [ISTAT, 2023]. This guiding role is explicit since the government -must- justify its decisions considering a subset of indicators BES by providing an appendix in the governmental economic and financial planning document (DEF). The BES seems to stand as a moral bulwark, a sort of statistical conscience that demands explanations although no one is required to comply with.

This paper questions whether the BES is morally neutral. If the BES was not a mere description of the reality useful to inform citizens and decision makers, and if it was a judgment affecting the public opinion and debate, then it would be propaganda.

The National Institute of Statistics should not be involved in propaganda in liberal democracies, hence, BES moral neutrality should be clarified and violations should be identified and avoided. Moreover, moral neutrality of indicators frame- work studies should be extended since such a type of propaganda is not new; indi- cators have been used to promote particular normative perspectives, including intergenerational equity, Human Rights, and Sustainable Development Goals [Landman, 2004; McGrogan, 2016].

The paper proposes and employs a prototype method to enquire about indicators framework moral neutrality. The method tests two conditions, each sufficient to have moral neutrality. The first is the non-judgment condition, satisfied if the indicators do

not provide a judgment or a moral principle. The second is the multiple judgments and moral principles condition, satisfied if the indicators provide heter- ogeneous judgments and moral principles so to avoid the result is a unique con- sistent judgment or moral principle. The paper inquiries about the first condition by debatimg the moral content of the framework's object and the modality of providing, interpreting, and using the indicators. Two steps are employed to test the sec- ond condition. The first concerns individualizing the most relevant criteria that differentiate moral doctrines, such as, for instance, the good prevalence over the right or vice versa. The second evaluates which criteria the indicators satisfy, highlighting whether they meet the criteria of one or many doctrines. The results suggest that the BES satisfies neither condition. Moreover, it is questionable whether it is a reaction against the "GDP ideology" or if is an effort to let the GDP ideology go beyond the GDP indicator limits.

The paper structure follows. The next chapter defines the premises, the method, and the conditions for testing moral neutrality. The third chapter uses the method to evaluate the BES framework. It follows a chapter debating the results, the implications, strategies to increase the BES moral neutrality, and further desirable research trajectories. The last chapter concludes.

2. Moral neutrality, neutrality conditions, and method

Gordon, interpreting Socrates, defined the Law of Moral Neutrality as "no definition of moral terms or analysis of moral reasoning shall favour one set of moral principles or ideals over another, nor one answer to a moral question over another." [Gordon, 1964]. Any definition includes some arbitrary choice, so does morality, but any conception of morality has a characteristic element: it is not a mere infor- mation or a description of the reality, it is one or more sentences that directly (judgment) or indirectly by means of logic (principle) define the right thing to do [Durrant, 1958][1].

According to its definition, a way to achieve moral neutrality is to have no judgments and no moral principles. We will call such a modality to achieve moral neutrality "no-judjment condition" (NJC). Such neutrality condition on includes con-

[1] The law of neutrality is itself a moral principle since, for instance, it judges wrong any advancement of a particular conception of good. The topic is interesting and relevant, but we will focus on whether the BES is morally neutral without debating whether such a neutrality is desirable or if the law of neutrality is consistent.

crete neutrality, consisting on advancing no particular conceptions of good but it is not restricted to the good alone. We will reject the neutrality of grounds, that defines neutral something acceptable by everyone regardless their conception of good [De Marneffe, 1990], since it is not a sufficient condition for moral neutrality. Indeed, on the one hand, to accept that -what happens to be in a precise moment the shared conception of the good- it is the good itself is itself a moral principle and it would be rejected, for instance, by the vail of ignorance of Rawls [Rawls, 1971] and Kant [Kant, 1788]. On the other hand, that the shared conception of the good is what, for instance, Rawls or Kant define (or potentially so through the method they propose) it is not shared.

Another way to achieve moral neutrality is to provide heterogeneous judgments and moral principles to avoid the result being a unique and consistent judgment or moral principle. We will refer to this modality as "multiple irreconcilable judgments and moral principles condition" (MIC). The word irreconcilable stresses that these principles must be conflicting to avoid their overlap becoming a unique and consistent judgment or moral principle. If such a condition was satisfied, then the report would merely inform about opinions of different moral theories. This path to moral neutrality is more challenging since there may be too many heterogeneous moral principles to provide exhaustive coverage.

To check MIC condition, the method employed adopts the following steps:

1. Select relevant criteria and prove them able to create disagreement among heterogeneous moral doctrines. The selected criteria must be as irreconcilable as possible to clear-cut the moral doctrines' judgments into opposite categories. The moral doctrines employed should be distinguishable according to these criteria in order to allow the researcher to claim whether indicators have a high polarity degree with one or more moral doctrines (polarity is defined in the following lines). If they have a high polarity degree consistent with only one of these doctrines, then we have a unique moral judgment or moral principle and the MIC is unsatisfied.
2. Determine the moral principles' polarity conditions. The polarity condition is that dimension to which the phenomenon measured by an indicator should correlate to provide useful information on the degree of morality. An example is the utilitarian conception of good, which can be turned into the polarity condition "higther aggragte wellbeing".
3. Measure the indicators' polarity degree for each moral principle. The polarity degree is the degree of correlation between the indicator (and the phenomenon it measures) and the polarity condition. For instance, the GDP,

education, and health have a positive polarity degree with the utilitarian conception of good.

Due to the constraints imposed by the paper's length and the topic's complexity, the research has been encompassed as follows:

1. The author adopted six criteria: good, rights, paternalism, consent, paternalistic preferences, and preferences neutrality.
2. Four moral doctrines are employed and distinguished by these criteria. They are a subset of Michael Sandel's Justice [Sandel, 2010], considered a selection of the most relevant nowadays and a proper base to adopt adequate simplifications and clear interpretations. The moral doctrines are the following: Nozick's libertarianism [Nozick, 1974], Kant's deontological libertarianism [Kant, 1788], Bentham's utilitarianism [Bentham, 1789], Mill's utilitarianism [Mill, 1863].
3. The 2023 BES report contains more than one hundred fifty indicators, and it is impossible to evaluate them all here. Consequently, we will focus on the indicators included in the DEF that are the most relevant from our standpoint.
4. A debate concerning the indicators and criteria provides the indicators' polarity degrees, and no statistical techniques have been adopted at this stage.

3. The moral-neutrality conditions tests

This chapter checks whether the BES satisfies the moral neutrality conditions. It will enquire about the non-judgment condition, the selection of moral principles and the related moral doctrines distinction, and finally, the polarity degree of the BES indicators.

Non-judgment condition

Different arguments support the conclusion that the BES does not satisfy the NJC. Let us consider the alredy quoted BES claims that [...] policies [...] to guarantee that the wellbeing levels are distributed fairly and do not deteriorate over time. It does not directly claim that guaranteeing a fair distribution of wellbeing and avoiding wellbeing deterioration are the right things to do; however, it is hard to imagine that this sentence is suggesting other than this. Indeed, first, it does not claim that it is a mere statistical description of the reality, second, the words equity and sustainability have moral content, and

they are so relevant to be in the acronymous of BES (Sustainable and Equitable Wellbeing).

Equity has an explicit moral content and refers to a specific type of distributive justice. A distribution may be equalitarian a' la' Rawls [Rawls, 1971], based on merit [16], on inviolable property rights and consensual transfers [Nozick, 1974], and the list may continue. Hence, BES contains at least a moral principle and the consequent judgments.

The word sustainability has a moral content as well [Bova, 2022]. Although there is no shared definition of sustainability [Bova, 2022; Moore, Mascarenhas, Bain, Straus, 2017], and the consequent confusion necessarily concurs to slow down its achievement, its content refers to sustaining something over a certain time lap. It is enough to notice that competing and mutually exclusive things can be sus- tained over time to be forced to admit that the decision to sustain one or another re- quires a decisional principle and, accordingly, a moral doctrine. To sustain utility, Jonas Hans's human life [Mantatov, Mantatova, 2015; Jonas, 2023], the environment as it is (conservatism), or property rights, are among the goals that different moral doctrines would support or reject and that often are competing and mutually exclusive. The BES claimed the willingness to sustain wellbeing, which is most likely a utilitarian moral view.

The purpose of seeking higher levels of wellbeing and maintaining it over time is related to moral doctrines, as we will debate later. Moreover, BES assigned a polarity to its indicators. The polarity is positive (negative) if the higher (lower) the indicator, the higher the wellbeing. Indicators with no polarity are excluded as irrelevant. Such an irrelevance can be justified in terms of cognoscitive goals. Nevertheless, the polarity remains a judgment on the phenomenon measured according to their impact on wellbeing, which is a consequentialist moral line of reasoning to determine the good as that act increasing wellbeing. The BES acronymous, polarity, history, presence in the DEF to judge governmental actions, results, and inten-, t i o n s and its claim to aim at guiding public decision makers' choices appear enough to conclude that the BES's cognoscitice efforts are all directed to provide a moral judgment.

The multiple irreconcilable judgments and moral principles condition: criteria and moral doctrines

This section debates a set of criteria and how they distinguish the selected moral doctrines. The first debate concerns whether the good prevails on the right or vice versa. Sandel illustrated the issue in the first chapter of [Sandel, 1998] and used it to

distinguish deontological liberalism and utilitarianism. He defined the deontological liberalism core thesis as "society, being composed of a plurality of persons each with his own aims, interests, and conception of the good, is best arranged when it is governed by principles that do not themselves presuppose any particular conception of the goods. What justifies these regulative pronciples […] is that they conform to the concept of right, a moral category given prior to the good and independent of it." [Sandel, 1998]. To introduce and debate the criteria, it is convenient to introduce the claims of two versions of libertarianism and utilitarianism. The libertarian claim is: each person has inviolable rights and own maximize the aggregate utility ('the greatest good for the greatest number'), which itself, the exercise of this property is limited only by other s' rights (rights prevalence), anyone can freely choose what is good or wrong (preference neutrality), and consequently, the rela- tionships among people are governed by their consent and the state role is reduced to protect and repristinate the rights (individualist). Opposed to this moral concep- tion, utilitarianism defines the right thing to do as that which will (consequentially) depends on free individual preferences (preferences neutrality), and, accordingly, the state role is achieve the general welfare despite some opposite individualistic interests (collectivistic).

Both liberalism and utilitarianism are not homogeneous; they have been disentangled in different interpretations. The most interesting to our ends is Mill's version of utilitarianism that attempted to justify the need for cultivating virtues and human rights. If Bentham defined the right thing to do as 'the greatest good for the greatest number', we may intend Mill's view as 'the greatest good for the greatest number and time'. He argued, in brief, that human rights allow for achieving the highest degrees of utility in the long term. For the same reason he argued that individual preferences, attitudes, and behaviors might be cultivated and shaped into more virtuous ones. Virtuosity, in this sense, means nothing more than a set of traits providing higher utility in the long run. Consequently, although the good pre- vails on the rights, and the right thing to do is determined by a consequentialist line of reasoning, he justified human rights and paternalistic approaches as means to achieve the greatest good. Perhaps the biggest challenge for his utilitarianism is that he embraces the aggregation of utilities, which are subjective by nature, and tries to find an objective model that, if reached, would guarantee the subjective utilities aggregate maximization in the long term: the risk is that such an objective model prevails on the source of its legitimation that is subjective by nature.

Kant's deontological liberalism would oppose Mill that justice requires certainty, it cannot be based on circumstances and subjective volatile preferences and that

come a universal law". These categorical imperatives must not be defined case by there exists a categorical justice that prevails over the good and is self-consistent [kant, 1788; Sandel, 1998]. A consequentialist reasoning based on aggregate subjectively defined good would generate an unstable ethics where the majority may be coercive and unfair by using the minority as a means and not as an end: condi- tional and categorical imperatives must be distinguished, and only the latter can be a base for a fair and stable ethics. He rejects the preference neutrality, intended as individu als' appetites elevated to moral aim (heteronomy), by arguing that a person can be free only once she is not a slave of these appetites and can set her own goals and act accordingly (autonomy). He considers human reason able, once autono- mous, to achieve universal categorical imperative able to satisfy the rule "act only according to that maxim whereby you can at the same time will that it should be case through a consequentialist line of reasoning; once set, they are immutable and guarantee a stable ethic resistant to collective prevarications. The achievement of autonomy requires a set of virtues and can justify paternalistic support aiming at reducing heteronomy. In this sense, both Mills and Kant see an active role of the state but the first on a collectivistic, consequential, and subjective base, and the second on an individualistic, deontological, and objective base. Despite his objectivization claim, that human reason is universal and able to individualize the same universal rules for every autonomous human beings requires the definition of the will in "you can the same time will that it should become a universal law" which is hardly disentangled from subjectivity.

Let us briefly recall two more moral standpoints to increase the heterogeneity of our evaluation providing two doctrines to provide further disagreement over the rights, the good, paternalism, individual consent, and preference neutrality: Nozick's libertarianism and Bentham's utilitarianism. Nozick [Nozick, 1974] proposed a libertarianism based on the motto 'I own myself'. The individual has an inalienable property right to himself and, consequently, to the results of his labor; hence, he can decide freely what to do with his property, nobody should violate it or interfere, and no collective action or good can prevail on his rights without his consent. This can be simplified in economics as 'the right thing to do is a Paretian improvement, that is, an act entailing nobody is worst off and at least one is better off' [Bova, 2022]. Hence, nobody should interfere with the individual's property, inclinations, and goals without his consent because the rights exist as such and have not a consequential source. Accordingly, the state should be minimal and en- sure that no particular conception of the good is promoted and implemented with- out the consent of everyone [De Marneffe, 1990].

Bentham's utilitarianism [Bentham, 1789] preceded Mill's interpretation and argued that the right thing to do is that which provides t he "greatest good for the greatest number". Bentham's determination of the right thing to do is a mere cost-benefit analysis where the benefit is the pleasure, the cost is the pain, and the utility is their difference. Pleasure and pain are the basis of the good, and, consequently, he would reject any paternalistic interference with individuals' inclinations; instead, his morality requires preference neutrality. Moreover, he argues, the right thing to do is that action that will -consequentially- entail the greatest good and, accordingly, he rejects any non-consequentialist constraints, including natural right that he called "no sense upon stilts" [Sandel, 2010].

Table 1 summarizes the polarity conditions for the criteria that emerged as able to create disagreement across the doctrines enquired. These polarity conditions can be extended by identifying the indicator(s) that measure the satisfaction of that moral criterion such as, for instance, it could be the life satisfaction to approximate the utilitarians' good. These criteria will be further debated once applied in the next chapter.

Criterion	Polarity condition	Criterion	Polarity condition
Rights	higher respect for rights	Good	higher aggregate utility
Consent	higher respect of individuals' consent	Paternalism	higher virtuosity of behaviours
Preference neutrality	higher respect for individuals' preference	Virtuous preferences	higher virtuosity of preferences

Table 1. Criteria and polarity condition

Figure 1 summarises which criteria the moral doctrines considered would approve. The debate we had allow us to give a mere representative scheme which must be intended as a convention to proceed and that refers to a vivid literature that continuously debate and reinterpret these doctrines.

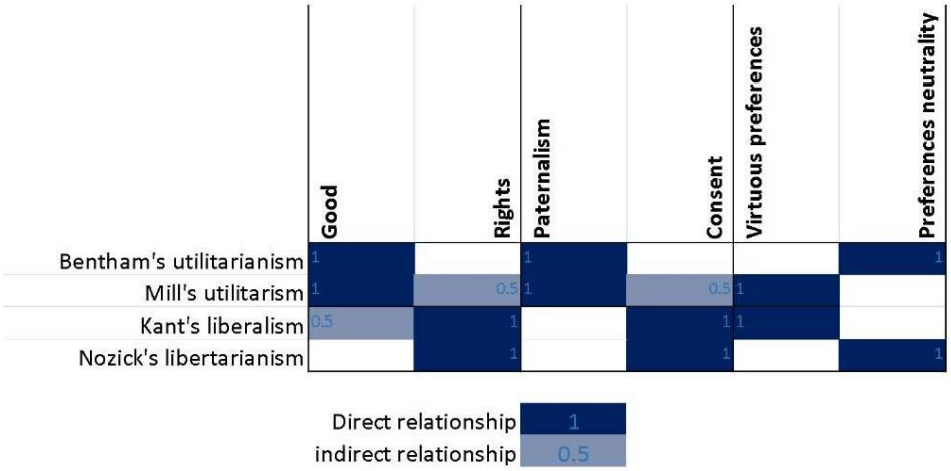

Figure 1 Criteria and moral doctrines.

The multiple irreconcilable judgments and moral principles condition: indicators evaluation.

This section debates each criteria and the related indicators polarity degree, the results are described in Figure 2.

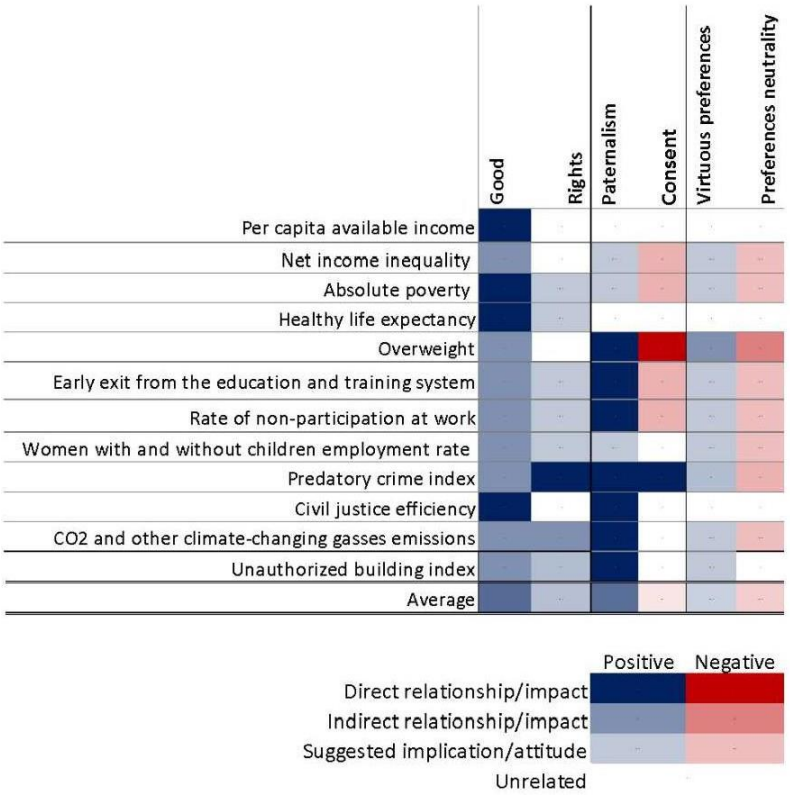

Figure 2 Indicators relationship with selected moral principles: polarity degree for each indicator and the related criteria.

The first evaluation couple of criteria concerns goods and rights. The BES indicators are selected by mandate according to their capacity to inform about the wellbeing. Hence, they do focus on the good and provide a judgment consistent with utilitarian perspectives. Such a sustainable and equitable wellbeing provides a focus on these dimensions, such as emissions, education, and landscape (unauthor- ized buildings), that concur to its actual and long-term achievements. The search for long term maximization led to measure behaviours that are supposed to maxim- ize it, such as higher education and healthy body weight; hence, it has that paternalistic mission closer to the Mill's vision of the utilitarianism than to Bentham. We must notice that there is not a list of rights the BES wants to support or inform about. The indicators have only indirect referments to rights such as to work, to education, to woman discrimination, and to health. Nevertheless, they appear on the background as helpful to increase the country wellbeing and, in this sense, their

relevance is close to the Mill's instrumentalization of the rights for the good.

The second evaluation couple includes paternalistic virtuous and individual's consent. The first requires a virtuous model to be promoted and these virtues should be clearly listed. BES has not such a list; however, to test possible the pa- ternalism instrumentalizations, we should check wherever there are behaviours considered good as such. The indicators include some examples, such as to work, to be healthy, and to study, other are suggested, such as altruism and solidarity for poverty and inequality. However, other virtues such as prudence, humility, cour- age, and loyalty are completely omitted suggesting virtues do not play a central role. Again, due to the BES set up, the virtuous behaviours that are suggested ap- pears as merely functional to the achievement of a higher wellbeing as Mill would. To measure the consent an indicator should measure the number of times an indi- vidual will is respected or violated. There is not a similar indicator among these analysed, instead, some behaviours (to study, to work, to maintain a proper weight…) are promoted regardless individuals' consent. Hence, the first criterion prevails on the second, but both are underrepresented and appear secondary to the good supporting again the idea that Mill's utilitarianism is the prevalent moral standpoint.

The last evaluation couple concerns virtuous preferences and preferences neu- trality. To measure virtuous preferences, we should have a list of virtuous attitudes such as altruism and courage. Hence, we should repeat the same considerations as before: there are indexes that suggest what's the right attitude but there are large lacks suggesting that these attitudes are either functional to wellbeing or are recog- nised as its source. Preferences neutrality idea is close to that of moral neutrality. To be protected, the phenomena measured should be associated with resistance to any influence on individuals' preferences and attitudes. An indicator that would satisfy such a task is, for instance, the presence of heterogeneous religious or moral lectures at school. There is no sign of such a type of indicators, instead, many indi- cators seem to suggest, as just mentioned, that some attitudes are either recognised or auspicial. The fact that these aspects appear reasonable or desirable is irrelevant as it would meet the objection we moved before to the neutrality of grounds.

5. Results and discussion

Results summary

The analysis of the non_judgment condition and the multiple irreconcilable judgments conditions suggest that the BES is not morally neutral. The NJC seems to be violated by the purpose of measuring equitable and sustainable welfare, each word having a moral content, the consequent polarity of the indicators, and the related judgment on the state of art of the country. Consequently, it was worth enquiring whether such a judgment was unique or moved by heterogeneous moral stand- points. The author adopted three couples of contrasted criteria to provide polarity conditions: the good and the right, paternalism and individuals' consent, paternalistic preferences and preferences neutrality. These distinguished Bentham's utilitarianism, Mill's utilitarianism, Nozick's libertarianism, and Kant's deontological liberalism. The analysis of the BES indicators in the DEF showed a common trend, the prevalence of a paternalistic utilitarian that seems to represent the Mill's interpretation. Hence the BES is not morally neutral, it helps increase long-term welfare (utilitarianism) by identifying appropriate behaviours (paternalistic virtues) and suggesting the related preferences (preferences paternalism) to hold.

The GDP's Hydra

The BES has been officially inspired by the 'beyond the GDP' movement and appeared reactionary: a proposal against GDP reductionism, accused of measuring everything but what matters for a good life. The BES reaction has been to provide indicators of these neglected aspects, but the GDP did not disappear. The reason is that, despite the revolutionary soul of the 'Beyond the GDP' movement, it did not reject what the GDP represented, utilitarianism, it merely extended it to everything the GDP alone could not measure by adopting a long-term utilitarianism. Hence, it become the GDP's hydra: any at tempt to cut his head, the GDP, did nothing but provide more heads, more utilitarian dimensions. Thus, despite the enthusiasm, it should be clarified if the BES represents what we want and what we ought to be, if it is adapted to endorse and define the sustainability challenge, if the equity it promotes is desirable, and why it prevails over the other competing proposals [Bova, 2020; Bova, 2022; Bova, 2022; Śleszyński, 2014].

Achieving moral neutrality

To achieve moral neutrality, the BES should either focus on life satisfaction statistical analysis, renouncing its guiding mission and equity and sustainability judgments or include different perspectives concerning other moral standpoints intro- ducing a deeper analysis of the rights, the individuals' consent, and the preferences of neutrality. Alternatively, ISTAT could provide further reports on these topics and provide them adequate mediatic space; an example in this direction is the SDGs report, but further efforts are required to provide a sufficient heterogeneity of judgments.

Future research trajectories

Several passages of the method proposed require further development and analysis. First, the steps to check the non-judgment condition require further refinement to become standardizable and repeatable. Second, a more profound definition of the polarity conditions and degrees in statistical terms is desirable to allow the analysis and comparison of large indicators frameworks. The method should also guarantee that the polarities conditions selected represent heterogeneous and irreconcilable doctrines. In brief, this paper perlustrated the potentialities of such a method to assess and improve the moral neutrality of national statistical institutes or other institutions' indicator frameworks.

6. Conclusions

This paper proposed the drivelines of a method to enquire about moral neutrality and applied it to explore the moral neutrality of BES, the Italian framework of in- dicators for equitable and sustainable wellbeing. Such an analysis is legitimated at least by the facts that the BES is provided by the national institute of statistics, which should not be a vehicle of propaganda, and its presence in the DEF, the gov- ernmental economic and financial planning document, where it stands as a 'statistical conscience' requiring the government to justify its results, intentions, and plans.

The method includes checking two conditions for moral neutrality, the absence of judgments and moral principles or the coexistence of heterogeneous irreconcila- ble judgments and moral principles. The paper argues that the BES contains a mor- al judgment since it judges the country state of art and the government intentions, actions, plans, and results through indicators having polarity for equitable and sus-

tainable wellbeing: each of these words having a moral content. Four doctrines concurred with analyzing the heterogeneity of such a moral judgment: Bentham's utilitarianism, Mill's utilitarianism, Nozick's libertarianism, and Kant's deontological liberalism. The paper adopted six contrapposed principles able to distinguish: the good and the rights, the paternalistic virtuous and the individuals' consent, the paternalistic preferences and the preferences neutrality. Each criterion was defined in terms of polarity condition that checks whether the phenomenon measured by an indicator is relevant for that very same principle. Accordingly, the author debated the polarity degrees of the BES indicators included in the DEF.

Although the methodology requires further research and its application can benefit from further statistical analysis, the preliminary results strongly suggest that the BES judges and its judgment fits Mill's utilitarianism. Such utilitarianism aims to maximize welfare in the long term and -consequently- seeks, promotes, and imposes rights, behaviours, and preferences instrumentally. Hence, although the BES claims to be inspired by the Beyond the GDP movement, it did not reject its utilitarian basis but extended it to the long term and other dimensions embracing Mill's standpoint and behaving as the GDP's Hydra. The non-moral neutrality of the BES poses the question of the role of ISTAT and the efforts necessary to conquer back the neutrality. In particular, it is desirable to advance in incorporating the level of rights, individuals' consent, and preferences neutrality. An effort in this direction could turn the suspected propaganda into higher moral awareness and knowledge into renewing the public debate to orient the country's progress vision.

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Mediterranean countries vs the other EU countries: a comparison between the European Green Deal three macro dimensions

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Abstract: The need to monitor the European Green Deal (EGD), the EU's Green Growth Strategy to achieve a climate-neutral, resource-efficient, toxic-free, resilient and competitive (in a fair and inclusive manner) circular economy, has allowed Eurostat to identify a key indicators "set [https://ec.europa.eu/eurostat/cache/egd-statistics/]. The paper analyses the key indicators "trend within each EDG macro dimensionfor the EU countries using appropriate composite indicators [Maggino, 2006; Mazziotta M., Pareto A., 2020], in order to detect if a specific trend can be captured for the European countries bordering the Mediterranean compared to the other EU countries.

Keywords: Mediterranean, indicators, environment, European Green Deal, composite indicators.

1. European Green Deal and its measurement

The reference context of our paper is the European Green Deal and its monitoring. The European Green Deal is an ambitious strategy promoted by the European Commission, presented in December 2019, in order to make Europe the first climate-neutral continent by 2050.

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The main purpose of this Strategy is to transform Europe into a sustainable economy, with a significant reduction in greenhouse gas emissions and a transition to a low-carbon economy.

The Green Deal is based on several plans and actions covering various sectors, including energy, transport, agriculture, industry and construction. Its main features include: climate neutrality, in order to achieve climate neutrality by 2050, that is, to balance greenhouse gas emissions with their removals (for example, through the absorption of CO2 by forests or the use of carbon capture and storage technolo- gies); circular economy, to promote an economy where waste is minimised, prod- ucts are recycled and reused, and resources are managed in a sustainable way; clean energy, to promote clean energy production, with a particular emphasis on renewable energy, such as solar, wind and hydroelectric energies; sustainable transport, to encourage sustainable transports (through the adoption of low and ze- ro-emission vehicles and the implementation of sustainable mobility infrastruc- tures); agriculture and biodiversity, to make European agriculture more sustainable (reducing the use of pesticides and chemical fertilizers and promoting environmen- tally friendly agricultural practices) and to preserve biodiversity and restore natural ecosystems.

Monitoring the European Green Deal is crucial for several reasons. The monitoring makes it possible to assess the progress achieved in implementing the policies and measures laid down in the Green Deal. Through the key performance indicators and data analysis, it is possible to determine whether the interim targets are being achieved and whether the final climate neutrality target is being addressed by 2050. Monitoring also provides an opportunity to identify areas where actions taken may not be effective or insufficient, new opportunities and innovative solutions that could be integrated into the Green Deal and a transparent framework based on concrete data on the progress of the European Green Deal. This allows citizens, stakeholders and international actors to be accountable on the actions taken and the results obtained. Transparency and responsibility are a key to maintain public confidence and stimulate actions and collaboration at all levels. In addition, monitoring results provide a solid basis for making informed policy decisions. In summary, the ongoing monitoring of the European Green Deal is essential to assess, improve and maintain the effectiveness of environmental policies and measures, to ensure the achievement of the set goals and to make Europe a more sustainable and resilient continent.

Against this background and waiting for all initiatives resulting from the European Green Deal to identify a core set of ad hoc indicators, Eurostat in March 2022

has issued a special dashboard to show the relevant statistics on the European Green Deal. The Eurostat core set of 25 key indicators [https://ec.europa.eu/eurostat/cache/egd-statistics/] aims to monitor the key aspects for achieving the European Green Deal targets, such as greenhouse gas emissions, total economic losses related to climate in millions or the amount of primary energy consumption. These 25 indicators are divided into three macro dimensions: indicators that aim to reduce our impact on climate (reducing our impact climate); indicators related to the protection of our planet and our health (protecting our planet and health); and activity indicators that allow a green and fair transition (en- abling a green and just transition).

While being aware that each country has its own complexity and specificity that can hardly be combined with other countries, it is well-known that from different points of view the European countries of the Mediterranean differ from the other European countries. Among the main differences between the two groups of European countries considered, climatic and demographic factors must certainly be mentioned: the Mediterranean countries of Europe, such as Spain, Italy, Greece and Malta, are characterised by a Mediterranean climate, with hot and dry summers and mild and wet winters. On the contrary, many northern European countries, such as Norway, Sweden and Finland, have a continental climate with harsh winters and cool summers. From a demographic point of view, some European Mediterranean countries may differ from others in their higher population density compared to northern countries, as many of the coastal cities are densely populated. Further- more, fertility rates, age structure and migratory movements may vary between Mediterranean and northern countries.

There are many differences related to agricultural production, in fact the Mediterranean countries have a long tradition of growing fruits, vegetables, cereals, olive oil and wine, agricultural sectors, often characterised by small-scale production and family farms. On the contrary, some northern European countries have a greater specialization in intensive agriculture and in the production of dairy products, meat and cereals.

The economies of the Mediterranean countries also differ from the northern countries in terms of economic indicators. For example, some Mediterranean countries have higher unemployment rates and a greater dependence on sectors such as tourism and agriculture than countries with more diversified economies. There are also clear differences in the distribution of wealth, productivity and level of income per capita.

Based on the context here summarized, the paper tries to show if some of the known differences - economic, social, climatic, demographic - between the European countries of the Mediterranean and the other European countries remain evident also analyzing the three macro dimensions in which the key indicators of the European Green Deal are divided into.

2. Data, methodology and data analysis

As mentioned above, the Eurostat core set of 25 key indicators aimed at monitoring the key aspects for achieving the objectives of the European Green Deal is divided into three macro dimensions, such as:

- Reducing our impact climate: Greenhouse gas emissions, GHG emissions by sector, Climate related economic losses, Renewable energy, Primary energy consumption, Household energy consumption, Zero-emission vehi- cles, Passenger transport and Freight transport;
- Protecting our planet and health: Forest and other wooded land, Protected areas, Common bird index, Organic Farming Area, Nitrate in groundwater, Consumption of hazardous chemicals, Premature deaths due to exposure to fine particulate matter (PM2.5) and Generation of waste;
- Enabling a green and just transition: (Raw material consumption, Circular material use rate, R&D expenditure, Population unable to keep home warm, GHG emissions intensity of employment, High-speed internet, Environmental tax revenues and Environmental protection expenditure).

For sake of simplicity, the three dimensions will be named in the article from now on in a more concise way: Reducing, Protecting and Enabling.

The objective of this study is to compare the performance trend of the Green Deal between the European countries belonging to the Mediterranean area and the others, building a composite indicator for each of the three dimensions proposed by the European Commission including as many years as possible, extending the se- ries to the most recent years. Unfortunately, not all indicators are populated in the same years and continuously. Databases are often incomplete, due to the lack of availability of several indicators' value for some countries. It has therefore become necessary to reduce the set of indicators, using those with the fewest possible missing data. From the database analysis for Reducing and Enabling dimensions, it is chosen to exclude the following key indicators: "GHG emissions by sector" (for avoiding redundant information, since it is a component of the global indicator "Greenhouse gas emissions"), "Climate related economic losses" and "Passenger

transport by mode" for Reducing and "Environmental tax revenues" and "Expenditure on environmental protection" for Enabling; for both dimensions the time coverage 2013-2021 has been guaranteed. For the Protecing dimension, due to many critical issues (very short series, many missing data, two indicators without territorial disaggregation such as "Common bird index" and "Consumption of chemicals by hazardounsess" and so forth), only three key indicators were used: "Organic Faming Area", "Prematures deaths due to exposure to fine particulate matter" and "Generation of waste", covering the time series from 2013 to 2020.

2.1 Methodology

To compare two areas of interest on multidimensional issues, which therefore require different indicators to be observed and evaluated, it is possible to compare all the key indicators (an example is illustrated in Figure1) or to combine the various indicators into a composite index.

The comparison of all indicators provides a detailed analysis of the deficiencies and/or excellences of each area observed, allowing an immediate counting of problems or strategies of strength. However, the possibility of verifying a ranking with respect to the objectives could be lost as it will be unlikely to be at a disadvantage on all the indicators analysed in one area compared to the others. A composite in- dex, by collecting the information provided by all the elementary indices involved in a single value, allows precisely this type of assessment, without compromising the possibility of a subsequent analysis aimed at verifying critical issues and defin- ing support policies.

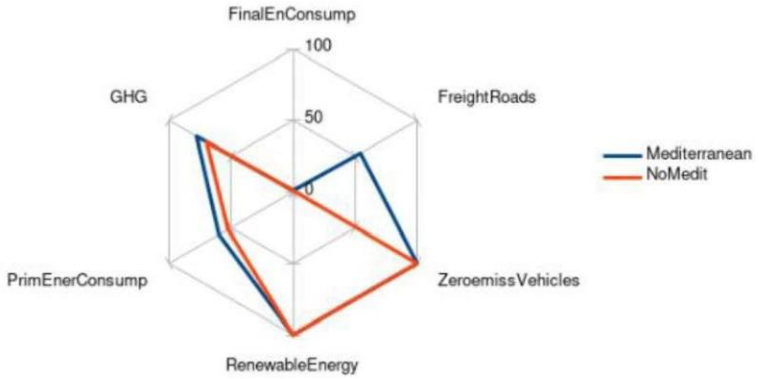

Figure 1: Comparison between EU countries bordering the Mediaterranean and the other EU countries for Reducing dimension, 2021

The first phase for the construction of a composite index concerns the selection of relevant indicators (which should cover exhaustively all aspects of the concept to be synthesized) and the definition of the spatial and temporal reference interval and finally the processing of any missing data. For this study, the selection of indi- cators, following the choices made by the European Commission, involved in ad- vance all the key indicators of the Green Deal dashboard for the period 2013-2021 for the dimensions Reducing and Protecting, narrowing to 2013-2020 range for Protecting because of the numerous missing data.

The problem of missing data also led to the renunciation of some key indicators in all dimensions, leading to the list of indicators set out in the previous paragraph. For the Waste indicator, which has a biennial periodicity, data corresponding to the missing annuities have been imputed through an arithmetic average between the two adjacent years.

The next steps points are the normalization of data (since the elementary indicators have different units of measurement and orders of magnitude), the choice of assigning weights or not and, finally, the aggregation function to work with.

The normalisation used constrained the values in a grid [https://ec.europa.eu/eurostat/cache/egd-statistics/] using as a minimum and maximum the values observed in the series of each indicator; the range was chosen to avoid values less than 1, due to the aggregation function applied, and maintain a wide range to diversify data. In the definition of the normalisation procedure, the polarity has been taken into account, namely "that the individual scores have the maximum score, in the direction of the measured size and the minimum score in the opposite direction.... With the reflection process we try to give all values the same logical direction" [2]. For those indicators in which the logical direction is upwards, the normalization used is: $\frac{x-min(x)}{max(x)-min(x)} * 99 + 1.$

Viceversa, the following formula is used: $\frac{max(x)-x}{max(x)-min(x)} * 99 + 1.$

The functions of aggregation most commonly used by the most well-known international composite indices (HDI, SSI, ILC, etc.) are the arithmetic or geometric means (in some cases the arithmetic mean has changed to the geometric one after a few years for the same index). The costruction of a meaningful composite indicator depends on the quality of the individual underlying indicators particularly, for the arithmetic mean it is necessary that the basic indicators are preferentially independent. Independence of preferences means that the trade-off between two variables remains constant regardless of the values of the other variables involved. This

allows the marginal contribution of each variable to be considered separately and to add these contributions to obtain an overall value. Excluding synergies or conflicts between the different aspects captured by the indicators, especially when dealing with environmental aspects, may be inappropriate. Another aspect to be considered in aggregations using arithmetic mean is what is defined as "complete compensability", that is to say, the score obtained by an indicator can be fully offset by the result of other indicators contributing to the composite indicator. This fact implies that the arithmetic mean does not penalise differences in value between indicators, i.e., it does not reward balanced results in all indicators and it does not penalise unbalanced performance. The geometric average is a method of aggregation less sensitive to the problem of compensability and with the property that the marginal utility of a score increase is much higher when the absolute value of the score of the incremented elementary indicator is low, so an increase in the score of an indicator with an initially low value will therefore have a greater relative impact on the growth of the geometric average than an indicator with an initially higher value. This can be very useful as it stimulates improvements in those sectors or activities whose indicators produce the lowest scores.

As far as the weights are concerned, it was decided to use the unweighted average, considering them equally adequate and necessary indicators to define the dimension to be measured.

2.2 Data analysis

Based on the above, the paper tries to prove whether some of the well-known differences between the European Mediterranean countries and the other European countries remain evident also by analysing the three macro dimensions into which the key indicators of the European Green Deal are divided into. In order to achieve this purpose, an attempt was first made to verify through an exploratory analysis whether some important economic factors actually exist between Mediterranean and non-Mediterranean countries. Over the last 10 years, there have been signifi- cant differences between Mediterranean and non-Mediterranean European coun- tries in terms of industry, services, trade, tourism, transport and employment. Drawing on the Eurostat database [https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10__custom_6869311/default/table; https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10 custom_694453

7/default/table?lang=en;
https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10__custom_6944566/default/table?lang=en] relating to GDP measured for all EU countries over time, attention was focused on the following three sectors that make up this economic indicator: trade and transport (Figure 2a), industry (Figure 2b) and "Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies (Figure 3a). Specifically, the average over time was measured for the entire EU, for the countries bordering the Mediter- ranean and for the remaining ones, using per capita indices starting from the references databases (unit of measurement in thousand of euro/per capita).

Non-Mediterranean European countries have a more diversified industrial base, covering the automotive, machinery, pharmaceutical and technological sectors. Non-Mediterranean countries generally have a higher level of industrial production and innovation than their Mediterranean counterparts. Mediterranean countries, on the other hand, have enormous commercial potential linked to maritime transport and large ports which are important gateways for international trade and transport. Countries like Greece, Italy and Spain have strategic locations and well-developed port infrastructures (Piraeus, Trieste, Algesiras). From the analysis of the index in question, the average trend over the years for the non-Mediterranean countries for these indices is higher than the same for the Mediterranean area (above the European global average trend), which is largely driven by the more developed coun- tries of Northern Europe (Figure 2a, Figure 2b).

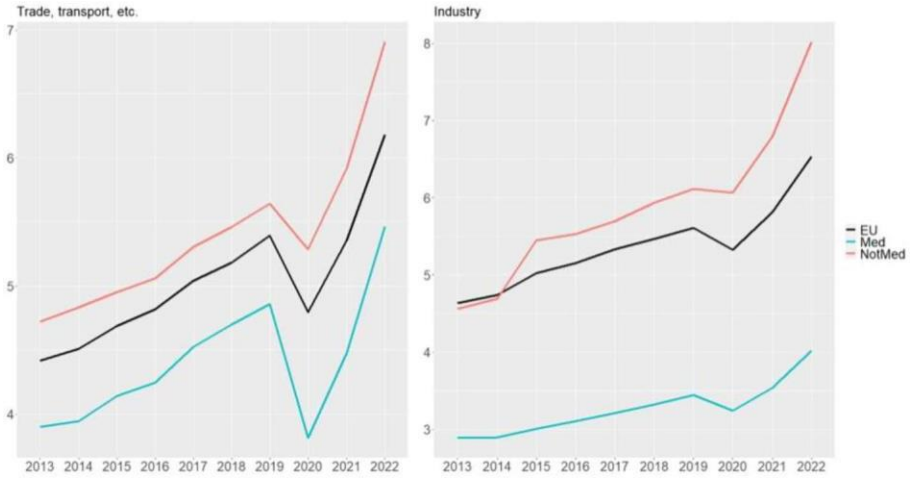

Figure 2: a) Index per capita related to "Wholesale and retail trade, transport, accommodation and food service activities"; b) Index per capita related to "Industry". The indices are marked in blue for the countries bordering the Mediterranean, in red for the other EU countries and in black for the European average value, from 2013 to 2022.

Although both Mediterranean and the other European countries have developed service sectors, including finance, banking, insurance and professional services, non-Mediterranean countries have a more significant presence in areas such as information technology, high value-added counselling and services and they attract more companies and international investments, which lead to a wider service sector overall. A separate discussion should be made for the tourism sector where, on the other hand, the Mediterranean countries, including France, gain the role of leaders by virtue of a set of combinations, richness and variety of elements, from culture to climate, that benefits these countries and makes them attractive. As can be seen from Figure 3a, the countries bordering the Mediterranean show an average trend over the years of the index higher than that related to the other EU countries in that sector of services of which tourism is a branch, confirming what is already known historically.

A comparison was made on the two areas also on an interesting phenomenon, which has always distinguished the EU countries, as it is a representative index of the economic growth of a nation, namely the unemployment rate. Using the rele- vant Eurostat database [https://ec.europa.eu/eurostat/databrowser/view/TPS00203_custom_6809146/defa

ult/table], the previous hypotheses are confirmed, i.e., the countries bordering the Mediterranean have an average trend higher than the European average and higher than the other EU countries average, although this index decreases considerably over time for both areas (Figure 3b).

Through a pure exploratory analysis, the study has shown that in fact in important sectors concerning economic activities and with a glance at the unemployment rate, strongly linked to the economy of a country, evident differences have been ascertained between one area and the other.

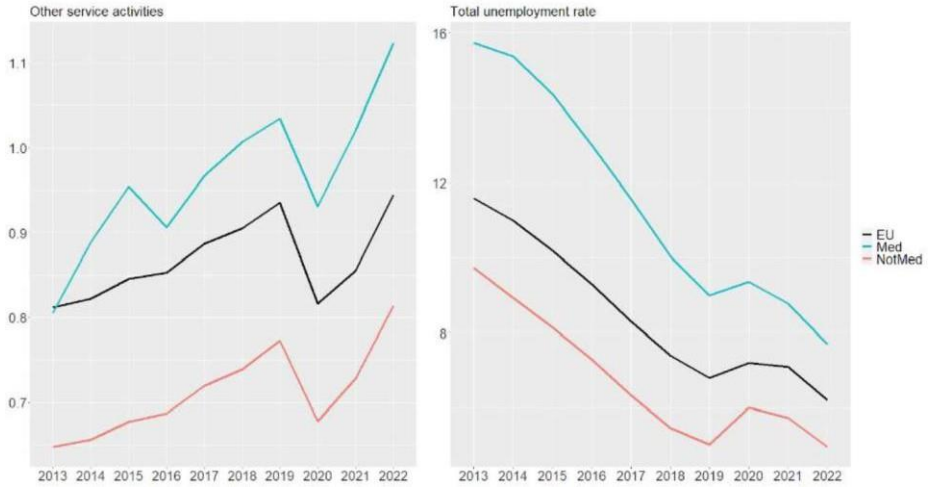

Figure3: a) Index per capita related to "Arts, entertainment and recreation; other service activities; activities of household and extra-territorial orga-nizations and bodies"; b) Unemployment rate. The indices are marked in blue for the countries bordering the Mediterranean, in red for the other EU countries and in black for the European average value, from 2013 to 2022.

While the overall objectives of the Green Deal are to achieve climate neutrality and to promote sustainable development across the EU, specific approaches and challenges may vary according to regional characteristics. Although regional differences may exist, Green Deal actions aim to promote a coordinated and collaborative approach across the EU to achieve common goals of climate neutrality and sustainable development.

The results highlighted by the use of the composite index confirm that the territorial, economic and social differences highlighted between the two territorial aggregates analysed are also reflected in the performance recorded for the three di-

mensions of the Green Deal. The Reducing dimension, which collects relative indicators to emissions and consumption of the resources, and the Enabling dimension, tied more to aspects of the production, show an initially uncertain course followed by a strong increase until 2020 (indicating a positive performance in the desired direction of the underlying elementary indicators), stimulated presumably also by the general lock-down as a consequence of the Covid19 pandemic, followed in 2021 by a reduction as a result of the resumption of normal activities. For the Reducing dimension, a lower reactivity of the indicator relating to the Mediterranean area can be noted compared to the other countries: the composite index, already growing, related to the Mediterranean area continues to grow from 2019 to 2020, even if at a reduced rate of increase, compared to the index related to other EU countries and from 2020 to 2021 it still grows but with a lower intensity, while the index of the non Mediterranean undergoes a drastic collapse. For the Enabling dimension, the composite index shows a better performance for the Mediterranean countries starting from 2019, even in the decreasing phase that has been recorded since 2020, stopping anymore at a higher level than the pre-pandemic period. For the Protect- ing dimension which mainly concerns aspects related to the protection and mainte- nance of the territory, both groups grow in parallel since 2018, with a better per- formance of the countries bordering the Mediterranean than the others.

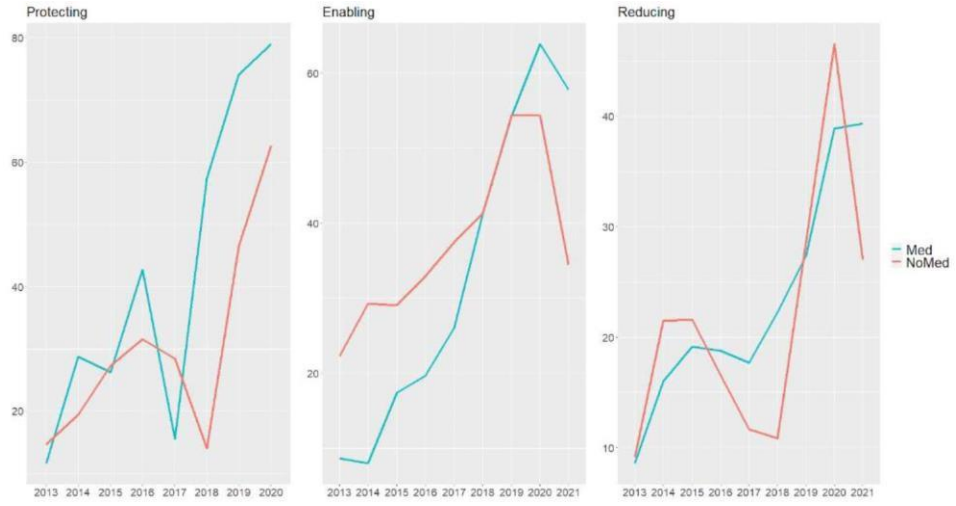

Figure 4: Composite index (in blue the countries bordering the Mediterranean, in red the other EU countries) for the three macro-dimensions of the European Green Deal from 2013 to 2020-2021.

3. Conclusion

In conclusion, the paper aimed at making known to policy makers and the general public the positioning of the various European countries for the various key indicators of the European Dashboard on the Green Deal and then for territorial integrated readings, focused on the analysis of two distinct groups of European countries, namely those bordering the Mediterranean and the others. Obviously the subdivision was forced and wanted for the purposes of the research, because they are not only two groups of European countries that would result from a real cluster analysis, however, imposing a priori the analysis on two distinct groups, the analysis in exploratory terms has confirmed the typical differences between the Mediterranean European countries and the other European Countries also for the three macro dimensions of the European Green Deal.

However, it is interesting to note that since 2019 (the year in which the European Green Deal Strategy was designed and launched) for the two macro dimensions Protecting and Enabling the countries bordering the Mediterranean show more virtuous trends than the other EU countries and also in the Reducing dimension, despite initially the Mediterranean countries perform worse than the other countries, from 2020, where the non-Mediterranean countries show a net reduction, they, on the other hand, although moderately continue to grow.

Obviously this judgment is absolutely partial since the time series used are quite short, however, it bodes well in environmental terms, since it can be interpreted as a positive circumstance for the countries bordering the Mediterranean (to be monitored in the coming years, with a greater extension of the time series), for this ambitious environmental challenge constituted by the European Strategy of the Green Deal.

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Gross value added and income by A*10 industry breakdowns - Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies: https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10__custom_6944566/default/table?lang=en

Gross value added and income by A*10 industry breakdowns - Wholesale and retail trade, transport, accommodation and food service activities: https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_A10__custom_6869311/default/table

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Spatial sentiment analysis of tourist points of interest

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Abstract: Thanks to the Web, tourists' experiences and opinions are more and more valued resources for creating a new symbolic identity for an attraction or a place [Assunção R.M., Neves M.C., Câmara G., Da Costa Freitas C., 2006], where tourists want to live a unique immersive experience rather than being only temporary bystanders. Textual reviews of points of interest (attractions, restaurants, accommodations) on platforms such as TripAdvisor can be processed and used in statistical analyses to obtain useful insights. Here we propose to compute the reviews' polarity scores and use them in combination with other characteristics (e.g., price, offered services and type of tourist facilities) to build spatial clusters of tourist points of interest. The geo-referenced semantic orientation of reviews concerning a particular activity or attraction represents a useful quantitative feature for further analyses and for the production of territorial statistics. We aim to use geo-referenced polarity scores to quantitatively and spatially assess whether and how tourist sentiment towards a place changed. Our strategy is developed under an Ambient Geographic Information (AGI) framework, in which social media are used to understand human narrative experiences and their evolution over time. The proposal can be extended to monitor the change of sentiment towards specific areas of interest and plan possible intervention policies.

Keywords: opinion mining, geo-referenced POI, cluster analysis.

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1. Introduction

The Web makes tourists' experiences and opinions increasingly valuable resources for creating a new symbolic identity for an attraction or place, where tourists want to have a unique and engaging experience rather than be temporary and impersonal spectators. Many people rely on free reviews and comments on TripAdvisor, Booking or Google when choosing a destination, booking accommodation or a table in a restaurant, or visiting cultural, scenic or entertainment attractions. These consumption practices can be part of robust innovation processes. In the case of bottom-up customer information or communication, it is possible to drive the sourcing of new services, in a business model called Open Innovation (OI) [Yun J.J., Park K., Gaudio G.D., Corte V.D., 2020], where shared narratives create value for customers themselves. In the most virtuous cases, the innovation process evolves into trustworthy open innovation platforms that align customer needs with the self-creation process.

Greater attention to the needs of tourists leads to better ratings of facilities and a more complete experience when multiple options are offered on restaurant menus. The food and wine supply chain are an essential driver of the local economy, creating jobs and promoting the area [Della Corte V., Sciarelli M., Cascella C., Del Gaudio G., 2014]. Some work [Park E., Chae B., Kwon J., Kim W.-H, 2020] shows that, in line with the participatory trend of tourists, there is a growing inter- est in the request of those that require special diets, like gluten-free or lactose-free alternatives, vegetarian and vegan products and, more generally, for ingredients that reflect an increasing attention to nutrition. One of the main difficulties for peo- ple with coeliac conditions is the ability to eat out, with the resulting anxiety often linked to being different from the general population, affecting the perceived quali- ty of life [Lee A., Newman J.M. 2003]. Studies on the quality of life of coeliacs [Ciacci C., D'Agate C., De Rosa A., Franzese C., Errichiello S., Gasperi V., Pardi D., Quagliata D., Visentini S., Greco L., 2003] show that the only cure is lifelong adherence to a gluten-free diet. In the catering industry, evaluating the relationship between price, menu variety, and the possibility of choosing specific products is crucial.

Here we propose to compute polarity scores from restaurant reviews and use them with other characteristics (e.g. price, services offered, quality of cuisine) to construct spatial clusters of points of interest for tourists with special needs in nutrition, like coeliacs. The geo-referenced semantic orientation of reviews towards a particular activity or attraction is a useful quantitative feature for further analysis

and the production of spatial statistics. It is proposed to use the spatial clustering technique SKATER (Spatial 'K'luster Analysis by Tree Edge Removal) [Assunção R.M., Neves M.C., Câmara G., Da Costa Freitas C., 2006], which takes into ac- count not only the spatial constraint but also the presence of covariates to identify regions that are particularly sensitive to tourist choices. Some authors [Amoroso N., Cilli R., Nitti D.O., Nutricato R., Iban M.C., Maggipinto T., Tangaro S., Mona- co A., Bellotti R., 2023] have used the SKATER clustering algorithm to highlight the presence of homogeneous patterns in a spatial dataset and to identify areas at hydrogeological risk, as in the case of the coastal plains of the Metapontum, rich in industrial and agricultural settlements. We aim to use geo-referenced polarity scores to quantitatively and spatially assess whether and how tourists' feelings to- wards a place have changed. A case study based on Naples (Italy) is presented be- low to demonstrate the effectiveness of this proposal. Naples is now one of the most important tourist attractions in Italy. Its historic centre has been on the UNESCO World Heritage List since 1995 and has recently become a significant tourist destination. Here we are particularly interested in evaluating restaurants, as Neapolitan restaurants are considered part of the tourist experience [Vrontis D., Basile G., Tani M., Thrassou A., 2021]. The city is indeed famous for its cuisine and gastronomic heritage.

Our strategy is developed within an Ambient Geographic Information (AGI) framework, which uses social media to understand human narrative experiences and their evolution over time. It can be extended to monitor the development of sentiment towards specific areas of interest and plan possible intervention strate- gies. In the field of tourism, the Tourism Sustainability Index (STI), a synthetic in- dicator that includes a dimension based on polarity scores, has been proposed to frame and geo-reference tourist satisfaction according to the European System of Tourism Indicators [Stefanidis A., Crooks A., Radzikowski J, 2013].

2. Data, methodology and data analysis

The restaurant reviews used in this study were scraped from the Italian TripAdvisor website, using Naples in the query and restaurants as the main category, and ar- chived in a local repository together with some metadata: name, address, latitude and longitude (validated with the corresponding Google Maps ID), cuisine rating, number of reviews, presence or absence of gluten-free diet, and restaurants with classic Italian or foreign cuisine. We considered the totality of 2032 restaurants

with 548,826 reviews until March 2023.

To apply lexicon-based sentiment analysis, we used a customised original lexicon of Italian terms to perform a lexicon-based sentiment analysis on this collection. Most resources in the field of sentiment research, such as lexicons, tag collections and NLP tools, are mainly available in English. The lack of linguistic resources is critical in most studies, creating the lexical gap [Chiavetta F., Lo Bosco G., Pilato G., 2016]. Therefore, we constructed an Italian lexicon by combining the resources developed in the Sentix project [Basile V., Nissim M., 2013], the OpeNER project [Russo I., Frontini F., Quochi V., 2016] and other appropriately selected studies [Bolasco S., Della Ratta F., 2004]. The resulting lexicon contains 26,511 polarised terms with a value of +1 if positive and -1 if negative. For our analysis, a slight pre-processing was applied to the reviews. Non-alphabetic characters and symbols – such as numbers or emoticons – were removed to consider only words containing content. Polarity scores were calculated using sentence-level logic [Balbi S., Misuraca M., Scepi G., 2018]. Each review is segmented into component sentences to evaluate the sentiment associated with each aspect of the described experience. Since we want to obtain a polarity score at the review level, we calculated an overall score for each text through a weighted average of zeros of the polarities of the sentences. We also included valence shifters that modify the polarity values (adversative words, negators, amplifier and de-amplifier). The overall polarity score was rescaled to the interval [-1,+1] to facilitate the interpretation of the results.

As for the spatial sentiment analysis, we divided the city of Naples into hexagonal grids, using the H3 Uber grid system with a resolution of 7, to form hexagons of approximately [Assunção R.M., Neves M.C., Câmara G., Da Costa Freitas C., 2006; Bolasco S., Della Ratta F., 2004] m^2. We aggregated the different POIs into their respective hexagonal cells covering the entire extension of the ten municipali- ties of the city of Naples. Once the polarity score was obtained, we introduced a regionalisation approach using graph partitioning to efficiently divide the spatial objects, preserving neighbourhood connectivity through the SKATER spatial clustering technique (Spatial 'K'luster Analysis by Tree Edge Removal). Regionalisation is a classification procedure applied to spatial objects with an area representation, which groups them into homogeneous contiguous regions. It relies on a connectivity graph to represent the spatial relationships between neighbouring areas, where nodes and edges represent each region and the respective connections between regions. Edge costs are calculated by evaluating the dissimilarity between neighbouring areas. The graph is defined by each domain's minimum spanning tree

(MST) [Assunção R.M., Neves M.C., Câmara G., Da Costa Freitas C., 2006].

The MST reduces the complexity of the original graph to one in which each node is connected to only one other node. The resulting tree has n vertices and n-1 edges. The "minimum" part refers to a cost function that is minimised. The objective is to minimise the total length of the tree (or cost), where in its simplest form, the price is the distances between nodes. In this case, however, a more general measure of worth is used, such as a multivariate dissimilarity measure between each pair of nodes, in our case, based on the different variables associated with each restaurant point.

3. Some preliminary results

The polarity scores of Neapolitan restaurants were geo-referenced on the city map. In Figure 1, we can see the first graphical output of our strategy. The outcome can be interactively browsed by navigating to the different points and evaluating the position of the sentiment concerning the other municipalities. Here we have used a static screenshot for illustrative purposes.

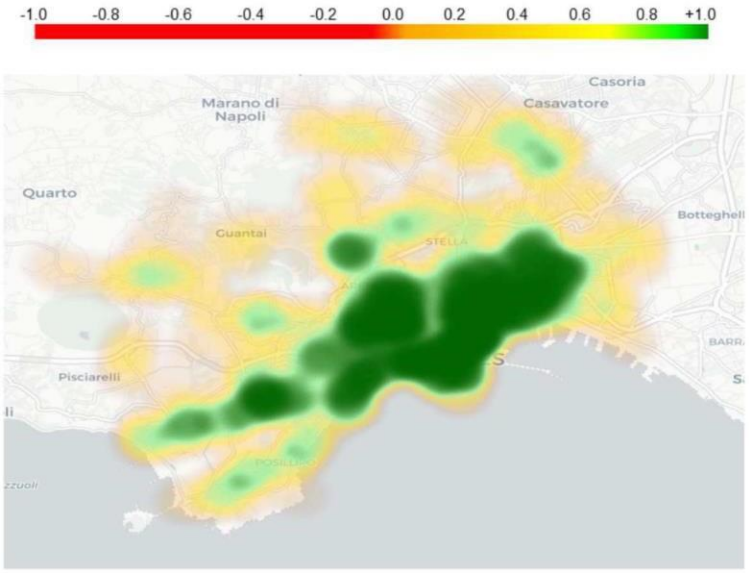

Figure 1 - Sentiment Heatmap of restaurants.

The green areas represent restaurants with higher positive sentiment, while the red regions represent restaurants with higher negative one. The map shows a con-

centration of restaurants with a positive sentiment near the historical centre and the seafront, near the so-called Riviera di Chiaia, full of tourist attractions and gastronomic sites, such as the Vomero and Arenella districts. It should also be noted that the mood tends to deteriorate mainly in the peripheral or ex-industrial areas, such as Bagnoli (on the left of the map) or San Giovanni a Teduccio (on the right of the map). Although these areas of Naples have tourist potential (e.g. Bagnoli houses the Science Museum, San Giovanni the National Railway Museum), they have crit- ical transport, services and air quality deficiencies.

The second graphical output of the strategy is the spatially constrained cluster identification obtained by the SKATER algorithm. We examined homogeneous patterns in the regions of interest, and the choice based on the elbow method suggests that the optimal number of clusters is four. In Figure 2, it is possible to assess how the different variables contribute to the characterisation of each cluster. In particular, the variables examined help to identify cluster profiles that are not only linked to spatial proximity. A more significant presence of medium-priced Italian restaurants characterises the first green cluster. It should be noted that the quality of the cuisine and the low presence of gluten-free options have a low impact on this cluster, as well as the customers' judgement and general sentiment. In this sense, the first cluster represents a relatively widespread situation of restaurants in Naples, as their distribution extends to the northern and south-western hinterland of the city. The second cluster, in blue, is the most characteristic, as it is characterised by a more significant presence of the gluten-free option on the menus, the value of the sentiment and the quality of the cuisine, with a relatively high restaurant price val- ue. This cluster, located in the wealthiest and most exclusive districts of Naples, Posillipo and S. Ferdinando and Chiaia, is strongly characterised by customer care, which responds with high sentiment values, even if the restaurants do not neces- sarily follow typical Italian cuisine.

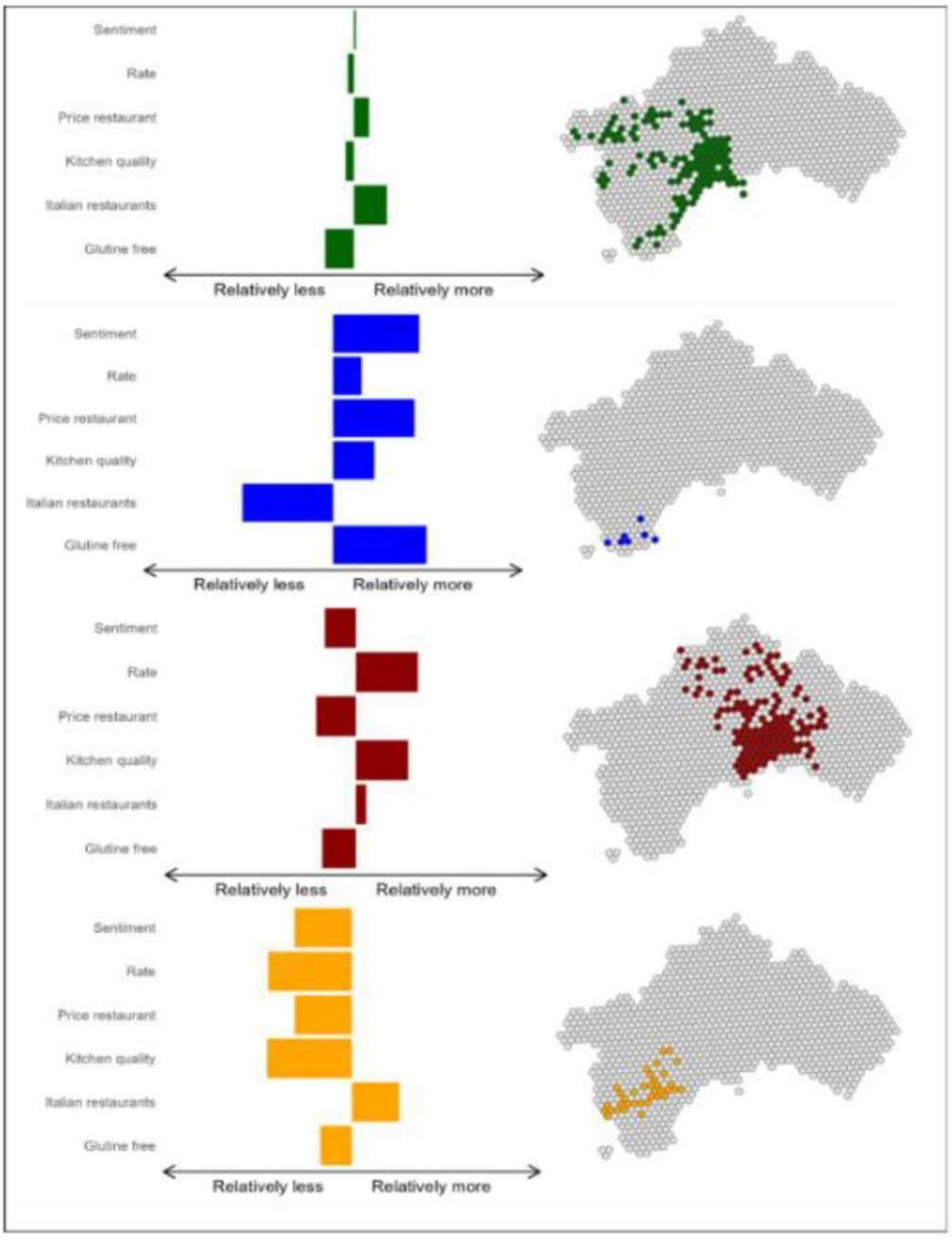

Figure 2 - Cluster profile of restaurants in Naples.

On the other hand, gluten-free foods are scarcer and more expensive than their gluten-containing counterparts, which affects the perceived quality of life of certain

types of customers [Lee A.R., Ng DL, Zivin J., 2007]. For the third cluster, in red, although the overall assessment of the restaurants is relatively high, as is the quality of the cuisine, the sentiment is relatively low, showing that other dimensions also appear in the narratives in the customers' judgement; in fact, the absence of the gluten-free option or the low presence of non-traditional cuisine could justify the low sentiment value for customers who instead seek a more varied menu that meets their needs. The fourth cluster, in yellow, is mainly located in the Fuorigrotta and Bagnoli area and is characterised by Italian restaurants. However, all other varia- bles have a low impact on sentiment, which could be influenced by the nature of the former industrial area of the city (Bagnoli) and the need for more public transport to reach these more peripheral areas. According to a study carried out by La Rocca [La Rocca R.A., 2021] on the city of Naples, the poor accessibility of the peripheral and former industrial sites (in terms of public transport) and the degrada- tion of urban spaces are, among other things, the main complaints that negatively influence visitors' intention to return to the city.

In Figure 3, it can be seen that the first and second clusters are the most numerous and extend from the neighborhoods of Pianura and Soccavo to the Est areas of the city; the third and fourth clusters are located further to the left of the town and are minor numerous than the first and the second.

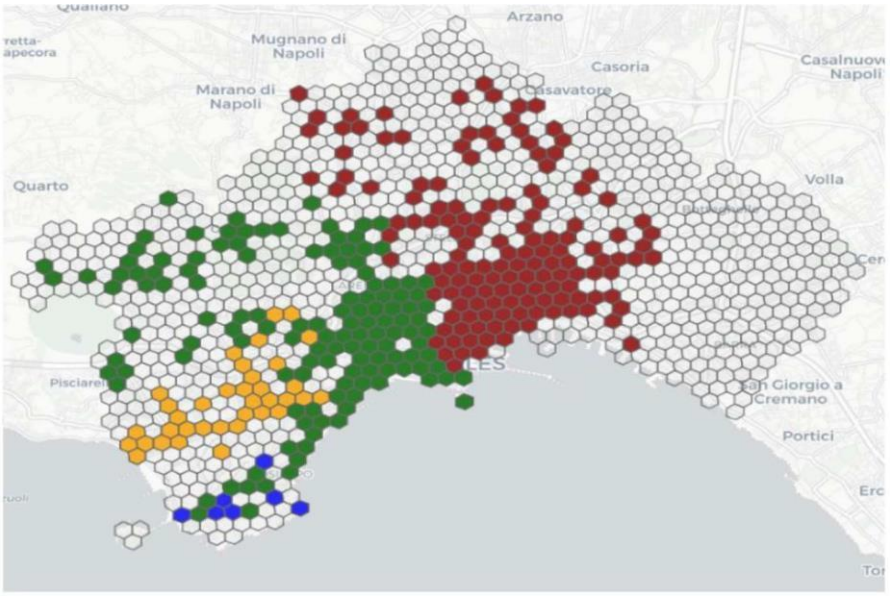

Figure 3 – SKATER clusters of restaurants in Naples.

The first cluster, shown in green, identifies the western area of Naples, extending from the districts of Vomero and Arenella to the more peripheral regions of the city, such as Soccavo and Pianura. The second cluster, in blue, has the lowest concentration of restaurants. However, it is located in one of the city's wealthiest areas, in Posillipo, Chiaia and S. Ferdinando districts. The third cluster, in red, covers the north-eastern hinterland of the city of Naples, from the communities of the historic center, such as Avvocata, Monte Calvario, the port area, to the suburbs of Miano and Secondigliano. The fourth cluster, in yellow, consists of ex-industrial regions of the western suburbs, such as Bagnoli and Fuorigrotta.

4. Conclusion

The integrated analysis of polarity scores and geographical data can help explore tourists' opinions and perceptions, providing all stakeholders with a powerful tool to assess and monitor the attractiveness of an area and develop actions or policies to maintain or improve its image. The possibility of geo-referencing tourist senti- ment increases the informative value of this type of data. The ability to manage these data flows also makes it possible to integrate traditional contextual analysis with data-driven strategies, incorporating the changing opinions of tourists into planning. As in the case of the city of Naples, the first graphical tool of our ap- proach allows an initial summary of the widespread sentiment in the analysis of the area. It can be seen that the restaurants in Naples are generally well-rated but less so in the outlying areas.

This phenomenon can trigger a process of increased attention to the historical and cultural heritage, as in San Giovanni, because it can damage tourist attractive- ness. The second output, on the other hand, can help to identify more precise spa- tial cluster profiles based on additional information selected in synergy between tourism actors and policy decision-makers. Using spatial clustering algorithms such as SKATER and clustering elements of spatial proximity, it is possible to include other characteristics such as the price of restaurants or special diets (e.g., gluten- free) to explore better phenomena such as the greater sensitivity of certain areas to consumer choices. Identifying specific clusters, such as those with a higher pres- ence of gluten-free products, helps to meet the increased demand of new custom- ers. Furthermore, when the purchase of gluten-free products is incentivized with immediate solutions (e.g., discounts), the increase in dietary restriction leads to a more remarkable ability to maintain a healthy diet and a better quality of life.

In contrast, delayed incentives (e.g., redeemable points) or other solutions based on traditional menus, which are not open to innovation, reduce this effect and negatively influence customer perceptions [Shin J., Mattila A. S., 2018].

Future developments of this work include the possibility of analyzing other tourist facilities, such as hotels, B&Bs or landscape and museum attractions, by identifying new cluster profiles with additional information (length of visit, service and room cleanliness). In this sense, other techniques, such as LISA [Anselin L., 1995], could be tested to identify hot and cold spots based on the autocorrelation between the sentiment in specific areas and the average sentiment in the surrounding area. Similarly, one could use dynamic techniques with insights into the shape and direction of cold and hot spots of sentiment in a given time interval [Rey S., 2019].

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Unleashing potential: how do innovation drivers shape subjective and objective well-being?

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Abstract: Although innovation policies have been implemented to promote economic growth and competitiveness, the current global situation triggered by sustainable development challenges (i.e., loss of biodiversity, climate change, poverty, etc.) calls for a change in the social and political agenda where society's well-being is guaranteed in all levels. While scientific research has extensively analysed the positive relationship between innovation and the economy, there is little evidence of how innovation affects well-being in terms of economic, social, and environmental outcomes. Some authors argue that technological innovation increases income, profits, productivity, goods and services quality, and life expectancy. Other authors claim that innovation fosters inequalit, stress and social pressure, and environmental degradation. Despite the broad and varied literature on well-being and innovation, their connection remains unclear. This paper uses a fuzzy-set qualitative comparative analysis (fsQCA) to determine the complex connection between well-being and innovation by examining how innovation drivers' interaction positively or negatively influences well-being. Moreover, the fsQCA was conducted separately for objective and subjective well-being to capture if innovation drivers influence them differently. The four main findings of the study are the following: (i) the complexity intrinsic to subjective well-being is higher compared to objective well- being due to the individuals' characteristics that affect their perceptions and behaviours, (ii) social interactions among individuals define well-being, (iii) the importance of the environment and nature on well-being

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is undervalued by society, and (iv) country's context and culture shape individuals' attitudes, principles, and ways of behaving or thinking.

Keywords: well-being, subjective well-being, innovation, social relationships, culture, fsQCA.

1. Introduction

Innovation policies have been established to promote countries' development and competitiveness and address global problems [OECD, 2005]. Society has implemented technological innovation to boost human development as it stimulates profits, income, productivity, life expectancy, and goods and services quality [Omri A, 2020; UNDP, 2006]. Health challenges and diseases are supported by human knowledge, and well-equipped and improved instruments or progress in ICTs can solve sustainable problems [Bodenheimer T., 2004]. Nevertheless, most of the literature only studies the positive effect of innovation on the economy, ignoring its possible influences on well-being [Aldieri L., Bruno B., Vinci C. P., 2021]. In this sense, whereas the innovation literature claims that economic growth enhances well-being, the well-being literature argues that the innovation-well-being relation- ship is complex, suggesting that economic growth and innovation do not necessari- ly increase well-being [Castellacci F., Tveito V., 2018].

Identifying the consequences and implications of innovations is difficult [Binder M., 2011], meaning that innovation may imply risks due to its impact on society and the environment. Inequality issues in society can increase [Mazzucato M., 2013], higher R&D expenditures decrease life satisfaction [Dolan P., Metcalfe R., Powdthavee N., Beale A., Pritchard D, 2011], or the Internet revolution can generate misuse of personal data, greater fraud and theft risks, or social pressure and stress [Castellacci F., Tveito V., 2018]. Despite the negative effects of technology and innovation, studies also analyse their positive effects, such as fostering wealth levels, human development, and life expectancy [Vukoszavlyev S., 2019]; decreases in the countries'ecological footprint [Geng Y., Sarkis J., Ulgiati S., 2016], or the creation of new environments where people meet and socialize, communication increases, information access is easier, and transportation efficiency improves, among others [Castellacci F., Tveito V., 2018].

Given that the literature on innovation and well-being is varied and broad, the existing relationship between innovation and well-being remains open [Binder M.,

2011]. Most studies that analyse the relationship between innovation and well- being use survey or econometric analyses [Castellacci F., Tveito V., 2018]. This paper conducts a fuzzy-set qualitative comparative analysis (fsQCA) to determine the innovation drivers (conditions) that trigger high levels of country well-being (outcome). Subjective and objective well-being were separately considered as outcomes to analyse if there are differences in how innovation drivers affect them. The innovation drivers considered in this analysis are institutional, social, digital, general infrastructure, environmental, and collaboration drivers. The four main find- ings of the study are the following: (i) the complexity intrinsic to subjective well- being is higher compared to objective well-being due to the individuals' characteristics that affect their perceptions and behaviours, (ii) social interactions among individuals define well-being, (iii) the importance of the environment and nature on well-bening is undervalued by society, and (iv) country's context and culture shape individuals' attitudes, principles, and ways of behaving or thinking.

2. Methodology and data

Qualitative Comparative Analysis (QCA) is a set-theoretic methodology based on a combination of quantitative and qualitative methods [Greckhamer T., Misangyi V. F., Fiss P. C., 2013; Ragin C., 1987; Ragin C., 2008] to identify causal relation- ships between an outcome and conditions through the comparison of cases [Roig- Tierno N., Huarng K. H., Ribeiro-Soriano D., 2017]. QCA considers that more than one condition or a combination may cause a particular outcome. QCA assesses sys- tems where different configurations, pathways, or recipes can lead to the same out- come [Schneider C. Q., Wagemann C., 2006]. Only one qualitative state (presence or absence) is assigned to the relationship between the outcome and conditions. The relationships between them are established in terms of necessity and sufficien- cy [Schneider C. Q., Wagemann C., 2018]. A condition is necessary if it is always present when the outcome occurs [Chaparro-Banegas N., Mas-Tur A., Park H. W., Roig-Tierno N., 2023; Lucas S. R., Szatrowski A, 2014], and a condition is sufficient when a condition is present whenever the outcome occurs, but the outcome can also occur without its presence [Ragin C., 1987; Schneider C. Q., Wagemann C., 2006]. This paper employs the fuzzy-set QCA (fsQCA) approach, which is designed for analysing continuous variables [Lucas S. R., Szatrowski A., 2014].

Data used in the analysis were collected from three main data sources for 2021 and 2022 and the OECD countries (41 countries). The data on innovation and innovation drivers was obtained from the GII for 2022 [Cornell University, INSEAD,

WIPO, 2020]. Data on well-being were collected from the Human Development Index (HDI) and OECD Better Life Index (BLI) for 2021. The HDI represents objective well-being. The BLI provides a multi-dimensional framework that represents eleven dimensions of well-being [OECD, 2020]. In this paper, the life satisfaction dimension represents subjective well-being. The research model studied is presented in Figure 1, showing that objective and subjective well-being may be influenced by innovation drivers.

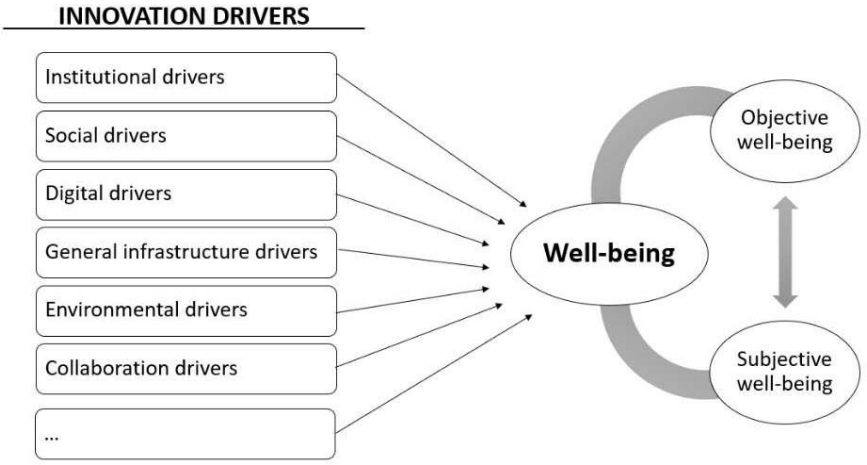

Figure 1. Impact of innovation drivers on objective and subjective well-being

3. Results

3.1 Necessary conditions for well-being

According to the analysis of necessary conditions, no necessary conditions explain subjective and objective well-being in the sample studied because they do not exceed the consistency threshold of 0.9 [Ragin C., 2008; Wagemann C., Schneider C. Q., 2010]. Consistency reflects the extent to which a condition or combination led to a specific outcome in terms of necessity and sufficiency [Legewie N., 2013; Ragin C. C., 2006]. Nevertheless, collaboration, institutional, general infrastruc- ture, and social drivers are significant conditions for subjective well-being since they show consistencies of 0.87, 0.83, 0.81, and 0.8, respectively. Moreover, these drivers are trivial for causing high levels of subjective well-being (relevance of ne- cessity, RoN, higher than 0.5 [Schneider C. Q., 2019]). No necessary conditions influence objective well-being.

3.2 Sufficient conditions for well-being

This section presents the configurations of conditions that trigger high levels of well-being, capturing the different pathways that guarantee national subjective and objective well-being (see Figure 2). The research model's consistency level is adequate (0.88, higher than the 0.75 threshold; [Ragin C., 2008]). The proportional reduction in inconsistency (PRI) quantifies the degree to which a group of conditions fails to adequately explain both the presence and absence of the outcome concerning sufficiency [Klijn E. H., Nederhand J., Stevens V., 2022; Schneider C. Q., Wagemann C., 2012], avoiding inconsistent combinations. Pathways 1 and 2 show PRI scores higher than 0.5, indicating that pathways are consistent.

Two pathways lead to high subjective well-being performances. Pathway 1 shows that a country may boost subjective well-being by improving collaboration drivers (pathway with only one trivial condition). On the other hand, Pathway 2 calls for a more complex conditions' combination to achieve subjective well-being. This model integrates the conditions institutional, social, digital, and general infrastructure drivers. Nevertheless, environmental drivers, whether considered alone or in conjunction with other factors, will not be enough to foster increased levels of subjective well-being. This suggests that society will place greater importance on different aspects considered as more essential for meeting its needs rather than preserving environmental well-being. However, all human activities have an indirect impact on the environment and, consequently, on the health and well-being of the population.

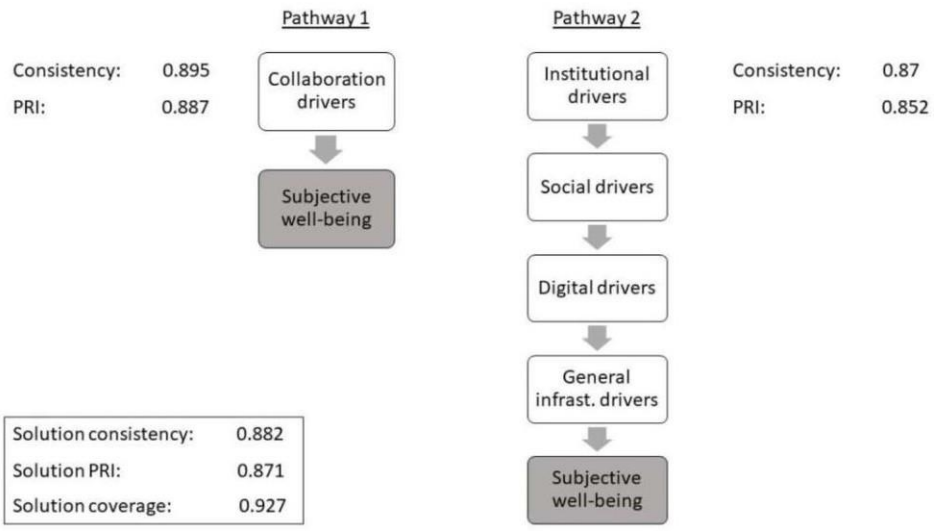

Figure 2. Sufficient pathways explaining high subjective well-being levels

Figure 3 shows four pathways that lead to high objective well-being levels. In this case, the research model and the pathways are also adequate (consistency > 0.75) and consistent (PRI > 0.5). Each pathway highlights the sufficiency explana- tory power of one of the conditions introduced in the research model. Pathway 1 stresses the potential of social drivers, Pathway 2 of digital drivers, Pathway 3 of environmental drivers, and Pathway 4 of collaboration drivers, positively influenc- ing all of them objective well-being.

Therefore, contrary to the subjective well-being findings, this sufficiency analysis indicates that countries' efforts to encourage at least one of these drivers may be sufficient to guarantee objective well-being achievement.

No combination of conditions or combination explains high objective well-being levels, being innovation drivers, which independently affect this type of well-being. This indicates that subjective well-being might encompass greater complexity compared to objective well-being because it goes beyond just positive perceptions and experiences, integrating concepts like happiness or life satisfaction [Smith M. K., Diekmann A., 2009].

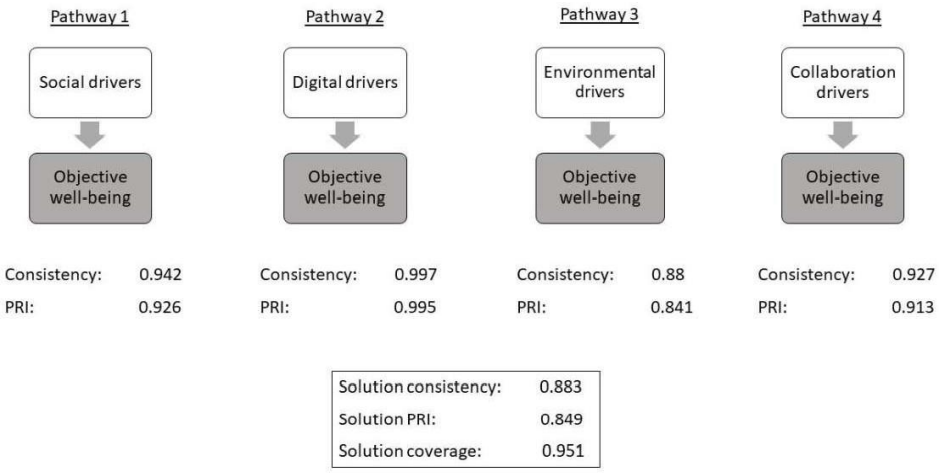

Figure 3. Sufficient pathways explaining high objective well-being levels

4. Conclusion

The current disruptive situation needs policy measures that address sustainable challenges while ensuring global well-being, shifting from the traditional economic growth objectives. Depending on the principles of innovation implementation, innovation policies may positively or negatively influence the economy, society, and the environment. However, their effective design and application may be complicated due to the complexity entailed by the innovation-well-being relationship. This paper tries to provide insights that help to understand this complex relation- ship by capturing the innovation drivers that trigger well-being achievement.

This research yields four key conclusions. Firstly, subjective well-being entails more complexity than objective well-being. Achieving subjective well-being depends on not only more innovation drivers but also more interactions among these conditions are involved. Countries characterized by just one of the drivers (i.e., sufficient conditions: social, digital, environmental, or collaboration drivers) can attain high levels of objective well-being. Therefore, enhancing objective well-being is relatively simpler compared to subjective well-being, as it can be achieved through the independent effects of multiple innovation drivers without needing complex relationships between factors and agents within innovation systems.

Secondly, individuals are key in promoting subjective well-being, both inter and intrapersonal. Interpersonal relationships are relations with individuals grounded

on networking, collaborative, or professional relationships. Intrapersonal relationships refer to relations with the individual's self, development, knowledge, expertise, or personal improvement. Furthermore, individuals hold decision-making roles in government, institutions, and companies. Their awareness and emotions significantly influence their perception of well-being. Each person's perception is entirely unique and unrelated to others. Individuals possess distinct characteristics stemming from their personalities and life experiences. Consequently, evaluating people's subjective well-being becomes more challenging, especially considering that external influences can affect them differently.

Thirdly, the fact that society does not place environmental aspects as one of the most important aspects when evaluating subjective well-being is worrying because high-environmental quality improves sustainability and well-being [Stiglitz J. E., Sen A., Fitoussi J.-P., 2009]. This may indicate a lack of individuals' awareness and concern for sustainable development problems, specifically environmental ones. Policymakers can incorporate awareness initiatives and programs that high- light the environmental impact and the positive effects of the environment on peo- ple's well-being. It is essential to report and communicate the effects of human ac- tivities, both positive and negative, to promote sustainable development [Michalos A. C., 2017]. Government and public institutions committed to society's well-being recognize the link between the economy, society, and environment [Coscieme L., Sutton P., Mortensen L. F., Kubiszewski I., Costanza R., Trebeck K., Pulselli F. M., Giannetti B. F., Fioramonti L., 2019; Costanza R., Daly, L., Fioramonti L., Giovannini E., Kubiszewski I., Mortensen L. F., Pickett K. E., Ragnarsdottir K. V., De Vogli R., Wilkinson R., 2016]. By doing so, society can adopt more daily life sustainable practices, value ecological aspects, and engage in activities that connect them with the environment and nature.

Finally, subjective well-being seems to be influenced by national culture, a perspective also supported by Smith and Diekmann [Smith M. K., Diekmann A., 2009]. Each country allocates different amounts of resources and time to innovation drivers, resulting in individuals who attribute different degrees of importance to specific aspects based on their nationality and value systems. Culture and traditions play a significant role in shaping individuals' personal development, value adoption, and decision-making processess. Society's own perceptions, opportunities, and life changes are valued differently depending on the culture and context [Cook D.,Davíðsdóttir B., 2021]. When assessing each country's situation, it is crucial to define the cultural boundaries of each context. People are educated and raised within specific societies and contexts characterized by particular aspects that

shape the behaviour and personality of that society. Culture can affect both individual agents of innovation systems and the interrelationships among them.

Acknowledgements
We thank the support Spanish Ministry of Universities through the FPU (Formación de Profesorado Universitario) Program.

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Policy lines for the development of sustainable infrastructures and mobility systems. How to guarantee effective protection to the "Do Not Significant Harm" principle (DNSH)

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Abstract: The availability of new technologies, the evolution of the market for factors of production, the trend in energy prices, the need to reduce climate- changing gas emissions throughout the production chain, as well as the huge investments planned with the PNRR and other funds, are changing the propensity of companies and people towards intermodality and rail transport, with a lively market demand for new services. To address these challenges, two lines of action will be pursued simultaneously. The first will be geared towards meeting the immediate needs of the mobility system. The second, will be aimed at directing choices towards the creation of more sustainable and resilient infrastructures, while complying with the Do Not Significant Harm (DNSH) principle, which implies that all planned investments and reforms to be improved must not damage the environment, but preserve it for future generations.

Keywords: Next Generation EU, multimodal transport corridors, intermodality, Do Not Significant Harm (DNSH).

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1. "Do No Significant Harm" definitions and criteria across the EU-Sustainable Finance framework

Sustainability and the transition to a safe, climate-neutral, resilient to climate change, more resource-efficient and circular economy are crucial to ensuring the competitiveness of the Union economy in the long term. Sustainability has long been central to the Union's project, and the Treaty on European Union and the Treaty on the Functioning of the European Union (TFEU) reflect its social and environmental dimensions[1].

In view of the scale of the challenge and the costs associated with inaction or delayed action, the financial system should be gradually adapted in order to support the sustainable functioning of the economy. To that end, sustainable finance needs to become mainstream and consideration needs to be given to the sustainability impact of financial products and services. Making available financial products which pursue environmentally sustainable objectives is an effective way of channelling private investments into sustainable activities.

The extraordinary financial plan entitled Next Generation EU, approved by the European Council in July 2020, provides the Member States with the necessary resources for a rapid economic recovery after the pandemic. The central pillar of this ambitious programme is the Recovery and Resilience Facility (RRF). The main purpose of this instrument is also to support investments and reforms that contribute to the implementation of the Paris Agreement[2] and the United Nations sustain-

[1] In its communication of 8 March 2018, the Commission published its action plan on financing sustainable growth, launching an ambitious and comprehensive strategy on sustainable finance. One of the objectives set out in that action plan is to reorient capital flows towards sustainable investment in order to achieve sustainable and inclusive growth. The establishment of a unified classification system for sustainable activities is the most Important and urgent action envisaged by the action plan. The action plan recognises that the shift of capital flows towards more sustainable activities has to be underpinned by a shared, holistic understanding of the environmental sustainability of activities and investments. As a first step, clear guidance on activities that qualify as contributing to environmental objectives would help inform investors about the investments that fund environmentally sustainable economic activities.

[2] The Paris Agreement is the first universal and legally binding agreement on climate change, adopted at the Paris climate conference (COP21) in December 2015. The agree- ment establishes a global framework to prevent dangerous climate change by limiting glob- al warming well below 2°C and continuing efforts to limit it to 1.5°C. Furthermore, it aims to strengthen the capacity of countries to deal with the impacts of climate change and to support them in their efforts.

able development goals[3], consistent with the EU Green Deal, namely Europe's growth strategy to promote resource efficiency, the restoration of biodiversity and the reduction of pollution.

The Regulation establishing the Recovery and Resilience Facility (RRF) provides that no measure included in a Recovery and Resilience Plan (RRP) should lead to significant harm to environmental objectives[4] within the meaning of article 17 of the Taxonomy Regulation[5]. According to the RRF Regulation, the assess- ment of the RRPs should ensure that each and every measure (i.e. each reform and each investment) within the plan complies with the " do no significant harm " principle (DNSH). The Taxonomy Regulation is a key legislative act to climate neu- trality for the EU by 2050 by defining a system of classification (taxonomy) of eco-sustainable economic activities. The Regulation establishes, in fact, the concept of the world's first system for the classification of sustainable economic activities, capable of creating a common language that investors can use anywhere when investing in projects and economic activities that have significant positive impacts on the climate and the environment.

In the past, monetary assessment methods for evaluating environmental im- pacts, such as cost-benefit analysis or cost-effectiveness analysis, have often been criticised for their shortcomings[6], as they focus on concepts that are linked to mone

[3] The United Nations 2030 Agenda, adopted by world leaders in 2015, constitutes the new global sustainable development framework and establishes 17 sustainability development goals. (OSS). The commitment focuses on eradicating poverty and achieving sustainable development globally by 2030, ensuring that no one remains excluded. The Sustainable Development Goals seek a balance between the three dimensions of sustainable development: the economic, social and environmental elements by providing concrete objectives.

[4] Article 9 of the Taxonomy Regulation has defined the following 6 environmental targets: climate change mitigation; adaptation to climate change; the sustainable use and protection of water and marine resources; the transition to a circular economy; the prevention and reduction of pollution; the protection and restoration of biodiversity and ecosystems.

[5] See article 4a ("Horizontal principles") of the RRF Regulation (which states that the RFF can only support measures that respect DNSH) and art icles 15 and 16 ("Recovery and Resilience Plan" and "Commission assessment") which further set out that the RRPs should explain and be assessed in light of how the plan ensures that no measure for the implementation of reforms and investments included in the plan makes a significant harm to environmental objectives within the meaning of Article 17 of Regulation (EU) 2020/852 ("do no significant harm").

[6] N. PERRY e D. PRIMROSE, Heterodox economics and the biodiversity crisis. Journal of Australian Political Economy, 2015, 133-152, in www.ppesydney.net/content/uploads/2020/05/Heterodox-economics-and-the-biodiversity-crisis.pdf; D PEARCE, Cost benefit analysis and environmental policy, Oxford Review of Economic Policy, 14-4, 1998, 84–100.

-tizable costs only. In this logic, decisions were made by public administrations on the basis of only one type of value; therefore, other values (such as social values) were not considered because they were harder to monetise[7]. Consequently, a multi-criteria evaluation method is needed to allow a more flexible approach that consid-ers a variety of objectives, which the DNSH framework represents.

This presents an excellent and essential opportunity to prevent harmful trade- offs and improve environmental outcomes. With the DNSH principle, there is a ho- listic approach to investment which considers good performance in a given envi-ronmental aspect, while also meeting minimum standards in other aspects[8]. The DNSH principle is defined by EU regulation 2020/852 concerning the establish-ment of a framework that promotes sustainable investments. The DNSH principle provides guidance for future investment decisions by addressing the sustainability parameter as a key element for obtaining European resources[9] and identifies criteria for determining how each economic activity contributes substantially to the protec-tion of the ecosystem. When assessing an economic activity on the basis of the do no significant harm criteria (no significant harm to the six environmental objectives established under the EU taxonomy, as provided by the article 17[10]), the environ-

[7] G. MUNDA, On the use of Cost-Benefit Analysis and Multi-Criteria Evaluation in ex- ante Impact Assessment, JRC Technical Reports, European Commission, Joint Research Cetre (JRC), 2017.

[8] N. HUMPHREYS, What does it mean to "Do No Significant Harm"?. in, www.bloomberg.com/professional/insights/financial-services/what-does-it-mean-to-do-no-significant-harm/, 2022.

[9] M. MONTEDURO, Le decisioni amministrative nell'era della recessione ecologica, in RivistaAIC.it, n. 2/2018.

[10] Article 17 of the Taxonomy Regulation defines the concept of "significant damage" for six environmental targets. In detail, an activity can cause significant damage:
a) the mitigation of climate change, if the activity leads to significant emissions of green-house gases; adaptation to climate change, if the activity leads to a worsening of the nega-tive effects of the current climate and the anticipated future climate on itself or on people, nature or assets; the sustainable use and protection of water and marine resources, if the ac-tivity harms: i) the good status or ecological potential of water bodies, including surface and groundwater; ii) the good ecological status of marine waters; d) the circular economy, including waste prevention and recycling, if: i) the activity leads to significant inefficien- cies in the use of materials or in the direct or indirect use of natural resources such as non-renewable energy sources, raw materials, water resources and soil, in one or more phases of the life of products, including in terms of durability, possibility of improving, repairing, re-using or recycling products; ii) the activity involves a significant increase in the production, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; iii) long-term disposal of waste could cause significant and long-term damage to the environment; the prevention and reduction of pollution, if the activity in-volves a significant increase in emissions of pollutants into the air, water or soil compared

mental impact of the activity itself and the environmental impact of the products and services provided by it during their entire life cycle are taken into account, in particular taking into account the production, use and end of life of these products and services.

A specific technical appendix of the Taxonomy for sustainable finance[11] reports the parameters for assessing whether different economic activities contribute substantially to climate change mitigation and adaptation or cause significant damage to any other relevant environmental objective. Based on the European Economic Activities Classification System (NACE), activities that can contribute to climate change mitigation are then identified, identifying the sectors that are crucial for effective pollution reduction. The framework defined by the Taxonomy thus provides a reliable guide for sustainable investment decisions and has become a central element in the criteria for the allocation of European resources. A specific technical annex[12] of the Taxonomy sets out parameters for assessing whether different economic activities contribute substantially to climate change mitigation and adaptation or cause significant damage to any other environmental objective.

The European Commission recently updated the technical guidelines[13] on the application of the "do no significant harm" principle under the Recovery and Resilience Facility Regulation. In particular, as stated by the Commission, the guidelines "are limited to defining how the DNSH principle should be applied exclusively in the context of the RRF, taking into account its specific characteristics". They "aim to clarify the meaning of the DNSH principle and how it should be applied in the context of the RRF and how Member States can demonstrate that the measures

to the situation before its start; the protection and restoration of biodiversity and ecosystems, if the activity: i) significantly harms the good condition and resilience of ecosystems; ii) harms the conservation status of habitats and species, including those of interest to the Union.

[11] Commission Delegated Regulation (EU) 2021/2139 lays down the criteria for climate change mitigation and adaptation targets; those criteria shall set out the methods by which the environmental performance of the economic activity will be measured, including the definition of the limit for such measurement and the qualitative or quantitative conditions that must be met in order to allow the activity to be carried out in a manner considered environmentally sustainable.

[12] Communication from the EU Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "EU Taxonomy, corporate sustainability reporting, sustainability preferences and fiduciary duties: directing finance towards the European Green Deal", COM(2021), 188.

[13] Communication from the EU Comm ission C/2023/111 "Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation", published in O.J.E.U. on 11 october 2023 n. C/2023/6454.

they propose in sthe RRP (Recovery and Resilience Plan) fulfil this principle". In a specific annex, the guidelines provide "concrete example simulations of how the DNSH principle should be demonstrated in the plans".

Member States need to assess both reforms and investments. Under the RRF, Member States need to put forward coherent packages of measures, including both reforms and investments (in accordance with article 14 of the RRF Regulation). The DNSH assessment needs to be carried out not only for investments, but also for reforms. Reforms in some sectors, including industry, transport and energy, while having the potential to significantly contribute to the green transition, can al- so entail a risk of significant harm to a number of environmental objectives, de- pending on how they are designed. On the other hand, reforms in other sectors (e.g. education and training, public administration, and arts and culture) will likely have a limited risk of environmental harm, independently of their potential contribution to the green transition, which might still be significant. The fact that the DNSH as- sessment must be carried out for reforms should not be understood as a deterrent for inclusion in the RRPs of important reforms in the areas of industry, transport and energy, given that such measures have a major potential to foster the green transition and to promote the recovery. In specific implementation of the DNSH principle, all projects and reforms proposed in the Italian National Recovery and Resilience Plan have been evaluated by the proposing administrations, with the support of experts in environmental matters. This evaluation process has condi- tioned the selection of investments and reforms and has qualified the characteristics of the selected ones (in particular, those with a high risk of impact) with specific indications aimed at limiting their impact on environmental objectives to a sustain- able level.

2. DNSH assessments for the purposes of the National Recovery and Resilience Plan

In the context of the RRF, the direct and primary indirect impacts of a measure are relevant for the DNSH assessment[14]. Direct impacts may reflect effects of the

[14] This approach follows article 17 ("Significant harm to environmental objectives") of the Taxonomy Regulation, which requires taking into account the environmental impacts of the activity and of the products and services provided by that activity throughout their life cy- cle.

measure at project-level (e.g. production plant, protected area) or at system-level (e.g. railway network, public transport system), and that occur at the time of implementation of the measure.

Primary indirect impacts may reflect effects that occur outside of those projects or systems and may materialise after the implementation of the measure or beyond the timeline of the RRF but are reasonably foreseeable and relevant. An example of a direct impact in the area of road transport would be the use of materials during the construction of the road. An example of a primary indirect impact would be the expected future GHG emissions due to an increase in overall traffic during the use-phase of the road.

In order to make it easier for Member States to evaluate and present the DNSH principle in their national plans, the Commission published guidelines with the technical guidance to refer to. The technical guidelines, while confirming that all measures require a DNSH assessment, indicate that a simplified approach can be adopted for those which have no foreseeable impacts or which have a negligible foreseeable impact on all or some of the 6 environmental targets. To facilitate Member States in the assessment and presentation of the DNSH principle in their Recovery and Resilience Plan (RRP), the Commission has prepared a check-list to be used to support their analysis of the link between each measure and the DNSH principle. The check-list is based on the following decision tree, which should be used for each measure of the RRP.

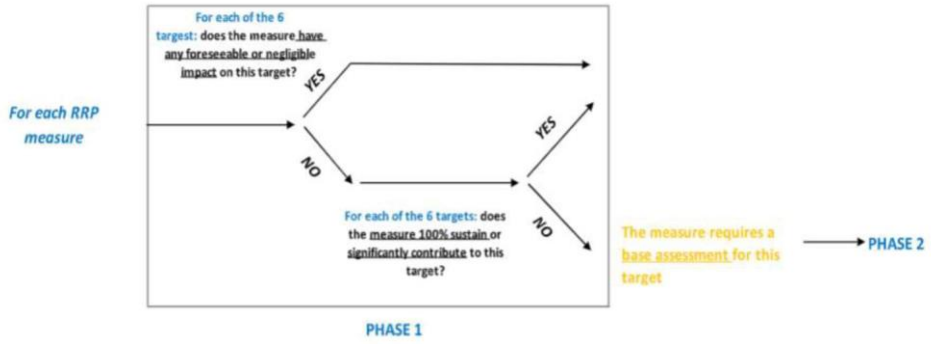


Figure 1 – Decison tree

As a first step, Member States are invited to complete part 1 of the check-list, to identify which of the six environmental targets requires a background assessment of the measure in light of the DNSH principle.

These are the possible answers to the checks on the 6 targets.

a. The measure has no or negligible foreseeable impact on the

environmental targets related to the direct effects and primary indirect effects of the measure over its life cycle, given its nature, and as such is considered compliant with the DNSH principle for the relevant target.

b. The measure has a 100% support ratio for a climate change or environment-related target, and as such is considered to comply with the DNSH principle for the relevant target.

c. The measure substantially contributes to an environmental target, pursuant to the Taxonomy Regulation, and as such is considered to comply with the DNSH principle for the relevant target. In case the measure has no or negligible impact on the target considered (option A of the response) or is considered compliant with the DNSH principle for that target (options B and C), the DNSH assessment can take a simplified form[15]. In this case, a short justification for each environmental target must also be provided.

If the answer to the checks is as follows, the second phase of the assessment must be started:

d. None of the above: the measure requires a background assessment for this target.

As a second step, for each measure of the plan, Member States are invited to use Part 2 of the checklist to perform a substantive DNSH assessment for those environmental objectives selected with a 'yes' under Step 1.Part 2 of the checklist compiles, for each of the six objectives, the questions corresponding to the legal requirements of the DNSH assessment. For measures to be included in the plan, they have to comply with DNSH. Therefore the answers to the questions in Part 2 of the checklist has to be "no", to indicate that no significant harm is being done to the specific environmental objective. Member States are asked to confirm that the answer is "no", and to provide a substantive explanation and justification of their reasoning in the right-handcolumn, on the basis of the corresponding questions. Where necessary, as a complement to the table, Member States are also invited to provide further analysis and/or supporting documents, in a targeted and limited

[15] For instance, a labour market reform intended to increase the overall level of social protection for the self-employed would have no or an insignificant foreseeable impact on any of the six environmental objectives, and a brief justification could be used for all six objec- tives. Similarly, for some simple energy efficiency measures, such as the replacement of existing windows with new, energy-efficient windows, a brief justification could be used as regards compliance with DNSH for the climate change mitigation objective. By contrast, this simplified approach is unlikely to be applicable to some investments and reforms in a number of areas (e.g. energy, transport, waste management, industry) which have a higher risk to affect one or more of the environmental objectives.

manner, to further substantiate their replies to the list of questions. Where Member States cannot provide a sufficient substantive justification, the Commission may consider that a given measure is associated with possible significant harm to some of the six environmental objectives. If this is the case, the Commission would need to give a rating of "C" to the RRP under the criterion spelled out in paragraph 2.4 of Annex II to the RRF Regulation. This would be without prejudice to the process outlined in articles 16 and 17 of the RRF Regulation, and in particular the possibility for further exchanges between the Member State and the Commission outlined in article 16. Complying with the applicable EU and national environmental law is a separate obligation and does not waive the need for a DNSH assessment. All measures proposed in the RRPs must comply with the relevant EU legislation, including the relevant EU environmental legislation. Although compliance with the existing EU legislation provides a strong indication that the measure does not entail environmental harm, it does not automatically imply that a measure complies with DNSH, in particular as some of the objectives covered by article 17 are not yet fully reflected in the EU environmental legislation[16].

3. Do No Significant Harm assessment sheets for the railway infrastructure sector

The NRRP is divided into 6 Missions, which in turn group together 16 Components functional to achieving the economic and social objectives defined in the Government strategy. The reforms required to ensure more effective completion, linked to the implementation of one or more Components are indicated for each Mission. The individual investment projects were selected according to criteria aimed at concentrating interventions on transformational ones, with the greatest impact on the economy and on labour.

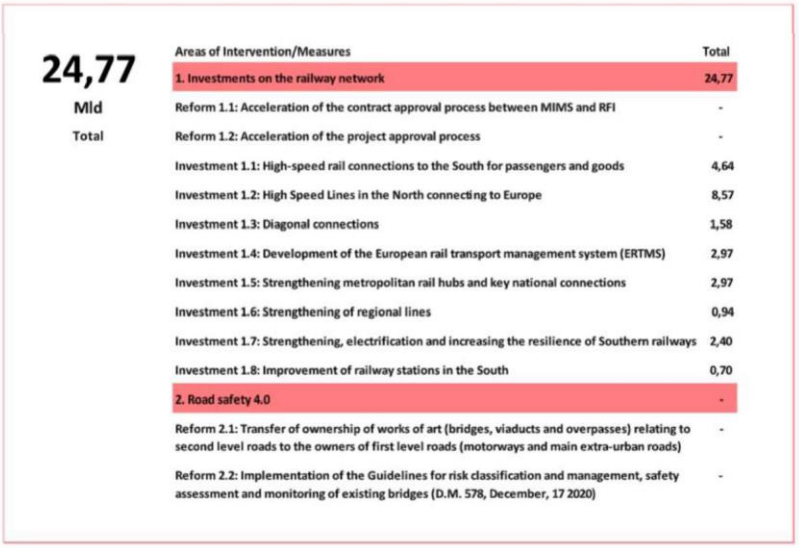
Mission 3 - Infrastructures for sustainable mobility - aims to complete by 2026,

[16] Impact assessments related to the environmental dimensions or the sustainability proofing of a measure should be taken into account for the DNSH assessment. Whilst they do not automatically entail that no significant harm is done, they constitute a strong indication for the absence of significant harm for a number of the relevant environmental objectives. Therefore, the fact that a Member State has carried out an Environmental Impact Assessment (EIA) in line with the Directive 2011/92/EU, a Strategic Environmental Assessment (SEA) in line with Directive 2001/42/EC, or Sustainability / Climate Proofing, as laid down in the guidance from the Commission on sustainability proofing under the Invest EU Regulation, for a particular measure included in the RRP will support the arguments brought forward by the Member State in the context of the DNSH assessment.

a first and significant step in a longer-term journey towards the creation of a modern, digitised and environmentally sustainable infrastructure system, taking into account the specificity of the orography of the Italian territory. By adding resources to existing projects and accelerating them, as well as introducing new ones, the aim will be to create and complete works that are part of European infrastructure pro- jects or that fill gaps that have hitherto penalised the economic development of the country and, in particular, of the South and the Islands. For the implementation of this strategy on the infrastructural system of Italian mobility, NGEU resources, or- dinary budget resources and the other European resources available for this pur- pose will contribute and will be synchronised. In line with the strategic design of the Recovery Plan, additional interventions have been included which are financed with state funds. The infrastructures for sustainable mobility mission takes the form of 2 components for a total amount of resources equal to 25,13 billion Euro, broken down as follows:

Figure 2 - Mission 3: components and resources

The mission aims to make, by 2026, the most modern, digital and sustainable infrastructure system, capable of responding to the challenge of decarbonisation indicated by the European Union with the strategies connected to the European Green Deal (in particular the "strategy for mobility intelligent and sustainable", published on 9 December 2020) and to achieve the sustainable development goals identified by the United Nations 2030 agenda. The planned investments are in line with the provisions of the current National Integrated Energy and Climate Plan (Integrated National Plan for Energy and Climate - PNIEC), which provides that "For transport, priority is given to policies for increasing collective mobility, in particular by rail, including the shift of freight transport from road to rail". Furthermore, as indicated by the Commission in the Country Specific Recommendations (CSR) 2020 and 2019 for Italy, "Investing in sustainable transport and infrastructure is also a way to address environmental challenges. Substantial green investments are needed to achieve the EU's ambitious energy and climate targets for 2030".



24,77
Mld
Total

Areas of Intervention/Measures	Total
1. Investments on the railway network	24,77
Reform 1.1: Acceleration of the contract approval process between MIMS and RFI	-
Reform 1.2: Acceleration of the project approval process	-
Investment 1.1: High-speed rail connections to the South for passengers and goods	4,64
Investment 1.2: High Speed Lines in the North connecting to Europe	8,57
Investment 1.3: Diagonal connections	1,58
Investment 1.4: Development of the European rail transport management system (ERTMS)	2,97
Investment 1.5: Strengthening metropolitan rail hubs and key national connections	2,97
Investment 1.6: Strengthening of regional lines	0,94
Investment 1.7: Strengthening, electrification and increasing the resilience of Southern railways	2,40
Investment 1.8: Improvement of railway stations in the South	0,70
2. Road safety 4.0	-
Reform 2.1: Transfer of ownership of works of art (bridges, viaducts and overpasses) relating to second level roads to the owners of first level roads (motorways and main extra-urban roads)	-
Reform 2.2: Implementation of the Guidelines for risk classification and management, safety assessment and monitoring of existing bridges (D.M. 578, December, 17 2020)	-

Figure 3 - Framework of measures and resources

The Component 1 - Investments on the railway network, of the Mission 3 includes interventions to implement the strategic and programmatic indications of the annex to the DEF #italia fast, approved by the Council of Ministers on 6 July 2020.

These are investments relating to the railway infrastructure sector, both belonging to the National Railway Infrastructure under concession to RFI S.p.A., and regional lines under concession to the Regions[17].

The technological upgrade of traffic management systems improves traffic regularity and solves reduced capacity issues on some railway lines[18].

[17] The main investments for HS concern the construction of some fundamental sections: Naples-Bari, Brescia-Verona-Vicenza-Padova and Salerno-Reggio Calabria. Investments are planned to speed up and increase the capacity of 6 further sections: Rome-Pescara, Orte-Falconara, Palermo-Catania-Messina, Liguria-Alps, Taranto-Metaponto-Potenza- Battipaglia and Verona-Brennero (adduction works). Technological updating of the railway lines and nodes through the start of the implementation of the European Rail Traffic Man- agement System (ERTMS) on the entire national network.

[18] Investments relating only to the regional lines interconnected to the national network (Torino Cerese-Canavesana, FUC Ferrovia Udine-Cividale, Bari-Bitritto line, Rosarno-S. Ferdinando line, FCU Centrale Umbra railway, EAV, FSE Ferrovie del Sud Est). Specific investments in upgrading, electrification and resilience in the south are foreseen (among the lines specifically concerned we can mention Ionica Sibari-Catanzaro Lido-Reggio Calabria, Venafro - Campobasso - Termoli, Catania node, Decimomannu-Villamassargia doubling, Olbia airport railway connection, and others).

The DNSH restrictions apply to the whole set of works that make up the infrastructure, namely the lanes, exchanges, level passages, engineering works (bridges, tunnels, etc.), the elements of the stations connected to railway use (including accesses, pavements, access areas, service areas, sanitary services and information systems and the related accessibility elements for persons with disabilities and persons of reduced mobility), safety and protection equipment.

Where a project is subject to VIA or VINCA, DNSH constraints and related mitigation measures are explicitly addressed as part of the relevant studies (preliminary environmental study, environmental impact study) to avoid duplication of studies and assessments.

The categories of works that fall under the scope of Sheet 23 – Rail Transportation Infrastructure are classified as established enabling activities of article 16 Taxonomy Regulations[19], provided they meet the technical screening criteria (DNSH constraints) for the other five environmental objectives (water resources, circular economy, etc.). It means that this type of infrastructure

[19] Article 16 ("Enabling activities") states that: "An economic activity shall qualify as contributing substantially to one or more of the environmental objectives set out in Article 9 by directly enabling other activities to make a substantial contribution to one or more of those objectives, provided that such economic activity:
(a) does not lead to a lock-in of assets that undermine long-term environmental goals, considering the economic lifetime of those assets; and
(b) has a substantial positive environmental impact, on the basis of life-cycle considerations".

Socio-economic and environmental determinants of women's reproductive health. Italian research into the reason why couples choose not to have children.

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Abstract: This paper examines the hypothesis underlyng the research "Socio-economic and environmental determinants of women's reproductive health. Italian research into the reason why couples choose not to have children". The hypotheses are that current public policies and the economic status of families, together with the scarce presence of a family network, lead families to choose not to have children. Is also considerate the context in which one lives can influence the choice not to have children as the territory is poor in opportunities or in areas without public services.
This work starts from Rindfuss and Brewster [Rindfuss R. R., Brewster K. L., 1996], Gauthier [Gauthier H. A., 2007], and Bonifazi [Bonifazi C., Paparusso A., 2009] studies about fertility and society. To understand what happens, an online questionnaire (elaborate with google forms) was used, disseminated through snowball sampling.

Keywords: fertility, social politics, territory, family, choice.

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1. Introduction

Every year the Italian Institute of Statistic–ISTAT produce the Natality Annual Report.

In these reports, since 2008 we can observe a decline of Italian birth rate, but the report is a descriptive statistics report and we do not find information on why the birth rate has decreased.

The goal of this brief research is studying the social motivations behind this problem.

A lot of studies confirm the public policies have an undeniable effect on families, indeed the idea about this project work starts from Rindfuss and Brewster Gauthier and Bonifazi studies about fertility and society.

The public politics regulate the conditions of employment, define eligibility to welfare benefits, provide education and health services, and define the rights and responsibilities of future parents.

The main assumption of this paper is that the family-public policies have pervasive effect.

In this paper were analysed:

- if the absence of a family network or friendship to support the couple influenced the choice,
- if the absence of public policies that support the families and the precarious economic situation (like economic policies) influenced the choice,
- if the place where you live (the presence of public transport, school, drug store etc.) influenced the future parents,
- if the current environmental situation is a problem.

2. Methodology

To understand what happens, an online questionnaire was used, built through a Google form, by G-suite.

The questionnaire was diffuse by social network and work of mouth all around Italy. The survey started on the June 22nd and finished on July 9th, 2023.

Anne Gauthier, in her essay "The impact of family policies on fertility in industrialized countries: a review of the literature" affirms: "[…] is very difficult to accurately measure policies and to adequately model the various ways by which policies may impact fertility […]" [Gauthier H. A., 2007].

Another problem is the social-desirability bias, in social science research many

people may not have answered truthfully and distorted the data. Therefore, it is important to underline that the results of this research should not be considered as absolute.

The questionnaire was composed by 25 closed questions and only one answer contains the "other section".

Both a univariate data analysis and a multivariate data analysis were performed.

At the end of the survey a snowball sample of 936 answers was obtained, 867 (92,6%) women and 68 (7,3%) men, because the survey was open to both sexes.

	18 – 24 years old	**25 – 34 years old**	**More than 35 years old**
Frequency	117 participants	387 participants	432 participants
Percent	12,5 %	41,3%	46, 2%

Table 1 - Participants age

Most of the participants come from northern Italy, 61,5%.

	North	**Centre**	**South**
Frequency	576	220	140
Percent	61,5%	23,5%	14,9%

Table 2 Population information – demographic

The questionnaire was only open to people who are in a romantic relationship:

	Married	**Living together**	**In a relationship**
Frequency	339	278	319
Percent	36,3%	29,7%	34,1%

Table 3 Population information – marital status

The important part of the sample for research is that which claims that it does not want children or does not want other.

	Has children	Not has children actually	Don't want to have children	Don't want to have more children
Frequency	355	581 (on 936)	260	254
Sample	936	936	581	355
Percent	37,9%	62,1%	44,8%	71,5%

Tab.4 Population information – parenthood

Many people may not have children for health reasons, so a "prefer not to answer" option has been included to avoid causing unnecessary suffering.

First assumption: The absence of a family network or friendship to support the couple.

224 people declare that they do not have a family network that would support them with offspring in case of need.

About the network of friends, however, only 201 out of 514 people tell us that they would not have friends ready to help them. The figure conforms with the fact that out of 936 people, 311 believe they do not have sufficiently supportive friends.

In the following graph we can see how people feel about their connection with their family of origin.

With value 1 we mean very low, with value 5 instead very strong.

Out of 936 people, 50% believe they have a very strong bond, while almost 28% of survey participants say they do not have a good relationship with their fam- ily. This data coincides with those who do not want to have children because they do not have a supportive family.

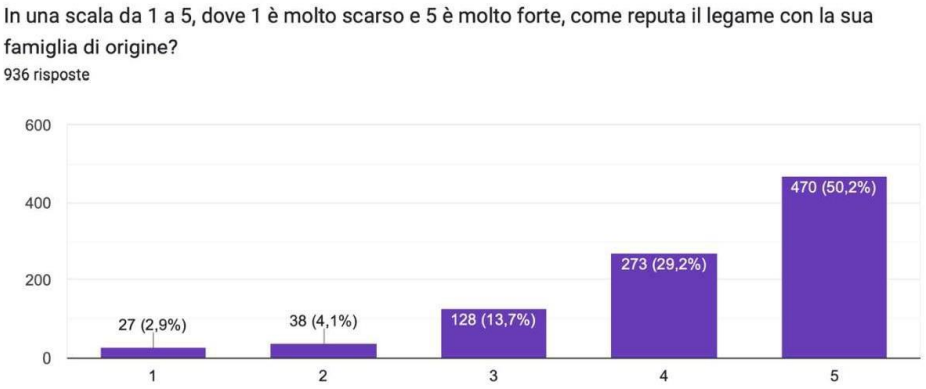

Figure 1 - Family

Second assumption: The absence of public policies that support the families and the precarious economic situation.

Public policies relating to the family and the economy are what have emerged in previous studies to influence fertility the most. About 70% of the sample has an income between 10,000 and 40,000 euros, and of the sub-sample of those who do not want to have children or do not want to have more, 380 out of 514 people believe they are influenced by their economic condition.

At the beginning of the questionnaire people were asked how many have benefited from social economic aid.

189 people, i.e. 20% answered yes.

Out of 189 people, 69 (36.5%) did not consider the bonuses useful at all, 50.8% declared that they were quite useful while 24 people declared that they totally helped them in the difficult situation.

Again in the last question, the question was how much, on a scale of 1 to 5, did the policies supporting maternity and paternity leave influence the choice to have children.

23.5% of people do not consider themselves influenced at all by the absence of policies to support maternity, while the remaining 76.5 consider it a very important aspect. The data is comparable to paternity support policies, where 71% of people feel influenced.

Another fact that should not be underestimated is family-work coordination.

Of the initial sample, only 16.4% are unemployed and those who do not want to have children, 70.3% of respondents are influenced by not having contractual forms and public policies that favour the reconciliation between the creation of a

family and professional career.

Although statistically irrelevant, for the writer it is important to point out that out of 514 people who responded, 72 are people in a same-sex couple who would like to have children but cannot because the current Italian policies on adoption and motherhood through third parties are very stringent.

Especially regarding gestation for others, this is considered a public policy which, if regulated, can increase the fertility of the nation.

Furthermore, as previously mentioned, some people closed the questionnaire as they "preferred not to answer", assuming they have reproductive difficulties, gestation through third parties could be a solution in these cases too.

Third assumption: The district.

Many people during their lives say they grew up "with nothing", that they had no opportunities for professional growth.

One of the hypotheses of this research is that people decide not to have children because the context in which they live and which they cannot leave is devoid of possibilities.

First, we have 38,4% of the sample who affirm the district has not public transport.

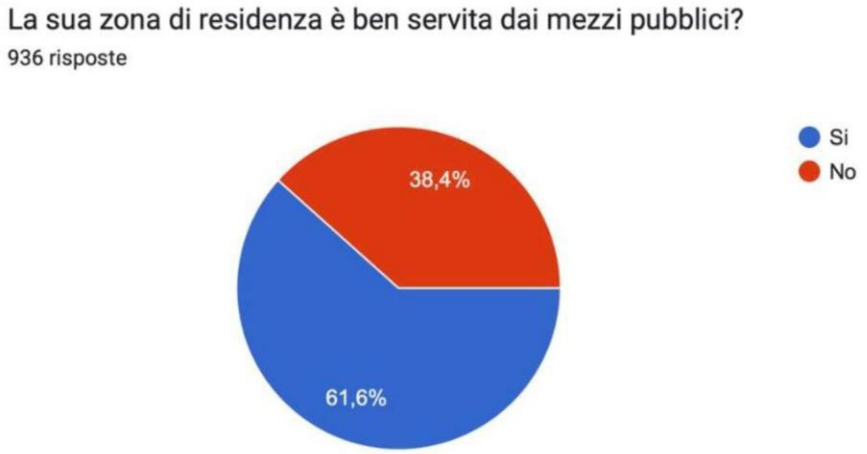

Figure 2 - Public transport

Then, we asked then we asked people which of these services were present in their area of residence: public polyclinics, hospital, Doctor of General Medi-

cine, first aid, pharmacy, post Office, bank, municipal services, police, supermarket, other necessities shops, kindergartens and schools.

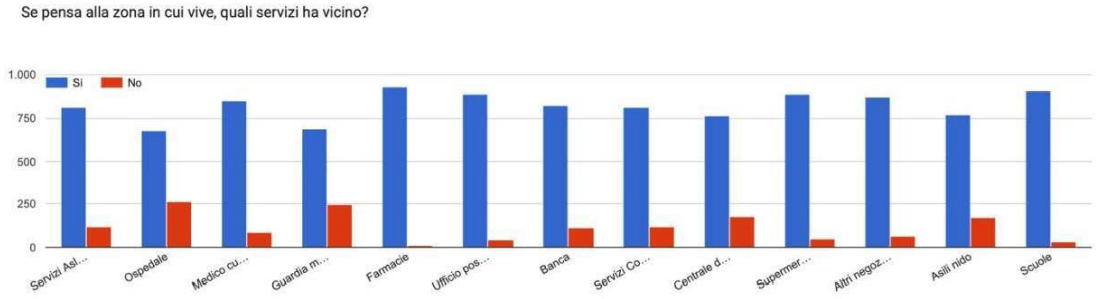

Figure 3 - Important services

Not even a third of the sample answers no to the presence with prox- imity services. But in the last question 245 people on 514 affirms that their choice to not have child is influenced by the absence of proximity service.

In relation to public transport, only 191 people feel influenced by their absence in choosing not to have children.

Fourth assumption: The current environmental situation.

The 45,6% of the sample affirms that their district has a high rate of pollution and exactly the half of our sample affirm to suffers about eco-anxiety, the fear about the climate change consequences.

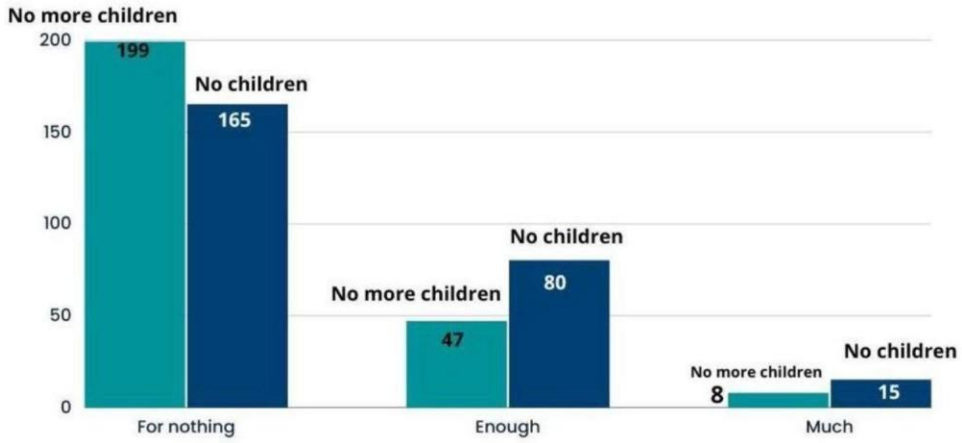

Figure 4 - How the pollution influences the choice

Despite 50% of respondents saying they suffer from eco-anxiety, only a total of 23 people does not want children out of fear of pollution. We can therefore reject this hypothesis because the birth rate has fallen in Italy.

3. Conclusion

In conclusion, we can say that this brief research carried out on the Italian territory confirms the trend studied in the past years both nationally and internationally. Since a totally anonymous and digitized form was used, we cannot know how many answers are invalid, as Gauthier's studies have found.

The assumptions that people don't want to have children because of climate change or the district where they should grow up are unexpectedly disproven. About the place of residence, the idea of being rooted in one place has certainly been undermined and the possibilities of escape have increased, both abroad and in other Italian regions. Furthermore, the hypothesis that the questionnaire did not reach those more isolated and backward areas of Italy where effectively today's young people do not perceive the possibility of growth for themselves and possibly for their children cannot be excluded.

The absence of public policies greatly influences couples in having children, both because they do not physically allow them to have them like surrogacy and

because it would not allow new parents to spend the right time with the new arrivals.

Italy is one of the European countries with the shortest paternity leave and one of the countries where women are afraid of being fired after reporting pregnancy. The hope is to mainly implement public nursery schools, which allow mothers or fathers to return to work without anxiety and additional expenses. It is also im- portant to extend the leave provided by companies or workplaces in the event of illness of the child, sudden closure of schools or simply to increase the chances of being accepted on the part-time scheme at work, to be able to spend more time at home.

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Soil Sealing Monitoring of the Mediterranean Coast: Presenting Ulysses, a New Service Based on Earth Observation.

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Abstract: This paper presents a new service developed for the project Mediterranean Soil Sealing, promoted by the European Space Agency in the frame of the EO Science for Society ~~M~~editerranean Regional Initiative.
The service will consist of time series of raster maps from 2018 to 2022 (2020 already available), representing the soil sealing degree of the whole Mediterranean coastal area at 10m spatial resolution. The maps will be presented using a dedicated web application, providing indicators related to soil sealing [Scalenghe R., Marsan F.A, 2009; Strollo A., Smiraglia D., Bruno R., Assennato F., Congedo L., Fioravante P.D., Giuliani C., Marinosci I., Riitano N., Munafò M., 2020], fostering sustainable planning and environmental assessment [EEA, 2012].

Keywords: degree of imperviousness, Copernicus Sentinel, sustainability, indicators.

1. Introduction

Soil sealing is the process related to human activities which leads to a change in

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soil characteristic of permeability because of artificial materials and compaction. The consequences of soil sealing (also called imperviousness) on the environment are multiple, affecting urban areas and local climate, influencing heat exchange, soil permeability, water infiltration and groundwater recharge, etc. [Burghardt W., Banko G., Hoeke S., Hursthouse A., L'escaille T.D., Ledin S., Marsan F.A., Sauer D., Stahr K., Amann E.J., Quast M.N., Schneider J., Kuehn K., 2004; Huber S., Prokop G., Arrouays D., Banko, G., 2008; Scalenghe R., Marsan F.A, 2009].

At the European level, the necessity to monitor land take and soil sealing and affected ecosystem services has been remarked in the recent proposal for a Directive of the European Parliament and of the Council on Soil Monitoring and Resilience [European Commission, 2023]. The European EAGLE classification system, developed by the EIONET EAGLE group "Action Group on Land monitoring in Europe", defines soil sealing within the class 1.1.1 "Sealed Artificial Surfaces and Constructions", including the surfaces covered with artificial constructions like buildings or pavements, and impervious surfaces [EEA, 2020].

The importance of monitoring the imperviousness of the coastline has been also remarked by the United Nations in the United Nations Environment Programme – Mediterranean Action Plan (IMAP) because of the impact thereof on soil weathering properties and aeolian transport patterns [UNEP/MAP, 2016].

This paper presents a new service developed for the project Mediterranean Soil Sealing, promoted by the European Space Agency in the frame of the EO Science for Society Mediterranean Regional Initiative. The project (named Ulysses, https://www.ulysses-project.org) has the main objective to develop the methodology for monitoring the soil sealing degree using Copernicus Sentinel images over Mediterranean coastal areas (within 20km from the coast) at a spatial resolution of 10m. At the moment, the service is already available for the reference year 2020 (Figure 2), and until the end of the project other reference year will be produced from 2018 to 2022.

Moreover, the project aims to provide to the End-Users several indicators and statistics extracted from the maps, as information to be directly ingested in working chains.

Figure 1: the Soil Sealing Degree map 2020 of the Mediterranean coastal areas (within 20km from the coast) aver Sentinel-2 cloudless (https://s2maps.eu)

2. Methodology

One of the requirements of this project is the use of Sentinel-2 images, which have a spatial resolution of 10m, to estimate the degree of soil sealing; the selection of the relevant algorithms was affected by ancillary data availability and the require- ment to estimate the soil sealing percentage, which for 10m spatial resolution (i.e., pixel area $100m^2$) implies the detection of variations of soil sealing between pixels as little as 1m2 of impervious surface.

Moreover, the use of satellite data such as Sentinel-2 (having 10m spatial resolution for visible and near infrared bands) implies the assessment of land cover properties at subpixel level, considering mixed pixels (different land cover classes inside one pixel) and the spectral similarity between natural soil and artificial surfaces.

Therefore, the developed methodology aimed at overcoming the difficulties related to subpixel analysis and the availability of data over a large area such as the Mediterranean basin; the methodology is composed of several phases (Figure 2).

First, input data Sentinel-2 Level 1C are corrected to level 2A using MAJA processor [Lonjou V., et al., 2016], and the Normalized Difference Vegetation Index (NDVI) is calculated for each image referred to a reference year; then the level 3A cloud-free composite for each month is computed (from the previous level 2A),

and for each composite the following indices are calculated: Normalized Differ- ence Vegetation Index (NDVI), Normalized Difference Tillage Index (NDTI), Modified Normalized Difference Water Index (MNDWI), and Normalized Differ- ence Built-up Index (NDBI), and a PANTEX band which is a texture descriptor useful to describe urban areas [Pesaresi M., Gerhardinger A., Kayitakire F., 2008].

The step of sealed soil mapping is performed through machine learning using Sentinel-2 images and a tool named "Broceliande", defining a set of selected bands, and creating a model of morphological trees from which multiscale features (called attribute profiles) are derived [Merciol F., 2019; Merciol F., 2020]. For each hierarchical representation, specific attributes are measured (e.g., area, weight, compactness, etc.) for all objects appearing at different scales, therefore as- signing these features to every pixel. The process of the binary classification (sealed/non-sealed) is performed using a Random Forest classifier.

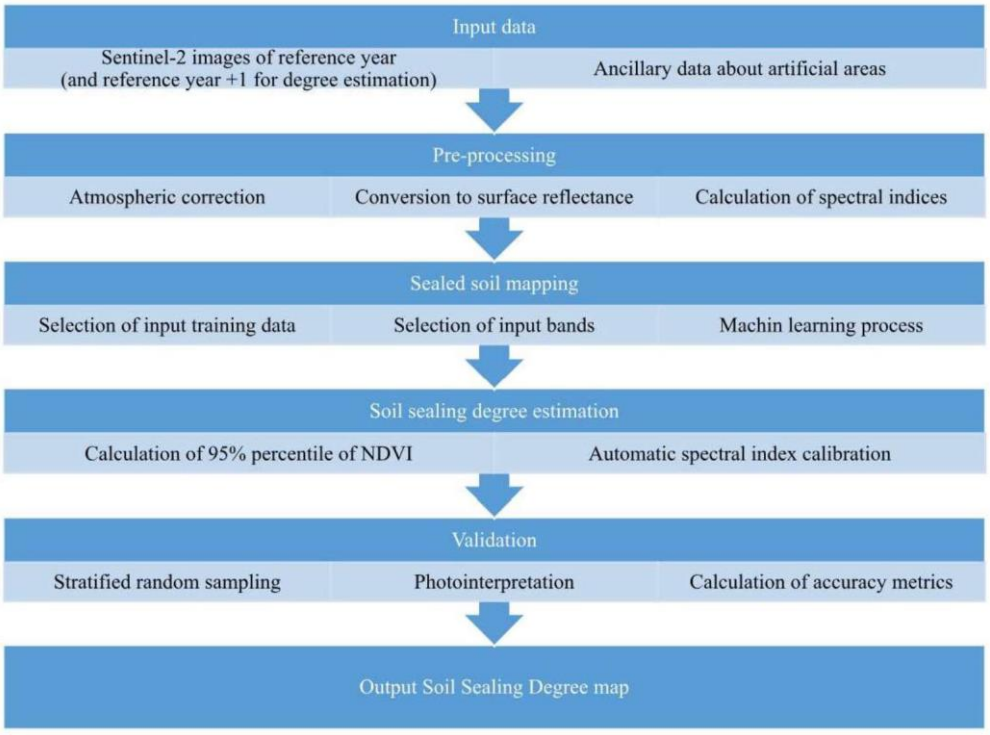

Figure 2: main workflow of the processing chain.

The step of estimating the soil sealing degree is performed on the sealed soil mask produced at the previous step. One major constraint in soil sealing degree

computation is the unavailability of very high resolution reference data (i.e., at least 1m resolution) which could be used as training data; therefore, an automatic approach was developed to avoid the need of training data, especially considering the extent of the study area (i.e., the Mediterranean basin). In particular, the NDVI time series calculated for each Sentinel-2 image is used to extract the 95% percentile of NDVI in the period reference year and reference year + 1; two years of images aim at reducing NDVI fluctuations due to the seasonality of vegetation in mixed pixels, allowing also to detect changes that cause a permanent decrease of NDVI such as new constructions. Spectral index calibration [Gangkofner U., Weichselbaum J., Kuntz S., Brodsky L., Larsson K., de Pasquale V., 2010], which does not require training data, is performed to estimate the soil sealing degree at pixel level; in particular, the developed method automatically estimates a minimum and maximum value of the spectral index (i.e., 95% percentile of NDVI) to cali- brate a linear relation with soil sealing degree.

The result of the whole process is a raster map with 10m spatial resolution, where each pixel represents the soil sealing degree (from 0 to 100%) within 20km from the coastline (Figure 4).

Validation was performed at two levels of analysis through stratified random sampling:

- Thematic validation to estimate both producer and user accuracies for the sealed areas.
- Correlation analysis with soil sealing degree to assess the reliability of the degree values.

For the whole product, the thematic validation of the sealed soil mask resulted in 93% overall accuracy, 92% user's accuracy (i.e., low commission errors), 51% producer's accuracy (i.e., high omission errors related to difficult identification of small, sealed features such as narrow roads, small and isolated buildings, and partially related to the different resolution between product and validation reference data). In particular, most omission errors are located over areas where soil sealing degree is less than 30%.

The correlation of the degree of soil sealing analysis showed a significant correlation with a coefficient of determination equal to 0.72 (linear regression equation: $y = 1.03x + 4.33$). Moreover, the absolute difference between product soil sealing degree and sample sealing degree resulted lower than 30 for the 80% of the samples, confirming the substantial agreement of the soil sealing degree, especially for higher levels of soil sealing.

Figure 4: example of soil sealing degree (left) compared to very high resolution image (Google Earth, right image); different level of urban density are represented by higher values of imperviousness over compact areas, and lower values of imperviousness are present over dispersed buildings mixed with vegetation

3. The monitoring service

The monitoring service is already available, and the data are freely available at the link https://datapool.ulysses-project.org (2020 already produced, other years in production and soon available).

Ulysses provides a comprehensive mapping tool that facilitates the exploitation of soil sealing products by visualizing and analysing a set of critical soil sealing indicators through a user-friendly web application. Ulysses enables users to access and interpret data at multiple administrative levels, including municipal, provincial, and regional scales.

Ulysses provides the following indicators for each administrative level:

Soil sealing consumption. This indicator expresses the percentage of soil sealed within the total area of the administrative level selected. By quantifying the extent of soil sealing, decision-makers gain insights into the level of urbanization and its potential impact on the environment.

Soil sealing percentage in buffered coastal zones. Within each administrative level, Ulysses webapp displays three distinct soil sealing percentages for several buffered coastal areas: 100m, 500m, 1000m, and 2000m. These values highlight the varying degrees of soil sealing in proximity to coastal regions. The comparison of sealing degrees in coastal zones with the administrative level's area in the buff- ered zone aids in understanding the potential coastal development impacts.

Soil sealing percentage in buffered waterways. Adopting a similar approach to the previous indicator, this indicator computes the percentage of sealed soil near

waterways, specifically within buffer zones of 500m, 1000m, and 2000m. Evaluating the sealing degree in rivers' buffered zones relative to the extension of buffered rivers within each administrative level offers valuable insights into the potential consequences of urban expansion near water bodies.

In addition to the previously described indicators, the web application incorporates essential metrics related to protected areas within the Natura 2000 Network and buffer zones surrounding major rivers. These additional indicators offer a comprehensive understanding of soil sealing patterns and trends across various protected zones and river environments. Specifically:

Soil sealing consumption in protected areas: it displays the percentage of soil consumed within each area of the Natura 2000 Network. This metric is derived by comparing the extent of soil sealing to the officially declared extension of each individual protected area. This indicator sheds light on the potential impact of human activities within these ecologically sensitive regions.

Soil sealing consumption in the buffer zone of the most important rivers: this indicator specifically targets areas within waterways clas sified as “river” in Open Street Maps. The analysis focuses on the part of these rivers that fall within the perimeter of the soil sealing map (20km buffer from the coastline). To calculate the sealing percentage, three distinct buffer zones (500m, 1000m, and 2000m) are considered. By assessing the degree of soil sealing within these buffers, Ulysses facilitates a detailed assessment of riverine environments' vulnerability to urban encroachment.

These indicators will be computed for each year in the period 2018 and 2022, following the production of the relevant soil sealing products. In this way, it will be possible to perform a temporal analysis on the platform of soil sealing trends for the three different administrative levels, for the protected areas and the river buffer zones.

The Figure 5 shows a prototype of the web app.

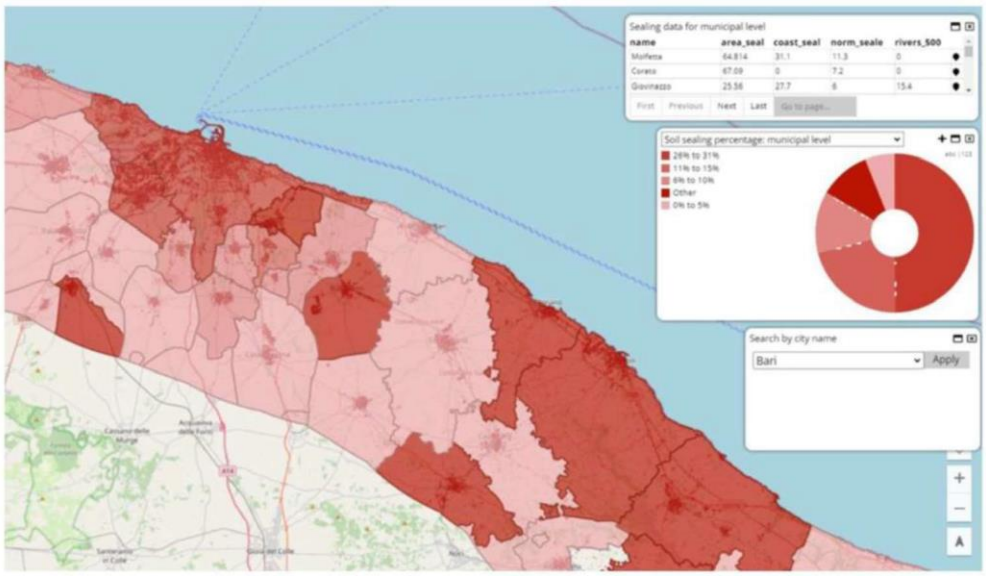

Figure 5: web app prototype for the municipal level

4. Discussion and conclusion

Monitoring soil sealing is very important considering the impact thereof on hu- man health, the environment, and ecosystem services.

This work presents the service for monitoring soil sealing degree developed in the project Mediterranean Soil Sealing, which will provide homogeneous information about soil sealing of the whole Mediterranean coast. The methodology involves the use of Copernicus Sentinel-2 images allows for updating the maps every year (from 2018 to 2022) with a spatial resolution of 10m and an automated workflow that involves machine learning and spectral index calibration.

In addition to the maps, the web app provided by Ulysses substantially im- proves the accessibility to soil sealing information and the changes thereof, with a set of indicators that relate soil sealing to relevant environmental factors, such as protected areas or vicinity to rivers, which can be directly used with stakeholders and urban planners to assess the impact of urbanization policies to reduce soil seal- ing.

The maps and indicators could also be valuable information to foster sustainable development in cooperation initiatives across the Mediterranean promoted by the United Nations Environment Programme such as the Priority Actions Pro-

gramme/Regional Activity Centre (which is one of the six Regional Activity Centres of the Mediterranean Action Plan), and populate indicators such as the Candidate Common Indicator 25 "Land use change" related to the Ecological Objective 8 (Coastal Ecosystems and Landscapes) proposed to be included in the IMAP list of common indicators [UNEP/MAP, 2017], which could be represented as the impervious area in a 100m buffer from the coastline, or as the length of coastline impacted by soil imperviousness in a 100m buffer from the coastline [UNEP/MAP, 2016].

Acknowledgment

This work is part of the ESA Ulysses project for Mediterranean Soil Sealing, promoted by the European Space Agency (ESA) in the frame of the EO Science for Society -Mediterranean Regional Initiative, Land applications. More information are available at https://www.ulysses-project.org/

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Le rotte del Mediterraneo: ponti o fossati? Vulnerabilità nelle migrazioni: il caso dei minori migranti non accompagnati

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Abstract: Il Mediterraneo è una delle rotte più battute dai migranti che tentano di raggiungere l'Unione Europea in modo irregolare, ed è anche scenario di numerosi naufragi. Dal mare approda in Italia un notevole numero di minori stranieri non accompagnati, che hanno affrontato percorsi molto disagevoli. In questo lavoro si descrive la dimensione del fenomeno e alcune caratteristiche dei giovani migranti, ponendo l'attenzione sui bisogni specifici, gli elementi di criticità e le principali risposte messe in atto.

Keywords: Minori stranieri non accompagnati, vulnerabilità, tutori volontari.

1. Le migrazioni nel Mediterraneo: rischi e diritti per i Minori stranieri non accompagnati

Per millenni, le persone hanno attraversato il Mediterraneo per giungere in Europa. In particolare negli ultimi 30 anni migliaia di migranti hanno scelto questa strada, non disponendo dei documenti richiesti dai Paesi di destinazione. Sulle diverse rotte del Mediterraneo è naufragato un numero enorme di imbarcazioni che trasportavano migranti non regolari. Il Missing Migrants Project [https://missingmigrants.iom.int/region/mediterranean] ha registrato, dal 2014, quasi 27.400 migranti morti o dispersi nel Mediterraneo (di cui oltre 1.100 minori)

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e ipotizza che il numero sia molto più alto. La rotta del Mediterraneo centrale risulta la più pericolosa, con oltre 22.000 perdite; questo è dovuto tanto alla durata del viaggio, quanto alla qualità inadeguata delle imbarcazioni utilizzate. Tra gli stranieri approdati in Italia dopo aver attraversato una delle rotte del Mediterraneo, una quota crescente è costituita da minori non accompagnati da adulti di riferimento.

I minori migranti non accompagnati sono titolari, in virtù della loro minore età, dei diritti fondamentali sanciti dalla Convenzione ONU del 1989 sui Diritti dell'Infanzia: principio di non discriminazione, superiore interesse del minore, diritto alla vita, alla sopravvivenza e allo sviluppo, al nome e all'identità, all'unità familiare, all'ascolto e ad essere informati, alla salute, all'istruzione, ad accedere alla protezione internazionale e all'assistenza umanitaria, diritto di giocare, di esse- re tutelati da tutte le forme di sfruttamento e di abuso.

L'Unione Europea (UE) ha adottato nel 2021 la Strategia ufficiale per i diritti del fanciullo, definendo gli obiettivi e le priorità dell'azione nei confronti dei mino- ri. Essa prevede la protezione di ogni minore da forme di violenza e la garanzia del diritto alla giustizia. In questo ambito c'è un richiamo esplicito ai Minori stranieri non accompagnati (di seguito MSNA), riconosciuti particolarmente vulnerabili sia per la loro condizione di migranti sia per l'assenza di figure genitoriali.

L'Italia con la legge 47/2017 "Disposizioni in materia di misure di protezione dei minori stranieri non accompagnati" (cosiddetta Legge Zampa, di seguito denominata Legge), ha una tra le più avanzate normative sul riconoscimento dei diritti dei minori migranti e rifugiati e sulla loro protezione. La norma definisce MSNA "il minorenne non avente cittadinanza italiana o dell'UE, che si trova per qualsiasi causa nel territorio dello Stato o che è altrimenti sottoposto alla giurisdizione italiana, privo di assistenza e di rappresentanza da parte dei genitori o di altri adulti per lui legalmente responsabili in base alle leggi vigenti nell'ordinamento italiano".

2. La protezione dei Minori stranieri non accompagnati: il quadro europeo e il caso Italiano

Pur nella cornice dei principi e dei valori enunciati e condivisi a livello internazionale, i diritti del MSNA scaturiscono da un sistema composito di fonti (Convenzioni, Trattati, Regolamenti, Direttive, Giurisprudenza delle corti internazionali). Le disposizioni normative si evincono da differenti documenti che possono riguardare ad esempio i minori stranieri, i minori richiedenti asilo, i minori non accompagnati oppure i neo-maggiorenni. In generale la tutela dell'infanzia secondo l'approccio

della Commissione UE è rivolta a prevenire e superare quelle condizioni di vulnerabilità che possono portare il minore a non godere di diritti fondamentali, necessari per conseguire il benessere attuale e nella futura vita adulta. Il principio del supremo interesse del minore viene prima di qualsiasi tipo di valutazione del suo status. Tuttavia i paesi dell'UE hanno normative, procedure e consuetudini proprie per gestire alcuni passaggi fondamentali. Questo determina alcune criticità. Ne è un esempio la giurisprudenza della Corte Europea dei Diritti dell'Uomo, chiamata in causa più volte per giudicare le procedure messe in atto in alcuni paesi (in particolare il Belgio, ma anche l'Italia) nell'accertamento dell'età. Anche in considerazio- ne di un sistema normativo così complesso, diversi documenti dell'UE e del Con- siglio d'Europa sostengono la nomina di tutori formati per garantire al MSNA il godimento dei diritti.

La normativa italiana in materia di MSNA è considerata tra le più avanzate. La Legge sancisce il divieto di respingimento, il diritto all'istruzione, alla salute, a specifico permesso di soggiorno, alla protezione, all'accoglienza in strutture dedicate ai minori, alla riduzione dei tempi per le procedure di identificazione. Dà preferenza all'affidamento a familiari rintracciati, qualora idonei a prendersi cura del minore, o all'affido familiare, rispetto al collocamento in strutture. L'art. 11 stabilisce che per la tutela legale si possano nominare tutori volontari debitamente formati, in luogo di tutori istituzionali, e l'art.13 definisce infine misure di accompagnamento verso la maggiore età e misure di integrazione di lungo periodo. Non tutto quanto previsto dalla Legge è stato tuttavia realizzato, per la mancata o tardiva promulgazione di disposizioni attuative fondamentali. A tale proposito, il 5° Piano nazionale di azione e di interventi per la tutela dei diritti e lo sviluppo dei soggetti in età evolutiva [Osservatorio nazionale per l'infanzia e l'adolescenza] dedica l'azione 22 espressamente all'attuazione della normativa sull'accoglienza dei minori stranieri non accompagnati.

3. I minori arrivati soli dal Mediterraneo: chi e quanti sono

Due sono le fonti statistiche per il monitoraggio dei MSNA. Il Ministero dell'Interno, attraverso il "Cruscotto statistico giornaliero", monitora e rende di- sponibili quotidianamente dati aggregati degli sbarchi avvenuti sul territorio italia- no e di questi indica il numero di MSNA, senza dati di dettaglio. Il Ministero del Lavoro e delle politiche sociali ha, invece, il compito di censire la presenza dei MSNA in Italia attraverso il Sistema Informativo Minori non accompagnati (SIM),

istituito dalla Legge. Grazie alle comunicazioni delle questure e dei comuni al SIM si dispone di informazioni molto dettagliate sull'anagrafica dei minori e sulle loro modalità di collocamento e di soggiorno in Italia. Il SIM può, inoltre, adattarsi a nuove esigenze informative. Ad esempio, dal 2018 vengono raccolte informazioni sul tipo di arrivo (via mare o via terra) e sulle tutele volontarie.

Nel 2014 - il primo anno del periodo definito della "crisi dei rifugiati" (2014-2016) - gli arrivi via mare di minori non accompagnati sono stati circa 13mila e sono aumentati nei due anni successivi raggiungendo quasi i 26mila nel 2016, il massimo fino ad oggi registrato (Figura 1). Queste rilevanti cifre fanno da sfondo ad un periodo di ingenti sbarchi sulle coste italiane: in media oltre 168 mila migranti all'anno. Negli anni a seguire il dato assoluto di MSNA sbarcati in Italia [1] è diminuito fino a registrare 1.680 arrivi nel 2019. A partire dal 2020, nonostante il diffondersi della pandemia da Covid-19, si sono rilevati nuovamente incrementi considerevoli degli arrivi di MSNA via mare fino a raggiungere, nel 2022 circa 14mila sbarchi. L'andamento crescente continua anche nei primi mesi del 2023, con un aumento del 20% rispetto allo stesso periodo dell'anno precedente. Oltre a constatare numeri non trascurabili di ragazzi minorenni che da soli affrontano un viaggio pieno di incognite, quello che più colpisce è il trend della quota dei MSNA arrivati via mare sul totale degli sbarchi: a partire dal 2016 oscilla tra il 13% e il 15% (negli anni precedenti era pari all'8% circa), anche negli anni 2018 e 2019 caratterizzati da un numero molto basso di arrivi, in virtù degli accordi dell'Italia con la Libia.

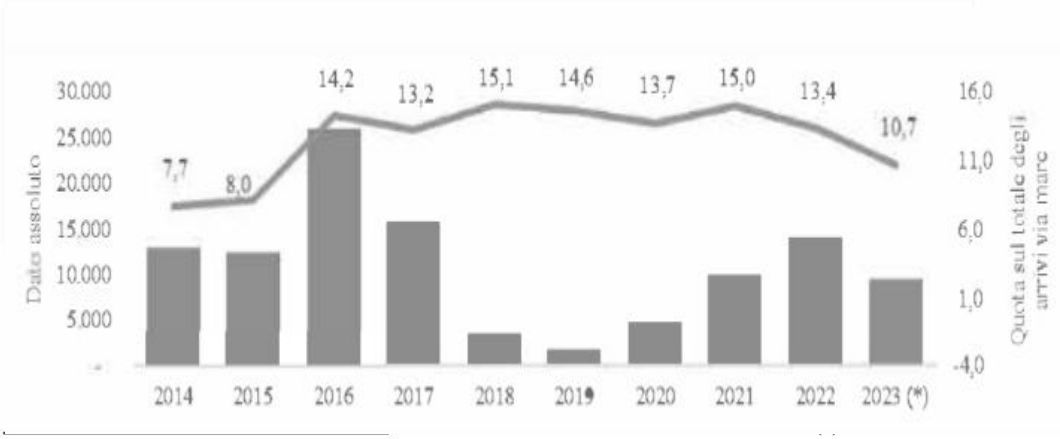

Figura 1 - Arrivi via mare di MSNA. Dati assoluti (asse sinistro) e percentuali sul totale degli arrivi via mare (asse destro). Anni 2014-2023

Fonte: Elaborazioni su dati del Ministero dell'Interno. (*) Aggiornato al 31 luglio 2023

[1] Inoltre coopera con altre amministrazioni coinvolte, si occupa delle indagini familiari, emette il parere positivo ai sensi dell'art. 32 del D.Lgs 286/1998 (TUI), modificato da L. 129/2011. Si vedano DPCM 535/1999 (artt. 2, 4, 5), D.Lgs 142/2015 (art. 19, c. 5) e L. 47/2017 (art. 9, c. 1).

Dal 2018 ad oggi una quota consistente di MSNA è giunta via mare, ma la proporzione varia nei diversi anni (Figura 2). La quota è notevolmente inferiore nel 2019, quando gli sbarchi hanno raggiunto il minimo storico, e per motivi diversi nel 2022. Infatti la guerra in Ucraina ha determinato, nei mesi immediatamente prossimi allo scoppio del conflitto, un ingente arrivo di minori via terra; ma già nel secondo semestre dello stesso anno gli arrivi via mare dei minori hanno ripreso a crescere tanto da costituire quasi il 45% degli arrivi a fine anno. A giugno 2023 gli arrivi via mare costituiscono quasi il 60% degli ingressi, la quota più alta di sempre.

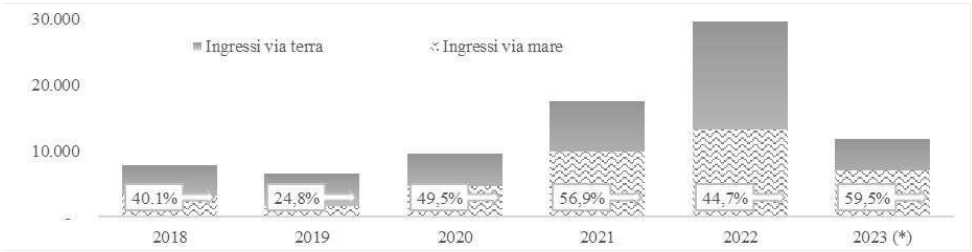

Figura 2 - Ingressi di MSNA per modalità di arrivo. Anni 2018-2023

Fonte: Elaborazioni su dati del Ministero del Lavoro e delle Politiche Sociali. (*) Aggiornato al 30 giugno 2023

I MSNA che arrivano via mare sono maggiormente polarizzati rispetto sia al genere sia all'età. Mediamente il 96% degli sbarchi è costituito da maschi e il 77% da minori di 16 o 17 anni, anche se va segnalato, a partire dal 2021, un aumento dell'incidenza della fascia di età 7-15 anni.

Nel 2022, l'ultimo anno completo a disposizione, gli ingressi hanno riguardato nel 32% dei casi minori egiziani il cui arrivo sulle coste italiane è aumentato di an- no in anno (+135% dal 2021) fino a raggiungere il primo posto in graduatoria con 4.231 minori arrivati soli. I ragazzi tunisini, sempre primi in graduatoria fino al 2021, pur aumentando(+ 29%), coprono il 19% degli sbarchi con 2.526 arrivi. Il 2022 segna il ritorno, tra i principali Paesi di provenienza, dei minori afghani e si- riani che, seppure con valori assoluti meno rilevanti, hanno visto più che triplicare la propria presenza rispetto al 2021 raggiungendo i primi 1.268 arrivi di ragazzi so- li (al terzo posto) e 342 i secondi. Anche gli arrivi dal Gambia sono in aumento, pur rimanendo su valori bassi (576). Al contrario diminuiscono i minori bangladesi (373) e pakistani (277). Nel primo semestre del 2023 si conferma la maggiore presenza di egiziani e tunisini e si rafforza quella dei ragazzi provenienti dalla Guinea

L'afflusso da Costa d'Avorio, Gambia, Eritrea e Pakistan si mantiene su livelli moderati, mentre diminuiscono gli sbarchi da Afghanistan, Siria e Bangladesh. Oltre i 3 quarti degli sbarchi di MSNA avvengono in Sicilia (quasi 3 lmila tra il 2018 e i primi 6 mesi del 2023); negli ultimi 3 anni si evidenzia una lieve flessione dell'incidenza a favore degli arrivi in Calabria che comunque ne totalizza meno di 6mila nel periodo. Residuali gli approdi in Puglia, Campania e Sardegna. La quasi totalità dei minori tunisini, del Bangladesh e della maggior parte dei paesi africani scelgono la rotta verso la Sicilia, mentre gli egiziani si distribuiscono anche verso la Calabria. Quest'ultima viene scelta invece dalla maggior parte dei ragazzi provenienti via mare dall'Afghanistan, Pakistan e dai principali paesi medio orientali.

4. L'esperienza condivisa della migrazione e le biografie individuali

L'esperienza migratoria è un passaggio significativo per chi la intraprende e può avere un forte impatto sulla qualità della propria vita. Ciascun mi$_{gr}$ante ha una storia e delle caratteristiche personali, subisce l'influenza di fattori legati all'area da cui si proviene (guerra, povertà, catastrofi ambientali, ingiustizia, ...), e/o all'appartenenza a gruppi discriminati. Si decide di migrare per sfuggire da condizioni estreme (pushing factors), ma in alcuni casi anche perché attratti da aspettative di miglioramento della propria vita o di quella dei familiari che rimangono nella terra d'origine (pullig factors). Tuttavia pur considerando le diverse storie e motivazioni personali, l'esperienza del viaggio può essere tanto forte da imprimersi nella persona in maniera preponderante. La migrazione può esporre le persone a ri- schi, miseria, sfruttamento e abusi. I tratti percorsi in mare a volte sono una parte minoritaria o una tappa intermedia di un viaggio iniziato anni prima. Per molti, soprattutto per chi proviene da regioni interne, il mare è un'incognita inquietante, immensa, imponente, oscura, instabile. Ma il pericolo è reale e deriva dalla inadeguatezza delle imbarcazioni e dalla scelta di percorsi impervi per evitare i controlli.

I disagi dei minori che arrivano via mare si amplificano se viaggiano da soli o se durante il viaggio hanno perso il contatto con gli adulti di riferimento. Anche se la maggior parte di essi arriva in Italia a ridosso della maggiore età, alcuni sono partititi da bambini o appena adolescenti. Dunque il percorso migratorio dei MSNA comporta una triplice transizione: "la transizione dall'adolescenza all'età adulta che accomuna ogni essere umano, la transizione legata alla migrazione che li porta dal distacco dalle proprie origini al doversi costruire una nuova vita in un contesto

culturale e sociale diverso e, infine, la transizione riguardante il superamento dei traumi vissuti prima, durante o dopo il viaggio compiuto" [Fondazione ISMU, 2019]. Rispetto alla transizione bambino-adolescente-giovane adulto, occorre ri- cordare che l'esperienza di infanzia e adolescenza non è necessariamente uguale a quella di chi nasce e cresce nel nostro paese, perché le condizioni economiche, so- ciali e culturali della comunità di origine possono essere molto diverse. Inoltre il processo stesso non lo si può immaginare lineare. Esso può subire traumi, salti o inversioni in particolare se avviene nel corso della migrazione. Migrare può essere vissuto come un atto che sancisce l'ingresso nella vita adulta, un rito di passaggio, una fase della costruzione della propria identità e di riflessione sul proprio senso di appartenenza ad una comunità. Anche questa riflessione sull'appartenenza (in ter- mini di valorizzazione o rifiuto) può costituire un ulteriore elemento destabilizzante per il minore. L'approdo in un paese straniero comporta l'apprendimento o l'interpretazione di molti codici, non soltanto quelli dell'idioma verbale. Il minore che ha subito o è stato testimone di maltrattamenti, abusi e sfruttamento, cerca an- che senza esserne consapevole, di affrontare lo stress che ne deriva, e non sempre le strategie messe in atto sono efficaci. Sono esperienze che incidono in modo du- raturo sullo stato psicologico degli adolescenti e giovani in misura maggiore che per le persone adulte. Esse giocano un ruolo anche sul rischio di cadere vittima di sfruttamento e abuso nel territorio di approdo. Unitamente alla esigenza impellente di guadagnare denaro, queste condizioni possono portare i giovanissimi ad intra- prendere rapporti con contesti lavorativi illegali. Essi comprendono tanto il lavoro sommerso, quanto lo sfruttamento vero e proprio, fino all'essere coinvolti in attivi- tà illecite. Inoltre, molti MSNA possono essere stati oggetto di razzismo già duran- te il percorso migratorio, e incontrando ancora nel territorio di approdo manifesta- zioni di razzismo e discriminazione, sviluppano una totale sfiducia in sé stessi e/o nelle persone che incontrano. Anche quando sono adeguatamente supportati, pos- sono assumere atteggiamenti rinunciatari che condizionano la loro progettualità di vita.

Uno dei momenti più delicati del percorso di un MSNA nel paese di accoglienza è il passaggio alla maggiore età. Questo espone i giovanissimi ad ulteriori elementi di rischio, venendo meno alcune forme di tutela e garanzia dei diritti riconosciuti ai minori. Per il maggiorenne non sussiste il divieto di respingimento, il diritto all'accoglienza in strutture idonee, alla tutela, all'istruzione, alla salute e a particolari procedure nella richiesta di protezione. Il passaggio alla maggiore età avviene in molti casi a pochi anni o addirittura mesi dall'inizio del percorso di acco- glienza e accompagnamento, proiettando il giovane in una condizione di vulnerabi-

lità molto più elevata se non ha avuto la possibilità di costruire un percorso per la sua permanenza legale nel paese. La Legge prevede tuttavia che un minore straniero non accompagnato, al compimento della maggiore età possa proseguire il suo percorso di inserimento fino al 2lesimo anno. Questo prolungamento del supporto, comunemente denominato 'prosieguo amministrativo', presume la proposta di un progetto plausibile che sia accolto dal Tribunale dei minorenni.

5. L'accoglienza e la permanenza in Italia. La figura del tutore

Il sistema di accoglienza dei MSNA[2] è organizzato in un primo e secondo livello, ciascuno con finalità e modalità differenti. Al momento dell'arrivo la prima azione da mettere in campo è la collocazione del minore in una struttura specializzata per assolvere alle primissime cure sanitarie, ma anche burocratiche[3]. La Legge sottolinea la necessità di dotarsi di strutture 'governative' di prima accoglienza mirate alle esigenze specifiche dei minori, nel rispetto di tutte le tutele ad essi riconosciute e per un soggiorno massimo di 30 giorni. Nella realtà il sistema di prima accoglienza dedicato ai MSNA ad oggi rimane ancora frammentato in diverse forme organizzative con un potenziale impatto sulla linearità del percorso di protezione e inclusione del minore. Nel primo livello di accoglienza sono compresi: i centri finanziati a valere sul Fondo Asilo Migrazione e Integrazione (FAMI), gestiti dal Ministero dell'Interno e i più simili per standard alla previsione normativa, ma purtroppo attivi solo fino al 31/12/2022[4]; le strutture Ricettive Temporanee che costituiscono centri di accoglienza straordinari (c.d. CAS minori) istituiti e gestiti dai Prefetti; le strutture di prima accoglienza accreditate/autorizzate dai Comuni o dalle Regioni. Nella seconda accoglienza - garantita fino al compimento della maggiore età e per i successivi 6 mesi, salvo necessarie proroghe per completare il percorso di integrazione avviato - rientrano le strutture afferenti al Sistema Accoglienza e Integrazione (SAI) finanziate con il Fondo Nazionale per le Politiche e i Servizi dell'Asilo (FNPSA), le strutture di seconda accoglienza finanziate con risorse del FAMI e tutte le strutture di secondo livello accreditate/autorizzate a livello regionale o comunale, la cui accoglienza è finanziata con il Fondo nazionale per l'accoglienza dei

2 Definito dall'art. 19 D. Lgs. 142/2015, come modificato dalla L. 47/2017.
3 Ad es.: avvio richieste per permesso di soggiorno/protezione internazionale, medico sanitario, nomina tutore.
4 Come da Avviso "Qualificazione del sistema nazionale di prima accoglienza dei MSNA" del 23/08/2016.

minori stranieri non accompagnati. Spesso queste strutture, diversamente dalla loro destinazione naturale, si trovano a svolgere una funzione di prima accoglienza. È poi prevista una terza forma di accoglienza, l'affido familiare, che consiste nel ser- vizio di aiuto e sostegno da parte di una famiglia o di una singola persona: più di tutte le diverse forme di accoglienza questa si avvicina al Diritto del minore a una famiglia (L. 184/83).

Nel 2022, dei MSNA arrivati via mare assegnati ad un centro di accoglienza, il 65% è stato accolto in uno di primo livello e il 35% in uno di secondo - prassi questa nel tempo sempre più diffusa. Oltre la metà dei MSNA accolti in un centro di primo livello sono in "Strutture emergenziali di Prima Accoglienza" gestite localmente, solo il 20,4% è stato assegnato ai centri governativi (non più attivi dal 2023) e il 15% alle strutture temporanee gestite dalle Prefetture; minima la quota (7%) degli accolti in "Strutture di Primissima Accoglienza ad alta specializzazione per Msna" che, però, dal 2023 accoglieranno parte dei minori provenienti dalle struttu- re in dismissione. Tra i ragazzi accolti in centri di secondo livello, la "Comunità Socio-educativa" e quella "Familiare" ne raccolgono, rispettivamente il 16,8% e il 15,2% e, anche in questo caso, la maggior parte viene assegnata a strutture accreditate/autorizzate a livello regionale o comunale. Del tutto assente, in questa prima fase dell'accoglienza di chi arriva via mare, l'affido presso un familiare. Nel defini- re i progetti di inclusione del minore è indispensabile tener conto della sua limitata permanenza nel sistema di accoglienza: in media non supera l'anno e si aggira intorno ai 7 mesi tra quanti arrivano via mare; tra questi ultimi, inoltre, rilevante la quota di quanti escono dal sistema di accoglienza per "allontanamento volontario".

Una volta individuata la struttura di accoglienza si può dare il via alla procedura per la nomina del tutore volontario presso il Tribunale per i Minorenni che provvederà all'abbinamento tra tutore disponibile e uno o più MSNA. Il tutore volontario, definito "l'asse intorno al quale ruota l'intero sistema italiano di protezione e accoglienza dei minori stranieri non accompagnati" [Di Pascale, Cuttitta, 2019], è un privato cittadino che esercita la rappresentanza legale del minore. Si diventa tutore volontario dopo un percorso di formazione e selezione attivato dal Garante per l'infanzia e l'adolescenza di Regione o Provincia autonoma. La distribuzione territoriale dei tutori volontari risulta piuttosto disomogenea, presumibilmente non solo perché legata alla diversa distribuzione dei minori soli sul territorio. Alcune regioni da subito si sono mostrate più attive di altre nell'avviare i corsi di formazione: tra queste Lazio, Liguria, Toscana, Emilia-Romagna e Campania. Inoltre, a seguito dell'approvazione della Legge si è assistito ad una immediata rilevante attività formativa che è andata scemando nel tempo e non solo per via del diffondersi del-

la pandemia da Covid-19. Al 31/12/2021 i tutori volontari iscritti negli albi costituiti presso i Tribunali dei minorenni erano 3.457, [AGIA: Rapporto di monitoraggio sul sistema della tutela volontaria, 2019] in lieve calo rispetto al 2020 (3.469). Analizzando i dati dei Tribunali per i minorenni di Sicilia e Calabria - le due regioni in cui si concentrano maggiormente i MSNA in arrivo nel nostro paese - si riscontra il maggior numero di abbinamenti, ma anche un numero di tutori volontari ancora insufficiente per sostenere l'elevato numero di ragazzi soli: per ciascun tutore volontario se ne contano, rispettivamente, circa 8 e 9, mentre a livello nazionale se ne contano 4. Nel Lazio, accanto ad un alto numero di abbinamenti si riscontra invece un MSNA per tutore.

Il tutore oltre a garantire la tutela dei diritti del minore e a esercitare a pieno la tutela legale, può partecipare attivamente al percorso di crescita del ragazzo, contribuendo alla sua futura indipendenza. La figura del tutore volontario può divenire pertanto un punto di riferimento importante per il minore. Ma cosa succede al 40% dei minori arrivati via mare che escono dal sistema di accoglienza per raggiunta maggiore età e si ritrovano senza tutela?

Nel momento del passaggio alla maggiore età il minore può aver intrapreso un percorso di inserimento[5], può aver ottenuto il prosieguo amministrativo o di protezione speciale, ma questo non vale per tutti. Tanto a livello nazionale che internazionale sono dunque state introdotte delle figure di supporto per i giovani da poco maggiorenni [Fondazione HAPAX, 2023]. Le figure sono definite in vario modo (mentori, tutori sociali) e possono assumere ruoli differenti; possono essere pressoché coetanei oppure adulti più esperti. Tali figure supportano il neomaggiorenne instaurando una relazione uno ad uno e facilitando "la creazione e il consolidamento di legami e relazioni significative che vadano a rafforzare la carenza di capitale sociale" [Fondazione HAPAX, 2023]. Il loro ruolo è sostenere il riconoscimento e lo sviluppo delle capabilities del giovane adulto, atto a costruire opportunità di autorealizzazione e di benessere non solo materiale.

6. Guardando al futuro con un occhio al presente

Il numero dei MSNA che approdano in Italia sta aumentando e cresce, anche se lentamente, la presenza dei più giovani. L'accoglienza presenta delle criticità: non

[5] A tal proposito si segnalano le Misure per l'autonomia dei minori stranieri non accompagnati promosse dal Ministero del Lavoro e delle politiche sociali: i progetti "Percorsi" e "Puoi".

rispetta sempre i criteri richiesti, per carenze economiche e organizzative o ritardi nell'attuazione delle norme. La prima accoglienza soffre della frammentazione delle risposte e non può continuare a contare sul supporto della seconda accoglienza, che deve perseguire finalità diverse. Quando il futuro di un o una giovane MSNA è legato all'incontro tra i suoi bisogni e le risorse effettivamente disponibili nello specifico contesto, si possono determinare delle ineguaglianze. L'attraversamento del mare ha segnato queste giovanissime vite, occorre garantire che l'approdo nel nostro territorio non si trasformi in un'ulteriore barriera che isola anche uno solo di questi giovani. Figure come i tutori volontari, i tutori sociali, i mentori rappresen- tano punti di riferimento centrali nell'indirizzare i ragazzi e le ragazze verso una progettualità di ampio respiro che consenta loro di sviluppare le proprie capabili- ties. La presenza di figure non istituzionalizzate può essere un valore aggiunto per immaginare progetti personalizzati e tarati anche sulle risorse attivabili nel territo- rio. Tuttavia si palesa la necessità che le risposte non siano casuali, effimere se non velleitarie, ma supportate da una rete adeguata di servizi. La conoscenza del feno- meno dei MSNA è alla base degli interventi in materia, pertanto è fondamentale avere a disposizione dati sempre più accurati e tempestivi.

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Povertà, alimentazione, comunicazione.

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Abstract: Il tema relativo al cibo del futuro impone una riflessione sul rapporto tra povertà e alimentazione. In particolare, la relazione affronta il tema della povertà di famiglie e minori e indaga le conseguenze che tale condizione ha sul piano socio-culturale, educativo e alimentare dei minori in Italia.
Il cibo del futuro sarà un cibo per tutti e sarà un cibo affidabile rappresentato da una comunicazione affidabile. Non sembra possibile un'idea di cibo del futuro senza l'azzeramento della fame o della mancanza di almeno un pasto al giorno prima ancora di un pasto sano del futuro.

Keywords: Povertà, alimentazione, minori, comunicazione.

1. Povertà economica e accesso alle risorse alimentari

La povertà è un fenomeno socialmente rilevante e in crescita a livello globale, ma anche locale, con effetti sulle diverse dimensioni della vita quotidiana di individui e gruppi sociali.

L'analisi sociale consente, sul piano comparativo, di definire i paesi a maggiore rischio di povertà, le categorie sociali più coinvolte e le variabili strutturali che ne sono la causa. La povertà è un fenomeno di grande rilevanza per i sistemi sociali; determina forti impatti per lo sviluppo economico, sociale e demografico dei paesi coinvolti.

Nell'ambito della definizione della povertà la Banca Mondiale ha sviluppato indicatori di misura e individuato cause e conseguenze per le persone coinvolte:

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formazione scolastica inadeguata, difficoltà di accesso ai servizi sociosanitari e di tutela della salute, vulnerabilità ed esclusione sociale. La povertà si presenta come problema complesso che coinvolge diverse realtà della vita individuale e sociale delle persone.

Le diverse fenomenologie della povertà definiscono i livelli di insicurezza e di instabilità esistenziale da cui si sviluppa una pluralità di dimensioni in un rapporto di causalità multifattoriale. La povertà economica rappresenta una delle dimensioni fenomenologiche della povertà; essa pone alla società questioni di ordine etico nella distribuzione delle risorse e problemi di sostenibilità sociale del sistema. Affrontare la povertà dalla prospettiva sociologica significa porre l'attenzione alla pluralità e multidimensionalità del fenomeno e porta a focalizzare l'attenzione sul concetto di capability deprivation [30]; esso include, come rileva Morlicchio, «la possibilità di nutrirsi in modo adeguato e corrispondente ai propri valori, la disponibilità di un'abitazione, di un'istruzione di base, così come poter partecipare alla vita della comunità ed essere in grado di apparire in pubblico senza vergogna» [21].

La povertà economica è definibile come stato di indigenza che si esplicita in funzione di un livello di reddito troppo basso per poter soddisfare i bisogni fondamentali della vita, a iniziare dall'accesso a un'alimentazione adeguata. La mancanza di risorse economiche sufficienti, anche riguardo alla società e al periodo storico e culturale di riferimento, può portare a situazioni di privazioni nei gruppi più vulnerabili della popolazione; il livello di reddito determina il paniere di beni e servizi cui una famiglia può accedere; tra essi i beni alimentari rappresentano il punto critico del sistema.

I dati sulla povertà economica nel mondo evidenziano come un considerevole numero di persone quotidianamente affrontano il problema della fame: un aspetto eticamente critico che si correla alla mancanza di un riparo, alle difficoltà di accesso all'istruzione, alle cure sanitarie, in un meccanismo di privazione di beni essenziali all'esistenza, che si autoalimenta in un rapporto circolare di causa ed effetto.

La misura della povertà, come condizione economica di individui e famiglie, ha portato la Banca Mondale a definire il valore monetario della condizione di povero inteso come soglia o livello minimo di reddito al di sotto del quale una persona o una famiglia lotta per la propria sopravvivenza. In questa condizione, che possiamo definire di estrema gravità, le persone non sono in grado di provvedere ai propri bisogni di base (alloggio, assistenza sanitaria, cibo) [10]. Le famiglie che vivono al di sotto di tale soglia internazionale di povertà ($2.15 per persona al giorno) presentano importanti limitazioni per quanto concerne l'accesso al cibo. A livello globale la Banca Mondiale, nella misurazione della povertà, rileva:

«The international poverty line is set at $2.15 per person per day using 2017 prices. This means that anyone living on less than $2.15 a day is in extreme poverty. About 648 million people globally were in this situation in 2019. The COVID-19 pandemic dealt the biggest setback to global poverty-reduction efforts since 1990, increasing the number of people in extreme poverty by about 70 mil- lion, to 719 million people. Rising energy and food crises, caused in part by the war in Ukraine, and the effects of climate change contribute to an uneven recov- ery» [13].

Secondo la FAO (Food and Agriculture Organization of the United Nations) [12] nel mondo 828 milioni di persone soffrono la fame [11]. Per esse l'accesso alle risorse alimentari si presenza limitato o critico.

2. Povertà economica e povertà alimentare

Il rapporto tra povertà economica e alimentazione si presenta con una significativa correlazione. La questione del cibo del futuro in una società caratterizzata da forme di disuguagliane economiche, sociali, culturali e educative è la questione principale del cibo futuro, inteso come garanzia di un'adeguata alimentazione per tutti. Il tema si prospetta come urgente necessità per trovare soluzioni rispetto al contesto delle disuguaglianze economico-sociali mondiali.

Anche nelle società occidentali, avanzate sul piano dello sviluppo economico e tecnologico, le disuguaglianze sociali persistono e definiscono condizioni di povertà e criticità [2]. Il tema delle disuguaglianze di reddito e di opportunità di crescita individuale e sociale, aprono a nuove questioni riguardo le politiche di contrasto della povertà; le difficoltà che tali azioni incontrano nel contesto delle attuali trasformazioni dell'economia e della società a livello globale riflettono le difficoltà e i limiti dello sviluppo economico mondiale, in cui si connettono le questioni delle disuguaglianze sociali e della tenuta dei sistemi di welfare occidentali [1].

La situazione italiana conferma sul piano empirico tali osservazioni. La prospettiva storica del dato [3] rileva diversità territoriali mai superate [6,7, 9]. In Italia la povertà si presenta con caratteristiche strutturali aggravate da situazioni congiunturali; si esplicita come fenomeno multidimensionale segnato da fattori sociali e culturali. La mancanza di un lavoro è solo una variabile che si inserisce in un quadro di vulnerabilità sociale di famiglie e persone più esposte di altre ai rischi di margi- nalità e di esclusione sociale: precarietà del mercato del lavoro, bassi tassi di occu- pazione femminile, frammentazione e eterogeneità del sistema di protezione socia-

le, scarsa e diseguale disponibilità di servizi nella conciliazione tra attività familiari e di lavoro esterno alla famiglia, forti differenze territoriali definiscono il quadro entro cui si esplicita, nelle diverse dimensioni, il fenomeno della povertà in Italia [29]. Il rapporto tra povertà economica e povertà alimentare si conferma nell'analisi empirica [8] facendo emergere esigenze di cambiamento nei sistemi e nelle politiche di welfare [20].

Nell'ambito degli studi sulla povertà si individuano questioni di metodo: è di estrema attualità il confronto tra prospettive di analisi statiche e dinamiche [4], che aprono a diverse interpretazioni e forme di interventi e politiche sociali sempre possibili. La prospettiva dinamica rileva che nella vita non si è poveri sempre: vi possono essere momenti diversi in cui si è poveri; la condizione di povertà può modificarsi anche più volte nel ciclo di vita di una famiglia o di una persona e spesso si manifesta in forme e livelli differenti di gravità. La condizione di povero, nella prospettiva dinamica, ha carattere di provvisorietà [31], può durare anche po- co e ripresentarsi in più momenti del ciclo di vita. La prospettiva statica descrive una condizione permanente di povertà relativa a specifici gruppi sociali, identifica- bili sulla base di variabili strutturali che incidono sul benessere economico di fami- glie e persone [5].

Nello studio della povertà e nella correlazione con i rischi di marginalità ed esclusione sociale è importante distinguere la povertà assoluta dalla povertà relativa [26]: la povertà assoluta è la forma più grave di povertà, descrive il mancato accesso alle risorse primarie per la riproduzione della vita quotidiana di famiglie e persone quali cibo, abitazione, cure sanitarie, istruzione; la povertà relativa definisce situazioni in cui l'insufficienza di beni e servizi è misurata in relazione al tenore di vita medio della popolazione in una determinata società e, pertanto, si presenta sensibile a forme diverse di costruzione del dato e di interpretazione della sua gravità.

In Italia la povertà assoluta è calcolata dall'Istat sulla base di una soglia di povertà che rappresenta il valore monetario, a prezzi correnti, di un paniere di beni e servizi considerati essenziali per ogni famiglia; è definita in relazione all'età dei componenti del nucleo familiare, all'area geografica e alla tipologia del comune di residenza [18]. Una famiglia è definita povera quando sostiene una spesa mensile per consumi pari o inferiore al valore monetario del paniere di beni e servizi considerati essenziali. Tra questi beni troviamo quelli riferiti all'adeguata alimentazione, alla disponibilità di un'abitazione conforme alle esigenze e dimensioni del nucleo familiare, riscaldata e con i principali servizi, ma anche il minimo di disponibilità dei beni e accessori per vestirsi, comunicare, informarsi, muoversi sul territorio,

istruirsi, mantenersi in salute.

Nel 2005 le famiglie in povertà assoluta in Italia erano 819 mila con un'incidenza del 3,6%. Le stime dell'Istat, anno 2021, segnalano in Italia la presenza di 1,9 milioni di famiglie in povertà assoluta con un'incidenza del 7,5%. Il dato, diversamente distribuito nelle aree del paese, descrive una situazione di povertà assoluta in netto aumento nel corso degli anni; ad essere maggiormente colpite dalla povertà assoluta sono le famiglie dei comuni del Mezzogiorno [19].

Le famiglie in maggiore sofferenza sono soprattutto quelle con tre o più figli minori. La povertà colpisce in misura maggiore le famiglie con componenti stranieri: «Gli stranieri in povertà assoluta sono oltre un milione e 600mila, con una incidenza pari al 32,4%, oltre quattro volte superiore a quella degli italiani (7,2%)» [19, p.5]. Il rapporto tra povertà economica e povertà alimentare si conferma anche in Italia nell'analisi empirica del fenomeno; [8];;;;in;modo specifico le situazioni di povertà assoluta descrivono l'esistenza in Italia di quasi due milioni di famiglie povere nella forma più grave.

3. «Le famiglie in maggiore sofferenza sono soprattutto quelle con tre o più figli minori»

La Convenzione sui diritti dell'infanzia e dell'adolescenza è certamente il riferimento imprescindibile e doverosamente più richiamato quando ci si occupa delle persone di minore età: è la carta del mondo per la loro protezione e tutela [24]. Ha segnato l'avvio di un'attenzione istituzionale internazionale, di una cultura degli intenti ricca di dichiarazioni cui ha fatto e fa seguito anche un concreto operare. Non è solo il documento che proclama i diritti dei minori, è testimonianza. La Convenzione, nel definire ciò che spetta loro, testimonia ciò che è stato, è, e può essere ancora loro inferto: discriminati (art.2), dimenticati (art. 3), uccisi (art. 6), strappati (art. 9), ignorati (art. 12), abbandonati, violati, sfruttati, maltrattati, abusati (artt. 17, 19, 33, 34), malnutriti (art. 24), deprivati (artt. 28, 29, 30, 31), venduti (art. 35), torturati (art. 37), arruolati (art. 38), deviati (art. 40). Con la ratifica del documento, per gli Stati- parte, l'interesse superiore del minore deve essere definitivamente una considerazione permanente in tutte le decisioni che li riguardano, di competenza delle istituzioni pubbliche o private di assistenza sociale, dei tribunali, delle autorità amministrative e degli organi legislativi (art. 3).

In particolare, il diritto non solo alla vita (art. 6), ma a un livello di vita necessario allo sviluppo fisico, mentale, spirituale, morale e sociale (art. 27) impegna ad

assicurare «il diritto di godere del miglior stato di salute possibile» (art. 24) e quindi anche a «lottare contro la malattia e la malnutrizione [...] mediante [...] la fornitura di alimenti nutritivi e di acqua potabile» (art. 24, c); a «fare in modo che tutti i gruppi della società [...] ricevano informazioni sulla salute e sulla nutrizione del minore, sui vantaggi dell'allattamento al seno, sull'igiene e sulla salubrità dell'ambiente e sulla prevenzione degli incidenti e beneficino di un aiuto che consenta loro di mettere in pratica tali informazioni» (art. 24, e); ad assistere materialmente e con programmi di sostegno genitori o persone aventi la loro custodia in difficoltà per quanto riguarda l'alimentazione, il vestiario e l'alloggio (art. 27, 3).

Secondo quanto documentato dal V e VI Rapporto al Comitato ONU – impegno che l'Italia adempie ogni cinque anni per aggiornare sul proprio stato di applicazione della Convenzione – sono essenzialmente tre gli ambiti di progettazione e di intervento sociale che implicano l'alimentazione:

il sostegno all'indigenza, i disturbi comportamentali e la promozione di stili di vita sani. Sono ambiti che hanno richiesto, e consolidato, la collaborazione interistituzionale con la Scuola.

Le misure intraprese per il sostegno all'indigenza sono:

l'adozione del Piano nazionale per la lotta alla povertà e all'esclusione sociale la previsione del Sostegno per l'Inclusione Attiva (SIA) da garantire in via prioritaria ai nuclei familiari con minori;

il Programma Operativo I relativo al Fondo di aiuti europei agli indigenti (FEAD), approvato dalla Commissione Europea al Ministero del lavoro e delle politiche sociali (MLPS), consistente principalmente nel finanziamento dell'acquisto e della distribuzione di beni alimentari per il periodo 2014-2020;

a livello locale, i servizi di mensa scolastica come elemento di contrasto alla povertà alimentare e le Commissioni mensa, in collaborazione con l'Amministrazione comunale e gli stakeholders, per il controllo della qualità e della quantità dei cibi somministrati agli alunni in riferimento alle vigenti tabelle dietetiche [23].

Nel 2013, il Piano di Azioni Nazionale per la Salute Mentale (PANSM) ha raccomandato interventi precoci e tempestivi nei confronti dei disturbi psichici adolescenziali e giovanili (fascia di età 15 –21 anni) anche nell'ambito dei disturbi dell'alimentazione per i quali il Ministero della Salute ha elaborato nel 2017 le Linee di indirizzo nazionali per la riabilitazione nutrizionale nei disturbi dell'alimentazione [32] ed effettuato il monitoraggio e l'aggiornamento della Mappa Nazionale dei Servizi per la cura dei Disturbi dell'Alimentazione.

La pianificazione strategica per la promozione di stili di vita sani ha previsto

programmi (es. il DPCM 4 maggio 2007 - Guadagnare Salute: rendere facili le scelte salutari dove la scorretta alimentazione è indicata come uno dei fattori di ri- schio di malattie cronico-degenerative) e sistemi di sorveglianza per la rilevazione dei dati (es. Okkio alla salute ha realizzato cinque rilevazioni di dati, in tutte le Re- gioni italiane e nel sistema scolastico dal 2008/09 al 2015/2016, su sovrappeso e obesità in età infantile, nonché sullo stile di vita dei bambini; es. il progetto HBSC. Health Behaviour in School-aged Children ha effettuato due rilevazioni nazionali, 2010 e 2014, sul sovrappeso in tutte le fasce di età).

I Piani Nazionali della Prevenzione degli ultimi dieci anni sono volti all'incremento del consumo di frutta e verdura, alla promozione dell'allattamento al seno, al miglioramento e al controllo della qualità nutrizionale dei menù delle mense scolastiche (es. la strategia nazionale del Programma UE Frutta, verdura e latte nelle scuole per il periodo 2017-2023) [33].

Nei progetti promossi dal Ministero della Salute nell'ambito dell'attività motoria, l'alimentazione è uno dei vettori del benessere psicofisico (es. il progetto Movimento in 3S: promozione della Salute nelle Scuole attraverso lo Sport e il progetto SBAM! Sport, Benessere, Alimentazione, Mobilità, Scuola, attivati rispettivamente dalle Regioni Friuli Venezia Giulia e Puglia, in relazione al Piano Nazionale per la promozione dell'attività sportiva).

Attualmente, un punto di riferimento per le iniziative nazionali è la European Child Guarantee (Racc.(UE)2021/1004) ovvero il Sistema di garanzia europeo per i bambini vulnerabili soprattutto in ragione degli esiti dell'impatto economico e sociale della pandemia. È il documento che esorta a permettere ai minori bisognosi di accedere gratuitamente ed efficacemente ad almeno un pasto sano per ogni giornata scolastica:

«L'accesso a un'alimentazione sana e sostenibile è problematico soprattutto per le famiglie a basso reddito. I programmi che promuovono prodotti alimentari e un'alimentazione sani possono contribuire ad affrontare problemi quali le cattive abitudini alimentari, la mancanza di attività fisica, l'obesità o il consumo di alcol e tabacco, riducendo così la malnutrizione e la cattiva alimentazione, che sono più diffuse tra i minori provenienti da contesti svantaggiati. L'esperienza maturata con la pandemia di COVID-19 ha dimostrato l'importanza dei programmi di alimentazione scolastica per alcuni minori, che durante il confinamento sono stati improvvisamente privati di una fonte affidabile di nutrimento. È pertanto fondamentale che a scuola i minori bisognosi abbiano accesso ad almeno un pasto sano al giorno, e ciò potrebbe essere conseguito fornendo tali pasti o facendo in modo che i genitori, i tutori o i minori siano in grado di provvedervi, tenendo conto delle circostanze e

delle esigenze specifiche locali» [25].

In Italia, l'attuazione della Child Guarantee è rappresentata dal 5° PAI (Piano nazionale di azione e di interventi per la tutela dei diritti e lo sviluppo dei soggetti in età evolutiva 2022-2023. Educazione, equità, empowerment) e soprattutto dal PANGI (Piano di azione nazionale per l'attuazione della garanzia infanzia). Sono Piani che sperimentano anche meccanismi di partecipazione attiva dei minori in modo da orientare nel modo più appropriato le azioni-obiettivo. Per il PANGI è stato costituito lo YAB (Youth Advisory Board) [22] le cui raccomandazioni ne sono parte integrante. Per quanto riguarda l'alimentazione, cioè una delle tematiche prioritarie della Child Guarantee, le riflessioni dello YAB si sono rapprese in tre ordini di difficoltà percepite e/o vissute:

«a) Servono più informazioni sui disturbi del comportamento alimentare e su come prevenirli.

b) Servono normative volte a proteggere bambine/i e adolescenti dalla diffusione di immagini nocive, corpi perfetti e canoni di bellezza stereotipati, che fanno tendere gli adolescenti a modelli irraggiungibili e irreali.

c) Bisognerebbe rendere più accessibile e meno costoso il cibo di qualità, educare a un'alimentazione sana e prevedere supporti alle famiglie o almeno la garanzia di un pranzo equilibrato al giorno a scuola […]» [22].

4. Lo Youth Advisory Board interpella la comunicazione

Le raccomandazioni dello YAB al Gruppo di lavoro del PANGI sopra riportate interpellano la comunicazione: più informazione, cioè più contenuto per capire e una comunicazione commerciale non ingannevole, cioè onesta nel significato che intende. I minori hanno il diritto di interpellare la comunicazione: sono, devono, essere liberi di attraversarla («libertà di ricercare, di ricevere e di divulgare informazioni», art. 13 della Convenzione ONU) e di potersi affidare perchè dall'altra parte i media devono svolgere la funzione di divulgare informazioni e materiali di «utilità sociale e culturale» per «il loro benessere sociale, spirituale e morale nonché la loro salute fisica e mentale» (art. 17, Convenzione ONU).

Alla protezione e tutela dei minori nelle comunicazioni commerciali ha pensato l'Istituto dell'Autodisciplina Pubblicitaria già nel 1966. L'Istituto nasce a Milano con lo scopo di promuovere una comunicazione commerciale «onesta, veritiera e corretta», che «deve evitare tutto ciò che possa screditarla» attraverso l'applicazione del Codice di autodisciplina della comunicazione commerciale [14]

(art. 1 Lealtà della comunicazione commerciale). Periodicamente aggiornato, il Codice detta una serie di norme, procedurali e sostanziali, che impongono l'osservanza di fondamentali principi a tutela del pubblico dei consumatori, della leale concorrenza tra gli operatori, della dignità umana e dei minori.

Ai minori il Codice dedica in particolare tre apposite norme: art. 11 Bambini e adolescenti, art. 22 Bevande alcoliche, art. 23bis Integratori alimentari e prodotti dietetici.

Secondo l'art. 11, sia i messaggi rivolti ai minori sia quelli comunque da loro recepiti

«non devono contenere nulla che possa danneggiarli psichicamente, moralmente o fisicamente e non devono inoltre abusare della loro naturale credulità o mancanza di esperienza, o del loro senso di lealtà».

In particolare, la comunicazione commerciale diretta alla vendita di prodotti alimentari e bevande non deve indurre a

«sminuire il ruolo dei genitori e di altri educatori nel fornire valide indicazioni dietetiche» e ad «adottare l'abitudine a comportamenti alimentari non equilibrati, o trascurare l'esigenza di seguire uno stile di vita sano» [14].

L'art. 22 relativo alle bevande alcoliche raccomanda di

«non contrastare […] modelli di consumo ispirati a misura, correttezza e responsabilità. Ciò a tutela dell'interesse primario delle persone, e in particolare dei bambini e degli adolescenti, ad una vita familiare, sociale e lavorativa protetta dalle conseguenze connesse all'abuso di bevande alcoliche. […] di non «rivolgersi o fare riferimento, anche indiretto, ai minori, e rappresentare questi ultimi o soggetti che appaiano evidentemente tali intenti al consumo di alcol; […] di non «utilizzare segni, disegni, personaggi e persone, direttamente e primariamente legati ai minori, che possano generare un diretto interesse su di loro».

La comunicazione commerciale di integratori alimentari e prodotti dietetici (art. 23bis)

«non deve vantare proprietà non conformi alle particolari caratteristiche dei prodotti, ovvero proprietà che non siano realmente possedute […] e «deve essere realizzata in modo da non indurre i consumatori in errori nutrizionali e deve evitare richiami a raccomandazioni o attestazioni di tipo medico. Queste regole si applicano anche agli alimenti dietetici per la prima infanzia, a quelli che sostituiscono in tutto o in parte l'allattamento materno e a quelli che servono per lo svezzamento o per l'integrazione alimentare dei bambini».

Parti integranti del Codice sono il Regolamento per la comunicazione commerciale relativa ai prodotti alimentari e alle bevande, a tutela dei bambini e della loro

corretta alimentazione e il Regolamento sulla comunicazione commerciale degli integratori alimentari.

I limiti imposti dal primo Regolamento evidenziano tutto quello che una comunicazione commerciale, di cui la pubblicità è una delle forme, può implicare/ingenerare/racchiudere.

La presentazione dei prodotti alimentari e delle bevande può indurre in errore

«per mezzo di omissioni, ambiguità o esagerazioni […], specie per quanto riguarda le caratteristiche nutrizionali e gli effetti del prodotto, il prezzo, la gratuità, le condizioni di vendita, la diffusione, l'identità delle persone rappresentate, i premi o riconoscimenti»; può «indurre a ritenere che il mancato consumo del prodotto oggetto della comunicazione commerciale significhi inferiorità, oppure mancato assolvimento dei loro compiti da parte dei genitori o di altri educatori» (punto 4.).

La comunicazione commerciale audiovisiva può:

«accentuare le qualità positive degli aspetti nutrizionali di prodotti alimentari o bevande dipendenti da grassi, acidi grassi trans, zuccheri, sodio o sale, la cui assunzione eccessiva nella dieta generale non è raccomandata» (punto 5.).

I claims prestazionali possono non avere:

«riscontro in una adeguata base scientifica e non rispecchiare le caratteristiche e le proprietà vantabili di un prodotto»; possono «adoperare approvazioni, richiami e raccomandazioni o attestazioni di tipo medico che si risolvono nell'attribuire caratteristiche salutistiche al di fuori dei casi in cui ciò è consentito dalla normativa vigente» (punto 7.).

Inoltre, le comunicazioni commerciali possono mostrare situazioni che suggeriscono un consumo smodato o non equilibrato, in contrasto con corretti comportamenti alimentari; possono rappresentare un comportamento da parte di adulti che avalla comportamenti alimentari non corretti; possono

«ridicolizzare corretti comportamenti alimentari, inducendo a contravvenire ad essi, o incitando ad assumere comportamenti alimentari sbagliati»; possono rappresentare situazioni che inducono a ritenere che il mancato consumo del prodotto «comporti il rifiuto da parte di amici o l'esclusione dal gruppo dei pari o dalla comunità di appartenenza»; possono sminuire «l'importanza di una vita attiva», […] mostrare scene di bambini che, da soli, consumano alimenti davanti a uno schermo così da incoraggiare uno stile di vita particolarmente inattivo […]» (punto 7.) [16].

Il Regolamento sulla comunicazione commerciale degli integratori alimentari non fa riferimento ai minori però è importante per tutto quello che comunque, raggiungendoli, può influenzarli, soprattutto se pre-adolescenti e adolescenti. Si pensi per esempio alla confusione indotta del concetto di salute con quello di dimagri-

mento:

«non è ammissibile» dice all'art. 1 «presentare i prodotti in questione come "dimagranti". Il ruolo degli integratori finalizzati al controllo o alla riduzione del peso è quello di "coadiuvanti di diete ipocaloriche". Non si deve inoltre enfatizzare il concetto di dimagrimento come sinonimo di salute» [17].

Ci sono poi i green claims; sono pubblicità che presentano un'immagine del brand caratterizzata dall'impegno ambientale e che possono indurre all'acquisto di prodotti ritenuti più adatti a uno stile di vita ecocompatibile anche per bambini e ragazzi. I pregi ambientali di un prodotto vantati e promessi da una pubblicità devono però corrispondere ad un impegno concreto delle aziende nella tutela dell'ambiente. Ecologico, biologico, c ompostabile, biodegradabile, riciclabile, ecosostenibile sono claims potenzialmente ingannevoli. L'art. 12 del Codice - Tutela dell'ambiente naturale - impone standard precisi di correttezza, affinché gli slogan 'ecologici' non divengano frasi di mero uso comune, annacquate di promesse (green washing) prive di concreto significato ai fini della caratterizzazione e della differenziazione dei prodotti e delle aziende [15].

Dell'Istituto si ricordano inoltre: la sottoscrizione con il Ministero della Salute e altre Associazioni del settore alimentare delle Linee di indirizzo per la comunicazione commerciale relativa ai prodotti alimentari e alle bevande, a tutela dei bambini e della loro corretta alimentazione sul rischio di sovrappeso e dell'obesità; il Protocollo d'Intesa con L'Autorità Garante per l'Infanzia e l'Adolescenza (AGIA) per vigilare insieme sul rispetto da parte degli operatori di pubblicità della Convenzione ONU; l'Accordo Quadro con l'Autorità Garante per le Comunicazioni (AGCOM) per coordinare le rispettive competenze (scambio di dati e informazioni, attività di indirizzo e prevenzione rivolta a consumatori e imprese e finalizzate a promuovere una corretta comunicazione commerciale, verifica delle condizioni regolamentari (obblighi, divieti) in materia di pubblicità e tutela di consumatori e utenti, organizzazione di seminari, gruppi di studio e attività formativa nelle materie di interesse comune); la recente elaborazione di una Digital Chart che fornisce un quadro delle più diffuse forme di comunicazione commerciale nella Rete, nel mondo digitale in genere e che dettaglia il tema della riconoscibilità della comuni- cazione commerciale digitale.

Gli ultimi decenni sono stati certamente densi di propositi ed esercizi di responsabilità anche se il comportamento degli operatori della comunicazione non si risolve certo «a colpi di normativa giuridica o paragiuridica e a colpi di interventi punitivi». Le violazioni nel campo dei media pongono sempre di fronte a «un problema di costume, mentalità, cultura, etica civile e non solo civile». La comunica-

zione resta «un'area di libertà e scelte coscienziali» [27], e dai costi umano-sociali di natura non contabilizzabile [28].

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Note

[24] La Convenzione è stata immediatamente riconosciuta come uno dei principali strumenti di protezione dei diritti umani nel sistema ONU: non solo approfondisce il solco tracciato dalla Dichiarazione dei diritti del fanciullo di Ginevra nel 1924 e da quella approvata dalle Nazioni Unite nel 1959 e che già originava dalla Carta delle Nazioni Unite del 1945, ma chiarisce il contenuto e la portata di principi già espressi in due Patti internazionali del 1966 rispettivamente sui diritti civili e politici (PIDCP) e sui diritti economici, sociali e culturali (PIDESC) che con la Dichiarazione universale dei diritti dell'uomo del 1948 costituiscono il c.d. Bill of Human Rights delle Nazioni Unite. Aperta alla firma il 26 gennaio 1990, è stata ratificata dall'Italia con la legge 27 maggio 1991 n. 176 (Ratifica ed esecuzione della Convenzione sui diritti del fanciullo, fatta a New York il 20 novembre 1989). F. Pocar, La CRC nel sistema delle Nazioni Unite, in Autorità Garante per l'Infanzia e l'Adolescenza (a cura di), La Convenzione delle Nazioni Unite sui diritti dell'infanzia e dell'adolescenza. Conquiste e prospettive a 30 anni dall'adozione, Roma, 2019.
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La rapidità degli interventi, la competenza nella definizione dei casi e l'indipendenza deg li organi giudicanti, rappresentano le caratteristiche peculiari del sistema autodisciplinare. La sanzione autodisciplinare, in caso di accertata non conformità al Codice, è l'immediata cessazione del messaggio. Sul sito Internet iap.it sono pubblicate tutte le decisioni più recenti del Giurì e le ingiunzioni di desistenza del Comitato di Controllo.

L'Autodisciplina interviene anche in via preventiva offrendo due fondamentali servizi: pareri preventivi sulla conformità alle norme del Codice di messaggi non ancora diffusi e protezione della creatività di future campagne da eventuali imitazioni. https://www.iap.it/codice-e-altre-fonti/il-codice/

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The new food

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Abstract: The sociocultural dynamics of food are taking very different directions, so that there will be no longer fixed and stable points in the sphere of food and gastronomy for the future. They will also determine interesting and significant innovations, such as fusion food, which inspires both the celebrity chefs and food enthusiasts alike. Among the most popular future consumer trends there are the superfoods, that seem to be able to guarantee healthfulness and mental and physical well-being. Consumers are instead more divided on novel foods, such as insects or artificial meat.

Keywords: Food, Future, Gastronomy, Superfoods, Fusion food, Novel Foods

1. Introduction

The world of food has undergone profound transformations in recent years, taking on an increasingly important role in socio-cultural dynamics as well as in people's daily lives (Murcott, Belasco, Jackson, 2013; Corvo 2015). In this essay we highlight some of the most relevant changes in the gastronomic field, related to consumption patterns, food practices, the organization of food services and restaurant management. Food has become a determining factor in the definition of individual identity, and a prime focus of traditional media, social networks, consumer movements and consumer associations (Poulain, 2005). To fully grasp the new frontiers of gastronomy is to rethink consumption options and choices without any certain or absolute point of reference. This is more evident today than ever before, even if

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thirty years ago Fischler had already spoken of gastro-anomy, describing a relationship to food characterized by a general absence of rules (Fischler, 1990).

To describe the current situation characterizing the world of food, it seems appropriate to evoke Zygmunt Bauman's concept of liquid society, where the globalized individual lives without certainties in an aesthetic and fragmented space (Bauman, 2000, 2017). Drawing from this perspective, we can perhaps speak of liquid food or gastro-liquidity, where the consumer's experience is in a state of constant change: from the introduction of automation into the restaurant sector (will we ever have robot waiters or robot chefs?), to the rediscovery of a direct relationship with producers; from the growing consideration of local products, to the attraction of fusion and multi-ethnic foods; from the multi-sensory and gustatory experiences of food (Sheperd's theories about neuro-gastronomy, 2012, come to mind here) to the online purchase of food, which is devoid of any visual or tactile contact.

In this variety of opportunities, the consumer tries to find their own identity and awareness, initially assuming contradictory, or at least inconsistent, behaviors – liquid, precisely – and eventually managing to adapt flexibly to the mutability of the food world and the food market. In this context, it is not easy to clearly outline the scenarios that await us. Nevertheless, we will comment on the new trends in the food and restaurant sector bearing in mind Bauman's desires for society, which he hoped would move from turbo-consumerism to social coexistence founded on sustainability and a better quality of life for people (Corvo, 2020).

2. The new role of social media in gastronomy

Digital innovations are profitably interacting with the world of food, creating very interesting opportunities. Art meets science, desire meets creativity, and tradition meets innovation.

Food has always united human beings: it is vital nutrition and gives pleasure to the body and mind. Over the centuries, each population has developed a specific gastronomic culture, and particular eating patterns determined both by the food products available and the demands of tradition. In Italy, the gastronomic model has significantly transformed over the last thirty years, in step with the social and cultural changes of the country. Today we can freely choose what to eat, whereas until the mid-20th century the choice for a large segment of the population was limited to basic staples. This freedom of gastronomic choice has determined the

new dimension the world of food has taken on in recent years: food has become an element of fundamental interest in contemporary society, thanks in part to the proliferation of social media, which have enhanced its aesthetic enjoyment.

The spread of digitalization and the development of online social networking as the prevalent means of communication are changing the restaurant industry and stimulating new or renewed food consumption patterns and information methods. On the Internet, food-related searches are constantly on the rise. Many people search specialized blogs for gastronomic tips as well as for recipes that are meticu- lously described and illustrated. The immediacy of access to information has con- tributed to the spread of gastronomic know-how, supporting the valorization of typ- ical local products and other gastronomic territorial resources.

Another common practice that has been enhanced by technology is booking a table at a restaurant. Thanks to advanced booking, restaurant managers can plan food purchases and meal preparation schedules, while customers can take ad- vantage of discounts and offers made available by the restaurateur and arrive at the restaurant knowing they have a reserved place.

Digitalization also offers the consumer access to home delivery: products can be ordered at home using smartphone applications, which are revolutionizing the world of commerce in all economic sectors. By accessing to electronic catalogue consumers can purchase restaurant dishes or do their grocery shopping online at supermarkets or grocery stores. In this way, the customers are able save time and wait for the requested products from the comfort of their own homes, even if they are deprived of direct contact with the product to be purchased.

There is also an aesthetic and emotional use of social media, embodied by the so-called food selfies depicting the food and drinks being enjoyed, which are shared, especially on Instagram. The sharing of images of food seems to create a sort of virtual conviviality, which tries to reproduce the pleasure of eating together. Chefs also contribute to this by giving a fundamental importance to the aesthetics of a dish, which is often designed to be an artistic creation. Food therefore becomes a work of art to be enjoyed in a multisensory way, capable of providing a gastro- nomic experience characterized by a tangled web of sensory elements that create sensations and emotions of various kinds, which hopefully – for the individual who experiences them – will be unforgettable.

3. The growing consumption of 'superfoods'

Consumers are looking for an increasingly high level of quality, both at home in the products they buy and cook, and at the restaurant: the demand for high-end and information-rich products has significantly risen. This phenomenon is not a passing trend, but a real desire to know the world of gastronomy in depth and to be able to enjoy a feeling of wellbeing while eating high-quality food. (Corvo, Fassino, 2015). For these reasons, we are witnessing a growing attention to farmers' markets, niche products, food novelties, and, above all, traditional and reduced-food-miles products (Belasco, 2008; Guptill, Copelton, Lucal, 2013).

This newly developed consumption model no longer concerns nutrition alone, but also, and above all, the pursuit of health, which is no longer understood as the absence of disease but as psychophysical wellbeing. Hence the success of so-called superfoods, i.e., foods with presumed health benefits due to their nutritional characteristics or overall chemical composition. These foods are also called functional foods or nutraceuticals. In recent years there has been a steady growth in the consumption of superfoods: just think of quinoa, ginseng, goji berries, turmeric, ginger, etc. It remains still to be verified if the consumption of superfoods is a trend advanced by effective marketing policies, or if it reflects heightened consumer awareness about the healthiness of food. Most likely, both elements contribute to the phenomenon. In any case, as the consequence, self-referential consumption behaviors that do not rely on the fundamental advice of specialists, such as doctors and nutritionists, ought to be avoided. In fact, there is still no scientific certainty about the actual healthiness of some superfoods. Therefore, consumers are advised to exercise a certain level of caution, especially concerning the quantity of products consumed, and to not overlook the importance of adopting a healthy, varied, and balanced diet.

On another health-related note, it is important to mention that food chain professionals have the social responsibility to ensure genuine, safe, and sustainable products. The transparency of the producer is reflected in the traceability of the supply chain, which has been made easier by digitalization. Restaurants must respond to the needs of customers with special dietary requirements due to intolerances, diseases, food philosophies, religious beliefs, and other legitimate demands. As a result, restaurant menus around the world have been increasing their offer of lactose- and gluten-free dishes, as well as vegan/vegetarian-friendly dishes. In this framework, the management of restaurants and food shops is becoming more and more specialized and personalized. Satisfying all requests is a hard task: some res-

taurants indeed decide to propose a general offer, while others choose specific market segments.

4. The fusion food

The phenomenon of globalization has brought about a change in the approach to new knowledge in all cultural spheres. It is no longer the prerogative of the traveler to seek novelty in exotic lands and return to his country of origin with a broader cultural background. It is rather the cultures themselves that travel elsewhere, with exchanges and entanglements reaching every corner of the planet. In the context of food, gastronomic multi-ethnicity, i.e., the encounter and fusion of different gas- tronomic traditions, is increasingly appreciated and sought after.

Gastronomy enthusiasts seek out local products from their territory, taking pleasure in the rediscovery of their sensory and health properties. But they are also very attracted to ethnic products. After they have come to know their own gastronomic tradition, origin, and identity, they want to engage with other food traditions. Diversity is recognized as a value, and food confirms itself as a universal language, which, like music and sport, does not require linguistic knowledge to be understood and appreciated.

In the Western world, thousands of restaurants prepare recipes and dishes from countries and ethnic groups all around the world. In Italy, North African restaurants (with products from Morocco, Tunisia, and Egypt), Central-South American restaurants (Mexican, Cuban, Peruvian, Argentinian, and Brazilian), Middle Eastern restaurants (such as Syrian, Iranian, Turkish, and Israeli), Eastern restaurants (such as Indian, Chinese, Japanese, and Thai) and African restaurants come to mind.

Multi-ethnic stores have also become very widespread. They sell products from various countries and are often located in the city neighborhoods most populated by migrants. Similarly, multi-ethnic restaurants are consolidating their presence in Western cities. They cater to a predominantly young age group, offering particularly inexpensive menu options, such as all-you-can-eat: the consumer can enjoy an almost unlimited amount of food for a fixed price. This promotion method has led to the success of restaurants that sell sushi and other Japanese products.

Lastly, a notable trend is the flowering of fusion food restaurants, which are profoundly transforming the gastronomic scene, proposing a meaningful blend of different but complementary recipes, flavors, aromas, emotions, and sensations. The most capable chefs have been able to transform this variety of emotions and

experiences into a unique and distinctive offer.

5. The insects: a controversial novel food

The gastronomic phenomenon of novel foods also deserves consideration. According to the definition of the European Union, novel foods are all those food products and substances that have no significant history of consumption in recent times (as of May 15, 1997, according to EU Regulation), and which therefore must undergo authorization before being placed on the market.

In recent years, much has been said and written about the spread of insect-based diets in the West. Entomophagy, or the consumption of insects, derives from the Greek ἔντομον (éntomon), meaning insect and φᾰ́γειν (phagein), meaning eating. The practice of eating insects is very common in some Eastern countries such as Cambodia, Thailand, Indonesia, and China, and can also be found in South America and Africa. Insect breeding is a very sustainable practice: owing to their small size, insects do not pollute the environment through the emission of greenhouse gases, nor do they require large swathes of land or quantities of nutrients. Insects are also interesting from a nutritional point of view: they contain high-quality pro- teins, vitamins, fibers, fatty acids, and trace elements useful for the human body. They can be bred for direct or indirect consumption, that is, the production of other derivatives (such as food extracts, snacks, or feed). There are 1900 known species of edible insects in the world, most of them in the West; therefore, their inclusion in future diets could be a winning bet. In fact, since January 1, 2018, the trade of edible insects and other novel foods upon authorization has been made possible in EU countries, thanks to European Regulation No. 2283/2015.

Nonetheless, now the market is quite stagnant, and in Italy insects have not yet been commercialized, probably due to a certain skepticism regarding their economic functionality and potential acceptance among consumers. In the West, some consumers are still perplexed by the idea of eating insects and report feelings of disgust, most likely stemming from a combination of fear of the new combined and cultural factors. In the Western collective imagination insects have rarely been considered anything but a pest, infesting crops, stinging, and sometimes infecting human beings. These elements lead humans to distance themselves from this source of food, a source of food that could nonetheless prove useful in developing a more sustainable model of nutrition as well as in addressing some failures of the conventional food supply chain. It is foreseeable that food practices will overcome cultural

resistance (as we have often seen with other imported foods), and insects will prove to be an interesting alternative to more traditional foods, even in Western countries (Sogari, Vantomme, 2014). In fact, here some chefs are already experimenting with new cooking techniques and including insects in recipes for pasta, rice, and soup dishes.

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Smart contracts, an emerging technology society can benefit from

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Abstract: The following provides a brief overview of blockchain smart contracts, focusing on their features, qualities and effects. It specifically focuses on Smart Contracts requirements and the strict bond between the smart contracts and the environment they must run in, consequently on the requirements of the execution environment. We identify such an environment to be a real, decentralized, BFT, public blockchain. We present both traditional and uncommon applications and investigate the impact they can have beyond commercial and economie transactions such as DAOs. This paper aims to enhance the understanding of their underlying technology and promote adoption of smart contracts as a tool to solve real life problems far public administration and government.

Keywords: Smart Contract, BFT, public blockchain.

1. A brief history of smart contracts

Despite being known to the public just in recent years, smart contracts already have 30 years of academic research to lay down the foundation of the technology.

Nick Szabo, a computer scientist and legal scholar, proposed the idea of smart contracts in 1994. The term "smart contract" in its original intention had a differ- ent, mainly legally oriented (precise and legitimate) meaning, this has often caused confusion.

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Szabo defined smart contracts as "digitai agreements embedded with predefined rules and conditions" before the advent of blockchain technology. However, it was not until the emergence of blockchain technology with the creation of Bitcoin in 2009 that smart contracts could be implemented in a practical manner. Later Ethereum brought smart contracts into the mainstream in 2015.

2. Definition

According to the current working-definition of ISO/TC 307, WGl, Terminology, a smart contract is a "an immutable computer program stored in a distributed ledger system that encodes the rules of a tamper-proof agreement wherein the outcome of any execution of the program is transparently recorded on the distributed ledger and happens without intermediaries"

It is often misinterpreted as a "legally binding contract" but this is not the case in the vast majority of instances. Hence Vitalik Buterin, founder of Ethereum, later proposed the name "immutable scripts".

The vending machine analogy

According to Szabo, a vending machine is similar to a smart contract because it automates the process of making a transaction without the need for human intervention. In a traditional contract, parties rely on the trustworthiness of each other and might need to involve trusted intermediaries while vending machines epito- mize autonomous, self-executing agreements. A customer and a (working) vending machine's customer transact without the need to internet with another person. Like a vending machine, a smart contract eliminates the need to trust a counterparty, as the execution of the contract is verifiable by all participants on the blockchain. The terms and conditions are coded, making them transparent, immutable, and tamper resistant. Once the code is deployed, it functions according to its predefined logie, and its outcomes cannot be changed or altered. This immutability ensures that the agreed-upon terms will be executed without any human errar or bias.

Smart contract limits

Some misconceptions about smart contracts suggest that smart contracts are only applicable to financial transactions while they can be used in various industries. It is anyway important to note that Smart contracts are not designed to replace tra-

ditional legal contracts, although they can complement them. Also the enforceability in traditional legal systems may vary depending on the jurisdiction.

They don't inherently provide privacy (data within a smart contract is public). The costs and speed of execution depend on the underlying blockchain network's scalability and transaction fees.

Smart contracts are often said to be automatic & self-executing, but that' s false: any operation carried out by a smart contract ultimately stems from a request made by an extemal user.

3. Key features of a smart contract

In order to fulfil their purpose, the following requirements are mandatory for a properly developer

smart contract:

- Smart contracts are code (a script or a program) written in a programming language.
- Smart contracts haven internal state. The state changes depending on the users' input and commands.
- Smart contract data can identify assets (tokens, cryptocurrency, NFTs etc). Those assets might be subject to a market and have economie value.
- Smart contracts can enforce ownership, identifying users and creating an ownership relation between users and assets.
- Smart contracts can own and transfer assets to other users or smart contracts.
- Smart contracts are immutable to ensure the rules of the agreement never change.
- Smart contracts are unstoppable. User operation requests cannot be caneeled nor stopped.
- Smart contracts are trustless, transparent and verifiable. No information should be hidden.

All those features are necessary since thesmart contract must act as a verifiable third party. In order to provide a trustless execution two more requirements, derive from the previous list:

- Smart contract must run on an immutable environment
- Smart contract must run on a trustless environment

From those we derive the conclusion that smart contracts must run in a specific

environment.

4. Defining the environment

The environment smart contracts run in is crucial to ensure all mandatory features are met. Consequently, we need to define the key aspects of this environment.

Transparency vs Trust

Trust, in the blockchain ecosystem, is considered a flaw, a vulnerability to be corrected. This refers to business and agreements only, situations where emotions, personal connections, or subjective judgments come into play are not in the scope.

Opacity creates opportunities for manipulation and abuse. Transparency minimizes the potential for manipulation and removes the need for trust by providing open, independent, autonomous, and easy verification of accessible and immutable information about the history of actors and their actions, removing uncertainty and allowing users to make informed decisions. When everything is subject to scrutiny, accountability increases as actors are held responsible for their actions, matters can be openly discussed, and actions and decisions can be questioned Smart contract aim to eradicate the need of trust by maximizing transparency

Byzantine fault tolerance

Byzantine fault tolerance (BFT) refers to a system's ability to withstand faults or malicious behavior from components within the system that are unreliable or behaving dishonestly. This is crucial for applications that require high levels of security, reliability, and integrity.

These algorithms aim to enable the system to keep functioning correctly, even if a subset of its components misbehave. The primary challenge is to reach consensus among the honest components, while detecting and mitigating the effects of faulty or malicious behavior. They typically use redundancy, replication and cryptographic techniques to achieve fault tolerance.

DLT vs Blockchain

The terms 'DLT' and 'Blockchain' are not synonyms, rather technologies that have different features.

DLT can be designed in different shapes and forms, might be p2p, open or private, usually do not use a BFT consensus (ex: RAFT) or a consensus at all (ex: Kafka), they have lower security standards and consequently cannot be used for

cryptocurrency or to manage valuable assets.

Proper Blockchain is a specific type of DLT that run on an open p2p network that uses cryptographic techniques to create an immutable chain ofblocks contain- ing a chronological sequence oftransaction records.

Public vs Private Blockchain

Another great misunderstanding concerns so-called "private blockchains". Private blockchain is a closed and restricted network where only selected entities or individuals have permission to participate. The lack of internal security requires access to be controlled and limited. Immutability cannot be demonstrated nor measured. The simplicity oftheir internal processes and restricted number ofactors make them efficient and scalable, but it is easy to demonstrate that any private blockchains are functionally equivalent to ordinary distributed databases.

Public blockchain is a permissionless, decentralized/distributed network where anyone can participate and validate transactions. They are transparent, immutable, censorship resistant and have high levels ofsecurity due to their distributed nature. Furthermore, public blockchains typically involve cryptocurrencies and incentivize participants through rewards.

Decentralized vs Distributed networks

Centralized, distributed and decentralized networks were first described by Paul Baran in his works in 1964.

In a centralized network a single node, called server, is connected to all the other nodes, called clients. Tue server is the single point of authority, data storage, truth, censorship but also as a single point of failure. A decentralized network doesn't have a single point ofcontrol, the authority is divided among a small subset ofnodes called servers. Servers connect between them, while clients can only con- nect to a server. This means that a network has many centralization points instead ofjust one.

In a distributed network, the control is spread among multiple nodes or entities. The network is designed to eliminate any centrai point of control. Any two nodes of the network, A and B, will find at least one path ofnode hops to connect each other in any moment and in any configuration. Each node operates independently, making its own decisions based on local information. Mesh networks and Peer-to- peer networks are examples ofdistributed networks.

The proper environment for smart contract

What derives from previous paragraphs is that proper smart contracts, in order to be thrustless, are code that should run in a public/permissionless blockchain with no hidden information. The blockchain should be decentralized (possibly distribut- ed), and reach agreement through a Byzantine fault tolerant consensus algorithm.

5. Practical smart contracts applications

Smart contract technology as defined so far and with all the required traits, allow for the creation ofsystems that never existed before and that can provide a wide range ofbenefits for society. Let's see two examples.

dApps: Distributed applications

A dApp, short for decentralized application, is an application that operates on a decentralized network, such as a blockchain. Properly designed dApps are transparent and resistant to censorship. dApps are less susceptible to hacking and unauthorized access since it becomes difficult to manipulate or compromise a decentralized system. The use ofblockchain eliminates the need for blind trust in intermediaries, as participants can verify actions and data for themselves.

Many dApps examples of dApps can be made, those range from supply chain management, public registries. Traditional Finance is looking closely at dApps and DeFi (Decentralized Finance) application have been developed in the last years

DAOs: Decentralized autonomous organizations

A DAO, which stands for Decentralized Autonomous Organization, is a type of organization thatoperates based on smart contracts and blockchain technology, aiming to eliminate the need fortraditional hierarchical management structures or intermediaries.DAOs can be defined as DePo (Decentralized Politics) dApps. Decision-making and govemance aredetermined collectively by its participants rather than a central authority. Rules are created through community consensus and then translated to code. Functions can include voting mechanisms, fund allocation, resource management, and dispute resolution. This results in transparency, accountability and reliability and inclusivity

DAOs have gained prominence in the cryptocurrency and blockchain communities, serving as a new way to organize and govem projects, investments, and various decentralized applications (DApps).

Politics and legislation did not ignore DAO's existence. The state legislatures in both Utah and New Hampshire have been simultaneously considering bills that would recognize DAOs as legal persons removing the need to wrap themselves in an existing corporate structure. On March 1, 2023 the state of Utah passed its DAO bill.

6. Present Government and PA issues with trust

In the last decades, countries all over the world have tested a growing feeling of suspicion against public administration and government. Interest groups manipu- late and shape public opinion for personal interest and politica! agendas. Fake news, misinformation and conspiracy theories got to a point where they can desta- bilize the rule of law. This undermines the democratic process and leads to the po- larization of society, weakening social cohesion and hindering effective decision- making.

To regain trust from public opinion, governments need to take proactive measures investing in robust and transparent communication strategies. Providing accurate information promptly and ensuring transparency in their decision-making processes, addressing rumors, clarifying misconceptions, and providing evidence- based information is key.

Transparency is the ultimate cure for loss of trust and can be achieved creating an environment where accurate information can thrive. Smart contracts and block- chain are the reference tools.

7. Smart contracts for PA and Government

By leveraging blockchain and smart contracts, governments can enhance transparency, improve
service delivery, reduce corruption, and streamline administrative operations.

Example : Transparency and auditing

Smart contracts can ensure transparency and immutability by allowing autonomous independent verification. All information in a blockchain and each interac- tion with a smart contract are public, digitally signed, time stamped, tamper proof, undeletable and immutable.

All this creates a significant obstacle to those who try to cheat. Blockchain cannot prevent actors from cheating or misbehaving, but those who do will record permanently their misconduct in public.

The transparency provided by smart contracts facilitates auditing processes, making it easier for institutions to demonstrate compliance with regulations. As an example, regular inspections of road, railroad, bridges and energy plants can be recorded in a blockchain to show that the specific company or person in charge is performing those inspections regularly, along with the results that emerge from the inspections and the planned future actions and maintenance.

Example : Public registries

Blockchain and smart contracts are perfect when it comes to storing and sharing public information like public registries. Blockchain can be used to create immutable and transparent land registries like those for land, housing, cars or pets, reducing corruption and fraud. Other advantages are prevention oftheft, abuse from individuals or from the authorities, tax evasion and many others.

Example : public voting system

In the event of votes that need to be cast in a public form (ie: the voters and their individua! votes must be public and known) blockchain can be used to store permanently the subject ofthe vote, those who had the chance to vote, who actually voted, each single vote and the times all the actions were performed. In this voting system all involved individuals can be held responsible for their decisions in the future.

Note: According to many security experts, neither blockchain nor any other electronic voting system is to be trusted in secret or private voting.

8. Conclusion

We explained the key characteristics of smart contracts and of the environment they must run in. From those we underlined the key features of smart contracts, namely transparency, accountability, verifiability, immutability and others. We see that those features can bring many benefits to society and we examined some examples conceming govemment and public administration.

As a conclusion, the multiple positive aspects need to be explored with the launch ofpilot projects as those might bring our societies in a more transparent fu-

ture we all collectively can benefit from.

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Disability and social inclusion: a perspective on the importance of equality and accessibility

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Abstract: Today's reflection aims to address the issue of disability and social inclusion, with an emphasis on the importance of promoting equality and participation for all people, regardless of their physical, cognitive or sensory abilities. Disability is an inherent human characteristic and, therefore, societies must strive to create inclusive environments that enable people with disabilities to enjoy the same rights and opportunities as individuals without disabilities.

Social inclusion involves the integration of people with disabilities into all aspects of social life, such as education, employment, health, culture and political participation. Its realization requires collective efforts by government institutions, civil society organizations and local communities to remove physical, communicative and social barriers that limit the participation of people with disabilities. Public policies must be geared toward social inclusion, ensuring the accessibility and adaptability of physical spaces, services and technologies. Education plays a crucial role in this process, as it can help create an inclusive school environment where students with disabilities can learn together with their peers without disabilities, fostering mutual understanding and respect for differences.

Social inclusion of people with disabilities is not only an ethical imperative, but also has numerous benefits for society as a whole. When people with disabilities are fully integrated into society, they have the opportunity to contribute significantly to economie progress, cultural diversity and innovation. In addition, social inclusion promotes the building of a more equitable and inclusive society in which basic human rights are guaranteed for all.

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In conclusion, social inclusion of people with disabilities requires a collective effort to remove barriers and promote equality. Only through an inclusive and inclusive approach can we create a society that respects and values human diversity, enabling all people, regardless of their abilities, to realize their full potential.

Keywords: inclusion, accessibility, equality.

1. The evolution of the role of accessibility in the path to social inclusion

The journey of framing the central role of accessibility for social inclusion cannot be determined by normative production alone but is the result of a transformative path that places attention to the person and his or her rights at the centre. Therefore, accessibility understood as access to services, places and relationships becomes, thanks to its transversality, the pivotal concept for a reflection on the evolution of our society that must set itself the goal of ensuring the protection of the rights of all. The ONU Convention on the Rights of Persons with Disabilities, identifies accessibility as one of the necessary conditions for promoting the inclusion of people with disabilities in society.

This perspective leads to a new key to understanding disability issues and shifts the focus from the person to his or her relationship with the context, which is often incapable of responding to the different needs of individuals. Indeed, Artide 1 of the Convention defines persons with disabilities as "those with a [...] substantial physical, mental, intellectual or sensory impairment whose interaction with various barriers may constitute an impediment to their full and effective participation in society on the basis of equality with others", thus emphasizing not only the importance of the person-environment relationship in the definition of disability, but above all the possibility of a condition in which all citizens can come to find themselves.

Determinant is the path of overcoming barriers that, by limiting participation in social life, deter mine discrimination and inequality of opportunity, hinder the relationship between people living in the same place aspiring to the full recognition

[1] Nazioni Unite. (2006). Convenzione sui diritti delle persone con disabilità. New York: Nazioni Unite.

of their differences. Indeed, the dictate of Artide 9 of the Convention requires states to "ensure access to the physicai environment, transportation, information and communication, induding information and communication technoiogy systems and other faciiities and services open or provided to the pubiic."

The comerstones ofthe Convention have been reflected in Itaiian legislation on the issue of accessibiiity for severai decades now, indeed in harmony with the principles of the Italian Consti tution, which in Artide 2 "recognizes and guarantees the inviolabie rights of man, both as an individuai and in the sociai formations where his personality takes place, and requires the fulfil ment of the mandatory duties ofpoiitical, economie and social solidarity," as well as to Artide 3 of the Constitution, in which the principles of formai and substantive equality are affirmed, have led institutions to work for the construction of inclusive contexts in which each individua!, regardless ofhis or her abilities, is the holder of indispensabie rights and fully participates in the sociai, culturai and productive life ofthe territory to which he or she belongs[2]. One thinks, for example, oflegislative interventions such as Itaiian Presidentiai Decree No. 503/96, borrowing from Italian Ministerial Decree No. 236/89, which defines architecturai barri ers as the "physical obstacles that are a source ofdiscomfort for anyone and in particular for those who, for whatever cause, have a reduced or impeded motor capacity...," a definition that unties the concept of architectural barrier from the condition of disability and defines for the first time the concept of the quality of space "visitabie" even by people with reduced motor capacity. So, iffor environmental and visibie barriers the iegisiator has provided timeiy legislation, it is necessary, on the other hand, to dwell on the analysis of intangible and invisible barriers, which differ in cuiturai and social character. Such intangibie barriers result in stigmatizing beliefs and attitudes that end up limiting or preventing interest in the condition of those who are different. Overcoming them is a very compiex path because the law, ifnot accompanied by a cultural evo lution, will hardly be able to act directly in the path of sociai inclusion ofthe disabied person. One speaks, in this regard, of "institutional discrimination"[3]referring to the fact that the norms, individually, faii to concreteiy affect sociai relations and initiate a culturai transformation, in the perspective ofinclusion.

[2] Legge 104/1992

[3] R. MEDEGHINI, E. VALTELLINA, Quale disabilità? Culture, modelli e processi di inclusione, FrancoAngeli, Milano 2006, p. 72.

In a society based on a broad concept of accessibility, which encompasses all the pillars of the Convention: from the right to inclusive education[4], to access to work as a tool that contributes to autonomy and independence[5], the issue of accessibility becomes the overriding goal of the inclu sive society that aims for greater social equity, as well as ensures freedom of movement and im proves quality of life. Autonomy of life translates into the ability to make decisions on fundamen tal aspects of one's existence: from place of residence, to people to live with, to education, to work, and lack of accessibility results in an inadeguate standard of living.

In this context, the perspective of social inclusion aims to not only intervene in the case at hand, but aims to change the context in arder to increase the capacity of the environment to promote the widest social participation by intervening in cultures to spread new paradigms based on the en gagement and appreciation of diversity, on the active participation of each and every person in the development of a more accessible, equitable, reflective and supportive society[6].

The concept of accessibility, understood in this way, has been found as early as the 1950s in the United States where the spread of Universal Design thinking, part of the idea that no two human beings are the same and, therefore, those who design urban development must take into account this irrepressible diversity.

Hence, one must design environments, goods and services that are accessible to all individuals: healthy people, the elderly, the disabled, pregnant women, children, to ensure that the user can enjoy the good freely, without the need for assistance and in safety[7]. This vision of accessibility is the basis of a profound cultural revolution, as it untethers accessibility from disability, prompt

ing different skills to collaborate to find accessibility solutions that can result in a more liveable environment for all.

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[4] Art. 24 Convenzione sui diritti delle persone con disabilità. Nazioni Unite. (2006). New York.

[5] Art. 27 Convenzione sui diritti delle persone con disabilità. Nazioni Unite. (2006). New

[6] M. STRIAÑO, "Introduzione. L'inclusione sociale come problema pedagogico e come emergenza educativa", in M. Striano (a cura di), Pratiche educative per l'inclusione sociale, FrancoAngeli, Milano 2010, p. 8

[7] A. MARRA, "Barriere architettoniche", in P. Grossi, E. Cheli, A. Falzea (a cura di), Enciclopedia del diritto, Vol. IV, Giuffré, Milano 2007, p.198.

2. Self-determination of the disabled person in modern society as the outcome of the process of equality and inclusion

Achieving the independent life of the disabled person is certainly the ultimate goal of the path of social indusion that the legislature has long been trying to pursue. Overcoming discrimination against people with disabilities is certainly not an immediate result, but, too many times, the legislature has fallen back on the mere and superficial promotion of the rights of people with disabilities, rather than working on guaranteeing the same rights[8].

The process of self-determination of the disabled person in society moves, first and foremost, from the dictate of Artide 19 of the UN Convention on the Rights of Persons with Disabilities insofar as in it we perceive the logica! reaction to established dynamics of exdusion and violation of rights[9]. Ensuring that individuals with disabilities can freely choose where to live becomes devoid of factuality and concreteness if measures and services are not provided together to rein farce this freely made choice of the disabled person.

It seems quite obvious that, if some services essential to guarantee the dignity of the person with disabilities, are not accessible or are accessible to a minimal extent, the consequence will be an inevitable, transition to the choice of public housing, with a substantial emptying of the meaning of the first paragraph of Artide 19. On the other hand, it is dear how the achievement of this end is the minimum condi- tion for a modem society to be able to say that it has, in its functioning mecha- nisms, substantial equality in the liability of spaces.

The right to independent living, understood as the right "to live in society, with the same freedom of choice as other people," comes to be a necessary prerequisite for the enjoyment of all other rights[10], and it is grasped how it is linked with the fundamental principles of our legal system, starting with that of equality, as out- lined in Artide 3 of the Constitution. Again, analysing Art. 19 of the UN Conven- tion, it can be seen that in outlining the right to independent living, on the one hand it emphasizes the dignity of the disabled person in the development of society

[8] Sul punto, è intervenuta anche la Corte Costituzionale con sentenza 215/1987.

[9] T. DEGENER, A New Human Rights Model of Disability, in V. DELLA FINA, R. CERA, G. PALMISANO (a cura di), The United Convention on the Rights of Persons with Disabilities, cit, pp. 41-59

[10] Sul punto G. ARCONZO, Il diritto alla vita indipendente delle persone con disabilità, A. MORELLI, L. TRUCCO (a cura di), Diritti e autonomie territoriali, Giappichelli, Torino, 2014, pp. 266 ss.

while, on the other hand, it intends to ensure inclusion within communities of reference.

The analysis of the right to independent living, based on Artide 19 of the UN Convention, should be linked with the provisions of Artide 26 of the Charter of Fundamental Rights of the European Union[11], where it states that "The Union recognizes and respects the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in the life of the community".

Ultimately, among the principles set forth in the UN Convention, it is important to emphasize that the definition of the right to independent living also includes many aspects that can be traced back to positive benefits from the state or public entities[12]. In Italy on the basis of the law n. 162/1998 and to 1. 328/2000, although different, have embraced the groove traced by Art. 19 of the UN Convention, try- ing to pursue a common goal, the desire "to allow people with disabilities to be able to independently decide the essential aspects of their lives."

The provisions just mentioned, moreover, call for the intervention of the regions and local author ities in the pursuit of the right to independent living and social inclusion, each within its own sphere of competence.

On this point, it is worth mentioning just a few of the regional regulations approved in recent years: Marche regional law nr. 21/2018 "Regional interventions to promote the independent living of persons with disabilities," Toscana regional law nr. 60/2017 (in particular, from Articles 9 and 10) or Piemonte regional law nr. 3/2019 (in particular, see Artide 6). Without any exhaustive character, it is clear that the current regulatory framework is not entirely sufficient to guarantee the right to independent living for the disabled person, despite the efforts that national and regional legislators have been pursuing for years.

Quite evident is that the path of social equality must pass, above all, through the schooling of children in order to break down the human and interpersonal barriers that limit the disabled per son's path to indusion. If social indusiveness is really to be sought, it would, perhaps, be appropriate to link the promotion to independent living of the disabled person to a regulatory sphere of urban and planning type, which obliges local authorities to link the above concepts to the regulatory paths of city planning.

[11] Carta dei diritti fondamentali dell'Unione Europea, Nizza 2000.
[12] A. PACE, Problematica delle libertà costituzionali, cit., pp. 141-152

In fact, if we dwell further on the provisions of Article 3 of the Italian constitution, it is evident how the will of the Constituent Assembly is to ensure something concrete, which goes beyond the abstract recognition of a right, a faculty, an aspiration. Indeed, the Constitution does not stop at the mere identification of duties that enable citizens to live in the community being able to count on egual dignity but demands that qualities and aptitudes achieve the expected results of equality. This, because only in this way can the self-determination and independent living of the disabled person be said to be achieved and, therefore, effective.

Therefore, only through work in pursuit of this end, as well as the elimination of what are, even today, the architectural and social barriers present, could it be said that the path to equality and inclusion is almost completely perfected. On the contrary, as can be seen from the analysis of today's society, the legal framework remains too theoretical and disconnected of application in urban and human development, thus failing in the intent of the Constituent to remove the obstacles that limit, in fact, the freedom and equality of citizens.

In conclusion, it is clear that the social inclusion of people with disabilities is fundamental to building a more just society that respects human diversity. Equality and accessibility are key elements in promoting social inclusion and ensuring that all people, regardless of ability, have the opportunity to participate fully in social, economie, and cultural life. Promoting social inclusion requires the commitment of all members of society so that every individua! can enjoy his or her basic rights and reach his or her full potential.

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Healthcare migrations: analysis of essential assistance level through a Gaussian mixture model

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Abstract: "Health migration", i.e. hospitalization in a hospital located in another region or in another country than that of residence, represents a phenomenon that has accompanied the extension of assistance to the entire population and the achievement of uniformity of services for all citizens. Healthcare migration is a complex phenomenon which, in Italy, involves a total of almost one and a half million people annually. Studies on interregional migration, obviously the most relevant phenomenon in terms quantitative and with significant repercussions on regional finances, are instead much more limited. Knowledge of the extent of the migratory phenomenon, its evolution aver the years, of the reasons that induce patients to request assistance in facilities outside those located in your area of residence, is important for scheduling purposes investments and services at national, regional and locai level. The purpose of this research is to provide a statistica! picture and social and economie assessments of the phenomenon of health migration to highlight the different problems that patients and their carers encounter within the numbers. In particular, in arder to highlight above all the territoriality of the Italian phenomenon, a cluster analysis was used by performing the Gaussian mixture model.

Keywords: health migration; health system; LEA; Gaussian mixture model; statistical approaches.

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1. Introduction

Migration is a fact of today's globalized world and increasingly a necessary component of economie and social development everywhere.

The social and economie inequalities that exist within and between all societies mean that the freedom to lead a prosperous life and enjoy good health is not equally distributed among different population groups. The territoriality of this phenomenon in the Italian regions is so important as to become a case study. Quality of services, access to experimental safety devices present only in some hospital centres and, finally yet importantly, a greater availability of beds, are fundamental aspects in the choices relating to medical treatments. Consequently, the migratory phenomenon becomes a fundamental and vital condition for reducing these imbalances.

Regions are likely to face problems related to healthcare and aging (as well as other socio-economie challenges) by adopting different measures and strategies that could lead to further differentiation of healthcare provision in the long time. In the short term, the essential levels of assistance/care (LEA) evaluation grid show how regional performance is progressing in three areas of the health sector (prevention, community health services and hospital care) at different speeds (Betti, De Tommaso, Maino, 2023).

Contrary to expectations, the North-South divide is not the only existing territorial gap. There are also strong differences between the regions of North-East, North-West and Central Italy.

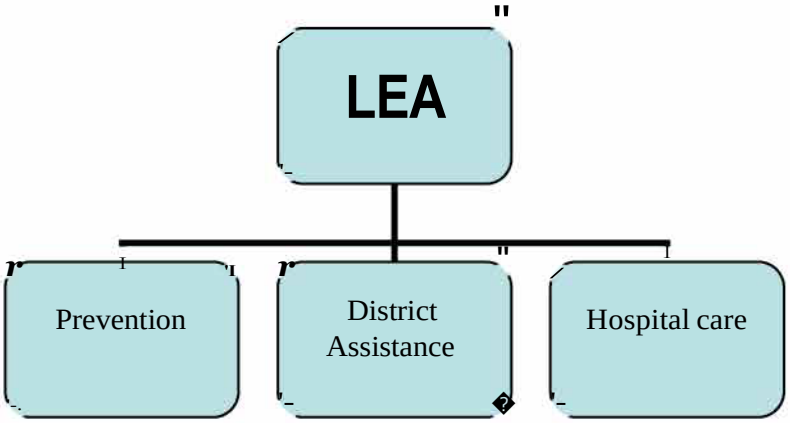
This article aims to analyse the phenomenon of healthcare migration starting from the analysis of three fundamental indexes: prevention, community health services, and hospital assistance. This article will discuss how migration itself is a determinant of health. To this end, it was necessary to use a Gaussian mixture model to better address and explain the phenomenon under analysis.

2. The essential levels of assistance Index

The essential levels of assistance (LEA) are the benefits and services that the National Health Service (SSN) is required to provide to all citizens, free of charge or upon payment of a participation fee (ticket), with public resources collected through the generai taxation (taxes).

In detail, the LEAs are based on the evaluation of different determinants divided into 3 domains. Below is the structure of the essential levels of assistance in Italy.

Figure 1. *The LEAs structure.*



As regards the domain "collective prevention and public health", which includes all the prevention activities aimed at communities and individuals, it is made up of the evaluation of the following parameters:

- surveillance, prevention and contro! of infectious and parasitic diseases, including vaccination programmes;
- protection of the health and safety of open and confined environments;
- surveillance, prevention and protection of health and safety in the workplace;
- animal health and urban veterinary hygiene;
- food safety - consumer health protection;
- surveillance and prevention of chronic diseases, including the promotion of healthy lifestyles and organized screening programmes;
- nutritional surveillance and prevention;
- medico-legal activities for public purposes.

In relation to the "District assistance" domain, i.e. the health and social health activities and services spread throughout the territory, the analysis parameters are as follows:

- basic health care;
- territorial health emergency;
- pharmaceutical assistance;
- supplementary assistance;
- specialist outpatient assistance;
- prosthetic assistance;
- thermal assistance;
- home and territorial social-health assistance;
- residential and semi-residential social and health care.

Finally, the analysis of hospital assistance is articulated through the evaluation

of the following activities:
emergency room;

- ordinary hospitalization for acute cases;
- day surgery;
- day hospital;
- post-acute rehabilitation and long-term care;
- transfusion activities;
- transplantation of cells, organs and tissues;
- poison contro! centres (CAV).

Bach of the parameters indicated in the evaluation of the individua! domains is calculated to be able to build a system of indicators suitable for the evaluation of the LEA at the regional level.

3. Methodology

A Gaussian mixture model (GMM) is a parametric probability density function represented as a weighted sum of Gaussians component density.GMMs are commonly used as a parametric model of the probability distribution of continuous measurements.

This model postulates that the overall population is actually made up of a number of subpopulations (the "clusters"), each with a different multivariate probability density function. By adopting this approach, the clustering problem becomes one of estimating the parameters of the assumed mixture, and then using the estimated parameters to calculate the (posterior) probabilities of cluster membership for each item. Furthermore, determining the number of clusters reduces to a model selection problem for which objective procedures exist.Finite model-based cluster analysis is also known as model-based clustering methods. In this work the parameters of the subpopulation densities are estimated with the maximum likelihood using the expectation-maximization (EM) algorithm.

3.1 The model

A Gaussian mixture model is a weighted sum of M component Gaussian densities as given by the equation,

$$p\,(x|\lambda) = \sum_{i=1}^{x} w_i\; g\,(x|\mu_i\,, \sum i)$$

where x is a D-dimensional continuous-valued data vector **(i.e.** measurement or features), W_i, **i**= 1, **…,** M, are the mixture weights, and $g(x|\mu_i, \sum_i)$, i= 1, **…,** M, are the component Gaussian densities. Bach component density is a D-variate

Gaussian function of the farm,

$$g(\mathbf{x}|\boldsymbol{\mu}_i, \boldsymbol{\Sigma}_i) = \frac{1}{(2\pi)^{D/2}|\Sigma_i|^{1/2}} \exp\left\{-\frac{1}{2}(\mathbf{x}-\boldsymbol{\mu}_i)'\ \Sigma_i^{-1}\ (\mathbf{x}-\boldsymbol{\mu}_i)\right\},$$

with mean vector µi and covariance matrix Li.The mixture weights satisfy the constraint that PM i= l Wi = 1. The mean vectors, covariance matrices and mixture weights from all component densities parameterize the complete Gaussian mixture model.These parameters are collectively represented by the notation,

$$\lambda = \{w_i,\ \boldsymbol{\mu}_i,\ \Sigma_i\} \qquad \text{i= 1, ... ,M.}$$

Given training vectors and a GMM configuration, we wish to estimate the parameters of the GMM, À, which in some sense best matches the distribution of the training feature vectors. There are several techniques available far estimating the parameters of a GMM. By far the most popular and well-established method is maximum likelihood (ML) estimation (Reynolds, 2009; Dempster et al., 1977). The aim of ML estimation is to find the model parameters, which maximize the likelihood of the GMM given the training data.Far a sequence of T training vectors X = {x1, ..., XT }, the GMM likelihood, assuming independence between the vectors, can be written as

$$\text{p(XI,\)} = \prod_{\text{t=l}}^{T} \text{p(xtlÀ).}$$

4. Application and results

Using data relating to the LEA parameters of 2021, we proceed to analyse and cluster the data relating to the three LEA domains, composed respectively by 8, 9 and 7 dimensionai indicators.

Starting from a descriptive analysis, it is possible to state that there are 7 Italian regions that in 2021 failed to fully guarantee essential care.This is the strongest datum that emerges from the preliminary analyses of the monitoring of the calculated essential levels of assistance.A better figure than 2020 when insufficiencies were present in 1O regions but in any case, also far 2021 the data was influenced by the pandemie.

Overall, in 2021 Piemonte, Lombardia, the Autonomous Province of Trento, Veneto, Friuli Venezia Giulia, Liguria, Emilia Romagna, Toscana, Umbria, Marche, Lazio, Abruzzo, Puglia and Basilicata recorded a score above 60 (thresholder of sufficiency in all macro areas.

The Regions with a score below the threshold in one or more macro-areas are: in a macro-area: Autonomous Province ofBolzano (Prevention), Molise (Hospital), Campania (District) and Sicily (Prevention); in two macro-areas: Sardegna (Dis- trict and Hospital); in all macro-areas: Valle d'Aosta and Calabria.

As per the methodology, some useful descriptive statistics were calculated: Pearson's linear correlation coefficients (the correlation font is scaled according to the size of the absolute correlation) and their significance level with confidence level a = 0.05; the main diagonal histograms and density graph; the main diagonal scatter plots and correlation ellipses. The calculated correlations show the relation- ships between the different dimensions ofthe 3 domains considered dimensions.

We proceed to group the 19 regions together with the two autonomous provinc- es of Trento and Bolzano using a model-based approach using Gaussian mixture models.

The clustering is computed via the Mclust package ofthe R statistical software.

The results show that, in the 3 domains, the regions are clearly divided into four clusters.

Figure 1. *Prevention dimensionai indices: clusters' composition ofregions.*

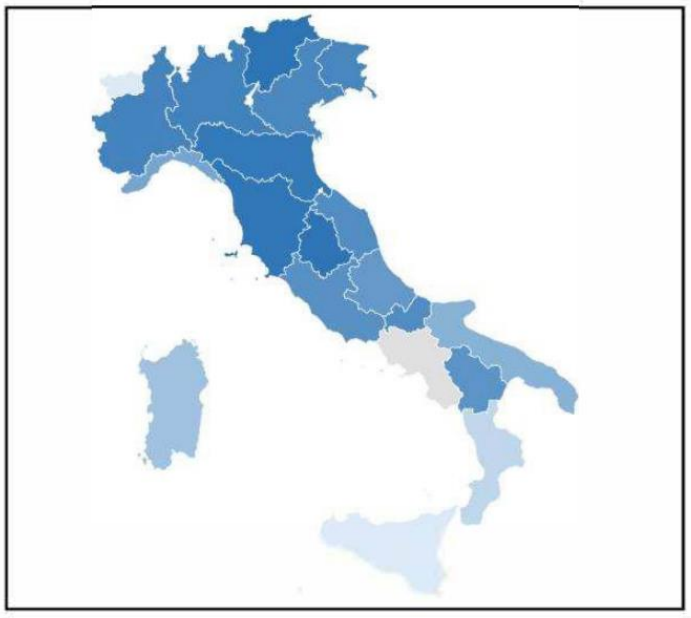


Figure 2. *District assistance dimensiona! indices: clusters' composition ofregions.*

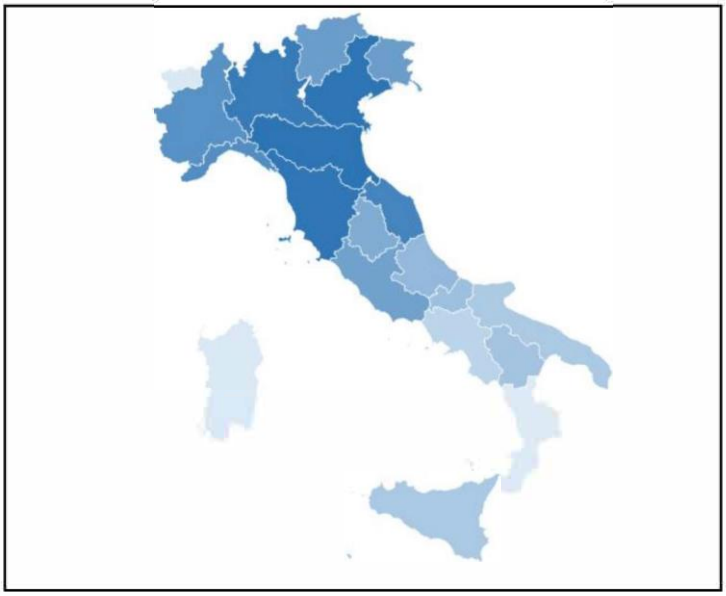
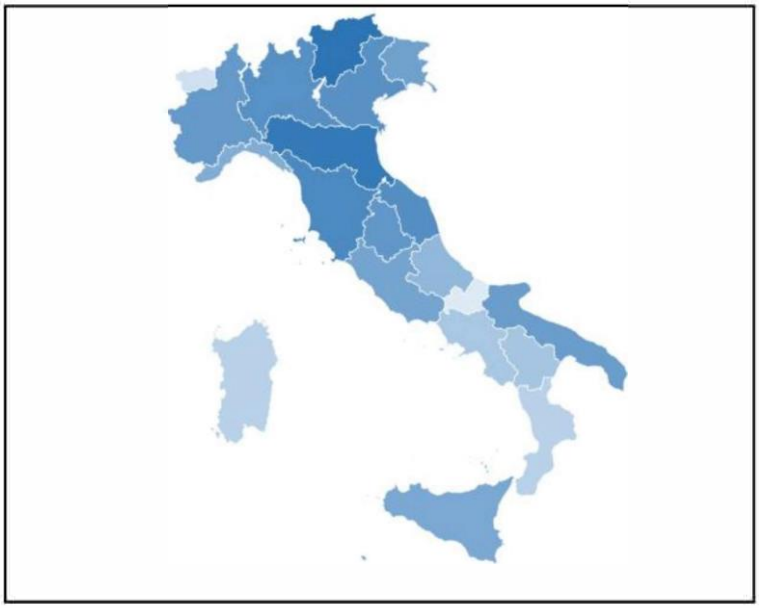


Figure 3. *Hospital care dimensiona! indices: clusters' composition ofregions.*



5. Conclusion

The analysis of the LEA aims to allow the comparison between the healthcare assistance procedures in the Italian regions, analysing them under 3 different do- mains. However, given the complexity of the phenomenon analysed, the classifica- tion using Gaussian blend model-based clustering allowed us to demonstrate the reading of the results and therefore a better comparison and evaluation of the per- formance of the regions considered.

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Globalization and ICTs capital endowment: How do they impact on an Inclusive Green Growth Index?

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Abstract. This study investigates the contribution of digital transformation and globalization to an inclusive and green economie growth. We construct an inclusive green growth index by leveraging 28 variables accounting for economie, environmental, and social performances. By exploiting a dataset of 95 countries and spanning from 2010 and 2020, we regress the inclusive green growth index [Jha, S., Sandhu, S. C., Wachirapunyanont, R., 2018] on variables capturing the investments in digital technologies and the degree of trade and capital openness. Findings show that while globalization is detrimental for an inclusive and sustainable growth, investments in digital technologies are beneficial. However, this latter evidence does not account for high-income countries.

Keywords: IGGI, Green Growth, Globalization, ICTs, Openness.

1. Introduction

Market openness and technological investments are key topics in the literature on

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economie growth and their role in bolstering economie performances has been widely investigated [Ades A. F., Glaeser E. L., 1999; Harrison A., 1996; Iamsiraroj S., Uluba et al., 2015; Niebel T., 2018]. However, the traditional economie models have not taken into consideration i) the capability of the earth to bear inten- sive use of resources at the cost of environmental catastrophes; and ii) the social dimension of the individuals being damaged by the fading of reference points in society pulled by mere economie goals. This study attempts to delve into the im- pact of investment in Information and Communication Technologies (ICTs) and globalization on an Inclusive Green Growth Index (IGGI), a new index that revises the composition of the Gross Domestic Product (GDP) index (based on "produc- tion-oriented measurement system") focusing on three pillars of economie efficien- cy, social equity (well-being) and environmental sustainability. In the literature, it is not clear whether globalized competition is helping to shape more inclusive and greener economie growth; moreover, it also appears that only a few studies address the relationship between technological progress in the form of digitalization and sustainable development [Del Rio Castro G., Gonz'alez Fem'andez M. C., Urubu- ru Colsa A., 2021; Caputo F., Del Giudice M., Papa, A., Scuotto, V., 2020]. For these reasons, this paper is the first one that investigates the impact of digitai tech- nologies and globalization on an inclusive green growth index accounting for sus- tainable growth. The aim of this paper is also to analyse two different measures of openness: Trade openness (calculated as the ratio between total foreign trade and the GDP) and Capitai openness (calculated as the ratio between the sum of Foreign Direct Investment both inflows and outflows and GDP).

2. The Balanced Inclusive Green Growth Index

Since the beginning of 1990, several measures have been built, aiming at complet- ing the GDP and limiting its supremacy, for instance: the Green Growth Index de- veloped by the UNESCAP in December 2013; the Quality of Growth Index devel- oped by Mlachila, Tapsoba, and Tapsoba in September 2014; the Inclusive Devel- opment Index developed by the WEF in January 2017; and the Green Growth Indi- cators developed by the GGKP in June 2017. However, the only one that gives an objective and comprehensive framework of the best country's well-being and that meets market needs is the balanced Inclusive Green Growth Index (IGGI) [Jha, S., Sandhu, S. C., Wachirapunyanont, R., 2018]. Developed by the United Nations Economie and Social Commission for Asia and the Pacific and the Organisation for

Economic Co-operation and Development, IGGI is focused on environmental sus- tainability and its relationship with economie growth. As reported in the Report "Inclusive green growth index- a new benchmark for quality of growth" [Jha, S., Sandhu, S. C., Wachirapunyanont, R., 2018], the IGGI:

• it is designed to help guide policymakers to make informed decisions on prior- itizing infrastructure investments and financial allocations to obtain a better quality of growth.

• it is aligned with the central principle of the SDGs to "leave no one behind".

• it meets Governments and their development partners' necessity of a new met- ric to comprehensively measure and monitor progress on achieving the develop- ment agendas defined in intemational agreements. The IGGI is composed of 28 variables related to three pillars: economie growth (sustaining powerful growth and openness), social equity (supporting human capital development, social inclusion, and reducing inequality) and environmental sustainability (limiting environmental degradation and the impacts of climate change). The IGGI is constructed by using the normalization techniques (min-max approach) to transform all the indicators of the three pillars into the same scale of scores from 1 (worst) to 6 (best); the formula is:

IGGI = 1/3 (average economie pillar)+ 1/3 (average equity pillar)+ 1/3 (average environmental pillar)

3. Sustainable development and globalization

Globalization has led worldwide economies to unprecedented expansion and inter- connection that has taken place in a few decades. This far-reaching evolutionary process has relied upon increasing-ly resource use that has accelerated the raise of sustainability issues. Negative impact of globalization on global environments is argued by Deere Birkbeck [Deere Birkbeck C., 2021] who states that it is a phe- nomenon that fuels unsustainable practices bolstered by economie players seeking for profits and neglecting social and environmental aspects. In addition, Huang and Duan [Huang Z., Duan H., 2020] prove that there is a relationship among globali- zation, inequalities, and environmental performance. It bounds globalization with inequalities in a way that the former is a driver for the latter. In tum, as inequalities rise, environmental degradation follows the same trend. Building upon this reasoning, the first research hypothesis we have formulated is:

Hl: Globalization, as known and experienced in the last decade, negatively impact on the IGGI.

4. Digital technology and sustainability

The concept of digita! transformation, developed after the industriai revolution, means that human behav iours, spatial and time distances, may be replaced with digital devices connected to each other thanks to the deluge ofICTs tools. However, the progress toward an advanced technological society and related eco nomic systems is challenged by the impact that this metamorphosis returns on both natural and societal environments, in terms ofmore pollution (CO2 emissions), degrada- tion or social changes in education, employment, etc. Thus, this article raises also the following research hypotheses:

H2: The level oftechnology endowment plays a significant role in determining the sustainability performance in the three economie, environmental, and social performance.

H3: The impact oftechnology endowment on the IGGI is positive.

5. Data

Yearly data aver the period 2010-2020 are used. Data are taken for 95 world countries, which are categorised more specifically by incarne (using the "Atlas method" incarne classification). Data were collected from the World Bank and Total Economy Database (TED) databases [De Vrie K., Erumban, A. A., 2017]. The IGGI is the dependent variable and it uses World Bank (WB) and Our World in Data- Global CarbonProject [Ritchie H., Roser M., Rosado P., 2020] databases. Table 1 below provides evidence ofboth the variable source and descriptive statistics with- out any transformation.

Variable	Description	Source	Mean	Std. Dev	Min
IGGI	Balanced Inclusive Green Growth Index	WB	3.274896	.2212636	2.77802
Capital Openness$_{i,t}$	The sum of Foreign Direct Investment, net inflows and Foreign Direct Investment, net outflows in % of GDP	WB	9.25e+08	9.91e+09	-82.981
Trade Openness$_{i,t}$	The ratio of Exports of goods and services and Imports of goods and services in % of GDP	WB	90.37569	58.08144	20.7223
ICT cap compens. in GDP$_{i,t}$	Share of ICT Capital Compensation in GDP	TED	2.780362	1.483745	.098
nICT cap compens. in GDP$_{i,t}$	Share of Non-ICT Capital Compensation in GDP	TED	47.5293	9.780124	20.601
Internet servet$_{i,t}$	The number of distinct, publicly-trusted TLS/SSL certificates found in the Netcraft Secure Server Survey	WB	247442.2	2100335	2
Lab. quantity contr$_{i,t}$	Contribution of Labor Quantity to GDP growth	TED	1990573	2.099643	-16.064
Lab. quality contr$_{i,t}$	Contribution of Labor Quality to GDP growth	TED	.3076255	.4668544	-5.662
Population growth$_{i,t}$	Population growth (annual %)	WB	1.110611	1.439298	-2.2584

Table 1- Source, variable description and descriptive statistics

6. Econometrie method

Our model reads as follows:

$$IGGL_t = P_o + P1CapitalOpennessit + Pz\ TradeOpennessit + p3\ ICTcapcompens.inGDPit + p4\ nonICTcapcompens.inGDPit + PiXi,it + 'tt + €it$$

where po is the intercept; p1 and p2 are the coefficients weighing the impact of capital and trade openness, respectively; P3 is the coefficient weighing the impact of ICTs endowment on the IGGI, and p4 weighs the impact of the non-ICTs capital on IGGI. Finally, pj (with j#) is the set of parameters capturing the impact of con- trols, that are Internet serven1, Labour quantityit, Labour qualityi1, and Population growthit. The time fixed effects are captured by i-1. The i and t subscripts denote the sectional and time dimensions, respectively. While € is the error term of the model. Moreover, preliminary diagnostic tests were conducted to address the estimation of the slope coefficients. We used the Lagrange-Multiplier test, the Modified Wald test, the Breuch-Pagan Lagrange-Multiplier and the Hausman test.

7. Results

The main results are reported in Table 2. We run panel estimators made of a balanced panel build on 95 countries and spanning from 2010 to 2020. For each estimator (POLS, FE, RE), we run it without and with control variables. By reading the results of the B-P LM test, we note that a panel effect exists, thus we turn to

check the results of the Hausman test which leads to consider the RE estimator the efficient and consistent one since the null hypothesis is not rejected. This means that we comment the results of RE estimator, with the awareness that the results obtained from FE estimator are the same at least in the sign of the slope coefficient. We first draw the attention to the model without controls, which shows that the variables proxying the market openness, that are capital and trade openness, are significant with low negative impact of capital on IGGI (-6.38e-13), and positive impact of trade openness on IGGI (0.0003). For capital openness the sign is confirmed also with POLS and FE estimators, while for trade openness it is confirmed only by FE estimator. As regards the role of technological endowment proxied by ICT capital compensation in GDP, the coefficient is positive and strongly significant (0.0134), this evidence being confirmed in sign and magnitude also by POLS and FE estimators. Importantly, while we note that IGGI does not significantly react to the variation of the other capital indicated by nonICT cap. compensation in GDP, the presence of internet server has negative impact on IGGI with all the three estimators, but non-significant for the RE one. Similarly, when we add the controls, the only difference in the main variables is that capital openness misses the significance, although it maintains the sign and magnitude. With regards to the controls, it is worth noting that to enhance the performance of the IGGI, it should be paid more attention to the quality of the labour force that has positive and significant coefficient, instead of the quantity that shows a negative and significant slope.

Variable	POLS		FE		
Capital Openness$_{i,t}$	-1.13e-12***	-3.27e-13*	-6.72e-13***	-5.25e-13***	-6.38e-1
	(1.91e-13)	(1.80e-13)	(8.63e-14)	(9.33e-14)	(3.49e-1
Trade Openness$_{i,t}$	-0.0010***	-0.0009***	0.0005	0.0006*	0.0003*
	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0001
ICT cap compens. in GDP$_{i,t}$	0.0099*	0.0117***	0.0137*	0.0140*	0.0136*
	(0.0055)	(0.0049)	(0.0072)	(0.0071)	(0.0034
nICT cap compens. in GDP$_{i,t}$	0.0020**	-0.0009	0.0002	0.0002	0.0005
	(0.0008)	(0.0008)	(0.0013)	(0.0013)	(0.0007
Internet server$_{i,t}$	-1.02e-08***	-1.05e-08***	-1.06e-09**	-1.06e-09**	-1.10e-0
	(3.31e-09)	(2.92e-09)	(4.27e-10)	(4.22e-10)	(8.80e-1
Lab. quantity contr$_{i,t}$		0.0039**		-0.0014**	
		(0.0019)		(0.0006)	
Lab. quality contr$_{i,t}$		0.0056		0.0045***	
		(0.0073)		(0.0018)	
Population growth$_{i,t}$		0.062***		0.0047*	
		(0.0071)		(0.0025)	
cons	3.208***	3.2577***	3.1439***	3.130***	3.154**
	(0.0492)	(0.0327)	(0.0622)	(0.0608)	(0.0432
N	1,045	1,045	1,045	1,045	1,045
R^2	0.11	0.27	0.41	0.43	0.41
Time dummies	✓	✓	✓	✓	✓
B-P LM test	0.000	0.000	-	-	0.000
Hausman test	-	-	0.193	0.880	0.193
p-value	0.000	0.000	0.000	0.000	0.000

Table 2 – Main results – Dep. Var. IGGI, full sample of 95 countries and timeframe spanning from 2010 to 2020

•••, •• and • refer to significance level at 1%, 5% and 10% respectively. Standard error in parentheses

8. Robustness checks

To strengthen the results, we made some changes in the model and run the RE estimator over the whole sample. We carry out three robustness tests: IV estimator for addressing potential endogeneity ofthe explanatory variables; added a control capturing the effect ofICT capitai service; lagged explanatory variables to check for any possible impact on the IGGI caused by past dynamics ofthe regressors. Results are shown in Table 3.

Variable	IV(lag. ICT instrum.)		contr. for ICT cap. service	
Capital Openness$_{i,t}$	-5.62e-13*	-4.68e-13	-5.62e-13*	-4.59e-13
	(3.28e-13)	(3.33e-13)	(3.46e-13)	(3.49e-13)
Trade Openness$_{i,t}$	0.0002	0.0002	0.0003**	0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
ICT cap compens. in GDP$_{i,t}$	0.0160***	0.0144***	0.0157***	0.0152***
	(0.0052)	(0.0052)	(0.0035)	(0.0035)
nICT cap compens. in GDP$_{i,t}$	0.0001	-0.00004	0.0007	0.0006
	(0.0007)	(0.0007)	(0.0007)	(0.0007)
ICT cap service$_{i,t}$			-0.0018***	-0.0009***
			(0.0003)	(0.0003)
nICT cap service in GDP$_{i,t}$			-0.0018	-0.0017
			(0.0013)	(0.0013)
Internet server$_{i,t}$	-1.20e-09	-1.28e-09*	-1.03e-09	-1.09e-09
	(7.88e-10)	(7.96e-10)	(8.74e-10)	(8.78e-10)
Lab. quantity contr$_{i,t}$		-0.0008*		-0.0009
		(0.0019)		(0.0005)
Lab. quality contr$_{i,t}$		0.0034**		0.0040**
		(0.0014)		(0.0016)
Population growth$_{i,t}$		0.066***		0.0065***
		(0.0021)		(0.0023)
cons	3.1746***	3.1822***	3.1589***	3.148***
	(0.0454)	(0.0441)	(0.0430)	(0.0421)
N	950	950	1,045	1,045
R^2	0.48	0.49	0.43	0.44
Time dummies	✓	✓	✓	✓
B-P LM test	0.000	0.000	0.000	0.000
Hausman test	RE	RE	RE	RE
p-value	0.000	0.000	0.000	0.000

Table 3 - Results from robustness test Dep. Var. IGGI, full sample of 95 countries and time frame spanning from 2010 to 2020

	lagged ind. vars	
Capital Openness$_{i,t-1}$	-5.41e-13*	-3.84e-13
	(3.46e-13)	(3.49e-13)
Trade Openness$_{i,t-1}$	0.0001	0.0001
	(0.0001)	(0.0001)
ICT cap compens. in GDP$_{i,t-1}$	0.0113***	0.0109***
	(0.0032)	(0.0071)
nICT cap compens. in GDP$_{i,t-1}$	0.0017**	0.0016**
	(0.0007)	(0.0013)
Internet server$_{i,t-1}$	-6.67e-10	-7.37e-10
	(1.05e-0)	(1.05e-09)
Lab. quantity contr$_{i,t-1}$		-0.0014**
		(0.0006)
Lab. quality contr$_{i,t-1}$		0.0031**
		(0.0015)
Population growth$_{i,t-1}$		0.0090***
		(0.0023)
cons	3.2368***	3.2246***
	(0.0787)	(0.0774)
N	950	950
R^2	0.49	0.48
Time dummies	✓	✓
B-P LM test	0.000	0.000
Hausman test	RE	RE
p-value	0.000	0.000

***, ** and * refer to significance level at 1%, 5% and 10%, respectively.
Standard error in parentheses.

Table 3a - Results from robustness test Dep. Var. IGGI, full sample of 95 countries and time frame spanning from 2010 to 2020

•••, •• and • refer to significance level at 1%, 5% and 10% respectively Standard error in parentheses

IV estimator - We used the first lag of the explanatory variable ICT investment as an instrument to address the possible correlation between regressor and the error term. Notably, the slope coefficients, both without and with controls (second column) show a weak significant and negative impact of the capital openness, while confirming the negative and significant impact of the presence of internet server. For the other controls, we see that the labour contribution is both significant in quantity and quality, but showing negative and positive impact, respectively.

Controlling for ICT capital service - A further check is run with adding the variables ICT and nonICT capitai services, proxying the contribution of the services around the ICTs and nonICTs assets to the IGGI performance. Results reported in column with controls, provide evidence of positive and significant contribution of trade openness (0.0003), ICT investments (0.0152), and negative impact of ICT

capital service. As regards the other controls, we see that, again, the positive and significant con tribution ofthe labour quality is confirmed.

Lagged independent variables - A further check is conducted assuming that the current dynamics ofIGGI is due to past dynamics ofthe independent variables. By focusing on the column reporting the estimates with controls, we note that there is no significant evidence for the openness both in capital and trade flows, while being confirmed with a positive and significant impact on the contribution ofICT investments (0.0109) which shows stronger impact than other capitai contribution (0.0016). Tue variation brought by the controlling variables of labour contribution supports the positive elasticity oflabour quality (0.0031) and negative when taken in quantity (-0.0014).

9. Discussion and policy implications

From the overall results, we surmise that, different from the current literature that mostly treats separately the multiple dimensions ofsustainability as outcome variables (e.g., growth models, Kuznets curve, IPAT model, etc.), the impact on an index, the IGGI, summarising these dimensions is more complex to achieve. There is some evidence that market openness is weakly beneficia! to bolster the three dimensions ofsustainability with the only small contribution oftrade openness. This is in contrast with the hypothesis Hl that we posited it would impact negatively. This result stems from the fact that the IGGI is an overall result that smooths the effect of each single sustainability goal. It means that at country level, there are specific territorial socio-economie features that gain benefits from global markets, and others that worsen their qual ity. In other words, it is that an improvement of sustainability in one ofits three dimensions within the IGGI, thus bringing benefits to those seeking such kind ofperformance, is to be detrimental for the groups looking for other goals.

As regards the investment in ICTs, we argue that there it is a relevant driver to accomplish the multiple dimensions of sustainability; the overall results witness that it gives a positive contribution to the IGGI but at an advanced stage ofsustainability development, changes in the quality oftechnology endowment are needed. Thus, we recommend calibrating the composition and destination of technological investments since the beginning ofthe growth process.

Beside this, it is worth mentioning that while the ICT endowment has positive payoff on IGGI, the services to make use ofICTs related technologies have nega-

tive and significant impact on IGGI, this suggesting that the way this complementary endowment is outlined and applied to territories is currently unsustainable. A further finding that deserves to be underscored concems the contribution to the IGGI of the control variable that proxies the labour quality. Indeed, there is sharp evidence its contribution is significant and positive. This, there is a need to bolster educational paths enhancing the worker's ability over the number of hours that the same worker spends at work.

To summarise, the overall evidence and results interpretation leads to deduce that there are several drivers to be triggered to accomplish sustainable outcomes as conceived with the IGGI: i) global markets are to be addressed and reshaped towards paths that account for the multiple dimensions of sustainability; ii) ICTs investments should take place more than in other capitals, this, however, to be carefully addressed in the purpose and use to be made of the technologies; iii) ICT related services should step forward towards more sustainable solutions to avoid that the benefits gained from ICT investments come to be eroded by linked services; iv) investments in skill development and, more in general, in education are recommended.

10. Conclusions

The present study analysed the impact of global markets (proxied by capital and trade openness), and ICT capital investments on a growth indicator accounting for the three economie, environmental, and social dimensions of sustainability. This is relevant to understand how the baseline social and economie conditions of current developments driven by global market and ICT related technologies fast progress, push the main sustainable goals envisaged in many policymaker agendas. From prior studies, we know that there are contrasting results based on the outcome variable employed: positive economie retums, negative environmental retums, unclear social retums. This study provides overall evidence since there is not sustainable goal achieved if one of the three dimensions is overlooked.

Results suggest that globalization has weak impact only with the trade dimension and mostly in not advanced economies, ICTs capital endowment is a relevant driver to support the overall sustainability. A further insight raises with focusing on the controls, where the labour quality contribution seems to be a good driver for the IGGI. Limitations of this study are to be sought in the fact that we do not distinguish the IGGI in the long and short run impacts, this due to the short length of the

panel data time extension for the reason that by using a lots of variables to con- struct the IGGI, we found that many series have this shortness. Another shortcom- ing is about making a distinction between ICT investments targeting green/social and non-green/social purposes.

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Students attitude towards online learning during Covid-19

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Abstract: In response to the COVID-19 pandemie, tertiary education institutions worldwide underwent a significant shift towards online leaming. The abrupt and mandatory adoption of this new instructional methodology compelled universities to swiftly adapt and enhance their digitai platforms to meet the novel demands. Similarly, educators were compelled to modify their teaching methods to align with the potentials and con straints of the online medium. The students, who were the ultimate recipients of this profound transfor mation had to swiftly adapt to the new teaching methodology, encountering numerous difficulties, chal lenges, and opportunities, in a complex emotional context. This research investigates the perceptions of students at the University of Foggia regarding the implemen tation of online leaming during Covid-19 and the factors influencing their attitude. Tue study involves several aspects, including students' views on the university's implementation of online course delivery, their thoughts on the future of online leaming, the emotional effects of attending courses through this methodol ogy, their attitude, and perspectives. A significant portion of the university's student population participated in the research by completing the provided questionnaire. The findings of the study indicate that students, in generai, exhibit a positive attitude towards online leaming, although a blended leaming approach is pre ferred by the majority. However, it is imperative to acknowledge that various underlying and overt factors play a substantial role in shaping this attitude.
By analyzing different participant groups using observable and latent variables, notable variations emerge, emphasizing the necessity for more intricate and

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integrated approaches to cater to diverse leaming needs and effectively address the full potential of online leaming.

Keywords: covid-19, attitude, students' perception, online leaming.

1. Introduction

The COVID-19 pandemie has resulted in a global health crisis, compelling higher education institutions worldwide to shift to online course delivery during Spring 2020 [Ali W, 2020; Daniel J, 2020; Murphy, M.P, 2020; Olasile Babatunde Adedoyin Emrah Soykan, 2023]. Governments worldwide have implemented measures to limit contact between individuals and control infection transmission to combat COVID-19 [Cao W., et al., 2020; Huang R., et al, 2020]. In response, universities have endeavoured to safeguard the well-being of all education stakeholders, including students, staff, and faculty members, and maintain a safe and healthy leaming environment [Cao W., et al., 2020; Huang R., et al, 2020]. Many universities swiftly transitioned to remote leaming, offering classes online [Ali W, 2020, Huang R., et al, 2020]. Some institutions adopted asynchronous classes, enabling students to complete assignments and lectures at their own pace [Hodges C.B., Moore S., Lockee B.B., Trust T., Bond M.A, 2020].

Others adopted synchronous leaming, which involves real-time interaction at specific times through designated platforms. Italy also embraced online leaming, extending it to Fall 2020 and Spring 2021 [Baber H, 2021; Murphy M..P, 2020]. However, students have voiced con- cems about stress and challenges associated with online leaming compared to tra- ditional physical classroom settings [Farooqui S, 2020]. Understanding students' difficulties and preferences can aid universities in devising strategies to support them during potential future waves of COVID-19 or other emergency scenarios requiring a rap- id transition to remote learning.

Consequently, many r esearch studies have focused on exploring perceived leaming outcomes and student satisfaction within this new online leaming environment [Aguilera-Hermida A.P, 2020; Baber H, 2021]. To comprehensively understand the pandemic's impact on the student community, a joint effort by the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR) and the European Association for Quality Assurance in Higher Education (ENQA) led to the development of a survey. This survey

aimed to analyse the didactic experiences of Italian universities during the COVID-19 health emergency, providing valuable insights for formulating post-pandemie strategies.

This research focuses on the University of Foggia, a relatively young institution in Southem Italy, with approximately 11,000 students across six departments. In particular, we analyse the data collected through questionnaire administered by the University of Foggia, following the guidelines received from ANVUR and ENQA. The distribution of the questionnaire was executed through various communication avenues including electronic mail, messaging platforms, and interpersonal exchanges, commencing from April 1, 2021, and concluding on April 19, 2021.

The survey instrument employed in this investigation comprises a total of ten inquiries, which inquire about perceptions conceming the experience of online leaming during the COVID-19 pandemie. These inquiries are distinguished by the "Q" identifier. Additionally, the questionnaire encompasses a supplementary series of queries focusing on student-related demographic information. Among the stipulated questions, specifically Ql, Q3, Q4, Q5, Q6, Q7, Q9, and QlO, an affirmative syntactical structure is adopted, signifying that a heightened level of agreement in respondent answers corresponds to positive outcomes. These questions are denoted as "positive" in nature. Conversely, another subset of questions, namely Q2 and Q8, is framed with a negative syntactical structure, where a substantial concurrence of responses denotes negative outcomes. This subset is categorized as "negative" questions. For a descriptive and psychometric analysis of the questionary results is possible to consult del Gobbo et al. [9].

2. Methodology and Results

In conducting the analysis, ordered variable models were employed, tailored to accommodate the nature of the data, with its application executed through the R programming environment [R Core Team], facilitated by the MIRT [Chalmers R.P., 2007] and LAVAAN [Rosseel Y, 2012] libraries.

For the purpose of scrutinizing the underlying structure of the questionnaire items pertaining to perceptions of online leaming (referred to as the "Q" questions), an initial exploratory step was undertaken. In this phase, a graded response model was utilized [Béguin A.A., Glas C.A.W, 2001] to ascertain the scale structure of the Q questions. During this analysis, the number of latent factors was systemati- cally varied from 1 to 3. Detailed ANOVA results of the resultant models are pre-

sented in Table 1, offering insights the fitting for different number offactors.

l\fodel	AIC	SABIC	HQ	BIC	logLik	*XI*	df	p-value
1 factor	62190_04	62305-38	62277-3	62432-5	-3!055	*NA*	-	
2 factors	61397_17	6153&_G3	61503.6	61693_7	-30650	811-229	9	*0*
3 factors	61368_68	6153253	61492_5	61713_7	-30627	44-489	8	*o*

Table 1. ANOVA for the explorative analysis with all the items, changing the number of latent factors

The findings yielded an optimal model selection based on the Bayesian Information Criterion (BIC), wherein the 2-factor model demonstrated the lowest BIC value. Furthermore, upon the inclusion ofall ten questions, the analysis highlighted that Q4 (Do you believe that listening to the lessons recording on the e-learning platform are useful for the purpose of studying and learning the concepts explained?) was singled out by the 3-factor model as an isolated factor. Contrarily, Q7 (Are you overall satisfied with how the online or blended teaching was carried out for the courses ofyour degree course?) consistently exhibited loadings on both factors within the 2-factor model. Consequently, the decision was made to exclude these items from subsequent analyses.

In Table 2, the ANOVA results ofmodels considering only eight questions are displayed. Within this context, the 2-factor models exhibited superior performance across all indicators. This selected model structure is characterized by coherence in its interpretation of the underlying factors. This analytical progression, involving the discerning exclusion ofcertain items and sub- sequent refinement ofthe model, contributes to enhancing the robustness and inter- pretability ofthe study's outcomes.

Model	AIC	SABIC	HQ	BIC	logLik	X2	df	p-value
I factor	54193_5 i	54285_4 9	54263_0 0	54387_1 7	-27064_7 5	- -A N	- N A	
2 factors	"3532_7 9	"3644_!3 9	"3617-4 9	"3768_8 ₃	-₂6727.3 9	674_71 8	7	O
3 factors	53536_1 ì	53665-4 6	53633_8 4	53808_4 5	-2672.3_0 5	8_680	6	0_192

Table 2. ANOVA for the explorative analysis with items Q4 and Q7 removed, changing the number of latent factors. The correlation among the factors in the model 2 factors is 0.61.

Presented in Table 3 are the outcomes derived from the graded response model incorporating two latent factors. The analysis delineates the loading pattems of individual questions within the model. Specifically, Ql, Q2, Q5, and Q6 demonstrated substantial loadings on Factor Fl, which can be conceptualized as the factor encompassing satisfaction with the e-learning platform employed. Conversely, Q3, Q8, Q9, and QlO exhibited notable loadings on Factor F2, reflective ofthe satisfaction associated with e-learning as a pedagogical approach. It is imperative to acknowledge that questions characterized by negative loadings signify inquiries formulated in an inverted manner.

Item	Question	Fl	F2	b2
Ql	Do you think the e-leaming pfatfonn is easy to use?	0_706		0.478
QS	Did the teachers mostly manage with ease the tool splatform used for remote leaming?	0.697		o_{2}-44
Q6	Did the equipm<ilt (compmers, tablet.s, smartphones) and the internet oonnectio11 available to you allow you to enjoy in a satisfactory \Vay (audio, video, interactjvity) the activities ofthe remote learning courses?	0.500		0.351
Q2	Have you struggled to find the t.eaching materiai (textbooks, handouts, slides, etc.)?	-0.66 8		0.397
QS	Did the lessons in online mode improve your time management?		0.841	0.720
Q9	Do you think that remote Leaming eases the comnmnication \·vith the teachee, sinc:.e you can expcess your opinions- without the embarras-sment of publìc spealring and or the fear ofbeing judged?		0.774	O_{2}-32
Q3	\Vith remote learning, has your class anendance increased (sync:hronous and or asynchronous)?		0.1544	O_{2}-01
QIO	Do you think that remote leaming negatively affects your emotional state (anxiety, stress, s=e of i.solation and loneliness, etc_)?		-0.75 2	0.590

Table 3. ANOVA for the explorative analysis with items Q4 and Q7 removed, changing the number of latent factors.

Subsequently, a Structural Equation Model (SEM) [Bollen K.A., 1989], has been undertaken to perform a confirmatory analysis in light of the outcomes established through the exploratory phase. This approach also encompassed the incorporation of covariates, as indicated in Table 4, to gauge the impact of additional variables on the defined latent factors. Tue outcomes of this analysis are visually represented in Figure 1, which delineates the interrelationships between factors, items, and covariates. Only regression coefficients and loadings with a significatively of 5% are represented.

Of particular significance among the findings is the influence related to covariate X3, signifying students who encountered challenges with the e-learning plat- form during examinations. This covariate exhibits an adverse association with Factor Fl, which pertains to the experience involving the e-learning platform, and with Factor F2, corresponding to e-learning as a pedagogical approach.

Notably, a distinct relationship was noted for the covariate associated with students residing be- yond the university town (X4.1 and X4.2), showcasing a positive correlation with Factor F2, while not affecting Factor Fl.

The utilization of the SEM framework, in conjunction with the inclusion of co-variates, facilitated a more comprehensive evaluation of the intricate interplay among latent factors and additional variables, thereby enhancing the depth and precision of the analysis.

Baseline	Cov.ld	Description
	Xl	Student had no exclusive acoess to a tablet or PC at home
Studrmr nor ìn the firstyen.r ofth.iir academic f912'J.§r	**X2.1**	Student enrolleò at first year ofthe bach.elo1 degree or unique cycle degree
	X2.2	Studen1 enrolleò at s.econd year in a bachelor or unique cycle degrne
	X3	Student faced iss.ue.s with the e-leaming platform during exams
Student lMng in Foggia	**X4.l**	Student lìving in a piace al less tban [redacted] Foggia
	X4.2	Student living in a piace al more than [redacted] Foggia
Student had an exclustve spacew atumd lectures	**XS.l**	Student had a shared space to attend online lecture.s
	X5.2	Student had no specific space to attend online lectures

Table 4. ANOVA for the explorative analysis with items Q4 and Q7 removed, changing the number of latent factors.

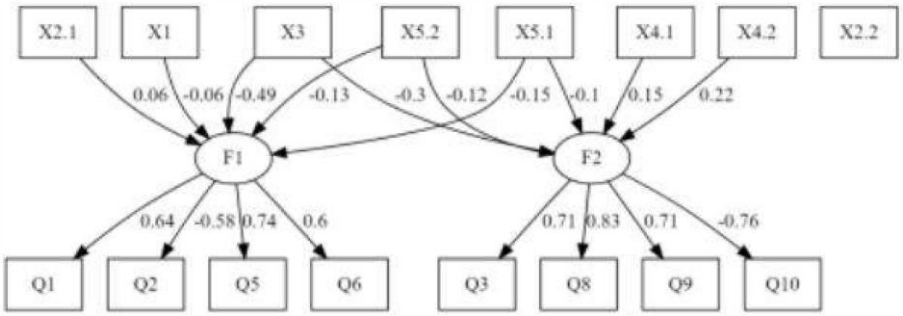

Figure 1 SEM path diagram

3. Conclusion

The findings of the study demonstrated a noteworthy alignment with reasonable expectations regarding students' experiences. Notably, factors such as the geographical distance between students and university facilities emerged as influential determinants shaping students' attitudes towards e-learning. Concurrently, challenges encountered in navigating the e-leaming platform were found to significantly impact students' overall learning experiences in a negative manner. Furthermore, although distinct classifications were assigned to the two factors of the e-learning platform and e-learning as a pedagogical modality, a robust correlation was observed between these latent factors. This observation underscores the potential existence of a bidirectional relationship between the two factors, suggesting reciprocal influences at play.

Considering these findings, future research endeavours aim to delve more comprehensively into the root causes that underlie the influence on students' attitudes and experiences. This pursuit seeks to elucidate strategies to mitigate the disparities and challenges faced by students who encounter difficulties in the realm of e-learning.

Acknowledgment

The authors acknowledge support from the project "A data driven approach to understand and anticipate Higher Education dropout." Fudend by Università di Foggia, 2023. Finanziamento sul Fondo per Progetti di Ricerca di Ateneo emanato con D.R. n. 1802/2022(prot. n. 55660-III/13 del 27/10/2022)

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Can we imagine future war scenarios in the Mediterranean area?[1]

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Abstract: Starting from history, the work aims to present possible future war scenarios in the Mediterranean context. The work starts from the analysis of the elements that have constituted - and constitute largely even today - the essence of the wars from Napoleon to von Clausewitz [Von Klausewitz C., 1832], from closed combat spaces to strategies connected to the use of war algorithms and tactical digital holograms. Following this logic and the possible recurrence of wars with actions codified and used from the more distant past, possible scenarios also arise linked to technological innovations, the growing dependence of the military on virtual reality and the widespread use of propaganda [Di Francesco G., 2022]. However, in present time the Mediterranean area is also at the centre of crises due to phenomena not existing in the past: for example, global warming, which will increasingly influence possible future conflicts [World Bank, 2023]. The work focuses on the specificity of the historical and cultural context(s) of the Mediterranean area [Capasso S., Corona G., Palmieri W., 2020].
In this way, the contribution will further underline the importance of the possible

[1] The work is the result of the overall work of the authors. However, paragraphs 1 is to be attributed to Gabriele Di Francesco, and paragraph 2 to Carolina Facioni. The opinions expressed by the authors in the paper do not necessarily coincide with those of the institutions to which the authors belong.

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developments of events in this area, and their possible impact on the world situation as a whole.

Keywords: war scenarios, Mediterranean context, possible futures.

1. How will "war" change?

To von Clausewitz [Von Klausewitz C., 1832] we owe one of the most important modern theorizations concerning war. In his text, the author highlights how the many elements at stake are anyth**ing** but trivially predictable. "Everything in war is indeterminate" it is stated, "and the quantities with which one must calculate are all of a variable nature. Attention is paid only to material magnitudes while all warfare is permeated with spiritual forces and influences", which are perceived only by the inner eye of each one in a different way from person to person and sometimes from moment to moment. Neither of the two parties can be split, since "war is a continuous reciprocal action of the opposing parties" action that becomes objectivity and conscience through "simple experience". Many centuries before, the Chinese General Sunzi - who probably lived in VIth-Vth century B.C. - had spoken [Sunzi, 2021] about the complexity of war, of how psychological subtlety was an essential element for victory: his work still inspires strategists around the world. In war, one of the fundamental weapons is psychology: this also emerges in Georg Simmel's reflection on the First World War – where the importance of the proclamations, of the propaganda aspects is exalted [Simmel G., 2003; Strassoldo R., 2008]. Mean- while, the world has seen the Second World War, a long period of Cold War and, after the fall of the Berlin Wall, many conflicts around the world, not necessarily isolated from each other. The latest blow to the illusion of peace is the recent Rus- sian-Ukrainian conflict. For some time, however, Pope Francis, already in 2014, on his return from a visit to South Korea, had spoken of a world that was experiencing a "Third world war, although if piecemeal fought"[2]. Pope Francis is one of the few protagonists of contemporary history to use the word "war". In recent years the "narration" of war has changed - it is no longer spoken of in terms of war, other definitions are given (e.g., "mission of peace"). Until a few years ago, the terror of

[2]See https://www.repubblica.it/esteri/2014/08/18/news/papa_francesco_terza_guerra_mondiale_kurdistan-94038973/

nuclear war managed to paralyze the superpowers and their respective allies protected by shields and by a more fictitious than real order. Anyway, humankind was (and still is) sitting on an enormous and potentially destructive weapon of mass. The risk of a catastrophe leading to the annihilation of humanity is real, but if its significance is underestimated and neglected, it can be removed from consciences [Bonanate L., 2023]. In the light of these last notations, the question remains, which war scenarios, could realistically materialize in a not so distant future. The latest war emergencies would almost lead to a return to Napoleonic strategies. Rap- id raids on multiple fronts, targeted bombings and dispositions of columns of armed forces and armoured vehicles on several fronts, as well as the identification of sensitive targets. The construction of a personal legend takes place in the field, with reckless certainty and without excessive prudence, entrusting the task to offic- ers of great faith but above all of great intelligence. However, von Clausewitz af- firms that in war everything is indeterminate. War is a continuous reciprocal action of the opposing parties and it is necessary to unite the spiritual force with the pure experiential matter. Strategic options that take into account the complexity of hu- man interaction, from the investigation into the spirit and morale of one's own troops and those of the enemy, up to the knowledge of reality that enters the logic of experience. A scenario of actions which in Simmel's reflection defends national identity, of one's own Kultur against the Zivilization due to the lightness of a few Europeans, but fought with an enthusiasm full of a spirit of sacrifice "in an amount never known". War of individual sacrifice but also of great deployment of commu- nicative interventions. It could be a kind of nationalist war, enriched by interven- tions and communication actions, by proclamations, aimed at inflaming spirits for the defence of the homeland. After all, it is the same communicative impact of D'Annunzio's rhetorical orations praising fire and holy death and other heroic sym- bols for the safeguarding of one's social and cultural identity [Lasswell H., Leites N., 1949]. Can we also expect war scenarios in the Mediterranean? Alternatively, can we hope for a peace role for the Mediterranean?

2. A role of peacemaker for Mediterranean area: could (will) it be possible?

Indeed, it makes more sense to speak of Mediterranean "areas". The charm of this incredible area of the world is precisely that of concentrating different stories, different cultures, and maybe different possible futures, only considering the different

demographical dynamics [Bellis G., Carella M, Léger J.F., Parant A., 2021; Bellis G., Carella M, Léger J.F., Parant A., 2023]. On the three shores of the Mediterranean, there are 22 countries, from three different continents. The northern (or European) shore includes, from west to east, Spain, France, Monaco, Italy, Malta, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania and Greece. The eastern (or Asian) shore includes, from north to south, Turkey, Cyprus, the Syrian Arab Republic, Lebanon, Israel, and the State of Palestine. Finally, the southern (or African) shore consists, from east to west, of Egypt, Libya, Tunisia, Algeria and Morocco. Therefore, an attempt to conceptualise the Mediterranean requires leaving a "unique narrative", a "poetics of the Mediterranean". Because the Mediterranean does not end with geography, due to its specificity [Matvejevic P., 2010]. Paraphrasing Morin, to understand the Mediterranean it is necessary to conceive unity, diversity and oppositions: there is a need for a thought that is not linear, that includes both complementarity and antagonisms [Cattedra R., 2005]. It needs to get out from the illusions of "geopoetics" [Cristiani D., 2018]. Starting from this indication, which we can consider to all intents and purposes a methodological best practice, we can consider the Mediterranean as a body of high-risk geopolitical situations. If not of real war (the word has become a taboo), at least of tensions of various kinds. Paradoxically, the dynamics linked to globalization have not diminished the importance of the Mediterranean area in time. This is clear considering the growing interest of major economic powers, such as China, in Mediterranean ports: in 2018, Haifa, Ashdod, Ambarli, Pireo, Vado Ligure, Bilbao and Valencia were involved in the Chinese Belt & Road Initiative. Not just China; Russia and the United States of America are also gradually expanding their sphere of influ- ence, not only directly on the Mediterranean basin, but also on neighbouring coun- tries. Being an area of interest in the larger geopolitical context fails, however, to ensure that the Mediterranean has "bargaining power". The situation seems to be too unstable. In this sense, the Barcelona Declaration of 1995 should be read as a missed opportunity. With the Barcelona Declaration, signed by 15 EU Member States and 20 Mediterranean third countries, the Euro-Mediterranean Partnership (EMP) was instituted, with the objective of "creating an area of dialogue, exchange and cooperation in the Mediterranean that guarantees peace, stability and prosperi- ty"[3]. As is well known, the results of the PEM have been very modest overall. Ex- ogenous factors, such as the escalation of tensions and crises in the Middle East,

[3] See: https://eur-lex.europa.eu/IT/legal-content/summary/barcelona-declaration-and-euro-mediterranean-partnership.html

alongside the scarcity of financial resources and the persistence of different national interests, made the pursuit of the ambitious goal decided in Barcelona increasingly difficult [Ferrara R., 2021]. Most probably, the scenarios awaiting the Mediterranean will be affected, in some ways, by the situation of the European Union. UE is still undergoing the greater economic power of Countries with a less refined cultural tradition, or in any case - even when an ancient history of civilization is present - still lacking the civil conquests that characterize Europe. Maybe it will be a future scenario of EU and of Mediterranean area too. On the other hand, the dynamics of the countries of North Africa and the Near East do not suggest the possibility that the Mediterranean, European, African and Asian will find its voice and make it heard.

We may not have a real war, but we will all continue to suffer the dripping of large and small conflicts. And only a brave few will say it's war. The same old, horrible, inhumane war. A beautiful work by the artist Michelangelo Pistoletto comes to mind, which represents the Mediterranean as a huge table overlooked by many different chairs. As often happens, art shows the way. Will the Mediterranean be able to indicate the right one in the world?

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The Italian demographic crisis in a Futures studies approach.

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Abstract: Official data confirmed the inexorable aging of the Italian population [Istat, 2022]. The progressive aging is historically due to the effect of the demographic transitions, but it also may be due to specific social/cultural aspects in Italy [Rosina A., 2022], considering the different performance of the other EU countries [Eurostat, 2022]. Italians have a higher life expectancy respect to the most part of the world [WHO, 2020], and one of the lowest fertility rates in the world [Golini A., Lo Prete M.V., 2019]. Aim of the work is to analyse the progressive aging in Italy in a multidimensional quality-of-life [Maggino F., 2022] approach, based on the consideration that the aging of the population will inevitably affect the future quality of life in Italy [Rosina A., 2021]. Anticipation practice, a fundamental step in Futures studies approach [Poli R., 2019; Paura R., 2022] need robust scenarios based on official data: the work uses the Equitable and Sustainable Well-being data [Istat, 2023], analysed by the Dynamic Factor Analysis method [Coppi R., Zannella F., 1979; Corazziari, I., 1999], focusing the Italian demographic dynamics in a multidimensional approach.

[1] The work is the result of the overall contribution of the authors. However, paragraphs 1 and 3 are attributable to Carolina Facioni, while paragraph 2 is attributable to Isabella Corazziari. The views expressed in the paper do not necessarily reflect those of the authors' affiliation institution.

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Keywords: Demographic crisis, Quality of Life, Dynamic Factor Analysis, Anticipation.

1. Age pyramids and complexity

Due to the stability related to demographic data, age pyramid communicate extremely clear and reliable information on the possible development of a population. Figure 1 clearly explain how in 2022, the number of children in the world, according to United Nations data, significantly decreased respect to past: people aged 0-4 are in a smaller percentage than those in the immediately higher class (5-9 years). Fewer and fewer children are born into the world. This is true everywhere. Even in countries – such as African ones - still characterized by a very high fertility rate (Figure 2). Nevertheless, a first step to understand the possible future dynamics is to focus on the presence of disproportions between new-borns and the older age groups. It is in this disproportion, and in the consequent future dynamics, that the future of many countries - and of Italy in particular - risks going into crisis. For centuries, everywhere in the world, the composition by age group has been, in its dynamics, similar to that of the African the top, due to the decrease in the popula- tion. A decrease that occurred from the first years of life, due to the high infant mortality rate.

Furthermore, only very few people arrived in the upper age continent in 2022 (Figure 2): very many new born, which created a very wide base of the age pyramid, which gradually narrowed towards groups, because life expectancy in the world was not as high as what we now see in the more developed countries. We can therefore state that the composition of a population is the result of a complex system in which economic, political, health and cultural factors come into play [Facioni C., 2022].

Moreover, we can consequently say that the study of the composition of a population tells us a lot not only about its present, but also about its past and - perhaps above all - about its possible futures. Indeed, the work emphasizes that the change currently underway is the result of scientific achievements and cultural changes whose roots are in the past. Moreover, that the consequences of these (very) positive achievements must be managed so that they do not have negative consequences in the future. In the approach that characterizes Futures Studies, it is necessary to anticipate the future, as the progressive and, apparently, inexorable aging of the population must be faced in terms of a real megatrend.

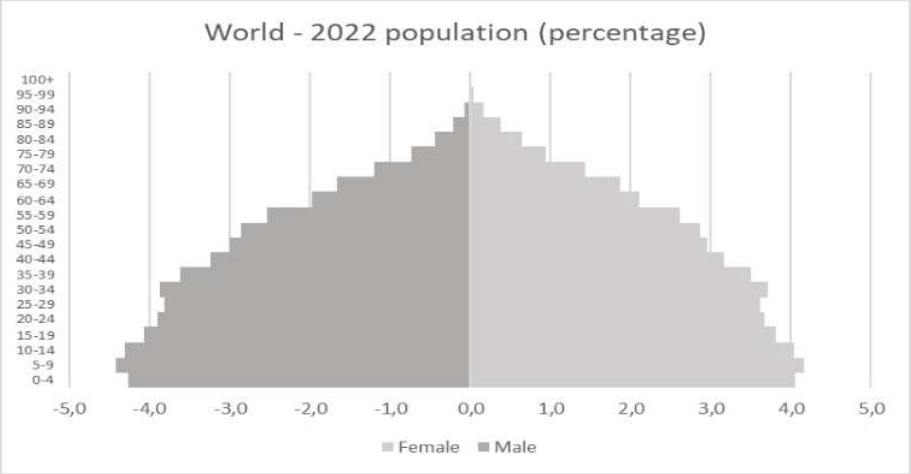

Figure 1 – World population by age and sex: year 2022. (Per 100 individuals)
Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2022 Revision. (Medium variant).

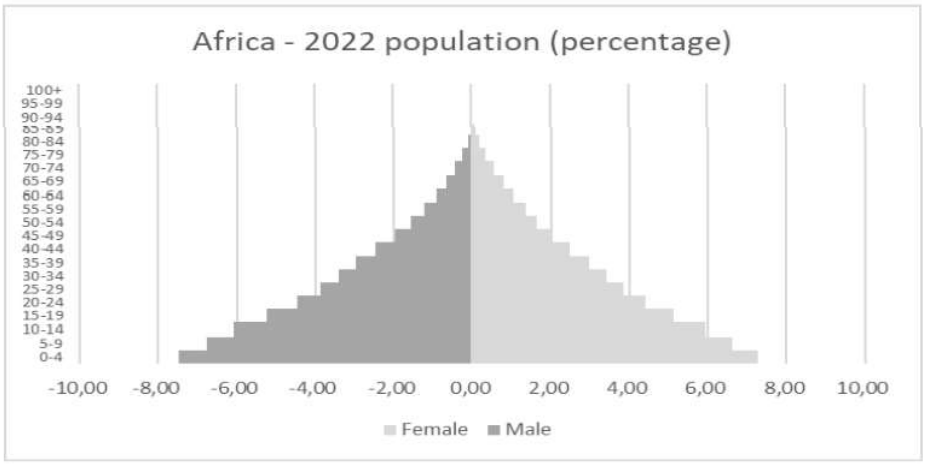

Figure 2 – African population by age and sex: year 2022. (Per 100 individuals)
Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2022 Revision. (Medium variant).

Population aging is the result of the combined effect of two distinct factors: a high life expectancy and a low fertility rate. These two elements are the result of two demographic transitions: the one that slowed down mortality and allowed peo- ple to live longer (the older of the two) and the one that reduced births (it started

about in the 60s of the last century). Thus, both of these factors were the result of civilizational achievements - and their effects concern the most developed coun- tries in particular. Furthermore, life expectancy increases not only due to scientific achievements, but also because medical care is available to everyone, because there is a widespread healthy lifestyle: in synthesis, a country's life expectancy increases because its society is characterised by a widespread good level of the quality of life.

On the other side, the possibility of birth control makes parenthood the result of a responsible decision. Something that people, especially young people, can face at the most appropriate moment, and not by chance. Therefore, also birth control is concerning the quality-of-life topic. However, it is worth focusing on the social aspects related to the "right time" to have children in Italian context. In fact, from this specific point of view, Italy represents a sort of borderline case, due to a historic impasse that will be maybe extremely difficult to resolve [Golini A., 1997; Golini A., 2001]. In 2022, the demographic crisis in Italy, respect both to European context, and to other European countries (e.g. Germany) is evident by comparing Figures 3, 4, and 5.

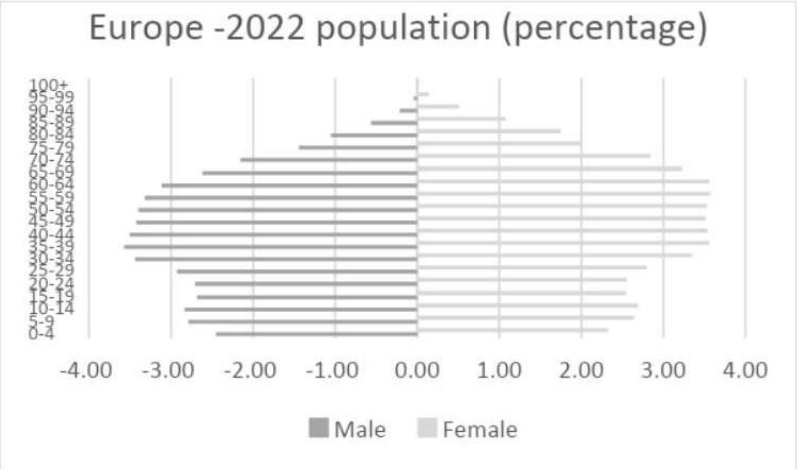

Figure 3 – European population by age and sex: year 2022. (Per 100 individuals)
Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2022 Revision. (Medium variant).

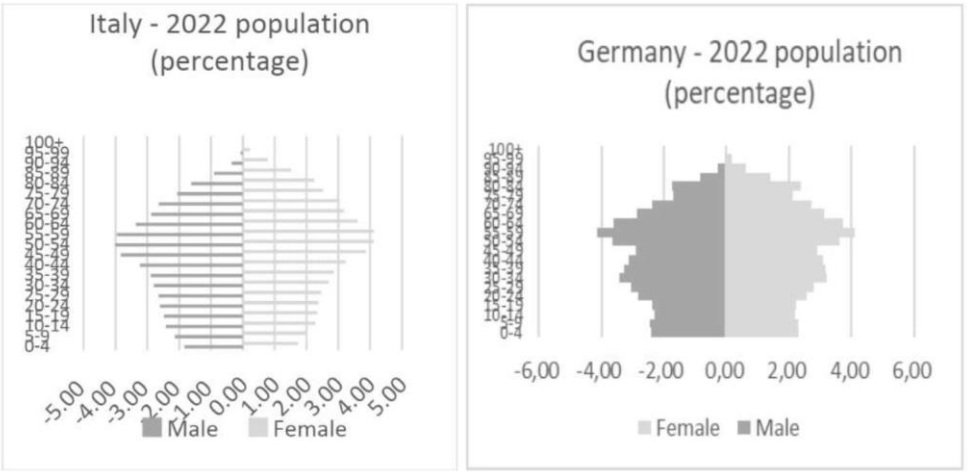

Figure 4 – Italian and German population by age and sex: year 2022. (Per 100 individuals)

Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2022 Revision. (Medium variant).

Population in Europe is aging as a whole, but Italy is aging more drastically (and faster). Considering the UN data for 2022, the total Italian population is 59,037,474 people; the largest group is made up of people aged 50-59 (9,566,566 individuals); children in the 0-4 age range are instead only 2,106,488. Italian offi- cial data say that in 2022 the average number of children per woman is 1.24, while life expectancy at birth is 82.6 years (Istat, 2023). Can we imagine the quality of life in a country that in twenty years will mainly consist of elderly people? It is ev- ident that such a particular situation requires immediate attention and policy measures. Keeping a good level of quality of life [Maggino, 2022] in our country requires very serious anticipation [Rosina A., 2021] work. A work that can rely on reliable data, such as the official data available in Italy.

2. A role of peacemaker for Mediterranean area: could (will) it be possible?

In order to address the changes of the above-discussed scenario over the last years, a descriptive multiway analysis was performed, considering the indicators available for the Italian regions (NUTS2) in years 2004-2022. Many methods have been proposed since 1970s to model data classified according to more than the

classic two dimensions units and variables [Acar E., Yener B., 2009]. The Dynamic Factor Analysis (DFA), has been proposed the first time in 1970s and improved since 1990s [Coppi R., Zannella F., 1979; Corazziari, I., 1999; [Blanco J., Coppi R., Corazziari I., 1999] to analyse multivariate data collected over time. It consists in the joint application of factorial methods (Principal Component Analysis) and time regression models to specific covariance matrices addressing particular source of variation of complex data. The method provides a descriptive analysis of multi- way data, and no inferential assumptions are included about the process generating data. DFA analyses array of data X(I, J, T), classified by unit (I) x variables (J) x times (T), whose generic element is x_{ijt}. The same units and variables are observed in each time.

The method defines three source of variation in the data. The first source (static) refers to the overall relationships between Italian regions and indicators described by centers x_{ij}. obtained as averages of the indicators over time, whose covariance matrix is $*S_i$. The second source of variation (dynamic of centers) describes the interaction between time and indicators, described by centers $x_{.jt}$, the means of the indicators at each time, whose corresponding covariance matrix is *St. The third source of variation refers to the Italian regions dynamic over time described by values xijt. The regions' dynamic over time is considered as differential: each regions will be observed in its net time variation compared to the dynamic of the indicators' means, if it strengthens the change of the indicators or if it moves in other directions over time, weakening or even contrasting the overall dynamics. The corresponding covariance matrix is Sit obtained as the covariance matrix of the deviations x_{ijt}- x_{ij}. - $x_{.jt}$ + $x_{.j.}$ The overall variability of the data is de- scribed by the covariance matrix S (Corazziari 1999). It can be shown that $S=*S_i$ + $*S_t + S_{it}$. In this work, we use the first DFA model, which focuses on the variability of the indicators and their interaction with the other two dimensions of the data.

In the first DFA model, each indicator's x.jt dynamic is described by linear (simple or polynomial) time regression model, using ordinary least squares, with the classic assumptions about residuals $e_{.jt}$, uncorrelated and homogeneous vari- ance. The static variability of the indicators is described by a PCA of the covari- ance matrix $S_t =*S_i + S_{it}$ where S_t is the mean of the covariance matrices of each year. By projecting the points x_{ij}. and x_{ijt}, on the space spanned by the selected Principal Components (PCs), we obtain PCs' representation of Italian regions' centres and trajectories over time. The comparison of the projected trajectories with the corresponding mean, allow us to evaluate the differential time evolution of the Italian regions. Trajectories can be clustered according to their closeness and shape

using Cluster Analysis on specific distance matrices (Blanco et al. 1999). The interpretation of results is based on the correlation coefficients between the Indicators and the PCs. If one unit or cluster moves toward the centre of the PCs' space (which characterizes the overall dynamic of the system of data) homogeneity among units is increasing. By contrast, if the unit or cluster move away from the centre, its differential dynamic is to be interpreted according to its direction. Finally, indexes of the goodness of fit of each source of variation are also provided as the ratio between the modelled total variability (trace of each covariance matrix) and the corresponding observed one.

2.1 Results

The following table shows the goodness of fit indices related to each source of variation analyzed in the first DFA model.

Quality index	Description	Value
Overall index		
I	S = overall covariance matrix	0.75
Regression analysis		
I_*S_t	*S_t = covariance matrix of centres $x_{.it}$	0.66
Factorial analysis (PCA)		
I_S_t	S_t = average cov matrix over times	0.78
I_*S_i	*S_i = cov matrix of centers $x_{i..}$	0.87
I_S_{it}	S_{it} = cov matrix of differential NUTS2's dynamic over time	0.53
I_S_{2004}	S_{2004}=cov matrix for year 2004	0.78
I_S_{2005}	S_{2005}=cov matrix for year 2005	0.79
I_S_{2006}	S_{2006}=cov matrix for year 2006	0.75
I_S_{2007}	S_{2007}=cov matrix for year 2007	0.76
I_S_{2008}	S_{2008}=cov matrix for year 2008	0.82
I_S_{2009}	S_{2009}=cov matrix for year 2009	0.83
I_S_{2010}	S_{2010}=cov matrix for year 2010	0.82
I_S_{2011}	S_{2011}=cov matrix for year 2011	0.78
I_S_{2012}	S_{2012}=cov matrix for year 2012	0.78
I_S_{2013}	S_{2013}=cov matrix for year 2013	0.74
I_S_{2014}	S_{2014}=cov matrix for year 2014	0.76
I_S_{2015}	S_{2015}=cov matrix for year 2015	0.76
I_S_{2016}	S_{2016}=cov matrix for year 2016	0.68
I_S_{2017}	S_{2017}=cov matrix for year 2017	0.82
I_S_{2018}	S_{2018}=cov matrix for year 2018	0.75
I_S_{2019}	S_{2019}=cov matrix for year 2019	0.84
I_S_{2020}	S_{2020}=cov matrix for year 2020	0.83
I_S_{2021}	S_{2021}=cov matrix for year 2021	0.77
I_S_{2022}	S_{2022}=cov matrix for year 2022	0.70

Table 1 − Index of goodness of fit

The DFA first model describe the 75% (I in the table) of the overall S variability. The factorial analysis describes a higher percentage of variability (St =78%) with respect to the regression one (I_*St = 66%), showing that the linear modeling is better fitted to the static structure of the data than to their dynamic. According to the dynamics of the indicators, few variables show nonlinear variability over time are constant; the others present good regression results. According to the analysis of centers x_{jt}: (coefficients and goodness of fit for demographic indicators), the population is slightly ageing with increasing mean age of the population and life expectancies at 0 and 65 years for both males and females (table 3). Consequently, the weight of elders on Youngers (Older rate) and the labour force (Older Dependency Rate) is linearly increasing. The birth rate is linearly decreasing. Marriage rates are decreasing over time, with the only exception of second or more marriag- es that involve older people realistically less interested in reproductive behaviours.

variable	R-squared	Least square stimates	
		intercept (*std error*)	slope coefficient (*std error*)
		Job Market	
bothPsEmp	0.785	0.928(*0.010*)	0.007(*0.001*)
MPsEmp	0.878	1.059(*0.006*)	-0.006(*0.001*)
WPsEmp	0.688	0.821(*0.033*)	0.018(*0.003*)
NoPsEmp_EP	0.922	1.386(*0.031*)	-0.039(*0.003*)
NoPsEmp_noEP	0.679	0.652(*0.066*)	0.035(*0.006*)
EmpR_M_1524	0.650	1.272(*0.055*)	-0.027(*0.005*)
EmpR_M_2534	0.563	1.087(*0.021*)	-0.009(*0.002*)
EmpR_M_3544	0.655	1.053(*0.011*)	-0.005(*0.001*)
EmpR_M_4554	0.531	1.035(*0.009*)	-0.003(*0.001*)
EmpR_M_5564	0.946	0.722(*0.018*)	0.028(*0.002*)
EmpR_F_1524	0.658	1.281(*0.056*)	-0.028(*0.005*)
EmpR_F_2534	0.487	1.062(*0.018*)	-0.006(*0.002*)
EmpR_F_3544	0.095	0.992(*0.007*)	0.001(*0.001*)
EmpR_F_4554	0.866	0.929(*0.008*)	0.007(*0.001*)
EmpR_F_5564	0.962	0.517(*0.026*)	0.048(*0.002*)
LFS1534M	0.899	1.204(*0.019*)	-0.020(*0.002*)
LFS5564M	0.981	0.564(*0.017*)	0.044(*0.001*)
LFS1534F	0.939	1.274(*0.019*)	-0.027(*0.002*)
LFS5564F	0.983	0.426(*0.021*)	0.057(*0.002*)
NEET1529M	0.457	0.768(*0.070*)	0.023(*0.006*)
NEET1529F	0.136	0.944(*0.039*)	0.006(*0.003*)
W2549wChildvsnoChild	0.285	0.978(*0.010*)	0.002(*0.001*)
		Education	
M1824leftStudy	0.960	1.340(*0.019*)	-0.034(*0.002*)
F1824leftStudy	0.938	1.363(*0.026*)	-0.036(*0.002*)
HD3034M	0.934	0.734(*0.019*)	0.027(*0.002*)
HD3034F	0.947	0.646(*0.023*)	0.035(*0.002*)
		Households: Youngs with parents	
noMar1834inH_Occ	0.277	1.110(*0.049*)	-0.011(*0.004*)
noMar1834inH_lookOcc	0.569	0.712(*0.069*)	0.029(*0.006*)
noMar1834inH_Stu	0.821	0.876(*0.016*)	0.012(*0.001*)

Table 2 − Regression Analysis of centers x.jt: coefficients and goodness of fit for labour and indicators

The Labour Force is ageing with rates of over 55 increasing and the proportion of 15-34 on the total LF decreasing. The proportion of couples with either partners or only the woman employed is slightly increasing, so as the proportion of couples with no partner employed and no employment pension made. Within the described ageing Labour Force market, the proportion of NEET young people, not studying and not looking for a job, is increasing for both males and females. In addition, the proportion of young people aged 30-34 with at least a university degree increased since 2004, while decreased those of young people aged 18-24 who left the studies.

In the considered period increased over time the proportion of people aged 18-34 still living at home with parents especially if they are looking for a job or are students over the total of people in the same age class.

The PCA of the static source of variability provided two principal components (PCs) explaining 78% of the St total variance.

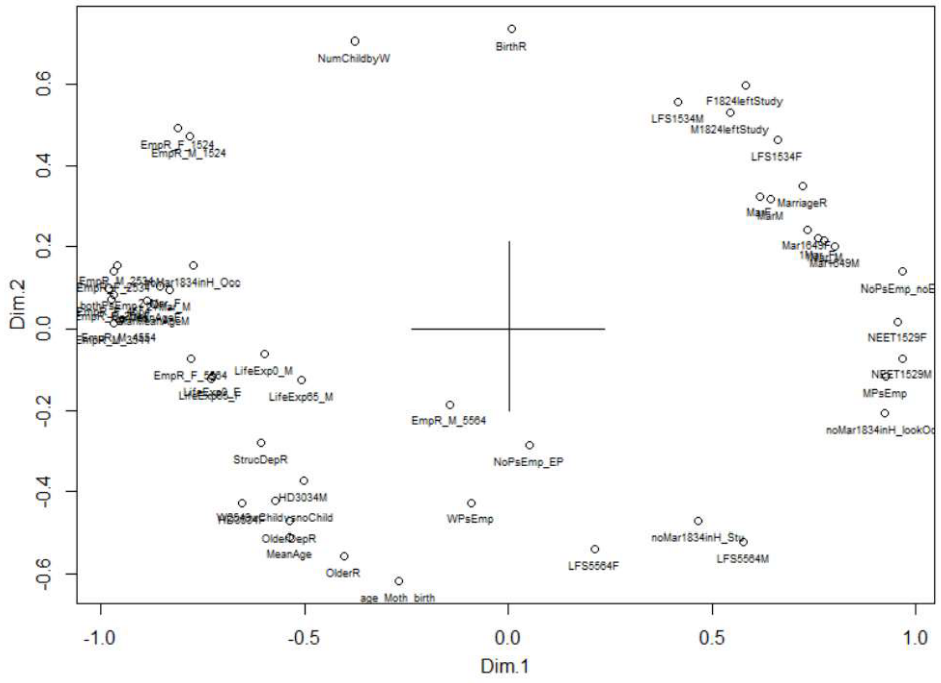

Figure 6 – Factorial analysis (Principal Components): Correlations between PCs and variables

According to the above graph of correlations, the first PC opposes two situa- tions based mainly on the labour indicators while the second PC is less polarised and contributes in describing the relationship between the labour indicators with the demographic ones. Following a circle counter clockwise, we start from a situa- tion characterised by more people that are elderly, graduates, and women with little children that can have a job. Then we find higher employment rates for people aged 25-54, higher rates of second or more marriage, couples with both partners employed and youngers aged 18-34 still living with parents employed too. Follow- ing, we found higher employment rates for young people, higher birth rates and number of children by woman. On the right, we find higher proportion of young

people on the total labour force and consequently higher rates of younger people aged 18-24 who left the study early, higher marriage rates for younger people (16-49) and higher first marriage rates. Then worst situations follow: higher proportion of couples where no partners has a job nor an employment pension or only the man is employed, higher NEET youngers rates and young people (aged 18-34) still living with parents looking for a job. Finally higher proportions of workers over 50 on the total labour force and young students (aged 18-34) still living with parents. Projecting the mean of the Italian regions over time, the graph contrasts the Northern versus the Southern ones, with the former characterized by better employment opportunities with respect to the latter characterised by a more traditional society with more marriages and the man providing economic resources for the family.

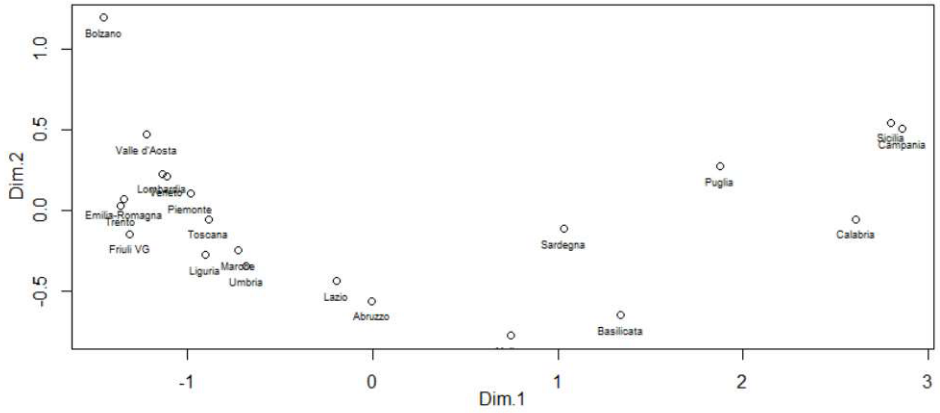

Figure 7 – Factorial analysis (Principal Components): representations of NUTS2 centres on PCs

A hierarchical cluster analysis of the regions' coordinates on the PCs' has been performed to describe the regions' differential dynamic over time. The better partition considers four clusters, the first two involving respectively the Northern regions and the central ones (Liguria and Abruzzo the exceptions) and the last two clusters splitting Southern regions and Islands.

Cluster	Cluster size	NUTS2 regions
1	8	Piedmont, Aosta Valley, Lombardy, Bolzano, Trento, Veneto, Friuli VG, Emilia-Romagna
2	6	Liguria, Tuscany, Umbria, Marche, Lazio, Abruzzo
3	3	Molise, Basilicata, Sardinia
4	4	Campania, Apulia, Calabria, Sicily

Table 5 – Cluster analysis of trajectories: size of each cluster

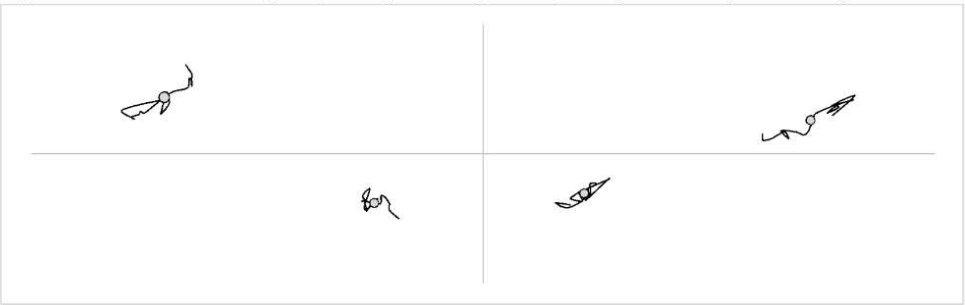

Figure 8 – Factorial analysis (Principal Components): Trajectories of clusters of NUTS2

The second and third clusters show low dynamic over time. The cluster 2 refers to central NUTS2 regions plus Liguria and Abruzzo. Moving to the left on the first PC, it shows an improvement in terms of employment rates especially in years 2018-2022, in contrast with the average dynamic of such indicators. It shows also an ageing of the population moving slightly up on the plane. The cluster 3, referring to Sardinia, Basilicata and Molise, after a slight worsening for Younger's opportunities seems to come back on the first axis, decreasing differences with the regions. The other two clusters, the first and the fourth, show a high dynamic over time, but in opposite directions and consequences. Cluster 1, referring to the Northern regions except Liguria, increases employment rates in years 2009-2019 for people aged more than 25 and especially for males, in contrast with the overall trend. In the last years the cluster comes back to its mean (grey circle), reducing differences from other regions. Finally, the cluster 4 shows a worsening dynamic, moving away from the centre towards the worst situation for younger people in terms of labour opportunities and of trust in the future (NEET young people).

3. Conclusion

It is difficult to expect young people in Italy to have children in order to allow the Italian fertility rate to reach 2.1, which guarantees the desirable generational turnover. Indeed, it is difficult to expect young people having children if they are not in a position to support them. It is clear that behind the demographic crisis that awaits Italy in the coming years there is a policy discourse relating to the quality of life of citizens [Baldacci E. & Lugaresi S., 1996].

The crisis was predictable: demographic forecasts are, due to the characteristics of their object, reliable. Eleonora Barbieri Masini, theorist and founder of Futures Studies as a discipline, had already underlined the possible risks for the quality of life of Italians - due to the aging of the population – in the 1970s. However, policymakers she contacted chose not to listen to her [Facioni C., 2019].

Italy has lost years in which it could have done a serious job of anticipation by preventing a demographic winter, which, even if it affects all of Europe, actually sees our country in a more disadvantaged condition respect to others. Countries, which, like France, have implemented serious policies to promote the birth rate, are certainly in a better situation than ours from a demographic point of view.

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Food: a tool for quality of life in a SDGs approach[1]

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Abstract: The work aims to focus on a reflection about food and its link to the many aspects of the complex concept of "quality-of-life" [Maggino, 2022; Facioni C., Di Francesco G., Corvo P., 2022]. The work underlines the direct link of food with almost all of the Sustainable Development Goals, as conceived in the UN agenda 2030 [United Nations, 2023]. It aims to highlight how food, in its being at the same time essential for life, but also cultural, full of symbolic aspects, as well as at the same time linked to technological innovations, can be "used" as a real tool for the construction of possible futures. In particular, food can be the tool to build a desirable future [Barbieri Masini E., 1993] in which humanity cares about the quality of life as a whole. With regard to the specific situation in Italy, the work will use data relating to the latest SDGs report published by the Italian Institute of Statistics Istat [Istat, 2023].

Keywords: food, SDGs, quality of life.

[1] The work is the result of the overall work of the authors. However, paragraphs 1 and 3 are to be attributed to Carolina Facioni. Paragraph 2 must be attributed to Gabriele Di Francesco. The opinions expressed by the authors in the paper do not necessarily coincide with those of the institutions to which the authors belong.

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1. Food, SDGs and complexity: not only Goal 2

A recent work [Facioni C., Di Francesco G., Corvo P., 2022] stressed the multidimensionality of food, and the link between food, social complexity, and quality-of-life. Indeed, food is not only the means by which humankind keeps itself alive. Food is the real expression of culture, history, behaviours, knowledge. It is no coincidence that food is a central element in Braudel's concept of "material civilization" [Braudel F., 1979]. The topic of food is linked to the many different ways of producing it in the world; to the different uses of resources related to food, etcetera. The 1972 Club of Rome Report [Meadows D.H., Meadows D. L., Randers J., Behrens W.W., 1972] named the indicators of food consumption "quality of life": a synthetic definition, which however says a lot about the meaning of food in human life. The conclusions of the Club of Rome – based on the results of the MIT team of scientist who developed the research - were very pessimistic. In the exponential increase of the human population on Earth, and in the consequent erosion of natural resources and increase in pollution, they identified the main cause of a possible disaster. The only possible solution they identified to prevent it consisted in a drastic reduction in the number of human beings on earth. A solution at the time not feasible in developing countries - and even harmful [Facioni C., 2022] for developed ones, which at the time were already in full second demographic transition. However, at the beginning of 2023 the world population seems to have exceeded the mark of 8 billion inhabitants. The predictions of the Club of Rome have had at least partial confirmation: the world is experiencing a period of crisis, also due to the ongoing climate change [Vergalli S., Romani I.G., El Khoury C., 2022]. Since it is evidently not possible to reduce the population, it is necessary to think of a ra- tional way of modifying the consumption of resources. Thus, can food be a pre- cious tool for resolution, or is it part of the problem? It depends on us. In this sense, we can re-read the 2030 Agenda. Food can be an essential element for its re- alization: food can be an essential tool at both a macro and micro level. Consider- ing food a central element for achieving Goal 2 (zero hunger) alone is a reductive reading of its enormous potential. Indeed, the risk of pursuing the Agenda's objec- tives individually and not from a complex point of view was highlighted in the Re- port published by the Club of Rome on its 50th anniversary [Von Weizsacker E.U, Wijkman A., 2018].

"Working on food" can directly help to eliminate the poverty in the world (Goal 1): so as to obtain good health and well-being (Goal 3). Considering all

the topics related to the production and consumption of the food, it could be a valid tool to achieve many other goals: e.g. Goal 6 (Clean water and sanitation); Goal 7 (affordable and clean energy); Goal 9 (Industry innovation and infrastructure), Goal 11 (Sustainable cities and communities), and Goal 12 (Responsible consumption and production). Therefore, a correct use of earth resources for producing food can help Goal 13 (Climate action), Goal 14 (Life below water), and Goal 15 (Life on land). Although there doesn't seem to be a direct link with goal 4 (quality education), a serious work on the correct nutrition of children can only help them on their development also at school, as also emerging in historic publications by the Italian Institute of Statistics [Mortara G., 1936]. Goal 5 (Gender equality), Goal 8 (Decent work and eco- nomic growth), and Goal 10 (Reduced inequalities) are all concerning the condition of the workers in the sector of Food - whether it is agriculture, in- dustry or the tertiary sector. In particular, these Goals concern all the women employed in the food production sector. For example, women engaged in ag- riculture represent over a quarter of the world's population while, in develop- ing countries, they make up about 43% of the workforce. Despite this, many of them are still denied access to basic health services and education. Another discriminating factor for this category concerns the particularly harsh working conditions, due to the long distances to travel for the transport of water and work tools, which causes a high rate of maternal and infant mortality. Thus,
food could be "the" tool for reaching the Goal 16 (Peace, justice, and strong institutions), and, according to Goal 17 (Partnership for the goals), an ideal filrouge connecting the UN Goals with one another. In this sense, Italy can give a great help, because of the historic "food literacy" that characterizes the country. In this sense, the phenomenon of food festivals can be an important model for improving food culture - and therefore the quality of life as a whole. Moreover, to help reaching of the UN SDGs starting from a local perspec- tive ".

2. The phenomenon of "Sagre": enhancing the food culture (and the territories)

The Sagre have become a vehicle for the enhancement of typical products and food and wine, for the rediscovery of local community values in the face of invasive globalization through moments of intense social life and finally for the promotion of quality of life. In their value of ritual and popular gastronomy, the Sagre repre- sent the expression of "social" creativity, the possibility of innovation that starts from the bottom, seem to show a great boost to the construction and cohesion of the social group, of which an element of identity is found. They can also represent a good driving force for promoting and enhancing the products of food and wine

fields and the preparations of terroirs in the logic of sustainability and local development.

In the change, most of the contemporary events remain overall hooked to the tested patterns of the first grape festivals, with the concomitant presence of reli- gious events, local history, scenic representations, initiatives and / or rediscoveries linked to local tradition, beyond typical quality products. In the various Italian ter- ritorial contexts - which do not always coincide with the regional administrative division – there are feasts dedicated to local products, such as the Raiano cherries or the saffron of Navelli, in the province of L'Aquila, the red garlic of the area of Sulmona and the hams of Basciano, in the Teramo area, etc. [Di Francesco G., 2011]

The Sagra is now, in any case, something different from the meanings it had in the past, in many ways it has evolved, improving its quality standards also by virtue of more precise and binding regulatory provisions also relating to sanitary conditions. The food and wine phenomena are also revisited and reinterpreted following innovative approaches that relate to the concepts of authenticity, local specialties, typical products, but which at the same time place food and wine in the broader context of cultural heritage. This process should probably also be read as an attempt to recompose the relationships between food and the territory, relationships that were initially shattered due to the development of the food industry and then with "the progressive disappearance of self-consumption". The sagre, also and above all in this logic, are attractive for tourist or excursion flows as they facilitate this subjective relationship with the territory, and they are more easily usable and immediately accessible. The multiplication and spread of sagre should make us reflect on the reality and consistency of this phenomenon, on its relevance and its potential as well as social aggregation as well as mediation between the demands of tradition and innovation. Without neglecting the aspects and the economic contribution, it is undeniable that contemporary wine and food festivals are an opportunity to become aware of the need to move towards more prudent choices, towards community reflections on fundamental ecological issues for life on earth. To reflect on the need to preserve the environment, to promote forms of consumption and transformation of food in a responsible and sustainable way.

In this regard, one of the innovative features is the specialization of the operators, considered the true innovative feature that characterizes many festivals, together with the tendency to aggregate into larger groups and federations to present themselves "on the square" with greater incisiveness, quality and competence. In the Piedmont's context of the city of Asti, this tendency to organize and associate

in larger groups has given rise to the "Festival delle Sagre", defined as the largest outdoor European restaurant. Founded in 1974, it sees the simultaneous participation of representatives of 45 municipalities and related associations for the promotion and enhancement of the territories and local quality products.

In today's globalized contexts, the sagra is in fact not only an economic and cultural resource, but also a valid way to strengthen the common identity, a heritage of the community in which one lives. Today's sagre still represent tradition, reproposing the customary elements of celebration, people and product or harvest. They can allow members of local communities to have a fixed point of reference to safeguard their identity, understood as a "system of representation according to which the individual feels he exists as a person, feels accepted and recognized as such by others, by its group and its culture of belonging ". However, at the same time they also express undoubted economic values both in the innovative elements expressed above all in terms of increased professionalism and quality that arises, and in terms of attractiveness in the context of the itineraries of taste [Fontefran- cesco M.F., 2020].

In this logic, the current sagre can increasingly act as events for the promotion of territorial contexts, useful tools to intercept the growing demand for tourism and the tourist currents linked to "taste", aimed at the discovery and knowledge of the so-called local food and wine fields. The sagre, through the work of its own committees and associations, can increasingly become a vehicle of this tourist flow, as they are configured as:

- forms of tourist enhancement even in marginal contexts for mass tourism flows;
- increasingly sought-after alternative to the beach-mountain road directors;
- a possible opportunity to limit long-term tourist stagnations (dead periods, or less favourable ones): in fact, the sagre take place almost at any time of the year (ex. chestnut festival, artichoke festival, etc.) and could be usable all year round;
- an opportunity for growth and transformation in the entrepreneurial sense of a given territory, with the offer of any new investment spaces;
- a boost to the diversification of tourism businesses linked to the land and its products, which flank or even overlap with the offers of rural, agritourism, naturalistic, seaside, artistic, cultural, religious, folkloric or traditional tourism;
- a possibility of networking, in an open but well-structured and inter-

communicating system, traditional agro-food production, local public actors, private entrepreneurs, the historical and cultural components of the regions and contexts involved.

In the overall interweaving of these variables, taste is placed as a real promotional and media vehicle of the territory, according to an approach that does not favour this or that product, but aims, directly and organically, on the palate and its emotions. It is the flavours, considered as "a profound expression of tradition, art, history and culture making a land and its people known to the general public" [Ronchetti G., 2001] that make it possible to glimpse the prospects for a future evolution, and the lines of development in terms of sustainability and quality of life.

3. Conclusions

Food is life. Food is culture. Food is complexity. Food is quality of life. There is no other topic involving so much both the macro and the micro level of social life, of environment, of technology, etcetera. Therefore, “using” food in a correct mode, developing and spreading a real “deep and thick” food literacy – producing and consuming it correctly - could represent a precious tool for the solution of the many problems afflicting our planet. Not the only tool, of course: but one of the most precious. Every human being can do a lot. Every day. Eating food, so as producing food, is a politic act.

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The environmental dimension of tourism sustainability and its measurement. Something is finally moving!

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Abstract: Although the environment represents one of the main attractions of tourist destinations, becoming a fundamental part of the tourist offer of the destinations, however the importance of protecting the environmental dimension of tourism is not always perceived and therefore (is not) measured in a systematic way. The paper will give an overview of the main "institutional" initiatives aimed at the measurability of the environmental dimension of tourism at an international, European and national level, which we hope, will soon lead to a solid and shared reference statistical framework.

Keywords: tourism, indicators, environment.

1. Sustainable Tourism

Sustainable tourism has been a topic of discussion in the tourism industry for many decades [Wagar, J. A., 1964; Wenkam, R., 1975; Cohen, E., 1978]. The continued and growing interest in sustainable tourism has been driven by two key factors. Firstly, the influence of the 1987 Brundtland Commission report "Our Common Future" and the subsequent 1992 Rio Summit on sustainable development. While ideas about sustainable development had been discussed for some time, this work represents the milestone in sustainable development, crystallizing the concept of

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sustainable development on the global political agenda. These ideas were later embraced in the United Nations' 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs).

The second key factor has been the tremendous growth in tourism activity in recent decades, reflecting the ongoing increase in household income and the decreasing relative prices of travel, particularly airfares. This growth has created at least five areas of interest for the sustainability of tourism:

The recognition that, by contributing to a larger share of economic activity in most countries, tourism has a greater impact on the use of environmental resources, and its impact on the natural environment is increasingly significant.

The idea that tourism can provide a pathway through which lower-income countries and regions can improve their standard of living and support more sustainable development.

The acknowledgement of the dependence of tourism on its environmental and social context and the need to maintain these basic resources in good condition and even contribute to their protection and enhancement.

The awareness that tourism benefits the visitors themselves (and their home countries) from a broader social perspective, through aspects such as personal well-being and relaxation, social cohesion (supporting the elderly and other disadvantaged groups in accessing tourism), and the fostering of peace and mutual understanding between places.

The potential for tourism to create a broader appreciation of a country's reputation and thus serve as a stimulus for foreign investment in support of sustainability more generally.

Based on these premises, the most authoritative and representative international body, the United Nations World Tourism Organization (UNWTO), provided a shared and internationally used definition of sustainable tourism in 2005. This definition, based on tourist destinations, clarifies that sustainable tourism is a multifaceted concept, and depending on the perspective, different aspects and areas of interest will be relevant. The UNWTO and UNEP define sustainable tourism as follows:

"Sustainable tourism takes into account environmentally friendly practices used in and by the tourism industry. It is defined by the United Nations Environment Programme and the United Nations World Tourism Organization (UNWTO) as 'tourism that takes full account of its current and future economic, social, and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities". This definition underscores the need for tourism to be en-

vironmentally respectful, socially inclusive, and economically sustainable in order to ensure long-term benefits for all stakeholders [UNEP & UNWTO, 2005].

In 2017, the profile of sustainable tourism was further strengthened with the proclamation of 2017 as the United Nations International Year of Sustainable Tourism. The debate surrounding the International Year of Sustainable Tourism 2017 recognized that tourism has the potential to contribute, directly or indirectly, to all 17 SDGs. In particular, goals related to sustainable tourism are explicitly mentioned in SDG 8 on decent work and economic growth, SDG 12 on responsible consumption and production, and SDG 14 on life below water.

2. The Environmental dimension of tourism and the importance of its measurement

The tourism ecosystem is vast and diverse, with numerous economic, social, and environmental implications. It is no wonder that sustainable tourism has been a topic of discussion in the tourism industry for many decades.

While the environment represents one of the main attractions of tourist destinations, the motivation that often drives tourists to travel, venturing away from their own territory, is not only to explore corners of the world but to first-hand experience a new adventure that leads to the discovery of different cultures, situations, and places, thus becoming a fundamental part of the tourism offering of destina- tions.

However, the importance of protecting the environmental dimension of tourism is not always perceived and therefore not systematically measured. Tourism activities, such as transportation and accommodation, require the use of natural resources like energy and water, hence tourism has a significant impact on the environment. It represents a demographic pressure, meaning more people in a territory, which translates to increased consumption, waste, infrastructure, and therefore greater pressures on the environment.

Although as early as 2008, in the International Recommendations for Tourism Statistics 2008 by the United Nations, it was recognized that tourism can contribute "to irreversibly damaging the environment through pressure on fragile ecosystems, the construction of resorts or roads that destroy sites and natural heritage, land, water, and air pressures, and various processes of pollution, waste discharge, erosion, deforestation, etc." Furthermore, the potential impact of climate change-related ef-

fects, such as rising sea levels and increased frequency of natural disasters, on tourism activity and vice versa, is increasingly being acknowledged, as the climate is affected by greenhouse gas emissions produced by tourism activities.

At the same time, visitors and tourism businesses can support environmental protection work and biodiversity conservation, thus playing a role in global efforts to achieve net positive outcomes for nature. In many contexts, tourism is considered an economic activity potentially compatible with achieving sustainability goals. Given the numerous interrelationships between the tourism ecosystem and the broader environmental ecosystem, the importance of measurement becomes even more evident and becomes crucial for those tasked with governing a tourism-oriented territory.

Overall, the measurement of the relationship between tourism and the environment is essential to provide meaningful information that can support the sustainable management of destinations and tourism activities. In summary, the environmental sustainability of tourism will require information primarily on the following four major themes:

- The use of natural resources such as water and energy as inputs for the production of tourism industries.
- The use of the environment more generally as the setting for tourism activities.
- The impacts and pressures exerted by tourism activities on the environment.
- The responses implemented by tourism industries to reduce environmental pressures and improve environmental outcomes.

3. The main "institutional" experiences of measuring sustainable tourism

A particular challenge in the work of measuring sustainable tourism has been the diversity of approaches developed so far. Although they all have similar motivations and generally encompass similar themes, this diversity hinders the ability to compare performance and results among destinations and across different scales.

From the perspective of statistical frameworks, some of the indicators used in sets of sustainable tourism indicators can be derived from data collected following the definitions and standards presented in the IRTS - International Recommenda-

tions for Tourism Statistics and the TSA: RMF - Tourism Satellite Account: Recommended Methodological Framework. Examples of such indicators include the number and expenditure of international visitors and the contribution of tourism to GDP. However, in many cases, a disconnect tends to occur: sustainable tourism indicators are developed to be applied at the destination level, while statistical frameworks are used to support data collection at the national level. Additionally, the IRTS and the TSA: RMF focus primarily on the economic dimension and employment and do not include the environmental or social dimensions.

To overcome the described inconsistencies and ensure a common language, the UNWTO is working through a global expert working group on sustainable tourism [UNEP & UNWTO, 2022] measurement to define a statistical framework for measuring the sustainability of tourism, known as the Statistical Framework for Measuring the Sustainability of Tourism (SF-MST). It is expected that this framework will be defined by 2023 for its subsequent formal approval by the United Nations in early 2024.

The main purpose of designing the SF-MST is to provide a holistic statistical framework that operationalizes the measurement within the broad definition of sustainable tourism by UNWTO/UNEP. Specifically, the SF-MST aims to provide a common set of concepts, definitions, classifications, and reporting structures to guide and support the measurement of tourism in its economic, environmental, and social dimensions, across different scales and territorial locations.

At the core of the SF-MST project is a multiple capitals approach to sustainability measurement. Therefore, the SF-MST provides an approach that involves measuring the stocks of produced, natural, human, and social capital, as well as the various flows of benefits derived from tourism. This not only provides a comprehensive data framework but also a clear narrative for assessing the sustainability of tourism. This multiple capitals-based approach can be implemented using an accounting approach that falls under the umbrella of SEEA - System of Environmental-Economic Accounting in the environmental context.

Similar to how the TSA - Tourism Satellite Account is applied to measure the economic dimension, the SEEA is a system that adapts the accounting concepts and definitions of the System of National Accounts. Measurement within the SEEA framework can be done in physical and monetary terms. Consequently, the focus of SEEA is on aligning measurement boundaries so that environmental data can be directly and meaningfully linked to associated economic data through the use of consistent definitions and classifications of economic units.

This accounting approach, promoted by UNWTO to ensure a common language

internationally, is being tested by various countries, particularly National Statistical Institutes responsible for the National Accounts of each country. In Italy, for example, it is the ISTAT that has already produced two Tourism Satellite Accounts (the latest in 2019) and attempted to create integrated economic and environmental accounts for tourism in 2019. This accounting tool integrates two products of official accounting statistics: the Tourism Satellite Account (TSA) and the satellite accounts of the environment, specifically the Accounts of Atmospheric Emissions (AEA) and the Accounts of Physical Energy Flows (PEFA).

By jointly representing economic and environmental data, the integrated economic and environmental accounts of tourism allow for the comparison of the economic values created by a set of tourism-related economic activities with the pressures exerted by these activities on the natural environment. The integrated accounts consist of two modules: an economic module that provides the main aggregates describing domestic tourism supply and domestic tourism consumption, following one of the tables of the Tourism Satellite Account, and an environmental module that measures the pressures on the natural environment in terms of energy product use and emissions of pollutants released into the atmosphere.

However, focusing solely on the System of Environmental-Economic Accounting (SEEA), which is consistent with the System of National Accounts (SNA), and not on environmental data from environmental monitoring or environmental statistics that could be used to develop specific environmental indicators, implies an extreme dominance of economic and accounting language at the expense of proper environmental language.

To fill this information gap regarding the availability of primary data necessary to identify the link between tourism and the environment, Environmental Protec- tion Agencies (EPAs), which hold environmental monitoring data, could share their information bases and collaborate to address environmental aspects, especially pressures and impacts, even with a circular approach, in current European official statistical surveys. The EPA Network's Interest Group Environment and Tourism, coordinated by the Italian Institute for Environmental Protection and Research (ISPRA), is working on these aspects at the European level. This group, whose purpose is to promote the environmental dimension of sustainability and its measurement, is trying to highlight the main informational gaps, the basic data needed at the European level to populate relevant and comparable indicators on tourism and the environment through continuous exchanges with key European and internation- al tourism and environment actors (DG GROW, Eurostat, EEA, UNWTO). This work of promoting and raising awareness of the environmental aspects of tourism

with an emphasis on environmental pressures and impacts, and in particular of the consequent measurement aspects, becomes crucial at the European level where there is not even an indirect reference to the environment or sustainability in gen- eral in the current EU Regulation on Tourism Statistics [REGOLAMENTO (UE) N. 692/2011].

Other initiatives in terms of measuring sustainable tourism, which also hold promise for the environmental component, although still limited at the moment, include:

1. The recent European Tourism Dashboard [https://tourism-dashboard.ec.europa.eu/?lng=it&ctx=tourism] developed by the Joint Research Centre (JRC) and the DG GROW, in response to the invita- tion of the Council of the European Union on May 27, 2021. This dash- board was conceived and developed as an online knowledge tool avail- able on the web to assemble, publish, and provide meaningful visualiza- tions of tourism-related indicators, to identify issues and support policy actions towards a more sustainable and resilient tourism ecosystem.
2. The announced (for 2023) core set of indicators for sustainable tourism development by Eurostat, which, however, includes very few indicators for the environmental dimension.

At the European level, but at the level of tourist destinations rather than national level, the ETIS (European Tourism Indicators System) [EU Commission, 2016] experience of 2013 was important. Following the European Commission's Communication COM(2010) 352 "Europe, the world's leading tourist destination - a new policy framework for European tourism", a system of indicators for the sustainable management of European tourist destinations (ETIS) was developed. ETIS is a strategic tool to monitor, manage, measure, and improve the sustainability performance of all European tourist destinations. This European system of indicators served as a tool to enhance the sustainable management of tourist destinations by providing stakeholders in the sector with a useful package of user-friendly tools to measure and monitor sustainability management processes and to share and compare progress and results in the future. The specific objective of ETIS is to contribute to the improvement of sustainable destination management.

At the national level, in addition to the aforementioned ISTAT experiences in terms of TSA and SEEA, in line with UNWTO guidelines, ISPRA has been providing environmental indicators on tourism (both in the Environmental Data Yearbook and in the Urban Environment Quality report) for many years. In 2017, coinciding with the International Year of Sustainable Tourism, ISPRA produced a

thematic report titled "Ambiente: sfida e opportunità per il turismo". The report aimed to highlight the main links between tourism and the environment, emphasizing the environmental dimension of sustainability, which is often poorly monitored in the tourism sector. Through an integrated analysis of indicators from ISPRA's Environmental Data Yearbook, both tourism-related and relevant to tourism, the report aimed to provide policymakers and managers of tourist destinations with insights for their tourism governance.

4. Conclusions

The paper aimed to highlight, on the one hand, the initial institutional efforts in monitoring sustainable tourism in general and its environmental dimension in particular, and on the other hand, the often political disregard for the environmental aspects of tourism, which are fundamental for territorial governance. Understanding the environmental impacts of tourism and the demographic pressure it gener- ates on major tourist destinations not only has implications for natural resources but also for territorial governance. Consider cities like Florence, which has a population density similar to other "less touristy" municipalities like Livorno, Lodi, or Lecce, or think of the coastal city Rimini. Both cities, with the influx of tourists, significantly alter their population density, reaching substantial values that are almost double that of Rome. In other words, governing cities with a strong tourism vocation means organizing services and ensuring an appropriate trade-off between residents and tourists based on the demographic pressure the territory must bear.

There is a great deal of confidence in the explicit policy guidance provided by the European Council on the European Agenda for Tourism 2030. Among the pri- ority areas of its multiannual work plan, it specifically includes the improvement of the availability and coverage of tourism statistics to consider the economic, social, cultural, and environmental impacts of tourism, as well as improving access to private data and destination-level data for the production of official tourism statistics while respecting data protection regulations and legitimate commercial interests. In terms of actions and responsibilities, it is formally invited to the actors of the European Statistical System to review the harmonized rules for data collection on tourism statistics, and the European Commission to enhance the current EU Tourism Dashboard to support the monitoring of environmental, digital, and socioeconomic aspects of tourism. Furthermore, there is also reliance on the dedicated Expert

Group "Together for EU Tourism (T4T)" recently established by the DG GROW to address these measurement aspects and the requirements arising from the application of the recent Transition Pathway for Tourism.

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Timber supply chain used in industrial production of semi-finished wood products

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Abstract: The consumption of timber represents a significant impact on the withdrawal of biomass and, more generally, raw materials. Timber is the essential raw material for wood products, as well as being a renewable fuel used in all Italian regions. This study reconstructs the timber supply chain used in industrial production for the creation of wooden semi-finished products, which will be used in subsequent productions, using annual data from Istat's ProdCom survey. The aim is to estimate the timber consumption of the Italian industry and indirectly the withdrawals in the forest.

Keywords: wood, industrial production, forest.

1. Introduction

The work aims to evaluate the amount of wood sourced in Italy and used in the Italian wood supply chain, using the production data of the "Annual Survey of manufactured goods (ProdCom)" and the goods trade data of the Foreign Trade Surveys “Import/Export of goods with EU Countries” and “Import/Export with non EU countries” by Istat.

The analysis focuses on semi-finished wood products in order to estimate the raw material used in their production. The raw material available for the production processes can be obtained from the Italian forest or from abroad. Data on the quan-

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tities of wood imported and exported from abroad are known and are provided each year by the Foreign Trade Surveys.

The proposed methodology describes the wood supply chain by analysing the Prodcom list class in parallel with the NACE classification and the Combined Nomenclature (CN) in order to identify the primary activities and the primary products.

2. Timber supply chain analysis

The work aims to evaluate the amount of timber used in the Italian timber supply chain, starting from the production data of the "Annual Survey of manufactured goods (ProdCom)" by Istat.

The ProdCom survey provides annual statistics on industrial production (Divisions 07 to 33 - excluding Division 9 and Group 19.2 - and Division 38 of the Nace Rev. 2 Classification of Economic Activities) compiled according to EU harmonised methods[1], concepts and classifications.

The ProdCom survey provides data on the production and marketing of a wide range of industrial products defined annually at Community level (ProdCom list).The survey is carried out on all local production units (about 62 thousand establishments) of industrial enterprises with 20 persons employed or more and on a representative sample of industrial enterprises with 3 to 19 persons employed. The data are processed and reported to the population on the basis of the information collected from the statistical units participating in the survey.

The analysis focuses on the production of wood semi-finished products, which use both wood logs taken in Italian forests and those imported from abroad as the raw material input of the process, referring to the year 2020 ProdCom code. These activities are linked to Nace division 16 "Wood and wood products; except furniture; manufacture of articles of straw and plaiting materials" represented in detail in Table 1.

[1] EU Regulations 2019/2152 and 2020/1197 from 1 January 2021

Nace 02	Forestry and use of forest areas
02.10	Forestry and other forestry activities
02.20	Use of forest areas
Nace 16	Wood industry
16.10	Sawing and planing of wood
16.21	Manufacture of veneer sheets and wood-based panels
16.23	Manufacture of other wooden structural and joinery products for construction
16.24	Manufacture of wooden packaging
16.29	Manufacture of other wood products; manufacture of cork, straw, and weaving materials articles

Table 1 - Economic activities due to the first phase of the wood supply chain

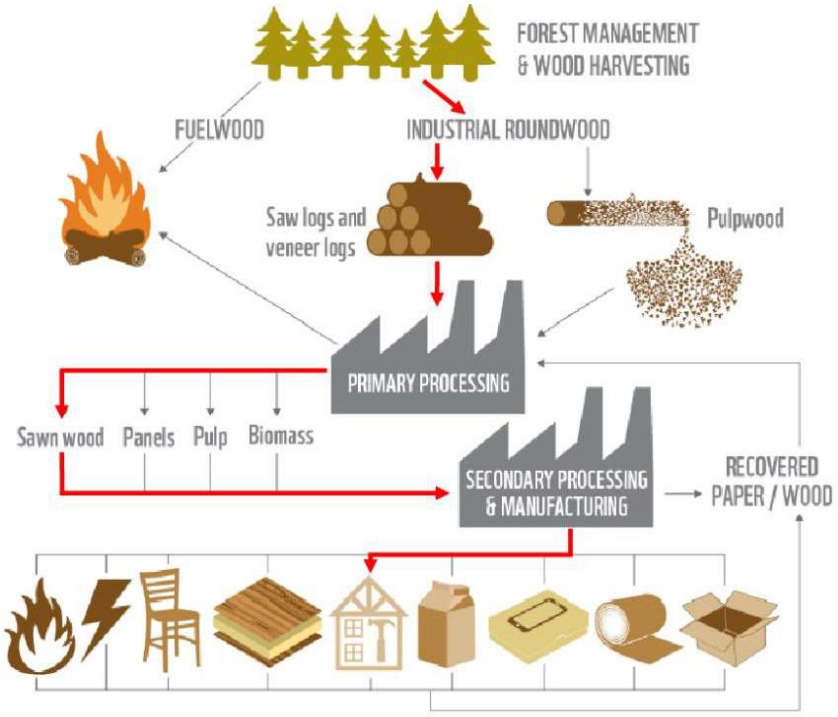

Figure 1 - Timber supply chain

Source: Statistic Canada, Robert Meyer-Robinson

The timber supply chain involves a first phase of activity in the forest, Nace division 02 "Forestry and logging", which concerns tree felling operations, debarking, primary processing, and transportation to the timber sawmills. (Fig. 1)

The quantities taken in this phase of the chain are not currently detected by a di-

rect statistical survey. The indications received from a selected panel of companies operating in Nace division "02 - Forestry and logging" suggest that the quantity of logs selected for primary processing in sawmills represents a percentage ranging from 40% to 50% compared to the volume of felled trees. The remaining part generally undergoes a chipping process directly in the forest and is largely delivered to bioenergy generators.

For each of these activity classes, the different wood processing stages were revised and analysed, and the semi-finished wood products and primary products obtained directly from log processing were identified based on the 8-digit ProdCom classification codes, 6-digit CPA classification codes, and 4-digit Nace classification codes (Table 2). The ProdCom survey annually publishes, in reference to the list of ProdCom codes in force during the examined period, the volume of produc- tion realised in terms of quantity and the volume of production sold in terms of quantity and value.

NACE	CPA	PRODCOM	Description	U. mis
16.10	16.10.11	16.10.11.34	Spruce wood, fir wood sawn or chipped lengthwise, sliced or peeled, of a thickness > 6 mm (en)	m3
16.10	16.10.11	16.10.11.36	Pine wood sawn or chipped lengthwise, sliced or peeled, of a thickness > 6 mm	m3
16.10	16.10.11	16.10.11.38	Coniferous wood sawn or chipped lengthwise, sliced or peeled, of a thickness of > 6 mm	m3
16.10	16.10.12	16.10.12.50	Wood, sawn or chipped lengthwise, sliced or peeled, of a thickness > 6 mm	m3
16.10	16.10.12	16.10.12.71	Tropical wood, sawn or chipped lengthwise, sliced or peeled, end-jointed or planed/sanded, of a thickness > 6 mm	m3
16.10	16.10.21	16.10.21.10	Coniferous wood continuously shaped	Kg
16.10	16.10.23	16.10.23.00	Wood, incl. strips and friezes for parquet flooring, not assembled, continuously shaped "tongued, grooved, rebated, chamfered,	Kg
16.10	16.10.24	16.10.24.00	Wood wool; wood flour	Kg
16.10	16.10.25	16.10.25.03	Coniferous wood in chips or particles	Kg
16.10	16.10.25	16.10.25.05	Non-coniferous wood in chips or particles	Kg
16.10	16.10.39	16.10.39.00	Other wood in the rough, including split poles and pickets	m3
16.21	16.21.11	16.21.11.00	Plywood, veneered panels and similar laminated wood, of bamboo	m3
16.21	16.21.12	16.21.12.00	Particle board, of wood	m3
16.21	16.21.13	16.21.13.16	Oriented strand board (OSB), of wood	m3
16.21	16.21.14	16.21.14.19	Waferboard and similar boards, of wood (excluding particle board and OSB boards)	m3
16.21	16.21.15	16.21.15.23	Medium density fibreboard (MDF) of wood or other ligneous materials, whether or not bonded with resins or other organic substances, of a thickness not exceeding 5 mm	m2
16.21	16.21.15	16.21.15.26	Medium density fibreboard (MDF) of wood or other ligneous materials, whether or not bonded with resins or other organic substances, with a thickness exceeding 5 mm but not exceeding 9 mm	m2
16.21	16.21.15	16.21.15.29	Medium-density fibreboard (MDF) of wood or other ligneous materials, whether or not bonded with resins or other organic substances, of a thickness greater than 9 mm	m2
16.21	16.21.16	16.21.16.00	Other plywood, veneered panels and similar laminated wood, of coniferous wood	m3
16.21	16.21.17	16.21.17.11	Plywood consisting solely of sheets of wood, each ply not exceeding 6 mm thickness, with at least one outer ply of tropical wood	m3
16.21	16.21.18	16.21.18.00	Other plywood, veneered panels and similar laminated wood, of other wood	m3
16.21	16.21.22	16.21.22.10	Veneer sheets and sheets for plywood and other wood	m3
16.21	16.21.23	16.21.23.00	Veneer sheets and sheets for plywood and other wood	m3
16.21	16.21.24	16.21.24.00	Veneer sheets and sheets for plywood and other wood	m3
16.23	16.23.12	16.23.12.00	Shuttering for concrete constructional work, shingles and shakes, of wood	Kg
16.23	16.23.19	16.23.19.00	Builders' joinery and carpentry of wood	Kg
16.24	16.24.12	16.24.12.00	asks, barrels, vats, tubs, and coopers products and parts thereof of wood	Kg
16.24	16.24.13	16.24.13.20	Cases, boxes, crates, drums and similar packings of wood	Kg
16.29	16.29.14	16.29.14.95	Pellets	t

Table 2 - Primary and semi-finished products, obtained directly from the processing of logs; Nace, Cpa, ProdCom coding

The production of wood panels is a primary processes, which requires a few de- tails. Wood panels are widely used in construction, furniture making, and other in- dustries due to their versatility. There are four main types of wood panels: OSB (Oriented Strand Board), Particleboard, Plywood, and MDF (Medium-Density Fi- breboard). Plywood is made from thin layers or "plies" of wood veneer that are glued together with adjacent plies, with the wood grain rotated up to 90° to each other. In this case, it can be assumed that 92 – 95% of the product consist of virgin wood.

Medium Density Fibreboard (MDF) is an engineered wood product made by combining wood fibre with wax and a resin binder and forming it into panels by applying high temperature and pressure. In this case, it can be assumed that 85 - 90% of the product consist of virgin wood.
Particleboard or chipboard is made by mixing particles or flakes of wood with a resin and forming the mixture into a board. In this case, it can be assumed that only 10% of the product consist of virgin wood, as it is mainly made from recycled wood and a resin is also added.
OSB (Oriented Strand Board) panels are mainly produced from virgin wood, rather than recycled wood. The reason is that the OSB manufacturing process requires wood chips of specific dimensions and quality, which are easier to obtain from virgin wood. However, some manufacturers may use a certain percentage of recycled wood, depending on their technical specifications and sustainability requirements. In terms of composition, OSB panels are made up of approximately 93-95% wood, while glue or resin makes up about 5-7% of the panel.

3. Proposed methodology

The published quantities are directly related to the timber used, through a simple mathematical model that takes into account some factors such as the moisture content of the raw material compared to the semi-finished products, the coefficients of use of the logs, and other aspects related to wood processing phases. The quantity of timber available for industrial production is estimated based on the relationship [1].

$$[1]\ Tav = \sum_{i}^{n} p_i * \alpha_i * \beta_i * \frac{100}{\eta_i}$$

T_{av}: Quantity of timber available for industrial production used for semi-finished and primary products, expressed in tons at standard moisture content of 12-15%.
p_i: Quantity annually published by ProdCom for each product identified in Table 2 of primary codes, based on the unit of measurement reported in the table.
αi: Conversion coefficient of the unit of measurement of the ith ProdCom code into tons

β_i: In general $\beta_i = 1$. If the ith product is a board $0 < \beta_i < 1$ depending on the types of panel as described above.

η_i: Yield of logs in sawmills. The expert panel declares a performance of around 90%.

The timber used as raw material, estimated through the reconstruction of the supply chain, is partly imported from abroad, with reference to the commodity category of roughly squared logs or blocks. Consequently, the timber for industrial use taken in Italy can be estimated [2].

[2] $$T_{Italy} = Tav - T_{imp} + T_{exp}$$

T_{av}: Quantity of timber available for industrial production used for semi-finished and primary products, expressed in tons at standard moisture content of 12-15%.

$T_{imp/exp}$: Raw imported/exported timber (standard moisture content of 12-15%)

T_{Italy}: Raw timber taken in Italy, considered with a standard moisture content of 12-15%;

Data on imported and exported quantities of wood are known and are provided annually by the foreign trade surveys: "Import/Export of goods with EU Countries" and "Import/Export with non EU countries" surveys. The basic classification used to collect statistical information on trade in goods is the Combined Nomenclature (CN) defined by the European Union and updated annually. Since the import and export of raw materials is known, in the category of "wood in the rough, whether or not stripped of bark or sapwood, or roughly squared", it is possible to estimate the amount of wood removed from Italian forests.

Starting from the timber for industrial use of Italian origin (Tav), the volumes of trees cut in Italy are estimated [3]. Moreover, it should be considered that both the estimation of the quantity of timber available for industry (Tav) and the estimation of imported and exported timber (Timp/exp) have been made considering a standard moisture content of wood equal to 12% - 15% of moisture[2].

[2] u=(m_f- m_o)/m_o *100

u: percentage of wood moisture content; m_f weight of wood referred to the moisture percentage u; m_o weight of the wood when dried.

$$[3] \quad Tf_{Italy} = \left(\frac{100+u_f}{100+u_s} * T_{Italy} \right) * \frac{100}{\eta_f}$$

Tf_{Italy}: Quantity in tons of trees cut, considering an average moisture content of wood in a range of 60% - 150%.

u_f: Moisture content of the timber at the time of extraction, in a range of 60% - 150%

u_s: Standard moisture content of the timber 12% - 15%, considering standard conditions of 20°C temperature and 65% relative humidity.

T_{Italy}: Raw timber taken in Italy, and considered with a standard moisture content of 12-15%;

η_f: Percentage ranging from 40% to 50% that represents the logs selected for primary processing in sawmills compared to the volume of felled trees, as indicated by the experts' panel.

4. Conclusion

The developed metodology provides annually an estimate of the quantity of timber used in the Italian timber supply chain, starting from the production data of the "Annual Survey of manufactured goods (ProdCom)" by Istat. The estimation is made by analysing the different phases of wood processing and identifying the wood semi-finished products and primary products obtained directly from the pro- cessing of logs. The estimation takes into account the quantity of timber available for industrial production, the conversion coefficient of the unit of measurement of the ProdCom codes into tons, and the yield of logs in sawmills.

In addition, the estimate takes into account the virgin wood used in the different types of board as well as the raw material from abroad. Finally the estimation considers the moisture content of the timber at the time of extraction and under standard conditions. The result of the analysis is an estimate of trees cut in Italy, considering an average moisture content of wood in a range of 60% - 150%.

The project idea described has been formalised with a mathematical model. This model will be verified by a panel of experts, including members of the Nace 16 division, members of professional associations, who will be asked to evaluate the proposed classification and the accuracy of the model in relation to their expertise.

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Digital technologies in academic entrepreneurship: requirements, applications, and challenges

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Abstract: This study examines the existing body of research on Academic Entrepreneurship in light of the rise of influential Digital technologies. It offers a comprehensive summary of the current state of research and presents a proposed research agenda for the future, specifically focusing on Digital Academic Entrepreneurship. The authors originally collected 37 journal publications from Scopus and evaluated their content parallel to picking the papers for their study. Initial results indicate a significant lack of literature on Digital Academic Entrepreneurship, with the existing studies being predominantly unconnected.
The study aims to give a comprehensive and detailed examination of the disruptive impact of the digital revolution on academic entrepreneurship.

Keywords: education, digital transformation, digital academic entrepreneurship.

1. Introduction

Academic entrepreneurship is vital in a society that relies on information as a foundation [Sieg, P., Posadzinska, I., Jo, M., 2023]. The main activities that define academic entrepreneurship include collaboration between universities and industry in research and management, as well as the implementation of spin-offs of ideas in

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firms [Toniolo, K., Masiero, E., Massaro, M., Bagnoli, C. , 2020; arcez, A., Silva, R., Franco, M., 2022].

To assess the trend of Digital Academic Entrepreneurship, it is crucial to examine the adoption and establishment of digital technologies in the academic sector after the onset of the COVID-19 pandemic and the ongoing socio-economic turmoil caused by the conflict in Ukraine.

Long et al. [Long, D., Xie, Y., Wei, Y., Zheng, J., 2022] state that digital entrepreneurship, which involves merging digital technology with entrepreneurship, has a transformative impact on the structure of the real economy and the arrangement of industries. This research seeks to elucidate the notion of Digital Academic Entrepreneurship, which has generated significant attention within the scientific community due to the growing importance of digital technologies in the academic sphere [Secundo, G., Rippa, P., Cerchione, R., 2020]. Public and private colleges progressively adopt a business-focused approach and have emerged as significant contributors to reshaping entrepreneurial ecosystems [Dell'Atti, V., Russo, G., Dicuonzo, G., Palmaccio, M., 2023].

The main objective of this research is to analyse the influence of digital so-utions on academic entrepreneurship, considering the factors above. This study in- tends to comprehensively analyse the existing information on the correlation between digitalisation and academic entrepreneurship. The objective is to propose potential avenues for further research.

2. Method

This project will employ structured literature review (SLR) approaches to examine and identify the crucial research areas (RA) that impact Digital Academic Entrepreneurship. The study will concentrate on discerning current and forthcoming patterns, innovative perspectives, and possible avenues for further investigation. This research will thoroughly examine the descriptive analysis, specifically focusing on the sources referenced in citations 7 to 11.

Secundo et al. [Secundo, G., Del Vecchio, P. Mele, G., 2021] state that doing a Systematic Literature Review (SLR) consists of the following stages:

- Establish the specific inquiries to be addressed in the research;
- Create a systematic plan for doing research
- Identify the publications to be analyzed;
- Establish a coding framework;

- Perform a rigorous analysis and discussion while suggesting future research possibilities and directions.

To begin an SLR, one must first establish research inquiries that seek to delineate the evolving nature, focus, and ramifications of the scientific literature over some time [Massaro, M., Handley, K., Bagnoli, C., Dumay, J., 2016].

The query syntax examined the fields "Title," "Keywords," "Abstract," and "Authors" within the survey perimeter. The search focused on terms such as "academic entrepreneurship" OR "entrepreneurial universit*" AND "digital technolog*" OR "digital transformation" OR "digitalization" and related terms in peer-reviewed journals [Keupp, M.M., Palmié, M., Gassmann, O., 2012].

Data were collected in September 2023. A descriptive analysis was conducted on the 37 selected documents. The descriptive analysis focuses on some aspects of a publication, such as the temporal distribution of published articles [Dumay, J., 2014].

3. Preliminary findings

Based on the publication dates shown in Figure 1, the issue being discussed ap- pears relatively recent. Since 2018, there has been a surge in interest in this field of research, but the subject is still in its nascent stage. Research interest has had a significant and continuous increase since 2020. The increased attention towards Digital Academic Entrepreneurship can be attributed to the rising acknowledgement of its significance in education and the scientific community.

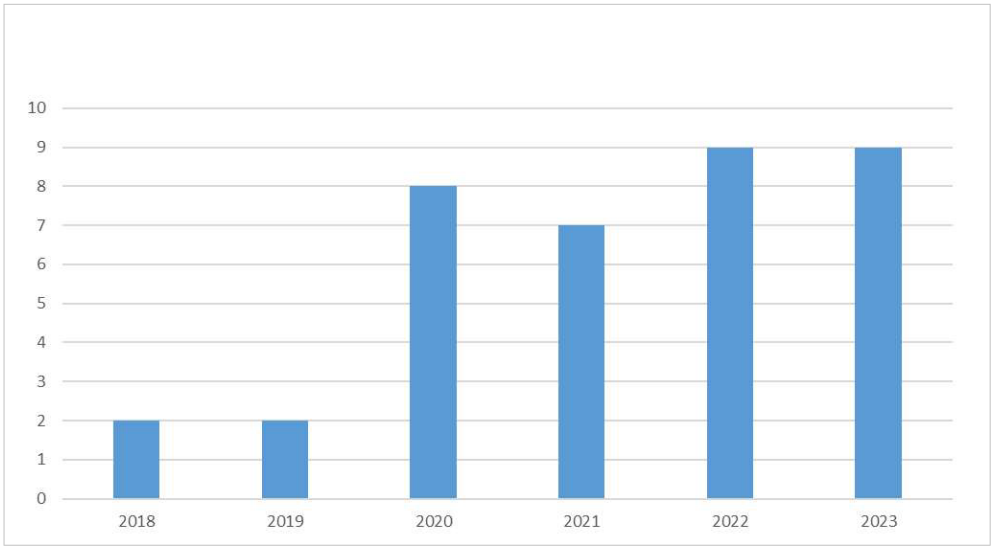

Figure 1: Distribution of papers over time. Authors' elaboration as a source.

As depicted in Figure 2, 65 % are exploratory articles about Digital Academic Entrepreneurship, indicating the scientific community's keen interest in this study area.

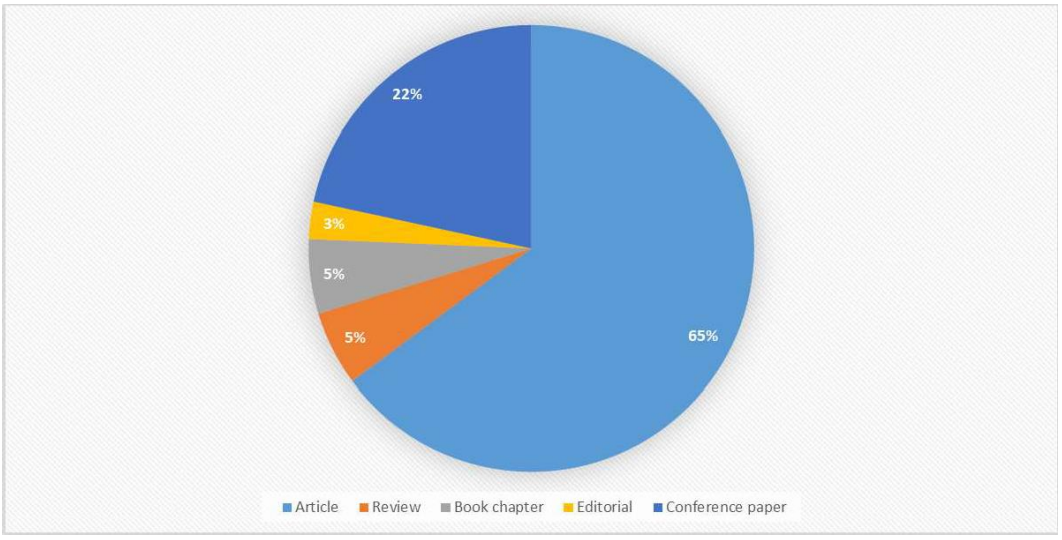

Figure 2: The types of documents published from 2018 to 2023.
Authors' elaboration as a source

The authors found it intriguing to examine the several fields within the educa-

tional sector that had the most significant influence on digital technology (Figure 3). Consequently, the field of Business, Management, and Accounting receives the highest scrutiny regarding scientific paper publications. Next, the Social Sciences sector is particularly intriguing in demonstrating the relevance of digital technology's social, emotional and cognitive components inside the academic system.

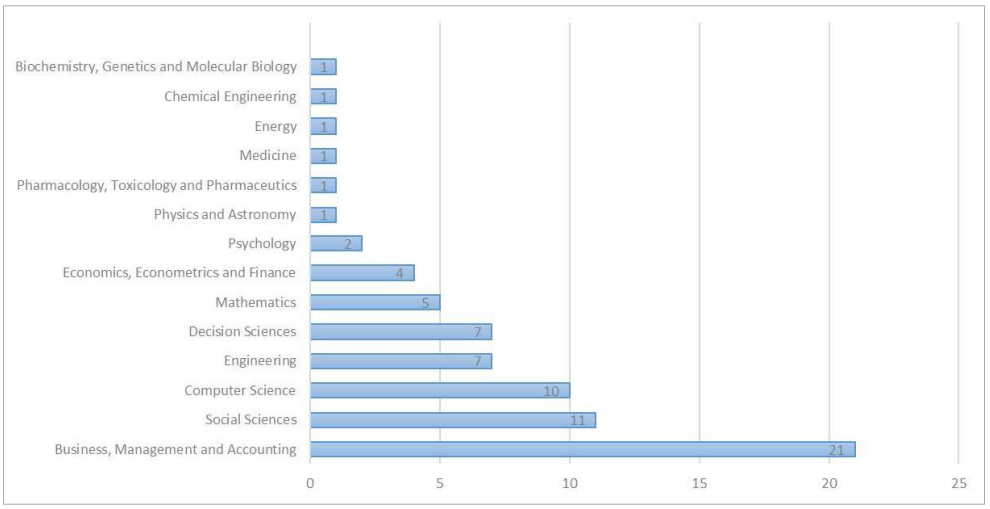

Figure 3: Types of research areas investigated from 2018 to 2023.
Authors' elaboration as a source

4. Conclusion and future direction

This paper focuses on analysing the influence of digital solutions on academic entrepreneurship. It explicitly covers the early phase of the descriptive study of the issue. The authors are intrigued by the outcomes shown in Figure 3, as well as the originality and relevance of the subject matter. As mentioned earlier, the Social Sciences is the second most extensively studied area. This indicates the scientific community's present focus on investigating and analysing the potential influence of social and cultural factors on integrating digital technologies into the academic system. Subsequently, it is necessary to conduct a meticulous content analysis to discern nascent research domains.

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Exploring the determinants for the adoption of human rights policy

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Abstract: The growing interest in non-financial information has led companies to publish more and more environmental, social and governance information in the different existing tools of voluntary or mandatory reporting. By disclosing non-financial information, companies also express their commitment to respecting human rights standards and their efforts to reduce potential risks and impacts. In a global context that emphasises sustainable practises, companies are also called upon to commit to respecting human rights and to disclose the policies adopted and their impacts, as well as the associated risks and management practises. By establishing clear and well-structured policies, companies can demonstrate their commitment to protecting fundamental human rights in their relationships with stakeholders such as employees, suppliers, customers, and local communities. A company's human rights policy plays a pivotal role in providing stakeholders with important information to assess a company's ethical practises and social impacts. In addition, the policy adoption enables the company to cultivate an organisational culture that upholds the intrinsic value of human rights. Given the limited number of studies in the literature, this study aims to investigate the determinants of human rights policy adoption in European companies through a quantitative analysis.

Keywords: human rights policy, human rights determinants, non-financial disclosure, European companies.

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1. Introduction

Today's business landscape is characterised by a very dynamic, discontinuous, and complex social and economic environment. In this context, companies also face increasing pressure to respect human rights in their daily operations. The respect for fundamental human rights is seen as an unquestionable moral obligation (Wettstein, 2009). Human rights and anti-corruption are two main areas of corpo- rate sustainability reporting (CSR) that have long been overlooked by organisa- tions. Changes in corporate reporting practises have led to a strong academic focus on the disclosure of non-financial information over the last two decades.

Academic research has highlighted the urgent need for improvements in the disclosure of non-financial information (Unerman and Chapman, 2014; Erkens et al., 2015). The value of human rights is recognised as a lever of sustainability, as required by European legislation in Directive 2014/95/EU. The adoption of the directive in Europe is a significant milestone, highlighting the importance of providing non-financial information for long-term economic growth, social justice and environmental protection. The Directive requires all EU Member States to integrate these standards into their national legislation. Large companies are required to report information on various non-financial topics, including human rights. Several empirical studies have examined the current state of reporting on non-financial information in European and Italian companies (Carmo et al., 2022; Mio and Venturelli, 2013; Montecchia et al., 2016). In a context where human rights and sustainable practises are at the forefront, the European Directive requires companies to explain their policies, the impact of these policies and the associated risks and management procedures. Human rights policies play an essential role in providing stakeholders with important information for analysing a company's ethical practises and social impact. These policies not only improve transparency but also promote a corporate culture that upholds the intrinsic value of human rights (Hess, 1999). However, the analysis of the factors that drive companies to take action to respect human rights seems to have been scarcely explored in the limited literature on the subject, where there are many qualitative studies. The aim of this paper is therefore to examine the adoption of human rights measures by answering the following research question:

RQ: What factors influence the adoption of human rights policies within companies?

The article aims to delve into the topic of large European companies that belong to the STOXX 600 index. These companies are generally affected by the European

directive on non-financial statement and should therefore have taken measures to respect human rights. By examining the factors that influence the implementation of human rights policies, this article sheds light on the reasons behind companies' commitment to the promotion of human rights and responsible business conduct. By assessing the state of human rights reporting and its underlying determinants, companies and policy makers can promote the development of a sustainable and ethically responsible business environment.

The remainder of the article is structured as follows. In section 2 we present the theoretical background, while in section 3 we explain the development of the hypothesis. The methodology is presented in section 4 and the results and discussion in section 5. Section 6 contains concluding remarks.

2. Theoretical background

The concept of human rights plays a central role in the field of social responsibility, ethics and social justice. Yet it is only recently that there has been a concerted effort to establish a more formal link between the concept of human rights and companies. In recent years, the issue of non-financial disclosure of human rights information has been widely discussed in academic literature and discourse. Non-financial disclosure is a strategic initiative that significantly improves companies' communication with their stakeholders (Fonseca, 2010; Miska et al. 2013). Given the increasing public pressure on commercial organisations to be accountable for human rights, as well as the complexity and sensitivity of human rights issues, studies emerged that examined the willingness of companies to disclose non-financial information on human rights. In the existing literature, these studies fall into two main categories: quantitative and qualitative.

Among qualitative studies, Hess (2019) has shown that human rights indicators, in existing sustainability reporting standards, are either not meaningful or focus on less important data. Furthermore, the analysis of sustainability reports reveals per- sistent problems of selective disclosure, impression management and incomparable disclosures. The study suggests that companies need to improve their communication of social and environmental information to investors, customers, employees, legislators, and other interested parties to support inclusive and responsible growth. The connections between human rights duty-bearers and human rights-holders (such as employees and customers) form the basis of the analytical framework pro- posed by Zagelmeyer (2020). He highlights how the roles and relationships of ac-

tors, and the goals of these relationships form the system of international corporate governance and human rights. According to Daily and Huang (2001), investment in human resources is imperative to maintain high standards of sustainability. Corporate decision-making levels should recognise that human rights management and control systems can be important elements for environmental success. In Europe, the issue of non-financial human rights disclosure has gained more attention fol- lowing the implementation of Directive 2014/95/EU. Lombardi et al. (2021), by examining case studies of two large Italian companies, have shown that the European Directive has brought about changes in companies' organisational roles, responsibilities, and procedures to ensure the completeness and reliability of non-financial information (NFI) and its preparation.

Among the quantitative studies, Lopatta et al. (2022) found that the 500 largest global trading companies have low levels of corporate human rights disclosure, indicating a lack of awareness, sensitivity, and transparency. Carmo et al. (2022) investigated the impact of Directive 95/2014/EU on the quality of NFIs disclosed by listed companies in Portugal. The research showed that companies that practise high quality voluntary reporting maintain it even after the directive enters into force. These findings contribute to a deeper understanding of the regulatory impact on NFI disclosure practises and shed light on companies' behaviour in complying with non-financial reporting standards in the context of the implementation of the Directive. Matuszak and Rozanska (2021) conducted an in-depth study of non-financial disclosure (NFD) practises among companies listed on the Warsaw Stock Exchange during the implementation of Directive 2014/95/EU. Using a content analysis and a disclosure index, the study found that non-financial disclosure increased significantly, especially in relation to human rights and anti-corruption. In particular, the Directive had a significant impact on companies with previously limited non-financial disclosure, leading to improved consistency across different industries. Dumitru et al. (2017) studied the quality of non-financial disclosure in Poland and Romania before the implementation of the European Directive. They also analysed the diffusion of this reporting practise through the lens of institution- al pressure. The study found that the quality of disclosure was influenced by previ- ous regulations, local institutional characteristics, ownership structures, industry affiliation and auditors.

Despite the relevant perspectives emerging from existing human rights literature, it is important to recognise and examine the following limitations. First, the topic of non-financial disclosure on human rights is relatively new and evolving, so it is difficult to grasp the full spectrum of practices of countries around the world. In

particular, the relevance of human rights policy is a topic little discussed and addressed by studies of existing literature (Meek et al., 1995; Aaronson,2002). Collecting accurate and reliable data on companies' human rights performance is complex and requires an interdisciplinary approach. Furthermore, there is a significant gap in empirical analysis that examines the impact and interrelationships between key variables. To bridge these gaps, this research adopts a quantitative approach to investigate how key determinants affect policy adoption in European companies.

3. Research hypotheses

The introduction of a human rights policy in a company can be influenced by various factors. Studies in the existing literature (Grey et al., 1995; Patten, 2002) highlight the importance of the firm size as a factor determining the adoption of sustainability policies. As Foster (1986) points out, the variable most often reported as significant in studies examining differences among firms in their sustainability policies is firm size. In general, large companies are more sensitive to attention to social and environmental issues than small companies. In particular, stakeholders put more pressure on larger companies, leading to higher expectations for environmental, social and governance (ESG) compliance. Companies need to meet user demands as they are more vulnerable to political consequences of their actions. The econometric analysis developed by Carmo and Ribeiro (2022) supports this theory by demonstrating the statistical significance of company size on the company's adoption ESG policies. By establishing clear and well-structured policies, companies can demonstrate their commitment to protecting fundamental rights in their business operations and in their relationships with all stakeholders involved. They should develop procedures to address ethical challenges and respect human rights in all business activities. Commitment to these policies is a sign of corporate social responsibility and can have an impact on a company's reputation. Based on the assumption that company size can have an impact on the adoption of human rights policies, the following hypothesis can be made:

H1: Firm size positively influences the adoption of human rights policies.

Corporate profitability is recognised as another crucial factor that can influence the adoption of human rights measures, as evidenced by the existing literature. According to Haniffa and Cooke's (2005) study, there may be a relationship between corporate profitability and corporate social responsibility disclosure. This could be

because profitable companies are able to implement and share more comprehensive social responsibility programmes and strategies with their shareholders. Moreover, by disclosing social information, these companies are able to demonstrate their commitment to the welfare of society, which helps to legitimise their existence. This link is also highlighted by Sahari and Hamzah (2014) and Lopatta (2022), who identified profitability as a control variable to assess potential influences on human rights disclosure. Based on these assumptions and the existing literature, the following hypothesis can be formulated:

H2: Firm profitability positively influences the adoption of human rights policies.

Organisations have gradually moved towards a governance framework centred on the introduction of CSR committees. More and more of these companies have established sustainability committees as part of their governance structures. According to Amran et al. (2014), a sustainability committee is important for providing information on sustainability and demonstrating a company's commitment to CSR to stakeholders. Kılıç and Kuzey (2018) found that the involvement of a sustainability committee has a significant impact on the level of corporate disclosure. The presence of a CSR committee or a board member responsible for sustainability issues indicates that the company takes an active strategic position towards stakeholders (Ullman 1985). According to Post et al. (2002), a CSR committee is usually responsible for evaluating policies and practises that are consistent with the company's values and commitment to sustainability issues. Therefore, the following hypothesis can be formulated:

H3: The existence of a CSR committee in a company positively influences the adoption of human rights policies.

According to Sierra-Garcia et al. (2018), companies that share more information on human rights tend to publish sustainability reports. Doni et al. (2019) also studied the corporate reports of 60 Italian companies. They investigated whether companies' sustainability activities influence their non-financial statements. The study found that pre-existing non-financial reporting capabilities and competencies have a significant impact on the ESG information published. The existence of a human rights policy in companies can be strongly influenced by the company's decision to publish a sustainability report. The publication of non-financial information primarily promotes respect for ESG issues about which all stakeholders need to be informed. CSR reports provide comprehensive information on a company's social, environmental and governance performance, including human rights aspects. By

increasing transparency through these disclosures, stakeholders can better assess a company's impact on society and the environment, which in turn motivates companies to have clear and verifiable human rights policies. As a result, it can be assumed that:

H4: The corporate decision to publish a sustainability report positively stimulates the adoption of human rights policies.

4. Methodology

To test the formulated hypotheses, we conduct a quantitative study using secondary data from the Refinitiv database. The study population includes companies belonging to the STOXX 600, a European index comprising companies from seventeen different nations. Specifically, a cross-sectional analysis was conducted for the year 2021 on 497 companies excluding those for which it was not possible to find data. The dependent variable in the model is Human Rights Policy (HRP), a score provided by Refinitiv that indicates the extent to which a company has a policy excluding child, forced or compulsory labour or guaranteeing freedom of association that is universally applied regardless of local laws. The independent variables are size (FSIZE), measured as the natural logarithm of the total number of employees; firm profitability (ROA), expressed by return on assets, calculated by dividing a company's net profit by the average of its total assets; CSR committee (CSRcom) a dummy variable that takes the value of 1 if the company has a CSR committee or team, and 0 otherwise; CSR sustainability reporting (CSRrep) is a dummy variable that takes the value of 1 if the company publishes a sustainability report or non-financial information document, and 0 otherwise. To improve the quality of the model, control variables are included in the model. These include the age of the company (FAGE) and the ESG score, which measures the ESG performance of the company. We decide to use the Tobit model because the value of the dependent variable is truncated and not continuous ranging from 0 to 100. Therefore, the applied model is represented by the following equation:

$$HRP_i = \beta_0 + \beta_1 FSIZE + \beta_2 ROA + \beta_3 CSRcom + \beta_4 CSRrep + \beta_5 FAGE + \beta_6 ESGsc + \varepsilon_i$$

5. Results and discussion

Table 1 provides an overview of the descriptive statistics for the variables ana- lysed. In addition, the effect of multicollinearity is not significant as variance in- flator factor (VIF) test shows that values are less than 10 (Myers, 1990). Table 2

instead shows the regression results where hypotheses 1, 3 and 4 are confirmed. The test shows that the model is highly significant with a high chi-square (313.33) and a p-value very close to zero (1.16e-68). The sigma value (12.00) indicates that there is some residual variation around the regression line, which is considered ac- ceptable for the purposes of the analysis.

Variables	Mean	Median	HRP	FSIZE	ROA	CSRcom	CSRrep	FAGE	ESGsc
HRP	75.42	76.92	1.00						
FSIZE	4.11	4.21	0.24 ***	1.00					
ROA	6.77	5.31	-0.01	-0.22 ***	1.00				
CSRcom	0.86	1.00	0.22 ***	0.27 ***	-0.11 *	1.00			
CSRrep	0.98	1.00	0.24 ***	0.21 ***	-0.02	0.21***	1.00		
FAGE	40.26	28.00	0.10 *	0.17 ***	-0.01	0.12 **	0.10 **	1.00	
ESGsc	72.40	74.8	0.29	0.50 ***	-0.16	0.47 ***	0.29 ***	0.10	1.00

Table 1 – Mean, standard deviation and correlation matrix.

Notes: N. = 497; *** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level

The positive relationship between company size and human rights policy suggests that larger companies may have greater resources and capabilities to develop and implement a comprehensive human rights policy. Consequently, H1 is accepted. Similarly, the significance of the CSR committee variable confirms the positive relationship already demonstrated in the existing literature, and this confirms H3. A sustainability committee composed of individuals with experience and professionalism certainly acts as a driving force for the company by supporting the board with investigative functions of a propositional and advisory nature in evaluations and decisions related to sustainability issues. Finally, the fourth hypothesis states that companies that engage in CSR sustainability reporting are more inclined to adopt a human rights policy. The positive association with CSR sustainability re- porting underlines the importance of transparency and accountability for the adop- tion of human rights policies. This aspect confirms the choice adopted by the Euro- pean Union which has obliged large companies to publish an annual sustainability report. Regarding the profitability variable (H2), the results show that there is no significant relationship with the dependent variable. This result is consistent with the findings of Cahaya and Hervina (2018) who found that profitability has no sig-

nificant effect on human rights disclosure. The possible explanation for this result is that companies may be motivated to adopt a human rights policy to demonstrate their commitment to ethical ideals and social obligations, regardless of the short- term financial impact. Furthermore, the adoption of human rights policies should be guided by the company's ethical values and strategic approach, rather than by economic and financial outcomes.

Variables	Coef.	Std. Err.	p-value
FSIZE	2.17	0.83	0.0091 ***
ROA	0.05	0.06	0.3578
CSRcom	4.06	1.80	0.0240 **
CSRrep	17.09	4.78	0.0003 ***
FAGE	0.02	0.02	0.2763
ESGsc	0.11	0.05	0.0325 **
Cons	37.07	5.18	<0.0001 ***
Number of obs.	497		
Chi-square	313.33 *p-value* 1,16e-68		
sigma	12.00 (0.38)		

Table 2 - Regression analysis

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level

6. Conclusion

This article provides an initial examination of the key factors driving corporate adoption of human rights policies. It highlights the complexity of corporate responsibility and the importance of implementing human rights policies in building a more ethical and sustainable business environment. The findings of the study have both practical and theoretical implications.

The analysis conducted shows the active role of the CSR committee, which is a fundamental body within companies to ensure the implementation of sustainable policies and respect for human rights. In this context, it is worth highlighting the positive policies of individual states in the field of corporate governance, which encourage companies to set up committees or integrate social responsibility aspects into their management. Furthermore, this study confirms what has already been established by the European Union regarding the obligation for companies to publish a sustainability report. Other countries should work towards the introduction of similar regulations. Therefore, the results of the study also offer valuable sugges-

tions to policy makers.

From a theoretical point of view, the study contributes to the existing knowledge on this topic by deepening the aspects that influence the adoption of this policy by companies. However, the study has some limitations. The study is limited by the lack of sufficient data on human rights policies, which makes it difficult to conduct a more comprehensive analysis. In addition, the study relied on cross-sectional da- ta, which limits its ability to track changes over time and demonstrate causality. Future research on the adoption of human rights policies in companies should in- clude longitudinal analyses to observe changes over time.

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Tourism in older population: an analysis of TripAdvisor reviews

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1. Introduction

Population aging is a widely recognized phenomenon in developed countries, where the proportion of older individuals has steadily increased over the past cen- tury [Horneman, L., Carter, R. W., Wei, S., Ruys, 2002]. The global population's age distribution is undergoing rapid change, with the median age rising and a con- sequent decline in the younger population [Harper, 2014]: Italy has emerged as the oldest country in Europe as of 2022, with a median age of 48 years.

Population aging is predicted to be a significant social transformation in the 21st century, affecting various sectors, including labour and financial markets, housing, transportation, social protection, and tourism [United Nations, 2015]. Tourism, in particular, stands to benefit from targeting the elderly as a potential market seg- ment with substantial economic significance for the hospitality and tourism indus- try [Patterson, I., Balderas, A., 2020]. Within the tourism industry, seniors are emerging as a prominent market segment, both in terms of the frequency of their trips and the significant amount they spend [3], becoming a recognized phenome- non worldwide [Jang, S., Wu, C. M., 2006]. Senior travellers have attracted increasing

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attention from tourism researchers, service providers and governments because of their remarkable growth in numbers and spending patterns [Glover, P., Prideaux, B., 2009]. This population segment represents a large untapped market, making it a significant driving force for the tourism industry [Meiners, N., Seeberger, B, 2012], because senior travellers are wealthier, healthier, more active, and have more leisure time than previous generations [Horneman, L., Carter, R. W., Wei, S., Ruys, H., 2002].

Recognizing the potential of the senior travel market, professionals in the tourism and hospitality industry have actively developed competitive business and marketing strategies specifically tailored for older tourists [Sedgley, D., Pritchard, A., Morgan, N., 2011]. To gain a comprehensive understanding of the needs and preferences of the elderly population, we conducted an analysis on reviews from TripAdvisor, focusing on hotels and accommodation facilities. These reviews provide valuable and spontaneous feedback from tourists, offering a rich blend of opinions and impressions. So, we employed Non-Negative Matrix Factorization to extract meaningful insights from reviews for the identification of the main discussion topics and to inform researchers and industry practitioners on the topics of interest. This analysis enables tourism and destination management operators to gain a deeper understanding of the feedback and leverage this technique to enhance their offerings and attractions, ensuring a more enjoyable experience for senior travellers.

2. Theoretical background

To identify the main themes related to the needs of older people during vacations, a data extraction process was conducted using TripAdvisor Italy reviews. The aim of this preliminary work is to comprehend the distinct requirements of senior tourists by analysing reviews, which shed light on the factors influencing their choice of accommodation. Additionally, the research aims to examine the geographical distribution of these needs across various regions of Italy. By identifying and understanding these specific needs, we can assess their impact on the tourism industry, offering valuable insights for better catering to elderly tourists' preferences and enhancing their overall travel experiences. In pursuit of our objectives, we formulated the following research questions:

RQ1: How is the user rating distributed across different regions in Italy? Addi-

tionally, how does it compare to ratings in other countries worldwide?

RQ2: What are the specific needs of elderly travellers concerning accommodations, and how do these needs influence their decision-making process when choosing a place to book?

For doing this, we devised code in Python that extract reviews from TripAdvisor containing the query "anziano" and its various declinations in the text. The goal is to gather valuable insights from these reviews. The following variables were extracted: username of the review writer, date of the review, rating expressed by the user, address, and region/state where the facility is located, and the text of the review. The extraction process successfully collected a total of 3.536 reviews from 2008 to 2023 that were relevant to the needs of older people during vacations. Text analysis involves several important steps to extract meaningful information from a given collection of documents. The initial step is tokenization and parsing, which involves identifying sequences of characters in the text and breaking down into distinct tokens. These tokens are strings of characters separated by spaces, punctua- tion marks, or other characters. This process helps in reducing the text to basic graphic forms.

After that, we performed some phases of normalization to reduce language variability. One common normalization technique is converting all the characters to lowercase to ensure consistency and to standardize all the terms. So, the text is subjected to grammatical tagging, that marks each word in the corpus to indicate its corresponding part of speech (POS) based on its definition and context. Common parts of speech like nouns, verbs, and adjectives are typically selected during this phase.

Next, lemmatization is performed, which involves reducing each inflected word to its base form or lemma. For verbs, this means considering their infinitive form, for nouns, their singular form, and for adjectives, their masculine singular form. Lemmatization ensures that different inflections of a word are treated as a single, unified term, simplifying the overall text analysis process.

After removing the stop-words (such as prepositions, articles, or other words as meaningless as they are isolated from context), we have streamlined the text analysis process to focus on more meaningful terms. As a result, we constructed a vocabulary that reports a list of unique terms (types) along with their respective occurrences. We had 2.450 types, 13.488 tokens and 3.356 documents. Next, we constructed the term-document matrix, where the rows represent the terms, and the columns represent the documents. On this matrix, it is possible to apply different topic modeling techniques to frame which topics of interest guests find important

[Rossetti, M., Stella, F., Zanker, M., 2016; Sutherland, I., Kiatkawsin, K., 2020; Sutherland, I., Sim, Y., Lee, S. K., Byun, J., Kiatkawsin, K., 2020]

In our work, we applied the Non-Negative Matrix Factorization (NMF) to define the major topics of discussion. NMF is an unsupervised technique already established in the literature used to reduce the size of high-density data by discovering the underlying low-density structures [Kuang, D., Choo, J., Park, H., 2015]. It has been used in many applications, such as audio source separation, image classification, and visual tracking because it imposes nonnegativity constraints on the factor matrices makes the results easily interpretable. This is particularly useful for textual data analysis, where clusters of terms that are created can be interpreted as arguments. In fact, NMF has gained significant attention in machine learning and text data mining research due to its effectiveness in identifying topics within text corpora. Compared to Latent Dirichlet Allocation (LDA) method, NMF has the advantage of involving fewer parameters in the modeling process and excels in identifying niche topics often overlooked by LDA approaches [14]. Selecting the optimal value of k (the number of topics) in NMF can be achieved using various methods, one of which suggests determining the value where the cophenetic coefficient starts to decrease (Brunet et al., 2004). By applying NMF to the term-document matrix, primary themes can be extracted from the collection of documents [Alshalan, R., Al-Khalifa, H., Alsaeed, D., Al-Baity, H., Alshalan, S., 2020; Grassia, M. G., Marina, M., Rocco, M., Misuraca, M., Agostino, S., 2023].

3. Main results

Reviews express different perspectives or aspects of the experience a user has had with an object. Therefore, extracting and interpreting these dimensions can be leveraged to enhance the accuracy of systems that automatically process these reviews, aiming to improve user experiences on such platforms or extract some form of commercial value from this review data. Before proceeding to define the main themes extracted from the reviews, we conducted an in-depth analysis of the distribution of user ratings across various Italian regions (Fig.1) and other countries (Fig.2). This examination provided us with valuable insights into the overall satisfaction levels and preferences of customers in different geographic locations. Ratings play a fundamental role in the tourism review ecosystem, providing users with essential information to make well-informed decisions, enhancing their travel experiences, and contributing to the growth and improvement of the tourism industry. For the Italian facilities (Fig. 1), it is evident that the overall distribution of ratings tends to be positive, with most scores falling above three. This indicates that most users had satisfactory experiences and expressed their contentment through higher

ratings. Among the Italian regions analysed, Basilicata and Sardinia stand out as top-performers, both receiving a rating value of 4. These regions have managed to create memorable and enjoyable experiences for older travellers, garnering high levels of satisfaction from visitors. On the other hand, Molise appears to have re- ceived a negative score, indicating that some older users may have had subpar ex- periences or encountered issues during their travels in this area.

On a global scale (Fig.2), the analysis of user ratings for elderly care facilities reveals interesting patterns in user preferences and satisfaction levels across different countries. According to the data, Italian tourists who chose outdoor vacations provided positive feedback and expressed appreciation for facilities mainly located in Kenya, Japan, the Czech Republic, and Cuba. These countries have managed to create environments that are highly valued by the elderly residents, providing exceptional care and services that have garnered positive reviews from users. In contrast, the user ratings indicate a less favourable perception of elderly care facilities in San Marino, Morocco, and Croatia. This suggests that users in these countries may have encountered challenges or perceived shortcomings in the quality of care, amenities, or services provided by the facilities.

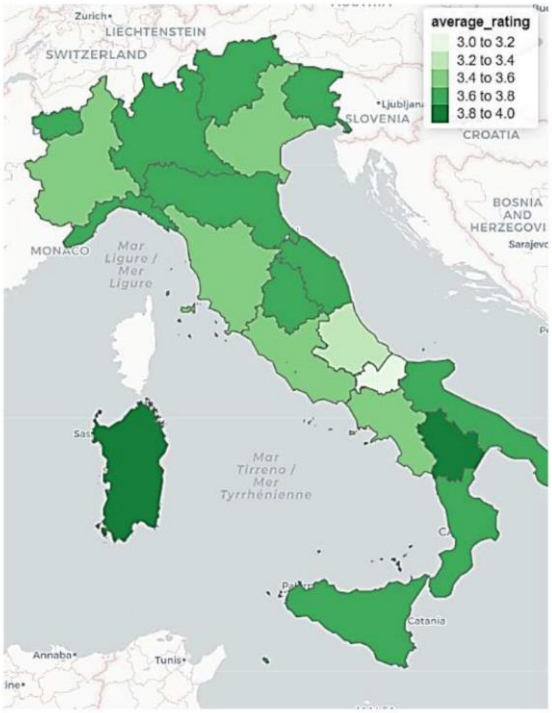

Figure 1- Average rating for Italian regions

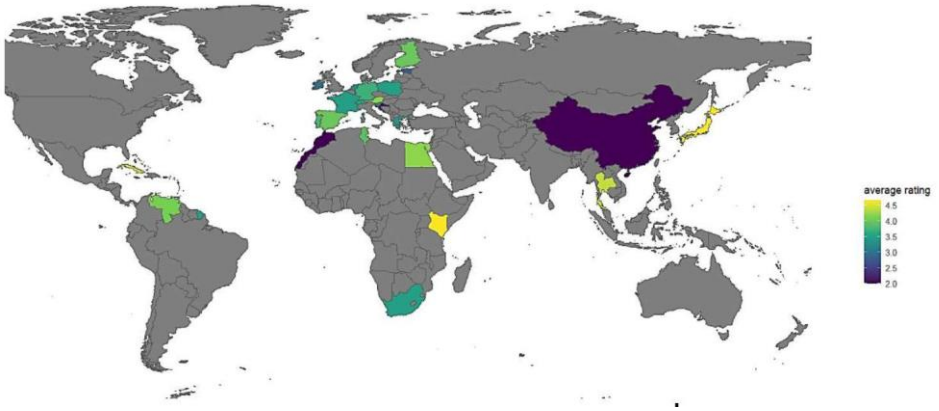

Figure 2 – World map with average rating for country

Once the rating trends provided by users were visually analysed, we embarked on identifying the main themes extracted from the reviews on TripAdvisor, focusing on the elderly vacation experience. According to the measure of cophenetic coefficient, we extracted 4 topics which shed light on the specific services and preferences that elderly customers look for when booking facilities for their vacations. One prominent theme that emerged from the reviews is the significance of tailored services catering to the unique needs of customers. This includes amenities and features designed to enhance their comfort and mobility during their stay. From accessible facilities and accommodation options to personalized care services, these considerations play a pivotal role in ensuring a delightful vacation experience for senior guests. Moreover, it was evident that senior tourists show a preference for vacation facilities located in serene villages, ideally with proximity to the sea and pool areas. Then, some elderly couples may require assistance or care services during the vacation, such as medical staff or caregivers, depending on their individual needs. So, an important aspect related to this topic is mobility, which plays a crucial role in ensuring a comfortable overnight stay for elderly clients. It is essential for facilities to offer transportation services to facilitate their movement and make it easier for them to get around during the stay.

Ensuring the availability of these services can provide them with peace of mind and support the well-being during the holiday. Personalized activity plans are also crucial for older adults couples. Offering a diverse range of activities that cater to

their interests and travel pace allows them to fully enjoy their vacation experience. Whether they prefer leisurely sightseeing, cultural excursions, or engaging in recreational activities, providing customizable options ensures that they can engage in activities that resonate with their preferences. The importance of spacious and well-appointed rooms was another recurrent theme in the reviews. Senior guests often prioritize rooms that offer ample space to move around comfortably and are equipped with amenities that promote comfort, such as air conditioning. Such fea- tures contribute significantly to the overall enjoyment and well-being of guests. Additionally, the proximity of vacation facilities to places of attraction emerged as a vital consideration for senior guests. The ability to explore nearby tourist spots or cultural landmarks without extensive travel to immerse themselves in local experiences and make the most of their time during the vacation.

Topic 1	Topic 2	Topic 3	Topic 4
Colazione	Mare	Personale	Camera
Pulizia	Spiaggia	Cordialità	Letto
Posizione	Animazione	Servizio	Bagno
Prezzo	Villaggio	Assistenza	Spazioso
Last_minute	Piscina	Attività	Scale
Buffet	Ristorante	Centro_Termale	Doccia
Parcheggio	Attrezzatura	Famiglia	Ascensore
Pranzo	Spazio_Verde	Cucina	Accesso
TV	Relax	Sala	Mobilità
Aria_condizionata	Ombrellone	Ristorante	Navetta

Table 1 – Terms associated with topics.

After identifying the underlying topics, we associated each review with its relevant topic of discussion. This allowed us to group the documents by region, enabling us to determine the prevailing topic for each area. By adopting this approach, we could visualize the distribution of extracted topics across different Italian regions and gain valuable insights into the geographical dispersion of senior tourists' needs.

As depicted in Figure 3, the theme concerning services and infrastructure appears to be widely discussed in the north-central part of Italy. This finding suggests that

travellers in this region show a significant interest in the quality of services offered by hospitality establishments and the overall infrastructure supporting their travel experiences. The second topic, centred around facilities with a diverse range of marine equipment, is prominently discussed in southern Italian regions. So, who visit these areas are particularly interested in amenities and services related to marine landscape and relax. This finding could be of great value to hospitality businesses operating in the southern regions, as they can tailor their offerings to cater to the specific interests of their target audience, thereby enhancing guest satisfaction and loyalty.

On the other hand, Friuli Venezia Giulia and Trentino Alto Adige emerge as the regions where activities and experiences offered by the facilities are the primary focus of discussions. This indicates that travellers in these regions place a strong emphasis on engaging in various recreational and cultural experiences, such as hiking, sightseeing, and exploring local attractions. Interestingly, Topic 4 appears to be less discussed in Italy compared to the other topics, with its prevalence being relatively low across other nations.

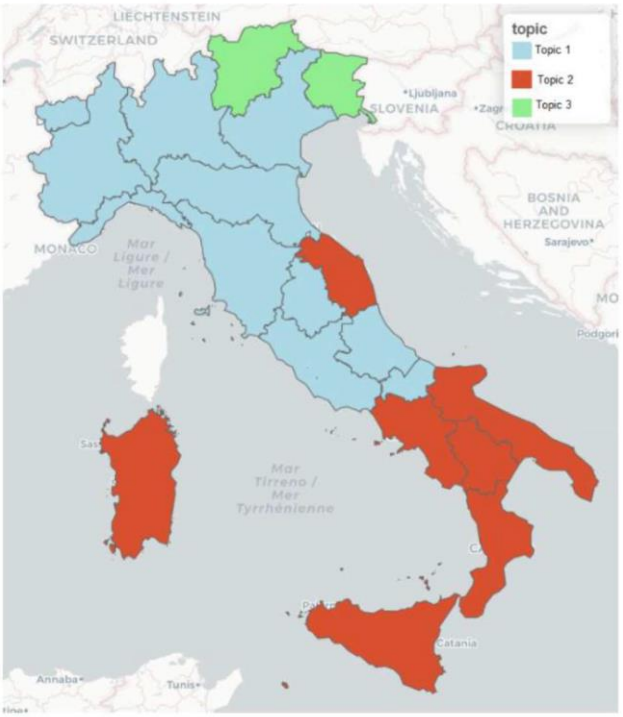

Figure 3 – Distribution of topics across Italian regions

4. Preliminary conclusions and future developments

In conclusion, this work sets out to conduct a preliminary analysis of the needs and perceptions of senior tourists. Understanding user preferences and satisfaction levels is crucial for enhancing the tourism experience for older adult guests. For Italian facilities, most ratings were positive, indicating satisfactory experiences and high levels of contentment among users. Basilicata and Sardinia stood out as top-performing regions. San Marino, Morocco, and Croatia received less favourable ratings, suggesting potential challenges in the quality of care and services. Countries with lower ratings should address concerns to improve the overall travel experience (RQ1).

By recognizing the preferences and needs faced by senior travellers, it is possible to devise a set of strategies to improve tourism offerings by accommodations. This approach enables to understand the distinctive attributes that attract visitors to specific areas. By exploring the regional prevalence of different topics, stakeholders in the tourism industry can make informed decisions and tailor their offerings to cater to the diverse needs of travellers, ultimately enhancing the overall tourism experience in Italy. We have identified the major topics that contribute to the satisfaction of senior tourists. Accessibility and safety emerged as fundamental considerations, with the provision of accessible facilities and accommodations equipped with safety features ensuring ease of mobility and a worry-free environment, but also a range of accommodations that are attentive to senior services and consider age- related needs (RQ2).

For future developments, we can fine-tune the search query used to gather relevant reviews from various online platforms. By optimizing the search parameters and incorporating more specific keywords related to senior-friendly amenities and services, we can ensure that the retrieved data is even more targeted and aligned with the specific needs and preferences of guests. While online booking platforms like booking.com and hotels.com ensure that reviews are only certified for book- ings confirmed through their platforms, TripAdvisor, on the other hand, does not verify the status of reviewers, creating a potential invitation for fake reviews. For this reason, even rating analysis does not show highly accurate information about the rating of facilities. In this regard in future developments, a sentiment analysis will be conducted to compare the rating expressed by users with the content ex- pressed in reviews.

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Development of rural peripheral areas in Poland

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Abstract: The EU's regional development policy aims, through cohesion policy, to reduce the disparities in the level of socio-economic development between the more developed regions of the Community and peripheral regions. Research shows that despite these measures, the socio-economic development of rural areas is spatially diversified. This is not consistent with the principles of sustainable development.Therefore, peripheral regions are of particular interest as the improvement of living conditions in these areas is one of the most important tasks of the country's development strategy.

The aim of the research is to evaluate the level of development of five peripheral regions of Poland. The evaluation was carried out on the basis of income, entrepreneurial, cultural, health indicators and on the internal viability of the regions. In this way it was possible to evaluate the evolution of the level of development of the peripheral areas and the changes in the living conditions of the inhabitants of the peripheral areas. The results of the analysis indicate that, in the years 2011-2021, improvement of all indicators characterizing the level of development of peripheral regions occurred. However the rate of these changes differs. The largest changes occurred in the development of transportation infrastructure.

Keywords: peripheral regions, rural areas, economic development, living conditions.

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1. Introduction

Peripherality is still a current topic undertaken in academic discussion. It is also important in a practical dimension, as it concerns a significant part of the population residing in peripheral areas.

More poorly developed regions are called problem regions by the European Commission [A new…2004]. They are characterized by a low level of economic potential in comparison to more economically developed regions. The causes of unequal development vary widely. They include, among other things, historically shaped neglect of economic development, demographic structure, location relative to economic centers. Weaklinks to the external surroundings result in economic peripherality.

The EU's regional development policy strives to reduce differences in the level of socioeconomic development between the most developed regions in the Community and peripheral regions. This is implemented through the cohesion policy. According to the inter-regional convergence theory, differences between developed and peripheral regions should disappear over time. Research indicates that, despite undertaken actions, socioeconomic development in the spatial system is varied, and the differences are even deepening. In effect, we have the intensive growth of cities and depopulating rural areas with deformation of demographic structures [Ubarevičienė & van Ham, 2017]. Peripheralization, perceived as growth of social and spatial inequalities, is a process that is still progressing [Kühn, 2015].

Contemporary theories of local and regional development emphasize the need or even the necessity to combine economic development with social development and respect for the environment [Guadalupe 2007].The goals of sustainable development therefore concern improvement of people's living conditions and protection of the environment against degradation for the purpose of supporting the needs of current and future generations.

The economic development of every country should be sustainable and characterized by long-term invariability of parameters. On the macro scale, it should contribute to the creation of a strong economy in the given country. On the micro scale, it entails improving the quality of life of households, and in the case of eco- nomic entities, generation of profits.

In modern theories of regional development, besides classical growth factors, the role of innovations and the level of innovation arising from their implementation is highlighted.

Research shows that underdeveloped regions have greater demand for innovation

[Musso et al. 2015]. They require technological, social and institutional innova- tions [Meynard et al. 2017, Barret et al. 2020].

Political and economic changes in Poland have deepened differences in the level of economic development, including at the level of rural areas' development. The causes of unequal development vary widely. They include, among other things, historically shaped neglect of economic development, demographic structure, location relative to economic centers. Research results indicate that development of all regions has occurred over the years. Despite the tendency of growth, they continue to develop highly disproportionally [Tejada-Gutierrez et al. 2023]. The division into dynamically growing regions and peripheries is consolidating. The most developed regions are often called regions of economic success [Banski 2016.]. Regions situated in the eastern part of Poland are found on the other pole. These are peripheral regions. The development of these regions is supported by public funds. A special programme under the name "European Funds for Eastern Poland" is dedicated to them. It covers five regions with the lowest level of socioeconomic development, considered to be peripheral. These are the following regions: Lubelskie, Podkarpackie,Podlaskie, Świętokrzyskie and Warminsko-Mazurskie. The primary objective of the programme is to improve the competitiveness of enterprises, modern transport and improve quality of life in Eastern Poland. The actions of the Polish government are focused on development of the most poorly developed regions, under the assumption that more rapid growth of this macro-region will contribute to territorially sustainable development of all of Poland.

In research conducted until now, the development of peripheral regions has been analyzed on the background of better economically-developed regions, and less attention was devoted to internal developmental processes of peripheral regions. Peripheral regions in Poland exhibit many similarities but also have specific features in which they differ between one another. Knowledge of the internal differentiation of peripheral regions seems to be important in the context of the country's sustainable development policy.

Therefore, the goal of the study was adopted as a search for an answer to the following questions: (1) have the measures taken within the framework of the country's sustainable development strategy contributed to the development of peripheral regions to an equal extent, (2) if differences have occurred in the development of individual regions, then which areas of life and activity of residents require additional measures or perhaps different methods or growth-stimulating instruments.

2. Materials and methods

The research made use of mass statistical data from the Local Data Bank (LDB) [GUS 2022a], the Poland's largest database of the economy, society and the environment, with data from 1995. The LDB delivers over 40 thousand statistically grouped thematic indicators according to the NUTS nomenclature: macro-region, region and sub-region.

The level of development of peripheral regions was assessed on the basis of the following indicators:

X1 - own income of communes per capita (PLN)
X2 - number of business entities per 1000 residents
X3 - gross salary (Poland = 100)
X4 - clubs and cultural centers per 10,000 residents
X5 - number of medical doctors per 10,000 residents
X6 - expressways and highways per 1000 km2 (km)
X7 - bicycle paths per 100 km2 (km)
X8 - railway lines per 100 km2 (km)
X9 - percentage of people living below the poverty line

Indicators: X1, X2, X3 pertain to the level of economic development. They speak to both the activity and level of income of the population, as well as to the afflu- ence of the local self-government, which is responsible for providing public services and the given area's development.

Indicators X4, X5 inform of the level of development of social infrastructure, and X6, X7 and X8 about the development of technical infrastructure. Infrastructure plays many functions in the development of regions, including satisfying demand for services reported by consumers, and forms social, economic and informational bonds in local systems. A special role is ascribed to transportation infrastructure, which has a substantial impact on the economic development of regions [Jiang et al. 2016, Vitale Brovarone & Cotella 2020], and such indicators as cycle paths(X7) and railway lines (X8) indicate sustainable mobility.

The potential of technical and social infrastructure is an important factor in the economic development of a given region and shapes the living conditions of its inhabitants.

In assessment of the development of peripheral regions, the percentage of people living below the poverty line was also taken into account. Analyses confirm the presence of disproportions between the quality of life in different parts of the world

and between regions. The greatest differentiation happens on the material plane. The scale of poverty in rural areas is greater than in cities, as indicated by statistical data [GUS 2022b]. This is why taking this indicator into account seems justified in the context of assessing living conditions in peripheral areas.

The analysis takes into consideration 5 peripheral regions of Poland. The data concerns two research periods, 2011 and 2021, which made it possible to learn about changes in the level of socio-economic development and to assess the effects of support for peripheral regional development. The adopted time horizon allows for such assessment.

3. Results and discussion

In the years 2011-2021, the value of all indicators increased (tab.1), but their values were still lower than the national average. In the case of indicator X1 (municipalities' own income per capita), this growth was over two-fold. The highest own incomes were achieved by municipalities from the Warminsko-Mazurskie region, however this was 3.8-8% less than the national average, depending on the year. This region was distinguished in terms of this indicator, however this is probably the result of a decrease in population rather than actual improvement of the effi- ciency of sources of income.

Specification	X1	X2	X3	X4	X5	X6	X7	X8	X9*
2011									
Mean	1 083.80	77.12	86.16	1.10	21.0	1.55	0.93	4.98	9.42
Medium	1 071.00	76.40	86.60	1.00	21.4	0.17	0.89	5.10	10.30
Min. value	908.00	71.00	83.30	0.80	18.2	0.00	0.83	3.80	6.80
Max. value	1 281.00	82.90	89.90	1.50	24.0	4.62	1.05	6.20	10.5
SD	139.03	4.76	2.81	0.29	2.68	2.13	0.09	1.02	1.55
Coefficient of variation	12.83	6.17	3.26	26.50	12.66	137.32	9.83	20.55	16.47
2021									
Mean	2 224.00	99.44	87.62	1.26	31.8	9.74	3.79	4.88	13.72
Medium	2 166.00	98.60	87.70	1.10	30.1	9.01	3.90	4.50	13.40
Min. value	1 930.00	94.20	85.40	0.90	25.1	8.07	3.08	3.80	12.60
Max. value	2 496.00	104.40	90.20	1.60	37.6	12.68	4.38	6.20	15.70
SD	216.67	4.03	1.91	0.32	5.67	1.93	0.49	0.96	1.23
Coefficient of variation	9.74	4.05	2.18	25.47	18.19	19.87	12.52	19.62	8.95

Table 1. Basic statistics of peripheral regions (2011 and 2021)

*available data for 2011-2019

Source: own calculation based on Local Data Bank (GUS 2022a).

Meanwhile, the lowest own incomes were found in the Lubelskie region, and they were 30% lower than the national average. Generally, all regions had low own incomes, and the differences between them were small (coefficient of variation 9.74-12.83).

In terms of indicator X2, the Świętokrzyskie region was favorably distinguished.In both studiem periods, the most commercial entities were prezent there. Meanwhile, the Lubelskie and Podlaskie regions were characterized by relatively high salaries (indicator X3). The gross salary in 2021 amounted to nearly 90%, and in the case of the Podlaskie region, even 90.2% of the average salary in the national economy (growth by 2.5% with respect to 2011).

In terms of indicator X4 (number of culture centers), there were no greater changes between the year 2011 and 2021. Two regions had the most favorable results: Podkarpackie and Podlaskie. In these regions, the number of culture centers was significantly greater than the national average.

Access to medical services is indicated by, among other things, the number of doc-

tors per 10,000 residents (indicator X5). In this respect were small positive changes in all regions, but the differences between regions are quite big (coefficient of variation 12.66 -18.19). The most difficult situation is in the Warminsko- Mazurskie region, where, in 2021, there were 25 doctors per 10,000 residents (Fig.1). It should be noted that the improvement in this indicator does not result from greater access to medical services, but is the result of a decrease in the num- ber of population. In the years 2021-2021 the population in the country decreased by 2%, and in peripheral regions by approx. 5% [GUS 2022a]. Generally, Poland is struggling with huge shortages of medical staff.

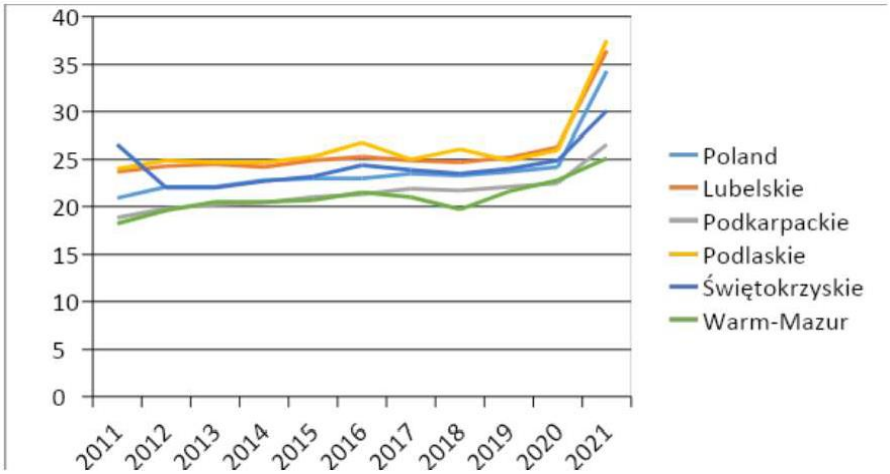

Figure 1. Number of medical doctor per 10,000 residents
Source: Local Data Bank (GUS 2022a).

Statistical data do not reflect the real situation because they do not take into account medical specialization. Access to specialist doctors is a big problem not only in peripheral regions, but also in the country.

Three successive indicators (X6, X7, X8) indicate the mobility and accessibility of regions.

In these terms, large changes have occurred in all regions (the coefficient of variation in 2021 amounted to 19.87% compared to 137.32% in 2011). This improvement was felt most strongly by residents of the Podlaskie and Podkarpackie regions (Fig.2). In 2011, there were no roads in a higher standard in these regions. In general, improvement of the state of transportation infrastructure in all peripheral regions is the result of expenditures of funds from the EU and national budgets. This

was a priority task in the programme "European Funds for Eastern Poland".

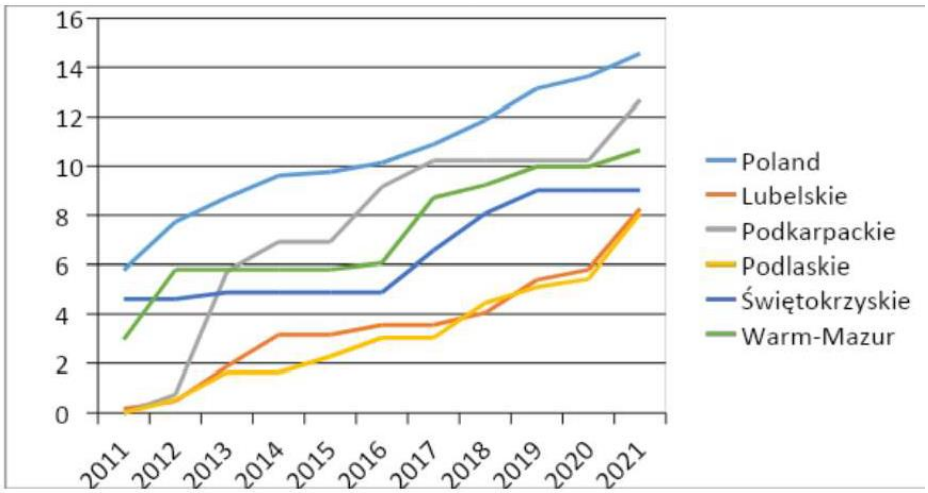

Figure 2. Expressways and highways per 1000 km2 (km)
Source: Local Data Bank (GUS 2022a).

Improvement of the mobility of regions is one of the more important factors in their development. The nature of mobility is important in the sustainable develop- ment strategy. This should be mobility based on environment-friendly means of transportation, that should fulfill the principles of sustainable transportation. The social aspect of transportation accessibility is frequently emphasized, as it is a component of integration of local communities and of quality of life improvement [Lucas 2018, Berg & Ihlstrom 2019, Vitale Brovarone & Cotella 2020]. Improvement of mobility is one way of preventing marginalization and social exclusion of a significant population [Lucas 2012, Currie et al. 2010].

Social expectations concerning mobility in Poland concern innovative solutions, particularly with regard to public transportation [Milbourne & Kitchen 2014, Szymańska & Koloszko-Chomentowska 2022]. This is an answer to technological progress, and on the other hand, to changing demographic trends and social behaviors.

From the perspective of households, the material foundations of their existence are the most important. They decide the quality of life. The presented data show that the problem of poverty in peripheral areas is greater than on the national scale. In the years 2012-2021, the scale of poverty increased from 9.42% to 13.72% (av-

erage).This problem affects the Warminsko-Mazurskie region the most, where over17% of the population lives below the poverty line. Also, in the Podlaskie region, the scale of poverty is relatively large (Fig.3). In the studied years, social polarization has deepened, both in peripheral regions and in the entire country, de- spite the financial support from social programs (available data refer to the years 2011-2019).

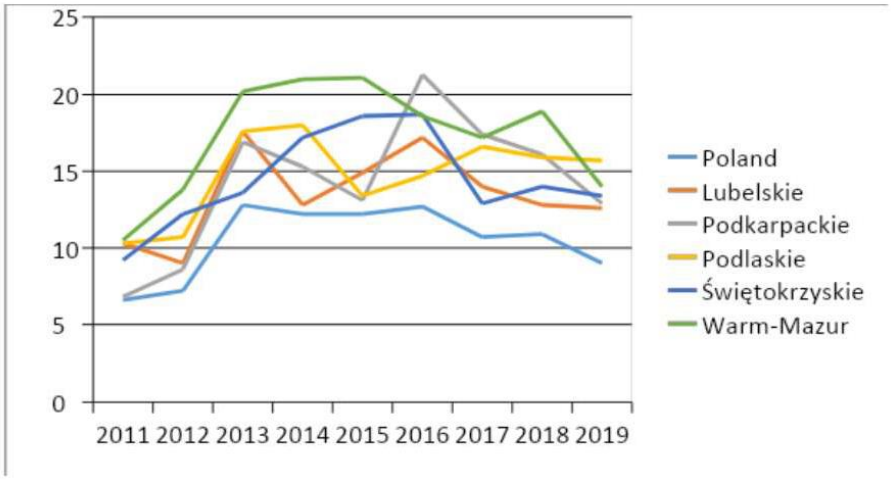

Figure 3. Percentage of people living below the poverty line

Source: Local Data Bank (GUS 2022a).

4. Summary

Persistent differences in the economic potential of individual regions are one of the basic problems of the modern economy. The results of the analysis indicate that, in the years 2011-2021, improvement of all indicators characterizing the level of development of peripheral regions occurred. The rate of these changes differs, however, and the national average has not been achieved. Moreover, differences in the level of development of individual areas of socioeconomic life are visible in peripheral regions. In general changes in the level of development of certain areas of life and activity of residents should be assessed positively. The largest changes occurred in the development of transportation infrastructure, and this pertains to all regions. This is one of the government's "flagship" programmes. The effects are visible, particularly in two regions, which did not have roads of a high standard in the first research period. However, this does not mean achievement of a complete

level of satisfying the needs of the local community. Local roads are important for the inhabitants, and their technical condition is often at a low level. The fact that the number of cycle paths is continuously increasing is a particularly positive sign. The bicycle is the most sustainable form of movement, but they are of secondary significance as a means of transportation [Soder & Peer 2018].

There are still big problems in access to medical services. Negligence in the area of medical services is very large, which is why the needs are also the greatest.The decline in access to medical services decidedly deteriorates quality of life. Access to medical services is a basic human need, and the problem requires decisive action on the part of the government administration. The problem affects all regions.

The fact that the scale of poverty has increased is disturbing. This is happening despite a broad range of social programmes financed with public funds. This problem certainly requires greater attention and verification of measures taken until now. In recent years, the government has directed large financial support under social programs to the poorest families. Perhaps the data for the following years will show a new picture of this problem.

There is a justified concern about further regional polarization, including within peripheral regions. This is not a special case, similar fears are expressed about the whole of Eastern Europe [Lang 2015]. Education and strengthening of human capital should play a special role in promoting more poorly developed regions as well as pro-innovative development [Kloska 2017].

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The multidimensional measurement of environmental quality in Italy

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Abstract: In the last few years, attention and sensibility towards problems relating to environmental issues has grown. Consequences of climate change, reduction of water resources, urban pollution and other manifestations of environmental crisis transversally affects the life and activities of human beings. In this work some main indicators for the assessment of environmental quality in the national territory are analysed. The complex and multidimensional nature of environmental phenomena has required identification, selection and measurement of a series of indicators relating to 6 macro areas (geological and natural risks, consumption, emissions, waste, protected areas, sustainability and environmental certification) to the implementation of more effective and incisive information and operational programs in the area Given multidimensionality of the phenomena, having analyzed and described the individual dimensions, a multivariate synthesis analysis was carried out to compare the state of environmental health at a regional level. The results show that the negative impact on the environment is in all Italian regions but is stronger in southern Italy. It is a study that offers in-depth insights to subjects engaged in development policies in compliance with environmental sustainability.

Keywords: Environmental, multidimensionality, sustainability

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[1] The paper is the result of the common work of the authors. In particular: sections are attributed as follows: F. Fullone paragraphs 1 and 2, M. Carbonara paragraph 3 and G. Lecardane paragraphs 4 and 5.

1. Introduction

The aim of this work is to analyse the impact of human activities on the Italian regions. The environmental analysis presents some critical issues since there are several aspect to identify and sometimes they are not homogeneous. A set of objective indicators has been selected to express the different environmental pressures caused by human and economic activities, moreover a subjective sentiment of environmental satisfaction has also been included. The indicators are evaluated in relation to the regional area and resident population, and then different multidimensional analyses are carried out.

2. Factor analysis

There are many public indicators, provided by the research institutes Istat and Ispra, regarding different aspects of the environmental dimension at regional level. The research hypothesis to be tested is whether there are a few latent factors that influence the observed indicators. A factor technique has been used to carry out an exploratory analysis of the observed indicators of the environmental phenomena. The assumption is that the analysed variables represent the effects of one or a few latent variables (factors), that are not directly observable and measurable (reflexive model). The indicator's long list is represented in Table 1.

Correlation analysis shows that some indicators are highly correlated (Pearson correlation factor >0,9) for example (nitrous oxide emissions, carbon dioxide emissions). In this case they seem to provide the same information, so a short list has been selected (Tab. 2).

Environmental Issue	Environmental indicators	*Source*	*Year*
Soil	Soil consumption	*ISPRA*	*2021*
	Amount of fertilizer used	*ISTAT*	*2021*
Raw material	Raw material taken	*ISTAT*	*2020*
Population	Population density	*ISTAT*	*2021*
Companies in the environmental area	Active companies with 3 or more employees that reduce the environmental impact of their activities (2018 Census)	*ISTAT*	*2018*
	Environmental quality UNI-EN-ISO 14001 certifications for company and production sites	*ISPRA*	*2020*
Waste Sorting	Urban waste collected separately	*ISPRA*	*2020*
	Special and hazardous waste incinerated and energetically recovered	*ISPRA*	*2020*
Atmospheric emissions	Nitrous oxide emissions N20	*ISPRA*	*2020*
	Carbon dioxide emissions CO2	*ISPRA*	*2020*
Environmental quality Perception	Environmental Satisfaction	*ISTAT*	*2020*

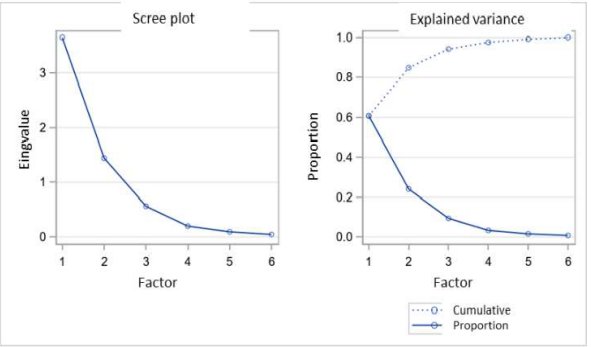
Table 1 - Environmental indicators, long list

Environmental issues	Environmental indicators			
	Polarity (+/-)	Indicators	Year	Source
Energy	(-)	Final consumption of electricity (agr, industrial, tertiary, residents) per unit area *(GWh/km2)*	2021	ISPRA
Soil	(-)	Soil consumption *(% of regional area)*	2021	ISPRA
Raw material	(-)	Raw material taken with respect to the regional area *(1,000 tons per km²)*	2020	ISTAT
Population	(-)	Population density *(residents per km2)*	2021	ISTAT
Perception of environm. quality	(+)	Percentage of people very or fairly satisfied with the environmental situation (air, water, noise) of the area in which they live *(% residents aged 14 and over)*	2020	ISTAT
Companies in the environm. area	(+)	Active companies with 3 or more employees that reduce the environmental impact of their activities (2018 Business Census) compared to the total regional population *(n. companies per residents population)*	2018	ISTAT

Table 2 - Environmental indicators, short list

The selected indicators describe the impact of human activities on the various regional areas, characterised by artificially covered soil, energy consumption, raw material extraction, and population density. At the same time, we will consider the number of companies that reduce the environmental impact of their activities, in relation to the resident population, and the percentage of people who express a positive assessment of the environmental situation of the area in which they live. The factor extraction method used is the main components, which aims to identify a linear combination of the observed indicators, able to explain most of their vari- ance. From the six indicators described in the short list, two factors have been ex- tracted, that explain 85% of the total variance (Fig. 1). However, the variance ex-

plained by the two factors for each variable is not less than 65%. The factors are easy to interpret on the basis of figure 2; the first, which explain the 65% of the to- tal variance, is highly correlated with the consumption of resources such as soil and energy, the extraction of raw material and the environmental impact of the popula- tion on the territories. The second factor, on the other hand, reflects the reduced impact of economic activities in relation to the resident population and a general sentiment of environmental satisfaction. The factor score of the regions (Fig.2) gives the representation of each region on the factorial coordinates. In the first quadrant of the Cartesian plane we can observe the central-northern regions where consumption and environmental pressures are high, and at the same time, there is a moderately positive perception of the environmental situation. In the second quad- rant, factor1 which reflects consumption and environmental pressure on the territo- ry, is moderately low, and there is a medium-high environmental perception above all in the Alpine regions. In the third quadrant, consumption and environmental pressures are not high, but the environmental perception is not positive. In the fourth quadrant the large southern regions are represented, where environmental pressures are moderate, but environmental perception is medium-low, especially in Campania.



Kaiser measure of sample adequacy: MSA total = 0.7

	Eingvalue	*Proportion*	*Cumulative*
1	3,64	0,61	0,61
2	1,44	0,24	0,85
3	0,57	0,09	0,94
4	0,20	0,03	0,98
5	0,10	0,02	0,99
6	0,05	0,01	1,00

Figure 1 - Factor analysis: scree plot, eingvalues

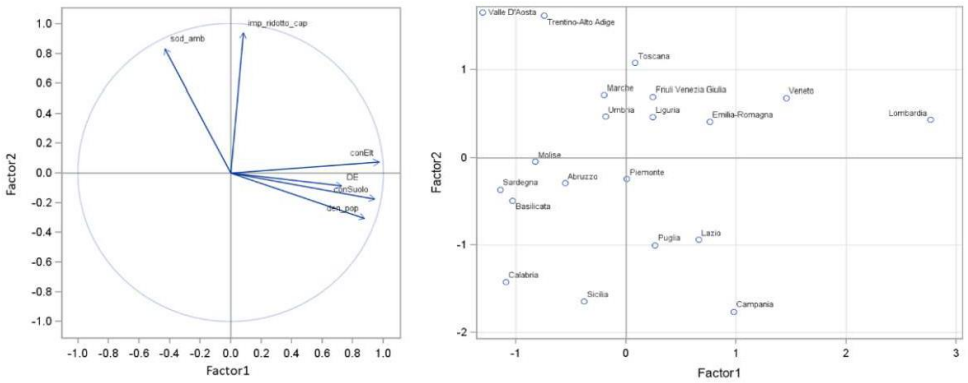


Figure 2 - Rotated factor pattern, left image; factor score of the regions on the right

3. Cluster analysis

In order to explore the main and most significant similarities and differences in the state of environmental health among the Italian regions, the Cluster analysis was carried out. Ward's hierarchical method was used for the analysis and the quadratic Euclidean distance was used to measure the dissimilarity between the statistical units.

For the analysis, the variables considered in the factor analysis previously described in paragraph 2 were used: Final consumption of electricity (agriculture, industry, tertiary, residual), Consumed soil, DE Raw material taken with respect to the regional area, Population density, Environmental satisfaction, Active compa- nies with 3 or more employees that reduce the environmental impact of their activi- ties.

The cluster analysis made it possible to identify five different groups' number and territorial distribution (Fig. 3): Cluster 1: Abruzzo, Molise, Basilicata, Cala- bria, Sardegna; Cluster 2: Piemonte, Friuli Venezia Giulia, Liguria, Toscana, Um- bria, Marche; Cluster 3: Campania, Lazio, Puglia, Sicilia; Cluster 4: Lombardia, Veneto, Emilia-Romagna; Cluster 5: Valle D'Aosta, Trentino-Alto Adige.

R-squared equal to 0.73 indicates the validity of the chosen partition.

The following graph and table (Fig.4 and Tab. 3) illustrate their spatial distribution and composition. Cluster 5, which includes Valle d'Aosta and Trentino-Alto Adige, is the one that is best positioned with a reduced environmental impact on the territories, while the number of companies that reduce the environmental im- pact of their activities and environmental satisfaction they are taller. Cluster 1, which includes Abruzzo, Molise, Basilicata, Calabria and Sardegna, also has a

good advantage situation with a high level of satisfaction. In Clusters 2 and 4, which include the central-northern regions, consumption and environmental pressures are higher and there is a moderately positive perception of the environmental situation. In Cluster 3, where the large southern regions are represented, environmental pressures are higher but the perception and number of companies that reduce the environmental impact of their activities are lower.

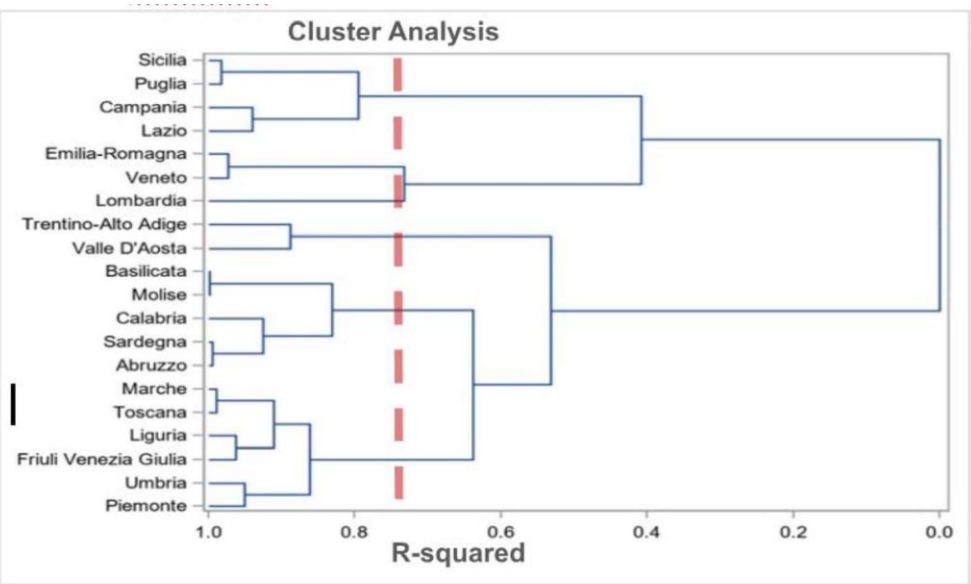


Figure 3 – Dendogram

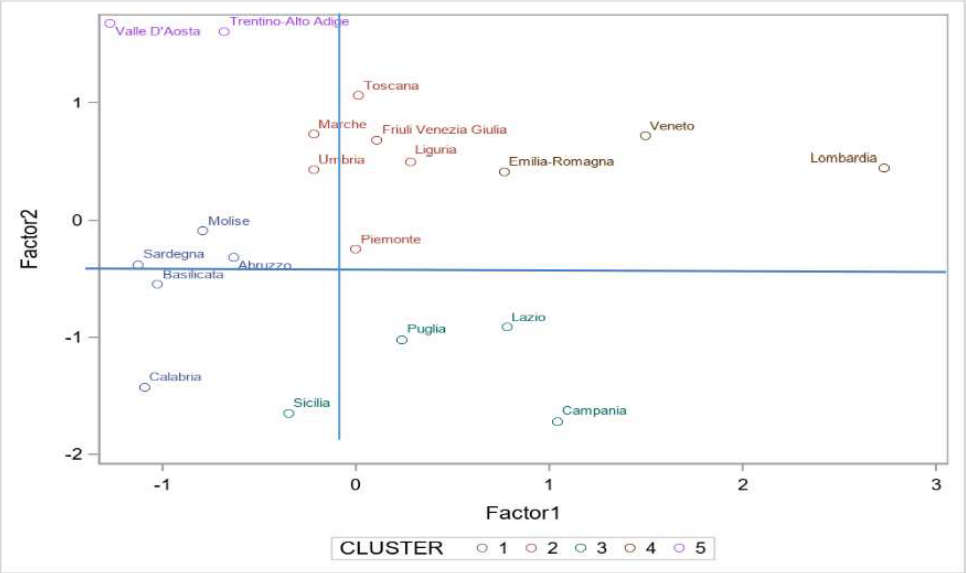


Figure 4 − Representation of clusters on factors

Cluster	DE	Final consumption of electricity	Consumed soil	Population density	Active companies that reduce the environmental impact of their activities	Environmental satisfaction
5	0,5	0,4	3%	58,7	16,1	86,9
1	0,8	0,4	4%	86,0	10,0	75,8
2	0,8	0,9	7%	170,9	13,0	78,7
3	1,1	1,0	8%	284,4	9,4	62,8
4	1,6	1,9	11%	294,4	13,3	71,8

Table 3 − Average values of variables calculated within each cluster

4. Compositive methods

The objective is to provide a synthetic tool the state of the environmental phenomenon starting from a set of selected indicators considered relevant in their impact with the territory and subsequently comparing performances at the regional level. Based on the latest data provided by Istat and Ispra on the environmental quality of our Italian regions, a set of elementary indicators were selected and combined (Tab. 2). Indicators present a rather pronounced variability and little correlation with each other, characteristics for the purposes of the objective being proposed.

It's the basis for the aggregation process through the construction and comparability of some main composite methods. Elementary indicators have been normalized

and standardized to obtain data purified from units of measurement and compari- son process. Standardized deviation in the composite index allows the construction of a robust measure and not very sensitive to remove a single elementary index (Mazziotta M. and Pareto A., 2013). In addition, polarity (positive or negative) of the relationship between indicator and phenomenon was specified. The AMPI is a non-compensatory (or partially compensatory) composite index and allows min-max standardization of the indicators j and aggregation with the arithmetic mean penalized by the "horizontal" variability of the indicators themselves. Normalized values are approximately in the range (70; 130), where 100 is the reference value[2].

From the exploratory data analysis, indicators show a pronounced variability and little correlated with each other (Tab. 4).

	a1	a2	a3	a4	a5	a6
M	0,90	0,06	0,97	179,66	64,59	11,87
S.q.m.	0,59	0,04	0,62	109,68	47,91	8,48
C.V.	0,66	0,68	0,64	0,61	0,74	0,71

Table 4 − Average and variability measures of environmental indicators

Figure 5 shows cartograms of MPI+ and MPI- method calculated in the Italian regions. Result of the regional ranking with the composite index method is like groupings obtained with the cluster and ACP analysis. Ranking, based on the assumed values of the two synthetic indicators, shows the positioning of Italian regions according to the state of environment health that decreases as one moves towards the higher ranks (Tab. 5).

The positioning, in terms of pressure on the environment for the issues considered, distinguishes Valle D'Aosta and Trentino Alto Adige as the region with the best perception environmental performance. Instead, Sicilia, Puglia, Lazio and Campania the environmental perception is not positive although consumption and environmental pressures are not high. Also noteworthy is the positioning in the lower ranks of Emilia-Romagna, Veneto and Lombardia where environmental consumption and pressures are high and the perception in terms of household satisfaction is rather negative.

[2] In the Bienaymé-Cebycev theorem, terms of the distribution within the interval (70; 130) constitute at least 89 percent of the total terms of the distribution.

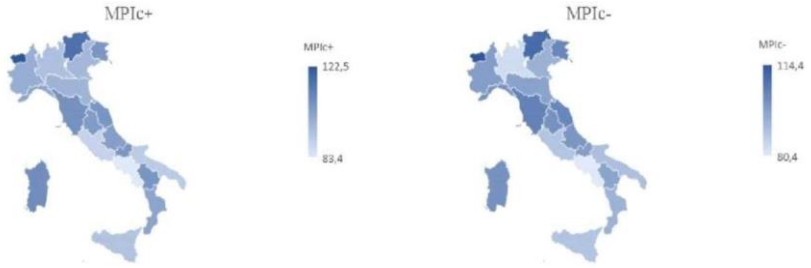


Figure 5 – Map of the MPI+ and MPI- composite indices
Source: Istat and Ispra data processed

Region	MPIc+		MPIc-		Region	MPIc+		MPIc-	
	N.	Rank	N.	Rank		N.	Rank	N.	Rank
Valle D'Aosta	122,5	1	114,4	1	Liguria	101,9	11	100,5	8
Trentino-A. A.	115,7	2	109,6	2	Calabria	101,8	12	93,2	15
Sardegna	107,8	3	100,7	6	Piemonte	99,2	13	98,1	10
Toscana	106,7	4	104,4	3	Emilia-R.	97,8	14	97,0	12
Marche	106,0	5	103,5	4	Veneto	96,7	15	93,5	14
Basilicata	105,7	6	96,8	13	Lombardia	94,5	16	83,6	19
Friuli-V. G.	105,6	7	103,3	5	Sicilia	93,7	17	89,3	17
Molise	105,6	8	98,1	11	Puglia	91,5	18	90,3	16
Umbria	*104,1*	9	*100,6*	7	*Lazio*	89,3	*19*	88,9	*18*
Abruzzo	103,5	10	99,7	9	Campania	83,4	20	80,4	20

Table 5 – Regional ranking between MPI+ and MPI- composite indices
Source: Istat and Ispra data processed

Table 6 shows rank differences compared by means of the absolute difference and Spearman's rank correlation coefficient. Sensitivity analysis shows similar re- sults in the comparison between MPI+ and MPI- method with absolute average rank differences 1.90 positions respectively with a strength of the relationship di- rectly proportional and close to 1 (0.91). Linear relation is also high with R2 equal to 0.87 (Fig. 6).

Measures	MPIc+-MPIc-
Absolute average rank difference	1,9
Cograduation index ρ	0,91

Source: Istat and Ispra data processed

Table 6 – Ranking differences MPI+ and MPI-

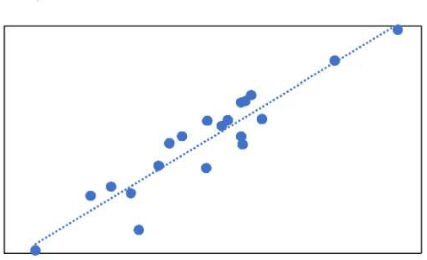


Figure 6 – Linear relationship and R2 between MPI methods

Source: Istat and Ispra data processed

4. Conclusion

The study on environmental aspects of Italian regions through the comparison of multidimensional acp, cluster and compositive methods led to a convergence judgment of results and offer an important contribution to the interpretation of the phenomenon.

The geography of environmental status, anthropogenic pressure and perception once again shows a unbalanced configuration to the detriment of most of the central and southern regions. At the other end of the distribution, greater satisfaction and environmental performance are recorded in the North where investments in development projects and awareness of environmental issues are growing.

A good result for those who carry out a study of the phenomenon and must give an interpretation that is as representative as possible of the environmental reality.

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Exploratory analysis of statistical information services with Rasch method

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Abstract: The quality has now assumed a primary position in the field of research and statistical information. Quality aspects of the statistical organization and production is essential to collect valuable information and identify service dimensions. The exploratory analysis with the Rasch method concerns the qualitative and functionality assessment of service and territorial structures through satisfaction degree expressed by environmental thematic referents. Rasch model has proved to be useful for diagnostics of service quality and allows valid and reliable information on the production and organizational process with analysis of strengths and weaknesses. Qualitative survey results show organizational skills of the statistical offices and referents to produce the
data. In other words, it is argued that perceived quality depends on organizational variables of a soft type (organizational climate, human resources, knowledge) rather than a system one (structures and/or processes). The objective of the study is exploratory to define specific measures aimed at improving the statistical function within the National Statistical System.

Keywords: Environment, Multidimensionality, Satisfaction

1. Introduction

The analysis of the process and the choice of an appropriate statistical methodol-

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ogy constitute excellent tools for evaluating the data production chain which guarantees continuous monitoring and the possibility of promptly intervening with corrective actions.

This work is the result of some lines of intervention of the Istat research project "Experimentation for new methods of collecting environmental data" (Lecardane, G. 2022[2]) 1 aimed at measuring and evaluating the perception of thematic managers/referees environmental data of the municipal environmental statistics offices on the organizational and production process of the statistical function within the territorial structures according to Istat directives on environmental data.

We proceeded with the analysis of the evaluative perception of the environmental thematic referents regarding the organizational and production process of the statistical function within the territorial structures involved. Due to the latent nature of the phenomenon, there is a need to identify appropriate statistical tools for an ob- jective measurement of perception and to implement a synthesis of the answers through a questionnaire provided to the representatives of the public and private entities that collaborated in the Istat survey for environmental statistics. Knowing the opinion of the representatives on the reliability of the data produced and trans- mitted to Istat is certainly important information, although not the only one, which can allow you to identify critical elements in the system and implement appropriate corrective actions.

2. Rasch model, an exploratory analysis of service quality

To study the functioning of the statistical production process, an evaluation questionnaire was prepared as a tool for critical reading of the data production.
The questionnaire, designed and used for the survey, was administered to officials and technicians of the public and private offices participating in the collection of urban environmental data, with the assignment of thematic referents and heads of the statistics offices. The experimental phase involved the recognition and selection of nine municipal statistical offices (Table 1) among the regions of northern and

[2] Research project Istat RD, Specific projects, ID 1095, Experimentation for new ways of collecting environmental data of cities - PPMO 2017/19 (Project ID: 1905 and 1400. ODS/164/2018 of 13/09/2018, ODS/141 /17, from 2017 to 2012). Project Manager and Coordinator: Lecardane Giuseppe. Project aimed at experimenting with new methods of data acquisition with the ARCAM online platform and analysis of the organizational processes of the municipal statistics offices for the archiving and transmission of environmental data to Istat.

southern Italy participating in the project (Abruzzo, Basilicata, Friuli-Venezia-Giulia, Molise, Sicily and Veneto) and the collaboration of almost seventy officials and technicians with the role of manager, referent and collaborator of the Istat environmental surveys.

Regions	Capital municipalities
Abruzzo:	Chieti
Basilicata:	Matera
	Potenza
Friuli-Venezia-Giulia:	Udine
Molise:	Campobasso

Regions	Capital municipalities
Sicilia:	Caltanissetta
	Palermo
Veneto:	Padova
	Rovigo

Table 1 - Statistical offices of the capital municipalities in the regions adhering to the project

Even if the outcome of the survey is not exhaustive of the entire structural and organizational of the local public system, the results nonetheless provide some important indications on the production process of the local statistical structures involved in the production of the statistical data and on possible corrective actions to be realize.

The analysis allows the quality and functionality assessments of territorial structure services through the satisfaction degree expressed by thematic respondents of the municipal statistics offices.

Among the many multidimensional methodologies used for the estimation of latent variables, Rasch model allows a particularly valid analysis, satisfying all the ideal properties of a quantitative and objective measure (Bergmann, Foster, et al.).

Table 2 lists items examined and the evaluation in terms of degree of judgment expressed by respondents useful for applying the model.

ITEM CODE	Item	Score	Judgement
66	IT and technological equipment	5	Excellent
67	Statistical staff assignment	4	Good
68	Staff training	3	Sufficient
69	Relationships with staff	2	Insufficient
70	Processes and workloads	1	Poor
71	Organizational structure		
72	Circulation, clarity of information		
73	Quality of statistical products and services offered		
74	Timeliness of response to users		
89	Overall office quality		

Table 2 - Evaluation of perceived quality in the organizational aspects of the statistics office

Tables 3, 4 and 5 show the percentages of the ten items evaluated by thematic referents regarding the organizational aspects and collaborative degree with internal and external personnel to the service.

Evaluations of interviewees on the functional and operational structure of the office are concentrated to a positive degree of judgment. However, some critical issues, judged below sufficient, are reported in staff training (34%), in assignment of personnel with statistical skills (32 %) and in organizational structure (18%).

When asked whether there has been a change in the structure and processes compared to the previous three years, almost all subjects (over 70%) agree that the condition has remained almost unchanged.

Finally, on the collaboration received from colleagues or other personnel in the statistical activities, the results are concentrated on good levels of cooperation, even if some difficulties for external personnel in other administrations (16% of respondents judge it not positive).

The estimate carried out using the Rasch model and elaborated using the statistical package Winsteps & Facets Rasch Software - Rasch measurement computer program.

Tables 6a and 6b show the statistics of the items: parameter estimate of the average difficulty of the items or measure, variability degree of the estimate or standard error, infit and outfit indices for measuring the goodness of fit to the model (average and standardized).

Values are arranged in descending order of the estimate measure: from items with greater difficulty in answering and which require greater ability of the subjects (positive values) to more "simple" items with less ability to answer (negative values). Model sets logit=0 the average difficulty of the items.

Organization of the office/service in terms of	Poor	Insufficient	Sufficient	Good	Excellent
IT and technological equipment	0,0	8,9	26,8	55,4	8,9
Statistical staff assignment	23,2	8,9	39,3	25,0	3,6
Staff training	10,7	23,2	37,5	28,6	0,0
Relationships with staff	5,4	1,8	28,6	53,6	10,7
Processes and workloads	10,7	8,9	26,8	53,6	0,0
Organizational structure	3,6	14,5	34,5	45,5	1,8
Circulation, clarity of information	3,6	5,4	37,5	50,0	3,6
Quality of statistical products and services offered	5,4	3,6	37,5	50,0	3,6
Timeliness of response to users	1,8	3,6	35,7	55,4	3,6
Overall office quality	1,8	1,8	21,4	69,6	5,4

Table 3 - Evaluation of the quality perceived in the organizational aspects of the office/service (percentage values)

Organization of the office/service in terms of	Much worsened	Worsened	Unchanged	Improved	Much improved
IT and technological equipment	0,0	0,0	55,4	39,3	5,4
Statistical staff assignment	1,8	10,7	64,3	21,4	1,8
Staff training	1,8	8,9	64,3	25,0	0,0
Relationships with staff	1,8	1,8	69,6	23,2	3,6
Processes and workloads	3,6	19,6	53,6	21,4	1,8
Organizational structure	1,8	12,5	57,1	25,0	3,6
Circulation, clarity of information	1,8	3,6	69,6	21,4	3,6
Quality of statistical products and services offered	1,8	5,4	62,5	30,4	0,0
Timeliness of response to users	1,8	1,8	67,9	28,6	0,0

Table 4 - Evaluation of the change in the organizational aspects of the office/service compared to three years ago (percentage values)

Evaluation of degree of collaboration with	Poor	Insufficient	Sufficient	Good	Excellent
Staff	3,6	1,8	21,4	58,9	14,3
Executive	3,6	1,8	14,3	67,9	12,5
Other operating units	5,4	5,4	35,7	50,0	3,6
Other public and/or private administrations	5,4	10,7	33,9	48,2	1,8
ISTAT	0,0	0,0	17,9	57,1	25,0

Table 5 - Evaluation of degree of collaboration (percentage values)

Results of the Rasch analysis show good model reliability indices (Reliability index: ratio between the variance explained by the model and the total variance. For values >0.8 index is good) with item reliability indices equal to 0.92 and person reliability equal to 0.89 (good reproducibility characteristics of the model) as well as a good extension of the logit measure of the item difficulty (from -1.28 to 1.63).

INPUT: 66 Person 10 Item MEASURED: 66 Person 10 Item 5 CATS MINISTEP 3.69.1.4
Item statistics: MEASURE ORDER Person Reliability: 0,89 Item Reliability: 0,92

Entry Num	Total Score	Measure	Stand. Error	INFIT Mnsq	INFIT Zstd	OUTFIT Mnsq	OUTFIT Zstd	Item	Description
2	155	1,63	0,21	0,87	-0,6	0,81	-0,8	67	Statistical staff assignment
3	159	1,46	0,21	0,81	-1	0,95	-0,2	68	Staff training
5	181	0,45	0,22	0,88	-0,5	0,66	-1,5	70	Processes and workloads
6	180	0,29	0,23	0,68	-1,6	0,7	-1,3	71	Organizational structure
8	192	-0,14	0,24	0,78	-1	0,91	-0,3	73	Qual. stat. prod. serv. offered
7	193	-0,2	0,24	1,07	0,4	0,7	-1,3	72	Circul., clarity of inform.
9	199	-0,55	0,25	0,66	-1,7	0,64	-1,6	74	Tim. of response to users
4	203	-0,8	0,25	1,34	1,5	1,14	0,7	69	Relationships with staff
1	204	-0,87	0,26	2,09	3,9	1,92	3,2	66	IT and tech. equipment
10	210	-1,28	0,27	0,89	-0,4	0,66	-1,6	89	Overall office quality
MEAN	*187,6*	*0,00*	*0,24*	*1,01*	*-0,1*	*0,91*	*-0,5*		
S.D.	*17,8*	*0,92*	*0,02*	*0,41*	*1,6*	*0,37*	*1,4*		

Table 6a - Item fit statistics in the Rasch model

INPUT: 66 Person 10 Item MEASURED: 66 Person 10 Item 5 CATS MINISTEP 3.69.1.4
Item statistics: MEASURE ORDER Person Reliability: 0,89 Item Reliability: 0,92

PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item	Description
0,85	0,79	62,5	59,0	67	Statistical staff assignment
0,79	0,78	66,1	60,1	68	Staff training
0,76	0,74	64,3	63,8	70	Processes and workloads
0,78	0,73	74,5	63,7	71	Organizational structure
0,73	0,71	69,6	66,8	73	Qual. stat. prod. serv. offered
0,69	0,71	78,6	67,2	72	Circul., clarity of inform.
0,75	0,69	78,6	67,1	74	Timeliness of response to users
0,68	0,68	60,7	68,0	69	Relationships with staff
0,46	0,67	58,9	69,0	66	IT and tech. equipment
0,64	0,66	82,1	70,4	89	Overall office quality
MEAN		69,6	65,5		
S.D.		7,9	3,6		

Table 6b – Item fit statistics in the Rasch model

There is a good fit for values between 0.7 (overfit) <Good Model<1.3 (misfit). If Overfit, item responses are too predictable therefore "suspicious" and statistically without any effect of the random component; if Misfit responses are not predictable, in contrast to the ability of the individual and the difficulty degree of the item. Figures 1 and 2 show the results of the diagnostic tests for the goodness of fit (infit and outfit) to the model according to the items examined. It is observed that almost all the items are concentrated within the range of good adaptability to the Rasch model conditionally on the subject's ability levels and on the probability of choosing response methods. Only item 66 " IT and technological equipment " is out of range with a value greater than 1.3 (misfit), therefore, based on the model, item could be poorly worded or extraneous to the construct. Ultimately, the items for which respondents evaluate a general dissatisfaction with the organizational aspects of the office/service are: item 67 "

Statistical staff assignment " (1.63) and item 68 "Staff training" (1.46), confirming the previously obtained results. Instead, items for which the respondents consider themselves most satisfied with the quality of the service are the following: item 89 "Overall office quality" (-1.28), item 66 " IT and technological equipment " (-0.87) even if in the presence of misfits and item 69 " Relationships with staff".

Item-Subject map (Fig. 3) shows on a logit scale the joint distribution of the subjects ability (left side) who respond according to a decreasing scale of required ability (more–less ability) and positioning of the items (right side) on a decreasing scale of difficulty.

Most of the subjects (X is represented by a single subject) and the items are concentrated in the central part of the graph, showing a substantial balance in ability of the respondents and in difficulty level of items.

Furthermore, the Item-Subject map reveals a dissatisfaction and difficulty level of the respondents in items “Statistical staff assignment (item 67)” and “Staff training (item 68)” as they differ strongly from the remaining group and higher levels close to 2 logits. These items would require important corrective interventions.

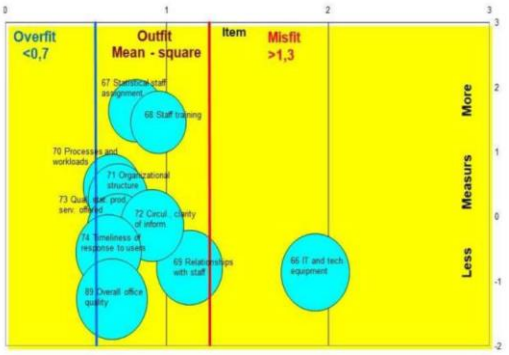

Figure 1- Bubble chart, OUTFIT (%)

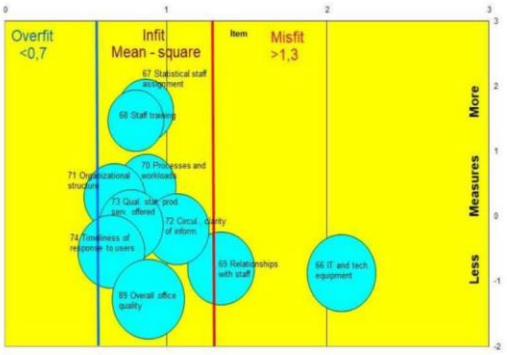

Figure 2 - Bubble chart, INFIT (%)

INPUT: *66 Persons 10 Item* MEASURED: *66 Persons 10 Item* 5 CATS MINISTEP 3.69.1.4

```
          Person     - MAP -      Item
                  <more>|<rare>
 More ability                    Difficult Item

  4                XX  +
                     T|
                   X  |
                      |
  3                   +
     XXXXXXXXXXX      |
                     S|
                   XX  |
  2                    +
                      |T  67 Statistical staff assignment
                   X  |   68 c) Staff training
                      |
  1              XXX  +S
                 XXXX  |
                      M|   70 Processes and workloads
                   XX  |   71 Organizational structure
  0              XXXX  +M
                 XXXX  |   72 Circulation and clarity of informations
                       |   73 Quality of statistical products and services offered
                  XXX  |   74 Timeliness of response to users
                 XXXX  |   66 IT and tech. Equipment
                       |   69 d) Relationships with staff
 -1               XX  +S
                  XX  |   89 Overall office quality
                   X  |
                  XXX S|T
 -2                X  +
                   XX  |
                       |
                   X   |
 -3                XX  +
                       |
                       |
                      T|
 -4                X  +
 Less ability                        Easy Item
                  <less>|<frequ>
```

Figure 3 - Item – Subject map (% values)

3. Conclusion

Knowing expectations and perception of statistical referent of one's own structure on the data production and dissemination methods is a prerequisite for improving the relationship between relationship between benefits provided and needs satis- fied.
The analysis and evaluation of statistical activity, within public and private structures, is an important tool to identify critical points to be corrected and strengths to be promoted and extended to other realities.

The transversal reading of the present work offers numerous points of reflection both in terms of knowledge and proposals on several fronts.

The use of the Rasch model has proved useful in methodological terms for in- depth diagnostics of service quality. In fact, the model allows to obtain valid and reliable information on the production and organizational process highlighting any strengths and/or weaknesses.

Results of the qualitative survey show appropriate organisational capacity of the statistical offices and statistical referents from data production to analysis.

However, the analysis reveals the need to:

- strengthening of structures and services;
- substantial training investment in the staff with suitable qualifications for the production and control of statistical data;
- improvement in the ability to interact with other statistical data providers in terms of engagement and collaboration;

Essentially, the perception of the service quality depends partly on the structural endowment but, in a decisive way, on the human factor in terms of training (acquisition of technical, methodological and specialist knowledge) and interaction (collaboration and participation). In other words, it is argued that perceived quality increasingly depends on organizational soft variables (organizational climate, human resources, knowledge) rather than system (structures and/or processes).

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