HEALTH, WELL-BEING AND QUALITY OF LIFE SATISFACTION: GENDER DIFFERENCES IN ITALIAN REGIONS[1].

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Abstract. Gender differences are an inherent part of human existence. However, beyond biological disparities, social structures have historically established gender-based roles, distinct societal functions, and varying social status across genders. The gender gap affects everyone: our families, communities, workplaces, societies and this influenced women health, well-being and quality of life. The EU has made significant progress in terms of gender equality in recent decades. A European-level tool that monitors disparities between men and women in different member countries is the Gender Equality Index, developed by the European Institute for Gender Equality (EIGE) in 2013. Starting from the analysis proposed by EIGE, the aim of this work is to represent gender differences in Italian regions in 3 domains: Health, Well-being and Quality of life. Using a multisource approach, simple indicators, both objective and subjective, were chosen for each domain. A total of 14 indicators were calculated, starting from Multipurpose survey on households "Aspects of daily life", Life tables and Multipurpose Survey: time use (all by Istat). The analyses were carried out with a model based on the use of multivariate analysis techniques and the construction of synthetic indices, one for each domain, capable of providing an overall view, which cannot be obtained by considering individual elements separately. The results show for Quality life satisfaction and Health a gap in favour of men, except for some territorial differences; instead, women reveal a better lifestyle, so the results of Well-being domain are to the advantage of them.

1. Introduction

Gender is an integral component of every aspect of the economic, social, daily and private lives of individuals and societies, and of the different roles ascribed by society to men and women. There is an increasing tendency worldwide to define quantifiable targets for equality and to measure each country's distance from them.

No country in the world has achieved gender equality yet, and international studies show that closing the gender gap will still take a long time, especially in some

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parts of the world where gender differences are still highly marked. The long and tremendous experience of COVID-19 has further prolonged this process; it has slowed down the reduction of gender gaps, more in some domains than in others, showing the fragility of the results already achieved, the weakness of gender policies, and the need to reinforce them (Di Bella *et al*., 2023).

According to the World Health Organization, despite living on average longer than men, women spend 25% more of their lives in poor health: activity limitations are particularly present in women's additional years of life. In the EU, men live on average 82% of their years without disability, while this percentage is lower among women, at 78%. Compared to men, older women score significantly lower on most indicators of subjective well-being (WHO, 2016).

Currently, on average in Europe, women's hourly wages in the EU are 16 percent lower than men's, pensions are 30.1 percent lower, and the difference between female and male employment rates is 11.6 percent (EC, 2020). Policy interest in achieving gender equality has become manifest at the European level with the 2020-2025 strategy, which sets out policy goals and actions to make concrete progress on gender equality in member states.

Over the last century, the issue of gender equality has become increasingly central to the political agenda of national and local governments, international organizations, and social movements. The European Union has been shown to be particularly sensitive to this issue, as evidenced by numerous documents. In 2013, the European Institute for Gender Equality has developed a tool that monitors disparities between men and women in different member countries, the so called Gender Equality Index.

In 2023, with 68.2 points out of 100, Italy ranks 13th in the EU on the Gender Equality Index. Its score is 2.0 points below the score for the EU as a whole. Since 2010, Italy's score has increased by 14.9 points, which is the largest increase in overall score among all the Member States, resulting in the biggest rise in the ranking by eight places. This change occurred mainly due to improvements in the domain of power (+ 37.5 points). In any case, according to this Index, except for health, where Italy ranks 9th among all member states, and power, in all domains of the index Italy's performance is lower than in Europe (on average) (EIGE, 2023).

Moreover, Gender equality represents n. 5 of SDGs goals: achieve gender equality and empower all women and girls. Gender equality by 2030 requires urgent action to eliminate the many root causes of discrimination that still curtail women's rights in private and public spheres. The study of gaps cannot be separated from an analysis that highlights the differences that characterize different geographical areas of the country.

Given the scope of analysis, the effects of which also depend on policymakers at both the national and local levels, it is important to focus on the regional geographic

level to understand what gender inequality looks like in Italy today. What is more, it is believed that the still persistent lack of official studies emphasizing this spatial level makes it necessary to fill this gap. Starting from the domains proposed by the GEI, integrated with some of the indicators of the Sustainable Development Goals (SDGs), in order to measure the changes in gender inequalities with the arrival of the pandemic and how they differ in the Italian regions (Fusco *et al*., 2023), this work intends to identify a measurement of the phenomenon, from 2018 to 2021, in 3 domains: Health, Well-being and Quality of life satisfaction.

2. Methodology

2.1. Data

The aim of this work is to analyse gender differences in Italian regions in three domains: Health, Well-being and Quality of life satisfaction. Each domain is the synthesis of a set of elementary indicators (Fusco *et al*., 2023). Developing a synthetic measure is a challenging process that necessitates making a multitude of crucial decisions across conceptual, analytical, and empirical dimensions.

For each domain, a survey of sources was carried out in order to identify the most suitable indicators to represent the phenomenon. All the analysed data come from institutional surveys[2].

Therefore, the elementary indicators were chosen on the basis of data availability of statistical data at regional level; data timeliness to ensure an adequate time comparison; thematic appropriateness feasibility (the availability of obtaining and processing updated data in a simple way has been taken into account). The analysis was based on the last 5 years (from 2018 to 2022).

This analysis highlights how overall indicators vary between gender and over time, providing a detailed picture of gender differences in various domains.

2.2. Method

In order to synthesize each domain in a single composite index, we use a formative measurement model that is the indicators are considered as causing the gender gap (rather than being caused by it, such as in the reflective approach), so,

[2] The sources used for this study are: Istat, Multipurpose survey on households "Aspects of daily life"; Istat, Life tables; Istat, Multipurpose Survey: time use.

the correlations between basic indicators are not very relevant. According to this approach, indicators are not interchangeable.

Gender equality is based on the existence of a gender role, so the aim of the indicators is to establish the relative situation of men and women and the changes that have occurred at different moments in time. Therefore, In line with previous studies (e.g., Bericat, 2012; Klasen, 2006; Cascella *et al.,* 2022) we didn't use absolute levels of indicators, but we have calculated female-to male ratios (R), because they can be interpreted as a measure of the gender gap. The ratios measure the level attained by women in relation to the status attained by men in this way it is possible to capture the different forms of inequality rather than the single levels. A value R = 1 indicates perfect parity; a value $0 < R<1$ indicates inequality favourable to men; and a value $R > 1$ indicates inequality favourable to women (Permanyer, 2010; Bericat, 2012).

Until now, some examples of indices that have used ratios are the Gender Equality Index developed by European Institute for Gender Equality (EIGE) and the Extended Regional Gender Gaps Index (eRGGI) (Cascella *et al*., 2022).

We apply the Adjusted Mazziotta–Pareto Index (AMPI) which allows spatial and time comparisons across units to be made. The AMPI is a non-compensatory (or partially compensatory) composite index that allows comparability of the data across units and over time (Mazziotta and Pareto, 2016). It is used by the Italian National Institute of Statistics for measuring ''Equitable and Sustainable Well-being'' in Italy. It is based on a non-linear function which, starting from the arithmetic mean, introduces a penalty for the units with unbalanced values of the indicators. Individual indicators are normalized by a re-scaling according to two 'goalposts', i.e., a minimum and a maximum value which represent the possible range of each variable for all time periods and for all units. Such type of normalization allows to perform absolute comparisons over time.

Given the original matrix X_{ij}, where i=1,...,n are the units of analysis (the Italian regions) and j=1,..,m are the basic indicators, we calculate the normalized matrix $R = \{r_{ij}\}$ as follows:

$$r_{ij} = \frac{(x_{ij} - MIN_{x_j})}{(MAX_{x_j} - MIN_{x_j})} * 60 + 70 \quad (1)$$

where x_{ij} is the value of the indicator j in the unit i and MIN_{x_j} and MAX_{x_j} are the "goalposts" for the indicator j. If the indicator j has negative 'polarity', the complement of (1) with respect to 200 is calculated. To facilitate the interpretation of results, the 'goalposts' can be fixed so that 100 represents a reference value (e.g.,

we set the value of Italy equal to 1 in 2018). A simple procedure for setting the 'goalposts' is the following.

Let $INF_{x_j}$and SUP_{x_j} be respectively the overall minimum and the maximum values of indicator j across all regions and all time periods considered, and REF_{x_j} be the reference value for indicator j. Then the "goalposts" are defined as:

$$\begin{cases} MIN_{x_j} = REF_{x_j} - \Delta \\ MAX_{x_j} = REF_{x_j} + \Delta \end{cases}$$

where $\Delta = (SUP_{x_j} - INF_{x_j})/2$. The normalized values will fall approximately in the range (70; 130), where 100 represents the reference value.

Denoting with M_{r_j}, $S_{r_j}$and cv_i respectively, the mean, standard deviation and coefficient of variation (S_{r_j}/M_{r_j}) of the normalized values of the unit i, the generalized form of AMPI is given by:

$$AMPI_i^{+/-} = M_{r_j} \pm S_{r_j} cv_i \quad (2)$$

The sign ± depends on the type of phenomenon considered and, therefore, on the direction of the elementary indicators: if the composite index is 'positive', i.e., increasing values of the index correspond to positive variations of the phenomenon then AMPI$^-$ is used; on the contrary, if the composite index is 'negative', i.e., increasing values of the index correspond to negative variations of the phenomenon, then AMPI$^+$ is used. The AMPI decomposes the score of each unit in two parts: mean level (M_{r_j}) and penalty ($S_{r_j} cv_i$). The penalty is a function of the indicators' variability in relation to the mean value ('horizontal variability') and it is used to penalize the units. The aim is to reward the units that, mean being equal, have a greater balance among the indicators values.

3. Results

The three selected domains (Quality of Life Satisfaction, Well-being and Health) were explained through 14 indicators.

The values of indicators and indices for each domain will be presented in the following paragraphs.

3.1. Domain Quality of life satisfaction

In the area of Quality of life satisfaction, all national indicators for men exceed those for women. The indicators in which the greatest gender differences are recorded are Positive judgement of future perspectives and Leisure time satisfaction; the lowest differences are recorded in Satisfaction with family relations indicator.

In 2021, due to a probable COVID-19 effect, Leisure time satisfaction, Satisfaction with family relations, and Satisfaction with friends relations worsen, both for men and women (Table 1).

Table 1 – *Indicators of Quality of life satisfaction. Values for Italy by gender and by years (2018-2022).*

year	Positive judgement of future perspectives		Leisure time satisfaction		Life satisfaction		Satisfaction with friends relations		Satisfaction with family relations	
	female	male	female	male	female	male	female	male	female	male
2018	27,2	31	64,6	68	40,1	42,8	22,8	23,7	33,1	33,4
2019	28,3	32	66,3	69,9	42	44,6	22	24,1	32,8	34
2020	26,9	30,5	67,5	71	43,1	45,5	21,9	23	32,7	33,2
2021	30	34	54,3	59	44,3	47,7	18	19,4	31,1	32,1
2022	27,9	31,1	63,5	67,9	44,9	47,7	20,5	22,7	31,9	33,3

Table notes: authors' elaboration

The synthetic index values in Table 2 show a different situation between regions and years. Although for this domain, the orientation of the indicators is in favour of males: almost all values have an index value below 100.

The only two exceptions are Molise and Valle d'Aosta in 2021. In Molise, females report higher satisfaction than males in terms of Positive judgment of future perspectives, Satisfaction with friendships, and Life satisfaction. In Valle d'Aosta, this trend is observed for Positive judgment of future perspectives and Life satisfaction.

Table 2 – *Regional synthetic Index of Quality of life satisfaction. Years 2018-2022.*

Index	2018	2019	2020	2021	2022
Piemonte	92,0	95,0	87,6	92,6	87,7
Valle d'Aosta/Vallée d'Aoste	87,2	94,3	86,6	103,6	88,0
Lombardia	95,7	92,1	89,4	78,4	88,7
Trentino-Alto Adige/Südtirol	97,8	94,2	93,7	94,7	97,5
Veneto	90,9	82,5	95,5	88,6	81,3
Friuli-Venezia Giulia	82,7	95,1	86,6	79,4	86,0
Liguria	87,4	92,4	89,5	85,9	88,9
Emilia-Romagna	91,2	86,5	92,9	91,9	94,6
Toscana	88,3	92,9	88,8	89,6	86,0
Umbria	72,7	77,0	84,7	88,7	89,7
Marche	89,8	87,0	98,4	88,1	83,7
Lazio	87,0	87,4	92,9	85,2	87,0
Abruzzo	81,2	84,0	85,8	93,3	83,6
Molise	89,5	76,0	84,1	101,3	72,0
Campania	92,0	83,9	92,0	86,4	84,7
Puglia	80,7	88,9	82,1	92,7	89,8
Basilicata	91,6	89,5	89,2	63,8	67,3
Calabria	86,1	88,8	89,3	91,1	90,9
Sicilia	86,8	82,4	86,3	83,2	85,9
Sardegna	76,8	87,1	85,1	81,8	94,3

Table notes: authors' elaboration

In 2022, no region achieves parity in this domain. The highest value of the index is that of Trentino-Alto Adige (97.5), the lowest that of Basilicata (67.3).

3.2. Domain Health

As expected, the Health domain is very linked to the Covid-19 pandemic: in 2020 Life expectancy at birth decreased, especially for females; Mental health index worsened in 2021 and Healthy life expectancy at birth worsened for females and the following year for males. As Table 3 shows, the indicators in which there are the greatest gender differences in favour of men are the Mental Health Index and Healthy life expectancy at birth, while Life expectancy at birth is consistently higher.

Table 3 – *Indicators of Health. Values for Italy by gender and by years (2018-2022).*

year	Mental health index		Life expectancy without limitations at age 65		Life expectancy at birth		Healthy life expectancy at birth	
	female	male	female	male	female	male	female	male
2018	66,2	69,6	9,8	10	85,2	80,8	57,6	59,4
2019	66,6	70,3	9,8	10,2	85,4	81,1	57,6	59,8
2020	66,5	71,2	9,7	9,5	84,5	79,8	60,1	61,9
2021	66	70,9	9,6	9,9	84,8	80,3	59,3	61,9
2022	67	71	9,9	10,2	84,8	80,5	59,1	61,2

Table notes: authors' elaboration

As Table 4 shows, all index values are around 100 and show low variability over the years. The synthetic index does not show a significant disparity until 2022; the disparity has probably increased due to the worsening of the health status, especially of women, after COVID-19.

Table 4 – *Regional synthetic Index of Health. Years 2018-2022.*

Index	**2018**	**2019**	**2020**	**2021**	**2022**
Piemonte	83,1	91,2	80,5	86,4	92,5
Valle d'Aosta/Vallée d'Aoste	70,7	98,8	96,0	100,9	85,5
Lombardia	98,6	88,5	90,1	85,0	92,5
Trentino-Alto Adige/Südtirol	101,8	103,9	100,1	98,7	94,3
Veneto	96,4	90,4	93,1	83,5	93,6
Friuli-Venezia Giulia	89,4	102,4	97,1	82,5	89,5
Liguria	85,3	96,1	80,4	98,6	91,3
Emilia-Romagna	94,6	87,8	91,1	85,3	89,5
Toscana	88,5	91,8	93,8	89,1	90,9
Umbria	85,8	76,7	79,3	75,3	88,5
Marche	89,1	98,0	95,3	74,6	88,2
Lazio	94,7	85,2	95,2	87,5	89,3
Abruzzo	87,0	93,1	94,0	95,4	94,2
Molise	82,4	85,0	87,1	87,8	71,3
Campania	101,7	102,5	99,1	88,0	83,5
Puglia	89,1	86,5	96,0	96,9	95,9
Basilicata	97,9	82,5	96,8	83,2	81,4
Calabria	101,8	82,0	78,2	95,2	94,3
Sicilia	86,0	89,5	91,0	86,8	92,6
Sardegna	81,4	86,7	72,7	87,4	90,6

Table notes: authors' elaboration

In 2022 there was a general worsening of women's health conditions, which caused a reduction in the synthetic index. The highest value of the index, which is below parity, is recorded in Puglia (95.9), the lowest in Molise (71.3).

3.3. Domain Well-being

In Italy, in the domain of Well-being, if Sedentariness behaviour is excluded, women behave better: they follow a diet and are more fit, drink less alcohol and smoke less (Table 5). With the exception of the Smoking indicator, gender differences have decreased over the years.

Table 5 – *Indicators of Well-being. Values for Italy by gender and by years (2018-2022).*

year	Adequate nutrition		Alcohol consumption		Overweight or obesity		Smoking		Sedentariness	
	female	male	female	male	female	male	female	male	female	male
2018	22,4	16,6	9,5	24,3	35,8	54,3	15,6	23,4	38,9	32,4
2019	20,1	15,1	9,5	22,3	36,4	53,9	15,2	22,5	38,3	32,6
2020	21,2	16	10,2	23,6	37,3	54,9	15,8	22,5	37,6	31,2
2021	19,9	15,2	9,2	20,5	35,7	53,6	16,0	23,1	34,6	30,3
2022	19,0	14,4	9,6	21,8	36,0	53,4	16,3	24,2	38,8	33,7

Table notes: authors' elaboration

As Table 6 shows, in all the years considered and, in all the regions, the synthetic index is above 100. In Liguria and Sardegna the situation has improved over time, while it has worsened in Basilicata, mainly due to a reduction in the Adequate nutrition indicator.

Table 6 – *Regional synthetic Index of Well-being. Years 2018-2022.*

Index	2018	2019	2020	2021	2022
Piemonte	115,0	120,9	118,8	123,6	121,6
Valle d'Aosta/Vallée d'Aoste	119,8	128,3	124,4	108,7	122,6
Lombardia	118,5	121,3	110,8	117,8	117,5
Trentino-Alto Adige/Südtirol	123,4	127,2	119,0	127,5	121,2
Veneto	119,5	120,6	120,4	125,1	119,3
Friuli-Venezia Giulia	112,5	123,4	108,0	113,6	109,8
Liguria	117,5	125,8	118,0	120,0	125,8
Emilia-Romagna	116,9	118,0	115,7	120,0	117,7
Toscana	113,6	122,7	116,7	122,2	118,0
Umbria	124,1	116,0	117,7	124,0	117,5
Marche	120,3	113,6	119,6	115,2	117,9
Lazio	118,8	111,5	118,6	115,6	118,0
Abruzzo	115,2	123,3	128,7	121,7	123,1
Molise	115,8	119,9	130,5	128,7	125,1
Campania	119,0	116,4	110,4	118,1	118,4
Puglia	117,4	118,7	111,9	120,9	124,2
Basilicata	129,1	116,4	126,8	123,2	115,0
Calabria	125,1	115,1	118,1	115,7	118,8
Sicilia	122,8	117,4	120,4	116,8	119,0
Sardegna	126,6	121,0	129,2	122,9	130,3

Table notes: authors' elaboration

Even in 2022 the index values are all above 100: on average, females behave better in all areas of well-being. This means that the females have better lifestyles than the males, with the exception of the sedentary lifestyle, perhaps linked to less free time. The situation of the females, in 2022, is better in Sardegna and Liguria, worse in Basilicata and Friuli-Venezia Giulia.

4. Final remarks

Academics and policymakers increasingly highlight subjective well-being as a key indicator of societal performance, with some advocating for policies aimed at maximizing happiness (Layard, 2011). Well-being is closely linked to health and quality of life.

Blanchflower and Bryson (2024) argue that men have become happier and more satisfied with life than women since a period immediately preceding the COVID-19

pandemic, implying that women are less happy than men today, whether positive or negative affect metrics are used to capture well-being.

The evidence presented in the last paragraph is consistent with the proposal that women express a less satisfactory quality of life than men, on average, expressing lower perceptions of perspective and relationships. These perceptions worsen in the post-pandemic period. The paradox is that women, while expressing less satisfaction with quality of life and worse health, worsened after COVID-19, compared to men, have a higher life expectancy. This could be due to well-being, in the sense of lifestyle, which is good for having a long life. The findings show that, on average, women are more proactive about disease prevention and adopt healthier lifestyles than men, yet they tend to have poorer overall health.

Women's health status is also influenced by the sociocultural context. In Italy, women still bear the greatest burden of family care. In addition, there remain gender differences in the world of work (access, pay, career opportunities) that can influence the state of women's mental and physical well-being.

Of course, in Italy there are many important regional differences in the aspects considered in this research, so regional monitoring is necessary. The results for the three domains showed that the construction of a regional ranking, alongside the reading of the individual domains, could be an important informational input for monitoring the issues over time.

This would be useful for policy makers considering our nation's programmatic choices in the context of the national strategy for gender equality.

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