

EUROPEAN CITIES: WHAT MATTERS FOR SUBJECTIVE WELL-BEING?

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Abstract

Cities are in the spotlight as places for living for most of the world's population. Motivation to move to cities is connected with ideas about prosperity, well-being and a higher quality of life. Politicians make decisions in the name of improving quality of life (QoL), reflected in various aspects such as housing, environment and amenities, etc. At the same time, residents have a subjective perception of their own well-being (SWB), which may be inconsistent with the supply and capabilities of the City Hall. Therefore, this article focuses on examining the factors of quality of life in European cities as related to the subjective perception of personal well-being. Eurobarometer 419 provides data on a sample of 79 major European cities and critical factors influencing SWB are identified. Subsequently, cluster analysis allows an even more detailed view of QoL and SWB based on the division of cities into categories according to mutual similarity. The results make it possible to identify which factors are crucial for the better functioning of cities and increasing their attractiveness to the population.

Keywords: quality of life, subjective well-being, European cities, cluster analysis.

1. INTRODUCTION

Urban quality of life, standard of living, well-being or prosperity are terms used to express the better or worse living of city residents. Suitability for living depends on several dimensions, on which there is consensus in principle (Ballas, 2013). Authors emphasise the various aspects of economic, social, cultural and environmental assets and life of the population (climate, beauty, economic prosperity, social justice and stability, educational, recreation and cultural opportunities, etc.) in examining quality of life. This evaluation of quality of life or liveability has been the subject of extensive research, and European cities in Switzerland, Austria, Sweden and Denmark appear at the top of the rankings using composite indices comparing theoretical qualities. There is a clear difference in the quality of life between the Western and Eastern European cities although Mediterranean cities are also specific if we look for similarities and differences.

Cities are attractive as places of prosperity and higher quality of life. Young people in particular are moving en masse from rural areas to the cities. However, it remains unanswered as to whether these urban

opportunities contribute to a personal sense of happiness and fulfilment given the prevailing competition and strained relationships. There are many perceptions and clichés about the nature of nations, loneliness and anonymity in big cities, crime and loss of spontaneity, all of which eventually translate into people's experiences. On the other hand, cities are praised as dynamic places with concentrated capital, wealth, unlimited job opportunities, amenities in culture and gastronomy, a generator of innovation as well as good urban governance. Wirth (1938) claims there is a gradient of happiness which increases outward from central cities under the influence of decreasing values of size, density and heterogeneity to the highest level on the edge of the countryside - a small town (Berry & Okulicz-Kozaryn, 2011).

It is of interest to look at whether residents themselves rate their city similarly to the rankings and what their personal feelings of satisfaction, happiness or well-being are (Okulicz-Kozaryn, & Valente, 2019). There has been a discrepancy between measuring objective conditions and subjective assessments of the quality of life (Kahneman & Krueger, 2006). Several approaches measuring quality of life can be combined and compared, e.g. theoretical quality of life (measured through statistical variables), or subjective evaluation of city living conditions by its residents. Besides, a different matter is personal satisfaction or happiness (subjective well-being) because it also depends on internal disposition, health, relationships with the environment, recognition of the environment and overall harmony. Surveys of subjective quality of life are simple in principle and are based on how satisfied or happy a person is with the way of life they lead nowadays. This measures all aspects on a scale of 0 to 10. It can be assumed that the answer reflects, to a certain extent, the city's suitability for living (housing supply, jobs, infrastructure and public transport, health and social care, quality of education, cultural and sports infrastructure and supply, governance and people). However, this raises a further question as to what extent individual happiness (subjective well-being) is conditioned by habitability (quality of life) in the city.

The European Commission occasionally conducts surveys among the inhabitants of European cities regarding how they perceive the dimensions of the city in which they live. Moreover, the survey (European Commission, 2015) also contains a relatively inconspicuous question about satisfaction with their own lives. This gives us the opportunity to relate the assessment of the city by the inhabitants (quality of life) and their own life (subjective well-being). It also allows us to relate the results of a representative survey with demographic and economic indicators of quality.

2. LITERATURE REVIEW

Quality of life refers to the life situations of people who have multiple needs and therefore represents a multi-dimensional concept (Bérenger & Verdier-Chouchane, 2007; Haq & Zia, 2013). At the same time, these domains do not only work independently and the interplay between them should also be considered

and understood. The concept is qualitative by nature, and there are undoubtedly limitations to the measurement possibilities. Clearly, a consensual value definition would be desirable; however, human needs are diverse, and even if we consider a standard model of needs, this can vary geographically. Moreover, it may even change over time with more emphasis, for example, on sustainability and addressing the impacts of climate change (Hudec, 2017). Nonetheless, some sort of generally accepted framework is necessary. GDP has long been a criticised metric of progress, although theories and beliefs about well-being are shaped by our metric systems (Stiglitz et al. (2010) and influenced by local social, economic and ethical values. Therefore, interregional comparisons between different spatial scales are fairly inconsistent. So far, a common methodology for comparing regional well-being has been lacking and in its place there is competition between several approaches (Scott & Bell, 2013).

Therefore, any effort to objectify the assessment includes subjective attitudes in setting the social construct. The definitions of prosperity, local development are necessarily dependent on the context and value system (Tomaney, 2017). The ideas and goals of people's prosperity are also geographically conditioned. Indicators such as GDP per capita may indicate how people live in a country or region. Yet, they can also mask significant differences in the real quality of life stemming from governance, labour market supply, health conditions, income and educational disparities as well as other dimensions of well-being. Therefore, designing and implementing a welfare strategy requires knowledge of the immediate socio-economic context and local ideas about the perceptions of well-being, i.e. a place-based approach (King, Renó & Novo, 2014).

In defence of well-being measurements, it should be noted that well-being indices are particularly useful in highlighting local and regional patterns of inequality. Economic growth is not a universal way of tackling inequality, and at the same time, a high level of inequality acts against economic growth (Perrons, 2012; Tomaney, 2017). Therefore, the policy dimension is maybe more important than a technical dispute in the debate on the quality of life and its assessment.

The size and density of cities have been shown to support agglomeration economies and provide a source of economic growth. However, it can also reduce well-being, happiness and well-being. It can be assumed that in the continuing growth of large cities, higher incomes and happiness are opposing variables (Easterlin, 2001). Today, cities have become the foremost pattern of geographical settlement around the world. We live in an "urban century" (Girard et al., 2017) and the organisation of modern cities requires a more integrated scientific analysis in order to understand such complex urban systems. However, this urbanisation trend does not lead to the same or uniform model of urban development but rather shows considerable heterogeneity in economic specialisation and a mix of knowledge bases (Duranton, 2007).

Urban development is reflected in the vision of cities as smart, digital, creative and happy; the last attribute expressing the focus on the quality of life of the inhabitants.

Cities integrate all dimensions of modern life, from the socio-economic to technological aspects. It is commonly acknowledged that the dynamic performance of cities is mainly driven by the knowledge base (Rabari and Storper, 2015) and thus by the intellectual or creative capital having a breeding ground in urban agglomerations. Therefore, future economic growth and development as well as solutions to global challenges such as sustainability are at the heart of cities. It is the concentration of knowledge and creativity in urban areas which makes cities international centres of economic power for innovation and with a global reach. Moreover, with the increasing mobility of high human capital, cities also need to offer a high quality of life in this worldwide talent competition (Yigitcanlar et al., 2008).

The measurement of quality of life (QoL) is therefore based on the analysis of more objective factors, such as the quantity and quality of natural amenities. However, subjective well-being and happiness are measured through questions in a survey. Both approaches relate to diverse demographic socio-economic, and often geographical, determinants. A precious source of research on the subjective quality of life in European cities are representative surveys called Quality of Life in European Cities. These were first conducted in 2012 and later in 2015 (European Commission, 2015) and published under the flash Eurobarometer 419 in 2016. Several studies work with data, emphasising comparisons of European cities and geographical patterns of higher and lower quality of life (Černáková a Hudec, 2012; Kopáčková, 2019; Moeinaddini et al., 2020; Okulicz-Kozaryn & Valente, 2019; Urbančíková, 2019; Węziak-Białowska, 2016).

This article attempts to relate data on the views of residents on various aspects of the cities in which they live with the subjective perception of their well-being, this creates a stimulating analysis of the relationship between a set of urban quality of life factors and subjective well-being. Following the current line of results on the quality of life in cities, a few research questions have been developed:

- How is the evaluation of various aspects of cities by their inhabitants related to subjective well-being?
- Which cities are assessed similarly or differently, and what geographical factors of variability can be identified?
- Is it possible to confirm the relationship between size, density and unemployment and the assessment of subjective well-being?

3. DATA AND METHODS

The examination of the quality of life and subjective well-being in European cities is made possible thanks to representative surveys called Quality of Life in European Cities. This was conducted in 2015 (European Commission, 2015) and published under the flash Eurobarometer 419 in 2016. The data obtained comes from 79 European cities in 28 Member States of the European Union as well as cities in Iceland, Norway, Switzerland and Turkey. A stratified random sample was used in the sampling of respondents. Interviews were conducted with approximately 500 respondents in each city. The report (European Commission, 2016) uses only elementary tools of descriptive statistics (percentage of the population with possible close-end responses). The results of the survey have been published and are freely available for further analysis. The questions in the interview concerned various aspects of the functioning of the city (Table 1) and has made it possible to define the dimensions of quality of life so that they correspond to the usual standards. One question was personal and regarded the degree of satisfaction of the respondents with their life. This is the question used to assess the subjective well-being of the individual.

The questions provide an opportunity to assess the relationship between the evaluation of the city and one's own life. It gives an interesting possibility of confronting the urban quality of life of the city and the subjective well-being of an individual. Regression analysis was used where the evaluations of the quality of life factors in the city were the independent variables and the dependent variable was satisfaction with one's own life. The list of factors entering the model is given in the following table Table 1 in an effort to identify the main factors contributing to a high or, conversely, low level of quality of life as well as the subjective quality of life. It is hypothesised that larger city size, density and unemployment rates could be factors influencing negative subjective well-being. These were then add to the model to show the impact of these external variables.

In the second part, the indicators and data on European cities from the Urban Audit (population, area, population density, unemployment rate) were added in order to observe further links about subjective well-being (SWB) (Eurostat, 2015). Some data needed to be supplemented from national statistical databases. It is not always easy to compare cities, as the administrative set-up can only include the inner centre or, conversely, greater cities with suburban areas. Thus, harmonisation of statistical data on large European centres such as Paris or Athens was necessary as well as for smaller cities such as Valletta. This was required in order to compare similar urban structures.

Subsequently, the question arises about the geographical location of cities with a higher and lower quality of life. In the second hypothesis, it was assumed that cities from more advanced countries would also show a higher quality of life. Therefore, survey data was used as the input for hierarchical cluster analysis.

This type of cluster analysis allows the classification of cities into groups according to similarity. At the same time, it also allows a dendrogram (see Annex) which can be created to look into the hierarchical classification of cities based on a similar quality of life. It is always a question of what the ideal number of clusters is. A scree plot is a method that recommends a suitable number of clusters.

The questions in the questionnaire) focused on satisfaction with public transport, health care, sports facilities, office services and extent of greenery. It also aimed at evaluating the possibility of finding a job or housing at a reasonable price in the city. In total, the residents answered 29 questions in the survey and assessed various dimensions of the city. In order to identify the dimensions and their variables, the groups of variables affected by a high correlation were replaced by one variable representing one dimension of quality of life in this way (for example, the questions focused on the amount of greenery, air pollution, noise levels and urban cleanliness). After merging the variables, five dimensions emerged in total: infrastructure and facilities, public services, economic factors, the environment and personal situation. Each of the dimensions consists of two variables, listed in Table 1. The ten question-factors considered also represent variables entering the regression model and cluster analysis.

TABLE 1 - DIMENSIONS AND VARIABLES SELECTED FOR RESEARCH FROM THE FLASH EUROBAROMETER 419

Dimensions		Variables
Infrastructure and facilities	1.	Public transport
	2.	Retail Stores
Public services	3.	Healthcare
	4.	Education
Economic factors	5.	Jobs
	6.	Housing
Environment	7.	City cleanliness
	8.	Greenery
Personal situation	9.	Timely payment of bills
	10.	Life satisfaction

4. ANALYSIS AND RESULTS

The initial analysis works with the average QoL value (the arithmetic mean formed from 22 questions omitting only the personal satisfaction question denoted Q1.18). The following map (Figure 1) provides a spatial picture of the quality of life in 79 cities, based on the average value from the responses, and thus the aggregate value of urban quality of life (QoL). The QoL value was created as an average rating created by the inhabitants of the city. Cities are marked with a square where they are located. A higher QoL is indicated by a blue square while lower values are marked with red squares. According to assumptions from previous international rankings the highest QoL values are present in Western European. This can be confirmed and this area is marked with a soft blue veil. On the contrary, the lowest QoL (soft red veil)

values are mostly concentrated in the arc stretching from Ireland through the Mediterranean cities back north to the Eastern European post-communist countries.

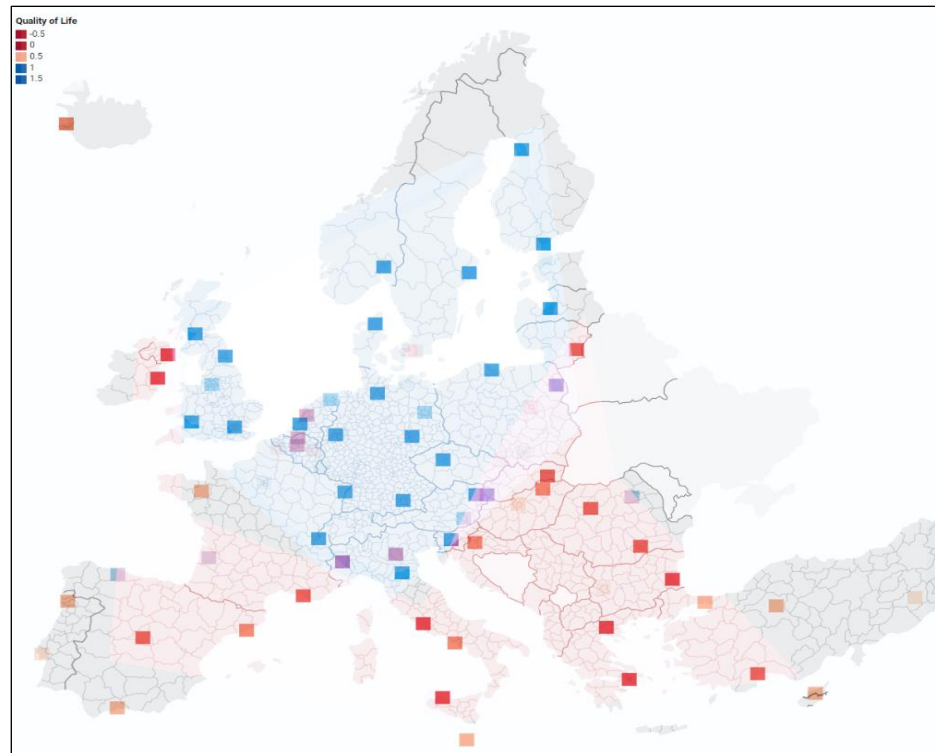


FIGURE 1 – QUALITY OF LIFE IN THE EUROPEAN CITIES DISPLAYED ON THE MAP.

The map provides a visual representation of the spatial distribution of the QoL level in the surveyed cities. The economic advancement of countries is also mirrored in the QoL values of the cities. The average QoL value will now be compared with the subjective well-being (SWB) level in the same sample of cities. This moves us to evaluating the relationship between the suitability of the city for living and personal feelings of life satisfaction. It has been assumed that the state of the city should also be reflected in personal experience, and this can be confirmed.

This difference can be seen even more clearly in the graph (Figure 2), in which both values, QoL (green) and SWB (blue), are marked for the city. In addition, the arrangement of all examined sites according to the SWB can be seen. This creates an interplay between the map (Figure 1) and the order (Figure 2). It is remarkable that in all cities, the value of SWB is higher than QoL. Moreover, when the inhabitants are critical of the liveability of their city and are dissatisfied with its governance, public transport, healthcare, cleanliness etc., they still know how to find a satisfying way of living. Thus, cities with low QoL but higher personal satisfaction, such as Naples, or Polish and Slovak cities, are among the cities with high SWB. There was significantly lower SWB measured in cities such as Athens, Iraklio, Roma, Sofia, Bucharest, as well as surprisingly in Barcelona and Reykjavik.

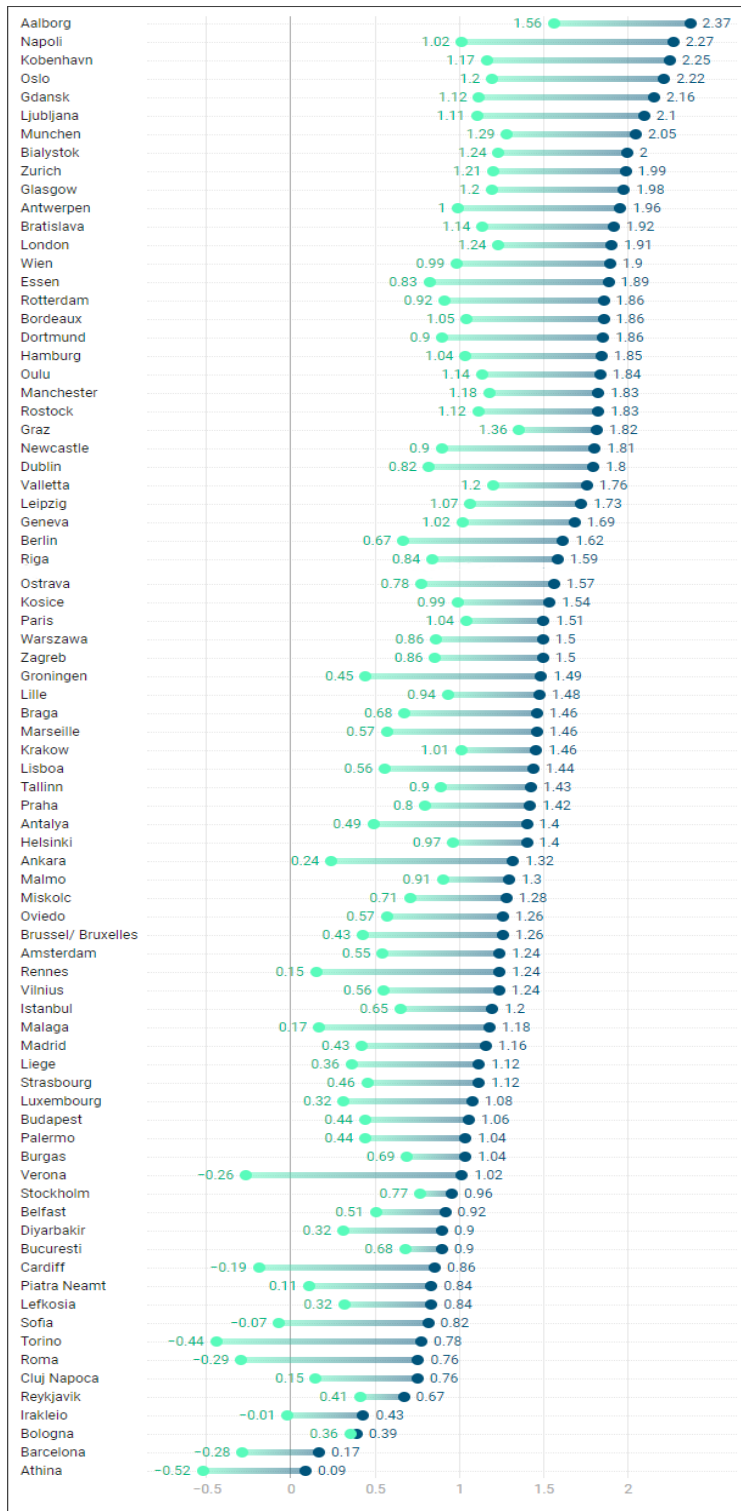


FIGURE 2 – CITIES ORDERED ACCORDING TO SWB (BLUE); QoL IS GREEN.

On the whole, the QoL and SWB are correlated (Figure 3). The impact of lower quality of the city is also reflected in subjective well-being and there is a correlation between the QoL and SWB variables. The regression line is shown in Figure 3.



FIGURE 3 – SCATTER PLOT OF THE CORRELATION BETWEEN QoL AND SWB.

The correlation manifests itself, one's own satisfaction is related to the disposition of the city for life, but the intercept is far from 0, the line is shifted upwards. This means that one's own satisfaction is typically higher than the city's rating.

Quality of life has its dimensions, and further examination is needed to determine which of the city's factors could be relevant to the satisfaction of the inhabitants.

5. LINEAR REGRESSION MODEL

Table 1 lists the variables (1 to 9) from the European Cities survey that enter the regression model as independent variables. In addition, the variables of density, unemployment rate, city size, potentially explaining subjective well-being, were added Subjective-well-being, as the dependent variable, is expressing the answer of the residents to the survey question on satisfaction with their lives is employed (variable 10). Therefore, the model is specified as follows:

$$\text{Life_satisfaction} \sim \text{Public_transport} + \text{Retail_Stores} + \text{Healthcare} + \text{Education} + \text{Jobs} + \text{Housing} + \text{City_cleanliness} + \text{Greenery} + \text{Timely_payment_of_bills} + \text{City_size} + \text{Density} + \text{Unemployment}.$$

The given model (Table 2) explains 84.2% of the variability of the variable Life_satisfaction. Light multicollinearity is present in the model. It is generally accepted that Variance Inflation Factor (VIF) values exceeding 5 or 10 indicate problematic collinearity. In the model, the VIF values assigned to the regression

factors are between 1.38 and 3.10, so the model can be considered correctly specified. Thus, the presence of multicollinearity does not have a significant effect on the accuracy of the regression model parameter estimation. The other basic assumptions of the model (normality of residue distribution, heteroskedasticity, autocorrelation) are met. The F-test confirms the model as a whole is significant at the level of significance $\alpha = 0.05$.

TABLE 2 - THE RESULTS OF THE REGRESSION MODEL.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	5.022e-01	1.914e-01	2.623	0.010813 *
Public_transport	-6.950e-02	5.245e-02	-1.325	0.189664
Retail_Stores	7.224e-02	8.226e-02	0.878	0.383023
Healthcare	1.619e-01	4.417e-02	3.665	0.000495 ***
Education	1.425e-01	7.523e-02	1.895	0.062499.
Jobs	1.587e-01	5.107e-02	3.108	0.002781 **
Housing	-1.964e-02	3.730e-02	-0.526	0.600334
City_cleanliness	2.785e-02	5.020e-02	0.555	0.580887
Greenery	1.288e-01	6.487e-02	1.985	0.051309.
Timely_payment_of_bills	2.558e-01	5.064e-02	5.051	3.71e-06 ***
City_size	1.607e-05	5.200e-05	0.309	0.758209
Density	-1.011e-05	8.359e-06	-1.210	0.230660
Unemployment	1.278e-02	6.625e-03	1.930	0.057943

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.2105 on 66 degrees of freedom

Multiple R-squared: 0.8422, Adjusted R-squared: 0.8135

F-statistic: 29.36 on 12 and 66 DF, p-value: < 2.2e-16

From the explanatory variables, healthcare, jobs, and timely payment of bills are significant at the level of significance of $\alpha = 0.05$. At a higher level of significance ($\alpha = 0.1$), education and unemployment are significant as well. Several variables with increasing value are related to an increase in overall subjective satisfaction. These are healthcare, jobs, the financial situation of the household and greenery in the environment. This also revealed the key links between subjective well-being and the state of the city.

There are three variables (public transport, housing and density) which do not have a positive relationship with overall subjective satisfaction. The explanations of the results are quite useful. The strongest negative correlation is between the variables jobs and housing. In other words, the better the situation in the city with jobs, the harder it is to get housing at a reasonable price. This phenomenon is prevalent in the capitals where it is a kind of tax for far superior amenities and opportunities for personal development, but the spatial capacity is limited. Housing supply tends to be better in cities that are somewhat less

attractive for living but finding suitable housing at a reasonable price is less effort. However, the public transport variable gives an ambiguous result. Cities reasonably organised, with a developed transport system (Paris, Vienna, Zurich, Prague) also exhibit high use of public transport and likewise higher life satisfaction. On the contrary, cities with very negative views on public transport (Palermo, Rome, Lefkosia, Naples) are also those where their use is deficient. It is then difficult to separate the quality of the public transport system from the perception of it if the foremost preference of the residents is to drive and therefore to move around a crowded city.

Lastly, the relationship between city size and density to satisfaction is of interest. The variable city size has no apparent effect on happiness. This is encouraging as it seems life can be superior in both small and large cities. However, what causes unpleasant feelings is of high density.

6. CLUSTER ANALYSIS

The last part groups the cities into clusters based on their similarities. Ward's hierarchical method is used for clustering in an iterative process. This starts with single clusters and gradually creates new and new richer groups so as to minimise variance as the sum of the square Euclidean distance. The same ten variables (Table 1) in the regression model are used again. First, however, the appropriate number of clusters for a set of city-data needed to be determined. The most suitable number of clusters can be estimated by a scree plot of the eigenvalues displayed on the y-axis. The number of clusters is where the curve levels off clearly (at which the elbow bend occurs), thus obtaining 8 clusters in our case.

TABLE 3 CHARACTERISTICS OF THE CLUSTER CENTROIDS

Variables	Clusters							
	1	2	3	4	5	6	7	8
Public transport	1.45	0.67	0.81	0.37	1.55	1.21	-1.01	0.63
Retail Stores	1.67	1.37	1.35	1.23	1.55	1.87	1.17	1.20
Healthcare	1.52	1.13	0.35	-0.01	1.51	-0.11	-0.39	0.04
Education	1.52	0.91	1.13	0.29	1.44	1.01	0.04	0.49
Jobs	-0.31	-0.87	-1.34	-0.27	0.17	0.07	-2.08	-1.63
Housing	-0.19	-0.96	0.58	-0.81	-1.83	-0.67	-0.44	0.16
City cleanliness	0.65	-0.20	1.24	-0.25	1.02	0.57	-1.67	-0.40
Greenery	1.57	0.83	1.31	0.48	1.75	1.42	-0.39	0.24
Life satisfaction	1.78	1.29	1.31	0.92	2.00	1.49	0.85	0.78
Timely payment of bills	2.06	1.68	1.75	1.03	2.28	1.92	1.04	0.84

Each of the hierarchically built clusters has its own characteristics, which distinguish it from the others. The average values of each of the ten variables corresponding to the centroids of the clusters are in Table 3. The centroid is a multi-dimensional cluster midpoint. Technically, it is a vector of the averages of the variables entering the cluster analysis calculated from the values of the cluster members.

The cluster algorithm ended the clustering process by creating eight groups of cities that have different characteristics. The cities were divided into eight groups in the clustering process, with the number of cities in the group varying from 5 to 20, which is an acceptable difference in cluster size. Accordingly, every two clusters must differ significantly in at least one or more variables. For example, clusters 1 and 5 have similar and the highest levels of life satisfaction but differ in the possibility of finding reasonable housing and a job.

Cluster 1 (20 cities): Antwerp, Ostrava, Prague, Aalborg, Dortmund, Essen, Leipzig, Rostock, Bordeaux, Rennes, Strasbourg, Groningen, Rotterdam, Graz, Ljubljana, Belfast, Cardiff, Glasgow, Manchester, Newcastle.

Cluster 2 (7 cities): Brussels, Liege, Berlin, Lille, Marseille, Paris, Bologna.

Cluster 3 (5 cities): Burgas, Oviedo, Oulu, Bialystok, Piatra Neamt.

Cluster 4 (8 cities): Sofia, Budapest, Bucharest, Bratislava, Ankara, Antalya, Diyarbakir, Istanbul.

Cluster 5 (14 cities): Copenhagen, Hamburg, Munich, Dublin, Helsinki, Reykjavik, Luxembourg, Amsterdam, Vienna, Oslo, Stockholm, London, Geneva, Zurich.

Cluster 6 (8 cities): Tallinn, Vilnius, Riga, Gdansk, Krakow, Cluj Napoca, Warsaw, Malmö.

Cluster 7 (5 cities): Athens, Irakleio, Naples, Palermo, Rome

Cluster 8 (12 cities): Barcelona, Madrid, Malaga, Zagreb, Miskolc, Torino, Verona, Nicosia, Valletta, Braga, Lisbon, Košice.

In the regression analysis, the timely bill payment parameter was found to be a critical parameter for life satisfaction. From the cluster analysis, the relationship between these two variables can be extracted, with the cities colour-coded according to their cluster affiliation and connected by a line to their cluster centroid. The differences between clusters are evident when viewed in a modified grouped scatter plot (Figure 4).

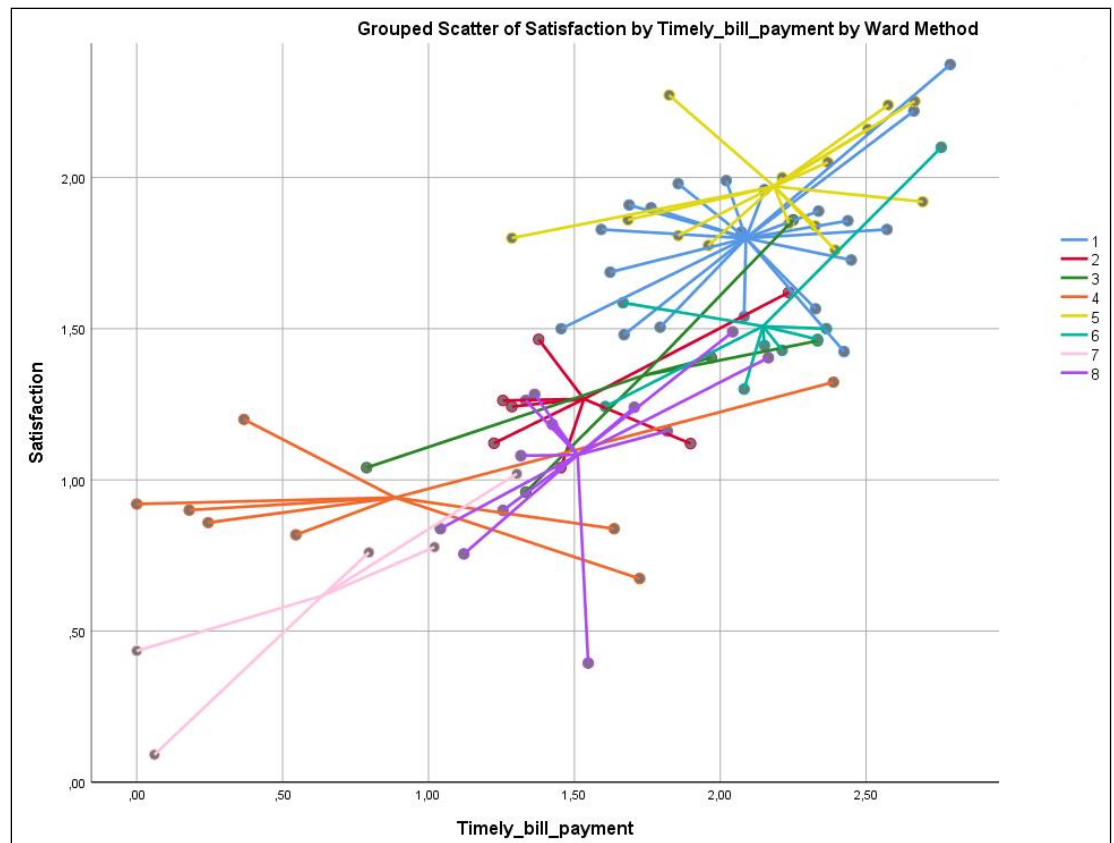


FIGURE 4 - GROUPED SCATTER PLOT OF TIMELY BILL PAYMENT AND LIFE SATISFACTION

There is a positive correlation between the variables life satisfaction and timely bill payment, with the best cities belonging to clusters 1 (North-West Europe), 5 (major European centres) and 6 (North-East Europe). On the opposite side of the spectrum are cluster 4 (East-European capitals and Turkish cities) and cluster 7 made up by South-Mediterranean cities. The cities in the clusters are almost entirely geographically anchored. This also links the results of the cluster analysis to the spatial view displayed in Figure 1.

7. CONCLUSIONS

Some answers have been obtained to the research questions using descriptive methods, regression analysis and cluster analysis. Subjective well-being of residents in all cities is higher than their assessment of the state of various aspects of the city. The main factors identified are the state of healthcare, the financial situation of households, and the possibility of getting a job within a reasonable time. Of less importance but close to significance are the quality of education and sufficient greenery in the city. Other variables are rather ambiguous; they work differently in Western, Eastern and Southern Europe. Overall, the impact of the location in Europe is strong, and life satisfaction is highly spatially conditioned.

The cluster analysis grouped cities according to similarities. In a cluster, there are typically cities from one geographical area, partially supplemented by several cities from elsewhere. This highlights the difference between the capital and smaller cities in a country. These bounce off each other and are sometimes not in one cluster (Sofia-Burgas; Bratislava - Košice; Budapest - Miskolc; Bucharest - Cluj Napoca). However, the position of the cities from the southern Mediterranean, concentrated in Cluster 7, is alarming (Athens, Irakleio, Naples, Palermo, Rome). The evaluation of city life is considerably more negative compared to other cities in the research. If we take other variables outside the Flash Eurobarometer survey into account, there is a relationship to high population density although the size of the city is not a significant factor.

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Annex: Dendrogram of the hierarchical cluster analysis

