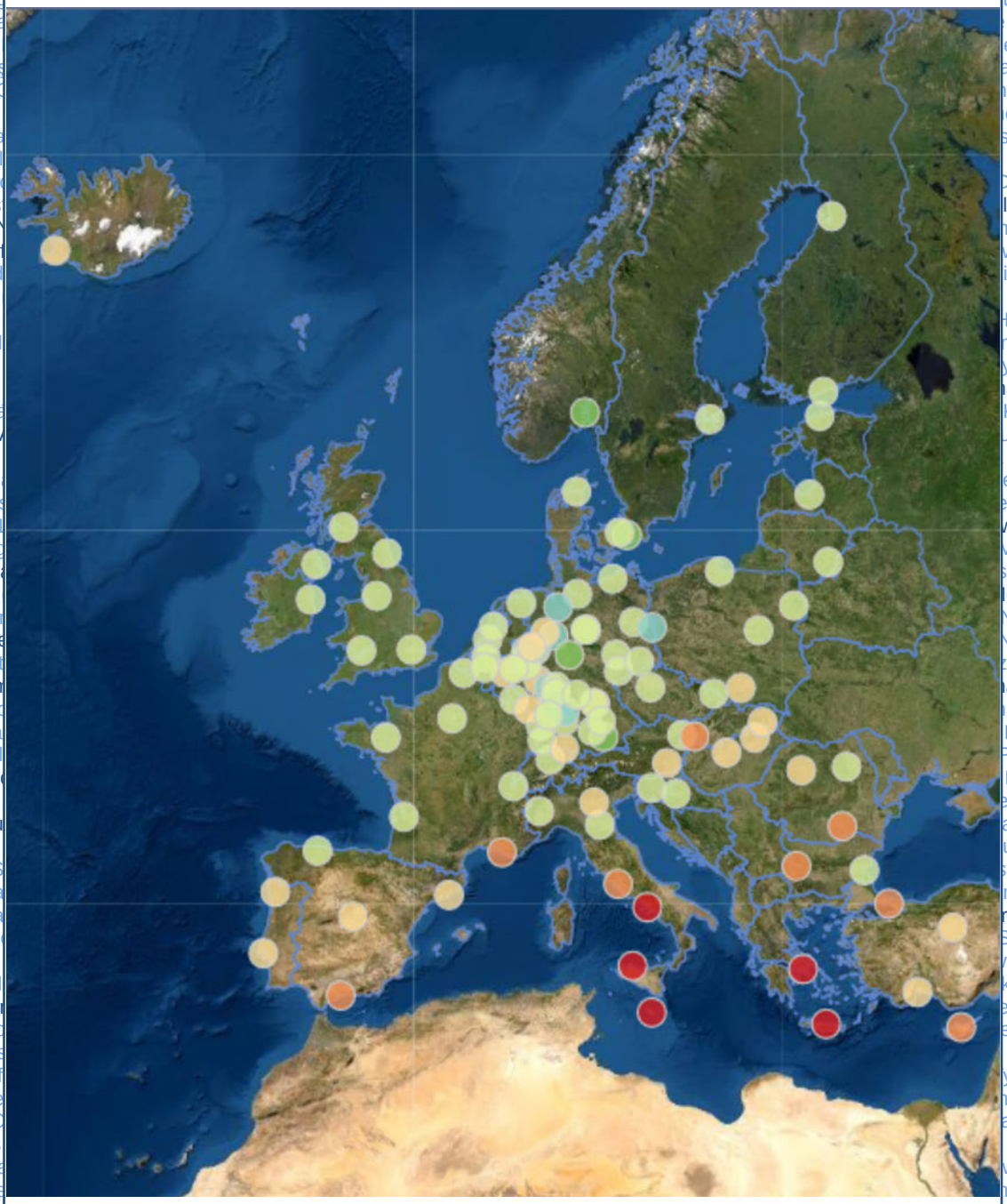
KOSIS Association Urban Audit

URBAN AUDIT

The German Urban Audit



Subjective Assessments of the Quality of Life in European Cities

Joint project with the German Federal Statistical Office and the Statistical Offices of the Federal States (Länder)

Supported by Eurostat, the Statistical Office of the European Union

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Cities participating in the EU City Statistics project are listed on the back cover.

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Introduction

Our brochure this year casts a spotlight on a successful project carried out by the Statistical Office of the European Union (Eurostat) and German municipal statisticians – the survey on the quality of life in cities. Eurostat has been conducting perception surveys in selected European cities ever since 2004 to facilitate comparisons between the objective structural data gathered in the context of the City Statistics project (formerly known as Urban Audit) and the subjective assessments of European citizens. Since 2006, the Coordinated Survey on the Quality of Life in German Cities has been conducted every three years in parallel with this European survey in around 20 additional cities by the surveys working group of the Association of German Municipal Statisticians (VDSt). The considerable value added by this at times challenging coordination work is clearly highlighted in this brochure, which is dedicated especially to data collected in 2018 and 2019. Linking both surveys affords opportunities for the cities that have been selected for participation or have voluntarily opted to participate to compare themselves not only with other cities in Germany but also with cities across Europe that may be facing similar challenges in highly diverse areas. Continuous participation also creates opportunities to make comparisons over time. This survey data thus complements structural data and provides local authorities with valuable information that can flow into planning and decision-making processes. It is encouraging to see that the overall quality of life in German cities is high: respondents' average satisfaction with life in their own cities (the percentage of respondents who reported being very or rather satisfied) is not below 90% in any city.

In the second part of the brochure, we would like to introduce you to three major new developments in the (structural) data collection. The first of these is the redrawing of the German functional urban areas (FUAs) – that had remained unchanged for many years – in collaboration with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) and the Federal Statistical Office. As the new FUA boundaries are now based on municipal-level rather than district-level data, they reflect the reality of commuter flows considerably more accurately. Secondly, and with the help of dedicated city statistician colleagues in Germany, it has proven possible to develop a common evaluation method for deriving the five new variables desired by the EU to shed light on the external and internal migration of urban residents and 90% of the surveyed cities have been able to supply data using this method. Finally, the Urban Audit Structural Data Atlas has also been overhauled and will hopefully encourage users to delve into and visualise Urban Audit data independently.

I would like to thank all the colleagues who have contributed directly or indirectly to the successful production of this Urban Audit brochure and I hope you enjoy reading it!

Dr Ellen Schneider
City of Mannheim
Head of Municipal Statistics and Urban Research Unit

Mannheim, 17 November 2021

Part I

Results of the 2018/2019 Urban Audit Survey

Chapter overview

Combining the 2019 EU survey with the 2018 Coordinated Survey on the Quality of Life in German Cities conducted by the Association of German Municipal Statisticians (VDSt) has once again led to the creation of added value for all stakeholders.[1] German cities not selected by the EU to participate in the perception survey nevertheless gain the opportunity to compare themselves with 83 other European cities. The European Commission is also very interested in expanding the number of participating cities and is now also supporting the supplementation of its dataset with the VDSt data in the context of the City Statistics project.

This European focus is reflected in the first three contributions in this part of the brochure – all three are concerned with comparisons at European level. To begin with, an overview of the survey results with informative graphics illustrating a selection of findings is presented by the European Commission. In the second contribution, Lasse Langemack and Anke Schöb compare the results from Stuttgart (a city participating voluntarily) with results from other European cities. They underline that the Urban Audit project brings 'European and international parallels' to light that 'emphasise in particular the importance of subjective perceptions and evaluations by the population for measuring quality of life.' This is followed by a contribution by Nassima Ouaarous examining whether satisfaction with health care services correlates with the severity of the impact of the COVID-19 pandemic.

Intra-German comparisons are already facilitated by the production of a comprehensive chart report by the implementing institute[2] and a variety of publications by the participating cities.[3] Tobias Link draws on the method of web scraping for a contribution to this brochure comparing subjective perceptions of the housing market situation in German cities with objective data in the form of current asking rents. Ossip Fürnberg looks at satisfaction with public transport in the German cities participating voluntarily in the survey and places a special focus on Mannheim.

In the final contribution in this first section, Ellen Schneider demonstrates that the survey results are not only useful for intra-European or intra-German comparisons, but that looking at small-scale differences in assessments of quality-of-life aspects can also prove worthwhile. In Mannheim, for example, satisfaction with safety and with multiple indicators of environmental quality varies considerably depending on where people live.

[1] For the sake of readability, both surveys together are described as the 'Urban Audit Survey'.

[2] https://www.staedtestatistik.de/fileadmin/media/VDSt/Umfragen/PDF/EU-Buergerumfrage/Charts_Standardmodul_2018_2019_20190625.pdf (in German)

[3] See, for example, Koblenz (https://www.koblenz.de/downloads/aemter-und-eigenbetriebe/statistikstelle/umfragen/2019-lebensqualitaet-in-koblenz-im-zeitlichen-wandel-und-im-staedtevergleich.pdf?cid=vre, in German) or Mannheim (https://www.mannheim.de/sites/default/files/2020-08/b202004_urban_audit_2018.pdf, in German).

1 Quality of Life in European Cities[1]

European Commission, Directorate-General for Regional and Urban Policy

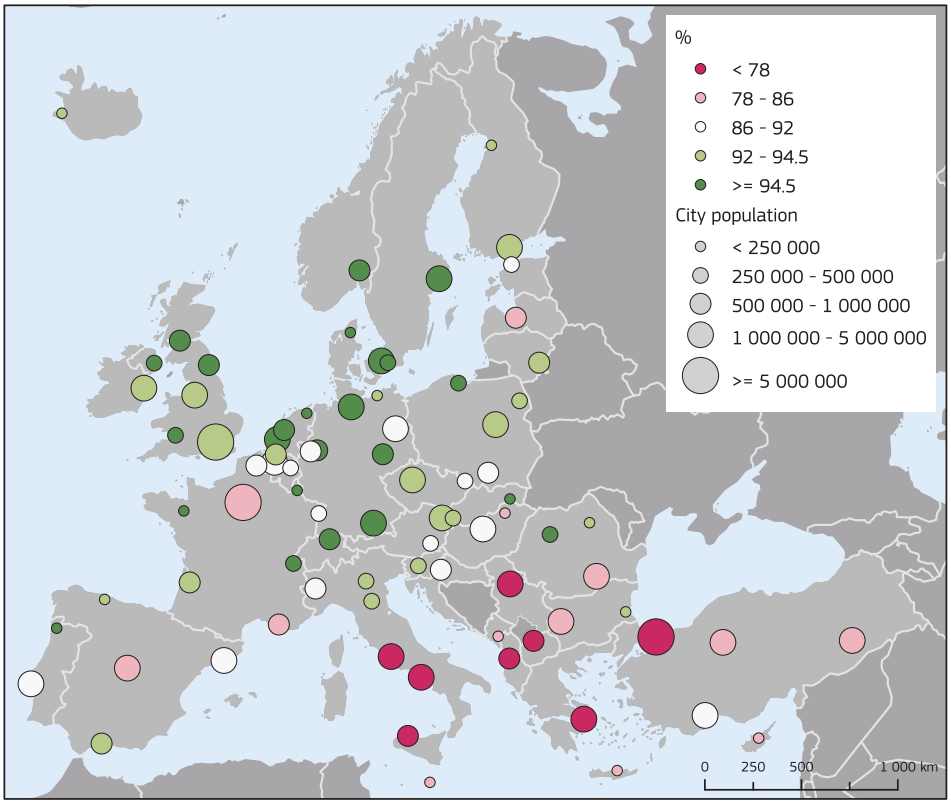


Figure 1.1: Share of those who are satisfied living in their own city

Satisfaction with living in the city

I am satisfied to live in the city: total agree (%)

Source: EC/DG REGIO Quality of life in European cities survey, 2019
Note: Percentages are based on all respondents (excluding don't know/ not answered)

What city is the cleanest or the safest? In which city is it easy to find a job or a house? Which city has the best public transport or air quality? Answers to these questions and many more can be found in the latest Report on the Quality of Life in European Cities, 2020.[2] This report summarises the results of the 5th survey of European cities, which covers 83 cities and was carried out in 2019.

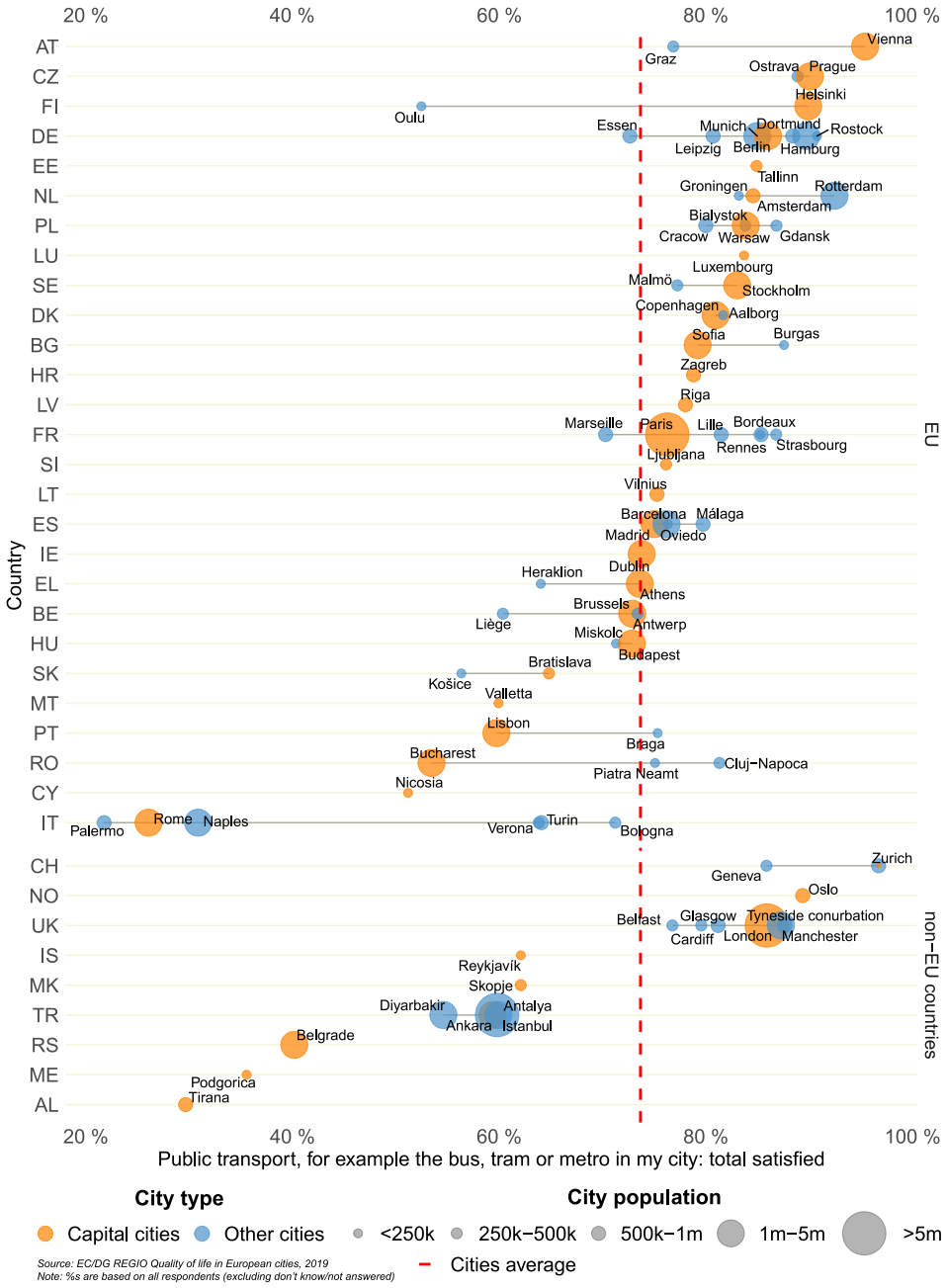
[1] This article is an adapted version of the commentary on the European Commission's Report on the Quality of Life in European Cities, expanded by maps and illustrations (see https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life; edited by Ellen Schneider).

[2] The full Report on the Quality of Life in European Cities can be downloaded here: https://ec.europa.eu/regional_policy/sources/docgener/work/qol2020/quality_life_european_cities_en.pdf.

Satisfaction of living in one's own city

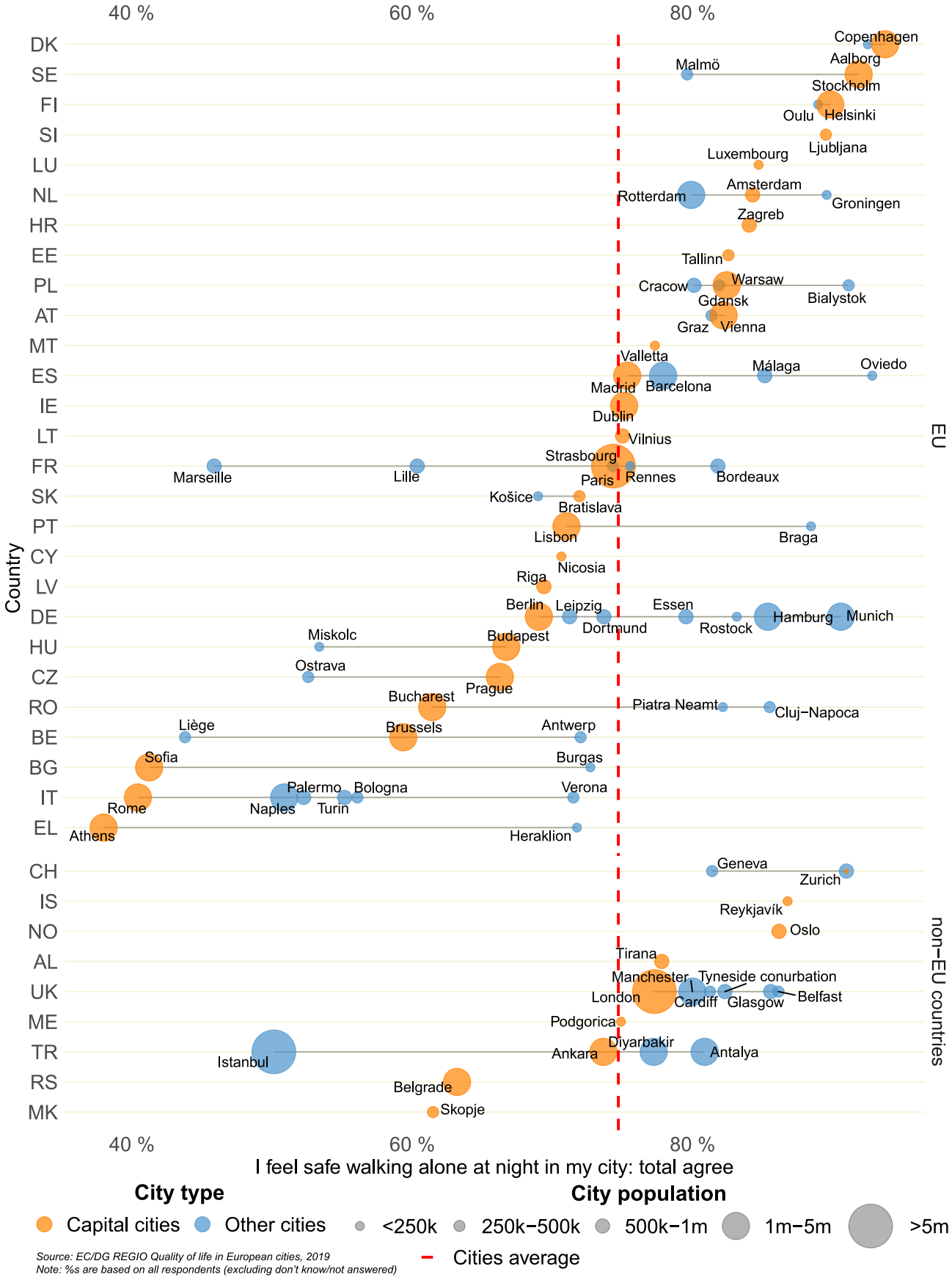
The 2019 Quality of Life in European Cities Survey provides a unique insight into city life. It gathers the experiences and opinions of city dwellers across Europe. It shows that people living in northern EU cities are the most satisfied with their city, but satisfaction in eastern EU cities is increasing rapidly (see figure 1.1 on page 9).

Figure 1.2: Share of those who are satisfied with public transport



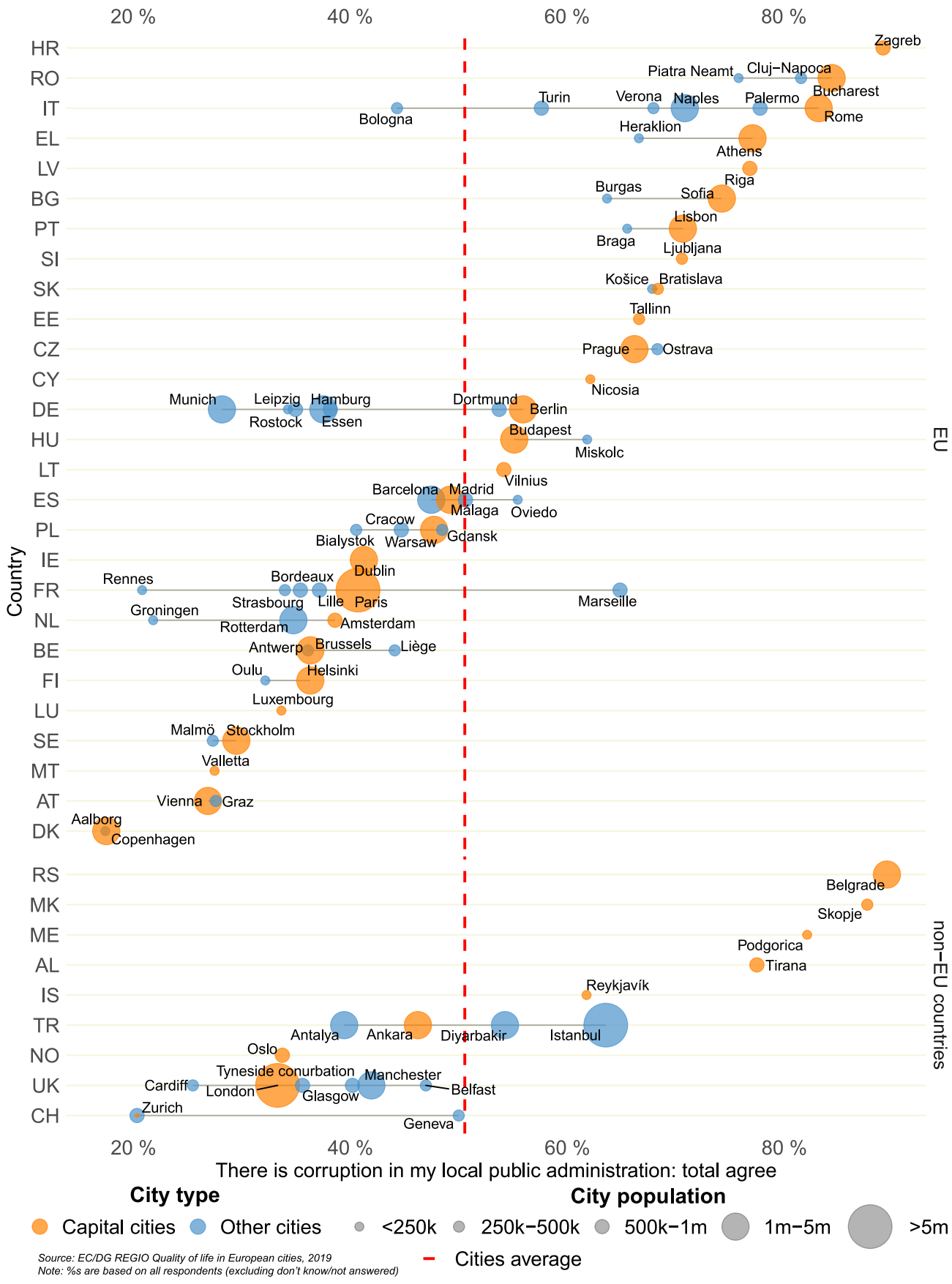
Satisfaction with public transport and feeling of safety

People living in a large city are more satisfied with public transport (see figure 1.2), but those living in smaller cities feel safer when walking alone at night (see figure 1.3).



Source: EC/DG REGIO Quality of life in European cities, 2019
Note: %s are based on all respondents (excluding don't know/not answered)

Figure 1.3: Share of those who feel safe walking alone through their city at night



Source: EC/DG REGIO Quality of life in European cities, 2019
Note: %s are based on all respondents (excluding don't know/not answered)

Figure 1.4: Share of those who think that there is corruption in their local public administration

Most people think their city is a good place for minorities, but in some cities less than half the residents think this is the case (see figure 1.5).

City a good place for minorities?

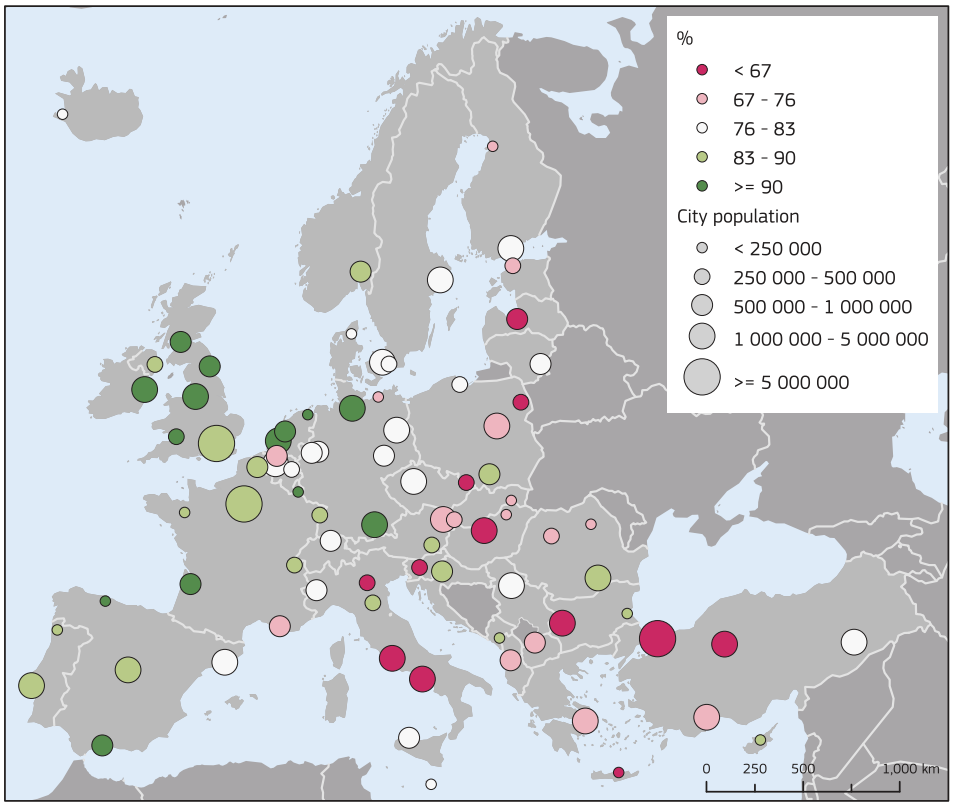


Figure 1.5: Share of those who think that their city is a good place for minorities

The city is a good place to live for racial and ethnic minorities

The city where I live is a good place to live for racial and ethnic minorities: yes (%)

Source: EC/DG REGIO Quality of life in European cities survey, 2019
Note: Percentages are based on all respondents (excluding don't know/not answered)

Corruption in the local public administration

For the first time, the survey includes questions about the quality of the city administration. For example, half of the city residents think there is corruption in their city administration, but in the worst cities four in five think this is the case compared to only one in five in the best cities (see figure 1.4).

The interactive maps and spider charts are another novelty. People can select the questions they want to see on a map and they can select for which city they want to see an overview of how it compares the average city and the best and the worst city in the survey. Both maps and charts can be downloaded. Also freely available are all the maps and charts in the report, the data, the full questionnaire and a technical report on the survey.

European Commission,
Directorate-General for Regional and Urban Policy
✉ REGIO-B1-PAPERS@ec.europa.eu

2 Stuttgart in a Comparison of European Cities: Results of the Sixth European Urban Audit Survey 2019[1]

Lasse Langemack and Anke Schöb

The results tables referred to in the article can be viewed online in the appendix of the original article.[2]

Added value of European analyses

The guiding aim of the Urban Audit process initiated by the European Commission in 1997 is to improve the quality of life in European cities. It is intended to meet the growing need for comparable and meaningful information on cities and thus to help with identifying the strengths and weaknesses of European cities.[3] In 2009, Urban Audit became an annual survey programme at the Statistical Office of the European Union (Eurostat) to facilitate closer observation of developments in European cities. In addition to collecting objective indicators,[4] opinion surveys have been conducted in European cities since 2004 as part of the Urban Audit project. The survey topics are closely aligned with the collection of objective data.[5] These in turn reflect the Community Strategic Guidelines of the European Union's cohesion policy, which encompass social and environmental policy objectives as well as the promotion of growth, competitiveness and employment in cities and regions.[6] Another essential building block for comparing cities

[1] This contribution is an abridged version of an article published in the monthly bulletin of Stuttgart's Statistical Office (Langemack, Lasse and Schöb, Anke. Statistik und Informationsmanagement, Monatsheft 4/2021, pp. 88-125. Statistical Office, State Capital Stuttgart). It is an updated version of the reports on the published results of the 2006, 2009, 2012, and 2015 surveys. See also Statistik und Informationsmanagement, Monatsheft 4/2008, pp. 80–96; Statistik und Informationsmanagement, Monatsheft 11/2010, pp. 237–272; Statistik und Informationsmanagement, Monatsheft 1/2015. pp. 4–40; Statistik und Informationsmanagement, Monatsheft 11/2016, pp. 300–332.

[2] https://www.domino1.stuttgart.de/web/komunis/komunissde.nsf/4f773778af844a10c125723c004b2ec5/5992eb3604436494c125870d0023c8cc/$FILE/c4d01_.PDF (in German).

[3] See the European Commission, 1997, Towards an urban agenda in the European Union, p. 17. Communication from the Commission COM/1997/0197.

[4] See the database of the European Statistical Office (Eurostat) at https://ec.europa.eu/eurostat/web/main/data/database.

[5] See the European Commission/Directorate General Regional Policy, 2005, Urban Audit. Key indicators on living conditions in European cities.

[6] 'The action taken under the Funds [Cohesion Fund, ed. note] shall incorporate, at national and regional level, the Community's priorities in favour of sustainable development by strengthening growth, competitiveness, employment and social inclusion and

is the harmonisation of city statistics between the data publishing bodies of the European Union and the Organisation for Economic Co-operation and Development (OECD). This standardisation enables the comparison of functional urban areas of the same size across and even beyond national European borders.[7]

In January 2004, the opinion surveys in European cities were carried out for the first time in the 31 cities of the then 15 Member States of the European Union (EU-15) that were chosen for participation[8] (see Table 1). In a repeat survey in 2006, the selection of cities was expanded to include 75 European cities, and citizens in the 27 Member States (EU-27) and in two of the then three candidate countries, Turkey and Croatia, were surveyed. At almost the same time, a parallel survey using the EU questionnaire took place in 15 German cities including the City of Stuttgart.[9] The opinion survey in 2009 also covered 75 European cities and a parallel survey was again carried out in 20 German cities.[10] In 2012, between 500 and 1 000 citizens in each of 20 German cities were surveyed on the quality of life in their city almost simultaneously with citizens in 79 other European cities. In the 2015 survey year, a telephone survey was conducted in 79 cities and four metropolitan areas (Athens, Lisbon, Manchester, Paris) of the 28 Member States (EU-28), the candidate country Turkey and 3 non-EU countries.[11] A telephone survey was also conducted in 21 German cities after a slight time delay. In the 2019 survey year, a telephone survey was conducted in 83 cities.[12] The survey in 24 German cities took place slightly earlier on this occasion. The results for the City of Stuttgart are compared with results from other European cities below.

Sixth opinion survey

The results available from the 2019 survey are presented in tabular form according to a derived index score which lies between 0 and 100 (see the Results Tables 1 to 26). For example, the basis for calculating the index for the satisfaction questions is the difference between the sum of ‘very satisfied/rather satisfied’ and the sum of ‘rather unsatisfied/not at all satisfied’.

by protecting and improving the quality of the environment’ (see European Commission (2007), The Cohesion Policy 2007–2013, Commentaries and Official Texts. Luxembourg, p. 50).

[7] See also Dijkstra, Lewis, Poelmann, Hugo, 2014, Cities in Europe. The new OECD-EC definition. Regional Focus RF 01/2012; OECD (2013), Definition of Functional Urban Areas (FUA) for the OECD metropolitan database. Paris; OECD (2012), Redefining ‘urban’: A new way to measure.

[8] Survey data, background information, publications and technical reports can be obtained from the Central Archive for Empirical Social Research in Cologne (identifier: Flash Eurobarometer). See the Urban Audit Perception Survey. Local Perceptions of Quality of Life in 31 European Cities.

[9] See the Association of German Municipal Statisticians (VDSt) (ed.), 2008, Lebensqualität aus Bürgersicht – deutsche Städte im Vergleich. Erste koordinierte Bürgerbefragung in deutschen und europäischen Städten. Frankfurt.

[10] See the European Commission/Directorate General for Regional Policy, 2010, Opinion Survey on Quality of Life in European Cities.

[11] Lebensqualität aus Bürgersicht 2012 und 2015 – Deutsche Städte im Vergleich (edited by Ulrike Schönfeld-Nastoll, Ralf Gutfleich, Anke Schöb and Alexandra Dörzenbach, 2018, Stuttgart).

[12] European Commission, Directorate-General for Regional and Urban Policy, Report on the Quality of Life in European Cities 2020, Luxembourg: Publications Office of the European Union, 2020.

Table 2.1: Urban Audit Surveys

Survey (year)	Survey form (registration key (DOI[1]))	Sample size (net)	Survey period
2006	Telephone survey in 75 cities of the 27 Member States (EU-27) and the candidate countries Turkey and Croatia (Flash Eurobarometer 194; DOI 10.4232/1.10092)	500 per city	08/11/2006–20/11/2006
	Telephone survey in 15 German cities	500–1 200 depending on city	31/10/2006–21/12/2006
2009	Telephone survey in 75 cities of the 27 Member States (EU-27) and the candidate countries Turkey and Croatia (Flash Eurobarometer 277; DOI 10.4232/1.10093)	500 per city	30/10/2009–10/11/2009
	Telephone survey in 20 German cities	500–1 200 depending on city	09/11/2009–20/12/2009
2012	Telephone survey in 79 cities and four metropolitan areas (Athens, Lisbon, Manchester, Paris) of the 28 Member States (EU-28), the candidate country Turkey and 3 non-EU countries (Flash Eurobarometer 366; DOI 10.4232/1.11916)	500 per city	15/11/2012–07/12/2012
	Telephone survey in 20 German cities	500–1 000 depending on city	22/11/2012–18/12/2012 07/01/2013–31/01/2013
2015	Telephone survey in 79 cities and four metropolitan areas (Athens, Lisbon, Manchester, Paris) of the 28 Member States (EU-28), the candidate country Turkey and 3 non-EU countries (Flash Eurobarometer 419)	500 per city	21/05/2015–09/06/2015
	Telephone survey in 21 German cities	500–1 000 depending on city	12/08/2015–01/12/2015
2019	Telephone survey in 83 cities of the 28 Member States (EU-28), the candidate country Turkey and 3 non-EU countries https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life	700 per city	12/06/2019–14/07/2019 02/09/2019–27/09/2019
	Telephone survey in 24 German cities	500–1 000 depending on city	15/10/2018–26/01/2019

[1] Digital Object Identifier

The cities in the results tables are sorted in descending order according to the index values within Germany, the EU-15, the EU-25, the EU-28, and the non-EU countries Iceland, Switzerland, Turkey, and Norway. 'Don't know/no answer' responses flow into the calculation of the index scores. Scores below 50 indicate that most respondents are dissatisfied with a service or see an area as a problem in their city, while scores around 50 suggest polarised perceptions among the population with regard to a service or a problem in their city. To structure the data, the cities are classified into five population size classes based on the Urban Audit population data.[13]

[13] See also Eurostat database (code: urb_cpop1).

2.1 Satisfaction with urban infrastructure

Among all 107 participating European cities, citizens' assessments resulted in the following average index scores for satisfaction with urban infrastructure in the specific areas listed (see Results Tables 1 to 7):

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Öffentlicher Nahverkehr	72	77	79
Gesundheitsversorgung (Ärzte, Krankenhäuser)	73	87	91
Sportanlagen (Sportplätze, Sporthallen)	72	76	80
Kulturelle Einrichtungen (Konzerthallen, Theater, Museen, Büchereien)	83	88	92
Grünflächen (öffentliche Parks und Gärten)	78	84	82
Öffentliche Flächen (Märkte, Plätze, Fußgängerzonen)	78	82	81
Schulen und Bildungseinrichtungen	74	73	73

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

KomunIS

Figure 2.1: Overview of satisfaction with urban infrastructure

Public transport • *72 points*

Six European cities (Belgrade, Podgorica, Tirana, Rome, Naples, and Palermo) had scores below 50 points, showing overwhelming dissatisfaction (see Results Table 1). German cities scored an average of 77 points, while in Stuttgart satisfaction with public transport was slightly higher (79 points).

Health care services, doctors and hospitals • *73 points*

18 European cities scored less than 50 points (see Results Table 2). Three German cities (Aachen, Osnabrück, and Würzburg) had the highest index score in the European city comparison, with Stuttgart lagging just behind them with 91 points and thus also forming part of the top group. Among the participating German cities with more than 500 000 inhabitants, Stuttgart, together with Munich and Nuremberg, had the highest score on the satisfaction scale.

Sports facilities such as sports fields and indoor sports halls • *72 points*

Four European cities (Athens, Tirana, Naples, and Palermo) had an index score of less than 50 points (see Results Table 3). German cities scored 76 points, putting them above the European average. With 80 points, Stuttgart had the highest satisfaction level with urban sports facilities among all German cities with a population greater than 500 000.

Cultural facilities such as concert halls, theatres, museums and libraries • *83 points*

Slightly more than half of all European cities scored 87 or more points (see Results Table 4). Valletta attained less than 50 points. Stuttgart's 92 points placed it well above the average in pan-European comparison and slightly

High degree of satisfaction with cultural facilities

above the average score of 88 points reached by German cities. People who lived in Vienna or in the greater Zürich area were particularly satisfied with the cultural facilities in their city (95 points each).

Green spaces such as parks and gardens • *78 points*

Behind on green spaces

Seven European cities scored less than 50 points (Tirana, Skopje, Valletta, Palermo, Naples, Heraklion, and Athens) (see Results Table 5), while slightly more than half of all European cities scored 83 or more points. With an index score of 82 points, Stuttgart was not among them and was also slightly below the average score of all German cities, which was 84 points. Compared to other major German cities with a population of 500 000 or more, Stuttgart lagged behind Munich (94 points), Dortmund, and Leipzig (91 points each), in particular.

Public spaces such as markets, squares, and pedestrian zones • *78 points*

Four European cities scored less than 50 points (Naples, Palermo, Valletta, and Athens) (see Results Table 6). More than half of all European cities scored 81 or more on the index. German cities had an average score of 82 points. Stuttgart (81 points) did not deviate significantly from the average values in either the German or the European city comparison.

Schools and other educational facilities • *74 points*

No European city recorded fewer than 50 points (see Results Table 7). In half of all European cities, the satisfaction level with schools and other educational institutions was 76 points or fewer. The average score of German cities was almost the same as the European average and amounted to 73 points. Stuttgart reached exactly this index score.

2.2 Satisfaction with the city administration

Data were not collected in all German cities participating in the 2019 Urban Audit Survey for the statements ‘I am satisfied with the amount of time it takes to get a request solved by my local public administration’ and ‘There is corruption in my local public administration’. With regard to all participating European cities, the following average index scores resulted from the citizens’ assessments of the statements about the performance of the city administration (see Results Tables 8 to 12):

Time it takes to get a request solved • *56 points*

The citizens of the European cities predominantly agreed with the statement that they were satisfied with the time it takes for the public administration to solve their requests (see Results Table 8). For half of all European cities, the index score was 60 or more points. The greater Zürich (80 points) and Geneva (78 points) areas attained the highest scores. In 18 European cities, the majority of respondents stated that they do not receive quick and uncomplicated assistance from their city administration. A clear majority of citizens expressed disapproval especially in Rome (16 points) and

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Bearbeitungszeit[1]	56	65	73
Komplexität der Abläufe	59	60	57
Legitimität geforderter Gebühren	60	64	59
Online-Verfügbarkeit von Informationen und Dienstleistungen	76	83	83
Korruption[1]	50	43	38

[1]Nicht in allen Städten erfragt.

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

Figure 2.2: Overview of satisfaction with the city administration

Palermo (15 points). German cities had an average score of 65 points. With 73 points, Stuttgart had the highest satisfaction level of all major German cities with more than 500 000 inhabitants and was thus also among the leaders in the city comparison across Europe.

Complexity of processes • *59 points*

In most European cities, the majority of citizens agreed with the statement that city administration procedures are straightforward and easy to understand. For half of all European cities, the index score was at least 62 points (see Results Table 9). The highest level of approval was in Brussels (79 points). 19 European cities scored fewer than 50 points, meaning that a majority disagreed with the statement. Among them were four major German cities with more than 500 000 inhabitants: Cologne, Dortmund, Essen, and Berlin. With 36 points, Berlin had the third-lowest approval rating of all European cities. Only in Rome (28 points) and Palermo (30 points) did citizens express even more dissatisfaction with bureaucracy in their city. The index score for Stuttgart was 57 points, slightly below the average for German cities (60 points).

Public administrative processes perceived as too complicated

Reasonableness of required fees • *60 points*

In the majority of European cities, the respondents largely found the fees charged by the city administration reasonable (see Results Table 10). The highest approval ratings were recorded in the greater Zürich area (79 points) and in Luxembourg (77 points). In Burgas, the ratio of approval and disapproval on this point was balanced (50 points). The index scores were lower in 14 European cities, where a majority perceived the fees demanded by the city administration as unreasonable. Based on their index scores, which were below 30 points, citizens in Naples, Heraklion, Athens, Riga, Rome, and Palermo are particularly likely to feel that the fees demanded by their city administration are unreasonable. German cities averaged 64 points, while Stuttgart came in slightly below this average with 59 points.

Reservations about reasonableness of fees

Online availability of information and services • *76 points*

Among the aspects related to satisfaction with the city administration,

agreement was highest with the statement that information and services of the local public administration are available on the internet (see Results Table 11). For slightly more than half of all European cities, the index score was 77 or more points. No European city scored fewer than 50 points. German cities had an average score of 83 points. Stuttgart scored exactly this average value. Karlsruhe and Osnabrück (89 points each) had the highest approval ratings of all European cities.

Corruption • *50 points*

For the statement 'There is corruption in my local public administration', the same scheme applied for the calculation of the index scores as for all the other variables. Due to the wording of this statement, however, the interpretation of the index scores must be reversed here: high index scores need to be interpreted negatively and low index values positively. The average index score for all cities was 50 points, indicating that perceptions as to whether corruption occurs in the local public administration varied very strongly from city to city (see Results Table 12). In a total of 38 European cities, the predominant view among citizens was that corruption exists in their public administration. For half of all European cities, the index score was 43 or more points. In Zagreb, Belgrade, and Skopje (83 points each), most citizens stated that corruption is a problem in their city. Podgorica, Bucharest, Palermo, Riga, Cluj-Napoca, and Athens also had high scores (more than 70 points). The least frequent allegations of corruption were made against the public administration in Copenhagen and Aalborg (19 points each). German cities averaged 43 points. In Cologne, Dortmund, and Berlin, most citizens perceived corruption as an existent problem. After Munich and Karlsruhe (35 points), Stuttgart (38 points) had the best score among the major German cities with 500 000 inhabitants or more and also scored well when compared with all European cities.

Perceptions of corruption lowest in Copenhagen and Aalborg

2.3 Satisfaction with environmental aspects

Across European cities, the level of satisfaction with the three environmental aspects covered by the survey showed a dependence on the number of inhabitants. Large cities tended to score lower on the satisfaction scale of 0 to 100 than cities with fewer than 500 000 inhabitants (see Results Tables 13 to 15).

Figure 2.3: Overview of satisfaction with environmental aspects

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Luftqualität	65	76	60
Lärmpegel	66	73	70
Sauberkeit	65	73	70

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

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Air quality • *65 points*

The question on satisfaction with air quality was rated with an average of 65 points in the European cities (see Results Table 13). Slightly more than half of all European cities scored at least 72 points. With an average of 76 points, satisfaction with air quality in German cities was rather positive in comparison. However, the Nordic cities (Norway, Sweden, Denmark, Finland, and Iceland), as well as the United Kingdom, Ireland, Switzerland, and Estonia, showed an equal or higher average satisfaction level compared to that of the German cities. The highest satisfaction rating among European cities was achieved by the greater Zürich area with 92 points. In a total of 23 European cities, the majority of respondents said they are rather unsatisfied or not at all satisfied with the air quality in their city. This was not the case in any German city. In Stuttgart, average satisfaction with air quality was found to be significantly lower than in most other German cities. With an index score of 60 points, Stuttgart (along with Frankfurt) had the second lowest satisfaction level. Cologne had the lowest score among German cities (56 points). Across Europe, citizens in Bucharest, Kraków, and Skopje (index scores below 20 points) were clearest about the problematic air quality in their cities.

Low level of satisfaction with air quality

Noise levels • *66 points*

The question on satisfaction with the noise level was rated with an average of 66 points in the European cities (see Results Table 14). In 17 European cities, the majority of respondents stated that they were dissatisfied. Respondents in Oulu were the most satisfied with the noise level in their city (87 points). Malmö, Glasgow, and the greater Dublin area also had high satisfaction levels of 85 and above. Strong dissatisfaction with noise levels was evident in Istanbul, Athens, Palermo, and Bucharest (35 points or fewer each). Overall, the index score for 17 European cities was below 50 points. In German cities, satisfaction with noise levels generally proved to be higher than the European city average. The average here was 73 points. Stuttgart had 70 points, which placed it in the bottom third of German cities. Lower scores were recorded in Mannheim, Darmstadt, Cologne, and above all in Frankfurt and Berlin (see Results Table 14).

Cleanliness • *65 points*

City cleanliness was rated at an average of 65 points in European cities. On this point, the scores were highly scattered (see Results Table 15). The range was 86 points with the highest satisfaction ratings being recorded by Luxembourg (94 points) and Oviedo (93 points). A total of 21 European cities including Berlin scored fewer than 50 points. Respondents expressed particularly strong dissatisfaction with the cleanliness of their city especially in Rome (9 points) and Palermo (8 points). German cities scored an average of 73 points and thus exceeded the European average on all aspects of environmental quality. Stuttgart also scored 70 points for cleanliness and was again slightly below the average for German cities. Among the major German cities with at least 500 000 inhabitants, however, some cities, especially Cologne with 50 points and Berlin with 49 points, reached considerably lower index scores than Stuttgart (see Results Table 15).

Stuttgart below average among German cities

2.4 Satisfaction with economic aspects

Figure 2.4: Overview of satisfaction with economic aspects

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Beschäftigungsmöglichkeiten	47	61	77
Persönliche berufliche Situation	76	85	89
Persönliche Situation des Haushalts	76	88	90

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

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Employment opportunities • *47 points*

Many respondents in European cities were sceptical about the employment opportunities available in their city (see Results Table 16). The ratio of positive and negative assessments of the labour market was balanced for the European cities (see Figure 2.5). This means that in half of all European cities, the majority of respondents did not think that it is easy to find a good job in their city. Overall, the average index score for European cities was 47 points. A total of 11 European cities reached fewer than 20 points (Białystok, Barcelona, Malaga, Athens, Miskolc, Rome, Madrid, Turin, Oviedo, Athens, Naples, and Palermo). Satisfaction with local employment opportunities was particularly low in Palermo (3 points). With an average of 61 points, German cities reached the second highest average of all participating countries in European comparison. Stuttgart (77 points) was one of the top cities in terms of labour market assessments both within Germany and in Europe. The highest score of all German cities was achieved by Ingolstadt (78 points) and in Europe as a whole, Prague (79 points) tops the table.

Stuttgart at the top in European comparison

Personal job situation • *76 points*

Compared to the assessments of the labour market, the respondents' assessments of their personal employment situation were more positive (see Results Table 17). No European city scored fewer than 50 points. The average satisfaction level with the respondents' own job situation was 76 points across all cities surveyed. It was comparatively high in most of the German cities. Overall, 24 German cities (see Results Table 17) had an index score of 85 or more points, while no other city in the rest of Europe had a score that high. Stuttgart (89 points) was also among the top group here; only in Karlsruhe (90 points) and Fürth (91 points) were citizens on average even more satisfied with their own job situation.

More positive evaluation of personal employment situation

Financial situation of household • *76 points*

The financial situation of the respondents' own households was influenced to a considerable extent by their personal job situation. Accordingly, the results for satisfaction with the financial situation of one's own household (see Results Table 18) show a similar distribution. In terms of satisfaction with one's financial situation, German cities scored an average of

Figure 2.5: It is easy to find a good job in <CITY>

88 points, a figure well above the average for all surveyed European cities (76 points). Augsburg had the highest score in a Europe-wide comparison of cities (93 points), while Athens and Heraklion scored fewer than 50 points. Among the major European cities with more than 500 000 inhabitants, Düsseldorf (91 points) and Stuttgart (90 points) achieved the highest satisfaction scores.

2.5 Social aspects

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Allgemeine Lebenszufriedenheit	87	94	96
Sicherheitsempfinden in der Stadt	71	64	63
Sicherheitsempfinden in der Wohngegend	81	80	77
Soziales Vertrauen in der Stadt	70	84	83
Soziales Vertrauen in der Wohngegend	81	90	90
Wohnungsmarkt	35	23	7

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

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Figure 2.6: Overview of satisfaction with social aspects

Satisfaction with life in general • *87 points*

The respondents' satisfaction with their life in general was influenced, among other things, by their job situation and their household financial situation. This explains the above-average satisfaction level on this item

Above-average satisfaction in German cities

in German cities. The average result in a comparison of German cities only was 94 points (see Results Table 19). For all European cities, the average index score was 87 points. The vast majority of respondents reported being satisfied with the life they lead. No city recorded an index score of fewer than 50 points. Of all major European cities with more than 500 000 inhabitants, average life satisfaction was highest in Stuttgart (96 points).

Perception of safety • *81 points (neighbourhood) and 71 points (city)*

Safety in the city rated lower than neighbourhood safety

How European citizens perceive their safety varied greatly in some cities depending on whether respondents were assessing the safety of walking alone through their city at night or through their immediate neighbourhood (see Results Tables 20 and 21). On average, people felt considerably safer in their neighbourhood than in their city. The average index score of all European cities for the perception of safety when walking through one's own neighbourhood alone and at night was 81 points. For time spent in one's own city as a whole in the same scenario, it was only 71 points. This pattern also occurred in the German city comparison and was even slightly more pronounced: for the respondents' own neighbourhood, the average satisfaction level was 80 points, but in the city at large, it was only 64 points. Compared to the average for all European cities, the perception of safety that citizens in German cities have is thus lower. Stuttgart scored somewhat below the average here with 63 points (city safety) and 77 points (neighbourhood safety). The highest perception of feeling safe in their city was expressed by citizens in Copenhagen (94 points). Respondents feel safest in their neighbourhood in Aalborg (94 points). The majority of respondents in Mannheim, Recklinghausen, Marseille, Zwickau, Liège, Sofia, Rome, and Athens do not feel safe alone at night in their city. Nowhere is this the case in the respondents' own neighbourhoods, as no European city had an index score of fewer than 50 points.

Social trust • *70 points*

Trust in neighbourhood higher than trust in city

With regard to the respondents' assessments of whether people in their city/neighbourhood can be trusted, a pattern similar to the results for the perception of safety emerged (see Results Tables 22 and 23). In European cities, the average index scores for social trust were 70 points in the city and 81 points within the respondents' own neighbourhoods. Social trust tended to be higher in cities with fewer than 500 000 inhabitants than in large cities. When it came to social trust within cities, more than half of all European cities (54 cities) scored at least 73 points, or at least 83 points in the question on respondents' own neighbourhoods. In 16 European cities, respondents overwhelmingly disagreed with the statement that people in their city can be trusted. Social distrust was most evident in Istanbul (29 points). The highest approval ratings with regard to the urban environment were recorded by Konstanz (92 points). For social trust within neighbourhoods, Bucharest (54 points) had the lowest and Aalborg (95 points) the highest index scores. No European city scored fewer than 50 points on this item. This time, the German cities recorded an average of 84 points (city) and 90 points (neighbourhood). With satisfaction ratings of 83 points

(city) and 90 points (neighbourhood), Stuttgart reflects the average result for German cities and comes in the top third of European cities with more than 500 000 inhabitants.

Housing market • *35 points*

Figure 2.7: It is easy to find good housing at a reasonable price in <CITY>

Perceptions of housing market mostly negative

The statement that it is easy to find housing at a reasonable price in their city was predominantly rejected by citizens in European cities (see Figure 2.7). On average, the housing market in European cities was rated with 35 points. Only in 27 European cities did the majority of respondents agree with the statement and only Oulu and Skopje scored 70 or more points. For half of all European cities, the index score was 35 or fewer points (see Results Table 24). Especially in German cities, citizens expressed strong dissatisfaction with the cost of housing. German cities had an average score of 23 points. In a comparison of German and European cities, no city's residents perceive the housing market and housing costs to be as problematic as the residents of Stuttgart. With 7 points, Stuttgart, together with Frankfurt and the greater Geneva area, had the lowest index score of all European cities. But even in other German cities such as Munich, Hamburg, Cologne or Konstanz, the chances of finding good housing at a reasonable price were not perceived to be much better.

2.6 General satisfaction with the city and neighbourhood

The approval ratings of citizens in European cities with regard to the statement that they are satisfied with living in their city probably represent the most telling indicator of the subjectively perceived quality of life in European

Figure 2.8: Overview of satisfaction in city and neighbourhood

	Europäische Städte (107) Ø (in Punkte)	Deutsche Städte (31) Ø (in Punkte)	Stuttgart
Allgemeine Zufriedenheit in der Stadt	90	94	92
Allgemeine Zufriedenheit in der Wohngegend	89	94	95

Stuttgart besser als Ø deutsche Städte
Stuttgart schlechter als Ø deutsche Städte

Quelle: Perception Survey 2019; Koordinierte Umfrage zur Lebensqualität 2019

Landeshauptstadt Stuttgart, Statistisches Amt

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cities (see Results Table 25). In the 107 European cities participating in the 2019 Urban Audit Survey, the respondents' satisfaction with both their city and their neighbourhood was recorded. In contrast to the perceptions of safety and social trust, no significant differences emerged between average satisfaction in cities and in neighbourhoods. Satisfaction with the city and the neighbourhood were on average similarly high in European cities. The mean index score for the 'satisfaction of living in <city>' was 90 points. The average for satisfaction with one's own neighbourhood was 89 points. For a total of 78 European cities, the index score for satisfaction with life in the respective city was 90 or more points. In terms of satisfaction with living in one's own neighbourhood, 66 European cities scored 90 or more points (see Results Table 26). No European city obtained fewer than 50 points.

Satisfaction with city and neighbourhood high

In the German cities, average satisfaction with living in one's own city and neighbourhood was 94 points in both cases. Stuttgart also achieved a very high level of general satisfaction with 92 points (city) and 95 points (neighbourhood).

Parallels to other European and international studies

With the Urban Audit project, European and international parallels can be shown that emphasise in particular the importance of subjective perceptions and assessments by the population for measuring quality of life. In the European Union, the 'Beyond GDP' initiative (GDP and beyond: Measuring progress in a changing world) picks up this discussion.[14] Other activities at European level have included the 'European Quality of Life Survey' from 2003, 2007, 2012 and 2016. The Organisation for Economic Co-operation and Development (OECD) formulates broadly the same aspirations in its project 'Measuring the Progress of Societies'. This interest in measuring values that indicate the population's well-being and are thus comparable to the gross domestic product highlights the importance of citizen surveys as a tool for measuring and achieving progress on socio-political policy objectives. With 'How's Life? Measuring Well-Being'[15] the OECD is also broadening the scope of quality of life in the regions to include the subjective well-being of the population in the narrower sense of people's satisfaction with their lives.

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[14] See http://www.beyond-gdp.eu/, accessed 2 February 2021.
[15] OECD, 2020, How's Life 2020: Measuring Well-Being, OECD Publishing (https://www.oecd-ilibrary.org/economics/how-s-life_23089679).

3 Health care Services Provision in European Countries in the Context of the COVID-19 Pandemic

Nassima Ouaarous

Relevance of adequate health care services

The global pandemic caused by the novel coronavirus (COVID-19) that has raged since early in 2020 has underscored the importance of comprehensive access to health care services. Policymakers and politics have repeatedly been confronted with strained intensive care capacity. Looking beyond national borders illustrates that considerable variance exists in the provision of health care services from place to place. Some developing and emerging countries have been hit particularly hard by the pandemic, but significant deficits in health care services and in tackling the dissemination of the virus have also become apparent within Europe. As health is an important dimension of the quality of life that people enjoy (and not solely in the context of a pandemic), results on this aspect of the Urban Audit Perception Survey on the Quality of Life in European Cities will be scrutinised in more depth in this contribution.

A look at how satisfaction with local health care services has changed over time across Europe provides a useful starting point. In addition, the results of the most recent survey will be examined in more detail to uncover structural disparities within Europe. To underscore the strong relevance of this topic for society, the results are considered in the context of the ongoing pandemic. The question of a possible link between the health care provided by doctors and hospitals and the effects of the pandemic will be explored.

3.1 Results of the Urban Audit Survey

First, the results of the Urban Audit Surveys conducted every three years are considered. In the context of the computer-assisted telephone surveys, interviewees were asked the following question:

'Generally speaking, please tell me if you are very satisfied, rather satisfied, rather unsatisfied or not at all satisfied with each of the following services in <city name> – Health care services – Health care provided by doctors and hospitals.'[1]

[1] This question was posed in 2009 for the first time. In 2004 and 2006, two separate questions were asked on satisfaction with health care services provided by doctors and by hospitals. For 2006, the mean values from both questions were therefore determined as the basis for further analysis. The results from 2004 have not been drawn on due to

As in the published Perception Survey Atlas, the evaluation of the data is based on the top two values – the proportion of respondents, in other words, who stated that they were either very satisfied or rather satisfied with health care services in their city.

3.1.1 Comparing results across cities

Looking at the most recent survey results available (from 2018/2019) shows that the question about health care was asked in 101 cities. This includes 31 German cities, 24 of which were participating via the parallel quality of life survey coordinated by the surveys working group of the Association of German Municipal Statisticians (VDSt). The number of people interviewed varies between 500 and 1 000 respondents per city.

Figure 3.1 shows the distribution of the response categories in the most recent survey. Respondents in most participating cities expressed satisfaction with locally available health care services. The median result, 80% satisfaction, is quite high. Satisfaction is highest in Aachen (93%) and in Antwerp, Osnabrück, Würzburg, and Zürich (all at 92%). At the other end of the scale, however, more than 50% of participants in the cities of Warsaw, Budapest, Athens, and Palermo stated that they are rather unsatisfied or not at all satisfied.

The picture from Germany, where most cities are at the upper end of the range of satisfaction scores, is positive. The lowest figures for Germany are from Zwickau (70%) and Wolfsburg (71%) and this means that well over half of the respondents expressed satisfaction with health care services even in the German cities with the poorest scores on this issue.

Time series comparison

The values for satisfaction with health care services have remained stable in the majority of participating cities across the different survey waves (see Figure 3.2 on page 30). The time series below shows the cities for which the most fluctuation in the top two scores has been registered. Apart from in Athens, Oulu, and Budapest, a general increase in satisfaction levels is visible after 2006, although the change in method with regard to the question asked must be taken into account here. The time series for Prague and for Vilnius show a remarkably positive trend: satisfaction in both cities has increased continuously since 2006.

the limited number of cities represented; initially only two cities participated.

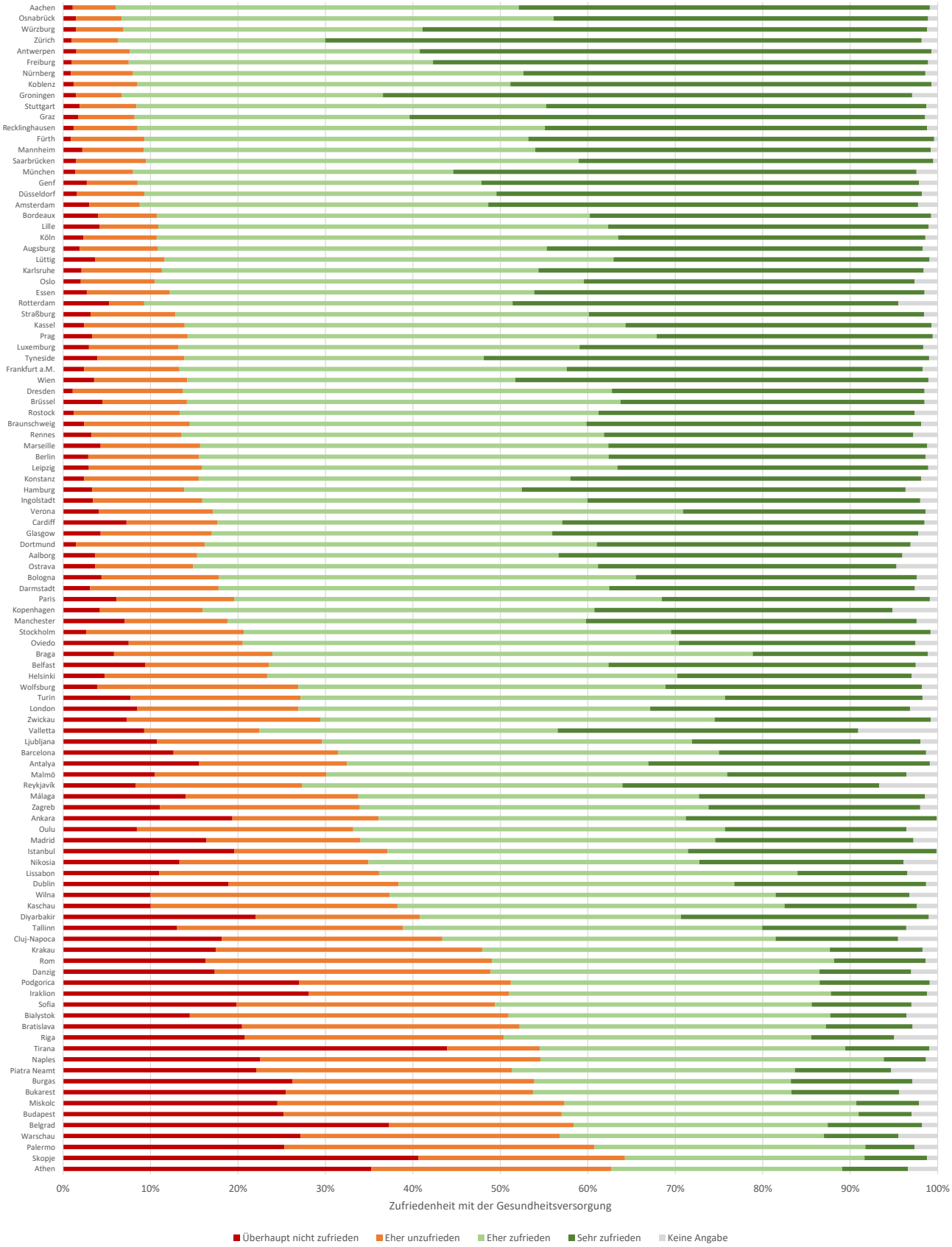
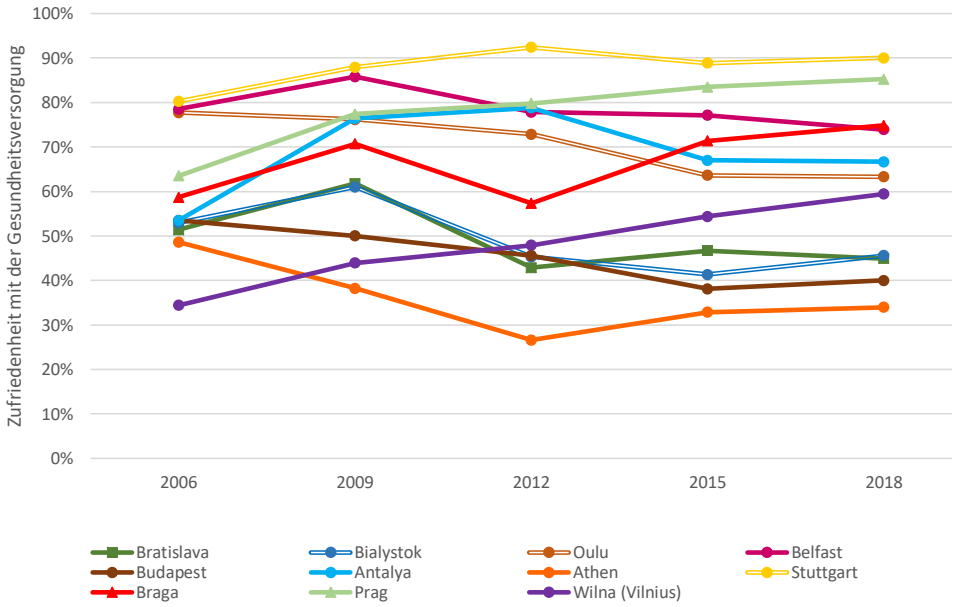


Figure 3.1: Satisfaction with health care services by city

Figure 3.2: Satisfaction with health care services 2006–2018

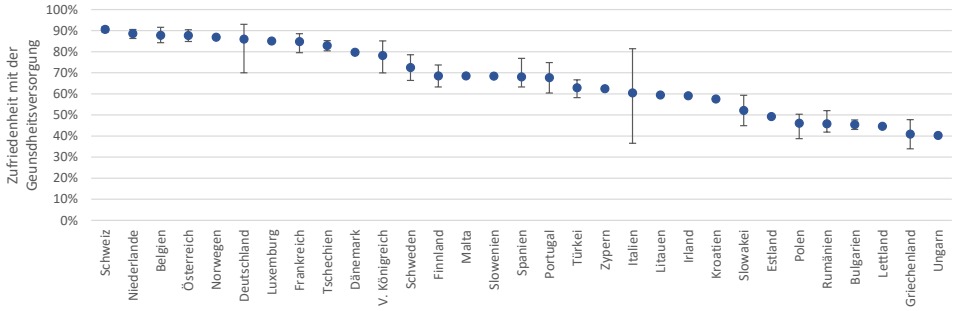


Comparing results across Europe demonstrates that the scores for satisfaction with health care services vary – in some cases quite strongly. Although the values have converged slightly since the 2009 survey, a high degree of variance is still in evidence. Only 27% of respondents in Athens in 2012 said that they were satisfied or very satisfied with health care services. This contrasts with the situation in Freiburg, where 96% of interviewees agreed with this statement. The range thus spans a very considerable difference of 69 percentage points. Athens' bottom rank on this issue has, moreover, barely changed over time.

3.1.2 Comparing results across countries

For the purpose of comparing results across countries, the means of the top two values for satisfaction with health care services in the individual cities were determined. The data from the 2018/2019 survey were used. Figure 3.3 shows the national averages and the respective ranges for the cities included in the survey. When no range is indicated, this means that only one city in the relevant country participated in the 2018 Perception Survey.

Figure 3.3: Mean values and ranges by country



In Italy, the contrast between data from different cities is especially stark. Satisfaction levels fluctuate between 37% (Palermo) and 81% (Verona). In

Germany, too, the values fluctuate somewhat more strongly than in pan-European comparison, although it must be mentioned in this context that German cities are overrepresented in the data due to the supplemental information supplied by the Coordinated Survey. It is worth referring to the Perception Survey Atlas once more at this point. In the case of Italy, for example, the map tool in the Atlas can be used to visualise the north-south gradient in the data (see Figure 3.4).

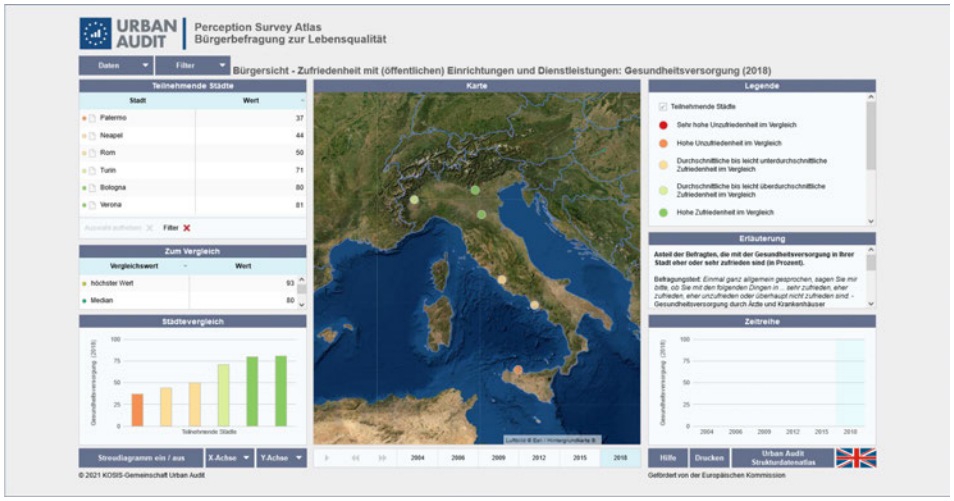


Figure 3.4: Screenshot from the Perception Survey Atlas

The map in Figure 3.5 illustrates that the highest satisfaction scores are achieved in Central Europe and in parts of Northern and Western Europe. Levels of satisfaction in Southern Europe are significantly lower in comparison. The lowest scores are found in the countries of Eastern Europe and the northern Baltic States. The stark contrast between the United Kingdom and Ireland is also striking.

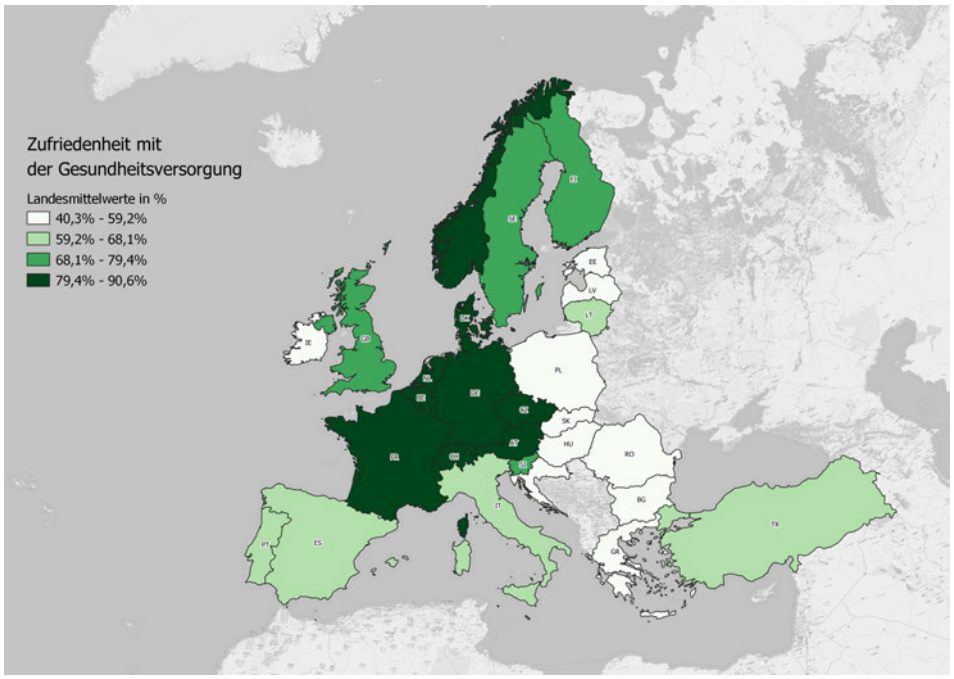


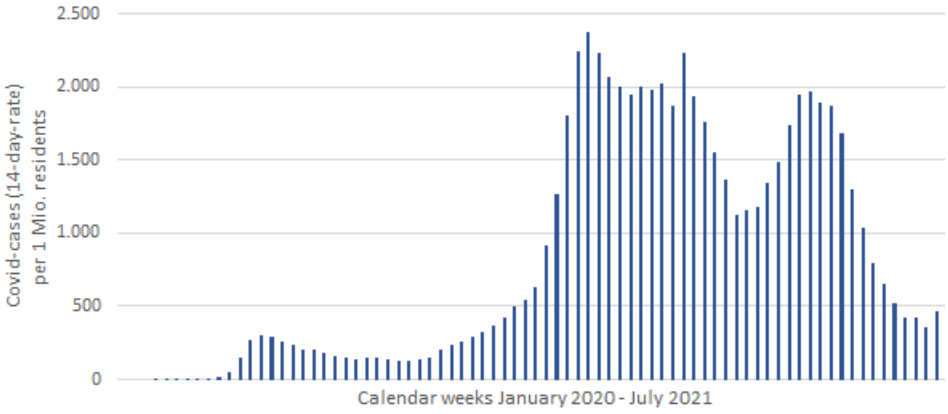
Figure 3.5: Mean values for satisfaction with health care services

3.2 Health care and COVID-19

Pandemic waves

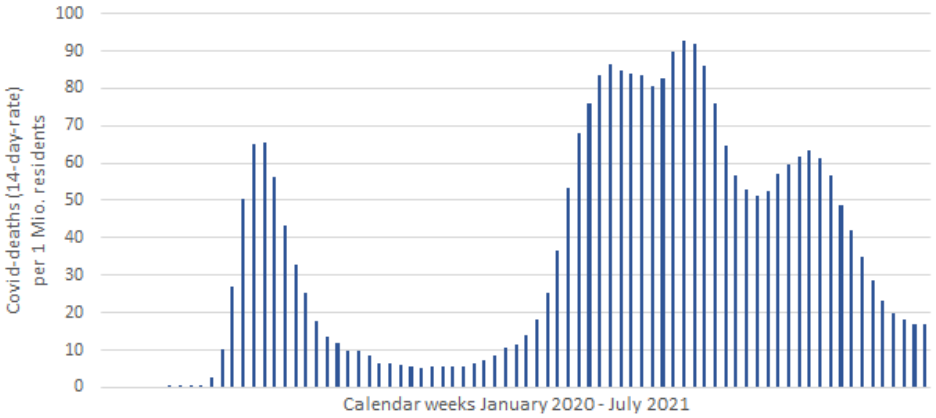
COVID-19 has spread unevenly across Europe since early 2020. As the figures show, the virus has spread in waves even as all the European states have striven to curb the transmission of infections insofar as appears feasible. The measures taken have ranged from restaurant and retail shutdowns to school closures and (partial) lockdowns. Not all countries within Europe have pursued the same strategies with regard to restricting public life. The effects of the peak phases of the pandemic have, however, unfolded throughout Europe. The first pandemic wave is considered to have taken place in spring 2020 with a second and third wave taking place during autumn/winter 2020 and spring 2021. The diagrams show that the number of deaths from COVID-19 increases and decreases almost synchronously with the number of infections after the first wave.[2] During the peak phases of these waves, the most pressing problem was avoiding gaps in the delivery of health care services.

Figure 3.6: Timeline of new infections in Europe



Source: ECDC (https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea)

Figure 3.7: Timeline of deaths in Europe



Source: ECDC (https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea)

The pandemic has demonstrated how important it is for the general population to have access to institutions providing health care services. Just how

[2] Fewer people were tested in the first wave of the pandemic, and this explains the large discrepancy between the number of (reported) infections and the number of deaths in this wave.

vulnerable socially disadvantaged groups of people are to the spread of the virus became especially clear in countries with highly privatised health care systems. In November 2020, for example, the Greek government temporarily nationalised two private clinics in Thessaloniki to ensure that care could be provided to citizens regardless of their financial resources.[3]

To investigate whether satisfaction with health care services and the impact of the pandemic are correlated, a bivariate correlation analysis was conducted. The results are detailed below. The cumulative number of deaths (due to COVID-19) per 100 000 inhabitants was compared with the data collected via the Urban Audit Survey showing average levels of satisfaction with the health care system. Although the survey was carried out before the pandemic in 2018/2019, so that the perceptions recorded are not directly linked to the provision of health care services during the pandemic, this approach seems justified considering the stability of the survey results over many years. A moderate negative correlation between the two variables with a correlation coefficient of r=–0.33 emerged. Countries where satisfaction with health care services was high in the participating cities and case fatality rates during the pandemic were low include Norway, the Netherlands, and Switzerland. This contrasts with the situation in Hungary, Romania, and Bulgaria, which had especially low satisfaction scores, as illustrated above, and all saw more than 200 deaths per 100 000 inhabitants.

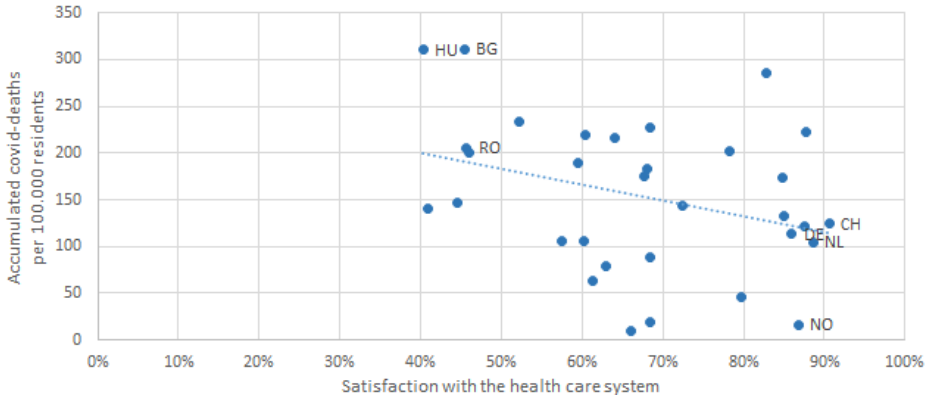


Figure 3.8: Correlations by country between satisfaction with the health care system and deaths

Since additional city-level data captured by the survey coordinated by VDSt is available for Germany, carrying out this correlation analysis at city level in Germany is also an option. Because the figures on deaths issued by the Robert Koch Institute (RKI) that are available for the desired period are only broken down as far as district (Kreis) level, exact figures are available only for those cities that are urban districts (Stadtkreise). When cities lie within districts rather than constituting districts in their own right, the figures for the relevant rural district (Landkreis) have been drawn on. This is the case for the cities of Aachen, Konstanz, Recklinghausen, Saarbrücken, and Zwickau. The correlation previously shown at country level in Europe can be replicated at city level for Germany, although it is slightly less pronounced: the bivariate analysis shows a correlation coefficient of -0.3. It

[3] https://abcnews.go.com/Health/wireStory/greece-private-clinics-appropriated-treat-covid-19-74312143.

can thus be stated that a moderate, negative correlation between satisfaction with health care services and deaths from COVID-19 also exists in relation to Germany. These results have, however, been very strongly influenced by the situation in the district of Zwickau, where satisfaction with health care is comparatively low and a very high number of deaths per 100 000 inhabitants has been recorded.

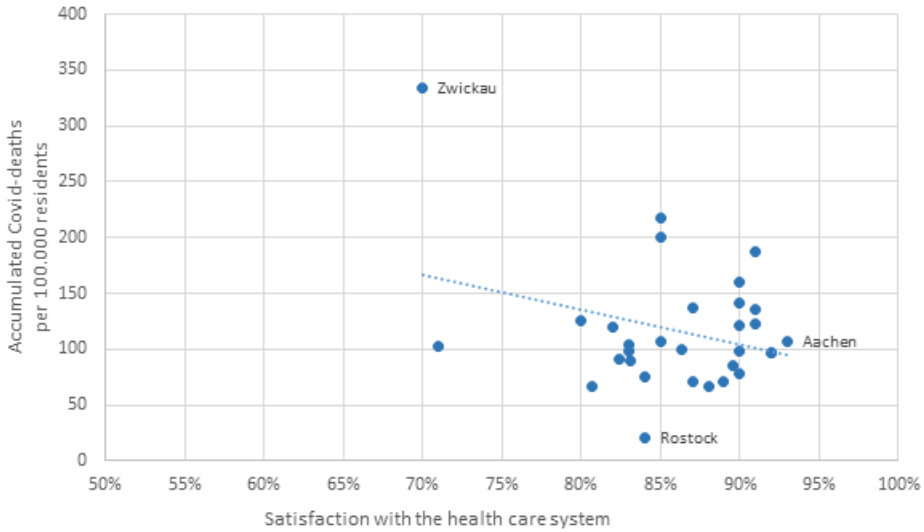


Figure 3.9: Correlations by city between satisfaction with health care services and deaths (Source: RKI)

After the first countries approved vaccines against COVID-19 in December 2020, vaccinating the general population came to be thought of as the primary strategy for combating the pandemic. The map below (Figure 3.10) shows how strongly the proportions of vaccinated people diverged by August 2021. One reason for this was that vaccines were not approved for use and deployed in every country simultaneously. But it can also be assumed that access to vaccines depends significantly on the accessibility of medical facilities. As of summer 2021, only one third of the population is fully vaccinated in areas including much of Eastern Europe and the Balkan region.

3.3 Conclusion

It can, in sum, be noted that health care within Europe is characterised at least in part by large disparities – despite EU directives and standards – and that this inequality can have tragic consequences for certain population groups, especially in pandemic times, as they often face barriers to accessing medical help in the event of an infection. The correlation analysis showed that a moderate negative correlation exists between satisfaction with health care and mortality attributable to COVID-19.

Fewer people died from coronavirus disease in 2020 and 2021 in the countries where the Urban Audit Survey recorded that a majority of residents expressed satisfaction with health care services. To put this into perspective, it must be borne in mind that conclusions about causality cannot be drawn from this correlation between satisfaction with health care and COVID-19

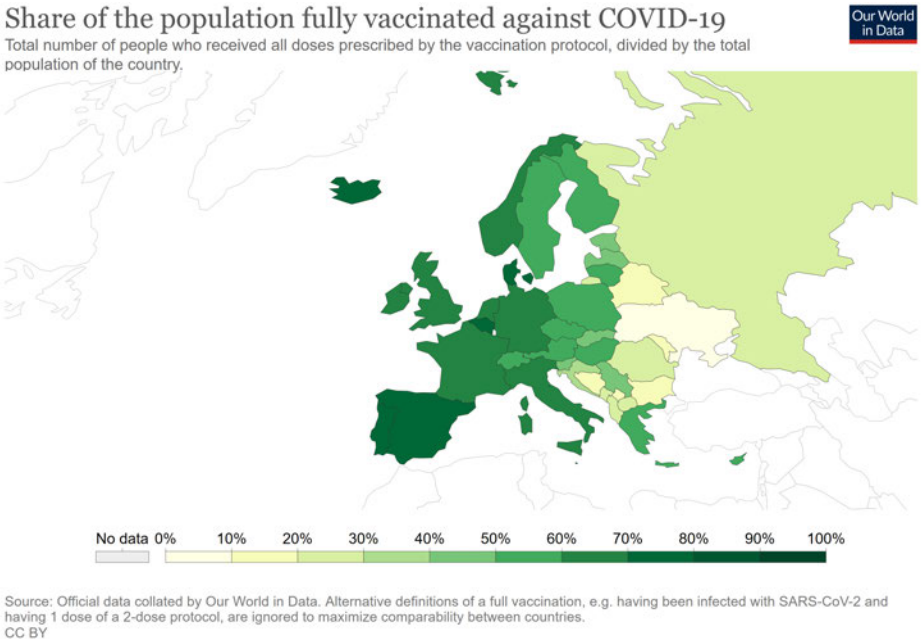


Figure 3.10: Vaccination coverage within Europe (as of November 2021)

related mortality in European countries. The survey question asked on satisfaction with health care services was very general in nature. Many different factors play a role in the provision of health care services, however, including access to physicians (including specialists) and hospitals, the quality of facilities, and local health care structures.

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4 The Housing Market Situation in German Cities in the 2018/19 Urban Audit Survey: Contrasting the Survey Results with Asking Rents from Internet Portals

Tobias Link

This contribution sets out to consider the housing situation in German cities as it is reflected in the subjective perceptions of citizens and, in a second step, to contrast this data with current asking rents extracted from various online portals using web scraping.

4.1 Introduction

Strained housing market situation

Housing is currently one of the greatest challenges confronting German cities, especially in urban agglomerations. The main issues are a lack of living space, high rents in major cities, the Mietpreisbremse or 'rent price brake' and the considerable increases in construction costs that have in turn driven up property prices. The housing situation impacts directly on citizens' quality of life and thus naturally attracts intense discussions in society and comprehensive treatment by the media. What is decisive for easing the housing market is expanding the supply of housing to counteract shortages and stabilise rents at a reasonable level. The number of dwelling units completed in Germany has been rising steadily since a trend reversal in 2010 and the figure for 2020 is not far off the level reached in 2001 (see Figure 4.1).

Expanding housing construction

The degree to which this expansion in housing construction will suffice to compensate for the imbalanced state of the rentals market is open to question. In an article on the regionalisation of the house price index, the Federal Statistical Office reaches the following conclusion: 'Prices rose the most in the seven largest metropolitan areas – by 23% between 2016 and 2018 for owner-occupied apartments and by 20% for one-family houses and two-family houses. Over the entire period for which data are available, from the fourth quarter of 2015 to the second quarter of 2019, prices in metropolitan areas for one-family and two-family houses rose by 42% and apartment prices rose by 46%.'[1]

[1] See Schöneich, Cordula and Teske, Markus. Regionalisierung des Häuserpreis-

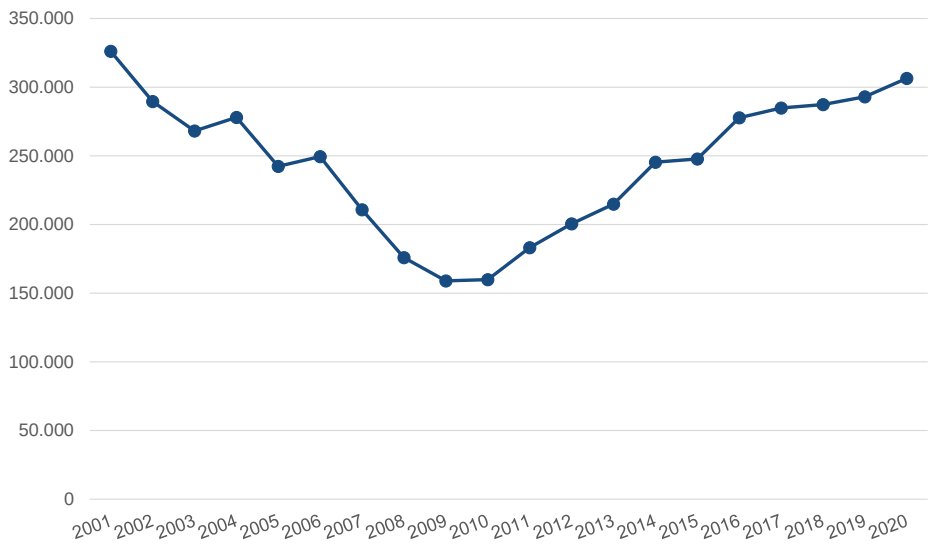


Figure 4.1: Dwelling units completed in Germany over time (Source: Federal Office of Statistics)

4.2 Data basis

To derive insights into the subjective appraisal by city residents of their local rental markets, data from the 2018/19 Urban Audit Survey will be drawn on. This consists of the datasets from the quality of life survey coordinated by the surveys working group of the Association of German Municipal Statisticians (VDSt)[2] and the 2019 EU Perception Survey.[3] The central variable considered in this context is based on the response behaviour generated by the statement 'In <city>, it is easy to find good housing at a reasonable price' with the proffered response categories 'strongly agree', 'somewhat agree', 'somewhat disagree' and 'strongly disagree'. The data were collected using the CATI method (computer-assisted telephone interviews). Table 4.1 provides an overview of the cities surveyed and the number of respondents in each city and identifies which of the two surveys collected the data for specific cities.

Attitudes to the housing situation

The data on current asking prices in the rental market of each city investigated were taken from the meta search engine Immosuchmaschine.de, a service provided by the company Immobilien Scout Österreich GmbH (part of the Scout24 Group). It covers rental property listings on various German real estate portals and classified advertisement sites offered via brokers and privately on a commission-free basis. The listings take in properties of every kind from residential properties such as rental apartments, owner-occupied apartments and houses to plots of land and commercial properties such as offices, business premises, and investment properties. We are thus looking at transaction-generated data here that are automatically retrieved from various online portals multiple times per day and made avail-

Asking rents

index. In: Federal Statistical Office (DESTATIS), WISTA, 1:2020, https://www.destatis.de/DE/Methoden/WISTA-Wirtschaft-und-Statistik/2020/01/regionalisierung-haeuserpreisindex-012020.pdf (in German).

[2] https://www.staedtestatistik.de/arbeitsgemeinschaften/vdst/ag-umfragen/koordinierte-umfrage-zur-lebensqualitaet (in German).

[3] https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life.

Table 4.1: The 2018/19 Urban Audit Survey

City	Population class	Survey	Respondents
Aachen	150 000–450 000	Coordinated Survey	801
Augsburg	150 000–450 000	Coordinated Survey	501
Berlin	>450 000	Perception Survey	700
Braunschweig	150 000–450 000	Coordinated Survey	801
Darmstadt	150 000–450 000	Coordinated Survey	500
Dortmund	>450 000	Perception Survey	700
Dresden	>450 000	Coordinated Survey	500
Düsseldorf	>450 000	Coordinated Survey	802
Essen	>450 000	Perception Survey	700
Frankfurt a.M.	>450 000	Coordinated Survey	500
Freiburg	150 000–450 000	Coordinated Survey	500
Fürth	<150 000	Coordinated Survey	500
Hamburg	>450 000	Perception Survey	700
Ingolstadt	<150 000	Coordinated Survey	501
Karlsruhe	150 000–450 000	Coordinated Survey	1 000
Kassel	150 000–450 000	Coordinated Survey	501
Koblenz	<150 000	Coordinated Survey	802
Cologne	>450 000	Coordinated Survey	1 000
Konstanz	<150 000	Coordinated Survey	500
Leipzig	>450 000	Perception Survey	700
Mannheim	150 000–450 000	Coordinated Survey	801
Munich	>450 000	Perception Survey	700
Nuremberg	>450 000	Coordinated Survey	800
Osnabrück	150 000–450 000	Coordinated Survey	500
Recklinghausen	<150 000	Coordinated Survey	802
Rostock	150 000–450 000	Perception Survey	700
Saarbrücken	150 000–450 000	Coordinated Survey	801
Stuttgart	>450 000	Coordinated Survey	801
Wolfsburg	<150 000	Coordinated Survey	501
Würzburg	<150 000	Coordinated Survey	501
Zwickau	<150 000	Coordinated Survey	500

able to site users in aggregated form. For this article, all advertisements for apartment rentals shown on the qualifying dates 5 October, 6 October and 11 October 2021 in the cities covered by the Urban Audit Survey were included. With a view to being able to extract the data present for individual cities efficiently from Immosuchmaschine.de, the method of web scraping using the Firefox add-on Web Scraper (www.webscraper.io) was chosen.[4] The complete dataset generated in this fashion consists of 37 344 records incorporating the information 'postcode', 'rent in euros', 'price per m^2', 'living space in m^2', 'number of rooms' and 'data source'. Information in the 'data source' category indicates where the advertisement originally appeared, i.e., the online portal from which Immosuchmaschine.de obtained the information. It is scarcely surprising that the largest data source, well ahead of all the others, is ImmobilienScout24 (80.5%), followed by Wohnung-jetzt.de (4.1%), Locaberlin.de (3.0%), Regionalimmob-

[4] Using this approach means that the data are extracted directly from the browser and not, as is otherwise usual, by scripts programmed in Python or R. The biggest advantage of this method is that the data are accessed via a 'real' web browser and thus in the usual way. Using a browser add-on also demands less technical background knowledge, since learning a programming language like Python or R is not necessary to deploy this approach. The disadvantage of this approach (vis-à-vis the programming approach) is that the tool which was used offers less flexibility and less functionality, but neither aspect was a significant consideration for this experimental application.

ilien24.de (2.5%), IVD24immobilien.de (2.5%), The-homelike.com (2.2%), Immo4trans.de (1.5%), and various others that each have a share of 1% or less after rounding.

The data basis has an obvious weakness in the form of the rather large temporal discrepancy between the survey data and the information collected from Immosuchmaschine.de. At the time of writing, the field phase of the 2021 Coordinated Survey is ongoing and a temporally compatible data source that would resolve this issue is on the cusp of becoming available but not yet ready for use. As changes to the housing market usually occur rather slowly and perceptions tend to lag behind reality, it can nevertheless be assumed that broad general trends are reflected reasonably reliably by the data.

4.3 Results

Time series on attitudes towards the housing market by city

Time series for individual cities can be generated with the data from the Perception Survey Atlas[5] to show agreement behaviour in response to the statement 'In <city>, it is easy to find good housing at a reasonable price' (Figure 4.2). The proportions of respondents answering with 'strongly agree' and 'somewhat agree' have decreased over the five survey waves in almost all the cities, in some cases quite drastically. The cities where comparatively small changes over time are seen are almost all at the lower end of the range on agreement: Konstanz, Freiburg, Munich, Stuttgart, Darmstadt, and Frankfurt am Main all consistently show agreement scores well below 20%. Hamburg and Düsseldorf show slightly more agreement at the beginning of the time series and join the cities already mentioned in 2009 and 2012, albeit with Düsseldorf showing a slight upward trend. It seems that the cities that already had low agreement scores in 2006 did not succeed in significantly turning this trend around by 2018 in the perception of their inhabitants.

Despite the average negative trend observed in almost all the cities surveyed, some cities show a clearly discernible positive turn from 2006 to 2009 (Braunschweig, Dortmund, Oberhausen, Koblenz, Saarbrücken, Essen and Nuremberg). This may be explained by the financial and real estate crisis of 2008 and its effects: many residential properties lost value because of foreclosures leading to a sudden oversupply on the real estate market and this may also have had short-term effects on the rental market in some locations.

Negative trend

Since 2009, however, a downward trend in agreement can be observed in almost all cities; it is strongest in Berlin and Rostock. The course of developments in Mannheim from 2009 on and in Dresden from 2012 on tracks the mean values from across all the cities in the survey quite closely. Until 2012, the mean values resemble a dividing line between two clearly separate groups of cities with agreement scores of around 40% and above at the upper end of the range and scores of around 20% and below at

[5] https://web2.mannheim.de/urbanaudit/perceptionsurvey/index.html.

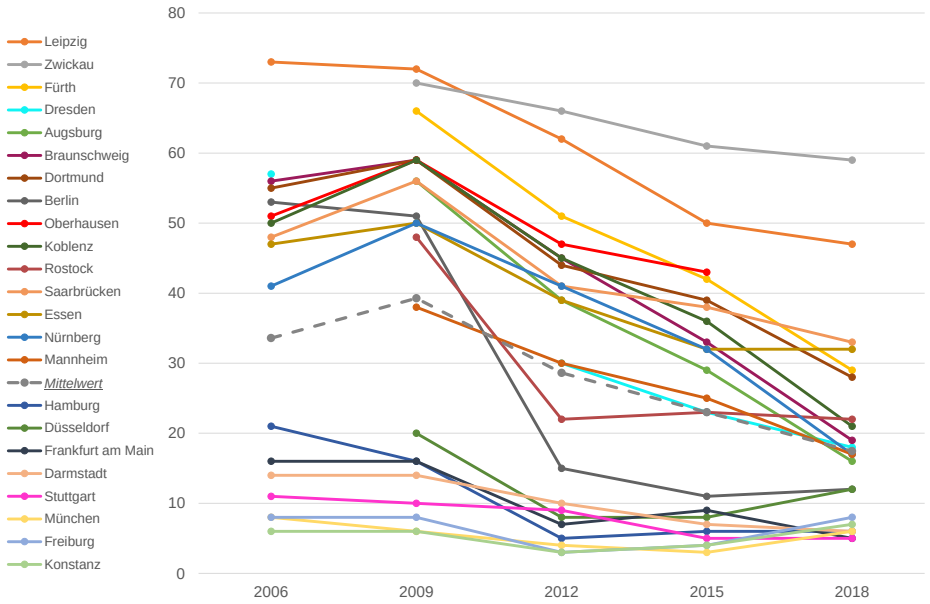


Figure 4.2: 'It is easy to find good housing in <city> at a reasonable price' – the percentage shares for 'strongly agree' and 'somewhat agree' (Source: Perception Survey Atlas)

Converging attitudes

the lower end of the range, a pattern disrupted only by falling agreement in Rostock and Berlin. From 2015 onwards, these agreement scores increasingly converge, and in 2018, agreement scores of 20% or less were found in most cities. Dortmund (28%), Fürth (29%), Essen (32%), and Saarbrücken (33%) form exceptions with agreement scores around 30%. Leipzig (47%) and Zwickau (59%) are also exceptions with by far the highest agreement scores over the entire period covered despite falling agreement over time.

Disagreement predominant

Figure 4.3 provides an overview of the percentage distribution of the individual response categories for each city in the 2018/19 survey wave. It is immediately obvious that the question elicited disagreement in almost all cities and that the problem of finding somewhere to live is perceived as a real issue by most citizens. Figure 4.4 demonstrates how differently the rental market for housing is seen by various groups in each city.

Agreement behaviour by attributes

Size of city

Agreement scores are, unsurprisingly enough, lower in very large (>450 000 inhabitants) and large (150 000–450 000 inhabitants) cities (at 16% each) than in the smaller cities (23%). The disagreement scores in the very large and large cities barely differ (76% and 74% respectively), but the proportion of respondents responding with 'strongly disagree' is eight percentage points higher in the very large cities than in the large cities.

Gender

Women tend to disagree with the statement more than men (75% versus 71% disagreement).

Age groups

Among the different age groups, it can be seen that the perceived difficulty of finding good housing at a reasonable price increases with age up until the middle generations (the 35–44 age bracket). Disagreement scores then remain at a level of 75–80% before falling again to 68% in the category of people aged 65 or older. The proportion of respondents answering with 'don't know/no answer' are, however, highest in this older age group (14%)

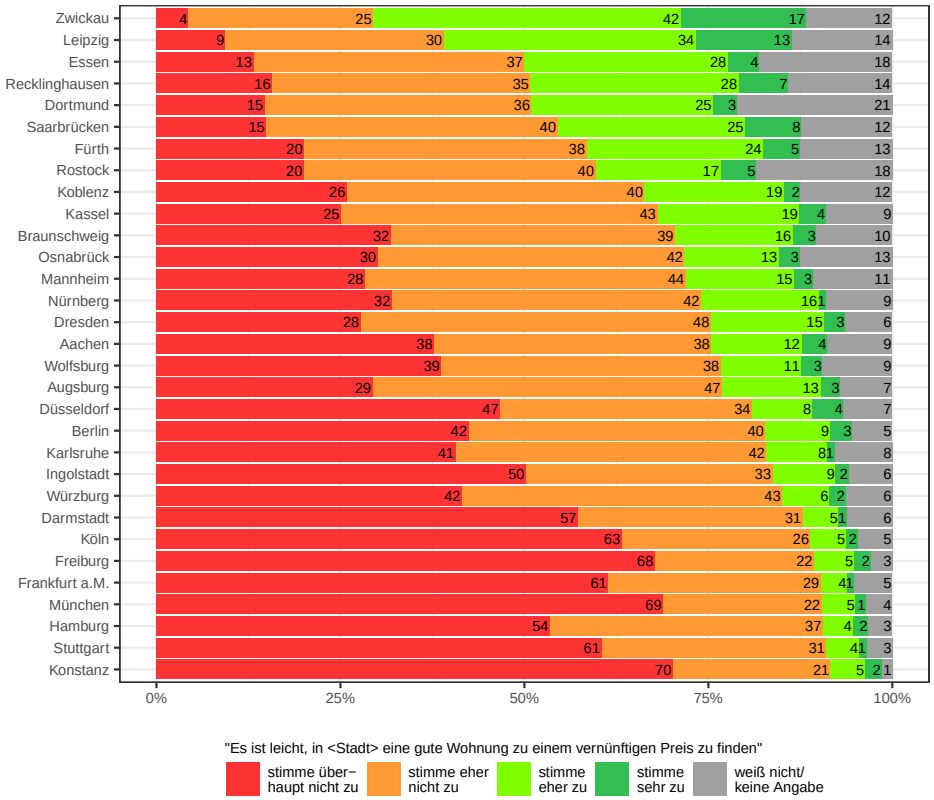


Figure 4.3: Attitudes to the housing market, percentage shares of response categories by city, 2018, sorted in ascending order by disagreement ('strongly disagree' and 'somewhat disagree')

and in the 15–24 age bracket (13%). This may be explained by a considerable share of older people perceiving the housing market as an issue that no longer greatly concerns them now that they have already found the place where they intend to spend their retirement and by a high proportion of young people still being in education and living with their parents.

Place of birth

Major differences in agreement and disagreement scores between German-born and foreign-born city residents were not observed with agreement scores of 18% and 20% respectively and disagreement scores of 73% and 71%. It is noticeable, however, that the proportion of respondents born outside Germany who answered 'strongly disagree' is six percentage points higher than the proportion of German-born respondents with the same response.

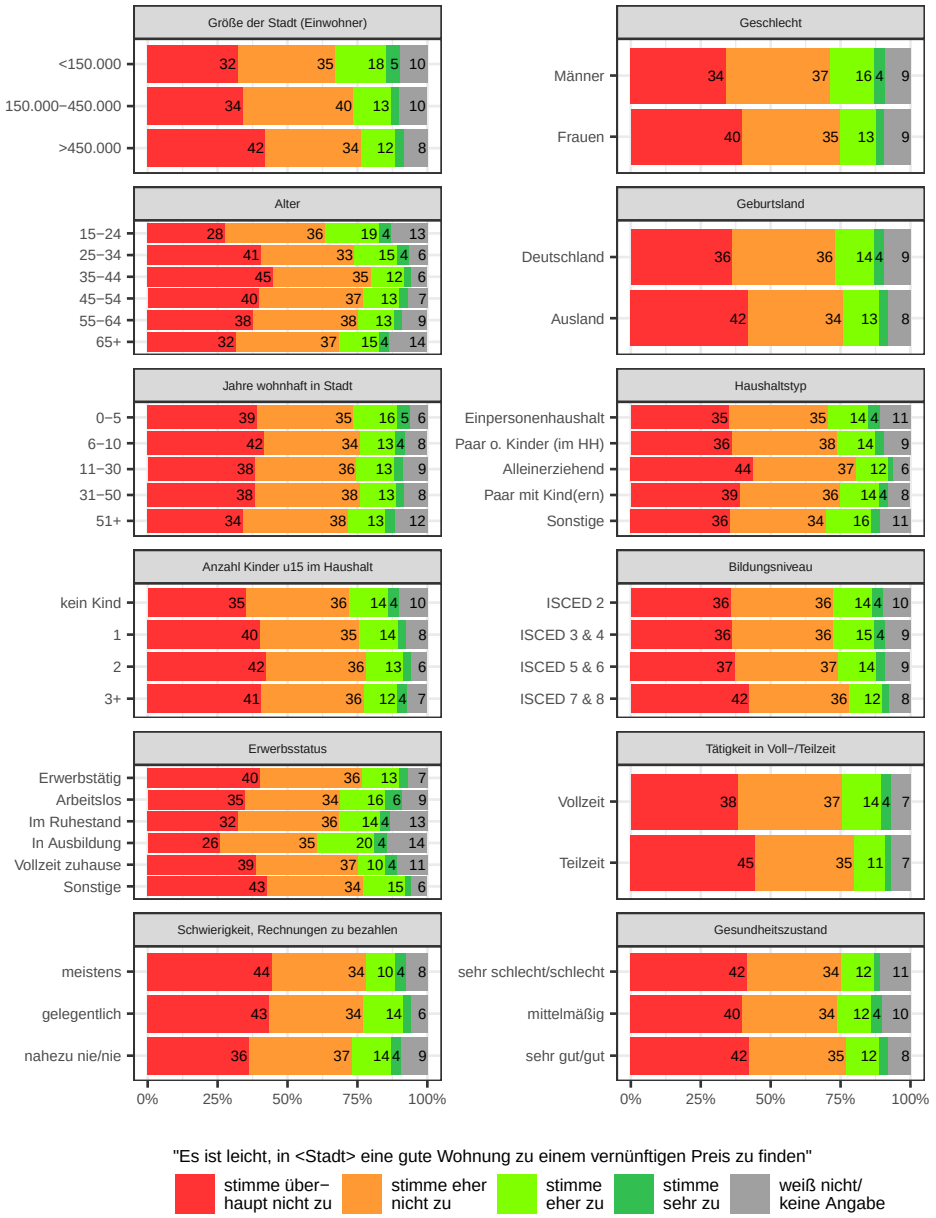
Duration of residence

There does not seem to be any particular connection between the length of time people have been resident in their respective cities and their attitude towards the housing market. The highest agreement in response to the statement (20%) is found among the group of people who have moved to a city recently, within the last 5 years – possibly because of the sense of success engendered by having found a place to live. Disagreement was lowest in the group of respondents that have most likely spent their entire lives in the respective city (51 years and longer) and for whom searching for housing is no longer a relevant issue.

Household composition

In terms of household composition, lone-parent households stand out as the group most critical of the housing situation in their city (81% disagree-

Figure 4.4: Attitudes to the housing market, percentage shares of response categories by various attributes across all cities, 2018



ment); disagreement scores in other categories of households range from 70% to 75%. The 'strongly disagree' response category was selected most often by lone-parent households (44%) followed by respondents from couple households with at least one child (39%). This result gives rise to the question as to how strongly attitudes are influenced by the presence of children in households. Disagreement is indeed lowest (at 72%) in households with no children aged under 15 and rises to 75% when one child is present in the household, to 78% when two children are present, and to 77% when three or more children are present. While differences exist, they are not very substantial and the differences in agreement behaviour are also only marginal (16% versus 18%). A 'child factor' with an impact on attitudes towards housing in cities does seem to exist, but alongside additional socio-economic factors that are, at the very least, no less influ-

ential.

Education status

For the purpose of comparing answers broken down by the varying educational backgrounds of respondents, persons with only early childhood education or primary school education were excluded from the analysis because their numbers were too low. The variation in agreement and disagreement scores between city residents who had completed lower secondary education (ISCED 2), upper secondary or vocational school education (ISCED 3–4) and short cycle tertiary education, a bachelor's degree, or an equivalent qualification (ISCED 5–6) is rather small with agreement scores ranging from 17% to 19% and disagreement scores ranging from 72% to 74%. It is interesting that the group with the highest levels of education (ISCED 7–8: master's degrees and equivalent qualifications, doctorates) is the most sceptical by a slight margin (78% disagreement) about the prospects of finding good housing at a reasonable price on the housing market. It seems that the higher aspirations of earners in the upper income bracket cannot be met from the resources available to them or can only be met by deploying resources to a degree perceived as excessive.

Employment status

For the variable on current working status, the categories 'unable to work due to persistent health problems' and 'volunteering' were assigned to the 'other' category due to the low numbers of respondents in these categories. Astonishingly enough, levels of disagreement proved highest among the employed (77%), including full-time workers (at 75% disagreement) and part-time workers (80% disagreement). The next-highest levels were recorded among homemakers at 75%. The highest agreement scores were recorded by people in education (25%) and the unemployed (22%), two groups that mostly lack financial independence and may therefore tend to evaluate the statement from perspectives characterised by relatively low aspirations. Retired people fall between these poles with 69% disagreement and 18% agreement. The insight that people not facing financial difficulties are less critical of the housing market (73% disagreement) than those respondents who report finding it difficult to pay bills 'occasionally' or 'most of the time' (77% and 78% disagreement respectively) comes as no great surprise.

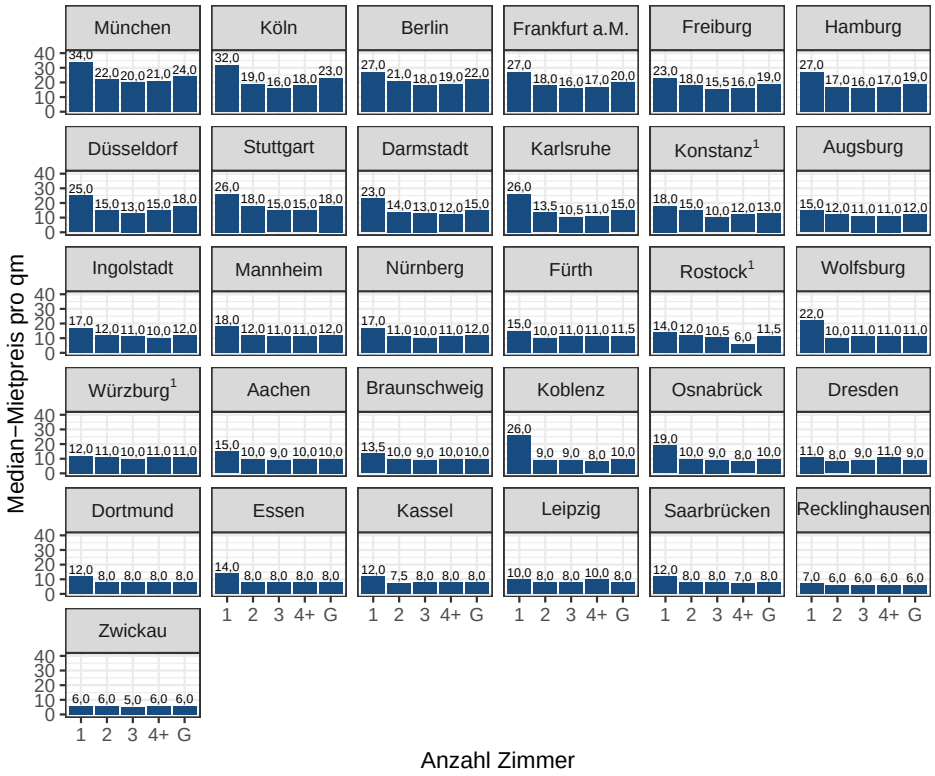
Health status

Health status seems to have little effect on attitudes towards the housing market. It is nevertheless interesting to register that people with 'good' or 'very good' health were slightly more likely to disagree with the statement (77%) than people in a 'mediocre' (74%) or 'very poor/poor' (75%) state of health.

Asking rents in the different cities

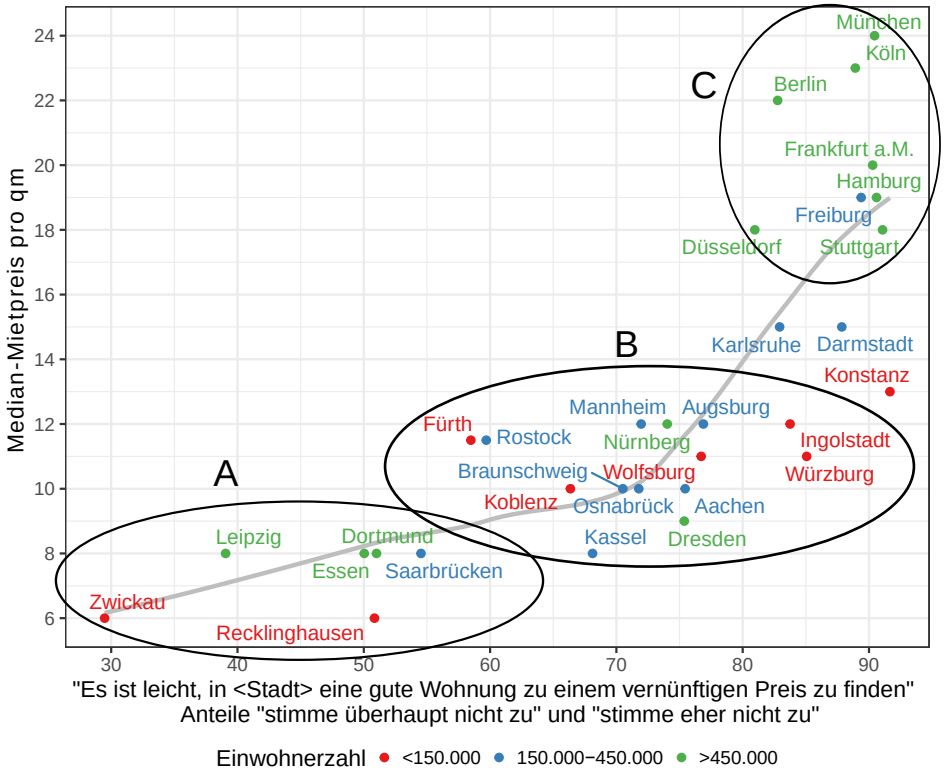
To round off this picture, current asking rents for flats in the individual cities covered by the Urban Audit Survey will be contrasted with these subjective perceptions of citizens in an effort to ascertain whether these attitudes are rooted in fact. Figure 4.5 provides an overview of asking rents per square metre in the individual survey cities. However, it should be noted that the figures for Konstanz (67), Würzburg (71), and Rostock (84) are based on less than 100 cases and that the results, especially when disaggregated by the number of rooms per unit, must be interpreted with great caution.

Figure 4.5: Median asking rents per square metre in cities by the number of rooms



G = Gesamt; [1]Fallzahl unter 100

Figure 4.6: Asking rents per square metre plotted against citizens' attitudes to the housing market



As expected, the major German cities of Munich (€24), Cologne (€23), Berlin (€22), and Frankfurt am Main (€20) are in the top group with average rents per square metre of €20 and above. They are closely followed by Freiburg, Hamburg, Düsseldorf (€19 each) and Stuttgart (€18). At the other end of the scale, average rents below €10 per square metre are found for Dresden (€9), Dortmund, Essen, Kassel, Leipzig, Saarbrücken (€8 each), Recklinghausen, and Zwickau (€6 each).

Correlations between median asking rents and subjective attitudes

Figure 4.6 plots the correlations between the median rent level per m^2 and respondents' attitudes towards the statement 'In <city>, it is easy to find good housing at a reasonable price.' In general, it can be established that the level of disagreement with the statement is strongly correlated with the level of asking rents. While this is not surprising, it does supply confirmation that a subjective indicator can describe a situation as validly as objective structural data and can usefully complement such data.

Three clusters

In purely visual terms, three clusters of cities can be roughly identified with different levels of rent and of disagreement with the statement. Cluster A is characterised by relatively low disagreement scores between 29% and 55% and low median rents per square metre of €6–€8. It includes the cities of Zwickau, where the lowest disagreement scores (29%) were found, as well as Leipzig, Recklinghausen, Essen, Dortmund, and Saarbrücken. Cluster B contains cities that rank in the middle on both dimensions. Subjective attitudes are reflected in disagreement scores ranging from 58% (Fürth) to 85% (Würzburg) and rents per square metre range from €8 (Kassel) to €12 (Mannheim, Nuremberg, Augsburg, and Ingolstadt). Cluster C, the top cluster in both dimensions, has the highest levels of disagreement, ranging from 81% (Düsseldorf) to 91% (Stuttgart), and the highest median rents per square metre, ranging from €18 (Düsseldorf and Stuttgart) to €24 (Munich). It is evident that the level of disagreement found in Ingolstadt and Würzburg (in Cluster B) overlaps with the level found in Cluster C. As the calculation of the median rent per m2 in Würzburg is based on very low numbers (71), the result here is not necessarily robust. Three 'rising star' cities are found between Cluster B and Cluster C: Karlsruhe, Darmstadt, and Konstanz. Rents in all three cities are at a higher level than in Cluster B but lower than the high rents in Cluster C, although the disagreement scores are very similar to those observed in Cluster C. Comparing these clusters also prompts the observation that the disagreement levels seen in Clusters A and B are quite dispersed, especially in comparison with Cluster C. This suggests the highly probable existence of further factors that can explain the response behaviour elicited by the statement on finding housing. For example, it seems likely that the different social structures in individual cities should have a degree of influence that is not inconsiderable on the elasticity of response behaviour for a given change in median rents. In other words, the observed increases in rents over the years should not be expected to generate the same level of disagreement in every city.

4.4 Conclusion

Suitability of alternative data sources

This contribution set out to supplement subjective survey data on housing from the 2018/19 Urban Audit Survey with data on asking rents from online portals to test the suitability of such alternative data sources and appraise their value for possible analyses. The results are quite encouraging on both counts: the data on asking rents supplement the attitudes of city residents with objective data that can underscore the explanatory power of the analyses and also serve as a kind of external validation of the survey data. The descriptive analysis carried out here can be seen as a trial of the method and has the potential to be fruitfully pursued in more depth in the future.

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5 On the Perception and Use of Local Public Transport

Ossip Fürnberg

5.1 Introduction

The question of how people move around is of enormous interest for policy-makers, politics, and planning. It is a question linked to personal freedom and mobility opportunities, but also to competition for limited public space. Mobility is rarely an end in itself. More frequently, it is a means of achieving objectives or an intermediate step towards satisfying needs. The extent to which people can satisfy their needs depends on how mobility is organised and coordinated as well as on other factors. Since mobility plays a role in satisfying needs, it is also linked to the quality of life that people enjoy and their satisfaction with life. Local public transport (LPT) plays a central role in this context. This is also the view taken by the German Environment Agency (UBA, 2020): 'Local public transport […] with buses and trains is an indispensable part of our mobility and our everyday culture in Germany. The quality of life and the urban flair of German cities is directly linked to an attractive and efficient public transport system.' The provision of local public transport as a service of general interest is, indeed, anchored in the German constitution (wikipedia.de 2021). As well as being important for the citizens of a city or region and their mobility, public transport can also be interpreted as a kind of calling card for the areas it serves. The degree to which public transport is frequent, reliable, affordable, easy to get, and safe may exert influence on the image of a city as it is perceived both from within and without. Insights into the use and perception of public transport are, last but not least, also highly relevant in the context of strengthening the position of public transport as an alternative to car travel to meet climate targets.

Relevance

Urban public transport

This is the backdrop against which data gathered in 2018 on the perception and use of local public transport will be examined in more detail. These data come from the 24 cities participating in the quality-of-life survey coordinated by the surveys working group of the Association of German Municipal Statisticians (VDSt). In addition to questions about socio-demographic aspects and respondents' quality of life, the Coordinated Survey asked important questions about the perception and use of public transport. In a first step, this contribution will take stock of the status quo by looking at how extensively public transport is used in comparison

Data and approach

to other transport modes and at the question of how users and non-users rate public transport. In a second step, the relationship between the use of public transport and perceptions of public transport in Mannheim is teased out. The issue of how the use and perception of public transport influence respondents' satisfaction with living in Mannheim is also examined. While a particular focus is placed on results from Mannheim because of the author's local knowledge, these results are always sited in the wider context of data from other participating German cities.

Reported percentage shares generally relate to these figures. An English translation of the wording of the items drawn on for the analysis can be found in an appendix.

5.2 Transport modes used

Measurement of transport mode use

Local public transport must be distinguished from transport modes that are not public (but private), not dedicated to moving passengers (but goods) and not local (but supra-regional). To collect data on the transport modes used, respondents in the Coordinated Survey were asked: 'On a typical day, which mode(s) of transport do you use most often?' and given the chance to respond with: car, motorcycle, train, ship or boat, urban public transport (bus, suburban train, underground train, tram, ferry etc.), bicycle, walking, other, none, don't know/not stated. 'Most often' implies that the naming of only one mode was expected. In addition, respondents could state a second mode. This means that the sum of the shares of all the modes of transport mentioned as the most frequently used mode exceeds 100%. As naming one transport mode did not exclude the naming of a second mode, looking at the combinations mentioned is also possible and potentially interesting. Care must be taken when interpreting these data, however, as respondents may well use more than two modes of transport regularly. In this light, responses not mentioning public transport cannot be read as signifying that the respondents do not use public transport regularly or at all or that they are opposed to it as a matter of principle; it is simply not the transport mode used 'most frequently' or among the two most frequently used transport modes on a typical day.

Overview of use

Table 5.1 shows the transport modes mentioned by respondents in the cities participating in the Coordinated Survey. The table is sorted by the relative share of mentions of public transport among the modes cited by respondents. On average, public transport is the second-ranking transport mode used in the 24 cities surveyed (with mentions by one third of respondents) and comes behind the car, which was mentioned by more than half of the respondents in the results averaged across cities. Cycling (just under 30%) and walking (mentioned by a good fifth of respondents) are also modes that are frequently used on average.

Use of car, bicycle, walking

The overall picture is that the car is the number one transport mode. But large differences exist between cities in this respect: while the car was

Table 5.1: Transport modes used in 24 German cities

City	Car	Motor-bike	Train	Boat	LPT	Bicy-cle	Walk-ing	None	Don't know
Frankfurt a.M.	37.7%	1.2%	2.8%	0.0%	52.6%	22.8%	21.9%	1.1%	0.2%
Stuttgart	49.5%	1.1%	2.0%	0.0%	50.6%	15.0%	20.4%	0.4%	0.5%
Dresden	50.1%	1.2%	0.3%	0.0%	49.2%	24.8%	15.7%	0.7%	0.6%
Düsseldorf	53.7%	0.6%	1.5%	0.0%	45.6%	22.8%	19.8%	0.3%	1.3%
Würzburg	54.2%	3.1%	1.3%	0.0%	41.9%	20.5%	22.2%	0.5%	0.7%
Kassel	56.4%	0.8%	1.0%	0.0%	40.9%	18.8%	24.0%	0.6%	0.0%
Cologne	48.9%	0.5%	1.9%	0.1%	40.0%	28.5%	22.1%	0.9%	0.6%
Mannheim	53.3%	1.1%	2.5%	0.0%	38.8%	28.9%	15.9%	0.9%	0.5%
Nuremberg	55.0%	1.4%	1.6%	0.0%	38.7%	25.9%	18.8%	0.5%	0.1%
Darmstadt	45.1%	1.4%	2.8%	0.0%	37.1%	38.4%	22.2%	0.3%	0.1%
Freiburg	35.7%	1.7%	1.3%	0.0%	35.8%	46.8%	20.7%	1.0%	0.4%
Mean value	**55.6%**	**1.4%**	**1.5%**	**0.0%**	**33.3%**	**28.2%**	**21.7%**	**0.6%**	**0.4%**
Fürth	64.2%	1.8%	1.5%	0.2%	31.5%	22.7%	18.7%	0.3%	0.0%
Karlsruhe	47.0%	1.4%	0.7%	0.0%	31.3%	43.0%	17.8%	0.5%	0.2%
Augsburg	53.8%	0.8%	2.7%	0.0%	30.7%	33.4%	21.7%	0.8%	0.2%
Aachen	57.4%	0.9%	1.0%	0.1%	30.7%	23.3%	30.7%	1.0%	0.3%
Konstanz	41.8%	2.0%	1.9%	0.5%	29.5%	46.2%	23.6%	0.2%	1.0%
Saarbrücken	66.7%	1.2%	1.1%	0.0%	26.4%	15.0%	28.1%	0.8%	1.1%
Braunschweig	56.7%	1.4%	2.2%	0.1%	25.6%	37.7%	20.4%	0.2%	0.1%
Koblenz	68.0%	2.5%	1.3%	0.0%	23.2%	19.2%	27.1%	0.9%	0.2%
Osnabrück	58.9%	1.8%	0.4%	0.2%	22.1%	41.1%	23.2%	0.0%	0.0%
Ingolstadt	59.3%	2.0%	1.2%	0.0%	20.6%	39.7%	19.7%	0.9%	0.1%
Wolfsburg	71.2%	0.8%	0.8%	0.0%	20.3%	28.4%	22.6%	0.3%	0.0%
Zwickau	75.7%	0.7%	1.2%	0.0%	20.3%	11.9%	21.5%	0.1%	1.6%
Recklinghausen	74.4%	1.9%	0.8%	0.0%	16.3%	22.1%	21.1%	0.9%	0.3%

Sorted by public transport use.
Mean values are given in bold blue type.
The lowest and highest values for the most frequently used modes of transport (car, public transport, bicycle, walking) are underlined.

mentioned by three quarters of respondents in Recklinghausen and Zwickau, its share of mentions in Freiburg was not even half as high (35.7%). The car there ranks 'only' in third place, slightly behind public transport (35.8%) and well behind cycling (46.8%). Mannheim is quite close to the average for all cities in this respect, as just over half of the respondents in Mannheim mentioned car use. In terms of the share for cycling, too, Mannheim's 30% is quite close to the average figure across all cities (28.2%). The range here also runs from the poles of Zwickau, where only one person in ten mentioned cycling, to Freiburg, where just under half of the study participants mentioned cycling. Aachen and Saarbrücken are cities of pedestrians. Results showed that walking is almost twice as common there (30.7% and 28.1%) as in Mannheim (15.9%) or Dresden (15.7%).

Use of public transport

The Mannheim figure for public transport use (38.8%) is above average. Public transport in Mannheim appears to be used more than twice as much as in Recklinghausen (16.3%). This still leaves a significant gap, however, between Mannheim and the top public transport performers Dresden, Frankfurt, and Stuttgart, which all have shares of about 50%. While the figures from the longstanding car-manufacturing locations of Wolfsburg, Braunschweig, Ingolstadt, and Zwickau point to 'car cities' having above-average car use and below-average public transport use, the example of Stuttgart shows that such a state of affairs is not inevitable.

Table 5.2: Transport mode combinations in Mannheim

MA	N	%	Car	Motorbike	Train	LPT	Bicycle	Walking
Car	427	53.3		1.4	0.2	20.1	15.9	11.7
Motorbike	8	1.0	75.0		0.0	12.5	25.0	0.0
Train	20	2.5	5.0	0.0		5.0	30.0	0.0
City LPT	311	38.8	27.7	0.3	0.3		18.0	11.6
Bicycle	231	28.8	29.4	0.9	2.6	24.2		8.7
Walking	127	15.9	39.4	0.0	0.0	28.3	15.7	
Total	1 135							

Answers from 801 respondents yielded 1 135 mentions (after weighting).
'None', 'don't know/not stated' not shown.
The percentages in the '%' column are based on the 801 respondents.
The percentages in the other columns refer to the 'N' column.

Table 5.3: Transport mode combinations in 24 German cities

ALL	N	%	Car	Motorbike	Train	LPT	Bicycle	Walking
Car	8 742	55.6		1.3	0.6	15.1	16.6	14.6
Motorbike	218	1.4	53.7		0.9	8.3	10.6	3.2
Train	236	1.5	21.2	0.8		38.1	8.9	5.5
City LPT	5 239	33.3	25.2	0.3	1.7		14.2	17.6
Bicycle	4 432	28.2	32.8	0.5	0.5	16.7		13.7
Walking	3 404	21.7	37.5	0.2	0.4	27.1	17.9	
Boat	8	0.1						
Total	22 436							

Answers from 15 716 respondents yielded 22 436 mentions (after weighting).
'None', 'don't know/not stated' not shown.
The percentages in the '%' column are based on the 15 716 respondents.
The percentages in the other columns refer to the 'N' column.

The overall picture which emerges of transport modes use across the cities in the survey is heterogeneous. The overall picture shows that four modes of transport dominate, although their shares differ from city to city: the car, cycling, walking, and public transport. Most people mainly use these four main modes of transport in varying patterns that reflect local conditions. Possible context effects may arise out of – among other factors – respondents' residential situations, their work locations, topography, public transport upgrades or the parking situation.

Mode combinations

The question about the modes used permitted mention of two modes at most. Tables 5.2 and 5.3 show the mode combinations that this yielded for Mannheim and all the other participating cities. Less than half of those surveyed in Mannheim mentioned a second transport mode. A similar ratio is seen in the results from across all cities: the majority of respondents named one transport mode in response to the question about the transport mode they use most frequently on a typical day.

The first thing that is noticeable about the data is that the four main modes of transport account for the largest shares of the combinations. The car, for example, is the additional mode preferred by those who report cycling, walking or using public transport. It is also interesting that almost half of the car drivers, the largest group, also mention cycling, using public transport

or walking. For car users in Mannheim, public transport is the mode mentioned most often, accounting for one fifth of the total. Across all cities, the other three modes had quite similar shares in combinations involving the car. It seems that an appreciable proportion of the population in Mannheim either combines both these transport modes on a typical day or chooses between them spontaneously. Travelling by train occurs significantly less often in Mannheim in combination with public transport (5%) than across all cities (38.1%). While these percentages should be interpreted with caution due to the low numbers in Mannheim, the figures in Tables 5.2 and 5.3 seem to point to rail passengers being more likely to cycle to and from the train station in Mannheim than the inhabitants of other cities (30% versus 8.9%).

5.3 Perceptions of public transport

This section focuses on the perception of public transport before moving on to examine links between the use and perception of public transport and the assessment given by respondents of life in Mannheim. As well as gathering data on global satisfaction with public transport, the Coordinated Survey also asked respondents to specifically rate how affordable, safe, easy to get, frequent, and reliable their local public transport system is (see Table 5.4).

Perception of public transport compared across cities

Table 5.4 presents a comparison of the average scores of every city in the study. In addition, the average of a public transport index variable[1] and average satisfaction with life in Mannheim are shown. All these values put Mannheim close to the average results from across all cities. Residents of Mannheim give a slightly higher satisfaction rating to the frequency of public transport than the average figure from across all cities, but the ratings for public transport being affordable, safe, reliable, and easy to get are slightly below average. Satisfaction with public transport does not vary very strongly across the different cities. While safety and how easy public transport is to get have very positive overall ratings and a particularly low dispersion, the ratings for reliability and frequency are more mixed. It seems very probable that dissatisfaction with these characteristics is linked to the experience of waiting for a long time for public transport. The cost of public transport was the factor that most clearly elicited dissatisfaction across the participating cities, but this was less pronounced in cities where public transport in general was rated more positively. While the Saarbrücken results are closer to the dissatisfied end of the spectrum across all categories, public transport is rated more positively in Dresden than elsewhere. Interestingly enough, the global assessment of public transport in Dresden is fairly close to the average for all cities, but the values for individual characteristics are all at the top of the respective rankings. It is also evident that no deterministic relationship exists between satisfaction with public transport

[1] Public transport index: The mean value from the items on how affordable, safe, easy to get, frequent and reliable public transport is. When respondents made at least two valid statements for the items, their answers flowed into the index.

Table 5.4: Perception of public transport in 24 German cities

City	LPT overall	Afford-able	Safe	Easy to get	Frequent	Reliable	LPT index	Life in the city
Braunschweig	1.8	2.1	1.6	1.7	2.0	1.7	1.8	1.4
Freiburg	1.8	2.2	1.6	1.6	1.7	1.7	1.8	1.4
Konstanz	1.8	2.1	1.5	1.6	1.9	1.8	1.8	1.4
Würzburg	1.9	2.2	1.6	1.6	2.1	1.7	1.8	1.4
Wolfsburg	1.9	2.1	1.7	1.6	2.0	1.7	1.8	1.5
Augsburg	1.9	2.4	1.6	1.6	1.7	1.8	1.8	1.5
Düsseldorf	1.9	2.2	1.8	1.6	2.0	2.2	1.9	1.4
Fürth	1.9	2.5	1.7	1.6	1.9	1.9	1.9	1.5
Nuremberg	2.0	2.6	1.8	1.6	1.9	1.9	2.0	1.4
Dresden	2.0	2.1	1.6	1.5	1.6	1.6	1.7	1.4
Mean value	**2.0**	**2.3**	**1.7**	**1.6**	**2.0**	**1.9**	**1.9**	**1.5**
Aachen	2.0	2.4	1.8	1.8	2.1	2.1	2.1	1.5
Karlsruhe	2.0	2.2	1.7	1.5	1.7	2.1	1.8	1.5
Darmstadt	2.0	2.5	1.7	1.6	1.9	1.9	1.9	1.5
Stuttgart	2.0	2.4	1.7	1.6	1.9	2.0	1.9	1.6
Recklinghausen	2.0	2.4	2.0	1.8	2.2	2.0	2.1	1.6
Zwickau	2.0	2.3	1.8	1.8	2.0	1.8	1.9	1.5
Ingolstadt	2.0	2.2	1.7	1.7	2.1	1.8	1.9	1.6
Koblenz	2.1	2.7	1.8	1.8	2.2	1.9	2.1	1.4
Kassel	2.1	2.2	1.7	1.7	1.9	1.9	1.9	1.5
Mannheim	2.1	2.2	1.8	1.6	1.8	1.9	1.9	1.6
Frankfurt a.M.	2.1	2.4	1.8	1.6	1.8	2.1	2.0	1.6
Osnabrück	2.1	2.4	1.8	1.8	1.9	2.0	2.0	1.5
Saarbrücken	2.1	2.6	1.9	1.9	2.4	2.4	2.3	1.6
Cologne	2.2	2.5	1.9	1.7	2.1	2.4	2.1	1.6

Sorted by satisfaction with public transport (in general).
Mean values are given in bold blue type.
Scale: 1 very satisfied, 2 rather satisfied, 3 rather unsatisfied, 4 not at all satisfied

and use of public transport. Satisfaction with public transport in Frankfurt and Stuttgart – the other two leading cities in terms of public transport use along with Dresden – is somewhat below average. This also indicates that transport mode choices are most likely made on the basis of comparing alternatives in ways that depend on the background conditions that prevail in particular cities and not solely on the quality of the public transport network.

Assessment differences in Mannheim by use

The overall ratings for public transport in Mannheim are largely positive. Users (very satisfied and rather satisfied: 85.5%) rate public transport only very slightly more highly than non-users (84.9%). This picture also largely holds true for the specific questions on how affordable, safe, easy to get, frequent, and reliable public transport is. But some differences worth mentioning are nevertheless uncovered by the detailed questions: non-users proved to be almost 10 percentage points more dissatisfied (rather unsatisfied or not at all satisfied) than users with the affordability of public transport. Non-users also rated the safety of public transport negatively almost twice as often as users (15.2% versus 7.8%). Although the ease of getting public transport is an issue that does not elicit much dissatisfaction, it is striking that three times as many non-users (6.6%) report dissatisfaction while the figure for users stands at 2.3%. The small differences could be interpreted as suggesting that choices not to use public transport are not substantially driven by negative perceptions of public transport in Mannheim. This in turn suggests that the prospects for boosting public transport use depend less on satisfaction with public transport than on the benefits associated

with the alternatives (and chiefly with car use).

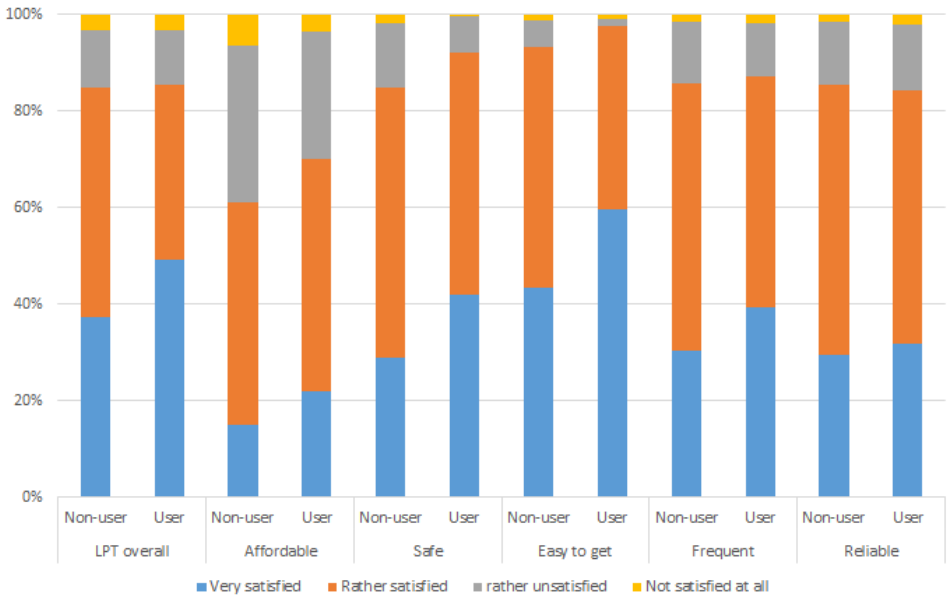

Figure 5.1: Assessment of public transport in Mannheim by use

Assessment by use in comparison

Looking at the different assessments of users and non-users of public transport in other German cities makes it clear that the Mannheim results cannot be generalised for other cities: Mannheim ranks in different positions depending on the specific aspects under consideration and the relatively low differences between the perceptions of users and non-users in Mannheim (other than in relation to the aspects of affordability and safety) are also salient (Figure 5.2). The most striking result here is the difference in overall satisfaction with public transport. For other cities (Augsburg, Koblenz), differences of more than 15 percentage points were found here. It is also interesting to note that differences of less than zero arise in some cities due to non-users rating certain aspects more highly than users. Summing up – and bearing the next step of the analysis in mind – it can be registered that the assessments given in the surveyed German cities differ and are probably connected to levels of public transport use in different ways. Different local background conditions could in turn explain much about transport mode choices. As such, it appears that cities should not be included in a common model for investigating the relationships between public transport use, its perception and the quality of life of residents without also controlling for specific context factors.

5.4 The connection between perceptions and use of public transport and perceptions of the city, using Mannheim as an example

This section scrutinises the connections between respondents' perceptions of and use of public transport in Mannheim and satisfaction with life in Mannheim. As already mentioned above, it can be hypothesised that the perception and use of public transport influences overall assessments of

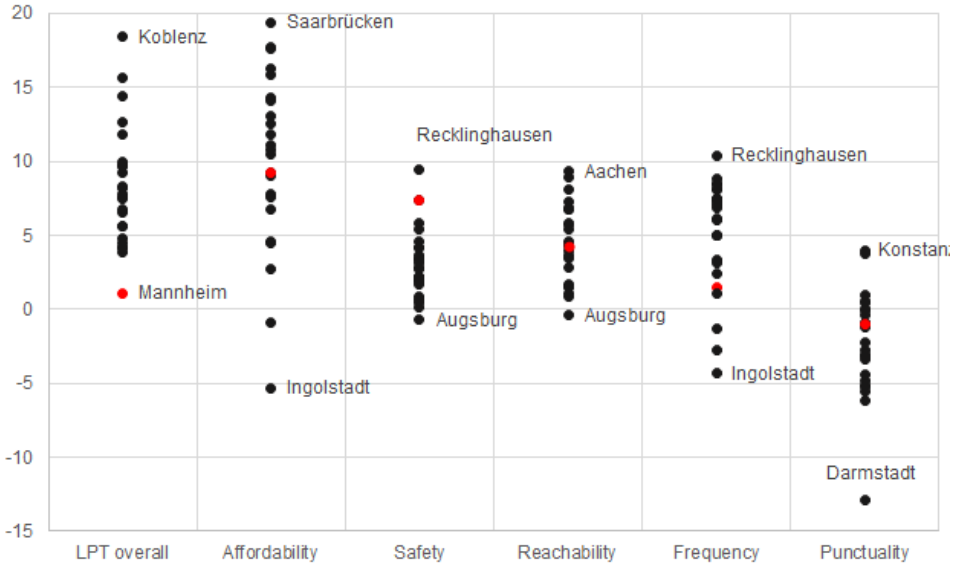

Figure 5.2: Difference in percentage points between users and non-users in satisfaction with public transport (assessed on multiple criteria)

the city in combination with other individual socio-demographic characteristics and attitudes. As Figure 5.3 appears to suggest, it may be the case that there are not only interactions between the use of and perceptions of public transport, but also between generally positive assessments of living in a city and assessments of public transport. Three different models are calculated to test the relationships. Model 1 has the use of public transport as the dependent variable, Model 2 has the perception of public transport as the dependent variable, and Model 3 has satisfaction with living in the city as the dependent variable.

Three models

To operationalise the use of public transport in Model 1, the dichotomous variable already employed (yes/no) is again used. For the perception of public transport (Model 2), the public transport index already introduced above is used.[2] Assessments of living in the city (Model 3) are measured using agreement scores for the statement 'I'm satisfied to live in Mannheim.' These dependent variables are each employed as independent variables in the other two models and supplemented by other socio-demographic characteristics and attitudes that were captured by the study and are available as control variables. These include the categorisation of certain issues as important for the city, satisfaction with the financial situation of one's own household and with one's life, and the perception that the city deploys its funds responsibly. Age, gender, employment status, belonging to the groups of school or third-level students, the duration of residence in Mannheim, and whether the reported residential neighbourhood is close to the city centre are also taken into account.[3] For age and the duration of residence in Mannheim, consideration was given to non-linear effects.

Operationalisation

[2] A factor analysis showed that the overall assessment and the five ratings of individual areas load onto one factor. The public transport index is effectively identical with the extracted factor (correlation > 0.99).

[3] The city districts city centre/Jungbusch, Neckarstadt-Ost, Neckarstadt-West, Schwetzingerstadt/Oststadt and Neuostheim/Neuhermsheim were classified as being close to the city centre (as per the definition in the Municipal Code of the City of Mannheim).

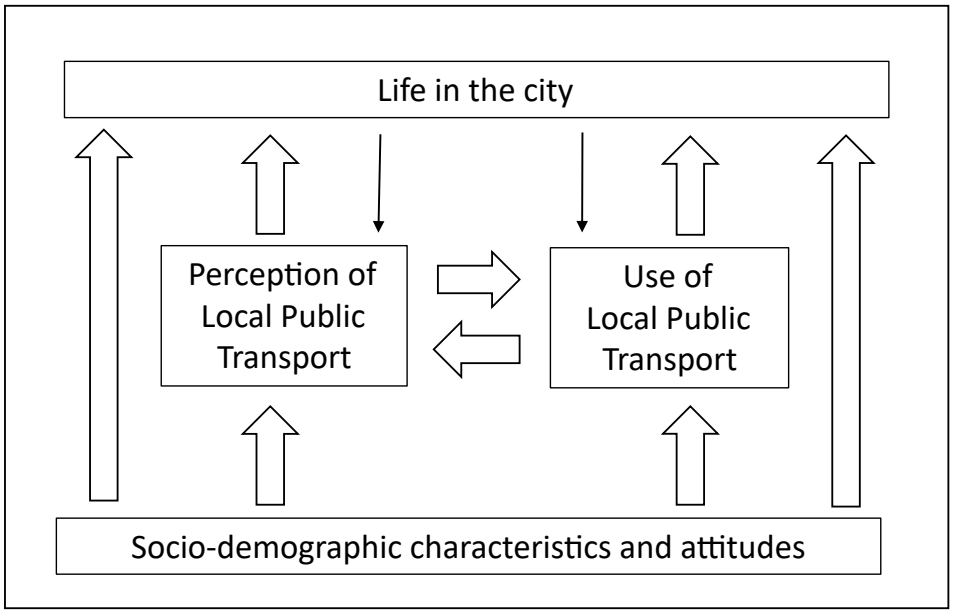

Figure 5.3: Schematic design for probing the perception and use of public transport in Mannheim

The three linear regression models[4] are all statistically significant. This means that at least one of the independent variables contributes to predicting the dependent variable. For both satisfaction with public transport and satisfaction with living in Mannheim, the models can explain about 25% of the variance. In the case of public transport use, the model quality should not be interpreted due to the binary nature of the variable.

Links between use, perception, and satisfaction with living in the city

The variables for the models were polarised in such a way that high values correspond to satisfaction or agreement.[5] Statistically highly significant relationships between the use of public transport, satisfaction with public transport, and satisfaction with living in Mannheim emerged. But only satisfaction with public transport is associated with the other two variables. Statistically significant interactions between public transport use and satisfaction with living in Mannheim are not evident in the models.

Model of public transport use

The strongest effect on **public transport use** (Model 1) is seen in connection with the ranking of public transport as one of the most important issues for Mannheim. People who consider public transport to be one of the most important issues Mannheim should address use public transport significantly more often than people who do not.[6] Satisfaction with public transport (the public transport index) has the second-strongest effect on the use of public transport. The greater the satisfaction with public transport, the more likely using public transport becomes. This effect in the multivariate model is significantly stronger than the bivariate illustration in Figure 5.1

[4] A linear regression model is calculated for the use of public transport, as it is easier to interpret and the results do not differ substantially from the logistic regression model.

[5] This relates to the public transport index variable, satisfaction with living in Mannheim, satisfaction with one's financial situation, life satisfaction, and agreement with the statement that Mannheim uses its funds responsibly.

[6] It is possible that the causal arrow runs in precisely the opposite direction: perhaps people who use public transport also rate public transport as one of the most important issues for Mannheim.

Table 5.5: Modelling the use and assessment of public transport and life in Mannheim

	Public transport use		Public transport satisfaction		Living in Mannheim	
Coefficients	**T**	**Sig.**	**T**	**Sig.**	**T**	**Sig.**
Public transport use			3.8	***		
Public transport satisfaction	3.8	***			4.5	***
Living in Mannheim			4.5	***		
Important: Safety					-2.6	**
Important: Air pollution					-3.4	***
Important: Noise					-2.3	*
Important: Public transport	4.3	***				
Important: Health care					-2.2	*
Important: Social facilities						
Important: Education and training						
Important: Unemployment						
Important: Housing						
Important: Road infrastructure						
Financial situation			4.1	***		
Life satisfaction					5.5	***
City uses funds responsibly			5.9	***	4.7	***
Age	-2.5	*			-2.9	**
Age^2	2.5	*			2.8	**
Female	2.7	**			2.6	*
Employed						
Students (school)/Students (tertiary)/ Voluntary service	2.9	**				
Duration of residence in MA			-2.4	*		
Duration of residence in MA^2			2.1	*		
Close to the city centre					2.8	**
Constant	5.3	***	6.7	***		
Model						
R^2	0.162		0.255		0.254	
Sig.	0.000		0.000		0.000	

* p<.05; ** p<.01; *** p<.001.
Statistically insignificant coefficients are not shown.
Public transport use: dichotomous dependent variable.

can show. Further effects are associated with socio-demographic characteristics: belonging to the groups of women, school students, or third-level students has a positive effect on public transport use.

Model of satisfaction with public transport

The strongest predictor of **satisfaction with public transport** (Model 2) is the perception that the municipality deploys its funds responsibly. The stronger agreement with this statement is, the more satisfied citizens are with public transport. Satisfaction with living in Mannheim has the second-strongest effect. The effect flowing from public transport use proves to be virtually a mirror image of what was described above for Model 1. The assessment of the financial situation of one's household also shows a strong effect. This link may be driven by the perception of public transport as affordable: those who perceive the financial situation of their household negatively are also less likely to consider public transport affordable. The non-linear effect exerted by the duration of residence in Mannheim should

be interpreted as implying that satisfaction with public transport decreases up to a duration of about 45 years of residence in Mannheim and then increases again.

Model of satisfaction with living in Mannheim

Satisfaction with living in Mannheim (Model 3) is most strongly influenced by general satisfaction with life and by the assessment that Mannheim uses its funds responsibly: higher general satisfaction with life and higher levels of agreement with the statement that Mannheim uses its funds responsibly correlated with greater satisfaction with living in Mannheim. Satisfaction with public transport in Mannheim was also found to be significant.[7] As in the previously described model, satisfaction with living in Mannheim and satisfaction with public transport in Mannheim are correlated. Satisfaction with living in Mannheim is also connected to the issues that are perceived as important for the city: citizens who rank air pollution, safety, and health care services as important issues for Mannheim are less satisfied with living in Mannheim. Other effects are associated with gender, age and living close to the city centre. Women and residents of the districts close to the city centre are more satisfied with life in Mannheim. Satisfaction with life in Mannheim decreases up to about the age of 50 and then rises again.

5.5 Conclusion

Summary

It has become evident that Mannheim is broadly in the middle of the range of the cities surveyed in relation to the use of public transport and satisfaction with public transport. A more detailed look nevertheless uncovers some specific features worth mentioning. The above-average levels of public transport use and positive perception of public transport observed merit acknowledgement. The multivariate analyses were able to shed some light on how the perception and use of public transport relate to satisfaction with living in Mannheim. This brought marked interactions between the use and perception of public transport to light. Public transport users also have a more positive image of public transport and vice versa. In the context of this contribution, the significance of the assessment of public transport for the perception of the city and the quality of life there is of particular interest. The more positively public transport is perceived, the more positively the city itself and the quality of life it offers appears. In the future, as the use of public transport increases in the context of the mobility transformation, public transport could become an increasingly significant factor contributing to the image of cities.

Ausblick

Future analyses could provide additional insights into public transport user behaviour by gathering more differentiated data on public transport use and especially on the combinations of transport modes used by respondents.

[7] A similar effect results when life satisfaction is examined as a dependent variable. The assessment of public transport – along with the financial situation of one's household, which dominates the model – is one of only four statistically significant independent variables that also include the city's responsible use of funds and the perception of the issue of safety.

A more detailed survey of transport mode use could possibly also identify a connection not shown here between the use of public transport and quality of life. More detailed comparisons with other cities that were beyond the scope of this contribution could also prove interesting in this regard. A more comprehensive comparison of cities could also use multi-level models to explore relevant context effects resulting from the residential situations of respondents, workplace locations, topography, upgraded public transport provision or the parking situation. Last but not least, the models used could be specified more realistically by a more targeted exploration of the direction of causality between the use and evaluation of public transport on the one hand and the perception of a city and general life satisfaction on the other.

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5.6 Appendix

5.6.1 Sources

German Environment Agency (UBA), 2020: Öffentlicher Personennahverkehr, https://www.umweltbundesamt.de/themen/verkehrlaerm/nachhaltige-mobilitaet/oeffentlicher-personennahverkehr, accessed 29 October 2021.

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5.6.2 Items used

Public transport

Use: On a typical day, which mode(s) of transport do you use most often? (Max. 2 answers possible)

Car, motorcycle, bicycle, foot, train, urban public transport (bus, tram or metro), other, do not commute, don't know/no answer/refuses

Perception: Thinking about public transport in your city, based on your experience or perceptions, please tell me whether you [1] strongly agree, [2] somewhat agree, [3] somewhat disagree or [4] strongly disagree with each of these statements. Public transport in your city is:

Affordable, safe, easy to get, frequent, reliable (comes when it says it will)

Public transport (overall satisfaction): Generally speaking, please tell me if you are very satisfied, rather satisfied, rather unsatisfied or not at all satisfied with each of the following issues in <your city>.

Public transport in <city>, for example bus, tram, or metro

Attitudes and behaviour

Life: I will read you a few statements. Please tell me whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of these statements?

Life: I'm satisfied to live in <city>.

Life satisfaction: On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with:

Finances: The financial situation of your household

Life in general: The life you lead

Responsible use of funds: I will read you a few statements about your city's public administration. Please tell me whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of these statements?

The city spends its resources in a responsible way

Important topics: In your opinion, among the following issues, which are the three most important for your city?

Safety, air pollution, noise, public transport, health care services, social facilities, education and training, unemployment, housing, road infrastructure, don't know/not stated

Socio-demographic characteristics

Age: In what year were you born?

Gender: Appraised by interviewer

Duration of residence in Mannheim: How long have you lived in <city>?

Proximity to city centre: Which city district do you live in?

Districts close to city centre: Innenstadt/Jungbusch, Neckarstadt-Ost, Neckarstadt-West, Schwetzingerstadt/Oststadt, Neuostheim/Neuhermsheim

Work/education status: Which of the following statements best describes your current work status?

At work as employee or employer/self-employed/relative assisting on family business, unemployed and not looking actively for a job, unemployed and looking actively for a job, retired, unable to work due to long-standing health problems, in full-time education (at school, university, etc.)/student, full-time homemaker/responsible for ordinary shopping and looking after home, compulsory military or civilian service, other, don't know/no answer/refuses

6 Assessing Aspects of Quality of Life in Mannheim by Residential Area

Ellen Schneider

Overview of inner and outer city districts

In 2018, the City of Mannheim took part in the survey on the quality of life coordinated by the working group on surveys of the Association of German Municipal Statisticians (VDSt) for the fourth time in a row. In all four of these survey rounds, some 800 people in Mannheim were questioned. As the respondents also provided information on the city district in which they live, a small-scale analysis of the results is possible in addition to comparisons of the overall results for Mannheim across time and against other cities. While the numbers of respondents per individual district are too low to permit any robust analysis, analysing the results by the inner and outer districts (as per the definition in the Municipal Code of the City of Mannheim[1]) is viable.

The example of Mannheim shows that assessments of various quality of life aspects can vary considerably not only between but also within cities depending on where people live. The discussion below focuses especially on small-area differences relating to satisfaction with public transport, aspects of environmental quality and the issue of safety.

6.1 Satisfaction with public transport

It is conceivable that satisfaction ratings for public transport in Mannheim could vary according to where people live. Figure 6.1 clearly shows that such differences have in fact been recorded, but they are not very pronounced, although the assessment of safety is an exception in this regard.

This could be attributable to Mannheim being able, as a densely populated city, to provide all its residents with a good public transport network. Residents of Mannheim are comparatively satisfied in this regard; higher levels of satisfaction with public transport than in Mannheim were recorded in only two of the cities surveyed. Examining the data further demonstrates that assessments of public transport in Mannheim depend more strongly on the mode of transport chosen most often than on residential location. Those who report most often using public transport on a normal day rate

[1] Residents in the outer districts tended to be overrepresented in all the survey rounds.

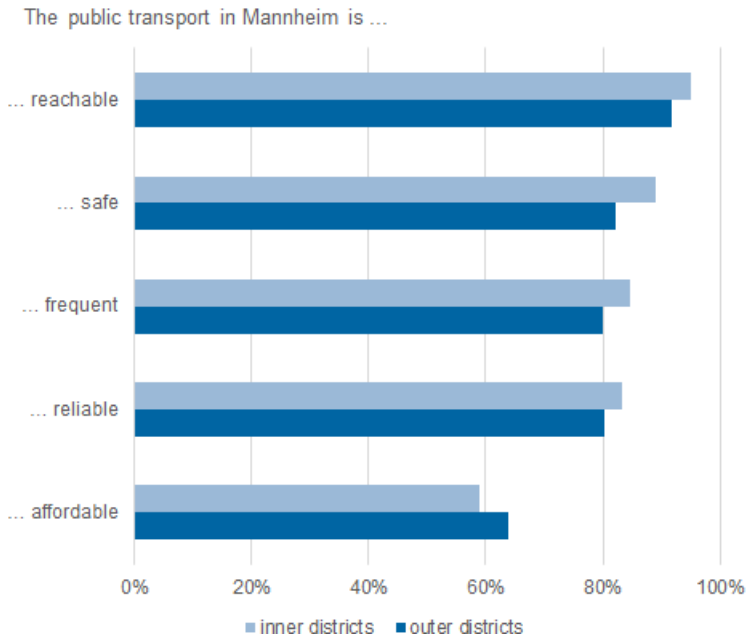

Figure 6.1: Satisfaction with public transport in Mannheim by residential location in the 2018 survey round

Mannheim's public transport system more positively than other respondents.

6.2 Satisfaction with aspects of environmental quality

Satisfaction with air quality and noise levels

As an industrial city, Mannheim ranks mostly in the lower third of the cities in the Coordinated Survey on satisfaction with environmental aspects. But even within Mannheim, satisfaction varies significantly depending on location (see Figure 6.2): in the most recent survey round, for example, satisfaction (very/rather satisfied) in the outer districts with air quality (65%) and the noise level (71%) was found to be significantly higher than in the inner districts, where the respective figures stood at 50% and 62%.

While noise pollution was consistently considered less of a problem in the outer districts than the inner districts, the differences in satisfaction with air quality have not been as clear in every survey round.

Satisfaction with the cleanliness of the city

In the 2012 and 2015 surveys, significant differences in satisfaction with cleanliness in Mannheim were also found. In 2015, for example, 60% of respondents from the outer districts but only 50% of respondents from the inner districts reported being 'very' or 'rather satisfied' with cleanliness in Mannheim. But the differences ascertained across all participating cities in 2015 were much more pronounced than this: the average satisfaction scores with the cleanliness of cities ranged from 55% to 93%.

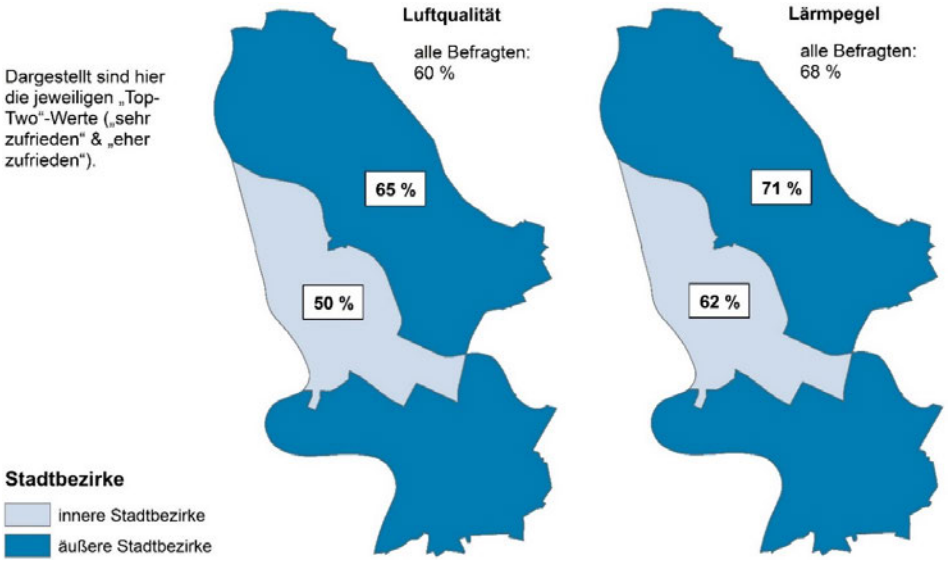

Figure 6.2: Satisfaction with aspects of environmental quality by residential location in the 2018 survey round

6.3 Satisfaction with safety

Differences in subjective perceptions of safety in different residential areas within the City of Mannheim also emerged and were marked in some cases. Consistently comparing perceptions of safety over time is unfortunately not feasible because the questions have changed on multiple occasions over the different survey rounds.

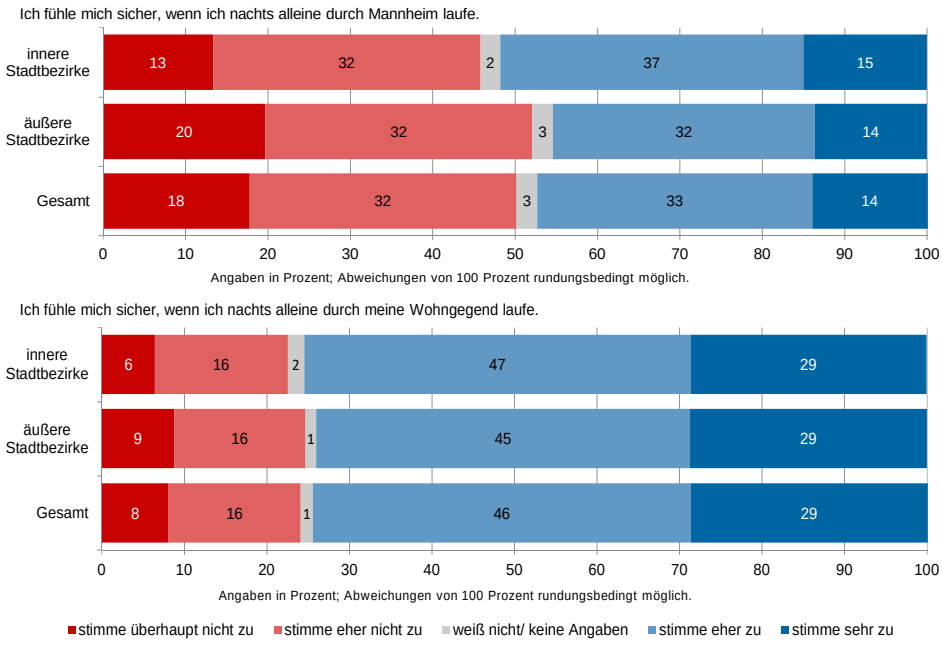

Figure 6.3: Assessment of safety at night in Mannheim by residential location in the 2018 survey round

Sense of safety in Mannheim at night

Two questions were asked about subjective perceptions of safety in 2018. The assessment of how safe one feels when walking alone through Mannheim at night proved to differ depending on where one lives: just over half (52%) of respondents in the central districts agreed (or agreed strongly) with the statement that they feel safe when walking alone through Mannheim at night, but the corresponding figure for respondents in the outer dis-

tricts stood at only 45% (see Figure 6.3). Interestingly enough, the 2018 question relating to perceptions of safety when walking alone through one's own neighbourhood at night did not show these differences by residential location.

Sense of safety in one's own neighbourhood

In the 2015 survey round, the question about how safe people feel in their neighbourhood showed significant differences by residential location in Mannheim: nine out of ten respondents in the outer city districts (91%) agreed with the statement that they feel safe in their neighbourhoods but only 84% of respondents in the inner-city districts also agreed with this statement (see Figure 6.4).

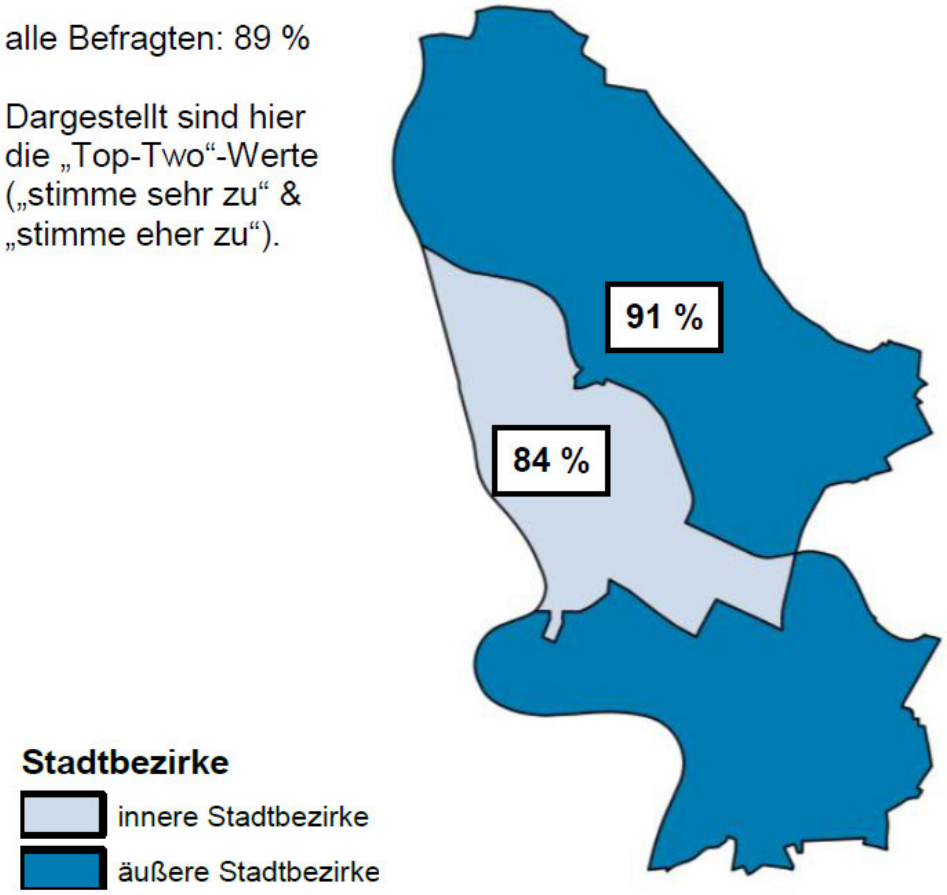

Figure 6.4: Satisfaction with safety in one's neighbourhood by location of city district in 2015

However, the overall picture, at least in Mannheim, is that perceptions of safety depend far more on gender than on residential location. In 2018, for example, 57% of men but only 38% of women agreed somewhat or agreed strongly with the statement that they feel safe when walking alone through Mannheim at night.

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Part II

Innovations in data collection

Chapter overview

We have again set ourselves ambitious project goals for the current funding period, which began mid-2020 and will end mid-2022. For city statisticians, as for other groups, the COVID-19 pandemic has meant that fewer opportunities to exchange expertise with colleagues have arisen and that staying in touch with colleagues has not always been easy. Two challenging tasks have nevertheless already been accomplished in cooperation with colleagues from the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), the Federal Statistical Office, and the KOSIS working group for Coordinated Household and Population Statistics (HHSTAT). One of these relates to the functional urban areas (FUAs) made up of cities and their commuting zones. These have been redrawn after remaining unchanged for many years and are now delineated at the level of municipalities (Gemeinden) rather than – as was the case up to now – at the higher level of districts (Kreise). A second innovation came about through the successful effort to quickly deliver five new variables on external and internal migration requested by the EU via the survey of German cities.

In addition to this work, the Urban Audit Structural Data Atlas, familiar to many users as an online application facilitating user-friendly access to statistical data, has been comprehensively overhauled and to some extent also restructured. Its most important features and recent improvements are briefly summarised in the final contribution at the end of this brochure.

7 The Redrawing of Functional Urban Areas in Germany

Tobias Link

FUAs as dynamic spatial units

As well as collecting data on the 127 participating German cities, the City Statistics project overseen in Germany by the Federal Statistical Office and the KOSIS Association Urban Audit also collects data on functional urban areas (FUAs) defined by commuting patterns. While the cities form fixed territorial units that remain stable over time, FUAs are dynamic by definition since their demarcation is based on commuter flows. In cooperation with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) and the Federal Statistical Office, the German FUAs were redrawn in 2021, after remaining unchanged for many years, to match the EU definition. The following contribution discusses the criteria for delineating FUAs before going on to explore the innovations vis-à-vis the previously used division.

7.1 Defining functional urban areas

Linked by commuter flows

A FUA consists of the municipal territory of a city and its commuting zone. Before forming FUAs, the cities selected for the City Statistics project are screened to determine whether any cities are linked to each other via commuter movements: if 15% of the employees subject to social insurance contributions resident in one of the cities work in another, the two cities are considered to be connected. The first city is then seen as belonging to the FUA of the second city and has no separate FUA of its own. Connected cities like this are treated as a single city during the remaining process for delimiting FUAs, and commuter flows into both cities are considered together. Special cases exist; some cities in the Ruhr area that are closely linked by commuter flows due to their strong spatial concentration are treated as one large FUA by the Urban Audit study, for example. The second step involves identifying and including all the surrounding municipalities in which at least 15% of the resident employees subject to social insurance contributions work in the (connected) city. In a final step, the municipalities that were not selected in the second step but are completely surrounded by municipalities forming part of a FUA are also included in the FUA thus defined. Municipalities that had been selected but are isolated and not adjacent to other selected municipalities are excluded. When municipalities meet the selection criteria for two different Urban Audit cities that are not connected

cities, they are assigned to the FUA of the city to which the greater share of residents commutes.

Implementation in Germany up to now

One problem with the implementation of the EU definition in Germany up to now has been that commuter linkages have not been tracked at the level of municipalities, but on the basis of district-level (Kreis) data available from the Federal Employment Agency. One issue resulting from this was that FUAs became very large due to data being aggregated at a high level. Another has been that many cities either had no FUA of their own or a FUA encompassing only the same area as the city itself because they were not able to meet the threshold criterion of 15% when inbound commuting was measured at the level of entire districts. This was especially likely to arise when several large cities in spatial proximity 'competed' for inbound commuters.

7.2 Results of the redrawing

Maps of Germany illustrating the old and the redrawn FUAs are shown below and some details in the differences between them are explored to illustrate the changes.

Smaller FUAs

It can be seen at a glance that the newly formed FUAs are mostly smaller (see Figures 7.1 and 7.2). On looking closer, it becomes discernible that almost all the cities that had no FUA of their own before the redrawing or only a FUA that was identical with the city territory (marked in grey) now also have municipalities from the surrounding area as part of their FUA. The only exception here is Solingen (due to the high concentration of cities in the Ruhr area). The total number of FUAs has increased slightly from 96 to 98: The cities of Speyer (formerly part of the Mannheim-Ludwigshafen FUA), Wolfsburg (formerly part of the Braunschweig-Salzgitter-Wolfsburg FUA), and Erlangen (formerly part of the Nuremberg FUA) are new. Lüneburg no longer has its own FUA because commuter statistics have led to Lüneburg being included in Hamburg's FUA, which has grown significantly.

More cities with a 'real' FUA

More FUAs

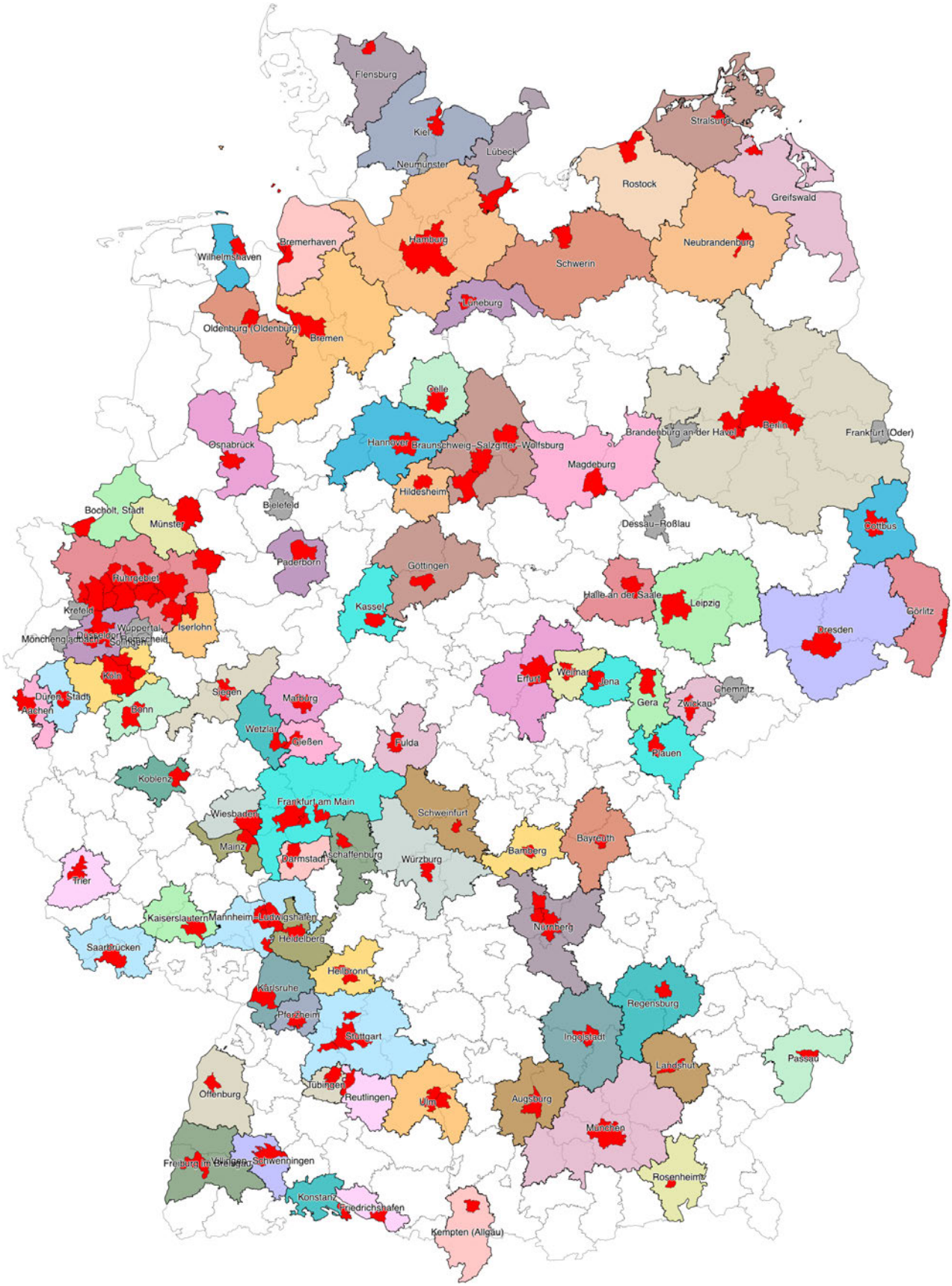


Figure 7.1: Functional Urban Areas in Germany up to now

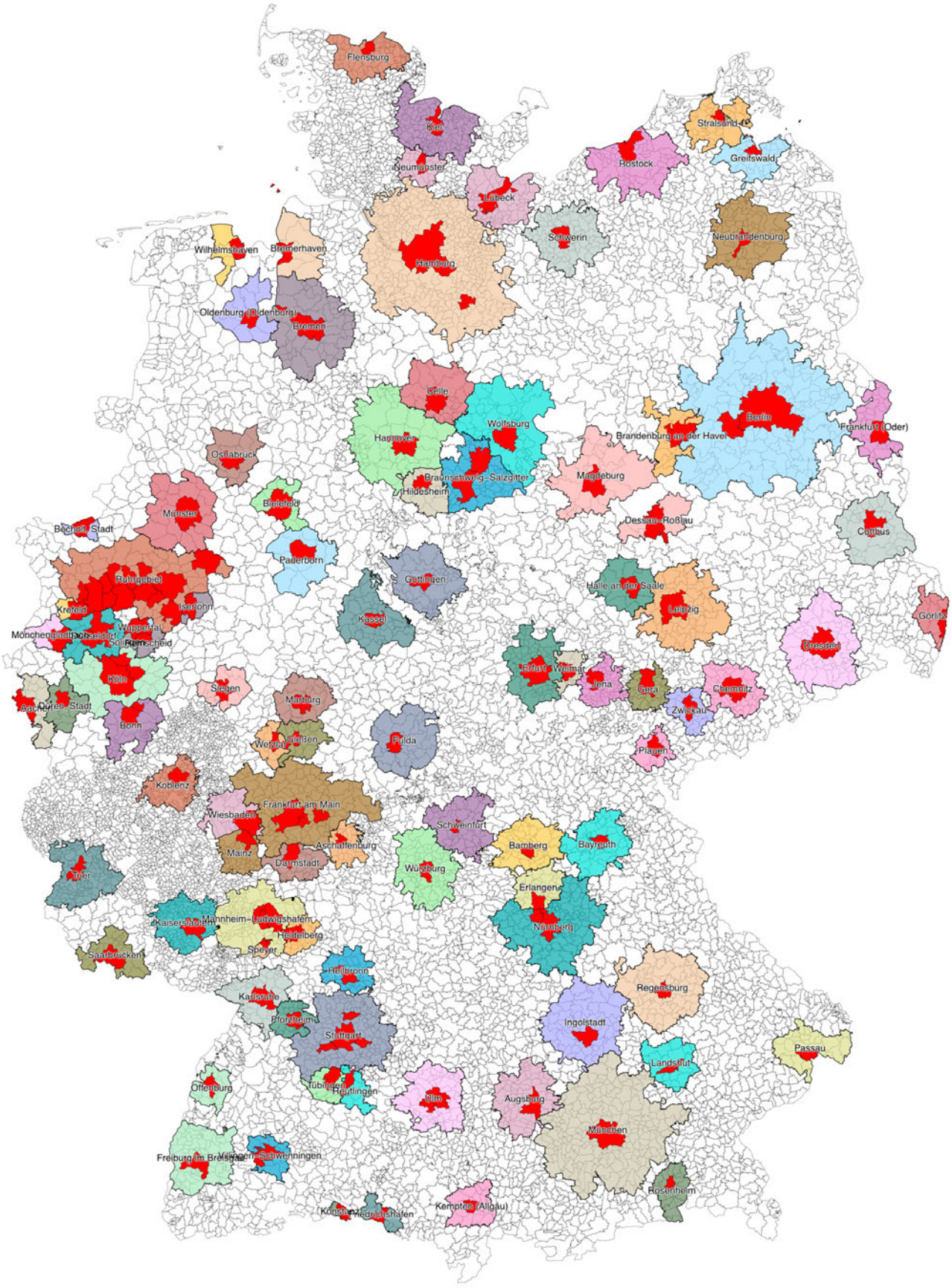
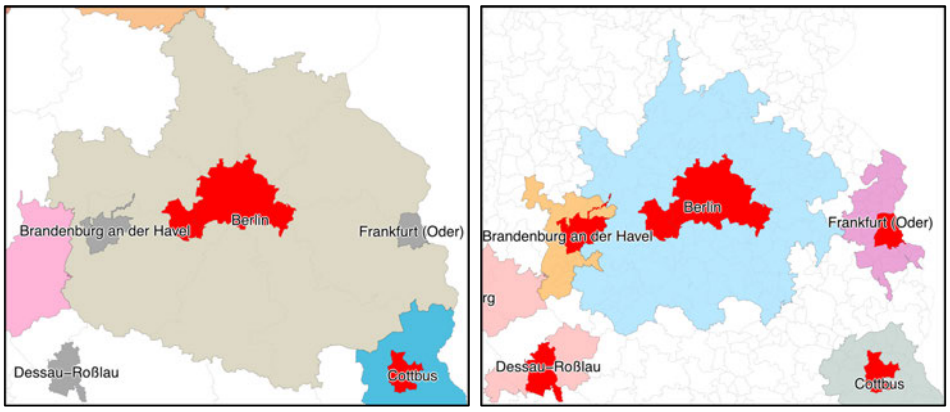


Figure 7.2: Redrawn Functional Urban Areas in Germany

An important aspect of the redrawing of the FUA boundaries at municipal level is that it has proved possible to resolve some of the criticisms that arose out of their previous delineation based on district-level data.

Figure 7.3 shows the old and new FUAs of the City Statistics project cities Berlin, Brandenburg an der Havel, Frankfurt (Oder), and Dessau-Roßlau (with the old FUAs on the left and the new FUAs on the right). Brandenburg and Frankfurt were formerly both located within the Berlin FUA, which is based on combined commuter flows to the connected cities of Berlin and Potsdam. However, they were not classed as part of the Berlin FUA, but as FUAs in their own right. When district-level data were being used, Brandenburg and Frankfurt were no match for the powerful gravitational pull exerted by the cities of Berlin and Potsdam. Similarly, Dessau-Roßlau also had no FUA extending beyond the territory of the city itself because the threshold could not be reached amid stiff competition for commuters from the surrounding districts from the cities of Magdeburg, Halle (Saale), and Leipzig.

Figure 7.3: FUAs for Berlin, Brandenburg an der Havel, Frankfurt (Oder), and Dessau-Roßlau



Bisheriges FUA Berlin | Neu zugeschnittenes FUA Berlin

More accurate representation of concentrations of commuters

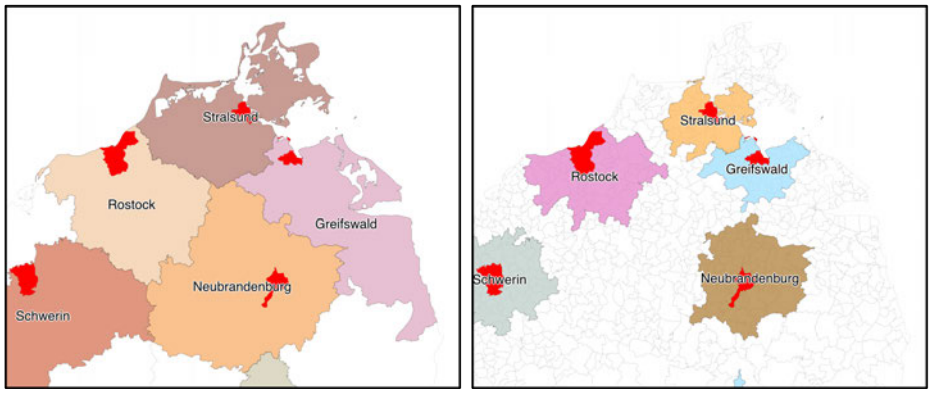
Brandenburg, Frankfurt, and Dessau-Roßlau now all have FUAs of their own that include commuting zones beyond their immediate city limits. The size of the Berlin FUA is now smaller and the areas in which commuter flows are concentrated can now be represented more realistically.

Smaller FUAs more realistic

The original problem with excessively large FUAs that resulted from using district-level statistics to determine FUA boundaries becomes especially obvious when one looks at the north-east of Germany (see Figure 7.4). The FUAs Schwerin, Rostock, Stralsund, Greifswald, and Neubrandenburg formed a contiguous swathe of land covering the entire region. This large area made it difficult to integrate the FUA concept usefully into analyses, as interpreting the entire largely rural area as an urban catchment area hardly seems valid. This was the context in which redrawing the FUAs at the municipal level appeared to be an urgent priority and the results that have now emerged (Figure 7.4 on the right) appear considerably more credible. Urban areas and their commuter zones can now be represented considerably better than was previously the case.

Unincorporated areas

Another issue, admittedly mainly of a cosmetic nature, was the question of how unincorporated areas not belonging to any political municipality



Bisherige FUAs in N-O-Deutschland

Neu zugeschnittene FUAs in N-O-Deutschland

Figure 7.4: FUAs for Schwerin, Rostock, Stralsund, Greifswald, and Neubrandenburg

should be treated. Up to now, these areas had been automatically included in FUAs because of the determination of FUA boundaries at district level. These mostly uninhabited areas (forests, lakes or marshes, military training areas, etc.) play no role in statistical analyses, since they contain hardly any infrastructure or inhabitants, but 'holes' can become visible in the cartographic representations of some FUAs when they are not included (see Figure 7.5). In consultation with the EU, the German Federal Statistical Office, our steering group, and the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), the decision was made to integrate these areas into their respective FUAs when such cases arose.

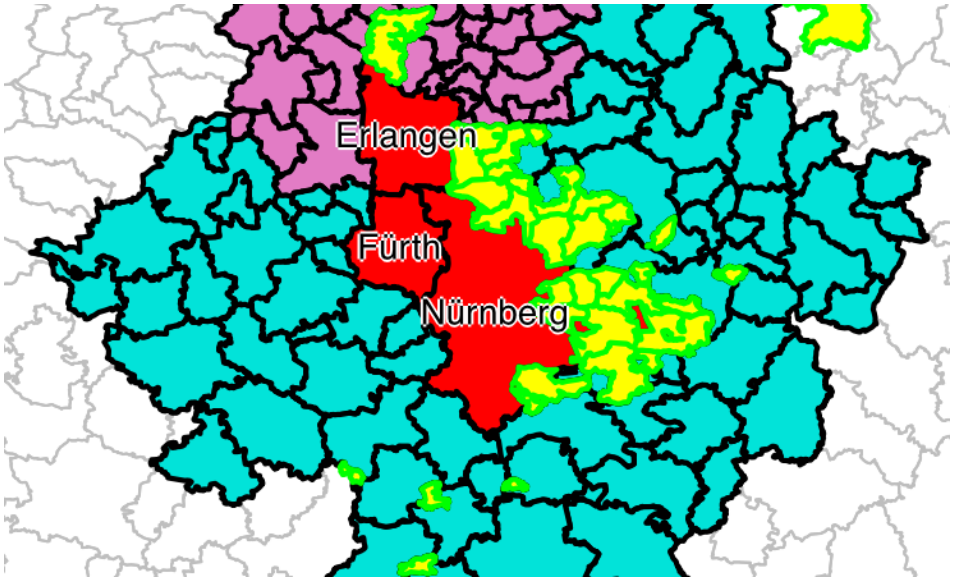


Figure 7.5: Unincorporated areas in the Nuremberg and Erlangen FUAs (yellow areas with green borders)

7.3 Conclusion

The redrawing of FUAs at municipal level has successfully addressed major criticisms of the previous implementation of the concept in Germany. A 'real' FUA integrating municipalities from the hinterlands of the respective cities has now been constructed for almost every city that previously had

a FUA composed only of its own urban territory. In addition, the average size of the FUAs has decreased, quite significantly in some cases, and this has enabled the realities of commuter flows to be more accurately represented. One major disadvantage is, however, associated with the new, updated areas: data collection will tend to become more difficult as the availability of certain variables at municipal level is considerably poorer. The extent to which this will have a negative impact on data provision in the future remains to be seen. The new FUAs are currently still being fine-tuned with the EU and it is anticipated that they will serve as the basis for supplying data from the next funding period onwards.

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8 Implementation of the New EU Variables on External and Internal Migration in the German City Survey

Ellen Schneider

A significant proportion of the structural data from Germany for the European City Statistics project is supplied by the German cities themselves. All 127 participating cities are queried once a year and supply data via a data entry form. When this data collection from the cities was carried out in the third quarter in 2020, five new variables on external and internal migration were added at the request of the European Union:

- Inhabitants (excluding those under one year of age) at the same address as in the previous year (DE4001H)
- Inhabitants (excluding those under one year of age) who had moved within the city during the year (DE4002H)
- Inhabitants (excluding those under one year of age) who had lived in Germany but not in the reporting city in the previous year (DE4003H)
- Inhabitants (excluding those under one year of age) who had lived outside the city and outside Germany but within the EU in the previous year (DE4004H), and
- Inhabitants (excluding those under one year of age) who had lived outside the city and outside the EU in the previous year (DE4005H).

It quickly became clear that this data could also be provided only by the cities themselves, but also that the problem of extracting the information sought was far from trivial and could in principle be achieved by drawing on stock or flow data. Following intensive and fruitful dialogue with the KOSIS working group for Coordinated Household and Population Statistics (HHSTAT) and another strongly involved colleague, a decision was made to recommend the use of stock data to the municipal statistics offices. The city statisticians were provided with a detailed correlation table and with screenshots illustrating the use of the data validation program EwoPEak produced by the KOSIS working group for Coordinated Household and Population Statistics (HHSTAT) to check the plausibility of their results. 90% of the cities that supplied data also ultimately succeeded in supplying data for the five new variables.

Figure 8.1 shows the proportion of inhabitants (excluding infants under one year of age) at the same address as in the previous year; low percentages reflect high levels of population fluctuation. While the figure for Leverkusen

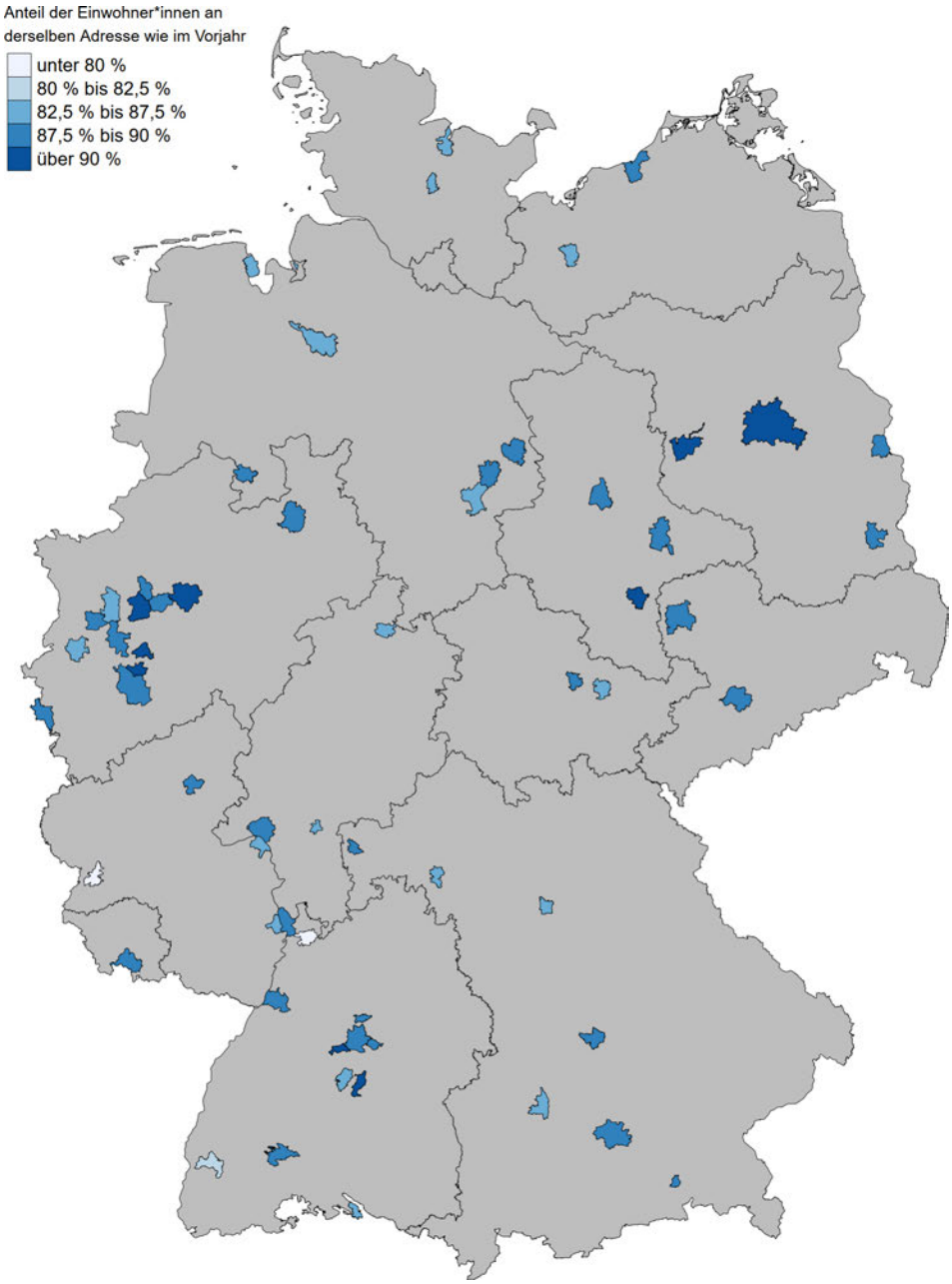

Figure 8.1: Percentage share of inhabitants at the same address as in the previous year in selected German cities (Urban Audit City Survey 2020)

stood at 91.5%, results for the university cities of Heidelberg (76.0%) and Trier (78.8%) were below 80%.

The proportion of residents (excluding infants under one) who moved within the city in the previous year as a percentage of all residents was also found to vary significantly between cities (see Figure 8.2).

Up to now, only a few countries in Europe have been able to provide this city-level data (Belgium, Estonia, Finland, and Latvia) and European comparisons are currently only possible to a limited extent. The city with the highest percentage of inhabitants residing at the same address as in the previous year is Narva, Estonia, with a share of 94.7%. In the Finnish City of Tampere, considerably fewer residents were still at the same address (79.6%) but this fluctuation is still below the levels observed in the

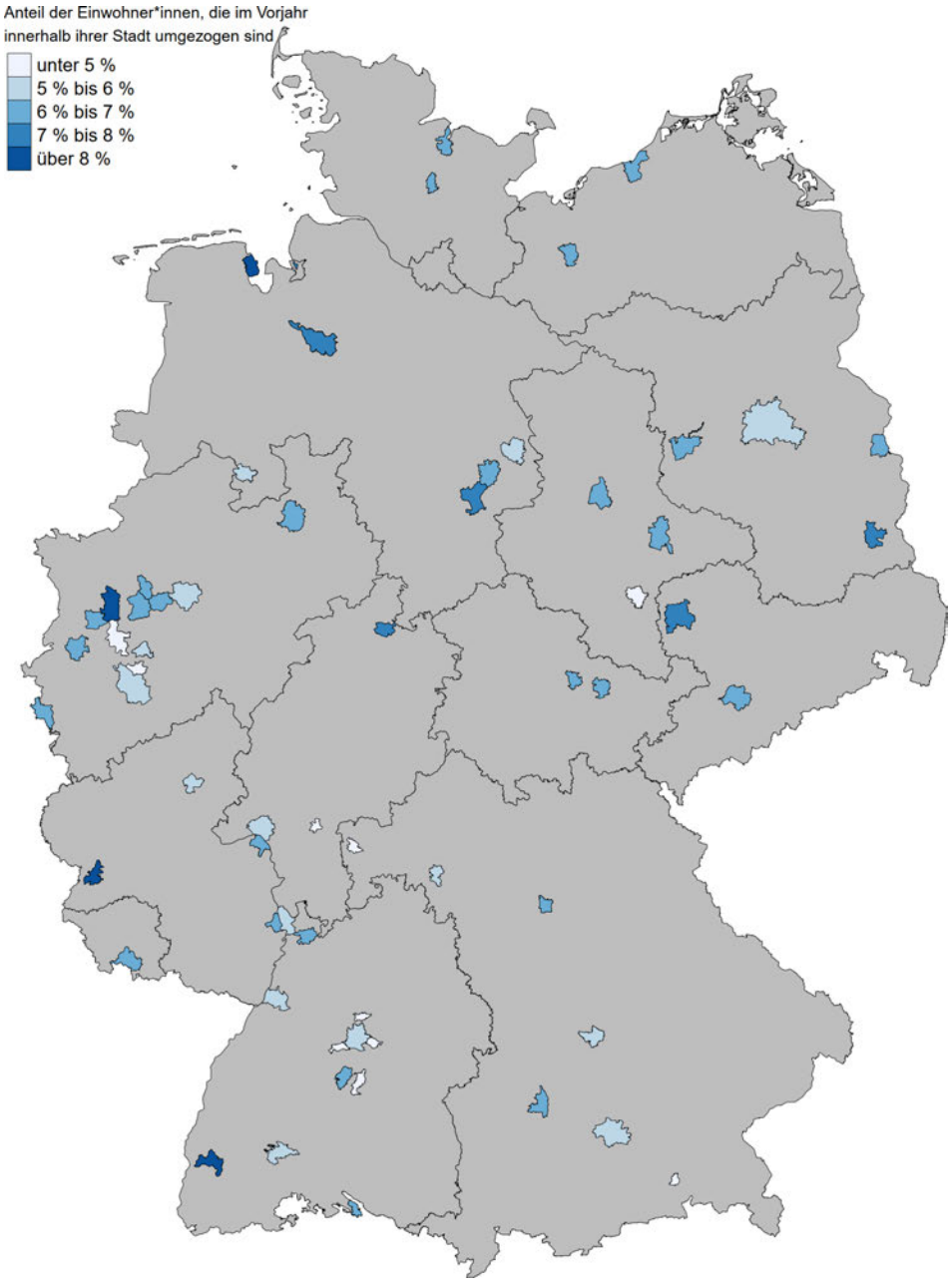

Figure 8.2: Percentage share of inhabitants who moved within the city in the previous year in selected German cities (Urban Audit City Survey 2020)

German cities of Heidelberg and Trier. However, the proportion of residents who had moved within Tampere in the previous year is comparatively high at 13.2% and similar results are seen for the Finnish cities of Helsinki (13.4%), Oulu (13.2%), and Kuopio (13.0%) – this initial information points to the existence of interesting differences at country level.

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9 The Overhauled Structural Data Atlas

Nassima Ouaarous

Alongside the Perception Survey Atlas, the Structural Data Atlas is the second Urban Audit product that illustrates data from the City Statistics project in Germany in dynamic reports. Like the Perception Survey Atlas, it is an InstantAtlas project and the user interface has the same structure allowing for user-friendly, intuitive navigation, and easy access to its features. The Structural Data Atlas can be accessed from the Urban Audit website (www.urbanaudit.de) by selecting the menu item ‘Daten und Auswertungen’ (‘Data and evaluations’).

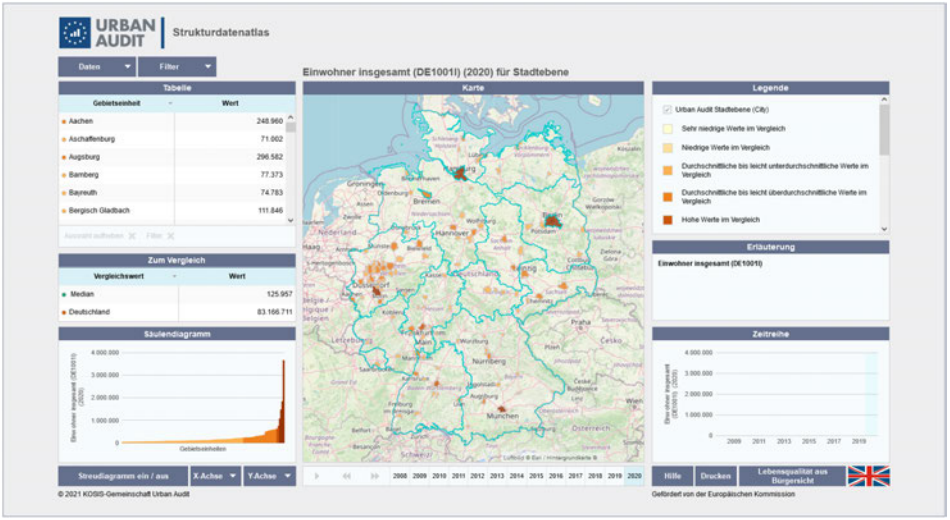


Figure 9.1: Overall view of Structural Data Atlas

The interactive report contains data on many indicators related to diverse topics affecting society. The ‘Topic’ button in the Structural Data Atlas opens a menu from which individual topics can be selected. In the course of updating the Structural Data Atlas, these topics were fundamentally overhauled and slightly restructured. Indicators that are no longer contained in the data catalogue of the EU or for which no current data has been available for quite some time have been deleted. The Structural Data Atlas has been pruned back for the sake of clarity and to facilitate concentrating on especially relevant indicators and updating them in the timeliest fashion possible.

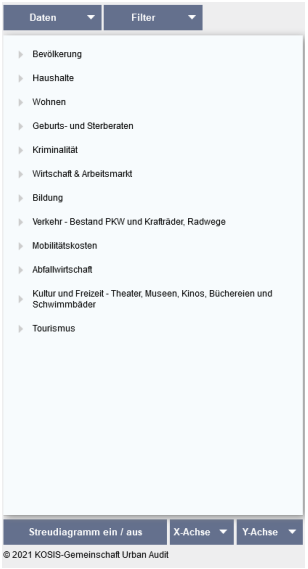
127 German cities are currently represented in the data collection and in the Structural Data Atlas. The ‘Filter’ button opens a menu that can be used to refine the selection of data to be displayed by, for example, filtering by federal state, city type, or whether cities are districts in their own right or belong to districts. The selected data for all cities or any selected cities can then be displayed on the map and viewed in its geographical context. Clicking on a specific city on the map highlights the data for that city in colour in the table and the bar chart that are adjacent to the map. It is also possible to see changes over several years in the time series data.

A key feature of the Structural Data Atlas is that data are presented at more than one level and more specifically at the levels of both cities and functional urban areas. The latter are, however, currently being comprehensively redrawn (see Chapter 7). The newly defined areas will be valid from the beginning of the next funding period (in June 2022) and the FUA level will only be reintegrated into the Structural Data Atlas again once this process is complete.

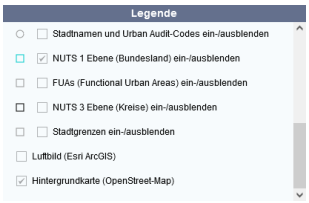
In the map view, users can select a background map (aerial photo or OSM map) and opt to show or hide various area boundaries. District boundaries and the boundaries of the functional urban areas (status: as of 2020) can be displayed in addition to city boundaries.

An explanation box on the right-hand side gives additional details on indicators for which it cannot be assumed that their definitions and explanatory power are generally known. This is intended to make interpreting the variables easier and to make the data comprehensible to members of the public without in-depth knowledge of statistics and familiarity with the definitions of such indicators as the old-age-dependency ratio or the youth dependency ratio. Going beyond this, a link will be provided here in the future to enable users to click through to the Urban Audit information portal. All the source data are contained there along with references and footnotes.

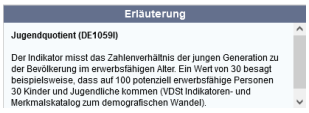
Selecting and filtering data:



Legend:



Explanation box:



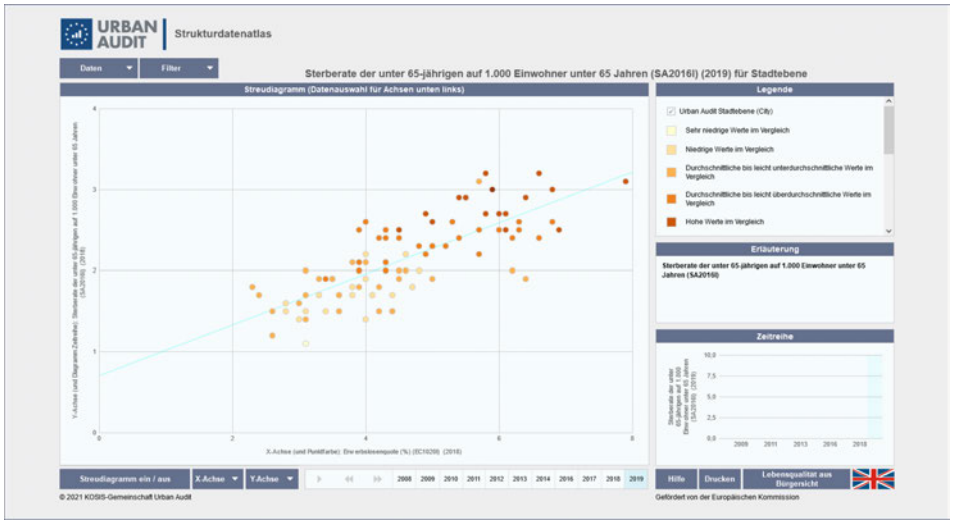


Figure 9.2: Scatter diagram

In our experience, the Urban Audit Structural Data Atlas is of value primarily because of its clear presentation of data related to many territorial entit-

ies. The interactive map allows regional differences to be identified quickly and easily. The features implemented make it possible to display changes over time with just a few clicks. In addition to these illustrative functions, statistical correlations can also be shown with the help of the scatter diagrams.

Help function:

Detailed descriptions of all the functions described here and other useful information can be accessed via the ‘Help’ button.

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A Contacts and responsibilities

KOSIS-Gemeinschaft Urban Audit

In Germany, the KOSIS Association Urban Audit acts as the project partner for data collection to support the European urban comparison. In 2020, the City of Mannheim was elected as the managing office for another year. The project is supervised by the municipal statistical office of Mannheim. The managing office is responsible for business management, represents the association within its mandate, heads the steering group, carries out bookkeeping, and manages the funds of the association.

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The director of the Municipal Statistics Office of the City of Mannheim, Dr Ellen Schneider, is responsible for the managing office.

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Tobias Link is the executive secretary of the managing office who oversees and coordinates the project with the European Union in collaboration with the Federal Statistical Office.

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Ms Nassima Ouaarous is the contact person for the KOSIS Association Urban Audit in all matters relating to the collection of structural data.

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DESTATIS wissen.nutzen.
www.destatis.de

The Federal Statistical Office is the project coordinator for the structural database and therefore the point of contact for Eurostat for all legal and financial matters. The contact person at DESTATIS is Gabriele Rutmann.

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eurostat

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Eurostat Directorate E, Sectoral and Regional Statistics, has overall responsibility for the project. The contact person is Teodora Brandmüller in Regional Statistics and Geographical Information.

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VDSt

The German survey, carried out parallel to the European survey on the quality of life from a citizen's perspective, is coordinated by the VDSt (Association of German Municipal Statisticians) Survey Working Group (VDSt AG Umfragen).

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B Publications

Copies of all publications of the KOSIS Association Urban Audit may be requested at no charge from urbanaudit@mannheim.de. The PDF versions are available for download in the download section of the website www.urbanaudit.de – there you can also find many other national and international publications on the topic of Urban Audit.

Quality of Life: Establishing New Data Sources (2019): This brochure takes up the challenge of new and alternative data sources and methods for measuring and monitoring urban quality of life. Exemplary model projects from the Urban Audit data collection or various cities are presented.

Quality of Life in the City and Suburban Areas (2017): The main focus of the Urban Audit brochure 2017 is the exploration of existing data for cities and their suburban areas and the testing of open geodata as an alternative data source. Overall, the brochure takes into account the growing importance of the urban dimension, not only at European level. Also available in English.

Regionalisierung des Mikrozensus für den europäischen Städtevergleich (Regionalisation of the micro-census for a comparison of European cities) (2016): This brochure documents the small estimation method which enables the utilisation of results from the regular micro-census survey and the registered statistics from the Federal Employment Agency for showing small, regionalised, socio-economic reference features.

Data – indicators – information (2015): The focus of this brochure is on the utilisation of comparative urban data. Let these national and international examples inspire you! Also available in English.

Comparison of Cities in the European Statistical System (2013): The compact brochure provides interesting information on the project background, organisation, and use of data for the German Urban Audit. Also available in English.

URBAN AUDIT

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