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# **Multi-scalar influences on mortality change over time in 274**

## **European cities**

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## **ABSTRACT**

Understanding determinants of urban health is of growing importance. Factors at multiple scales intertwine to influence health in cities but, with the growing autonomy of some cities from their countries, city population health may be becoming more a matter for city-level rather than national-level policy and action. We assess the importance of city, country, and macroregional (Western and East-Central Europe) scales to mortality change over time for 274 cities (population 80 million) from 27 European countries. We then investigate whether mortality changes over time are related to changes in city-level affluence. Using Urban Audit data, all-age all-cause standardised mortality ratios (SMRs) for males and females were calculated at three time points (wave one 1999-2002, wave two 2003-2006, and wave three 2007-2009) for each city. Multilevel regression was used to model the SMRs as a function of survey wave and city region gross domestic product (GDP) per 1000 capita. SMRs declined over time and the substantial East-West gap narrowed slightly. Variation at macroregion and country scales characterised SMRs for women in Western and East-Central European cities, and SMRs for men in East-Central European cities. Between-city variation was evident for male SMRs in Western Europe. Changes in city-region GDP per capita were not associated with changes in mortality over the study period. Our results show how geographical scales differentially impact urban mortality. We conclude that changes in urban health should be seen in both city and a wider national and macroregional contexts.

**KEYWORDS:** Cities, European Union, health policy, longitudinal, mortality, urbanisation

## **BACKGROUND**

The World's urban population is forecast to reach almost 5 billion by 2030 (Fragkias et al., 2013). Over 70% of Europe's 740 million inhabitants already live in cities (United Nations, 2013, 2014). Population health in Europe, and globally, is increasingly determined by the health of city dwellers. Whilst we know that there are substantial variations in health status between the countries of Europe (Leon, 2011; Mackenbach et al., 2013; Richardson et al., 2014), it is not clear whether these associations are replicated between cities across Europe.

There are reasons why the health status of cities might be different to that of the rest of a country. Historically this possibility was reflected in the debate over the existence of an urban penalty or an urban advantage (Moon & Kearns, 2014; Vlahov et al., 2005). In contemporary Europe many cities have now become increasingly dissimilar from their countries due to starkly different trajectories of demographic and economic development (Brenner, 1998; Salet et al., 2003). Younger more affluent urban areas may hold a health advantage; conversely urban economic crises and ageing city populations may link to poorer health. Further, in recent years there has been a devolution of resources and policy responsibilities to the city or regional level in many European countries, including the UK, Belgium, Italy, and Spain (Scully & Jones, 2010; Telò, 2014). Key decisions on health-related policy realms, that were once the preserve of central governments, are now often taken at the city level, albeit within a national framework. As a result, cities may develop health-influencing characteristics that are distinct from the rest of their country and/or from other cities within the same country: different labour markets, infrastructure, physical environments, and health care provision. Together, these contentions suggest the

importance of geographical scale in the study of health outcomes (Kim & Subramanian, 2016).

Two broader structural influences overlay the juxtaposition of country and city as scales affecting the health of city residents. First, and of particular relevance in the European context, supranational groupings of countries, or 'macroregions', differ in their social and economic development trajectories. The major divide in health between Western Europe and the Central and East-Central European countries of the former Soviet bloc has been well documented, reflecting historical political and economic divisions (Marmot, 2013).

Population health in Central and East-Central Europe remains generally worse than in the West, although there are indications that it is improving rapidly in some countries (Leon, 2011; Vågerö, 2010).

Second, and more generally, whilst a range of social, political and environmental factors are likely to influence health in European cities, affluence is likely to be a major determinant of differences in urban health (Borrell et al., 2013). Associations between affluence and population health are well established between countries (Marmot, 2005; Pearce & Dorling, 2009), but the extent to which the uneven changes in health across European cities are a function of changes in affluence is less clear. Addressing this omission is important because a better understanding of the relationship between trajectories in health and affluence will assist in identifying policy levers for improving health and reducing inequalities across Europe.

In this paper we use novel data to investigate the extent to which changes in the health of city populations across Europe reflect variations at the ‘city-level’, the ‘country-level’, and the macroregion (East-Central or Western Europe), and taking into account changing affluence. Comparisons of health between the cities of different European countries have, to date, been cross-sectional and have either focussed exclusively on cities in Western Europe (Baccini et al., 2008; Gray et al., 2012), or included only a small fraction of East-Central European cities (Gotsens et al., 2013; Katsouyanni et al., 2001). The relative contribution of city-, country-, and macroregion to city health trajectories is unknown and there has been limited specific focus on city health. Our research questions were thus: i) how do variations in city mortality over time differ in relation to the city, country, and macroregion scale?, and ii) are variations in urban mortality over time related to variations in the affluence of the area in and around the city?

## **METHODS**

We conducted a repeated measures panel study of city-level mortality over three waves of the European Urban Audit. Assembling and curating our data was a substantial task, which we outline first prior to describing our analytical strategy.

### ***Data***

The Urban Audit was established to provide reliable and comparable information about the characteristics of European urban areas with more than 50,000 inhabitants (termed ‘cities’). It sought to represent at least 20% of the population of each country and included all capital cities, most regional capitals and a range of smaller cities. Three waves were available for analysis: 1999-2002 (‘wave one’), 2003-2006 (‘wave two’), and 2007-2009 (‘wave three’). By

wave three, the Urban Audit included cities in each of the then EU countries except Cyprus, plus cities in Croatia, Turkey, Norway and Switzerland. We excluded cities distant enough from the European mainland that they might be considered atypical ( $n=8$ ; e.g., Funchal, Madeira (Portuguese); Saint-Denis, Réunion (French)).

Urban Audit mortality and demographic data at each wave were obtained from Eurostat. This provided all-age, all-cause mortality counts by sex, city, and wave. Age- and sex-specific counts were not available, precluding direct standardisation. We calculated indirectly standardised mortality ratios (SMRs), standardised to 2001, to render rates comparable between cities and over time. For each wave and city we calculated the 'expected' number of all-age all-cause deaths, by applying average age group- and sex-specific mortality rates for a Europe-wide reference population from 2001 to the city's age group- and sex-specific population counts, and summing the result. The age groups were 0-4, 5-14, 15-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-74, and 75+. The reference population was that of the 21 Urban Audit countries providing complete data in the WHO Detailed Mortality Database (DMDB): Bulgaria, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom. The age- and sex-specific mortality rates for this population were considered to represent the best available approximation of average rates for the Urban Audit cities. Five UA countries with SMR data – Belgium, Italy, Ireland, Portugal, and Denmark – were absent from the reference population. Their absence did not affect our subsequent results, therefore cities in these countries were retained in our analyses. Each city's 2001-referenced SMR was calculated as (observed

deaths)\*100/(expected deaths). A value below/above 100 indicated a standardised mortality ratio lower/higher than the reference population average for 2001.

City-specific measures of affluence were not available in the Urban Audit. We obtained gross domestic product (GDP) per capita from Eurostat for the wider 'city-region' in which each Urban Audit city was situated. City-regions were defined as level 3 of the Nomenclature of Units for Territorial Statistics (NUTS), a standard European unit for statistical reporting. On average, Urban Audit cities contained 53% of the population of their host NUTS3 area. GDP was expressed in purchasing power standards, an artificial unit of currency enabling comparisons of GDP across countries with different currencies and costs of living. Average GDP per capita was calculated for the years covered by each wave. Wave one GDP per 1000 capita was averaged over 2000 to 2002 due to missing data in 1999.

### ***Data quality***

Urban Audit data were collated from multiple countries with differing mechanisms and standards of statistical reporting, hence data quality was a concern and we checked the datasets extensively. Outlying SMR values (>2 standard deviations from expectations based on regional (NUTS2) or national mortality rates) were deemed suspect. Wave one mortality data for Spanish cities ( $n=13$ ) were excluded as a result, as well as a further 3%, 2%, and 5% of other cities with SMRs for waves one, two, and three, respectively. Missing GDP data resulted in the exclusion of cities in Norway, Switzerland and Turkey as well as all bar one city in Italy. The online supplementary data table gives details of excluded and included cities. The resulting dataset represented an average of 80 million people at each wave for



218 cities in wave one, 257 in wave two, and 196 in wave three. A total of 274 cities were represented in the dataset with 144 cities present in all waves.

### ***Analyses***

We chose to run separate models for East-Central and Western European cities, given the well-established European health divide between Western Europe and the countries of the former Soviet bloc (Mackenbach et al., 2013). East-Central European cities were those in Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Hungary, Romania, Slovenia, Croatia, and Bulgaria plus those located in the former German Democratic Republic (n=5; recreated as a country for the purposes of analysis). We also conducted separate analyses by sex in recognition of the clear evidence of disparities in health between men and women (Bambra et al., 2009). Our decision to pursue stratified analyses reflected a desire to ease interpretation and recognise distinctive geographical processes and gendered differences in the experience of mortality. An alternative strategy modelling a single large dataset and testing for interactions by macroregion and gender would have added needless complexity to our modelling.

Multilevel linear regression models were used to model city-level SMR variation while accounting for the nesting of repeat observations (waves) within cities within countries. Multilevel modelling can address 'unbalanced' data (we had variable numbers of repeat observations per city) and produce accurate and precise estimates of variation at the city and country level taking account of the clustering within the data; multilevel models are computationally far more efficient than proceeding with multiple dummy variables at city and country level (Goldstein et al., 1994). We first ran a null model that estimated the SMR

for wave  $i$  in city  $j$  in country  $k$  with no predictors. We then added an indicator of wave as a fixed effect, using a single order orthogonal polynomial allowing the wave indicator to be treated as a continuous variable; next we allowed the slope of our wave indicator to vary between cities and between countries. Finally GDP per 1000 capita was added as an additional fixed effect and tested for random intercepts and slopes at the city level; random slopes proved unnecessary. We report results for our final models, which took the form:

$$SMR_{ijk} = \beta_{0ijk} + \beta_{1jk}wave_{ijk} + \beta_3GDP_{ijk}$$

Where  $\beta_{0ijk} = \beta_0 + v_{0k} + u_{0jk} + e_{0ijk}$  (with  $v$ ,  $u$  and  $e$  denoting random intercepts at each level: country, city and wave)

And  $\beta_{1jk} = \beta_1 + v_{1k} + u_{1jk}$  (with  $v$  and  $u$  denoting random slopes for wave at country and city levels)

Models were fitted using MCMC methods, in MLwiN version 2.35 (Browne, 2015; Rasbash et al., 2015). The modelled variances at country, city and wave levels were summed and the percentage of variance at each level was calculated to indicate how the variability in SMRs was partitioned. A pairwise comparison of means test was used to examine differences in the modelled SMRs between groups. We tested for residual heteroscedasticity and other assumptions using graphical diagnostics and found no significant problems; re-running models with logged outcomes confirmed our results and upheld this position.

## RESULTS

***i) How do variations in city mortality over time differ in relation to the city, country, and macroregion scale?***

Average fitted SMRs are presented in Figure 1. At wave one, fitted male SMRs averaged 90.904 (86.193 - 95.613) and 129.450 (113.751 - 145.753) in Western and East-Central European cities respectively. The corresponding fitted SMRs for females were 94.123 (87.545 - 100.661) and 114.668 (103.845 - 125.390). Pairwise comparisons of means showed that the fitted SMRs for Western European cities were significantly lower than those for East-Central European cities throughout the period: the difference for males was 38.55 points in wave one, reducing to 26.51 points in wave three. For females it was 20.55 points in wave one and 15.87 points in wave three. SMRs generally fell over time: pairwise comparisons of means showed that the fitted SMRs for wave three were significantly lower than those for wave one for all groups except Western European females. On average SMRs decreased by 17.63 (14.4 to 22.4) and 6.85 points for East-Central European males and females, respectively, and by 5.59 points for Western European males.

(Figure 1 here)

The partitioning of SMR variance between the country, city and wave levels is indicated in Table 1. For males in Western European cities, the city-level (51.6% of variance) was more important than the country-level (40.6%). The opposite was found for females from both East-Central and Western Europe and for East-Central European males (<19.0% of the variance in the SMR was at the city level, and >76.0% at the country level).

(Table 1 here)

Table 2 presents the results from the multilevel models that underlie the above figures. Wave was significant as a fixed effect on SMR only for men and the gradient of the decline in SMR over time was stronger in East-Central Europe than in Western Europe. There were significant differences between countries in Western Europe with respect to the average SMR for women, and significant between-country variations in the slope of the association between wave and SMR for Western European women. Other random coefficients at the country level were not significant. All models showed significant between-city variation, but there was no evidence for significant variations at the city scale in the slopes of the association between wave and SMR. The only covariance term within the models to reach statistical significance suggested convergence of SMRs over time in East-Central Europe at the country level.

***ii) Are variations in city mortality over time related to variations in city affluence?***

Table 2 also provides results for our second research question. In both East-Central and Western European cities an increase in GDP per 1000 capita was associated with statistically non-significant decreases in SMR after adjusting for the effect of wave. These reductions were marginally greater for men than women but still statistically non-significant. Further tests for interactions between wave and affluence and for random variation in the effects of affluence were not significant, did not impact model parameters and are not presented here.

**DISCUSSION**

We compared mortality change over time (1999 to 2009) for 274 cities in 27 European countries. These cities are home to approximately 80 million people, making this the largest

study of changing urban mortality in Europe to date. City-level mortality decreased over time, but the East-West mortality gap, evident previously mainly in national comparisons (Leon, 2011), has additionally been shown to persist at the city level across our period of analysis.

Between-country differences explained more of the decline in urban women's SMRs than between-city differences, whether in East-Central or Western Europe, suggesting that country-level factors – such as welfare state provision or educational policy – have a greater influence on the mortality trajectories of female city dwellers than city-level factors. The importance of such country-level factors in explaining international differences in urban health provides a large-scale confirmation of previous research on the importance of national social policy to women's health (Bambra et al., 2009; Eikemo et al., 2008; Jamison et al., 2007; Niedzwiedz et al., 2016; Safaei, 2009). We extend this work by showing that, while national factors may impact female SMRs most, significant differences in that impact between countries are only evident in Western Europe. We also show that, though SMR variation at the city level is less important than country-level variation (except for men in Western Europe), there is significant variation for both sexes between cities in both East-Central and Western Europe. This variation is greater for men and adds weight to contentions that cities are of increasing importance to understanding health variations in Europe (Verma et al., 2015), providing a counterpart to research on the significance of urban health in other contexts (Galea et al., 2005).

Our finding of significant between-city variation in SMRs takes account of trajectories over time and the potential influence of GDP. With this in mind, some cities emerge as outliers in

our analyses. In Western Europe, in line with previous work (Walsh et al., 2010), Glasgow and Liverpool (both UK) have much higher male and female mortality than expected on the basis of trend and GDP. The suggestion that higher SMRs might thus be associated with struggling post-industrial urban areas (Walsh et al., 2009) is supported by the presence of Lens (France) as another large positive residual. In East-Central Europe a similar pattern is evident with the deindustrialising Polish city of Łódź providing a clear positive residual for both men and women. Negative residuals, with lower than expected SMRs, tended to be smaller cities with tourism economies in East-Central Europe and service economies in affluent parts of Western Europe.

Over our relatively short study period, only male SMRs have declined significantly, with the sharpest decline evident in East-Central Europe. A non-significant decline for female SMRs in Western Europe masks significant variation between Western European countries, as well as variations between cities as noted above. Urban SMRs may be improving for men because men are advancing from a generally worse position and the more rapid improvement in East-Central Europe reflects the historic impact of East-West differentials (Bijak, 2013). Variation between countries in Western Europe for women is evident in higher than expected SMRs in the UK, Ireland, the Netherlands, Denmark and Greece and lower than expected outcomes in Spain and France. Gender rights and labour force participation may be implicated but these differentials require further research. Some studies suggest that men's health is more susceptible to local labour market factors (Bellaby & Bellaby, 1999), while wider national influences (e.g., family-related policies) may have greater relevance for women's health (Borrell et al., 2004; Chandola et al., 2004).

It is encouraging that falls in mortality ratios have been most rapid in East-Central European cities, leading to a narrowing over time of the East-West mortality gap for the cities included in the study. All East-Central European countries in our study were part of the EU by 2013, and most joined in 2004. EU enlargement, and the resulting large-scale migration to the West that it facilitated from many but not all East-Central European countries, might have been expected to widen East-West differences within the EU as international migrants tend to be healthier than those remaining in their country of birth (Gadd et al., 2006). Several factors may explain why this did not happen. Vågerö suggested that joining the EU resulted in health benefits for former socialist states, while those remaining outwith the EU continued to show increasing health disadvantage compared with the West (Vågerö, 2010). The extent to which these improvements were caused by EU membership, or coincided with it, is unclear but it is plausible that the processes of fiscal and policy alignment that preceded joining the EU, and the economic boost that followed, impacted particularly positively on cities. Equally, it is also possible that the improvements evident over the span of our study were the same as those experienced earlier in Western countries as a result of rising standards of living (Mladovsky et al., 2005). Hence while our findings indicate narrowing of the East-West gap in mortality between the cities of EU countries, the broader East-West health divide between European countries is still a topic of concern (Mackenbach et al., 2013; Mackenbach et al., 2015).

The absence of a significant relationship between changes in affluence and changes in mortality over time was intriguing. We know that the association between affluence and health is a life-long process, with living conditions and environment in childhood continuing to hold influence on health for the remainder of the life span (Galobardes et al., 2004). The

decade covered in this study was a brief period for changes in affluence to exert much influence on mortality rates, particularly if effects were lagged. Our GDP measure may also have been acting as a proxy for multiple aspects of the urban environment, including labour market conditions and stability.

Despite the known association between affluence and health-related behaviour (eg. Chaix & Chauvin, 2003), our GDP measure may also have failed to pick up city-level aggregations of compositional factors. While it was not an objective of this paper to inquire into the multiple determinants of urban health beyond the key affluence variable, we know that individual-level factors such as smoking and drinking are stronger determinants of health than contextual factors but individuals with similar behaviours tend to aggregate spatially (Pickett & Pearl, 2001). Hence collective behaviour is likely play a part in determining city health. Moreover, there is a wealth of evidence to indicate that 'lifestyle' factors (including the consumption of alcohol, tobacco and highly-processed food) are heavily influenced by other contextual factors that vary between cities (see for example Barnett et al. (2016) on smoking and Witten and Pearce (2016) on diet and physical activity). Future work could usefully explore the importance of these, and other, city-level factors. The Urban Audit is a European-wide dataset that is appropriate for these analyses but further work will require the gathering of new data beyond the scope of the present study.

### ***Limitations***

Our work had a number of limitations. First, the data were sourced from separate national administrations, and some reliability issues were identified. To address this we carefully



checked and omitted problematic data. Second, we selected all-age mortality counts because they were available for the largest number of cities but recognise that these will have been affected by population distribution differences between cities (e.g., older populations in some cities than others). Our indirect standardisation will have helped reduce the effect of these age-structure differences. Third, cause-specific mortality or morbidity measures would have been more helpful in suggesting suggest potential causative pathways but were unavailable in the Urban Audit. Fourth, whole-country mortality data were used for standardising the city mortality rates because detailed city-level data were unavailable. Urban-rural health differences may have had an effect on the resulting SMRs. Fifth, the GDP data we used generally pertained to larger areas than the cities they were intended to represent, particularly in the case of small cities. These areas (NUTS3 regions) are defined differently in each country. Hence, although unavoidable due to the absence of more complete data at the city level, detection of any influence of GDP on mortality ratios may have been compromised by this mismatch.

## **CONCLUSIONS**

This study of mortality trends in European cities adds to our understanding of urban health in Europe, and may also have implications for global urban health. As many cities around the world become ever more economically and socially distinct from their countries, the temptation is to view their population health as a matter for city-level policy and action. Our study sustains this viewpoint but also suggests that we need to see urban health in its wider national and macroregional context, even in areas such as Europe that are dominated by large and powerful cities. The urbanisation of the world's population is occurring quickly and

extensively; public health practitioners must be aware of that a range of geographical scales impact on the health of urban dwellers. The influence of city, national and supra-national scales reminds us of both the complexity of population health, but also the need to avoid single-scale approaches and policies to protecting and improving health.

#### **LIST OF ABBREVIATIONS USED**

EU European Union

GDP Gross domestic product

NUTS Nomenclature of Units for Territorial Statistics

SMR Standardised mortality ratios

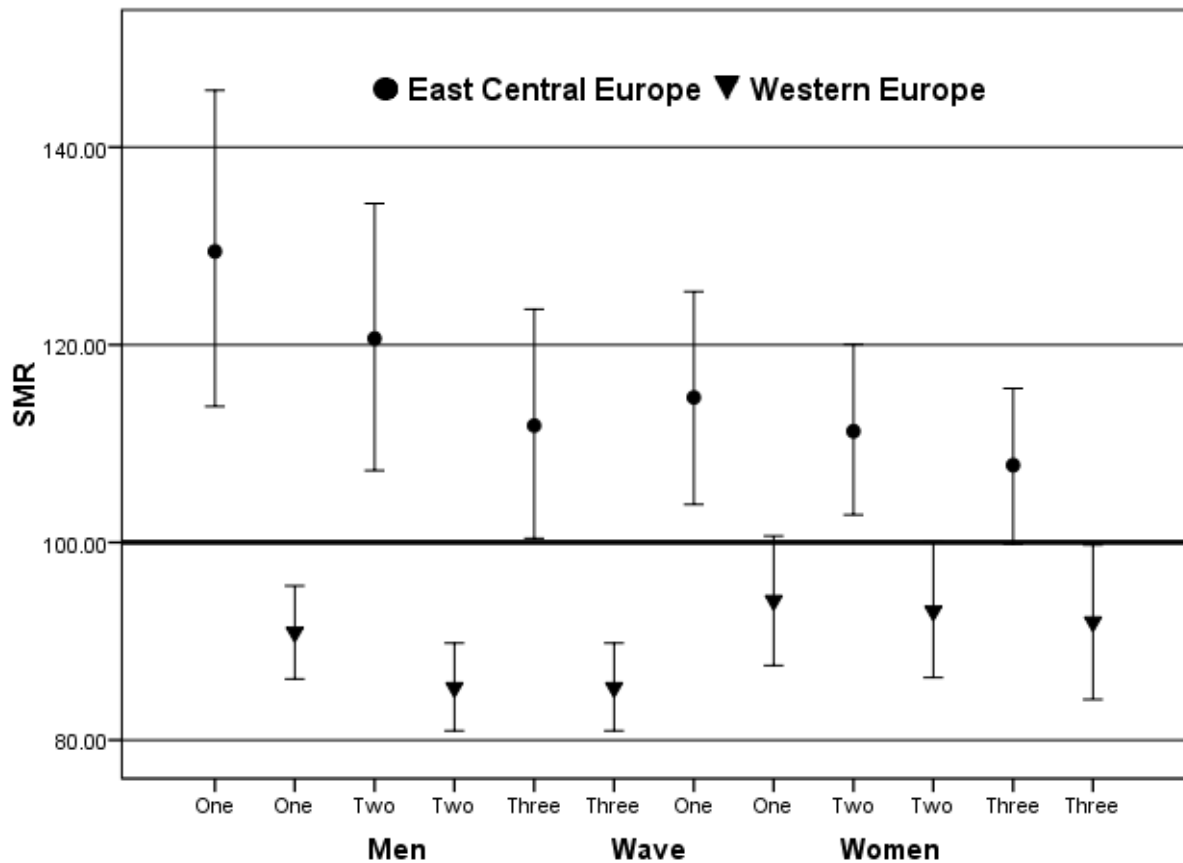
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Figure 1. SMR change over time: mean fitted SMRs for 179 Western European and 95 East-Central European cities, by sex, by wave.



Footnotes:

Error bars indicate 95% confidence intervals.

Wave one: 1999-2002; wave two: 2003-2006; wave three: 2007-2009.

**Table 1. Partitioning of the variance in Standardised Mortality Ratios (SMRs) (%).**

Level	Male		Female	
	Western Europe (n=401)	East-Central Europe (n=270)	Western Europe (n=416)	East-Central Europe (n=255)
<b>Country</b>	40.6	83.9	76.4	77.4
<b>City</b>	51.6	11.7	18.2	14.2
<b>Wave</b>	7.8	4.4	5.4	8.4
<b>Total</b>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

n=total of SMRs in each model

**Table 2. Final Multilevel Model Results**

	Western Europe		East-Central Europe	
<b>Fixed part</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
Intercept	85.34 (2.20)	92.96 (3.49)	120.33 (7.07)	111.14 (4.40)
Wave	<b>-7.94 (1.17)</b>	-1.58 (1.40)	<b>-12.38 (3.29)</b>	-4.84 (2.47)
GDP/1000	-0.10 (0.06)	-0.06 (0.05)	-0.12 (0.15)	-0.04 (0.13)
<b>Random part - Country</b>				
Intercept	56.06 (29.34)	<b>173.33 (77.00)</b>	581.39 (304.97)	230.12 (119.54)
Wave Slope/ Intercept Covariance	0.42 (11.08)	26.19 (22.37)	-141.35 (106.68)	-56.92 (46.83)
Wave Slope	14.95 (8.55)	<b>23.96 (11.87)</b>	112.66 (61.84)	58.81 (32.93)
<b>Random part - city</b>				
Intercept	<b>71.37 (8.64)</b>	<b>41.37 (5.40)</b>	<b>81.27 (14.73)</b>	<b>43.99 (9.18)</b>
Wave Slope/ Intercept Covariance	-0.76 (1.32)	3.94 (2.40)	<b>-12.45 (5.55)</b>	-0.07 (0.73)
Slope	0.08 (0.19)	2.33 (1.52)	4.40 (2.80)	0.04 (0.14)
<b>Random part- wave</b>				
Intercept	<b>10.79 (1.06)</b>	<b>12.079 (1.31)</b>	<b>30.37 (3.67)</b>	<b>35.228 (4.05)</b>

Footnote:

**Bold** denotes statistical significance ( $p > 0.05$ ; Likelihood Ratio Test)



## **COMPETING INTERESTS**

The authors declare that they have no competing interests.

## **AUTHORS' CONTRIBUTIONS**

JP, RM, NKS and EAR were responsible for the design of the study. EAR was responsible for assembling and managing the data. EAR and GM conducted the analysis. All authors contributed to the interpretation of the results and writing of the manuscript. All authors have approved the final version of the manuscript.

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# Multi-scalar influences on mortality change over time for 274

## European cities

### SUPPLEMENTARY DATA (ONLINE ONLY)

Standardised Mortality Ratios (SMRs, 2001-referenced) calculated for 364 Urban Audit cities for which appropriate data were available, with superscript letters indicating the reason for exclusion from the analysis, where appropriate:

<sup>a</sup> Excluded due to distance from European mainland.

<sup>b</sup> Incomplete mortality and/or population data, hence no SMR was calculated.

<sup>c</sup> No GDP per capita data.

<sup>d</sup> Judged to be unreliable (see text).

<sup>e</sup> Excluded because no male SMR

W Western Europe

E East-Central Europe

GDR Former German Democratic Republic (East Germany)

Country			Male SMR			Female SMR		
(Macroregion)	Urban Audit code	City	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Belgium (W)	BE001C	Bruxelles / Brussel	98.1	92.3	87.3	99.5	97.6	93.7
	BE002C	Antwerpen	92.4	88.5	83.7	93.2	90.2	90.3
	BE003C	Gent	98.3	91.9	81.4	91.8	89.1	87.7
	BE004C	Charleroi	118.6	115.4	111.3	108.1	100.4	104.3
	BE005C	Liège	110.1	98.5	97.7	100.6	97.5	99.8
	BE006C	Brugge	80.5	81.2	73.3	90.3	75.7	79.7
	BE007C	Namur	<sup>b</sup>	107.4	91.4	<sup>b</sup>	86.8	87.2
Bulgaria (E)	BG001C	Sofia	137.5	133.6	127.9	133.8	125.6	122.3
	BG002C	Plovdiv	140.8	136.2	127.5	135.6	119.7	117.1
	BG003C	Varna	140.9	138.8	126.1	143.3	123.3	119.8
	BG004C	Burgas	150.8	146.1	132.4	139.0	135.3	121.7
	BG005C	Pleven	141.4	139.8	134.0	136.8	137.7	114.9
	BG006C	Ruse	149.6	141.6	130.2	147.1	128.8	135.6
	BG007C	Vidin	153.7	155.1 <sup>d</sup>	153.9 <sup>d</sup>	163.0	173.3 <sup>d</sup>	145.8 <sup>d</sup>
	BG008C	Stara Zagora	<sup>b</sup>	<sup>b</sup>	124.8	<sup>b</sup>	<sup>b</sup>	120.6
Switzerland (W)	CH001C	Zürich	87.9 <sup>c</sup>	83.6 <sup>c</sup>	76.6 <sup>c</sup>	94.2 <sup>c</sup>	97.3 <sup>c</sup>	85.2 <sup>c</sup>
	CH002C	Genève	75.3 <sup>c</sup>	67.7 <sup>c</sup>	71.6 <sup>c</sup>	71.4 <sup>c</sup>	67.9 <sup>c</sup>	70.5 <sup>c</sup>
	CH003C	Basel	93.8 <sup>c</sup>	84.8 <sup>c</sup>	80.1 <sup>c</sup>	100.0 <sup>c</sup>	87.1 <sup>c</sup>	81.6 <sup>c</sup>
	CH004C	Bern	93.0 <sup>c</sup>	78.9 <sup>c</sup>	71.9 <sup>c</sup>	94.1 <sup>c</sup>	92.1 <sup>c</sup>	87.3 <sup>c</sup>
	CH005C	Lausanne	88.6 <sup>c</sup>	81.5 <sup>c</sup>	71.3 <sup>c</sup>	82.9 <sup>c</sup>	78.2 <sup>c</sup>	79.0 <sup>c</sup>
	CH006C	Winterthur	86.6 <sup>c</sup>	82.2 <sup>c</sup>	70.4 <sup>c</sup>	90.6 <sup>c</sup>	99.3 <sup>c</sup>	84.4 <sup>c</sup>
	CH007C	St. Gallen	82.5 <sup>c</sup>	<sup>b</sup>	69.8 <sup>c</sup>	95.3 <sup>c</sup>	<sup>b</sup>	79.9 <sup>c</sup>
	CH008C	Luzern	117.2 <sup>c</sup>	74.3 <sup>c</sup>	89.7 <sup>c</sup>	70.6 <sup>c</sup>	78.3 <sup>c</sup>	68.6 <sup>c</sup>
	CH009C	Lugano	77.7 <sup>c</sup>	59.2 <sup>c</sup>	61.1 <sup>c</sup>	82.2 <sup>c</sup>	70.6 <sup>c</sup>	58.7 <sup>c</sup>
	CH010C	Biel/Bienne	92.5 <sup>c</sup>	<sup>b</sup>	<sup>b</sup>	99.8 <sup>c</sup>	<sup>b</sup>	<sup>b</sup>
Czech	CZ001C	Praha	105.0	100.9	89.4	114.3	106.5	97.9

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Republic (E)	CZ002C	Brno	104.8	98.1	92.4	109.6	107.4	93.7
	CZ003C	Ostrava	135.4	130.7	118.6	128.9	114.8	108.1
	CZ004C	Plzen	102.4	108.8	94.6	116.1	111.9	93.8
	CZ005C	Usti nad Labem	131.2	132.3	110.4	118.4	111.0	103.9
	CZ006C	Olomouc	..b	100.5	94.1	..b	92.4	90.6
	CZ007C	Liberec	..b	114.6	101.0	..b	99.0	96.8
	CZ008C	Ceske Budejovice	..b	99.7	94.9	..b	96.9	92.8
	CZ009C	Hradec Kralove	..b	87.8	78.0	..b	99.7	92.8
	CZ010C	Pardubice	..b	98.1	83.5	..b	93.8	99.2
	CZ011C	Zlin	..b	102.9	97.2	..b	95.5	98.0
	CZ012C	Kladno	..b	115.6	112.2	..b	117.0	109.8
	CZ013C	Karlovy Vary	..b	112.2	96.0	..b	102.3	97.9
	CZ014C	Jihlava	..b	103.4	85.7	..b	94.6	86.2
Germany (W)	DE001C	Berlin	93.9	85.2	77.0	105.4	98.9	94.8
	DE002C	Hamburg	91.1	85.0	77.4	96.9	95.3	93.2
	DE003C	München	86.2	75.8	70.7	90.5	82.7	80.3
	DE004C	Köln	92.3	83.3	79.0	96.5	93.6	90.7
	DE005C	Frankfurt am Main	83.8	81.6	72.3	91.4	89.1	87.8
	DE006C	Essen	105.8	94.6	88.7	104.8	98.2	99.5
	DE007C	Stuttgart	83.0	72.3	69.2	89.0	81.5	80.1
(GDR - E)	DE008C	Leipzig	94.1 <sup>c</sup>	84.3 <sup>c</sup>	76.4 <sup>c</sup>	97.3 <sup>c</sup>	87.5 <sup>c</sup>	86.3 <sup>c</sup>
(GDR - E)	DE009C	Dresden	82.1 <sup>c</sup>	74.5 <sup>c</sup>	68.1 <sup>c</sup>	89.7 <sup>c</sup>	85.6 <sup>c</sup>	81.7 <sup>c</sup>
	DE010C	Dortmund	102.1	93.6	88.9	102.1	96.1	94.5
	DE011C	Düsseldorf	97.4	91.9	81.4	101.9	99.5	95.3
	DE012C	Bremen	94.6	88.1	80.9	93.2	92.7	88.4
	DE013C	Hannover	93.3	86.0	79.9	95.8	90.9	91.7
	DE014C	Nürnberg	93.4	82.8	78.0	99.3	89.2	92.7
	DE015C	Bochum	101.6	85.7	85.9	102.4	94.3	97.1
	DE017C	Bielefeld	86.8	79.7	79.4	88.8	91.1	86.9
(GDR - E)	DE018C	Halle an der Saale	103.0	91.8	87.8	98.2	93.3	94.8
(GDR - E)	DE019C	Magdeburg	100.4	86.8	84.3	102.4	100.5	87.6
	DE020C	Wiesbaden	85.3	79.6	72.7	103.9	91.3	93.5
	DE021C	Göttingen	84.1	84.8	66.6	102.7	96.9	95.8
	DE022C	Mülheim a.d.Ruhr	94.2	81.3	83.0	105.3	95.7	97.4
	DE023C	Moers	88.2	83.3	74.2	103.4	86.8	79.6
	DE025C	Darmstadt	85.4	79.1	75.7	92.7	91.2	95.7
	DE026C	Trier	92.0	90.8	83.0	86.2	95.8	86.3
	DE027C	Freiburg im Breisgau	82.1	74.1	66.8	91.7	90.6	89.6
	DE028C	Regensburg	92.9	85.5	76.2	92.6	87.9	88.2
(GDR - E)	DE029C	Frankfurt (Oder)	105.2 <sup>c</sup>	93.7 <sup>c</sup>	80.5 <sup>c</sup>	98.9 <sup>c</sup>	91.7 <sup>c</sup>	87.0 <sup>c</sup>
(GDR - E)	DE030C	Weimar	88.6	80.9	77.5	95.6	92.9	91.9
(GDR - E)	DE031C	Schwerin	101.7	86.3	81.4	96.3	86.6	83.1
(GDR - E)	DE032C	Erfurt	92.8	86.2	81.2	98.8	93.8	90.4
	DE033C	Augsburg	99.3	90.2	80.7	98.0	93.7	91.3
	DE034C	Bonn	81.7	75.6	68.0	92.0	85.2	87.8
	DE035C	Karlsruhe	87.3	79.6	70.0	97.3	85.4	83.4
	DE036C	Mönchengladbach	99.8	94.9	87.4	104.4	94.8	100.4
	DE037C	Mainz	88.9	78.1	73.0	97.5	93.3	91.0
	DE039C	Kiel	105.5	91.5	85.0	97.4	99.7	97.3
	DE040C	Saarbrücken	113.2	95.4	103.3	104.8	96.5	104.7
(GDR - E)	DE041C	Potsdam	83.1 <sup>c</sup>	81.5 <sup>c</sup>	69.8 <sup>c</sup>	90.3 <sup>c</sup>	79.3 <sup>c</sup>	82.3 <sup>c</sup>
	DE042C	Koblenz	94.0	88.5	83.5	100.9	90.9	95.5
(GDR - E)	DE043C	Rostock	..b	75.8 <sup>c</sup>	77.6 <sup>c</sup>	..b	84.4 <sup>c</sup>	77.5 <sup>c</sup>
Denmark (W)	DK001C	København	124.5 <sup>d</sup>	122.4 <sup>d</sup>	..b	133.1 <sup>d</sup>	127.6 <sup>d</sup>	..b
	DK002C	Aarhus	98.2	88.4	..b	110.2	101.1	..b
	DK003C	Odense	105.3	101.0	..b	111.8	109.0	..b
	DK004C	Aalborg	101.4	100.2	..b	116.0	105.6	..b

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Estonia (E)	EE001C	Tallinn	171.4	156.6	124.7	128.8	115.0	96.1
	EE002C	Tartu	168.2	136.9	122.0	120.6	109.0	96.2
Greece (W)	EL001C	Athina	99.9	97.7	..b	107.9	104.9	..b
	EL002C	Thessaloniki	101.0	102.7	..b	111.6	107.5	..b
	EL003C	Patra	90.4	88.6	..b	99.8	107.2	..b
	EL004C	Irakleio	92.0	..b	..b	88.7	93.3 <sup>e</sup>	..b
	EL005C	Larisa	88.6	88.0	..b	98.1	99.7	..b
	EL006C	Volos	96.4	94.8	..b	105.5	111.8	..b
	EL007C	Ioannina	82.3	73.0	..b	86.5	87.5	..b
	EL008C	Kavala	104.8	100.0	..b	110.0	113.6	..b
	EL009C	Kalamata	107.7	96.5	..b	107.9	102.1	..b
Spain (W)	ES001C	Madrid	90.5 <sup>d</sup>	76.4	71.5	72.5 <sup>d</sup>	69.8	66.9
	ES002C	Barcelona	94.2 <sup>d</sup>	80.0	74.3	81.0 <sup>d</sup>	72.3	72.5
	ES003C	Valencia	136.5 <sup>d</sup>	89.6	81.0	106.4 <sup>d</sup>	80.8	78.2
	ES004C	Sevilla	149.6 <sup>d</sup>	90.4	84.2	120.6 <sup>d</sup>	82.8	79.1
	ES005C	Zaragoza	108.0 <sup>d</sup>	..b	77.6	96.7 <sup>d</sup>	82.8 <sup>e</sup>	75.2
	ES006C	Málaga	123.7 <sup>d</sup>	92.0	87.9	105.8 <sup>d</sup>	86.7	87.4
	ES007C	Murcia	120.3 <sup>d</sup>	82.0	75.2	102.4 <sup>d</sup>	79.1	81.2
	ES008C	Las Palmas	157.5 <sup>a</sup>	98.7 <sup>a</sup>	88.5 <sup>a</sup>	139.9 <sup>a</sup>	89.5 <sup>a</sup>	87.9 <sup>a</sup>
	ES009C	Valladolid	..b	..b	73.7	..b	71.9	70.0
	ES010C	Palma de Mallorca	138.0 <sup>d</sup>	82.2	81.3	122.4 <sup>d</sup>	79.3	79.3
	ES011C	Santiago de Compostela	..b	82.2	76.0	..b	69.5	65.7
	ES012C	Vitoria/Gasteiz	..b	73.3	68.0	..b	72.5	68.1
	ES013C	Oviedo	..b	91.4	78.7	..b	80.2	74.8
	ES014C	Pamplona/Iruña	149.6 <sup>d</sup>	74.6	72.1	109.7 <sup>d</sup>	69.4	68.2
	ES015C	Santander	135.6 <sup>d</sup>	86.4	80.2	101.3 <sup>d</sup>	72.6	75.6
	ES016C	Toledo	274.3 <sup>d</sup>	79.4	72.4	206.3 <sup>d</sup>	75.6	68.0
	ES017C	Badajoz	190.7 <sup>d</sup>	81.6	78.7	141.1 <sup>d</sup>	76.6	85.0
	ES018C	Logroño	116.2 <sup>d</sup>	73.8	72.0	100.5 <sup>d</sup>	74.9	69.3
	ES019C	Bilbao	..b	81.8	76.5	..b	74.9	70.1
	ES020C	Córdoba	..b	86.2	84.7	..b	79.2	77.0
	ES021C	Alicante/Alacant	..b	80.6	78.1	..b	71.5	69.8
	ES022C	Vigo	..b	80.4	76.4	..b	74.1	72.0
	ES023C	Gijón	..b	88.6	81.9	..b	79.5	82.2
	ES024C	Hospitalet de Llobregat(L')	..b	72.6	73.1	..b	69.4	69.4
	ES025C	Sta. Cruz de Tenerife	..a	90.5 <sup>a</sup>	81.3 <sup>a</sup>	..a	87.7 <sup>a</sup>	77.6 <sup>a</sup>
	ES026C	Coruña, A	..b	..b	73.4 <sup>c</sup>	..b	..b	70.1 <sup>c</sup>
Finland (W)	FI001C	Helsinki	103.8	..b	..b	101.8	..b	..b
	FI002C	Tampere	90.1	..b	80.0	103.7	..b	82.6
	FI003C	Turku	98.7	..b	89.8	98.0	..b	88.2
	FI004C	Oulu	89.2	..b	84.6	86.1	..b	74.3
France (W)	FR001C	Paris	76.4 <sup>d</sup>	67.4 <sup>d</sup>	..b	75.2 <sup>d</sup>	66.8 <sup>d</sup>	..b
	FR003C	Lyon	80.2	78.8	..b	76.1	73.5	..b
	FR004C	Toulouse	73.0	70.1	..b	71.8	63.3	..b
	FR006C	Strasbourg	86.8	76.4	..b	85.1	72.8	..b
	FR007C	Bordeaux	86.4	72.1	..b	78.9	66.6	..b
	FR008C	Nantes	85.7	74.6	..b	70.9	63.3	..b
	FR009C	Lille	106.7	91.7	..b	95.8	77.7	..b
	FR010C	Montpellier	79.6	68.1	..b	73.1	67.4	..b
	FR011C	Saint-Etienne	86.7	80.0	..b	82.0	68.9	..b
	FR012C	Le Havre	102.3	92.9	..b	84.3	71.3	..b
	FR013C	Rennes	79.5	67.9	..b	73.1	62.6	..b
	FR014C	Amiens	101.9	83.3	..b	81.0	74.9	..b
	FR015C	Rouen	92.5	80.2	..b	76.6	71.3	..b
	FR016C	Nancy	88.8	76.4	..b	80.8	67.6	..b
	FR017C	Metz	91.9	83.4	..b	90.8	79.2	..b
	FR018C	Reims	98.4	86.9	..b	84.9	78.2	..b
	FR019C	Orléans	77.8	67.8	..b	71.2	62.3	..b

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
	FR020C	Dijon	87.5	68.0	..b	76.1	59.6	..b
	FR021C	Poitiers	82.9	69.8	..b	81.4	59.9	..b
	FR022C	Clermont-Ferrand	89.1	78.6	..b	75.6	63.8	..b
	FR023C	Caen	86.0	83.3	..b	71.0	64.8	..b
	FR024C	Limoges	87.5	73.0	..b	76.8	65.3	..b
	FR025C	Besançon	83.5	69.5	..b	73.7	67.5	..b
	FR026C	Grenoble	73.4	65.1	..b	75.7	60.6	..b
	FR027C	Ajaccio	88.3	71.4	..b	85.8	70.7	..b
	FR028C	Saint Denis	108.1 <sup>a</sup>	98.9 <sup>a</sup>	..a	94.1 <sup>a</sup>	87.1 <sup>a</sup>	..a
	FR029C	Pointe-à-Pitre	97.6 <sup>a</sup>	86.7 <sup>a</sup>	..a	78.3 <sup>a</sup>	76.2 <sup>a</sup>	..a
	FR030C	Fort-de-France	84.9 <sup>a</sup>	79.7 <sup>a</sup>	..a	78.8 <sup>a</sup>	70.2 <sup>a</sup>	..a
	FR031C	Cayenne	112.1 <sup>a</sup>	90.8 <sup>a</sup>	..a	108.8 <sup>a</sup>	92.4 <sup>a</sup>	..a
	FR032C	Toulon	91.0	76.9	..b	82.4	71.2	..b
	FR035C	Tours	77.6	69.6	..b	72.9	58.9	..b
	FR202C	Aix-en-Provence	88.9	65.2	..b	89.8	68.2	..b
	FR203C	Marseille	85.9	68.5	..b	83.5	60.1	..b
	FR205C	Nice	74.2	75.9	..b	69.6	73.0	..b
	FR207C	Lens - Liévin	127.4	117.8	..b	86.3	80.5	..b
Croatia (E)	HR001C	Zagreb	119.5	..b	..b	114.8	..b	..b
	HR002C	Rijeka	124.1	..b	..b	108.1	..b	..b
	HR003C	Slavonski Brod	131.8	..b	..b	125.1	..b	..b
	HR004C	Osijek	136.8	..b	..b	118.2	..b	..b
	HR005C	Split	113.1	..b	..b	103.4	..b	..b
Hungary (E)	HU001C	Budapest	125.3	121.1	118.7	122.2	116.7	108.9
	HU002C	Miskolc	152.3	148.6	135.2	135.6	121.1	120.5
	HU003C	Nyiregyhaza	151.7	134.2	134.0	129.8	102.3	111.3
	HU004C	Pecs	138.3	124.0	130.6	126.5	104.1	119.4
	HU005C	Debrecen	151.2	142.8	142.1	135.9	110.9	125.0
	HU006C	Szeged	138.5	146.7	116.9	128.7	110.5	108.2
	HU007C	Gyor	131.3	136.6	124.8	116.3	127.1	111.5
	HU008C	Kecskemét	145.4	143.8	137.5	126.1	133.4	122.1
	HU009C	Székesfehérvár	121.5	116.8	112.7	116.9	114.7	102.8
Ireland (W)	IE001C	Dublin	118.3	103.2	..b	120.6	108.3	..b
	IE002C	Cork	111.4	106.4	..b	124.1	119.4	..b
	IE003C	Limerick	127.5 <sup>d</sup>	92.2	..b	138.3 <sup>d</sup>	94.1	..b
	IE004C	Galway	93.9	74.8	..b	101.2	99.7	..b
	IE005C	Waterford	93.2	95.0	..b	96.9	96.6	..b
Italy (W)	IT001C	Roma	82.7 <sup>c</sup>	83.5 <sup>c</sup>	69.6 <sup>c</sup>	84.4 <sup>c</sup>	87.2 <sup>c</sup>	76.2 <sup>c</sup>
	IT002C	Milano	82.6 <sup>c</sup>	75.6 <sup>c</sup>	71.4 <sup>c</sup>	82.6 <sup>c</sup>	75.0 <sup>c</sup>	75.9 <sup>c</sup>
	IT003C	Napoli	101.6 <sup>c</sup>	90.6 <sup>c</sup>	86.9 <sup>c</sup>	100.8 <sup>c</sup>	93.1 <sup>c</sup>	90.6 <sup>c</sup>
	IT004C	Torino	82.3 <sup>c</sup>	76.8 <sup>c</sup>	72.4 <sup>c</sup>	83.8 <sup>c</sup>	75.1 <sup>c</sup>	74.1 <sup>c</sup>
	IT005C	Palermo	96.2 <sup>c</sup>	86.9 <sup>c</sup>	85.9 <sup>c</sup>	100.8 <sup>c</sup>	88.6 <sup>c</sup>	87.5 <sup>c</sup>
	IT006C	Genova	89.3 <sup>c</sup>	80.3 <sup>c</sup>	78.7 <sup>c</sup>	89.0 <sup>c</sup>	80.4 <sup>c</sup>	84.1 <sup>c</sup>
	IT007C	Firenze	82.6 <sup>c</sup>	74.2 <sup>c</sup>	70.0 <sup>c</sup>	83.4 <sup>c</sup>	74.5 <sup>c</sup>	79.2 <sup>c</sup>
	IT008C	Bari	86.9 <sup>c</sup>	60.3 <sup>c</sup>	68.4 <sup>c</sup>	91.9 <sup>c</sup>	60.9 <sup>c</sup>	75.7 <sup>c</sup>
	IT009C	Bologna	82.9 <sup>c</sup>	74.4 <sup>c</sup>	72.4 <sup>c</sup>	82.1 <sup>c</sup>	75.5 <sup>c</sup>	78.6 <sup>c</sup>
	IT010C	Catania	94.9 <sup>c</sup>	86.6 <sup>c</sup>	87.8 <sup>c</sup>	97.9 <sup>c</sup>	88.8 <sup>c</sup>	88.4 <sup>c</sup>
	IT011C	Venezia	85.1 <sup>c</sup>	80.6 <sup>c</sup>	75.0 <sup>c</sup>	84.6 <sup>c</sup>	80.9 <sup>c</sup>	83.0 <sup>c</sup>
	IT012C	Verona	76.5 <sup>c</sup>	71.8 <sup>c</sup>	67.3 <sup>c</sup>	80.3 <sup>c</sup>	68.6 <sup>c</sup>	68.2 <sup>c</sup>
	IT013C	Cremona	88.6 <sup>c</sup>	82.9 <sup>c</sup>	75.4 <sup>c</sup>	77.5 <sup>c</sup>	66.7 <sup>c</sup>	72.8 <sup>c</sup>
	IT014C	Trento	72.1	73.8	71.1	72.0	69.4	71.0
	IT015C	Trieste	93.8 <sup>c</sup>	86.1 <sup>c</sup>	87.4 <sup>c</sup>	99.0 <sup>c</sup>	93.0 <sup>c</sup>	90.9 <sup>c</sup>
	IT016C	Perugia	72.4 <sup>c</sup>	71.4 <sup>c</sup>	73.9 <sup>c</sup>	81.0 <sup>c</sup>	72.5 <sup>c</sup>	79.1 <sup>c</sup>
	IT017C	Ancona	77.5 <sup>c</sup>	73.3 <sup>c</sup>	67.4 <sup>c</sup>	77.2 <sup>c</sup>	72.2 <sup>c</sup>	74.4 <sup>c</sup>
	IT018C	L'Aquila	87.9 <sup>c</sup>	79.6 <sup>c</sup>	75.2 <sup>c</sup>	81.8 <sup>c</sup>	71.3 <sup>c</sup>	72.9 <sup>c</sup>
	IT019C	Pescara	82.6 <sup>c</sup>	77.3 <sup>c</sup>	66.0 <sup>c</sup>	79.4 <sup>c</sup>	71.6 <sup>c</sup>	66.7 <sup>c</sup>
	IT020C	Campobasso	73.6 <sup>c</sup>	75.6 <sup>c</sup>	79.9 <sup>c</sup>	79.4 <sup>c</sup>	71.8 <sup>c</sup>	67.9 <sup>c</sup>
	IT021C	Caserta	82.3 <sup>c</sup>	82.7 <sup>c</sup>	77.4 <sup>c</sup>	85.2 <sup>c</sup>	74.2 <sup>c</sup>	81.8 <sup>c</sup>

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
	IT022C	Taranto	88.7 <sup>c</sup>	68.9 <sup>c</sup>	89.2 <sup>c</sup>	86.5 <sup>c</sup>	70.1 <sup>c</sup>	83.7 <sup>c</sup>
	IT023C	Potenza	82.3 <sup>c</sup>	73.1 <sup>c</sup>	73.4 <sup>c</sup>	76.8 <sup>c</sup>	70.7 <sup>c</sup>	72.7 <sup>c</sup>
	IT024C	Catanzaro	77.1 <sup>c</sup>	73.6 <sup>c</sup>	76.7 <sup>c</sup>	86.7 <sup>c</sup>	76.8 <sup>c</sup>	73.6 <sup>c</sup>
	IT025C	Reggio di Calabria	91.8 <sup>c</sup>	81.9 <sup>c</sup>	78.4 <sup>c</sup>	87.2 <sup>c</sup>	83.8 <sup>c</sup>	82.7 <sup>c</sup>
	IT026C	Sassari	88.4 <sup>c</sup>	75.5 <sup>c</sup>	72.6 <sup>c</sup>	86.7 <sup>c</sup>	74.6 <sup>c</sup>	73.7 <sup>c</sup>
	IT027C	Cagliari	85.7 <sup>c</sup>	77.8 <sup>c</sup>	74.9 <sup>c</sup>	75.9 <sup>c</sup>	74.4 <sup>c</sup>	73.2 <sup>c</sup>
	IT028C	Padova	..b	74.3 <sup>c</sup>	72.9 <sup>c</sup>	..b	79.0 <sup>c</sup>	83.1 <sup>c</sup>
	IT029C	Brescia	..b	70.7 <sup>c</sup>	68.2 <sup>c</sup>	..b	67.1 <sup>c</sup>	68.7 <sup>c</sup>
	IT030C	Modena	..b	72.8 <sup>c</sup>	69.9 <sup>c</sup>	..b	74.8 <sup>c</sup>	77.6 <sup>c</sup>
	IT031C	Foggia	..b	74.0 <sup>c</sup>	70.0 <sup>c</sup>	..b	73.4 <sup>c</sup>	72.3 <sup>c</sup>
	IT032C	Salerno	..b	96.9 <sup>c</sup>	93.7 <sup>c</sup>	..b	80.6 <sup>c</sup>	84.5 <sup>c</sup>
Lithuania (E)	LT001C	Vilnius	155.8	142.8	145.8	115.2	105.4	112.2
	LT002C	Kaunas	153.0	145.0	146.5	117.8	108.5	108.8
	LT003C	Panevezys	151.1	133.2	137.0	113.7	109.3	102.2
Luxembourg (W)	LU001C	Luxembourg (city)	93.6	90.8	69.0	99.8	83.8	81.0
Latvia (E)	LV001C	Riga	173.1	154.0	143.5	130.2	118.9	110.6
	LV002C	Liepaja	202.2	..b	140.7	145.0	..b	105.4
Malta (W)	MT001C	Valletta	..b	73.9	85.0	..b	86.5	87.9
	MT002C	Gozo	..b	73.3	65.5	..b	95.1	77.6
Netherlands (W)	NL001C	's-Gravenhage	104.4	98.8	..b	109.7	104.1	..b
	NL002C	Amsterdam	102.7	89.1	..b	113.9	106.2	..b
	NL003C	Rotterdam	107.8 <sup>c</sup>	99.2 <sup>c</sup>	..b	109.8 <sup>c</sup>	106.6 <sup>c</sup>	..b
	NL004C	Utrecht	102.9	95.6	..b	105.1	100.3	..b
	NL005C	Eindhoven	91.9	88.7	..b	106.5	101.5	..b
	NL006C	Tilburg	103.1	97.8	..b	119.9	105.9	..b
	NL007C	Groningen	106.2	92.2	..b	111.1	107.8	..b
	NL008C	Enschede	107.4	99.1	..b	114.4	110.5	..b
	NL009C	Arnhem	108.0	100.8	..b	114.0	117.1	..b
	NL010C	Heerlen	108.5	96.0	..b	112.8	104.9	..b
	NL011C	Almere	..b	77.8	..b	..b	88.5	..b
	NL012C	Breda	..b	85.8	..b	..b	96.9	..b
	NL013C	Nijmegen	..b	93.0	..b	..b	100.7	..b
	NL014C	Apeldoorn	..b	84.0	..b	..b	96.9	..b
	NL015C	Leeuwarden	..b	86.2	..b	..b	101.7	..b
Norway (W)	NO001C	Oslo	97.2 <sup>c</sup>	91.7 <sup>c</sup>	84.2 <sup>c</sup>	109.1 <sup>c</sup>	101.2 <sup>c</sup>	99.3 <sup>c</sup>
	NO002C	Bergen	87.3 <sup>c</sup>	79.0 <sup>c</sup>	79.1 <sup>c</sup>	94.5 <sup>c</sup>	91.7 <sup>c</sup>	89.1 <sup>c</sup>
	NO003C	Trondheim	83.9 <sup>c</sup>	86.0 <sup>c</sup>	74.2 <sup>c</sup>	92.8 <sup>c</sup>	86.3 <sup>c</sup>	92.4 <sup>c</sup>
	NO004C	Stavanger	85.2 <sup>c</sup>	85.4 <sup>c</sup>	74.4 <sup>c</sup>	94.1 <sup>c</sup>	94.2 <sup>c</sup>	92.5 <sup>c</sup>
	NO005C	Kristiansand	89.9 <sup>c</sup>	80.3 <sup>c</sup>	79.8 <sup>c</sup>	91.1 <sup>c</sup>	101.2 <sup>c</sup>	90.7 <sup>c</sup>
	NO006C	Tromsø	84.5 <sup>c</sup>	77.2 <sup>c</sup>	72.8 <sup>c</sup>	107.6 <sup>c</sup>	91.6 <sup>c</sup>	81.5 <sup>c</sup>
Poland (E)	PL001C	Warszawa	108.5	102.9	95.0	103.9	96.9	88.7
	PL002C	Lodz	158.1	142.7	141.0	124.5	114.0	113.6
	PL003C	Krakow	110.9	101.9	97.9	108.1	96.7	91.1
	PL004C	Wroclaw	114.2	109.2	106.0	95.9	93.4	91.7
	PL005C	Poznan	123.1	112.8	106.8	115.5	105.0	99.7
	PL006C	Gdansk	120.3	115.2	104.4	94.1	98.7	93.9
	PL007C	Szczecin	124.4	123.5	115.6	107.3	98.3	93.5
	PL008C	Bydgoszcz	120.3	113.5	111.3	108.7	106.5	98.8
	PL009C	Lublin	128.1	116.0	112.8	107.2	98.9	95.5
	PL010C	Katowice	138.0	134.6	118.5	120.6	115.7	109.3
	PL011C	Bialystok	119.2	110.5	102.1	94.9	95.6	80.4
	PL012C	Kielce	109.9	110.2	101.5	97.7	103.2	83.2
	PL013C	Torun	120.7	114.2	108.4	103.8	94.8	90.1
	PL014C	Olsztyn	114.3	95.5	93.2	93.5	83.0	83.8
	PL015C	Rzeszow	104.2	98.7	90.3	100.2	94.8	82.6
	PL016C	Opole	102.1 <sup>d</sup>	104.0	94.5	102.6 <sup>d</sup>	100.2	90.2
	PL017C	Gorzow Wielkopolski	118.3	120.7	112.7	107.3	89.6	91.6

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Portugal (W)	PL018C	Zielona Gora	122.2 <sup>d</sup>	105.7	107.8	93.4 <sup>d</sup>	89.2	89.9
	PL019C	Jelenia Gora	130.4	126.7	110.9	115.0	103.2	101.5
	PL020C	Nowy Sacz	115.9	112.3	107.3	94.6	94.4	95.9
	PL021C	Suwalki	139.4	114.2	95.4	104.8	100.5	84.6
	PL022C	Konin	125.1 <sup>d</sup>	112.9	99.5	86.3 <sup>d</sup>	90.6	87.6
	PL023C	Zory	109.3	128.3	110.1	123.9	107.1	94.6
	PL024C	Czestochowa	140.0	125.5	120.7	117.7	113.4	107.2
	PL025C	Radom	137.1	129.2	117.2	104.7	97.6	93.3
	PL026C	Plock	120.7	123.8	124.2	108.4	100.1	106.1
	PL027C	Kalisz	147.2	127.3	113.9	125.4	96.3	101.6
	PL028C	Koszalin	106.6	104.4	101.4	102.1	95.1	90.8
	PT001C	Lisboa	113.6	105.4	104.1	102.2	93.0	92.2
	PT002C	Porto	107.7	102.0	110.2 <sup>d</sup>	102.1	94.7	94.7 <sup>d</sup>
	PT003C	Braga	88.2	75.9	73.2	95.2	78.7	74.6
	PT004C	Funchal	134.3 <sup>a</sup>	151.2 <sup>a</sup>	144.2 <sup>a</sup>	115.5 <sup>a</sup>	126.6 <sup>a</sup>	129.7 <sup>a</sup>
	PT005C	Coimbra	87.8	91.6	88.0	92.0	80.3	82.1
	PT006C	Setúbal	116.1	96.9	95.2	103.1	102.6	89.4
	PT007C	Ponta Delgada	133.2 <sup>a</sup>	160.1 <sup>a</sup>	130.4 <sup>a</sup>	127.4 <sup>a</sup>	125.3 <sup>a</sup>	120.9 <sup>a</sup>
	PT008C	Aveiro	90.0	81.6	83.5	92.6	90.4	85.5
PT009C	Faro	.. <sup>b</sup>	104.3	107.2 <sup>d</sup>	.. <sup>b</sup>	99.3	110.0 <sup>d</sup>	
Romania (E)	RO001C	Bucuresti	136.4	121.6	118.2	133.0	118.0	112.9
	RO002C	Cluj-Napoca	142.5	119.4	111.8	133.8	122.4	104.3
	RO003C	Timisoara	143.6	129.3	113.7	134.3	132.7	111.0
	RO004C	Craiova	141.7	123.1	120.0	148.9	125.8	116.5
	RO005C	Braila	158.2	144.7	134.7	131.5	138.6	117.3
	RO006C	Oradea	168.2	143.5	131.1	157.1	140.9	128.8
	RO007C	Bacau	158.2	135.3	130.6	141.4	123.2	107.5
	RO008C	Arad	156.6	160.1 <sup>d</sup>	130.7	148.1	164.0 <sup>d</sup>	134.5
	RO009C	Sibiu	153.5	127.7	120.6	136.3	123.0	111.2
	RO010C	Targu Mures	141.8	127.0	113.3	136.4	119.9	109.7
	RO011C	Piatra Neamt	149.7	138.2	116.2	143.1	118.1	112.4
	RO012C	Calarasi	177.2	163.8	170.0 <sup>d</sup>	161.3	136.3	120.1 <sup>d</sup>
	RO013C	Giurgiu	156.5	140.1	142.5 <sup>d</sup>	161.3	141.7	130.6 <sup>d</sup>
	RO014C	Alba Iulia	134.5	123.6	107.7	117.4	112.6	111.0
Sweden (W)	SE001C	Stockholm	86.1	84.2	79.7	97.7	94.9	96.8
	SE002C	Göteborg	89.8	83.9	81.1	99.6	95.9	96.9
	SE003C	Malmö	91.9	85.8	87.8	97.7	99.1	99.6
	SE004C	Jönköping	83.2	79.5	73.7	92.6	96.7	85.3
	SE005C	Umeå	121.5 <sup>d</sup>	68.9	61.6	85.2 <sup>d</sup>	88.9	83.3
	SE006C	Uppsala	76.0	70.2	66.3	92.2	84.6	82.8
	SE007C	Linköping	82.3	80.1	71.6	83.9	92.9	92.5
	SE008C	Örebro	84.8	86.6	73.5	95.9	90.2	94.8
Slovenia (E)	SI001C	Ljubljana	94.1	92.4	70.7	86.5	82.2	70.2
	SI002C	Maribor	110.9	108.1	90.6	95.1	92.4	91.8
Slovakia (E)	SK001C	Bratislava	79.4	111.2	106.9	83.1	107.3	105.5
	SK002C	Kosice	102.3	124.4	116.5	102.3	120.4	112.6
	SK003C	Banska Bystrica	86.5	111.2	102.3	93.6	108.4	101.9
	SK004C	Nitra	101.9	108.4	105.6	97.3	105.8	107.9
	SK005C	Prešov	110.3	112.8	105.5	108.4	108.5	99.6
	SK006C	Zilina	106.4	104.7	111.4	101.3	109.8	109.3
	SK007C	Trnava	108.6	121.9	101.1	94.3	131.2	103.4
	SK008C	Trencin	96.0	103.3	87.4	85.7	94.2	90.0
Turkey (W)	TR001C	Ankara	111.2 <sup>c</sup>	106.8 <sup>c</sup>	.. <sup>b</sup>	151.8 <sup>c</sup>	148.3 <sup>c</sup>	.. <sup>b</sup>
	TR002C	Adana	115.6 <sup>c</sup>	100.5 <sup>c</sup>	.. <sup>b</sup>	167.6 <sup>c</sup>	148.3 <sup>c</sup>	.. <sup>b</sup>
	TR003C	Antalya	51.2 <sup>c</sup>	45.8 <sup>c</sup>	.. <sup>b</sup>	76.3 <sup>c</sup>	70.6 <sup>c</sup>	.. <sup>b</sup>
	TR004C	Balikesir	61.0 <sup>c</sup>	46.2 <sup>c</sup>	.. <sup>b</sup>	85.1 <sup>c</sup>	64.6 <sup>c</sup>	.. <sup>b</sup>
	TR005C	Bursa	98.3 <sup>c</sup>	75.5 <sup>c</sup>	.. <sup>b</sup>	136.8 <sup>c</sup>	106.9 <sup>c</sup>	.. <sup>b</sup>
	TR006C	Denizli	49.9 <sup>c</sup>	41.1 <sup>c</sup>	.. <sup>b</sup>	71.9 <sup>c</sup>	55.7 <sup>c</sup>	.. <sup>b</sup>

Country (Macroregion)	Urban Audit code	City	Male SMR			Female SMR		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
	TR007C	Diyarbakir	59.9 <sup>c</sup>	50.5 <sup>c</sup>	-.b	90.6 <sup>c</sup>	78.6 <sup>c</sup>	-.b
	TR008C	Edirne	75.6 <sup>c</sup>	62.0 <sup>c</sup>	-.b	92.1 <sup>c</sup>	76.7 <sup>c</sup>	-.b
	TR009C	Erzurum	63.0 <sup>c</sup>	55.4 <sup>c</sup>	-.b	92.9 <sup>c</sup>	86.6 <sup>c</sup>	-.b
	TR010C	Gaziantep	119.1 <sup>c</sup>	101.6 <sup>c</sup>	-.b	167.8 <sup>c</sup>	144.6 <sup>c</sup>	-.b
	TR011C	Hatay	26.4 <sup>c</sup>	29.8 <sup>c</sup>	-.b	37.8 <sup>c</sup>	45.7 <sup>c</sup>	-.b
	TR012C	Istanbul	96.8 <sup>c</sup>	96.2 <sup>c</sup>	-.b	126.5 <sup>c</sup>	127.6 <sup>c</sup>	-.b
	TR013C	Izmir	104.6 <sup>c</sup>	98.8 <sup>c</sup>	-.b	139.7 <sup>c</sup>	133.4 <sup>c</sup>	-.b
	TR014C	Kars	23.7 <sup>c</sup>	18.1 <sup>c</sup>	-.b	38.1 <sup>c</sup>	28.8 <sup>c</sup>	-.b
	TR015C	Kastamonu	52.2 <sup>c</sup>	31.2 <sup>c</sup>	-.b	70.6 <sup>c</sup>	44.8 <sup>c</sup>	-.b
	TR016C	Kayseri	77.5 <sup>c</sup>	67.0 <sup>c</sup>	-.b	113.4 <sup>c</sup>	99.8 <sup>c</sup>	-.b
	TR017C	Kocaeli	58.2 <sup>c</sup>	63.2 <sup>c</sup>	-.b	79.2 <sup>c</sup>	90.3 <sup>c</sup>	-.b
	TR018C	Konya	65.9 <sup>c</sup>	54.9 <sup>c</sup>	-.b	96.5 <sup>c</sup>	82.6 <sup>c</sup>	-.b
	TR019C	Malatya	64.1 <sup>c</sup>	54.9 <sup>c</sup>	-.b	97.1 <sup>c</sup>	82.4 <sup>c</sup>	-.b
	TR020C	Manisa	53.3 <sup>c</sup>	44.9 <sup>c</sup>	-.b	73.2 <sup>c</sup>	62.3 <sup>c</sup>	-.b
	TR021C	Nevsehir	35.8 <sup>c</sup>	27.0 <sup>c</sup>	-.b	51.7 <sup>c</sup>	39.3 <sup>c</sup>	-.b
	TR022C	Samsun	74.9 <sup>c</sup>	55.4 <sup>c</sup>	-.b	108.3 <sup>c</sup>	82.4 <sup>c</sup>	-.b
	TR023C	Siirt	34.1 <sup>c</sup>	13.8 <sup>c</sup>	-.b	42.8 <sup>c</sup>	18.7 <sup>c</sup>	-.b
	TR024C	Trabzon	48.2 <sup>c</sup>	38.4 <sup>c</sup>	-.b	63.4 <sup>c</sup>	50.1 <sup>c</sup>	-.b
	TR025C	Van	53.4 <sup>c</sup>	35.4 <sup>c</sup>	-.b	82.9 <sup>c</sup>	57.9 <sup>c</sup>	-.b
	TR026C	Zonguldak	21.9 <sup>c</sup>	36.4 <sup>c</sup>	-.b	32.3 <sup>c</sup>	52.9 <sup>c</sup>	-.b
United Kingdom (W)	UK001C	London	91.3	82.7	77.9 <sup>d</sup>	101.2	95.8	159.9 <sup>d</sup>
	UK002C	Birmingham	103.6	95.3	88.8	106.3	102.6	99.3
	UK003C	Leeds	92.7	84.4	83.4	103.4	98.4	96.2
	UK004C	Glasgow	141.4	136.5	126.5	132.5	128.9	128.0
	UK005C	Bradford	101.7	96.6	89.4	114.2	110.9	108.2
	UK006C	Liverpool	117.6	107.5	98.8	130.1	127.3	120.6
	UK007C	Edinburgh	-.b	92.6	87.3	-.b	101.4	97.0
	UK008C	Manchester	122.6	108.7	101.5 <sup>d</sup>	121.7	117.2	121.0 <sup>d</sup>
	UK009C	Cardiff	95.4	88.6	86.0	103.1	97.1	96.7
	UK010C	Sheffield	98.1	87.7	82.2	106.4	103.6	102.2
	UK011C	Bristol	97.7	87.3	88.4	103.6	100.7	96.9
	UK012C	Belfast	-.b	105.1	106.8	-.b	107.0	111.5
	UK013C	Newcastle upon Tyne	107.9	99.4	94.3	114.0	103.1	103.3
	UK014C	Leicester	104.1	93.5 <sup>d</sup>	96.0 <sup>d</sup>	115.7	116.1 <sup>d</sup>	111.2 <sup>d</sup>
	UK015C	Derry	-.b	92.5	89.6	-.b	113.4	102.8
	UK016C	Aberdeen	105.6	95.7	91.7	107.2	109.5	107.6
	UK017C	Cambridge	86.1	80.6	83.1	96.8	100.3	96.8
	UK018C	Exeter	87.2	89.8	73.8	97.0	94.8	94.9
	UK019C	Lincoln	98.4	89.9	86.0 <sup>d</sup>	93.5	99.1	108.4 <sup>d</sup>
	UK020C	Gravesham	86.5	74.4	75.7	96.7	99.1	88.9
	UK021C	Stevenage	87.1	82.4	84.4	99.6	86.5	83.0
	UK022C	Wrexham	99.7	91.4	85.9	118.0	104.9	101.5
	UK023C	Portsmouth	94.5	93.5	82.8	108.7	102.6	96.6
	UK024C	Worcester	92.3	78.7	89.1	100.0	104.9	94.7
	UK025C	Coventry	-.b	92.4	88.8	-.b	100.0	100.3
	UK026C	Kingston-upon-Hull	-.b	97.0	95.5	-.b	114.3	104.8
	UK027C	Stoke-on-Trent	-.b	102.4	93.0 <sup>d</sup>	-.b	109.7	116.0 <sup>d</sup>
	UK028C	Wolverhampton	-.b	93.5	87.5	-.b	104.7	102.1
	UK029C	Nottingham	-.b	99.7	93.9 <sup>d</sup>	-.b	107.5	109.1 <sup>d</sup>
	UK030C	Wirral	-.b	93.3	86.1	-.b	103.3	105.2

Footnote:

Wave one: 1999-2002; wave two: 2003-2006; wave three: 2007-2009.