



The Impact of Covid19 on the Urban–Rural Happiness

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Abstract

People tend to be less happy in cities than in rural areas, the so called “urban–rural happiness gradient.” The recent covid19 pandemic allows us to explore one of the disadvantages of large and dense cities: the faster spread of infectious diseases. Using the World Values Survey, we find a large differential, or effect size, pre v during pandemic for cities versus smaller areas—cities became two times less happy during the pandemic versus pre-pandemic compared to smaller areas. In absolute terms, while .2 to .5 difference on a 1–10 SWB scale is not large, given the massive scale of urbanization, the practical effect in the population is large. As in any non-experimental research, causality may not be present. The results from Great Britain, the Netherlands, and Uruguay studied here may not generalize to other countries, especially ones with much different covid19 rates, policy responses, and urbanization patterns.

Keywords Urban · Rural · Urban–rural happiness gradient · Happiness · Life satisfaction · Subjective wellbeing · Covid19 · World values survey (wvs)

Introduction

Covid19 has changed our way of life (Olasov et al., 2022). Pre-pandemic there was city renewal, rebirth, and urban triumphalism. Just a few years back, Ed Glaeser wrote a bestselling book titled, “Triumph of the City” (Peck, 2016). The pandemic, however, brought urban scepticism and scare. Many cities were hollowed out in important ways—commercially (e.g., offices, restaurants, stores) and residentially (many urbanites fled urban centers to less dense areas, particularly the suburbs)

Here is the great city: here have you nothing to seek and everything to lose. (Nietzsche)

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(Nixey, 2020). Pundits now wonder if the “golden era for large cities’ might be turning into an ‘urban doom loop’” (Edsall, 2023b; Robbins, 2021).

The covid19 pandemic exposed urban–rural differences. A person’s chance of getting the virus and surviving it was closely associated to their zipcode (Chen & Krieger, 2021). Urban areas were the epicenters of the virus outbreak: the dense population and inevitable close proximity to others, a defining feature of cities, resulted in rapid transmission and a fertile ground for infection. One of the disadvantages of city life is the increased spread of infectious disease¹ (Bettencourt et al., 2007, 2010). The transmission of infectious disease is a social contact process. Urbanization increases the conditions and statistical likelihood that microbes are being spread, which has resulted in a tripling of the total number of disease outbreaks per decade since the 1980s (Ali & Keil, 2011; Connolly et al., 2021; Haggett, 1994). Although the scale of covid19 was unparalleled, major infectious disease outbreaks in the past, e.g., SARS and Ebola, occurred in urbanising hinterlands and quickly spread to metropolitan areas (Keil & Ali, 2007). Rural areas, in contrast, given their low population density and geographic isolation, provide a natural social distancing environment that slows the spread of infectious viruses. As such, covid19 affected cities more than smaller areas (Stier et al., 2021).

In the present study, we take a development perspective using a measure of human development, progress, or flourishing: subjective wellbeing (SWB). Our hypothesis is that since cities suffer disproportionately from infectious diseases, city happiness decreased disproportionately during the covid19 pandemic.

We start with a brief discussion of the urban–rural happiness gradient, point to gaps in the literature, and reflect on how covid19 impacted different aspects of life in urban versus rural areas. In the data section we focus on the sample selection from the World Values Surveys down to: United Kingdom, the Netherlands, and Uruguay—countries that were severely affected by the pandemic (e.g., infections and deaths) and with substantial samples available pre and during the pandemic for cities and smaller areas. The analysis of the data follows and we conclude with a discussion of the results and limitations/directions for future research.

Urban–Rural Happiness

The urban–rural happiness gradient states, generally, that happiness raises from its lowest in largest cities to its highest levels in smallest places, little towns, villages, and open country. Often the gradient is simplified as a gap that exists between the extremes, i.e., large cities versus rural areas. Urban unhappiness is common (Lenzi & Perucca, 2016; Morrison, 2015; Morrison & Weckroth, 2017; Okulicz-Kozaryn & Valente, 2021; Senior, 2006; Sørensen, 2014, 2021). Recent studies added nuance: Lenzi and Perucca (2020), Morrison (2021), Okulicz-Kozaryn and Valente (2018), Carlsen and Leknes (2022a, 2022b), Lenzi and Perucca (2022). As a corollary, exposure to nature, the opposite of urbanicity, is related to happiness (Berman et al., 2012; Frumkin, 2001; Maller et al., 2006; Pretty, 2012; Tesson, 2013).

¹ See for example, “SIR Models for Spread of Disease” (Cooper et al., 2020; Newman 2002).

Easterlin and O'Connor (2023) points out that only a few studies examine the effect of covid19 on SWB. Easterlin and O'Connor (2023) do an overall analysis for Europe, but miss the urban–rural differential. Thus, this is the first study on this topic.

Health is one of the strongest predictors of SWB, if not the strongest—decent health is clearly necessary for SWB (e.g., Campbell et al., 1976) and therefore, expected to be strongly linked with SWB. During pandemics, city inhabitants suffer disproportionately in terms of health because cities are hotbeds of infectious disease—infections and contamination are promoted by proximity and close contact between humans—by definition, cities offer the most fertile ground for infectious diseases to spread. Pandemics by overwhelming the urban healthcare system deteriorate urban health in general beyond the pandemic-related illness, for instance, healthcare is less available for cardiovascular disease and cancer treatment.

There are detailed data for the geography of the covid19 pandemic in the US, and other countries likely followed a similar pattern—large central metropolitan areas were the most affected compared to fringe metros and medium cities (Curtin & Heron, 2022). The covid19 urban disadvantage at the beginning of the pandemic translated to almost $2\times$ more incidences of the disease and almost $3\times$ more mortality in urban areas compared to rural areas. Then, the rates converged, and towards the end of the pandemic, cities recovered while rural areas had higher rates (Cuadros et al., 2021). Still, the urban (not rural) scare remains² as cities are hit first by pandemics, and proximity to others astronomically increase the chance of infection and death.

It is important to underscore that the infection rates are reported per capita, for example, per 100,000 population. If it was reported per area, say square kilometers (sq km), i.e., how much disease incidence is recorded in a particular area, the urban disadvantage would have been astronomical during a pandemic. For instance in New York City, the population density is about 11 k/sq km, whereas in Montana it is about 3/sq km, about a $3600\times$ difference. Urban density not only increases the risk of infection and the spread of infectious diseases (Bettencourt & West, 2010), but it also increases the need for social distancing—which in itself (regardless of a pandemic) has a negative effect on SWB by causing psychological distress (Khan et al., 2021).

Data and Sample Selection

We use the World Values Survey (WVS) 7-wave (1981–2022) cumulative file freely available at: worldvaluessurvey.org. The WVS is representative of countries, typically with country-wave samples of over 1 k. The key variables are urbanicity and happiness—variable descriptions and distributions, including control variables, are in the online appendix for peer review appended at the end.

The rate of covid19 infection increased later in 2020, peaked in 2021 and again in 2022 (see online appendix for covid19 data from coronavirus.jhu.edu/region). Hence, the covid19 period sample is 2021 and 2022. The WVS data

² This is a speculation, of course, and future research is needed. However, pundits and scholars are starting to discuss how the era of “urban supremacy” might be over and the covid19 pandemic was a catalysis for this phenomenon, see for example Edsall (2023a).

in 2021 are only available for: Armenia, Kenya, Maldives, Morocco, and Venezuela. We drop Armenia, Kenya, and Maldives. Armenia's pre-pandemic sample for large city is only 4 respondents. Kenya was only observed in one time period in WVS, 2021. The Maldives is a small island without an urban–rural gradient.

Morocco, a country of 37 million people, seem to have been largely spared from the pandemic: only 1.2 m cases (3%) and 16 k deaths. Venezuela is under a dictatorship largely cut off from the world and might have been protected from covid19 due to its isolation (or perhaps the statistics are tampered with)—despite having about 30 million people in its population, there were only 0.5 m cases (2%) and 5 k deaths, compared to neighboring Colombia with a population of 50 m with more than 10× the number of cases, 6.3 m, and 142 k deaths. All cases and deaths data are from coronavirus.jhu.edu/region. We examine Morocco and Venezuela further in the online appendix. The 2022 WVS sampled: Czechia, Libya, Netherlands, Northern Ireland, Slovakia, United Kingdom, and Uruguay. We dropped: Czechia—no city with a population > 500 k before 2022; Libya—only 7 respondents in cities > 500 k before 2022; Northern Ireland—data for one wave only; and Slovakia—only 61 respondents in cities > 500 k pre-2022. This leaves us with: the United Kingdom (GBR) with 25 m cases out of 67 m population (37%) and 221 k deaths, the Netherlands (NLD) with 8.7 m cases out of 18 m population (48%) and 24 k deaths, and Uruguay (URY) with 1 m cases out of 3.4 m population (30%) and 7 k deaths.

While all three countries produced significantly similar policy responses during covid, the United Kingdom and the Netherlands are much richer countries per capita than Uruguay (a developing country). and therefore had higher percentage of GDP used to deploy resources during the pandemic. Nonetheless, these three countries response to the pandemic were remarkably similar particularly in terms of vaccination, social distancing, and closure measures (for specific policies, refer to the appendix). For example, the percentage of the population who received at least one dose of the covid vaccine were 87% in Uruguay, 79% in Great Britain, and 75% in the Netherlands (data extracted from <https://coronavirus.jhu.edu/region/>). Likewise, there were substantial measures in place for social distancing and closures for all three countries, ranging from partial or recommended restrictions to full or/and necessary restrictions (refer to the appendix for a summary). Both, the United Kingdom and the Netherlands had partial availability of vaccines and recommended/partial mask requirement. Uruguay, on the other hand, provided universal vaccine availability, which possibly explains the highest vaccination rate, about 10% higher than in the other two countries.

There are differences in policy responses. In the United Kingdom citizens received broad support in terms of both income supplement and debt contract relief; in The Netherlands citizens received broad support in terms of income supplement, but narrow support in terms of debt contract relief; while the least amount of support took place in Uruguay where there were scarce support in terms of income support and narrow support in terms of debt contract relief. In the online appendix we provide details and discuss specific policy responses by country.

Model and Controls

We use a standard OLS regression with robust standard errors. We treat the 10-step happiness variable as continuous—ordinal happiness can be treated as a continuous variable (Ferrer-i-Carbonell & Frijters, 2004). OLS has become the default method in happiness research (Blanchflower & Oswald, 2011). Theoretically, while there is still debate about the cardinality of SWB, there are strong arguments to treat it as a cardinal variable (Ng, 1996, 1997).

In the choice of controls, we generally follow Okulicz-Kozaryn and Valente (2021). There are specific controls worth discussing. One great advantage of city living that is often forgotten is freedom, “City air makes men free (Stadt Luft macht frei)” Park et al. ([1925] 1984, p. 12),³ hence we control for freedom. Health is a key predictor of SWB, and also note that the subjective health measure used here is a reasonable measure of actual health (Subramanian et al., 2009). More discussion regarding the control choice of freedom is in the end of the results section.

Results

We start with bar graphs in Fig. 1. Each panel shows results for a separate country: United Kingdom (GBR), the Netherlands (NLD), and Uruguay (URY). The Y axis is life satisfaction, and the X axis is the rural–urban gradient, degrees of urbanicity. The blue bars show pre-pandemic averages (year varies by country; the latest available), and the green bars show pandemic averages (2022).

The focus here is on the differential from the bar graphs for cities (> 0.5 m) before and during the pandemic (the last two bars in each country panel). The baseline for urbanicity is smaller areas (all other bars, < 0.5 m).

In both the United Kingdom (GBR) and the Netherlands (NLD), the biggest difference pre-during pandemic (blue v green bar) is for the largest places (> 0.5 m). Uruguay (URY), on the other hand, experienced an increase in SWB pre-during pandemic across different urbanicity levels, but the largest places (> 0.5 m) increased the least. Thus, across the three countries, we find support for our hypothesis that large cities’ happiness suffered disproportionately during the pandemic. Next, we repeat the bar graphs, but with more detailed urban–rural classification to explore nuances in Fig. 2.

In the United Kingdom, pre-pandemic, the happiest places were the smallest (< 10 k), while during the pandemic, both the smallest and largest places were most affected and saw significant reduction in SWB. It is unexpected to see this reduction in the smallest places, and the result could be due to some country specific factors (also note the large confidence intervals).

In the Netherlands, there’s not much change in SWB in the smaller places pre versus during the pandemic, except for the largest cities where there’s a larger drop in SWB as expected. There was also a smaller drop in places with 10–20 k , and especially in the 20–50 k categories.

³ It originated in the Middle Ages, and it meant freedom from feudalism, non-feudal islands in a sea of feudalism (Harvey 2012).

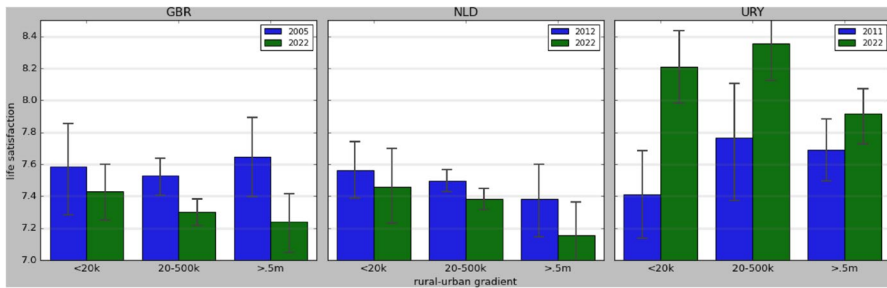


Fig. 1 Life satisfaction (1 = *unhappy* to 10 = *happy*) means with 95% CI against rural urban gradient categories. *GBR* = United Kingdom, *NLD* = Netherlands, *URY* = Uruguay

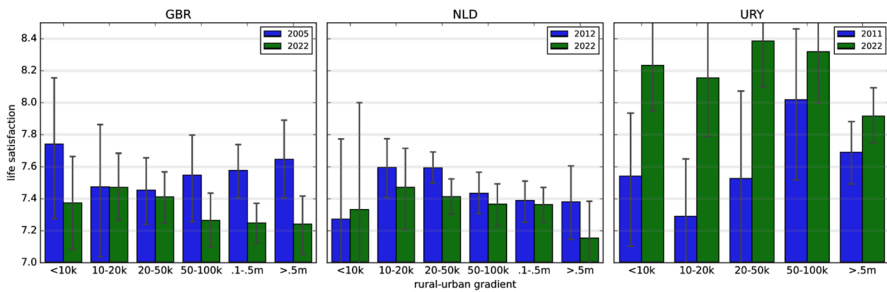


Fig. 2 Life satisfaction (1 = *unhappy* to 10 = *happy*) means with 95% CI against rural urban gradient categories. *GBR* = United Kingdom, *NLD* = Netherlands, *URY* = Uruguay. Note: *URY* is missing 0.1–0.5 m category due to small cell sizes

Uruguay, a developing country, shows a different story: SWB increased across urbanicity, including the largest areas (> 0.5 m), but that's also where the smallest increase occurred, as expected. Many of the CI are wide, and so even large mean differences may not be statistically significant. Next, we test the differences with OLS regression.⁴ First, since the focus is on cities versus smaller areas (rural and towns), for simplicity, we collapsed all categories < 0.5 m into one, as rural and towns, and contrast it with cities (> 0.5 m).

There are also two technical reasons for such a binary gap approach versus using the original gradient in the bar charts. It is a simpler exposition to have an urban dichotomy as opposed to a gradient, given that we also have two other breakdowns: pre-during COVID, and by country. And, critically, the cell sizes run small with too many breakdowns for this relatively small dataset. When more data becomes available, future research should test the full urban–rural gradient.

Our hypothesis is that while the pandemic decreased SWB in general, we expect to see an even greater SWB decrease in cities. We are focused on the pre-during pandemic differences in SWB levels in city (> 0.5 m) versus smaller areas (< 0.5 m).

⁴ The usual argument in favor of OLS over categorical models is repeated in the online appendix. And a set of control variables is also motivated.

Table 1 OLS regressions of life satisfaction on pandemic dummy (“2022”) only. WVS country samples split by rural and towns (<0.5 *m*) v cities (>0.5 *m*)

	GBR		NLD		URY	
	<0.5 <i>m</i>	>0.5 <i>m</i>	<0.5 <i>m</i>	>0.5 <i>m</i>	URYrurTow	>0.5 <i>m</i>
2022	-0.21**	-0.41**	-0.12**	-0.23	0.75***	0.23 +
constant	7.54***	7.65***	7.50***	7.38***	7.54***	7.69***
N	3111	521	3572	373	1154	836
adj R2	0.003	0.008	0.002	0.002	0.036	0.002

+ 0.10; ** 0.01; *** 0.001; robust std err

The bivariate regression results are in Table 1. We first separate our analyses by country⁵ and then within each country by rural and towns (<0.5 *m*) versus cities (>0.5 *m*). We regress life satisfaction on a year dummy for 2022 with the base case being the latest pre-pandemic wave as shown in Figs. 1 and 2.

The effect sizes on the year 2022 dummy are the bar length differences from Fig. 1 or 2 for cities (>0.5 *m*) and the average bar lengths for smaller areas now collapsed as (<0.5 *m*). For GBR the difference pre-during pandemic is about 0.2 for rural areas and towns (<0.5 *m*), and the difference for cities (>0.5 *m*) is about 0.4, and so forth for the NLD and URY. A remarkable finding in our analysis is the roughly 2 times difference for GBR (0.2 v 0.4) and NLD (0.1 v 0.2), and 3 times difference for URY (0.7 v 0.2)—this is a strong differential. When comparing cities (>0.5 *m*) versus smaller areas (<0.5 *m*), cities became 2 to 3 times less happy during the pandemic compared to pre-pandemic levels.

Still, one of the coefficients for the NLD is not significant, and only weakly significant for URY, and there is left out variable bias. Differences in SWB levels should be even bigger when controlling for SWB predictors as the urban rural happiness gradient often emerges only after controlling for SWB predictors (Okulicz-Kozaryn & Valente, 2021). Hence, we elaborate our models with SWB predictors in Table 2.

The elaborated models in Table 2 mostly confirm our earlier results. We find that there’s again roughly a 2 times difference for GBR and the NLD, while for URY the differential is reduced from about 3 times to roughly 2 times as well.

As a robustness check we add “health” as a control variable in Table 3. It is important to underscore that there’s a confounding effect between pre-during covid19 and health by definition. And there will also be confounding effects between urbanicity and health since covid19 is more prevalent (at least in initial phase) in cities as previously discussed. Hence, these regressions are less useful in determining pre-during difference, and the coefficients are smaller and less significant, as expected. Remarkably though, we find that the urbanicity differentials, even though less statistically significant, are still about 2 times larger for GBR and URY and even stronger for the NLD.

In the online appendix we do not split by urban/rural but instead we add a urban/rural dummy and an interaction with the pandemic dummy—the interaction

⁵ One reason to split by country is that countries are diverse, and pooling them together introduces much heterogeneity, hence, we first proceed by examining country-by-country, and only then introduce a pooled model.

Table 2 OLS regressions of life satisfaction: added predictors of life satisfaction. WVS country samples split by rural and towns (<0.5 m) v cities (>0.5 m)

	GBR		NLD		URY	
	<0.5 m	>0.5 m	<0.5 m	>0.5 m	URYrurTow	>0.5 m
2022	-0.18*	-0.39+	-0.20***	-0.45**	0.42***	0.21
income	0.09***	0.01	0.06***	0.14***	0.07*	0.13***
age	-0.03*	-0.08**	-0.02+	-0.06+	0.00	-0.06**
age2	0.00**	0.00**	0.00**	0.00*	-0.00	0.00**
male	-0.18**	-0.13	-0.11*	-0.27+	0.06	0.19
married or living together as married	0.53***	0.74***	0.44***	0.23	0.46**	0.06
divorced/separated/widowed	0.07	0.15	-0.11	-0.14	-0.37+	-0.19
autonomy	-0.11*	-0.07	-0.11**	-0.01	-0.06	0.06
freedom	0.44***	0.42***	0.35***	0.43***	0.43***	0.36***
trust	0.12+	0.42**	0.43***	0.28+	-0.05	0.10
postmaterialist	-0.05	-0.18	-0.11*	0.14	-0.02	0.15
god important	0.01	0.05*	0.02*	-0.01	0.05**	0.06**
constant	4.08***	5.95***	4.59***	4.80***	3.47***	4.58***
N	1985	309	2283	237	736	579
adj R2	0.321	0.313	0.279	0.398	0.276	0.201

+ 0.10; * 0.05; ** 0.01; *** 0.001; robust std err

Table 3 OLS regressions of life satisfaction: added “health.” WVS country samples split by rural and towns (<0.5 m) v cities (>0.5 m)

	GBR		NLD		URY	
	<0.5 m	>0.5 m	<0.5 m	>0.5 m	URYrurTow	>0.5 m
2022	-0.12	-0.26	-0.06	-0.24+	0.44***	0.23
health	0.48***	0.67***	0.62***	0.77***	0.56***	0.32**
income	0.05**	-0.01	0.04***	0.08**	0.05	0.12***
age	-0.02*	-0.07*	-0.01	-0.03	0.01	-0.05*
age2	0.00**	0.00**	0.00**	0.00+	-0.00	0.00*
male	-0.16*	-0.15	-0.09+	-0.23+	-0.01	0.14
married or living together as married	0.49***	0.60**	0.38***	0.21	0.41**	0.04
divorced/separated/widowed	0.05	0.20	-0.15	-0.27	-0.36+	-0.16
autonomy	-0.12**	-0.09	-0.10**	0.07	-0.09	0.04
freedom	0.38***	0.29***	0.29***	0.31***	0.40***	0.35***
trust	0.07	0.28*	0.34***	0.21	-0.07	0.01
postmaterialist	-0.05	-0.26+	-0.09*	0.06	0.01	0.12
god important	0.01	0.02	0.02+	0.00	0.05**	0.06**
constant	2.72***	4.29***	2.46***	2.01*	1.31+	3.31***
N	1985	309	2279	236	736	578
adj R2	0.379	0.416	0.371	0.527	0.320	0.216

+ 0.10; * 0.05; ** 0.01; *** 0.001; robust std err

Table 4 OLS regressions of life satisfaction. Country-wave pooled models

	a1	a2	a3	a4	a5
pandemic	-0.20**	-0.13 +	-0.10	-0.02	-0.18*
city lg500k	0.05	0.19*	0.20*	0.11	0.07
pandemic × city lg500k	-0.26*	-0.26*	-0.26*	-0.21 +	-0.15
United Kingdom	-0.04	0.03	0.08	-0.01	-0.04
Uruguay	0.82***	0.92***	0.95***	0.68***	0.43***
2005	0.00	0.00	0.00	0.00	0.00
2011	-0.82***	-0.72***	-0.54***	-0.47***	-0.44***
2012	-0.10	0.15 +	0.11	0.02	0.05
income		0.14***	0.13***	0.08***	0.08***
age		-0.05***	-0.04***	-0.03***	-0.03***
age2		0.00***	0.00***	0.00***	0.00***
male		-0.16***	-0.17***	-0.16***	-0.11**
married or living together as married		0.46***	0.46***	0.39***	0.44***
divorced/separated/widowed		0.01	0.01	-0.03	-0.07
god important			0.03***	0.03***	0.02***
trust			0.38***	0.25***	0.26***
postmaterialist			-0.04	-0.05 +	-0.04
autonomy			-0.10***	-0.10***	-0.09***
health				0.71***	
freedom					0.40***
constant	7.58***	7.42***	7.14***	4.40***	4.47***
N	9196	7746	6038	6032	5970
adj R2	0.020	0.094	0.113	0.230	0.291

+ 0.10; * 0.05; ** 0.01; *** 0.001; robust std err

is statistically insignificant, i.e., the pandemic differential urban v rural effect is not statistically significant if split by country. However, if the urbanicity variable is not collapsed into the binary urban–rural, but left as several categories, the differences for Great Britain and Uruguay are statistically significant. Finally, we pool data for the three countries together in Table 4.

We start with a basic model where we regress life satisfaction on a dummy for the largest cities, and during-pandemic wave dummy where “pandemic” = 1 if *year* = 2022. We also include country dummies, as we now pull all the data together. We also include year dummies in addition to pandemic dummy since data were collected in different countries in different years.

In column a1, as expected, during the pandemic SWB went down by -0.2, and especially so for cities by an additional -0.26. When adding basic controls in model a2, “pandemic × city lg 500 k” stays about the same at -0.26. We include an extended list of controls in model a3, and again the coefficient stays at -0.26. It is only after adding “health” in model a4 that the coefficient slightly drops to -0.21.

The addition of freedom in model a5 cuts the effect most substantially to -0.15 and loses statistical significance. The freedom variable comes from the following survey item: “Some people feel they have completely free choice and control over

their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means ‘none at all’ and 10 means ‘a great deal’ to indicate how much freedom of choice and control you feel you have over the way your life turns out.” A rationale to look at freedom is that it confounds with city; i.e., cities have more freedom than rural areas at least in some senses. The idea goes back at least to Ferdinand Toennies’ “*Gemeinschaft und Gesellschaft*” (Tönnies [1887] 2002)—city air is free—e.g., nonstandard/nonconformist people, such as LGBTQ, are more free in an urban area.

The WVS freedom variable also measures control over one’s life. Clearly, during the covid19 pandemic, city residents, all things equal, would have felt a greater loss of control over their lives since they were more exposed to being infected. This may explain why ‘freedom’ removes the effect of the interaction variable “pandemic x city lg500k.”⁶

Conclusion and Discussion

The present study argues that the covid19 pandemic has lowered SWB in large cities. The covid19 pandemic made the economic advantage and prosperity of cities quickly wither away. The pandemic created significant economic turmoil particularly in large urban centers: as businesses and industries shut down, millions lost their jobs, and thousands fled to the suburbs or smaller places, hoping to avoid human interaction and protect themselves against the virus. Places like New York City, that were vibrant and full of life, became dull and empty. Still, as of 2023, much of the commercial real estate in urban cores is empty.

Urban and rural areas experienced and coped with the pandemic very differently. Urban areas became the center of coronavirus outbreaks around the world, and many cities saw their healthcare systems become quickly overwhelmed given the magnitude of the virus—makeshift hospitals and makeshift morgues were set up in urban places like New York City.

There’s always a strong correlation between subjective well being and health. Health is the key predictor of happiness—almost no one considers health unimportant (e.g., Campbell et al., 1976). The virus not only made people severely ill, but it prevented people who had any other health emergencies or issues from being properly taken care of (e.g., cancer, heart disease, diabetes). Thus, the number of people who’s health was directly or indirectly affected by covid19 is significantly larger than the reported statistics of covid19 infection. This was particularly an issue in large metropolitan areas. Covid19’ impact on wellbeing is arguably larger than simply measuring it by incidence, hospitalization, and death counts—e.g., social distancing in itself (regardless of infection) increases psychological distress (Khan et al.,

⁶ We thank an anonymous reviewer for providing this explanation. Likewise, the anonymous reviewer also points to institutional trust (the more you trust the institution the more you are confident that the COVID-19 situation is handled well by the authorities). Maybe rural residents have higher institutional trust and if so, maybe this could explain their lower loss of happiness. For discussion see Sørensen and Christiansen (2022). Future research could further explore freedom, control, and institutional trust.

2021). Thus, it is no surprise that our findings show such a significant and relatively large drop in happiness levels in cities as compared to smaller places.

We interpret the impact of Covid-19 broadly—not narrowly focused just on the disease and its mortality rate. There is the scare inflicted by the pandemic to people in the vicinity of major outbreaks, and there are also socio-economic consequences of imposed restrictions to stop the spread of the disease, such as unemployment. One of the standard arguments for urban over rural living is the availability of amenities such as commodities, services, and work/career opportunities. The opportunity to take advantage of such amenities is reduced by pandemic restrictions. Thus, a “bundle view” or a broader understanding of life satisfaction domain is arguably applicable here.⁷

Understanding the urban–rural discrepancies is important because policymakers can implement policies targeted to create a more healthy and livable environment for urban and rural residents based on the different challenges they experience to foster happiness. The spread of infectious disease in cities is unavoidable and will likely happen again in the near future. Learning from the challenges brought by covid19 might result in lifesaving, health and happiness promoting measures.

It is important to highlight that only the initial phase of an infection per capita is greater in cities, then urban versus rural rates converge, and in the last stage, infections are higher in rural areas as cities get hit first and recover first (Cuadros et al., 2021)—at least in the US—and we assume that elsewhere the mechanism will be similar.

But there is arguably a strong psychological effect, urban scare, that will also last well beyond the pandemic in the foreseeable future—future research can test it. Likewise, urban quality of life versus rural quality of life even given similar⁸ per capita infection is very different—one can easily go about daily life and even enjoy most rural activities in rural areas, while the opposite is true in cities—the urban way of life is unbearable during a pandemic.

The massive difference in population density of urban versus rural needs to be underscored. The disproportionate population density signifies that even if the infection rate were similar across urban–rural areas, the difference in infection rate per sq km would be massive. And this is one key factor behind the urban scare from covid19—the sheer number of infections in one’s proximity was astronomical.

The pandemic has brought attention to the many existing problems of cities. In many ways, cities cannot be fixed—there is an inherent conflict, dysfunction and even misanthropy in metropolitan areas (Amin, 2006; Fischer, 1972; Okulicz-Kozaryn, 2015; Okulicz-Kozaryn & Valente, 2022; Peck, 2016; Thrift, 2005; Wirth, 1938). Others would argue that a city can be fixed and made happier (for a review see Ballas, 2013). An useful discussion of directions for change is Olasov et al. (2022)—for instance, to re-imagine cities as places that offer convivial and sensual shared space for shared pleasure, “a mesh of small, safe, intimate places, rather than a series of grand urban projects.”

⁷ We thank an anonymous reviewer for this point.

⁸ Assuming similar per capita rates is not illogical: cities experience increased infection rate only initially, but then infection rates in smaller areas rise as cities recover and disease spreads to smaller areas.

Limitations and Future Research

These are the first analyses examining the urban–rural SWB differential during the covid19 pandemic. As such, there are limitations that need to be considered. First, even though population size and density correlate, they are not the same—future research could use density to explore whether these findings are robust. Unfortunately, the WVS only measures urbanicity by population size, and we know that the spread of infectious diseases like covid19 and the subjective “urban scare” are not only due to population size, but also density.

In addition, there may be time effects—covid19 developed differently in different places over time—see covid19 trajectories in the online appendix. We only used 2 periods for each country—before and during the pandemic. Another dataset that has more time points would be useful to test the robustness of these findings.

One potential limitation is that the slower diffusion of infectious disease to rural areas compared to urban areas may have affected the results. Another threat is omitted variables, although we have strived to mitigate this with multiple specifications including before-after (pre and during pandemic) 2 group (urban v rural) specification, so called difference-in-difference (DID). Also note that study of urbanization is inherently observational, not experimental (or even quasi-experimental).

As more data becomes available, it will be instructive to closely examine countries that were most affected by covid19. The results from Great Britain, the Netherlands, and Uruguay studied here may not generalize to other countries, especially ones with much different covid19 rates, policy responses and urbanization patterns. Italy and the U.S., for example, will probably show much greater negative effects on SWB than what we found in the UK (GBR), the Netherlands (NLD) and Uruguay (URY). Although covid19 infection rates are significantly lower now (in 2023), and another massive pandemic could be decades ahead, we’ll likely experience covid19 lingering effects for many years to come. This could arguably include urban scare, prevalence of misanthropolis (a metropolis full of distrust and dislike of humankind) (Okulicz-Kozaryn & Valente, 2022), and possibly an urban crisis. It would be useful to study the long term effect on urban–rural happiness gradient/gap and whether covid19 has widened more permanently the urban–rural happiness gap that had been closing prior to the pandemic (Okulicz-Kozaryn & Valente, 2018).

This is only the first study on the topic and more research is needed to examine the impact of covid19 on the urban–rural gradient/gap. We are interested in the general and overall patterns we observed here and believe it provides a good starting point for a much needed debate on this topic. Future research can focus on a more direct link between infections, hospitalizations, and deaths and SWB by linking public health data with SWB data for specific locations. Likewise there is a huge difference in infection rates across countries (e.g., Italy, the US, China), and across places within countries. Such differences could be perhaps explored in a natural experiment framework where massively infected area can be matched with a similar area but with low infection rate.

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References

- Ali, S. H., & Keil, R. (2011). *Networked disease: Emerging infections in the global city*. John Wiley & Sons.
- Amin, A. (2006). The good city. *Urban Studies*, 43, 1009–1023.
- Ballas, D. (2013). What makes a 'happy city'? *Cities*, 32, S39–S50.
- Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., Kaplan, S., Sherdell, L., Gotlib, I. H., & Jonides, J. (2012). Interacting with nature improves cognition and affect for individuals with depression. *Journal of Affective Disorders*, 140, 300–305.
- Bettencourt, L., & West, G. (2010). A unified theory of urban living. *Nature*, 467, 912–913.
- Bettencourt, L. M., Lobo, J., Helbing, D., Kühnert, C., & West, G. B. (2007). Growth, innovation, scaling, and the pace of life in cities. *Proceedings of the National Academy of Sciences*, 104, 7301–7306.
- Bettencourt, L. M., Lobo, J., Strumsky, D., & West, G. B. (2010). Urban scaling and its deviations: Revealing the structure of wealth, innovation and crime across cities. *PLoS ONE*, 5, e13541.
- Blanchflower, D. G., & Oswald, A. J. (2011). International happiness: A new view on the measure of performance. *The Academy of Management Perspectives*, 25, 6–22.
- Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. Russell Sage Foundation.
- Carlsen, F., & Leknes, S. (2022a). For whom are cities good places to live? Evidence from Norway. *Regional Studies*, 56, 2177–2190.
- Carlsen, F., & Leknes, S. (2022b). The paradox of the unhappy, growing city: Reconciling evidence. *Cities*, 126, 103648.
- Chen, J. T., & Krieger, N. (2021). Revealing the unequal burden of COVID-19 by income, race/ethnicity, and household crowding: US county versus zip code analyses. *Journal of Public Health Management and Practice*, 27, S43–S56.
- Connolly, C., Keil, R., & Ali, S. H. (2021). Extended urbanisation and the spatialities of infectious disease: Demographic change, infrastructure and governance. *Urban Studies*, 58, 245–263.
- Cooper, I., Mondal, A., & Antonopoulos, C. G. (2020). A SIR model assumption for the spread of COVID-19 in different communities. *Chaos Solitons & Fractals*, 139, 110057.
- Cuadros, D. F., Branscum, A. J., Mukandavire, Z., Miller, F. D., & MacKinnon, N. (2021). Dynamics of the COVID-19 epidemic in urban and rural areas in the United States. *Annals of Epidemiology*, 59, 16–20.
- Curtin, S. C., & Heron, M. P. (2022). *COVID-19 death rates in urban and rural areas: United States, 2020*. US Department of Health and Human Services, Centers for Disease Control and Prevention.
- Easterlin, R. A., & O'Connor, K. J. (2023). Three years of COVID-19 and life satisfaction in Europe: A macro view. *Proceedings of the National Academy of Sciences*, 120, e2300717120.
- Edsall, T. B. (2023a). *The Era of Urban Supremacy is over*. The New York Times.
- Edsall, T. B. (2023b). *How a 'Golden Era for Large cities' might be turning into an 'Urban Doom Loop'*. The New York Times.
- Ferrer-i-Carbonell, A., & Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness? *Economic Journal*, 114, 641–659.
- Fischer, C. S. (1972). Urbanism as a way of life (A Review and an Agenda). *Sociological Methods and Research*, 1, 187–242.
- Frumkin, H. (2001). Beyond toxicity: Human health and the natural environment. *American Journal of Preventive Medicine*, 20, 234–240.
- Haggett, P. (1994). Geographical aspects of the emergence of infectious diseases. *Geografiska Annaler: Series b, Human Geography*, 76, 91–104.
- Harvey, D. (2012). *Rebel cities: From the right to the city to the urban revolution*, Verso Books.

- Keil, R., & Ali, H. (2007). Governing the sick city: Urban governance in the age of emerging infectious disease. *Antipode*, 39, 846–873.
- Khan, A. G., Kamruzzaman, M., Rahman, M. N., Mahmood, M., & Uddin, M. A. (2021). Quality of life in the COVID-19 outbreak: Influence of psychological distress, government strategies, social distancing, and emotional recovery. *Heliyon*, 7, e06407.
- Lenzi, C., Perucca, G. (2016). The Easterlin paradox and the urban-rural divide in life satisfaction: Evidence from Romani. Unpublished; <http://www.grupposervizioambiente.it>. Accessed 14 Feb 2024.
- Lenzi, C., & Perucca, G. (2020). Not too close, not too far: Urbanisation and life satisfaction along the urban hierarchy. *Urban Studies*, 58(13), 2742–2757.
- Lenzi, C., & Perucca, G. (2022). No place for poor men: On the asymmetric effect of urbanization on life satisfaction. *Social Indicators Research*, 164(1), 165–187.
- Maller, C., Townsend, M., Pryor, A., Brown, P., & St Leger, L. (2006). Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promotion International*, 21, 45–54.
- Morrison, P. (2015). *Capturing effects of cities on subjective wellbeing*. European Regional Science Association Conference, Lisbon.
- Morrison, P. S. (2021). Whose happiness in which cities? A quantile approach. *Sustainability*, 13, 11290.
- Morrison, P. S., & Weckroth, M. (2018). Human values, subjective well-being and the metropolitan region. *Regional Studies*, 52(3), 325–337.
- Newman, M. E. (2002). Spread of epidemic disease on networks. *Physical Review E*, 66, 016128.
- Ng, Y.-K. (1996). Happiness surveys: Some comparability issues and an exploratory survey based on just perceivable increments. *Social Indicators Research*, 38, 1–27.
- Ng, Y.-K. (1997). A case for happiness, cardinalism, and interpersonal comparability. *The Economic Journal*, 107, 1848–1858.
- Nixey, C. (2020). *Death of the office. As the pandemic leaves offices around the world empty, Catherine Nixey asks what was the point of them anyway?* The Economist.
- Okulicz-Kozaryn, A. (2015). *Happiness and place. Why life is better outside of the city*. Palgrave Macmillan.
- Okulicz-Kozaryn, A., & Valente, R. R. (2019). No urban malaise for millennials. *Regional Studies*, 53(2), 195–205.
- Okulicz-Kozaryn, A., & Valente, R. R. (2021). Urban unhappiness is common. *Cities*, 118, 103368.
- Okulicz-Kozaryn, A., & Valente, R. R. (2022). Misanthropopolis: Do cities promote misanthropy? *Cities*, 131, 103945.
- Olasov, I., Menser, M., Gammage, J., dos Santos, E.S., Short, J.R., Easwaran, K., Sundstrom, R.R., Khawaja, I., Kukla, Q.R. and Melcher, K. (2022). Cities after COVID: Ten philosophers consider how COVID has impacted the life of the city. *The Philosophers' Magazine*. <https://philarchive.org/archi ve/SUNCAC-6>
- Park, R. E., & Burgess, E. W. (2019). *The city*. University of Chicago Press.
- Peck, J. (2016). Economic rationality meets celebrity urbanology: Exploring Edward Glaeser's City. *International Journal of Urban and Regional Research*, 40, 1–30.
- Pretty, J. (2012). *The earth only endures: On reconnecting with nature and our place in it*. Routledge.
- Robbins, G. (2021). *How the pandemic is creating new urban wastelands*. Jacobin.
- Senior, J. (2006). *Some dark thoughts on happiness*. New York Magazine.
- Sørensen, J. F. (2014). Rural–urban differences in life satisfaction: Evidence from the European Union. *Regional Studies*, 48, 1451–1466.
- Sørensen, J. F. (2021). The rural happiness paradox in developed countries. *Social Science Research*, 98, 102581.
- Sørensen, J. F. L., & Christiansen, M. (2022). The role of economic stress, health concerns, and institutional trust in supporting public protests against COVID-19 lockdown measures in Denmark. *International Journal of Environmental Research and Public Health*, 20, 148.
- Stier, A. J., Berman, M. G., & Bettencourt, L. M. (2021). Early pandemic COVID-19 case growth rates increase with city size. *npj Urban Sustainability*, 1(1), 31.
- Subramanian, S., Subramanyam, M. A., Selvaraj, S., & Kawachi, I. (2009). Are self-reports of health and morbidities in developing countries misleading? Evidence from India. *Social Science & Medicine*, 68, 260–265.
- Tesson, S. (2013). *Consolations of the Forest: Alone in a Cabin in the Middle Taiga*. Penguin.

- Thrift, N. (2005). But malice aforethought: Cities and the natural history of hatred. *Transactions of the Institute of British Geographers*, 30, 133–150.
- Tönnies, F. (2002). *Community and society*. Dover Publications
- Wirth, L. (1938). Urbanism as a way of life. *American Journal of Sociology*, 44, 1–24.

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