Unhappy Metros: Panel Evidence

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abstract: We study the effect of urbanicity (metro v nonmetro) on life satisfaction, or Subjective WellBeing (SWB). The literature agrees that residents of metropolitan areas tend to be less satisfied with their lives than residents of smaller settlements in the developed world. But the existing evidence is cross-sectional only. This is the first study using longitudinal dataset to test the "unhappy metro" hypothesis. Using the 2009-2019 US Panel Study of Income Dynamics (PSID), we find support for the cross-sectional findings: metros are less happy than nonmetros. The effect size is significant, the negative effect of metro v nonmetro is equivalent to the effect of one's health deteriorating about a third from "fair" to "poor." Given extremely large scale of urbanization, projected 6b of people from 1950 to 2050, the combined effect of urbanicity on human wellbeing is large.

keywords: Panel Study of Income Dynamics (PSID), urban-rural happiness gradient, urban, cities, happiness, life satisfaction, Subjective WellBeing (SWB)

"With urbanization comes disharmony" The Dalai Lama

1 Introduction

For over 95% of our evolutionary history, humans have lived without cities as hunter-gatherers usually in small bands of 50-80 people (Maryanski and Turner 1992). Only several generations ago, in 1800, a miniscule 1.7% of the world population lived in cities larger than 100k (Davis 1955). Humans have not evolved to live in settlements of millions of inhabitants at high densities, such as cities. Human nature is unlike that of ants or bees: by one estimate we're 90% chimp and only 10% bee (Haidt 2012).

Urbanism is not just built environment, it is a way of life (Wirth 1938). Urbanism affects humans in multiple and profound ways, indeed urbanism is arguably the most significant disruption of human habitat in our species history (Okulicz-Kozaryn 2015). World is urbanizing at an astonishing pace–urban population is projected to increase from .75b in 1950 in to 6.75b in 2050 (`population.un.org/wup`)–6 billion urbanites more over just 100 years.

At the same time, an agreement has emerged that in addition to the traditional development measures such as Gross Domestic Product (GDP) and Human Development Index (HDI), it is useful to measure human development as Subjective WellBeing (SWB) (Stiglitz et al. 2009, Diener 2009). Hence, the present study estimates the effect of urbanicity on SWB.

Many studies are finding lowest happiness in largest cities (e.g., Gurin et al. 1960, Campbell et al. 1976, Senior 2006, Office for National Statistics 2011, Chatterji 2013, Lu et al. 2015, Lenzi and Perucca 2016, Morrison 2015, Morrison and Weckroth 2017, Okulicz-Kozaryn and Valente 2021, Lenzi and Perucca 2021). Yet all studies to date are cross-sectional. Longitudinal evidence is missing.

Rehdanz and Maddison (2008) uses a German panel dataset (GSOEP), properly defining urban rural gradient with multiple cutoffs including at several hundred thousand, but without panel modeling techniques such as fixed or random effects. Few studies about the effect of place on SWB using panel data do not actually test the urban unhappiness hypothesis. White et al. (2013b) and White et al. (2013a) use British Household Panel Study (BHPS) but test green space (such as gardens, parks, and proximity to coast), not size of a place. Similarly, Alcock et al. (2014) is a panel study (BHPS) but also examining green space, not size of a place.

Hoogerbrugge and Burger (2021) also using BHPS test green space effect, not urbanism. The size of a place cutoff is at 10,000 or 3,000 people for Scotland. Hence, much of the places above the cutoff, such as large villages and small towns are not really "urban." They are lacking defining features of urbanness: size, density, and heterogeneity (Wirth 1938). The build environment in villages or small towns lacks tall buildings, urban transit, airports, etc. Way of life in such places is not urban either(Tönnies [1887] 2002, Park 1915, Wirth 1938, White and White 1977) . Urbanicity, ideally, should be measured as a gradient, but if a binary cutoff is necessary, it should be at several hundred thousand (Okulicz-Kozaryn 2016), not at 3 or 10 thousand as in Hoogerbrugge and Burger (2021).

2 Theory

There are at least several theories predicting the effect of urbanism on SWB. It is useful to start with evolution as genes determine about half of SWB (Schnittker 2008, Lykken and Tellegen 1996, Brooks 2013), and drive many other theories. As already indicated in the introduction humans have not evolved for city life among thousands of people densely packed together in an artifical setting made of concrete, metal, and plastic. Again, for over 95% of human evolutionary history there were no cities–hunters-gatherers lived in bands of 50-80 (Maryanski and Turner 1992).

Interestingly, neuroscience is becoming interested in urbanism (Adli et al. 2017, Pykett et al. 2020), and initial empirical results indicate negative effect of urbanism on human brain (Lederbogen et al. 2011).

Ingroup preference or homophily ("love of the same") theory (McPherson et al. 2001, Tajfel

1982, Tajfel et al. 1971, Smelser and Alexander 1999, Putnam 2007, Fowler and Christakis 2008) states that a human has a prference for other humans like her–ingroups typically contain similar persons. A defining feature of a city is heterogeneity or diversity Wirth (1938), which produces: mistrust, uneasines, conflict, and misanthropy (Milgram 1970, Thrift 2005, Amin 2006).[1]

Livability theory (Veenhoven and Ehrhardt 1995, Veenhoven 2014, 2000) states that humans, just as other animals, have needs (such as those on Maslow hierarchy of needs (Maslow [1954] 1987)), and if those needs are satisfied, then conditions are livabale and happiness follows. As opposed to evolution and homophily indicating urban unhappiness, it is somewhat unclear what livability theory would predict. Theory author, Veenhoven, tended to argue (personal conversations) that at least some aspects of urbanism improve livability, and hence, happiness. Clearly, cities have multiple benefits (Meyer 2013, Florida 2008, Glaeser 2011, O'Sullivan 2009), notably jobs and amenities that improve livability and happiness. But cities also do have multiple disamenities such as more congestion, crime, infectious disease spread, air, noise, and light polutions (Bettencourt and West 2010, Bettencourt et al. 2007, Meyer 2013, Okulicz-Kozaryn 2015). If happiness is a yardstick to be considered, then city disadvantages outweigh city advantages, at least in the developed world (Okulicz-Kozaryn and Valente 2021).

Multiple Discrepancies Theory (MDT) (Michalos 1985, 2014) states that happiness is relative and a result of multiple comparisons (e.g., Luttmer 2005). Arguably, visual and social comparisons are more likely in urban areas as there are more people and more stimuli. And there is some evidence that humans tend to make upwards comparisons (Frey and Stutzer 2002). As a sidenote,

[1]Yet, on the other hand, in a city there can be community, a neighbourhood village, that at least in some ways can simulate a more natural habitat for a human (Fischer 1995, 1975, Jacobs [1961] 1993).

there are authors arguing great liberation upon leaving the city (Thoreau 1995 [1854], Tesson 2013, Nietzsche and Parkes 2005).

Classic urban sociology has produced much insight on the effect of urbanism on human condition: City destroys norms, social fabric, and moral compass; and produces instead disorder, overstimulation, and withdrawal (Wirth 1938, Simmel 1903, Tönnies [1887] 2002, Park et al. [1925] 1984, Fischer 1972, 1973).

Economists, on the other hand, tend to argue triumph of the city (Glaeser et al. 2016, Glaeser 2011): humans are rational (economics assumption) and they urbanize (revealed preference), so there must be more utility in cities, and probably more happiness; Or alternatively: there is more money (income and consumption) in cities, so there is also more utility, so again there should be probably more happiness.

There is a debate whether utility is happiness and it is beyond the scope of this study, for discussion see Van Der Deijl (2018), Welsh (2016), Hirschauer et al. (2015), Kenny (2011), Ng (2011), Clark et al. (2008), Frey et al. (2008), Becker and Rayo (2008), Kahneman and Krueger (2006), Kimball and Willis (2006), Kahneman and Thaler (2006), Stutzer et al. (2004), Frey and Stutzer (2002), Kahneman (2000), Frey and Stutzer (2000), Kahneman et al. (1997), Ng (1997), Kahneman and Thaler (1991), Scitovsky (1976). If utility is happiness, then lower happiness in cities challenges economic theory.

A curious altenative is that "happiness is a commodity in the utility function in the same way that owning a car and being healthy are" (Becker and Rayo 2008, p. 89). This strange statement may actually make some sense: happiness is not all that matters to humans and drives human

behavior. Humans may chose to move to and/or stay in cities even if they are less happy there and still be rational: one may trade off happiness loss for increase in income, prestige, pride, etc. In many ways an urbanite has a fuller/faster life: exciting and stimulating experiences and encounters, etc.

Yet, it is clear that humans are not fully rational as economics asssumes it (Frank 2012, Ariely 2009, Kahneman 1994, Zafirovski 2014, Peck 2016, Zakaria 2019)–humans consistently and often predictably make decisions that they regret–for a refreshing perspective see Ware (2012).

For many people, notably Americans, pursuit of happiness is just about the same as pursuit of money (Easterlin 1973, **?**, Joye et al. 2020). And yet we know that materialism and consumerism do not lead to happiness (Kasser 2003, Leonard 2010, Skidelsky and Skidelsky 2012, Dittmar et al. 2014, Hsee et al. 2013, Roberts 2011, Roberts and Clement 2007, Schmuck et al. 2000, Frank 2012, 2010, 2008, 2004, Klein 2014)

Americans move to places mostly for jobs (Campbell 1981), and since companies (and government and nonprofits) locate most jobs in urban areas, this is where most people have to move to in order to have a job. That people move to and/or stay in cities does always mean that they prefer it–people are often rather forced into cities than urbanize voluntarily (Molotch 1976).

3 Data and model

We use the 2009-2019 US Panel Study of Income Dynamics (PSID) from `psidonline.isr.umich.edu`. We cannot use earlier waves because the SWB question started in 2009. We use the family files and only retain the reference person following Brown and Gathergood (2019).

The SWB question reads: "Please think about your life as a whole. How satisfied are you with it? Are you completely satisfied, very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied?" on scale from 1 (low) to 5 (high).

The key independent variable is the metro dummy variable as defined in table 1. Summary statistics of all variables are in Supplementary Online Material (SOM).

metro	beale rural-urban code	description
1	1	Metro: Counties in metro areas of 1 million population or more
1	2	Metro: Counties in metro areas of 250,000 to 1 million population
1	3	Metro: Counties in metro areas of fewer than 250,000 population
0	4	Nonmetro: Urban population of 20,000 or more, adjacent to a metro area
0	5	Nonmetro: Urban population of 20,000 or more, not adjacent to a metro area
0	6	Nonmetro: Urban population of 2,500 to 19,999, adjacent to a metro area
0	7	Nonmetro: Urban population of 2,500 to 19,999, not adjacent to a metro area
0	8	Nonmetro: Completely rural or less than 2,500 urban population, adjacent to a metro area
0	9	Nonmetro: Completely rural or less than 2,500 urban population, not adjacent to a metro area

Table 1: Metro variable: Metropolitan/Non-metropolitan Indicator. This indicator is derived from the 2013 Beale-Ross Rural-Urban Continuum Codes published by USDA based on matches to the FIPS state and county codes: 1. Metropolitan area (Beale-Ross Code ER775923= 1-3); 0. Non-metropolitan area (Beale-Ross Code ER775923= 4-9). Each county in the U.S. is assigned one of the 9 codes.

We control for a usual set of SWB predictors following Okulicz-Kozaryn and Valente (2018). In addition, following Brown and Gathergood (2019) we control for distress.

There are three variables that not only predict SWB, but also are likely to be confounded with metro: race, political views, and religiosity–yet, as they are mostly constant over short period of time such as that considered here, they are irrelevant in fixed effects model. Race is definitely almost always constant over time, and while political views and religiosity do change, they rarely change much over just several years as studied here. Furthermore, there are no measures of political views in PSID.

The US is a geographically diverse country with a multitude of regional differences that may affect the results, notably urban areas differ in their character greatly depending on the region,

and hence, we include state dummies. Following Brown and Gathergood (2019) we also add year dummies.

We use a standard Fixed Effects model. Although linear models assume cardinality of the outcome variable, and SWB measures are technically ordinal, cardinality can be assumed. Ferrer-i-Carbonell and Frijters (2004) has shown that linear model results are substantially the same as those from discrete models (and linear models are the default method in happiness research (Blanchflower and Oswald 2011)). Aside from statistical estimation, even theoretically, while there is still debate about the cardinality of SWB, there are strong arguments to treat it as cardinal (Ng 1996, 1997, 2011).

A standard fixed effects model is given by:

$$SWB_{it} = \gamma METRO_{it} X_{it}\beta + \alpha_i + u_{it} \tag{1}$$

Where, $METRO_{it}$ is a metro dummy for person i at time t. γ is the main coefficient of interest on the metro dummy. α_i (i=1...n) is the unknown intercept for each person (n person-specific intercepts). SWB is the dependent variable, where i = person and t = wave (2009, 2011, 2013, 2015, 2017, 2019). X_{it} is a vector of control variables as listed in the Supplementary Online Material. β is the vector of coefficients for control variables. u_{it} is the error term. In Supplementary Online Material (SOM), we also present Random Effects, 2015 and 2015-2019 pooled OLS results– estimates on metro are stronger in these models, and hence, Fixed Effects results presented here are conservative estimates.

4 Results

Fixed effects regressions of `SWB` on `metro` are in table 2. Regression coefficient on `metro` is not significant without controlling for predictors of `SWB` in model a1. But addition of even most basic `SWB` predictors in model a2 makes `metro` negative at -.04 and statistically significant at .1 level of significance. This is an important finding: metro-nonmetro happiness gap only emerges after controlling for `SWB` predictors. Addition of further controls in a3 attenuates `metro` coefficient only slightly down to -.03. Addition of control for distress in model a4 and further addition of state and year dummies in a5 yields the same estimate as only controlling for basic `SWB` predictors in a2 at -.04.

Table 2: Fixed Effects regressions of SWB.

	a1	a2	a3	a4	a5
metro	0.01	-0.04*	-0.03*	-0.04**	-0.04*
age		0.02***	0.02***	0.01***	0.00
age sq		-0.00**	-0.00	-0.00	-0.00
last year total family income		0.00*	0.00	0.00	0.00
unemployed		-0.18***	-0.18***	-0.16***	-0.16***
male		0.27	0.21	0.07	0.08
health		0.13***	0.13***	0.10***	0.10***
kids			-0.01	-0.01	-0.01
college			-0.08*	-0.07	-0.07
married			0.18***	0.17***	0.17***
family unit size			0.04***	0.03***	0.03***
distress				-0.05***	-0.05***
constant	3.71***	2.37***	2.45***	2.90***	3.60***
state and year dummies	no	no	no	no	yes
N	37567	37489	36285	36142	36142
*** p<0.01, ** p<0.05, * p<0.1					

5 Conclusion and Discussion

Urbanism affects humans in multiple and profound ways (Wirth 1938), indeed urbanism is arguably the most significant disruption of human habitat in our species history (Okulicz-Kozaryn 2015). In addition to the traditional development measures such as Gross Domestic Product (GDP) and Human Development Index (HDI), it is useful to measure human development as Subjective WellBeing (SWB) (Stiglitz et al. 2009, Diener 2009). In the present study, we have focused on this important relationship of urbanicity and SWB.

This is the first panel data investigation of metro-nonmetro SWB gap. The results confirm cross-sectional evidence of urban unhappiness. Time invariant person-level characteristics, such as personality traits, do matter–the fixed effects metro unhappiness disadvantage is only about half of that from single-year or pooled data models (see Supplementary Online Material (SOM)). While the estimate of -.04 on 1-5 SWB scale may seem small, such effect size is not irrelevant. Even a finding of no effect would be counterintuitive amid current pro-urbanism (Glaeser 2011, Glaeser et al. 2016, Burger et al. 2020). Regression coefficients on `metro` are not significant without controlling for predictors of SWB, so it is important to adjust the metro non-metro happiness gap with happiness predictors, unlike in Burger et al. (2020).[2]

About 50% of human traits are genetically determined (Ridley 2000), including happiness (Lykken and Tellegen 1996, Brooks 2013, Schnittker 2008). Then person level characteristics such as health and unemployment matter, and only small proportion of SWB variation is due to environmental factors such as urbanness. Health is one of the strongest predictors of SWB (Pavot and

[2]Burger et al. (2020) also uses faulty Gallup data as elaborated in Okulicz-Kozaryn and Valente (2021)–in general, one should avoid Gallup happiness data–Gallup charges $30,000 for access (per one year), clearly "happiness industry," not happiness research (Davies 2015).

Diener 2008, Gerdtham and Johannesson 2001). In full model, a5, the coefficient on 5-step `health` is .10, hence, for instance, the negative effect of metro at -.04 is equivalent to the effect of one's health deteriorating at least a third from "fair" to "poor."

Urban population is projected to increase by 6 billion, from .75b in 1950 in to 6.75b in 2050 (`population.un.org/wup`). Even an apparently small effect of -.04 on 1-5 SWB scale, but multiplied by billions of humans urbanized, results in massive human unhappiness. For instance, given an urbanization of 1m of people, the unhappiness effect is equivalent to 40k people falling on SWB from "very satisfied" to "somewhat satisfied," or 10k people falling 4 steps from "very satisfied" to "not at all satisfied."

5.1 Limitations and Future Research

Future research can improve in a number of ways. Metro-nonmetro binary measure of urbanicity is limited–urbanicity is a gradient (Berry and Okulicz-Kozaryn 2011), not a dichotomy. Future research could use finer classification than binary metro-nonmetro. We have only had 6 waves of PSID data–as more waves become available, future research can arrive at more robust results. It will be also possible to estimate SWB from moving across urbanicity.

A limitation of 2009-2019 PSID used here is limited variablility over time especially with respect to urbanicity and SWB, as these variables do not change much over time. The problem is somewhat alleviated as PSID waves are every two years, not every year. Still, it will be useful to replicate the study as more waves become available.

Claiming causality is always problematic without experimental design. Having panel data helps, notably with respect to time-invariant characteristics that were not controlled for, but still causality

may not be present for a number of reasons. It needs to be remembered, however, that with respect to urbanicity, an experiment that would randomly assign persons to settlements of varying size is implausible. Likewise, there does not seem to be a clean quasi-experimental approach. Comments and suggestions are welcomed via email to the corresponding author.

Apart from technical/statistical considerations, there are conceptual directions for the future research. Human flourishing or subjective wellbeing is not only life satisfaction as studied here. Notably there are different dimensions or domains (Campbell et al. 1976). Overall life satisfaction is lower in urban than rural, but it doesn't mean that all domains follow the same pattern. Likewise, not all groups are necessarily less happy in city, for instace, the young, the educated, and the rich are arguably better able to take advantage of urban amenities and be less affected by urban disamenities.

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Supplementary Online Material (SOM)

[note: this section will NOT be a part of the final version of the manuscript, but will be available online instead]

5.2 Variables' Definitions

Table 3: Variable definitions.

name	description
swb	"Please think about your life as a whole. How satisfied are you with it? Are you completely satisfied, very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied?" 1 (lo) - 5 (hi)
metro	"Metropolitan/Non-metropolitan Indicator. This indicator is derived from the 2013 Beale-Ross Rural-Urban Continuum Codes published by USDA based on matches to the FIPS state and county codes." 1 Metropolitan area (Beale-Ross Code ER775923= 1-3) 0 Non-metropolitan area (Beale-Ross Code ER775923= 4-9)
age	age
age sq	age squared
last year total family income	last year total family income
unemployed	EMPLOYMENT STATUS-1ST MENTION; We would like to know about what you do – are you working now, looking for work, retired, keeping house, a student, or what?–FIRST MENTION; 1="Looking for work, unemployed", 0 otherwhise
male	gender
health	"Now I have a few questions about your health. Would you say your health in general is excellent, very good, good, fair, or poor?" 1 (poor) to 5 (excellent)
kids	"Number of Persons Now in the FU Under 18 Years of Age"
college	"Did (you/he/she) attend college?" 1='yes', 0='no'
married	"Are you married, widowed, divorced, separated, or have you never been married?" 1='married'; 0 otherwhise
family unit size	Number of Persons in FU at the Time of the Interview
white	"What is (your/his/her) race? (Are you/Is [he/she]) white, black, American Indian, Alaska Native, Asian, Native Hawaiian or other Pacific Islander?–FIRST MENTION" 1='white', 0 otherwhise
distress	The K-6 Non-Specific Psychological Distress Scale

5.3 Summary statistics

```
      id:  2, 3, ..., 14365                                  n =      10108
      yr:  2009, 2011, ..., 2019                             T =          6
           Delta(yr) = 1 unit
           Span(yr)  = 11 periods
           (id*yr uniquely identifies each observation)

Distribution of T_i:   min      5%     25%       50%       75%     95%     max
                         1       1       2         4         6       6       6

     Freq.  Percent    Cum. |  Pattern*
 ---------------------------+----------
     3179     31.45   31.45 |  111111
      723      7.15   38.60 |  ....11
      672      6.65   45.25 |  .....1
      548      5.42   50.67 |  ...111
      505      5.00   55.67 |  ..1111
      502      4.97   60.64 |  1.....
      481      4.76   65.39 |  .11111
      480      4.75   70.14 |  111...
      450      4.45   74.59 |  11....
     2568     25.41  100.00 | (other patterns)
 ---------------------------+----------
    10108    100.00         |  XXXXXX
 ------------------------------------
 *Each column represents 2 periods.
```

Variable		Mean	Std. Dev.	Min	Max	Observations
swb	overall	3.718723	.8759134	1	5	N = 37767
	between		.7136601	1	5	n = 10091
	within		.5603667	.5187227	6.552056	T-bar = 3.74264
met	overall	.7801749	.4141335	0	1	N = 37730
	between		.385049	0	1	n = 10073
	within		.1878218	-.0531584	1.613508	T-bar = 3.74566
age	overall	44.85923	16.82858	16	99	N = 37928
	between		17.23457	17	99	n = 10107
	within		2.911229	37.19257	51.60923	T-bar = 3.75265
age2	overall	2295.544	1698.311	256	9801	N = 37928
	between		1728.178	289	9801	n = 10107
	within		285.6776	1268.044	3368.044	T-bar = 3.75265
inc	overall	61242.84	81095.25	0	3316000	N = 37912
	between		66126.72	0	1883797	n = 10108
	within		39658.52	-937554.6	2052160	T-bar = 3.75069
une	overall	.0907629	.2872754	0	1	N = 37923
	between		.2197753	0	1	n = 10108
	within		.2116276	-.7425705	.9240962	T-bar = 3.75178
male	overall	.5491432	.4975856	0	1	N = 37930
	between		.4994373	0	1	n = 10108
	within		.0058544	-.2508568	1.049143	T-bar = 3.75247

```
hea      overall |  3.436374   1.046857          1          5 |     N =   37862
         between |              .92175          1          5 |     n =   10100
         within  |             .5731675   .4363742   6.603041 | T-bar = 3.74871
                 |                                           |
kid      overall |  .6846296   1.119852          0         11 |     N =   37930
         between |             1.061457          0         11 |     n =   10108
         within  |             .4720193  -3.148704    5.18463 | T-bar = 3.75247
                 |                                           |
col      overall |  .6264205   .4837605          0          1 |     N =   36608
         between |             .4803487          0          1 |     n =    9674
         within  |             .0744979  -.2069129   1.459754 | T-bar = 3.78416
                 |                                           |
mar      overall |  .2802942   .4491489          0          1 |     N =   37928
         between |              .412416          0          1 |     n =   10107
         within  |             .1586708  -.5530391   1.113628 | T-bar = 3.75265
                 |                                           |
nFU      overall |  2.281413   1.412387          1         14 |     N =   37930
         between |             1.317328          1         13 |     n =   10108
         within  |              .615575  -3.468587   8.081413 | T-bar = 3.75247
                 |                                           |
whi      overall |  .5256386   .4993489          0          1 |     N =   37697
         between |             .4985538          0          1 |     n =   10038
         within  |             .0213918  -.2743614   1.192305 | T-bar = 3.75543
                 |                                           |
k        overall |  3.608904   4.151942          0         24 |     N =   37689
         between |             3.629813          0         24 |     n =   10083
         within  |             2.339743  -10.05776    22.6089 | T-bar = 3.73788
```

(obs=5.00 ,55 8.00)

	swb	met	age	age2	inc	une	male	hea	kid	col	mar
swb	1.00										
met	-0.08	1.00									
age	0.09	-0.05	1.00								
age2	0.09	-0.06	0.98	1.00							
inc	0.13	0.06	0.10	0.06	1.00						
une	-0.12	0.02	-0.19	-0.18	-0.13	1.00					
male	0.09	-0.06	-0.01	-0.03	0.29	-0.02	1.00				
hea	0.27	0.02	-0.24	-0.23	0.20	-0.01	0.15	1.00			
kid	-0.01	0.02	-0.29	-0.30	0.01	0.09	-0.10	0.05	1.00		
col	0.04	0.08	-0.08	-0.09	0.24	-0.12	0.06	0.17	-0.04	1.00	
mar	0.20	-0.06	0.17	0.14	0.43	-0.12	0.55	0.13	0.10	0.14	1.00
nFU	0.04	0.01	-0.16	-0.19	0.16	0.05	0.08	0.06	0.86	-0.03	0.35
whi	0.09	-0.19	0.16	0.17	0.26	-0.16	0.26	0.12	-0.16	0.19	0.29
k	-0.37	-0.00	-0.12	-0.12	-0.17	0.12	-0.14	-0.30	0.04	-0.10	-0.18

(obs=6,294)

	swb	met	age	age2	inc	une	male	hea	kid	col	mar
swb	1.0000										
met	-0.0233	1.0000									
age	0.0701	-0.0482	1.0000								
age2	0.0704	-0.0482	0.9850	1.0000							
inc	0.1675	0.0793	0.0604	0.0308	1.0000						
une	-0.0931	0.0118	-0.1420	-0.1345	-0.1376	1.0000					
male	0.0619	-0.0174	-0.0316	-0.0407	0.2897	-0.0217	1.0000				
hea	0.3035	0.0486	-0.1854	-0.1776	0.2135	-0.0393	0.1189	1.0000			
kid	0.0501	-0.0036	-0.2768	-0.2929	0.0566	0.0246	-0.0676	0.0553	1.0000		

```
       col |  -0.0072   0.1033  -0.0532  -0.0633   0.2552  -0.1330   0.0317   0.1209  -0.0449   1.0000
       mar |   0.2059  -0.0181   0.1509   0.1293   0.4559  -0.1102   0.5009   0.1282   0.1246   0.1368   1.0000
       nFU |   0.1095  -0.0064  -0.1650  -0.1919   0.2014  -0.0005   0.0708   0.0593   0.8656  -0.0266   0.3526
       whi |   0.0585  -0.1388   0.1392   0.1496   0.2572  -0.1132   0.2024   0.0756  -0.0782   0.1494   0.2623
         k |  -0.3863  -0.0110  -0.1877  -0.1813  -0.1506   0.1098  -0.1076  -0.3022   0.0164  -0.0556  -0.1855
```

5.4 Panel Structure of Metro Variable

```
xttab met
```

```
                  Overall             Between             Within
      met |    Freq.  Percent      Freq.  Percent        Percent
----------+-----------------------------------------------------
 Inap.:   |    8294     21.98       2947     29.26          77.39
 Metropol |   29436     78.02       8362     83.01          93.19
----------+-----------------------------------------------------
    Total |   37730    100.00      11309    112.27          89.07
                           (n = 10073)
```

```
xtsum met
```

```
Variable         |      Mean   Std. Dev.       Min        Max |    Observations
-----------------+--------------------------------------------+----------------
met      overall |  .7801749   .4141335          0          1 |     N =   37730
         between |              .385049          0          1 |     n =   10073
         within  |             .1878218  -.0531584   1.613508 | T-bar = 3.74566
```

5.5 Single Year And Pooled Results V FE Results

Table 4: Regressions of SWB: FE v OLS 2015

	c1-FE	c1-2015	c2-FE	c2-2015	c3-FE	c3-2015	c4-FE	c4-2015	c5-FE	c5-2
metro	0.01	-0.11***	-0.04*	-0.12***	-0.03*	-0.10***	-0.04**	-0.09***	-0.04*	-0.08
age			0.02***	-0.00	0.02***	-0.01**	0.01***	-0.01***	0.00	-0.01
age sq			-0.00**	0.00**	-0.00	0.00***	-0.00	0.00***	-0.00	0.00
last year total family income			0.00*	0.00***	0.00	0.00**	0.00	0.00*	0.00	0.00
unemployed			-0.18***	-0.23***	-0.18***	-0.24***	-0.16***	-0.18***	-0.16***	-0.18
male			0.27	0.08***	0.21	-0.05*	0.07	-0.06**	0.08	-0.06
health			0.13***	0.26***	0.13***	0.26***	0.10***	0.18***	0.10***	0.18
kids					-0.01	-0.04*	-0.01	-0.03	-0.01	-0.03
college					-0.08*	-0.12***	-0.07	-0.13***	-0.07	-0.13
married					0.18***	0.28***	0.17***	0.24***	0.17***	0.24
family unit size					0.04***	0.06***	0.03***	0.05***	0.03***	0.05
distress							-0.05***	-0.06***	-0.05***	-0.06
constant	3.71***	3.82***	2.37***	2.80***	2.45***	2.93***	2.90***	3.63***	3.60***	3.74
state and year dummies	no	no	no	no	no	no	no	no	yes	yes
N	37567	6256	37489	6250	36285	6092	36142	6068	36142	6068

*** p<0.01, ** p<0.05, * p<0.1; robust std err (OLS)

Table 5: Regressions of SWB: FE v OLS Pooled 2015-2019.

	d1-FE	d1-09-19	d2-FE	d2-09-19	d3-FE	d3-09-19	d4-FE	d4-09-19	d5-FE	d5-0
metro	0.01	-0.08***	-0.04*	-0.09***	-0.03*	-0.07***	-0.04**	-0.08***	-0.04*	-0.08
age			0.02***	-0.00	0.02***	-0.01***	0.01***	-0.01***	0.00	-0.01
age sq			-0.00**	0.00***	-0.00	0.00***	-0.00	0.00***	-0.00	0.00
last year total family income			0.00*	0.00***	0.00	0.00***	0.00	0.00***	0.00	0.00
unemployed			-0.18***	-0.25***	-0.18***	-0.25***	-0.16***	-0.20***	-0.16***	-0.20
male			0.27	0.05***	0.21	-0.08***	0.07	-0.11***	0.08	-0.10
health			0.13***	0.25***	0.13***	0.25***	0.10***	0.17***	0.10***	0.17
kids					-0.01	-0.03***	-0.01	-0.02***	-0.01	-0.02
college					-0.08*	-0.10***	-0.07	-0.11***	-0.07	-0.11
married					0.18***	0.29***	0.17***	0.26***	0.17***	0.26
family unit size					0.04***	0.04***	0.03***	0.04***	0.03***	0.04
distress							-0.05***	-0.06***	-0.05***	-0.06
constant	3.71***	3.78***	2.37***	2.77***	2.45***	2.91***	2.90***	3.60***	3.60***	3.66
state and year dummies	no	no	no	no	no	no	no	no	yes	yes
N	37567	37567	37489	37489	36285	36285	36142	36142	36142	3614

*** p<0.01, ** p<0.05, * p<0.1; robust std err (OLS)

5.6 Random Effects

Table 6: RE regressions of SWB.

	b1	b2	b3	b4	b5
metro	-0.04***	-0.05***	-0.04***	-0.05***	-0.06***
age		0.00	-0.01***	-0.01***	-0.01***
age sq		0.00***	0.00***	0.00***	0.00***
last year total family income		0.00***	0.00***	0.00***	0.00***
unemployed		-0.22***	-0.22***	-0.19***	-0.19***
male		0.07***	-0.05***	-0.08***	-0.08***
health		0.19***	0.19***	0.14***	0.14***
kids			-0.02**	-0.02**	-0.02**
college			-0.06***	-0.08***	-0.08***
married			0.27***	0.24***	0.25***
family unit size			0.04***	0.04***	0.04***
distress				-0.05***	-0.05***
constant	3.74***	2.92***	3.03***	3.59***	3.68***
state and year dummies	no	no	no	no	yes
N	37567	37489	36285	36142	36142
*** p<0.01, ** p<0.05, * p<0.1					