Growing Cities are Happier than Shrinking Cities

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CP to resulyts and conclusion:

This is only second study on the topic after Delken (2008), such gap in the lterarture is remarkable.

A remarkable result is strength of the relationship –population correlates higher than crime and income– Remarkably about 50 perc more–and hold in regressions controlling for person level and county level predictors of SWB. so Relative effects are very large as compared to other county level predictors even as impiortant as crime or income level, but absolute effects as those other ecological vars, are small, 10 percent increase in population size leads to little additional happiness about .1 or .2 increase on 1-5 SWB sclae (chekc if 1-5)

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Urbanization is rampant: according to UN, urban population exploded from 30% in 1950 to 50% in 2005, and is projected to grow to 70% in 2050. Yet, many cities shrink. There is much research on the effect of size of place on SWB as recently summarized by Okulicz-Kozaryn and Valente (2021). But we know very little about the effect of change in size of a place on SWB. Hence, the present study.

The US is a land of inequalities, not just in widely discussed income, but also in population growth and shrinkage.

Take for instance two counties that an author of this study inhabitted. Collin TX is a northern suburb of Dallas– it mushroomed sevenfold just over 4 decades, from 150k in 1980 to 1m in 2019. Or take my current county, Camden NJ, which over the same period stayed flat, while the county seat, city of Camden shrank about 40% from its height of 125k in 1950 to 72k in 2020. Collin TX and Camden NJ tell a story representative of many other counties in South v North East.

Sunny, spacious, and afforadble South aka "Sunbelt" often mashrooms at mind boggling pace, and gritty, crowded, and expensive North East aka "Rustbelt" stays flat or shrinks. [1]

Again, there is much research on population size and SWB as recently summarized in Okulicz-Kozaryn and Valente (2021), but there is very little research on population change and SWB. Google Scholar queries such as "population change and happiness," "city growth and happiness," "population growth and happiness," "population decline and happiness" do not yield releveant literature. If anything, there is a sizeable literature on shirnking city and very little of it somewhat relaes to quality of life (but not happiness) (the terms are defined for instance in Okulicz-Kozaryn and Valente 2019).

The only study on population change and SWB is a master thesis written under the direction of a "happiness grandfather," Ruut Veenhoven (Delken 2008). The thesis offers a conclusion: "Overall satisfaction with life appears not to be lower in shrinking cities and satisfaction with several domains of life even higher. This is not because inhabitants are unaware of the situation of their city, since they appear to be more concerned about job-chances and crime." We agree that job-chances and crime are critical for happiness, possibly the most important ecological variables when it comes to place growth or shirinkage. But our study finds that shrinkage is related to lower SWB (controlling for crime and employment).

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I thank XXX. All mistakes are mine.

[1]Many counties in the US shrink, and are desparate to regain population, even offering $15,000 to move in (Block 2021). Largest American cities are not growing or even shrinking recently (THOMPSON 2019).

Delken (2008) assumes three scenarios for cities: $growing >= 3\%$, $-3\% < stable > 3\%$, $3\% < shrinking$. An advantage of Delken (2008) over our study is domain satisfactons–we only have global life satisfaction. An advantage of our study is structural: Delken (2008) uses German data–our study uses US data–US is more dynamic in terms of population than Germany.

Hartt (2019) makes a similar point to Delken (2008)– people can live happily in shrinking cities, but Hartt (2019) does not use SWB measure and uses other proxies instead. Per shrinking cities Hollander is perhaps the most prolific scholar in this area– Hollander (2011) argues similarly: cities can shrink successfully, enjoy "smart decline": shrinkage does not always mean decline in quality of life.

The bottomline is that there is some related research to the population growth-SWB nexus, but only one study, Delken (2008), uses SWB measure.

One other study uses SWB measure– similarly to our study, Glaeser et al. (2016) uses BRFSS data and finds positive effect of population growth on SWB. There are, however, critical problems with Glaeser et al. (2016): Glaeser et al. (2016) cherry-picks only certain urban areas and drops from the data smaller counties without any good reason. Dropping cases from sample may lead to finding results that one wants to find. [2] In addition, the analyses are oversaturated with many controls. Specifically, by adding state fixed effects, which correlate with population size and change, the relationship flips from negative to positive on urbanicity. Modeling in Glaeser et al. (2016) appears to be flawed, and hence Delken (2008) is considered the only useful study in this area.

Several other studies are somewhat related to the present study, but fundamentally their approaches are disjoint, and hence, not relevant to the present study. Goetzke and Islam (2017) and Barreira et al. (2019) argue that unhappiness predicts population decline or happiness predicts population growth. We believe that population changes are mostly due to other factors than happiness, and it is rather decline or growth that leads to unhappiness or happiness, not the other way round.

Park et al. (2021) offers a novel approach using Twitter data, but the research is conducted in one city only. We note that data from social media holds much promise for the future research.

Finally, Chen et al. (2019) finds that shrinking or as they term "hollowing" rural areas are not less happy, however, –it's disjoint from present research–study uses Chinese data–China has unique population change and migration patterns.

1 Theory

None of the 5 major happiess theories help to explain much why population growth or decline would change SWB:

- genes/set point (eg Schnittker 2008)

- adaptation/adjustment; hedonic treadmill (Brickman et al. 1978)

- needs/livability (Veenhoven and Ehrhardt 1995)

- comparison/discrepancies (Michalos 1985)

- happiness just a motivator (Carver and Scheier 1990) (rather momentary affective happiness than global cognitive life satisfaction)

But we find another theory that may explain the mechanism well. It may be signballing, visually explained with so called "tunnel effect"–humans think that whatever happens to others, whether things get better or worse, will eventually happen to them as well. Hence, if a place grows, there are possitive connotations; if it shrinks, it's negative. This is so-called "tunnel effect":

> Suppose that I drive through a two-lane tunnel, both lanes going in the same direction, and run into a serious traffic jam.
> No car moves in either lane as far as I can see (which is not very far). I am in the left lane and feel dejected. After a while
> the cars in the right lane begin to move. Naturally my spirits lift considerably, for I know the jam has been broken and

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[2]Notably, there seem to be a pattern–for instance Glaeser (2011) drops from the sample developed countries so that much of it contains African countries to make a case that urban places are happier, while in fact they are not with exception of very poor countries such as those in Africa.

that my lane's turn to move will surely come at any moment now. Even though I still sit still, I feel much better off than before because of the expectation that I shall soon be on the move. (Hirschman, quoted in Ravallion and Lokshin 2000, p. 88)

In a sense, tunnel effect is related to MDT–if by comparison the area is doing well (growing as opposed to shrinking), then a person is happier. Although there can also be negative effects of others doing better, "Schadenfreude", e.g., neighbors as negatives (Luttmer 2005), being together with those doing well v others doing not so well Firebaugh and Schroeder (2009). Population growth/decline seems to be related to opportunities/jobs safety/crime, at least prospects or perceptions of those.

2   Data and Method

All person level data come from the 2005-2010 Behavioral Risk Factor Surveillance System (BRFSS) data `cdc.gov/brfss`. We use the SMART (Selected Metropolitan/Micropolitan Area Risk Trends) version of BRFSS that is representative of counties.

All county level data come from the Inter-university Consortium for Political and Social Research: County Characteristics, 2000-2007. `doi:10.3886/ICPSR20660.v2`. As most county level control variables are for 2000-2005, regression analyses use 2005 BRFSS only, and descriptive statistics at county level only use full 2005-2010 BRFSS collapsed by county.[3].

While we only have 392 counties in 2005-2010 BRFSS, 13% of about 3,000 US counties, there is a good representation across the country including the largest coastal cities, smaller cities, suburbs, exurbs, and rural counties.[4]

The SWB item reads "In general, how satisfied are you with your life?" For simplicity answers were recoded so that a higher numeric value means more happiness: 1 "very dissatisfied" 2 "dissatisfied" 3 "satisfied" 4 "very satisfied"–over 90 percent of respondents were either satisfied or very satisfied with their lives. All other variables are defined in table 1. We follow Okulicz-Kozaryn and Mazelis (2016) in terms of controls.

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[3]In addtion for the supplemntary analyses and robustness checks we use census data for 90-00 and 00-10 pop gro

[4]All 51 states are in the data, but most have fewer than 10 counties represented here, and several only one or two counties. Small NJ has almost all of its 21 counties represented. And by far most counties in this dataset are from FL, over 40.

Table 1: Variable definitions.

name	description
person-level variables:	
income	"Is your annual household income from all sources:"
married or member of an un-married couple	"marital status; Are you:"
unemployed	"Are you currently: Out of work"
age	age
White	White
education level	"What is the highest grade or year of school you completed?"
soc/emo support	"How often do you get the social and emotional support you need? " BRFSS
county-level variables:	
crime rate index	"Index crime rate (per 100,000 persons), 2004"
persistent poverty	"20 percent or more of residents were poor as measured by each of the last 4 censuses, 1970, 1980, 1990, and 2000"
% Black	"percent Black, 2005"
low education	"25 percent or more of residents 25-64 years old had neither a high school diploma nor GED in 2000."
housing stress	"30 percent or more of households had one or more of these housing conditions in 2000: lacked complete plumbing, lacked complete kitchen, paid 30 percent or more of income for owner costs or rent, or had more than 1 person per room."
low employment	"Less than 65 percent of residents 21-64 years old were employed in 2000."
population loss	"Number of residents declined both between the 1980 and 1990 censuses and between the 1990 and 2000 censuses."
pers. inc. (USD 1,000)/cap	"per capita personal income (USD 1,000), 2005"
population percent change 2000-2005	from county characteristics ICPSR file
population percent change 2000-2010	popGro00 10=100*((census2010pop-pop00)/pop00); var census2010pop from https://www2.census.gov/programs-surveys/popest/datasets/2000-2010/intercensal/county/co-est00int-tot.csv
population percent change 1990-2000	popGro90 00=100*((pop00-apr1 1990Pop)/apr1 1990Pop); var apr1 1990Pop from https://www2.census.gov/programs-surveys/popest/datasets/1980-1990/counties/totals/comp8090.zip
population	"census 2000 total resident population"

Notable controls include person level `unemployed` and county level `low employment` and `crime rate index`—these variables not only predict SWB but also correlate with population change.

We use a standard OLS regression with clustered standard errors on county with BRFSS sampling weights to account for over-sampling. We treat the 4-step happiness variable as continuous. Ordinal happiness can be treated as a continuous variable (Ferrer-i-Carbonell and Frijters 2004).[5]

3 Results

[6]

[7]

Over just 5 years from 2000 to 2005 several counties shrank by about 5% and several grew by about 10%.[8]

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[5]We used the following Stata command: regress <happiness> <person-level variables> <county-level variables> [pw=_cntywt] , robust cluster(<county>).

[6]for descriptive statistics at county level we take mea ns by county and over 2005-2010

[7]for regression analyses we only use data for 2005; all regressions use brfss-smart county weight variable "_cntywt"

[8]Full county-level and auxiliary descriptive statistics (not shown here) are https://colab.research.google.com/drive/1fFzDc73LbGAC-G6_I58FV1fH691NAs7_?usp=sharingonline. Over 10 years 1990-2000 or 2000-2010 several counties shrank by >30% and several grew by >50%.

Table 2 shows correlations. Among ecological (county-level) variables, remarkably, SWB's very strongest correlation is with population growth, even much stronger (more than 50%) than crime or (about 100%) income! This is the key, and unexpected finding of this research. While some correaltions of these signs were expected, such extremely large magnitudes were unexpected.[9]

Table 2: Cross-correlation table. All correlations bigger than .1 are also statistically significant at .05.

Variables	population percent change 2000-2005	crime rate index	% Black	housing stress	low employment	population loss	pers. inc. (USD 1,000)/cap	swb
population percent change 2000-2005	1.00							
crime rate index	-0.17	1.00						
% Black	-0.21	0.48	1.00					
housing stress	0.04	0.20	0.10	1.00				
low employment	0.09	0.04	0.03	0.18	1.00			
population loss	-0.27	0.18	0.27	-0.01	0.05	1.00		
pers. inc. (USD 1,000)/cap	-0.18	-0.17	0.00	0.05	-0.27	-0.04	1.00	
swb	0.39	-0.25	-0.24	-0.13	-0.18	-0.29	0.22	1.00

Nb. obs. : 376

While correlation between population change and SWB is remarkably high, the absolute differences on SWB are small. SWB ranges only between 3.2-3.6 on 1-4 person level scale asked to respondents. The scatterplot between population change and SWB is shown in figure **??**. There are curiously consistent geographic patterns circled in the graph, for instance large North-Eastern cities cluster at bottom-left, Southern counties cluster at top-right, and three happiest counties in this sample are either in West or North.

As per Hartt (2019), Delken (2008), Hollander (2011) shrinkage does not alwasys mean problems, and so we find outliers as shown in figure **??** at top-left, yet most places fit the patterm that the more growth, the more SWB.

Figure 2 shows¿¿¿

notably opportunity and jobs–hence important ti control for that–we gat inc and unemployenty at person lev; and ecological lev we got low employment per capita personal income

	a0	a1	a2	a3	a4
population percent change 2000-2005	0.04***	0.02***	0.02***	0.02***	0.02***
income		0.09***	0.09***	0.09***	0.09***
married or member of an unmarried couple		0.11***	0.11***	0.11***	0.11***
unemployed		-0.06***	-0.06***	-0.06***	-0.06***
age		-0.20***	-0.21***	-0.21***	-0.21***
age squared		0.29***	0.30***	0.30***	0.30***
White		-0.04***	-0.04***	-0.04***	-0.04***
education level		-0.01+	-0.02*	-0.02*	-0.02*
soc/emo support		0.32***	0.31***	0.31***	0.31***
general health		0.23***	0.23***	0.23***	0.23***
crime rate index			0.02**	0.02**	0.01*
persistent poverty			0.00	0.00	0.00
% Black			-0.02**	-0.01*	-0.01
low education				0.01	0.02
housing stress				-0.01	-0.00
low employment				-0.01	-0.01
population loss				-0.00	-0.00
pers. inc. (USD 1,000)/cap				0.01	0.02**
population density per sq mile, 05-09 * 1,000,000					-0.02**
population					-0.01
N	163656	138453	132677	131657	131657

+ 0.10 * 0.05 ** 0.01 *** 0.001

Table 3: OLS beta (fully standardized) regressions of SWB: `population percent change 2000–2005`. Note only BRFSS 2005 data uses as most of the county level controls are available for 2000-2005.

effect sizes large, of course smaller than say person level unemployment but about as large as or larger than county level crime level

10
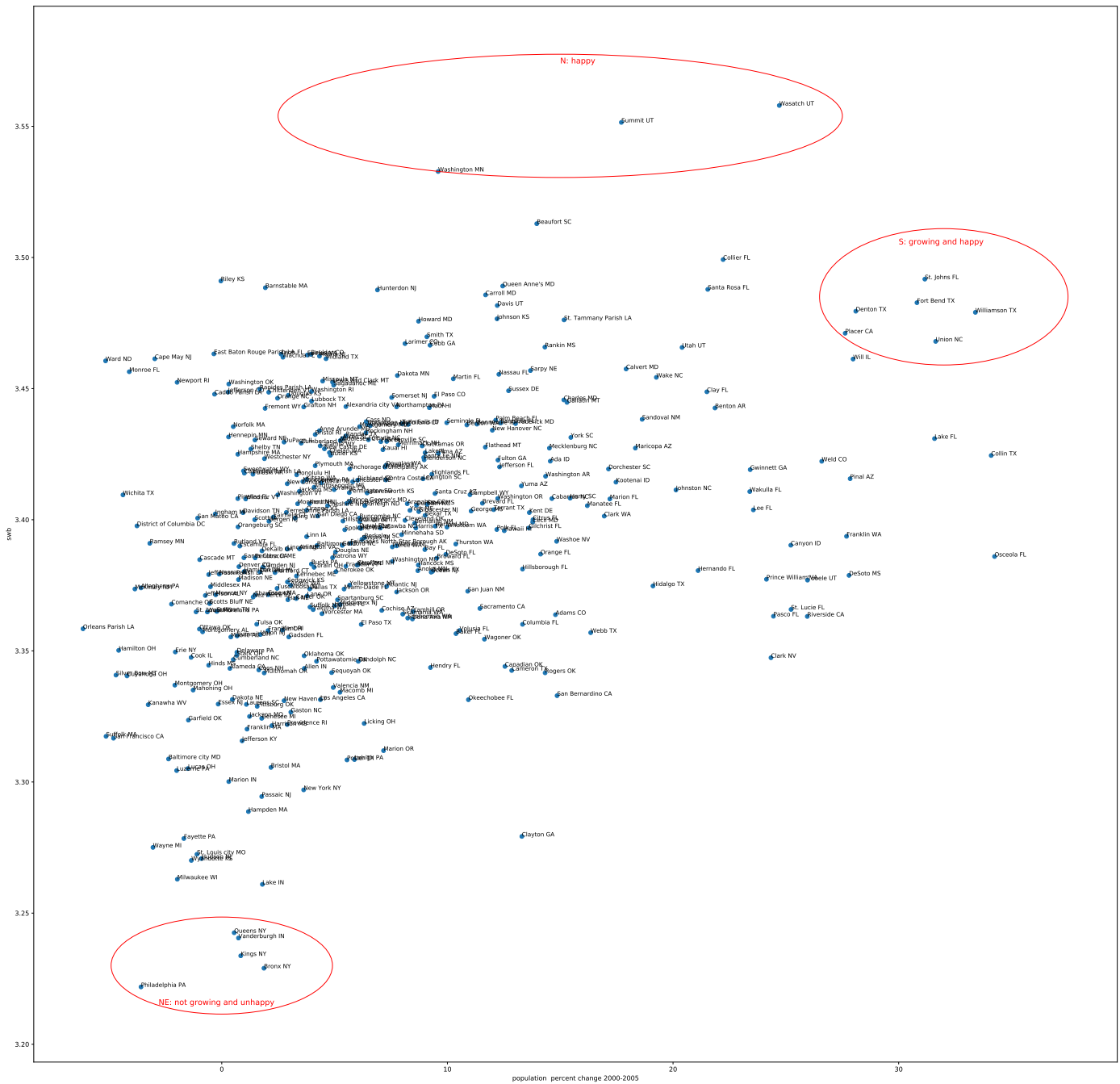
Figure 1: Note: this is a hi-res vector image that necessarily uses small font so that most labels are readable–zoom 2x to 10x to read county names. Elipses mark patternts: NE: not growing and unhappy (except one IN county (Midwest)); S: growing and happy (except one IL county (Midwest)); N: happy. Also do note that in general around the regions marked with elipses, there are many more counties from the same region. Notably at lower-left: Wayne MI that houses Detroit; and Suffolk MA that houses Boston. At upper-right, there are multiple Southern counties, mostly FL.

Figure 2: Thematic maps across counties of `population percent change 2000-2005` in 1st panel (quantiles) and `SWB` (natural breaks) in 2nd panel. X and Y axes are labelled with latitude and longitude. Points are not labelled with county names for readabilitu here, but all counties along with values on key variables are shown in Supplementary Online Material (SOM).
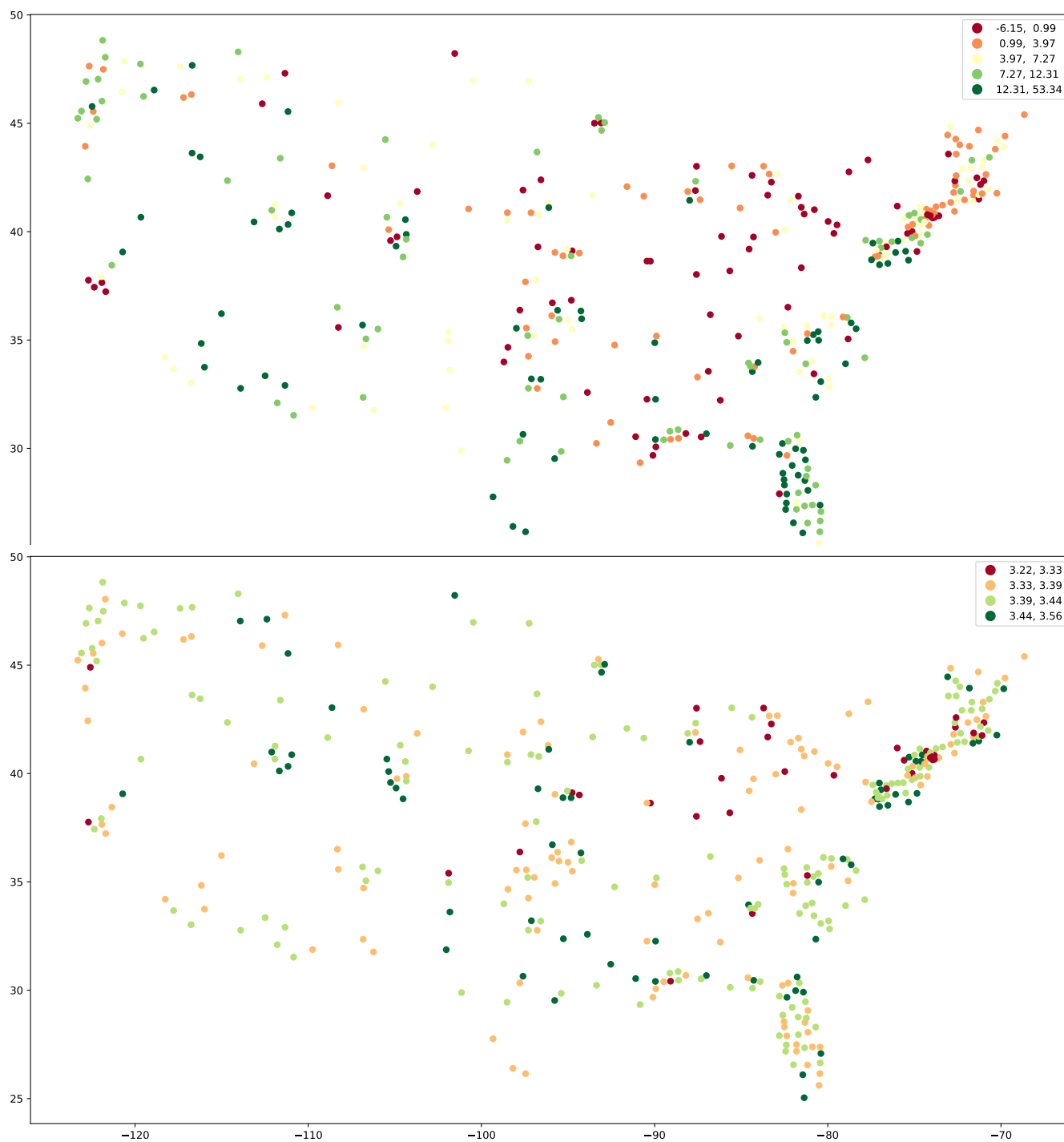
Discussion and future research

there is some related research to the population growth-SWB nexus, but only one study, Delken (2008), uses SWB measure. Such gap in the literature is remarkable.

LATER there is like pop change back to 80s alsoredy in these data

yes as per lit delken hollander hart, shhirnkage does not mean low QOL, and so we find many outliers...

TODO: have separate som-r.tex as opposed to having it below; and in paper say see supplemetary material as opposed to see appendix!

ONLINE APPENDIX

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

Descriptive statistics are at `https://colab.research.google.com/drive/1fFzDc73LbGAC-G6_I58FV1fH691NAs7_?usp=sharing`

4   Robustness Checks: Additional Regression Models

	a0rc	a1rc	a2rc	a3rc	a4rc
population percent change 2000-2005	0.004***	0.002***	0.002***	0.002***	0.002***
income		0.025***	0.026***	0.026***	0.025***
married or member of an unmarried couple		0.139***	0.140***	0.140***	0.140***
unemployed		-0.168***	-0.167***	-0.167***	-0.166***
age		-0.008***	-0.008***	-0.008***	-0.008***
age squared		0.000***	0.000***	0.000***	0.000***
White		-0.056***	-0.056***	-0.055***	-0.056***
education level		-0.008	-0.011*	-0.011*	-0.011*
soc/emo support		0.185***	0.184***	0.184***	0.184***
general health		0.134***	0.136***	0.135***	0.135***
crime rate index			0.000*	0.000*	0.000*
persistent poverty			0.012	0.025	0.018
% Black			-0.001*	-0.001	-0.000
low education				0.023*	0.041
housing stress				-0.008	-0.002
low employment				-0.028	-0.024
population loss				-0.006	-0.006
pers. inc. (USD 1,000)/cap				0.000	0.001**
population density per sq mile, 05-09 * 1,000,000					-1.436**
population					-0.000
constant	3.352***	2.057***	2.056***	2.037***	2.019***
N	163656	138453	132677	131657	131657

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

Table 4: OLS (robust cluster) regressions of SWB: `population percent change 2000-2005`

	b0	b1	b2	b3	b4
population percent change 2000-2010	0.041***	0.022***	0.019***	0.023***	0.023***
income		0.087***	0.088***	0.087***	0.086***
married or member of an unmarried couple		0.106***	0.107***	0.107***	0.107***
unemployed		-0.058***	-0.058***	-0.058***	-0.057***
age		-0.200***	-0.209***	-0.209***	-0.209***
age squared		0.290***	0.300***	0.300***	0.300***
White		-0.044***	-0.043***	-0.042***	-0.043***
education level		-0.015+	-0.020*	-0.020*	-0.019*
soc/emo support		0.316***	0.315***	0.315***	0.315***
general health		0.226***	0.229***	0.229***	0.228***
crime rate index			0.014*	0.014*	0.010+
persistent poverty			0.003	0.005	0.004
% Black			-0.017**	-0.011+	-0.004
low education				0.015	0.021
housing stress				-0.005	-0.000
low employment				-0.015	-0.011
population loss				-0.002	-0.003
pers. inc. (USD 1,000)/cap				0.006	0.016*
population density per sq mile, 05-09 * 1,000,000					-0.021**
population					-0.005
constant	***	***	***	***	***
N	163656	138453	132677	131657	131657

+ 0.10 * 0.05 ** 0.01 *** 0.001

Table 5: OLS beta (fully standardized) regressions of SWB: `population percent change 2000-2010`

	b0rc	b1rc	b2rc	b3rc	b4rc
population percent change 2000-2010	0.002***	0.001***	0.001***	0.001***	0.001***
income		0.026***	0.026***	0.026***	0.025***
married or member of an unmarried couple		0.139***	0.140***	0.140***	0.140***
unemployed		-0.168***	-0.167***	-0.167***	-0.166***
age		-0.008***	-0.008***	-0.008***	-0.008***
age squared		0.000***	0.000***	0.000***	0.000***
White		-0.057***	-0.057***	-0.055***	-0.056***
education level		-0.008+	-0.011*	-0.011*	-0.011*
soc/emo support		0.185***	0.184***	0.184***	0.184***
general health		0.134***	0.136***	0.135***	0.135***
crime rate index			0.000+	0.000+	0.000
persistent poverty			0.017	0.031	0.026
% Black			-0.001+	-0.001	-0.000
low education				0.027*	0.038
housing stress				-0.006	-0.000
low employment				-0.038+	-0.028
population loss				-0.005	-0.007
pers. inc. (USD 1,000)/cap				0.000	0.001*
population density per sq mile, 05-09 * 1,000,000					-1.399*
population					-0.000
constant	3.350***	2.058***	2.061***	2.043***	2.025***
N	163656	138453	132677	131657	131657

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

Table 6: OLS (robust cluster) regressions of SWB: population percent change 2000–2010

	c0	c1	c2	c3	c4
population percent change 1990-2000	0.033***	0.017***	0.012*	0.013**	0.013**
income		0.086***	0.087***	0.087***	0.086***
married or member of an unmarried couple		0.107***	0.108***	0.108***	0.108***
unemployed		-0.059***	-0.058***	-0.058***	-0.058***
age		-0.193***	-0.202***	-0.202***	-0.202***
age squared		0.283***	0.292***	0.293***	0.292***
White		-0.042***	-0.043***	-0.042***	-0.042***
education level		-0.015*	-0.020*	-0.020*	-0.020*
soc/emo support		0.317***	0.316***	0.316***	0.316***
general health		0.226***	0.229***	0.228***	0.228***
crime rate index			0.016**	0.014*	0.012*
persistent poverty			0.002	0.006	0.004
% Black			-0.021***	-0.012*	-0.007
low education				0.010	0.017
housing stress				-0.004	0.000
low employment				-0.017+	-0.012
population loss				-0.006	-0.006
pers. inc. (USD 1,000)/cap				0.002	0.011+
population density per sq mile, 05-09 * 1,000,000					-0.019*
population					-0.006
constant	***	***	***	***	***
N	162958	137885	132109	131089	131089

+ 0.10 * 0.05 ** 0.01 *** 0.001

Table 7: OLS beta (fully standardized) regressions of SWB: population percent change 1990–2000

	c0rc	c1rc	c2rc	c3rc	c4rc
population percent change 1990-2000	0.001**	0.001**	0.000*	0.001*	0.000*
income		0.025***	0.026***	0.026***	0.025***
married or member of an unmarried couple		0.140***	0.141***	0.141***	0.141***
unemployed		-0.169***	-0.168***	-0.168***	-0.167***
age		-0.007***	-0.008***	-0.008***	-0.008***
age squared		0.000***	0.000***	0.000***	0.000***
White		-0.055***	-0.056***	-0.055***	-0.056***
education level		-0.009+	-0.011*	-0.011*	-0.011*
soc/emo support		0.186***	0.185***	0.185***	0.185***
general health		0.134***	0.136***	0.135***	0.135***
crime rate index			0.000*	0.000+	0.000+
persistent poverty			0.012	0.031	0.022
% Black			-0.001*	-0.001	-0.000
low education				0.019+	0.033
housing stress				-0.005	0.000
low employment				-0.048*	-0.036
population loss				-0.013	-0.014
pers. inc. (USD 1,000)/cap				0.000	0.001
population density per sq mile, 05-09 * 1,000,000					-1.231+
population					-0.000
constant	3.351***	2.051***	2.053***	2.050***	2.032***
N	162958	137885	132109	131089	131089

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

Table 8: OLS (robust cluster) regressions of SWB: population percent change 1990–2000

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