

Online Appendix: Happy Colombia, Unhappy Bogota

Wednesday 8th October, 2025 13:20

Graphical Abstract:

Happy Colombia, Unhappy Bogota. Rural Salento (flickr.com/photos/pedrosz/9515685099), and Bogota Center (Centro) (commons.wikimedia.org/wiki/File:1024px-Bogota_Centro_Internacional.pdf) Rural-Urban happiness levels illustrated with smiley and frownie emojis.



1 Revised Results for Specific Cities

Using region/province variable and 500k top bin population cutoff we were able to identify largest cities by name as they uniquely fall in different provinces. Then we simply replace the top ">500k" category in WVS data with a dummy for each of the largest cities.

Regression results are below: notably Bogota is less happy than the smallest places. Medellin, the second largest city, has a small positive coefficient (but insignificant).

```
codebook X048WVS, ta(100)
```

```
recode town (1 2 3=1 "-10") (4 5=2 "10-50k") (6 7=3 "50-500k") (8=4 "500k-") ,  
gen(town4)
```

```
gen townCMB=town4  
replace townCMB=5 if townCMB==4 & X048WVS==170129 | X048WVS==170129 //cali  
replace townCMB=6 if townCMB==4 & X048WVS==170102 | X048WVS==170102 //medellin  
replace townCMB=7 if townCMB==4 & X048WVS==170005 | X048WVS==170134 //bogota
```

note: in these revision added these last conditions above after |

all models include year dummies; c6 and c7 incl employment and religion dummies; and c7 includes region dummies

	c1	c2	c3	c4	c5	c6	c7
-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10-50k	-0.04	0.01	-0.02	-0.01	-0.01	-0.01	0.02
50-500k	-0.04	-0.08	-0.14	-0.14	-0.13	-0.13	-0.09
500+	0.09	-0.04	-0.14	-0.13	-0.12	-0.12	-0.13
Cali	-0.14	-0.22	-0.28+	-0.28	-0.28	-0.27	-0.31
Medellin	0.40*	0.31*	0.24	0.25	0.24	0.24	0.20
Bogota	-0.21	-0.28+	-0.39**	-0.39**	-0.37*	-0.37*	0.04
age	0.01	0.01	0.01	0.01	0.01	0.01	0.01
age2	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
male	-0.11*	-0.12**	-0.12*	-0.12*	-0.04	-0.05	-0.04
married or living together as married	0.23***	0.24***	0.24***	0.21***	0.21***	0.20**	
divorced/separated/widowed	-0.01	-0.01	-0.00	-0.02	-0.02	-0.02	-0.03
health	0.60***	0.56***	0.55***	0.55***	0.55***	0.54***	
income		0.06***	0.06***	0.06***	0.06***	0.06***	0.06***
class			0.04	0.03	0.03	0.03	
religious services				0.02	0.02	0.02	
trust					-0.00	-0.01	
constant	8.46***	5.77***	5.69***	5.59***	5.53***	5.53***	5.60***
N	6025	6021	5997	5957	5936	5915	5915

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

Table 1: OLS regressions of life satisfaction.

2 Initial Results

Paper Data and Results (in nice LaTeX formatting)

2.1 Variables

Table 2: Variable definitions.

name	description
age	age
age2	age squared
male	male
married or living together as married	"Are you currently(READ OUT AND CODE ONE ONLY) 1 'Married' 2 'Living together as married' 3 'Divorced' 4 'Separated' 5 'Widowed' 6 'Single/Never married' 7 'Divorced, Separated or Widow' 8 'Living apart but steady relation (married,cohabitation)"
divorced/separated/widowed	"Are you currently(READ OUT AND CODE ONE ONLY) 1 'Married' 2 'Living together as married' 3 'Divorced' 4 'Separated' 5 'Widowed' 6 'Single/Never married' 7 'Divorced, Separated or Widow' 8 'Living apart but steady relation (married,cohabitation)"
health	"State of health (subjective)"
class	"Social class (subjective)"
education	"Highest educational level attained"
income	"Scale of incomes"
Employment status	"Are you employed now or not? IF YES: About how many hours a week? If more than one job: only for the main job 1 'Full time' 2 'Part time' 3 'Self employed' 4 'Retired' 5 'Housewife' 6 'Students' 7 'Unemployed' 8 'Other'"
religious services	"Apart from weddings, funerals and christenings, about how often do you attend religious services these days?"
Religious denominations - major groups	"Religious denomination WVS: Do you belong to a religious denomination? In case you do, answer which one. EVS: Which one?"
victim of a crime last year	"Have you been the victim of a crime during the past year?"
freq felt unsafe from crime at home	"In the last 12 months, how often have you or your family: Felt unsafe from crime in your own home "
trust	"Most people can be trusted"

2.2 Overall Results

Results are set in in table 3. In bivariate model a1, there is no difference across urbanicity—an expected result—the gradient only arises controlling for socio-demographics, e.g., income, education, and social class are confounded with urbanicity (Okulicz-Kozaryn and Valente 2021). Not controlling for SWB predictors (and/or using Gallup data) may even lead one to an erroneous conclusion that

people are happier in cities.¹

Addition of basic sociodemographics in a2 increases negative effect of cities, but results still remain insignificant. Addition of income in a3 is enough to produce marginally significant results. Addition of class in a4 doesn't change the results. But addition of education in a4a kills the significance on "500k-." Yet it also results in smaller sample size as education variable is missing for 2018. A4b is a4 but on sample from a4a—as results are insignificant without controlling for education, it is actually not education but cut in sample size that is responsible for insignificant "500k-." Model a5 oversaturated with extra controls for religiosity and employment does not change the results much.

Model a5a adds crime, a key urban problem—while the magnitude changes only slightly, "500k-" becomes statistically insignificant and the sample size is reduced by almost half (due to missing data on crime variables). The statistical insignificance is due to negative impact of crime, not due to the sample size—model a5b drops crime controls, reruns model a5, except on sample from a5b and coefficient on "500k-" is significantly negative again. Hence, while we find some evidence for urban-rural happiness gradient in Colombia, the evidence is not robust to crime controls. And results in full models, a4 and a5, are only marginally statistically significant at .1. Still one can argue that increased crime indeed is a city property—it does increase linearly with city size—double the population, and per capita crime goes up by 15% Bettencourt (2013), Bettencourt et al. (2010), Bettencourt and West (2010), Bettencourt et al. (2007).

	a1	a2	a3	a4	a4a	a4b	a5	a5A	a5b
urbanicity (base: lt 10k):									
10-50k	-0.04	0.01	-0.02	-0.02	0.16	0.15	-0.02	-0.13	-0.13
50-500k	-0.03	-0.07	-0.13	-0.12	0.05	0.01	-0.12	-0.08	-0.13
500k-	-0.05	-0.15	-0.25+	-0.25+	-0.00	-0.05	-0.23+	-0.20	-0.31*
age	0.01	0.01	0.01	0.01	-0.00	-0.01	0.01	0.02	0.02
age2	-0.00	0.00	-0.00	-0.00	0.00	0.00	-0.00	-0.00	-0.00
male	-0.11*	-0.12**	-0.12*	-0.04	-0.04	-0.04	-0.03	-0.11	-0.10
married or living together as married	0.22***	0.23***	0.23***	0.23***	0.25***	0.20**	0.16+	0.18+	
divorced/separated/widowed	-0.02	-0.02	-0.00	-0.00	0.01	-0.03	-0.11	-0.11	
health	0.60***	0.57***	0.56***	0.53***	0.51***	0.55***	0.56***	0.59***	
income		0.06***	0.06***	0.07***	0.05***	0.06***	0.09***	0.09***	
class			0.04	0.06+	0.05	0.03	0.03	0.01	0.01
education				-0.05***					
religious services						0.02+	0.01	0.01	
victim of a crime last year							-0.21*		
freq felt unsafe from crime at home							-0.16***		
constant	8.46***	5.72***	5.64***	5.54***	5.91***	5.92***	5.45***	5.41***	4.99***
year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
religious denomination dummies	no	no	no	no	no	no	yes	yes	yes
employment status dummies	no	no	no	no	no	no	yes	yes	yes
N	6025	6021	5997	5957	4376	4376	5936	2968	2968
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err									

Table 3: OLS regressions of life satisfaction.

2.3 Results for Specific Cities

A key limitation of the analysis so far is that it lumps in top category "> 500k" places of very different urbanness such as .5m Cucuta and 8m Bogota. Using region/province variable "X048WVS" and 500k top bin population cutoff we were able to identify largest cities in WVS data as they uniquely fall in different provinces. Barranquilla and Soledad are exception as they both are in Atlantico province, but they border each other and we simply treat them as one large city coded as Barranquilla. Then we simply replace the top "> 500k" category in WVS data with a dummy for each of the largest cities.

Regression results are set in in table 4: notably Bogota, but also Cali are less happy than the smallest places; but not Medellin, the second largest city—actually Medellin has a small positive coefficient (but insignificant). Coefficients are even more positive for Cartagena (still insignificant), a popular Caribbean tourist destination. We refrain from interpreting coefficients on "Cucuta," "Bucaramanga," and "Ibagué" as there are < 50 observations for each of them. Note that Ibagué and Bucaramanga have large negative coefficients about

¹For a recent example see <https://news.gallup.com/opinion/gallup/315857/degree-urbanisation-effect-happiness.aspx>, and for a whole erroneous book see Glaeser (2011). Only in the very poorest countries, where income is badly needed for necessities, cities may be necessary to satisfy human needs.

as large as Cali, even close to Bogota, depending on specification, but insignificant—one reason being that there are few observations for these cities. See SOM for details and descriptive statistics.

In table 4, as opposed to 3, even in model 1, without controls, there is already a significant difference for Bogota—it is less happy than the smallest areas even without controlling for predictors of happiness.

	b1	b2	b3	b4	b4a	b4b	b5	b6
urbanicity (base: It 10k):								
10-50k	-0.05	-0.01	-0.04	-0.04	0.14	0.13	-0.04	-0.04
50-500k	-0.05	-0.08	-0.15	-0.14	0.03	-0.01	-0.13	-0.13
500-	-0.08	-0.18	-0.28*	-0.28*	-0.03	-0.08	-0.26+	-0.26+
Cali	-0.08	-0.21	-0.29	-0.29	0.11	0.06	-0.27	-0.26
Medellin	0.29	0.19	0.11	0.11	0.42	0.41	0.12	0.12
Bogota	-0.17	-0.25	-0.39*	-0.38*	-0.15	-0.20	-0.35*	-0.35*
age	0.01	0.01	0.01	0.00	-0.00	-0.01	0.01	0.01
age2	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00
male	-0.11*	-0.12**	-0.12*	-0.12*	-0.04	-0.04	-0.04	-0.04
married or living together as married	0.23***	0.24***	0.24***	0.23***	0.25***	0.21***	0.21***	0.21***
divorced/separated/widowed	-0.01	-0.01	0.00	0.00	0.01	0.01	-0.02	-0.02
health	0.60***	0.56***	0.56***	0.52***	0.50***	0.55***	0.55***	0.55***
income			0.06***	0.06***	0.07***	0.05***	0.06***	0.06***
class				0.04	0.06+	0.04	0.03	0.03
education					-0.04**			
religious services							0.02	0.02
trust							0.00	0.00
constant	8.49***	5.77***	5.68***	5.59***	5.97***	5.98***	5.51***	5.51***
year dummies	yes							
religious denomination dummies	no	no	no	no	no	no	yes	yes
employment status dummies	no	no	no	no	no	no	yes	yes
N	6025	6021	5997	5957	4376	4376	5936	5915
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err								

Table 4: OLS regressions of life satisfaction.

3 Additional Information

3.1 Density and Character of Colombian Cities

Density often adds valuable information because population size is also a function of arbitrary administrative boundaries. Bogota has density comparable to that of Berlin at 4k and about a quarter of that of Seoul or Barcelona at 16k—same source as in table 1. But note that using night time satellite imaginary densities of Bogota, Cali, and Medellin are quite high at 20k, severalfold higher than Quito at 6.5k or Lima at 11k (Pares-Ramos et al. 2013). Barranquilla is shown as denser than Bogota but that's because administrative boundaries in Barranquilla are about 3/4 built-up environment, whereas in Bogota it appears to be only about half (based on city boundaries on Google Maps). Also note an useful distinction can be made to distinguish between core and satellites—see table 1 in Duranton (2015). Un Habitat World Cities Report 2022 scores cities in terms of housing, sanitation etc at https://unhabitat.org/sites/default/files/2022/06/wcr_2022.pdf. Another way to measure density is to use built-up area per cap—see last column in table 1.

The authors visited personally the three largest cities—Bogota feels North-Western not only in climate but also in attitude and behavior of people living there. Bogota doesn't feel like Colombia, it feels like a Western city, say Philadelphia or London, rushed, stressed, and alienated. Or rather even worse than Philadelphia, like Washington DC—without character or soul. Cali is the most Latin of the three cities, and Medellin seems to achieve good economic development and organization without the stress, alienation, and soullessness of Bogota. Smaller places such as Manizales and Pasto appear warmer and more welcoming and happier than Bogota.

3.2 Additional Theory

The theory is either ambivalent or predicts urban wellbeing penalty (White and White 1977, Okulicz-Kozaryn 2024). Classic urban sociological theory clearly predicted urban malaise (Wirth 1938, Simmel 1903, Tönnies [1887] 2002, Park et al. [1925] 1984), but

Fischer later noted some positives, i.e., social communities within cities (Fischer 1995, 1982, 1981, 1975, 1973, 1972). Likewise, 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) predicts wellbeing penalty in heterogeneous and diverse settings such as cities (Herbst and Lucio 2014, Postmes and Branscombe 2002, Okulicz-Kozaryn 2015). Only economists tend to argue one-sidedly in favor of cities—there is more production and consumption in cities, so there is more utility, so the thinking goes, there must be more happiness as well (Glaeser 2011, O'Sullivan 2009).

Large cities are the least resembling of human natural habitat and are mostly man made objects such as asphalt, concrete, glass, etc, (and are likely to be least happy in developed countries.) In developing countries, on the other hand, as per livability theory (Veenhoven and Ehrhardt 1995), cities are more needed as they provide more amenities and services that are not available outside of the cities, and hence they are hypothesized to be generating more happiness compared to rural and town areas.

3.3 Variables' definitions, coding, and distributions

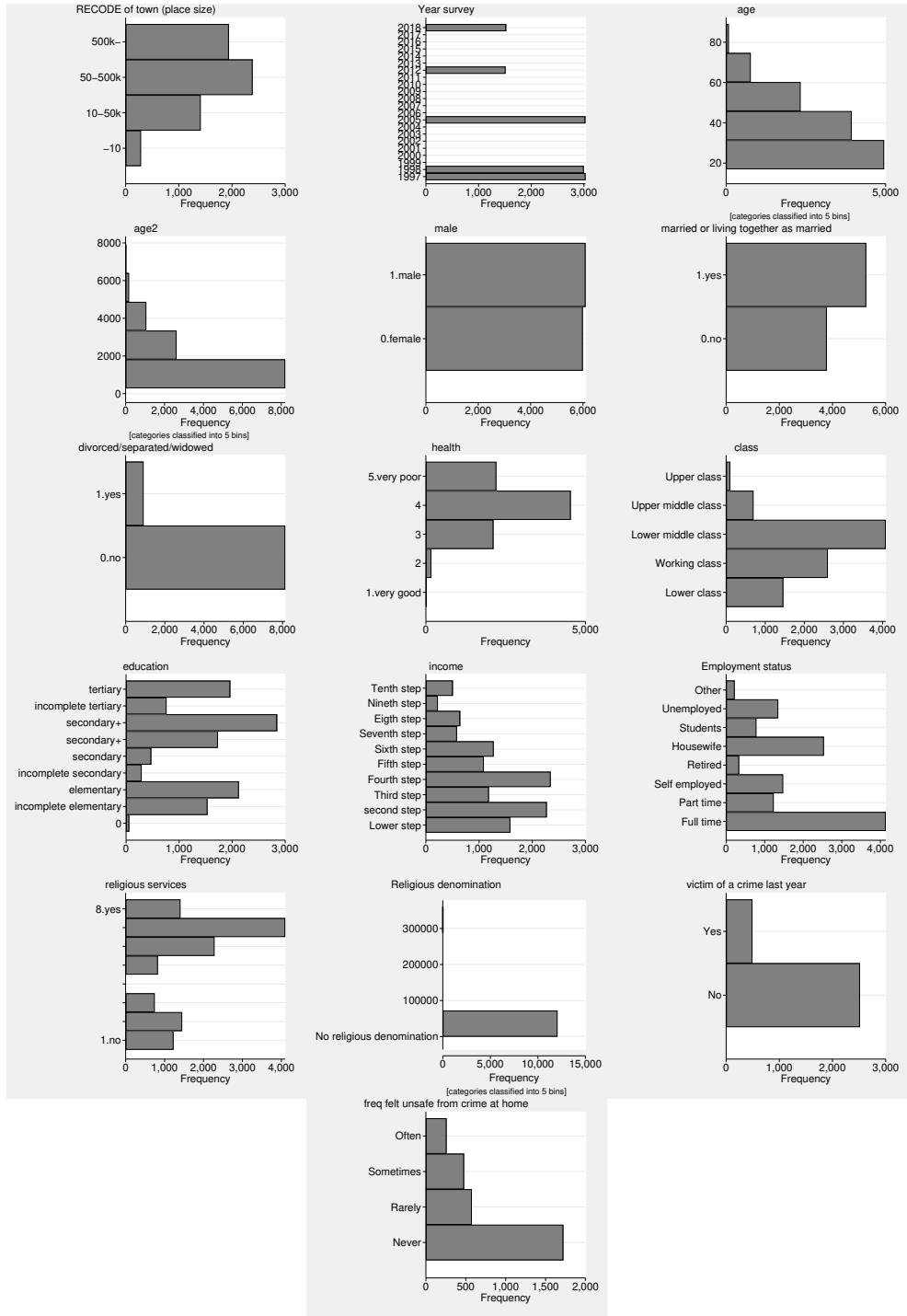


Figure 1: Variables' distribution.

Note that the main education variable has a sizable portion of it missing, and we have filled in the missing values based on the country-specific education variable X025A2, in a following way

```
replace ed=0 if X025A2==0 & ed==.
replace ed=2 if X025A2==1 & ed==.
replace ed=4 if X025A2==2 & ed==.
replace ed=5 if X025A2==3 & ed==.
replace ed=6 if X025A2==4 & ed==.
replace ed=7 if X025A2==5 & ed==.
replace ed=8 if X025A2==6|X025A2==7|X025A2==8 & ed==.
```

The largest Colombian cities were identified in a following way, and the frequencies on them are the following:

```

replace townN=4 if town4==4 & X048WVS==170102
replace townN=5 if town4==4 & X048WVS==170104
replace townN=6 if town4==4 & X048WVS==170129
replace townN=7 if town4==4 & X048WVS==170134
replace townN=8 if town4==4 & X048WVS==170135
//3 more 24 people ONLY:
replace townN=9 if town4==4 & X048WVS==170121
replace townN=10 if town4==4 & X048WVS==170126
replace townN=11 if town4==4 & X048WVS==170128

cap label drop townN_lbl
label define townN_lbl 1 "-10" 2 "10-50k" 3 "50-500k" 4 "Medellin" 5 "Barranquilla" 6 "Cali" 7 "Bogota" 8 "Cartagena" 9 "Cucuta" 10 "Bucar

```

tabulation:	Freq.	Numeric	Label
	289	1	-10
	1,411	2	10-50k
	2,386	3	50-500k
	176	4	Medellin
	78	5	Barranquilla
	152	6	Cali
	536	7	Bogota
	56	8	Cartagena
	24	9	Cucuta
	24	10	Bucaramanga
	24	11	Ibagué

3.4 Additional Descriptive Statistics

3.5 Regional explorations

There is large variability in urbanization and population density across provinces—see for instance: <https://www.cepal.org/es/publicaciones/40852-configuracion-territorial-provincias-colombia-ruralidad-redes> eg towards the end in the document

Table 5: Listing of key variables of interest."

"province"	"SWB"	"GDP per cap, PPP, USD"	"Density per sq km"	""	""	""
Antioquia	8.691489	14656	100.72			
Atlantico	8.24375	11614	748.38			
Bogota	8.044776	22189	4670.8			
Bolivar	8.330358	13548	79.69			
Boyaca	8.3125	15619	52.5			
Caldas	8.5625	10479	126.55			
Caqueta	8	6855	4.52			
Cauca	7.8625	8750	49.97			
Cesar	8.525	11676	52.42			
Choco	8.1875	5837	11.49			
Cordoba	8.333333	6991	71.33			
Cundinamarca	8.090278	13412	120.57			
Huila	7.975	10548	55.32			
La Guajira	7.625	6645	42.24			
Magdalena	8.222222	6997	57.86			
Meta	8.475	23385	12.14			
Narino	7.95	6286	49.01			
Norte de Santander	8.65	8560	68.87			
Putumayo	8.075	7221	13.99			
Quindio	8.7	9534	292.63			
Risaralda	8.339286	10889	227.87			
San Andres	9.0625		1178.46			
Santander	8.565789	25661	71.55			
Sucre	8.325	6560	82.89			
Tolima	8.479167	10636	56.45			
Valle del Cauca	8.163195	14346	202.16			
Amazonas		6298	.7			
Arauca		13685	11.01			

Continued on next page

Table 5 – continued from previous page

"province"	"SWB"	"GDP per cap, PPP, USD"	"Density per sq km"	""	""	""	""
Casanare	26546	9.42					
Guainia	5383	.67					
Guaviare	5438	1.55					
Vaupes	4293	.75					
Vichada	4940	1.08					

Preliminary evidence especially regarding regional differences—small sample, need more evidence using more data as data becomes available in the future

X048WVS	N	mean
CO: Atlantica	1383.0	8.4
CO: Centro Orien	1759.0	8.3
CO: Central	722.0	8.6
CO: Pacifica	663.0	8.2
CO: Bogota	688.0	8.2
CO: Orinoquia	170.0	8.5
CO: Amazonia	142.0	8.1
CO: Occidente	486.0	8.6
Total	6013.0	8.4

Linear regression	Number of obs	=	5,754
	F(15, 5738)	=	20.41
	Prob > F	=	0.0000
	R-squared	=	0.0597
	Root MSE	=	1.7561

ls	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
X048WVS					
CO: Centro Oriental	-0.08	0.07	-1.22	0.22	-0.21 0.05
CO: Central	0.12	0.08	1.47	0.14	-0.04 0.28
CO: Pacifica	-0.23	0.09	-2.62	0.01	-0.41 -0.06
CO: Bogota	-0.24	0.08	-2.87	0.00	-0.40 -0.08
CO: Orinoquia	0.20	0.15	1.36	0.17	-0.09 0.48
CO: Amazonia	-0.13	0.20	-0.68	0.50	-0.52 0.25
CO: Occidente	0.21	0.11	2.02	0.04	0.01 0.42
yr					
2005	-0.08	0.06	-1.33	0.18	-0.20 0.04
age	0.00	0.01	0.38	0.70	-0.02 0.03
age2	0.00	0.00	0.04	0.97	-0.00 0.00
male	-0.08	0.05	-1.65	0.10	-0.17 0.01
mar	0.29	0.06	4.66	0.00	0.17 0.41
div	-0.09	0.11	-0.84	0.40	-0.30 0.12
health	0.52	0.04	14.11	0.00	0.44 0.59
inc	0.03	0.01	2.98	0.00	0.01 0.05
cons	5.99	0.26	22.67	0.00	5.47 6.51

the simple mean differences are only .5 min for amazonia 8.1 and max for central 8.6 and occidente; controlling for swb predictors pacifica and bogota significantly less happy at about .24, and occidente happier by .21 than base Atlantica, hence similarly, differences about .5

X048WVS	N	mean
CO: ANT-Antioqui	376.0	8.7
CO: ATL-Atlantic	160.0	8.2
CO: CAQ-Cauquena	40.0	8.0
CO: CAU-Cauca	80.0	7.9
CO: CES-Cesar	40.0	8.5
CO: CHO-Choco	16.0	8.2
CO: COR-Cordoba	96.0	8.3
CO: HUI-Huila	80.0	8.0
CO: LAG-La Guajira	32.0	7.6
CO: MET-Meta	80.0	8.5
CO: NAR-Nariño	120.0	8.0
CO: NSA-Norte de	120.0	8.7
CO: PUT-Putumayo	40.0	8.1

CO: QUI-Quindao	40.0	8.7
CO: RIS-Risarald	56.0	8.3
CO: SAP-San Andr	16.0	9.1
CO: SAN-Santande	152.0	8.6
CO: SUC-Sucre	80.0	8.3
CO: TOL-Tolima	96.0	8.5
CO: VAC-Valle de	288.0	8.2
CO: CUN-Cundinam	144.0	8.1
CO: DC -Bogota (536.0	8.0
CO: BOL-Bolivar	112.0	8.3
CO: BOY-Boyaca	80.0	8.3
CO: CAL-Caldas	80.0	8.6
CO: MAG-Magdalen	72.0	8.2
Total	3032.0	8.3

Linear regression

Number of obs	=	3,014
F(33, 2980)	=	7.80
Prob > F	=	0.0000
R-squared	=	0.0879
Root MSE	=	1.906

	ls	Robust				
		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
X048WVS						
CO: ATL-Atlantico		-0.45	0.18	-2.45	0.01	-0.81 -0.09
CO: CAQ-Caquetá		-0.68	0.36	-1.88	0.06	-1.39 0.03
CO: CAU-Cauca		-0.59	0.30	-1.97	0.05	-1.18 -0.00
CO: CES-Cesar		0.02	0.33	0.05	0.96	-0.63 0.67
CO: CHO-Choco		-0.02	0.73	-0.03	0.98	-1.45 1.41
CO: COR-Cordoba		-0.31	0.23	-1.34	0.18	-0.76 0.14
CO: HUI-Huila		-0.70	0.23	-3.06	0.00	-1.15 -0.25
CO: LAG-La Guajira		-0.69	0.41	-1.67	0.09	-1.49 0.12
CO: MET-Meta		-0.09	0.25	-0.35	0.72	-0.58 0.40
CO: NAR-Narino		-0.58	0.21	-2.80	0.01	-0.99 -0.17
CO: NSA-Norte de ..		0.01	0.17	0.06	0.95	-0.32 0.34
CO: PUT-Putumayo		-0.40	0.26	-1.53	0.13	-0.91 0.11
CO: QUI-Quindio		0.06	0.26	0.22	0.83	-0.45 0.56
CO: RIS-Risaralda		-0.33	0.25	-1.32	0.19	-0.81 0.16
CO: SAP-San Andre..		0.42	0.32	1.33	0.19	-0.20 1.04
CO: SAN-Santander		-0.20	0.16	-1.31	0.19	-0.51 0.10
CO: SUC-Sucre		-0.29	0.25	-1.16	0.25	-0.77 0.20
CO: TOL-Tolima		-0.18	0.21	-0.85	0.40	-0.58 0.23
CO: VAC-Valle del..		-0.52	0.14	-3.73	0.00	-0.80 -0.25
CO: CUN-Cundinamarca..		-0.47	0.18	-2.58	0.01	-0.82 -0.11
CO: DC-Bogota (...)		-0.66	0.12	-5.54	0.00	-0.90 -0.43
CO: BOL-Bolivar		-0.19	0.20	-0.95	0.34	-0.58 0.20
CO: BOY-Boyaca		-0.24	0.24	-0.99	0.32	-0.72 0.24
CO: CAL-Caldas		-0.11	0.22	-0.52	0.60	-0.55 0.32
CO: MAG-Magdalena		-0.31	0.27	-1.12	0.26	-0.84 0.23
yr						
2018		-0.09	0.07	-1.29	0.20	-0.23 0.05
age		0.01	0.02	0.75	0.45	-0.02 0.04
age2		-0.00	0.00	-0.15	0.88	-0.00 0.00
male		-0.16	0.07	-2.26	0.02	-0.30 -0.02
mar		0.19	0.09	2.08	0.04	0.01 0.36
div		-0.10	0.14	-0.73	0.47	-0.37 0.17
health		0.60	0.05	10.92	0.00	0.49 0.70
inc		0.09	0.02	5.67	0.00	0.06 0.12
cons		5.46	0.39	13.85	0.00	4.69 6.23

here for last 2 waves 2012 and 2018, more detailed provinces, and larger differences, from 7.6 in La Guajira (only 32 obs) and 7.9 in Cauca to 8.6 in Santander, Caldas and 8.7 in Antioquia, Norte de Santander, and Quindio.

hence the difference between lo and hi is as large as about 1.

after controlling for basic predictors of happiness, relative to base case Antioquia, a number of provinces are less happy, Atlantico at .45, Caqueta at .7, Cauca at .6, Huila and La Guajira at .7, Narino at .6, Valle del Cauca at .5, Cundinamarca at .47, and Bogota (Distrito Capital) at .66. Notably Bogota is the very largest Colombian city, and also one of the least happy provinces. and that data from govt has happiness but not sure how precise is urbanicity: Encuesta Nacional de Calidad de Vida <https://www.datos.gov.co/Estadisticas-Nacionales/Encuesta-Nacional-de-Calidad-de-Vida-ECV-/mz9y-3x9k>

Limitation—caveat is that not representative of provinces though pooling 2 years together arguably helps and all regions have at least 40 obs with exception of san andres, choco and la guaji—results for which we refrain from interpreting

positive relationship with gdp and nil relationship with density right so more developed are denser, the two correlate at .35, so

looking at them simultaneously reveal positive rel with gdp, but negative with density as expected



Figure 2: Colombia Administrative Divisions. File:Colombia administrative divisions <https://commons.wikimedia.org/wiki/>.

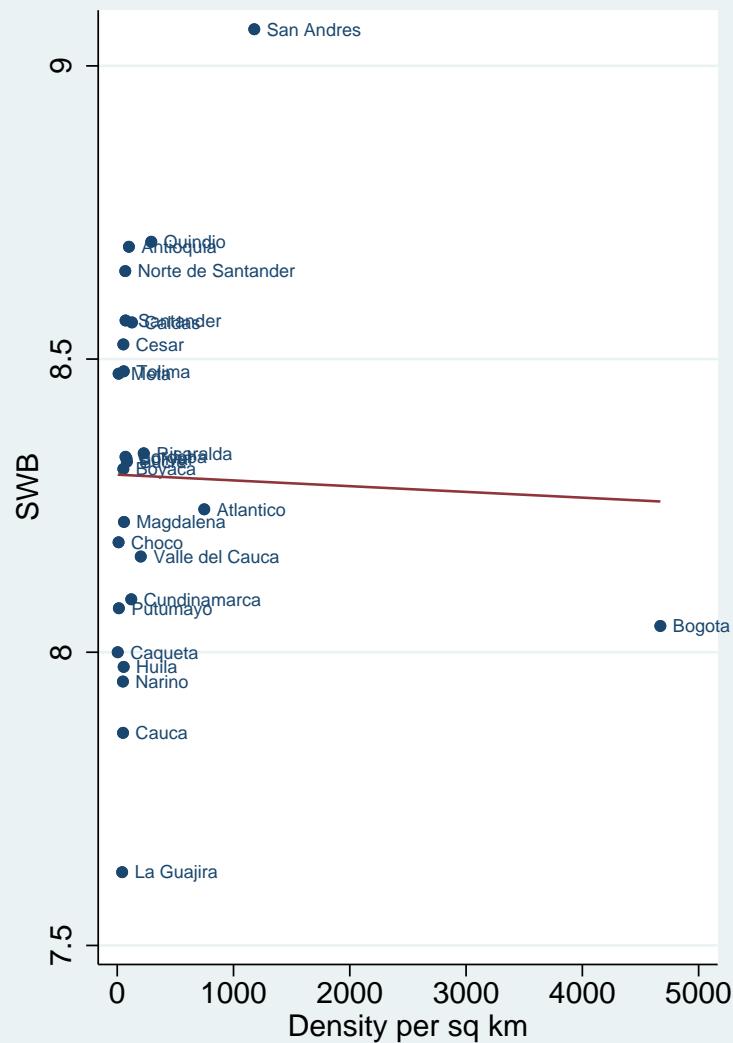
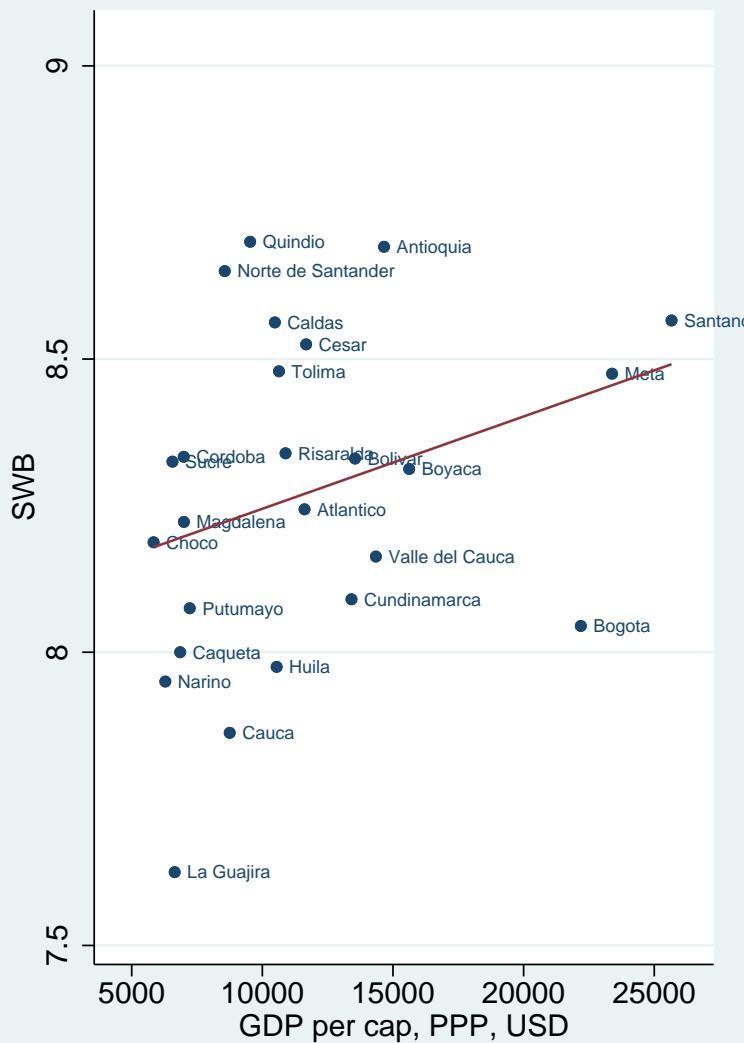


Figure 3: Bivariate relationships

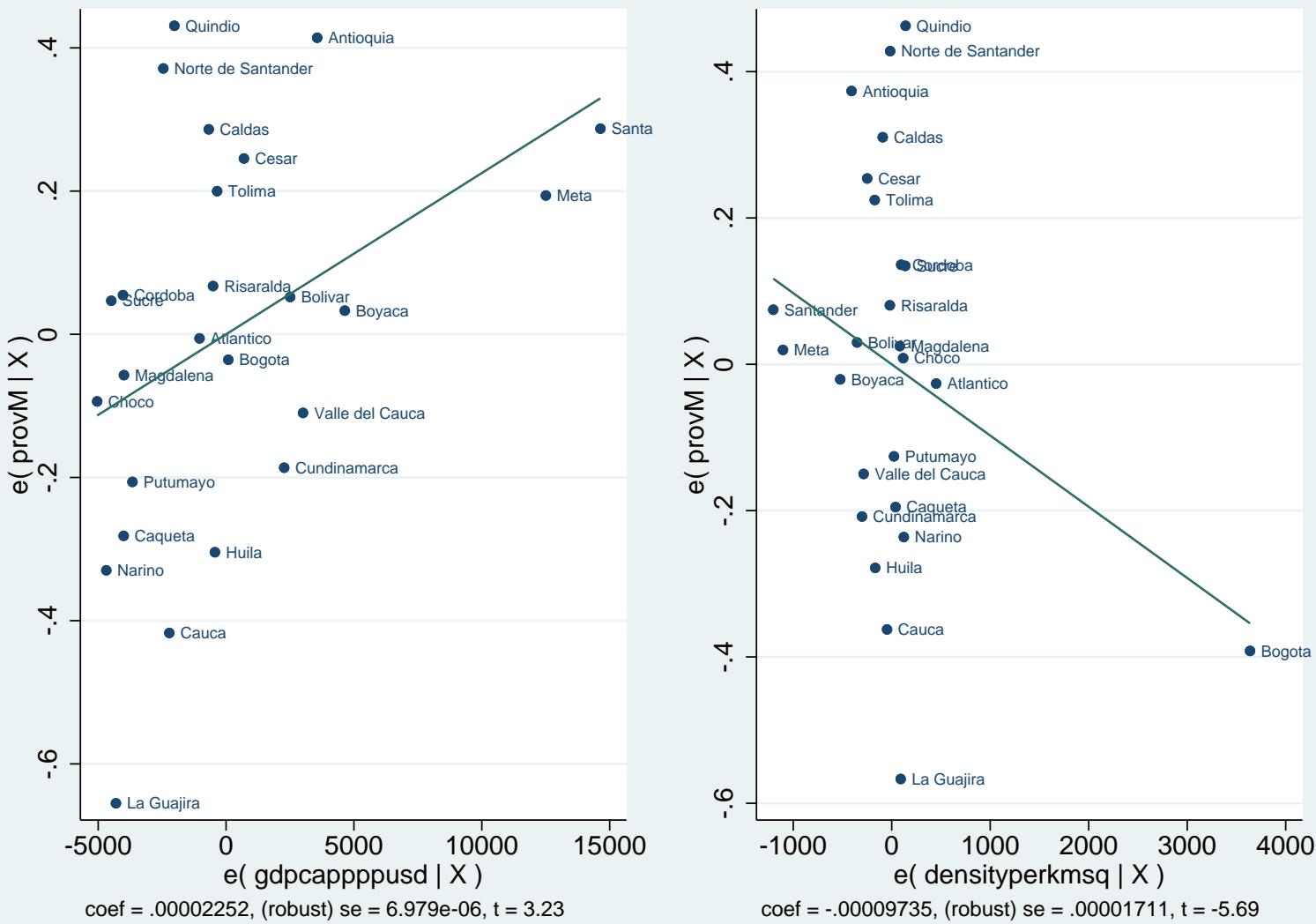


Figure 4: Added Variable Plots relationships

3.6 Additional visualizations of the gradient

3.7 High Density Living

Contemporary largest cities crowd millions of people at densities of about 25,000/sq km (Manhattan), which is 105 people per acre. Imagine about 3 times larger soccer field (2.7 acre) and 22 people on it (2 teams of 11 players)—it's a livable density—Manhattan has 281 people on it. Of course it is only manageable thanks to towers and underground (subway, tunnels, etc) facilities. And there are dozens of cities more dense than Manhattan, and it is only getting denser and worse.

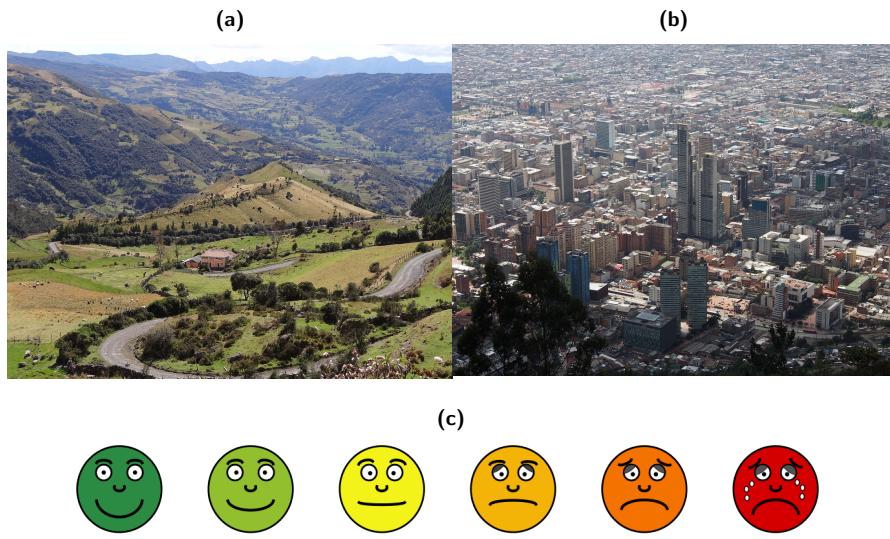
A city of hundreds of thousands of people is a very recent invention in human evolutionary history—there was no such even single place in the world before around 1,000 BC. By 1850 AD only about 2.3% of world population lived in cities larger than 100,000 (Davis 1955).

Some argue that many species, e.g., ants and bees, thrive at high densities, but clearly humans are unlike ants or bees. By one estimate—we're 90% chimp and only 10% bee (Haidt 2012). Small population level and density in a natural setting is humans' evolutionary home, not high population size and density in artificial setting (Pretty 2012). Humans have evolved to live sparsely in a

Figure 5: Urban-Rural happiness gradient endpoints. Note that the gradient has multiple steps as illustrated with frownie and smiley emojis, but for simplicity only end points illustrated with photos: very rural v very urban (more photos would make them small and less legible). Images from <https://www.flickr.com/photos/pedrosz/9515685099>, and Bogota Centro International https://commons.wikimedia.org/wiki/File:Bogota_Centro_International.jpg



Figure 6: Urban-Rural happiness gradient endpoints. Images from File:Guican Rural.JPG - Wikimedia Commons, and <https://www.maxpixel.net/Urban-Bogota-Capital-Bogota-Colombia-Architecture-5357148>



natural environment, not densely in a mixture of concrete, metal, and plastic. Unnatural large population and density is accompanied by a third defining feature of city, heterogeneity or diversity (Wirth 1938). But humans have an ingroup preference or homophily ("love of the same") (McPherson et al. 2001, Tajfel 1982, Tajfel et al. 1971, Smelser and Alexander 1999, Putnam 2007, Fowler and Christakis 2008).

3.8 Urbanization Measures From Wikipedia

Quite a growth, in 1950 no city larger than a million, now 5 such cities and notably Bogota close to 10m. All five largest Colombian cities increased more than 5x times since 1950, and even about as much as 10x.

Figure 7: Urban-Rural happiness gradient endpoints. Images from File:Guican Rural.JPG - Wikimedia Commons, and bogota, landscape, bogota, city, architecture, urban, panoramic, capital, cities, viewpoint <https://www.pxfuel.com/en/free-photo-xiffs>

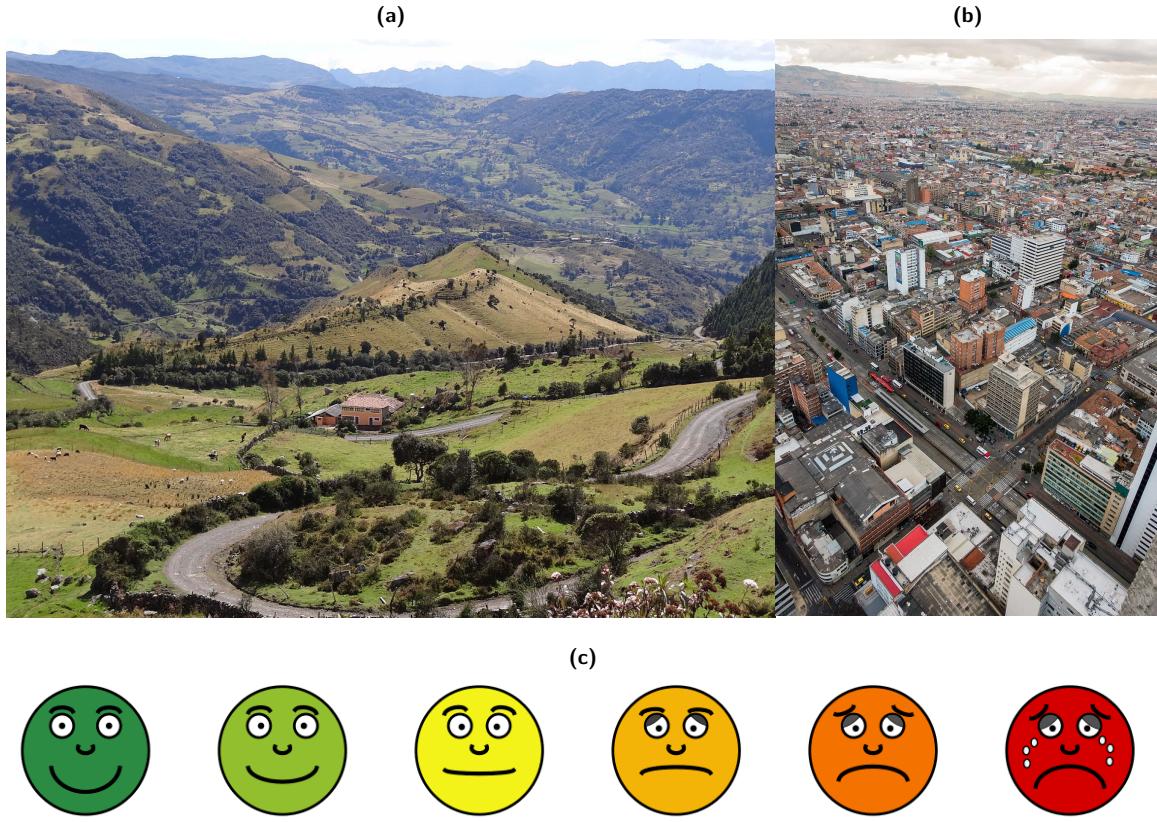


Table 6: 10 largest Colombian Cities. Data source: Wikipedia.

rank	city	2018 population	1950 population	density (thousands per sq km)
1	Bogota	8m	.7m	4.3
2	Medellin	2.5m	.4m	6.9
3	Cali	2.4m	.2m	3.6
4	Barranquilla	1.2m	.2m	7
5	Cartagena	1m	.1m	1.6
6	Cucuta	.7m		
7	Soledad	.7m		
8	Ibagué	.6m		
9	Soacha	.5m		
10	Bucaramanga	.5m		

2018 population: http://www.dane.gov.co/files/investigaciones/poblacion/proyepobla06_20/ProyeccionMunicipios20052020.xls

1950 population: Bogota [https://web.archive.org/web/20120403010130/http://www.dane.gov.co/files/censo2005/PERFIL_PDF\(CG2005/11001T7T000.PDF](https://web.archive.org/web/20120403010130/http://www.dane.gov.co/files/censo2005/PERFIL_PDF(CG2005/11001T7T000.PDF)

Medellin: Suramericana de Seguros (1988), Historia de Antioquia. Editorial Presencia Ltda.(Edicion especial no tiene ISBN) Medellin. pp. 299.

Cali: (?)

Barranquilla: [https://en.wikipedia.org/wiki/National_Administrative_Department_of_Statistics_\(Colombia](https://en.wikipedia.org/wiki/National_Administrative_Department_of_Statistics_(Colombia)

Cartagena: https://en.wikipedia.org/wiki/Cartagena,_Colombia

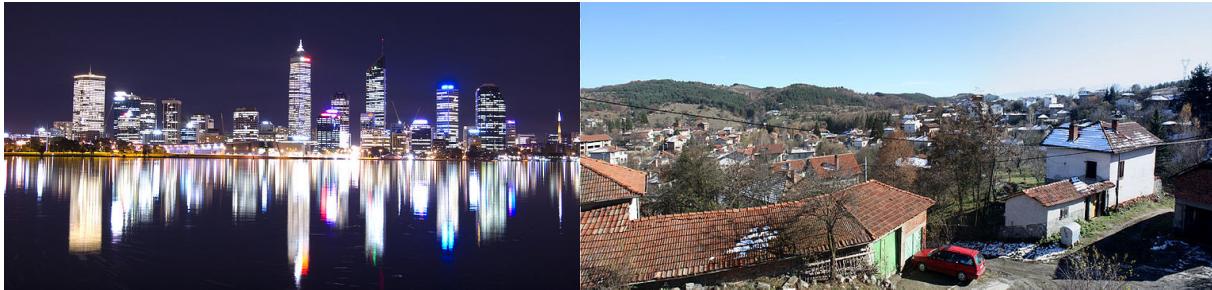
Density: Wikipedia Websites for each city

3.9 Metropolitan v Small-Town Visualization

For Colombian context, the metropolis could be Bogota or Medellin, and the small town could be Ipiales or Honda.

Figure 8: Imagine a person from a city, say, Chicago or London, meets a person from a town, say, Beeville TX or Vineland, NJ. Some likely face expressions (exaggerated; people hide emotions) of a city dweller are on the left, and of person from a town are on the right.

(a) city: snazzy, awesome, cool, amazing, sexy, fantastic, spiffy, hot, great, pretty, sharp, stylish, jazzy, nifty, hip, (b) town: boring, ugly, ordinary, dull, average, normal, lame, plain, bland, stupid, common, dumb, unattractive

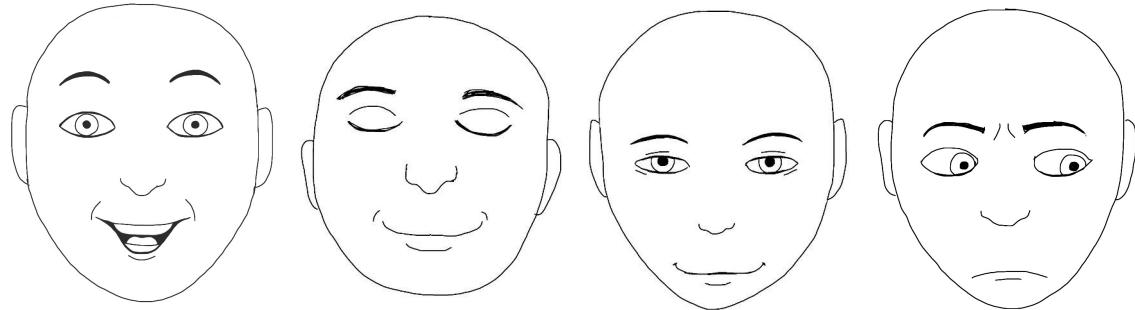


(c) ecstatic

(d) adored

(e) adoring

(f) embarrassed



3.10 Author's Personal Observation on Bogota

I never look forward to visiting Bogota, it's a necessity as per central place theory, airport rare goods such as cigars etc. And it's not just build environment, asphalt, concrete, glass, ie city, that's depressing, it's people too, urbanism is a way of life (Wirth 1938). Otherwise relaxed positive friendly Colombians are now acting closer to stressed, cold, and unfriendly Philadelphians (replace with any other big city)

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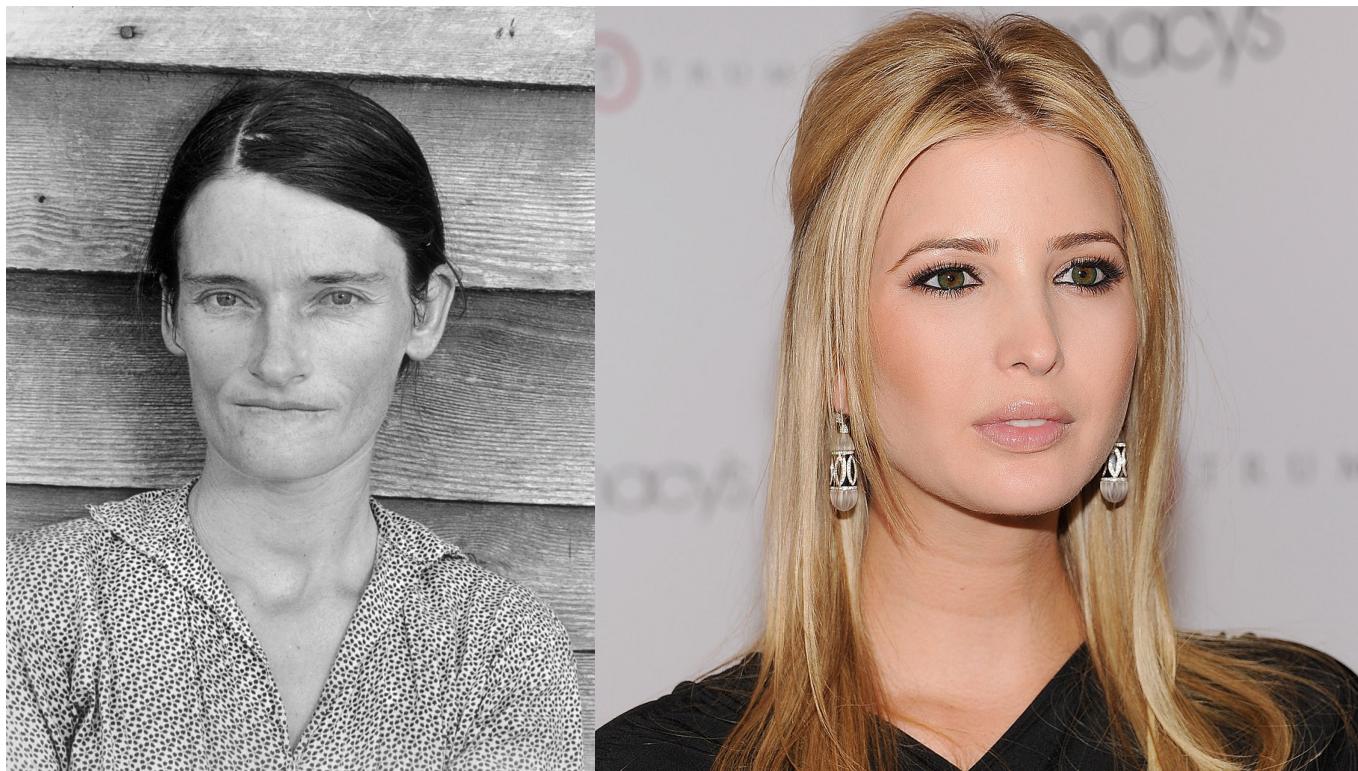
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Figure 9: Rural v Urban way of life.

(a) "Becky, a rural woman." Allie Mae Burroughs from rural Hale County, Alabama from https://en.wikipedia.org/wiki/Farm_Security_Administration#/media/File:Allie_Mae_Burroughs_print.jpg. Public Domain.

(b) "Charlotte, an urban woman." Ivanka Trump from New York City from https://commons.wikimedia.org/wiki/File:Ivanka_Trump_in_2011.jpg. Creative Commons Attribution-Share Alike 2.0 Generic license.



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