Happiness and Place in Colombia: Urban-Rural and Regional

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Graphical abstract:

Figure 1: 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:`

Happiness and Place in Colombia: Urban-Rural and Regional patterns from World Values Survey (WVS)

This study focuses on urban-rural SWB differences in Colombia. Vast of majority of the research on urban-rural SWB differences are in global North. This is one of the first studies in global South. Colombia, a developing country, is expected to have little evidence or urban-rural gradient oberserved in developed countries–cities promote economic growth needed in devloping countries. Yet, we do find some evidence or urban-rural happiness gradient in Colombia, especially Bogota, the largest COlombian city, 8m, is less happy than rural Colombia. The study also offers some preliminary evidence regarding regional differences–small sample, need more evidense us8ing more data as data becomes available in the futre.

XXX TODO ADD TO EBIB AS KEYWORD PAPER-CODE-NAME AND TAG WITH EBIB KEYWORDS

Per urban-rural happiness gradient CITE MY PAP WITH BERRY INDER THAT TITLE, latin america deserves a special attention– Within the last 50 years, Latin America's urbanization rate has doubled to 80%, making it the most urbanized region in the world[1], Colombia is not an exception `https://population.un.org/wup/Country-Profiles/`

1 Happiness within Colombia across space

Most happiness studies are in global north, and the field is still only emerging in Latin America **??**. Carol Graham was an early student of latin happiness, yet her studies are in general about the continent, they do not focus on Colombia**????**[2]

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I thank XXX. All mistakes are mine.

[1] `https://www.weforum.org/agenda/2019/06/latin-america-is-a-mass-transit-powerhouse-but-it-needs-fine-tuning/`

[2] **?** is an exception, but they focus on labor market, not geography.

There are cross national studies focusing on happiness that include colombia (e.g., Okulicz-Kozaryn and Valente 2021) or latin american studies (e.g., Valente and Berry 2016), but they do not focus on colombia and gloss over. Extant literature does not address Colombian intricancies.

Burger et al. (2021) is an exception in its sub-country look at regional happiness, but it uses questionable Gallup data–for problems with Gallup data see Okulicz-Kozaryn and Valente (2021).

Colombia has one large city, Bogota, at about 8m, Medellin and Cali are at about 2.5m, and Baranquila and Cartaghena at about 1m, and about 7 cities .5-1m.

Then it makes sense that Bogota is a category on its own, and likewise medellin and cali shoudl be sepreated out and thsi is how we will proceed

When I am in Bogota I ask myself why did I come here just looks like London or new York or any place like that; big cities just like airports or hospitals they all look and feel the same

Bogota doesn't feel like Colombia, it feels like a western city, rushed and stressed

Cities are more stressful–people work more in cites ROSENTHAL/SMALL?

Only about 20 perc of Colombia population is rural, similar to the US, `https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=CO` `https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=US` Yet the UN/WB definition has urban-rural cutoff very low, if looking at medium and large citiies ¿.5m v elsewhere, only about 20m out of about 50m colombian population live there, less than half.

so we hypothesize that rural up to medium towns will be happy and theere will be happiness penalty for the very largest place, Bogota. Medellin and Cali–unsure.

We know that cities promote economic growth glaeserTrimph and osullivan textbook eco dev first then lifestyle so maybe actually big cities happier? 2

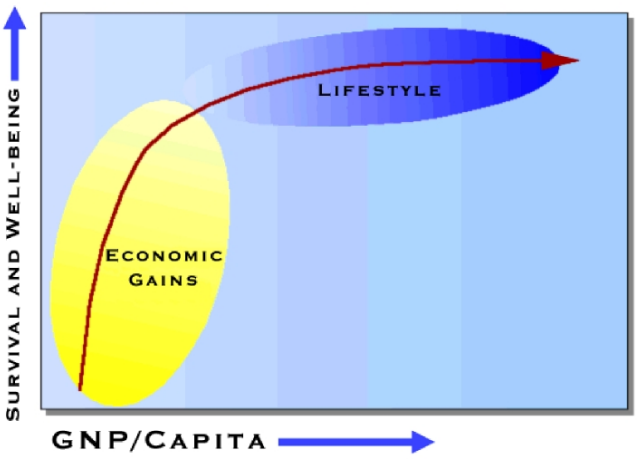

Figure 2: Well-being and income, (Inglehart 1997).

The authors visited personally all three largest cities, Bogota feels North-Western not only in climate but also in attitude and behavior, fact paced, stressful. Cali is the most Latin of the three cities, and Medellin seems to merge reasonably well edcomic development and organization but yet does not appear stiff and stressed like Bogota. Smaller places such as Popayan, Pasto apear warmer and more welcoming and happier than Boogota.

Figure 3: 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:`

2 Data and methods; REPHRAZE! copied from earlier

We use `www.worldvaluessurvey.org`, which is representative of about 90% of the world population,[3] and as elaborated in previous section, is much better suited for the study than an inadequate and poorly designed Gallup data. The variables are listed in table 1. Country codes and descriptive statistics are in SOM (Supplementary Online Material).

SWB question reads "All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with your life as a whole?"

Urbanicity is operationalized with WVS variable `X049`–note that it is objective and recorded by reviewer, not respondent. There are eight categories ranging from '$< 2k$' to '$> 500k$.' This is important advantage, because as elaborated earlier, urbanicity or urbanness is a continuum, not a binary urban v rural. We conduct the analysis using a set of dummy variables for all eight categories (leaving out the base case) in the SOM. However, for simplicity and ease of exposition we present simplified results in the body of the paper using three categories only. In other words, this study will use 8 categories of urbanicity, and summarize results for ease of presentation with 3 categories.

Because in many countries, there are either no observations or few observations in the first two bottom categories `-2k` and `2-5k`, we combine them together for the analyses in the main body of the paper. These two categories together proxy free of city natural environment most closely resembling human natural habitat where we have evolved, and it includes: wilderness, open country, and small villages. The other critical category that must be measured based on earlier review of theory is large cities, again, there is likely to be a threshold at several hundred thousand, hence we use the top category on WVS variable `X049` '`>500k`' to proxy large cities. Such places, are the least resembling of human natural habitat and are mostly consisting of man made objects such as asphalt, concrete, glass, etc, and as per theory as reviewed earlier, are likely to be least happy. The third category in our main analyses are places in between, `5-500k`.

wvs boilerplate (bash gallup) and ols boilerplate

As Davies (2015) put it, it's not happiness research, it's "happiness industry." There are multiple problems with Gallup data. First, it is not meant for research but for commerce–Gallup charges $30,000 for access (per one year!). (author's email inquiry)

–private corporations are making fortune from tax dollars and students tuition–scholars should resist corporatization of academia (Mills 2012a, Cox 2013, Mills 2012b, Catropa and Andrews 2020, Schmidlin 2015), and corporatization of happiness research (Davies

[3]While WVS is conducted in about 100 countries that represent about 90% of the world population, due to missing data for the particular variables of interest, the present's study coverage is slightly smaller, about 70 countries (depending on the model and specification).

2015).

Second, urbanicity classification is twofold less precise than in WVS: 4 v 8 categories. Third, while WVS uses precise population size numeric cutoffs, Gallup uses fuzzy concepts such as "rural area", "small town or village", "large city". Fourth, (and this compounds third problem) Gallup uses self-reports of urbanicity, which is highly subjective and problematic in this case–many, if not most people, would likely classify themselves completely arbitrarily into "rural area" v "village" and so forth. WVS uses interviewer's information about the place. Fifth, apparently much of data are missing–Easterlin et al. (2010) notes that in 14 countries "rural area" responses were exceptionally low. Also, about half of the world population is urban, but Burger et al. (2020) reports that in their dataset only about quarter of respondents report rural residence.

Table 1 lists control variables used in the body of the paper.

Table 1: 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 denomination	"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 "

In choice of controls we generally follow (Okulicz-Kozaryn and Valente 2020). There are specific controls worth discussing. Young, single and childless persons and young men with tertiary education are relatively more satisfied with urban areas as place of residence (Carlsen and Leknes 2019). Income, class, and education are important controls–not only predict greater SWB, but are also confounded and higher in cities.[4]

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)[5], hence we control for freedom.

Likewise, trust is important, it predicts SWB, and it is lower in cities (Milgram 1970).

Health is a key predictor of SWB, and also note that subjective health measure used here is a reasonable measure of actual health (Subramanian et al. 2009).

We use a standard OLS regression with robust standard errors. We treat the 10-step happiness variable as continuous. Ordinal

[4]where i discuss controls in data and to literature where i slam burger and indeed as shown later comparing unadjusted means results in cities being happier notably due to confounding of higher income education and class–see appendix for tables with and without controls

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

happiness can be treated as a continuous variable (Ferrer-i-Carbonell and Frijters 2004). OLS has become the default method in happiness research (Blanchflower and 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).

Using region/province variable X048WVS and 500,000 top bin population cutoff we were able to identify Colombian largest cities ($> 500k$ in WVS data as they uniquely fall in different provinces.[6] Then we simply replace top $> 500k$ category in WVS data with dummies for each of the largest cities.

3 Results

The regional exploration is preliminary and postponed to appendix in sec 4.

in tab 2 Bivariate model a1, no difference across urbanicity. This is important. As argued in urb undhapiness is common looking at simple mean differences may not reveal the urban-rural happiness gradient–notably, and especially in developing countries, cities are economic engines, and income is badly needed for necessities in developing countries and there is more opportunity in cities and so this confounds with urbanicity and results in nil relationship.[7]

Adding basic sociomegraphis in a2, likewise no difference. Adding health, class, and edu in a3 only slightly changes. But addition of income in a4 changes it. so with income it is sig! but not without! ppl go to city for inc (cite) higheer there, but confounds, witout accounting for it no diff.

and in a5 oversaturated with extra vars not much change

a5a adds crime as key urban problem; magnitude changes only slightly but become insig as sample size is reduced by almost half, yet the reduction is due to neg impact of crime, not due to the sample size–a5b reruns a5 except on sample from a5b and it is significant negative on 500k-

same motivation: urban rural gradient almost only solely in global north; rare exception rubia paper

[6] Baranquilla and Soledad are exception as they both are Atlantico province, but they border each other and we simply treat them as one large city coded as Baranquilla.

[7] likewise irt is important to contril for city disamenities, notablty crime

	a1	a2	a3	a4	a5	a5A	a5b
-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10-50k	-0.04	-0.02	-0.04	-0.07	-0.08	-0.18	-0.18
50-500k	-0.03	-0.01	-0.10	-0.15	-0.14	-0.11	-0.17
500k-	-0.05	-0.02	-0.18	-0.25+	-0.23+	-0.20	-0.31*
1998	0.00	0.00	0.00	0.00	0.00		
2012	-0.03	-0.02	0.01	-0.06	-0.02	0.00	0.00
2018	-0.24***	-0.21**	-0.19**	-0.20**	-0.18*	-0.19*	-0.13+
age		0.00	0.01	0.01	0.01	0.03+	0.03
age2		-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
male		0.01	-0.10*	-0.11*	-0.05	-0.13	-0.12
married or living together as married		0.21***	0.22***	0.22***	0.19**	0.16+	0.17+
divorced/separated/widowed		-0.02	-0.00	-0.01	-0.03	-0.11	-0.12
health			0.61***	0.59***	0.58***	0.59***	0.62***
class			0.12***	0.07*	0.06*	0.05	0.06
education			-0.03**	-0.06***	-0.06***	-0.06**	-0.06**
income				0.08***	0.07***	0.09***	0.10***
Full time					0.00	0.00	0.00
Part time					0.08	-0.10	-0.10
Self employed					-0.04	-0.14	-0.16
Retired					0.13	0.19	0.20
Housewife					0.08	0.03	0.05
Students					0.02	0.12	0.12
Unemployed					-0.25**	-0.26+	-0.27+
Other					-0.13	-0.18	-0.15
religious services					0.02	0.01	0.01
No religious denomination					0.00	0.00	0.00
Buddhist					-0.18	0.04	-0.09
Christian					0.05	0.10	0.08
Evangelical					0.01	-0.14	-0.13
Jehovah witnesses					0.40+	0.61	0.52
Jew					0.38		
Muslim					0.94***	1.44***	1.19***
Other					0.07	-1.02+	-1.03*
Pentecostal					1.11**	1.16**	1.20**
Protestant					0.38	0.14	0.08
Roman Catholic					0.06	0.13	0.13
Seven Day Adventist					0.76+	0.76	0.82+
Wicca					1.15***	1.37***	1.36***
AU: Uniting Church					-0.26*	-0.42**	-0.27+
victim of a crime last year						-0.21*	
freq felt unsafe from crime at home						-0.17***	
constant	8.46***	8.25***	5.49***	5.53***	5.46***	5.40***	4.97***
N	6025	6024	5895	5874	5853	2885	2885

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

Table 2: OLS regressions of life staisfaction.

in table 3: notably bogota, but also cali less happy than smalest places; not medelin the second largest; actually medelin adn cartagena have very small positive coefficients (but insignificant).[8]

here in table 3 as opposed to 2, even in model 1, without controls, there is already a significant difference for Bogota–it is less happy than smallest areas even without controlling for predictors of happiness.

[8]We refrain from interpreting coefficients on "Cucuta," "Bucaramanga," "Ibague" as there are only 24 observations for each of them.

	b3	b4	b5	b5A	b5b
-10	0.00	0.00	0.00	0.00	0.00
10-50k	-0.11	-0.17	-0.18	-0.18	-0.18
50-500k	-0.11	-0.17	-0.17	-0.12	-0.17
Medellin	0.09	-0.00	-0.03	0.03	-0.03
Barranquila	-0.17	-0.27	-0.25	-0.11	-0.24
Cali	-0.30	-0.37+	-0.37+	-0.23	-0.36+
Bogota	-0.43**	-0.51**	-0.48**	-0.36*	-0.47**
Cartagena	0.13	0.09	0.13	0.21	0.13
Cucuta	0.14	-0.01	-0.04	0.03	0.02
Bucaramanga	-0.20	-0.31	-0.37	-0.31	-0.39
Ibague	-0.22	-0.29	-0.34	-0.30	-0.33
2012	0.00	0.00	0.00	0.00	0.00
2018	-0.20**	-0.11	-0.14+	-0.19*	-0.13
age	0.01	0.02	0.03	0.03+	0.03
age2	-0.00	-0.00	-0.00	-0.00	-0.00
male	-0.16*	-0.17*	-0.13	-0.14+	-0.13
married or living together as married	0.18+	0.19*	0.17+	0.16+	0.17+
divorced/separated/widowed	-0.09	-0.10	-0.11	-0.10	-0.11
health	0.67***	0.64***	0.62***	0.59***	0.62***
class	0.14***	0.06	0.06	0.05	0.06
education	-0.04*	-0.05**	-0.06**	-0.05**	-0.06**
income		0.10***	0.10***	0.09***	0.10***
Full time			0.00	0.00	0.00
Part time			-0.07	-0.09	-0.09
Self employed			-0.14	-0.13	-0.14
Retired			0.18	0.17	0.18
Housewife			0.04	0.02	0.03
Students			0.13	0.12	0.12
Unemployed			-0.27*	-0.26+	-0.27*
Other			-0.17	-0.20	-0.17
religious services			0.01	0.01	0.01
No religious denomination			0.00	0.00	0.00
Buddhist			-0.04	0.11	-0.02
Christian			0.10	0.10	0.09
Evangelical			-0.14	-0.15	-0.14
Jehovah witnesses			0.44	0.53	0.43
Muslim			1.22***	1.44***	1.22***
Other			-1.02+	-1.01+	-1.01+
Pentecostal			1.17**	1.13*	1.17**
Protestant			0.05	0.11	0.05
Roman Catholic			0.12	0.12	0.12
Seven Day Adventist			0.82+	0.76	0.82+
Wicca			1.46***	1.48***	1.48***
AU: Uniting Church			-0.21	-0.40+	-0.23
victim of a crime last year				-0.19+	
freq felt unsafe from crime at home				-0.16***	
constant	5.33***	5.06***	5.02***	5.41***	5.00***
N	2933	2917	2909	2885	2885
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

Table 3: OLS regressions of life staisfaction.

9

4 Discussion and Conclusion

big city gives exposure to more comparisons, and as people tend to make upward comparisons (**??**), it may result in relative depribation and lower happiness, just as neighbors act as negatives (**?**) incidentally, there is a similar hint from another area in colombia: inhabitants of poor municipalities in the choco are happy to know only that environment in which they were born and raised, but when they know and live in other municipalities with greater socio-economic development their demands and expectations increase (**?**). In other words, ignorance may be a bliss.

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

[9]Note that Ibague and Bucaramanga have large negative coefficients about as large as Cali, even close to Bogota, depending on specification, but insignificant–one reason being that there are few observations for these cities.

ONLINE APPENDIX

Variables' definitions, coding, and distributions

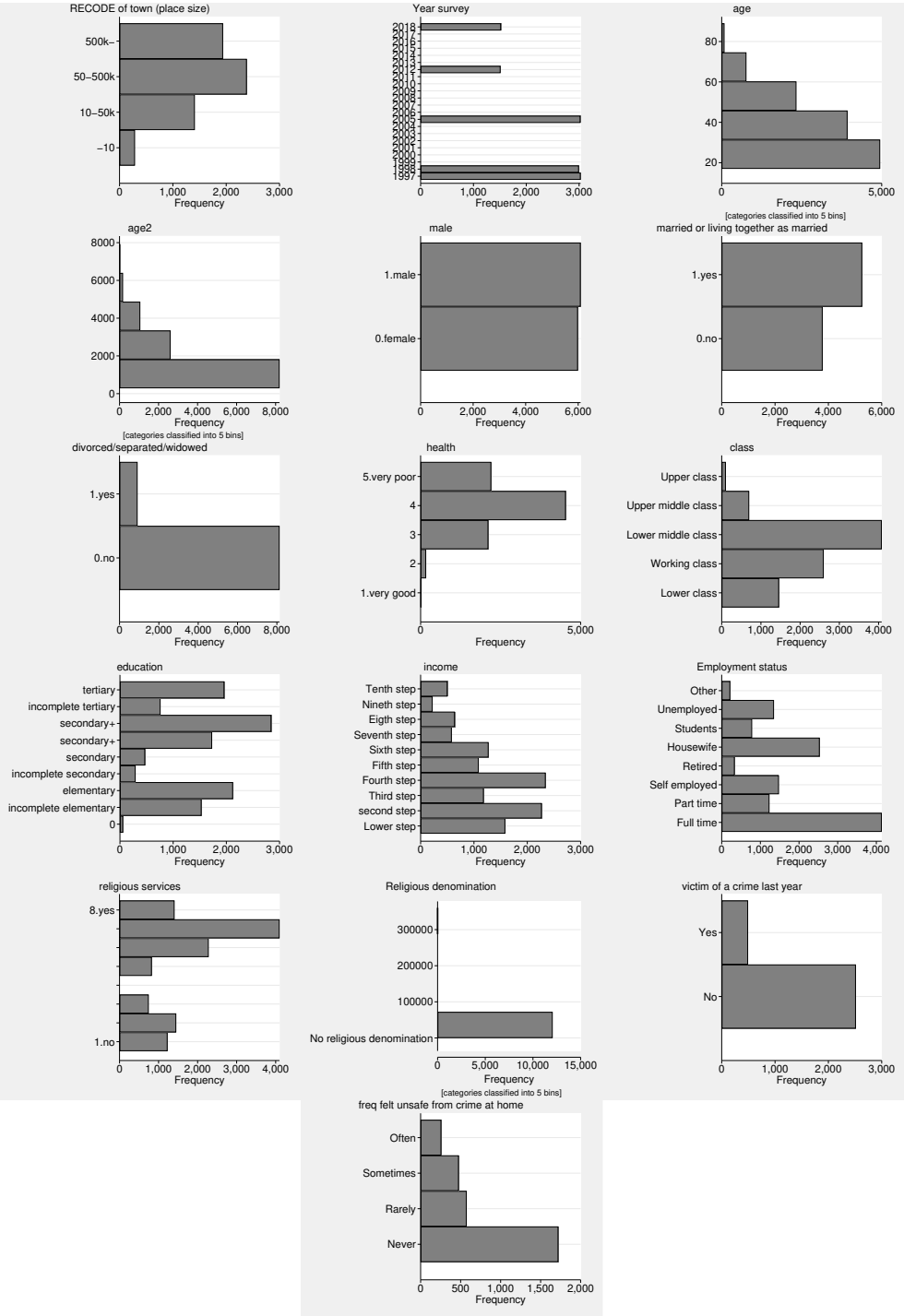

Figure 4: Variables' distribution.

Note that the main education variable has a sizeable 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 "Barranquila" 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  Barranquila
                           152         6  Cali
                           536         7  Bogota
                            56         8  Cartagena
                            24         9  Cucuta
                            24        10  Bucaramanga
                            24        11  Ibague
```

Additional Descriptive Statistics

Regional explorations

Table 4: 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				

Continued on next page

Table 4 – continued from previous page

"province"	"SWB"	"GDP per cap, PPP, USD"	"Density per sq km"	""	""	""	""
Tolima	8.479167	10636	56.45				
Valle del Cauca	8.163195	14346	202.16				
Amazonas		6298	.7				
Arauca		13685	11.01				
Casanare		26546	9.42				
Guainia		5383	.67				
Guaviare		5438	1.55				
Vaupes		4293	.75				
Vichada		4940	1.08				

abs and conclusion: preliminary evidence especially regarding regional differences–small sample, need more evidense us8ing more data as data becomes available in the futre

```
         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

------------------------------------------------------------------------------
                   |               Robust
                ls |      Coef.   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; contrillong fow swb predictors pacifica and bogota siginificantly less happy at about .24, and occidente happoer 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-Caqueta |      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 Guaji |      32.0       7.6
    CO: MET-Meta |      80.0       8.5
  CO: NAR-Narino |     120.0       8.0
CO: NSA-Norte de |     120.0       8.7
CO: PUT-Putumayo |      40.0       8.1
 CO: QUI-QuindÃo |      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-BolÃvar |     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	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
X048WVS						
CO: ATL-AtlÃ¡ntico	-0.45	0.18	-2.45	0.01	-0.81	-0.09
CO: CAQ-Caqueta	-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-Cundinama..	-0.47	0.18	-2.58	0.01	-0.82	-0.11
CO: DC -BogotÃ¡ (..)	-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 Guaji (only 32 obs) and 7.9 in Cauca to 8.6 in Santander, Caldas and 8.7 in Antioquia, Norte de Santander, and QuindÃo.

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

after ontrolong 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 lest 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/Estadsticas-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

TO n org later can redo with latinobarometer, goes back every year to like 95, but at least since 05 has 8 step urbanicity, but top one is 100k and then there is capital ad

and then can do size with province :)

positive relationship with gdp and nil relationship with density right so more developed are denser, thw two correlate at .35, so looking at them simultanously reveal positive rel with gdp, but negative with density as expected

Figure 5: Colombia Administrative Divisions. File:Colombia administrative divisions `https://commons.wikimedia.org/wiki/`.

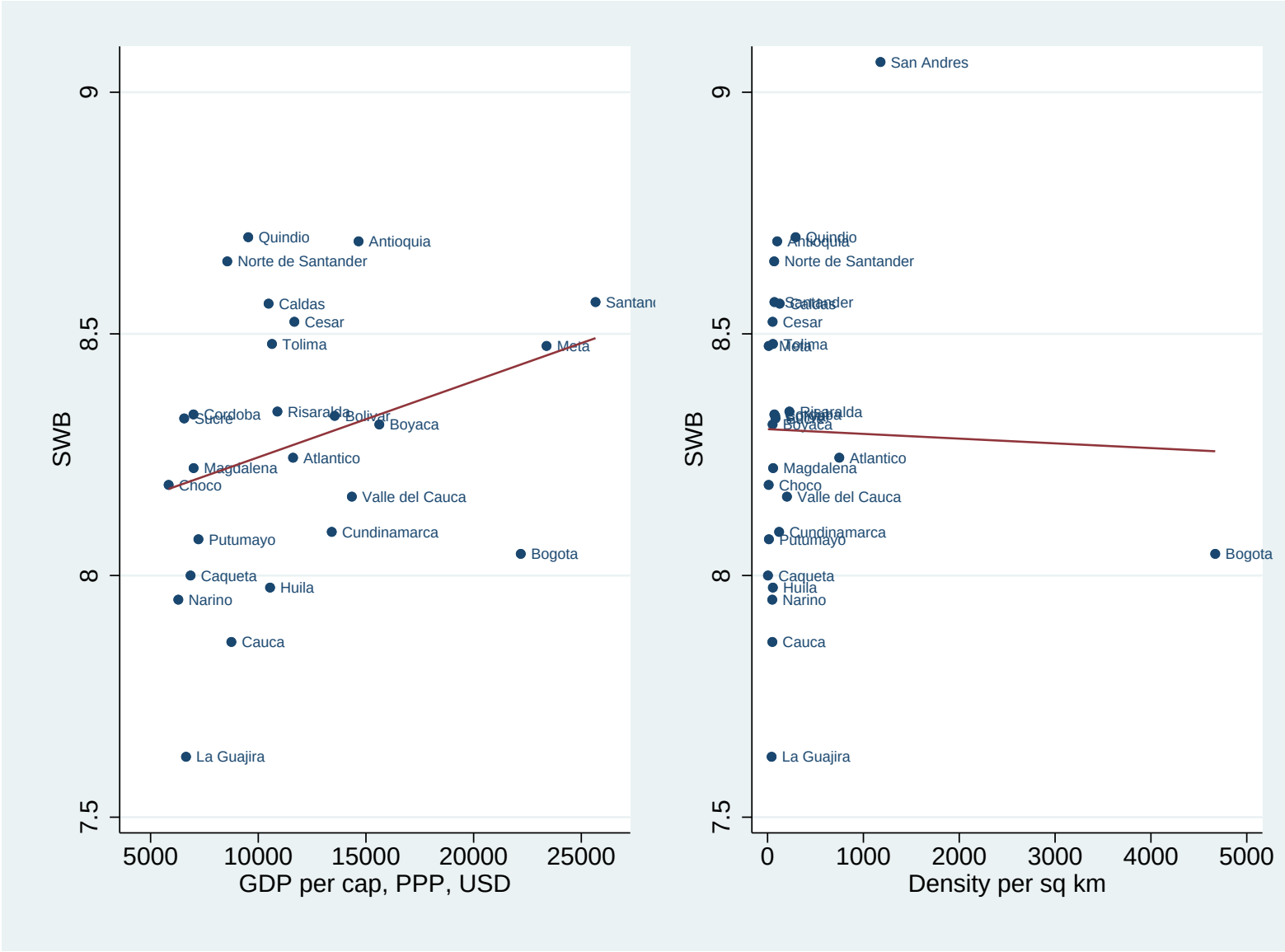

Figure 6: Bivariate relationships

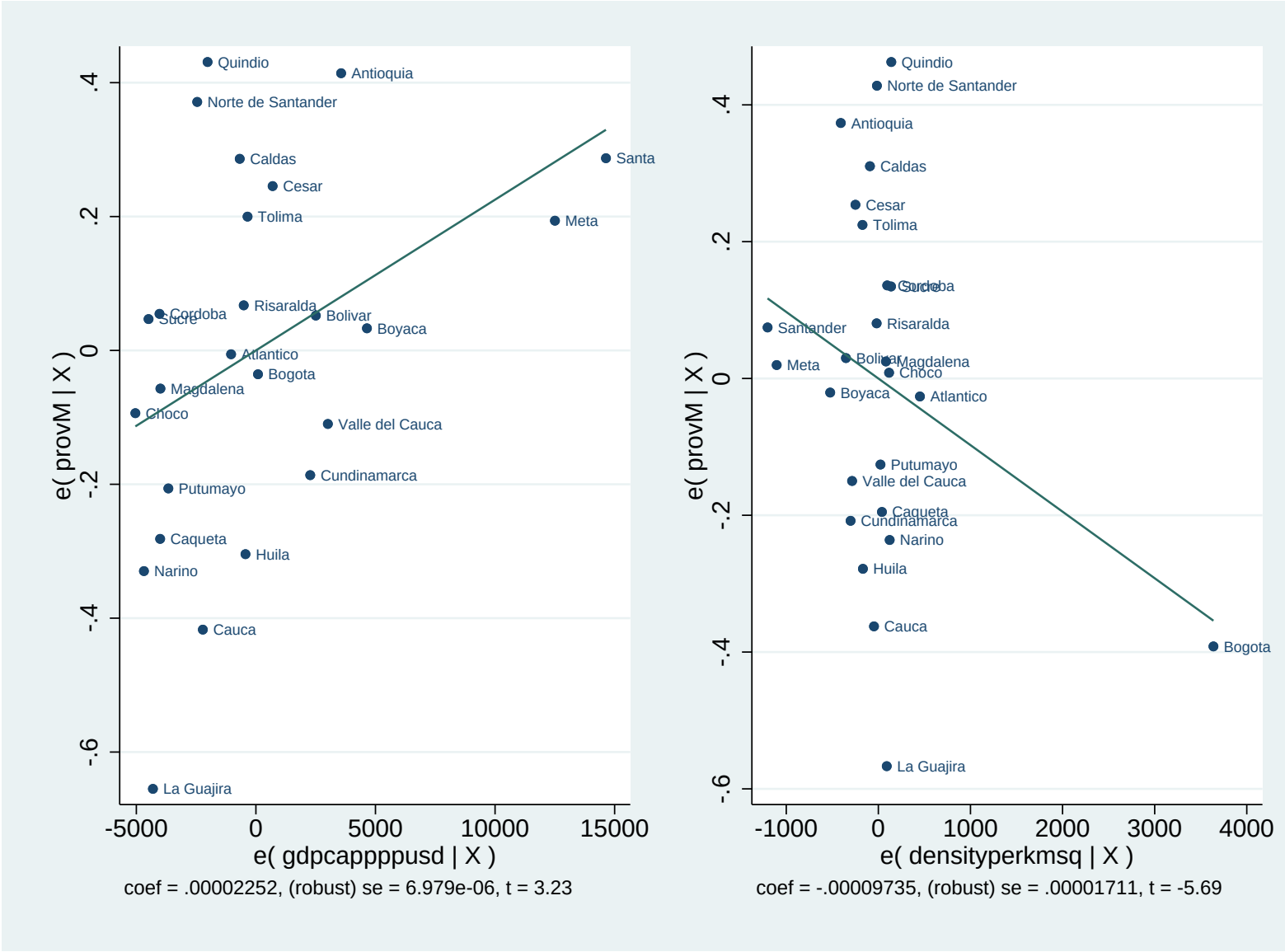

Figure 7: Added Variable Plots relationships

Additional visualizations of the gradient

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Figure 8: 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`

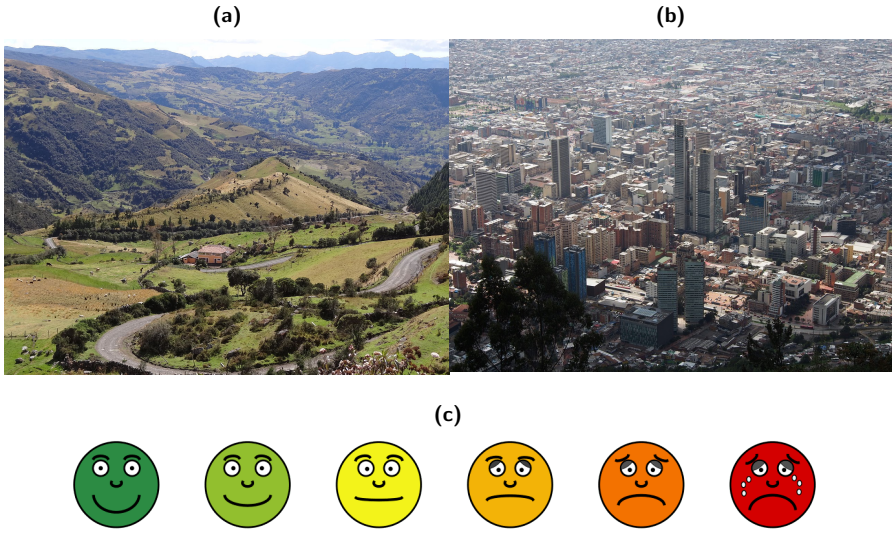
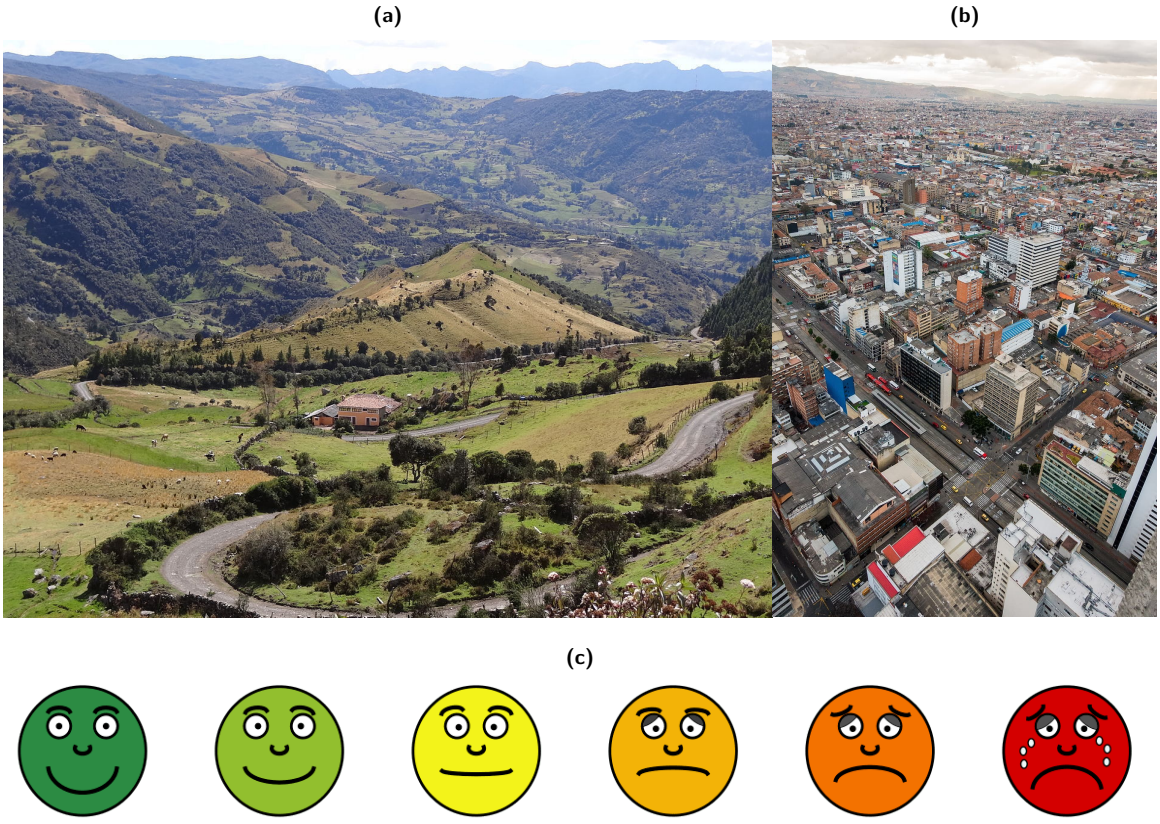


Figure 9: Urban-Rural happiness gradient endpoints. Images from File:Guican Rural.JPG - Wikimedia Commons, and bogota, landscape, bogotÃ¡, city, architecture, urban, panoramic, capital, cities, viewpoint `https://www.pxfuel.com/en/free-photo-xiffs`



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