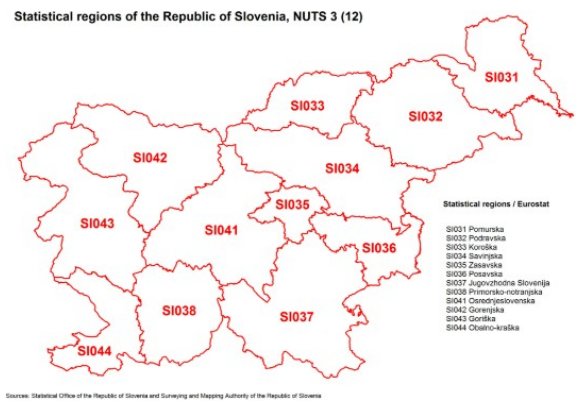
**Morrison. Whose happiness in which cities. Sustainability 1230475**

**Supplement 2.**

# Case study: Slovenia

Slovenia is only a quarter of the population size of Austria and slightly smaller than Czech Republic which hasa higher rate of urbanisation but Slovenia's rate of population growth has been much lower. The correspondence of the single NUTS2 region (S1021) and the FUR is particularly close in the Slovenian case as the following maps show.

**Figure S2.1. The Functional Urban Region classification of Slovenia**

| a. The Functional Urban Region | b. The NUTS2 classification |
|---|---|
| |   |

*Source*: https://www.oecd.org/cfe/regionaldevelopment/Slovenia.pdf

The Table S2.1 presents the uncontrolled results of urban living on life satisfaction and happiness in Slovenia using the five separate classifications identified in the text. Their individual effects on both measures of wellbeing are positive and statistically significant (at the $p<0.05$ level using the weighted survey estimates). The first two classifications are those defined in the text as Big City and Big City and Suburbs. The third classification of 'urban' defines the 'City' of Ljubljana (those living within the NUTS2 region of Osrednjeslovenska who say they live in a Big City) and this attracts the most positive coefficient in terms of both life satisfaction and happiness, particularly the latter. The fourth classification refers to the combined Big City and suburbs of Osrednjeslovenska which I label LjubljanaSub. Although this generates a significant positive coefficient in the case of happiness this wider definition fails to register as significant for life satisfaction. The fifth classification is the NUTS2 region of Osrednjeslovenska itself which closely approximates the FUR, hence its label Ljubljana FUR. Neither measure of wellbeing registers as different from zero when this definition is used.

**Table S2.1. Mean life satisfaction and happiness associations with five measures of agglomeration. Slovenia, 2018**

**a. Life satisfaction**

| Agglomeration (n) | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Big City (162) | .326** | | | | |
| | (.157) | | | | |
| BigCity and Suburbs (326) | | .294** | | | |
| | | (.123) | | | |
| LjubljanaCity (75) | | | .486** | | |
| | | | (.219) | | |
| LjubljanaSub (163) | | | | .307* | |
| | | | | (.162) | |
| LjubljanaFUR (318) | | | | | .119 |
| | | | | | (.122) |
| Constant | 7.283*** | 7.249*** | 7.294*** | 7.283*** | 7.293*** |
| | (.059) | (.065) | (.056) | (.059) | (.065) |
| Observations | 1314 | 1314 | 1314 | 1314 | 1314 |
| R-squared | .003 | .004 | .003 | .003 | .001 |

**b. Happiness**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Big City | .469*** | | | | |
| | (.144) | | | | |
| BigCity and Suburbs | | .287** | | | |
| | | (.12) | | | |
| LjubljanaCity | | | .683*** | | |
| | | | (.189) | | |
| LjubljanaSub | | | | .361** | |
| | | | | (.16) | |
| LjubljanaFUR | | | | | .082 |
| | | | | | (.11) |
| Constant | 7.555*** | 7.54*** | 7.572*** | 7.566*** | 7.591*** |
| | (.054) | (.057) | (.052) | (.054) | (.06) |
| Observations | 1314 | 1314 | 1314 | 1314 | 1314 |
| R-squared | .007 | .005 | .008 | .005 | 0 |

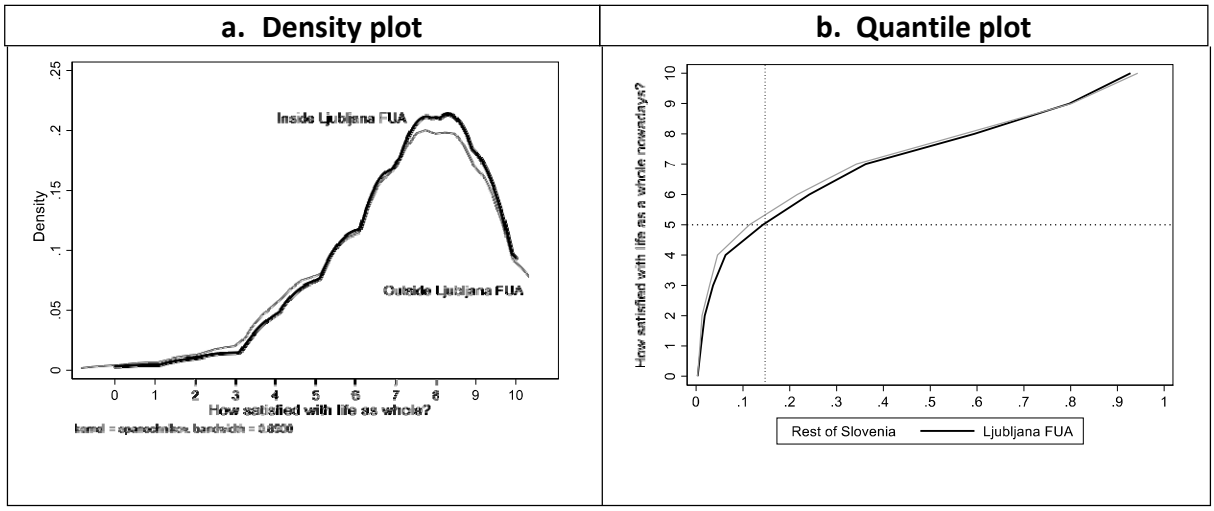
*Standard errors are in parentheses*
**** p<.01, ** p<.05, * p<.1*

*Source*: ESS9. Survey weights applied

Unlike Austria and Czech Republic, those living within the first four definitions of agglomeration return a *higher* average wellbeing. This is reflected in Figure S2.2 where the distribution

of life satisfaction of those who live in Ljubjlana (black line) sits to the left of most of the rest of Slovenia and below in the quantile plot. The median life satisfaction in Ljubljana and rest of Slovenia are equal and while the two means differ inside (7.41) and outside the capital FUA (7.3) the difference is not statistically significant.

**Figure S2.2. The density and quantile plot of life satisfaction inside and outside the Ljubjlana FUA. Slovenia, 2018**




*Source*: ESS9

The survey sample estimated means of the variables employed in the regressions below are shown inTable S2.2. The (minor) departures from the Czech Republic case include the higher proportion coping on their current income, a smaller proportion trusting and a higher proportion saying they are religious and a lower proportion feeling safe walking alone at night.

**Table S2.2. Variables used in the models of subjective wellbeing. Slovenia, 2018**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| How satisfied with life as a whole? | 1314 | 7.33 | 1.98 | 0 | 10 |
| How happy would you say you are? | 1314 | 7.62 | 1.79 | 0 | 10 |
| LjubljanaFUR | 1318 | .26 | .44 | 0 | 1 |
| Age - centered | 1318 | 0 | 18.82 | -34.35 | 40.65 |
| Female | 1318 | .50 | .5 | 0 | 1 |
| Born in country | 1318 | .88 | .32 | 0 | 1 |
| Unemployed (or sick) | 1317 | .05 | .22 | 0 | 1 |
| In good/vgood health | 1318 | .65 | .48 | 0 | 1 |
| Tertiary qual. | 1314 | .19 | .39 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Coping on current income | 1308 | .86 | .34 | 0 | 1 |
| Legally married | 1318 | .47 | .5 | 0 | 1 |
| Sociable | 1318 | .54 | .5 | 0 | 1 |
| Trusting | 1315 | .34 | .47 | 0 | 1 |
| Religious | 1318 | .4 | .49 | 0 | 1 |
| Safe walking at night | 1318 | .93 | .25 | 0 | 1 |

*Source*: ESS9

Turning to the OLS regressions, note how in the Ljubljana case the positive wellbeing effect of living inthe agglomeration is not statistically significant except when it becomes negative in model 7 of the Happiness regression when all controls are added.

**Table S2.3. OLS estimates of association between agglomeration and life satisfaction.**
**Slovenia 2018**

**a. Life satisfaction**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| LjubljanaFUR | .119 | .062 | .053 | -.003 | -.043 | -.108 | -.165 |
| Age - centered | | -.029*** | -.03*** | -.02*** | -.019*** | -.015*** | -.016*** |
| Female | | .073 | .07 | .071 | .047 | .115 | .138 |
| Born in country | | -.384** | -.416** | -.394** | -.447*** | -.494*** | -.365** |
| Unemployed | | | -.707** | -.534** | -.526** | -.367 | -.284 |
| In good health | | | | .917*** | .878*** | .788*** | .737*** |
| Tertiary qual. | | | | | .445*** | .33*** | .256** |
| Coping on income | | | | | | 1.291*** | 1.22*** |
| Legally married | | | | | | | .368*** |
| Sociable | | | | | | | .398*** |
| Trusting | | | | | | | .271*** |
| Religious | | | | | | | .296*** |
| Safe at night | | | | | | | .429* |
| Constant | 7.293*** | 7.6*** | 7.667*** | 7.059*** | 7.065*** | 6.04*** | 5.039*** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observations | 1314 | 1314 | 1313 | 1313 | 1309 | 1299 | 1296 |
| R-squared | .001 | .08 | .086 | .126 | .133 | .176 | .206 |

**b. Happy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| LjubljanaFUR | .082 | .037 | .027 | -.028 | -.069 | -.129 | -.2* |
| Age - centered | | -.023*** | -.023*** | -.014*** | -.013*** | -.01*** | -.012*** |
| Female | | .14 | .137 | .139 | .118 | .17* | .235** |
| Born in country | | -.414** | -.45*** | -.428*** | -.472*** | -.528*** | -.383** |
| Unemployed | | | -.793*** | -.626** | -.62** | -.468* | -.345 |
| In good health | | | | .886*** | .848*** | .766*** | .698*** |
| Tertiary qual. | | | | | .355*** | .268*** | .173* |
| Coping on income | | | | | | 1.011*** | .902*** |
| Legally married | | | | | | | .521*** |
| Sociable | | | | | | | .47*** |
| Trusting | | | | | | | .302*** |
| Religious | | | | | | | .185** |
| Safe at night | | | | | | | .635*** |
| Constant | 7.591*** | 7.89*** | 7.965*** | 7.378*** | 7.39*** | 6.616*** | 5.362*** |
| Observations | 1314 | 1314 | 1313 | 1313 | 1309 | 1299 | 1296 |
| R-squared | 0 | .06 | .069 | .115 | .12 | .152 | .204 |

**** p<.01, ** p<.05, * p<.1*

The quantile regression results in Table S2.4 serve as a background to the plots of row 1 in Figure 5 ofthe main text.

**Quantile regression**

**Table S2.4. Quantile regression of life satisfaction on the Ljubljana FUR and covariates.**
**Estimates table. Slovenia, 2018**

**a. Life satisfaction**

| | Q05 | Q10 | Q15 | Q20 | Q30 | Q40 | Q50 | Q60 | Q70 | Q80 |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ljubljana FUA | -.341 | -.349 | -.094 | -.098 | -.137 | -.07 | -.019 | -.071 | -.129 | 0 |
| Age - centered | -.039*** | -.032*** | -.031*** | -.024*** | -.02*** | -.02*** | -.014*** | -.015*** | -.012*** | 0 |
| Female | .123 | .048 | .133 | .049 | .036 | .104 | .219* | .239* | .165 | 0 |
| Born in country | -.373 | -.444 | -.367 | -.463* | -.351 | -.332 | -.428** | -.427** | -.506*** | -1*** |
| Unemployed | .136 | .143 | -.055 | -.122 | -.21 | -.608* | -.287 | -.129 | -.141 | 0 |
| In good health | .783** | .794*** | .797*** | 1.024*** | .988*** | .786*** | .628*** | .573*** | .482*** | 1*** |
| Tertiary qual | .26 | .619** | .523** | .659*** | .532*** | .239 | .152 | .043 | .106 | 0 |
| Coping on income | 1.755*** | 1.778*** | 1.633*** | 1.512*** | 1.391*** | 1.389*** | 1.443*** | 1.175*** | .953*** | 1*** |
| Legally married | .528 | .508** | .469** | .488*** | .367** | .259* | .269** | .314** | .318** | 0 |
| Sociable | .653** | .333 | .148 | .22 | .343** | .259* | .307*** | .29** | .412*** | 0 |
| Trusting | .377 | .651*** | .656*** | .488*** | .363** | .346** | .268** | .282** | .165 | 0 |
| Religious | .571* | .571*** | .484*** | .439*** | .419*** | .22 | .288** | .189 | .047 | 0 |
| Safe at night | 1.128* | 1.349*** | 1.469*** | .756** | .492* | .217 | .304 | .248 | .165 | 0 |
| Constant | .563 | 1.259** | 1.7*** | 2.869*** | 3.763*** | 4.906*** | 5.293*** | 6.043*** | 6.961*** | 8*** |
| Observations | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 |

## b. Happiness

| | (1) Q05 | (2) Q10 | (3) Q15 | (4) Q20 | (5) Q30 | (6) Q40 | (7) Q50 | (8) Q60 | (9) Q70 | Q80 |
|---|---|---|---|---|---|---|---|---|---|---|
| LjubljanaFUR | -.263 | -.407* | -.359 | -.231 | -.177 | -.14 | -.055 | -.069 | -.051 | .036 |
| Age-centered | -.018** | -.017*** | -.017*** | -.015*** | -.016*** | -.012*** | -.01*** | -.011*** | -.008*** | -.009** |
| Female | .336 | .305 | .109 | .108 | .226 | .226** | .261** | .207* | .098 | .182 |
| Born in country | -.044 | -.186 | -.383 | -.354 | -.435** | -.506*** | -.558*** | -.483*** | -.824*** | -.618*** |
| Unemployed | .58 | -.051 | -.384 | -.462 | -.5 | -.27 | -.186 | .046 | -.004 | -.2 |
| In good health | 1.296*** | 1.102*** | 1.069*** | 1.015*** | .581*** | .544*** | .568*** | .575*** | .641*** | .436*** |
| Tertiary qual. | .226 | .237 | .409* | .323 | .194 | .18 | .186 | .092 | .062 | -.064 |
| Coping on income | 1.828*** | 1.441*** | 1.025*** | 1.046*** | 1.161*** | 1.036*** | .935*** | .954*** | .84*** | .473** |
| Legally married | 1.223*** | .712*** | .438** | .4** | .452*** | .39*** | .387*** | .517*** | .266*** | .373** |
| Sociable | .843*** | .78*** | .574*** | .585*** | .516*** | .387*** | .307*** | .287** | .242** | .318** |
| Trusting | .77*** | .627*** | .382* | .277 | .29* | .242** | .307*** | .23* | .121 | .182 |
| Religious | .259 | .356* | .31 | .462*** | .274* | .212** | .116 | .023 | -.043 | -.045 |
| Safe at night | .715 | .881** | .818** | .692** | .855*** | 1.105*** | .869*** | .632*** | .27 | -.055 |
| Constant | .143 | 1.655*** | 3.183*** | 3.671*** | 4.381*** | 4.874*** | 5.579*** | 6.157*** | 7.552*** | 8.388*** |
| Observations | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 | 1296 |

**** p<.01, ** p<.05, * p<.1*

**##**