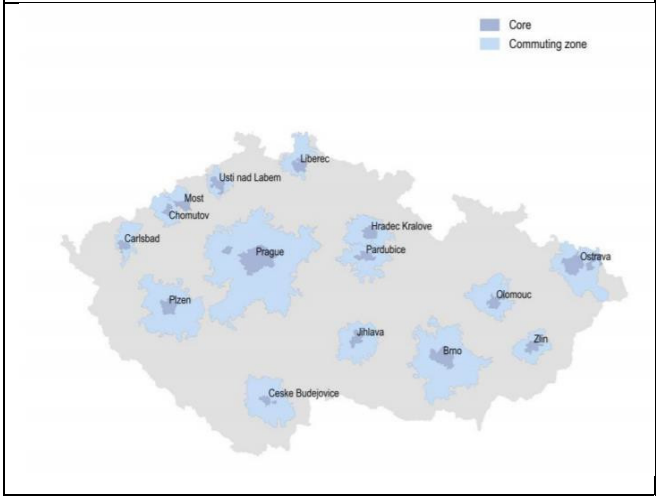
Morrison. Whose happiness in which cities. Sustainability 1230475

Supplement 1.

Case study: Czech Republic

According to the United Nations nearly three quarters of the 2.78 million people living in Czech Republic reside in urban areas compared to just over half (58.3 percent) in Austria (see main text Table 1). Figure S1.1 presents the Functional Region classification of Czech Republic alongside its NUTS2 regions. The twoNUTS2 regions of CZ010 & CZ020 are used to define the Prague FUA, the largest of multiple FUAs defined for Czech Republic.

Figure S1.1. The Functional Urban Region classification of Czech Republic.

a. The Functional Urban Area	b. The NUTS2 classification
	

Source: Czech Republic: https://www.oecd.org/cfe/regionaldevelopment/Czech-Republic.pdf

In a replication of Table 3 (Austria) Table S1.1 for Czech Republic shows that the regression of life satisfaction and happiness on the Prague FUA carries the expected negative sign in both cases. However the lower wellbeing associated with living within the Prague FUA is less marked than it was in the case ofVienna FUA in Austria.

Table S1.1. Mean life satisfaction and happiness associations with five measures ofagglomeration. Czech Republic, 2018

a. Life satisfaction

Agglomeration (n)	(1)	(2)	(3)	(4)	(5)
Big City (873)	-.076				
	(.095)				
BigCity and Subs (961)		-.113			
		(.094)			
PragueCity (332)			-.091		
			(.142)		
PragueSub (379)				-.107	
				(.133)	
PragueFUA (614)					-.284***
					(.103)
Constant	7.093***	7.109***	7.078***	7.082***	7.137***
	(.056)	(.058)	(.049)	(.05)	(.054)
Observations	2386	2386	2386	2386	2386
R-squared	0	.001	0	0	.005

b. Happiness

	(1)	(2)	(3)	(4)	(5)
Living in Big City	-.113				
	(.094)				
Living in BigCity and Suburb		-.169*			
		(.095)			
PragueCity			-.231*		
			(.14)		
PragueSub				-.247*	
				(.131)	
PragueFUA					-.357***
					(.107)
_cons	7.072***	7.098***	7.063***	7.069***	7.122***
	(.061)	(.063)	(.051)	(.052)	(.055)
Observations	2371	2371	2371	2371	2371
R-squared	.001	.002	.002	.002	.008

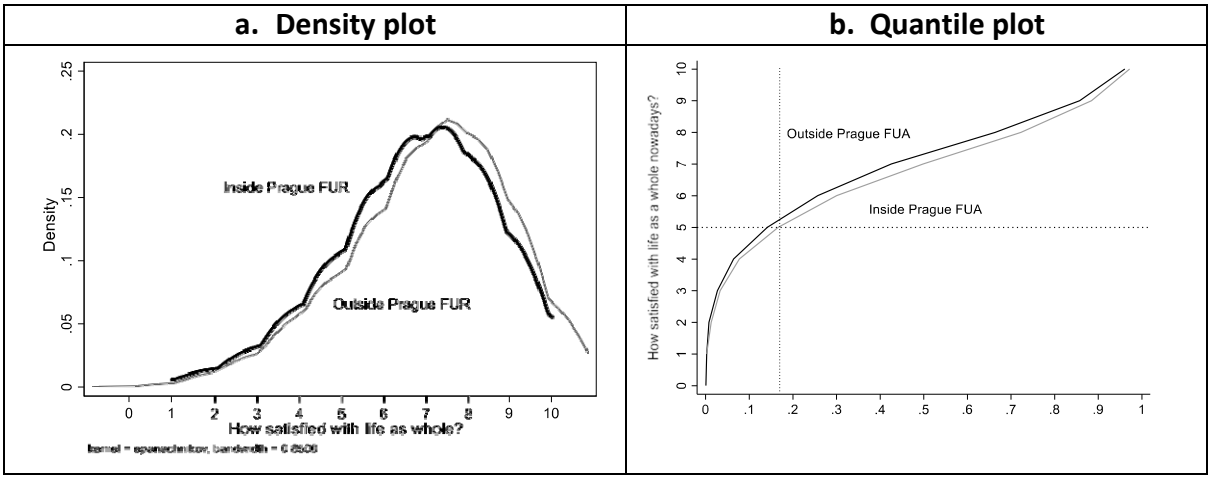
Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Source: ESS9. Survey weights applied

While all signs in Table S1.1 suggest both wellbeing measures are lower in all five definitions of agglomeration only the Functional Urban Area coefficient is significantly below zero at p<0.01. Figure S1.2 replicates Figure 3 in the main text for Czech Republic reflecting a mean life satisfaction (and happiness)*inside* the Prague FUA significantly lower than the rest of the country for both life satis-

faction (6.83 < 7.09) and happiness (6.76 < 7.09). The kernel density plots in panel 'a' Figure S1.2 show how the (smoothed) distribution of life satisfaction responses assumes a similar shape inside and outside this country's major FUA. The corresponding cumulative densities of the same two distributions are re-expressed as a quantile plot in panel b.

Figure S1.2. The density and quantile plots of life satisfaction inside and outside the Prague FUA. Czech Republic, 2018



Source: ESS9

As in the Austrian case I control for the composition of the populations inside and outside the PragueFUA. The controls are listed in Table S1.2. Compared to Austria a slightly smaller proportion of the Czech Republic population were born in the country, and the proportion in good health is also lower as is theproportion with a tertiary qualification and a smaller proportion are able to cope on their current income. Levels of socialisation are notably lower in Czech Republic, levels of trust are lower, the proportion who say they are religious is markedly lower but perceived safety walking at night is similar.

Table S1.2. Variables used in the models of subjective wellbeing. Czech Republic, 2018

Variable	Obs	Mean	Std. Dev.	Min	Max
How satisfied with life as a who	2386	7.07	1.79	0	10
How happy would you say you are?	2371	7.03	1.77	0	10
Inside Prague FUA	2398	.25	.43	0	1
Age - centered	2398	0	17.84	-34.04	40.96

Female	2398	.52	.5	0	1
Born in country	2398	.97	.16	0	1
Unemployed	2388	.04	.2	0	1
In good health	2398	.67	.47	0	1
Tertiary qual.	2393	.17	.38	0	1
Coping on income	2312	.72	.45	0	1
Legally married	2398	.50	.5	0	1
Sociable	2398	.51	.5	0	1
Trusting	2390	.44	.5	0	1
Religious	2398	.18	.38	0	1
Safe at night	2398	.8	.4	0	1

Source: ESS9

For comparability reasons the same OLS models were estimated in each country.

The estimates table Czech Republic

The estimates in Table S1.3 from the OLS regression applied to the Czech Republic sample result in similar estimates to Table 5 of the main text. There is the same tendency as in the ViennaFUA case for the negative effect of living in Prague to decrease only slightly following the addition of covariates. Despite their different magnitudes all the coefficients carry the same signs as in Table 5 a and b. For example goodhealth has a noticeably higher impact on both wellbeing measures in Czech Republic than Austria but copingon current income has a reduced positive effect. And again, as a result of the positive coding, the constant declines as new variables are added.

Table S1.3. OLS estimates of association between agglomeration and life satisfaction andhappiness. Czech Republic, 2018

a. Life satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Prague FUA	-.284***	-.344***	-.355***	-.341***	-.371***	-.268***	-.23**
Age-centred		-.013***	-.014***	-.003	-.003	0	0
Female		.074	.083	.109	.106	.116	.184**
Born in country		.048	-.053	.026	.035	.088	.024
Unemployed			-1.294***	-1.069***	-1.004***	-.781***	-.721***
In good health				.831***	.789***	.727***	.621***
Tertiary qual.					.358***	.247**	.253**
Coping on income						.637***	.553***
Legally married							.183**
Sociable							.3***
Trusting							.19**

Religious							-.139
Safe at night							.353***
Constant	7.137***	7.066***	7.213***	6.553***	6.518***	6.023***	5.582***
Observations	2386	2386	2376	2376	2375	2291	2284
R-squared	.005	.021	.041	.077	.081	.106	.124

b. Happiness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PragueFUA	-.357***	-.428***	-.437***	-.424***	-.456***	-.359***	-.312***
Age		-.014***	-.015***	-.004*	-.005*	-.002	-.003
Female		.191**	.193***	.222***	.22***	.243***	.324***
Born in country		.093	-.006	.074	.085	.028	-.109
Unemployed			-1.267***	-1.039***	-.965***	-.731***	-.664***
In good health				.855***	.81***	.744***	.632***
Tertiary qual					.38***	.304***	.293***
Coping on income						.645***	.538***
Legally married							.331***
Sociable							.386***
Trusting							.13*
Religious							-.071
Safe at night							.426***
Constant	7.122***	6.951***	7.097***	6.418***	6.38***	5.992***	5.475***
Observations	2371	2371	2361	2361	2360	2278	2271
R-squared	.008	.031	.051	.09	.095	.126	.157

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

Source: ESS9

The main result of applying the quantile model was relayed in Figure 5 which showed only a limited tendency for the negative reaction to living in Prague to vary across the quantiles. Otherwise the heteroscedasticity in Table 6 of the text also appears in the Czech Republic case, TableS1.4.

Table S1.4. Quantile regression of life satisfaction on the Prague FUA and covariates. Estimates table. Czech Republic, 2018

a. Life satisfaction

	(1) **Q05**	(2) **Q10**	(3) **Q15**	(4) **Q20**	(5) **Q30**	(6) **Q40**	(7) **Q50**	(8) **Q60**	(9) **Q70**	(10) **Q80**
PragueFUA	-.1	0	-.333**	-.2	-.286***	-.286***	-.333***	-.321***	-.257***	-.252**
Age-centered	0	0	0	0	0	0	0	.002	.004	.005*
Female	.1	0	.333**	.4***	.286***	.357***	.333***	.125	.209**	.254***
Born in country	.9*	1**	.667	.8*	-.286	-.286	-.333	-.182	-.062	-.196
Unemployed	-.9**	-1***	-1***	-.6*	-.429*	-.5**	-1***	-.56***	-.555***	-.559**
In good health	.9***	1***	.667***	.8***	.714***	.643***	.667***	.537***	.478***	.725***
Tertiary qual.	.2	0	.333*	.6***	.429***	.357***	.333***	.283***	.386***	.123
Coping on income	.6***	1***	.667***	.4***	.714***	.571***	.333***	.45***	.436***	.426***
Legally married	.4**	0	.333**	.4***	.429***	.429***	.333***	.127	.059	.033
Sociable	.1	0	0	.2	.429***	.286***	.333***	.222***	.362***	.295***
Trusting	.8***	1***	.667***	.6***	.429***	.357***	.333***	.069	-.003	-.091
Religious	-.2	0	-.333*	-.2	-.143	-.143	0	-.04	-.011	.033
Safe at night	.4**	0	.667***	.6***	.429***	.5***	.333***	.283***	.244**	.3***
_cons	1.2**	2***	2.667***	2.8***	4.571***	5.143***	6***	6.673***	6.894***	7.433***
Observations	2284	2284	2284	2284	2284	2284	2284	2284	2284	2284

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

b. Happiness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PragueFUR	-.2	-.188	-.5***	-.333**	-.333***	-.286**	-.353***	-.333***	-.5***	-.429***
Age-centered	-.012*	0	0	0	0	0	0	0	0	0
Female	.35*	.375**	.5***	.333***	.333***	.429***	.471***	.333***	.5***	.286***
Born in country	.5	.625	.5	0	-.667**	-.429	-.412	-.222	0	.143
Unemployed	-1.038**	-.438	-.5	-.667**	-.667***	-.714***	-.824***	-.556***	-.5**	-.571***
In good health	.325	.875***	1***	.667***	.667***	.714***	.647***	.667***	.5***	.571***
Tertiary qual.	.7***	.687***	.5***	.667***	.333**	.286**	.235**	.222**	0	.143
Coping on income	.35	.563***	.5***	.667***	.667***	.571***	.529***	.444***	.5***	.286***
Legally married	.762***	.562***	.5***	.333***	.333***	.429***	.353***	.111	0	.143*
Sociable	.238	.312*	.5***	.333***	.333***	.429***	.353***	.333***	.5***	.286***
Trusting	.8***	.687***	.5***	.333***	.333***	.286***	.176**	0	0	-.143*
Religious	-.438*	-.5**	0	0	-.333**	0	.059	0	0	0

Safe at night	.8***	.562***	.5***	.667***	.667***	.571***	.412***	.444***	.5***	.429***
Constant	1.614**	2***	2.5***	3.667***	5***	5.143***	5.824***	6.333***	6.5***	7.143***
Observations	2271	2271	2271	2271	2271	2271	2271	2271	2271	2271

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

Source: ESS9

Summary

The Czech Republic case while confirming the general argument behind the urban wellbeing paradox showeda mixed pattern of quantile effects departing from the conditional mean. As Figure 5 in the main textshows, there is evidence again that those with low wellbeing were more likely to benefit from residence in the FUA but the negative effects on the higher wellbeing quantiles apparent in the ViennaFUA case were not apparent.

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