



**THE VALUE**  
**OF**  
**GREEN INFRASTRUCTURE**  
**IN**  
**URBAN**  
**QUALITY OF LIFE**

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# Agenda

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- **1. Methodological approach: Quality of Life**
- **2. Measuring „green“: Urban Greenness indicator**
- **3. Results**
- **4. Conclusions**

# VALUE - an European Project

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## Valuing **A**tractive **L**andscapes in the **U**rban **E**conomy

- Valuation of green infrastructure at the local and regional level

### Project aim:

- Demonstrating the economic value of green infrastructure at the city and regional scale - showing how to target green investments best to maximise competitive benefits to communities

### What is green infrastructure (GI):

- A network of multi-functional green spaces
- Local areas for recreation and leisure or urban greenery, which contribute to the city's/ region's quality of life

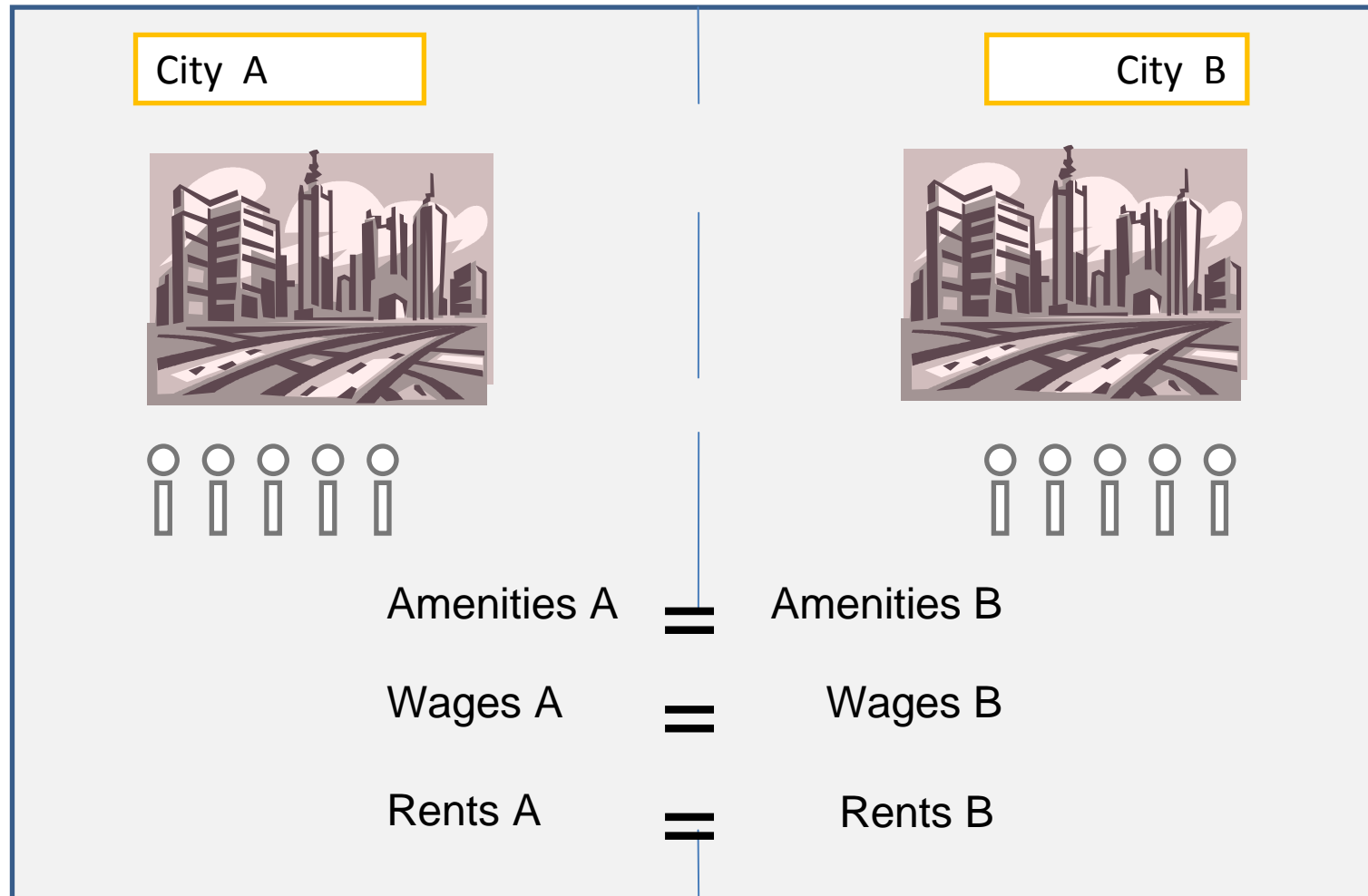
# Economic Evaluation - „Quality of Life“ - Basis

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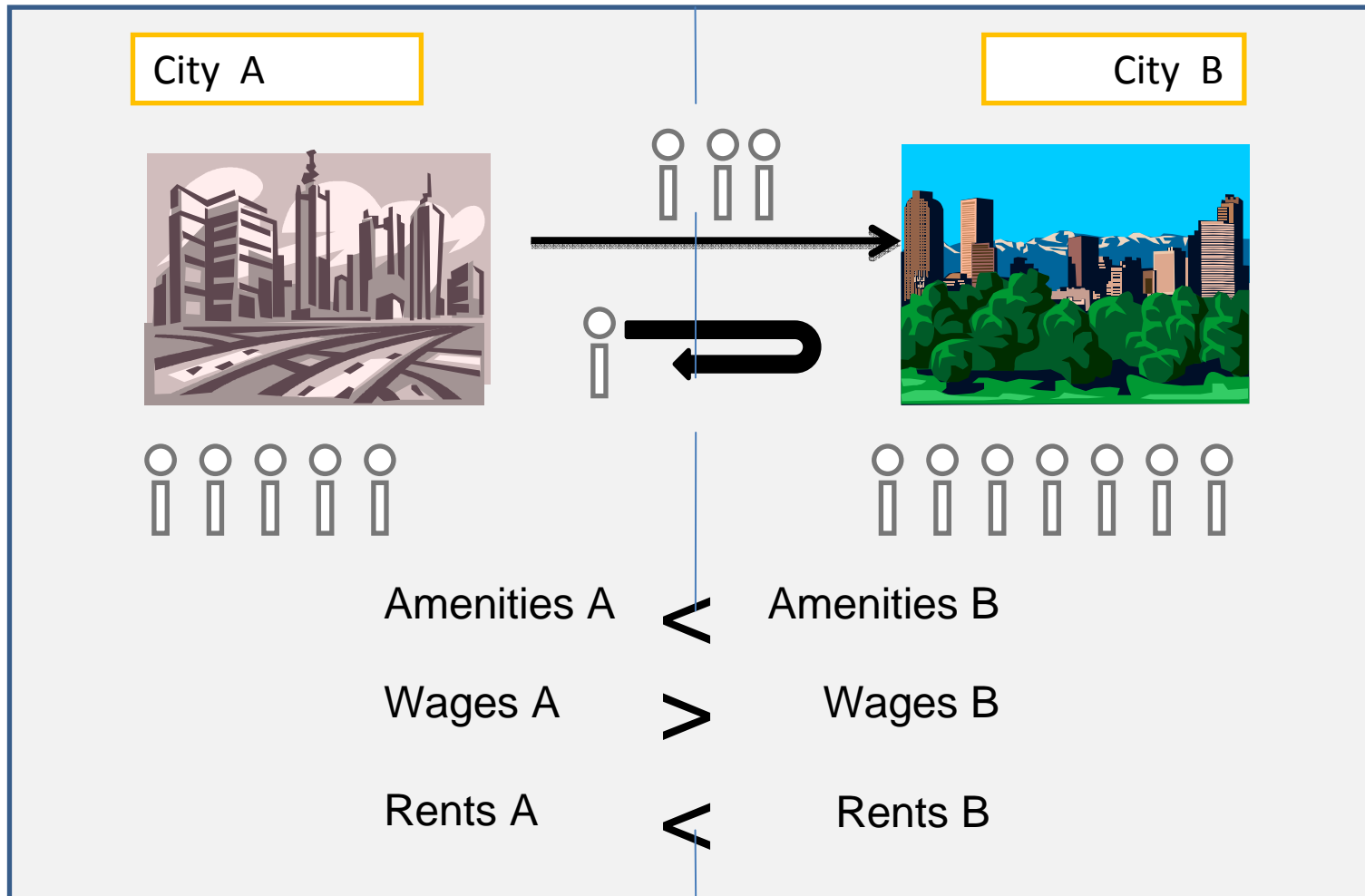
- The approach to measure „Quality of Life“ (QoL) is associated in literature with a special theoretical and methodological concept (ROSEN 1979/ROBACK 1982/BLOMQUIST 1988,2006/GYOURKO ET.AL. 1999/GABRIEL,ROSENTHAL 2004/BÜTTNER,EBERTZ 2009)
- It is assumed that households choose their place of residence depending on utility maximization.
- Regions offer specific sets of amenities, which affect the (residential) decisions of households.
- The differences in urban attractiveness and livability will be represented in local prices to offset incentives to migrate (spatial equilibrium).



# Economic Evaluation - „Quality of Life“ - Rationale

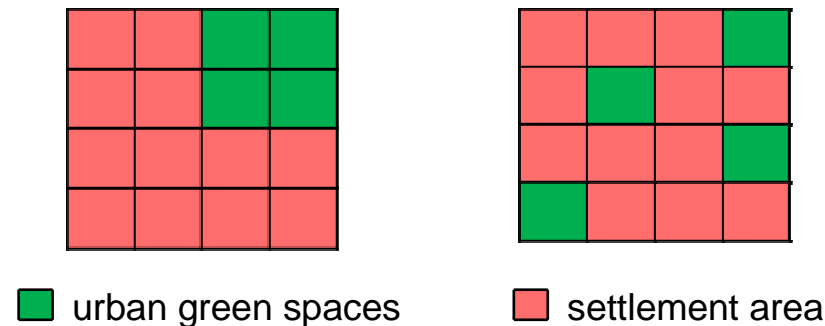


# Economic Evaluation - „Quality of Life“ - Rationale



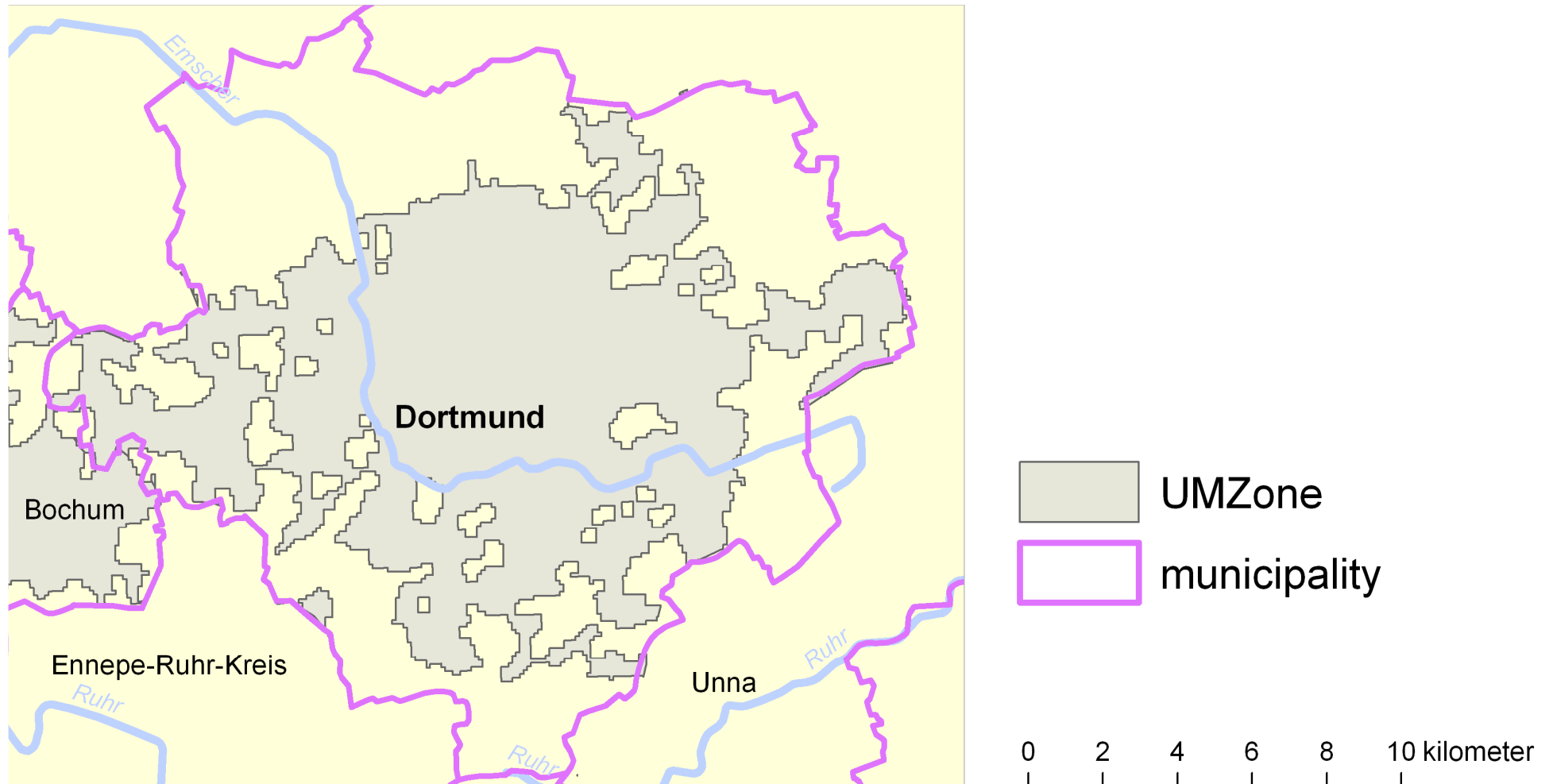
# Urban Green as an amenity: Accessibility

- Our research approach focuses on **the accessibility** of urban green spaces (in terms of “green infrastructure”).
- This is hardly displayed only by the pure amount of green spaces.



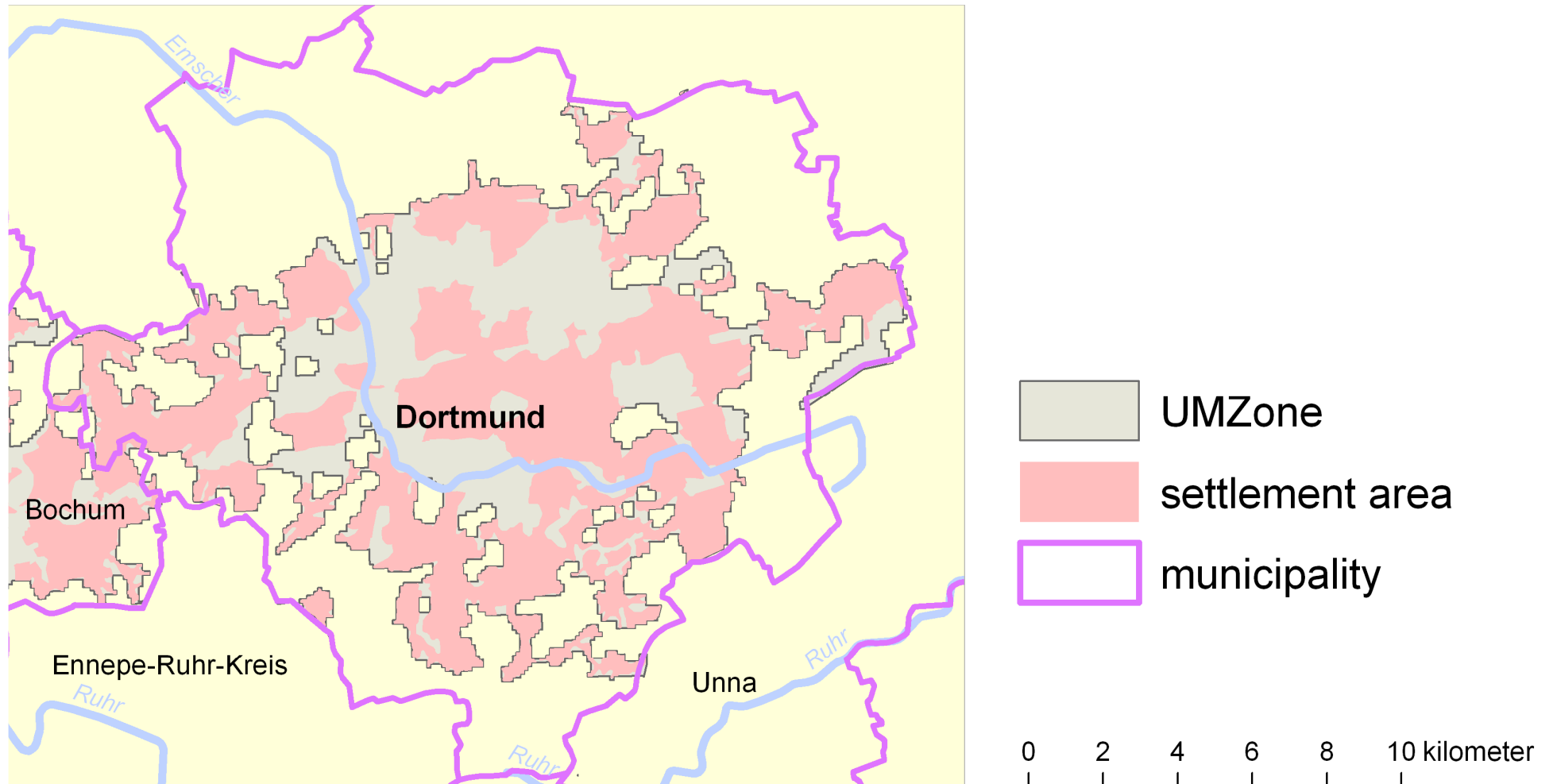
- Idea: 
$$\text{„Greenness“} = \frac{\text{settlement area within a 300m radius („as the crow flies“) around urban green spaces}}{\text{total urban settlement area}}$$

# Urban Greenness – GIS approach

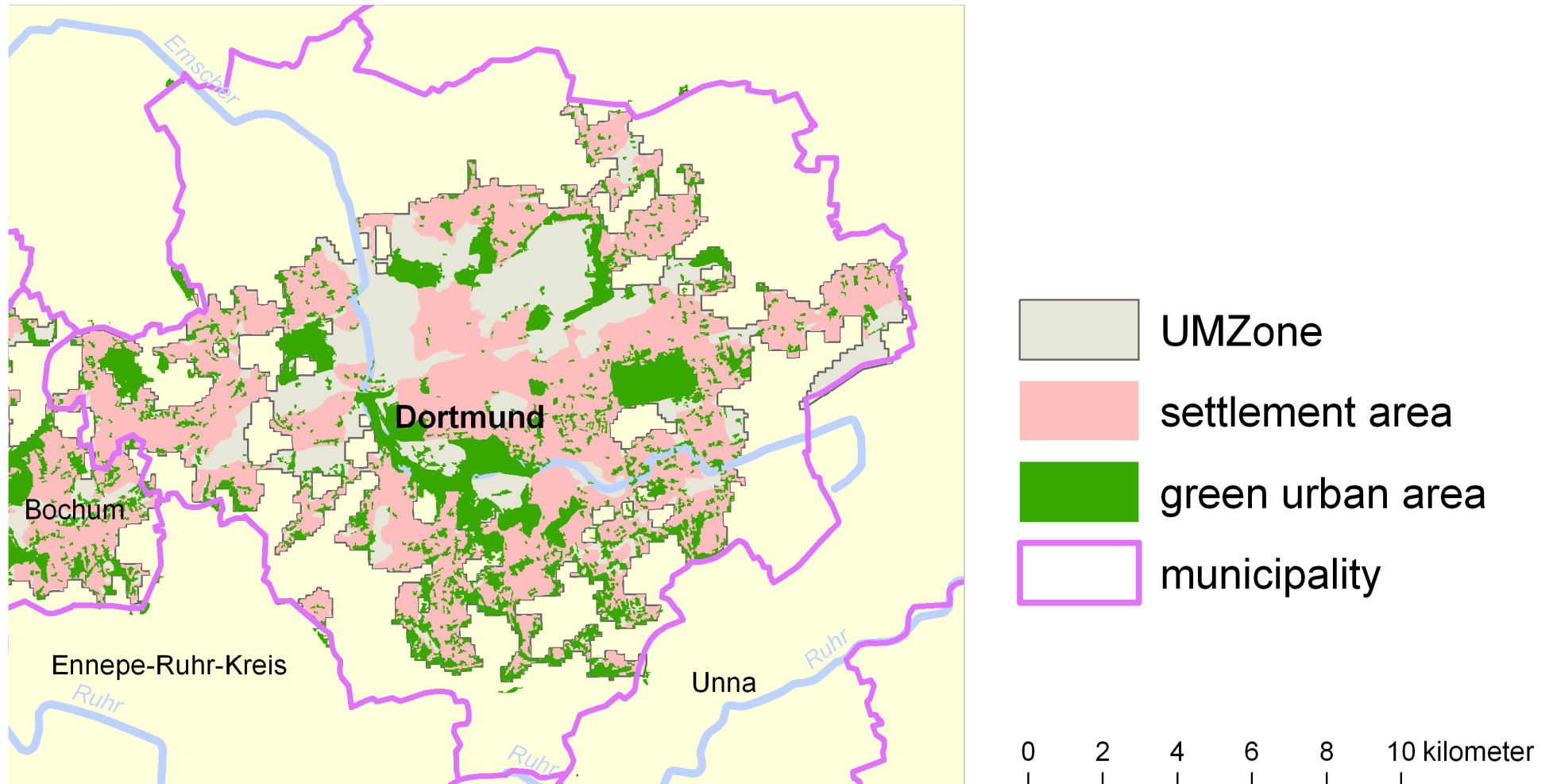




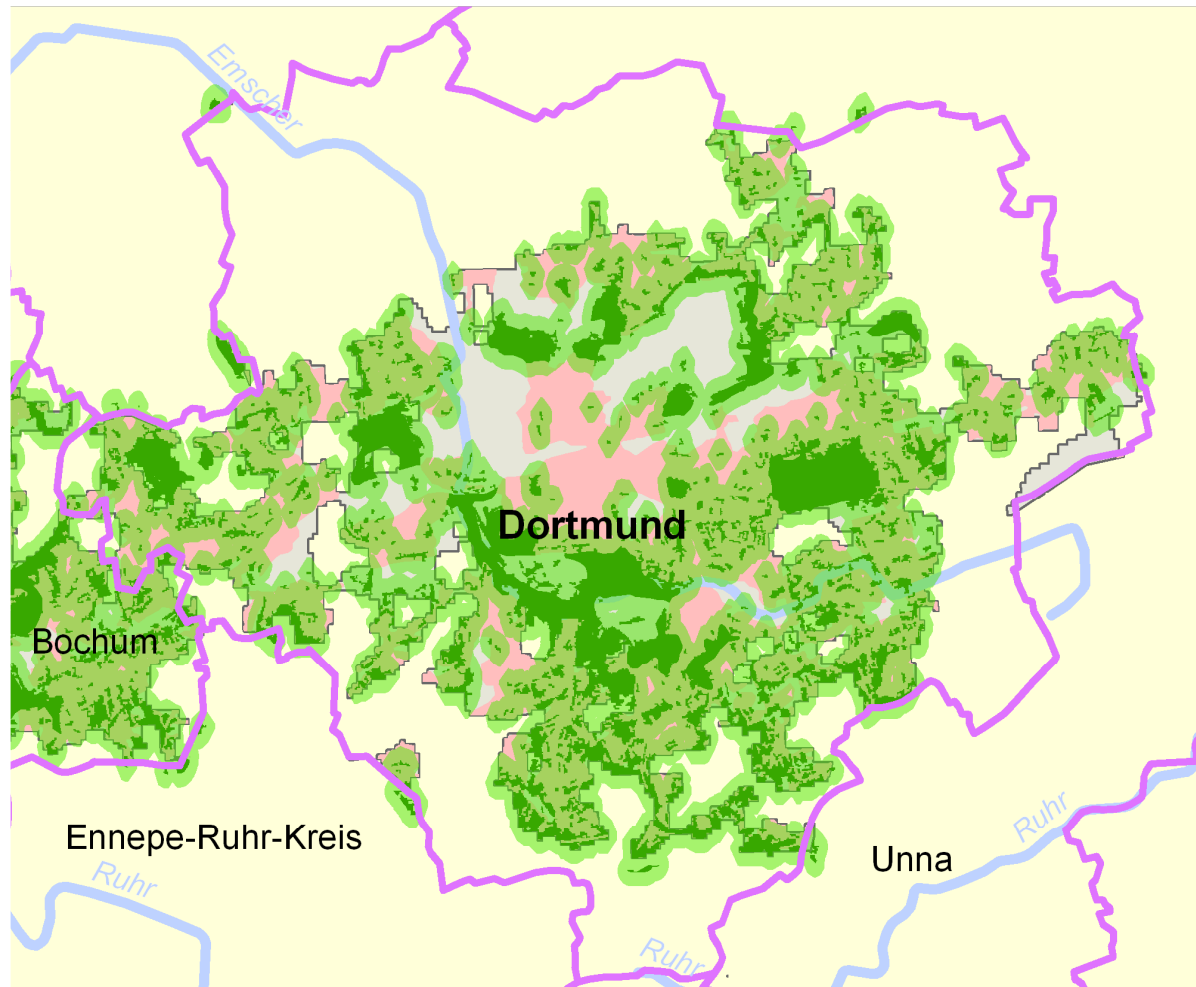
# Urban Greenness – GIS approach



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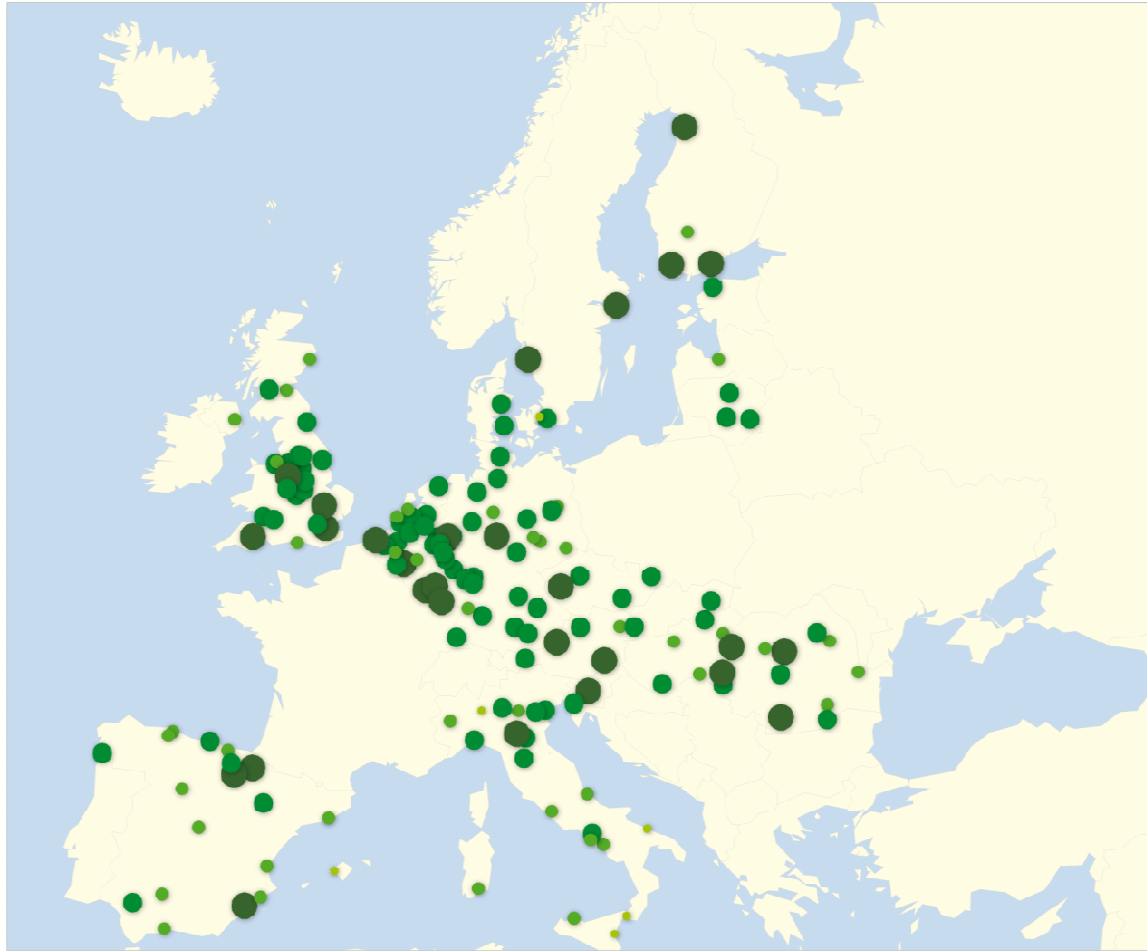
Urban Greenness = 84,2 %

- UMZone
- settlement area
- green urban area
- 300 m buffer
- municipality

0 2 4 6 8 10 kilometer

# Urban Greenness – Results for the Urban Greenness

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## Urban Audit Cities - Sample **Greenness**

- 0,20 - 0,50
- 0,50 - 0,75
- 0,75 - 0,90
- 0,90 - 1,00

# QoL – Results of the regression setting

Dependent

Variable

Annual Housing Rent (city-average)

N

141

Estimate Std. Error z value Pr(>|z|)

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	1460.700	1649.000	0.886	0.376	
GNP (Nuts-3)	0.191	0.026	7.438	0.000	***
Population density	0.325	0.158	2.058	0.040	*
<b>Urban Greenness</b>	<b>46.960</b>	<b>16.858</b>	<b>2.786</b>	<b>0.005</b>	**
Settlement structure	-139.680	83.692	-1.669	0.095	.
Coastline (Nuts-3)	1226.500	540.110	2.271	0.023	*

Country Dummies :

Signif. codes: 0.000 '\*\*\*' 0.01 '\*\*' 0.05 '.' 0.001 '\*\*'

Adjusted R<sup>2</sup>:

0.7363

F-statistic:

31.29 on 13 and 128 DF p-value: 0.00000

Urban Greenness has a significant impact on urban housing prices! 46.96 € per percentage point of Greenness

# Conclusions and Outlook

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- Urban greenness has a significant and positive impact on urban Quality of Life.
- People value green open spaces as an urban amenity and they are willing to pay for it.
- It became also evident, that the pure amount of urban green is not a sufficient measure of peoples' perception of green infrastructure.

# Conclusions and Outlook

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- People are primarily willing to pay for a good overall accessibility of urban green.
- A “green city” should rather focus on building networks of green infrastructure throughout the urban fabric instead of investing in just a few main green places (that are on average less available to the citizens).

Thank you for your attention !



# Variable correlation

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	<i>Income</i>	<i>Greenness</i>	<i>Green_Relation</i>	<i>RentYear</i>	<i>GNP</i>	<i>Density</i>	<i>Settlement structure</i>
Income	1.000						
Greenness	0.093	1.000					
Green_Relation	0.046	0.568	1.000				
RentYear	0.661	0.059	-0.062	1.000			
GNP	0.729	0.119	0.164	0.711	1.000		
Density	0.039	-0.362	-0.249	0.214	0.007	1.000	
Settlement structure	-0.227	-0.055	0.041	-0.141	-0.205	-0.175	1.000