

# Land value increasing effects by open spaces in European cities

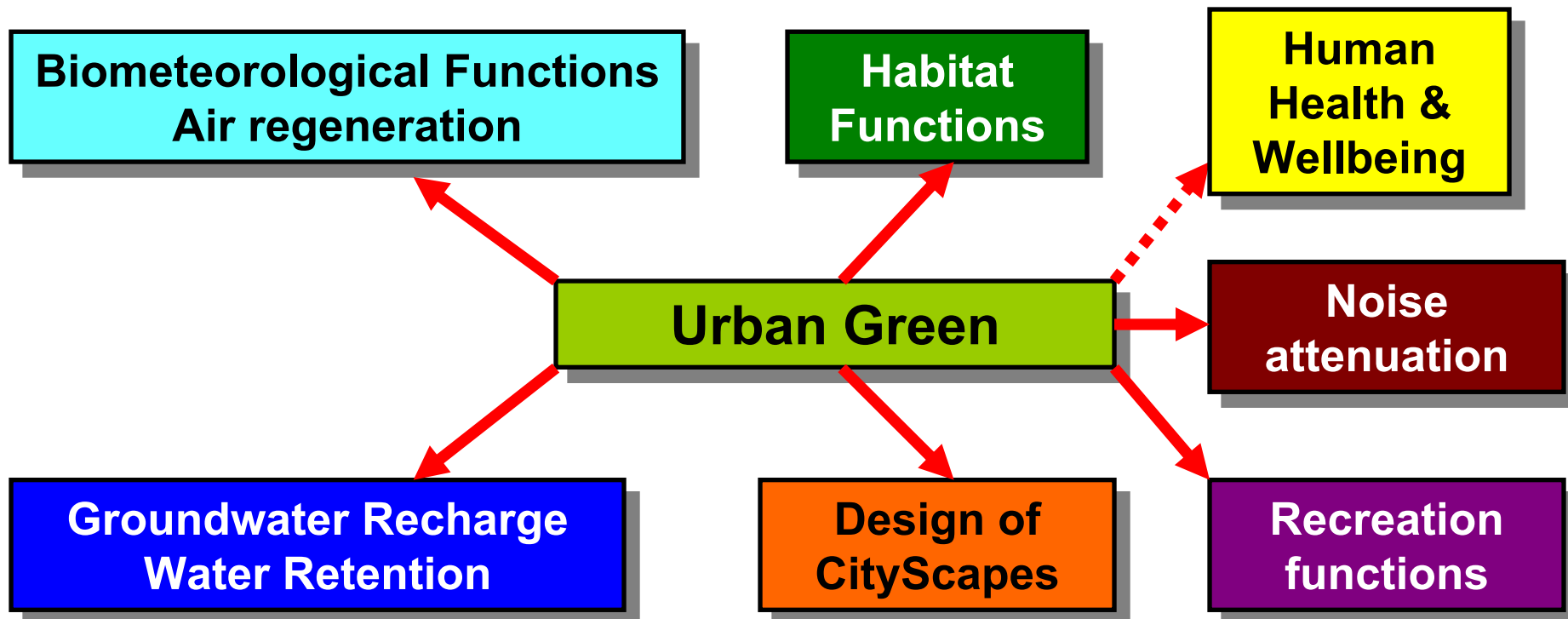


# Agenda

- 1. Introduction**
- 2. Goals, Theoretical Background and Hypotheses**
- 3. Methods and Data**
- 4. Results**
- 5. Conclusions**

# 1. Introduction

**What kind of ecosystem services / landscape functions are being provided by urban green spaces ?**



## **Do urban green spaces also have an economic impact?**

- Social and ecological functions of green spaces are widely appreciated by the public
- Economic meaning is basically discussed in the following way:
  - migration out of cities
  - cities are competing with each other for enterprises
  - soft location factors will increasingly replace “hard” ones
- Provision of districts with green spaces, which contribute to social and ecological functions, may have an impact on the value of real estates



# Run down open spaces in shrinking cities



City of Zittau

City of Leipzig

## Global competition: Which city is believed to have the highest life quality?

- Vienna, Zurich, Geneva, Stockholm, Vancouver...?
- **Reputation of the city becomes more and more important**
- Many of those cities using green issues in their advertising campaigns



2010: Stockholm

2011: Hamburg ...



## Real Estate Advertisements highlight **Urban Green**



**Maksā lēni,  
dzīvo zaļi!**



**unibanka**  
LABAS PĀRMAIŅAS

Häuser mit Persönlichkeit.



Houses with character



Living in harmony with  
nature close to nature  
protection area ...

## 2. Goals, Theoretical Background and Hypotheses

- To test/prove the impact of urban green and open spaces on land value of major cities (Germany, Sweden), especially
  - to discover relationship between land value and provision and quality of open spaces
  - to verify value-increasing effects of urban open spaces by means of inferential statistics





## Theoretical Approaches for Estimating Economic Values of Non Market Goods

### Stated Preference Method (CV)

**Analysis** of individual  
preferences  
by asking people directly

**Result:**  
Willingness to pay for certain  
goods

**Problem:**  
Overestimation of wtp !!!

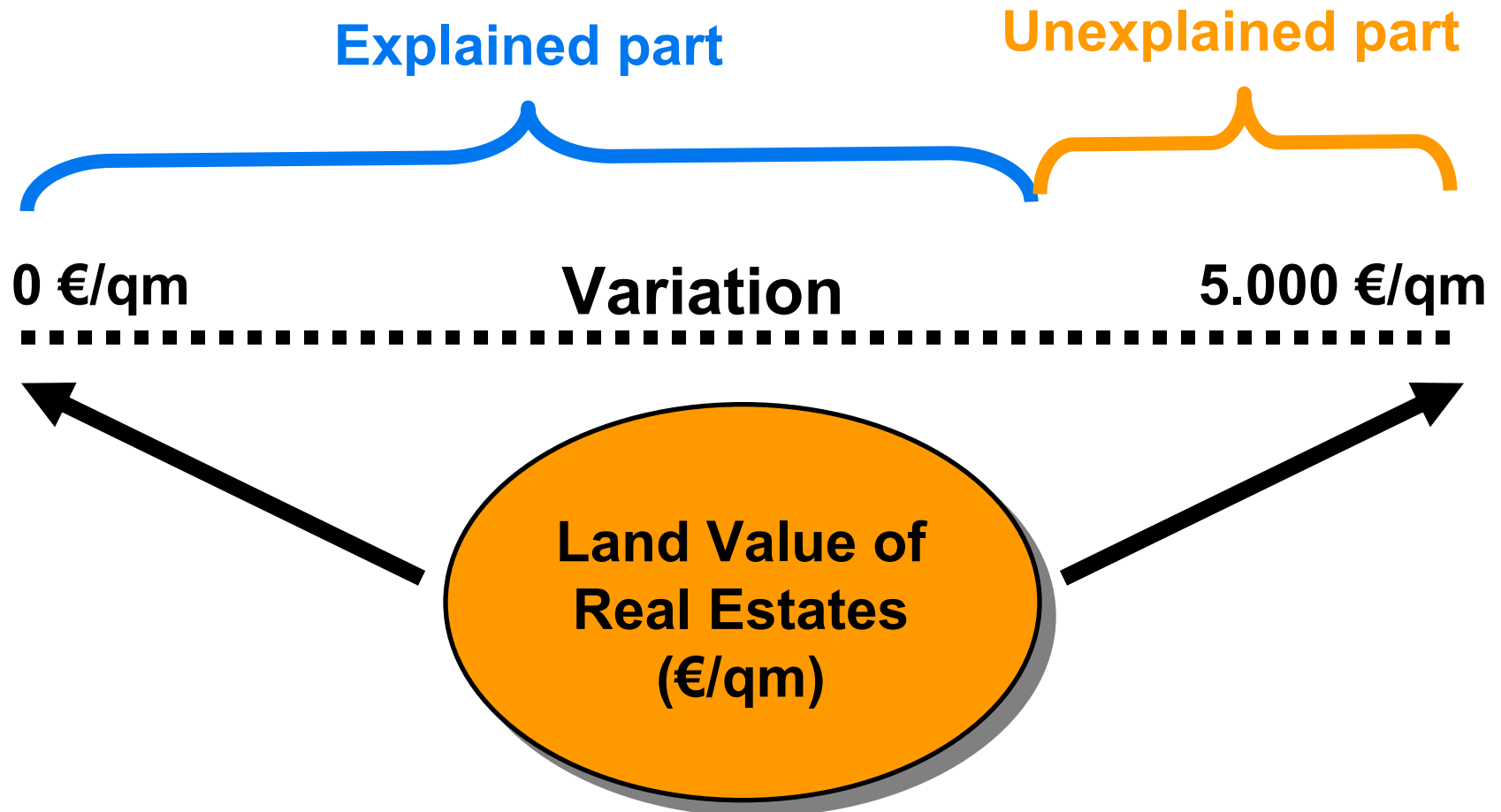
### Revealed Preference Method

**Analysis** of the relationship  
between private market goods  
and public goods

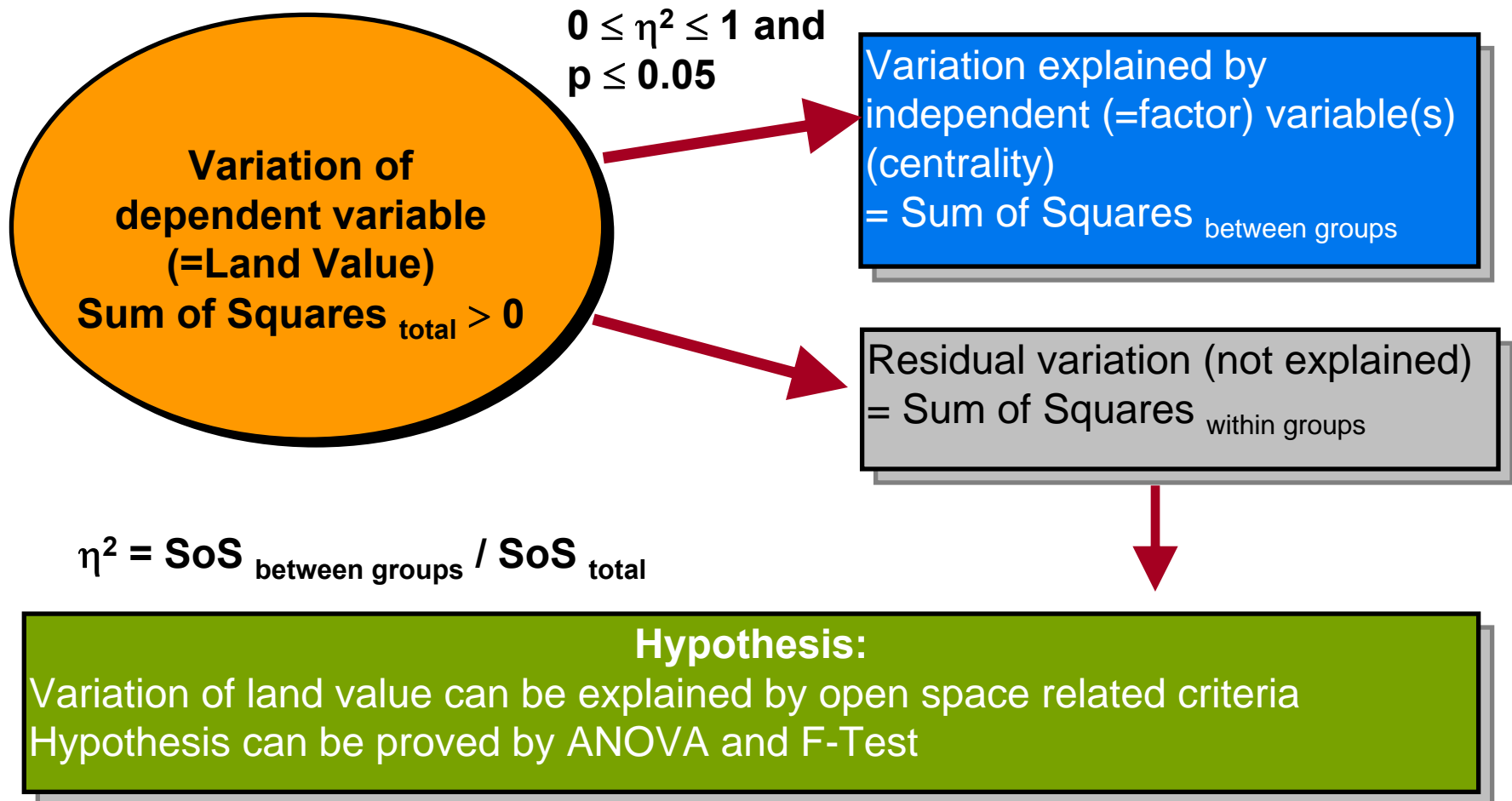
**Result:** Conclusion of the value  
of the public good from the price  
of the private good

**Problem:** Underestimation due  
to spatial data resolution ?

# Hypothesis: Open space related criteria?



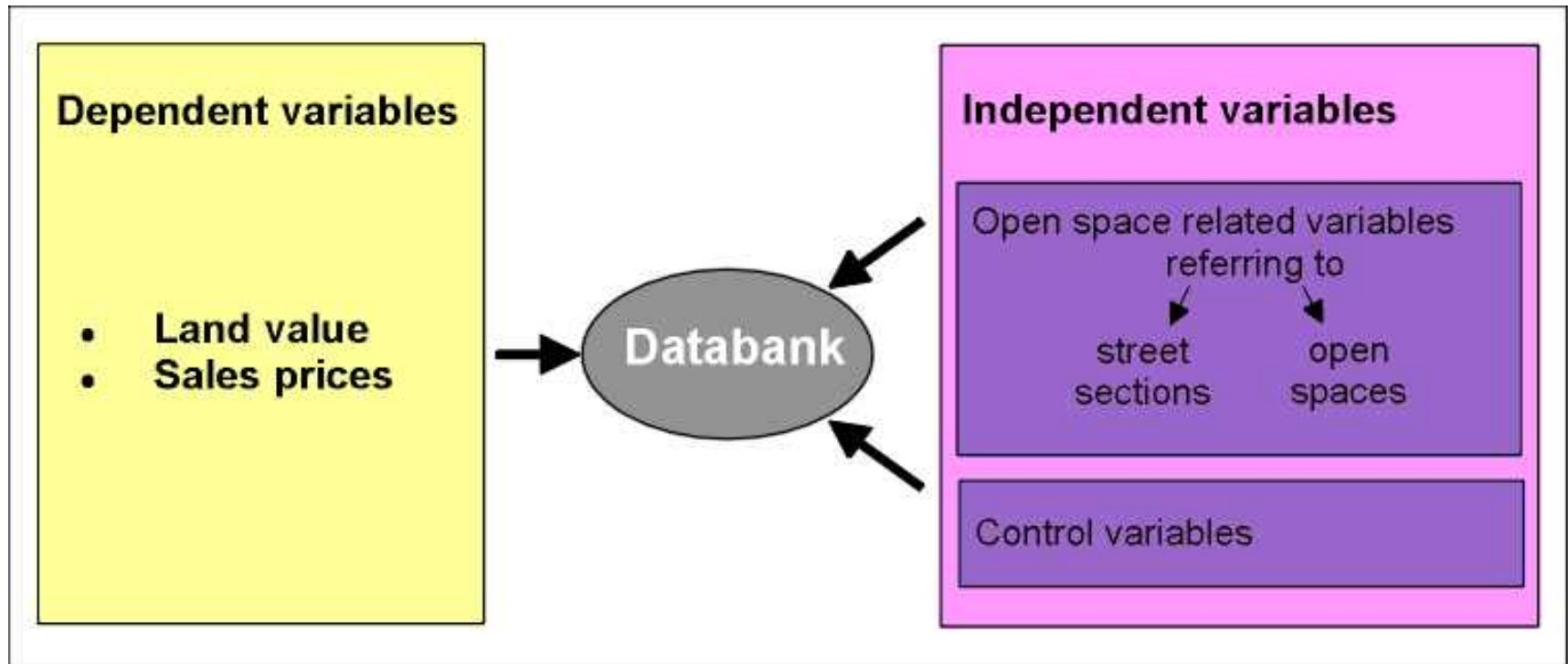
## Analysis of Variance (ANOVA)





### 3. Methods and Data

- Data acquisition:



# Which components determine real estate market values ?

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Several factors can affect land value (less or more central location, adjacency to waterfront, access to green spaces, character of urban quarter, noise impairments etc.)

## Building → Value of Building

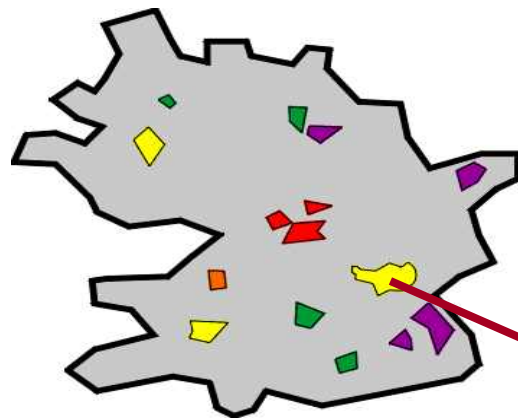
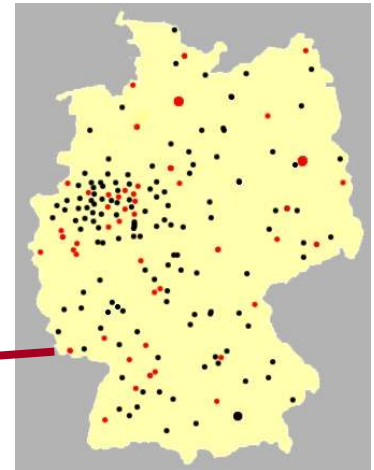
The value of the building can be calculated on the basis of its size, equipment, value of materials etc., e.g. for fire insurance

## Plot → Land Value

Official land value is fixed by expert panels on local level for small consistent areas as basis for land taxes, income taxes etc.

# Selection of spatial units of the survey (multi-stratified sampling)

## 1. Selection of cities



## 2. Selection of 15 clusters within the cities



## 3. Selection of 10 street sections within the clusters



## Considering different types of urban fabric



High density city area



Apartment area



Garden related residential area

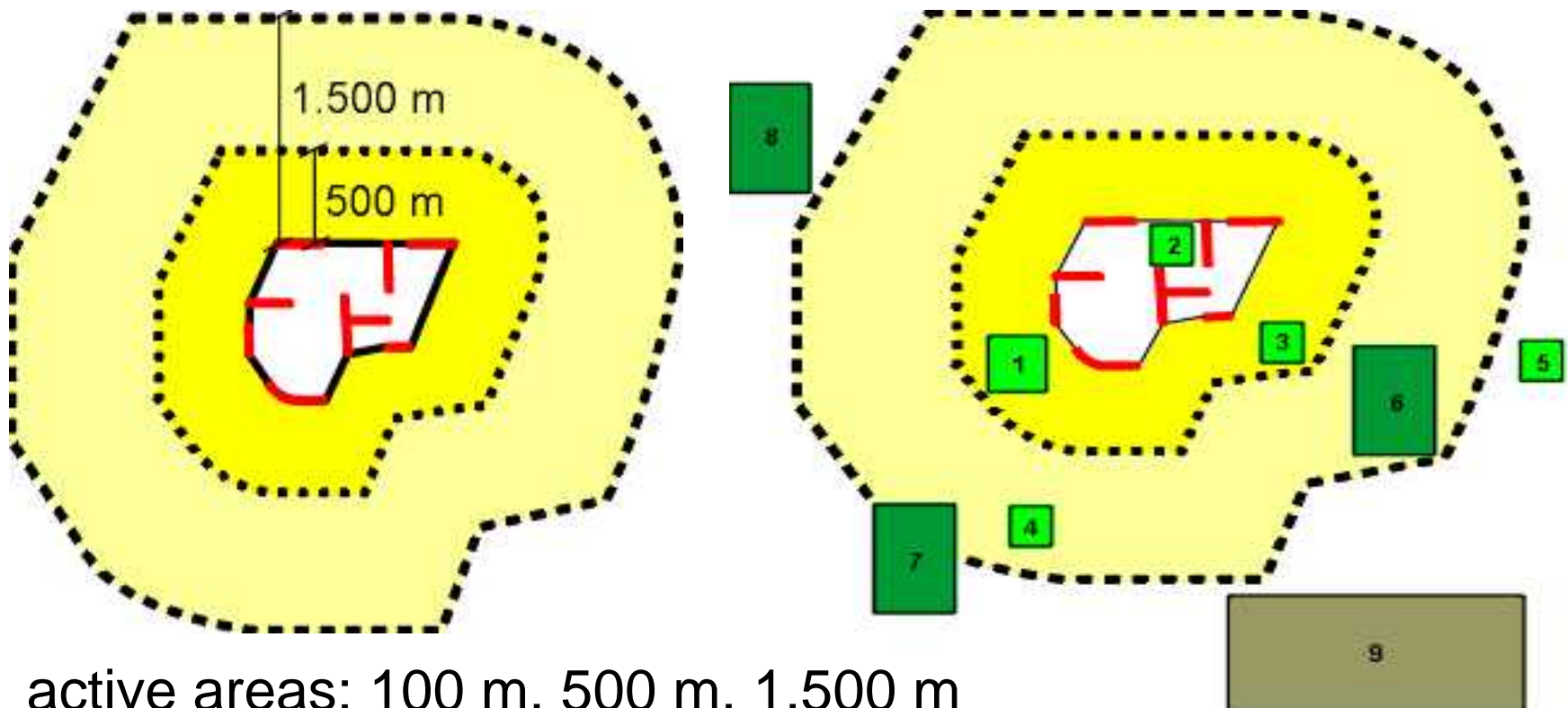


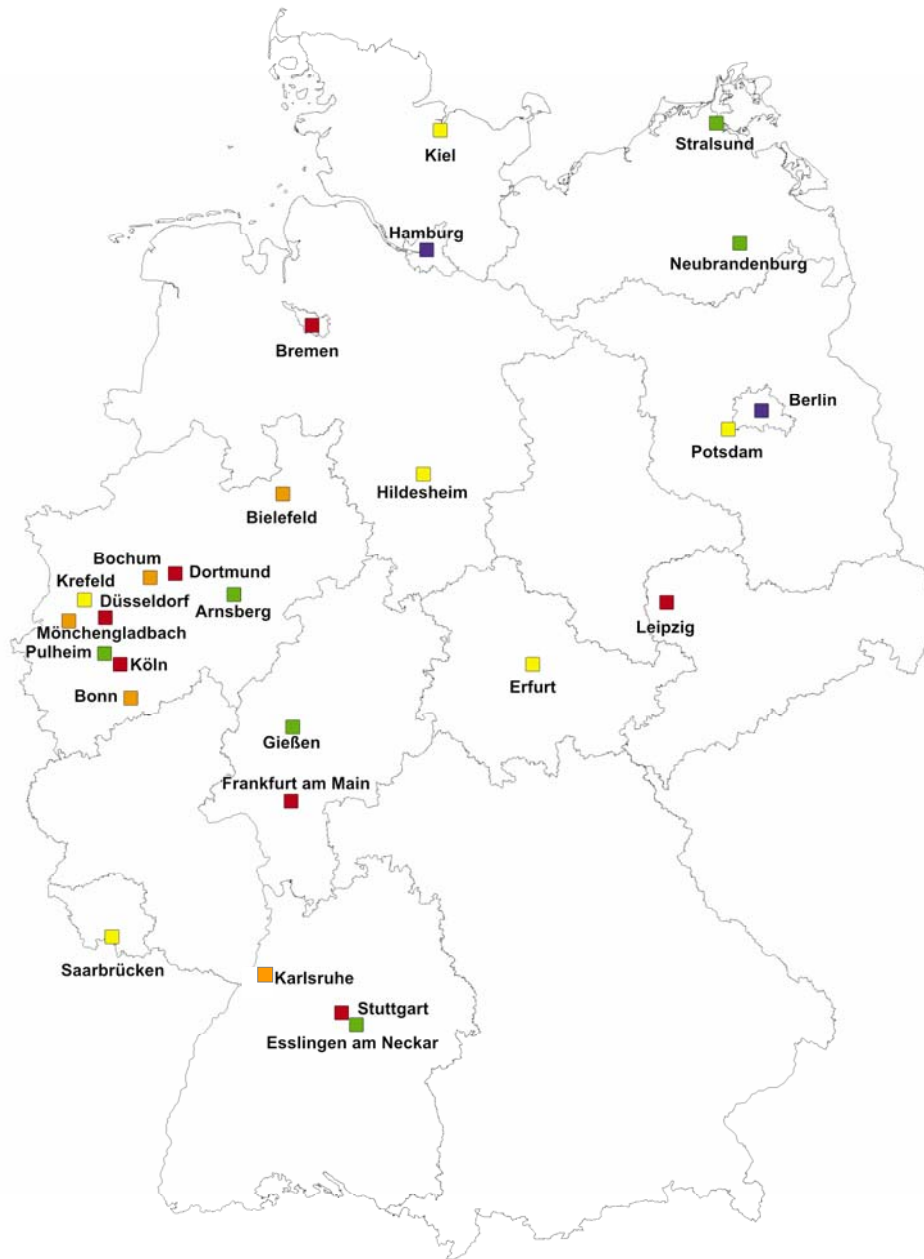
Industrial area



Rural character area

## Identification of relevant open spaces





# German cities included in the multiple stratified random sample

**≥ 1,0 Mio. inh.: 2**

**500.000 – 999.999 inh.: 7**

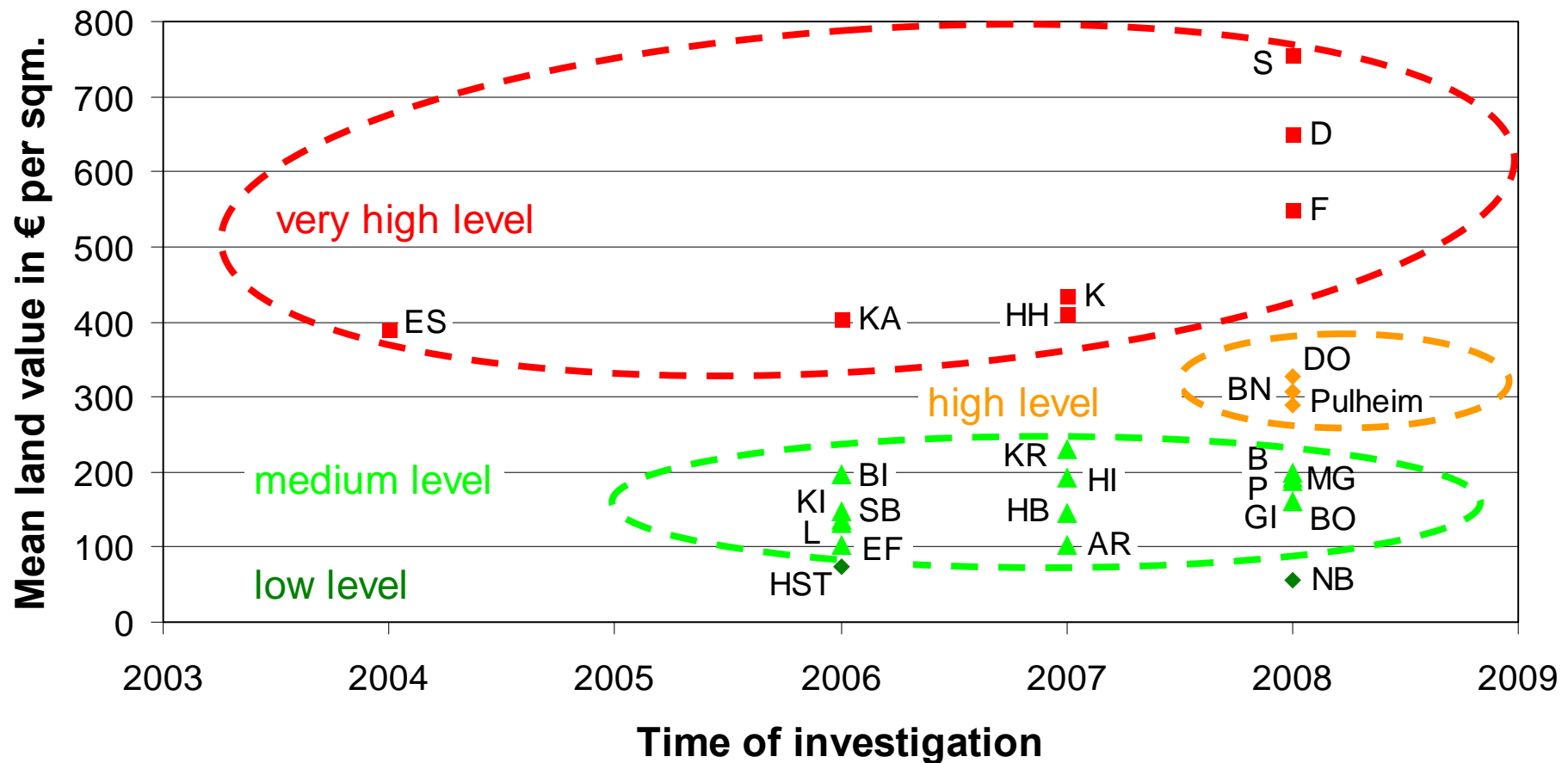
**250.000 – 499.999 inh.: 5**

**100.000 – 249.999 inh.: 6**

**≤ 100.000 inh.: 6**

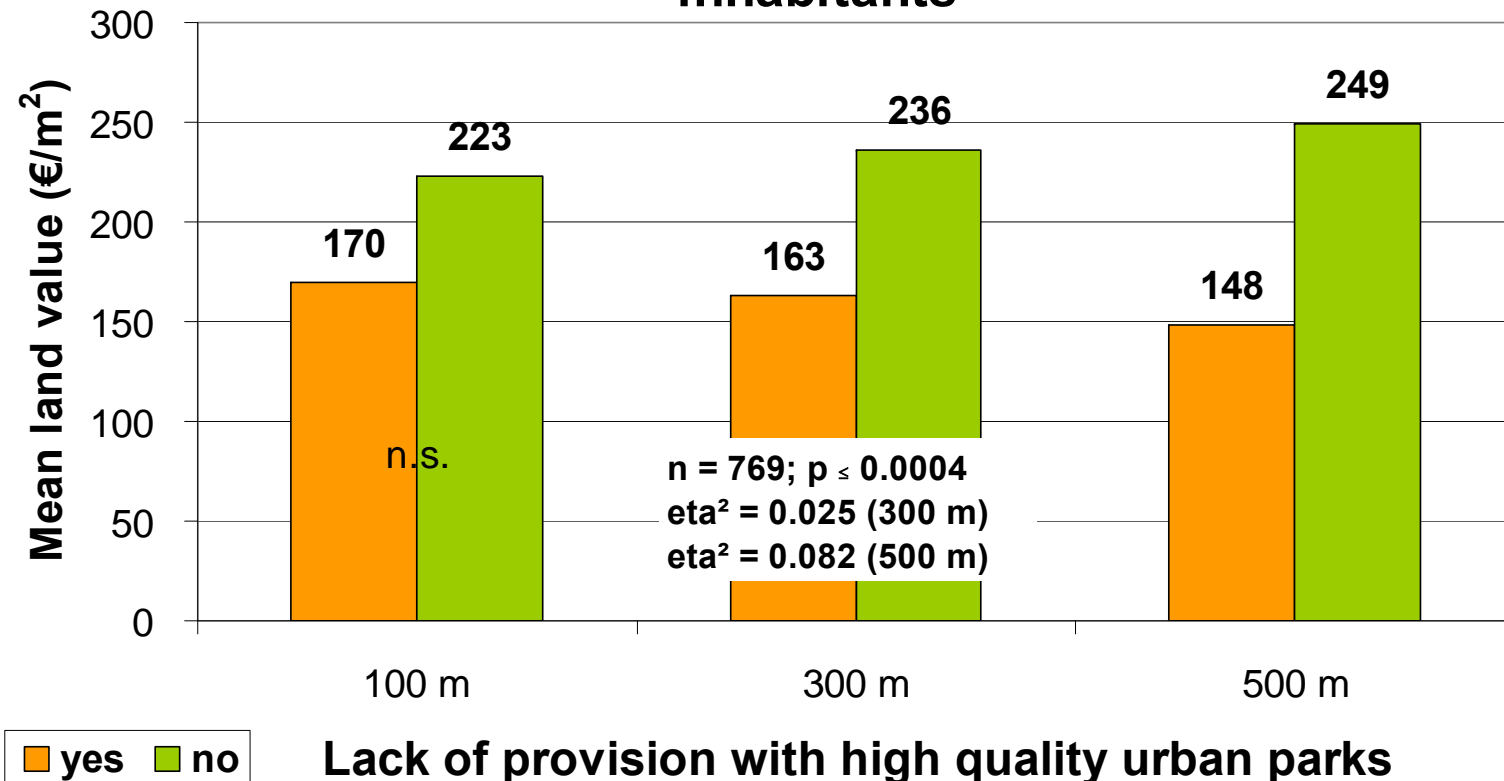


## Mean land value level of the 26 investigated German cities

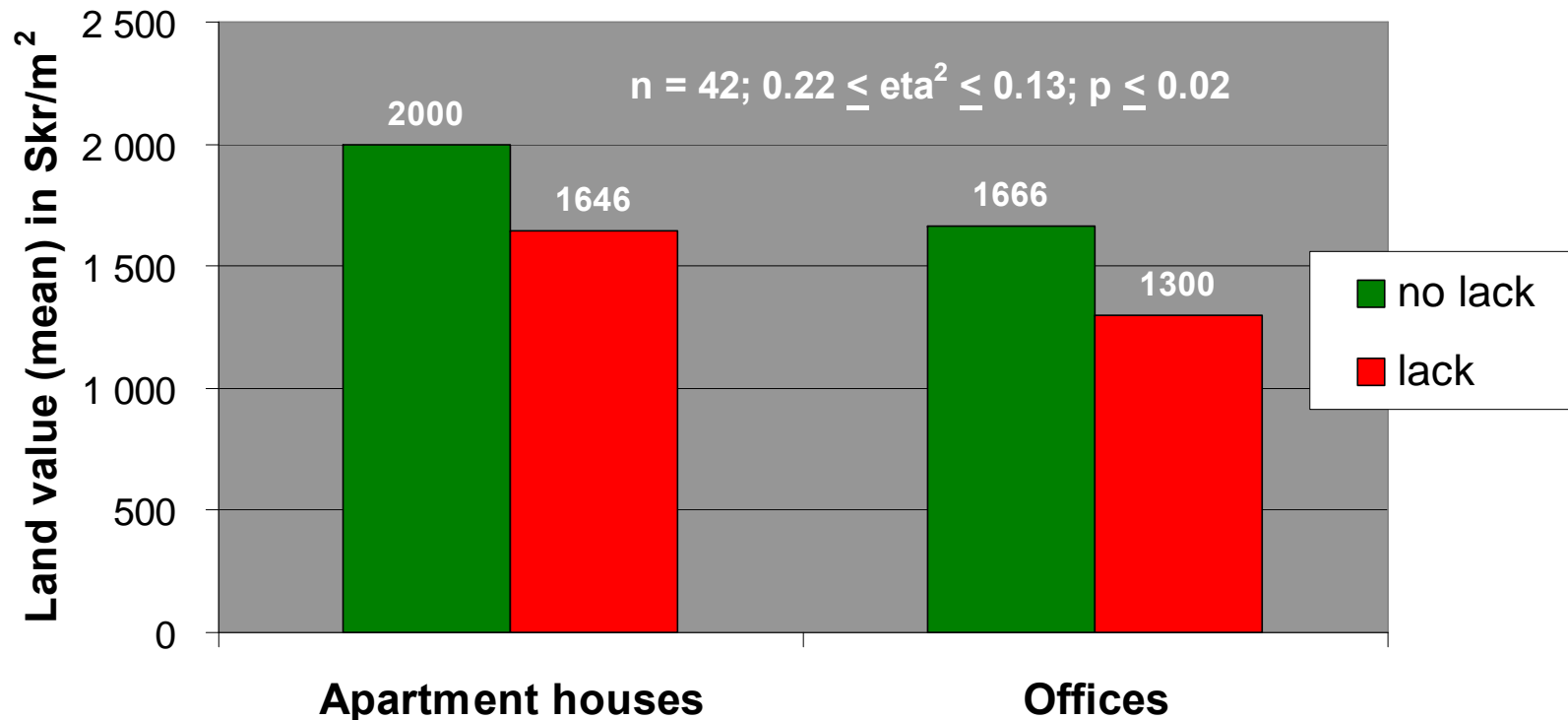


## 4. Results

**Impact of a lack of provision with high quality urban parks within different active areas on land values in German cities with 100,000 – 250,000 inhabitants**



**Effect of missing local city parks on the land  
value in residential quarters in Malmoe/Sweden  
- Mixed development zone in the inner city  
(enclosed block development) -**





**Mean land value in €/m²**

**Trees**

**none** **scattered** **alleys**

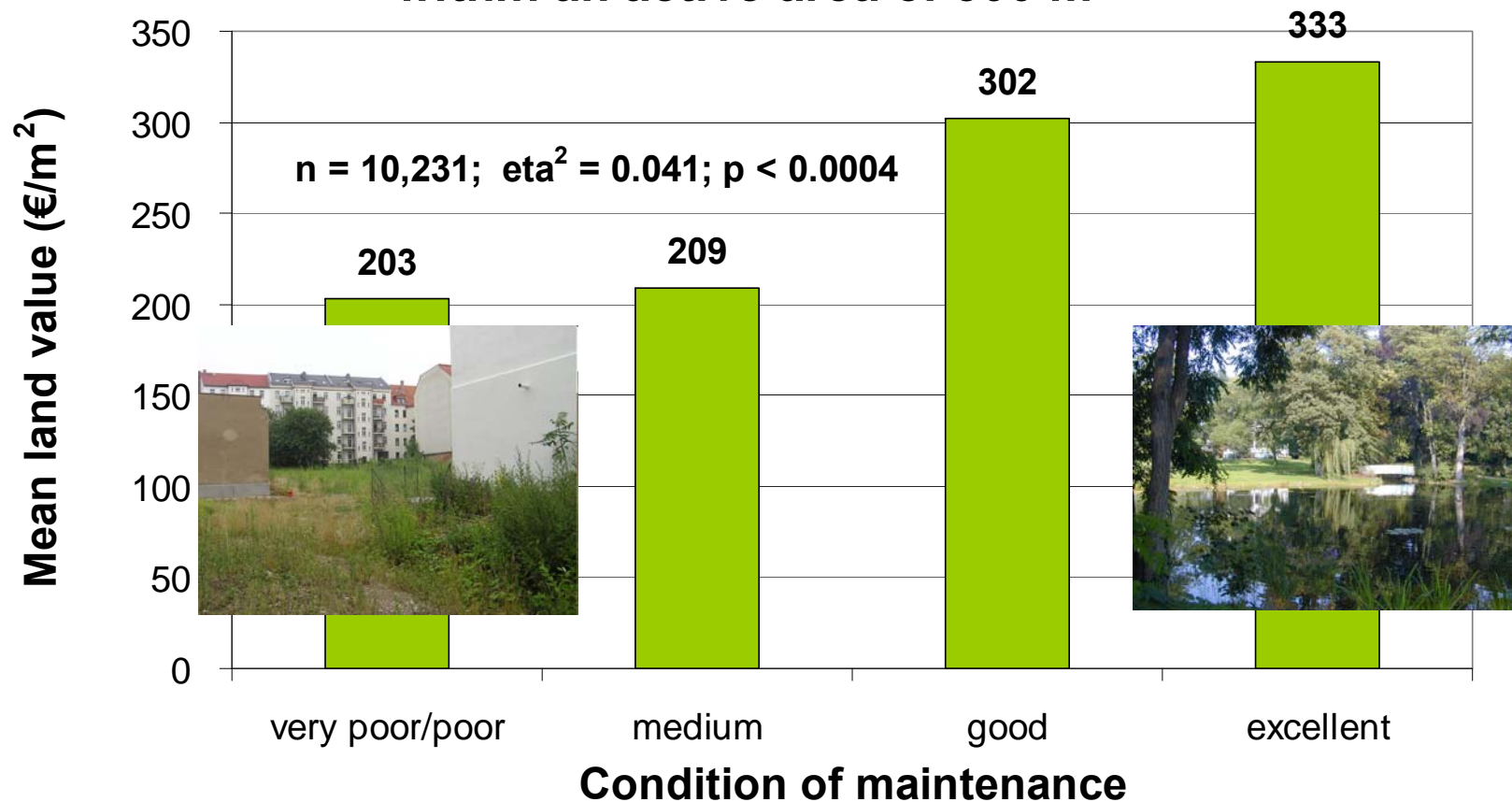
**489** **471** **687**

**543**

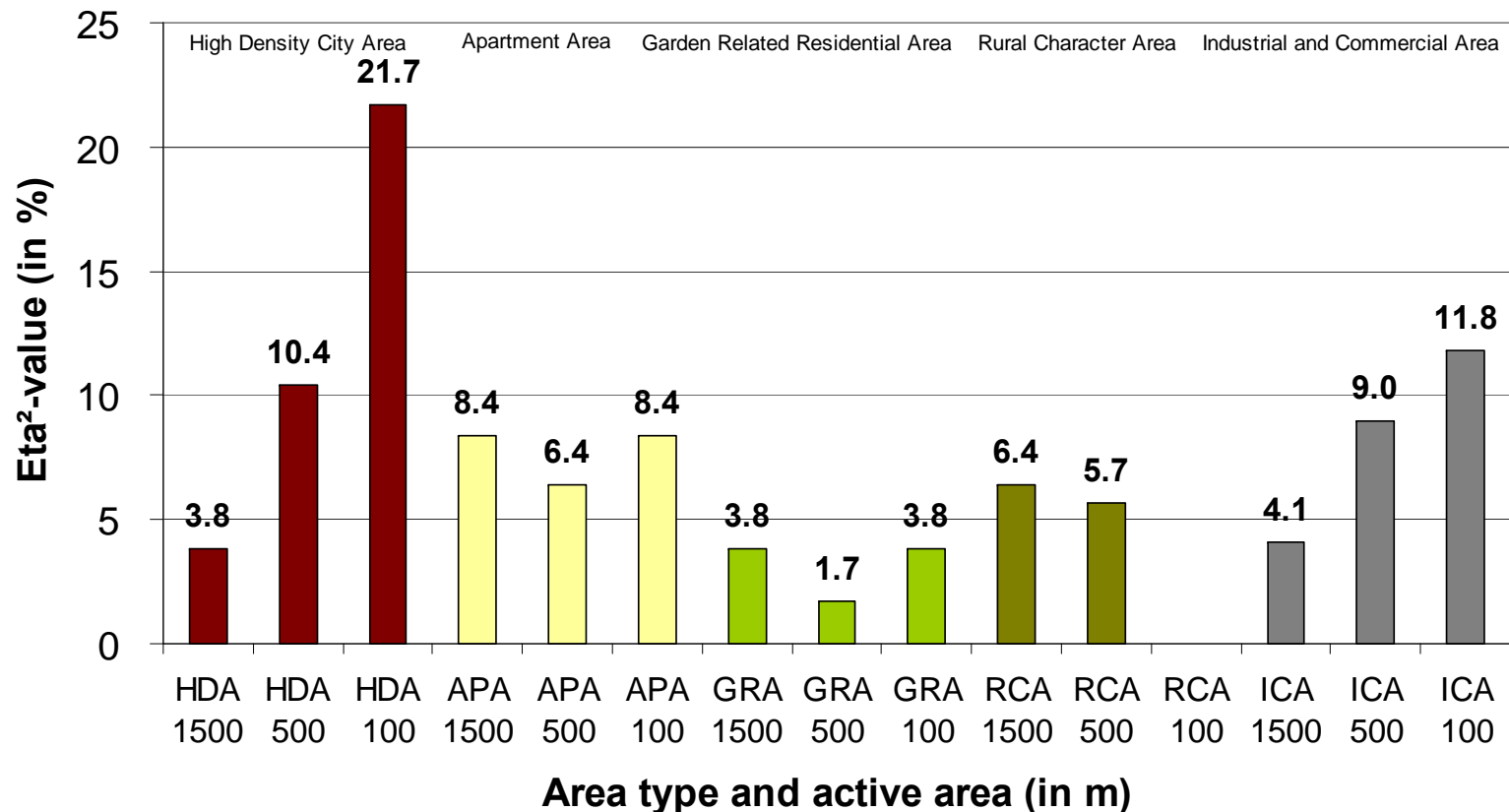
**n = 245;  $\eta^2 = 0.101$ ;  $p \leq 0.0004$**

Trees	Mean land value in €/m²
none	489
scattered	471
alleys	687

## Impact of open space maintenance condition on mean land value in German cities within an active area of 500 m

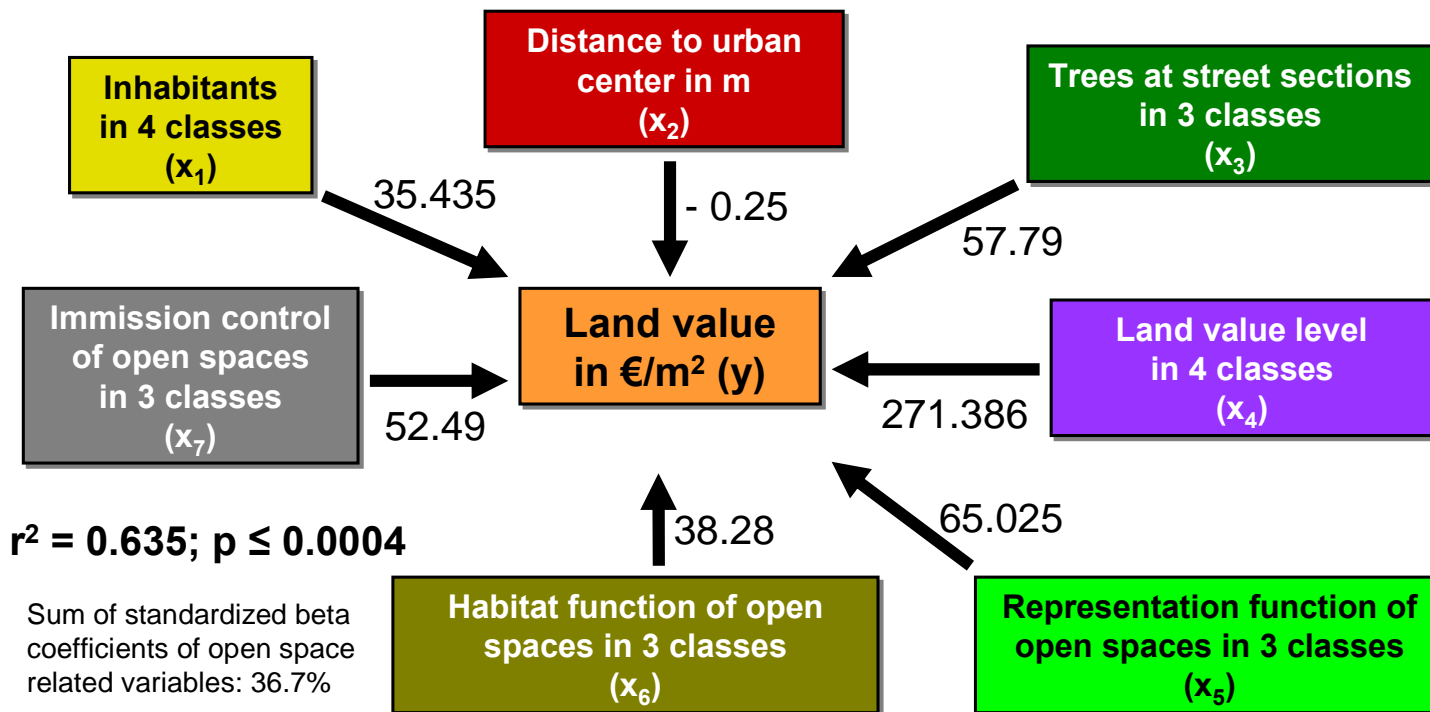


## Impact of open space maintenance condition on mean land value in German cities in dependence of area type and active area





## Calculation of land value in high density city areas (multiple regression equation)



$$y = \text{Land value (in €/m}^2\text{)} = -164.624 + 35.435 \cdot x_1 + (-0.25) \cdot x_2 + 57.79 \cdot x_3 + 271.386 \cdot x_4 + 65.025 \cdot x_5 + 38.28 \cdot x_6 + 52.49 \cdot x_7$$



<b>Area type</b>	<b>Regression model quality: (eta-squared)</b>
High density city area	0.635
Apartment area	0.627
Garden related residential area	0.611
Rural character area	0.73
Industrial area	0.422

## 5. Conclusions

- Results give evidence of a broad range of different value increasing effects of urban open spaces on land value in European major cities
- More expensive prices of private plots within a "green environment" are an expression of greater appreciation of residents for their surroundings
- This discovery ought to be recognised by politicians when setting priorities in financial and tax decisions
- Results could also deliver inputs for the discussion on shrinking cities: development and maintenance of high quality open spaces could be a means to raise life quality and image.

# Thank you very much for your attention!

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