

RGS-IBG Annual International Conference 2026

**Social inequalities in green space among German adults:
Insights from the population-representative German Environmental
Survey for Adults (GerES VI, 2023-24)**

*Wiehn, J., Tietjen, S., Bunge, C., Kolossa-Gehring, M., Murawski, A., Reiber, L.,
Rucic, E., & Conrad, A.*

Department II 1 Environmental Hygiene, German Environment Agency

Deprivation amplification hypothesis

“The deprivation amplification hypothesis postulates that the **socially disadvantaged** are exposed to further structural deprivation by their residential environment such that **social inequalities are therefore amplified.**”

Research questions and hypotheses

Is socioeconomic status associated with self-reported...



...walking distance to the nearest public green space among adults living in Germany?

Higher socioeconomic status is associated with shorter self-reported walking distance to the nearest public green space.



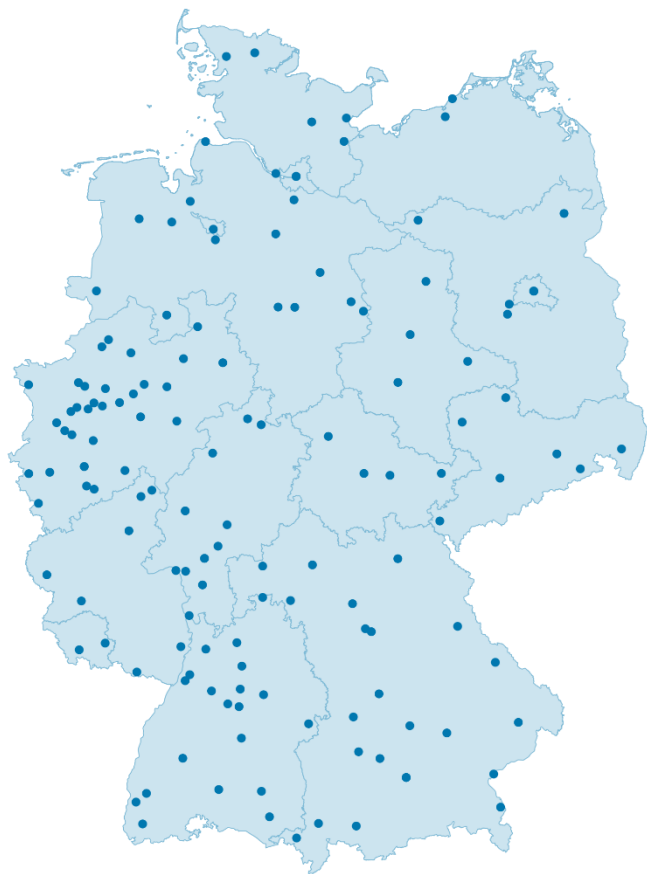
...assessments of the quality of the nearest public green space among adults living in Germany?

Higher socioeconomic status is associated with more favourable self-reported assessments of the quality of the nearest public green space.



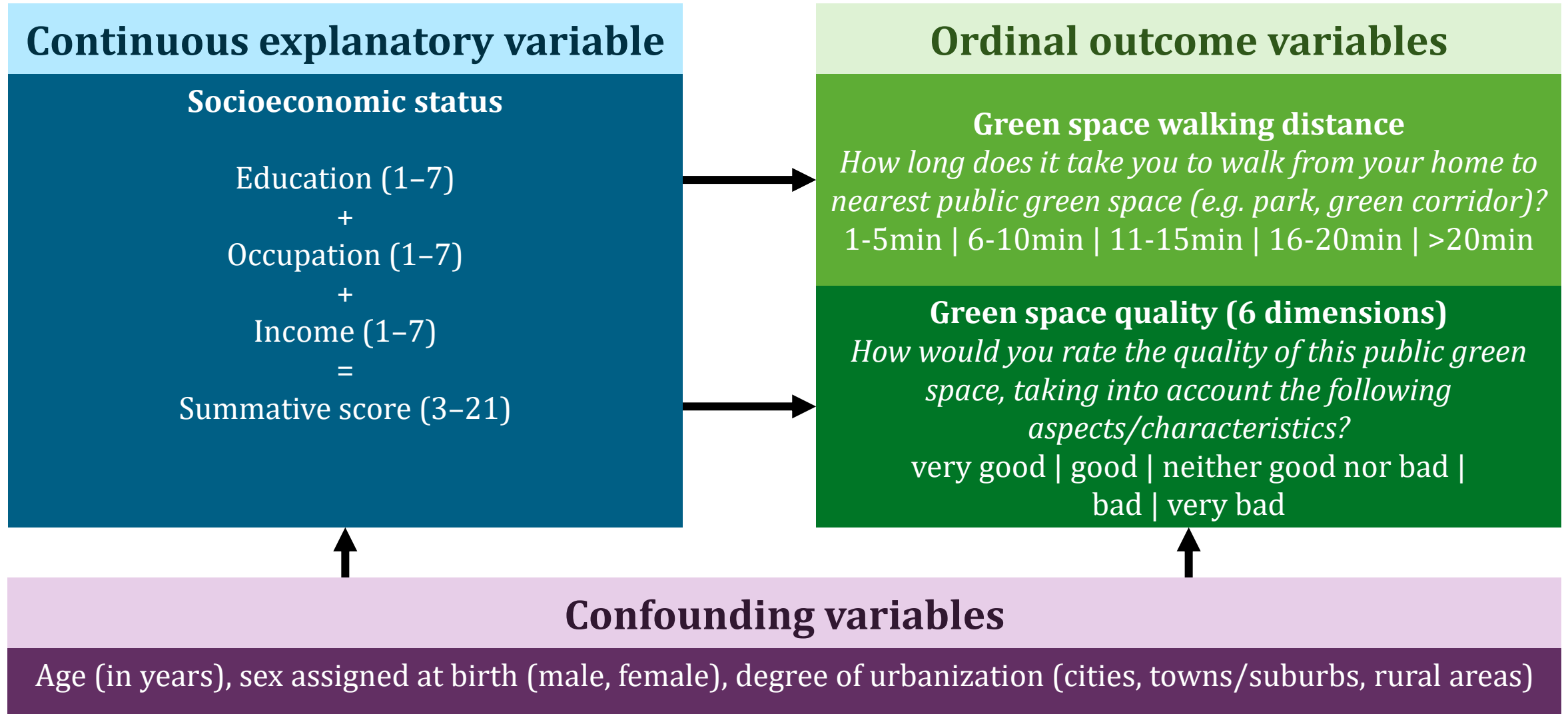
Methods

Data



Data source	German Environmental Survey for Adults (GerES VI, 2023–2024)
Study design	Population-representative, cross-sectional survey with human biomonitoring
Target population	Adults aged 18–79 years living in Germany
Sampling	Three-stage stratified random sampling across 150 primary sampling units
Data collection	Household-based interviews, self-administered questionnaires, and standardized health and environmental assessments
Study sample	1,622 participants completed the basic questionnaire
Ethics	Approved by the Ethics Committee of the Berlin Chamber of Physicians; scientific responsibility by the German Environment Agency

Measures



```
744 ## 2.3 Modelling -----
745
746 ### 2.3.1 Walking Distance -----
747
748 #### 2.3.1.1 Subset data -----
749 svy_data_complete <- subset(
750   svy_data,
751   complete.cases(
752     dist_green,
753     ses_num,
754     degurba,
755     age,
756     sex
757   )
758 )
759
760 #### 2.3.1.2 Fit Models -----
761 mod_0 <- svyolr(
762   dist_green ~ ses_num,
763   design = svy_data_complete,
764   method = "logistic"
765 )
766
767 mod_1 <- svyolr(
768   dist_green ~ ses_num + degurba + age + sex,
769   design = svy_data_complete,
770
```

Results

Sample characteristics

Characteristics of the study population

Adults aged 18 to 79 years residing in Germany (N = 1,622)

Characteristic	N (%) ¹	Mean (SD) ²
Age (range: 18-79)		48.3 (16.6)
Sex assigned at birth		
male	788 (50.1%)	
female	834 (49.9%)	
Socioeconomic status (range: 3-21)		12.1 (3.8)
Missing	2	
Degree of urbanization		
cities	572 (37.7%)	
suburban or towns	603 (42.0%)	
rural areas	447 (20.3%)	

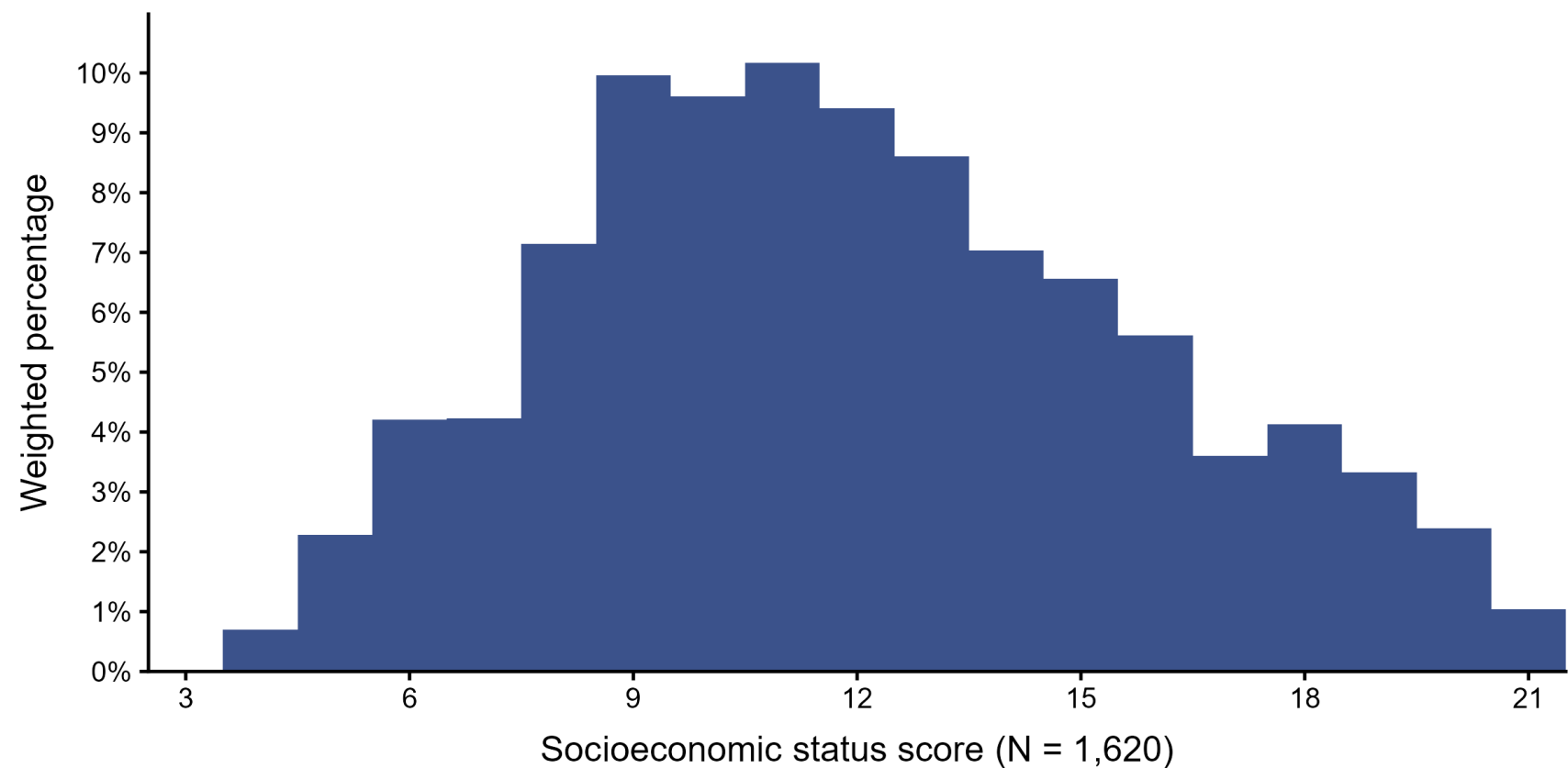
¹ Unweighted absolute number of observations (N) and weighted relative proportion of observations (%).

² Weighted arithmetic mean and standard deviation (SD).

Distribution of socioeconomic status

Construction of the socioeconomic status score

Sum of equalized household net income, education, and occupation. Each component ranges from 1 to 7, resulting in an overall score from 3 to 21 (including decimal values).

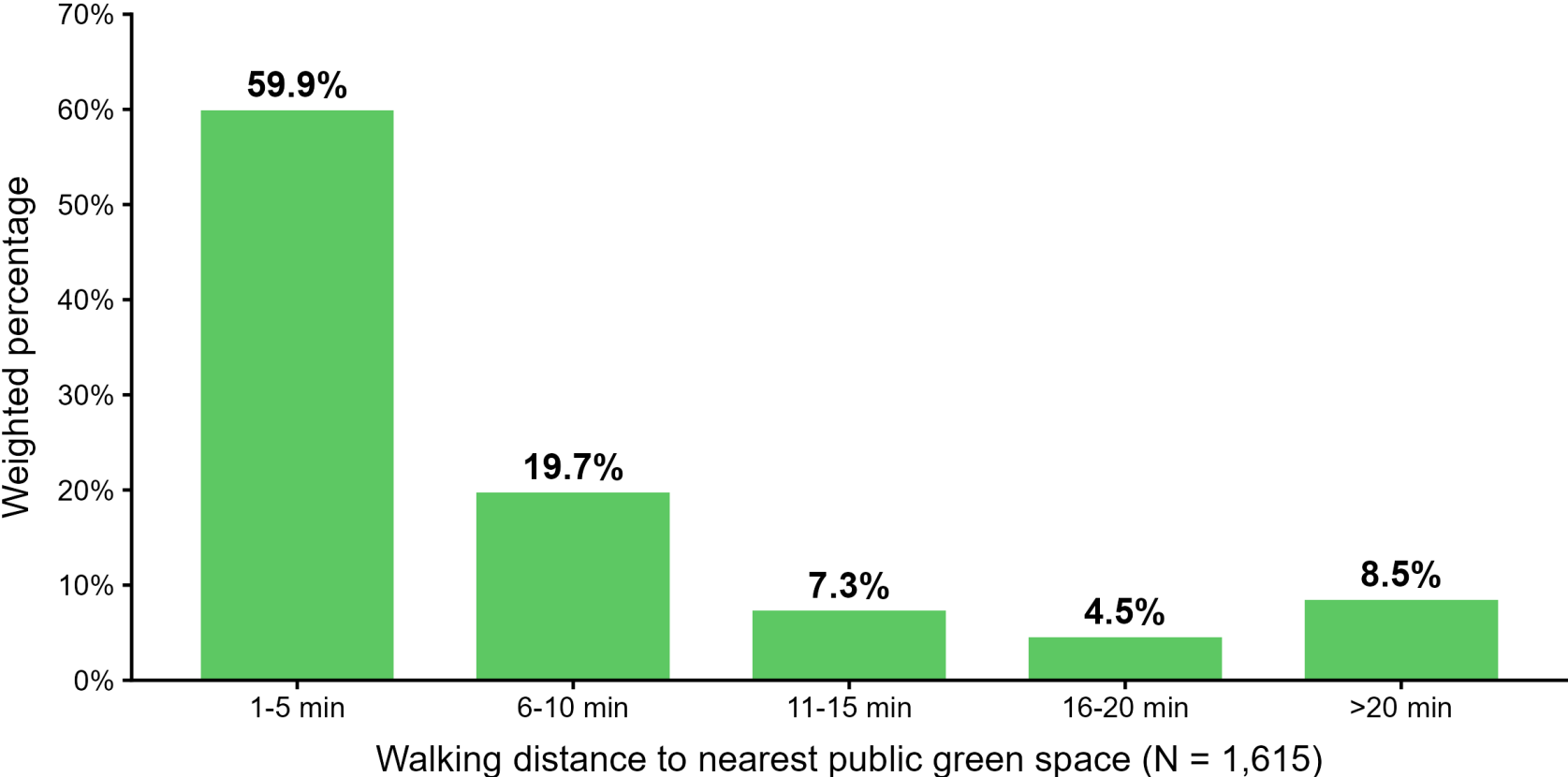




Distribution of walking distance to the nearest public green space

How long does it take you to walk from your home to nearest public green space (e.g. park, green corridor, woodland, meadows, cemetery)?

If you do not use any of the facilities listed, please state how long it would take you if you were walking on your own (without a dog, child, etc.).

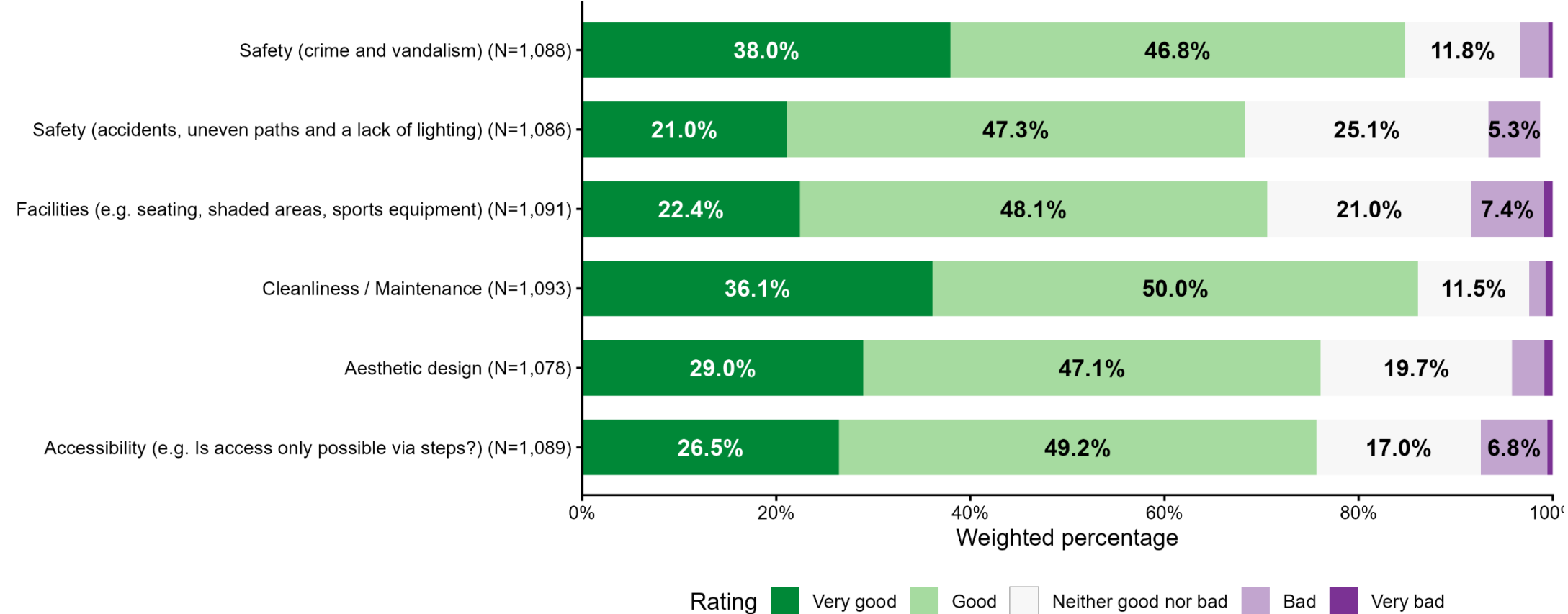


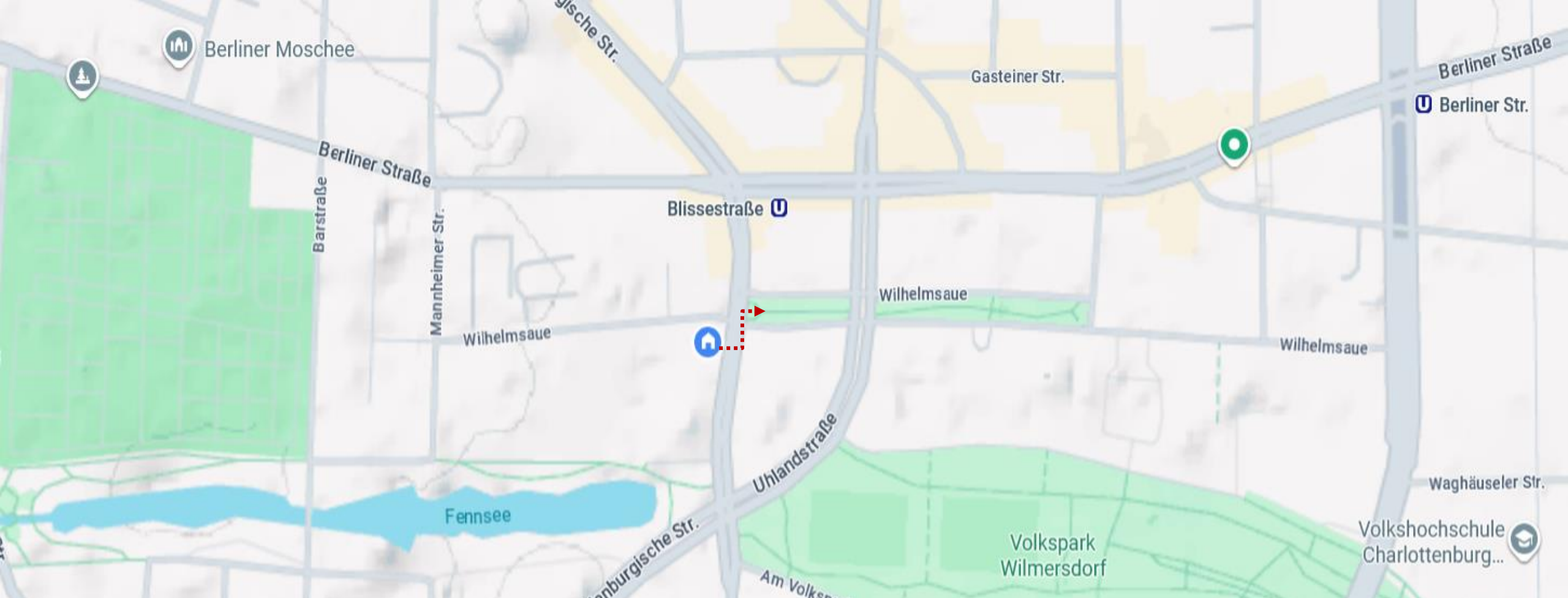
German Environmental Survey, GerES VI (2023-2024)



Distribution of quality characteristics of nearest green space

How would you rate the quality of this public green space, taking into account the following aspects/characteristics?





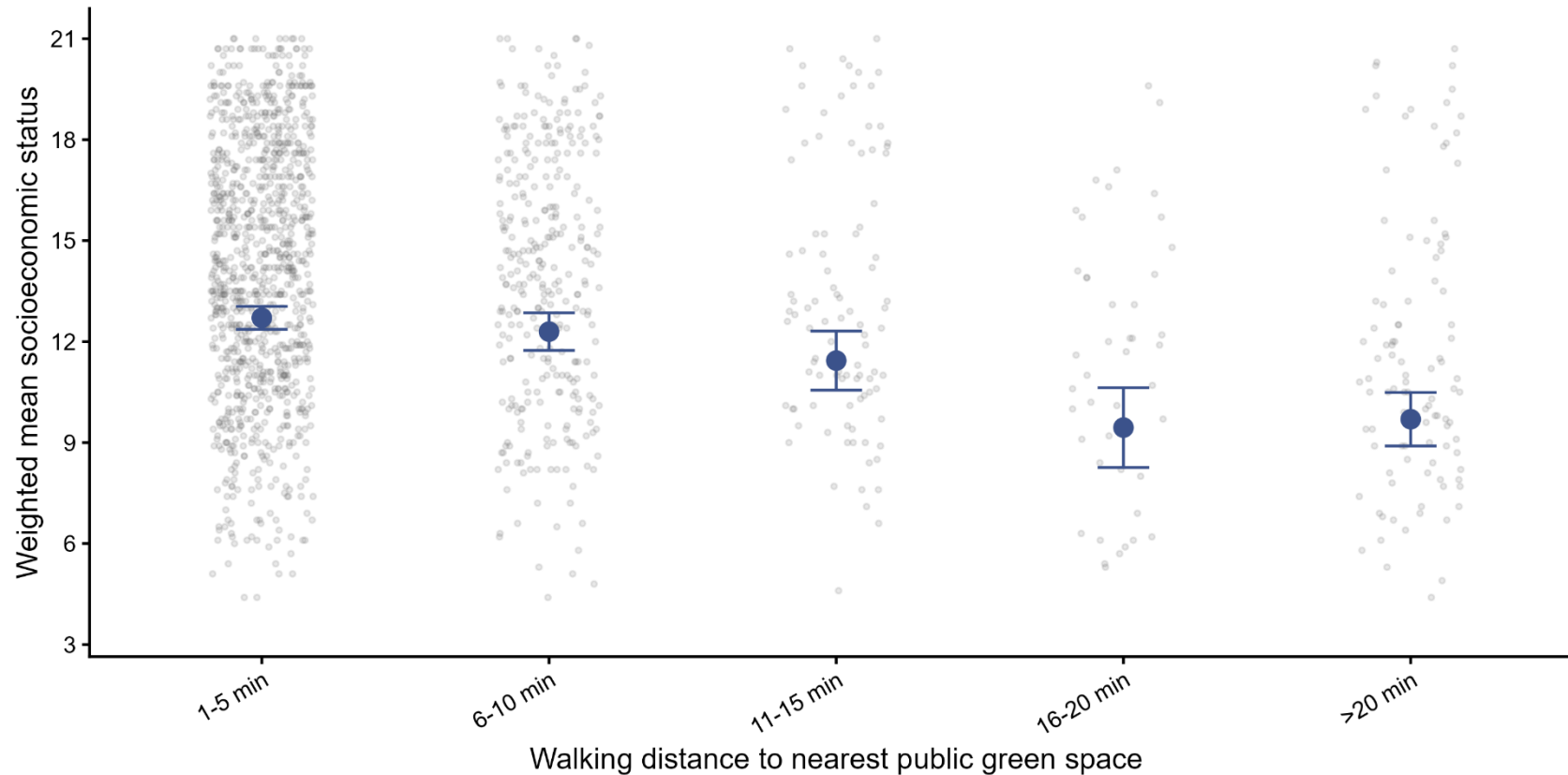
Is socioeconomic status associated with self-reported walking distance to the nearest public green space among adults living in Germany?



Relations between socioeconomic status and self-reported walking distance

Comparison of mean socioeconomic status across varying walking distances

Survey-weighted mean socioeconomic status is shown for each walking-distance category to the nearest public green space. Grey points represent individual observations, while blue points and error bars indicate the survey-weighted mean and 95% confidence interval.



German Environmental Survey, GerES VI (2023-2024)



Association between socioeconomic status and self-reported walking distance

Survey-weighted proportional odds regression models

Survey-weighted proportional odds regression models were used to estimate the association between socioeconomic status and walking distance to the nearest public green space. Odds ratios (ORs) with 95% confidence intervals (CIs) are presented for both the unadjusted and adjusted models. OR < 1 indicates lower odds of a longer walking distance to the nearest green space.

	Unadjusted model		Adjusted model ¹	
Variable	OR (95% CI)	p	OR (95% CI)	p
Socioeconomic status	0.88 (0.85, 0.92)	<0.001	0.88 (0.84, 0.91)	<0.001

¹ Adjusted for degree of urbanization, age, and sex assigned at birth.

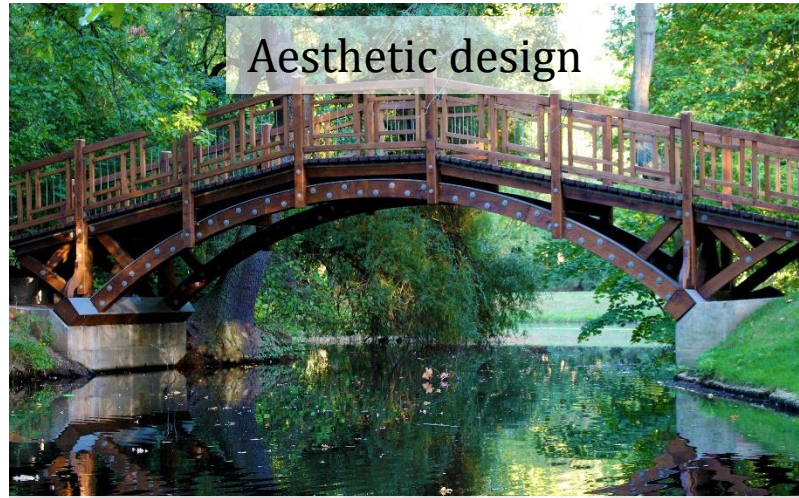
Each one-point increase in socioeconomic status was associated with a 12% lower odds of reporting a longer walking distance to the nearest public green space.

Higher socioeconomic status was associated with lower odds of a longer walking distance.

Accessibility



Aesthetic design



Facilities

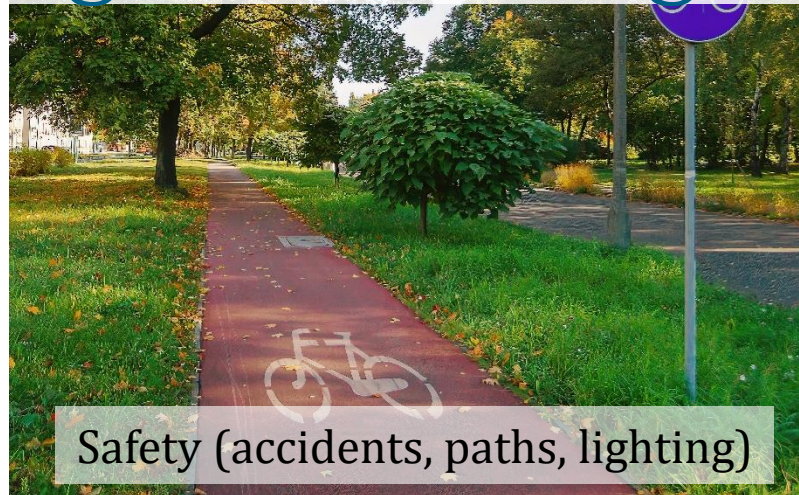


Is socioeconomic status associated with self-reported assessments of the quality of the nearest public green space among adults living in Germany?

Maintenance



Safety (accidents, paths, lighting)



Safety (crime, vandalism)

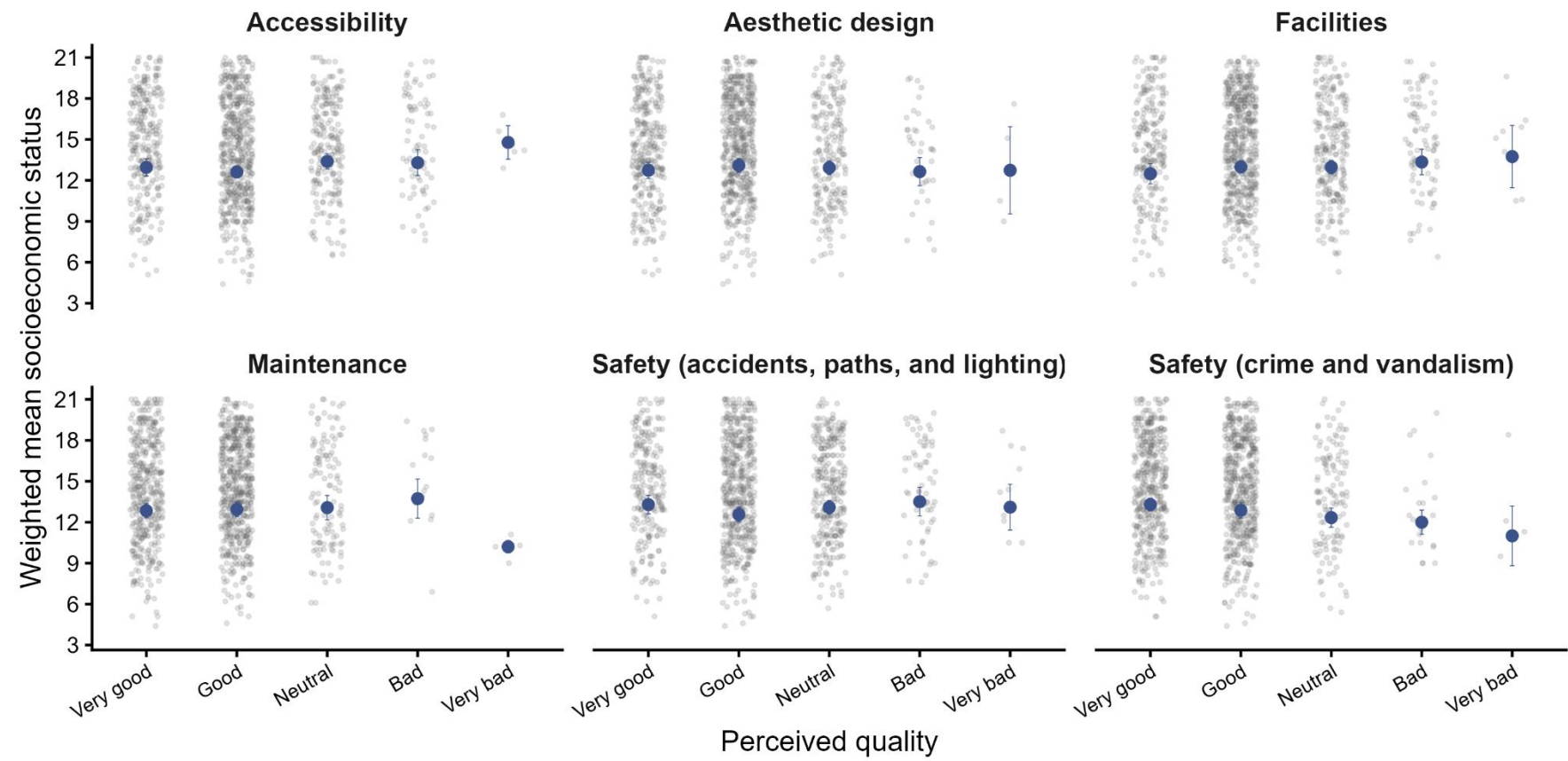




Relations between socioeconomic status and self-reported green space quality

Comparison of mean socioeconomic status across varying quality assessments, by quality dimensions

Survey-weighted mean socioeconomic status is shown for each level of quality assessment. Grey points represent individual observations, while blue points and error bars indicate the survey-weighted mean and 95% confidence interval.



German Environmental Survey, GerES VI (2023-2024)



Association between socioeconomic status and self-reported green space quality

Survey-weighted proportional odds regression models

Survey-weighted proportional odds regression models were used to estimate the association between socioeconomic status and six perceived quality dimensions of the nearest public green space. Odds ratios (ORs) with 95% confidence intervals (CIs) are presented for both the unadjusted and adjusted models. OR < 1 indicates lower odds of reporting poorer green space quality.

	Unadjusted model		Adjusted model ¹	
Outcome	OR (95% CI)	p	OR (95% CI)	p
Accessibility	1.02 (0.98–1.06)	0.264	1.03 (0.99–1.06)	0.163
Aesthetic design	1.01 (0.97–1.04)	0.656	1.00 (0.97–1.04)	0.855
Facilities	1.03 (0.99–1.07)	0.125	1.04 (1.00–1.08)	0.074
Maintenance	1.01 (0.97–1.05)	0.698	1.00 (0.96–1.04)	0.999
Accidents, paths & lighting	1.00 (0.97–1.04)	0.859	1.01 (0.97–1.05)	0.644
Crime & vandalism	0.95 (0.92–0.99)	0.015	0.94 (0.90–0.97)	0.001

¹ Adjusted for degree of urbanization, age, and sex assigned at birth.

A grayscale photograph of two people in an office setting. On the left, a person with glasses is seen in profile, looking at a laptop. On the right, a man with a beard is also in profile, gesturing with his hand while looking at his laptop. The background shows a bright window and another computer monitor. A dark teal horizontal band is overlaid across the middle of the image, containing the word 'Discussion' in a white serif font.

Discussion

Key findings

Is socioeconomic status associated with self-reported...



...**walking distance** to the nearest public green space among adults living in Germany?

Higher socioeconomic status was associated with lower odds of...

...a longer walking distance.

Deprivation amplification hypothesis was...

...confirmed.



...assessments of the **quality** of the nearest public green space among adults living in Germany?

...safety concerns regarding crime and vandalism.

...partially confirmed (one out of six outcomes).

Implications



Research

1. Conduct longitudinal studies
2. Integrate objective and perceived measures
3. Examine spatial inequalities at neighborhood level



Practice

1. Promote equitable green space provision
2. Define benchmarks for public green space
3. Incorporate environmental justice legally



Conclusion

A large, dark teal circular graphic on the left side of the slide, containing white text.

Adults with a higher socio-economic status live closer to public green spaces, although the self-assessed quality of these green spaces do not vary by socio-economic status (with the exception of safety in terms of crime and vandalism).

THE END

Acknowledgment

We thank all participants for taking part in GerES VI. We also express our gratitude to the field teams and researchers from Oracle Life Sciences and the German Environment Agency (UBA) study team. We are grateful to the Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN), which funded GerES VI. We also acknowledge the support of the German Environment Agency's 'Advancing the New European Bauhaus' in-house research project, also funded by BMUKN.



Many thanks for your attention!

Jascha Wiehn, PhD

Research associate

Section II 1.1

✉ Jascha.Wiehn@uba.de

