



*WalkUrban Conference:
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Spatial modelling

GIS analysis of objective Walkability with ILS Walkability Index

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COMUNE DI GENOVA



ERA-NET Cofund Urban Accessibility and Connectivity

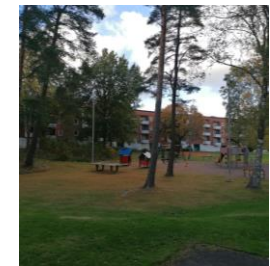
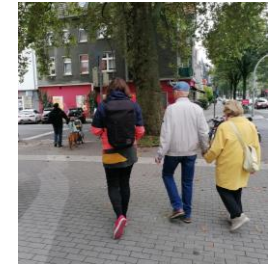




Objective or calculated walkability

GIS based analysis and spatial modelling

- **Potential** of the urban environment for walking
- Overview, to what extent does it **enable** and/or **encourage walking**?
 - **feasible**: Is there a path where I can walk?
 - **accessible**: Are there amenities or services in walking distances?
 - **pleasant**: Is there any green space (to make it more enjoyable to walk)?
- **GIS-Tool** for calculating: **ILS Walkability Index**
 - Open source tool: Q-GIS plugin
 - Open source data: OpenStreetMap (OSM), OpenRouteService (ORS)



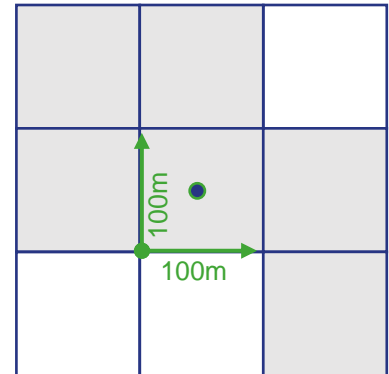
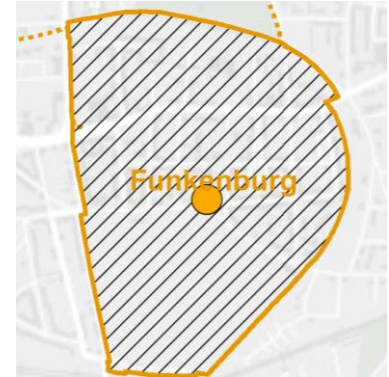
Fina, S., Gerten, C., Pondi, B., D'Arcy, L., O'Reilly, N., Vale, D. S., Pereira, M., & Zilio, S. (2022). OS-WALK-EU: An open-source tool to assess health-promoting residential walkability of European city structures. *Journal of Transport & Health*, 27, 101486. <https://doi.org/10.1016/j.jth.2022.101486>



Assessment at neighbourhood-level

Spatial scale and unit for analysing

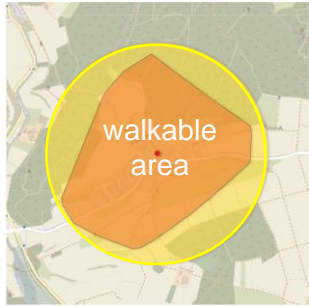
- Residential areas
- Populated grid cells represent the homes of the population
- Small scale: 100m*100m
- Starting points and calculation unit for the analyses





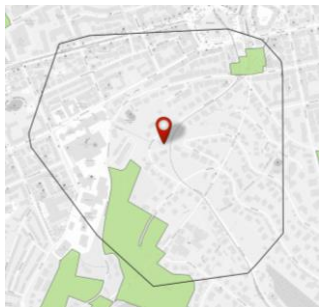
Modules for ILS Walkability Index

Pedestrian shed – dense network of footpaths & permeability for pedestrians



- Walkable area: 500m walking distance along pedestrian street network
- Pedestrian shed: percentage covered by walkable area in comparison to perfect circle area
- Percentage transformed into point values between 1 and 10 (< 10% - ≥ 90%)

Green area – attractiveness for walking, foster social interaction and well being



- Green area: percentage of the walkable area covered by green elements
- Percentage transformed into point values between 1 and 10 points (< 2.5% - ≥ 22.5%)



Moduls for ILS Walkability Index

Access to services & amenities – shorter distances are preferable



- Supermarkets and (discounter) grocery stores
 - Education
 - Shopping
 - Other errands
 - Leisure
-
- Points between 0 and 1 are given due to rings of walking radius (e.g. inner ring 0-250m)
 - Add-up values (summed and weighted by category) are transformed into final values between 1 and 10



ILS Walkability Index – final score

Final score for ILS-Walkability Index






- For each module there is a weight factor, it represents how important the module is
 - 0,4 for pedestrian shed
 - 0,6 for green area
 - 1,0 for amenities and services
- Final value for each grid cell is calculated
 - Weighted values of modules are summed up
 - sums are converted into a scale from 0 to 100[#]

[#] optional: final slope penalty of up to – 5%

Score-illustration in the maps

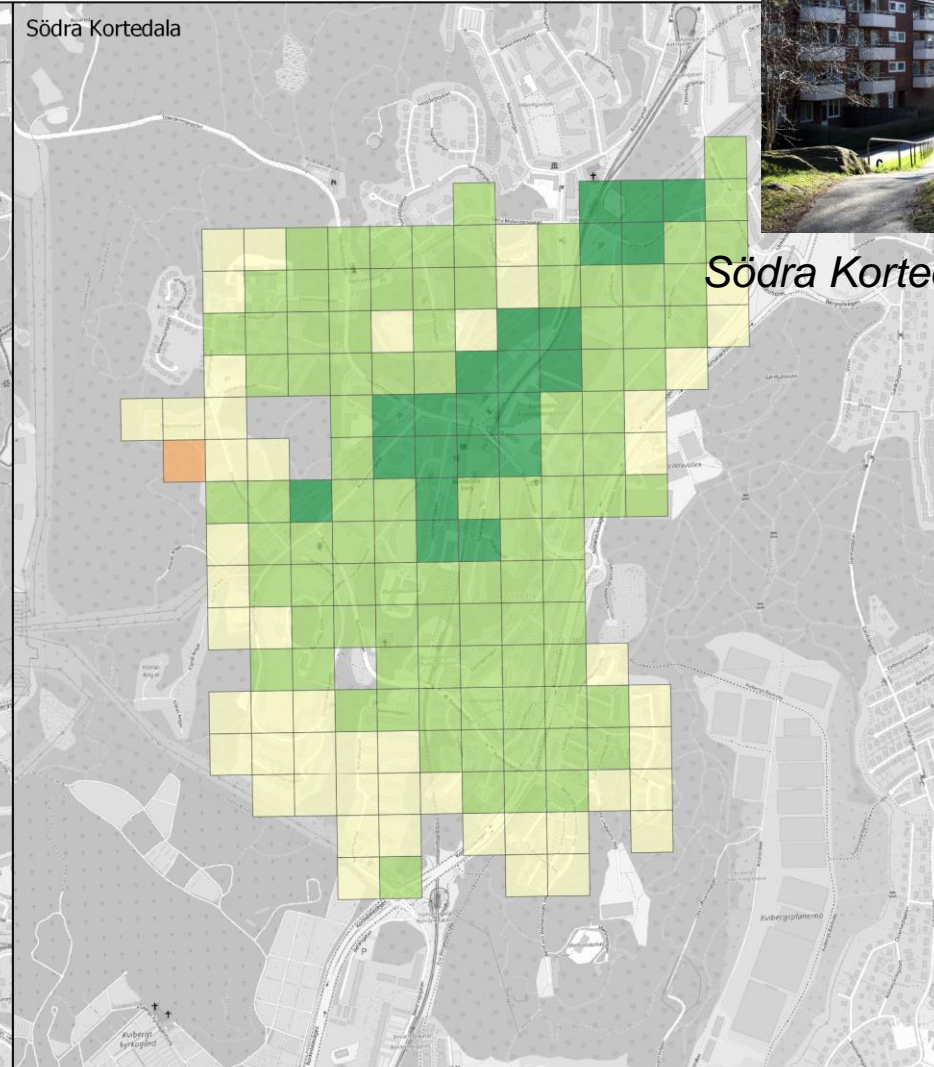
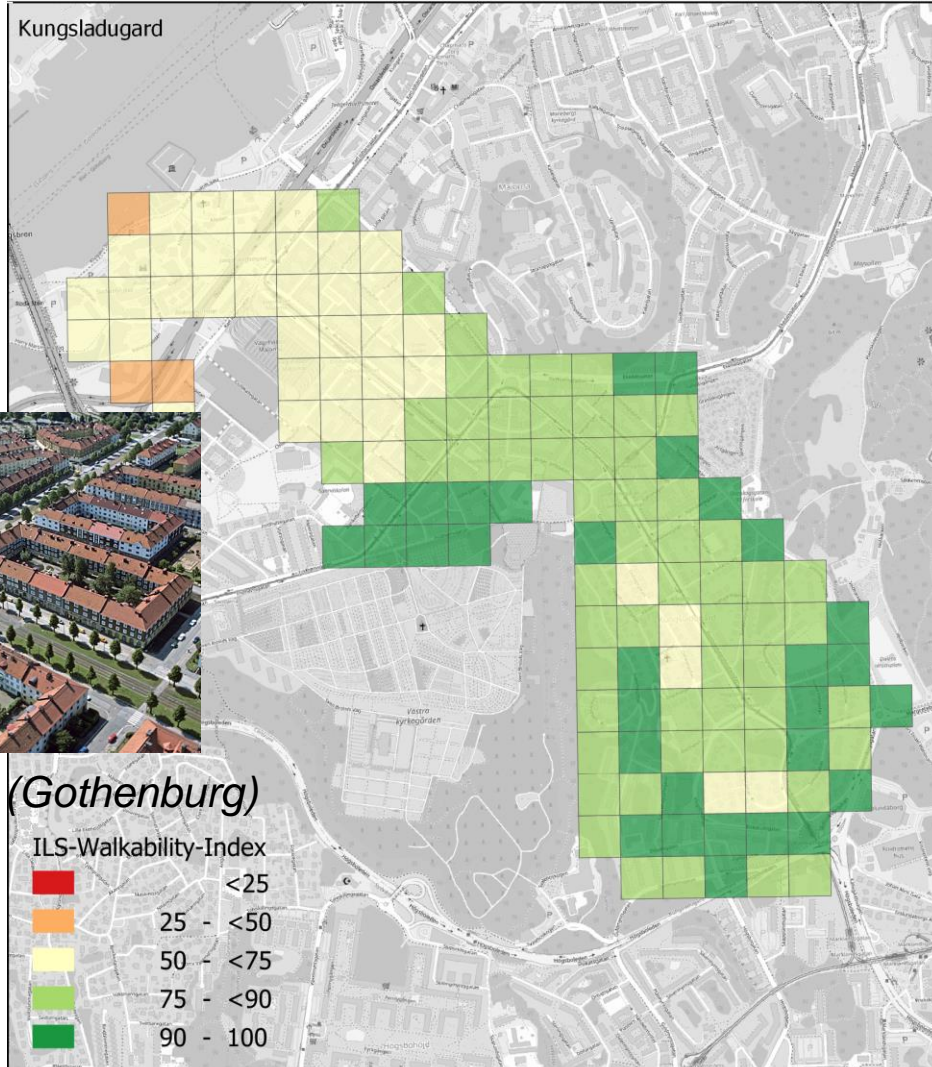
- Each grid cell is colour-coded according to the final value

ILS Walkability Index

	<25
	25 - <50
	50 - <75
	75 - <90
	90 - 100

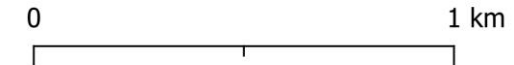


ILS Walking Index - Gothenburg (all age groups)



Data: Eurostat (2018); OSM Contributors (2023) ILS (2023); University of Gävle (2023)
 Geodata: OpenStreetMap

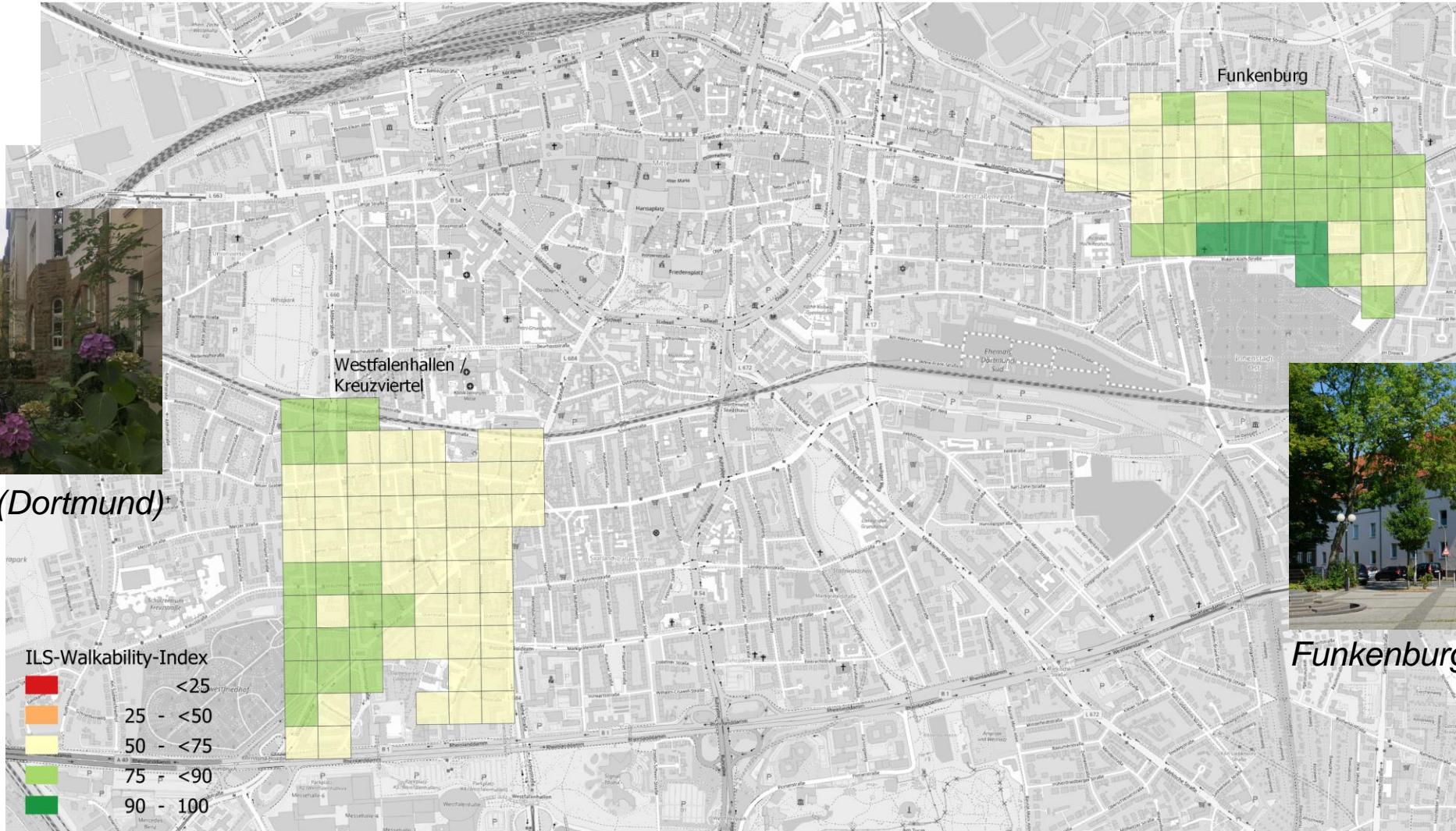
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Kreuzviertel (Dortmund)

Ø 74,2



Ø 79,2

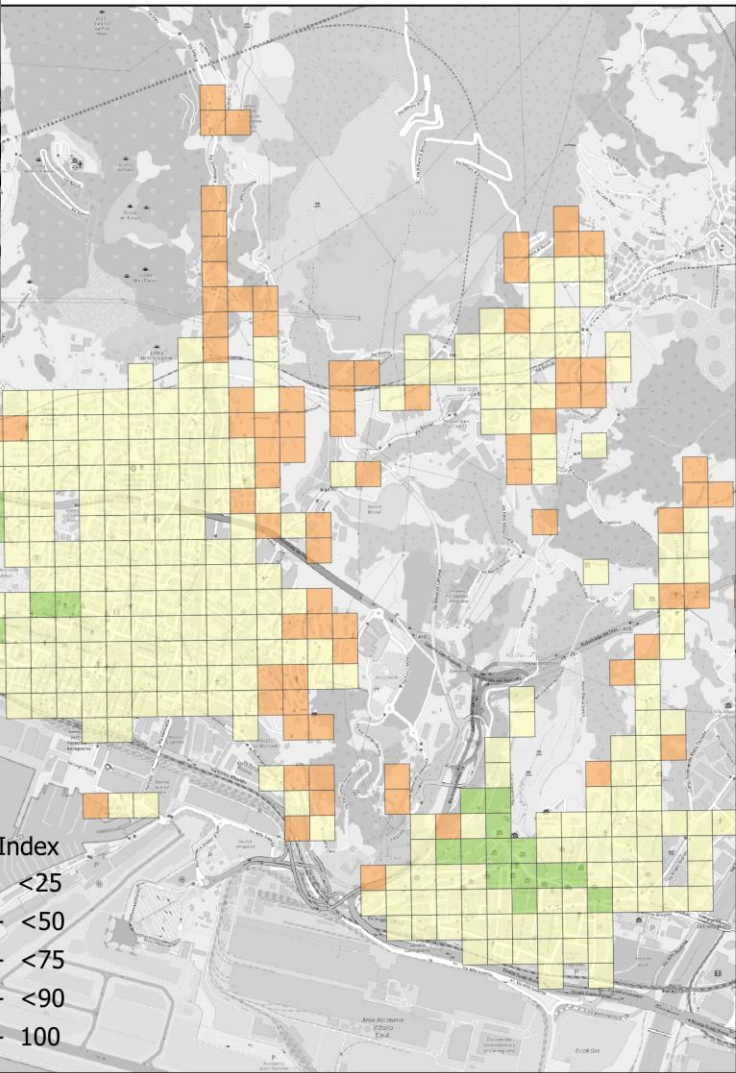


Funkenburg (Dortmund)

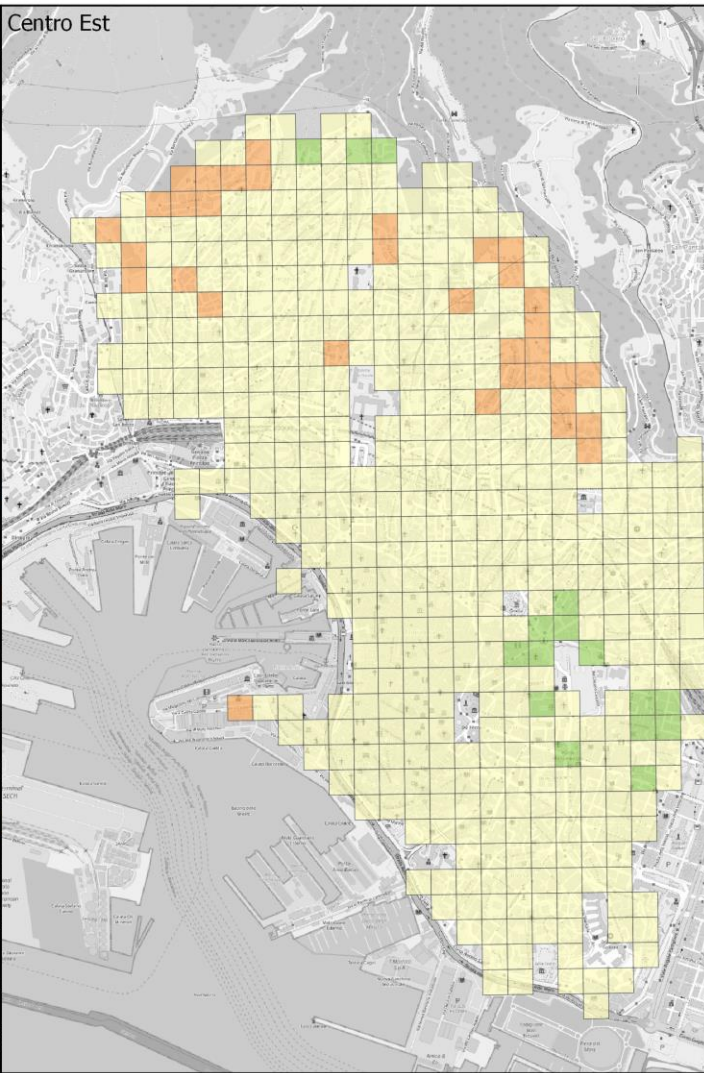
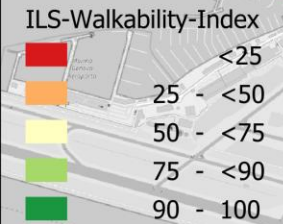
Data: Statistisches Bundesamt (2015); OSM Contributors (2023); ILS (2023)
Geodata: OpenStreetMap

1:15.000





Medio Ponente (Genoa)
 \emptyset 57,6



Centro Est (Genoa)
 \emptyset 63,5

Data: Eurostat (2018); OSM Contributors (2023) ILS (2023); Comune di Genova (2023); Geoportale Nazionale Italia/OpenDEM.info
 Geodata: OpenStreetMap

