

How Bicycle-Friendly Is Your Cycling Infrastructure? Assessing Municipal Bikeability Using the Example of Sonthofen, Germany

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Cycling is widely regarded as a key component of sustainable mobility systems due to its environmental, health, and social benefits. Nevertheless, cycling mode shares in Germany have remained largely unchanged over recent years. Particularly in small and medium-sized municipalities is cycling rather unpopular. Research suggests that the built environment and the quality of cycling infrastructure are among the most important factors influencing whether people choose to cycle. Consequently, improving cycling infrastructure has become a central objective of transport planning and cycling promotion strategies.

To support evidence-based decision-making, municipalities require tools that enable them to assess the quality of their cycling infrastructure, identify deficiencies, and prioritize investments. While numerous bikeability assessment approaches have been developed internationally, many are either data-intensive, difficult to transfer between countries, or insufficiently suited to the resource constraints of smaller municipalities.

This study develops and tests a practical Bikeability Index for municipal application. Building on existing bikeability research and cycling infrastructure audits, a multi-criteria evaluation framework was designed. The assessment covers four categories: infrastructure design and condition, safety, nodes, and attractiveness and 35 criteria. To account for their differing relevance, categories and criteria were weighted using an Analytic Hierarchy Process (AHP).

A particular feature of the approach is the separate assessment of road segments and intersections. Data collection was conducted through a GIS-based field audit using QField, allowing standardized and spatially referenced documentation of cycling infrastructure characteristics.

The method was applied to two cycling routes in the city of Sonthofen (Bavaria, Germany): a section of the Bodensee–Königssee cycle route and an important school route connecting the local secondary school with surrounding residential areas. The pilot application indicates that the developed index produces realistic and plausible results. Identified strengths and weaknesses correspond closely with findings from municipal planning documents, expert interviews, and user perceptions reported in the ADFC Bicycle Climate Test.

The study demonstrates that a structured bikeability audit can support municipalities in identifying infrastructure deficits, prioritizing interventions, and monitoring progress towards cycling-friendly development. Furthermore, the findings underline the importance of standardized indicators and improved availability of open cycling infrastructure data for future bikeability assessments and comparative analyses.