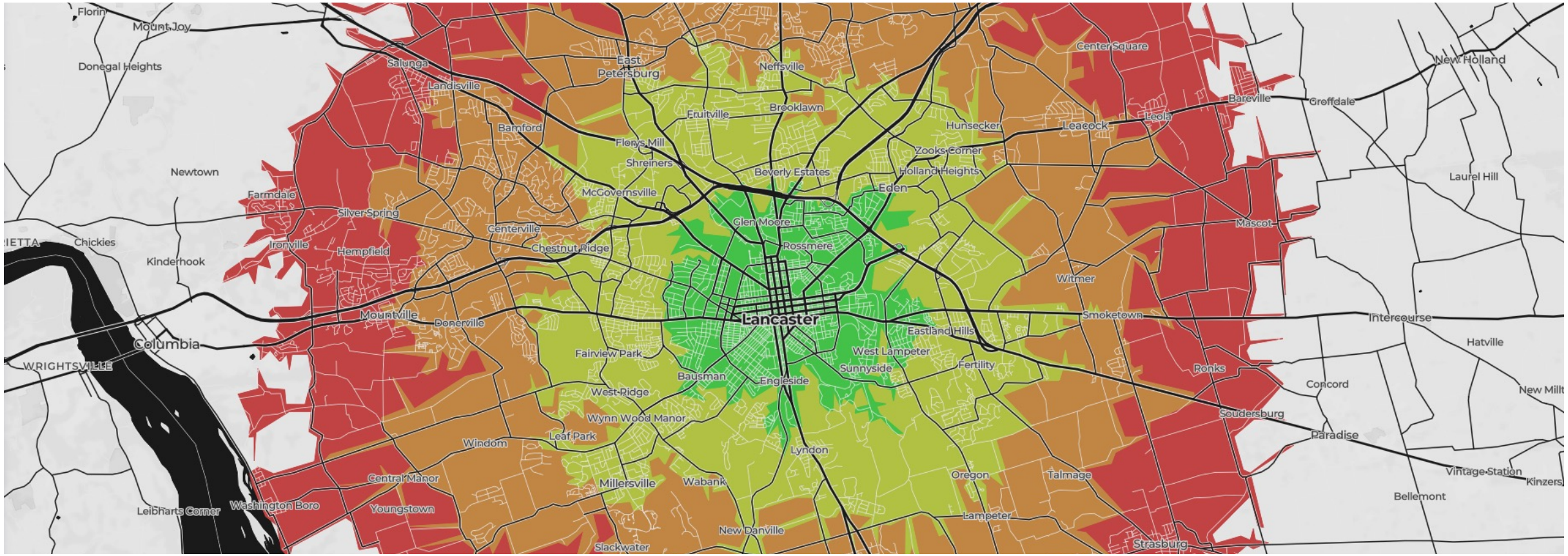
TECHNISCHE UNIVERSITÄT DARMSTADT

ACCESSIBILITY MAPPING WITH ISOCHRONES



https://valhalla.github.io/valhalla/api/isochrone/api-reference/

ACCESSIBILITY MAPPING WITH ISOCHRONES

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INTRODUCTION AND BASICS

- Isochrones: "a line drawn on a map connecting points at which something occurs or arrives at the same time“

➢ Used for temporal accesibility, taking real world network barriers (road network, one-way streets, topography, rivers and so on) into account

- Many different websites for calculating isochrones, but we will use RStudio
- OSRM-engine = open-source routing machine: routing engine written in C++ and based on OpenStreetMap

➢ Calculates routes (e.g. for cars, bicycles or pedestrians) and is optimized for fast, server-side route computation

➢ Uses the Dijsktra Algorithm for finding the shortest path between nodes in a weighted graph

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LIVE DEMO USING R-STUDIO

Download R and RStudio (https://posit.co/download/rstudio-desktop/)

(if not already done)

LIVE DEMO USING R-STUDIO

1. Task: How far can you get from Luisenplatz within 5, 10 and 15 min of walking?

2. Task: How far can you get within 5,10 and 15 min of riding the bike?

3. Task: Creating a finer mesh and calculating isochrones for every 5 min of biking

4. Task: “Finding an apartment in Darmstadt, from where I can reach TU Lichtwiese, TU Campusmitte and Hauptbahnhof within 13 min of riding the bike“

USE CASES

City planners use Isochrones to…

- …determine „service deserts“
- …find optimal locations for emergency services e.g. Fire Department
- …increase logistics efficiency (Micro-Hubs)
- …analyse public transit integration

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THANK YOU FOR YOUR ATTENTION