

MVG Rad Bike Ride Analysis

Exploring Urban Mobility in Munich with Kotlin

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Software Engineer & Data Enthusiast

About Me

- **Enrique López Mañas**
- Passionate about software engineering, data science, and uncovering patterns in data.
- Experienced in building robust systems and analyzing complex datasets.
- Strongly interested in how open technologies can solve real-world urban challenges.



My Work in Open Source GIS

I have a deep background in mapping technologies and geospatial data visualization. Some of my key open-source contributions include:

- **Android Maps Compose:** Maintainer and main developer bridging the gap between traditional Google Maps APIs and modern Android Jetpack Compose paradigms.
- **Android Maps Utils:** Maintainer and main developer for utility libraries for advanced map functionality, including heatmaps, marker clustering, and GeoJSON integration.
- I love turning raw geospatial data (like we see in this dataset!) into actionable, visual insights.



Open Data in Munich

Munich has a thriving Open Data portal (*Open-Data-Portal München*), offering incredible resources for analysts and developers:

- **The Dataset:** MVG Rad (Munich's public bike-sharing system) ride data for the entire year of 2024.
- **Volume:** Over **700,000+** individual rides.
- **Geospatial context:** Start/End coordinates, rental station identifiers, and timestamps.
- **Why it matters:** Open data allows citizens to understand their own city's infrastructure, optimize logistics, and promote sustainable mobility.

Kotlin Notebooks

Why use Kotlin for Data Science?

- **Interactive Development:** Jupyter Notebooks are no longer just for Python!
- **Type Safety:** Kotlin brings static typing to the data science world, reducing runtime errors.
- **Familiar Syntax:** Seamless transition for Android and Backend developers who already love Kotlin.
- **Powerful Tooling:** Native integration with IntelliJ IDEA allows for rapid experimentation and immediate visual feedback.

Kotlin DataFrame & Kandy

The modern stack for data manipulation and visualization:

- **Kotlin DataFrame:**
 - Strongly typed, immutable data structures.
 - Expressive DSL for filtering, grouping, joining, and mutating data.
 - E.g., Effortlessly parsing timestamps and merging weather API data with 700k rows.
- **Kandy (Lets-Plot):**
 - Declarative plotting library inspired by the Grammar of Graphics.
 - Easily generate scatter plots, bar charts, and maps directly inside the notebook.

Key Insights Discovered

Through this stack, we analyzed:

1. **Rider Profiles:** Differentiating commuters (short weekday trips) from leisure riders (longer weekend trips).
2. **Fleet Rebalancing:** Identifying exact "sink" stations where bikes pile up and "source" stations where they run out.
3. **Weather Impact:** Proving the direct correlation between the average daily temperature and total bike usage by joining Open-Meteo API data.



I'm Looking for a Job!

- I am currently open to new opportunities!
- Looking for roles in **Software Engineering, Android, Backend, or Data Engineering.**
- If your team is looking for someone who loves to build, analyze, and solve complex problems (and occasionally over-analyze bike data):

Let's connect!

- *GitHub:* [kikoso](#)
- *Email:* eenriquelopez@gmail.com
- *Notebook Code:* [kikoso/Machine-Learning \(GitHub\)](#)

 **Thank You!**

Questions?