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# **Simple Open Data Measures of Public Transit Service Availability**

**Usecases for Closeness Centrality and Isochrones**

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## **1 Introduction**

In recent years, but for decades by now, the demand for a paradigm shift in transportation infrastructure and service has become louder and louder. While calls for a shift away from car centric mobility are nothing new and where a well established part of German Academic discourse in the 1990s already, [1] it has become part of a widespread political discourse around the so called *Verkehrswende* [2]. With increased awareness and concrete experiences of climate change this discourse has reached states of heated debate. Benefits of

### **1.1 Transit Equity and Equality**

- How can an easy closenes centrality measure help asses transit service availability and equality

### **1.2 Related Work**

### **1.3 Methodological Approach**

### **1.4 Geographic Case Studies**

## **2 Closeness or Reachability**

### **2.1 Closeness Centrality**

### **2.2 Isochrones as a Measure of Reach**

### **2.3 Comparison Use Cases**

### **2.4 Methods**

### **2.5 Results**

## **3 Comparisons with Non-Schedule-Based Modes**

### **3.1 Cycling**

#### **3.1.1 Methods**

#### **3.1.2 Results**

### **3.2 Cars**

#### **3.2.1 Methods**

- added parking times

#### **3.2.2 Results**

## **3.3 Temporal Discrepancies with Scheduled Transit**

### **3.4 Limitations**

- limitations to car traffic estimations
- limitations to parking times

## **4 Distinguishing Transit Footprints**

### **4.1 Historical Urban Blueprints**

### **4.2 Radial and Tangential Services**

### **4.3 Methods**

#### **4.3.1 Visual Differences**

#### **4.3.2 Inequality Measures**

- Lorenz Curves and Gini Coefficients being silly sometimes [3]

### **4.4 Results**

### **4.5 Hub and Spoke Transit Planning**

## 5 Recap of Results

## 6 Discussion

### 6.1 General Limitations

- Lack of real world measures as Comparisons
- Lack of reliability Data
- Lack of delay data
- *inequality* being silly at times [3].



## Bibliography

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- [3] D. Graeber and D. Wengrow, *The Dawn of Everything. A New History of Humanity*. Dublin: Penguin Books, 2022.