

TPI Target Population Index

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1 TPI - Target Population Index

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TPI stands for **Target Population Index**. It is a tool developed to be used in several scientific disciplines to evaluate how particular segments (subgroups) of a population fare compared with the rest of the population. We refer to the subgroup of interest as the *target population*, that is the target of future policies for instance, hence the index's name.

A theoretical *worst-case* and a theoretical *best-case* situation are used as two distinct population-specific benchmarks, to determine the relative position of the subgroup of interest in relation to the rest of the population. This allows to characterise the situation of specific subgroups and compare them one to another, or to assess the same subgroup in different positions in time.

Please refer to the paper of **Pritchard et al.**¹ for more details about the methodology and the theoretical framework that underlines the TPI concept.

In the paper we discuss also an [application of the index to transport studies](#), using 49 of the largest US metropolitan regions as a case study. In particular, the variable *job accessibility by public transport* is assessed for two population subgroups that are especially likely to benefit from public transport: adults without a car and adults living in poverty. The analysis finds that the car-less population is comparatively better served by public transport than the poor population. Additionally, regions with a higher TPI score for car-less populations also tend to have public transport systems that better serve their population living in poverty. These results highlight that the proposed index allows for easy comparison across regions, despite large differences in the scale of the variable of interest (accessibility by public transport), the total population, and the size of the target groups (car-less or adults in poverty).

1.1 Notes on the code

- *DatabaseCreation_groups.R* Tool to generate the database necessary to run the analysis. It combines US census data at different scales (blocks to tracts) for ~50 metropolitan areas. Note: the data is locally stored and this file doesn't access them online, but sources

are listed in this repository (see below). The R code is [here](#) and its use is described more in detail [here](#)

- *TPI.R* Script to run the TPI analysis as in the analysis presented in the paper. It generates also complementary plots optionally. The R code is [here](#) and its use is explained [here](#)

1.2 Data

All the data used in the analysis is open-source etc etc A detailed description is [here](#) TBC

1.3 Run a TPI analysis yourself

TBC Application to transport studies, with code walkthrough [here](#)

1.4 References

1: Still under review. J.P. Pritchard, A. Zanchetta, K. Martens, *A new index to assess the situation of subgroups, with an application to public transport disadvantage in US metropolitan areas*, 202?

You can also download this site as [a PDF](#) and find all code [on Github](#).

This work was implemented at the Technion - Israel Institute of Technology under the guidance of prof. Karel Martens within the [Fair Transport Lab](#)

2 TPI applied to Transport Justice analysis

TPI was applied in a case study to analyse job accessibility by transport in 49 US metropolitan areas

Part I

Running TPI

3 Data sources

TBC

- ☐ Sources
- ☐ Description
- ☐ Examples (tables)

```
library(ggplot2)

ggplot(airquality, aes(Temp, Ozone)) +
  geom_point() +
  geom_smooth(method = "loess"
  )
```

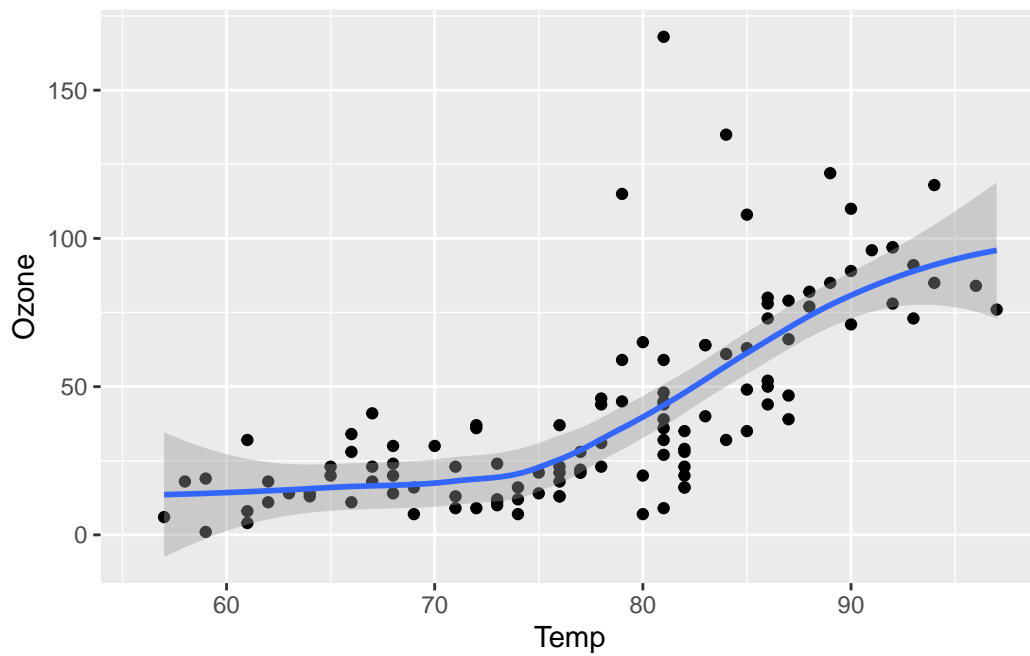


Figure 3.1: Temperature and ozone level.

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