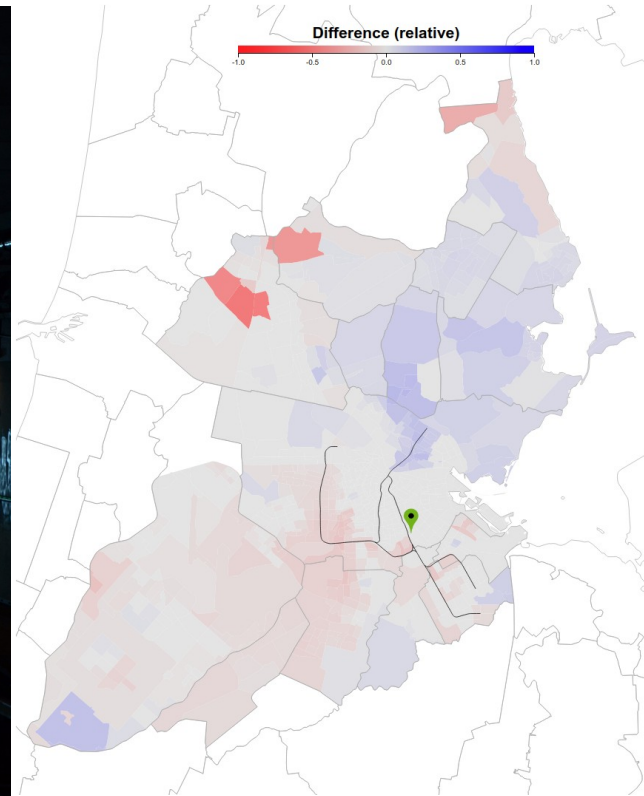# Determining the impact of lower public transit frequencies in COVID-19 timetables on perceived door-to-door travel times

Thomas Koch • Dr. Elenna Dugundji
Joint Online Workshop of WCTR SIG F1 and AUM • February 25th 2021

Lower demand
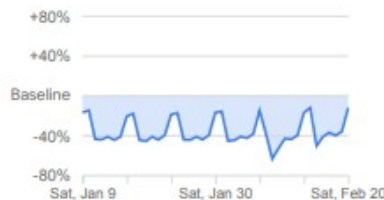
Reduced supply

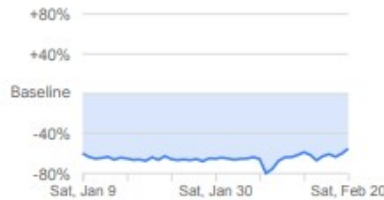- **Disruptions due to absent staff**
- **Additional cleaning in vehicles**

Photo Vincent Jannink (ANP)

Introduction

- **Lower demand and supply:**

  – Subsequent service cuts.

- **How to measure the effect on the level of service experienced by passengers?**

Level of Service

- **Travel-time: door to door**
  - Walk to/from transit.
  - In vehicle time.
  - Transfer time between vehicles.
- **Wait-time or adaption time**
  - How much time is spend on fitting a transit schedule to your agenda.
- **Typically service was reduced by lowering the frequencies**
  - Using Sunday frequency levels

Reducing frequencies

CWI

- **Travel-time: door to door**

  - Walk to/from transit.

    Often unchanged

  - In vehicle time.

  - Transfer time between vehicles.

    Worse or improved

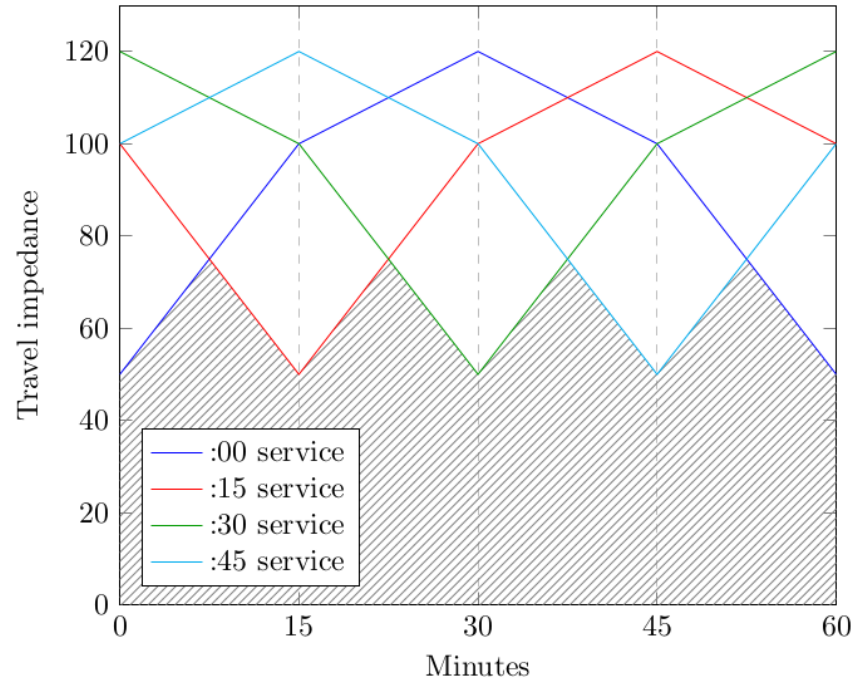- **Wait-time or adaption time**

  - How much time is spend on fitting a transit schedule to your agenda.

    Increased

- **Typically service was reduced by lowering the frequencies**
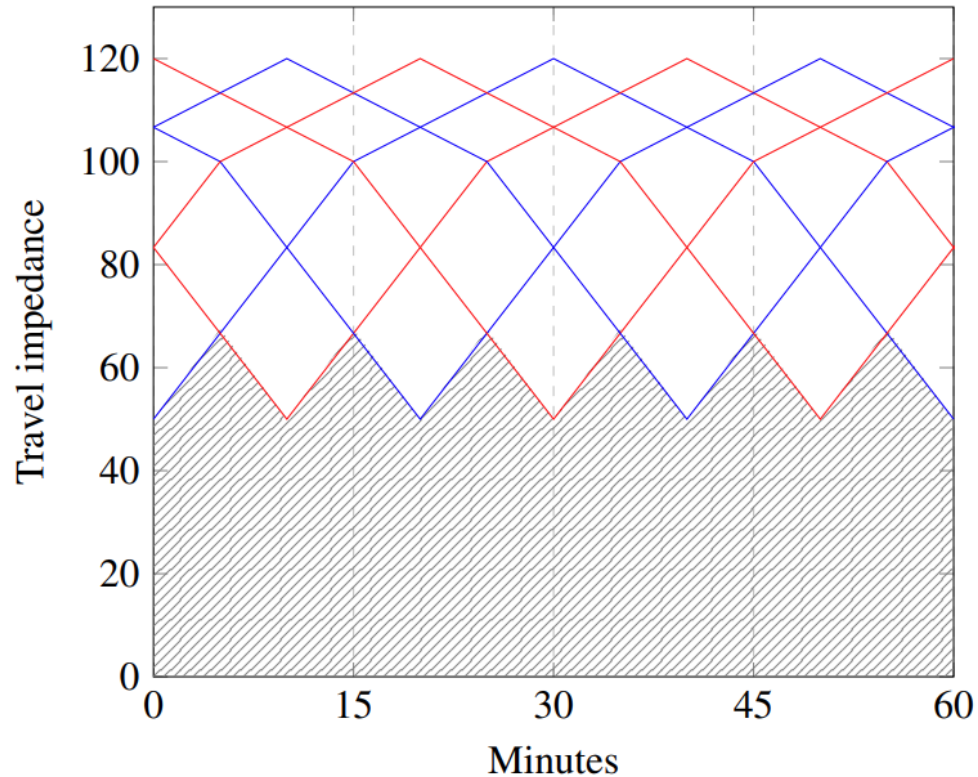
  - Using Sunday frequency levels

Rooftop method (1)

- Door to door is 50 minutes, at exact moment of departure.
- Wait time between each departure is 15 minutes.
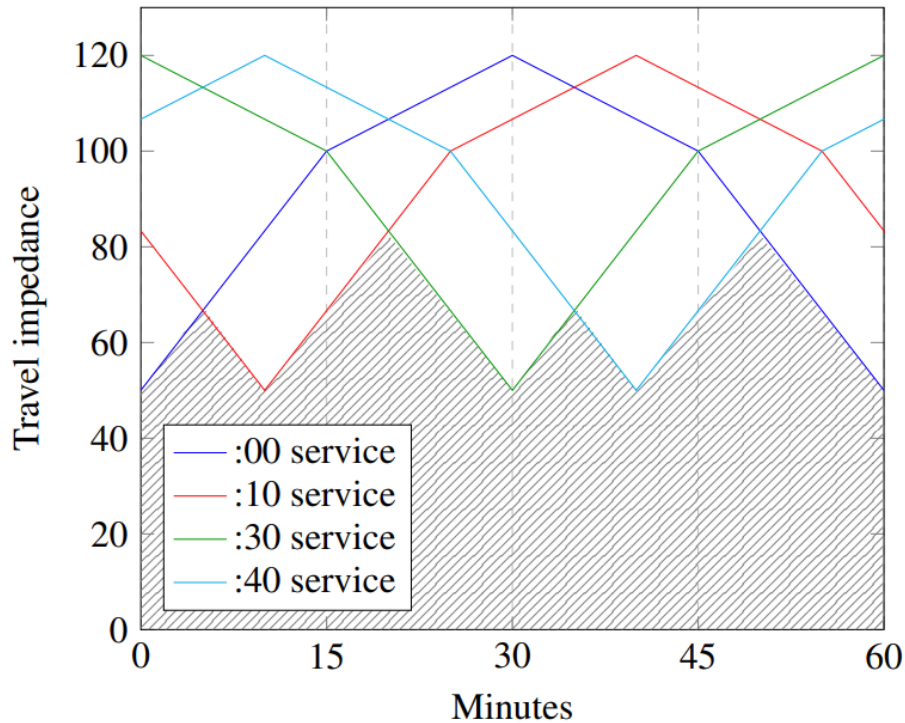- Level of service is the average surface marked below.

Rooftop method (2)

- Travel time door to door still 50 minutes.
- Higher frequency, wait time between each train now 10 minutes.
- Level of service has improved.

Rooftop method (3)

- Travel time door to door remains 50 minutes
- Irregular wait-time between each train, 10 than 20 minutes.
- Level of service worse than a regular 4 trains per hour pattern.

Case study

- **Selected addresses among zones.**
  - Randomly but weighted selected.
  - Door to door travel-time
- **Calculate all travel options between ~7000 addresses for three 2-hour ranges.**
  - Multiple days for different phases of pandemic
- **Calculate level of service using roof-top method.**

Case study

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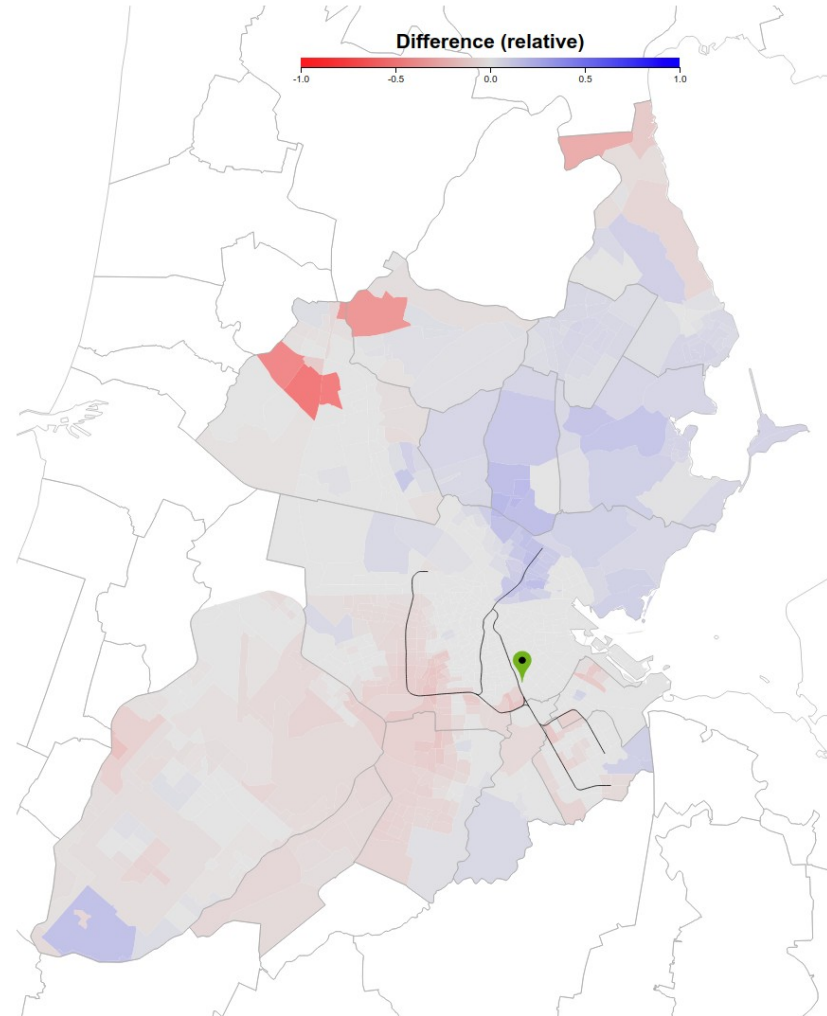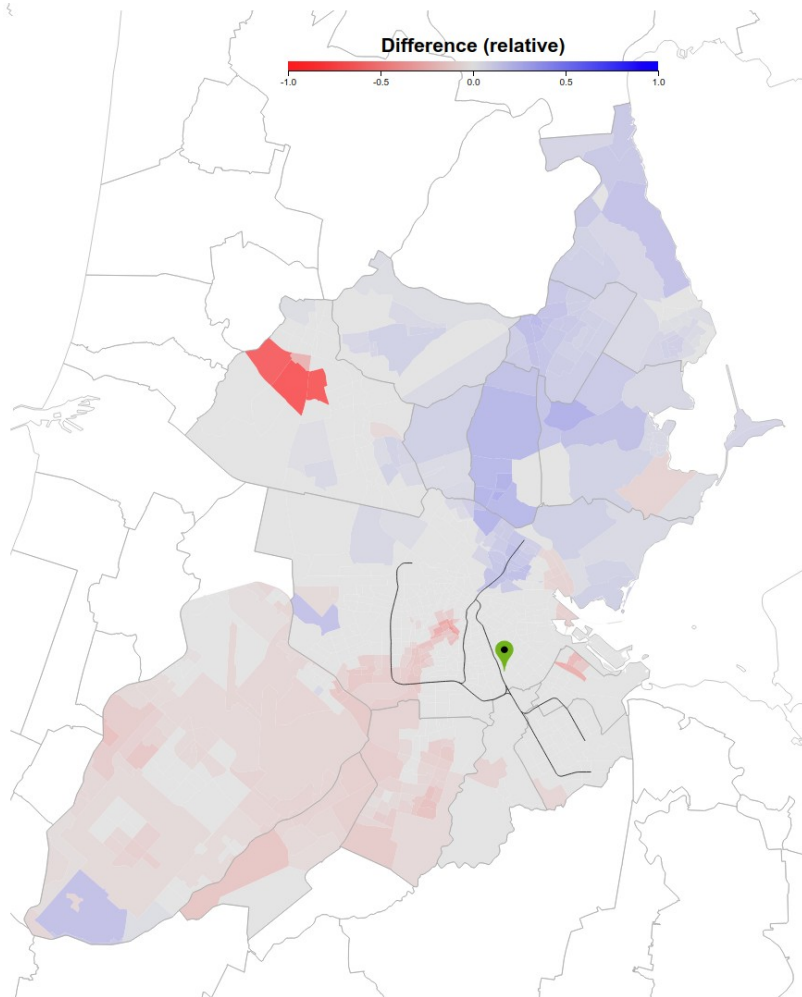- **Calculate level of service using roof-top method.**

CWI

Door to door (fastest travel-time)

Results

Level of service by rooftop

Conclusions

- **Service cuts can affect travelers in different ways.**

- **Computational power and new algorithms make it possible to conduct more advanced analyses.**

Q&A

- **Further questions or suggestions can always be emailed at** koch@cwi.nl