


# Insights for practice from the NFP75

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# Insights for practice from the NFP75

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# Acknowledgments

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The NFP75 team and consortium

# Basic issue

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**Transport is a**

**system of moving queues**

**and**

**their servers**

**with**

**elastic demand**

# Data challenge

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## Observation and measurement of

- **Context – land use and activity levels**
- **Demand – aggregate (flows)**
- **Demand – disaggregate (person, vehicles)**
- **Supply – network**
- **Supply – services**
- **Results – speeds**
- **Results – crowding**

# Where to strike the balance, but based on what ?

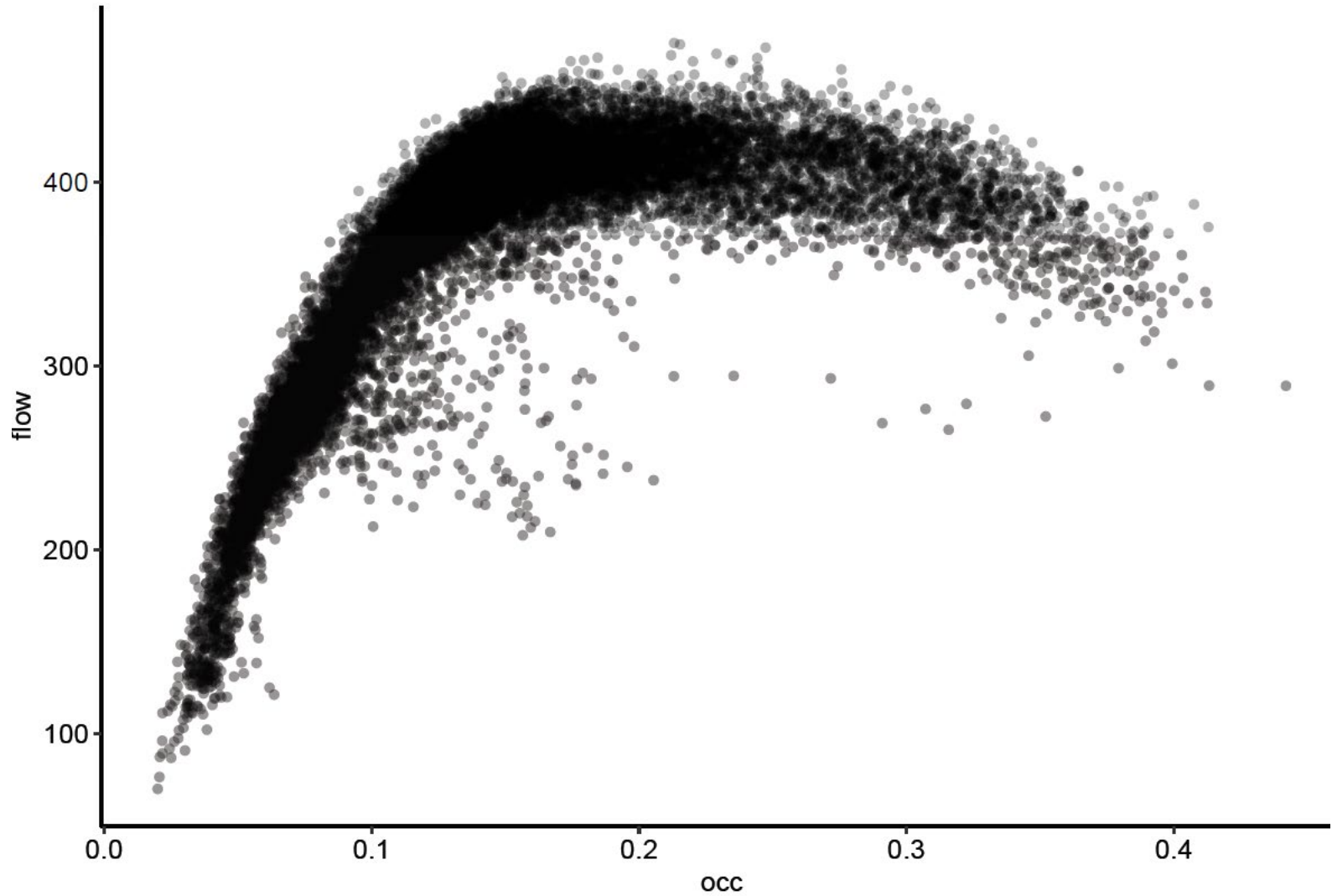
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# A model of Singapore's travel demand and traffic

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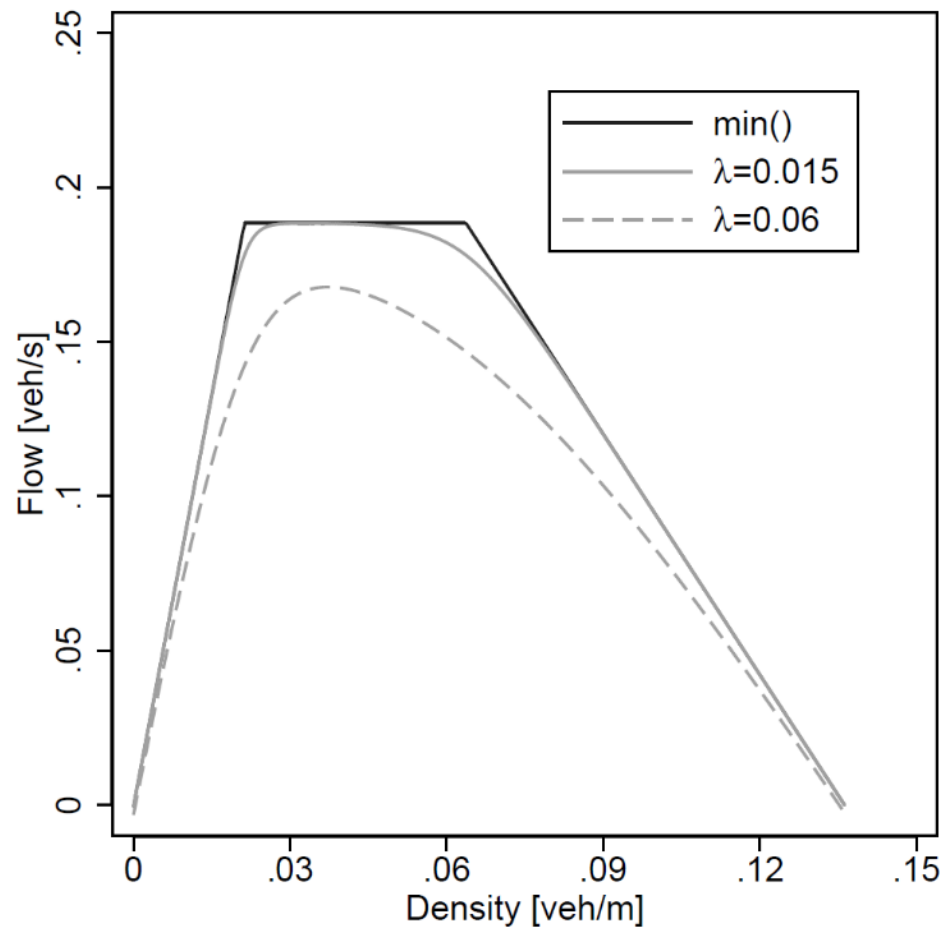
# MFD data for one year (Wiedikon, Zürich)

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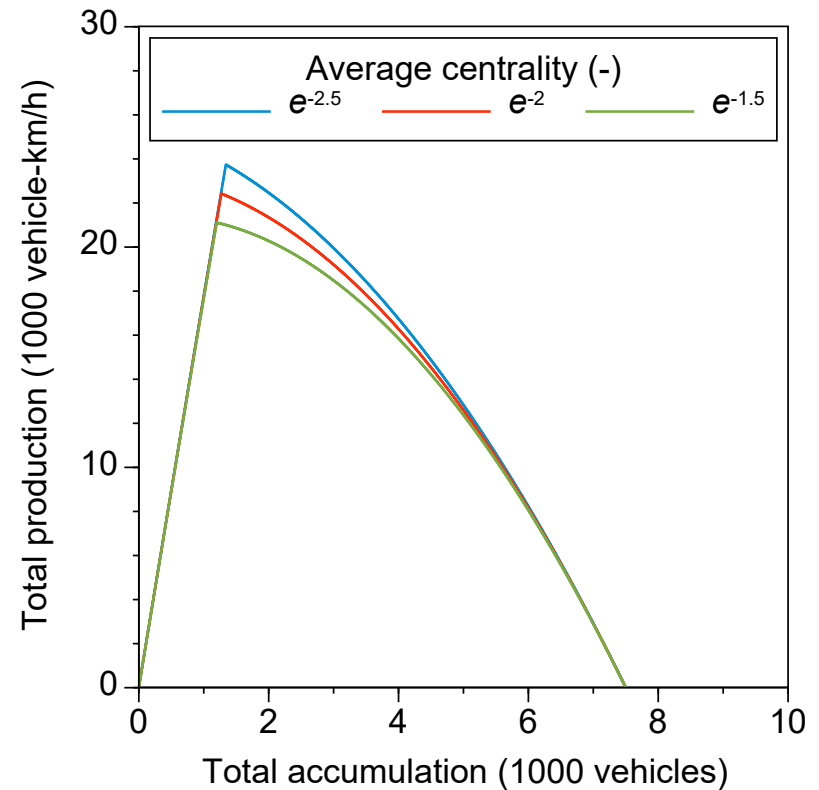
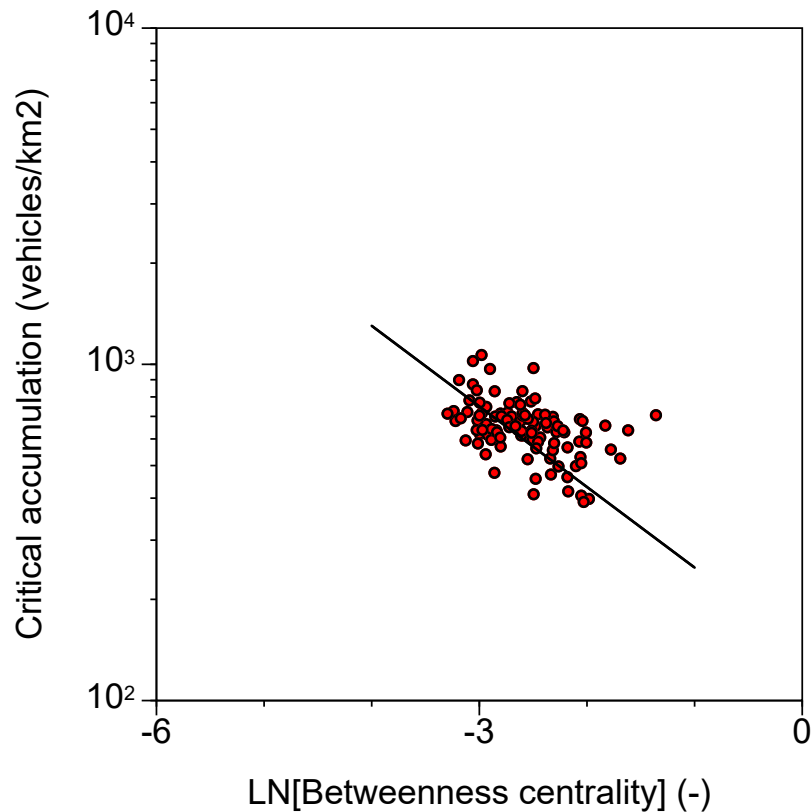


# A functional form for the MFD



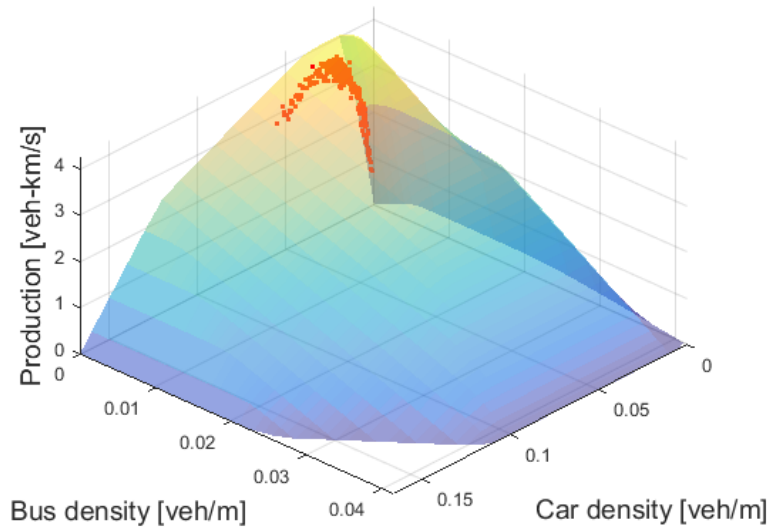
$$q(k) = \min(vk; Q; w(\kappa - k))$$
$$\approx -\lambda \ln \left( \exp \left( -\frac{vk}{\lambda} \right) + \exp \left( -\frac{Q}{\lambda} \right) \exp \left( -\frac{w(\kappa - k)}{\lambda} \right) \right)$$

# Influence of network design: Betweenness-Centrality

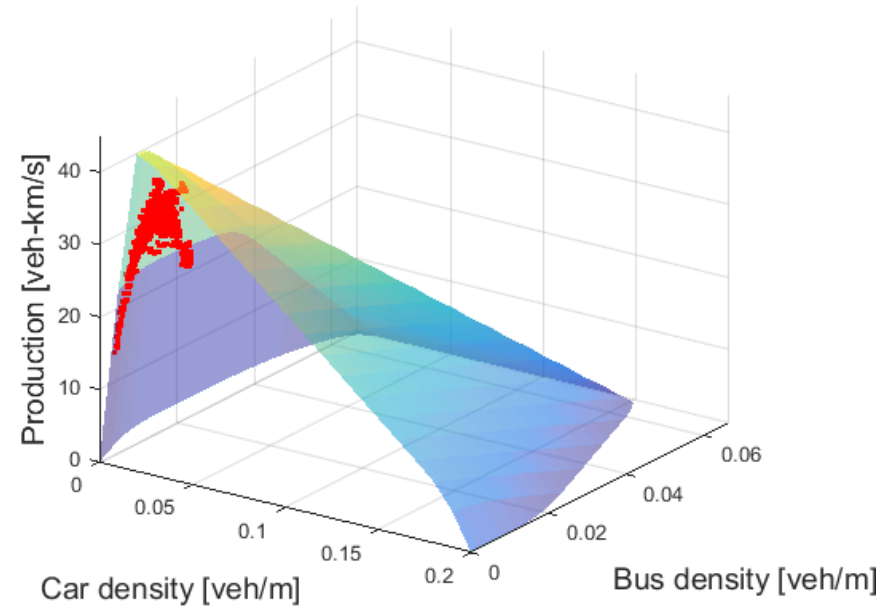


Network design measured in average betweenness centrality. Higher value indicates more bottlenecks (e.g. bridges)

# First results using the approximation approach



Zurich



London

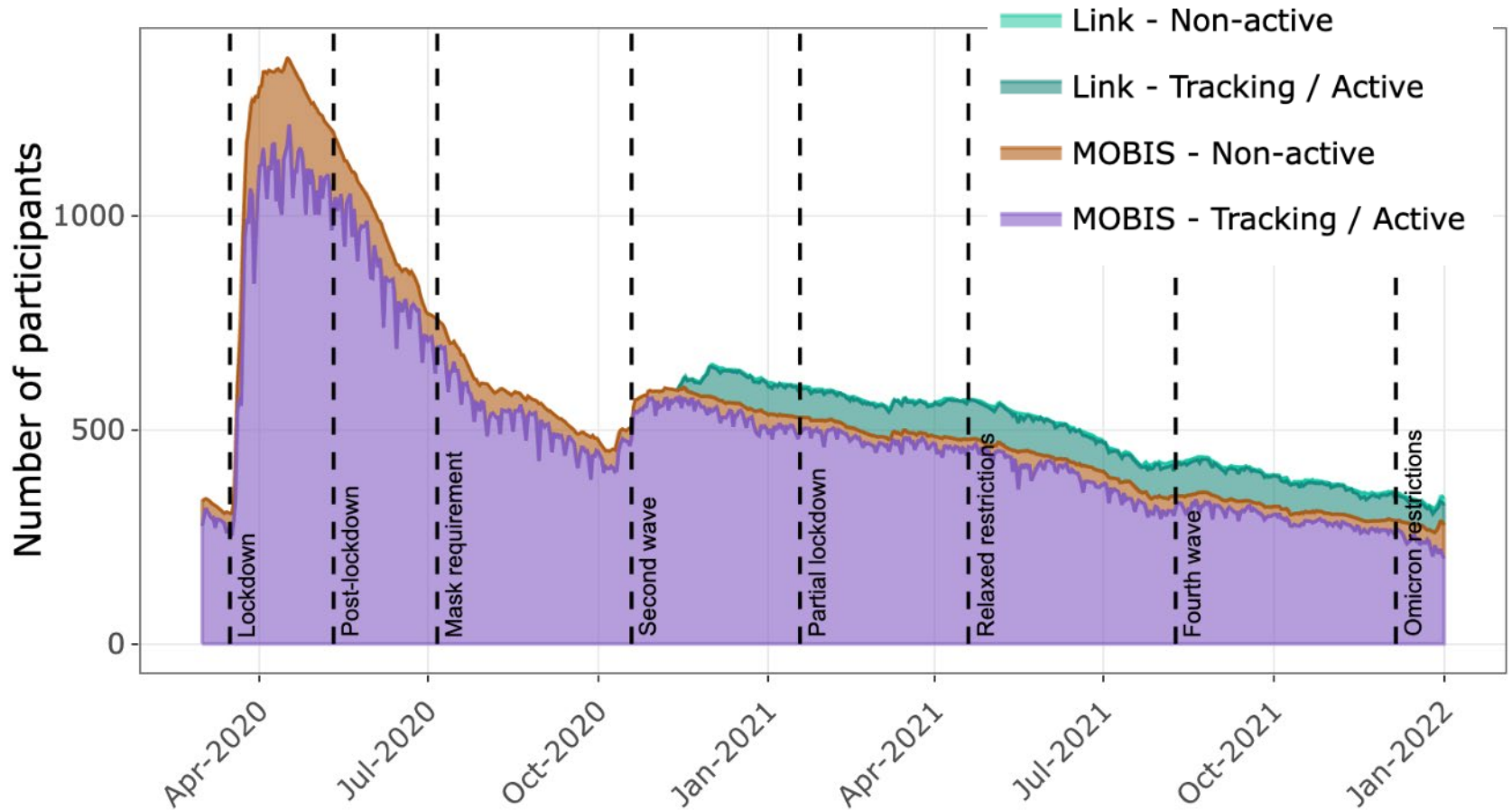
# Observing disaggregate demand

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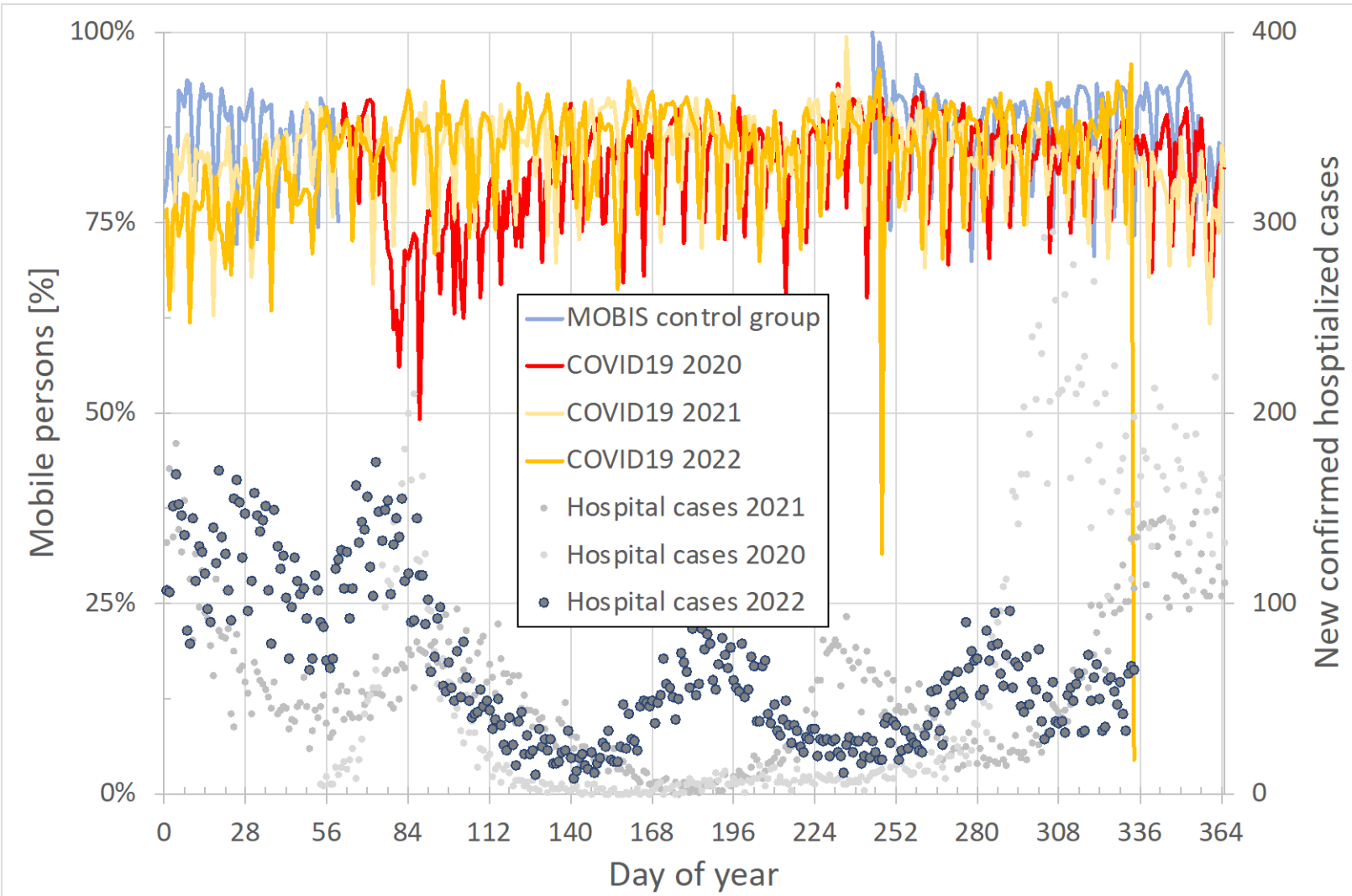
# COVID19 in Switzerland – Impressions

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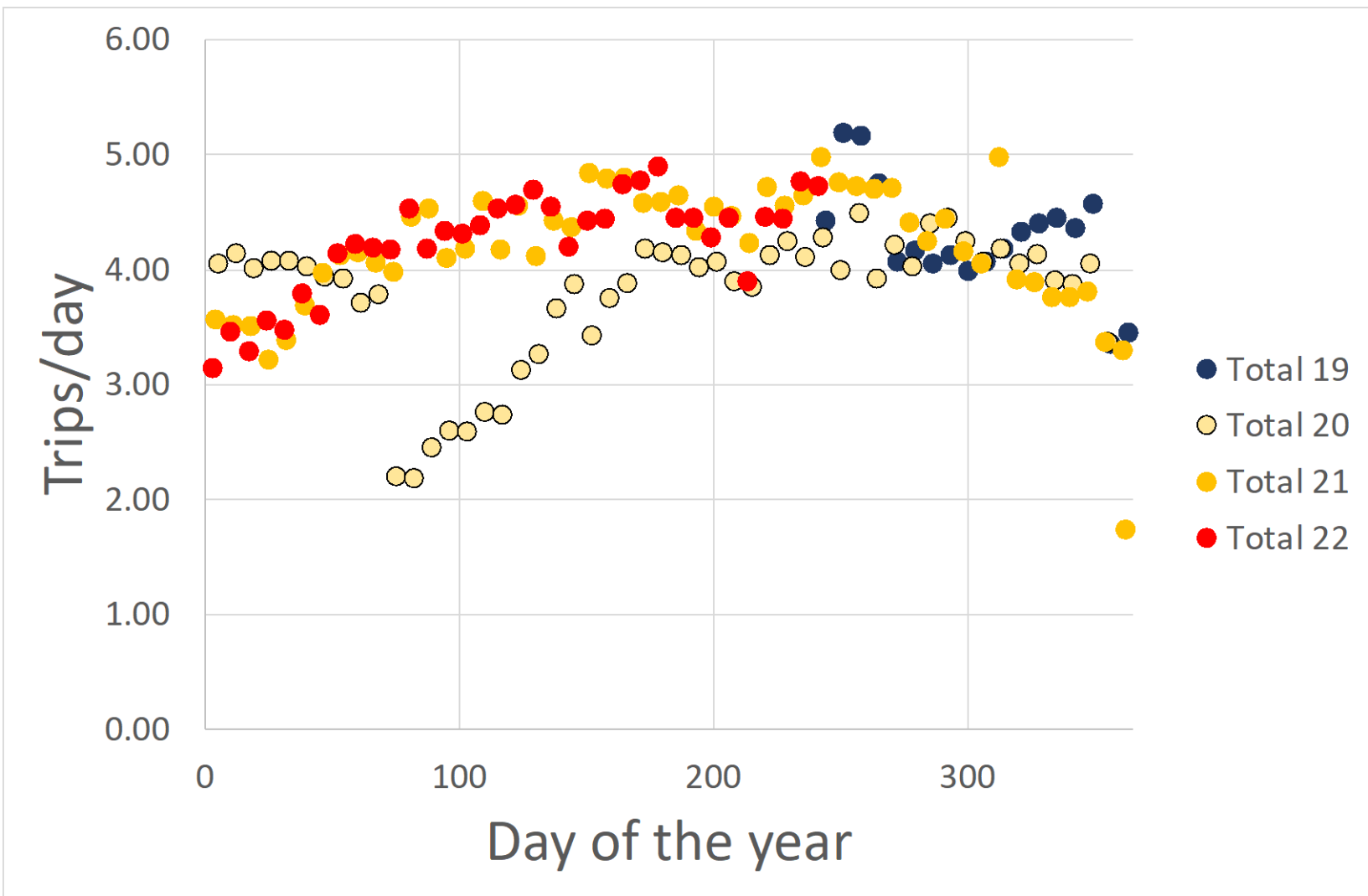
# MOBIS COVID Sample



# Share of mobiles since September 2019



# Number of trips since September 2019





# Recommendation for practice

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# Recommendation for practice

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- **Big data should be interpreted against theory**
- **ML results should be interpretable (Shapley)**
- **Check against standard approaches**
- **GSM data would be great, if you could access to it**
- **GPS data helps and corrects human sources**

# Questions ?

