

# **Commercial traffic 2.0 - Analysis and recommendations of delivery strategies for the CEP industry in urban areas**

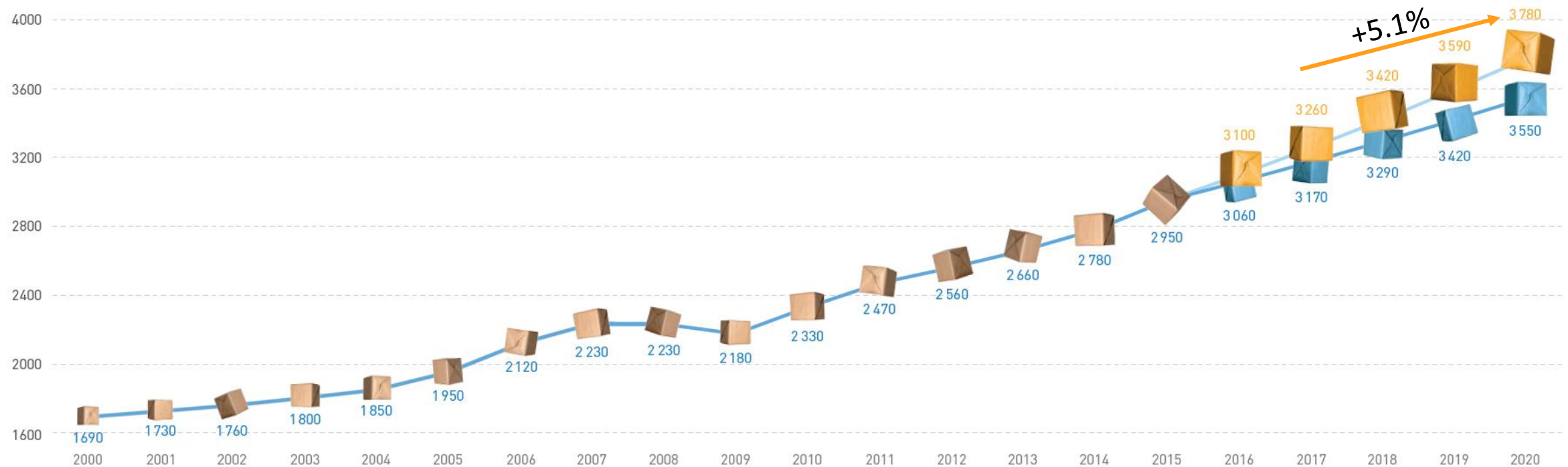
**Silke Höhl**

**U!REKA, Edinburgh, November 20<sup>th</sup> – 21<sup>st</sup>, 2017**

## A global urban issue

CEP companies and local authorities have to face the challenge of **managing the growing traffic** in a more efficient and greener way in addition with **better adjustment to local needs**.

Due to limited capacity concerning the streets as well as the general public areas in the cities a lot of **conflicts of use** occur.



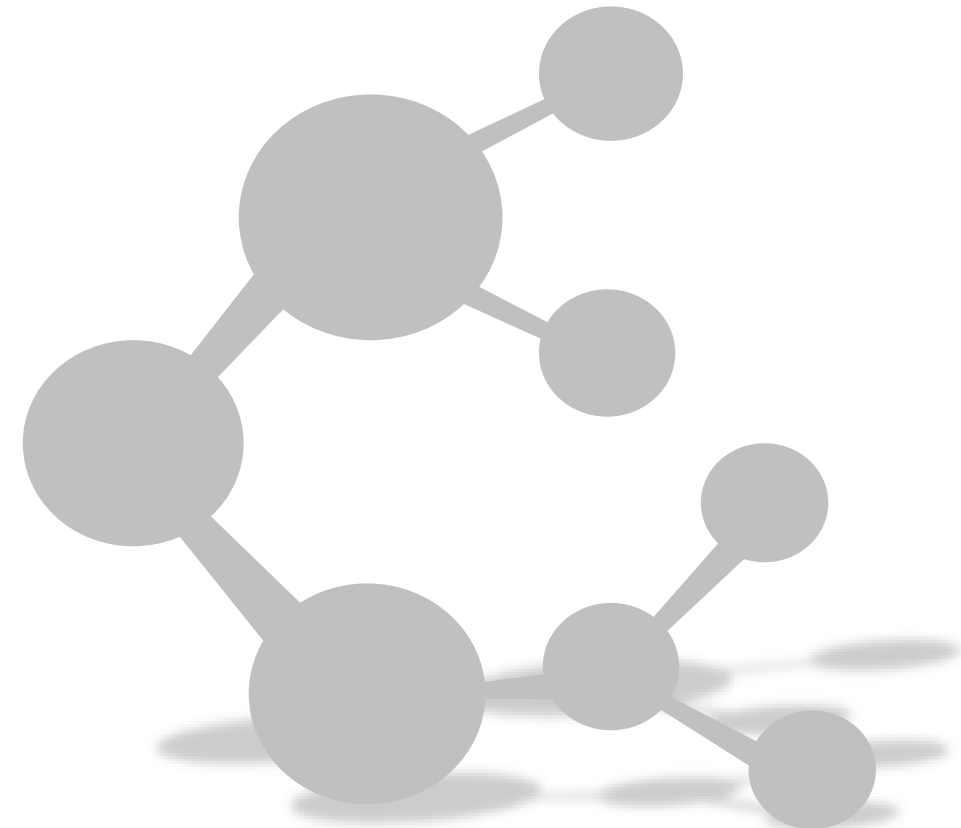
## A global urban issue

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- Emissions are a big urban problem.
- CEP companies started to develop innovative strategies.
- A data base is necessary

## Objective of our research project

- Analysis of distribution concepts used by CEP companies
- Aim: **develop city district related delivery strategies**



# Methodology

## OBSERVATIONS

- **Interviews** with experts of CEP-companies
- **Attending** delivery routes (daily shifts)
  - 4 CEP-companies
  - 40 shifts (>> 400h)
  - 7133 parcels
  - 3738 customers
  - 2054 stops
- Questionnaire & GPS-tracking

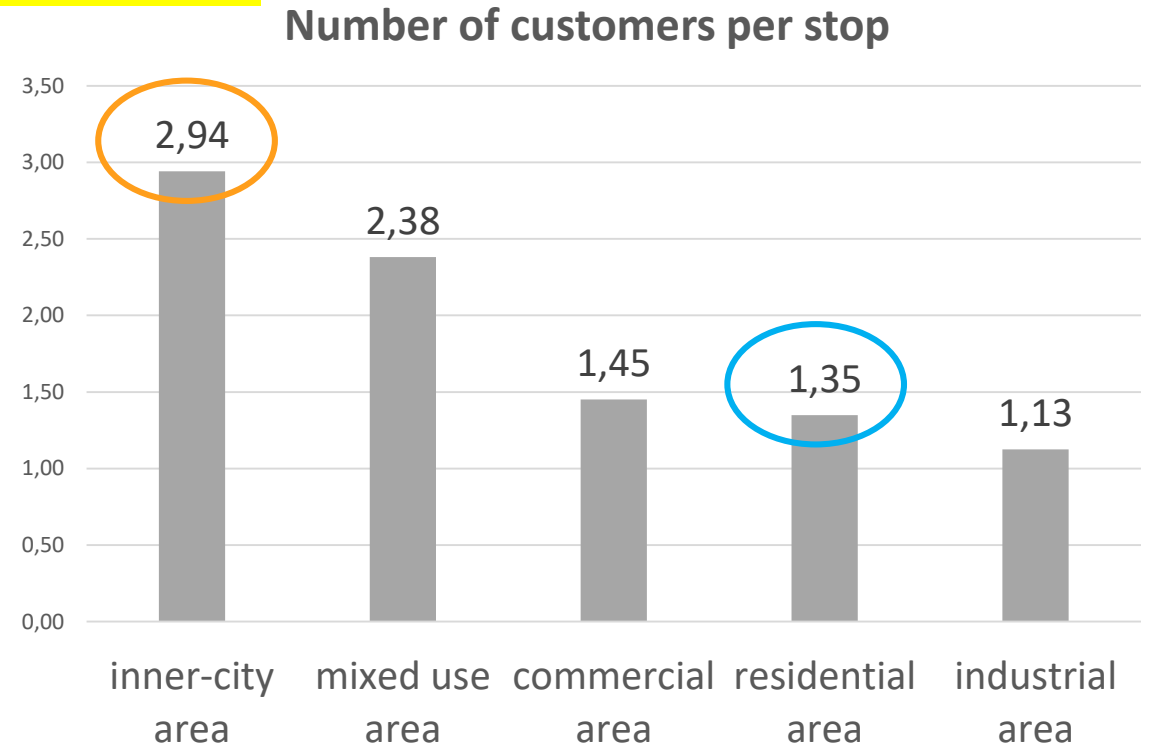
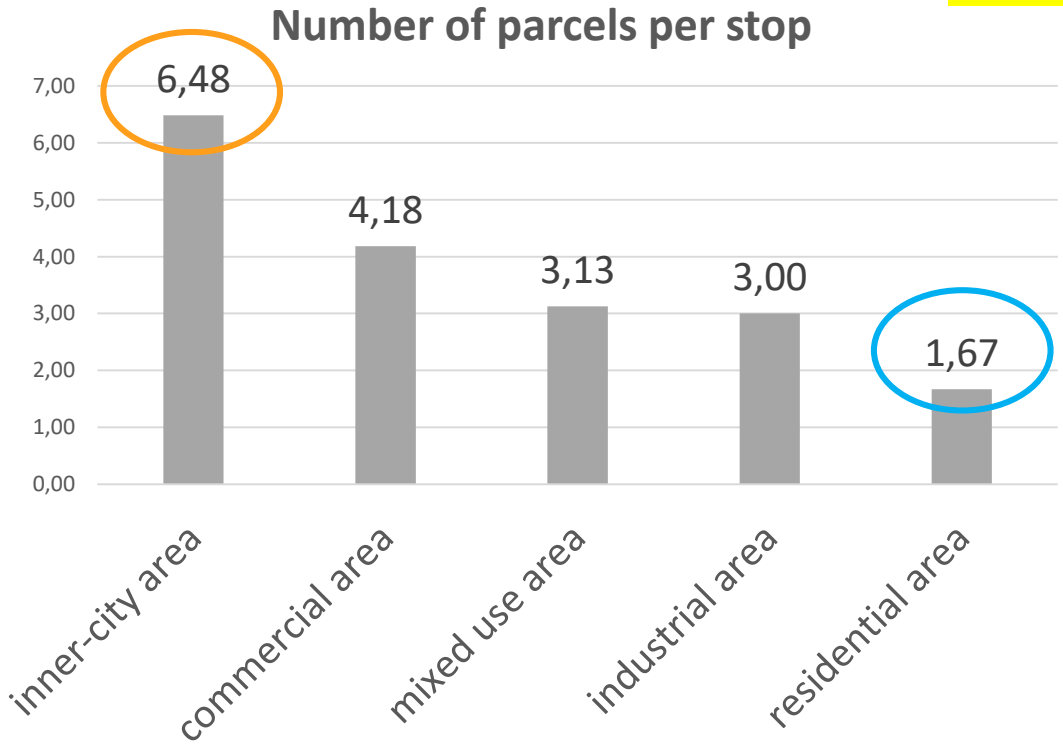
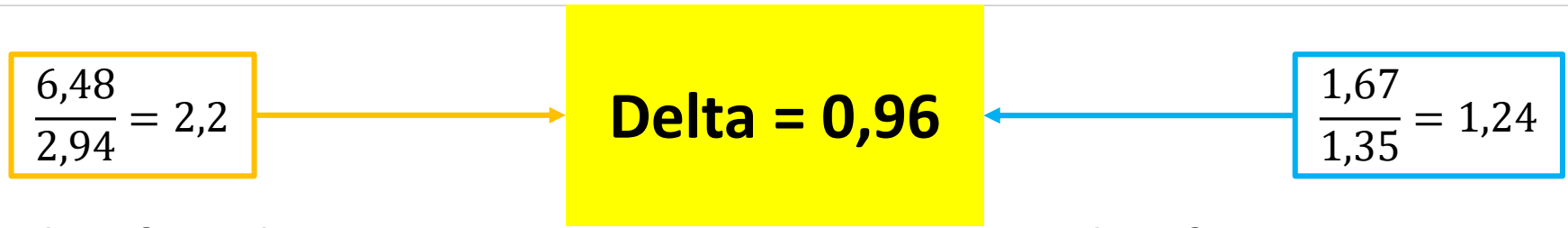
## CLUSTERING

- A **cluster of districts** delivered by the CEP companies was generated.
- Focus is set on five types of districts: **inner-city area, mixed use area, residential area, commercial area, industrial area**
- A survey of identified hotspots was conducted.



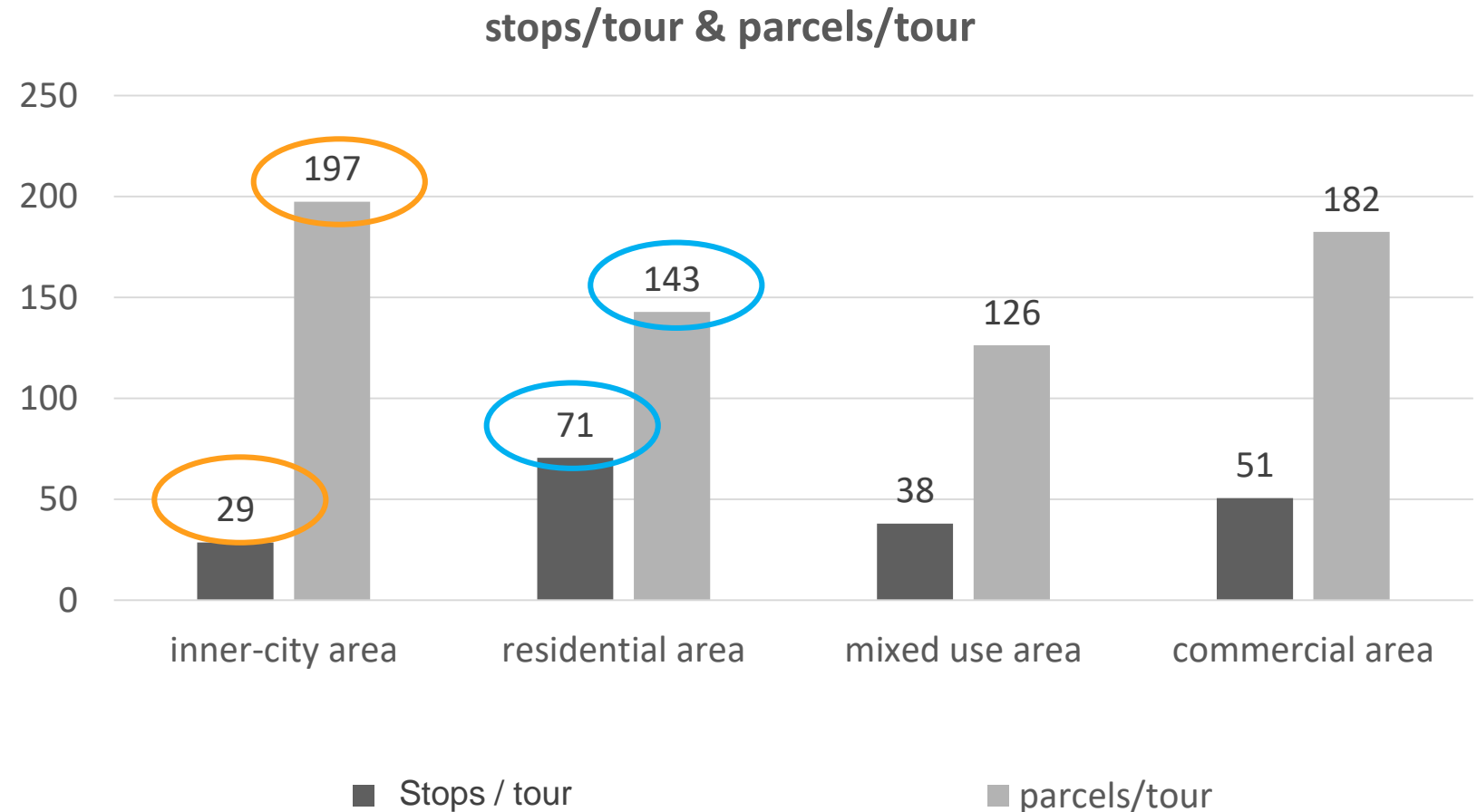
## RECOMMENDATIONS

# Customers in inner-city areas got almost twice as much parcels than in residential areas



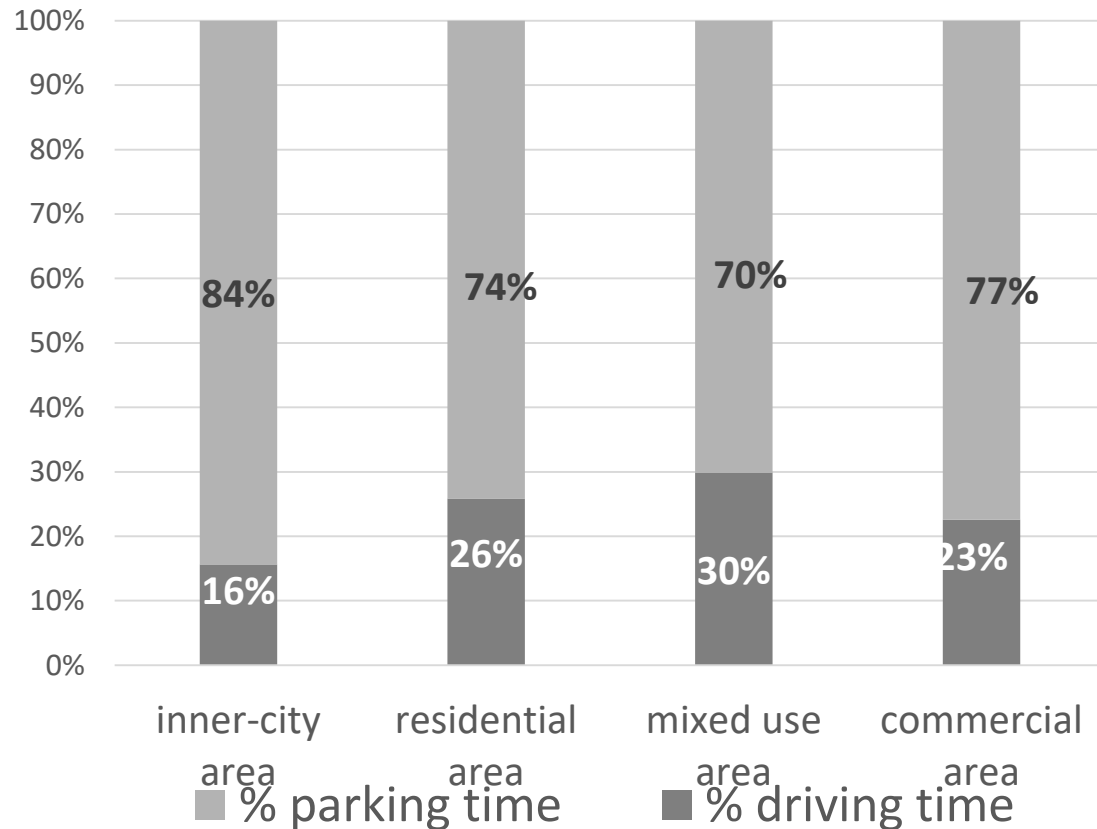
## High productivity of parcels per stop in inner-city area

- Less stops in inner-city and mixed use areas compared to residential & commercial areas

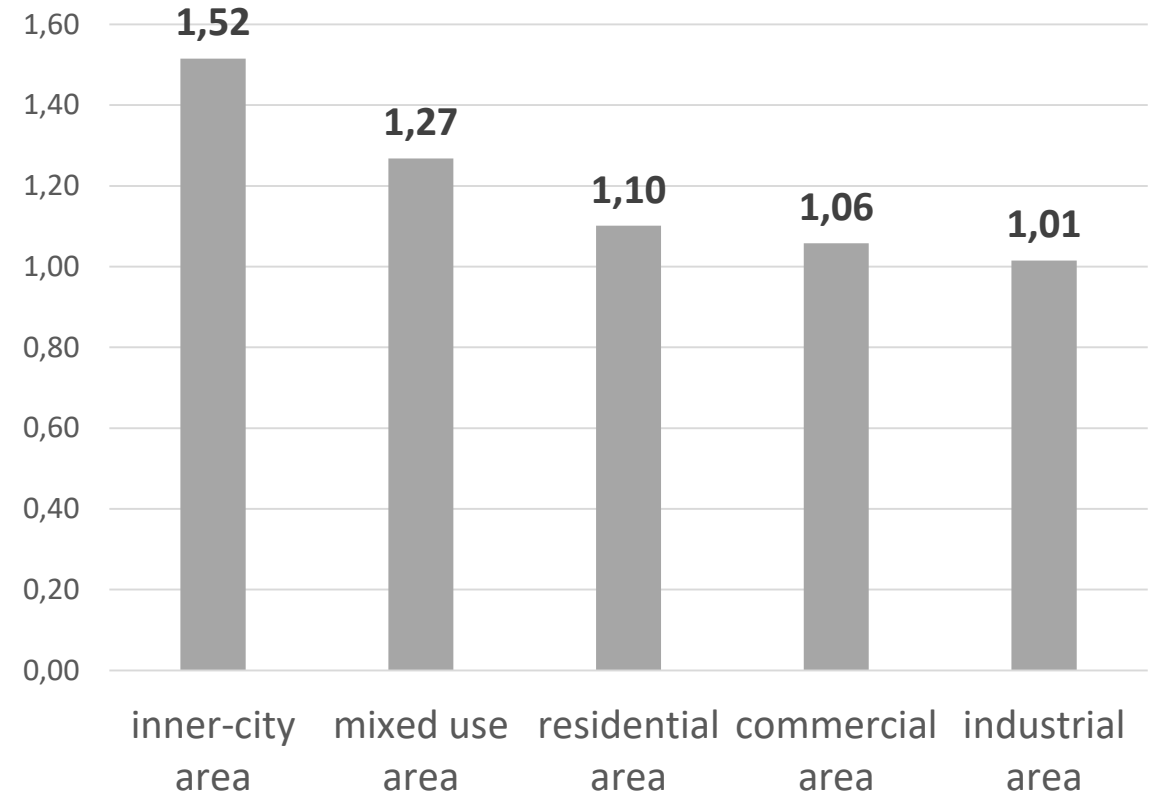


## The driving time is between 16% and 30%

### driving time vs. parking time

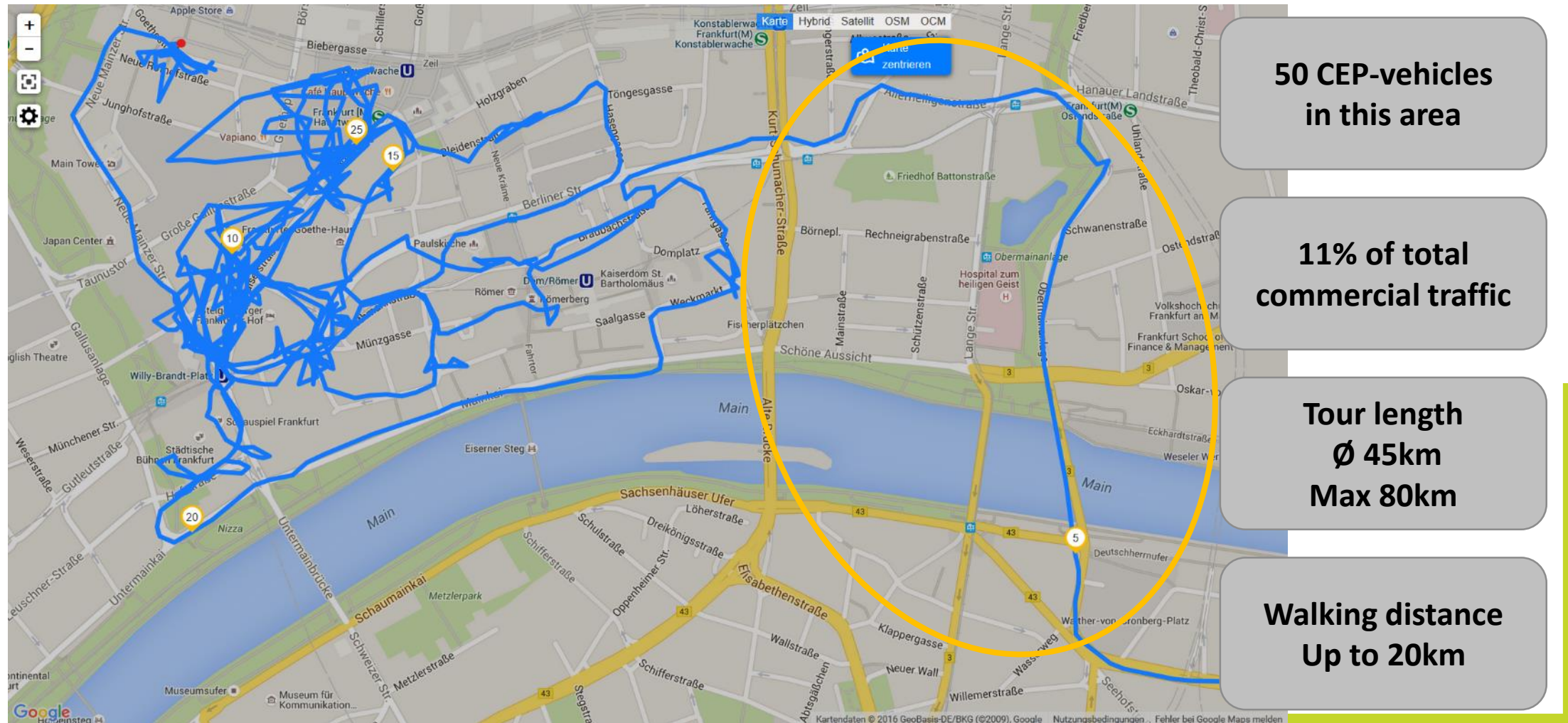


### number of walking routes per stop



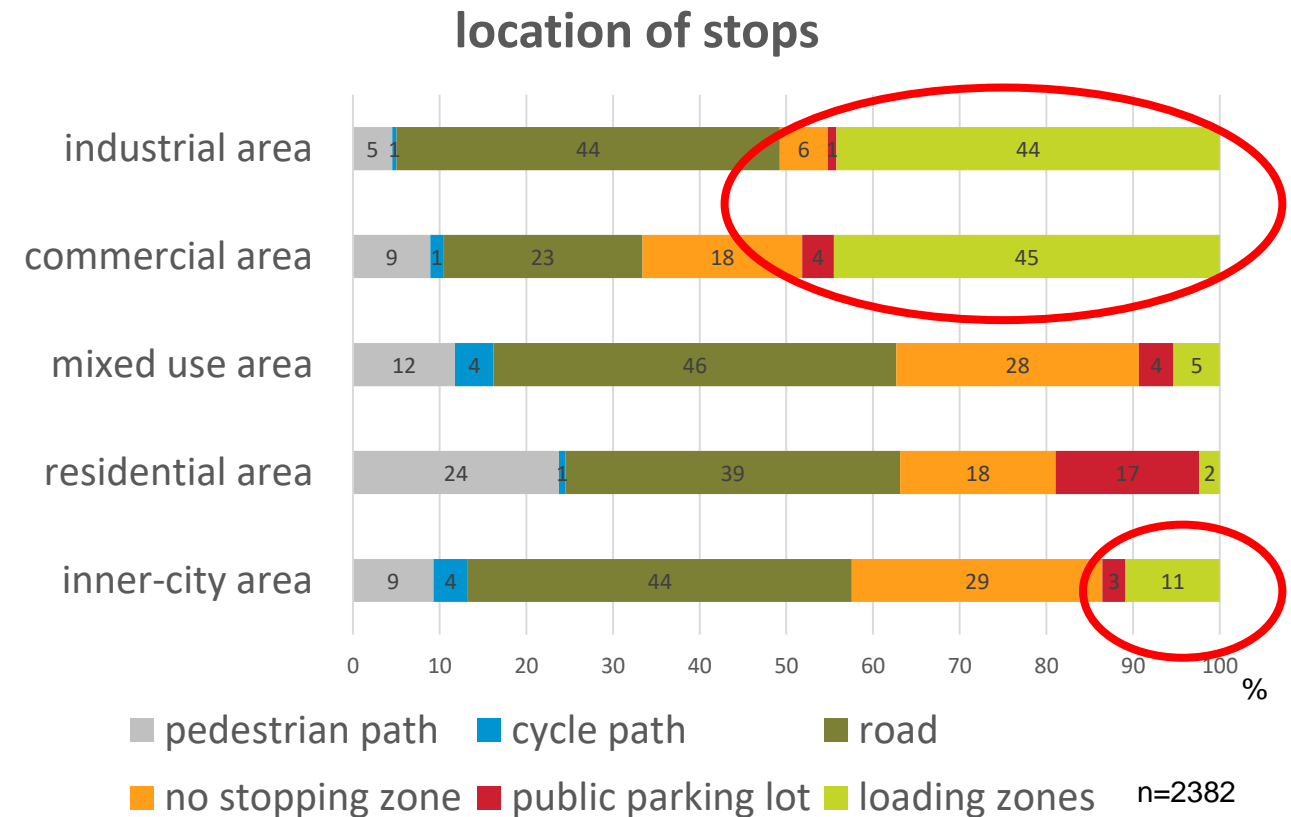


## Screenshot of a tracked tour in the city center of Frankfurt

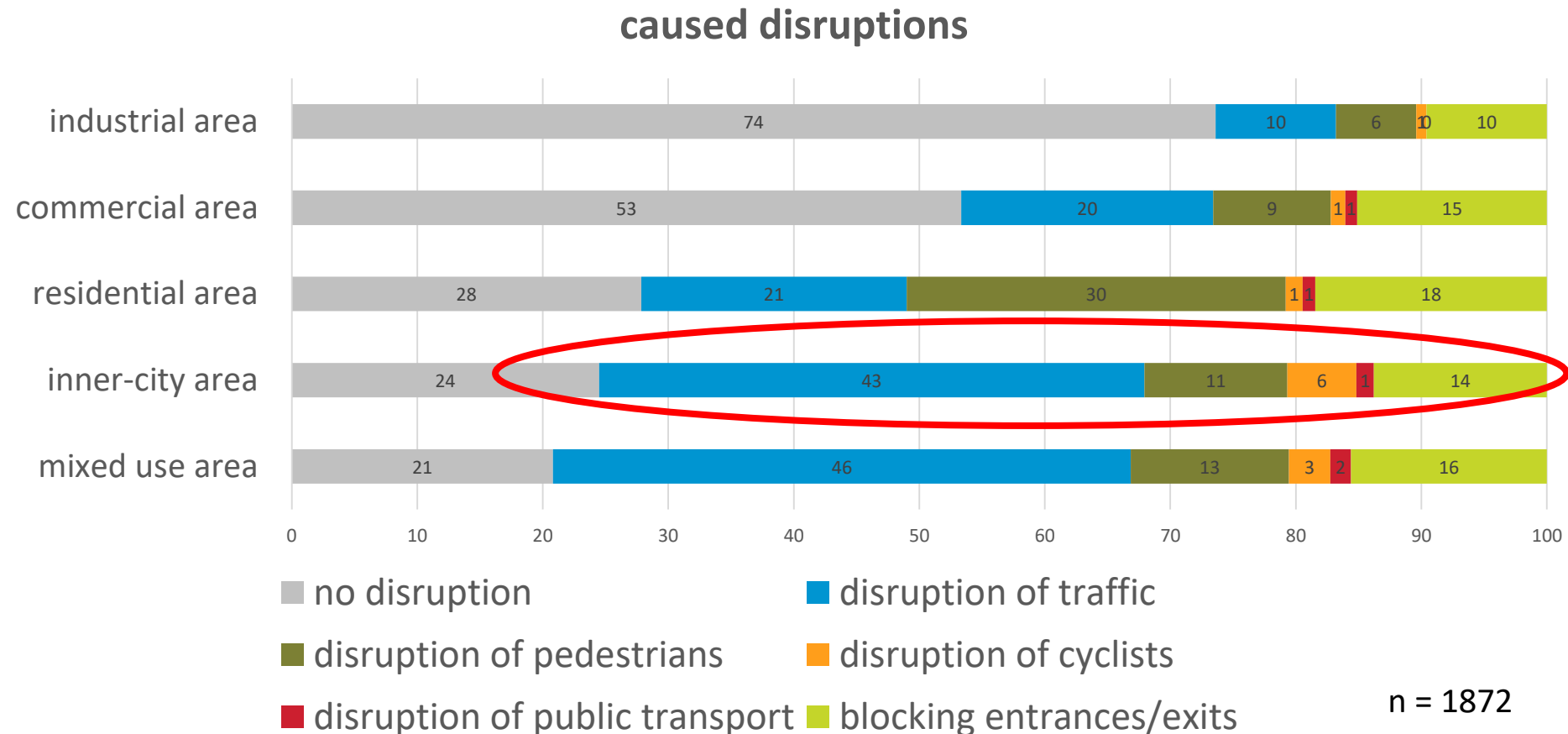


## Only 14% are parking legal in inner-city areas

- Most of the stops take place on the road.
- Drivers usually do not look for parking places.

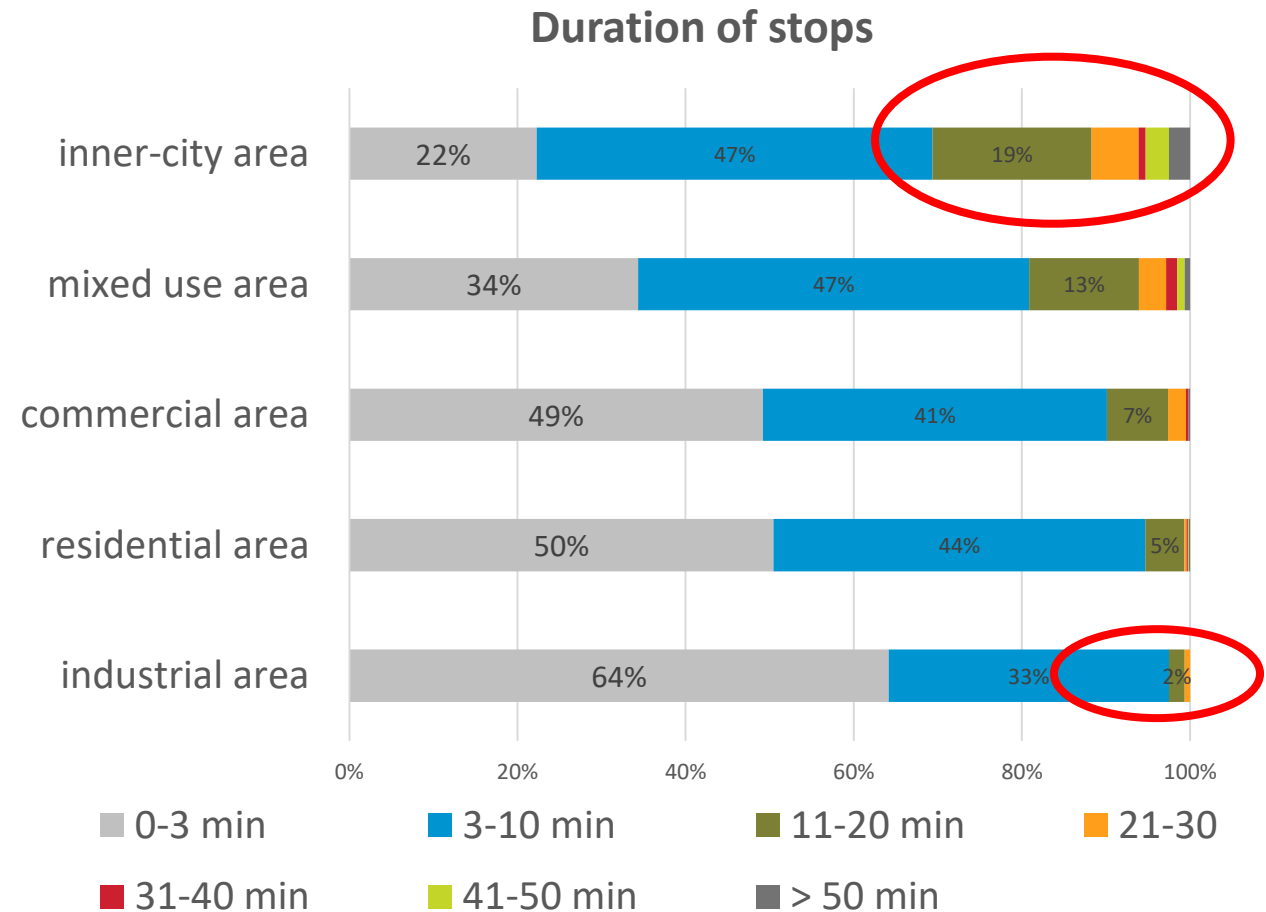


## 76% of the stops in inner-city areas are not according to road traffic regulations




## Whenever you find a parking spot, you stop, leave and return

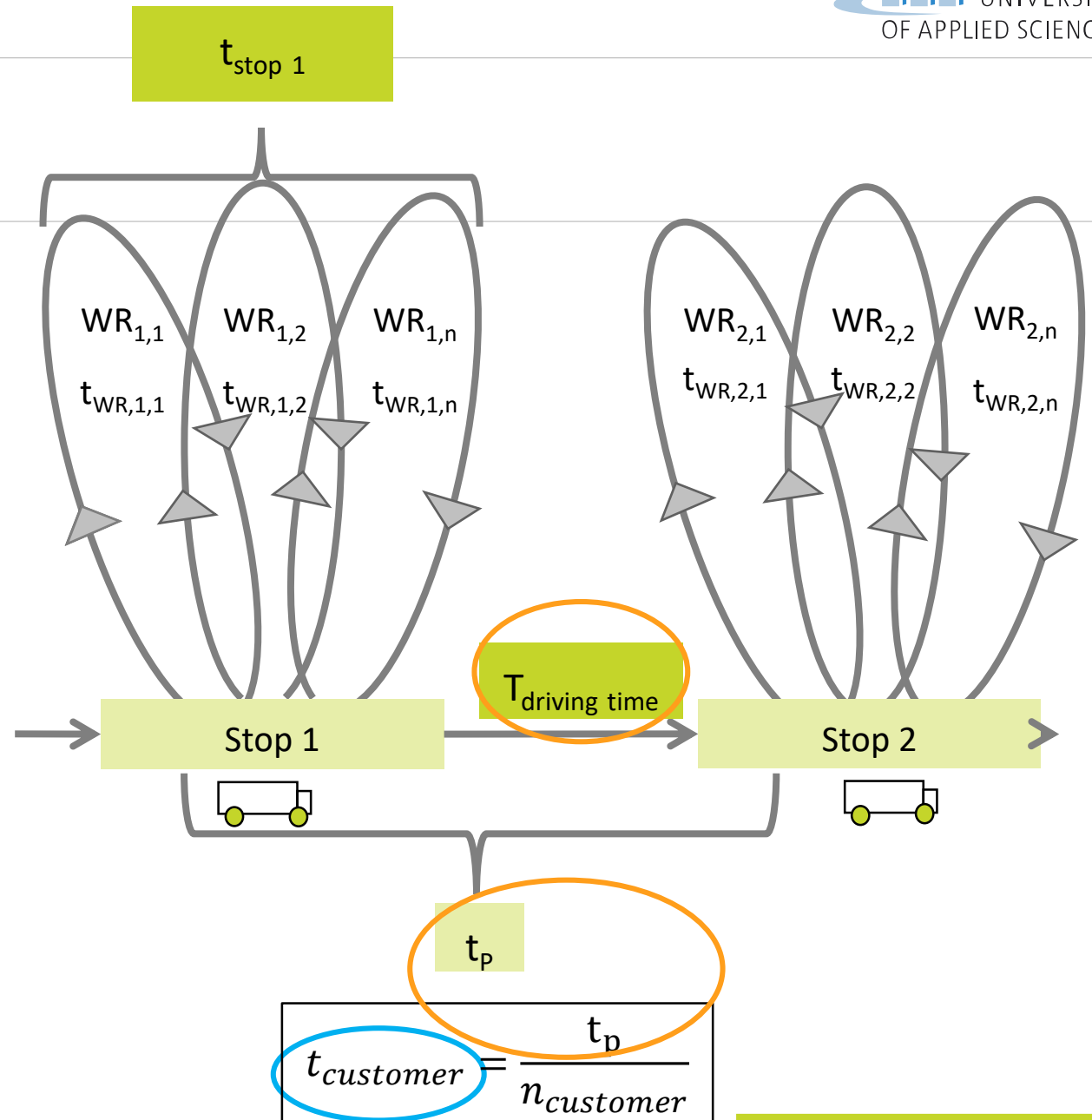
- Industrial and residential areas register the most stops of shortest time.
- stops in inner-city and mixed use areas took longest time



# Efficiency rises by reducing driving time

Remember: 84% parking 16% driving time!

efficiency 



## Facts – inner-city area

3 times more parcels  
per stop than in  
residential areas

Twice as much  
customers per stop  
than in residential  
areas

Very high  
productivity

Long walks

**84% parking time vs.  
16% driving time**

**Only 14% are parking  
legal**

Up to 76% are  
causing disruptions

**31% are parking  
longer than 11  
minutes**

**Very similar to mixed use  
areas**

## A two stage distribution strategy for inner-city and mixed use areas

- **First stage (depot to district):**
  - According to short distances in between delivery area and depot, stage one should be performed via electric vehicles (leading aspect: distance in between depot and district)
    - Decrease of emissions
- **Second stage (within district):**
  - eCargoBike is suitable for the density of building, for one way routes and the timely limited pedestrian zone



Source: all pictures taken by Silke Höhl


## Further observations

- Shelf spaces in vehicles: easy locating of parcels due to structured shelf space
- reachability of private customers is a major aspect (24/7 delivery models as packing stations, package boxes/butlers and trunk delivery)  
-> 72% at recipient / 25% at neighbors / 2,5% 2<sup>nd</sup> try
- All cars are fully loaded



## Critical appraisal

- Globalization will continue to grow. E-commerce will increase and that goes along with an increase in the volume of parcels. Therefore **handling of parcels** needs to be designed **efficient** for every participant of the process and especially for the environment.
- The results represent only first indications.
- **Traffic situation around the parked vehicle** could not be observed since there was only one attendant per vehicle. Two attendants per vehicle would have been necessary.
- Due to the cluster a **transferability** to other cities is given.
- **Huge differences between CEP companies** regarding processes in packing vehicles, working shifts and wages were identified.
- Further research needs regarding **locations of micro depots** and the **efficient design of two stage distribution strategies**.



## Wirtschaftsverkehr 2.0

Analyse und Empfehlungen für Belieferungsstrategien  
der KEP-Branche im innerstädtischen Bereich

Frankfurt University of Applied Sciences  
Fachbereich 1: Architektur · Bauingenieurwesen · Geomatik und Fachbereich 3: Wirtschaft & Recht

Wissen durch Praxis stärkt

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This project (HA-Projekt-Nr.: HO 2016/05) was supported by funds of the state of Hesse and HOLM-funds using the line of funding „innovations in logistics and mobility“ of Hesse’s Ministry of Economics, Energy, Transport and Regional Development.



## Thank you! - contact

### Frankfurt University of Applied Sciences

#### *Faculty Business and Law*

Fachgruppe Logistik



Prof. Dr. Kai-Oliver Schocke



Silke Höhl, M.Sc.

[silke.hoehl@fb3.fra-uas.de](mailto:silke.hoehl@fb3.fra-uas.de)

#### *Faculty Architecture • Civil Engineering • Geomatics*

Fachgruppe Neue Mobilität



Prof. Dr.-Ing. Petra Schäfer



Antje Quitta, M.Eng.

Frankfurt / airport  
House of Logistics and Mobility



**Thank you  
for your  
attention!**

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