

# PREDICTING LAST-MILE PERFORMANCE

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## During this presentation

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- Introduction
- Methods used
- Results
- Recommendations
- Questions

## Introduction

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- What is the research about
- The aim of the research
- The current situation

## Methods Used

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- Acquiring the data
- Cleaning the data
- Analyzing the data

$$Z_0 = \frac{P_1 - P_2}{\sqrt{p(1-p) \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

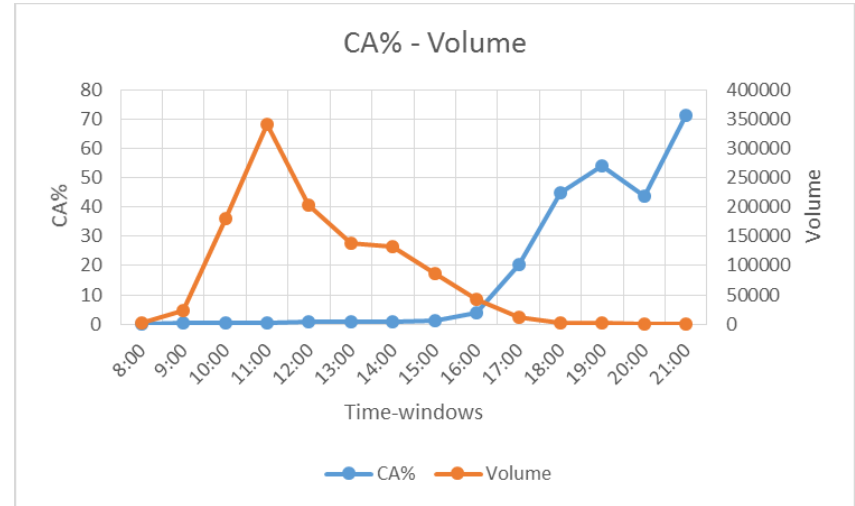
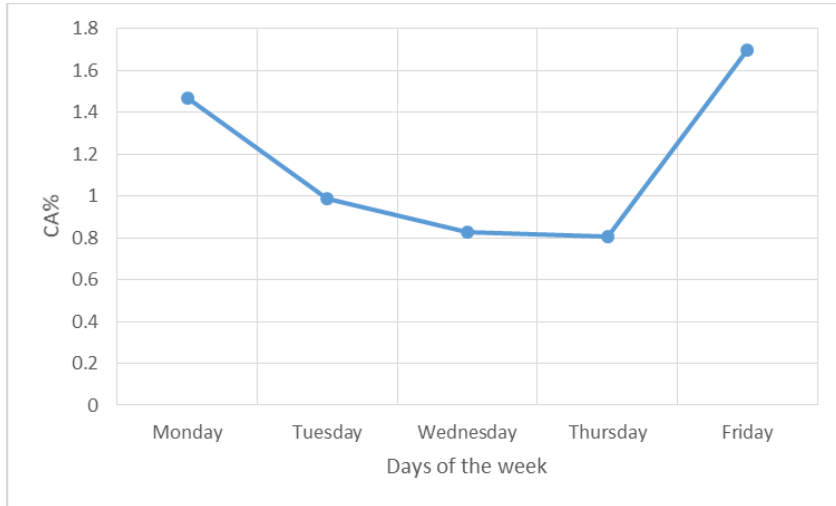
- $Z_0$  is the z-score
- $P_1$  is the value to be tested
- $P_2$  is the average value of all variables except the one to be tested
- $n_1$  is the number of data points of the value to be tested
- $n_2$  is the number of data points of all values except the one to be tested

## Results

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- Weekdays and time-windows
- Dates
- Months
- People per household
- Low income households
- Population density
- Zip code area

# Weekdays and time-windows B2B



Time	CA	OK	Grand Total	CA%
09:00	92	22657	22749	0.40
10:00	918	179709	180627	0.50
11:00	1547	339819	341366	0.45
12:00	1397	202150	203547	0.68
13:00	1075	136231	137306	0.78
14:00	1209	130569	131778	0.91
15:00	1058	85487	86545	1.22
16:00	1562	39901	41463	3.76
17:00	2555	10025	12580	20.31
18:00	1200	1470	2670	44.94
19:00	650	549	1199	54.21
20:00	419	536	955	43.87
21:00	102	41	143	71.32

# Weekdays and time-windows B2C



## Dates B2B

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Event
Carnaval Monday
Carnaval Tuesday
Good Friday
Day after king's day
Liberation day
Day after ascension day
Christmas days
2 January

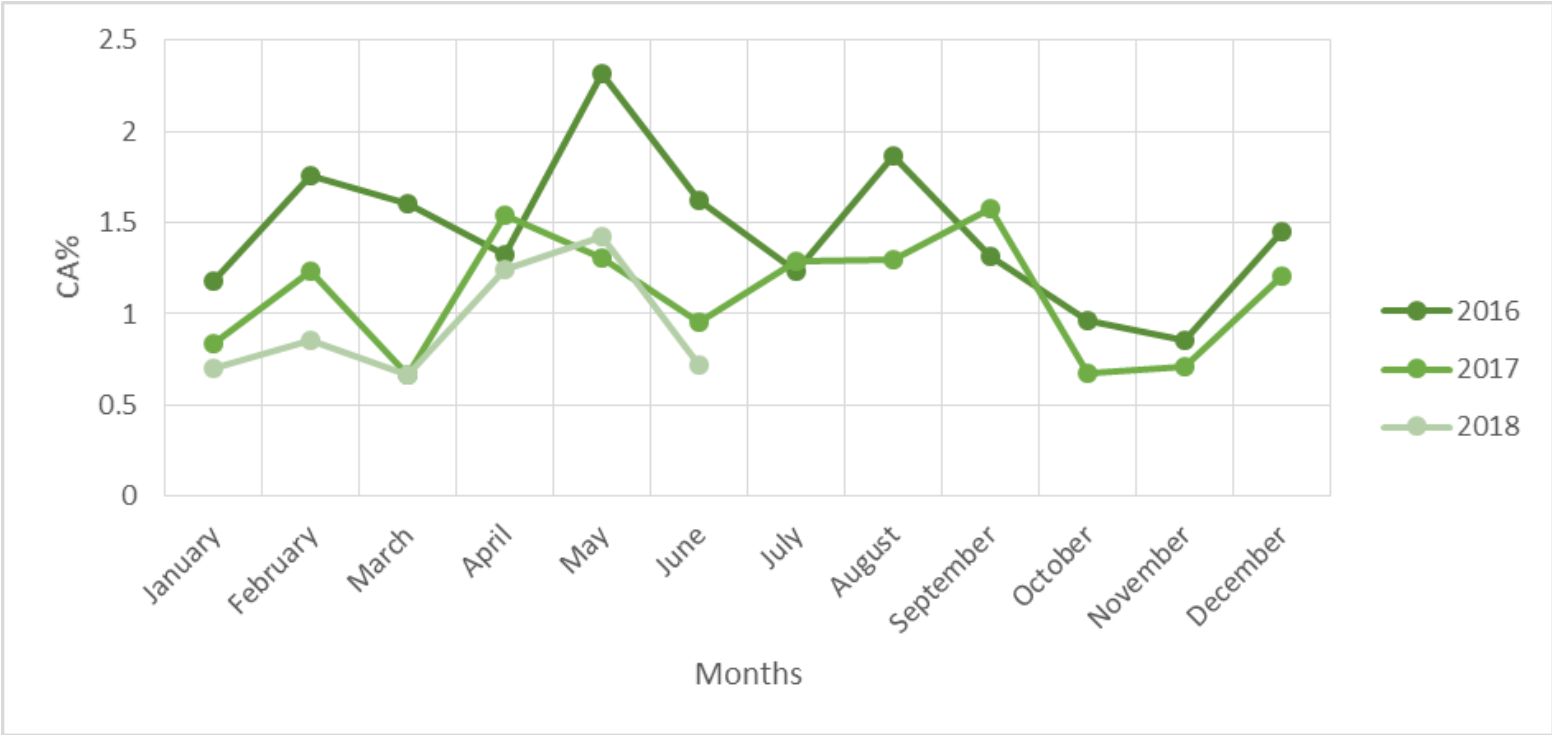


## Dates B2C

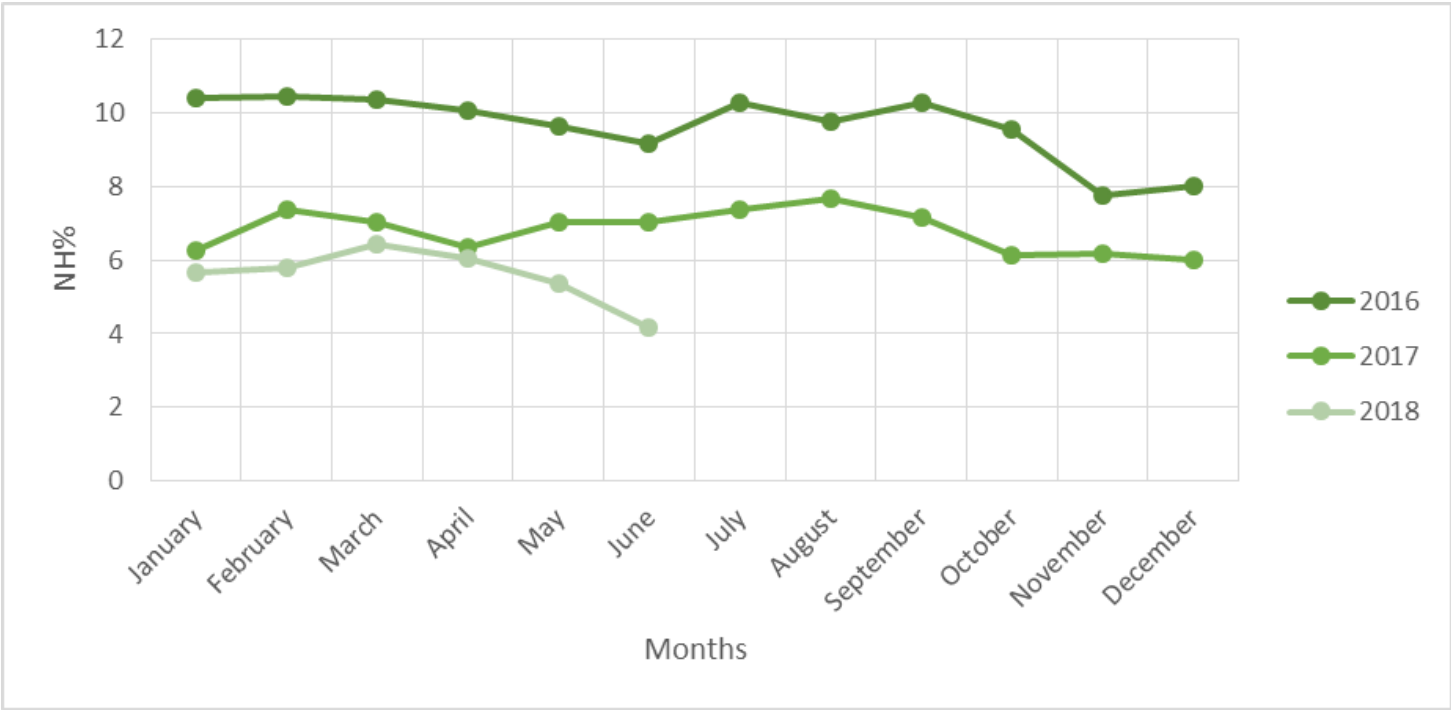
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Date	NH%	Event
4-1-2016	13.17	No apparent explanation
23-3-2016	41.10	No apparent explanation
31-3-2016	40.82	No apparent explanation

# Months B2B

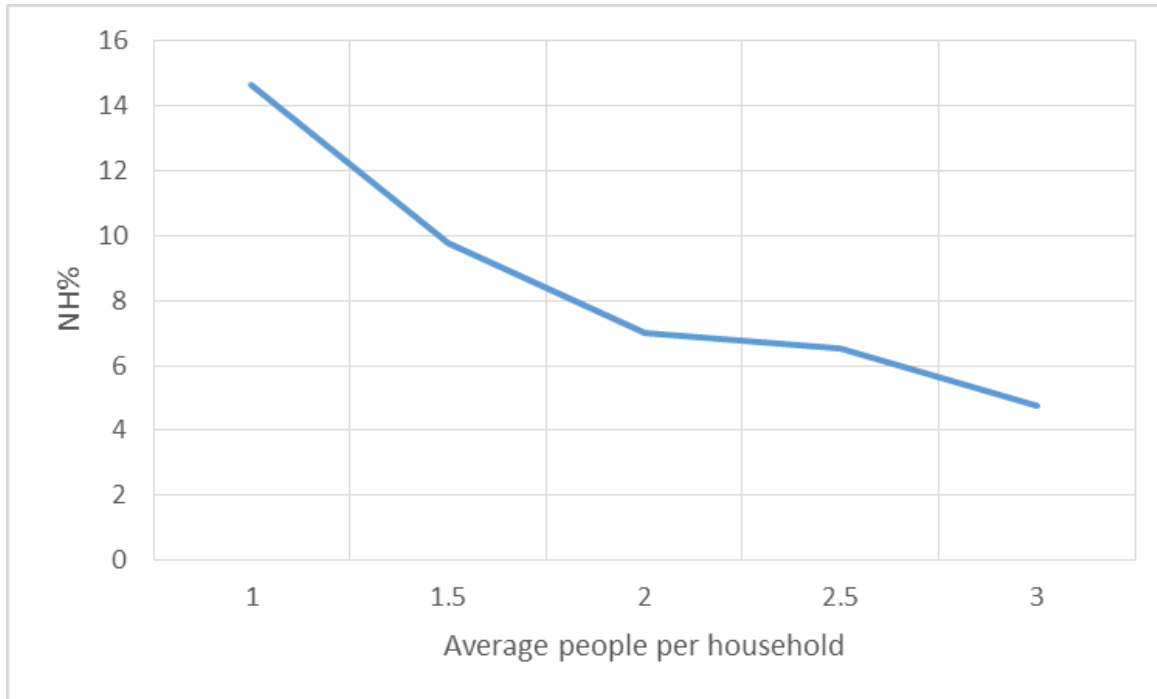


# Months B2C



## People per household

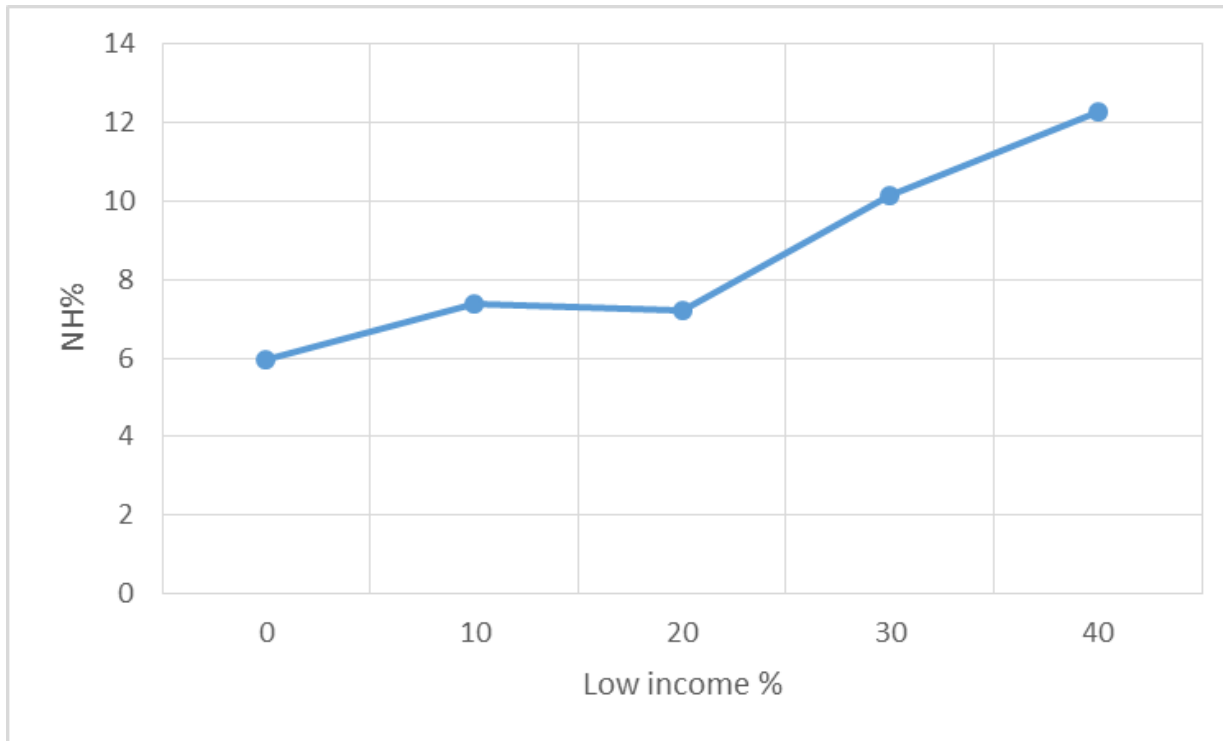
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- Correlation = -0.94
- P-value = 0.02

## Low income households

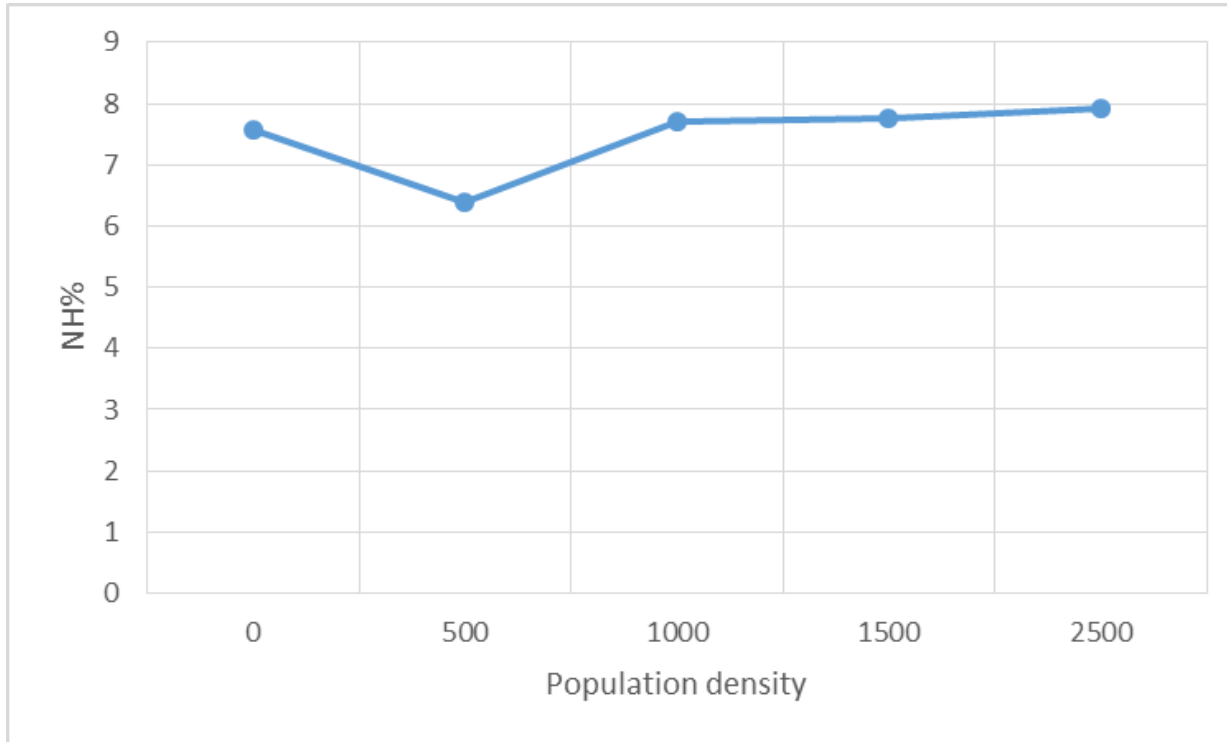
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- Correlation = 0.95
- P-value = 0.01

## Population density

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- Correlation = 0.52
- P-value = 0.36

# Zip code area



## Recommendations

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- Focus on shifting B2B shipments to earlier on the day and B2C shipments to later on the day
- Making lists of companies expected to be closed on a specific date
- Setting up centralized pick-up points for B2C shipments



Questions?

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