# Group project – TIL 6022

## Group 6

**Members**

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## Research objective

The main research question of this study is: What are the capacities of the train network in the current NS time schedule?

This question will be answered by answering the following sub-questions:

* What is the difference in capacities of trains between the Randstad and outside the Randstad?
* How does the capacity differ between different days of the week?
* To what extend does the capacity differ when looking at train types, i.e. Sprinter vs. Intercity trains?

## Introduction

## Every day, more than 1 million passengers use the services of the Nederlandse Spoorwegen (NS). The NS has the concession to run the main rail routes in the Netherlands and operates with 4800 train rides and 260.000 seats per day with Sprinters and Intercity’s. Every year the train schedule is updated and changes are made. Different tracks in the network have different frequencies of train service, which leads to different capacity between cities. To understand and map those differences this project is set up. With databases from the NS an overview is made of the seat capacity between cities on the main rail route. This data is analysed for differences in capacity between cities in- and outside the Randstad, between days of the week and between Sprinters and Intercity’s

## Difference in capacity between in- and outside the Randstad

1. Output:
2. Randstad average = 846768
3. Not Randstad average = 262787
4. Top 10 max:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **From** | **To** | **Seats** |
| 1 | Amsterdam Centraal | Amsterdam Sloterdijk | 2804743 |
| 2 | Utrecht Vaartsche Rijn | Utrecht Centraal | 1889216 |
| 3 | Amsterdam Muiderpoort | Amsterdam Centraal | 1696851 |
| 4 | Amsterdam Holendrecht | Amsterdam Bijlmer ArenA | 1659776 |
| 5 | Abcoude | Amsterdam Holendrecht | 1659776 |
| 6 | Breukelen | Abcoude | 1659776 |
| 7 | Schiphol Airport | Hoofddorp | 1633914 |
| 8 | Utrecht Centraal | Utrecht Zuilen | 1567422 |
| 9 | Maarssen | Breukelen | 1566476 |
| 10 | Utrecht Zuilen | Maarssen | 1566126 |

1. Top 10 min:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **From** | **To** | **Seats** |
| 1 | Workum | IJlst | 36666 |
| 2 | Koudum-Molkwerum | Hindeloopen | 36666 |
| 3 | Hindeloopen | Workum | 36666 |
| 4 | Eemshaven | Roodeschool | 28260 |
| 5 | Zuidbroek | Veendam | 27180 |
| 6 | Winschoten | Bad Nieuweschans | 26685 |
| 7 | Vriezenveen | Almelo | 24830 |
| 8 | Mariënberg | Vroomshoop | 24830 |
| 9 | Vroomshoop | Daarlerveen | 24830 |
| 10 | Daarlerveen | Vriezenveen | 24830 |

## Difference in capacity between days of the week

## Difference in capacity between Sprinters and Intercity’s

## Discussion

1. Excel is not 100 percent reliable: werkzaamheden
2. Plotten zorgt voor overlap tussen lijnen, niet geheel duidelijk

## Contribution statement

Alene:

Matthijs:

Thijs:

Niels:

Chris:

## Data used

* <https://data.ndovloket.nl/bezetting/ns/>
* <http://data.openov.nl/>