

## Have they missed the tram?

### A case study on well-time public transport in new housing developments

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Timing in public transport is crucial. It determines, for example, whether you arrive on time at the railway station, which is important for your chances of making or missing your connection. In this research, another type of timing is considered, namely of the development of public transport facilities and the impact of this development on the use of these facilities.

An important policy topic in spatial planning and transport policy is that of improving accessibility. In transport policy, the goal is to accommodate faster travel, and to make it cleaner and safer. Next to travelling by passenger vehicle, bicycle, or on foot, one of the transport alternatives available to people is the use of public transport. In current spatial planning in the Netherlands, one of the goals is to provide new housing developments with access to a well-timed and adequate public transport network. However, the terms well-timed and adequate have not been further defined. Early implementation of a public transport network leads to high costs in the beginning, as the number of residents in a new neighbourhood is low, initially. But what if such an early implementation would lead to more public transport use by future dwellers?

One of the thoughts that triggered this interest was that, if a public transport network would be developed in the first stages of a new housing development, residents may start using this public transport instead of their cars. This could result in less car-oriented travel patterns and more public transport users. From a contrasting point of view it may not matter when access to a public transport network is established, because residents of new housing developments tend to be more mobile and, therefore, more likely to use a form of personal transportation. According to this view, it is unlikely that an early and adequate public transport network would influence this behaviour.

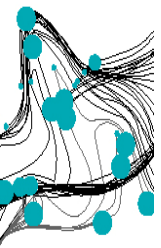
#### Research

This study analyses the effect of timing, with respect to the implementation of light rail based public transport in new housing areas, and how much use is made of it. For this study, three comparable new housing developments with differently timed light rail realisation were selected. These cases were compared with other new housing developments in the Netherlands. Furthermore, the cases were analysed on accessibility, self-selection and migration. With these factors, and public transport use in the areas, the effect of timing was analysed. Part of the research was to conduct a survey in the three case study areas.

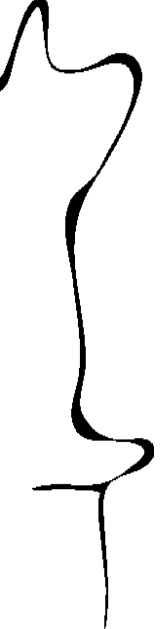
The main research question of this research is:

*To which extent does the time of implementation of light rail transport in new housing areas affect the local use of public transport?*

In the Netherlands, the large-scale new housing developments of the past decades are called Vinex locations (named after the




Fourth Spatial Planning Document (*Vierde Nota Ruimtelijke Ordening Extra*) by the Dutch Ministry of VROM). The Vinex locations are large-scale new-housing areas on appointed greenfield locations. Most of these locations were previously used as farmland. One of the goals connected to these Vinex locations was to reduce the increase in passenger vehicle traffic.

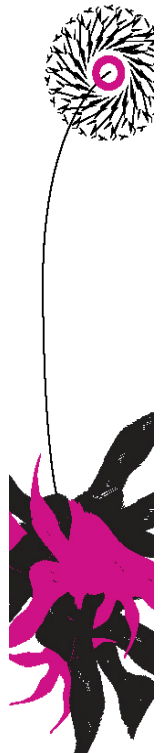


Three Vinex locations in the municipality of The Hague were chosen for this case study; Wateringse Veld, Ypenburg and Leidschenveen. As they are situated within the same municipality, the data sources are the same for all districts. In addition, the quality of their current public transport facilities are comparable, all three districts have access to a frequent light rail service. In Wateringse Veld, the development of new housing started in 1996, and a year later, in 1997, tram line 17 was established in the south of the district. In Ypenburg, construction was also started in 1996, but a tram line (15) did not become operational until 2002 – when 30 per cent of the houses had been built. In both districts, the light rail system connects them to The Hague central station. In the Vinex location of Leidschenveen, construction was started in 1997, and during the first decade, there was no light rail service connecting the area to the central station of The Hague. In 2007, a metro and tram station was built in the centre of the district, connecting it to the city of The Hague and, in a southern direction, to Zoetermeer and Rotterdam.

### Results

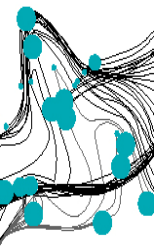


To study the effect of the timing of public transport, many factors were analysed. First, the case study areas were compared with other Vinex locations in the Netherlands. This showed that Vinex locations in the Netherlands were later and less well-connected to any form of quality public transport. Light rail systems are important to the case study districts in The Hague, but only cover 4 per cent of the Vinex land area. This is due to the fact that only the main cities have such a light rail systems.



Subsequently, the characteristics of the case study areas were compared. This analysis showed that Wateringse Veld has the largest share of adult residents with a driving licence, and the group of people that are the main user of a car is the largest in Wateringse Veld. However, Wateringse Veld also has the highest number of students and those that own a student public transport card. These characteristics are positively related to public transport use. For other characteristics, such as demography and spatial planning, the districts are comparable. Only Wateringse Veld has twice as many elderly residents, which could have influenced the mobility figures for the district.

Even though the districts are located within the same municipality, there are many differences in accessibility. Leidschenveen has, using transportation by car, access to the most residents and facilities. With regards to access to other residents, the results for public transport were comparable. In the areas of facilities, jobs, shops and schools, Leidschenveen scored the best. Wateringse Veld has the most facilities accessible to cyclists. When looking at the travel time ratio, Leidschenveen again scored highest. From the results, a frequent use of public transport was expected in Leidschenveen



for 2009. The results for Ypenburg and Wateringse Veld were expected to be comparable.

Self-selection plays an important role in travel behaviour research. The causality between living environment and travel behaviour can work in two directions. Therefore, the preferences of the residents in the case study areas were analysed. The results from the survey showed that, for public transport users, public transport facilities are important. Furthermore, transport facilities seemed the least-important aspect for people considering a move to a certain area.

The migration patterns influenced the group of people that had no public transport facilities available to them during their first years in the district. These patterns were relatively slow, in each of the three districts, compared to other areas in The Hague and the Netherlands.

Finally, the use of public transport and the effect of timing were analysed. The use of public transport was analysed according to different parameters. The results showed that Wateringse Veld had the highest modal split for tram or metro in 2006, while in 2008, Leidschenveen had the highest number of people getting on or off the metro at the light rail station. These differences between case study areas can partly be explained by the number of trips per person, per day. Looking at the frequency of public transport use (April 2010), Leidschenveen had the highest share of frequent users.

From the variables that explain the light rail use in the case study areas in 2006, can be deduced that the districts themselves play a significant role. Although another data source for 2010 showed the districts to not be significantly different. Therefore, timing could have an influence on public transport use, albeit temporarily.

### Conclusion

Based on the analyses in which the three cases are compared, it is concluded that timing of public transport does have a small effect on its use, visible in the number of people that used the light rail services in the case study areas. Looking at the variables that explain the amount of light rail use in the case study areas, in 2006, the areas themselves play a significant role. Although another data source of April 2010 showed the districts to not be significantly different. Therefore, timing could have an influence on public transport use, albeit temporarily.

When considering the realisation of public transport facilities in newly urbanised areas, it is important that the factors that influence the use of such public transport are taken into account. Furthermore, as resources are not unlimited in public transport projects, the importance of early implementation needs to be weighed against other aspects, such as connections, frequency and quality of these services. This research shows that there is no clear evidence that early realisation makes a large difference to the way public transport is used in a particular area. Therefore, policymakers need to take this into account when considering such early realisation. The frequent use of public transport in Leidschenveen indicates that other aspects of public transport facilities may play a more important role.