



Data-gedreven fietsbeleidsinnovatie

Joost de Kruijf | Dutch Cycling Intelligence
03-06-2021

DATA-GEDREVEN FIETSBELEID

Hoe kunnen we fietsbeleid klantvriendelijker maken?



Mentimeter



Building
knowledge



Data-driven
Cycle policy



GPS-data
collection



Cycling
accessibility



Cycling
preferences



Bicycle Oriented
development



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Knowledge
clips



Building
knowledge



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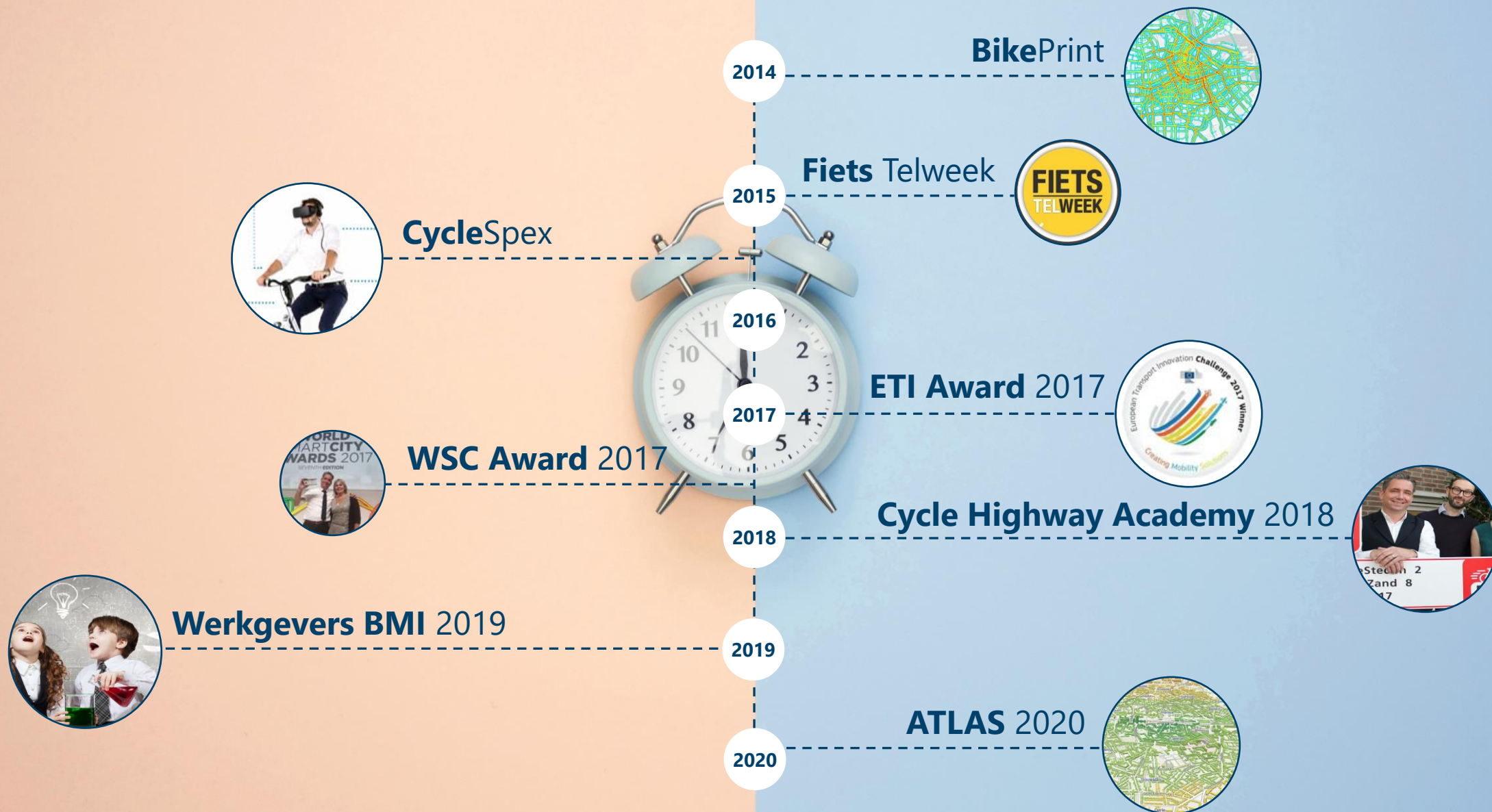
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Innovatie is onderdeel van onze cultuur

...waarbij continue opzoek zijn naar verbetering van het onderwijs en onderzoek van morgen





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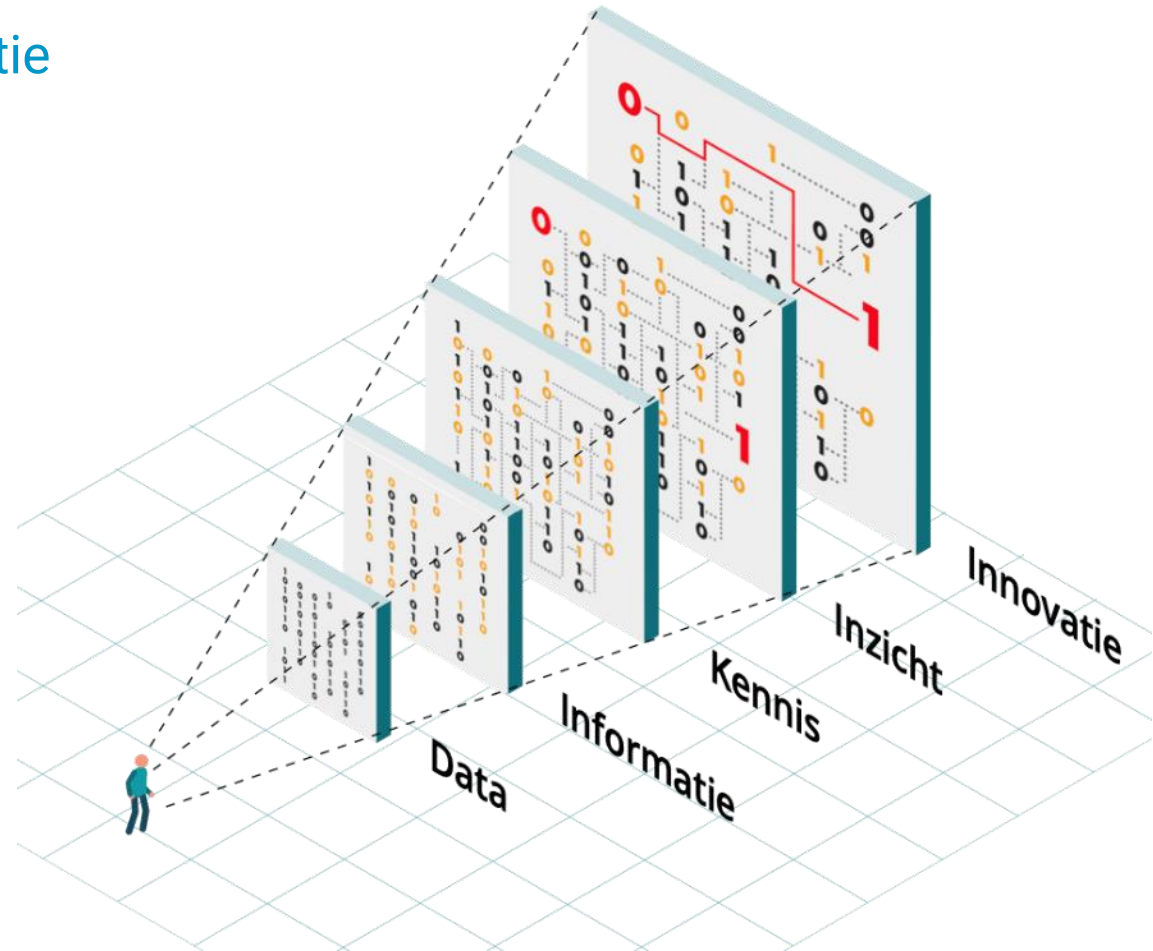
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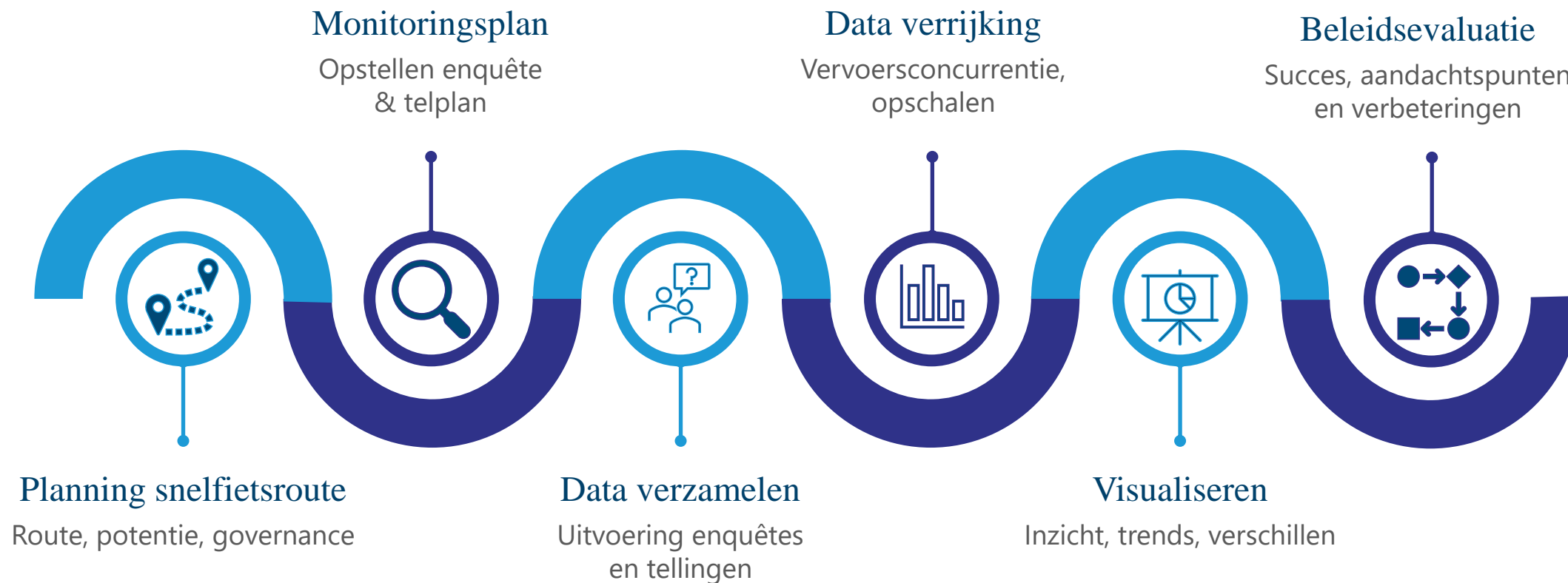


Knowledge
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DATA-GEDREVEN WERKEN

Landelijke ontwikkelingen vs. kennisinnovatie







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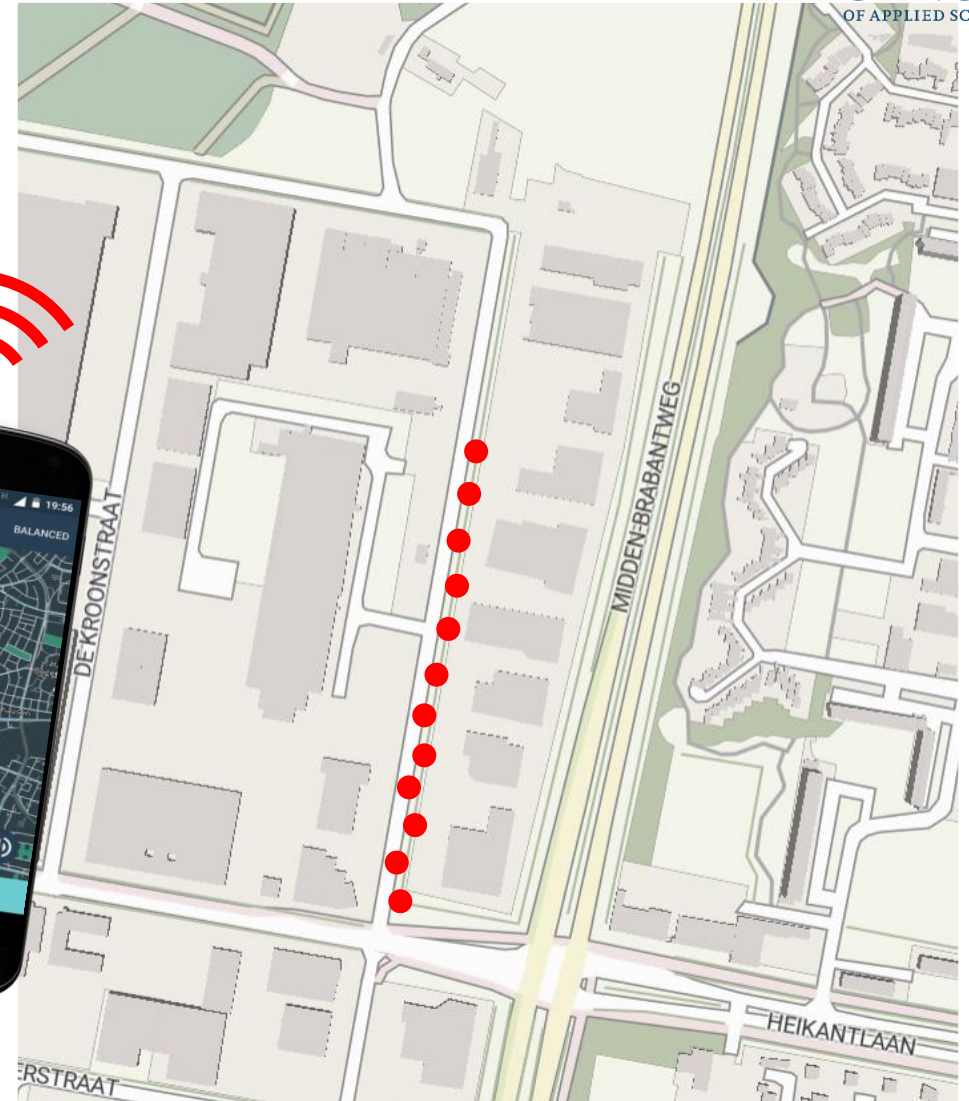
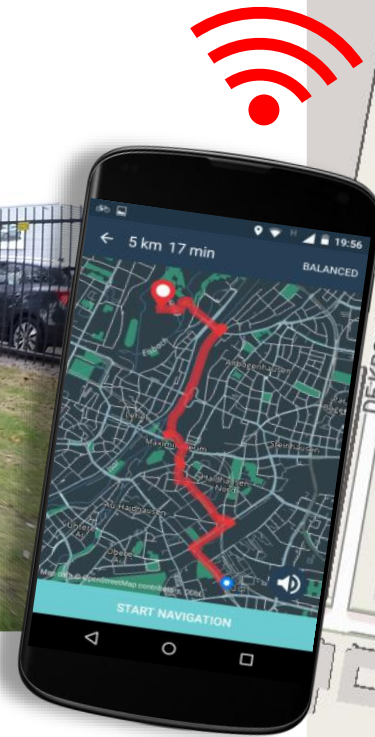


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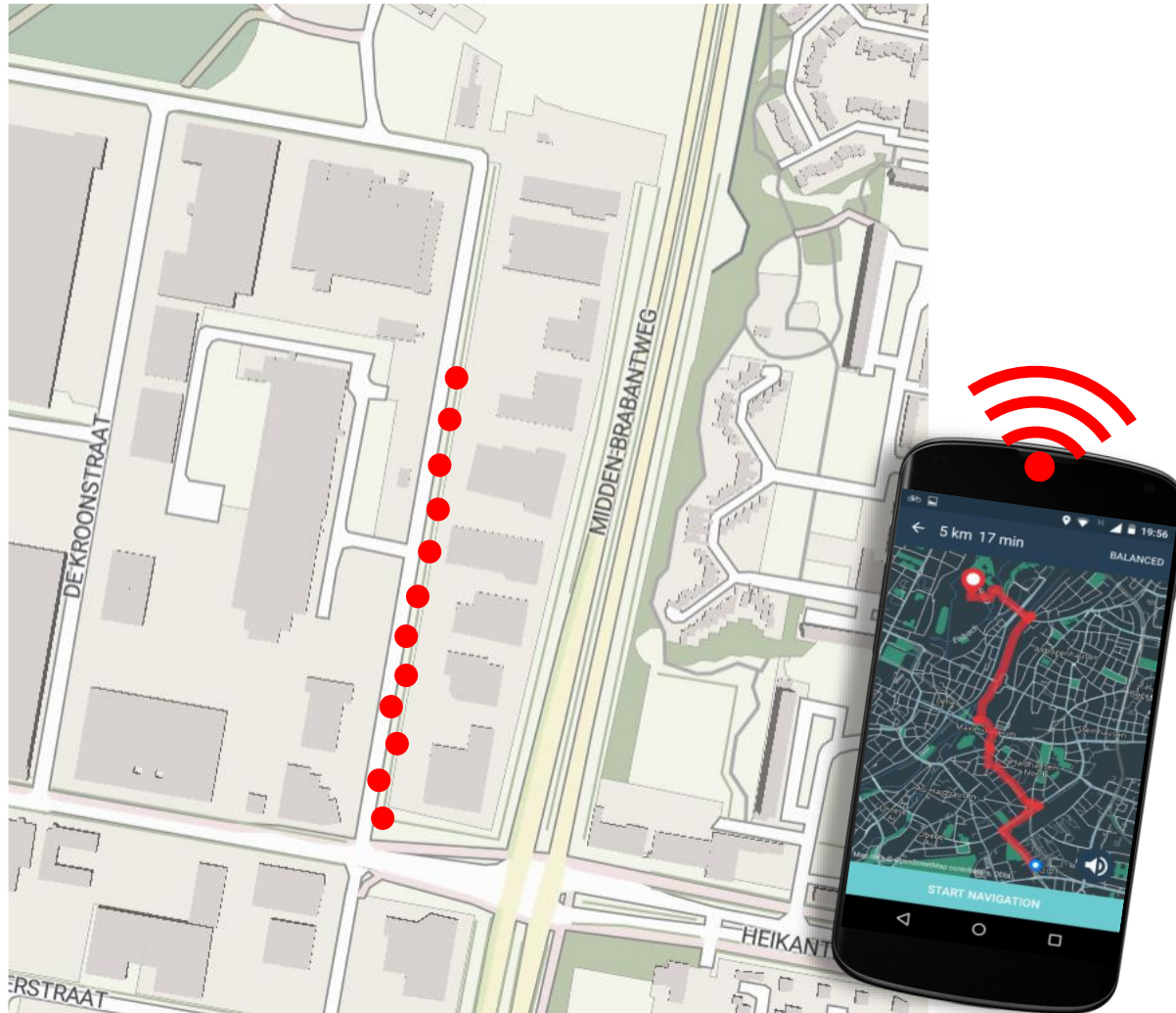


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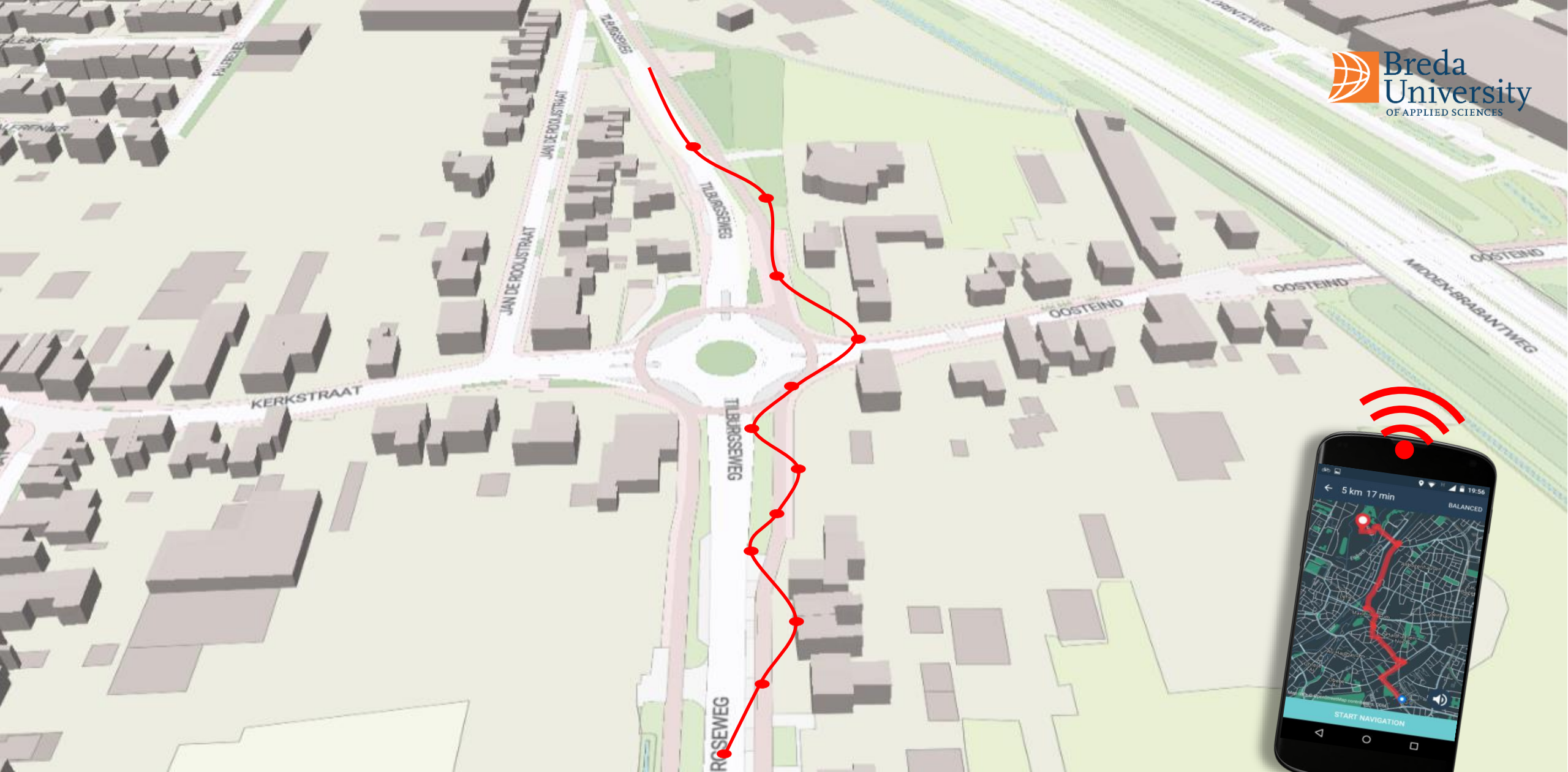
GPS tracking



Smartphone (or tracking device)



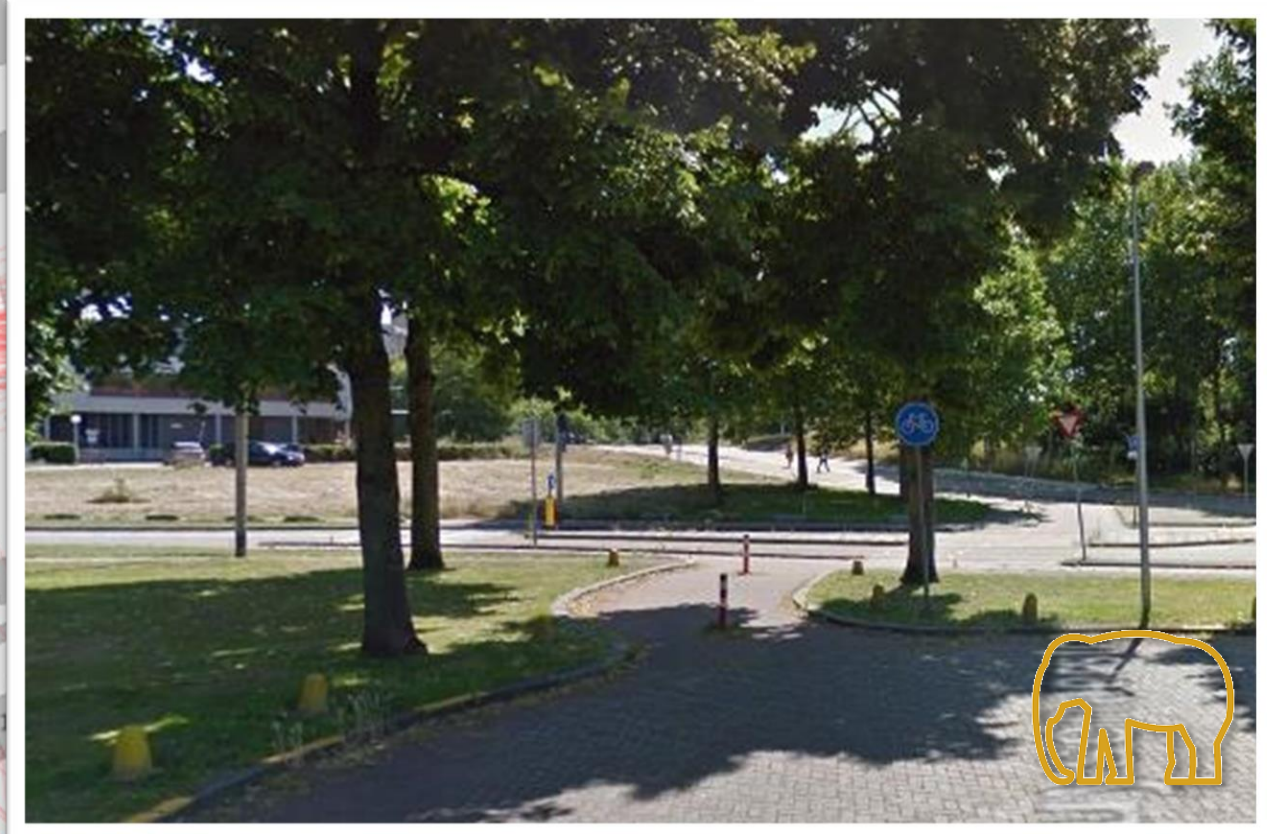
- Result: location points
- Smartphone: less location points (battery and data)
- GPS trace: all modes of transport (cleaning)
- Cycling network to map match
- Calculated speeds & routes
- Analyses: whole cycle trace
- Visualisation: cut off beginning / end because of privacy





Volume
Reistijd
Routes

Waardevolle informatie



Pand ParkKing Beheer B.V.

Pand

BAG pand ID	085510000023037
Categorie	Industrie
Activiteit	Opslag/distributie
Bouwjaar	1993
Maaiveldhoogte	15,5 m
Hoogte	7,1 m
Bouwlagen	2 (bovengronds)
Populatie	6,2 (kengetal overdag)
Oppervlakte	680 m ² (vergund)
Status	Pand in gebruik
WOZ-waarde	onbekend
Buurt	BU08553401: Bedrijventerrein Het Laar

Perceel



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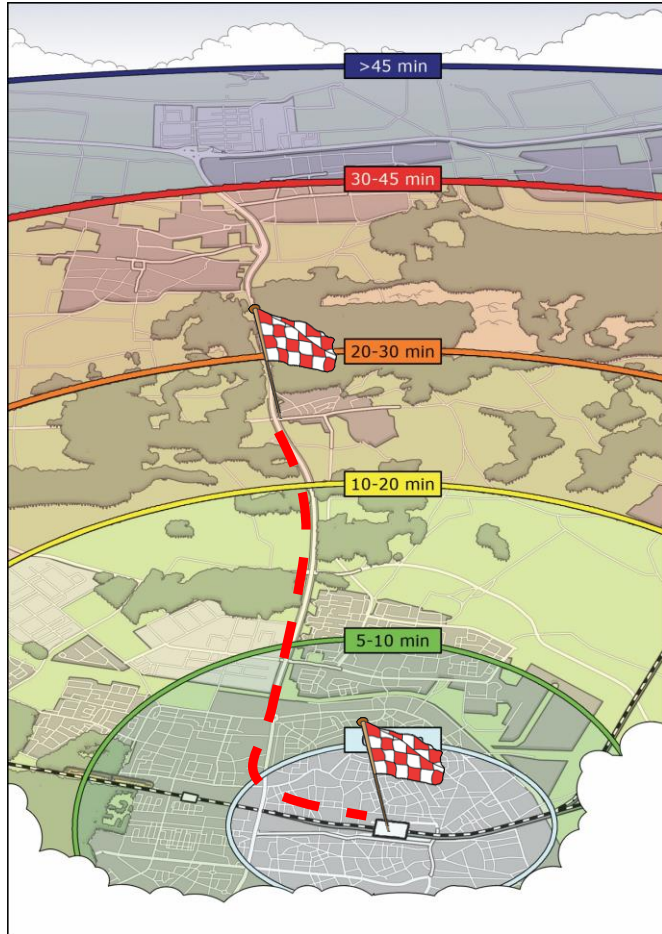


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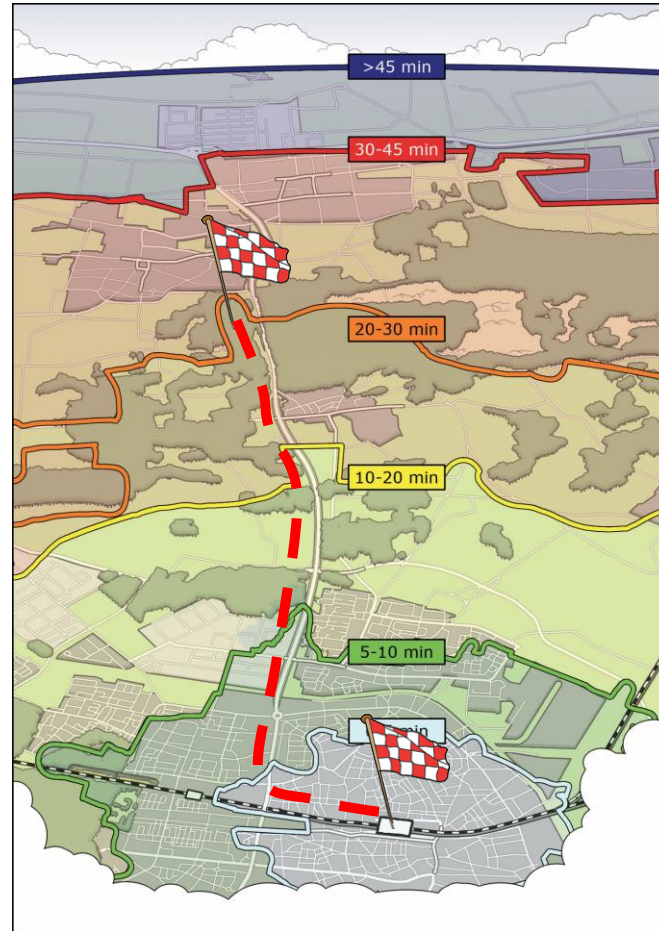


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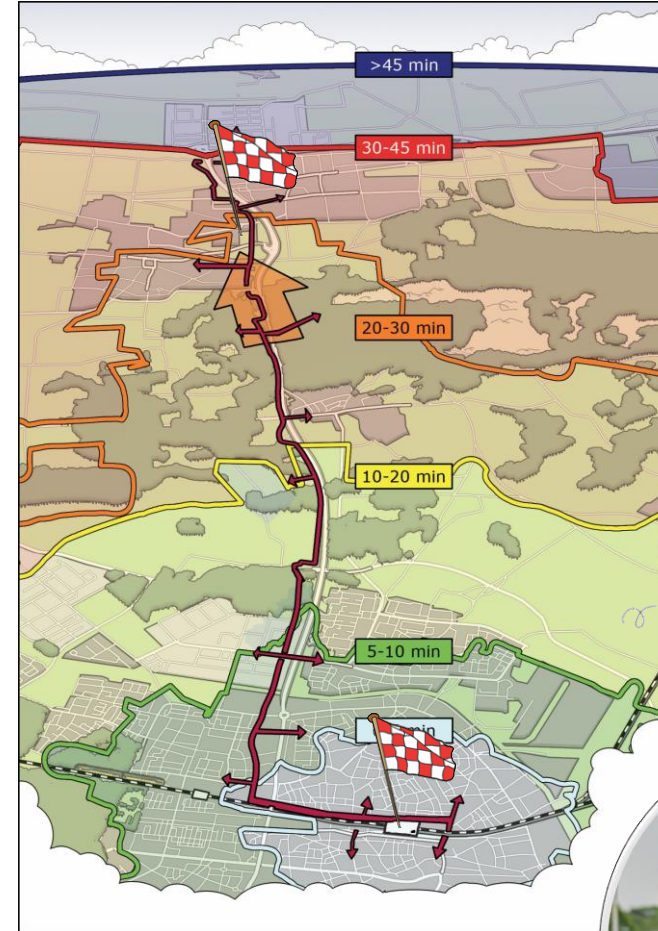
Fietspotentie



Theoretische fietsafstand



Empirische cycle afstand / time



Snelfietsroute ontwikkeling



Snelfietsroute F261 Tilburg - Waalwijk

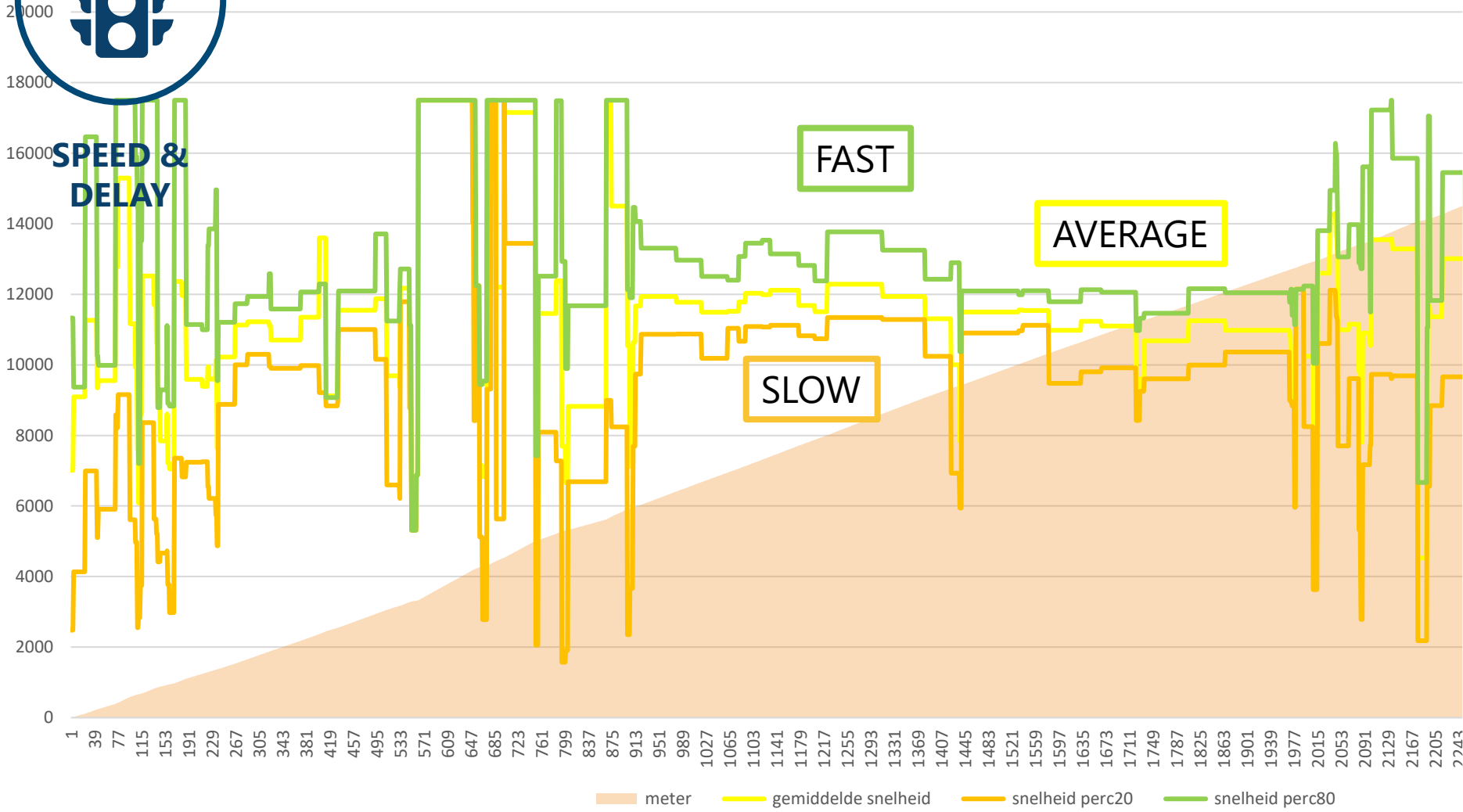


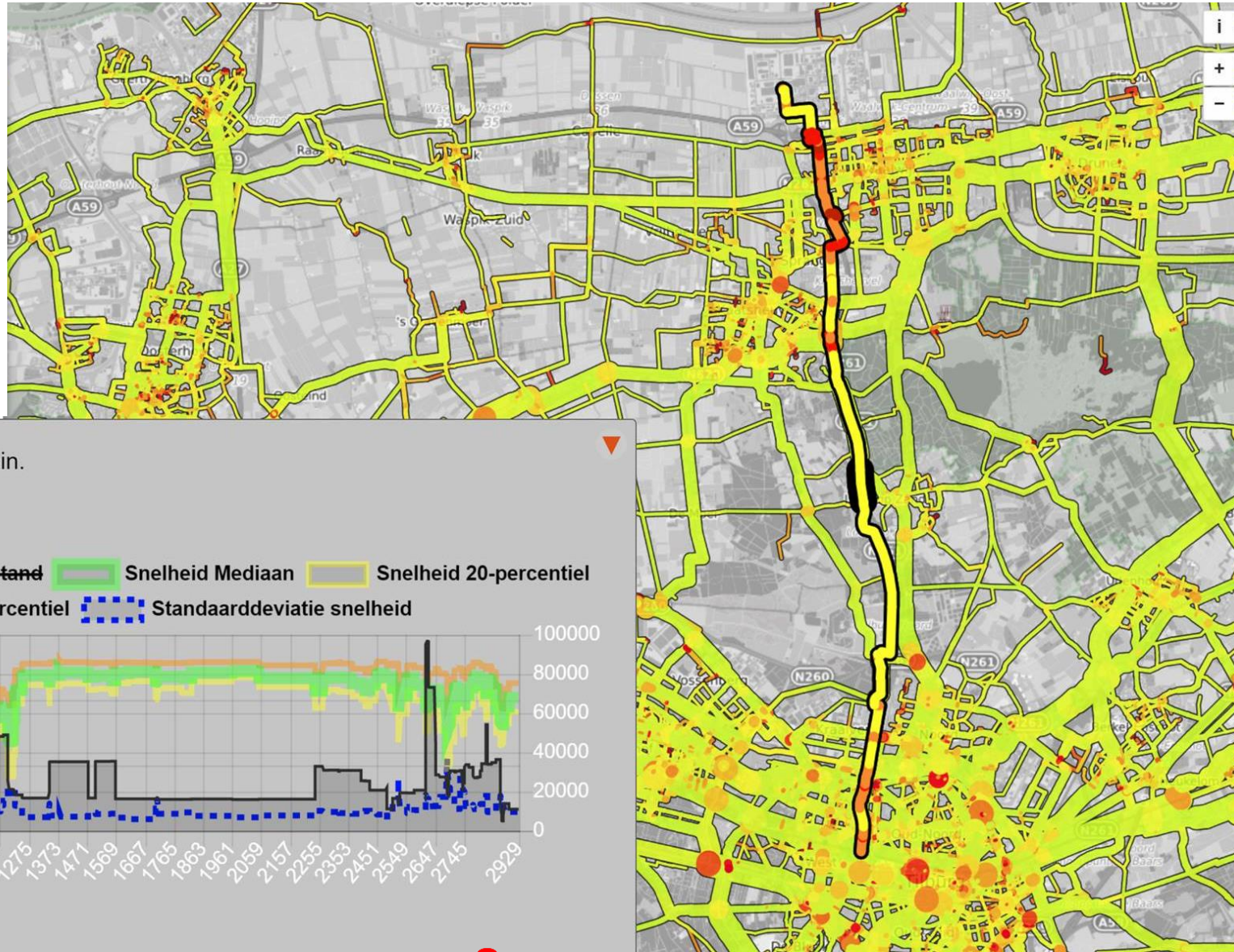
The Netherlands, F261 Cycle Highway Tilburg - Waalwijk



Combi-chart Tilburg-Waalwijk 2016
x-as seconden, y-as links meter, y-as rechts km/uur

**SPEED &
DELAY**





Snelfietsroute potentie





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(Virtual) Environment

Cycle path

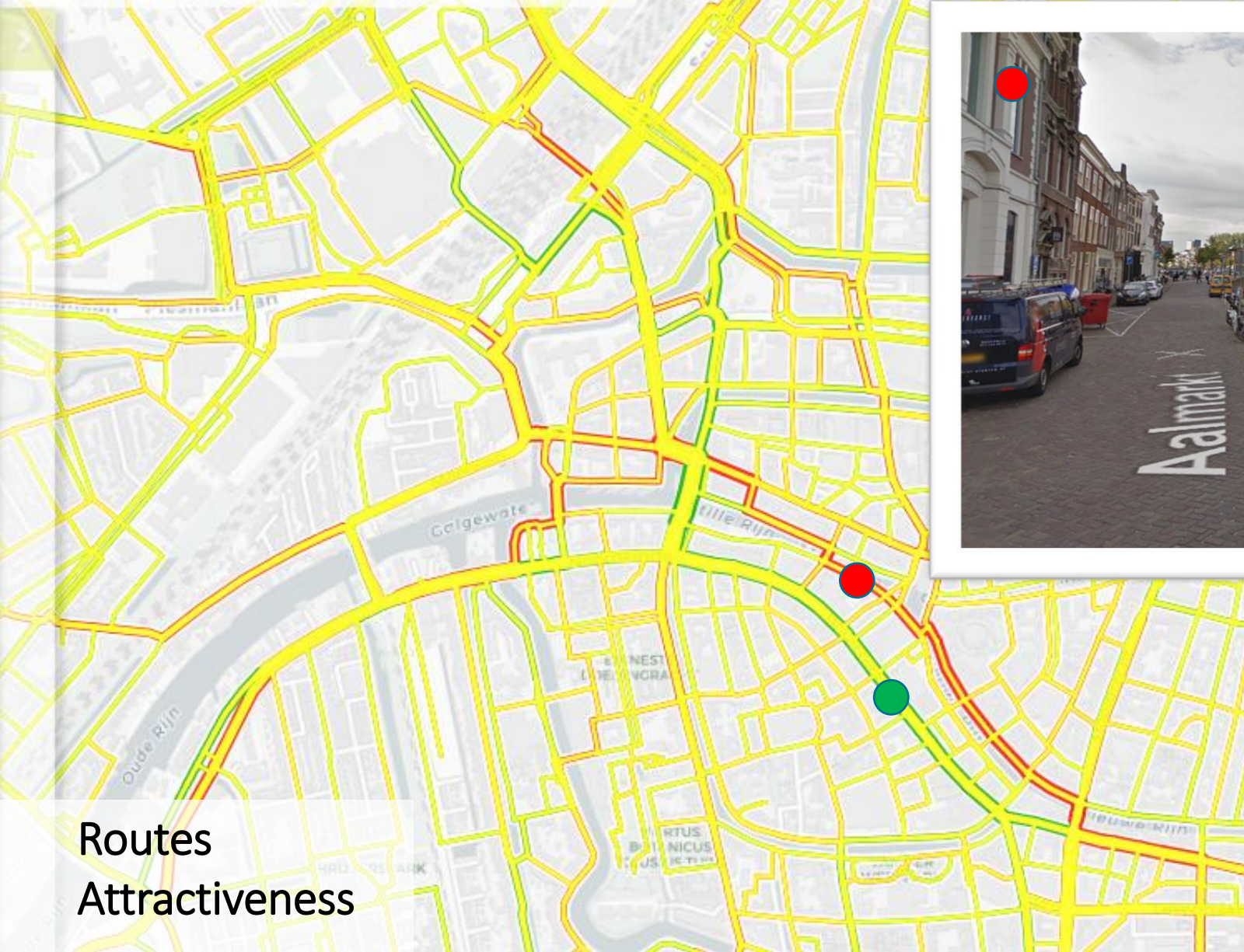
Cyclists

Bicycle



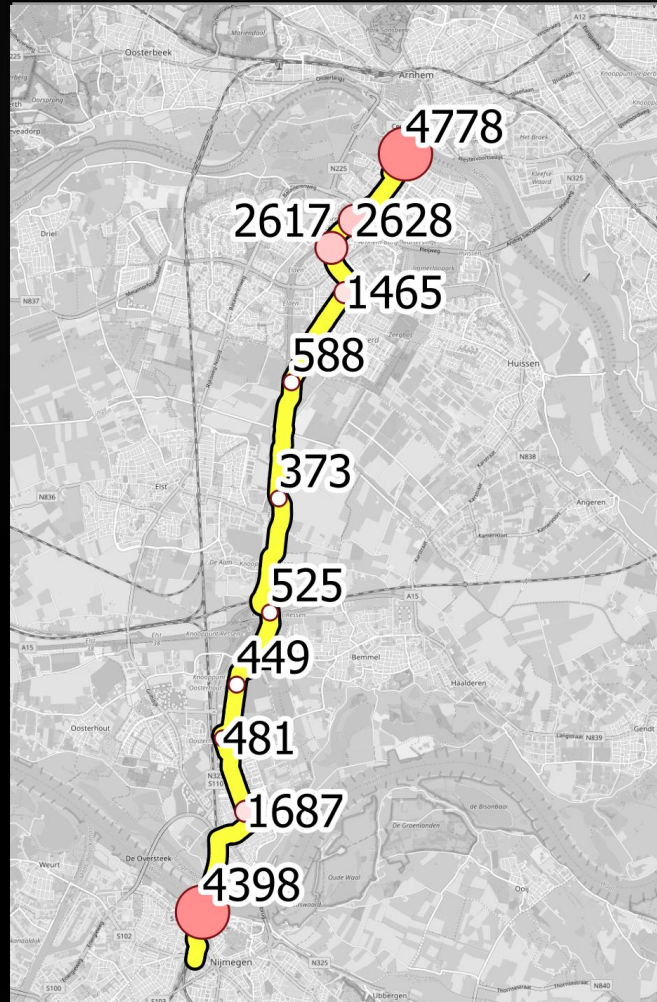


Origin/Destination
All cyclists crossing the bridge



Routes
Attractiveness





Name	Place	Count	Tracks	Percentage
John Frostbrug west	Arnhem	4.778	401	8%
Fietspad Nijmeegseweg zuidoost	Arnhem	2.628	389	15%
Huissensedijk	Arnhem	2.617	400	15%
Fietspad Kruisstraat	Arnhem	1.465	470	32%
Fietspad RijnWaalpad	Overbetuwe	588	356	61%
Sillestraat gemengde weg	Overbetuwe	373	343	92%
Fietstunnel A15 (RijnWaalpad)	Lingewaard	525	366	70%
Zwarteweg gemengde weg (noord)	Nijmegen	449	355	79%
Zwarteweg zuid (Notenlaantje)	Nijmegen	481	353	73%
Visveldsestraat gemengde weg	Nijmegen	1.687	534	32%
Snelbinder	Nijmegen	4.398	1.332	30%
Total		19.989	5.299	27%

Name	Place	Count	Trip Length	Cycling km
John Frostbrug west	Arnhem	4.778	5,3	25.323
Fietspad Nijmeegseweg zuidoost	Arnhem	2.628	7,5	19.710
Huissensedijk	Arnhem	2.617	9,2	24.076
Fietspad Kruisstraat	Arnhem	1.465	8,4	12.306
Fietspad RijnWaalpad	Overbetuwe	588	10,5	6.174
Sillestraat gemengde weg	Overbetuwe	373	10,9	4.066
Fietstunnel A15 (RijnWaalpad)	Lingewaard	525	10,8	5.670
Zwarteweg gemengde weg (noord)	Nijmegen	449	9,9	4.445
Zwarteweg zuid (Notenlaantje)	Nijmegen	481	9,6	4.618
Visveldsestraat gemengde weg	Nijmegen	1.687	6,4	10.797
Snelbinder	Nijmegen	4.398	5,1	22.430
Total		19.989	8,5	170.088



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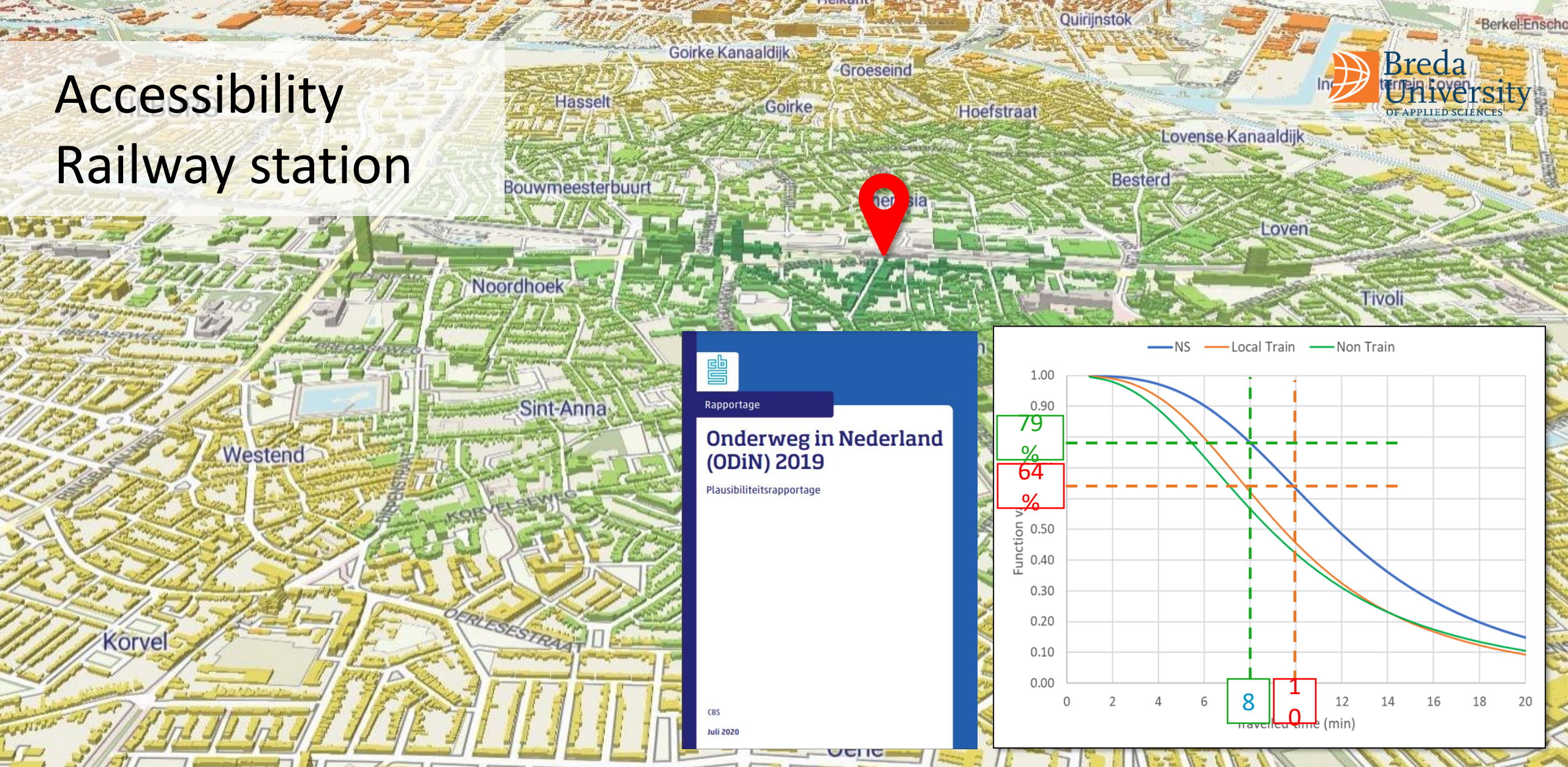


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Accessibility Railway station



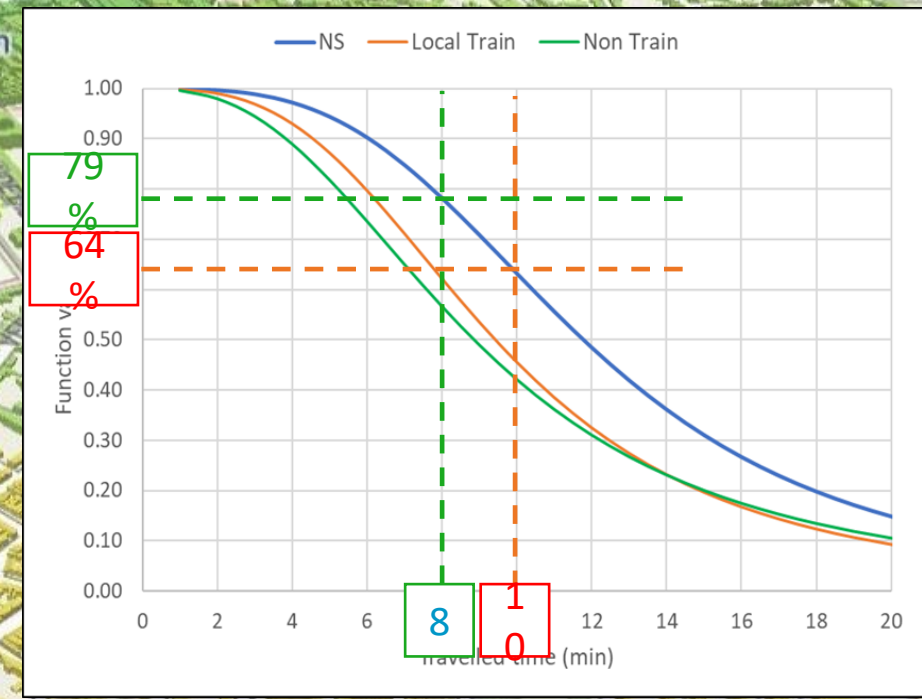
Rapportage

Onderweg in Nederland (ODiN) 2019

 Plausibiliteitsrapportage

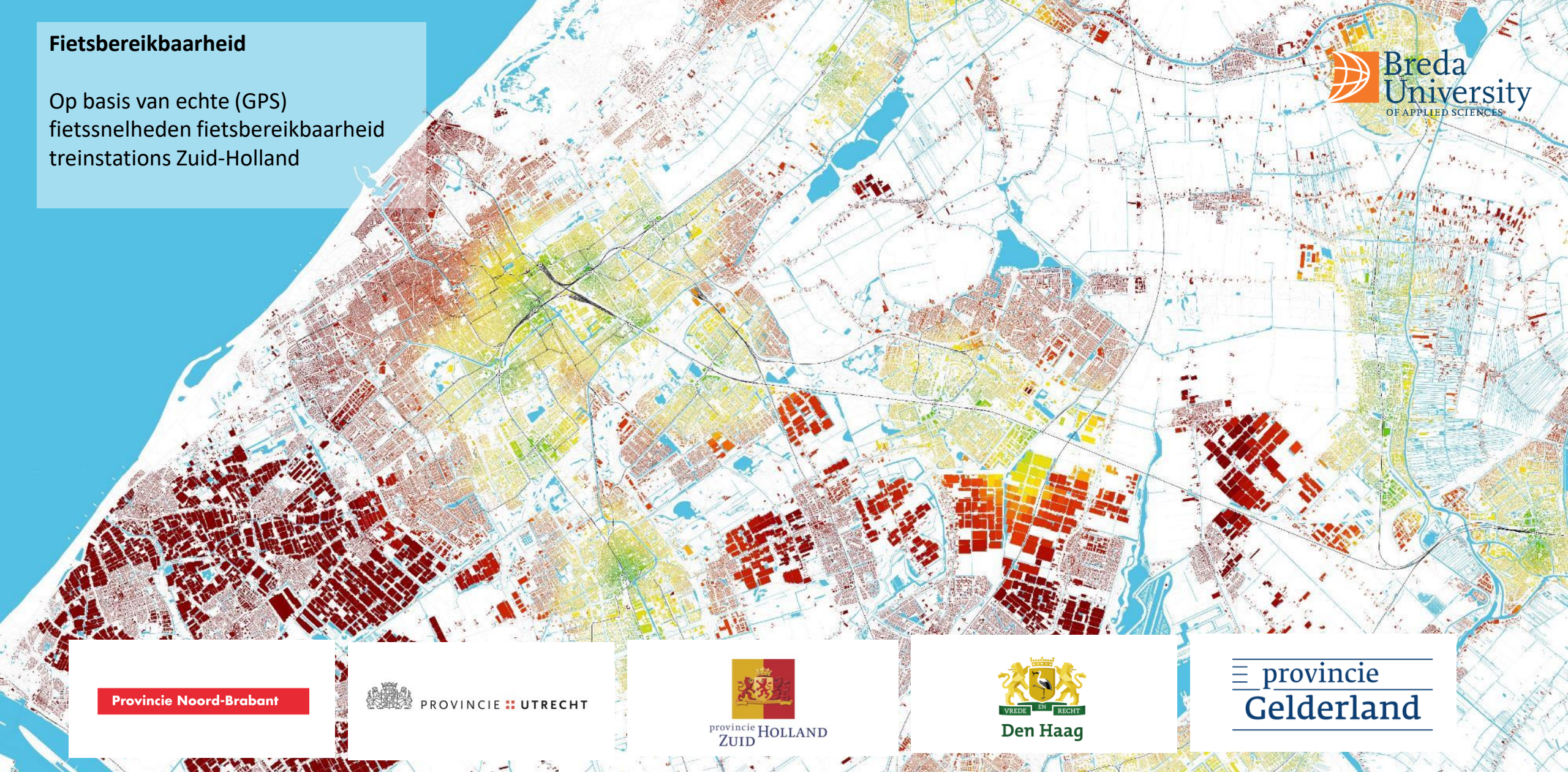
 CBS

 Juli 2020



Fietsbereikbaarheid

Op basis van echte (GPS)
fietsnelheden fietsbereikbaarheid
treinstations Zuid-Holland



Provincie Noord-Brabant



PROVINCIE UTRECHT



provincie HOLLAND
ZUID



VREDE EN RECHT
Den Haag

≡ provincie
Gelderland

Distance Decay Function Calibration Results

Model Structure

$$F(t_{ij}) = \left[1 + \text{Exp}(a + b * \text{Ln}(t_{ij})) \right]^{-1}$$

Where:

t_{ij} = bike travel time from point i to point j (a trip or a trip segment)

$F(t_{ij}) = 1 - \text{Cum}(t_{ij})$

$\text{Cum}(t_{ij})$ = Cumulative distribution function of t_{ij}

a and b = Model parameters

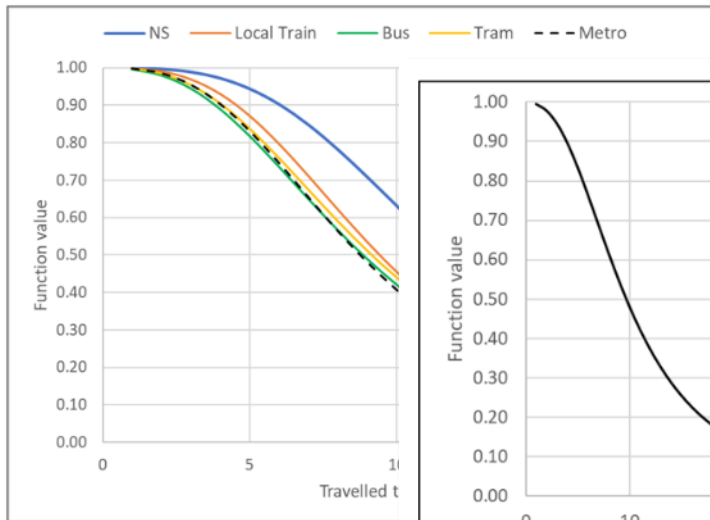


Figure 2. DDF for Tra

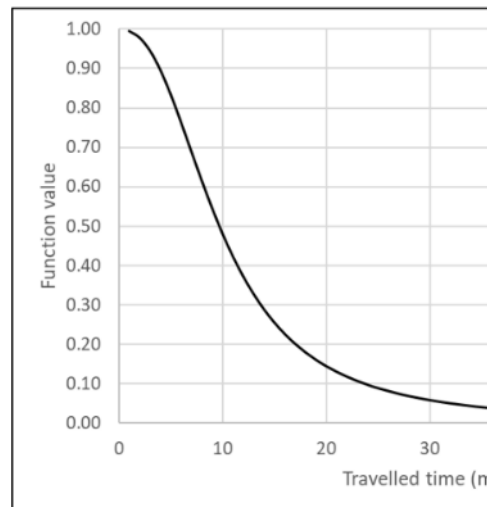


Figure 3. DDF for City Cen

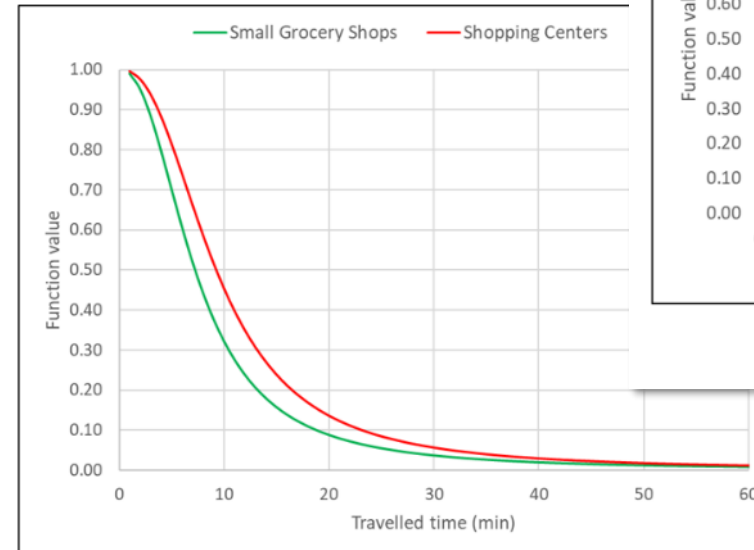


Figure 4. DDF for Shops

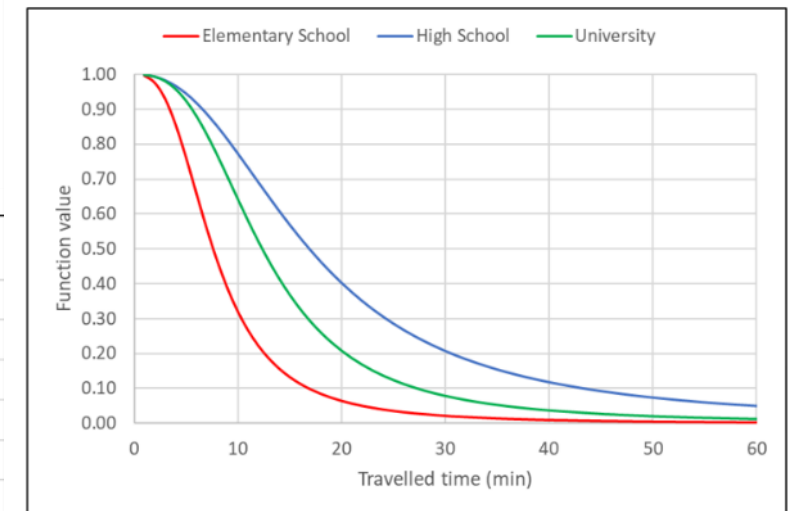


Figure 5. DDF for Education Centers



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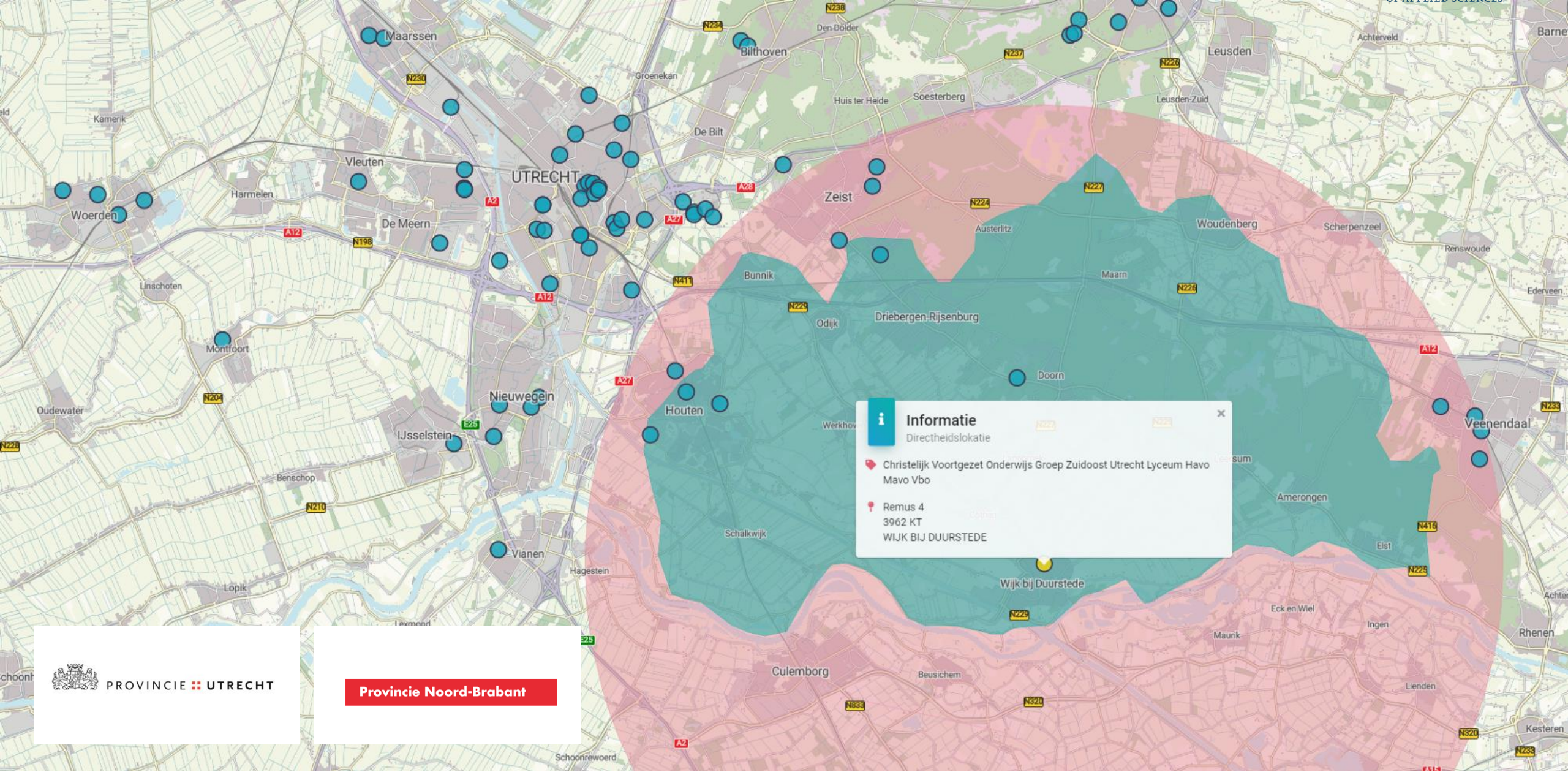
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Informatie
 Directheidslokatie

- Christelijk Voortgezet Onderwijs Groep Zuidoost Utrecht Lyceum Havo Mavo Vbo
- Remus 4
3962 KT
WIJK BIJ DUURSTED



NATIONAAL TOEKOMSTBEELD FIETS

Vertragingen

Rode schakels zijn verbindingen waar fietsers hinder ondervinden tussen een herkomst en bestemming

Den Haag

Leiden



Provincie Noord-Brabant

Omfietsen

Rode schakels zijn relaties waar geen verbindingen bestaat maar wel (gezien de dikte van de lijn) potentie is.

Den Haag

Leiden





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5 design principles for bicycle infrastructure SAFETY
Tsjip Gersons, DTV Capacity Building

5 design principles for bicycle infrastructure COHESION
Tsjip Gersons, DTV Capacity Building

5 design principles for bicycle infrastructure COMFORT
Tsjip Gersons, DTV Capacity Building

5 design principles for bicycle infrastructure ATTRACTIVENESS
Tsjip Gersons, DTV Capacity Building

CYLING GPS-DATA & INFORMATION
connected to the cycle policy life cycle
Joost de Kraker, Breda University of applied sciences

5 design principles for bicycle infrastructure DIRECTNESS
Tsjip Gersons, DTV Capacity Building

Bike Share
Do more with less
Dit Oer, Tishman Institute for Sensible Transport

Bikenomics: how to get cycling on the agenda
Matteo Jarre, Decisio BV

How e-bikes impact our mobility
Paul Huijzen, University of Groningen & Stappo

design principles for bicycle parking
Simone Jorink, Movares | studioSK

Protected Roundabouts and cycling
Harm Geelkerck, DTV Consultants

Synergies between Cycling, Public Transport and Urban planning
Roland Kuger, Studio Benelux

MONITORING & EVALUATION
Connected to the cycle policy life cycle
Joost de Kraker, Breda University of applied sciences

Breda University
OF APPLIED SCIENCES

<https://www.dutchcycling.nl/en/projects/knowledge-clips>

“Looking at the actual behaviour of cyclists will not only learn us more about their preferences and barriers, it also enables us to make the switch to customer friendly cycle policy”

Joost de Kruijf
Breda University of applied sciences