



Emerging modes & impacts: Flexible public transport

June 2021

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2021



Niels van Oort
Smart Public Transport
Lab, TU Delft



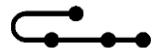
 @Niels_van_Oort
@UrbanismNextEU
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Photo: OV Magazine

Emerging Modes



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Impacts?



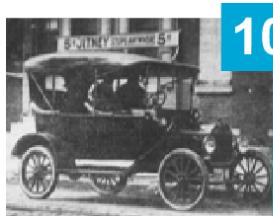
- Fast, reliable, comfortable door-door
- Efficient land use
- Wealth Wellbeing
- Sustainability Health
- Social inclusion

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Demand Responsive Transit (DRT)



10s

First DRT trials:
jitneys in the USA



70s

Spread of DRT in the
USA and Europe



90s

Enhanced data collection &
improved communication
solutions



60s

First dial-a-bus
experiences



80s

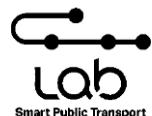
Development of GPS,
telephones and GIS



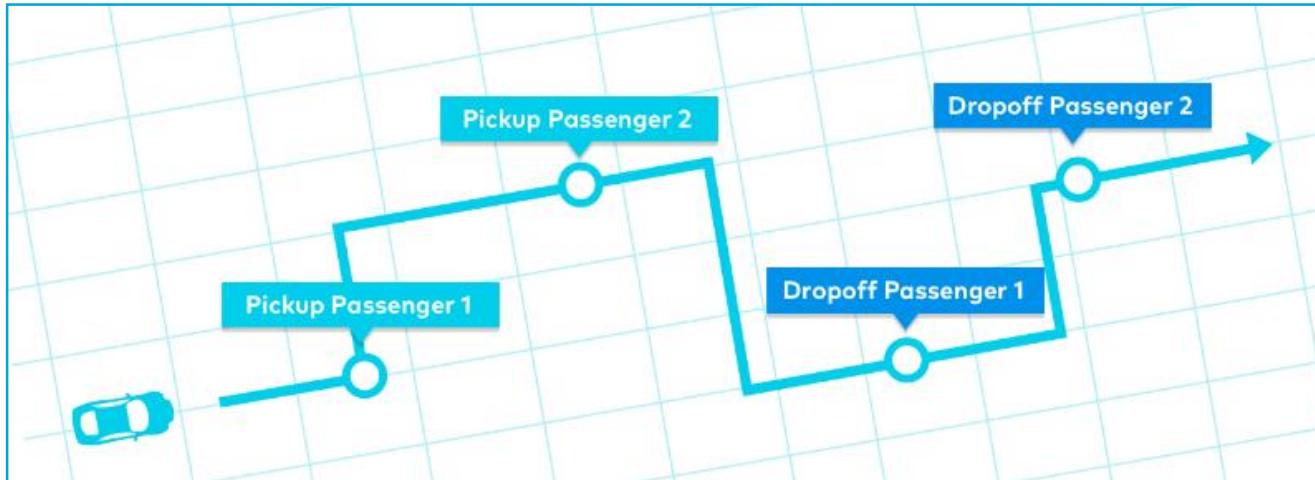
00s - 20s

Diffusion of internet
and smartphones

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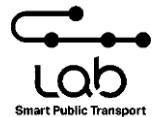


Shareability of trips



The share of taxi trips in New York City that can be shared is
above 95% with less than 5 minutes delay.

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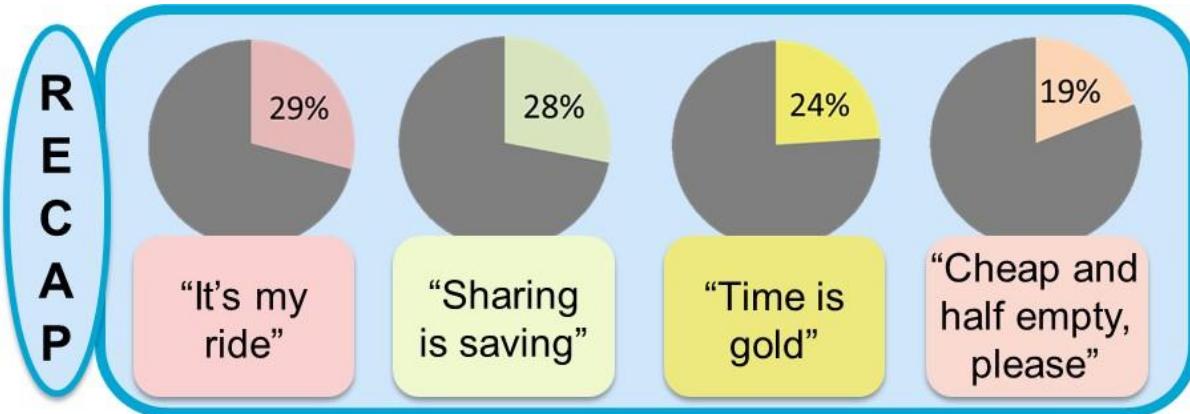


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In Amsterdam:
Replacement rate on demand:cars -> 1:9

(Narayan et al., 2019)
(Santi et al., 2014)
(Shareable Cities, MIT, 2017)

Willingness to share?

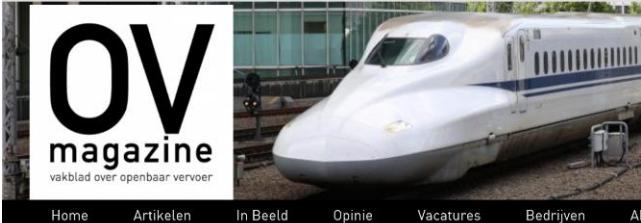


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DRT in NL: BrengFLEX



vrijdag 1 december 2017

dossier Innovatie

Juul van Hout: 'Ik geloof in flexibel vervoer'

door Guus Puylaert in rubriek flexibel vervoer



vrijdag 23 augustus 2019

dossier Innovatie

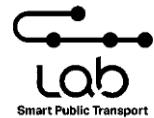
Doek valt definitief voor Breng flex

door Guus Puylaert in rubriek flexibel vervoer

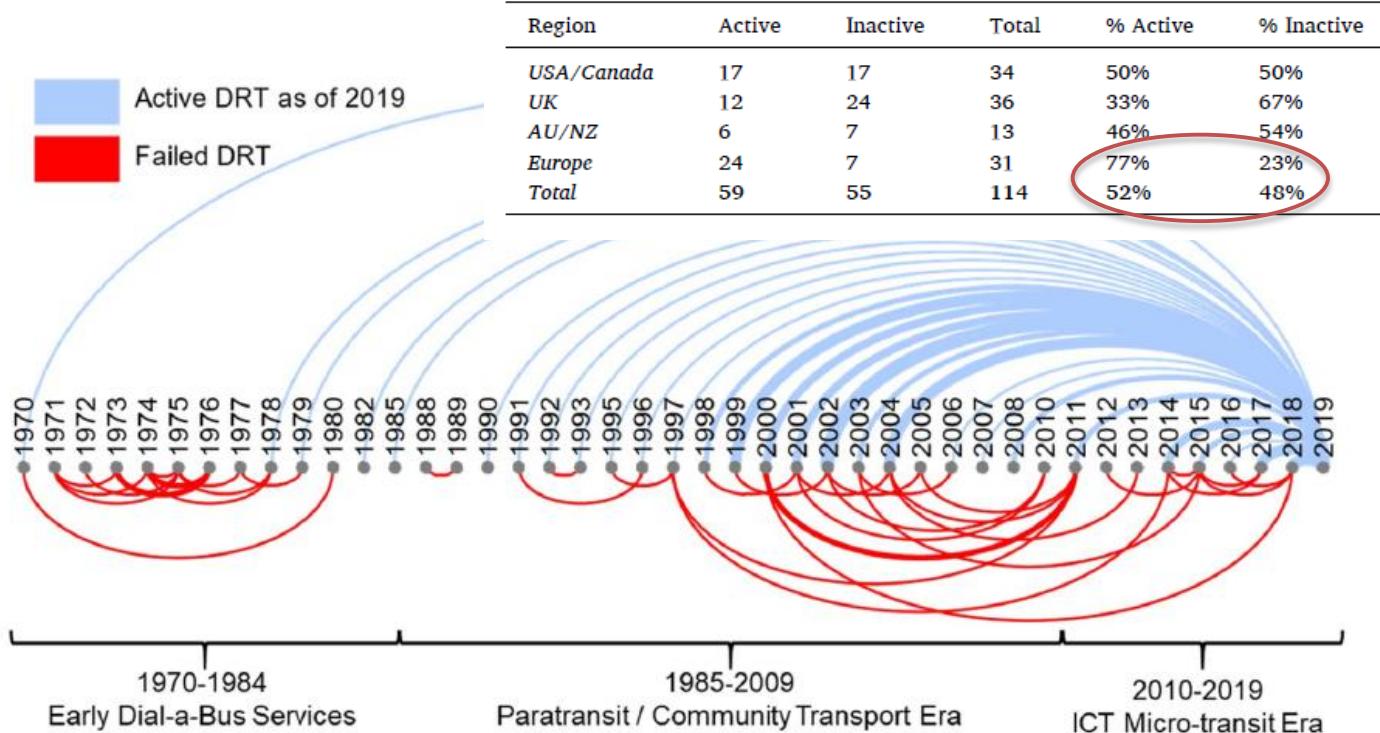
Alonso-Gonzalez et al. (2018) 7

DRT worldwide

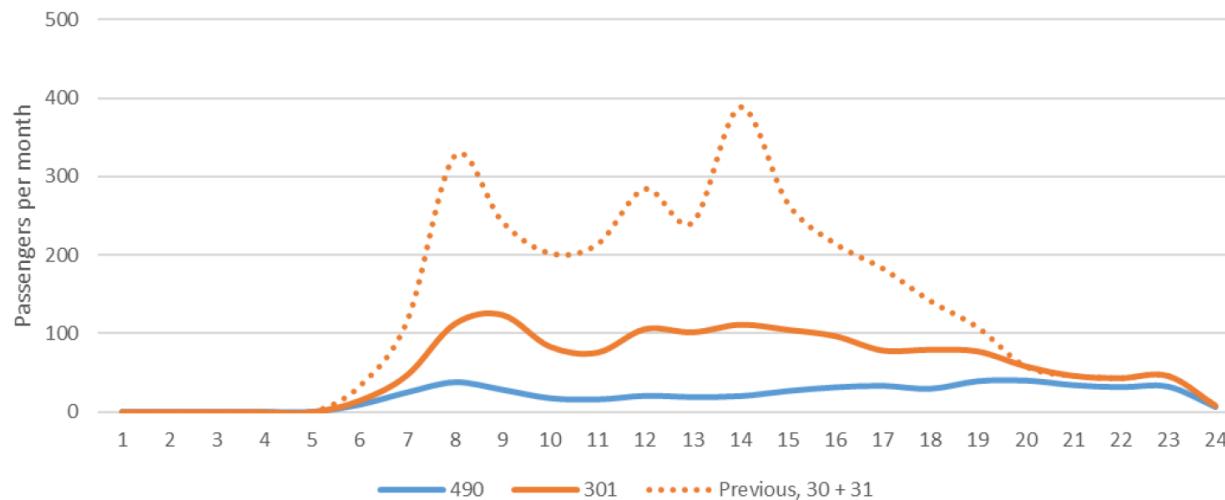
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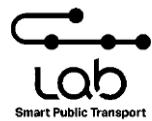
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MokumFlex (1st generation (2018))



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	Fixed, 30 + 31 Sprinter	DRT Combi
Mileage (vehicular km/ month)	27.561	4.098
Ridership (passenger/ month)	1.718	478
Vehicles	3	2
Operational costs (€/ month)	\$44.288	\$9.551
% vs Fixed line	100%	22%
Veh km/passenger	16.0	8.6

Success?



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Automation

	Benefits	Challenges
Urban areas	Flexibility	Complicated traffic situation
	Reduced congestion and emission	Space on roadways
	Option for high intensity PT	Perceived safety
	Reduced costs	Public acceptance
	More options for (especially) egress	Competition with walking and cycling
	Improved comfort and accessibility	Create and efficient multimodal node
	Benefits	Challenges
Rural areas	Less operational costs	Low demand
	Alternative to private vehicles	Public acceptance
	Accessibility	Low speed compared to usual flow
	Increased mobility	Reliability
	Alternative for low quality PT areas	Many charging stations

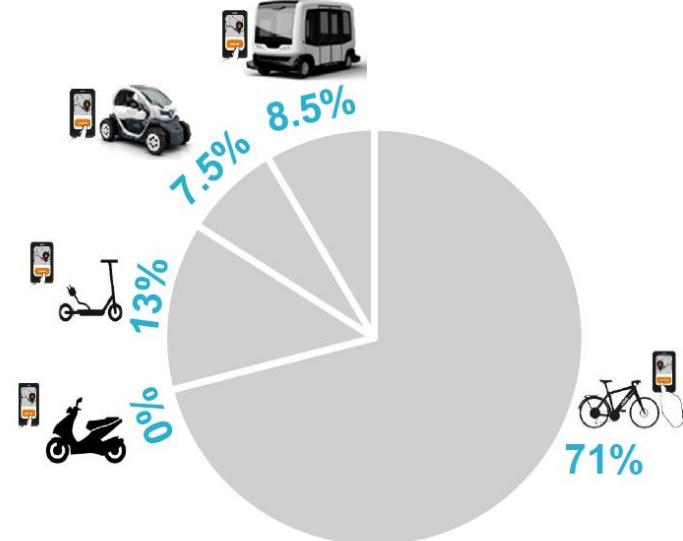
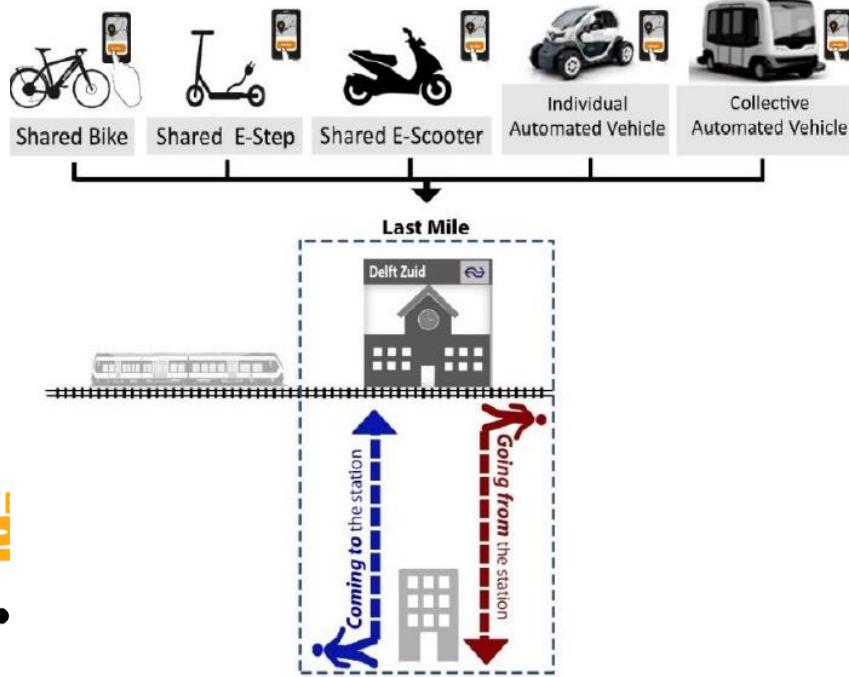


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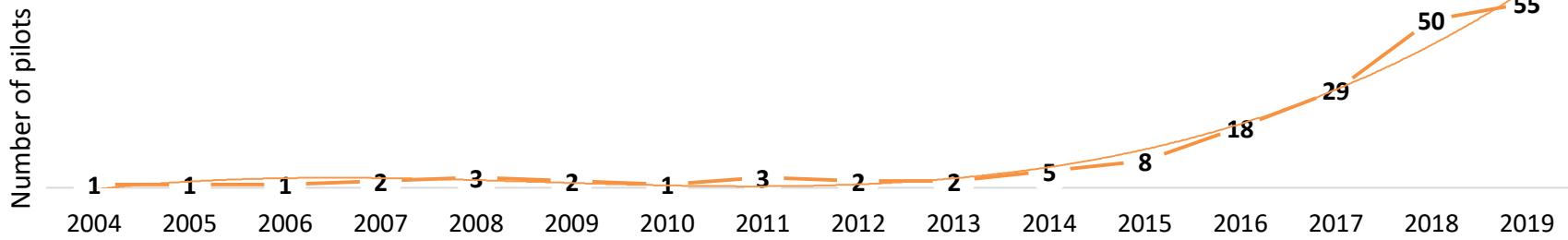
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Expected usage?



From pilots ... to implementation

NUMBER OF ACTIVE PILOTS PER YEAR



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Read more:

<http://nielsvanoort.weblog.tudelft.nl/>

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Alonso Gonzalez M.J., Hoogendoorn-Lanser S., van Oort N., Cats O., and Hoogendoorn S. (2019) “**Drivers and barriers in adopting Mobility as a Service – A Latent Class Cluster Analysis of attitudes**”. *Transportation Research Part A: Policy and Practice*

Coutinho, F.M., van Oort, N., Christoforou, Z., Alonso-González, M.J., Cats, O., Hoogendoorn, S.(2020), **Impacts of replacing a fixed public transport line by a demand responsive transport system: Case study of a rural area in Amsterdam**, Research in Transportation Economics, art. no. 100910.

Currie, G., N. Fournier (2020), **Why most DRT/Micro-Transits fail – What the survivors tell us about progress**, Research in Transportation Economics, 100895.

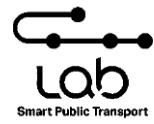
Narayan, J., O. Cats, N. van Oort and S. Hoogendoorn, "Does ride-sourcing absorb the demand for car and public transport in Amsterdam?", 2019 6th International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS), 2019, pp. 1-7.

Van Oort, N., R.A.J. vd Bijl, F.C.A. Verhoof (2017), **The wider benefits of high quality public transport for cities**, European Transport Conference, Barcelona.

More information & contact



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Welcome to Workshop 6B, Friday 9:30;
The future of public transport in the era of emerging modes