

Preferred citation style

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Visions and dilemmas

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Zürich

December 2023

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Institute for Transport Planning and Systems

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Dilemmas

Dilemma of transport planning as sketched 24 years ago

- Congestion
- Customers or citizens ?
- Pricing or rationing ?

System design approaches

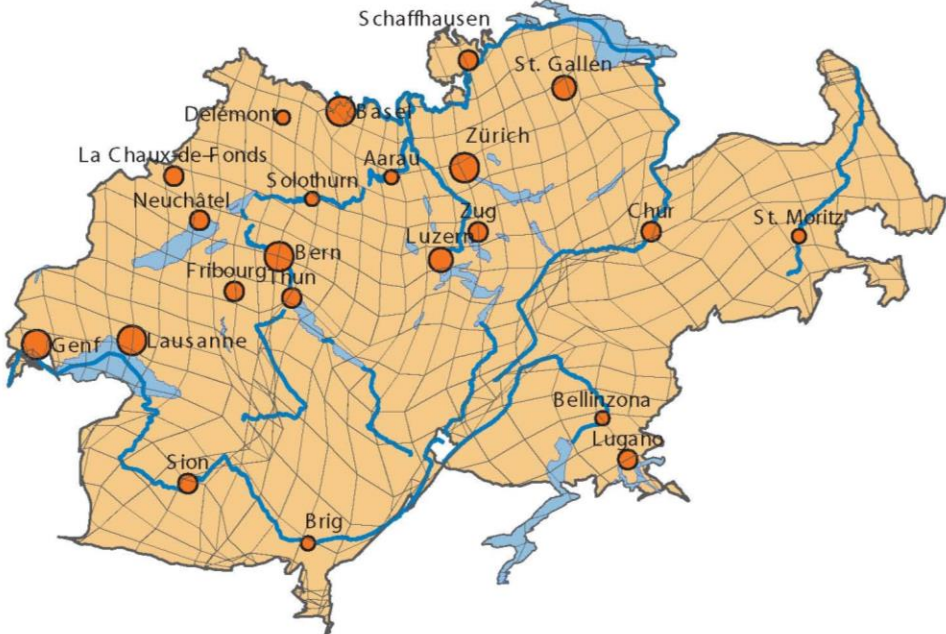
System perspective		
User perspective	Private good	Public good
Customer	Service quality	User equilibrium
Citizen	Agreed standards	System optimum

Dilemma of transport planning as understood today

Shrinking “road” – Switzerland (1950)



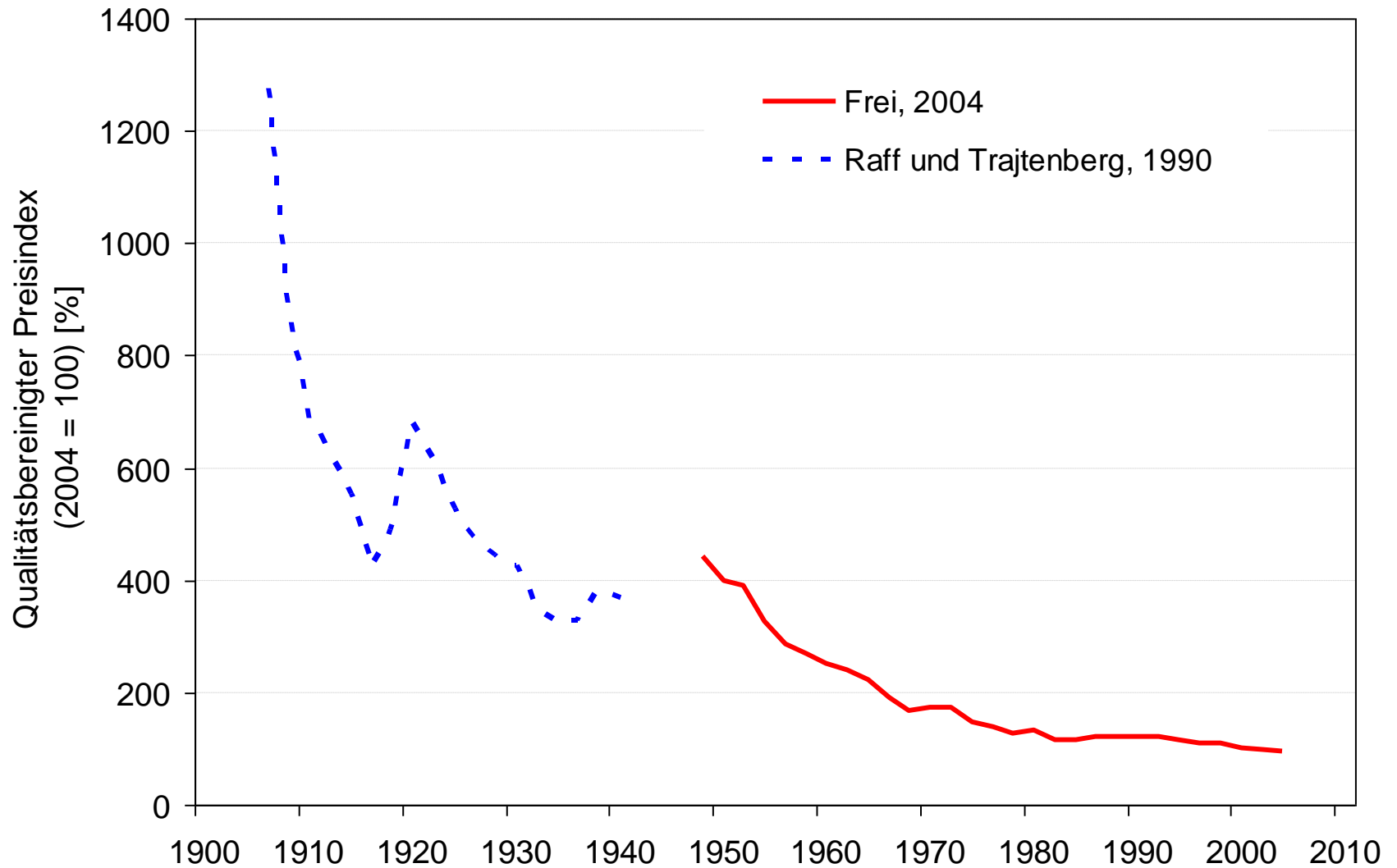
Shrinking “road” – Switzerland (2000)



1 Stunde

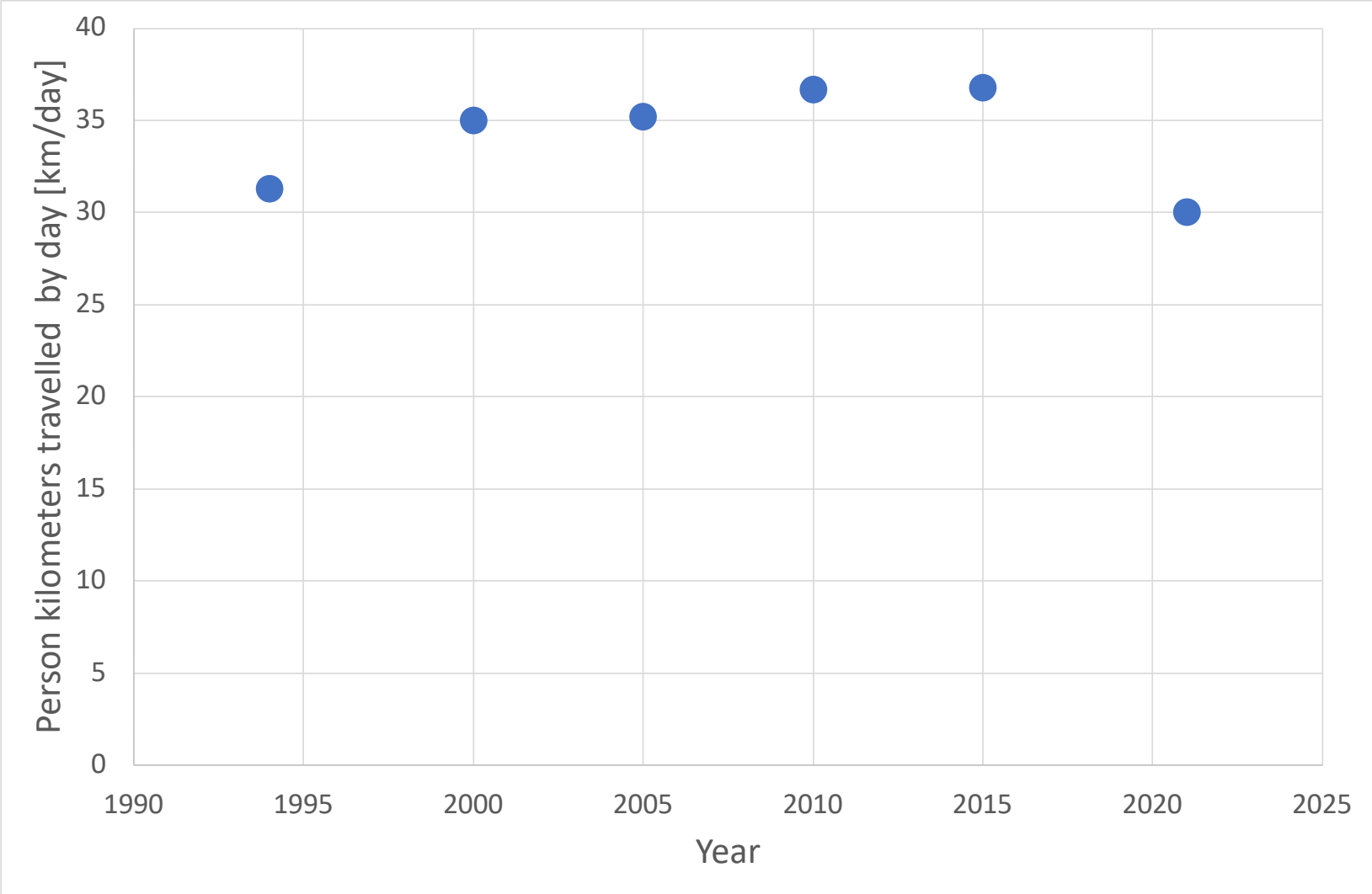
10km x 10km Raster

CH: Quality- and inflation adjusted price of mid-class saloon



Source: Frei (2005)

Switzerland: Pkm change since the MZ 1994

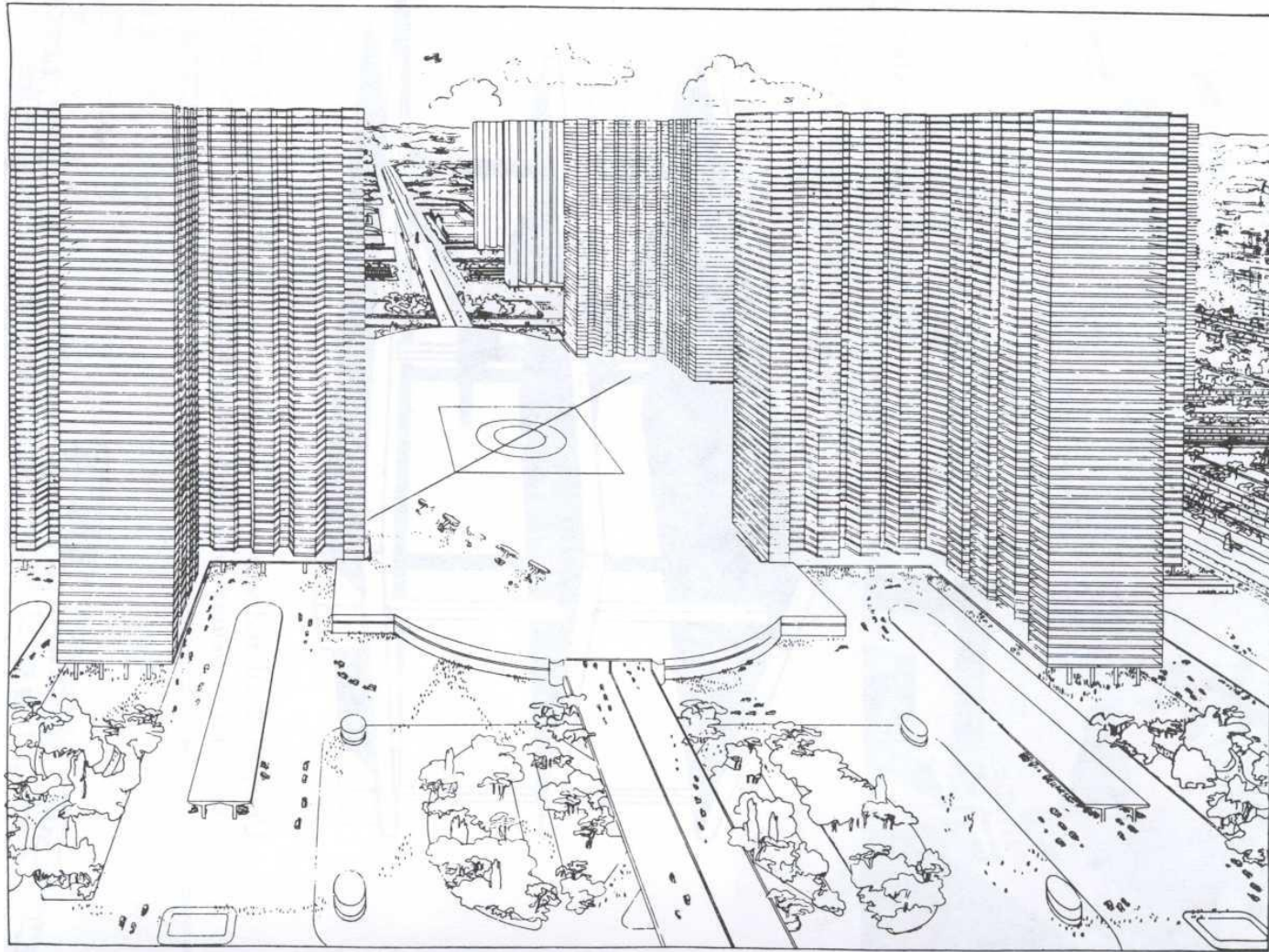


Dilemma today

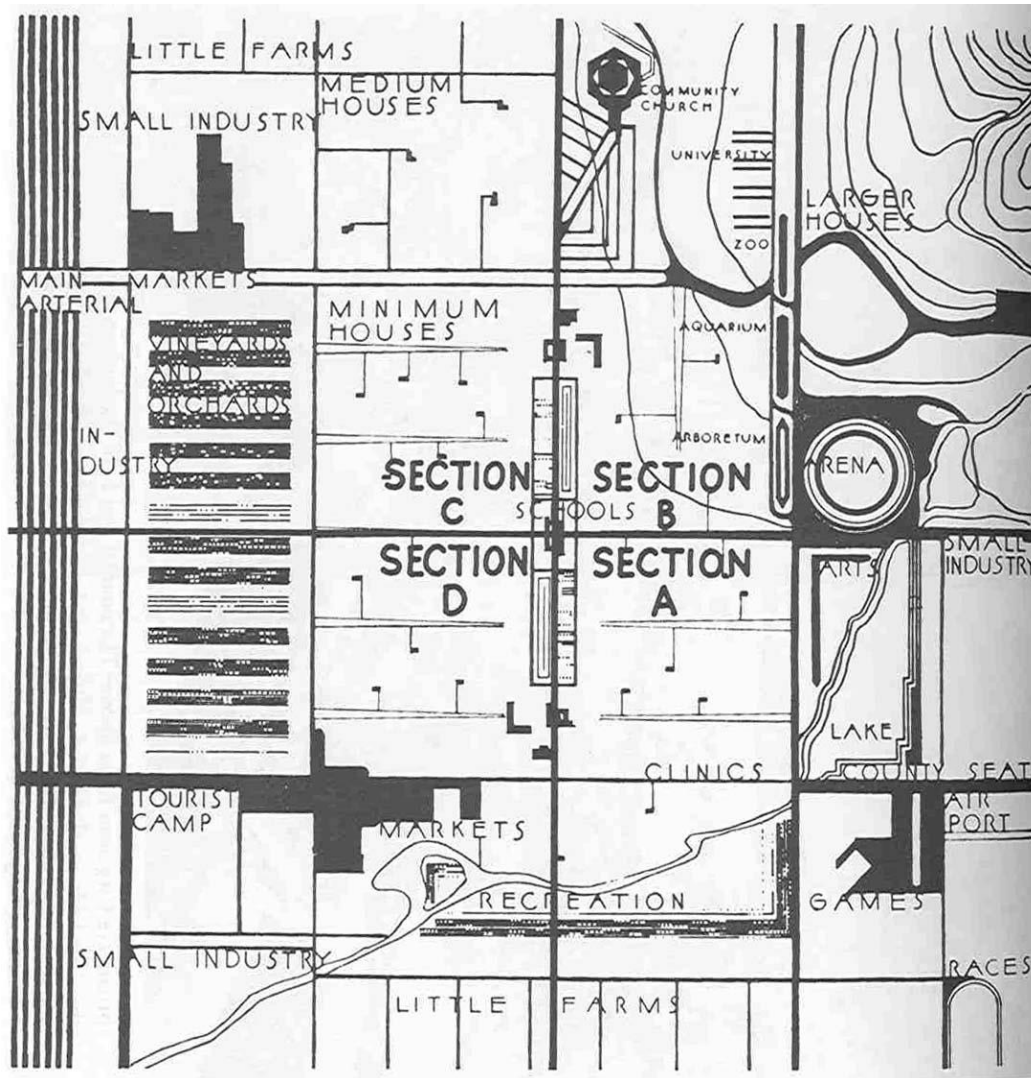
- Higher accessibility improves productivity and increases social capital
- Higher accessibility (lower generalised cost and/or more people) increases
 - car ownership
 - transport demand and with it
 - GHG emissions
 - Congestion
 - encourages WFH (and lower transit use)
 - invites sprawl

What were the past visions ?

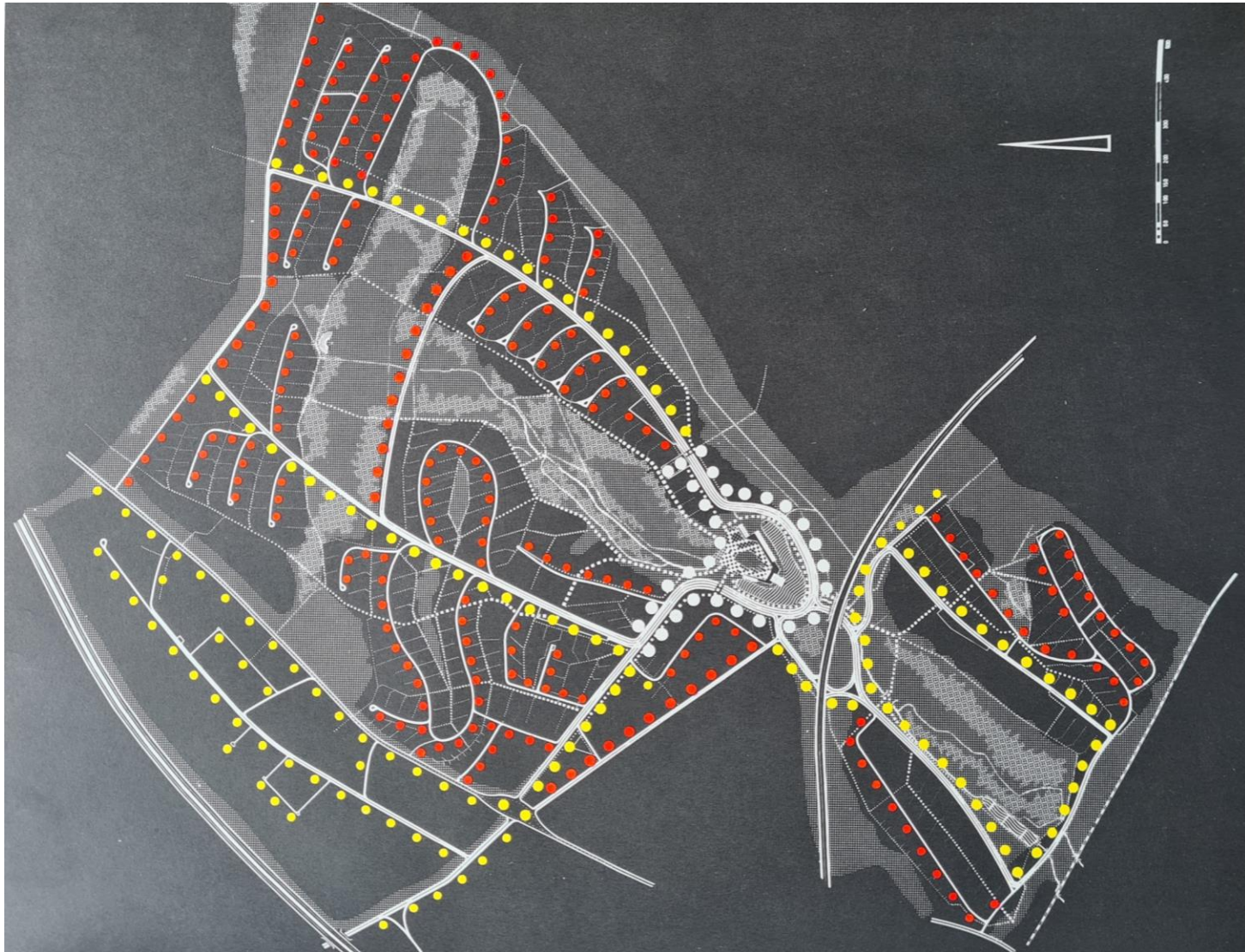
Radical dreams: Le Corbusier's City radieuse



Past radical dreams: Lloyd Wright's Usonia



Past radical dreams, realised: «Autogerechte Stadt»



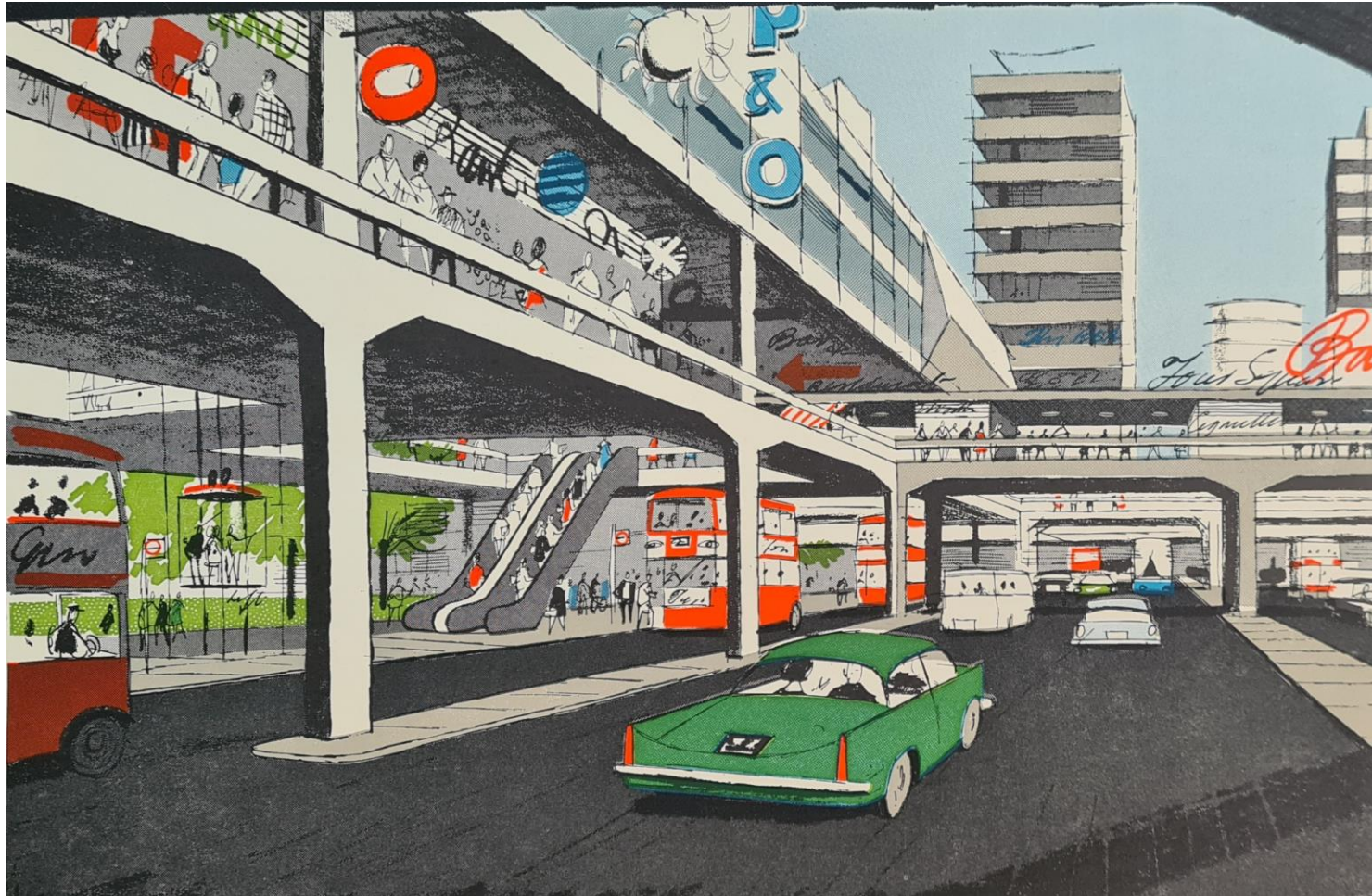
Source: Reichow (1963), p. 24

Past radical dreams, realised: Motorways



Dr. Wolf Strache, Public domain, via Wikimedia Commons

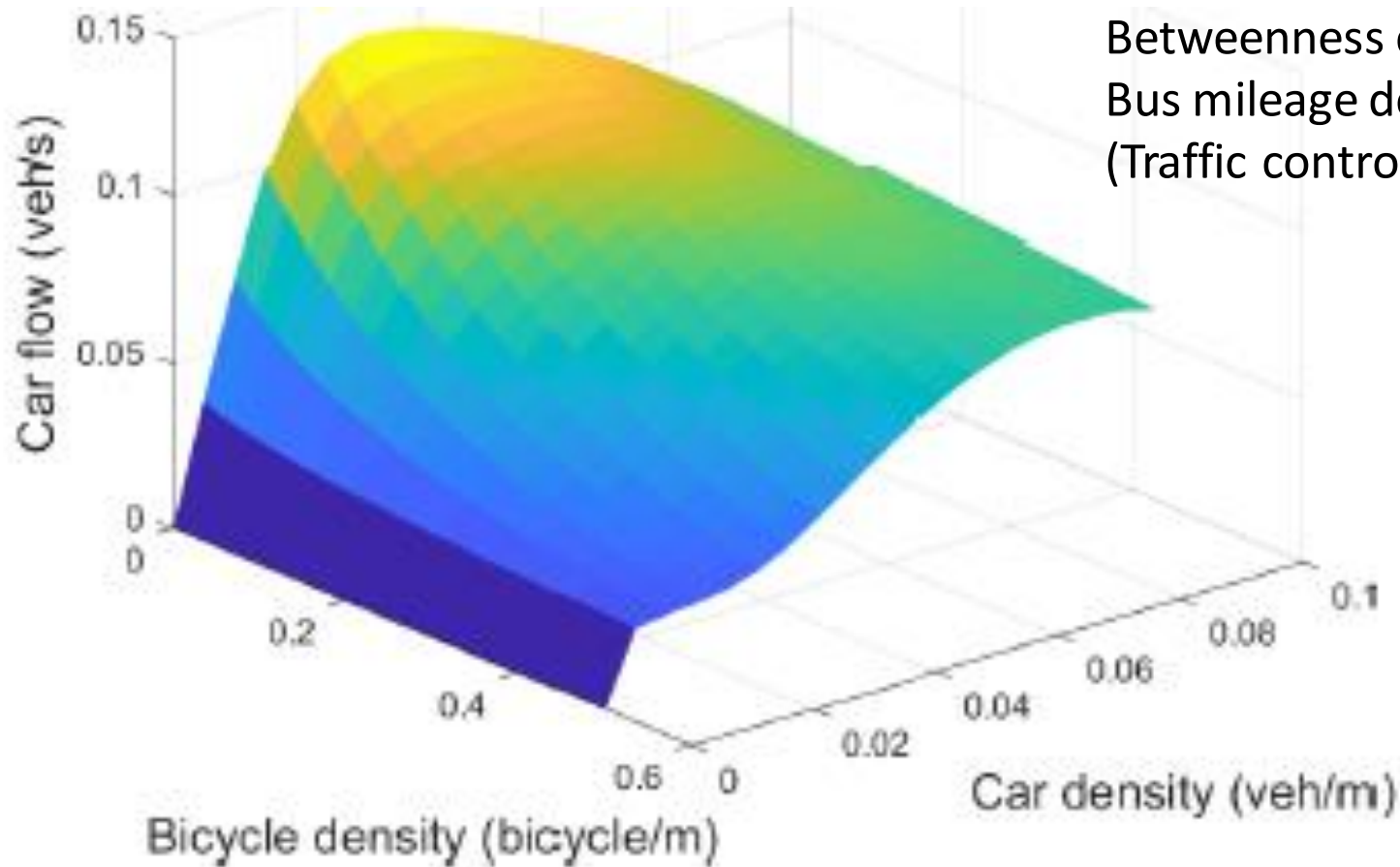
Past radical dreams: Buchanan's two-level central London



Source: Buchanan Report (1963)

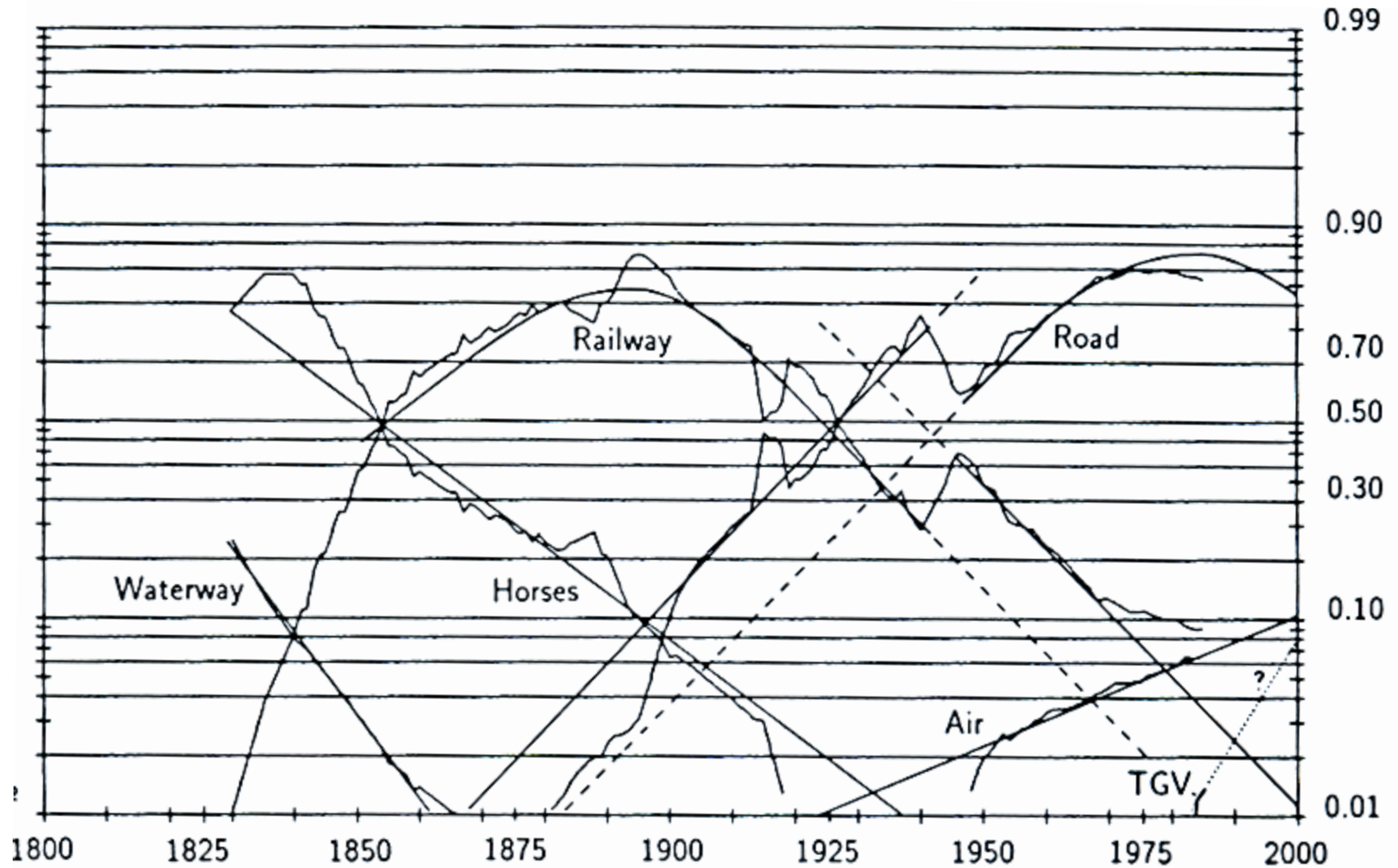
Can we escape? Nearly fixed urban network capacity =

Junction density,
Lane miles density
Betweenness centrality,
Bus mileage density
(Traffic control)



Ways out ?

History: Modal split in France (all distance bands)



Source: Grübler (1998) S.209

Visions, academic visions ?

Visions, academic visions for (local) authorities ?

	Algorhythm	Object
Idea	Developer/academic	Designer
Prototype	First coder	Workshop/engineer
Product	Software engineer	Factory/team
Transmission	Consultant	Firm
Filter	Advisor	Advisor
Decision shaper	Executive	Excutive
User/ decision maker	Sovereign	Sovereign

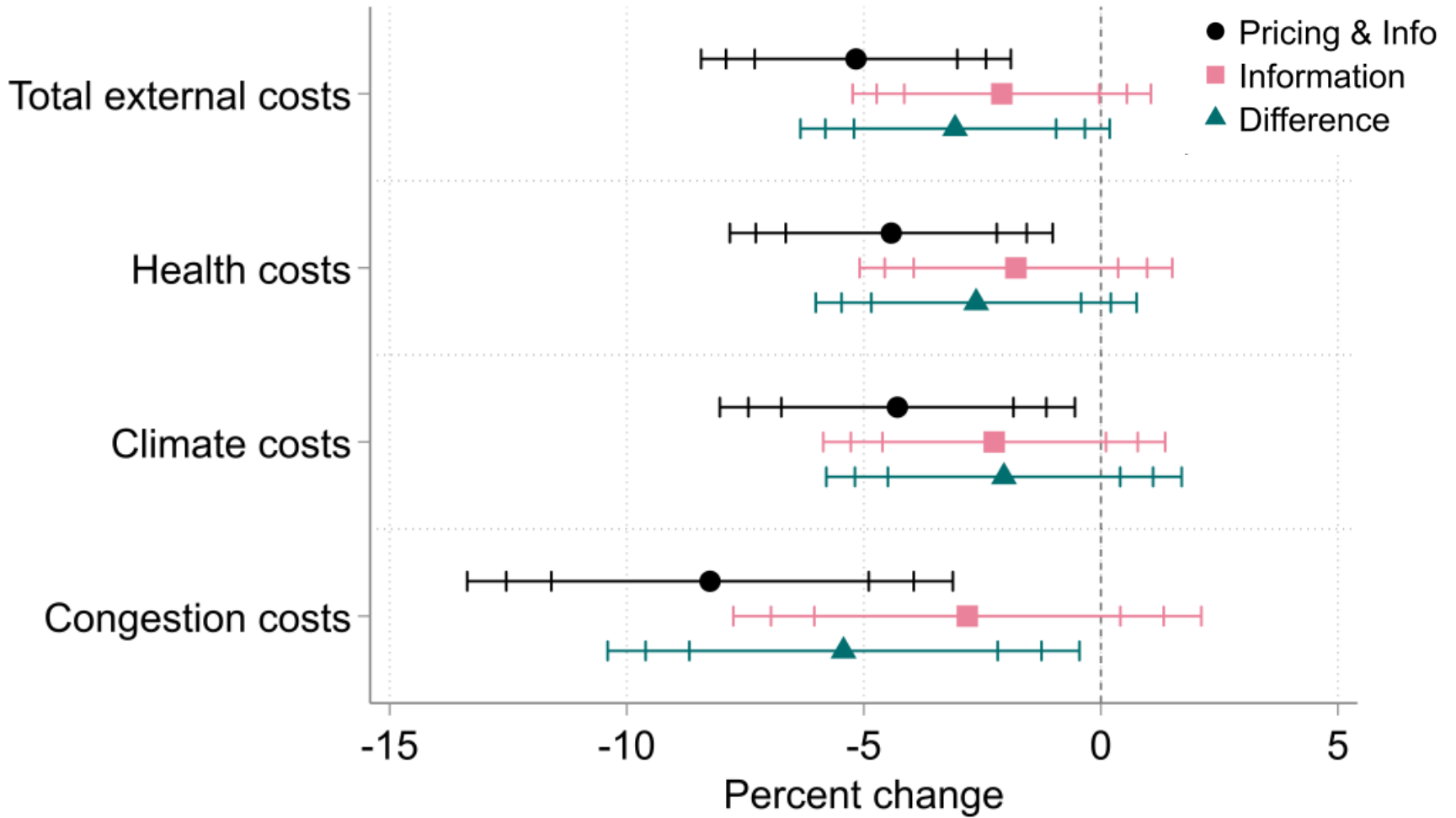
Which visions are we discussing?

A managed/co-ordinated one

A managed/co-ordinated one: Pricing

- *Mobility pricing*
 - Two-part tariffs for infrastructure
 - Option fee
 - Pay-as-you-go for usage
 - Congestion pricing
 - (Demand responsive) parking pricing
 - GHG (CO₂) pricing
 - Local emissions pricing

Pricing effects – MOBIS average treatment effect

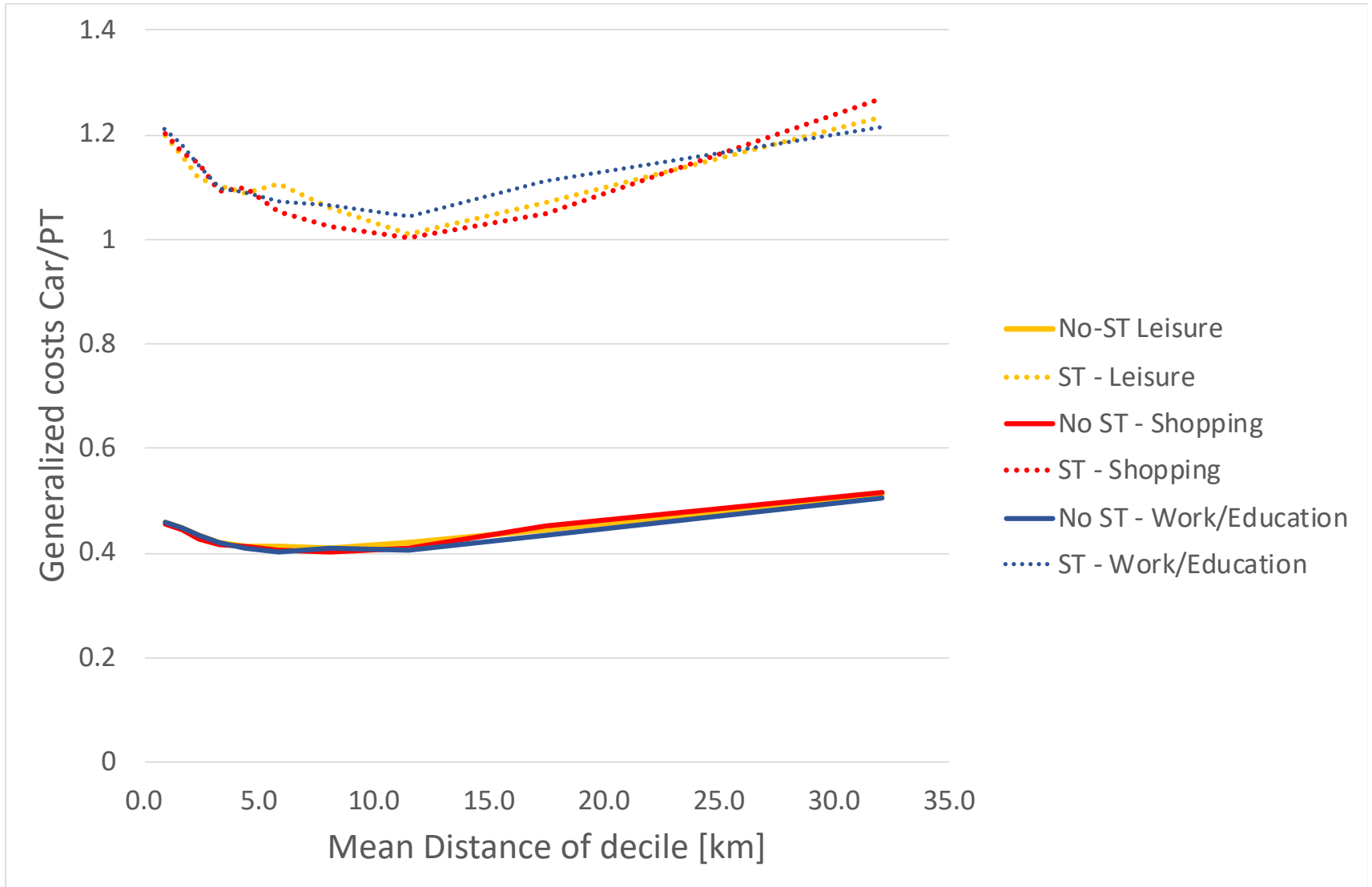


Source: Hintermann, 2023

A managed/co-ordinated one: Public transport

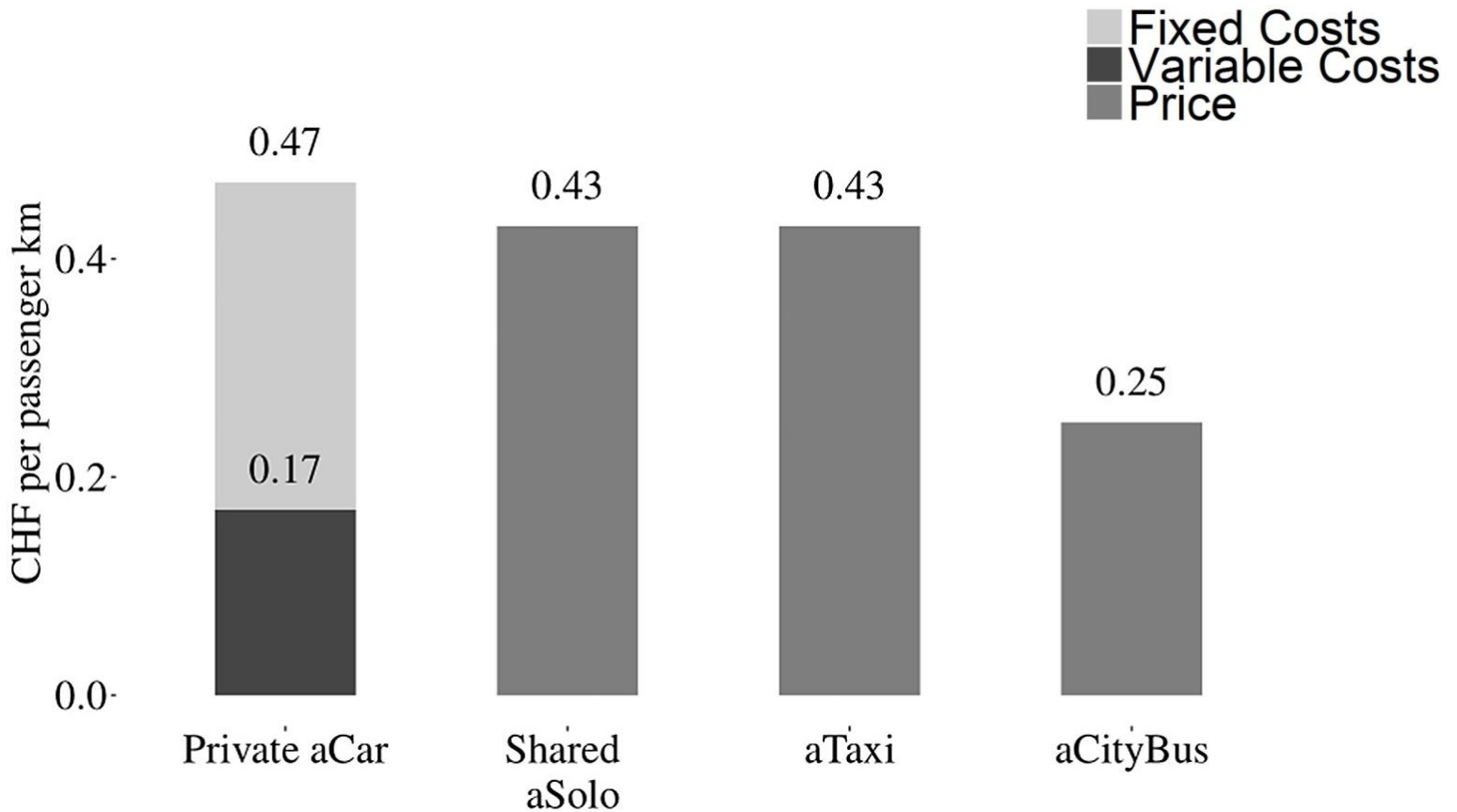
- MaaS improved shared mobility with
 - Demand responsive pricing

A managed/co-ordinated one? Comparison of MOBIS GC



An automated one? First robust cost estimates

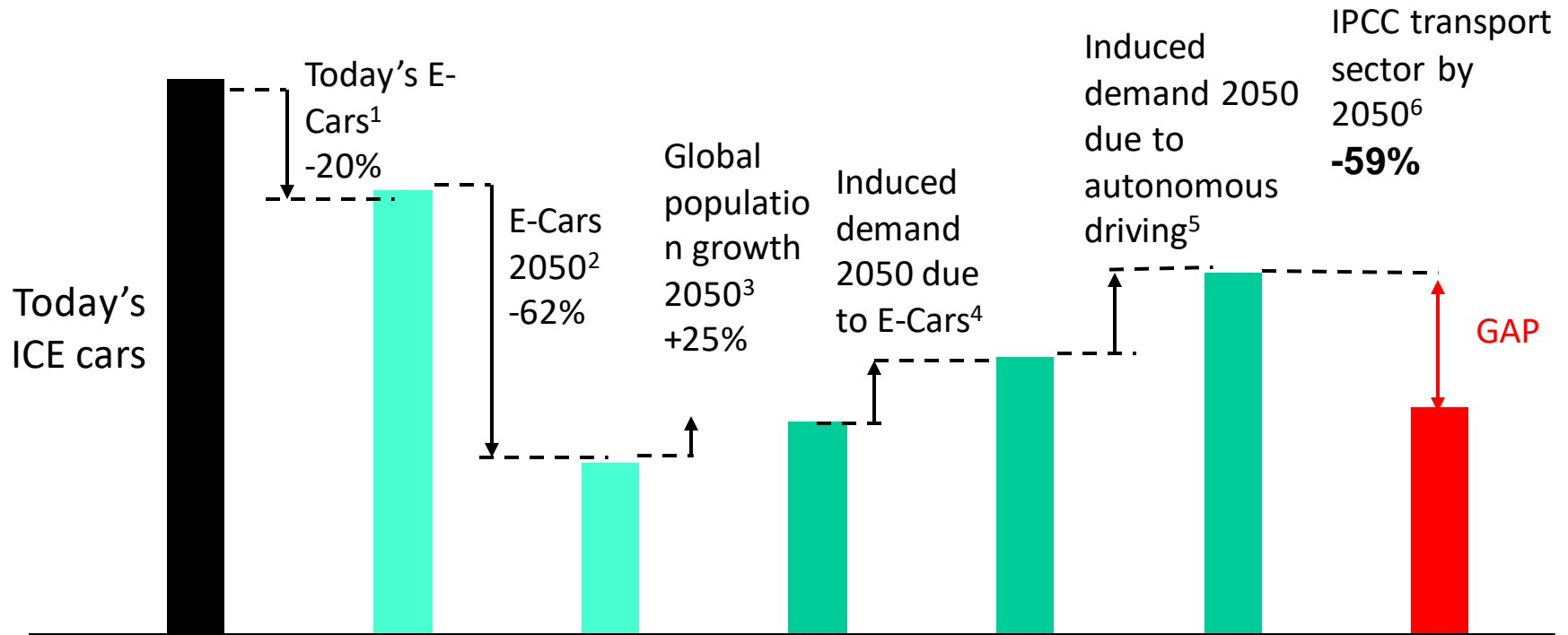
Structure of the pkm full costs for today's usage levels



Source: Bösch, Becker, Becker and Axhausen (2017)

An electrical autonomous one,

An electrical autonomous one,



Source: Livingston (2022)

Note: These are optimistic estimates of how many CO2 emissions can be avoided through technology.

A car free/reduced one,

A car free/reduced one,

- a 15 min city ?
- a net-zero CO₂ city ?
- an e-Bike city ?

An e-bike city?

The idea of an e-bike city

- e-bike/transit are the core modes
- 50% of road space for slow vehicles (e-bike, bike etc.)
- Integration with shared services for large demands and demand variations
- Maintaining of current accessibility levels (for all)

The idea of an e-bike city: Birchstrasse, Zürich



Farewell 23/12

Short term losers & winners

- Future generations
- Current and future cyclists and micro-mobility
- Current and future pedestrians
- (Urban public transport users – fewer stops, more services & lines)
- Urban residents (and property owners)

- Mobility impaired

- (Poor) suburban in-commuters
- Urban car users
- (Urban consumers)

Can we trust this idea to be a tie breaker?

“Act only according to that maxim whereby you can at the same time will that it should become a universal law”

(Kant, 1785)

Thanks to

Thanks to

- ETH Zürich
 - Department BAUG
 - IVT's past and current members
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- strc.ch co-organizers
- Project collaborators
- External funders, e.g. SNF, ASTRA, EU, Airbus, BFE, Zürich AG, etc.

Special thanks to



Questions? - but not now

- www.ivt.ethz.ch
 - ebikecity.ethz.ch/en
 - ebis.ethz.ch/
-
- but rather during the apero at the Dozentenfoyer upstairs or outside