

Preferred citation style

Axhausen, K.W. (2024) What next when BAU doesn't work anymore?,
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What next when BAU doesn't work anymore?

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Zürich

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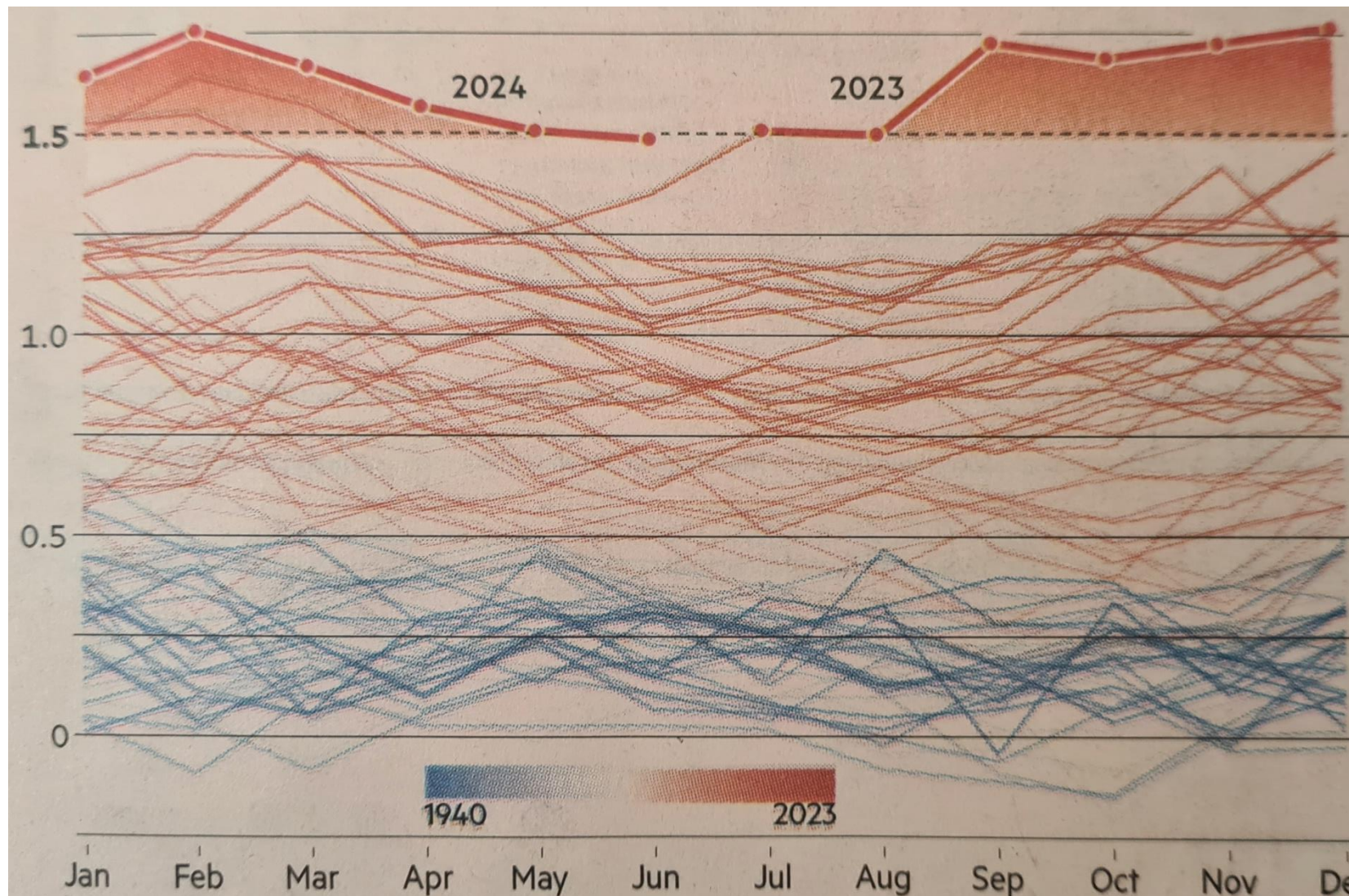
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Where do we go now ?

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Source: Financial Times, 13.7.2024

BAU – business as usual

BAU

- Infrastructure expansion as the first solution driven by dedicated (and steady) tax revenue streams and the resulting budgets
- Infrastructure expansion driven by the absence of alternative visions
- Operational improvement and automation as the second solution driven by tech advances
- Exclusion of demand management from the discussion by political objections (See e.g. the slow implementation of congestion pricing in Manhattan)

Dilemma of transport planning as understood today

Shrinking “road” – Switzerland (1950)



Shrinking “road” – Switzerland (2000)

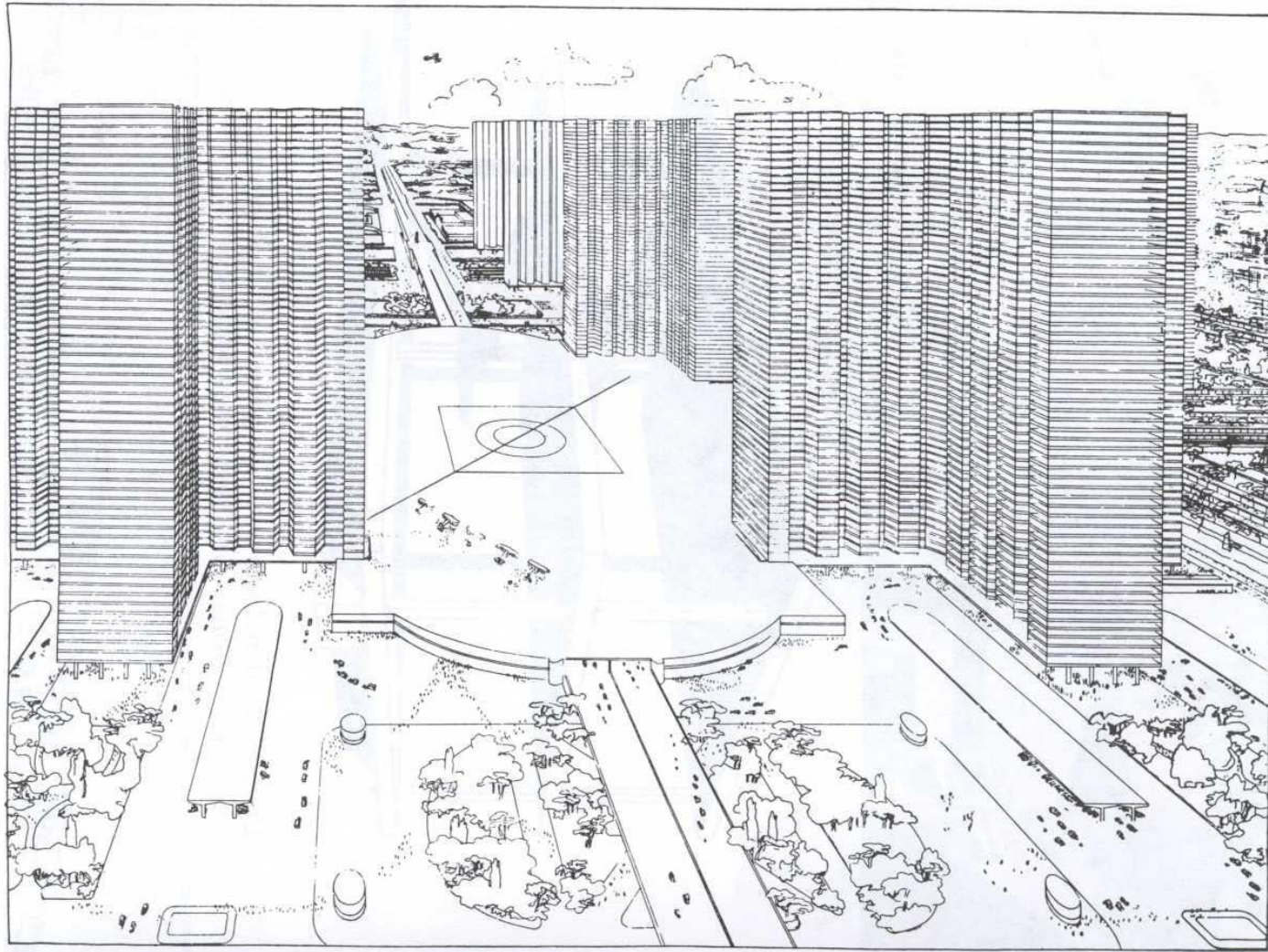


Dilemma today

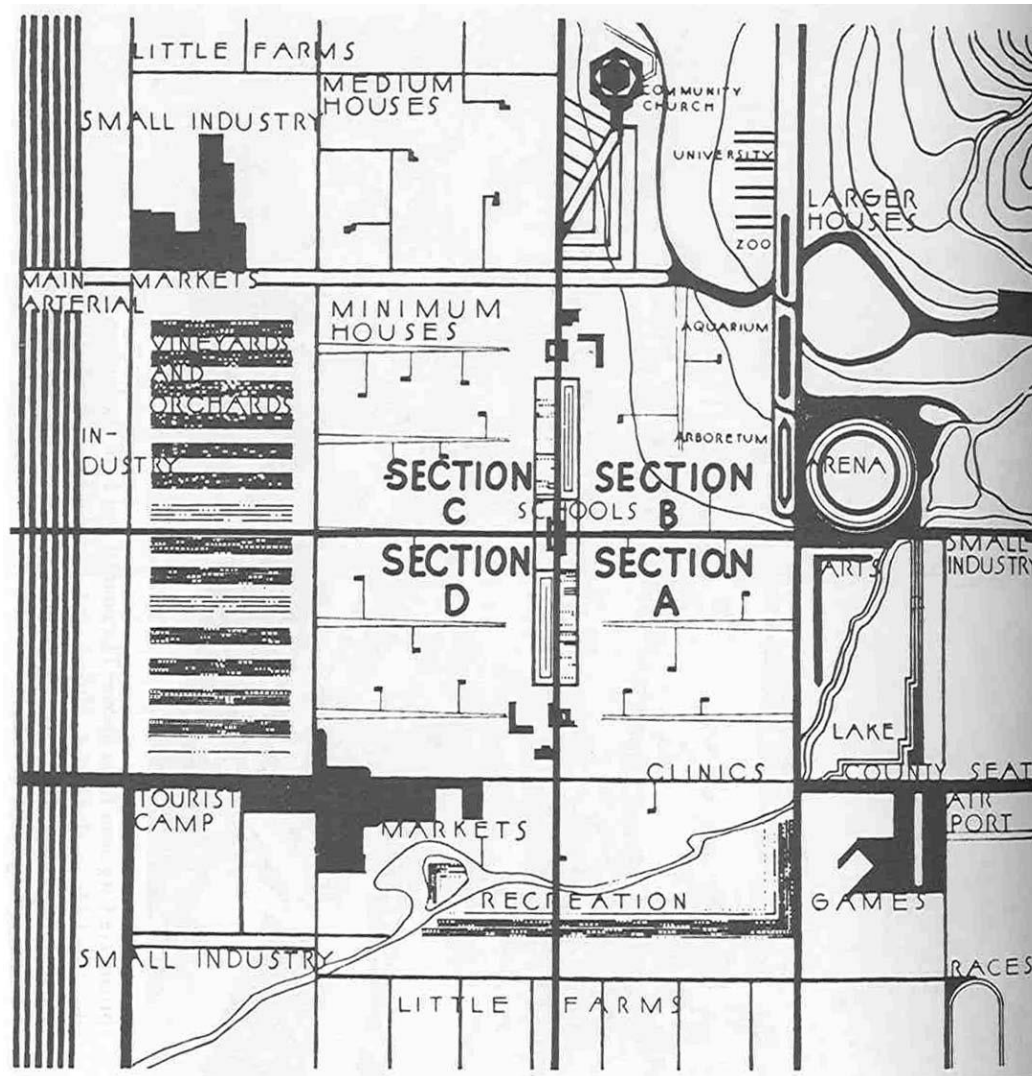
- Higher accessibility improves productivity and increases social capital
- Higher accessibility (lower generalised cost) increases
 - car ownership
 - transport demand and with it
 - GHG emissions
 - Congestion
 - encourages WFH (and lower transit use)
 - invites sprawl

What were the past visions ?

Radical dreams: Le Corbusier's City radieuse



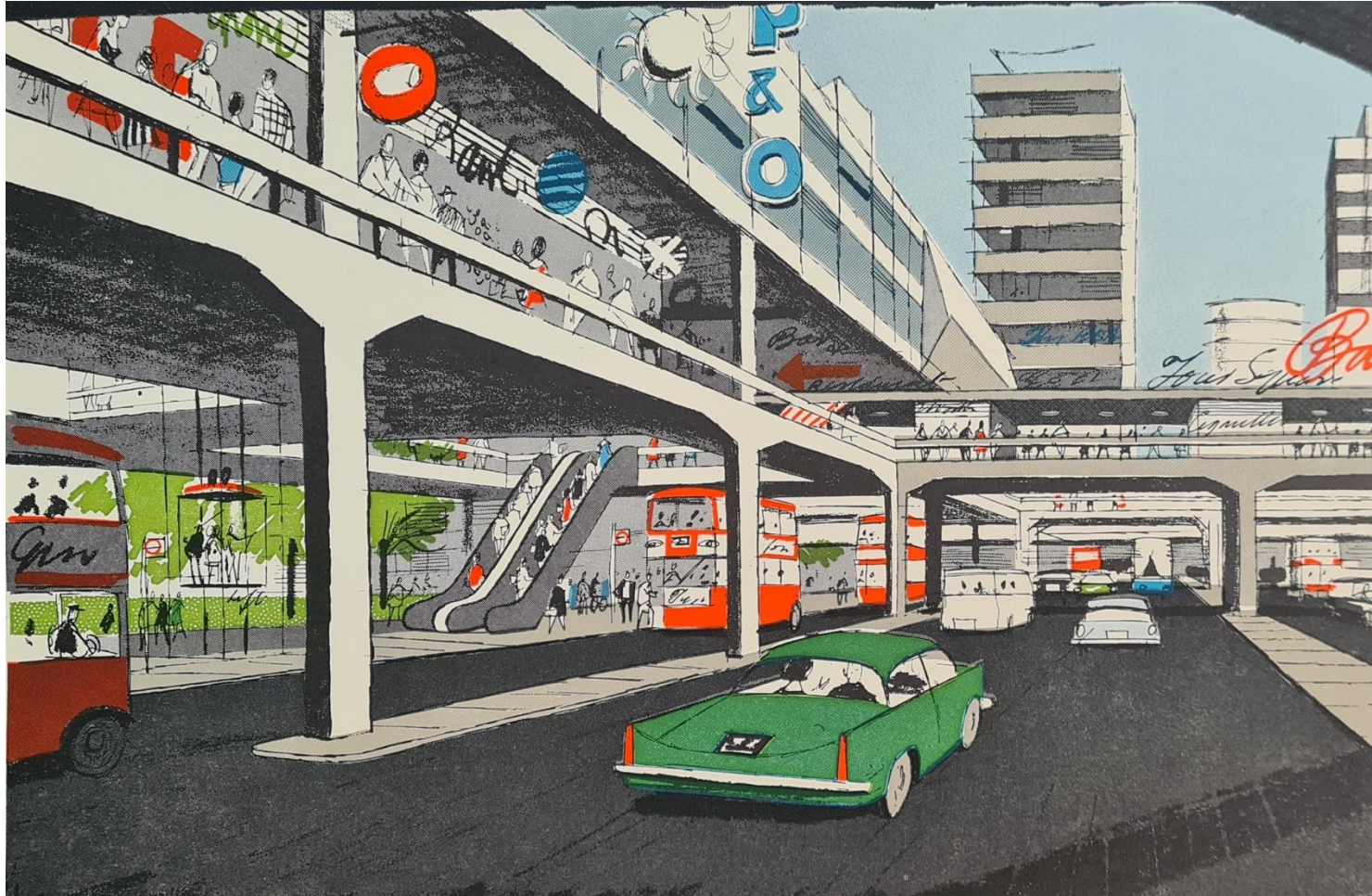
Past radical dreams: Lloyd Wright's Usonia



Past radical dreams, realised: Motorways



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



Source: Buchanan Report (1963)

Ways out ?

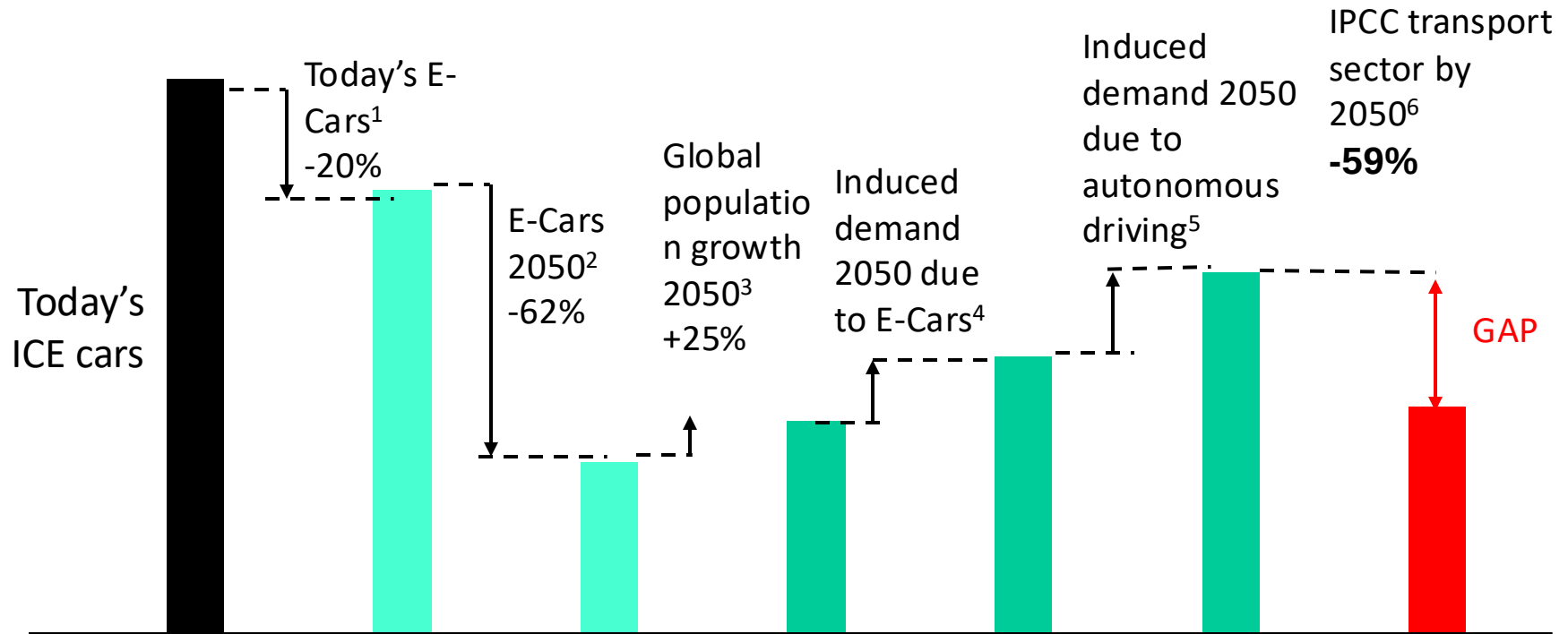
A managed/co-ordinated one: Pricing

- *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

A managed/co-ordinated one: Public transport

- MaaS – mobility as a service - improved shared mobility with
 - Demand responsive pricing and services
- Even with free season tickets MaaS could only match the generalised costs of cars by transit in Switzerland

An electrical autonomous one,



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

An e-bike city?

The idea of an e-bike city

- e-bike/transit are the core modes of the city / metro area
- 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: A brief video

Accessibility as the policy goal ?

Accessibility as the policy goal ?

- Current residents should not be worse off
- Maintain today's level of accessibility
 - Via residents, employment possibilities, leisure (All, mixture?)
 - Via Generalised costs
- Trade-off between modes
- Targeted infrastructure improvements possible
- Targeted operational improvements possible
- No further step changes

Questions?

- www.ivt.ethz.ch
- ebikecity.baug.ethz.ch/
- ebis.ethz.ch/
- www.ebikecity.ch

Appendix

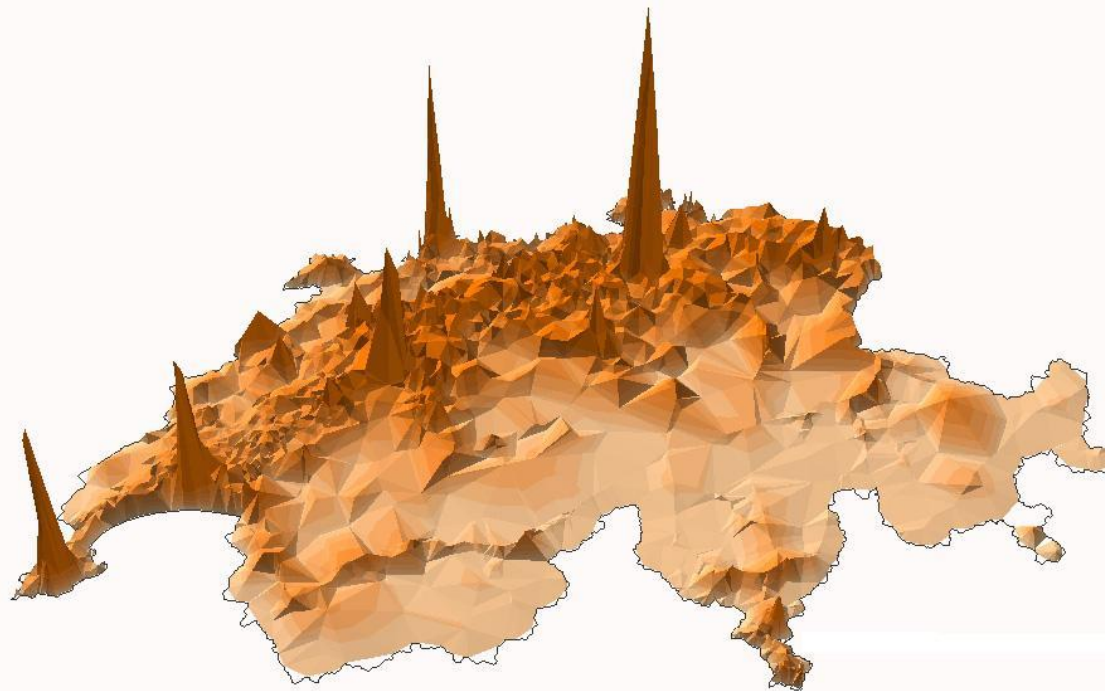
Calculation of Hansen-accessibility

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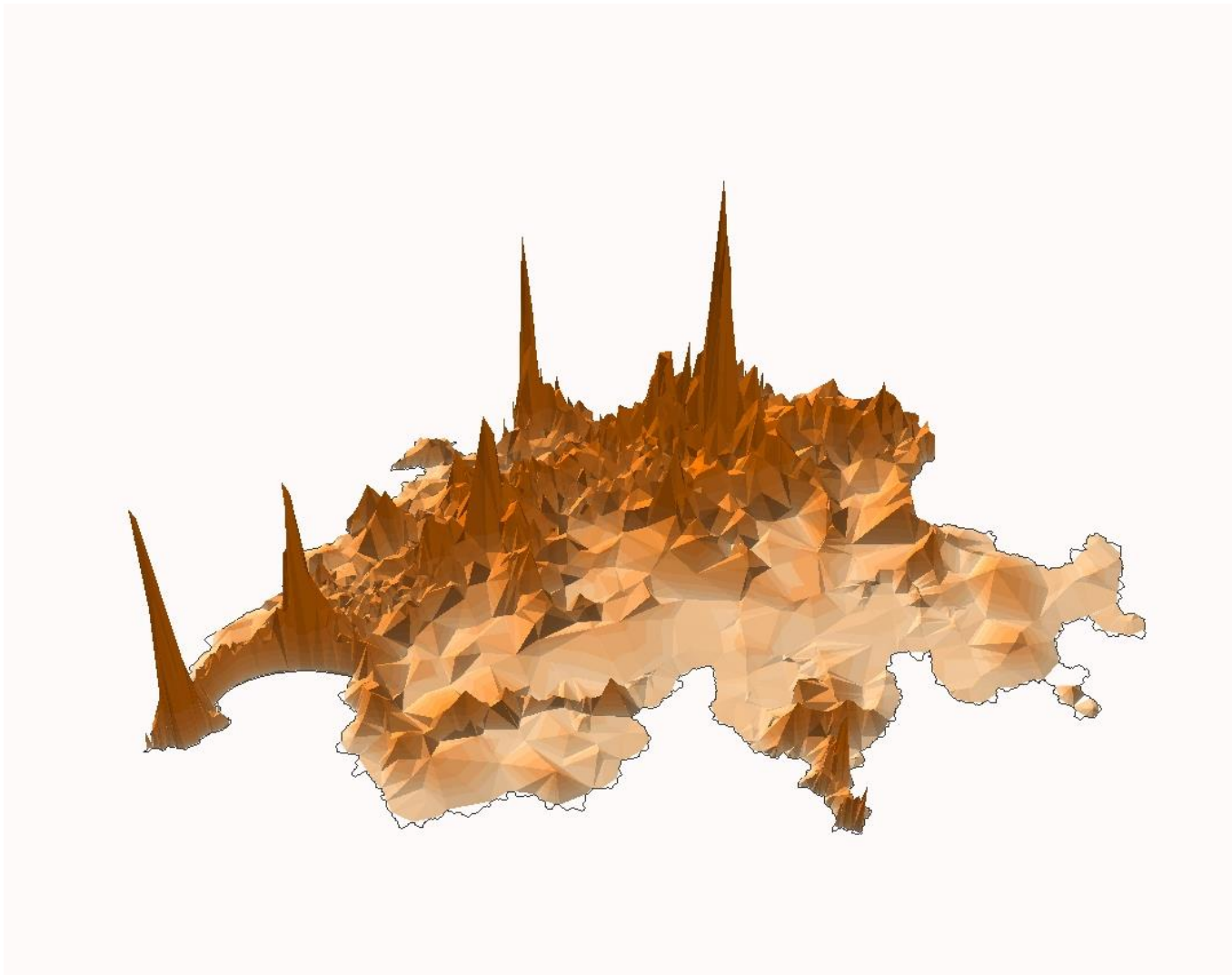
$$E_i = \sum_{k_{ij}=0}^{k_{ij} < k_{\max}} X_j f(k_{ij})$$

E_i	Erreichbarkeit von Ort i aus
i	Ausgangsort i
j	Zielort j
X_j	Gelegenheiten am Ort j
k	Generalisierte Kosten des Widerstands zwischen i und j
f()	Gewichtungsfunktion

Hansen-accessibility – roads (1950)



Hansen-accessibility – roads (1950)(2000)



Selection of relevant IVT papers

- Ballo, L., L. Meyer de Freitas, A. Meister and K.W. Axhausen (2023) The E-Bike City as a radical shift towards zero-emission transport: Sustainable? Equitable? Desirable?, *Journal of Transport Geography*, **111**, 103663.
- Ballo, L., A. Sallard, L. Meyer de Freitas and K.W. Axhausen (2024) Is “small” infrastructure the next factory for accessibility? Evaluating the regional accessibility effects of a cycling-centric transport policy in Zurich, *Arbeitsberichte Verkehrs- und Raumplanung*, 1888, IVT, ETH Zurich, Zurich.
- Heinonen, S., A. Meister, L. Meyer de Freitas, L. Schwab, J. Roth, T. Götschi, B. Hintermann and K.W. Axhausen (2023) The e-biking in Switzerland (EBIS) study: Methods and dataset, paper presented at the *102nd Annual Meeting of the Transportation Research Board (TRB 2023)*, Washington, D.C., January 2023.
- Meyer de Freitas, L. and K.W. Axhausen (2023) Evaluating willingness-to-pay for cycling infrastructure in Switzerland, paper presented at the 7th Annual Meeting of the Cycling Research Board (CRBAM), Wuppertal, October 2023.
- Meyer de Freitas, L. and K.W. Axhausen (2024) The influence of individual physical capabilities for cycling adoption: Understanding its influence and mode-shift potentials, *Transportation Research Part A: Policy and Practice*, **185**, 104105.