



Trial my ride – A field-experiment with test-driving battery - electric vehicles (BEVs) by mass-market consumers.

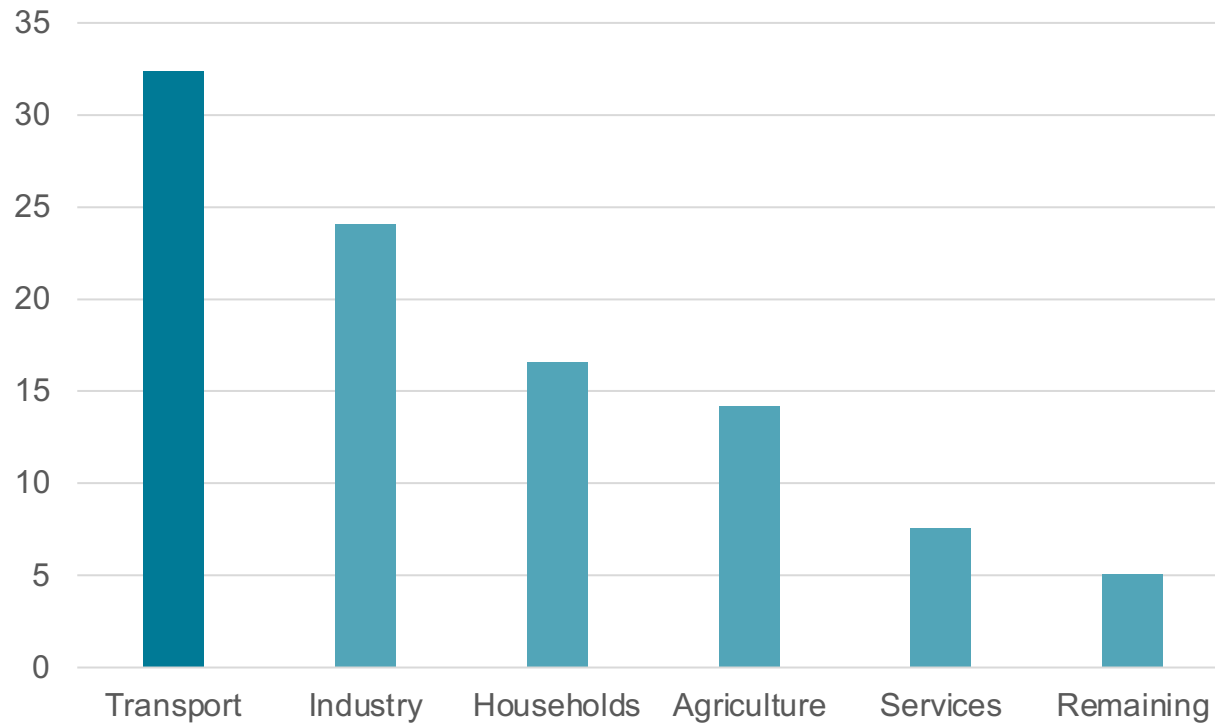
Presentation prepared for FRONTIERS IN ENERGY RESEARCH
Gracia Brückmann

About me

- Studied **Economics**
 - Microeconomics: *what individuals do*
 - Econometrics: *using data to estimate causality*
- PhD student at ETH since 10/2017
 - D-GESS: International Political Economy and Environmental Politics Group
 - Institute of Science, Technology & Policy (ISTP), Swiss Mobility Lab
- Mitigating climate change calls for decarbonising all areas of human life (IPCC, 2018).

Transport responsible for 25% of GHG emissions

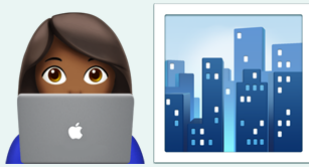


Swiss emissions shares (in %) by sectors
2018



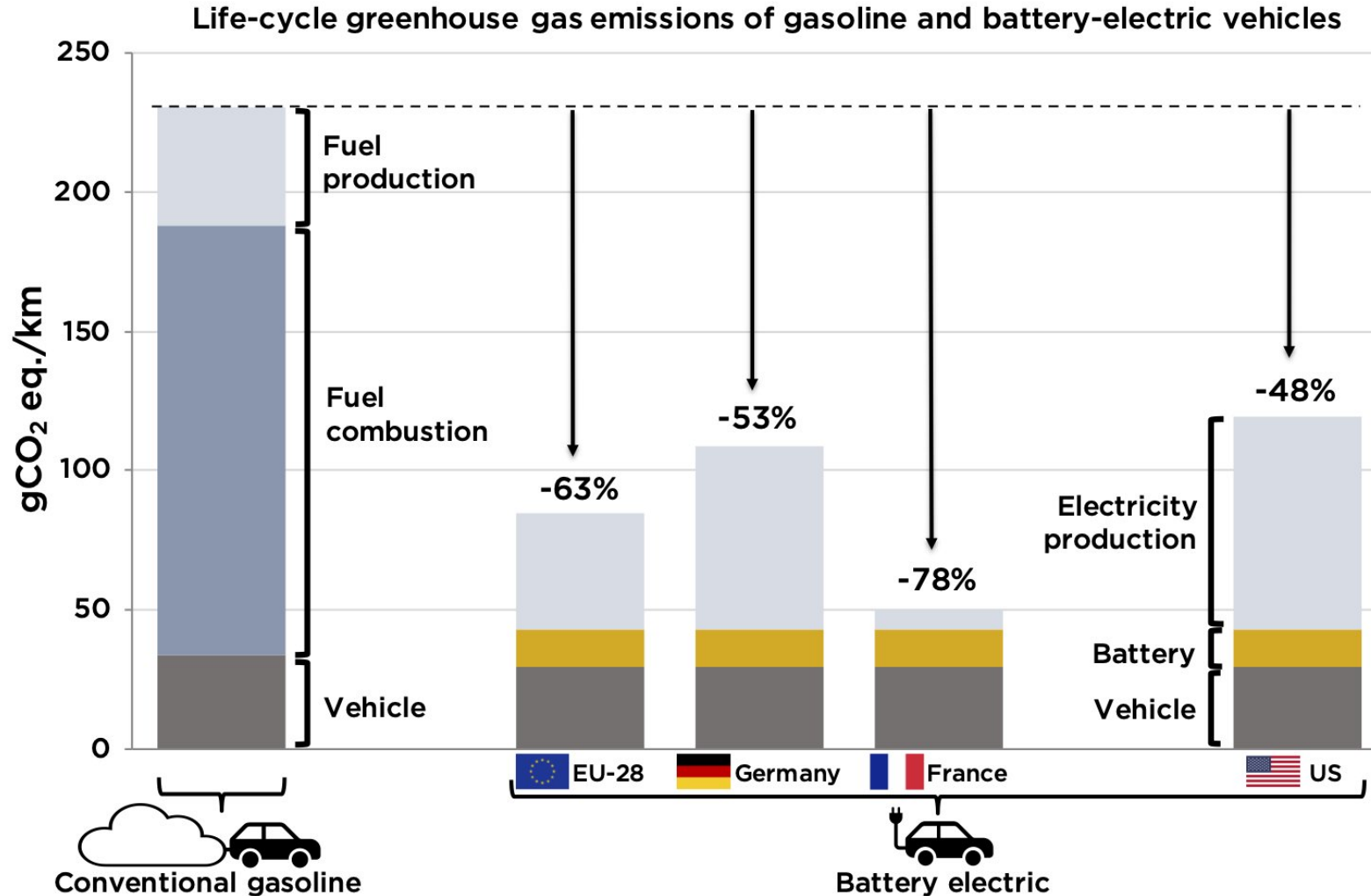
- Transport emissions rose since 1990 (+ 5 %)
- Transport emissions stem mainly from **passenger transport** (75 % in 2018)
- Highest emitting newly registered car fleet in Europe (2019)

Solutions? Avoid-Shift-Improve

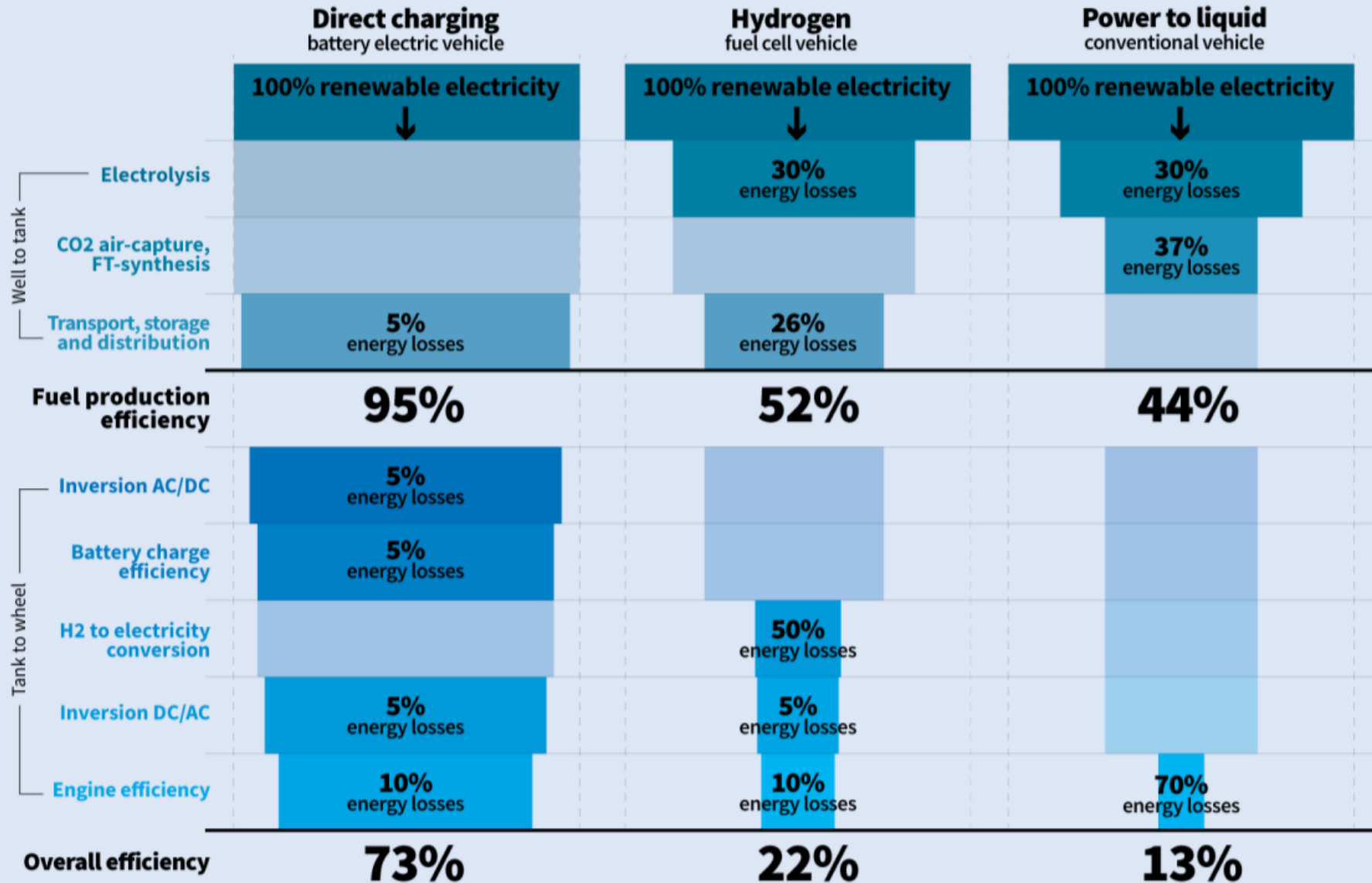
Table 1 | Illustrative 'avoid-shift-improve' options in different sectors and services

	Service	Avoid	Shift	Improve
Transport	Accessibility Mobility			

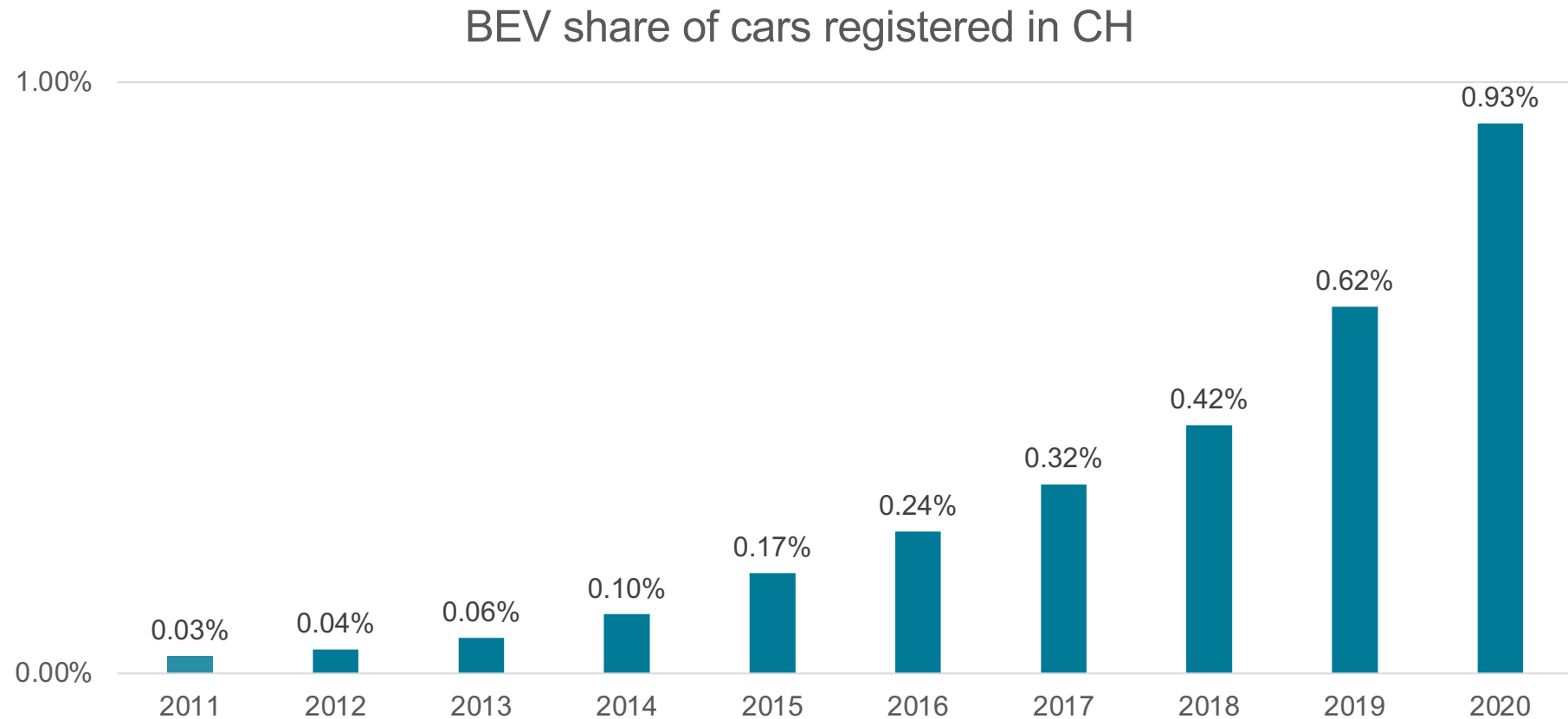
Why BEVs? Lower life-cycle emissions



Why BEVs? Higher efficiency



So, everything sorted out?



Tech alone won't save (us unless we use it)!

nature human behaviour

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Changing behaviour is the key to solving the climate challenge

[Greer K. Gosnell](#) ✉ & [Morgan D. Bazilian](#)

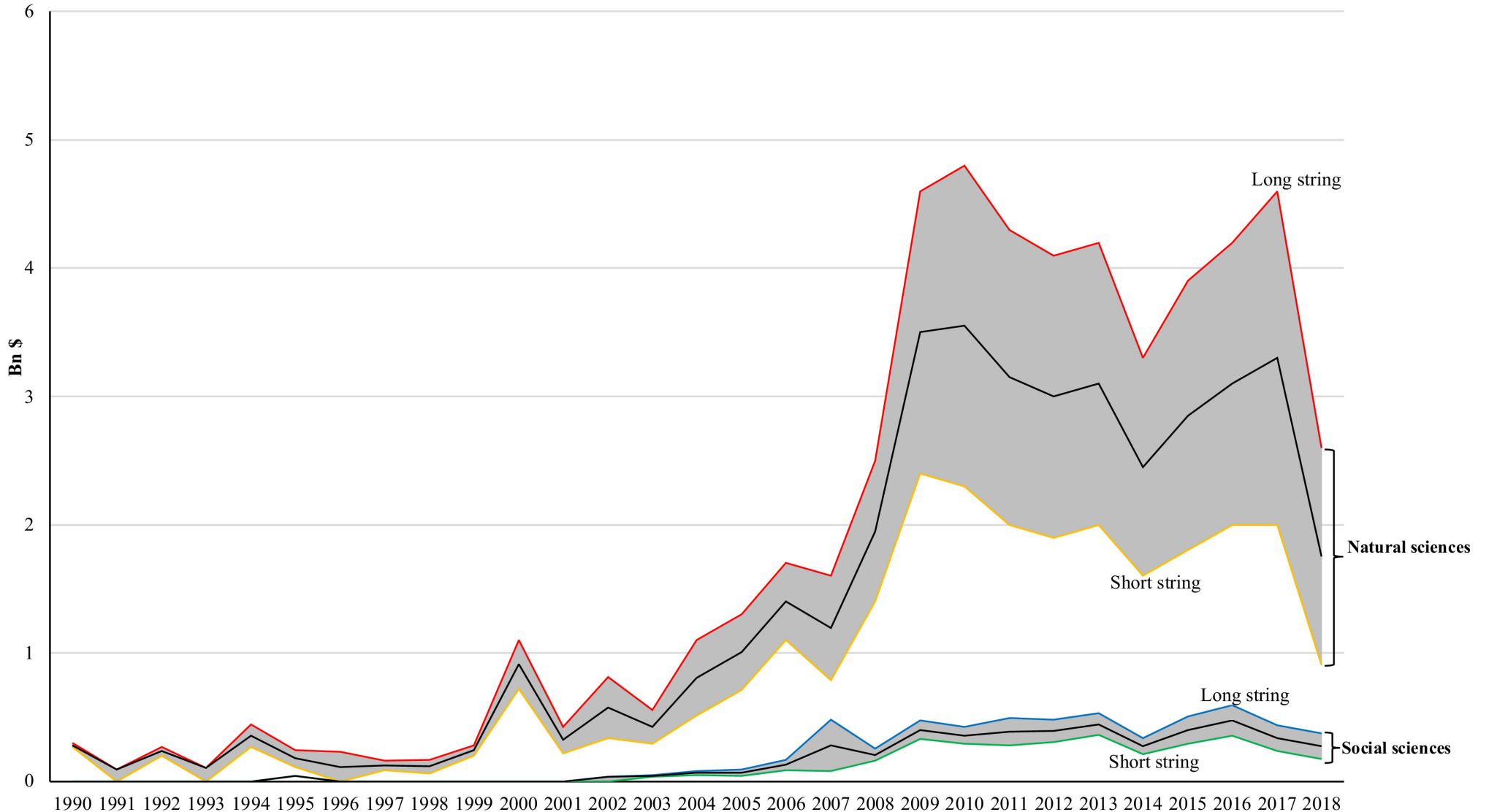
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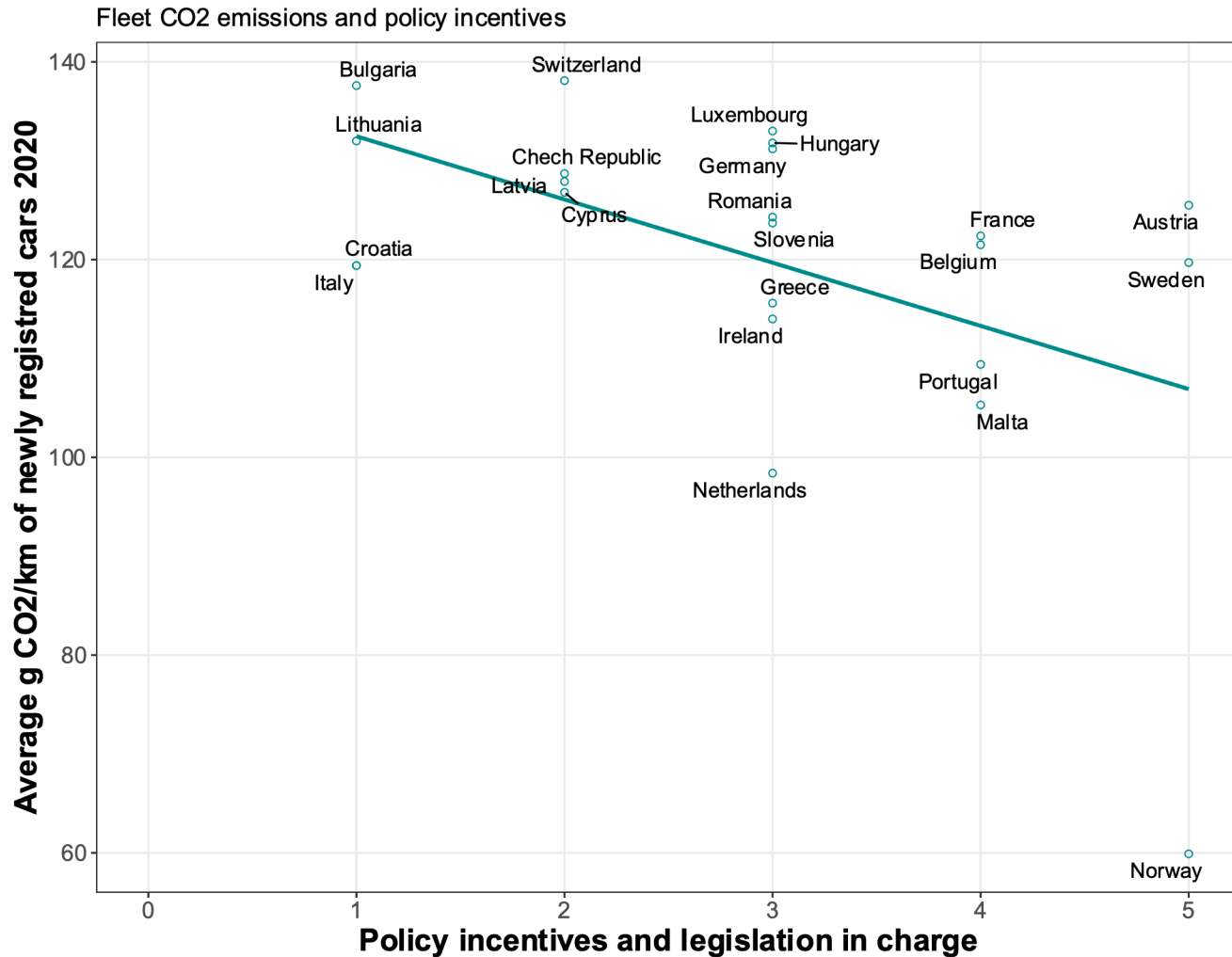
Energy Social Science Research

Funding for climate research in the natural and technical sciences versus the social sciences and humanities (USD).

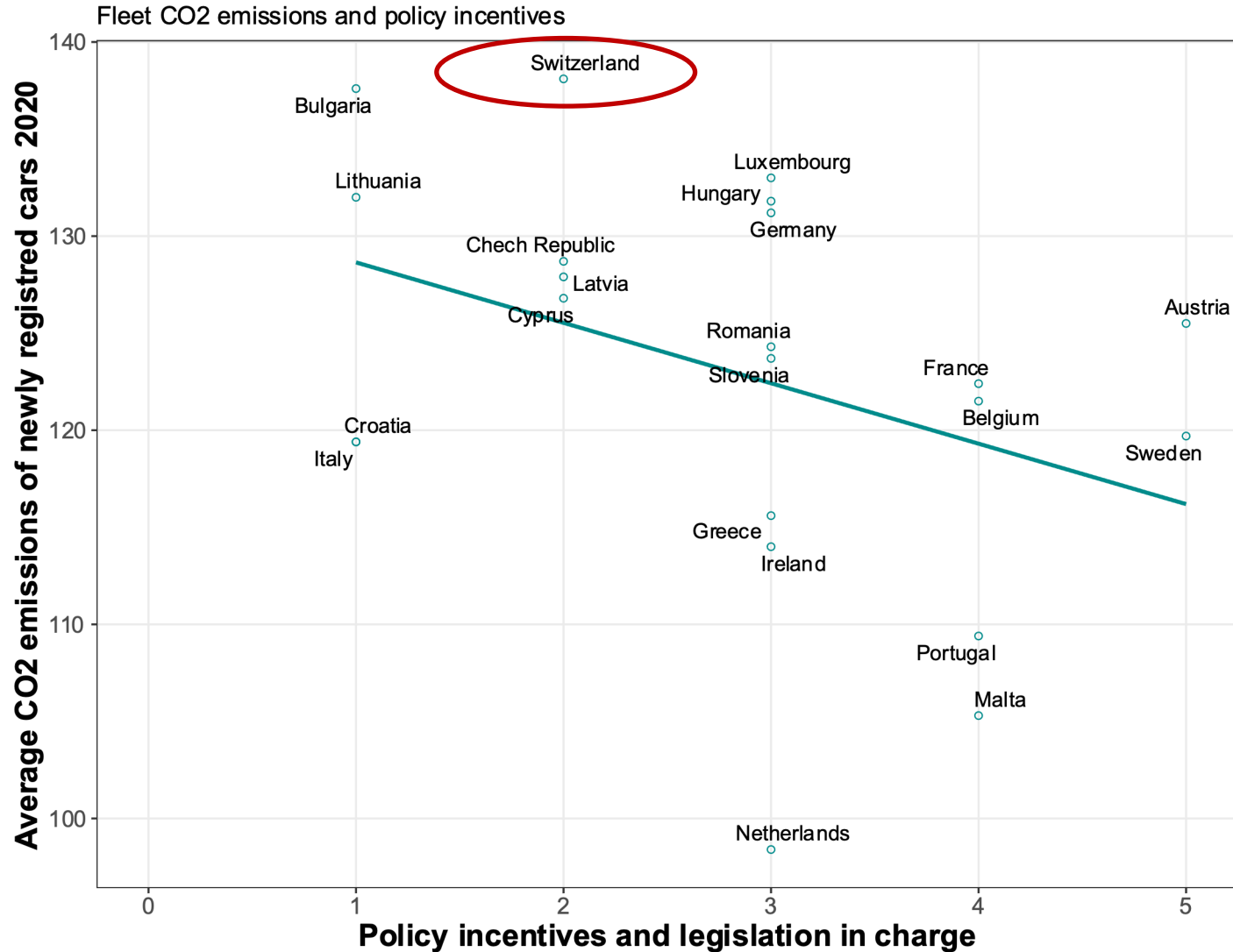
→
Much less funding for social sciences.



Some reasons for low BEV adoption (in): 1) Policy

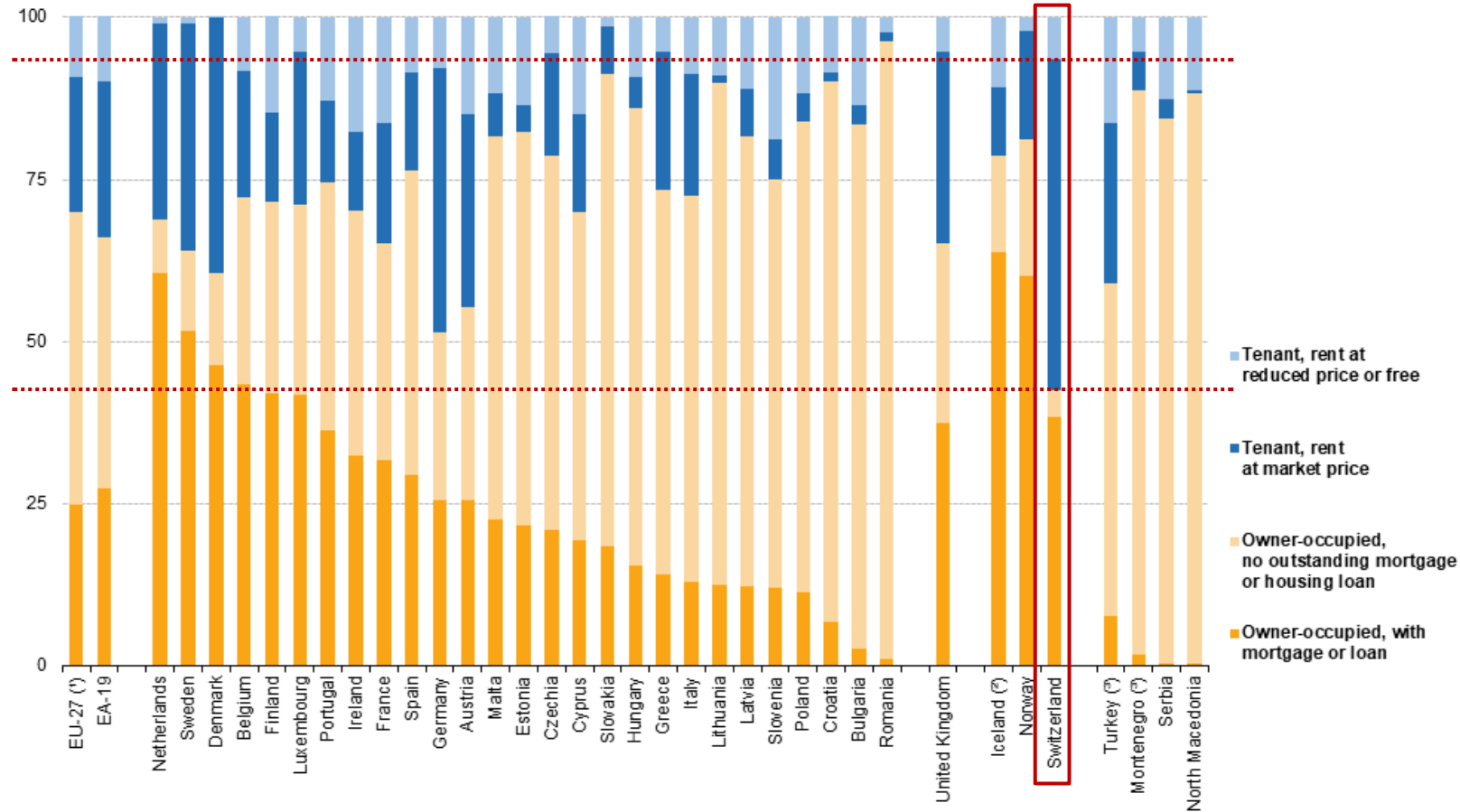


Some reasons for low BEV adoption (in): 1) Policy



Some reasons for low BEV adoption (in): 2) Housing

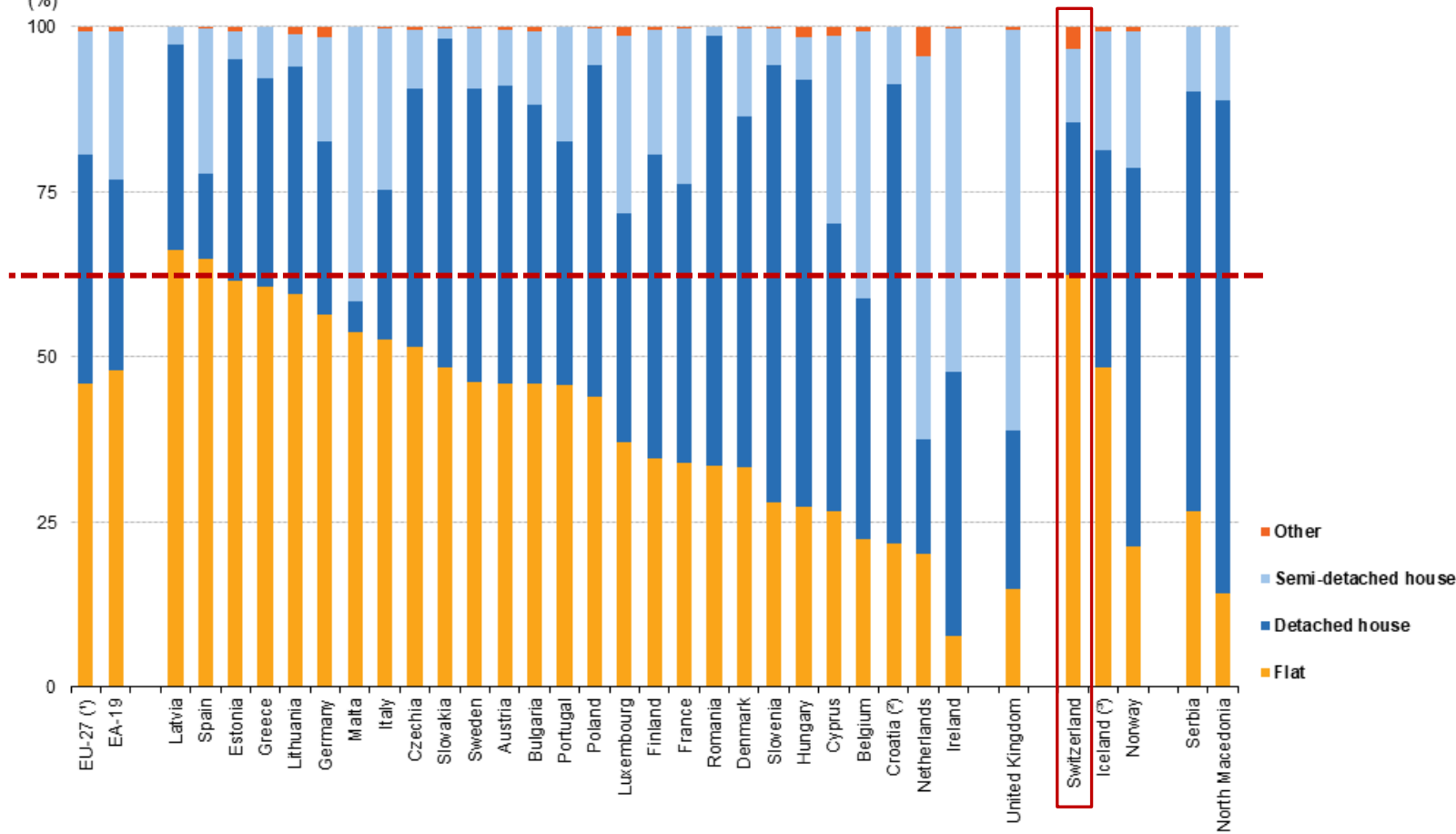
Distribution of population by tenure status, 2018 (%)



Note: ranked on owner, with mortgage or loan.
 (*) Estimates.
 (*) 2016.
 (*) 2017.
 Source: Eurostat (online data code: ilc_lvh002)

Some reasons for low BEV adoption (in): 2) Housing

Distribution of population by dwelling type, 2018 (%)



Note: ranked on flat.
 (*) Estimates.
 (*) Other: no significant values.
 (*) 2016.
 Source: Eurostat (online data code: ilc_vho01)

Some reasons for low BEV adoption (in): 3) Dealers

news & views

ELECTRIC VEHICLES

Dealerships are a tipping point

Many consumers encounter electric vehicles for the first time at car dealerships when they are looking to buy a new vehicle. Now, research shows that interactions with sales personnel have an important and often detrimental influence on the purchase of electric vehicles, presenting a critical barrier to their wide-spread adoption.

Jennifer Lynes

There was a time when one in three cars on the streets of New York City was an electric vehicle. The year was 1900. The popularity of electric vehicles (EVs) would continue to grow over the next decade. Considered a luxury car at the time, EVs were easier to drive, less noisy and had elegant interiors. However, by the 1920s



Some reasons for low BEV adoption (in): 4) Concerns

Stylized facts of common (mis-)perceptions

- “Range anxiety”
- Tech enthusiasts adopt BEVs
- BEV owners keep their old car
- Less 4x4 options
- Environmental consequences of switching from conventional cars to BEVs, see e.g. <https://blogs.ethz.ch/energy/electric-vehicles-in-zurich/>

Combatting low adoption of BEVs

- **Policy? Only weak public support in CH for ambitious mobility policies**
- Housing? Difficult, regulation in the making.
- Dealers? Already regulated through import targets.
- **Concerns? Maybe experience helps!**

Literature: experience matters for BEV adoption

- **Lacking knowledge** about electric vehicles among consumers
- Positive correlation between knowledge about EVs and **perceived usefulness**
→ higher intentions to adopt
- Extended trial experience called “most effective tool to **reduce** uncertainty and **negative BEV expectations** is”
- Opportunities to test-drive matter for BEV market penetration
- Trials & information campaigns regarded as effective policy measures

Sources: [Long et al. 2019](#), [Wang et al. 2018](#), [Thøgersen and Ebsen 2019](#), [Kim et al. 2019](#),
[Sierzchula et al. 2014](#), [Santos and Davies 2020](#)

Theory: experience matters for BEV adoption

- Trialability has direct influence on BEV adoption decision following **diffusion of innovation** theory (Rogers, 2003)
- **Theory of Planned Behaviour** (Ajzen, 1991)
- **Construal level theory** (Trope and Liberman 2010):
 - Analytical (if something is “psychological distant”)and
 - experiential processing (“psychologically close”) → stronger in shaping attitudes and behaviour
- Also, **econ** theory: info/experience = search cost reduction

Aim of this study

- Examining the **causal** effect of test-driving on BEV uptake
- Correlation necessary but does not imply causality

- Causality hard to achieve for social scientists because of endogeneity

- → Experiment needed!

- Experiments more difficult compared to natural sciences

Thanks for understanding.

These preliminary findings presented in the course cannot be made public to a more general audience yet. Thanks for understanding.

Course participants: Please contact Gracia Brückmann bgracia@ethz.ch if you have any questions regarding slides from the zoom lecture video.

Conclusions

- Experiment able to replicate findings for intention to adopt BEVs.

Thank you for your attention!

Looking forward to your questions, comments and suggestions!

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