



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Bundesamt für Raumentwicklung ARE  
Office fédéral du développement territorial ARE  
Ufficio federale dello sviluppo territoriale ARE  
Uffizi federal da svilup dal territori ARE

# Modeling driving license ownership in Switzerland

Swiss Mobility Conference, 30.06.2017



# Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect the views of the Federal Office for Spatial Development.



# Content

- Mobility and Transport Microcensus
- Determinants of choice and previous works
- Our model
- Preliminary results
- Conclusion and next steps



# Mobility and Transport Microcensus

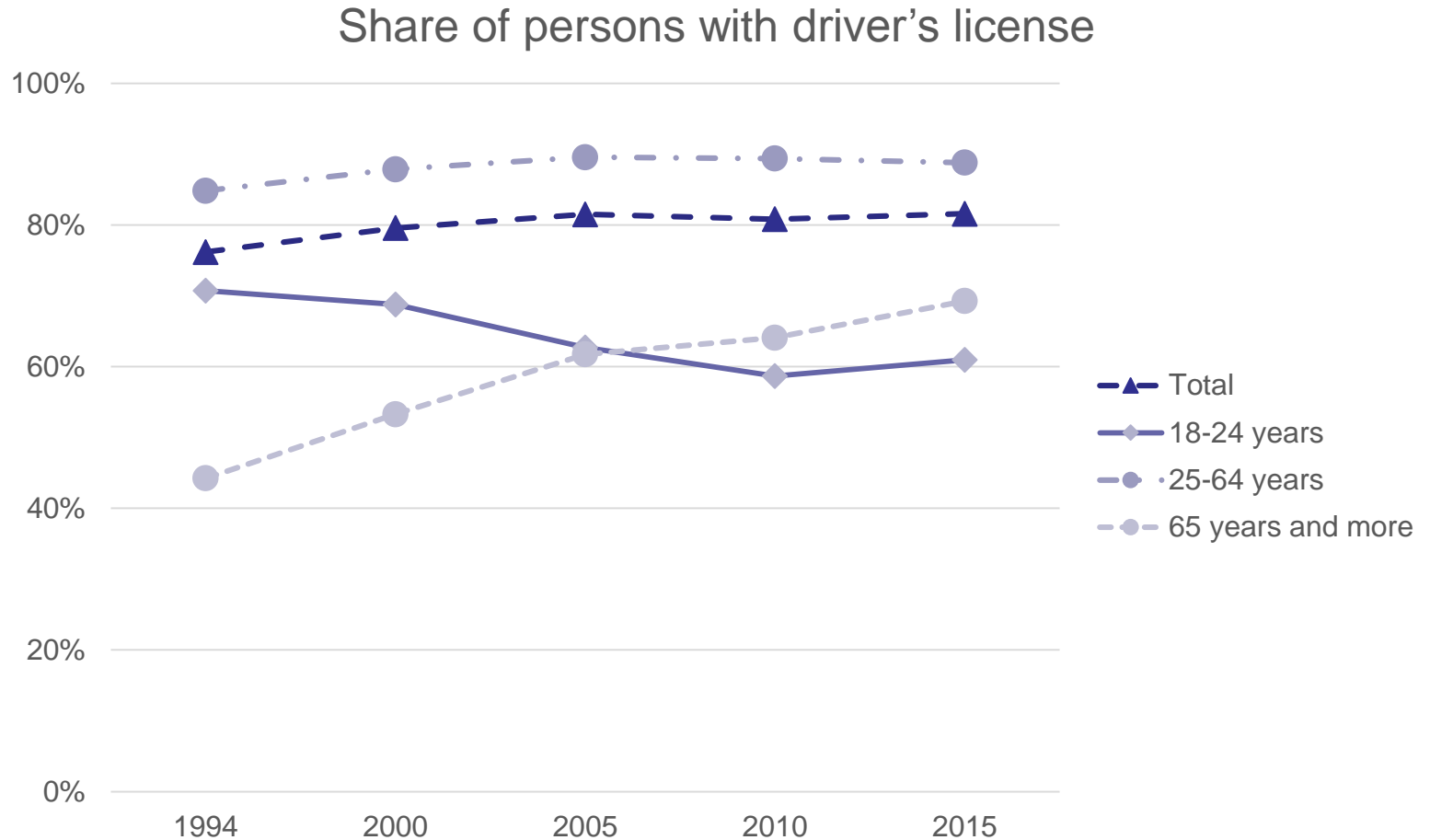


# Mobility and Transport Microcensus (MTMC)

- Conducted by the Federal Statistical Office and by ARE, together with some cantons
- 57'090 successful interviews in 2015
- Content:
  - socioeconomic characteristics,
  - mobility tools (number of vehicles, ...),
  - trips and activities for a reference day,
  - occasional trips,
  - political opinions about transportation.
- Check [www.mzmv.bfs.admin.ch](http://www.mzmv.bfs.admin.ch) / [www.are.admin.ch/mzmv](http://www.are.admin.ch/mzmv):
  - Main report (DE, FR)
  - Short version of the report (DE, FR, IT, EN)
  - XLS-Tables with confidence interval
- Data are available for research!



# Driving license by young adults: no decrease in 2015





# Determinants of choice and previous works



# Reasons of the decrease [1,2]

- Increased accessibility of the household by public transport and increased urbanization
- Exam: more difficult and expensive
- Young adults are studying longer (lower income)
- On-demand mobility service: might postpone the acquisition

Reasons for stability/increase?

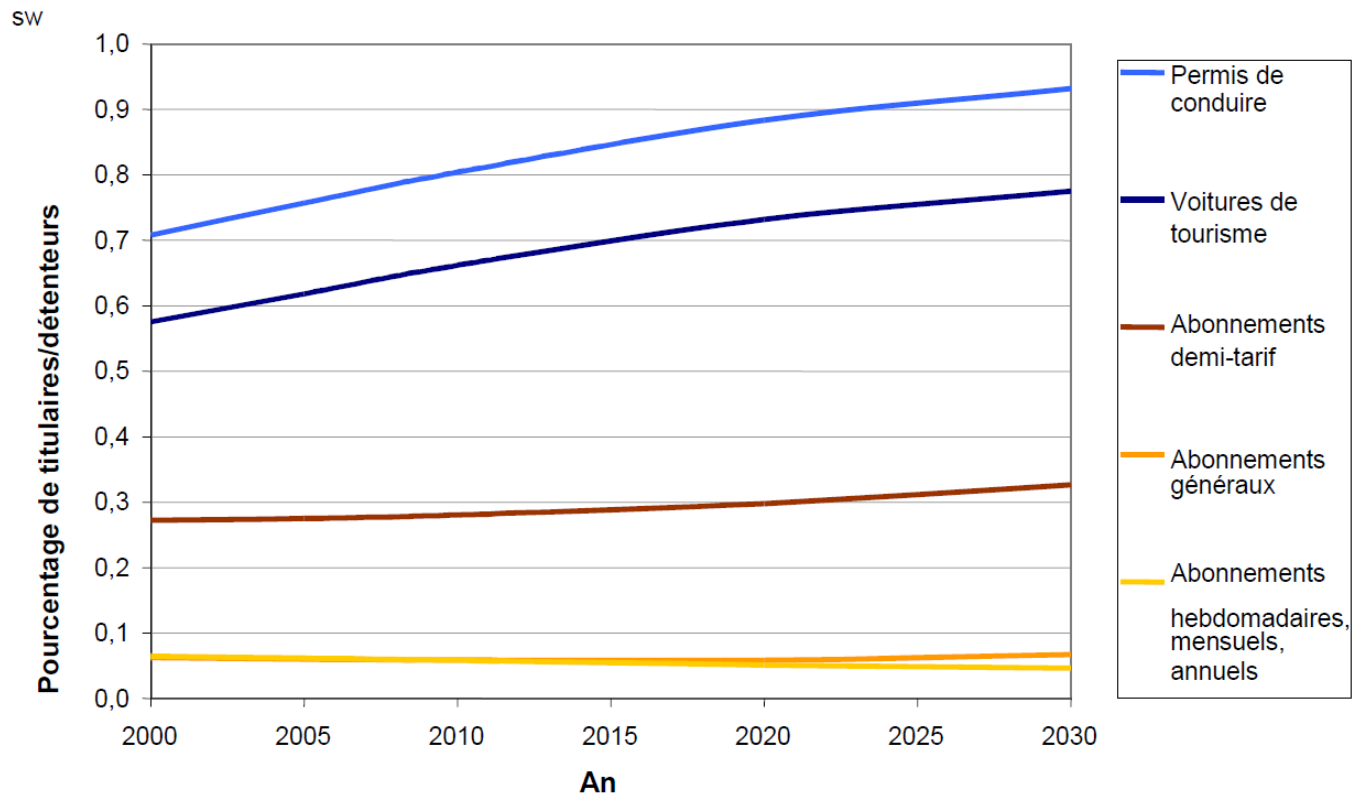
First observed in the MTMC 2015, published in 2017.





# First model in 2006 [3]

Illustration III Prévisions relatives au pourcentage de détenteurs d'instruments de mobilité 2000 – 2030 (personnes âgées de 18 ans et plus)





# 2nd model in 2016 [4]

- Improved version of the model of 2006
- Applied to data 2000 and 2010



# Our model



# Model specification

- **Decision maker:** respondent of the microcensus 2010/2015
- **Choice set:** owning a driving license or not
- **Parameters of the choice** : similar to 2016 model
  - Age
  - Sex
  - Income
  - Employment status
  - Spatial characteristics (urban/rural typology, region, nb of inhabitants)
  - **New:** Uber availability
  - **New:** Accessibility by public transport



# Preliminary results



# Results 2015: similar to 2010 (1/2)

- More licenses with **age** (linear)
- Less new licenses with **age** (quadratic)
- More licenses when being **employed**
- More licenses when being a **man**
- Even more licences when being an **old man**
- Compared to living in an **isolated city**,
  - same number of licenses:
    - in **core centers** of agglomerations
    - in **alpine touristic municipalities**
    - In **rural municipalities**

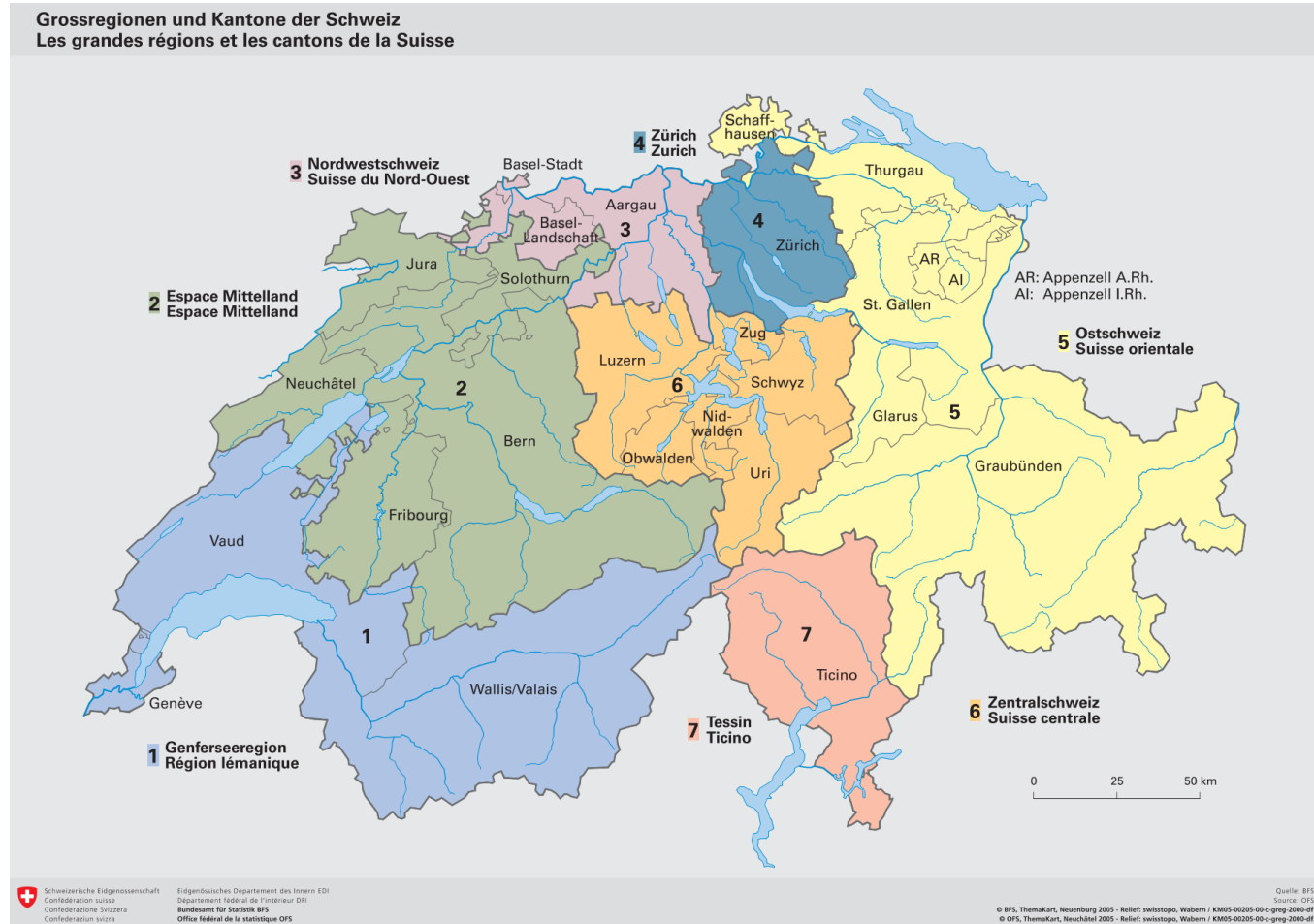


# Results 2015: similar to 2010 (2/2)

- Compared to living in **Tessin**:
  - Same number of licenses in
    - **Zurich** region
    - **Lake Geneva** region
    - **Eastern Switzerland** region
    - **Central Switzerland** region
  - Less licenses in
    - **Espace Mittelland** region
    - **Northern Switzerland** region



# Regions of Switzerland





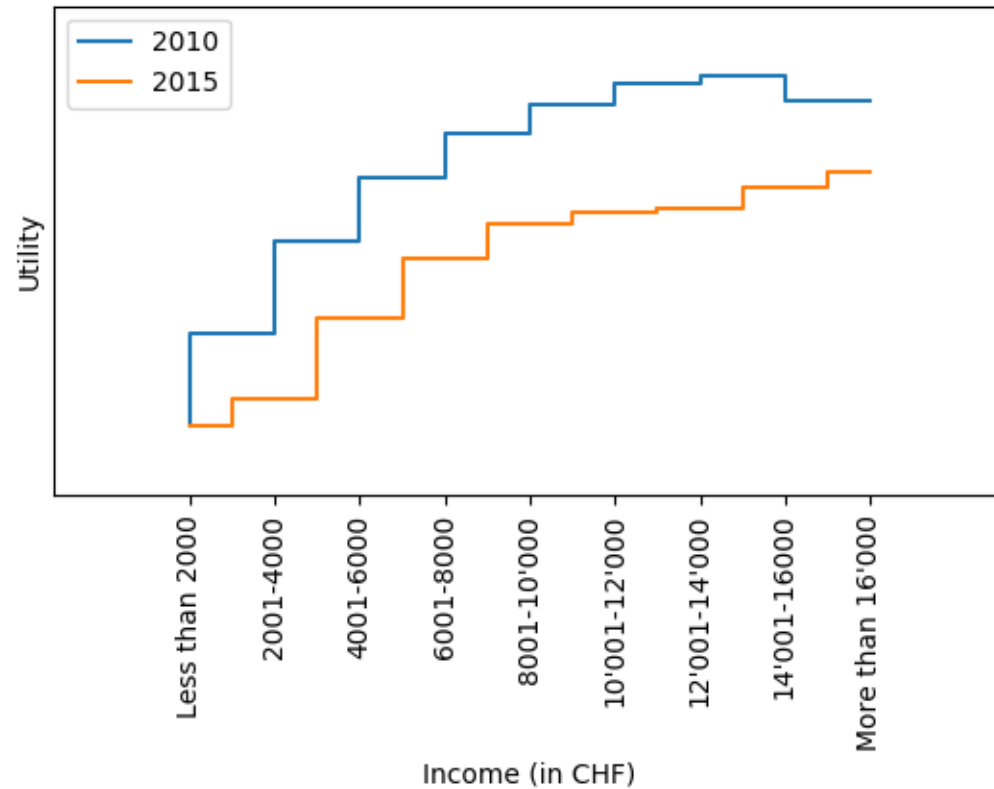


# Results 2015: different to 2010

- Same general effects, lower impact:
  - More driving licenses with **higher income**
  - Positive impact on the decision to own a license in
    - **Inner suburbs**
    - **Periurban rural areas**
- Different structure of the effect:
  - Less driving licenses with higher population in the commune (but marginal effect decreases)
- Less driving licenses with higher PT accessibility
- Less driving licenses in areas where Uber is available



# Results 2015: effect of revenue, 2010 vs 2015





# Uber in Switzerland

- Started its service
  - in Zurich in Sommer 2013,
  - in Geneva in September 2014,
  - in Basel in December 2014,
  - in Lausanne in January 2015
- Binary variable in model based on agglomerations where Uber is available:
  - Zurich area: Zurich, Winthertour, Lachen, Baden-Brugg, Wohlen (AG), Rapperswil-Jona - Rüti
  - Geneva area: Geneva
  - (Lausanne area: Lausanne, Vevey-Montreux)
  - Basel area: Basel



UBER Passagers Chauffeurs AIDE CONNEXION DEVENEZ CHAUFFEUR

https://www.uber.com/fr-CH/cities/zurich/

Conduisez ou déplacez-vous...

VOIR TOUTES LES VILLES

Uber dynamise Zurich

ESTIMER LE PRIX D'UNE COURSE

Google

Données cartographiques ©2017 GeoBasis-DE/BKG (©2009), Google 20 km Conditions d'utilisation

L'expérience Uber  
Votre course. sur demande



# Conclusion

- Between 2010 and 2015, factors influencing the ownership of a driving license
  - Do not differ between regions
  - No age difference in our model
- New factors for 2015:
  - Accessibility by public transport  $\leftrightarrow$  less licences
  - Uber-effect? Or unobserved underlying spatial effect?



# Next steps

- Look for underlying reasons in the «Uber-effect»
- Add new variables in the model:
  - Cost and difficulty of the exam
  - Being a student (in particular an old one)
- Piecewise linear specification for age?
- Include data from 1994, 2000, 2005



# References (1/2)

1. A. Delbosc and G. Currie, “Causes of Youth Licensing Decline: A Synthesis of Evidence,” *Transp. Rev.*, vol. 33, no. 3, pp. 271–290, May 2013.
2. Å. Aretun and S. Nordbakke, “Developments in driver’s licence holding among young people: potential explanations, implications and trends,” Statens väg- och transportforskningsinstitut, Linköping, 824A, 2014.
3. K. W. Axhausen, S. Beige, and M. Bernard, “Prognose über Besitz und Nutzenintensität von Mobilitätswerkzeugen im Personenverkehr, Grundlagenbericht für die Perspektiven des Schweizerischen Personenverkehrs bis 2030,” Bundesamt für Raumentwicklung, 2006.



# References (2/2)

4. M. Kowald, B. Kieser, N. Mathys, and A. Justen, “Determinants of mobility resource ownership in Switzerland: changes between 2000 and 2010,” *Transportation*, Mar. 2016.