

## Preferred citation style for this presentation

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# Personal transport choices – OECD Project on household behaviour and environmental policy

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# Outline

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1. Introduction and key questions
2. Methodology
3. Results & policy recommendations

# Introduction

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Personal transport choice:

- Choice of alternative modes
- Willingness to pay a premium price to purchase an electric car
- Importance of environmental impacts relative to other attributes in car choice

# Key questions

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## Mode choice:

- Main determinants behind the use of alternatives modes?
- Influence of household car ownership?

## WTP:

- How does WTP vary across different groups?
- Who is most reluctant?

## Importance environmental factors car choice:

- Most important characteristics when choosing a car?
- Effect of attitudes towards the environment?

# Methodology I

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- Binary logit (mode choice, car ownership)

$$V_i = ASC_i + \beta_{SoEc\ i} \cdot X_{SoEc} + \beta_{GeoEnvInf\ i} \cdot X_{GeoEnvInf} + \beta_{At\ i} \cdot X_{At} \\ + \beta_{Country\ i} \cdot X_{Countr} + \beta_{TT} \cdot X_{TT}^{(1+\varepsilon_{MC} \cdot G_{MC} + \varepsilon_{HC} \cdot G_{HC})}$$

- OLS (environmental factors)

$$y_i = \alpha + \beta_{(CarChoice\ i)} \cdot X_{CharChoice} + \beta_{(SoEc\ i)} \cdot X_{SoEc} \\ + \beta_{(At\ i)} \cdot X_{At} + \beta_{(Country\ i)} \cdot X_{Countr} + \varepsilon_i$$

# Methodology II

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- Censored regression model (WTP)

$$y_i^* = \alpha + \beta_{(SoEc\ i)} \cdot X_{SoEc} + \beta_{(At\ i)} \cdot X_{At} + \beta_{(Country\ i)} \cdot X_{Countr} + \varepsilon_i$$

$$y_i = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ y^* & \text{if } 0 < y_i^* < 100 \\ 100 & \text{if } y_i^* \geq 100 \end{cases}$$

$$\frac{\partial E[y^*]}{\partial x_i} = \beta_i$$

$$\frac{\partial E[y]}{\partial x_i} = \Phi\left(\frac{X_i\beta}{\sigma}\right) \beta_i$$

# Mode choice - commute

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## Walking:

- Long distances discourage respondents strongly from walking compared to car use

## Cycling:

- Travel time has strong negative influence but decreases with high environmental concerns

## Public transport:

- Travel time and accessibility are most important, no interaction between travel time and environmental concerns



# Mode choice - shopping

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## Walk:

- Less likely alternative for shopping caused by on distance, environmental awareness has light positive impact

## Cycling:

- Least preferred mode for shopping, differs among countries

## Public transport:

- Respondents with higher income tend to shop by car

# Mode choice – policy recommendations

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- Long term policies should aim to improve urban planning and increase the mix of residential and business zones
- Short term: adjustment to transportation infrastructure with relatively low costs to serve non-motorized modes

# Car ownership

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- Strong impact on mode choice → car ownership model to support findings of mode choice models
- Strongest influence: income and travel time savings
- Important: Household size and public transport accessibility
- Countries with high public transport use (e.g. Switzerland or Japan) have strongest negative impact
- Being environmentally friendly has only minor effect

# Car ownership - policy recommendations

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- Income and household size can't be targeted by policy actions
- Car ownership can be decreased by offering valuable and time efficient alternatives
- Possible rediscovery of non-motorized modes when households deliberately abstain from car ownership

# WTP price premium for EV

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- Supporters and political active respondents are willing to contribute themselves to the environment and pay a price premium for an EV
- Experience with fuel efficient and sustainable vehicles increases WTP
- WTP differs among countries

# WTP price premium for EV - policy recommendations

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- Encourage the environmental awareness of the public
- Provision of reliable high quality information about environmental impacts of products
- Subsidy price for an electric vehicle has to be taken into consideration

# Imp. envtl. factors car choice

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- Most important for car choice: price, reliability & safety
- Env'tl. Factors have strong relationship with importance of fuel consumption and safety
- Price as the most important factor has negative influence
- Awareness of environmental issues and concerns

# Imp. envtl. factors car choice - policy recommendations

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- Necessity to improve awareness of the seriousness of environmental issues
- A more informed consumer choice may lead to a positive effect on the importance of environmental factors when buying a car
- Link considerations for personal safety and stability with direct negative consequences brought about by ecological change
- Subsidy for environmentally friendly cars may have a stronger effect than a penalty for ecologically inefficient cars



Thank you very much!

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Questions?