

# Who do we not reach with online-only? Insights from a mixed-mode panel

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February 26, 2026

CIPHER Conference 2026



# Online data collection is fancy – but what about offliners?

- Offliners (= people who are not able or willing to participate in a survey via web mode)
- Some statistics
  - 5% of the German general population aged 18–74 do not access the internet (Destatis 2025)
    - No official statistics for those aged 75+
  - GESIS Panel.pop Population Sample (probabilistic mixed-mode panel with push-to-web design) recruitment 2023: ~18% decided that they do not want to participate online but via paper mode
- Why does that share of offliners in surveys matters?
  - Including offliners results in more accurate estimates for some socio-demographic characteristics<sup>1</sup> and substantive characteristics<sup>2</sup>

<sup>1</sup> Blom et al., 2017; Bosnjak et al., 2018; Cornesse & Bosnjak, 2018; Cornesse & Schaurer, 2021; Leenheer & Scherpenzeel, 2013; Revilla et al., 2016; own research

<sup>2</sup> Leenheer & Scherpenzeel, 2013; Pforr & Dannwolf, 2017; Schaurer & Weiß, 2020; own research

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## Research question

Apart from the simple effect of having or not having internet access:  
How do internet-related characteristics influence mode choice for people with internet access?

# Hypotheses

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How do internet-related characteristics influence mode choice for people with internet access?

Hypothesis 1

X1: Higher frequency of internet usage

-

Y: Participating offline

Hypothesis 2

X2: Better internet skills

-

Y: Participating offline

Hypothesis 3

X3: Larger variety of internet activities

-

Y: Participating offline

Hypothesis 4

X4: Larger variety of internet devices

-

Y: Participating offline

# Data

- GESIS Panel.pop Population Sample
- Population register-based samples
  - Two survey modes (web-based and complementary paper mode)
    - Internet users: online as default, paper mode only as alternative (push-to-web)
  - Analysis Sample: The most recent waves containing the for the analyses necessary variables after recruitment for the cohorts recruited in 2021 and 2023 (Waves jc & jd (2022) and lc & ld (2024))
  - $N \approx 1,400$

# Method

- Binary logistic regressions with interpretation of Average Marginal Effects (AMEs)
- Standard-demographic control variables (education, age, gender)
- Variable thresholding for the variables **X1: frequency of internet usage** and **X2: internet skills** to identify potential thresholds

# Results Hypothesis 1

X1: Higher frequency of internet usage



Y: Participating offline

Binary logistic regression of **X1: frequency of internet usage** on mode choice (0 = web mode, 1 = paper mode) for respondents with internet access

**Coefficients:** Average Marginal Effects (AMEs)

	Model 1.1 AME	Model 1.2a AME	Model 1.2b AME	Model 1.2c AME
frequency of internet usage <i>(metric; 6 answer categories)</i>	-3.3%***			
<b>Dummy-Variables frequency of internet usage</b>				
[1] more than once a month <i>Ref.: Up to once a month</i>		-17.9%*		
[1] more than once a week <i>Ref.: up to once a week</i>			-23.8%***	
[1] daily or more <i>Ref.: up to several times a week</i>				-11.0%***
Control Variables (education, age, gender)	Included	Included	Included	Included

## Interpretations:

Model 1.1: With every increasing frequency level of internet usage, respondents have on average a 3.3% lower probability of participating offline.

Models 1.2: The group of respondents using the internet more often has on average a 17.9% / 23.8% / 11.0% lower probability of participating offline.

\* significant with  $p < 0.1$ , \*\* significant with  $p < 0.05$ , \*\*\* significant with  $p < 0.01$

# Results Hypothesis 2

X2: Better internet skills



Y: Participating offline

Binary logistic regression of **X2: internet skills** on mode choice (0 = web mode, 1 = paper mode) for respondents with internet access

**Coefficients:** Average Marginal Effects (AMEs)

	Model 2.1 AME	Model 2.2a AME	Model 2.2b AME	Model 2.2c AME
Internet skills (metric; 5 answer categories)	-7.3%***			
<b>Dummy-Variables internet skills</b>				
[1] moderately or better Ref.: bad + very bad		-17.5%***		
[1] good or very good Ref.: moderately or worse			-13.5%***	
[1] very good Ref.: good or worse				-8.1%***
Control Variables (education, age, gender)	Included	Included	Included	Included

\* significant with  $p < 0.1$ , \*\* significant with  $p < 0.05$ , \*\*\* significant with  $p < 0.01$

### Interpretations:

Model 2.1: With every increasing internet skill level, respondents have on average a 7.3% lower probability of participating offline.

Models 2.2: The group of respondents with better internet skills has on average a 17.5% / 13.5% / 8.1% lower probability of participating offline.

# Results Hypothesis 3

X3: Larger variety of internet activities



Y: Participating offline

Binary logistic regression of **X3: variety of internet activities** on mode choice (0 = web mode, 1 = paper mode) for respondents with internet access

**Coefficients:** Average Marginal Effects (AMEs)

	Model 3 AME
Variety of internet activities (metric) <i>Index of 11 internet activities</i>	-3.3%***
Control Variables (education, age, gender)	Included

\* significant with  $p < 0.1$ , \*\* significant with  $p < 0.05$ , \*\*\* significant with  $p < 0.01$

### Interpretation:

Model 3: With every additional internet activity, respondents have on average a 3.3% lower probability of participating offline.

# Results Hypothesis 4

X4: Larger variety of devices



Y: Participating offline

Binary logistic regression of **X4: variety of devices** on mode choice (0 = web mode, 1 = paper mode) for respondents with internet access

**Coefficients:** Average Marginal Effects (AMEs)

	Model 4 AME
Variety of internet devices <i>Index of 4 devices (PC, laptop, smartphone, tablet)</i>	-5.9%***
Control Variables (education, age, gender)	Included

\* significant with  $p < 0.1$ , \*\* significant with  $p < 0.05$ , \*\*\* significant with  $p < 0.01$

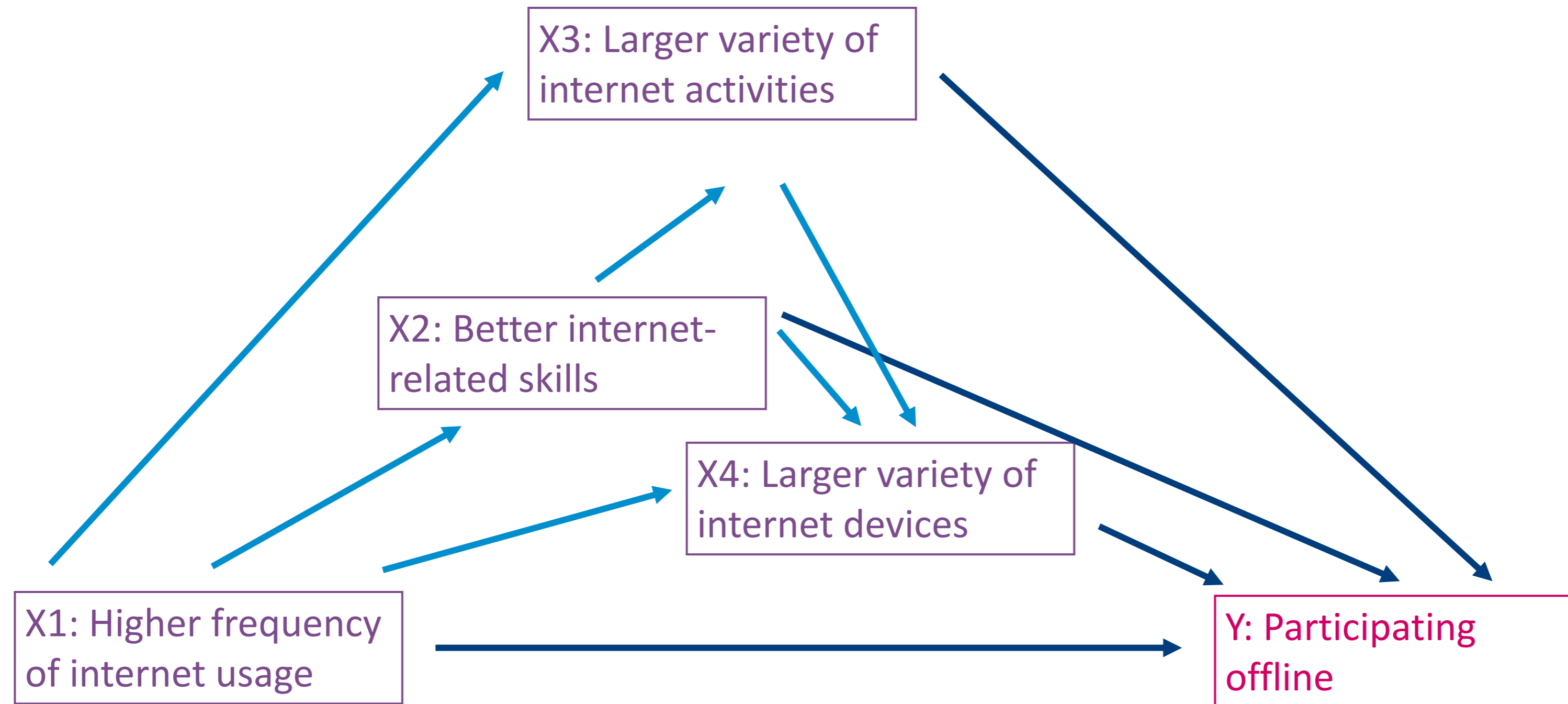
## Interpretation:

Model 4: With every additional internet device, respondents have on average a 5.9% lower probability of participating offline.

**Can the effects of the previous slides be interpreted as causal?**

**Or are they overestimated or underestimated by undercontrol / overcontrol biases stemming from the internet-related characteristics among each other?**

# Presumably most plausible dominant causal directions I argue for, visualized as DAG



# Results

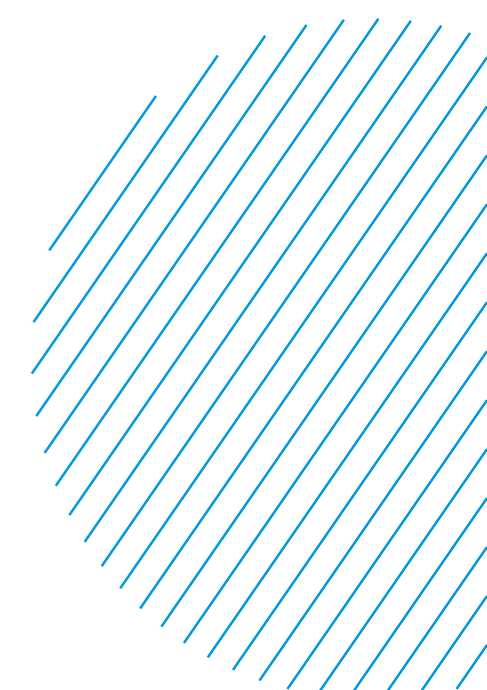
Binary logistic regression of internet-related characteristics on mode choice (0 = web mode, 1 = paper mode) for respondents with internet access

**Coefficients:** Average Marginal Effects (AMEs)

	Model 5.X1 AME	Model 5.X2 AME	Model 5.X3 AME	Model 5.X4 AME
frequency of internet usage (metric)	-3.3%***	-1.4%**	0.3%	-0.4%
Internet skills (metric)		-6.6%***	-4.6%***	-4.4%***
Variety of internet activities (metric) <i>Index of 11 internet activities</i>			-2.6%***	-2.3***
Variety of internet devices <i>Index of 4 devices (PC, laptop, smartphone, tablet)</i>				-2.0%*
Control Variables (education, age, gender)	Included	Included	Included	Included



Presumably interpretable as causal effect

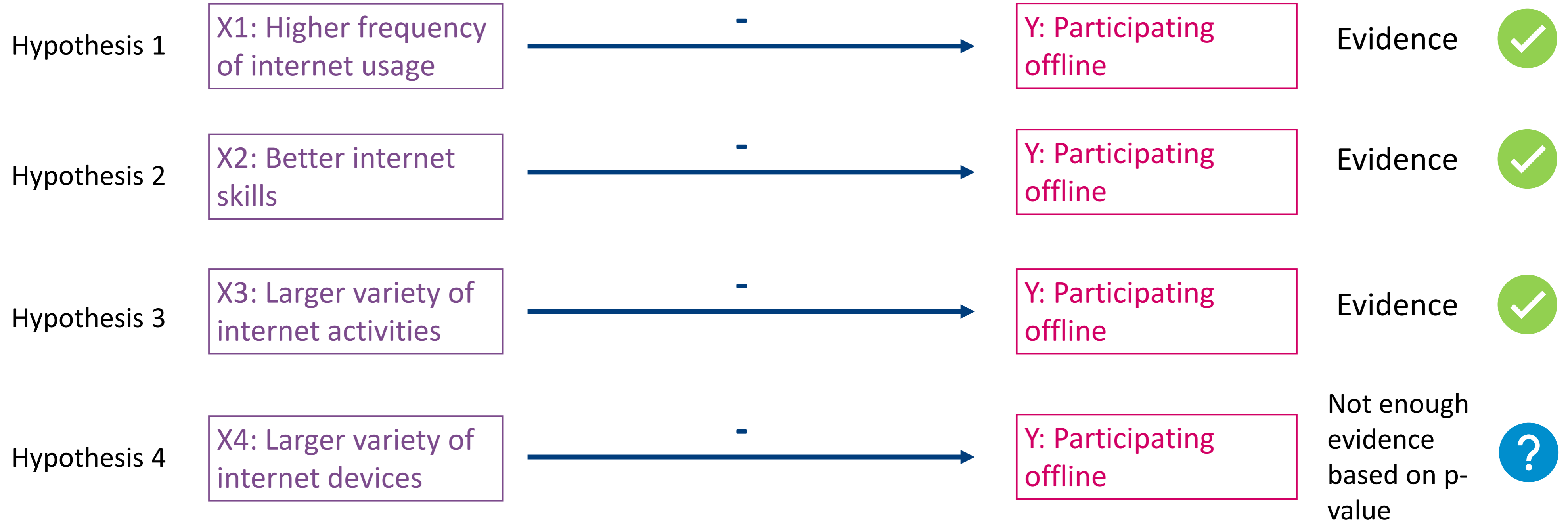


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# Hypotheses

## Research question

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# Conclusion

## Research question

Apart from the simple effect of having or not having internet access:  
How do internet-related characteristics influence mode choice for people with internet access?

- The more frequent respondents use the internet, the higher their variety of internet activities and the higher their skills, the less often they participate offline
  - It might also be that variety of internet devices influences the probability of participating offline negatively
  - The effect of frequency of internet usage is the most substantial (~25%)
- Internet-related characteristics do not determine mode choice -> further research needed
  - Targeted design with only considering internet-related characteristics would not capture the complexity of mode choice
  - Mode choices are more complex than being only influenced by internet related-characteristics

# Outlook

- Who are “typical” offliners? What are the profiles of offliners?
- How do attitudes (privacy concerns, affinity for technology, risk perception) interplay in the influence of the examined internet-related characteristics on mode choice?

Thank you!



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