behavior, energy & climate change becc 2019 Conference Nov 17 - 20 Sacramento, CA

Institute for Economy and the Environment
University of St.Gallen

Touchpoints for electric vehicles

Vehicle purchase process understanding to promote EV purchases in Switzerland

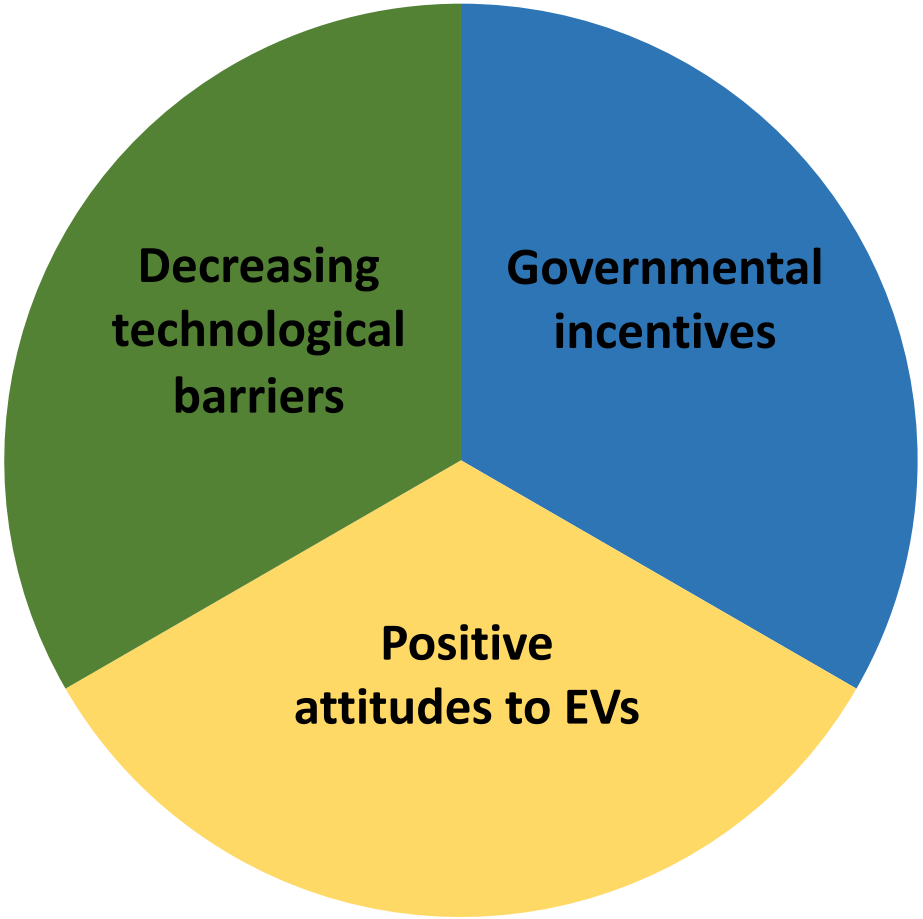
Jana Plananska

Institute for Economy and the Environment, University of St.Gallen, Switzerland

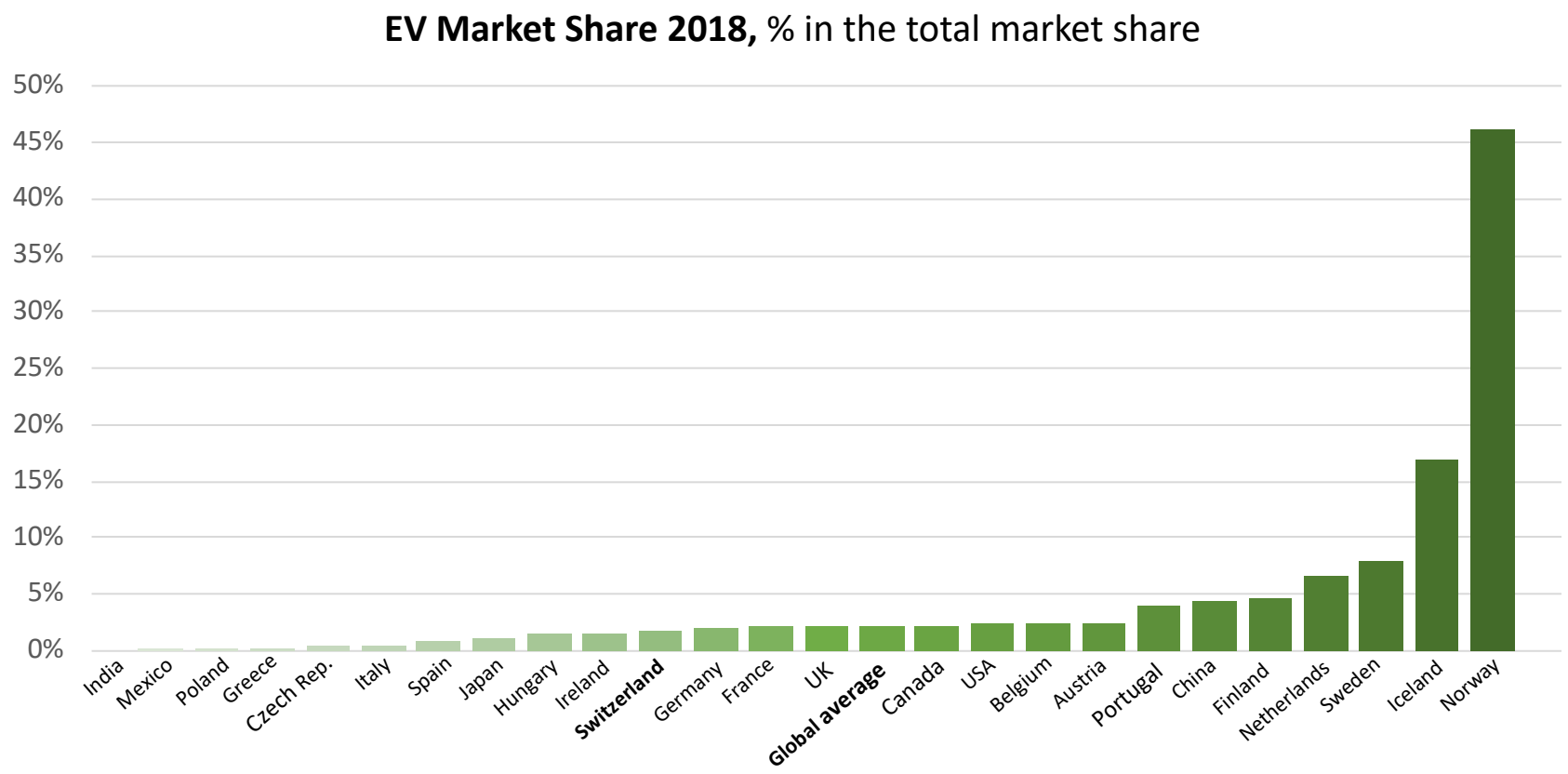
Behavior, energy & climate change conference - BECC 2019

Sacramento, CA, November 20, 2019

Conducive conditions for EVs



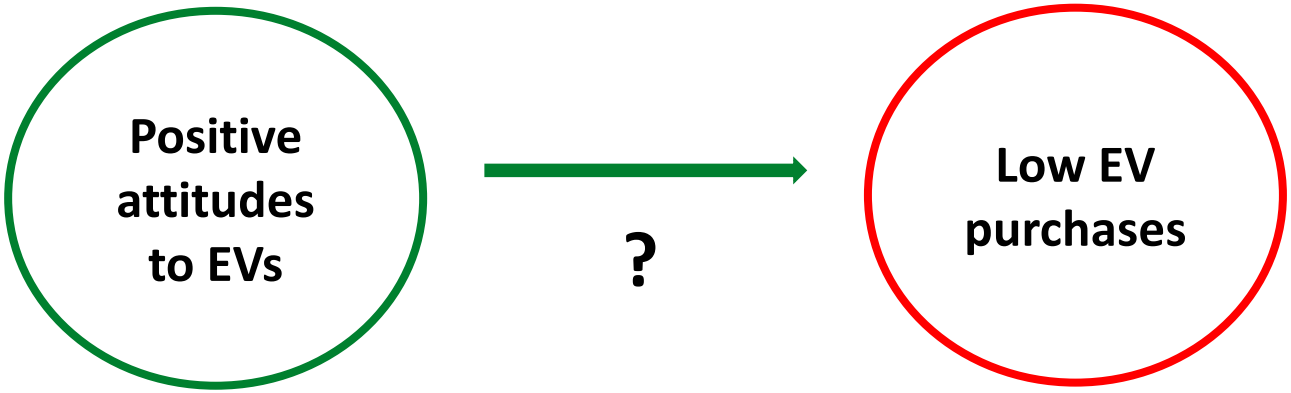
Low customer acceptance of EVs



Sources: IEA Global EV Outlook 2019; ACEA 2019

Research problem

- **Attitude-behavior gap**



- **Goal: To overcome this low EV customer acceptance**
- **Theory to date:** Mostly socio-demographic characteristics of potential EV adopters
- **Taylor & Fujita (2018):** Call to analyze the vehicle purchase process in its entirety

Research questions

RQ1: What does the consumer vehicle purchase process look like? Namely, how many stages does it consist of?

RQ2: What are the most important influences determining the vehicle purchase process?

RQ3: What are the most effective touchpoints in the process through which EV purchases in Switzerland can be fostered?

Method

- **Mixed-method research**
  - Narrative literature review of relevant literature
    - Consumer-behavior literature
    - Marketing literature
  - Online survey of Swiss car drivers (n=553)

Narrative literature review

Consumer-behavior literature

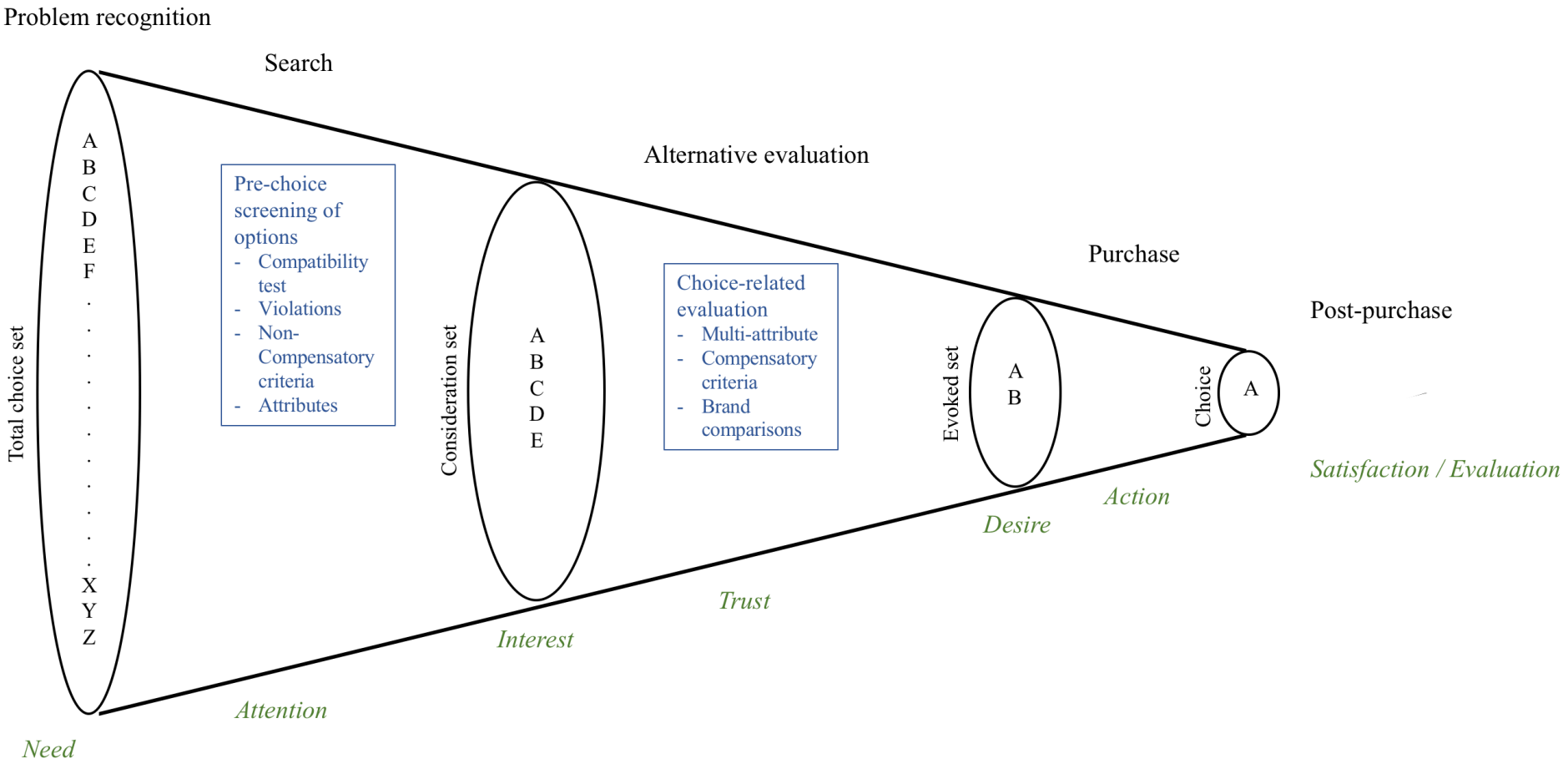
1. **Stage models**
- **1. Number of stages**
  - **2 –** Mueller & de Haan, 2009; Xu et al. 2015;
  - **4** – Bamberg, 2013; Klöckner, 2014
  - **5** – Taylor & Fujita, 2018
- **2. Decision-making processes involved**
  - Pre-choice screening
  - Choice-related evaluation

Marketing literature

1. **AIDA**
   - Awareness – interest – desire - action
- **NAITDASE Model –** Betancur, 2014
  - need, attention, interest, trust, desire, action, satisfaction / evaluation

2. **Touchpoints**
   - Episodes of interaction – customers and the product
   - **Duncan (2005):** 4 types: company, consumer initiated, intrinsic and unexpected
   - **Baxendale (2015):** 6 types

Conceptual framework of the vehicle purchase process



Institute for Economy and the Environment
University of St.Gallen
sccer mobility
SCCER CREST
Supported by:
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Innosuisse – Swiss Innovation Agency

Online survey – research objectives

RO1: Validate the generated conceptual framework of vehicle purchase process

RO2: Identify the most important influences in the process

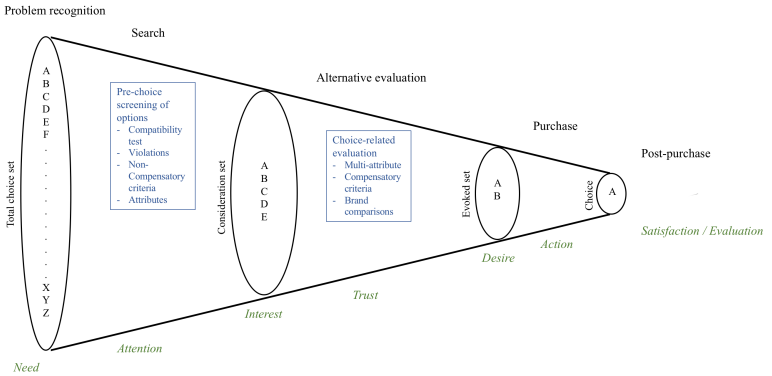
RO3: Propose touchpoints to promote EV purchases in Switzerland

Online survey - method

- December 2018
- 553 Swiss car drivers – representative of Swiss population
- **Condition to participate:** 20-70 years old, household to posses at least 1 vehicle
- **Sections: Simulating the vehicle purchase process**
  - Car ownership
  - Individual stages
  - Individual influences
  - Number of models
  - Reasons for and against car / EV purchase
  - Influence on EV consideration
  - Socio-demographic data
- **Questions:** Single, multiple choice, Likert-scale type (5-point)
- **Analysis:** Regression analysis (ANOVA, Chi-square test)

Generated conceptual framework validated

- **Vehicle purchase process consists of 5 individual stages**
  - Need generation
  - Two core decision-making stages
  - Size of consideration and evoked set confirmed
  - Purchase – natural part of the process
  - **Post-purchase stage: key, especially for EV purchase willingness**



Influences - Information sources

- Potential EV adopters – see a plurality of information sources as significantly more important than EV non-adopters

Information source seen as very important

Information sources	Consider EV		Do not consider EV	
	General information search	Alternative evaluation	General information search	Alternative evaluation
Test drives	42.5%	59.1%	42.2%	48.7%
Personal discussions with car dealers	36.5%	36.5%	30.6%	39.8%
Promotional materials from car dealers	2.8%	6.1%	4.0%	8.3%
Website of the car brand	26.0%	29.3%	19.1%	21.5%
Swiss EnergieEtikette	20.4%	23.8%	11.8%	13.7%
Online car configurators (Verbrauchskatalog etc.)	19.9%	19.3%	11.3%	14.5%
Friends and family	19.9%	18.8%	14.5%	14.8%

Influences - Information sources

Information sources and purchase stage (S= search, AV = alternative evaluation)	Mean and standard deviation		ANOVA
	EV adopters ("EV")	EV non-adopters ("NEV")	
* Website of the car brand (S)	M = 2.08, SD = 0.91	M = 2.27, SD = 0.94	$F_{(1, 519)} = 4.91$, $p = .027$
**Website of the car brand (AV)	M = 2.00, SD = 0.89	M = 2.23, SD = 0.95	$F_{(1, 511)} = 6.79$, $p = .009$
**Energy label for cars (Swiss EnergieEtikette) (S)	M = 2.31, SD = 0.98	M = 2.55, SD = 0.95	$F_{(1, 505)} = 6.79$, $p = .009$
*Energy label for cars (Swiss EnergieEtikette) (AV)	M = 2.26, SD = 1.01	M = 2.49, SD = 0.98	$F_{(1, 504)} = 6.70$, $p = .011$
+Online car configurators (i.e. Verbrauchskatalog) (AV)	M = 2.28, SD = 0.96	M = 2.44, SD = 0.97	$F_{(1, 497)} = 3.34$, $p = .068$
+Personal meetings with car dealers (AV)	M = 2.03, SD = 0.99	M = 1.86, SD = 0.91	$F_{(1, 522)} = 3.61$, $p = .058$

** Confidence interval of 99% ($p < 0.01$); * Confidence interval of 95% ($p < 0.05$); $^{+}$ Confidence interval of 90% ($p < 0.1$);

Influences – Car dealers

- **Role across all vehicle purchase process stages**
  - Generate the need for the new vehicle
  - 94% of respondents have been to a car dealer
  - Main purchase channel (73% of vehicles in the sample)
  - Post-purchase – service and maintenance 4th most important reason
  - Main information channel

Influences – Car dealers

- **Main information channel**

Given information source seen as very important

Information sources	Respondents	
	General Information search	Alternative evaluation
Test drives	42.3%	52.1%
Personal discussions with car dealers	**29.3%**	**38.7%**
Promotional materials from car dealers	**3.6%**	**7.6%**
Website of the car brand	21.3%	24.1%
Swiss EnergieEtikette	14.6%	17.0%
Online car configurators (Verbrauchskatalog etc.)	14.1%	16.1%
Friends and family	16.3%	16.1%

Car dealers – barrier to EV purchases

- **Hesitant to offer EVs**
  - Only 5.3% of respondents were offered an EV during their visit of a car dealer related to the purchase
    - Statistically significant association: EV consideration – EV being offered by car dealers

		Car dealers		
		EV offered at the last visit	EV not offered at the last visit	Do not remember if EV was offered
Customers	Consider EV	**13.8%**	82.5%	3.7%
	Do not consider EV	**0.5%**	94.8%	4.7%

Car dealers – barrier to EV purchases

- **Reinforce ICE lock-in**

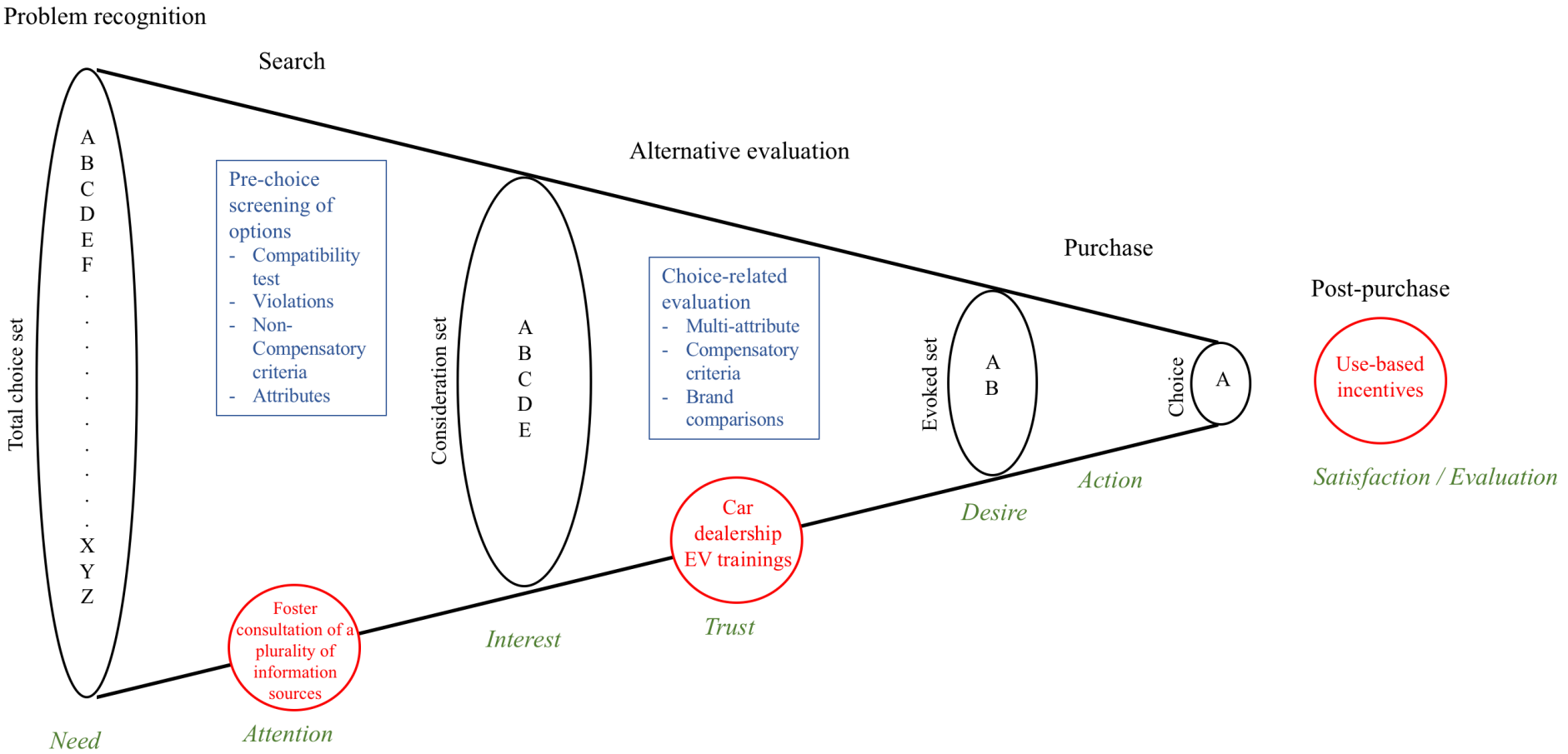
	Same car brand	Different car brand
Good experience with a car dealer a reason to purchase a vehicle	42.6%	11.2%

Conclusions

- **Newly generated conceptual framework of the vehicle purchase process validated by the online survey**
  - 5 stages
  - Critical importance of the post-purchase stage for EV consideration
- **Role of additional influences – especially information sources and car dealers x Car dealers represent a barrier to EV sales**

How to leverage these findings to promote EV purchases?

Policy recommendations



Institute for Economy and the Environment
University of St.Gallen
sccer mobility
SCCER CREST
Supported by:
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Innosuisse – Swiss Innovation Agency

Thank you!

Any questions?

