EXAMPLE SLIDES
(from a total of 130 pages)

Charging Payment Study 2025

Paying at the Charging Station from the User‘s Perspective

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www.uscale.digital

Objective

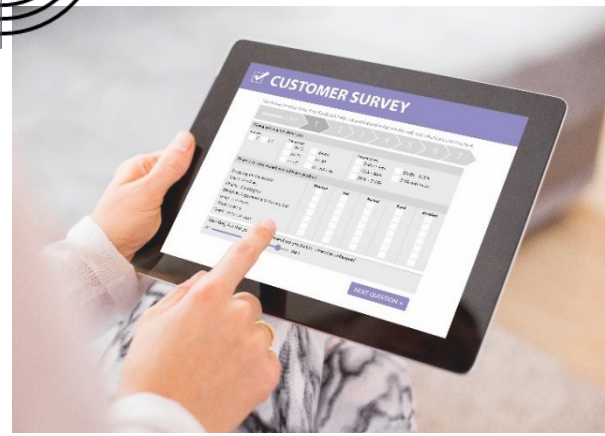
Initial situation:

- There are over 1,000 eMSP and CPO offerings in Germany. This leads to fierce competition in a rapidly growing market.
- At the same time, the offering of payment methods and means of payment at public charging stations is growing. This leads to high costs for CPOs, without it being clear which methods and means are really in demand among EV drivers.

Question

- Which authorisation and payment methods do EV drivers use or would they like to use? Which criteria influence the choice of payment method and means of payment?
- Is there a connection between the desired payment method and willingness to pay, or price elasticity? How flexible is behaviour? How can EV drivers be persuaded to switch?
- What are the expectations regarding receipt generation and invoicing?
- What are the differences between different target groups?

Target group



Survey:

- Target group: BEV drivers who charge at public
- Survey: Online survey (CAWI)
- Country: Germany
- Recruitment: Social media, Access panel
- Length of interview: 15 min
- Field phase: November 2025

Sample

- Total sample: N = 1,510
  of which:
  - Social media panel: N = 508
  - Access panel: N = 1,002

Split by EV adopter segments

The study differentiates between three adopter segments in order to identify trends.

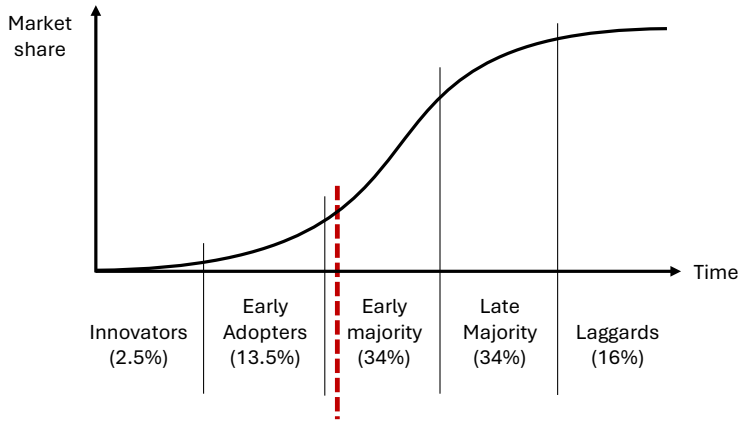
Background to segmentation:

- The best-known model for the ramp-up of innovations segments adopters according to the time of conversion (figure). It assumes (simplistically) that the time of conversion correlates with motivation. (Criticism: Many EV enthusiasts switch later due to the often long car ownership periods.)
- This study therefore distinguishes between when respondents registered their first own EV. This results in three segments:

EV Pioneers	EV Regulars	EV Newbies
> 3 years Experience	2 to 3 years of experience	< 2 years Experience
(N = 526)	(N = 413)	(N = 571)

If the results differ, this indicates a trend.

Segments in the ramp-up of electric mobility*:



Market share of BEVs in Germany in 2025 (approx. 18%)

* The classification shown is based on Everett Rogers' diffusion model (LINK).

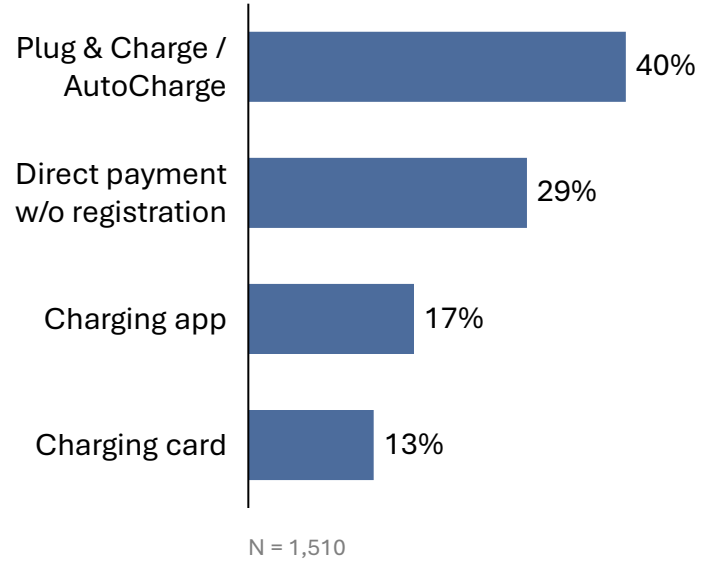
Split by preferred payment method

The second characteristic that proves significant for segmentation is the preferred payment method.

Background to segmentation:

- The payment methods actually used at public charging stations do not reflect actual payment preferences.
- Reasons:
  - The payment methods currently offered at public charging stations do not consistently meet the expectations of EV drivers.
  - Not all payment methods are available at all charging stations.
  - EV drivers actively use multiple payment methods.
- This study therefore distinguishes between preferred payment methods.

Preferred payment methods:

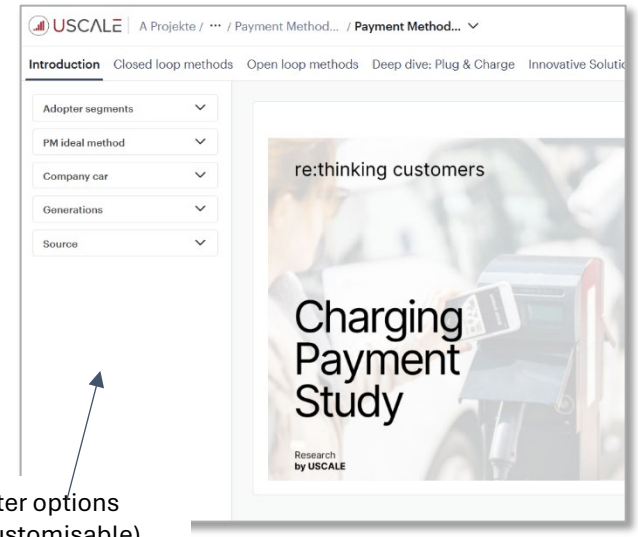


Study dashboard for your own analysis

Analysis options in the dashboard

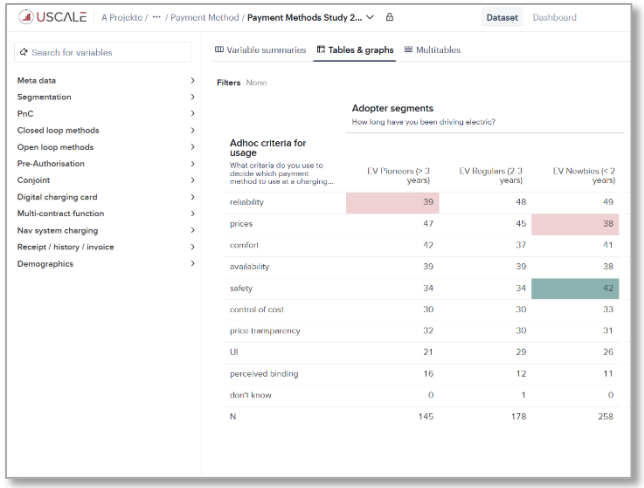
The dashboard provides access to all detailed data. It allows you to perform your own analyses and download any data splits.

Breakdown of all results by sub-target groups:



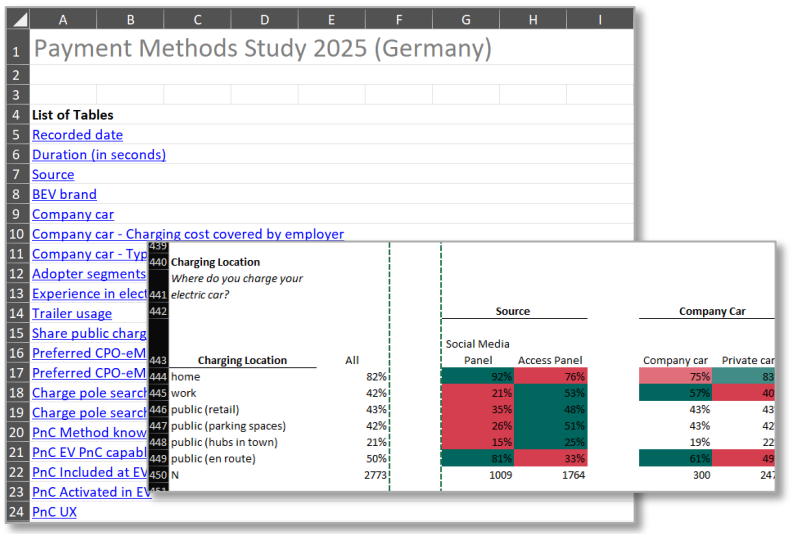
Filter options (customisable)

Correlations and statistical analyses:



Download all data as xls and ppt:

Example



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Management Summary

- Paying at charging stations causes considerable pain for EV drivers. The lack of price transparency, the multitude of payment methods and the operating processes itself are viewed partly critically.
- In an ideal world, respondents would prefer to use Plug&Charge ("PnC") + Autocharge (49%), followed by direct payment (28%), the charging app (17%) and the RFID charging card (13%). The reality is quite different: as of today, 77% actively use the charging app, 76% use the charging card, 65% pay direct and 48% use PnC. The usage rates are also reflected in satisfaction with the methods: users of the charging app are the most satisfied, while direct payers are the least satisfied.
- All payment methods offer specific advantages that are important when paying:
  - PnC + Autocharge stands for convenience from the respondents' point of view.
  - RFID charging cards and chips are valued for their reliability and availability.
  - Charging apps stand for price transparency, cost control and low prices.
  - Direct payment methods offer independence from specific providers.
- Despite the high promises of convenience, PnC is rarely used. The reasons for this are its inconsistent availability and the lack of price transparency due to provider loyalty.
- Among the open loop methods, payment by credit, debit and giro card is the most commonly used, followed (some way behind) by payment apps.
- Around half of respondents pay attention to direct payment prices when charging at public, whether they are roaming, possible variable prices and promotions.
- The conjoint analysis shows that respondents are not willing to pay extra for their preferred payment method or means of payment. Nevertheless, payment methods and means of payment have a major influence on the choice of charging location.
- Innovative payment methods such as digital charging cards, payment from the vehicle's head unit or payment from the navigation app are very popular.
- For many, documentation of the charging process is essential (receipt generation: 29%, history: 18%, invoice: 17%) or at least important. Entries in the charging app and a PDF document sent by e-mail are the preferred types of documentation.

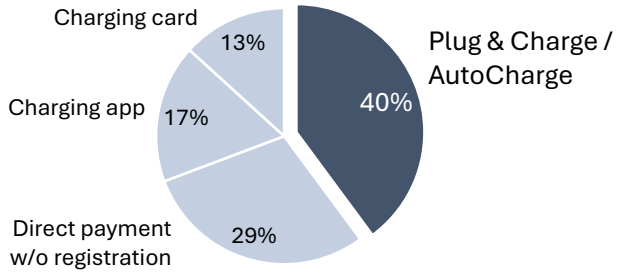
Management Summary

1

The Plug & Charge Persona

Characteristics:
The "Plug & Charge-preferred" persona...

- is more often* male, of average age, more likely to earn a high income, more likely to live in a large city
- more often drives a company car and more often drives a Tesla
- more often searches for charging stations using the vehicle's navigation system than an app
- generally uses a digital wallet more often than a physical card when paying in retail stores and pays more often with Apple Pay or Google Pay when shopping online, uses bonus programmes less often
- Appreciates the low price and reliability of PnC
- use other payment methods in addition to PnC in the following order: charging app – charging card – direct payment



* i.e. more often / less often than the average of the EV drivers surveyed

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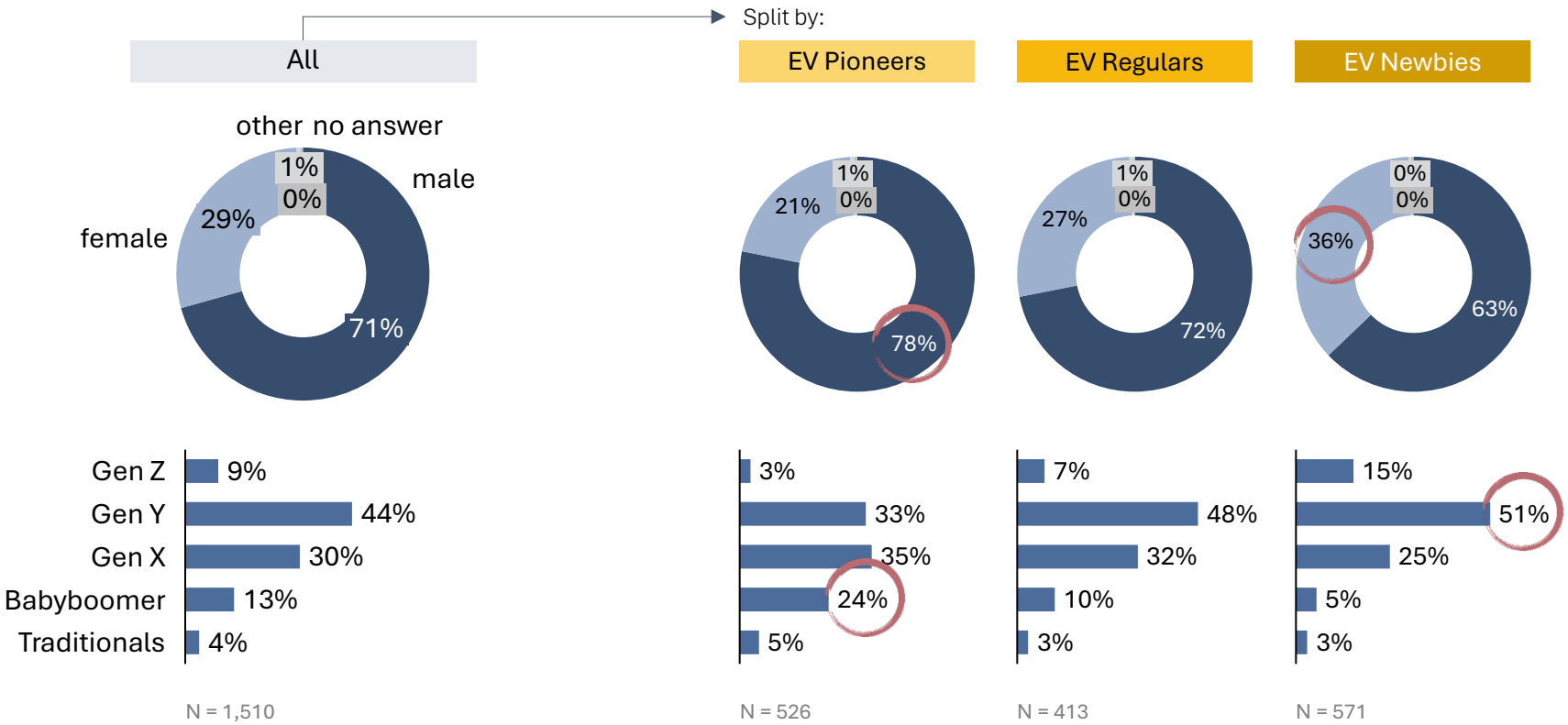
Gender and age

The pioneers of e-mobility are more often men from the baby boomer generation.
Among the newbies, there is an above-average number of women from Gen Y.

"You are...?"

"How old are you?"

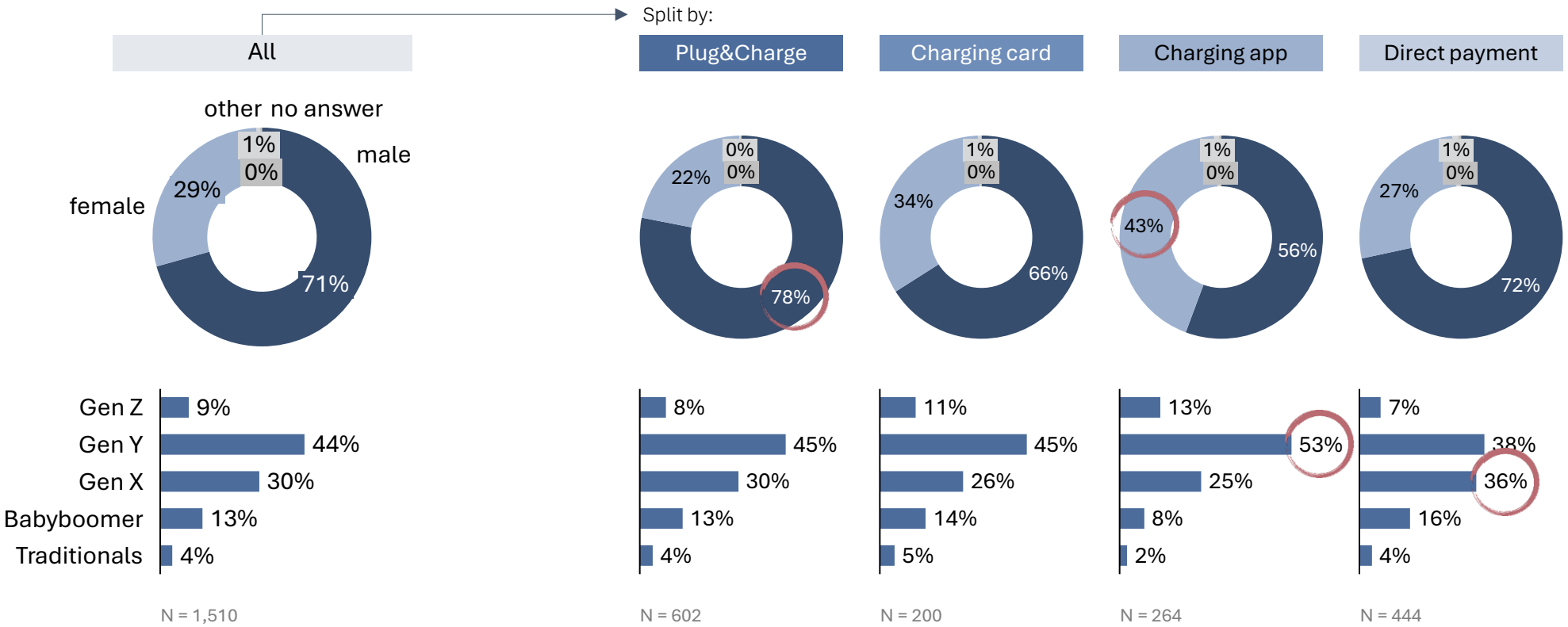


Gender and age

Fans of the charging card are significantly more likely to be women from Gen Y, while fans of direct payment are more likely to belong to Gen X or the baby boomers. Fans of PnC are more likely to be men.

"You are...?"

"How old are you?"



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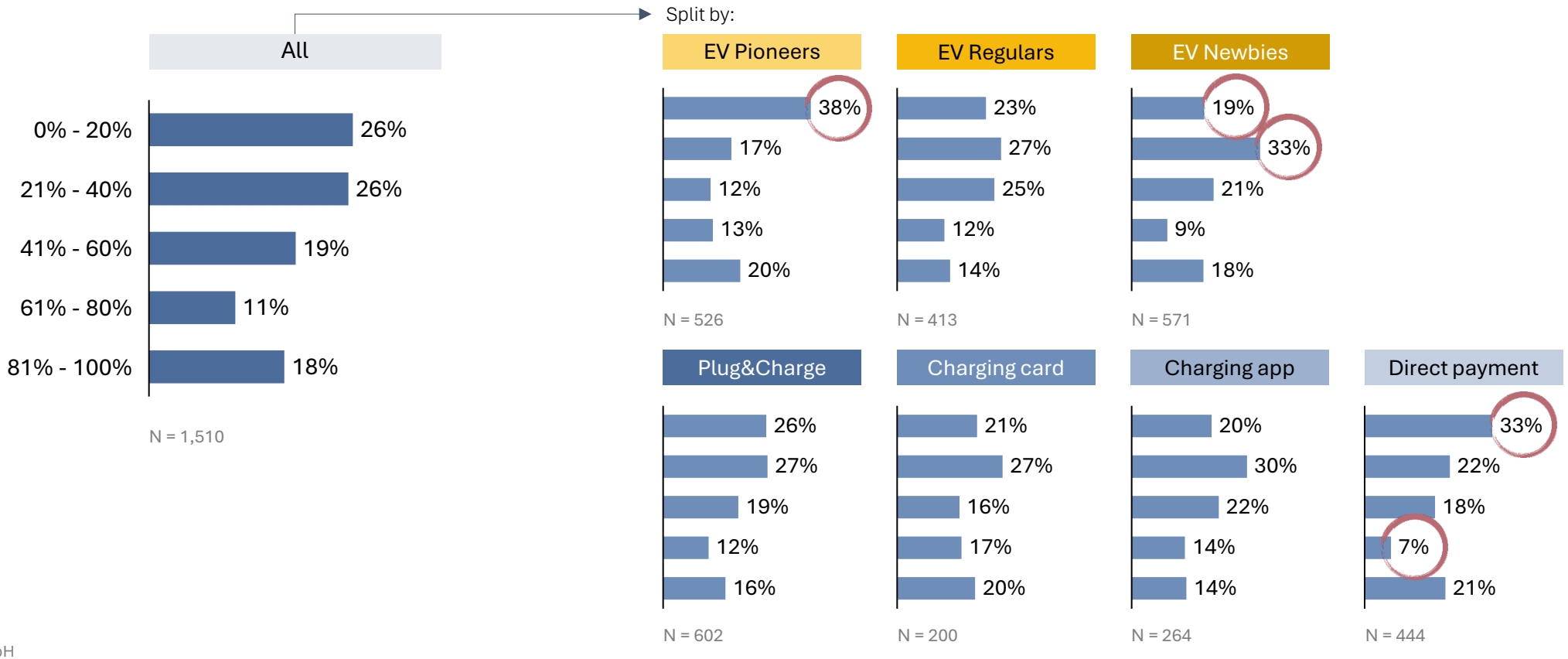
Charging routine

Pioneers rarely charge at public, while newbies charge 21 to 40% of the time. Friends of direct payment rarely charge at public.

"What percentage of your charging sessions are public?"

(Not counting charging at work)



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In retail: preferred direct payment method

"In general:
When you pay with your credit or debit card **in retail stores** or **restaurants** today, which payment method do you prefer?"

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Overall rating of payment at charging stations

Fans of the charging app are by far the most satisfied with the current payment situation at public charging stations in all categories. Direct payment supporters are the most critical.

"In general:
How would you rate the payment situation for charge at public overall?"

Perception of closed-loop payment methods

"In general:
What do you think of the
following payment methods?"

Evaluation comparison

From the respondents' point of view, each payment method has its own specific advantages. PnC stands for convenience, the charging card for availability and reliability, the charging app for cost transparency and control, and open loop for avoiding ties to a single provider.

"How would you rate the payment method **[payment method]** in detail?"

Not preferred method, but ratings by all for the specified payment method

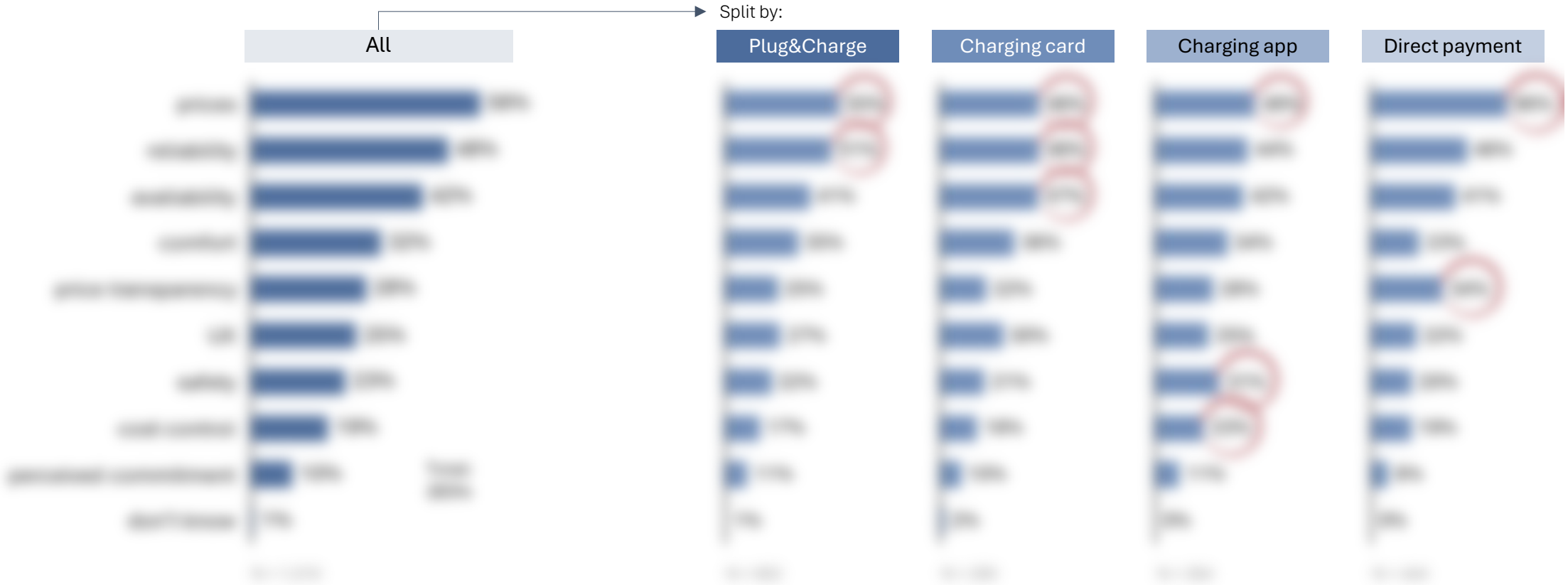
Criteria for choosing a payment method

For PnC users, price and reliability are particularly important. Fans of the card also appreciate its high availability. Fans of the app tend to value security, while direct payers appreciate the price and price transparency.

"In general:
What criteria do you use to decide which payment method to use at a charging station?

Please select the **three most important criteria** for you."

(Multiple answers possible, max. 3)



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Correlation between payment method and willingness to pay

Conjoint analysis

(Introduction to the method)

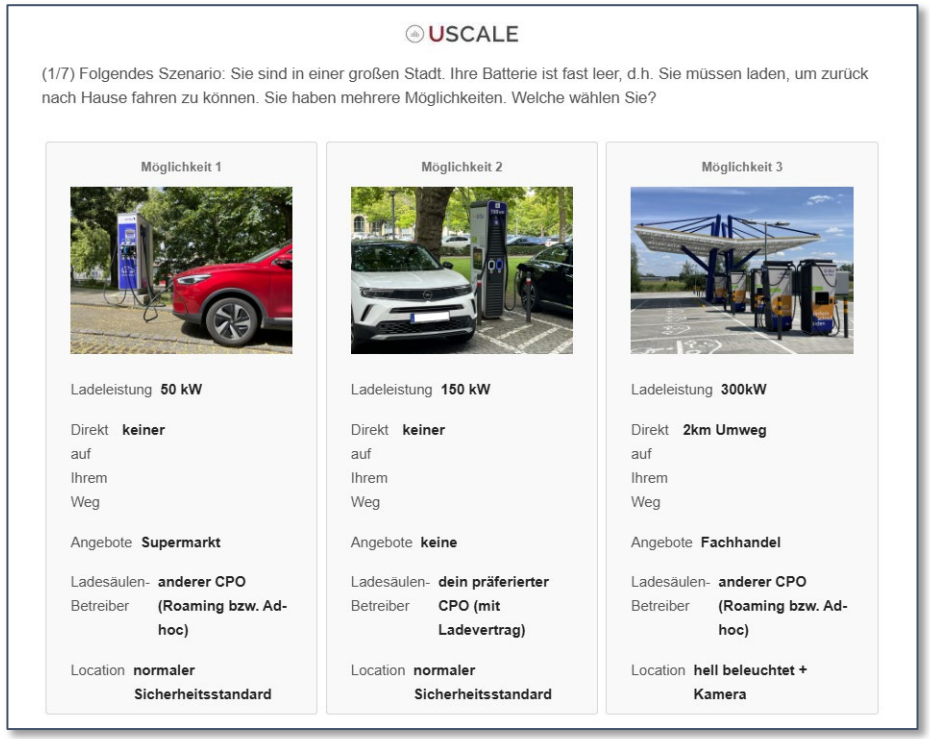
The conjoint method maps the choice of payment method.

When choosing the right payment method, users weigh up several criteria before making a decision.

In order to determine which criteria influence the payment method, participants in the survey were repeatedly presented with different constellations from which they had to choose their preference.

Each offering consisted of a combination of several characteristics that were compiled by an algorithm. The survey thus provided thousands of individual evaluations, which were analysed using multivariate analysis.

Example illustration

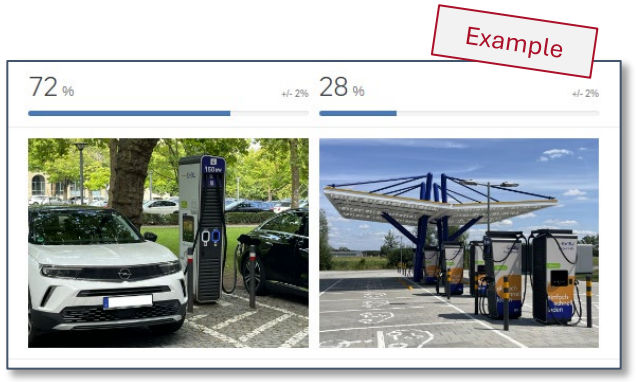


Correlation between payment method and willingness to pay

Conjoint analysis

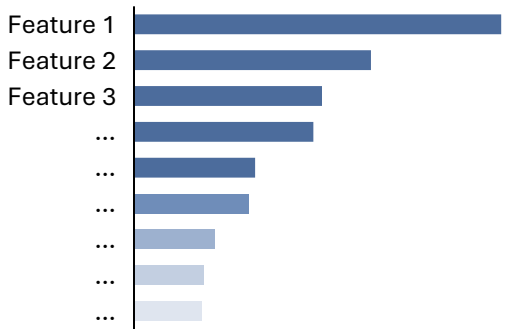
(Exemplary results)

Simulation of user preferences



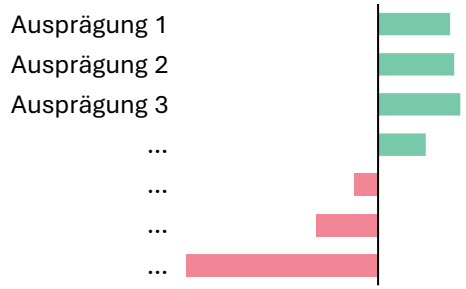
For the simulation, the market potential (using the rule of three) is estimated in comparison to its alternatives.

Importance of characteristics



Calculation of partial utility values for each individual feature. The sum of all partial utility values is 100%.

Partial benefit of characteristics



Calculation of relative preferences for individual characteristics by normalising the average partial utility to the mean value of the characteristic.

Correlation between payment method and willingness to pay

Conjoint analysis

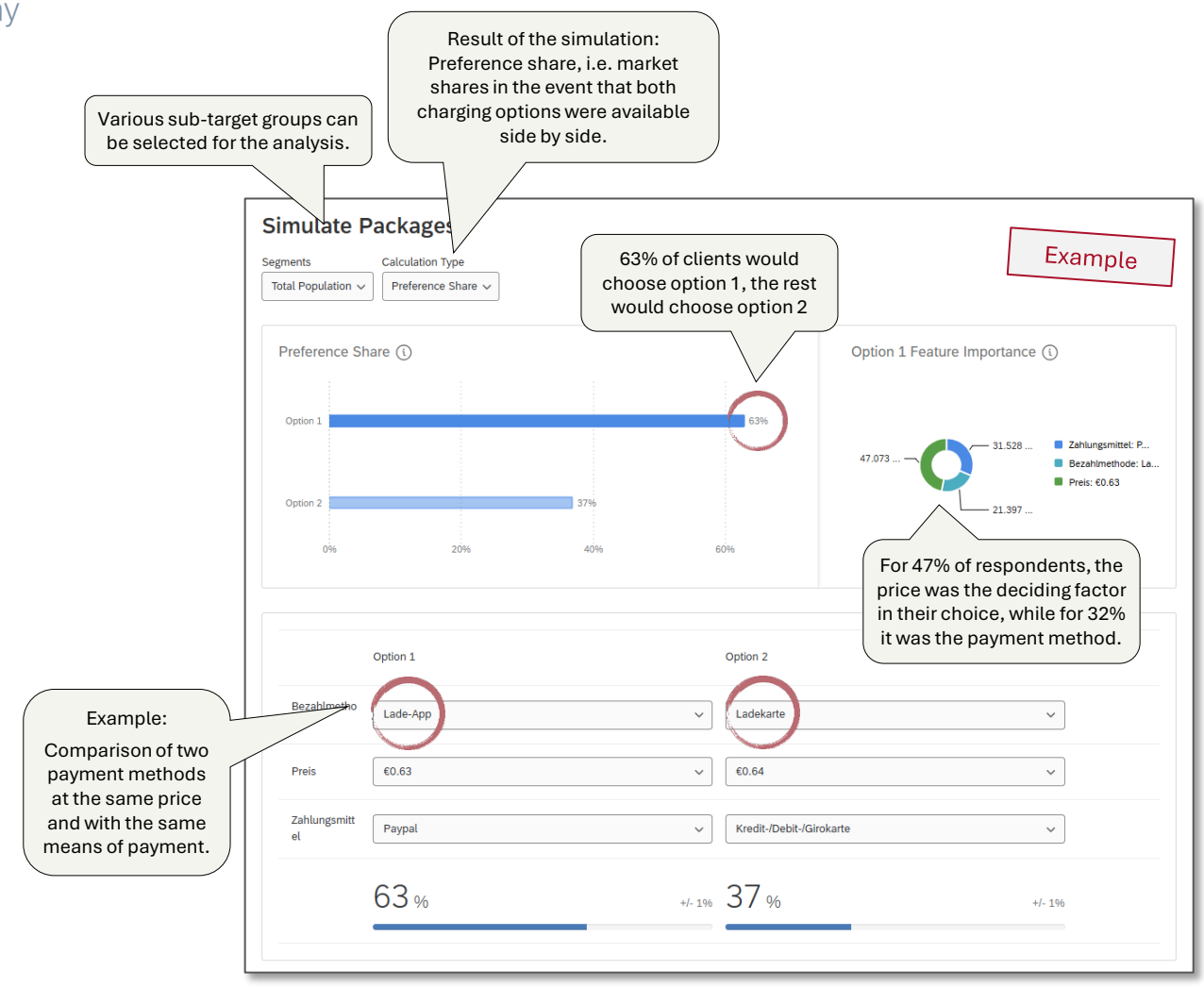
(Instructions for the simulation tool*)

Calculation of the market potential of different payment methods.

The potential market position of a product depends on the variety and attractiveness of competing offerings. The market potential of an offering can therefore only be estimated in relation to its alternatives.

Since the variety of feature combinations and target groups is very large, the market potential is calculated in a simulation tool based on all the features surveyed.

LINK to the simulator tool



* The simulation tool will be available until at least December 2026.

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SCALE YOUR USER
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