

EXAMPLE SLIDES
(from a total of 130 pages)

Charging Payment Study 2026

Paying at the Charging Station from the User's Perspective

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.

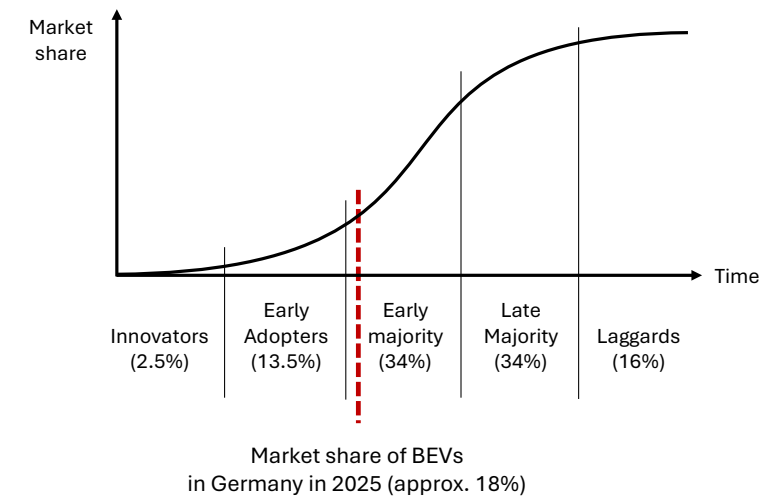
Background to segmentation:

- 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*:



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

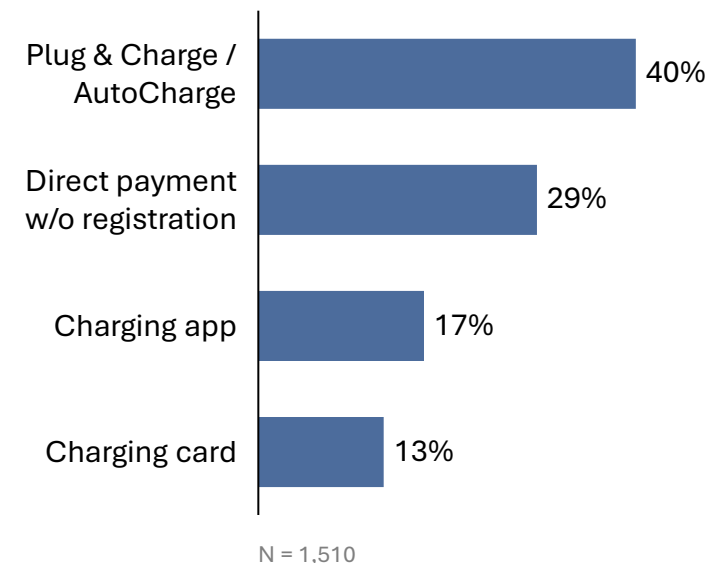
Split by preferred payment method

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:

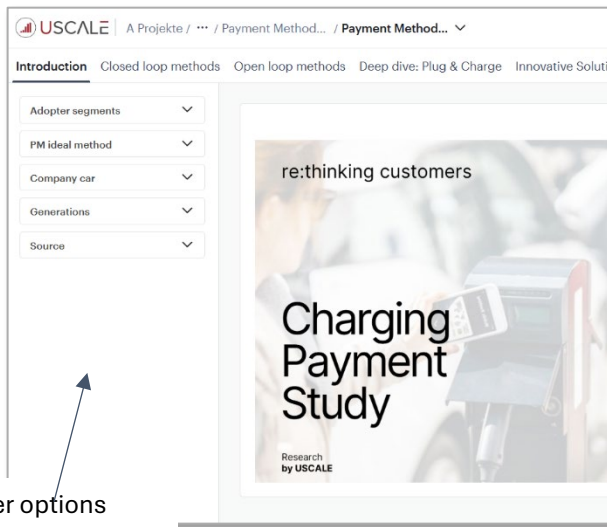


Study dashboard for your own analysis

Analysis options in the dashboard

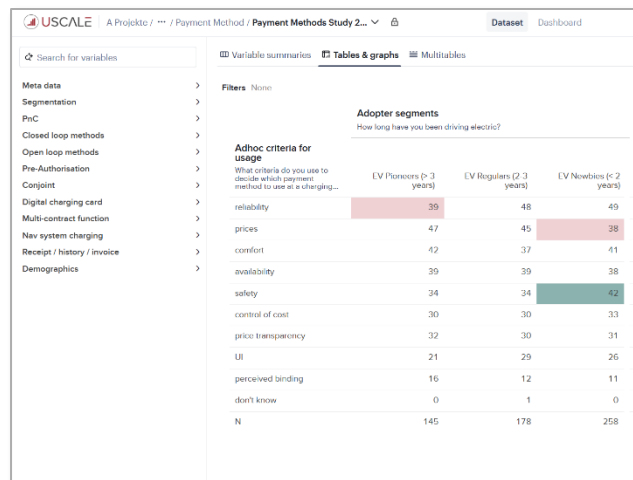
The dashboard provides access to all detailed data. It allows you to perform your own analyses and download any data splits.

Breakdown of all results by sub-target groups:



Filter options
(customisable)

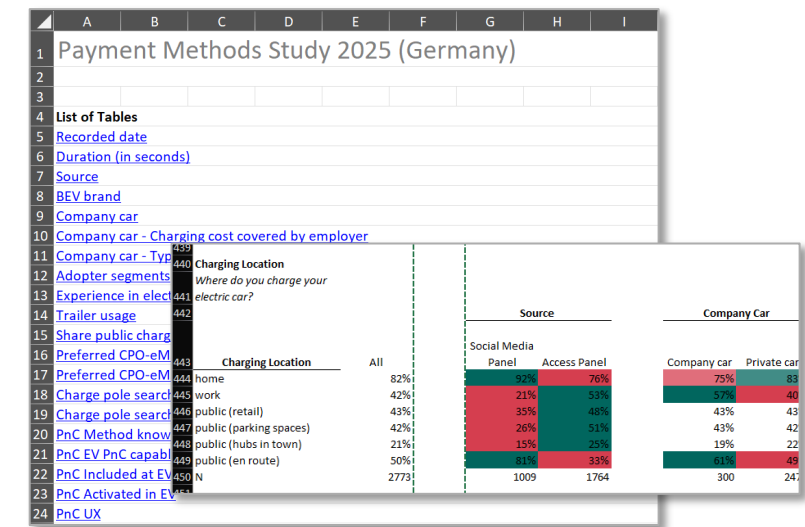
Correlations and statistical analyses:



Adhoc criteria for usage	EV Pioneers (> 3 years)	EV Regulars (2-3 years)	EV Newbies (< 2 years)
reliability	39	48	49
prices	47	45	38
comfort	42	37	41
availability	39	39	38
safety	34	34	42
control of cost	30	30	33
price transparency	32	30	31
UI	21	29	26
perceived binding	16	12	11
don't know	0	1	0
N	145	178	258

Download all data as xls and ppt:

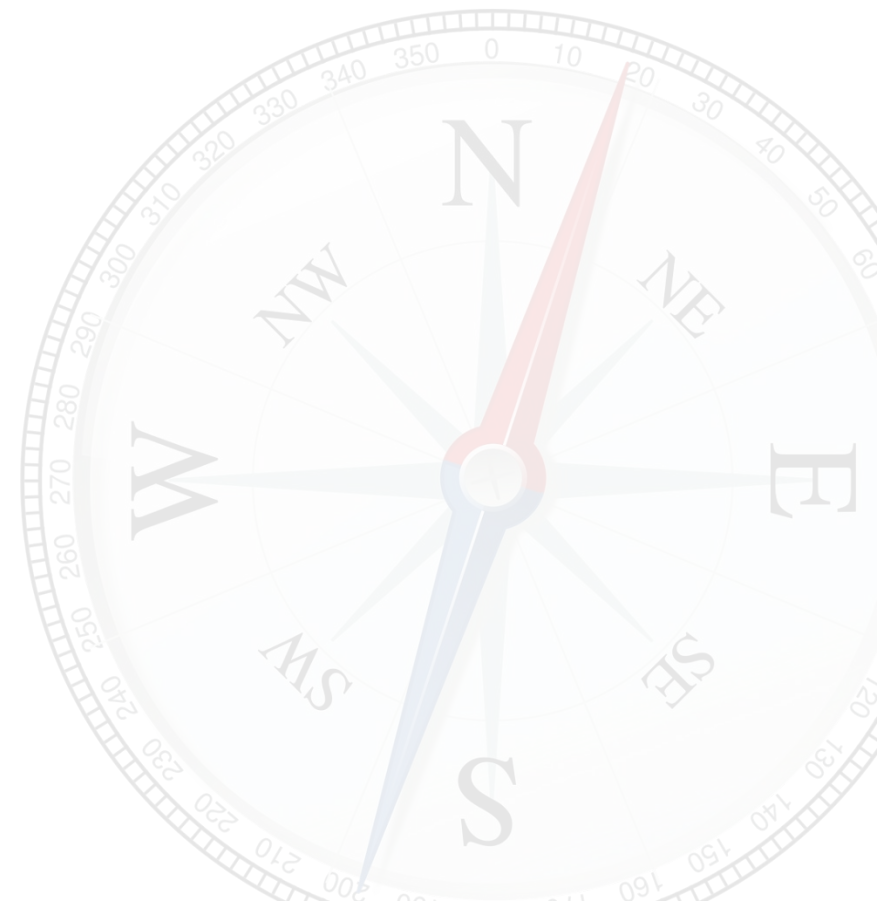
Example



Charging Location	All	Source	Company Car
home	82%	Panel	75%
work	42%	Access Panel	75%
public (retail)	43%		43%
public (parking spaces)	42%		43%
public (hubs in town)	21%		19%
public (en route)	50%		61%
N	2773	1009	1764

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- 7. Receipt, charging history, invoice



Management Summary

- Having a charging system is an essential requirement for the system. The lack of price transparency, the multitude of payment methods and the spending process itself are issues particularly critically.
- In an ideal world, respondents would prefer to use the charging app that is a charging cable, followed by direct payment (50%), the charging app (17%), and the 50% charging card (17%). The reality is quite different: as of today, 17% actually use the charging app, 16% use the charging card, 50% the direct payment and 17% the 50%. The usage rates are also influenced by satisfaction with the methods: users of the charging app are the most satisfied, while direct payment is the least satisfied.
- Payment methods also specify advantages that are important when using:
 - The charging cable is convenient from the respondent's point of view.
 - The charging card and app are valued for their security and simplicity.
 - Charging app stands for price transparency, cost control and no price.
 - Direct payment methods offer independence from specific providers.
- Despite the high number of respondents, 50% is a very small. The reasons for this are the inconsistent availability and the lack of price transparency that is provided today.
- Among the app-based methods, payment by credit card and app are the most commonly used. Followed closely by payment app.
- Around half of respondents pay attention to direct payment prices when charging at public, whether they are charging, provide variable prices and providers.
- The survey results show that respondents are not willing to pay more for their preferred payment method as means of payment. Nevertheless, payment methods and means of payment have a major influence on the choice of charging provider.
- Innovative payment methods such as digital charging cards, payment from the vehicle's head unit or payment from the navigation app are very popular.
- The most documented of the charging providers is awarded a rating of 50%, followed by 50%, and 17%. A direct payment system is the charging app and a 50% document rating is high and the preferred type of documentation.

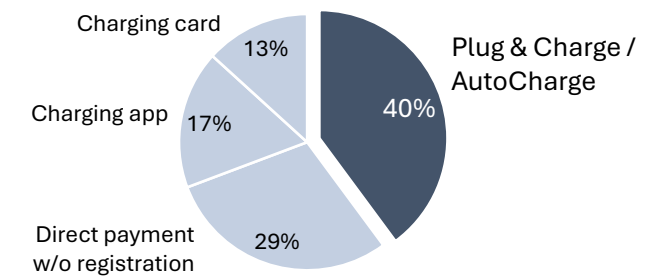
Management Summary

1

The Plug & Charge Persona

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

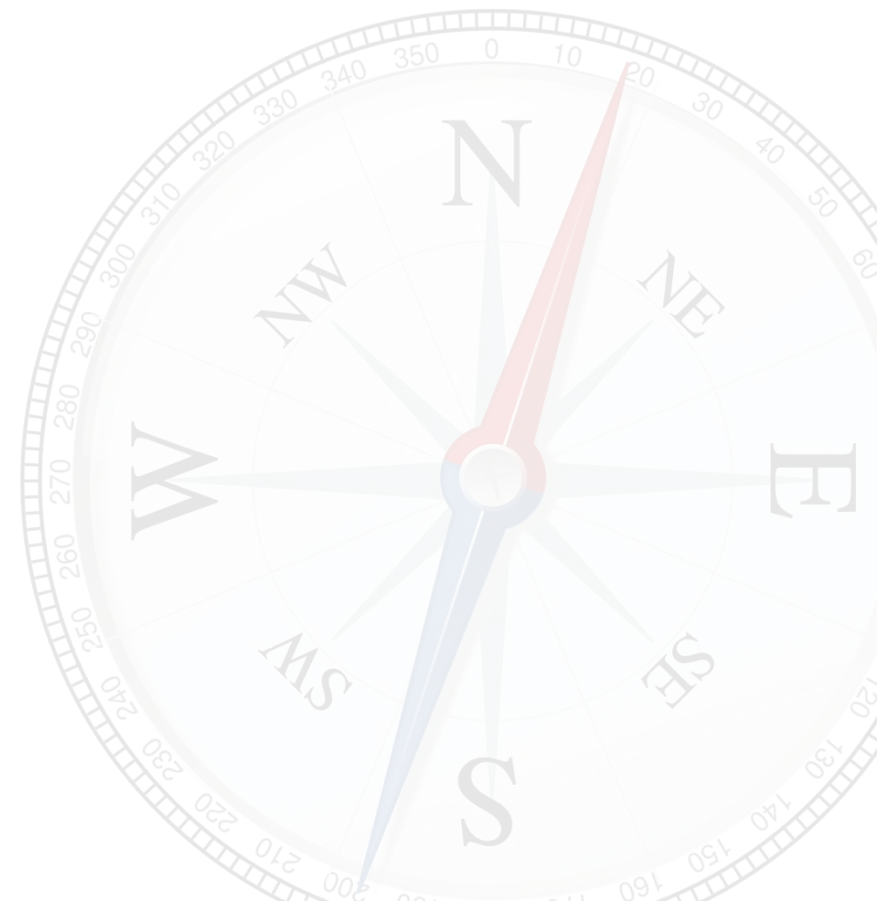
- is more often male, of average age, more likely to earn a high income, more likely to live in a large city
- more often drives a company car and more often drives a Tesla
- more often searches for charging stations using the vehicle's navigation system than an app
- generally uses a digital wallet 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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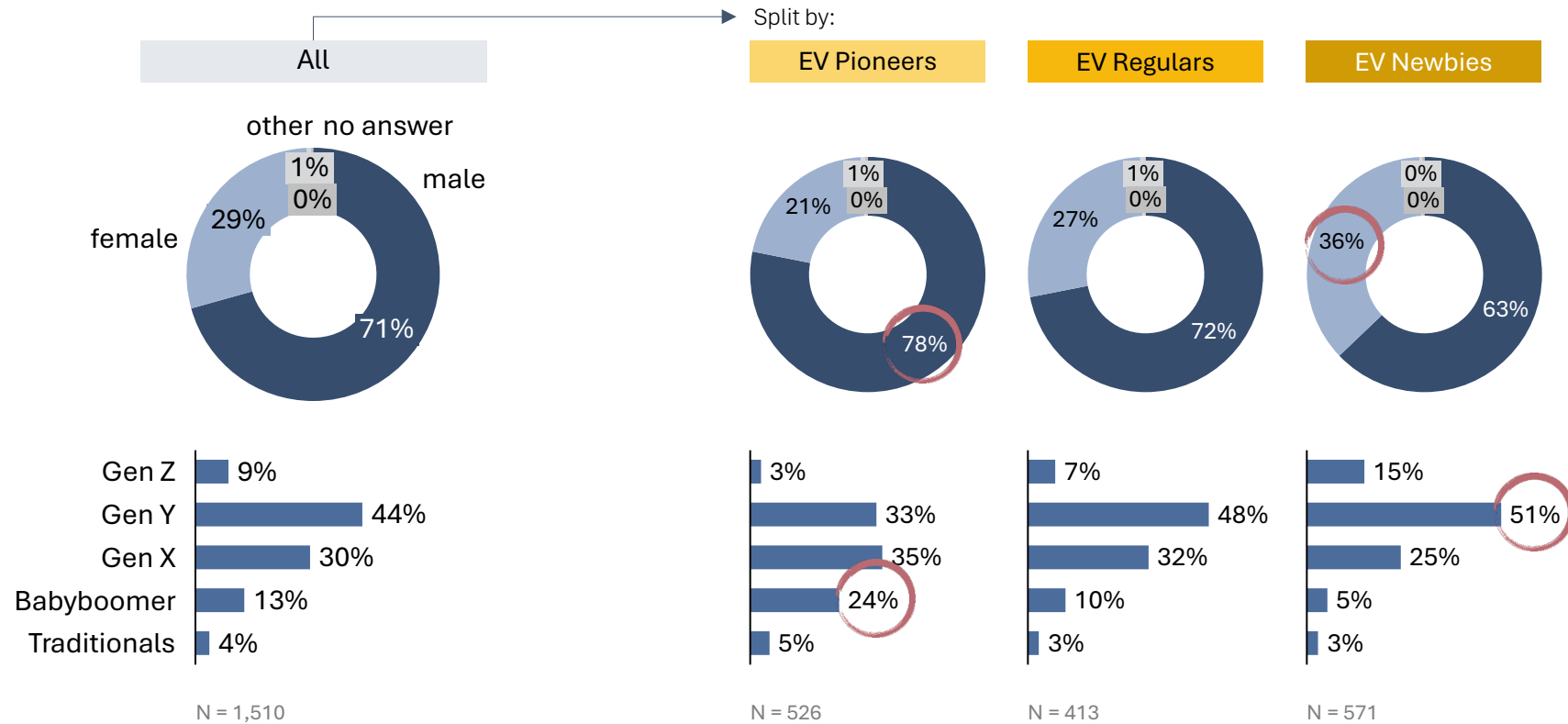


Demographics

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?"



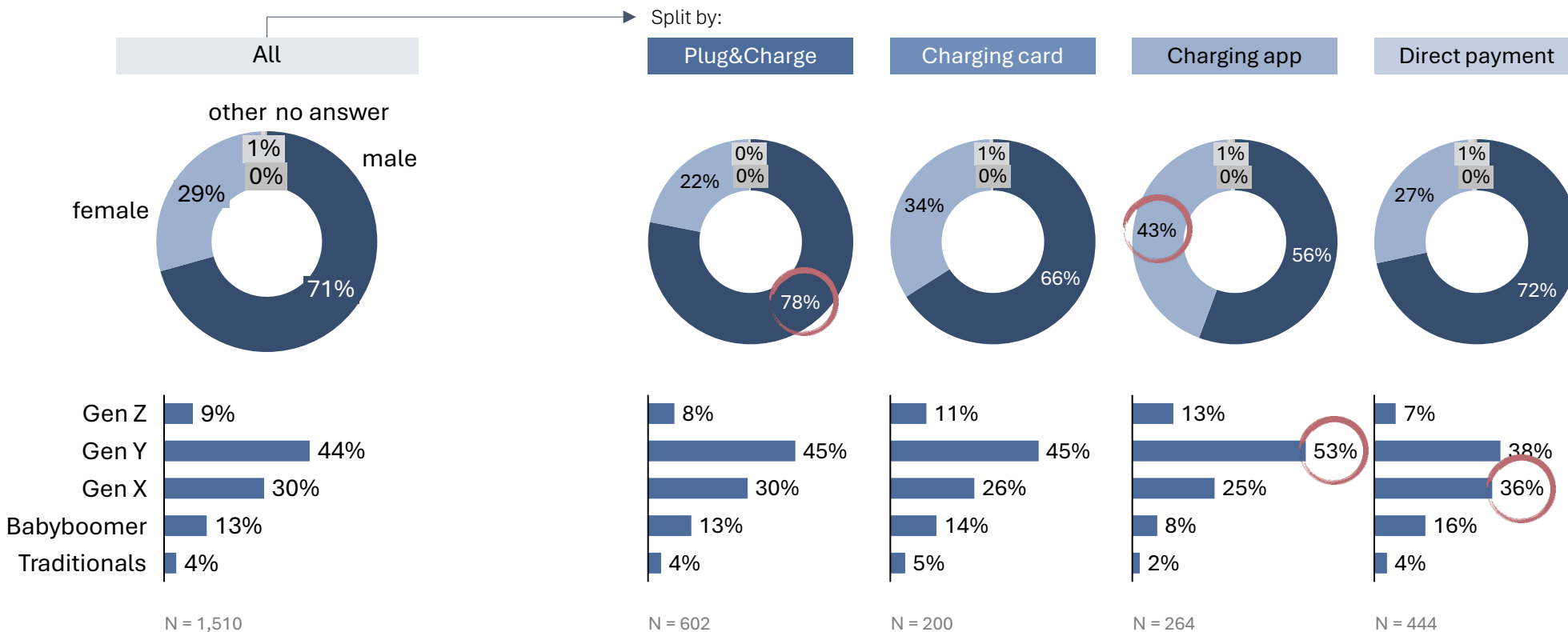
Demographics

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.

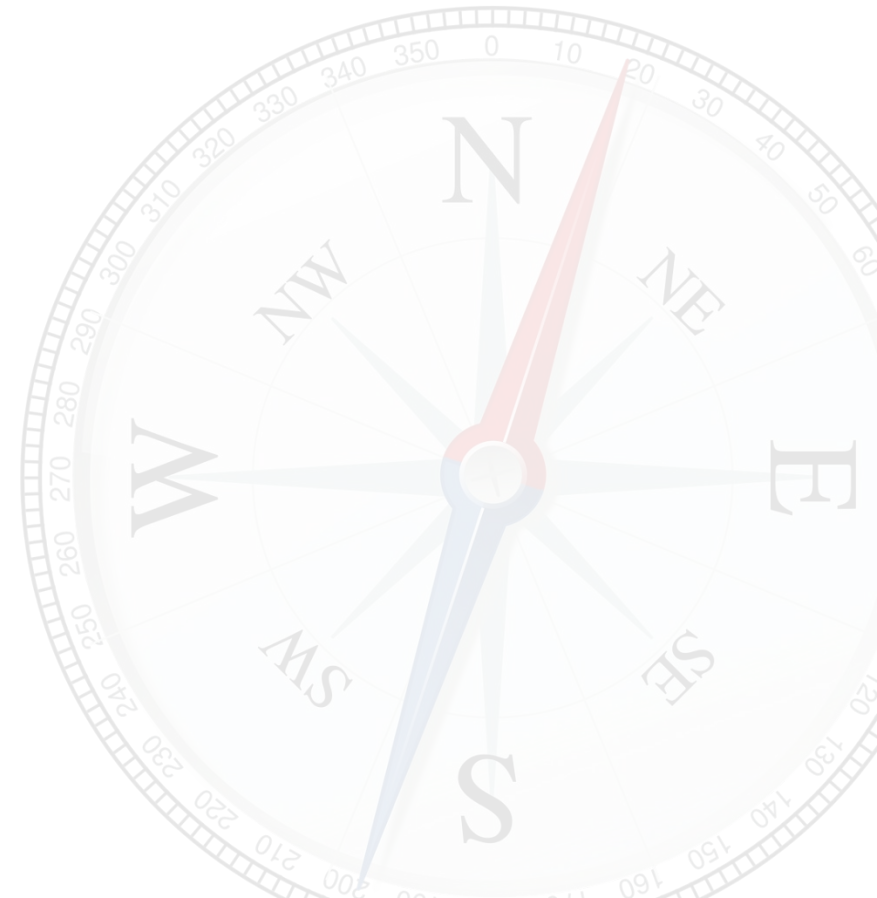
"You are...?"

"How old are you?"



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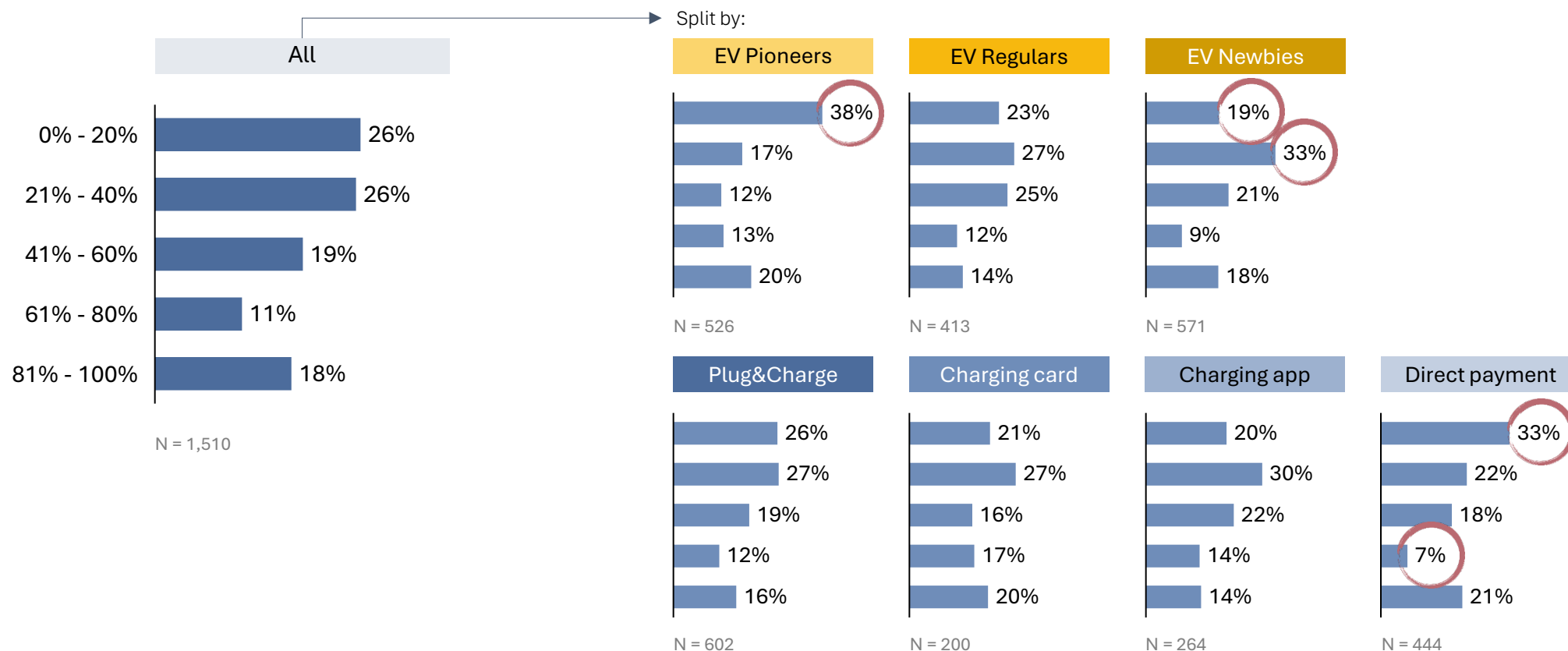
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Charging routine

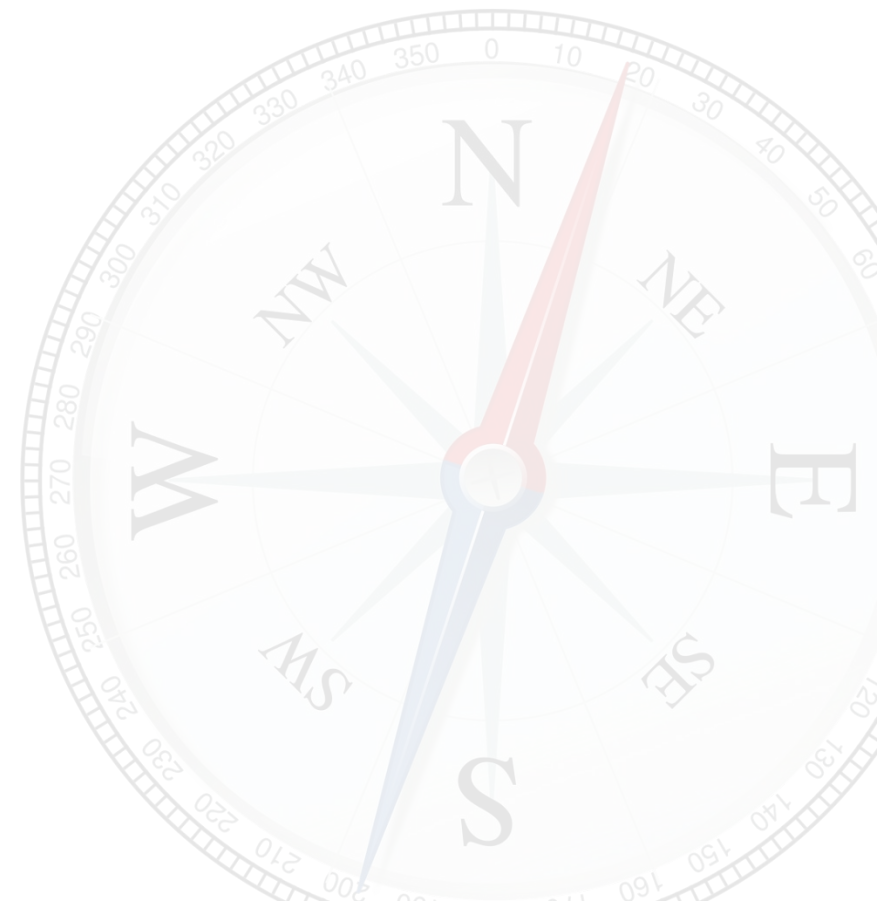
Pioneers rarely charge at public, while newbies charge 21 to 40% of the time. Friends of direct payment rarely charge at public.

"What percentage of your charging sessions are public?"
(Not counting charging at work)



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General payment behaviour

In retail: preferred direct payment method

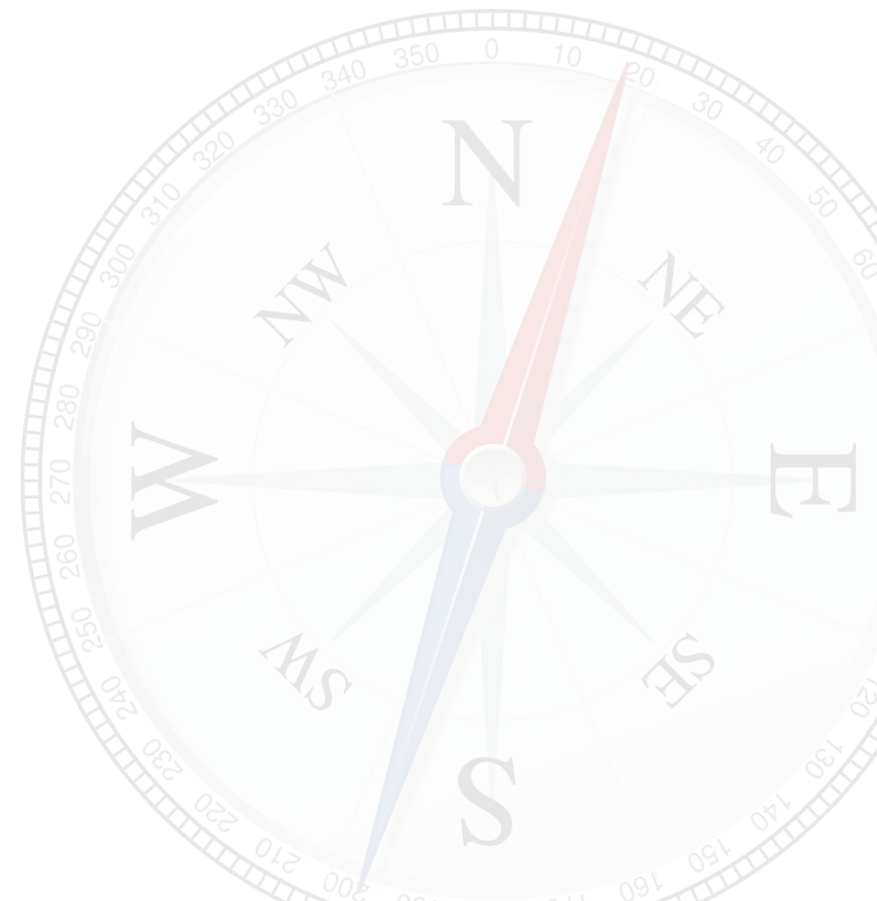
In retail stores or restaurants, the drivers use smartphones to pay more often than physical credit/debit cards to pay, regardless of charging. In comparison, less of charging cards and direct payments prefer credit cards in retail stores. But, there are notable differences.

"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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Evaluation of various closed-loop payment methods

Overall rating of payment at charging stations

None of the charging apps 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?"

Charging Payment Study 2025



Evaluation of various closed-loop payment methods

Perception of closed-loop payment methods

As expected, some of a particular method rate that method particularly positively. However, between a quarter and half of respondents also rate other methods very highly. Only the charging card and charging app are strongly rejected by 15 to 20% of direct payment friends.

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



Evaluation of various closed-loop payment methods

Evaluation comparison

From the respondents' point of view, each payment method has its own specific advantages that depend on convenience, the charging speed for sustainability and reliability, the charging rate for cost transparency and control, and open loop for switching rate 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



Plug & Charge

Charging card

Charging app

Direct payment



Evaluation of various closed-loop payment methods

Criteria for choosing a payment method

The first criteria, price and reliability, are particularly important. Those of the card also appreciate the high reliability. Those of the app tend to value security, while direct payment appreciates 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)

Split by:

All

Plug&Charge

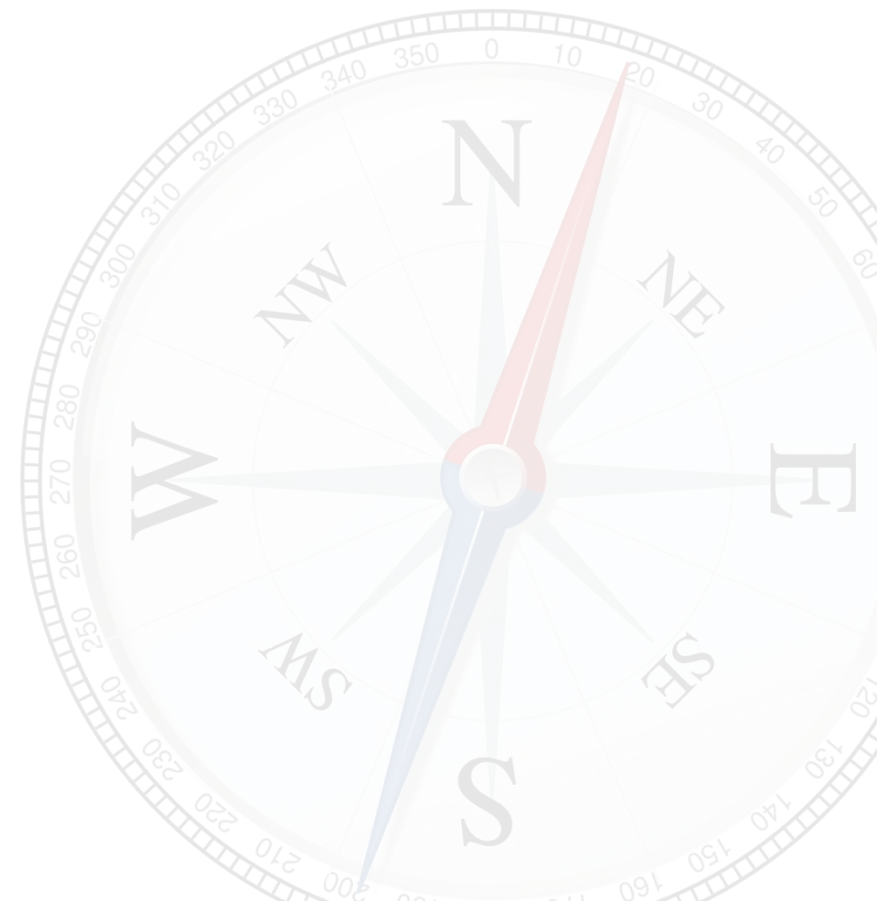
Charging card

Charging app

Direct payment

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Correlation between payment method and willingness to pay

Conjoint analysis

(Introduction to the method)


Example illustration

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.



(1/7) Folgendes Szenario: Sie sind in einer großen Stadt. Ihre Batterie ist fast leer, d.h. Sie müssen laden, um zurück nach Hause fahren zu können. Sie haben mehrere Möglichkeiten. Welche wählen Sie?

Möglichkeit 1



Ladeleistung **50 kW**


Direkt **keiner**
auf
Ihrem
Weg

Angebote **Supermarkt**

Ladesäulen- **anderer CPO**
Betreiber **(Roaming bzw. Ad-hoc)**

Location **normaler**
Sicherheitsstandard

Möglichkeit 2



Ladeleistung **150 kW**


Direkt **keiner**
auf
Ihrem
Weg

Angebote **keine**

Ladesäulen- **dein präferierter**
Betreiber **CPO (mit Ladevertrag)**

Location **normaler**
Sicherheitsstandard

Möglichkeit 3



Ladeleistung **300kW**

Direkt **2km Umweg**
auf
Ihrem
Weg

Angebote **Fachhandel**

Ladesäulen- **anderer CPO**
Betreiber **(Roaming bzw. Ad-hoc)**

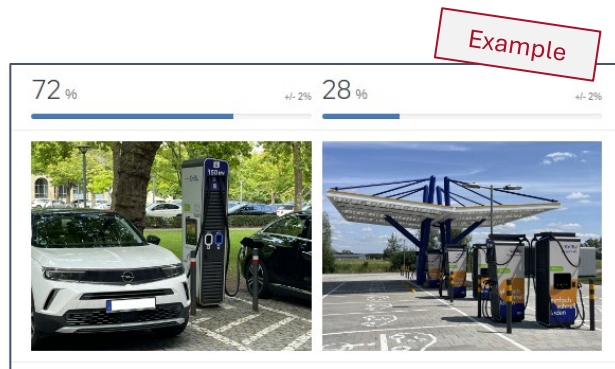
Location **hell beleuchtet +**
Kamera

Correlation between payment method and willingness to pay

Conjoint analysis

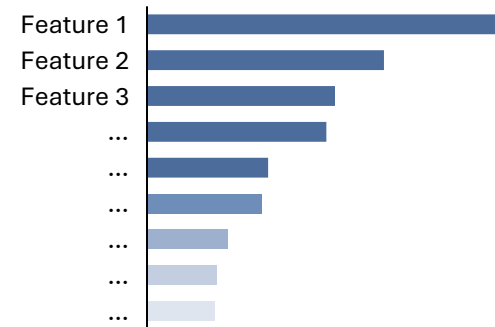
(Exemplary results)

Simulation of user preferences



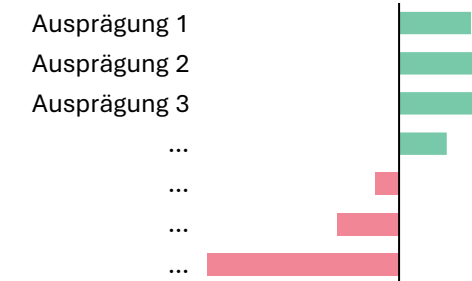
For the simulation, the market potential (using the rule of three) is estimated in comparison to its alternatives.

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*)

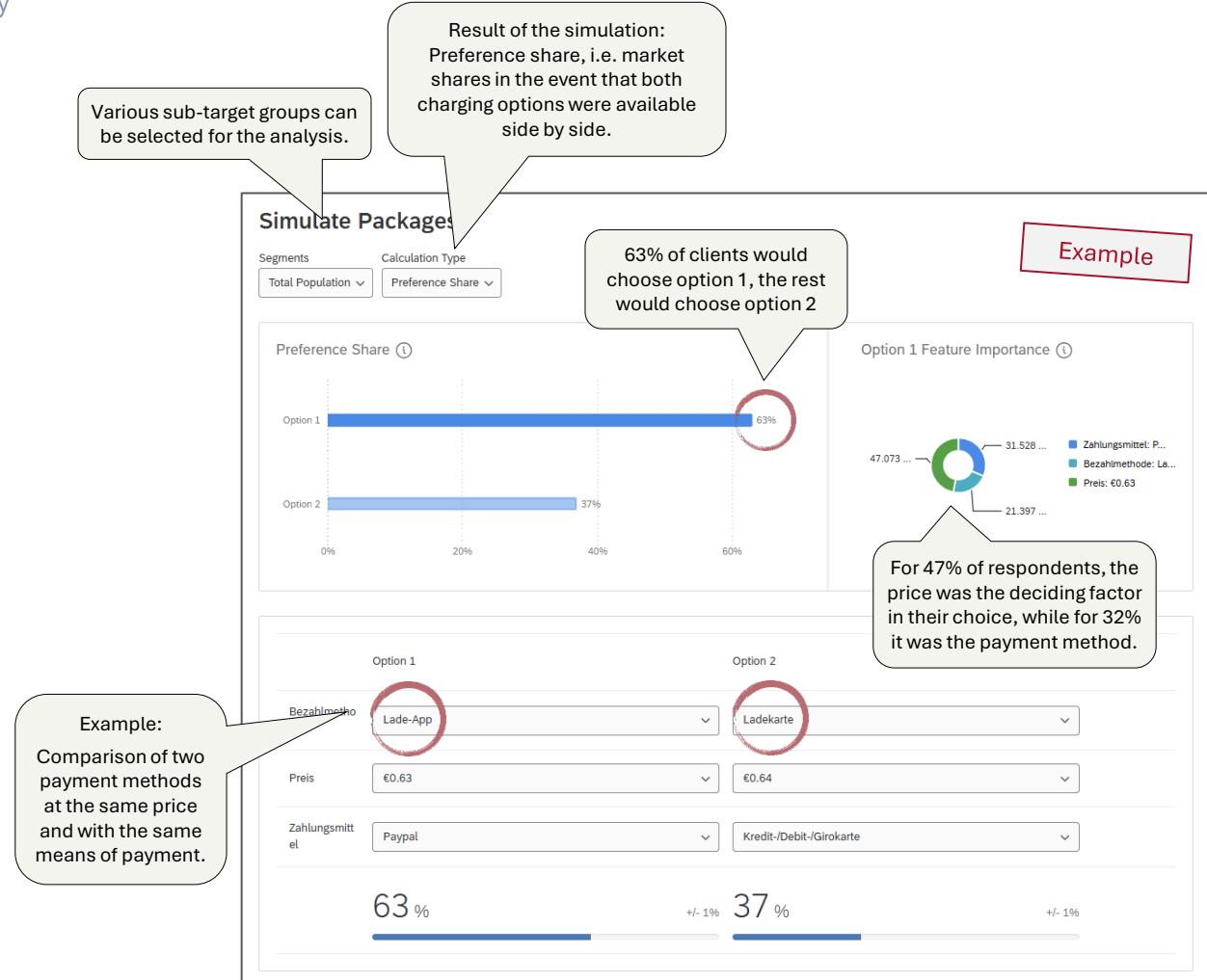
Calculation of the market potential of different payment methods.

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.



SCALE YOUR USER
SCALE YOUR BUSINESS



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