# 3. Literature and experiences

In the following, we review the literature and previous experience. In particular, we identify relevant attributes with respect to the choice of car and consider;

i) how they can be measured,
ii) their relative effect,
iii) their importance.

## 3.1 Monetary cost attributes

Several cost components can be considered including the purchase cost, operating expenses (variable km costs) and annual costs (e.g., green tax and insurance).

One tempting approach from an application perspective is to include different cost components in a combined 'Total Cost of Ownership' variable, here referred to as TCO. However, it is not obvious that a stated preference experiment would provide realistic trade-offs from cost attributes described by TCO. TCO is not a commonly understood concept among private customers and it is expected that many respondents will have difficulties relating to this concept.

**Purchase/leasing price**

In a recent literature review of SP studies regarding BEV purchase, Liao, Molin, and van Wee (2017) state that all reviewed studies included *purchase price* and that many studies used a pivoted design with respect to the price. Hence, the values for the purchase price that are presented to consumers are pivoted around a reference price stated by each respondent. Indeed, (Glerum et al. 2013) include both purchase price and *leasing price* but do not include details on how these are calculated. In order to control for uncertainty with respect to value depreciation due to technological development, Bockarjova, Rietveld, and Knockaert (2013) included both purchase price and expected resale price in their choice experiment.

**Operation costs**

Another important cost attribute is the costs of using the vehicles. It is widely accepted to use approximate *operation costs* by energy costs per km or per 100 km (e.g. Potoglou and Kanaroglou, 2007; Jensen, Cherchi and Ortúzar, 2014). However, there are also examples of combined costs for energy and maintenance (Mabit and Fosgerau 2011) and annual operation costs (Giansoldati et al. 2018).

Where the energy costs for ICVs are easily measured as the cost of fuel, the energy costs for BEVs are more complicated. This is because BEVs can be charged at home and away from home. When charging at home, the costs is often equal to a fixed rate. However, BEV users can also have special agreements with separate charging operators and many different cost structures are possible, e.g. flat rate, variable rate and/or lump sum payment.

When BEVs are charged away from home, different roaming conditions can influence the price as well.

## 3.2 Technical attributes

Technical attributes describe technical features of the individual vehicles.

**Driving range**

The limited driving range of many BEVs is often found to be a great barrier for the BEV market share. Driving range has been included in different ways in stated preference surveys. In many studies, driving range only vary for BEVs, while in other studies, the driving range also varies for other vehicle alternatives. The attribute values also vary significantly, e.g. from 30-60 miles (48-97 km) (Hess et al. 2012) to 200-600 km (Giansoldati et al. 2018). Generally, older studies are characterized by limited range because these studies reflected the technology state at the time of the study. However, more recent studies include BEVs with longer driving range.

The functional form of driving range has been debated in the literature. As discussed (Dimitropoulos, Rietveld, and van Ommeren 2013) it is not reasonable to expect that the marginal increase is constant across different reference levels of driving range. In a Meta study they find evidence for a log transformation of driving range. Furthermore, they suggest that driving range can depend on charging activities, charging time and the extent of the charging infrastructure.

**Charging infrastructure**

Most BEV users are able to charge at home. Several studies suggest that about 70%-80% of all charging events occur at home (Figenbaum and Kolbenstvedt 2016; Franke and Krems 2013; Haustein and Jensen 2018). However, even though long-distance trips represent only a small share of the transport demand of the household, the need for charging while taking these trips is known to have influence on the car purchase decision (Nicholas, Tal, and Turrentine 2017). It has been found that owners of first generation Nissan Leaf BEVs (with a comfortable driving range of 110 km) stays within the one-way distance of their battery range, whereas Tesla owners (with a driving range above 300 km) often exceeds this limitation, i.e. they use fast charging on longer trips. As the battery size for BEVs increase, we can expect to see more long-distance trips. However, such development also dependent on the supply of fast chargers (Nicholas, Tal, and Turrentine 2017).

Currently there is a research gap with respect to the type of infrastructure that will support the transition to long distance BEV trips (Hardman et al. 2018). Several past studies included fuel availability in a single attribute and do not distinguish between BEVs and other vehicles (e.g. Horne, Jaccard and Tiedemann, 2005; Potoglou and Kanaroglou, 2007; Bolduc, Boucher and Alvarez-Daziano, 2008; Achtnicht, 2012). Bockarjova, Rietveld and Knockaert (2013), as one of the first studies, included the detour and waiting time to reach a charging point whereas (Hidrue et al. 2011) only included charging time. In another study (Ito, Takeuchi, and Managi 2013) included charging time and a combined refuel availability and refuel location in one attribute. In order to account for access to private parking space at home, (Jensen, Cherchi, and Mabit 2013) included the distance to the nearest charging option from home and charging at work. Hardman *et al.* (2018) found the work destination to be the second most frequently used charging location.

**Vehicle performance and characteristics**
Several studies also include an attribute describing the driving performance of the vehicles, e.g. acceleration, top speed and size. In the early studies, (e.g. Bunch et al. 1993; Ewing and Sarigöllü 1998), this was especially important as electric vehicles were known as being rather small and slow. Today, electric vehicles perform at least as well as conventional cars and several studies show that drivers appreciate the fast acceleration, the smoothness and the silence of BEVs (Franke et al. 2012; Gärling and Johansson 1998; Jensen, Cherchi, and Ortúzar 2014; Skippon et al. 2016). Furthermore, it is now possible to get an BEV in all size segments. However, as BEVs are still significantly more expensive compared with ICV vehicles, it is particularly relevant to consider size segments in order to investigate potential substitution effects between segments. As an example, a household might be willing to consider a smaller and cheaper BEV over a larger conventional car, if this vehicle is within budget constraints.

It is also likely that households will prefer BEVs due to environmental performance. Previously, such performance has mostly been included as an attribute describing carbon dioxide emissions (Achtnicht 2012; Ito, Takeuchi, and Managi 2013; Jensen, Cherchi, and Mabit 2013) but also simpler definitions for pollution effects have been used, such as the pollution represented as a percentage of a reference vehicle (Hackbarth and Madlener 2013; Hidrue et al. 2011; Potoglou and Kanaroglou 2007).

## 3.3 Policy attributes
In order to promote the market uptake of BEVs, different countries have suggested different types of incentives. According to a recent literature review (Liao, Molin, and van Wee 2017), several studies consider reductions in purchase price (Glerum et al. 2013; Mau et al. 2008; Potoglou and Kanaroglou 2007) or usage cost reductions (Hackbarth and Madlener 2013; Hoen and Koetse 2014). No studies have found free parking to be effective and only 2 out of 10 studies (Hackbarth and Madlener 2013; Horne, Jaccard, and Tiedemann 2005) has found that access to high occupancy vehicle or bus lanes were effective in promoting BEVs.

# 4. SP design

In this section we will describe the design process of the stated choice experiment. The experiment is designed to capture substitution between car types (e.g. different propulsion) and car segments (size of cars). We consider the following car types and car segments:

| Dimensions | Description |
|---|---|
| Types | 1: Conventional cars (ICVs),<br>2: Plug-in Hybrids (PHEVs),<br>3: Battery Electric cars (BEVs) |
| Segments | 1: Mini, 2: Small, 3: Medium, 4: Large, 5: Premium, 6: Luxury/Sport |

Table 2: Overview and definition of car types and car segments considered in the study.

The full set of alternatives will consist of all combinations of car types and segments, thus a total of 18 alternatives. For simplicity, each respondent is only presented with a subset of the most relevant alternatives.

## 4.1 Attributes

The final design included the following attributes:

***Cost attributes:***

- **Purchase price [*DKK*]**: The purchase market price of the vehicle from new.
- **Yearly cost [*DKK/Year*]**: A fixed yearly cost that reflects expenses for annual taxation and insurances.
- **Operation costs [*DKK/km*]:** The cost related to operation/propulsion of the vehicle.

***Car characteristics:***

- **Range [km]:** The driving range of the vehicle with full battery or tank. For PHEV, only the battery range varies and the gasoline/diesel driving range is fixed to 600 km.
- **Acceleration [*Seconds*]:** The acceleration time from 0-100 km/h.
- **Boot size:** The size of the vehicle boot defined by the categories, small, medium, large and very large. This solution was chosen over specific storage capacity as simplicity for respondents was considered more important than actual size.
- **Carbon emissions [*g/km*]**: The pollution related to $CO_2$ emission per km. While other emission types could be relevant, only $CO_2$ emission are considered as it: 1) keeps the design “simple”, and 2) new cars today are labelled with a “$CO_2$ emission”-label (in g/km) when purchased (e.g., it is expected that the respondent is able to relate to the values presented in the stated choice experiment), 3) because most other related emissions are strongly correlated with $CO_2$ use.

***Charging infrastructure:***

- **Distance to home charging [Meter]:** Indicates the distance to the nearest public (slow) charger from home. This attribute is only included for individuals who do not have access to private charging at home.
- **Home charging availability:** Indicates the probability that the nearest public (slow) charger(s) has a vacant plug (and is accessible). This attribute is only included for individuals who do not have access to private charging at home.

- **Distance between fast chargers [km]:** Defines the average distance between public fast chargers in the network.
- **Charging speed [km *per 10 minutes of charging*]:** Indicates the charging speed for public fast chargers. In order be applicable for all BEV car segments and varying battery sizes, it is shown as an average driving distance which can be achieved after 10 minutes of charging.

The attributes *Distance to home charging* and *Home charging availability* are only included for individuals who do not have access to private charging at home, e.g. in a garage/carport either through a dedicated charging unit or an emergency charger (so called 'granny charger'). Further, since these two attributes reflect general infrastructure conditions, these are independent of the specific car and thus have the same value for all BEVs and plug-in hybrid electric vehicles (PHEVs) within each choice task. The attributes *Distance between fast chargers* and *Charging speed* (when fast charging) are only presented for BEVs and, as for home charging attributes, these fast charging attributes have the same value across all BEVs within a choice scenario. The reason for not considering attributes related to fast charging in relation to PHEV alternatives is that PHEVs have only small batteries and is not relevant for this type of charging. Indeed, most PHEVs are not able to fast charging and for longer trips they will usually use their ICV engine.

## 4.2 Level value

The attribute levels are defined based on existing literature as well as the car models that are available in the market today and is expected to be available in the future. The Danish Authorities have information on all Danish vehicles, and based on this information the levels were defined. Furthermore, some attribute levels were changed to better represent the future car fleet (e.g. longer range for BEVs). The final attribute levels are presented in the Appendix.

## 4.3 Design versions

The design process is complicated by the fact that conditions are very different across the population. In particular, home charging possibilities will often depend on the respondent's type of house (private house, flat, etc.). To accommodate these differences, two designs where constructed. One design included the two attributes (*Distance to home charging* and *Home charging availability*) while an alternative design did not include these attributes. As PHEV is an alternative where driving range is based on energy from both batteries and gasoline/diesel, it is not obvious how the inclusion of this car type impacts (the robustness of) the parameter estimates. In order to investigate this (and to simplify the task for each respondent), two sub-designs were constructed: a design that only included ICVs and BEVs, and a design that included all three car types (ICV, BEV, and PHEVs). All respondents were presented with four tasks in each sub-design. The advantages of the first design is two-fold: firstly, the design is simpler and expected to be more robust, and secondly it makes it easier for the respondents to relate to the design when starting with only two car types. The most complicated design with three car types is presented last. Clearly, only the second design allows for the estimation of substitution effects for PHEVs. To summarize, a total of four (two main designs each with two different sub-designs) stated choice designs were generated. Table 3 presents an overview of the car types and attributes included in each of these designs, while Figure 4.1 shows an example of the final layout of the actual choice scenarios presented to the respondents.

| Main design | House | | Flat | |
|---|---|---|---|---|
| **Sub-design** | **1** | **2** | **1** | **2** |
| ***Car types*** | | | | |
| ICV | • | • | • | • |
| BEV | • | • | • | • |
| PHEV | | • | | • |
| ***Attributes*** | | | | |
| Purchase price [*DKK*] | • | • | • | • |
| Yearly cost [*DKK/Year*] | • | • | • | • |
| Operation costs [*DKK/km*] | • | • | • | • |
| Range [*km*] | • | • | • | • |
| Acceleration [*s*] | • | • | • | • |
| Boot size | • | • | • | • |
| Carbon emissions [g/km] | • | • | • | • |
| Distance to home charging [*m*] (PHEV and BEV) | | | • | • |
| Home charging availability (PHEV and BEV) | | | • | • |
| Distance between fast chargers [*km*] (BEV) | • | • | • | • |
| Charging speed [*km per 10 minutes of charging*] (BEV) | • | • | • | • |

Table 3: Overview of constructed stated choice designs.

## 4.4 Choice set size

One of the main objectives of this study is to account for substitution effects across car types and car segments. This is particularly relevant as BEVs in the current market are more expensive. Hence, opting for a BEV rather than a traditional ICV can shift some consumers to target a smaller car segment due to budget constraints.

As mentioned, in this study we consider 3 car types each containing 6 car segments. It is however not possible to ask respondents to answer all 18 alternatives, each with 7-11 attributes, as such a task will be too complex. Instead, we decided to present each respondent with the two car segments that were most relevant for them. Thus, the “simple” design (design 1) contains 2*2 alternatives, while the “complex” design (design 2) contains 3*2 alternatives. An example of a scenario from design 2 for a person that does not have access to a private home charger is presented in Figure 4.1.

Forestil dig at disse nye biler er til salg som de bedste muligheder i hver bilklasse.

*Forklaring af bilklasser:*

- ***Mini:*** *fx Toyota Aygo, Kia Picanto, Volkswagen Up*
- ***Lille:*** *fx Peugeot 208, Toyota Yaris, Renault Zoe*
- ***Mellem:*** *fx Ford Focus, Volkswagen Golf, Nissan Leaf*
- ***Stor:*** *fx Ford Mondeo, Skoda Superb, Tesla 3*
- ***Premium:*** *fx Mercedes E-klasse, Audi A6, Tesla S/X*
- ***Luksus/Sport:*** *fx Mercedes S-klasse, BMW 7 serie, Audi A8*

| Ny bil | **Benzinbil** | **Benzinbil** | **Elbil** | **Elbil** | **Plug-in Hybrid** | **Plug-in Hybrid** |
|---|---|---|---|---|---|---|
| Bilklasse | Medium | Stor | Medium | Stor | Medium | Stor |
| **Omkostninger** | | | | | | |
| Købspris | 250.000 kr. | 430.000 kr. | 300.000 kr. | 450.000 kr. | 225.000 kr. | 350.000 kr. |
| Kørselsomkostninger (Omkostninger per 10.000 km) | 1,19 kr / km (11.900 kr) | 1,37 kr / km (13.700 kr) | 0,68 kr / km (6.800 kr) | 0,56 kr / km (5.600 kr) | 1,27 kr / km (12.700 kr) | 1,11 kr / km (11.100 kr) |
| Årlige omkostninger (afgifter, service, forsikring) | 5.978 kr. | 9.083 kr. | 5.899 kr. | 8.881 kr. | 5.072 kr. | 7.529 kr. |
| **Beskrivelse af bilen** | | | | | | |
| Rækkevidde | 898 km | 1097 km | 450 km | 550 km | EL: 40 km Benzin: 600km | EL: 25 km Benzin: 600km |
| Acceleration (0-100km/t) | 14 sek | 12 sek | 5 sek | 11 sek | 5 sek | 9 sek |
| Bagagerum | Stort | Meget stort | Stort | Meget stort | Stort | Meget stort |
| $CO_2$ udledning | 91 g/km | 98 g/km | 33 g/km | 35 g/km | 138 g/km | 150 g/km |
| | | | *Udledning er beregnet på basis af 70 % vedvarende energi* | | | |
| **Infrastruktur** | | | | | | |
| Opladningsmuligheder nær hjemmet | | | Ladepunkt inden for 50m fra hjemmet Ledig 1 ud af 4 gange | | | |
| Distance opnået efter 10 min hurtig opladning | | | 35 km | 125 km | | |
| Distance mellem hurtigladere på hovedvejnetværket (min 50kW) | | | *90km* | | | |
| **Hvilken bil ville du vælge i denne situation?** | ● | ● | ● | ● | ● | ● |

Figure 4.1: Choice task example with ICV, BEV, and PHEV for individuals who cannot charge at home.

## 4.5 Final design / Design Type

The designs were generated as efficient designs with zero priors. The reason for using efficient designs is that it allows restrictions on attribute levels for specific attributes. More specifically, for the infrastructure attributes, it was desired to keep levels constant across all (relevant) alternatives within each choice task. That is, if the nearest home charger is 400 meter away, it would be the same independent of the car being an BEV or PHEV. The reason for using zero priors is to maintain robustness of the design as much as possible (Walker et al. 2018/2019).

Each of the final four stated choice designs (listed in Table 3) contained 80 choice tasks. These were divided into 20 blocks of 4 choice tasks each. Hence, each respondent were presented with 2*4 choice scenarios, i.e. four choice scenario from design 1 followed by four choice scenarios from design 2. If home charging is available then they are presented with design 1 and 2 from the “House”-designs, while if home charging is not available they are presented with design 1 and 2 from the “Flat”-designs.

# 5. Survey description

The coding and hosting of the survey was conducted by Epinion who has a professional setup for online data collections. However, as their standard tool could not handle the stated choice experiment, the users are redirected to another tool, called sawtooth, during the experiment.

The survey begins with an introduction page describing the overall objective of the study. Detailed information about the experiment and the other relevant information (e.g. GDPR) is already described in the invitation letter.

The respondent is asked to read the questions carefully before answering and is informed that it is possible to exit the interview and use the link again later to continue from where the session stopped.

The survey consists of four parts:

1. Intro questions (needed for customizing the SP scenarios)
2. Stated choice experiment
3. Background characteristics and car usage
4. Attitudinal statements

## 5.1 Part 1: Intro questions and customization

In this part of the survey, basic information for the respondent is collected. Some of this information is used for customizing of the stated choice experiment for each specific user. The sections begins with the following text:

*'In this part of the survey, we ask for information about your occupation and cars that you have access to in your household. Besides cars that you may own, this can also be a company car, a leased car, or a car that you often borrow from somebody else.'*

An overview of the survey questions included in this part are found in Table 4 below:

| ID | Description | Type | # categories |
|---|---|---|---|
| q1 | Primary occupation | Categorical | 17 |
| q2 | Car availability in household | Categorical | 5 |
| q2a | Description of cars in household | multiple | |
| | Car segment | Categorical | 6 |
| | Ownership type | Categorical | 7 |
| | Model year | integer | |
| | Propulsion | Categorical | 6 |
| q3 | Parking options at home | Categorical | 20 |
| q4 | Parking options at work | Categorical | 12 |
| q15 | Accessibility to charging at home | Categorical | 4 |
| q15a | Accessibility to charging at work | Categorical | 4 |

| | | | |
|---|---|---|---|
| q6 | Future car changes in household (replace existing, additional car or no changes) | Categorical | 3 |
| q6a | Description of next car in household | | |
| | Ownership type | Categorical | 7 |
| | Condition | Categorical | 3 |
| | Propulsion | Categorical | 6 |
| | Expected time for change | Categorical | 3 |
| q7 | Probability for each car segment | Multiple | 6x6 |

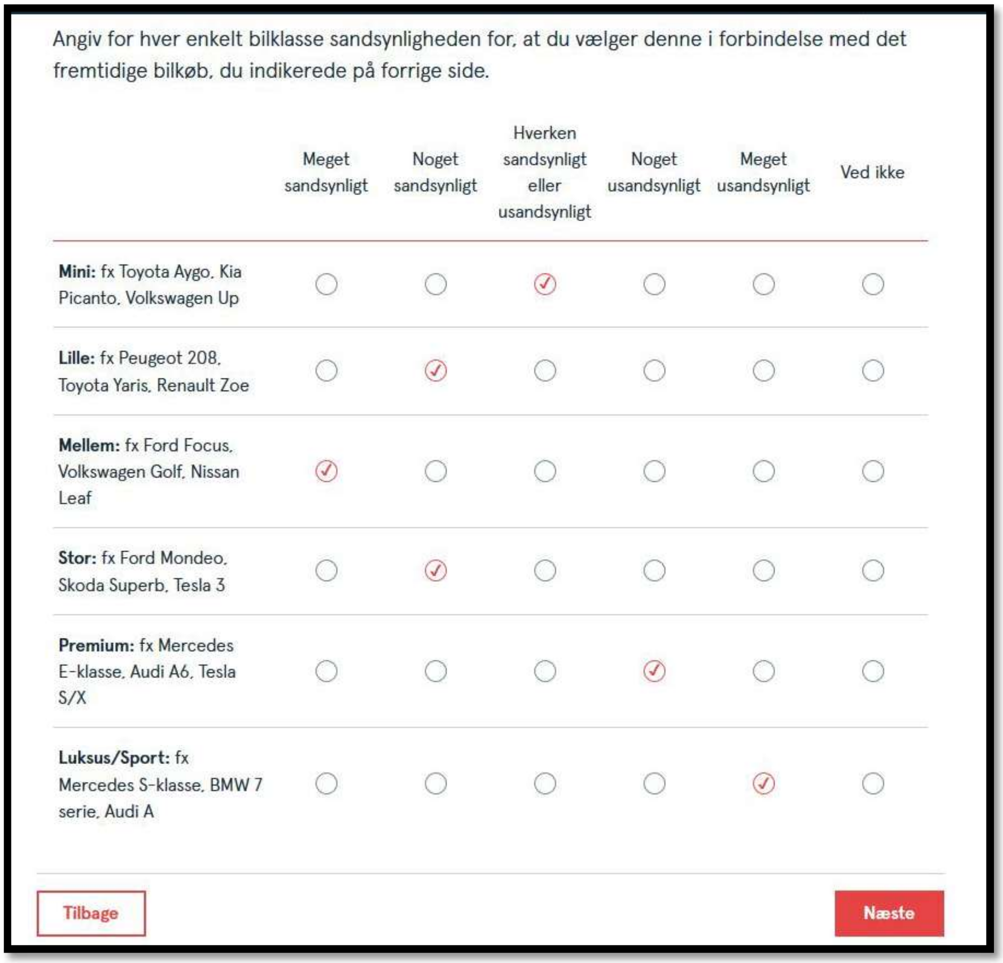
Table 4: Intro questions included in part 1.

q1 is about primary occupation and the categories are similar to the corresponding categories for the Danish National Travel Survey (TU). If a respondent selects a category that indicates that the respondent does not go to work, then following questions about charging at work are not presented. Subsequently, the respondent is asked to describe the available cars in the household. Question q2 is regarding the number of available cars and the answer can be one of the categories: 0, 1, 2, 3 or “more than 3”. For each of the available cars, the respondent is now asked to indicate the car segment, type of ownership, model year and propulsion.

The parking opportunities at home and at work are asked in question q3 and q4. Note that work parking options are only asked if ‘primary occupation’ indicates that the respondent goes to work. We ask specifically for charging options at home and at work in q15 and q15a respectively. Here the respondent can indicate if a charger has already been installed at home or if it is possible or not. For charging at work, the respondent can indicate whether these are accessible and close to the work location.

In q6 the respondent is asked to indicate the likely next car purchase scenario in the household. It is possible to indicate “I will replace car X”, “I will acquire another car” and “I do not have plans of acquiring a car”. If “replace” is chosen, it is possible to indicate which one of the cars in the household are most likely to be replaced. In q6a, the respondent is asked to further describe the car. It is possible to define type of ownership, condition (new or used), propulsion and when this event will most likely take place.

Finally, for each car segment in the survey, the respondent is asked (q7) to indicate the likelihood that the next car in the household will belong to a given segment as seen in Figure 5.1. This is used to select the two car segments that will be included in the stated choice experiment. The cars with the highest likelihood will be included. In case of cars being equally likely, one of them will be randomly selected.


Angiv for hver enkelt bilklasse sandsynligheden for, at du vælger denne i forbindelse med det fremtidige bilkøb, du indikerede på forrige side.

| | Meget sandsynligt | Noget sandsynligt | Hverken sandsynligt eller usandsynligt | Noget usandsynligt | Meget usandsynligt | Ved ikke |
|---|---|---|---|---|---|---|
| **Mini:** fx Toyota Aygo, Kia Picanto, Volkswagen Up | | | | | | |
| **Lille:** fx Peugeot 208, Toyota Yaris, Renault Zoe | | | | | | |
| **Mellem:** fx Ford Focus, Volkswagen Golf, Nissan Leaf | | | | | | |
| **Stor:** fx Ford Mondeo, Skoda Superb, Tesla 3 | | | | | | |
| **Premium:** fx Mercedes E-klasse, Audi A6, Tesla S/X | | | | | | |
| **Luksus/Sport:** fx Mercedes S-klasse, BMW 7 serie, Audi A | | | | | | |

Tilbage

Næste

Figure 5.1: Question on relevance of car segments.

## 5.2 Part 2: Stated choice experiment

Right before the stated choice experiment, the respondent is presented with two pages of information. In the first page, it is stated that the respondent now proceeds to the second part where he/she will face a number of car options and that these options beside conventional cars, also include BEVs and PHEVs. Then follows a brief presentation of these technologies. On the second page, the respondent is reminded about the details for the most likely car purchase as indicated in part 1 and that he/she should pretend to be in that situation now.

After the introduction each respondent is presented with 2*4 stated choice tasks, in which the respondent is asked to select the option he/she would prefer in a real-life situation. As discussed previously, the first four choice tasks contains four alternatives (2 ICVs and 2 BEVs), while the subsequent four choice tasks contains 6 alternatives (2 ICVs, 2 BEVs, and 2 PHEVs). For individuals, who in question q15, indicated that they have (the possibility of installing) a home charger, the "House" main design was used. If on the contrary, they indicated that this is not possible, the "Flat" design was used.

## 5.3 Part 3: Background characteristics

After the stated choice experiment was completed, respondent and household characteristics were collected. In the sample data, we already have information about the age of the respondent, gender and home location.

| ID | Description | Type | # categories |
|---|---|---|---|
| q8x | Highest finished education | Categorical | 11 |
| q8a | Number of persons in household | Integer | |
| q8 | Description of other persons in household | | |
| | Relation | Categorical | 3 |
| | Gender | Categorical | 3 |
| | age group | Categorical | 12 |
| | Possession of driver's license | Categorical | 2 |
| q8_2 | Own possession of driver's license | Categorical | 2 |
| q9 | Annual household income before tax | Categorical | 12 |
| q10 | Annual mileage for each available car in household | Categorical | 7 |
| q11 | Frequence of purpose usage for each car | Multiple categories | 3x5 |
| q12 | Frequency of trip distances for each car | Multiple categories | 6x6 |

Table 5: Background questions included in part 3.

For each member of the household, we ask about the relation to respondent, gender, age group and driver's license status. Furthermore, for each car (current) in the household, we ask about the car usage, e.g. yearly mileage and frequency of trips for certain trip purpose.

## 5.4 Part 4: Attitudinal statements

The final part of the survey collects information based on attitudinal statements. The statements have been developed in previous research projects at DTU. The complete list of attitudinal statements are presented in Table 6. Respondents were asked to rate their agreement to each of the statements on a 1-5 Likert scale where 1=completely disagree, and 5=completely agree. The attitudinal statements are distributed randomly across three survey pages.

| ID | Attitude statements |
|---|---|
| 1 | The need for charging makes electric cars very unpractical for use in everyday life. |
| 2 | Ensuring that an electric car is always charged makes it inconvenient to use. |
| 3 | Using an electric car requires a careful planning of activities. |
| 4 | It is fun to drive an electric car. |
| 5 | The fast acceleration of an electric car is an exciting experience. |
| 6 | I'm fascinated by the technology of electric cars. |
| 7 | Electric cars are not suitable for my lifestyle. |
| 8 | My next car will be an electric car |
| 9 | Using an electric car for longer distances is difficult due to a lack of charging stations along the motorway. |

| | |
|---|---|
| 10 | An electric car is well suited to carry out my daily tasks. |
| 11 | The development of public incentives for electric cars is very unpredictable in Denmark/Sweden. |
| 12 | The resale value of electric cars is very unpredictable. |
| 13 | People who are important to me are considering to buy an electric car. |
| 14 | If I buy a car, I feel morally obliged to choose a car that minimises carbon emissions and air pollution. |
| 15 | I feel obliged to take environmental consequences of vehicle use into account when choosing a car. |
| 16 | People who are important to me think that electric cars should play an important role in our transport system. |
| 17 | People who are important to me think that my next car should be an electric car. |
| 18 | People who are important to me own an electric car. |
| 19 | When driving an electric car, I'm always (would always be) worried about running out of charge. |
| 20 | I (would) feel embarrassed when driving an electric car. |
| 21 | I (would) feel proud of having an electric car. |
| 22 | Driving an electric car expresses (my) openness for new technologies. |
| 23 | Driving an electric car is easily compatible with my habits. |
| 24 | Future political support for electric cars is very uncertain in Denmark/Sweden. |

Table 6: Full list of attitudinal statements presented to the respondents.