Results MINI E UK field trial.

BMW Group

Results MINI E UK field trial.
Insights from the MINI E field trial.

- **General conditions and electromobility.**
- MINI E and BMW Group E-Mobility Roadmap.
- The field trial.
- Results of the field trial.

General Conditions and Electromobility.

The following factors will determine sustainable mobility.

Environment

- Impacts of climate change are perceivable.

Urbanisation

Politics

- More stringent legislation.
- Charge for inner city access access.
- Link to vehicle emissions.

E-mobility drivers

Economics

- Shortage of resources.
- Increase in the price of fossil fuels.

Culture

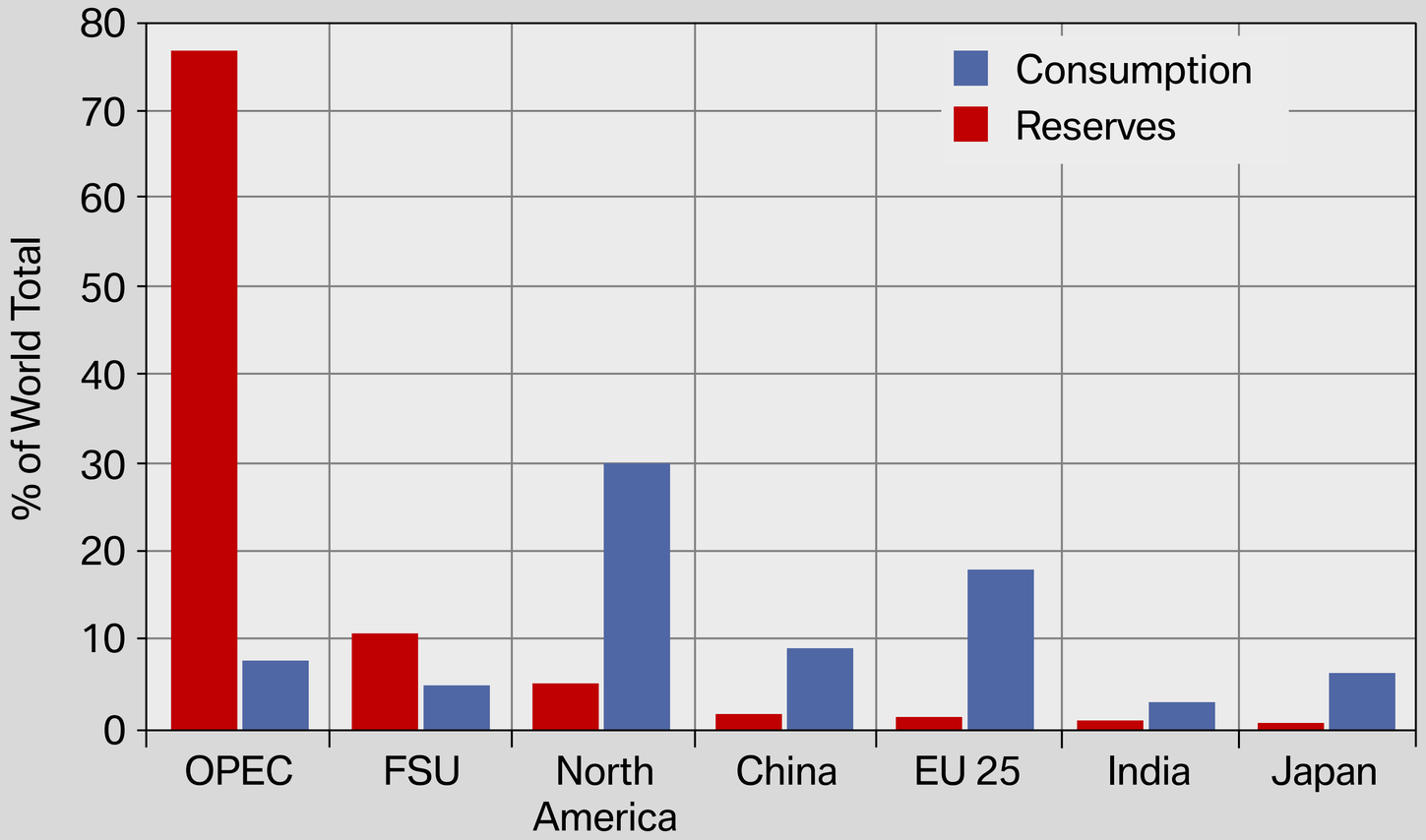
- Sustainable mobility as part of a modern urban lifestyle.
- Assumption of social responsibility.

Customer preferences, Sustainibility

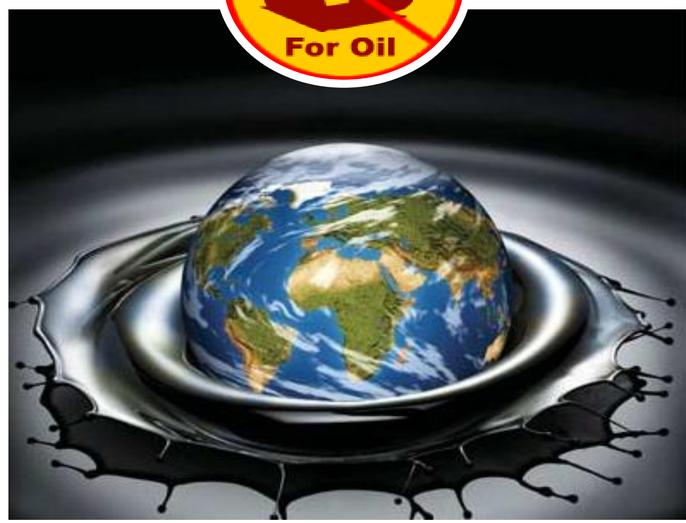
General Conditions and Electromobility.

Oil resources are unevenly distributed - energy independence is a top political priority.

Crude oil: reserves compared with consumption (2006).



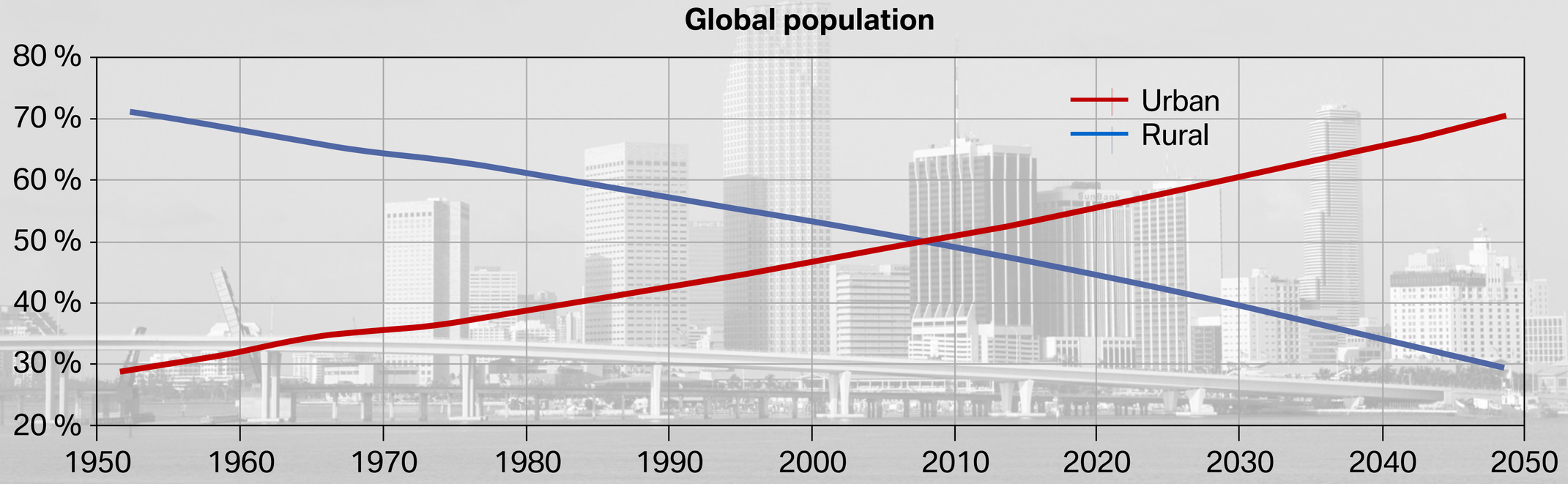
Data source: BP Statistical Review 2007.



General Conditions and Electromobility.

Megacities are a global trend.

- In 2007, more people lived in cities than in rural areas for the first time.
- By 2030, more than 60 % of the world's population will be living in urban settings.
- Megacities with populations of over 10 million inhabitants will have the biggest growth rates.
- Growth leads to restrictions on urban infrastructure and mobility.



Source: Based on: Megacity Challenges – A Stakeholder Perspective (A research project conducted by Globe Scan and MRC McLean Hazel / Sponsored by Siemens)

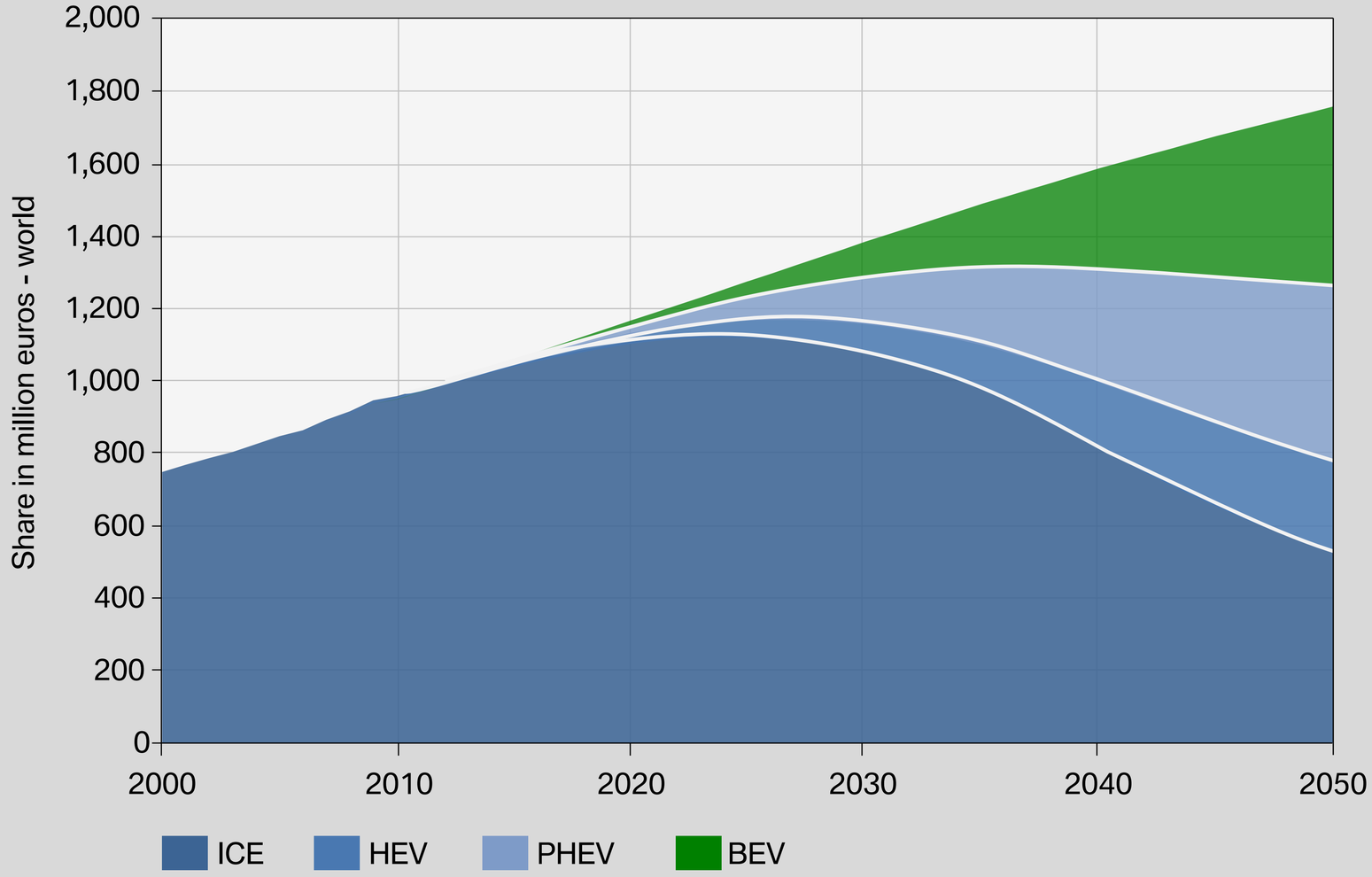
General Conditions and Electromobility.

Electrified vehicles will achieve relevant market shares.

- Internal combustion engines will continue growth trajectory until 2020 - 2030.

- The shares of electrification will steadily increase.

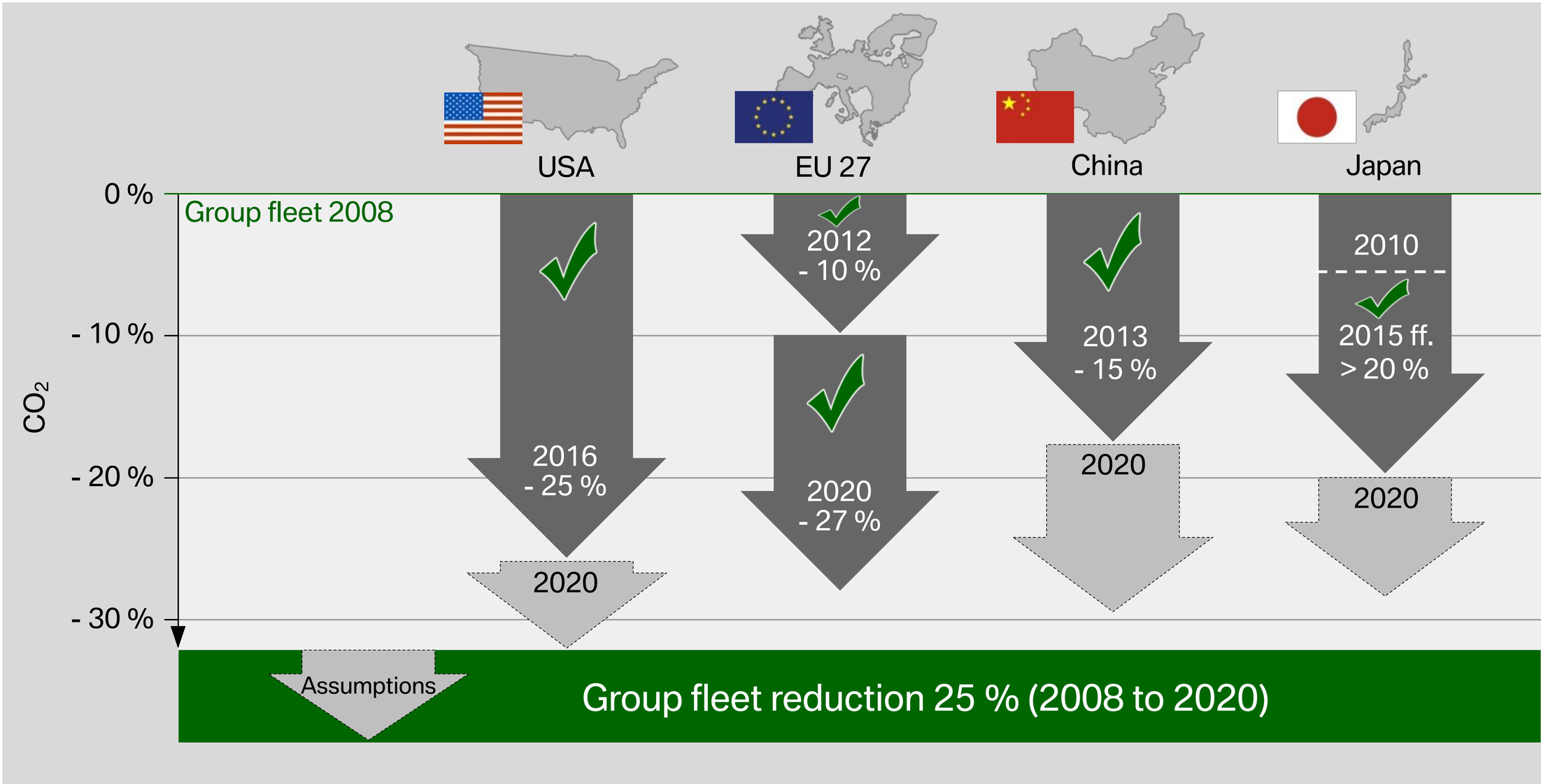
- In 2020, the proportion of new registrations for electrified vehicles is estimated at 5 -15 %.



Source: United Nations, Global Insight, Credit Suisse, BMW calculations.

General Conditions and Electromobility.

Global targets require a reduction in BMW Group CO_2 emissions in excess of 25% by 2020.



General Conditions and Electromobility.

Sustainability is part of the BMW Group strategic direction.

Board statement 2000:

"The BMW Group is pursuing sustainable development as a key principle of the corporate strategy."

Dow Jones Sustainability Indexes

2011: The BMW Group was awarded the accolade of most sustainable automobile company for the seventh year in succession.

Zero emissions.

We're bringing zero emissions within reach.
It's what's next for us.

General Conditions and Electromobility.

BMW Group drive train strategy provides a broad technology spectrum for today and the future.

Combustion engine	Hybrid technology	E-Vehicle	Hydrogen
			
Today	**Today**	**Near future**	**Future**
- Optimisation of fuel consumption and emissions. - Lightweight construction.	- Full and mild hybrid vehicles. - Initial step towards electrification of the drivetrain. - Plug-in hybrid drive-trains.	- First limited electric vehicle production in 2008. - MINI E on the road since 2009. - BMW ActiveE in 2011. - Introduction BMW i3 BEV and E-REV in 2013.	- Commitment to and validation of technology. - Optimisation of BMW H_2 ICE. - Improvement of hydrogen storage and efficiency.

Powertrain concepts

Results MINI E UK field trial.
Insights from the MINI E field trial.

MINI E and BMW Group E-Mobility Roadmap.

The BMW Group has a 40 year expertise in electric vehicles.

Battery-Electric Vehicles

1972:
BMW 1602
Lead Battery

1987:
BMW 325
NaS Battery

1992:
BMW 325
NaNiCl Battery

1993:
BMW E1
NaS Battery

1996:
BMW 325
NaNiCl Battery

2008:
MINI E
Li-Ion Battery

2010:
BMW Concept Active E
Li-Ion Battery

1970 1980 1990 2000 2010

Hybrid-Electric-Vehicles

1994:
BMW 518i
Parallel-Hybrid
with NiMH Battery

1995:
BMW 316i
Seriell Hybrid
with NaNiCl Battery

2003:
BMW X5 Active
Hybrid with
Super Caps

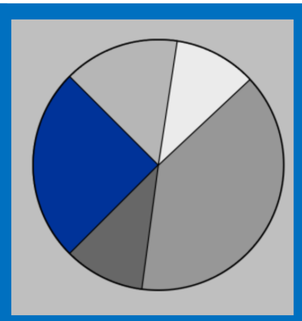
2010:
BMW ActiveHybrid X6

2010:
BMW ActiveHybrid 7

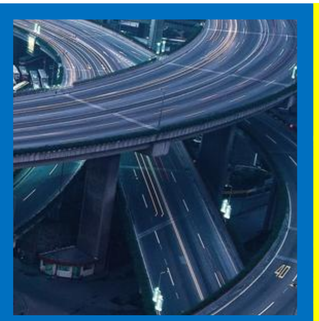
MINI E and BMW Group E-Mobility Roadmap.

MINI E and BMW ActiveE are key learning activities for i3.

Use of renewable energy.



Market potential.



Transfer scenarios.

User behaviour.

Acceptance.

Demands of e-infrastructure.

Strengths and weaknesses.

MINI E 2009

BMW ActiveE 2011

BMW i3 **2013**

MINI E and BMW Group E-Mobility Roadmap.

The MINI E - an important building block for future electric vehicles.

Vehicle	2-seater, 60 ltr. trunk	
Electric motor	Output	150 kW/204 hp
	Torque	220 Nm
	Top speed limited	95 mph
	Acceleration 0-62 mph	8.5 sec
Energy storage	Lithium-Ion battery	35 kWh, 29 kWh available
	Voltage	400 V
	Number of battery cells	5,088
	Cooling	Air cooled depending on cell temperature
	Charging times (230 V)	2.4 hours at 50 A 3.8 hours at 32 A 10.1 hours at 12 A
	Weight	260 kg
	Range	In real terms up to 112 miles; According to FTP72: 149 miles

MINI E and BMW Group E-Mobility Roadmap.

As the MINI E is an early conversion example it has some characteristics to bear in mind.

Specific characteristics of the MINI E

- 2 seats
- Left-hand drive
- Boot capacity: 60 litres
- Weight: 1660kg
- Battery: air cooling
- 5,088 battery cells

MINI E and BMW Group E-Mobility Roadmap.

The BMW ActiveE as the next step towards the series introduction of the Megacity Vehicle.

Vehicle	4-seater, 200 ltr. trunk	
Electric motor	Output	125 kW/170 hp
	Torque	250 Nm
	Top speed	90 mph
	Acceleration 0-62 mph	9.0 sec
Energy storage	Lithium-Ion battery	32 kWh
	Number of battery cells	192 cells in 25 modules
	Cooling	Liquid cooling
	Charging time (240 V)	4-5 hours at 32 A
	Range	99 miles in real terms

MINI E and BMW Group E-Mobility Roadmap.

The BMW ActiveE is a step on from the MINI E.

Enhanced Usability of the ActiveE

MINI E:		ActiveE:
2 seats	→	4 seats
Boot space 60 l	→	Boot space 200 l
Air cooling of battery	→	Liquid cooling of battery
Simple displays	→	Modes of driving Connectivity

Introduction of "Eco" mode as part of "EfficientDynamics"
→ Eco button, formerly Sport button in DTC selector lever

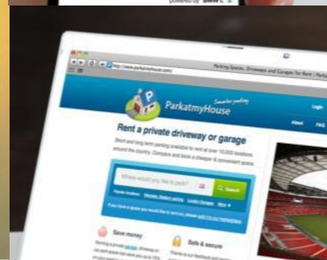
State-of-charge information through web portal as part of "Connected Drive"

Integration of specific points-of-interest (POIs),
e.g. charging stations

MINI E and BMW Group E-Mobility Roadmap.

BMW i: A new sub-brand, i3 and i8 vehicles based on a new architecture, mobility services.

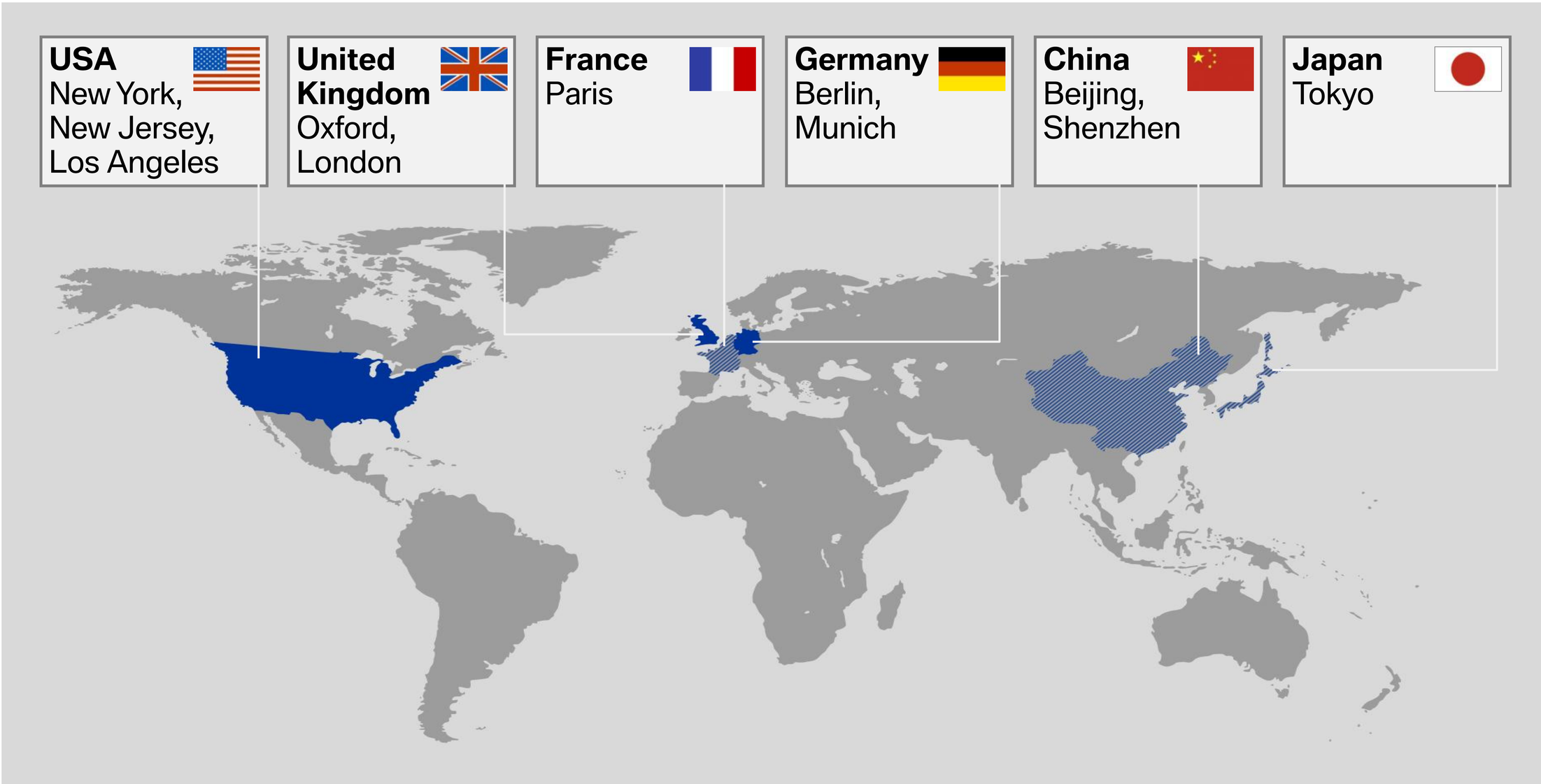
Visionary Mobility. **Inspiring Design.** **Premium sustainability.**



Results MINI E UK field trial.
Insights from the MINI E field trial.

MINI E UK field trial.

Establishment of learning projects world-wide with e-mobility consortia.

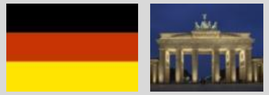
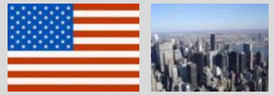


MINI E UK field trial.

User survey UK: December 2009 – March 2011.

MINI E UK field trial.

MINI E research consortia brought together key stakeholders and stimulated new relationships.

	 1.)					
Government involvement	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit	Technology Strategy Board; SEEDA; Oxford City Council	CA.GOV; California Environmental Protection Agency Air Resources Board	中华人民共和国国家发展和改革委员会 National Development and Reform Commission; 中华人民共和国科学技术部; NDRC MOST MIIT	ADEME; Agence de l'Environnement et de la Maîtrise de l'Energie	経済産業省 Ministry of Economy, Trade and Industry; 国土交通省 Ministry of Land, Infrastructure, Transport and Tourism; 環境省 Ministry of the Environment
Scientific research	Chemnitz University of Technology; Öko-Institut e.V. Institut für angewandte Ökologie Institute for Applied Ecology; Technische Universität Berlin	Oxford Brookes University	UC Davis University of California	CNTARC; China Automotive Technology and Research Center	INRETS Institut national de recherche sur les transports et leur sécurité; eesar Centre Européen d'Études de Sécurité et d'Analyse des Risques	Waseda University; Libertas Excellentiae; 早稲田大学
Field trial	50 vehicles (x 2): 40 private and 10 fleet vehicles. 	40 vehicles (x 2): 20 private and 20 fleet vehicles. 	450 vehicles: 246 private and 204 fleet vehicles. 	50 vehicles (x 2): 25 private and 25 fleet vehicles. 	50 vehicles (x 2): 25 private and 25 fleet vehicles. 	20 vehicles (x 2): 14 private users , 6 fleet vehicles. 
Infrastructure and energy	Vattenfall	Scottish and Southern Energy	Various regional energy partners	China Southern Power Grid Co., Ltd.; State Grid, Southern Grid	EDF	

1.) MINI E field trial with Siemens and SWM in Munich started in 09/2010 not depicted.

MINI E UK field trial.

The MINI E UK Consortium.

Technology Strategy Board
Driving Innovation

- Sponsorship.
- Political conditions.

OXFORD CITY COUNCIL
CITY OF LONDON
SEEDA SOUTH EAST ENGLAND DEVELOPMENT AGENCY
Working for England's World Class Region

BMW Group

- Vehicles.
- User recruitment.
- Interface E-Infrastructure.

MINI E UK

Scottish and Southern Energy

- E-Infrastructure.
- Energy.

OXFORD BROOKES UNIVERSITY

- User selection.
- Research methodology & analysis.

MINI E UK field trial.
MINI E data sources.


Subjective Data

User Data

- User interviews
- Questionnaires (f2f, online)
- Log books
- Focus groups

Data source
UK N=40 Private users
N=20 fleet cars
Users are interviewed before, during and after the usage of MINI E.

Objective Data

Vehicle Data

Record of all relevant **vehicle parameters**
- Driven distances
- Trip duration
- Battery status
- Charging status
- Etc.

Data source
Record with Data loggers, signals are sent via SIM card.


Objective Data

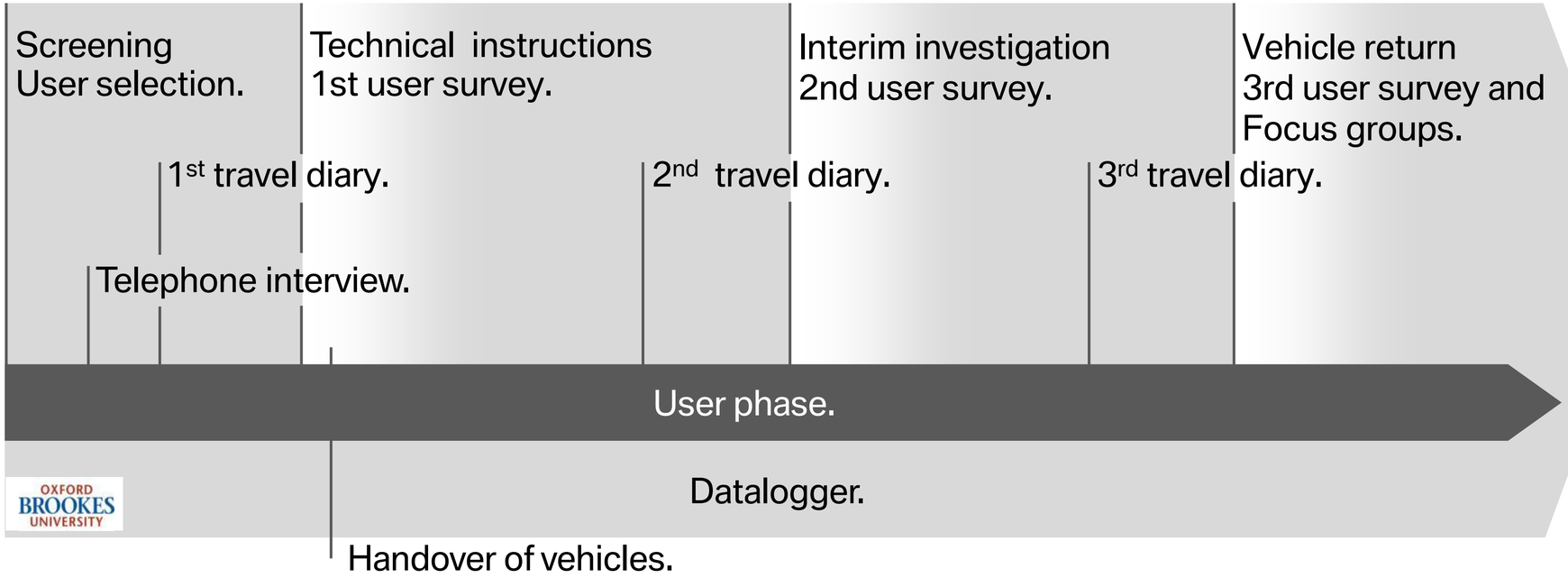
Infrastructure Data
(Wall boxes, public charging infrastructure, smart meters)

Record of all relevant **charging data**
- Charging times
- Amount of energy (kWh)
- Etc.

Data source
Data recorded by the Energy provider.

MINI E UK field trial.

Methods applied in each user phase.



Data.

Subjective Data.
- User interviews.
- Questionnaires.
- Travel diaries.
- Focus groups.

Objective Data.
- Datalogger.

Results MINI E UK field trial.
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- The field trial.
- **Results of the field trial.**

MINI E UK field trial findings.

User profile - guiding questions.

Applicant/User profile.	Who applied? - Applicant profile - Who used the MINI E?
User expectations.	What expectations do users have of the technology?
User experience.	How is the MINI E actually used on an everyday basis?
Charging.	What has to be addressed in future in relation to charging and infrastructure?
Ecological relevance.	How important is the ecological added value of an e-vehicle to MINI E users?
Driving experience.	How do users perceive the features of the MINI E?
Purchase intention & Pricing.	What are the purchase intentions for an EV?
Fleet results.	How do fleet users experience the MINI E and how does an e-vehicle fit in a fleet context?

MINI E Applicant/User profile.

Who applied for the MINI E field trial?

Phase 1	Phase 2
Gender 81% male	**Gender** 81% male
Age 77% 35 years and older	**Age** 71% 35 years and older
Education 78% University degree	**Education** 73% University degree
Household structure 29% 2 people 56% no children	**Household structure** 66% 2 people 57% no children
Residence 20% urban 80% semi rural	**Residence** 17% urban 83% semi rural
Ever owned a **MINI** 43% **BMW** 37%	**Ever owned a** **MINI** 35% **BMW** 40%
Source: User Survey UK. OXFORD BROOKES UNIVERSITY	






MINI E Applicant/User profile.

Who used the MINI E (scientific sample)?

Phase 1 – 20 MINI E users	Phase 2 – MINI E users
Gender 18 male, 2 female	**Gender** 11 male, 9 female
Average age 47 years	**Average Age** 40 years
Education undergraduate or postgraduate	**Education** 2 GCSE, 1 A level, 11 Undergraduate, 3 postgraduate, 3 professional
Household structure 2-3 adults, 0 children	**Household structure** 2 adults, 14 without children, 6 with 1-3 children
Residence West and South-West of London	**Residence** West and South-West of London
Median net monthly household income £ 4,500- £ 6,000	**Median net monthly household income** £ 3,000- £ 4,500
Source: User Survey UK. OXFORD BROOKES UNIVERSITY	






MINI E Applicant/User profile.

What are the reasons for interest?

Phase 1	Phase 2
Most important factor: - Interested in the intersection of new technology and environmental issues -> Sustainability meets Technology - To be at the vanguard of research into environmentally-oriented vehicle technology that will move the industry and personal driving experience forward **Further factors:** - Motivated by the quality of BMW/MINI - Reducing costs for daily mobility	**Most important factor:** - Supporting environmental protection and getting away from oil **Further factors:** - Want to make personal assessment of practicality of E vehicles - Motivated by the MINI brand - Reducing costs for daily mobility

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

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MINI E User Expectations.

MINI E users of both phases anticipate that they will be able to cope with limitations.

Anticipated limitations prior to use.	- 90% expect that they will be more concerned about range than in a conventional vehicle - But more than 90% expect that the MINI E will satisfy their daily mobility needs - 90% of users expect that 80% of their daily trips could be made in the MINI E
Expectations in terms of driving experience.	- More than 95% expect that they will cope fine with the MINI E
Expectations in terms of quality of the car brand.	- BMW is seen as a guarantee for the technical maturity of an EV such as the MINI E.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

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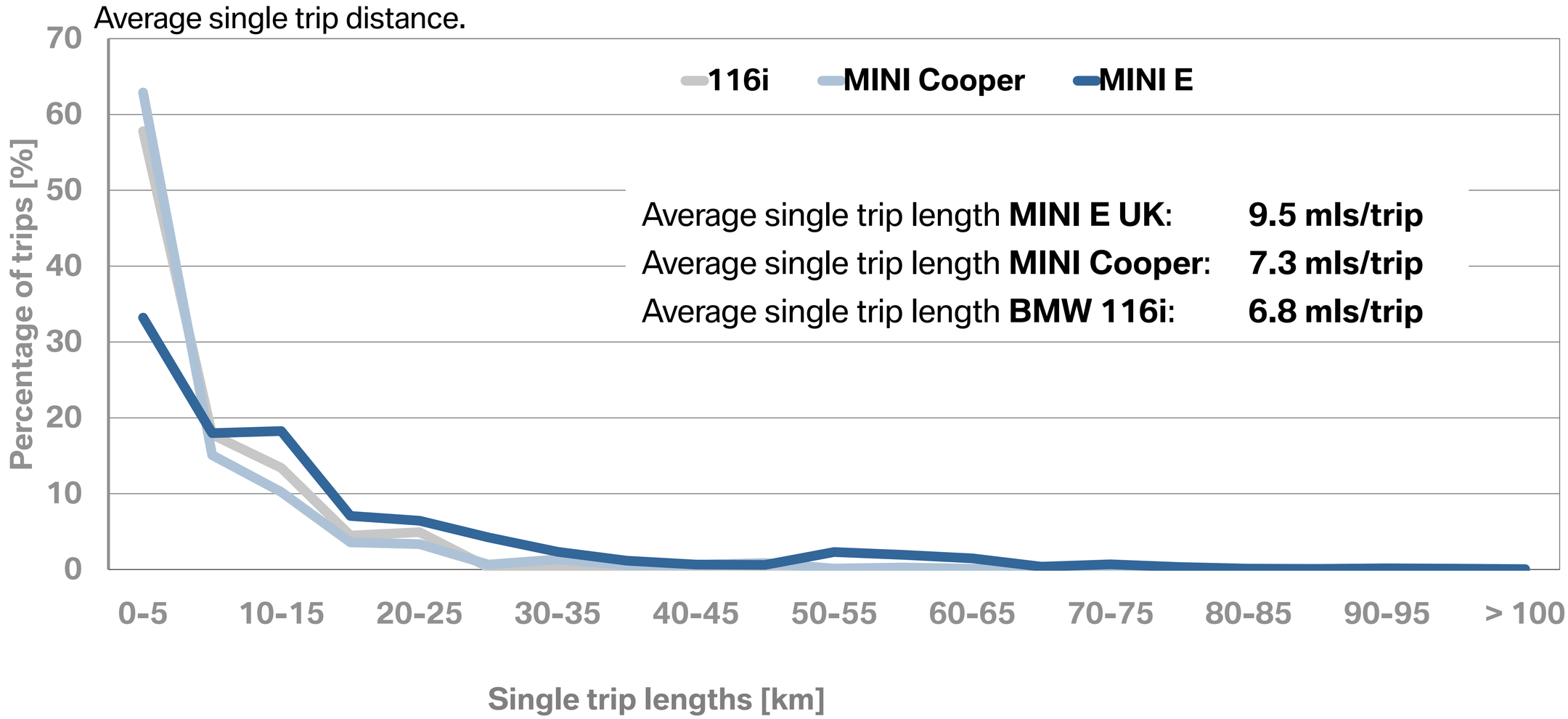
MINI E User Experience.

Overview of samples from technical data collection – to comparing MINI E with conventional vehicles.

 BMW 116i	 Mini Cooper	 MINI E (UK)
Number of vehicles		
18	22	40
Distribution of vehicles (town/country)		
		
Germany		West and South-West of London
Data Loggers		Data Loggers

MINI E User Experience.

No objective limitations were detected on single trips by MINI E users.

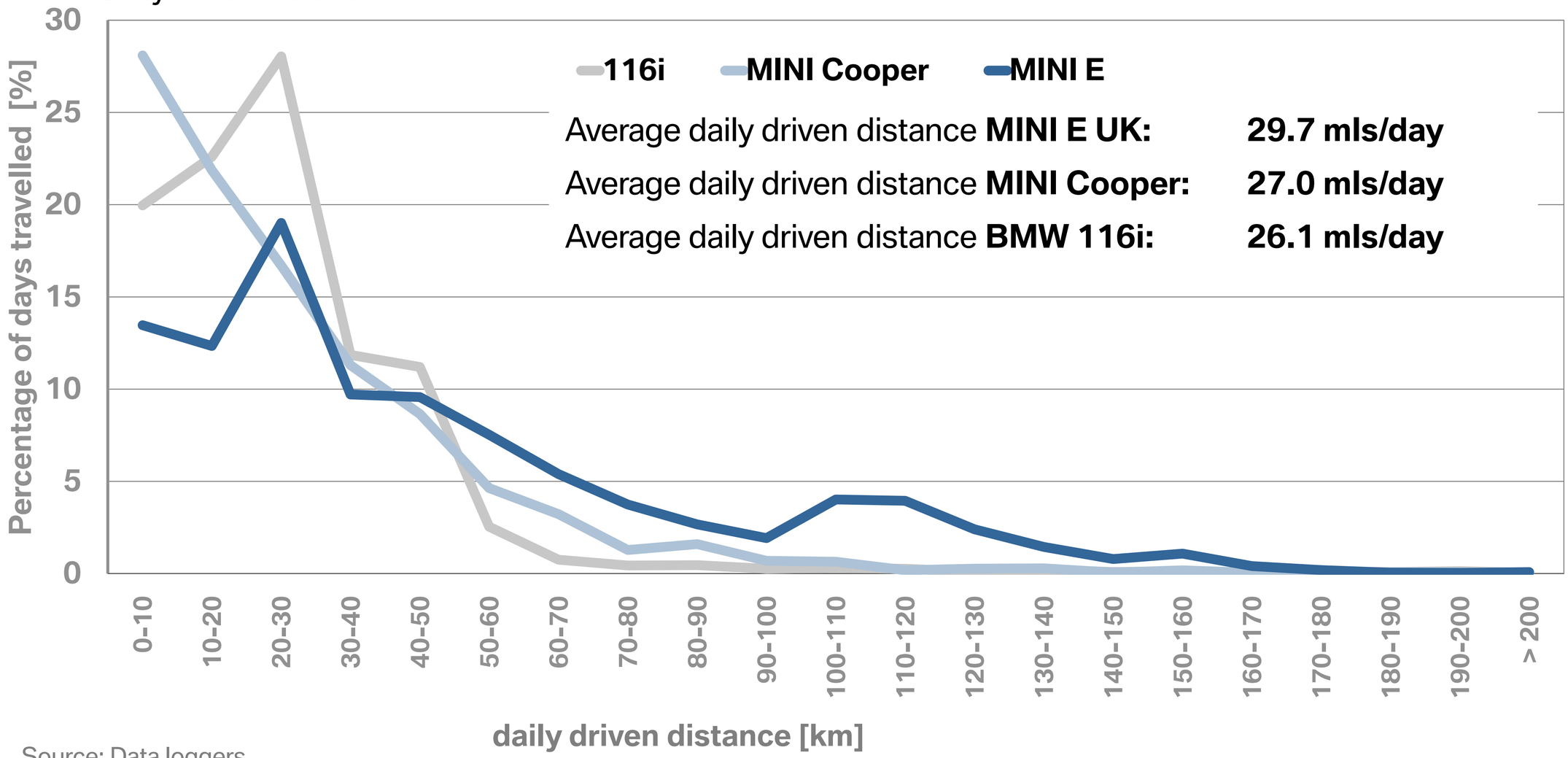


Source: Data loggers.

MINI E User Experience.

Measured daily driving behaviour does not differ in the same car segment.

Daily driven distance.



Source: Data loggers.

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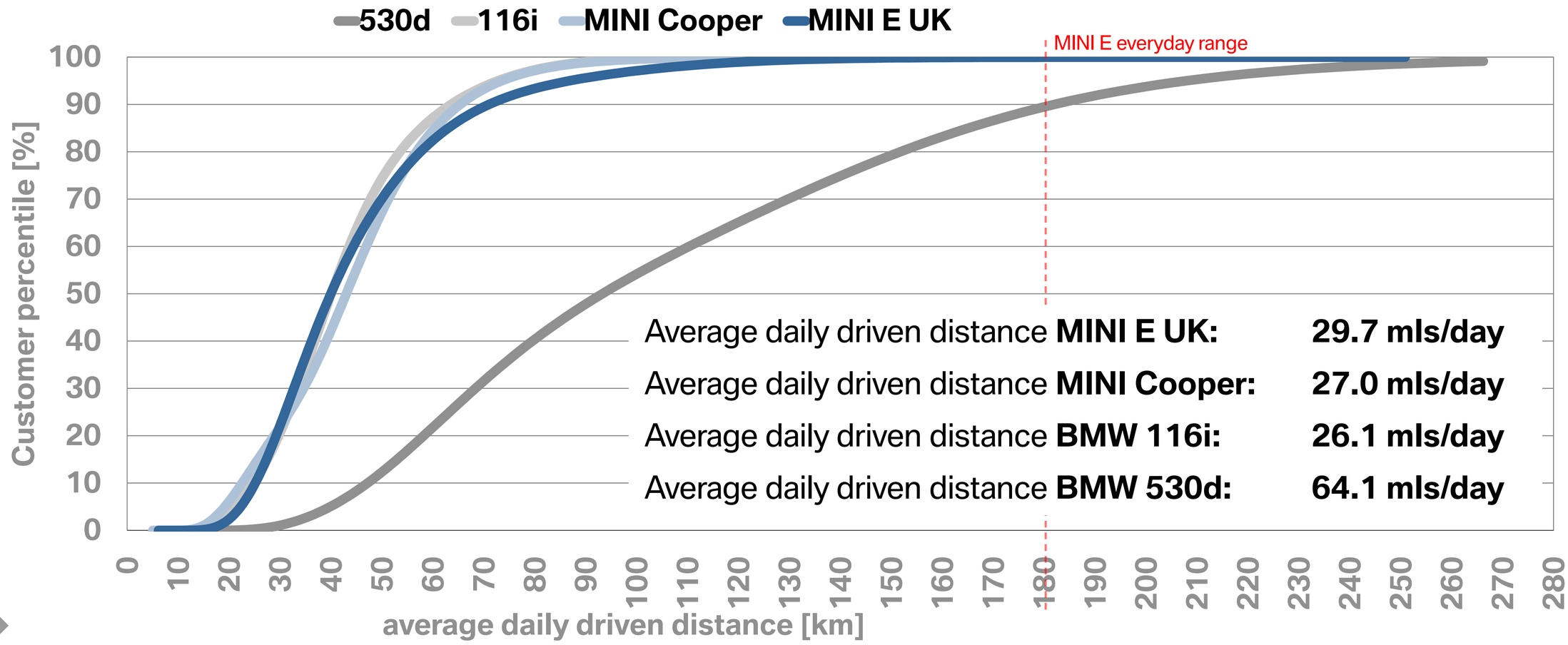
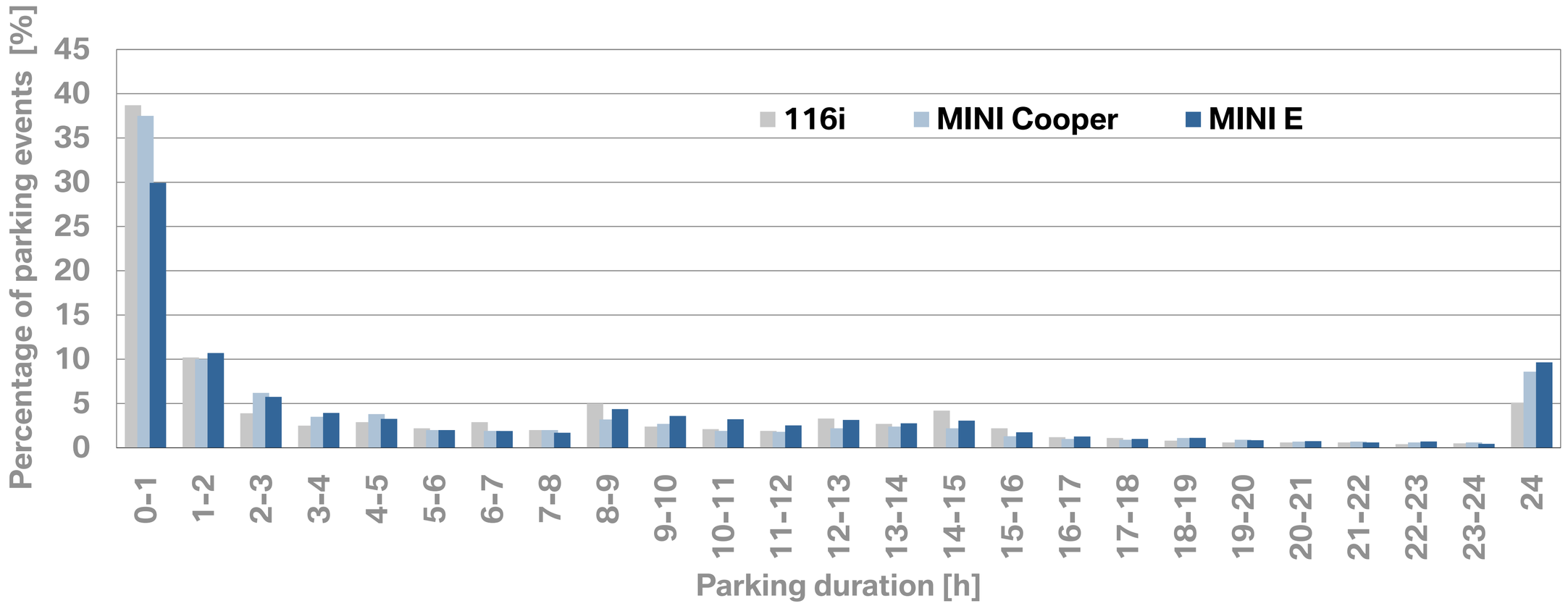


Source: Data loggers.

MINI E User Experience.

Measured parking periods follow a similar pattern.



Source: Data loggers.

MINI E User Experience.

For the majority, the range of the MINI E is sufficient for everyday life. But perception is that a higher range is desired.

- 79% of participants reported that 80% of their trips could be done exclusively in the MINI E.
- 82% agreed that 90% of their trips could be done exclusively in the MINI E if there were no constraints in carrying capacity (seating, size of boot).
- 74% indicated that the range of the MINI E is sufficient for everyday life.
- Nonetheless 53% feel generally constrained by the limited range of the MINI E.

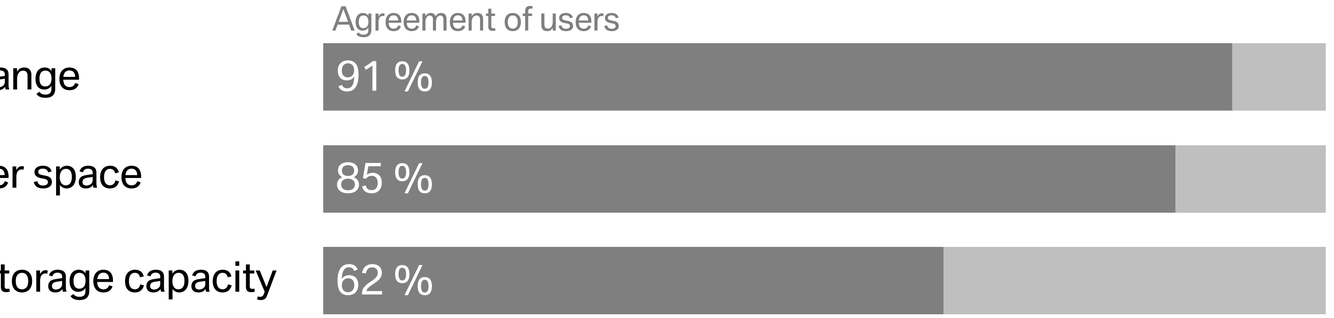
- Average range achieved in a MINI E: 90 miles
- For an EV, a range of:
  - < 100 miles would be too short.
  - 150 miles would be appropriate.
  - 250 miles would be comfortable.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E User Experience.

Only 10% of the trips could not be done in a MINI E.

- 10% of trips could not be done with the MINI E, due to:



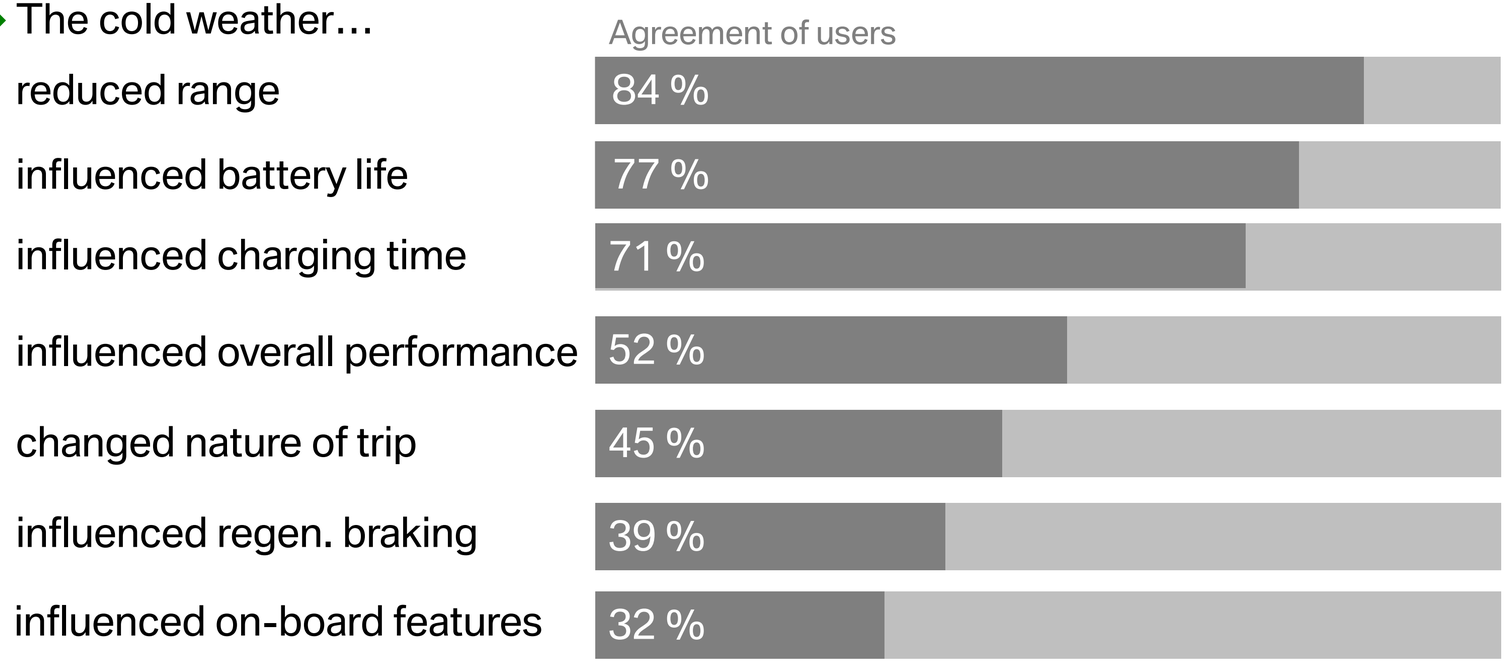
- 93% made trips beyond the range of the MINI E using another car in their household.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E User Experience.

Without sophisticated battery management, cold temperatures impact on performance.

- The cold weather…



- For 92%, at the start of a trip there were variations in the battery state of charge.
- But 81% agree that overall the MINI E is suitable for winter usage.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E User Experience.

During the first week of usage, MINI E users have an important learning curve.

Learning Curve:

- Original motivation, thorough handover and early support are prerequisites for a successful user experience.

- One week is needed for customers to adapt to the EV characteristics like

  -charging process
  -weather influencing charge and range
  -handling
  -regenerative braking
  -low noise etc.

- Besides the length of training and testing an EV, the fit of training to the motivational profile of the driver is crucial too to make sure, users overcome the hurdle of learning.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

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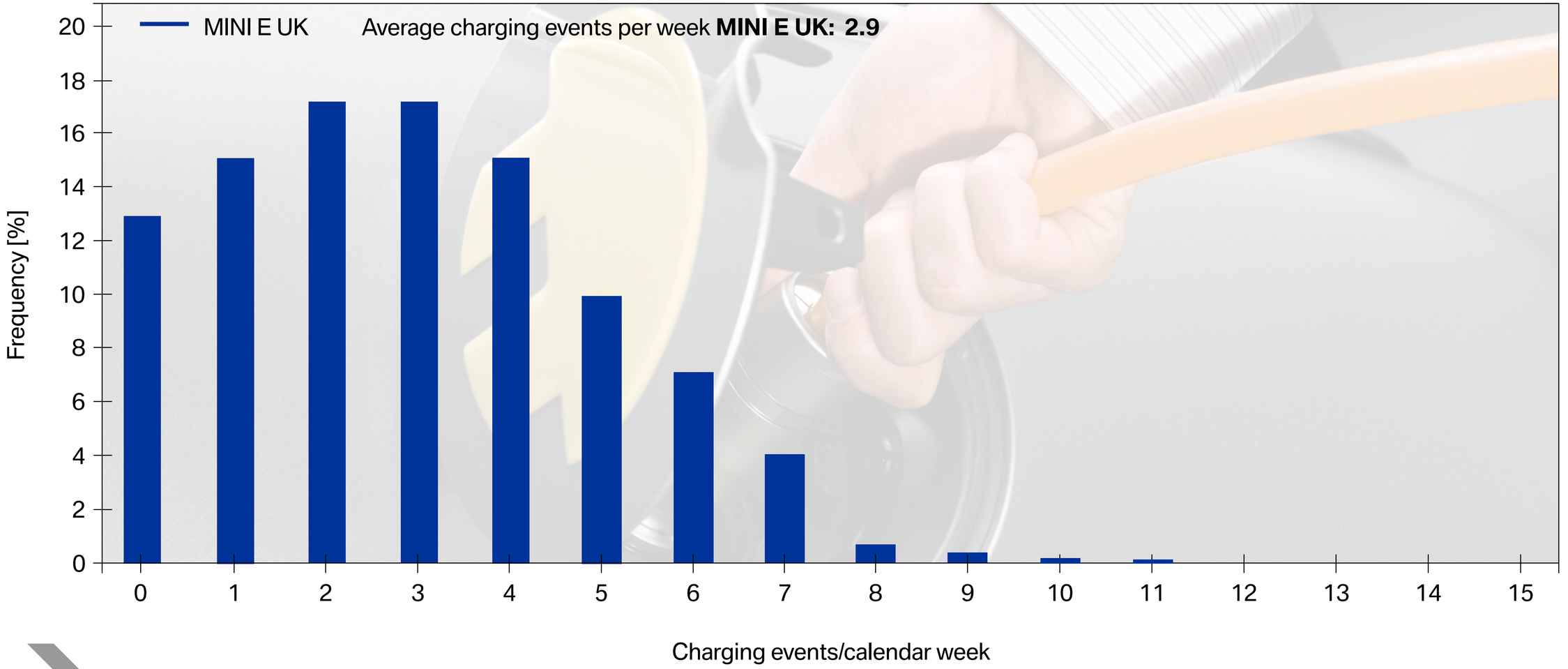
MINI E Charging.

MINI E users charge on average every 2 to 3 days.

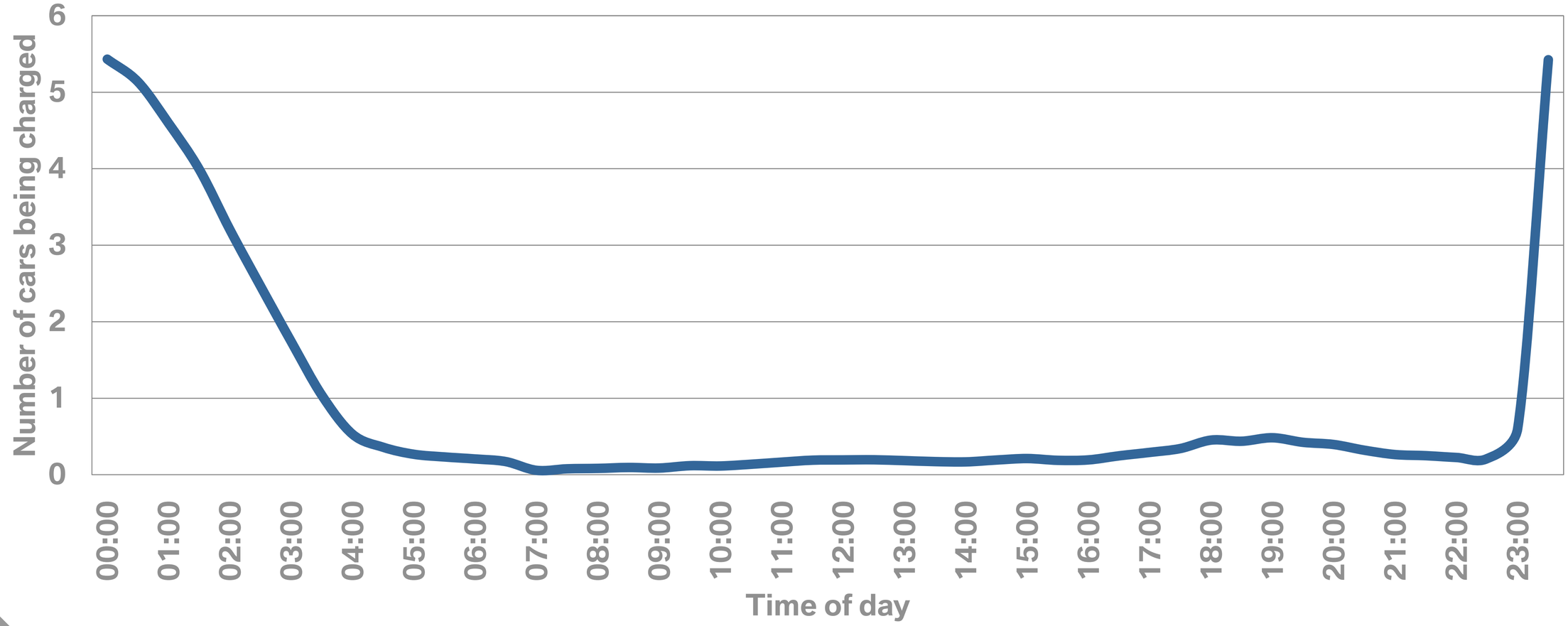
Average charging events per week.



Source: Data Loggers.

MINI E Charging.

Night charging dominates - managed charging / a special tariff avoids evening peak demands.

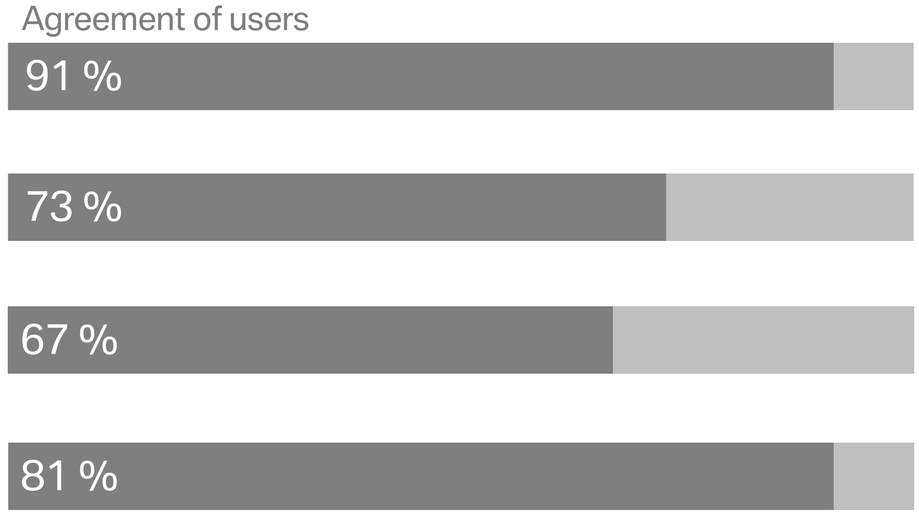


Source: UK Smart Meters.

MINI E Charging.

The charging times fit the daily routine of the MINI E users. Charging at home is preferred over going to a fuel station.

- Current charging times suit my daily routine.
- Charging time has <u>not</u> restricted the use of the MINI E.
- It does not matter that charging takes longer than refuelling.
- I prefer to plug in the car than go to a fuel station.



<u>Desired charging times:</u>

A charging time of 4 hours is seen as reasonable for a full charge.
1.5 hours would be seen as exceptional.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Charging.

The handling of the charging process seems easy, with the exception of unwieldy cables.

- 79% agreed that plugging in the MINI E at a charging site (e.g. wall box) is simple and easy to handle.
- 97% feel competent in charging the MINI E and are convinced, that most people would also quickly learn how to charge the MINI E.
- But for 49%, the charging cable is awkward to handle, especially women drew attention to the unwieldy (heavy and rigid) cables.

Source: User Survey UK.

MINI E Charging.

Most of the time, users charge via their wallbox at home.

Agreement of users

- I charged 90% of the time at the wallbox at home. — 82 %
- I charged at a wall socket at another place for 1-5% of the time. — 47 %
- I would like to have a second wall box at a different location. — 58 %
- I think it is essential that a public charging infrastructure is developed in the future. — 82 %
- I can use the MINI E right now perfectly adequately without a comprehensive public charging infrastructure. — 72 %

Possible ways of increasing use of public charging stations:

- Increase density of network and select appropriate locations for charging stations.
- Information on locations and availability (e.g. in navigation system).
- Standard payment and access system.
- Reduced charge duration.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E UK field trial findings.
User profile - guiding questions.

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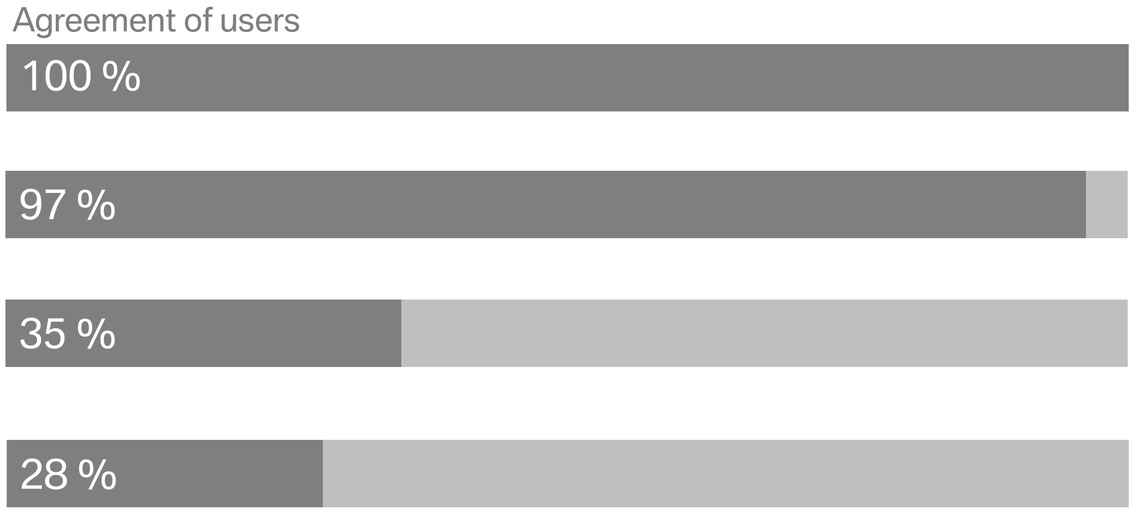
User experience.	How is the MINI E actually used on an everyday basis?
Charging.	What has to be addressed in future in relation to charging and infrastructure?
Ecological relevance.	**How important is the ecological added value of an e-vehicle to MINI E users?**
Driving experience.	How do users perceive the features of the MINI E?
Purchase intention & Pricing.	What are the purchase intentions for an EV?
Fleet results.	How do fleet users experience the MINI E and how does an e-vehicle fit in a fleet context?

MINI E Ecological relevance.

The drivers would value the use of renewable energies for charging EVs, though one third do not see it as a necessity.

- In principle, I am a supporter of renewable energy.
- I would value the use of renewable energy in charging batteries of EVs.
- Electric cars should only drive with ‘green energy’.
- I do not find it necessary to charge an electric vehicle with renewable energy since they are environmentally friendly.

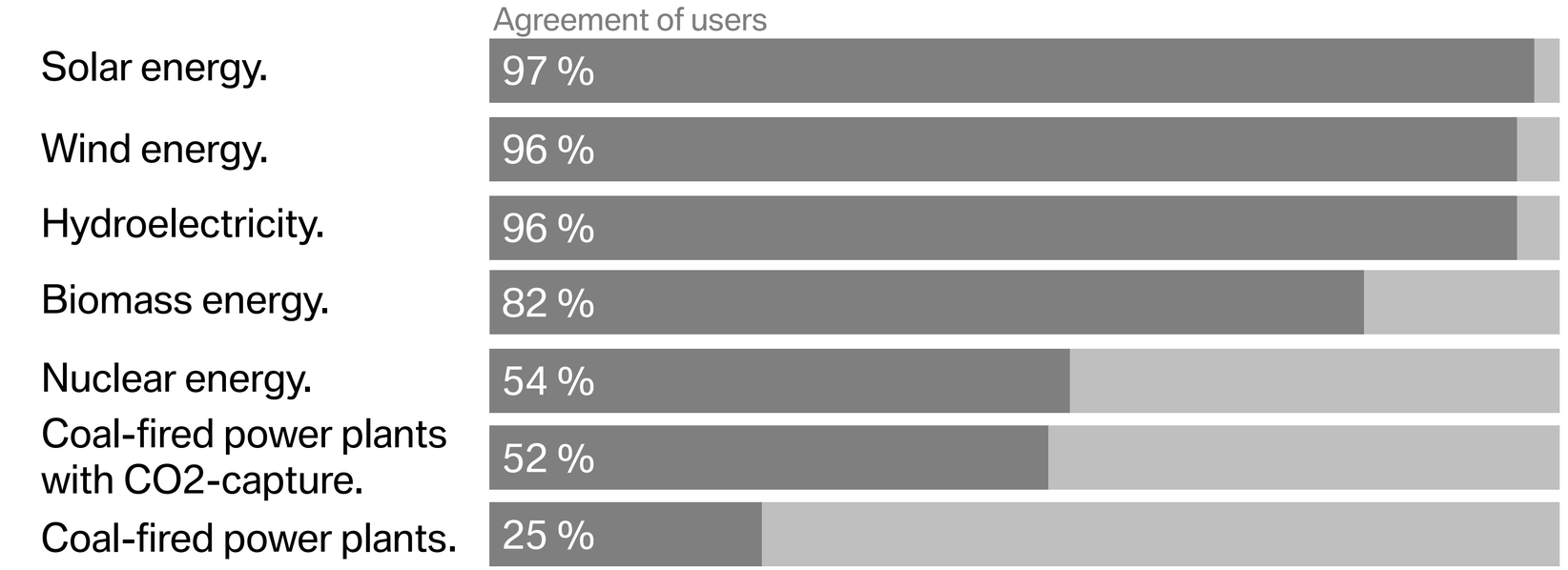


Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Ecological relevance.

The electricity for charging electric vehicles should come primarily from renewable energies.

From a users perspective, the electricity for charging EVs should come from:

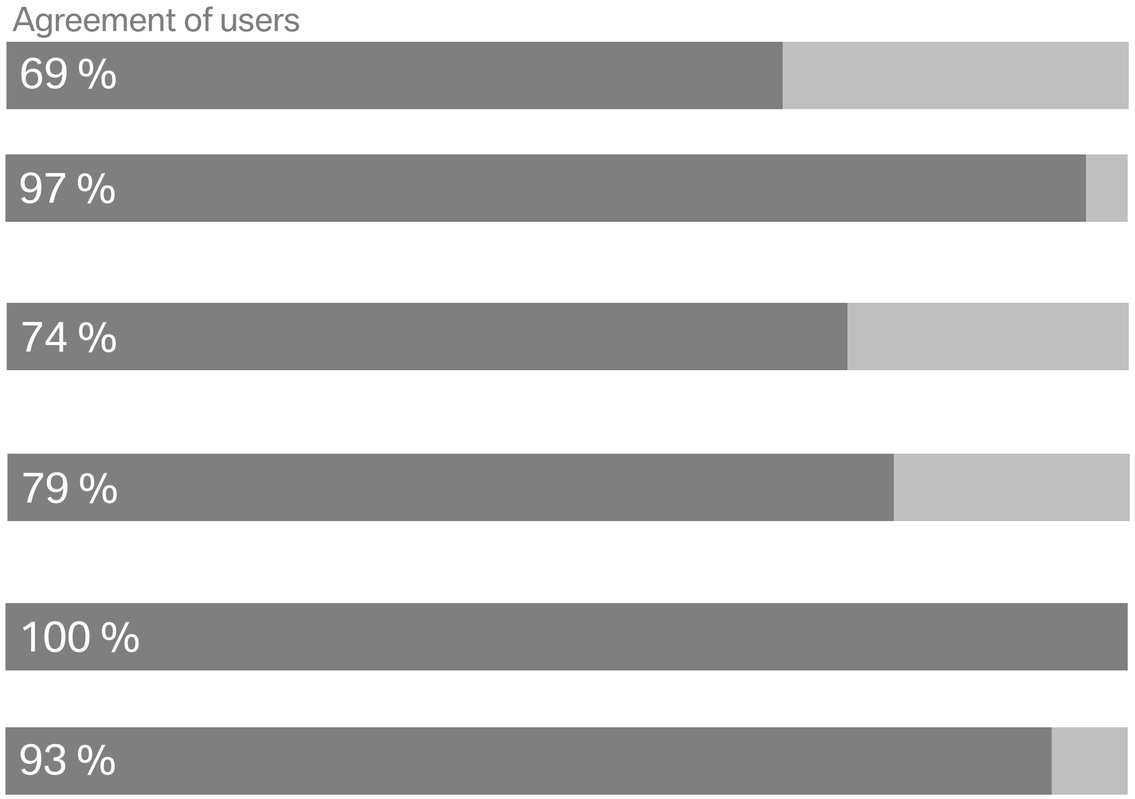


Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Ecological relevance.

MINI E users see electric vehicles as a good way to help reduce air pollution and want to set an example.

- The conventional car is a serious environmental villain.
- EVs are a great way to reduce air pollution in the UK.
- It is important to me personally to set an example for others by driving a car that produces lower carbon emissions.
- It is important to me personally to be at the forefront of new environmentally focused driving technology.
- It would be great to have more EVs on the road (phase 2).
- Buying an EV supports further research and development in this area (phase 2).



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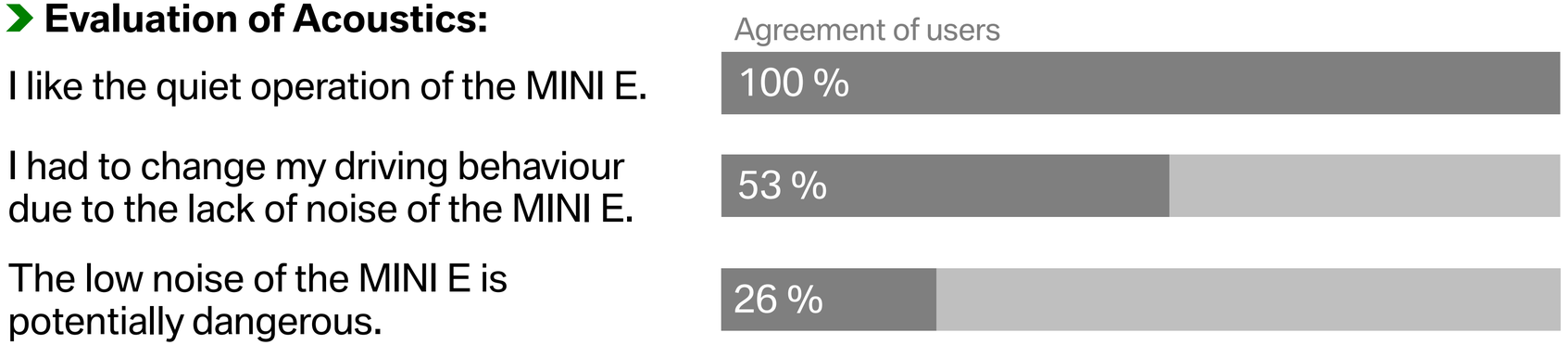
MINI E Driving experience.

All users enjoy the silent driving of the MINI E, although they have to pay more attention when driving, especially at low speed.

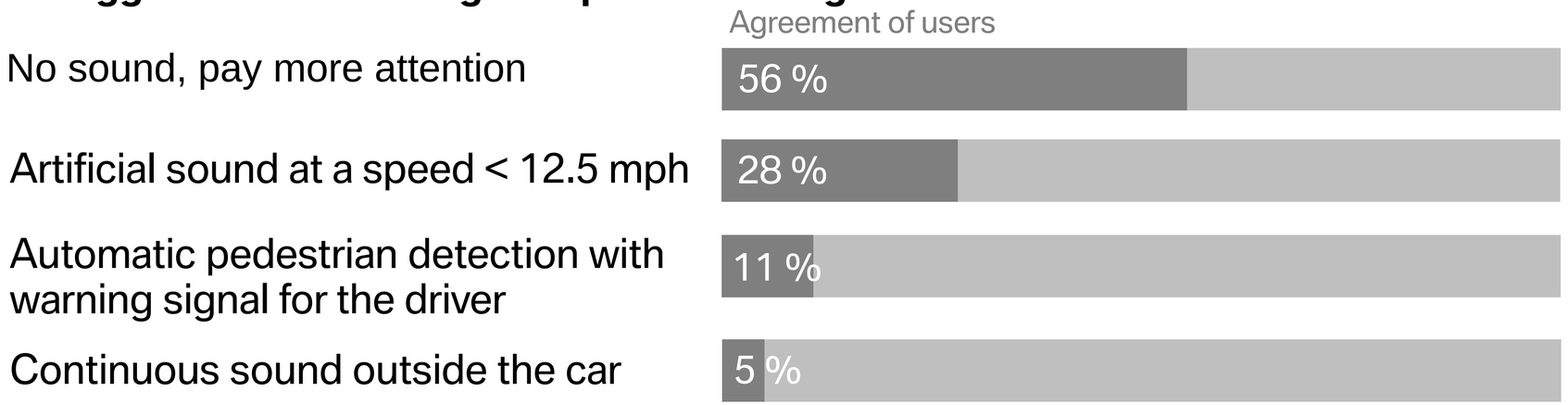
„I don't have to have the radio turned up so loud "

„It is quite peaceful"

Evaluation of Acoustics:



Suggestions for dealing with potential danger from lack of noise:



Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Driving experience.

All users enjoy driving the MINI E and would recommend it to their friends.

E-Drive:

Agreement of users

Electric vehicles are fun to drive.	100 %
The MINI E is far superior to previous electric vehicles.	100 %
I like the MINI E's fast pick-up and quick acceleration.	100 %
The MINI E is a smoother ride than my normal car.	68 %
I would recommend electric vehicles like the MINI E to my friends.	97 %

„ It is absolutely the best car I have ever driven "

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

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MINI E Purchase intention & Pricing.

Participating in the study has a positive impact on the buying intention of the users, but users are price sensitive.

- Due to my positive experiences with the MINI E I will consider buying an EV in the future.

Agreement of users

- I will seriously consider buying an EV after taking part in the study.

I think the time to buy an EV is in …

After 3 months: 15% 6-10 years 55% 2-5 years 30% now/next year

After 6 months: 7% 6-10 years 75% 2-5 years 18% now/next year

- I would spend a third more for an EV like the MINI E.

Agreement of users

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

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MINI E Fleet results.

Different types of fleet - MINI E usage therein.

	Business	Private
Single users	**Business Individual Fleet Users** (Field staff, Sales force, Company car) SEEDA (Oxford, 5 cars) SSE (Oxford, 5 cars) Oxfordshire County Council (Oxford, 1 car)	**Private Single Users**
Multiple users	**Business Multiple Fleet Users** (Company Car Pool, Police Fleet, Delivery services, Taxicab company, Car rental services) Oxford City Council (Oxford, 5 cars) Oxfordshire County Council (Oxford, 4 cars) Bayerisches Rotes Kreuz (Munich, 10 cars) Vattenfall (Berlin, 5 cars) SWM (Munich, 3 cars) Siemens (Munich, 1 car) Veolia (Paris, 6 cars) EDF (Paris, 7 cars) Met Police (Oxford, 2 cars)	**Private Multiple Users** (Car Sharing) SIXTI (Berlin, 2 cars) DB rent (Berlin, 2 cars)

MINI E Fleet results.

Individual fleet users and pool car drivers differ in motivations, but both have high expectations of the brand.

Motivations:

Individual Fleet Users are interested in:

- assessing practicality for personal and business use
- determining ways to lower CO2 emissions
- reducing reliance on traditional energy sources
- setting a “green” example for others and matching company policy

Pool Car Drivers:

- do not identify with the company green agenda to the same extent
- use the car because they feel obliged to
- but are almost as strong as Individual drivers in their endorsement of the importance of driving an E-friendly vehicle

Expectations:

- All in all, fleet users’ expectations of BMW lead them to believe the performance of the MINI E will be superior to previous EVs and is seen as a guarantee for a reliable car.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Fleet results.

Fleet managers could substitute the MINI E for conventional fleet vehicles within the involved fleet types.

Usage:

- All in all, drivers are unanimous in their agreement that the MINI E is an **excellent car** to drive.
- There were no reports from individual fleet users of problems planning a trip and only 6% of pool drivers reported planning as being a problem.
- Individual Fleet Users substituted the MINI E for their conventional vehicle and used the car for commuting, business meetings, etc.
  Generally they had no trouble reaching 70% of their desired targets – only in the minority of occasions when range (or carrying capacity) was insufficient.
- Pool Cars are used for a variety of trips including e.g. managers' business meetings. At least 80% to 90% of journeys being done at the moment by most people with pool cars could be done within the range of the MINI E.
- Fleet managers indicated over 80% of jobs can be accomplished with the MINI E.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Fleet results.

The charging process could be successfully implemented into a daily routine.

Charging :

- Generally fleet users reported that they **felt competent in charging** the MINI E and could integrate the process in their workday.
- The pool fleet would benefit from a manager to ensure the vehicle is fully charged prior to use and for everyone to recognise their own responsibility for leaving the car/charging equipment in the appropriate manner for the next person.
- Individual Fleet Users would like a network of business destinations with charging facilities.
- Fleet users in general emphasized the importance of the speed of charging.
- Fleet drivers overwhelmingly **supported the usage of renewable energies** to charge EVs in order for them to be really environmentally friendly.

Source: User Survey UK. OXFORD BROOKES UNIVERSITY

MINI E Fleet results.

For a successful adaptation to the MINI E, it was of vital importance to provide good training and support in the early days.

Adaptation to usage:

- The **MINI E served successfully as a pool car**, but it was very important that all drivers received good training and support, especially in the early days of using an EV for the first time.
- Therefore it is vitally important to construct **appropriate supportive frameworks** (including “expectation management” and training programmes) to ensure that people who drive an EV have a good experience and are helped through the learning curve rather than becoming a negative model.

Adaptation to charging:

- Regarding the charging process, a **clear procedure** is required for successful charging of pool vehicles. Fleet users establish a system of good practice relatively quickly when a clear policy is in place.

Source: User Survey UK.

OXFORD BROOKES UNIVERSITY

MINI E Fleet results.

There is potential within the fleet market for electric vehicles but there are aspects that need to be addressed amongst a range of different stakeholders:

- **Aspects:**
- Fit with mobility needs
- Charging and costs
- Training and technical reliability
- Everyday suitability
- Ecological benefit

- **Stakeholders:**
- Drivers
- Policy makers
- Fleet companies
- Automotive manufacturers
- Energy providers

Research Trial
MINI E
EI-211, LI-C

The MINI E. 100% MINI. 100% Electric

Any Questions?