UNITED KINGDOM

POPULATION 2016
65 637 240

URBAN POPULATION %
83%

NUMBER OF PASSENGER CARS IN USE
30 250 294

NUMBER OF VEHICLE PER HEAD (DATA IN 2016) PER 1000 HABITANT
587

TOTAL PASSENGER ROAD TRAVEL DISTANCE 2016 (MILLION PASSENGER-KILOMETRES)
696 779

ROAD INFRASTRUCTURE INVESTMENT 2017 €
9 046 831 956

% OF GLOBAL ELECTRIC VEHICLES SALES IN 2017
LESS THAN 5%

Source of data: World Bank; OECD; Eurostat; OICA; IEA; UN-DESA/Population Division; Statistics from Departments of Transport

MAZARS

Louis Burns
Partner, Mazars UK

Is the key to managing risks observing changes in consumer behaviour?

With increasing signs that a shift from traditional powertrains towards electric and hybrid alternatives is underway, Louis Burns, Partner at Mazars looks at the sustainable mobility challenges the industry now faces and how paying closer attention to consumer behaviour can help manage the risks involved.

Over 49,100 ultra-low emission vehicles (ULEVs) were registered in the UK over the 12 month period to September 2017, according to the Department of Transport. Representing an increase of 22% on 2016 figures and 72% since 2015, it heralds a growing appetite for environmentally friendly cars. Of course, if we take a look at overall car sales, ULEVs still make up only 4.4% of all newly registered cars in the UK. So while indicators are pointing firmly in the direction of where the future of the automotive industry lies, the debate on how it gets there and how long it will take is currently concentrating the minds of OEMs and suppliers alike.

Yet looking at statistics in isolation doesn't always tell the full story. A sustainable mobility model that enables movement with minimal environmental impact requires a much greater level of collaboration between a wider range of stakeholders that not only includes commercial partners, but also environmentalists, government bodies, town planners and local communities. While these working relationships help the automotive industry understand policies that will impact decision making on powertrain development, plant design and location, relationships with the end consumer are generally focused on the pre-purchase and purchase phase. But by paying closer attention to consumer behaviour across the whole lifecycle of the car buying process, deeper insights can be gained that add value to the development of a sustainable mobility strategy.

REDEFINE CAR OWNERSHIP

Alongside the high cost of car ownership, government policies aimed at reducing the consumption of goods that harm the environment are guiding consumers to make more informed choices on car ownership, particularly second car ownership. Rather than paying for an additional car that is used infrequently, consumers are killing two birds with one stone by assessing car hire and shared ownership options to contain costs and help reduce air pollution. This does not necessarily mean a reduction in car sales, as it's expected that increased use of fewer vehicles will require more frequent replacement. More importantly, such trends open up doors to create or improve synergies between the automotive industry, car hire firms and car sharing platforms.

GENERICALLY CONNECTED SYSTEMS

From on-board diagnostics that remember where you park and track your travel history, to turning your car into a Wi-Fi hot spot, vehicles are becoming more connected. Yet with consumers looking for a more fluid relationship with car ownership, plug and play systems that are intuitive and able to accept the widest possible range of consumer devices will become increasingly important when it comes to vehicle choice.

REMOVE BARRIERS

The lack of charging stations is a major barrier for consumers considering a more environmentally friendly car. Whether a sustainable mobility model involves hydrogen fuel cell innovation or full electric and hybrid engine development, it's crucial that the automotive industry collaborates with local government and stakeholders to speed up the process of enabling infrastructure so that the ability of consumers to refuel or recharge continues to improve. Ease of use and increased access to charging stations in major locations will help increase consumer confidence in low emission vehicles.

IMPROVE INCENTIVES

It's no surprise that the current growth in ULEVs in the UK is being helped primarily by government subsidies including lower tax and cash grants. At the top end of the range, Category 1 cars that have CO2 emissions of less than 50g/km and can travel at least 70 miles without any emissions at all qualify for a government grant that will pay for 35% of the purchase price, up to a maximum of £4,500. Combined with government subsidies, promotional offers on low emission vehicles such as cash rebates, a lower finance rate or special lease terms by car manufacturers and dealers have an important role to play in the consumer decision making process. Improved and continual financial incentives can help reach the critical mass needed to push sustainable vehicle sales further into the mainstream.

Feeding such insights on consumer behaviour through to the CFO and finance department can help formulate spending and investment budgets, as well as design and integrate sustainable development strategies. Taken into consideration alongside government policies, regulatory guidelines and global environmental plans, such insights can help the automotive industry manage financing and working capital arrangements more efficiently to give them a competitive edge? Importantly, it can help manage the many risks and challenges involved as the industry moves to a global sustainable mobility model.

Whether it's by developing internal data collection channels or partnering with experts, the ability to capture such a wide range of insights is key. As the decision making process becomes more complex and the number of stakeholders involved increases, the industry has to have a clearer understanding of customer needs and behaviours across the lifecycle, not just during the purchase phase if it is to develop relevant and compelling sustainable mobility choices.

CASE STUDY: London

~8,7Mn
POPULATION (2015)

~2,7Mn
CAR OWNERS (2016)

~5 Mn
TUBE RIDERS (2015 WEEKDAY DAILY AVG.)

~3,5 Mn
HOUSEHOLDS (2015)

1,572
LONDON AREA (SQ. KM)

GPB 44,000
PER CAPITA ANNUAL INCOME (2015)

2,688,161
LICENSED CARS

125,223
MOTORCYCLES

241,651
LIGHT & HEAVY GOOD VEHICLES

20,812
BUSES & COACHES

35,546
OTHER VEHICLES

CASE ASSUMPTIONS :

PERSONAL OWNERSHIP MODEL

It is assumed that the current (2016) licensed car stock (2,668,161) will grow at a constant growth rate of 1.55% (derived from the historical averages from 2013-16) for the next 14 years, bringing the 2030 total car stock to = 3,309,261.

The average distance covered by each car is assumed to = the total traffic flow of cars for 2016/total number of cars, which = 23,213,000,000 km /2,668,161 = 8,700 km/year.

The ICE-EV current ratio is taken to be equivalent to the amount of electric car stock outstanding in 2015-16 (as by International Energy Agency) to total number of cars.

RIDE SHARING

It is assumed that each ride sharing car will carry a total of 4 passengers across each journey.

In each case, it is assumed that 100% ride shared cars and 50% of personal cars will be electric

Each ridesharing vehicle is assumed to cover an average distance of 17,400 km/year.

VEHICLE ECONOMICS

- ✔ Cost for a Private 4-wheeler Petrol ICE and EV car is assumed to be GBP 0.126/mile and GBP 0.047/mile for each user (translating into km), based upon the current fuel/charging cost undertaken for a Renault Clio (Petrol) and Renault Zoe (Electric) in the UK, as well as the average service and maintenance expenditure for these models. A ratio of 4 users is taken to calculate the cost per user, keeping charging costs equal, for a Shared EV 4-wheeler.
- ✔ Cost of public transit is taken to be GBP 0.125/km, using the Gross expenditure taken for London buses, along with a 50% reduction in costs due to electrification.

ELECTRIFICATION SCENARIO :
80% EV Penetration Reduces Running Costs by 50.1%

20 % EVs

20% ELECTRIC VEHICLE + 80% INTERNAL COMBUSTION ENGINE

Data Points	Size
Avg Distance Covered - Year	8,700 km
Cars in 2016	2,668,161
Cars in 2030	3,309,261
Estimated Electric Vehicles 2030	661,852
Estimated ICE's (Petrol) 2030	2,647,409
Avg Distance covered by EV's	5,758,113,955 km
Avg Distance covered by ICE's	23,032,455,819 km
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: $ 1.96 BN

50 % EVs

50 % ELECTRIC VEHICLE + 50% INTERNAL COMBUSTION ENGINE

Data Points	Size
Avg Distance Covered - Year	8,700 km
Cars in 2016	2,668,161
Cars in 2030	3,309,261
Estimated Electric Vehicles 2030	1,654,630
Estimated ICE's (Petrol) 2030	1,654,630
Avg Distance covered by EV's	14,395,284,887 km
Avg Distance covered by ICE's	14,395,284,887 km
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: GBP 1.54 BN

80 % EVS

80% ELECTRIC VEHICLE + 20% INTERNAL COMBUSTION ENGINE

Data Points	Size
Avg Distance Covered - Year	8,700 km
Cars in 2016	2,668,161
Cars in 2030	3,309,261
Estimated Electric Vehicles 2030	2,647,409
Estimated ICE's (Petrol) 2030	661,852
Avg Distance covered by EV's	23,032,455,819 km
Avg Distance covered by ICE's	5,758,113,955 km
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: GBP 1.12 BN

Source: Mazars' Global Knowledge Center Analysis; London Data Store (Greater London Authority); Press Articles

RIDE SHARING SCENARIO :
Greater Ride Sharing Cuts Down on Number of Vehicles and Cost

20% RIDE SHARING

20 % RIDE SHARING + 80% PERSONAL CARS (WITH 50% EV)

Data Points	Size
Avg Distance – YR (Ride Sharing)	17,400 km
Avg Distance – YR (Personal Car)	8,700 km
Ride Sharing (2030)	165,463
Personal Ownership (2030)	2,647,409
Estimated EVs 2030	1,489,167
Estimated ICEs (Petrol) 2030	1,323,704
Avg Distance Covered by EVs	14,395,284,887 km
Avg Distance Covered by ICEs	11,516,227,909 km
Shared 4w EV (GBP/km)	0.00739
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: GBP 1.25 BN

50 % RIDE SHARING

50 % RIDE SHARING + 50% PERSONAL CARS (WITH 50% EV)

Data Points	Size
Avg Distance – YR (Ride Sharing)	17,400 km
Avg Distance – YR (Personal Car)	8,700 km
Ride Sharing (2030)	413,658
Personal Ownership (2030)	1,654,630
Estimated EVs 2030	1,240,973
Estimated ICEs (Petrol) 2030	827,315
Avg Distance Covered by EVs	14,395,284,887 km
Avg Distance Covered by ICEs	7,197,642,443 km
Shared 4w EV (GBP/km)	0.00739
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: GBP 0.82 BN

80 % RIDE SHARING

80 % RIDE SHARING + 20% PERSONAL CARS (WITH 50% EV)

Data Points	Size
Avg Distance – YR (Ride Sharing)	17,400 km
Avg Distance – YR (Personal Car)	8,700 km
Ride Sharing (2030)	661,852
Personal Ownership (2030)	661,852
Estimated EVs 2030	992,778
Estimated ICEs (Petrol) 2030	330,926
Avg Distance Covered by EVs	14,395,284,887 km
Avg Distance Covered by ICEs	2,879,056,977 km
Shared 4w EV (GBP/km)	0.00739
Private 4w EV (GBP/km)	0.029
Private 4w Petrol (GBP/km)	0.078

TOTAL RUNNING COST: GBP 0.39 BN

Source: Mazars' Global Knowledge Center Analysis; London Data Store (Greater London Authority); Press Articles