MAY 2020

NORTH STAFFORDSHIRE LOCAL AIR QUALITY PLAN

UNAPPROVED OUTLINE BUSINESS CASE
APPENDIX 1 - Stated Preference Survey Report

Staffordshire County Council

NEWCASTLE UNDER LYME BOROUGH COUNCIL

City of Stoke-on-Trent

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Appendices

Executive Summary

The need to develop options to improve Nitrogen Dioxide (NO2) levels within Stoke-on-Trent and Newcastle-under-Lyme, comes as a result of the UK's Plan for Tackling Roadside NO2 Concentrations. This follows ClientEarth successfully winning their court case against the Government that not enough was being done to stop the UK breaching EU limits for NO2. In March 2018, Stoke-on-Trent and Newcastle-under-Lyme were identified by the Government as two areas in which NO2 levels exceed EU regulations as part of 33 "third-wave authorities". These two authorities, alongside Staffordshire County Council (SCC) (the County being the Highway Authority for the road network in Newcastle-under-Lyme) were mandated under Government ministerial direction to produce an North Staffordshire Local Air Quality Plan (NSLAQP). The NSLAQP should address these NO2 exceedances in the shortest possible timeframe. In March 2019, Sweco was appointed by Newcastle-under-Lyme Borough Council (NuLBC) to produce an NSLAQP and a Business Case submission to the Department for Environment, Food and Rural Affairs (Defra). The NSLAQP is required to include analysis and modelling to test the impact of a list of possible options against the benchmark option of a charging Clean Air Zone (CAZ). In order to understand the likely behavioural response of drivers to a potential charging CAZ, a multinomial logistic regression model was created. The model has been developed from a local stated preference (SP) survey that was conducted between September 2nd and October 2nd, 2019 and was designed for residents' and businesses' in North Staffordshire. The survey targeted those that had recently driven within the proposed CAZ boundary in a non-compliant vehicle as defined under the Defra Clean Air Zone Framework for England. Separate questionnaires were created for private car users, taxi drivers and operators, and for commercial LGV and HGV drivers and operators.

The SP surveys consisted of several demographic questions and other questions relevant to the respondents current and future choice of vehicles and the frequency that they utilised the road network within the proposed CAZ boundary. It also contained two questions that asked the participant to consider their last trip within the CAZ region and what changes they might have made if a charging CAZ was operational.

The data acquired was used to fit two statistical models for each vehicle type. These logistic regression models were then combined for each vehicle type to predict the response to a range of potential charges and so provide input to inform the transport modelling for the proposed Clean Air Zone.

1 Introduction

1.1 Background

In July 2011, ClientEarth commenced legal proceedings against Defra. They claimed that the UK Government was not doing enough to tackle NO_2 emissions that breached EU limits. ClientEarth won three rulings forcing the Government to make urgent changes to air quality policy. This led to Defra introducing the UK's Plan for Tackling Roadside NO_2 which directs relevant local authorities to produce an NSLAQP to address these NO_2 exceedances in the shortest possible timeframe. In October 2018, Stoke-on-Trent and Newcastle-under-Lyme were identified by the Government as two areas in which NO_2 levels exceed EU regulations. These two authorities, alongside SCC (the County being the Highway Authority for the road network in Newcastle-under-Lyme) were mandated under Government ministerial direction to produce an Air Quality Local Plan. The NSLAQP is required to include analysis and modelling to test the impact of possible options against the benchmark option of a charging CAZ.

In March 2019, Sweco was appointed by NuLBC to produce an NSLAQP and an Outline Business Case (OBC) submission to Defra. This OBC is written to support the NSLAQP and includes details of the SP surveys undertaken to determine the behavioural response to the potential introduction of a charging CAZ.

1.2 Study overview

To understand the travel behaviour within the study area and how this could change following the introduction of a chargeable CAZ, a SP survey was commissioned. SP respondents were chosen from individuals and companies that travel through the proposed CAZ charge area. The survey also collected respondents' demographic details and their current vehicle replacement plans.

The study area can be seen in Figure 1-1 where the extent of the original proposed CAZ around both Newcastle-under-Lyme and Hanley/Etruria are identified.

Figure 1-1: Study area

Figure 1-1: Study area
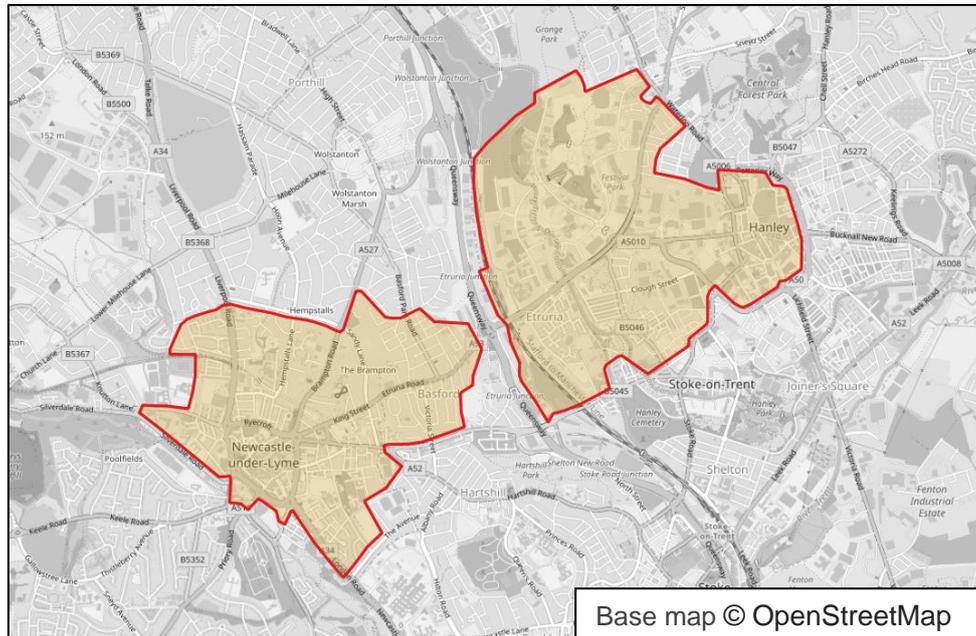
The purpose of the CAZ is to improve air quality by reducing the use of non-compliant vehicles. Therefore, this survey was focused on motorists who own or drive vehicles that do not comply with limits in Defra's CAZ Framework, namely:

- Petrol vehicles with emission standards earlier than Euro 4 (registered before 1st January 2006)
- Diesel vehicles with emission standards earlier than Euro 6 (registered before 1st September 2015

This report refers to such vehicles as "non-compliant" whilst later vehicles are "compliant".

The surveys were conducted by specialist survey company Watermelon Ltd, between 2nd of September and the 2nd of October 2019.

1.3   Purpose of report

The purpose of this report is to outline the key stages in the development and implementation of the SP survey, the processing of the results and the analysis of the data to inform the transport modelling.

1.4   Report structure

The report covers the following sections:

- **Introduction**: A high-level overview of the location and purpose of the surveys
- **Survey Design:** An overview of the design choices made when developing the SP survey

- **Implementation and Sampling:** A description of the implementation of the survey including an overview of the returned data

- **Logic Checks:** A description of the logic checks and data cleansing processes applied to the data

- **Stated Preference Analysis and Results:** An overview of the analysis and results

- **Applying the Combined Model:** A description of how the model has been applied in order to determine potential daily CAZ charges for a range of vehicle types

- **Conclusion:** The headline results and conclusions from the survey

2 Survey design

2.1 Overview

The study was undertaken using a variety of data collection methodologies specifically chosen to best reach the target respondent group. These were:

- CAWI (Computer Assisted Web Interviewing) - Private car

- CAPI (Computer Assisted Personal Interview) – Private car, taxi

- CATI (Computer Assisted Telephone Interview) - Commercial LGV and HGV

The web-based (CAWI) surveys targeted the residents of Stoke-on-Trent and Newcastle-under-through an on-line panel supplied by Dynata.

Face to face fieldwork (CAPI) was conducted using a tablet device. The questionnaire was scripted in Confirmit and hosted on each interviewers' tablets. This enabled the fieldwork staff to easily switch to the appropriate vehicle type. Fieldwork was conducted at the following locations that were chosen to likely have large proportions of people who would be impacted by a proposed charging CAZ.

- Newcastle-under-Lyme Town Centre (Private car survey)

- Hanley Town Centre (Private car survey)

- Royal Stoke Hospital (Private car survey)

- Newcastle-under-Lyme Borough Council Depot (Taxi survey)

- City Transport MOT Centre, Stoke-on-Trent (Taxi survey)

Telephone call surveys (CATI) were conducted for the 01782 (Stoke-on-Trent) area code numbers.

CAWI and CATI surveys were included to ensure a representative sample of the population was captured including age, gender and income.

The questionnaire used to test responses to the potential CAZ was based on the Bath CAZ survey which in turn was based on the Bristol CAZ study, and the London Ultra Low Emissions Zone (ULEZ) SP survey conducted for Transport for London.

The full survey for all vehicle types can be found in Appendix A to C.

2.2 Screening questions

To exclude non-eligible respondents, the survey began with a series of screening questions.

For private vehicle owners, the screening questions were based on the following criteria:

- Age of respondent (to check eligibility to drive)
- Main mode of transport (to ensure they use private transport)
- Whether or not they make the decisions concerning replacement of the vehicle
- Fuel type (to ensure their standard vehicle was either petrol or diesel fuelled)
- Year of registration of main model of transport (to ensure respondents main vehicle is non-compliant)
- Whether or not they have travelled through the study area in past 6 months

For taxi operators, the screening questions were based on the following criteria:

- Fleet size by fuel type (to ensure they operate either petrol or diesel fuelled vehicles)
- non-compliant fleet size (to ensure respondent operates a non-compliant fleet)

For LGV/HGV vehicle operators, the screening questions were based on the following criteria:

- Whether or not the company operates using Light Goods Vehicles (twin axle not exceeding 3.5 tonnes) or Heavy Goods Vehicles (exceeding 3.5 tonnes)
- Whether or not they have travelled through the study area in the past 6 months
- LGV/HGV non-compliant fleet size (to ensure respondent operates a non-compliant fleet)

2.3 Vehicle questions

The questions within this section were specific to the respondent type (private car, taxi or commercial LGV/HGV). They were designed to obtain information about the vehicles the respondent either operated or had access to and included vehicle age and fuel type (to understand compliance) and vehicle replacement plans. The probable age of the replacement vehicle, and its fuel type enables the future make-up of the vehicles that will enter the charge zone to be predicted, thereby enabling forecasting future charge revenue.

2.4 Frequency question

The frequency that the respondent's vehicle or fleet entered the proposed CAZ area was obtained in order to determine if a relationship existed between the regularity of entering the charging CAZ area and the respondents' actions and if statistical testing indicates a requirement to apply factoring based on this answer.

2.5 Clean air zone exercise 1

The first exercise is designed to help understand respondent's short-term behaviour to the introduction of a potential charging CAZ. The data gathered from this question is used to build a statistical model which is combined with another model created from Exercise 2. This combined model allows predictions of behavioural response to a potential charging CAZ to be made.

To determine the likely response to the introduction of a CAZ charge, respondents were given a series of possible alternatives in relation to their most frequent journey through the proposed CAZ area. Asking specifically for the most frequent journey rather than the most recent is intended to obtain an accurate representation of the most likely response to the charge. The available multiple choices are listed below for each survey type for what the respondent would choose following the introduction of a charging CAZ.

For private car owners:

- Made the same journey using your own vehicle and paid the charge
- Made the same journey by cycling or walking
- Made the same journey using public transport
- Upgraded to a compliant vehicle at a cost of £2,500 to avoid paying the charge and made the same journey
- Changed your destination to avoid paying the charge
- Changed your route to avoid paying the charge
- Used a compliant vehicle already available in your household
- Would not have made this journey

For taxi operators:

- Made the same journey using your existing vehicle and paid the charge
- Made the same journey by using another compliant vehicle already within the fleet
- Purchase compliant vehicle for £12,000 and made the same journey
- Stop operating
- Other (please state)

For LGV operators:

- Made the same journey using current vehicles and paid the charge
- Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge
- Relocated business
- Would not have made this journey at all
- Changed your route to the same destination to avoid the charge
- Upgraded to compliant vehicle at a cost of £9,000 to avoid charge

For HGV operators:

- Made the same journey using current vehicles and paid the charge
- Made the same journey but used compliant vehicles within your current fleet to avoid paying charge

- Relocated business
- Would not have made this journey at all
- Changed your route to the same destination to avoid the charge
- Upgraded to compliant vehicle at a cost of £45,000 to avoid charge

The exercise consisted of three different scenarios for each of the vehicle types, consisting of a low, medium and high charge level. These daily charges are presented in Table 2-1.

Table 2-1: Exercise 1 charge levels

	Low charge (£)	Medium charge (£)	High charge (£)
Car/Taxi	£2.00	£5.00	£8.00
LGV	£6.00	£9.00	£12.00
HGV	£25.00	£50.00	£75.00

2.6 Clean air zone exercise 2

The second exercise examined the respondent's potential long-term behaviour assuming a CAZ charge was in place. The only options provided in this scenario were to continue paying the charge when travelling in or through the zone using the current non-compliant vehicle or to replace the vehicle with a compliant one at a given hypothetical cost. The data from this exercise was used to build a statistical model that was combined with that produced from Exercise 1.

Each respondent type (private car, taxi, commercial LGV and commercial HGV) was asked nine different scenarios as shown in Table 2-2.

Table 2-2: Exercise 2 charge levels

Private car		Taxi		Commercial LGV		Commercial HGV	
Charge (£)	Replace (£)	Charge (£)	Replace (£)	Charge (£)	Replace (£)	Charge (£)	Replace (£)
£2.00	£1,000.00	£2.00	£12,000.00	£6.00	£9,000.00	£20.00	£45,000.00
£2.00	£2,500.00	£2.00	£14,000.00	£6.00	£12,000.00	£20.00	£55,000.00
£2.00	£5,000.00	£2.00	£16,000.00	£6.00	£15,000.00	£20.00	£65,000.00
£5.00	£1,000.00	£5.00	£12,000.00	£9.00	£9,000.00	£35.00	£45,000.00
£5.00	£2,500.00	£5.00	£14,000.00	£9.00	£12,000.00	£35.00	£55,000.00
£5.00	£5,000.00	£5.00	£16,000.00	£9.00	£15,000.00	£35.00	£65,000.00
£8.00	£1,000.00	£8.00	£12,000.00	£12.00	£9,000.00	£50.00	£45,000.00
£8.00	£2,500.00	£8.00	£14,000.00	£12.00	£12,000.00	£50.00	£55,000.00
£8.00	£5,000.00	£8.00	£16,000.00	£12.00	£15,000.00	£50.00	£65,000.00

2.7 Demographic questions

Respondents to the private vehicle questionnaire were invited to provide demographic information including address, household size, number of householders in work, occupation, income, ethnic group, gender and disabilities. This information was gathered to analyse the

demographic makeup of the sample and to allow the model to be applied to the transport model which is segmented on income class.

3 Implementation and sampling

3.1 Implementation and sampling

By using mobile devices to undertake the survey, the experienced survey team ensured a representative sample of the population was questioned by interactively monitoring the respondents based on sex, age, and demographic information. For example, should a high proportion of respondents belong to a specific gender or age, a directive would then be in place to target respondents of the opposite gender and different age groups. While it is difficult to assign potential respondents to a specific age group, analysis of the survey data shows that the age ranges and gender of those that were surveyed closely match census data for the area (see Figure 3-1).

3.2 Survey testing

The questionnaires were fully tested prior to release for collection. The testing focused on the following areas,

- The question sequence and logic
- That screening questions were adequate
- No technical issues occur during survey completion

3.3 Survey pilot

As this survey was based on the recently completed Bath CAZ survey, it was deemed unnecessary to undertake a specific pilot of this survey.

3.4 Quotas achieved

Table 3-1 shows the target and achieved sample size for responses that passed initial screening. The actual response for private car owners exceeded the target and the taxi response met the target. Responses fell below the target for commercial LGV and HGV operators, this was due to greater difficulty in finding respondents who operated non-compliant vehicles in the affected area and that were willing to be interviewed.

Table 3-1: Targets and achieved sample

Questionnaire	Target	%Target	Actual	%Actual
Private Car	350	%74	492	%141
Taxi	25	%5	50	%200
Commercial LGV	50	%11	38	%76
Commercial HGV	50	%11	25	%50
TOTAL	**475**	**%100**	**605**	**%127**

3.5 Sample profile

The proportion of respondents for the private car respondent group in each age range that passed initial screening is shown in Figure 3-1 where it is compared against the 2011 census

data for Stoke-on-Trent and Newcastle-under-Lyme. As can be seen, for most age ranges, the survey counts are proportionate to the census figures. However, fewer respondents were identified for the 17-24 age range and more were identified for the 55-59 age range than predicted by census data. In part, this may be due to the difficulty in reaching younger age groups using traditional survey techniques that are more likely to engage with older, mobile, time-rich respondents.

Figure 3-1: Respondents age

Respondents by Age
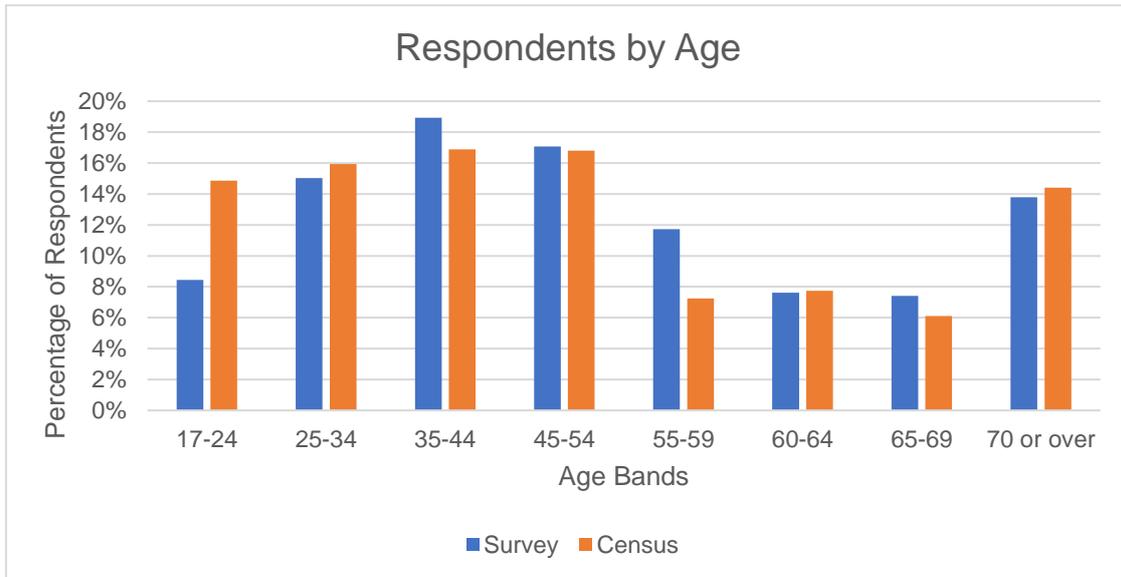
For all vehicle types, participants were asked the fuel type of their vehicle(s), this is shown in Figure 3-2. The responses show a good match with previously acquired Automatic Number Plate Recognition (ANPR) data as seen in Figure 3-3. The difference between fuel types for taxi vehicles between the survey and the ANPR dataset can be explained by the ANPR survey reporting on Hackney Carriages which are traditionally diesel powered whilst the survey also included private-hire drivers who may choose petrol fuelled vehicles.

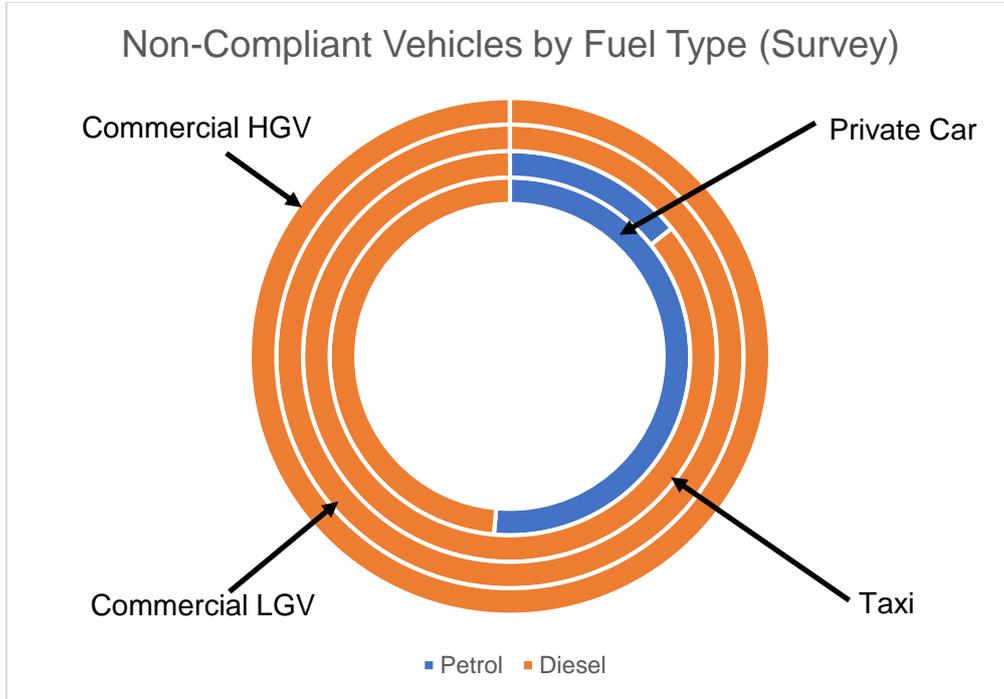*Figure 3-2: Non-compliant vehicles by fuel type (survey)*

Non-Compliant Vehicles by Fuel Type (Survey)

Commercial HGV — Private Car
Commercial LGV — Taxi

■ Petrol ■ Diesel

Figure 3-3: Non-compliant vehicles by fuel type (ANPR)

Non-Compliant Vehicles by Fuel Type (ANPR)

Commercial HGV — Private Car
Commercial LGV — Taxi

■ Petrol ■ Diesel
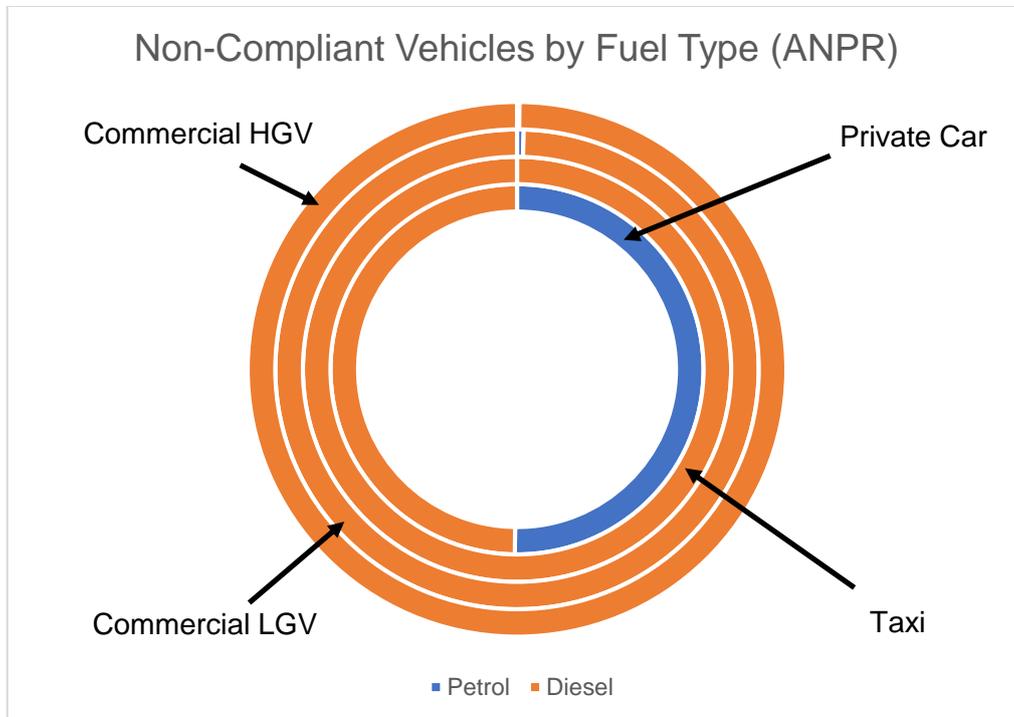
Respondents for the private car vehicle type were asked their occupation; these results are shown in Figure 3-4. Whilst the largest category is "retired", the sum of the employment related categories is significantly greater than the sum for those categories out of employment.
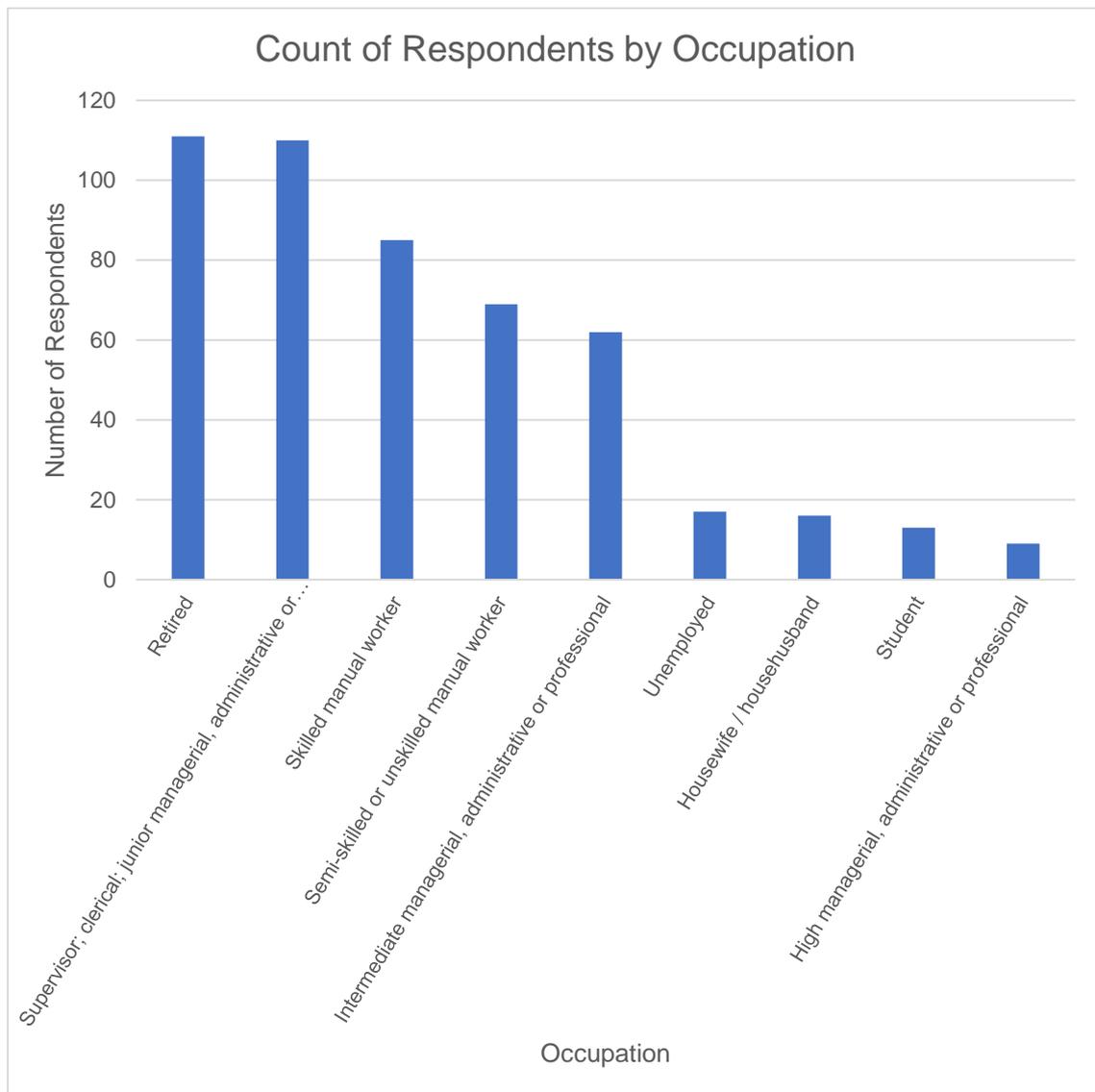
Figure 3-4: Respondents occupation

Figure 3-5 shows respondents' income for the private car vehicle type survey. As can be seen, a large proportion of respondents chose not to state their income; This is likely a result of respondents feeling unwilling to disclose such information during a publicly located personal interview. The process used to compute income where the data is missing is explained in "Section 5-1 - Segmentation".

Figure 3-5: Respondents income

Count of Respondents by Income

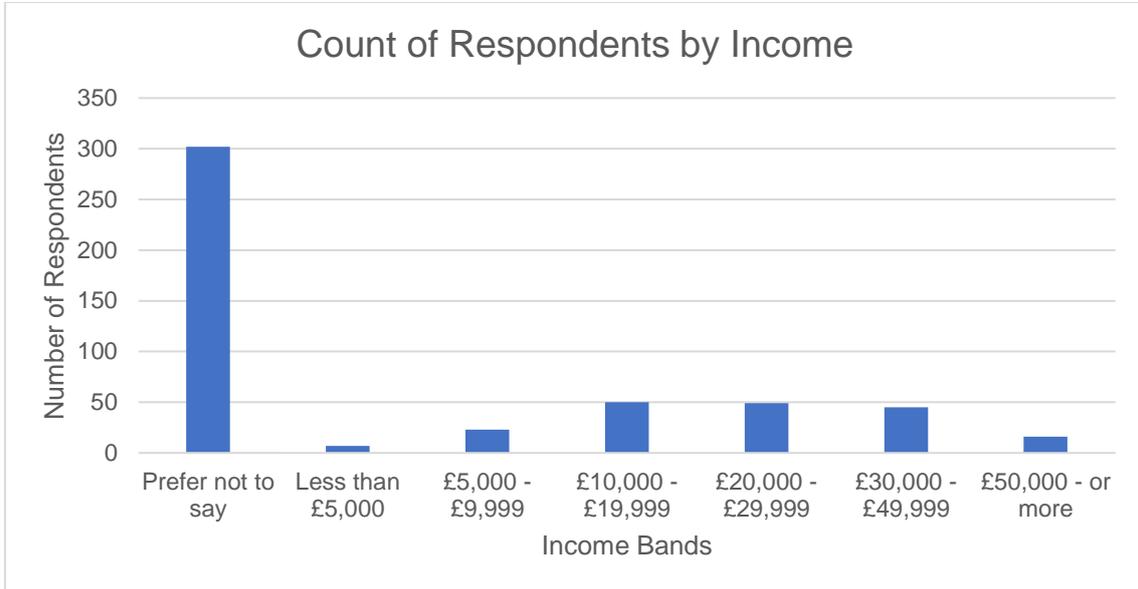Figure 3-6 shows private car respondents trip purposes. Shopping and commuting trips make up the largest share of trip purposes.

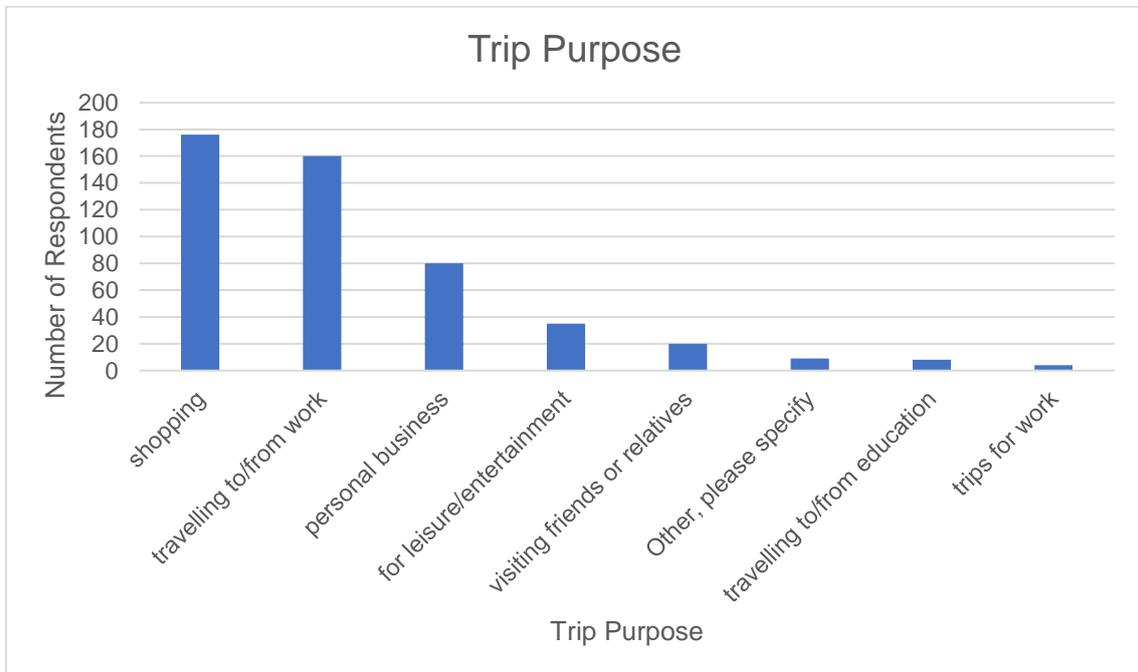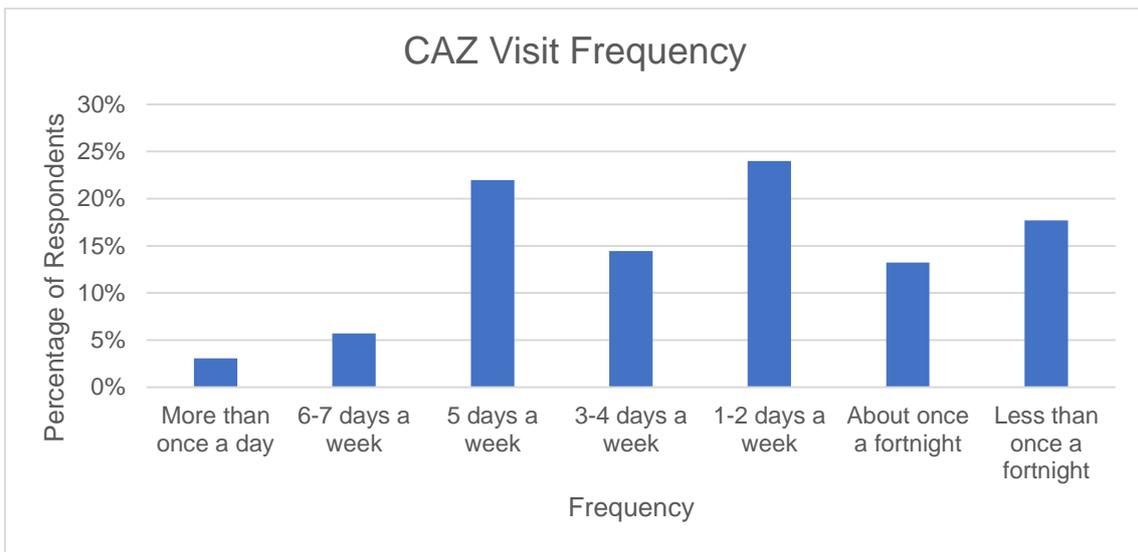*Figure 3-6: Trip purpose*

Trip Purpose

Figure 3-7 shows trip frequency to the study area as reported by private car respondents. This shows 31% of respondents visit the area at least five days a week whilst 69% visit at least every week.

Figure 3-7: CAZ visit frequency

4 Logic checks

The collected data underwent several checks to help exclude any illogical responses. Rather than automatically excluding a response based on automated criteria, suspect responses were flagged for review. Flagged records were then manually reviewed to determine if they should be discarded.

4.1 Exercise 1: pay charge vs behaviour change

This exercise presents incremental hypothetical CAZ charges and asks the respondent for their expected response to the charge. It is considered illogical that a respondent would choose to change behaviour for a lower CAZ charge though be content to continue to use their non-compliant vehicle and pay the CAZ charge when the charge is higher. Such responses were flagged for review for removal from Exercise 1 only.

4.2 Exercise 2: pay charge vs replace vehicle

This exercise gave the respondent the choice of paying the CAZ or upgrading to a compliant vehicle for a range of CAZ charges and upgrade costs. Responses where the respondent stated in Exercise 2 that they would always pay the CAZ whilst in Exercise 1 that they would never pay the CAZ were flagged. Likewise, those responses where the respondent stated they would always upgrade in Exercise 2 though stated they would always pay the CAZ in Exercise 1 were also flagged for review for removal from both Exercise 1 and 2.

4.3 Summary

As a result of logic checks, 108 records (17.9%) were removed from Exercise 1 whilst 7 records (1.2%) were removed from Exercise 2. Removing this suspected erroneous data should improve the quality of the data being used for further analysis.

5 Stated preference analysis and results

This section describes how the data was segmented, factored and weighted prior to analysis. It then describes the statistical models built for both Exercise 1 and Exercise 2 before describing how these were combined into a single model. This section also describes how the model can predict the percentage of respondents likely to pay the charge for different charge levels and income categories or the likelihood of other demand responses. Such predictions were then used in the North Staffordshire Multi-Modal transport model (NSMM)

5.1 Segmentation

To allow integration with the NSMM model, the Private Car vehicle type data was segmented by income into three categories as shown in Table 5-1. The three income ranges were chosen to reflect an evenly distributed demand across the groups as recommended by TAG.

Table 5-1: NSMM income segmentation

NSMM Income Class	Income Range
1	£0 - £20,000
2	£20,000 - £45,000
3	< £45,000

For those records where income was not stated though an address was given, an estimated income was established. This was achieved by geocoding the respondents' home location then identifying what NSMM zone the respondent lived in. If this was an internal zone, an income class was selected based on the probability of each class existing in the chosen zone. Such a methodology gives a balanced distribution of assigned incomes that should better match the pattern within each zone. This method allowed income to be established for 40% of records where the respondent had omitted it. Based on best practise, for all records where income was either not given, location was not given or couldn't be geocoded or lay outside the NSMM internal zones, the modal income class of 2 was assigned.

5.2 Factoring

It was considered that the relationship between the respondent's frequency of travel to the proposed CAZ zone and their decision to either upgrade to a CAZ-compliant vehicle or pay the charge should be tested in order to determine wherever factoring should be applied based on travel frequency.

A statistical test was performed to determine the significance of the results in relation to a null hypothesis. The null hypothesis states that there is no relationship between the frequency of respondents' trips to the proposed CAZ and their responses to Exercise 2 (Pay Charge or Replace Vehicle). The level of statistical significance is expressed as a p-value between 0 and 1 with smaller P-Values indicating stronger evidence against the null hypothesis. The test gave a P-Value of 0.08 which is greater than the typically used threshold of 0.05 used for statistical significance indicating there to be no significance between frequency of travel and behavioural response to a CAZ. As no significant relationship was found, no attempt was made to factor the observed data by trip frequency.

5.3 Weighting

Due to the good match between the survey and ANPR/census data for fuel type and respondents age (see Figure 3-1, Figure 3-2 and Figure 3-3), it was decided that weighting of the survey data to account for variations in the observed data for these fields was not required.

5.4 Exercise 2 model and results (pay charge or replace vehicle)

Both Exercise 1 and Exercise 2 were used to construct the final statistical model with the results of Exercise 2 considered first. Exercise 2 consists of a series of nine individual questions where the respondent is asked to choose between keeping their non-compliant vehicle and paying the CAZ or upgrading to a compliant vehicle for a range of hypothetical CAZ charges and upgrade costs.

The expectation is that the costs and charges are well defined and evenly balanced so that respondents will provide a mix of answers to the different choice sets therefore providing a trade-off and that evenly proportioned minorities will choose to always upgrade or always pay. The results for this exercise are shown in Figure 5-1 and show a different pattern for each vehicle type. Both private car and commercial HGV show the expected even balance between "Always Pay" and "Always Upgrade". Both taxi and commercial LGV show a willingness to always pay the CAZ charge.

Figure 5-1: Exercise 2 response
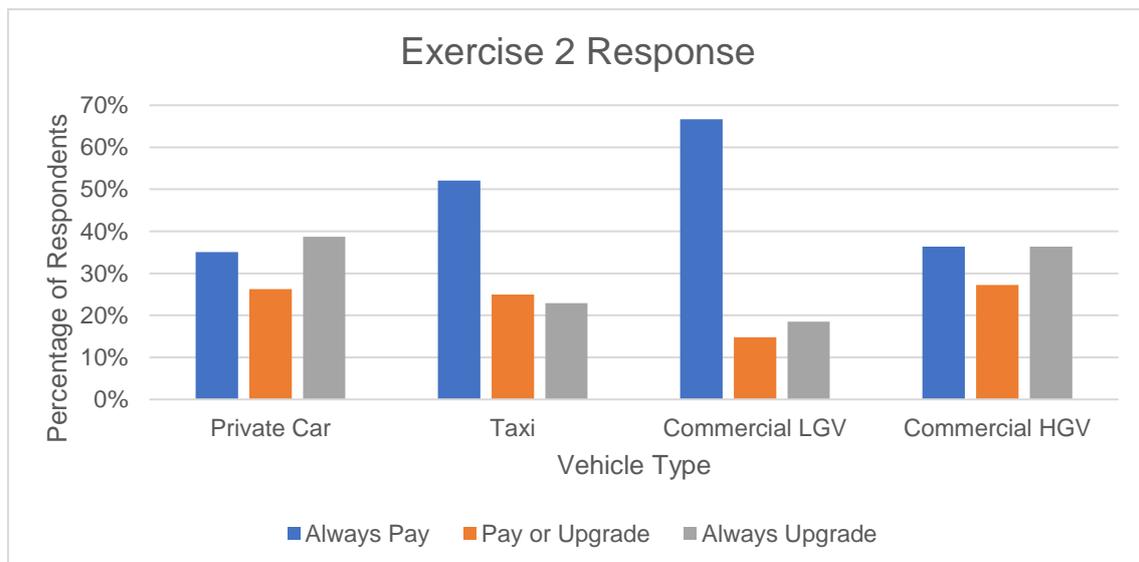
Exercise 2 presented the respondent with a binary choice of either paying the CAZ charge or upgrading the vehicle. This allows the use of a logistic regression model to calculate the probability of paying the charge for a given combination of charge and upgrade cost for each of the questionnaires, with the private car response segmented by income.

The resulting coefficients from the logistic regression are shown in Table 5-2. Note that Income only exists for the private car vehicle type and is slightly negative indicating a slight shift to upgrading as income increases. For all vehicle types, Charge is positive, and Upgrade is

negative. This is as expected and indicates that as the CAZ Charge increases and Upgrade cost decreases, the probability of a respondent choosing to upgrade their vehicle increases.

Table 5-2: Exercise 2 coefficients

Coefficients	Private Car	Taxi	Commercial LGV	Commercial HGV
Constant	-0.014963	-0.00008	-0.00003	-0.00004
Income	-0.009434	N/A	N/A	N/A
Charge	0.103096	0.00871	0.00141	0.00125
Upgrade	-0.000317	-0.00006	-0.00005	-0.00007

The coefficients can be applied to the following equation to calculate upgrade probabilities for a range of CAZ and Upgrade costs.

$$P(charge) = \frac{1}{1 + e^{-(Const - coefIncome \times Income - coefCharge \times Charge - coefUpgrade \times Upgrade)}}$$

For private car vehicle types, the P-Values are shown in Table 5-3 Whilst this shows a strong correlation between CAZ Charge and Upgrade Cost and the respondents decision, there isn't a statistically significant correlation for Income. This may be a result of the boundaries of the three TAG derived income bands and that once a threshold of income is reached, any additional income won't affect the respondent's viewpoint. A sensitivity test was undertaken against the unsegmented income bands which showed that there was a slight correlation between Income and response to the CAZ charge. However, this test omitted records where Income was not stated as they could not be estimated so the sample size was significantly reduced.

Table 5-3: Exercise 2 - private car P-Values

Input	P-Value
Income	0.799862107
CAZ Charge	4.40E-14
Upgrade Cost	5.03E-44

From the results of the logistic regression, a surface plot can be constructed for a given set of coefficients for each vehicle type. Figure 5-2 shows a plot for private cars for Income Class of 2 (the modal income). As CAZ charge rises and upgrade cost falls, the probability of upgrading rather than paying the charge increases. When the CAZ charge falls, and the upgrade cost rises the probability of upgrading rather paying the charge decreases. For example,

- CAZ charge = £2, Upgrade Cost = £1,000 - Upgrade Probability = %47

- CAZ charge = £2, Upgrade Cost = £2,500 - Upgrade Probability = %36

- CAZ charge = £9, Upgrade Cost = £1,000 - Upgrade Probability = %65

- CAZ charge = £9, Upgrade Cost = £2,500 - Upgrade Probability = %53

Figure 5-2: Private car upgrade probabilities (income = 2)
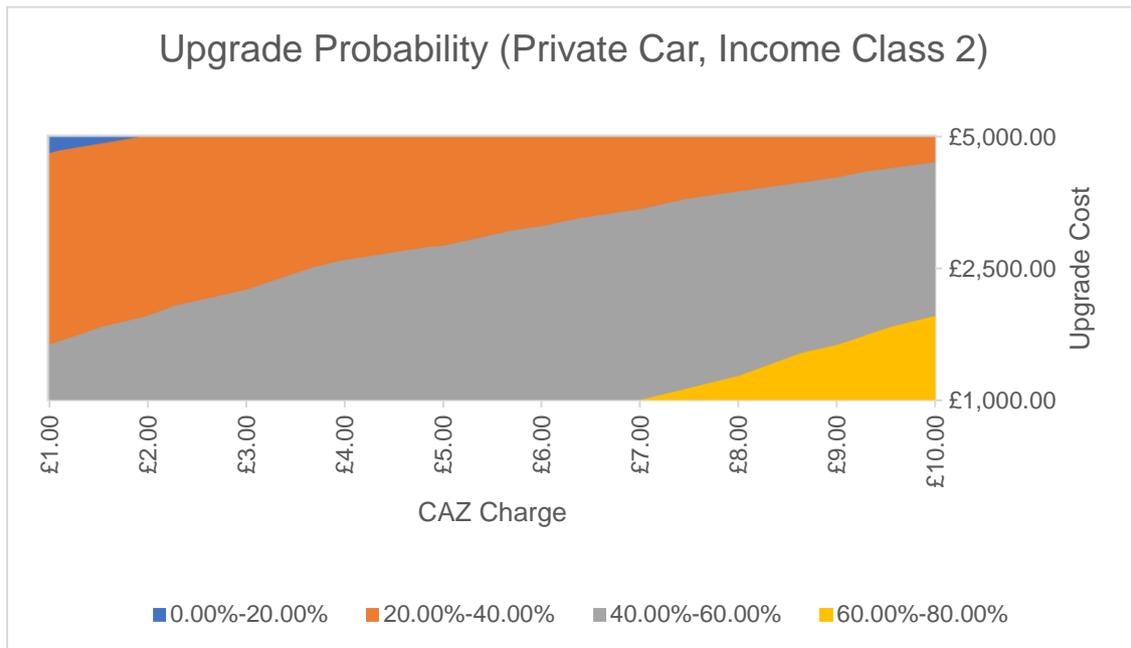
Figure 5-3 shows a similar plot for the private car vehicle type though now includes income on an additional axis. The same pattern as shown Figure 5-2 can be observed on the Daily Charge/Upgrade Costs axis. Figure 5-2 can be interpreted as a slice of Figure 5-3 taken where Income Group is 2. There is a slight increase in the probability of paying the charge as income increases though this is not significant and is not strong enough to clearly see on the plot.

Figure 5-3: Private car upgrade probabilities
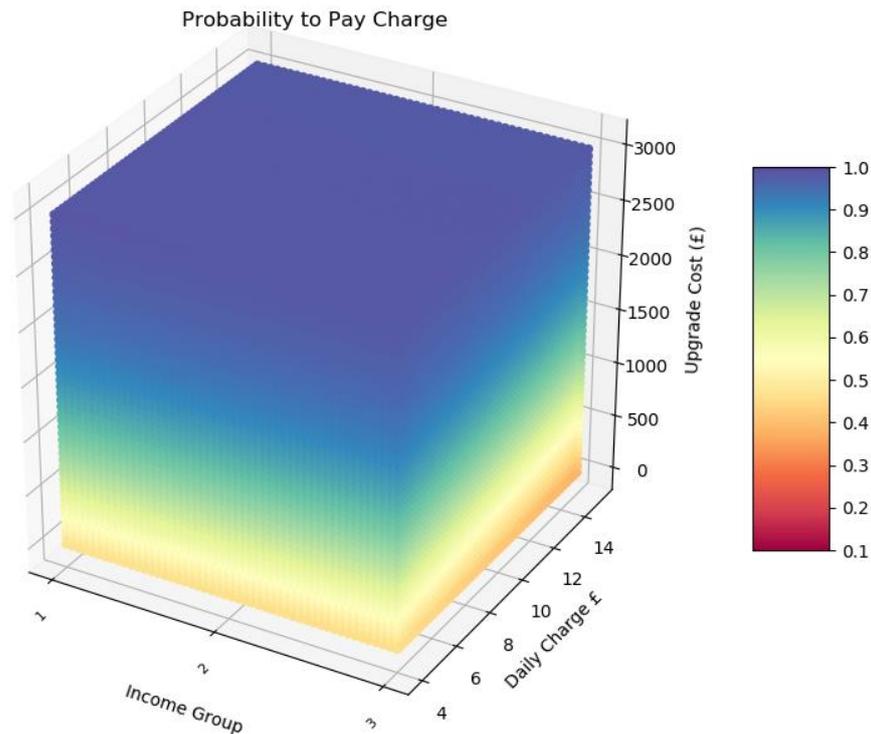
5.5 Exercise 1 model and results (pay charge or changing travel behaviour)

For Exercise 1, respondents were asked how they would have modified their last journey into the study area had a charging CAZ been in place. Respondents were given the same choice of responses for three incrementally increasing CAZ charges with differing charges and responses for each of the questionnaire types (private car, taxi, commercial LGV/HGV).

As seen for Exercise 1, it was decided that the use of logistic regression would allow the creation of a model to predict the responses to differing charge levels. Unlike Exercise 2, Exercise 1 utilises a multinomial logistic regression which can consider the multiple-choice nature of this exercise.

The results from the multinomial logistic regression are shown in Table 5-4 to Table 5-7. Paying the charge is chosen as the reference outcome so is given a coefficient of zero. All other outcomes are appropriately adjusted so as not to impact the final model.

Table 5-4: Exercise 2 coefficients (private car)

Coefficients	Pay Charge	Change Mode	Not Travel	Change Destination	Change Route	Switch Vehicle
Constant	0	-2.13601	-2.68468	-1.82567	-1.67879	-5.92286
Income	0	0.25199	-0.22862	-0.13943	-0.15320	1.01417
Charge	0	0.34674	0.40137	0.28818	0.34008	0.36762

Table 5-5: Exercise 2 coefficients (taxi)

Coefficients	Pay Charge	Switch Vehicle	Stop Operating
Constant	0	1.07862277	1.01616727
Charge	0	0.1741951	0.19387649

Table 5-6: Exercise 2 coefficients (commercial LGV)

Coefficients	Pay Charge	Switch Vehicle	Relocated Business	Not made journey	Changed Route
Constant	0	-1.94887273	-3.53653985	-2.87194768	-0.38471851
Charge	0	0.0003193	-0.00186174	0.00104001	0.03245195

Table 5-7: Exercise 2 coefficients (commercial HGV)

Coefficients	Pay Charge	Switch Vehicle	Relocated Business	Not made journey	Changed Route
Constant	0	-1.31060116	-5.09613855	-2.6004546	-0.54955764
Charge	0	0.03366961	0.06448078	0.04129855	0.01348811

Table 5-8 shows the P-Values for both income and CAZ charge change for each option. This shows a strong correlation between income and choosing to not travel, change route, change mode and switch vehicle. Income has no significant effect on choosing to pay the charge or changing destination. There is strong correlation between the value of the CAZ charge and choosing to either pay the charge, not travel, change route or change mode however there was no correlation between the value of the charge and changing destination or switching vehicle.

Table 5-8: Exercise 1 P-Values

	Income	CAZ Charge
Pay Charge	0.9999703	1.28E-32
Not Travel	0.0379828	1.56E-05
Change Destination	0.9704317	0.17506814
Change Route	0.0122207	0.00050955
Change Mode	0.031911	2.22E-10
Switch vehicle	1.44E-05	0.232854917

The coefficients can be applied to the following equation to calculate upgrade probabilities for a range of CAZ and Upgrade costs.

$$P(Y) = \frac{e^{\beta_{0_Y} + \beta_{1_Y} C}}{\sum_{k=1}^{K} e^{\beta_{0_k} + \beta_{1_k} C}}$$

Figure 5-4 shows the results of the multinomial logistic regression model constructed for Exercise 2 applied to Private Car usage with an upgrade cost of £2,500 and for income class of 2. It can be clearly seen how increasing the CAZ charge leads to a reduction in those willing to pay and an increase in other choices with switch vehicle and pay charge being the key beneficiaries.

Figure 5-4: Exercise 1 response - private car

Exercise 1 Response (Private Car, £2,500 Upgrade, Income Class 2)
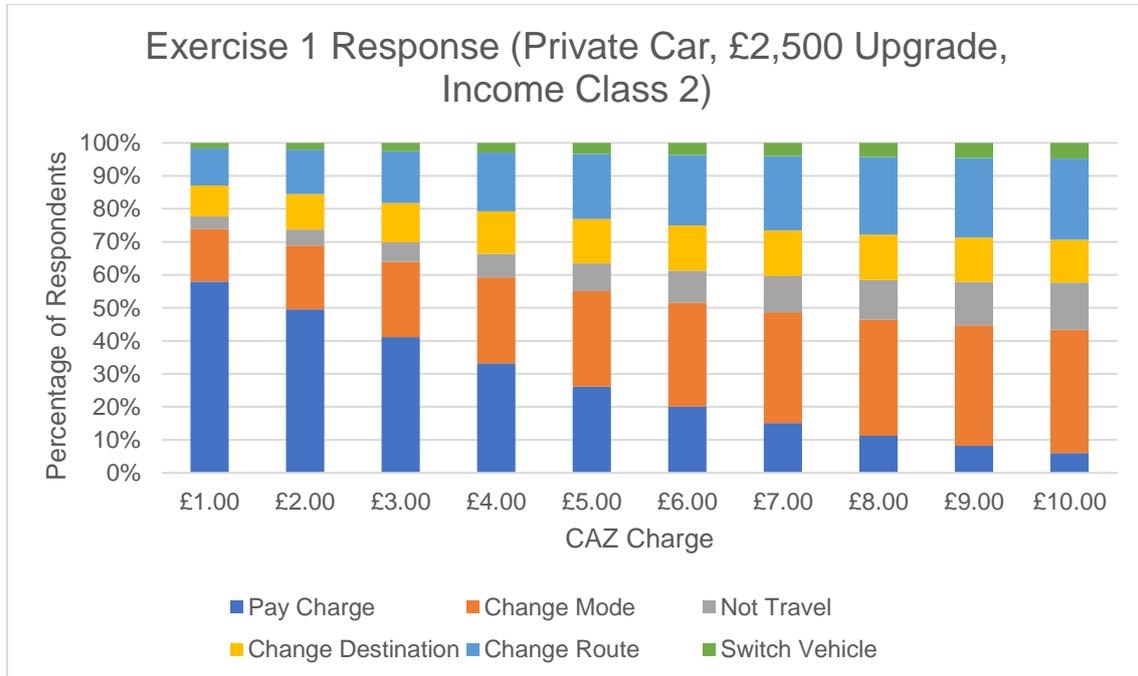
5.6   Combined model

In order to calculate an overall response to changes in CAZ charge and Upgrade cost, the results of the two models constructed for Exercises 1 and 2 for each vehicle type were combined. This methodology assumes that all of those who indicated that they would replace their vehicle for Exercise 2 would choose to do so whilst the remaining proportion that had said they would pay the CAZ charge for Exercise 2 are split between the probabilities established for Exercise 1. This process also combined some of the options from Exercise 1 for certain vehicle types in order to simplify the results for transport modelling.

Figure 5-5 to Figure 5-8 show the results of the combined models for each of the questionnaire types and for a range of input variables appropriate for that questionnaire. The response to change in a CAZ charge was quite flat for taxi and commercial LGV with the majority choosing to upgrade to a compliant vehicle irrespective of the level of the charge. For private car and commercial HGV vehicle types, the change in response due to a rising CAZ charge is more pronounced. For car drivers, a rising CAZ charge would encourage drivers to change mode or cancel as well as upgrading their vehicles. For HGV operators, an increased CAZ would lead to changes in route.

Figure 5-5: Combined model - private car

Combined Model Response (Private Car, £2,500 Upgrade, Income Class 2)
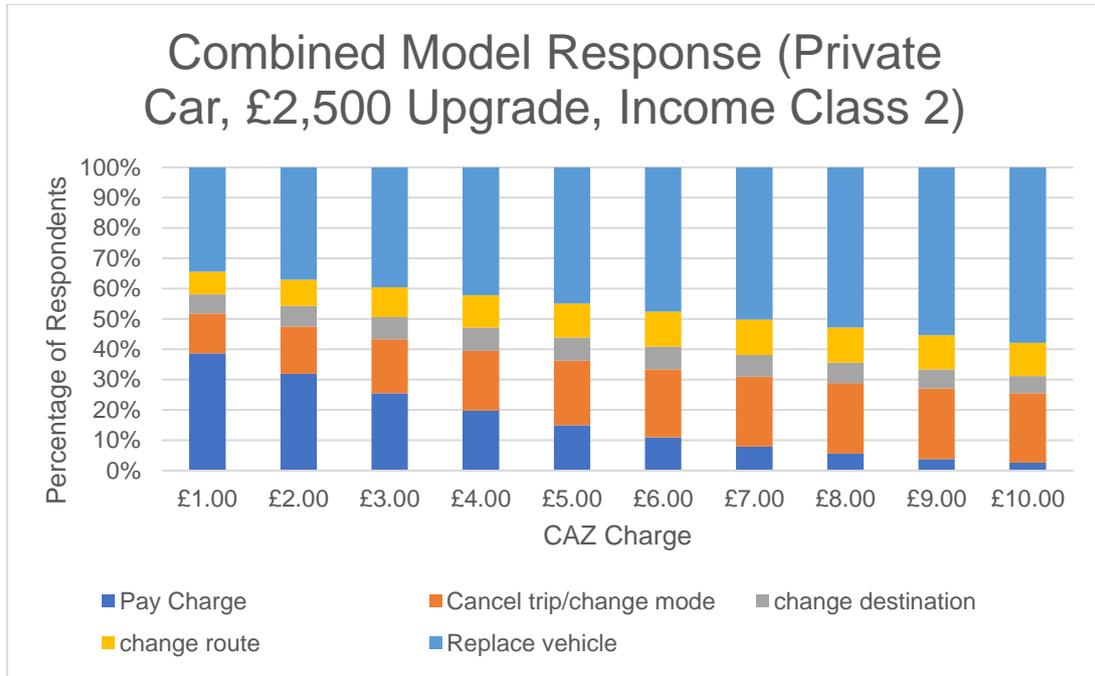
Figure 5-6: Combined model – taxi

Combined Model Response (Taxi, £1,200 Upgrade)
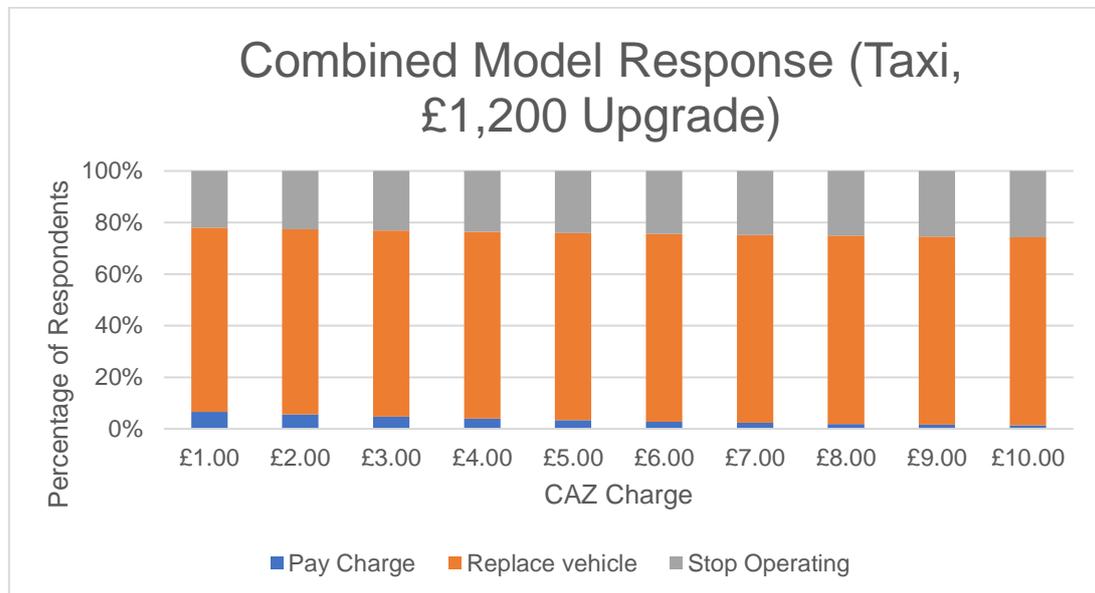
Figure 5-7: Combined model - commercial LGV

Combined Model Response (LGV, £1,200 Upgrade)
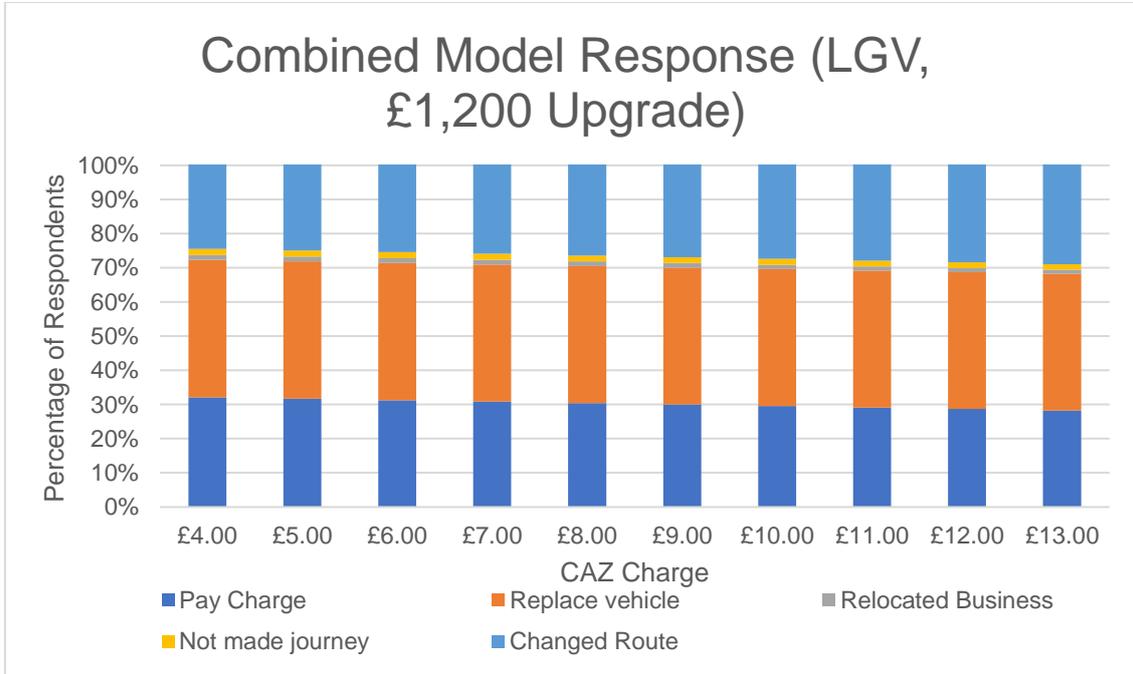
Figure 5-8: Combined model - commercial HGV

Combined Model Response (HGV, £55,000 Upgrade)
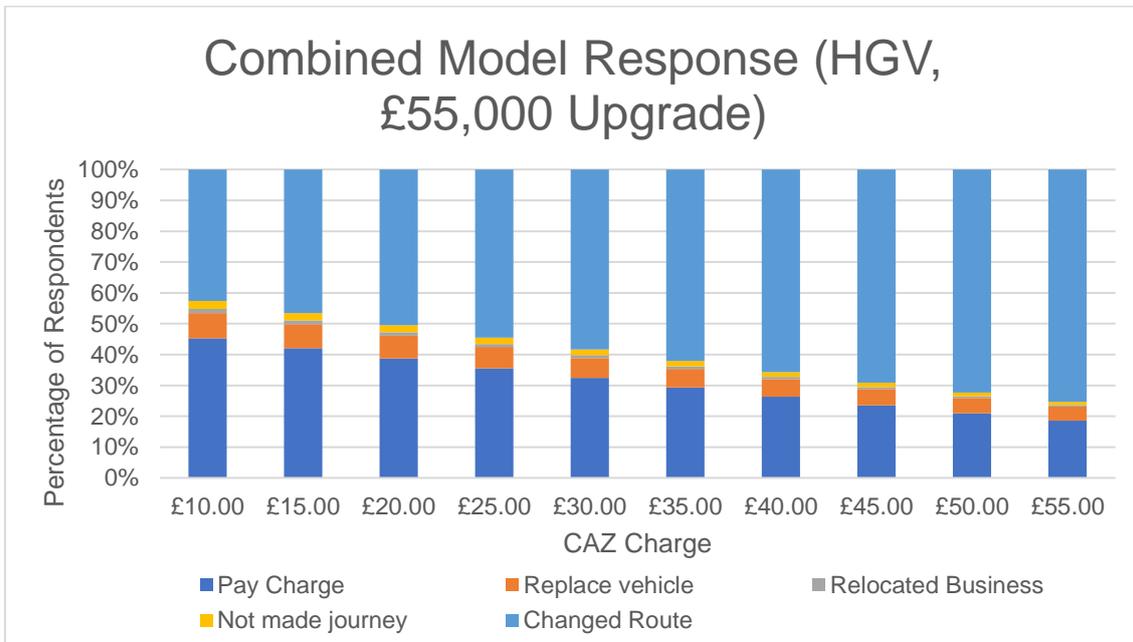
6 Applying the combined model

This section describes how the combined model discussed previously was used as a tool for defining potential daily CAZ charges for a range of vehicle types.

6.1 Deriving charging CAZ daily charges

Figure 5-5 to Figure 5-8 show the results of the combined models created from the SP data. The same data is displayed in Figure 6-1 for car usage. The chart has been simplified to show two probabilities per charge level; the shift to compliant behaviour (all responses except paying the CAZ) and the subset that will cancel, mode shift or upgrade (excluding those who would change route) Behaviour changes that exclude re-routing have the additional benefit of reducing the use of more polluting vehicles in the greater area.

Figure 6-1: Probability of paying CAZ charge
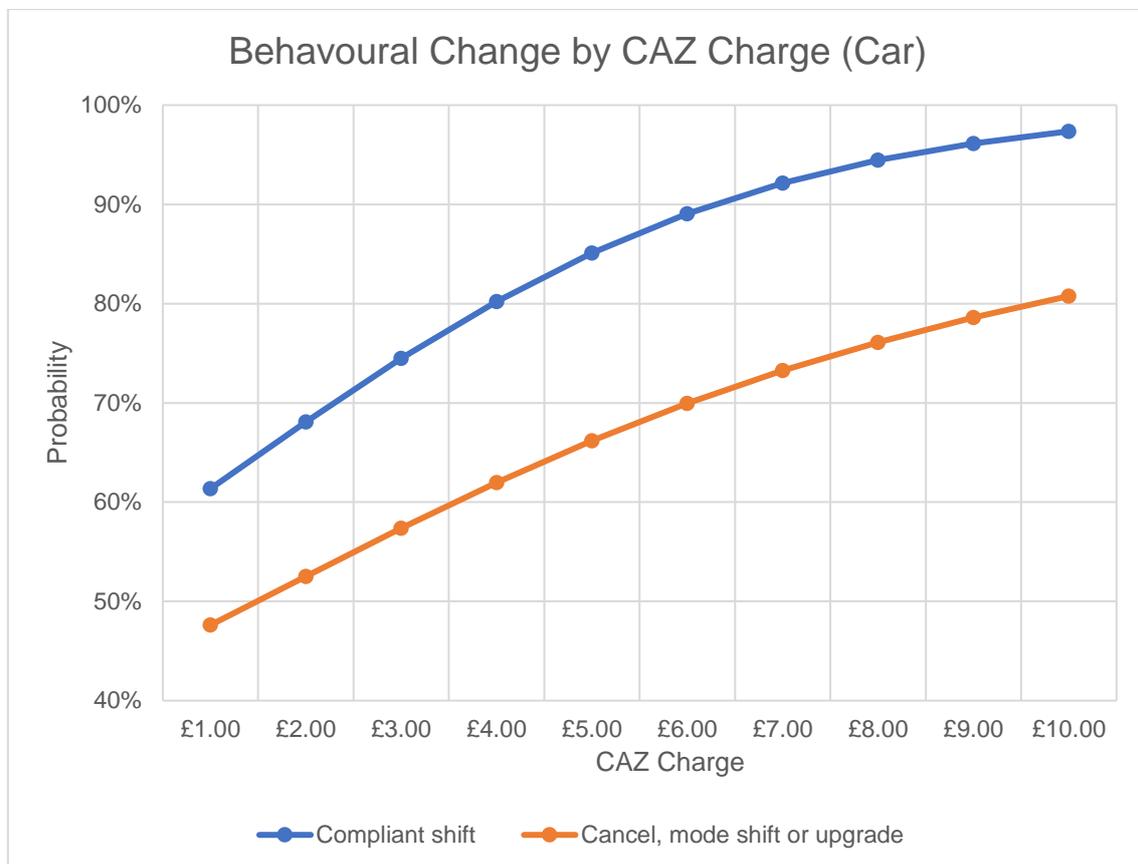
Both lines show a flattening in probability as charge increases. Therefore, the change in rate of drivers choosing to pay the charge and drive through the CAZ is not constant and reduces as the charge increases. This indicates that further increases in charge result in progressively weaker behavioural change. This observation allows charges per vehicle type to be identified that will be high enough to have a strong positive effect in encouraging a change in driver behaviour without being excessive. Higher charges would not only show diminishing results for

discouraging drivers though also risk creating an economic barrier for some financially disadvantaged drivers. The potential CAZ charge for Stoke-on-Trent and Newcastle-under-Lyme is shown in *Table 6-1* along with those from other potential Benchmark CAZ D locations.

Table 6-1: Potential Benchmark CAZ D charges

Vehicle Type	North Staffordshire	Birmingham	Bath (Proposed)
Cars	£5.00	£8.00	£9.00
Taxis	£5.00	£8.00	£9.00
LGVs	£9.00	£8.00	£9.00
HGVs	£35.00	£50.00	£100.00
Buses	£35.00	£50.00	£100.00

The charges established for North Staffordshire are based on the results of the combined model and are set at a point where a rising CAZ charge gives the greatest positive return. The charges also consider that North Staffordshire is a comparatively poorer region than the others in Table 6-1 making it more price-sensitive and with public transport options more limited than the other locations due to the polycentric nature of the region. Therefore, care has been taken to ensure the charge does not have a disproportionate effect on lower income residents.

As can be seen, the proposed charges for Stoke-on-Trent and Newcastle-under-Lyme compare favourably to other locations.

7   Conclusion

The report summarised the process of designing, analysing and applying a SP survey undertaken in Newcastle-under-Lyme, Stoke-on-Trent and surrounding areas for respondents who had recently driven within the proposed CAZ region in a vehicle considered non-compliant under the Defra Clean Air Zone Framework for England. The utilisation of a SP survey was shown to be a good source of data to construct a robust model based on logistic regression methods. This model could be successfully used for the prediction of behavioural responses to a potential chargeable CAZ for different vehicles.

The analysis of the SP surveys was composed by two exercises. For Exercise 1, respondents were asked how they would have modified their last journey into the study area had a CAZ been in place. Exercise 2 investigated the trade-off between paying the CAZ charge and upgrading to a compliant vehicle for a range of hypothetical CAZ charges and upgrade costs. Statistical models were produced using the responses from each exercise and they were then combined to one statistical model.

The combined models constructed for each of the vehicle types reflect different priorities for each of these groups of respondents and the analysis indicates what factors are statistically significant when individuals contemplate modifications to their travel behaviour following the introduction of a chargeable CAZ.

Models for all vehicle types showed a flattening in response for an increasing CAZ charge. This indicates that beyond a threshold, increasing the CAZ charge will have less pronounced

behavioural effects and should be balanced against the negative financial consequences of a larger CAZ on lower income residents.

The final model was utilised as a predictor of future behaviour to a potential CAZ charge in order to assist the initial charging levels for different vehicle types. The resultant charges compare favourably with those identified for other CAZ schemes.

The combined models derived from the SP surveys provide the behavioural response to a charging Benchmark CAZ D. The predicted splits were used in the NSMM model to adjust the traffic demand prior to the assignment to reflect the impact of a Benchmark CAZ D policy.

Appendix A – Stated preference questionnaires (private car)

SP1: This questionnaire is to be used only for private vehicles (Registered to a single individual and not to a Company)

North Staffordshire Local Air Quality Questionnaire

Good morning/afternoon/evening.

My name is …………, I represent Watermelon Research an independent market research agency. I am conducting a survey on behalf of the three local authorities in relation to a Local Air Quality Plan that is being developed for North Staffordshire.

Interviewer instruction: SHOW THE LAMINATED PRIVACY NOTICE TO THE PARTICIPANT WHEN YOU READ OUT 'THIS PRIVACY NOTICE' BELOW

In parts of Newcastle-under-Lyme and Stoke-on-Trent traffic related pollution is above legal limits which is affecting the health of local people. Central Government requires your councils to consider the introduction of a Clean Air Zone which would involve charging higher polluting vehicles to enter a defined area. At the same time, the local authorities are working to identify an alternative non-charging traffic management solution that improves air quality and avoids the need for a charging Clean Air Zone.

To help us identify the most appropriate solution to the air quality problem, we need to understand the likely responses of local people to the introduction of a charging Clean Air Zone and this survey will allow us to collect the necessary information.

The survey will take no more than 15 minutes and is completely confidential. We will retain any personal contact details you provide for quality control purposes only under ISO20252/IQCS. In line with GDPR guidelines, the data will not be retained for any longer than is required for this study.

The information that you provide will not be sold or passed to any other persons or organisations, you will receive no marketing material because of completing this questionnaire, and all results will be reported anonymously. Thank you for taking the time to complete this survey.

Interviewer instruction: IF RESPONDENT IS NOT WILLING TO UNDERTAKE SURVEY, MENTION THAT THEY COULD WIN £100

Do you have any questions?

Are you happy to proceed?

Part A: This part of the survey is to determine whether it is of relevance to you. *All questions relate to your main vehicle used.*

<u>Q1. What age group do you fall into?</u>

□ *Under 17*

□ *17-24*

□ *25-34*

□ *35-44*

□ *45-54*

□ *55-64*

□ *65-74*

□ *75 or over*

***If under 17 then: Unfortunately, only people aged 17 or over are eligible to complete the remainder of the questionnaire. Thank you for your time.* Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.**

<u>Q2a. What is the main mode of transport you use?</u>

□ *Private Car*

□ *Van*

□ *Pre-booked taxi*

□ *Do not use private transport*

***If main vehicle is pre-booked taxi, please proceed to Part E. If 'do not use private transport' then unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.* Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.**

<u>Q2b. Do you make decisions concerning the replacement of your vehicle?</u>

□ *Yes*

□ *No*

If 'no' then: This survey is for people who make the decision about replacing their vehicle so unfortunately you are not eligible to complete the remainder of the questionnaire.

Thank you for your time. Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.

Q3. What type of fuel does the vehicle you normally drive use?

□ *Petrol*

□ *Diesel*

□ *Electric/Plug-In*

□ *Hybrid*

□ *Gas/LPG*

□ *Other*

If not petrol or diesel then: This survey is focused on non-compliant vehicles, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time. Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.

Q4. If your vehicle is petrol, was it registered before 1st January 2006? If it is diesel, was it registered before 1st September 2015?

□ *Yes*

□ *No*

If 'no' then: This survey is focused on non-compliant vehicles, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time. Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.

Q5. In the past 6 months have you used your main vehicle to travel in the areas shown on the map?

□ *Yes*

□ *No*

Interviewer Instruction: Show Map of Areas Under Consideration

If 'no' then: This survey is focused on trips in these areas, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time. Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.

Part B: Information on vehicle most frequently driven

Q6. When do you expect to replace this vehicle?

□ *By 2020*

□ *By 2021*

□ *By 2022*

□ *By 2023*

□ *After 2023*

□ *I have no specific plans at this time*

Q7. How old do you expect your replacement vehicle will be?

□ *It will be a new vehicle*

□ *Under 2 years old*

□ *2-4 years old*

□ *Over 4 years old*

□ *Don't know*

Q8. What type of fuel do you expect your replacement vehicle will use?

□ *Petrol*

□ *Diesel*

□ *Electric/Plug In*

□ *Hybrid*

□ *Gas/LPG*

□ *Other*

□ *Don't Know*

Part C: Travel in the areas depicted on the map

Thinking about your main vehicle:

Q9. You stated that you have made at least one journey in the areas shown on the map in Q5 in the last 6 months. What was the most frequent purpose for your journey?

□ *to/from work (commuting)*

□ *to/from education (as a student or escort for others)*

□ *for leisure/entertainment*

□ *shopping*

□ *to visit friends or relatives*

□ *for personal business (e.g. doctors, dentist, bank appointment)*

□ *trips for work (e.g. meeting)*

□ *Other please specify_____*

Q10. How often do you use your vehicle in these areas for the most frequent purpose mentioned above?

□ *More than once a day*

□ *6-7 days a week*

□ *5 days a week*

□ *3-4 days a week*

□ *1-2 days a week*

□ *About once a fortnight*

□ *Less than once a fortnight*

Q11. Are there any other reasons you travel in these areas and approximately how often do you travel for these reasons?

Purpose   *How often?*

Part D: Clean Air Zone*: This part of the survey is to understand your response to the following scenario: Journeys made by your main vehicle in the areas shown on the map in Q5 would be subject to a "one-off" daily charge. Camera enforcement would be in place to identify non-compliant vehicles.*

*Question 12a to be answered if respondent uses **car***

Q12a. Thinking about your most frequent journey driving in these areas, what would you have done, assuming a Clean Air Zone was in place?

*Clean Air Zone Daily Charge (£2)

□ *Made the same journey using your own vehicle and paid the £2 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £2,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Clean Air Zone Daily Charge (£5)

□ *Made the same journey using your own vehicle and paid the £5 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £2,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Clean Air Zone Daily Charge (£8)

□ *Made the same journey using your own vehicle and paid the £8 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £2,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Question 12b to be answered if respondent uses **van***

Q12b. Thinking about your most frequent journey driving in these areas, what would you have done, assuming a Clean Air Zone was in place?

*Clean Air Zone Daily Charge (£6)

□ *Made the same journey using your own vehicle and paid the £6 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £7,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Clean Air Zone Daily Charge (£9)

□ *Made the same journey using your own vehicle and paid the £9 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £7,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Clean Air Zone Daily Charge (£12)

□ *Made the same journey using your own vehicle and paid the £12 charge*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Upgraded to a compliant vehicle at a cost of £7,500 to avoid paying the charge and made the same journey*

□ *Changed your destination to avoid paying the charge*

□ *Changed your route to avoid paying the charge*

□ *Used a compliant vehicle already available in your household*

□ *Would not have made this journey*

*Question 13a to be answered if respondent uses **car**.*

Q13a. If you had to choose between paying the Clean Air Zone charge or upgrading your vehicle, which option would you choose in the following 9 scenarios?

Please select one answer for each scenario.

*£2 charge or £1,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £1,000 and pay no charge when driving through the zone*

*£2 charge or £2,500 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £2,500 and pay no charge when driving through the zone*

*£2 charge or £5,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £5,000 and pay no charge when driving through the zone*

*£5 charge or £1,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £1,000 and pay no charge when driving through the zone*

*£5 charge or £2,500 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £2,500 and pay no charge when driving through the zone*

*£5 charge or £5,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £5,000 and pay no charge when driving through the zone*

*£8 charge or £1,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £8*

□ *Change to a compliant vehicle for an upgrade cost of £1,000 and pay no charge when driving through the zone*

*£8 charge or £2,500 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £8*

□ *Change to a compliant vehicle for an upgrade cost of £2,500 and pay no charge when driving through the zone*

*£8 charge or £5,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £8*

□ *Change to a compliant vehicle for an upgrade cost of £5,000 and pay no charge when driving through the zone*

*Question 13b to be answered if respondent uses **van***

Q13b. If you had to choose between paying the Clean Air Zone charge or upgrading your vehicle, which option would you choose in the following 9 scenarios?

Please select one answer for each scenario.

* **£6 charge or £7,500 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £7,500 and pay no charge when driving through the zone*

* **£6 charge or £10,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £10,000 and pay no charge when driving through the zone*

* **£6 charge or £12,500 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £12,500 and pay no charge when driving through the zone*

* **£9 charge or £7,500 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £7,500 and pay no charge when driving through the zone*

* **£9 charge or £10,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £10,000 and pay no charge when driving through the zone*

* **£9 charge or £12,500 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £12,500 and pay no charge when driving through the zone*

* **£12 charge or £7,500 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £7,500 and pay no charge when driving through the zone*

*£12 charge or £10,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £10,000 and pay no charge when driving through the zone*

*£12 charge or £12,500 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £12,500 and pay no charge when driving through the zone*

This section only to be answered by respondents who use a pre-booked taxi as main form of transport specified in Q.2a

Part E: Clean Air Zone*: This part of the survey aims to understand the response to an increase in the fare price paid for pre-booked taxis due to the Clean Air Zone charge*

Q14. In the past 6 months have you used a pre-booked taxi to travel in the areas shown on the map?

□ *Yes*

□ *No*

Interviewer Instruction: Show Map of Areas Under Consideration

If 'no' then: This survey is focused on trips in these areas, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time. Interviewer instruction: Go to end of questionnaire to get contact details for entry into prize draw.

Q15. In general, how often do you use a pre-booked taxi to travel in these areas?

□ *More than once a day*

□ *6-7 days a week*

□ *5 days a week*

□ *3-4 days a week*

□ *1-2 days a week*

□ *About once a fortnight*

□ *Less than once per fortnight*

Q16. Thinking about the journey you usually make using a pre-booked taxi in these areas, what would you have done, assuming an increase in the taxi fare as a result of the Clean Air Zone?

*Clean Air Zone Journey Charge (Additional fare of 20p per trip)

□ *Made the same journey using the taxi and paid the additional fare*

□ *Made the same journey by cycling or walking*

□ *Made the same journey using public transport*

□ *Changed your drop-off/pick-up point to outside the charge areas and walk to destination/pick-up point to avoid paying additional fare*

□ *Requested that the taxi re-route to avoid the Clean Air Zone additional fare*

□ *Changed destination to avoid the Clean Air Zone additional fare*

□ *Would not have made this journey*

*Clean Air Zone Journey Charge (Additional fare of 40p per trip)

□ *Made the same journey using the taxi and paid the additional fare*

□ *Made the same journey by cycling or walking*

□ *Made the same journey but using public transport*

□ *Changed your drop-off/pick-up point to outside the charge areas and walk to destination/pick-up point to avoid paying additional fare*

□ *Requested that the taxi re-route to avoid the Clean Air Zone additional fare*

□ *Changed destination to avoid the Clean Air Zone additional fare*

□ *Would not have made this journey*

*Clean Air Zone Journey Charge (Additional fare of 60p per trip)

□ *Made the same journey using the taxi and paid the additional fare*

□ *Made the same journey by cycling or walking*

□ *Made the same journey but using public transport*

□ *Changed your drop-off/pick-up point to outside the charge areas and walk to destination/pick-up point to avoid paying additional fare*

□ *Requested that the taxi re-route to avoid the Clean Air Zone additional fare*

□ *Changed destination to avoid the Clean Air Zone additional fare*

□ *Would not have made this journey*

Part G: About You

Q17. Please would you be able to confirm your home address and postcode? This information will be used by Sweco only for the purpose of classifying your answers to our transport models, with the data being destroyed within 6 months.

Address line 1: _____

Address line 2: _____ _____

County: _____ _____

Post-code: _____ _____ _____

REFUSED

Q18. How many people live in your household?

_____

Q19. How many people in your household are working?

_____

Q20: What best describes your occupation?

1	High managerial, administrative or professional *– e.g. doctor, lawyer, company director (50+ people), judge, surgeon, school headmaster etc.* [SEG 'A']	
2	Intermediate managerial, administrative or professional *– e.g. school teacher, office manager, junior doctor, bank manager, police inspector, accountant etc.* [SEG 'B']	
3	Supervisor; clerical; junior managerial, administrative or professional *– e.g. policeman, nurse, secretary, clerk, self-employed (5+ people) etc.* [SEG 'C1']	
4	Skilled manual worker *– e.g. mechanic, plumber, electrician, lorry driver, train driver etc.* [SEG 'C2']	
5	Semi-skilled or unskilled manual worker *– e.g. baggage handler, waiter, factory worker, receptionist, labourer, gardener etc.* [SEG 'D']	
6	Housewife / househusband [SEG 'E']	
7	Unemployed [SEG 'E']	
8	Student [SEG 'C1']	
9	Retired	

Q21. Which category corresponds to your annual household income before tax?

□ *Less than £5,000*

□ *£5,000 - £9,999*

□ *£10,000 - £19,999*

□ *£20,000 -£29,999*

□ *£30,000 - £49,999*

□ *£50,000 - or more*

□ *Prefer not to say*

Q22. Choose one option that best describes the ethnic group you belong to:

□ *White*

□ *Asian/Asian British*

□ *Black/African/Caribbean/Black British*

□ *Mixed/multiple ethnic group*

□ *Other (please specify) _____*

□ *Prefer not to say*

Q23. Do you identify as:

□ *Male*

□ *Female*

□ *Other*

□ *Prefer not to say*

Q24. Do you suffer from any long-term illness or disability which limits your ability to travel and/or carry out day-to-day activities?

□ *Yes*

□ *No*

□ *Prefer not to say*

Q25. Are you a Blue Badge holder?

□ *Yes*

□ *No*

Q26. Do you have any further comments about this topic or the survey itself?

□ *Yes* _____

_____

_____

□ *No comments*

<u>*Q27. And finally, Watermelon or the local authorities' consultants (Sweco) may wish to contact you again with any follow up questions relating to this research. Would you be willing to be re-contacted? Any re-contact would take place within the next 2 months.*</u>

□ *Yes*

□ *No*

By what e-mail address or telephone number would you like to be contacted?

_____

As a thank you for taking part you can chose to be entered into a prize draw to either win one of five cash prizes of £100 or an equivalent donation to a charity of your choice. The prize draw will take place on <DATE>

If you would you like to be entered into the prize draw, please provide your name and telephone number. Your details will only be used if you are a winner.

Name_____

Telephone number _____

This survey has been completed successfully. Thank you once again for your time and effort.

Appendix B – Stated preference questionnaires (taxi)

SP2: This questionnaire to be used only for Taxi vehicles used for Business

North Staffordshire Local Air Quality Questionnaire

Good morning/afternoon/evening.

My name is …………, I represent Watermelon Research an independent market research agency. I am conducting a survey on behalf of the three local authorities in relation to a Local Air Quality Plan that is being developed for North Staffordshire.

Interviewer instruction: SHOW THE LAMINATED PRIVACY NOTICE TO THE PARTICIPANT WHEN YOU READ OUT 'THIS PRIVACY NOTICE' BELOW

In parts of Newcastle-under-Lyme and Stoke-on-Trent traffic related pollution is above legal limits which is affecting the health of local people. Central Government requires your councils to consider the introduction of a Clean Air Zone which would involve charging higher polluting vehicles to enter a defined area. At the same time, the local authorities are working to identify an alternative non-charging traffic management solution that improves air quality and avoids the need for a charging Clean Air Zone.

To help us identify the most appropriate solution to the air quality problem, we need to understand the likely responses of local businesses to the introduction of a charging Clean Air Zone and this survey will allow us to collect the necessary information.

The survey will take no more than 15 minutes and is completely confidential. We will retain any personal contact details you provide for quality control purposes only under ISO20252 / IQCS. In line with GDPR guidelines, the data will not be retained for any longer than is required for this study.

The information that you provide will not be sold or passed to any other persons or organisations, you will receive no marketing material because of completing this questionnaire, and all results will be reported anonymously. Thank you for taking the time to complete this survey.

Do you have any questions?

Are you happy to proceed?

Part A: This part of the survey is to determine whether it is of relevance to you

Q1. Do you or your company own or hire your vehicle?

□ *Own*

□ *Hire*

□ *Not my vehicle*

If 'Not my vehicle' then: This survey is only applicable to people who own or hire vehicles, therefore unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.

Q2. In the past 6 months have you or your business operated in the areas shown on the map?

□ *Yes*

□ *No*

Interviewer Instruction: Show Map of Areas Under Consideration

If 'no' then: This survey is focused on trips in these areas, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.

Part B: This part of the survey is about your business and operation

Q3. *Which of the following best describes the size of your business?*

☐ *1 vehicle*

☐ *Small, 2 to 4 vehicles*

☐ *Medium, 5 to 25 vehicles*

☐ *Large, 26 vehicles and over*

Q4a. *How many of your vehicles are petrol driven?*

_____

Of those vehicles, how many are 55 registration or older (registered before January 2006)?

_____

Q4b. *How many of your vehicles are diesel driven?*

_____

Of those vehicles, how many are 15 registration or older (registered before September 2015)?

_____

If no vehicles are either

- **55 registration or older for petrol or**
- **15 registration or older for diesel,**

then: This survey is focused on non-compliant vehicles, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.

Q5a. *When do you expect to replace the non-compliant vehicle in your fleet? If replacement is to be phased over time, please provide all appropriate years.*

☐ *By 2020*

☐ *By 2021*

☐ *By 2022*

☐ *By 2023*

□ After 2023

□ I have no specific plans at this time.

Q5b. *How old do you expect your replacement taxis will be?*

□ They will be new vehicles

□ After registration year 67 (2017/2018)

□ Before registration year 67 but after 14 (2014/2015 – 2016/2017)

□ Before registration year 14 (before 2014)

□ Don't know

Q5c. *What type of fuel do you expect your replacement taxis will use?*

□ Petrol

□ Diesel

□ Electric/Plug In

□ Hybrid

□ Gas/LPG

□ Other

□ Don't Know

Q6. *Typically, how often do you or your taxi drivers operate within the areas shown on the map in Q2?*

□ 21 times per day or more

□ 11 – 20 times per day

□ 1 – 10 times per day

□ Less frequent

Part D: Clean Air Zone*:*

This part of the survey is to understand your response to the following scenario: Journeys made in the areas shown on the map in Q2 would be subject to a "one-off" daily charge. Camera enforcement would be in place to identify non-compliant vehicles.

Q7*. Thinking about the last journey you made in these areas, what would your response be, assuming the Clean Air Zone was in place?*

*Clean Air Zone Daily Charge (Taxi £2)

□ *Made the same journey using your existing vehicle and paid the charge*

□ *Made the same journey by using another compliant vehicle already within the fleet*

□ *Purchase compliant vehicle for £12,000 and made the same journey*

□ *Stop operating*

□ *Other (please state) _____*

*Clean Air Zone Daily Charge (Taxi £5)

□ *Made the same journey using your existing vehicle and paid the charge*

□ *Made the same journey by using another compliant vehicle already within the fleet*

□ *Purchase compliant vehicle for £12,000 and made the same journey*

□ *Stop operating*

□ *Other (please state) _____*

*Clean Air Zone Daily Charge (Taxi £8)

□ *Made the same journey using your existing vehicle and paid the charge*

□ *Made the same journey by using another compliant vehicle already within the fleet*

□ *Purchase compliant vehicle for £12,000 and made the same journey*

□ *Stop operating*

□ *Other (please state) _____*

Q8*. If the Clear Air Zone was in place, which option would you choose in the following 9 scenarios?*

Please select one answer for each scenario.

*£2 charge or £12,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £12,000 per taxi vehicle and pay no charge when driving through the zone*

*£2 charge or £14,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £14,000 per taxi vehicle and pay no charge when driving through the zone*

*£2 charge or £16,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £2*

□ *Change to a compliant vehicle for an upgrade cost of £16,000 per taxi vehicle and pay no charge when driving through the zone*

*£5 charge or £12,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £12,000 per taxi vehicle and pay no charge when driving through the zone*

*£5 charge or £14,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £14,000 per taxi vehicle and pay no charge when driving through the zone*

*£5 charge or £16,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £5*

□ *Change to a compliant vehicle for an upgrade cost of £16,000 per taxi vehicle and pay no charge when driving through the zone*

*£8 charge or £12,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £8*

□ *Change to a compliant vehicle for an upgrade cost of £12,000 per taxi vehicle and pay no charge when driving through the zone*

*£8 charge or £14,000 vehicle upgrade

□ Use current vehicle and pay a daily charge of £8

□ Change to a compliant vehicle for an upgrade cost of £14,000 per taxi vehicle and pay no charge when driving through the zone

*£8 charge or £16,000 vehicle upgrade

□ Use current vehicle and pay a daily charge of £8

□ Change to a compliant vehicle for an upgrade cost of £16,000 per taxi vehicle and pay no charge when driving through the zone

Q9. *How would a Clean Air Zone affect the future plans for you or your business?*

_____

_____

_____

_____

_____

_____

_____

Q10. *Do you have any further comments about this topic or the survey itself?*

□ Yes

_____

_____

_____

_____

_____

_____

_____

□ *No comments*

Q11_. And finally, Watermelon or the local authorities' consultants (Sweco) may wish to contact you again with any follow up questions relating to this research. Would you be willing to be re-contacted? Any re-contact would take place within the next 2 months._

□ *Yes*

□ *No*

By what e-mail address or telephone number would you like to be contacted?

_____

_____

This survey has been completed successfully. Thank you once again for your time and effort.

Appendix C – Stated preference questionnaires (commercial LGV/HGV)

SP3: This questionnaire to be used only for Light Goods Vehicles and Heavy Goods Vehicles used for Business

North Staffordshire Local Air Quality Questionnaire

Good morning/afternoon/evening.

My name is ...., I represent Watermelon Research an independent market research agency. I am conducting a survey on behalf of the three local authorities in relation to a Local Air Quality Plan that is being developed for North Staffordshire.

Are you responsible for making decisions regarding the operation of the vehicle fleet?

□ Yes

□ No

If 'no' then: Could you provide a contact name and telephone number of the person responsible (transport manager or fleet manager for example) within your business who will be able to respond to questions regarding the operation of the vehicle fleet

_____

If 'no' then: This survey is for people who make the decision about replacing their vehicle so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.

In parts of Newcastle-under-Lyme and Stoke-on-Trent traffic related pollution is above legal limits which is affecting the health of local people. Central Government requires your councils to consider the introduction of a Clean Air Zone which would involve charging higher polluting vehicles to enter a defined area. At the same time, the local authorities are working to identify an alternative non-charging traffic management solution that improves air quality and avoids the need for a charging Clean Air Zone.

To help us identify the most appropriate solution to the air quality problem, we need to understand the likely responses of local businesses to the introduction of a charging Clean Air Zone and this survey will allow us to collect the necessary information.

The survey will take no more than 15 minutes and is completely confidential. We will retain any personal contact details you provide for quality control purposes only under ISO20252 / IQCS. In line with GDPR guidelines, the data will not be retained for any longer than is required for this study.

The information that you provide will not be sold or passed to any other persons or organisations, you will receive no marketing material because of completing this questionnaire, and all results will be reported anonymously. Thank you for taking the time to complete this survey.

Do you have any questions?

Are you happy to proceed?

Part A: This part of the survey is to determine whether it is of relevance to you

__Q1.__ Are you a business that operates Light Goods Vehicles (twin axle not exceeding 3.5 tonnes) or Heavy Goods Vehicles (exceeding 3.5 tonnes)?

□ Light Goods Vehicles only

□ HGVs only

□ Both Light Goods Vehicles and HGVs

□ None of the above

If 'None of the above' then: This survey is focused on Light Goods Vehicles or HGVs, so unfortunately you are not eligible to complete the remainder of the questionnaire. Thank you for your time.

__Q2__. In the past 6 months have you or your business operated any services in the following areas:

- *Newcastle-under-Lyme town centre*
- *City centre (Hanley)*
- *Festival Park and Etruria*
- *Basford*

□ Yes

□ No

If 'no' then: This survey is focussed on services or deliveries in these areas, and there is no requirement for you to complete the remainder of this questionnaire. Thank you for your time.

__Q3__. How often do any of your vehicles operate in these areas?

□ More than once a day

□ 6-7 days a week

□ 5 days a week

□ 3-4 days a week

□ 2 days a week

□ *1 day a week*

□ *About once a fortnight*

□ *Less than once a fortnight*

Part B: This part of the survey is about your business and operation

Q4. *What is the primary nature of your business:*

_____

Q5. *Which of the following do you consider appropriately describes the size of your business?*

□ *Micro: employing less than 10 employees*

□ *Small: employing 10 - 49 employees*

□ *Medium: employing 50 -249 employees*

□ *Large: employing 250 or more*

Q6. *How many vehicles are in your company's fleet that operate in the areas described in Q2?*

□ *1-10*

□ *11-20*

□ *21-30*

□ *31-40*

□ *41-50*

□ *50 - over*

Question 7 should be asked subject to the responses received for Q1 regarding the use of Light Goods Vehicles and HGVs.

Q7. *Of the number of vehicles stated in Q6, how many are;*

□ *Light Goods Vehicles _____*

□ *HGVs _____*

Question 8 should be asked subject to the responses received for Q7.

Q8 Only for Light Goods Vehicles:

Q8a. How many of your Light Goods Vehicles stated in Q7 are:

Petrol ………………… vehicles

Diesel ………………… vehicles

Q8b. Of these vehicles, how many are not compliant with:

Euro 4 (Petrol) registered …………………
before 1ˢᵗ January 2006 vehicles

Euro 6 (Diesel) registered …………………
before 1ˢᵗ September 2015 vehicles

If the response in Q1 is Light Goods Vehicles only and the response to Q8b is zero, then: the remainder of this questionnaire relates to non-compliant vehicles. Thank you for your time.

Question 9 should be asked subject to the responses received for Q7.

Q9 Only for Heavy Goods Vehicles

Q9a. How many of your HGVs stated in Q7 are:

Rigid ………………… vehicles

Articulated ………………… vehicles

Q9b. Of these vehicles, how many are non-compliant with Euro 6? (registered before 1ˢᵗ September 2015)

_____

If the response in Q1 is HGV only and the response in Q9b is zero, then: the remainder of this questionnaire is related to questions to non-compliant vehicles. Thank you for your time.

If the response in Q1 is both Light Goods Vehicles and HGV and the responses in Q8b and Q9b are zero then, the remainder of this questionnaire is related to questions for non-compliant vehicles. Thank you for your time.

Q10. Only to be used if the response in Q1 is 'Light Goods Vehicles Only' or 'Light Goods Vehicles and HGVs'.

Q10a. When do you expect to replace the non-compliant Light Goods Vehicles in your fleet? If replacement is to be phased over time, please provide all appropriate years.

□ By 2020

□ By 2021

□ By 2022

□ By 2023

□ After 2023

□ I have no specific plans at this time

Q10b*. How old do you expect your replacement Light Goods Vehicles will be?*

□ They will be new vehicles

□ Under 2 years old

□ 2-4 years old

□ Over 4 years old

□ Don't know

Q10c*. What type of fuel do you expect your replacement Light Goods Vehicles will use?*

□ Petrol

□ Diesel

□ Electric/Plug In

□ Hybrid

□ Gas/LPG

□ Other

□ Don't Know

Q11. Only to be used if the response in Q1 is 'HGVs Only' or 'Light Goods Vehicles and HGVs'.

Q11a*. When do you expect to replace the non-compliant HGVs in your fleet? If replacement is to be phased over time, please provide all appropriate years.*

□ By 2020

□ By 2021

□ By 2022

□ *By 2023*

□ *After 2023*

□ *I have no specific plans at this time*

Q11b*. How old do you expect your replacement HGVs will be?*

□ *They will be new vehicles*

□ *Under 2 years old*

□ *2-4 years old*

□ *Over 4 years old*

□ *Don't know*

Q11c*. What type of fuel do you expect your replacement HGVs will use?*

□ *Diesel*

□ *Hybrid*

□ *Gas/LPG*

□ *Electric/Plug In*

□ *Other*

□ *Don't Know*

Part D: Clean Air Zone*:*

First Part of Question 12 to be asked if respondent uses Light Goods Vehicles and Q8b is greater than zero.

Second Part of Question 12 to be asked if respondent uses HGVs and Q9b is greater than zero.

This part of the survey is to understand what you would have done in response to a one-off daily charge being made at the time that your vehicles were operating in the areas described in Q2.

Q12*. If a charge had been in place at the times your vehicles had been operating in these areas, what would have been your response? Please select one answer.*

For Light Goods Vehicles Only

*Clean Air Zone Daily Charge (£6)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £9,000 to avoid charge*

*Clean Air Zone Daily Charge (£9)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £9,000 to avoid charge*

*Clean Air Zone Daily Charge (£12)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £9,000 to avoid charge*

For HGVs Only

*Clean Air Zone Daily Charge (£20)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £45,000 to avoid charge*

*Clean Air Zone Daily Charge (£35)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £45,000 to avoid charge*

*Clean Air Zone Daily Charge (£50)

□ *Made the same journey using current vehicles and paid the charge*

□ *Made the same journey but used compliant vehicles within your current fleet to avoid paying the charge*

□ *Relocated business*

□ *Would not have made this journey at all*

□ *Changed your route to the same destination to avoid the charge*

□ *Upgraded to compliant vehicle at a cost of £45,000 to avoid charge*

Question 13a to be asked if respondent uses Light Goods Vehicle and Q8b is greater than zero.

Q13a. If you had to choose between paying the Clean Air Zone charge or upgrading your vehicle, which option would you choose in the following 9 scenarios?

Please select one answer for each scenario.

***£6 charge or £9,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £9,000 and pay no charge when driving through the zone*

***£6 charge or £12,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £12,000 and pay no charge when driving through the zone*

***£6 charge or £15,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £6*

☐ *Change to a compliant vehicle for an upgrade cost of £15,000 and pay no charge when driving through the zone*

***£9 charge or £9,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £9,000 and pay no charge when driving through the zone*

***£9 charge or £12,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £12,000 and pay no charge when driving through the zone*

***£9 charge or £15,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £9*

☐ *Change to a compliant vehicle for an upgrade cost of £15,000 and pay no charge when driving through the zone*

***£12 charge or £9,000 vehicle upgrade**

☐ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £9,000 and pay no charge when driving through the zone*

*£12 charge or £12,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £12,000 and pay no charge when driving through the zone*

*£12 charge or £15,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £12*

□ *Change to a compliant vehicle for an upgrade cost of £15,000 and pay no charge when driving through the zone*

Question 13b to be asked if respondent uses HGV and response to Q9b is greater than zero.

Q13b. Of the HGVs mentioned in Q9b, are the vehicles mostly:

□ *Rigid-axle*

□ *Articulated-axle (tractor unit)*

*Interviewer directive: If **Rigid-axle, go to Q13c**, if **Articulated-axle (tractor unit) go to Q13d***

Q13c. If you had to choose between paying the Clean Air Zone or upgrading your vehicle, which option would you choose in the following 9 scenarios?

Please select one answer for each scenario.

*£20 charge or £45,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £45,000 and pay no charge when driving through the zone*

*£20 charge or £55,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £55,000 and pay no charge when driving through the zone*

*£20 charge or £65,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £65,000 and pay no charge when driving through the zone*

*£35 charge or £45,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £35*

☐ *Change to a compliant vehicle for an upgrade cost of £45,000 and pay no charge when driving through the zone*

*£35 charge or £55,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £35*

☐ *Change to a compliant vehicle for an upgrade cost of £55,000 and pay no charge when driving through the zone*

*£35 charge or £65,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £35*

☐ *Change to a compliant vehicle for an upgrade cost of £65,000 and pay no charge when driving through the zone*

*£50 charge or £45,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £50*

☐ *Change to a compliant vehicle for an upgrade cost of £45,000 and pay no charge when driving through the zone*

*£50 charge or £55,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £50*

☐ *Change to a compliant vehicle for an upgrade cost of £55,000 and pay no charge when driving through the zone*

*£50 charge or £65,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £50*

☐ *Change to a compliant vehicle for an upgrade cost of £65,000 and pay no charge when driving through the zone*

Q13d. If you had to choose between paying the Clean Air Zone or upgrading your vehicle, which option would you choose in the following 9 scenarios?

Please select one answer for each scenario.

*£20 charge or £75,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £75,000 and pay no charge when driving through the zone*

*£20 charge or £85,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £85,000 and pay no charge when driving through the zone*

*£20 charge or £95,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £20*

□ *Change to a compliant vehicle for an upgrade cost of £95,000 and pay no charge when driving through the zone*

*£35 charge or £75,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £35*

□ *Change to a compliant vehicle for an upgrade cost of £75,000 and pay no charge when driving through the zone*

*£35 charge or £85,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £35*

□ *Change to a compliant vehicle for an upgrade cost of £85,000 and pay no charge when driving through the zone*

*£35 charge or £95,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £35*

□ *Change to a compliant vehicle for an upgrade cost of £95,000 and pay no charge when driving through the zone*

*£50 charge or £75,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £50*

□ *Change to a compliant vehicle for an upgrade cost of £75,000 and pay no charge when driving through the zone*

*£50 charge or £85,000 vehicle upgrade

□ *Use current vehicle and pay a daily charge of £50*

□ *Change to a compliant vehicle for an upgrade cost of £85,000 and pay no charge when driving through the zone*

*£50 charge or £95,000 vehicle upgrade

☐ *Use current vehicle and pay a daily charge of £50*

☐ *Change to a compliant vehicle for an upgrade cost of £95,000 and pay no charge when driving through the zone*

<u>*Q14. How would a Clean Air Zone affect the future plans for your business, for example review expansion plans, review staff numbers or promote environmental credentials?*</u>

_____

_____

_____

<u>*Q15. Do you have any further comments about this topic or the survey itself?*</u>

☐ *Yes* _____

_____

_____

☐ *No comments*

<u>*Q16. And finally, Watermelon or the local authorities' consultants (Sweco) may wish to contact you again with any follow up questions relating to this research. Would you be willing to be re-contacted? Any re-contact would take place within the next 2 months*</u>

☐ *Yes*

☐ *No*

By what e-mail address or telephone number would you like to be contacted?

_____

This survey has been completed successfully. Thank you once again for your time and effort.