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### Original Citation

Nikitas, Alexandros, Avineri, Erel and Parkhurst, Graham (2011) Older People's Attitudes to Road Charging: Are They Distinctive and What are the Implications for Policy? *Journal of Transportation Planning and Technology*, 34 (1). pp. 87-108. ISSN 0308-1060

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# Older People's Attitudes to Road Charging: Are They Distinctive and What Are the Implications for Policy?

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*(Received; final version received)*

In an ageing society older people have a growing influence on politics in general, and potentially on the acceptability of road charging in particular. They face specific types of risk of transport-related social exclusion which may influence their views on charging, although there is also evidence to suggest that older people favour, more than any other age group, what is positively valued by society – a process known as ‘pro-social value orientation’. Family and friends may also affect older people’s considerations about their intentions and choices - thus the importance of studying the influence of ‘social norms’ on older people’s attitudes to road charging. The paper develops our understanding of these issues, based on the findings of a quantitative survey conducted in Bristol, UK. Evidence indicates that the attitudes of older people to road charging do differ from those of younger people and that pro-social value orientations and social norms do contribute to the formation of these attitudes. It is concluded that the presence of pro-social attitude orientations assists in explaining why people assumed to be ‘natural supporters’ of charging schemes may hold negative attitudes, which underlines to scheme promoters the importance of understanding and overcoming strongly-held, psychologically complex objections.

**Keywords:** road charging; older people; attitudes; pro-social value orientations; social norms

## **Introduction: the Importance of the Age Dimension to Road Charging Policy**

The concept of road charging covers a range of policy measures which involve payment for road access in direct relation to usage criteria, rather than paying a fixed network access fee unrelated to use, or paying proxy charges such as road fuel duty. Toll roads to raise revenue operate without controversy in many countries but schemes intended to manage congested road conditions tend to suffer from low public acceptability (Fujii et al. 2004, Ison and Rye 2005) as a result of the public resistance to ‘taxing’ a service that used to be offered for free (King et al. 2007). An important reason behind this controversy is that this latter type of charging scheme generally has the intention of reducing the number of private vehicles trips, rather than raising funds to pay for more facilities for private motor vehicles. This gives rise to arguments about which trips are deterred and hence the fairness of charging and its likely impacts on exclusion from mobility opportunities (Raje 2003, Raje 2004). It can hence be hypothesised that according to the extent to which schemes are identified as having net exclusion-reduction benefits and are seen as overall ‘pro-social’ the more likely it is that they will be sustained through the implementation process.

The rapidly ageing worldwide population provides an important dimension to this discussion: in 2000 approximately 600 million people were aged 60 and over and by 2050, that number is expected to be more than three times higher - close to 2

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billion (World Health Organization 2009), whereas the midrange population forecast is for around 50% growth in the same period (United Nations 2004). Older people are more interested in local democracy (Jordan and Avineri forthcoming) and are more likely to vote than younger people (Goerres 2007), so their views can be particularly influential on social policy in general, and hence, it is argued here, on the acceptability of road charging.

Hereafter the paper provides, in the following section, a summary of the findings from a literature review and secondary data analysis undertaken into the age-specific differences on public attitudes to road charging. This is followed by the presentation and analysis of the methodology and results of a questionnaire survey. The analysis examines the attitudes of younger and older people to road charging and the extent to which those attitudes are influenced by pro-sociality for the different age groups. Specific hypotheses are examined which state that, at the aggregate level, older people hold attitudes to road charging that are significantly different from those of younger people and that those attitudes show greater influence by pro-sociality than younger people's attitudes. Finally, the paper concludes by considering the implications of pro-sociality for promoters of road charging schemes.

### **Theory and Evidence to Date on Age-Related Attitudes to Road Charging**

Older people are at greater risk of transport-related social exclusion than other age groups (Gaffron et al. 2001). An insufficient transport system that cannot be easily accessed can create barriers in the fulfilment of older people's physical needs. Furthermore, transport provides an essential link to friends, family and the wider community - a vital lifeline to maintaining independence (DfT 2001a). Research has shown that a lack of mobility can prevent older people from participating in social activities and lead to low morale, depression and loneliness. It can also impact upon older people's carers, social services and health agencies (DfT 2001a). Furthermore, older people are the individuals most likely to have complex mobility needs (DfT 2001a, Alsnih and Hensher 2003), physical vulnerability (DfT 2001b, Musselwhite 2006), lower incomes (DfT 2001a, 2001b), cognitive limitations in their abilities to process complicated information (Kovalchick et al. 2004), and less effective linkage with technology (DfT 2001a). Older people are also prone to experience a progressive loss of feeling independent with age (Orimo et al. 2006). Considering car access, older people can be more cost-aware, and more likely to reduce car ownership or use than younger people (Dominy and Kempson 2006), resulting in them relying more on others for lifts (DfT 2001a, Raje 2003). These tendencies are only partly compensated for by older people enjoying greater time flexibility (ONS 2005) and, in many countries, benefitting from discounted public transport fares.

In this context, the implementation of a transport demand management measure which has a significant influence on the relative costs of using parts of the road network could be variously perceived by older people as having a positive or negative influence on their social inclusion and the accessibility of their significant others or other members of society in general. The stance of an older person is likely to depend on factors including the extent to which he or she is reliant on private car travel (either directly or by carers and relatives) and, particularly for those who mainly use modes other than car, where he or she perceives public transport or environmental conditions might benefit if congestion is reduced. In addition the specific nature of the scheme (and the extent to which the detail of the scheme has been accurately assimilated) can be assumed to be influential.

As introduced above, the social dimension is important in the process of shaping attitudes to road charging. Hence the present paper explores the connection between attitude development and two important elements of this social parameter: social norms and the pro-social value orientations. The focus is on attitudes from the affective and cognitive perspective; the concept of the attitude is employed as affecting and reflecting public acceptability. Attitudes as factors shaping intentional behaviours are beyond the scope of the paper.

It has been argued that older people favour, more than any other age group (Midlarsky 1991, Rushton 2004), what is positively valued for society, and ascribe more importance to collective consequences; a process described as ‘pro-social value orientation’. Hence in a transport context, older people may be more likely to express positive or negative attitudes to the acceptance of road charging, depending on whether they believe it would be good or bad for others or for society in general. Family, friends, or more generally their ‘significant others’ may also have a particular influence on older people’s evaluations about their intentions and choices; thus the importance of studying the influence of ‘social norms’ on older people’s attitudes to road charging. Social norms are standards of behaviour that are based on widely shared beliefs about how individual group members ought to behave in a given situation (Horne 2001). Evidence suggests attitudes can reflect social influence (Oliver and Bearden 1985), and hence it is possible that attitudes to charging are shaped by social norms, and perhaps more specifically, are influenced by what an individual’s significant others believe about road charging.

Even though older people have recently been the focus of much attention in social policy in general, no research effort has focused exclusively, or even significantly, on the socio-psychological links between older age and perceptions, attitudes, or voting behaviour in relation to road charging policies. The limited findings from UK national road charging attitude surveys and studies regarding specific local charging applications provide no clear answer as to whether older people’s attitudes to road charging differ significantly from those of younger people. Indeed, although no authoritative evidence exists, the findings relating to the London Congestion Charge and its Western Extension (Accent 2005) suggested that older people are more positively oriented to road charging than younger individuals, whilst other research studies indicated exactly the opposite (DfT 2004, Scottish Executive 2006).

The authors sought to clarify this conflicting evidence through secondary analysis of three attitudinal datasets: two relating to the scheme for Edinburgh which was rejected at referendum (Gaunt et al. 2007, Scottish Executive 2006) and one collected nationally and not related to a specific proposal (DfT 2006). Tentative findings from these analyses indicated that attitudes to road charging did vary with age: older respondents, and particularly those aged 75 and over were most likely to be uncertain, neutrally oriented or answer ‘don’t know’ to questions directly or indirectly regarding road charging. There was also some evidence that people aged 65 and over were the ones most likely to oppose the principle of road charging, although this was somewhat in conflict with the finding that older people overall were least likely to believe that road charging would be unfair. In the national survey, older people were most positive towards scenarios that indicated charging would be taxation neutral or the revenues would be hypothecated.

These findings provide some support for the view that older people might have a pro-social attitudinal orientation, but only primary research, considering pro-sociality directly, could test this. Similarly, secondary analysis provided some

evidence that social norms concerning road charging vary with age but the analysis was constrained by the relevance of the data not having been collected specifically for this type of analysis. Lastly, the need was identified for research conducted outside of the specific context of a ‘megacity’ (London), which might limit generalisation. Similarly, the researchers wished to work with data not collected immediately after the rejection of a scheme (as was the case in respect of the Edinburgh datasets). Social processes occurring in the context of rejection can be assumed to introduce biases by influencing the very social norm phenomena the current research addresses: a scheme that has been rejected in a referendum is a scheme that was considered not good enough by the majority of the people who voted (thus social norms are considered to be negative) and it is very unlikely to be re-introduced in the foreseeable future. These factors could have an impact on the post-referendum attitudes of people to it, since they could be viewing the scheme not as a realistic future policy measure, potentially helpful for society, but instead, branded as unsuitable.

### **Research Methodology**

A primarily quantitative survey examining age-specific differences in public attitudes, social norms and people’s potential to be influenced by their pro-social value orientations was undertaken to explore the effect of age on attitude and norm orientations to road charging.

Varying definitions of the beginning of old age are used in research involving older people. Pensionable age (in developed countries typically 65 for men, often younger for women) has been frequently used due to the implied change of socioeconomic status with retirement, but in many countries pensionable age is now being variously postponed, equalised and becoming more flexible. The UN, in recognition of there being no internationally-recognised standard, uses the concept of ‘60+’ years to define a consensus around a lower limit to the range (World Health Organization 2010). Given that the location of the data collection for the present study was in the UK, the existence of age 60 as the eligibility criterion for concessionary bus travel (DfT 2008) was seen as important, as the availability of free bus travel has reduced reliance on the private car for some older citizens, even in the absence of road charging. In addition, in the context of road charging, the provision of free bus travel would tend to reduce the risk of social exclusion on travel grounds. Such behavioural responses can be expected to have age-specific effects on survey responses and consequently age 60 was chosen as the age threshold for the current study.

The study area chosen for data collection was the local authority area of Bristol City, which has around 435,000 residents (19% of them being aged 60 and over). There were two main criteria that led to the selection of Bristol. First, the case study had to be conducted in a place with a socio-demographic profile (age structure and car ownership characteristics for example) not dissimilar with that of many British cities, in order to maximise the extent to which the results of this work can be generalised to a wider context. The other major criterion for the choice of the case study area was that it had to be a city with a certain level of awareness about road user charging. The formation of public attitudes and beliefs (and especially social norms) towards a stimulus object (i.e. road charging) relies on the public awareness of the stimulus object. Bristol suited both these research criteria, as the local authorities in the Bristol area have undertaken technical investigative and planning work into two different charging schemes in the last two decades, but for strategic political reasons neither of these schemes has progressed beyond initial, informal public consultation. The concept of charging has remained part of the local transport debate, but there has not

been an election mandate sought specifically in connection with charging, as in London, or a referendum held, as in Edinburgh and Manchester.

A postal questionnaire was administered containing 21 main questions organised in six transport-related parts referring to: the respondents' daily travel experiences; their views on congestion and road charging; their opinions about other people's attitudes about road charging (social norms); the presence of pro-social values in the road charging context; the potential influence of social norms on their attitudes; and the roles that Government and the media play in the way society views road charging. A final section contained questions regarding the demographic characteristics of the respondents. Five-point Likert-scales were used to record responses varying from strongly agree to strongly disagree.

Pre-notification (Maheux et al. 1989, Shiono and Klebanoff 1991) and financial incentives (Gilbart and Kreiger 1998, Halpern et al. 2002) have been reported to produce consistent improvements in response rates, and therefore both were applied in this study. The incentive was an entry into a prize-draw, whilst the preface to the questionnaire 'pre-notified' the research project, offering a definition of the term 'road charging' as "a measure aiming to reduce traffic jams by charging car use on busy roads usually during peak traffic hours". The pre-notification made it clear that the survey would be for academic research, independent of any local authority consultation. There was no mention of Bristol as a specific local candidate for charging such that would encourage recipients to take that perspective (although some no doubt responded with Bristol in mind). In other words the attitude object set for the study was 'urban peak road charging' in general and not a specific local application, although some respondents would have retained and drawn upon a level of awareness of past outline proposals and debates in Bristol and perhaps other locations.

Following the response rates reported by similar road charging surveys (e.g. Gaunt et al, 2007: 25.8%), the survey was distributed to approximately 2,000 addresses in order to achieve the 400 minimum sample size required to enable the intended statistical analyses. The addresses were randomly chosen from a de-personalised local authority list. The needs of the analysis also required that a minimum number of responses were received from older people in order for this group to be sufficiently large for meaningful and statistically significant comparison with people of younger ages. For this reason a further 275 questionnaires were posted to members of Bristol's Older People's Forum. This sampling choice enhanced significantly the response rate and the number of older participants. The geographical coverage of the sampling frame was city-wide. There were 491 useable responses: 184 from people aged 60 and over. The sample was split into three main age groups for the purposes of analysis: young younger people (16 to 34), old younger people (35 to 59) and older people (60 and over). Figure 1 presents a frequency distribution of the size of each group. The responses were analysed primarily to assess the influence of age on the way respondents viewed road charging. As the variables were generally categorical, Pearson's chi square tests were applied.

Figure 1. "Frequency distribution of the three age groups used in analysis"

## Survey Findings

As noted above, as an intention of the sampling strategy, older people (those aged over 60) were over-represented in the sample. The gender split of the sample (48.1%

male, 51.9% female) reflected the Bristol and UK populations (Bristol 48.8:51.2, UK 49.2:50.8 in the 2001 Census). There were no statistically significant gender differences between the three age groups ( $\chi^2 = 4.589$ ;  $df = 2$ ;  $p = 0.101$ ). Three-quarters of the older people lived alone or as part of a couple, while more than half of the younger people lived in larger households. Older people were more likely to report being on a low income than younger people – especially those individuals aged 75 and over. Only 4.1% of the older participants indicated that they lived in households with incomes over £50,000 per annum, while this share for younger respondents was considerably higher at 32.3%.

Figure 2 illustrates the geographical distribution of the respondents within the city of Bristol, which included all urban areas and broadly reflected population density. A spatial analysis of attitudes towards charging enabled some measure of the extent to which the most high-profile Bristol charging scheme – a city centre cordon scheme considered at the beginning of the 2000s – had influenced responses, as those living nearer the city centre would have been relative beneficiaries given the wider availability of alternatives to the car. However, a two-way analysis based on the categorisation of postcodes as ‘close to the city centre’ and ‘away from the city centre’ revealed no statistically significant association ( $\chi^2 = 7.678$ ;  $df = 4$ ;  $p = 0.104$ ).

Figure 2. “Geographical distribution of the respondents”

In order to build up an understanding of the respondents’ daily travel experiences and options, data were collected about levels of driving licence holding, car availability, frequency of using different transport modes and frequency of facing traffic congestion. Table I provides a synopsis of the results. Older people were least likely to be daily car drivers or to experience congestion and most likely to be daily bus users and to report ‘never walking’. Overall, the young younger group’s reported travel experiences were closer to those of the oldest group than to those of the old younger group. These differences are considered further below in statistical modelling.

Table I. Age-specific reported travel experience

To measure attitudes to the key principle of charging, two of the questionnaire items asked respondents whether they agreed that people using busy roads should pay more and whether people driving at busy times should pay more. Related items referred to how important it was for the authorities to tackle congestion and whether the respondent planned routes to avoid congestion. An age-specific analysis of these results is shown in Table II.

Table II. Support for the need for reducing congestion

These results indicate that people aged 60 and over were more likely than the other two age groups to identify the need for reducing road congestion ( $\chi^2 = 15.132$ ;  $df = 8$ ;  $p < 0.05$ ) and more likely as individuals to avoid congestion themselves ( $\chi^2 = 15.974$ ;  $df = 8$ ;  $p < 0.05$ ). The relevance of these findings lies in the fact that people are more likely to accept something as a problem according to the extent that they are aware of the circumstances (Schade and Schag 2000, Steg 2003). Older people were also less negative towards the idea that motorists should pay more to travel in

congested places ( $\chi^2 = 15.326$ ;  $df = 8$ ;  $p < 0.05$ ) and times ( $\chi^2 = 14.043$ ;  $df = 8$ ;  $p < 0.05$ ).

However, these age difference proved somewhat in contrast to the finding that people aged 60 and over were the group most negative in their perceptions of the effectiveness of road charging in reducing congestion ( $\chi^2 = 15.567$ ;  $df = 8$ ;  $p < 0.05$ ) and were least likely to accept that it was a “good idea” ( $\chi^2 = 25.104$ ;  $df = 8$ ;  $p < 0.01$ ) (see Table III). They were also least positive towards accepting road charging in the context of “better public transport, walking and cycling facilities” ( $\chi^2 = 19.034$ ;  $df = 8$ ;  $p < 0.05$ ). There was little difference between the groups’ perception of fairness ( $\chi^2 = 14.145$ ;  $df = 8$ ;  $p < 0.05$ ), whereas in the literature review it had been suggested that older people were more likely than younger people to regard charging as fair. This issue is considered further in the Discussion and Conclusions.

Table III. Support for road charging

Notably, these views do not arise from particular concerns about the effects of charging on the respondents, as older people were more likely than the other two age groups to self-report that they would not be personally affected by charging in monetary or travel time terms if it were to be introduced. These differences were statistically significant ( $\chi^2 = 32.669$ ;  $df = 8$ ;  $p < 0.01$  for money;  $\chi^2 = 14.976$ ;  $df = 8$ ;  $p < 0.05$  for time). Table IV provides a synopsis of responses to questions about whether road charging would make respondents spend more money on travel and less time in traffic.

Table IV. Potential impact of charging on respondents’ travel costs and travel times

Closer inspection of the Likert scale responses of the three age groups for the question as to whether road charging was a “good idea” (Figure 3) showed that the older respondents expressed statistically significantly more extreme views, being the most likely of the three groups both to strongly agree and strongly disagree. An explanation for the positive part of this heterogeneity is that older people were more likely to believe than younger people that they would not be affected by road charging; both in terms of travel costs and travel time, and as noted above, were less likely to be drivers, more likely to be bus passengers, and least likely to encounter congestion. The focus of strong negative views cannot be explained from the survey data, but may reflect a particular lack of trust amongst this age group that the principles would be effective and beneficial in practice. The issue of trust is considered further in the final section of the paper.

Figure 3. “Road charging is a good idea”

Having considered the respondents’ own attitudes to the acceptability of road charging, the survey turned to examine the possible influence of social interactions. Options were examined in piloting to identify the most efficient and least cognitively challenging method to capture information about social norms towards road charging, as revealed by respondents’ beliefs about what the attitudes of “people who are most important to me” would be towards the measure. Hence, respondents were asked to reflect on who the ‘most important people’ would be for them and were then asked to rate how far they believed five statements captured the attitudes of these people towards charging.

Of the three age groups, the older people disagreed most strongly that those people important to them believed charging would “reduce traffic jams”, be “fair” and was a “good idea” (Table V). These were all statistically significant differences ( $\chi^2 = 14.407$ ;  $df = 8$ ;  $p < 0.05$  for effectiveness;  $\chi^2 = 14.915$ ;  $df = 8$ ;  $p < 0.05$  for fairness;  $\chi^2 = 14.163$ ;  $df = 8$ ;  $p < 0.05$  for goodness). Figure 4 identifies for the last of these issues that this is due to the much higher incidence of selecting the ‘strongly disagree’ option. Similarly, the oldest group was more likely than the younger groups to believe that their significant others would not accept road charging even if it either followed an improvement in alternative modes ( $\chi^2 = 14.391$ ;  $df = 8$ ;  $p < 0.05$ ) or would result in an improvement in alternative modes ( $\chi^2 = 22.064$ ;  $df = 8$ ;  $p < 0.01$ ).

Table V. Beliefs about significant others’ attitudes to charging

Figure 4. “Most people who are important to me believe that road charging is a good idea”

Given these findings, it was notable that people aged 60 and over were also the group most likely to believe that their significant others would *not* be affected either positively or negatively by road charging in terms of travel costs or journey time (see Table VI). Both age-specific results were statistically significant ( $\chi^2 = 14.283$ ;  $df = 8$ ;  $p < 0.01$  for costs;  $\chi^2 = 13.887$ ;  $df = 8$ ;  $p < 0.05$  for time). It should be noted, however, that reaching judgements about the effects of a hypothetical transport scheme on significant others requires a further level of conceptualisation than assessing their likely views on such a scheme, and therefore the linkage between these apparently similar variables may be weak.

Table VI. Potential impact of road charging on respondents’ significant others

Two questions sought to examine directly the extent to which respondents recognised that the views of others could influence their own acceptance of road charging (Table VII). When respondents were specifically asked whether the people who were important to them could influence their views on road charging, the mean age group scores suggested overall slight disagreement or a neutral view. Notably, this was the only item in the survey for which the responses did not show an age-related gradient: people aged 16 to 34 were close to neutral as to whether they could be influenced, whilst the older age groups were less accepting. However this age-specific result was not statistically significant ( $\chi^2 = 5.464$ ;  $df = 8$ ;  $p = 0.707$ ).

Table VII. Acceptance of the influence of others

The second of these influence questions took a more subtle approach, in asking whether participants felt they would be influenced if their significant others felt charging was “a good idea”. Although the mean scores indicate that respondents tended to reject this possibility, the oldest age group was least negative. Figure 5 clarifies that this statistically significant finding ( $\chi^2 = 17.852$ ;  $df = 8$ ;  $p < 0.05$ ), mainly resulted from the difference in the number of respondents ‘disagreeing’ with the statement.

Figure 5. “I would accept road charging if my significant others agreed that it was a good idea”

Two other questions examined whether high profile public agencies - the media and government - were recognised as influential (Table VIII). Although the results indicated that the respondents did accept that they had some influence (more so the media than government), only small, statistically insignificant, age-differences were identified ( $\chi^2 = 2.546$ ;  $df = 8$ ;  $p = 0.960$  for media;  $\chi^2 = 4.628$ ;  $df = 8$ ;  $p < 0.790$  for government).

Table VIII. Acceptance of government and media influence

Moving beyond the acceptance by respondents that they could be influenced, the survey sought to establish whether pro-sociality actually resulted in age-related differences in the acceptability of pricing. Four questions on pro-social themes (generativity, hypothecation, fairness of travel conditions and the preservation of the environment) were posed to respondents, examining whether they would accept charging if the measure would “help future generations”, “improve local public transport, walking, and cycling facilities”, “make most people’s journeys quicker” and “help reducing environmental damage”. This method of examining pro-social value orientations relies on these constructs being constituents of attitudes referring to public acceptability and may be less rich than broader attempts to capture the pro-social mechanism. Messick and McClintock (1968) used a series of decomposed games to examine the framing of pro-social value orientations. These games involve participants in making choices about combinations of outcomes for oneself and for another person (“the other”). According to Van Lange and Kuhlman (1994) and Van Lange et al. (1997) “the other” is someone whom participants do not know and whom they would never knowingly meet in the future: something allowing the researchers to examine participants’ general tendencies towards others. Such techniques were explored during piloting but were deemed unsuitable for this research project due to the significant cognitive challenge they presented to respondents in self-completing the questionnaire.

Inspection of Table IX reveals that older people’s mean attributions towards the four pro-social statements were consistently lower than those of the other two age groups, indicating that older people were less likely to be accepting of road charging for pro-social reasons. These results were statistically significant ( $\chi^2 = 22.567$ ;  $df = 8$ ;  $p < 0.01$  for “help future generations”;  $\chi^2 = 13.756$ ;  $df = 8$ ;  $p < 0.05$  for “improve local public transport, walking, and cycling facilities”;  $\chi^2 = 16.004$ ;  $df = 8$ ;  $p < 0.05$  for “make most people’s journeys quicker”;  $\chi^2 = 14.740$ ;  $df = 8$ ;  $p < 0.05$  for “help reducing environmental damage”). Figure 6 provides an example of the distributions obtained. (The responses to the other three pro-social statements produced similar results.)

Table IX. Respondents’ acceptance of road charging for pro-social reasons

Figure 6. “I would accept road charging if this would help future generations”

Further to the analysis of the survey elements, a model (Table X) was developed to analyse and predict attitudes to road charging. The attitude towards whether road charging is a “good idea” is of particular importance given that this is the most direct indicator of whether respondents at the time of the survey were broadly accepting or rejecting of the concept and so this was central to the model. Ordinal logistic

regression was employed since it is a well-established and appropriate generic model for the empirical analysis of any ordered, categorical dependent variable (in this case the attitude about the goodness of road charging) and when potential predictor variables are factors (such as pro-social values) or covariates (such as age). The model uses as explanatory variables: age (in the form of age groups); car usage frequency; a social norm-themed variable (whether significant others were believed to think charging was a “good idea”) and a pro-social value orientation-themed variable (“charging would result in most journeys being quicker”). For completeness, all themed variables (and not just the significant ones) are presented.

Table X. Regression analysis for the perceived ‘goodness’ of road charging

Social norms were represented in the model by the variable concerning significant others’ beliefs about road charging being a good idea. This was selected since it relates most directly to the model’s dependent variable about respondents’ own attitudes to charging being a good idea. The model output identifies social norms as having a strong influence on people’s attitudes towards road charging as a good idea since the corresponding estimate values are very high. Considering that all the other variables of the model are held constant, support is identified for the view that the more likely people are to believe that their significant others think that road charging is a good idea, the more likely they will be to think themselves that road charging is a good idea.

The pro-social value orientation-themed variable that was used in the model referred to respondents’ acceptance of road charging under the condition that it would “make most people’s journeys quicker”. As with the social norm variable, a very noticeable trend with quite high estimate coefficients was recorded for the different variable choices of the pro-social value orientation attribute. According to this, the more individuals are negative towards this pro-social statement, the less likely they are to think that road charging would be a good idea, when the other variables are kept constant.

Using a different pro-social value orientation themed variable (i.e., one of the three alternatives linked to the environment, generativity or hypothecation), very similar models to that reported in Table X resulted. However, using a combination of two, three or four explanatory variables reflecting pro-social themes simultaneously did not produce statistically significant estimate results (due to the high correlation between them).

The impact of the social norms and pro-social value orientations on people’s attitudes regarding the goodness of road charging is not a feature that was observed in these models only. Social norms and pro-social value orientations constituted the most important set of explanatory variables, with the most identifiable impact on the dependent variable (always statistically significant) in a wide range of regression models combining different independent variables.

The variable choices regarding frequency of car usage were all statistically significant. The results suggest (with all other variables in the models held constant) that the people who use a car frequently are the ones least likely to agree that road charging is a good idea. However, people that never use a car are less likely to agree that road charging could be a good idea than people who use a car once a week, at least once a month, or rarely. Hence, the relationship is more complex than the one observed for social norms and pro-social value orientations. Furthermore, the estimate

coefficients for the car usage frequency variable are lower than the estimates corresponding to the two social context variables.

The variable choices reflecting the frequency in which people face traffic congestion were not statistically significant, so they were not important in the prediction model. With the exception of age, other socio-demographic variables (such as gender, employment stage, income, household type) were also not found to be statistically significant in predicting attitudes to road charging in different regression models that were used during the preliminary analysis stage.

Finally, age, the factor on which this research focuses, was found to be associated with attitudes to road charging. The results suggest that the group of people aged 60 and over is less likely to perceive that road charging is a good idea than younger people aged 35 to 59, when other variables are held constant. This is a result which confirms the statistical analyses that were presented earlier.

## **Discussion and Conclusions**

The focus of this paper was the argument that the rapidly ageing populations in many countries could have important implications for the acceptability of policies such as road user charging, as older citizens are more likely to be socially excluded and are more likely to be politically active. The research did not seek to assess the validity of attitudes and attributions for or against road charging held by different individuals or age groups, but instead to highlight the importance of age-specific attitudes to the acceptance of policy, and hence its 'deliverability'. The study involved data collection in a medium-size city in which there has been a long-running debate about road charging but in which there has not been an election or referendum to determine a proposal. The results are therefore most generalisable to urban populations which have a good level of general awareness of road charging but which have not been polarised into clear groups of supporters and opponents for a specific scheme.

A first conclusion from the research is that the hypothesis which stated attitudes to road charging do vary with age was supported. Older people were less likely to identify road charging as potentially effective, fair and overall a 'good idea' compared to two younger age groups.

As is generally the case in respect of initial exploratory studies, further research would be useful to clarify the way in which age is important as a variable. Detailed spatial analysis of the dataset was beyond the scope of the present study, although it was observed that that older people are more likely to live away from the city centre of Bristol than younger people, reflecting factors such as the distribution of different housing types. In the case of the notional road charging scheme involving a city centre cordon or area charge then distance of residence from the centre, age and attitudes to road charging could be correlated. Such interactions could probably only be disaggregated, however, in the context of analysis in respect of a specific scheme and considering a wider range of transport and housing variables.

A further caveat in respect of the overall conclusion is that, for reasons of sample size, all people over 60 have been considered in a single group, whereas in practice 'old age' is a highly diverse experience, which may for some individuals last for four decades of life. And aside from age, older people as a group are characterised by the same diversity of ethnicity, sexual orientation, lifestyles, beliefs and attitudes in the same way that younger age groups are (Gilleard and Higgs 2005). Further research might examine age differences amongst older citizens as well as other socially-linked differences in attitudes to road charging.

The present study also tested the hypothesis that older people were more likely to be influenced by social norms and to be pro-social in their attributions. A second conclusion is that support was found for this hypothesis, as beliefs about others' attributions towards charging as a good idea were a more important criterion for older people accepting road charging than they were for younger people. While the data should not be interpreted mechanistically as confirming that social norms are more influential on the attitudes of older people compared with younger people, they do suggest that older people are more open to forming opinions which reflect – perhaps quite consciously - the interests of others. The greater preparedness of older people to consider others' needs may variously reflect their stage of life, social status, or being senior members of multi-generational families.

Multivariate analysis showed that social norms and pro-social value orientations around road charging appear to be the two best explanatory variables of people's attitudes regarding the potential 'goodness' of road charging.

However, in the specific case of road charging, this greater pro-sociality was not reflected in support for the measure: people aged 60 and over comprise the group of individuals least likely to accept road charging were it to be associated with four pro-social themed outcomes relating to future generations, alternatives to the car, congestion, and the environment. These findings were in contradiction to some of the literature (DfT 2004, Scottish Executive 2006) which suggested older people would be relatively positive if charging were linked to hypothecation. A possible explanation is that individuals aged 60 and over might have relatively weak trust that road charging would in practice be implemented in such a way as to deliver worthwhile societal benefits, and so there is no perceived substance behind the policy to justify pro-social attributions. While older people may be more pro-social, other evidence does indicate they are also less likely than younger people to trust governments and their practices (Pew Research Center for the People and the Press 2010). Notably, trust was identified as an acceptance issue for the Edinburgh scheme defeated at referendum (Scottish Executive 2006). Trust or confidence, therefore, either towards charging itself, or perhaps its promoters, could be a factor which has a stronger influence on overall attitudes than pro-sociality, especially among older people. More research would be required to confirm this hypothesis.

Nonetheless, the third and final conclusion is that policymakers would do well to remember that what they regard as 'pro-social' in broad conceptual terms for a population may be very different from the perceptions of an individual whose pro-sociality may focus on a much smaller group of family, friends, contacts and trusted informants. A related finding was that people aged 60 and over were most likely to attribute negative attitudes to road charging to their significant others. This is interesting given that the younger groups were actually more positive than the older respondents toward pricing: to the extent that older people's significant others are younger, their beliefs about younger people's views are more negative than younger people's views actually are in reality.

The extent to which respondents identified real and significant factors about charging which they believed would negatively impact on them and others was beyond the scope of this paper. As Raje (2004) suggests, there is a clear need for local authorities to identify and consider the possible social exclusion related impacts of proposed charging schemes on different social groups. Indeed, the current findings emphasise the potential for genuine disadvantage arising from policies to influence not only the attitudes of affected individuals, but those around them. By the same token, to the extent that concerns can be identified and addressed, pro-sociality is a

mechanism which may spread the acceptability of policies, and older people may be particularly ready to adjust their attitudes in response to perceptions of wider benefit.

Whilst some further research and validation has been identified as desirable, an implication of the existence of pro-social influences on attitudes for policymakers and practitioners introducing controversial schemes would be that it would be perilous to think in terms of ‘natural’ supporters and opponents, as individuals may well consider the needs of others in formulating their views about a scheme, and hence may not ‘vote’ the way their car ownership status or travel behaviours might suggest they would. Therefore, relying on emphasising broad societal and environmental benefits as part of consultation exercises may have limited impact, even where the arguments are supported by strong evidence, as the key focus of concern of an individual may be his or her immediate friends and family, rather than less proximate problems and concerns. Therefore, information provision and consultation exercises which include explicit dimensions relating to the immediate social network of the consultee may be particularly effective in addressing concerns and therefore increasing the acceptability of road pricing proposals.

### **Acknowledgments**

The authors are grateful for the funding support of the UK Government Department for Transport and Bristol City Council, however the views expressed in the paper should be assumed to be entirely their own.

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## Tables

| Reported travel behaviour                  |                                     |                                     |                                     |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| Travel Experience                          | Age Groups                          |                                     |                                     |
|  | Young Younger People                | Old Younger People                  | Older People                        |
| Licence holding                            | Yes: 83.8%                          | Yes: 89.2%                          | Yes: 84.2%                          |
| Car ownership per household                | 1.05                                | 1.31                                | 1.07                                |
| Frequency of driving                       | Daily: 42.2%<br>Never: 20.9%        | Daily: 56.6%<br>Never: 13.8%        | Daily: 35.3%<br>Never: 23.9%        |
| Frequency of bus usage                     | Daily: 12.6%<br>Never: 24.3%        | Daily: 13.8%<br>Never: 27.6%        | Daily: 31%<br>Never: 21.7%          |
| Frequency of walking                       | Daily: 46.6%<br>Never: 13.6%        | Daily: 36.6%<br>Never: 13.4%        | Daily: 44.3%<br>Never: 24.0%        |
| Frequency of finding oneself in congestion | Daily: 26.1%<br>Never/Rarely: 19.0% | Daily: 31.6%<br>Never/Rarely: 15.8% | Daily: 10.9%<br>Never/Rarely: 33.9% |

Table I. Age-specific reported travel experience

| Mean support for views regarding congestion<br>(when -2 strongly disagree and 2 strongly agree) |  |                                      |   |  |
|---|--|--------------------------------------|---|--|
| Age Groups  | Views regarding congestion                               |                                      |   |  |
|   | It is important for the authorities to tackle congestion | Avoid certain roads at certain times | Driving on busy road should be more expensive than driving on quieter roads | Driving on busy times should be more expensive than driving on quiet times |
| Young Younger People  | 1.33 (SD 0.83)   | 1.17 (SD 0.91)                       | -0.54 (SD 1.12)   | -0.51 (SD 1.15)  |
| Old Younger People  | 1.46 (SD 0.80)   | 1.22 (SD 0.93)                       | -0.47 (SD 1.13)   | -0.37 (SD 1.24)  |
| Older People  | 1.51 (SD 0.76)   | 1.36 (SD 0.69)                       | -0.41 (SD 1.27)   | -0.34 (SD 1.35)  |

Table II. Support for the need for reducing congestion

| Mean support for views regarding directly road charging<br>(when -2 strongly disagree and 2 strongly agree) |   |  |                       |                              |
|---|---|--|-----------------------|------------------------------|
| Age Groups  | Views regarding congestion  |  |                       |                              |
|   | I would accept road charging if this would improve local public transport, walking and cycling facilities | Road charging will be effective in reducing traffic congestion | Road charging is fair | Road charging is a good idea |
| Young Younger People  | 0.68 (SD 1.24)  | -0.13 (SD 1.11)  | -0.51 (SD 1.15)       | -0.37 (SD 1.16)              |
| Old Younger People  | 0.58 (SD 1.38)  | -0.20 (SD 1.21)  | -0.55 (SD 1.21)       | -0.45 (SD 1.29)              |
| Older People  | 0.27 (SD 1.55)  | -0.23 (SD 1.24)  | -0.60 (SD 1.33)       | -0.52 (SD 1.42)              |

Table III. Support for road charging

| Percentages of people perceiving specific outcomes about the impacts that road charging could impose upon them personally in monetary and travel time terms |                 |           |            |            |                 |           |            |            |
|---|-----------------|-----------|------------|------------|-----------------|-----------|------------|------------|
| Age Groups  | Time in Traffic |           |            |            | Money on travel |           |            |            |
|   | Spend more      | No effect | Spend less | Don't know | Spend more      | No effect | Spend less | Don't know |
| Young Younger People  | 53.2%           | 23.4%     | 2.7%       | 20.7%      | 25.2%           | 40.5%     | 5.4%       | 28.8%      |
| Old Younger People  | 49.5%           | 25.0%     | 5.6%       | 19.9%      | 20.5%           | 35.9%     | 13.3%      | 30.3%      |
| Older People  | 33.7%           | 47.3%     | 6.5%       | 13.5%      | 22.8%           | 44.6%     | 10.0%      | 22.6%      |

Table IV. Potential impact of road charging on respondents' travel costs and travel times

| Mean support for views regarding social norms to road charging<br>(when -2 strongly disagree and 2 strongly agree) |  |                                  |  |   |   |
|--|--|----------------------------------|--|---|---|
| Age Groups   | Views regarding social norms to road charging                |                                  |  |   |   |
|  | Most people who are important to me...                       |                                  |  |   |   |
|  | ...believe that road charging will reduce traffic congestion | ...believe road charging is fair | ...would accept road charging if this would improve local public transport, walking and cycling facilities | ... would accept road charging if better local public transport, walking and cycling facilities were in place | ...believe road charging is a good idea |
| Young Younger People   | -0.09 (SD 1.01)  | -0.51 (SD 1.07)                  | 0.41 (SD 1.12)   | 0.48 (SD 1.14)  | -0.43 (SD 1.02)                         |
| Old Younger People   | -0.20(SD 1.12)   | -0.55 (SD 1.04)                  | 0.28 (SD 1.21)   | 0.38 (SD 1.20)  | -0.46 (SD 1.11)                         |
| Older People   | -0.35 (SD 1.16)  | -0.65 (SD 1.14)                  | 0.11 (SD 1.33)   | 0.28 (SD 1.30)  | -0.58 (SD 1.17)                         |

Table V. Beliefs about significant others' attitudes to charging

| Percentages of people perceiving specific outcomes about the impacts that road charging could impose upon their significant others in monetary and travel time terms |                 |           |            |            |                |           |            |            |
|--|-----------------|-----------|------------|------------|----------------|-----------|------------|------------|
| Age Groups   | Time in Traffic |           |            |            | Money on roads |           |            |            |
|  | Spend more      | No effect | Spend less | Don't know | Spend more     | No effect | Spend less | Don't know |
| Young Younger People   | 25.5%           | 34.5%     | 7.3%       | 32.7%      | 62.7%          | 15.5%     | 4.5%       | 17.3%      |
| Old Younger People   | 20.6%           | 34.5%     | 13.4%      | 31.4%      | 53.6%          | 22.7%     | 3.6%       | 20.1%      |
| Older People   | 21.9%           | 38.7%     | 8.2%       | 31.2%      | 44.6%          | 31.5%     | 6.5%       | 17.4%      |

Table VI. Potential impact of road charging on respondents' significant others

| Mean Support for views regarding social norms influence on attitudes to road charging<br>(when -2 strongly disagree and 2 strongly agree) |   |   |
|---|---|---|
| Age Groups  | View regarding social norms influence                                       |   |
|   | The people who are important to me can influence my views on road charging. | I would accept road charging if most people who are important to me agreed that it was a good idea. |
| Young Younger People  | -0.14 (SD 1.09)   | -0.49 (SD 1.01)   |
| Old Younger People  | -0.36 (SD 1.10)   | -0.50 (SD 1.11)   |
| Older People  | -0.31 (SD 1.17)   | -0.37 (SD 1.24)   |

Table VII. Acceptance of the influence of others

| Mean support for views regarding the influence of the Government and media<br>(when -2 strongly disagree and 2 strongly agree) |  |  |
|--|--|--|
| Age Groups   | Views regarding Government and media influence on society    |  |
|  | The media can influence the way society views road charging. | The Government can influence the way society views road charging |
| Young Younger People   | 0.70 (SD 1.11)   | 0.32 (SD 1.16)   |
| Old Younger People   | 0.65 (SD 1.13)   | 0.21 (SD 1.26)   |
| Older People   | 0.74 (SD 1.09)   | 0.31 (SD 1.25)   |

Table VIII. Acceptance of government and media influence

| Mean support for views regarding pro-social value orientations<br>(when -2 strongly disagree and 2 strongly agree) |  |   |   |   |
|--|--|---|---|---|
| Age Groups   | Views regarding congestion               |   |   |   |
|  | I would accept road charging if...       |   |   |   |
|  | ...it this would help future generations | ...it would make most people's journeys quicker | ...if this would improve local public transport, walking and cycling facilities | ...if it would help reducing environmental damage |
| Young Younger People   | 0.57 (SD 0.94)                           | 0.60 (SD 1.05)                                  | 1.04 (SD 1.00)  | 0.89 (SD 1.04)                                    |
| Old Younger People   | 0.45 (SD 1.15)                           | 0.34 (SD 1.12)                                  | 0.67 (SD 1.19)  | 0.69 (SD 1.16)                                    |
| Older People   | 0.25 (SD 1.29)                           | 0.21 (SD 1.24)                                  | 0.58 (SD 1.33)  | 0.50 (SD 1.32)                                    |

Table IX. Respondents' acceptance of road charging for pro-social reasons

| <i>Ordinal Regression Model Regarding Road Charging Goodness</i> |                        |                  |                     |
|--|------------------------|------------------|---------------------|
| <b>Dependent Variable</b>  | <b>Variable Choice</b> | <b>Estimate</b>  | <b>Significance</b> |
| Road charging goodness   | Threshold Value 1      | -7.448           | 0.000               |
|  | Threshold Value 2      | -5.427           | 0.000               |
|  | Threshold Value 3      | -3.498           | 0.000               |
|  | Threshold Value 4      | -1.360           | 0.048               |
| <b>Explanatory Variables</b>                                     |                        |                  |                     |
| Social norm:   | Strongly disagree      | -7.830           | 0.000               |
| Significant others think road charging is good                   | Disagree               | -5.626           | 0.000               |
|  | Neutral                | -4.165           | 0.000               |
|  | Agree                  | -2.173           | 0.002               |
|  | Strongly agree         | Reference Choice |                     |
| Pro-social values:   | Strongly disagree      | -4.640           | 0.000               |
| Making most people's journeys quicker                            | Disagree               | -2.188           | 0.000               |
|  | Neutral                | -1.249           | 0.001               |
|  | Agree                  | -0.883           | 0.006               |
|  | Strongly agree         | Reference Choice |                     |
| Car usage frequency  | Never                  | 0.959            | 0.032               |
|  | Rarely                 | 1.489            | 0.003               |
|  | Once a month           | 1.010            | 0.044               |
|  | Once a week            | 0.962            | 0.026               |
|  | Few days a week        | 0.730            | 0.005               |
|  | Daily                  | Reference Choice |                     |
| Facing congestion frequency                                      | Never                  | -0.740           | 0.246               |
|  | Rarely                 | -0.300           | 0.380               |
|  | Once a month           | -0.177           | 0.642               |
|  | Once a week            | 0.224            | 0.521               |
|  | Few days a week        | 0.092            | 0.745               |
|  | Daily                  | Reference Choice |                     |
| Age group  | 16 to 34               | 0.096            | 0.280               |
|  | 35 to 59               | 0.312            | 0.049               |
|  | 60 and over            | Reference Choice |                     |
| R <sup>2</sup> : 0.689   |                        |                  |                     |

Table X. Regression analysis for the perceived goodness of road charging

## Figures

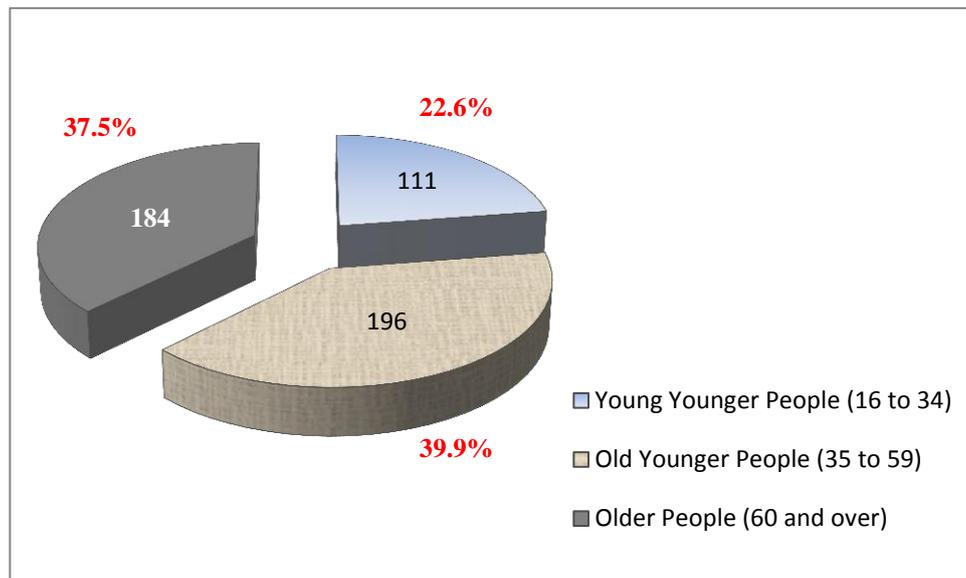


Figure 1. Frequency distribution of the three age groups used in analysis

## GEOGRAPHICAL DISTRIBUTION

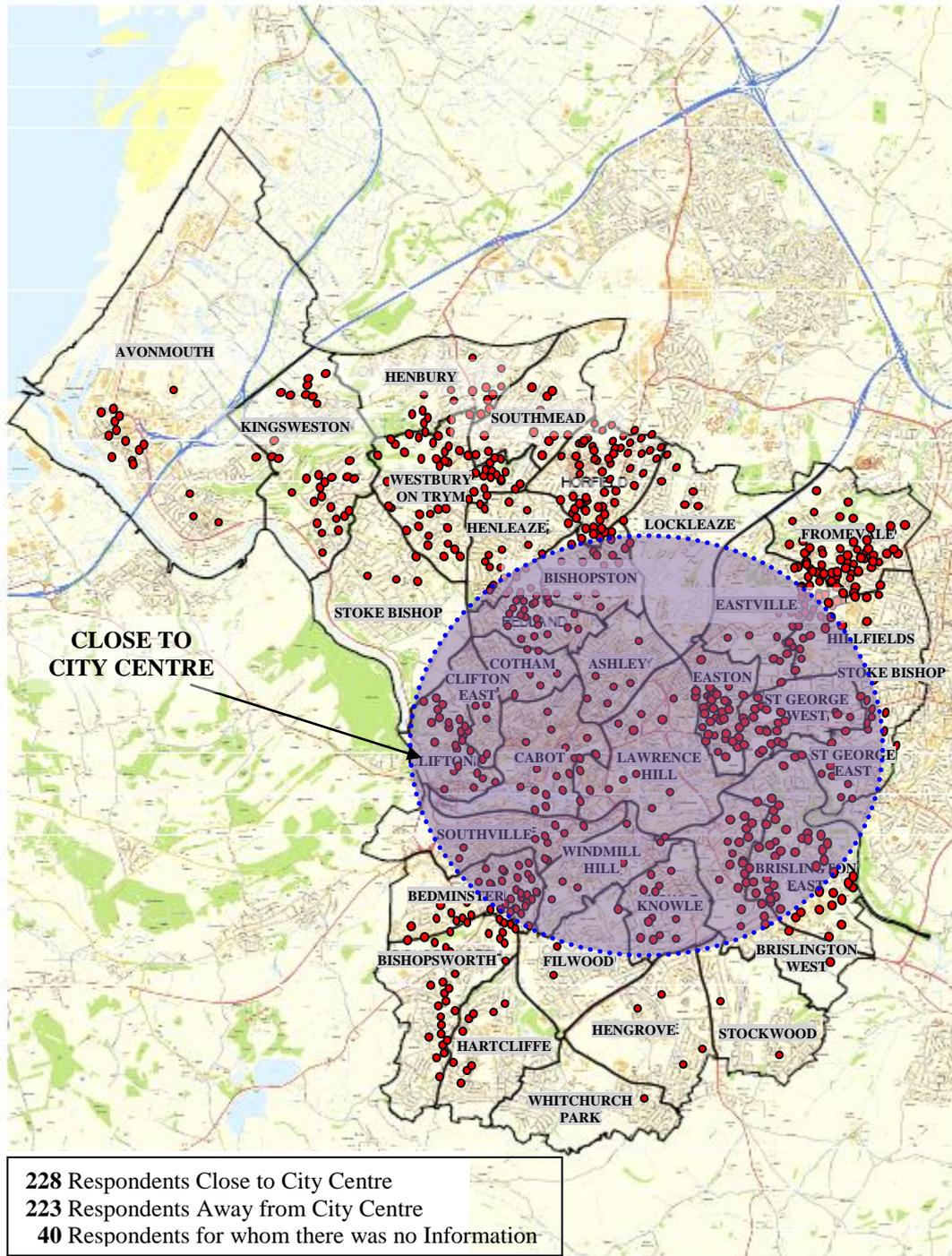


Figure 2. Distribution of survey respondents in Bristol City wards

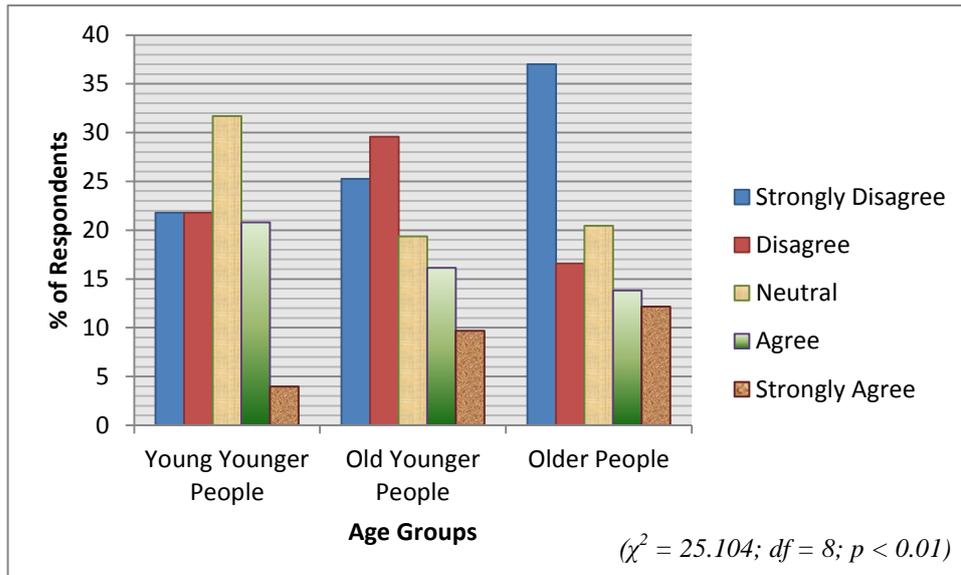


Figure 3. "Road charging is a good idea"

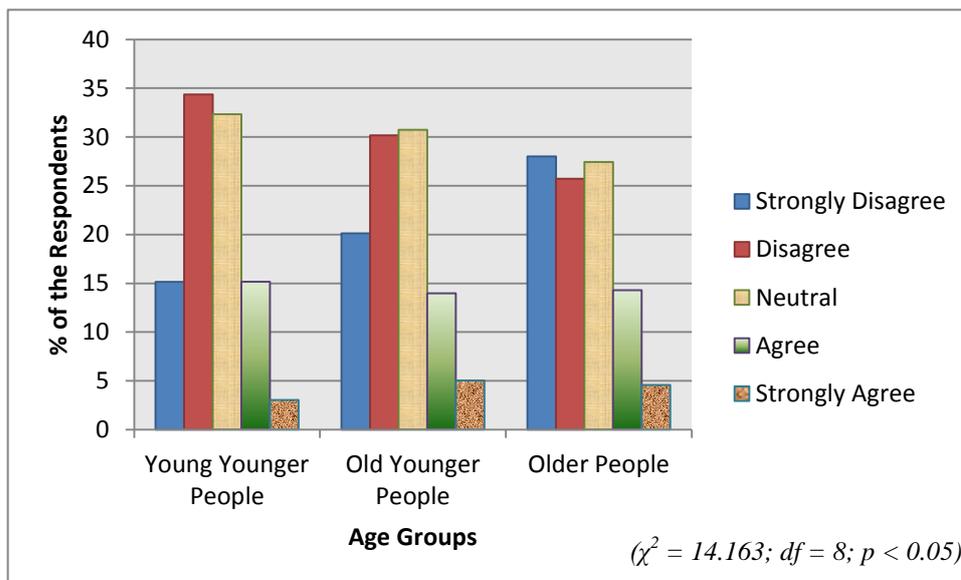


Figure 4. "Most people who are important to me believe that road charging is a good idea"

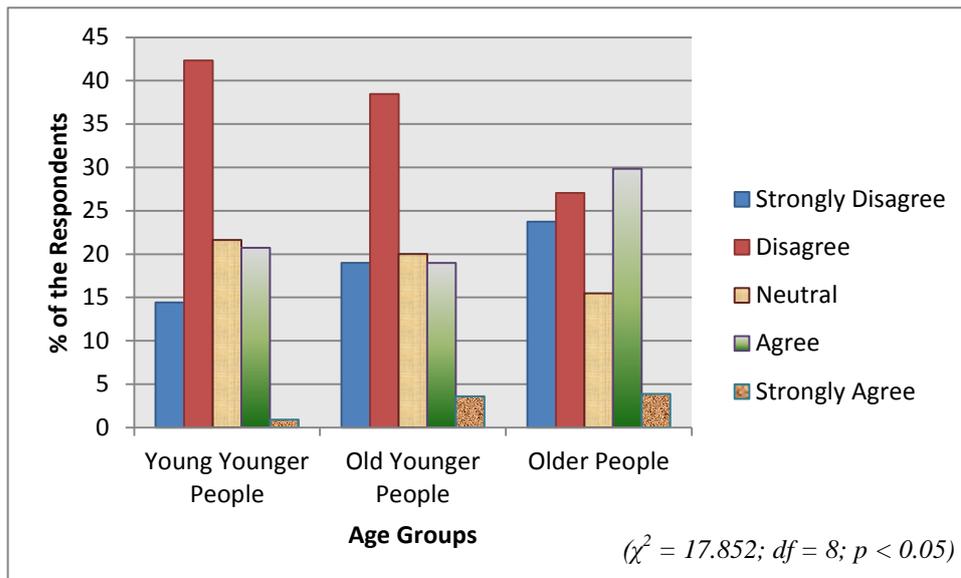


Figure 5. “I would accept road charging if most people who are important to me agreed that it was a good idea”

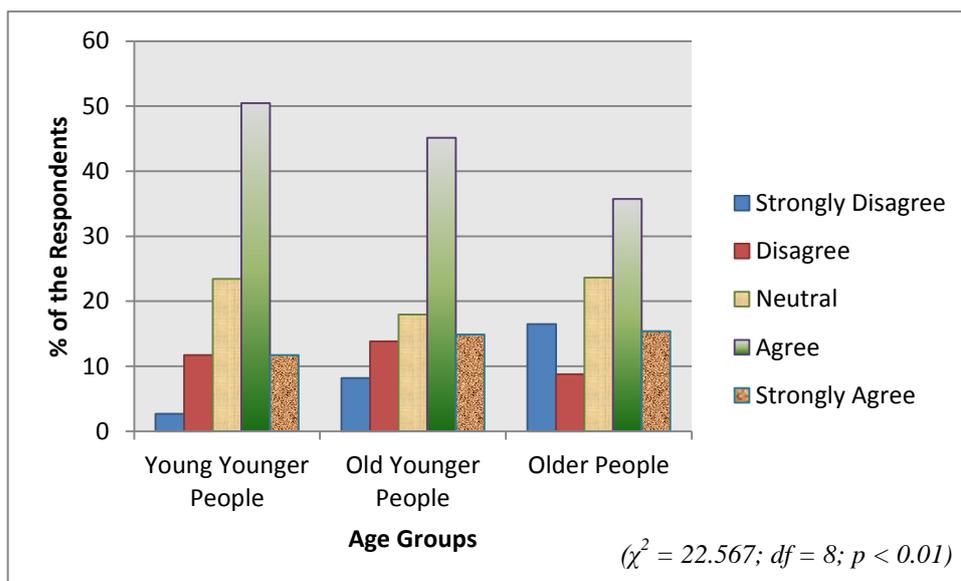


Figure 6. “I would accept road charging if this would help future generations”