Department for Transport

Evaluation of Concessionary Bus Travel

The impacts of the free bus pass

Moving Britain Ahead

Department for Transport

The Department for Transport has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the Department's website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact the Department.

Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
Telephone 0300 330 3000
General enquiries https://forms.dft.gov.uk
Website www.gov.uk/dft

OGL

Contents

Executive summary

1. The English National Travel Concession Scheme (ENCTS) allows free off peak[1] bus travel for residents of England of pensionable age and for disabled people[2]. Local authorities have the ability to introduce additional "discretionary" concessions funded by their local tax base, such as extending the time of availability or allowing carers of disabled residents free travel when they accompany them.
2. Prior to the ENCTS, a statutory half-fare off peak concession was in place. Free concessionary travel was introduced in April 2006 and applied only to journeys made within an individual local authority, but in April 2008 was extended to include free off peak travel in any part of England. Since April 2010, the age of eligibility has been increasing with changes to the state pension age. This means that eligibility for a bus pass is gradually increasing from 60 to 66 between 2010 and 2020.
3. This report examines statistical and academic evidence about the use and impacts of concessionary travel, and provides an economic appraisal of the policy's costs and benefits.

Characteristics of older concessionary travellers

4. We have used statistical data sources (predominantly the National Travel Survey (NTS) and Department for Transport (DfT) bus statistics[3]), academic literature and reports from the transport sector, to analyse the impacts of the ENCTS, with a specific focus on older pass holders. This analysis does not look at or make any conclusions on the disabled persons' concession due to a lack of data.
5. Since the concession was introduced, take up of the pass has steadily increased. We find that females have consistently had a higher take up of the concessionary bus pass, probably in part because the number of holders of driving licences is considerably lower for older women[4].
6. Data shows that people are more likely to take up the pass if they: are in lower income households, have no access to cars, live in metropolitan areas or generally live near better bus links.
7. In terms of bus pass usage, pass holders without access to a car make more than three times as many trips as passholders with access to a car. Those from lower income households also make more trips – pass holders with income of less than £10,000 per annum made twice as many trips than those receiving £20,000 or more.
8. The number of trips per pass holder per year falls, as the area type becomes less populated. These areas typically have less frequent bus services with

[1] Between the hours of 09:30 and 23:00 on weekdays, and all day at the weekend and on bank holidays.
[2] Disability criteria are outlined in the Transport Act 2000.
[3] Available at https://www.gov.uk/government/collections/bus-statistics
[4] In 2013 for example, the percentage of those aged 70 with a full driving licence was 82% for males and 47% for females. Source: DfT (2015) National Travel Survey: NTS0201

fewer destinations served (it may be that in some rural areas, no bus services run or there is one return service a day to the local town centre). London borough pass holders make the greatest number of journeys per annum (around 200), and this reduces to around 150 in metropolitan and 50 in rural areas. Additionally, concessionaires who live closer to a bus stop and are served by more frequent buses make considerably more trips. Some of these findings are also corroborated by the academic literature.

9. From the NTS we estimate that 830,000 people in households with no car access and incomes below £15,000 use concessionary travel at least once a week.

10. Overall, females and both men and women aged between 70 and 79 years make more bus journeys than the average pass holder. This indicates that men and more recent retirees, who are more likely to drive, use the concession less often. It also suggests that pass holders over 80, who might be less active, use the concession less often.

11. Notably, there has been a decline in the number of trips per pass holder over time, from 118 per pass holder per year in 2002, to 94 in 2012. Some of this decline could be due to the fact that those who may have most pressing need for a pass, and therefore are most likely to make a lot of trips with it, took up the pass prior to bus travel becoming free travel in 2006. Those with the most pressing need might include people on low incomes or lacking a car, who might take up the first opportunity to have a pass, and these groups of people tend to make more journeys using their pass.

Evidence from the academic literature

12. The academic literature in general does not present robust, conclusive evidence on the relationship between the ENCTS, improvements in access to services and socialisation, and the consequent impact on the quality of life of older people. However, some tentative conclusions could be made.

13. Some of the academic evidence suggests that pass holders use the concession to socialise, including making trips that they would not otherwise make if they had to pay a fare. Also, the ENCTS has incentivised some concessionary travellers to be more active as bus journeys are likely to involve some element of walking, and may serve as a means to further physical activity at their destinations.

14. The literature also confirms that the abolition of fares has contributed small increases to pass holders' disposable income. Additionally, some motorist pass holders report the concession has encouraged them to switch some car trips to the bus, and helped them avoid some motoring costs, such as parking fees. It has also enabled some to do more of things they like, such as volunteering and avoid doing things they do not like, such as the annoyance of driving in bad weather conditions, looking for parking spots etc. Some pass holders report that this has made small positive contributions to their quality of life.

15. Concessionary travellers in the survey literature cite increased flexibility in their daily routines as well as increased variety in their choice of destinations

as evidence of life improvements. Indeed, one survey[5] found that pass holders value the pass more than being given its monetary value in cash. This could be because it makes travelling slightly more convenient due to cashless boarding, local benefits that could be bundled with the pass (such as a library card) or a general attitude towards the freedom that the pass provides.

16. There might be a difference between the characteristics of bus pass usage of those who had a pass before the ENCTS ("old users" who travelled under the half price concession) and those who subsequently obtained one ("new users"). A study found that newly issued passes are associated with lower trip levels and this could be part of the reason for the decline in *average* journeys per pass holder.

17. It is also suggested that "new users" are more likely to have access to a car, hold a driving licence, and less likely to be in receipt of benefits. This would indicate that those that are more likely to be dependent on the bus, and therefore most in need of the concessionary pass (low income and low car ownership), are those who already held the pass prior to the free concession coming in.

18. Just under 25% of those that are eligible to hold a pass have not taken it up, according to NTS evidence. A portion of these is likely to be individuals who have access to a car and do not need bus travel. However further research is needed to identify the possible reasons as to why they have chosen not to take up the pass, as some non-users may face barriers in obtaining the pass or accessing bus services more widely. They may be more vulnerable and it is possible that some of those that are most prone to the processes of social exclusion are not deriving the benefits from the scheme.

Value for money assessment

19. We have carried out a cost-benefit analysis of the ENCTS to estimate the costs to government as well as the benefits the scheme brings to both its users and society, and we have generated a benefit cost ratio (BCR) for the scheme.

20. We present a BCR and a sensitivity test:

    - central case BCR: reported according to well-established WebTAG appraisal principles
    - sensitivity test: including more uncertain calculations of additional benefits, which are not currently covered in WebTAG guidance and are illustrative only.

21. The BCR benefits include consumer benefit, net effect on congestion and greenhouse gas emissions, and increased tax revenue to the Treasury. The ENCTS puts extra bus capacity on the road which is estimated to have a net negative impact on congestion and greenhouse gas emissions. Money that

[5] Andrews, G., Parkhurst, G., Susilo, Y., & Shaw, J. (2012) The Grey Escape: Investigating older people's use of the free bus pass. *Transportation Planning and Technology , 35* (1), 3-15.

would have been spent on VAT-exempt fares is now spent in the rest of the economy, where it attracts VAT, providing a positive transfer to government.

22. The sensitivity test includes health benefits to pass holders and society from more active lifestyles, improvements in bus frequency due to the extra bus capacity, and concessionaires' small benefit from more convenient cashless boarding.

23. The costs of the scheme are made up of the costs of reimbursing bus operators for foregone fares and additional operating costs, as well as admin costs to government.

24. We analyse the London market separately to the rest of England. The reason is that free concessionary and disabled travel has been available in London for a much longer period of time, compared to the rest of the country, and the travel behaviour adjustments by pass holders had occurred before the ENCTS became statutory. Therefore, we assume the ENCTS has not added any bus capacity to the Transport for London (TfL) network and it has no impact on congestion, greenhouse gasses or bus frequency improvements to offer. The cashless benefit also does not apply, as London concessionaires have been boarding without paying fares prior to the ENCTS.

25. The analysis indicates that in London, the BCR is 1.18, whilst in the rest of England it is 1.16. When we add the benefits incorporated in the sensitivity test, the BCRs rise to 1.32 in London and 1.40 in the rest of England.

26. The BCR is higher in London than in the rest of England due to the lack of generated bus capacity (which adds congestion and greenhouse emission costs from generated bus traffic). This is reversed in the sensitivity case, when estimates of the additional benefits outside the capital are taken into account, as the policy has provided cashless boarding and some additional bus frequency.

27. The quantitative analysis on its own suggest low value for money as the BCRs all fall under 1.50, the medium value for money threshold[6], yet there are other elements which help inform the overall value for money category, according to Departmental guidance. There are non-monetised benefits associated with the scheme that are reflected in wider academic and industry literature, which might bring the scheme up to medium value for money (equivalent to a BCR of over 1.50) if we were able to robustly monetise them. Therefore, we judge that the policy delivers low to medium value for money.

Value for money in 2021

28. We have also attempted to project a likely scenario of the costs and benefits of concessionary travel in 2021, as the increases in eligibility age over the next few years are expected to shrink the number of eligible pass holders. We project that they might fall from 10.9m in 2015 to 10.2m in 2021 as new pass holders are added at a slower rate.

29. We project a small decline in the number of concessionary trips in 2021 in both London and the rest of England, which reduces costs to government

[6] Department for Transport (DfT), Value for Money Assessments. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255126/value-for-money-external.pdf%20%20%20

from their 2015 level of £285m in London and £854m in the rest of England respectively, to £257m and £828m (in constant 2015 prices).

30. The BCR in London is projected to stay roughly the same in 2021, but expected to fall slightly in the rest of England – from 1.16 in the central and 1.40 in the sensitivity case in 2015, to 1.09 and 1.33 respectively. This is because the damage costs of added bus capacity outside the capital, are predicted to be worse per trip in 2021, as worsening climate change in the near term makes additional pollution more damaging. This dampens the level of net benefit, and consequently the BCR. As a result the value for money case for the scheme in England excluding London could be weaker in the future.

31. Our analysis suggests that pegging the eligibility age to the increasing state pension age could help keep the concession affordable until 2021, as the real reimbursement costs are projected to be fairly constant. However without increasing the eligibility age further post-2021, the costs to government are expected to start increasing in real terms with the ageing population.

Introduction

The English National Travel Concession Scheme allows free bus travel for residents of England of pensionable age and for disabled people between the hours of 09:30 and 23:00 on weekdays, and all day at the weekend and on bank holidays. Local authorities have the ability to introduce additional “discretionary” concessions funded by their local tax base, such as extending the time of availability or allowing carers of disabled residents free travel when they accompany them.

A statutory half-fare minimum concession has existed for off-peak local bus services for older and disabled people since 2003. When the free concession was first introduced in April 2006 it applied only to journeys made within an individual local authority, but in April 2008 was extended to include free off peak travel across England. Since April 2010, the age of eligibility has been increasing with changes to the state pension age. This means that eligibility for a bus pass is gradually increasing from 60-66 between 2010 and 2020.

London has largely been treated separately from the rest of the country in this report. This is because London has offered free concessionary travel for older people for a much longer time than has been the case with the rest of England and including it has a distortionary effect in determining the true impact of the introduction of the national concession. We also look more at the mandatory element of the concession. While some other modes of travel are available discretionally in some areas such as rail and trams, this evaluation is designed to look at the impact of free bus travel.

From the introduction of the free concession, it was believed that the concession would reduce the cost of travel for those people eligible and help those households without access to a car to travel in their local area. When the concession was extended to cover travel in all of England, the importance of public transport and the role access to transport has to play in tackling social exclusion and maintaining wellbeing was noted.

The policy objective of statutory concessionary travel can therefore be defined as reducing the cost of bus travel for disabled and older people (in particular those without access to a car) and contributing to:

- improved access to essential services;
- improved access to friends and family;
- improved access to leisure activities; and
- facilitating independent living for longer.

While these were the expected direct benefits, the scheme was also expected to generate considerable indirect benefits such as decongestion from journeys switched from cars to bus, and benefits to the local economy from increased expenditure as a result of more frequent shopping trips.

Whilst the Government has committed to keeping the statutory travel concession in England until at least the end of the current parliament, the Department is

responsible for demonstrating that policy initiatives achieve their objectives and the anticipated value for money to the taxpayer. This evaluation will bring together information and data from various sources in order that the realised outcomes of the concessionary travel scheme can be judged against their planned objectives.

This evaluation will take the following format:

Chapter 1 brings together evidence from statistical sources (predominantly the National Travel Survey[7]) to gain a broader understanding of the characteristics of those people who are using the concessionary scheme.

Chapter 2 collates evidence on the effectiveness of the concession in helping to improve the quality of life of older and disabled people in England.

Chapter 3 uses the evidence gathered in Chapters 1 and 2, as well as other sources of data, to estimate the benefits of the concession, thereby generating a value for money assessment.

The **Conclusion** draws up the findings of the preceding Chapters into a high level assessment of the extent to which the concession may be meeting its objectives.

[7] For background information about the NTS, e.g. data collection methods, sample size, see the NTS Statistical release and Technical Report, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342160/nts2013-01.pdf and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337263/nts2013-technical.pdf respectively.
The NTS is primarily designed to track long term changes. All survey results are subject to sampling error. Therefore, some of the year to year changes may not be statistically significant and are just sample variability due to the characteristics of the individuals surveyed in a given year rather than a real change in behaviour.

Chapter 1
Who is using the concession, where and how often?

1.1. Introduction

This section will highlight the key characteristics of people using the travel concession in England, looking both at the take up of passes and the number of boardings per pass. Each of these areas will be looked at in turn, and within each a number of characteristics will be considered in an attempt to draw some conclusions as to who is using the concession, where they are using it and how often they use it.

1.2. *Take-Up of Concessionary Passes*

1.2.1. General Take-Up of Concessionary Passes

As can be seen from figure 1, the percentage of eligible older people in England (excluding London) who have taken up the option of holding a concessionary pass has increased from 53% in 2002 to 76% in 2012.

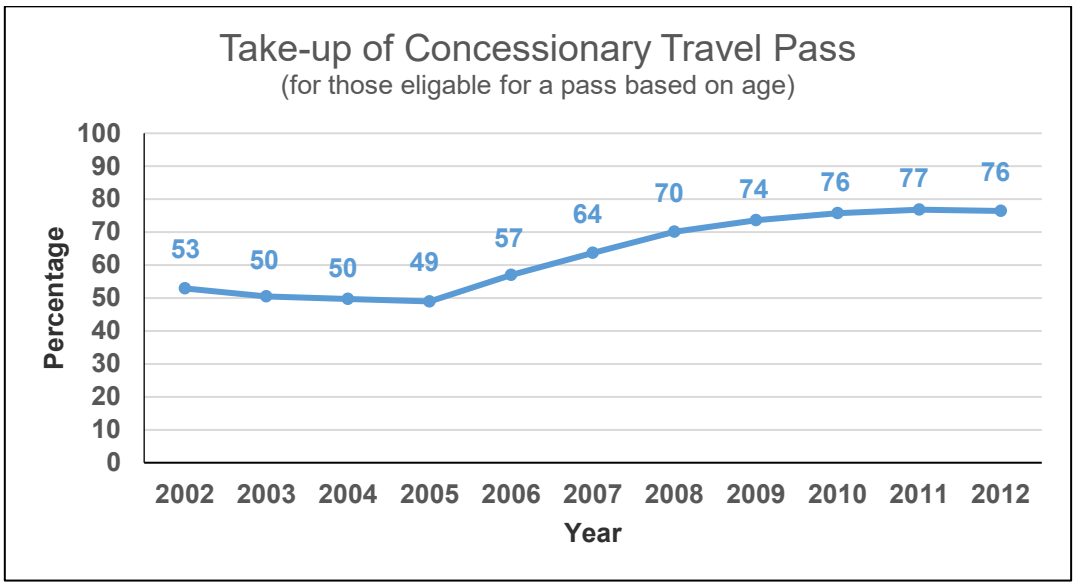


Figure 1: Take up of Concessionary Travel Passes

The half fare scheme started in 2001 with eligibility at the pensionable age (60 for women and 65 for men). A discrimination case was won by campaigners and the age of eligibility became the same for both genders (at the female pensionable age). Around the introduction of the equal half fare scheme in 2003 take up was around 50%. The move from half-fare to a free local concession in 2006 brings an increase in the proportion of people holding the pass while trend growth has continued to rise. However, the rate of change has slowly decreased (and fallen slightly in 2012), which suggests that even with the full national concession (which has been in place since 2008), there will remain a group of people who do not take up the option of holding a concessionary bus pass.

Whilst there was a clear step-change in the proportion of people in England holding a pass in 2006 following the introduction of free local bus travel, we cannot be certain whether this was as a result of increased awareness of the scheme amongst eligible people or due to the increased benefits of holding a concessionary pass. In all likelihood, some combination of the two is most likely, although there is evidence to suggest that the increased benefits of holding is a more prevalent factor.

There may be further factors driving the increase in pass uptake, for example, some passes offer other benefits such as shopping discounts or act as a library card. This may have resulted in a number of "no trip" pass holders that use the non-travel related benefits (evidence provided later shows an increase in "no trip" passes). "No trips" pass holders or zero trip pass holders are those who are taking up the pass but not using it for its intended main purpose of free travel. Although it may be the case that have the pass and do not use it immediately but feel it might one day be useful.

1.2.2. Note on Further Analysis

Analysis of the data has been grouped into four categories:

1. Years 2003-05 where an established half fare scheme already existed
2. Years 2006-07 where concessionary passengers were entitled to free local bus travel
3. Years 2008-10 where concessionary passengers were entitled to free national bus travel
4. Years 2011-12 (a continuation of concessionary passengers being entitled to free national bus travel)

For each category the average percentage take up has been calculated. Whilst there are drawbacks from taking this approach as some level of detail is lost and direct comparison is not straightforward (as each period contains a different number of years), it is possible to compare take up levels for different stages of the concessionary travel pass (half fare to full fare etc.).

1.2.3. *Take-Up of Concessionary Passes by Age*

Figure 2 shows the percentage of people in a particular age group that have taken up the option of holding a concessionary pass since 2003.

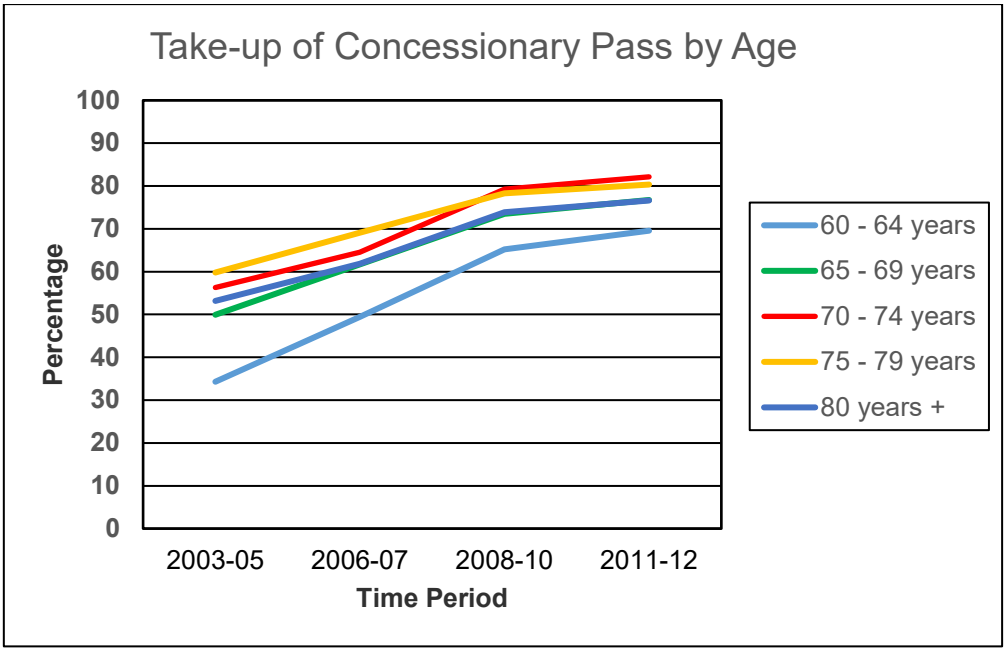


Figure 2: Take up of Concessionary Pass by age

Figure 2 shows, take up has increased for all age groups. The largest percentage increase is for the '60-64' age category, however this group has lower than average take up. This is perhaps unsurprising as a large proportion of this age group will still be in work and therefore a concessionary pass that does not allow free travel before 09:30 is of limited use to them. In addition, since 2010, the eligibility age for a bus pass has been gradually increasing from 60 to 65 by 2016.

Those in the '75-79' age category had the highest take-up rate until the 2008-10 period but have since been surpassed by the '70-74' age category. Perhaps unsurprisingly, the take-up rate is quite low for the over 80s, the group expected to have most trouble accessing their local bus service.

1.2.4. Take Up of Concessionary Passes by Car Availability

Figure 3 shows the percentage of people with different car availabilities (defined as the number of cars or vans owned by the household) that have taken up the option of holding a concessionary pass since 2003.

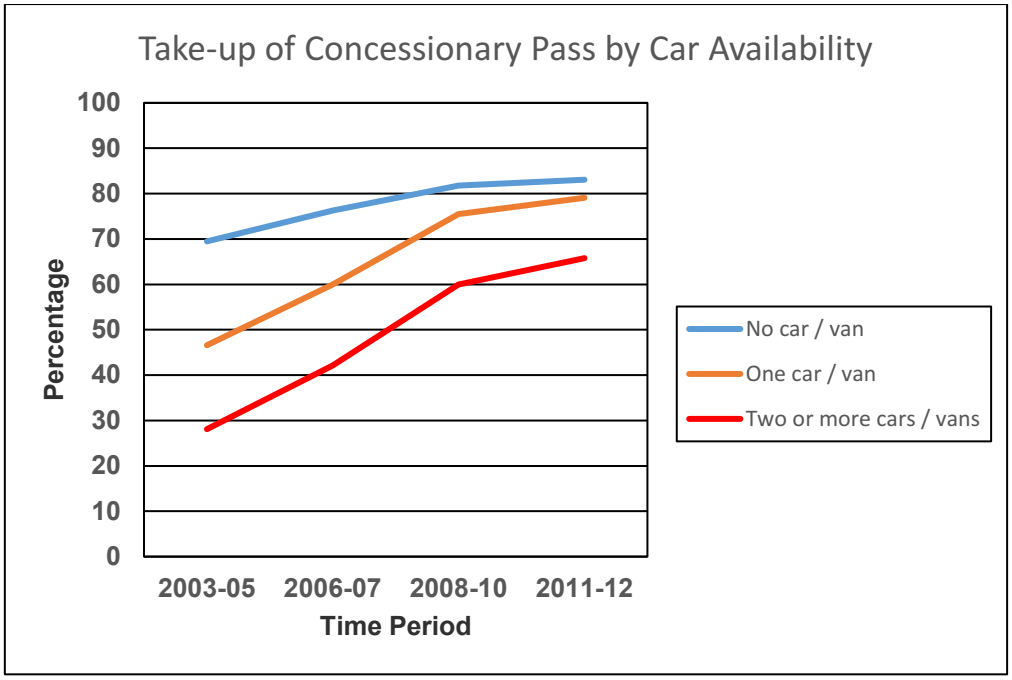


Figure 3: Take up of Concessionary Passes by Car Availability

Whilst take up of concessionary passes has increased for all levels of car availability, it has increased most for those households that own a car compared to those that do not. The increase in take up by car owners is likely to be to their desire to replace some car journeys with bus journeys as the reduction in cost of bus travel makes it more attractive relative to car travel. This fits in with the economic theory of substitutes, if two modes of travel can be substituted for each other (as bus and car are), the relative reduction in price for one will mean more people shift to using the cheaper mode.

The fact that the take up is higher for those households that have no access to a car/van is expected as these households have fewer transport substitutes. Therefore, the value of being able to travel for free on buses is greater as it could reduce their transport expenditure to zero as it is highly likely that they would have been relying on buses as their main mode of transport.

1.2.5. *Take-Up of Concessionary Passes by Household Income*

Figure 4 shows the percentage of people with a particular household income that have taken up the option of holding a concessionary pass since 2003

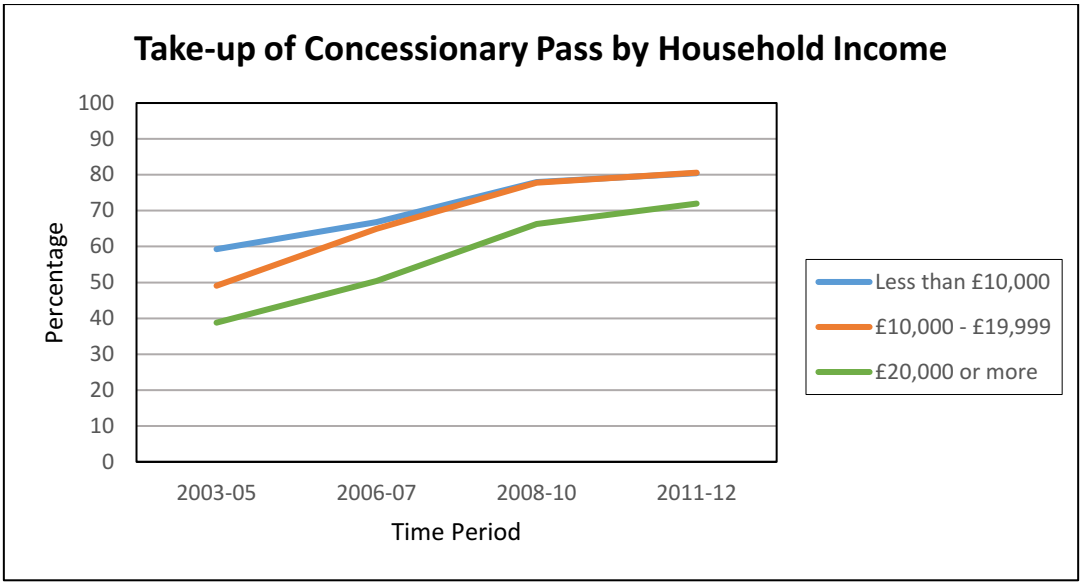


Figure 4: Take up of Concessionary Pass by Household Income

As we can see in figure 4 take up increased from 2003-05 to 2011-12 with the largest percentage increase for those in income group '£20,000 or more'. It is not surprising that take up of concessionary passes increases as household income decreases. Firstly, lower income households are less likely to own a car, which we have already seen is a significant factor in determining pass take up. Secondly, in the absence of the concession, a given level of expenditure on bus travel would represent a higher percentage of household income for those travellers in lower income brackets. For these people the value of travelling on the bus for free is higher, by releasing a higher percentage of their household income, more can be spent on other goods and services, therefore they are more likely to take up a concessionary pass. As is also a theme throughout, there is a convergence in take up amongst households of different incomes over time. Take up of concessionary travel by annual gross individual income was also analysed and followed a similar trend to household income.

1.2.6. *Take-Up of Concessionary Passes by Area Type*

Figure 5 shows the percentage of people from different area types that have taken up the option of holding a concessionary pass since 2003.

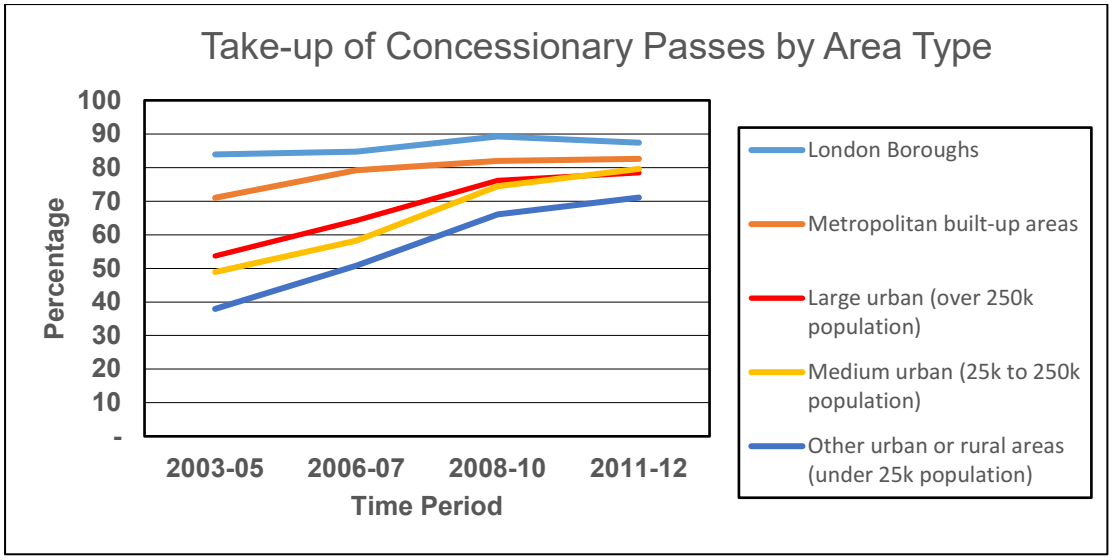


Figure 5: Take up of Passes by Area Type

Take up of passes has increased during 2003-2010 for all area types, although the rate of increase is much lower for built up metropolitan areas and London Boroughs than it is for other urban and rural areas. Again, this is not surprising as London Boroughs have a combination of measures which make travel by car less attractive and a concessionary package[8] that allows free travel on the Underground, buses, trams, the London Overground and Dockland's Light Railway. Similarly, Metropolitan areas typically have well established bus networks and are more likely to have offered free concessionary travel prior to 2006. We can however see that in the 2011/12 period there has been a convergence in take up by area.

It is also worth noting that there is lower take up of concessionary passes the more rural the area type becomes. This is because rural areas will typically have fewer bus services which run less frequently than would be found in metropolitan and larger urban areas. Therefore, for people in more rural areas the value of holding a bus pass, and therefore the take up of passes, would be expected to be lower than for those in areas with greater access to bus services (although if the bus pass is used when visiting other parts of the country or doubles as a library or discount card for example, then there will be some value). And, given that we would expect more rural areas to have worse access to buses than more urban areas, it seems logical that people in these areas would be more likely to own a car as a means of getting around, and we have seen that people who live in households with a car are less likely to take up concessionary passes than those who do not.

1.2.7. *Take-Up of Concessionary Passes by Access to Bus Stop*

Figure 6 shows the percentage of people that have taken up the option of holding a concessionary pass since 2003 sorted by the average time it takes them to walk to their nearest bus stop.

[8] London has had concessionary travel since the 1970's an introduction of the ENTCS would have less of an impact for Londoner's travel modes and characteristics.

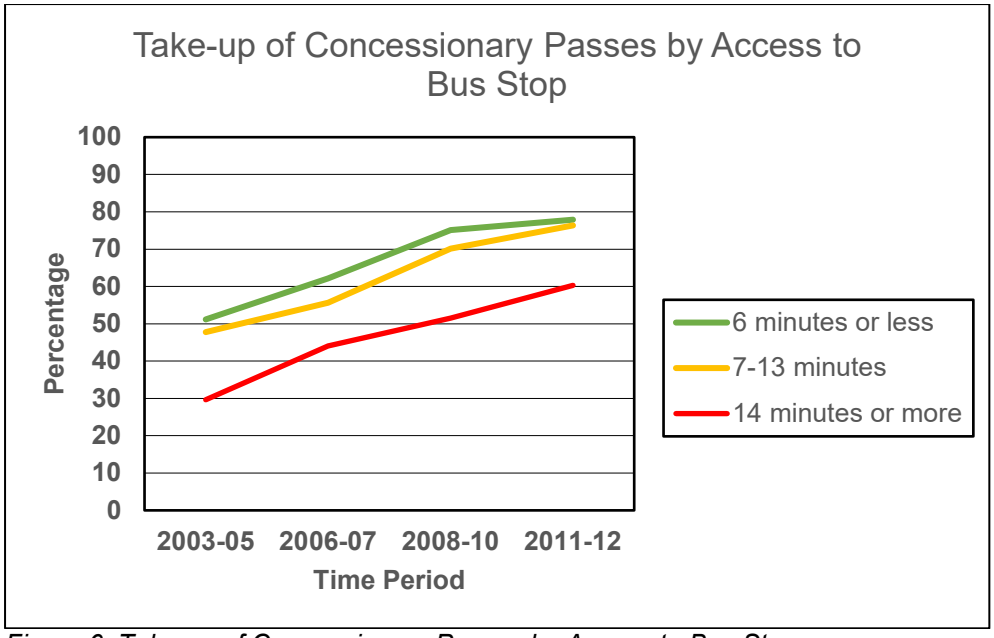


Figure 6: Take up of Concessionary Passes by Access to Bus Stop

For all groupings the increase in take up has been broadly similar over time, and as we would expect take up is higher the closer a person is to their nearest bus stop.

1.2.8. *Take-Up of Concessionary Passes by Bus Frequency*

Figure 7 shows the percentage of people that have taken up the option of holding a concessionary pass since 2003 grouped by the average frequency of bus service in their local area.

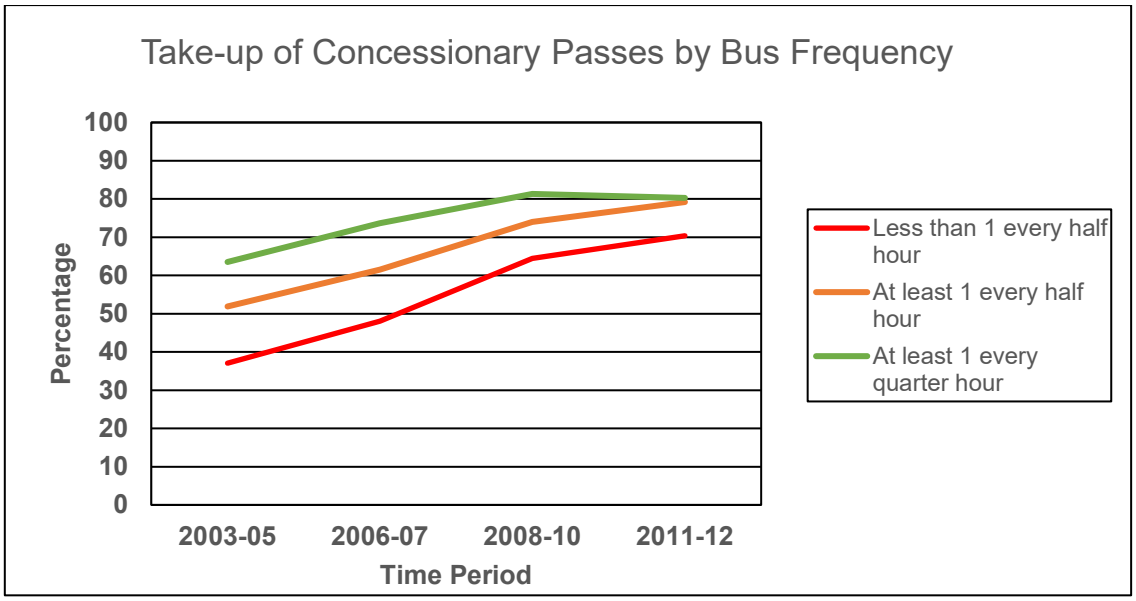


Figure 7: Take up of Concessionary Passes by Bus Frequency

Again we see that there have been broadly similar increases for all three categories, although the gap between the highest and lowest does narrow slightly over the period. Again, the lower the frequency of buses there is, the lower the take up of free passes we observe.

1.2.9. Take-up of Concessionary Passes by Discretion offered

Figure 8 shows take up of concessionary pass based on whether concessionary travel has been extended to other modes (for example on trains, trams, ferries etc.). The orange line ('none') shows the take up in places where just the statutory concession is available. The green line (any additional mode) shows take up in places where the concession is offered on other modes too.

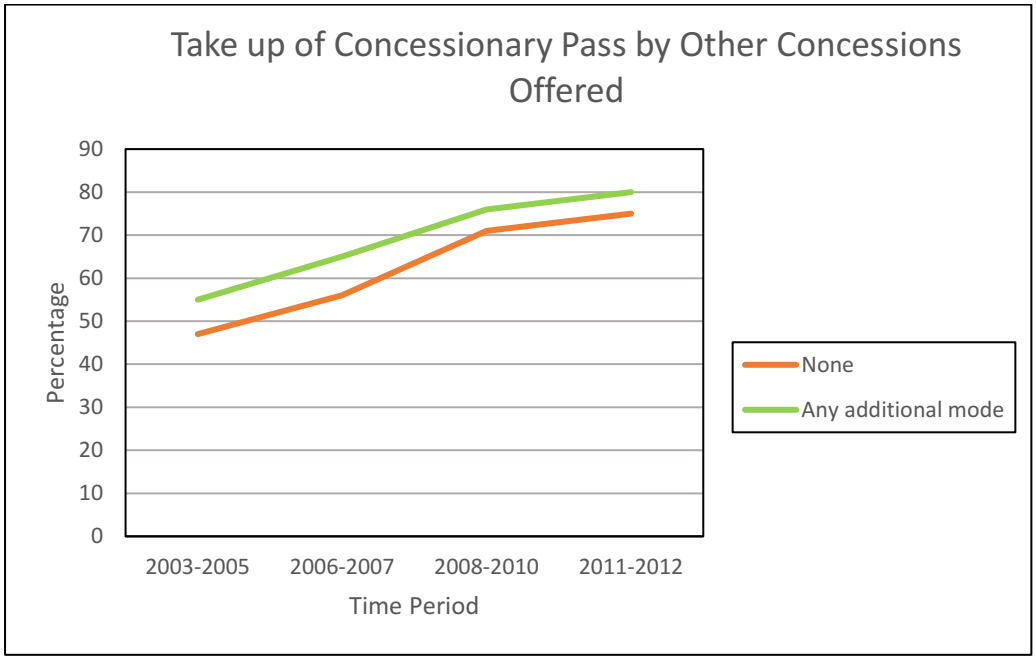


Figure 8: Take up of Concessionary Pass by Other Concessions Offered

Take up is consistently higher where the concession has been extended to other modes of transport).

1.2.10. *Take-Up of Concessionary Passes by Gender*

Figure 9 shows the percentage of people that have taken up the option of holding a concessionary pass since 2003 grouped by gender.

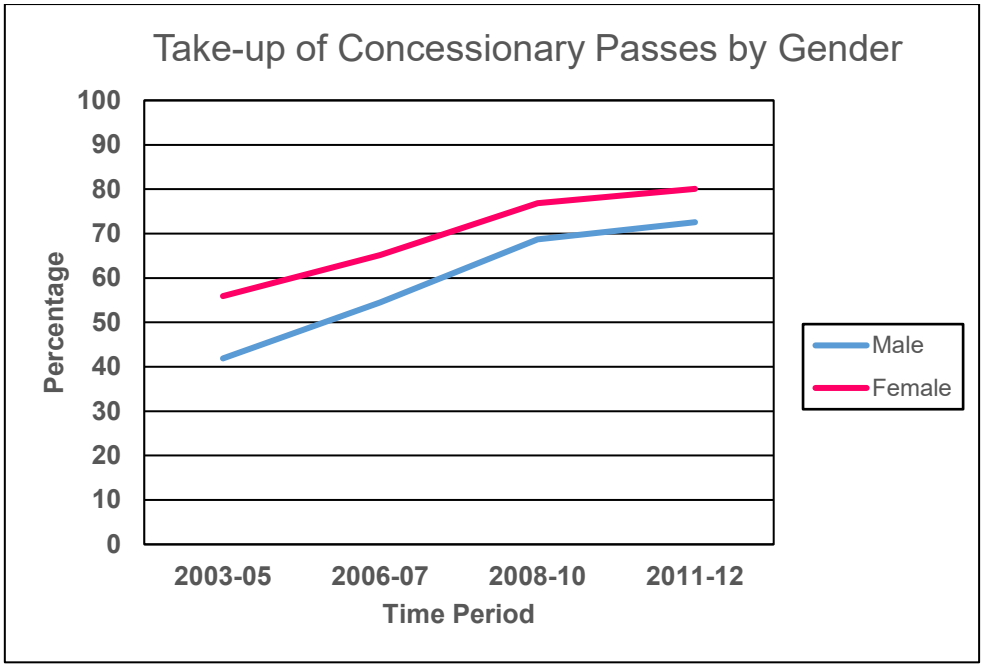


Figure 9: Take up of Concessionary Passes by Gender

Both males and females have seen increased take up of passes across the time period, with females consistently being more likely to take up the option of holding a concessionary pass. The increase in the male take up rate is higher than females between 2003-05 and 2011-12; 31 percentage points compared to 24 percentage points respectively. The national travel survey[9] shows men are significantly more likely to hold a full licence, which could be a reason why female take up of concessionary passes is higher. In 2013 for example, the percentage of those aged 70 with a full driving licence was 82% for males and 47% for females. With section 1.2.4 highlighting the higher take up for those without a car one might conclude that take up would be higher for females as they are less likely to be driving.

1.2.11. *Conclusions*

We can see from this section of the analysis that by every indicator we have looked at, the take up of concessionary passes has increased since the move from the local half-fare to the local free schemes and then the national concessionary travel schemes. There are perhaps no surprises regarding the characteristics of people who take up passes, those who are in lower income households without access to cars in metropolitan areas with frequent bus services and local bus stops are more likely to take up a pass than those people with high household incomes, two or more cars who live in rural areas without frequent bus services or a bus stop close by.

1.3. Average Number of Boardings per Pass per Year

1.3.1. General Number of Boardings per Pass per Year

Figure 10 shows the average number of boardings per concessionary pass in England, as well as the take-up rate and zero-trip rate for concessionary travellers.

[9] NTS0201 available at https://www.gov.uk/government/collections/national-travel-survey-statistics

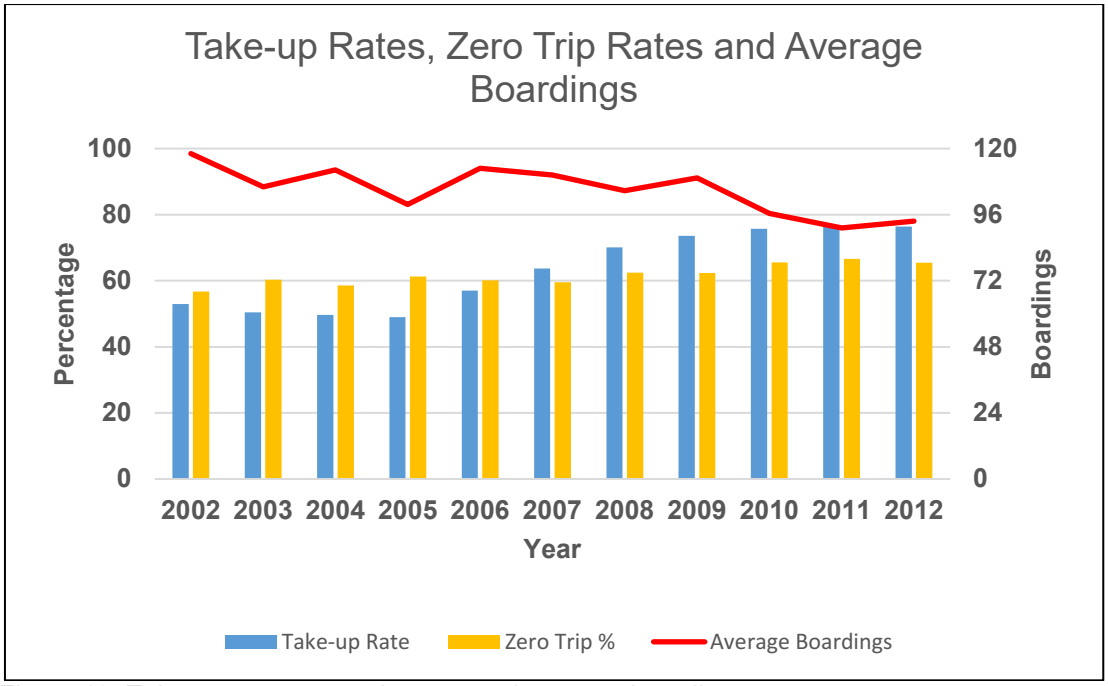


Figure 10: Take up rates, zero trip rates and average boardings

The number of boardings per pass holder per year is calculated by dividing the total number of bus boardings using a concessionary pass by the total number of individuals who said they held a pass in the NTS interview.

Figure 10 shows that the average number of boardings per pass for all pass holders has steadily decreased over time, from 118 per pass holder per year in 2002 to 94 per pass holder per year in 2012. This is a fall from 2.3 trips per week to 1.8 trips per week – a fall of roughly one trip every two weeks for each concessionary pass holder.

The likely explanation for the decrease in trips per pass over time is that those people who have most need for a pass, and therefore are most likely to make a lot of trips with it, took up the pass as soon as possible (i.e. prior to free travel in 2006). Those with most need might include those on low incomes or lacking a car so would take up the first opportunity to have a pass. Over time, the people who take up the pass are therefore those who are less likely to need to use it to travel, and therefore they make fewer trips per year than existing pass holders, reducing the number of trips per pass holder per year made.

Another reason for the decrease over time is that there has been a slight increase in the zero trip rates which brings down the average. The proportion of pass holders who did not make a bus trip during the 7 day travel week in the NTS rose from 53% in 2002 to 63% in 2012. Reasons why a person may hold a pass but not take any trips with it could be that the card doubles up as a wider benefit card, for example to provide discounts on certain goods and services or as a library card. Passes may also be held by people who feel it is their right to do so as they are eligible to hold one despite never intending to use it. It is important however to note that as it measures those that did not make a trip during the last 7 days and not those that have never made a trip, it could just reflect those that use it less than once a week.

Free local bus travel for concessionaries was introduced in 2006 and we see an increase in take up rate from 53% in 2005 before free local bus travel to 66% in 2007 after it has been in place. Free national travel started in 2008 and we see take up rates increase from 66% in 2007 to 77% in 2010. This is to be expected as the more that is on offer, the more enticing it is and therefore we would expect more people who did not have one before to obtain one.

1.3.2. Note on Further Analysis

As with section 1.2.2 data has been grouped into four categories; one corresponding to 2003-05 where a well-established statutory half-fare scheme existed; a second for 2006-07 where concessionary passengers were entitled to free local bus travel and a third and fourth for 2008-10 and 2011-12 respectively where concessionary passengers were entitled to free national bus travel. For each category the average boardings data has been calculated and presented. Whilst there are drawbacks from taking this approach as some level of detail is lost and direct comparison is not straightforward as each period contains a different number of years, the advantage gained is that it is possible to compare boarding levels for different levels of benefit from holding a concessionary travel pass more easily.

1.3.3. *Average Number of Concessionary Boardings by Age*

Figure 11 shows the average number of boardings per pass per year according to different age categories tracked across the four different time periods.

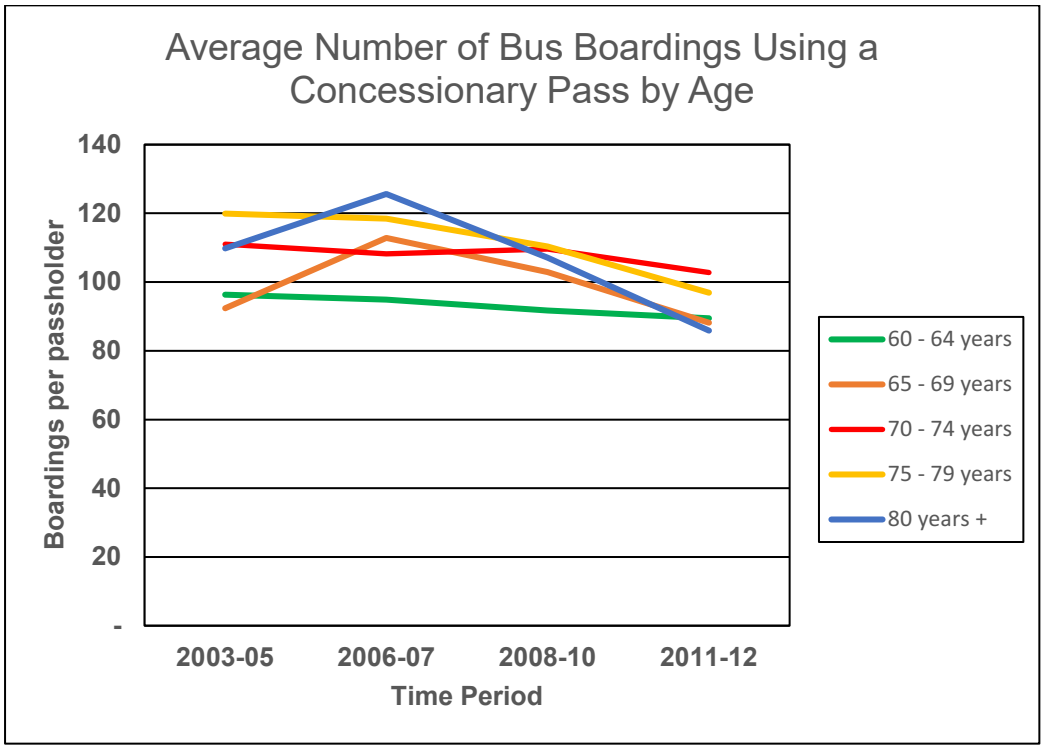


Figure 11: Average Number of Concessionary Boardings by Age

Over the time period, the average number of bus boardings per pass holder per year has seen decreases for most age groups, most notably the over 80's. The reason for these declines may be as discussed above, that new pass holders are making fewer

trips and there has been a rise in the number of zero trip passes being held, thus reducing the overall number of trips per person per year.

Those people in the age groupings 65-69 increased the number of journeys per pass holder per year in the period 2006-07. This may be because of the factors discussed in 1.3.1 discussing the general increase in trips per passenger per year in these years before the reduction in subsequent years.

1.3.4. *Average Number of Concessionary Boardings by Car Availability*

Figure 12 shows the average number of bus trips conducted by people with different levels of household car availability.

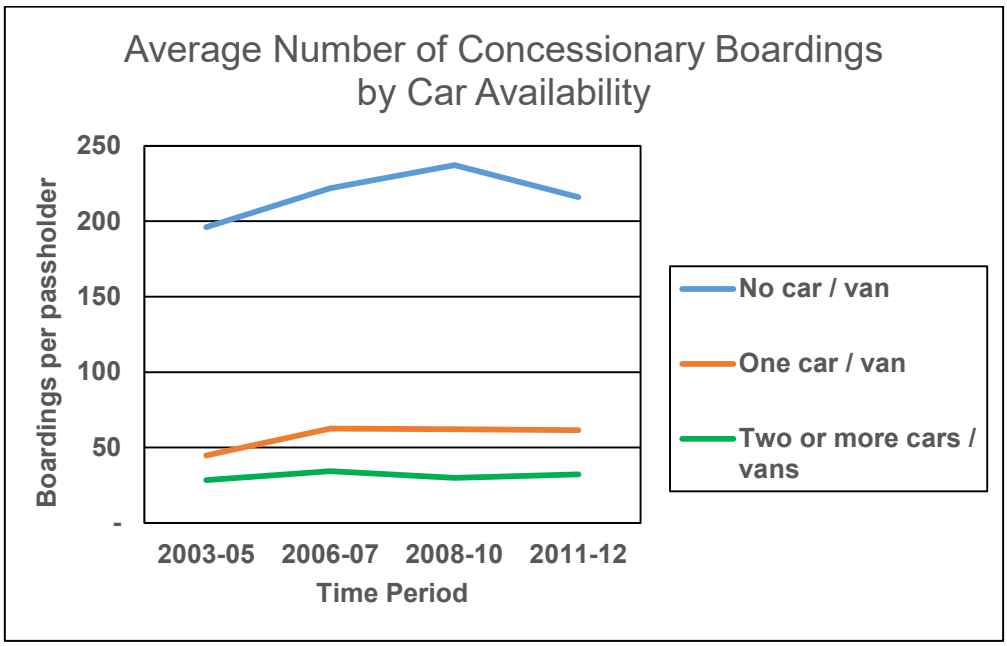


Figure 12: Average Number of Concessionary Boardings by Car Ownership

The striking feature of this graph is that there is a large difference between the numbers of trips made per pass holder per year for those passes holders without access to a car as for those with access to a car. In 2008-10 those households with access to no cars or vans made three and a half times as many trips per year on average compared to those with access to one car or van, and nearly seven times as many trips as those households with access to two or more cars or vans. This logically makes sense, as those pass holders without access to cars will rely on the bus and other forms of public transport to a much greater extent than those who have access to private transport and therefore make more bus trips on average per year.

Also of note is the fact that the number of trips per pass holder per year increased between 2003-2008/10 for those who have no access to a car. This suggests that there was a significant impact for this group from the move to free regional and then national travel. For households with only one car available, we see a slight increase in trips per year following the introduction of free regional travel and then a reduction following the introduction of free national travel and for those households with access to two or more cars we see a reduction across the period. This suggests that for

these groups, especially following the move from free regional to free national travel, new pass holders made fewer trips than existing ones, and there was an increase in "zero trip" passes, as discussed above. In 2011/12 there has been a decline in no car/van boardings but it still remains significantly higher than households with access to one or more cars.

1.3.5. *Average Number of Concessionary Boardings by Household Income*

Figure 13 shows the average number of trips per pass holder per year according to different groupings of household income.

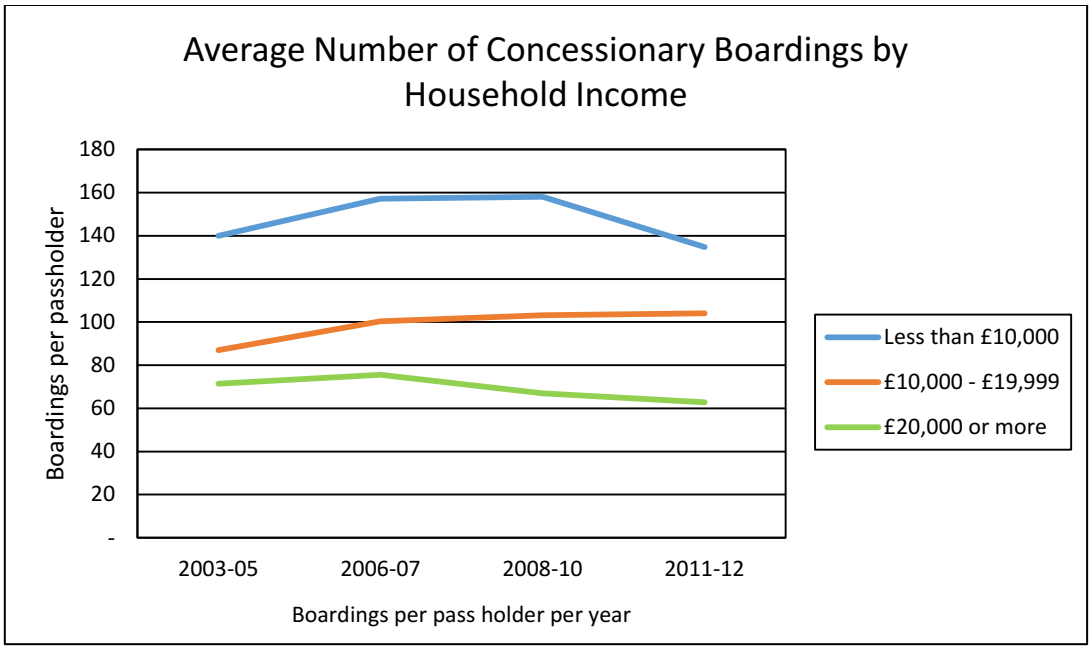


Figure 13: Average Number of Concessionary Boardings by Household Income

For the majority of the income groups, the number of trips per pass holder per year has either remained fairly constant or fallen, as we would expect given the discussion in section 1.3.1.

There has been a slight decrease in the number of trips per pass holder per year for those people with household incomes of £20,000 a year or higher, which is likely due to an increase in zero trip passes and new pass holders making less trips per year than ones who have held a pass for longer.

An interesting feature of this analysis is that in 2010-11, the number of trips per pass holder per year actually fell for those people in the less than £10,000 income grouping. It is not clear why this reduction has been observed when for those in income bracket £10,000-£19,999, the number of trips stays roughly the same 2006-07 compared to 2011-12. This could be linked to the reductions in shopping trips we see in section 1.3.10. In many cases, particularly amongst the lowest income bracket, real income has fallen. We know shopping trips have fallen so this could also cause a fall in the average number of boardings amongst those that would be most affected, the under £10,000 household income.

The number of trips per household per year increases as household income falls; those on lower incomes are less likely to be able to access other forms or transport (such as private cars) and are therefore more likely to rely on bus services which they can access for free.

1.3.6. *Average Number of Concessionary Boardings by Area Type*

Figure 14 shows the average number of concessionary boardings per pass holder per year grouped according to area type.

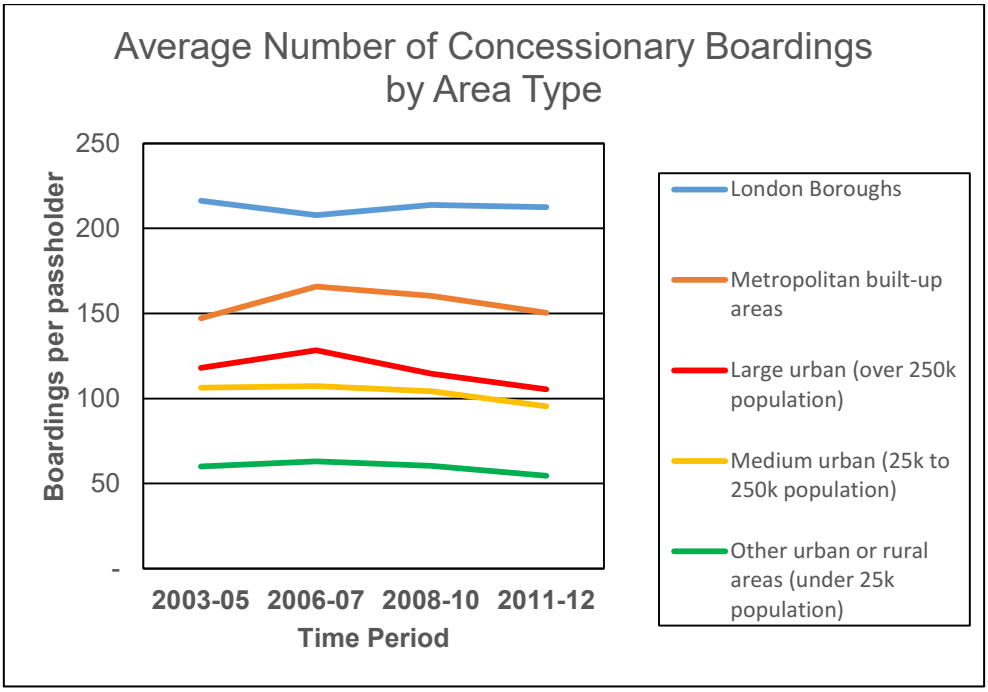


Figure 14: Average Number of Concessionary Boardings by Area Type

The number of trips per pass holder per year falls as the area type becomes less populated. These areas typically have less frequent bus services with fewer destinations served (it may be that in the most rural areas, no bus services run or there is one return service a day to the local town centre). In these instances, it is easy to see why there will be fewer trips per passenger per year; there simply isn't the option to make these trips. Added to this the fact that people in rural areas are more likely to own a car, which we know from analysis in 1.3.4 is associated with a fewer number of trips per pass holder per year, the reason we observe lower trips per pass holder per year for more rural areas becomes clearer.

1.3.7. *Average Number of Concessionary Boardings by Access to Bus Stop*

Figure 15 shows the average number of concessionary trips per pass holder per year with people grouped according to the average walking distance to their nearest bus stop.

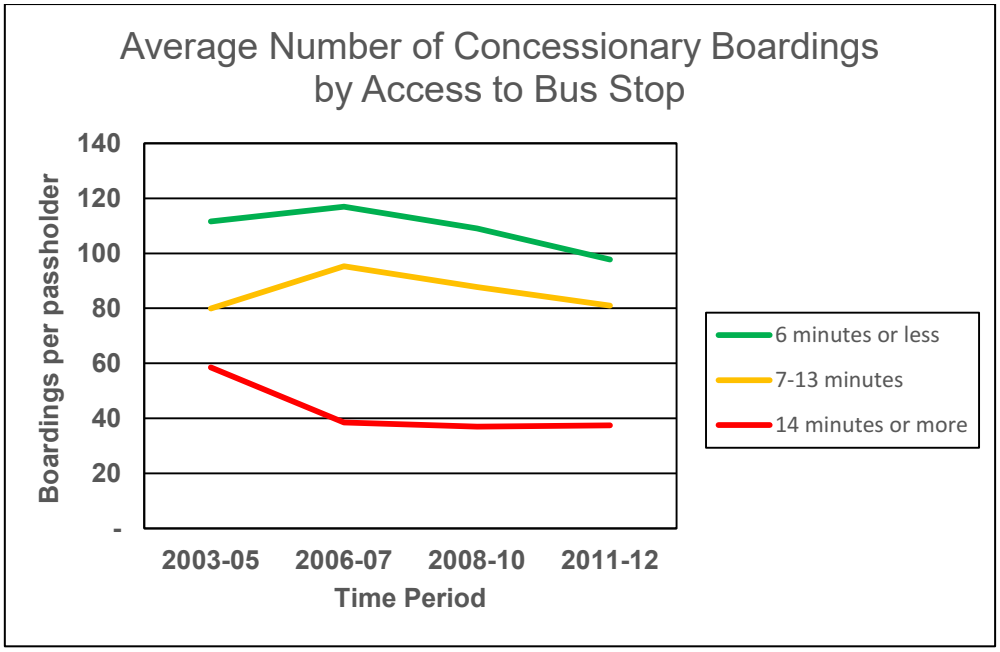


Figure 15: Average Number of Concessionary Boardings by Access to Bus Stop

Unfortunately, a low sample size means that we should be cautious in drawing any conclusions from the changes observed in those people who live 14 minutes or more from their nearest bus stop.

For the other two groupings, we see rises in the number of trips per pass holder per year following the introduction of free local concessionary travel (greater for those in the grouping where the nearest bus stop is 7-13 minutes away) and then a slight decrease for both following the move to free national concessionary travel in 2008. This latter trend suggests that take up of passes since 2008 has been by people who make fewer trips than those who held a pass previously, and fits with that discussed previously.

1.3.8. *Average Number of Concessionary Boardings by Bus Frequency*

Figure 16 shows the average number of bus trips per pass holder per year according to how frequent the nearest bus service is.

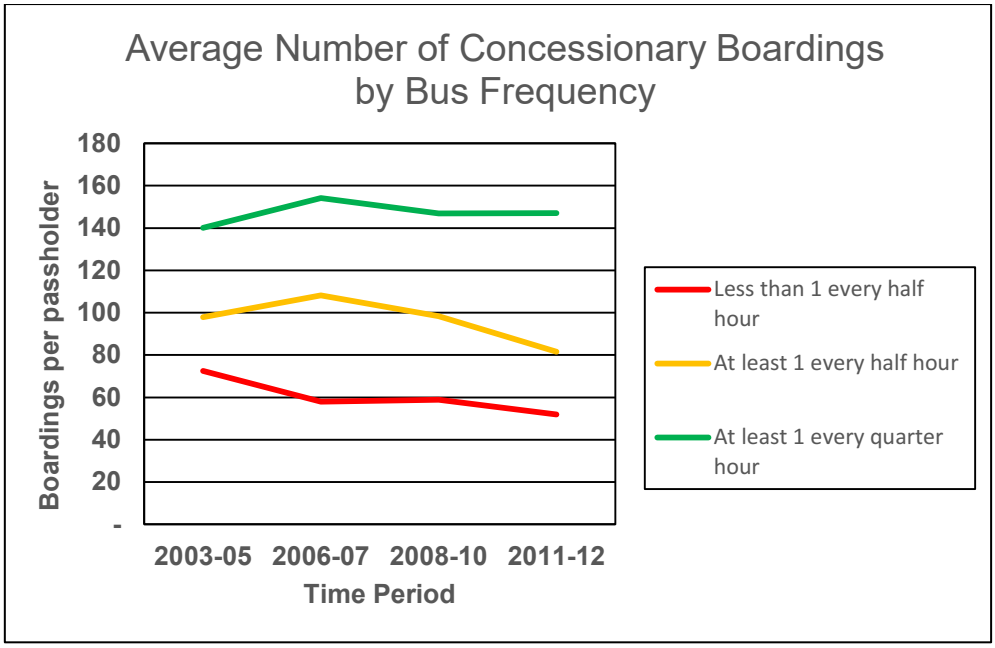


Figure 16: Average Number of Concessionary Boardings by Bus Frequency

As figure 16 shows, the more frequent a bus service is, the greater the number of trips per pass holder per year we observe on average. Over the time period the number of trips per pass holder per year is relatively stable for those whose local service runs at least every quarter of an hour, but we have observed a decrease in the number of trips per pass holder per year for those whose local bus service runs at least every half hour or only once an hour or less. This suggests that the large increase in passes that has been observed for this group is comprised mainly of people who make fewer trips per year.

The fact that the number of trips per pass holder per year increases with service frequency is not surprising, as with greater frequency comes a greater opportunity to use the bus and therefore a greater likelihood that people will make more trips.

1.3.9. *Average Number of Concessionary Boardings by Trip Distance*

Figure 17 shows the average number of concessionary trips per pass holder per year grouped according to the trip distance made.

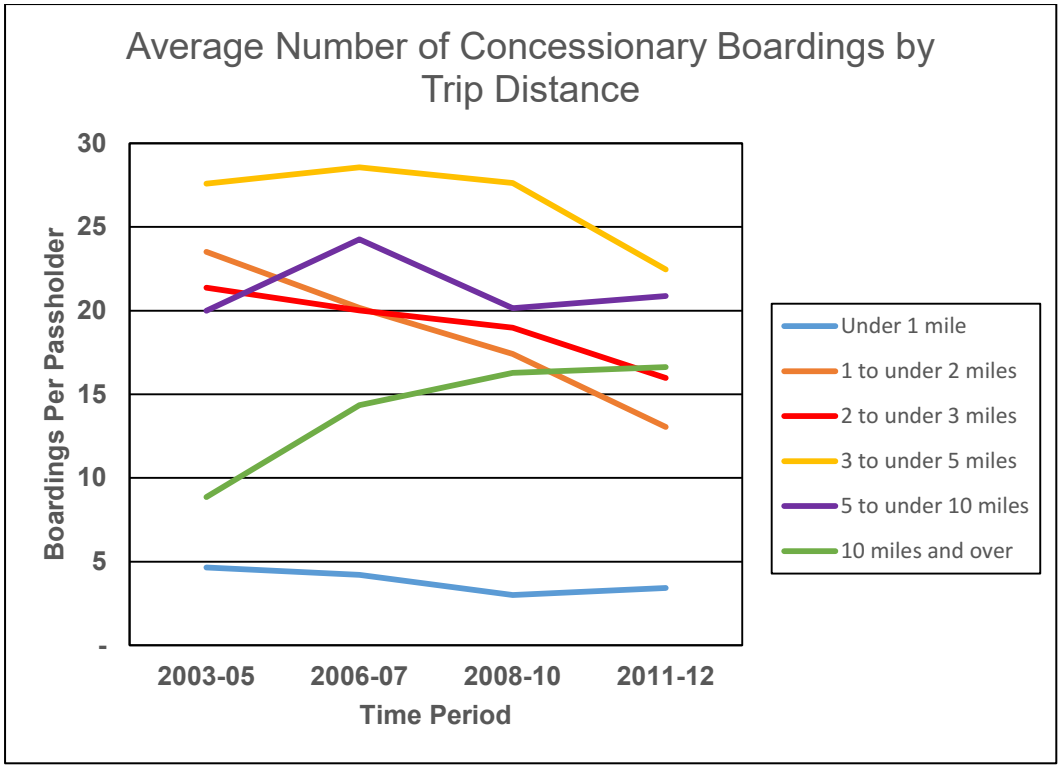


Figure 17: Average Number of Concessionary Boardings by Trip Distance

Figure 17 shows that the majority of trips are between 3 and 5 miles in length but there is low use for trips under a mile. An increasing number of trips are being made over 10 miles, this may be because the pass now entails not only local but regional travel.

The fact that there are very few trips 1 mile and under possibly reflects the fact that these trips are the easiest to walk, however there is a low sample size associated with this category so we cannot draw any firm conclusions.

Given that we have no data on take up of passes and distance travelled, it is not possible to identify the impact of the introduction of the scheme from this data.

1.3.10. *Average Number of Concessionary Boardings by Trip Purpose*

Figure 18 shows the number of trips per pass holder per year according to different trip purposes.

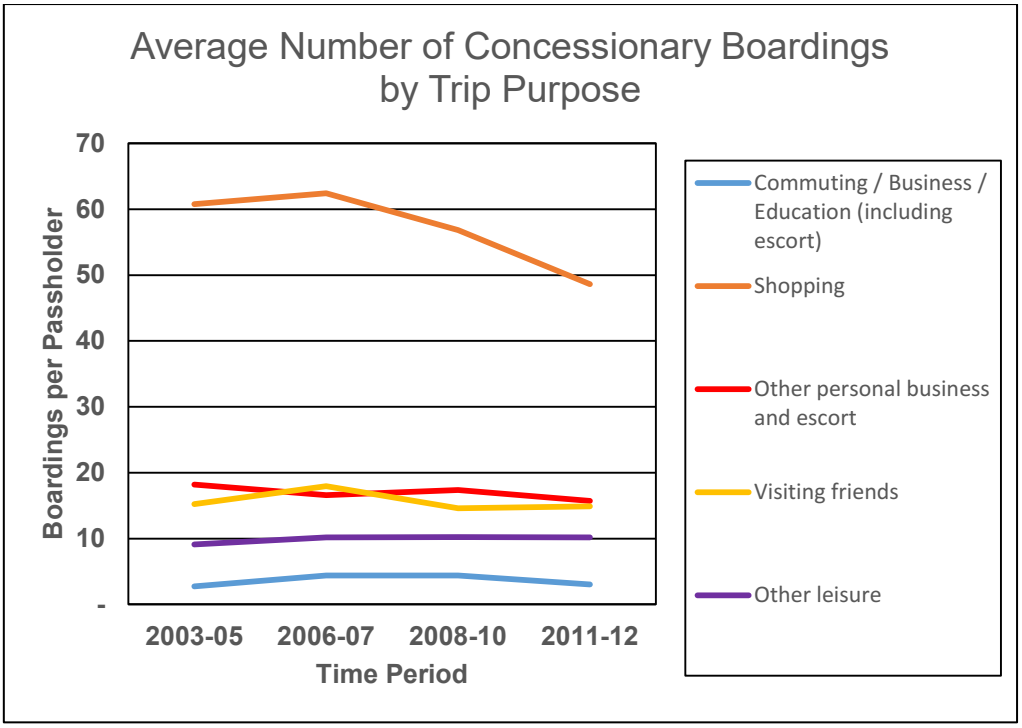


Figure 18: Average Number of Concessionary Boardings by Trip Purpose

By far the most common reason for taking a trip by bus is to go shopping with over half of all trips for this purpose. The least common trip purpose is commuting, and this is unsurprising as many pass holders will no longer be in employment and those that are will be unable to use their pass to get to work if they start before 9.30am (assuming their local scheme does not have a discretionary concession).

1.3.11. *Average Number of Concessionary Journeys by Gender*

Figure 19 shows the average number of trips per pass holder per year according to gender.

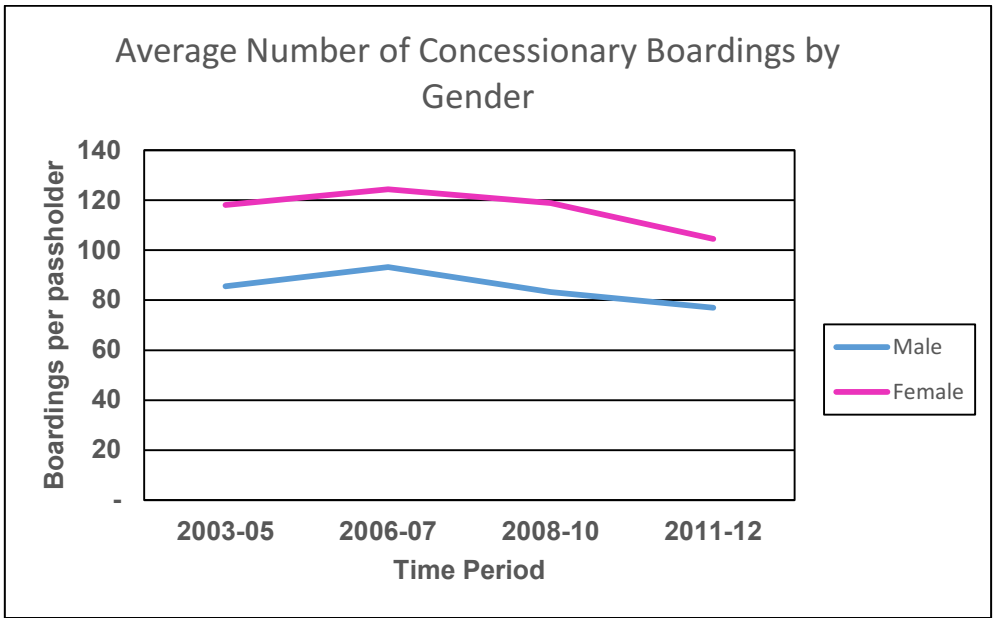


Figure 19: Average Number of Concessionary Boardings by Gender

Females make more trips on average than males, although since 2006-07 there has been a slight decrease in the number of trips per pass holder per year for both genders. Given the increase in take up for both genders, this is suggestive of the fact that newer pass holders make fewer trips, a common conclusion drawn from the data. As discussed during section 1.2.10 for take up, men may have more access to a car and therefore more likely to have a substitute to using the bus so you might expect this to be a reason for higher average boardings for woman.

1.4. Relying on the Pass

It was clear from figure 18 and general analysis that the pass is used for many different reasons. These reasons can largely be grouped together:

1) essential services (e.g. Doctors' appointments)
2) access to friends and family
3) access to leisure activities (e.g. sports and days out)

The benefits associated with the wider availability, ease and removal of cost to do these activities are available to all regardless of personal and household situation. It is believed, however, that those with incomes below £15,000 and with lower car availability may see increased benefits as they would be at the highest risk of losing access in the absence of a bus. This is further discussed in Chapter 2. We have also seen from the graphs above that this group have higher take and make more journeys (average boardings). Using analysis from the NTS we can derive that an estimated 830,000 people in households with no car access and incomes below £15,000 use the concessionary pass at least once a week.

1.5. *Conclusions*

There has been a general downward trend in the average number of bus boardings per pass holder per year over the time period we are considering. There is some evidence to suggest that for some individuals bus boardings have increased since 2006, which may reflect the impact of the concessionary scheme, although this is hard to draw out. It appears to be the case that there are factors driving the average number of trips per pass holder down over time which remain unexplained. Data shows an increase in “zero trip” pass holders over time, which suggests that new pass holders are less likely to make bus trips as the value of holding a pass for them is lower - if someone is reliant on the bus they are more likely to have held a bus pass for a longer period of time.

Of great interest from this data is the fact that we observe significantly higher numbers of trips per pass holder for people who do not have access to a car, have low household income and live in densely populated areas, characterised by frequent bus services that can be accessed by a nearby bus stop. Those people who exhibit the opposite characteristics tend to make fewer bus trips per year.

Chapter 2

How effective has the concession been in helping to improve the quality of life of older people?

2.1. *Introduction*

Whilst the analysis in Chapter 1 provides a useful background to the concessionary travel scheme and helps identify characteristics that might drive uptake of a pass and increase the numbers of trips per year, we cannot draw any conclusions from this data regarding the effectiveness of the concession in meeting its policy objectives. In order to do this, it is essential to consider academic evidence on whether the policy has actually increased bus use amongst the eligible population, and to what extent the policy aims have been achieved, with an emphasis on the social objectives.

In order to measure how adequately the English National Concessionary Travel Scheme (ENCTS) has met its social (non-monetised) objectives, we have to recall its main objective - to increase the '*quality of life*' for concessionary travellers. The literature on the relationship between the ENCTS and social objectives presents various definitions for the term '*quality of life*' and consequently utilises varying proxies for the term. The recurring references regarding the interpretation of '*quality of life*' relate to 'well-being', 'physical and mental health', 'standard of living', 'recreation and 'leisure time' and 'social-belonging'. The measurement of these variables has involved both quantitative and qualitative assessments.

This review will collate the evidence from existing literature and present any conclusions that could be drawn. The purpose is to evaluate the various potential benefits of the scheme identified and the extent to which they can be monetised. The literature reviewed covers a breadth of studies at both the regional and the national level.

2.2. *Background*

Chapter 1 presented some insight on who is using the concession, when and how often. The analysis demonstrated that the percentage of eligible older people in England who have taken up the option of holding a Concessionary pass has increased from 51% in 2002 to 76% in 2012. Although Chapter 1 does not evidence a strong positive correlation between patronage and the introduction of the ENCTS, this occurrence is well evidenced throughout the academic literature.

The existing literature demonstrates the success of the ENCTS in improving bus patronage amongst older people across a wide range of socio-economic backgrounds; the change to zero-fare from half-fare in particular resulted in substantial increases in patronage. However the literature fails to provide an adequate evaluation of the wide-ranging effects of the ENCTS, to whom the benefits from the policy accrue, and whom they exclude. Specific evidence on how and why

bus users respond to the zero-fare intervention and how this in turn impacts their quality of life is generally sparse.

The official policy aim was to ensure that bus travel, in particular, remains within the means of those on limited incomes and those who have mobility difficulties. The 2005 budget announced that not only will the scheme reduce the cost of travel for approximately 11 million people aged over 60 and approximately 2 million disabled people, it should also help approximately 54% of pensioner households who do not have a car to travel freely in their local area (Butcher, 2009).

Webb et al., (2011) utilised logistic regression analyses based on three waves of data (2004, 2006 and 2008) from the English Longitudinal Study of Ageing (ELSA). Their outcome measures were: changes in self-reported public transport use, body mass index, waist circumference and obesity. They found that eligibility for bus travel was significantly associated with increased patronage. Those that were eligible for free bus travel were 1.51 times more likely to increase bus journeys than those that were not.

The resultant increase in bus patronage does not necessarily entail an increase in the quality of life of the users however. Andrews et al, (2012) developed a Binomial Logit Model based on responses from 500 concessionary pass holders. They found no significant relationship between an increase in trip frequency and the *reporting* of an improvement in quality of life. Although the methodology employed may not be robust, this finding supports Metz's (2003) claim that the assessment of concessionaires' mobility should not only be concerned with patronage - rather the meaning of the trips may be more telling.

2.3. *Who benefits?*

When measuring how effective the scheme has been in improving the quality of life of older people, consideration has to be given to the fact that although the pass is universally available, the benefits derived from the scheme are not universal. A proportion of those eligible to hold a pass are excluded for a variety of reasons which include personal mobility constraints and frequency/existence of bus services. In addition, amongst those that hold a pass there is considerable variability in the level of usage of the pass as well as variability in trip purpose. Consequently, the benefits derived from the pass are highly variable and contingent on numerous factors.

2.3.1. Factors that constrain the benefits derived from the scheme

The predominant determinants of ownership and frequency of use of the pass are:

- access to a private car
- personal mobility
- bus frequency
- income
- gender
- walking time to the bus stop.

The existing literature states that these are they key factors that determine to whom the benefits will accrue.

Humphrey and Scott (2012) argue that the three main reasons for non-ownership and infrequent pass use are **car ownership, health problems and availability of bus services**. The report uses the NTS (2010) to obtain a detailed understanding of who owns a bus pass, who uses their pass frequently and what the pass is used for. The NTS survey sample was based on a random selection of 15,048 private households from the postcode address file (PAF); the survey achieved a 60% response rate.

The report also utilised evidence from Ipsos-Moris's Omnibus Survey to contribute to an understanding of reasons for non-ownership and infrequent use. The survey responses were based on a nationally representative sample of 988 individuals aged 61 years or older in England.

Using secondary analysis of the NTS (2010) data and analysis of the Omnibus survey they confirm that **access to a private vehicle** is the main determinant of ownership of a bus pass, and regular use of the bus pass. In response to direct questions access to a private vehicle was given by 69% of respondents as a reason for not owning a pass and cited by 74% of respondents as a reason for infrequent pass use. Health problems were the 2nd most common reason for not owning a pass and the third most popular for infrequent pass use. 14% cited availability of bus services as a reason for infrequent use whilst 10% cited this as a reason for not owning a pass.

Studies by Humphrey and Scott (2012) and Andrews et al., (2012) both highlight the considerable variability in the expected benefits that will accrue to different age groups. In the study by Andrews et al., (2012) a Binary Logistic Model was used to assess the impact of a number of factors on the likelihood that respondents would report an improvement in their quality of life, since obtaining a free bus pass. The quantitative data set consists of responses from an on board survey of 500 concessionary bus pass holders.

People aged 70-74 were the group most likely to regard free bus passes as something that improved their quality of life. The study argues that those aged 70-74 are at the life-stage where they exhibit high trip aspirations that are concurrently tempered by driving cessation. This group is consequently more prone to be reliant on alternatives to car travel than other age groups.

The study by Andrews et al., (2012) also highlights that people aged over 75 are less likely to increase their number of trips following obtaining a free bus pass than their younger counterparts. This occurrence could be attributed to the fact older pass holders are already making a higher number of trips, hence are less likely to increase their trips rates. Section 1.3.3 using NTS data evidenced the average number of concessionary boardings by age; those aged over 75 exhibit higher number of bus boardings than younger pass holders. Younger pass holders typically start from a lower trip-making base rate and thus have greater scope to increase their trip frequency.

Humphrey and Scott (2012) using a multivariate analysis in the form of a logistic regression find that people aged 70-79 or 80-84 are significantly more likely to own a

bus pass than those in their 60's. People aged 85 or over show no significant difference to those in their 60's in pass ownership. They find that pass holders aged 85+ are considerably less likely to use their pass once a week in comparison to those aged 60-84.

Section 1.2.3, using data from the NTS evidences the take-up of Concessionary Pass by age. The findings indicate that those aged between 70-79 exhibit the largest percentage take up of the pass in comparison to other age groups. Those aged between 60-64 exhibit the lowest percentage take-up of the pass in comparison to other groups. This supports the analysis by Humphrey and Scott (2012).

Metz (2003) argues that in general, mobility for older people declines with increasing age as a result of concurrent declines in physical/cognitive abilities, affordability of travel on limited incomes, mal-design of transport infrastructure and operational arrangements related to frequency/existence of bus services.

For the ENCTS scheme to result in equitable/optimal opportunities to reap the benefits for those that are eligible/able to utilise the scheme, it is important to address the key factors that are currently constraining this outcome. Affordability of travel has already been addressed by the scheme. However existence/frequency of bus services is still likely to be a significant constraining factor.

Consequently, those that enjoy the direct benefits of the ENCTS are those that hold a pass and use it. The spill-over effects between frequent users, non-frequent users and non-pass holders in terms of improvement in their quality of life have not been adequately explored in the existing literature.

This evaluation has focussed on the benefits derived from the scheme in relation to improvements in the quality of life of those that have, and are able to utilise the free bus pass.

2.4. The benefits of concessionary travel

2.4.1. Access to services

Rationale

At the most basic level the scheme sought to facilitate access to goods and services. This objective in turn essentially enables the benefits that will be explored in the subsequent sections (social integration, active lifestyles and cost gains) to materialise. The ENCTS sought to increase access to vital services for older people e.g. shops, post offices, medical care and social clubs. The social benefits in terms of increased access to services would only accrue to passengers that would not have travelled otherwise. In addition the facilitated access sought to reduce the burden on friends/relatives to provide transport for the older population.

Evidence

Kelly (2011) utilises the findings from the English Longitudinal study of ageing (ELSA) which is a panel of individuals aged 50 and over living in England. The

sample is nationally representative, and consists of four waves (2002, 2004, 2006 and 2008) of data. Each wave is comprised of a face-to-face interview and a self-completion questionnaire. This study focussed only on two services: the Post Office, and General Practitioners (general practitioners or primary care physicians). The reason given is that the post office is considered an essential service for older people because it distributes pensions and welfare payments to those without bank accounts. In addition access to GPs is also important for the short and long term health of older people.

The effects of the ENCTS are estimated using random effects Linear Probability Model specifications. Results from the study indicate that on average the policy is associated with a 5-7 percentage point rise in ***perceived*** access to these services. Kelly (2011) argues that data from the National Travel Survey indicates that the proportion of older people using buses has risen in line with this increase in perceived access. Although the analysis in Chapter 1 does not confirm this assertion the literature on the ENCTS in general consistently cites this occurrence. The methodology employed in Chapter 1 does not allow for this occurrence to be validated.

Green et al., (2013) use London as a case study to study the impacts of the ENCTS. The study draws on data from 47 participants aged 60 years and over living in London. Green et al. utilised both individual and group interview methods to gather their data. They found that the respondents cited the pass as representing a lifeline that enables them to access vital services such as hospital appointments. Although their study was based on a small sample of participants their survey technique enabled a richer representation of the experiences of older people in London.

In addition although the transport infrastructure in London differs largely from England the study is still valuable. We can assume that given a certain set of conditions like transport infrastructure for example, the benefits in terms of increased access to services are likely to transpire. Variability in terms of the set of conditions will only yield different levels of enhanced access to services, but one can assume the net effect will be positive in all instances.

In general the survey literature finds that the ENCTS has enabled users to engage in a wide range of activities both vital and recreational. What is important to note is that the social benefits related to increased access to services only applies to those generated passengers that would not have travelled otherwise. Consequently an assumption can be made that the net effect, although positive, is not likely to be considerable. The literature in general does not present robust evidence on the relationship between the ENCTS, improvements in access to services and the consequent impact on the quality of life of older people.

2.4.2. Tackling social exclusion

Rationale

The ENCTS's main social objective has been to tackle '*social exclusion*'.

Social exclusion refers to the processes in which a particular group are systematically blocked from the rights, opportunities and resources that are entitled to all members of the society.

Transport tackles social exclusion primarily through accessibility. Transport in general promotes accessibility which in turn enables people to fully participate in the economic, social and political life of the society they are embedded in. This involves entitled access to employment, housing, civic engagement, democratic participation, education and training, sports and recreation facilities, social networks and health care.

However, transport contributes to social exclusion when it limits access to these activities due to the cost of transport and/or the availability of transport. Limited access to services due to cost/availability of transport limits the number and range of activities people can engage in, which is a key driver of marginalisation and alienation.

The older population as a group are more prone to social exclusion because they are faced with declining incomes and deteriorating mental/physical health which may inhibit their participation within the society they are embedded in. A survey by Help the Aged (2005) reported that 36% of those aged 65 and above felt out of touch with society with 11% reporting often feeling lonely.

The ENCTS policy sought to overcome the obstacles that constrain the older population's successful integration/participation in society by providing them with access to a wide-range of activities/services.

Specifically, the provision of the free bus pass sought to enhance the quality of life of older people by enabling them to engage in social interaction by leaving the house.

The social interaction could transpire:

- on the actual bus journeys: where they would be able to interact with the rest of society
- as well as at the destination of the journeys: where they could participate in interactive societies and activities such as volunteering or dancing.

A key factor is that older people would not have to factor in travel costs when deciding to leave the house. It was hoped that this would incentivise them to get-out-and-about to help stem the processes of social exclusion. Andrews et al., (2012) showed that older people would be able to enhance their quality of life by making additional journeys to visit friends/relations, by participating in social activities and by interacting with people they could meet on the bus. In addition an indirect benefit that could result from enhanced social interaction is the mental/physical stimulation that could result from engaging in the associated activities, this form of active travel will be discussed in the subsequent sections.

Evidence

The literature on whether the ENCTS has improved the quality of life for older people in the form of tackling social exclusion is highly variable.

Responses from various case study surveys signal that the scheme has improved the quality of life for older people in terms of tackling social exclusion. A study by the Transport Action Group of Manchester in Hirst & Harrop, (2011) is a case in point. The study is based on a questionnaire that was completed by 152 existing pass holders and focused on the use of passes on local buses. The focus of the study was limited to the metropolitan district of Manchester, 84% of respondents were residents within Manchester.

Responses from the Manchester surveys found that without the scheme the trips that were most likely to be sacrificed were trips to friends and family, leisure and recreational trips and shopping trips. If these trips were sacrificed this would undermine the social objectives of the policy related to tackling social exclusion.

However, Kelly, (2009) using data from the ELSA and APS finds no evidence of substantive spillovers onto social participation. The key implication from the Kelly, (2009) findings is that the price of bus fares does not appear to be a determining factor which limits social participation, but public transport in and of itself may still play a role in tackling social exclusion. In other words the evidence points to public transport in general as playing an important role in tackling social exclusion.

In Andrews, (2012) the responses from the survey method indicate that older people value the pass on the grounds that it does promote social integration. The study finds that the policy does encourage use of the bus as a 'social space' where informal support networks are formed and where social engagement is enhanced. Moreover new, more recreational trips were reported that would not have been undertaken if there was an associated cost to that travel.

In addition, the Green et al., (2013) case study of London found that the pass provided:

- opportunities for meaningful social interaction
- a sense of belonging by travelling with the general public
- a socially acceptable way of combating loneliness
- a mechanism for participation in life in the city.

The evidence on the relationship between social participation and fare price on the whole is inconclusive. It is evident from responses from surveys that older people value their passes highly for social integration purposes. However, what is not evident from the literature is how much any increase in social participation is actually attributable to the ENCTS policy if any. There is a general lack of robust evidence on whether those who have a free concession now are less excluded than when there was no free concession.

Finally the ENCTS's success in delivering the objective of tackling social exclusion is questionable on the grounds that the very people who are most at risk of becoming isolated are those who are not able to utilise the scheme. Most of the literature sidelines those that cannot use the bus due to mobility constraints and/or frequency

of bus services, yet these are the very people that are prone to the processes of social exclusion. Section 1.2.1 indicated that just under 25% of those that are eligible to hold a pass have not taken up the concessionary pass. Further research is needed to identify the possible reasons as to why they have chosen not to take up the pass. However the findings will not alter the concern highlighted in this section; those that are most prone to the processes of social exclusion could be those that are not deriving the benefits from the scheme.

2.4.3. Active lifestyles

Rationale

Physical activity plays a key role in the prevention and treatment of a wide range of chronic diseases and conditions e.g. cardiovascular disease, osteoporosis, diabetes, hypertension, and anxiety and depression.

The national service framework for older people by the Department for Health in 2001 argued that mobility is an effective means for improving the quality of life for older people. In this light the ENCTS sought to enhance the mobility of concessionary travellers to help serve the health objectives aimed at the older population.

Kelly, (2011) notes that the theoretical effect of the ENCTS scheme on active lifestyles is closely related to the impact on walking. However, the expected effect of the ENCTS on walking is ambiguous. Pass holders may substitute away from walking journeys, but could also increase their walking time when making additional journeys. Consequently, the ENCTS could incentivise concessionary travellers to engage in more active forms of travel as bus journeys are likely to involve some element of walking and may serve as a means to further physical activity at their destinations.

The Local Transport White Paper (2011) highlights the public health benefits of active travel. Similarly, the Department for Health (2010) has cited active forms of travel as having the effect of reducing the impact of mental health problems such as dementia as well as physical ailments. Consequently the rationale of the ENCTS in terms of active travel was to enhance the physical and mental wellbeing of older people via the actual bus journeys and the access they provided to a range of activities that could potentially physically and mentally stimulate the older population.

Evidence

The Manchester case study by Hirst & Harrop, (2011) confirms this hypothesis. They found that the ENCTS does promote active travel. Respondents reported using their pass to attend a variety of physical, health-oriented, and leisure and recreational pursuits e.g. swimming, organised walks and line dancing. In addition social/cultural/educational activities, visits to the theatre, museum art galleries and libraries were also cited. The study found that the pass was key to providing the impetus for pass holders to experience the mental and physical stimulus of new pursuits and places.

The case study in Manchester provides evidence that the scheme has been successful in promoting physical and mental health by providing access to key physical/mental activities and also through the resultant increase in walking time associated with bus journeys.

The positive relationship between the ENCTS and the impact on walking is confirmed by Kelly's (2011) study using results from the APS. The APS shows that reported days of moderate walking increased by an average of 0.03-0.5 days per month, which was consistent with the growth in bus use. This confirms that the ENCTS has contributed to an increase in active travel. This finding is consistent with existing evidence that finds a positive association between public transport use and walking activity. In addition results from the NTS indicate no substitution from walking journeys, and that the extra journeys represent new trips. If this holds one would expect the effect on walking to be weakly positive. Coronini-Cronberg et al (2012) also associated pass holding with a positive effect on walking. They found that there was greater likelihood of walking more frequently both to advantaged and disadvantaged groups.

Although the findings from the Hirst & Harrop (2011) study and the Kelly (2011) study both confirm that the reform has increased walking time in the course of making bus journeys the evidence related to whether the scheme has enabled access to physical activities at the destination of the bus journeys is less robust.

Respondents from the Hirst & Harrop (2011) Manchester surveys report that the ENCTS has enabled them to engage in various physical activities but the Kelly (2011), using APS and ELSA data finds no indirect benefits in the form of spill over effects on sporting activity. In addition, Kelly (2011) using only the APS data found that the ENCTS had no effect on participation in leisure activities not directly related to travel.

Another study by Webb et al., (2011) used logistic regression analyses using three waves of data (2004, 2006 and 2008) from the ELSA. The main outcome measures were changes in self-reported public transport use, body mass index, waist circumference and obesity. The regression analyses found that older people who use public transport had reduced their odds of becoming obese in 2008 compared with those who did not use public transport. The study concludes that the introduction of free bus travel for older residents of England appears to have increased public transport use, and may have induced a protective effect against obesity.

Webb et al (2011) also use data from the 2008 health survey for England which suggests that 70% of people aged 65 years or older are overweight or obese and fewer than 20% meet government recommended levels of physical activity. In addition 80% of respondents aged 65-74 and 90% of those aged 75+ years spent no time walking 'at a fairly brisk pace' in an average week. Consequently the protective effect against obesity that was cited by Web et al., (2011) proves important in stemming the obesity related problems that older people face.

The ENCTS may confer significant population health benefits through increased physical and mental activity; these potential health benefits appear to be equitably distributed across socio-economic groups.

There appears to be insufficient evidence documenting that the scheme enables access to more physical forms of activity. The evidence does signal that increases in bus journeys are highly correlated with increased walking times. The literature consistently evidences the success of the ENCTS in increasing the number of journeys by older people; consequently we can infer that the ENCTS has positively contributed to the active lifestyles of older people.

Active lifestyles in the form of taking public transport seem to be key in stemming the onset of physical and mental ailments, however further research is needed to analyse the specific relationship between concessionary travellers and improvements in their mental/physical health as a result of both half and full-fare concessions.

2.4.4. Cost gains

Rationale

The ENCTS sought to change the decision making process of older people. Before the ENCTS, when making the decision to travel, older people had to consider all the possible fare and time costs, against the benefits of their decision to travel. The ENCTS, by reducing the cost to travel effectively enabled older people to enjoy some of the alternative goods/services that were previously rejected on the basis of the fare cost required to reach them. Hence the ENCTS sought to ensure a cost gain: whereby bus fare prices are reduced to zero which in turn increases the disposable income of older people.

Older people in particular have a greater tendency to not be in employment or have lower incomes via part time work or phased retirement. In this light the ENCTS sought to ease the financial constraints older people faced by reducing transport costs related to bus journeys to zero. In addition the ENCTS sought to induce a shift from car to bus which would similarly result in an increase in disposable income due to the cost savings from car journeys.

The ENCTS intended to counter the effects on mobility of low retirement incomes by reducing travel costs. The cost gain would enable older people to divert the funds to alternative goods, services and activities that could further enhance their quality of life e.g. leisure and recreational activities. In addition, the cost gain would also serve the social participation objective by incentivising people to get-out-and-about, thus discounting any decision to stay home-bound as a result of travel costs.

Evidence

The literature confirms the hypothesis that a reduction in travel costs enhances the quality of life for older people, due to the increase in disposable income, which allows them to choose how they would like to spend their savings on previously rejected options.

For example, respondents from the Manchester case study highlighted being able to afford treats at concerts instead of paying for parking fees. This simple transfer from paying for parking fees to paying for a treat that they would not have bought otherwise has a positive impact on their quality of life.

Some respondents reported being able to take up volunteering work due to the reduction in travel costs, indicating some positive spill-over effects on those that are now able to engage in such activities and those that are on the receiving end of the volunteering activities.

The literature also finds that free travel has resulted in avoidance gains. Older people reported being able to avoid activities they did not want to engage in, like driving in bad weather conditions, paying for parking fees and not having to drive themselves to their desired destinations.

However although these surveys indicate reported changes in travel behaviour the results from Kelly's (2011) study, using ELSA and APS data, find that there is no strong pattern of substitution across modes, and no significant change in recorded journeys made by car, car passenger, rail or foot.

The studies also find that the impacts of the reform are not confined to traditionally disadvantaged groups. Although the scheme intended to counter the effects on mobility of low retirement incomes, those pass holders on higher incomes have not been excluded from the benefits. Section 1.2.5 supports this conclusion. Those that are eligible for a pass that earn up to £9,999 exhibit a take-up rate of 80%, whilst those that earn £20,000 and above exhibit a high take-up rate of 72%. Although the take up-rate amongst high-income earners is high, local bus boardings by income levels do not follow the same trend. Those that earn up to £10,000 take up the greatest proportion of local bus boardings. There is a significant drop in the percentage of local bus boardings once the income threshold of >£20,000 is reached.

Andrews et al., (2012) using regression analysis found at the 10% significance level that those who would have taken a paid bus journey were also significant predictors of an increased likelihood of an improved quality of life.

This is explained by non-generated pass holders deriving clear benefits from not having to pay for the trips they would have made under the half-fare scheme. The study also found facilitative gains from the scheme, transpiring through increased flexibility in the daily routines of pass holders and increased variety and choice of end destinations.

Although the findings from the various studies cannot provide a definitive representation of the level of benefits derived from the ENCTS, in terms of the indirect benefits from cost gain for concessionary travellers on the whole, there is some indication that there are positive effects on their quality of life. Respondents from the survey literature consistently value the pass in terms of the cost gain. Control and autonomy are two key components of quality of life. In this light the

ENCTS has enabled facilitative gains, whereby the benefits derived relate to what is allowed to happen as a result of the scheme.

Concessionary travellers in the survey literature cite increased flexibility in their daily routines as well as increased variety in their choice of destinations. Evidence from Andrews et al., (2012) found that people valued their pass above and beyond its' actual monetary value. When offered a simple addition to the state pension they did not equate them to the same level. The pass was said to symbolize their freedom and independence, in addition it was perceived to be easier and hassle free to use.

In summary the survey results indicate that the pass represents an embodiment of values of freedom, autonomy and choice for concessionary travellers. In this light the ENCTS does impact positively on the quality of life of concessionary travellers by ensuring this autonomy and freedom through the resultant cost gains.

2.5. *'Old' pass holders vs 'New' pass holders*

Baker and White (2010) look at the impacts of free concessionary travel by using a case study of an English rural region; the Salisbury area. They make the important distinction that in the counterfactual we would not expect those eligible for concessions to pay the full adult price. They give an average discount for older passengers of 46% based on a sample of many European cities and countries. One of the main aims of the study looks into the differences between old pass holders (those who had previously held a half fare pass) and new pass holders (who have only taken one up since it became free).

A relative trip rate for old pass holders after the introduction of free passes had an average of 1.17 weekly trip rate (looking at Salisbury, small urban and rural areas), compared with just 0.86 for the 'new pass' category. This may explain the reductions in average boardings we saw in section 1.3.1. While take up has increased over time, the tendency for new pass holders to travel less, see's overall average boarding reductions. These differences between pass holders is an important distinction when considering the impacts of free concessionary travel. We know from Chapter 1 that there are significantly higher numbers of trips per pass holder per year for people who do not have access to a car, and have low household income. Baker and White's report distinguishes these into old/new passes:

- 'old' pass holders were far more likely to indicate that their 'main mode' of transport was the bus – 63.5%, compared with 31.1% for the 'new' pass holders
- 'old' pass holders were far more likely to live in a household without a car – 70.3% than did the 'new' holders
- 'new' pass holders were more likely to possess a driving licence
- 'old' pass holders were more likely to be in receipt of council tax or housing benefits than 'new' pass holders.

This concludes that those that are more likely to be dependent on the bus and therefore most needing of the concessionary pass (low income and low car ownership) are those who already held the pass prior to the free concession coming in.

2.6. *Conclusions*

The literature falls short in suggesting an appropriate methodology to monetise the social benefits. Moreover it does not provide a realistic scale of the suggested impacts. Mackett (2013) also highlights that most of the research has been based on modest sample surveys, which makes it difficult to generalise the results for the whole population.

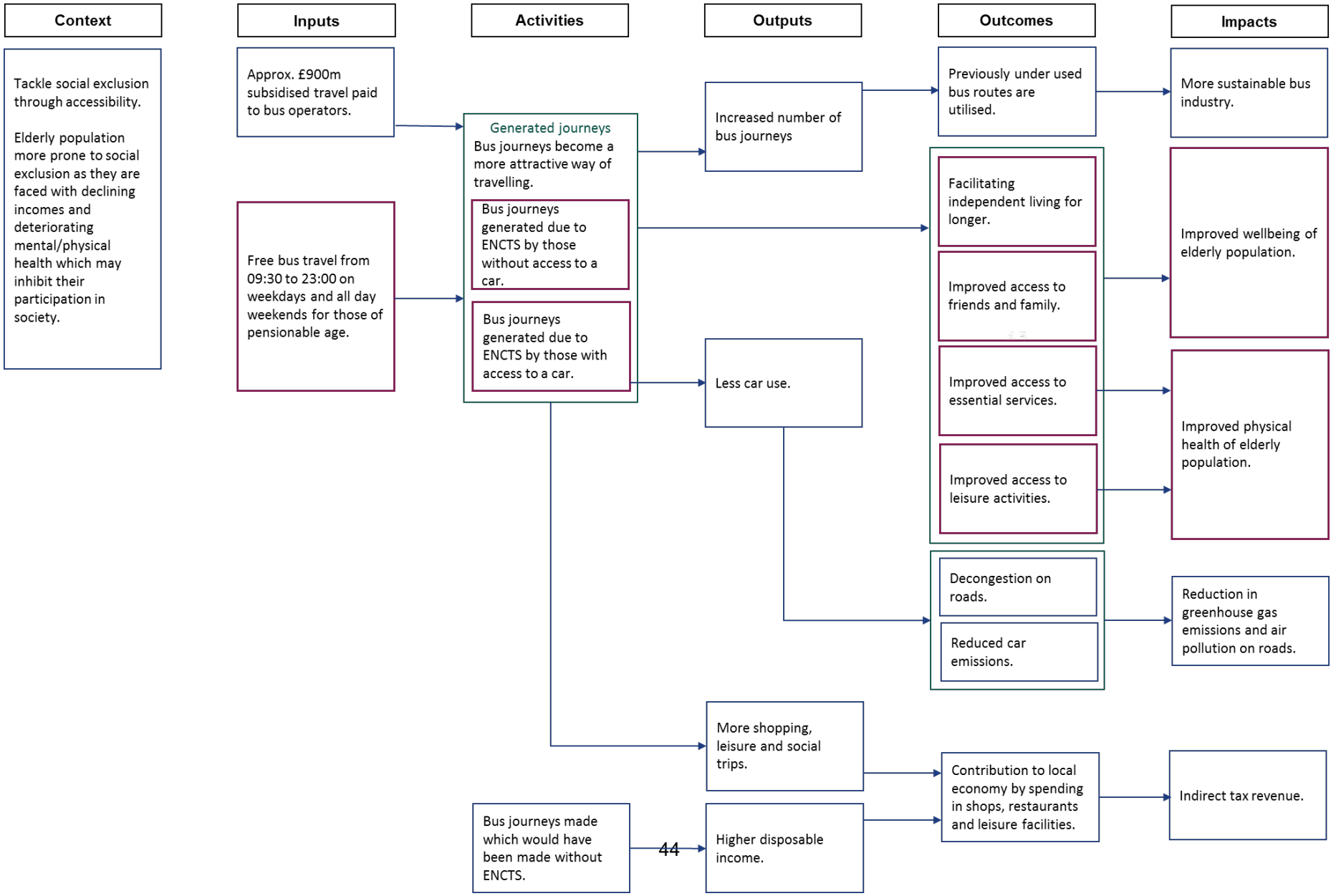
In general, the literature on the impact of concessionary travel on quality of life is fairly diverse, not systematic and any significance cited is highly dependent on specific survey data. As a result, due diligence has to be noted when attempting to deduce anything from the conclusions offered from the studies. From the literature reviewed it is likely that the ENCTS has positively contributed to the quality of life of concessionary travellers in a variety of ways. The difficulty is that the literature as of yet has been unable to give a robust and clear depiction of this relationship at the aggregate level. Finally, the question related to the measurement of how effective the ENCTS has been in improving the quality of life is difficult to conclusively answer, on the basis of the available literature.

The findings cannot be generalised due the studies' use of varying proxies for 'quality of life' as well as the findings being contingent on specific regional contexts. Moreover many studies fall short in providing analyses that clearly examine any significant direct relationships, between the ENCTS specifically and a 'quality of life' variable. Consequently measurement of the effectiveness of the ENCTS in terms of improvements in the quality of life for older people may be assumed to be positive; however, an accurate estimate of how much increases in the quality of life of older people are attributable to the ENCTS has not been shown in the literature.

2.7. *Logic mapping*

This Chapter aimed to look at the effectiveness of the concession in meeting its policy objectives. In order to work out a benefit cost ratio and technical analysis in Chapter 3, it was important to look at the existing literature and general available knowledge, on what benefits should be considered and valued. Below is a logic map showing the scheme's context, inputs, outputs and impacts.

English National Concessionary Travel Scheme (ENCTS) for Buses



Bibliography

1. Andrews, G. (2012). Just the ticket? Understanding the wide-ranging benefits of England's concessionary fares policy. *Centre for Transport and Society* .
2. Andrews, G., Parkhurst, G., Susilo, Y., & Shaw, J. (2012) The Grey Escape: Investigating older people's use of the free bus pass. *Transportation Planning and Technology , 35* (1), 3-15.
3. Baker S., White P. (2010) Impacts of Free Concessionary Travel: Case study of an English rural region. *Transport Policy,* 20–26
4. Butcher, L. (2009). *Buses: Concessionary Fares .* House of Commons Library
5. Coronini-Cronberg et al. (2012). The Impact of a Free Older Persons' Bus Pass on Active Travel and Regular Walking in England. American Journal of Public Health, Vol 102, No. 11
6. Green, J., Jones, A., & Roberts, H. (2012). More than A to B: the role of free bus travel for the mobility and wellbeing of older citizens in London. In *Ageing and Society* (pp. 1-23). Cambridge University Press.
7. Greener Journeys/KPMG (2014). The costs and benefits of concessionary bus travel for older and disabled people in Britain.
8. Hirst, E., & Harrop, B. (2011). Getting out and about: Investigating the impact of concessionary fares on older people's lives. *Transport Action Group* .
9. HUG. (2005 unpublished). GfK/ NOP Help Unite Generations (HUG) survey. *Help the Aged* .
10. Humphrey, A., & Scott, A. (2012). Older people's use of Concessionary Travel. *Nat Cen, Age UK* .
11. Kelly, E. (2011). A Ticket to Ride: Does Free Bus Travel Promote Active Ageing? *University College London & Institute for Fiscal Studies: Job Market Paper* .
12. Mackett, R. (2013). The impact of concessionary bus travel on the wellbeing of older and disabled people. *Transportation Research Board 92nd Annual Meeting* .
13. Metz, D. (2003). Transport Policy for an ageing population. *Transport Reviews: A Transational Transdisciplinary Journal , 23* (4), 375-386.
14. Titheridge, H., Achuthan, K., & Mackett, R. L. (2009). Assessing the extent of transport social exclusion among the elderly. *Journal of Transport and Land Use , 2* (2), 31-48.
15. Webb, E., Gopalakrishnan, N., & Millett, C. (2011). Free bus passes, use of public transport and obesity among older people in England. *Journal of Epidemiology & Community Health , 6* (2), 166-180.
16. WRVS (Royal Volunteering Service) (2011). Gold age pensioners -Valuing the Socio-Economic Contribution of Older People in the UK.

Chapter 3
Value for money of concessionary travel

3.1. *Introduction*

This Chapter builds on the previous ones by presenting a cost-benefit analysis (CBA) of concessionary travel. It estimates the costs to government as well as the benefits the policy brings to both its users and society, and we generate a benefit cost ratio (BCR) for the scheme[10].

The overall conclusion of the value for money of concessionary travel, as expressed in a value for money category, must also consider non-monetised benefits from the statistics and literature reviews, given the challenge of monetising some of the wider social impacts of the policy due to a lack of evidence.

We also provide a scenario of future costs and benefits, to determine the expected value for money of concessionary travel in the first year of the next Parliament (2021). Due to the rise in qualifying age for concessionary travel[11], it is expected that total concessionary patronage would fall slightly in the next few years as the pass holder cohort will shrink. Thus the costs to government are expected to be slightly lower than today in constant cash terms. Additionally, rising numbers of older female driving licence holders[12] are expected to dampen pass holders' demand for bus transport.

We present a BCR and a sensitivity test:

- **central case BCR**: reported according to well-established WebTAG appraisal principles
- **sensitivity test**: including more uncertain calculations of additional benefits, which are not currently covered in WebTAG guidance and are illustrative only.

The London market has been analysed separately to the rest of England. This is due to the fact that free concessionary and disabled travel has been available in London on a discretionary basis for a much longer period of time, compared to the rest of the country, and the travel behaviour adjustments by pass holders had occurred before the English National Concessionary Travel Scheme (ENCTS) became statutory.

3.2 *Costs and benefits of concessionary travel*

[10] A BCR indicates the quantifiable benefit from a scheme per £1 cost to the government's transport budget. A BCR of 2.0 indicates that society gains £2 for every £1 spent from the transport budget.
[11] The eligibility age for older persons' concessionary travel is increasing in line with increases in the pension age.
[12] Although licence ownership by older men is very high and at saturation, the level of older women driving licence ownership has historically been low and is experiencing a steady increase, based on ONS data.

We have carried out a retrospective assessment of the costs and benefits of concessionary travel in a single year in 2015, based on statistical data and assumptions. We explain the derivation of the results in the Annex.

As shown in Chapter 2, concessionary travel could provide increased access to services, lifestyle improvements and cost savings to pass holders. We have attempted to monetise some of these effects. Annex E presents a map of the costs and benefits.

The policy also provides a number of benefits to other road users, non-concessionary travellers, the Treasury and affects the environment. These impacts are included in the **central case** BCR, as they can be monetised following WebTAG. Other benefits are estimated using less well-established methods and therefore included in the **sensitivity test**.

The **central case** benefits are as follows:

> **Change in consumer benefit**: This is a measure of consumers' benefit brought about by free bus travel. This represents every individual's reason for travel – whether it is socialising, shopping, education or something else.
>
> **External benefits**: All benefits to individuals other than the travellers, and the environment. This includes the *net* benefit from people **switching from cars** to buses such as savings in **congestion costs** and **greenhouse gas emissions**. However, concessionary travel creates extra journeys and also *adds* to the overall demand for transport – in fact we find that the external benefit is *negative* i.e. a cost to other road users and the environment. External benefits also include **indirect tax benefits** - the **tax revenue** the Treasury receives from bus passengers who no longer spend money on a fare, which does not include VAT[13], and can spend this money on other goods and services that do.

In addition to the above, the **sensitivity test** benefits also include:

> **Health benefits** to both pass-holders and society for travelling by bus instead of driving.
>
> **Service enhancement:** small saving in bus waiting times as additional ENCTS passengers lead to increased bus frequency.
>
> **Cashless benefit:** small reduction to boarding times, felt by all passengers, as concessionary travellers travel cashless with a smart card.

The **costs** of the scheme are made up of:

> **Cost of reimbursement to bus operators**: These costs have been split by reimbursing the cost of fares that would have been paid by travellers in the

[13] Travel fares are exempt from VAT.

absence of the scheme, and running costs for the newly generated trips made as a result of free travel.

Administrative costs: These are the estimated costs to travel concessionary authorities (TCAs) of implementing the scheme and will include costs of issuing passes and staff costs.

Some local authorities or bus operators might have offered discretionary concessionary travel prior to the ENCTS, meaning that central government funding is used to subsidise travel that would have been paid for at the local level. This means the reported benefits are a slight overestimate, but we believe that this issue is not widespread and the effect on the BCR is small.

Travellers and bus operators behave differently in the London market. When bus travel becomes free, as it did outside London with the ENCTS, patronage increases and bus operators may have to run more services to cope with this demand. As 34%[14] of bus trips in England, outside London are made by concessionary passengers, they represent a significant portion of bus service demand.

However, free travel for older people and disabled has been offered by Transport for London (TfL) for several years before ENCTS became statutory. Therefore travellers and bus operators have had a number of years to adjust their travel habits and bus timetables respectively.

As a result, although most of the benefits and costs of ENCTS still apply, in London the following **do not**:

Zero external benefits: As concessionary travel was already in place in London, eligible travellers' switch from car to bus travel and bus operators/TfL's increase in bus frequency to deal with the extra demand of generated journeys had already taken place. Therefore the net effect on congestion and the environment is nil.

Zero service enhancements: As bus operators/TfL were already providing sufficient frequencies to deal with concessionary travellers, there is no further improvement to bus timetables and no benefit of reduced waiting times.

3.3 *Changes in travel demand and consumer benefit*

Changes in the propensity of pass holders to travel by bus drive the costs and benefits of the ENCTS. Total concessionary journeys are split into "generated" and "non-generated journeys". Generated journeys are those that have only been taken due to the offer of free concessionary travel, whereas non-generated journeys are those that would have been taken under a paid fare (i.e. in the absence of the scheme). The effect of concessionary travel is that non-generated passengers save

[14] DfT (2014) Annual Bus Statistics: England 2013/14 available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387397/annual-bus-statistics-year-to-march-2014.pdf

their trip fare whereas generated passengers get a benefit from travelling, now that their free fare makes their trip worth it.

These two groups of journeys are brought about by different dynamics. We have used the latest available statistics and estimated the proportion of generated and non-generated trips to work out the benefits to both groups: fare savings to non-generated passengers and consumer benefit to generated passengers.

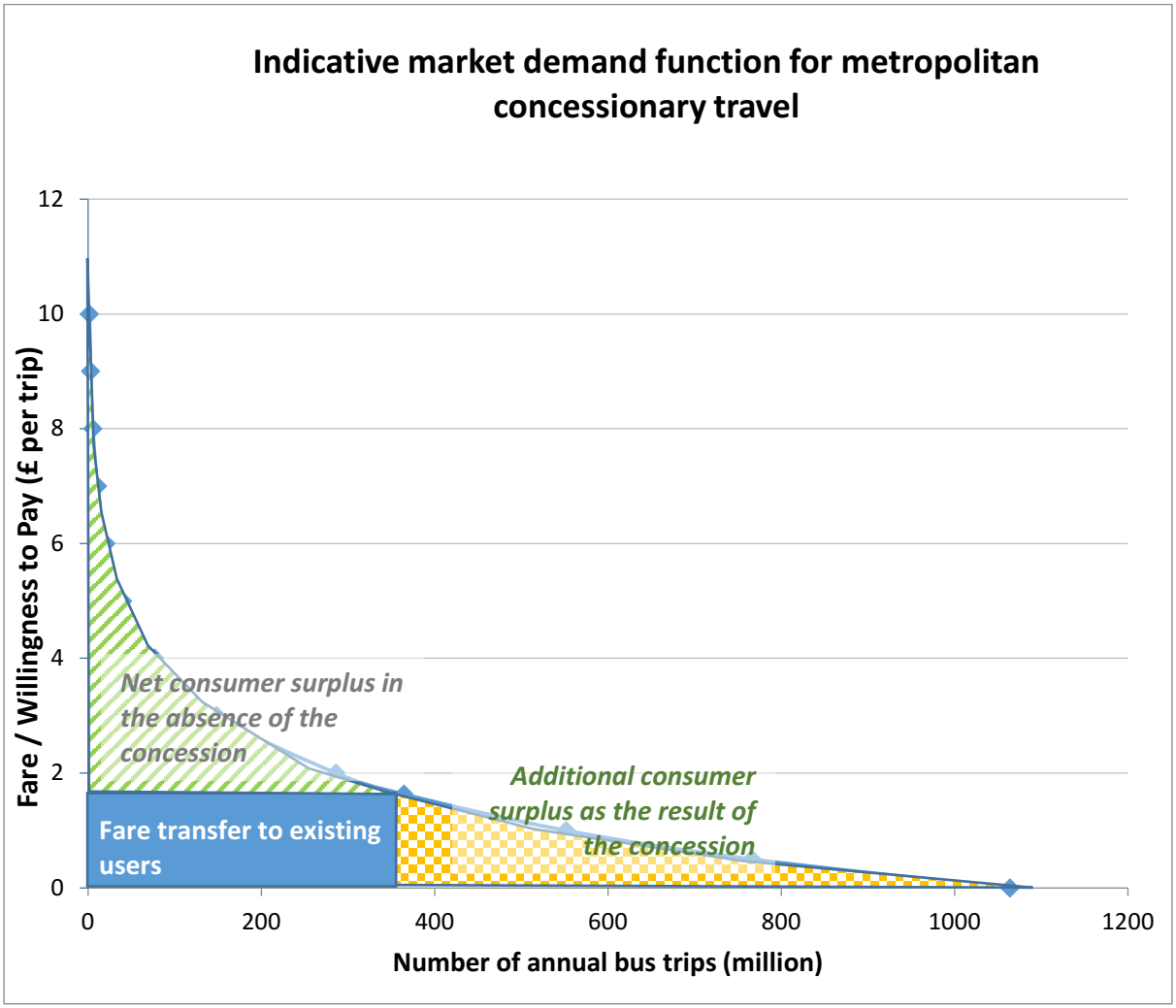


Figure 20: Indicative market demand for Metropolitan Concessionary Travel

Figure 20 above shows an indicative demand curve for concessionary passengers, illustrating a theoretical example of willingness to pay for travel. Willingness to pay varies between individuals and takes into account their personal reasons for making a trip (e.g. socialising, shopping, education etc.). The sum of every individual's willingness to pay for a service can be plotted as a single demand curve which indicates that at higher prices, fewer people would buy the service. Those who do, would likely have the most "pressing" reason to use the service and/or the fewest available transport alternatives.

The vertical axis shows the fare or willingness to pay, so at £8 per trip very few people would be willing to pay the fare but at a lower fare of around £2, many more are willing to make the bus journey. Crucially, travellers are assumed to anticipate

the extent to which they can gain a personal benefit from bus travel and weigh that up against the cost of travel. If they decide to travel, then their benefit is assumed to be as high as their willingness to pay; otherwise they would not pay the fare to travel. When actual travel costs are lower than individuals' willingness to pay, they experience "consumer surplus" from the service and that measures people's additional benefits from a bus trip such as socialising, shopping, education, etc. above the fare they pay – these are the "consumer benefits" that are included in the cost-benefit analysis.

At an estimated average full fare paid by ENCTS passengers in the absence of the scheme (approx. £1.60 in England excluding London and £1.20 in London[15]), using a variation of the market demand curve above, we estimate the number of annual bus trips at around 370 million across England.

The area shaded in **green** above is the consumer surplus enjoyed by passengers for the (non-generated) trips that would have been made in the absence of the scheme. These passengers also now save the fare they would have paid, equal to the **blue** shaded area.

As a result of making travel free, bus trips rise to just over 1 billion in the whole of England due to generated journeys. These travellers enjoy the accessibility of free travel and are able to engage in activities they find useful such as socialisation, shopping etc. - their consumer surplus is illustrated by the **orange** shaded area.

3.4 *Results of the analysis*

Table 1 below outlines the trips and reimbursement costs according to the latest (2014/15) datasets[16]. We use these inputs to calculate the costs or benefits in a single year. All figures are in constant 2015 prices unless stated otherwise.

Reimbursement costs	
Reimbursement, excludes London	£703 million
Reimbursement, with London	£943 million
Number of trips made	
Concessionary trips, excludes London	708 million
Concessionary trips, with London	1,004 million
All trips (commercial and concessionary), excludes London	2,284 million
All trips (commercial and concessionary), with London	4,647 million
Pass holders characteristics	
Pass holders, % of eligible population in metropolitan areas	74%
Pass holders, % of eligible population in non-metropolitan areas	82%

[15] DfT (2015) Concessionary Travel Reimbursement Guidance Calculator
[16] DfT (2014) Bus Statistics: BUS0830, BUS0821, BUS0103 and National Travel Survey (2014) NTS9915

Average concessionary journeys per pass holder per year in metropolitan areas	128
Average concessionary journeys per pass holder per year in non-metropolitan areas	67

Table 1: Total trips and reimbursement costs according to 2014/15 data set

Table 2 provides the monetised costs and benefits. A separate table included in section 3.5 shows the non-monetised impacts and the likely magnitude of these. A fuller assessment of the value for money of concessionary travel is made with reference to those and evidence from Chapter 2 in section 2.3.1.

In-year impacts for England, constant 2015 prices	England excluding London, £m	London, £m
(a) Total reimbursement costs	**£855**	**£285**
Fare and operating cost reimbursement	£837	£284
Admin costs	£18	£1
(b) Consumer benefit	**£920**	**£295**
Increase in consumer surplus	£920	£295
(c) External benefits	**£70**	**£40**
Decongestion benefits (cars)	£13	£0
Congestion costs (buses)	-£42	£0
Net greenhouse gas costs	-£18	£0
Change in indirect taxes (VAT)	£117	£40
Total Costs (a)	**£855**	**£285**
Total Benefits (b+c)	**£993**	**£335**
Benefit Cost Ratio (b+c)/a	**1.16**	**1.18**

Table 2: Summary of costs and benefits of the concessionary scheme

3.4.1 *England excluding London*

The analysis shows that there are £990m of benefits generated for £855m of costs. It indicates that the admin costs per £1 of reimbursement vary between London and the rest of England; however there is considerable uncertainty about this figure as it has been obtained from local authorities and extrapolated, and it should only be taken as a guide.

Consumers benefit by £920m as the existence of free bus travel enables them to access opportunities to socialise, use local services, shop etc. The removal of fares also reinvests the money that would have been spent on fares back into the economy, where spending attracts VAT. This is expected to raise £117m of tax for the Treasury.

The congestion and environmental effects are more mixed. We assume that concessionary travel incentivises a smaller proportion of travellers to switch from car to bus travel than the general population (which improves decongestion and emissions). Whilst we expect that around 30% of trips on buses are diverted from

cars for the general population[17], older people are less likely to be motorists due to a number of socio-economic factors, including low levels of commuting and lower disposable income after retirement. Indeed 31% of those aged 70+ are in a household without access to a car or van, compared to 19% for all adults[18].

Therefore we have assumed that only 5% of trips are diverted from cars, in order to present a more conservative benefit from displacing car trips. The figure may be higher or lower than this but more research is required to determine that. This means that instead of free bus travel displacing considerable driving mileage, almost all generated journeys would not have happened without the scheme, so they are responsible for an increase in environmental and congestion costs.

The fare saving to non-generated passengers is estimated to be £680m, however it is a transfer of money from government to customers. As such it does not create a net benefit to society, and it cannot be counted in the cost-benefit analysis.

3.4.2 *London*

Total benefits in London are estimated at £335m and generated at a cost of £285m, which has a slightly higher BCR. The reason for this is that there are no environmental and congestion costs in London because all changes to bus timetables to accommodate concessionary travel had already taken place when TfL offered their own free older persons' travel several years prior to the introduction of the ENCTS.

The fare saving to non-generated passengers is estimated to be £250m, but it is also a transfer and does not feature in the cost-benefit analysis or BCR.

3.4.3 *Sensitivity test analysis*

In addition to the BCR (the costs, welfare calculations and external benefits) we have assessed impacts that can still be monetised, but with greater uncertainty. These are health and cashless benefits and service enhancements.

In-year impacts for England, 2015 prices	England excluding London, £m	London, £m
BCR Elements		
1.1 Total reimbursement costs	**£855**	**£285**
2.1 Consumer benefit	**£920**	**£295**
3.1 External benefits	**£70**	**£40**
Sensitivity Test Elements		
4.1 Health and wellbeing	**£84**	**£10**
Benefits to users	£42	£5
Benefits to society	£42	£5
5.1 Service enhancement	**£43**	**£0**
6.1 Cashless benefits	**£72**	**£30**

[17] TRL (2004) The Demand for Public Transport: A Practical Guide
[18] DfT (2014) National Travel Survey: NTS0208

Total Costs	**£855**	**£285**
Total Benefits	**£1,189**	**£375**
Benefit Cost Ratio	**1.40**	**1.32**

Table 3: Summary of sensitivity test benefits of the concessionary scheme

The additional benefits of health and wellbeing from extra walking activity generate £84m in the rest of England and £10m in London. Our analysis indicates that half of these benefits accrue to bus users and the other half to society, and they are applicable across England.

Service enhancement benefits do not apply in London. This is because bus timetables already accommodated concessionary passenger traffic when ENCTS became statutory; in the rest of England however they did not. The extra frequencies put on by operators to accommodate concessionary travel demand benefits existing older travellers (non-generated) and commercial passengers who wait less at bus stops, which is valued at £43m.

The abolition of fares also removes the need to use cash which saves time during boarding – this is valued at £72m in England outside London and £30m in London, based on estimated time savings.

As seen, the BCR is higher in London than in the rest of England due to the lack of generated bus congestion. This is reversed in the sensitivity test. When additional benefits are included, the health benefits are proportionately bigger outside of London, and service enhancements are also felt there. This gives a disproportionally greater increase in benefits in England excluding London, more than making up for the saving in traffic costs in the capital.

3.5 *Non-Monetised Impacts*

Table 4 gives a breakdown of the impacts which we believe would have an effect on the BCR and value for money category but cannot be monetised for this study. Further research would need to be conducted, to estimate these impacts robustly.

Unquantified impact	Expected impact on the BCR
Benefits to passengers and residents	
Option and non-use values	Slight beneficial
Additional economic impacts	
Voluntary work	Slight to Moderate beneficial
Retail gains	Nil to Slight beneficial
Further health and wellbeing (not already included in consumer benefit)	
Mental health and wellbeing	Slight beneficial
Social inclusion	Slight beneficial

Table 4: Benefits that may have effect on the BCR but are not monetised

Option and non-use values estimate the value that people place on concessionary bus services although they are using other modes of travel at the moment (hence

valuing the option of using these services in the future) or have no intention of using them, but have a sense of value for other residents who might.

The 'Expected impact on the BCR' column in table 4 gives a rough guide to the expected impact that factor would have on the BCR, if it could be monetised. Many of these factors appear in a study by Greener Journeys[19] which also notes the reasons why they are difficult to monetise. We have indicated the potential effect on the BCR from each of these benefits.

Older pass holders provide voluntary work across the economy and free bus travel could help them as they travel to volunteering opportunities for free. If it were possible to monetise this effect robustly, it would have the largest effect of those listed above on the BCR, as the number of hours of work provided could be relatively high.

Conversely, the gains to the retail trade from pass holders' access to the high street are likely to have the smallest relative effect on the BCR. Older people have lower spending power and the ENCTS is likely to only enable small, marginal spending while pass holders travel around. More substantial shopping trips that cover periodic purchases (e.g. seasonal) or habitual shopping (e.g. grocery) that make up the bulk of consumer spending, are likely to have occurred in the absence of the scheme anyway. However, the spending on retail could be a transfer according to WebTAG guidance, meaning it is not counted as additional benefit (i.e. it has a Nil additional effect on the BCR).

There are some reservations about option, non-use values and further health and wellbeing which would have a moderate effect on the BCR and are discussed in Annex F.

Finally, concessionary travel has a beneficial distributional impact by benefitting older people and those with a disability, as well as potentially people on lower income and those without access to a car, as suggested by some evidence from the statistics and literature review (Chapters 1 and 2). We have not been able to carry out Distributional Impact Appraisal according to the Department's WebTAG guidance[20], and although these effects cannot be monetised, the beneficial distributional impact on those groups adds weight to the policy assessment.

3.6 *Value for money assessment*

The BCR calculated for England excluding London on its own would suggest that the scheme offers low value for money, even we monetised a few further benefits in the sensitivity test (as the BCR is below 1.50 which is threshold for medium value for money). However, this BCR does not take into account the non-monetised benefits associated with the scheme.

[19] Greener Journeys (2014) The costs and benefits of concessionary bus travel for older and disabled people in Britain, page 7
[20] DfT (2015) WebTAG: TAG Unit A4.2 Distributional Impact Appraisal

The BCR is currently 1.16 in England excluding London and 1.18 in London. If we take into account the sensitivity test BCR of 1.32 in London and 1.40 in the rest of England, the policy is close to medium value for money (a BCR above 1.50).

Due to a number of small non-monetised benefits outlined in section 3.5, which together might have a slight to moderate effect on the value for money, and evidence of the potential wellbeing effects of concessionary travel from Chapters 1 and 2, we judge that the concession is likely to provide low to medium value for money overall.

We explore attempts to quantify these non-monetised effects by stakeholders further in Annex F, however we have chosen not to quantify them ourselves, as the methods for estimating such benefits are less well-established. Evidence that the policy has a beneficial distributional impact (mainly on older people, those with a disability, lower income individuals and those without to a car) also adds weight to the value for money assessment.

3.7. *Future likely of costs and benefits*

The UK has an ageing population however eligibility for older persons' concessionary passes is changing, in line with pension age, until it reaches 66 years in 2020. We have taken this and a limited scope of social factors into account (male and female driving licence holding), to estimate a scenario of the future travel patterns and costs and benefits of the scheme up to 2021.

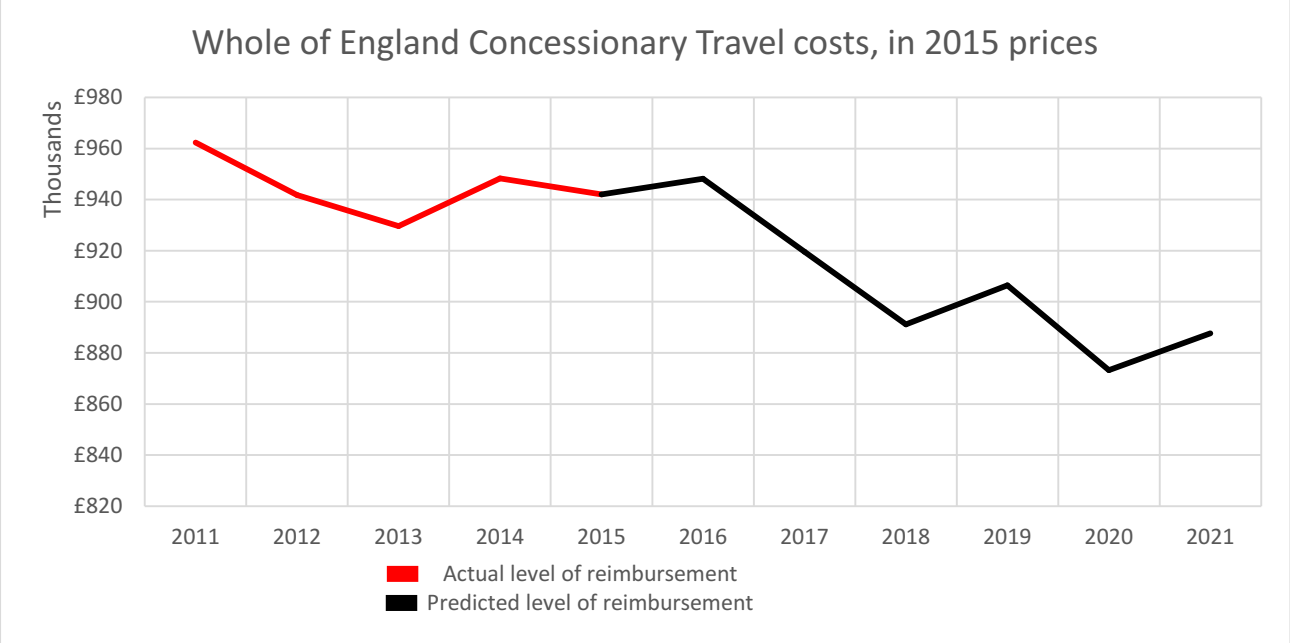


Figure 21: Concessionary travel reimbursement, whole of England, constant 2015 prices

Using statistical analysis of the change in eligible age and car ownership levels of older people, we estimated concessionary reimbursement in the whole of England to fall from around £960m in 2015 to below £890m by 2021 in real prices, as shown in figure 21. The downward kinks in the graph correspond to increases in eligibility age (driven by increases in the pension age) which mean that as mortality and emigration reduce the older persons' cohort, it is being replenished more slowly at the lower age end. The steady rise in licence holding and driving among older females is also

taken into account. As Chapter 2 outlined, women make more concessionary trips than men, so in our analysis, the increase in their driving licence holding has a small effect on the overall number of trips and reimbursement costs.

We have assumed that the reimbursement costs per trip remain constant in real terms and figure 22 illustrates the fall in journeys, from 1,020 million in 2015 to a projected 970 million by 2021 that drives this.

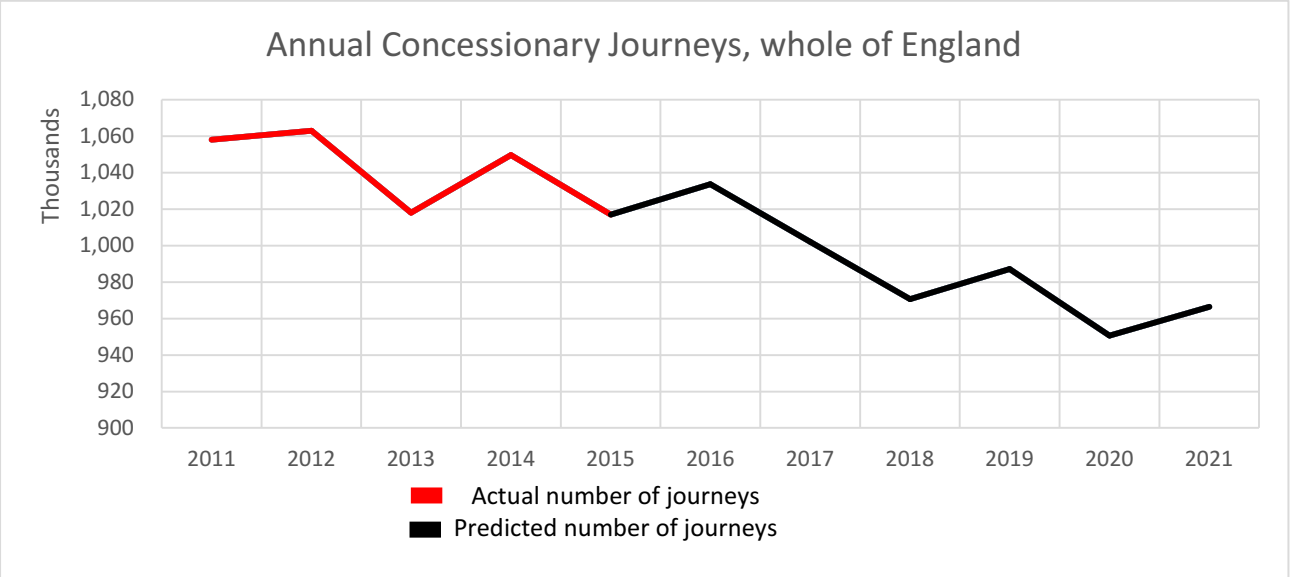


Figure 22: Whole of England concessionary journeys

The future concessionary travel reimbursement costs have been estimated using ONS forecast of the age cohorts, following increases in the pension age, to give the number of eligible people for a concessionary pass. The analysis indicates that the eligibility age reform has decreased the eligible pass holders from 11.9 million in 2011 to 10.9 million in 2015 and could lower them to 10.2 million by 2021 – this is the main driver of the projected fall in real reimbursement costs (see Annex A for more details).

The analysis does not account for changes in income, car ownership (we only consider possession of a driving licence), GDP growth and other factors which may also influence the trend. As such this should be used as a guide only.

Our trip projections show that they might begin to fall after 2016. The decline is expected to be more pronounced in England excluding London, where trips could fall by around 4% in 2021 compared to 2015, compared to London where the fall is 2%. Both declines are small, but are not typical of many social policies aimed at older people, where usage and costs could be expected to rise in the future.

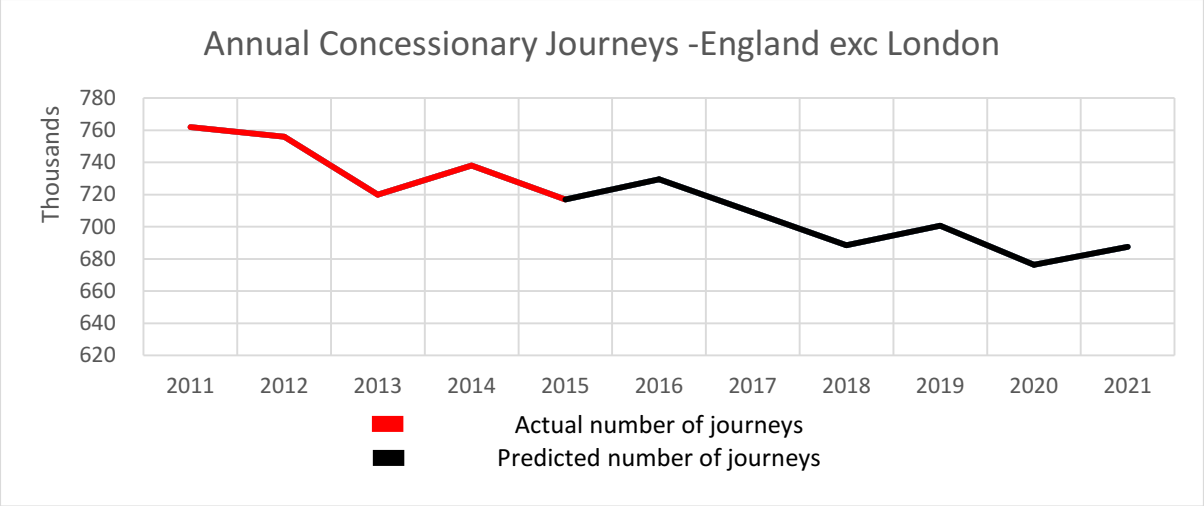


Figure 23: Concessionary trips, England excluding London

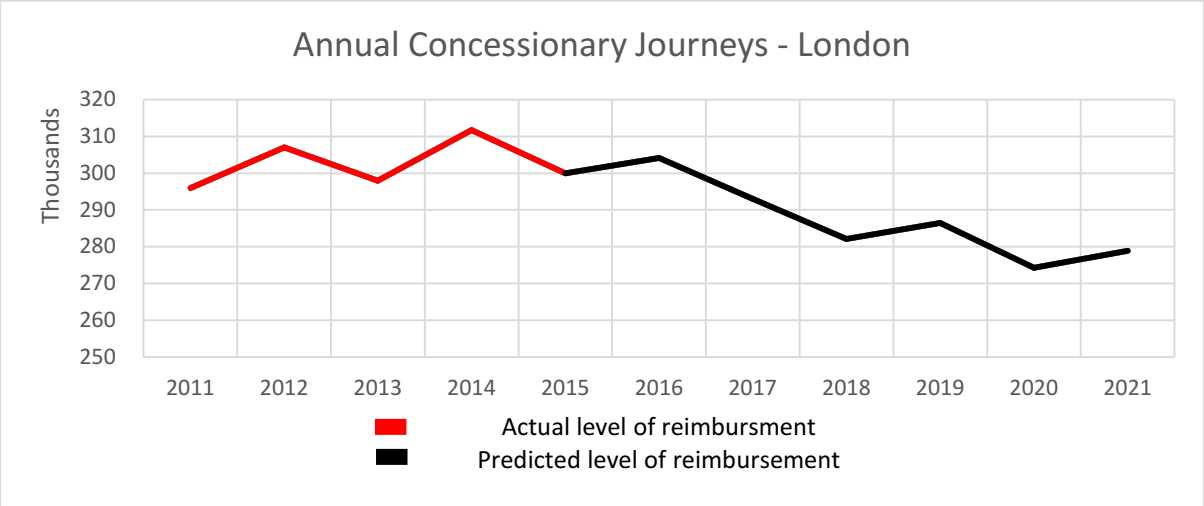


Figure 24: Concessionary trips, London

3.8. *Comparing 2015 and 2021 costs and benefits*

2015

London	Central Case BCR	Sensitivity test
Total Costs	£285	£285
Total Benefits	£335	£375
NPV	£50	£90
BCR	**1.18**	**1.32**

England excluding London	Central Case BCR	Sensitivity test
Total Costs	£854	£854
Total Benefits	£993	£1,193
NPV	£139	£337
BCR	**1.16**	**1.40**

2021

London	Central Case BCR	Sensitivity test
Total Costs	£257	£257
Total Benefits	£299	£338
NPV	£43	£81
BCR	**1.17**	**1.32**

England excluding London	Central Case BCR	Sensitivity test
Total Costs	£828	£828
Total Benefits	£904	£1,099
NPV	£76	£270
BCR	**1.09**	**1.33**

Table 5: Cost-benefit Analysis and BCR of the Concessionary Scheme in 2015 and 2021

Table 5 shows that the BCR for England excluding London is estimated to fall between 2015 and 2021. The total benefits have decreased as we have estimated there could be fewer trips (total costs have fallen too). Thus the net present value is lower in 2021 than 2015. Also, congestion and environmental costs *per bus trip* in 2021 are predicted to be higher, as costs of additional congestion and pollution are predicted to be worse in 2021[21] due worsened congestion and climate change in the near term. This means that total environmental dis-benefits are greater in absolute terms in 2021 despite the slight fall in patronage, as concessionary travel creates more external damage per trip.

In 2021 the BCR in London becomes higher than in the rest of England and almost equal to the sensitivity case BCR. This is because although the rest of England has service frequency improvements, the higher congestion and environmental cost per bus trip outweigh this benefit outside London.

This means that the value for money case for the scheme is weaker in the future regardless of whether trips fall by as much as we anticipate. This is due to the increased cost of congestion and environmental damage per trip, which counterweigh more of the benefits of the policy. Even if patronage was higher, the net benefit per trip would be smaller.

If the future scenario above is plausible, it is noteworthy that the costs of concessionary travel are not expected to rise in real terms in the short to medium

[21] DfT (2014) WebTAG: TAG Unit A3.3: External damage and carbon costs

term, which differs from the expected spending profile of a number of policies targeted at older people.

As regards environmental damage, this analysis has not taken into account the expected increased deployment of ultra-low emission buses across fleets because the bus fleet is not expected to develop into a sustainable ultra-low emission fleet by then. The increased deployment of ultra clean Euro VI buses across the fleet has not been fully incorporated either as the extent to which Euro VI can reduce carbon over its predecessors is somewhat uncertain at the moment. Hence it is preferable to present a conservative estimate for the environmental impacts.

Conclusion

Take up of the pass

The concessionary travel pass has enjoyed a fairly healthy increase in take-up following its introduction (increasing from 57% to 76% of those eligible) and an increase in overall trips. This has met the objective of generating additional bus trips that could help older and disabled people to stay connected to their community and social surrounding, although take up is not universal.

Reaching with fewer transport alternatives

The pass' more frequent use by women, and people aged 70-79, indicates that it is achieving the objective of providing transport for those who have lower licence holding and access to a car, and are still relatively active. The higher take up of the pass by lower income households is also a positive finding, because the evolution to free and cross-district boundary travel has helped these individuals save money on fares. We estimate this fare saving at £250m in London and £680m in the rest of England per year (in 2015 prices), which is a direct transfer to pass holders.

The social benefits of free travel

There are suggestions in the academic literature that the concession has helped older people's wellbeing and provided them with more freedom to travel, however the evidence is not conclusive. Two benefits that seem more borne out are the fare saving to users, and the greater usage of the concession by individuals with fewer transport alternatives, and lower income.

Cross-boundary travel

There is less evidence specifically on the success of introducing national free travel. The number of trips between 5 and 10 miles seems to have picked up after falling during the recession period, and an increasing number of trips are being made over 10 miles. However we have not found further evidence from the academic literature to corroborate or expand on this finding.

"New" vs "old" pass holders

Although take up of the pass has increased, the ENCTS might have mostly benefitted those who held a pass during the statutory half-fare concession ("old users"). NTS evidence shows that "new" pass holders make fewer trips, are more likely to drive and might be slightly financially better off. For these users, the concession might be more of a back-up – therefore the move to a full concession and national travel might not have benefitted as many additional people as hoped.

If that is so, then the greater success of the ENCTS might be to benefit "old users" by saving them a fare and extending the pass to national travel, and to a more limited extent to provide a new group of people with the benefits of free travel.

Non-take up of the pass

Almost a quarter of eligible people have not taken up the pass, which could be a cause for concern, because these might be individuals who face barriers such as mobility issues, lack of information or social exclusion. Those are the types of

individuals who might benefit the most from free travel as they are more marginalised. On the other hand, a portion of those who do not take up the pass are likely to be people who have access to a car and do not need bus travel. More research is needed to find out why eligible customers do not take up the pass, and whether vulnerable individuals experience barriers in doing so.

Value for money implications

Based on analysis of the available evidence, the concession provides low to medium value for money, when we take into consideration its potential non-monetised benefits (equivalent to BCR of over 1.50) and the positive distributional impact of the policy on several protected groups. This is a positive result, because it is difficult to find evidence of the wider social benefits that the policy might bring about.

However, in light of the above findings it seems that although the ENCTS does deliver value for money for its users and society, around a quarter of eligible people have not taken up the pass, and it might not be benefiting the full range of individuals it is intended to help.

Our projections suggest that the value for money of the ENCTS in England outside the capital might deteriorate in 2021, as the congestion and environmental costs of the bus trips become worse.

Annex

ANNEX A: Deriving costs and benefits

A.1 Total Reimbursement Costs

Total costs to government are made up of fare reimbursement, additional cost reimbursement and local authority admin costs. The first two are implicit in DfT statistics on concessionary travel reimbursement, under the heading "Net current expenditure on concessionary travel"[22]. Admin costs have been extrapolated from a questionnaire sent to local authorities.

Fare reimbursement: The costs of reimbursing bus operators for those travellers that would have travelled in the absence of the concessionary travel scheme (*non-generated journeys*), and paid a fare. The total fare reimbursement cost is equal to the total number of concessionary trips made at free fare multiplied by the percentage of those journeys that would have been made in the absence of the scheme (see A.2). The fare reimbursement we have derived is around £1.40 in metropolitan and £1.80 in non-metropolitan areas, for each non-generated trip.

Additional costs: The costs associated with journeys that would not have been made in the absence of the scheme as they are stimulated by the abolition of fares (*generated journeys*). Such costs include any marginal cost bus operators have to bear as a result of carrying additional concessionary passengers. This includes extra fuel and increasing service frequencies in order to accommodate concessionary demand.

We have used default assumptions in Concessionary Travel Guidance Calculator[23] and internal information from past ENCTS claims, to derive additional costs per trip of £0.20 in London, £0.20 in metropolitan and £0.35 in non-metropolitan. The key reasons for costs increasing in less densely populated areas is that it is more cost-effective to meet extra demand within a denser bus network, where there is greater capacity overall.

These costs are considerably lower than reimbursing the average fare forgone, which is the level of reimbursement for non-generated journeys.

Admin Costs: These are the costs to local authorities associated with administering the scheme and will include cost of issuing passes and issuing lost passes. At the time of writing, the ENCTS pass are provided at no cost to the pass-holder and therefore the cost of these must be covered by the local authority. There will also be staff costs to local authorities associated with running the scheme and reimbursement negotiations. Admin costs are obtained from advice from several TCAs, which has been extrapolated, therefore there is uncertainty around these figures.

[22] DfT (2015) Bus Statistics BUS0821
[23] https://www.gov.uk/government/publications/guidance-on-reimbursing-bus-operators-for-concessionary-travel

A.2 Welfare calculations

There are two elements to the welfare calculations. Those who would have travelled before the ENCTS benefit from a transfer equal to the fares they save, which create zero net benefit to society. The benefit to generated passengers, who only travel because of zero fares, is estimated using the rule of a half method[24].

The rule of a half method is a way of approximating the change in consumer surplus resulting from an intervention, when the function of the curve is unknown. Figure 20 in the main text shows the rule of a half applied to data on the number of concessionary travel trips in the whole of England. It typically assumes a linear demand curve. The demand curve is downward sloping, representing the fact that as fares fall, more bus trips will be made, as more people are willing to pay the fare. Consumer surplus is the difference between what the consumer is willing to pay and what is actually paid. As the fare of bus travel increases, the consumer surplus falls, because the fare paid is closer to the customer's maximum willingness to pay for bus travel.

Working out welfare benefits

To work out consumer welfare, we work backwards from reported statistics to find the number of generated and non-generated passengers, and a representative fare that they are saving. We have used the following:

- Total reported reimbursement costs for London, metropolitan and non-metropolitan areas, divided by total trips in these areas[25] to obtain reimbursement cost per trip
- Indicative additional costs per generated trip, based on the assumptions in A.1
- Indicative shares of generated and non-generated passengers (see below) to separate trips into generated and non-generated.

Our method is as follows:

- We work out the additional costs of generated trips by multiplying the additional cost per trip, by the number of generated trips
- We subtract the additional costs of generated trips from the total reimbursement; we divide this value by non-generated trips to obtain an indicative fare used for reimbursement per trip
- This method gives us an indicative fare of around £1.40 in metropolitan, £1.80 in non-metropolitan areas and £1.20 in London
- This allows us to work out the transfer benefit (of saving the fare) to non-generated passengers, by multiplying the representative fare, by the number of non-generated trips

[24] DfT (2014) WebTAG: TAG Unit A1.3: User and Provider Impacts
[25] Both reimbursement costs and trips are available from DfT (2015) Bus Statistics: BUS0821

- We work out the welfare benefit to generated passengers by multiplying the number of their trips by the representative fare, and then applying the rule of a half.

Splitting generated and non-generated passengers

To work out the share of generated and non-generated journeys we used our published reimbursement calculator[26] with DfT statistics as inputs and obtained the following split:

Region	Generated passengers	Non-generated passengers
Metropolitan	52%	48%
Non-metropolitan	57%	43%
London	45%	55%

Table 6: The percentage of generated and non-generated passengers as a result of concessionary travel

The share of generated journeys in London is much smaller than the rest of England because of the existence of concessionary travel funded by TfL prior to the ENCTS and existing incentives such as higher costs of motoring, the frequency of buses and extensive bus stop infrastructure.

A.3 External Impacts

Those are the impacts of time lost in congestion and environmental damage from generated trips, as the impact of non-generated trips would have occurred without the ENCTS anyway.

Free bus travel encourages some generated passengers to switch from driving to riding the bus, which reduces the environmental impact (carbon and air quality pollution) and relieves congestion, improving journey times for other road users. This is a reduction in car kilometres travelled.

On the other hand free bus travel encourages people to take the bus for some trips which they would have walked, cycled or not made at all in the absence of the scheme, adding to pollution and congestion. This is an increase in bus kilometres travelled.

The net impact on congestion as a result of the scheme will be the decongestion benefits from reduced car travel minus the additional congestion created by the increased number of buses on the road. In the case of this analysis, the net effect is negative i.e. a cost to other road users and the environment because there is a net increase in vehicle kilometres.

[26] https://www.gov.uk/government/publications/guidance-on-reimbursing-bus-operators-for-concessionary-travel

Working out bus kilometre reductions

Once we derive the share of generated trips (see A.2), we estimate the proportion of generated concessionary trips which would have been taken in cars in the absence of the scheme. The default figure of trips shifted from cars is 31%[27].
This figure is an average for the whole population and is not representative of older people. As older people have lower disposable income and lower levels of access to a car[28], we expect the diversion ratio for older people to be smaller still. There is no evidence on how low the diversification ratio should be, but we have taken a conservative assumption of 5% because the default diversion ratio is quite likely to overstate the external benefits.

This is based on the fact that the average number of bus boardings for those with one or more cars is considerably lower than to those without a car[29]. If the diversion ratio was higher, it would suggest that there was a large modal switch from cars to buses and therefore we would expect the average number of bus boardings for those with cars to be much closer to those without. While there has likely been a shift from car use to bus use (as a considerable number of car-owning householders have taken up the pass according to Chapter 1), we believe there is relatively high usage of cars as the main mode of transport for older people, even with free bus travel. We believe the default diversion ratio would over-inflate the BCR.

We have carried out a further sensitivity test to work out the effect on the BCR from different car to bus diversion levels. The BCR would change by .08 (or 8p in every pound) between a 5% and 31% diversion factor:

Effects on the central case BCR of different diversion factors
England excluding London

Diversion factor	BCR
5% (Current)	1.16
10%	1.18
20%	1.21
31% (Default)	1.24

Table 7: Effects on the BCR with different diversion factors

We apply 5% diversion ratio to the number of generated trips, to obtain the number of avoided car trips, and multiply this by the average car trip length (around 14km, outside London)[30] to calculate the displaced car kilometres.

[27] DfT (2014) WebTAG: TAG Unit A1.3: User and Provider Impacts
[28] DfT (2015) National Travel Survey: Adult personal car access by age and gender NTS0208
[29] Internal analysis of DfT National Travel Survey data
[30] DfT (2015) National Travel Survey: Average trip length by main mode, region and rural urban classification NTS9910

We multiply the number of generated bus trips (see A.2) by the Mohring factor, which tells us that bus operators supply 60%[31] extra capacity for every 100% increase in demand, to obtain the share of extra bus kilometres. We then use average bus trip length (around 8km, outside London)[32] to work out the difference in bus kilometres with and without generated passengers.

We multiply both vehicle type kilometres by WebTAG values of average fuel efficiency for buses and cars, to work out the net change in fuel used as a result of the scheme. We turn this figure into net carbon emitted, by using emission factors to convert the litres of fuel into carbon released. Those are multiplied by the value of non-traded carbon available from WebTAG.

Vehicle kilometres are multiplied by the marginal external costs available from WebTAG to estimate[33] the net congestion impact.

A.4 Indirect Taxes

This is an estimate of the impact that the scheme has on tax receipts to the Treasury. The money that would have previously been spent on bus fares can now be spent on other consumer goods, most of which include VAT, unlike bus fares which do not. As a result we would expect there to be an increase in indirect tax revenues to the Treasury as a result of the scheme. VAT at a weighted average rate of 19%[34] has been applied to the amount that would have been spent on fares by eligible pass holders in the absence of the ENCTS, which is calculate by multiplying the share of non-generated passengers by the indicative fare for each area type.

ANNEX B: Sensitivity test methodology

B.1 Health and Wellbeing

These benefits measure the benefits to the users themselves and wider society from the increased amount of walking that occurs as a result of free bus travel. The increase in walking activity is summed up for all journeys and multiplied by the value of walking – suggested to be around £1.00 per km in 2010 prices[35] as a result of bus travel.

Additional evidence[36] has suggested that bus travel leads to an extra 0.5 days of walking per month with an average of 1.5km walked per day. Bringing those two sets of assumptions together allows us to work out some of the health benefits however this is not an exhaustive measure, and there is uncertainty about these figures.

B.2 Service Enhancements

[31] Mohring, H (1972) Optimization and scale economics in urban transport networks
[32] DfT (2015) National Travel Survey: Average trip length by main mode NTS0306
[33] DfT (2014) WebTAG: TAG Unit A.3: Environmental Impacts
[34] DfT (2014) WebTAG: TAG Unit A1.3: User and Provider Impacts
[35] New Zealand Transport Agency (2008) Research Report 359 Valuing the health benefits of active modes
[36] Paul Kelly (2011) Health economic assessment tools (HEAT) for walking and for cycling: Methodology and user guide

These are the benefits to both concessionary and commercial passengers who use the bus in the form of reduced waiting times, as bus operators put on extra capacity to carry generated concessionary passengers. This can improve service frequency. These calculations look at the average wait time improvements and work out the gain that consumers receive by having to wait less time.

These calculations only estimate benefits from service enhancement for bus users in metropolitan areas. This is because in metropolitan areas buses would be frequent enough that passengers would arrive at a bus stop without consulting a timetable, expecting a bus to arrive soon enough. The extra frequency improves the average waiting time. We assume that in rural areas, where services are more infrequent, passengers would usually check a timetable before arriving at a bus stop and therefore their wait time at a bus stop would remain constant.

We use the assumption that new demand for bus travel from concessionary passengers leads to extra bus frequency supply at 60% of the new demand (known as the Mohring factor[37]), as consistent with the assumptions in the DfT Concessionary Travel Calculator[38]. The proportionate increase in frequency leads to a reduction in waiting time which we monetise using WebTAG values of time (updated in the Summer of 2016). Values of time indicate customers' perceived cost of the time spent waiting at a bus stop and travelling, in recognition of the fact that customers prefer to have shorter journeys and waiting times[39]. This is multiplied by the number of non-generated concessionary trips (because service frequencies improve from those they experienced before the scheme) and the number of commercial trips (as commercial passengers benefit from the bus service improvement).

We assume that current waiting times in metropolitan areas are around 3 minutes, take the increase in metropolitan area bus kilometres and apply the Mohring factor to work out that the policy has shaved around 0.2 minutes off the average waiting time.

B.3 Cashless benefits

These are the benefits from users no longer needing cash to board a bus. Removing the delay from handling cash during boarding speeds up the service and saves passengers time. The monetised value used is obtained from Atkins[40].
In order not to overstate the benefits we have used the minimum estimate provided by this research (£0.09 per boarding, whereas the central estimate is £0.17). It is noteworthy that smart tickets are not in mandatory use for concessionary travel. Some bus operators allow pass-holders to simply show their card to gain access to the service (often referred to as "flash pass"). Using the minimum cashless benefit input values could understate the benefit because the figures only include the benefit

[37] Mohring, H (1972) Optimization and scale economics in urban transport networks
[38] https://www.gov.uk/government/publications/guidance-on-reimbursing-bus-operators-for-concessionary-travel
[39] DfT (2016) WebTAG: TAG Unit A1.3.1: Value of time per person (working and non-working)
[40] Atkins (2014) Provision of market research on valuation of economic benefits of smart and integrated ticketing interventions on public transport

of not having to pay by cash (or load money on to a smart card). Atkins suggests the most relevant benefits are:

- greater flexibility of travel plans;
- convenience of not handling cash/ not having to have exact change;
- security benefits due to not needing to carry or use cash; and
- perceived modernity/ efficiency of system.

ANNEX C: Age and eligibility projections

The eligibility age for concessionary travel is going up in line with the State Pension age until it reaches 66 in 2021, as follows:

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Eligible age	60	60	61	62	62	63	63	64	65	65	66	66

Table 8: Age and eligibility projections from 2010 to 2021

We have used ONS population projections to track the size of the older persons' cohort as the eligibility age increases. The number of people of eligible age in each year between 2010 and 2021 is shown below.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
London	1,252	1,198	1,146	1,160	1,110	1,125	1,076	1,028	1,044	998	1,014
Rest of England	10,640	10,287	9,938	10,095	9,749	9,914	9,570	9,228	9,390	9,049	9,198
England	**11,892**	**11,485**	**11,084**	**11,255**	**10,859**	**11,039**	**10,646**	**10,257**	**10,434**	**10,046**	**10,212**

Table 9: Number of people of eligible age for ENCTS pass in thousands

We then multiply the number of eligible people by the likelihood that they will obtain a pass, according to the projected driving licence holding rates for males and females of several age subgroups, to obtain an estimate of the active pass holders. We then multiply these figures by the average number of trips made by a pass holder of each age subgroup, obtained from NTS data (around 90 trips per annum over the whole age cohort).

ANNEX D: Other reports estimating a benefit cost ratio for the scheme

Other reports have looked at the cost-benefit analysis of concessionary travel. This section will look at two[41] of these and highlight differences between their approach and ours - Urban Transport Group's (formerly PTEG) "The case for the urban bus" and a paper commissioned by Greener Journeys - "The costs and benefits of concessionary bus travel for older and disabled people in Britain" by KPMG.

Greener Journeys' report estimates a BCR for concessionary travel of 2.87, making it high value for money by DfT standards. In our analysis we have chosen not to monetise some of the benefits this report quantifies, and used a sensitivity case test on the BCR for non-WebTAG impacts.

The benefits include a rule of a half calculation similar to the analysis in our report. However the change in consumer surplus is measured on the basis of the change in generalised cost of travel for older people from:

a) the fare change,
b) the benefits associated with smart ticketing (as opposed to paying a cash fare)
c) the benefits to concessionary and non-concessionary passengers in the form of service improvements (or reduced waiting times).

[41] Urban Transport Group (2013) The case for the Urban Bus and Greener Journeys (2014) The costs and benefits of concessionary bus travel for older and disabled people in Britain

The effect of this is that the expected size of the consumer surplus and therefore the benefit to consumers is somewhat higher than our estimate, but not necessarily more optimistic.

Additionally, the Greener Journeys paper incorporates benefits from smart ENCTS passes in its BCR, whilst we have included them in the sensitivity test only, due to uncertainty about the size of the smart ticketing benefit.

The report also assessed option values associated with the scheme amounting to £19m; this is the willingness to pay to preserve the option of using a transport service for trips not yet anticipated or currently undertaken by other modes, over and above the expected value of any such future use. The theory behind its inclusion is that a cut to concessionary travel would put at risk marginal services. Therefore residents would put a value on keeping the service even though they rarely or never used it. The department's WebTAG appraisal framework typically does not include option values in a BCR and we have not included an estimate of those in our report.

The report also considers additional economic benefits, namely voluntary work, child care, improved retail productivity and community transport. However because of the difficulties associated with estimating the impact ENCTS has had on most of these areas, Greener Journeys have only estimated the impact of volunteering. We have not quantified any of these benefits in our report due to the considerable uncertainty in working them out.

The Greener Journeys paper values the contribution of volunteering to the economy as a result of the concession at £297m. The report highlights estimates from the Royal Volunteering Service which quote that the "the value of older people participating in voluntary work, social care and child care is £10 billion, £34 billion and £3 billion respectively"[42]. The difficulty with valuing the impact of volunteering is trying to measure to what extent the volunteering would have happened in the absence of the scheme compared to the absence of the ENCTS. The report addresses this by considering whether voluntary work requires transport and estimating the proportion of the current level of volunteering that would have happened in the absence of the scheme. Most of the quantitative outputs were taken from "Gold Age Pensioners" (2011) undertaken by the Royal Volunteering service. Whist we acknowledge that the concessionary travel scheme could have a positive impact on volunteering and hence the quality of life of pensioners, we have not sought to explicitly quantify the benefits it brings to the wider economy. Importantly, it is possible that when calculating the welfare benefits using the rule of a half method in our analysis, some of these benefits have already been captured as some pass holders' willingness to pay could be associated with the benefit they expect from these activities.

Health and wellbeing impacts have been estimated with a similar approach to our own. However, the key difference is the estimated number of generated trips that are shifted away from cars. Our analysis assumes a 5% diversion ratio (see Annex D)

[42] Royal Voluntary Service (2011) Gold Age Pensioners: Valuing the socio-economic contribution of older people in the UK – Accessed January 2016 from http://www.royalvoluntaryservice.org.uk/our-impact/reports-and-reviews/gold-age-pensioners

compared to the Greener Journeys assumption of 31% which is similar to the general population and this introduces a significant upward impact on the benefits they estimate.

"The case for the Urban Bus" (2013) by Urban Transport Group which focuses on metropolitan areas only, outlines a lower BCR of 1.5 in Table 10, which is medium value for money by DfT standards.

	Benefits		Costs
Welfare gain to old users (transfer)	£232m	Reimbursement for revenue forgone	£232m
Welfare gain to new users	£69m	Reimbursement for additional capacity costs	£22m
Deadweight welfare loss[198]	-£0.5m		
Decongestion/other externalities[199]	£42m		
Wider Economic Impacts (WI1)	£19m		
Welfare gains to other bus users	£27m		
Health benefits (equally split between users and government/society)	£16m		
Bus externalities	-£20m		
Indirect taxation	-£8m		
Total	£377m		£254m
Benefit:Cost Ratio	**1.5 : 1**		

Table 10: Welfare assessment of the national concessionary travel scheme, Urban Transport Group, "The case for the Urban Bus" (2013)

Our lower BCR is in large part due to our conservative assumption that only 5% of new trips would have been made by car, which leads to estimates of considerably lower decongestion and environmental benefits.

The PTEG report also focussed on metropolitan areas, whereas we analyse non-metropolitan areas as well. The PTEG study also notes that *"Around one fifth of these benefits accrue to other transport users and society at large rather than to those who benefit from the concession".* Our analysis suggests an estimated 12-13% of benefits accrue to individuals other than concessionary passengers, in London and the rest of England respectively. This is important to note because through the ENCTS, taxpayers enable significant benefits not only for concessionary travellers but the wider public and economy as well.

It is possible that the BCR that we calculate for ENCTS could reach 1.5 (medium value for money), if elements such as volunteering and option values seen above, as well other wider social benefits that we discuss in Table 4, were monetised.

ANNEX E: Map of concessionary travel impacts