

10 EQUITY

10.1 INTRODUCTION

This chapter addresses the theme of equity impacts for cities considering or planning the implementation of a road pricing scheme.

The concept of equity refers to the fair or equal distribution of resources and opportunities. In transport terms it is often used to describe the opportunities that people experience in terms of mobility to give them access to goods and services.

For the purposes of this chapter we will consider equity in relation to the following areas:

- The pursuit of social inclusion as an objective;
- The avoidance of real adverse impacts on certain groups of users or residents, as a constraint - 'impact groups'; and
- The avoidance of perceived unfairness, which links directly to the material in Chapter 11 relating to acceptability.

Social Inclusion as an objective

In terms of social inclusion, adequate mobility is regarded as essential for people to participate fully in society. It can affect an individual's ability to obtain (fairly) key goods and services such as education, employment, health etc.

People who are often considered the more vulnerable within society include:

- Children;
- Young people;
- Unemployed people;
- People in low paid work;
- People from minority ethnic communities;
- Disabled and mobility-impaired people; and
- Older people.

These groups will each have specified needs in terms of access and, as a rule, policy makers are obliged to avoid any measures or policies that will have an adverse impact on these members of society.

Avoidance of real adverse impacts – identifying impact groups

The concept of equal access also applies to a number of key 'impact groups'. These can be summarised as follows:

- Car users who travel in and out of the charging zone;
- People who are located, often resident, *inside* the charging zone;
- People who are located, often resident, *outside* the charging zone; and
- Public transport users who travel in and out of the charging zone.

Avoidance of perceived unfairness

The next logical step considers how policy makers may avoid inequity that will in turn relate to the next chapter in terms of acceptance of road pricing.

One school of thought considers that congestion charging will be regressive, since people with higher incomes have a higher value of time, and hence more often feel that the time gain is worth the charge.

As the issue of acceptance is addressed in more detail in Chapter 11 we will not deal further with this issue here.

In what follows, we will first of all consider the importance of this theme in relation to road pricing. We then go on to briefly outline what is known about the theme, introducing the primary concepts of Vertical and Horizontal Equity. Most of the remainder of the chapter will focus on key impact groups. We then briefly assess the policy implications of road pricing in relation to equity, before outlining the implications of equity in relation to other themes in CURACAO. We conclude by outlining the research gaps of significance to the State of the Art Report (SOAR) and road pricing in general.

10.2 WHAT IS THE IMPORTANCE OF THE THEME?

Concern over inequity was frequently cited as one of the main reasons for rejecting many early road pricing proposals. More recently, equity appears to have been less frequently mentioned as an issue. This is reflected in the results of the User Needs Assessment Questionnaire, in which 21 city users ranked this topic sixth out of nine in terms of importance to them.

However, social acceptance was identified by PROGRESS and CUPID as a main barrier to road pricing implementation. Therefore it has been agreed to include equity as a theme for review within CURACAO.

While definitions of equity vary, they all involve defining groups of potential winners and losers from road pricing (Langmyhr, 1997).

In the remainder of this chapter we will focus mainly on how and why practitioners may avoid detrimental impacts on certain groups of road users or residents – so called ‘impact groups’ – when introducing a road pricing scheme.

The key aim in terms of equity remains to make the introduction of any new measure or scheme such as road pricing fair. Furthermore, it should not place any given group in a position of unfair advantage or disadvantage.

In the next section we briefly outline what is known about the theme of equity in relation to road pricing.

10.3 WHAT IS KNOWN ABOUT THE THEME?

Historically, equity has often been divided in to two types – Vertical and Horizontal equity.

In what follows we briefly describe these two concepts before exploring what we consider to be the most relevant and applicable elements of Equity as a theme in CURACAO.

10.3.1 Vertical Equity

Vertical equity concerns the distribution of impacts by income and socio economic characteristics. It is often described in this context in terms of affordability or the individual’s ability to pay for access.

Vertical equity also concerns itself with the barriers that can prevent some members of society from participating with parity in services such as education, employment, health, leisure and retail. As a result, Vertical equity impacts are often complex and challenging to evaluate.

Early attempts in dealing with equity in road pricing mainly involved analysing the impact of road pricing on vertical equity (see Anderson and Mohring, 1995; Fridstrøm *et al.*, 2000; Giuliano, 1994; Gomez-Ibanez, 1992; Langmyhr, 1997).

10.3.2 Horizontal Equity

Horizontal equity deals with the fairness of impact allocation between individuals and groups considered comparable in ability and need. The concept implies that consumers should “get what they pay for and pay for what they get,” unless a subsidy is specifically justified.¹¹ It can also depend on the location and nature of charging. It is also referred to as spatial or territorial equity and relates mostly to impact on people living in areas affected by road pricing or those who need to make specific journeys.

10.3.3 The approach to Equity in the CURACAO project

The core issue when considering equity in road pricing is: who will road pricing affect? In Section 10.1 we outlined the key impact groups that we consider will be affected by the introduction of a road pricing scheme. They are:

- Car users who travel in and out of the charging zone;
- People who are located, often resident, **inside** the charging zone;
- People who are located, often resident, **outside** the charging zone; and
- Public transport users who travel in and out of the charging zone.

It is evident in this regard that equity in road pricing concerns itself primarily with the location and mobility of the population following the introduction of a scheme. Much of the focus is geographic and relates to boundaries in this case.

Within these key impact groups are those more vulnerable members of society – already listed in Section 10.1 - who may be excluded or adversely impacted by the introduction of a scheme.

The treatment of equity impacts therefore focuses on the differences between individuals and the opportunities they experience in terms of mobility. There should be a particular focus in this regard on enabling the key groups identified to gain equal access to goods and services.

In Section 10.4 we consider each of the four groups listed above in turn. In each case we will consider within these groups those most in need or ‘at risk’ when introducing road pricing.

10.4 IDENTIFYING KEY IMPACT GROUPS

Hau (1992) considers that the fundamental problem with congestion charging is that three groups of people are made worse off by the charge:

1. Those who pay a toll because they face higher (motoring) costs;
2. Those who avoid paying the toll; and
3. Those who travel in areas adjacent to charging zones and may suffer increased volumes of traffic and congestion due to diverted traffic.

For the purposes of this report we will consider the four impact groups already mentioned throughout this chapter. In each case we debate the issues that are relevant to key impact groups in turn. There will inevitably be some subjective comment made here. However, we have wherever possible included case study evidence as examples.

¹¹ Definition specified by the Victoria Transport Policy Institute, Online Transportation Demand Management (TDM) Encyclopedia: <http://www.vtpi.org/tm/tm13.htm>

10.4.1 Car users who travel in and out of the charging zone

With a charge to cross a cordon into a charging zone, differences are marked, with those making short journeys across the cordon experiencing the greatest proportional cost increase.

With multiple cordons or distance-based charges, the differences are less acute, but more complex. There are also considerations which concern the nature of the user or journey.

Disabled drivers are a key group in this regard. They have little choice but to use a car and so road pricing or charging is considered an unfair levy should there not be exemptions in place. So, to a lesser extent, are those travelling at times of the day when public transport is not available.

Netherlands

In the Netherlands, whilst there is no finalised plan to introduce Road Pricing, there is to be a discussion of introducing distance-based road pricing by the year 2012. The financial burden there is to shift from owning a car to running a car. Cleaner vehicles will be cheaper to run than those that are more polluting.

Norway

In Trondheim, Norway, road pricing attracts much equity-based opposition on the basis that high-income motorists and commercial traffic constitute the “winners” predominantly. Those likely to lose out on the grounds of equity are predominantly those who are low-income and car-dependent families. The most commonly used solution here is to use pricing revenues to improve public transport. Trondheim’s experience has been to allocate revenue not only to public transport improvements but also to walking and cycling.

Sweden

In Stockholm the introduction of congestion taxes have increased car travel costs by around 5% for the residents of the outer suburbs, 11% for the residents of the inner suburbs and 31% for residents of the inner city. Cost-benefit predictions suggest that inner city residents suffer the greatest net losses due to the congestion tax despite actually reporting a favourable attitude towards it.

10.4.2 People (residents) located inside the charging zone

Road pricing is often defined by cordons - a ‘line’ that is crossed to enter and leave a charging zone.

Fridstrøm *et al* (2000) analysed the spatial impact of road pricing cordons using spatial accessibility for each zone segregated by modes as the indicator. Their work suggested that the main adverse impact of a charging cordon is its boundary effect, which also depends on the actual design of the scheme.

A key finding was that a small cordon would have the most significant effect on residents living inside the cordon. Arguably any cordon, if you reside within it, will have some impact on you if you own a car unless you are entirely exempt from paying a fee.

The key perceived benefits for those living and working within a charging cordon are reduced congestion and a better environment, for example improved air quality, as a direct result of less traffic.

There are however a number of other factors to consider in terms of equity, and the case study of London is a good example.

London Congestion Charging

The Congestion Charge in London is an £8 daily charge for driving or parking a vehicle on public roads within the zone between the hours of 7.00am and 6.00pm, Monday to Friday¹². Payment of the daily charge allows drivers to drive within, exit and re-enter the charging zone as many times as required in one day. Furthermore, residents within the charging zone receive a 90% discount on vehicles registered at an address within the charging zone¹³.

It is considered that lower income car users in the charging zone or area will be adversely affected, in particular if they have to use their cars. The charges that would accrue over time might be considered unjust simply because someone is resident within a charging zone. It could be argued that for those on a low income 80p per day - £4 a week, approximately £16 a month etc remains a fixed cost and / or an additional motoring cost that could adversely affect those on lower incomes.

Much depends on the individual's necessity to use the car and if indeed they have an alternative choice – to use public transport, walk, cycle etc. However, in the case of London, residents pay the 80p per day for parking a vehicle in the charging zone regardless of their travel needs.

10.4.3 People (residents) located outside the charging zone

It is also important to consider those that live near or adjacent to a road pricing scheme. Whilst people, in particular residents, may not pay a charge for travel or parking in their immediate locality, there may be other factors that change as a result of introducing a road pricing scheme.

Most of the issues here are in the main considerations for policy makers and practitioners before the implementation of a road pricing scheme and how this may affect those who live and work adjacent to a charging zone.

Singapore

In a study of the Singapore ALS, Holland and Watson (1978) indicated that the cordon gave a greater advantage to commercial firms outside the cordon. This problem may be reduced by the introduction of time-based, distance-based, or delay-based regimes (Jones, 2002).

Edinburgh

Case study work conducted in Edinburgh looked at both the economic case and cross-boundary acceptability issues for the proposed scheme.

The scheme proposed before the Public Inquiry was a two-cordon scheme, including one inside the ring road, and one outside of the historic city centre. It was also suggested that Edinburgh residents residing outside of the outer cordon be exempt from the charge.

This matter was of considerable concern to the residents of neighbouring authorities, who would not be exempt from the charge and hence there was a degree of concern over whether all residents would be receiving “fair” treatment. (Saunders, 2005)

Further issues to consider

Aside of these issues there may be, as Hau suggested (1992), an adverse impact on those who travel in areas adjacent to charging zones. Drivers may ‘suffer’ increased volumes of traffic and congestion due to diverted traffic or those driving round the cordon to avoid the charge.

¹² Weekends and public holidays are not included, and between 25 December and 1 January inclusive.

¹³ <http://www.tfl.gov.uk/roadusers/congestioncharging/6735.aspx>

In addition to the needs and considerations of car users it is worth considering alternative modes of travel. This includes those who travel in and out of the charging zone by public transport. Road Pricing has led to better quality of surface public transport in cities like London and Stockholm.

The improved quality of surface-based public transport would be assumed to have reduced inequities from a position whereby non-car owners would have experienced lower quality public transport before road pricing. This makes the assumption that a proportion of the revenue gain from a road pricing scheme is re-invested in measures including public transport.

10.4.4 Public transport users who travel in and out of the charging zone

Shanghai

Furthermore, in Shanghai, a qualitative analysis (Ma *et al*, 2005) of an Electronic Road Pricing Proposal concluded that there would be limited adverse implications in terms of equity provided the revenues raised were reinvested in public transport.

From this point of view the winners can be considered to be public transport users, including those on low incomes who cannot afford to pay road pricing tolls. This assumes that pricing structures for public transport remain relatively constant and do not increase as a direct result of the road pricing scheme.

If revenues are not redistributed in any way, for example investing in improvements to public transport, cycling and walking infrastructure etc, road pricing will generally result in gains for higher-income groups – those more likely to be car drivers - and losses for lower-income groups (Else, 1986; Cohen, 1987) and those without access to a car.

Edinburgh

In Edinburgh a range of public transport improvements were promised before charging was due to commence in the planned, now abandoned scheme. It is noted that bus service improvements were defined late in the planning process. This resulted in a lack of demonstrable benefits and alternatives for car users. The main view of Edinburgh's neighbouring authorities was, therefore, to oppose the concept of road pricing due to the lack of planned benefits including public transport schemes.

10.5 WHAT ARE THE POLICY IMPLICATIONS AND IMPLICATIONS FOR OTHER THEMES?

10.5.1 Policy Implications

Fears of inequity appear to be less dominant in decisions on road pricing than they once were. However, it is still probable that those opposed to road pricing will use equity concerns as a supporting argument. It therefore remains important to understand the scale of equity, and this will require a disaggregated analysis by person type, income level, journey type and specific person and journey characteristics.

The principal solutions to equity problems lie in the design of the scheme itself, that include:

- Location,
- Time of day and level of charge;
- The use of exemptions and rebates;
- The application of complementary policies, particularly to provide alternatives; and
- The use of surplus revenues to provide direct or indirect support.

In due course it may be possible to assess these issues further through additional empirical research. In the meantime research will have to rely on the results of predictive studies using disaggregated models.

It can be particularly problematic to predict the impacts on narrowly defined groups such as disabled drivers, or of special treatment such as rebates.

The User Needs Assessment Questionnaire results for CURACAO demonstrated that for equity, the achievement of this through road pricing has been given a low priority by key decision makers.

It may be argued that there is a need, demonstrated in this chapter, to concentrate efforts on presenting and promoting road pricing as an equity driver. However this may be as much a focus for the issue of acceptance as equity.

10.5.2 Implications for Other CURACAO themes

In what follows we summarise under key headings the implications for road pricing in relation to other themes in CURACAO:

- **Objectives:** While equity now appears to be less of a concern to key decision makers, it should continue to be considered either as an objective of, or more appropriately a constraint on, road pricing schemes.
- **Scheme Design:** More guidance is needed on how to incorporate equity considerations into scheme design. However, schemes can be designed which make due consideration of equity. Key characteristics include:
 - The location of a scheme;
 - When the charge is applied - time of day and on which days charges are appropriate;
 - The level of charge;
 - Exemptions and rebates; and
 - Use of revenues – for example to invest in improving public transport.
- **Technology and Business Systems** : It is not clear that there is a link between technology or Business Systems and equity.
- **Prediction:** For equity considerations, models are needed which predict the impact of road pricing on individuals, and individual journeys, disaggregated by income, location, time of day and journey purpose. Ideally those models should also identify impacts on those with special needs, such as disabled drivers and those carrying bulky loads. Where scheme design includes exemptions and rebates, models should ideally be able to assess their impacts
- **Economy:** Economic impacts can have substantial secondary impacts on equity. For example, low income households in the rented sector are more likely to have to move if rental values increase. Those without good (public) transport access are more vulnerable if facilities such as shops close or vacate an area as a direct result of road pricing.
- **Acceptability:** Those who are, or perceive that they are, more adversely affected can be expected to find road pricing less acceptable. Perceptions of inequity may also increase concerns over acceptability. It would be helpful to have more information on the scale of these impacts.
- **Transferability:** The transferability of equity impacts and underlying equity concerns and resulting design responses to inequities are likely to differ between cities. Little is known about these impacts.

10.6 WHAT THE RESEARCH GAPS AND PLANS FOR FUTURE RESEARCH?

In conclusion, it is worth considering briefly the gaps in knowledge relating to equity in road pricing and how the CURACAO project will record progress in such matters in the final version of this report.

Evidence from both predictive and empirical research will continue to become available. Information on current research into equity-focused design tools would also be of interest to CURACAO. Clearer guidance is also needed on ways of designing schemes to reduce inequities.

There are also research gaps that need to be addressed in terms of the relationships between progressive and regressive dimensions of equity, and the relationship between equity, perceived fairness and social inclusion.