Australasian Transport Research Forum 2021 Proceedings
8-10 December, Brisbane, Australia
Publication website: http://www.atrf.info

Quantifying the benefit of reduced social exclusion by major transport infrastructure investments

Praveen Thakur[1], Lulu Zeng[1], Ella Han[1]

[1]KPMG

Email for correspondence: lzeng3@kpmg.com.au

Abstract

Social exclusion has been described as the existence of barriers which make it difficult or impossible for people to participate fully in society or to obtain a decent standard of living. Maximum participation in economic, social and community life is a defining characteristic of a well-rounded, sustainable and resilient society. Achieving this outcome for all Australians means preventing social exclusion and delivering policies and programs that support people to strengthen their ability to actively participate in the labour market and in their communities.

Access to transport provides opportunities to participate in the economy, education and training, and cultural and civic activities. Transportation disadvantage and its connection with social exclusion are now one of the main research and policy areas in the UK and the US. However, the majority of transport infrastructure investment proposals in Australia typically focus on the economic benefits relating purely to travel outcomes. This paper aims to fill the gap by providing an approach to quantify the impact of transport investment on reducing social exclusion.

This paper developed a method of quantifying the reduced social exclusion benefit using a calibrated database that leverages a number of key datasets in Australia and Victoria. By using a Melbourne based case study, we found that large scale, city shaping transport investment can play a positive role in enhancing social inclusion and bridging inequality, beyond just conventional transport benefits[1]. We believe this practice is an important step to better align transport investment proposals with their policy objectives, and provide inclusive social and infrastructure service to all members of our society.

1. Introduction

Social exclusion has been described as the existence of barriers which make it difficult or impossible for people to participate fully in society or to obtain a decent standard of living (Social Exclusion Unit, 2003). It is a problem in big cities globally. Income and wealth in urban areas are more unequal than in rural areas. High levels of wealth and modern infrastructure coexist with a lack of services in an area, creating a divide between the "haves" and the "have-nots" and intensifying the social exclusion of the latter. This social issue must be addressed directly if mankind is to actually leave no one behind (United Nations, 2016).

[1] Due to the confidential nature of the project this method was developed for, we are not able to provide the result. But the analytical findings are noted here, namely a positive impact of large scale transport projects on reducing social exclusion.

Promoting social connectivity and inclusion have also been a dedicated, long-term goal for the Australian Federal Government and society (Australian Government, 2010). Maximum participation in economic, social and community life is a defining characteristic of a well-rounded, sustainable and resilient society. Achieving this outcome for all Australians means preventing social exclusion and delivering policies and programs that support people to strengthen their ability to actively participate in the labour market and in their communities (Australian Inclusion Board, 2010).

The Australian Inclusion Board has identified geography as a type of disadvantage that is relevant to the level of government infrastructure provision. People living in the outer suburbs can have a comparatively lower level of access to service resources (compared to their inner suburban counterparts) because of relative distance. The important point to note is that geography in and of itself generates potential for disadvantage due to the natural barriers it places on communities which require access to social support / services and economic opportunities.

Access to public transport provides opportunities to participate in local economies, education and training, and the cultural and civic activities of local communities. It also provides access to individuals who are seeking social assistance and welfare. Public transport offers a cost-effective way for people to gain access to economic and social opportunities. Thus, transport accessibility and connectivity plays a key role in achieving social inclusion.

Although transportation disadvantages and its connection with social exclusion are now the main research and policy areas in the UK, and solving transportation equity issues is part of US policy, transport infrastructure investment proposals in Australia typically focus on the economic benefits relating to travel outcomes. This paper provides an approach to quantify the impact of transport investment on reducing social exclusion. It uses a Melbourne-based case study to demostrate the impact of transport investment in reducing social exclusion. A calibrated dataset using various Victorian based data was developed to enable the quantfication of the reduced social exclusion economic benefit.

2. A literature review - social exclusion and public transport

It is widely recognised that public transport has the potential to remove barriers for people to participate in economic, social and community life. The role of transport infrastructure in reducing social exclusion is gaining increasing attention in the recent decade in Australia, but literature on this topic is still scarce in the transport infrastructure investment appraisal space. This section provides a literature review on the role of transport infrastructure in reducing social exclusion in Australia.

2.1 Trends in social exclusion in the context of Australia and Melbourne

According to Hensher (2011), the concept of social exclusion has grown from work which sought to better understand and represent poverty. While poverty and social exclusion are related, social exclusion describes the existence of barriers which make it difficult or impossible for people to actively participate fully in society. While low income and unemployment are considered important barriers, other examples include poor health, limited education, ethnic minority status, age, and poor mobility.

Against the backdrop of rising property prices in major cities across Australia, it is increasingly difficult for lower income households to live affordably within inner-city areas, resulting in financial pressures to relocate to outer fringe areas where property prices are lower. Migrant families, newly established families (e.g. first home buyers), sole-parent families and key workers are over-represented in these outer fringe suburbs (Stanley and Stanley, 2017).

Even in outer suburban / regional areas where the public transport network is currently available, the quality and frequency of services means that households may face a daily long distance commute and high transport costs. Transport accounts for 14.5 per cent of household expenditure (Australian Bureau of Statistics, 2017), the third highest expenditure share behind housing, and food and beverages. In such settings, people generally have little alternative to buying and using a car to be able to participate in the opportunities available in their society, because of a lack of alternative mobility choices (Currie & Senbergs, 2007).

Currie and Delbosc (2010) developed an empirical model to measure links between transport disadvantage, social exclusion and well-being through a Melbourne-based study. The study drew on an interview questionnaire measuring transport disadvantage through self-reported difficulties with transport in Melbourne, especially in the outer suburbs. The model quantitatively proved that transport disadvantage is positively associated with social exclusion and is strongly negatively associated with wellbeing. Currie et al (2011) undertook a study to investigate transport disadvantage through an analysis of existing Census and travel survey data. The concept of 'forced' car ownership (FCO) as it applies to outer Melbourne has been explored. Overall, some 20,831 households were identified in outer Melbourne which may be considered to have FCO, including no / low relative public transport service levels, lack of walkability to activities, an income below $500 / week, and those who also run two or more cars. These households were found to own smaller and older cars and spent a higher share of motor vehicle expenditure on registration and insurance and less on vehicle purchase. Analysis found that FCO households make less trips (12.9 per cent less) and travel shorter distances than the average households in outer Melbourne. Currie et al (2011) found that public transport demand and supply gap is highly correlated with the distribution of lower income households.

There has been little application of social exclusion concepts within the transport field in Australia, until the 2000s. Research has been undertaken on specific groups who are at risk of social exclusion such as people with limited financial means (Stanley and Stanley 2004). Also, Alsnith and Hensher (2003) and Harris (2005) have researched transport issues for the elderly, and Currie et al (2005) have worked on accessibility to transport for youth and found youth are one of the groups over-represented in 'transport disadvantage' in Australia.

2.2 Statistical evidence of transport connections reducing social exclusion

There is a large body of literature overseas regarding how transport disadvantage can exacerbate social exclusion or reduce quality of life. Interest in reducing transport related social exclusion stems from French social policy (Lenoir 1989) and more recently, the UK has focussed a great deal of policy attention on reducing social exclusion (UK Social Exclusion Unit 2003). The UK is also one of the few governments to make the transport-exclusion relationship a focus of policy (Hodgson and Turner 2003; Department for Transport 2006). The European Commission has also funded a comprehensive best practice review of transport programs to reduce exclusion across Europe (Holmes et al. 2007).

Barriers to transport accessibility and connectivity were seen as centering around a number of factors including (Janet Stanley, 2017): availability and physical accessibility of transport, cost of transport, services located in inaccessible places, safety and security (fear of crime) and travel horizons (people on low incomes being less willing to travel to access work than those on higher incomes given high cost and travel time required relative to income). A number of other studies have also targeted accessibility around specific groups of people. For example, Cartmel and Furlong (2000) found youth are more likely to suffer transport exclusion; Bradshaw et al. (2004) reinforced the importance of transport to those with limited financial means such as the key service workers.

For Australia, Stanley, Hensher et al (2011) quantified the value of social inclusion enabled by better transport accessibility using a Generalised Ordered Logit regression model. The model was built using Melbourne-based survey data (a face-to-face survey undertaken for the purpose of the study). The survey sampling covered inner and outer metropolitan areas, people living in areas within walking distance to public transport and outside such distance, low and high income levels, and representative characteristics. The regression model included variables to control for and to capture:

- social exclusion (various social exclusion indicator questions and questions related to social capital, community strength and social wellbeing measures);
- well-being (various well-being and personality measures);
- transport (building on details in the household travel survey); and
- socio-economic characteristics (education, country of birth, various income questions, including relative poverty).

The findings provide statistically significant evidence to suggest that transport accessibility and connectivity is positively correlated with the likelihood of social inclusion. In particular, higher trip-making implies less risk of social exclusion. Higher household income, connection with community, and personal growth (being open to new experiences) are also positively related to a lower risk of social exclusion. Using the statistically significant relationships between household income, number of trips, and level of social exclusion, the Marginal Rate of Substitution (MRS) between number of daily trips and average daily household income was derived. The MRS are estimated to decline with increasing household income levels. Using the average daily household income and the MRS, the value of an additional trip was estimated at $19.30 per trip (in 2011 dollar terms).

Compared to the $19.30 per trip set out above, the value estimated using a generalised travel cost approach based on ATAP (2018) measures the monetised vehicle operating cost fares and travel time savings. Applying the conventional generalised cost approach, and based on the survey data underpinning Stanley and Hensher et al (2011), it results in a value of $3.50 for an additional car trip and $4.80 for a public transport journey (both in 2011 dollar terms, and applied 'rule-of-a-half'). According to Stanley and Hensher et al (2011), the difference is likely to be due to generalised cost estimates being appropriate for benefit estimation for small changes in travel opportunities (such as a small increase in public transport service) but not for major changes in trip behaviour (for example, major improvement in public transport service or new service).

With a typical daily trip rate of about 2.5 to 5 return trips (based on the survey), an additional trip is a non-marginal change in activity, where valuation should incorporate expected consumer's surplus on the travel activity, not simply be estimated based on expected travel costs. This implies higher values for non-marginal changes in travel activity, which is what the results show in Stanley and Hensher et al (2011).

However, it needs to be noted that the $19.30 is more suitable for economic appraisal of major public transport projects that provide significant accessibility and connectivity uplift to communities in relative disadvantage and / or in the outer metropolitan areas. The application of using the $19.30 as an economic parameter to estimate the economic benefit from 'Connected Communities: Better Bus Services in Tasmania' was demonstrated in Currie (2017).

3. Our analytical approach

This section discusses the method used to quantify the impact of a highly confidential, large scale transport project in Victoria in reducing social exclusion. Due to the confidentiality, it is referred as 'a hypothetical proejct of interst' in this paper, to demostrate the methodology. The quantification involves the following key steps:

1. Identify the number of 'people at risk of social exclusion' (SE);
2. Estimate the additional 'trips per SE per day' (SE trip rate) attributable to the project of interest;
3. Combine the above two items to derive the total number of additional trips made by the project of interest; and
4. Monetize the benefits by applying the average value per trip as per Hensher (2011).

The analysis is undertaken at the Australian Bureau of Statistics (ABS) Statistical Area Level 2 (SA2).

To support the above calculation, multiple Australian and Victorian datasets have been used and calibrated to a joint dataset. The datasets and variables sourced using them are:

Table 1 Datasets used and calibrated

Dataset	Variables sourced
ABS Census 2016 data (TableBuilder Pro)	The number of SE
Victorian Integrated Survey of Travel and Activity (VISTA) 2016	Additional SE trip rate due to the project of interest
Victorian Integrated Transport Model (VITM) output (in additional trips) undertaken for the project of interest	
Household, Income and Labour Dynamics in Australia (HILDA) Wave 16	Used for calibration purposes, to ensure the number of SE estimated are consistent with Hensher (2011), ABS Census 2016 and VISTA 2016

The quantification method and data sources are discussed in further detail in the following sub-sections.

3.1 Theoretical base of the method

In order to monetise the economic benefit of reduced social exclusion, this paper adopted the unit value of per SE trip of $19.30 as estimated by Hensher (2011).

This value is based on a survey of 443 adults in Greater Melbourne, which was specifically designed to capture travel and socio-economic attributes of the SE group. The study establishes five criteria to identify SE, who meet three out of the five criteria. Based on these, 31 out of 443 adults (7 per cent) were identified as SE. The five dimensions to indicate a person's risk of being socially excluded (SOCEXA) are outlined as:

- Household income: less than $500 (pre-tax) per week;
- Employment status: neither employed, retired, in education or training, looking after family, nor undertaking voluntary work;
- Political activity: did not contribute to/participate in a government political party, campaign, or action group to improve social/environmental conditions, to a local community committee/group in the past 12 months;
- Social support: not able to get help if a person needs it from close or extended family, friends or neighbours; and
- Participation: did not attend a library, sport (participant or spectator), hobby, or arts event in the past month.

Using these survey data, the study developed a Generalised Ordered Logit regression to derive the MRS between Public Transport (PT) trips and income, as a proxy for monetised value per PT trip valued by SE. The model suggested a SE value per PT trip of $19.30, and a non-SE (NSE) of $9.56.

3.2 Data

As discussed earlier in this section, this paper utilises a number of Australian and Victorian data sources to identify SE and estimate the additional SE trip rate due to the project of interest.

Initially, for greater consistency, we have attempted to derive all necessary variables from one single data source. However, there is no single data source in Australia that allows us to obtain a full set of variables required for this analysis at the SA2 level. The most comprehensive data that covers all variables is HILDA, but this is only available at the Greater Capital City Statistical Areas (GCCSAs) level[2]. We consider geographical breakdown to the more granular SA2 level essential for this analysis, as benefits tend to be realised locally since the distribution of SE varies significantly across geographies.

Thus, multiple data sources were used jointly. To ensure consistent information across the data sources, we have calibrated the data to a joint database, using the number of SE as an indicator to verify the validity for jointing datasets. The key datasets used to calibrate the data are:

- HILDA: Is used as the benchmark dataset for data calibration. This is because HILDA comprises the most comprehensive set of relevant variables, and it aligns closely with the Hensher (2011) study we have adopted as the theoretical base. The validity of using Census and VISTA jointly were assessed based on their consistency with HILDA;
- ABS Census: Is used to obtain the number of SE. This is because Census contains the most comprehensive data on socio-economic characteristics of the Australian population, and allows analysis at a granular geographic level;

[2] HILDA does not provide SA level data to commercial subscribers. Even for non for profit subscribers, where granular SA level data is available, we do not consider it suitable for this SE analysis given the small sample size. It needs to be noted that a national level sample of 17,512 for wave 16 used would result in a large sampling error at Melbourne SA2 level. The smaller population for SE would further exacerbate this issue.

- VISTA: Is used to derive trip rate for SE and NSE. This is because VISTA contains the most comprehensive trip information for Victoria, as well as some socio-economic variables which allow the identification of SE trips.

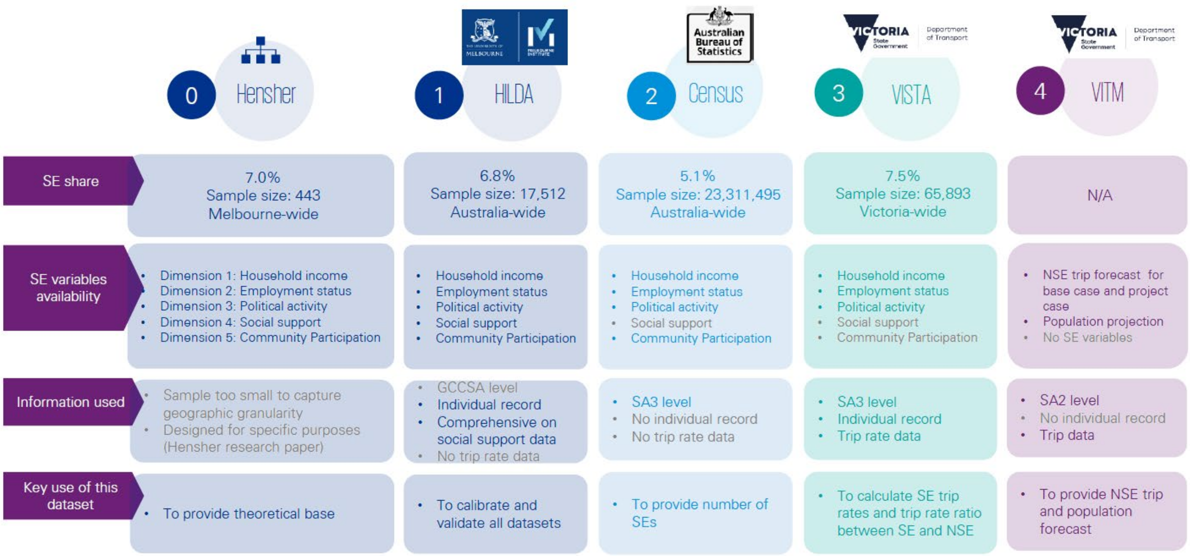
The variables sourced and dataset used are provided in further detail in Figure 1 below.

3.2.1 Data calibration

We have attempted to mimic the Hensher (2011) approach to determine the share of SE across the data sources. In most occasions, proxy variables exist in Census and VISTA to allow identifying SE across the five Hensher dimensions (despite not being to the same level of detail in the Hensher survey or HILDA). 'Social support' is found to be a missing dimension in both Census and VISTA due to the nature and purpose of these surveys.

The share of SE derived from Hensher (2011), HILDA, Census and VISTA are broadly in line with one another, with the largest variance of 1.9 per cent between Hensher and Census. We do not consider this a major issue given that Census has a lower magnitude (5.1 per cent, versus 7.0 and 6.8 per cent in Hensher and HILDA respectively) which suggests the SE estimated by this paper is on the conservative side.

Figure 1 Overview of dataset used and variables sourced



3.2.2 Alignment of VISTA and HILDA data

We used regression analyses to validate the relationship between VISTA and HILDA. Firstly, we employed a Logit regression model to predict the missing variables of 'social support' and 'community participation' in VISTA. We then fitted these predicted variables (along with the existing variables) to calculate the SE share for VISTA. The predicted SE share confirms the consistency of VISTA and HILDA, and thus suggests the validity of using VISTA to derive SE trips. In particular, we used HILDA (where a full set of variables was available at GCCSA level) to derive the relationship between the missing variables of 'social support' and 'community participation' and the known variables (income, employment and political activity). The Logit regression equations used for estimating the missing variables are provided below. We then applied this relationship to the VISTA data, so that the missing variables of 'social support' and 'community participation' can be predicted using available variables.

$$Social\ support = \beta 0 + \beta 1\big(log(Income)\big) + \ \beta 2\ (Employment) + \beta 3(Political)$$

$$Community\ participation = \beta 0 + \beta 1(log(Income))\ + \ \beta 2\ (Employment)\ + \ \beta 3(Political)$$

Where:

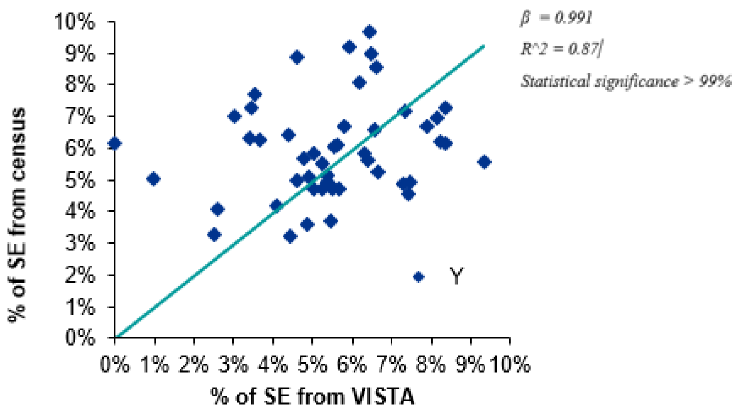
- *Social support: 1 if someone does not get social support, otherwise 0*
- *Community participation: 1 if someone does not engage in community, otherwise 0*
- *Log(Income): log of annual household income*
- *Employment: 1 if someone is not employed, otherwise 0*
- *Political: 1 if someone does not engage in political activities, otherwise 0*

Most of the coefficients turned out to be statistically significant at the 90 per cent level with a McFadden R squared around 0.5. Using the estimated coefficient to predict the share of SE using VISTA, the predicted SE share remains at 7.5 per cent. This is likely to be due to the correlation between variables, and thus the impact of the missing variables are 'nested' under the existing ones. In other words, this provides us the confidence that the missing variables do not lead to material issues as their impact is captured by the known variables.

3.2.3 Alignment of Census and VISTA data

As discussed above, Census is the most comprehensive and reliable data source for identifying the number of SE at a more granular geography level. VISTA is the only data source that contains trip rates and socio-economic characteristics (for identification of SE trips). To further ensure the two key datasets we used to derive SE numbers and SE trip rates are consistent with one another (and thus suitable to be used jointly), we have undertaken analysis to compare the trends across the two datasets at SA2 level. We plotted the linear relationship between SE shares by SA2 using Census versus VISTA (Figure 2). This shows a statistically significant relationship between VISTA and Census share of SE. R squared associated with the linear regression is 0.87, suggesting a good modelling fit.

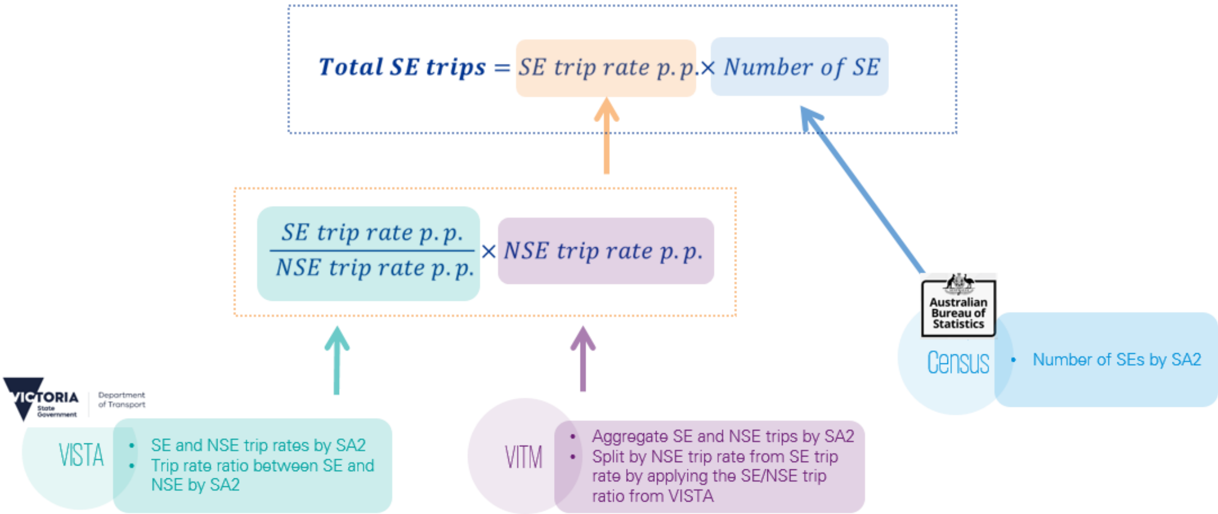
Figure 2 SE share by SA2 using VISTA and Census



3.3 Quantification method

The additional trips were derived by combining the additional SE trips due to the project of interest with the number of SE in a given SA2. To these trips, the average value per trip was applied to calculate the monetised (annual) benefits. The number of additional trips (item 1 above) can be quantified using the method depicted by Figure 3. Here, Victorian Integrated Transport Model (VITM) is used as an example of obtaining additional trips due to the hypothetical project of interest in the City of Melbourne, Victoria.

Figure 3 Method of estimating the number of SE trips



In summary, the number of additional SE trips is derived from the multiplication of the below as shown in Table 2. This method ensures the reduced social exclusion benefit is calculated for the project of interest. While the number of SE is identified for all SA2s in Greater Melbourne, the benefit is only applicable for those who are benefiting from the project of interest. For example, for SE who live outside of the project catchment, the additional trips generated by them will be calculated as zero (e.g. as per VITM output). Consequently, the benefit accrued to these 'unaffected' SE (due to the project of interest) will be zero.

Table 2 Key components of deriving additional SE trips

Key component	Detailed component items	Estimation method	Data source
SE trip rate (per person, per day) due to project of interest	Ratio of SE vs NSE trip rate	• Analysis of VSTA unit record data, and derive the trip per day per person for SE versus NSE. • SE (and thus SE trips) identification consistent with Hensher (2011) method of five dimensions.	VISTA 2016 by SA2
	NSE trip rate	• VITM provides total number of daily trips for both SE and NSE. • NSE trips can be derive by applying the VISTA ratio of SE/NSE trip rate (row above).	VITM modelling for the project of interest by SA2
Number of SE	Number of SE	• Applying Hensher (2011) method of five dimensions to derive the number of SE.	Census 2016 by SA2

4. Findings and outcome

This section presents the results of this study, including the current distribution of SE, trips made by them and the impact of the project of interest on SE trips. Our key finding is that the project of interest can provide potential to reduce social exclusion as demonstrated by the positive economic benefit we quantified. The quantum of the monetised benefit is not presented in this paper, which focuses more on method.

4.1 Socially excluded people in Melbourne and trips made by them

Figure 4 (left hand side) shows the distribution of SE in Greater Melbourne, calculated using the 2016 Census as discussed above. We found the largest numbers of SE reside in Brimbank, Wallan and Dandenong, followed by Geelong, Wyndham and Broadmeadows. Figure 4 (right hand side) provides the trip ratio of SE versus NSE calculated using VISTA as discussed above. SE travel less than NSE, where the trip rate ratio is less than one.

Figure 4 Number of SE by SA2 in 2016 (left) and Train SE/NSE trip rate ratio by SA2 in 2016 (right)

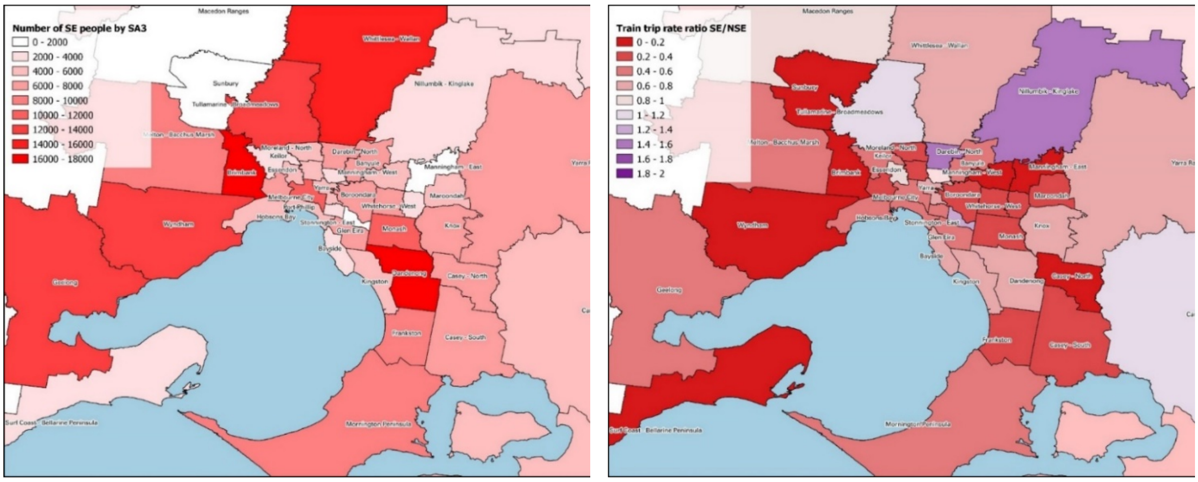
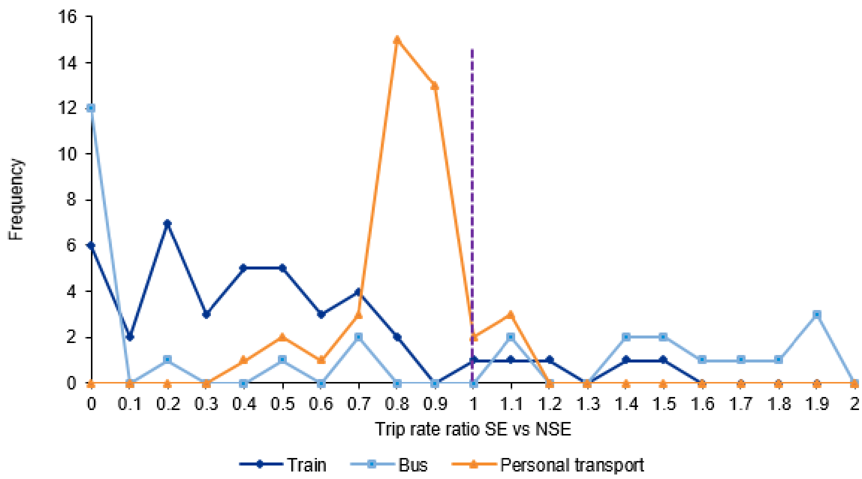


Figure 5 provides a more detailed travel pattern by mode for SE versus NSE. SE travel less than NSE in most SA2s. In addition, compared to NSE, SE makes less train trips, likely to indicate their poorer access to train service. However, SE seems to take more bus trips, likely to reflect buses are used where train service is lacking. Lastly, personal transport trips (including vehicle driver, vehicle passenger and motorcycle) made by SE and NSE are similar in number.

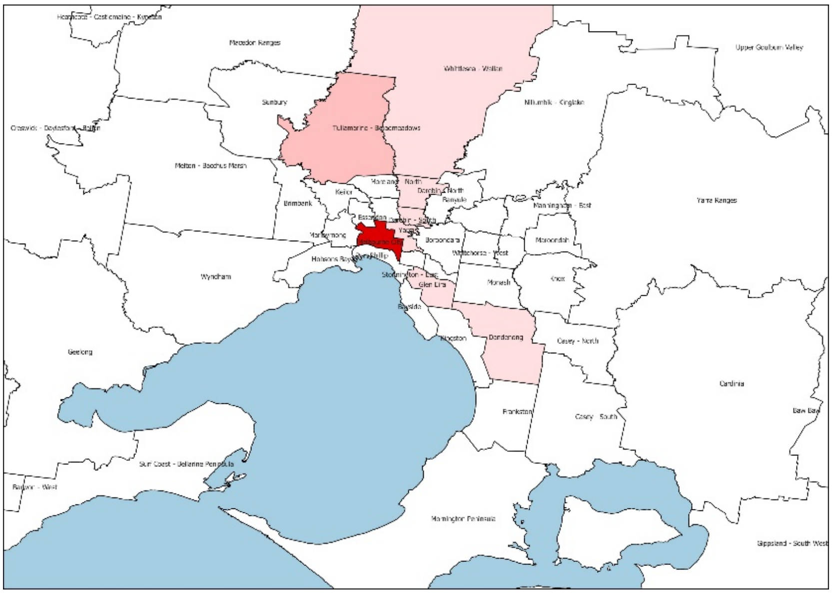
Figure 5 Trip rate ratio SE / NSE by SA2 in 2016



4.2 The impact of project on SE trips

The map in Figure 6 shows the distribution of SE trips by SA2 in year 2051 under the Base Case where the project of interest does not exist.

Figure 6 Number of SE trips by SA2 (2051 Base Case)[3]



Under the Project Case, the project of interest may improve connectivity and accessibility, and makes train travel more attractive. As a result, it may have potential to promote train travel and mode shift from automobiles. This would see increases in trips from the map above under the Project Case.

4.3 Monetise economic benefit of reduced social exclusion

The economic benefit of the project in reducing social exclusion can be monetised by applying the Hensher (2011) unit value per SE trip of \$19.30 (2021 value of \$24.10). The quantified positive economic benefit confirms the project's role in promoting transport equity and reducing social exclusion.

5. Conclusions

Reducing social exclusion has been an important policy objective in Australia and globally. Transport can play an important role in enhancing social inclusion and bridging inequality, as demonstrated in this case study. Transport appraisals need to recognise the value of infrastructure investment in reducing social exclusion, to be in line with the overarching policy objectives.

This paper provides an approach to quantify the impact of transport investment on reducing social exclusion. Using our methodology and calibrated dataset, we are able to quantify the social inclusion benefit of a transport initiative accrued to people experiencing difficulties in participating in society. This demonstrated the project of interest's value in promoting social inclusion and equality, beyond its conventional transport benefits.

[3] Note legend was intentionally removed for confidentiality reasons.

6. References

Holmes, K, Clifford, S, Gregory, K & Mabelis, J 2007, 'ECLIPSE: Good practice review - Final version year two', *Social Research in Transport (SORT) Clearinghouse*.

Currie, GV & Senbergs, Z 2007, Exploring forced car ownership in Metropolitan Melbourne. in J Morris (ed.), *Proceedings of the 30th Australasian Transport Research Forum - Managing Transport in a Climate of Change and Uncertainty*. Department of Infrastructure Victoria, Melbourne VIC Australia, pp. 1 - 24, Australasian Transport Research Forum 2007, Melbourne, Australia, 25/09/07.

Department for Transport 2006, Guidance on accessibility planning in local transport plans, Australian Government, Canberra ACT Australia.

Currie, GV, Richardson, T, Smyth, P, Vella-Brodrick, D, Hine, J, Lucas, K, Stanley, J, Morris, J, Kinnear, R, & Stanley, J 2010, 'Investigating links between transport disadvantage, social exclusion and well-being in Melbourne – Updated results', *Research in Transportation Economics*, vol. 29, no. 1, pp. 287–295, DOI: 10.1016/j.retrec.2010.07.036.

UK Social Exclusion Unit 2003, 'Making the Connections: Final Report on Transport and Social Exclusion', Office of the Deputy Prime Minister, London United Kingdom.

Currie, GV & Delbosc, A 2010, 'Modelling the social and psychological impacts of transport disadvantage', *Transportation*, vol. 37, no. 6, pp. 953 – 966, DOI: 10.1007/s11116-010-9280-2

Currie, GV 2011, *New Perspectives and Methods in Transport and Social Exclusion Research,* Emerald Group Publishing Limited, Bingley UK.

Hodgson, F & Turner, J 2003, 'Participation not consumption: The need for new participatory practices to address transport and social exclusion', *Transport Policy*, DOI: 10. 265-272. 10.1016/j.tranpol.2003.08.001.

Currie, GV, Gammie, F, Waingold, C, Paterson, D & Vandersar, D 2005, *Rural and Regional Young People and Transport - Improving access to transport for young people in rural and regional Australia,* Australian Government Dept of Family and Community Service, Canberra ACT Australia.

Stanley, J, Hensher, D, Stanley, J, Currie, G, Greene, W & Vella-Brodrick, D 2011, 'Social exclusion and the value of mobility', *Journal of Transport Economics and Policy*, vol. 45, no. part 2, pp. 197 - 222.

Australian Social Inclusion Board 2010, *Social Inclusion in Australia: How Australia is Faring,* Australian Government, Canberra ACT Australia.

Bradshaw, J, Kemp, P, Baldwin, S & Rowe, A 2004, *The Drivers of Social Exclusion: A review of the literature,* Breaking the Cycles Series, Social Exclusion Unit, Office of the Deputy Prime Minister, London.

Stanley, J, & Stanley, J 2017, 'The importance of transport for social inclusion', *Social Inclusion*, 5(4), 108-115.

Alsnih, R & Hensher, DA 2003, 'The mobility and accessibility expectations of seniors in an aging population', *Transportation Research Part A: Policy and Practice*, vol. 37(10), pages 903-916, December.

United Nations Department of Economic and Social Affairs 2016*, 'The Report on the World Social Situation 2016: Leaving no one Behind', Report on the World Social Situation*, DOI: 10.18356/5aa151e0-en.

Stanley J (2017), The Usefulness of Social Exclusion as a Theoretical Concept to Inform Social Policy in Transport, *Transport Policy*, DOI: 10.1016/j.tranpol.2009.02.003.

Harris, A, & Tapsas, D 2006, 'Transport and mobility: Challenges, innovations and improvements', *Transport*, 14(1), 38-43.