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EXPLORING TRANSPORT DISADVANTAGE, SOCIAL EXCLUSION AND WELL-BEING IN SPATIAL CONTEXT

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ABSTRACT

This paper explores the spatial differences in measures of transport disadvantage, social exclusion and well being in a survey of inner metropolitan, outer suburban, peri-urban and regional areas of Victoria, Australia. Its aim is to understand how geographic context may influence transport disadvantage which may in turn influence social exclusion and well-being.

There were very clear differences in mobility and car dependence between geographic locations. Walk access to business zones and public transport access both declined considerably as distance from central Melbourne increased. These two factors likely influenced the increase of car dependence with distance from central Melbourne. Car dependence peaked in peri-urban Melbourne with regional areas showing slightly less car dependence.

Mobility and kilometres travelled also increased with distance from central Melbourne, which in turn resulted in greater sensitivity to fuel price increases. Again these factors were greatest in peri-urban Melbourne. Those in inner Melbourne were more likely to switch to alternative transport to cope with fuel price increases, those in regional areas were more likely to give or get lifts, and those in peri-urban locations were the most likely to have to give up activities altogether.

Links between transport disadvantage and social exclusion were small and inconsistent in this paper although they have been demonstrated in other research. Links between transport disadvantage and well-being were small and somewhat inconsistent, but they were particularly strong and very statistically significant in the regional sample.

1 INTRODUCTION

A wide range of research has now demonstrated that transport disadvantage can act to limit access to social and economic activities and that this can both lower the quality of life and act to exacerbate social exclusion (Social Exclusion Unit, 2003, Lucas, 2004a, Currie et al., 2007, Hine, 2007). In general research in this field has been either focussed on specific socially disadvantaged groups or focussed on geographical locations facing disadvantage. Studies with a geographic focus have examined the situation in a range of locations. Each of these locations creates unique barriers to access which, in turn, can influence the well-being or social exclusion of the people living there. An understandable limitation of these studies is that most of them concentrate on understanding a single geographic area in some depth. Fewer studies have used the same survey or dataset to examine differences across geographic contexts.

Analyses of national travel survey datasets compare trip rates and car ownership between urban and rural contexts (e.g. Pucher and Renne, 2004, Department for Transport, 2007, Abley et al., 2008) but transport disadvantage can only be inferred from these results and these surveys do not measure social exclusion or well-being. Some analyses use spatial tools to measure transport disadvantage in different areas around a city (Church et al., 2000, Hurni, 2007, Currie, 2010) contrasting inner-urban with urban-fringe situations.

This paper explores the differences in measures of transport disadvantage, social exclusion and well-being as identified in a survey of metropolitan (Inner, Outer and Peri-urban) and Regional areas in Victoria, Australia. Its aim is to understand how differences in geographic location influences transport disadvantage which may in turn influence social exclusion and well-being. It is part of a greater research project investigating and quantifying links between transport disadvantage, well-being and social exclusion[1].

This paper is structured as follows. Section 2 presents some of the research background to the study. Section 3 details the methodology for the survey and the approach to exploring results for different geographical regions. Section 4 details the results which are discussed in section 5. The paper closes with a brief summary of key findings and a review of implications for future research.

2 BACKGROUND

Transport disadvantage and its links to social exclusion has been a theme of much recent work. Social exclusion as a concept has emerged from French social policy (Lenoir, 1974) but more recently the UK has focussed policy and research attention on social exclusion and its links to transport (Hodgson and Turner, 2003, UK Social Exclusion Unit, 2003, Clifton and Lucas, 2004, Lucas, 2004b, Department for Transport, 2006).

Research literature on the topic sometimes focuses on geographic areas with are seen to be problematic in terms of transport needs. Studies that have focussed on transport disadvantage for inner city residents have been dominated by US research exploring unemployment and racial disadvantage of ghetto type developments (Cervero and Tsai, 2003, Cervero, 2004). Low car ownership and public transport services not focused on reverse commute trips to suburban jobs is a major focus of this research.

[1] Australian Research Council Industry Linkage Program Project LP0669046 'Investigating Transport Disadvantage, Social Exclusion and Well-being in Metropolitan, Regional and Rural Victoria', Monash University, in association with the University of Westminster (UK), University of Ulster (UK), Department of Infrastructure, Victoria, the Bus Association of Victoria and the Brotherhood of St. Laurence. The principal chief investigator is Prof. G. Currie, the chief investigators are Prof. T. Richardson, Prof. P. Smyth and Dr. D. Vella-Brodrick. The partner investigators are Prof. J. Hine, Dr. K. Lucas, Mr. J. Stanley, Dr. J. Morris, Mr. R. Kinnear and Dr. J. Stanley. The study Research Fellow is Ms Alexa Delbosc.

The urban fringe of metropolitan areas is a major focus of a range of research, especially within Australian cities (Dodson and Sipe, 2006, Hurni, 2007, Currie, 2010). This research suggests that fringe areas are characterized by poor walk accessibility, little or no public transport and travel distances which are much longer than inner urban areas. Importantly housing affordability can attract low income houses to the urban fringe where a lack of alternative transport "forces" households into investing a large portion of their limited income on car ownership (Banister, 1994).

"Forced car ownership" was originally a term coined in the UK related to rural contexts where similar issues of car dependence on low income were identified (Jones, 1987, Banister, 1994). Rural contexts tend to exacerbate the need to travel over longer distances and hence generate a higher degree of car dependence. This includes a higher share of lift giving amongst those without cars including young people (Currie, 2007). In general rural communities are said to be 'closer' to each other in terms of social contacts outside of immediate family groups which may improve mobility opportunities through lift giving (Onyx and Bullen, 2000, Gray et al., 2006).

Much of this research focuses on understanding the issues faced in specific geographic locations. Fewer studies use the same instrument to compare the situation across different areas. Analyses of national travel surveys sometimes compare travel characteristics between urban and rural contexts (Pucher and Renne, 2004, Department for Transport, 2007, Abley et al., 2008). However estimations of transport disadvantage from these surveys must be inferred from car ownership levels or trip rates. For example Pucher and Renne (2004) found that the rural elderly and poor were considerably more mobile than their urban counterparts, but noted that higher *mobility* did not necessarily reflect higher *accessibility*, especially for the small percentage of rural households without a car.

The literature on the impact of transport disadvantage on well-being is in early stages. The first studies were restricted to elderly cohorts where increased mobility was shown to have a small but important impact on quality of life (Banister and Bowling, 2004, Mollenkopf et al., 2005, Spinney et al., 2009). More recent work has demonstrated an indirect link between transport disadvantage and well-being in a broader demographic group (Currie and Delbosc, In Press). But this relationship has not been explored across different geographic contexts; exploring this relationship is an important focus of this paper.

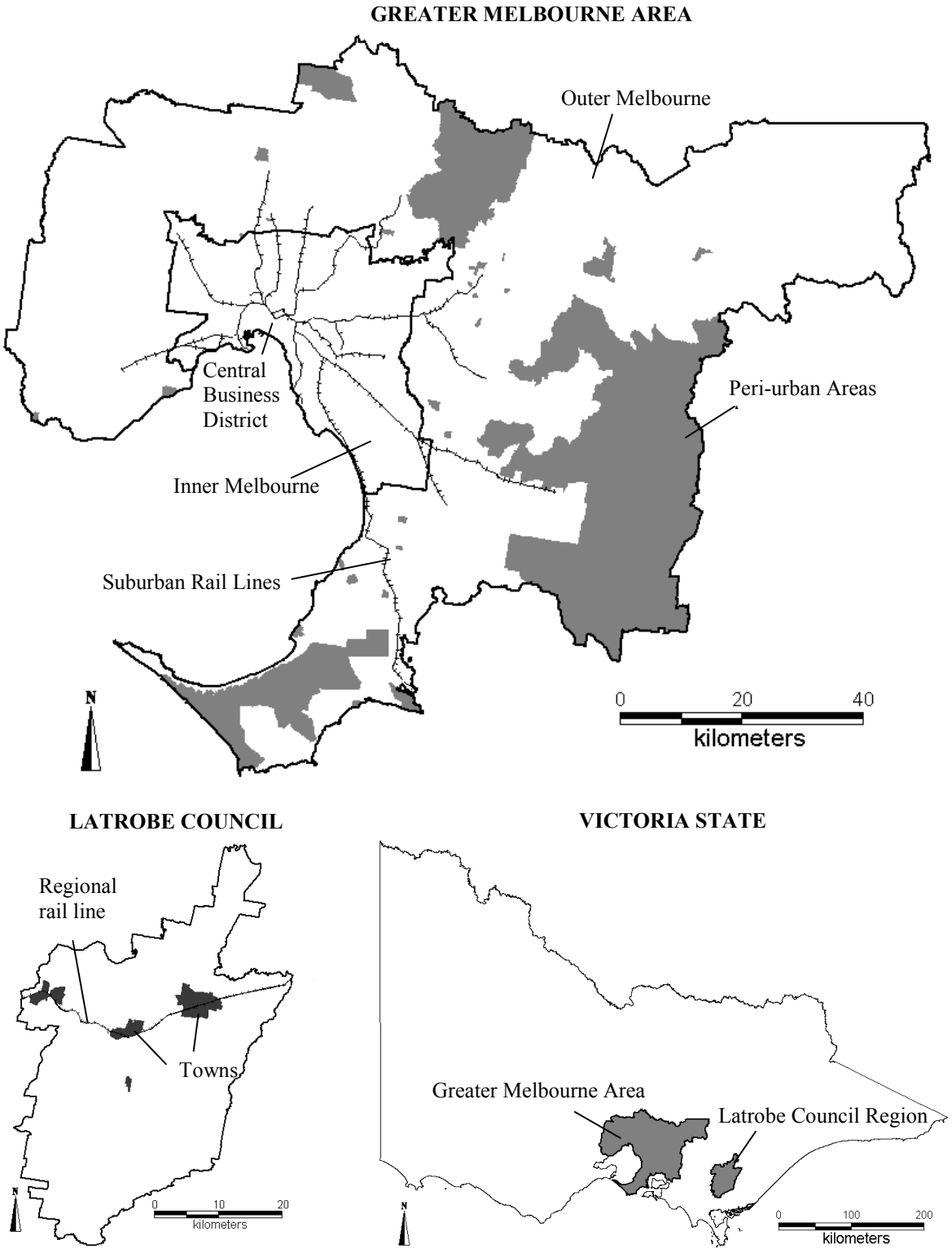
The aim of this research paper is to flesh out the understanding of the transport disadvantage experienced in urban, suburban, peri-urban and rural contexts. The relationships between transport disadvantage, social exclusion and well-being will be explored in greater depth across these contexts. Using the same survey method and instrument will allow a more systematic comparison across these areas.

3 METHODOLOGY

The data for this research was collected using a household interview survey lasting between 60 and 90 minutes[2]. Respondents were selected from two sources. The first was a pool generated by a previous household travel survey called VISTA (Victorian Integrated Survey of Travel and Activity, Department of Infrastructure, 2007); some households who completed VISTA were later approached to complete this survey. This approach enabled access to existing travel diary records and also provided a suitable sample frame for targeting of respondents. The survey covered advantaged as well as disadvantaged households but purposefully over-sampled outer urban areas. This sample was made up of two major sub-samples, one of 535 interviews from the greater Melbourne area (the 'main metropolitan' sample) and another 148 interviews from the Latrobe region of Eastern Victoria. These sampling areas are displayed in Figure 1. Both surveys were conducted in the latter part of 2008.

[2] The development of the survey and the wider analysis in this project are fully described in Currie, G., T. Richardson, P. Smyth, D. Vella-Brodrick, J. Hine, K. Lucas, J. Stanley, J. Morris, R. Kinnear and J. Stanley (2009). " 'Investigating links between transport disadvantage, social exclusion and well-being in Melbourne—Preliminary results' ," Transport Policy **Vol 16 (2009) 97–105**.

Figure 1: Metropolitan Melbourne and Latrobe Council survey sample areas



The second survey sample specifically targeted disadvantaged individuals who may have avoided the VISTA survey. They were recruited from government and non-government support service providers such as Centrelink welfare distribution centres, churches and youth support centres. This sample of 336 contained a high proportion of single parents, unemployed persons, the disabled and carers. These respondents completed a travel survey of their previous day's travel to compensate for not having completed the VISTA survey.

For this analysis the total sample of 1,019 was divided into geographic regions. The 'inner Melbourne' sample of 229 generally lived within 20km of the central business district. The 'outer Melbourne' sample of 476 came from the remainder of the outer suburban areas[3] between 20km and 110km of Melbourne's centre. In addition a 'peri-urban' sample made up 79 interviews. These areas were defined as regions in the outer ring of local government areas that had little or no public transport services.

The regional sample came from the Latrobe region of Eastern Victoria between 120 and 150kms east of Melbourne's central business district. The region includes the towns of Moe, Morwell, Traralgon and Churchill as well as smaller villages and areas of isolated housing.

Transport disadvantage in this survey was measured using several subjective, self-reported measurements. Respondents were asked how often they had difficulty accessing activities due to transport problems and whether there were any activities they could not access at all because of transport.

In addition to the above a number of other transport related issues were explored in the survey. Travel trip rates and mode of travel for a survey day was available via the link to the previous VISTA survey. The survey also explored the impact of rising fuel prices.

Social exclusion is a complex, multi-faceted construct. It is more than just poverty and encompasses issues with social participation and civic engagement. Drawing on the work of Burchardt (2000), the survey measured social exclusion using five dimensions:

- Income: Participants were classified into four categories of non-equivalised gross household income
- Unemployment: This included both those who were looking for work and those who were unemployed due to disability or illness
- Political engagement: This was measured by recording recent participation in political or community groups.
- Participation: Participants were asked if they have been excluded from a range of activities such as hobbies, sport and visiting libraries
- Social support: This was measured by asking how easily people could get help from others if they needed it.

People were categorised as excluded using cut-off criteria from the above variables. Those with an income below $500 per week (the 'poverty line') were considered excluded on one dimension as were people who were unemployed. Those who participated in no political or social activities were considered excluded and so were people with very low scores on the social support scale. Finally, these exclusion scores were summed, giving participants a total social exclusion score ranging from 0 (not excluded on any dimensions) to a possible 5 (excluded on all 5 dimensions, although the highest score in this sample was 4).

The measurement of **well-being** at the individual level is a mature research topic in social psychology (Kahn and Juster, 2002). For this study four measures of well-being are adopted:

- Satisfaction With Life Scale: Participants indicate how much they agree with five statements about their life conditions and how close their life is to their ideal (Diener et al., 1985)
- Personal Well-being Index (PWI): Participants indicate how satisfied they are with nine different aspects of their life (International Wellbeing Group, 2005)
- Positive Affect Schedule: Participants rate how much they generally feel a range of positive emotions (Watson et al., 1988)

[3] Outer suburban areas include the local government areas of : Cardinia, Casey, Frankston, Hume, Knox, Mornington Peninsula, Maroondah, Melton, Nillumbik, Whittlesea, Wyndham, Yarra Ranges. At their closest these areas lay some 20kms from Melbourne CBD and at their furthest they are some 110kms from the CBD

- Negative Affect Schedule: Participants rate how much they generally feel a range of negative emotions (Watson et al., 1988).

The 'Satisfaction With Life Scale' (SWLS), 'Personal Well-being Index' (PWI) and 'Positive Affect' (PA) and 'Negative Affect' (NA) Schedule are standard measures for measuring subjective well-being in the psychology literature (Diener, 1984, Lucas and Diener, 1996). Taken together these scales measure subjective well-being or quality of life.

4 RESULTS

Results are examined from a number of perspectives by geographic region. This includes general sample characteristics, transport and travel, self reported transport difficulties and links between transport difficulties, social exclusion and well being.

Sample Characteristics

Table 1 shows the sample size by geographic region and some descriptive features of the sample in each region. The sample was not chosen to be representative of the population as the disadvantaged and people living in outer areas were deliberately over-sampled. For example the income profile of the sample was lower than the Melbourne average; 68% of the sample was below the Melbourne median income of $AU1,040 per week (Australian Bureau of Statistics, 2007).

The proportion of each geographic sample taken from the special survey of disadvantaged individuals ranges between 31% of the Inner and Outer Melbourne samples to 41% of the Peri-urban sample. However this does not appear to have greatly influenced the difference in demographics between these samples although the demographics of the geographic groups differed in a few notable ways. As the samples moved from inner Melbourne to Regional areas, people were more likely to be retired, were less likely to have a post-secondary education, were less likely to be born overseas and were less likely to be female. Within Melbourne incomes did not vary by region but they were more likely to have children the farther they were from Inner Melbourne. Incomes were lower in the Regional sample and they were less likely to have children. Household size and age did not appear to vary greatly between geographic areas. The unemployed were most likely to be in Inner Melbourne and Regional areas.

These differences should be kept in mind as they may influence other variables in the survey.

Table 1: Sample Characteristics by Region

	Metro overall	Inner Melb	Outer Melb	Peri-Urban	Regional
Sample Size					
Number completed interviews	784	229	476	79	235
Percent from "special survey" sample	32%	31%	31%	41%	37%
Key Descriptive Statistics					
Adults in HH	2.1	2.0	2.1	1.9	1.9
Proportion who have children in HH	43%	37%	45%	51%	34%
Average age	44	44	45	46	45
Retired	20%	17%	21%	23%	26%
Proportion with income below $Aust 1,100pw	61%	61%	61%	60%	71%
Proportion who are unemployed	16%	20%	14%	13%	25%
Proportion with post-secondary education	40%	46%	39%	37%	35%
Proportion born overseas	23%	29%	20%	20%	13%
Proportion who are female	57%	56%	59%	52%	48%

Transport and Travel

Table 2 details some of the transport and travel characteristics of the study areas. Average walk distance to business zones (local shops/activities) increases greatly with distance from the centre of

Melbourne. A walk distance of 500m is considered accessible; using this cut-off most of those in inner Melbourne could walk to local shops whilst those in all other areas could not.

The quantity of public transport was measured using an index of quantity of service per week and walk access to service (described fully in Currie, 2010). This service level declines inversely with distance from central Melbourne in the Metropolitan area (peri-urban areas have less service than regional areas due to the definition of peri-urban used in this paper). Inner Melbourne has a public transport service level which is more than 100 times greater than in peri-urban areas and nearly 15 times larger than in regional areas.

There are strong links between car ownership, mode share and lack of public transport. Regions with the highest car ownership and highest mode share by car also have the lowest public transport usage. Car ownership increases with distance from the city centre except for regional areas. Interestingly, car ownership is lower in the Regional sample than it is in the Outer Melbourne sample. Walk/cycling is also high in the Regional sample and public transport mode share is almost as high even though service levels are a third of the level in Outer Melbourne.

Interestingly the volume of travel made also generally increases with distance from the centre of Melbourne. The Peri-urban sample has the highest trip rates and longest distances travelled. Regional trip rates are the second-highest though their average trip distances are just as long as the Peri-urban sample. Compared to inner Melbourne average daily passenger kilometres are 1.5 times higher for regional areas and twice as high for peri-urban areas.

Apart from a general picture of increasing car dependence and higher travel volume in non-inner areas there is an increasing share of shared car trips in outer and regional areas (peaking at 18% of trips).

Table 2 : Transport and Travel Characteristics by Region

	Metro overall	Inner Melb	Outer Melb	Peri-Urban	Regional
Walkability					
Distance from business zone (metres)*	690	479	690	1,283	2,061
Public Transport Availability					
Public transport service level index*	1,719	3,821	1002	36	292
Car Ownership					
Proportion without cars**	12%	21%	8%	6%	15%
Average number of vehicles per HH*	1.7	1.5	1.8	1.9	1.6
Average Realised Daily Travel per Person					
Trips per day*	3.7	3.5	3.6	4.4	3.9
Distance travelled per day (km)*	36	28	36	56	47
Distance per trip (km)*	10.0	7.8	10.4	13.6	13.6
Mode Split					
Car driver*	45%	36%	44%	52%	46%
Car passenger	16%	12%	18%	16%	17%
Public transport*	17%	25%	14%	8%	12%
Walk/cycle	21%	25%	19%	21%	23%

**One-way ANOVA between inner, outer, peri-urban and regional values is statistically significant, $p < .05$*
***Chi-square between inner, outer, peri-urban and regional values is statistically significant, $p < .05$*

Transport Disadvantage

Table 3 details survey results regarding self reported difficulties with transport and access to activities. This includes some responses to increasing fuel prices which were occurring during the survey period.

Overall people in outer, peri-urban and regional areas were the most likely to report transport difficulties often/very often but these differences were not statistically significant. However when

people were asked if there were activities they *could not do* because of transport problems there were statistically significant differences between groups. The Peri-urban and Regional areas were the most likely to identify activity barriers.

In general there were many similarities in the particular activities associated with transport difficulties in each of the sample areas. Visiting friends and relatives was the most common activity associated with transport difficulties with a particularly high share in the peri-urban sample. This was followed by general recreation and sporting/leisure. Shopping, personal business and work access issues were highlighted by a higher share of the peri-urban sample. Interestingly, residents of inner Melbourne were slightly more likely to report transport difficulties on many activities than residents of outer or regional areas.

Table 3: Transport Difficulties by Region

	Metro overall	Inner Melb	Outer Melb	Peri-Urban	Regional
Frequency of Self Reported Transport Problems					
Never	45%	41%	48%	38%	44%
Rarely or occasionally	43%	50%	39%	49%	43%
Often or very often	12%	9%	13%	13%	13%
Activities Cannot Do Due to Transport					
Percent who said there were activities they couldn't do because of transport problems*	15%	18%	14%	20%	24%
Activities Difficulty Accessing					
Visiting friends and relatives	29%	34%	25%	37%	31%
Enjoyment (getting out and about)	23%	25%	21%	23%	23%
Sporting/leisure	18%	20%	17%	22%	17%
Shops	15%	13%	14%	25%	17%
Work	14%	14%	13%	19%	17%
Person business (medical/banking)	12%	12%	12%	15%	14%
School/university/TAFE	12%	10%	12%	15%	15%
Interview for jobs	10%	11%	10%	10%	11%
Accompanying a child/elderly etc	6%	5%	7%	3%	7%
Other	3%	4%	3%	3%	2%
Travel Affected by Increasing Fuel Prices*					
Yes	44%	35%	46%	56%	47%
No	56%	65%	54%	44%	53%
Response to Increasing Fuel Prices (only includes those affected by increasing fuel prices)					
Make fewer trips by driving	86%	86%	86%	84%	95%
Do multiple activities in a single trip	86%	84%	87%	89%	83%
Travel less overall	80%	72%	82%	89%	87%
Travel the same but pay more	78%	78%	78%	73%	79%
Travel to places which are closer	78%	79%	77%	84%	76%
Walk/cycle more	67%	75%	63%	68%	65%
Use the train/tram more	56%	57%	58%	43%	59%
Participate in activities less	55%	46%	56%	66%	58%
Share car with others more	45%	48%	44%	41%	54%
Use the bus more	37%	32%	41%	27%	32%
Get more lifts	32%	32%	33%	32%	38%
Get lifts less often	29%	30%	28%	32%	37%

**Chi-square between inner, outer, peri-urban and regional values is statistically significant, $p < .05$*

There was a strong association between car dependence, travel quantity and fuel price impacts across regions. Peri-urban areas were the most affected by fuel price increases followed by regional and outer areas. Although making fewer trips by car and doing multiple activities on a single trip were the

most common responses in all geographic areas, there were significant differences in coping responses by location. People in inner areas were more likely to walk/cycle and less likely to participate in activities less. Outer areas were the least likely to walk/cycle and most likely to use the bus more (buses in Melbourne tend to run in middle and outer suburbs). People in peri-urban areas were the most likely to travel to places which are closer but with lower train/tram and bus use, they were also the most likely to participate in activities less and travel less overall. Regional areas were by far the most likely to share their car with others and were also more likely to change the number of lifts they gave.

Links Between Transport Difficulties, Social Exclusion And Well Being

Table 4 shows the average social exclusion and well-being scores by geographic area. Respondents could be socially excluded on anywhere from one to five dimensions and the metropolitan groups had very similar social exclusion scores. The regional sample was, on average, slightly more socially excluded. Well-being scores, measured on four different scales, were very similar across geographic regions. Taken together this shows that whilst people in regional Victoria were slightly more likely to be socially excluded, geographic location alone did not make people more or less satisfied with their life.

Table 4: Social exclusion and well-being

	Metro overall	Inner Melb	Outer Melb	Peri-Urban	Regional
Average dimensions socially excluded*	1.1	1.2	.99	.99	1.4
Well-being average scores					
Satisfaction with Life Scale (SWLS)	5.0	4.9	4.9	5.0	4.8
Personal Well-being Index (PWI)	7.1	7.1	7.1	7.3	7.0
Positive Affect (PA)	3.6	3.6	3.6	3.6	3.5
Negative Affect (NA)	1.8	1.8	1.8	1.8	1.9

**One-way ANOVA between inner, outer, peri-urban and regional values is statistically significant, p < .05*

Table 5: Links Between Social Exclusion, Well Being and Transport Disadvantage by Region

	Metro overall	Inner Melb	Outer Melb	Peri-Urban	Regional
Correlation between "Frequency of difficulties accessing activities due to transport problems" and social exclusion score					
Social exclusion score	.10**	.15*	.07	.12	.20**
Correlation between "Number of activities cannot do due to transport problems" and social exclusion score					
Social exclusion score	.02	.09	-.03	.11	.12
Correlation between "Frequency of difficulties accessing activities due to transport problems" and well-being					
SWLS	-.19**	-.24**	-.16**	-.20	-.41**
PWI	-.21**	-.27**	-.17**	-.33**	-.44**
PA	-.02	-.11	.02	-.10	-.08
NA	.21**	.15*	.24**	.18	.34**
Correlation between "Number of activities cannot do due to transport problems" and Well-being					
SWLS	-.14**	-.09	-.13**	-.32**	-.30**
PWI	-.07*	-.07	-.05	-.24*	-.33**
PA	.05	-.02	.08	-.08	.06
NA	.07	.00	.07	.19	.22**

*p < .05; **p < .01

Table 5 explores the results of the correlation analysis between subjective transport disadvantage, social exclusion and well-being measures. Even using two different measure of transport disadvantage, most of the correlations with social exclusion were low or not statistically significant, and one measure of transport disadvantage showed no significant correlations with social exclusion at all. There is some suggestion that there may be slight correlation between one measure of transport disadvantage and social exclusion, particularly for those in regional areas, but these simple correlations should be interpreted with caution.

A stronger set of links were found between transport disadvantage and well-being measures. The strongest relationships using both measures of transport disadvantage were found in the regional sample where correlations ranged between -.22 and -.44 at a 99% confidence level. Correlations in other geographic areas were smaller and inconsistent; they depended more on which measure of well-being or transport disadvantage was used.

5 DISCUSSION

This central aim of this paper was to explore whether the relationship between transport disadvantage, well-being and social exclusion differs in different geographic contexts using the same survey instrument. It used a household survey to sample people in inner, outer and peri-urban Melbourne as well as regional Victoria.

There were very clear differences in mobility and car dependence between geographic locations. Almost all those in inner Melbourne were in walking distance of local shops whilst those in outer and regional areas were not. The quantity of public transport supply declined inversely with distance from central Melbourne (although peri-urban areas had less service than regional areas due to the method used to designate peri-urban areas). These two factors likely influenced the increase of car dependence with distance from central Melbourne. Interestingly, car dependence "peaked" in peri-urban Melbourne, rising from 31% mode share in Inner Melbourne to 52% in Peri-urban Melbourne and declining slightly to 46% in regional areas. Conversely, public transport mode share dropped from a high of 25% in Inner Melbourne to a low of 8% in Peri-Urban Melbourne which was lower than the 12% in Regional areas.

Furthermore a slightly higher volume of overall trips per day were made in regional and outer areas and average trip distances were much greater, consistent with research from travel surveys in many countries (Pucher and Renne, 2004, Department for Transport, 2007, Abley et al., 2008). Compared to inner Melbourne average daily passenger kilometres were around 1.5 times higher in regional and outer Melbourne and twice as high in peri-urban Melbourne. These increased passenger kilometres, combined with clear evidence of car dependence, are likely to be directly responsible for the higher reported impacts of fuel price increases evident most acutely in peri-urban areas.

Whereas those in inner Melbourne suffering from fuel price increases used a range of alternatives including walking, cycling, and public transport, those in peri-urban Melbourne had the fewest alternatives and were the most likely to say they simply had to participate in fewer activities. People in regional areas employed lift-giving and lift-taking as an adaptation strategy much more than their metropolitan counterparts. This supports past literature that suggested that people in regional and rural areas have a closer community structure that may facilitate lift-giving and other forms of social transport (Onyx and Bullen, 2000, Gray et al., 2006).

In many ways it appears that the peri-urban experience the greatest degree of transport disadvantage of any sample. Their car dependence and kilometres travelled is the highest of any group, they are the most affected by fuel price increases and they are highly likely to report transport difficulties. Although they live within the greater metropolitan area of Melbourne, they appear to be more isolated with fewer transport alternatives than their country cousins.

A further analysis of the VISTA travel survey shows that this finding is unsurprising (Department of Transport, 2009). The Melbourne city councils of Mornington Peninsula and Cardinia contain the highest proportion of peri-urban areas. The average daily kilometres travelled in these councils (67kms and 55kms, respectively) are the highest in Melbourne and higher than in the Latrobe valley regional council (51kms). Their median journey to work distances (29kms and 20kms) are also significantly greater than in Latrobe (14km).

Transport disadvantage appears to have an influence on well-being. Although it depended on which measures of disadvantage and which measures of well-being, many of the correlations between the two were small but highly significant (at 99% confidence). This relationship was particularly robust in the Regional sample where correlations were of medium size (-.22 to -.44) as well as highly significant. Although the Regional sample showed slightly less transport disadvantage than the peri-urban sample, these strong correlations suggest that *if* someone in a regional area faces severe transport barriers, their well-being is more likely to suffer.

Explorations into the relationship between social exclusion and transport disadvantage across geographic areas were less conclusive. The correlations between the two were small and inconsistent. The strongest correlation (at .20 with 99% significance) was in the Regional sample. Considering the wealth of research demonstrating the impacts of transport on social exclusion (Hodgson and Turner, 2003, UK Social Exclusion Unit, 2003, Cervero, 2004, Clifton and Lucas, 2004, Hine, 2004, Lucas, 2004b) it is unlikely that the two are unrelated. Moreover, a more sophisticated statistical technique (structural equation modelling) did find a significant relationship between these constructs using this same survey sample (Currie and Delbosc, In Press).

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