



This is the seventh in a series of articles commissioned by the Committee for Perth that aims to inform the conversation around the rising costs of living that we are experiencing in Perth and other Australian cities. This series is written by consultant researcher Gemma Davis.

By considering the data and examining the causes of rising costs of living, we aim to identify what can be done by government and the private sector to address the issue.

The series provides an eye opening overview into just how expensive our region has become. Currently sitting in 21st position in the Economist Intelligence Unit's top 50 most expensive cities in the world, nearly all areas of living costs such as groceries, fuel and housing have doubled in the last ten years.

When the results of the Economist's survey are pitted against the findings of our FACTBase research relating to the increasing gap between the haves and have nots, the picture is concerning.

## Can commuting impact on your health?

Commuting times in Perth are getting longer. If you live in Perth's outer suburbs you can now expect to spend an hour each way<sup>1</sup>, or more, commuting to work in the CBD. That's 19 full days every year spent getting to work<sup>2</sup>.

The reasons for this are relatively simple. Perth has grown, more people are living further away from the city centre than ever before, and congestion delays have increased.

It is now estimated that 60% of Perth's growth is occurring in areas located more than 20kms from the Perth CBD and Perth's ten largest growing suburbs are located more than 33km from the CBD<sup>3</sup>. These suburbs alone have become home to nearly 120,000 additional residents since 2001<sup>4</sup>.

In addition, congestion delays in metropolitan Perth have grown and it's now the second most congested region in Australia, with congestion adding 31 minutes delay for every one hour peak period commute<sup>5</sup>. Peak journey delays in Perth are longer than in much larger global centres like New York (30 minutes) and Chicago (29 minutes)<sup>6</sup>.

It's well known that congestion has negative economic impacts on households, businesses<sup>7</sup> and the wider economy<sup>8</sup>. But what impact do long commutes have on individual health and community well-being?

Most people find battling traffic stressful<sup>9</sup> and increasing global recognition is now being given to a growing body of international evidence that links long commutes to a range of long term serious health and social problems from premature death, to obesity, mental health issues and family problems<sup>10</sup>.

This paper examines the health impacts of commuting based on the findings of existing published research.

## Commuting in Perth

In Perth, commute times have increased substantially in recent decades and there are now many people who spend an hour travelling to and from work. For example a journey from Clarkson to the city during the morning peak now takes an hour<sup>11</sup>. Journeys from Midland, Rockingham and Armadale took close to an hour in 2009<sup>12</sup> and are now likely to take longer meaning, that these commuters spend more than 19 full days in their cars travelling to work each year. That's nearly as much time spent commuting every year as on annual leave.

The factors contributing to increased commute times are complex, but they include:

- Population growth.
- Increased vehicle ownership.
- Cultural preferences for cars.
- High concentrations of movement during peak periods.
- Quality and accessibility of public transport infrastructure.
- Road infrastructure length and quality.
- Urban form and accessibility to jobs and services (i.e. the number of people who have good access employment and service by walking cycling or public transport).
- Economic prosperity – highly productive cities generate more trips, and therefore more congestion.

It is evident that Perth has experienced a period of considerable economic and population growth over the past decade, and that this has generated increased demand for road use. It is also clear that this demand has been exacerbated by cultural preferences for car use, by the region's low density urban form and by declining accessibility of jobs and services via alternative transport modes, like train, bus, walking or cycling, due to significant growth in the number of people living in less accessible fringe locations<sup>13</sup>.

<sup>1</sup> Main Roads Department, 2009, published by <http://www.viacorp.com/perth-rush-hour-travel-times.html>

<sup>2</sup> Based on 230 work days per year.

<sup>3</sup> Property Council of Australia, Office of Senator Scott Ludlam and Australian Urban Design Research Centre, 2013, Transforming Perth, Regenerating Transport Corridors as a Network of High Street Precincts

<sup>4</sup> Ibid.

<sup>5</sup> Tom Tom, 2013, Tom Tom Traffic Index Australia New Zealand 2013, [www.tomtom.com](http://www.tomtom.com)

<sup>6</sup> Tom Tom, 2013, Tom Tom Traffic Index Australia New Zealand 2013, [www.tomtom.com](http://www.tomtom.com)

<sup>7</sup> RAC 2013, RAC, CCI Business Wise Congestion Survey: [www.rac.com.au](http://www.rac.com.au)

<sup>8</sup> Sweet M, 2013, Does traffic congestion slow the economy?, Journal of Planning Literature, October 2013 <http://jpl.sagepub.com/content/26/4/391.abstract?rss=1>

<sup>9</sup> IBM, 2011, Commuter Pain Index Australia Summary, [www.ibm.com](http://www.ibm.com)

<sup>10</sup> Kylstra C, 2014, 10 Things Your Commute Does to Your Body, Time Magazine 26 February 2014, <http://time.com/9912/10-things-your-commute-does-to-your-body/>

<sup>11</sup> RAC 2013, Time Travel Report : [www.rac.com.au](http://www.rac.com.au)

<sup>12</sup> Main Roads Department, 2009, published by <http://www.viacorp.com/perth-rush-hour-travel-times.html>

<sup>13</sup> Committee for Perth, 2013, Cost of Living: Urban Sprawl Fuels Perth's Traffic Congestion, [www.committeeforperth.com.au](http://www.committeeforperth.com.au)

Perth drivers are also among the least sensitive in the world when it comes to petrol price rises. Just 18% of those that commute by car would seriously look at alternative options if the price of petrol increased by 30%. This is low when compared to other Australian cities and well below the levels observed in other international cities<sup>14</sup>.

In addition, most people in Perth still travel to work during peak periods, just 12% of Perth commuters work after 6pm, and only 24% ever work from home – low proportions by international standards<sup>15</sup>.

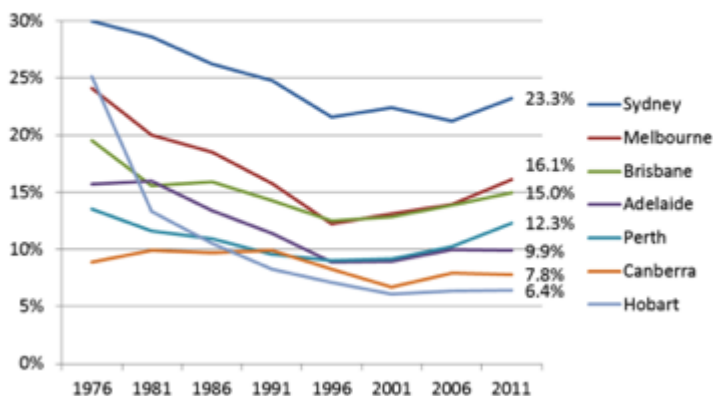
It is also apparent that while Perth's public transport infrastructure has been substantially improved over the past three decades, and the proportion of people who travel to work by public transport has increased, the region still lags behind most other major Australian cities in public transport use.

For example, approximately 12% of people in the Perth region take public transport to work compared with 23% of workers in Sydney, 16% of workers in Melbourne, 15% in Brisbane, 12% in Perth and 10% in Adelaide<sup>16</sup>.

For all journeys, Perth has the second lowest percentage public transport use of all capitals, with 6.8%, compared to 15.1% in Sydney, 11.6% in Melbourne, 9.8% in Brisbane and 6.4% in Adelaide<sup>17</sup>.

However, while total public transport passenger kilometres in Perth are expected to increase significantly by 2030, the share of public transport trips in Perth is forecast to decrease very slightly to 6.7%, with a similar trend expected in most other Australian capitals except Brisbane which is forecast to significantly increase its public transport mode share to 12.3%<sup>18</sup>.

**Public transport mode share in journey to work (by home location)**



Source: Charting Transport: <http://chartingtransport.com/2012/10/30/trends-in-journey-to-work-mode-shares-in-australian-cities-to-2011/pt-mode-share-trend-8/>

What this means is that unless there is very considerable ongoing investment in public transport and other alternative modes of transport, as well as changes to the region's urban form and employment patterns, Perth is likely to face a future with a lot more cars on the region's roads, and with more people who have long commute distances.

Ultimately this is likely to result in more people in Perth spending more time sitting in their cars – something that could have major costs, not the least of which could be impacts on community health and well-being.

## Could longer commutes be impacting on our health?

In 2011 the IBM Commuter Pain Index found that 71% of Perth commuters have experienced travel stress; 28% of Perth drivers believe that traffic has negatively affected their health and 26% believe that traffic has negatively affected their performance at work or school<sup>19</sup>.

It is well known that the long-term activation of the stress-response system can disrupt almost all human body processes. This puts people at an increased risk of numerous health problems, from anxiety and depression to heart disease, sleep problems and weight gain<sup>20</sup>.

But can the stress caused by commuting contribute to these types of problems? Are other impacts of long commutes, such as increased sedentary time and reduced time to exercise, sleep, prepare nutritious food or spend with our families, affecting community well-being? And are some parts of the community likely to be more affected than others?

There is a growing body of international evidence indicating that this is the case and that, the longer you commute, the more likely it is that your health will be affected. One of the biggest potential impacts of long commutes appears to be weight gain.

For example, a study in Adelaide examined weight gain by more than 800 participants over a period of five years, considering the time people spent commuting by car, their work status, and leisure time physical activity. The study identified significant increases in weight across commuting categories which was more pronounced for people with long car commutes. It found that non-car commuters gained 1.26kg over the study period; occasional car commuters gained 1.53 kg; while daily car commuters gained 2.18kg<sup>21</sup>.

The study identified stronger associations between commuting and weight among people who were sufficiently active in their leisure-time and significantly higher weight gain in women compared to men<sup>22</sup>.

Similarly, a 2012 study examining the travel behavior of 4,297 Texans found that as people's commutes get longer, their physical activity and cardiovascular fitness drops, while their blood pressure, body weight and waist circumference rises<sup>23</sup>.

The study (which adjusted its modelling results to account for factors like socio-demographic characteristics, smoking, alcohol intake, family history, body mass index and weekly minutes of activity) also associated driving more than 16kms one way, to and from work, with an increased risk of developing high blood sugar and high cholesterol<sup>24</sup>.

A 2006 Californian study also examined correlations between distances travelled by vehicle, population density, commute time, and county indicators of obesity and physical inactivity. It found that obesity and physical inactivity were significantly related, as were obesity and vehicle miles travelled<sup>25</sup>.

Significantly, the study found that vehicle kilometres travelled had a stronger correlation with obesity than any other factor.

<sup>14</sup> IBM, 2011, Commuter Pain Survey Announcement, Major Findings Document for all Australian Cities, [www.ibm.com](http://www.ibm.com)

<sup>15</sup> Ibid.

<sup>16</sup> Charting Transport: <http://chartingtransport.com/2012/10/30/trends-in-journey-to-work-mode-shares-in-australian-cities-to-2011/pt-mode-share-trend-8/>, accessed March 2014

<sup>17</sup> Bureau of Infrastructure Transport and Regional Economics (BITRE), 2013, Public Transport in Australia's Capital Cities, modelling and forecasting, Report 129, Canberra, ACT

<sup>18</sup> Ibid.

<sup>19</sup> IBM, 2011, Commuter Pain Survey Announcement, Major Findings Document for all Australian Cities, [www.ibm.com](http://www.ibm.com)

<sup>20</sup> Mayo Clinic, 2014, Management Stress, <http://www.mayoclinic.org/healthy-living/stress-management/in-depth/stress/art-20046037>

<sup>21</sup> Sugiyama T, Ding D, Owen N, 2013, Commuting By Car. Weight Gain Among Physically Active Adults, American Journal of Preventative Medicine, Feb 2013, Vol. 44, Issue 2:169-173

<sup>22</sup> Ibid.

<sup>23</sup> Hoehner C et al, 2012, Commuting Distance, Cardiorespiratory Fitness, and Metabolic Risk, American Journal of Preventative Medicine, 2012 June;42(6):571-8

<sup>24</sup> Ibid.

<sup>25</sup> Lopez-Zetina et al, 2006, The link between obesity and the built environment. Evidence from an ecological analysis of obesity and vehicle miles of travel in California, <http://www.sciencedirect.com/science/article/pii/S1353829205000572>

Swedish researchers have also linked long commutes with high blood pressure, stress, heart disease<sup>26</sup> and premature death, particularly among women<sup>27</sup>. They have also concluded that, regardless of how people travel to work (i.e. car, rail or bus), having a job that is a long distance from home is associated with increased exhaustion, stress, lack of sleep and days off work<sup>28</sup>.

Closely associated with these findings are links between the time people spend commuting and a reduction in healthy lifestyle habits. A study in the United States identified a link between time spent commuting and reductions in time spent exercising, preparing food and sleeping<sup>29</sup>.

It also concluded that longer commutes inhibit healthy lifestyles and determined that spending an additional 60 minutes daily commuting above average (the average was determined to be 62 minutes daily) is associated with a 6% decrease in aggregate health-related activities and spending an additional 120 min is associated with a 12% decrease.

Importantly, the research finds that it is commuting, not the total length of the workday that has the biggest impact. Take a worker with a short commute and a 12 hour workday and a worker with an hour long commute and a 10 hour workday. The research indicates that former will have healthier habits than the latter<sup>30</sup>.

However a crucial element is also the context in which that time loss occurs. Responses to time constraints may differ by culture, attitudes towards health, or the environment. In countries like Australia and the United States, leisure time lost to commuting occurs within a context of an increasing shift towards eating energy dense foods, which are linked to obesity, as well as a trend towards more sedentary lifestyles<sup>31, 32</sup>.

Obesity is already one of the biggest health risks facing Perth's community. Being overweight or obese increases a person's risk of developing long-term health conditions including cardiovascular disease, high blood pressure, Type 2 diabetes, several cancers and sleep apnoea<sup>33</sup>.

The proportion of Australians that are overweight or obese is increasing at an alarming rate. In 1989, 44% of Australians were reported to be overweight or obese. By 2011-2012 this had increased to 63%<sup>34</sup>. Perth is not immune to the rise in obesity. The percentage of people in Perth classified as overweight or obese currently ranges from 61% in Fremantle and Perth's northern suburbs, to 72% in Perth's southern coastal suburbs and the Peel region<sup>35</sup>.

It is also clear that, as a nation, Australians are becoming more sedentary. According to ABS data more people report sedentary levels of physical activity (21% or 3.6 million) than high levels of physical activity (15% or 2.5 million) and from 2004-2005 to 2011-2012, the proportion of Australians who report sedentary levels of activity increased by 7%<sup>36</sup>.

Proportions of adults with sedentary levels of activity are also reported to be significantly higher among lower socio-economic groups than higher socio-economic groups<sup>37</sup>.

Of people with sedentary activity levels, almost 90% report sitting for transport. Weekly time spent sitting for transport was equivalent to leisure time spent sitting at a computer (an average of 4.4 hours per week) which was exceeded only by time spent sitting watching TV or videos (16 hours per week) and time spent sitting at work (7.6 hours per week)<sup>38</sup>.

This suggests that the time Australians are spending in their cars could be contributing to more sedentary lifestyles and possibly to higher rates of obesity. In this context is it possible that reducing commute times or encouraging people to shift to more active forms of transport could be part of the solution to building a healthier community?

The findings of the IBM Commuter Pain Index suggest that it is. It found that many Australian commuters feel a significant reduction in their daily commute times would allow them to do many other things, with 51 % indicating that they would prefer to spend the time exercising<sup>39</sup>.

## Mental Health and Wellbeing

Long periods of time spent commuting not only impacts on physical health, it can seriously affect mental health and wellbeing. Internationally there is substantial evidence linking commutes to a greater risk of depression and anxiety as well as reduced life satisfaction and family and relationship problems.

The Office for National Statistics in the United Kingdom recently released the findings of research that has found that feelings of happiness, life satisfaction and sense of worth all decrease with every successive minute of travel to work<sup>40</sup>.

This is what constitutes personal wellbeing and, in general, the longer the commute the more it shrinks. According to the study, lengthy commutes of between an hour and an hour and a half long, have the most negative effect on personal wellbeing<sup>41</sup>.

These findings are further verified by the conclusions of a 2010 survey by the Gallup-Healthways Well-Being Index which found that 40% of employees who spend more than 90 minutes getting home from work experienced worry for much of the previous day. That number falls to 28% for those with commutes of 10 minutes or less. It also found that workers with very long commutes feel less rested and experience less enjoyment<sup>42</sup>.

However UK research suggests that it is women whose mental health is most affected - a sensitivity to commuting which seems to be a result of the larger responsibility that women have for day-to-day household tasks, including childcare and housework<sup>43</sup>.

In this context, there is also evidence that time spent commuting can impact on families and relationships due to the amount of time it potentially takes away from family activities. For example according to the findings of research in Sweden, if one partner commutes for 45 minutes or more each way you are 40% more likely to divorce<sup>44</sup>.

<sup>26</sup> Lopez-Zetina et al, 2006, The link between obesity and the built environment. Evidence from an ecological analysis of obesity and vehicle miles of travel in California, <http://www.sciencedirect.com/science/article/pii/S1353829205000572>

<sup>27</sup> NY Times, 2014, Commuting's Hidden Cost, [http://well.blogs.nytimes.com/2013/10/28/commutings-hidden-cost/?\\_php=true&\\_type=blogs&\\_r=0](http://well.blogs.nytimes.com/2013/10/28/commutings-hidden-cost/?_php=true&_type=blogs&_r=0)

<sup>28</sup> Roberts C, 2013, <http://travel.aol.co.uk/2013/04/14/could-your-commute-be-a-killer/>

<sup>29</sup> Hansson Erik, 2011, Relationship between commuting and health outcomes in a cross-sectional population survey in southern Sweden, BMC Public Health, [www.biomedcentral.com](http://www.biomedcentral.com)

<sup>30</sup> Christian Thomas J, 2012, Trade-offs between commuting time and health related activities, J Urban Health. Oct 2012; 89(5): 746-757

<sup>31</sup> Ibid.

<sup>32</sup> Christian Thomas J, 2012, Trade-offs between commuting time and health related activities, J Urban Health. Oct 2012; 89(5): 746-757

<sup>33</sup> National Health Performance Authority, 2013, Overweight and Obesity Rates Across Australia 2011-12, [www.myhealthycommunities.gov.au](http://www.myhealthycommunities.gov.au)

<sup>34</sup> Obesity Australia, 2011, Fact Sheets, [www.obesityaustralia.org](http://www.obesityaustralia.org) accessed April 2014

<sup>35</sup> National Health Performance Authority, 2013, Overweight and Obesity Rates Across Australia 2011-12, [www.myhealthycommunities.gov.au](http://www.myhealthycommunities.gov.au)

<sup>36</sup> Ibid.

<sup>37</sup> ABS, 2013, Australian Idle: Physical Activity and Sedentary Behaviour among Australian Adults, 4156.0.55.001 - Perspectives on Sport, Nov 2013

<sup>38</sup> Ibid.

<sup>39</sup> Ibid.

<sup>40</sup> IBM, 2011, Commuter Pain Survey Announcement, Major Findings Document for all Australian Cities, [www.ibm.com](http://www.ibm.com)

<sup>41</sup> Office of National Statistics, 2014, Commuting and Personal Wellbeing, <http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/commuting-and-personal-well-being-2014/art-commuting-and-personal-well-being.html>, accessed April 2014

<sup>42</sup> Roxby P, 2014, How does commuting affect wellbeing?, <http://www.bbc.co.uk/news/health-26190236>

<sup>43</sup> Annie Lowrey, Your Commute is Killing You, [http://www.slate.com/articles/business/moneybox/2011/05/your\\_commute\\_is\\_killing\\_you.html](http://www.slate.com/articles/business/moneybox/2011/05/your_commute_is_killing_you.html)

<sup>44</sup> Roberts J, 2011, It's driving her mad: Gender differences in the effects of commuting on psychological health, Journal of Health Economics Vol. 30, 5, 1064-1076

<sup>45</sup> Annie Lowrey, Your Commute is Killing You, [http://www.slate.com/articles/business/moneybox/2011/05/your\\_commute\\_is\\_killing\\_you.html](http://www.slate.com/articles/business/moneybox/2011/05/your_commute_is_killing_you.html)

## Can commuting have health benefits?

It is evident that negative health impacts are primarily associated with long, primarily sedentary commutes – by car or public transport. However, by contrast there is evidence that commuting can be good for you, if it incorporates significant levels of physical activity.

Active commuting has been found not only to significantly increase physical activity and improve physical fitness it has been found to improve health outcomes, including reduce all-cause mortality and cardiovascular risk, particularly among women<sup>45,46,47</sup>. In some cases, cyclists and pedestrians have been found to achieve greater than 80% of recommended daily physical activity levels through active commuting alone<sup>48,49</sup>. This includes commuting by walking and cycling alone as well commutes by public transport *and* walking or cycling.

An analysis of household travel data in Victoria, for example, found that people who used public transport on a particular day also spent on average 41 minutes of their day walking or cycling as part of their travel. This was five times more physical activity than those who only use private transport and who spent an average of just 8 minutes walking and cycling.

This suggests that if you have a long public transport commute some of the negative health impacts of your commute could be abrogated if you walk or cycle to and from your stop / station. However it is clear that in car-oriented cities like Perth, most people cannot feasibly walk or cycle to work – and a relative few have convenient access to public transport by walking or cycling.

Achieving growth in the proportion of active commuters will therefore require very substantial and sustained investment in public transport as well as walking and cycling infrastructure - yet the potential benefits of this investment are likely to outweigh the costs.

The findings of recent research in New Zealand indicate that achieving growth in the proportions of people who cycle to work that are significant enough to meet health goals requires sustained investment into the transformation of local and arterial roads using best practice bicycle friendly interventions. It finds that the potential benefits of this type investment would be significant, returning tens of dollars for every dollar spent<sup>50</sup>.

## What can be done to improve the health of Perth commuters?

Improve the health of Perth commuters now and in the future will be about enabling people to reduce their commutes or alter the way they commute through lifestyle changes.

If you find yourself spending a miserable hour or two getting to and from work every day it is likely that if you will start looking for ways to improve your quality of life. You might try to move closer to work, look for another job that is closer to home, or think about alternative ways to make the journey.

It is also evident from many other, larger, cities in developed countries that, as city populations increase, people are more likely to alter their behaviour and lifestyles– by choosing to live in more accessible and denser inner urban areas or in locations that are accessible by public transport or by switching to using public transport, walking or cycling to work rather than driving.

The key to success may be in how well cities provide the choices that enable people to make these lifestyle changes.

Perth's commuters already make employment choices to reduce the distances that they need to travel to work. 2011 Census data tells us that most people seek employment that is located within the residential corridor in which they live or in highly accessible locations such as the CBD<sup>51</sup>.

We also know that a majority of Perth's people would prefer to live in the region's inner and middle suburbs, rather than in fringe locations, and that many would compromise house type and size to do so<sup>52</sup>.

However limited housing and affordable lifestyle options in Perth's central sub region as well as limited accessibility to public transport both from residences and to work places in many parts of the region make the potential for behavioural changes to occur in Perth reasonably limited<sup>53</sup>.

Strategies to address the impacts of commuting therefore need to concentrate not just on the provision of road infrastructure but on:

- Enabling more people to live closer to jobs by increasing the supply of diverse and affordable housing options close to employment centres.
- Connecting people to employment and service centres through high quality transport links.
- Ensuring the development of public transport keeps pace with growth.
- Providing high quality bicycle and pedestrian friendly infrastructure.
- Encouraging people out of their cars and onto other modes of transport, particularly active forms of transport.
- Encouraging employers to provide flexible work hours and opportunities to work from home.
- Encouraging women in particular to take action to reduce their commute times or shift to more active forms of commuting.

These actions will cost money in the short term, but have the potential to deliver long term benefits – not the least of which could be improvements to community health.

<sup>46</sup> Kitchen P et al, 2011, Walking to work in Canada: health benefits, socio-economic characteristics and urban-regional variations, BMC Public Health 2011, 11:212, <http://www.biomedcentral.com/1471-2458/11/212>

<sup>46</sup> Oja P, Titze S, Bauman A, de Geus B, Reger-Nash B, Kohlberger T, 2011, Health benefits of cycling: A systematic review. Scandinavian Journal of Medicine & Science in Sports. 2011;21(4):496–509

<sup>47</sup> Hamer M, Chida Y, 2008, Active commuting and cardiovascular risk: A meta-analytic review. Preventive Medicine. 2008;46,1, 9–13.

<sup>48</sup> Kitchen P et al, 2011, Walking to work in Canada: health benefits, socio-economic characteristics and urban-regional variations, BMC Public Health 2011, 11:212, <http://www.biomedcentral.com/1471-2458/11/212>

<sup>48</sup> Oja P, Titze S, Bauman A, de Geus B, Reger-Nash B, Kohlberger T, 2011, Health benefits of cycling: A systematic review. Scandinavian Journal of Medicine & Science in Sports. 2011;21(4):496–509

<sup>49</sup> Hamer M, Chida Y, 2008, Active commuting and cardiovascular risk: A meta-analytic review. Preventive Medicine. 2008;46,1, 9–13.

<sup>51</sup> ABS Census, 2011, Place of Residence by Place of Work: [www.abs.com.au](http://www.abs.com.au)

<sup>52</sup> DoP Department of Planning and Infrastructure, The Housing We'd Choose A Study for Perth and Peel, [www.planning.wa.gov.au](http://www.planning.wa.gov.au)

<sup>53</sup> Department of Planning and Infrastructure, The Housing We'd Choose A Study for Perth and Peel, [www.planning.wa.gov.au](http://www.planning.wa.gov.au)

<sup>54</sup> Committee for Perth, 2013, Cost of Living: Urban Sprawl Fuels Perth's Traffic Congestion, [www.committeeforperth.com.au](http://www.committeeforperth.com.au)