In discussions around liveability in big cities, inevitably some reference is made to the desirability of a 30-minute commute and Marchetti’s constant, which states that over time, people will adjust their life conditions to achieve a 30-minute journey time, either by changing mode, moving job or moving residence. The 30-minute commute has become aspirational and a pseudo-measure for liveable cities.

Despite their city’s liveability attributes, many Sydneysiders have lengthy commutes, which fall outside this 30-minute goal, regardless of mode. The challenge is determining how to change this, as most people find themselves travelling significant distances for education, shopping and entertainment, in addition to the daily work commute. All of these trips contribute significantly to congestion and hours wasted sitting in cars and on public transport.

The journey to work reflects the changing patterns of human settlement and often highlights the extent to which home and work are geographically mismatched. House affordability and availability have driven a dislocate from where jobs are distributed, creating increased commuting distances. These increased distances drive longer commuting times that cause significant societal and individual impacts: congestion, air pollution, and real implications for quality of life.

To help understand and evaluate the impacts of increased congestion times, we need to have measures in place so we can assess the impact of changing policies and urban use. One such measure is a concept called ‘Trip Containment’, which indicates the number or percentage of commuting trips made in a particular area or catchment. This idea can be extended to include all trips that can be performed within a given area, e.g. shopping, schooling, sports etc. Generally, a higher number, or percentage of people who can meet all their living ‘needs’ in a prescribed area is seen as a positive simply because shorter trips increase the likelihood of transport to work or other destinations via methods other than private cars. The one caveat, of course, is that despite the shorter distances, car use may be the only viable travel option unless appropriate public transport, or active travel opportunities are available.

In effect, the higher the level of Trip Containment the less congestion and the more liveable cities become.
Current Situation in Sydney

The Sydney CBD and Inner South suburbs currently contain 26% of all employment in Greater Sydney, so it is not surprising that there is a predominance of commuting flows into this key centre. These flows are supported by Sydney’s transport system which has historically been based around the Sydney CBD in the east, with the majority of road, rail and bus networks converging on the Sydney CBD.

While this has facilitated traditional access to a singular CBD, Sydney’s urban form has continued to evolve, and it has become more of a polycentric city. This metropolitan shape has more recently been reinforced by several policies and strategies restructuring the metropolitan framework around the concept of three cities:

- The Western Parkland City (based around the Western Sydney Airport – Badgerys Creek Aerotropolis).
- The Central River City (based around Greater Parramatta).
- The Eastern Harbour City (based around the Sydney CBD).

By rebalancing as three cities, Greater Sydney will broaden its global economic footprint to support net jobs growth of 817,000 by 2036. This will occur not only in the east, but west of Parramatta due to the Western Sydney Airport and the Badgerys Creek Aerotropolis. Currently half of Western Parkland City workers commute to other parts of Greater Sydney compared to less than 10% of Eastern Harbour City workers (GSC Metropolis of three cities – page 80/81).

It is expected that this change in focus should aid in trip containment as there will be greater alignment of employment and residential distribution.

The State of Play

Current levels of trip containment

Using the Australian Bureau of Statistics 2016 Census Data, trip containment for commuters was determined by analysing where residents within Greater Sydney lived compared to their place of work. This analysis was collected at the 2016 Local Government Area level, which was then aggregated into the Greater Sydney Commission Three Cities.

Our hypothesis was that trips within the Eastern City could be expected to exhibit higher containment rates, as well as significantly more trips (understanding population distributions are heavily skewed towards the east). The results of the trip containment analysis are shown below.

Clearly, a significant portion of trips for the Central City and Western City are external trips. This is largely a result of the historic development throughout Sydney where the Eastern City has been the traditional employment centre. As Parramatta grows and the development of the Western City occur, it should be expected that work trips would flow less from the west to the east. This should increase the level of trip containment across the three “cities”.

The analysis examined trip containment for a select number of locations using data publicly sourced from Google for an average working day in June 2018. The analysis was undertaken for trips to and from the Three Cities: The Western Parkland City / Western Sydney Airport, the Central River City / Greater Parramatta and the Eastern Harbour City / Sydney CBD. The trips to and from each city were calibrated to the morning peak period based on Journey to Work (JTW) travel patterns.

Based on our analysis, it was found that:

- Only 15% of trips by public transport in the Western Parkland City were contained, while 85% of public transport trips left the Western Parkland City.
- Similarly, 19% of public transport trips were made within the Central River City and 81% trips were made externally.
- The Eastern Harbour City has a much higher percentage of public transport trips within the City (73%), with access to the Sydney CBD provided through high frequency public transport links and shorter travel distances.
- Car-based trips are in stark contrast to public transport trips in the Western and Central Cities. Of the car trips made, 51% and 42% are made internally respectively, reflecting the dominance of the car in the outer parts of Metropolitan Sydney and the lack of public transport alternatives for some short and medium distance trips.
- The Eastern Harbour City has very similar levels of trip containment between car-based and public transport-based trips at 72-73%, reflecting the closer proximity of origins and destinations.

Average travel distance was also analysed using the same approach as the origin and destinations of trips. Based on our analysis, it was found that:

- External trips from the Western City are much longer than internal trips, averaging 33 kilometres by public transport and 23 kilometres by car, compared to approximately 9 kilometres for both for internal trips. This reflects the use of the rail network to move people more quickly over longer distances.
- In the Central City, external trips made by public transport average over 21 kilometres and slightly less for external car-based trips (18.5 kilometres). Similar to the Western City, internal trips are less than half the distance for both public transport and car-based trips.
- In the Eastern City, external trips by public transport are approximately 26 kilometres, which are on average longer than the Central City (21.5 kilometres), with internal trips by public transport the highest of the three cities (9.6 kilometres). The average internal trip length by car is the lowest of the three cities.
Changing the Paradigm

Over time we believe that people will try, where possible to improve their lives through working and residing in similar areas, avoiding time consuming commutes and trips. This in turn will increase the level of trip containment of a given area.

Given that, we believe that increased levels of trip containment are inherently beneficial, it is also important to look at ways of improving the attractiveness of aligning work and residence, beyond congestion.

There are many levers we can use to make living and working local more attractive. For example, providing high-quality frequent public transport within the Central and Western Cities in Sydney should encourage firms to move to these centres – which can be serviced by more local residents.

The first lever we look at is road or distance-based charging which uses price signalling to encourage increases in trip containment. The second focuses on increasing the viability and attractiveness of living and working in the same catchment through improving the amenity of active transport.

Road or Distance-Based Charging and some Potential Implications

A key to increasing the level of trip containment lies in creating a framework that provides visibility on the true costs of operating a private vehicle. Road, or distance-based, charging can help provide the necessary price signalling which will encourage people to look for shorter commutes, which will in turn lift the level of trip containment.

Already cities, such as London and Stockholm, have introduced cordon pricing around CBDs and there are pushes towards distance-based pricing. Road and distance-based pricing has long been heralded as a way of achieving fair and equitable outcomes as it crystallises the true economic cost of driving a car, it should help the user make better-informed mode and lifestyle choices.

That is, if people understand the true cost of their commutes, and factor in time-cost and the disruption and pain of long commutes, the incentive to change residence or workplace will increase. This will, in turn, drive higher levels of trip containment.

The knock-on impacts of higher levels of trip containment will be felt in congestion levels across the network. In the Eastern city, nearly 30% of trips come from outside the containment area. In the Central and Western Cities the number approaches 50%. If we are able to reduce these numbers considerably, then pressure on the existing road and public transport networks will drop significantly.
Active Transport

Walking and cycling have an important role to play in the overall transport network and are often overlooked in Sydney due to the predominance of private vehicle and public transport-based travel.

Having the right facilities and infrastructure to improve the viability of active transport as a travel mode is key and has the potential to improve the attractiveness of working and living within the same catchment area – i.e. increasing the level of trip containment.

However, there is a big challenge – the facilities and infrastructure provided for walking and cycling are often disconnected, indirect and unsafe. Research undertaken for the Future Transport 2056 Strategy found that a lack of access to safe cycling paths is a barrier for the 70% of people who would like to cycle more for short trips and would do so if they felt safer and more confident. Therefore, by ensuring that walking and cycling facilities are safe, direct and comfortable to use, it is possible to remove these barriers to active travel and therefore encourage more local trips which has the potential to reduce pressure on other parts of the transport network.

Summary

More local trips need to be encouraged and facilitated, especially in the Western and Central cities. Increasing the attractiveness and viability of shorter trips will increase the level of trip containment and reduce the pressure of longer travel distance Sydney’s transport network.

Distance based charging could shift travel behaviour in the future, and promote shorter, more active travel options, however at this stage it is unclear on exactly how or when this may occur. It is reasonable to expect, however, that using some form of price signalling to encourage changes in the alignment of work/residence in the longer term, will improve levels of congestion, environmental impact and trip containment.

Increased levels of trip containment mean more local trips by active transport and public transport, resulting in health benefits, fewer car trips, lower vehicle kilometres and more efficient use of road space. To help facilitate this shift we need to create the right kind of frameworks and incentives to drive that change.

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