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The impact of working from home on travel demand: a methodology and preliminary estimates from Victoria

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Abstract

Working from home behaviours established during the Covid-19 pandemic will likely endure at materially higher levels than transport demand forecasts have historically assumed. Applications of strategic transport models typically assume trip generation functions calibrated to historic household travel survey data will remain unchanged in the decades ahead. It will be several years before a new steady state of travel behaviour is established and models can be recalibrated and validated to observed data. In the meantime, informed assumptions and innovative methods are required to use strategic transport models to forecast demand that incorporates long term working from home impacts.

Our preliminary central scenario assumes 29 per cent of current Victorian jobs are suited to long term working from home, and workers in those jobs will work an additional 1.8 days per week from home compared to before the pandemic began. Jobs suited to working from home are heavily concentrated in the CBD and inner-city areas, while the location of workers employed in those jobs are more dispersed across Greater Melbourne and regional areas.

We apply a tailored method to integrate these parameters with employment projection inputs and the four-step modelling process used in the Department of Transport's Victorian Integrated Transport Model (VITM). As well as reducing demand for work commute trips, the method redistributes demand for some trips made during the workday – previously assumed to made from workplaces – to occur from home locations.

Preliminary estimates reflect an 11 per cent reduction in daily work commutes in Greater Melbourne, representing two per cent of total daily weekday trips. Travel demand in inner areas in peak periods are disproportionately affected, with seven per cent fewer trips to the Melbourne CBD.

1. Introduction

The Covid-19 pandemic forced an experiment in working from home on a previously unimaginable scale. En masse a large proportion of Australia's workforce rapidly shifted to working from home in March 2020 as Covid-19 infections began to climb. Large employers in Melbourne's CBD quickly moved over 90 per cent of their workforce to working from home for the majority of 2020.[1]By early May 2020 an estimated 46 per cent of all working Australians were working from home.[2] This contrasts with indications of pre-Covid-19 working arrangements where less than five per cent of employed Victorians reported working

[1] Victorian Department of Premier and Cabinet surveys of CBD employers, 2020.
[2] Australian Bureau of Statistics, 29 Apr – 4 May 2020, *Household Impacts of COVID-19*.

from home on Census day in 2016, and only 29 per cent of respondents to a 2020 survey of Victorian workers had ever experienced working from home.[3]

The shift to working from home combined with restrictions imposed on activity during the pandemic had a significant impact on travel demand. During the height of the first and second Covid-19 waves in Victoria in 2020, when the strictest activity restrictions were in place, public transport patronage fell to around 10 per cent of normal levels and vehicle traffic levels to as low as 44 per cent. By May 2021, with most local activity and travel restrictions lifted and workers permitted to return to offices, vehicle traffic returned to around 94 per cent of pre-Covid-19 levels and public transport only to around 56 per cent.[4]

While many of the enduring social and economic effects of the pandemic are not yet clear, a growing body of evidence indicates working from home arrangements will endure at levels materially higher than before Covid-19 for much of the workforce.[5] With work commute trips comprising approximately 30 per cent of AM peak trips in Victoria,[6] a material change in working from home has major implications for travel demand.

While some surveys are research efforts to understand post Covid-19 work from home trends in Australia and overseas exist, at the time of writing we are not aware of any completed and published work in Australia to incorporate these impacts into long term travel demand forecasting models.[7]

A clear and direct impact of increased working from home is a reduction in demand for trips between households and workplaces. A flow-on impact of this is that trips workers used to make during their workday from their workplace may change – such as trips to medical appointments, retail and business meetings. How they might change is uncertain – they may be redistributed to other locations or times, or no longer occur.

While the likely nature and scale of these and other impacts remains uncertain, this paper presents a methodology and preliminary estimates of the impact of working from home on travel demand forecasts.[8] We first estimate the size of the future work from home market using analysis of occupation types and surveys of Victorian workers. The travel demand impact of the shift to working from home is then estimated using a tailored implementation of the Victorian Department of Transport's strategic transport model, the Victorian Integrated Transport Model (VITM). The method focuses on two key impacts: reduced demand for trips between home and work locations, and changes to other trips linked to the workplace location. Preliminary demand forecasts are presented for year 2026.

2. The work from home market

Two key parameters were identified to estimate the size of the work from home market: (1) the suitability of occupations in the Victorian workforce to working from home; and (2) the long term uptake of working from home by workers in those occupations.

[3] Department of Jobs, Precincts and Regions (2020).
[4] Victorian Department of Transport, unpublished data.
[5] Barrero, Bloom & Davis (2021).
[6] Victorian Integrated Transport Model (2020).
[7] With the exception of a recent Technical Note issued by Transport for NSW to NSW transport agencies developing business cases: Transport for NSW (2021).
[8] While not the subject of this paper, less direct impact of increased working from home could conceivably play out over time is a change to workers' household and workplace location choices, with less frequent commuting leading to a willingness to accept longer commutes. In turn, this may influence land use outcomes as planning schemes and developers respond to changing preferences for household and office types and densities.

2.1 Occupations suited to working from home

Occupations suited to working from home are referred to as 'remote workable occupations'. The methodology used to estimate the remote workability of occupations in the Victorian workforce draws on research form a US study by Dingel and Neiman (2020).[9] The study classified standardised US occupation types as either suited or unsuited to working from home based on the results of two surveys run by the US Department of Labor.

In 2020, the Victorian Department of Environment, Land, Water and Planning (DELWP) matched occupation types from the US study to the Australian and New Zealand Standard Classification of Occupations (ANZSCO). DELWP undertook further analysis to arrive at a final list of 87 of the 358 ANZSCO unit level occupation types it considered suitable for long term working from home arrangements. In arriving at the final list, the analysis excluded some occupations such as teaching, which can be done remotely if necessary but are not considered suited to long term remote working.

Applying this classification to ABS 2016 Census data, 29 per cent of the Victorian workforce in 2016 was employed in occupations suited to working from home arrangements. The locations of remote workable jobs and home locations of people employed in those jobs can be derived from Census data, providing a picture of the potential work from home market within the current Victorian workforce.

Forecasting the impact of increased working from home on travel demand requires linking this information with employment inputs to strategic transport models. Employment inputs influence the number and distribution of trips forecast to be made by the working population. In the case of the VITM, employment inputs consist of the number of jobs located in each travel zone.[10] Each job is classified into one of the 19 Australian and New Zealand Standard Industry Classification (ANZSIC) divisions.

Projected changes in numbers and locations of jobs in each ANZSIC division over time reflect economic growth, change in the industry composition of the economy and changing land use such as urban renewal. The VITM accounts for these projected changes by including employment projections by industry classification and location as inputs. These inputs align with employment projections used consistently across Victorian Government agencies.

Economic and land use changes will also change the size and distribution of the work from home market. To capture this change, a method of linking information on remote workable occupations to the VITM employment projection inputs is required. As described above, we estimated the remote workability of jobs according to the ANZSCO classification of occupations, as the ability to work from home is assumed to be a function of the activities of an occupation type. This presents a challenge for linking remote workability of jobs to the VITM employment inputs as the VITM inputs are not classified by occupation type, but by industry.

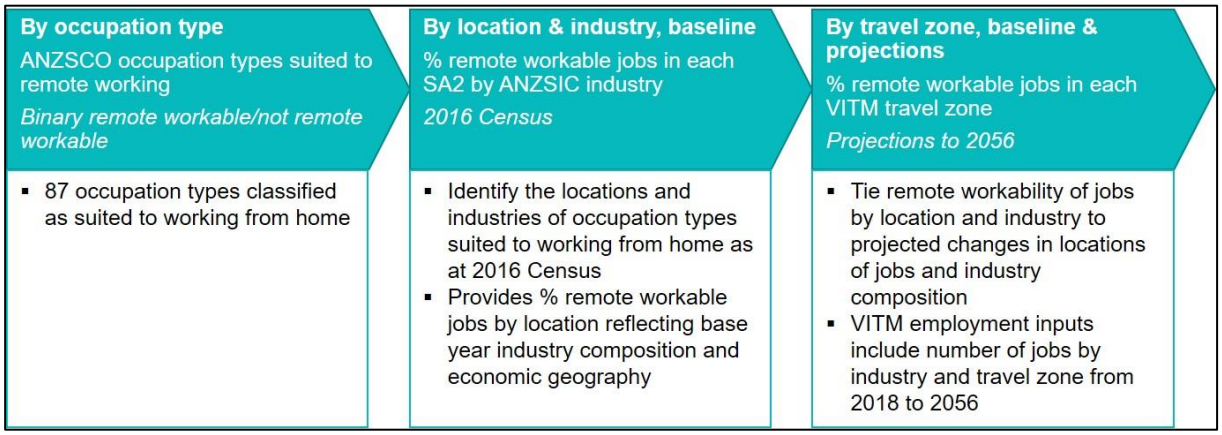
To align with the VITM job projection inputs a method was derived to project the future remote workability of the workforce as a function of the number of jobs by industry classification and workplace location. The method involved matching the remote workable jobs as determined by ANZSCO occupation type to their workplace location and ANZSIC division according to 2016 ABS Census data. The matching process provides a baseline for the percentage of remote workable jobs in each industry in each SA2 location. These can be

[9] Dingel, J.I. & Neiman, B. (2020).
[10] In the VITM the state of Victoria is disaggregated into approximately 6,000 travel zones forming the origins and destinations of trips made within the state.

tied to the VITM input projections of the number of jobs by industry in each VITM travel zone.

The process of tying remote workable occupation assumptions to VITM employment projection inputs is illustrated in Figure 1. It effectively enables future changes in Victoria's industry composition and locations of jobs that are inherent in VITM employment inputs to also be captured in estimating the future work from home market.

Figure 1: linking remote workable occupation assumptions to VITM employment inputs



The matching exercise found that the remote workability of jobs in Victoria varies significantly across locations, across industries and within industries:

- Across locations inner areas tend to have higher proportions of remote workable jobs – 64 per cent of jobs located in the Melbourne SA2 are considered remote workable, 41 per cent in the inner suburb of South Yarra and 20-30 per cent in Geelong, Ballarat and Bendigo.
- Across industries the proportion of remote workable jobs ranges from 4 per cent in the Accommodation and Food Services industry, to 78 per cent in the Professional, Scientific and Technical Services industry.
- Within industries the remote workability of the workforce also varies considerably by location. For example, 29 per cent of all jobs in Victoria's Mining industry are considered remote workable. However, of those located in the Bendigo North SA2 only four per cent are considered remote workable, compared to 66 per cent in the Melbourne SA2.

2.2 Future work from home uptake

The level of remote working that occurred in Victoria prior to Covid-19 is not straight-forward to estimate. Trip generation rates in strategic models including the VITM are derived from household travel surveys of individuals' travel behaviour over recent years. The rates are estimated as a function of individual and household characteristics such as employment status, car ownership and household size. Working from home rates are accounted for in these functions but not explicitly defined. It is typically assumed trip generation functions remain unchanged in future years, meaning pre-Covid-19 working from home rates are implicitly held constant. For this reason, the relevant parameter for estimating travel demand impacts of working from home is the expected *change* in number of days working from home by those in remote workable jobs.

Our central estimate is that: on average, workers employed in remote workable jobs will work from home an additional 1.8 days per week compared to pre-Covid-19. This estimate was derived from results of a survey of 2,517 Victorian workers in August 2020 commissioned by

the Victorian Department of Jobs, Precincts and Resources (DJPR).[11] The survey included approximately 1,000 workers who considered their jobs able to be done from home long term. On average, those workers worked from home 1.1 days per week prior to Covid-19 and stated an expectation of working from home 2.9 days per week in the long term after the pandemic is over – an additional 1.8 days per week.

There is presently considerable uncertainty around this estimate and it should be updated as more information and observed data become available. Other surveys and analysis described below were also considered for further context and to add confidence to our central estimate.

Analysis of ABS 2016 Census data found that, of workers employed in occupations considered remote workable, 8.7 per cent worked from home on Census day. Extrapolating this observation implies workers in remote workable jobs worked from home 0.44 days per week prior to Covid-19.[12] The snapshot of one day in 2016 is too narrow a sample of time to be conclusively representative of a pre-Covid-19 work from home rate, but is informative, nonetheless.

In May 2020 during the early stages of the pandemic, the Victorian Department of Premier and Cabinet's Behavioural Insights Unit administered a survey of the Victorian Public Service to gain insight into employees' attitudes to working remotely. The survey was completed by 5,947 employees from more than 10 government departments. From analysis of the survey results it is estimated that, on average, respondents worked from home approximately one day per week prior to Covid-19 and would like to work from home 2.2 days per week in the long term after the pandemic is over – an additional 1.2 days per week. While this sample is not necessarily reflective of the total Victorian workforce in remote workable occupations, it is likely most or all of the occupations of these public sector worker respondents would be remote workable, providing another informative reference point for pre and post-Covid-19 work from home rates.

There are also strong indications that the expectations of major employers align with employee expectations of future working from home arrangements. In July 2021, The Age published its survey of 50 large Australian employers. Almost all expected to adopt a 'hybrid' workplace policy with many saying two to three days working in the office would be required or encouraged.[13] The Victorian Public Service also updated its flexible working policy in March 2021, outlining that employees are to negotiate working arrangements around a starting position of full-time employees working from home two days per week.[14]

The above analysis and surveys broadly support our central estimate derived from the DJPR survey of an additional 1.8 days per week working from home for those in remote workable occupations. We note this is a Victoria-specific estimate and it should be updated as more information and data become available and the post-Covid-19 steady state becomes clearer.

Translating this estimate into a travel demand impact on an average workday, this equates to approximately 36 per cent fewer two-way daily work commutes per person employed in a remote workable occupation.[15]

[11] Victorian Department of Jobs, Precincts and Resources 2020.
[12] Assuming a five-day working week, 8.7% x 5 days = 0.44 days per week work from home averaged across those in remote workable jobs.
[13] Koehn & Irvine 2021.
[14] Pearson, D 2021.
[15] Assumes 1.8 fewer two-way commutes across a five-day working week (1.8 days / 5 days = 0.36). If some days of the week are preferred over others for working from home this may lead to greater variation in travel demand across different days of the week, which is not captured by this average.

The average reduction in number of work commutes per day to each VITM travel zone, j, can then be estimated as follows:

$$Trips\ removed_j = (\%\ fewer\ daily\ commutes\ per\ remote\ workable\ job).(\%\ remote\ workable\ jobs_j).(Trips_j)$$

Here, $Trips_j$ is the pre-Covid-19 forecast number of trips to zone j for the home-based work trip purpose.

3. Strategic transport modelling methodology

The travel demand impacts of the expected increase in working from home arrangements were tested using a tailored method applied to the VITM.

3.1 Overview of the VITM

The VITM is a multimodal strategic transport model used to forecast public transport and private vehicle travel demand across Victoria. Forecasts are produced for a 24-hour typical weekday spanning four time periods: AM peak (7-9am), interpeak (9am-3pm), PM peak (3pm-6pm) and off-peak (6pm-7am). The VITM is calibrated to a base year of 2018 and is used to forecast demand for future years to 2056.

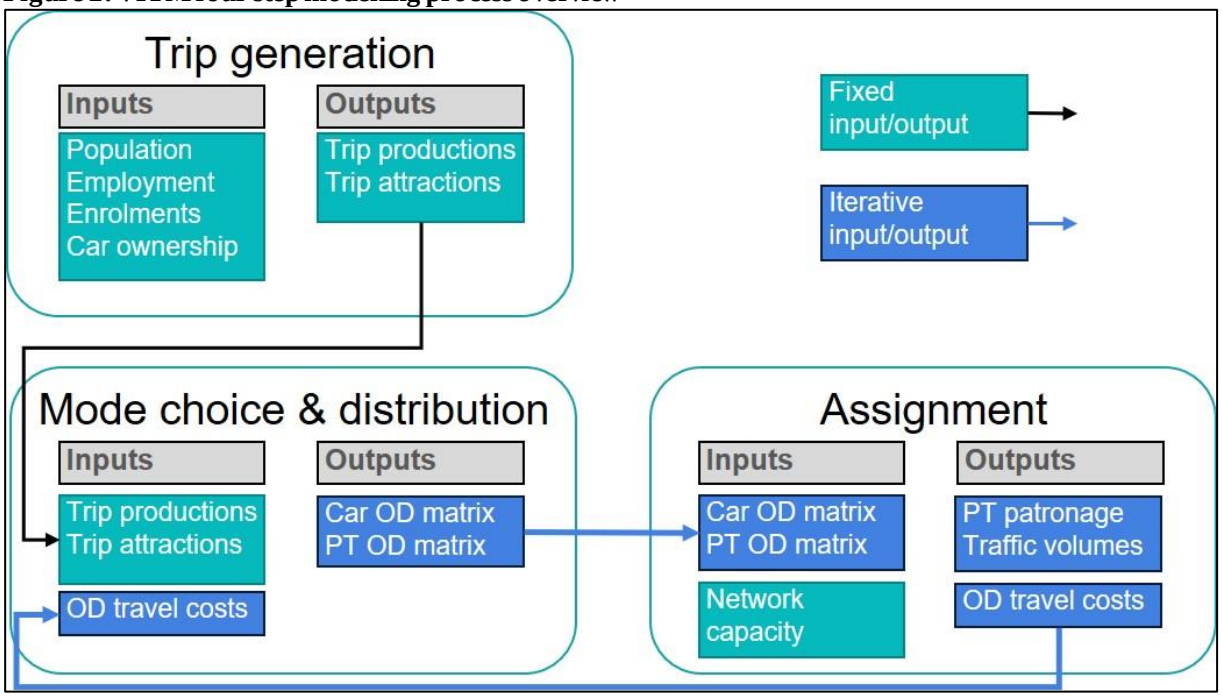
The model divides Victoria spatially into several thousand travel zones representing the origins and destinations of the trips it forecasts. It uses the following common four-step process to forecast demand for trips between all travel zones and the modes and routes those trips take:

1. Trip generation – estimates the number of trips that will be produced from and attracted to each travel zone based on the zone's projected population, employment and land use
2. Trip distribution – also referred to as 'destination choice', connects trips between all travel zones, estimating the origin and destination travel zones of all trips (OD matrix)
3. Mode choice – estimates the mode choice (car or public transport) for all trips
4. Assignment – estimates route choice for all trips, including allocation of car demand to road network routes and public transport demand to train, tram and bus routes.

The process is illustrated in Figure 2. Steps two to four involve an iterative feedback loop where the calculation of the cost of travelling between origins and destinations is iteratively updated. Within these steps people who make trips from a given travel zone make three choices: their destination travel zone (step 2), car or public transport mode (step 3) and their route (step 4). Destination and mode choices are influenced by the perceived cost of travel between origin and destination zones (OD travel costs). People choose destinations according to the purpose of their trip and are more likely to choose the destinations and modes that minimise their OD travel costs. For route choice, the least cost route from the origin to the destination is chosen.

OD travel costs incorporate travelers' perceived cost of travel time, vehicle operating costs, tolls and public transport fares. The lower the travel cost the more attractive the destination and mode. The assignment step then models the demand for all mode and destination choices against the network capacity, with the resulting congestion levels and travel times informing iteratively updated OD travel costs. The VITM performs six loops of the iterative travel cost feedback. During each loop the forecast origin-destination travel demand for car and public transport modes is updated and assigned to the network.

Figure 2: VITM four step modelling process overview



The VITM segments travel demand into nine trip purposes including seven 'home-based' and two 'non-home-based' trip purposes described in Table 1 below. To forecast the impact of increased working from home we focus on changes to demand for trips made to or from workplaces, which include home-based work trips and some non-home-based trips.

Table 1: VITM trip purposes

Trip purpose	Description of travel
Home-based trips	
Home-based work (HBW)	Between home and workplace
Home-based primary education (HBEP)	Between home and primary school
Home-based secondary education (HBES)	Between home and secondary school
Home-based tertiary education (HBET)	Between home and tertiary institution
Home-based shopping (HBSh)	Between home and shopping locations
Home-based social (HBSoc)	Between home and other locations for social and entertainment purposes
Home-based other (HBO)	Between home and other locations for other purposes such as medical appointments
Non-home-based trips	
Employer's business (EB)	Between workplace and other locations for work purposes (e.g. from own workplace to a supplier's office for a meeting)
Non-home-based other (NHBO)	Between non-home locations for non-work purposes (e.g. from work and to shops for personal shopping)

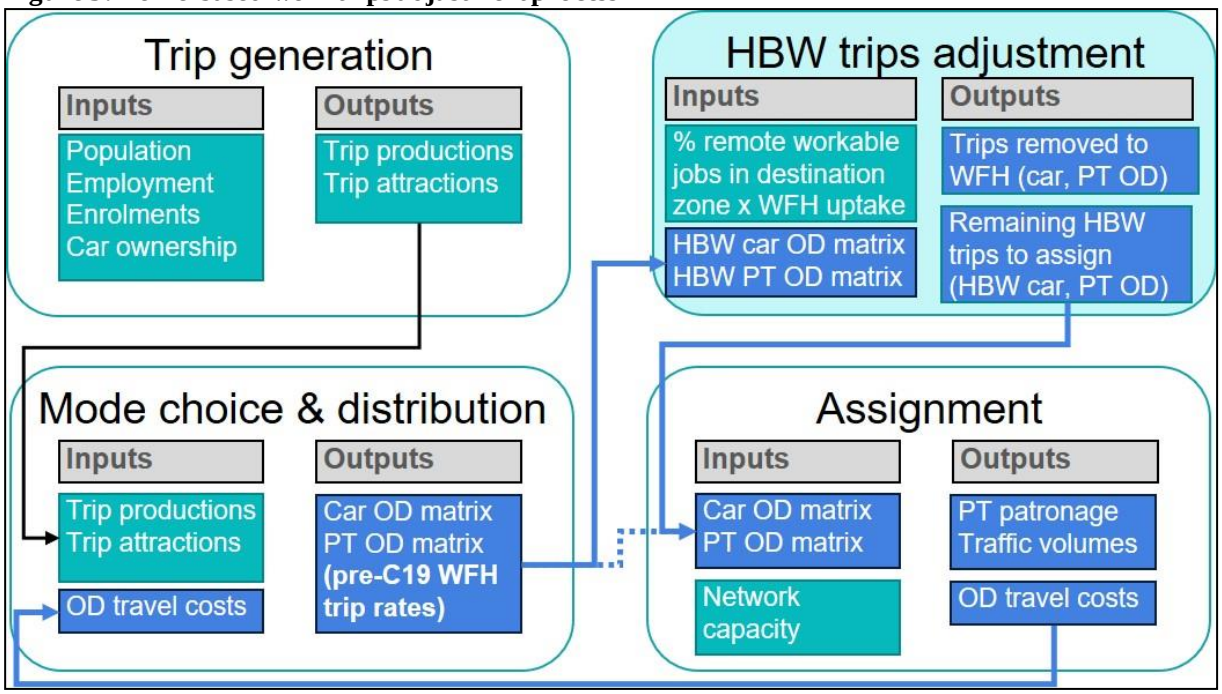
3.2 Adjustments to home-based work trips

The trip generation model within the VITM forecasts the number of home-based work (HBW) trips produced from each travel zone. The forecast HBW trip demand is a function of each travel zone's resident population and household characteristics including the number and ages of household members, their employment status and car ownership. Being calibrated to household travel survey data from 2012 to 2018, the trip generation function reflects pre-Covid-19 rates of travel to work, which implicitly include a level of working from home. In typical applications of the VITM these rates are assumed to remain constant in future years. A

tailored adjustment is required to test increased working from home rates for the subset of the workforce identified in Section 2.

In Section 2 we estimated the reduction in average daily work commutes from expected future working from home rates. These are estimated by workplace location, being the attraction zone of HBW trips. To adjust HBW trip demand to reflect the expected increase in working from home, we subtract trips from the HBW car and public transport daily trip matrices produced after the VITM's distribution and mode choice steps. The remaining trips are then assigned to the network, new OD travel costs are calculated and fed back through the iterative loop process, as illustrated in the following Figure 3.

Figure 3: Home-based-work trips adjustment process



The working from home impact obviously results in some decongestion of the transport network. As the resulting lower OD travel costs are fed back through the iterative looping process to influence destination and mode choices for all trips. The lower travel costs can be expected to result in longer average trip distances compared to pre-Covid assumptions as people can travel to more distant destinations for the same travel cost.

Removing work from home demand at this point in the process allows the VITM trip generation model calibrated to pre-Covid-19 travel behaviour to function as normal. This means the origins and destinations of trips removed to working from home are explicitly identified – information which is set aside for use in estimating changes to non-home-based trip demand.

3.3 Adjustments to non-home-based trips

Non-home-based trips are trips for which neither the origin nor destination are the home location of the person making the trip.[16] They typically form part of a longer chain of linked trips made across the day, often referred to as tours. An example is a trip from a person's workplace to a shop during their workday.

Two types of non-home-based trips are represented in the VITM: employer's business (EB) trips and non-home-based other (NHBO) trips. These include trips made between workers'

[16] This is not strictly true for employer business trips in the VITM, some of which can involve a home trip end.

workplace and other non-home locations. The VITM forecasts demand for the number of EB and NHBO made to and from a workplace as a function of the number of HBW trips made to that workplace. For example, for every 100 HBW trips made by car to a workplace, the VITM estimates there will be approximately 22 NHBO trips and 11 EB trips made by car to and from that same location.

More research is required to understand how working from home trends will impact non-home-based trips previously made to or from the workplace. The methodology implemented here ensures the total number of non-home-based trips remains unchanged by working from home arrangements, but non-home-based trips associated with removed HBW trips are redistributed to occur from the home location. Continuing the example above, if 10 of those 100 HBW trips to a workplace are removed due to working from home, then 2.2 of the 22 associated NHBO trips, and 1.1 of the 11 EB associated trips, are made to occur at the home locations of those workers now working from home. That is, the home location zones generate and attract 2.2 NHBO trips and 1.1 EB trips, and those trips are distributed using the usual gravity model for the VITM's non-home-based trip distribution whereby destination choices are based on travel costs between origins and destinations.

4. Transport modelling results of working from home impact

This section presents the transport impacts of a 'central work from home scenario', as defined by the parameters and method described in Sections 2 and 3. The key parameters for the central working from home scenario are summarised in Table 2 below. It is compared against a pre-Covid-19 'business as usual' scenario, which assumes pre-Covid-19 work from home rates remain unchanged in future.

Forecast years 2026 and 2036 were modelled in the VITM. The results presented are for 2026 as, in percentage terms, the impacts were generally similar in both forecast years.

Table 2: Central working from home scenario key parameters

Parameter	Central work from home scenario
Percentage of the Victorian workforce employed in remote workable occupations[17]	29%
Average increase in work from home days per week for those employed in remote workable jobs (compared to pre-Covid-19 levels)	+1.8 days per week *(approx. 2-3 days per week total)*

4.1 Trips avoided due to working from home

The central scenario projects working from home would remove from the transport network around 10 per cent of work commutes trips – equivalent to two per cent of all daily trips – from the transport network each weekday (Table 3). This represents around 414,000 avoided trips per day in 2026 and 489,000 in 2036.

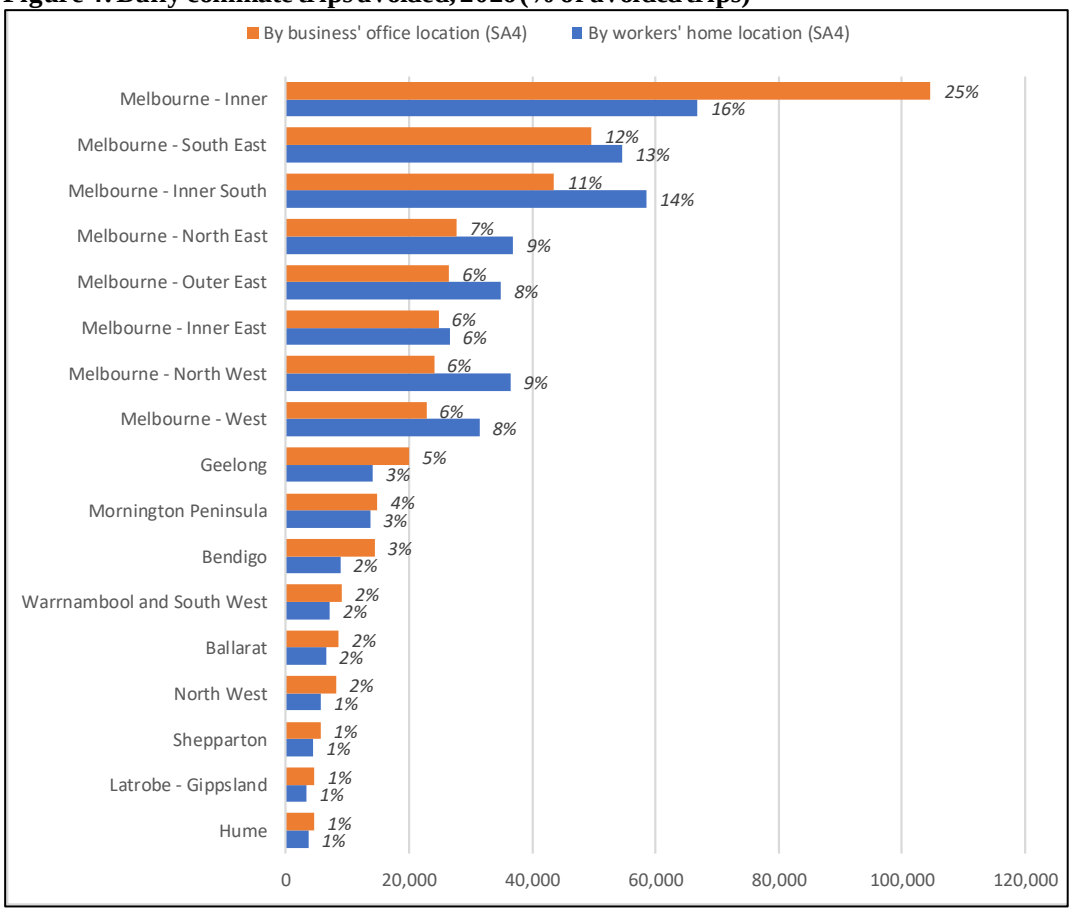
[17] Weighted by 2016 Census occupation data. Estimated percentage may be different in forecast years due to projected change in industry composition and job locations.

Table 3: Daily work commute trips avoided, by workers' home location, 2026 forecast (% of work trips)

	Central work from home scenario
Greater Melbourne	350,000 (11%)
Regional Victoria	64,000 (7%)
Victoria	414,000 (10%)

The impact on travel demand would vary significantly by location across the state. Due to the high concentration of remote workable jobs in Inner Melbourne, for example, work trips to these jobs would account for one quarter of the avoided trips. Avoided work trips from workers' home locations would be more evenly spread across the state, as shown by the blue bars in Figure 4 below.

Figure 4: Daily commute trips avoided, 2026 (% of avoided trips)



4.2 Impacts on transport network and users – summary of VITM outputs

The central scenario projections indicate AM peak period travel demand would decline by 3.0 per cent for private vehicle travel and 4.5 per cent for public transport. For context, since the pandemic began traffic volumes peaked at 97 per cent of pre-Covid-19 levels, and public transport use at around 62 per cent in May 2021.[18] Public transport demand is clearly yet to reach a steady post-Covid-19 state.

Outputs of the VITM suggest the assumed increase in working from home could have significant impacts on the transport network and users. Within the Greater Melbourne network, Victorians would save an estimated 139,000 hours of travel time in 2026 and

[18] Victorian Department of Transport, unpublished data.

162,000 hours in 2036 – attributable to avoided travel time for those working from home and decreased network congestion for remaining users of the network. Around 2.2 million private vehicle kilometres per weekday would also be avoided in 2026, and 2.6 million in 2036 – reducing vehicle emissions, road accident costs and improving environmental amenity.

To further illustrate estimated impacts of increased working from home, Table 4 and Table 5 below provide a selection of 2026 AM peak period outputs from the VITM for private vehicle and public transport travel. Reduced travel demand improves the level of service for transport users, with less travel in congested traffic conditions, less travel on crowded public transport services and faster road network travel speeds.

An increase in the private vehicle share of motorised trips of 0.2 percentage points is projected with improved road network conditions. The overall improvements to travel conditions result in some induced travel effects, with average trip distances increasing by 0.4 per cent for private vehicle trips and 0.9 per cent for public transport trips.

Table 4: Private vehicle travel metrics – estimates for a 2026 weekday, Greater Melbourne

Private vehicle travel – 7-9am	2026 business as usual scenario	2026 central work from home scenario	Difference
Number of person trips by car	2,144,400	2,080,300	-3.0%
Number of vehicle trips	1,439,200	1,388,700	-3.5%
Total vehicle kilometres	21,526,600	20,755,100	-3.6%
Total vehicle travel time (hours)	543,600	512,700	-5.7%
Average network speed (km/hr)	39.6	40.5	2.3%
Total vehicle kilometres in congested conditions	791,900	723,900	-8.6%
Average trip distance (km)	11.4	11.5	0.4%
Average trip time (mins)	17.2	16.8	-2.2%

Table 5: Public transport travel metrics – estimates for a 2026 weekday, Greater Melbourne

PT travel - 7-9am	2026 business as usual scenario	2026 central work from home scenario	Difference
PT mode share (motorised trips)	16.1%	15.9%	-1.4%
Number of PT trips	411,200	392,500	-4.5%
Total passenger kilometres	6,674,100.0	6,431,700	-3.6%
Total PT travel time	334,400	319,800	-4.4%
Congested passenger kilometres	89	74	-16.9%
Metro train boardings	327,200	310,900	-5.0%
Tram boardings	156,400	146,800	-6.1%
Metro bus boardings	134,900	132,000	-2.1%
Inbound train passenger load at CBD cordon	175,300	164,700	-6.0%
Alightings at CBD train stations	115,800	107,700	-7.0%
Average trip distance (km)	16.5	16.6	0.9%
Average trip time (mins)	49.6	49.7	0.2%

5. Conclusions

Occupations suited to working from home represent a subset of the total workforce, with an estimate adopted in this paper being 29 per cent of the current Victorian workforce. Evidence is growing that working from home levels will endure at levels higher than before the Covid-19 pandemic. This challenges demand forecasting norms that carry forward trip generation functions calibrated to historic travel survey data. Evidence-based parameters and tailored methods are required to incorporate the impacts of increased working from home in strategic transport models.

The modelling methodology and estimates presented in this paper are preliminary but offer a step forward in capturing some potential effects of the future of working from home. The method captures estimated reductions in demand for work commute trips. It also redistributes some other trips from workplace locations to home locations, reflecting a shift in activity as more workers work from home. The implementation in the four-step model process allows for mode and destination choices of travelers to respond to improved levels of service on the transport network resulting from fewer trips being made.

The estimated two per cent reduction in total weekday trips is not uniform across geography or time of day. Inner-city areas and peak period travel expected to see higher reductions in demand. Model results suggest a minor increase in private vehicle mode share and inducement of longer trip distances as travelers respond to decongestion of the network.

These preliminary estimates from the working from home scenario suggest working from home impacts warrant accounting for in strategic models as we come to grips with forecasting post-Covid-19 travel. Waiting for observed data on stable post-pandemic conditions before recalibrating models is likely to take several years. In the meantime, evidence-based parameters, assumptions and tailored implementation methods in strategic transport models will be required to account for the impact of increased working from home levels.

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