Impacts of working from home
Number 36, 2021

Part of the Tranzinfo Hot Topics series, this issue offers a selection of material on the impacts of working from home on the environment, urban planning, travel behaviour, and transport infrastructure. The COVID-19 pandemic has seen unprecedented numbers of people working from home or adopting flexible working arrangements, a pattern of behaviour which may become permanent. This has had major impacts on the environment and travel behaviour, with implications for urban and transport planning for governments.

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The environment

How working from home could save 11 billion road miles, cut emissions
Forbes, Tuesday 16 June, 2020
Maintaining remote working in the UK after lockdown restrictions are lifted could reduce commuting mileage by 11.3 billion miles and cut greenhouse gas emissions by about 3.3 million tons per year, according to research by a UK business consortium with the backing of the UK Government.

Why working from home might be less sustainable
BBC, United Kingdom, 22 February 2020
Working from home seems more sustainable than commuting to an office, but the reality is not so simple, according to a recent article from the BBC.

[A transition to working from home won't slash emissions unless we make car-free lifestyles viable](#)
The Conversation, 6 October 2020
People who work from home travel to work less frequently but they have a tendency to travel more often for other reasons, according to a new [study](#) by UK researchers.

[Does working from home reduce CO2 emissions? An analysis of travel patterns as dictated by workplaces](#)
Cerqueira, E, Motte-Baumvol, B, Chevallier, L, Bonin, O, Transportation Research Part D: Transport and Environment, vol: 83, 2020.
This research provides new evidence about the relationship between travel behavior, workplace diversification, and environmental impact in the United Kingdom using data from the National Travel Survey for the period between 2002 and 2017. The results suggest that workplace diversification is often reflected by longer average distances for work trips, which are often associated with more remote residential locations. Findings also show that for some categories, such as teleworkers and home-based workers, trade-off effects are observed between work and non-work trips, which increase CO2 emission levels.

[Global emissions plunge as working-from-home slashes transport emissions](#)
Renew Economy, May 2020
The global impacts of the Covid-19 pandemic show a dramatic fall in global greenhouse gas emissions, and particularly in transport as the shift to working from home drive and the cut-back in international travel delivered massive cuts in transport emissions. Early findings of research have been published in the journal [Nature Climate Change](#), and was undertaken by researchers at Australia's CSIRO, along with the University of East Anglia, Stanford University, the CICERO Centre for International Climate Research under the banner of the Global Carbon Project.

[Working from home can save energy and reduce emissions. But how much?](#)
International Energy Agency, June 2020
As the Covid-19 crisis spread around the world, large numbers of people started working from home, with immediate and varied impacts on energy use. Oil demand shrank but residential electricity use surged. Companies such as Google and Facebook announced they would allow staff members to work remotely until at least the beginning of next year, while Twitter said its employees could continue working from home indefinitely.
This raises the question of what the implications would be for energy use and greenhouse gas emissions if a significant amount of people continued regularly working from home in the years to come.

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Urban planning

[More urban sprawl while jobs cluster: working from home will reshape the nation](#)
The Conversation, 19 August 2020
Working from home will create more urban sprawl, jobs will cluster in the bigger cities, and there will be greater economic disparity between regions, according to modelling by Victoria University.

[Bike-friendly, green space, working from home: new planning blueprint for life after COVID-19](#)
Sydney Morning Herald, 26 February 2021
Prioritising cycling over cars and ensuring more people have access to green space are features of Sydney's new draft Design and Place state environmental planning policy.

[If more of us work from home after coronavirus we'll need to rethink city planning](#)
The Conversation, April 2020
If, as some expect, people are likely to work from home more often after the pandemic, what will this mean for infrastructure planning? Will cities still need all the multibillion-dollar road, public transport, telecommunications and energy projects, including some already in the pipeline?

[The great rebalancing: working from home fuels rise of the 'secondary city'](#)
The Guardian, Monday 26 October 2020
A fall in commuting due to the pandemic is already prompting workers to move out of the major metropolises. If it proves a permanent change, it will have far-reaching repercussions – for the communities now accommodating workers midweek, and for the inner cities they have abruptly vacated.

[Where are people working from home, and how could this reshape Australia's cities and regions?](#)
SGS Economics & Planning, November 2020
This analysis is a step towards understanding how working remotely could reshape the form and structure of Australia's cities and regions. It explores the long term benefits and costs of remote working, and the spatial impacts of COVID-19. It's clear that the future of work is changing, and the opportunities will vary across the diverse places and communities in our cities. We need to continue to bring a spatial lens to urban policy and continue to address social and spatial inequalities.

[How do cities change when we work from home?](#)
Delventhal, Matthew J, Kwon, Eunjee, Parkhomenko, Andrii, Journal of Urban Economics, 2021.
How would the shape of cities change if there were a permanent increase in working from home? The authors study this question using a quantitative model of the Los Angeles metropolitan area featuring local agglomeration

externalities and endogenous traffic congestion. The authors find three important effects: (1) Jobs move to the core of the city, while residents move to the periphery. (2) Traffic congestion eases and travel times drop. (3) Average real estate prices fall, with declines in core locations and increases in the periphery. Workers who are able to switch to telecommuting enjoy large welfare gains by saving commute time and moving to more affordable neighborhoods. Workers who continue to work on-site enjoy modest welfare gains due to lower commute times, improved access to jobs, and the fall in average real estate prices.

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Travel behaviour

[Sydneysiders are working from home more, but the shift is linked to where you live, data reveals](#)
ABC News, 27 August 2020
The scale of the transition to working from home is linked to where people live, and public transport commuters have not moved to the roads, according to an ABC analysis of NSW transport information and data from Google.

[Australians want to work from home more post-COVID](#)
University of Sydney, 28 September 2020
75% of workers think their employers will support work from home plans post COVID-19, leading to a decline in commuting activity of 25 to 30 percent, according to the [Transport Opinion Survey](#) from Sydney University's Institute of Transport and Logistics Studies.

[How much time and money do commuters save working from home?](#)
University of Sydney, 19 April 2021
Commuters could save an average of 90 hours (or two-and-a-half working weeks) each year if work from home continues at current rates, according to a [study](#) by University of Sydney researchers.

[Insights into the impact of Covid-19 on household travel, working, activities and shopping in Australia: the early days under restrictions](#)
Beck, MJ & Hensher, DA, Institute of Transport and Logistics Studies Working Paper, ITLS- WP-20-09, 2020.
The paper reports the findings from the first phase of an ongoing survey designed to identify the changing patterns in travel activity of Australian residents as a result of the stage 2 restrictions imposed by the Australian government. With some employers encouraging working from home and others requiring it, in addition to job losses, and many children attending school online from home, the implications on travel activity is extreme. We identify the initial impacts associated with the first month of stricter social distancing measures introduced in Australia.

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[Insights into the impact of COVID-19 on household travel and activities in Australia: the early days of easing restrictions](#)
Beck, MJ & Hensher, DA, Institute of Transport and Logistics Studies Working Paper, ITLS- WP-20-16, 2020.
This paper is the second in what will be an ongoing series of analyses of a panel travel and activity survey. In this paper we examine data collected over a period of late May to early June in Australia, following four-to-six weeks of relatively flat new cases in COVID-19 after the initial nationwide outbreak, as many state jurisdictions have begun to slowly ease restrictions designed to limit the spread of the SARS- CoV-2 virus. We see that working from home continues to be an important strategy in reducing travel and pressure on constrained transport networks, and a policy measure that if carried over to a post-pandemic world, will be an important step towards a more sustainable transport future. We find that work from home has been a generally positive experience with a significant number of respondents liking to work from home moving forward, with varying degrees of employer support, at a level above those seen before COVID-19. Thus, any investment to capitalise on current levels of work from home should be viewed as an investment in transport.

[Telecommuting and other trips: an English case study](#)
Budnitz, H, Tranos, E, Chapman, L, Journal of Transport Geography, vol. 85, 2020.
This paper investigates the importance of non-work travel to the growing population of telecommuters and the implications of this for sustainable travel patterns. Previous research has identified a link between increased online access to work and reduced proximity between residential and workplace locations. These studies raise concerns that as more people split their work activities between home and external workplace, whilst living in more dispersed locations, more unsustainable transport impacts will be generated, including higher vehicle mileage, car dependency, and less physical activity. This paper counters that the implications of telecommuting and other flexible working practices for sustainable travel behaviours may be more dependent upon the number and type of non-work journeys and the accessibility of amenities for these purposes rather than on the distance to the workplace for less frequent commuting journeys.

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Transport infrastructure

[COVID has proved working from home is the best policy to beat congestion](#)
The Conversation, 16 November 2020
An increase on working from home during the pandemic has led to reductions in traffic congestion, and governments must publicly support this way of working in the future as a way of reducing pressure on transport

networks without building more roads, according to researchers at the University of Sydney.

[Most Victorians working from home since lockdown: new data](#)
University of Sydney, 9 September 2020
The widespread adoption of working from home and flexible working arrangements has implications for road investment linked to congestion, according to the findings of a survey by Sydney University's Institute of Transport & Logistics Studies.

[City work commutes set back a decade by COVID-19](#)
The Age, 16 October 2020
A threefold increase in the number of people working from home has led to calls from planning experts and the private sector to rethink Australia's infrastructure pipeline, which is focused on large transport infrastructure projects.

[How we're moving](#)
Transurban, 11 February 2021
New [research](#) commissioned by Transurban sought to get a snapshot of people's attitudes to working from home and how they will be using transport networks in the future.

[Flexible working, the neglected congestion-busting solution for our cities](#)
The Conversation, September 2019
One obvious solution to traffic congestion, caused mostly by workers commuting to jobs in the city centre during peak hours, might appear to be building more, or bigger, roads. But a less obvious answer, and potentially a more cost-effective one, might be to increase flexible working arrangements.

[Insights into working from home in Australia in 2020: positives, negatives and the potential for future benefits to transport and society](#)
Beck, MJ & Hensher, DA, Institute of Transport and Logistics Studies Working Paper, ITLS- WP-21-08, 2021.
This paper builds on earlier papers by the authors on the Australian response, with a focus on the role that working from home (WFH) has played in response to reducing the risk of seeding the virus in local sources. Given the volatility of exposure and transmission, WFH to some extent has growing support from employees, employers and government as a way of not only containing the virus but as a positive unintended consequence in contributing to the future management of the transport network, especially in larger metropolitan areas. We report on the findings from the first three waves of data collected in Australia between March and September 2020, highlighting the potential future benefits of WFH to society more generally what this might mean for the future revision of transport plans and priorities.

[The impact of COVID-19 on cost outlays for car and public transport commuting - the case of the Greater Sydney Metropolitan Area after three months of restrictions](#)

Hensher, DA, Wei, E, Beck, MJ, Balbontin, C, Transport Policy, vol. 101, 2021.
This paper estimates the short-term reduction in money and time costs associated with a reduction in car and public transport commuting activity in the Greater Sydney Metropolitan Area (GSMA) during a period of the COVID-19 pandemic in which Australia started to see an easing of restrictions (see Beck and Hensher 2020a). As of late May 2020, three months after COVID-19 resulted in restrictions in Australia, the authors saw an annual travel time reduction for car and public transport commuters in the GSMA of $5.58 billion, representing a 54.02% reduction in the Pre-COVID-19 total time costs, much of which they would suggest can be associated with reductions in congestions costs. Adjusting further for reduced employment volumes relative to pre-COVID-19 levels, to take into account reduced commuting activity due, in part, to a lower volume of work associated with a loss of employment or lower employment hours, the annual time cost reduction for all commuters who still have regular pre-COVID-19 levels of employment are estimated as $4.4 billion. Hence there is $1.17 billion worth of reduced time costs associated with significantly reduced employment hours, including a loss of employment. The implications for road investment linked to congestion in particular is profound, and shows how much of an increase in benefit to society, through congestion busting, can be obtained by more flexible work arrangements, even allowing for some switching into car out of public transport. Whether the current decrease in travel costs will be long-lasting is unknown, but it does support the appeal of working from home, if it is sustainable, as a policy lever

[The rise of mega-projects: counting the costs](#)

Terrill, M, Emslie, O, Moran, G, Grattan Institute, Australia, 2020.
Australian governments are committing to a record number of 'mega' transport projects, and that exposes taxpayers to mega risks of cost blowouts. Ten years ago there was just one transport infrastructure project in Australia worth more than $5 billion. Today there are nine, and costs have already blown out by $24 billion on just six of them. Projects announced before governments are prepared to formally commit are also particularly risky. About one third of projects are announced prematurely; they account for more than three quarters of the cost overruns. Australian governments are now fast-tracking transport projects in the quest for an infrastructure-led recovery from the COVID-19 recession. But spending big on transport projects conceived before COVID makes little sense, because the pandemic has pushed population growth over a cliff, and fewer people will commute in future as working from home becomes part of 'COVID normal'. The danger is that governments rush to build what may turn out to be white elephants. Taxpayers would get bigger bang for their buck if politicians steered clear of what they like to call 'nation building' and 'city shaping' mega projects, and instead spent more on upgrading existing infrastructure and on social infrastructure such as aged care and mental health care. The pandemic should prompt governments to rethink major projects that have been promised or are under construction, particularly those announced without a

business case. Governments should continuously disclose to Parliament material changes to expected costs and benefits, as listed companies are required to disclose to the stock exchange. And to avoid ending up here again in future, governments should collect data on and learn lessons from past projects. The key lesson is that megaprojects should be a last, not a first resort.

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