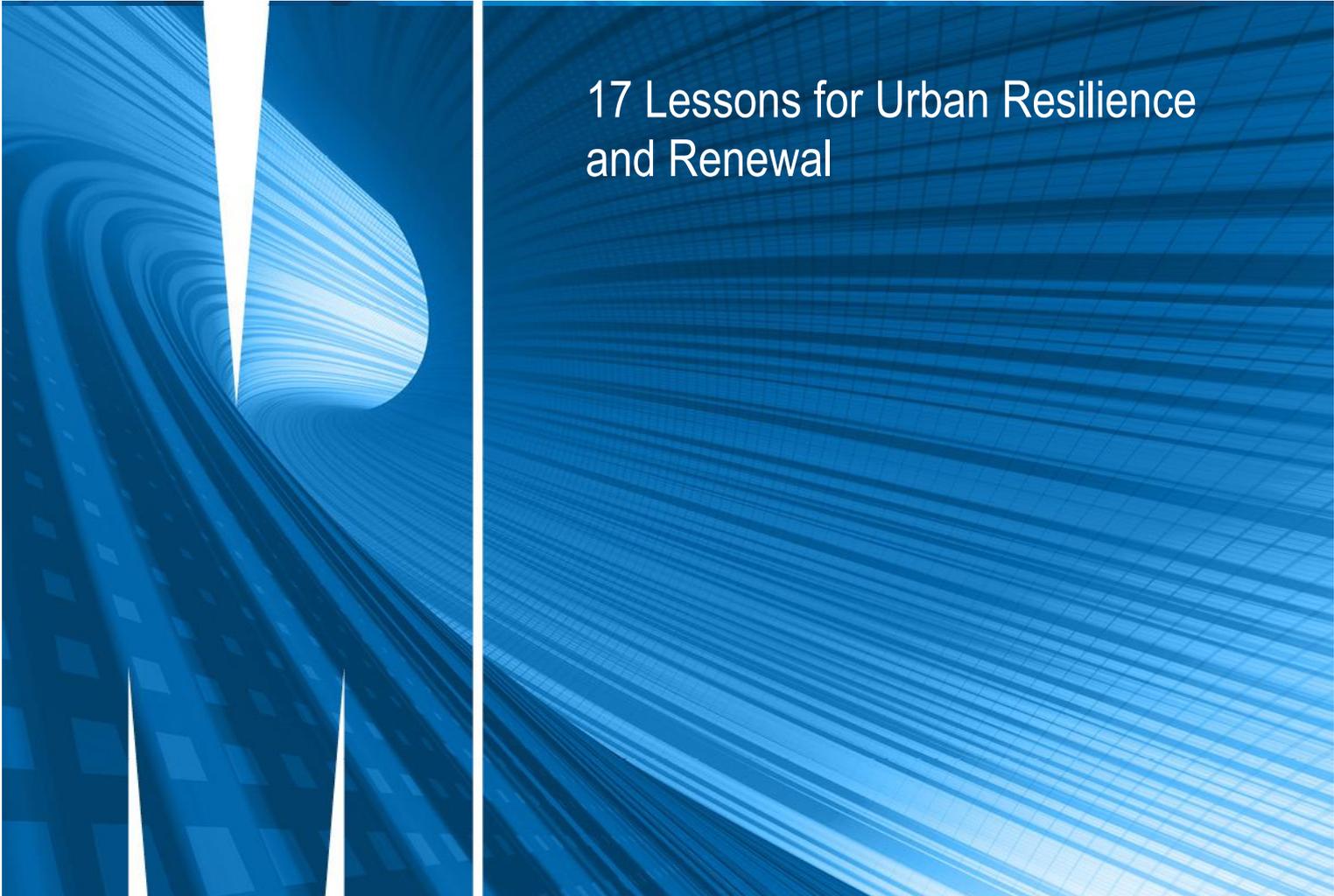# The Melbourne Experiment Report

17 Lessons for Urban Resilience and Renewal

FOREWORD BY THE PROVOST AND SENIOR VICE-PRESIDENT

Monash University has earned an international reputation for delivering excellent interdisciplinary research into matters of great social importance. Through collaborations with partners from industry, government and our communities, our researchers make a transformative contribution towards solving the most pressing challenges of the age.

The Melbourne Experiment is further testament to Monash University's commitment to excellence in research and research translation.

As COVID-19 swept the globe in 2020, the demands on leaders and communities worldwide to unpack and address the myriad challenges they were facing became clear - and the importance of expert analysis and guidance to support this endeavour more urgent.

Bringing together research expertise across Monash University, the Melbourne Experiment examines elements of the urban environment before, during and after the COVID-19 shutdown. Through over 40 unique interdisciplinary projects, research teams have been investigating, analysing, and advising on the core issues stemming from this crisis.

By focusing on new approaches for urban renewal that emphasise innovation, sustainability and social cohesion alongside economic prosperity to help meet the United Nations 2030 Sustainable Development Goals, the Melbourne Experiment has built a crucial knowledge base for community regeneration and recovery.

This report features a selection of the research undertaken during the pandemic. It is intended as an introduction to the Melbourne Experiment, and a chance to reflect on lessons learnt so far. Drawing on their projects, our researchers provide innovative and practical recommendations relevant to cities as they begin the project of post-COVID recovery and renewal.

It is with great pleasure that I present this report on the Melbourne Experiment.

Professor Marc Parlange

PROVOST AND SENIOR VICE-PRESIDENT, MONASH UNIVERSITY

CONTENTS

ACKNOWLEDGMENTS

The *Melbourne Experiment* thanks the following individuals whose contributions were invaluable in the development of this Report.

INTRODUCTION

THE MELBOURNE EXPERIMENT

Across the world, the Covid-19 pandemic caused rapid changes to how citizens live and cities function. On January 25 2020, Australia recorded its first confirmed case of Covid-19 in the state of Victoria.[1] Over the next months, border and travel restrictions were introduced, emergency legislation was fast tracked, and lockdowns, quarantines and mass closures of schools and businesses commenced. Beyond the direct health impact of the virus, the crisis and responses to it also generated psychological, social, and economic impacts. As vaccines are rolled out to further control the virus, these secondary impacts continue to evolve.

Monash University's *Melbourne Experiment* was established in 2020 in response to the Covid-19 crisis. The pandemic, and world leaders' myriad responses to it, exposed mixed levels of practical and ideological preparedness for such a historic disruption. People's access to support in the form of healthcare, economic safety nets and employment security, housing, justice, and safety all varied. These variations emphasising stark inequalities between and within countries, and within cities and regions.

To understand this complex situation and begin to move forward, a nuanced and multidisciplinary approach to mapping, analysis, and planning was needed. It is imperative we know what happened, and what the ongoing, disparate effects are, and to let this information guide what happens next.

Bringing together research expertise from across Monash University, the *Melbourne Experiment* is building a knowledge base. Monash experts from medicine; engineering; education; psychiatry; business and economics; family violence prevention; social sciences; law; and architecture and planning, are working across disciplines, finding novel ways forward. Their research falls within one of seven themes that cover vital aspects of urban renewal, and connects to the UN Sustainable Development Goals.

THE THEMES:

1) **Physical and Mental Health and Wellbeing:** *Addressing Impacts and Inclusive Planning;*
2) **Human Behaviour:** *People and Place*;
3) **Economic Impact:** *Employment and Growth;*
4) **Future City:** *Planning and Urban Renewal;*
5) **Social Impacts:** *Access and Inclusion;*
6) **Environmental Impacts:** *Lessons for a Green Recovery; and*
7) **Digital Technology:** *Opportunities for a Better Future.*

Each unique research project delivers practical information and policy insights for governments, community leaders, and other decision makers working towards every facet of post-Covid-19 urban recovery and renewal. These projects provide in-depth analysis and a reliable record of experiences and lessons from before, during and after the Covid-19 shutdown(s). This knowledge base can facilitate the development of evidence-based policies that will enable cities to grow beyond this pandemic. It also offers an opportunity to examine and address the underlying inequalities that were exacerbated by the crisis.

From the research projects featured in this report, we can draw three broad lessons.

THREE BROAD LESSONS:

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[1] Department of Health (25 Jab 2020) 'First confirmed case of novel coronavirus in Australia', *Commonwealth of Australia*. Available: https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/first-confirmed-case-of-novel-coronavirus-in-australia

- The need to expand funding and commit to adequate resourcing for mental health care and gender specific planning.
- The need to encourage and expand positive behaviours established during the pandemic. *This includes employment flexibility, reduction in the use of cars, and the utilisation of technology to reduce social inequalities and increase access to social supports.*
- The need for reflexive and innovative planning and policy design that incorporates the voices of experts and communities and relies on evidence.

The focus point of the *Melbourne Experiment* is the city of Melbourne. However, Melbourne provides a broader platform from which to study the effects of the pandemic on the functions of a large, vibrant city. The experiences and lessons from the Melbourne case study can be applied nationally and internationally. The themes that emerge through the research projects - gender inequality; employment and economic disparities; mental health crises; climate change; and opportunities stemming from digital technologies - are all global concerns that traverse the specific challenges of the Covid-19 pandemic.

FOUNDATIONAL SUPPORT

The Monash Data Futures Institute (MDFI) supported numerous *Melbourne Experiment* research projects along the way. MDFI ensured these research projects were grounded in data informed evidence, augmenting their insights and real-world applicability.

The Better Governance and Policy Initiative also provided background support, assisting with the translation of research findings into these 17 lessons for urban resilience and renewal, and the collation of this report.

STRUCTURE OF THE REPORT:

The following report highlights some of the extraordinary, on-going work of the *Melbourne Experiment* research teams. The report is split into seven sections following the seven research themes: **Physical and Mental Health and Wellbeing; Human Behaviour; Economic Impact; Future City; Social Impacts; Environmental Impacts; and Digital Technology.** Each section starts with a list of practical recommendations drawn from the in-depth research conducted by the featured teams. An extended overview of selected projects follows, with further information and links at the back of the report for those wanting a comprehensive look at any of the projects.

We hope the insights and recommendations contained in this report inspire readers to think about the effects of the pandemic through a new lens so we can collectively move towards creating a more equal, sustainable city.

THEME 1:

PHYSICAL AND MENTAL HEALTH AND WELLBEING: ADDRESSING IMPACTS AND INCLUSIVE PLANNING

1# Prioritise and resource progress towards gender equality and women's safety from violence during the recovery and in future planning and preparedness for pandemics and other crises

2# Continue funding for wastewater-based epidemiology.

3# Ensure pandemic response and recovery plans appropriately resource mental health supports and healthcare services.

PHYSICAL AND MENTAL HEALTH AND WELLBEING: ADDRESSING IMPACTS AND INCLUSIVE PLANNING

With 909 Covid-19 deaths in Australia, 820 of which occurred in Victoria, the physical effects of the virus are clear. Beyond Australia, the toll has been exponentially higher. By early 2021, deaths from Covid-19 in the U.S. reached over 500,00[2]; the U.K had registered over 130,000[3]; and there were over 830,000 deaths recorded across the EU.[4]

Melbourne's multiple lockdowns and on-going restrictions were put in place to stop the widespread illness and death caused by Covid-19. Along with innovative measures to track and understand the virus, these unprecedented actions successfully stopped the spread of the virus. However, the on-going impact on mental health, wellbeing, and non-Covid-19 related physical illness and physical harm is still unfolding.

In order to move forward and successfully restructure support systems and society, we need to learn from this crisis and reflect on what preceded it. The projects undertaken by Monash experts help us understand what happened during the crisis, what the on-going effects are, and how we can use this knowledge to address pervasive issues of gender-based violence, mental health, and community illness.

PROJECT 1: GENDER-BASED VIOLENCE AND HELP-SEEKING BEHAVIOURS DURING THE COVID-19 PANDEMIC

Times of crisis are associated with increased violence against women and children and often with reduced access to support services. Professor Jacqui True, Associate Professor Kate Fitz-Gibbon, and Dr Naomi Pfitzner from the Monash University Centre for Gender, Peace and Security and the Monash Gender and Family Violence Prevention Centre are working alongside peak state specialist family violence bodies in Victoria and Queensland, and the national peak body for men's services, No To Violence.

This research project investigates women's experiences of violence and help-seeking under the COVID-19 restrictions as well as the impact on the wellbeing of practitioners who provided support during this time.

What they're doing:

Using a mixed methods approach, their research brings together the views and experiences of practitioners responding to family violence during the coronavirus lockdowns via a multi-wave practitioner survey and focus groups, as well as service provider data.

What they've found:

Violence has increased in both frequency and severity during the global crisis. At the same time the pandemic has increased women's economic vulnerability. COVID-19 has exacerbated existing inequalities and intensified the impact of the exclusion of temporary visa holders experiencing family violence from safety and support mechanisms, at a time when they need it more than ever. The rapid transition to remote work and

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[2] Centers for Disease Control and Prevention. 'Provisional Death Counts for Coronavirus Disease 2019 (COVID-19)', *U.S. Department of Health and Human Services* (updated daily). Available https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm

[3] Public Health England. 'Deaths in United Kingdom', *Crown* (updated daily). Available: https://coronavirus.data.gov.uk/details/deaths

[4] European Centre for Disease Prevention and Control. 'COVID-19 situation update worldwide', *EU* (updated daily). Available: https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases#:~:text=Europe%3A%20830%20948%20deaths%3B%20the,and%20Germany%20(67%20903).

responding to family violence from home during the restrictions has also taken a significant toll on the mental health and wellbeing of practitioners in the sector.

Research Impact:

This project has raised awareness at the state and national level of the impact of the COVID-19 pandemic on women's experiences of and responses to family violence in Australia. The research team were invited to give evidence to three Australian parliamentary inquiries and have also presented their work to key government departments and agencies including Family Safety Victoria, Victoria Police, Victorian Family Violence Justice Advisory Network and the Victorian Department of Health and Human Services. This research is referenced in the 2021 Commonwealth parliament report to inform the next National Plan to reduce violence against women and their children.

What's next:

In partnership with the peak state specialist family violence bodies in Victoria, Domestic Violence Victoria, the team are developing practice guidelines for the family violence sector to support the mental health and wellbeing of practitioners working in remote settings.

One recommendation for post-COVID-19 urban recovery and renewal:

Prioritise and resource progress towards gender equality and women's safety from violence during the recovery and in future planning and preparedness for pandemics and other crises

PROJECT 2: TRACKING COVID-19 INFECTIONS IN THE COMMUNITY

Associate Professor David McCarthy and a team of civil engineering experts worked alongside Water Research Australia, Department of Health (Vic), and others to establish novel sampling of SARS-CoV-2 virus in wastewater, providing a way to track COVID-19 infections in the community.

What they're doing:

Wastewater based epidemiology is a novel way of understanding community infection levels. However, sampling is difficult - you need to be at the right place and at the exact moment in time when the infected individual flushes the toilet. The team developed a new device that can sample the wastewater continuously over time - a passive sampler for SARS-CoV-2 in wastewater.

What they found:

This passive sampler can be used to detect SARS-CoV-2 in wastewater from populations with low prevalence of active COVID-19 infections (0.034 to 0.34 per 10,000), demonstrating early detection of infections at three different scales (lot, suburb and city). A side by side evaluation of passive samplers and traditionally collected wastewater samples verified that the passive samplers were at least as sensitive at detecting SARS-CoV-2 in wastewaters.

Research Impact:

The team's devices are now used by all states and territories across Australia, with over 50 deployed in Victoria each day. They have been exported to Canada, USA, Netherlands, New Zealand, Indonesia, Luxemburg, and more. The open-sourced nature of the technology has allowed rapid uptake and will allow cities and towns around the globe to be more proactive at targeted mitigation of the virus.

What's next:

Beyond COVID-19, there are many applications for this technology, including the ability to track contamination sources in complex catchments and to understand risks to recreational users of our urban waterways.

One recommendation for post-COVID-19 urban recovery and renewal:

Continue funding for wastewater-based epidemiology.

PROJECT 3: WORK CHANGES DURING AND AFTER COVID AND THEIR HEALTH EFFECTS

Professor Alex Collie from the Insurance Work and Health Group is working with a team of experts from public health and preventative medicine, law, health economics, and occupational and environmental health, actively engaging with Commonwealth and state government authorities involved in planning the response to the COVID-19 pandemic.

The interdisciplinary team aim to determine the long-term social, employment and health consequences of losing work during the COVID-19 pandemic.

What they're doing:

The research team are conducting multiple surveys with a large group of Australians who have lost work during the COVID-19 pandemic. Surveys use standardised, validated outcome measures, with study-specific measures used as necessary.

What they've found:

During the lockdowns, Victoria experienced a 29% increase in individuals not seeing any other person on a weekly basis. Elevated levels of distress were observed for people in lockdown, along with worsening mental health.

Psychological distress was particularly elevated in people who lost work during the pandemic. However, social interactions and financial resources moderate this relationship. People who maintain social connections, and those with better financial resources, are less likely to have poor mental health.

Determining the health consequences of the public health measures to contain the spread of the coronavirus, and the characteristics of individuals who are most affected, is of critical importance to both understanding the current pandemic, and for planning responses to future similar events nationally and internationally.

What's next:

The team will continue to measure the longer-term consequences of COVID-related work loss. In 2021, they will monitor the health and working conditions of Australians who lost work during the pandemic, and explore the role vaccinations play for the workforce.

One recommendation for post-COVID-19 urban recovery and renewal:

Ensure pandemic response and recovery plans appropriately resource mental health supports and healthcare services.

THEME 2:

HUMAN BEHAVIOUR: PEOPLE AND PLACE

1# Create the conditions for a city-wide shift back to public transport use and other, alternative modes of transport.

2# Consider the actual behaviours post-COVID-19 urban recovery and renewal strategies are intended to affect. Let this guide what policies are put in place.

HUMAN BEHAVIOUR: PEOPLE AND PLACE

Lockdowns and restrictions during the pandemic necessitated huge shifts in how we work, interact, and live our lives. Restrictions on movement and socializing meant working from home became the new normal. Technology, more than ever, became our intermediary for connection.

In the city of Melbourne, behaviours were altered in obvious, physical ways; avoiding public transport; not leaving our suburbs; not dining out or attending events; staying 1.5 meters apart from each other; wearing masks; constantly washing our hands. These changes were often made at great personal sacrifice. Despite this, Melbourne residents listened to public health messaging and, as a city, they curbed the dangers of the virus.

As the city's restrictions ease and people resume their lives, there is the question of what changes in behaviour might remain. Monash researchers are exploring what this means for our on-going use of services, public space and transport. Looking to the future, they examine how we can direct these new ways of operating within the city in positive ways. They also offer salient lessons on the use of effective public messaging in times of crisis.

PROJECT 1: TRAVEL PATTERNS DURING AND AFTER COVID-19

Professor Graham Currie from the Public Transport Research Group and a cross-disciplinary team of experts from health, land use, and the social sciences, are conducting research that will help us understand the impact of COVID-19 on travel in Melbourne during the pandemic. They seek to predict the long-term impacts on public transport use, after the virus is no longer contagious.

What they're doing:

The team reviewed historical literature on pandemics and travel and explored the topic of mega disruptions and travel ranging from disasters to major sporting events. Primary research has included interviews and a major online panel survey to explore current and future travel behaviours in depth.

What they've found:

COVID-19 has created the largest shifts in urban travel in contemporary history. This effect has been global, creating significant changes in access and quality of life in cities.

The team's findings suggest that only a share of pandemic travel impacts will be long term. Post pandemic, when the virus has gone the team estimate total commuting in Melbourne will decline by 6% from pre-pandemic levels. The main cause is working from home (WFH). Melbourne CBD is most affected as the team predict 20% of CBD workers will no longer be based there. As CBD land use and activity shifts, there will be opportunities for planning.

Post pandemic, public transport (PT) use will be lower than pre pandemic due to infection fear lasting beyond the pandemic itself. The shift to driving cars has traffic congestion and environmental impacts. Public Transport usage decline is a concern but a return to population growth rates would fill this gap in 7 years and previous capacity pressures will remerge.

What's Next:

The next phase of the research will involve measuring on-going change to public transport use in 2021.

One recommendation for post-COVID-19 urban recovery and renewal:

Create the conditions for a city-wide shift back to public transport use and other, alternative modes of transport.

PROJECT 2: SURVEY OF COVID RESPONSES TO UNDERSTAND BEHAVIOUR (SCRUB)

Dr Alexander K Saeri and a team of behavioural science experts from the Monash Sustainable Development Institute, ACU, and the Victorian Government created the *Survey of COVID-19 Responses to Understand Behaviour (SCRUB)*. The *Survey* measures Australians' behaviours and attitudes during the COVID-19 pandemic. Measuring behaviour - and its drivers or barriers - helps to calibrate policy responses to ensure they are optimally reducing harms and supporting recovery.

What they're doing:

This research project involved co-design of policy and research questions, survey development, and analysis and reporting to research users across the Victorian State government. Every three weeks, the team conducted a 20 minute online panel survey of 1300 Victorians and 700 non-Victorian Australians, targeting representativeness by age and gender, with repeated sampling of the same people where available.

What they've found:

The glue between policy responses and COVID-19 harms and recovery is human behaviour. Throughout the COVID-19 pandemic, Australians have enthusiastically taken up public health behaviours when recommended by health authorities, but that adherence varies widely depending on location and time. Causes of behaviour also vary widely, emphasising the value of a 'behavioural diagnosis' approach: social norms and government recommendations influenced mask-wearing, while perceptions of risk and trust influenced physical distancing with family and friends.

Timely measurement and diagnosis of behaviour helps to prove the value of an evidence-informed approach to government decision- and policy-making. It does this by tightening the information loop between decisions and effects.

Tighter information loops allow for a leaner, more responsive and explicitly experimental / empirical approach to governing in a rapidly changing and high-complexity context such as the COVID-19 pandemic.

What's next:

The team will continue to collect data for SCRUB until at least June 2021.They will then move to secondary data analysis to (1) inform future pandemic and global catastrophic risk preparedness and response efforts, and (2) support the longer term sustainable recovery in Victoria and Australia.

One recommendation for post-COVID-19 urban recovery and renewal:

Consider the actual behaviours post-COVID-19 urban recovery and renewal strategies are intended to affect. Let this guide what policies are put in place.

THEME 3:

ECONOMIC IMPACT: EMPLOYMENT AND GROWTH

1# Build a more resilient and diverse job mix that supports quality future employment opportunities.

2# **Place a positive obligation on employers to consult with workers about caring and family obligations, and account for them in designing work practices.**

3# Ensure that systems and resources to support mental health are developed for both workers and their families.

ECONOMIC IMPACT: EMPLOYMENT AND GROWTH

The city of Melbourne spent 2020 in and out of lockdown. Businesses had to shut their doors or find new ways of operating on smaller or remote scales. Bars, music venues, and art galleries were shut. Events ceased. Schools operated on an online basis with parents having to work from home while facilitating their children's education and childcare needs. Those deemed essential workers continued as normal, often under strained circumstances. Many others lost their jobs, with the unemployment rate in Victoria set to average 7.75% in 2020-21.[5] More generally, due to low consumer and business confidence and ongoing restrictions, Victoria's GSP is set to drop by 4% in 2020-21.[6]

To soften the financial impact of these lockdowns, the state and federal government introduced economic safety nets during the worst periods. In the first quarter of 2021, many of these support systems are set to reduce or cease, while the effects of the crisis continue.

Moving past the worst of the pandemic's health effects, this historic situation offers a chance to examine how our systems and structures are currently working. Monash researchers provide evidence-based accounts of how economic and employment systems held up during the crisis and who was most vulnerable to the shocks. Their findings provide a foundation for a more secure and sustainable economic future for everyone.

PROJECT 1: ASSESSING RISK OF EMPLOYMENT VULNERABILITY

Professor Carl Grodach leads a team of Urban Planning and Design experts. Their research project navigates economic uncertainty in post-COVID cities by mapping the geography of COVID-vulnerable employment areas for all suburbs in Australia's five largest capital cities.

What they're doing:

Using data from the *Australian Census of Population and Housing (2016)* at the suburban level, the team examined a "first wave" scenario based on employment immediately vulnerable to social distancing, travel restrictions, and government directives, and a "second wave" scenario based on a more protracted recession.

What they've found:

The economic consequences of COVID-19 fell on service-dependent suburbs that lack economic diversity, as well as the largely low-income, part-time, female and young workforce in consumer service jobs. While the pandemic has exposed these fragilities, they stem from pre-existing labour market disparities.

The economic burden of COVID-19 restrictions showed a concentration of vulnerable workers in high-cost, job-rich inner suburbs. This does not necessarily reflect a reversal of the well-documented trend towards the suburbanisation of disadvantage in Australian cities, or show that the outer suburbs are more resilient. Rather, it implies that some people working in service-based employment manage to live close to their jobs despite the high median rents in the inner suburbs. This puts additional pressure on those living in high-cost housing markets and could actually exacerbate existing patterns of inequality. Hence, spatial inequality may accelerate in the post-COVID city.

What's next:

Following the quantitative phase, the team will undertake a qualitative study of diverse employment lands and industrial areas.

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[5] Victoria State Government (2020) 'Victoria Budget 2020/21: Putting People First: Overview', *State of Victoria*. Pp., 2.

[6] *Ibid.*

One recommendation for post-COVID-19 urban recovery and renewal:

Build a more resilient and diverse job mix that supports quality future employment opportunities.

PROJECT 2: FLEXIBLE WORKING ARRANGEMENTS DURING THE COVID-19 RESPONSE

Associate Professor Dominique Allen, Adriana Orificiand a team from Monash Business School are investigating the impact of the direction to work from home during the COVID-19 pandemic on workers with family responsibilities. They are also exploring how employers responded to requests for flexibility.

What they're doing:

The project draws on traditional doctrinal analysis of the federal, state and territory laws relating to employment flexibility. Empirical data about the experience of workers with family responsibilities during the COVID-19 pandemic was collected via an online survey.

What they've found:

The transformed world of work produced by COVID-19 provides an opportunity for a cultural shift in the way flexible work arrangements are perceived by both workers and employers.

Workers with family responsibilities will require flexibility long after the pandemic has ended so it is important that effective legal mechanisms are in place to facilitate this and that the law supports and encourages employee-led requests for tailored flexibility.

1. The Right to Request provision in s 65 of the Fair Work Act 2009 needs to be amended to explicitly require proactive conduct from employers following employee requests for flexibility;
2. The short timeframes imposed by s 65 are ill-suited to addressing urgent, or crisis-driven, requests for flexible working arrangements, which risks diminishing its utility to employees;
3. There are few positive obligations imposed on an employer to accommodate a worker's family or caring responsibilities. COVID-19 could be the catalyst for strengthening the protections available to facilitate flexible working arrangements by introducing a positive obligation on employers to take a worker's family responsibilities into account in designing work practices.

What's Next:

The team have conducted an online survey exploring employee requests for flexibility during COVID-19 and employer responses. They will be analysing the findings in 2021. This data will contribute to legal reform of industrial laws and anti-discrimination laws.

One recommendation for post-COVID-19 urban recovery and renewal.

Place a positive obligation on employers to consult with workers about caring and family obligations, and account for them in designing work practices.

PROJECT 3: FRONTLINE HEALTHCARE WORKERS AND THEIR FAMILIES

Professor Andrea Reupert and her team from education, nursing, midwifery and psychology are examining the effects of the crisis on Frontline healthcare workers (FCWs) and their families. They aim to understand how frontline families function during times of crisis to better inform individual and structural mental health supports for this group, prevent significant illness, and effectively direct resources.

What they're doing:

This is a longitudinal mixed methods study, gathering data from FHWs and their families at five time points (end of June 2020 (T1); then 3mnths (T2); 6mnths (T3); 12mnths (T4); and 24mnths (T5) on). FHWs who were actively working in Accident and Emergency, Intensive Care or Hospital in the Home during the COVID-19 pandemic and members of their family household 12 years and older will be invited to participate. Participants

will complete an online test battery. Then, a sub-set of participants will undertake 30-40 min semi-structured interviews.

What they've found:

FHWs are reporting changes in work environments and demands which impact negatively, and for some also positively, on family life. The domestic load, which has increased since the pandemic, continues to be assumed, by and large, by women. Some workplaces have been considerate of the needs of families, others less so. Communication about changes at work, especially hygiene arrangements, directed at the individual and family are key to adaptive coping in families.

What's next:

The team will continue their longitudinal study and also intend to investigate the needs of other FHWs and their families, in particular those who are often overlooked such as cleaners and cooks working in hospitals. Developing culturally appropriate resources and policies for these often overlooked workers and their families is an important part of future work.

One recommendation for post-COVID-19 urban recovery and renewal.

Ensure that systems and resources to support mental health are developed for both workers and their families.

THEME 4:

FUTURE CITY: PLANNING AND URBAN RENEWAL

1# Incorporate existing city assets and resources into future urban plans.

2# Ensure city planning includes adequate access to local, quality public open spaces.

FUTURE CITY: PLANNING AND URBAN RENEWAL

As plans commence for the next phase of recovery, leaders and communities need to have a clear sense of what they want for the future of their cities. The city of Melbourne is known for its arts and culture, its music, food, and sports. Prior to the crisis, major road and rail infrastructure plans were well underway and construction sites scattered the city. Some of these initiatives have continued as planned. Other sectors, such as the arts, are now struggling.

During the coronavirus crisis when the city all but shut down, local green spaces, parks, playgrounds, and local cafes and grocery stores became irreplaceable. This experience shone new light on what our urban spaces look like and how they should function, as well as who has access to them.

As we turn our focus to 'building back better' Monash researchers show us how inclusive and reflective planning can incorporate lessons from the past to facilitate an equal, sustainable, thriving future city.

PROJECT 1: USING THE PAST TO INFORM THE FUTURE OF URBAN SPRAWL AND RENEWAL

Associate Professor Lionel Frost and a team are working with economists, designers, urban historians, policy makers, developers, and residents to examine urban landscapes in the context of contemporary issues.

What they're doing:

The team will link archival data, documents, and census to historic maps, plans and images. Using GIS tools, they will generate and analyse new spatial visualisations of links between work, home, and community formation.

What they've found:

In a post-Covid-19 recovery phase, knowledge of our urban past, its role in making Australia 'modern', and understanding the success and failure of previous attempted adaptions will be a vital national resource. Australia's urban communities and suburbs are not blank slates. They are rich landscapes with existing, socially diverse identities, resources and productive networks. We need this information to help inform the re-establishment of a skilled and flexible sector that makes effective use of living spaces, assures supply of essential products, and builds relationships between the production of value and job creation and the advancement of living standards.

A historically-informed approach to considering our city can provide significant benefits, including policy setting for national resilience in a post-Covid-19 recovery phase.

What's next:

Contributing to Melbourne Design Week, the team will run two half-day workshops on 'A New Suburban Ambition - The Past and Future of the Australian Suburb'. They will continue their work examining the impact of manufacturing on the built environment, social diversity, and innovation of the Australian city.

One recommendation for post-COVID-19 urban recovery and renewal.

Incorporate existing city assets and resources into future urban plans.

PROJECT 2: PUBLIC PERCEPTIONS OF BLUE AND GREEN SPACES IN MELBOURNE

Associate Professor Megan Farrelly and a team of experts in human geography, civil engineering and water science are examining community perceptions of the role, accessibility, value and quality of blue and green spaces following COVID-19 restrictions.

What they're doing:

The team conducted an online quantitative survey. The next step will be to conduct semi-structured interviews.

What they've found:

Access to waterways and public parks varies across metropolitan Melbourne. Knowing how and why people engaged with these spaces during the pandemic and whether this changed due to the Victorian movement restrictions will inform future government policy and management strategies to deliver greater resilience and liveability of local places across Melbourne.

The survey data revealed expected outcomes like a high percentage (45%, n=360) of respondents utilising local streetspaces and parks and waterways within 5km of their homes more often, and for a wide variety of reasons. Exercise topped the list, but community connection also rated highly. Other reasons included seeking 'time-out' for mental health, relaxation opportunities, and appreciating nature.

63% of respondents indicated that they had a 'stronger appreciation' for parks and waterways as a result of this lock-down period. The experiences reported by respondents were overwhelmingly positive.

What's next:

The team will conduct a series of semi-structured interviews to provide a more in-depth understanding of their topic.

One recommendation for post-COVID-19 urban recovery and renewal.

Ensure city planning includes adequate access to local, quality public open spaces.

THEME 5:

SOCIAL IMPACTS: ACCESS AND INCLUSION

1# Ensure Courts have access to technologies that help to alleviate issues of justice accessibility.

2# Create financially accessible alternatives to the MBS fee-per-service model for mental health care delivery.

3# Train and support school wellbeing staff in technological skills that can facilitate identification of at-risk students and their needs.

SOCIAL IMPACTS: ACCESS AND INCLUSION

The lockdowns and restrictions brought in to mitigate the Global Covid-19 pandemic have been country, state, and city specific. This has meant the effects of the crisis have varied across geographies. Even within a specific city or local, people experienced the Covid-19 crisis in different ways.

There were numerous factors that contributed to an individual, family, or community's ability to accommodate the restrictions put in place. To stay home you need to have a home. Access to appropriate space and technology to facilitate remote work and learning varies widely. As does access to social and economic support in times of crisis. For some people these challenges were new. For others, their daily struggles were just amplified.

During the lockdowns, government and non-governmental organizations had to pivot to continue providing social services, often having to expand their scope as need and the intensity of need increased. Rapidly implemented, socially focused initiatives, like telehealth, could provide a model for a more equal and accessible system of social support. But the sectors providing these supports need adequate resourcing.

Monash researchers have been working on projects that provide insight into how the justice, mental health and education sectors were impacted by the crisis. Their findings and the tools they have created provide innovative ways to mitigate and address the underlying social issues the crisis exacerbated.

PROJECT 1: IMMERSIVE VIRTUAL COURT HEARING PODS

Associate Professor Jacqui Horan and a team of experts from the Monash Law Faculty are working with expert acoustics, electroacoustics and audio-visual facilities engineers, and the Victorian Court System to improve the user experience of online court hearings. They are developing an online court experience that is purpose built.

What they're doing:

The team built four prototype Virtual Court Hearing Pods. The next step is to showcase these pods to judges, prosecutors and defence counsel in order to obtain their feedback. This feedback will form the basis of improving the prototype.

What they've found:

Still in its initial stages, the research project is based on the knowledge that technology has the ability to cut the time and expense of running courtrooms, which ultimately translates into greater community access to justice. Courts throughout the world have been forced online due to the pandemic. In order to ensure that the quality of justice is not compromised, this requires a rethinking of courtroom spaces and how justice is performed within them.

What's next:

The team plan to use the purpose built court hearing pods in a pilot scheme.

One recommendation for post-COVID-19 urban recovery and renewal.

Ensure Courts have access to technologies that help to alleviate issues of justice accessibility.

PROJECT 2: EQUITY IN MENTAL HEALTH SERVICES DURING COVID-19

Professor Graham Meadows is working with Monash University colleagues from Southern Synergy, housed at Department of Psychiatry, the Monash Centre for Health Research and Implementation and the Department of Econometrics and Business Statistics. The team are examining mental health service delivery.

What they're doing:

The team applied quantitative methods to public datasets, including those from ABS and AIHW, as well as data specifically acquired by the RANZCP. They use principles of epidemiology and population survey research.

What they've found:

Before COVID-19, the national prevalence of mental illness was increasing, despite a doubling in mental health expenditure since 2000. Now, the pandemic has further negatively impacted Australians' mental health, presenting an unprecedented but crucial opportunity to evaluate and reform mental health service delivery.

Aiming to improve equitable mental health care access, the team have proposed and published an Australian mental health resource distribution formula; are investigating longitudinal trends in rates of mental illness (pre and post COVID), focusing on national trends by socioeconomic status, gender, and age, and; are concurrently assessing the use of mental health items (including telehealth items) pre and post COVID to determine if their introduction is affecting equity of delivery in any way. All of this work is informing our development of simulation and other modelling tools that may enhance sophistication and accuracy of forecasting effects of planned or considered service changes.

Research Impact:

A member of the National Mental Health modelling network, the team collaborate with the Royal Australian and New Zealand College of Psychiatrists, (RANZCP) and are involved on advisory groups for the Victorian DHHS. They have also had significant invited input into the Royal Commission into Victoria's Mental Health System.

What's next:

The team will continue their investigations and collaborations with key stakeholder groups (clinicians, consumers, health service planners). They will also begin publishing their findings.

One recommendation for post-COVID-19 urban recovery and renewal.

Create financially accessible alternatives to the MBS fee-per-service model for mental health care delivery.

PROJECT 3: <u>SCHOOL INNOVATIONS TO SUPPORT ACCESS AND INCLUSION</u>

Professor Andrea Reupert is working with education experts and psychologists from Monash University and colleagues from the US, Canada, and Germany. They are engaged in a project investigating how school psychologists and counsellors supported children's mental health and wellbeing during COVID-19 related school closures.

What they're doing:

The team disseminated a brief questionnaire to school psychologists and counsellors across Melbourne and Australia.

What they've found:

As a result of COVID-19 restrictions, school closures meant many students were unable to physically connect with their peers while others experienced family stress related to parental unemployment or loss of family income. Already vulnerable children were exposed to chaotic, turbulent home environments without the respite of school. Students' access to school-based mental health supports was disrupted, paradoxically when they needed it the most.

Particular student cohorts missed out on psychology and counselling services during Covid-19, including Aboriginal children and young people, and those living in families experiencing a range of adversities. Study participants [the school psychologists] employed a range of novel approaches for providing support such as daily wellbeing surveys, and wellbeing hubs. However, participants' capacity to provide psychometric assessments was significantly reduced during this period.

Many participants reported that as a result of school closures there would be long term changes to how schools provided mental health support given the greater acceptance of online counselling and the flexibility it provided.

What's next:

The next step is to determine what changes introduced during school closures, such as telehealth, are still being offered. Children's perceptions of these supports is another critical question that needs to be answered.

One recommendation you have for policymakers working for post-COVID-19 urban recovery and renewal.

Train and support school wellbeing staff in technological skills that can facilitate identification of at-risk students and their needs.

THEME 6:

ENVIRONMENTAL IMPACTS: LESSONS FOR A GREEN RECOVERY

1# Encourage behaviours that were found to reduce heat levels and air pollution during Covid-19. This could include working from home, and fewer private vehicles on the roads.

2# Integrate reflexivity, learning, and the possibility of failure into urban experimentation to ensure a successful shift towards net zero emission cities.

ENVIRONMENTAL IMPACTS: LESSONS FOR A GREEN RECOVERY

As Covid-19 began to cause disruptions around the globe, scientists noted corresponding effects on the environment. Changes in our behaviour and activities contributed to a reduction of negative environmental effects and improvements in air quality. These changes can be quantified and they provide further evidence of the effect humans have on the environment.

Governments and international organizations around the globe have heralded the idea of 'building back better' from the Covid-19 crisis. A large component of this is the idea of a 'green recovery.' Yet, already, as we emerge from pandemic restrictions, our relationship with the environment is returning to what it was. As a community, a city, and a nation, we need to refocus our priorities. Covid-19 has shown us the true devastation caused by a global crisis, but it has also shown us that we are able to work together and make monumental changes to save lives and livelihoods.

Monash researchers are contributing to the ever-growing evidence base on human induced climate change. They are showing us a way forward, offering practical guidance for how to turn a 'green recovery' into a reality.

PROJECT 1: URBAN AIR QUALITY AND TEMPERATURE

Emeritus Professor Nigel Tapper is working with a team of civil engineers, climate scientists and meteorologists to document the impacts of Covid-19 Lockdowns on Melbourne's Atmospheric Environment.

What they're doing:

There are two dimensions to this research project. The first looks at urban warmth, providing an analysis and comparison of urban and suburban temperature data for days-of-the-week (DOW) during lockdown periods, versus baseline periods for the same days/months in the 2015-2019 period. The second part looks at air quality using satellite remote sensing of air quality data for the 2020 lockdown periods and comparing these to baseline periods from previous years.

The team have also been working with the Victorian EPA, contributing to a global study of 80-100 cities to analyse impacts of COVID shutdowns on a range of air pollutants.

What they've found:

Humans contribute to urban warmth through anthropogenic emissions of heat and to global warming and unhealthy air through emissions of air pollution from industry, transport and space heating. Covid-19 lockdowns provided a unique opportunity to quantify these effects.

Urban Warmth:

Their research suggested that there is less anthropogenic heat emitted over the weekend and on Monday, compared to the rest of the week. In addition, the 2020 lockdown period showed mean daily temperatures up to 1-2 degrees Celsius cooler than for the baseline periods.

Urban warmth is of major concern. Heat causes more deaths than any other natural hazard and most of the global population live in cities where the background climate is becoming warmer because of climate change. This work gives an indication of the role of humans in adding to urban heat and contributes to understanding how we might reduce heat loading in cities into the future.

Air Pollution:

Similarly air pollution levels for all Melbourne stations (and regionally from satellite observations) were dramatically reduced during lockdown, especially for roadside land industrial locations.

What's next:

The team will continue to complete their analysis from data from the second lockdown in Melbourne and work on various publications.

One recommendation for post-COVID-19 urban recovery and renewal.

Encourage behaviours that were found to reduce heat levels and air pollution during Covid-19. This could include working from home, and fewer private vehicles on the roads.

PROJECT 2: NET ZERO PRECINCTS: AN INTERDISCIPLINARY APPROACH TO DECARBONIZING CITIES

Professor Rob Raven is working with a team of Monash experts from the Monash Sustainable Development Institute, IT, Arts and Architecture to understand the drivers and barriers that frame the community's experiences, expectations and visions of the precinct and net zero futures**.**

What they're doing:

The team are developing a new approach to urban transition management by using design anthropology. They aim to provide new insights into human experience and possible futures of urban places in transition. This will be tested in a Living Lab through real-world experimentation and engagement opportunities for research and training in the Monash Technology Precinct.

What they found:

The project is at an early stage but preliminary research in the form of systematic reviews has found the diversity of imagined futures, actor networks, and institutions at the level of a precinct makes urban experimentation at this scale challenging. Their net zero transformation depends on changes in the broader governance, decision-making, and power hierarchies across scales, public policy portfolios, and industrial sectors.

A key question for our ongoing research on precinct-scale transitions is under which (social, institutional or otherwise) conditions precinct-scale change advocates for net- zero futures are able to have significant impact?

Research Impact:

The project will deliver a framework for urban transition management, providing guidance for local government and state-level policy actors with commitments to net zero. External Partner Organisations include ENGIE, City of Monash, ICLEI – Local Governments for Sustainability and CSIRO. The Advisory Group is comprised of City of Greater Dandenong, Energy Efficiency Council and Swinburne University.

What's next:

The team will undertake stakeholder engagement workshops, interviews and design anthropology techniques to develop an integrated perspective of the social, institutional and experiential precinct conditions in the lead up to developing transition pathways and living lab experiments.

One recommendation for post-COVID-19 urban recovery and renewal.

Integrate reflexivity, learning, and the possibility of failure into urban experimentation to ensure a successful shift towards net zero emission cities.

THEME 7:

DIGITAL TECHNOLOGY: OPPORTUNITIES FOR A BETTER FUTURE

1# Utilize digital technologies to enable communities to visualize and communicate how broader metropolitan policies will affect them on a local scale.

2# Design a national internet infrastructure with stability and robustness at its core.

DIGITAL TECHNOLOGY: OPPORTUNITIES FOR A BETTER FUTURE

Throughout the pandemic, technology enabled connectivity, remote working and education, access to counselling and telehealth consultations, and live news updates.

Digital tools have also been integral to managing the pandemic from a public health perspective. Successful contact tracing, tracking, screening, and testing rely on innovative technology, and have been used globally to contain and mitigate the virus. Public messaging about Covid-19 restrictions and management have often been shared online via live-stream, or on social media platforms.

As well as providing us with a connection to the present, technology enables us to predict and plan for the future. It provides an accurate way to record and measure, supplying us with the information we need to move forward while acknowledging and avoiding the pitfalls and inequalities of the past. Technology can help us visualize a problem, and provide solutions. It can be used to facilitate engaged community planning and can provide a platform for a multiplicity of voices.

Digital technology offers great opportunities for social, economic, and environmental change. Monash researchers have been examining how we can harness digital technology for social good. They caution that to do so, we need to ensure we have the infrastructure in place, at scale. Further, technology must accessible and reliable across the globe.

PROJECT 1: MELBOURNE DIGITAL CITY MODEL

Professor Carl Grodach leads an interdisciplinary research team of experts from architecture, planning, geography and information technology. They have created *The Melbourne Digital City Model* which provides a platform to visualise the potential outcomes of a proposed policy change and compare the possible affects with alternative scenarios. The model also encourages more sophisticated development conversations with different places and communities in Greater Melbourne. The project was developed in consultation with the Victorian Government Department of Environment, Land, Water and Planning 20-minute neighbourhood team, and the local government of Brimbank urban design team.

What they're doing:

The research team have developed a web based, digital twin plugin with an easy to use interface. The benefits and barriers for use of this tool in community consultation have been tested with a series of community surveys and online, expert focus groups.

What they've found:

Sustainable planning is currently hampered by limited and narrow public engagement methods. Visualising policy proposals, as is possible in *The Melbourne Digital City Model* (MDCM), facilitates community discussion and understanding of the scope of the change envisioned in their area and assists the community in weighing the costs and benefits.

The MDCM allows users to visualise change at the broad suburb level down to the street level through a highly accurate, 3D LiDAR model of their area. Additionally, the scenario functionality can show multiple ways in which a policy objective can be achieved and encourage the development of targeted and unique, place-specific policy responses. Community members can explore and directly manipulate the scenarios to determine the outcomes that they feel best suit their specific neighbourhood before tangible changes occur.

What's next:

The research team plan to extend *The MDCM* to further areas across Melbourne.

One recommendation for post-COVID-19 urban recovery and renewal.

Utilize digital technologies to enable communities to visualize and communicate how broader metropolitan policies will affect them on a local scale.

PROJECT 2: THE MONASH IP OBSERVATORY

Associate Professor Simon Angus, Associate Professor Paul Raschky and Dr Klaus Ackermann co-founded the Monash IP Observatory, a unique internet observational platform, alongside Monash economists, econometricians, and engineers.

What they're doing:

The Monash IP Observatory monitors over 400 million, statistically representative, internet connected end-point devices across 20,000 geo-spatial regions globally from four continental scanning sources every day. The observatory uses a combination of computer science, statistical, and engineering methods to conduct its measurements. Our empirical methodology uses time-series analysis, anomaly detection, machine-learning, and causal statistical inference.

What they've found:

The observatory is uniquely able to provide granular information on internet connectivity and quality at any point on the globe in near real-time. This objective, impartial capability has a real-time benefit in many situations where access to the internet is suspected to have been suppressed, or lost.

Under Covid-19, the team found that Melbourne's internet infrastructure was stressed during the early lockdown period resulting in high latency. This impact was not uniform and some suburbs were more impacted than others as people shifted to e-learning, and remote-work. Melbourne's experience was typical of other Australian cities, but some internet infrastructure internationally suffered far worse impacts, reflecting the uneven infrastructure capabilities available around the world.

More broadly, their work has shown that human behavioural changes (patterns of time-use, technological basis of work, education, health, law etc.) leave measurable impacts on the internet. This opens up a wide and novel research domain where the internet can be re-conceptualised as a human behavioural laboratory, at global scale. Relatedly, our work shows how important good quality internet access is for Australians, and citizens globally, but access today does not imply access tomorrow under times of political, health, or natural crisis.

Research Impact:

So far the team are providing measurements to UN agencies (UN-OHCHR, UNDP), federal agencies (the US Federal Communications Commission, Greater Sydney Commission), research institutes (Australian Strategic Policy Institute), and public media agencies (ABC, BBC).

What's next:

The team aim to develop the capabilities of the Monash IP Observatory further with opportunities for organisations to link our data into their own social good and research activities.

One recommendation for post-COVID-19 urban recovery and renewal.

Design a national internet infrastructure with stability and robustness at its core.

APPENDIX A

RESEARCH TEAMS: INFORMATION, RESOURCES, AND LINKS

Physical and Mental Health and Wellbeing: Addressing Impacts and Inclusive Planning

PROJECT 1: GENDER-BASED VIOLENCE AND HELP-SEEKING BEHAVIOURS DURING THE COVID-19 PANDEMIC

Research Leads: Professor Jacqui True [hyperlink: https://research.monash.edu/en/persons/jacqui-true], Director of the Monash University Centre for Gender, Peace and Security. Associate Professor Kate Fitz-Gibbon [hyperlink: https://research.monash.edu/en/persons/kate-fitz-gibbon], Director of the Monash Gender and Family Violence Prevention Centre.

Research Team: Dr Naomi Pfitzner, Monash Gender and Family Violence Prevention Centre.

Resources:

1. Pfitzner, N., Fitz-Gibbon, K., and True, J. (2020). Responding to the 'shadow pandemic': practitioner views on the nature of and responses to violence against women in Victoria, Australia during the COVID-19 restrictions. *Monash Gender and Family Violence Prevention Centre*, Monash University, Victoria, Australia. Available: https://www.researchgate.net/publication/342068794_Responding_to_the_'Shadow_Pandemic'_practitioner_views_on_the_nature_of_and_responses_to_violence_against_women_in_Victoria_Australia_during_the_COVID-19_restrictions

2. Pfitzner, N., Fitz-Gibbon, K., Meyer, S., and True, J. (2020). Responding to Queensland's 'shadow pandemic' during the period of COVID-19 restrictions: practitioner views on the nature of and responses to violence against women. *Monash Gender and Family Violence Prevention Centre*, Monash University, Victoria, Australia. Available: https://www.genderandcovid-19.org/resources/responding-to-queenslands-shadow-pandemic-during-the-period-of-covid-19-restrictions-practitioner-views-on-the-nature-of-and-responses-to-violence-against-women/

3. Pfitzner, N., Fitz-Gibbon, K., McGowan, J., and True, J. (2020). When home becomes the workplace: family violence, practitioner wellbeing and remote service delivery during COVID-19 restrictions. *Monash Gender and Family Violence Prevention Centre,* Monash University, Victoria, Australia. Available: https://apo.org.au/node/308946

4. Segrave, M., and Pfitzner, N. (2020). Family violence and temporary visa holders during COVID-19. *Monash Gender and Family Violence Prevention Centre*, Monash University, Victoria, Australia. Available: https://apo.org.au/node/308985

5. Fitz-Gibbon, K., Pfitzner, N., & True, J. (2020, 18 August). More help required: the crisis in family violence during the coronavirus pandemic. *The Conversation*. Available from https://theconversation.com/more-help-required-the-crisis-in-family-violence-during-the-coronavirus-pandemic-144126

6. Pfitzner, N. & Segrave, M. (2020, 24 September). 'If you call 000 … I will send you back to your country': how COVID-19 has trapped temporary visa holders. *The Conversation*. Available from: https://theconversation.com/if-you-call-000-i-will-send-you-back-to-your-country-how-covid-19-has-trapped-temporary-visa-holders-146579

7. Pfitzner, N., True, J., Fitz-Gibbon, K. and Meyer, S. (2020, 1 July). 'We are in a bubble that is set to burst'. Why urgent support must be given to domestic violence workers. *The Conversation*. Available from https://theconversation.com/we-are-in-a-bubble-that-is-set-to-burst-why-urgent-support-must-be-given-to-domestic-violence-workers-141600

8. ***Further Media Coverage:*** **https://www.monash.edu/arts/gender-and-family-violence/research-and-projects/covid-19-and-gender-based-violence/media-coverage-of-monash-covid-19-research**

PROJECT 2: TRACKING COVID-19 INFECTIONS IN THE COMMUNITY

Research Lead: **Associate Prof David McCarthy** [hyperlink: https://www.monash.edu/engineering/davidmccarthy], EPHM Lab, Civil Engineering, Monash University.

Research Team [selected]: Ms Christelle Schang, Civil Engineering, Monash University; Mr Miao Wang, Civil Engineering, Monash University; Mr Baiqian Shi, Civil Engineering, Monash University; Ms Yitian Yuan, Civil Engineering, Monash University; Mr Peter Kolotelo, Civil Engineering, Monash University.

Resources:

1. Monash University (18 Feb 2021) 'COVID breakthrough: 'Torpedo' device targets SARS-CoV-2 hotspots in wastewater', *Monash University.* Available: https://www.monash.edu/news/articles/covid-breakthrough-torpedo-device-targets-sars-cov-2-hotspots-in-wastewater

2. Hall, J. (19 Feb 2021) 'Sewage submarine' a major development in tracking COVID-19', *The Australian*. Available: https://www.news.com.au/technology/innovation/inventions/coronavirus-sewage-submarine-a-major-development-in-tracking-covid19/news-story/b90f7dd1d7481bc283c23062dbfc657a

3. Schang, C. et al. (December 2020) 'Passive sampling of viruses for wastewater-based epidemiology: a case-study of SARS-CoV-2', *Research Gate*. Available: https://www.researchgate.net/publication/347103410_Passive_sampling_of_viruses_for_wastewater-based_epidemiology_a_case-study_of_SARS-CoV-2

PROJECT 3: WORK CHANGES DURING AND AFTER COVID AND THEIR HEALTH EFFECTS

Research Lead: **Professor Alex Collie** [hyperlink: www.covidstudy.net], Insurance Work and Health Group, School of Public Health and Preventive Medicine, Monash University.

Research Team: Dr Daniel Griffiths, Insurance Work and Health Group, School of Public Health and Preventive Medicine, Monash University; Mr Luke Sheehan, Insurance Work and Health Group, School of Public Health and Preventive Medicine, Monash University; Dr Caryn van Vreden, Insurance Work and Health Group, School of Public Health and Preventive Medicine, Monash University; Associate Professor Genevieve Grant, Australian Centre for Justice Innovation, Faculty of Law, Monash University; Associate Professor Dennis Petrie, Centre for Health Economics, Monash Business School; Professor Malcolm Sim, Monash Centre for Occupational & Environmental Health (MonCOEH), Faculty of Medicine Nursing and Health Sciences, Monash University.

Resources:

1. Griffiths, D., Sheehan, L., van Vreden, C. et al. (2021) The Impact of Work Loss on Mental and Physical Health During the COVID-19 Pandemic: Baseline Findings from a Prospective Cohort Study. *J Occup Rehabil* . Available: https://doi.org/10.1007/s10926-021-09958-7
2. Griffiths, Daniel; Sheehan, Luke; Van Vreden, Caryn; Petrie, Dennis; Sim, Malcolm; Collie, Alex (2020): The Community Lockdown in Victoria, Australia (July-October 2020): Implications For Health During The Second COVID-19 Wave. *Monash University*. Report. Available: https://doi.org/10.26180/13289570

Human Behaviour: People and Place
PROJECT 1: TRAVEL PATTERNS DURING AND AFTER COVID-19

Research Lead: **Professor Graham Currie** [hyperlink: http://publictransportresearchgroup.info/our-team/staff/prof-graham-currie/], Public Transport Research Group, Department of Civil Engineering, Monash University.

Research Team: Dr Taru Jain, Public Transport Research Group, Monash University; Laura Aston, Department of Civil Engineering, Monash University; Dr Laura McCarthy, Public Transport Research Group, Monash University; and Dr James Reynolds, Department of Civil Engineering, Monash University.

Resources:

1. *Research Project website:* http://publictransportresearchgroup.info/portfolio-item/covid-19-long-terms-impacts/
2. *National AITPM presentation video on research findings to date:* https://www.youtube.com/watch?v=qDNDox3oPhU
3. *Researching Transit Podcast on preliminary results:* http://publictransportresearchgroup.info/portfolio-item/rt5-professor-graham-currie-long-term-impacts-of-covid-19-on-travel-demand/
4. *ABC National TV interview on the research:* https://www.msn.com/en-au/news/australia/roads-could-see-50percent-peak-hour-car-increase/vi-BB14p0uO
5. *Committee for Melbourne Webinar presentation and discussion of early findings:* https://vimeo.com/423867105

PROJECT 2: SURVEY OF COVID RESPONSES TO UNDERSTAND BEHAVIOUR (SCRUB)

Research Lead: **Dr Alexander K Saeri** [hyperlink: https://www.behaviourworksaustralia.org/], BehaviourWorks Australia, Monash Sustainable Development Institute, Monash University.

Research Team: Dr Peter Slattery, BehaviourWorks Australia, Monash Sustainable Development Institute, Monash University; Ms Emily Grundy, BehaviourWorks Australia, Monash Sustainable Development Institute, Monash University; Dr Michael Noetel, Senior Lecturer, School of Behavioural and Health Sciences, Australian Catholic University; Professor Liam Smith, BehaviourWorks Australia, Monash Sustainable Development Institute, Monash University; and Victorian Government Staff.

Resources:

1. *Research Project Websites:* https://www.behaviourworksaustralia.org/ or https://www.scrubcovid19.org/.
2. *Academic articles written with data from SCRUB*
   - Bradshaw, E.et al (2021) 'Information Safety Assurances Increase Intentions to Use COVID-19 Contact Tracing Applications, Regardless of Autonomy-Supportive or Controlling Message Framing', *Frontiers in Psychology*, Vol 11. Available: 10.3389/fpsyg.2020.591638.
   - Mata, F. et al. (2021) 'Age and education moderate the relationship between confidence in health and political authorities and intention to adopt COVID-19 health-protective behaviours', International Journal of Sociology and Social Policy. Available: 10.1108/IJSSP-01-2021-0007.
3. *Media coverage:*
   - ABC News Radio (25 June 2020) 'Survey finds most Australians with symptoms of Covid-19 aren't getting tested', *ABC*.

Available: https://www.abc.net.au/radio/newsradio/survey-finds-most-australians-with-symptoms-of/12390796.

- Saeri, A. Et al. (7 April 2020) 'More Australians are worried about a recession and an increasingly selfish society than about coronavirus itself', *The Conversation*. Available: https://theconversation.com/more-australians-are-worried-about-a-recession-and-an-increasingly-selfish-society-than-about-coronavirus-itself-135297.

Economic Impact: Employment and Growth

PROJECT 1: ASSESSING RISK OF EMPLOYMENT VULNERABILITY

Research Lead: **Professor Carl Grodach** [hyperlink: https://www.monash.edu/mada/about-us/people/carl-grodach], Urban Planning and Design, Dept of Architecture, Monash University.

Research Team: Mr. Declan Martin, Urban Planning and Design, Monash University; Dr. Alexa Gower, Department of Architecture, Monash University; Associate Professor Liton Kamruzzaman, Urban Planning and Design, Monash University; Deepti Silwal, Urban Planning and Design, Monash University; and Dalex Truong, independent researcher.

Resources:

1. *Research Project Website:* https://www.monash.edu/mada/research/navigating-economic-uncertainty-in-post-covid-cities
2. Grodach, C. and Martin, D. (25 June 2020) Navigating economic uncertainty in post-COVID cities, *APO*, Working Paper. Available: https://apo.org.au/node/306452
3. Grodach, C. (3 August 2020) 'Why coronavirus will deepen the inequality of our suburbs', *The Conversation*. Available: https://theconversation.com/why-coronavirus-will-deepen-the-inequality-of-our-suburbs-143432
4. Trigs, A. (15 sept 2020) 'What will our economy look like at the next election?', *Canberra Times*. Available: https://www.canberratimes.com.au/story/6923936/what-will-our-economy-look-like-at-the-next-election/?cs=14264
5. Paynter, J., Deery, S., and Argoon, A. (24 June 2020) 'Defence Force called in to help Victoria battle worsening coronavirus situation', *Herald Sun*. Available: https://www.heraldsun.com.au/coronavirus/the-suburbs-most-at-risk-of-covid19-job-impacts/news-story/d45cb5d4f720dd46dd2d142466cb7eb1
6. Grodach, C. (25 June 2020) 'The suburbs most affected by COVID-19 employment vulnerability', Monash University. Available: https://www.monash.edu/news/articles/the-suburbs-most-affected-by-covid-19-employment-vulnerability

PROJECT 2: FLEXIBLE WORKING ARRANGEMENTS DURING THE COVID-19 RESPONSE

Research Lead: Associate Professor Dominique Allen [hyperlink: https://research.monash.edu/en/persons/dominique-allen/publications/], Monash Business School, Monash University.

Research Team: Ms Adriana Orifici, Lecturer, Monash Business School, Monash University.

Resources:

1. Allen, D. and Orifci, A. (2021) 'Home Truths: What did COVID-19 Reveal about Workplace Flexibility?', *Australian Journal of Labour Law*. (forthcoming)
2. Allen, D. and Orifci, A. (30 Nov 2020) ''What working-from-home lessons can be learned to protect fairness and flexibility?', *Monash Lens*. Available: https://lens.monash.edu/2020/11/30/1381807/what-working-from-home-lessons-can-be-learned-to-protect-fairness-and-flexibility
3. Dominique Allen (23 Apil 2020) 'What if flexibility became the new normal post COVID-19?', *Labour Law Down Under*. Available: https://labourlawdownunder.com.au/?p=832

PROJECT 3: FRONTLINE HEALTHCARE WORKERS AND THEIR FAMILIES

Research Lead: **Professor Andrea Reupert** [hyperlink: https://research.monash.edu/en/persons/andrea-reupert], Faculty of Education, Monash University.

Research Team: Professor Leanne Boyd, Chief Nursing/Midwifery Officer, Executive Director Learning and Teaching, Eastern Health; Associate Professor Jade Sheen, Deakin University; Professor Craig Olsson, Deakin University; and Dr Phillip Tchernegovski, Monash University.

Future City: Planning and Urban Renewal

PROJECT 1: USING THE PAST TO INFORM THE FUTURE OF URBAN SPRAWL AND RENEWAL

Research Lead: **Associate Professor Lionel Frost** [hyperlink: https://research.monash.edu/en/persons/lionel-frost], Department of Economics, Monash University.

Research Team: Dr Lee-Anne Khor, Faculty of Art, Design and Architecture, Monash University; Associate Professor Seamus O'Hanlon, School of Philosophical, Historical and International Studies, Faculty of Arts, Monash University.

PROJECT 2: PUBLIC PERCEPTIONS OF BLUE AND GREEN SPACES IN MELBOURNE

Research Lead: **Associate Professor Megan Farrelly** [hyperlink: https://research.monash.edu/en/persons/megan-farrelly] , Human Geography - School of Social Sciences, Monash University.

Research Team: Dr Belinda Hatta, Senior Researcher Melbourne Water, Adjunct Waterway Ecosystem Research Group, University of Melbourne; Dr Stephanie Lavau , Waterway Ecosystem Research Group, University of Melbourne; Dr Peter Bach, EAWAG, ETH Zurich, Honorary Adjunct Research Fellow Monash University.

Social Impacts: Access and Inclusion

PROJECT 1: IMMERSIVE VIRTUAL COURT HEARING PODS

Research Lead: **Associate Professor Jacqui Horan** [hyperlink: https://research.monash.edu/en/persons/jacqui-horan], Faculty of Law, Monash University.

Research Team: Adjunct Professor David Tait, Professor of Justice Research, Western Sydney University.

Resources:

1. Tait, D. and Rossner, M. (8 April 2020) 'Courts are moving to video during coronavirus, but research shows it's hard to get a fair trial remotely,' *The Conversation*. Available: https://theconversation.com/courts-are-moving-to-video-during-coronavirus-but-research-shows-its-hard-to-get-a-fair-trial-remotely-134386
2. Horan, J. (Summer 20/21) 'What will courtroom justice look like in the future?' Victorian Bar News, Issue 168, pp. 39. Available: https://www.vicbar.com.au/sites/default/files/VBN168-Web.pdf
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PROJECT 2: EQUITY IN MENTAL HEALTH SERVICES DURING COVID-19

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PROJECT 3: SCHOOL INNOVATIONS TO SUPPORT ACCESS AND INCLUSION

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Environmental impacts: Lessons for a green recovery

PROJECT 1: URBAN AIR QUALITY AND TEMPERATURE

Research Lead: Emeritus Professor Nigel Tapper [hyperlink: https://scholar.google.com/citations?user=Z1kvCLIAAAAJ&hl=en] School of Earth, Atmosphere and Environment, Monash University.

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PROJECT 2: NET ZERO PRECINCTS: AN INTERDISCIPLINARY APPROACH TO DECARBONIZING CITIES

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Digital Technology: Opportunities for a better future

PROJECT 1: MELBOURNE DIGITAL CITY MODEL

Research Lead: **Professor Carl Grodach** [hyperlink: https://www.monash.edu/mada/about-us/people/carl-grodach], Urban Planning and Design, Dept of Architecture, Monash University.

Research Team: Dr Alexa Gower, MADA, Dept of Architecture, Monash University.

Resources:

1. *Research website:* https://www.monash.edu/mada/research/remote-working-in-sunshine-west
2. *Melbourne Design Week Event:* https://www.eventbrite.com.au/e/132896546147

PROJECT 2: THE MONASH IP OBSERVATORY

Research Lead: **Associate Professor Simon Angus** [hyperlink: https://research.monash.edu/en/persons/simon-angus], Dept. of Economics; and SoDa Laboratories, Monash Business School, Monash University.

Co-founders of the Observatory, Co-Directors: Associate Professor Paul Raschky, Dept. of Economics, SoDa Laboratories, Monash Business School; Dr Klaus Ackermann, Dept. of Econometrics & Business Statistics, and Soda Laboratories, Monash Business School.

Research team: Satya Borgohain, Dev-Ops Engineer, SoDa Laboratories, Monash Business School; Hayley Lock, Research Assistant, SoDa Laboratories, Monash Business School; Cynthia Huang, Research Assistant, SoDa Laboratories, Monash Business School.

Resources:

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