WESTERN SYDNEY
UNIVERSITY

WESTERN SYDNEY UNIVERSITY

Centre for Smart Modern Construction

WESTERN SYDNEY UNIVERSITY

Improving Mental Health of Project Management Practitioners in Architecture, Engineering and Construction Sectors during the COVID-19 Pandemic

A Presentation at PGCS 2022

Assoc Prof Xiaohua Jin

PGCS PROJECT AND PROGRAM MANAGEMENT SYMPOSIUM
Better Management Better Projects

Contents

- Research Team
- Research Background
- Research Problem and Questions
- Key Literature and Theoretical Framework
- Research Design
- Results and Findings
- Acknowledgement

WESTERN SYDNEY UNIVERSITY

Research Team

Assoc. Prof. Xiaohua (Sean) Jin
Director of PM PG Programs
Director of Constr Law PG prog
School of Engineering, Design and Built Environment
Western Sydney University

Dr. Robert Osei-Kyei
Senior Lecturer, Academic Program Advisor in CM
School of Engineering, Design and Built Environment
Western Sydney University

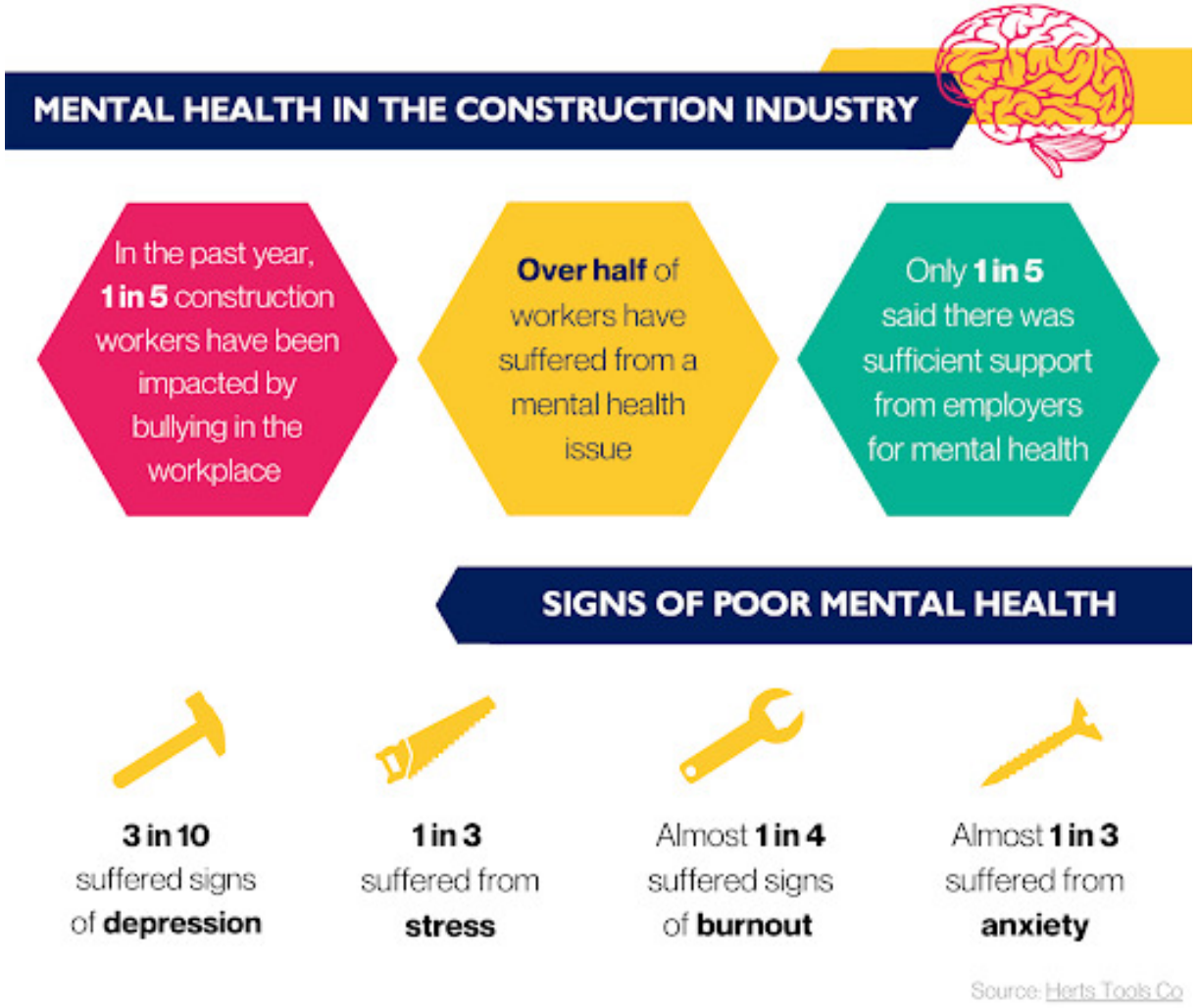
Prof. Srinath Perera
Director of Centre for Smart Modern Construction (c4SMC)
Western Sydney University

Mr James Bawtree
CEO, PMLogic
Non-Executive Director of AIPM

Mr Bashir Tijani
Research Associate
Western Sydney University

Poor mental health in AEC

- The **state of well-being** in which an individual realizes his or her own potential, can cope with normal stress of life, can work productively and fruitfully.
- significant problem with enormous social and economic effects
- Australian businesses were **losing $10.9 billion annually** for neglecting to address mental health in the workplace.
- Why AEC?



PM Practitioners during COVID 19

- Many PM-practitioners in AEC suffered from poor mental health due to **complexity and dynamism** of project management roles.
- **Psychosocial risks**: aspects of work organisation, design and management that have capacity to harm on health.
- COVID-19 : **new psychosocial risks** causing poor mental health among PM-practitioners in AEC sectors

Urgent need for organizations to intervene

- **Organizational Intervention**: organisational practices developed to reduce poor mental health
- A return of **$2.30 for every $1** invested in initiatives that foster better mental health in the workplace.
- In the construction industry, the return is even higher – and average of **$2.50 for every $1** invested.
- How? Limited studies

Research Problem and Questions

WESTERN SYDNEY UNIVERSITY

Research Problem

How to improve PM practitioners' mental health in the Australian AEC sectors during COVID-19

Research Questions

RQ1: What are the COVID-19 related psychosocial risk factors causing poor mental health among PM-practitioners in AEC projects?

RQ2: What are the COVID-19 related organizational preventions for improving mental health among PM-practitioners in AEC projects?

RQ3: How do COVID-19 related psychosocial risk factors and COVID-19 related organizational preventions impact mental health in combination?

Research Aim and Objectives

WESTERN SYDNEY UNIVERSITY

Research Aim

Improve mental health status of PM practitioners in AEC sectors during COVID-19.

Research Objectives

ROBj1: To explore COVID-19 related psychosocial risk factors causing poor mental health of PM-practitioners in AEC projects.

ROBj2: To evaluate organisational interventions for mental health of PM-practitioners in AEC projects.

ROBj3: To establish psychosocial management framework for mental health of PMPs in AEC projects.

Key Literature – COVID-19 Psychosocial Risks

No	COVID-19 Psychosocial Risks	References
1	Unsafe project environment	(Ho et al. 2020; Xiang et al. 2020)
2	Challenges due to working from home.	(Alsharef et al. 2021; Ho et al. 2020; Xiang et al. 2020)
3	Overwhelmed by managing different projects.	(Kniffin et al. 2021; Ramarajan and Reid 2013; Sonta 2020)
4	Lack of leadership knowledge and skills.	(Dirani et al. 2020; Stiles et al. 2021)
5	Lack of access to additional tools and equipment.	(Alsharef et al. 2021; CDCgov 2020)
6	Disruption to supply chain	(Alsharef et al. 2021; Raoufi and Fayek 2021; Sonta 2020)
7	Social isolation.	(Brooks et al. 2018; Tavares 2017; World Health Organization and International Labour Organisation Office 2021)
8	Difficulty in balancing personal and work needs	(Hamouche 2020; Pirzadeh and Lingard 2021; van der Molen et al. 2018)
9	Lack of training to learn various communication tools	(CDCgov 2020; van der Molen et al. 2018)
10	Difficulty in adjusting to new work schedules	(Pamidimukkala and Kermanshachi 2021)

Key Literature – COVID-19 Psychosocial Risks

No	COVID-19 Psychosocial Risks	References
11	Fear to catch corona virus.	(International Labour Organisation Office 2020)
12	Difficulty in collaborating with project team members	(Koch and Schermuly 2021)
13	Difficulty in managing project stakeholders	(Koch and Schermuly 2021; Sonta 2020)
14	Difficulty in managing project resources.	(Koch and Schermuly 2021; Sonta 2020)
15	Fears of losing job	(Brooks et al. 2018; Tavares 2017; World Health Organization and International Labour Organisation Office 2021)
16	Difficulty in managing project time	(Koch and Schermuly 2021; Sonta 2020)
17	Difficulty in managing project cost	(Koch and Schermuly 2021; Sonta 2020)
18	Difficulty in managing project contracts	(Koch and Schermuly 2021; Sonta 2020)
19	Change in project delivery methodology	(Kniffin et al. 2021; Ramarajan and Reid 2013; Sonta 2020)

WESTERN SYDNEY UNIVERSITY

Key Literature – Organisational interventions

No	Organisational interventions	References
1	Providing support for working remotely	(Hamouche 2020; Kniffin et al. 2021; Pamidimukkala and Kermanshachi 2021)
2	Providing flexible work schedules.	(Alsharef et al. 2021; Pamidimukkala and Kermanshachi 2021; World Health Organization and International Labour Organisation Office 2021)
3	Providing training on how to detect and manage stress.	(Deloite 2020)
4	Providing training on how to enhance use of technologies for project delivery	(Firm 2021; Raoufi and Fayek 2021)
5	Establishing a system to maintain effective communication.	(Safapour et al. 2020)
6	Providing routine COVID-19 screening.	(McKinsey & Company 2020; Stiles et al. 2021)
7	Regularly disinfecting the project workplace.	(McKinsey & Company 2020; World Health Organization and International Labour Organisation Office 2021)
8	Enforcing the use of personal protective equipment.	(World Health Organization and International Labour Organisation Office 2021)
9	Providing additional childcare supports.	(McKinsey & Company 2020)
10	Providing training on how to balance work and family.	(Alsharef et al. 2021; Kniffin et al. 2021)

WESTERN SYDNEY UNIVERSITY

Key Literature – Organisational interventions

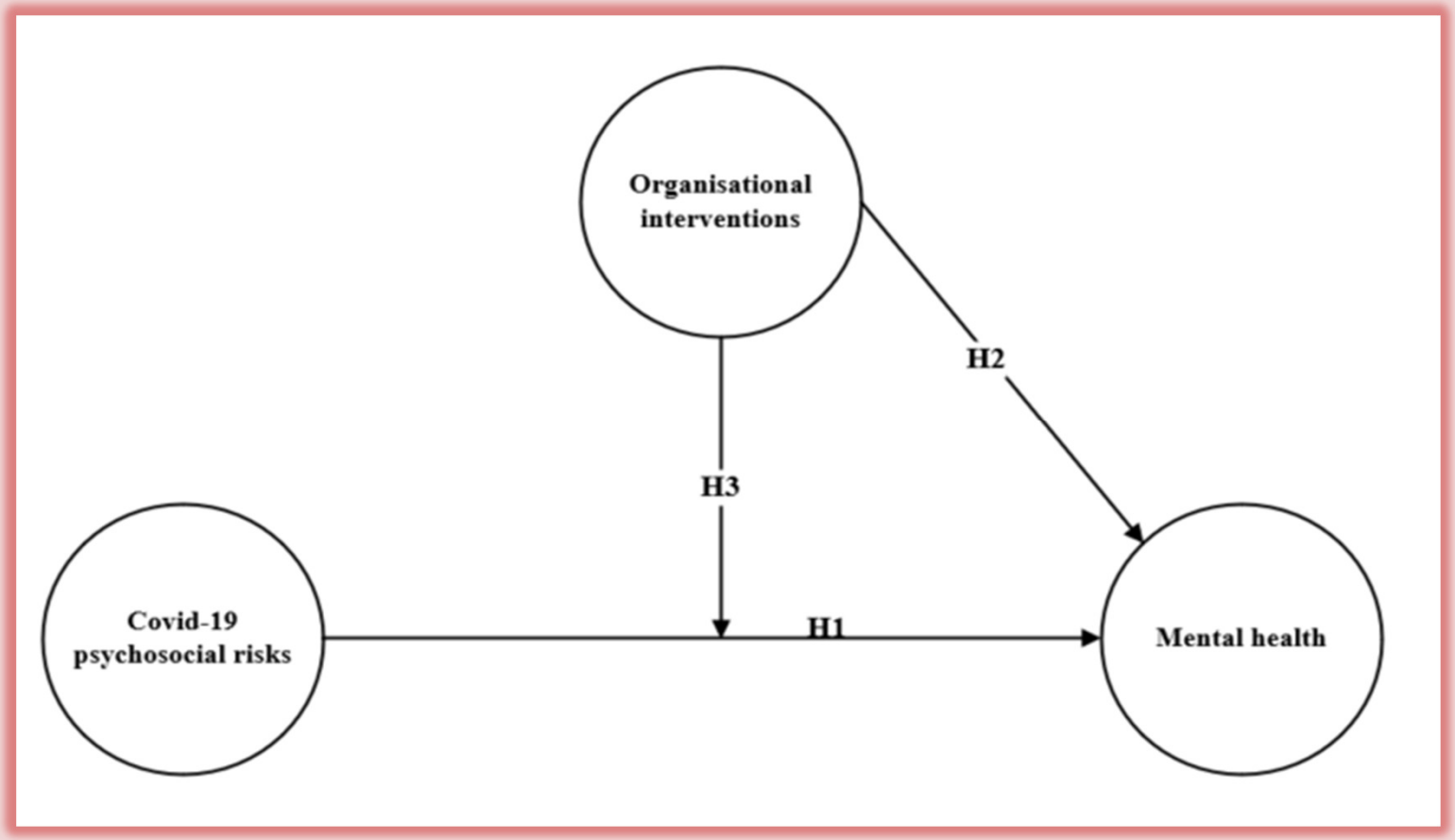
No	Organisational interventions	References
11	Providing unlimited access to self-care apps.	(Deloite 2020; McKinsey & Company 2020)
12	Hiring additional PM practitioners to distribute project workload	(Deloite 2020)
13	Offering specific pandemic-related leaves.	(McKinsey & Company 2020)
14	Providing Employee Assistance Program.	(McKinsey & Company 2020)
15	Providing additional technical facilities for virtual and remote work	(Kniffin et al. 2021)
16	Encouraging the sharing of ideas and suggestions to improve project delivery.	(Koch and Schermuly 2021)
17	Encouraging the adoption of non-traditional project delivery methodologies.	(Koch and Schermuly 2021)
18	Taking additional measures to manage the supply chain of materials.	(Sharma et al. 2016; Stephany et al. 2020)
19	Managing and maintaining collaboration between PM practitioners and stakeholders	(Koch and Schermuly 2021)
20	Providing additional PM training.	(Pamidimukkala and Kermanshachi 2021)

Job Demand-Resources (JD-R) Model/Theory

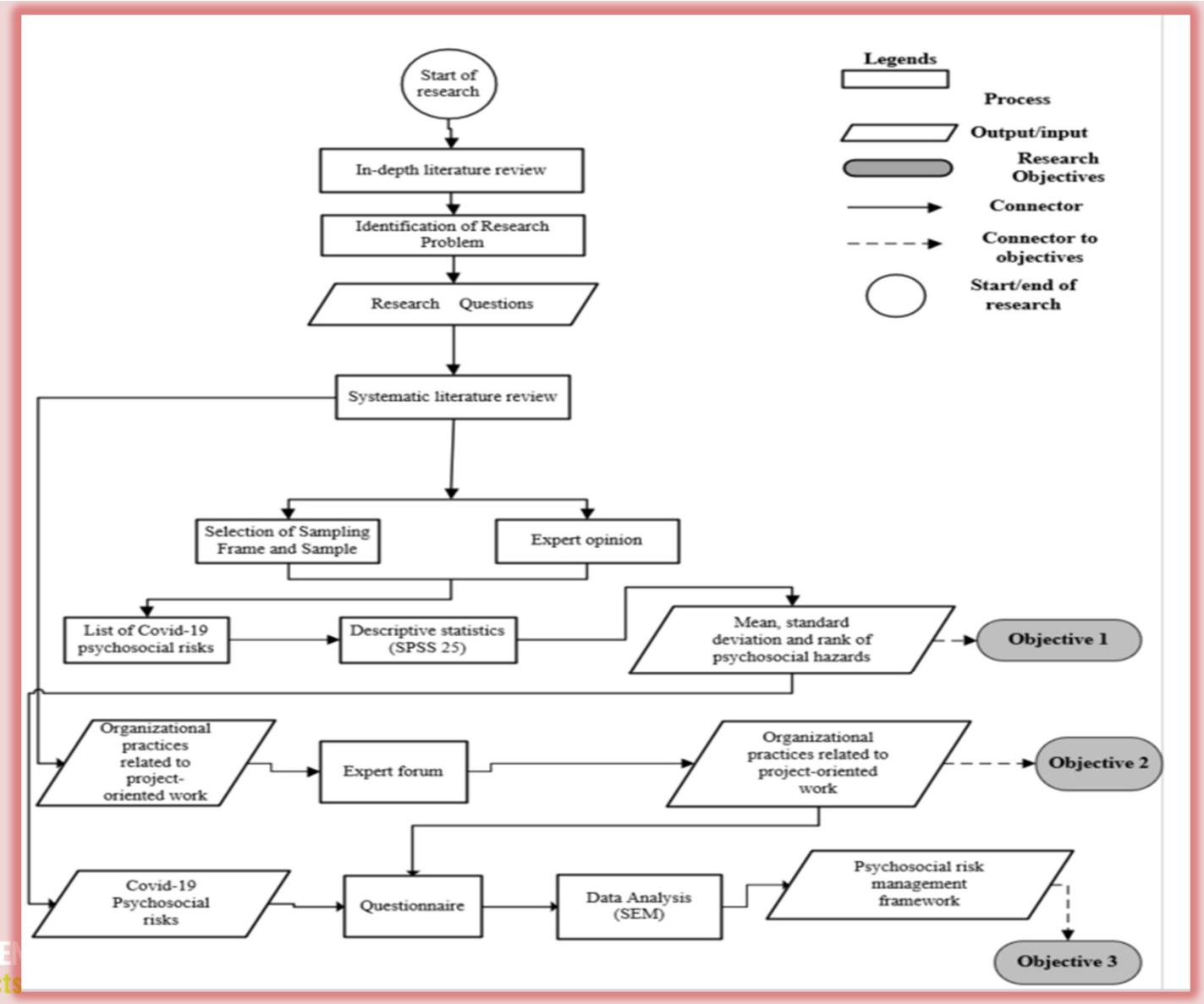
- One of the most prominent **occupational stress models /**theories for occupational health and safety.
  - ✓ **Job strain** is a response to **imbalance** between **job demands** on the individual and the **job resources** he or she has to deal with those demands.
  - ✓ job resources may **buffer** the effect of job demands on job strain
  - ✓ lack of job resources to balance job demands is the **predictors** of poor mental health

- Drawing on the JDR theory, **organisational interventions** can balance the effect of **COVID-19 psychosocial risks** on **work stress**

Theoretical framework



Research Design



PGCS PROJECT AND PROGRAM MANAGEMENT
Better Management Better Projects

Research Design - Perceived Stress Scale (PSS)

- Absence of work stress considered as good mental health (Leung. 2007; Love, 2010)

- Prof Sheldon Cohen

Professor of Psychology at Carnegie Mellon University.

Director of the Laboratory for the Study of Stress, Immunity and Disease

- PSS

The most widely used psychological instrument for measuring the perception of stress. (e.g. Remor, 2006; Smith et al. 2014; Cohen,1994 and Roberti et al. 2011)

Expert Forum – Expert Profiles

	Education	Sector	PM-oriented works experience	Number of projects	Professional membership
EXP 1	Master's degree	Engineering	16 years above	21 projects above	PMI
EXP 2	Master's degree	Construction	6 years	16 projects	AIPM
EXP 3	Master's degree	Construction	16 years above	10 projects	None
EXP 4	Doctoral degree	Construction	16 years above	20 projects	None
EXP 5	Diploma	Construction	10 years	11 projects	None
EXP 6	Master's degree	Construction	11 years	6 projects	AIPM and PMI
EXP 7	Master's degree	Engineering	16 years above	21 projects above	None
EXP 8	Master's degree	Architecture and Construction	16 years above	21 projects above	AIPM
EXP 9	Master's degree	Engineering	16 years above	21 projects or above	AIPM

Expert Forum – Findings

COVID-19 related Psychosocial risks	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
1. Safe project environment during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Challenges due to working from home during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. Being overwhelmed by managing different projects during COVID-19 period.	✓	✓	X	X	✓	✓	✓	✓	X
4. Employers' leadership knowledge and skills to manage PM practitioners during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
5. Accessibility to additional tools and equipment to manage project(s) during COVID-19.	✓	✓	✓	X	✓	✓	✓	✓	✓
6. Disruption to project supply chain of materials during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
7. Social isolation when working from home during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
8. Ability to balance personal, family-related and work-related needs while working from home during COVID-19 period.	X	✓	✓	X	✓	✓	✓	✓	✓
9.Lack of specific training on various communication tools during COVID-19 period.	✓	✓	X	X	✓	✓	✓	✓	✓
10. Need to adjust oneself to new work schedules due to Covid-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
11. Fears to catch corona virus in the project environment during COVID-19 period.	X	✓	✓	X	✓	✓	✓	✓	✓
12. Trouble in collaborating with project team members during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
13. Challenges in managing project stakeholders during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓

Expert Forum – Findings

COVID-19 related Psychosocial risks	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
14. Trouble in managing project resources due to working from home during COVID-19 period.	X	✓	X	✓	✓	✓	✓	✓	✓
15. Fears of losing job due to the COVID-19 pandemic.	✓	✓	✓	X	X	X	✓	✓	✓
16. Significant project delay due to COVID-19 pandemic.	✓	✓	✓	✓	X	✓	✓	✓	✓
17. Costs associated with changing delivery methodologies to manage COVID-19 across projects (Provided by Expert 2)	X	✓							
18. Trouble in managing project contracts due to variations caused by the pandemic.	✓	✓	✓	✓	✓	✓	✓	✓	✓
19. Changes in delivery methodologies caused by managing COVID-19 on projects (Provided by Expert 2		✓							

✓ = Applicable , X = Not applicable

Expert Forum – Findings

COVID-19 related Organisational interventions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
1. Offering support to PM practitioners who worked remotely during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Providing flexible work schedules to promote social distancing during COVID-19 period	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. Providing training on how to detect and manage stress during COVID-19 period.	✓	✓	✓	✓	✓	✓	✓	✓	✓
4. Providing training on how to enhance the use of technologies for project delivery during COVID-19 period	✓	✓	X	✓	✓	✓	✓	✓	✓
5. Establishing a system to maintain effective communication between PM practitioners, project teams, leadership and stakeholders during COVID-19 period.	✓	✓	X	✓	✓	✓	✓	✓	✓
6. Providing routine COVID-19 screening to PM practitioners	✓	✓	✓	✓	✓	✓	✓	✓	X
7. Regularly disinfecting the project workplace environment during COVID-19 period.	✓	✓	X	✓	✓	✓	✓	✓	X
8. Enforcing the use of personal protective equipment in the project environment during COVID-19 period.	✓	✓	✓	✓	X	✓	✓	✓	✓
9. Providing additional childcare supports for PM practitioners during COVID-19 period.	X	✓	✓	X	✓	✓	✓	✓	✓
10. Providing training on how to manage and balance work and family during COVID-19 period.	X	✓	✓	✓	✓	✓	✓	X	✓
11. Providing unlimited access to self-care apps for mental health and psychological support (e.g Digital	✓	✓	✓	✓	✓	✓	✓	✓	✓

Expert Forum – Findings

COVID-19 related Organisational interventions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9
mental health app and or therapy) to PM practitioners during COVID-19 period.									
12. Hiring additional PM practitioners to distribute project workload during COVID-19 period.	✓	✓	X	✓	X	✓	✓	✓	✓
13. Offering specific pandemic-related leaves (e.g. vaccination leave, leave for self-isolation) for PM practitioners COVID-19 during the project delivery.	✓	✓	✓	✓	✓	✓	✓	✓	✓
14. Providing Employee Assistance Program (EAP) to help alleviate the distress associated with work-family conflict during COVID-19 period.	✓	✓	X	✓	✓	✓	✓	✓	✓
15. Providing additional technical facilities for virtual and remote work during COVID-19 period.	✓	✓	X	X	X	✓	✓	✓	✓
16. Encouraging PM practitioners to share ideas and suggestions to improve project delivery during COVID-19 period.	✓	✓	✓	✓	X	✓	✓	✓	✓
17. Encouraging the adoption of agile PM methodologies to promote autonomy, social interactions and breaking down of project activities in various phase during COVID-19 period.	✓	✓	X	✓	✓	X	✓	X	X
18. Taking additional measures to manage the supply chain of materials for project delivery.	✓	✓	✓	✓	X	X	✓	X	✓
19. Managing and maintaining collaboration between PM practitioners and stakeholders during COVID-19 period.	✓	✓	X	✓	X	✓	✓	X	✓
20. Providing additional PM training (e.g Quality management, Budget management and Time management) during Covid-19.	✓	✓	X	✓	X	✓	✓	X	X

✓ ⊨ Applicable , X = Not applicable

Questionnaire Survey

4-Section Questionnaire	Respondents' demographic, COVID-19 psychosocial risk, organisational interventions and perceived stress.
Convenience Sampling	58 valid responses were received from PM-practitioners in AEC sectors
4 Months	Data collection from April to July 2022

The Australian Institute of Project Management (AIPM)

WESTERN SYDNEY UNIVERSITY

International Centre for Complex Project Management (ICCPM)

INTERNATIONAL CENTRE FOR COMPLEX PROJECT MANAGEMENT

ICCPM Newsletter - April 2022

Improving the Mental Health of Project Management Practitioners (PMPs)
in Architecture, Engineering and Construction (AEC) Projects during COVID-19 Pandemic

Research Survey

Researchers from Western Sydney University need your input to improve the mental health of project management practitioners. Objectives include exploring psychosocial risk factors, evaluating management strategies and establishing a psychosocial management framework. Click below to learn more about this important research and participate in the short survey. As featured on the ICCPM Research Support Program.

LEARN MORE

ONLINE SURVEY

The Chartered Institute of Building (CIOB)

Upcoming CIOB events for you

View in browser | Login | Contact us

CIOB

CIOB Events: What's Coming Up

Every year we organise hundreds of CPD and networking events, award ceremonies and competitions across the globe. Here's the latest upcoming events you might be interested in - alternatively you can view all upcoming events on our dedicated events site linked below.

View all upcoming events

SURVEY

Western Sydney University Survey

Mental Health of Project Management (PM) Practitioners in Architecture, Engineering and Construction (AEC) Sector during COVID-19 Pandemic

If your work is PM-oriented in the AEC sector, you are cordially invited to participate in this online questionnaire survey by reflecting on your own PM-oriented work experience during the CoVID-19 pandemic.

This survey is anonymous and will take you about 15 minutes.

Find out more →

WESTERN SYDNEY UNIVERSITY

PGCS
Mosaicproject's Blog

Australian Research Project

Posted on May 9, 2022 by Pat Weaver | Leave a comment

A research project funded by the PGCS needs your input: "***Mental Health of Project Management (PM) Practitioners in Architecture, Engineering and Construction (AEC) Sector during COVID-19 Pandemic***"

If your work is PM-oriented in the Architecture, Engineering and Construction (AEC) sector, you are cordially invited to participate in this online questionnaire survey by reflecting on your own PM-oriented work experience during the CoVID-19 pandemic. This survey is anonymous and will take you about 15 minutes.

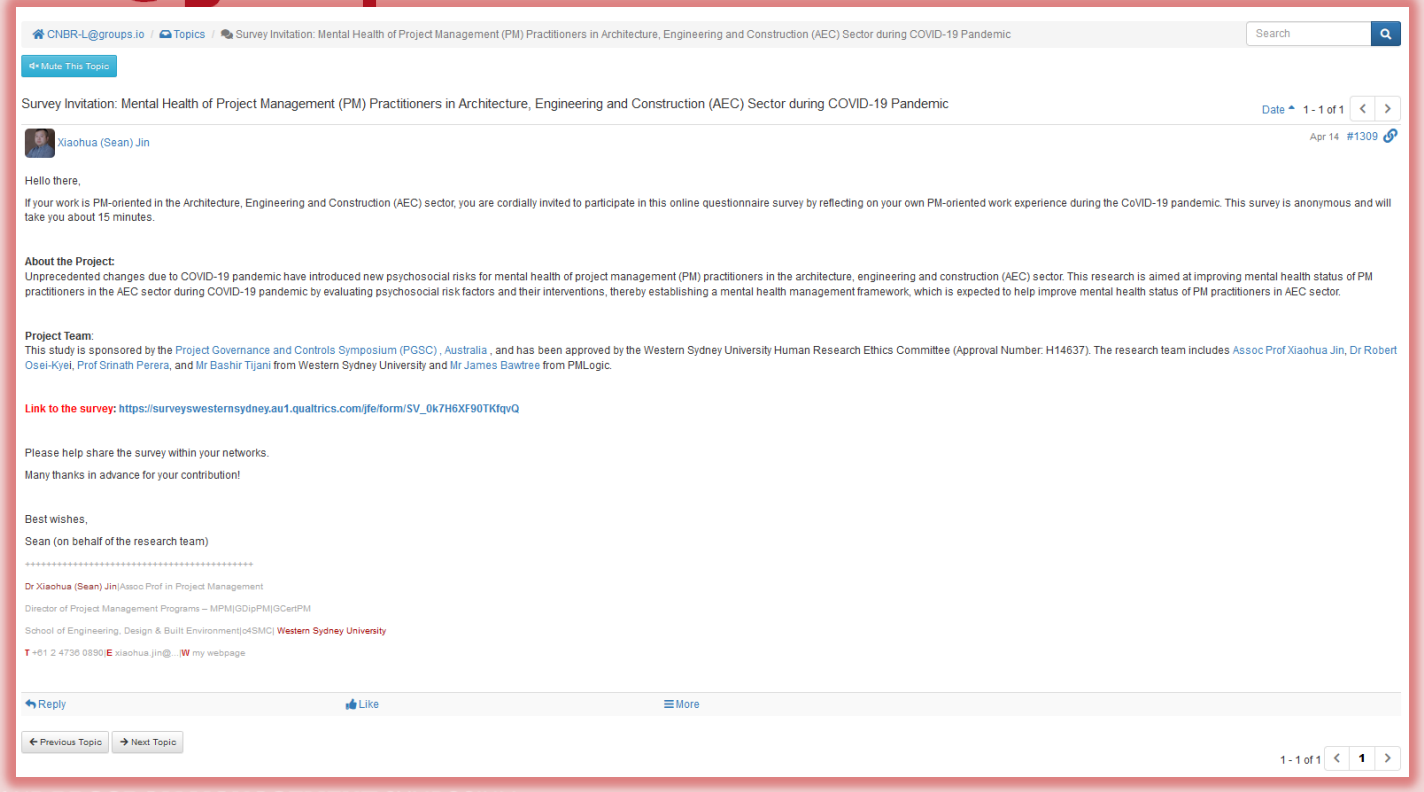
About the Project:
Unprecedented changes due to COVID-19 pandemic have introduced new psychosocial risks for mental health of project management (PM) practitioners in the architecture, engineering and construction (AEC) sector. This research is aimed at improving mental health status of PM practitioners in the AEC sector during COVID-19 pandemic by evaluating psychosocial risk factors and their interventions, thereby establishing a mental health management framework, which is expected to help improve mental health status of PM practitioners in AEC sector.

Project Team:
This study is sponsored by the Project Governance and Controls Symposium (PGSC) , Australia , and has been approved by the Western Sydney University Human Research Ethics Committee (Approval Number: H14637). The research team includes Assoc Prof Xiaohua Jin, Dr Robert Osei-Kyei, Prof Srinath Perera, and Mr Bashir Tijani from Western Sydney University and Mr James Bawtree from PMLogic.

Link to the survey: https://surveyswesternsydney.au1.qualtrics.com /jfe/form/SV_ok7H6XF90TKfqvQ

WESTERN SYDNEY UNIVERSITY

Co-operative Network of Building Researchers CNBR-L@groups.io



CNBR-L@groups.io / Topics / Survey Invitation: Mental Health of Project Management (PM) Practitioners in Architecture, Engineering and Construction (AEC) Sector during COVID-19 Pandemic

Search

Mute This Topic

Survey Invitation: Mental Health of Project Management (PM) Practitioners in Architecture, Engineering and Construction (AEC) Sector during COVID-19 Pandemic

Date 1 - 1 of 1

Xiaohua (Sean) Jin

Apr 14 #1309

Hello there,

If your work is PM-oriented in the Architecture, Engineering and Construction (AEC) sector, you are cordially invited to participate in this online questionnaire survey by reflecting on your own PM-oriented work experience during the CoVID-19 pandemic. This survey is anonymous and will take you about 15 minutes.

About the Project:
Unprecedented changes due to COVID-19 pandemic have introduced new psychosocial risks for mental health of project management (PM) practitioners in the architecture, engineering and construction (AEC) sector. This research is aimed at improving mental health status of PM practitioners in the AEC sector during COVID-19 pandemic by evaluating psychosocial risk factors and their interventions, thereby establishing a mental health management framework, which is expected to help improve mental health status of PM practitioners in AEC sector.

Project Team:
This study is sponsored by the Project Governance and Controls Symposium (PGSC) , Australia , and has been approved by the Western Sydney University Human Research Ethics Committee (Approval Number: H14637). The research team includes Assoc Prof Xiaohua Jin, Dr Robert Osei-Kyei, Prof Srinath Perera, and Mr Bashir Tijani from Western Sydney University and Mr James Bawtree from PMLogic.

Link to the survey: https://surveyswesternsydney.au1.qualtrics.com/jfe/form/SV_0k7H6XF90TKfqvQ

Please help share the survey within your networks.

Many thanks in advance for your contribution!

Best wishes,

Sean (on behalf of the research team)

++

Dr Xiaohua (Sean) Jin|Assoc Prof in Project Management

Director of Project Management Programs – MPM|GDipPM|GCertPM

School of Engineering, Design & Built Environment|o4SMC| Western Sydney University

T +61 2 4736 0890|E xiaohua.jin@...|W my webpage

Reply Like More

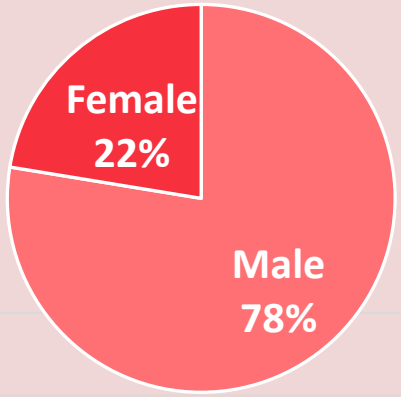
Previous Topic Next Topic

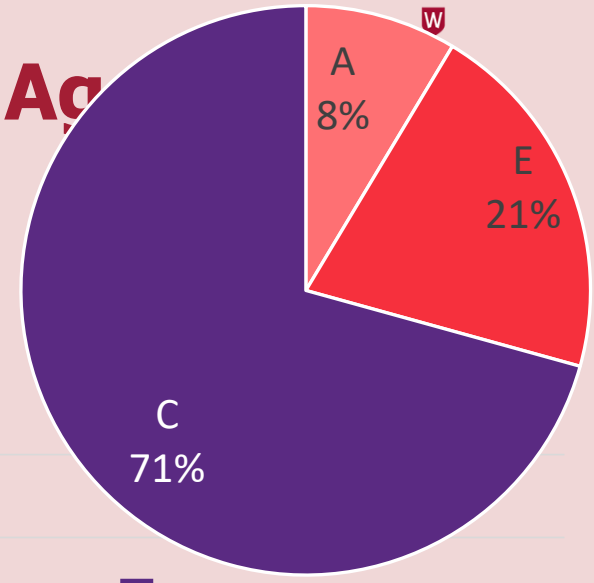
1 - 1 of 1 1

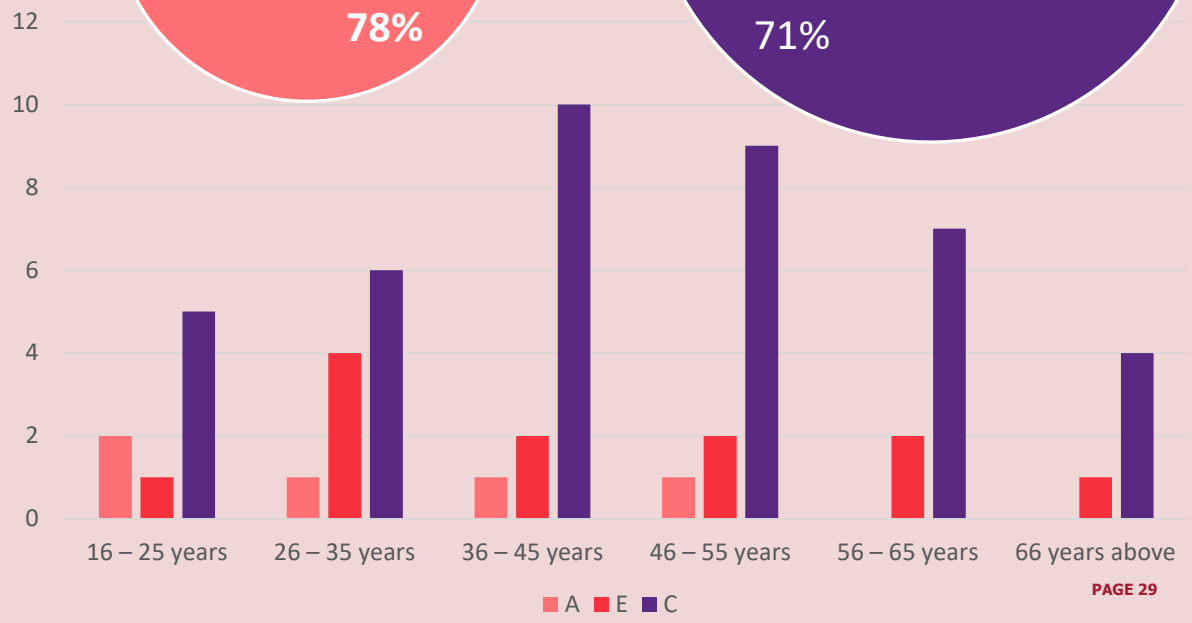
Profile of Respondents – Gender & Ag

Gender	A	E	C	Total
Male	4	11	30	45
Female	1	1	11	13
Total	**5**	**12**	**41**	**58**

Age	A	E	C	Total
16 – 25 years	2	1	5	8
26 – 35 years	1	4	6	11
36 – 45 years	1	2	10	13
46 – 55 years	1	2	9	12
56 – 65 years	0	2	7	9
66 years above	0	1	4	5
Total	**5**	**12**	**41**	**58**

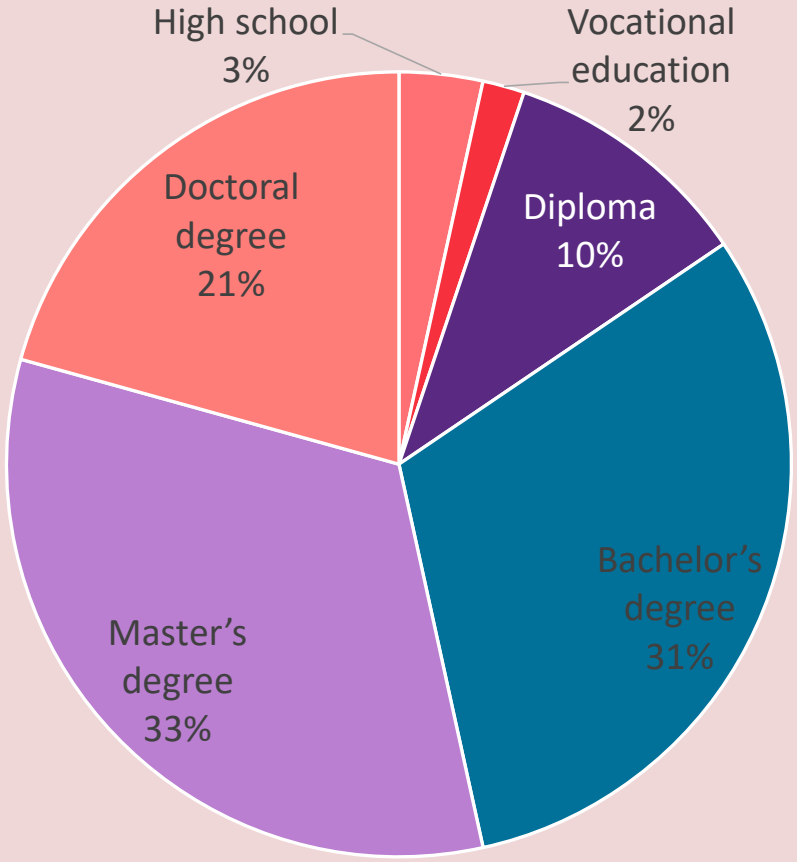




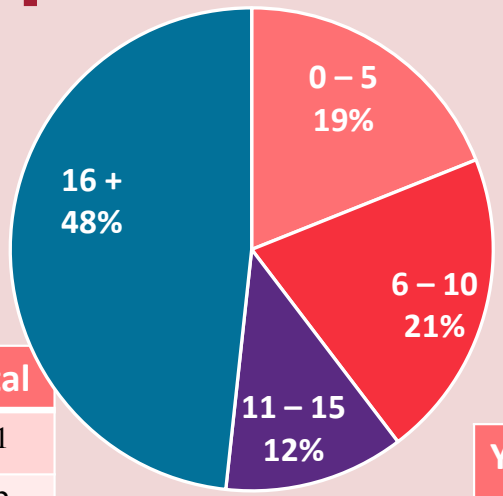


Profile of Respondents - Educational qualification

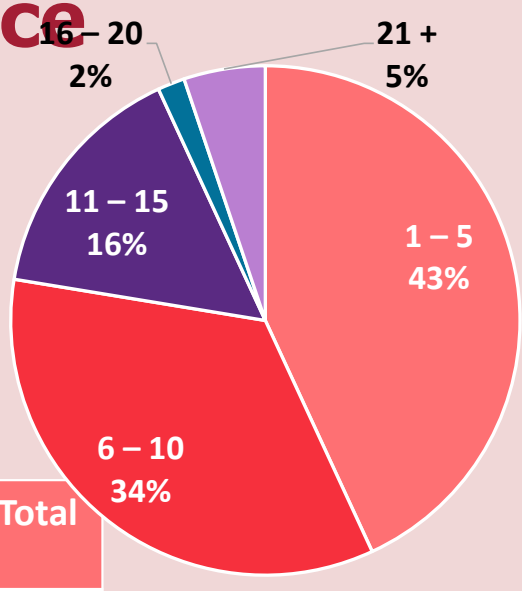
Education Qualification	A	E	C	Total
High school	1	1	0	2
Vocational education	0	0	1	1
Diploma	1	1	4	6
Bachelor's degree	2	4	12	18
Master's degree	1	4	14	19
Doctoral degree	0	2	10	12
Total	**5**	**12**	**41**	**58**



Profile of Respondents – PM Experience



Years in PM	A	E	C	Total
0 – 5 years	3	1	7	11
6 – 10 years	1	4	7	12
11 – 15 years	0	1	6	7
16 years or above	1	6	21	28
Total	**5**	**12**	**41**	**58**

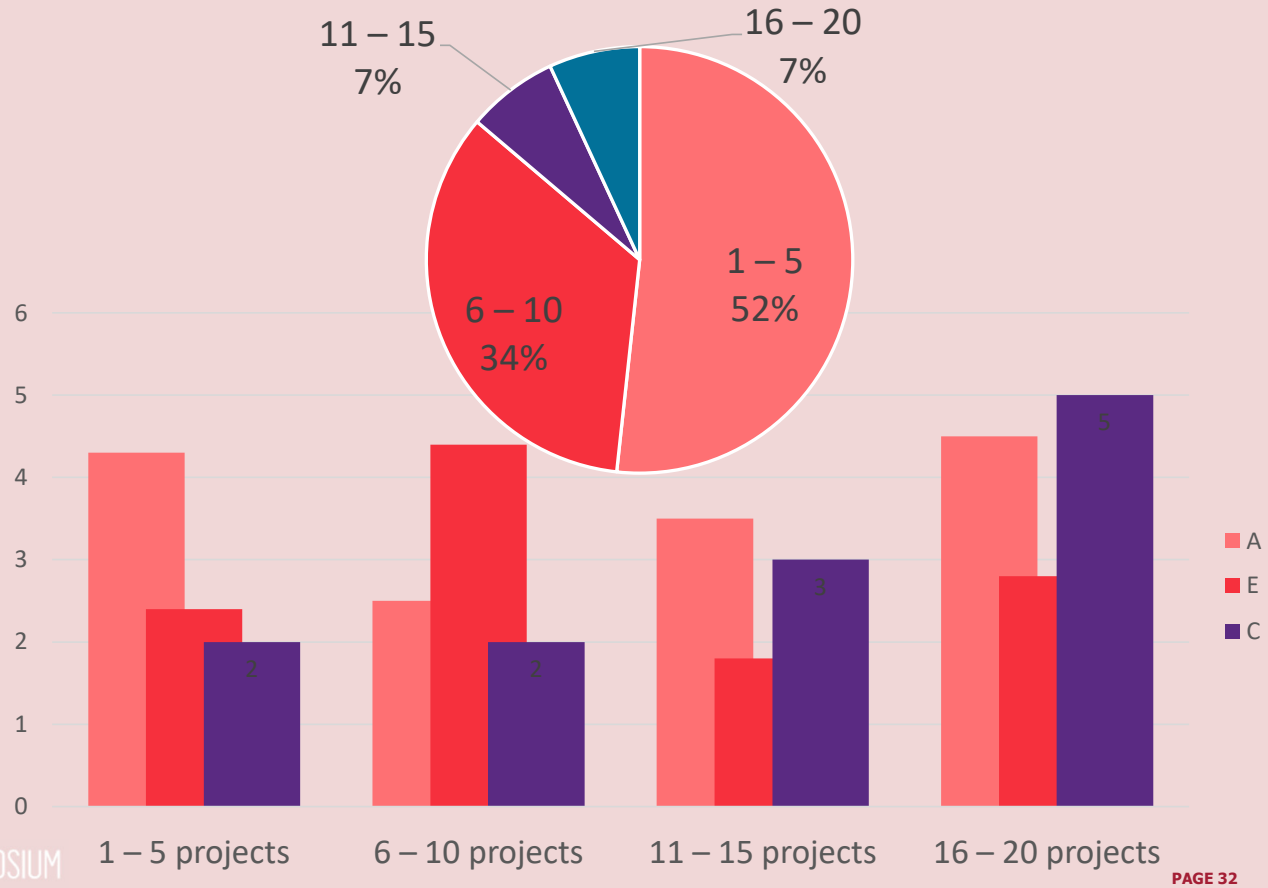


Years with employer	A	E	C	Total
1 – 5 years	4	4	17	25
6 – 10 years	1	7	12	20
11 – 15 years	0	1	8	9
16 – 20 years	0	0	1	1
21 years or above	0	0	3	3
Total	**5**	**12**	**41**	**58**

WESTERN SYDNEY UNIVERSITY

Profile of Respondents – workload during Covid

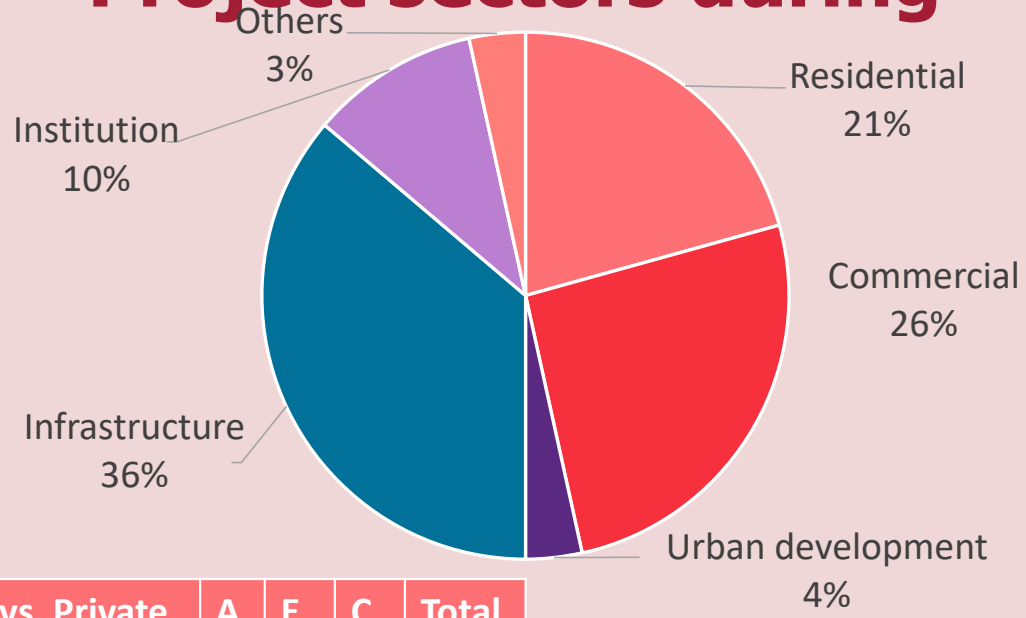
# of Projects	A	E	C	Total
1 – 5 projects	2	5	23	30
6 – 10 projects	2	5	13	20
11 – 15 projects	0	1	3	4
16 – 20 projects	1	1	2	4
Total	**5**	**12**	**41**	**58**

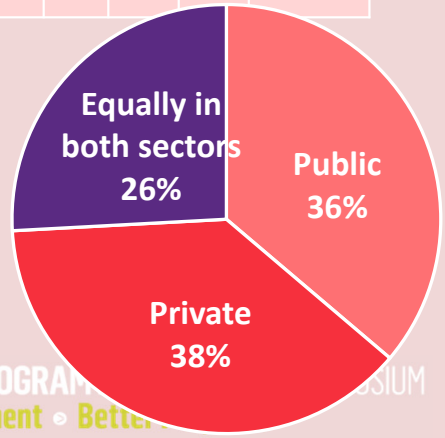


WESTERN SYDNEY UNIVERSITY

Profile of Respondents – Project sectors during

Sectors	A	E	C	Total
Residential building	2	1	9	12
Commercial building	3	3	9	15
Urban development	0	1	1	2
Infrastructure	0	6	15	21
Institution	0	1	5	6
Others	0	0	2	2
Total	**5**	**12**	**41**	**58**



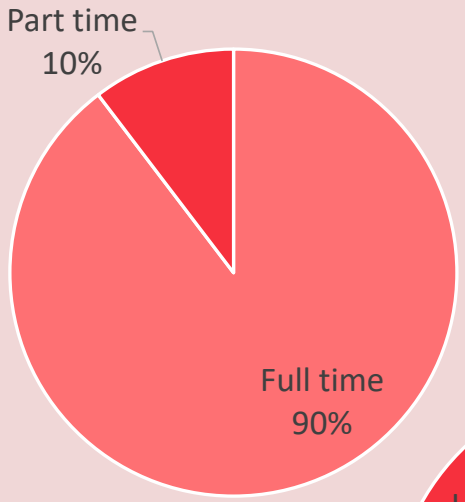


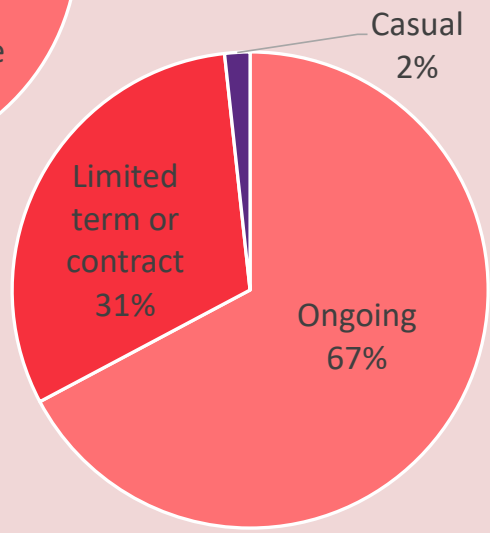
Public vs. Private	A	E	C	Total
Public	2	2	17	21
Private	1	6	15	22
Equally in both sectors	2	4	9	15
Total	**5**	**12**	**41**	**58**

Profile of Respondents - Employment during Covid

Employment status	A	E	C	Total
Full time	5	9	38	52
Part time	0	3	3	6
Total	**5**	**12**	**41**	**58**

Employment Basis	A	E	C	Total
Ongoing	4	9	26	39
Limited term or contract	1	2	15	18
Casual	0	1	0	1
Total	**5**	**12**	**41**	**58**

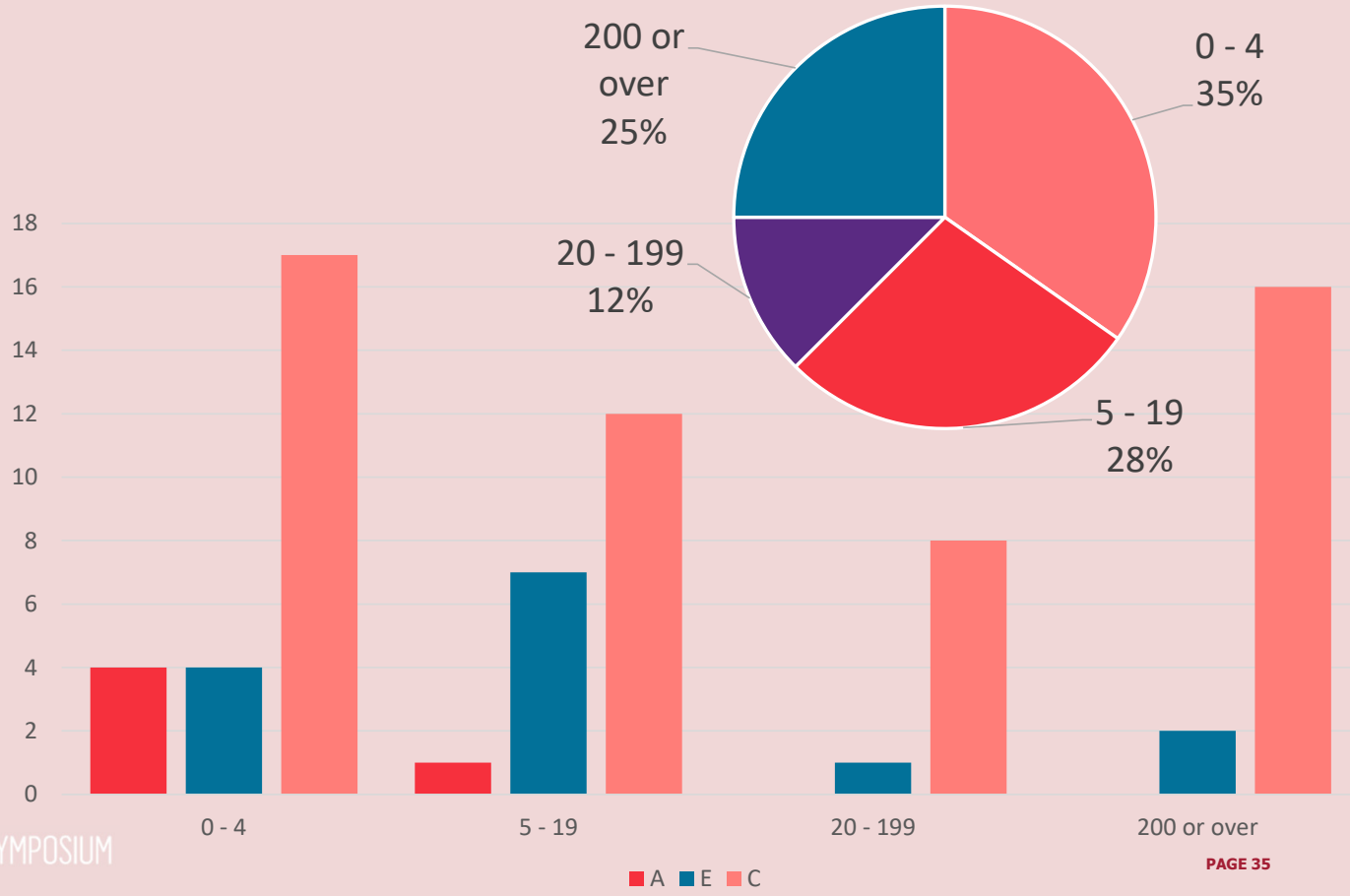




WESTERN SYDNEY UNIVERSITY

Profile of Respondents - Size of Employers

Number of people employed	A	E	C	Total
0 - 4	4	4	17	25
5 - 19	1	7	12	20
20 - 199	0	1	8	9
200 or over	0	2	16	18
Total	**5**	**12**	**41**	**58**



How stressful do we feel in PM-oriented work during the Pandemic?

CODE	Stress Indicators	Total		Architecture		Engineering		Construction	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
STRE 1	How often have you been upset	3.83	1.523	3.20	1.095	3.88	1.691	3.88	1.691
STRE 2	How often have you felt that you were unable to control the important things	3.67	1.616	3.20	1.095	4.00	1.044	3.63	1.799
STRE 3	How often have you felt nervous and "stressed"	3.88	1.676	3.60	1.517	3.75	1.865	3.95	1.673
STRE 4	How often have you felt confident about your ability to handle the problems.	4.55	1.465	4.60	0.548	4.33	1.557	4.61	1.531
STRE 5	How often have you felt that things in your PM-oriented work were going your way.	4.22	1.285	4.00	1.225	4.17	0.835	4.27	1.415
STRE 6	How often have you found that you could not cope with all the things.	3.43	1.666	3.20	1.095	3.46	1.872	3.46	1.872
STRE 7	How often have you been able to control irritations.	4.29	1.338	4.60	0.548	3.92	0.669	4.37	1.529
STRE 8	How often have you felt that you were on top of things.	4.53	1.570	4.60	0.548	4.08	0.793	4.66	1.797
STRE 9	How often have you been angered because of things.	3.76	1.559	3.40	1.342	4.00	0.739	3.73	1.761
STRE 10	How often have you felt difficulties in your PM-oriented work.	3.47	1.592	2.80	1.095	4.00	1.477	3.39	1.656

Challenges faced by PM professionals during the Pandemic

WESTERN SYDNEY UNIVERSITY

CODE	Psychosocial Risks	Total		Architecture		Engineering		Construction	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
CORISK 1	Unsafe project environment ^	2.59	1.271	2.80	1.304	2.67	1.303	2.59	1.271
CORISK 2	Challenges due to working from home.	2.24	1.014	2.80	1.304	2.50	1.000	2.54	1.286
CORISK 3	Overwhelmed by managing different projects.	2.74	1.208	3.00	1.225	2.08	0.669	2.90	1.281
CORISK 4	Lack of leadership knowledge and skills.	3.24	1.129	3.20	0.837	2.92	1.084	3.34	1.175
CORISK 5	Lack of access to additional tools and equipment. ^	2.59	1.027	2.00	0.707	2.42	0.669	2.71	1.123
CORISK 6	Disruption to supply chain	1.91	1.048	2.20	1.789	2.08	0.996	1.83	0.972
CORISK 7	Social isolation.	2.62	1.073	3.40	1.140	2.67	0.778	2.51	1.121
CORISK 8	Difficulty in balancing personal and work needs ^	3.07	1.226	3.20	0.447	3.08	1.165	3.05	1.332
CORISK 9	Lack of training to learn various communication tools	2.76	1.081	3.20	1.095	3.08	1.165	2.64	1.226
CORISK 10	Difficulty in adjusting to new work schedules ^	2.69	1.143	2.40	0.548	2.83	1.115	2.68	1.213

Challenges faced by PM professionals during the Pandemic

WESTERN SYDNEY UNIVERSITY

CODE	Psychosocial Risks	Total		Architecture		Engineering		Construction	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
CORISK 11	Fear to catch corona virus.	2.41	1.243	2.60	1.140	1.83	0.718	2.56	1.343
CORISK 12	Difficulty in collaborating with project team members	2.88	1.186	3.00	0.707	2.92	0.900	2.85	1.315
CORISK 13	Difficulty in managing project stakeholders	2.66	1.052	2.60	0.548	2.42	0.793	2.73	1.162
CORISK 14	Difficulty in managing project resources.	2.50	1.096	2.40	0.894	2.42	0.900	2.54	1.185
CORISK 15	Fears of losing job	3.22	1.338	3.40	1.517	3.33	1.155	3.17	1.395
CORISK 16	Difficulty in managing project time	2.17	0.939	2.00	0.707	2.17	0.718	2.20	1.030
CORISK 17	Difficulty in managing project cost	2.24	0.979	2.20	0.837	2.50	1.168	2.17	0.946
CORISK 18	Difficulty in managing project contracts	2.48	1.047	2.20	0.837	2.58	1.084	2.49	1.075
CORISK 19	Change in project delivery methodology	2.71	1.100	2.60	0.894	3.08	0.996	2.61	1.152

Did our employers pull their weight during the Pandemic?

WESTERN SYDNEY UNIVERSITY

CODE	Organisational Interventions	Total		Architecture		Engineering		Construction	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
COOPM 1	Providing support for working remotely	2.16	1.105	2.40	1.140	2.42	0.900	2.05	1.161
COOPM 2	Providing flexible work schedules.	2.22	1.044	2.00	0.707	2.33	0.778	2.22	1.151
COOPM 3	Providing training on how to detect and manage stress.	2.78	1.257	2.80	1.483	2.50	1.087	2.85	1.295
COOPM 4	Providing training on how to enhance use of technologies for project delivery	2.62	1.167	2.60	1.517	2.50	0.798	2.66	1.237
COOPM 5	Establishing a system to maintain effective communication.	2.47	1.063	2.40	1.673	2.50	0.798	2.46	1.075
COOPM 6	Providing routine COVID-19 screening.	2.66	1.101	2.60	1.140	2.67	0.651	2.66	1.217
COOPM 7	Regularly disinfecting the project workplace.	2.47	1.143	2.20	1.304	2.67	0.651	2.44	1.246
COOPM 8	Enforcing the use of personal protective equipment.	2.22	1.027	2.40	0.894	2.25	0.622	2.20	1.145
COOPM 9	Providing additional childcare supports.	2.93	1.122	2.40	0.894	2.50	0.674	3.12	1.208
COOPM 10	Providing training on how to manage and balance work and family.	2.98	1.235	2.60	1.517	2.67	1.073	3.12	1.249

Did our employers pull their weight during the Pandemic?

WESTERN SYDNEY UNIVERSITY

CODE	Organisational Interventions	Total		Architecture		Engineering		Construction	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
COOPM 11	Providing unlimited access to self-care apps.	2.85	1.145	3.00	1.414	2.75	0.965	2.87	1.189
COOPM 12	Hiring additional PM practitioners to distribute project workload	3.29	1.298	3.40	1.517	2.75	1.055	3.44	1.324
COOPM 13	Offering specific pandemic-related leaves.	2.59	1.200	2.80	1.483	2.75	0.965	2.51	1.247
COOPM 14	Providing Employee Assistance Program.	2.55	1.202	3.00	1.414	2.83	1.115	2.41	1.204
COOPM 15	Providing additional technical facilities for virtual and remote work	2.53	1.143	2.80	1.483	2.58	0.900	2.49	1.186
COOPM 16	Encouraging the sharing of ideas and suggestions to improve project delivery.	2.62	1.105	2.80	1.140	2.33	0.778	2.68	1.150
COOPM 17	Encouraging the adoption of non-traditional project delivery methodologies.	2.76	1.113	2.60	1.140	2.67	0.888	2.80	1.188
COOPM 18	Taking additional measures to manage the supply chain of materials.	2.52	1.047	2.40	1.342	2.42	0.793	2.56	1.097
COOPM 19	Managing and maintaining collaboration between PM practitioners and stakeholders	2.34	0.928	2.20	0.837	2.58	0.669	2.29	1.006
COOPM 20	Providing additional PM training.	2.72	1.182	2.60	1.517	2.58	0.900	2.78	1.235

Structural Equational Modelling (SEM)

- SEM has the potential to estimate multiple and interdependent relationships, presentation of **latent constructs** in interdependent relationships, and account for **measurement error** in the estimation process (DiLalla et al. 2000)
- In this research, SEM was applied to examine the interactive relationships between COVID-19 related psychosocial risk, organisational interventions and mental health.
- SEM is classified into two types: covariance-based (CB-SEM) and partial least-squares (PLS-SEM).
- In this research, PLS-SEM was considered appropriate than CB-SEM because it is suitable for non-distribution data and smaller sample size (Hair et al. 2016).
- SEM is evaluated in two stages: measurement model and structural model.

SEM - Measurement model – PM Work Stress

Construct	Code	Measurement items	Loading
PM Work Stress Cronbach's alpha **0.804** Composite reliability **0.593** Average variance extracted **0.699**	STRE 1	How often have you been upset	0.784
	STRE 2	How often have you felt that you were unable to control the important things	0.959
	STRE 3	How often have you felt nervous and "stressed"	0.923
	STRE 4	How often have you felt confident about your ability to handle the problems.	0.677
	STRE 5	How often have you felt that things in your PM-oriented work were going your way.	0.860
	STRE 6	How often have you found that you could not cope with all the things.	0.836
	STRE 7	How often have you been able to control irritations.	0.742
	STRE 8	How often have you felt that you were on top of things.	0.834
	STRE 9	How often have you been angered because of things.	0.792
	STRE 10	How often have you felt difficulties in your PM-oriented work.	0.913

SEM - Measurement model - psychosocial risks

Construct	Code	Measurement items	Loading	Ranking
COVID-19 psychosocial risk Cronbach's alpha **0.719** Composite reliability **0.669** Average variance extracted **0.530**	CORISK 1	Unsafe project environment ^	0.842	**1**
	CORISK 2	Challenges due to working from home.	0.220	17
	CORISK 3	Overwhelmed by managing different projects.	0.676	7
	CORISK 4	Lack of leadership knowledge and skills.	0.724	4
	CORISK 5	Lack of access to additional tools and equipment. ^	0.612	10
	CORISK 6	Disruption to supply chain	0.219	18
	CORISK 7	Social isolation.	0.512	13
	CORISK 8	Difficulty in balancing personal and work needs ^	0.652	8
	CORISK 9	Lack of training to learn various communication tools	0.605	11
	CORISK 10	Difficulty in adjusting to new work schedules ^	0.695	5

WESTERN SYDNEY UNIVERSITY

SEM - Measurement model - psychosocial risks

Construct	Code	Measurement items	Loading	Ranking
COVID-19 psychosocial risk Cronbach's alpha **0.719** Composite reliability **0.669** Average variance extracted **0.530**	CORISK 11	Fear to catch corona virus.	0.497	14
	CORISK 12	Difficulty in collaborating with project team members	0.793	2
	CORISK 13	Difficulty in managing project stakeholders	0.681	6
	CORISK 14	Difficulty in managing project resources.	0.617	9
	CORISK 15	Fears of losing job	0.786	3
	CORISK 16	Difficulty in managing project time	0.349	16
	CORISK 17	Difficulty in managing project cost	0.382	15
	CORISK 18	Difficulty in managing project contracts	0.553	12
	CORISK 19	Change in project delivery methodology	0.180	19

WESTERN SYDNEY UNIVERSITY

SEM - Measurement model - Organisational interventions

Construct	Code	Measurement items	Loading	Ranking
Organisational interventions Cronbach's alpha **0.967** Composite reliability **0.960** Average variance extracted **0.558**	COOPM 1	Providing support for working remotely	0.998	2
	COOPM 2	Providing flexible work schedules.	0.999	1
	COOPM 3	Providing training on how to detect and manage stress.	0.756	7
	COOPM 4	Providing training on how to enhance use of technologies for project delivery	0.663	10
	COOPM 5	Establishing a system to maintain effective communication.	0.895	5
	COOPM 6	Providing routine COVID-19 screening.	0.556	18
	COOPM 7	Regularly disinfecting the project workplace.	0.634	12
	COOPM 8	Enforcing the use of personal protective equipment.	0.712	8
	COOPM 9	Providing additional childcare supports.	0.529	19
	COOPM 10	Providing training on how to manage and balance work and family.	0.711	9

WESTERN SYDNEY UNIVERSITY

SEM - Measurement model - Organisational interventions

Construct	Code	Measurement items	Loading	Ranking
Organisational interventions Cronbach's alpha **0.967** Composite reliability **0.960** Average variance extracted **0.558**	COOPM 11	Providing unlimited access to self-care apps.	0.612	14
	COOPM 12	Hiring additional PM practitioners to distribute project workload	0.583	16
	COOPM 13	Offering specific pandemic-related leaves.	0.486	20
	COOPM 14	Providing Employee Assistance Program.	0.642	11
	COOPM 15	Providing additional technical facilities for virtual and remote work	0.907	4
	COOPM 16	Encouraging the sharing of ideas and suggestions to improve project delivery.	0.630	13
	COOPM 17	Encouraging the adoption of non-traditional project delivery methodologies.	0.605	15
	COOPM 18	Taking additional measures to manage the supply chain of materials.	0.561	17
	COOPM 19	Managing and maintaining collaboration between PM practitioners and stakeholders	0.996	3
	COOPM 20	Providing additional PM training.	0.790	6

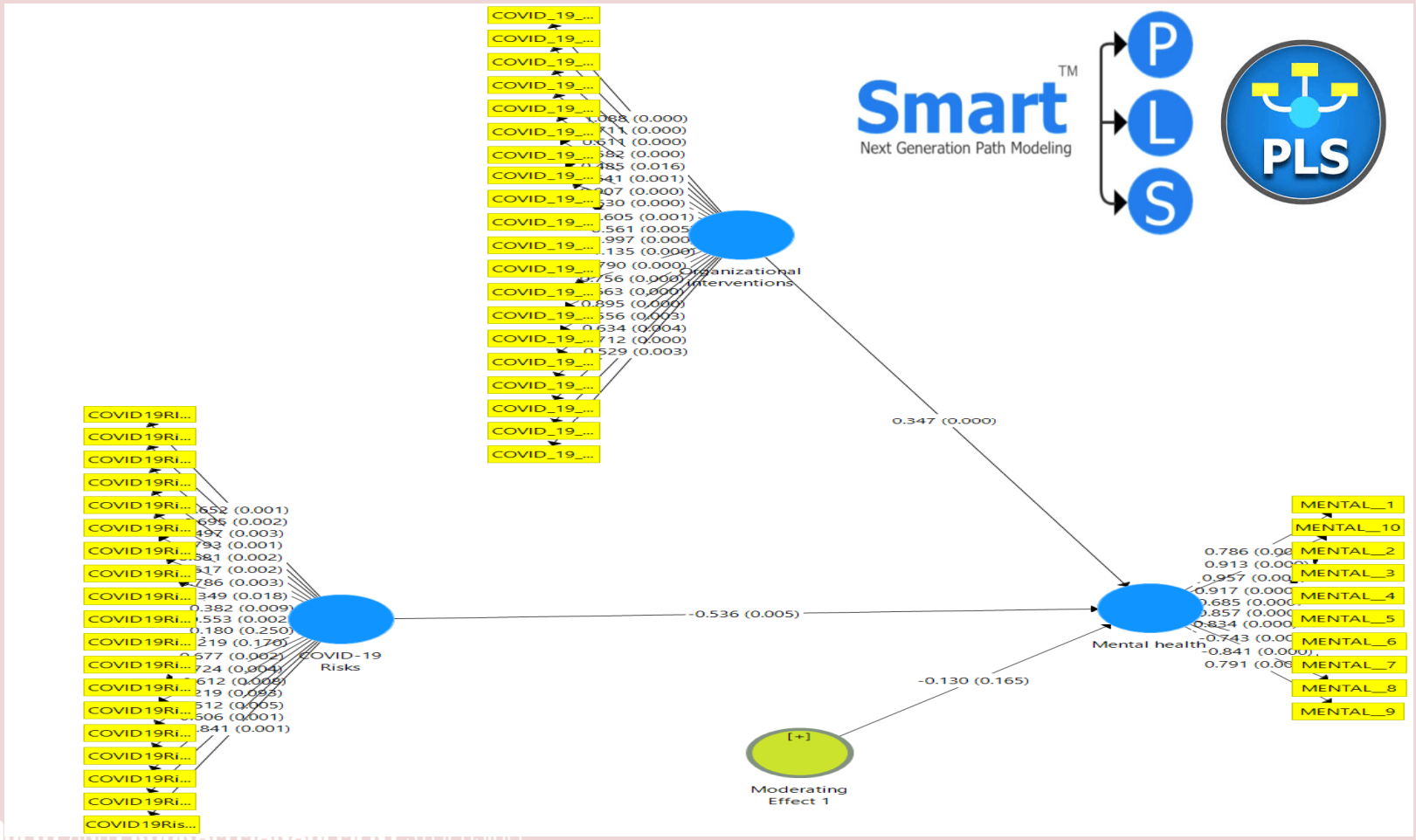
SEM - Measurement model assessment

- Discriminant validity
- Heterotrait-monotrait ratio of correlations (HTMT)

	COVID-19 psychosocial risk	Mental health	Organizational interventions
COVID-19 psychosocial risk	-	-	-
Mental health	0.693	-	-
Organizational interventions	0.396	0.618	-

SEM Model Generated Using SmartPLS

WESTERN SYDNEY UNIVERSITY



SEM - Structural model assessment

Hypotheses	Path coefficient	P-values	Hypotheses validation	F square
H1: COVID-19 psychosocial risk negatively impact mental health	-0.536	0.005	Supported	0.870
H2: Organisational interventions positively impact mental health	0.347	0.000	Supported	0.311
H3: Organisational interventions moderate the effect of COVID-19 psychosocial risk on mental health	-0.130	0.165	Not supported	0.086

Hypotheses

Predictive Power

Constructs	SSO	SSE	Q^2 (=1-SSE/SSO)
COVID-19 psychosocial risk	1102.000	1000.000	0.090
Mental health	580.000	305.248	0.474
Organisational interventions	1160.000	1100.000	0.052

Major Findings

- The mental health of PM-practitioners in had been compromised across AEC sectors during Covid-19
- 19 significant COVID-19 psychosocial risks causing poor mental health among PM-practitioners in AEC sectors were confirmed.
- 20 organizational interventions for improving mental health of PM-practitioners in AEC sectors were established.
- In general, there are no significant differences in the above constructs among AEC sectors during Covid-19

WESTERN SYDNEY UNIVERSITY

Major Findings

top 5 **psychosocial risks** during COVID

1. Unsafe project environment (CORISK 1)
2. Difficulty in collaborating with project team members (CORISK 12)
3. Fears of losing job (CORISK 15)
4. Lack of leadership knowledge and skills (CORISK 4)
5. Difficulty in adjusting to new work schedules (CORISK 10)

top 5 **organizational interventions** during COVID

- Providing flexible work schedules. (COOPM 2)
- Providing support for working remotely (COOPM 1)
- Managing and maintaining collaboration between PM practitioners and stakeholders (COOPM 19)
- Providing additional technical facilities for virtual and remote work (COOPM 15)
- Establishing a system to maintain effective communication. (COOPM 5)

Major Findings

- COVID-19 psychosocial risks had played a major role in causing poor mental health of PM-practitioners in the AEC sectors.
- Organisational interventions had buffered the negative impact of COVID-19 psychosocial risks by improving the mental health of PM-practitioners in AEC sectors.
- There was no clear evidence to confirm that organisational interventions had moderated the impact of COVID-19 psychosocial risks on mental health of PM-practitioners in the AEC sectors.

Acknowledgement

- Project Governance and Controls Symposium (PGSC), Australia
- The experts who participated in the Expert Forum
- The PM-practitioners who participated in the anonymous questionnaire survey
- AIPM, ICCPM, CIOB, PGCS, AIB, CNBR, Directors of Academic Programs at WSU

WESTERN SYDNEY UNIVERSITY

Main References

- Alsharef, A., Banerjee, S., Uddin, S., Albert, A., and Jaselskis, E. (2021). "Early impacts of the COVID-19 pandemic on the United States construction industry." International journal of environmental research and public health, 18(4), 1559.
- Association for Project Management (2020). "Revealed – the impact of Coronavirus on the project profession in the UK." <https://www.apm.org.uk/news/revealed-the-impact-of-coronavirus-on-the-project-profession-in-the-uk/>.
- Australian Government Department of Health (2020). "Australian Health Protection Principal Committee (AHPPC) coronavirus (COVID-19) statement on 22 March 2020." <https://www.health.gov.au/news/australian-health-protection-principal-committee-ahppc-coronavirus-covid-19-statement-on-22-march-2020-0>.
- Bowen, P., Edwards, P., Lingard, H., and Cattell, K. (2014). "Workplace stress, stress effects, and coping mechanisms in the construction industry." J Constr Eng Manage, 140(3), 1-15.
- Deloite (2020). "COVID-19 Workforce strategies for a post-COVID-19 recovery Workbook." Deloitee Development LLC, Canada.

Thank you!
Questions?