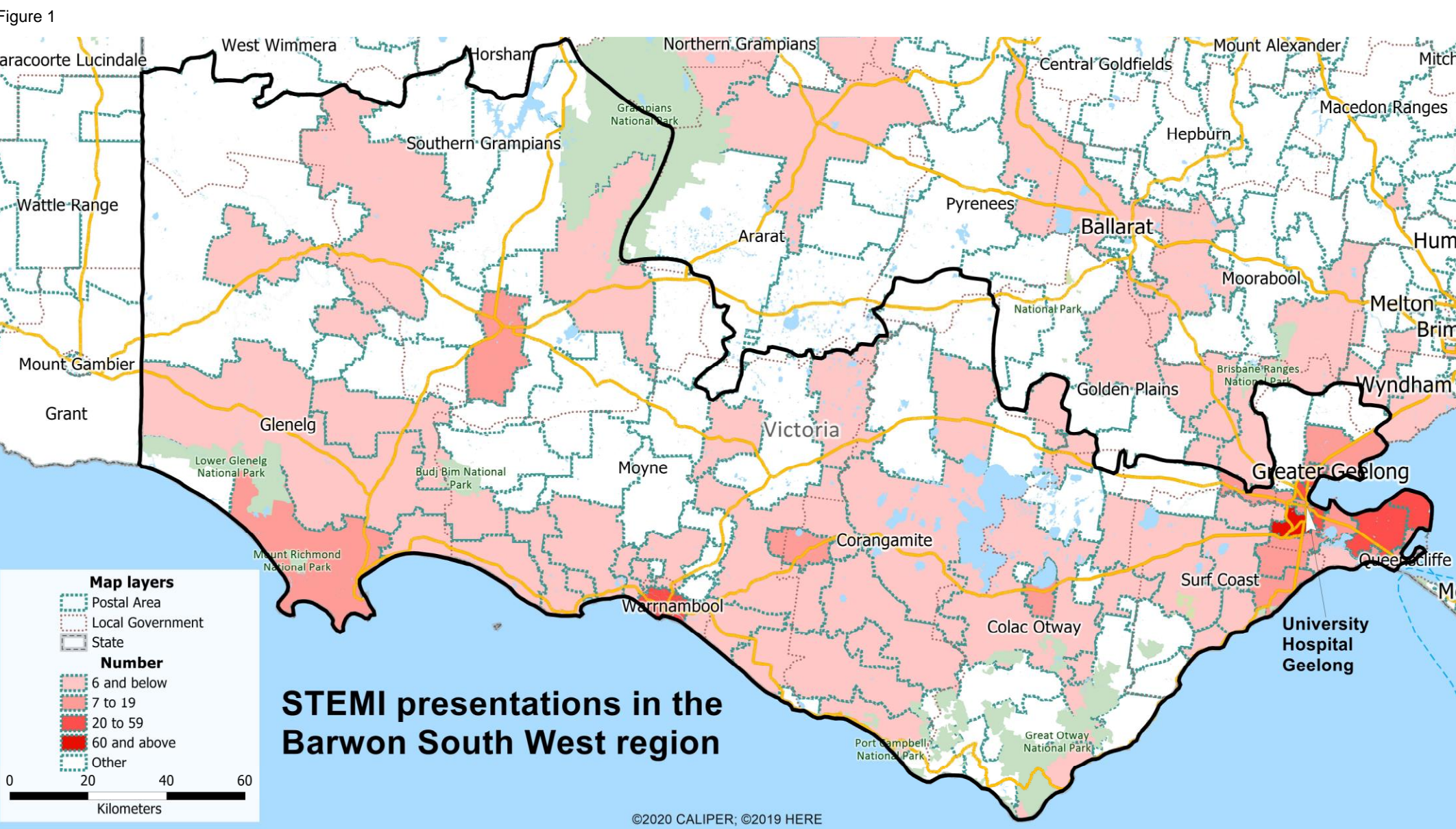


AIM – We seek to examine the potential impact of the lockdowns associated with the COVID-19 pandemic on STEMI presentations, system delays and patient outcomes, in the largest regional area of Victoria.

BACKGROUND
The COVID-19 pandemic impacted the utilisation of health services worldwide^[1]. A parallel decrease in global ST-elevation myocardial infarction (STEMI) presentations was reported^[2,3]. Many countries implemented ‘lockdowns’ to slow the spread of the virus^[3,4]. Minimal published data exists on the pandemic’s impact in regional Victoria.



SETTING
University Hospital Geelong (UHG) is part of the Barwon South West (BSW) region of Victoria. The region stretches from the Queenscliff Heads to the South Australian boarder (see Figure 1). This is Victoria’s largest region by population with an estimated 434,619 people across 32,767 km²^[5]. The UHG is the only hospital in the region providing a 24/7 STEMI service.



METHODS
A retrospective study was performed to investigate the effect of lockdowns on patient and system delays and clinical outcomes in STEMI treatment. This study uses the widely accepted date of 31st March, 2020 as the beginning of the first lockdown period in Victoria. Pre-lockdown period is defined as: 1st January, 2019 to 30th March, 2020, and During-lockdown: 31st March, 2020 to 31st December, 2021.

INCLUSION
All patients presenting with STEMI to the UHG from 2019 - 2021, who underwent percutaneous coronary intervention (PCI) were included in this study.

RESULTS
491 patients met the inclusion criteria. Table 1 shows patient demographics. There were no statistically significant differences in the number of STEMI presentations between the two study periods (214 vs 277 cases, p=0.19). Table 2 reports PCI indication between the two study periods.

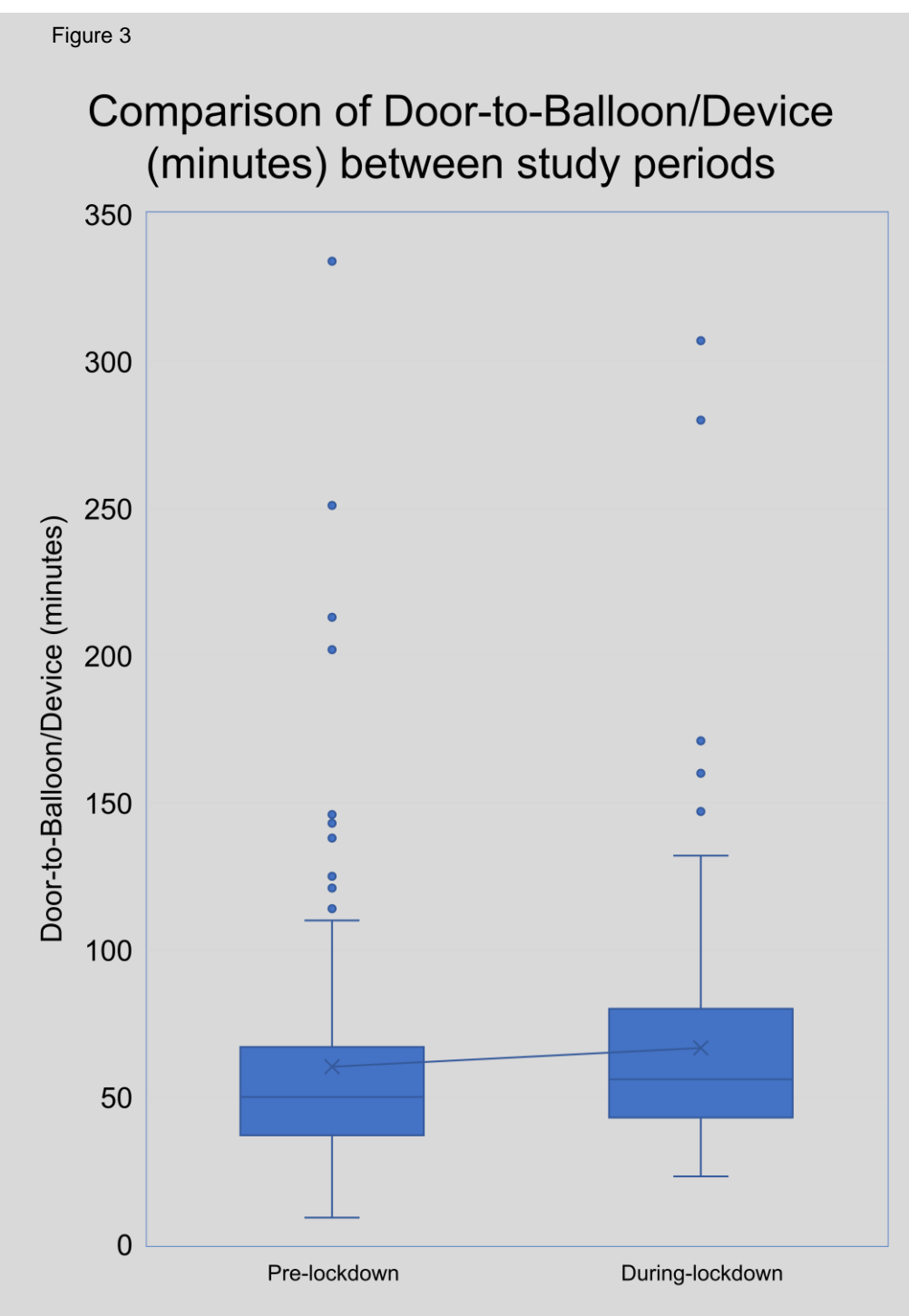
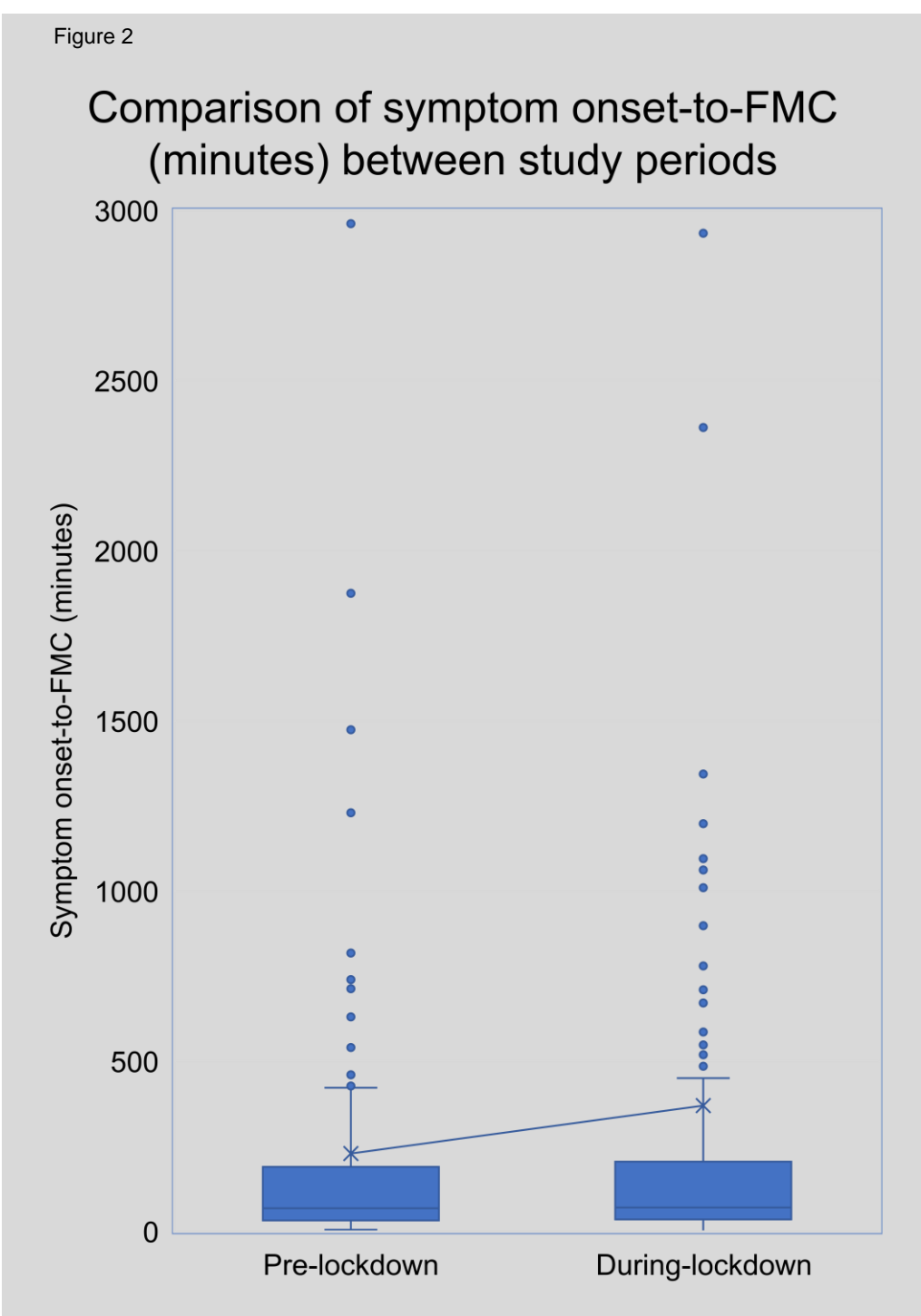
Variable	Pre-lockdown (N=214)	During-lockdown (N=277)	p-value
Male	162 (75.4%)	201 (72.6%)	0.43
Age M(SD) (years)	63.51(11.98)	64.79(12.78)	0.26
BMI M(SD) (kg/m ²)	28.85(5.41)	28.5(5.47)	0.48
Smoking status			0.13
Never	94 (43.9%)	127 (45.8%)	
Current	61 (28.5%)	94 (33.9%)	
Previous	59 (27.6%)	56 (20.3%)	
Asthma	12 (5.6%)	8 (2.9%)	0.13
COPD	11 (5.1%)	15 (5.4%)	0.89
Diabetes	33 (15.2%)	39 (14.1%)	0.68
Hypertension	130 (60.7%)	151 (54.5%)	0.17
Dyslipidaemia	158 (73.8%)	164 (59.2%)	<0.001*
Previous MI	30 (14%)	34 (12.3%)	0.57
Family cardiac history	81 (37.9%)	54 (19.5%)	<0.001*
Pre procedural creatinine (μmol/L) M(IQR1-3)	93 (77.5-111.5)	92 (77-105.5)	0.18
Previous PCI	25 (11.7%)	30 (10.8%)	0.77
Previous CABG	10 (4.7%)	8 (2.9%)	0.31

Note: *p<0.05, BMI: Body mass index, CABG: Coronary artery bypass graft, COPD: Chronic obstructive pulmonary disease, MI: Myocardial infarction, PCI: Percutaneous coronary intervention

Variable	Pre-lockdown (N=214)	During-lockdown (N=277)	p-value
PPCI (<12hrs)	152 (71%)	180 (65%)	0.16
Late presentation STEMI (>12hours)	21 (9.8%)	32 (11.5%)	0.54
STEMI (unstable following lysis)	25 (11.7%)	37 (13.4%)	0.58
STEMI (stable following lysis)	16 (7.5%)	28 (10.1%)	0.15

Note: lysis: thrombolysis, PPCI: primary percutaneous coronary intervention

Patient related delay was measured as symptom onset-to-first medical contact (FMC).The pre-lockdown median (IQR1-3) was 68 (32-189.5) minutes while the during-lockdown median (IQR1-3) was 70 (35-205) minutes, p=0.525 (see Figure 2). Examination of potential system delays (Door-to-Balloon/Device) times for primary PCI between the two study periods did not reveal any significant differences. The pre-lockdown median (IQR1-3) was 50 (37-67) minutes while the during-lockdown median (IQR1-3) was 55 (43-80) minutes, p=0.155 (see Figure 3).



There was no statistically significant differences in clinical outcomes seen during the lockdown period (Table 3).

Variable	Pre-lockdown (N=214)	During-lockdown (N=277)	p-value
In Hospital			
Bleeding	3 (1.4%)	4 (1.4%)	0.97
Stroke	3 (1.4%)	5 (1.8%)	0.73
In-hospital mortality (all-cause)	11 (5.1%)	20 (7.2%)	0.35
In-hospital mortality (excluding Cardiogenic Shock/OOHCA)	3 (1.4%)	6 (2.2%)	0.53
30-Day	Pre-lockdown (N=203)	During-lockdown (N=257)	
Bleeding	4 (1.9%)	2 (0.7%)	0.28
Stroke	0 (0%)	0 (0%)	
Unplanned Cardiac Readmission	5 (2.5%)	6 (2.3%)	0.92
30-day mortality (all-cause)	4 (1.9%)	4 (1.6%)	0.52
Mortality	Pre-lockdown (N=214)	During-lockdown (N=277)	
All-cause Mortality (In hospital and 30-days)	15 (7%)	24 (8.7%)	0.50

Note: OOHCA: Out of Hospital Cardiac Arrest

CONCLUSION

- STEMI presentations and clinical outcomes at the UHG did not change significantly during the lockdown periods associated with the COVID-19 pandemic.
- Individuals of the BSW region continue to follow healthcare advice and present in a timely manner for life saving treatment.
- The UHG provided the BSW region with timely treatment despite the added complexities during this time; personal protective equipment, patient screening and transport. Healthcare services within the BSW region, including Ambulance Victoria and the UHG showed resilience in the face of the unprecedented COVID-19 pandemic.

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