
MATAKITE O AOTEAROA

University of Otago
ŌTĀKOU WHAKAIHU WAKA

Centre for Rural Health

Welcomes you to

Rural Research for Policy Seminar

1st August 2024

Nau mai, haere mai

Jamie Gilbertson
Ray Anton
Professor Garry Nixon
Dr Rory Miller
Associate Professor Gabrielle Davie
Dr Jesse Whitehead
Professor Sue Crengle
Talis Liepins
Associate Professor Katharina Blattner
Associate Professor Katharina Blattner
Professor Tim Stokes
Dr Jane Taafaki
Dr Steve Withington
Michelle Smith
Dr Sarah Walker
Dr Katelyn Costello
Dr Lynne Clay

In NZ rural urban disparities exist in the determinants of health, health outcomes and service utilisation

Making sense of the data

What’s rural? The classification problem

Prof Garry Nixon

Urban–Rural Health Comparisons

Key results of the 2002/03 New Zealand Health Survey

Public Health Intelligence Occasional Bulletin No. 41

Citation: Ministry of Health. 2007. *Urban–Rural Health Comparisons: Key results of the 2002/03 New Zealand Health Survey*. Wellington: Ministry of Health.

Published in February 2007 by the
Ministry of Health
PO Box 5013, Wellington, New Zealand

ISBN 978-0-478-30742-9 (Book)
ISBN 978-0-478-30743-6 (Internet)
HP 4355

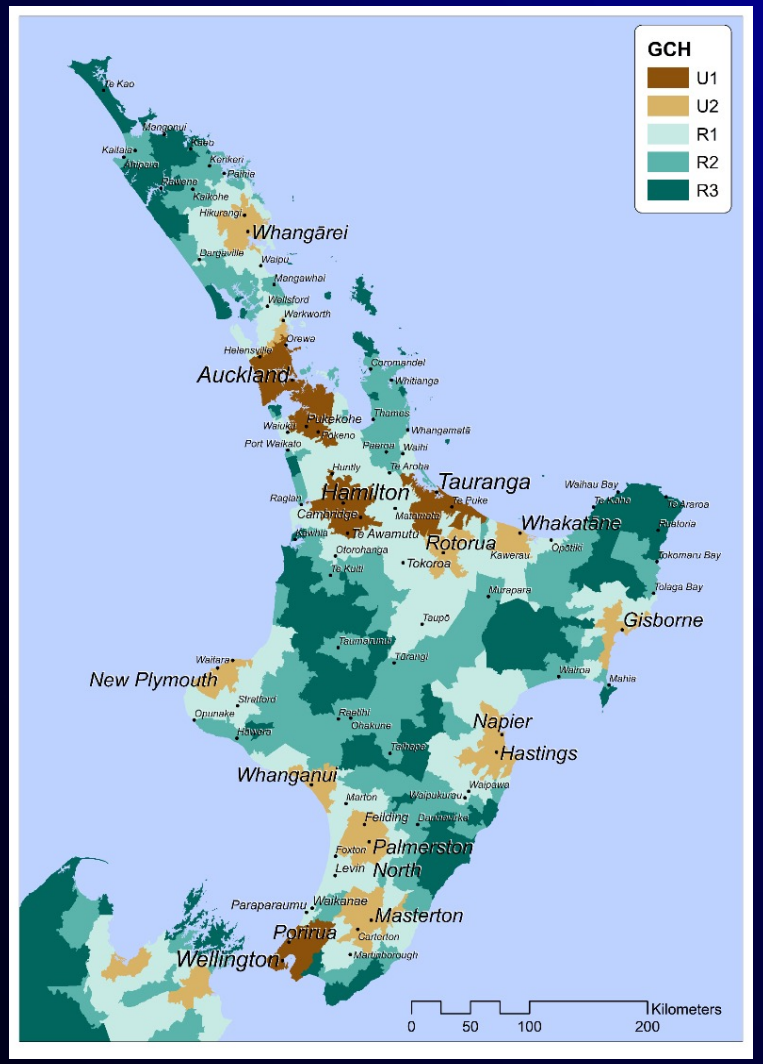
This document is available on the Ministry of Health's website:
http://www.moh.govt.nz

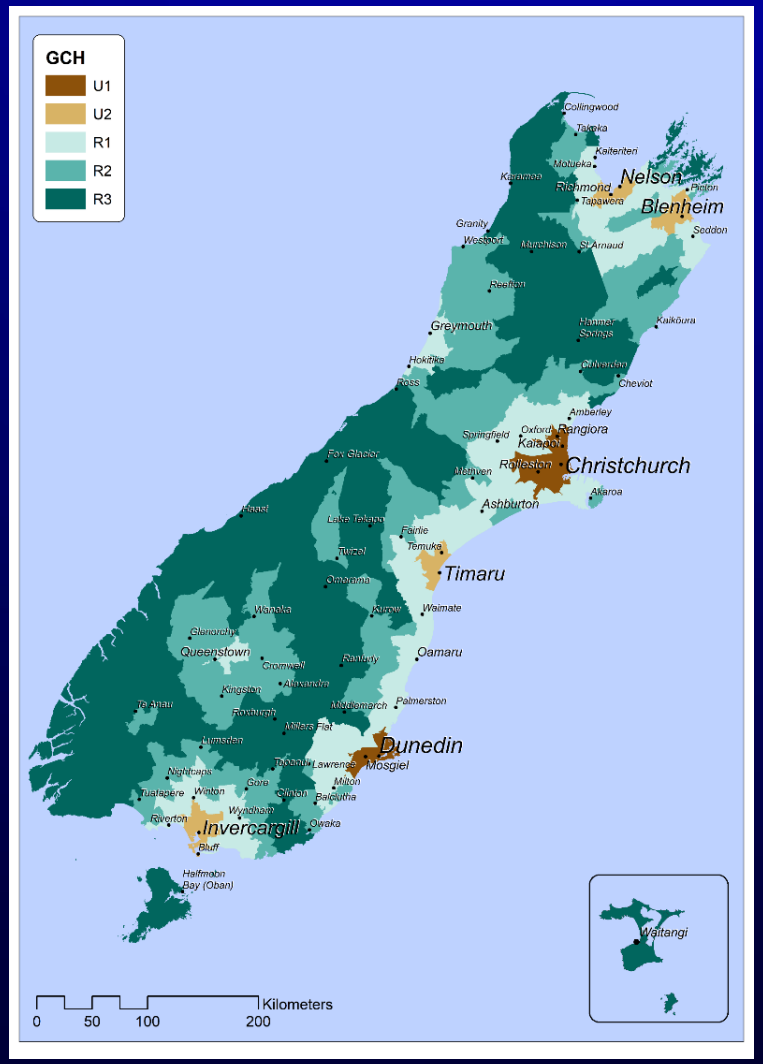
MINISTRY OF HEALTH
MANATŪ HAUORA

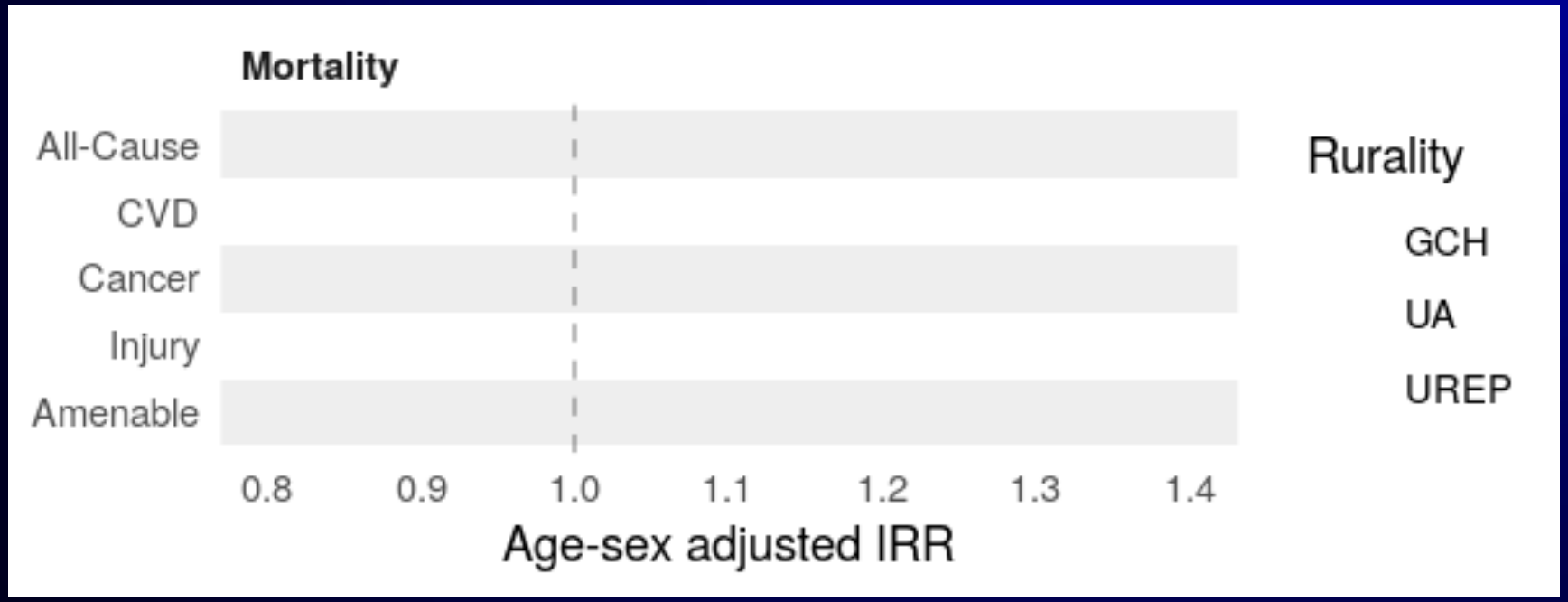
Mātātuhi Tuawhenua:

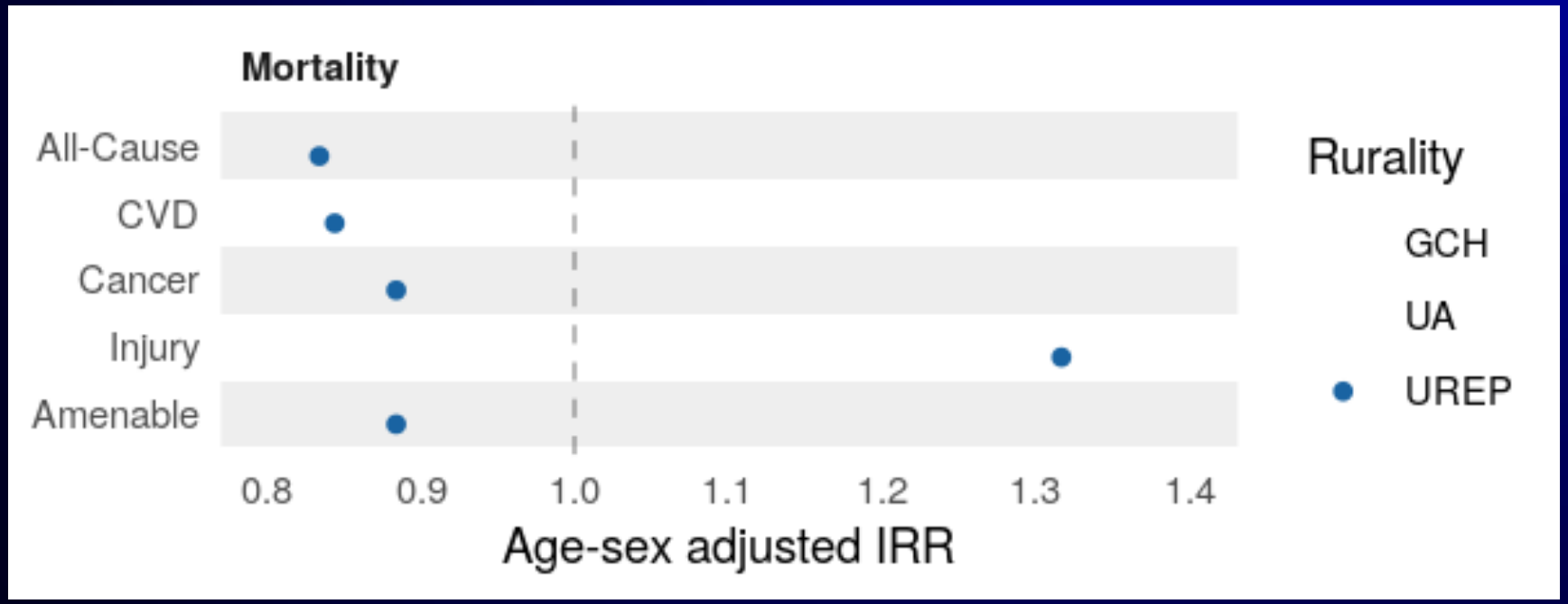
Health of Rural Māori 2012

GCH Geographic Classification for Health






Mortality
All-Cause
CVD
Cancer
Injury
Amenable
0.8
0.9
1.0
1.1
1.2
1.3
1.4
Age-sex adjusted IRR
Rurality
GCH
UA
UREP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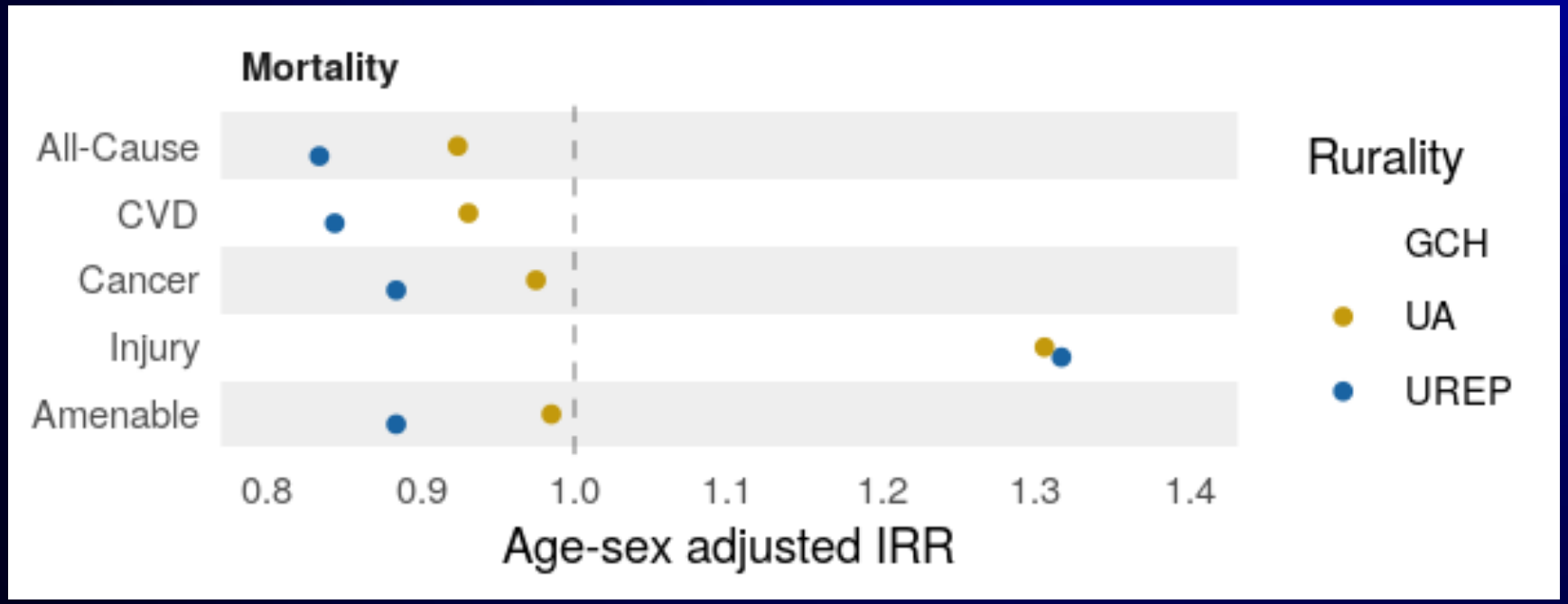
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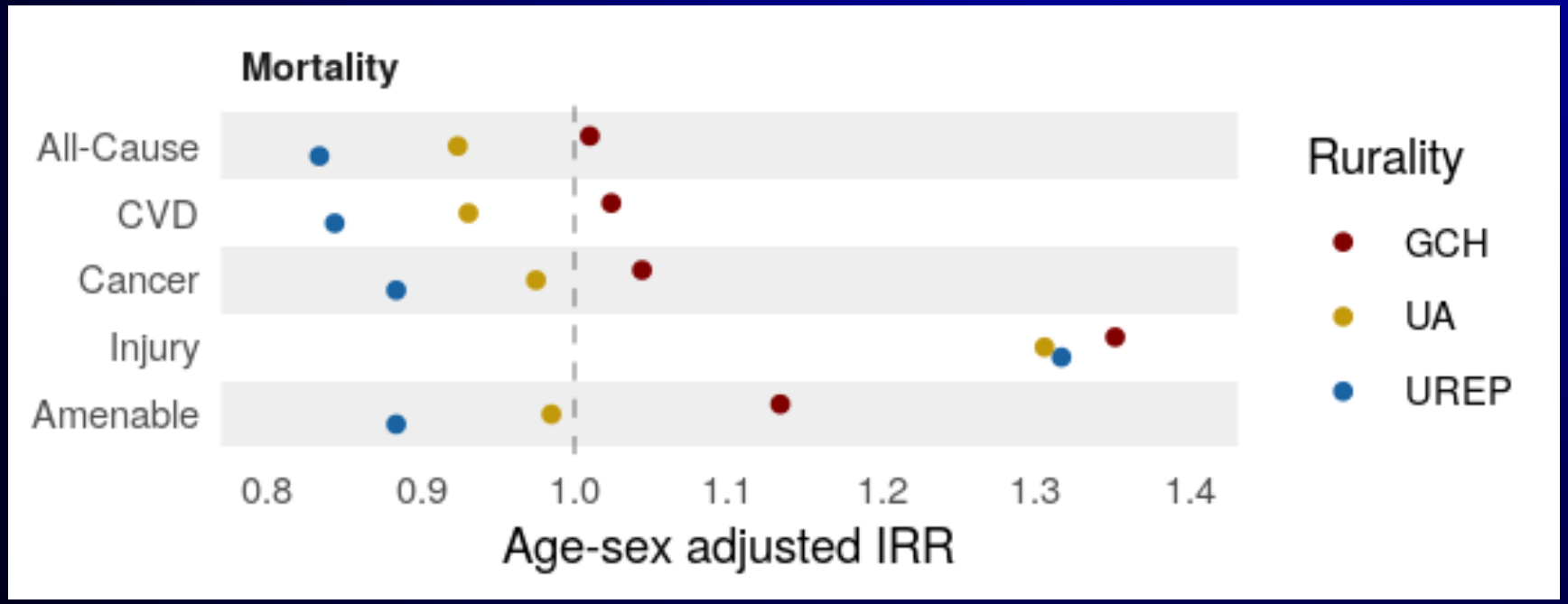
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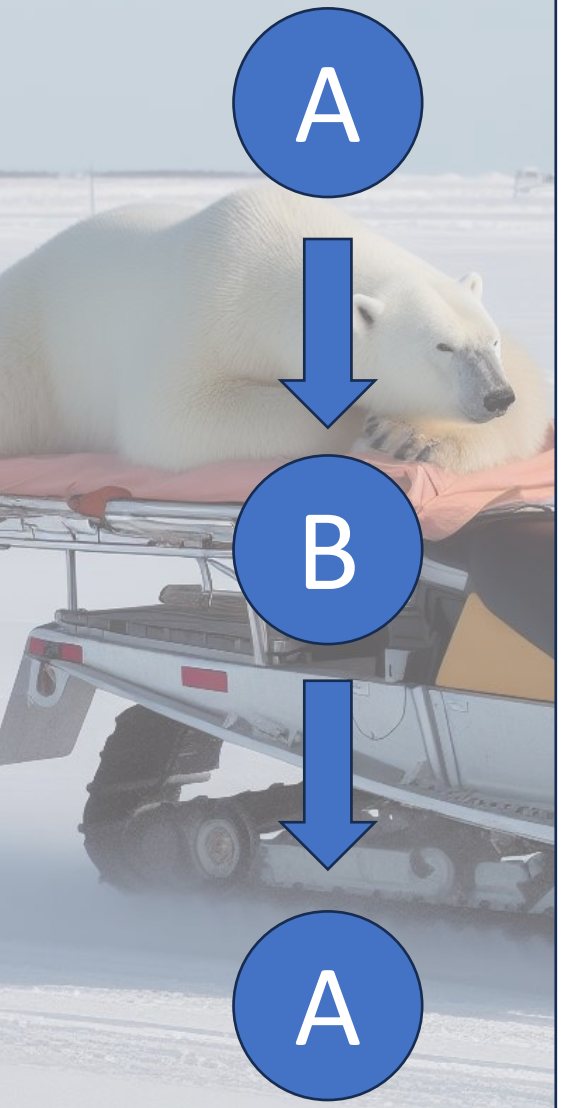
1.4
Age-sex adjusted IRR
Rurality
GCH
UA
UREP

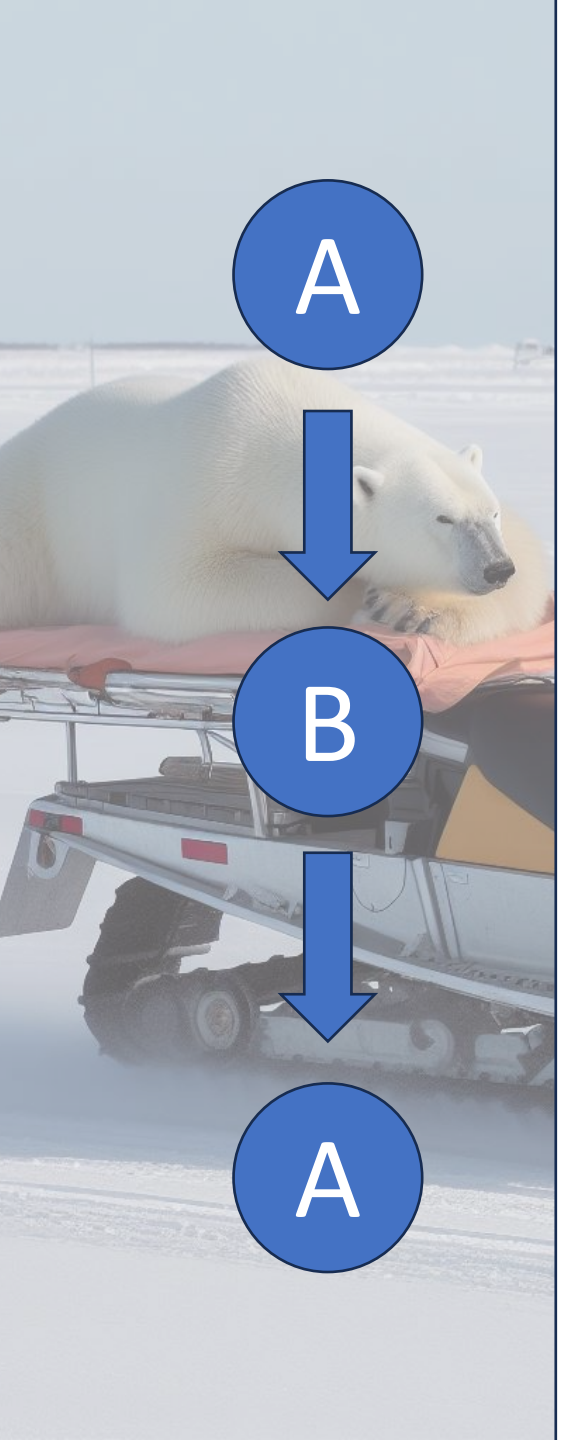
Other data pitfalls: Accounting for transfers & Diagnosis coding

Dr Rory Miller

Interhospital transfers *need to be accounted for*



Facility	Admission source	Discharge end-type flag	Date admit	Date discharge
A	Routine	DT (discharge to another facility)	11/11/2017	12/11/2017
B	Transfer	DT (discharge to another facility)	12/11/2017	20/11/2017
A	Transfer	DR (routine discharge)	20/11/2017	01/12/2017



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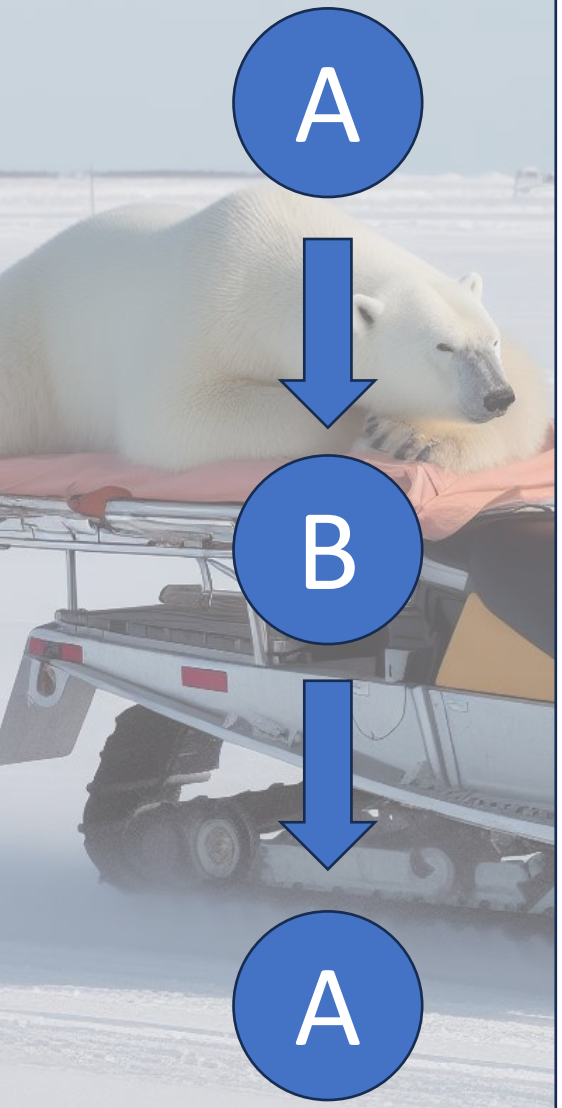
EVENTS



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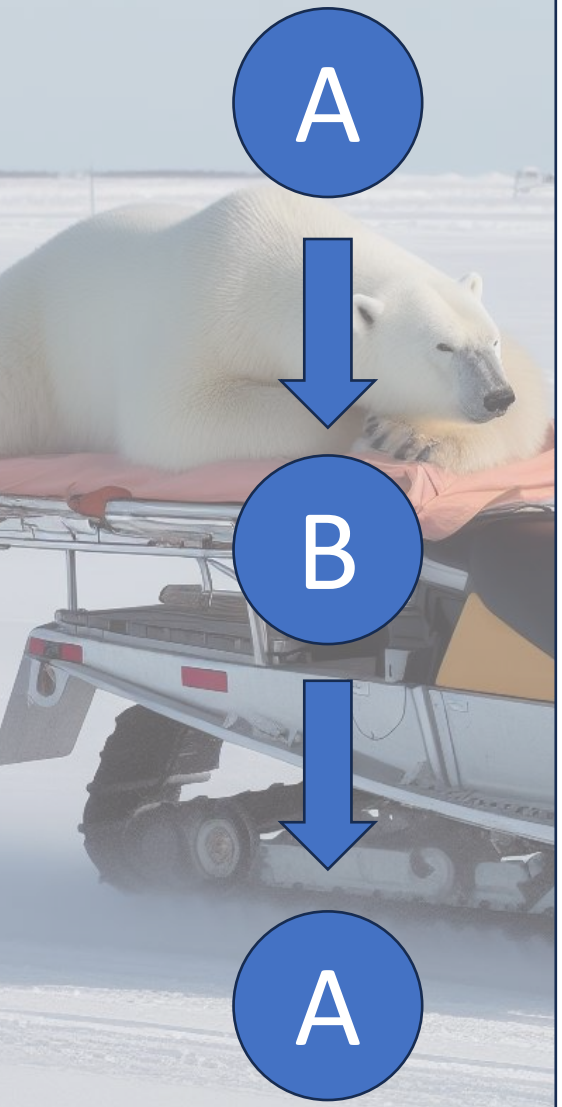

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B	Tra			/2017
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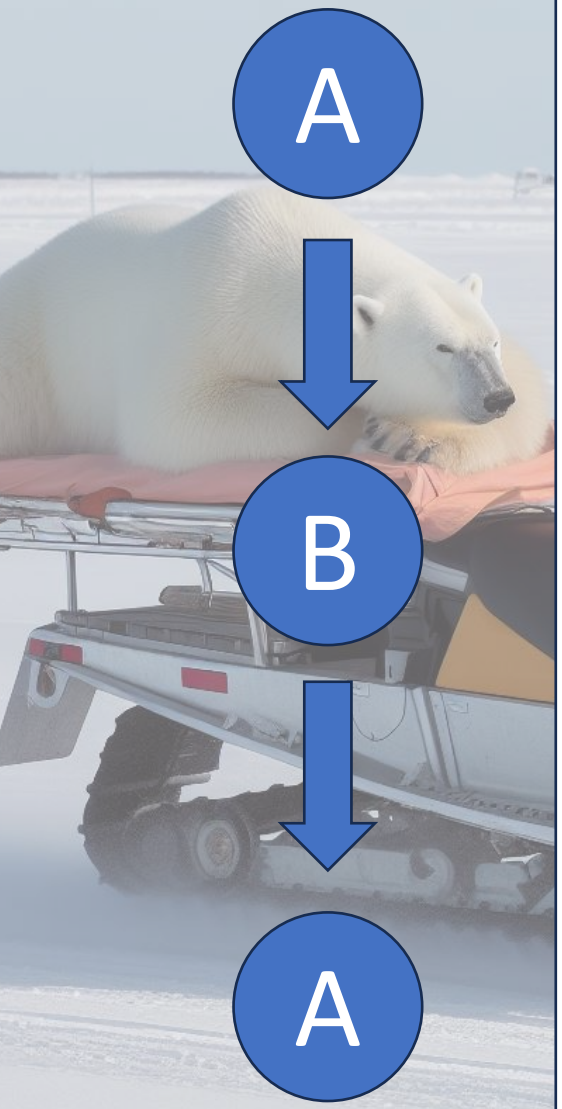
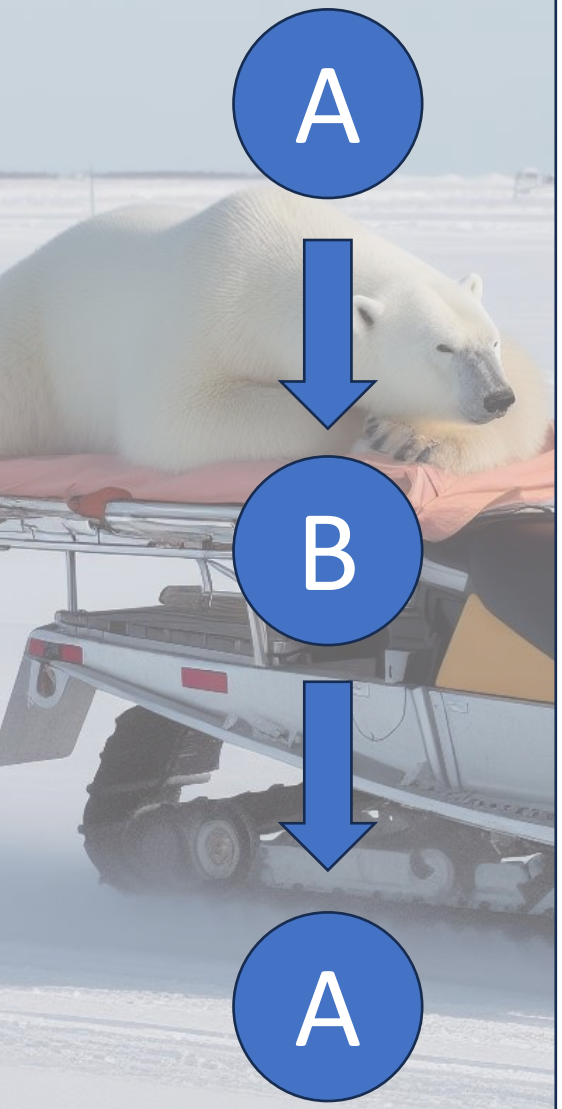
ENCOUNTERS



Facility	Admission source	Discharge end-type flag	Date admit	Date discharge
A	Routine	ER Routine discharge from ED	11/11/2017	12/11/2017
B	Routine	DT (discharge to another facility)	12/11/2017	20/11/2017
A	Routine	DR (routine discharge)	20/11/2017	01/12/2017



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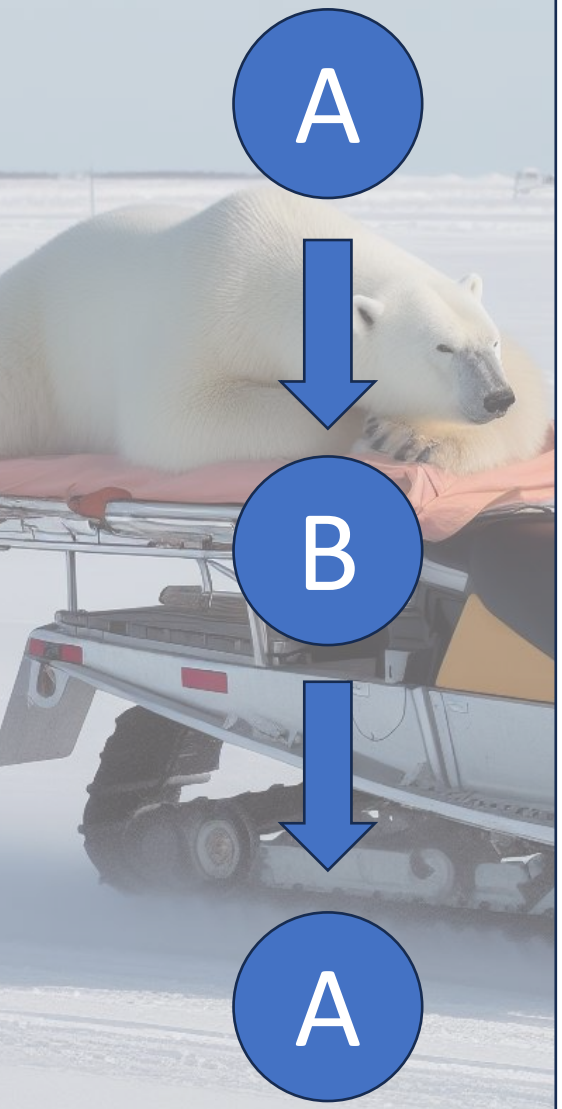

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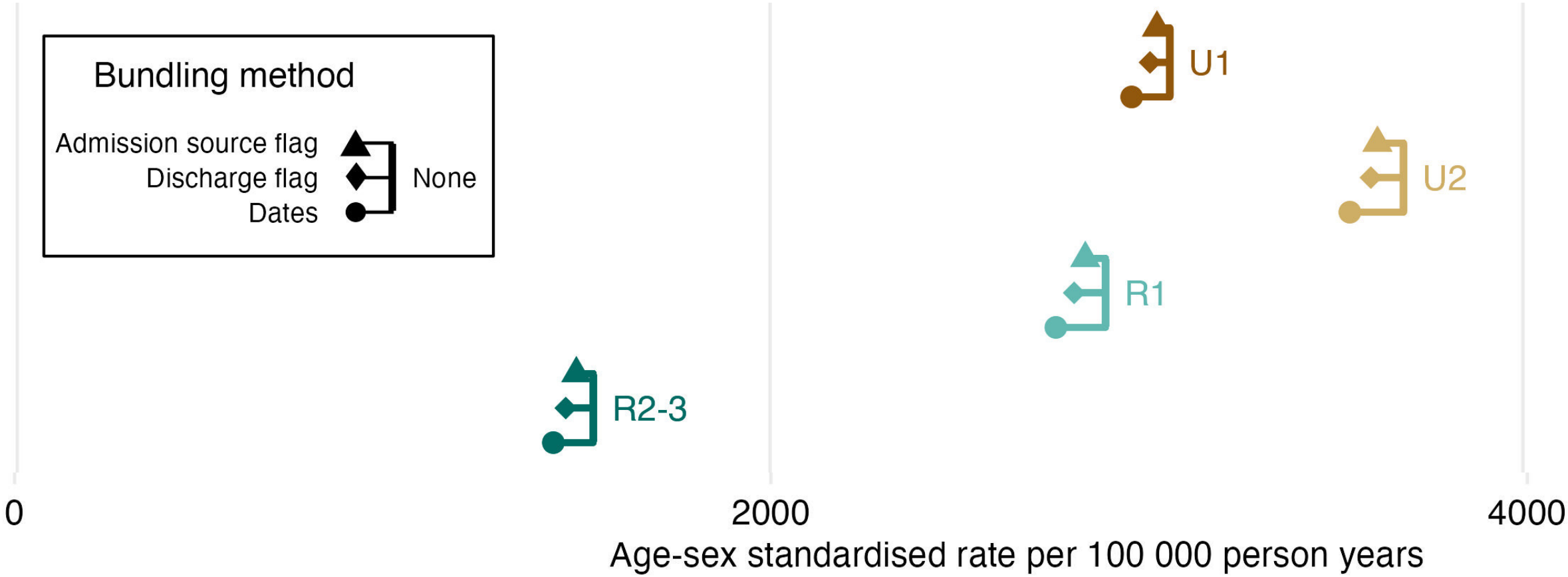
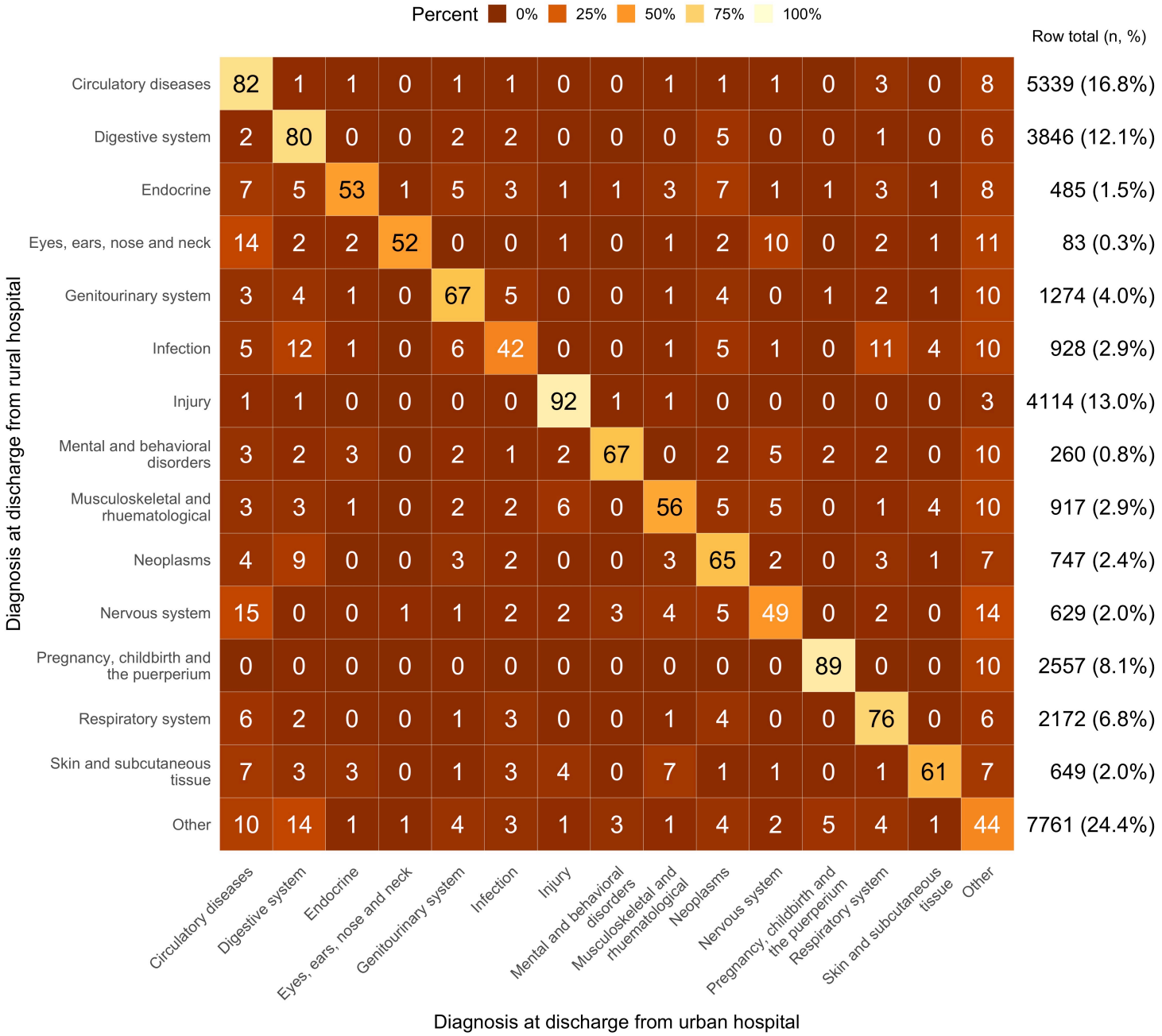

Bundling method
Admission source flag
Discharge flag
Dates
None
U1
U2
R1
R2-3
0
2000
4000
Age-sex standardised rate per 100 000 person years

Clinical coding practices *might vary*


Percent 0% 25% 50% 75% 100%
Row total (n, %)
Diagnosis at discharge from rural hospital
Circulatory diseases 82 1 1 0 1 1 0 0 1 1 1 0 3 0 8 5339 (16.8%)
Digestive system 2 80 0 0 2 2 0 0 0 5 0 0 1 0 6 3846 (12.1%)
Endocrine 7 5 53 1 5 3 1 1 3 7 1 1 3 1 8 485 (1.5%)
Eyes, ears, nose and neck 14 2 2 52 0 0 1 0 1 2 10 0 2 1 11 83 (0.3%)
Genitourinary system 3 4 1 0 67 5 0 0 1 4 0 1 2 1 10 1274 (4.0%)
Infection 5 12 1 0 6 42 0 0 1 5 1 0 11 4 10 928 (2.9%)
Injury 1 1 0 0 0 0 92 1 1 0 0 0 0 0 3 4114 (13.0%)
Mental and behavioral disorders 3 2 3 0 2 1 2 67 0 2 5 2 2 0 10 260 (0.8%)
Musculoskeletal and rhuematological 3 3 1 0 2 2 6 0 56 5 5 0 1 4 10 917 (2.9%)
Neoplasms 4 9 0 0 3 2 0 0 3 65 2 0 3 1 7 747 (2.4%)
Nervous system 15 0 0 1 1 2 2 3 4 5 49 0 2 0 14 629 (2.0%)
Pregnancy, childbirth and the puerperium 0 0 0 0 0 0 0 0 0 0 0 89 0 0 10 2557 (8.1%)
Respiratory system 6 2 0 0 1 3 0 0 1 4 0 0 76 0 6 2172 (6.8%)
Skin and subcutaneous tissue 7 3 3 0 1 3 4 0 7 1 1 0 1 61 7 649 (2.0%)
Other 10 14 1 1 4 3 1 3 1 4 2 5 4 1 44 7761 (24.4%)
Circulatory diseases
Digestive system
Endocrine
Eyes, ears, nose and neck
Genitourinary system
Infection
Injury
Mental and behavioral disorders
Musculoskeletal and rhuematological
Neoplasms
Nervous system
Pregnancy, childbirth and the puerperium
Respiratory system
Skin and subcutaneous tissue
Other
Diagnosis at discharge from urban hospital

Other data pitfalls: Ethnicity data quality

Prof Sue Crengle

Ethnicity data quality

We still don't count: the under-counting and under-representation of Māori in health and disability sector data

Ricci B Harris, Sarah-Jane Paine, June Atkinson, Bridget Robson, Paula T King, Jennifer Randle, Anja Mizdrak, Melissa McLeod

The New Zealand **Medical Journal**
Te ara tika o te hauora hapori
Published by the Pasifika Medical Association Group
Vol 135 | No 1567 | 2022 Dec 16

Other data pitfalls: Address inaccuracy, Domicile inaccuracy & Privacy issues

Assoc Prof Gabrielle Davie

Geospatial analyses

- Important tool for undertaking research & underpinning policy

  Inaccurate geospatial information can result in misleading conclusions

- **"...the Mortality Collection is the only national collection considered of sufficient quality to permit meaningful rurality analyses"** [1]

  National Minimum Dataset (hospital events)?

[1] Technical Reference Group – Ministry of Health and Health NZ. (2022). *User guide: Geospatial data in the National Collections* (Version 1.0).

Geographies

Meshblock ~60-120 usual residents

Geographies

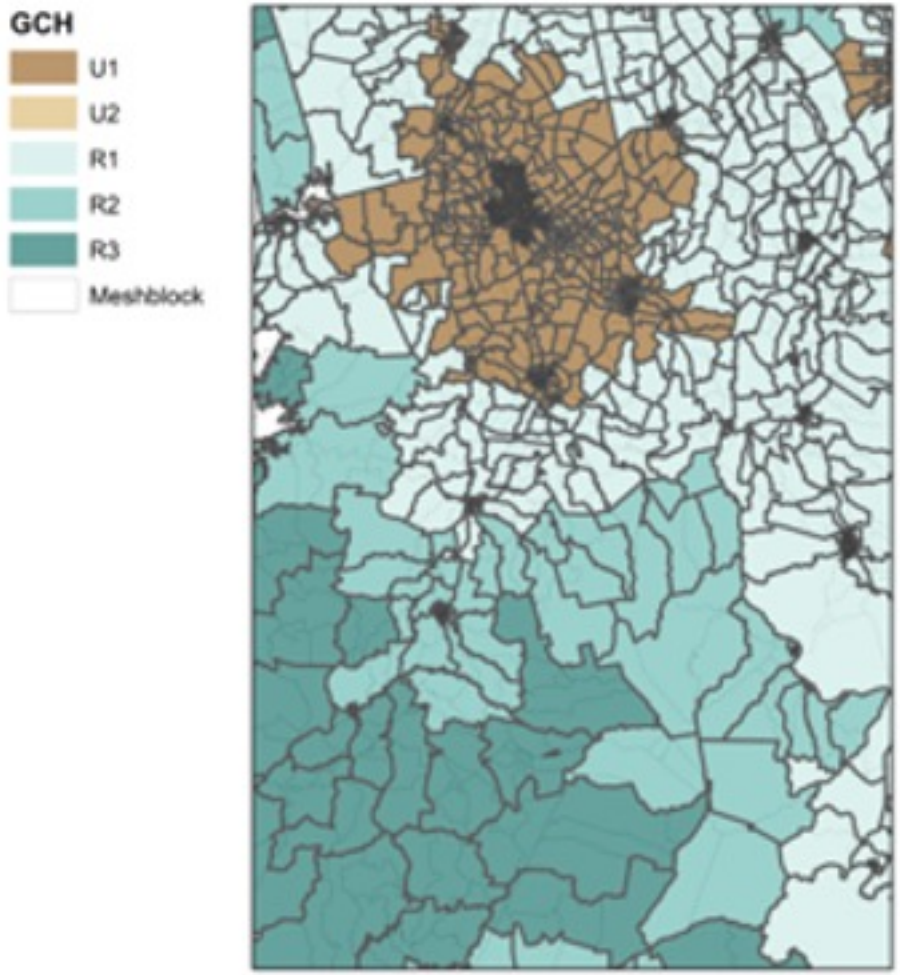
Meshblock ~60-120 usual residents

MoH

Domicile
~500-5000

StatsNZ

SA1
~100-120



Statistical area 1 (SA1)

Geographies

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MoH

Domicile
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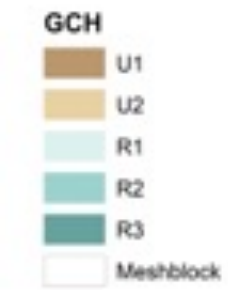

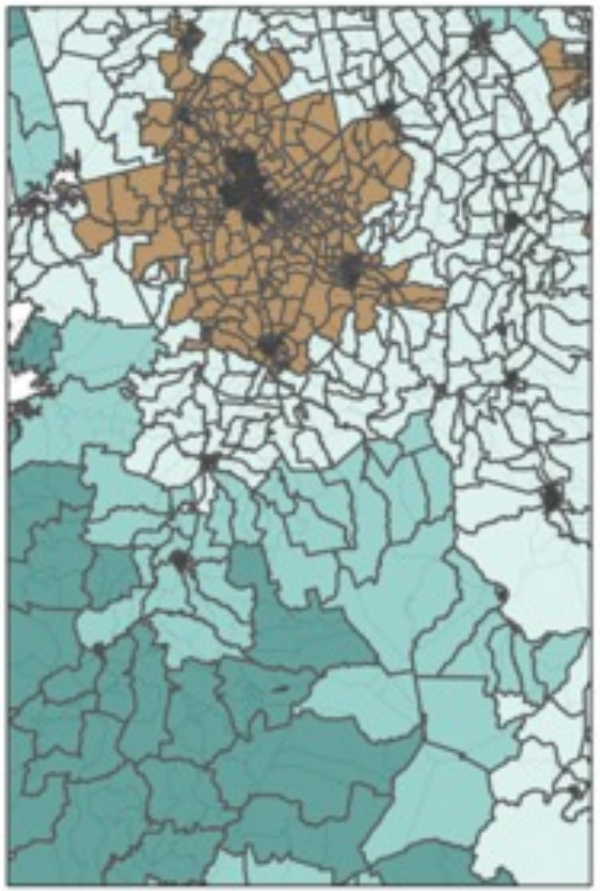

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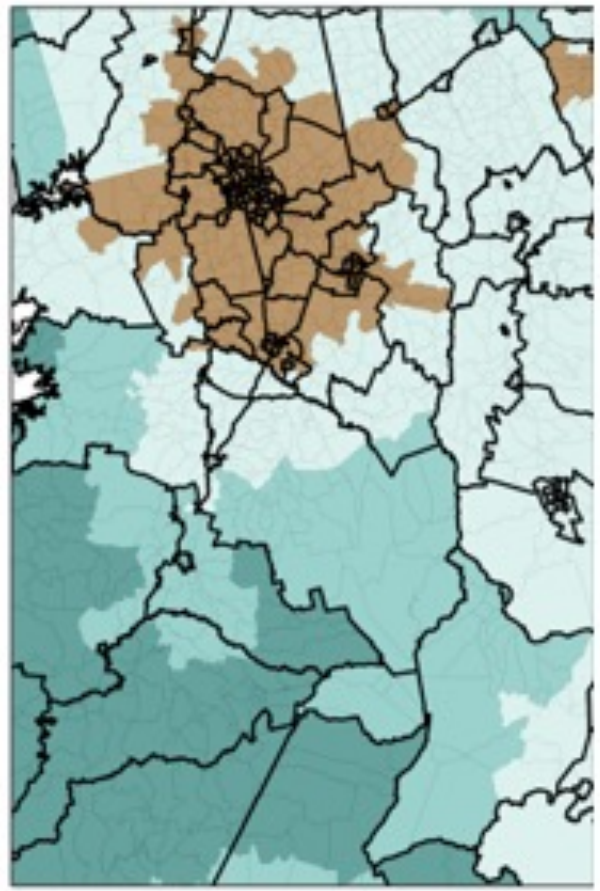
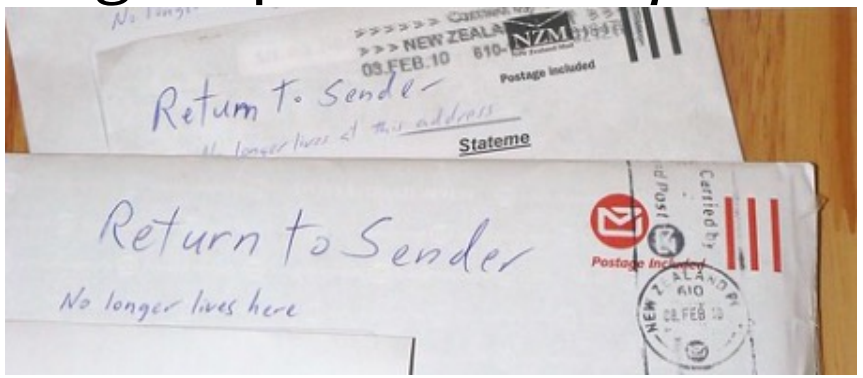


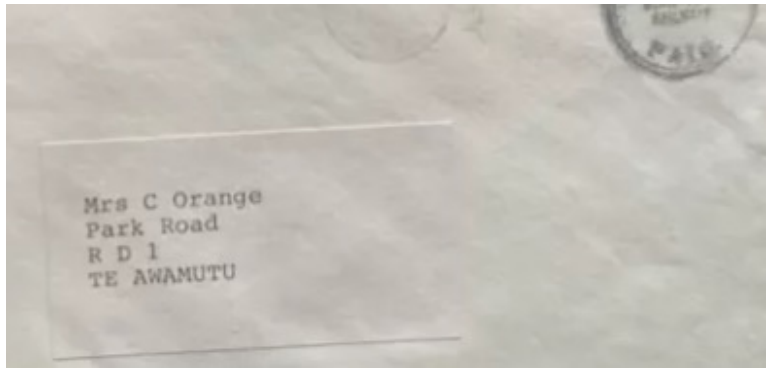
Domiciles

Aggregation/approximation needed to apply GCH to domiciles

Geography based on residential address

Many things impact accuracy





In the National Collections:

- **Domicile always populated** - Irrespective of quality
- **Meshblock left blank if 'too difficult'**

  In MORT, these are manually investigated & geocoded where possible

Address inaccuracy in the NMDS is considerable but no greater for rural than urban residents

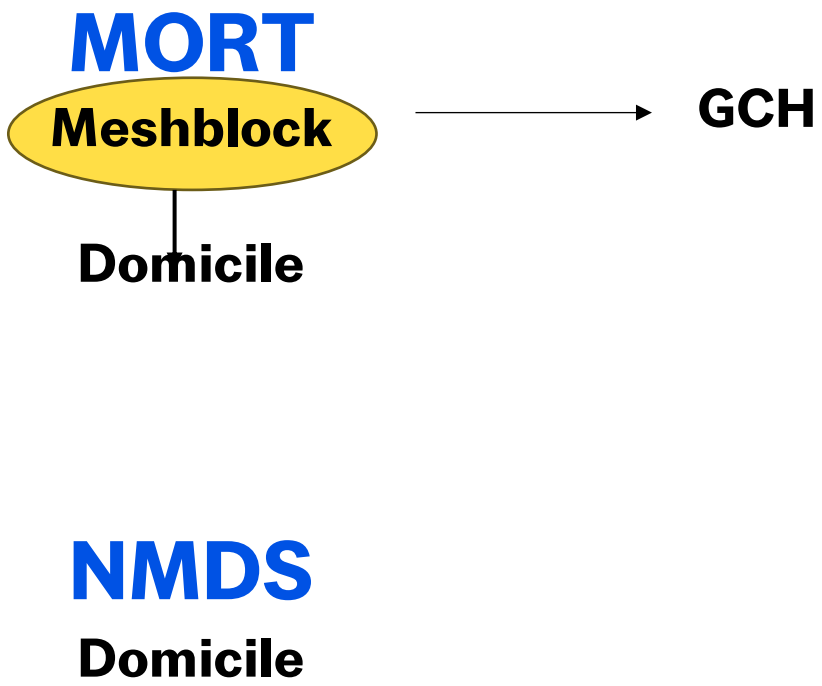
For those that died in hospital....

48,644

in-hospital

deaths

(2015-2018)



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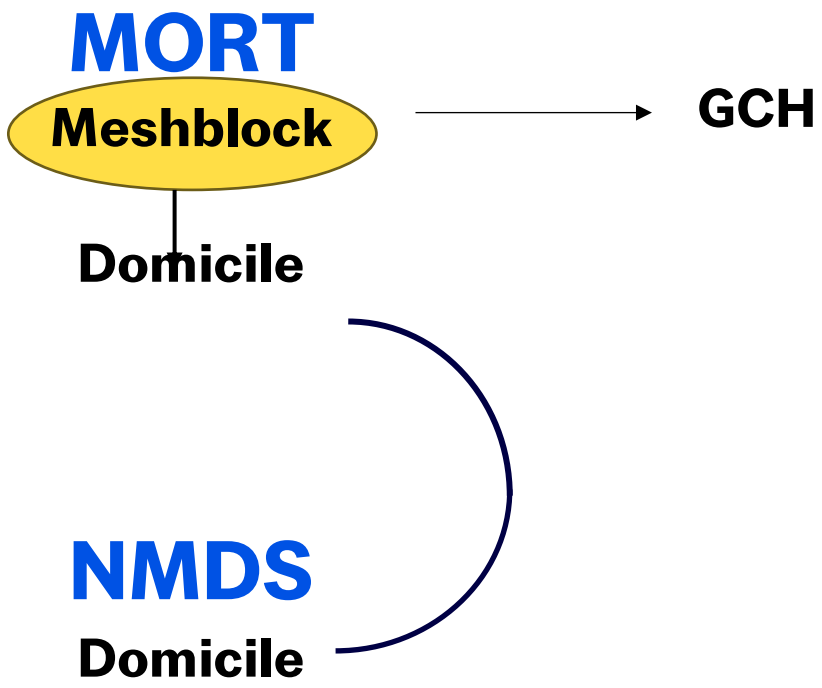

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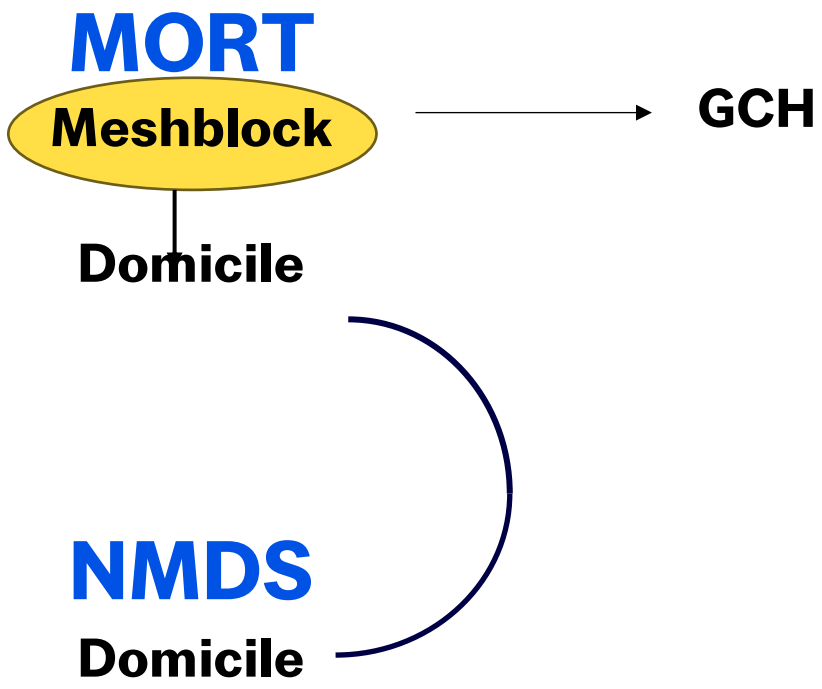

% in NMDS with incorrect domicile

U1	22.4	21.6
U2	19.8	
R1	17.8	16.5
R2	12.6	
R3	16.6	

These inaccuracies may result in an underestimation of rural-urban differences

Impact of these inaccuracies on GCH

GCH from MORT	N	Col %	GCH from NMDS domicile U1 row %	U2	R1	R2	R3	% Incorrect Est.	95% CI
NMDS address error:			*GCH from MORT domicile compared with NMDS domicile*						
U1	27,008	55.7	99.0	0.3	0.5	0.1	0.0	1.0	(0.9, 1.1)
U2	11,041	22.8	0.9	97.8	0.9	0.3	0.0	2.2	(1.9, 2.5)
R1	7,071	14.6	2.7	2.7	93.9	0.7	0.1	6.1	(5.6, 6.7)
R2	2,962	6.1	2.5	1.4	2.2	93.5	0.4	6.5	(5.6, 7.4)
R3	426	0.9	4.0	2.8	1.2	5.6	86.4	13.6	(10.5, 17.2)

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Combining R2 & R3 considerably reduced the inaccuracies

Impact of these inaccuracies on GCH

GCH from MORT domicile	N	Col %	GCH from NMDS domicile row % U1	U2	R1	R2	R3	% Incorrect Est.	95% CI
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R2/R3

7.4

Improving address/geocoding quality will increase accuracy of geographic analyses and should be a priority

Solutions for NMDS address error

- Record accurate address details
  - Verify & update address at time of health-service utilisation
- Invest in accurate geocoding of rural addresses
- Use binary GCH or R2/R3 to reduce misclassification

The mismatch between domiciles used in National Collections and Stats NZ's SA1s adds another layer of inaccuracy

Domicile inaccuracy

GCH from MORT	N	Col %	GCH from MORT domicile row % U1	U2	R1	R2	R3	% Incorrect Est.	95% CI
Aggregation error: GCH from MORT meshblock compared with MORT domicile									
U1	26,967	55.6	99.9	0.0	0.1	0.0	0.0	0.1	(0.1, 0.2)
U2	11,295	23.3	0.0	97.1	2.9	0.0	0.0	2.9	(2.6, 3.3)
R1	7,490	15.4	0.9	0.9	88.0	10.1	0.1	12.0	(11.2, 12.7)
R2	2,330	4.8	0.0	0.2	3.7	93.0	3.5	7.5	(6.4, 8.6)
R3	426	0.9	0.0	0.2	7.5	12.9	79.3	20.7	(16.9, 24.8)

Solutions for Aggregation error

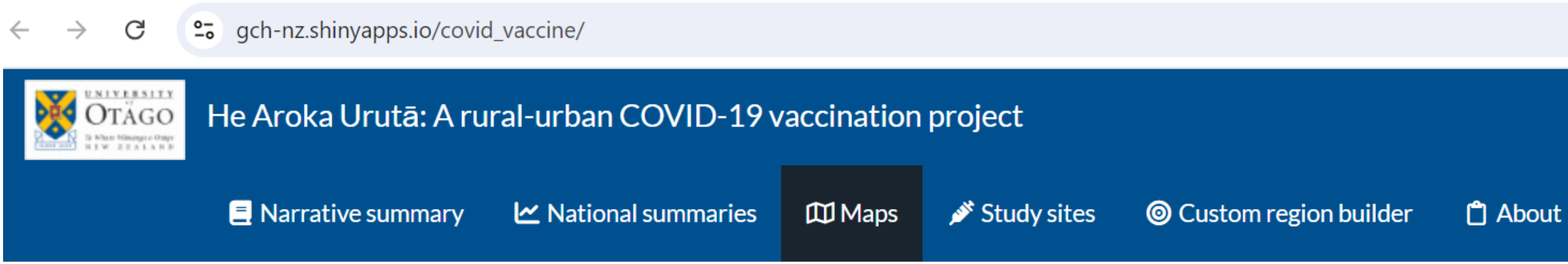
- National Collections should use SSGA (not domiciles)

- Record addresses using x-y co-ordinates, make available using smallest geographical unit

47m

There is tension between privacy 'rules and dissemination of rural data, especially for rural Māori and Pacific peoples

Our recent experience



Development of an interactive web app to examine rural-urban variation in COVID-19 vaccination rates and to inform case-study site selection.

Controls

Change data

Opacity

0 0.5 1

0 0.1 0.2 0.4 0.6 0.8 1

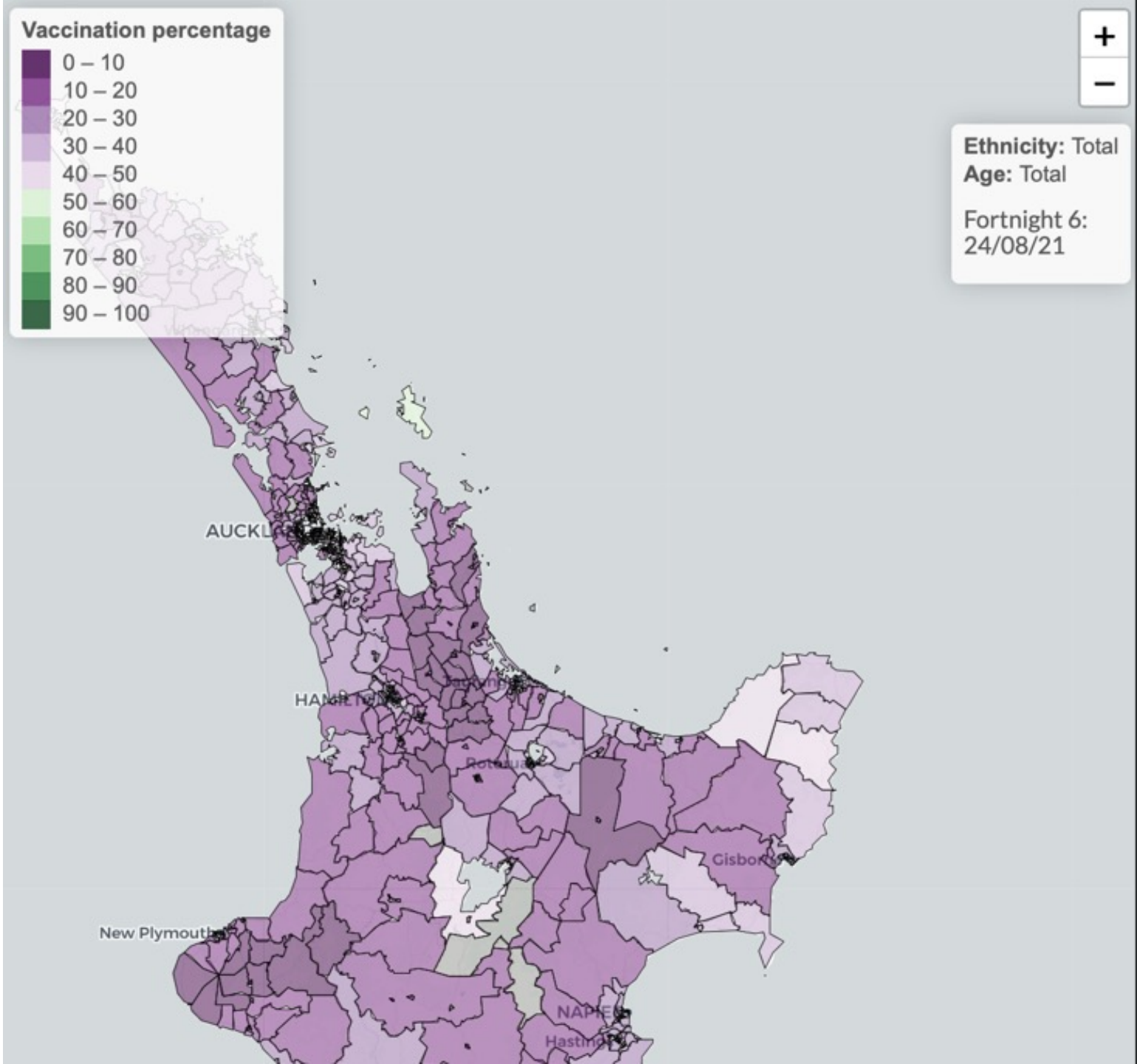
Fortnight

0 15

0 2 4 6 8 10 12 14 15

Select ethnicity

Total



MoH/TWO

- Funded project
- Provided data

“It is the responsibility of the author(s) of any publications to ensure that information is not published in a manner which could reasonably be expected to identify any individual concerned.” (https://www.health.govt.nz/publication/current-data-access-policy)

Reviewers' comments

" The work presented here is in conflict with what would be required by the Stats NZ five safes framework, or by Nga Tikanga Paihere. Indeed, ... values that are displayed in the web app ... would constitute a data breach if the data had originated from the IDI. "

"I would argue that IDI-based rules would be a good starting point (at least). This would require random rounding to base 3, suppression of cells <6 and secondary suppression where appropriate."

MoH/TWO

- Funded project
- Provided data

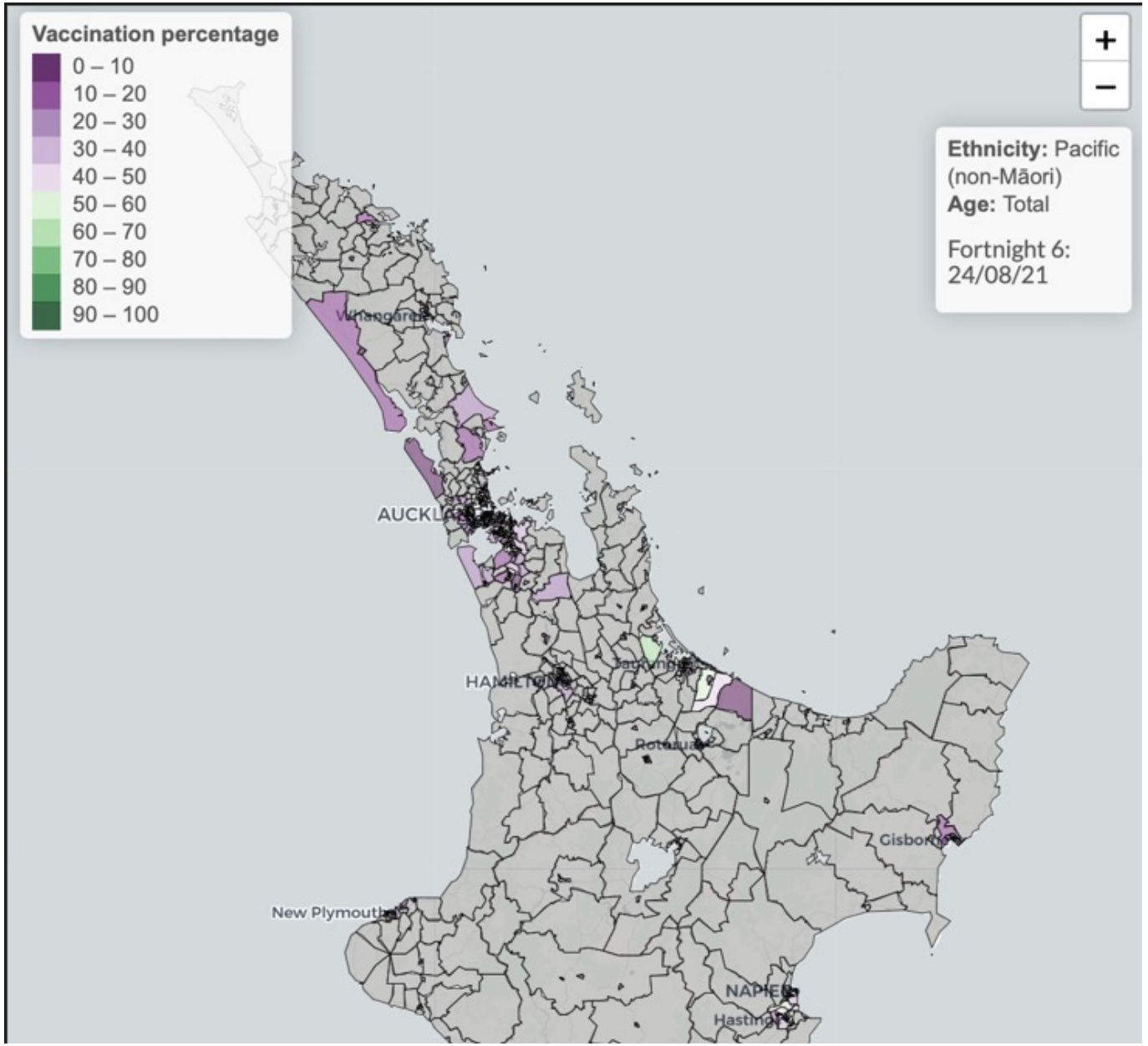
"It is the responsibility of the author(s) of any publications to ensure that information is not published in a manner which could reasonably be expected to identify any individual concerned."
https://www.health.govt.nz/publication/current-data-access-policy

Stats NZ

Type of statistic	Type of output	Output rule/s	
		Survey (4.0.1)	IDI/LBD (4.0.2)
Descriptive statistics	Unweighted counts	4.1.1–4.1.3	4.1
	Weighted counts	4.2.1–4.2.4	4.2
	Count magnitudes		4.12
	Totals and means (value magnitudes)	4.3.1	4.3.2–4.3.4
	Medians and other quantiles	4.4	4.4
	Percentages, proportions, and ratios	4.5.1–4.5.2	4.5.4
	Maximum/minimum values	4.6	4.6
	Aggregation	4.10	4.10
	Suppression	4.11	4.11
	Underlying entities (for example, businesses)		4.13
	Simulated output		4.15
Analytical output	Regression models	4.7	4.7
Output from specific datasets	Suppression under 6 and 3		4.11.4
	Census data		4.14
	Annual Enterprise Survey data		4.16
	Overseas Merchandise Trade data		4.17
	Agricultural production data		4.18
	IDI population explorer		4.19
Graphical output	Graphs	4.8	4.8
Programming code	Programming code and logs	4.9	4.9

https://www.stats.govt.nz/assets/Methods/Microdata-Output-Guide-2020-v5-Sept22update.pdf

Implementing these changes caused a large amount of data suppression especially for Pacific peoples in rural communities and to a lesser extent SA2 with small Māori communities



Concerns

- Discussion is needed over ‘best practice’ confidentiality
  - Is it appropriate for Stats NZ’s Microdata output rules be used the ‘gold standard” for all data?

- An over-prescriptive approach to privacy/confidentiality could have a disproportionate impact on data for rural communities

Other data pitfalls: Limitations of rural hospital catchments

Prof Garry Nixon

CSIRO PUBLISHING

The Royal New Zealand College of General Practitioners
Te Whare Tohu Rata o Aotearoa

QUANTITATIVE RESEARCH
https://doi.org/10.1071/HC22133

Journal of Primary Health Care

Defining catchment boundaries and their populations for Aotearoa New Zealand's rural hospitals

Jesse Whitehead[A,*], Katharina Blattner[A,B], Rory Miller[A,C], Sue Crengle[D], Stephen Ram[E], Xaviour Walker[F,G] and Garry Nixon[A,H]

- Drive time approach
- Hospital Discharge approach
  - SA2
  - Domicile

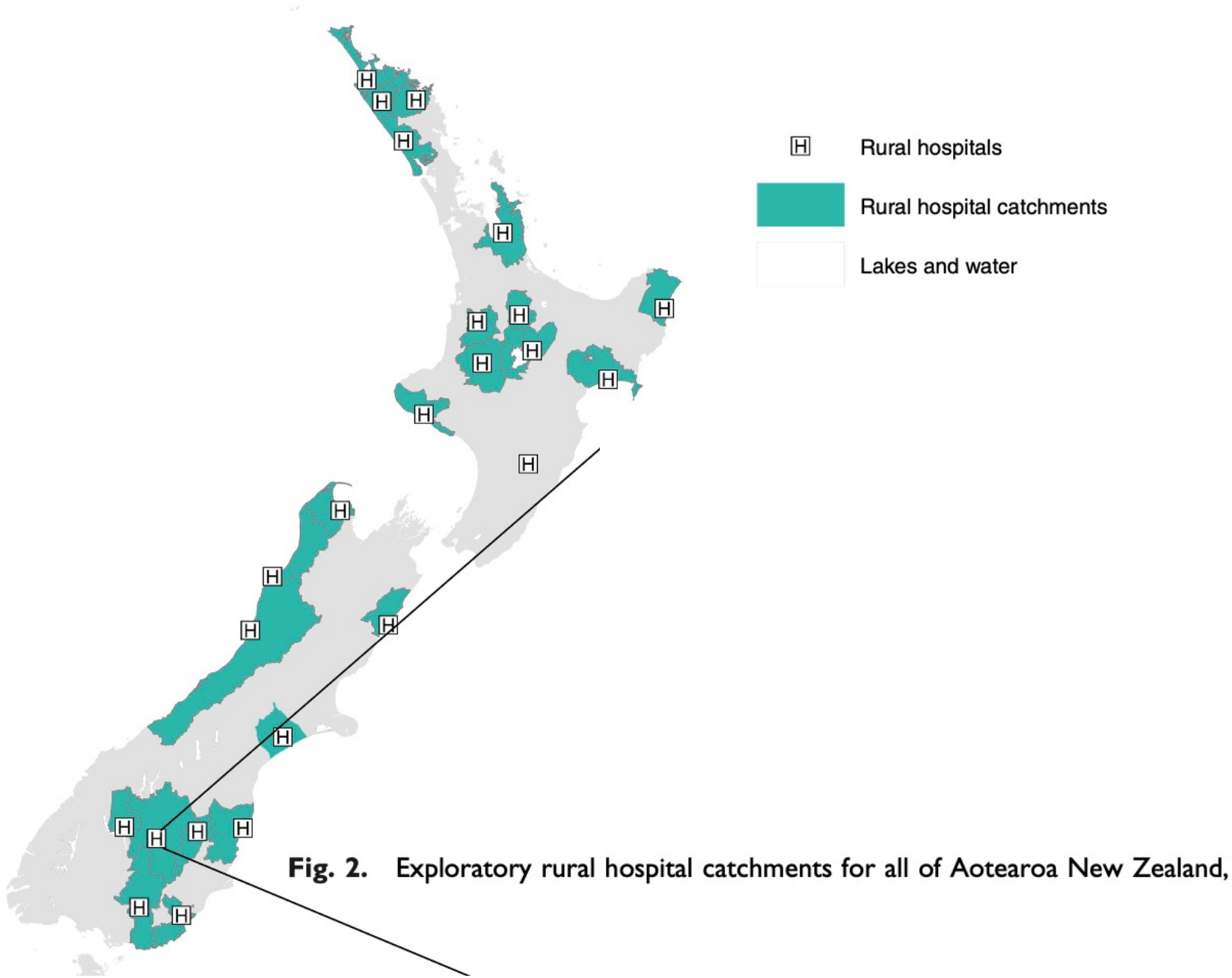
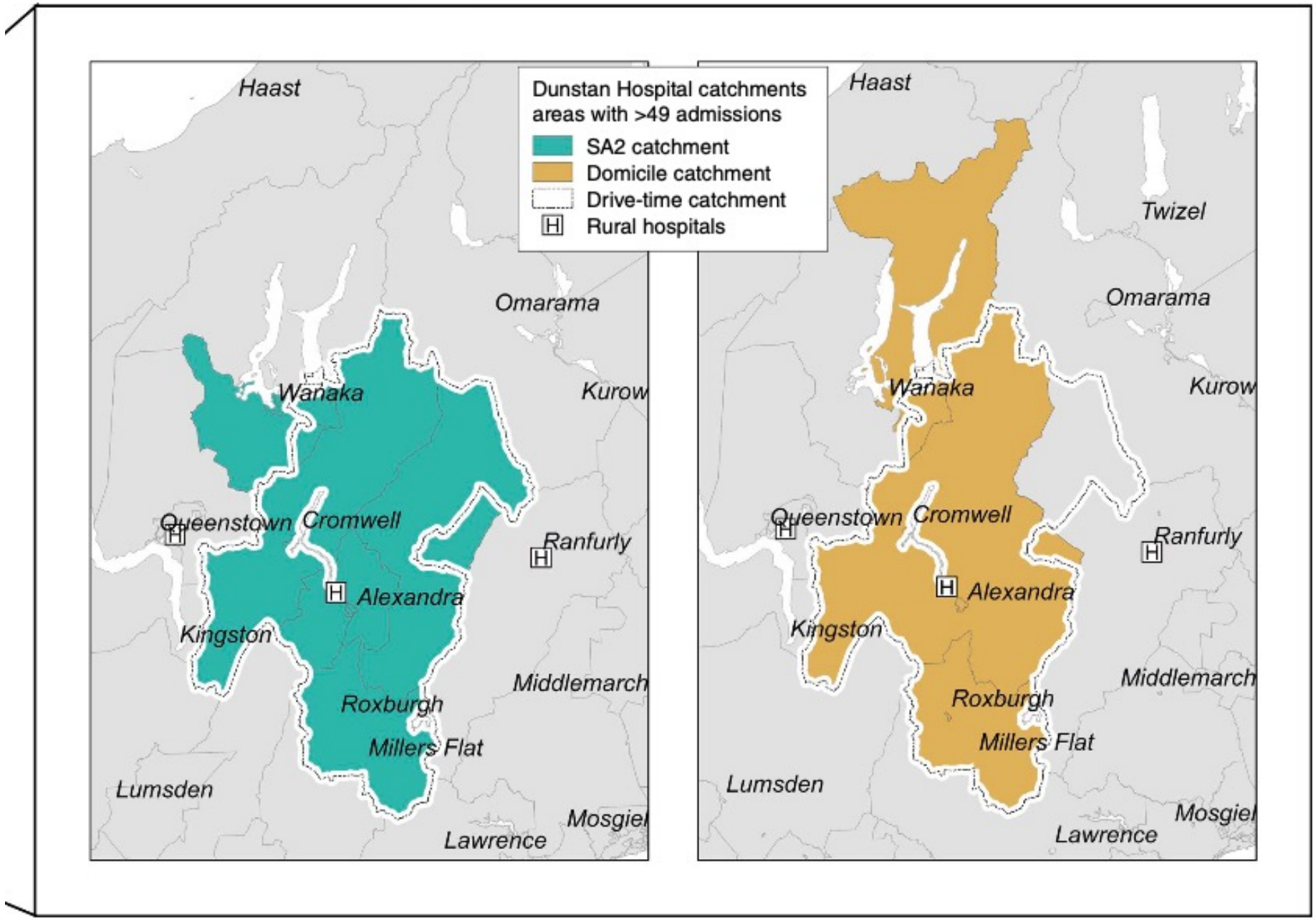


Fig. 2. Exploratory rural hospital catchments for all of Aotearoa New Zealand,


Dunstan Hospital catchments
areas with >49 admissions
SA2 catchment
Domicile catchment
Drive-time catchment
Rural hospitals
Haast
Omarama
Wanaka
Kurow
Queenstown
Cromwell
Ranfurly
Alexandra
Kingston
Middlemarch
Roxburgh
Millers Flat
Lumsden
Mosgiel
Lawrence
Haast
Twizel
Omarama
Wanaka
Kurow
Queenstown
Cromwell
Ranfurly
Alexandra
Kingston
Middlemarch
Roxburgh
Millers Flat
Lumsden
Mosgiel
Lawrence

- ‘Hospital discharge’ preferred method for defining rural hospital catchments

- More work is needed to refine the framework and to check the ‘on the ground’ validity

The GCH framework & updates
Using the GCH

Dr Jesse Whitehead

In NZ rural urban disparities exist in the determinants of health, health outcomes and service utilisation

Rurality exacerbates ethnic & socioeconomic disparities

Sociodemographic & determinants of health of rural populations

Assoc Prof Gabrielle Davie

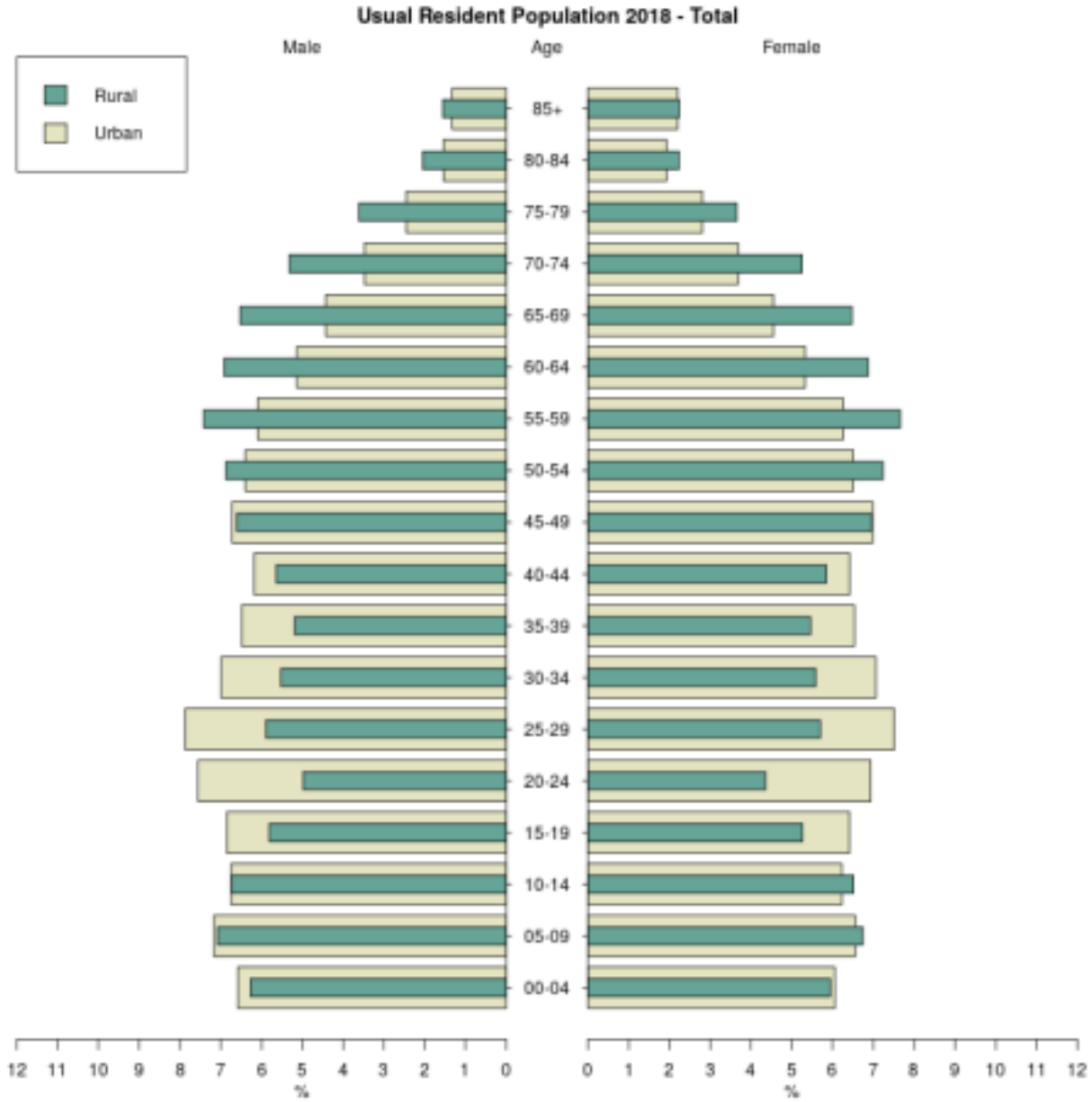
Rural populations

are older

New Zealand Population Review, 49, 27–69.

Comparison of the Sociodemographic Composition of Rural and Urban Aotearoa New Zealand: Insights from Applying the Geographic Classification for Health to the 2018 Census

JESSE WHITEHEAD,[*, 1] JUNE ATKINSON,[2] GABRIELLE DAVIE,[3] BRANDON DE GRAAF,[3] KYLE EGGLETON,[4] SUE CRENGLE,[5] RORY MILLER,[6, 7] KATHARINA BLATTNER,[6, 8] PETER CRAMPTON,[9] AND GARRY NIXON[6, 10]


Usual Resident Population 2018 - Total
Male
Age
Female
Rural
Urban
85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
05-09
00-04
12 11 10 9 8 7 6 5 4 3 2 1 0
%
0 1 2 3 4 5 6 7 8 9 10 11 12
%

2018 Census variables		*Urban*			*Rural*		*All urban*	*All rural*
		U1	U2	R1	R2	R3		
Age in yrs (col%)	< 15	19.5	20.3	19.5	19.9	19.8	19.7	19.6
	15–29	22.5	18.1	16.2	15.6	15.5	21.6	16.0
	30–64	44.9	43.4	44.8	44.7	46.8	44.6	44.9
	65+	13.1	18.2	19.4	19.8	17.9	14.2	19.5

2018 Census variables		*Urban*			*Rural*		*All urban*	*All rural*
		U1	U2	R1	R2	R3		
Age in yrs (col%)	< 15	19.5	20.3	19.5	19.9	19.8	19.7	19.6
	15–29	22.5	18.1	16.2	15.6	15.5	21.6	16.0
	30–64	44.9	43.4	44.8	44.7	46.8	44.6	44.9
	65+	13.1	18.2	19.4	19.8	17.9	14.2	19.5

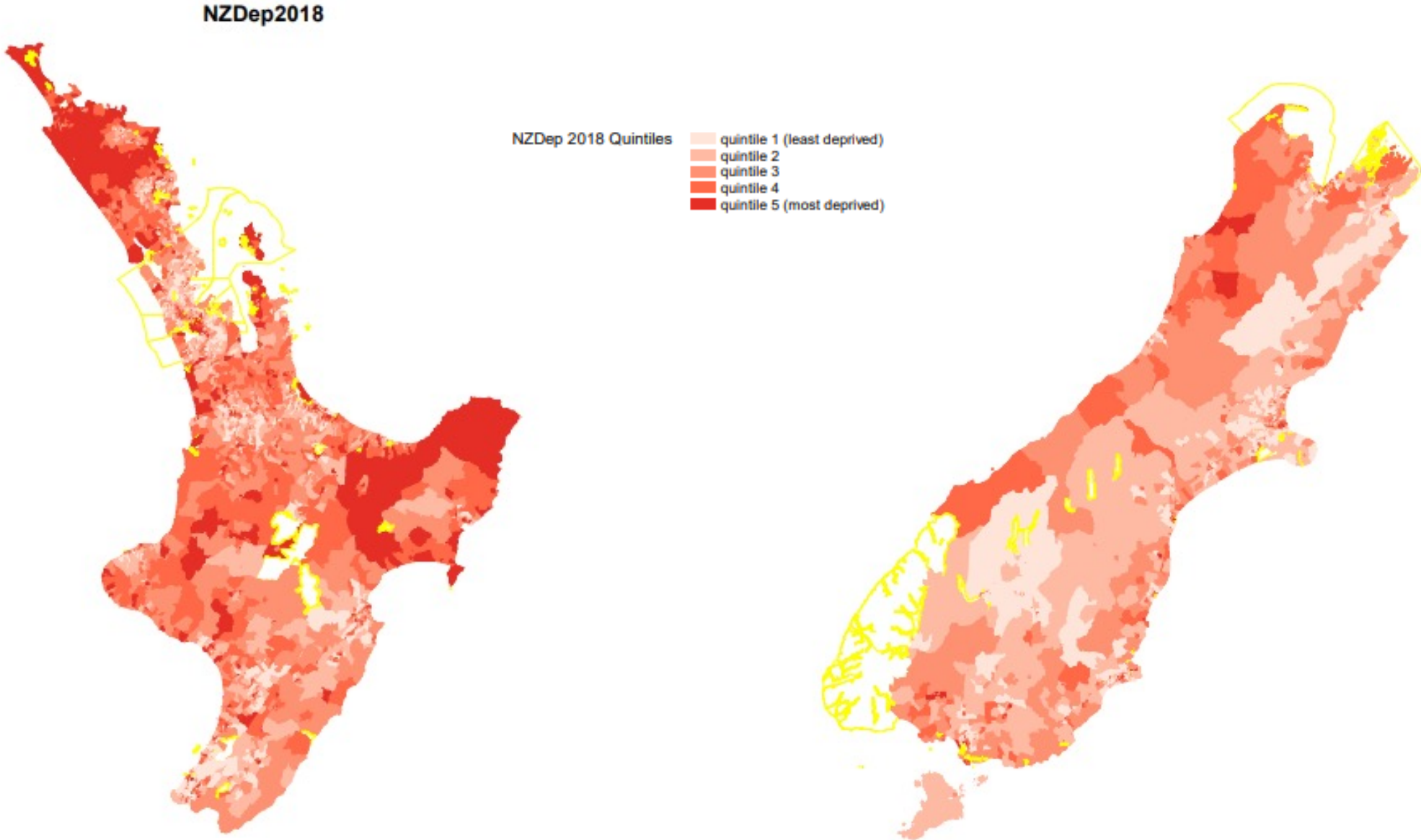
Several determinants of health *are worse in rural areas*

	All urban	*All rural*
Smoking status		
Regular smoker	12.4	16.5
Ex-smoker	20.9	27.0
Never smoked regularly	66.7	56.5

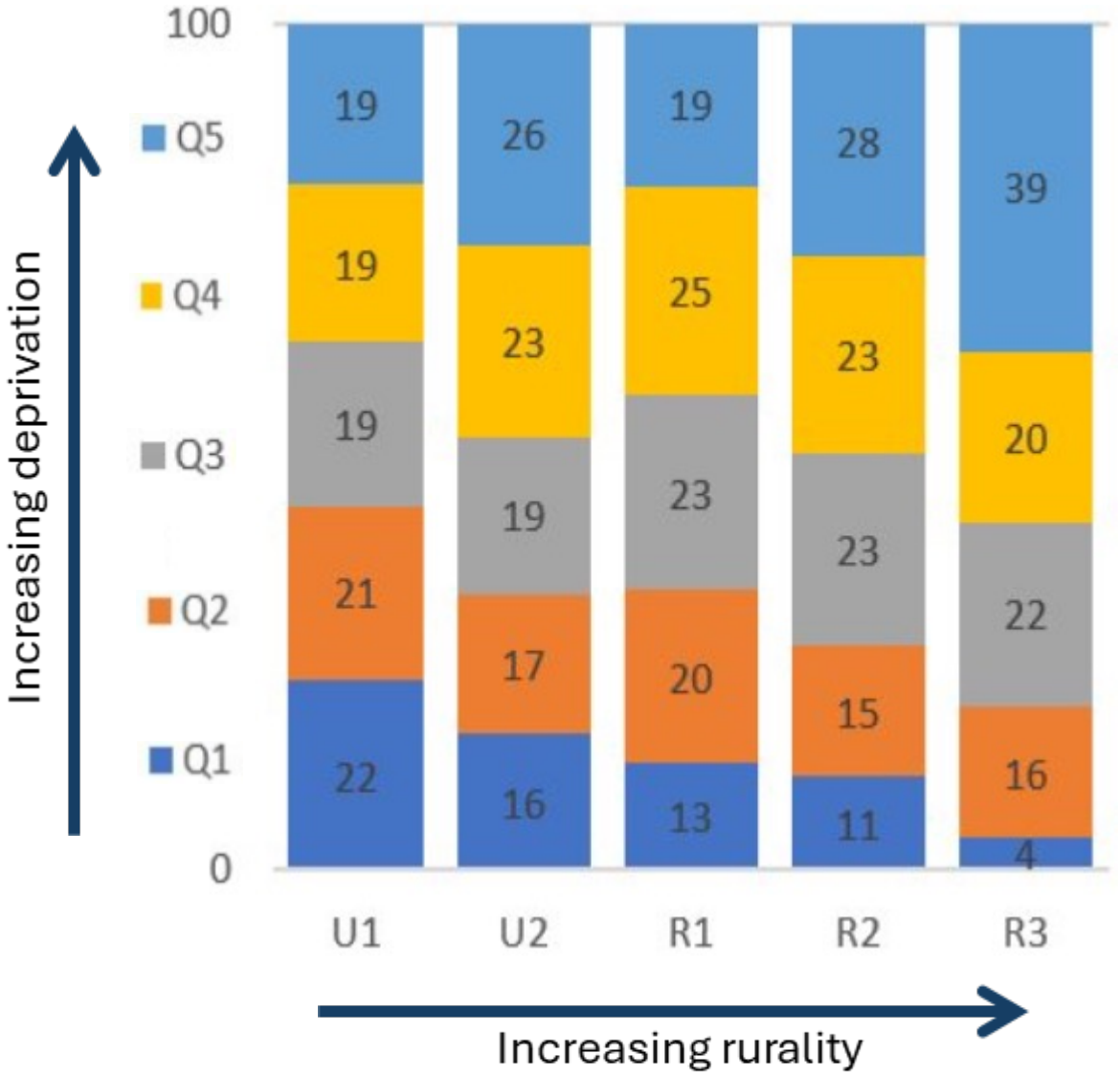
≥ 15 (yrs)

	All urban	*All rural*
Total personal income		
< 20k	34.4	35.1
20–50k	33.1	37.5
50–70k	14.5	13.9
>70k	18	13.5

Wealth is concentrated in the cities &
poverty in more remote communities


NZDep2018
NZDep 2018 Quintiles
quintile 1 (least deprived)
quintile 2
quintile 3
quintile 4
quintile 5 (most deprived)

To what extent does rurality and socioeconomic deprivation define the same population?



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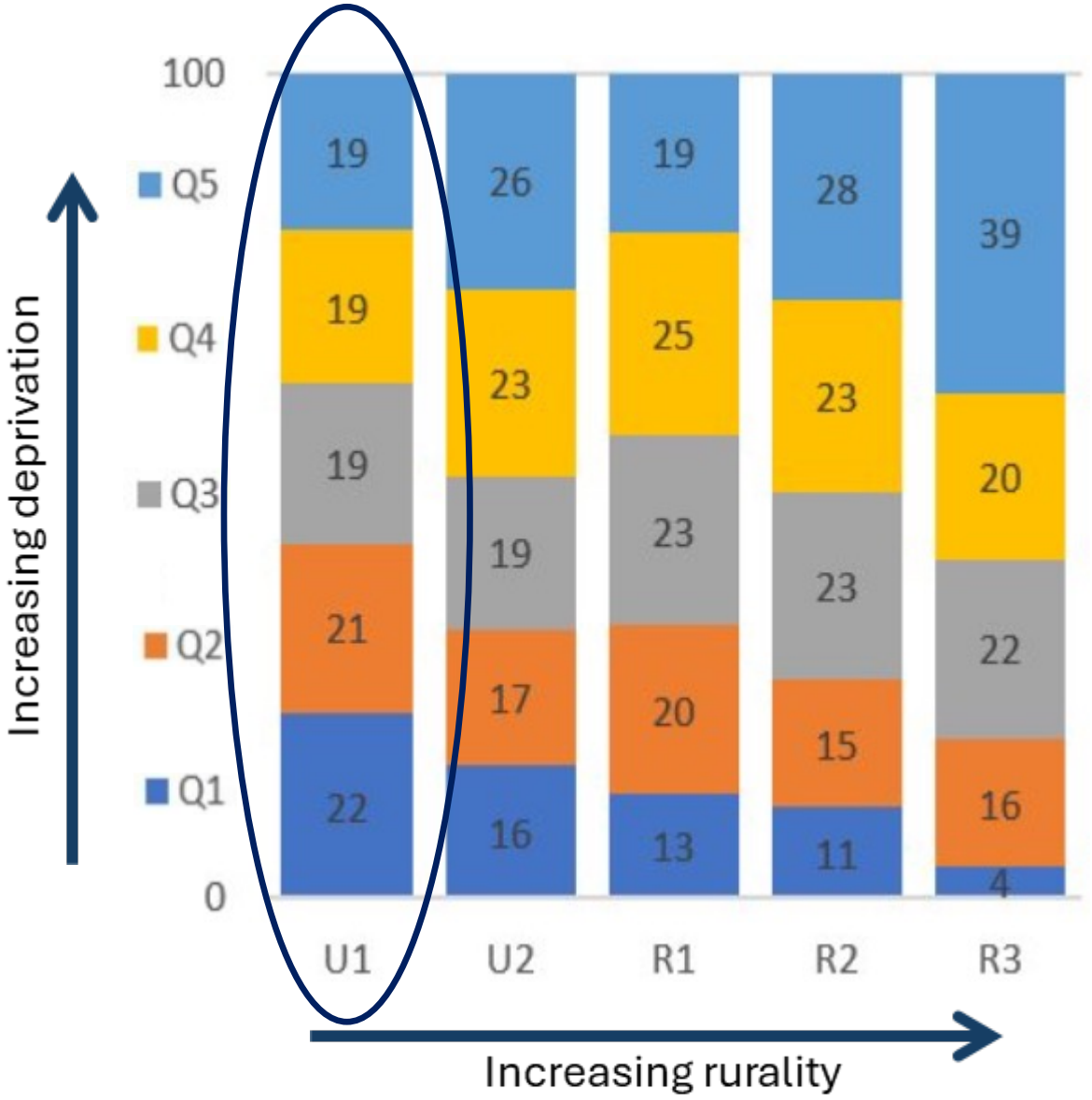

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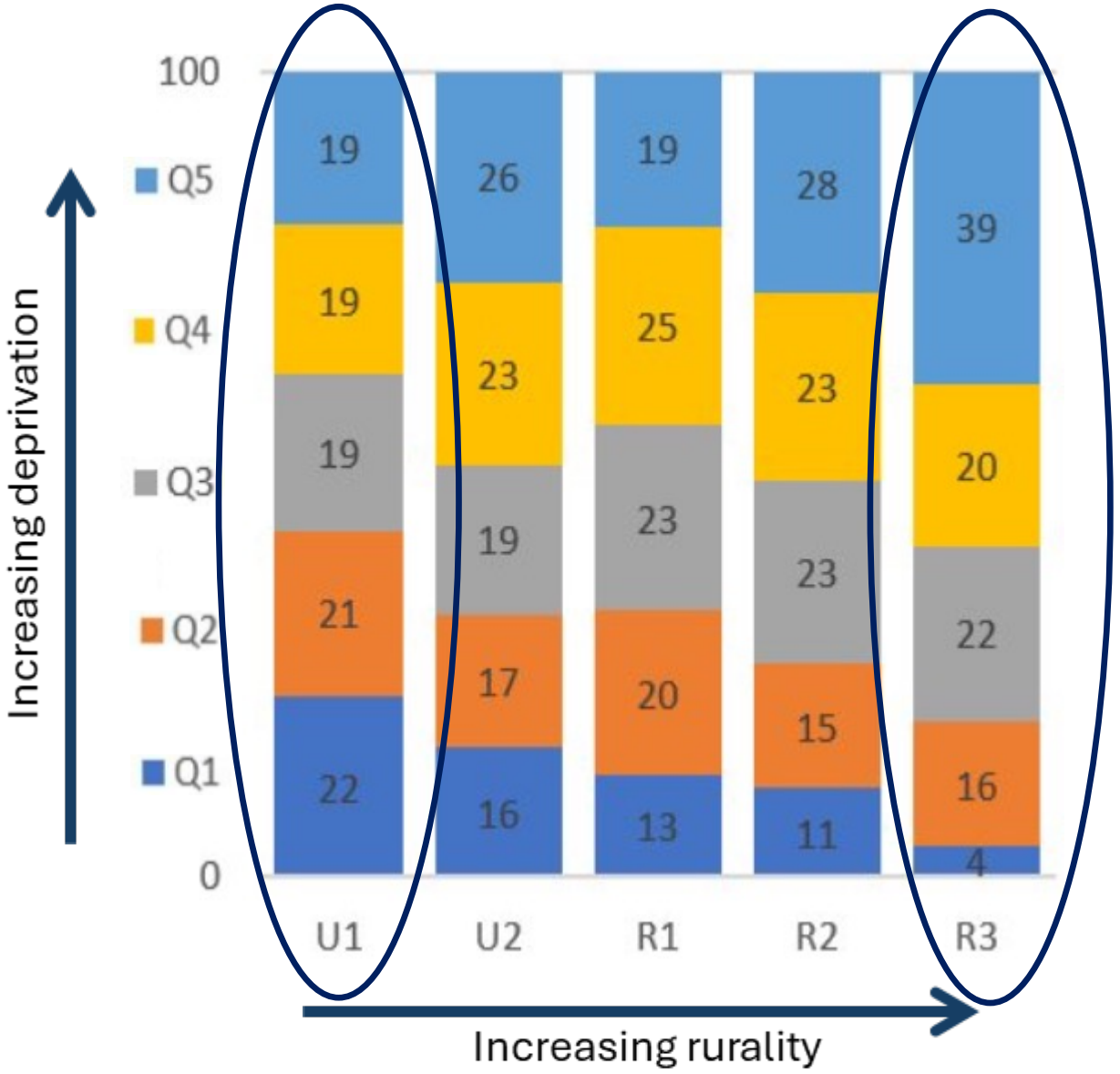

Māori are much more likely to live *in rural areas*

2018 Census variables		*Rural*			*All urban*	*All rural*
		R1	R2	R3		
Ethnicity total responses (col%)	European	83.4	80.2	74.0	67.4	81.9
	Māori	19.0	26.2	32.5	15.2	22.0
	Pacific	3.5	2.4	2.9	9.3	3.1
	Asian	4.4	3.5	3.2	17.6	4.1
	MELAA & Other	2.2	1.8	2.0	2.9	2.1

2018 Census variables		*Rural*			*All urban*	*All rural*
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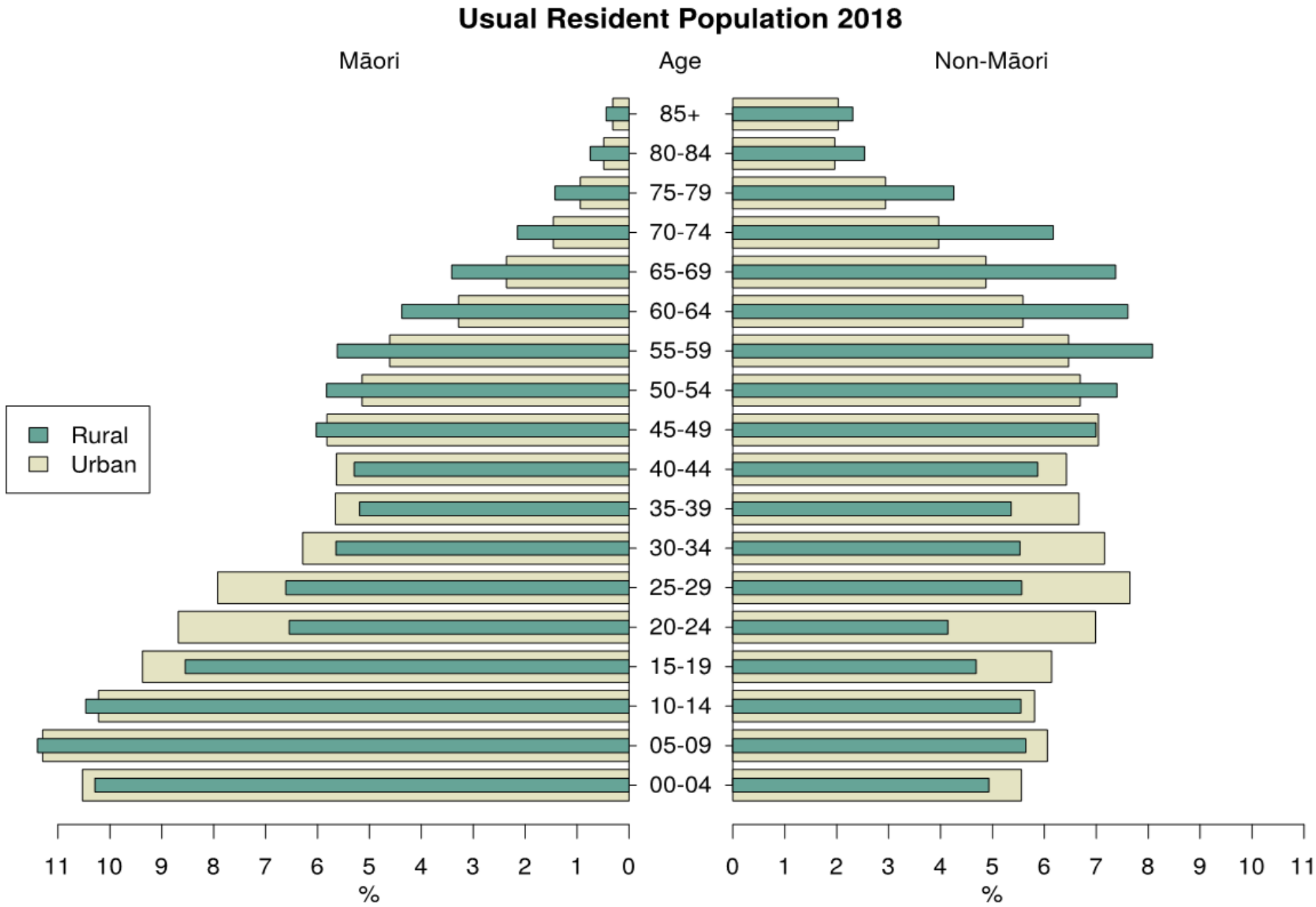
Usual Resident Population 2018
Māori
Age
Non-Māori
Rural
Urban
85+
80-84
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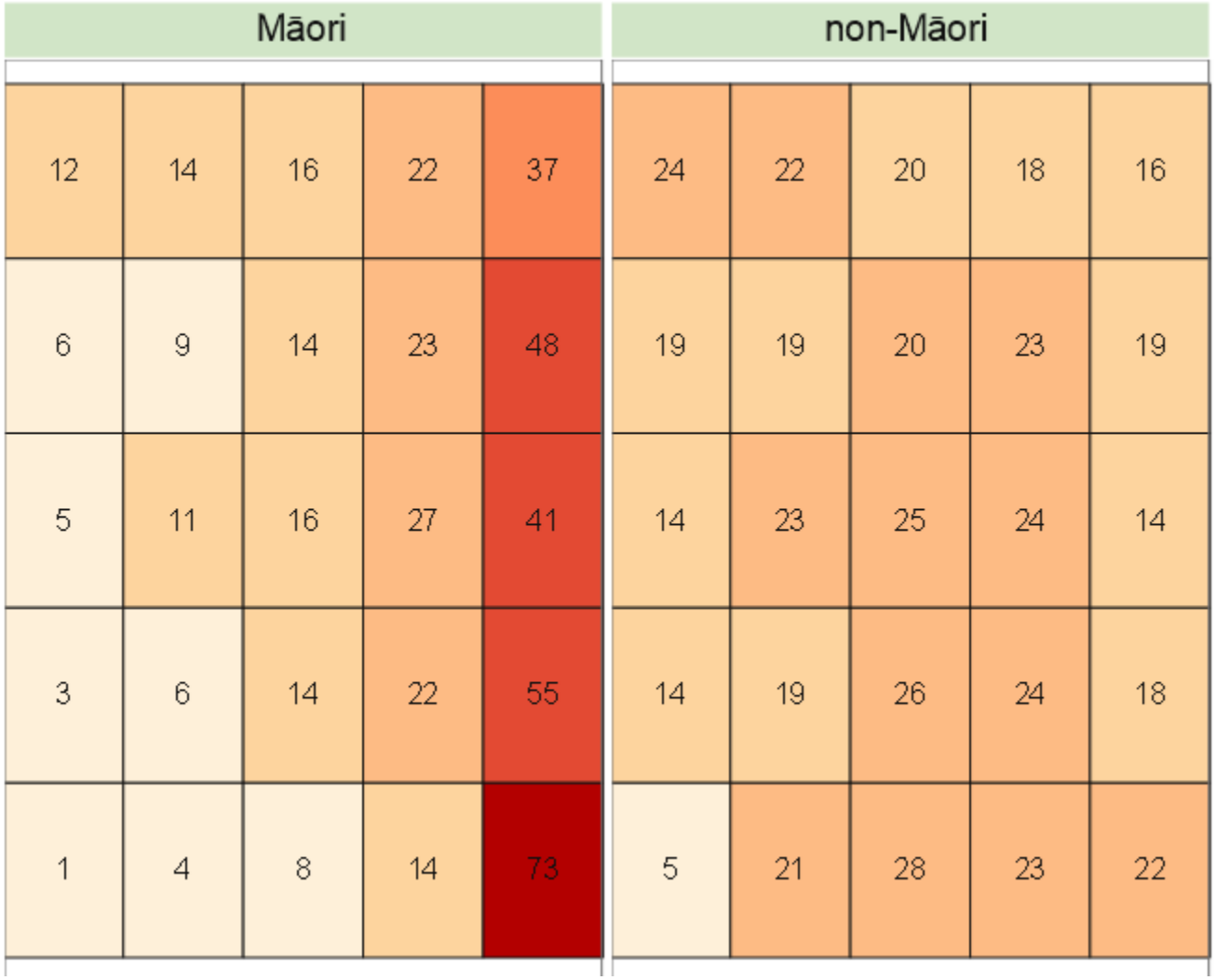
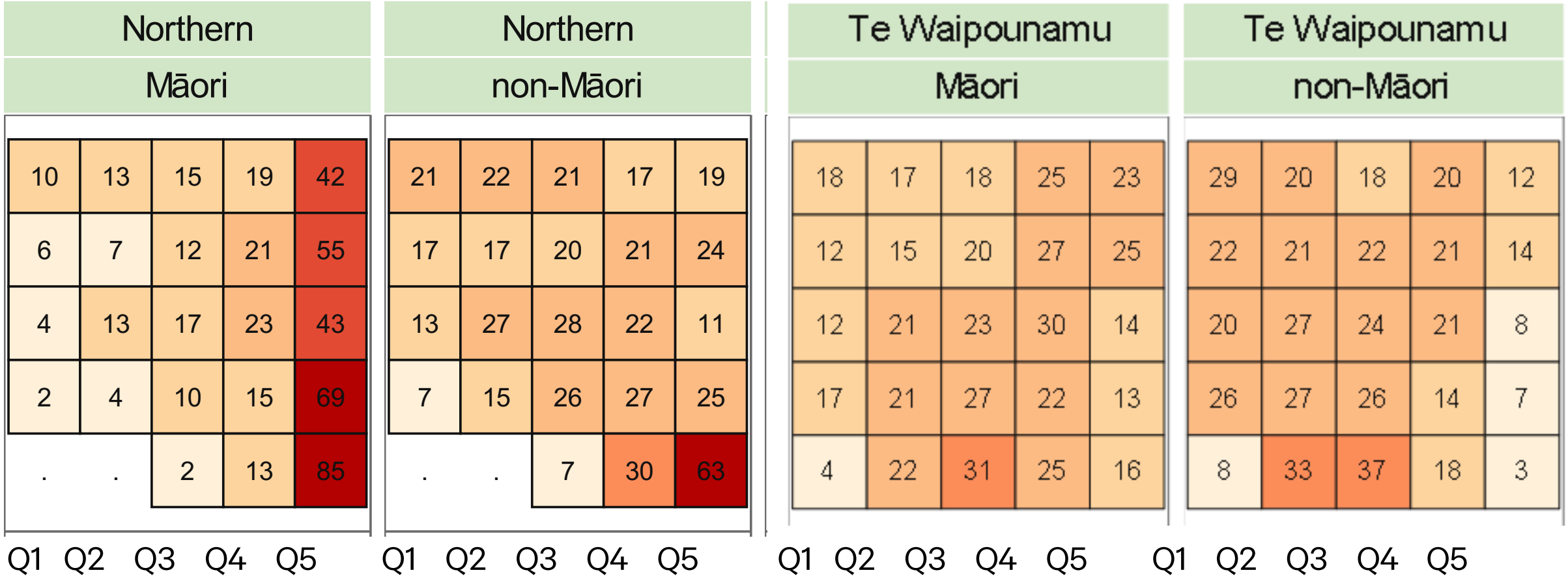
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
05-09
00-04
11 10 9 8 7 6 5 4 3 2 1 0
%
0 1 2 3 4 5 6 7 8 9 10 11
%

Rurality & socioeconomic deprivation *intersect differently for Māori*

Distribution of Socioeconomic Deprivation by GCH





Davie G, Whitehead J, Crengle S, de Graaf B, Blattner K, Nixon G. Rurality, socioeconomic deprivation and ethnicity: their intersection and impact on mortality in Aotearoa New Zealand. (Soon to be submitted to Health and Place)

Māori:nonMāori mortality inequities are
much larger than rural:urban disparities

& at their greatest
in remote communities

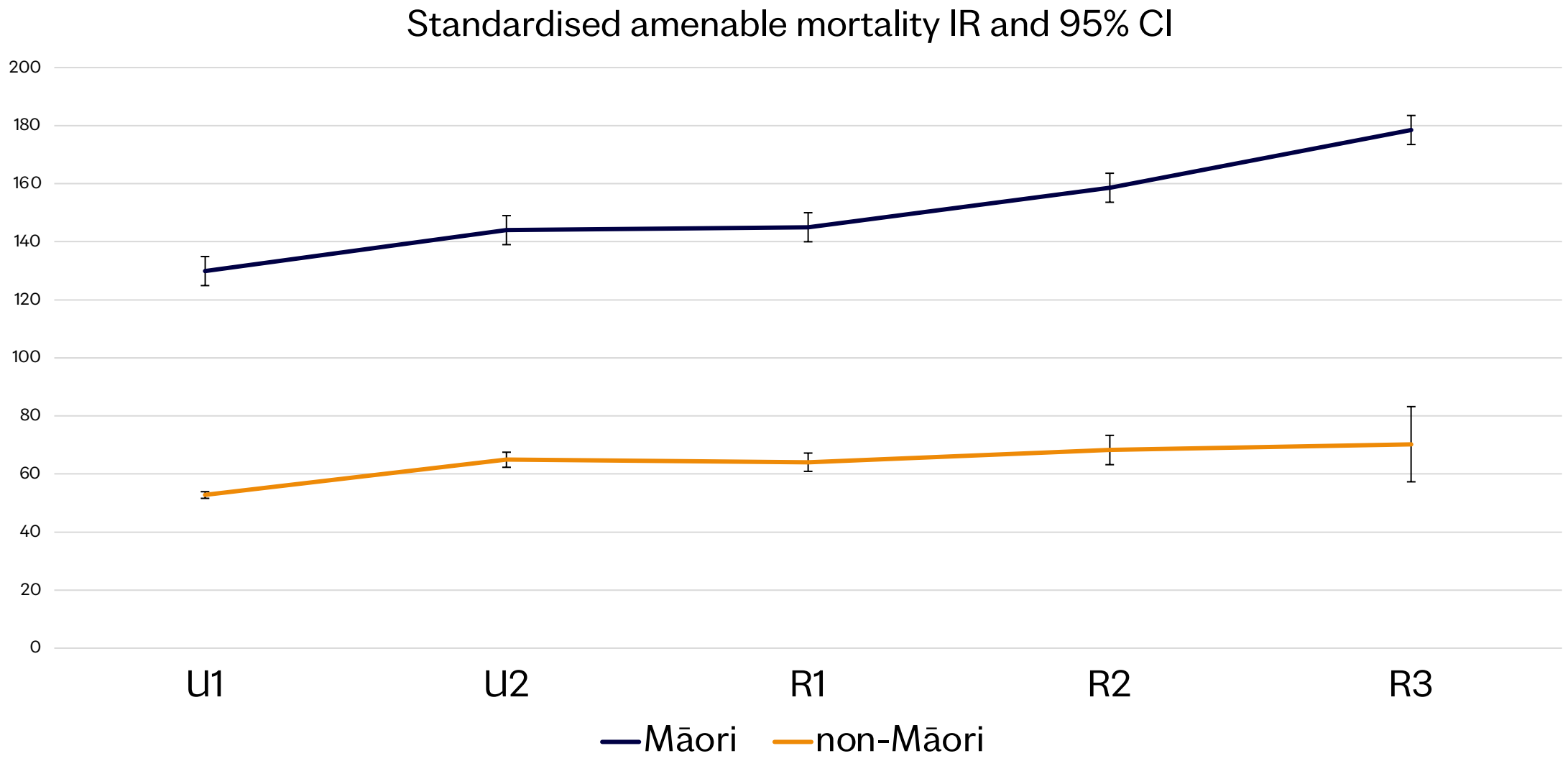
Amenable mortality, binary GCH (Crengle et al. 2022)

	Māori	Non-Māori	Māori:Non-Māori	Māori Rural:Urban
	Standardised IR Rate 95% CI	Standardised IR Rate 95% CI	Standardised IRR 95% CI	Standardised IRR 95% CI
Urban	134·9 130·7, 139·1	55·1 54·1, 56·2	2·45 2·36, 2·54	ref
Rural	152·9 145·4, 160·5	65·5 62·9, 160·5	2·34 2·19, 2·49	1·13 1·07, 1·20

Amenable mortality, binary GCH (Crengle et al. 2022)

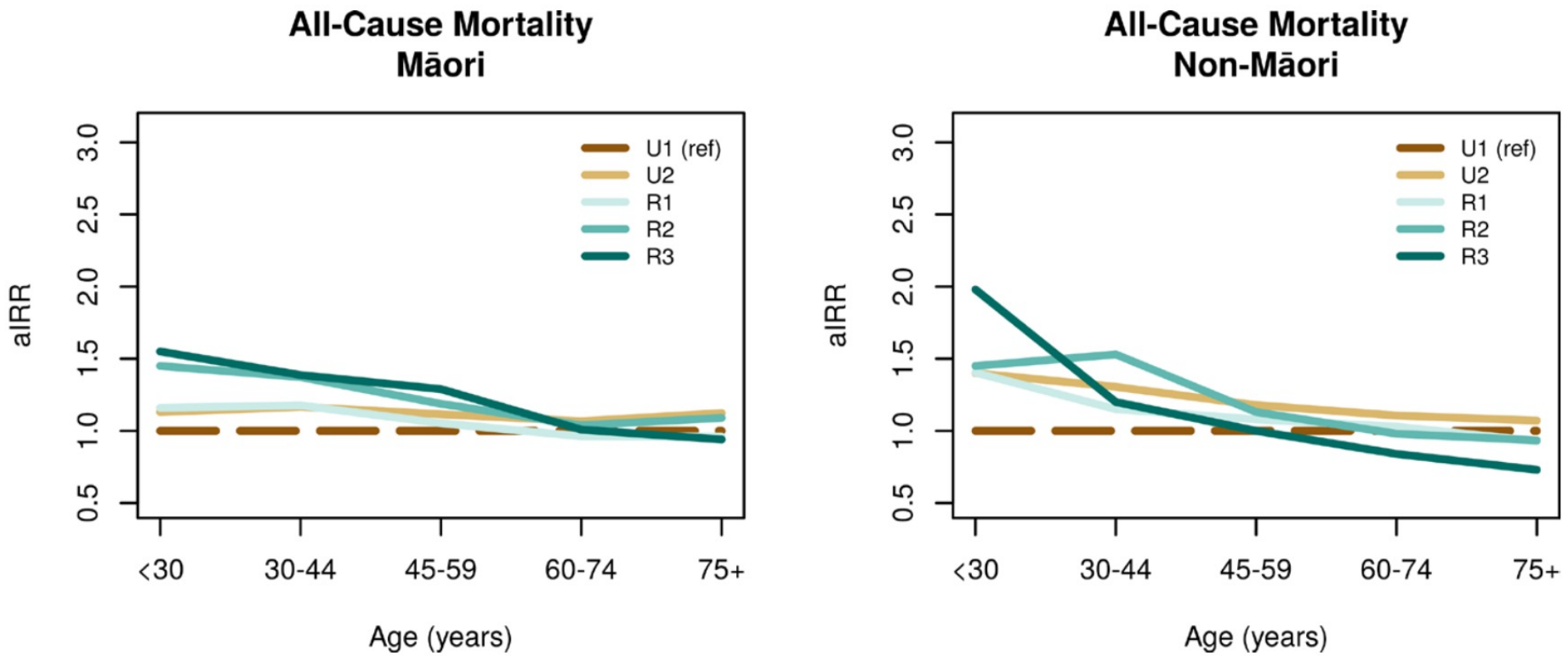
	Māori	Non-Māori	Māori:Non-Māori	Māori Rural:Urban
	Standardised IR Rate 95% CI	Standardised IR Rate 95% CI	Standardised IRR 95% CI	Standardised IRR 95% CI
Urban	134·9 130·7, 139·1	55·1 54·1, 56·2	2·45 2·36, 2·54	ref
Rural	152·9 145·4, 160·5	65·5 62·9, 160·5	2·34 2·19, 2·49	1·13 1·07, 1·20

Amenable mortality, 5 level GCH, ($p < 0.001$) (Crengle et al. 2022)

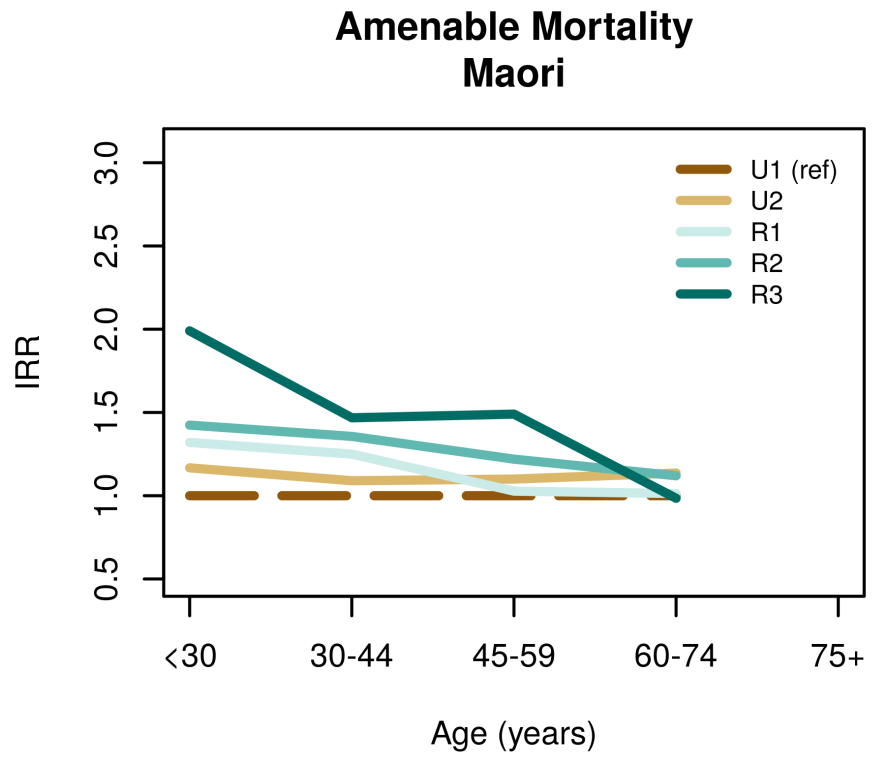


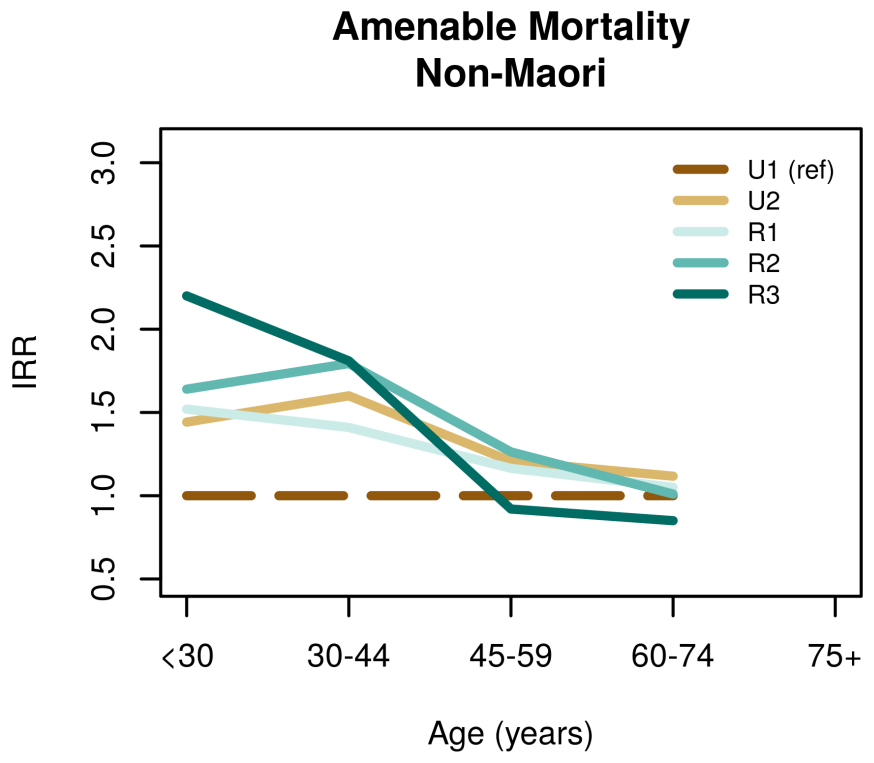
Rural people have poorer health outcomes

- *NZ is similar to other high income low population density countries*
- *Rural mortality rates are higher especially in the younger age groups and more remote communities (and for amenable mortality including male suicide).*
- *The impact of migration is unknown*

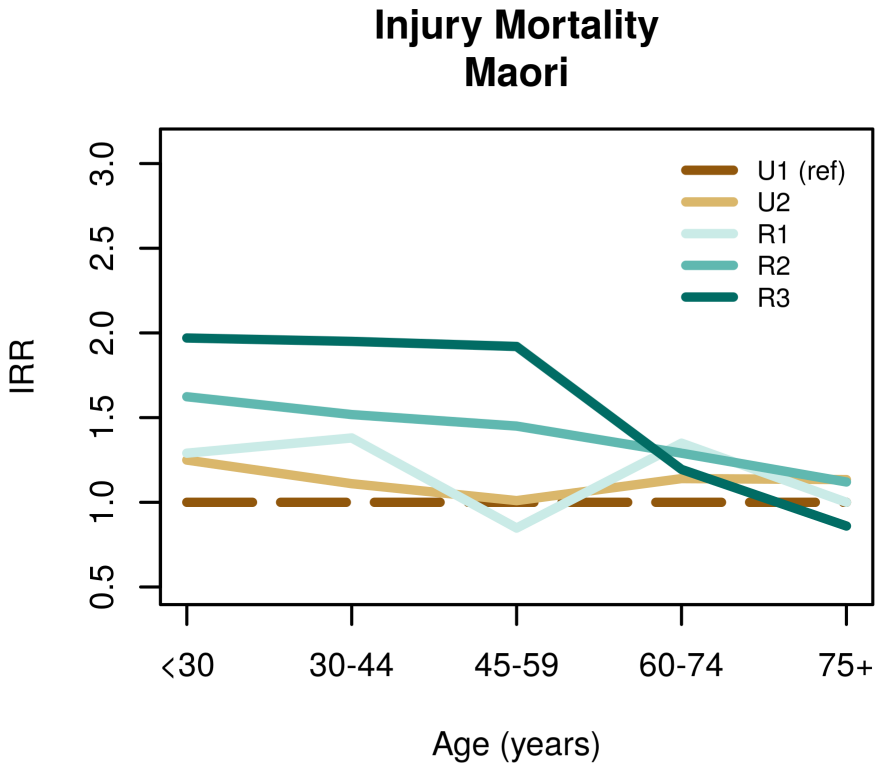


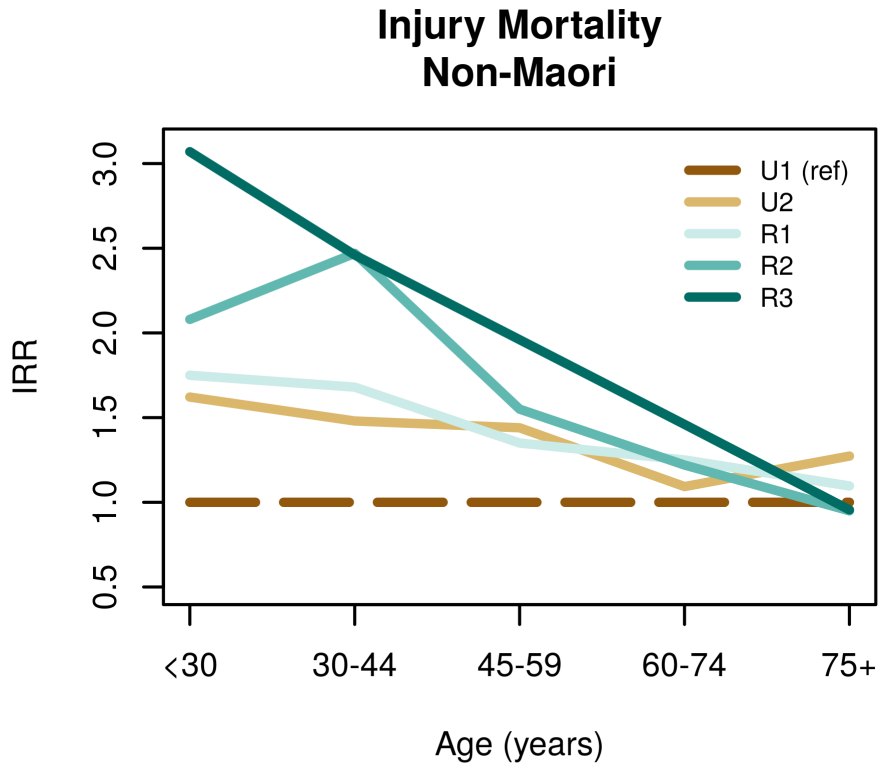
GCH age stratified amenable mortality rate ratios with U1 as reference.



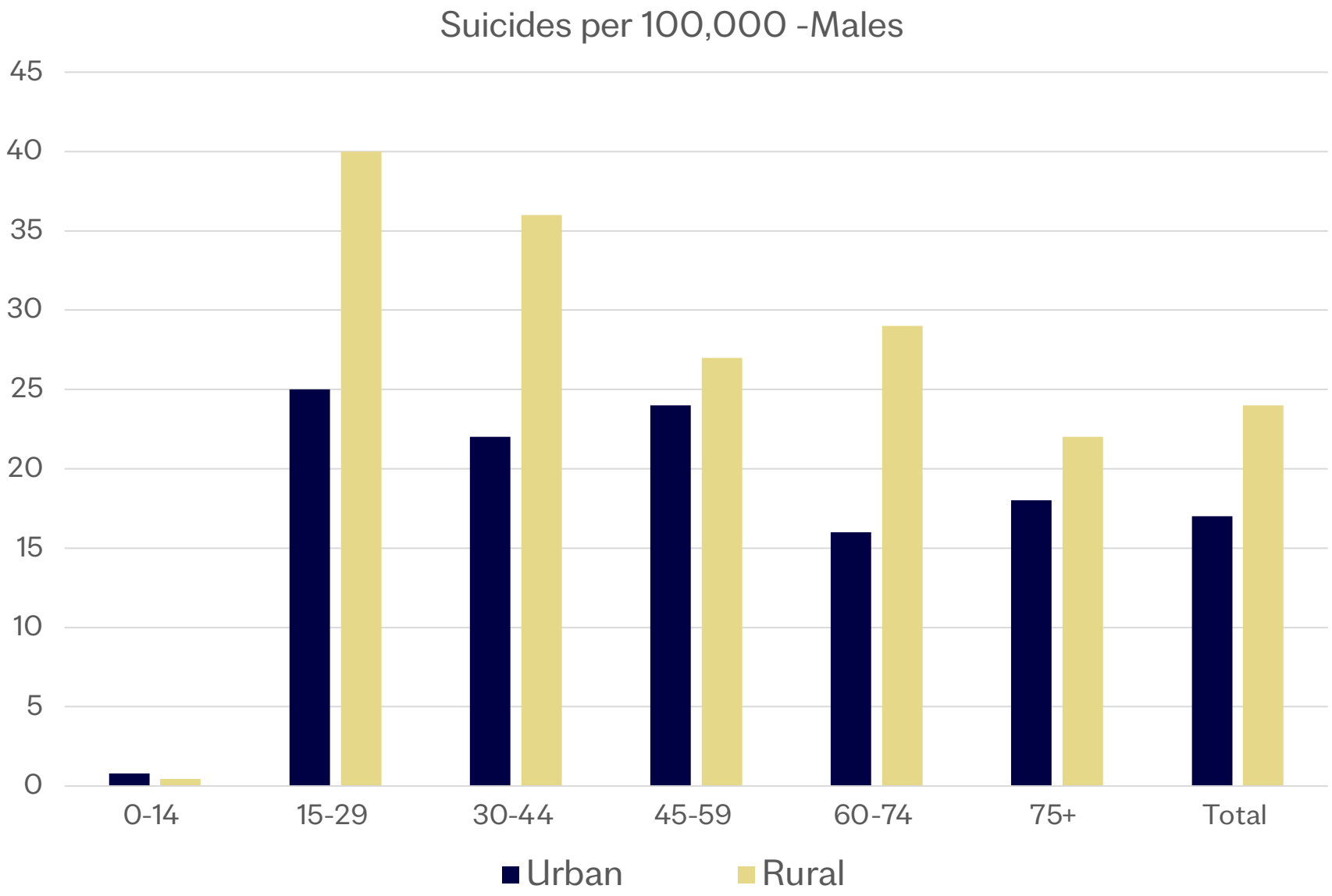


GCH age stratified amenable mortality rate ratios with U1 as reference.
Amenable mortality = deaths that are potentially avoidable through healthcare





GCH age stratified injury related mortality rate ratios with U1 as reference


Suicides per 100,000 -Males
45
40
35
30
25
20
15
10
5
0
0-14
15-29
30-44
45-59
60-74
75+
Total
Urban
Rural

Rural:Urban IRR

	<45 years		45-59 years	
	Est.	95%CI	Est.	95%CI
non-Māori				
Amenable Mortality				
Crude	1.45	(1.33,1.58)	1.13	(1.05,1.21)
Adjusted				
Sex	1.44	(1.32,1.58)	1.12	(1.05,1.20)
Sex, NZDep	1.46	(1.33,1.59)	1.07	(1.00,1.14)

In NZ rural urban disparities exist in the determinants of health, health outcomes and service utilisation

Rural people often have lower rates of health service utilisation

International evidence

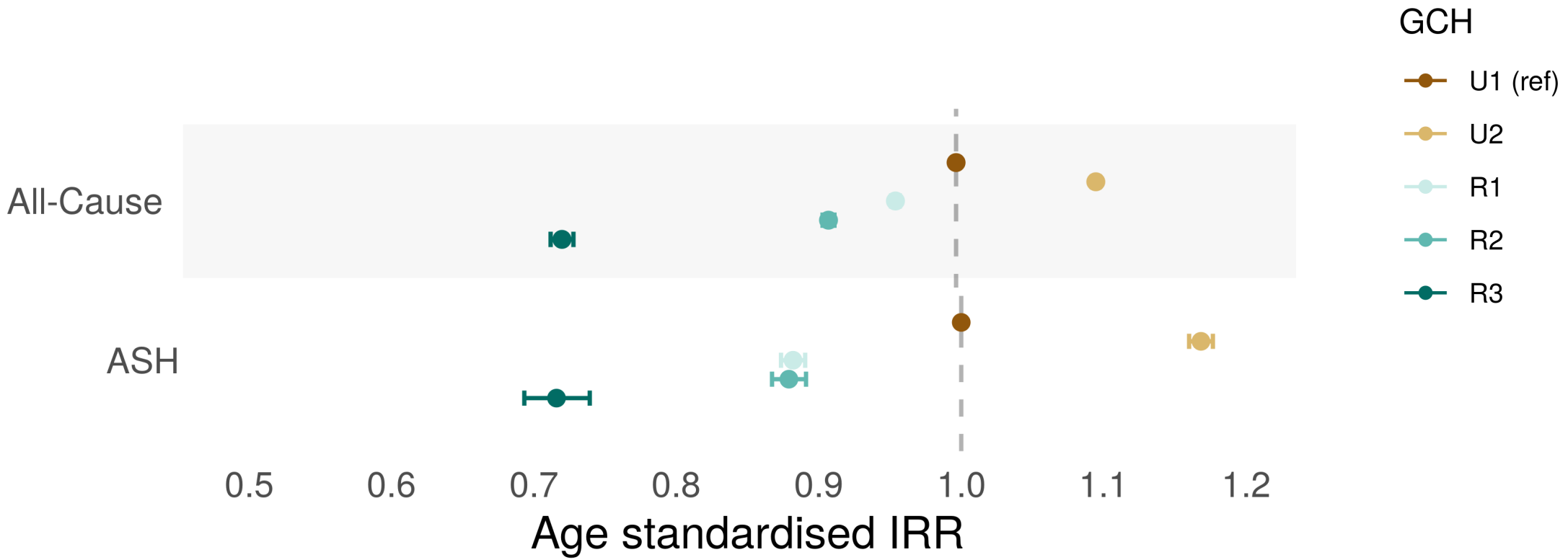
Talis Liepins

Health Service Utilisation by rurality

- International oriented study
- 179 papers appraised
- Overall, a greater quantity of studies found rural populations use less services than urban
- Where service utilisation was more – this was proportionately attributed to a lack of access to other more appropriate services
  - (for example, ED use might be higher due to a lack of primary care)
  - This held across both primary and secondary sectors
- In short - rural people have lower utilisation of the ‘most appropriate’ health services

Hospitalisations, outpatient services, CT scanning

Prof Garry Nixon



GCH age standardised hospitalisation rates for rural and urban populations. U1 as reference.
ASH = ambulatory sensitive (potentially avoidable) hospitalisations

Age standardised event rate by GCH

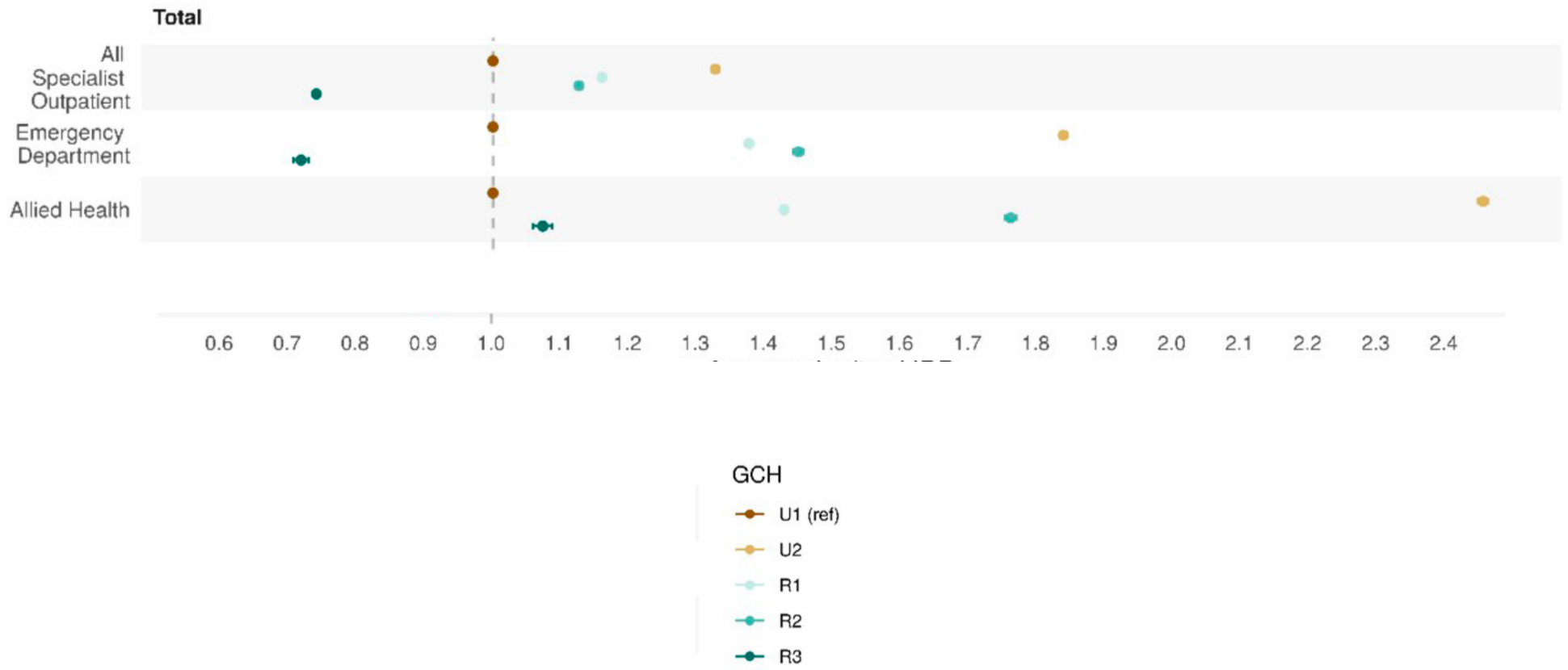


Table 2
Rates by catchment groups, referral source and procedure.

	Remote rural hospital catchments	Rural hospital catchments	Urban base hospital catchments
All scans[a]	22.5 (21.5–23.5)	32.2 (31.1–33.4)	36.7 (36.1–37.2)
Referral source			
Emergency Dep. (ED)[a]	5.1 (4.7–5.6)	7.9 (7.3–8.6)	10.9 (10.6–11.3)

[a] Scans per 1000 residents per annum age adjusted (95% confidence intervals).

Table 2
Rates by catchment groups, referral source and procedure.

	Remote rural hospital catchments	Rural hospital catchments	Urban base hospital catchments
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Emergency Dep. (ED)[a]	5.1 (4.7–5.6)	7.9 (7.3–8.6)	10.9 (10.6–11.3)

[a] Scans per 1000 residents per annum age adjusted (95% confidence intervals).

ORIGINAL SCIENTIFIC PAPER

ORIGINAL RESEARCH: RURAL ECONOMIC

The price of ‘free’. Quantifying the costs incurred by rural residents attending publically funded outpatient clinics in rural and base hospitals

Table 1. Average cost per clinic visit for Central Otago residents:

	Dunstan OP attendance	Additional costs of Dunedin attendance	Total Cost DPH OP attendance*
Travel Cost	$83	$308	$391
Paid time	$77	$83	$160
Accommodation	-	$60	$60
Unpaid time	$34	$118	$152
Total	**$194**	**$569**	**$763**

*Assuming all additional lab tests/radiology are done at Dunstan. Some people will have to travel to Dunedin for some specialised tests/investigations and this will significantly increase the average cost of a Dunedin attendance, but this amount has not been captured in this survey.

Health Service Utilisation by rurality

- International - rural people have lower utilisation of the ‘most appropriate’ health service.
- In NZ Rural hospitalisation rates (especially ASH) are lower. This is unexpected and unexplained.
- ED utilisation is higher in many rural areas.
- There is a lack of primary care data

HRC 22/339: Understanding the impact of rurality on health outcomes and healthcare delivery

RQ1: Intersecting impact of rurality, ethnicity and socioeconomic deprivation

- Registration with an LMC in first trimester
- Fully immunised at 2 yrs
- Dental health in children: % preschool enrolled, % caries free at yr 8
- GP utilisation [GPQED]
- Cancer mortality by age group
- Diabetes: HbA1c in last 12 months / HbA1c level
- Injury mortality < 60 yrs
- ASH 45-64 yrs
- Breast cancer screening

RQ2: Rural:urban relocation in the last 5-years of life, especially for Māori

RQ3: Extent of urban and rural variation in total public healthcare consumption and costs

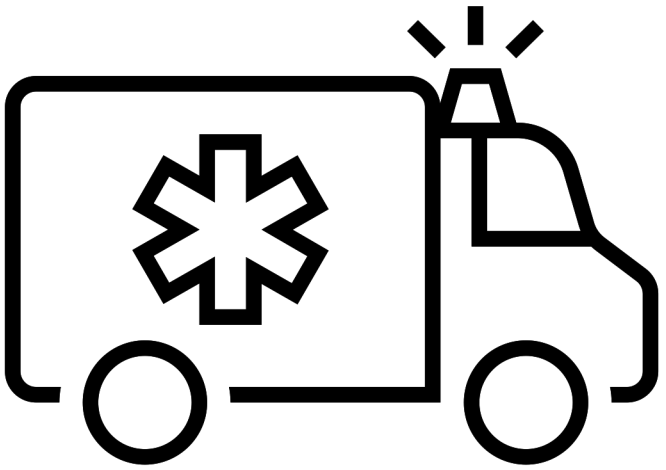
Heart disease outcomes
Access to cardiac services

Dr Rory Miller

Management and outcomes of acute coronary syndromes in Aotearoa NZ

without machines that go ***boop***

Hospitals of presentation



1. Urban hospitals with routine access to PCI (Urban interventional),

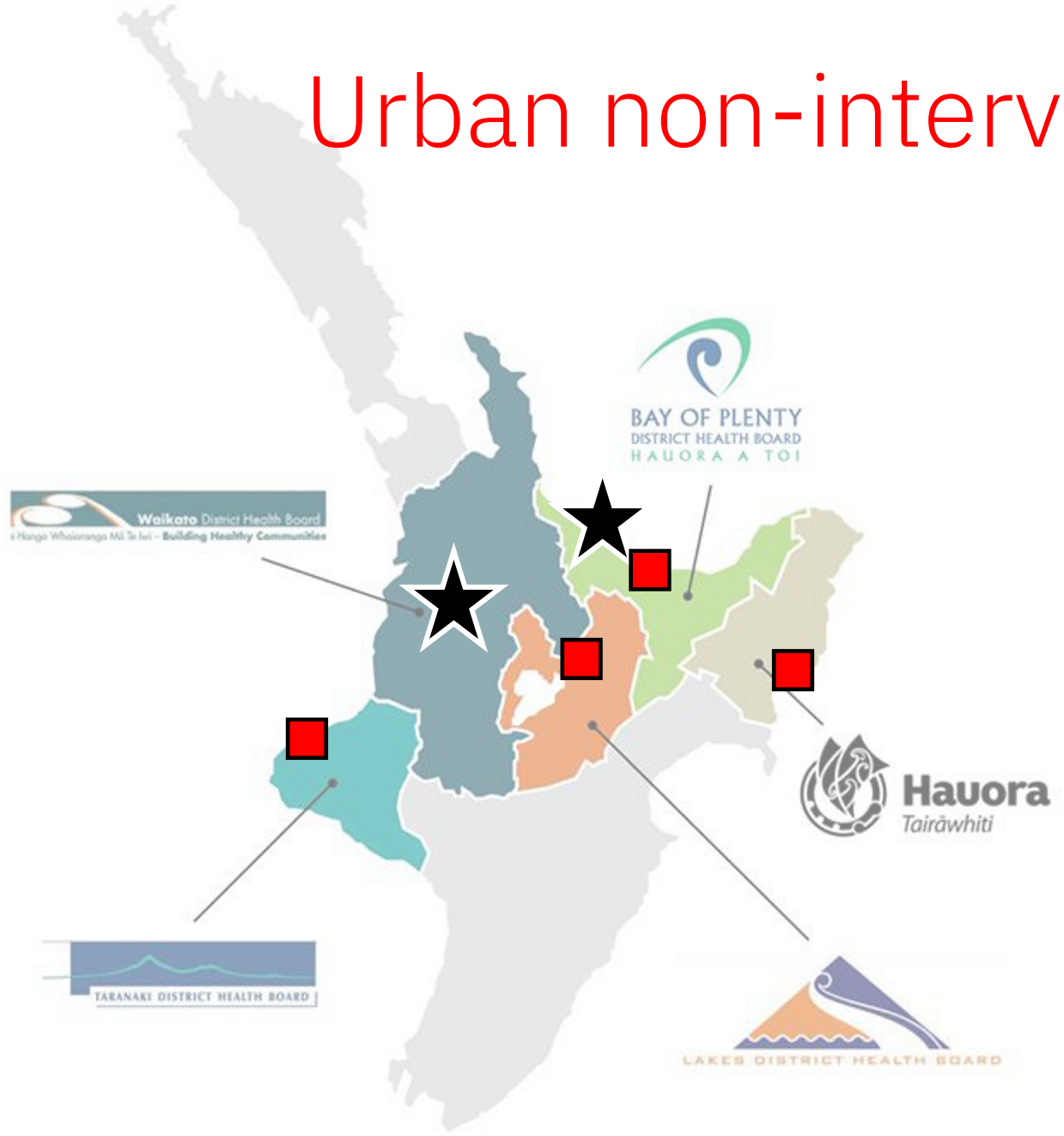
2. Urban hospitals without routine access to PCI (Urban non-interventional)

3. Rural hospitals

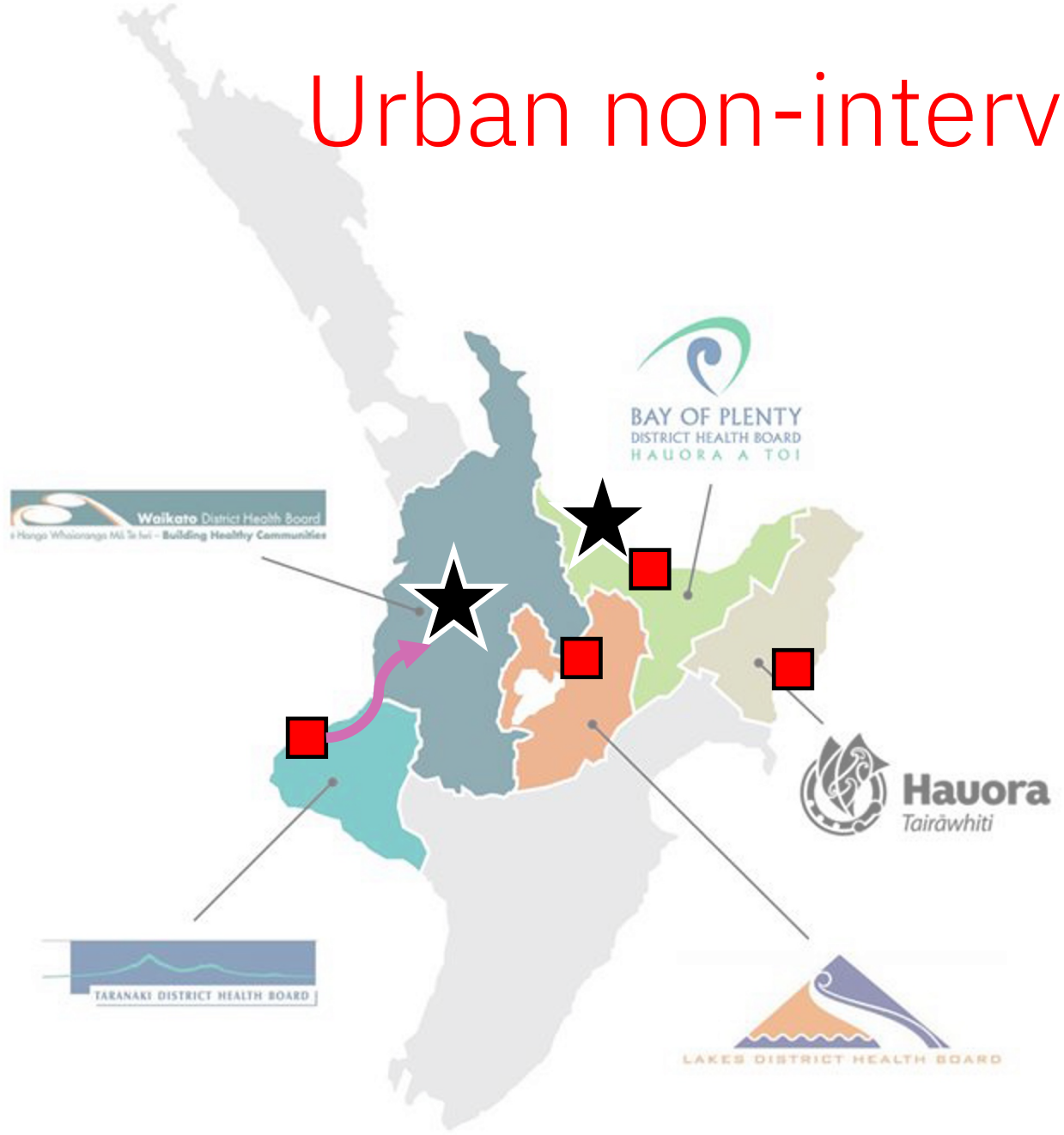

BAY OF PLENTY
DISTRICT HEALTH BOARD
HAUORA A TOI
Waikato District Health Board
Hauora
Tairāwhiti
TARANAKI DISTRICT HEALTH BOARD
LAKES DISTRICT HEALTH BOARD

Urban interventional

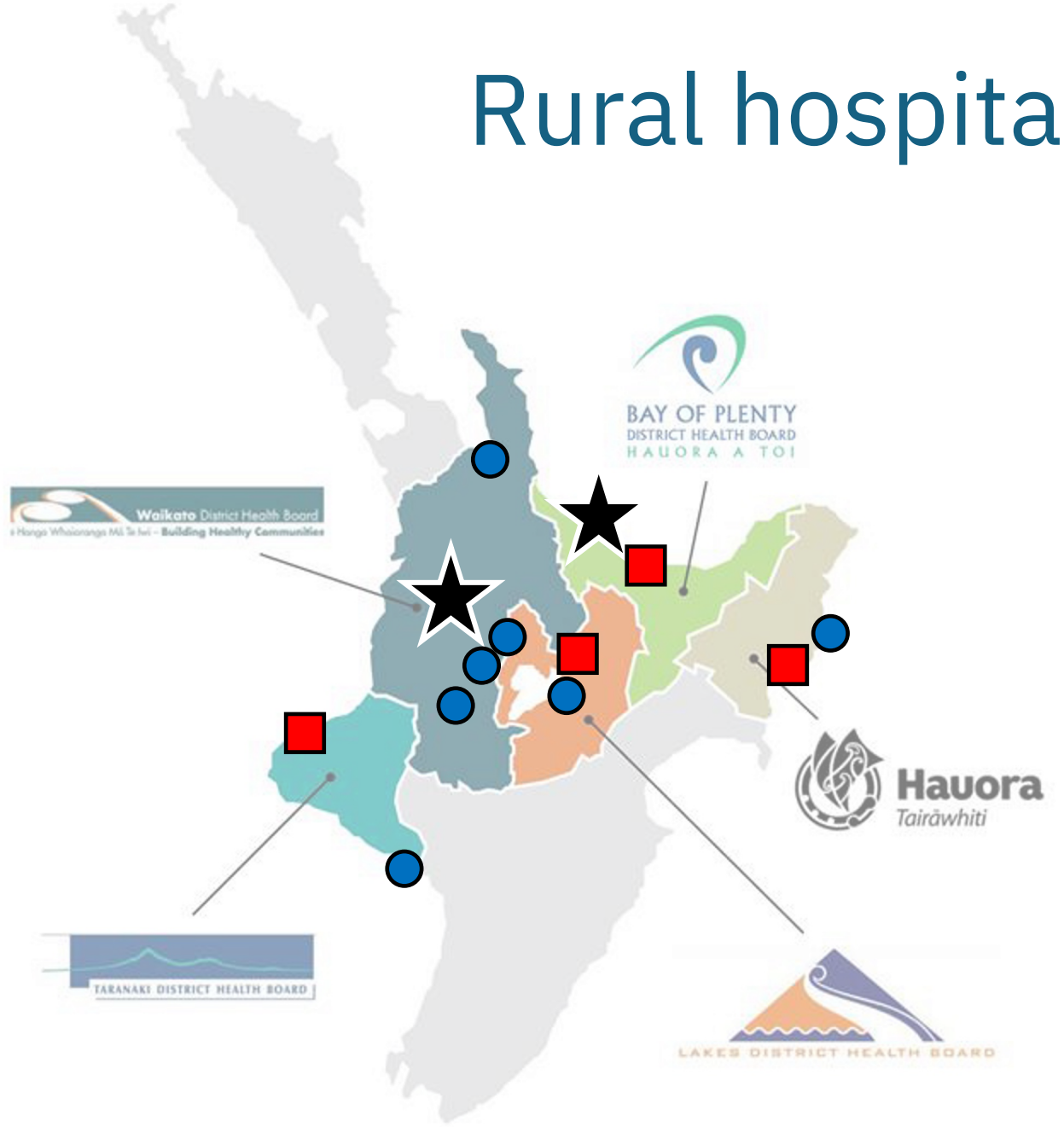
Urban non-interventional



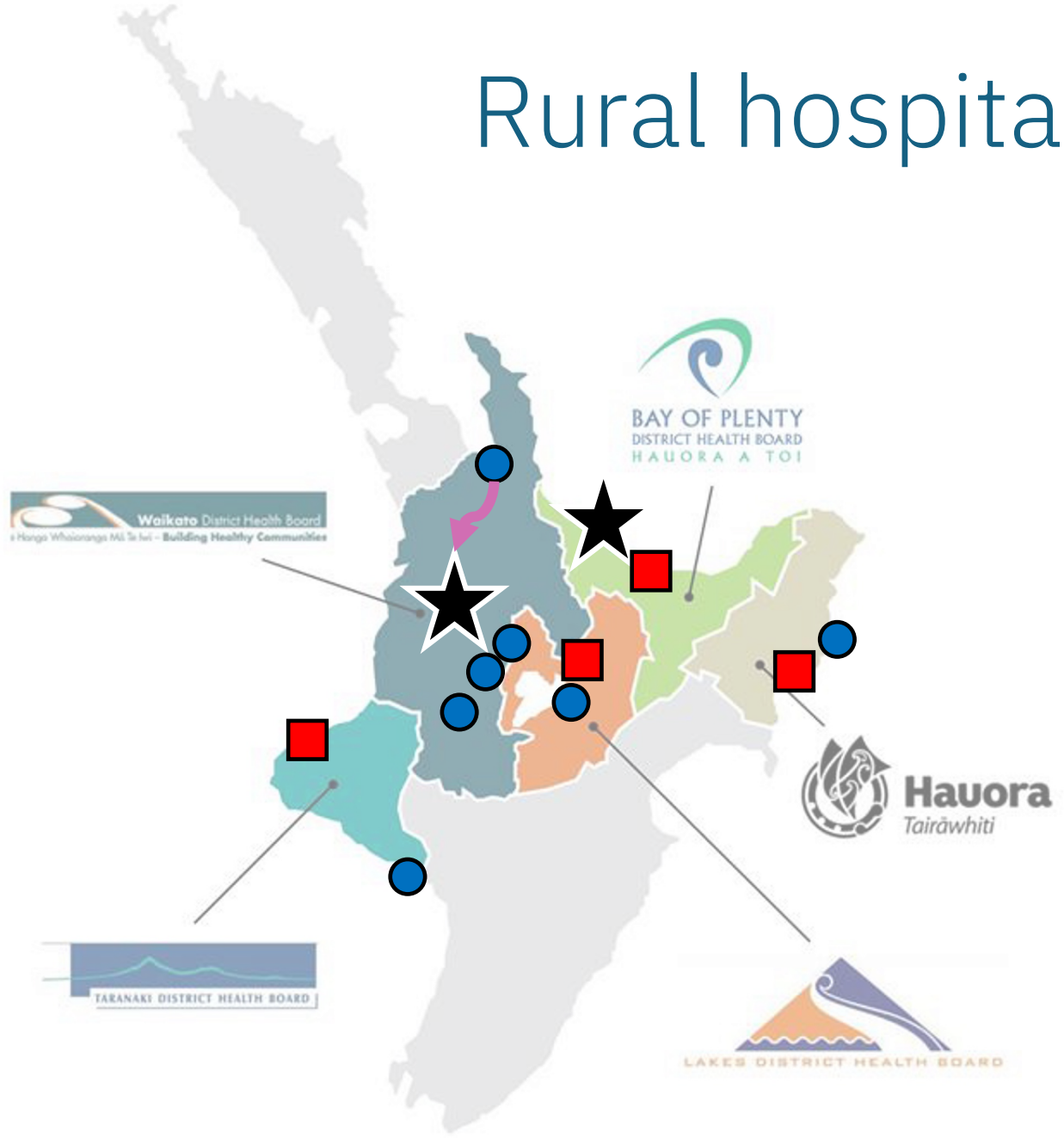
Urban non-interventional



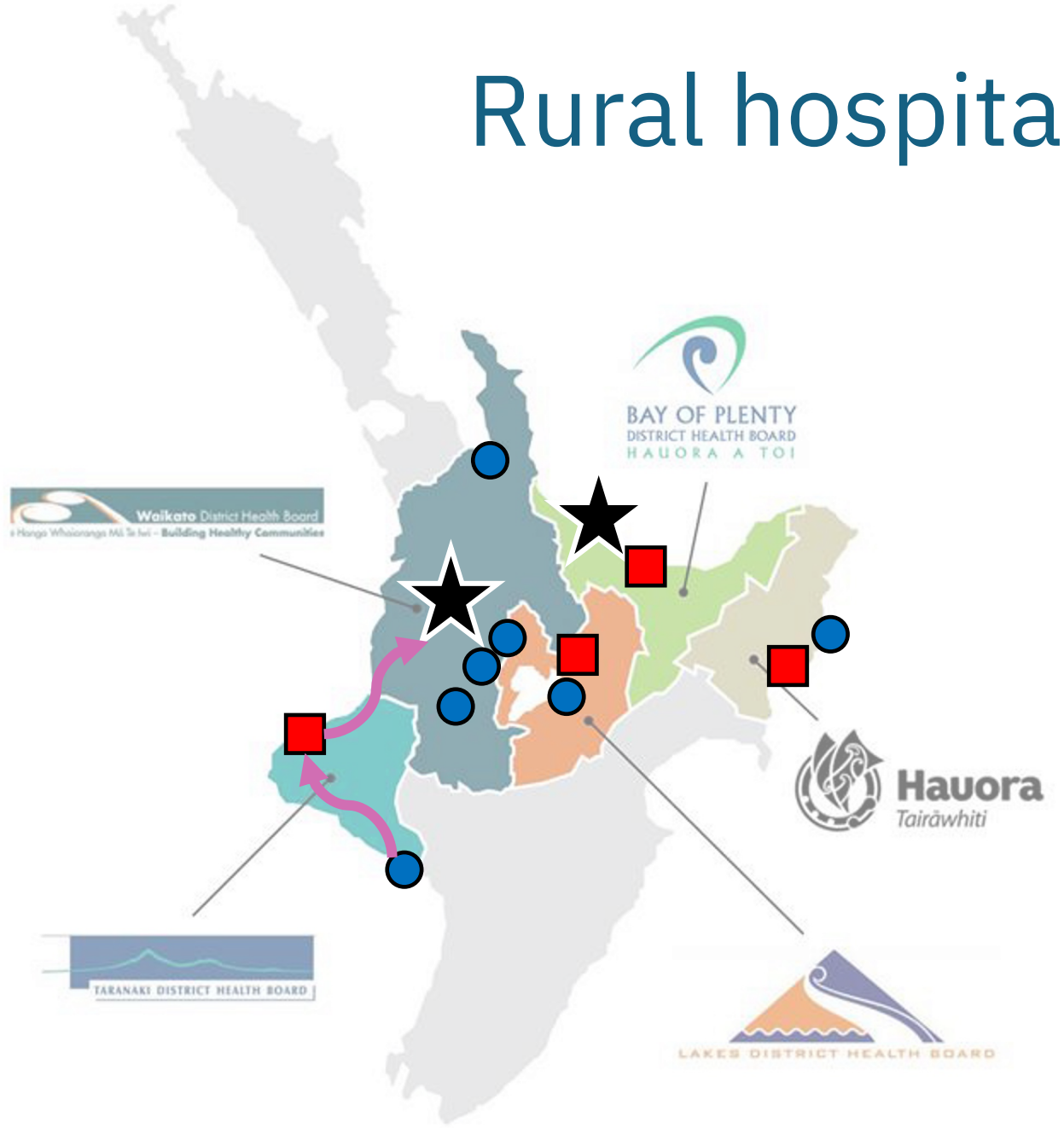
Rural hospitals



Rural hospitals



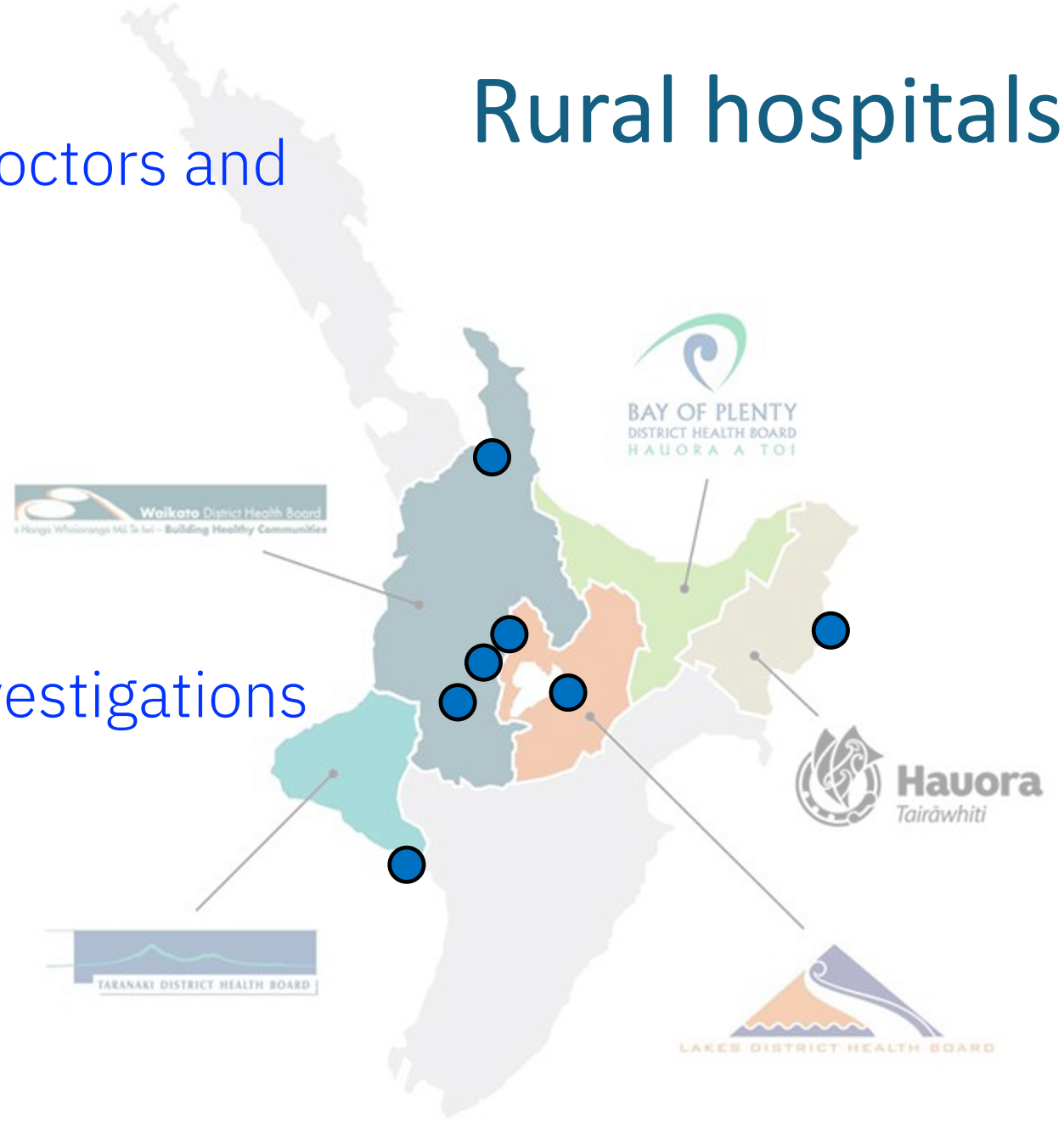
Rural hospitals



Rural hospitals

Less resources
More generalist doctors and nurses
At a distance

Internationally:
Less and **slow** investigations
Less treatments
Worse outcomes



THE NEW ZEALAND MEDICAL JOURNAL
Vol 119 No 1238 ISSN 1175 8716

Community hospital versus tertiary hospital comparison in the treatment and outcome of patients with acute coronary syndrome: a New Zealand experience

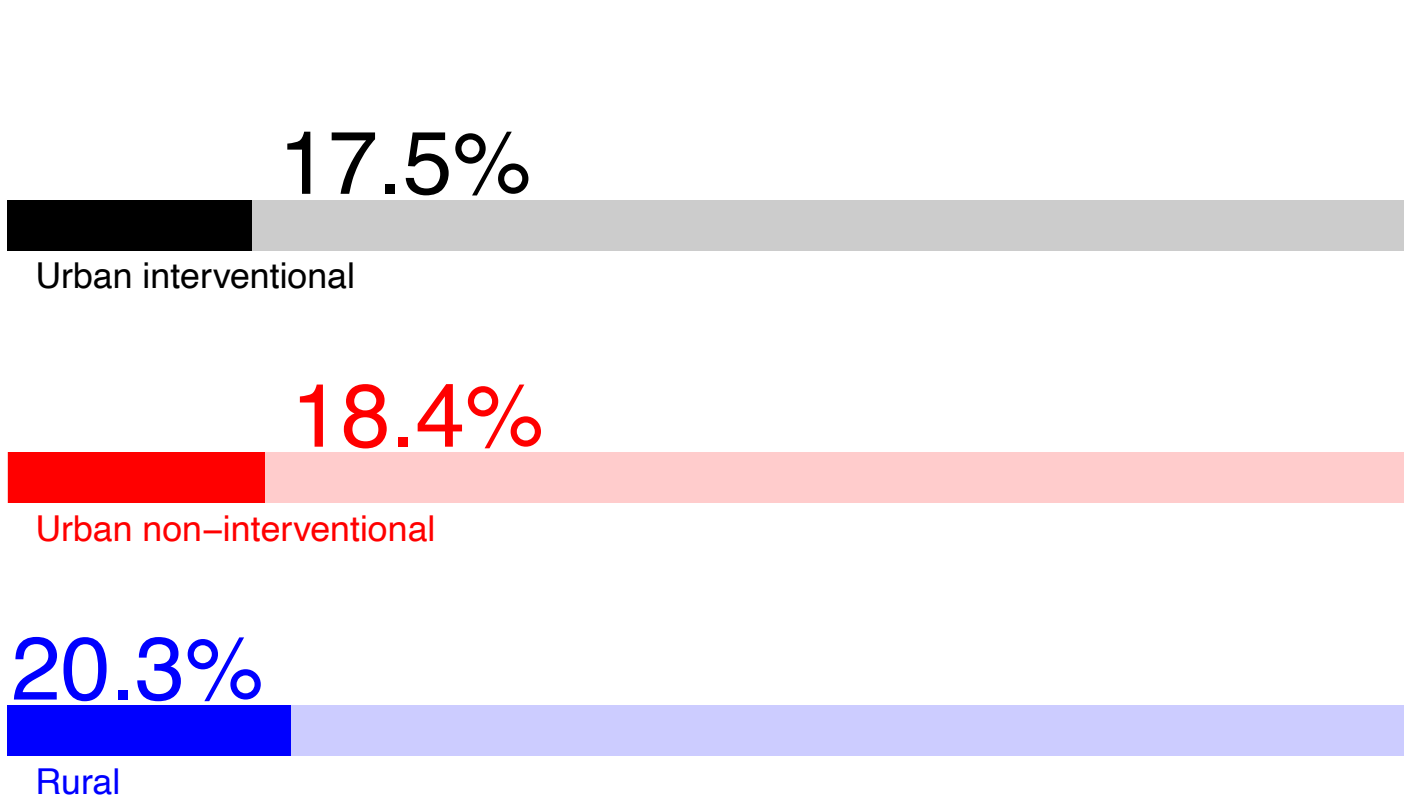
Eng Wei Tang, Cheuk-Kit Wong, Peter Herbison

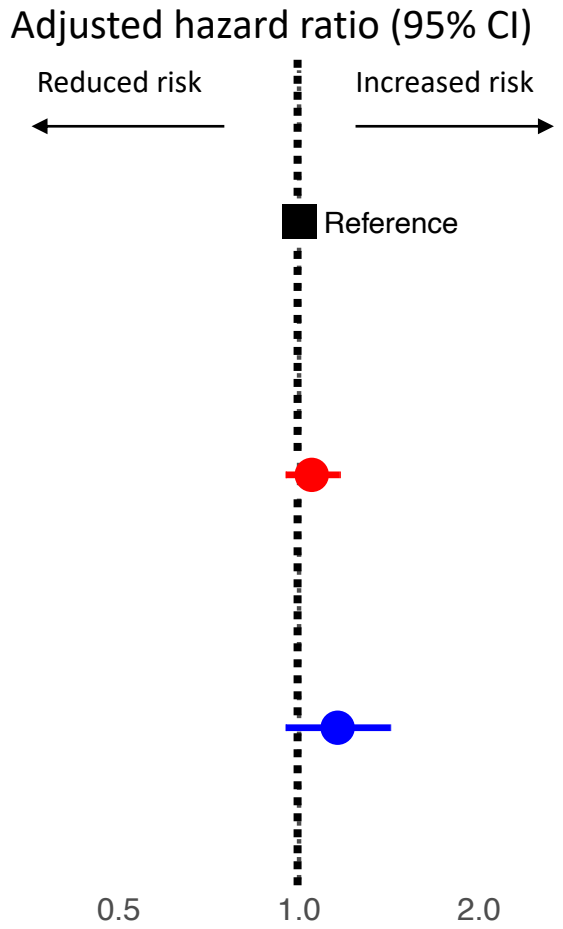
	Hospital with catheterisation facility and on-site cardiologists	Hospital without catheterisation facility	Unadjusted hazard ratio (95% C.I.)	Adjusted hazard ratio[1] (95% C.I.)	Adjusted hazard ratio[2] (95% C.I.)	Adjusted hazard ratio[3] (95% C.I.)
Died in hospital	6.4%	10.7%*	1.67(1.10-2.54)	1.45(0.97-2.17)	1.46(0.91-2.36)	1.36(0.81-2.31)
Died in 6-months	9.6%	19.1%**	2.06(1.10-3.88)	2.60(1.29-5.27)	2.91(1.32-6.44)	3.15(1.31-7.55)
Died in 1-year	12.1%	22.1%**	1.90(1.19-3.04)	2.33(1.39-3.91)	2.61(1.45-4.68)	3.02(1.60-5.71)

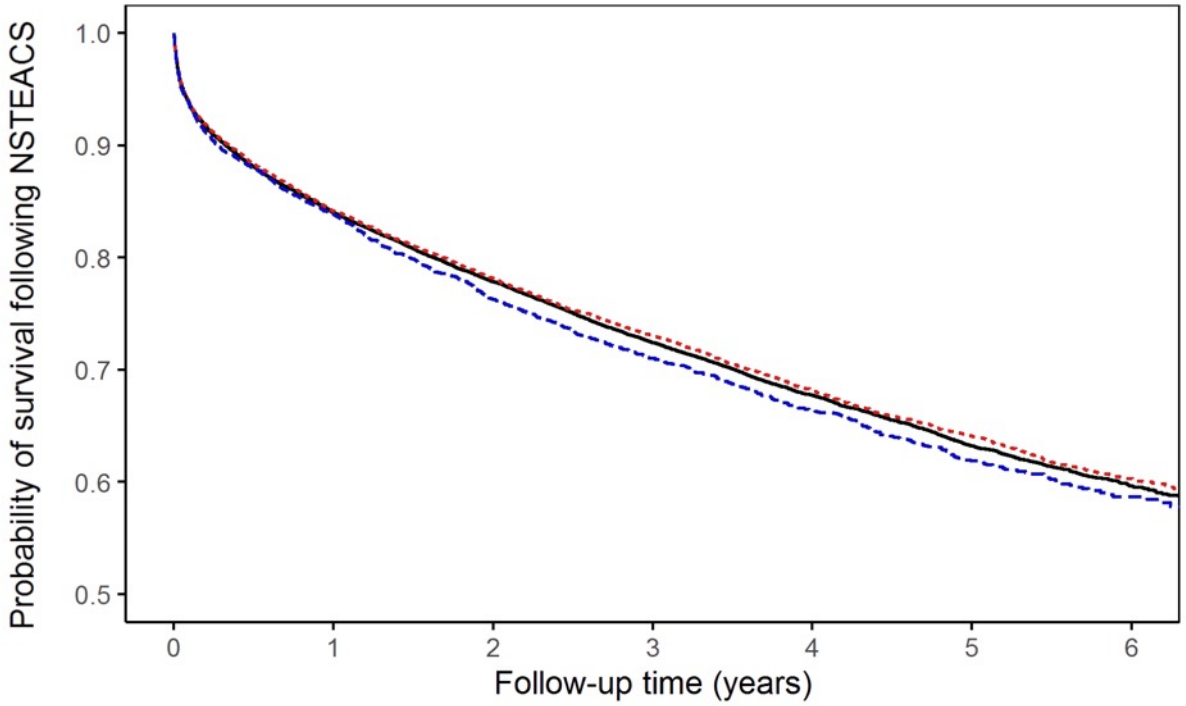
Mortality -

no difference for patients who present to rural hospitals

STEMI - Mortality







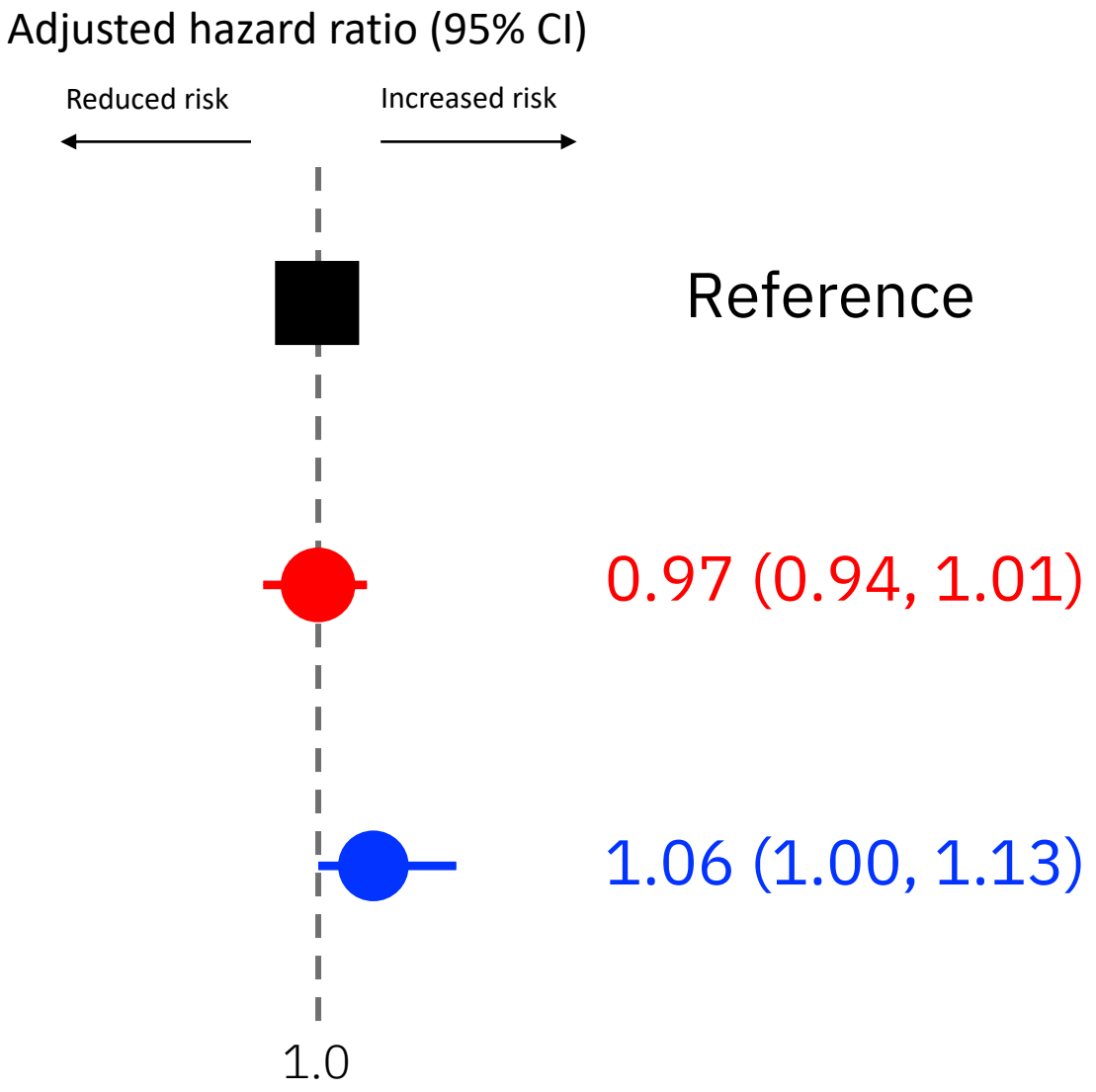
Number at risk

Urban hospital with PCI	26781	22497	19269	14246	9852	5723	2192
Urban hospital without PCI	12471	10495	8962	6630	4485	2626	1005
Rural hospital	3624	3038	2521	1815	1222	728	272

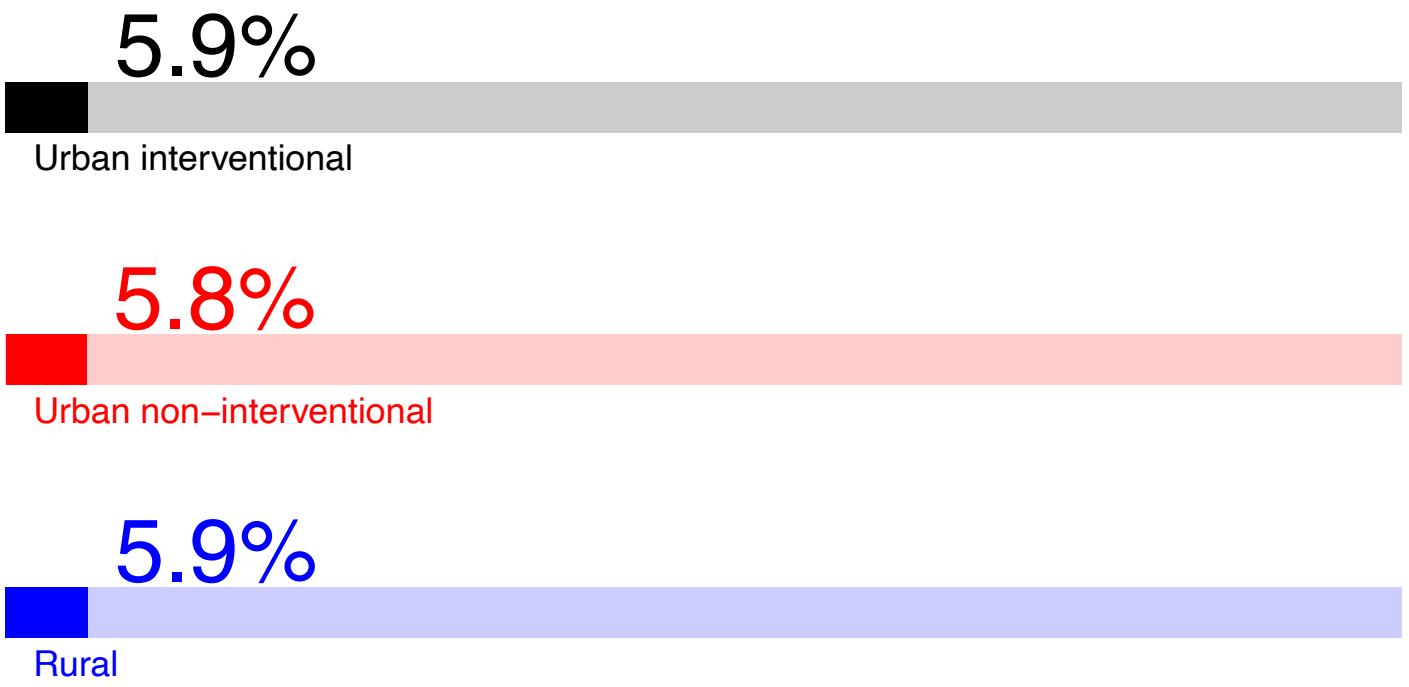
Cumulative number of patients censored

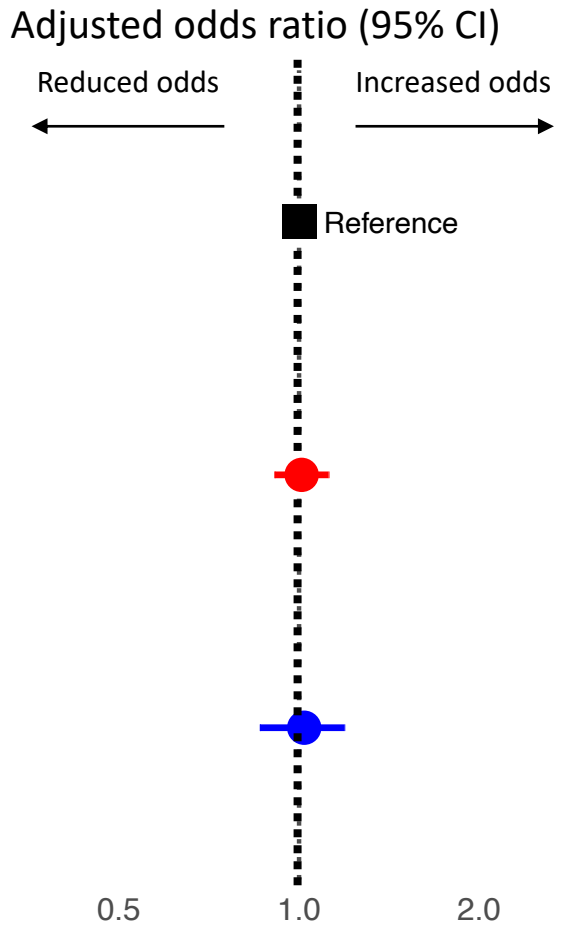
Urban hospital with PCI	0	0	1607	5420	9020	12603	15905
Urban hospital without PCI	0	0	796	2603	4371	6001	7507
Rural hospital	0	0	248	800	1292	1717	2147

Hospital Type: — Urban hospital with PCI - - - Urban hospital without PCI – – Rural hospital

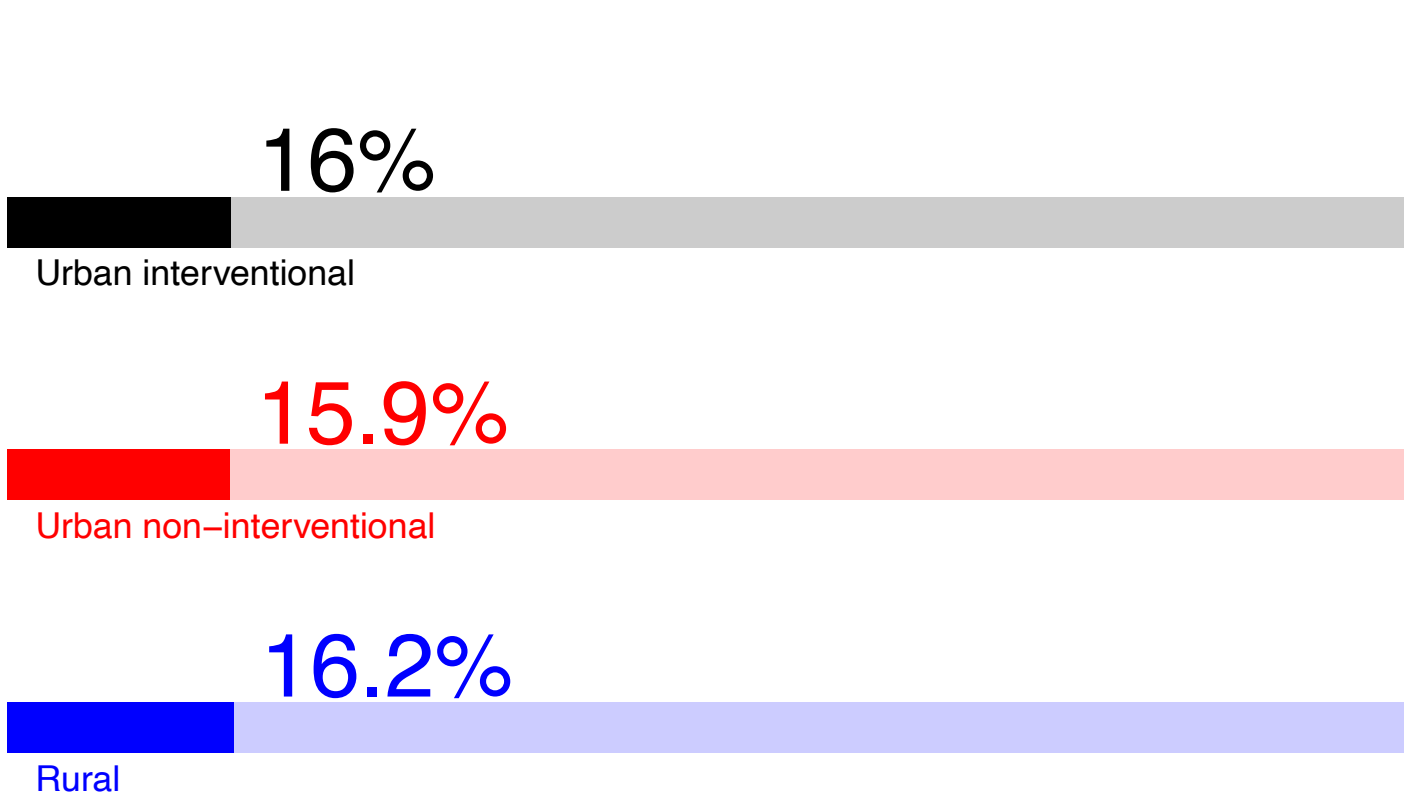


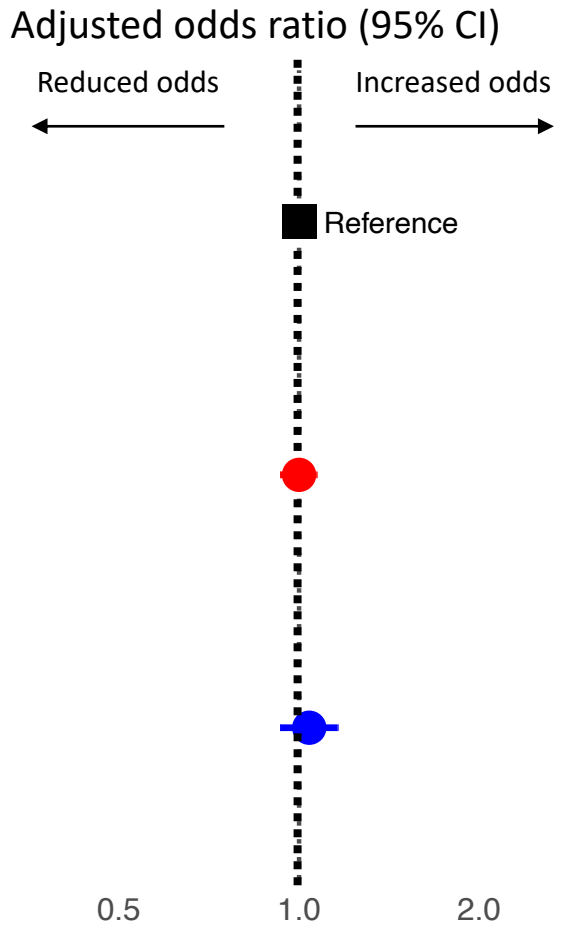
30 day Mortality



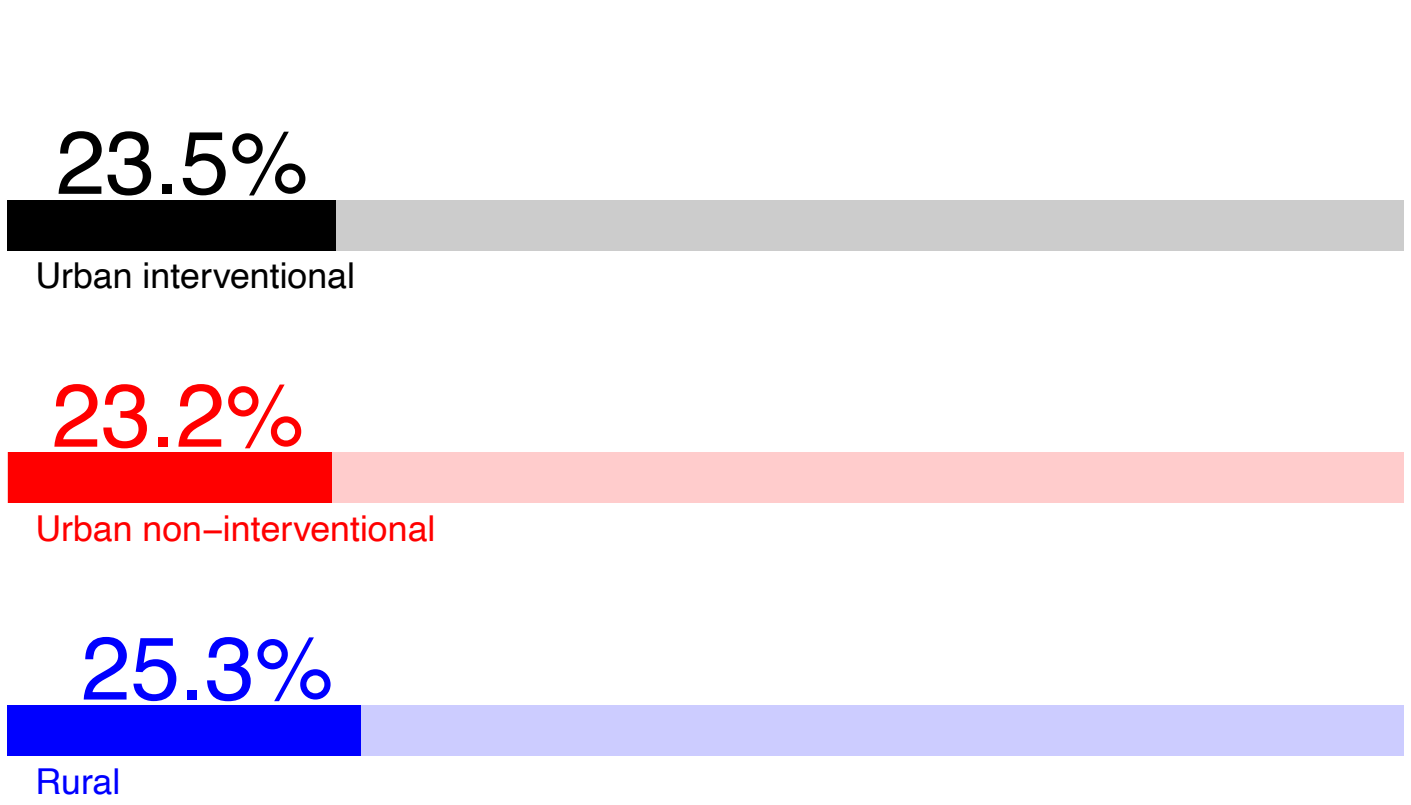


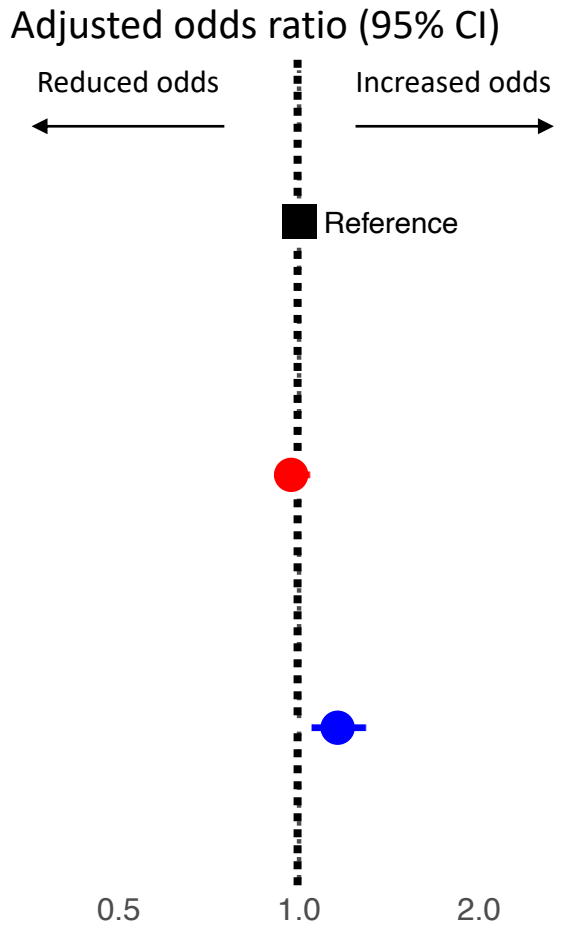
1 year Mortality

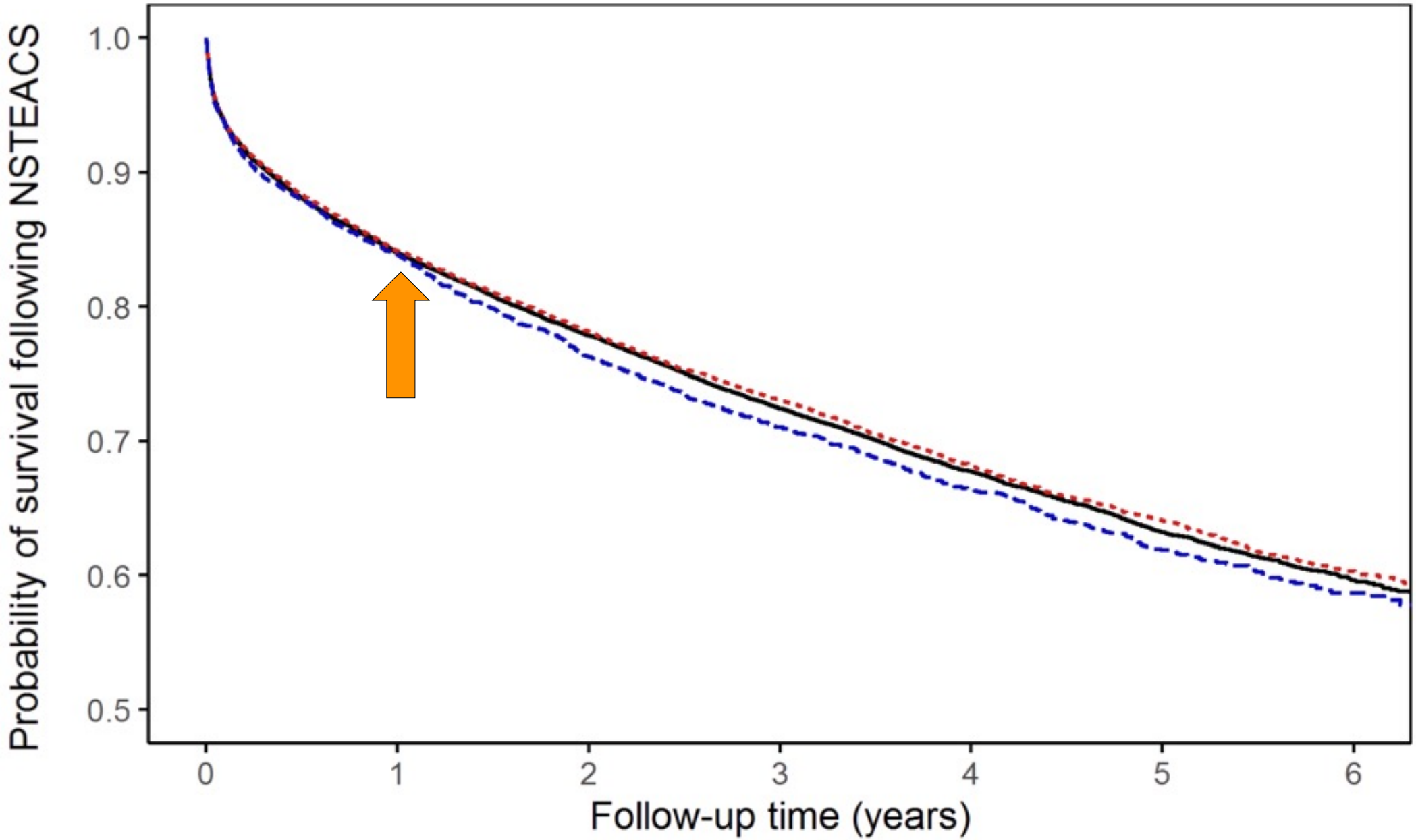




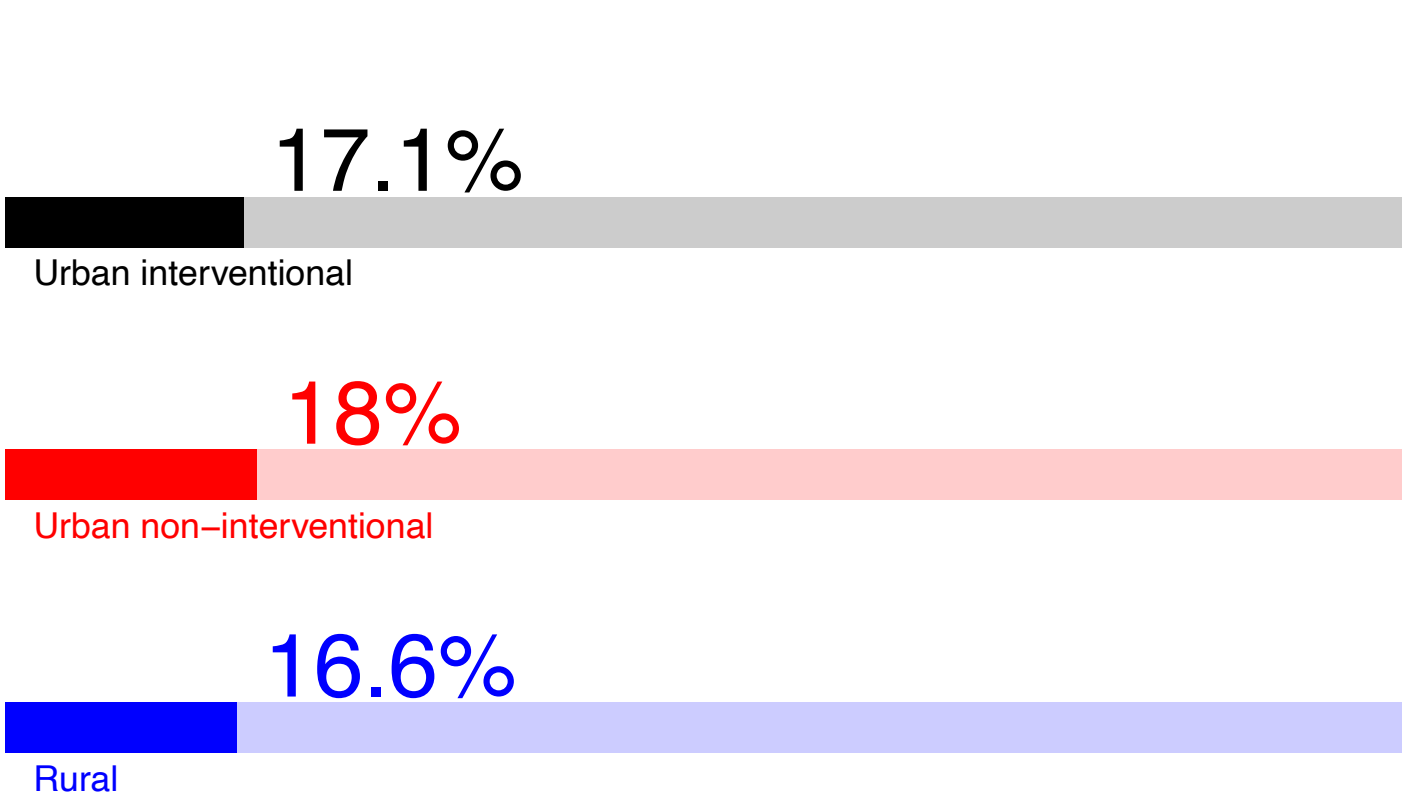
2 year Mortality

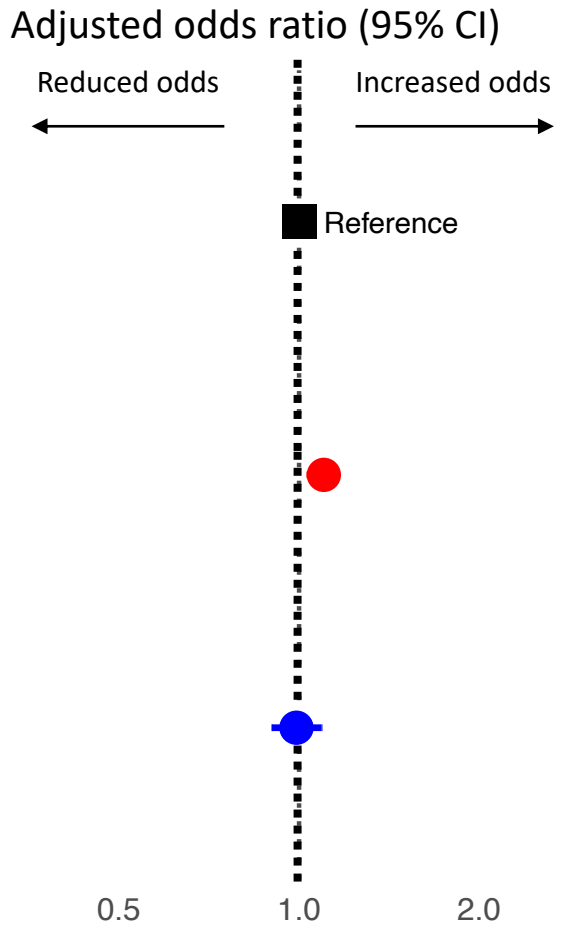





Probability of survival following NSTEACS
1.0
0.9
0.8
0.7
0.6
0.5
0
1
2
3
4
5
6
Follow-up time (years)

1 year Major Adverse Cardiac Events

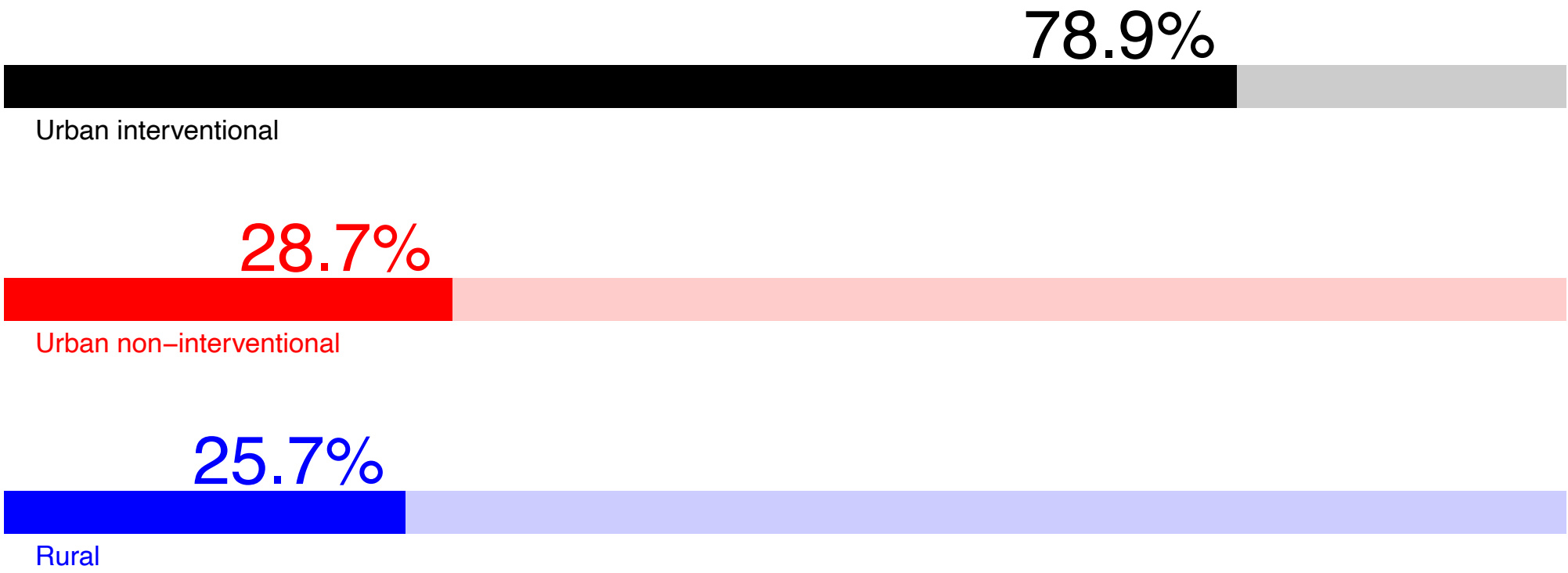




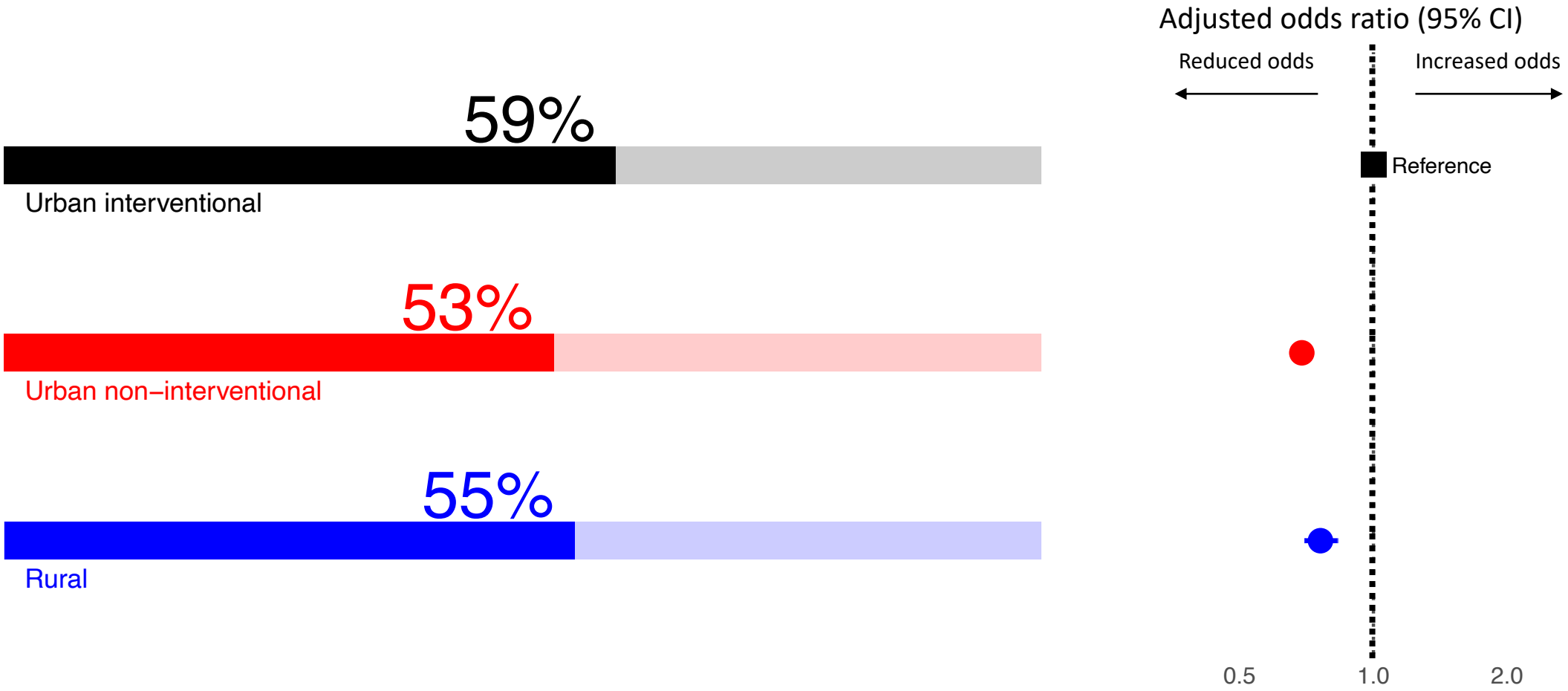
Less (timely) interventions

for patients who present to rural hospitals

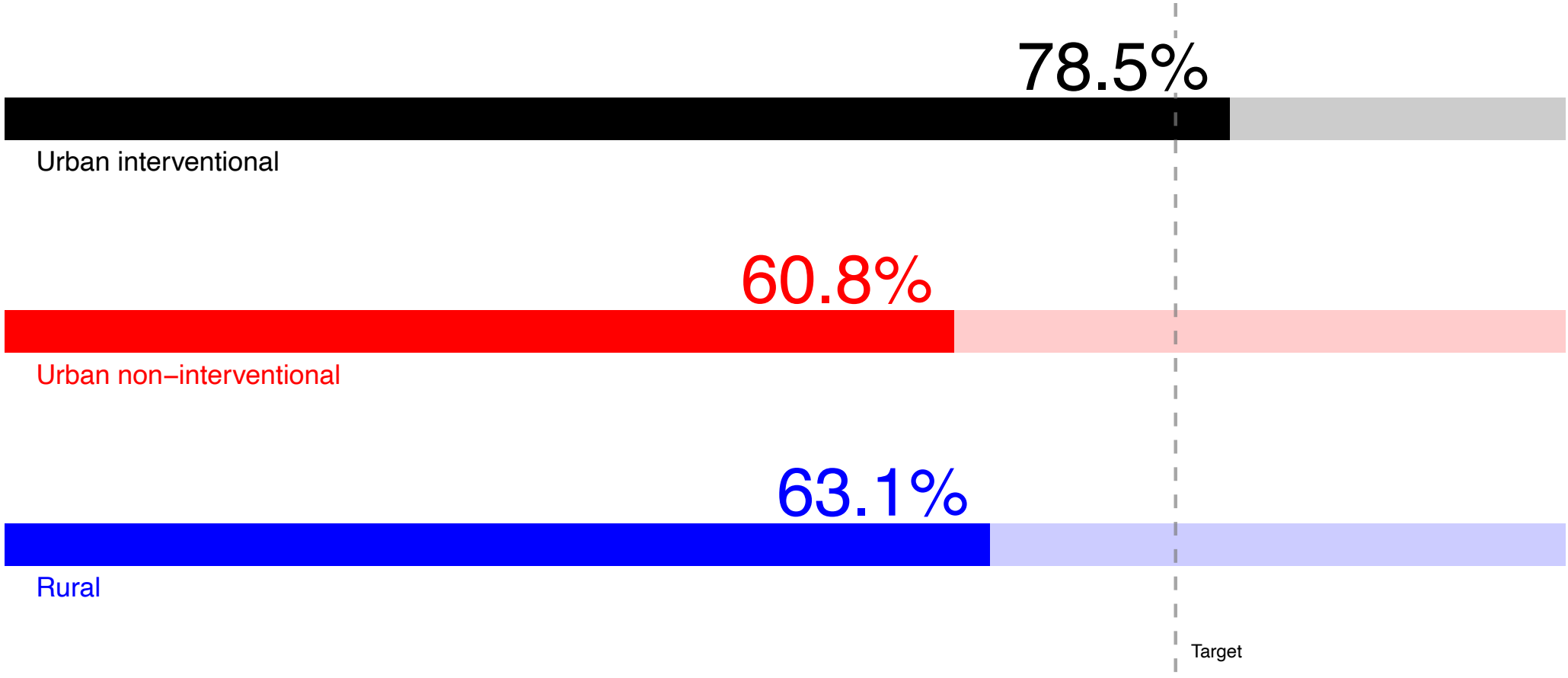
STEMI - Angiography in 1 day



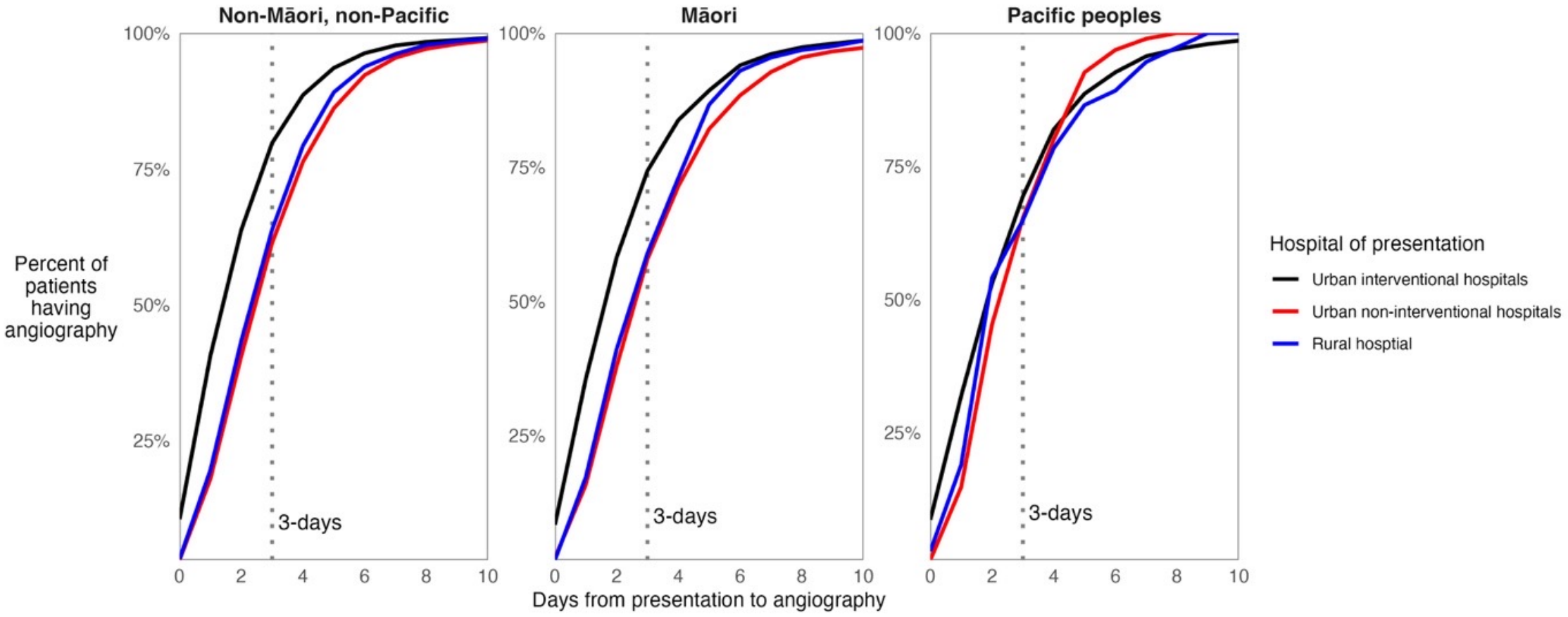
NSTEACS - Angiography within 30 days

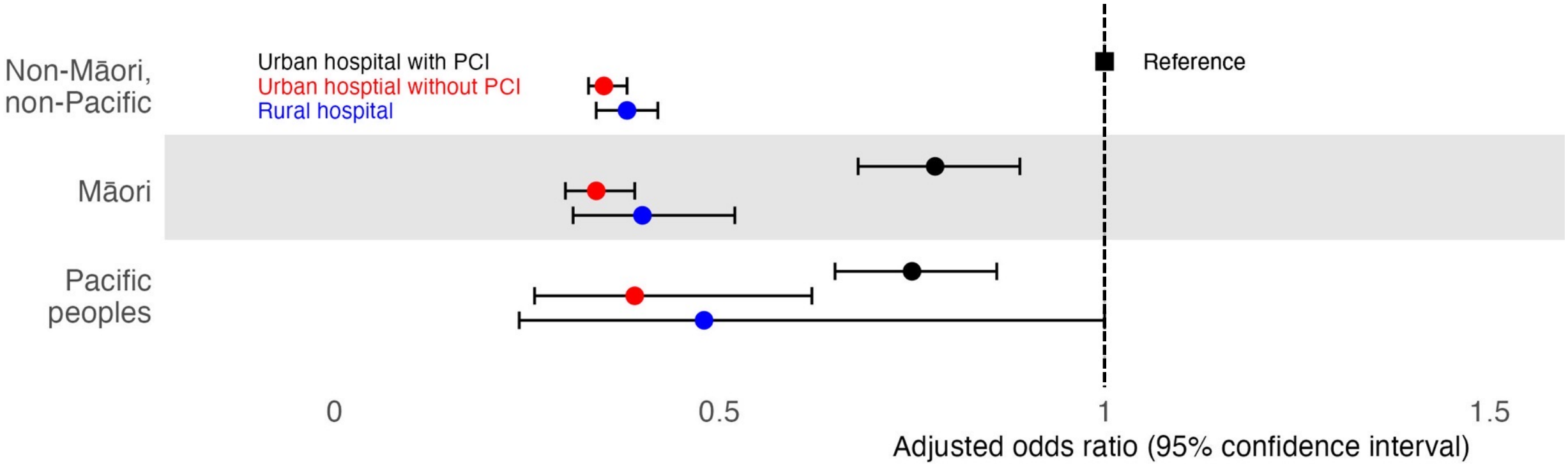


Angiography within 3 days

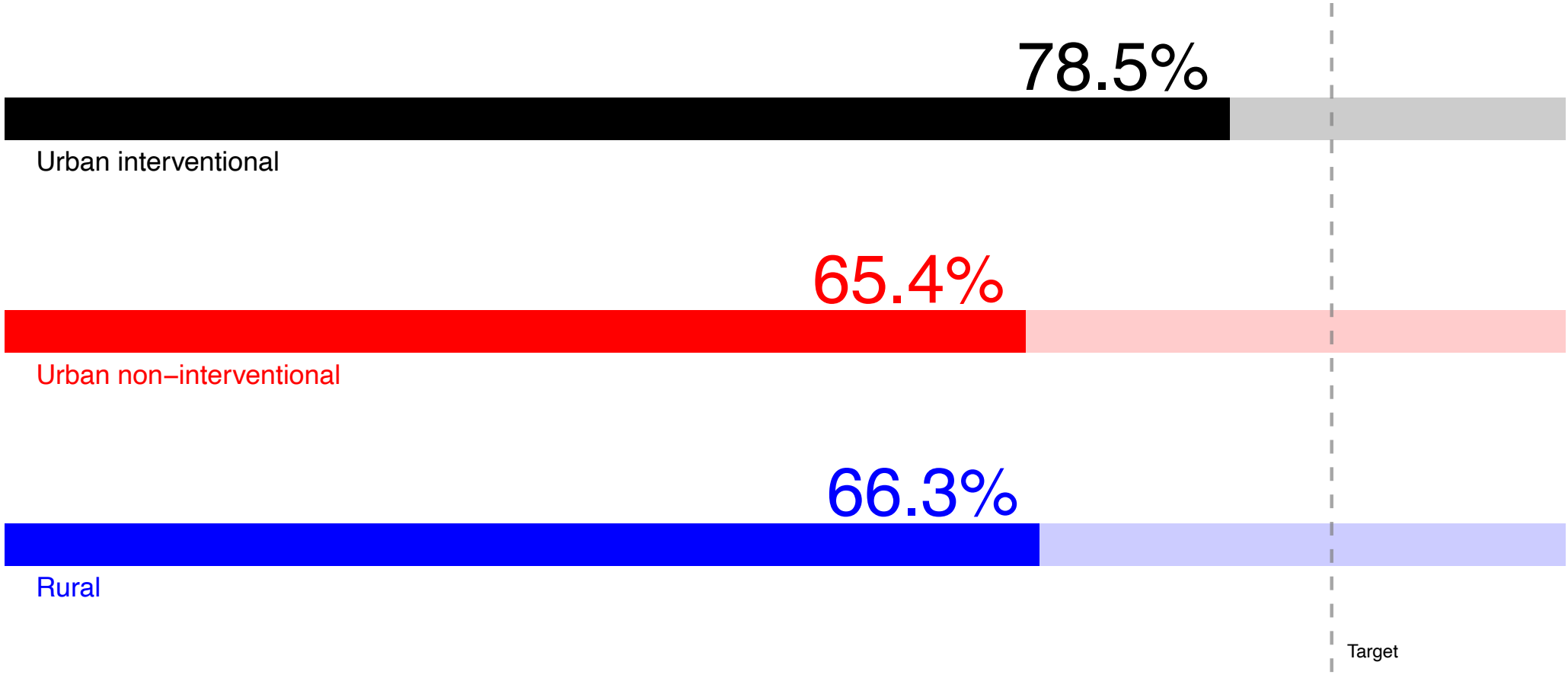


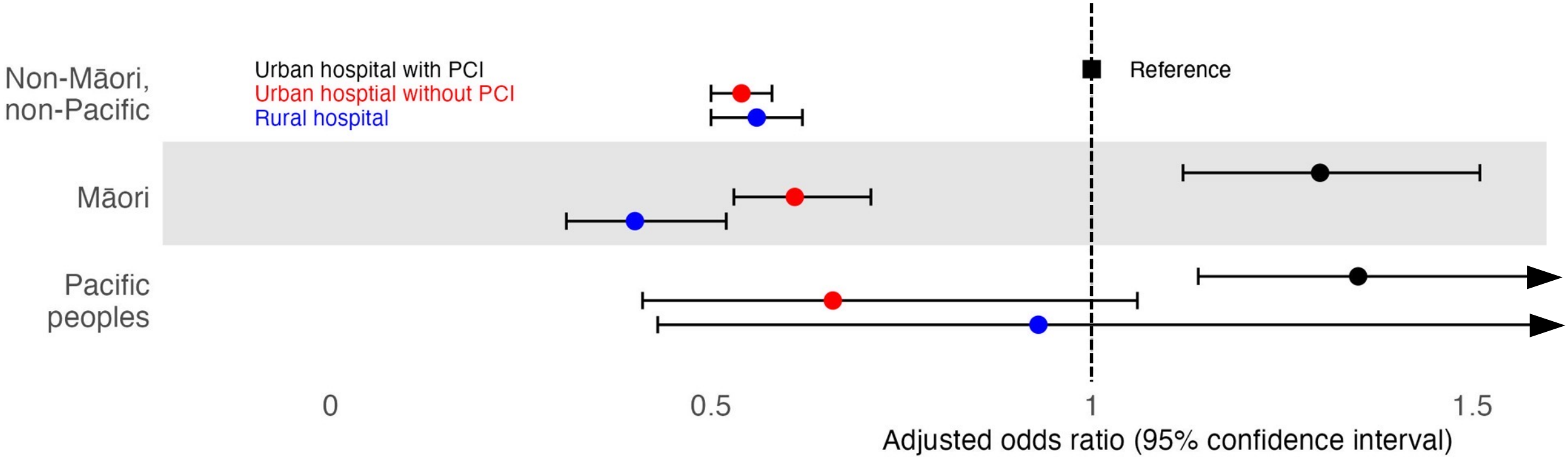
Angiography within 3-days




Non-Māori, non-Pacific
Māori
Pacific peoples
Urban hospital with PCI
Urban hosptial without PCI
Rural hospital
Reference
0
0.5
1
1.5
Adjusted odds ratio (95% confidence interval)

Assessment of LVEF

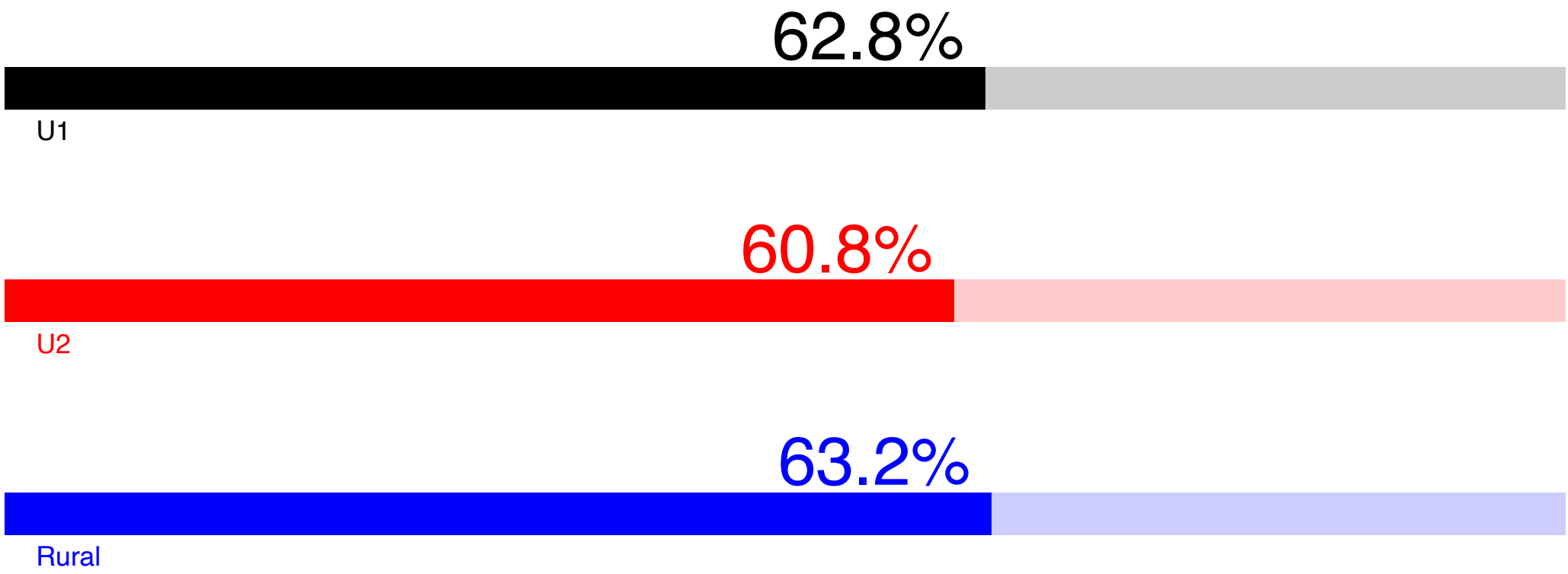



Non-Māori, non-Pacific
Māori
Pacific peoples
Urban hospital with PCI
Urban hosptial without PCI
Rural hospital
Reference
0
0.5
1
1.5
Adjusted odds ratio (95% confidence interval)

Secondary prevention medications

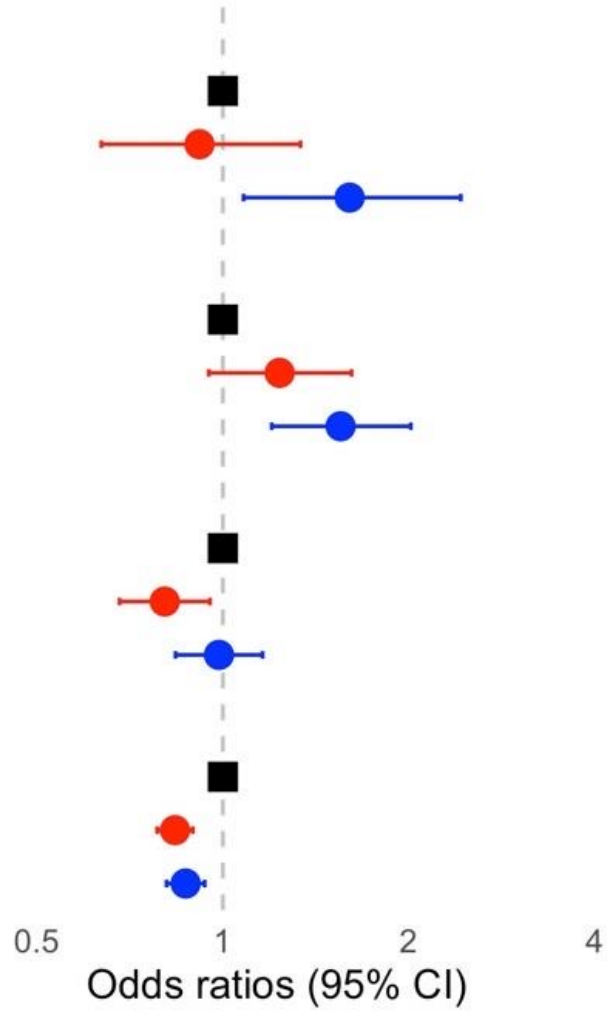
		Total	Urban hospital with PCI	Urban hospital without PCI	Rural hospital
Aspirin					
	Prescribed	25203 (94.1%)	16796 (94.8%)	6339 (92.4%)	2068 (94.3%)
	CI† or not tolerated	542 (2%)	329 (1.9%)	187 (2.7%)	26 (1.2%)
	Adjusted OR			0.89 (0.75, 1.05)	0.66 (0.52, 0.85)
Dual antiplatelet therapy					
	Prescribed	19826 (74%)	13134 (74.1%)	5020 (73.1%)	1672 (76.2%)
	CI or not tolerated	542 (2%)	329 (1.9%)	187 (2.7%)	26 (1.2%)
	Adjusted OR			1.10 (1.00, 1.21)	1.15 (1.00, 1.34)
Beta blocker					
	Prescribed	21325 (79.6%)	13896 (78.4%)	5559 (81%)	1870 (85.3%)
	CI or not tolerated	1258 (4.7%)	811 (4.6%)	382 (5.6%)	65 (3%)
	Adjusted OR			1.40 (1.28, 1.53)	1.34 (1.16, 1.54)
ACEi§ARB¶					
	Prescribed	18348 (68.5%)	12243 (69.1%)	4579 (66.7%)	1526 (69.6%)
	CI or not tolerated	868 (3.2%)	568 (3.2%)	257 (3.7%)	43 (2%)
	Adjusted OR			1.16 (1.08, 1.25)	1.08 (0.97, 1.20)
Statin					
	Prescribed	24713 (92.3%)	16454 (92.8%)	6242 (91%)	2017 (92%)
	CI or not tolerated	560 (2.1%)	324 (1.8%)	197 (2.9%)	39 (1.8%)
	Adjusted OR			1.17 (1.02, 1.34)	0.93 (0.76, 1.13)

IHD deaths that occur without a hospital admission in preceding 30 days



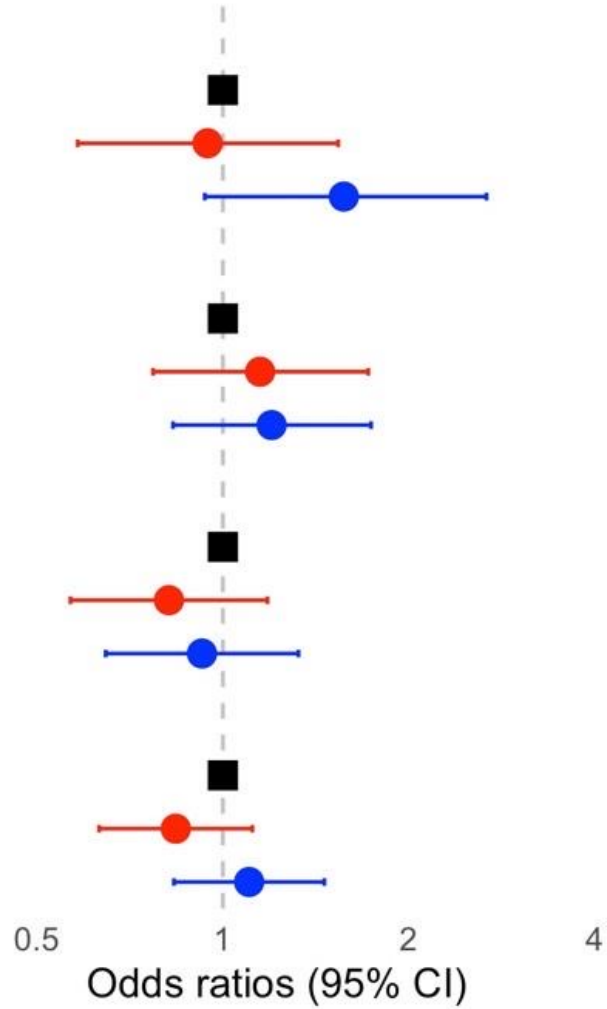
Non-Māori

		n (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
<55 years	U1	566 (74.8%)	Reference	Reference
	U2	178 (75.7%)	1.05 (0.75, 1.49)	0.92 (0.64, 1.34)
	R	209 (83.9%)	1.76 (1.22, 2.60)	1.60 (1.08, 2.43)
55-64 years		854 (66.3%)	Reference	Reference
		304 (71.7%)	1.29 (1.02, 1.65)	1.24 (0.95, 1.62)
		397 (76.9%)	1.70 (1.35, 2.16)	1.55 (1.20, 2.02)
65-74 years		1,469 (61.3%)	Reference	Reference
		593 (59.5%)	0.93 (0.80, 1.08)	0.81 (0.68, 0.95)
		765 (65.0%)	1.17 (1.01, 1.35)	0.99 (0.84, 1.16)
75+ years		8,695 (62.4%)	Reference	Reference
		3,832 (60.1%)	0.91 (0.85, 0.96)	0.84 (0.78, 0.89)
		3,166 (60.2%)	0.91 (0.85, 0.97)	0.87 (0.81, 0.93)



Māori

		n (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
<55 years	U1	174 (73.1%)	Reference	Reference
	U2	117 (70.5%)	0.88 (0.57, 1.37)	0.94 (0.58, 1.54)
	R	136 (81.0%)	1.56 (0.97, 2.55)	1.57 (0.93, 2.67)
55-64 years		225 (62.0%)	Reference	Reference
		139 (67.1%)	1.25 (0.88, 1.80)	1.15 (0.77, 1.72)
		197 (70.4%)	1.46 (1.05, 2.03)	1.20 (0.83, 1.74)
65-74 years		192 (58.4%)	Reference	Reference
		146 (55.9%)	0.91 (0.65, 1.26)	0.82 (0.57, 1.18)
		173 (60.5%)	1.09 (0.79, 1.51)	0.93 (0.65, 1.33)
75+ years		246 (53.0%)	Reference	Reference
		225 (50.7%)	0.91 (0.70, 1.18)	0.84 (0.63, 1.12)
		278 (57.1%)	1.18 (0.91, 1.52)	1.10 (0.83, 1.46)



Summary - For acute coronary syndromes:

- Mortality (at 30 days and 1 year) rates are similar
- Small increase in mortality at 2 years after admission @ rural hospital
- If present to rural hospital or urban interventional hospital less likely to get timely angiography or echocardiogram
- Prescription rates of secondary prescription medications are similar
- Lack of difference in mortality are not explained by people dying without a preceding hospital admission

COVID-19 Immunisation rates

Talis Liepins

COVID-19 Vaccination Rates

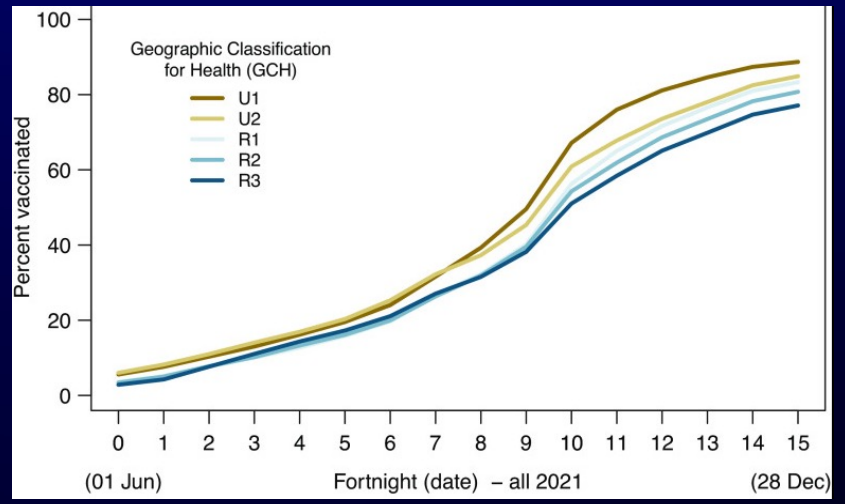
Evaluated vaccination rates, by GCH – over the peak period of activity

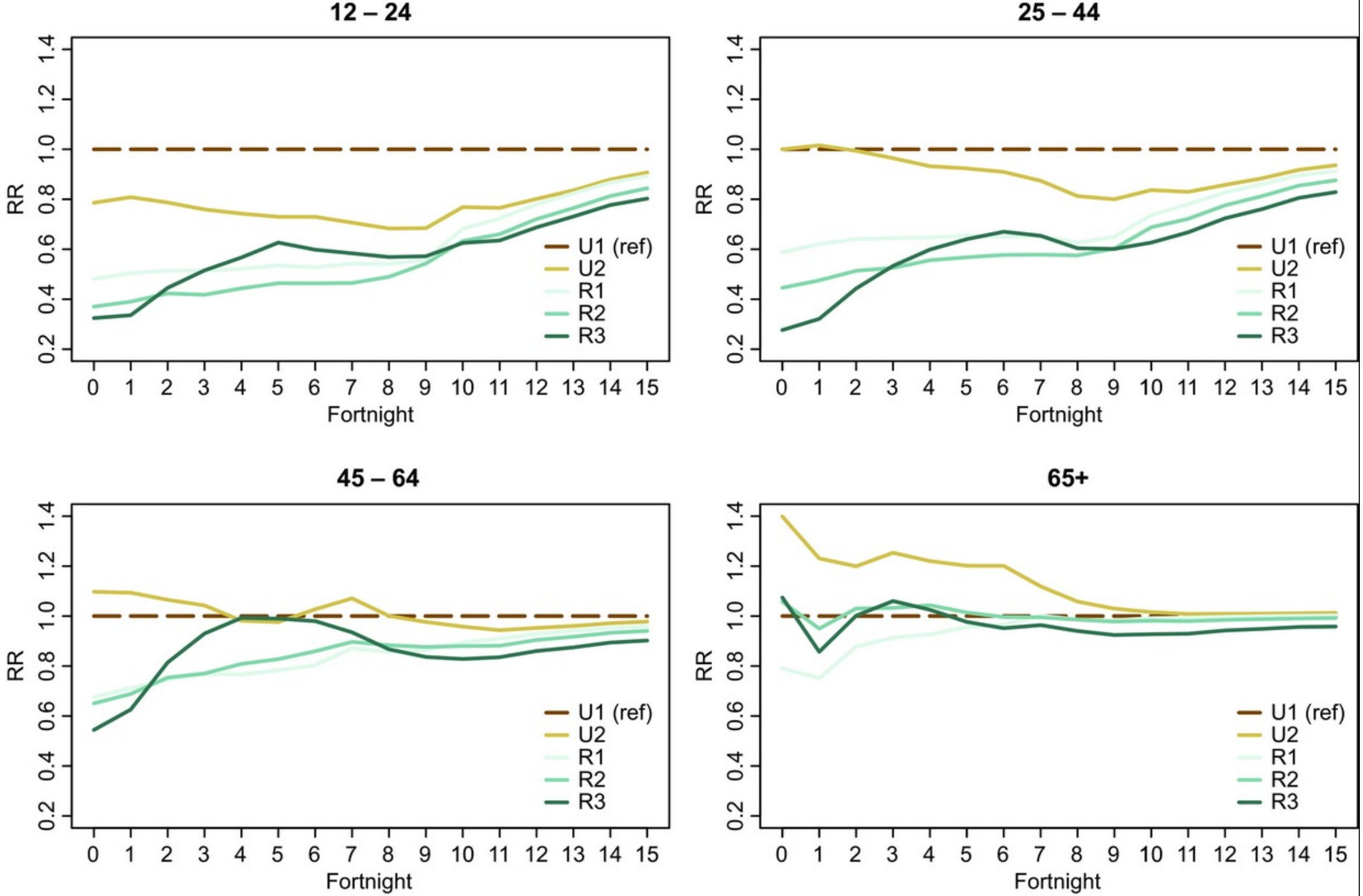
15 fortnights from 1 June 2021 to 27 December 2021

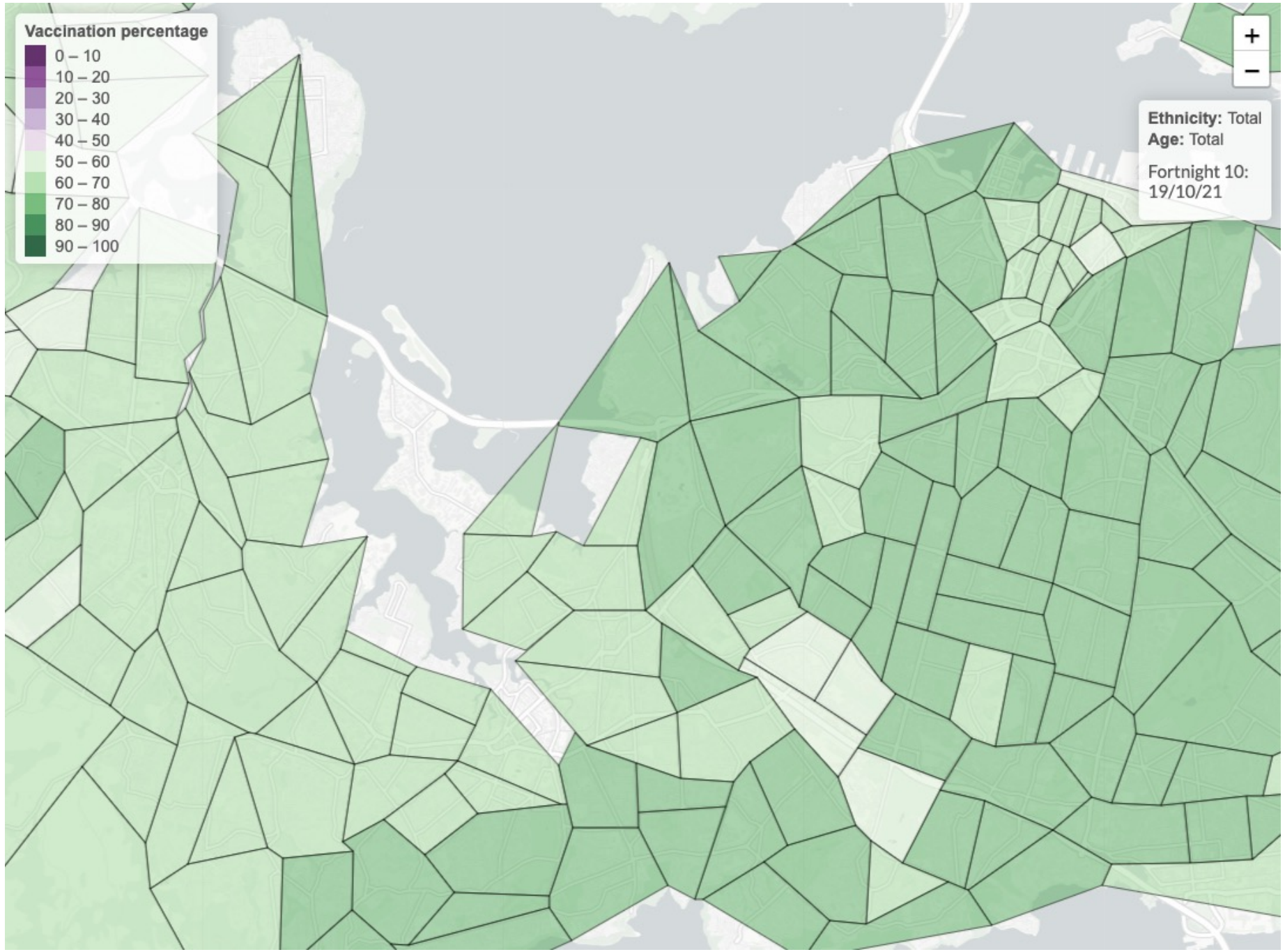
(After border and port workers, and health professional restrictions)

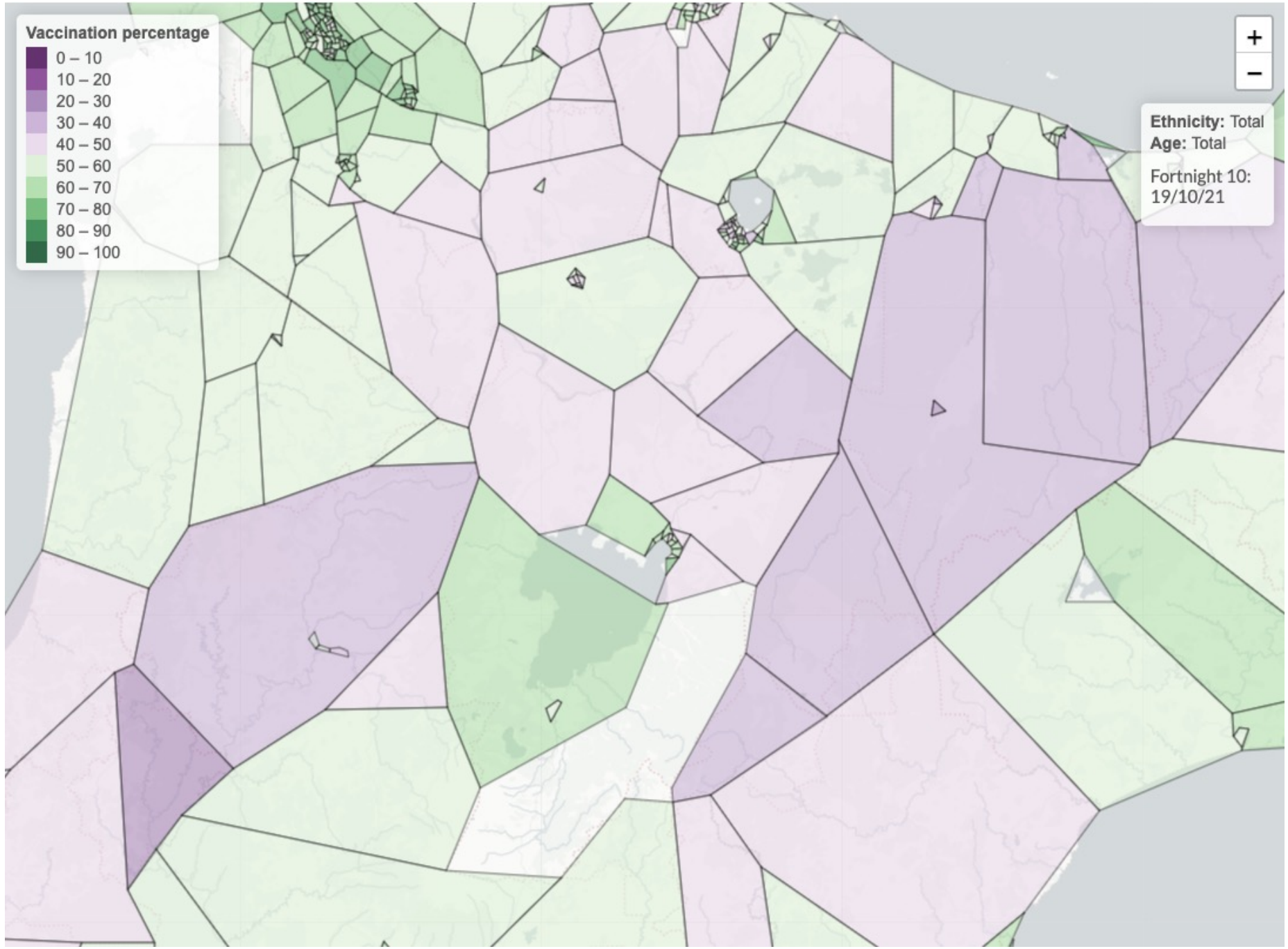
Key findings

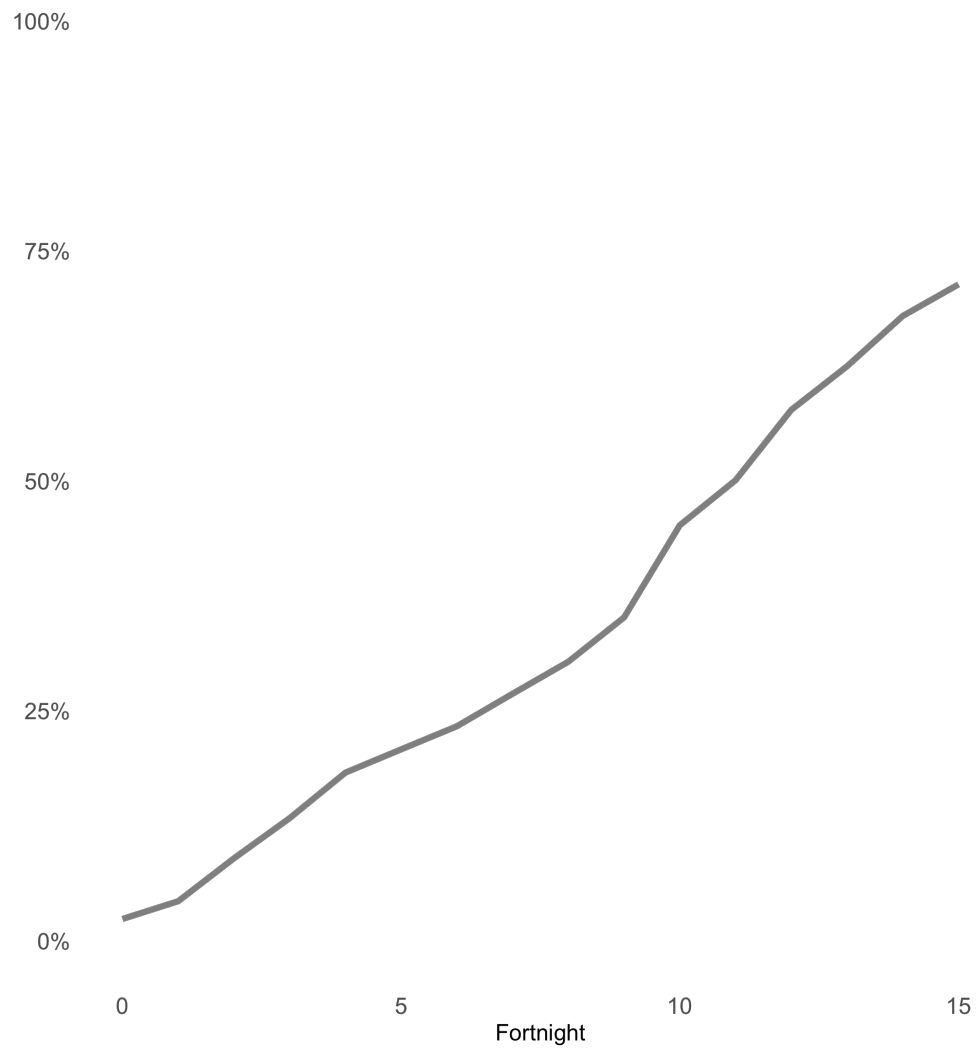
1. Rural-urban gradient emerged – less uptake in rural
2. However, older people in rural areas had broadly similar rates to urban
3. Rural areas appeared to have greater variation
4. Urban areas largely homogenous

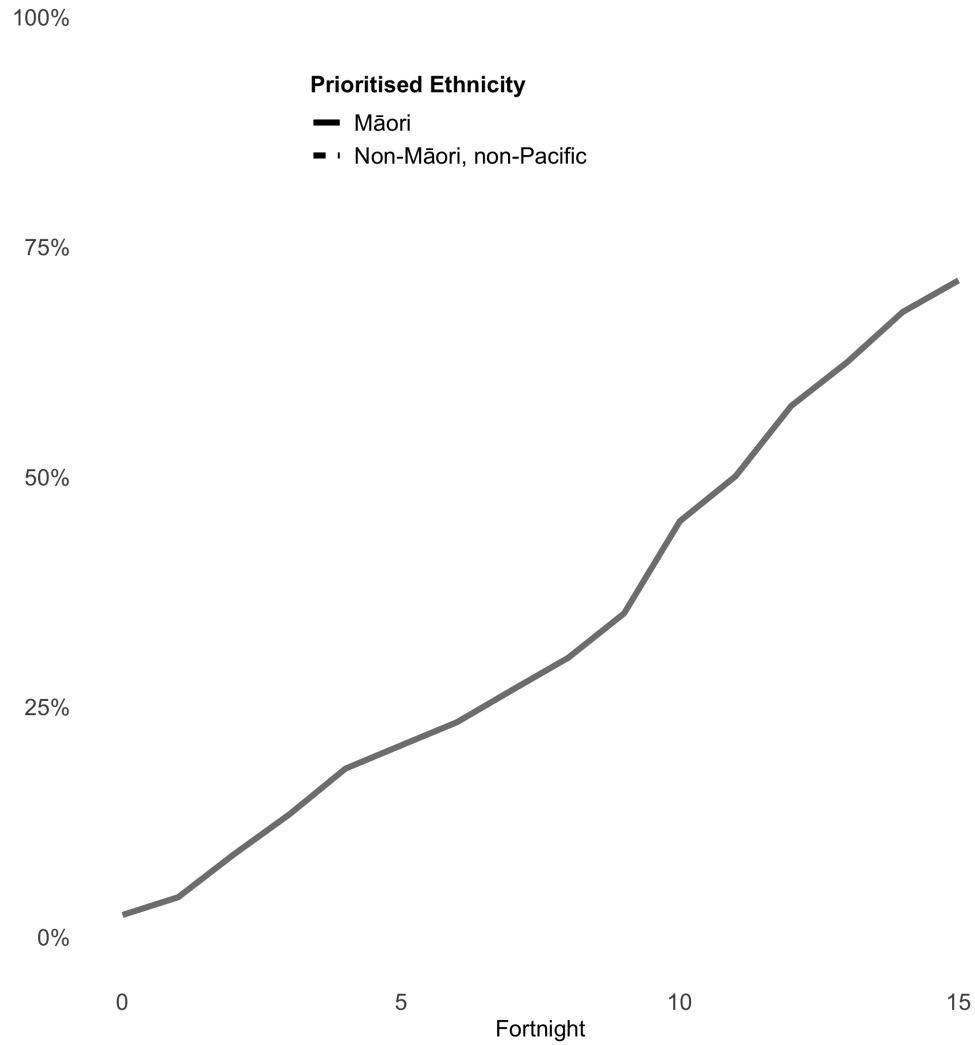


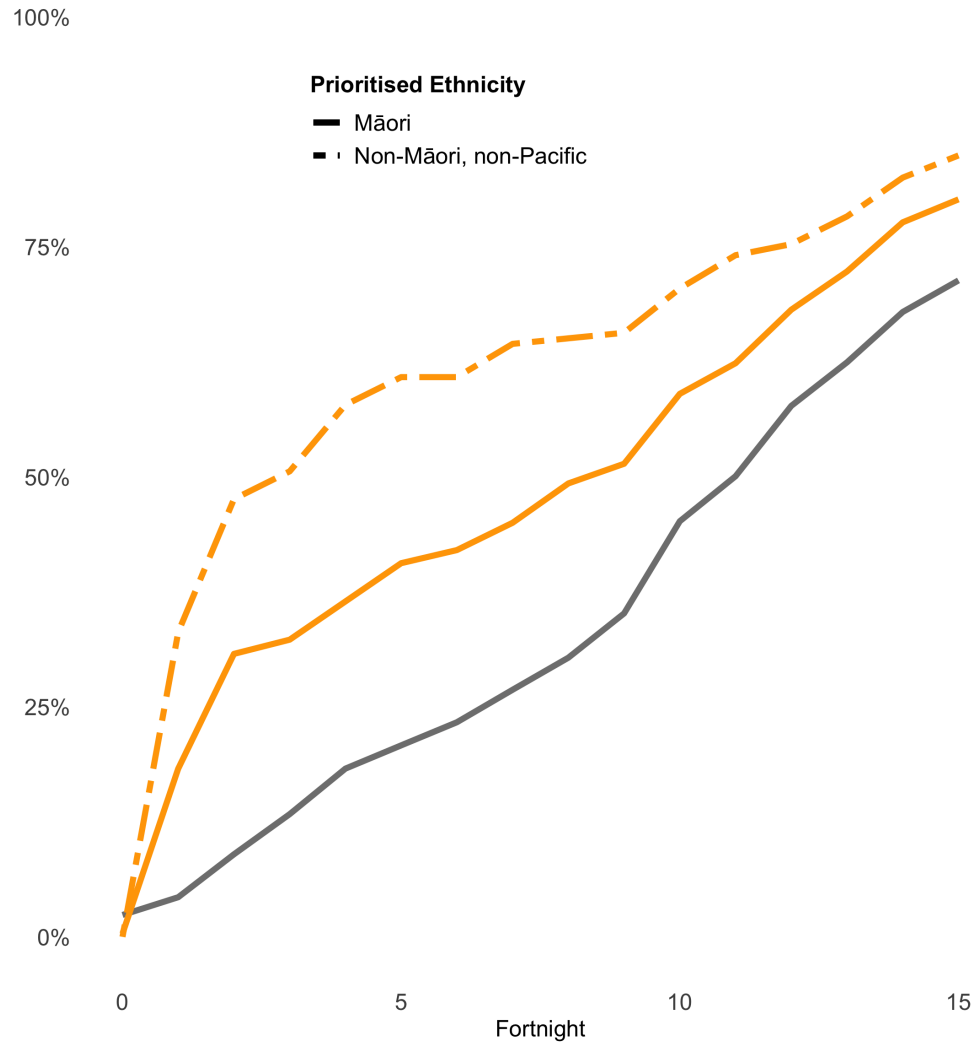

12 – 24
25 – 44
45 – 64
65+
RR
Fortnight
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
U1 (ref)
U2
R1
R2
R3


Vaccination percentage
0 – 10
10 – 20
20 – 30
30 – 40
40 – 50
50 – 60
60 – 70
70 – 80
80 – 90
90 – 100
+
−
Ethnicity: Total
Age: Total
Fortnight 10: 19/10/21


Vaccination percentage
0 – 10
10 – 20
20 – 30
30 – 40
40 – 50
50 – 60
60 – 70
70 – 80
80 – 90
90 – 100
+
−
Ethnicity: Total
Age: Total
Fortnight 10:
19/10/21

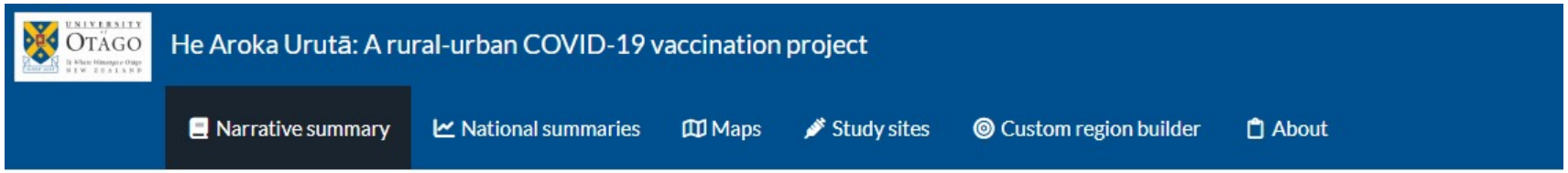

100%
75%
50%
25%
0%
0
5
10
15
Fortnight

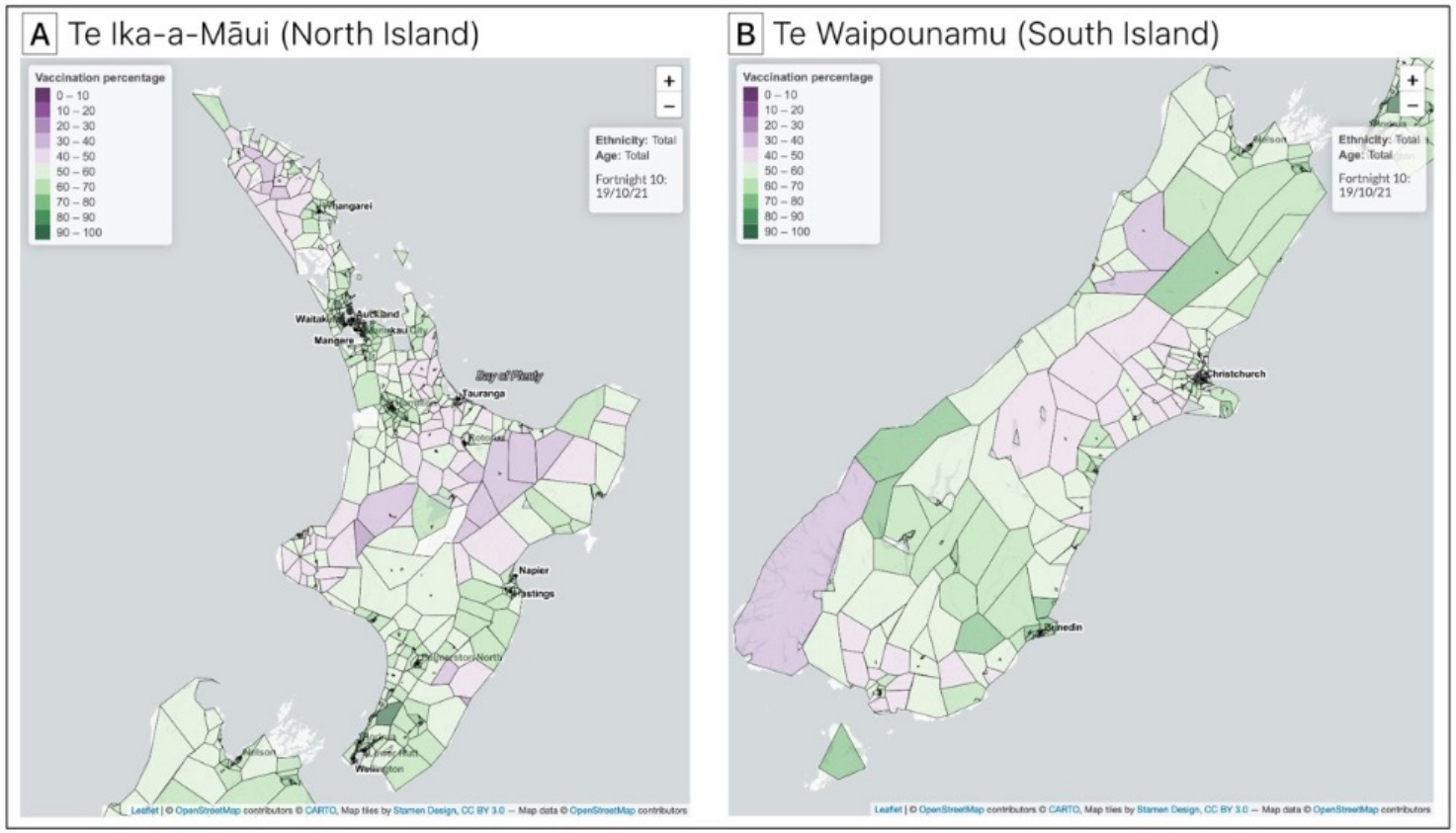

100%
Prioritised Ethnicity
Māori
Non-Māori, non-Pacific
75%
50%
25%
0%
0
5
10
15
Fortnight


100%
75%
50%
25%
0%
Prioritised Ethnicity
Māori
Non-Māori, non-Pacific
0
5
10
15
Fortnight

Interactive application

https://gch-nz.shinyapps.io/covid_vaccine/





The rural context is not the same and rural health services are not small versions of urban health services

Qualitative and mixed methods research

Prof Tim Stokes

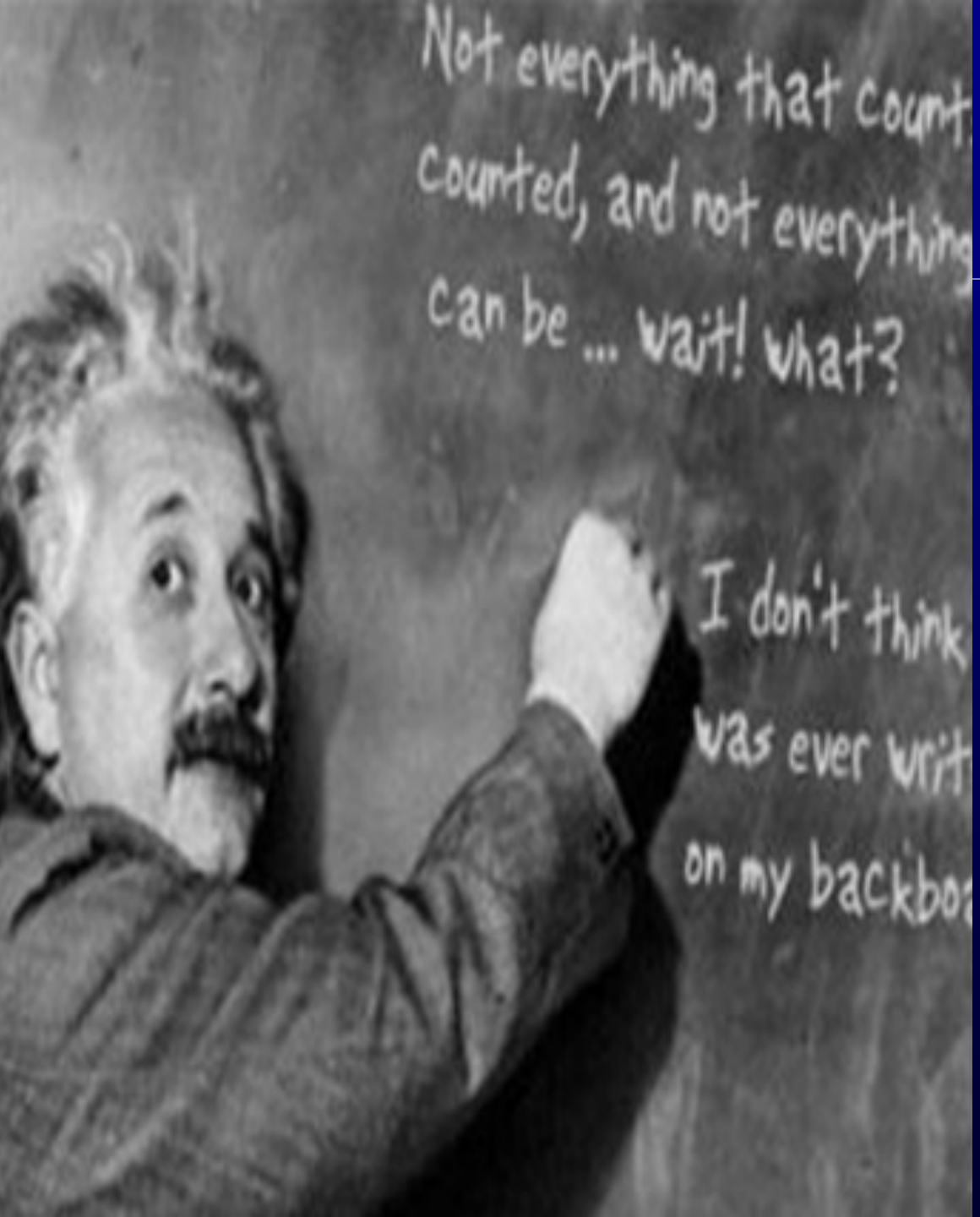
Definitions

Qualitative research involves the collection, analysis and interpretation of data that are not easily reduced to numbers.

These data relate to the social world and the concepts and behaviours of people within it.

(Murphy et al, 1998)

Mixed methods research : Combines Qualitative and Quantitative Research in a single study



Not everything that can be counted counts ...

and not everything that counts can be counted

What is qualitative research?

1. Commitment to viewing events, actions, norms, values from the perspective of those being studied
2. Emphasis upon description of the setting being studied
3. Emphasis on context and holism

   Researcher as part of process

   Reflexivity
4. Emphasis on process
5. Flexibility and lack of structure: reluctance to impose a priori theoretical frameworks at outset

(1- 5 Bryman, 1988)

Good qualitative research is rigorous and its findings can be transferable to other settings

Why do qualitative research in health care?

Qualitative studies help us understand why promising clinical interventions do not always work in the real world, how patients experience care, and how practitioners think.

- Patients' accounts of living with and managing inflammatory bowel disease in rural Southern New Zealand: a qualitative study (Richard et al., 2020)

They also explore and explain the complex relations between the healthcare system and the outside world, such as the socio-political context in which healthcare is regulated, funded, and provided, and the ways in which clinicians and regulators interact with industry

- How did New Zealand's regional District Health Board groupings work to improve service integration and health outcomes: a realist evaluation (Penno et al., 2023)

(Greenhalgh et al., 2016 – quoted in Pope & Mays, 2020)

The rural health context

Assoc Prof Katharina Blattner

The rural health context

Research to date: qualitative- interview, some survey data

The ‘conceived’, ‘perceived’, and ‘lived’ rural space

Data largely from the ‘lived space’ lens: *‘the participants’*

Single Rural Health Service → → National Rural Health Services

My/our positionality

Overview

Features of rural health: Place & People

Geographical distance

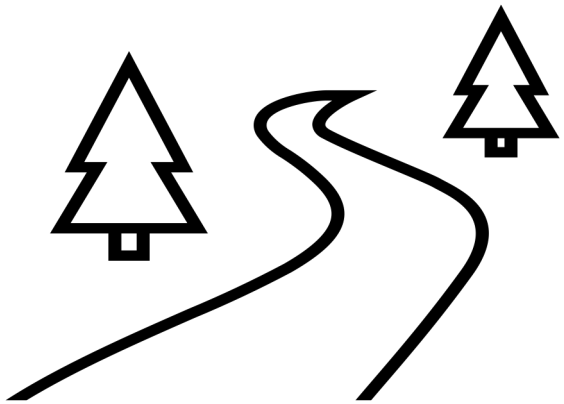
Infrastructure

Small /low density populations

Non-homogenous, but common features across diverse settings

Spatial isolation can impact on health needs and service responses

Rural people need access to : 1^0 & 2^0, acute & chronic, community & hospital services



you have to have that ability to treat people for 24-48 hours ***when you're this far away****, because it just* ***makes so little sense*** *to send many people away.*

Place & People

People – history, culture, relationships, diverse

Community connectedness

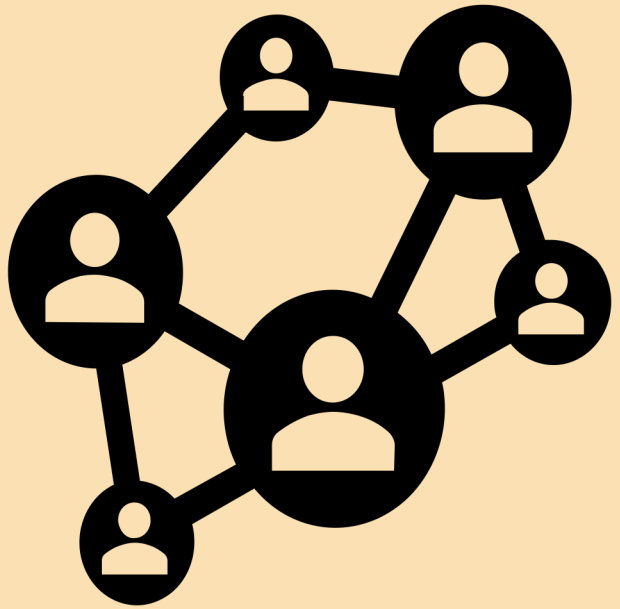
Local contextual knowledge

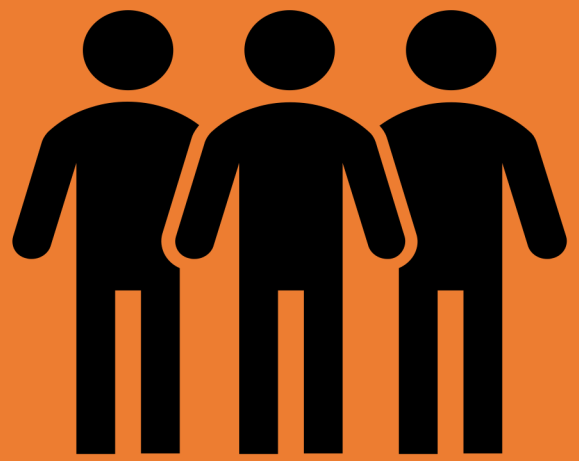
Cultural safety

Established relationships local/ regional/national

Adaptability and innovation

*'We had **lots of things embedded** in our community before COVID so we could activate them. Yeah...and we had **a community that trusts us**'*





tangata whenua can respond flexibly to local people's needs. The staff are from this area, so the patients know our staff and our staff know our patients. Our service is based on ***our knowledge of each other.***

Rural health services – features

Blurred boundaries between 1^0 - 2^0, community- hospital care

Small staff teams

Broad services

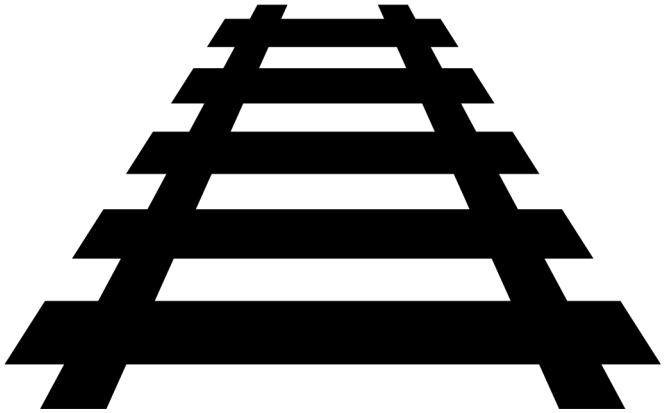
Health professional broad scopes *blurred boundaries*

Transport/transfers

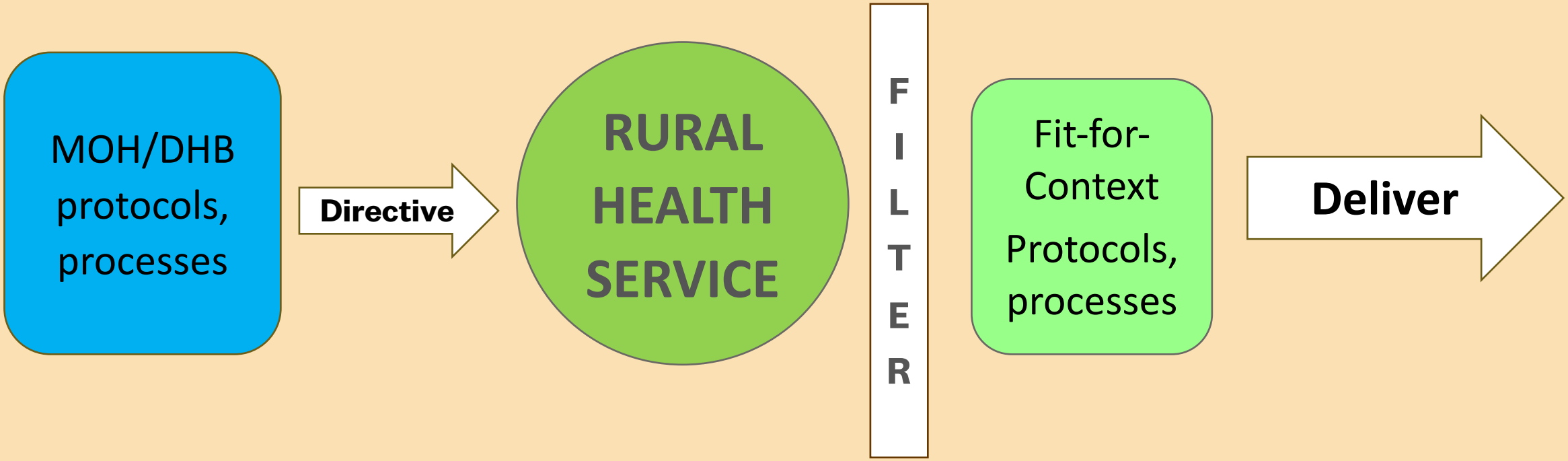
Strong networks- local/ regional /national – ‘virtual’

Varied models of care: geography/ history/ people

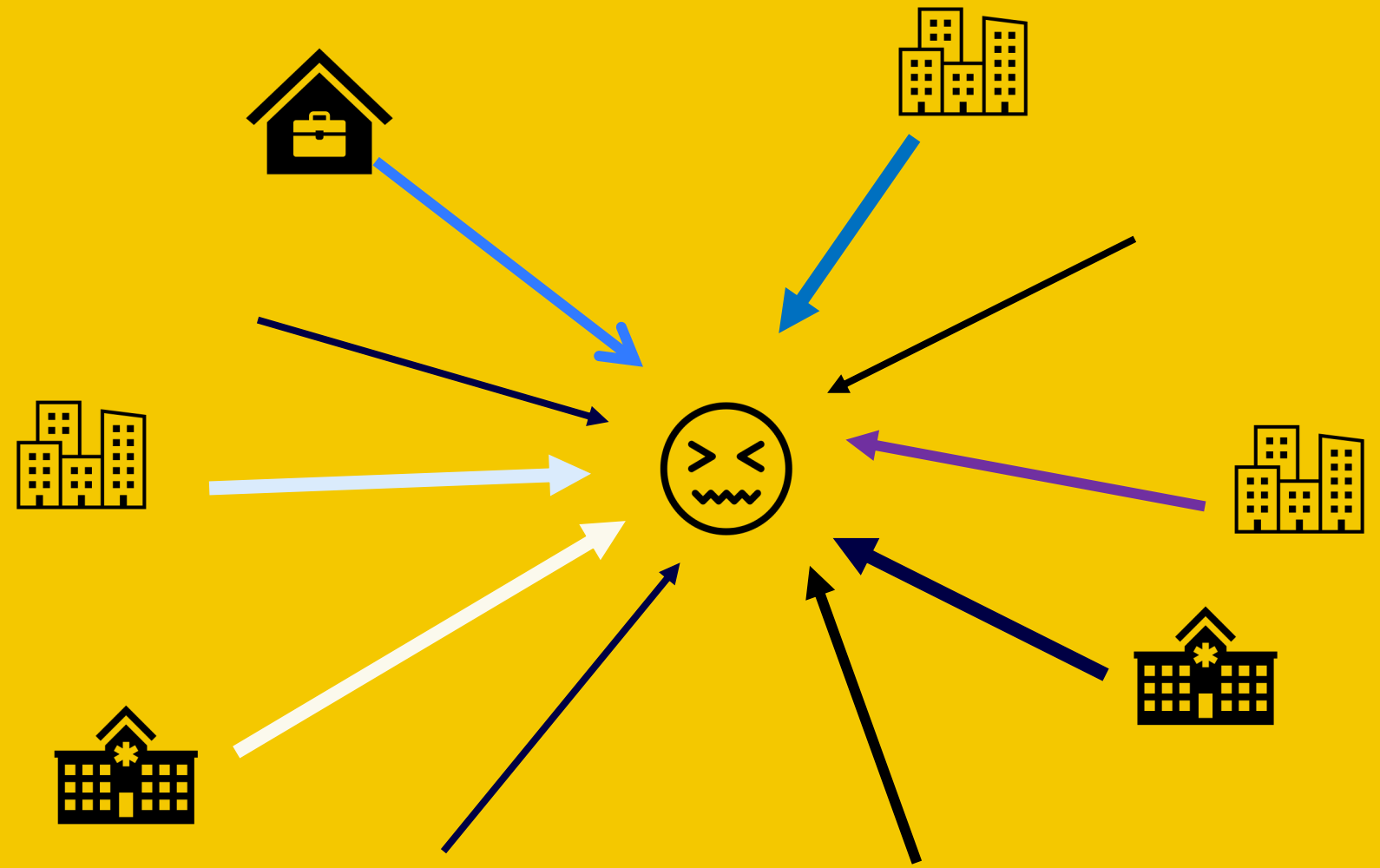
Sometimes we do things that are probably quite close to secondary care and sometimes we're doing things which are probably primary care so somewhere along that line ... ***it's a shifting line.***



Converting urban centric guidance …

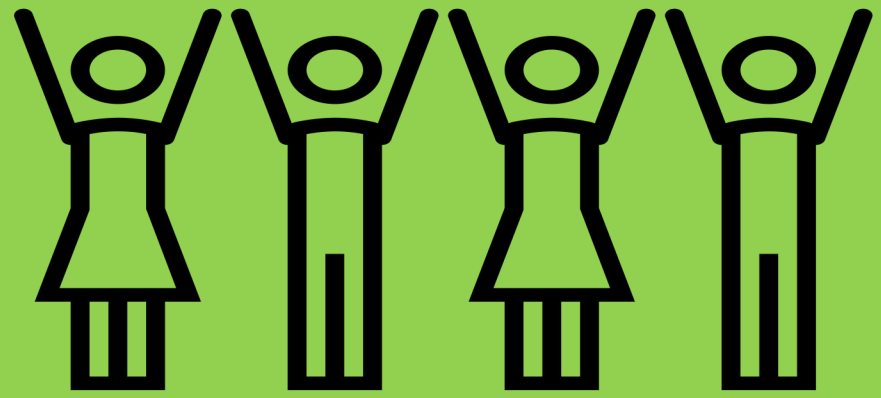


Trying to align with urban-centric regulatory systems & processes



*'You have to kind of **bundle things up together** using the same resources across different initiatives. It was the only way that made sense here... but **it didn't fit** the way that it was **conceived centrally**'*

Staff are the absolute strength they work in a very strong, cohesive team in a small standalone place a ***long way from support.*** *Anything can happen, and* ***you just have to respond***



The rural health context: Nomenclature

Lack of a shared language

For sustaining rural health services aligning terminology to fit changing policy can be critical

Primary Care

Emergency Department

General Practice

Rural Hospital

Rural Generalism

So we're not an emergency service, we're ***not allowed to call ourselves an emergency service****, as there are criteria that you have to meet for that. But we are…well,* ***we do have those presentations that are emergencies.***

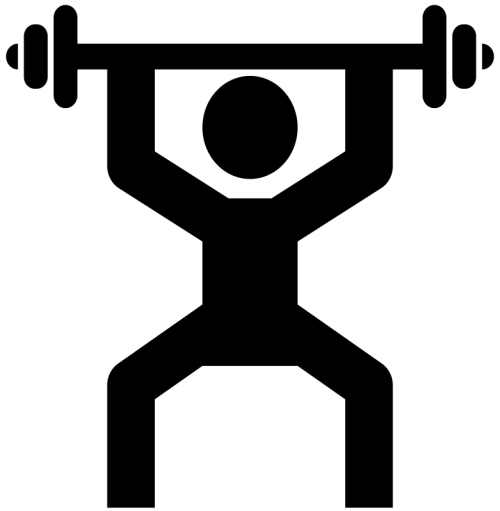
Key influencers of a rural health service response

Geographical distance

Connectedness & contextual knowledge

Funding long-term integrated (not 'by activity') health services

It's having a ***trusting relationship*** *It can't be just tacked on as a little bit, it needs to be* ***built into the health services****. It's not about 'getting the measles vaccination rolled out',* ***it's about having strong services'***



Rural health context: Key points

The more geographically remote a health service, the more splintered the urban-centric systems, processes and funding models that the service depends on.

Rural health services, rural hospitals, are not a scaled down version' of an urban service/hospital.

Divided funding streams within a health system can impact negatively on the delivery of care in rural settings.

Rural health initiatives:

GEOGRAPHICALLY TAILORED

CULTURALLY ANCHORED

LOCALLY DRIVEN

Pacific rural communities

Dr Jane Taafaki

Rural Pasifika communities

- Waitaki District: 3500 Pasifika, 200-250 families
- **Pasifika represent 20% of the local population – higher than Auckland**
- Employment predominantly in meat processing: hazardous work, high rates of musculoskeletal injury and chronic disease
- No Pasifika clinical healthcare provider, one Pasifika community organisation filling the healthcare gap
- 5 GP clinics – no clinic taking new patients since early 2023, one underfunded rural hospital, regular A&E closures
- **Intersection of health, rurality and ethnicity is the space in which disparities are most evident for Pasifika**

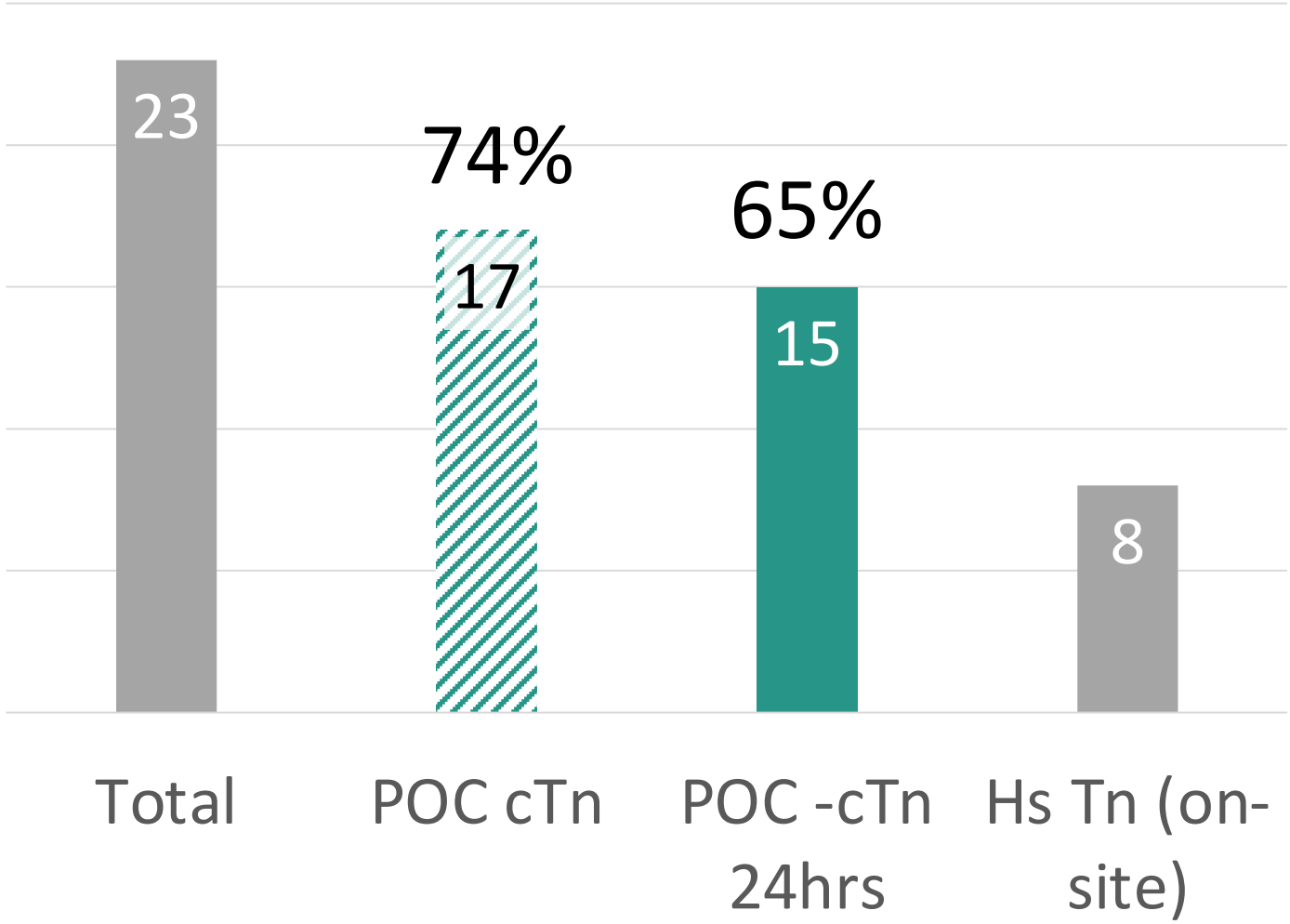

MATAKITE O AOTEAROA

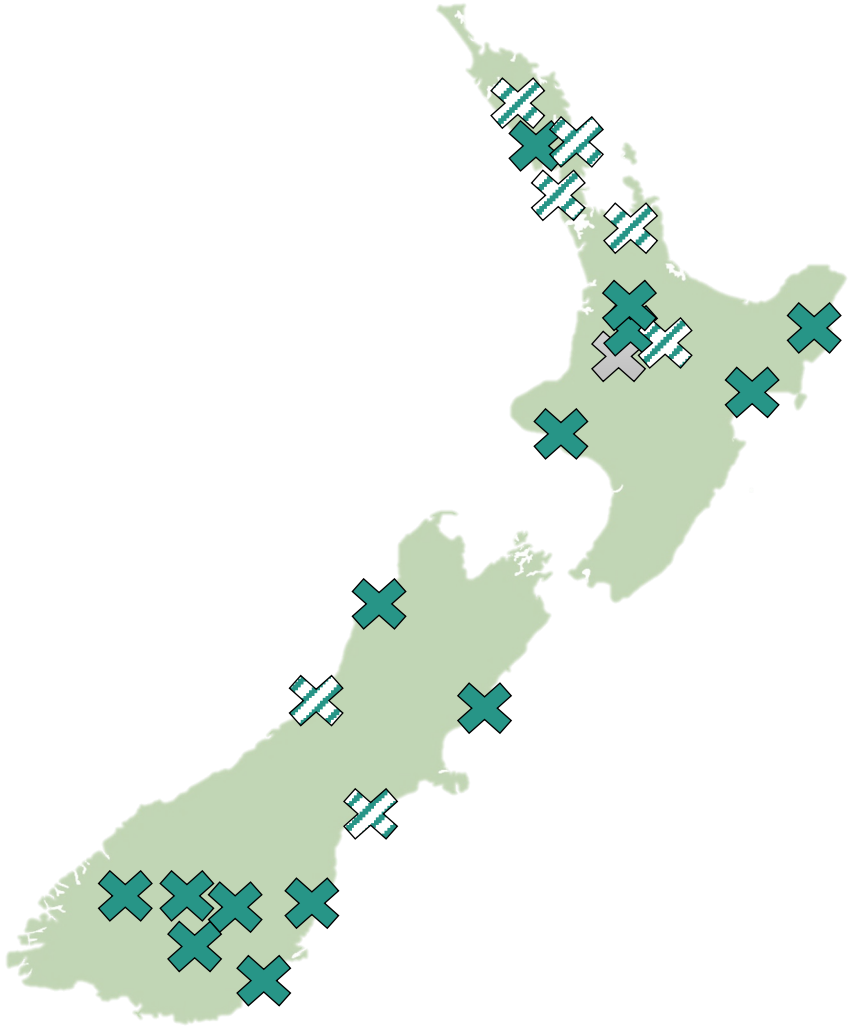
The rural context demands different and specific healthcare solutions

Point-of-care diagnostics

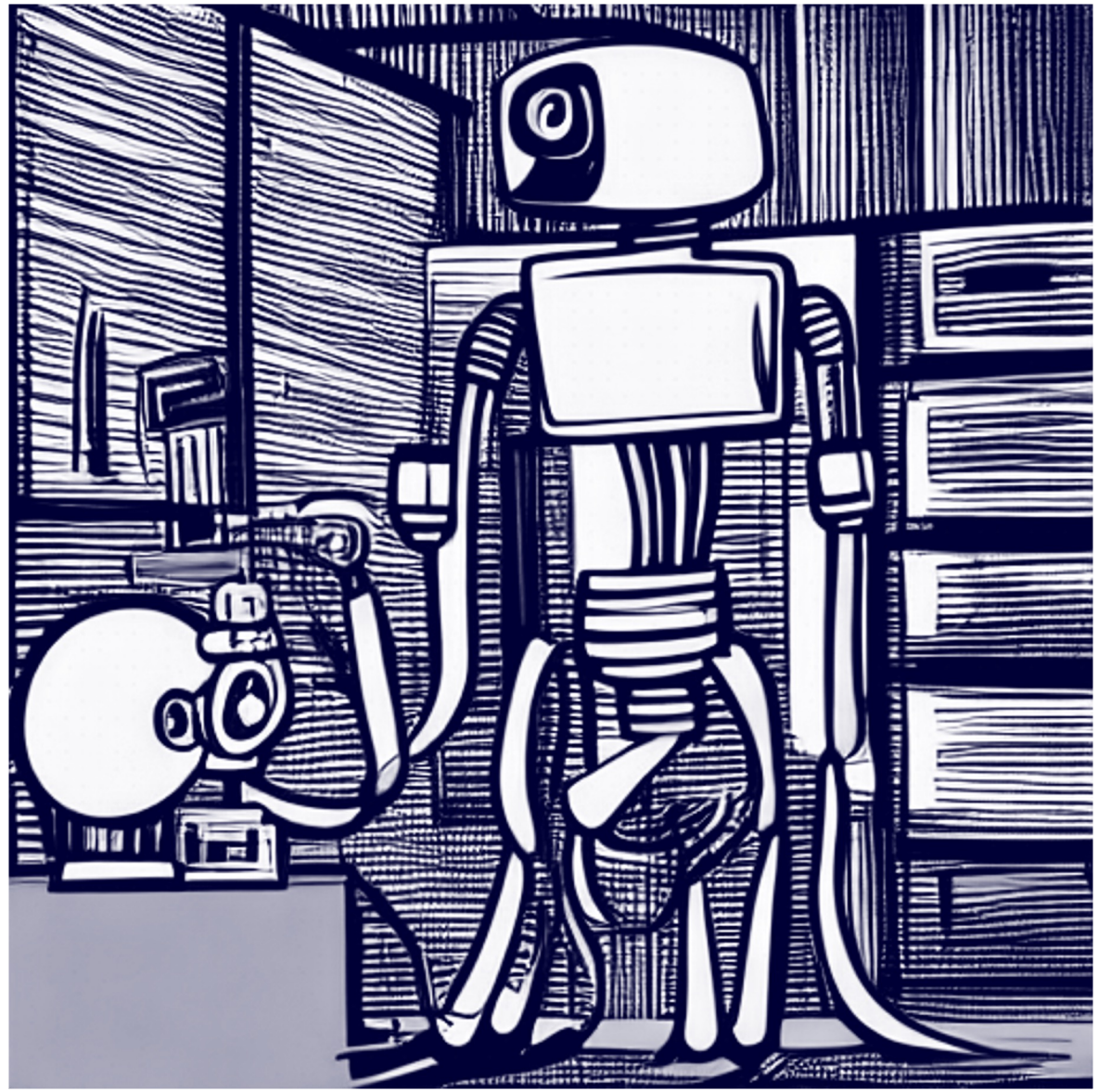
Dr Rory Miller

Rural Health Facilities
have fewer diagnostic facilities





Miller R, Stokes T, Nixon G. Point-of-care troponin use in New Zealand rural hospitals: a national survey. New Zealand Medical Journal. 2019;132(1493):13.



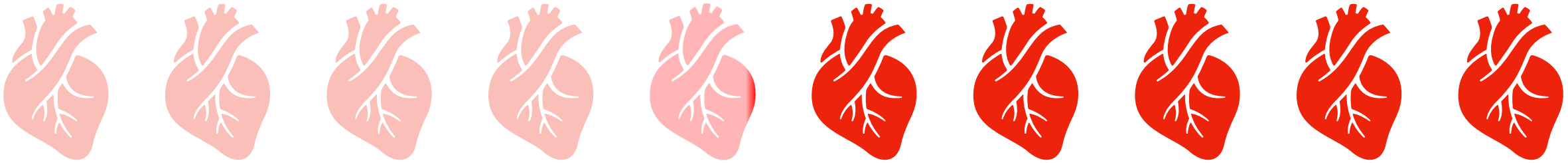
Point-of-care Ultrasound

‘At the bed side as part of a clinical assessment’

Point-of-care diagnostic tests *are safe and effective*

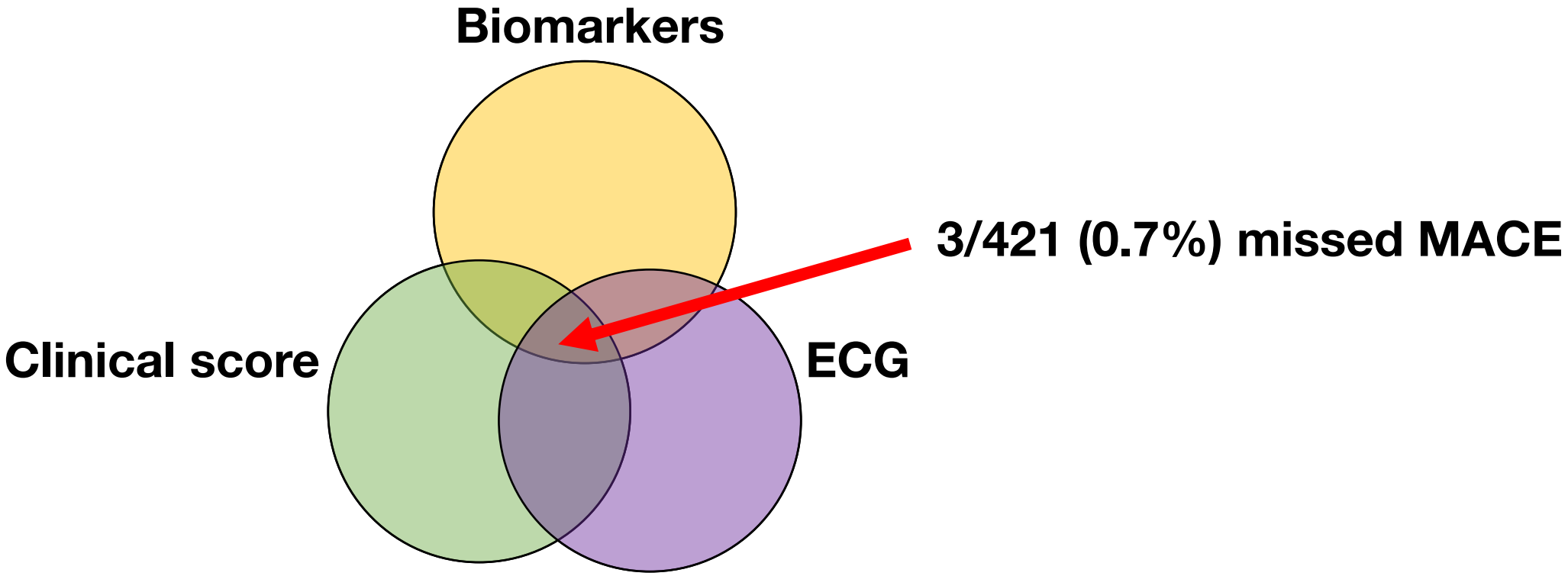
iSTAT point-of-care troponin vs. high sensitivity troponin

@ manufacturer's cutoff (0.08ug/L)



48% missed AMI

Schneider HG, Ablitt P, Taylor J. Improved sensitivity of point of care troponin I values using reporting to below the 99th percentile of normals. Clinical Biochemistry. 2013 Aug;46(12):979–82.



Than M, Cullen L, Reid CM, Lim SH, Aldous S, Ardagh MW, et al. A 2-h diagnostic protocol to assess patients with chest pain symptoms in the Asia-Pacific region (ASPECT): a prospective observational validation study. 2011;377:8.

ESC European Society of Cardiology

European Heart Journal: Acute Cardiovascular Care (2022) **11**, 418–427
https://doi.org/10.1093/ehjacc/zuac037

ORIGINAL SCIENTIFIC PAPER
Acute Coronary Syndromes

A prospective multi-centre study assessing the safety and effectiveness following the implementation of an accelerated chest pain pathway using point-of-care troponin for use in New Zealand rural hospital and primary care settings

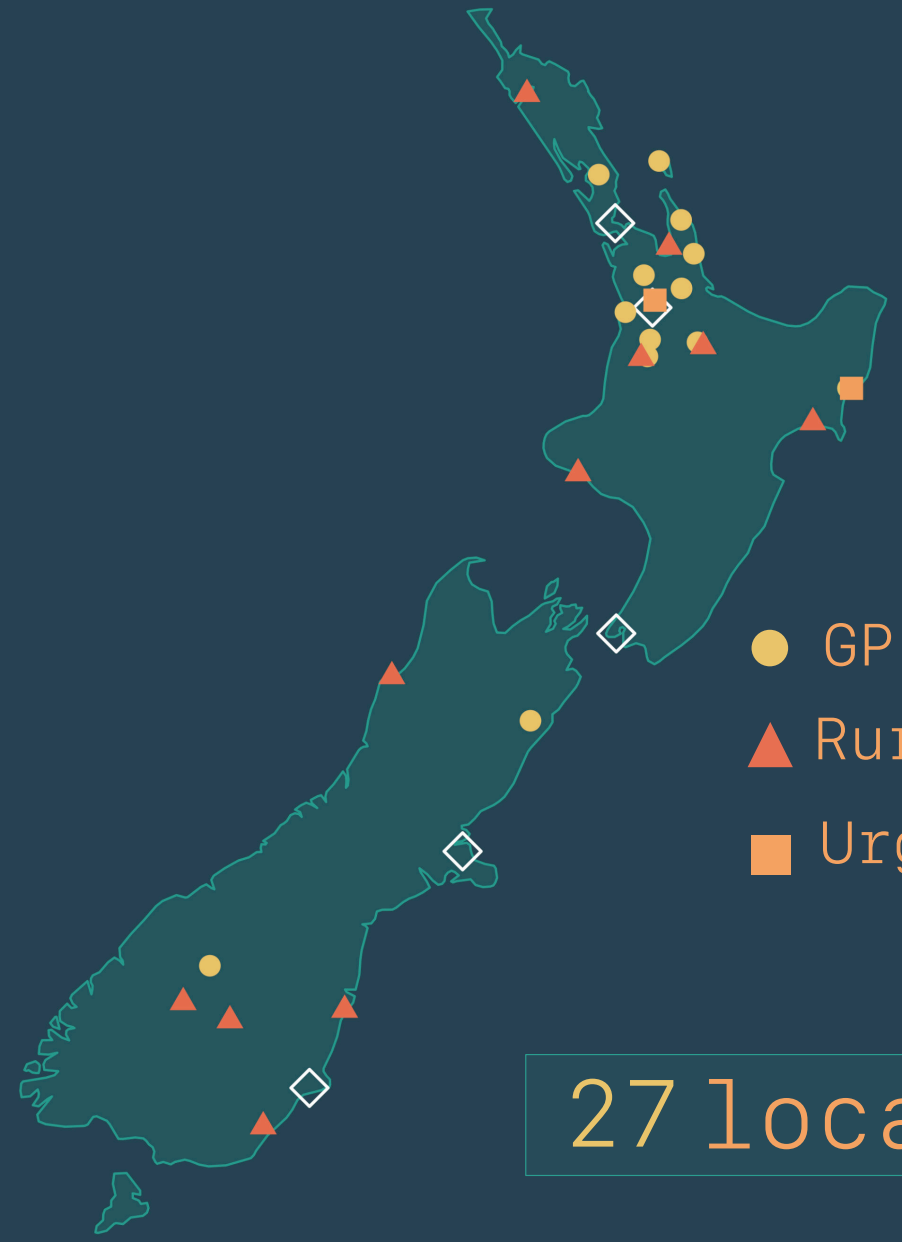
Rory Miller [1]*, Garry Nixon [1], John W. Pickering[2], Tim Stokes[1], Robin M. Turner[3], Joanna Young[4], Marc Gutenstein[5], Michelle Smith[1], Tim Norman[6], Antony Watson[4], Peter George[7], Gerald Devlin[8], Stephen Du Toit[9], and Martin Than[10]

[1]Department of General Practice and Rural Health, University of Otago, Dunedin School of Medicine, Dunedin, New Zealand; [2]Emergency Department, University of Otago – Christchurch, Christchurch, New Zealand; [3]Centre for Biostatistics, Division of Health Sciences, University of Otago, Dunedin, New Zealand; [4]Canterbury DHB, Christchurch Hospital, Christchurch, New Zealand; [5]Rural Health Academic Centre Ashburton, University of Otago – Christchurch, Christchurch, New Zealand; [6]Project Office, Midlands Regional Health Network Charitable Trust, Hamilton, New Zealand; [7]Chemical Pathology, PathoGene, Merivale, Christchurch, New Zealand; [8]Tairawhiti DHB, Gisborne, New Zealand; [9]Waikato DHB, Hamilton, New Zealand; and [10]Emergency Department, Canterbury DHB, Christchurch Hospital, Christchurch, New Zealand

Received 11 January 2022; accepted 15 March 2022; online publish-ahead-of-print 4 April 2022

1 July 2018–31 Dec 2020

1073 patients



GP

Rural Hospitals

Urgent care

27 locations

Heart Foundation

30d MACE

1073

474

Low-risk

0 (0.0%)
0-0.8%

Not low-risk

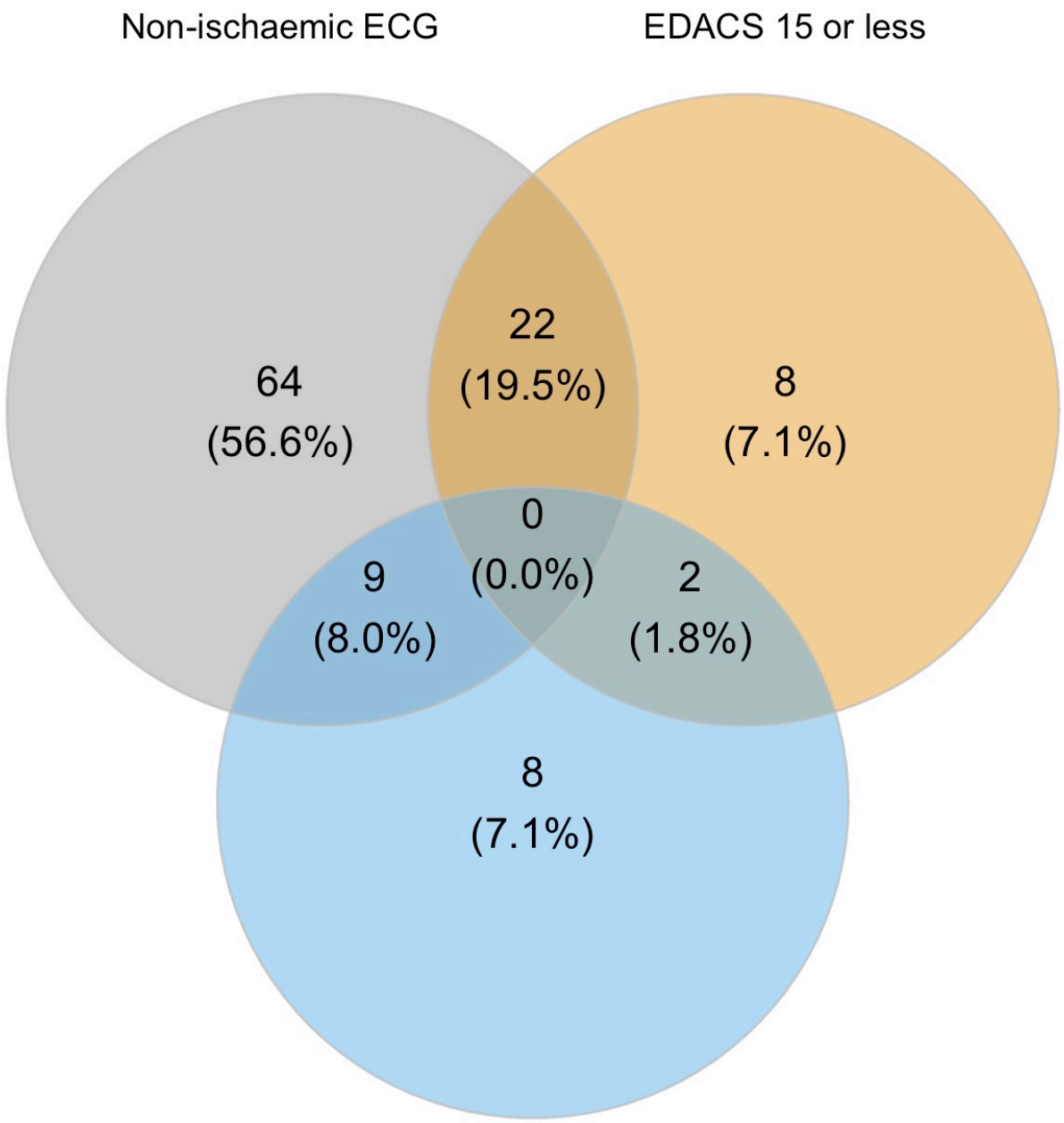
599

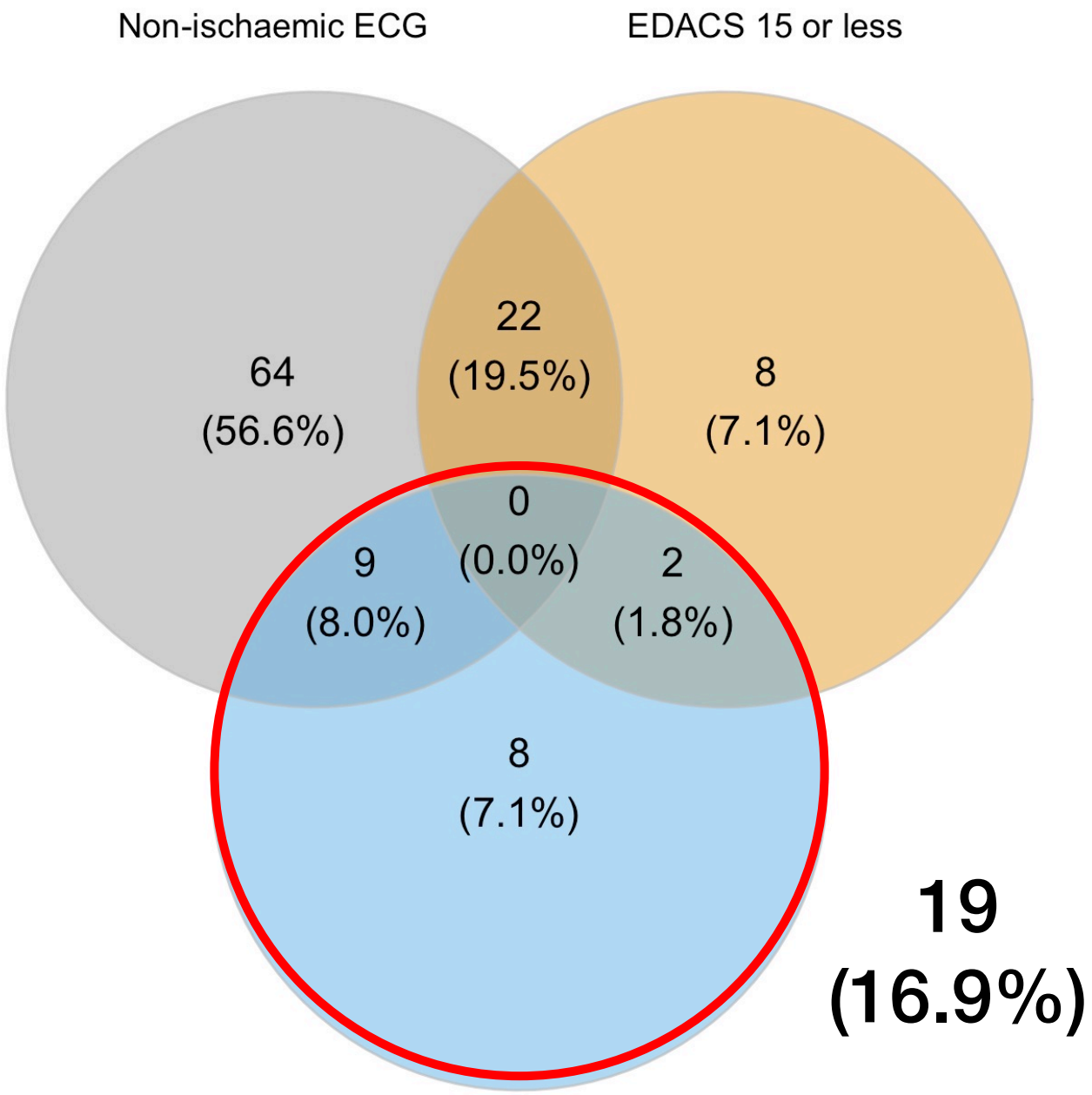
138 (23%)
19.7-26.6%

44% low-risk

0 MACE

91.8% discharged


Non-ischaemic ECG
EDACS 15 or less
64
(56.6%)
22
(19.5%)
8
(7.1%)
0
(0.0%)
9
(8.0%)
2
(1.8%)
8
(7.1%)
Troponin below cutoff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22
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(1.8%)
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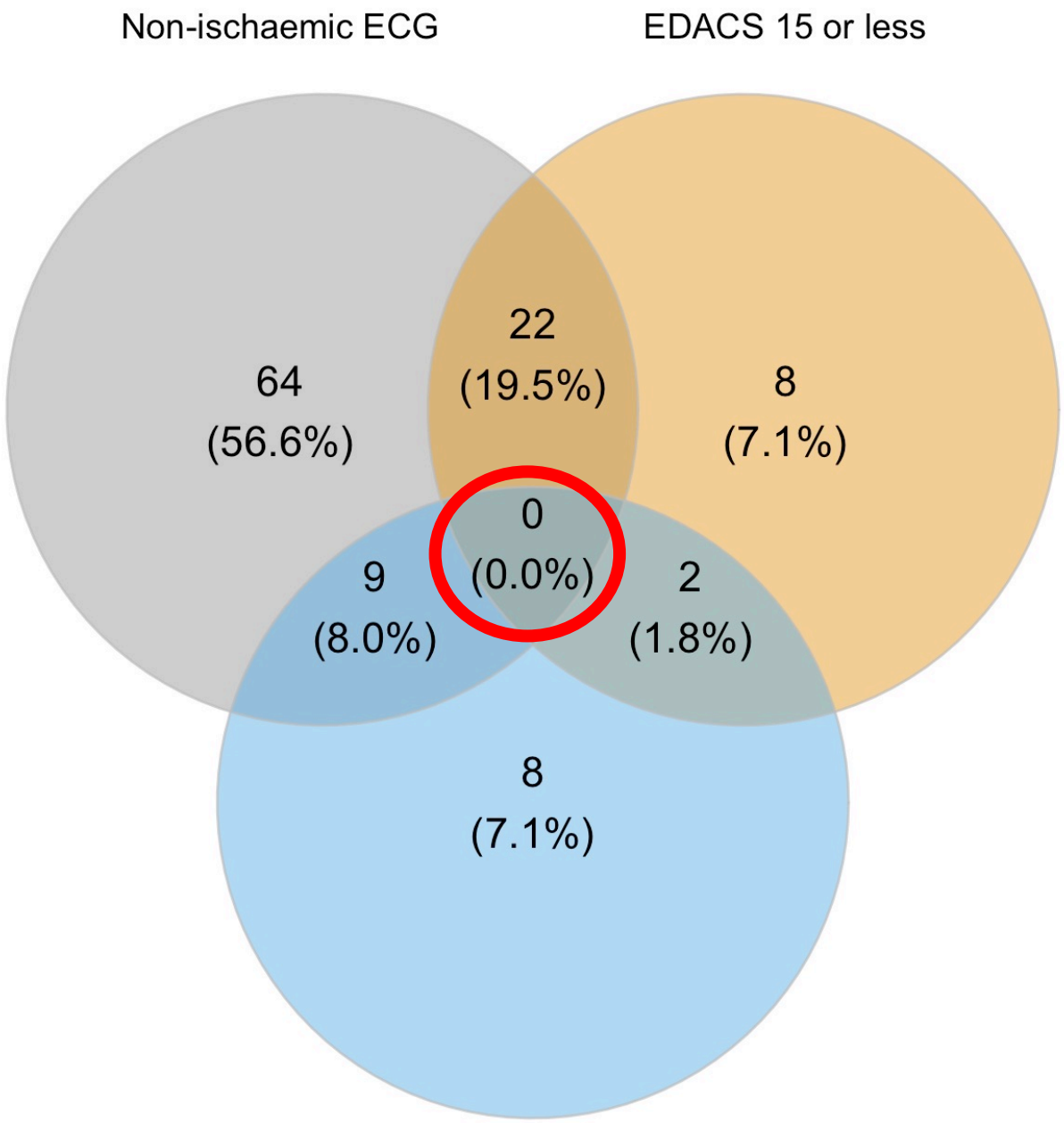
(7.1%)
Troponin below cutoff

19
(16.9%)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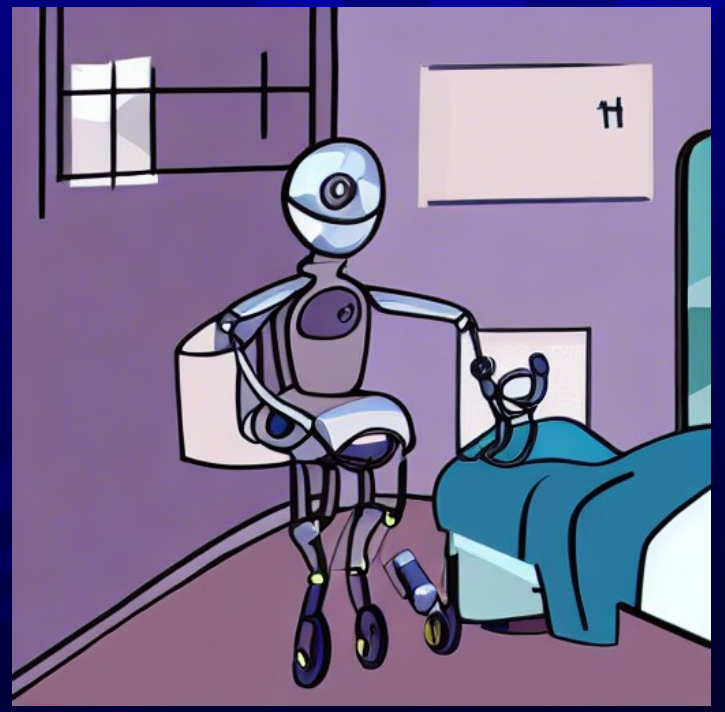
0
(0.0%)
9
(8.0%)
2
(1.8%)
8
(7.1%)
Troponin below cutoff

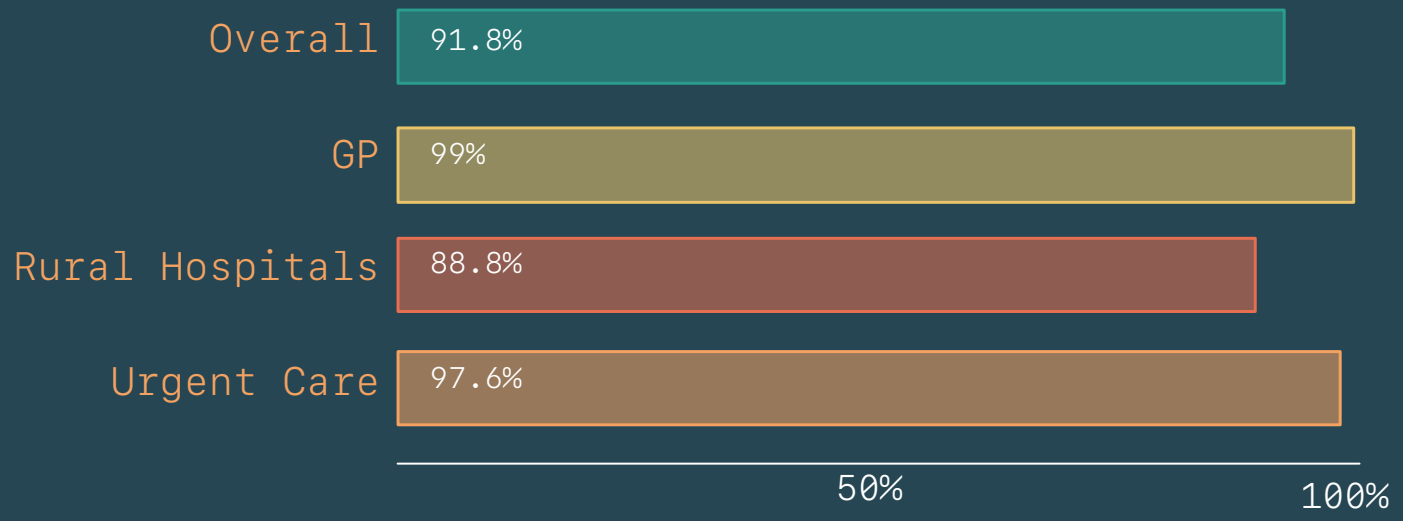
Point-of-care ultrasound

Is safe IF it's undertaken as part of a full clinical assessment, and operators keep to a defined scope in which they are well trained.

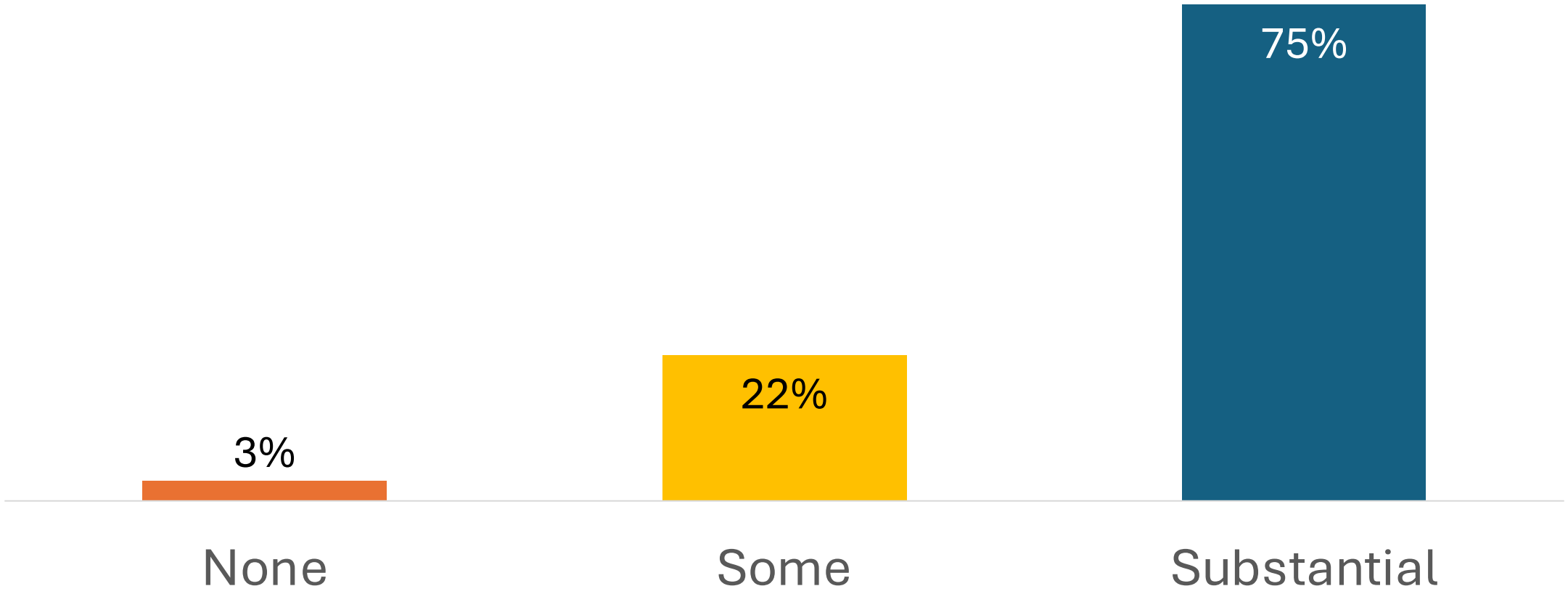


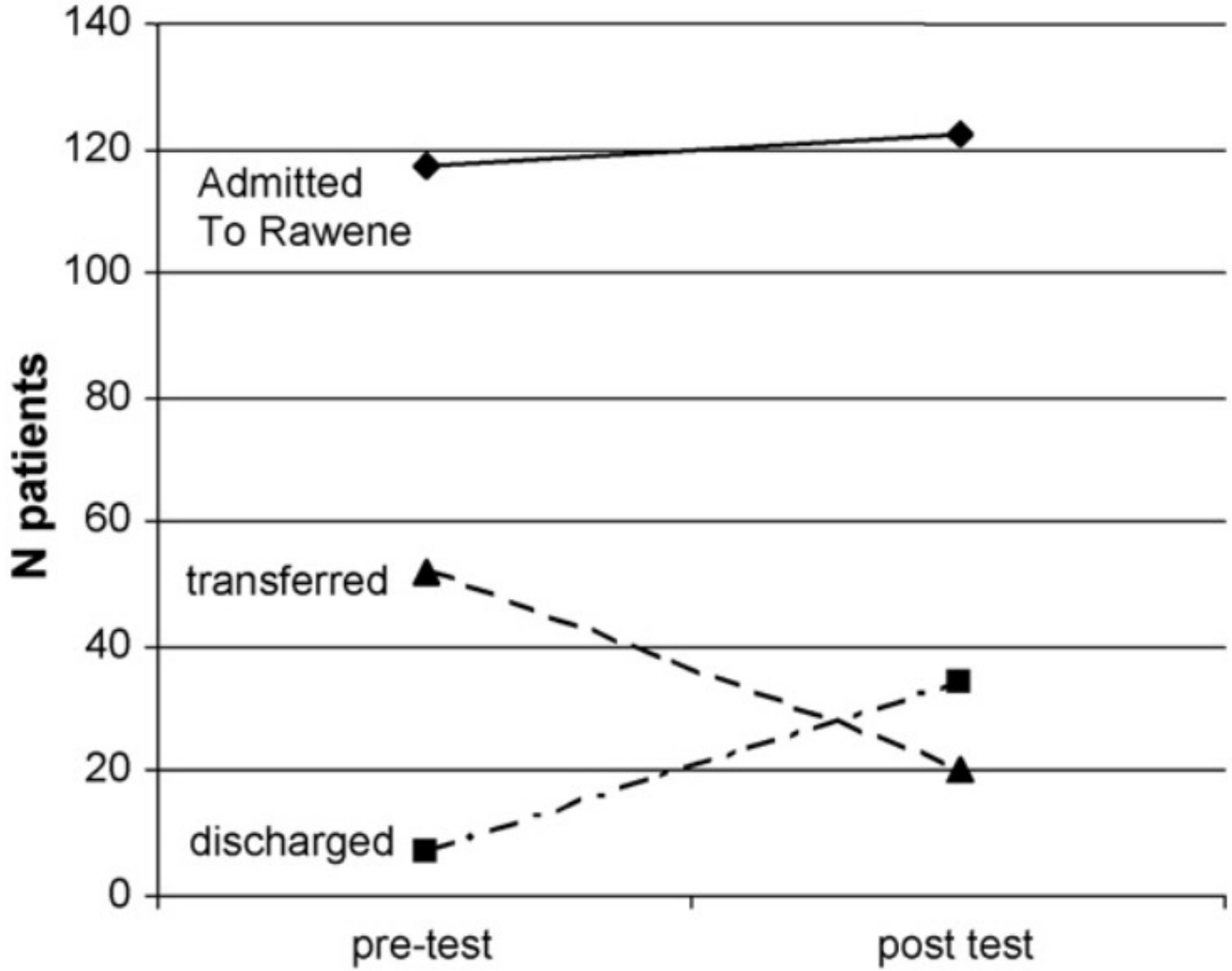
Majority of low-risk patients discharged or avoided transfer to hospital

91.8%



Changes in practice

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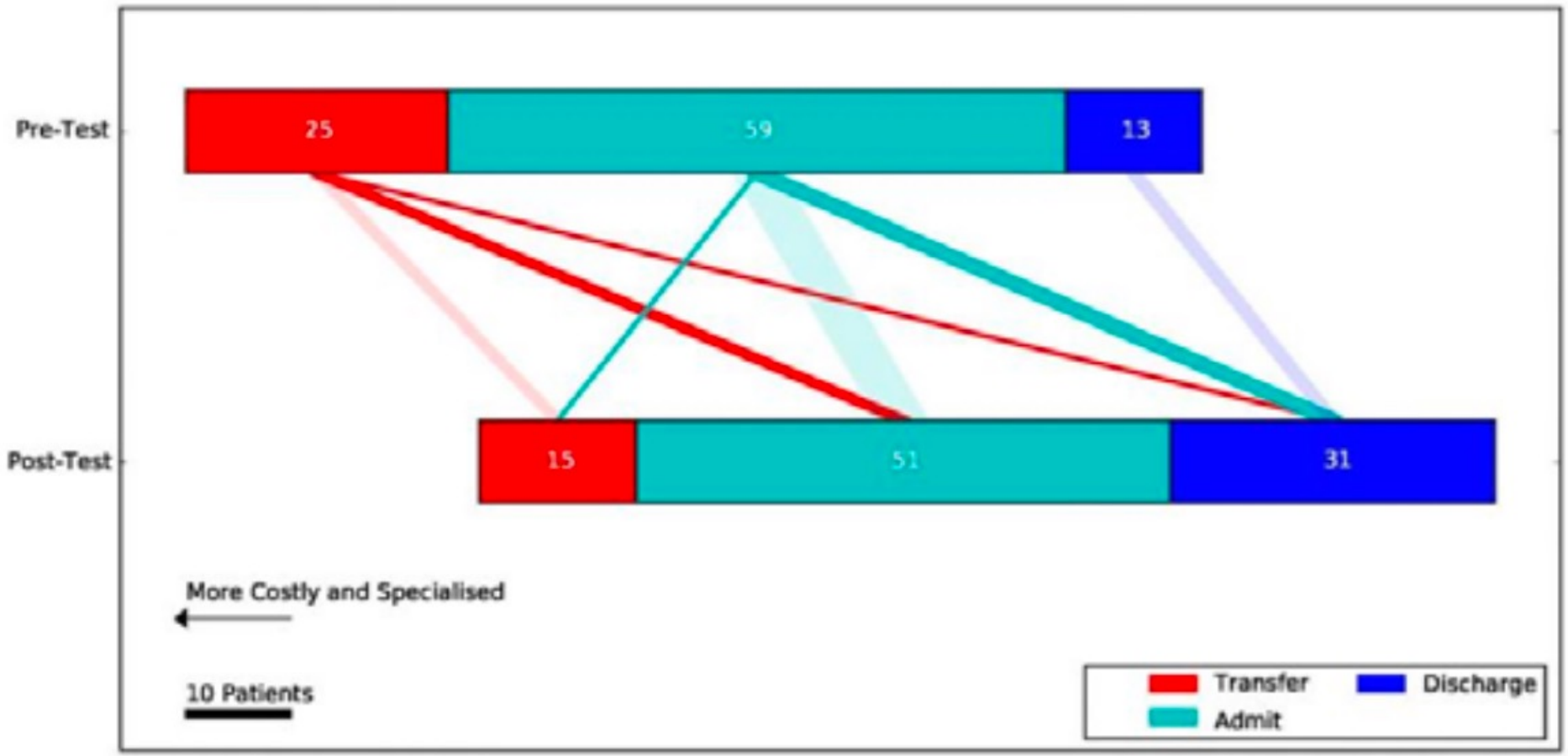
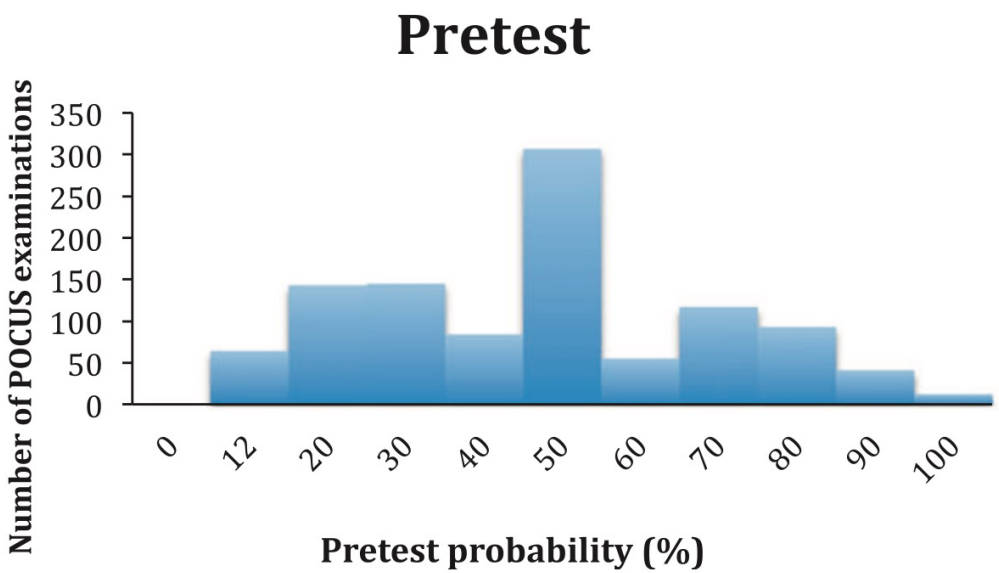
discharged
pre-test
post test


Pre-Test
Post-Test
25
59
13
15
51
31
More Costly and Specialised
10 Patients
Transfer
Admit
Discharge


Pretest
Number of POCUS examinations
350
300
250
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100
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12
20
30
40
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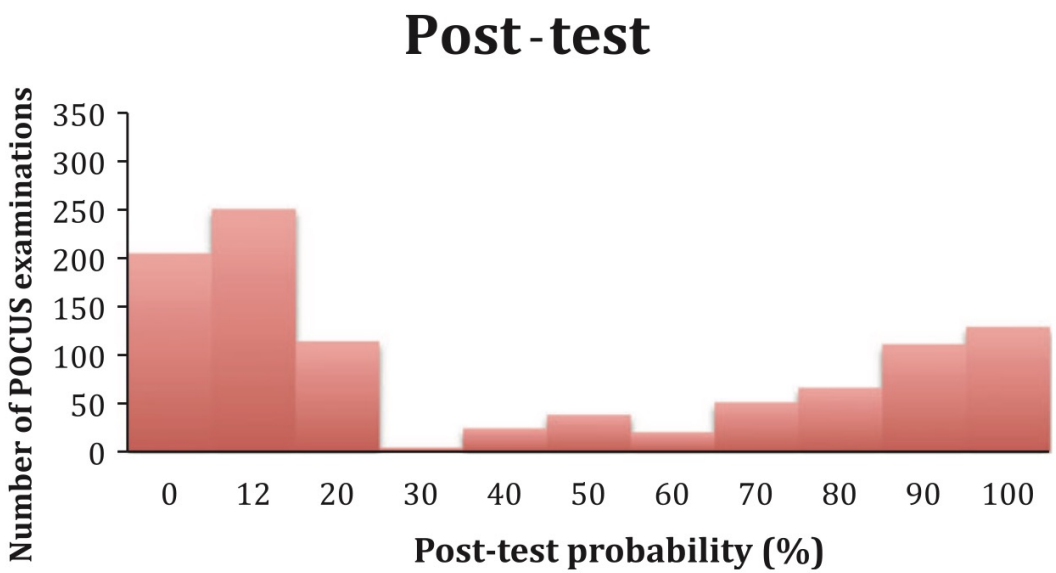
70
80
90
100
Pretest probability (%)


Post-test
Number of POCUS examinations
350
300
250
200
150
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50
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70
80
90
100
Post-test probability (%)

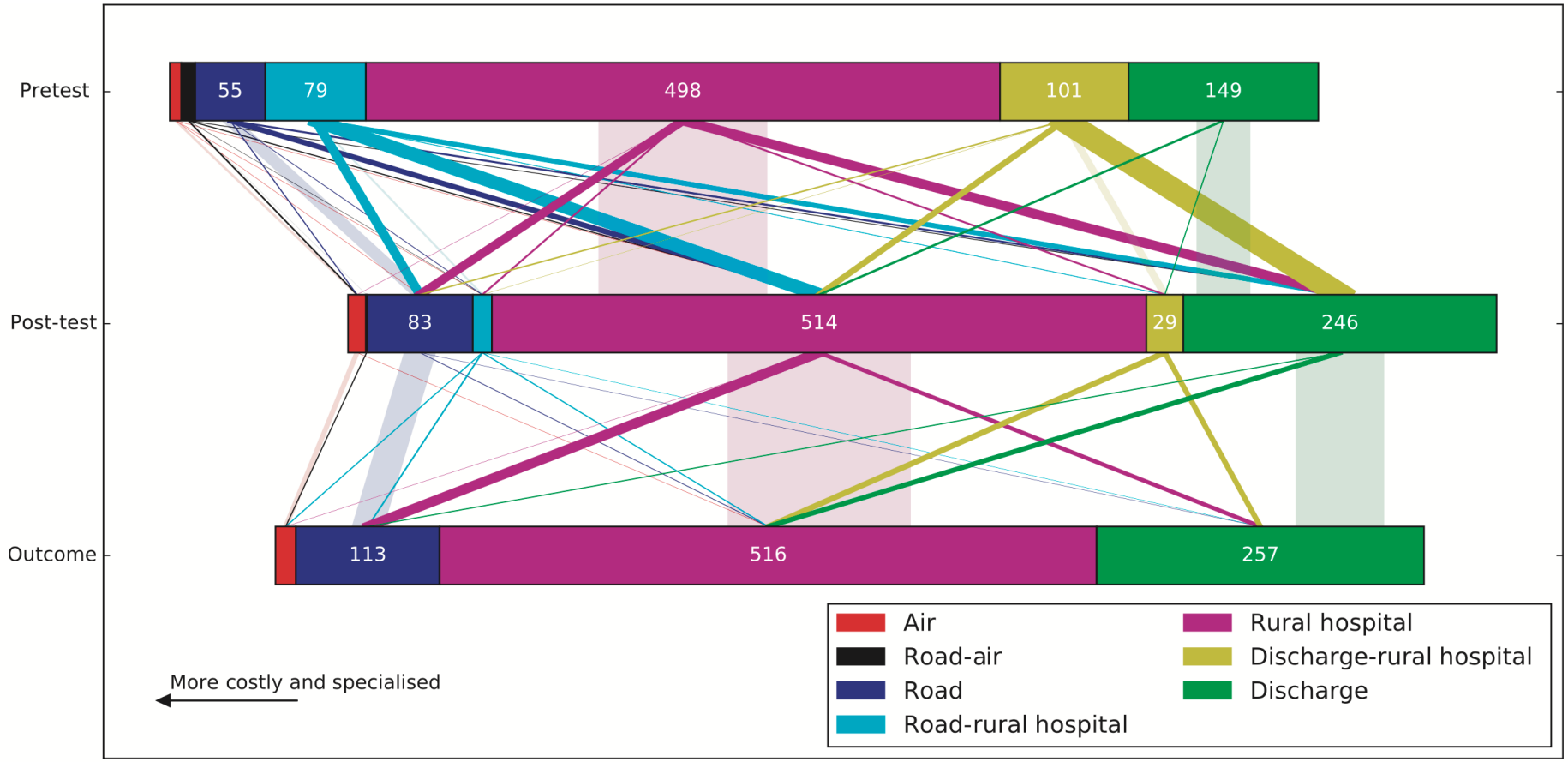
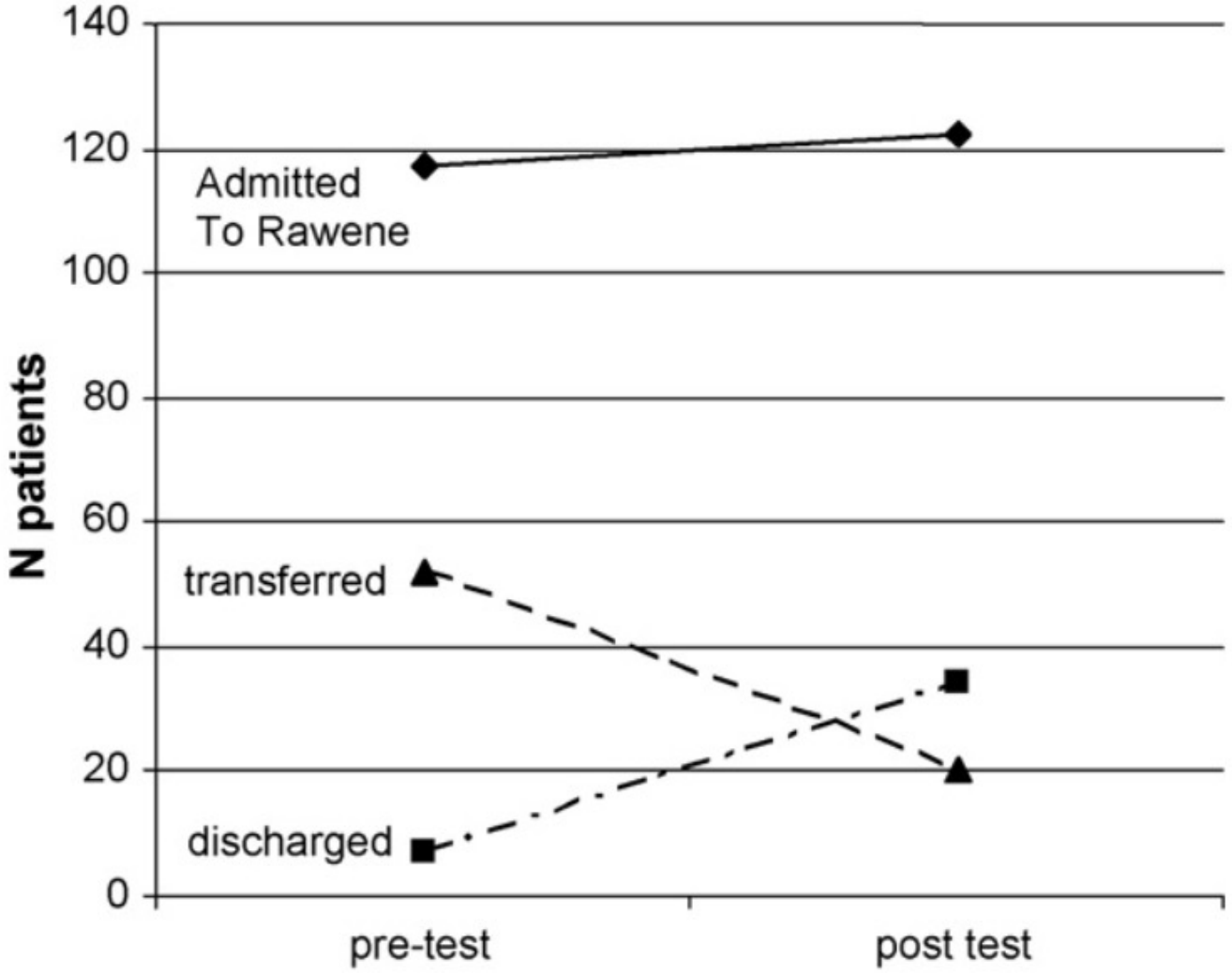


FIGURE 2: *Impact of point-of-care ultrasound on the planned disposition of patients and the actual patient disposition.*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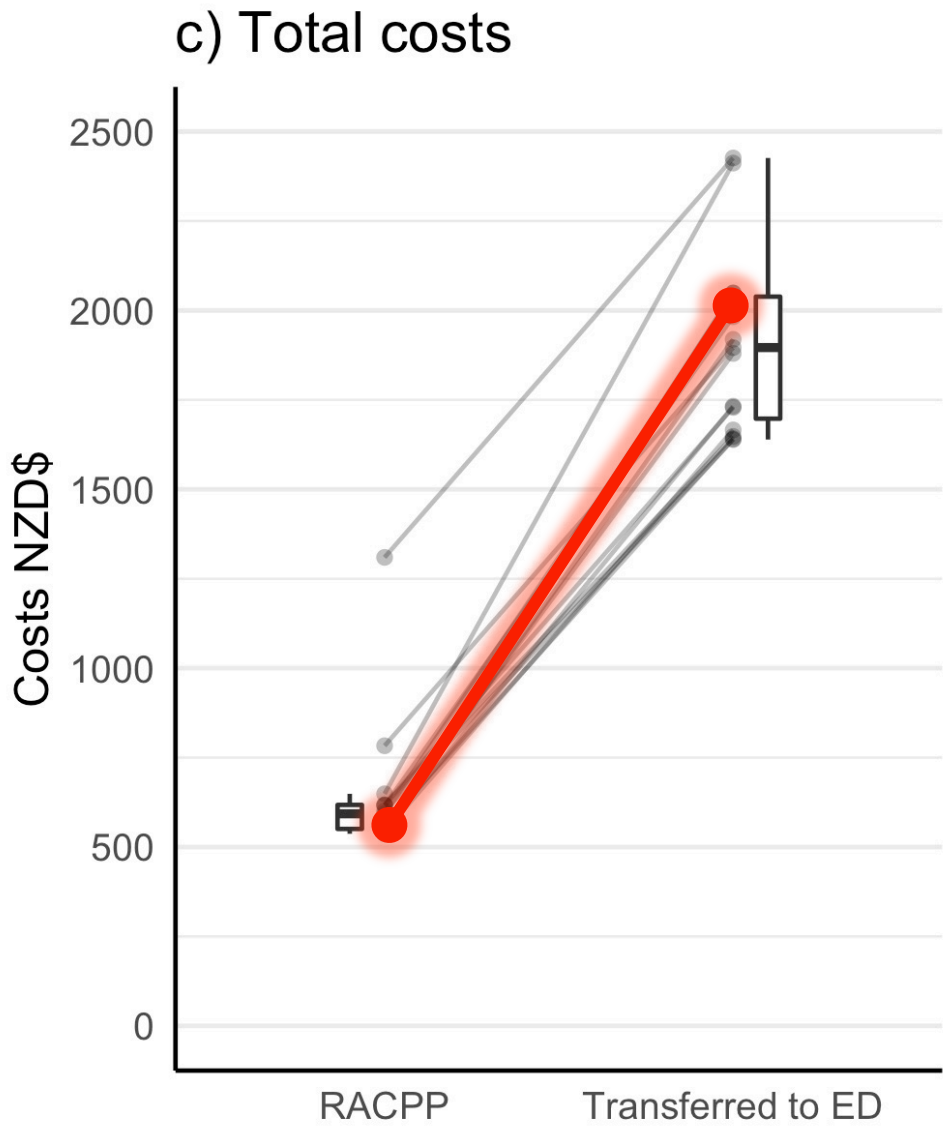
$362,138.00

Health system **$ 977**

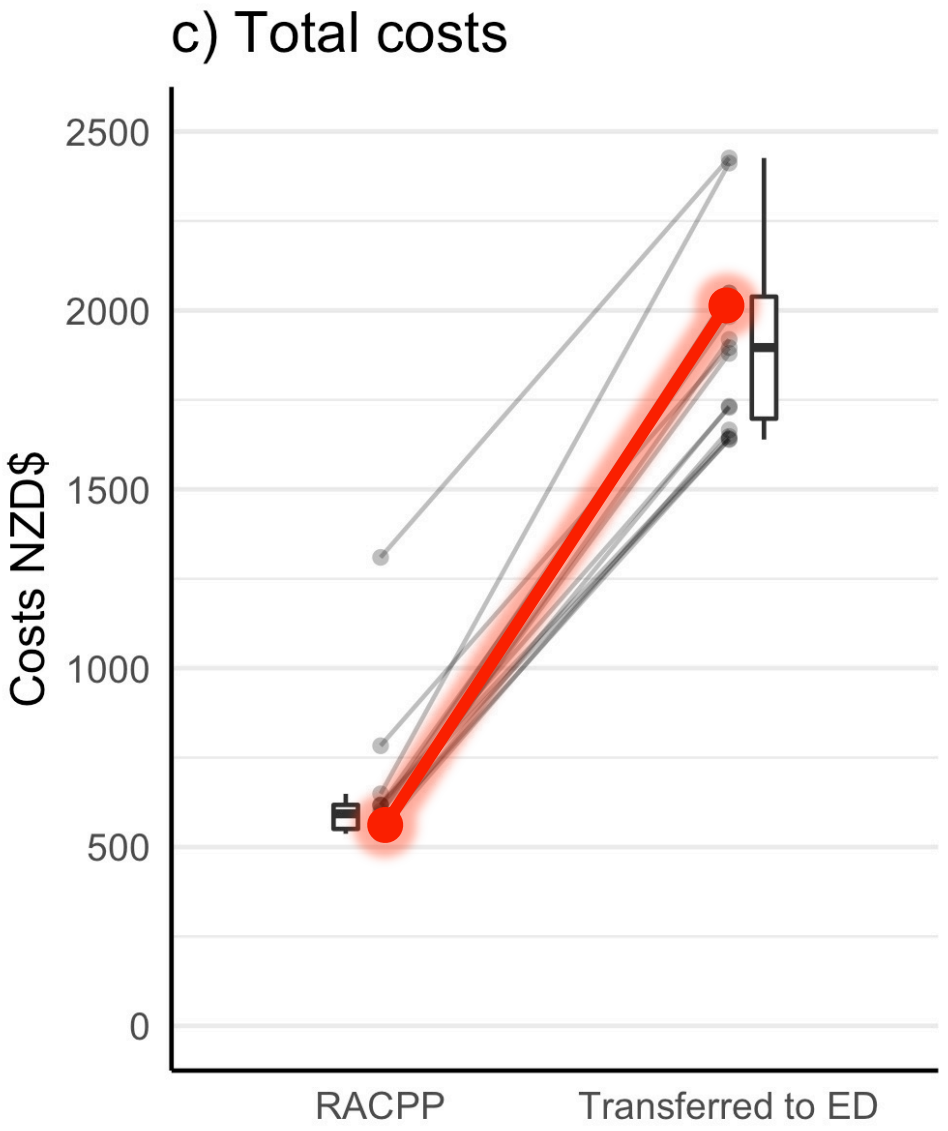
Patient **$ 344**



Miller R, Nixon G, Stokes T, Smith M, Pickering JW, Liepins T, et al. The cost savings of the rural accelerated chest pain pathway for low-risk chest pain in rural general practice: a cost minimisation analysis. J Prim Health Care [Internet]. 2022 [cited 2022 Dec 29]; Available from: http://www.publish.csiro.au/?paper=HC22117

Health system **$463,098**

Patients **$163,056**



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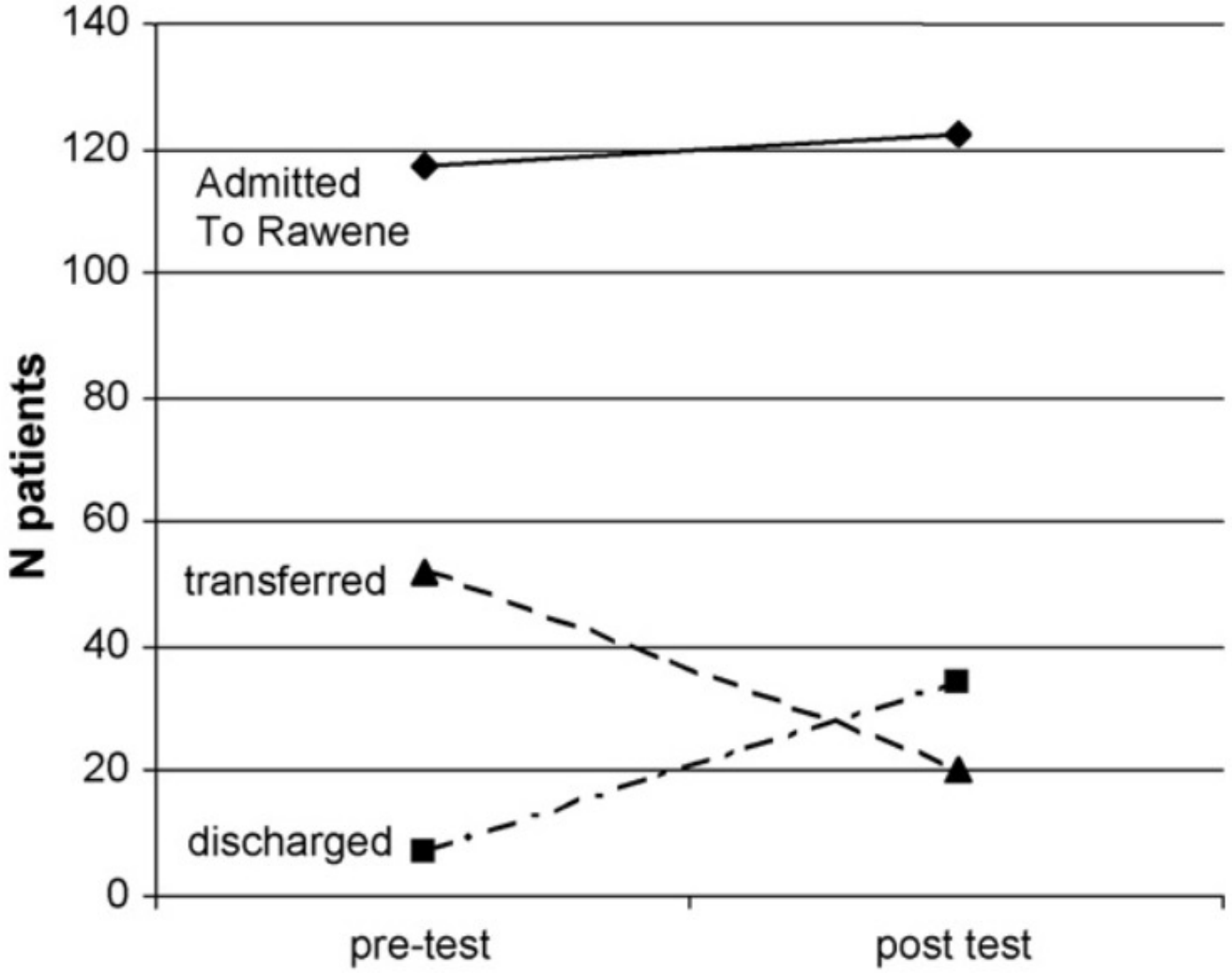
Funding paradigms *limit sustainability*

	Task	Frequency	Duration
Internal	Start up	Daily	2–3 min
	Running quality controls (high, normal and low)	Daily – run one level Weekly – run all three levels	5 – 10 min per day 20 min once per week
	Cleaning of exterior	Weekly and as required	<5 min
	Filing of results	Weekly	5–10 min
	Ordering of reagents (Lyse, cleaner, diluent)	Monthly	5 min to check stock levels and advise manager for ordering
	Bleach baths	Monthly (fortnightly if higher volume use)	20 min
	Changing of reagents	As required, usually every 3–4 weeks	5 min per reagent to upload into haematology analyser
	Updating lot numbers for control samples	Every 8 weeks	10–15 min
External	External quality control – visiting point-of-care testing co-ordinator: Check precision testing (accuracy and variance of results), Whole blood correlation testing (between point-of-care testing and laboratory results)	Monthly	2–3 h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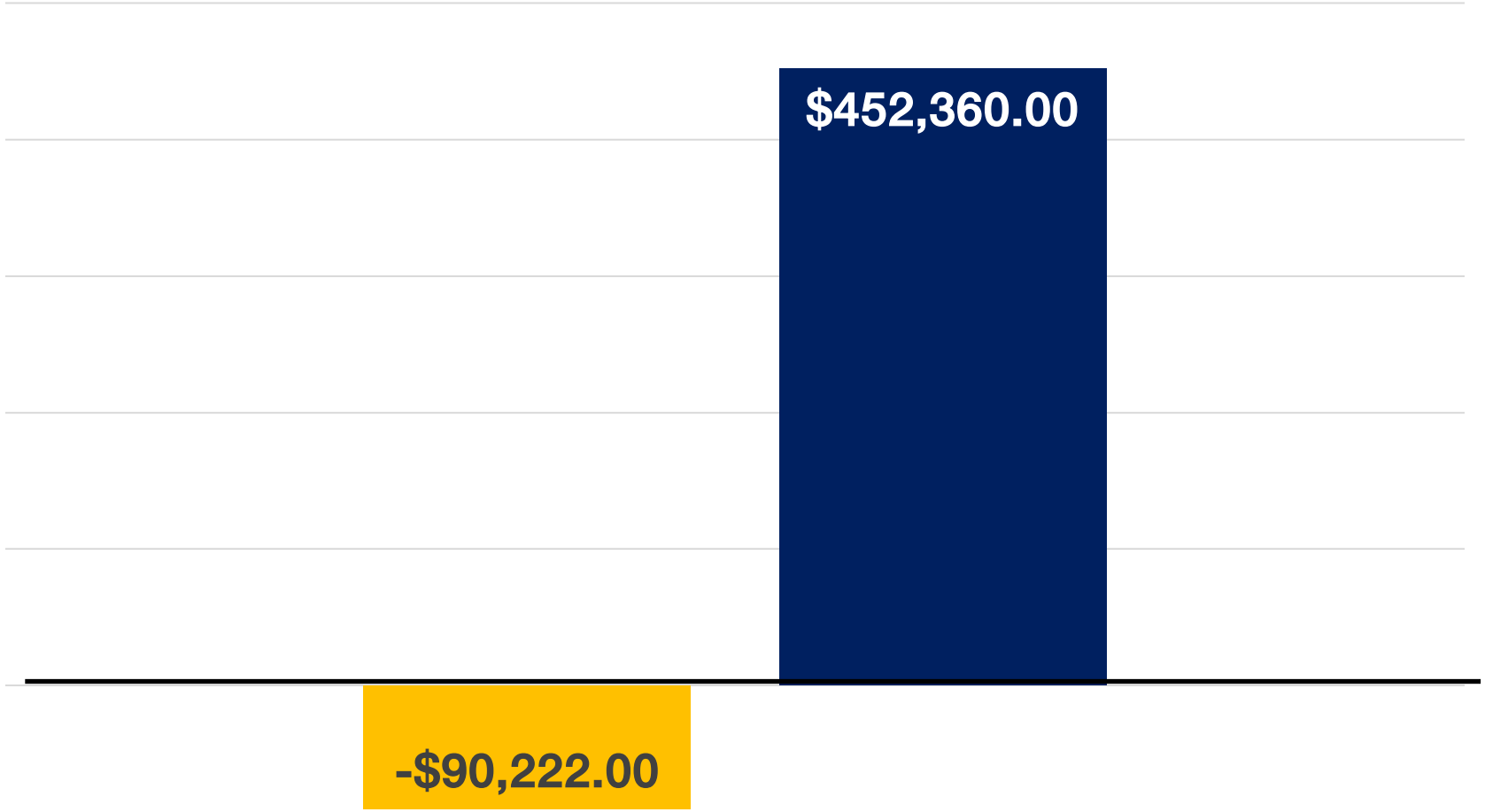
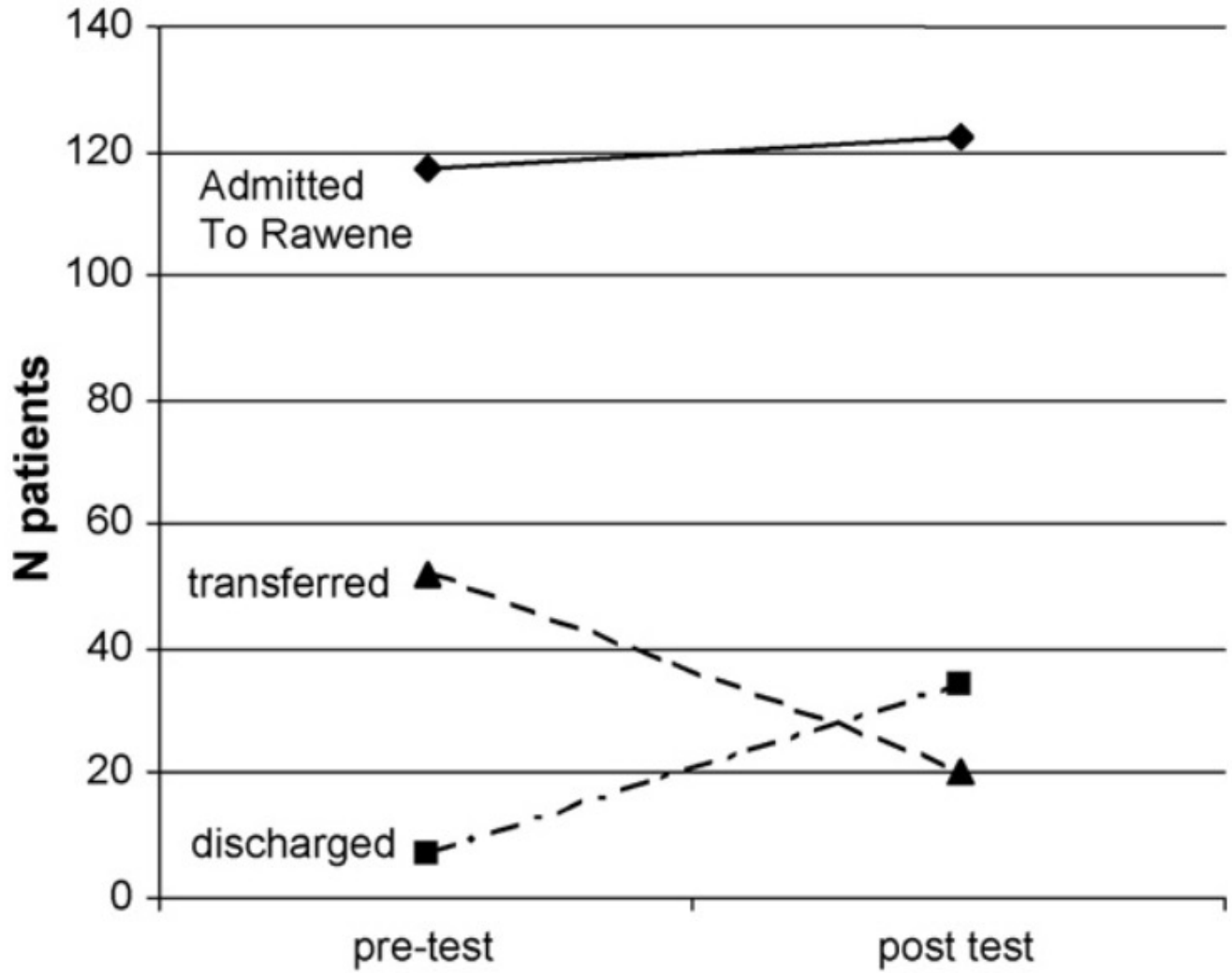

$452,360.00
-$90,222.00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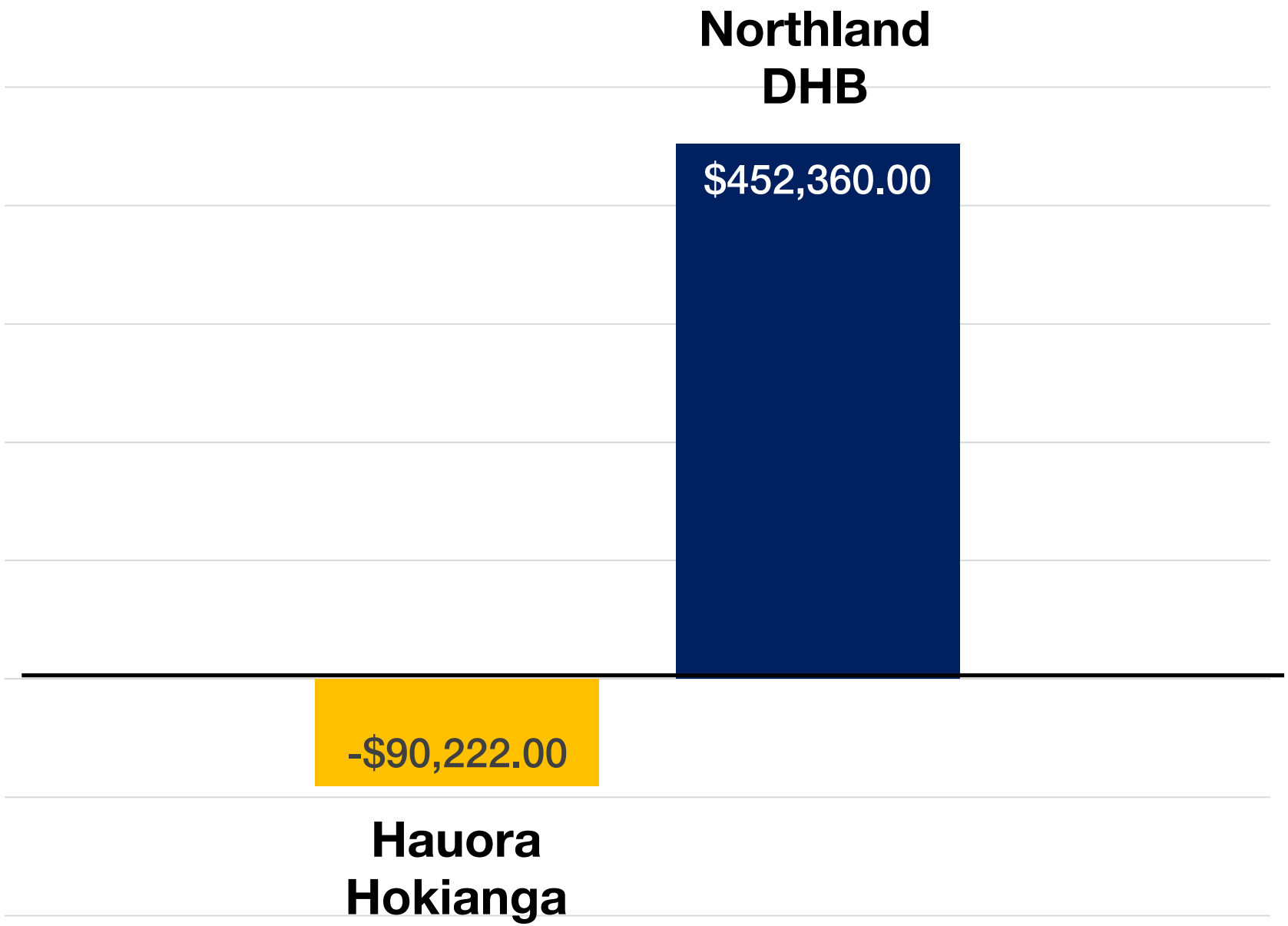

Northland DHB
$452,360.00
-$90,222.00
Hauora Hokianga


IMAGINED WITH AI

Point-of-care diagnostic tests
are safe & effective
Services are delivered
closer to home
have hidden costs

The rural context demands different and specific healthcare solutions

Rural Clinical Pathways

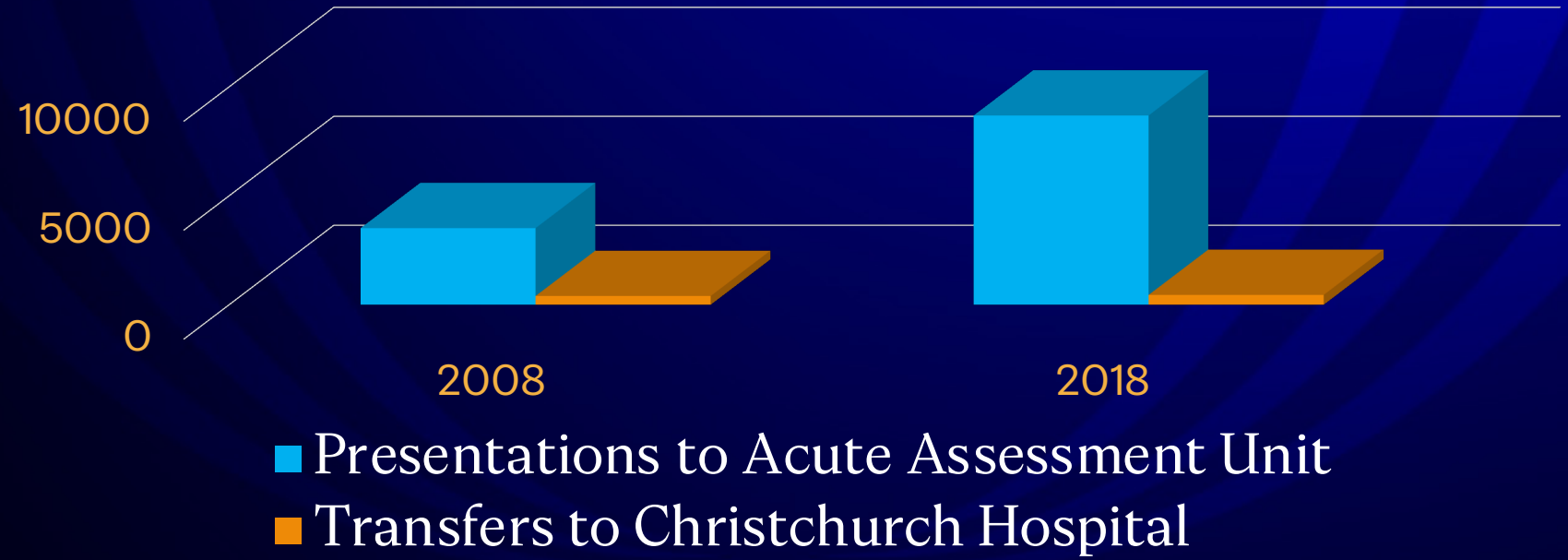
Dr Rory Miller

The rural context demands different and specific healthcare solutions

Ashburton experience / Transfers

Dr Steve Withington

Changing the model of care increases service close to home without increasing transfers



How many transferred patients received an investigation or intervention that was not available at the rural hospital?

A

97

B

100

C

102

D

91

E

99

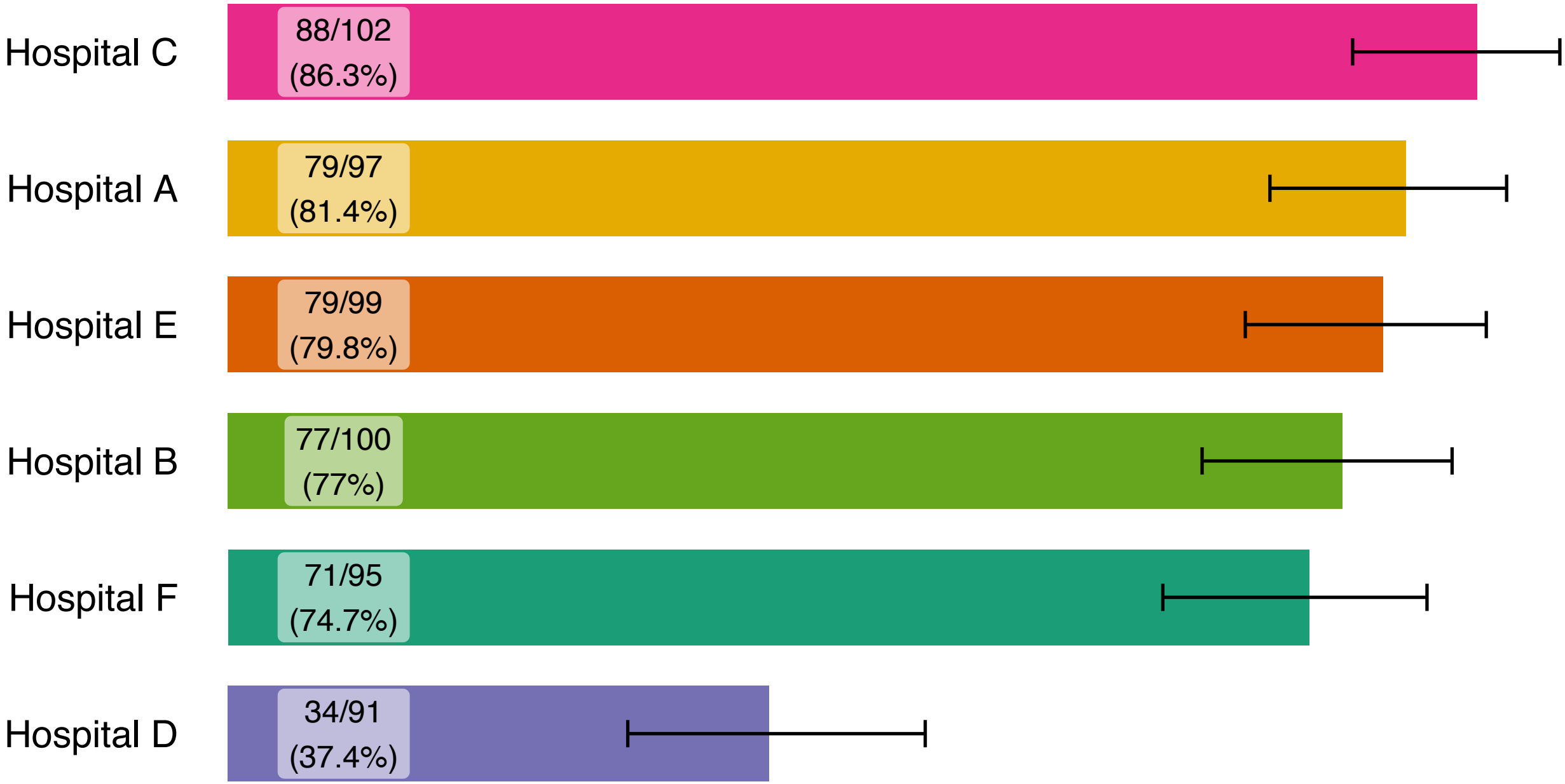
F

95

584

Patients in 2019

	A	B	C	D	E	F
Population served	>30,000	>30,000	10–30,000	>30,000	10-30,000	<10,000
Inpatient beds	>30	20-29	20-29	>30	10-20	10-20
Admissions	>3,000	2,000-2,999	1,000-1,999	1,000-1,999	<1,000	<1,000
Transfers	0-499	0-499	500-999	>1,000	>1,000	0-499
CT	✅	✅	❌	✅	❌	❌


Hospital C
88/102
(86.3%)
Hospital A
79/97
(81.4%)
Hospital E
79/99
(79.8%)
Hospital B
77/100
(77%)
Hospital F
71/95
(74.7%)
Hospital D
34/91
(37.4%)

1. NZ rural hospitals are heterogenous

2. Most interhospital transfers from rural to urban hospitals “add value”

3. Generalism in rural hospital medicine helps keep people close to home

The rural context demands a different health workforce and educational strategies

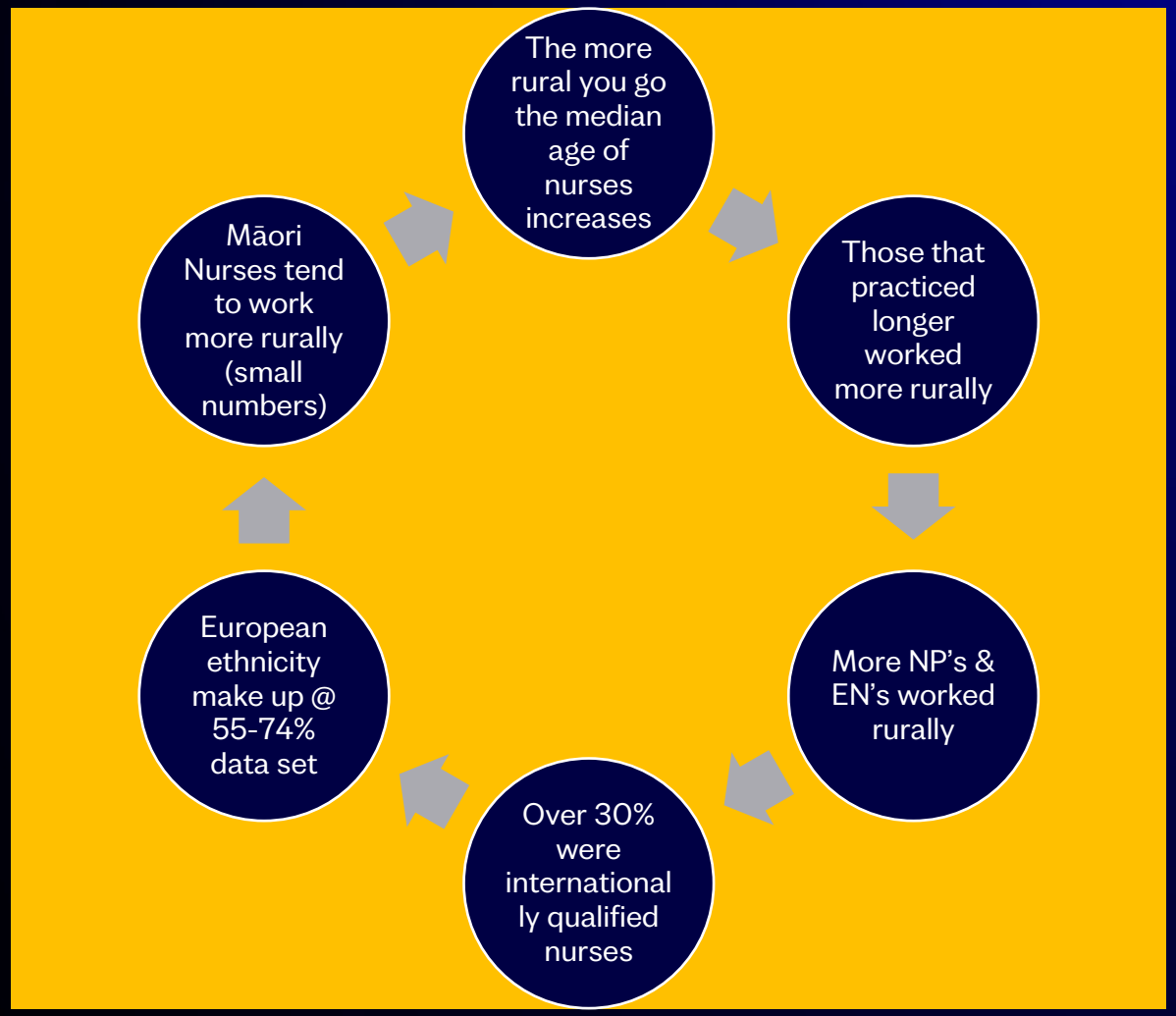
Nursing workforce

Michelle Smith

Rural Nursing Workplace review

- Use of the Geographic Classification for Health (GCH) to understand the Geographic distribution of rural nurses and the rurality of their place of work.
- 62,342 nurses in NZ in 2020-2021
- 28% 17,826 – final dataset with an accurate GCH U1- R3 coding using employer address.
- 90.2 % employed in urban.
- 9.7 % employed in rural

Results/ Future directions



- We don't know about 70% of the nursing workforce
- Difficult to make workforce predictions
- Review data collection of employer address obtained from nursing annual registration
- Rural nursing education national focus at undergraduate and postgraduate level
- Accurate data on workforce

Unregulated workforce

Dr Jane Taafaki

Harnessing the unregulated workforce

He Aroka Urutā

Created May 2021 as a new class of vaccinators who are non-regulated healthcare workers to support the COVID-19 immunisation programme rollout.

https://www.publish.csiro.au/HC/HC23171

COVID Vaccinators Working Under Supervision (CVWUS)
Vaccinating health workers (VHW)

- Administer COVID-19 vaccine
- Flu, MMR, dTap, HPV under supervision of full vaccinator
- Level 3 micro-credits
- Administered through employers, IMAC and MOH

Harnessing the unregulated workforce
He Aroka Urutā

Taking ownership

- Solution-driven
- Capacity building
- Independent vaccination sites
- **Geographically tailored**
- **Culturally anchored**
- **Locally driven**

Recognise & support non-clinical groups ability to support national immunisation programmes and other health initiatives

Allied Health Workforce

Sarah Walker

What do we know about the AH workforce

- It is not well understood
- Embedded within rural communities
- The rural skillset reaches beyond clinical practice
- Context is important

How can leverage this WF to meet rural needs

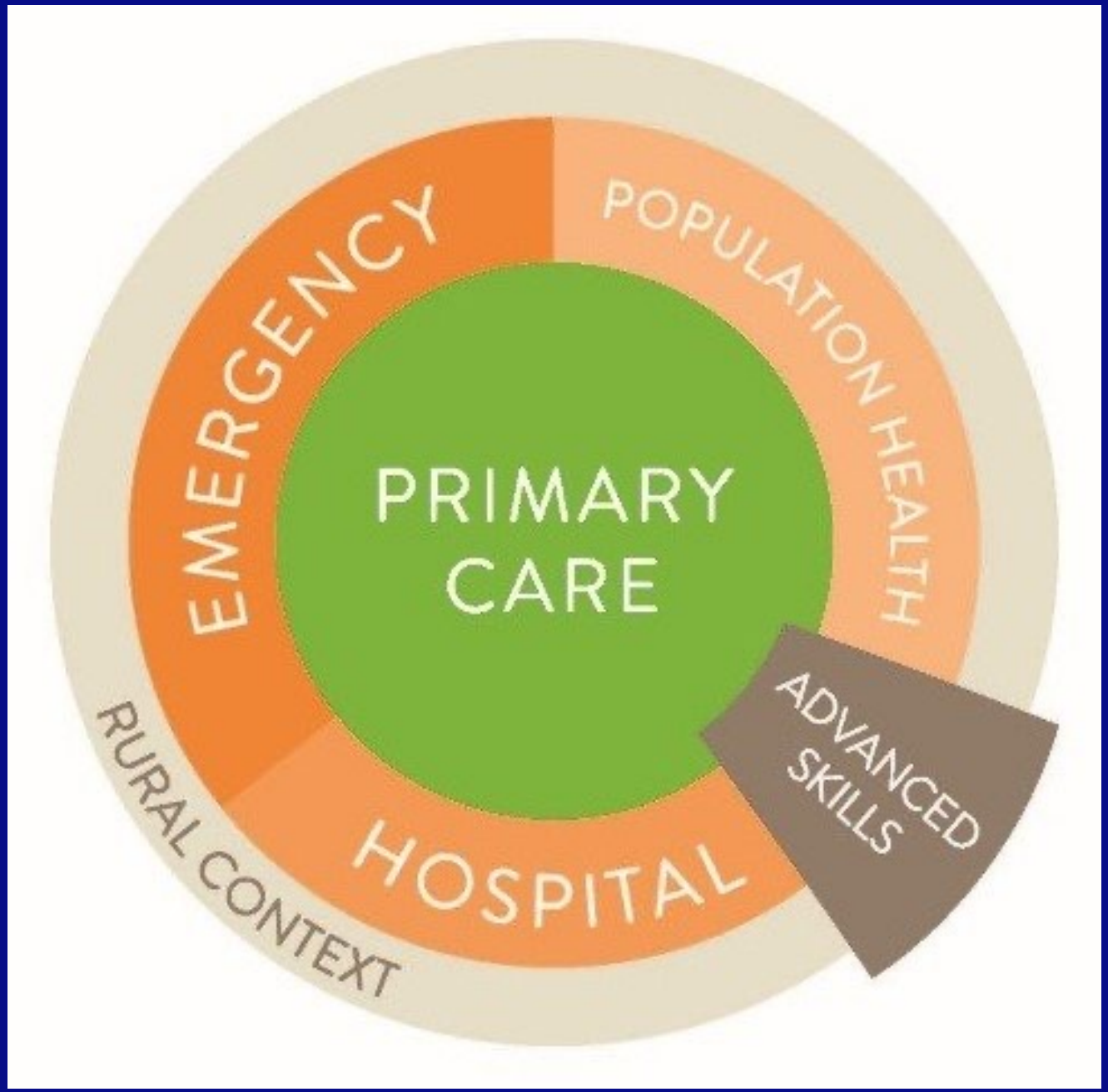
- Developing a better understanding
- Recognition of rural practice
- Development of professional networks
- Development of pathways for innovation and training

Rural generalism: what is it?

A/Prof Kati Blattner

Rural Generalism- what is it??

- A form of clinical practice , equally relevant to all health professions.
- Well established /being established internationally
- Indicates a broad scope of practice to take into account the spatial distance between rural community and services/resource.
- A core skill set based in primary care plus emergency care in a clinical context of relative professional isolation, and additional areas of advanced skills .



https://www.acrrm.org.au/about-us/about-the-college/rural-generalist-medicine

Australia

- Rural Generalist Medicine
https://www.medicalboard.gov.au/News/2023-10-16-Rural-generalist-medicine.aspx
https://www.health.gov.au/our-work/national-rural-generalist-pathway

- Nursing Generalist training
https://www.health.gov.au/news/release-of-the-national-rural-and-remote-nursing-generalist-framework-2023-2027

- The Allied Health Rural Generalist Pathway
https://sarrah.org.au/ahrgp

Aotearoa NZ
the combined medical vocational RHM-GP pathway
('Dual Fellowship RNZCGP')
 is ***most similar*** to the Australian medical rural generalist pathway.

Medical workforce: Undergraduate

Dr Katelyn Costello

PhD in progress

Improving rural medical workforce outcomes in Aotearoa New Zealand

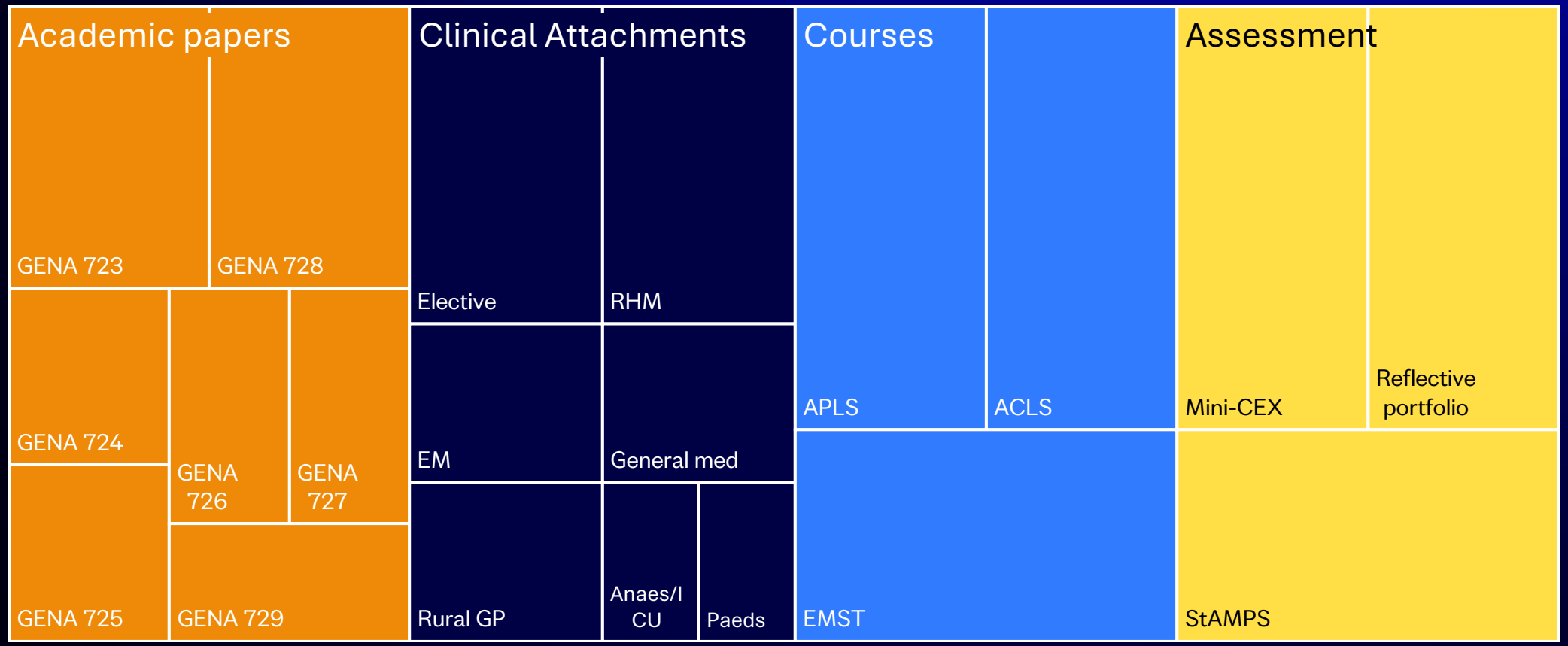
Take home messages

- Only 4% of NZ medical graduates choosing to work in rural
  - 133 individual doctors between 2011 – 2019
- Rural *intention* doesn't necessarily result in rural *outcomes*
  - 12% have rural intentions at ENTRY to medical school
  - 7% have rural intentions at EXIT from medical school
  - 5% (57 doctors) "dream to be rural" at PGY3
  - Only a third of our current rural doctors intended to be rural at entry into medical school
- Regional ≠ Rural

Medical workforce: Postgraduate

Dr Rory Miller

Rural Hospital Training Programme



RHMTP first 10 years

98 entered

20% withdrawn

RHMTP first 10 years

29 (29.5%) graduates

Rural Practice

92% (24/26)

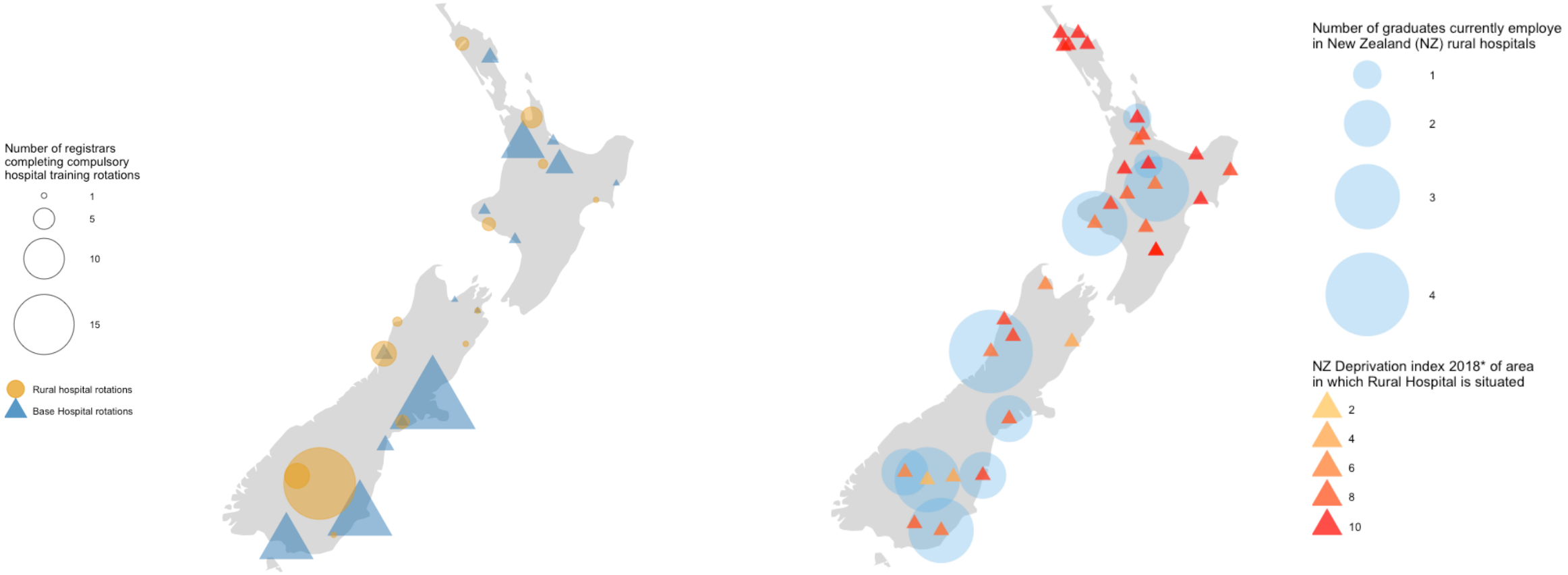
7% NZ Māori
34% IMG
59% other fellowship

RHM

92% (22/24)

GP (8)

EM (4)



"It was a bit confusing understanding and navigating the programme... understanding and then... ***accessing funding for runs and academic components. Especially in the smaller rural hospitals with limited funding****. This was a real issue when choosing my final placements, when [there were] lots of costs involved."* R15

Current research

Evaluating a bedside high-sensitivity troponin within a rural chest pain pathway

Mar 2023-Mar 2026

Improving Care in Rural and Urgent Care centres for patients with possible Acute coronary syndrome using the latest point-of-care troponin (I-Care RURAL POC)

Nov 2023-May 2026

Dr Rory Miller PI

Health Research Council of New Zealand
Te Kaunihera Rangahau Hauora o Aotearoa

Understanding the impact of rurality on health outcomes and healthcare delivery

Mar 2023-Mar 2026

Prof Garry Nixon PI

Palliative care in the Wairarapa: access and primary care workload through an equity lens

July 2024-Jun 2025

Dr Helen Clayson PI

Tū Ora
COMPASS HEALTH

Central Otago Health Services Limited

Exploring factors influencing the stable senior medical workforce at Dunstan Hospital *April 2024-April 2025*

Evaluating Clinical Pharmacist Trial at Dunstan Hospital *Jan 2024-Aug 2024*

Dr Lynne Clay PI

Exploring workplace preferences and choices of RNZCGP dual fellows (with fellowship in both general practice and rural hospital medicine) and contributing factors to those preferences/choices

July 2024-Jun 2025

Dr Mark Smith PI

The Royal New Zealand College of General Practitioners
Te Whare Tohu Rata o Aotearoa

University of Otago
ŌTĀKOU WHAKAIHU WAKA

Impact & Engagement Award 2024

July 2024-Aug 2024

Rural Health Research Network

July 2022-July2026

Dr Kati Blattner PI

Radiation Oncology Rural Equity

July 2024-Jun 2025

Dr Steve Withington PI

University of Otago
ŌTĀKOU WHAKAIHU WAKA

HRC Programme Grant ???

This 5-year research programme using routinely collected health data to compare how well different rural healthcare services are working and, by conducting structured interviews with patients and healthcare providers, try to understand why and for whom they work well. We aim to work out what services can be safely and appropriately provided in rural areas of NZ and design the best possible health system models for delivering them.

Summation

Prof Garry Nixon

Health Systems Priorities

Rachel Pearce (TWO)

Julia Cronin (MoH)

National Rural Health Commissioning Workplan 2024–25

Prepared for the University of Otago Rural Health Research for Policy Seminar

1 August 2024

Te Kāwanatanga o Aotearoa
New Zealand Government

Health New Zealand
Te Whatu Ora

Who are we here to serve?

- More than 880,000 New Zealanders live in rural areas.
- Rural New Zealanders are more likely than their urban counterparts to be Māori, over 65 years of age, live in deprivation and not have reliable telecommunications connectivity.
- New Zealand's most remote communities have the lowest rates of health service utilisation despite high amenable mortality rates *(Nixon. G, Davie. G., Whitehead. J, Miller. R (2023))*
- Rural New Zealanders are more likely than their urban counterparts to die from a range of preventable conditions.

R1 - 65%
total population: 576093

19% are Māori
50% are Female
19% are over 65 years old

R2 - 30%
total population: 268344

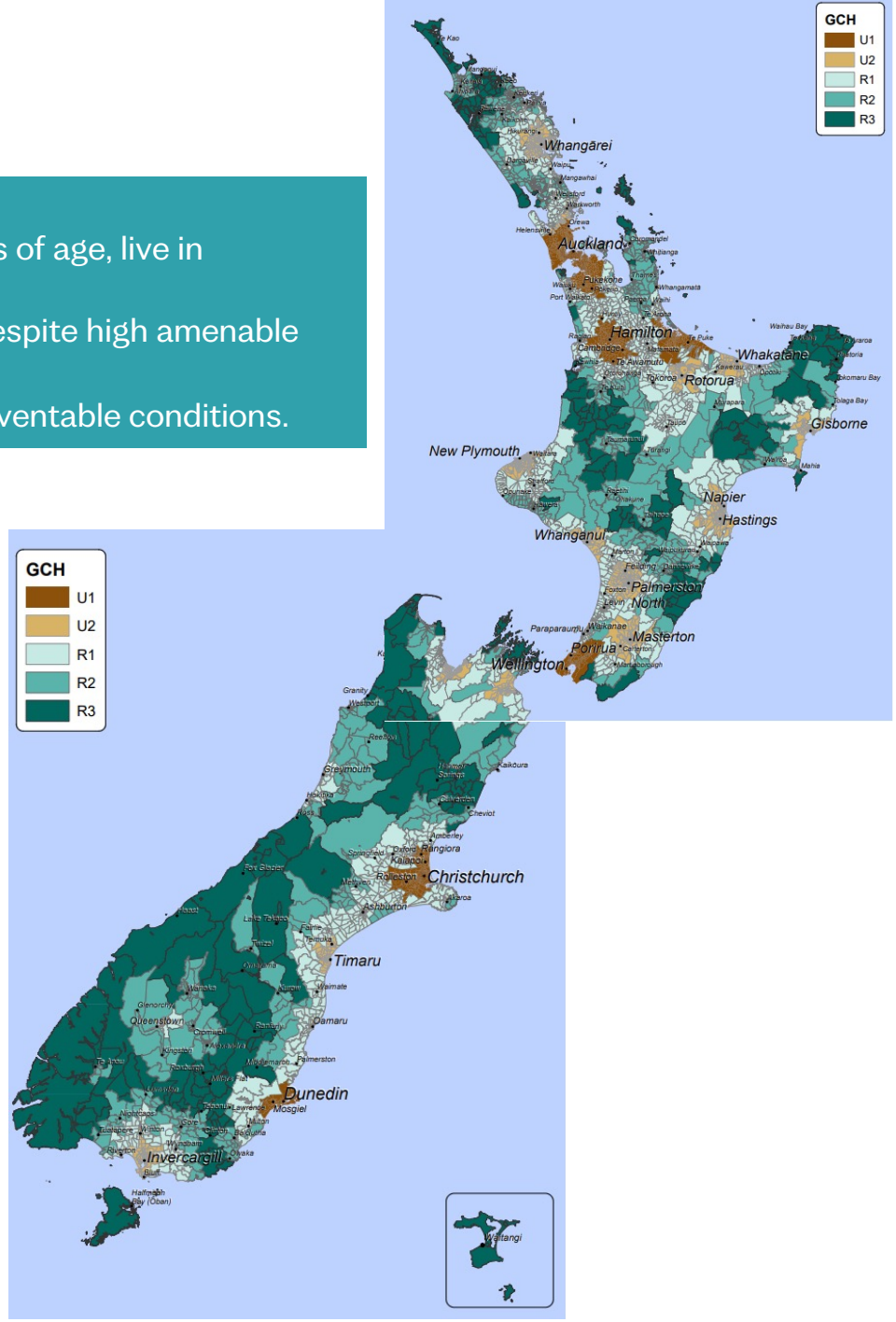
30% are Māori
49% are Female
20% are over 65 years old

R3 - 5%
total population: 44217

36% are Māori
48% are Female
19% are over 65 years old

19% of the New Zealand population live in rural areas[1]

81% of the New Zealand population live in areas U1 and U2

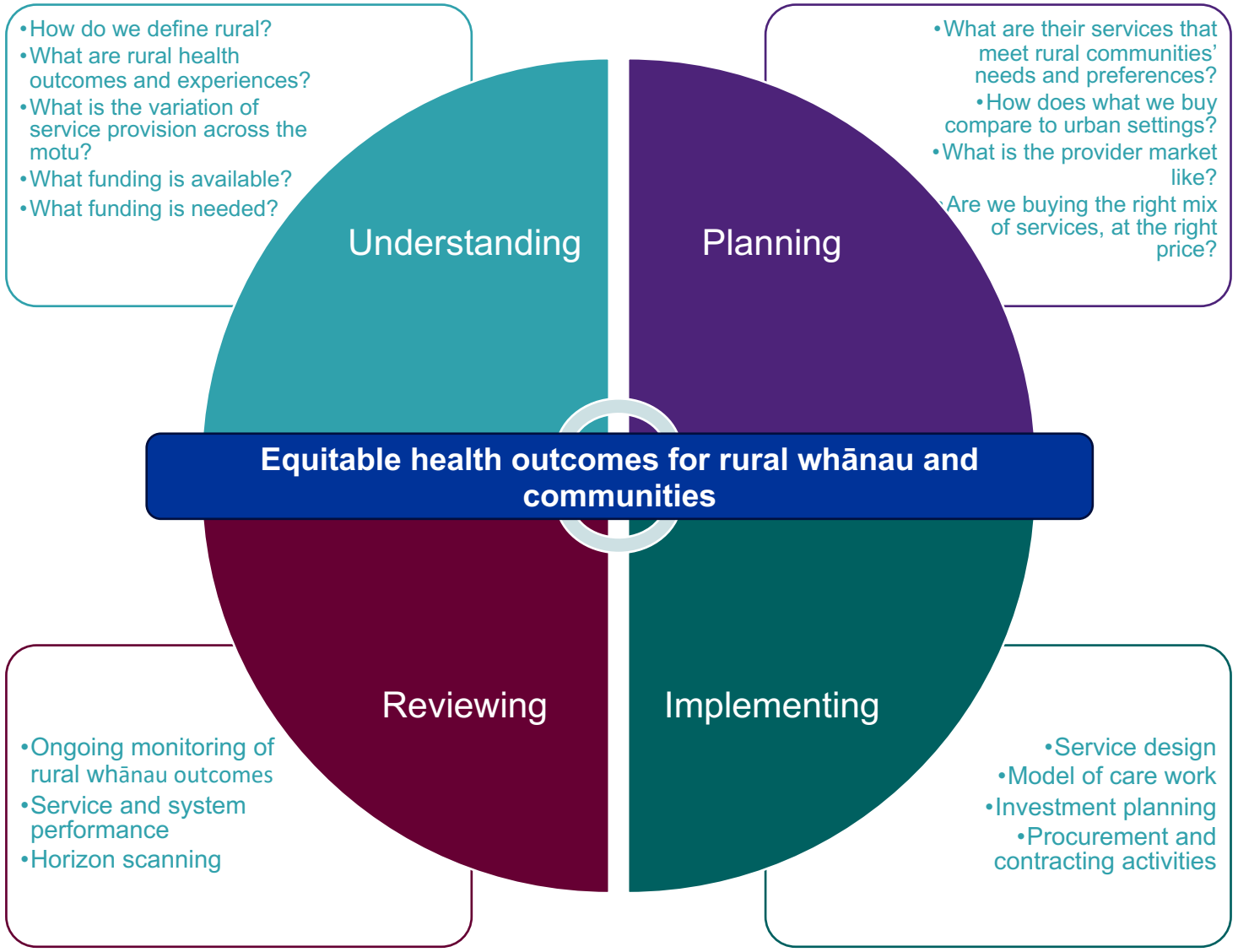


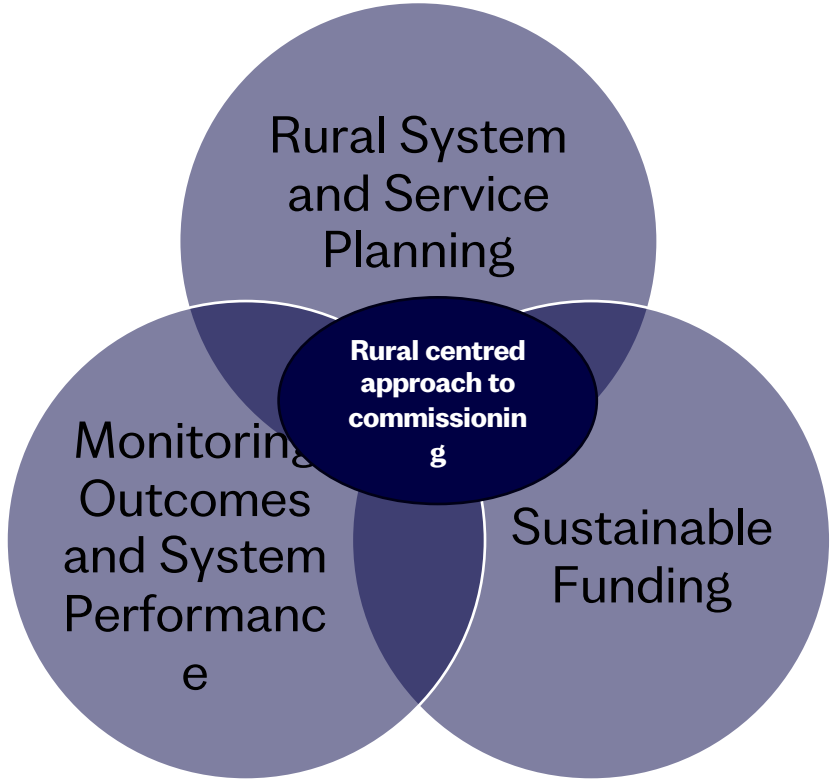
The National Rural Health team acknowledges Haoura Taiwhenua Rural Health Network for producing these infographics. Available in full in *Rural Health Snapshot*

National Commissioning functions

- Leadership on system (re)design and national funding mechanisms
- Supporting regional rural teams to be an effective 'team of teams'
  - Doing common work once
  - Ensuring enabling functions are optimally supporting regions and providers
  - Connecting, sharing, learning
- Embed a greater understanding of rurality and intersectionality across Te Whatu Ora
- Whole-of-government rural opportunities

Our role as system commissioners





Translating research to action

Supporting the Hauora Taiwhenua led Rural Definition Working Group

Working with MoH to embed the GCH in health entities data, reporting and accountability frameworks

Rurality as a consideration in future capitation model

Rural Hospital Sustainability – consistency in the way we understand rural hospital catchments

Urgent care redesign - Using travel times consistently and appropriately in commissioning work

Resources and training for health entity analysts and commissioners

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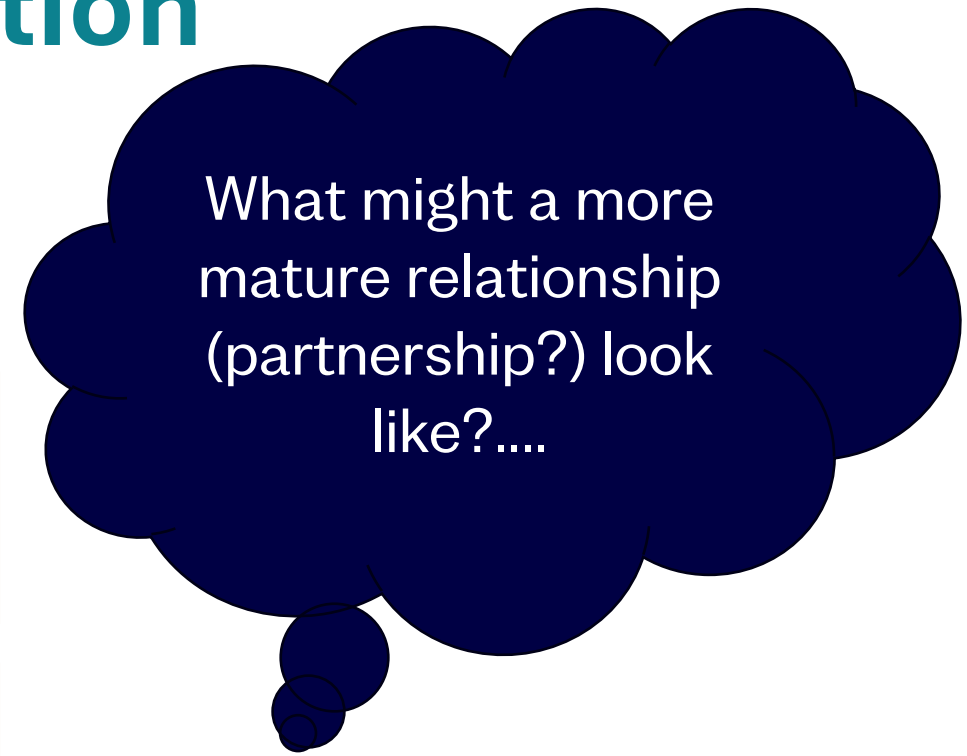


Development approach for this work programme

Commissioning

NATIONAL RURAL HEALTH TEAM

8 PRIORITY ACTION AREAS FOR 2024-25

Rural funding that reflects rural context and need

- Lead rural-specific deliverables within existing work including:
  - Capitation
  - Telehealth review
  - Road and air ambulance

Re-imagining the rural health system

- Rural Hospital Sustainability project
- Rural unplanned urgent care redesign
- Rural national services framework

Insights

- Lead the implementation and application of a consistent definition of rural across the system
- Ensure the GPS, Health Targets and other key system performance and health status measures are routinely reported by rurality

Relationships and partnerships

- Develop an engagement framework
- Revisit the National Rural Advisory Group
- Support the rural National Clinical Network

Elevating rurality across HNZ

- With a focus on the areas identified as priorities in existing plans and based on evidence:

Workforce

- Support implementation of the 2024/25 NZ Workforce Plan
- Support the development of an implementable, long term rural health workforce strategy

Breathing life to Te Tiriti

- Articulate the role of the national rural health team in response to:
  - climate events and
  - planning climate resilient services

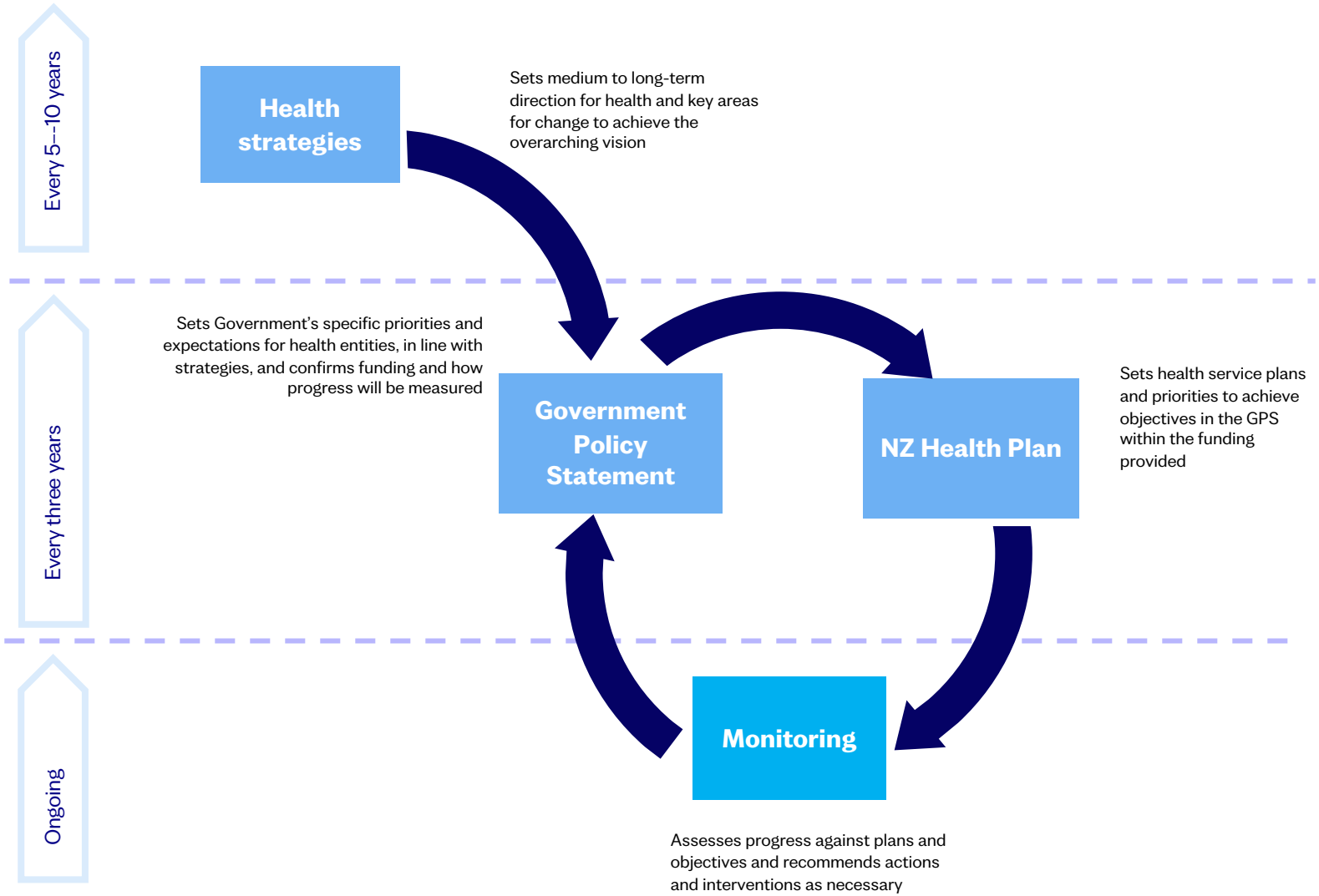
Build a trustworthy and credible national rural health team

- Geography and rural issues knowledge
- Cultural safety
- Impactful and collaborative relationships

Rural Health

Ministry of Health work update

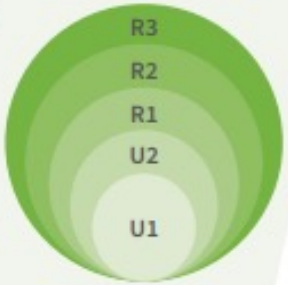
Health system has integrated direction-setting, planning, funding and monitoring



The Geographic Classification for Health (GCH)

There is a lack of data on rural health access and outcomes. This impacts our ability to know where to prioritise our resources to improve rural health.

The GCH provides a consistent way to measure rural health outcomes. The Geographic Classification for Health has three rural categories (R1, R2 and R3) based on distance to urban centres, and relative size of population in the area.



The most remote and isolated rural communities are classified as R3. There are two urban classifications, one for the six main centres (U1) and one for the provincial cities (U2).

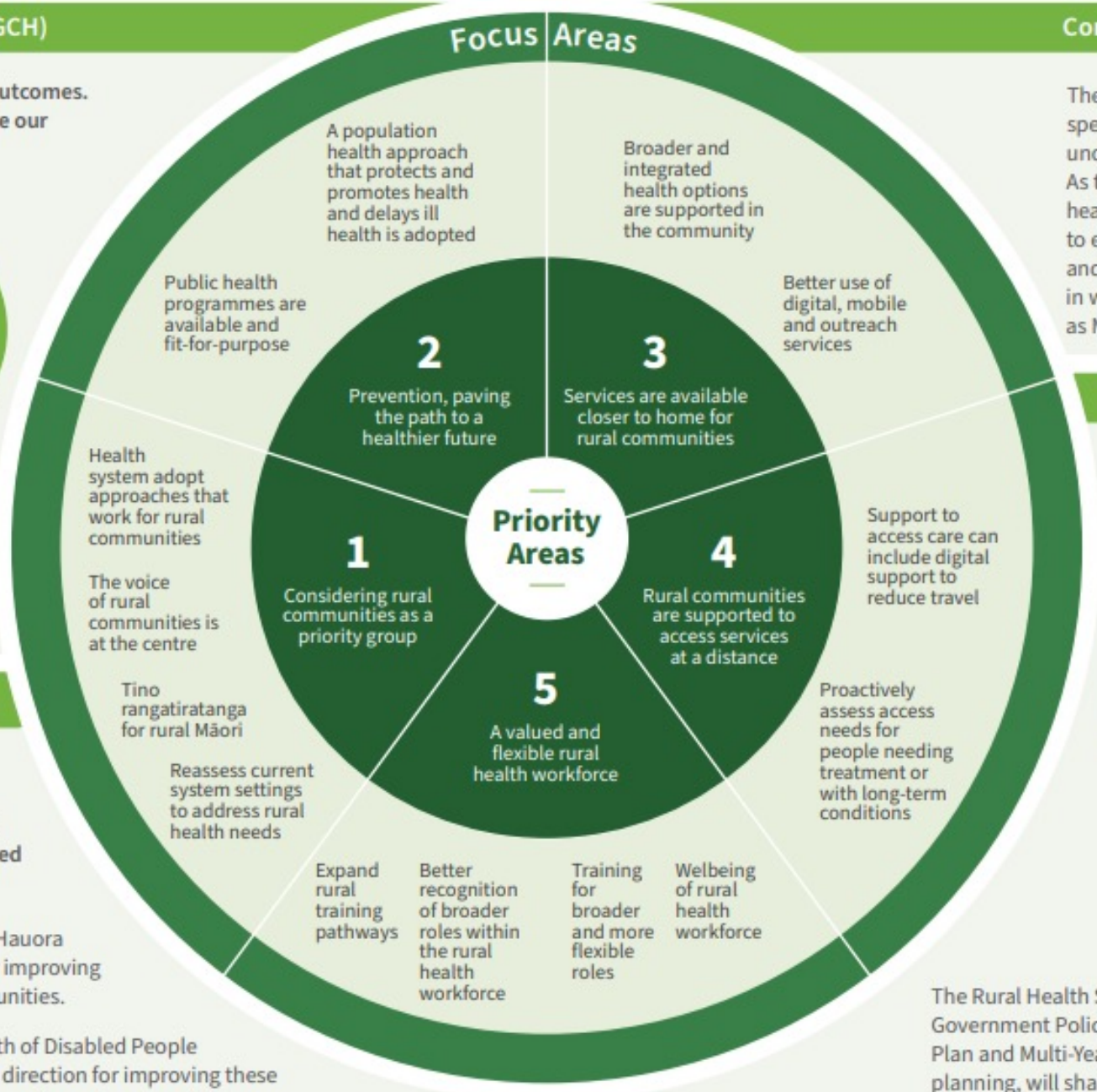
Alignment across the Pae Ora Strategies

The Rural Health Strategy is part of a suite of six health strategies required under the Pae Ora Act. The priorities of these strategies are closely aligned and interwoven.

The New Zealand Health Strategy and Pae Tū- the Hauora Māori Strategy provide the direction for change for improving overall health outcomes, including for rural communities.

Te Mana Ola - the Pacific Health Strategy, the Health of Disabled People Strategy and the Women's Health Strategy provide direction for improving these population groups outcomes, including when they are in rural communities.

Focus Areas



Commitment to Te Tiriti

The health sector is committed to fulfilling the special relationship between Māori and the Crown under Te Tiriti of Waitangi | The Treaty of Waitangi. As the kaitiaki and steward of the health system, the health sector has the responsibility to enable Māori to exercise authority over their health and wellbeing and achieve equitable health outcomes for Māori in ways that enable Māori to live, thrive and flourish as Māori.

Turning Strategy into Action

Improved rural health outcomes

The Rural Health Strategy will provide direction for the Government Policy Statement on Health, the New Zealand Health Plan and Multi-Year Health Funding. These, along with locality planning, will shape action to improve rural health outcomes and rural communities will be a key part of this discussion.

GOVERNMENT POLICY STATEMENT ON HEALTH 2024–2027 MAPPED TO RURAL HEALTH STRATEGY

MANATŪ HAUORA
MINISTRY OF HEALTH

1. Access | 2. Timeliness | 3.Quality | 4. Workforce | 5. Infrastructure

Rural Health Strategy priorities	GPS objectives	GPS expectations
Considering rural communities as a priority group *Making sure the diverse needs of rural communities are considered in policy, planning and service decisions*	1.1 Improve access to and choice of primary and community health care services, and diversify the points of entry and support throughout a person's health care journey.	Stabilise the General Practice sector by supporting them to perform their core roles.
	1.2 Develop models of care to better meet people's needs closer to home.	Increase support for leadership pathways that enable local leadership in the design and delivery of health care services.
	3.2 Enable the use and generation of evidence, information, research and evaluation across the health system by using science principles and concepts.	Improve data on communities, including data collection, reporting, monitoring and sharing for providers and treaty partners and enable outcomes to be monitored by ethnicity, gender, age, rurality, and disability.
	4.2 Strengthen health system leadership locally, regionally and nationally.	Esure public health, primary, and community health care services better enable local leadership in their design, delivery, and integration.
Prevention: Paving the path to a healthier future *Shifting focus to prevention and addressing wider influences on health*	1.1 Improve access to and choice of primary and community health care services, and diversify the points of entry and support throughout a person's health care journey.	Deliver immunisation services that meet the needs of communities, especially for those with the poorest immunisation rates, including Māori and Pacific peoples. Expand access to community-based supports to improve prevention and management of non-communicable diseases, including kaupapa Māori and Pacific-led options.
	1.4 Improve cancer screening.	Increase human papillomavirus (HPV) screening rates with a focus on population groups with lower screening rates. Improve access to bowel screening.
	2.2 Faster access to primary and community healthcare services.	Support strengthened public and population health initiatives for non-communicable diseases to reduce pressure on the health system.
Services are available closer to home for rural communities *Shifting the balance towards more services being closer to home, through local provision, or services coming to the community through mobile or digital options*	1.1 Improve access to and choice of primary and community health care services, and diversify the points of entry and support throughout a person's health care journey.	Implement an increasingly integrated mix of prevention, primary, community and specialist services for mental health and addiction, and suicide prevention, including community-based alternatives for acute care and a focus on prevention and early intervention to reduce the impact of mental health and addiction.
	1.2 Develop models of care to better meet people's needs closer to home.	Work in partnership with local communities to ensure primary and community care services are increasingly tailored to better respond to people's needs, including family and community-based services. Work in partnership with IMPBs to ensure primary and community care services are increasingly tailored to better respond to the needs of Māori, and ensure the services are well supported and resourced. Prioritise the sustainability and quality of health services for older people. This includes ensuring aged care services and funding models support older people to live well, age well, and have a respectful end of life in age-friendly communities.
	1.3 Increase access to online health services (including telehealth) and improve access to communication, information and transport and accommodation assistance.	Implement initiatives that support an increased understanding and uptake of online care and telehealth, particularly in primary and community health care settings, and to equip people, families and whānau to better meet their own mental wellbeing needs.
	2.2 Faster access to primary and community healthcare services.	Diversify people's entry points into the primary and community health care system, to ease acute wait times, and support more point of care diagnostic testing for putting people on the care pathway they need sooner.
	5.3 Enable evidence-based digital solutions.	Continue to progress digital initiatives to enable care closer to home.
Rural communities are supported to access services at a distance *Better support for when whānau need to access care outside their community*	1.3 Increase access to online health services (including telehealth) and improve access to communication, information and transport and accommodation assistance.	Improve the transport and accommodation assistance support, particularly for disabled people and people living in rural communities.
A valued and flexible rural health workforce *Growing and supporting the rural health workforce and expanding their capabilities to deliver the care needed by the community closer to home*	4.1 Improve training pathways and develop a more culturally safe and competent workforce.	Improve access to domestic training pathways to deliver a culturally competent and home-grown workforce that better reflects the population of New Zealand as a whole. Improve and encourage career progression and flexible pathways, including through improving professional development. Increase training places for doctors, and grow the numbers of those entering training as nurses, midwives and allied health roles.
	4.3 Retain, value, and recognise the workforce.	Improve recruitment and retention of the health workforce. Monitor the experience of health workers and target initiatives at issues that improve workers' experiences and working environments. Create employment settings that allow for more workforce mobility within and between professions. This could include through role descriptions and service design. Review regulatory settings related to the health workforce.

Key policy work related to rural health

- Primary and community care objectives, funding and settings
- Health workforce – health workforce regulation, scoping allied health barriers and opportunities, and proposal for University of Waikato medical school
- Monitoring rural students in health training (developing work with education agencies and then with tertiary providers)
- Cross-agency work on digital inclusion (community-hubs with digital access)
- Ongoing work to improve rural health data reporting
- Rural Health Strategy - monitoring

Future Research Directions

University of Otago
ŌTĀKOU WHAKAIHU WAKA

Centre for Rural Health

Leaning on Fence Posts

https://rhrn.nz/lofp

GCH Website

https://rhrn.nz/gch/about-gch

Leaning On Fence Posts

Welcome to Leaning on Fence Posts

brought to you by the Rural section, Department of General Practice and Rural Health

Leaning on Fence Posts is an interdisciplinary rural health blog. It was established in 2018 to provide up-to-date news and research for rural health professionals and researchers or those just interested in rural health news and views impacting Aotearoa New Zealand and beyond. It is also the home of the Rural section's continuing medical education (CME) programme. Further information on CME activities, including in-person workshops and the Rural Interprofessional Simulation Courses (RISC) can be found here.

We rely on contributions to keep this blog interesting, up-to-date, and informative. If you come across anything you'd like to share please send us the details for consideration with a short commentary describing its value to rural health in NZ.

Subscribe

About the Geographical Classification for Health

The GCH is a rural-urban geographic classification designed to allow New Zealand's health researchers and policy makers to accurately monitor rural-urban variations in health outcomes. The GCH classifies all areas of Aotearoa New Zealand as rural or urban according to their proximity to larger urban areas with respect to health.

The GCH is comprised of five categories, two urban and three rural, that reflect degrees of reducing urban influence and increasing rurality. The GCH applies these categories to all of New Zealand's Statistical Area 1s (SA1s, small statistical areas which are the output geography for population data) on a scale from 'Urban 1' to 'Urban 2' based on population size, and from "Rural 1' to 'Rural 3' based on drive time to their closest major, large, medium, and small1 urban areas.

The population and drive time thresholds used in the GCH were developed from a health perspective; the nature of the functional relationships between urban areas and rural surrounds considered through a health lens. The

University of Otago
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Centre for Rural Health

Thank you & safe journey home