

Comparison of the sociodemographic composition of rural and urban Aotearoa New Zealand

NZPopCon2023

Population futures in an uncertain world

The changing faces of Aotearoa New Zealand

29th August 2023

Jesse Whitehead, June Atkinson, Gabrielle Davie,
Brandon de Graaf, Kyle Eggleton, Sue Crengle, Rory
Miller, Kati Blatner, Peter Crampton, Garry Nixon





Defining rural in Aotearoa New Zealand: a novel geographic classification for health purposes

Jesse Whitehead, Gabrielle Davie, Brandon de Graaf,
Sue Crengle, David Fearnley, Michelle Smith, Ross Lawrenson, Garry Nixon

Whitehead J, Davie G, de Graaf B, et al. Defining rural in Aotearoa New Zealand: A novel geographic classification for health purposes. *The New Zealand Medical Journal* 2022;135(1559):22-38.

Data and the geography of population health



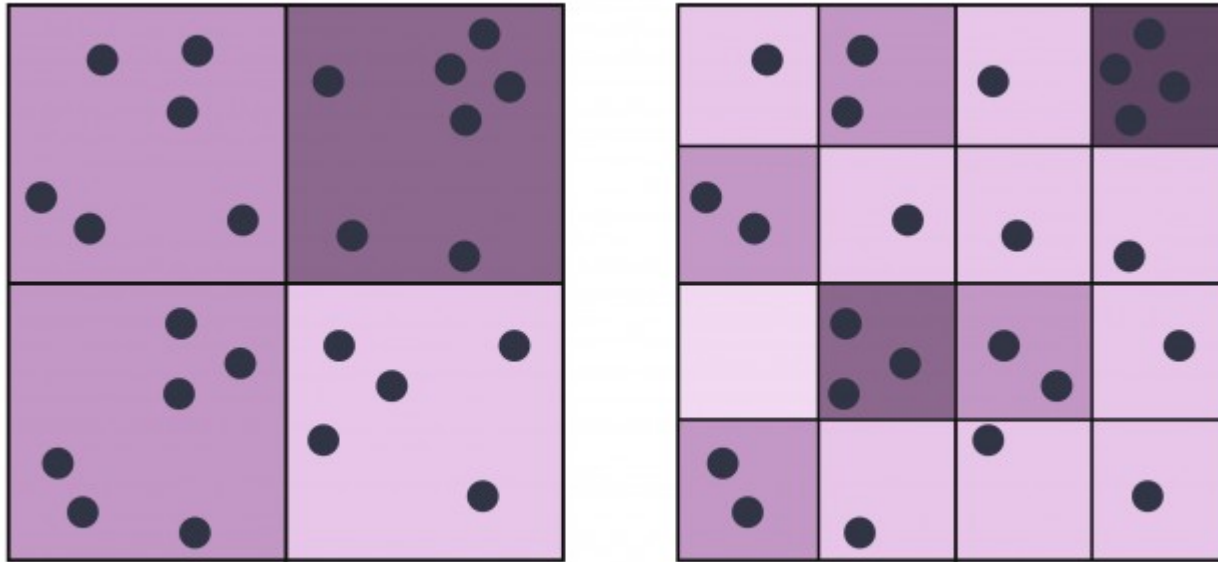
Data and the geography of population health



Data and the geography of population health



Modifiable Areal Unit Problem – Scale effect



Data and the geography of population health



Additional considerations:
Timaru, Blenheim, Whakatane, Masterton → Large urban
Greymouth → Medium urban

URBAN

Geographic Classification for Health					
	Urban 1 U1	Urban 2 U2	Rural 1 R1	Rural 2 R2	Rural 3 R3
Major Urban ≥100,000	≤25 min		>25 to ≤60 min	>60 to ≤90 min	>90 min
Large Urban 30,000-99,999		≤20min	>20 to ≤50 min	>50 to ≤80 min	>80 min
Medium Urban 10,000-29,999			≤25 min	>25 to ≤60 min	>60 min
Small Urban 1,000-9,999				≤25 min	>25 min

RURAL

Rural population health



Does it matter?

“measures of health status are **similar for rural and urban populations**”
(New Zealand National Health Committee, 2010)

We used 5 years (2013-2017) of mortality collection data to compare rural-urban health outcomes

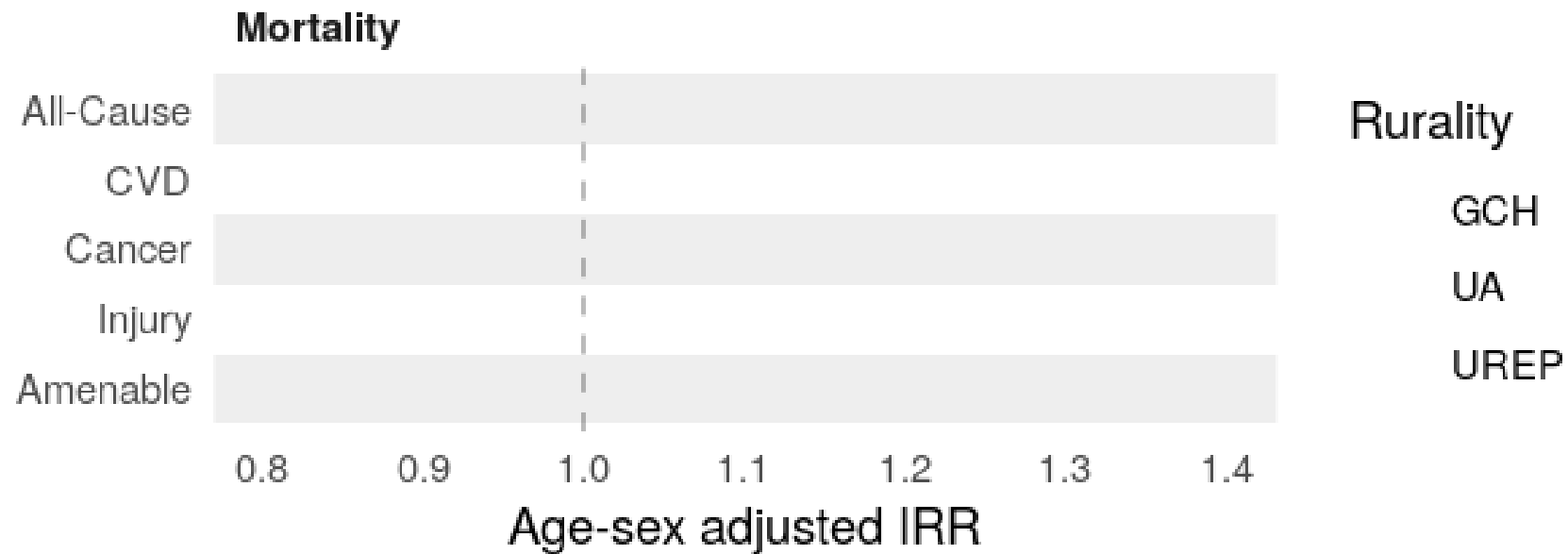
- 1) Old StatsNZ classification (UREP)
- 2) New StatsNZ classification (UA)
- 3) Geographic Classification for Health

Open access Original research

BMJ Open Unmasking hidden disparities: a comparative observational study examining the impact of different rurality classifications for health research in Aotearoa New Zealand

Jesse Whitehead ^{1,2} Gabrielle Davie ³ Brandon de Graaf³ Sue Crengle ³
Ross Lawrenson^{4,5} Rory Miller ^{1,6} Garry Nixon¹

Comparing mortality rates



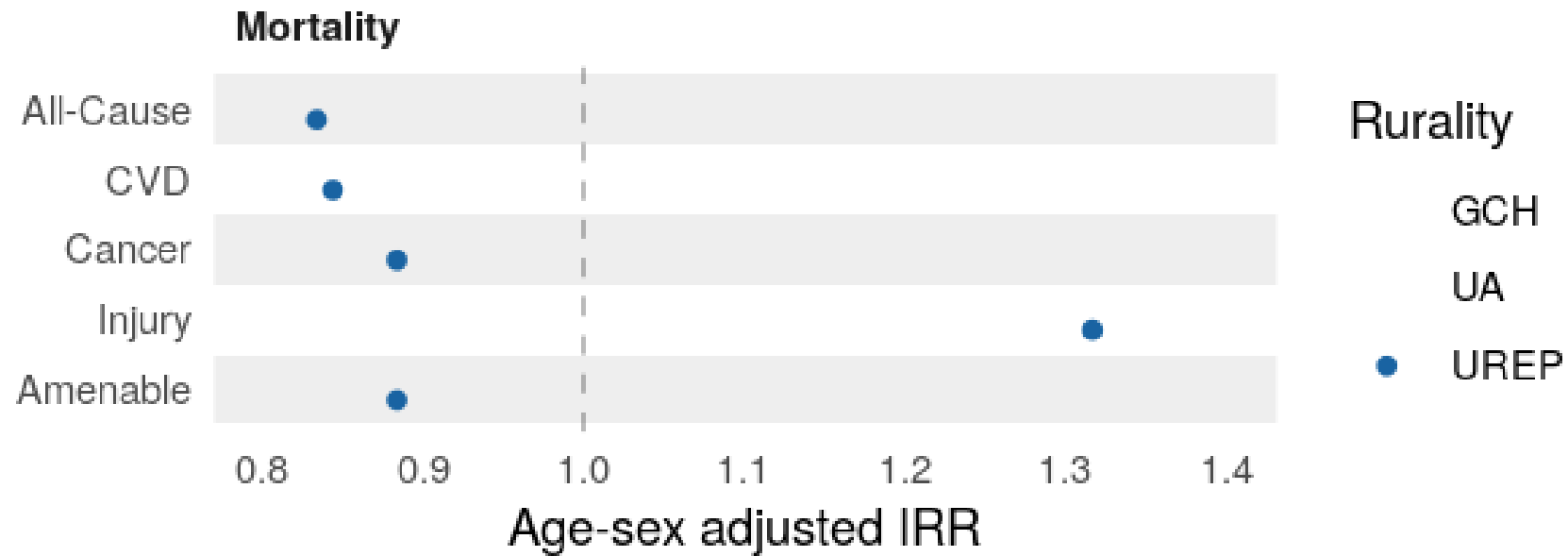
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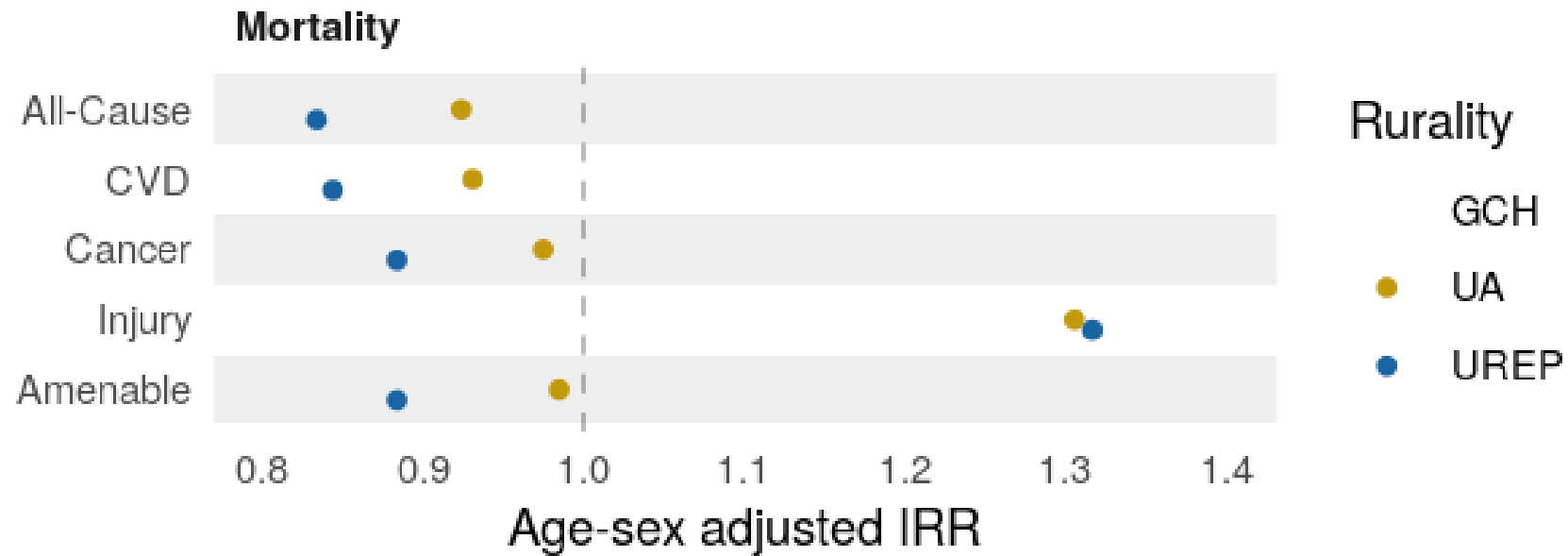
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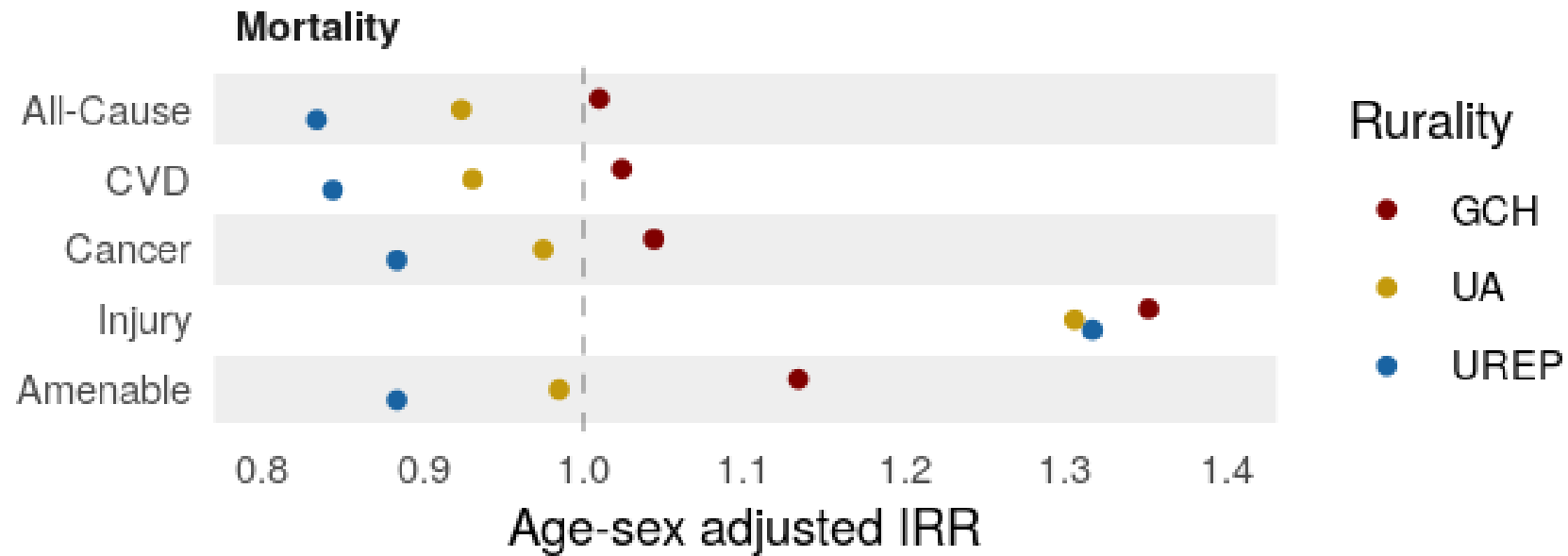


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Socio-demographic characteristics: Rural- urban



How do the **social determinants of health & wellbeing** vary for rural people?

At the SA2 Level:

- 2018 Census
- NZDep18
- GCH

Socio-demographic characteristics: Rural- urban

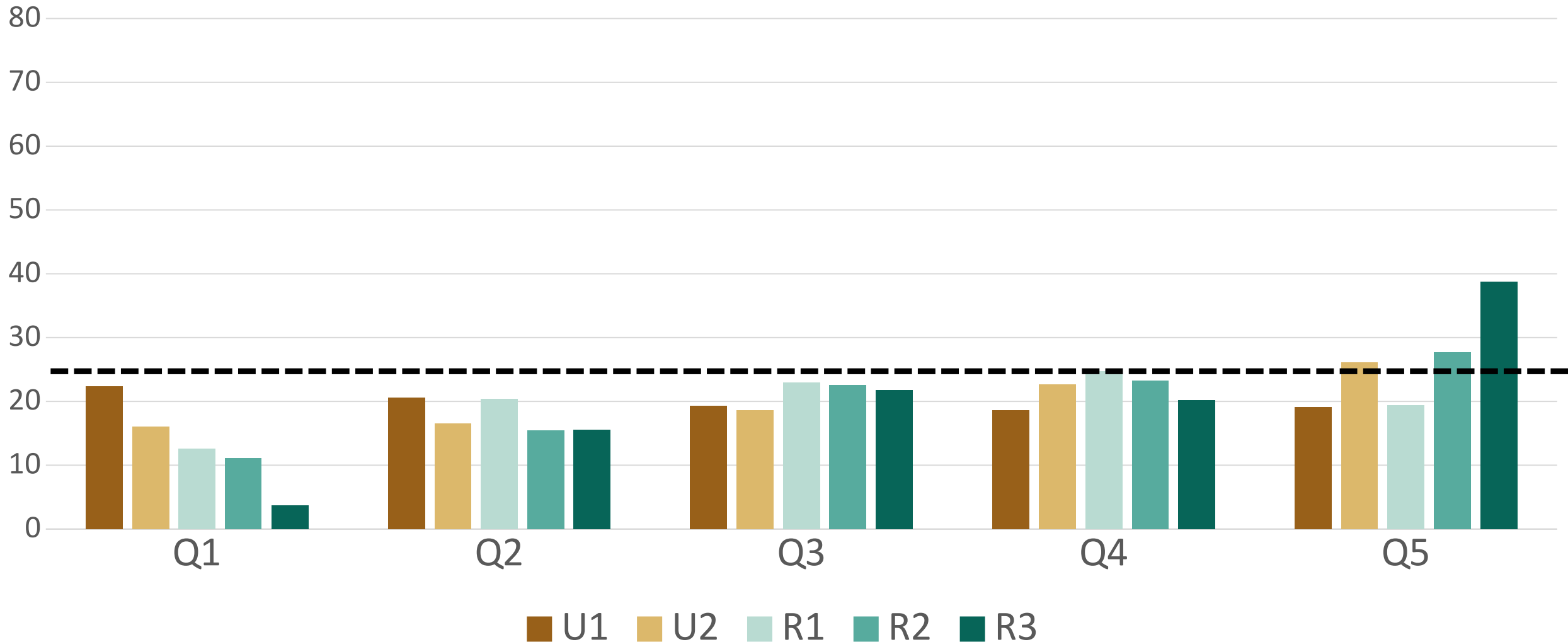


Census 2018 variables		Classification					All urban	All rural
		Urban		R1	Rural			
		U1	U2		R2	R3		
Total Population	N	2,961,138	845,169	570,147	266,931	55,806	3,806,307	892,884
	Row %	63.0	18.0	12.1	5.7	1.2	81.0	19.0
Population density	Land area (km2)	10,176	12,873	58,992	78,924	103,923	23,049	241,839
	Land area (%)	3.8	4.9	22.3	29.8	39.2	8.7	91.3
	Population per km2	291.0	65.7	9.7	3.4	0.5	165.1	3.7
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
Gender	Female (col%)	50.7	51.2	50.1	49.6	48	50.8	49.8
Ethnicity total responses (col%)	European	57.3	69	74.1	70.3	64.6	60	72.4
	Māori	11.5	20.5	16.9	22.9	28.3	13.5	19.5
	Pacific	9.6	3.5	3.1	2.1	2.5	8.3	2.8
	Asian	18.7	5.2	3.9	3.1	2.8	15.7	3.6
	MELAA & Other	2.8	1.7	2	1.6	1.7	2.6	1.8

Socio-demographic characteristics: Rural- urban



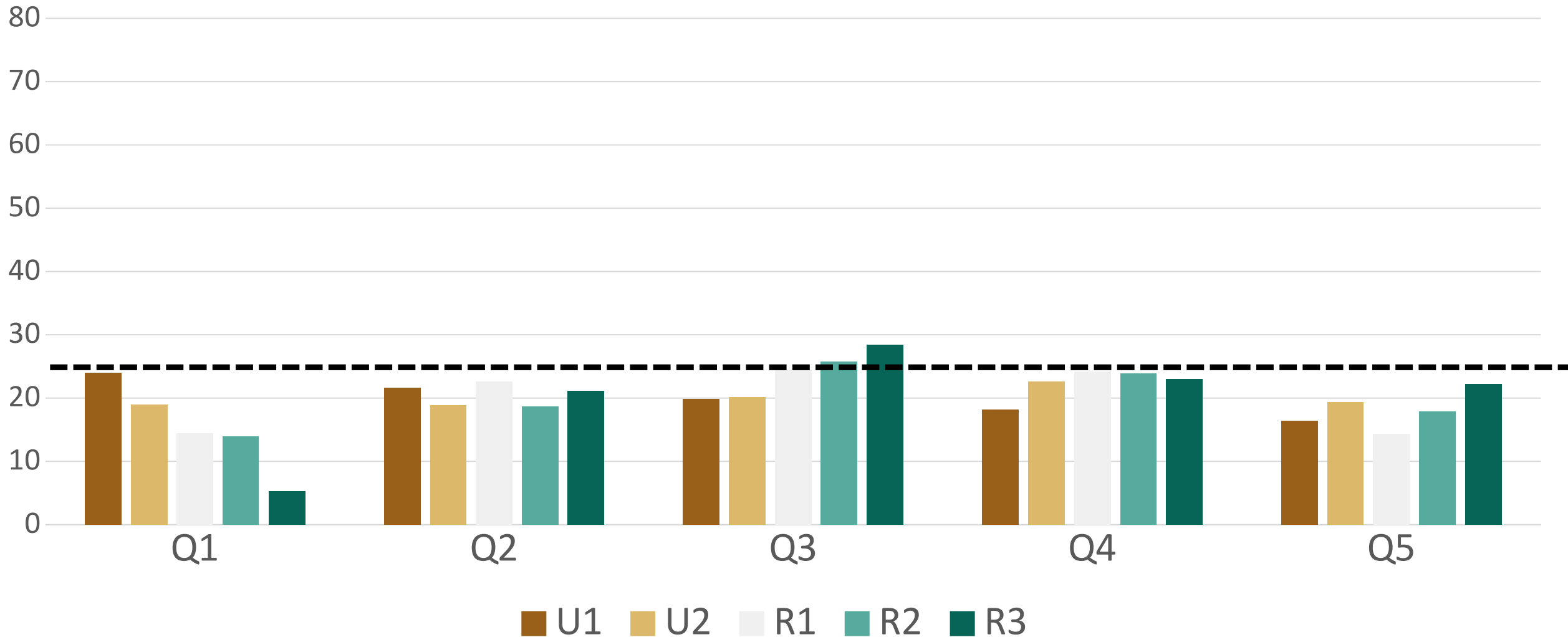
NZ Population



Socio-demographic characteristics: Rural- urban



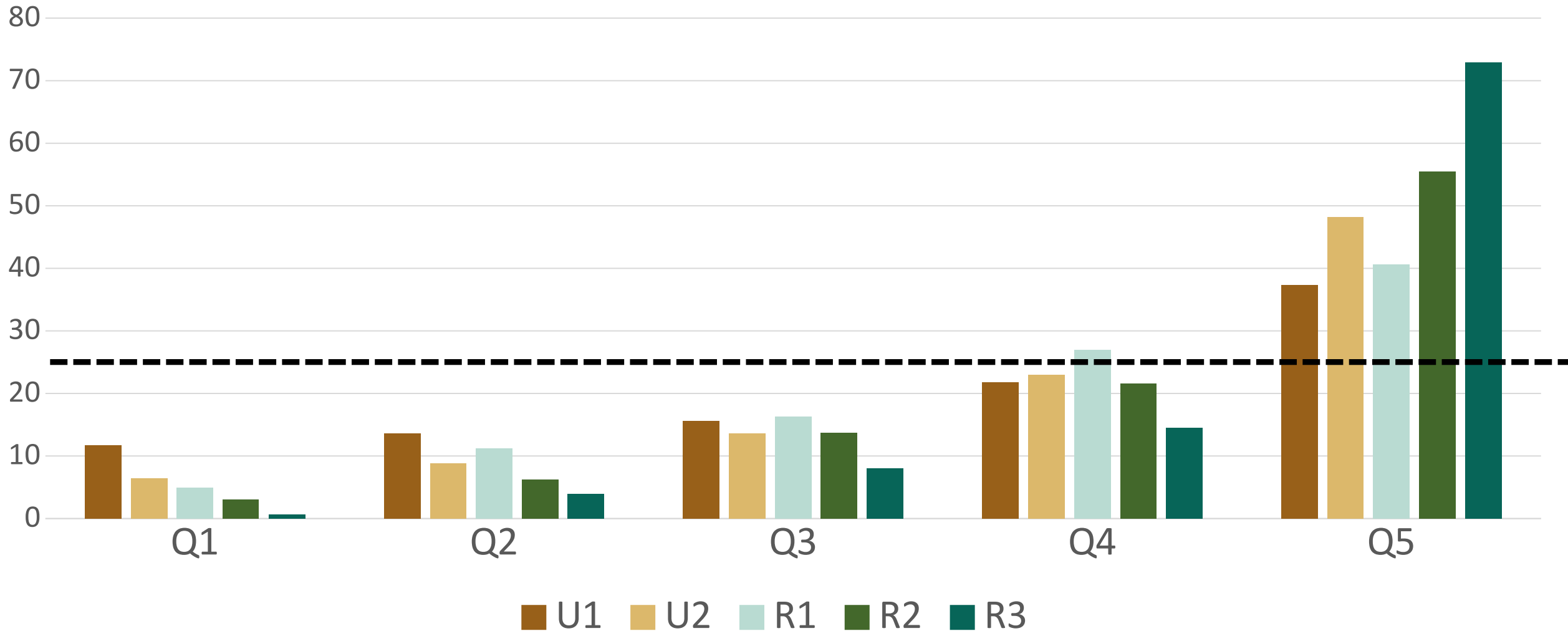
non-Māori



Socio-demographic characteristics: Rural- urban



Māori



Socio-demographic characteristics: Rural- urban



	Total Ethnicity					Māori					non-Māori				
	U1	U2	R1	R2	R3	U1	U2	R1	R2	R3	U1	U2	R1	R2	R3
U1	22	21	19	19	19	12	14	16	22	37	24	22	20	18	16
U2	16	17	19	23	26	6	9	14	23	48	19	19	20	23	19
R1	13	20	23	25	19	5	11	16	27	41	14	23	25	24	14
R2	11	15	23	23	28	3	6	14	22	55	14	19	26	24	18
R3	4	16	22	20	39	1	4	8	14	73	5	21	28	23	22
Population (in thousands)															
U1	663	610	571	551	566	44.6	51.7	59.5	83.1	142	619	558	511	468	424
U2	135	140	157	192	221	12.7	17.4	27.0	45.5	95.5	123	122	130	146	125
R1	71.8	116	131	141	110	5.3	12.2	17.7	29.2	44.1	66.5	104	113	111	66.3
R2	29.5	41.1	60.2	62.1	73.8	2.1	4.4	9.6	15.0	38.6	27.4	36.7	50.6	47.1	35.2
R3	2.1	8.7	12.1	11.3	21.5	0.1	0.7	1.5	2.6	13.2	2.0	7.9	10.7	8.6	8.3
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5

NZDep2018 Quintiles

% of Usual Resident population within each GCH category □ N/A □ 0-9% □ 10-19% □ 20-29% □ 30-39% □ 40-59% □ ≥60%

Socio-demographic characteristics: Rural- urban



	Northern Total Ethnicity					Northern Māori					Northern non-Māori					Te Manawa Taki Total Ethnicity					Te Manawa Taki Māori					Te Manawa Taki non-Māori				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
U1	19	21	20	18	22	10	13	15	19	42	21	22	21	17	19	18	19	19	22	21	8	11	14	26	40	21	22	20	21	16
U2	14	14	17	21	33	6	7	12	21	55	17	17	20	21	24	13	14	17	22	34	5	7	12	21	56	17	18	20	23	22
R1	11	24	25	22	18	4	13	17	23	43	13	27	28	22	11	7	14	21	28	30	2	7	12	26	52	8	17	24	29	22
R2	5	11	20	22	42	2	4	10	15	69	7	15	26	27	25	4	9	21	32	35	1	4	13	26	55	5	11	24	35	25
R3	.	.	5	22	73	.	.	2	13	85	.	.	7	30	63	3	6	8	24	59	0	1	3	12	83	6	12	14	38	29
Population (in thousands)																														
U1	295	324	306	269	332	17.9	23.6	26.5	33.8	73.9	277	301	279	235	258	80.9	85.5	83.1	96.7	92.5	7.7	10.2	13.4	24.2	37.3	73.2	75.3	69.8	72.5	55.2
U2	11.6	11.9	14.4	17.3	27.6	1.3	1.7	2.8	4.9	13.3	10.3	10.2	11.6	12.4	14.3	27.4	29.7	37.3	47.4	71.8	3.5	4.8	8.5	15.5	40.9	23.9	25.0	28.8	31.9	30.9
R1	8.9	19.5	20.7	17.9	14.9	0.8	2.4	3.0	4.1	7.7	8.1	17.1	17.7	13.8	7.2	11.2	24.0	36.2	48.0	52.3	1.1	3.6	6.0	12.4	25.2	10.1	20.4	30.2	35.5	27.2
R2	2.9	6.7	12.1	13.5	25.5	0.4	1.0	2.3	3.5	15.9	2.6	5.6	9.8	10.0	9.6	3.0	7.3	17.6	27.6	29.6	0.3	1.0	3.4	7.1	14.8	2.7	6.3	14.1	20.6	14.7
R3	.	.	0.8	4.0	13.3	.	.	0.1	1.2	7.4	.	.	0.7	2.9	6.0	0.3	0.6	0.9	2.5	6.3	0.0	0.1	0.2	0.7	4.9	0.3	0.6	0.7	1.8	1.4

	Central Total Ethnicity					Central Māori					Central non-Māori					Te Waipounamu Total Ethnicity					Te Waipounamu Māori					Te Waipounamu non-Māori				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
U1	31	20	18	15	16	16	15	17	20	32	33	21	18	15	13	28	20	18	21	13	18	17	18	25	23	29	20	18	20	12
U2	16	16	18	24	27	6	9	14	24	46	18	18	19	24	21	21	20	22	22	15	12	15	20	27	25	22	21	22	21	14
R1	12	18	23	26	21	5	11	18	30	36	14	20	24	26	17	19	27	24	22	9	12	21	23	30	14	20	27	24	21	8
R2	2	10	22	25	41	1	4	13	23	60	3	14	28	26	29	25	26	26	15	8	17	21	27	22	13	26	27	26	14	7
R3	.	20	48	11	21	.	10	32	14	44	.	23	53	10	12	8	32	37	19	4	4	22	31	25	16	8	33	37	18	3
Population (in thousands)																														
U1	125	82.6	73.9	62.7	63.5	9.1	8.5	9.5	11.1	18.1	116	74.1	64.4	51.6	45.4	162	118	108	122	77.9	9.9	9.5	10.1	13.9	12.7	152	108	97.8	108	65.2
U2	52.3	54.8	59.7	80.0	89.1	4.6	7.1	10.6	18.1	34.7	47.7	47.8	49.0	61.9	54.3	44.1	43.2	46.0	47.1	32.5	3.2	3.9	5.1	7.0	6.6	40.8	39.3	40.8	40.1	26.0
R1	15.0	22.5	29.1	33.5	26.3	1.3	2.6	4.5	7.4	8.7	13.8	19.9	24.6	26.1	17.6	36.6	50.5	44.8	41.4	16.9	2.2	3.7	4.1	5.3	2.6	34.5	46.8	40.7	36.1	14.3
R2	0.6	3.0	6.4	7.3	11.9	0.1	0.5	1.4	2.6	6.7	0.6	2.5	4.9	4.7	5.1	23.0	24.1	24.2	13.6	6.9	1.4	1.8	2.4	1.9	1.1	21.6	22.3	21.8	11.8	5.8
R3	.	0.9	2.2	0.5	1.0	.	0.1	0.4	0.2	0.5	.	0.8	1.8	0.4	0.4	1.8	7.1	8.2	4.2	1.0	0.1	0.5	0.7	0.6	0.4	1.7	6.6	7.5	3.6	0.6

NZDep2018 Quintiles

% of Usual Resident population within each GCH category

□ N/A □ 0-9% □ 10-19% □ 20-29% □ 30-39% □ 40-59% □ >=60%

Socio-demographic characteristics: Rural- urban



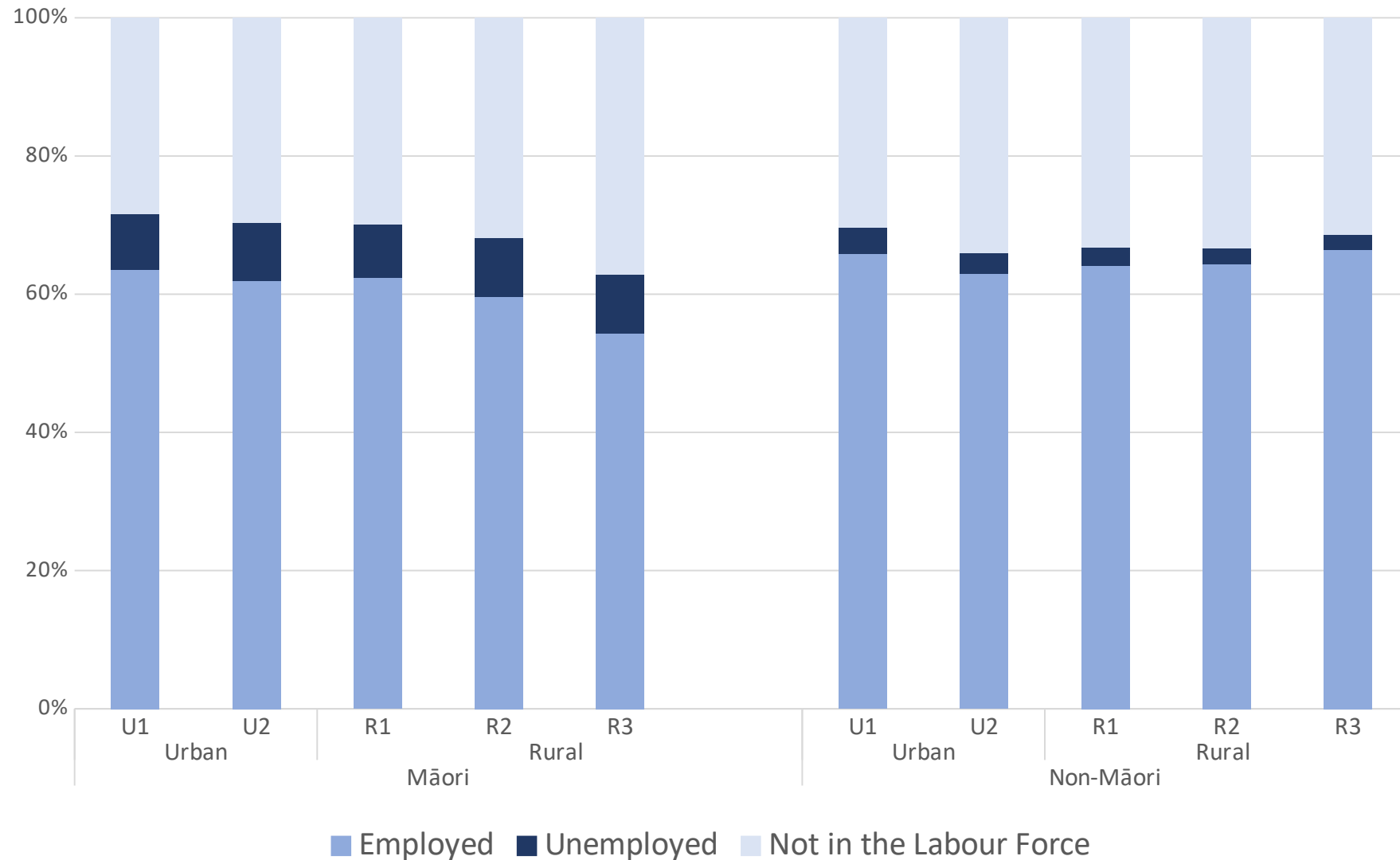
Aotearoa New Zealand		Total Population (col%)							Māori (col%)							Non-Māori (col%)								
	Ages (yrs)	Urban		Rural			All urban	All rural	Urban			Rural			All urban	All rural	Urban			Rural			All urban	All rural
		U1	U2	R1	R2	R3			U1	U2	R1	R2	R3				U1	U2	R1	R2	R3			
Socio-economic variables																								
* Employment Status																								
Employed	≥15	65.6	62.8	63.8	63.3	62.5	65	63.6	63.5	62.0	62.4	59.6	54.3	63.0	60.7	65.9	63.0	64.1	64.3	66.4	65.3	64.3		
Unemployed	≥15	4.1	4.0	3.4	3.7	4.2	4.1	3.5	8.1	8.3	7.7	8.5	8.5	8.1	8.0	3.7	3.0	2.6	2.3	2.2	3.5	2.5		
Not in the Labour Force	≥15	30.2	33.2	32.8	33.1	33.3	30.9	32.9	28.4	29.7	29.9	31.9	37.2	28.8	31.3	30.4	34.0	33.3	33.4	31.4	31.2	33.3		
Occupation																								
Managers	≥15	17.2	15.6	22.5	24.4	28.5	16.8	23.4	13.4	10.6	14.5	14.5	16.1	12.4	14.6	17.6	16.8	23.9	27.1	33.2	17.5	25.2		
Professionals	≥15	26.1	20.0	15.8	13.9	12.1	24.8	15.0	18.6	15.4	12.6	12.3	13.8	17.6	12.6	27.0	21.2	16.4	14.3	11.4	25.8	15.6		
Technicians and Trades Workers	≥15	11.8	12.8	12.4	11.9	9.5	12.0	12.1	12.0	11.0	11.4	11.2	8.9	11.7	11.1	11.8	13.3	12.6	12.1	9.8	12.1	12.3		
Community & Personal Service Workers	≥15	9.3	10.6	9.2	9.2	10.2	9.6	9.2	11.6	12.8	11.7	12.2	12.1	12.0	11.9	9.1	10.0	8.7	8.4	9.4	9.3	8.7		
Clerical and Administrative Workers	≥15	11.6	10.3	9.1	8.6	7.3	11.3	8.9	11.3	8.6	7.8	7.8	6.8	10.4	7.7	11.7	10.7	9.4	8.8	7.5	11.5	9.1		
Sales Workers	≥15	9.7	8.9	7.8	7.6	5.5	9.5	7.6	9.9	8.5	7.5	7.1	5.2	9.4	7.2	9.7	8.9	7.9	7.7	5.6	9.5	7.7		
Machinery Operators and Drivers	≥15	5.6	6.6	7.0	6.6	6.3	5.8	6.9	9.3	8.9	9.5	7.8	8.9	9.2	8.9	5.2	6.0	6.6	6.3	5.4	5.4	6.5		
Labourers	≥15	8.6	15.2	16.2	17.8	20.6	10.0	16.9	13.9	24.2	25.2	26.9	28.0	17.3	26.0	8.0	13.1	14.5	15.4	17.7	9.0	14.9		
* Total personal income																								
<20k	≥15	34.2	35.0	34.2	36.2	40.9	34.4	35.1	41.5	43.9	43.4	46.4	51.0	42.3	45.2	33.3	32.8	32.5	33.2	36.2	33.2	32.8		
20-50k	≥15	31.7	37.8	37.1	38.3	38.1	33.1	37.5	32.5	36.5	35.6	36.4	34.6	33.9	35.8	31.6	38.1	37.4	38.8	39.8	32.9	37.9		
50-70k	≥15	14.8	13.6	14.2	13.6	11.6	14.5	13.9	13.4	11.4	12.1	10.7	8.3	12.7	11.3	15.0	14.1	14.6	14.4	13.2	14.8	14.5		
>70k	≥15	19.3	13.6	14.5	12.0	9.3	18	13.5	12.6	8.1	8.8	6.5	6.1	11.1	7.7	20.1	15.0	15.6	13.5	10.8	19.1	14.8		
* Highest Qualification																								
No qualifications	≥15	15.4	22.2	23.4	24.7	24.3	16.9	23.9	23.0	25.8	28.4	30.3	30.0	24.0	29.2	14.4	21.3	22.5	23.2	21.8	15.9	22.7		
Secondary School	≥15	45.6	49.3	50.0	50.6	50.7	46.5	50.2	53.9	54.3	54.0	53.6	52.2	54.0	53.7	44.6	48.2	49.3	49.7	50.0	45.4	49.4		
Diploma	≥15	9.6	10.2	10.1	10.0	10.1	9.8	10	8.2	8.7	8.0	7.7	8.0	8.4	7.9	9.8	10.6	10.5	10.6	11.1	10.0	10.5		
Bachelors	≥15	17.1	11.0	10.0	9.3	9.2	15.8	9.8	9.8	7.9	6.5	5.9	6.4	9.2	6.3	18.0	11.8	10.7	10.2	10.4	16.7	10.5		
Higher degree	≥15	12.3	7.2	6.5	5.5	5.6	11.1	6.1	5.0	3.4	3.0	2.4	3.3	4.5	2.8	13.1	8.1	7.1	6.3	6.7	12.1	6.8		
* Home ownership																								
Held in trust or own	≥15	48.3	56.9	59.3	57.5	55.3	50.2	58.5	27.4	32.5	36.9	35.8	39.9	29.1	36.7	50.5	61.9	62.9	62.7	61.3	52.9	62.8		
Not held in trust or owned	≥15	51.7	43.1	40.7	42.5	44.7	49.8	41.5	72.6	67.5	63.1	64.2	60.1	70.9	63.3	49.5	38.1	37.1	37.3	38.7	47.1	37.2		
* Telecommunications (households)																								
No access to telecommunication systems	All	1.0	1.0	1.0	1.3	2.5	1.0	1.2	This household-level data is not available by ethnic identity															
No access to a cellphone	All	85.7	84.9	84.3	80.8	64.6	85.5	82.0																
No access to a telephone	All	55.7	61.1	60.7	58.6	59.0	57.0	60.0																
No access to the internet	All	81.9	77.1	76.1	72.2	64.9	80.7	74.2																
Other variables																								
Smoking status																								
Regular smoker	≥15	11.6	15.4	15.7	17.6	20.1	12.4	16.5	26.2	29.4	30.1	32.7	32.9	27.2	31.3	9.8	11.9	13.0	13.2	14.1	10.3	13.1		
Ex-smoker	≥15	19.6	25.5	26.8	27.1	28.5	20.9	27.0	22.1	24.0	24.8	24.3	27.1	22.7	24.8	19.3	25.9	27.2	27.8	29.2	20.6	27.5		
Never smoked regularly	≥15	68.8	59.1	57.5	55.4	51.4	66.7	56.5	51.8	46.7	45.1	43.0	40.0	50.0	43.9	70.9	62.2	59.8	58.9	56.7	69.1	59.4		
Birthplace																								
New Zealand	All	66.2	83.6	82.3	85.7	86.6	70.1	83.6	97.8	98.2	98.1	98.2	98.5	98.0	98.2	61.5	79.1	78.6	81.3	79.8	65.1	79.4		
Overseas	All	33.8	16.4	17.7	14.3	13.4	29.9	16.4	2.2	1.8	1.9	1.8	1.5	2.0	1.8	38.5	20.9	21.4	18.7	20.2	34.9	20.6		
Dwelling mould indicator																								
Always mould over A4 size	All	5.5	4.8	4.4	5.1	7.2	5.3	4.8	10.9	10.1	10.2	11.9	12.9	10.6	11.0	4.8	3.4	3.3	3.1	4.5	4.5	3.3		
Sometime mould over A4 size	All	15.0	13.8	12.9	13.5	15.8	14.8	13.2	22.3	22.2	21.3	23.4	23.9	22.3	22.3	14.1	11.7	11.2	10.5	12.0	13.6	11.1		
No mould / mould smaller than A4 size	All	79.5	81.4	82.6	81.4	77.1	79.9	82.0	66.9	67.7	68.4	64.7	63.2	67.1	66.7	81.1	84.9	85.5	86.3	83.5	81.8	85.6		

* These variables are similar to those included in NZDep2018

Rural-urban socio-demographics: Employment



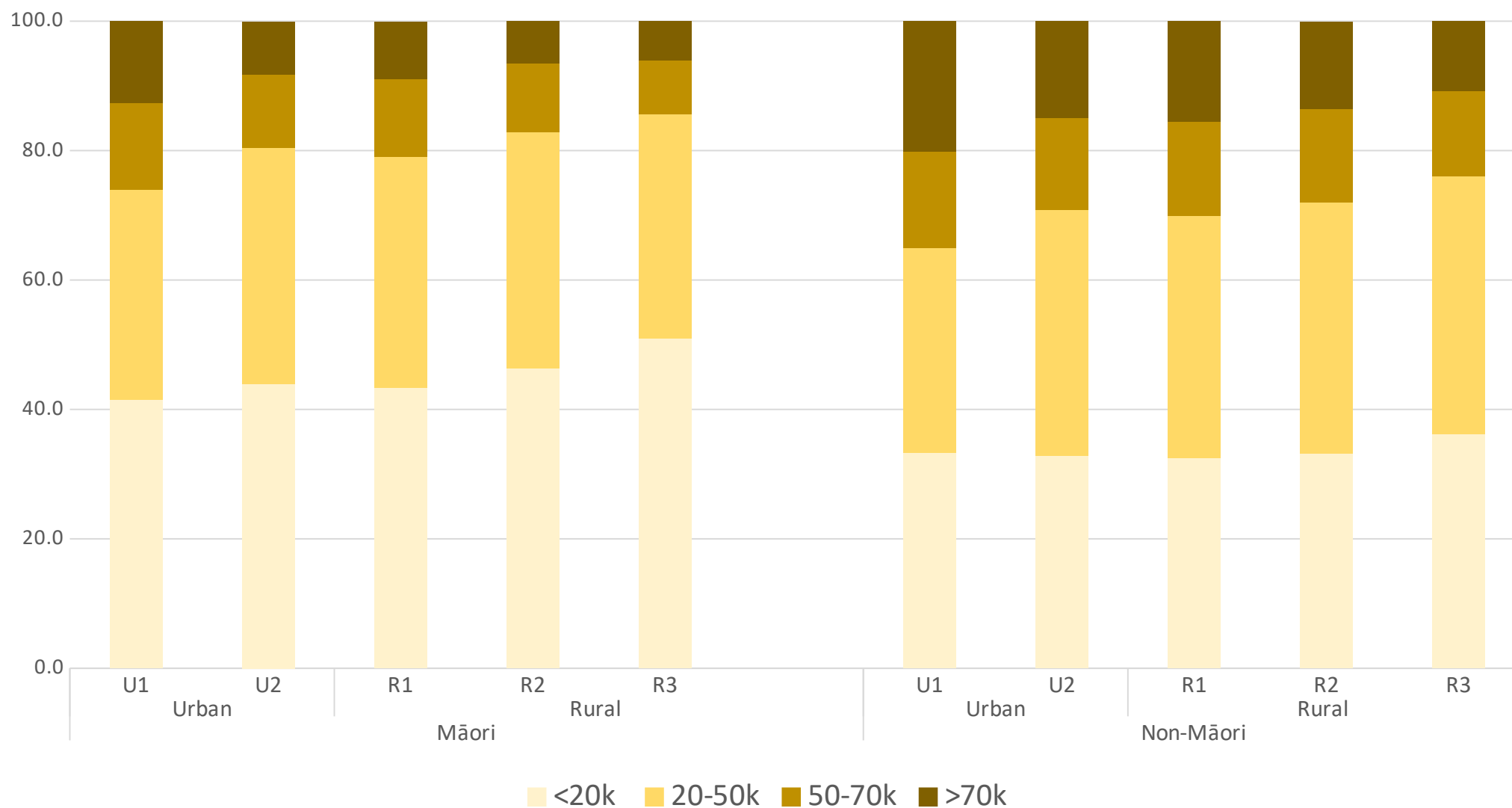
Employment Status (≥ 15 yr)



Rural-urban socio-demographics: Income



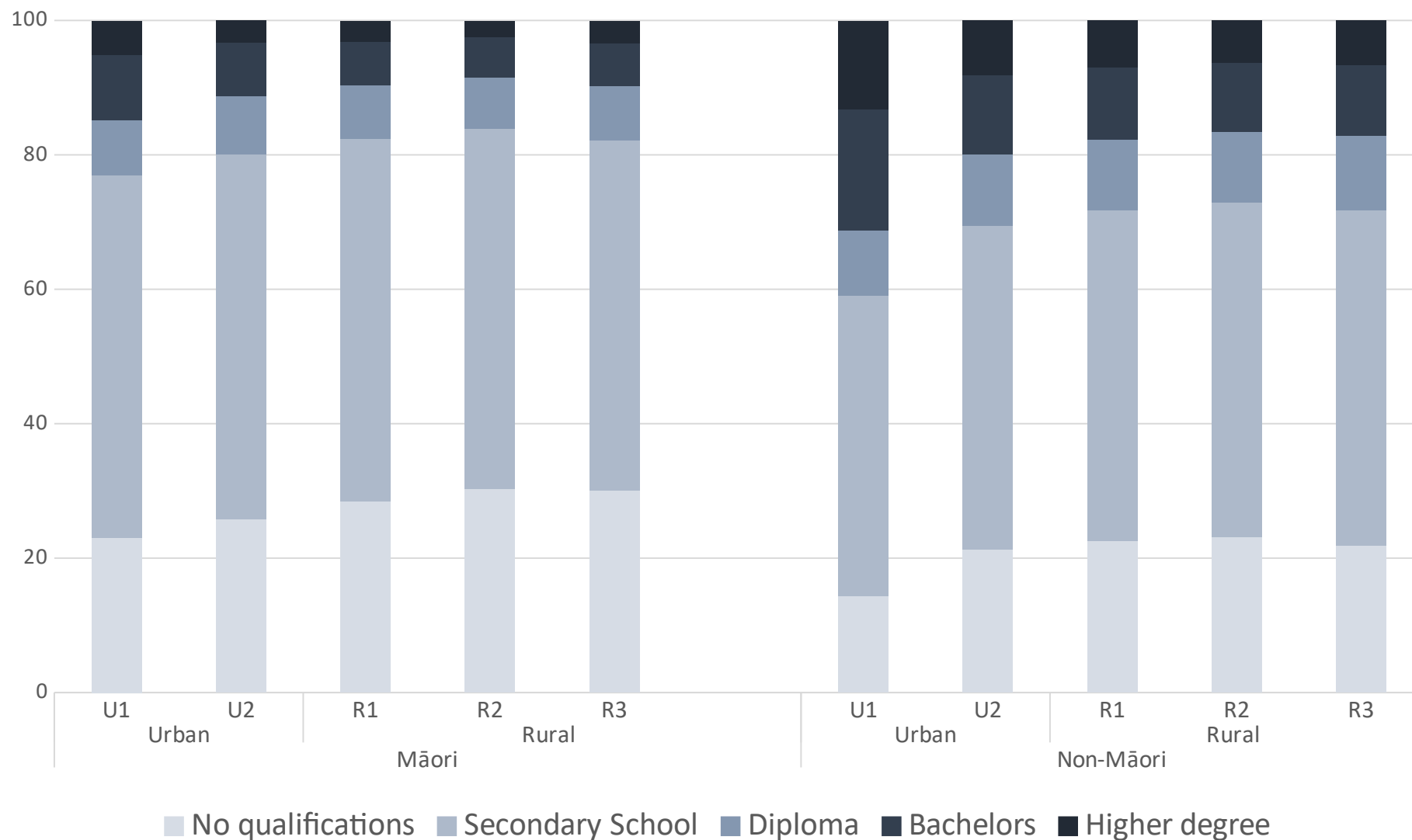
Total Personal Income



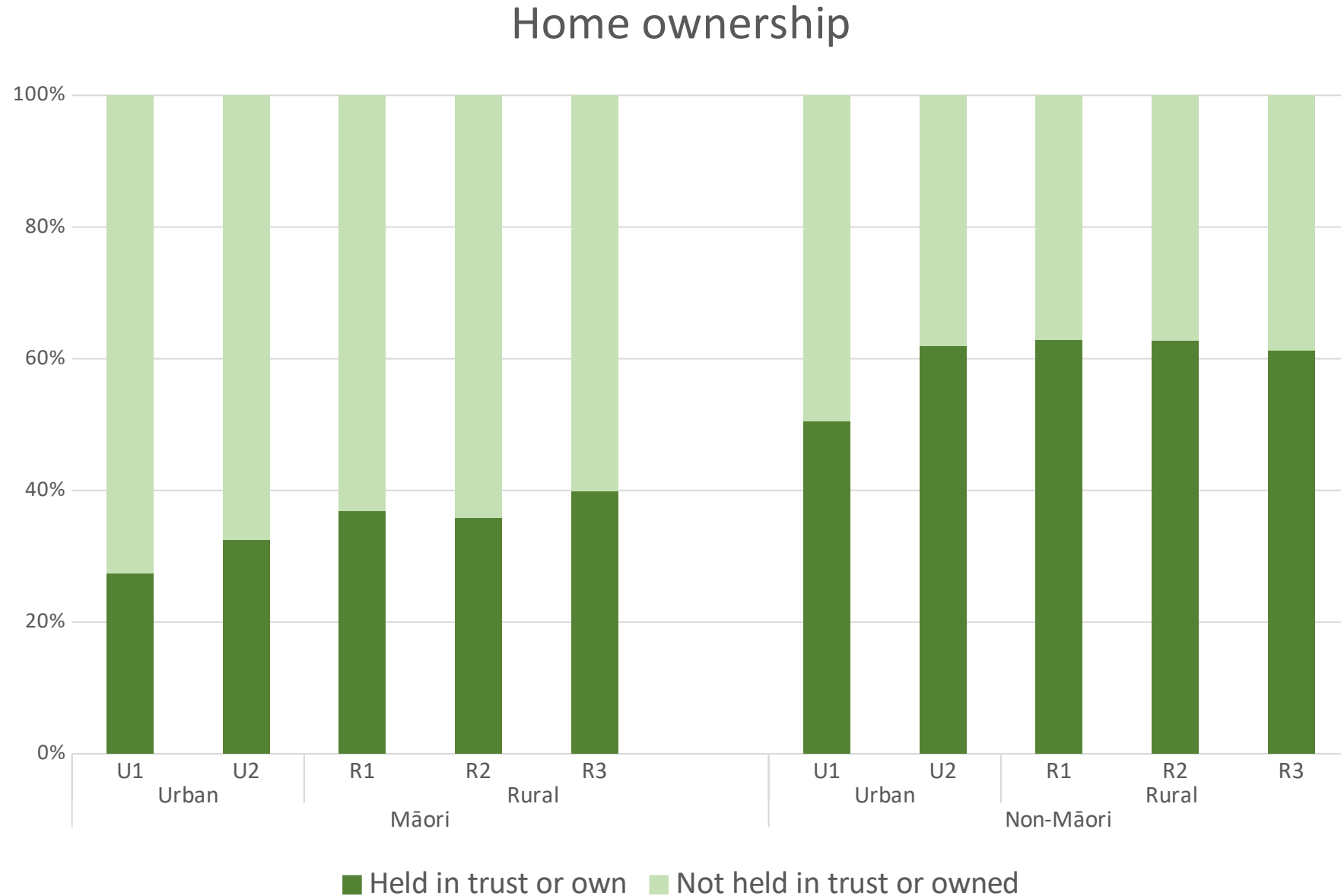
Rural-urban socio-demographics: Education



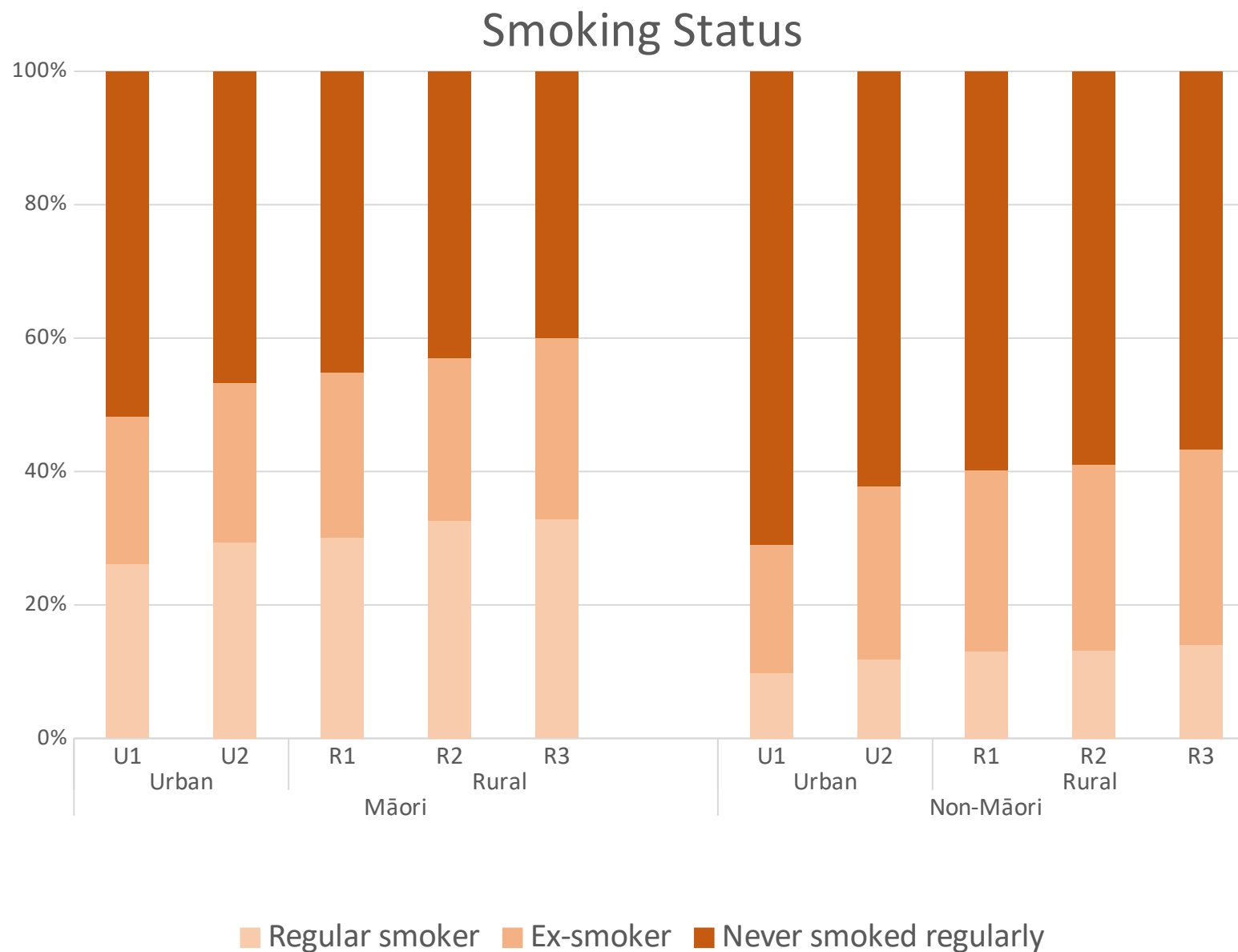
Highest Qualification



Rural-urban socio-demographics: Home Ownership



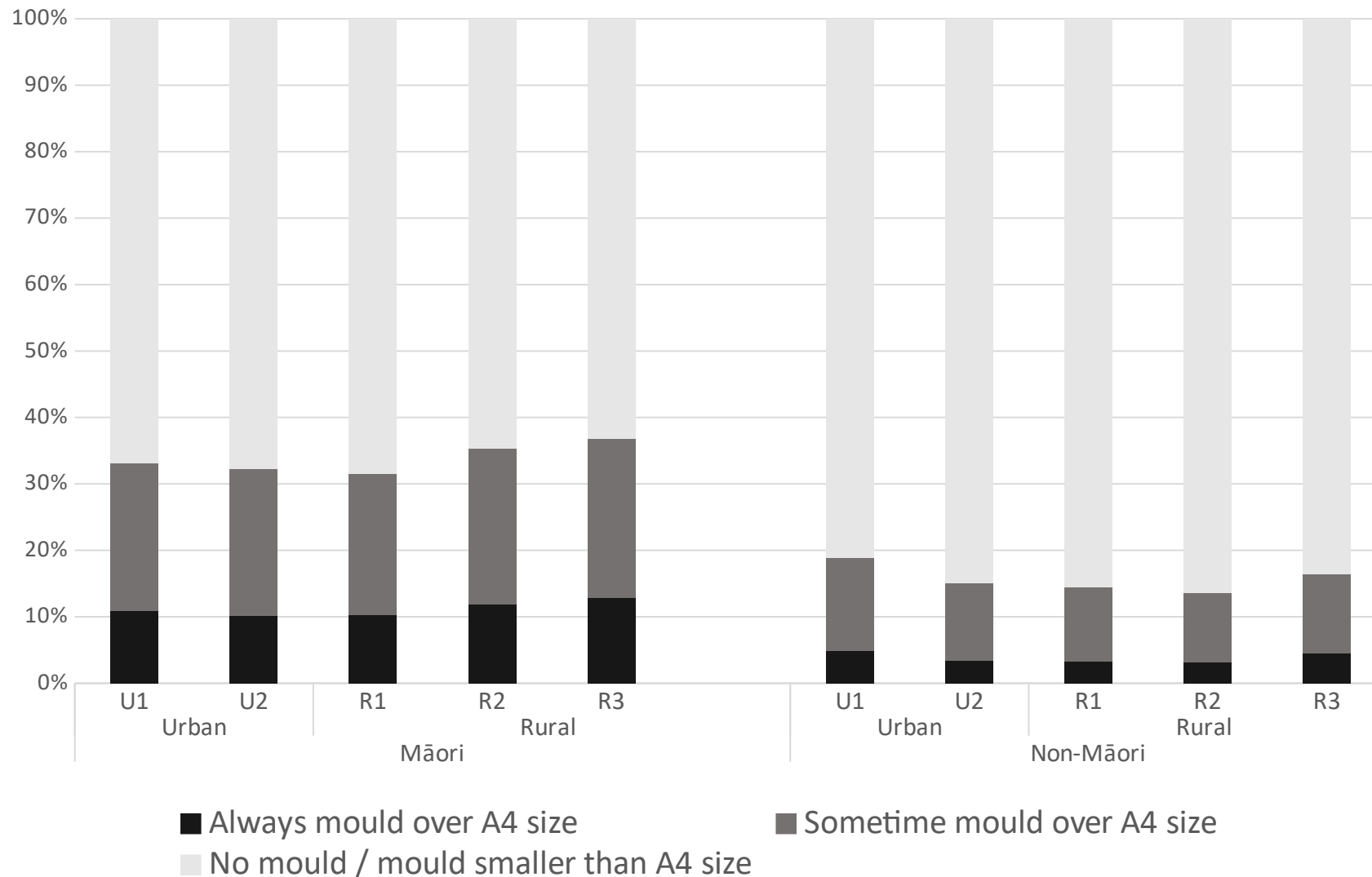
Rural-urban socio-demographics: Smoking



Rural-urban socio-demographics: Healthy Housing



Dwelling Mould Indicator



Rural-urban socio-demographics: Regional variation



To Wharua Ora Northern Region										Māori										Non-Māori									
Total Population										Total Population										Total Population									
Urban										Urban										Urban									
Rural										Rural										Rural									
Unclassifiable										Unclassifiable										Unclassifiable									
No GCH										No GCH										No GCH									
Urban										Urban										Urban									
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Urban										Urban										Urban									
Rural										Rural										Rural									
Total Population										Total Population										Total Population									
Urban										Urban										Urban									
Rural										Rural										Rural									
Unclassifiable										Unclassifiable										Unclassifiable									
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