



Rural–urban variation in Opioids indicators: Key findings from the New Zealand Atlas of Healthcare Variation

This report presents data from the Atlas of Healthcare Variation to examine differences in dispensing opioids among people living in rural and urban regions in New Zealand. This supports analysis and monitoring of rural health and aligns with one of the goals of the New Zealand Rural Health Strategy (Minister of Health 2023).

Opioids are a type of medicine used to treat pain. They are used a lot in hospital for patients to help ease pain but can also cause harm. The Institute for Healthcare Improvement (IHI) classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. Harm associated with opioid therapy include opioid tolerance, opioid-induced hyperalgesia, iatrogenic addiction and dependency, drug diversion and aberrant drug-related behaviours (Chen et al 2013, Sullivan et al 2010). In addition, a strong relationship between severe dependence on opioids and other substance use and mental health disorders has been observed (van Draanen et al 2022).

Key findings

- Strong opioids: People in less urban and rural areas (urban 2, rural 1, rural 2 and 3) were significantly more likely to be dispensed strong opioids than those in the most urban areas (urban 1). This trend was consistent across age groups and for European/Other populations, but less consistent for Māori.
 - Individuals in less urban areas were more likely to receive strong opioids for six weeks or longer, though differences by age and ethnicity were not always statistically significant.
 - Morphine: Dispensing was higher in less urban areas (urban 2) across most age groups, especially among European/Other populations. Long-duration morphine use was also more common in these regions.

- Oxycodone: Unlike other opioids, oxycodone dispensing was higher in urban areas (urban 1 and urban 2), with long-duration use also more prevalent in urban settings.
- Fentanyl: Dispensing was lowest in the most urban area (urban 1) across all age groups. Rural residents aged 80 years and over were more likely to receive fentanyl, including for at least 6 weeks or more.
- Weak opioids: Dispensing rates were generally higher in less urban areas, though no consistent pattern emerged when broken down by age, ethnicity and rurality.

Method

The Opioids Atlas reports data from existing national collections, including the Pharmaceutical Collection, the National Minimum Dataset, and the Primary Health Organisation Enrolment Collection. It highlights demographic and regional differences in dispensing of opioids. Only those who are enrolled in a PHO are included in the analysis.

Geographical Classification for Health

To determine how urban or rural an area is, we used the 2018 Geographical Classification for Health (GCH). There are three rural and two urban categories with rural 3 being the most rural and urban 1 being the most urban.

The GCH categorises areas using a health lens, considering population size (urban 1 and urban 2) and drive times to closest urban areas (rural 1, rural 2, rural 3). According to the GCH, one in five New Zealanders and one in four Māori live in rural regions.

[About the Geographical Classification for Health – https://rhrn.nz/gch/about-gch](https://rhrn.nz/gch/about-gch)

To determine rurality for each individual record, we linked GCH files with the domicile code information in our national datasets. For more information on methodology:

[Atlas of Healthcare Variation: Methodology Opioids – hpsc.govt.nz](https://hpsc.govt.nz)

In this report, we grouped rural 2 and 3 due to low numbers. Ethnic group comparisons were between Māori and European/Other due to the low number of Pacific peoples and Asians living in rural areas.

We used confidence intervals to determine whether there is a statistically significant difference between two subgroups.

Dispensing strong opioids

A strong opioid is classed as step 3 of the World Health Organization's (WHO) analgesic ladder. This includes fentanyl, methadone, morphine, oxycodone and pethidine. These opioids are subsidised in New Zealand.

In 2023, and excluding people receiving methadone for opioid substitution treatment, 19.6 per 1,000 of the PHO-enrolled population was dispensed a strong opioid any time during the year.

Dispensing rates increased significantly with age, with those aged 80 years and over having the highest rates.

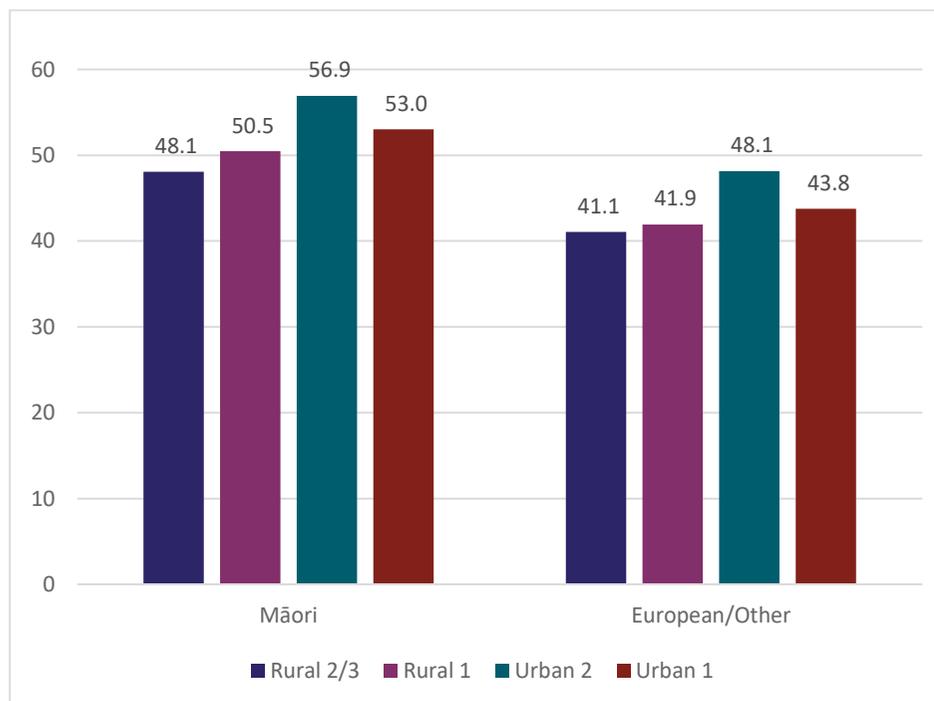
Ethnic differences were evident. For example, among individuals aged 65–74 years, Māori (53.4 per 1,000) had significantly higher dispensing rates than other ethnic groups: Pacific peoples (37.4), Asian (18.5), and European/Other (44.6 per 1,000).

For more results: [Opioids Atlas of Healthcare Variation](#)

By rurality

- Overall, those living in less urban areas (urban 2; 25.8 per 1,000) are significantly more likely to receive any strong opioid any time during 2023 when compared to people living in other areas (urban 1: 16.6; rural 1: 22.7; rural 2 and 3: 22.4 per 1,000). This pattern was consistent across all age groups and observed separately for both Māori and European/Other populations.
- However, when the data was further broken down by rurality, ethnicity and age, the pattern held true for European/Other across all age groups, but not for Māori.
- Those living in most urban areas (urban 1: 1.7 per 1,000) are less likely to receive strong opioids for at least 6 weeks or more when compared to people living in other areas (urban 2: 2.8; rural 1: 2.6; rural 2 and 3: 2.6 per 1,000). These differences weren't statistically significant when split by age and ethnicity.

Figure 1: PHO-enrolled population aged 65–79 years were dispensed a strong opioid any time during 2023, by ethnic grouping and rurality, rate per 1,000



Morphine

- In 2023, approximately 12.9 per 1,000 of the PHO-enrolled population received morphine.
- Overall, people living in more urban areas were less likely to be dispensed morphine, while those in less urban areas were more likely to receive it at any point during 2023. This pattern held across most age groups, except for those aged 0–24 years.
- When the data was further broken down by age, ethnicity and rurality, European/Other individuals living in less urban areas were consistently more likely to be dispensed morphine compared to their counterparts in other areas across all age groups. However, this pattern was not statistically significant for Māori across some age groups.

- People in less urban areas were more likely to receive morphine for six weeks or longer. For example, among those aged 80 and over, dispensing rates were highest in urban 2 (11.4 per 1,000), compared to urban 1 (7.3), rural 1 (9.1), and rural 2 and 3 (8.2 per 1,000). While this pattern was generally consistent across all age and ethnic groups, it was not always statistically significant.

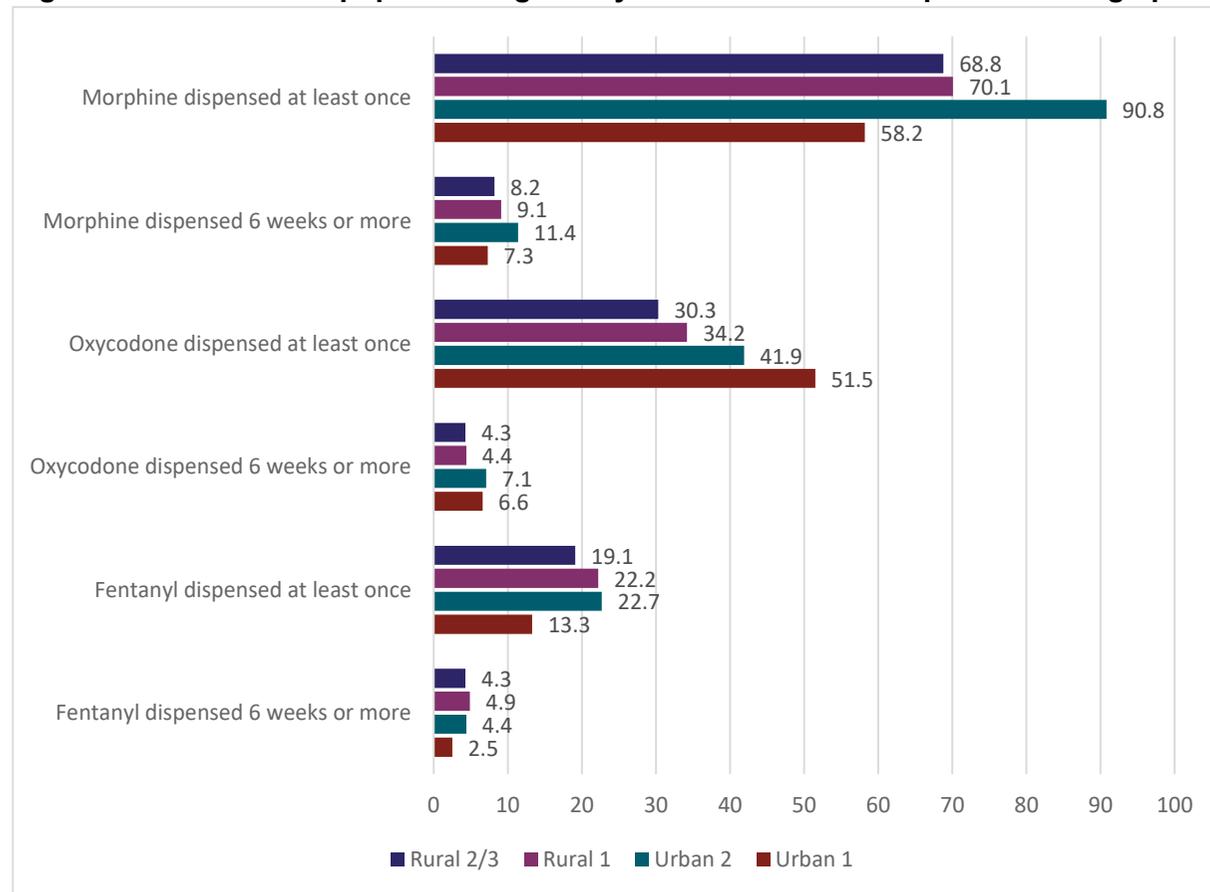
Oxycodone

- In 2023, about 7.2 per 1,000 of the PHO-enrolled population received oxycodone, a significant increase from 2019 (5.1 per 1,000).
- Differences by rurality are more pronounced in older age group. For example, among those aged 80 years and over, people living in urban regions (urban 1: 51.5 urban 2: 41.9 per 1,000) are significantly more likely to be dispensed oxycodone any time in 2023 than other those living in rural regions (rural 1: 34.2; rural 2 & 3: 30.3 per 1,000). This pattern holds for both Māori and European/Other populations in this age group.
- Similarly, among those aged 80 years or over, people living in urban areas were more likely to receive oxycodone for six weeks or longer.

Fentanyl

- In 2023, about 1.4 per 1,000 of the PHO-enrolled population received fentanyl.
- Fentanyl dispensing significantly increased with age from 3.3 per 1,000 aged 65–79 years to 17.1 per 1,000 people aged 80 years and over.
- Fentanyl dispensing is lowest among individuals living in the most urban areas across all age groups, with the difference being statistically significant for those aged 65 years and over. This pattern holds for European/Other populations, while for Māori, it is only statistically significant among those aged 80 years and over.
- Similarly, among those aged 80 years and over, people living in urban areas were less likely to receive fentanyl for six weeks or longer.

Figure 2: PHO-enrolled population aged 80 years or over were dispensed strong opioids during 2023, by rurality, rate per 1,000



Dispensing of weak opioid

A 'weak' opioid is classed as step 2 of WHO's analgesic ladder. This includes tramadol, codeine and dihydrocodeine.

- In 2023, about 105.1 per 1,000 of the PHO-enrolled population in New Zealand were dispensed a weak opioid, a significant increase from 2019 (103.0 per 1,000). Weak opioid use remains most common among older people aged 80 years and over (167.8 per 1,000).

By rurality

- Overall, people living in the most urban areas (101.3 per 1,000) were less likely to be dispensed a weak opioid compared to those in other areas (urban 2: 111.4; rural 1: 112.8; rural 2 and 3: 108.2 per 1,000).
- When results were broken down by age, ethnicity, and rurality, no consistent pattern emerged by rurality. For example, among individuals aged 80 years and over, those living in less urban areas (Urban 2: 184.7 per 1,000) were more likely to receive a weak opioid than those in other areas (Urban 1: 162.6; Rural 1: 165.0; Rural 2 and 3: 159.6 per 1,000). This pattern held for European/Other populations, but the differences were not statistically significant for Māori.

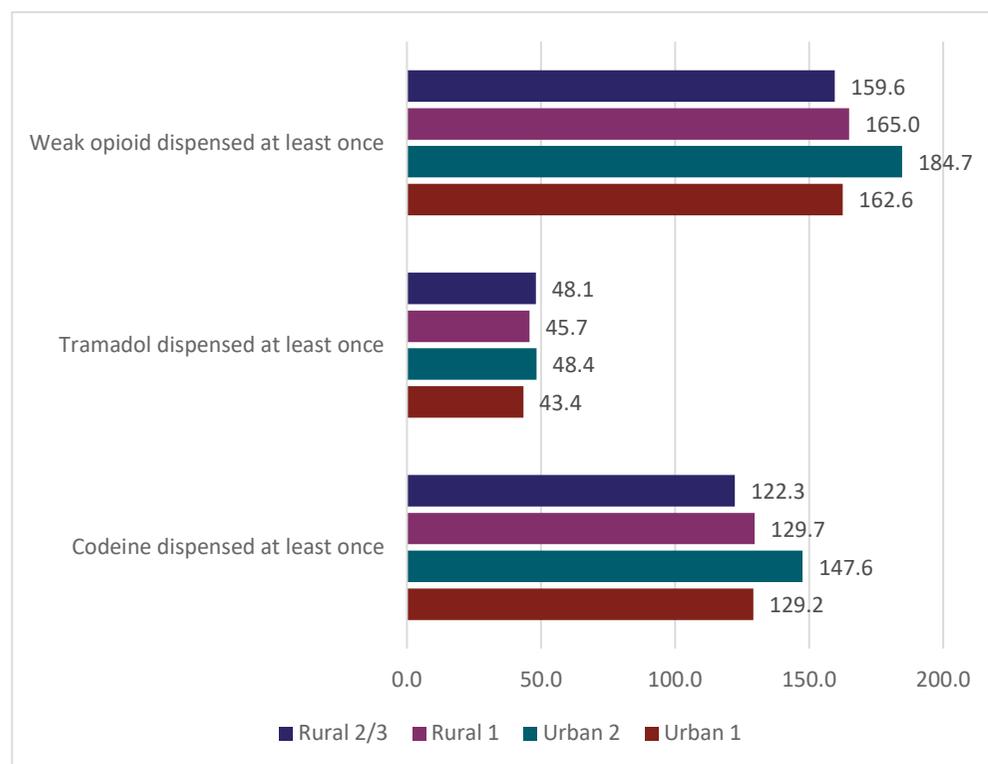
Tramadol

- In 2023, about 50.9 per 1,000 were dispensed tramadol one or more times. Tramadol dispensing is highest among those aged 25–64 and 65–79 years (67.8 and 67.3 per 1,000, respectively).
- Overall, individuals living in the most urban areas (49.0 per 1,000) were less likely to be dispensed tramadol compared to those in other areas (urban 2: 51.9; rural 1: 55.6; rural 2 and 3: 57.2 per 1,000). When results were broken down by age, ethnicity, and rurality, no clear pattern by rurality was observed.

Codeine

- In 2023, about 64.9 per 1,000 were dispensed codeine or dihydrocodeine one or more times. Rates are highest among individuals aged 80 years and over (133.0 per 1,000).
- Overall, people living in the most urban (62.5 per 1,000) and most rural areas (62.7 per 1,000) were less likely to be dispensed a weak opioid compared to those in other areas (Urban 2: 70.6; Rural 1: 69.2 per 1,000). When results were broken down by age, ethnicity, and rurality, rates were generally lowest among those living in the most rural areas across most categories.

Figure 3: PHO-enrolled population aged 80 years were dispensed weak opioids any time during 2023, by rurality, rate per 1,000



People dispensed a strong opioid who had a public hospital event in the 8 days prior to dispensing

- Of every 10 people dispensed a strong opioid, nearly five attended a public hospital as an inpatient or outpatient in the week prior.
- Younger people were more likely to have a public hospital event prior to being dispensed a strong opioid compared with older people; 6 out of every 10 of those aged 0–24 years compared with 4 out of 10 of those aged 80 years and over.
- There were no significant differences by rurality.

Discussion

There is no clear, consistent pattern of opioid dispensing by rurality in New Zealand. While some opioids (eg, morphine) are more commonly dispensed in less urban areas, others (eg, oxycodone) show higher use in the most urban areas. This mixed picture suggests that rurality alone does not fully explain variation in opioid use.

Further exploration is needed to understand the drivers of these differences in opioid dispensing. Areas for investigation include whether aged residential care status explains some variation – particularly how much oxycodone use is attributable to people living in aged residential care – differences in access to elective surgery, pain management services and specialist care, as well as population health factors such as weight, comorbidities and eligibility for surgery. Additionally, the higher opioid use observed in urban 2 and rural areas compared with urban 1 raises questions about local prescribing practices and health system factors. Understanding these drivers will be critical for designing targeted interventions to ensure safe and equitable pain management across all regions.

References

Chen L, Vo T, Seefeld L et al. 2013. Lack of correlation between opioid dose adjustment and pain score change in a group of chronic pain patients. *The journal of pain* 14(4): 384–92.

Minister of Health. 2023. *Rural Health Strategy*. Wellington, NZ: Ministry of Health. URL: <https://www.health.govt.nz/system/files/documents/publications/rural-health-strategy-oct23-v2.pdf>

Sullivan MD, Von Korff M, Banta-Green C et al. 2010. Problems and concerns of patients receiving chronic opioid therapy for chronic non-cancer pain. *Pain* 149(2): 345–53.

van Draanen J, Tsang C, Mitra S, et al. 2022. Mental disorder and opioid overdose: a systematic review. *Social psychiatry and psychiatric epidemiology* 57(4):647-671.

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