



## Rural–urban variation in Chronic Obstructive Pulmonary Disease (COPD): Key findings from the New Zealand Atlas of Healthcare Variation

This report presents data from the Atlas of Healthcare Variation to examine differences in the prevalence and management of COPD among people living in rural and urban regions in Aotearoa New Zealand. This supports analysis and monitoring of rural health, aligning with one goal of the New Zealand Rural Health Strategy (Minister of Health 2023).

Chronic Obstructive Pulmonary Disease (COPD) is the fourth most common cause of death in Aotearoa New Zealand, and the third most common cause of death in the Māori population (Asthma and Respiratory Foundation NZ 2024; Health NZ 2024). There is a high and disproportionate burden of disease for Māori and Pacific populations.

### *Key findings*

- COPD prevalence in Aotearoa New Zealand has increased over time with about 66,000 people were estimated to have COPD<sup>1</sup> in 2023.
  - COPD prevalence was lowest in the most urban region (urban 1) across all age groups for European/Other. Among Māori, this pattern was observed but not consistently statistically significant across all age groups.
  - Hospital admissions with a primary diagnosis of COPD were lowest in all rural areas
  - Influenza vaccination rates in people with COPD were lowest in the most rural areas (rural 2 and rural 3)
- Across all rural-urban settings, compared to European/Other, Māori:

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<sup>1</sup> People were identified as having COPD if they had a hospital admission with any diagnosis of COPD, or if they had any dispensing of long-acting muscarinic agonists (LAMA) along or in combination with long-acting beta agonists (LABA) and inhaled corticosteroids (ICS). To increase diagnostic certainty and reduce the contribution from asthma, only adults aged 45 years or over are included.

- had a higher prevalence of COPD
- were less likely to receive an influenza vaccine
- were more likely to regularly receive a short-acting bronchodilator agonist (SABA) alone.

## **Method**

The COPD Atlas reports data from existing national collections, including the National Minimum Dataset, the Pharmaceutical Collection, and the Primary Health Organisation Enrolment Collection. It highlights demographic and regional differences in COPD, such as prevalence, medication use, and hospital admissions.

### **Geographical Classification for Health**

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

The Geographical Classification for Health 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 it, 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 the Geographical Classification for Health files with the domicile code information in our national datasets. For more information on methodology:

[Atlas of Healthcare Variation Methodology – hpsc.govt.nz/Methodology-COPD-Atlas-2025](https://hpsc.govt.nz/Methodology-COPD-Atlas-2025)

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

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

## Ethnicity and statistical significance

Ethnicity data is presented using total response ethnic groups, meaning individuals identifying with more than one ethnicity are included in each group. For example, a person identifying as both Māori and European is counted in both groups.

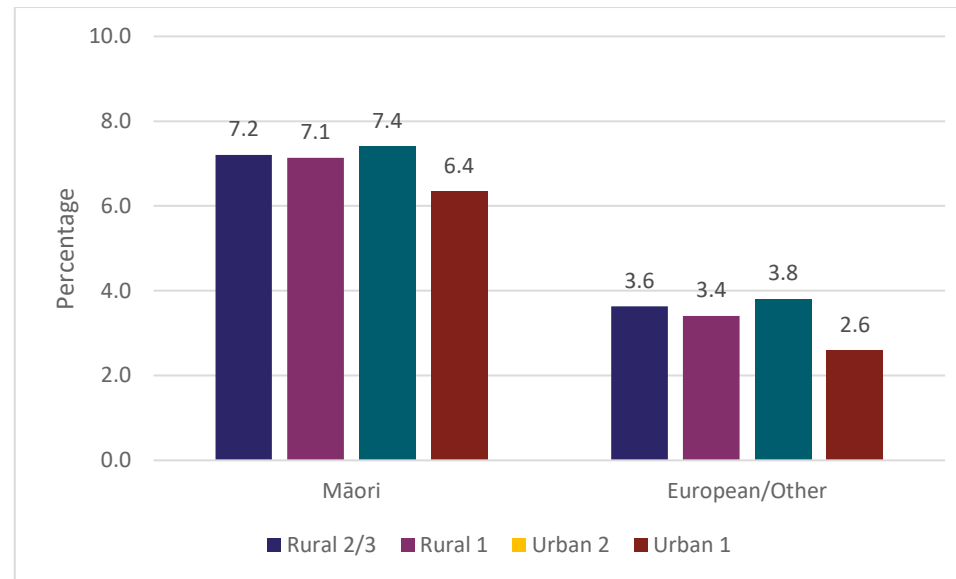
We used this approach when comparing groups such as Māori and European/Other, but it means these groups are not mutually exclusive. Most standard statistical methods assume mutually exclusive group membership. Therefore, confidence intervals used to determine statistically significant differences between ethnic groupings should be interpreted with caution, as this assumption does not hold under total response ethnicity.

## *COPD prevalence*

About 66,000 of the Primary Health Organisation (PHO) enrolled population aged 45 years or over had COPD in 2023, an increase of nearly 20,000 people from 2018. Across all age groups, Māori had the highest estimated rate of COPD, at 6.9 percent, while the Asian population had the lowest rate, at 0.7 percent. See [the COPD Atlas of Healthcare Variation](#) for more results.

## By rurality

- Estimated COPD prevalence was significantly higher for Māori than European/Other irrespective of rurality.
- Among European/Other, COPD prevalence was significantly lowest in the most urban region (urban 1) for all age groups. This pattern, however, was not consistent for all age categories for Māori.



*Figure 1: COPD prevalence among Māori and European/Other by rurality, as a percentage of PHO enrolled population aged 45 years and over (2023)*

**People admitted to hospital with a primary diagnosis of COPD**

In 2023, nearly 7,400 people (~3.5 per 1,000 of the PHO-enrolled population aged 45 years or over) were admitted to hospital at least once with a primary diagnosis of COPD. This represents about 11.1 percent of those diagnosed with COPD.

- Among those estimated to have COPD, Māori were significantly more likely to be admitted to hospital than those of European/Other, across rural and urban areas.
- Overall, admission rates were lower in those living in rural areas, compared those living in urban regions.

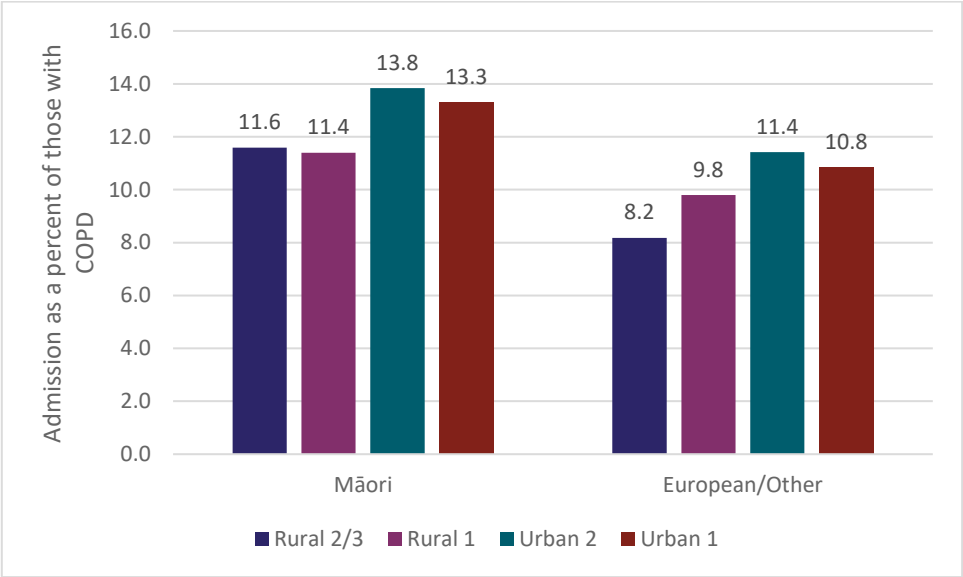


Figure 2: One or more hospital admissions with a primary diagnosis of COPD, of those estimated to have COPD, aged 45 years and over (2023) (percent).

### Regular dispensing of COPD medication

- There were no significant differences within rural and urban setting by age-group or ethnicity for any of the medicine combinations analysed. For example, the regular dispensing rates of SABA monotherapy were significantly higher for Māori compared to New Zealand European/Other. This finding was consistent across all rural-urban categories (see Figure 3).

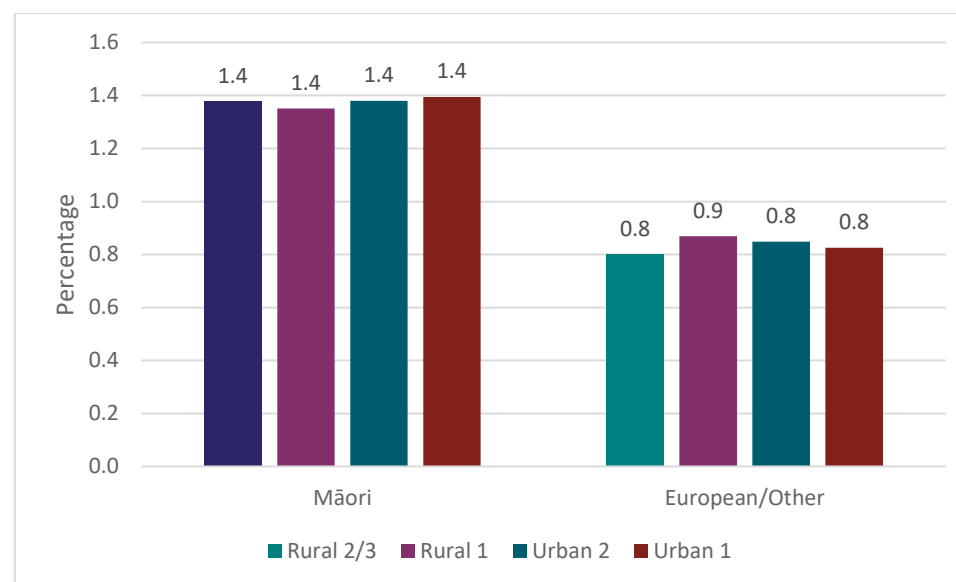


Figure 3: People aged 45 years or over who regularly received SABA alone among PHO enrolled population with COPD aged 45 years and over (2023).

## ***Influenza vaccination***

It's recommended people with COPD have an influenza vaccination as they are at greater risk of severe illness and hospitalisation if they contract influenza. Pharmac funds the influenza vaccine for this group. For more information on eligibility criteria for influenza vaccination, visit [2025 flu season – pharmac.govt.nz](https://www.pharmac.govt.nz/2025-flu-season)

In 2023:

- the influenza vaccination rate among people with COPD aged 45 and over and enrolled in a PHO was 59 percent, a decrease from 66 percent in 2022
- older people aged 75 years or over had the highest rates at 74 percent, compared to 35 percent for those aged 45–64 years and 62 percent for those aged 65–74 years
- Māori had significantly lowest vaccination rate than European/Other, for example, Māori (61 percent) aged 75 years or over significantly less likely to receive influenza vaccination when compared to European/Other counter parts (76 percent).

## **By rurality**

There were consistent differences by ethnic grouping in influenza vaccination rates, with Māori having significantly lower rates than European/Other across all age groups.

People living in most urban (urban 1) regions have highest vaccination rates across all age groups. When vaccination rates are viewed by age, rurality and ethnicity, large differences are evident. For example, 25 percent of Māori aged 45 to 64 years living in R3 received a vaccination compared with 77 percent of European/Other aged 75 and over living in most urban region.

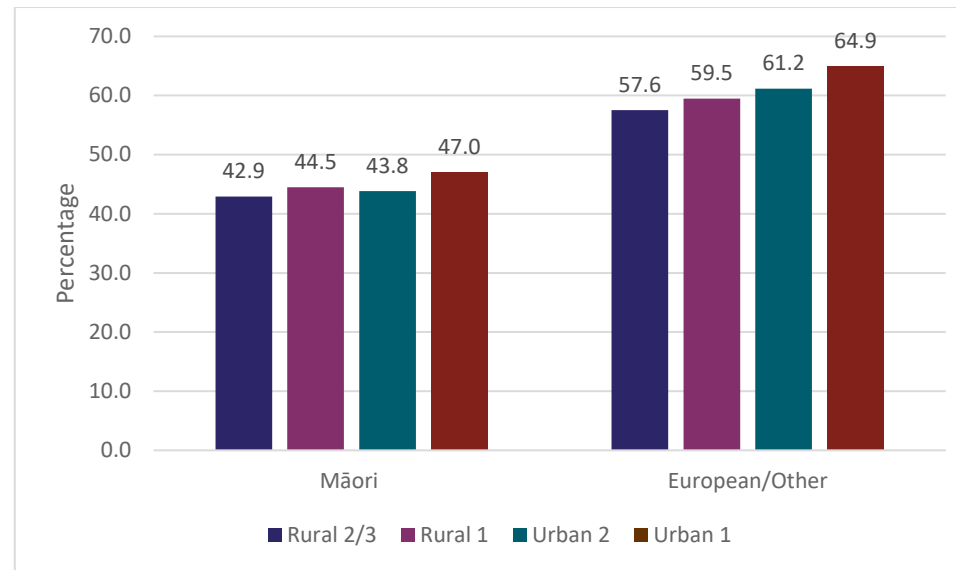


Figure 4: People aged 75 years or over with COPD who received an influenza vaccination in the year, by rurality and ethnicity (2023).

## Discussion

This study found COPD prevalence in Aotearoa New Zealand has increased over time. This increase is likely to be due to:

- a combination of improved uptake of medications
- better reporting and diagnosis
- increased disease burden, potentially linked to ageing population.

Across all rural and urban locations, Māori were more likely to have COPD than European/Other.

COPD hospital admission rates were lower among people living in rural regions. This may reflect less severe disease or delayed recognition of COPD flare-ups, potentially leading to later or fewer hospitalisations.



People living in rural regions have lower influenza vaccination rates, which may indicate barriers such as fewer vaccination sites, limited public health outreach, or lack of tailored programmes.

Targeted and culturally appropriate interventions aiming at improving vaccination coverage in rural areas might focus more on:

- tailoring public health campaigns to local needs
- increasing awareness about the importance of prevention (such as vaccination)
- making vaccination more accessible through mobile clinics or community events.

This could help bridge the gap in preventive care, which might ultimately reduce future exacerbations of COPD and the need for hospitalisations.

Studies suggest that socioeconomic differences between rural and urban populations likely contribute to disparities in health outcomes (Whitehead et al. 2023). People living in rural areas may face additional challenges such as lower income, reduced access to healthcare – all of which can impact COPD diagnosis, treatment, and disease management.

These challenges often intersect with ethnicity, particularly for Māori, compounding existing inequities. Further research is needed to better understand how rurality, socioeconomic status, and ethnicity interact to influence the quality and accessibility of care for people with COPD, and to inform equity-focused interventions.

## **References:**

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3. References: 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>
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