# Access to safe drinking water

This report presents information on the population who have access to safe drinking water in New Zealand. Access to safe drinking water is measured by access to drinking water that meets core safety provisions and is free from excess biological and chemical contamination levels.

## Key facts

- In 2024, about 4.5 million New Zealanders (83.5% of the population) received water from registered drinking water sources. Only 3.8 million (70.9% of the population) received water that met all three core barrier treatments necessary for safe water.

- The most common substances to exceed the limits for acceptable levels of contaminants in drinking water were 'byproducts of the disinfection process', followed by aluminium, arsenic, lead and chlorine. It is not possible to accurately quantify the number of people potentially exposed due to data availability issues.

## Understanding supplies vs. zones

New Zealand's drinking water supply network is split into two organisational levels – **supplies** and **zones**.

**Supplies** generally service an entire city/town/small area, and are the primary level of organisation at which most water quality and regulatory data is now reported. However, they do not necessarily equate to a specific water source or treatment facility. **Distribution zones** are subsections of supplies that reflect the areas served by actual water infrastructure. This means that a city may be served by a single 'supply', but this one supply will consist of multiple zones and treatment plants serving different areas of the city.

This report uses data at both the supply and zone levels, depending on what has been made available by the Water Services Authority – Taumata Arowai ('the Authority').

## What determines 'safe' drinking water?

Safe drinking water is vital for human health. The presence of pathogens or chemicals in our water may render that water unsafe to drink. Safe source selection and treatment of drinking water can ensure that the water is safe. Registered drinking water supplies in New Zealand must be regularly tested for microbiological and chemical compliance with the Drinking Water Standards for New Zealand.

The Authority (2025a) lists three primary indicators of the safety of a water distribution zone, all of which are supported by legislation.

- The water supply should be fitted with a means of preventing protozoa such as *Cryptosporidium* from contaminating it, a '**protozoa barrier**'.
- The supply should feature a means of preventing bacterial contamination (e.g. from *E. coli)*, referred to as a '**bacteria barrier**'.
- The supply should add a low concentration of a disinfecting agent, such as chlorine, to protect against microbiological contaminants that may remain or enter after the water

leaves the treatment facility. This is known as '**residual disinfection**'.

These core requirements are different from the compliance indicators that EHINZ has previously reported on. The Ministry of Health created those previous measures when it was the regulatory body overseeing water quality, and the Authority does not publish directly equivalent measures.

## About 70% of New Zealanders get water that meets three core safety measures

About 4.5 million New Zealanders (83.5% of the population) received water from registered drinking water supplies during 2024. The remainder (16.5%, 879,000 people) received water from very small community supplies (typically serving fewer than 100 people) or sourced their water from 'self-supplies' (such as rainwater tanks).

Of the population on registered supplies, 88.6% (4.0 million people) received water from a distribution zone equipped with a protozoa barrier, 97.1% (4.3 million) from a zone with a bacteria barrier, and 95.6% (4.3 million) were served drinking water treated with a residual disinfectant.

Altogether, 84.8% of the population on registered supplies (3.8 million, or 70.9% of New Zealand's total population) received water from a distribution network that met all three core requirements. (Table 1).

**Table 1: Estimated population who had access to safe drinking water, 2024**

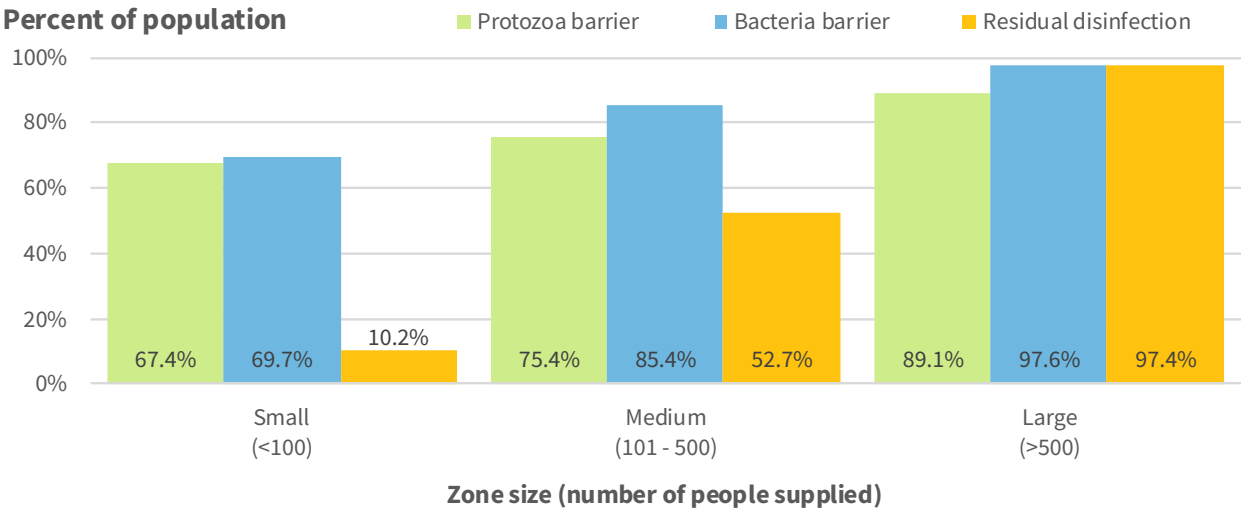
| Safety Measures | Estimated population served | Percent of population on registered supplies | Percent of total population |
|---|---|---|---|
| Protozoa barrier in place | 3,967,636 | 88.6% | 74.1% |
| Bacteria barrier in place | 4,347,493 | 97.1% | 81.2% |
| Residual disinfection applied | 4,279,670 | 95.6% | 79.9% |
| **All measures present** | **3,800,557** | **84.8%** | **70.9%** |
| **Total population on registered supplies** | **4,478,560** | **100.0%** | **83.5%** |
| Population not on registered supplies | 878,140 | – | 16.5% |
| **Total population** | **5,356,700** | **–** | **100.0%** |

Note: This analysis treats a requirement not being applicable equally to failing to meet it and considers all zones that served one or more people. Population estimates in this table are based on the estimated population of distribution zones and may double-count people who access water from multiple sources.
Source: Water Services Authority – Taumata Arowai 2025c, Statistics New Zealand

## Larger zones are more likely to meet core safety requirements

Distribution zones that serve fewer than 500 people were less likely to provide drinking water that met the core requirements, compared with larger supplies (Figure 1a). This will likely reflect increased compliance costs per capita in smaller areas (Ministry of Health 2021). Smaller supplies (often composed of single zones) tend to be in smaller settlements. In contrast, the largest drinking water supplies serve New Zealand's major cities and are operated by well-funded local authorities.

**Figure 1a:** **Population on registered community drinking-water supplies that had access to safe drinking water, 2024, by zone size**

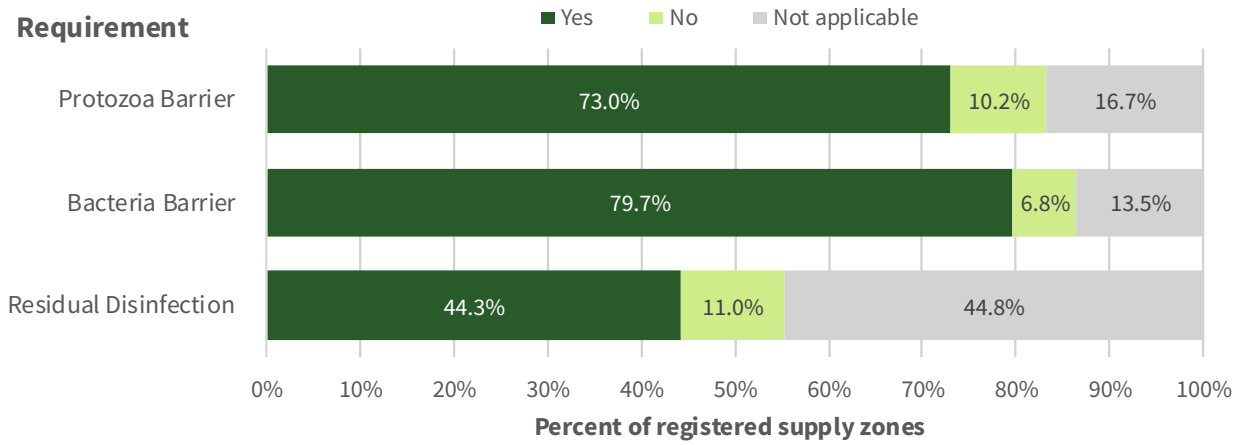



Note: These data are based estimated population of distribution zones and may double-count people who access water from multiple sources. Zones are used instead of supply sizes to increase the precision of the underlying counts. The size categories are based on supply size categories used by the Water Services Authority. They do not conform to the sizes used in previous editions of this report, which uses size classifications created by the Ministry of Health.
Source: Water Services Authority – Taumata Arowai 2025c

The low use of residual disinfection in smaller zones reflects this requirement not always being applicable to these supplies. For instance, supplies that are both reticulated and serve fewer than 100 people have no minimum requirement for disinfection; supplies may rely on end-point treatment (ie. the point where water is consumed) as an acceptable alternative solution, and under certain conditions, supplies may apply for a legal exemption (Water Services Authority 2025a) – and supplies without reticulation (typically self-supplying buildings) are not required to disinfect at all according to the Water Services Act 2021.

Thus, almost half of all registered zones are marked ‘not applicable’ with regard to residual disinfection in the Authority’s records (Figure 2).

**Figure 2:** **Distribution of water safety measures amongst distribution zones, 2024**




Note: Some zones are excluded from this analysis for reasons outlined in the ‘data for this indicator' section.
Source: Water Services Authority – Taumata Arowai 2025c

**Table 2: Number of distribution zones with or without core safety features, 2024**

| Safety Measures | Protozoa barrier | Bacteria barrier | Residual disinfection |
|---|---|---|---|
| *Small (≤100 people served)* | | | |
| Yes | 390 | 401 | 63 |
| No | 61 | 77 | 105 |
| Not applicable | 165 | 138 | 448 |
| *Medium (101–500 people served)* | | | |
| Yes | 358 | 404 | 219 |
| No | 60 | 23 | 51 |
| Not applicable | 61 | 52 | 209 |
| *Large (>500 people served)* | | | |
| Yes | 351 | 394 | 384 |
| No | 33 | 3 | 9 |
| Not applicable | 25 | 12 | 16 |
| ***Total (all zones)*** | | | |
| **Yes** | **1,099** | **1,199** | **666** |
| **No** | **154** | **103** | **165** |
| **Not applicable** | **252** | **203** | **673** |

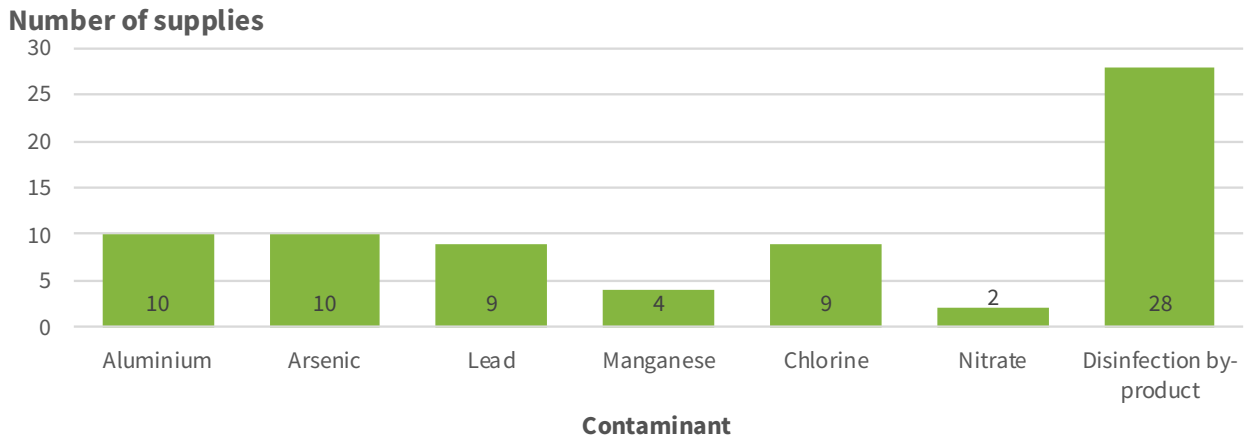
Note: Some zones are excluded from this analysis for reasons outlined in the 'data for this indicator' section. Size categories do not conform to those used in previous editions of this report, which uses size classifications created by the Ministry of Health.
Source: Water Services Authority – Taumata Arowai 2025c

## Fifty-seven supplies reported exceedances of contaminants in 2024

The Authority receives notifications from supply operators when their in-house monitoring detects that their drinking water in one or more distribution zones may be (or is) unsafe, or has exceeded the acceptable levels of certain contaminants. The Authority also receives notifications from laboratories when water samples sent in for further testing confirm the presence of bacterial or chemical contamination.

In 2024, 57 supplies informed the Authority that their drinking water (in one or more distribution zones) either certainly had (confirmed by testing) or might have become (suspected but not confirmed) unsafe on at least one occasion (Figure 3). The most common contaminants with exceedances (based on MAV, Maximum Acceptable Value) reported by supplies were disinfection by-products, followed by aluminium and arsenic, and lead and chlorine.

**Figure 3: Number of supplies that submitted notifications for MAV exceedances, 2024**




Note: MAV means Maximum Acceptable Value.
Source: Water Services Authority – Taumata Arowai 2025b

## Poor data precludes knowing precise population exposed to contaminants

From a public health perspective, it is valuable to know the number of people exposed to drinking water that was potentially unsafe.

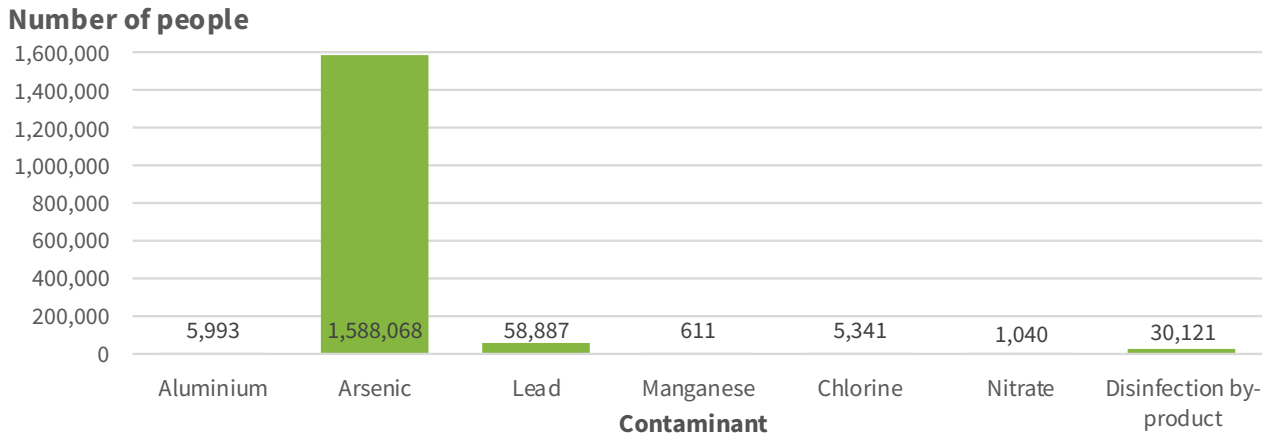
However, we do not have information about the specific distribution zones affected by exceedances, so it is difficult to know how many people have been exposed. The Water Services Authority is unable to provide information on MAV exceedances or consumer advisories in connection with which distribution zones were affected (2025c) and the population served by those zones. This means that we cannot provide precise estimates of the populations exposed to unsafe drinking water.

At best, we can provide the maximum possible number of people who were exposed, as the number of people on the registered supplies with reported exceedances. These population numbers provide an upper limit to the number of exposed individuals, but are likely to overestimate the true number of people exposed.

Figure 4 shows the number of people using registered supplies that submitted notifications of MAV exceedances in 2024. The contaminant with the highest number of potentially exposed people was arsenic. This is due to the Auckland supply (serving a population of 1.4 million people) reporting an exceedance of arsenic in 2024.

However, not every person using the Auckland supply will have been served water with excess arsenic levels, because not all are served by the same distribution network - even though those networks are treated as a single supply for administrative purposes. In reality, the excess arsenic will likely relate to a single distribution zone within the supply, and the actual number of people affected could be low (as low as 100 or fewer).

**Figure 4: Upper limit estimates for people served by supplies that submitted notifications for MAV exceedances, 2024**




Note: MAV means Maximum Acceptable Value. These figures give an upper limit of the number of people exposed to contaminated water, but are highly likely to be overestimates, as not everyone on the supply will be within the affected distribution zone(s).
Source: Water Services Authority – Taumata Arowai 2025b

These estimates of exposed population are based on supply-level data, and are therefore almost certainly overestimates. This highlights a major flaw in using data aggregated to supply-level for population estimates. We consider that any population estimates need to be at the distribution zone level in order to be suitable for public health surveillance. However, this data cannot be made available by the regulator.

When the responsibility for reporting on drinking water supply performance was held by the Ministry of Health, specific figures were available for the number of people within the wider supply population affected by shortfalls in performance (Ministry of Health 2021). These data are no longer available with the transfer of responsibility to the new regulator. Consequently, the Authority's data is not a reliable source of data for public health surveillance of the population exposed to poor quality drinking water. The data that the Authority is able to release is most suited to quantifying the performance of water suppliers. – but not the population exposed to poor quality drinking water.

## Data for this indicator

This indicator presents information based on analysis of the supply-level summary dataset for the 2024 *Drinking Water Regulation Report*, published on Water Services Authority – Taumata Arowai's website, as well as zone-level summary data provided to EHINZ at our request.

The analyses used for this report include all registered supply types, including private community supplies, but exclude 250 single-zone supplies as they lacked associated population data, making them unusable for population analysis. Almost all of these were private community supplies, with 8 council-operated supplies, one Defence Force supply and one Ministry of Education supply making up the minority remainder.

A further two zones (serving 513 people between them and thus an insignificant portion of the total population) are excluded from the information presented Figures 1 & 2 and Tables 1 & 2, on the grounds that their records appeared to indicate they were either inactive in 2024, (stating 'No active plants' regarding their bacterial treatment), or their records were not submitted correctly ('Missing plant or Zone'/'No valid source-plant relationships' for their protozoal/residual disinfection status respectively)

For additional information, see the Metadata sheet.

## References


Ministry of Health. 2021. *Annual Report on Drinking-water Quality 2019–2020*. Wellington: Ministry of Health.

Water Services Authority – Taumata Arowai. 2025a. *Drinking Water Regulation Report 2024.* Wellington: Water Services Authority|Taumata Arowai.

Water Services Authority – Taumata Arowai. 2025b. *Supply Summary Dataset (2024).* Wellington: Water Services Authority|Taumata Arowai. URL: https://www.taumataarowai.govt.nz/about-us/reports-and-publications/water-services-insights-and-performance. Accessed: 07/10/2025.

Water Services Authority – Taumata Arowai. 2025c. *Distribution zone level data extract.* Created 22/09/2025 and provided to EHINZ through personal communication with Water Services Authority analysts.


## Explore geographic data on interactive dashboards:

Water domain dashboard

EHINZ dashboard

## Previous surveillance reports:

2023

2021

2018

2017

## Other related topics include:

Waterborne diseases related to drinking-water

Access to fluoridated drinking-water

Oral health of children

## Disclaimer



## Author


The author of this report is Patrick Hipgrave, ehinz@massey.ac.nz


## Citation

Environmental Health Intelligence. 2025. *Access to safe drinking-water*. [Surveillance Report]. Wellington: Environmental Health Intelligence NZ, Massey University.

Visit the EHINZ website

Subscribe to our newsletter