Hazardous substances notifications

This factsheet presents a national indicator, which allows us to monitor injuries from hazardous substances.

Key facts

- In 2020, there were 44 (32 adults and 12 children) hazardous substances notifications. The rate for adults in 2020 was the lowest since 2014, while the rate for children has halved since 2018.
- Males and females aged under 25 years have similar rates of hazardous substances notifications in 2014–20.
- There was a statistically significant drop in the hazardous substances notification rate for children under five years only in 2020.
- Pacific peoples had a slightly higher hazardous substances notification rate than other ethnic groups in 2014–20.
- The hazardous substances notification rate was higher in the most deprived areas (NZDep 2018 quintile 5) than the least deprived areas (NZDep 2018 quintile 1) in 2014–20.
- Carbon monoxide and ammonia were the most commonly notified substances in 2020.
- Four of the incidents involved storage of chemicals in an inappropriate container in 2020. Three of these were children under ten years old.
- The majority of the hazardous substances injuries notified were unintentional across all age groups in 2014–20.

Injury from hazardous substances is an important public health problem

In New Zealand, any injury or disease caused by hazardous substances must be notified to the Medical Officer of Health. Examples of cases that should be reported include:

- a fireworks injury
- ingestion of cleaning products or cosmetics by children
- poisoning with agrichemicals (including spraydrift incidents)

- unintentional carbon monoxide poisoning
- illness caused by exposure to solvents or chlorine
- contact dermatitis due to chemicals
- huffing of butane and other hydrocarbons.

Many substances can be found in the kitchen, bathroom, workplace, garage or utility shed. If users do not follow label instructions, this can lead to injuries from hazardous substances (Ministry of Health 2019). Adverse health effects can be acute (short term) or chronic (long term). Typical acute health effects include headache, nausea or vomiting, and skin corrosion, while chronic health effects include asthma, dermatitis, nerve damage or cancer (Worksafe 2017).

Children, particularly under five years old are at much greater risk from hazardous substances exposures than any other age groups. For more information, see the '**Unintentional hazardous substances exposures in children (0– 14 years)**' factsheet.

This factsheet reports on hazardous substance injury notifications from the Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) which was developed in 2013. It includes data on substances covered by the Hazardous Substances and New Organisms Act (HSNO) 1996 and Health Act 1956.

A hazardous substance is any substance that has any of the following hazardous properties:	**A hazardous substance does NOT include:**
Explosive Toxic Oxidises Flammable Corrosive	Medicine in finished dose form Alcohol when classified as food item Chemical toxins associated with food (food poisoning) Radioactive materials Manufactured items (eg, button batteries)

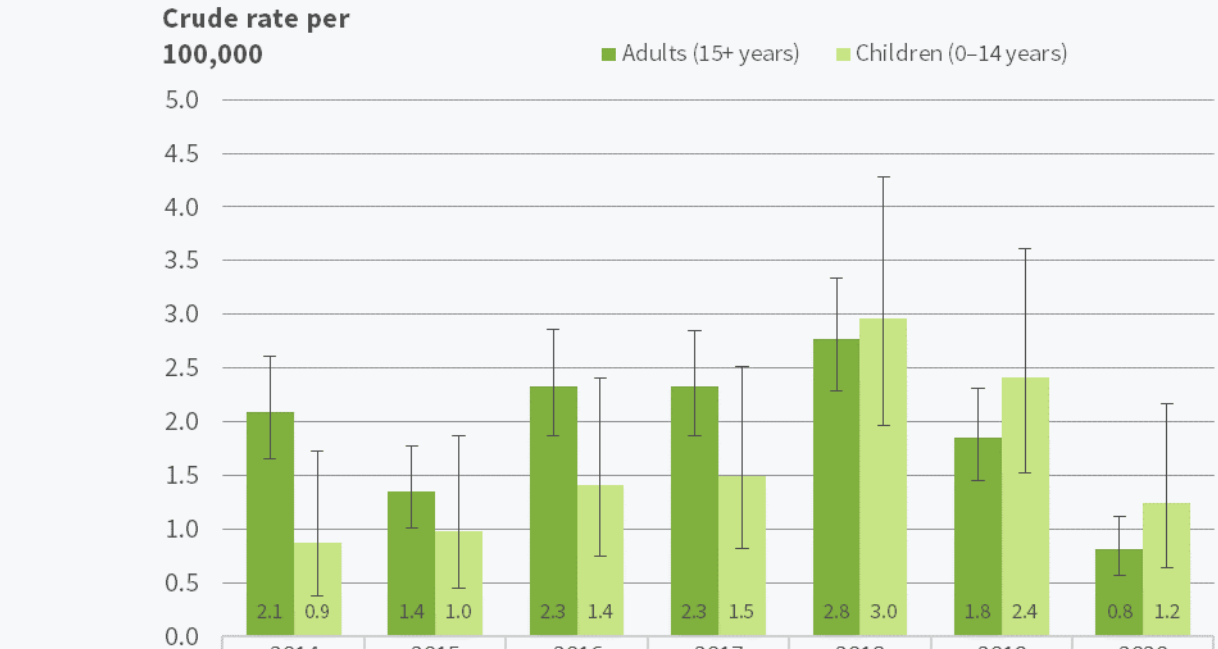
Adult notification rate was the lowest since 2014, while the rate for children has halved since 2018

There were a total of 44 hazardous substance notifications in 2020, 32 of which were adults (15 years and over), and 12 were children (0 to 14 years) (Figure 1).

The hazardous substances notification rate for adults in 2020 (0.8 per 100,000) was the lowest since 2014. The rate for children remained fairly stable between 2014 and 2017, but increased in 2018. Since then, the rate has halved, dropping from 3.0 per 100,000 in 2018 to 1.2 per 100,000 in 2020.

Lower notification rates in 2020 for both adults and children may have been impacted by the COVID-19 nationwide lockdown.

Figure 1: Hazardous substances notification rate, by age group, 2014–20 (crude rate per 100,000)



	2014	2015	2016	2017	2018	2019	2020
Adults (15+ years)	2.1	1.4	2.3	2.3	2.8	1.8	0.8
Children (0–14 years)	0.9	1.0	1.4	1.5	3.0	2.4	1.2
Adult count	77	51	90	92	112	76	32
Children Count	8	9	13	14	28	23	12

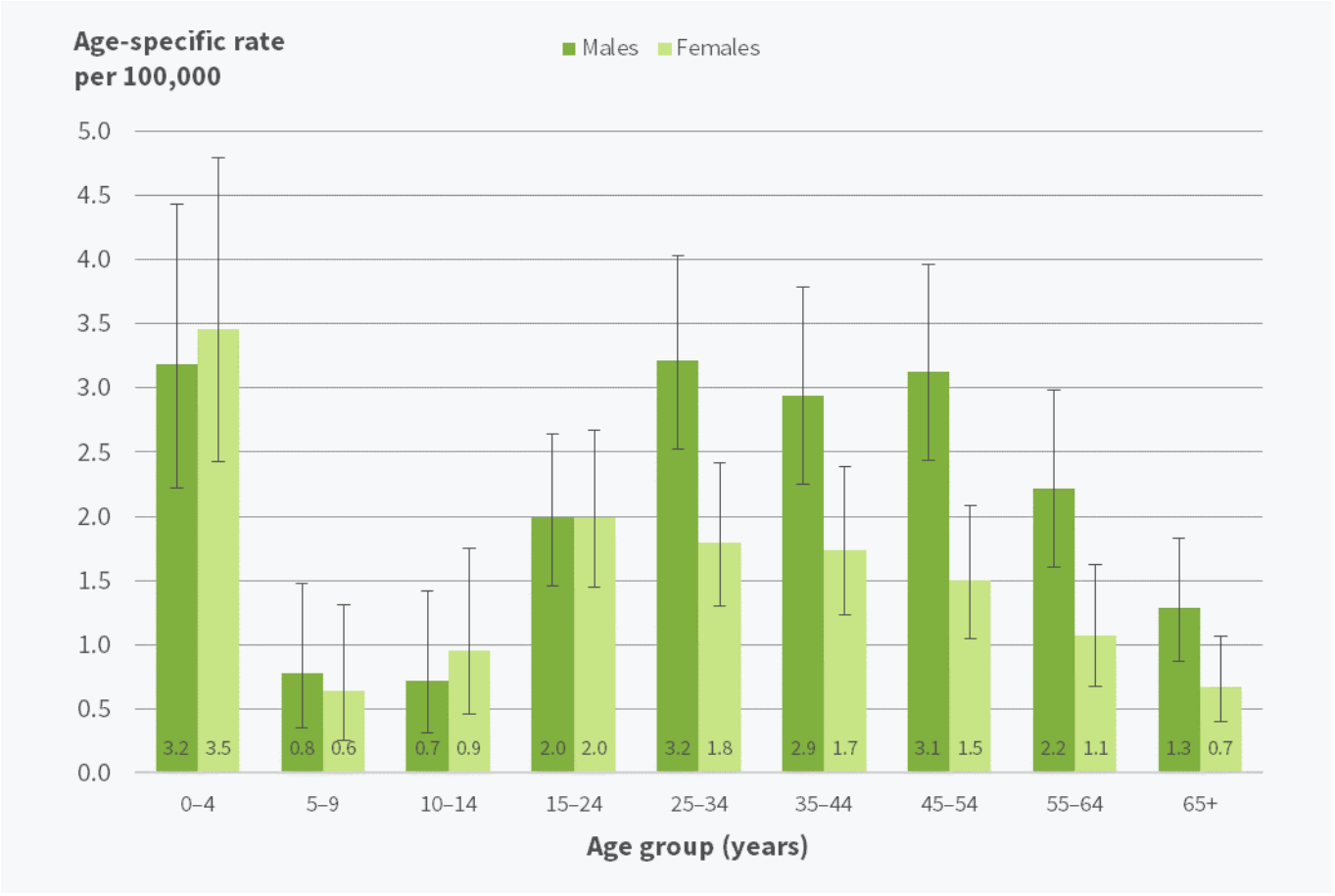
Note 1: Cases where age was unknown or not entered have been excluded from the above graph.
Note 2: 95% confidence intervals have been presented as error bars. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

Males and females aged under 25 years have similar rates of hazardous substances notifications in 2014–20

In 2020, the majority (61.4%) of the hazardous substances notifications were males (27 notifications). Since 2014, the percentage of notifications in males ranges from 53–65%.

From 2014–20, males and females aged under 25 years have similar rates of hazardous substances notifications (Figure 2). However, for people aged 25 years and over, the notification rates were statistically significantly higher for males than females.

Figure 2: Hazardous substances notification rate, by sex and age group, 2014–20 (Age-specific rate per 100,000)

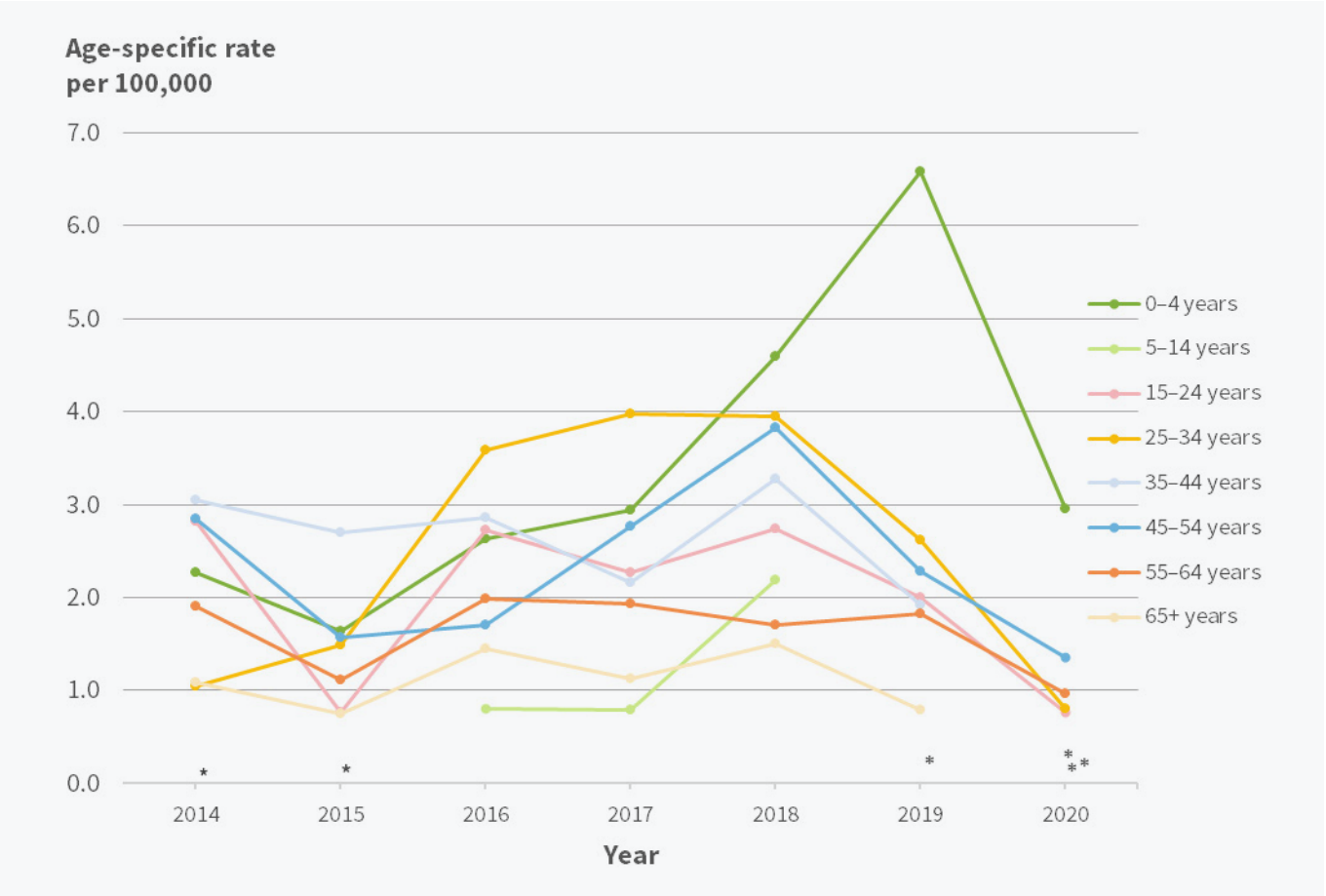


Note: 95% confidence intervals have been presented as error bars. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

A significant drop in the hazardous substances notification rate for children under five years in 2020

In 2020, the hazardous substances notification rate in the 0–4 year age group has dropped significantly, from 6.6 per 100,000 (20 notifications) in 2019 to 2.9 per 100,000 (9 notifications) in 2020. In that year, although the rates were somewhat have decreased in other age groups, but the decrease were not statistically significant (Figure 3).

Figure 3: Hazardous substances notification rate, by age group, 2014–20 (Age-specific rate per 100,000)



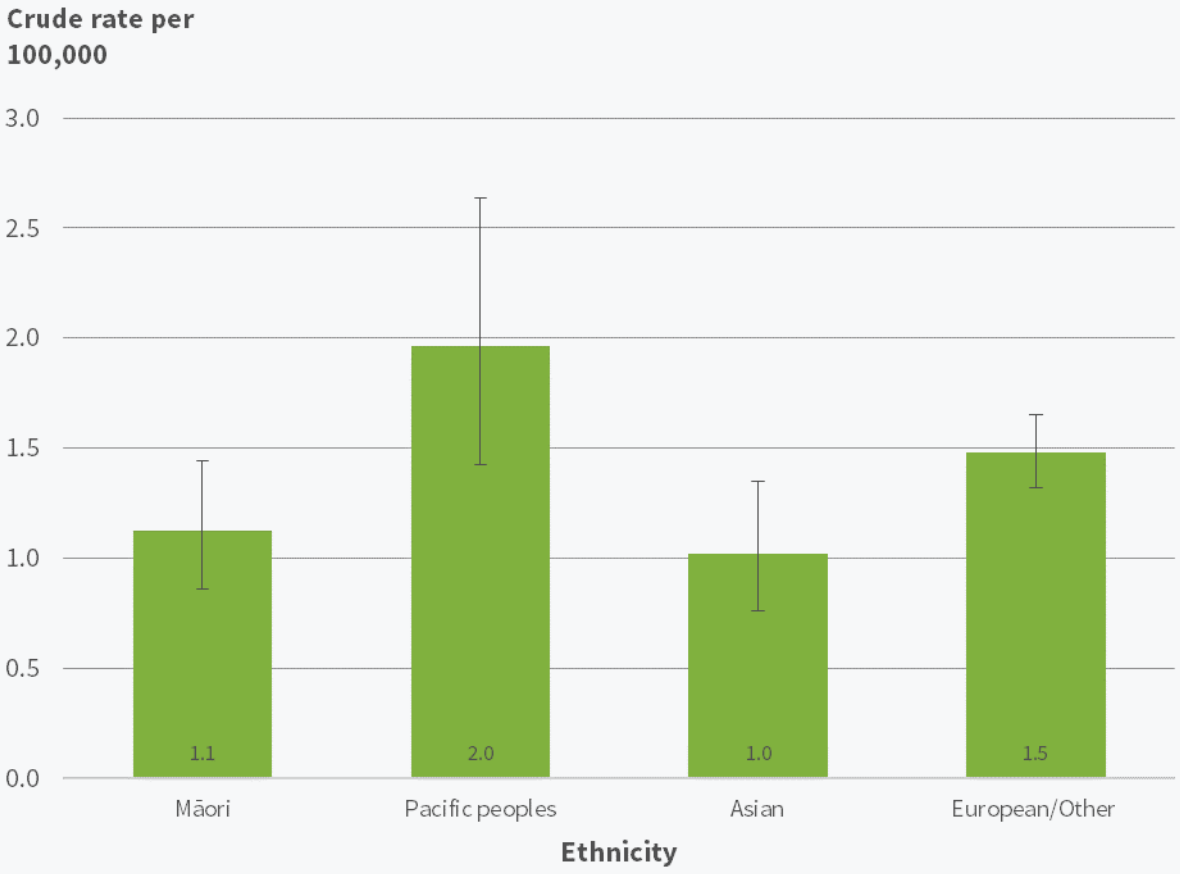
Note: *The rate is suppressed due to an unreliable estimate with small numbers. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

Pacific peoples had a slightly higher hazardous substances notification rate than other ethnic groups

In 2020, of the 40 notifications with known ethnicity, 72.5% (29) were of European/Other ethnicity, 17.5% (7) were Pacific peoples, 5.0% (2) were Māori and 5.0% (2) were Asian.

In 2014–20, Pacific peoples had a slightly higher hazardous substances notification rate than other ethnic groups, with the rate of 2.0 per 100,000 (44 notifications) (Figure 4).

Figure 4: Hazardous substances notifications rate, by ethnicity (prioritised), 2014–20 (crude rate per 100,000)



Note: 95% confidence intervals have been presented as error bars. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

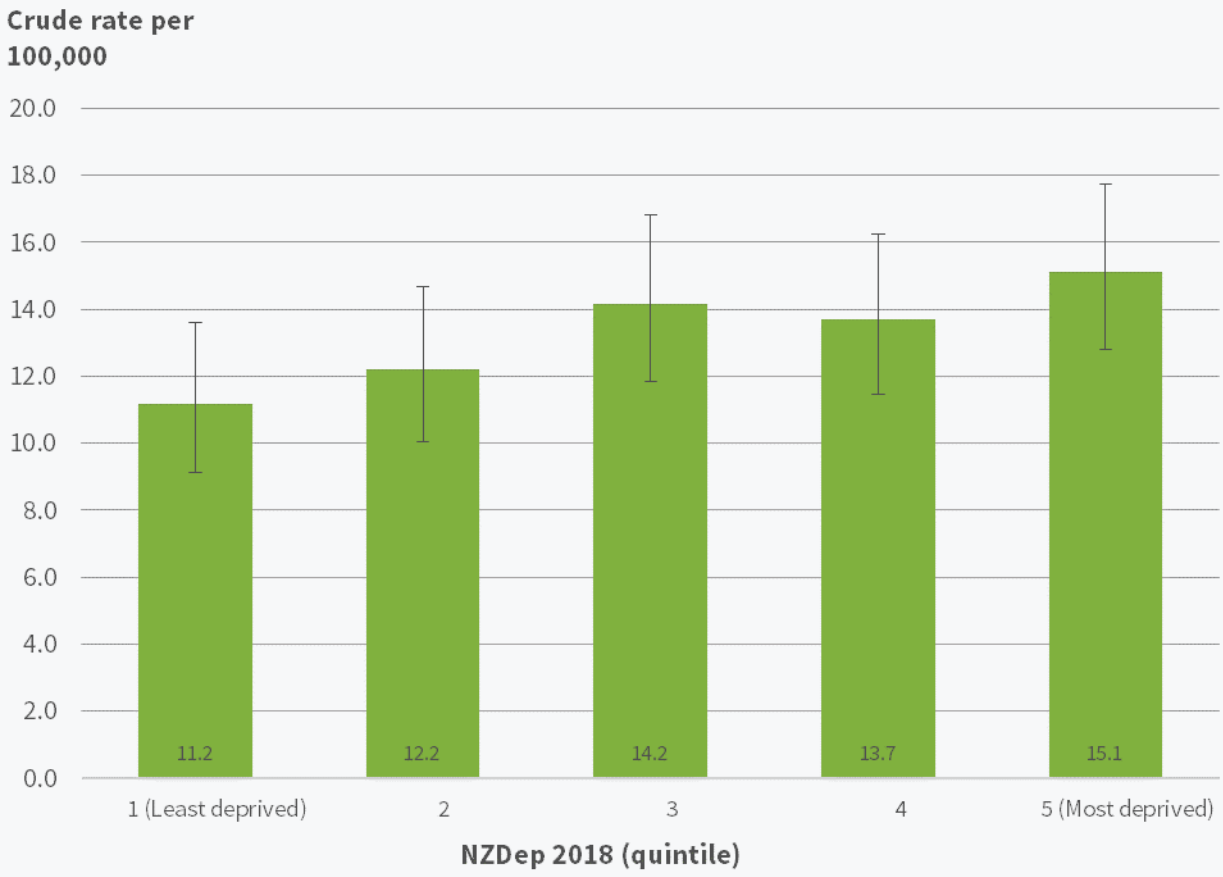
Higher hazardous substances notification rates in the most deprived areas

In 2020, of the 42 notifications with known level of socioeconomic deprivation in New Zealand:

- 28.6% (12) of the people were living in quintile 2
- 28.6% (12) were in quintile 3
- 19.0% (8) were in quintile 5
- 14.3% (6) were in quintile 4 and
- 9.5% (4) were in quintile 1.

In 2014–20, there is an increasing rate of hazardous substance injury notifications with increasing NZDep Quintile levels (from least deprived to most deprived) (Figure 5).

Figure 5: Hazardous substances notification rate, by NZ Deprivation 2018 quintiles, 2014–20 (crude rate per 100,000)

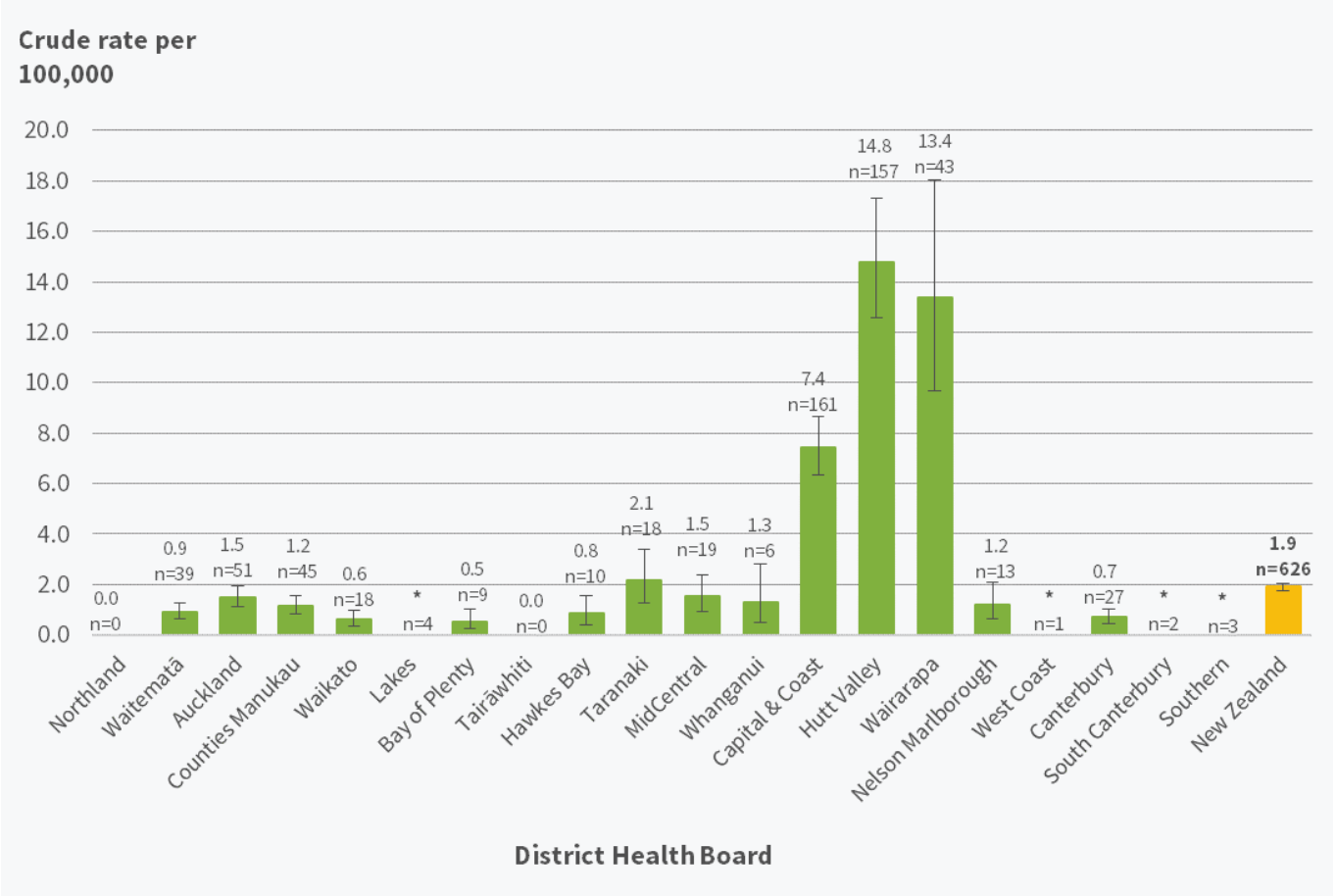


Note: 95% confidence intervals have been presented as error bars. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

Higher hazardous substances notifications rates in Hutt Valley, Wairarapa and Capital & Coast DHBs

In 2014–20, people living in the Hutt Valley, Wairarapa and Capital & Coast DHBs had higher rates of hazardous substances notifications compared to other DHBs (Figure 6). This was the same in 2014–19. These are most likely due to increased use of the HSDIRT in these areas rather than an increased exposure to hazardous substances. Rates in Lakes, West Coast, South Canterbury and Southern DHBs were suppressed due to low numbers of notifications (<5) reported.

Figure 6: Hazardous substances notification rate, by District Health Board, 2014–20 (crude rate per 100,000)



Note 1: 95% confidence intervals have been presented as error bars. See Metadata for more information on how to interpret this graph.
Note 2: *The rate is suppressed due to an unreliable estimate with small numbers. See Metadata for more information on how to interpret this graph.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

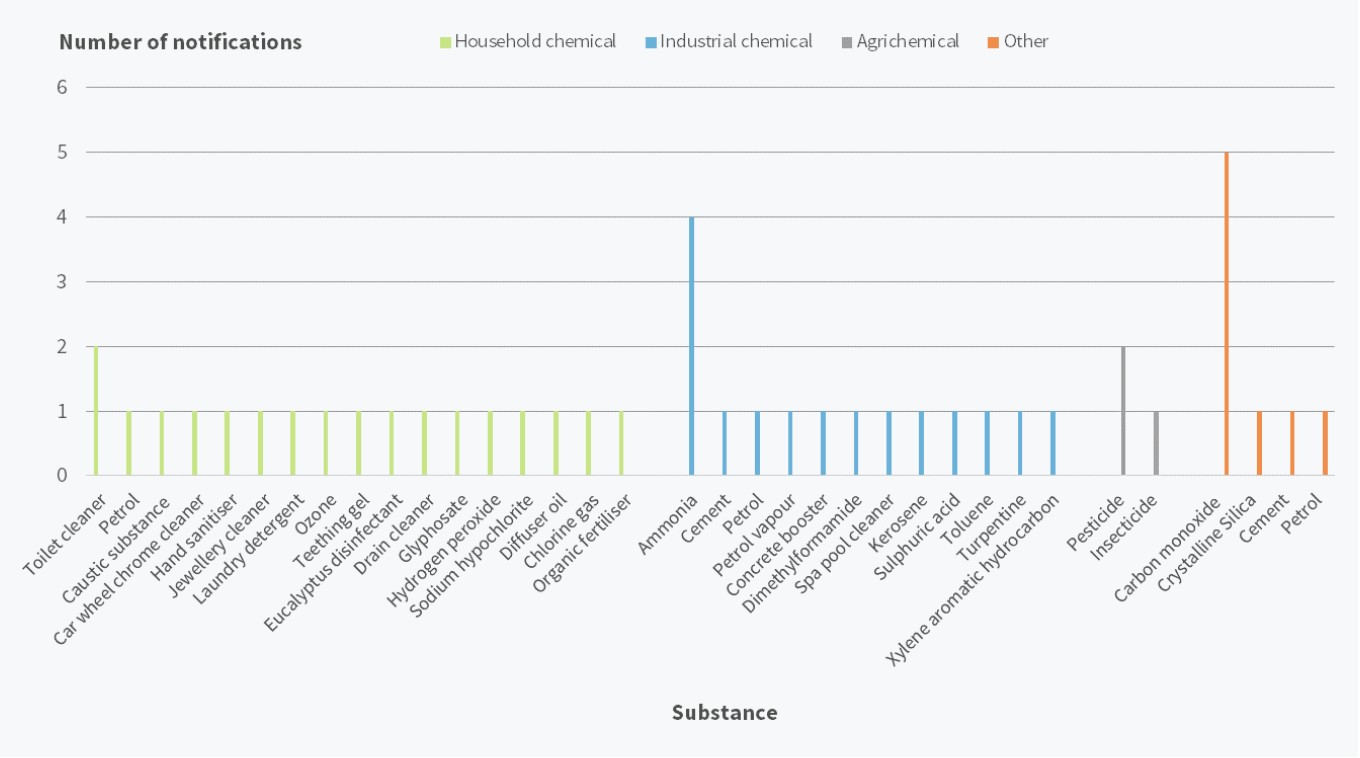
Ammonia and carbon monoxide were the most commonly notified substances in 2020

In 2020, the most commonly identified substances were carbon monoxide (5 notifications) and ammonia (4 notifications) (Figure 7). In 2019, bleach/sodium hypochlorite, carbon monoxide and cleaning agent were the mostly commonly reported substances.

In 2020, 40.9% (18) of the substances were household chemicals, 36.4% (6) were industrial chemicals, 15.9% (7) were other chemicals and 6.8% (3) were agrichemicals.

In 2020, there were four incidents where accidental ingestion occurred due to inappropriate storage of chemicals in bottles other than their original containers. Three of these were children under the age of ten years old.

Figure 7: Number of hazardous substances notifications, 2020



Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

Although the most commonly notified place of injury was at home, 25–54 year old males had a higher percentage of injury at the workplace in 2014–20

In 2014–20, although the most commonly notified place of injury was at home (46.7%, 297 notifications), males in the 25–54 years age group had a higher percentage of injury at the workplace compared with females of the same age group (42.1% vs 30.7%) (Table 1). For children under five, 83% of the injuries occurred in the home, because that's where they spend most of their time (BPAC 2014).

Table 1: Number of hazardous substances notifications, by exposure place, age group and sex, 2014–20

	0–4 years		5–14 years		15–24 years		25–34 years		35–44 years		45–54 years		55–64 years		65+ years			
Exposure place																	**Unknown age**	**Total**
Home	29	30	7	9	15	14	25	18	23	19	24	18	15	11	18	15	7	297
Workplace	1	0	0	0	19	16	37	15	22	10	29	10	17	8	2	1	11	198
Public place	1	0	1	0	2	2	4	0	4	0	2	3	2	1	1	1	0	24
School/ Early childhood centre	0	0	6	6	0	2	0	1	0	0	0	0	0	0	0	0	0	15
Other	0	1	2	0	2	3	0	1	1	3	6	1	2	1	3	1	0	27
Unknown exposure place	4	5	1	2	9	5	11	6	12	6	9	3	7	1	8	0	0	89
Total	**35**	**36**	**17**	**17**	**47**	**42**	**77**	**41**	**62**	**38**	**70**	**35**	**43**	**22**	**32**	**18**	**18**	**650**

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

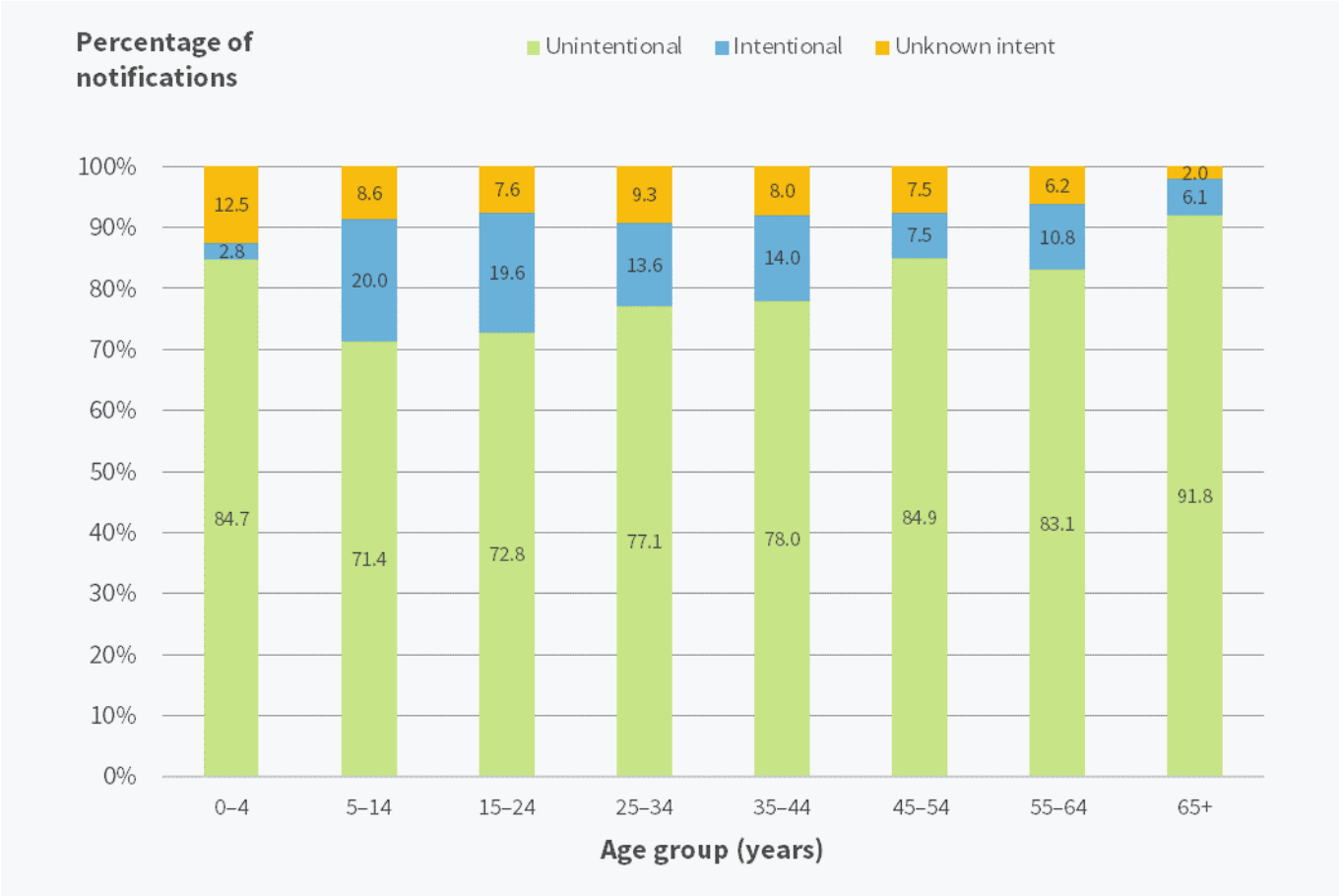
Key	
	Male
	Female

The majority of hazardous substances injuries notified were unintentional across all age groups in 2014–20

When investigating hazardous substances injuries, intent is categorised as either intentional, unintentional or unknown by the public health unit.

In 2014–20, the majority of the hazardous substances injuries notified were unintentional across all age groups (Figure 8).

Figure 8: Hazardous substances notifications, by intent and age group, 2014–20 (% of total notifications)

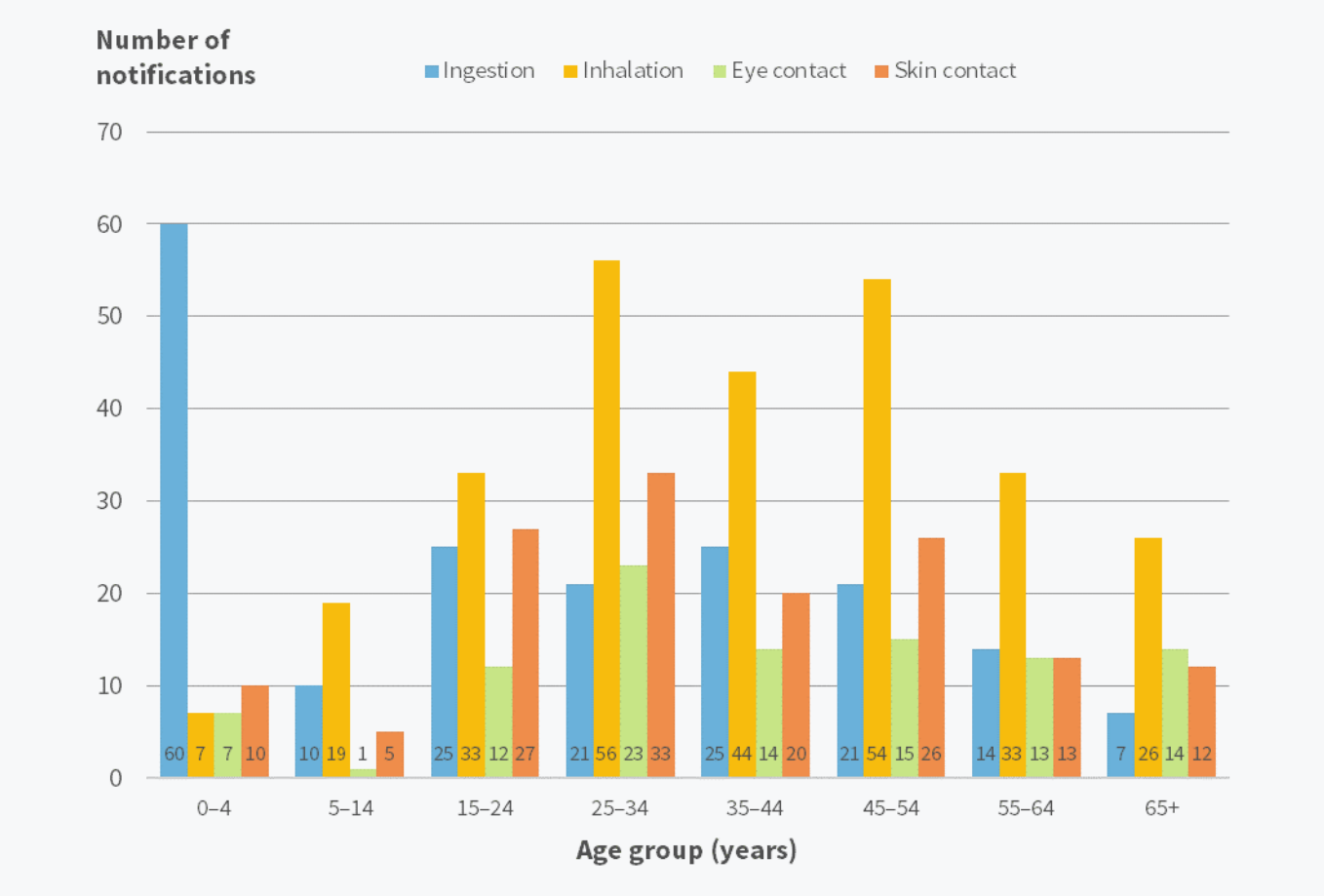


Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

The most common route of exposure for children under five was ingestion

In 2014–20, the most common route of exposure for children under five years was ingestion (60 out of 84 notifications) (Figure 9). Children, especially under the age of five, commonly spend time exploring their surroundings at home, with regular hand-mouth contact with items they encounter there. If they gain access to hazardous substances, especially if stored incorrectly or unsafely, this can lead to unintentional exposures (Safekids Aotearoa, 2015). Whereas for other age groups, their most common route of exposure was inhalation.

Figure 9: Number of notifications, by exposure route and age group, 2014–20



Note: More than one exposure route can be recorded for a single notification. Therefore, the total can add to more than the number of notification.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2021.

Data for this indicator

This indicator reports HSDIRT hazardous substances notifications from 2014 to 2020. The data was extracted from the HSDIRT system on 5 March 2021. Updates or additions made to HSDIRT after this date are not reflected in this factsheet.

Data have sometimes been pooled to give sufficient numbers for analysis.

Crude rates presented in this factsheet do not take into account varying age distributions when comparing between populations.

For additional information, see the metadata link below.

References

BPAC. 2014. Hazardous Substance poisoning in children:poisons in and around the house. URL: **https://bpac.org.nz/BPJ/2014/March/hazardous.aspx** (Accessed 7 October 2021)

Ministry Of Health. 2019. *The Investigation and Surveillance of Poisoning and Hazardous-substance Injuries: Guidelines for public health units* (4th edn). Wellington: Ministry of Health.

Safekids Aotearoa. 2015. Position Paper: Child Poisoning Prevention. Auckland, Safekids Aotearoa, 2015.

Worksafe – Mahi Humaru Aotearoa. 2017. Information on Hazardous Substances. URL: **https://www.worksafe.govt.nz/topic-and-industry/hazardous-substances/about-hazardous-substances/** (Accessed 21 September 2021)

Other related topics include:

Unintentional hazardous substances exposures in children (0–14 years)

Occupational lead absorption notifications

Non-occupational lead absorption notifications

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Citation

Environmental Health Intelligence. 2021. *Hazardous substances notifications.* [Factsheet]. Wellington: Environmental Health Intelligence NZ, Massey University.

Further information

For descriptive information about the data **Metadata Sheet**

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