

Occupational lead absorption notifications

This report presents data on occupational lead absorption notifications in Aotearoa New Zealand's working population aged 15 years and older, entered into the Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) from 2014–2022.

Headline



Occupational lead absorption notification rates doubled from 2019 to 2022 in part due to the new notifiable blood lead level introduced in 2021.

Key facts



Painters and smelting/metal refinery workers account for 68% of notifications where occupation was known/recorded, in 2021–22.



Notification rates for Pacific males (50.1 per 100,000) were triple all other ethnic groups.



Notification rates for males living in the most deprived areas, deciles 9 and 10, are five times greater than for males living in the least deprived areas, decile 1.



Notification rates for Te Mana Ora have increased 12-fold from 2018–19 to 2021–22.

Lead absorption investigation guidelines

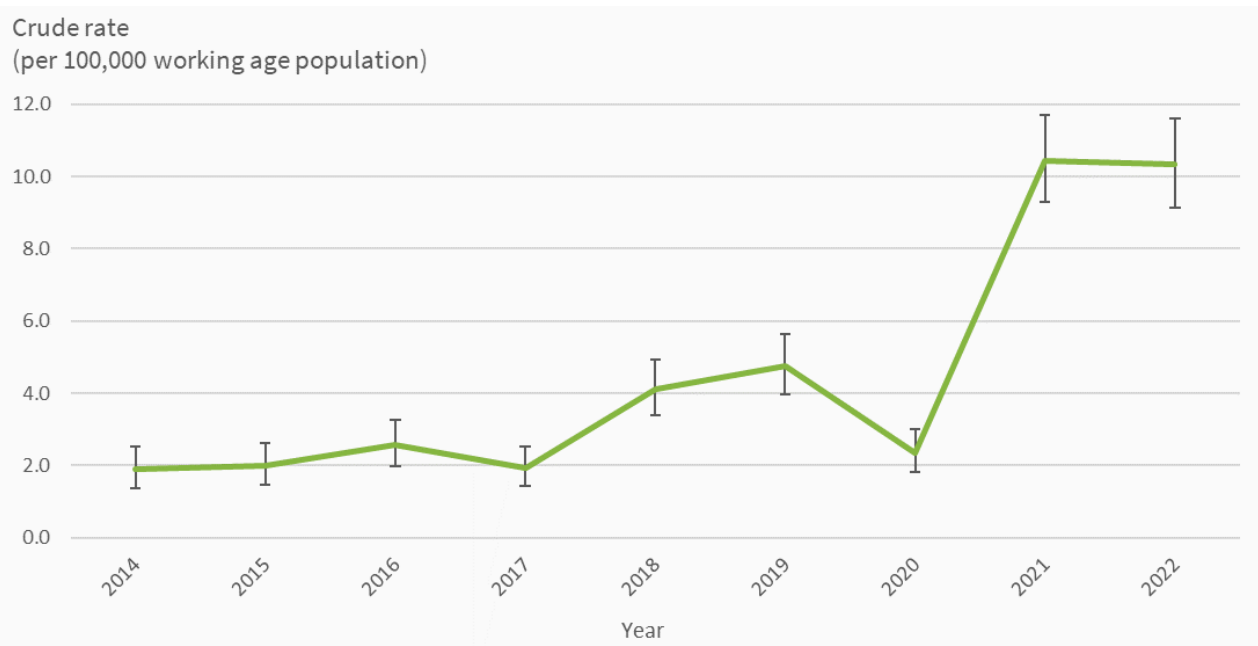
Although no safe level of exposure to lead has been found, the blood lead levels required to be notified in New Zealand are lead absorption equal to or in excess of 0.24 $\mu\text{mol/L}$. The notifiable threshold was reduced from 0.48 $\mu\text{mol/L}$ to 0.24 $\mu\text{mol/L}$ on 9 April 2021. At and above this level, public health intervention and investigation of sources/pathways is dependent on the blood lead level of individuals as set by the [Ministry of Health](#) and [WorkSafe](#).

This report presents occupational lead absorption notifications based on the blood lead notification thresholds. These notifications relate to individuals aged 15 years or older potentially exposed in the workplace, as determined by the Public Health Service. It is often not possible to be certain of the exposure source(s). As a result, determination is left to the investigator's discretion and knowledge of individual cases. For information on the health risks of lead absorption, visit the [MoH website](#).

Occupational lead absorption notifications remained high in 2022

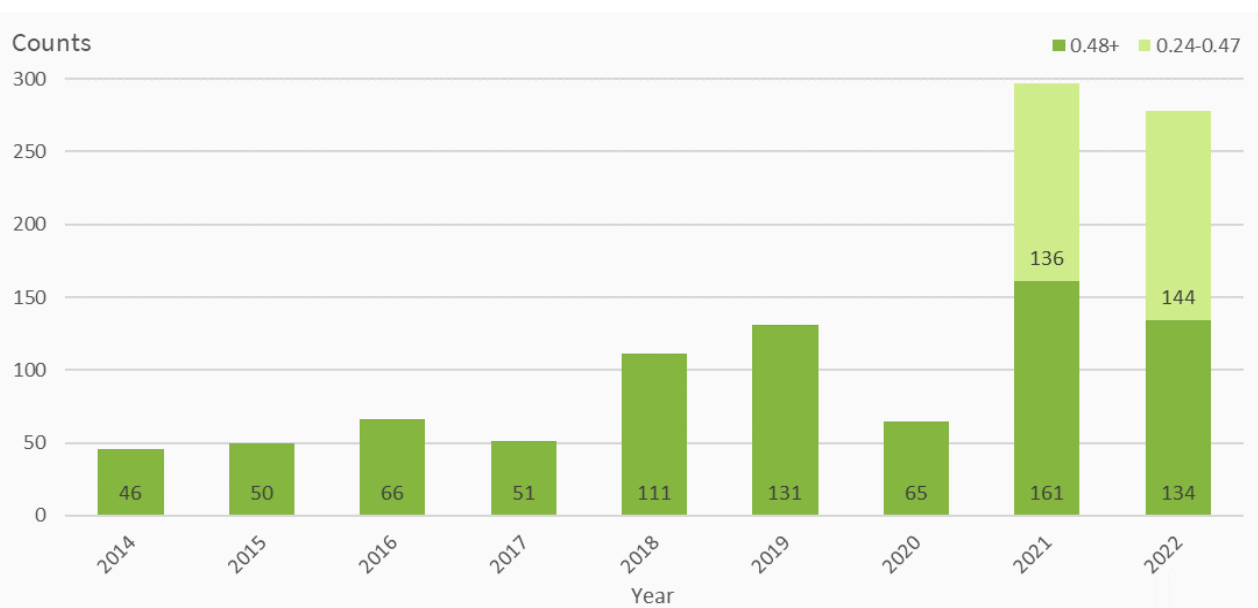
Occupational lead absorption notification rates remained high in 2022 (10.3 per 100,000 working age population) having previously been roughly half this in 2019 (5.8 per 100,000 working age population) (Figure 1). This is partially due to the new notifiable range of 0.24–0.47 $\mu\text{mol/L}$, introduced on 9 April 2021. However, the number of notifications with BLL's of $\geq 0.48+ \mu\text{mol/L}$ in 2021 and 2022 (161 and 134 notifications respectively) are still high compared to most previous years (Figure 2). If you would like to view total lead absorption notification rates from 2001–2022 please visit the [Non-Occupational lead report \(2023\)](#).

Figure 1: Occupational lead absorption notification rates, 2014–22



Notes: 95% confidence intervals have been presented as error bars. See [Metadata](#) for more information
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

Figure 2: Occupational lead absorption notifications, by BLL, 2014–22



Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

Painters and Smelting/Metal refinery workers were the most impacted in 2021–22

Painters and smelting/metal refinery workers made up the majority of occupational lead absorption notifications in 2021–22, with 179 notifications each, accounting for 68% of all known/recorded notifications (Table 1). In addition to this, these two occupational groups also have the highest median BLL's when notified, with 0.56 and 0.57 $\mu\text{mol/L}$ respectively. Painters have consistently been the most commonly notified occupational group since 2014. Some other key findings relating to occupational groups in 2021–22 include:

- Smelting/Metal refinery workers were largely located in Christchurch and surrounds, Te Mana Ora (100 notifications), or Auckland Regional Public Health Service (71 notifications).
- Te Mana Ora also made up the majority of battery manufacturing/recycling notifications (14 notifications), and 42% of metal recycling notifications (24 notifications).
- While deprivation is a factor in most occupational groups, it is most notable for painters. Painters living in the most deprived quintile (68 notifications) have considerably higher notifications than those living in the least deprived quintile (15 notifications).

Breakdowns by demographic and geographic information can be found further down this report.

Table 1: Occupational lead absorption notifications & median BLL, by occupational group, 2021–22

| Occupation group | Notifications | Median ($\mu\text{mol/L}$, interquartile range) |
|--------------------------------------|---------------|---|
| Painter | 179 | 0.56 (0.36–0.86) |
| Smelting/Metal refinery worker | 179 | 0.57 (0.38–0.74) |
| Metal recycling | 57 | 0.38 (0.31–0.63) |
| Automotive and radiator repair | 21 | 0.36 (0.28–0.46) |
| Construction (non-painter) | 18 | 0.41 (0.31–0.55) |
| Lead light fitter/manufacturer | 16 | 0.47 (0.38–0.81) |
| Battery manufacturing/recycling | 15 | 0.34 (0.27–0.40) |
| Mining/Oil and Gas | 6 | 0.29 (0.28–0.66) |
| Engineer/technician (non-automotive) | 6 | 0.28 (0.25–0.38) |
| Unknown/unrecorded | 47 | 0.42 (0.31–0.65) |
| Total* | 575 | - |

Note: * Some notifications involve more than one lead source meaning the total can be less than the sum of the sources.

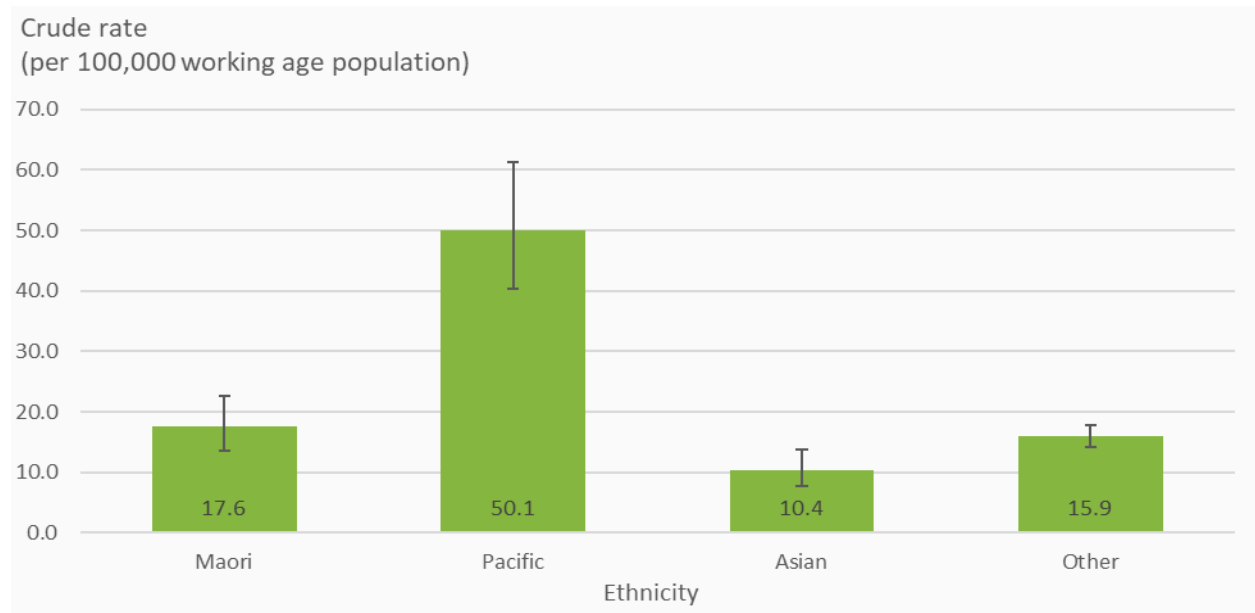
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

In 2022, there were only nine notifications relating to females. Males have accounted for more than 95% of notifications every year since 2014. Because of this, the following section on ethnicity and deprivation focus on males specifically. Unfortunately, the final two sections on PHU's and age could not be broken down by gender due to unknown population figures.

Pacific males and males living in the most deprived areas are disproportionately impacted by occupational lead absorption

Occupational lead absorption notification rates for Pacific males (50.1 per 100,000) were roughly triple that of all other ethnic groups in 2021–22 (Figure 3). Notification rates for Pacific males are similar to those in 2018–19 while rates for all other ethnic groups tripled from 2018–19 to 2021–22.

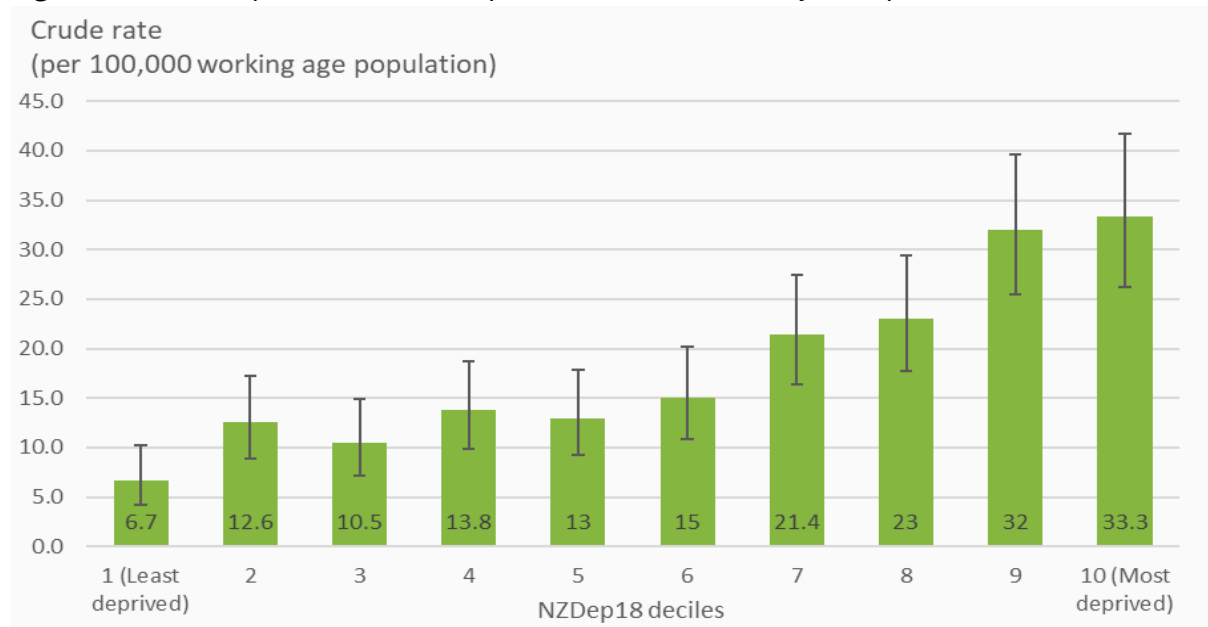
Figure 3: Male occupational lead absorption notification rates, by ethnicity, 2021–22



Notes: 95% confidence intervals have been presented as error bars. See [Metadata](#) for more information
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

Notification rates for males living in the most deprived areas, deciles 9 and 10 (32.0 and 33.3 per 100,000 respectively), were also high. This is almost five times the rate for males living in the least deprived area, decile 1 (6.7 per 100,000) in 2021–22 (Figure 4).

Figure 4: Male occupational lead absorption notification rates, by NZDep18 deciles, 2021–22

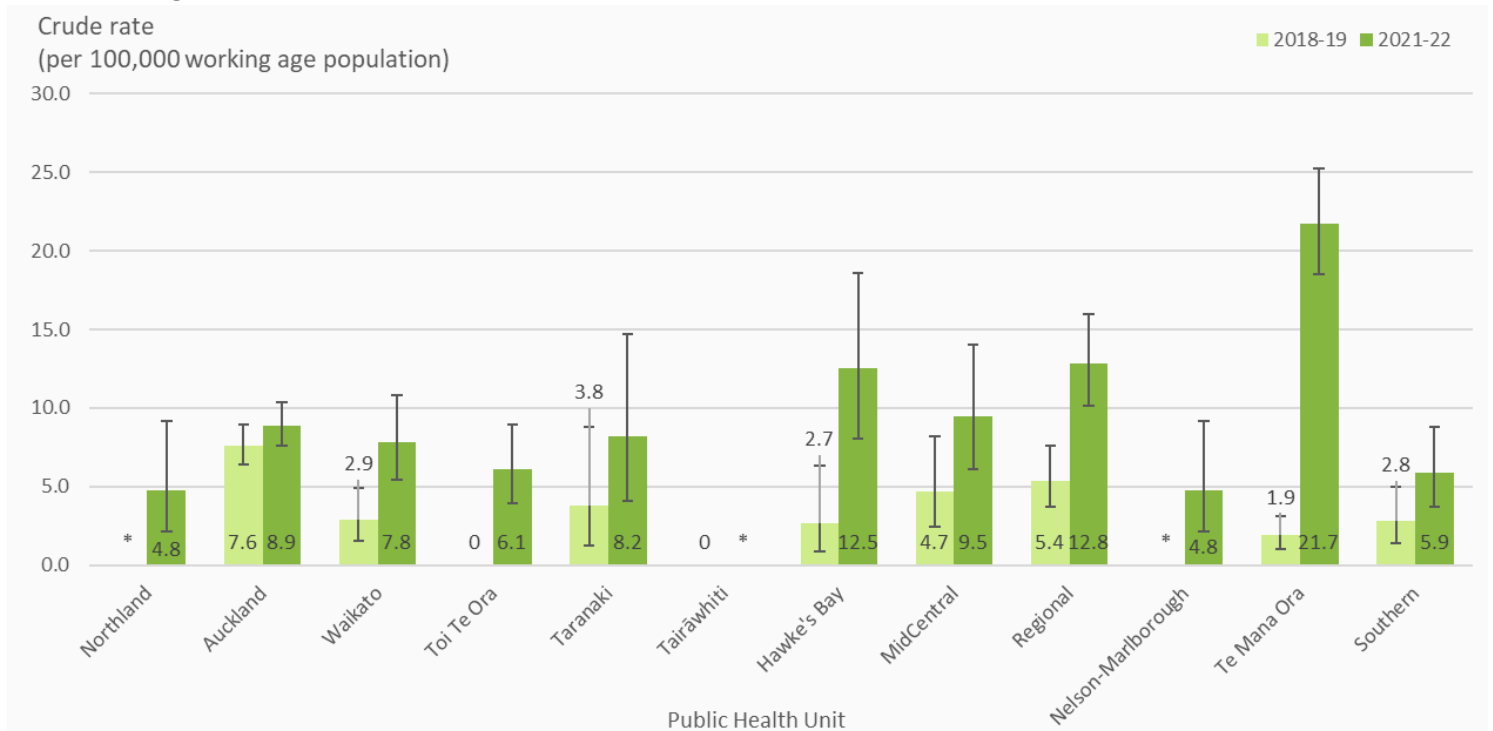


Note: 95% confidence intervals have been presented as error bars. See [Metadata](#) for more information
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

Occupational lead absorption rates in Te Mana Ora have increased almost 12-fold

Occupational lead absorption notification rates increased in many Public Health Units (PHUs) across New Zealand from 2018–19 to 2021–22. However, notification rates for Te Mana Ora, Christchurch and surrounds, has increased 12-fold from 1.9 per 100,000 in 2018–19, to 21.7 per 100,000 in 2021–22 (Figure 5). Te Mana Ora now has notably high rates compared to other PHUs.

Figure 5: Occupational lead absorption notification rates, by PHU, 2018–19 and 2021–22



Note 1: 95% confidence intervals have been presented as error bars.

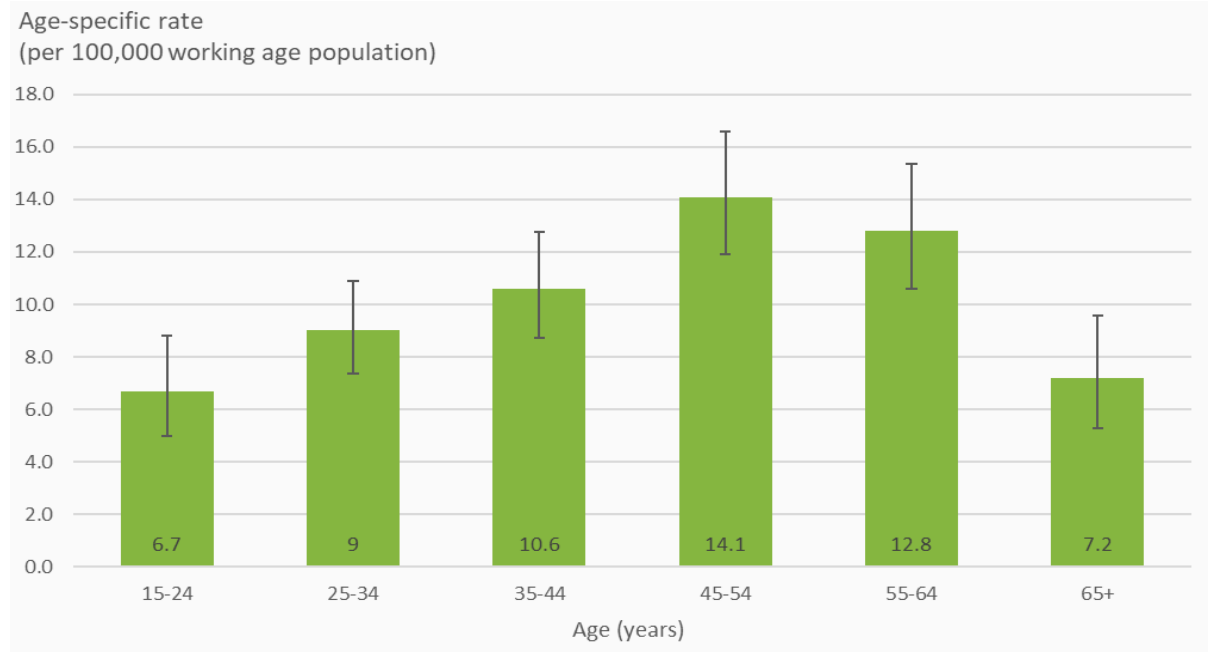
Note 2: *The rate is suppressed as it is an unreliable estimate based on small numbers. See [Metadata](#) for more information.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

45–54-year-olds experience high occupational lead absorption notification rates

Occupational lead absorption notification rates for those aged 45–54 years (14.1 per 100,000) were roughly double that of 15–24 and 65+ years olds (6.7 and 7.2 per 100,000 respectively) (Figure 5). This has been consistent over time with the youngest and oldest age groups having lower rates. Age distributions were similar for each occupational group discussed in Table 1.

Figure 6: Occupational lead absorption notification rates, by age, 2021–22



Note: 95% confidence intervals have been presented as error bars. See [Metadata](#) for more information.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2023.

Data for this indicator

This indicator reports HSDIRT occupational lead absorption notifications from 2014 to 2022. The data were extracted from the HSDIRT system on 6 March 2023. Updates or additions made to HSDIRT after this date are not reflected in this factsheet. For additional information, see the metadata.

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

REFERENCES

Environmental Health Intelligence NZ. 2023. *Non-occupational lead absorption notifications*. Wellington: Environmental Health Intelligence NZ, Massey University.

Other related topics include:

[Non-Occupational lead absorption notifications](#)

[Hazardous substances-related deaths registered in New Zealand](#)

[Unintentional hazardous substances-related hospitalisations](#)

[Hazardous substances-related deaths reported to the coroner in New Zealand](#)

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Environmental Health Intelligence NZ. 2023. *Occupational lead absorption notifications*. Wellington: Environmental Health Intelligence NZ, Massey University.

Further information

For descriptive information about the data [✉ Metadata Sheet](#)

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