Patterns and experiences of smoking, electronic cigarettes (vapes) and heated tobacco use among people who smoke or who recently quit

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ABSTRACT

AIM: The aim of this study is to understand patterns and experiences of smoking and electronic cigarette use, as well as related attitudes and behaviours among adults in Aotearoa New Zealand who smoke or recently stopped smoking.

METHODS: We analysed data from the Evidence for Achieving Smokefree Aotearoa Equitably/International Tobacco Control New Zealand Survey (N=1,230), conducted between November 2020 and February 2021.

RESULTS: Among people who smoked, 77.5% (95% confidence interval [CI] 74.0–80.8%) reported regretting having started smoking, 73.6% (95% CI 69.5–77.4) intended to quit, 87.3% (95% CI 84.1–89.9) reported being addicted to smoking and 86.3% (95% CI 83.3–88.8) had tried to quit smoking in the past. Among people who smoked, 24.8% (95% CI 21.3–28.6) used electronic cigarettes (ECs) daily and 4.6% (95% CI 3.3–6.6) used heated tobacco products (HTPs) daily. Among people who had recently stopped smoking, 33.4% (95% CI 25.6–42.2) used ECs daily and less than 1% used HTPs daily.

CONCLUSION: High levels of regret for starting smoking, addiction and intent to quit smoking highlight the importance of implementing effective and equitable smokefree measures to prevent people from starting to smoke and to support people to stop smoking.

Following advocacy by Māori leaders to aim to achieve a tobacco "endgame", the Aotearoa New Zealand government set the Smokefree Aotearoa goal in 2011. The goal aimed to reduce daily smoking prevalence and the availability of smoked tobacco products to minimal levels for all population groups by 2025.[1] However, over the following decade, largely business-as-usual policy changes took place, including a ban on point-of-sale displays of tobacco products, plain packaging, annual above-inflation increases in tobacco taxation and media campaigns. While important, these measures fell short of the changes required to achieve rapid and equitable reductions in smoking prevalence. Smoking is still the leading cause of preventable death in Aotearoa New Zealand[2,3] and significant inequities remain: in 2022/2023, 6.8% of New Zealanders smoked daily, but rates were substantially higher for Māori (17.1%) and people living in the most deprived neighbourhoods (10.7%).[4]

In December 2021, the New Zealand Government introduced the Smokefree Aotearoa 2025 Action Plan, which included three endgame policies to reduce smoking prevalence profoundly, rapidly and equitably by: 1) greatly reducing the number of outlets where cigarettes can be sold, 2) decreasing nicotine in cigarettes to very low non-addictive levels (VLNCs), and 3) implementing a "smokefree generation" by disallowing the sale of tobacco products to people born after 2008. These measures were passed into law in January 2023 as part of the *Smokefree Environments and Regulated Products (Smoked Tobacco) Amendment Act* (*SERPA Act*).[5]

However, following a change of government in September 2023, the three *SERPA* endgame measures were repealed in February 2024, before implementation could occur. This is despite modelling studies strongly suggesting the measures would have had a substantial impact on smoking prevalence, including for Māori.[6,7] In March 2024, new regulations introduced by the previous Government for electronic cigarettes (ECs, also known as "vapes") were implemented. These aimed to reduce youth EC use and included a nicotine concentration limit on e-liquids and limits on flavour names. There has also been a change to the regulation of heated tobacco products (HTPs), which are devices that heat tobacco (rather

than burn it), allowing nicotine to be absorbed from the resulting aerosol. In July 2024, the new Government halved excise tax on HTPs, claiming this would support people to quit smoking. This was contrary to recommendations of the World Health Organization[8] and a Cochrane review that found minimal evidence that HTPs support smoking cessation.[9]

We analysed data from a nationally representative sample of adults who smoke or who recently stopped smoking in the 2020–2021 EASE (Evidence for Achieving Smokefree Aotearoa Equitably) International Tobacco Control New Zealand (ITC NZ) Survey to understand patterns of tobacco and nicotine product use, attempts to stop smoking and key attitudes and beliefs associated with the likelihood of continued smoking vs cessation, including desire to quit smoking, perceived addiction and regret over starting smoking, which have been shown to be related to intentions to quit smoking.[10] We conducted these analyses prior to the 2024 changes to regulations on ECs and HTPs, providing baseline data on cigarette smoking, EC use and HTP use, as well as factors relating to product use. We also examined whether product use and the factors relating to product use varied by equity dimensions, including ethnicity and financial hardship.

Methods

Study design, sampling and recruitment

This cross-sectional analysis examined data from Wave 3 of the EASE/ITC NZ Survey, a combined prospective cohort and repeat cross-sectional study of people who currently smoke (combustible tobacco) or recently stopped smoking. Wave 3 was conducted online from 8 November to 24 December 2020 and 1–27 February 2021.

Recruitment was via an invitation to participants in the previous survey wave (Wave 2 in 2018), and a replenishment sample of participants was recruited through an online survey panel and through social media to boost recruitment among Māori, Pacific peoples and people aged 18–24. This included targeted paid social media advertisements and invitations distributed through Pacific and Māori networks such as the University of Otago Pacific Centre Facebook page and local/community Facebook groups in Porirua and South Auckland (areas with large Māori and Pacific populations).

People from Wave 2 of the survey were eligible to take part in Wave 3 if they lived in Aotearoa New Zealand, were at least 18 years of age and either: i) currently smoked, or ii) had recently stopped smoking and quit for fewer than 5 years. Replenishment participants were eligible to take part if they were at least 18 years of age and either: i) currently smoked at least monthly, or ii) had recently stopped smoking and had previously smoked at least monthly, had smoked at least 100 cigarettes in their lifetime and stopped smoking within the past 24 months.

To achieve adequate statistical precision and explanatory power for priority groups, we aimed to recruit equal numbers of Māori, Pacific and non-Māori, non-Pacific participants, and to have at least 25% of the sample aged 18–24. Details of the sampling and survey methods are available on the ITC website.[11]

Data collection and measures

Socio-demographic measures included ethnicity, age and gender. Smoking status was combined with intention to quit to create four categories: "smokes daily not intending to quit", "smokes daily intending to quit", "smokes less than daily" or "recently stopped smoking". Survey questions on smoking status and financial hardship are in the Table 1 legend.

Study outcomes included: 1) the types of cigarettes smoked among people who smoke (including factory-made [tailor-made] and roll-your-own [RYO]), 2) use of ECs and HTPs among people who smoke and people who quit smoking, and 3) among people that smoked: perceived addiction to smoking, regret for starting to smoke, previous quit attempts and plans to quit in the future. Wording of the questions used to obtain these outcomes is in the table legends.

Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.

Data analysis

Weighted prevalence estimates are reported as percentages with 95% confidence intervals (95% CI) for the key outcomes. When comparing subgroups, marginally standardised percentages and absolute differences (with 95% CIs) are presented that adjust for key covariates: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.[12]

Data were analysed in R 4.1 (R Institute, Vienna, Austria),[13] with raked weight calculations drawing on gender, age group, region and prioritised ethnicity, calibrated based on population estimates

for people who smoke and recently stopped smoking from the New Zealand Health Survey (NZHS) (2018–2019 and 2019–2020, combined) to represent this population. Marginal standardisation and differences for multinomial outcomes (more than two levels) were conducted in Stata 17 (Statacorp, College Station, TX).

To ensure complete representation of Pacific participants, prevalence of outcomes by ethnicity are presented using total ethnicity, classified as Māori (including people who also identified as Pacific), Pacific (including people who also identified as Māori), or non-Māori, non-Pacific (exclusive of the other two groups). Marginal differences for Māori and for Pacific are presented compared to the exclusive non-Māori, non-Pacific category, but total ethnicity estimates for Māori and Pacific should be compared with caution as these groups are not mutually exclusive. Prioritised ethnicity[14] was only used for weighting and for marginal standardisation adjustment, with participants classified as Māori (including people who also identified as Pacific), Pacific (excluding people who also identified as Māori), or non-Māori, non-Pacific.

Marginal estimates for Pacific total ethnicity are estimated from a separate model and marginal standardisation step (using the same covariates), and so the absolute marginal differences (relative to non-Māori, non-Pacific) presented in the tables may not perfectly match the differences between the marginal proportions reported in the Pacific and non-Māori, non-Pacific rows.

Marginally adjusted estimates and differences are not reported for participants indicating "other" for their gender, as there was an insufficient number to allow for their inclusion as a category in the multivariable models (n=18).

Ethics

Approval was obtained prior to participant recruitment from the University of Otago Human Ethics Committee (20/020) and University of Waterloo Office Research Ethics Board (REB#42549).

Results

Participants

A total of 1,230 participants were included, of whom 80.7% were currently smoking and 19.3% recently stopped smoking (Table 1).

Tobacco product use

Among people who smoke, 39.6% (95% CI 35.7–43.6) only smoked factory-made cigarettes, 22.0% (95% CI 18.8–25.5) only smoked RYO cigarettes and 38.4% (95% CI 34.5–42.5) smoked both.

People who smoked daily and intended to quit were less likely to only smoke RYO than people who smoked daily and did not plan to quit (absolute marginal difference [AMD] −13.9% [95% CI −23.7–−4.0]). People who smoked less than daily were less likely to smoke RYO and more likely to smoke factory-made than people who smoked daily and did not intend to quit (AMD −16.5% [95% CI −27.8–−5.2] and 18.9% [95% CI 7.0–30.7], respectively).

Smoking both RYO and factory-made cigarettes was less common for Māori compared to non-Māori, non-Pacific (AMD −16.0% [95% CI −24.3–−7.7]), less common in women compared to men (AMD −10.1% [95% CI −18.0–−2.1]) and more common in those experiencing financial hardship compared to those who do not (AMD 10.5% [95% CI 1.9–19.2]). Smoking factory-made cigarettes only was more common for Māori compared to non-Māori, non-Pacific (AMD 11.3% [95% CI 2.5–20.0]). Further details are available in Appendix Table 1.

Other nicotine and tobacco product use

As outlined in Table 2, a quarter of people who smoked also used ECs daily (24.8%, 95% CI 21.3–28.6). Among people who had stopped smoking, a third used ECs daily (33.4%, 95% CI 25.6–42.2).

Daily EC use was more common in people who smoked daily and intended to quit and in people who smoked less than daily, compared with people who smoked daily not intending to quit. Among people who smoked, daily EC use was less prevalent among Māori compared to non-Māori, non-Pacific, among people aged 45 and older compared with younger age groups and in women compared with men.

Among people who had recently stopped smoking, daily EC use was more common in Māori and Pacific peoples compared to non-Māori, non-Pacific; however, this did not reach statistical significance for Māori.

ECs were used at least monthly by 41.6% (95% CI 37.6–45.6) of people who smoke and 39.7% (95% CI 31.5–48.6) of people who recently stopped smoking. Further detail is available in Appendix Table 2.

About one in 20 of those who smoke also used HTPs daily (4.6%, 95% CI 3.3–6.6). There were no substantial differences in prevalence of daily HTP use by age, ethnicity, gender or financial hardship. Two out of 235 people who had stopped smoking

Table 1: Participant characteristics.

Characteristic	N (%) unless otherwise stated
Age (years)	
Mean (SD)	38.0 (14.8)
18–24	326 (26.5%)
25–44	528 (42.9%)
≥45	376 (30.6%)
Gender	
Man	442 (35.9%)
Woman	770 (62.6%)
Other	18 (1.5%)
Ethnicity*	
Māori	492 (40.0%)
Pacific	238 (19.3%)
Non-Māori, non-Pacific	546 (44.4%)
Smoking status^	
People who smoke daily	700 (56.9%)
• with no intent to quit	182 (14.8%)
• with intent to quit	474 (38.5%)
• no response for intent to quit#	44 (3.6%)
People who smoke less than daily	292 (23.7%)
• with no intent to quit	28 (2.3%)
• with intent to quit	234 (19.0%)
• no response for intent to quit#	30 (2.4%)
People who have recently stopped smoking	238 (19.3%)
Heaviness of smoking in people who smoke (people who smoke daily only)	
Smokes ≤20 cigarettes per day	540 (77.1%)
Smokes >20 cigarettes per day	141 (20.1%)
No response on amount smoked#	19 (2.7%)

Table 1 (continued): Participant characteristics.

Evidence of financial hardship**	
Yes	345 (28.0%)
No	847 (68.9%)
No response on financial hardship#	38 (3.1%)

N=1,230. All figures are unweighted.
SD = standard deviation.
*Ethnicity reported as total ethnicity; some participants identified as both Māori and Pacific (n=46 [3.7%]), resulting in percentages adding to over 100%.
^"Daily smoker, wanting to quit" is defined as a person who smoked daily and selected one of the following options when asked "Are you planning to quit smoking?": "within the next month", "between 1–6 months from now" or "sometime in the future, beyond 6 months".
#This includes participants who refused to answer, answered "don't know" or had missing data for this question.
**Financial hardship is defined as answering "yes" to the following question: "In the last 30 days, because of a shortage of money, were you unable to pay any important bills on time, such as electricity, telephone or rent bills?"

Table 2: Daily electronic cigarette use in people who smoke and people who recently stopped smoking.

	n/N	**Weighted percentage (95% CI)**	**Marginally standardised percentage (95% CI)**	**Absolute marginal difference (95% CI)**
People who smoke: use of electronic cigarettes daily				
Total	252/992	24.8 (21.3–28.6)		
Smoking status:				
Smokes daily not intending to quit	26/182	10.3 (6.2–16.8)	11.7 (7.0–18.9)	Reference
Smokes daily intending to quit	93/474	22.9 (18.2–28.3)	23.7 (18.8–29.4)	**12.1 (4.0–20.2)**
Smokes less than daily	130/292	43.9 (36.1–52.0)	42.0 (33.8–50.7)	**30.3 (19.5–41.2)**
Total ethnicity:				
Māori	95/408	20.4 (16.2–25.4)	21.8 (17.0–27.4)	**−7.8 (−15.3–−0.2)**
Pacific	49/197	24.3 (17.5–32.9)	24.3 (17.4–33.0)	−5.2 (−14.6–4.1)
Non-Māori, non-Pacific	120/427	27.2 (22.0–33.2)	29.6 (24.3–35.4)	Reference
Age group:				
18–24	94/263	37.0 (30.0–44.7)	32.3 (25.6–39.9)	**14.2 (4.7–23.7)**
25–44	120/436	28.8 (23.4–34.8)	31.1 (25.3–37.5)	**12.9 (4.4–21.5)**
≥45	38/293	15.3 (10.4–22.1)	18.2 (12.9–24.9)	Reference
Gender:				
Man	117/369	28.8 (23.3–35.1)	30.0 (24.4–36.3)	Reference
Woman	133/621	20.0 (16.4–24.0)	22.2 (18.3–26.6)	**−7.8 (−15.1–−0.5)**

Table 2 (continued): Daily electronic cigarette use in people who smoke and people who recently stopped smoking.

Evidence of financial hardship:				
No	164/669	24.9 (20.6–29.7)	25.8 (21.7–30.4)	Reference
Yes	82/292	26.6 (20.7–33.5)	28.3 (21.9–35.6)	2.4 (−5.3–10.2)
People who stopped smoking: use of electronic cigarettes daily				
Total	92/238	33.4 (25.6–42.2)		
Total ethnicity:				
Māori	36/84	40.0 (25.7–56.2)	44.6 (29.2–61.1)	17.3 (−1.8–36.4)
Pacific	17/41	51.6 (30.9–71.7)	55.9 (34.7–75.1)	**28.9 (5.4–52.4)**
Non-Māori, non-Pacific	42/119	28.4 (19.6–39.1)	27.3 (18.9–37.6)	Reference
Age group:				
18–24	20/63	29.4 (17.9–44.3)	29.9 (17.0–47.0)	0.6 (−20.3–21.4)
25–44	43/92	42.5 (27.9–58.6)	40.9 (27.8–55.4)	11.5 (−7.5–30.6)
≥45	29/83	27.6 (17.2–41.1)	29.3 (18.3–43.4)	Reference
Gender:				
Man	26/78	31.8 (20.3–46.1)	34.3 (23.0–47.6)	Reference
Woman	66/159	35.4 (26.5–45.6)	33.1 (24.4–43.2)	−1.1 (−16.8–14.5)
Evidence of financial hardship:				
No	67/178	31.6 (23.3–41.3)	32.8 (24.6–42.3)	Reference
Yes	24/53	41.4 (23.5–62.0)	36.9 (22.5–54.0)	4.0 (−13.8–21.9)

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

used HTPs daily (0.6%); due to small numbers no further analyses could be conducted by subgroup. HTPs were used at least monthly by 10.2% of people who smoke (95% CI 8.1–12.7) and 1.7% of people who stopped smoking (95% CI 0.6–4.3). Further detail is available in Appendix Table 3.

Regret and addiction

As outlined in Table 3, most people who smoke reported being addicted to smoking (87.3%, 95% CI 84.1–89.9) and most reported that they regretted starting to smoke (77.5%, 95% CI 74.0–80.8). People who smoked less than daily were less likely to report being addicted to smoking. People who smoked daily and did not intend to quit were less likely to report that they regret having started smoking, compared with people who smoked daily and intended to quit and people who smoked less than daily.

Māori were more likely to report being addicted

Table 3: Prevalence of addiction, regret, previous failed quit attempts and plans to quit in the future in people who smoke.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
People who smoke: report being addicted* to smoking				
Total	854/974	87.3 (84.1–89.9)		
Smoking status:				
Smokes daily not intending to quit	170/177	95.9 (90.8–98.2)	95.7 (90.5–98.1)	Reference
Smokes daily intending to quit	455/473	96.7 (94.3–98.1)	96.4 (93.8–97.9)	0.8 (−3.2–4.7)
Smokes less than daily	188/281	61.5 (53.1–69.2)	63.0 (55.1–70.3)	**−32.6 (−41.3–−4.0)**
People who smoke: regret having started smoking**				
Total	747/964	77.5 (74.0–80.8)		
Smoking status:				
Smokes daily not intending to quit	110/170	64.9 (55.2–73.4)	60.0 (50.2–69.1)	Reference
Smokes daily intending to quit	395/468	84.4 (79.5–88.3)	86.0 (81.5–89.6)	**26.0 (15.7–36.3)**
Smokes less than daily	212/285	74.4 (67.1–80.6)	76.3 (69.2–82.2)	**16.3 (4.4–28.2)**
People who smoke: previously tried to quit smoking^				
Total	834/972	86.3 (83.3–88.8)		
Smoking status:				
Smokes daily not intending to quit	121/180	69.4 (60.3–77.2)	66.4 (57.5–74.3)	Reference
Smokes daily intending to quit	434/469	92.5 (88.8–95.1)	92.3 (88.4–95.0)	**25.9 (16.8–34.9)**
Smokes less than daily	245/281	90.0 (85.2–93.3)	92.0 (88.2–94.7)	**25.6 (16.5–34.8)**
People who smoke: previously tried to quit smoking in the past 12 months^^				
Total	546/988	51.5 (47.4–55.6)		
Smoking status:				
Smokes daily not intending to quit	35/182	14.2 (9.5–20.6)	15.9 (10.7–22.9)	Reference
Smokes daily intending to quit	280/472	56.3 (50.5–61.9)	56.1 (50.0–62.0)	**40.2 (31.6–48.9)**

Table 3 (continued): Prevalence of addiction, regret, previous failed quit attempts and plans to quit in the future in people who smoke.

Smokes less than daily	209/290	72.2 (65.0–78.5)	71.4 (63.7–78.0)	**55.5 (45.7–65.3)**
People who smoke: plan to quit smoking in the future#				
Total	708/918	73.6 (69.5–77.4)		
Smoking status:				
Smokes daily	474/656	68.4 (63.5–73.0)	68.5 (63.7–72.9)	Reference
Smokes less than daily	234/262	88.8 (82.8–92.9)	87.4 (80.5–92.1)	**18.9 (11.6–26.1)**

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
See Table 1 for the definition of financial hardship.
*Participants who reported being "yes—somewhat addicted" or "yes—very addicted" when asked "Do you consider yourself addicted to cigarettes?" were classified as addicted to smoking.
**Participants who answered that they "agree" or "strongly agree" with "If you had a chance to live your life again, you would not have started smoking cigarettes" were classified as regretting having started to smoke.
^This was classified as answering "yes" to the question "Have you ever tried to quit smoking cigarettes?"
^^This was classified as answering "yes" to the question "Have you tried to stop smoking in the last 12 months?"
#This was classified as answering "within the next month", "between 1–6 months from now", or "sometime in the future, beyond 6 months" after the question "Are you planning to quit smoking..."
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

to smoking than non-Māori, non-Pacific.

Pacific people were less likely to report regret for having started smoking compared to non-Māori, non-Pacific. People aged 18–24 were also less likely to report regret compared with people aged 45 and older. For detailed information see Appendix Table 4.

Previous quit attempts and intent to quit

As outlined in Table 3, most participants that smoked tried but had not been able to quit smoking in the past (86.3%, 95% CI 83.3–88.8). Most also planned to quit in the future (73.6%, 95% CI 69.5–77.4). Of those who smoked, about half had tried and failed to quit smoking in the past 12 months (51.5%, 95% CI 47.4–55.6). People who smoked daily and intended to quit and people who smoked less than daily were more likely to report that they had previously tried to quit smoking compared with people who did not intend to quit.

People with evidence for financial hardship were more likely to report a previous quit attempt and report that they planned to quit smoking in the future compared with people without evidence of financial hardship. For detailed information see Appendix Table 5–6.

Discussion

The data in this study from people who smoke or who recently stopped smoking provide a baseline prior to the 2024 changes to cigarette, EC and HTP policies and regulations and provide important evidence to inform the development and implementation of effective and equitable public health policy.

RYO tobacco use in Aotearoa New Zealand is common; ITC data dating back to 2007/2008 demonstrated over half of the participants who smoked were regularly using RYO tobacco.[15] The results from the current survey are much higher than in many other countries,[16] and particularly high among people who smoked daily and did not intend to quit, Māori, young people and people experiencing financial hardship. This demonstrates the importance of considering the impacts of public health measures on the use of both factory-made and RYO products. For example, mass media campaigns should include representation of both types of products to ensure their relevance to all people who smoke.

In line with international findings,[10,17,18] we found that a high proportion of participants who smoked regretted having started smoking, and did not want to continue smoking (intent to quit

and history of attempts to quit). These findings were consistent across demographic groups and strengthen the case for implementing policy measures to prevent the initiation of smoking and support people to stop smoking, such as the *SERPA* endgame measures.[7] Further evidence in support of these measures comes from findings from the EASE/ITC NZ study that found substantial support for them among people who smoke or who recently stopped smoking.[19]

A quarter of people who smoke and one-third of people who recently stopped smoking used ECs daily—a much higher prevalence than in the general adult population (9.4%, in the 2020/2021 NZHS for people aged 15+).[4] Rates of daily EC use were much higher than in previous waves of the EASE/ITC NZ Survey (4.9% in people who smoke and 21.0% in people who recently stopped smoking [2016/2017, Wave 1]; 7.9% in people who smoke and 22.6% in people who recently stopped [2018, Wave 2]).[20]

The high prevalence of EC use in people who recently stopped smoking suggests they are used to help people stop smoking and may help prevent relapse back to smoking. This is consistent with overall population trends in Aotearoa New Zealand of substantial increases in prevalence of EC use concurrent with recent rapid reductions in smoking prevalence (NZHS data: daily smoking prevalence reduced from 14.5% in 2015/2016 to 6.8% in 2022/2023, while daily EC use increased from 0.9% to 9.7% in the same period).[4] It also aligns with a recent Cochrane review that demonstrated "high certainty" evidence that ECs with nicotine increase smoking quit rates compared to nicotine replacement therapy, but less certainty compared to behavioural support.[21]

However, the high prevalence of EC use in people who smoke could also suggest long-term dual use of both tobacco and ECs.[22,23] We found 11.7% of people who smoked and did not intend to quit smoking used ECs daily, suggesting that ECs may be used by some people who smoke as an additional source of nicotine (e.g., in places where smoking is not allowed) rather than as stop smoking aids.[21,24]

Any positive impacts of ECs on stopping smoking need to be balanced by the rapidly increasing levels of EC use among young people.[25] Care is needed in developing regulatory frameworks that protect young people from becoming addicted to ECs and enable their use as smoking cessation aids.

HTP use was far less common than EC use, suggesting they were not substantially contributing to smoking cessation. Given these products are likely more hazardous than ECs, with little evidence that they are effective for smoking cessation,[9] there is a case for stronger regulation of these products than for ECs. The data from this study will provide an important baseline for evaluating the decision by the New Zealand Government to reduce excise tax on HTPs from July 2024.

A key strength of this study is that it provides results that are directly relevant to intervention and policy development in Aotearoa New Zealand. We were able to recruit 40% Māori participants, and the sample is sufficiently large enough to provide relatively precise estimates of tobacco and alternative product use, as well as related attitudes and behaviours. Additionally, data are weighted to the NZHS sample (a nationally representative population survey), so the findings should be representative of the population of New Zealanders who smoke or recently quit smoking. Where the sample size allowed, we were able to evaluate differences by smoking status and intent to quit smoking, ethnicity, age, gender and evidence of financial hardship.

One limitation is that the target for the recruitment of Pacific participants (a third of participants) was not reached, meaning that results for this group are less precise than for Māori and non-Māori, non-Pacific participants. We are actively investigating ways to increase Pacific recruitment for subsequent survey waves.

We do not make a causal interpretation of the associations with ethnicity that we found: estimates by ethnic group describe differential patterning of opinions/behaviours for these groups, with the marginal estimation reporting differences adjusted for demographic covariates (as listed in the Methods). Differences by ethnicity are likely to represent the outcome of multiple contextual factors, such as historical experiences of colonisation, racism and structural disadvantage, rather than being due to ethnicity itself.

Patterning of outcomes by other variables (e.g., by age group) derive from the same models, and so while estimates are technically "adjusted" for differential profile by ethnicity, we again do not assume that the adjustment role for ethnicity within these models represents a causal mechanism, but rather most likely reflects the impact of other variables that are associated with outcomes and that are differentially distributed by ethnicity.

Data were collected in 2020 and 2021, so the findings represent views and experiences prior to the introduction and repeal of the *SERPA*

endgame measures. We plan to evaluate data from subsequent waves of the EASE/ITC NZ Survey as new policies are implemented. A limitation of this analysis for investigating the impacts of ECs on smoking cessation is that the direction of causation of associations are uncertain due to its cross-sectional nature. We plan to explore the relationship between use of ECs and subsequent smoking patterns (including cessation and relapse) through longitudinal analysis of EASE/ITC NZ data.

Overall, these findings demonstrate the need for further interventions and policies to equitably encourage and support people who smoke to stop smoking. Risk-proportionate regulatory frameworks for smoked tobacco products, ECs and HTPs are needed, including policy measures that promote smoking cessation, minimise youth uptake of all nicotine and tobacco products and discourage long-term dual use of tobacco products and ECs.

COMPETING INTERESTS
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JB currently receives funding from the Health Research Council for this and other projects and in the past has received funding from the Royal Society of New Zealand, Health Promotion Agency, NIB foundation, Cancer Society and the Ministry of Business, Innovation and Employment. JB is secretary of Public Health Association, Wellington Branch; member of Smokefree Expert Advisory Group, Health Coalition Aotearoa; and member of Tuturu development rōpu, NZ Drug Foundation.
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Appendix

Appendix Table 1: Smoking patterns among people who smoke.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
Total number and percentage of participants that smoke				
Tailor-made and roll your own cigarettes*	386/986	38.4 (34.5–42.5)		
Tailor-made cigarettes only*	388/986	39.6 (35.7–43.6)		
Roll-your-own cigarettes only*	212/986	22.0 (18.8–25.5)		
Smoking status				
Smokes daily not intending to quit:				
Tailor-made and roll-your-own cigarettes	70/181	31.4 (23.9–40.1)	35.2 (27.0–43.3)	Reference
Tailor-made cigarettes only	57/181	34.0 (25.3–43.9)	31.3 (23.1–39.5)	
Roll-your-own cigarettes only	54/181	34.6 (25.9–44.5)	33.5 (24.6–42.5)	
Smokes daily intending to quit				
Tailor-made and roll-your-own cigarettes	196/473	45.0 (39.3–50.8)	42.7 (37.0–48.5)	7.5 (−2.7–17.7)
Tailor-made cigarettes only	178/473	35.7 (30.5–41.2)	37.6 (32.0–43.2)	6.3 (−3.7–16.4)
Roll-your-own cigarettes only	99/473	19.4 (15.5–23.9)	19.7 (15.4–23.9)	**−13.9 (−23.7–−4.0)**
Smokes less than daily				
Tailor-made and roll-your-own cigarettes	108/288	34.4 (27.0–42.6)	32.9 (24.9–40.8)	−2.4 (−14.3–9.6)
Tailor-made cigarettes only	134/288	49.5 (41.6–57.4)	50.1 (42.2–58.1)	**18.9 (7.0–30.7)**
Roll-your-own cigarettes only	46/288	16.1 (11.4–22.3)	17.0 (10.9–23.1)	**−16.5 (−27.8–−5.2)**
Total ethnicity				
Māori:				
Tailor-made and roll-your-own cigarettes	192/407	47.0 (41.3–52.8)	44.9 (38.6–50.6)	**11.3 (2.5–20.0)**
Tailor-made cigarettes only	119/407	27.7 (22.9–33.0)	28.8 (23.0–34.5)	**−16.0 (−24.3–−7.7)**

Appendix Table 1 (continued): Smoking patterns among people who smoke.

Roll-your-own cigarettes only	96/407	25.3 (20.6–30.7)	26.3 (20.3–32.2)	4.7 (−2.8–12.2)
Pacific:				
Tailor-made and roll-your-own cigarettes	83/196	47.1 (38.3–56.2)	42.8 (33.8–51.7)	9.1 (−1.6–19.8)
Tailor-made cigarettes only	82/196	36.6 (28.7–45.3)	39.2 (30.5–47.8)	−5.5 (−16.1–5.0)
Roll-your-own cigarettes only	31/196	16.3 (10.6–24.3)	18.0 (10.5–25.5)	−3.6 (−12.3–5.2)
Non-Māori, non-Pacific:				
Tailor-made and roll-your-own cigarettes	131/423	31.5 (25.9–37.6)	33.7 (27.9–39.4)	Reference
Tailor-made cigarettes only	200/423	46.4 (40.3–52.5)	44.7 (38.9–50.6)	
Roll-your-own cigarettes only	92/423	22.2 (17.6–27.6)	21.6 (17.0–26.1)	
Age group				
18–24:				
Tailor-made and roll-your-own cigarettes	123/261	43.5 (36.2–51.1)	41.2 (33.7–48.8)	6.4 (−4.1–16.9)
Tailor-made cigarettes only	89 /261	37.9 (30.7–45.7)	34.1 (26.5–41.7)	−9.8 (−20.3–0.7)
Roll-your-own cigarettes only	49/261	18.6 (13.4–25.3)	24.7 (16.8–32.5)	3.4 (−6.7–13.6)
25–44:				
Tailor-made and roll-your-own cigarettes	173/432	43.3 (37.2–49.5)	40.1 (34.1–46.1)	5.2 (−3.8–14.3)
Tailor-made cigarettes only	163/432	36.1 (30.4–42.1)	37.2 (31.4–43.0)	−6.7 (−15.9–2.4)
Roll-your-own cigarettes only	96/432	20.7 (16.5–25.6)	22.7 (17.8–27.5)	1.5 (−5.9–8.8)
≥45:				
Tailor-made and roll-your-own cigarettes	90/293	31.2 (25.0–38.1)	34.9 (28.0–41.7)	Reference
Tailor-made cigarettes only	136/293	44.1 (37.2–51.2)	43.9 (37.0–50.9)	
Roll-your-own cigarettes only	67/293	24.8 (19.1–31.5)	21.2 (15.6–26.8)	
Gender				
Man:				
Tailor-made and roll-your-own cigarettes	153/368	42.5 (36.4–49.0)	43.1 (36.7–49.5)	Reference

Appendix Table 1 (continued): Smoking patterns among people who smoke.

Tailor-made cigarettes only	146/368	38.7 (32.7–45.1)	37.3 (31.3–43.4)	
Roll-your-own cigarettes only	69/368	18.8 (14.5–24.0)	19.6 (14.6–24.6)	
Woman:				
Tailor-made and roll-your-own cigarettes	232/616	33.7 (29.4–38.2)	33.0 (28.6–37.5)	**−10.1 (−18.0–−2.1)**
Tailor-made cigarettes only	241/616	40.6 (35.9–45.4)	41.9 (36.9–46.9)	4.5 (−3.5–12.5)
Roll-your-own cigarettes only	143/616	25.8 (21.5–30.5)	25.1 (20.5–29.7)	5.5 (−1.3–12.4)
Evidence of financial hardship				
No:				
Tailor-made and roll-your-own cigarettes	233/665	33.9 (29.3–38.8)	35.4 (30.9–40.0)	Reference
Tailor-made cigarettes only	283/665	42.6 (37.8–47.6)	41.0 (36.4–45.6)	
Roll-your-own cigarettes only	149/665	23.5 (19.5–27.9)	23.6 (19.5–27.6)	
Yes:				
Tailor-made and roll-your-own cigarettes	139/291	49.5 (42.3–56.8)	46.0 (38.5–53.5)	**10.5 (1.9–19.2)**
Tailor-made cigarettes only	93/291	32.1 (25.7–39.2)	35.2 (28.0–42.5)	−5.8 (-14.1–2.6)
Roll-your-own cigarettes only	59/291	18.4 (13.9–24.0)	18.8 (13.3–24.2)	−4.8 (−11.5–1.9)

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
*Classifications were made by asking "Do you smoke …?" and offering the answer options of: "tailor-made cigarettes only", "roll-your-own cigarettes only" and "both".
Participants who refused to answer or answered "don't know" for this outcome were excluded.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

Appendix Table 2: Current electronic cigarette use in people who smoke and people who recently stopped smoking.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
People who smoke: use electronic cigarettes at least monthly				
Total	449/992	41.6 (37.6–45.6)		
Smoking status:				
Smokes daily not intending to quit	42/182	18.3 (12.5–25.9)	21.9 (15.6–29.8)	Reference
Smokes daily intending to quit	192/474	40.1 (34.6–45.9)	40.8 (35.2–46.7)	**19.0 (9.7–28.2)**
Smokes less than daily	201/292	65.9 (58.3–72.7)	63.6 (55.1–71.3)	**41.7 (30.4–53.0)**
Total ethnicity:				
Māori	182/408	37.9 (32.6–43.5)	38.1 (32.5–43.9)	**−10.9 (−18.6–−3.2)**
Pacific	80/197	38.7 (30.4–47.7)	34.6 (27.0–43.1)	**−14.4 (−24.0–−4.8)**
Non-Māori, non-Pacific	207/427	44.5 (38.5–50.6)	49.0 (43.3–54.7)	Reference
Age group:				
18–24	155/263	58.0 (50.4–65.3)	49.9 (41.7–58.1)	**17.8 (7.1–28.6)**
25–44	212/436	48.6 (42.6–54.7)	50.0 (44.0–56.0)	**18.0 (9.2–26.8)**
≥45	82/293	27.2 (21.3–34.1)	32.1 (25.8–39.0)	Reference
Gender:				
Man	200/369	47.6 (41.3–53.9)	47.8 (41.7–54.0)	Reference
Woman	247/621	34.6 (30.3–39.1)	37.6 (33.2–42.3)	**−10.2 (−17.5–−2.9)**
Evidence of financial hardship:				
No	290/669	41.1 (36.3–46.1)	41.8 (37.2–46.5)	Reference
Yes	148/292	45.9 (38.9–53.2)	46.9 (39.8–54.1)	5.1 (−2.9–13.2)
People who quit smoking: use electronic cigarettes at least monthly				
Total	109/238	39.7 (31.5–48.6)		
Total ethnicity:				
Māori	45/84	52.2 (36.8–67.2)	58.7 (42.2–73.5)	**25.8 (6.4–45.1)**
Pacific	18/41	54.4 (33.7–73.7)	56.4 (35.0–75.6)	23.7 (−0.6–47.9)
Non-Māori, non-Pacific	49/119	34.0 (24.3–45.1)	33.0 (23.7–43.8)	Reference
Age group:				
18–24	29/63	45.8 (31.3–61.0)	49.7 (31.9–67.5)	20.1 (−3.5–43.6)
25–44	48/92	48.0 (32.7–63.6)	46.6 (32.4–61.3)	17.0 (−2.7–36.7)

Appendix Table 2 (continued): Current electronic cigarette use in people who smoke and people who recently stopped smoking.

≥45	32/83	29.3 (18.6–42.9)	29.6 (18.8–43.3)	Reference
Gender:				
Man	32/78	38.8 (26.4–52.9)	41.4 (29.2–54.8)	Reference
Woman	77/159	40.9 (31.2–51.4)	38.6 (29.4–48.7)	−2.8 (−19.0–13.3)
Evidence of financial hardship:				
No	78/178	37.2 (28.2–47.1)	38.9 (30.0–48.6)	Reference
Yes	30/53	51.0 (32.0–69.7)	44.5 (28.2–62.0)	5.6 (−13.9–25.1)

Current use is defined as use at least monthly.
Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

Appendix Table 3: Daily heated tobacco product use in people who recently stopped smoking, current heated tobacco product use in people who smoke and current heated tobacco use in people who recently stopped smoking.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
People who smoke: use heated tobacco products daily				
Total	54/975	4.6 (3.3–6.6)		
Smoking status:				
Smokes daily not intending to quit	15/175	4.5 (2.4–8.3)	5.0 (2.7–9.2)	Reference
Smokes daily intending to quit	26/468	5.0 (3.0–8.1)	4.8 (2.9–7.7)	−0.3 (−4.1–3.6)
Smokes less than daily	10/289	3.2 (1.4–7.0)	3.6 (1.6–7.9)	−1.5 (−5.9–3.0)
Total ethnicity:				
Māori	30/401	5.6 (3.5–8.8)	4.9 (2.8–8.4)	0.0 (−4.2–4.1)
Pacific	8/194	5.4 (2.2–12.9)	3.0 (1.0–8.5)	−1.9 (−6.5–2.6)
Non-Māori, non-Pacific	19/420	3.8 (2.2–6.5)	4.9 (2.8–8.6)	Reference
Age group:				
18–24	7/262	1.9 (0.8–4.4)	2.0 (0.8–4.9)	−1.0 (−4.4–2.5)
25–44	39/426	7.4 (4.8–11.1)	6.8 (4.3–10.6)	3.8 (−0.5–8.2)
≥45	8/287	2.8 (1.3–6.0)	2.9 (1.2–7.1)	Reference
Gender:				
Man	35/363	6.1 (3.9–9.5)	5.8 (3.6–9.0)	Reference
Woman	18/610	2.9 (1.6–5.0)	3.1 (1.7–5.4)	−2.7 (−5.8–0.5)
Evidence of financial hardship:				
No	22/660	3.8 (2.3–6.2)	3.5 (2.1–5.7)	Reference
Yes	31/285	7.6 (4.8–11.9)	7.6 (4.5–12.6)	4.1 (−0.2–8.5)
People who smoke: current use of heated tobacco products				
Total	116/975	10.2 (8.1–12.7)		
Smoking status:				
Smokes daily not intending to quit	24/175	8.3 (4.9–13.6)	9.7 (6.0–15.5)	Reference
Smokes daily intending to quit	60/468	11.4 (8.4–15.2)	10.3 (7.5–14.1)	0.6 (−5.0–6.2)

Appendix Table 3 (continued): Daily heated tobacco product use in people who recently stopped smoking, current heated tobacco product use in people who smoke and current heated tobacco use in people who recently stopped smoking.

Smokes less than daily	28/289	9.4 (5.8–15.0)	9.7 (5.9–15.4)	−0.1 (−6.8–6.7)
Total ethnicity:				
Māori	63/401	13.1 (9.7–17.5)	12.2 (8.6–17.0)	1.3 (−4.6–7.2)
Pacific	13/194	9.2 (4.7–17.2)	4.6 (1.9–10.7)	**−6.3 (−12.1–−0.5)**
Non-Māori, non-Pacific	43/420	8.7 (6.1–12.2)	10.9 (7.6–15.3)	Reference
Age group:				
18–24	13/262	4.8 (2.5–8.9)	4.4 (2.3–8.5)	−1.5 (−6.3–3.3)
25–44	88/426	17.0 (13.0–21.8)	15.4 (11.5–20.4)	**9.5 (3.5–15.5)**
≥45	15/287	4.9 (2.8–8.5)	5.9 (3.2–10.7)	Reference
Gender:				
Man	78/363	14.2 (10.7–18.6)	13.3 (10.0–17.5)	Reference
Woman	37/610	5.5 (3.7–7.9)	6.0 (4.1–8.8)	**−7.3 (−11.7–−2.9)**
Evidence of financial hardship:				
No	59/660	8.8 (6.5–11.9)	8.8 (6.5–11.9)	Reference
Yes	54/285	13.7 (9.8–18.7)	13.4 (9.4–18.8)	4.6 (−0.7–9.9)
People who stopped smoking: current use of heated tobacco products				
Total	5/235	1.7 (0.6–4.3)		
Total ethnicity:				
Māori	2/84	3.1 (0.7–13.2)	2.9 (0.7–11.6)	1.6 (−2.8–6.0)
Pacific	1/41	2.5 (0.3–17.0)	1.6 (0.2–12.0)	0.3 (−3.7–4.4)
Non-Māori, non-Pacific	2/116	1.0 (0.2–4.7)	1.3 (0.3–5.9)	Reference
Age group:				
18–24	2/62	4.0 (1.0–15.4)	3.6 (0.9–13.3)	3.0 (−2.2–8.2)
25–44	2/90	1.6 (0.3–7.6)	1.5 (0.4–5.8)	0.9 (−1.4–3.3)
≥45	1/83	0.4 (0.1–3.2)	0.6 (0.1–4.4)	Reference
Gender:				
Man	1/77	0.9 (0.1–6.4)	1.0 (0.2–5.9)	Reference
Woman	4/157	2.6 (0.9–7.4)	2.5 (0.9–6.7)	1.5 (−1.3–4.3)

Appendix Table 3 (continued): Daily heated tobacco product use in people who recently stopped smoking, current heated tobacco product use in people who smoke and current heated tobacco use in people who recently stopped smoking.

Evidence of financial hardship:				
No	2/175	1.1 (0.3–4.2)	1.2 (0.3–5.2)	Reference
Yes	3/53	4.0 (1.0–14.3)	2.8 (0.6–12.1)	1.5 (−3.4–6.5)

Current use is defined as use at least monthly.
Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
See Table 1 for the definition of financial hardship.
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

Appendix Table 4: Prevalence of addiction and regret in people who smoke, by ethnicity, age, gender and evidence of financial hardship.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
People who smoke: report being addicted* to smoking				
Total	854/974	87.3 (84.1–89.9)		
Total ethnicity:				
Māori	370/403	93.3 (90.2–95.4)	90.9 (86.6–93.8)	**5.2 (0.6–9.8)**
Pacific	162/194	84.4 (77.2–89.7)	83.5 (76.4–88.8)	−2.1 (−8.8–4.5)
Non-Māori, non-Pacific	355/417	85.2 (80.0–89.3)	85.7 (81.7–88.9)	Reference
Age group:				
18–24	202/257	76.5 (69.0–82.7)	84.6 (79.1–88.8)	−1.2 (−7.9–5.5)
25–44	389/429	90.1 (86.1–93.1)	88.1 (83.6–91.5)	2.3 (−3.6–8.2)
≥45	263/288	88.6 (82.0–93.0)	85.8 (80.2–90.0)	Reference
Gender:				
Man	306/361	84.5 (79.0–88.7)	84.7 (80.3–88.2)	Reference
Woman	546/611	90.6 (87.5–92.9)	88.9 (85.4–91.7)	4.3 (−0.2–8.8)
Evidence of financial hardship:				
No	573/660	86.4 (82.3–89.7)	86.6 (83.1–89.4)	Reference
Yes	255/285	88.8 (83.3–92.7)	86.1 (80.5–90.3)	−0.5 (−5.6–4.7)
People who smoke: regret having started smoking**				
Total	747/964	77.5 (74.0–80.8)		
Total ethnicity:				
Māori	311/400	75.0 (69.5–79.8)	74.9 (69.0–80.0)	−6.9 (−14.1–0.3)
Pacific	140/193	69.9 (60.7–77.8)	70.4 (60.5–78.7)	**−11.4 (−21.6–−1.1)**
Non-Māori, non-Pacific	325/411	81.1 (75.8–85.4)	81.8 (76.7–86.0)	Reference
Age group:				
18–24	172/257	66.5 (59.1–73.2)	67.9 (59.9–75.0)	**−14.9 (−24.2–−5.7)**
25–44	337/426	76.8 (71.0–81.8)	77.4 (71.1–82.6)	−5.5 (−13.2–2.2)
≥45	238/281	82.8 (76.8–87.5)	82.8 (77.1–87.4)	Reference
Gender:				
Man	272/355	75.5 (69.7–80.6)	76.1 (70.3–81.0)	Reference
Woman	474/607	79.9 (75.7–83.5)	80.2 (75.8–84.0)	4.1 (−2.5–10.7)

Appendix Table 4 (continued): Prevalence of addiction and regret in people who smoke, by ethnicity, age, gender and evidence of financial hardship.

Evidence of financial hardship:				
No	495/645	78.5 (74.2–82.3)	77.4 (73.0–81.3)	Reference
Yes	233/288	77.7 (70.5–83.5)	79.3 (72.6–84.8)	1.9 (−5.2–9.1)

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
*Participants who reported being "yes—somewhat addicted" or "yes—very addicted" when asked "Do you consider yourself addicted to cigarettes?" were classified as addicted to smoking.
**Participants who answered that they "agree" or "strongly agree" with "If you had a chance to live your life again, you would not have started smoking cigarettes" were classified as regretting having started to smoke.
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

Appendix Table 5: Prevalence of failed quit attempts in the past 12 months,* in people who smoke by ethnicity, age, gender and evidence of financial hardship.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
Total	546/988	51.5 (47.4–55.6)		
Total ethnicity				
Māori	239/406	54.4 (48.6–60.1)	52.7 (46.5–58.7)	2.4 (−5.6–10.4)
Pacific	115/196	55.0 (46.0–63.8)	53.4 (44.7–61.9)	3.1 (−7.1–13.4)
Non-Māori, non-Pacific	218/426	49.1 (43.0–55.3)	50.2 (44.6–55.9)	Reference
Age group				
18–24	190/263	75.2 (68.4–80.9)	64.0 (55.4–71.7)	**19.2 (8.5–29.9)**
25–44	232/432	54.4 (48.3–60.3)	52.3 (46.4–58.1)	7.5 (−1.2–16.3)
≥45	124/293	38.8 (32.2–45.8)	44.7 (38.1–51.6)	Reference
Gender				
Man	202/369	52.4 (46.1–58.7)	51.7 (45.7–57.6)	Reference
Woman	343/617	50.4 (45.6–55.3)	50.8 (46.1–55.6)	−0.8 (−8.0–6.3)
Evidence of financial hardship				
No	353/667	49.3 (44.4–54.3)	49.5 (44.8–54.1)	Reference
Yes	178/290	58.7 (51.3–65.7)	56.1 (49.0–63.0)	6.7 (−1.2–14.6)

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
*This was classified as answering "yes" to the question "Have you tried to stop smoking in the last 12 months?"
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.

Appendix Table 6: Prevalence of previous failed quit attempts and plans to quit in people who smoke, by ethnicity, age, gender and evidence of financial hardship.

	n/N	Weighted percentage (95% CI)	Marginally standardised percentage (95% CI)	Absolute marginal difference (95% CI)
People who smoke: previously tried to quit smoking^				
Total	834/972	86.3 (83.3–88.8)		
Total ethnicity:				
Māori	354/400	89.0 (85.0–92.0)	89.9 (85.7–92.9)	4.7 (−0.8–10.2)
Pacific	161/196	84.1 (76.6–89.4)	86.4 (79.1–91.5)	1.3 (−6.2–8.8)
Non-Māori, non-Pacific	350/416	85.3 (80.6–89.0)	85.1 (80.4–88.9)	Reference
Age group:				
18–24	225/262	86.7 (80.9–90.9)	82.3 (74.5–88.0)	−6.6 (−14.5–1.4)
25–44	360/424	86.1 (81.4–89.7)	85.7 (80.5–89.7)	−3.1 (−9.3–3.0)
≥45	249/286	86.4 (80.9–90.5)	88.8 (84.0–92.3)	Reference
Gender:				
Man	303/364	85.4 (80.7–89.1)	86.3 (81.7–89.9)	Reference
Woman	530/606	87.4 (83.6–90.4)	87.1 (83.1–90.3)	0.9 (−4.4–6.1)
Evidence of financial hardship:				
No	555/656	85.0 (81.2–88.2)	85.3 (81.6–88.4)	Reference
Yes	256/286	91.1 (86.3–94.3)	90.7 (85.3–94.2)	**5.4 (0.1–10.7)**
People who smoke: plan to quit smoking in the future^^				
Total	708/918	73.6 (69.5–77.4)		
Total ethnicity:				
Māori	296/381	76.9 (71.5–81.5)	70.9 (66.0–75.4)	−2.9 (−6.1–0.4)
Pacific	144/185	75.3 (66.3–82.6)	72.3 (67.1–76.9)	−1.5 (−4.9–1.9)
Non-Māori, non-Pacific	294/390	70.7 (64.3–76.4)	73.8 (69.5–77.6)	Reference
Age group:				
18–24	210/243	84.8 (78.0–89.8)	73.3 (68.8–77.3)	1.4 (−2.1–4.9)
25–44	319/406	78.9 (73.5–83.5)	73.8 (69.5–77.7)	1.9 (−1.3–5.1)
≥45	179/269	63.5 (55.9–70.5)	71.9 (66.9–76.3)	Reference
Gender:				
Man	250/341	71.5 (65.1–77.2)	72.3 (67.9–76.3)	Reference

Appendix Table 6 (continued): Prevalence of previous failed quit attempts and plans to quit in people who smoke, by ethnicity, age, gender and evidence of financial hardship.

Woman	457/576	76.0 (71.0–80.4)	74.4 (70.2–78.1)	2.1 (−0.1–4.3)
Evidence of financial hardship:				
No	464/619	70.6 (65.5–75.3)	72.6 (68.4–76.5)	Reference
Yes	223/276	80.2 (73.4–85.6)	75.1 (70.9–78.8)	**2.5 (0.7–4.2)**

Values in bold indicate statistically significantly absolute marginal differences compared with the reference value.
Total ethnicity data are presented for Māori and Pacific. Some participants identified as both Māori and Pacific (see Table 1); comparisons for these two groups are made to an exclusive non-Māori, non-Pacific group.
Note that those with a non-binary gender do not have results reported (group too small for reasonable inference).
See Table 1 for the definition of financial hardship.
^This was classified as answering "yes" to the question "Have you ever tried to quit smoking cigarettes?"
^^This was classified as answering "within the next month", "between 1–6 months from now", or "sometime in the future, beyond 6 months" after the question "Are you planning to quit smoking..."
Participants who refused to answer or answered "don't know" were excluded from the relevant analyses.
Marginally standardised percentages and absolute differences adjust for: smoking status and quit intention, prioritised ethnicity, gender, age group and financial hardship.