

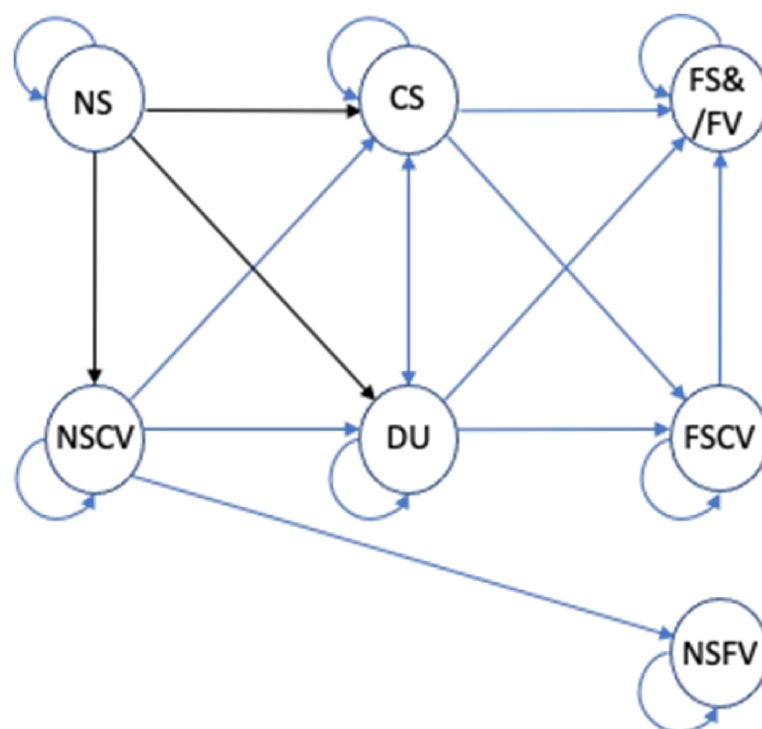
## Supplementary material

### Contents

Figure S1. Tobacco and vaping life history Markov model .....	3
Table S1: Seven smoking and Vaping States used in the Multistate Life-table Model.....	3
Table S2. Baseline annual transition probabilities based on data reported by Doan et al. 2020 <sup>5</sup> .....	4
Appendix A: Tobacco-related disease models .....	5
Appendix B: Epidemiological inputs .....	6
Table S3. CHD input parameters .....	6
Table S4. Stroke input parameters.....	7
Table S5. Lung cancer input parameters.....	9
Table S6. Head and neck cancer input parameters .....	10
Table S7. Esophageal cancer input parameters .....	12
Table S8. Stomach cancer input parameters .....	13
Table S9. Liver cancer input parameters.....	15
Table S10. Pancreatic cancer input parameters .....	16
Table S11. Cervical cancer input parameters.....	18
Table S12. Bladder cancer input parameters.....	19
Table S13. Kidney cancer input parameters .....	20
Table S14. Endometrial cancer input parameters .....	22
Table S15. Melanoma input parameters.....	23
Table S16. Thyroid cancer input parameters .....	24
Table S17. COPD input parameters.....	26
Table S18. LRTI input parameters .....	27
Table S19. Future APC trends in incidence, CFR and remission.....	30
Appendix C: Association of smoking and vaping with disease incidence rates.....	31
Health impact of changing exposure to tobacco smoke.....	31
Relative risks of smoking-related diseases.....	31
Table S20. Relative risks of smoking-related diseases for current versus never smokers ..	32

Table S21. Regression coefficients used to estimate declining risks of disease with smoking cessation.....	33
Appendix D: Expert knowledge elicitation process .....	34
Table S22. Co-authors estimates of the effect of denicotinisation on smoking prevalence .....	34
Figure S2. Probability density function applied to average effect of denicotinisation on smoking cessation .....	35
Table S23. Estimated smoking prevalence (20+ year olds) in Aotearoa/New Zealand by policy scenario for 2020, 2025, 2030, and 2040 by sex and ethnic group .....	37
Table S24. Absolute change in premature deaths (i.e., before age 75 years).....	38
Table S25. Relative percentage change in premature deaths (i.e., before age 75 years) ...	39
Figure S3. Comparison of total health gains from tobacco endgame strategies modelled in this paper, with those we have previously modelled for the ANZ population of food taxes and subsidies <sup>14</sup> , colorectal cancer screening <sup>15</sup> , and 10% per annum increases in tobacco tax <sup>16</sup> .....	40
Table S26. Health gain (in HALYs gained; 3% discount rate) per 1,000 people alive in 2020 (base-year) in Aotearoa/New Zealand by the modelled policies, by timeline into the future .....	41
Table S27. Sensitivity of Health gains results to policy effect specifications* .....	42
References .....	43

Figure S1. Tobacco and vaping life history Markov model



NS = never smoker, CS = current smoker, FS & FV = former smoker and former vaper; NSCV = never smoker current vaper; DU = dual user; FSCV = former smoker current vaper; NSFV = never smoker former vaper.

Table S1: Seven smoking and Vaping States used in the Multistate Life-table Model

Smoking and/or Vaping State <sup>a</sup>	Definition
NS (never smoker)	'A person who has never smoked at all or has never regularly smoked one or more manufactured or RYO tobacco cigarettes per day.' <sup>1,2</sup>
NSCV (never smoker, current vaper)	'As above for NS and currently vapes daily (i.e., "do you now use an e-cigarette every day, some days, or not at all?")' <sup>1,3</sup>
CS (current smoker)	'A person who currently smokes one or more manufactured or RYO tobacco cigarettes per day.' <sup>1</sup>
DU (dual user – both vaping and smoking)	'As above for CS and who currently vapes daily (i.e., "Do you now use an e-cigarette every day, some days, or not at all?")' <sup>1,3</sup>
FS&/FV (former smoker and/or former vaper)	A person who currently neither smokes or vapes, but previously either smoked one or more manufactured or RYO tobacco cigarettes per day and/or previously vaped daily. <sup>1,2</sup>
FSCV (former smoker and current vaper)	'A person who does not smoke currently, but previously smoked one or more manufactured or RYO tobacco cigarettes per day' <sup>1,2</sup> and 'currently vapes daily (i.e., "do you now use an e-cigarette every day, some days, or not at all?")' <sup>1-3</sup>
NSFV (never smoker and former vaper)	As above for NS and previously vaped daily.

<sup>a</sup>As per the definitions described in Petrović-van der Deen et al 2019.<sup>4</sup> RYO: roll-your-own

Table S2. Baseline annual transition probabilities based on data reported by Doan et al. 2020<sup>5</sup>

<b>Transitions</b>	<b>Age 20-44</b>	<b>Age 45+</b>
CS=>DU (smokers adopting dual use)	8.4%	5.3%
CS=>FS (smokers quitting all nicotine)	8.6%	14.6%
CS=>FSCV (smokers becoming vapers)	3.5%	4.4%
NSCV=>CS (vapers becoming smokers)	13.8%	15.5%
NSCV=>DU (vapers adopting dual use)	15.4%	10.9%
NSCV=>NSFV (vapers quitting vaping)	22.1%	20.5%
DU=>CS (dual users becoming just smokers)	13.7%	16.2%
DU=> FS&/FV (dual users quitting all nicotine)	17.9%	20.0%
DU=>FSCV (dual users becoming just vapers)	14.8%	18.9%
FSCV=> FS&/FV (vapers quitting all nicotine)	22.1%	20.5%
FSCV=> CS (former smokers, who became exclusive vapers, who go back to exclusive smoking)	13.8%	15.5%

## Appendix A: Tobacco-related disease models<sup>1</sup>

There are many diseases associated with smoking, with varying evidence in terms of the contribution of tobacco use to their incidence. In principle, we prioritised inclusion in the model for: 1) diseases which were included as smoking-related in the New Zealand Burden of Disease Study<sup>6</sup>; 2) cancers that were found to have a significant association with smoking in the New Zealand Cancer Trends study<sup>7</sup>; and 3) other smoking-related diseases that contributed to at least 0.5% of the total disease burden in New Zealand in 2006 (as measured in DALYs in the NZBDS). Diseases needed to meet criteria 1 and 3 or criteria 2 to be included in the model. Most of the included diseases were chronic diseases (e.g. various cancers) with the exception of acute lower respiratory tract infections.

Some diseases with relatively high relative risks (RRs) were excluded such as age-related macular degeneration (ARMD) and peripheral vascular disease, as these each make up <0.5% of the total disease burden in New Zealand (and therefore would contribute negligible health gains in a smoking intervention model). Also, data availability and reliability were poor for the following conditions: gum disease, impotence, female infertility, hip fracture risk, fire-related injuries and other injuries, and mental health effects such as depression, anxiety, and for the psychological state of being “addicted” to tobacco. We did not include diseases from second-hand smoke and smoking in pregnancy as this was deemed too complex for our macro-simulation modelling – thus there is an inherent bias in our modelling to underestimate health gains from tobacco reduction (albeit probably slightly). Regarding female breast cancer IARC states “limited” evidence for the association with smoking<sup>8</sup>, therefore we did not include it. Last, we did not include “ovary mucinous” cancer, as this was not included in the NZBDS and would be a minor contributor to total health gains (even though IARC states that there is sufficient evidence for an association with smoking). Also of note, we included three diseases for which smoking appears to have protective effects: melanoma, thyroid cancer and endometrial cancer (based on the Cancer Trends study)<sup>7</sup>.

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<sup>1</sup> The text presented in this section was reproduced from the supplementary material provided in Blakely et al. 2015. The full methodological appendix is available at: <https://doi.org/a0.1371/journal/pmed/10011856.s006>

## Appendix B: Epidemiological inputs

The tables below present the tobacco-related diseases baseline epidemiological inputs into the multistate life table models

Table S3. CHD input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.0	0.105
		5-9	0.0	0.000	0.0	0.105
		10-14	0.0	0.000	0.0	0.105
		15-19	0.2	0.000	0.0	0.105
		20-24	8.8	0.000	0.2	0.105
		25-29	27.5	0.006	1.1	0.105
		30-34	44.7	0.026	2.6	0.105
		35-39	125.4	0.029	5.9	0.105
		40-44	250.4	0.030	13.8	0.105
		45-49	487.0	0.038	27.6	0.108
		50-54	846.3	0.040	52.0	0.108
		55-59	1249.4	0.035	88.2	0.100
		60-64	1796.2	0.034	138.1	0.100
		65-69	2333.5	0.032	200.8	0.083
		70-74	2769.0	0.034	269.6	0.083
		75-79	3009.7	0.041	331.9	0.069
		80-84	2793.6	0.050	375.6	0.069
		85-89	2676.4	0.071	386.8	0.061
90-94	4368.9	0.111	385.1	0.061		
95+	6671.4	0.168	392.6	0.061		
Female	Māori	0-4	0.0	0.000	0.0	0.096
		5-9	0.0	0.000	0.0	0.096
		10-14	0.0	0.004	0.0	0.096
		15-19	0.9	0.085	0.0	0.096
		20-24	13.9	0.165	0.3	0.096
		25-29	30.4	0.089	1.1	0.096
		30-34	29.8	0.033	2.2	0.096
		35-39	46.6	0.027	3.6	0.096
		40-44	130.0	0.027	6.9	0.096
		45-49	290.3	0.020	15.9	0.112
		50-54	459.2	0.017	32.3	0.112
		55-59	650.4	0.017	54.8	0.124
		60-64	1053.5	0.023	87.2	0.124
		65-69	1401.6	0.027	130.0	0.110
		70-74	1690.4	0.031	176.7	0.110
		75-79	2245.6	0.045	224.2	0.101
		80-84	2870.6	0.069	268.4	0.101
		85-89	2999.2	0.103	289.6	0.090
90-94	3085.3	0.176	262.8	0.090		
95+	3996.0	0.339	171.9	0.090		
Male	non-Māori	0-4	0.0	0.000	0.0	0.079
		5-9	0.0	0.000	0.0	0.079
		10-14	0.0	0.002	0.0	0.079
		15-19	0.4	0.038	0.0	0.079
		20-24	8.5	0.074	0.2	0.079

		25-29	21.7	0.040	0.8	0.079
		30-34	29.3	0.018	1.9	0.079
		35-39	75.9	0.012	4.1	0.079
		40-44	165.8	0.013	9.6	0.079
		45-49	302.9	0.016	19.8	0.088
		50-54	500.5	0.015	37.0	0.088
		55-59	763.1	0.015	63.1	0.088
		60-64	1109.7	0.017	99.7	0.088
		65-69	1570.9	0.018	148.7	0.086
		70-74	2071.5	0.020	209.4	0.086
		75-79	2683.9	0.026	277.5	0.083
		80-84	3562.0	0.042	348.3	0.083
		85-89	4498.6	0.079	405.2	0.072
		90-94	4944.0	0.151	410.1	0.072
		95+	5201.0	0.301	296.2	0.072
Female	non-Māori	0-4	0.0	0.000	0.0	0.069
		5-9	0.0	0.000	0.0	0.069
		10-14	0.0	0.000	0.0	0.069
		15-19	0.1	0.000	0.0	0.069
		20-24	7.0	0.000	0.1	0.069
		25-29	19.7	0.001	0.8	0.069
		30-34	16.4	0.002	1.8	0.069
		35-39	21.2	0.003	2.6	0.069
		40-44	50.4	0.006	4.2	0.069
		45-49	104.6	0.007	7.7	0.086
		50-54	198.9	0.005	14.7	0.086
		55-59	350.4	0.006	27.4	0.089
		60-64	551.5	0.010	47.4	0.089
		65-69	864.6	0.012	76.9	0.093
		70-74	1258.7	0.015	118.7	0.093
		75-79	1786.0	0.021	171.8	0.093
		80-84	2495.9	0.032	234.9	0.093
		85-89	3131.2	0.062	294.8	0.086
		90-94	3297.2	0.144	303.7	0.086
		95+	3388.0	0.344	187.0	0.086

Table S4. Stroke input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.0	0.396
		5-9	0.0	0.006	0.0	0.396
		10-14	0.0	0.067	0.0	0.396
		15-19	0.0	0.122	0.0	0.396
		20-24	0.0	0.089	0.0	0.396
		25-29	2.1	0.042	0.2	0.396
		30-34	15.1	0.089	0.4	0.396
		35-39	51.8	0.074	1.6	0.396
		40-44	81.2	0.035	4.4	0.396
		45-49	115.5	0.024	8.3	0.132
		50-54	168.0	0.023	14.1	0.132
		55-59	216.4	0.023	21.5	0.143
		60-64	297.6	0.020	31.0	0.143
		65-69	448.8	0.019	45.3	0.218
		70-74	625.7	0.035	64.0	0.218

		75-79	733.8	0.058	79.7	0.294
		80-84	788.9	0.083	87.6	0.294
		85-89	1013.0	0.168	82.2	0.534
		90-94	1645.2	0.399	57.6	0.534
		95+	2760.7	0.803	36.8	0.534
Female	Māori	0-4	0.0	0.000	0.0	0.431
		5-9	0.0	0.000	0.0	0.431
		10-14	0.0	0.000	0.0	0.431
		15-19	0.0	0.000	0.0	0.431
		20-24	0.0	0.000	0.0	0.431
		25-29	0.8	0.333	0.0	0.431
		30-34	4.2	1.476	0.0	0.431
		35-39	15.1	1.897	0.1	0.431
		40-44	75.9	1.017	0.6	0.431
		45-49	163.9	0.126	4.2	0.137
		50-54	226.0	0.029	12.5	0.137
		55-59	274.1	0.027	22.4	0.130
		60-64	353.9	0.030	33.7	0.130
		65-69	463.0	0.034	47.0	0.164
		70-74	586.2	0.042	61.9	0.164
		75-79	721.5	0.055	76.6	0.258
		80-84	1041.1	0.096	88.4	0.258
		85-89	1650.4	0.229	87.5	0.559
		90-94	2168.2	0.481	60.5	0.559
95+	2670.8	0.770	37.1	0.559		
Male	non-Māori	0-4	0.0	0.004	0.0	0.373
		5-9	0.0	0.028	0.0	0.373
		10-14	0.0	0.043	0.0	0.373
		15-19	0.0	0.044	0.0	0.373
		20-24	0.0	0.050	0.0	0.373
		25-29	5.1	0.051	0.3	0.373
		30-34	5.1	0.028	0.5	0.373
		35-39	19.9	0.012	1.0	0.373
		40-44	44.5	0.012	2.5	0.373
		45-49	72.9	0.014	5.1	0.132
		50-54	116.6	0.012	9.3	0.132
		55-59	188.1	0.013	15.9	0.122
		60-64	288.9	0.015	26.0	0.122
		65-69	447.7	0.017	41.0	0.150
		70-74	656.4	0.020	62.5	0.150
		75-79	921.0	0.029	90.1	0.158
		80-84	1255.7	0.048	120.5	0.158
		85-89	1589.6	0.097	142.8	0.166
		90-94	1876.4	0.219	127.9	0.166
95+	2773.8	0.472	73.9	0.166		
Female	non-Māori	0-4	0.0	0.000	0.0	0.415
		5-9	0.0	0.000	0.0	0.415
		10-14	0.0	0.000	0.0	0.415
		15-19	0.0	0.002	0.0	0.415
		20-24	0.0	0.136	0.0	0.415
		25-29	3.4	0.354	0.1	0.415
		30-34	10.9	0.172	0.2	0.415
		35-39	23.4	0.039	0.9	0.415
		40-44	39.1	0.024	2.3	0.415
		45-49	57.6	0.019	4.3	0.180
		50-54	78.8	0.015	7.2	0.180
55-59	111.4	0.009	11.3	0.166		



60-64	182.0	0.011	17.7	0.166
65-69	299.4	0.017	27.6	0.164
70-74	483.1	0.024	42.7	0.164
75-79	775.5	0.033	64.8	0.180
80-84	1223.1	0.054	94.2	0.180
85-89	1739.5	0.080	116.5	0.242
90-94	2120.5	0.124	124.7	0.242
95+	2777.6	0.182	109.2	0.242

Table S5. Lung cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.00	0.000	0.0	0.323
		5-9	0.0	0.00	0.000	0.0	0.323
		10-14	0.0	0.00	0.000	0.0	0.323
		15-19	0.0	0.00	0.000	0.0	0.323
		20-24	0.1	0.00	0.000	0.0	0.323
		25-29	0.5	0.03	0.005	0.0	0.323
		30-34	1.3	0.14	0.023	0.0	0.323
		35-39	3.4	0.30	0.046	0.1	0.323
		40-44	7.9	0.29	0.063	0.1	0.323
		45-49	21.8	0.27	0.065	0.4	0.323
		50-54	56.5	0.51	0.058	0.9	0.323
		55-59	132.3	0.79	0.055	1.3	0.323
		60-64	268.6	0.80	0.048	2.7	0.323
		65-69	378.4	0.83	0.052	4.1	0.281
		70-74	447.6	0.95	0.056	4.5	0.281
		75-79	504.9	1.31	0.052	3.9	0.281
		80-84	552.0	1.67	0.046	3.2	0.281
		85-89	545.2	1.59	0.044	3.4	0.281
		90-94	469.1	1.62	0.043	2.9	0.281
95+	404.5	1.77	0.043	2.3	0.281		
Female	Māori	0-4	0.0	0.00	0.000	0.0	0.396
		5-9	0.0	0.00	0.000	0.0	0.396
		10-14	0.0	0.00	0.000	0.0	0.396
		15-19	0.0	0.00	0.000	0.0	0.396
		20-24	0.3	0.00	0.000	0.0	0.396
		25-29	1.5	0.10	0.010	0.0	0.396
		30-34	3.9	0.53	0.061	0.1	0.396
		35-39	8.2	1.14	0.155	0.1	0.396
		40-44	15.3	1.00	0.186	0.1	0.396
		45-49	42.1	0.57	0.138	0.4	0.396
		50-54	105.0	0.56	0.092	1.3	0.396
		55-59	208.8	0.63	0.080	2.6	0.396
		60-64	353.0	0.85	0.069	3.7	0.396
		65-69	443.6	0.99	0.067	4.1	0.313
		70-74	502.0	1.02	0.060	4.5	0.313
		75-79	549.3	0.98	0.045	5.2	0.313
		80-84	557.2	0.99	0.037	5.7	0.313
		85-89	502.3	1.23	0.035	4.2	0.313
		90-94	432.5	1.43	0.034	3.1	0.313
95+	378.7	1.64	0.034	2.4	0.313		
Male	non-Māori	0-4	0.0	0.00	0.000	0.0	0.358
		5-9	0.0	0.00	0.000	0.0	0.358

		10-14	0.0	0.00	0.000	0.0	0.358
		15-19	0.0	0.00	0.000	0.0	0.358
		20-24	0.1	0.00	0.000	0.0	0.358
		25-29	0.3	0.07	0.014	0.0	0.358
		30-34	0.6	0.29	0.062	0.0	0.358
		35-39	1.6	0.33	0.080	0.0	0.358
		40-44	3.6	0.35	0.082	0.1	0.358
		45-49	9.0	0.47	0.078	0.1	0.331
		50-54	20.9	0.55	0.066	0.3	0.331
		55-59	43.6	0.55	0.068	0.6	0.338
		60-64	85.6	0.61	0.066	1.1	0.338
		65-69	135.1	0.71	0.073	1.6	0.297
		70-74	199.0	0.83	0.082	2.1	0.297
		75-79	268.5	1.11	0.091	2.3	0.273
		80-84	309.2	1.55	0.105	1.9	0.273
		85-89	298.5	1.96	0.112	1.5	0.378
		90-94	275.5	2.23	0.105	1.2	0.378
		95+	245.2	2.46	0.100	1.0	0.378
Female	non-Māori	0-4	0.0	0.00	0.000	0.0	0.353
		5-9	0.0	0.00	0.000	0.0	0.353
		10-14	0.0	0.00	0.000	0.0	0.353
		15-19	0.0	0.00	0.000	0.0	0.353
		20-24	0.2	0.00	0.000	0.0	0.353
		25-29	0.6	0.03	0.019	0.0	0.353
		30-34	1.3	0.12	0.094	0.1	0.353
		35-39	2.7	0.15	0.179	0.1	0.353
		40-44	5.9	0.26	0.149	0.1	0.353
		45-49	11.9	0.39	0.079	0.2	0.355
		50-54	22.9	0.44	0.076	0.4	0.355
		55-59	42.6	0.50	0.079	0.6	0.367
		60-64	73.9	0.55	0.067	1.0	0.367
		65-69	106.9	0.68	0.063	1.4	0.305
		70-74	139.5	0.80	0.062	1.6	0.305
		75-79	162.6	0.97	0.058	1.6	0.290
		80-84	171.7	1.14	0.055	1.4	0.290
		85-89	169.9	1.13	0.053	1.5	0.122
		90-94	147.7	1.19	0.052	1.2	0.122
		95+	128.4	1.36	0.052	1.0	0.122

Table S6. Head and neck cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.000	0.0	0.319
		5-9	0.0	0.000	0.000	0.0	0.319
		10-14	0.0	0.000	0.000	0.0	0.319
		15-19	0.3	0.000	0.000	0.0	0.319
		20-24	0.9	0.001	0.000	0.0	0.319
		25-29	1.8	0.010	0.031	0.1	0.319
		30-34	3.1	0.033	0.132	0.1	0.319
		35-39	5.1	0.033	0.145	0.2	0.319
		40-44	8.4	0.035	0.084	0.3	0.319
		45-49	13.4	0.054	0.061	0.6	0.319
		50-54	20.1	0.075	0.097	0.9	0.319
		55-59	28.9	0.097	0.111	1.1	0.319

		60-64	37.9	0.144	0.086	1.4	0.319
		65-69	42.8	0.159	0.064	1.7	0.270
		70-74	44.7	0.181	0.052	1.9	0.270
		75-79	44.1	0.192	0.055	1.8	0.270
		80-84	45.4	0.177	0.065	1.8	0.270
		85-89	56.9	0.208	0.059	2.0	0.270
		90-94	73.4	0.282	0.056	2.1	0.270
		95+	88.3	0.344	0.060	2.2	0.270
Female	Māori	0-4	0.0	0.000	0.000	0.0	0.388
		5-9	0.0	0.000	0.000	0.0	0.388
		10-14	0.0	0.000	0.000	0.0	0.388
		15-19	0.1	0.000	0.000	0.0	0.388
		20-24	0.3	0.001	0.000	0.0	0.388
		25-29	0.9	0.013	0.092	0.0	0.388
		30-34	2.5	0.047	0.395	0.1	0.388
		35-39	3.8	0.047	0.452	0.1	0.388
		40-44	5.1	0.046	0.263	0.1	0.388
		45-49	6.9	0.073	0.142	0.2	0.388
		50-54	9.1	0.105	0.164	0.3	0.388
		55-59	12.2	0.142	0.151	0.4	0.388
		60-64	16.1	0.209	0.104	0.5	0.388
		65-69	19.0	0.235	0.086	0.5	0.196
		70-74	21.9	0.283	0.085	0.6	0.196
		75-79	24.1	0.312	0.123	0.6	0.196
		80-84	27.3	0.283	0.178	0.6	0.196
		85-89	35.7	0.322	0.169	0.7	0.196
		90-94	46.5	0.473	0.152	0.7	0.196
		Male	non-Māori	95+	58.9	0.695	0.130
0-4	0.0			0.000	0.000	0.0	0.280
5-9	0.0			0.000	0.000	0.0	0.280
10-14	0.0			0.000	0.000	0.0	0.280
15-19	0.0			0.000	0.000	0.0	0.280
20-24	0.7			0.001	0.000	0.0	0.280
25-29	1.1			0.009	0.012	0.1	0.280
30-34	1.8			0.026	0.051	0.1	0.280
35-39	2.9			0.028	0.063	0.2	0.280
40-44	4.9			0.030	0.037	0.3	0.280
45-49	8.1			0.048	0.019	0.5	0.256
50-54	12.9			0.067	0.040	0.7	0.256
55-59	19.6			0.083	0.065	1.0	0.283
60-64	27.8			0.115	0.054	1.3	0.283
65-69	33.3			0.129	0.052	1.6	0.225
70-74	37.4			0.153	0.057	1.7	0.225
75-79	40.2			0.165	0.080	1.7	0.182
80-84	44.4			0.152	0.108	1.7	0.182
85-89	56.5			0.178	0.098	1.9	0.112
90-94	71.2			0.249	0.101	2.0	0.112
Female	non-Māori	95+	81.3	0.332	0.115	2.0	0.112
		0-4	0.0	0.000	0.000	0.0	0.494
		5-9	0.0	0.000	0.000	0.0	0.494
		10-14	0.0	0.000	0.000	0.0	0.494
		15-19	0.0	0.000	0.000	0.0	0.494
		20-24	0.3	0.000	0.000	0.0	0.494
		25-29	0.6	0.010	0.051	0.0	0.494
		30-34	1.4	0.040	0.216	0.0	0.494
		35-39	2.1	0.043	0.245	0.1	0.494
		40-44	3.2	0.038	0.174	0.1	0.494

45-49	4.6	0.050	0.136	0.2	0.386
50-54	6.3	0.070	0.140	0.2	0.386
55-59	9.1	0.089	0.138	0.3	0.312
60-64	12.6	0.107	0.136	0.4	0.312
65-69	15.7	0.137	0.137	0.5	0.263
70-74	19.1	0.177	0.150	0.6	0.263
75-79	21.8	0.221	0.189	0.6	0.297
80-84	25.4	0.258	0.237	0.5	0.297
85-89	34.8	0.291	0.256	0.6	0.165
90-94	44.4	0.341	0.259	0.7	0.165
95+	49.3	0.389	0.264	0.8	0.165

Table S7. Esophageal cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.00	0.000	0.000	0.283
		5-9	0.0	0.00	0.000	0.000	0.283
		10-14	0.0	0.00	0.000	0.000	0.283
		15-19	0.0	0.00	0.000	0.000	0.283
		20-24	0.0	0.00	0.000	0.000	0.283
		25-29	0.0	0.08	0.009	0.000	0.283
		30-34	0.0	0.33	0.032	0.001	0.283
		35-39	0.5	0.38	0.023	0.007	0.283
		40-44	1.3	0.43	0.048	0.022	0.283
		45-49	2.9	0.60	0.129	0.036	0.283
		50-54	6.9	0.63	0.166	0.072	0.283
		55-59	15.7	0.53	0.114	0.195	0.283
		60-64	27.9	0.76	0.096	0.304	0.283
		65-69	39.4	0.73	0.075	0.438	0.283
		70-74	50.9	0.69	0.042	0.652	0.283
		75-79	62.3	0.82	0.021	0.736	0.283
		80-84	70.9	0.97	0.017	0.728	0.283
		85-89	72.6	1.22	0.016	0.619	0.283
		90-94	64.1	1.58	0.016	0.430	0.283
		95+	51.9	1.78	0.016	0.282	0.283
Female	Māori	0-4	0.0	0.00	0.000	0.000	0.271
		5-9	0.0	0.00	0.000	0.000	0.271
		10-14	0.0	0.00	0.000	0.000	0.271
		15-19	0.0	0.00	0.000	0.000	0.271
		20-24	0.0	0.00	0.000	0.000	0.271
		25-29	0.0	0.06	0.006	0.000	0.271
		30-34	0.0	0.24	0.021	0.000	0.271
		35-39	0.2	0.26	0.020	0.003	0.271
		40-44	0.4	0.28	0.017	0.010	0.271
		45-49	0.9	0.40	0.026	0.017	0.271
		50-54	1.8	0.45	0.030	0.029	0.271
		55-59	4.3	0.41	0.020	0.072	0.271
		60-64	8.7	0.51	0.019	0.138	0.271
		65-69	13.0	0.50	0.017	0.215	0.271
		70-74	17.8	0.50	0.012	0.314	0.271
		75-79	23.7	0.58	0.008	0.383	0.271
		80-84	28.0	0.66	0.008	0.416	0.271
		85-89	27.0	0.77	0.008	0.371	0.271
		90-94	22.1	0.93	0.008	0.262	0.271

Male	non-Māori	95+	17.4	1.07	0.008	0.162	0.271
		0-4	0.0	0.00	0.000	0.000	0.530
		5-9	0.0	0.00	0.000	0.000	0.530
		10-14	0.0	0.00	0.000	0.000	0.530
		15-19	0.0	0.00	0.000	0.000	0.530
		20-24	0.0	0.00	0.000	0.000	0.530
		25-29	0.0	0.11	0.024	0.000	0.530
		30-34	0.1	0.46	0.094	0.000	0.530
		35-39	0.5	0.50	0.084	0.006	0.530
		40-44	1.3	0.55	0.140	0.017	0.530
		45-49	2.7	0.84	0.250	0.023	0.530
		50-54	5.6	0.94	0.237	0.042	0.530
		55-59	11.8	0.76	0.128	0.113	0.530
		60-64	21.4	0.97	0.106	0.187	0.530
		65-69	31.8	0.96	0.107	0.275	0.295
		70-74	43.5	0.97	0.092	0.392	0.295
		75-79	56.2	1.15	0.079	0.450	0.295
		80-84	65.8	1.31	0.075	0.473	0.295
		85-89	65.9	1.55	0.072	0.420	0.295
		90-94	55.6	1.82	0.069	0.310	0.295
Female	non-Māori	95+	44.3	1.98	0.071	0.210	0.295
		0-4	0.0	0.00	0.000	0.000	0.367
		5-9	0.0	0.00	0.000	0.000	0.367
		10-14	0.0	0.00	0.000	0.000	0.367
		15-19	0.0	0.00	0.000	0.000	0.367
		20-24	0.0	0.00	0.000	0.000	0.367
		25-29	0.0	0.09	0.025	0.000	0.367
		30-34	0.0	0.39	0.099	0.000	0.367
		35-39	0.3	0.42	0.082	0.003	0.367
		40-44	0.6	0.42	0.068	0.010	0.367
		45-49	1.0	0.57	0.082	0.014	0.367
		50-54	1.9	0.61	0.063	0.023	0.367
		55-59	4.0	0.50	0.039	0.057	0.367
		60-64	7.8	0.62	0.040	0.103	0.367
		65-69	11.9	0.64	0.043	0.155	0.279
		70-74	17.1	0.68	0.045	0.221	0.279
		75-79	24.7	0.85	0.052	0.264	0.279
		80-84	31.8	1.04	0.058	0.289	0.279
		85-89	33.0	1.25	0.061	0.261	0.279
		90-94	29.1	1.53	0.058	0.194	0.279
95+	24.1	1.73	0.058	0.133	0.279		

Table S8. Stomach cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.000	0.0	0.262
		5-9	0.0	0.000	0.000	0.0	0.262
		10-14	0.0	0.000	0.000	0.0	0.262
		15-19	0.0	0.000	0.000	0.1	0.262
		20-24	0.7	0.000	0.000	0.1	0.262
		25-29	2.0	0.025	0.086	0.2	0.262
		30-34	3.4	0.126	0.347	0.1	0.262
		35-39	6.4	0.267	0.305	0.1	0.262
		40-44	11.5	0.477	0.176	0.2	0.262

		45-49	17.6	0.529	0.146	0.2	0.262
		50-54	24.6	0.410	0.153	0.4	0.262
		55-59	37.3	0.528	0.189	0.5	0.262
		60-64	60.1	0.828	0.162	0.6	0.262
		65-69	83.9	0.802	0.119	0.8	0.326
		70-74	103.7	0.665	0.099	1.3	0.326
		75-79	139.4	0.553	0.082	1.9	0.326
		80-84	185.0	0.464	0.064	3.1	0.326
		85-89	209.0	0.573	0.066	3.4	0.326
		90-94	250.4	0.777	0.060	3.1	0.326
		95+	280.6	0.949	0.057	2.9	0.326
Female	Māori	0-4	0.0	0.000	0.000	0.0	0.296
		5-9	0.0	0.000	0.000	0.0	0.296
		10-14	0.0	0.000	0.000	0.0	0.296
		15-19	0.0	0.000	0.000	0.1	0.296
		20-24	0.2	0.000	0.000	0.1	0.296
		25-29	0.9	0.111	0.011	0.1	0.296
		30-34	4.8	0.484	0.047	0.1	0.296
		35-39	8.2	0.605	0.058	0.1	0.296
		40-44	11.3	0.500	0.075	0.2	0.296
		45-49	15.7	0.406	0.079	0.3	0.296
		50-54	20.0	0.424	0.084	0.4	0.296
		55-59	24.1	0.496	0.142	0.4	0.296
		60-64	35.8	0.416	0.123	0.5	0.296
		65-69	48.6	0.307	0.100	1.0	0.281
		70-74	61.3	0.403	0.097	1.3	0.281
		75-79	61.2	0.518	0.090	1.1	0.281
		80-84	69.5	0.448	0.069	1.1	0.281
		85-89	123.1	0.404	0.050	2.2	0.281
		90-94	148.8	0.523	0.046	2.7	0.281
				95+	163.8	0.720	0.044
Male	non-Māori	0-4	0.0	0.000	0.000	0.0	0.304
		5-9	0.0	0.000	0.000	0.0	0.304
		10-14	0.0	0.000	0.000	0.0	0.304
		15-19	0.0	0.000	0.000	0.0	0.304
		20-24	0.2	0.000	0.000	0.0	0.304
		25-29	0.3	0.030	0.014	0.0	0.304
		30-34	0.7	0.136	0.065	0.0	0.304
		35-39	1.4	0.213	0.102	0.0	0.304
		40-44	2.5	0.266	0.138	0.1	0.304
		45-49	4.6	0.286	0.156	0.1	0.300
		50-54	8.5	0.298	0.163	0.2	0.300
		55-59	15.6	0.391	0.210	0.2	0.359
		60-64	26.4	0.500	0.254	0.3	0.359
		65-69	36.5	0.491	0.243	0.5	0.342
		70-74	52.4	0.561	0.223	0.6	0.342
		75-79	71.3	0.665	0.192	0.8	0.249
		80-84	87.4	0.660	0.147	1.0	0.249
		85-89	102.4	0.652	0.133	1.3	0.143
		90-94	114.0	0.683	0.131	1.4	0.143
				95+	115.8	0.724	0.132
Female	non-Māori	0-4	0.0	0.000	0.000	0.0	0.153
		5-9	0.0	0.000	0.000	0.0	0.153
		10-14	0.0	0.000	0.000	0.0	0.153
		15-19	0.0	0.000	0.000	0.0	0.153
		20-24	0.5	0.000	0.000	0.0	0.153
		25-29	0.3	0.032	0.019	0.0	0.153

	30-34	0.4	0.148	0.086	0.0	0.153
	35-39	0.8	0.249	0.118	0.0	0.153
	40-44	1.7	0.302	0.134	0.0	0.153
	45-49	2.9	0.289	0.133	0.1	0.312
	50-54	4.5	0.265	0.121	0.1	0.312
	55-59	6.6	0.345	0.147	0.1	0.239
	60-64	9.4	0.457	0.172	0.1	0.239
	65-69	14.6	0.425	0.167	0.2	0.317
	70-74	23.1	0.446	0.156	0.3	0.317
	75-79	33.0	0.522	0.137	0.5	0.231
	80-84	41.5	0.512	0.110	0.6	0.231
	85-89	47.4	0.491	0.101	0.8	0.107
	90-94	51.3	0.516	0.100	0.8	0.107
	95+	51.4	0.561	0.101	0.8	0.107

Table S9. Liver cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.00	0.000	0.000	0.148
		5-9	0.0	0.00	0.000	0.000	0.148
		10-14	0.0	0.00	0.000	0.000	0.148
		15-19	0.0	0.00	0.000	0.005	0.148
		20-24	0.7	0.00	0.000	0.027	0.148
		25-29	1.4	0.03	0.031	0.072	0.148
		30-34	2.9	0.14	0.133	0.100	0.148
		35-39	5.3	0.17	0.150	0.131	0.148
		40-44	9.8	0.26	0.109	0.216	0.148
		45-49	18.3	0.47	0.087	0.298	0.148
		50-54	32.4	0.63	0.086	0.409	0.148
		55-59	49.8	0.62	0.086	0.628	0.148
		60-64	59.4	0.55	0.083	0.867	0.148
		65-69	57.2	0.54	0.086	0.931	0.138
		70-74	52.6	0.56	0.103	0.832	0.138
		75-79	53.1	0.67	0.097	0.727	0.138
		80-84	54.2	1.16	0.072	0.512	0.138
85-89	44.5	1.72	0.087	0.263	0.138		
90-94	23.7	1.18	0.117	0.192	0.138		
95+	13.3	0.48	0.141	0.187	0.138		
Female	Māori	0-4	0.0	0.00	0.000	0.000	0.183
		5-9	0.0	0.00	0.000	0.000	0.183
		10-14	0.0	0.00	0.000	0.000	0.183
		15-19	0.0	0.00	0.000	0.000	0.183
		20-24	0.1	0.00	0.000	0.003	0.183
		25-29	0.6	0.13	0.041	0.017	0.183
		30-34	1.1	0.54	0.174	0.018	0.183
		35-39	1.8	0.62	0.200	0.020	0.183
		40-44	3.3	0.51	0.150	0.041	0.183
		45-49	4.2	0.48	0.122	0.065	0.183
		50-54	5.8	0.49	0.122	0.085	0.183
		55-59	10.4	0.50	0.123	0.144	0.183
		60-64	13.7	0.67	0.129	0.172	0.183
		65-69	18.3	0.92	0.115	0.175	0.183
70-74	20.4	1.28	0.118	0.152	0.183		
75-79	19.5	1.31	0.102	0.136	0.183		

		80-84	18.3	0.98	0.050	0.171	0.183
		85-89	16.1	0.89	0.039	0.177	0.183
		90-94	10.3	0.77	0.038	0.140	0.183
		95+	6.4	0.55	0.039	0.102	0.183
Male	non-Māori	0-4	0.0	0.00	0.000	0.000	0.147
		5-9	0.0	0.00	0.000	0.000	0.147
		10-14	0.0	0.00	0.000	0.000	0.147
		15-19	0.0	0.00	0.000	0.000	0.147
		20-24	0.1	0.00	0.000	0.002	0.147
		25-29	0.5	0.09	0.029	0.013	0.147
		30-34	0.9	0.42	0.126	0.017	0.147
		35-39	1.4	0.53	0.146	0.019	0.147
		40-44	2.4	0.42	0.103	0.036	0.147
		45-49	4.2	0.44	0.079	0.069	0.178
		50-54	7.4	0.59	0.092	0.098	0.178
		55-59	11.8	0.59	0.121	0.149	0.178
		60-64	15.8	0.65	0.157	0.190	0.178
		65-69	21.3	0.89	0.151	0.205	0.217
		70-74	28.8	1.35	0.159	0.196	0.217
		75-79	33.2	2.12	0.167	0.152	0.190
		80-84	34.3	2.56	0.136	0.126	0.190
		85-89	37.2	1.94	0.114	0.173	0.190
		90-94	33.0	1.43	0.123	0.211	0.190
		95+	27.8	1.17	0.145	0.206	0.190
Female	non-Māori	0-4	0.0	0.00	0.000	0.000	0.005
		5-9	0.0	0.00	0.000	0.000	0.005
		10-14	0.0	0.00	0.000	0.000	0.005
		15-19	0.0	0.00	0.000	0.000	0.005
		20-24	9.4	0.00	0.000	0.431	0.005
		25-29	2.2	0.77	0.246	0.341	0.005
		30-34	0.4	3.02	0.982	0.002	0.005
		35-39	0.5	2.04	0.752	0.002	0.005
		40-44	0.9	0.78	0.259	0.008	0.005
		45-49	1.5	0.76	0.109	0.015	0.262
		50-54	2.3	0.56	0.059	0.031	0.262
		55-59	3.9	0.58	0.105	0.052	0.262
		60-64	6.9	0.87	0.221	0.062	0.262
		65-69	9.6	1.27	0.257	0.063	0.174
		70-74	13.3	1.50	0.215	0.075	0.174
		75-79	17.1	1.71	0.241	0.087	0.183
		80-84	18.0	1.98	0.367	0.078	0.183
		85-89	14.8	1.82	0.491	0.065	0.183
		90-94	9.1	0.94	0.634	0.059	0.183
		95+	6.5	0.35	0.731	0.058	0.183

Table S10. Pancreatic cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.00	0.000	0.000	0.160
		5-9	0.0	0.00	0.000	0.000	0.160
		10-14	0.0	0.00	0.000	0.000	0.160
		15-19	0.0	0.00	0.006	0.000	0.160
		20-24	0.1	0.01	0.338	0.002	0.160
		25-29	0.1	0.08	0.865	0.001	0.160



		30-34	0.6	0.25	0.365	0.007	0.160
		35-39	1.3	0.41	0.049	0.021	0.160
		40-44	2.5	0.53	0.049	0.038	0.160
		45-49	4.8	0.61	0.075	0.062	0.160
		50-54	8.9	0.63	0.096	0.105	0.160
		55-59	16.3	0.63	0.065	0.199	0.160
		60-64	27.5	0.62	0.044	0.361	0.160
		65-69	41.0	0.69	0.033	0.524	0.160
		70-74	58.0	0.79	0.022	0.670	0.160
		75-79	76.5	0.83	0.014	0.853	0.160
		80-84	94.9	0.82	0.012	1.079	0.160
		85-89	114.3	0.79	0.012	1.357	0.160
		90-94	126.8	0.87	0.012	1.447	0.160
		95+	132.5	0.97	0.012	1.370	0.160
Female	Māori	0-4	0.0	0.00	0.000	0.000	0.183
		5-9	0.0	0.00	0.000	0.000	0.183
		10-14	0.0	0.00	0.000	0.000	0.183
		15-19	0.0	0.00	0.006	0.000	0.183
		20-24	0.1	0.03	0.335	0.001	0.183
		25-29	0.1	0.12	0.857	0.001	0.183
		30-34	0.4	0.25	0.355	0.005	0.183
		35-39	0.9	0.38	0.037	0.016	0.183
		40-44	2.2	0.53	0.039	0.031	0.183
		45-49	4.2	0.70	0.047	0.051	0.183
		50-54	7.2	0.79	0.050	0.077	0.183
		55-59	13.3	0.75	0.040	0.145	0.183
		60-64	23.1	0.70	0.031	0.274	0.183
		65-69	35.4	0.77	0.026	0.413	0.183
		70-74	50.3	0.87	0.020	0.538	0.183
		75-79	71.2	0.96	0.016	0.693	0.183
		80-84	94.7	1.13	0.018	0.812	0.183
		85-89	111.3	1.33	0.022	0.828	0.183
		90-94	120.8	1.48	0.023	0.808	0.183
		95+	124.4	1.65	0.023	0.753	0.183
Male	non-Māori	0-4	0.0	0.00	0.000	0.000	0.314
		5-9	0.0	0.00	0.000	0.000	0.314
		10-14	0.0	0.00	0.000	0.000	0.314
		15-19	0.0	0.00	0.006	0.000	0.314
		20-24	0.0	0.04	0.338	0.001	0.314
		25-29	0.0	0.15	0.868	0.000	0.314
		30-34	0.2	0.35	0.368	0.002	0.314
		35-39	0.5	0.57	0.054	0.007	0.314
		40-44	1.2	0.79	0.065	0.013	0.314
		45-49	2.5	0.98	0.170	0.020	0.314
		50-54	4.9	1.10	0.281	0.033	0.314
		55-59	9.4	1.10	0.220	0.065	0.314
		60-64	16.6	1.11	0.173	0.119	0.314
		65-69	25.4	1.32	0.138	0.168	0.192
		70-74	36.5	1.61	0.093	0.207	0.192
		75-79	47.9	1.77	0.065	0.254	0.192
		80-84	58.5	1.85	0.068	0.300	0.192
		85-89	70.3	2.06	0.076	0.327	0.192
		90-94	81.8	2.39	0.075	0.331	0.192
		95+	87.1	2.63	0.074	0.326	0.192
Female	non-Māori	0-4	0.0	0.00	0.000	0.000	0.369
		5-9	0.0	0.00	0.000	0.000	0.369
		10-14	0.0	0.00	0.000	0.000	0.369

15-19	0.0	0.00	0.006	0.000	0.369
20-24	0.0	0.07	0.327	0.001	0.369
25-29	0.0	0.22	0.837	0.000	0.369
30-34	0.2	0.30	0.352	0.002	0.369
35-39	0.4	0.45	0.045	0.006	0.369
40-44	1.0	0.76	0.054	0.011	0.369
45-49	2.2	1.15	0.087	0.017	0.369
50-54	4.2	1.40	0.116	0.025	0.369
55-59	8.3	1.40	0.105	0.050	0.369
60-64	15.2	1.38	0.095	0.095	0.369
65-69	24.0	1.60	0.088	0.138	0.230
70-74	34.6	1.87	0.071	0.173	0.230
75-79	47.3	2.00	0.060	0.223	0.230
80-84	60.4	2.13	0.067	0.270	0.230
85-89	70.5	2.41	0.079	0.282	0.230
90-94	78.0	2.65	0.081	0.285	0.230
95+	81.8	2.84	0.082	0.283	0.230

Table S11. Cervical cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Female	Māori	0-4	0.0	0.000	0.0	0.00	0.127
		5-9	0.0	0.000	0.000	0.00	0.127
		10-14	0.0	0.000	0.000	0.00	0.127
		15-19	0.0	0.000	0.000	0.00	0.127
		20-24	2.3	0.000	0.000	0.05	0.127
		25-29	7.7	0.004	0.000	0.29	0.127
		30-34	13.1	0.017	0.028	0.59	0.127
		35-39	18.9	0.024	0.131	0.71	0.127
		40-44	21.7	0.037	0.221	0.76	0.127
		45-49	21.1	0.050	0.236	0.79	0.127
		50-54	20.8	0.062	0.214	0.81	0.127
		55-59	22.3	0.090	0.183	0.91	0.127
		60-64	20.9	0.117	0.128	0.97	0.127
		65-69	17.3	0.135	0.098	0.92	0.093
		70-74	13.0	0.138	0.073	0.82	0.093
		75-79	9.6	0.099	0.045	0.77	0.093
		80-84	9.3	0.043	0.020	0.91	0.093
		85-89	11.4	0.033	0.006	1.23	0.093
		90-94	6.7	0.034	0.004	1.44	0.093
95+	2.1	0.035	0.004	1.33	0.093		
Female	non-Māori	0-4	0.0	0.000	0.000	0.00	0.209
		5-9	0.0	0.000	0.000	0.00	0.209
		10-14	0.0	0.000	0.000	0.00	0.209
		15-19	0.0	0.000	0.000	0.00	0.209
		20-24	1.7	0.001	0.000	0.04	0.209
		25-29	6.2	0.006	0.050	0.21	0.209
		30-34	10.1	0.018	0.230	0.37	0.209
		35-39	12.7	0.040	0.347	0.35	0.209
		40-44	13.2	0.034	0.352	0.33	0.209
		45-49	12.1	0.015	0.304	0.36	0.130
		50-54	10.8	0.025	0.242	0.39	0.130
		55-59	10.1	0.057	0.183	0.41	0.107
		60-64	9.8	0.085	0.157	0.41	0.107

65-69	9.2	0.104	0.147	0.39	0.119
70-74	8.5	0.149	0.126	0.35	0.119
75-79	8.0	0.202	0.084	0.30	0.109
80-84	8.0	0.212	0.049	0.29	0.109
85-89	8.7	0.175	0.057	0.33	0.056
90-94	8.7	0.123	0.088	0.38	0.056
95+	8.1	0.082	0.117	0.40	0.056

Table S12. Bladder cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.000	0.000	0.232
		5-9	0.0	0.000	0.000	0.000	0.232
		10-14	0.0	0.000	0.000	0.000	0.232
		15-19	0.0	0.000	0.000	0.000	0.232
		20-24	0.3	0.000	0.000	0.005	0.232
		25-29	1.0	0.063	0.083	0.030	0.232
		30-34	1.6	0.262	0.349	0.031	0.232
		35-39	2.6	0.270	0.366	0.035	0.232
		40-44	4.2	0.192	0.273	0.071	0.232
		45-49	6.4	0.166	0.275	0.122	0.232
		50-54	9.6	0.182	0.314	0.173	0.232
		55-59	13.4	0.240	0.314	0.222	0.232
		60-64	18.9	0.267	0.274	0.305	0.232
		65-69	31.1	0.184	0.210	0.580	0.208
		70-74	45.4	0.175	0.160	1.077	0.208
		75-79	58.8	0.281	0.135	1.353	0.208
		80-84	67.7	0.324	0.123	1.444	0.208
		85-89	73.4	0.279	0.122	1.692	0.208
90-94	98.9	0.377	0.121	1.932	0.208		
95+	132.3	0.554	0.117	2.079	0.208		
Female	Māori	0-4	0.0	0.000	0.000	0.000	0.163
		5-9	0.0	0.000	0.000	0.000	0.163
		10-14	0.0	0.000	0.000	0.000	0.163
		15-19	0.0	0.000	0.000	0.000	0.163
		20-24	0.2	0.000	0.000	0.003	0.163
		25-29	0.6	0.054	0.000	0.020	0.163
		30-34	1.0	0.245	0.000	0.036	0.163
		35-39	1.5	0.347	0.007	0.038	0.163
		40-44	2.2	0.326	0.066	0.048	0.163
		45-49	3.2	0.291	0.168	0.064	0.163
		50-54	4.9	0.305	0.206	0.084	0.163
		55-59	7.7	0.343	0.163	0.131	0.163
		60-64	10.6	0.353	0.232	0.169	0.163
		65-69	14.6	0.265	0.200	0.256	0.163
		70-74	19.8	0.208	0.178	0.431	0.163
		75-79	26.2	0.262	0.251	0.511	0.163
		80-84	36.0	0.545	0.307	0.455	0.163
		85-89	50.1	1.130	0.264	0.369	0.163
90-94	60.8	1.624	0.175	0.339	0.163		
95+	63.4	1.856	0.174	0.315	0.163		
Male	non-Māori	0-4	0.0	0.000	0.000	0.000	0.145
		5-9	0.0	0.000	0.000	0.000	0.145
		10-14	0.0	0.000	0.000	0.000	0.145

		15-19	0.0	0.000	0.000	0.000	0.145
		20-24	0.2	0.000	0.000	0.008	0.145
		25-29	0.5	0.010	0.039	0.025	0.145
		30-34	1.1	0.044	0.176	0.041	0.145
		35-39	2.1	0.052	0.258	0.054	0.145
		40-44	4.0	0.043	0.225	0.098	0.145
		45-49	8.1	0.037	0.183	0.219	0.128
		50-54	15.7	0.040	0.197	0.438	0.128
		55-59	29.2	0.055	0.217	0.777	0.144
		60-64	51.9	0.071	0.249	1.263	0.144
		65-69	85.4	0.084	0.239	2.037	0.140
		70-74	127.5	0.089	0.208	3.306	0.140
		75-79	175.3	0.105	0.219	4.716	0.110
		80-84	220.5	0.158	0.269	5.213	0.110
		85-89	255.6	0.303	0.275	4.727	0.093
		90-94	291.7	0.591	0.184	3.959	0.093
		95+	309.9	0.812	0.145	3.351	0.093
Female	non-Māori	0-4	0.0	0.000	0.000	0.000	0.114
		5-9	0.0	0.000	0.000	0.000	0.114
		10-14	0.0	0.000	0.000	0.000	0.114
		15-19	0.0	0.000	0.000	0.000	0.114
		20-24	0.1	0.000	0.000	0.019	0.114
		25-29	0.3	0.033	0.065	0.029	0.114
		30-34	0.7	0.141	0.279	0.022	0.114
		35-39	1.2	0.154	0.333	0.021	0.114
		40-44	2.2	0.103	0.298	0.042	0.114
		45-49	3.8	0.067	0.281	0.082	0.155
		50-54	6.6	0.045	0.350	0.139	0.155
		55-59	11.2	0.022	0.504	0.191	0.134
		60-64	16.8	0.019	0.445	0.296	0.134
		65-69	23.8	0.050	0.287	0.531	0.150
		70-74	33.2	0.078	0.196	0.910	0.150
		75-79	44.9	0.121	0.216	1.234	0.107
		80-84	58.9	0.237	0.255	1.235	0.107
		85-89	72.6	0.434	0.215	1.152	0.068
		90-94	79.4	0.648	0.183	1.000	0.068
		95+	79.0	0.711	0.249	0.836	0.068

Table S13. Kidney cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.000	0.000	0.265
		5-9	0.0	0.000	0.000	0.000	0.265
		10-14	0.0	0.000	0.000	0.000	0.265
		15-19	0.1	0.000	0.000	0.002	0.265
		20-24	0.3	0.000	0.000	0.013	0.265
		25-29	0.7	0.003	0.039	0.033	0.265
		30-34	2.1	0.016	0.169	0.068	0.265
		35-39	4.1	0.044	0.210	0.115	0.265
		40-44	7.3	0.058	0.222	0.192	0.265
		45-49	12.7	0.093	0.240	0.304	0.265
		50-54	19.6	0.147	0.225	0.444	0.265
		55-59	27.3	0.153	0.204	0.634	0.265
		60-64	37.3	0.170	0.193	0.892	0.265

		65-69	45.1	0.230	0.216	1.009	0.111
		70-74	51.2	0.256	0.186	1.078	0.111
		75-79	48.6	0.257	0.130	1.240	0.111
		80-84	41.6	0.272	0.115	1.138	0.111
		85-89	40.1	0.274	0.111	1.080	0.111
		90-94	24.8	0.284	0.115	0.825	0.111
		95+	14.1	0.288	0.116	0.433	0.111
Female	Māori	0-4	0.0	0.000	0.000	0.000	0.199
		5-9	0.0	0.000	0.000	0.000	0.199
		10-14	0.0	0.000	0.000	0.000	0.199
		15-19	0.1	0.000	0.000	0.001	0.199
		20-24	0.2	0.000	0.000	0.008	0.199
		25-29	0.6	0.002	0.063	0.023	0.199
		30-34	1.9	0.012	0.266	0.047	0.199
		35-39	3.3	0.031	0.284	0.078	0.199
		40-44	5.2	0.040	0.243	0.134	0.199
		45-49	8.2	0.082	0.234	0.209	0.199
		50-54	12.3	0.140	0.211	0.294	0.199
		55-59	16.6	0.138	0.202	0.410	0.199
		60-64	20.6	0.165	0.163	0.549	0.199
		65-69	23.0	0.216	0.149	0.620	0.118
		70-74	24.8	0.235	0.115	0.661	0.118
		75-79	25.0	0.263	0.087	0.726	0.118
		80-84	23.0	0.379	0.093	0.587	0.118
		85-89	19.9	0.540	0.085	0.380	0.118
		90-94	14.4	0.608	0.113	0.234	0.118
		95+	9.4	0.658	0.145	0.131	0.118
Male	non-Māori	0-4	0.0	0.000	0.000	0.000	0.131
		5-9	0.0	0.000	0.000	0.000	0.131
		10-14	0.0	0.000	0.000	0.000	0.131
		15-19	0.0	0.000	0.000	0.000	0.131
		20-24	0.4	0.000	0.000	0.014	0.131
		25-29	0.7	0.002	0.023	0.039	0.131
		30-34	1.5	0.012	0.101	0.070	0.131
		35-39	3.2	0.027	0.129	0.119	0.131
		40-44	6.0	0.037	0.156	0.208	0.131
		45-49	11.1	0.055	0.189	0.333	0.146
		50-54	18.6	0.083	0.196	0.516	0.146
		55-59	28.4	0.093	0.208	0.758	0.164
		60-64	42.3	0.112	0.229	1.066	0.164
		65-69	54.5	0.162	0.302	1.186	0.207
		70-74	66.3	0.193	0.316	1.230	0.207
		75-79	72.5	0.233	0.308	1.352	0.170
		80-84	74.6	0.380	0.382	1.102	0.170
		85-89	78.2	0.602	0.475	0.775	0.172
		90-94	57.7	0.679	0.500	0.534	0.172
		95+	39.8	0.687	0.500	0.327	0.172
Female	non-Māori	0-4	0.0	0.000	0.000	0.000	0.144
		5-9	0.0	0.000	0.000	0.000	0.144
		10-14	0.0	0.000	0.000	0.000	0.144
		15-19	0.0	0.000	0.000	0.000	0.144
		20-24	0.2	0.000	0.000	0.009	0.144
		25-29	0.5	0.002	0.030	0.026	0.144
		30-34	1.2	0.010	0.128	0.048	0.144
		35-39	2.2	0.026	0.154	0.079	0.144
		40-44	3.8	0.036	0.170	0.130	0.144
		45-49	7.1	0.055	0.200	0.206	0.179

50-54	12.1	0.083	0.206	0.323	0.179
55-59	17.3	0.090	0.208	0.469	0.180
60-64	23.9	0.101	0.203	0.657	0.180
65-69	28.2	0.136	0.233	0.757	0.132
70-74	32.7	0.156	0.222	0.802	0.132
75-79	34.0	0.181	0.201	0.891	0.166
80-84	31.5	0.262	0.249	0.730	0.166
85-89	30.0	0.364	0.316	0.497	0.124
90-94	21.3	0.390	0.345	0.333	0.124
95+	14.8	0.395	0.356	0.201	0.124

Table S14. Endometrial cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Female	Māori	0-4	0.0	0.000	0.000	0.00	0.231
		5-9	0.0	0.000	0.000	0.00	0.231
		10-14	0.0	0.000	0.000	0.00	0.231
		15-19	0.0	0.000	0.000	0.00	0.231
		20-24	0.3	0.000	0.000	0.01	0.231
		25-29	1.6	0.007	0.031	0.05	0.231
		30-34	4.5	0.034	0.149	0.14	0.231
		35-39	8.2	0.058	0.260	0.22	0.231
		40-44	15.2	0.061	0.284	0.34	0.231
		45-49	29.1	0.058	0.237	0.67	0.212
		50-54	49.6	0.062	0.189	1.33	0.212
		55-59	69.4	0.062	0.186	2.17	0.212
		60-64	75.8	0.066	0.210	2.63	0.212
		65-69	72.3	0.096	0.216	2.53	0.161
		70-74	75.1	0.160	0.223	2.16	0.161
		75-79	79.7	0.210	0.206	1.94	0.102
		80-84	76.7	0.216	0.162	1.98	0.102
		85-89	69.8	0.210	0.149	2.00	0.102
		90-94	54.4	0.217	0.153	1.71	0.102
		95+	42.6	0.225	0.158	1.21	0.102
Female	non-Māori	0-4	0.0	0.000	0.000	0.00	0.176
		5-9	0.0	0.000	0.000	0.00	0.176
		10-14	0.0	0.000	0.000	0.00	0.176
		15-19	0.0	0.000	0.000	0.00	0.176
		20-24	0.1	0.000	0.000	0.01	0.176
		25-29	0.3	0.005	0.009	0.02	0.176
		30-34	1.8	0.019	0.050	0.06	0.176
		35-39	3.5	0.022	0.116	0.14	0.176
		40-44	6.7	0.024	0.128	0.25	0.176
		45-49	12.8	0.031	0.097	0.49	0.187
		50-54	22.5	0.035	0.093	0.92	0.187
		55-59	35.6	0.034	0.121	1.51	0.179
		60-64	46.8	0.041	0.159	1.99	0.179
		65-69	54.8	0.066	0.171	2.21	0.153
		70-74	59.0	0.096	0.203	2.14	0.153
		75-79	59.9	0.120	0.207	1.90	0.144
		80-84	58.0	0.139	0.180	1.87	0.144
		85-89	53.1	0.162	0.220	1.61	0.070
		90-94	47.8	0.201	0.253	1.21	0.070
		95+	43.6	0.130	0.168	0.56	0.070

Table S15. Melanoma input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.000	0.000	0.00	0.080
		5-9	0.0	0.000	0.000	0.00	0.080
		10-14	0.0	0.000	0.000	0.00	0.080
		15-19	0.0	0.000	0.000	0.00	0.080
		20-24	1.7	0.001	0.000	0.06	0.080
		25-29	3.0	0.008	0.044	0.17	0.080
		30-34	4.7	0.022	0.190	0.22	0.080
		35-39	6.1	0.035	0.229	0.22	0.080
		40-44	7.8	0.038	0.222	0.26	0.080
		45-49	10.6	0.036	0.216	0.34	0.080
		50-54	14.5	0.038	0.213	0.47	0.080
		55-59	19.8	0.047	0.277	0.57	0.080
		60-64	28.1	0.063	0.351	0.64	0.080
		65-69	37.0	0.089	0.368	0.75	0.061
		70-74	46.5	0.101	0.358	0.92	0.061
		75-79	57.6	0.107	0.363	1.14	0.061
		80-84	66.9	0.116	0.393	1.28	0.061
		85-89	67.0	0.102	0.444	1.26	0.061
		90-94	59.0	0.076	0.491	1.11	0.061
95+	52.9	0.054	0.519	0.94	0.061		
Female	Māori	0-4	0.0	0.000	0.000	0.00	0.181
		5-9	0.0	0.000	0.000	0.00	0.181
		10-14	0.0	0.000	0.000	0.00	0.181
		15-19	0.0	0.000	0.000	0.00	0.181
		20-24	1.6	0.001	0.000	0.06	0.181
		25-29	3.4	0.007	0.078	0.16	0.181
		30-34	7.0	0.020	0.335	0.20	0.181
		35-39	9.1	0.031	0.409	0.20	0.181
		40-44	10.7	0.033	0.368	0.24	0.181
		45-49	12.7	0.031	0.313	0.31	0.181
		50-54	14.9	0.033	0.258	0.43	0.181
		55-59	17.6	0.042	0.273	0.52	0.181
		60-64	21.3	0.056	0.284	0.58	0.181
		65-69	25.3	0.079	0.256	0.68	0.199
		70-74	29.5	0.089	0.221	0.84	0.199
		75-79	34.3	0.095	0.205	1.03	0.199
		80-84	37.3	0.110	0.227	1.12	0.199
		85-89	35.0	0.112	0.291	0.98	0.199
		90-94	29.8	0.096	0.346	0.77	0.199
95+	25.6	0.080	0.388	0.58	0.199		
Male	non-Māori	0-4	0.0	0.000	0.000	0.00	0.111
		5-9	0.0	0.000	0.000	0.00	0.111
		10-14	0.0	0.000	0.000	0.00	0.111
		15-19	0.0	0.000	0.000	0.00	0.111
		20-24	11.0	0.001	0.000	0.42	0.111
		25-29	14.8	0.006	0.021	1.07	0.111
		30-34	20.4	0.012	0.092	1.49	0.111
		35-39	27.8	0.017	0.119	1.69	0.111
		40-44	38.4	0.018	0.133	2.02	0.111
		45-49	54.9	0.018	0.139	2.56	0.150

		50-54	78.2	0.019	0.145	3.52	0.150
		55-59	109.9	0.024	0.207	4.30	0.161
		60-64	157.1	0.032	0.270	4.82	0.161
		65-69	205.2	0.045	0.285	5.60	0.170
		70-74	252.0	0.051	0.278	6.83	0.170
		75-79	301.5	0.055	0.280	8.22	0.129
		80-84	339.6	0.077	0.302	8.96	0.129
		85-89	340.2	0.126	0.335	8.08	0.137
		90-94	315.2	0.202	0.345	6.41	0.137
		95+	292.1	0.278	0.354	4.84	0.137
Female	non-Māori	0-4	0.0	0.000	0.000	0.00	0.166
		5-9	0.0	0.000	0.000	0.00	0.166
		10-14	0.0	0.000	0.000	0.00	0.166
		15-19	0.0	0.000	0.000	0.00	0.166
		20-24	11.6	0.001	0.000	0.41	0.166
		25-29	20.3	0.005	0.046	1.16	0.166
		30-34	32.0	0.011	0.197	1.52	0.166
		35-39	42.3	0.015	0.246	1.52	0.166
		40-44	53.2	0.017	0.238	1.80	0.166
		45-49	66.3	0.016	0.211	2.31	0.167
		50-54	80.5	0.017	0.176	3.20	0.167
		55-59	96.9	0.021	0.202	3.91	0.128
		60-64	117.5	0.028	0.215	4.38	0.128
		65-69	137.5	0.039	0.193	5.12	0.126
		70-74	155.8	0.044	0.166	6.24	0.126
		75-79	172.2	0.048	0.151	7.50	0.098
		80-84	179.5	0.056	0.169	8.14	0.098
		85-89	167.7	0.059	0.236	7.00	0.096
		90-94	145.2	0.055	0.300	5.10	0.096
		95+	127.1	0.051	0.347	3.51	0.096

Table S16. Thyroid cancer input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Remission rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.0000	0.00	0.000	0.135
		5-9	0.0	0.0000	0.00	0.000	0.135
		10-14	0.0	0.0000	0.00	0.000	0.135
		15-19	0.6	0.0000	0.00	0.014	0.135
		20-24	1.5	0.0001	0.00	0.070	0.135
		25-29	1.4	0.0000	0.02	0.138	0.135
		30-34	2.2	0.0000	0.10	0.176	0.135
		35-39	3.3	0.0002	0.14	0.196	0.135
		40-44	4.3	0.0018	0.14	0.236	0.135
		45-49	5.4	0.0100	0.15	0.284	0.135
		50-54	6.9	0.0190	0.18	0.318	0.135
		55-59	8.8	0.0160	0.23	0.342	0.135
		60-64	10.7	0.0110	0.29	0.361	0.135
		65-69	12.4	0.0122	0.44	0.312	0.135
		70-74	13.4	0.0129	0.53	0.254	0.135
		75-79	12.5	0.0105	0.64	0.215	0.135
		80-84	11.6	0.0099	0.72	0.161	0.135
		85-89	13.5	0.0127	0.49	0.227	0.135
		90-94	14.3	0.0151	0.48	0.286	0.135
		95+	14.6	0.0137	0.57	0.259	0.135



Female	Māori	0-4	0.0	0.0000	0.00	0.000	0.169
		5-9	0.0	0.0000	0.00	0.000	0.169
		10-14	0.0	0.0000	0.00	0.001	0.169
		15-19	1.5	0.0000	0.00	0.033	0.169
		20-24	3.8	0.0000	0.00	0.172	0.169
		25-29	4.9	0.0000	0.05	0.354	0.169
		30-34	10.6	0.0000	0.22	0.444	0.169
		35-39	14.7	0.0001	0.28	0.479	0.169
		40-44	17.1	0.0011	0.25	0.584	0.169
		45-49	19.4	0.0063	0.24	0.702	0.169
		50-54	22.3	0.0138	0.25	0.783	0.169
		55-59	24.5	0.0150	0.26	0.846	0.169
		60-64	24.5	0.0094	0.28	0.874	0.169
		65-69	25.7	0.0100	0.38	0.752	0.145
		70-74	26.3	0.0105	0.43	0.625	0.145
		75-79	24.5	0.0089	0.55	0.521	0.145
		80-84	23.1	0.0188	0.80	0.321	0.145
		85-89	25.6	0.0399	0.91	0.271	0.145
		90-94	27.0	0.0429	1.05	0.252	0.145
		95+	27.6	0.0342	1.27	0.217	0.145
Male	non-Māori	0-4	0.0	0.0000	0.00	0.000	0.137
		5-9	0.0	0.0000	0.00	0.000	0.137
		10-14	0.0	0.0001	0.00	0.000	0.137
		15-19	0.4	0.0000	0.00	0.009	0.137
		20-24	1.0	0.0000	0.00	0.044	0.137
		25-29	1.1	0.0000	0.03	0.090	0.137
		30-34	1.7	0.0000	0.13	0.113	0.137
		35-39	2.4	0.0001	0.17	0.122	0.137
		40-44	3.0	0.0009	0.16	0.147	0.137
		45-49	3.6	0.0053	0.16	0.177	0.121
		50-54	4.3	0.0113	0.19	0.200	0.121
		55-59	5.2	0.0119	0.21	0.218	0.121
		60-64	6.0	0.0079	0.27	0.224	0.121
		65-69	6.7	0.0098	0.38	0.193	0.207
		70-74	6.9	0.0109	0.43	0.161	0.207
		75-79	6.4	0.0095	0.57	0.132	0.186
		80-84	5.9	0.0072	0.86	0.078	0.186
		85-89	6.2	0.0017	1.06	0.059	0.186
		90-94	6.5	0.0001	1.16	0.056	0.186
		95+	6.6	0.0001	1.29	0.052	0.186
Female	non-Māori	0-4	0.0	0.0000	0.00	0.000	0.229
		5-9	0.0	0.0000	0.00	0.000	0.229
		10-14	0.0	0.0000	0.00	0.000	0.229
		15-19	0.9	0.0000	0.00	0.021	0.229
		20-24	2.1	0.0000	0.00	0.102	0.229
		25-29	2.5	0.0000	0.06	0.191	0.229
		30-34	7.9	0.0000	0.26	0.255	0.229
		35-39	11.0	0.0001	0.33	0.299	0.229
		40-44	11.9	0.0007	0.30	0.353	0.229
		45-49	12.5	0.0040	0.28	0.411	0.155
		50-54	13.6	0.0078	0.28	0.449	0.155
		55-59	14.7	0.0069	0.30	0.468	0.155
		60-64	13.6	0.0047	0.27	0.493	0.155
		65-69	12.8	0.0049	0.31	0.462	0.122
		70-74	12.5	0.0051	0.32	0.402	0.122
		75-79	10.0	0.0047	0.33	0.358	0.145
		80-84	7.4	0.0075	0.46	0.222	0.145

	85-89	9.7	0.0134	0.60	0.162	0.145
	90-94	10.4	0.0156	0.65	0.157	0.145
	95+	9.9	0.0156	0.69	0.143	0.145

Table S17. COPD input parameters

Sex	Ethnic group	Age group (years)	Incidence rate per 100,000	Case-fatality rate	Prevalence per 1000	Disability rate
Male	Māori	0-4	0.0	0.0000	0.0	0.125
		5-9	0.0	0.0000	0.0	0.125
		10-14	0.0	0.0000	0.0	0.125
		15-19	45.2	0.0000	2.9	0.125
		20-24	74.1	0.0000	5.9	0.125
		25-29	99.3	0.0002	10.3	0.125
		30-34	107.1	0.0012	15.4	0.125
		35-39	160.1	0.0020	21.7	0.125
		40-44	206.7	0.0019	30.8	0.125
		45-49	320.1	0.0015	43.1	0.083
		50-54	528.7	0.0019	64.0	0.083
		55-59	696.8	0.0038	93.8	0.091
		60-64	832.2	0.0074	129.3	0.091
		65-69	1008.7	0.0110	169.3	0.100
		70-74	1157.4	0.0176	213.0	0.100
		75-79	1196.9	0.0259	252.6	0.097
		80-84	1164.2	0.0322	282.7	0.097
		85-89	1136.9	0.0394	303.8	0.087
		90-94	1054.3	0.0540	309.9	0.087
95+	960.7	0.0791	293.4	0.087		
Female	Māori	0-4	0.0	0.0000	0.0	0.224
		5-9	0.0	0.0000	0.0	0.224
		10-14	0.0	0.0000	0.0	0.224
		15-19	30.1	0.0000	2.2	0.224
		20-24	51.3	0.0005	4.2	0.224
		25-29	82.0	0.0015	7.5	0.224
		30-34	123.4	0.0018	12.5	0.224
		35-39	181.6	0.0016	19.9	0.224
		40-44	249.7	0.0018	30.5	0.224
		45-49	344.9	0.0022	44.8	0.160
		50-54	458.4	0.0027	64.4	0.160
		55-59	553.5	0.0053	88.4	0.167
		60-64	664.4	0.0111	115.0	0.167
		65-69	766.5	0.0159	143.2	0.170
		70-74	839.4	0.0225	171.0	0.170
		75-79	873.6	0.0290	194.2	0.149
		80-84	868.7	0.0306	213.3	0.149
		85-89	830.5	0.0289	230.1	0.113
		90-94	765.5	0.0267	244.9	0.113
95+	690.0	0.0246	257.1	0.113		
Male	non-Māori	0-4	0.0	0.0000	0.0	0.117
		5-9	0.0	0.0000	0.0	0.117
		10-14	0.0	0.0000	0.0	0.117
		15-19	35.2	0.0000	1.7	0.117
		20-24	66.1	0.0000	4.4	0.117
		25-29	61.6	0.0000	7.7	0.117
		30-34	49.2	0.0001	10.4	0.117

		35-39	67.1	0.0002	13.2	0.117
		40-44	84.2	0.0003	17.0	0.117
		45-49	136.4	0.0005	22.2	0.083
		50-54	235.5	0.0008	31.5	0.083
		55-59	304.8	0.0018	44.9	0.084
		60-64	380.3	0.0039	60.9	0.084
		65-69	658.7	0.0063	84.3	0.096
		70-74	906.8	0.0101	120.4	0.096
		75-79	1030.2	0.0156	161.3	0.095
		80-84	1054.2	0.0228	200.0	0.095
		85-89	954.5	0.0333	227.1	0.095
		90-94	847.6	0.0480	236.3	0.095
		95+	755.9	0.0720	225.6	0.095
Female	non-Māori	0-4	0.0	0.0000	0.0	0.217
		5-9	0.0	0.0000	0.0	0.217
		10-14	0.0	0.0000	0.0	0.217
		15-19	17.6	0.0000	1.2	0.217
		20-24	33.2	0.0000	2.5	0.217
		25-29	53.8	0.0000	4.6	0.217
		30-34	81.6	0.0001	8.0	0.217
		35-39	116.8	0.0002	12.9	0.217
		40-44	159.9	0.0003	19.8	0.217
		45-49	214.6	0.0005	29.0	0.119
		50-54	277.7	0.0008	41.2	0.119
		55-59	340.9	0.0018	56.4	0.116
		60-64	408.8	0.0035	74.3	0.116
		65-69	474.3	0.0054	94.7	0.122
		70-74	526.3	0.0087	116.5	0.122
		75-79	555.2	0.0132	137.6	0.127
		80-84	558.3	0.0178	155.8	0.127
		85-89	536.7	0.0238	169.3	0.117
		90-94	496.1	0.0333	175.0	0.117
		95+	450.2	0.0484	170.7	0.117

Table S18. LRTI input parameters

Sex	Ethnic group	Age group (years)	Mortality per 100,000	Disability rate
Male	Māori	0-4	11.86	0.00064
		5-9	0.00	0.00018
		10-14	0.00	0.00019
		15-19	0.00	0.00018
		20-24	0.00	0.00024
		25-29	0.00	0.00031
		30-34	0.00	0.00023
		35-39	0.00	0.00030
		40-44	1.99	0.00028
		45-49	0.00	0.00025
		50-54	15.47	0.00035
		55-59	6.63	0.00046
		60-64	0.00	0.00045
		65-69	0.00	0.00064
		70-74	19.97	0.00077
		75-79	74.44	0.00092
80-84	174.66	0.00116		

		85-89	312.50	0.00146
		90-94	312.50	0.00146
		95+	312.50	0.00146
Female	Māori	0-4	12.35	0.00059
		5-9	0.00	0.00022
		10-14	0.00	0.00008
		15-19	0.00	0.00027
		20-24	0.00	0.00030
		25-29	0.00	0.00032
		30-34	0.00	0.00029
		35-39	0.00	0.00030
		40-44	1.58	0.00031
		45-49	1.80	0.00033
		50-54	2.41	0.00044
		55-59	0.00	0.00053
		60-64	4.56	0.00060
		65-69	0.00	0.00078
		70-74	8.80	0.00063
		75-79	83.68	0.00077
		80-84	108.75	0.00083
		85-89	542.45	0.00095
		90-94	542.45	0.00095
		95+	542.45	0.00095
Male	non-Māori	0-4	3.69	0.00032
		5-9	0.30	0.00009
		10-14	0.54	0.00009
		15-19	0.00	0.00009
		20-24	0.00	0.00012
		25-29	0.00	0.00016
		30-34	0.00	0.00012
		35-39	0.29	0.00015
		40-44	0.00	0.00014
		45-49	0.25	0.00013
		50-54	1.72	0.00018
		55-59	2.02	0.00024
		60-64	2.06	0.00024
		65-69	4.28	0.00035
		70-74	11.13	0.00042
		75-79	26.31	0.00052
		80-84	105.42	0.00066
		85-89	474.57	0.00088
		90-94	474.57	0.00088
		95+	474.57	0.00088
Female	non-Māori	0-4	1.31	0.00026
		5-9	0.00	0.00010
		10-14	0.00	0.00004
		15-19	0.00	0.00012
		20-24	0.00	0.00013
		25-29	0.00	0.00014
		30-34	0.00	0.00013
		35-39	0.00	0.00014
		40-44	0.46	0.00014
		45-49	0.24	0.00015
		50-54	1.67	0.00020
		55-59	2.09	0.00025
		60-64	1.17	0.00028
		65-69	3.68	0.00037

70-74	8.72	0.00030
75-79	20.07	0.00038
80-84	92.26	0.00040
85-89	558.75	0.00046
90-94	558.75	0.00046
95+	558.75	0.00046

Table S19. Future APC trends in incidence, CFR and remission

	Incidence Trends				Case-Fatality Trends				Remission Trends			
	Non-Māori		Māori		Non-Māori		Māori		Non-Māori		Māori	
	Men	Woman	Men	Woman	Men	Woman	Men	Woman	Men	Woman	Men	Woman
CHD	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%				
Stroke	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%				
COPD	-1.00%	-1.00%	-1.00%	-1.00%	-1.00%	-1.00%	-1.00%	-1.00%				
LRTI												
Bladder Cancer	0.10%	1.00%	0.10%	0.90%	4.20%	4.49%	3.00%	2.47%	-2.40%	-1.77%	-5.38%	-7.04%
Head & Neck Cancer	-1.80%	-0.30%	0.80%	2.40%	-1.26%	-1.55%	-1.28%	-1.33%	1.93%	1.13%	1.87%	1.72%
Esophageal Cancer	0.10%	-0.60%	0.10%	-0.70%	-0.32%	-0.23%	-0.29%	-0.14%	1.98%	2.47%	2.12%	3.18%
Liver Cancer	1.90%	1.60%	-0.10%	-0.30%	-0.71%	-0.86%	-0.77%	-0.76%	4.30%	3.64%	4.04%	4.06%
Cervical Cancer		-2.40%		-3.50%		-0.31%		-0.28%		0.20%		0.26%
Endometrial Cancer		0.50%		0.40%		-1.91%		-1.85%		0.73%		0.88%
Kidney Cancer	1.30%	1.50%	1.30%	1.50%	-1.83%	-1.83%	-1.64%	-1.56%	0.93%	0.93%	1.39%	1.61%
Leukemia	1.90%	1.50%	1.80%	1.40%	-3.50%	-2.51%	-2.90%	-1.76%	1.37%	4.04%	2.91%	6.75%
Lung Cancer	-3.80%	-0.40%	-2.90%	0.50%	0.02%	0.02%	0.02%	0.02%	-0.24%	-0.24%	-0.29%	-0.25%
Melanoma	1.90%	1.60%	1.90%	1.60%								
Pancreas Cancer	-1.80%	-1.40%	-1.80%	-1.40%	-0.03%	-0.02%	-0.02%	-0.01%	0.23%	0.30%	0.28%	0.33%
Stomach Cancer	-1.50%	-1.40%	-0.50%	-0.50%	-0.48%	-0.45%	-0.36%	-0.37%	1.04%	1.14%	1.47%	1.42%
Thyroid Cancer	1.90%	3.70%	1.90%	3.70%	-2.60%	-2.61%	-2.60%	-2.60%	0.05%	0.04%	0.07%	0.06%

## Appendix C: Association of smoking and vaping with disease incidence rates

### Health impact of changing exposure to tobacco smoke

We modelled the health benefits of interventions through a reduction in incidence of each smoking-related disease (Equation 1). Note that all calculations were done by age, gender and ethnicity, although we omit these subscripts from the following equations for clarity.

$$I_x' = I_x \times (1 - \text{PIF}_x) \quad (1)$$

where:

$I_x$  is the current incidence of disease  $x$  in the population;

$I_x'$  is the new incidence of disease  $x$  after an intervention is implemented; and

$\text{PIF}_x$  is the population impact fraction for disease  $x$ .

Each  $\text{PIF}_x$ <sup>9</sup> was derived from the current smoking prevalence, the new smoking prevalence following intervention and the relative risks of smoking-related diseases (Equation 2).

$$\text{PIF}_x = \frac{\left[ p_n + p_c \text{RR}_{xc} + \sum_{t=0}^{100} p(t)_f \text{RR}_{xf}(t) \right] - \left[ p'_n + p'_c \text{RR}_{xc} + \sum_{t=0}^{100} p'(t)_f \text{RR}_{xf}(t) \right]}{\left[ p_n + p_c \text{RR}_{xc} + \sum_{t=0}^{100} p(t)_f \text{RR}_{xf}(t) \right]} \quad (2)$$

where:

$\text{RR}_{xc}$  is the risk of disease  $x$  in current smokers, relative to never smokers;

$\text{RR}_{xf}(t)$  is the risk of disease  $x$  among former smokers at time  $t$  since cessation, relative to never smokers;

$p_c$  and  $p'_c$  are the prevalence of people who report currently smoking at least one cigarette daily, before and after intervention;

$p_n$  and  $p'_n$  are the prevalence of prevalence of people who report never having smoked at least one cigarette daily, before and after intervention; and

$p_f$  and  $p'_f$  are the prevalence of prevalence of people who report past smoking of at least one cigarette daily, before and after intervention.

### Relative risks of smoking-related diseases

We applied risks of smoking-related disease from New Zealand-specific epidemiological studies where possible. Unlike the large cohort studies, such as the US based Cancer Prevention Study II (CPS II), the New Zealand studies<sup>7,10,11</sup> make use of national cancer registry (and mortality) data linked with data from the regular censuses, which have episodically included questions on smoking behaviour since 1976. For risks of chronic obstructive pulmonary disease and lower respiratory tract infections, however, we had to

draw on international studies <sup>12</sup>. Table S20 gives a summary of all the relative risk values used in the modeling and their sources.

Table S20. Relative risks of smoking-related diseases for current versus never smokers

Disease	Relative risk (95% uncertainty interval)	Confounding adjustment*	Source
Coronary heart disease	Men: 1.61 (1.44 to 1.80) Women: 1.66 (1.27 to 2.17)		New Zealand linked data <sup>11</sup>
Stroke	Men: 2.52 (2.12 to 2.99) Women: 2.20 (1.66 to 2.90)		New Zealand linked data <sup>11</sup>
Chronic obstructive pulmonary disease	Men: 10.80 (8.40 to 13.90) Women: 12.30 (9.90 to 15.20)		CPS-II <sup>12</sup>
Lower respiratory tract infection	Men: 1.90 (1.50 to 2.40) Women: 2.20 (1.70 to 2.80)		CPS-II <sup>12</sup>
Lung cancer	9.28 (8.31 to 10.40)**		New Zealand linked data <sup>7</sup>
Mouth and oropharyngeal cancer	2.30 (1.94 to 2.72) **		New Zealand linked data <sup>7</sup>
Esophageal cancer	2.14 (1.73 to 2.65) **	-0.4 to -0.1	New Zealand linked data <sup>7</sup>
Pancreatic cancer	1.68 (1.44 to 1.96) **	0.1 to 0.2	New Zealand linked data <sup>7</sup>
Bladder cancer	2.22 (1.94 to 2.55) **		New Zealand linked data <sup>7</sup>
Kidney cancer	1.29 (1.07 to 1.56) **		New Zealand linked data <sup>7</sup>
Stomach cancer	1.42 (1.22 to 1.66) **	0.07 to 0.10	New Zealand linked data <sup>7</sup>
Liver cancer	1.75 (1.37 to 2.24) **	-0.10 to -0.20	New Zealand linked data <sup>7</sup>
Cervical cancer	1.82 (1.51 to 2.20) **		New Zealand linked data <sup>7</sup>
Endometrial cancer#	0.67 (0.56 to 0.79) **	0.08	New Zealand linked data <sup>7</sup>
Melanoma#	0.62 (0.56 to 0.69) **		New Zealand linked data <sup>7</sup>
Thyroid cancer#	0.76 (0.58 to 1.00) **		New Zealand linked data <sup>7</sup>

\* Additional change in RR to additionally correct for potential residual confounding by alcohol and obesity (which were not captured in census data).

\*\*Rate ratio values adjusted for selection bias and confounding (e.g. due to socio-economic factors) and exposure misclassification.

# That is, there is some evidence that tobacco smoking protects against these cancers (possibly due to hormonal effects)

(Note that we did include a scenario analysis substituting the CPS II relative risks for CHD and stroke for the ‘default’ relative risks above.)



We assumed no excess risk of lower respiratory tract infection immediately after cessation of smoking, but for all other diseases, we assumed that the current smoker disease risks decline with time since cessation, using regression models derived by Hoogenveen et al.<sup>13</sup> The regression model parameters are shown in Table S21. We assumed no excess risk remained after 20 years.

$$RR_{xf}(t) = 1 + (RR_{xc} - 1) \exp[-\gamma t] \quad RR_{xf}(t) = 1 + (RR_{xc} - 1) \exp[-\gamma t] \quad (1)$$

$$\gamma = \gamma_0 \exp[-\eta(a - 50)] \quad \gamma = \gamma_0 \exp[-\eta(a - 50)] \quad (2)$$

where:

$\gamma$  is a regression coefficient for time ( $t$ );

$\gamma_0$  is the regression coefficient value at age 50 (minimum observed age of age gradient<sup>13</sup>);

and

$\eta$  is a regression coefficient for age ( $a$ );

Table S21. Regression coefficients used to estimate declining risks of disease with smoking cessation

Disease	$\gamma_0$	$\eta$
Coronary heart disease <sup>13</sup>	0.24228	0.05822
Stroke <sup>13</sup>	0.31947	0.01648
Chronic obstructive pulmonary disease <sup>13</sup>	0.20333	0.03087
<b>Cancers</b>		
Lung cancer <sup>13</sup>	0.15637	0.02065
Mouth and oropharyngeal cancer <sup>13</sup>	0.0493028	0
Esophageal cancer <sup>13</sup>	0.0537424	0
Pancreatic cancer <sup>13</sup>	0.09279	0
Bladder cancer <sup>13</sup>	0.05417	0
Kidney cancer <sup>13</sup>	0.0385957	0
Stomach cancer <sup>13</sup>	0.0264112	0
Liver cancer*	0.0525	0
Cervical cancer*	0.0525	0
Endometrial cancer* #	0.0525	0
Melanoma* #	0.0525	0
Thyroid cancer* #	0.0525	0

\* Estimated as average of all other cancers, excluding lung cancer.

# For these diseases it is the decline in time of the protective effect – back to zero.

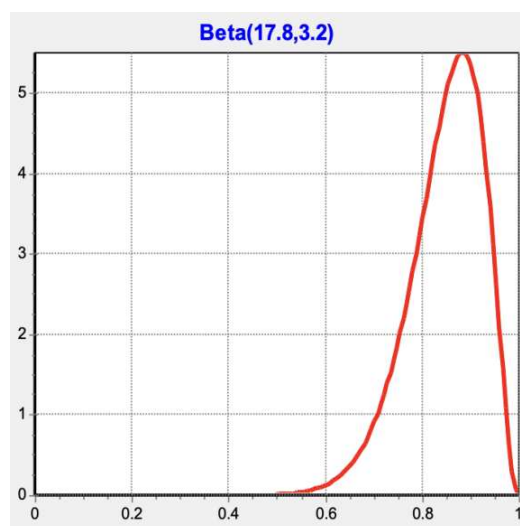
## Appendix D: Expert knowledge elicitation process

There is no firm evidence on the amount by which smoking prevalence will reduce – as a result of quitting – with denicotinising tobacco. On the one hand, given nicotine is the addictive component there is reason to believe the vast majority of smokers will quit if only tobacco with sub-addictive levels of nicotine is available. This optimistic stance is further strengthened by possible positive reinforcement of denormalisation and suppliers exiting the market. On the other hand, some smokers maintain they will smoke regardless of nicotine, and for many smoking is a socially conditioned habit as well as a biological addiction. To parameterise our model, many of the co-authors of this paper were asked to independently estimate the most likely percentage reduction in smokers after five to ten-years compared to ongoing BAU trends with not denicotinisation. And to estimate a pessimistic and optimistic percentage reduction in smoking (that we interpreted as each individual's 95% range of likely values). Table S22 shows the separate estimates, resulting in an average of 84.8% reduction as the most likely estimate, and average pessimistic and optimistic scenarios of 65.8% and 96.6%, respectively (equating to an approximated SD of 7.84%). Specifying this a Beta distribution (17.8, 3.2) gave a mean of 84.8%, median of 85.9%, 2.5<sup>th</sup> percentile of 67.0% and 97.5<sup>th</sup> percentile of 96.3%. Figure S2 below gives the probability density function).

Table S22. Co-authors estimates of the effect of denicotinisation on smoking prevalence

Co-authors	Pessimistic	Most likely	Optimistic
RE	50%	80%	95%
RM	50%	78.50%	95%
AW	80%	95%	99%
DAO	75%	85%	98%
TB	80%	90%	97.50%
NW	60%	80%	95%
Average	65.8%	84.8%	96.6%

Figure S2. Probability density function applied to average effect of denicotinisation on smoking cessation



It is interesting to compare our expert elicitation results with those done by the US Food and Drug Administration expert elicitation process, conducted in 2015 and published in the *New England Journal of Medicine*.<sup>14</sup> It is important to note the key contextual differences with our process: our elicitation was undertaken in 2022; Aotearoa NZ is a country with strong border controls and ocean borders that limit potential illicit supply; Aotearoa NZ has liberal access to vaping as both an additional cessation support and substitute for those unwilling to or unable to quit nicotine altogether. Compared to Apelberg et al (2018), our experts' estimates were more similar than the (surprisingly) large heterogeneity among experts in Apelberg et al. The Apelberg et al.'s expert median estimates of quitting in the first year ranged from 4.5% to 55%, and annual quitting in subsequent years ranged from 4.5% to 80% (table below). Calculating what this implies as the quitting after five years, it ranges from 20.6% to 99.9% (average across experts 77.2%). Our experts ranged from 78.5% to 95% in their 'most likely' estimates of quitting after five years and ranged from 65.8% to 96.6% for the average of their pessimist and optimistic estimates. In summary, our experts estimate somewhat higher quitting after five years than the Apelberg et al. experts – a difference that we believe is plausible due to the strengthened evidence base and the unique circumstances of Aotearoa NZ, but nevertheless must be noted as higher than that in Apelberg et al.

Apelberg et al experts.	A	B	C	D	E	F	G	H	Average of experts
a. Median percentage quitting in first year	20%	55%	20%	50%	9%	10%	4.5%	30%	25%
b. Median percentage quitting in subsequent years	13.5%	80%	10%	30%	15%	8%	4.5%	15%	22%
Implied quitting over five years = $1 - (1-a) \times (1-b)^4$	55.2%	99.9%	47.5%	88.0%	52.5%	35.5%	20.6%	63.5%	72.2%

Regarding reduced initiation of tobacco smoking, the Apelberg et al experts had an average of a 46% (range 21% to 75%) reduction in initiation in the first year and an average of a 49% (range 21% to 70%) reduction in initiation in subsequent years. Our experts (not by

independent elicitation as above for cessation, but rather a group discussion) settled on 10% of the BAU initiation by five years post implementation (95% UI 2.6% to 21.5%). As modelled, this was a 37%, 60%, 75%, 84% and 90% reduction in initiation compared with BAU by year post implementation, then held constant at 90% from year five onwards. Our estimate of reduced initiation is considerably greater than Apelberg et al – even our lower limit of reduction of 78.5% (i.e., 1 – 21.5%) is above the average of Apelberg et al.'s experts 95<sup>th</sup> percentile estimates of 71% (range 45% to 95% across experts). We attribute the higher estimates in the Aotearoa-NZ context to the ready access to vaping as a substitute, the strong border controls that should limit illicit supply, and the dramatic falls in young adult smoking prevalence in recent years in Aotearoa-NZ that gives more confidence in major reductions in initiation from mandatory denicotinisation of retail tobacco.

Returning to the increase in cessation, we operationalised it in the model by randomly drawing from the Beta distribution (17.8, 3.2). Assume the mean of 84.8% was drawn. We applied the following additional net cessation rate in the first five annual cycles of  $1 - (1 - 84.8\%)^{1/5} = 31.3\%$ . That is, after five cycles the 'survivorship' will be  $1 - (1 - 31.3\%)^5 = 15.3\%$  (which is  $1 - 84.8\%$ ). Given that this reduction was compared to future BAU, the percentage impact on the net cessation rate (NCR) was on that after the BAU NCR. For example, if BAU NCR in the next cycle was 5%, then under denicotinisation it would become  $5\% + (1 - 5\%) \cdot 31.3\% = 34.8\%$ .

This additional intervention NCR for denicotinisation was applied for the first 5 cycles, then the NCR was set at twice the BAU NCR.

Table S23. Estimated smoking prevalence (20+ year olds) in Aotearoa/New Zealand by policy scenario for 2020, 2025, 2030, and 2040 by sex and ethnic group

Policy	Population group	2020		2025		2030		2035		2040	
		Prevalence	95% UI	Prevalence	95% UI	Prevalence	95% UI	Prevalence	95% UI	Prevalence	95% UI
Business as usual	Māori Female	37.1%	(37.1% to 37.1%)	32.3%	(28.9% to 34.0%)	27.9%	(22.3% to 31.0%)	23.9%	(17.1% to 28.1%)	20.2%	(12.9% to 25.4%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	10.1%	(9.0% to 10.6%)	8.5%	(6.8% to 9.4%)	7.1%	(5.1% to 8.3%)	5.9%	(3.8% to 7.4%)
	Māori Male	30.6%	(30.6% to 30.6%)	24.9%	(21.9% to 26.6%)	20.2%	(15.6% to 23.1%)	16.2%	(11.1% to 20.0%)	12.9%	(7.8% to 17.2%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	11.5%	(10.2% to 11.8%)	9.9%	(7.9% to 10.6%)	8.4%	(6.1% to 9.5%)	7.1%	(4.7% to 8.5%)
	All	15.4%	(15.4% to 15.4%)	13.2%	(11.8% to 13.8%)	11.2%	(9.0% to 12.3%)	9.5%	(6.8% to 11.0%)	7.9%	(5.1% to 9.8%)
Low nicotine	Māori Female	37.1%	(37.1% to 37.1%)	10.0%	(5.3% to 13.1%)	3.6%	(1.4% to 5.3%)	2.6%	(1.1% to 4.2%)	1.7%	(0.8% to 3.3%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	3.1%	(1.7% to 4.1%)	1.1%	(0.5% to 1.6%)	0.8%	(0.4% to 1.3%)	0.5%	(0.3% to 1.0%)
	Māori Male	30.6%	(30.6% to 30.6%)	7.7%	(4.1% to 9.9%)	2.6%	(1.0% to 3.8%)	1.6%	(0.8% to 2.8%)	0.9%	(0.5% to 2.1%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	3.6%	(1.9% to 4.7%)	1.4%	(0.5% to 1.9%)	1.0%	(0.5% to 1.5%)	0.7%	(0.4% to 1.3%)
	All	15.4%	(15.4% to 15.4%)	4.1%	(2.2% to 5.4%)	1.5%	(0.6% to 2.2%)	1.0%	(0.5% to 1.7%)	0.7%	(0.4% to 1.4%)
Low nicotine + media	Māori Female	37.1%	(37.1% to 37.1%)	10.0%	(5.3% to 13.0%)	3.6%	(1.4% to 5.3%)	2.6%	(1.1% to 4.2%)	1.7%	(0.8% to 3.3%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	3.1%	(1.7% to 4.1%)	1.1%	(0.5% to 1.6%)	0.8%	(0.4% to 1.3%)	0.5%	(0.3% to 1.0%)
	Māori Male	30.6%	(30.6% to 30.6%)	7.7%	(4.1% to 9.9%)	2.6%	(1.0% to 3.8%)	1.6%	(0.8% to 2.8%)	0.9%	(0.5% to 2.1%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	3.6%	(1.9% to 4.7%)	1.4%	(0.5% to 1.9%)	1.0%	(0.5% to 1.5%)	0.7%	(0.4% to 1.3%)
	All	15.4%	(15.4% to 15.4%)	4.1%	(2.2% to 5.3%)	1.5%	(0.6% to 2.2%)	1.0%	(0.5% to 1.7%)	0.7%	(0.4% to 1.4%)
Retail reduction	Māori Female	37.1%	(37.1% to 37.1%)	25.8%	(22.6% to 28.5%)	22.0%	(17.4% to 25.6%)	18.7%	(13.3% to 23.2%)	15.8%	(10.1% to 21.0%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	8.1%	(7.0% to 8.8%)	6.9%	(5.3% to 7.8%)	5.8%	(4.0% to 6.9%)	4.8%	(3.0% to 6.1%)
	Māori Male	30.6%	(30.6% to 30.6%)	19.8%	(17.0% to 22.1%)	16.0%	(12.1% to 19.1%)	12.9%	(8.6% to 16.5%)	10.4%	(6.1% to 14.2%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	9.2%	(8.0% to 9.8%)	8.1%	(6.2% to 8.8%)	6.9%	(4.8% to 7.9%)	5.8%	(3.7% to 7.1%)
	All	15.4%	(15.4% to 15.4%)	10.6%	(9.2% to 11.5%)	9.1%	(7.0% to 10.2%)	7.7%	(5.3% to 9.1%)	6.4%	(4.0% to 8.1%)
Smokefree generation	Māori Female	37.1%	(37.1% to 37.1%)	32.1%	(28.9% to 33.9%)	25.4%	(20.3% to 28.7%)	19.7%	(14.0% to 23.6%)	15.3%	(9.7% to 19.6%)
	Māori Male	30.6%	(30.6% to 30.6%)	24.8%	(21.9% to 26.5%)	18.4%	(14.2% to 21.3%)	13.3%	(9.1% to 16.7%)	9.8%	(6.0% to 13.2%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	10.1%	(9.1% to 10.8%)	8.2%	(6.6% to 9.3%)	6.6%	(4.7% to 7.9%)	5.2%	(3.4% to 6.7%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	11.5%	(10.3% to 12.1%)	9.5%	(7.7% to 10.5%)	7.8%	(5.6% to 9.0%)	6.2%	(4.1% to 7.7%)
	All	15.4%	(15.4% to 15.4%)	13.4%	(12.0% to 14.1%)	10.9%	(8.7% to 12.3%)	8.7%	(6.2% to 10.4%)	6.9%	(4.4% to 8.8%)
Combined interventions	Māori Female	37.1%	(37.1% to 37.1%)	8.2%	(4.3% to 10.5%)	2.9%	(1.1% to 4.3%)	2.1%	(0.9% to 3.4%)	1.4%	(0.7% to 2.7%)
	non-Māori Female	11.8%	(11.8% to 11.8%)	2.5%	(1.3% to 3.3%)	0.9%	(0.4% to 1.3%)	0.7%	(0.3% to 1.1%)	0.5%	(0.3% to 0.9%)
	Māori Male	30.6%	(30.6% to 30.6%)	6.3%	(3.4% to 7.9%)	2.1%	(0.9% to 3.1%)	1.3%	(0.6% to 2.3%)	0.8%	(0.5% to 1.8%)
	non-Māori Male	13.1%	(13.1% to 13.1%)	2.9%	(1.5% to 3.8%)	1.1%	(0.5% to 1.6%)	0.8%	(0.4% to 1.3%)	0.6%	(0.4% to 1.1%)
	All	15.4%	(15.4% to 15.4%)	3.3%	(1.8% to 4.3%)	1.2%	(0.5% to 1.8%)	0.9%	(0.4% to 1.4%)	0.6%	(0.4% to 1.2%)

Table S24. Absolute change in premature deaths (i.e., before age 75 years)

Population	Year	BAU	Denicotinisation		Denicotinisation + media		Retail reduction		Smokefree generation		Combined interventions	
		Estimate	Estimate	95% UI	Estimate	95% UI	Estimate	95% UI	Estimate	95% UI	Estimate	95% UI
Māori	2020 to 2030	49,731	-437	(-567 to -306)	-443	(-571 to -315)	-147	(-208 to -98)	-1	(-1 to 0)	-503	(-616 to -392)
	2030 to 2040	64,618	-2,703	(-3,341 to -2,060)	-2,727	(-3,362 to -2,094)	-671	(-976 to -435)	-17	(-22 to -13)	-2871	(-3,485 to -2,264)
	2040 to 2050	83,543	-5,024	(-6,183 to -3,872)	-5,058	(-6,214 to -3,915)	-1,092	(-1,603 to -706)	-120	(-148 to -93)	-5232	(-6,349 to -4,134)
	2020 to 2040	114,349	-3,137	(-3,891 to -2,374)	-3,172	(-3,916 to -2,420)	-818	(-1,178 to -535)	-18	(-22 to -13)	-3371	(-4,075 to -2,664)
	2020 to 2050	197,892	-8,159	(-10,018 to -6,253)	-8,223	(-10,070 to -6,335)	-1,910	(-2,777 to -1,244)	-138	(-170 to -106)	-8614	(-10,423 to -6,807)
Non-Māori	2020 to 2030	336,543	-675	(-881 to -473)	-684	(-887 to -485)	-231	(-328 to -153)	-1	(-1 to 0)	-778	(-957 to -609)
	2030 to 2040	431,519	-4,137	(-5,156 to -3,128)	-4,170	(-5,176 to -3,173)	-1,051	(-1,526 to -681)	-15	(-19 to -10)	-4396	(-5,346 to -3,475)
	2040 to 2050	531,435	-7,803	(-9,683 to -5,919)	-7,853	(-9,712 to -6,001)	-1,792	(-2,655 to -1,153)	-55	(-72 to -40)	-8125	(-9,940 to -6,321)
	2020 to 2040	768,062	-4,804	(-5,997 to -3,609)	-4,846	(-6,033 to -3,681)	-1,282	(-1,857 to -835)	-15	(-20 to -11)	-5179	(-6,292 to -4,092)
	2020 to 2050	1,299,497	-12,610	(-15,698 to -9,562)	-12,698	(-15,729 to -9,693)	-3,072	(-4,526 to -1,984)	-70	(-92 to -51)	-13313	(-16,113 to -10,512)
All	2020 to 2030	386,274	-1,112	(-1,444 to -780)	-1,128	(-1,454 to -803)	-378	(-535 to -251)	-1	(-2 to -1)	-1280	(-1,569 to -1,001)
	2030 to 2040	496,137	-6,837	(-8,481 to -5,200)	-6,889	(-8,511 to -5,270)	-1,720	(-2,505 to -1,116)	-32	(-40 to -23)	-7266	(-8,821 to -5,756)
	2040 to 2050	614,978	-12,821	(-15,848 to -9,813)	-12,908	(-15,914 to -9,918)	-2,885	(-4,275 to -1,853)	-175	(-216 to -134)	-13367	(-16,233 to -10,485)
	2020 to 2040	882,411	-7,940	(-9,892 to -5,984)	-8,014	(-9,961 to -6,096)	-2,103	(-3,031 to -1,365)	-33	(-42 to -24)	-8543	(-10,367 to -6,777)
	2020 to 2050	1,497,389	-20,806	(-25,718 to -15,805)	-20,955	(-25,772 to -16,026)	-4,987	(-7,308 to -3,228)	-209	(-258 to -159)	-21939	(-26,599 to -17,386)

Table S25. Relative percentage change in premature deaths (i.e., before age 75 years)

Population	Year	BAU	Denicotinisation		Denicotinisation + media		Retail reduction		Smokefree generation		Combined interventions	
		Estimate	% Change	95% UI	% Change	95% UI	% Change	95% UI	% Change	95% UI	% Change	95% UI
Māori	2020 to 2030	49731	-0.88	(-1.14 to -0.61)	-0.89	(-1.15 to -0.63)	-0.30	(-0.42 to -0.20)	0.00	(0.00 to 0.00)	-1.01	(-1.24 to -0.79)
	2030 to 2040	64618	-4.18	(-5.17 to -3.19)	-4.22	(-5.20 to -3.24)	-1.04	(-1.51 to -0.67)	-0.03	(-0.03 to -0.02)	-4.44	(-5.39 to -3.50)
	2040 to 2050	83543	-6.01	(-7.40 to -4.63)	-6.05	(-7.44 to -4.69)	-1.31	(-1.92 to -0.84)	-0.14	(-0.18 to -0.11)	-6.26	(-7.60 to -4.95)
	2020 to 2040	114349	-2.74	(-3.40 to -2.08)	-2.77	(-3.42 to -2.12)	-0.72	(-1.03 to -0.47)	-0.02	(-0.02 to -0.01)	-2.95	(-3.56 to -2.33)
	2020 to 2050	197892	-4.12	(-5.06 to -3.16)	-4.16	(-5.09 to -3.20)	-0.97	(-1.40 to -0.63)	-0.07	(-0.09 to -0.05)	-4.35	(-5.27 to -3.44)
Non-Māori	2020 to 2030	336543	-0.20	(-0.26 to -0.14)	-0.20	(-0.26 to -0.14)	-0.07	(-0.10 to -0.05)	0.00	(0.00 to 0.00)	-0.23	(-0.28 to -0.18)
	2030 to 2040	431519	-0.96	(-1.19 to -0.72)	-0.97	(-1.20 to -0.74)	-0.24	(-0.35 to -0.16)	0.00	(0.00 to 0.00)	-1.02	(-1.24 to -0.81)
	2040 to 2050	531435	-1.47	(-1.82 to -1.11)	-1.48	(-1.83 to -1.13)	-0.34	(-0.50 to -0.22)	-0.01	(-0.01 to -0.01)	-1.53	(-1.87 to -1.19)
	2020 to 2040	768062	-0.63	(-0.78 to -0.47)	-0.63	(-0.79 to -0.48)	-0.17	(-0.24 to -0.11)	0.00	(0.00 to 0.00)	-0.67	(-0.82 to -0.53)
	2020 to 2050	1299497	-0.97	(-1.21 to -0.74)	-0.98	(-1.21 to -0.75)	-0.24	(-0.35 to -0.15)	-0.01	(-0.01 to 0.00)	-1.02	(-1.24 to -0.81)
All population	2020 to 2030	386274	-0.29	(-0.37 to -0.20)	-0.29	(-0.38 to -0.21)	-0.10	(-0.14 to -0.06)	0.00	(0.00 to 0.00)	-0.33	(-0.41 to -0.26)
	2030 to 2040	496137	-1.38	(-1.71 to -1.05)	-1.39	(-1.72 to -1.06)	-0.35	(-0.50 to -0.22)	-0.01	(-0.01 to 0.00)	-1.46	(-1.78 to -1.16)
	2040 to 2050	614978	-2.08	(-2.58 to -1.60)	-2.10	(-2.59 to -1.61)	-0.47	(-0.70 to -0.30)	-0.03	(-0.04 to -0.02)	-2.17	(-2.64 to -1.70)
	2020 to 2040	882411	-0.90	(-1.12 to -0.68)	-0.91	(-1.13 to -0.69)	-0.24	(-0.34 to -0.15)	0.00	(0.00 to 0.00)	-0.97	(-1.17 to -0.77)
	2020 to 2050	1497389	-1.39	(-1.72 to -1.06)	-1.40	(-1.72 to -1.07)	-0.33	(-0.49 to -0.22)	-0.01	(-0.02 to -0.01)	-1.47	(-1.78 to -1.16)

Figure S3. Comparison of total health gains from tobacco endgame strategies modelled in this paper, with those we have previously modelled for the ANZ population of food taxes and subsidies<sup>14</sup>, colorectal cancer screening<sup>15</sup>, and 10% per annum increases in tobacco tax<sup>16</sup>

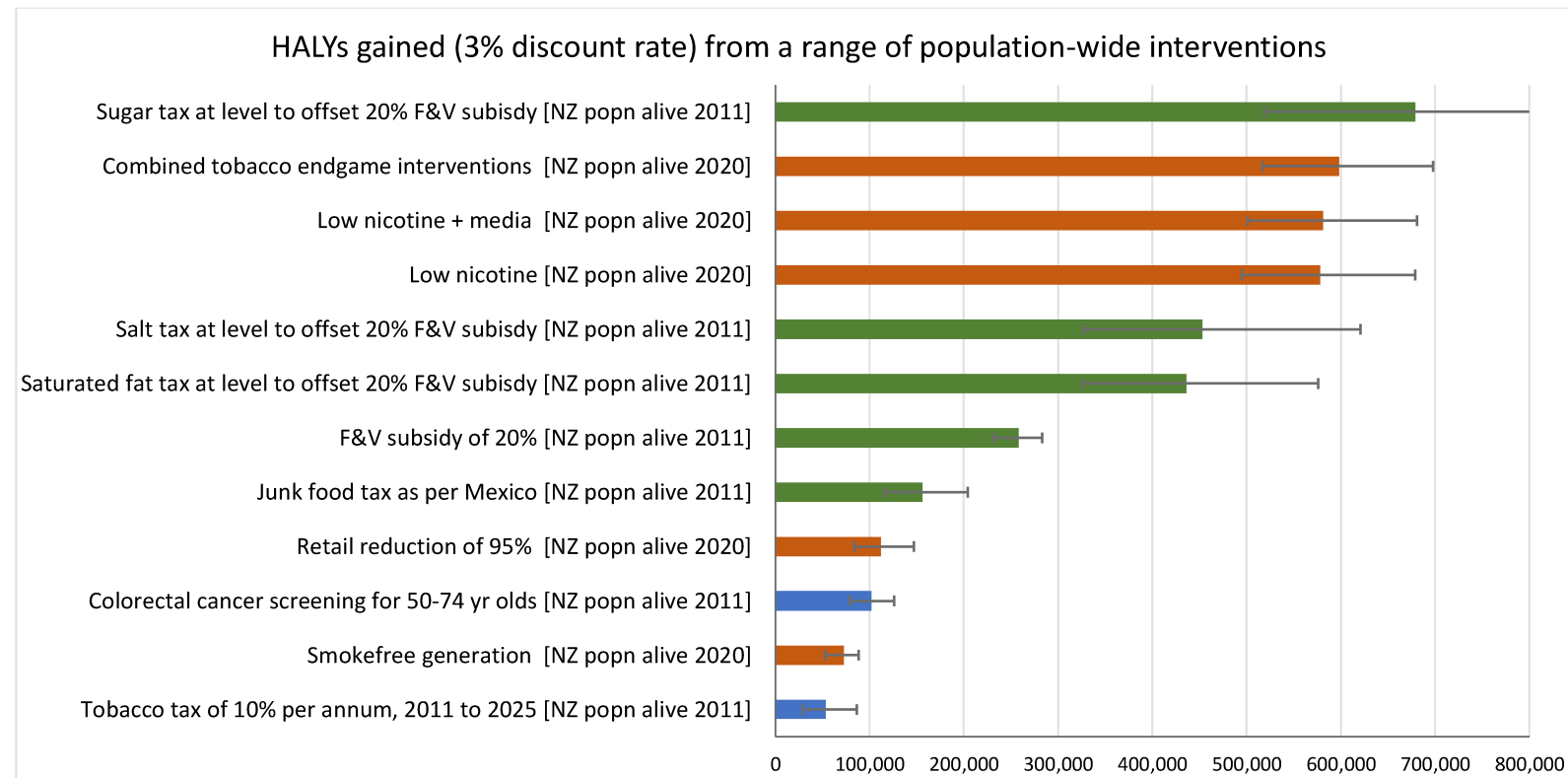




Table S26. Health gain (in HALYs gained; 3% discount rate) per 1,000 people alive in 2020 (base-year) in Aotearoa/New Zealand by the modelled policies, by timeline into the future

Population	Years	Low nicotine		Low nicotine + media		Retail reduction		Smokefree generation		Combined interventions	
		Estimate	Relative risk compared to non-Māori	Estimate	Relative risk compared to non-Māori	Estimate	Relative risk compared to non-Māori	Estimate	Relative risk compared to non-Māori	Estimate	Relative risk compared to non-Māori
Māori female	2020 to 2030	0.29	3.23	0.30	3.24	0.11	3.13	0.01	4.91	0.34	3.24
	2031 to 2040	4.26	3.45	4.26	3.46	1.13	3.36	0.13	4.65	4.54	3.44
	2041 to 2131	37.80	4.62	37.80	4.58	6.20	3.82	7.66	8.48	39.02	4.57
	All	16.89	4.73	16.99	4.73	2.91	3.96	3.23	9.01	17.50	4.75
Non-Māori female	2020 to 2030	0.09	1	0.09	1	0.03	1	0.00	1	0.10	1
	2031 to 2040	1.23	1	1.24	1	0.34	1	0.03	1	1.32	1
	2041 to 2131	8.20	1	8.26	1	1.62	1	0.90	1	8.48	1
	All	3.55	1	3.57	1	0.73	1	0.36	1	3.68	1
Māori male	2020 to 2030	0.19	1.79	0.19	1.80	0.07	1.78	0.01	3.45	0.21	1.80
	2031 to 2040	2.50	1.81	2.51	1.82	0.68	1.81	0.09	3.16	2.67	1.82
	2041 to 2131	18.58	2.03	18.66	2.03	3.30	1.84	3.43	3.44	19.20	2.04
	All	8.30	2.12	8.33	2.12	1.54	1.93	1.42	3.61	8.59	2.12
Non-Māori male	2020 to 2030	0.10	1	0.11	1	0.04	1	0.00	1	0.12	1
	2031 to 2040	1.37	1	1.38	1	0.37	1	0.03	1	1.47	1
	2041 to 2131	9.06	1	9.12	1	1.78	1	1.00	1	9.41	1
	All	3.88	1	3.92	1	0.80	1	0.39	1	4.04	1

HALYs gained are age-standardized to the 2020 Māori population. Because we model a closed cohort (all ANZers alive in 2020), in out-years the HALYs gained are increasingly only among the younger birth cohorts in 2020. The ‘missing’ older people in out-years is why the RR comparing Māori to non-Māori for all years combined is higher than the weighted average of the three sub-periods.

Table S27. Sensitivity of Health gains results to policy effect specifications\*

Population	Year	Denicotinisation		Denicotinisation + media		Retail reduction		Smokefree generation		Combined interventions	
		Estimate	95% UI	Estimate	95% UI	Estimate	95% UI	Estimate	95% UI	Estimate	95% UI
Māori	2020 to 2030	1,050	(901 to 1,130)	1,090	(934 to 1,167)	529	(473 to 656)	37	(28 to 47)	1,430	(1,240 to 1,560)
	2031 to 2040	10,700	(9,060 to 12,100)	11,500	(9,777 to 12,793)	3,900	(3,340 to 4,780)	514	(422 to 623)	12,900	(11,000 to 14,400)
	2041 to 2131	151,000	(112,000 to 190,000)	183,000	(139,119 to 224,223)	28,600	(22,700 to 36,900)	71,300	(53,800 to 83,500)	181,000	(137,000 to 225,000)
	All	163,000	(122,000 to 203,000)	196,000	(149,920 to 238,183)	33,200	(26,500 to 42,100)	71,900	(54,400 to 84,000)	195,000	(149,000 to 241,000)
Non-Māori	2020 to 2030	2,230	(1,910 to 2,390)	2,310	(1,973 to 2,456)	1,150	(1,020 to 1,430)	47	(35 to 62)	3,030	(2,620 to 3,330)
	2031 to 2040	22,200	(18,400 to 24,300)	23,600	(19,723 to 25,693)	8,060	(6,930 to 10,100)	757	(600 to 937)	26,700	(22,300 to 29,100)
	2041 to 2131	245,000	(175,000 to 294,000)	294,000	(214,785 to 341,991)	55,100	(42,900 to 71,500)	78,300	(57,500 to 89,000)	287,000	(208,000 to 342,000)
	All	269,000	(195,000 to 320,000)	320,000	(236,709 to 370,125)	64,800	(50,900 to 83,000)	79,200	(58,300 to 89,800)	317,000	(234,000 to 374,000)
All population	2020 to 2030	3,270	(2,810 to 3,510)	3,390	(2,907 to 3,623)	1,680	(1,500 to 2,090)	84	(63 to 109)	4,460	(3,860 to 4,880)
	2031 to 2040	33,000	(27,500 to 36,400)	35,100	(29,500 to 38,486)	12,000	(10,300 to 14,800)	1,270	(1,020 to 1,560)	39,600	(33,300 to 43,300)
	2041 to 2131	395,000	(287,000 to 484,000)	477,000	(353,905 to 566,214)	83,800	(65,600 to 108,000)	150,000	(111,000 to 173,000)	468,000	(345,000 to 566,000)
	All	432,000	(318,000 to 524,000)	516,000	(386,629 to 608,307)	98,000	(77,400 to 125,000)	151,000	(113,000 to 174,000)	513,000	(383,000 to 614,000)

\* Denicotinisation policy set at the lower end of effectiveness (i.e., 97.5th percentile values of: the percentage reduction in smoking prevalence due to increased cessation over and above BAU of 67.1%, and the percentage reduction in initiation of 78.5%), and retail outlet reduction and the tobacco free generation set to their expected or median input values.

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