



## ORIGINAL ARTICLE

# What has changed from 2001 to 2012 for sexual minority youth in New Zealand?

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**Aim:** To provide an overview of the health and well-being of sexual minority high school students in New Zealand, investigate differences between sexual minority youth (SMY) and exclusively opposite-sex-attracted youth (EOSAY), and examine changes across survey waves.

**Methods:** Nationally representative cross-sectional surveys were completed in 2001 ( $n = 9011$ ), 2007 ( $n = 8002$ ) and 2012 ( $n = 8167$ ). Logistic regressions were used to examine the associations between selected outcomes and sexual attraction across survey waves.

**Results:** SMY accounted for 6% of participants in all three waves, with a greater proportion being 'out' in 2012 ( $P < 0.0001$ ). SMY were more likely to work as volunteers (OR = 1.37) than EOSAY, and the majority of SMY reported good general health, liking school and having caring friends. With the exceptions of binge drinking and being driven dangerously by someone, SMY reported comparatively diminished health and well-being relative to EOSAY. Increasing proportions of SMY had depressive symptoms from 2001 (OR = 2.38) to 2012 (OR = 3.73) compared with EOSAY. There were some differences between the sexes; female SMY were less likely to report positive family relationships (OR = 0.59) and liking school (OR = 0.55), and they were more likely to have been hit (2012 OR = 1.95) than female EOSAY. Male SMY reported especially high rates of suicide attempts (2012 OR = 5.64) compared with male EOSAY.

**Conclusions:** Health services, schools, communities and families must be more responsive to the needs of SMY to ensure that disparities are addressed.

**Key words:** adolescent; bisexual; gay; lesbian; well-being.

## What is already known on this topic

- 1 Sexual minority youth experience compromised health and well-being relative to exclusively opposite-sex-attracted youth.
- 2 Sexual minority youth are often problematised, but this locates the issues as internal to the young person, rather than reflecting the impact of challenging environments.
- 3 The milieu in which young people live has a significant impact on their health and well-being.

## What this paper adds

- 1 A greater proportion of sexual minority youth were 'out' in 2012 (in comparison to the earlier survey waves in 2001 and 2007).
- 2 There has been no progress in relation to bullying and suicide attempts for sexual minority youth, and increasing proportions of sexual minority youth reported depressive symptoms from 2001 to 2012.
- 3 Despite the challenging environments, most sexual minority youth reported good general health, liking school and having caring friends, and many contribute to their communities through volunteering.

Historically, there has been a lack of systematic research on sexual minority individuals.<sup>1</sup> However, in recent years longitudinal and cross-sectional surveys have demonstrated that numerous disparities exist when sexual minority youth (SMY) are compared with exclusively opposite-sex-attracted youth

(EOSAY).<sup>2-8</sup> The elevated rates of ill health and other disparities for SMY are not related to sexuality *per se*, but are best understood as being a result of sexual minority-specific victimisation.<sup>9,10</sup> This relationship has been highlighted lately in studies where this type of abuse was directly linked to suicidality and depression in SMY.<sup>9,10</sup> While there are disparities, there have also been some social improvements, as evident by the availability of same-sex marriage in over 17 countries and international campaigns such as It Gets Better (<http://www.itgetsbetter.org/>).<sup>11</sup> It is therefore plausible that, based on these social changes and because there have been improvements in regard to the health of young people overall,<sup>12,13</sup> the health and well-being of SMY has improved over time. There is a need to monitor potential health

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changes at a population level so targeted action can be taken.<sup>14</sup> Nonetheless, to the best of the authors' knowledge, no prior studies have investigated whether key experiences of SMY have improved over time based on cross-sectional data from nationally representative samples.

It is important to consider how sexuality is defined, because this requires an appreciation of developmental factors. For example, high school students in industrialised countries mostly report not having sexual intercourse;<sup>12</sup> therefore, using sexual behaviour as the primary means of determining adolescent sexuality is limited. Sexual identity labels, such as lesbian, gay, bisexual (LGB) and straight/heterosexual, are commonly used by adolescents;<sup>15</sup> yet many youth who are sexually attracted to people of the same sex or both sexes do not necessarily identify themselves as LGB.<sup>15,16</sup> Various reasons could account for this. For instance, many of those who will eventually describe themselves as LGB may not yet have come out to themselves or others,<sup>17</sup> and some may instead prefer terms like 'queer' or 'questioning'.<sup>15</sup> After reviewing school-based health surveys, Saewyc and colleagues<sup>18</sup> suggested that if only one sexuality item were to be permitted on a health survey, it should be a sexual attraction question. Moreover, same-sex sexual attractions are highly correlated with same-sex sexual behaviour and self-identification as LGB.<sup>19</sup>

The present study utilises nationally representative data from more than 25 000 students over three waves of a cross-sectional survey. This study's design is particularly useful, as other research over time has tended to be longitudinal<sup>2-6</sup> or selected participants based on their sexual identity.<sup>9,20</sup> In the current study, comparisons between time points and sexual attraction groups can be made, because the sample is representative and the results are not confounded by having the same participants (as they would be in a longitudinal study). Furthermore, participants were surveyed about a range of risk and protective factors and health and well-being indicators, so that the strengths and challenges of SMY could be investigated simultaneously.

## Methods

The Youth2000 surveys are cross-sectional, self-administered questionnaires, carried out with representative samples of New Zealand secondary school students. The surveys were conducted in 2001 (Youth '01), 2007 (Youth '07) and 2012 (Youth '12). The anonymous surveys were completed by students at school using multimedia, computer-assisted self-interviewing technology on laptop computers in 2001 and on Internet tablets in 2007 and 2012.<sup>21</sup> Questions appeared in text and were read out loud via a voice-over; students could only hear the voice-over for their own survey on individual headphones. To ensure maximal privacy for participants, study personnel administered the survey in venues such as the school hall or gymnasium, the seating was carefully arranged so that participants were at a sufficient distance from each other, and no school staff were present in the venue while students were completing the survey. Detailed descriptions of the surveys' methodologies are available elsewhere<sup>12</sup> (see also <http://www.fmhs.auckland.ac.nz/faculty/ahrg/>).

Each student provided consent before completing the survey. Ethics approval was obtained from the University of Auckland Human Participants Ethics Committee.

## Measures

### Demographic information

Participants were asked 'What sex are you?' and their age in years. Students indicated the ethnic group that they belonged to using the New Zealand Census standard 2001/2006 ethnicity questions.<sup>22</sup> Those participants who chose more than one ethnicity were assigned a single ethnic group based on an ethnicity prioritisation method.<sup>23</sup> Sexual attraction was determined by the question 'Which are you sexually attracted to?' with the response choices being 'the opposite sex (e.g. I am a male attracted to females or I am a female attracted to males)', 'the same sex (e.g. I am a male attracted to males or I am a female attracted to females)', 'both sexes (e.g. I am attracted to males and females)', 'not sure' and 'neither'. Analyses categorised participants into those who were attracted to the opposite sex (EOSAY) and those who were attracted to the same sex or both sexes or were not sure (SMY). Students attracted to neither sex were excluded from analyses. It was inappropriate to include students attracted to neither sex in the SMY group, as they do not appear to experience comparable issues.<sup>8</sup> The combined SMY group was created following prior research that grouped those attracted to the same sex or both sexes and those who were not sure into a single category.<sup>10,24</sup> Furthermore, previous studies have indicated that this group's health is diminished relative to EOSAY.<sup>8,25,26</sup>

### Coming out

Those students attracted to the same sex or both sexes who gave an affirmative response to 'Have you come out (told people close to you openly of your sexuality)?' were classified as having come out.

### Risk and protective factors and health and well-being indicators

Selected factors and indicators were chosen for analysis *a priori* based on their importance for adolescent health and well-being.

## Analyses

In all analyses, the data were weighted by the inverse probability of selection, and the variance of estimates were adjusted to allow for correlated data from the same schools. Total numbers and adjusted percentages were calculated for the various outcomes and indicators according to sex and sexual attraction by survey wave. Logistic regression models, including the possible confounders age, sex and ethnicity, were used to investigate the associations between sexual attraction and the various outcomes or indicators. For each outcome or indicator, the interactions with sex, sexual attraction and survey wave (controlled for by age and ethnicity) were investigated to see whether further analyses should be separated by sex. Firstly, the three-way interaction was tested, and where this interaction was significant ( $P < 0.01$ ) further analyses were stratified by sex. If the three-way interaction was not significant, the two-way interaction between sex and sexual attraction (controlled for by

**Table 1** Responders to the sexual attraction question by survey wave, *n* (%)

	Youth '12 ( <i>n</i> = 8167) <sup>†</sup>	Youth '07 ( <i>n</i> = 8002)	Youth '01 ( <i>n</i> = 9011)
Exclusively opposite-sex-attracted	7336 (89.9%)	7370 (92.2%)	8308 (92.1%)
Sexual minority	485 (5.9%)	486 (6.0%)	552 (6.1%)
Attracted to neither sex <sup>‡</sup>	168 (2.0%)	146 (1.8%)	151 (1.7%)

<sup>†</sup>In Youth '12, students could respond 'I don't understand this question' to the sexual attraction question (this response option was not available in Youth '07 or Youth '01). Just over 2% (2.2%, 178/8167) of students responded that they did not understand the question in Youth '12, and these students are excluded from all analyses. <sup>‡</sup>For completeness of data, those attracted to neither sex are only reported upon in this table; subsequent analyses only include exclusively opposite-sex-attracted youth and sexual minority youth.

**Table 2** Demographics of exclusively opposite-sex-attracted and sexual minority students by survey wave, *n* (%)

	Sex		Age		Ethnicity				
	Male	Female	15 or less	16 or older	New Zealand European	Māori	Pacific	Asian	Other
Exclusively opposite-sex-attracted									
Youth '12	3357 (95.0%)	3978 (92.9%)	4717 (94.5%)	2611 (92.6%)	3660 (94.6%)	1469 (94.3%)	912 (91.9%)	849 (92.9%)	438 (92.4%)
Youth '07	3968 (94.8%)	3402 (92.8%)	4732 (94.0%)	2638 (93.6%)	4067 (94.2%)	1360 (94.2%)	639 (93.7%)	861 (91.7%)	440 (94.3%)
Youth '01	3791 (93.7%)	4517 (93.8%)	5604 (93.9%)	2692 (93.4%)	4816 (95.8%)	1971 (93.0%)	548 (86.5%)	531 (87.4%)	350 (93.7%)
Sexual minority									
Youth '12	178 (5.0%)	306 (7.1%)	276 (5.5%)	208 (7.4%)	209 (5.4%)	92 (5.7%)	80 (8.1%)	65 (7.1%)	37 (7.6%)
Youth '07	220 (5.2%)	266 (7.2%)	305 (6.0%)	181 (6.4%)	253 (5.8%)	84 (5.8%)	43 (6.3%)	78 (8.3%)	27 (5.7%)
Youth '01	252 (6.3%)	300 (6.2%)	366 (6.1%)	185 (6.6%)	208 (4.2%)	151 (7.0%)	87 (13.5%)	77 (12.6%)	24 (6.3%)

wave, ethnicity and age) was tested, and where this was significant, further analyses were stratified by sex. The interactions between wave and sexual attraction (controlled for by ethnicity, age and sex (if sex was not stratified)) were then tested, and where this interaction was significant, analyses were separated by wave. All analyses were carried out using SAS software version 9.3 (2010) survey procedures. Differences were interpreted conservatively (i.e. a *P*-value of  $\leq 0.01$  was taken to indicate statistical significance) given the sample size and number of comparisons.

## Results

The overall proportions of SMY across the three survey waves were similar (Table 1). Table 2 highlights that SMY were varied and were represented across sex, age and ethnicity categories.

The proportion of students attracted to the same sex or both sexes who had come out had increased between the survey waves ( $P < 0.0001$ ); approximately a third were out in 2001 ( $n = 109$ , 31.3%, 95% CI 26.6–36.1), compared with approximately 40% in 2007 ( $n = 135$ , 39.8%, 95% CI 33.7–45.9) and over half in 2012 ( $n = 158$ , 53.1%, 95% CI 48.2–58.0).

Most SMY across all three survey waves reported that they had caring friends, that they were not bullied on a weekly basis

and that they liked school 'a lot' or 'a bit' or thought school was 'OK' (Table 3). Additionally, there was a general pattern of improvements in relation to family relationships and reductions in being hit for both SMY and EOSAY when the results from 2001 were compared with the results from 2012. There were statistically significant differences between sexes in relation to liking school ( $P = 0.008$ ), family relationships ( $P = 0.008$ ) and being hit ( $P = 0.003$ ) (Table 3).

SMY reported having good general health, and most did not report clinically significant depressive symptoms, attempting suicide or binge drinking (Table 4). There was a general pattern of improvements in relation to recent binge drinking and being driven dangerously by someone for both SMY and EOSAY when the results from 2007 were compared with the results from 2012. There were significant differences between survey waves in relation to depressive symptoms ( $P = 0.009$ ) and significant differences between the sexes in relation to suicide attempts ( $P < 0.0001$ ) (Table 4).

In further analyses where data from different sexes and survey waves were combined, SMY were significantly less likely to have friends who cared about them (OR = 0.72) and to rate their general health as good (OR = 0.46), and they were more likely to have been bullied (OR = 2.88) in comparison with EOSAY. However, SMY were more likely to have worked as volunteers (OR = 1.37) than EOSAY. SMY were statistically no

**Table 3** Risk and protective factors for exclusively opposite-sex-attracted and sexual minority students by sex across survey waves

	Exclusively opposite-sex-attracted, n (%) [95% CI]		Sexual minority, n (%) [95% CI]		P value	Sex x sexual attraction x wave†	Sex x sexual attraction‡	Wave x sexual attraction§
	Males	Females	Males	Females				
Friends who care about student ('a lot', 'some')								
Youth '12	2996 (90.4%) [89.4–91.5]	3704 (93.5%) [92.6–94.4]	148 (83.9%) [79.6–88.3]	276 (91.6%) [88.0–95.2]	0.024	0.096	0.79	
Youth '07	3264 (83.9%) [82.5–85.3]	3080 (91.4%) [90.3–92.5]	173 (82.1%) [76.4–87.8]	228 (88.0%) [84.1–91.9]				
Youth '01	2971 (82.6%) [81.3–83.9]	3907 (90.1%) [89.2–91.1]	181 (81.0%) [75.1–86.8]	227 (82.4%) [77.6–87.1]				
Weekly bullying in last 12 months/this year (≥1 time)								
Youth '12	213 (6.4%) [5.4–7.4]	208 (5.3%) [4.4–6.1]	28 (15.8%) [9.6–22.0]	39 (12.7%) [8.6–16.7]	0.042	0.35	0.69	
Youth '07	265 (6.7%) [5.6–7.7]	142 (4.2%) [3.4–4.9]	30 (13.7%) [8.3–19.1]	37 (13.8%) [9.4–18.3]				
Youth '01	326 (8.7%) [7.6–9.7]	217 (4.8%) [4.2–5.5]	43 (18.5%) [11.9–25.0]	27 (9.7%) [5.7–13.6]				
Likes school ('a lot', 'a bit', 'school's OK')								
Youth '12	3030 (90.3%) [89.0–91.6]	3595 (90.4%) [89.2–91.5]	152 (85.2%) [79.7–90.7]	256 (83.6%) [78.2–89.1]	0.16	0.008*	0.12	
Youth '07	3450 (87.0%) [85.4–88.6]	3017 (88.8%) [87.3–90.3]	185 (84.3%) [78.7–89.9]	213 (80.3%) [76.1–84.4]				
Youth '01	3151 (84.6%) [83.1–86.2]	3853 (86.5%) [85.1–87.6]	212 (86.9%) [82.4–91.4]	241 (82.9%) [78.3–87.6]				
Volunteered in the last 12 months								
Youth '12	702 (26.2%) [23.8–28.7]	930 (27.8%) [25.9–29.6]	38 (29.0%) [22.1–36.0]	97 (37.0%) [30.7–43.2]	0.23	0.36	0.61	
Youth '07	487 (15.5%) [13.9–17.1]	516 (18.4%) [16.6–20.3]	34 (21.2%) [14.4–28.0]	51 (24.5%) [18.6–30.5]				
Youth '01	–	–	–	–				
Relationship with family ('I'm happy how we get along')								
Youth '12	2515 (75.1%) [73.7–76.5]	2772 (69.7%) [67.9–71.5]	126 (70.9%) [62.8–79.0]	168 (54.6%) [48.5–60.7]	0.008*	–	Male 0.029 Female 0.29	
Youth '07	3009 (76.1%) [74.9–77.4]	2222 (65.5%) [64.0–67.1]	138 (62.8%) [56.4–69.3]	140 (53.1%) [47.3–58.9]				
Youth '01	2371 (63.9%) [62.1–65.6]	2393 (54.0%) [52.4–55.7]	150 (61.4%) [55.5–67.2]	129 (44.7%) [38.6–50.7]				
Has been hit in last 12 months (≥1 time)								
Youth '12	1178 (35.2%) [32.7–37.6]	931 (23.5%) [21.9–25.1]	59 (33.4%) [25.9–41.0]	110 (36.2%) [30.4–41.9]	0.003*	–	Male 0.13 Female <0.0001*	
Youth '07	1940 (49.2%) [46.8–51.6]	1106 (32.5%) [30.8–34.3]	97 (44.6%) [36.5–52.6]	135 (51.0%) [45.2–56.9]				
Youth '01	1907 (51.4%) [48.6–54.1]	1774 (39.9%) [38.1–41.7]	132 (55.1%) [48.0–62.1]	129 (43.4%) [38.4–48.4]				

\*Statistically significant (i.e.  $P \leq 0.01$ ). †Controlled for ethnicity and age. ‡Controlled for wave, ethnicity and age; calculated where three-way interaction among sex, sexual attraction and wave was not significant. §Controlled for ethnicity, age and sex (if sex was not stratified).

**Table 4** Health and well-being indicators of exclusively opposite-sex-attracted and sexual minority students by sex across survey waves

	Exclusively opposite-sex-attracted, n (%) [95% CI]		Sexual minority, n (%) [95% CI]		P value		
	Males		Females				
	Males	Females	Males	Females			
Rated general health as good							
Youth '12	3173 (94.6%) [93.8–95.4]	3564 (89.6%) [88.4–90.8]	153 (85.8%) [80.6–91.0]	240 (78.2%) [74.2–82.2]	0.44	0.48	0.07
Youth '07	3734 (94.3%) [93.4–95.2]	3086 (90.7%) [89.6–91.8]	188 (85.8%) [80.6–91.0]	216 (81.5%) [76.7–86.3]			
Youth '01	3571 (94.7%) [93.9–95.5]	4085 (90.8%) [89.8–91.9]	225 (91.0%) [87.0–94.9]	249 (83.7%) [80.0–87.4]			
Clinically significant depressive symptoms (RADS-SF ≥ 28)					0.14	0.39	0.009*
Youth '12	240 (7.3%) [6.3–8.3]	583 (14.8%) [13.2–16.4]	40 (24.2%) [17.3–31.1]	114 (38.6%) [32.0–45.3]			
Youth '07	238 (6.1%) [5.5–6.8]	449 (13.4%) [12.2–14.6]	44 (20.6%) [14.7–26.5]	88 (34.0%) [28.4–39.5]			
Youth '01	299 (8.1%) [7.2–8.9]	623 (14.1%) [13.1–15.2]	44 (19.2%) [13.6–24.9]	81 (28.1%) [23.1–33.0]			
Binge drinking in last 4 weeks (≥5 alcoholic drinks in 4-h session)					0.26	0.011	0.011
Youth '12	785 (23.6%) [20.7–26.6]	890 (22.6%) [20.5–24.7]	47 (26.4%) [19.1–33.6]	93 (31.0%) [25.4–36.7]			
Youth '07	1429 (37.3%) [34.3–40.2]	1131 (33.9%) [30.5–37.2]	77 (38.2%) [31.3–45.1]	102 (40.6%) [34.0–47.3]			
Youth '01	1518 (42.4%) [39.1–45.8]	1719 (39.9%) [37.1–42.6]	73 (35.0%) [28.5–41.6]	92 (34.9%) [28.3–41.5]			
Driven dangerously by someone (speeding, car chase, burnout) in last month					0.03	0.47	0.73
Youth '12	620 (18.6%) [17.1–20.1]	679 (17.1%) [15.9–18.4]	40 (21.9%) [15.8–27.9]	62 (20.2%) [15.1–25.4]			
Youth '07	1073 (27.3%) [25.4–29.1]	741 (21.7%) [20.0–23.4]	66 (30.2%) [24.5–35.9]	73 (27.2%) [20.2–34.2]			
Youth '01	620 (20.0%) [13.8–26.3]	679 (23.8%) [17.6–30.1]	40 (19.2%) [11.3–27.1]	62 (26.6%) [17.9–35.3]			
Has attempted suicide in the last 12 months					<0.0001*	–	Male <0.0001* Female <0.0001*
Youth '12	62 (1.8%) [1.3–2.4]	212 (5.4%) [4.4–6.3]	18 (10.3%) [6.3–14.2]	50 (16.3%) [12.1–20.6]			
Youth '07	90 (2.3%) [1.8–2.8]	201 (5.9%) [5.0–6.7]	32 (14.8%) [10.1–19.6]	51 (18.9%) [14.0–23.7]			
Youth '01**	154 (4.1%) [3.3–4.9]	434 (9.7%) [8.5–10.9]	31 (12.1%) [7.7–16.4]	63 (20.8%) [16.2–25.3]			

\*Statistically significant (i.e.  $P < 0.01$ ). †Controlled for ethnicity and age. ‡Controlled for wave, ethnicity and age; calculated where three-way interaction among sex, sexual attraction and wave was not significant. §Controlled for ethnicity, age and sex (if sex was not stratified). ¶In 2012 and 2007 only the RADS-SF was used; in 2001, the full version of the RADS (which includes the RADS-SF) was administered. \*\*Only those who reported having thought about killing themselves were asked this question in Youth '01. RADS-SF, Reynolds Adolescent Depression Scale, Short Form.<sup>27,28</sup>

**Table 5** Odds ratios for factors and indicators with no significant interactions of sexual attraction with sex or survey wave

	OR [95% CI]	P value
Friends who care about student ('a lot', 'some')		0.0002
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.72 [0.61–0.85]	
Weekly bullying in last 12 months/this year ( $\geq 1$ time)		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	2.88 [2.42–3.43]	
Volunteered in the last 12 months		0.0002
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.37 [1.16–1.62]	
Rated general health as good		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.46 [0.39–0.53]	
Binge drinking in last 4 weeks ( $\geq 5$ alcoholic drinks in 4-h session)		0.070
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.12 [0.99–1.27]	
Driven dangerously by someone (speeding, car chase, burnout) in last month		0.011
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.18 [1.04–1.34]	

OR adjusted for age and ethnicity (reference category: exclusively opposite-sex-attracted students) for all three survey waves (i.e. Youth '01, Youth '07 and Youth '12 combined).

more likely to have engaged in recent binge drinking or to have been driven dangerously (Table 5).

For analyses where data were separated by survey wave, SMY were more likely to report clinically significant depressive symptoms in all three waves, and the disparities in relation to this outcome increased from 2001 (OR = 2.38) through 2007 (OR = 3.55) to 2012 (OR = 3.73) (Table 6).

Where analyses were separate for males and females (see Tables 7,8), male and female SMY were less likely to report liking school and having positive family relationships. However, the differences were more pronounced for female SMY compared with female EOSAY than for male SMY compared with male EOSAY (e.g. OR = 0.59 for female SMY vs. female EOSAY compared with OR = 0.73 for male SMY vs. male EOSAY for positive family relationships). Male SMY were no more likely to have been hit than male EOSAY. However, female SMY were more likely to have been hit compared with female EOSAY in 2007 (OR = 2.30) and 2012 (OR = 1.95).

The item on suicide attempts is not directly comparable across survey waves due to differences in question branching in 2001, 2007 and 2012. However, SMY were at increased risk of suicide attempts in every survey wave, with male SMY being at especially high risk of this when compared with male EOSAY (e.g. in 2007, OR = 7.65).

**Table 6** Odds ratios for factors and indicators with significant interactions of sexual attraction with survey wave but not sex

	OR [95% CI]	P value
Clinically significant depressive symptoms (RADS-SF $\geq 28$ )†		
Youth '12		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	3.73 [3.04–4.58]	
Youth '07		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	3.55 [2.86–4.41]	
Youth '01		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	2.38 [1.95–2.91]	

OR adjusted for sex, age and ethnicity (reference category: exclusively opposite-sex-attracted students) for each survey wave (i.e. Youth '01, Youth '07 and Youth '12 separately). †In 2012 and 2007 only the RADS-SF was used; in 2001, the full version of the RADS (which includes the RADS-SF) was administered. RADS-SF, Reynolds Adolescent Depression Scale, Short Form.<sup>27,28</sup>

**Table 7** Odds ratios for factors and indicators with significant interactions of sexual attraction with sex but not survey wave

	OR [95% CI]	P value
Likes school ('a lot', 'a bit', 'school's OK')		
Males		0.13
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.83 [0.65–1.06]	
Females		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.55 [0.46–0.66]	
Relationship with family ('I'm happy how we get along')		
Males		0.0009
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.73 [0.61–0.88]	
Females		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.59 [0.51–0.68]	
Has been hit in last 12 months ( $\geq 1$ time)		
Males		0.98
Exclusively opposite-sex-attracted	1.0	
Sexual minority	0.998 [0.84–1.19]	

OR adjusted for age and ethnicity (reference category: exclusively opposite-sex-attracted students) for all three survey waves (i.e. Youth '01, Youth '07 and Youth '12 combined).

## Discussion

In this series of cross-sectional national surveys, the majority of students who were SMY reported good general health. Most



**Table 8** Odds ratios for factors and indicators with significant interactions of sexual attraction with both survey wave and sex

	OR [95% CI]	P value
Has attempted suicide in the last 12 months		
Males		
Youth '12		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	5.64 [3.26–9.77]	
Youth '07		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	7.65 [4.97–11.77]	
Youth '01		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	2.88 [1.75–4.73]	
Females		
Youth '12		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	3.71 [2.53–5.44]	
Youth '07		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	3.97 [2.69–5.84]	
Youth '01		0.0013
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.94 [1.30–2.91]	
Has been hit in last 12 months (≥1 time)		
Females		
Youth '12		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.95 [1.49–2.56]	
Youth '07		<0.0001
Exclusively opposite-sex-attracted	1.0	
Sexual minority	2.30 [1.83–2.88]	
Youth '01		0.075
Exclusively opposite-sex-attracted	1.0	
Sexual minority	1.22 [0.98–1.51]	

OR adjusted for age and ethnicity (reference category: exclusively opposite-sex-attracted students) for each survey wave (i.e. Youth '01, Youth '07 and Youth '12 separately).

SMY liked school and had friends who cared. SMY were more likely than other students to work as volunteers; this is a notable finding, as the authors of this study are unaware of any population-based studies that have indicated that SMY are significantly more likely to report an asset<sup>29</sup> such as this relative to EOSAY. However, compared with EOSAY, SMY were significantly more likely to experience difficulties in relation to their family, school and community environments. Over an 11-year period there have been significant changes for SMY, such that an increasing percentage had come out and the rates of depression had worsened, while there was little overall change in depressive symptoms for the majority.<sup>13</sup> Why this should occur in the context of improvements in relationships and declining substance use, with little change in depression for EOSAY, is not clear and warrants further attention.

## Strengths and limitations

This study provides a rare opportunity to consider changes for SMY over time, as the results are drawn from a nationally representative survey series. This is of value, as there is a shortage of population-based research on SMY.<sup>30</sup> Our analyses are unique, as they reflect a socio-ecological approach by investigating a broad range of variables and recognise the importance of supportive environments for healthy development.<sup>31</sup> A prior criticism of studies conducted in the field is the lack of data on ethnicity.<sup>1</sup> The current study included this information, thus highlighting that SMY are represented across all main ethnic groups in New Zealand.

It should be noted that the cross-sectional nature of the surveys means that although a number of associations have been observed, causality cannot be determined. There is also the potential for bias due to a reliance on self-report. Moreover, slight changes to the survey items and the branching of the questionnaire may have impacted upon the comparability of some factors or indicators across the survey waves, although these changes are highlighted. Students were not asked a question about whether they were transgender (except in Youth '12; the results of this are reported elsewhere)<sup>32</sup> or whether they were intersex. As a result of these questions not having been asked across the survey waves (or not at all), this detail is not included.

## Comparisons with prior research

Our findings of disparities between SMY and EOSAY are consistent with previous research. Meta-analyses have demonstrated that SMY are more likely to attempt suicide<sup>33</sup> and to experience depressive symptoms<sup>33</sup> and report higher rates of substance use.<sup>34</sup> Our results reflect these findings but also add to them. For example, although rates of binge drinking have decreased overall in New Zealand,<sup>12</sup> binge drinking rates appeared elevated in SMY, but the differences were statistically non-significant in this study. Furthermore, Fergusson and colleagues, in their longitudinal study, found that a greater proportion of sexual minority males than sexual minority females had attempted suicide.<sup>4</sup> In contrast, our results found that despite male SMY being at an elevated risk of suicide compared with other males, a greater proportion of female SMY reported attempting suicide in comparison with male SMY. Other significant sex differences in relation to liking school, family relationships and being hit were also observed in our study. Similar differences have been highlighted in the Add Health Study, where female SMY were less likely to report positive school attitudes and family interactions than female EOSAY.<sup>35</sup> Future research with representative samples of SMY should further examine differences according to sex.<sup>36</sup>

This study highlights the need for up-to-date research, as we have found some changes from 2001 to 2012. Positive changes pertaining to relationships, substance use, risky driving, violence and suicide attempts from 2001 to 2012 for New Zealand secondary school students overall have been previously reported,<sup>12</sup> but we have been unable to find similar results highlighting any positive trends for SMY. However, research from Australia's large Writing Themselves In 3 study, conducted over more than a decade, also noted that SMY were coming out

at increasingly early ages,<sup>20</sup> and this change was hypothesised to be related to social and political progress.<sup>20</sup> The majority of SMY in our study reported good general health. As previous research among SMY has focused on identifying risk factors for negative outcomes,<sup>17,36</sup> this general health finding is important, as it highlights the resilience of SMY and helps to illustrate that most SMY are healthy, suggesting that the majority will develop into happy and productive adults.<sup>17,37</sup> Future research should investigate differences within the wider sexual minority group and factors associated with resilience, as well as detecting trends and/or changes over time. Studies on changes over time will be especially important for assisting us in understanding contemporary needs and evaluating the impact of social factors and government policies.

Finally, despite commentary reminding us that 'in most respects youths with same-sex attractions are similar to all youths' (p. 6)<sup>17</sup> SMY in our study reported mistreatment, poorer experiences of family support and lower likelihood of having caring friends than EOSAY. Family, friends and positive environments are important for all adolescents but may be of particular relevance to SMY in acting as protective factors against victimisation and bullying.<sup>38–40</sup>

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