Tobacco Use Among Students in the Cayman Islands: CISDUS Findings 1998 - 2006

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1.0 INTRODUCTION & METHOD

In this report we describe the extent and patterns of tobacco smoking in 2006 among students in grades 7 to 12 in the Cayman Islands, and any changes since 1998. The findings are based on the 2006 cycle of the *Cayman Islands Student Drug Use Survey* (CISDUS 2006). Previous survey cycles were conducted in 1998, 2000, and 2002. Therefore, we are able to present data on changes in tobacco use that have occurred over the past 8 years (1998-2006).

This report is one of a series of focused CISDUS reports published by the National Drug Council (NDC) regarding substance use among Cayman Islands students. Readers should also be aware of the NDC's short "CISDUS Briefs," which provide highlights of selected CISDUS findings.

Surveys such as CISDUS contribute to a better understanding of both current and changing rates of substance use. Although the survey is based on a core set of questions, changes have been made to reflect contemporary public health issues.

Survey Design

The CISDUS employs a census (i.e., a 100% sample) of students enrolled in grades 7-12. In 2006, 2,480 students in the twelve private and public schools were asked to complete anonymous, self-administered questionnaires between February 6th and 10th. Also, 2187, 2186, and 1946 students were interviewed in 2002, 2000 and 1998 respectively. (Please see the Appendix for the details about the procedure and questionnaire).

Although sample surveys are preferable for collecting data in large populations, there are several advantages to complete surveys when the population is small, as is the case for the Cayman Islands school population. First, public acceptance and compliance is often enhanced in complete surveys. In turn, this also strengthens political acceptance and credibility, especially in new research endeavors. Second, data analysis is less complicated because calculation of sampling error is irrelevant. Third, survey administration is easier. And fourth, complete surveys provide the maximum numbers required to study subgroup differences. In sum, complete surveys can increase reliability of collected data and public acceptance of it.

Sample Participation and Characteristics

All twelve middle and high schools in the Cayman Islands participated in the 1998, 2000, 2002 and 2006 surveys. Of the 2,945 enrolled students, 2,480 completed questionnaires in 2006; 2,187 completed questionnaires in 2002; 2,186 completed questionnaires in 2000 and 1,946 completed questionnaires in 1998. Student participation rates were 84% in 2006, 88% in 2002, 94% in 2000 and 86% in 1998, which is comparable to or exceeds other large-scale surveys conducted elsewhere (e.g., Ontario Student Drug Use Survey, 77%; U.S. Monitoring The Future survey, 85%).

As seen in Table 1, the major characteristics of the sample did not change significantly between 1998 and 2006. In sum, the high response rate and comparability between samples suggests a representative sample.

Table 1. Sample Characteristics, CISDUS 1998-2006

	1998		2000		2002		2006	
	Number Interviewed	%	Number Interviewed	%	Number Interviewed	%	Number Interviewed	%
Total	1946		2186		2187		2480	
Male	952	**48.9**	1063	**48.9**	1036	**48.5**	1228	**49.7**
Female	982	**50.5**	1111	**51.1**	1148	**51.5**	1242	**50.3**
Grade 7	359	**18.4**	409	**18.7**	429	**19.6**	427	**17.3**
Grade 8	376	**19.3**	378	**17.3**	420	**19.2**	432	**17.5**
Grade 9	329	**16.9**	361	**16.5**	340	**15.5**	452	**18.3**
Grade 10	349	**17.9**	372	**17.0**	368	**16.8**	438	**17.8**
Grade 11	300	**15.4**	369	**16.9**	321	**14.7**	405	**16.4**
Grade 12	228	**11.7**	297	**13.6**	309	**14.1**	313	**12.7**
West Bay	422	**21.7**	524	**24.1**	505	**23.1**	562	**22.8**
George Town	866	**44.5**	941	**43.3**	886	**42.9**	990	**40.2**
Bodden Town	390	**20.**	423	**19.5**	481	**20.6**	562	**22.8**
East End	71	**3.6**	79	**3.6**	79	**3.7**	99	**4.0**
North Side	76	**3.9**	77	**3.5**	75	**3.6**	84	**3.4**
Cayman Brac	110	**5.7**	127	**5.8**	140	**6.0**	168	**6.8**

Notes: sex-year difference: $X^2(3df)=2.6$, p=.46; grade-year difference: $X^2(15df)=23.6$, p=.07; district-year difference: $X^2(15df)=21.9$, p=.11.

Data Analysis, Interpretation and Presentation

Because the survey is based on a complete sample (i.e., a census) there is no sampling error attached to estimates (although estimates still have error based on non-sampling error such as mis-reporting). Thus, the calculation of confidence intervals is inappropriate. Although these data are population derived, there are still important reasons to perform inferential statistical analysis. First, a complete census can be regarded as a sample because it is subject to observational error (rates of tobacco smoking could vary slightly if the census was replicated the following day) and it has a population limited in time and space. Second, random sampling is not a prerequisite for drawing statistical inference. For example, if we were to find numerical differences in tobacco smoking among districts, we still need to rule out the possibility of chance processes in generating the differences. Consequently, in this report we employ statistical tests, primarily the chi-square (χ^2) test, to ensure that differences are not due to chance processes. We report a difference as statistically significant if the probability is at the .05 level or lower.

In order to analyze changes in substance use across time, we employ logit models that allow us to assess the overall change across the four survey cycles (1998, 2000, 2002, 2006). In addition, we assess the two most relevant point comparisons: (1) we compare the two most recent surveys (i.e., 2006 vs 2002), and (2) we compare the most recent survey (2006) and the first survey in 1998. In addition, to test for differential change according to sex, grade, or district, we assess the year-by-sex, year-by-grade, and year-by-district interactions.

Readers should note the following important points regarding the data analyses in this report, or any survey report: (1) Since there is still the element of chance findings, the element of non-sampling errors (such as mis-reporting), we cannot treat all absolute differences in percentages as meaningful and important; and (2) small percentages are more unreliable than larger percentages.

2.0 RESULTS

Lifetime Smoking, 2006

As seen in Figure 1, one-quarter (25.3%) of Cayman Island students in grades 7 to 12 have smoked at least one tobacco cigarette in their lifetime. Males (26.5%) and females (24.0%) are equally likely to have smoked in their lifetime. There is a significant grade effect for lifetime smoking, ranging from a low of 10.2% among 7th-graders to a high of 43.5% among 12th-graders. Despite some variation among the districts, there were no significant differences.

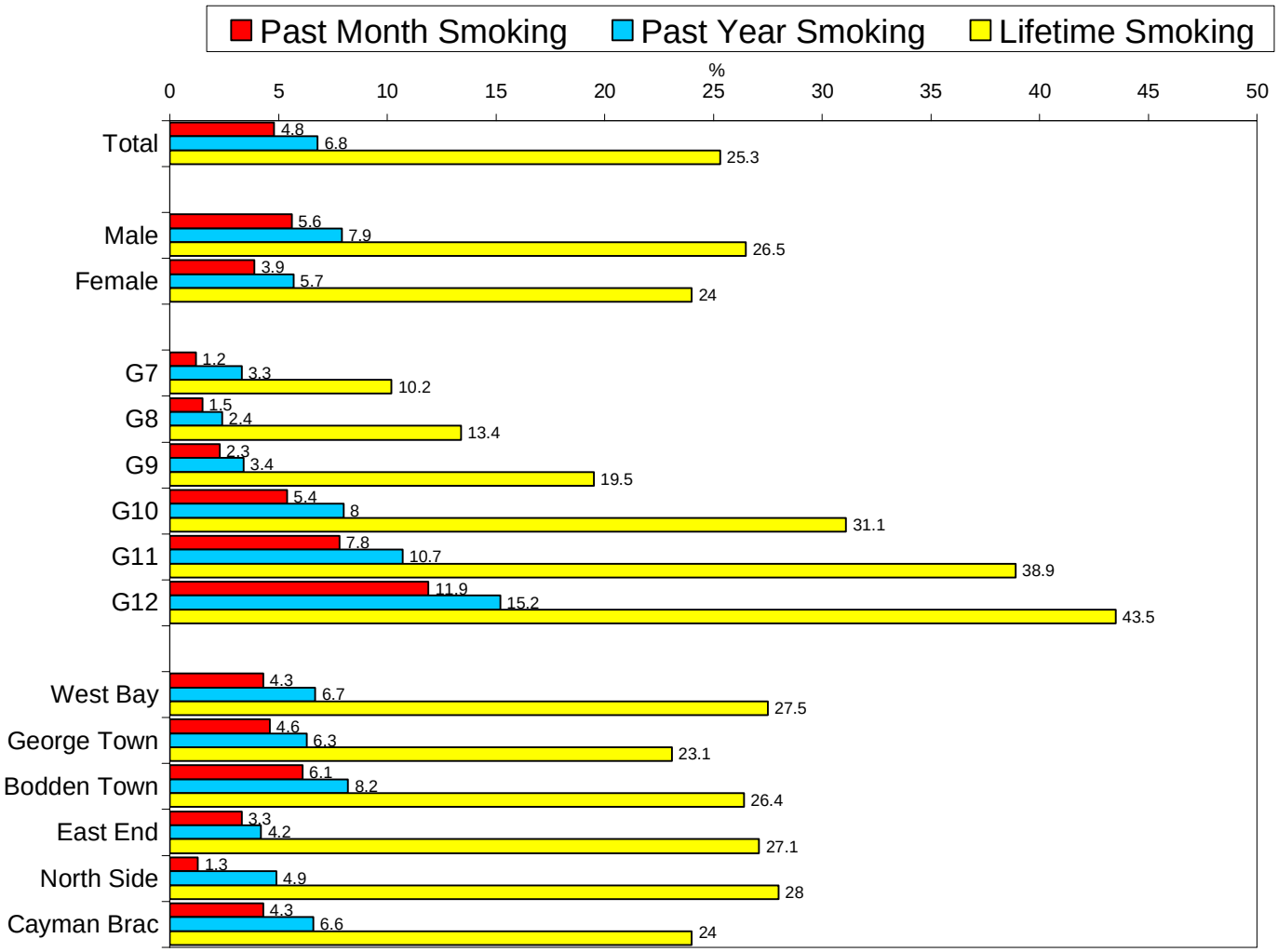
Past Year Smoking, 2006

Overall, 6.8% of Cayman Islands students smoked tobacco cigarettes during the 12 months before the survey (Figure 1). Males are significantly more likely to be past year smokers compared to females (7.9% vs 5.7%, respectively). Rates significantly increase with grade, from 3.3% of 7th-graders up to 15.2% of 12th-graders. Despite some variation, there is no significant difference by district.

Past Month Smoking, 2006

For the first time in 2006, the CISDUS asked students about smoking cigarettes during the four weeks before the survey. Overall, 4.8% of students smoked cigarettes during the four weeks before the survey (Figure 1). Males are more likely to be past month smokers compared to females (5.6% vs 3.9%). Rates significantly increase with grade, from 1.2% of 7th-graders up to 11.9% of 12th-graders. Again, there is no significant difference by district.

Figure 1. **Percentage of Students Reporting Past Month, Past Year, and Lifetime Smoking, by Sex, Grade and District, 2006 CISDUS**



Past Month Smoking (N=2394)	Past Year Smoking (N=2451)	Lifetime Smoking (N=2451)
Sex difference, p=.05	Sex difference, p<.05	Sex difference not significant
Grade difference, p<.001	Grade difference, p<.001	Grade difference, p<.001
District difference not significant	District difference not significant	District difference not significant

TRENDS IN PAST YEAR SMOKING, 1998-2006

Past year tobacco smoking decreased from 8.5% in 1998 to 6.8% in 2006, although the decrease mainly occurred between 1998 and 2000 (5.9%) and rates have subsequently remained stable since then (see Table 2).

- **Sex:** Past year smoking among males did not significantly change over time, hovering between 7% and 9%. However, smoking among females is significantly lower in 2006 compared to 1998 (5.7% vs 8.4%, respectively), but remains similar to the rate from 2002 (6.1%).
- **Grade:** 7th-graders showed a significant decline in smoking between 1998 (2.3%) and 2000 (0.5%), remained steady in 2002 (0.5%), but then significantly increased in 2006 (3.3%). Past year smoking was significantly lower in 2006 compared to 1998 among 9th-graders (3.4% vs 8.3%, respectively), as well as among 11th-graders (10.7% vs 17.7%). There was no change over time among students in grades 8, 10, and 12.
- **District:** Only students in West Bay showed a significant change in past year smoking over time, declining from 10.6% in 1998 down to 5.8% in 2000 and remaining steady in 2002 (5.6%) and 2006 (6.7%).

Table 2. Trends in Past Year Tobacco Smoking (%) by Sex, Grade, and District, 1998-2006 CISDUS

	(N=)	1998 (1919)	2000 (2152)	2002 (2180)	2006 (2451)		Overall Change 1998 to 2006	Comparing 2006 vs 2002	Comparing 2006 vs 1998
Total		8.5	5.9	6.7	6.8		*	ns	*
Sex	**Male**	8.6	6.7	7.3	7.9		ns	ns	ns
	Female	8.4	5.2	6.1	5.7		*	ns	*
Grade	**7**	2.3	0.5	0.5	3.3		**	**	ns
	8	4.0	2.7	1.2	2.4		ns	ns	ns
	9	8.3	2.0	5.9	3.4		***	ns	**
	10	10.1	7.9	9.0	8.0		ns	ns	ns
	11	17.7	9.6	13.1	10.7		**	ns	**
	12	11.4	14.9	14.0	15.2		ns	ns	ns
District	**West Bay**	10.6	5.8	5.6	6.7		*	ns	*
	George Town	8.4	6.1	7.6	6.3		ns	ns	ns
	Bodden Town	5.7	5.2	7.5	8.2		ns	ns	ns
	East End	4.3	2.6	2.6	4.2		ns	ns	ns
	North Side	10.8	9.1	6.7	4.9		ns	ns	ns
	Cayman Brac	11.8	5.0	5.0	6.6		ns	ns	ns

Notes: (1) * p<.05; ** p<.01; *** p<.001; ns=not significant; (2) sex*year interaction=ns, grade*year interaction=p<.01, district*year interaction=ns.

Question: "In the last 12 months, how often did you use tobacco cigarettes?" (Use excludes trying a cigarette in the last 12 months)

DAILY SMOKING IN THE PAST YEAR

Daily Smoking, 2006

Overall, 4.7% of Cayman Islands students smoke cigarettes daily (see Table 3). Males are significantly more likely to be smoke daily compared to females (5.8% vs 3.6%, respectively). Rates of daily smoking significantly increase with grade, from about 2% of students in grades 7 to 9 up to 10.6% of 12th-graders. Despite some variation, there is no significant difference by district.

Trends in Daily Smoking, 1998-2006

Daily smoking remained stable between 1998 and 2006, hovering between 4% and 5% (see Table 3).

- **Sex**: Daily smoking has remained stable over time for males and females.
- **Grade:** 7th-graders showed a significant decline in smoking between 1998 (2.0%) and 2000 (0.5%), remained steady in 2002 (0.2%), but then significantly increased in 2006 (2.6%). Daily smoking was significantly lower in 2006 compared to 1998 among 9th-graders (2.0% vs 5.6%, respectively). There was no significant change over time for students in grades 8, 10, 11 and 12.
- **District:** Students in Bodden Town showed a significant increase in daily smoking between 1998 (2.8%) and 2006 (5.7%). Students in Cayman Brac showed a significant decrase between 1998 (10.9%) and 2006 (4.2%). There were no significant changes in the other districts.

Table 3. Trends in Daily Tobacco Smoking in the Past Year (%) by Sex, Grade, and District, 1998-2006 CISDUS

	(N=)	1998 (1919)	2000 (2152)	2002 (2180)	2006 (2451)		Overall Change 1998 to 2006	Comparing 2006 vs 2002	Comparing 2006 vs 1998
Total		5.5	3.8	3.9	4.7		ns	ns	ns
Sex	**Male**	6.1	4.2	4.9	5.8		ns	ns	ns
	Female	5.0	3.5	3.0	3.6		ns	ns	ns
Grade	**7**	2.0	0.5	0.2	2.6		*	*	ns
	8	2.4	2.2	0.7	1.7		ns	ns	ns
	9	5.6	0.8	3.3	2.0		**	ns	**
	10	6.1	5.4	5.7	5.5		ns	ns	ns
	11	11.7	6.0	8.4	7.5		ns	ns	ns
	12	7.3	9.2	7.1	10.6		ns	ns	ns
District	**West Bay**	6.5	3.5	3.6	4.7		ns	ns	ns
	George Town	5.7	3.8	4.1	4.2		ns	ns	ns
	Bodden Town	2.8	3.3	4.8	5.7		ns	ns	*
	East End	2.9	1.3	1.3	4.2		ns	ns	ns
	North Side	5.4	7.8	5.3	4.9		ns	ns	ns
	Cayman Brac	10.9	4.1	2.1	4.2		*	ns	*

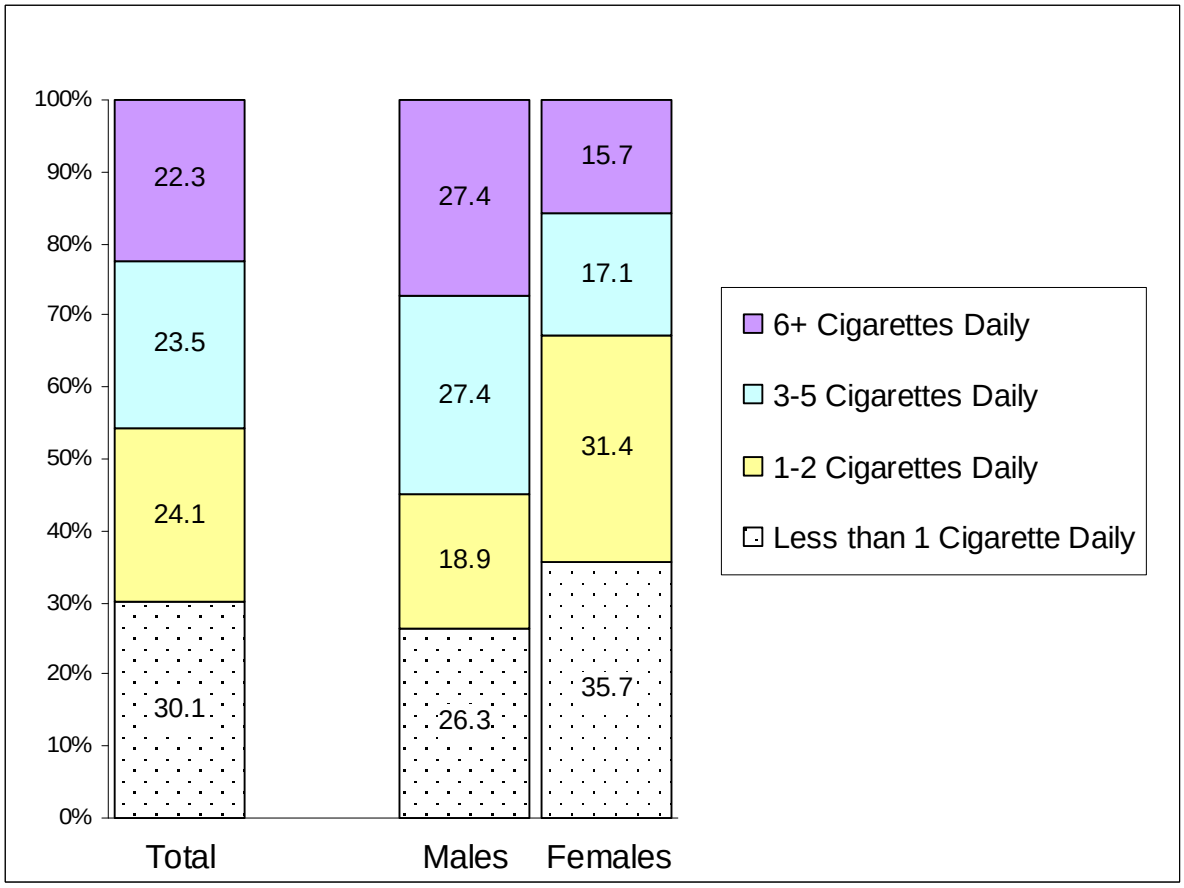
Notes: (1) * p<.05; ** p<.01; *** p<.001; ns=not significant; (2) sex*year interaction=ns, grade*year interaction=p<.05, district*year interaction=ns.

Question: "In the last 12 months, how often did you use tobacco cigarettes?" (Daily smoking is defined as smoking 1 or more cigarettes per day)

USUAL NUMBER OF CIGARETTES SMOKED DAILY (AMONG SMOKERS)

Among past year smokers in 2006 (N=166), almost one-third (30.1%) report smoking less than 1 cigarette daily, on average (see Figure 2). About one-quarter (24.1%) smoke 1 or 2 cigarettes daily, 23.5% smoke 3 to 5 cigarettes daily, and 22.3% smoke 6 or more cigarettes. There is a significant sex difference, with males more likely to smoke more cigarettes daily. For example, 27.4% of male smokers smoke 6 or more cigarettes daily compared to 15.7% of female smokers. There is no significant variation by grade, or by district regarding amount of cigarettes smoked daily (data not presented).

Figure 2. Percentage of Smokers (N=166) Reporting Usual Number of Cigarettes Smoked Daily During the Past Year, by Sex, 2006 CISDUS



Note: sex difference $X^2(3df)=8.0$, $p<.05$

NEW SMOKERS AND EARLY ONSET OF SMOKING

New Smokers, 2006

"New smokers" refers to those students who smoked their first whole cigarette during the past 12 months. In 2006, 8.1% of students smoked their first whole cigarette during the past year (see Table 4). There is no significant difference between males (8.8%) and females (7.6%). There is significant grade variation, with a large increase in new smokers occurring between grade 9 and 10 (from 5.2% to 9.0%) and again in grade 11 (12.6%). There is no significant variation by district.

New Smokers, 1998-2006

The percentage of students that became new smokers in 2006 is significantly lower than the percentage found in 1998 (8.1% vs 10.4%, respectively), but is not statistically different from 2002 (9.5%).

- **Sex**: Females showed a small, but significant, decline in the percentage of new smokers in 2006 (7.6%) compared to 1998 (10.0%).
- **Grade:** 7th-graders showed an increase in the percentage of new smokers between 2002 and 2006 (from 1.9% up to 4.6%). 8th-graders showed a decrease between 1998 (8.2%) and 2006 (4.0%), and 9th-graders showed a decrease in 2006 (5.2%) compared to both 2002 (10.7%) and 1998 (11.7%).
- **District:** The percentage of new smokers in George Town decreased between 1998 and 2006 (from 10.2% down to 7.6%), and in Cayman Brac (from 14.2% down to 4.8%).

Table 4. Trends in the Percentage of New Smokers During the Past Year by Sex, Grade, and District, 1998-2006 CISDUS

	(N=)	1998 (1888)	2000 (2125)	2002 (2157)	2006 (2430)		Overall Change 1998 to 2006	Comparing 2006 vs 2002	Comparing 2006 vs 1998
Total		10.4	7.4	9.5	8.1		**	ns	**
Sex	**Male**	10.7	6.9	10.0	8.8		*	ns	ns
	Female	10.0	8.0	9.1	7.6		ns	ns	*
Grade	**7**	5.7	2.0	1.9	4.6		**	*	ns
	8	8.2	4.4	4.1	4.0		*	ns	*
	9	11.7	10.5	10.7	5.2		**	**	**
	10	11.4	9.7	12.1	9.0		ns	ns	ns
	11	13.7	7.5	17.0	12.6		**	ns	ns
	12	13.9	11.9	15.0	14.7		ns	ns	ns
District	**West Bay**	10.5	8.2	9.0	8.7		ns	ns	ns
	George Town	10.2	8.2	9.3	7.6		ns	ns	*
	Bodden Town	9.0	5.8	10.8	8.5		ns	ns	ns
	East End	14.7	6.7	11.7	11.5		ns	ns	ns
	North Side	8.0	5.6	11.0	9.5		ns	ns	ns
	Cayman Brac	14.2	5.0	8.0	4.8		*	ns	**

Notes: (1) * p<.05; ** p<.01; *** p<.001; ns=not significant; (2) sex*year interaction=ns, grade*year interaction=p<.01, district*year interaction=ns.

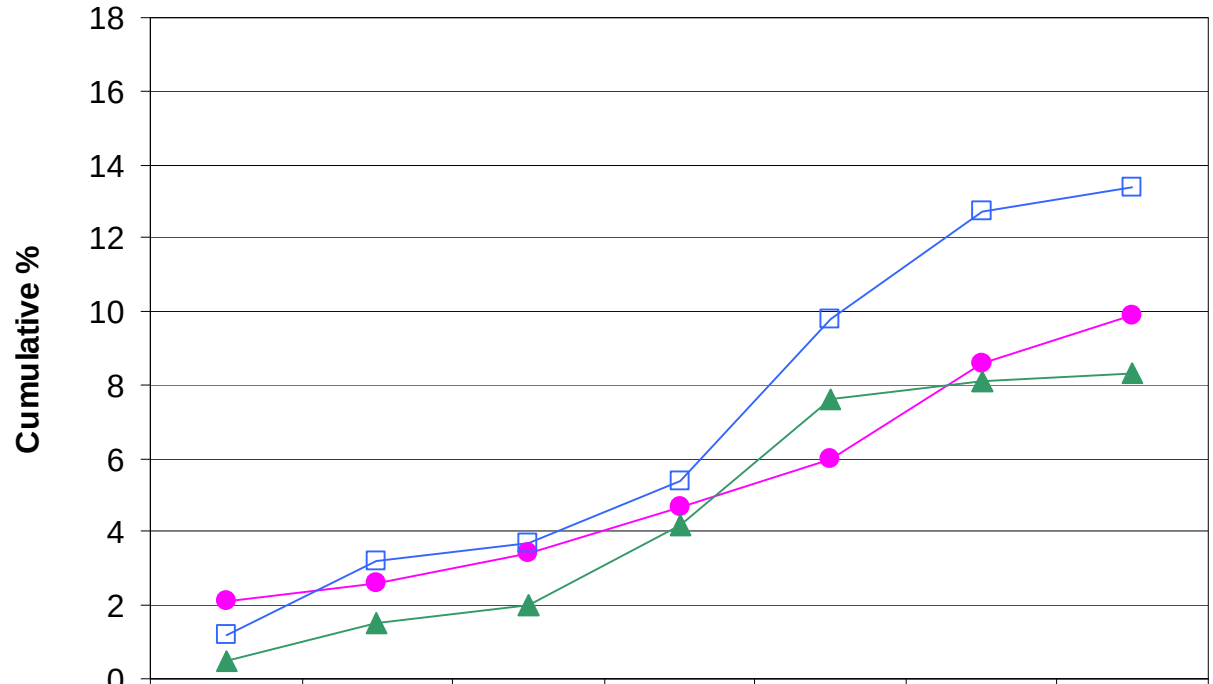
Question: "During the last 12 months, have you smoked one whole cigarette for the very first time?"

Early Onset of Smoking

One important predictor of future smoking dependence is early onset of smoking. "Early age" of smoking onset is defined here as having a whole cigarette between the **ages of 6 and 11**. In 2006, about 45.1% of lifetime smokers (N=665) in all grades reported early onset, that is they smoked their first cigarette between the ages of 6 and 11. In 2006, the average age of smoking onset among all students reporting ever smoking was 11.7 years.

One way to monitor changes in early onset over time is to examine onset among the youngest cohort of students surveyed, namely the 7th-graders. Figure 3 presents the trends in first age of smoking among all grade 7 students between 2000 and 2006. Generally, more 7th-graders in 2006 smoked at a young age than did earlier cohorts. For example, the percentage of 7th-graders who report having their first cigarette by age 10 is higher in 2006 (9.8%) compared to 2000 (6.0%).

Figure 3. Reported First Age of Smoking a Cigarette Among All Grade 7 Students, 2000-2006 CISDUS



	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12
2000	2.1	2.6	3.4	4.7	6	8.6	9.9
2002	0.5	1.5	2	4.2	7.6	8.1	8.3
2006	1.2	3.2	3.7	5.4	9.8	12.7	13.4

PERCEPTIONS ABOUT DAILY SMOKING: RISK AND DISAPPROVAL

Research shows that students' attitudes and beliefs about substances correlate with both increases and decreases in rates of substance use over time, although there may be a lag effect.

Perceived Risk

Students were asked how much risk they thought smoking one or more packs of cigarettes per day poses to one's health and well-being. Table 5 presents the percentage of students who perceive "great risk" of harm to one's health from daily drinking. In 2006, 52.2% of all students perceive daily smoking is a great risk of harm. There is a sex difference, with females more likely than males to perceive a great risk (55.9% vs 48.4%, respectively). Perception of great risk increases with grade, from a low of 40.7% among 7th-graders up to 66.2% of 12th-graders. There is a significant district difference, with students in East End (31.0%) least likely to believe daily smoking is a great risk, whereas those in West Bay are most likely (55.2%).

Compared to the percentage found in 1998, the percentage of students in 2006 who believe daily smoking to be a great risk of harm is significantly lower (57.0% vs 52.2%, respectively). There was no significant change in perceived risk in between 2002 (50.2%) and 2006 (52.2%).

Table 5. Trends in the Percentage of Students Reporting a "Great Risk" to Smoking One or More Packs of Cigarettes Per Day, by Sex, Grade, and District, 1998-2006 CISDUS

	(N=)	1998 (1826)	2000 (2043)	2002 (2014)	2006 (2307)		Overall Change 1998 to 2006	Comparing 2006 vs 2002	Comparing 2006 vs 1998
Total		57.0	53.4	50.2	52.2		***	ns	**
Sex	**Male**	51.3	47.7	44.6	48.4		*	ns	ns
	Female	62.4	59.0	55.0	55.9		**	ns	**
Grade	**7**	45.3	40.6	38.7	40.7		ns	ns	ns
	8	50.0	42.2	39.4	43.7		*	ns	ns
	9	57.3	54.5	42.5	51.6		***	*	ns
	10	59.9	56.2	52.4	51.7		ns	ns	*
	11	62.2	62.7	63.0	62.2		ns	ns	ns
	12	74.9	66.7	69.1	66.2		ns	ns	*
District	**West Bay**	55.2	55.4	54.7	55.2		ns	ns	ns
	George Town	57.2	55.9	51.1	53.8		ns	ns	ns
	Bodden Town	61.0	50.2	49.2	50.9		**	ns	**
	East End	53.1	42.6	37.1	31.0		*	ns	**
	North Side	54.2	63.5	47.0	47.3		ns	ns	ns
	Cayman Brac	50.5	40.8	40.6	51.9		ns	ns	ns

Notes: (1) * p<.05; ** p<.01; *** p<.001; ns=not significant; (2) sex*year interaction=ns, grade*year interaction=ns, district*year interaction=ns.

Question: "How much do you think people risk harming themselves (physically or in other ways) if they smoke one or more packs of cigarettes a day?"

Disapproval of Daily Smoking

Students were asked how much they disapprove of someone aged 18 or older smoking one or more packs of cigarettes per day. Table 6 presents the percentage of students who "strongly disapprove" of this behavior. In 2006, 42.8% of all students report that they strongly disapprove of adults smoking daily. There is a significant difference between males and females (39.5% vs 45.9%, respectively). Disapproval significantly decreases as grade increases, from a high of 55.1% of 7th-graders down to about 37% of students in grades 10 to 12. Despite some variation, there is no significant district effect.

Disapproval of adults smoking one or more packs of cigarettes per day is significantly lower in 2006 (42.8%) compared to 1998 (47.3%), but is similar to the percentage from 2002 (43.9%).

Table 6. Trends in the Percentage of Students that Strongly Disapprove of Smoking One or More Packs of Cigarettes Per Day, by Sex, Grade, and District, 1998-2006 CISDUS

	(N=)	1998 (1805)	2000 (2024)	2002 (1987)	2006 (2279)		Overall Change 1998 to 2006	Comparing 2006 vs 2002	Comparing 2006 vs 1998
Total		47.3	45.3	43.9	42.8		*	ns	**
Sex	**Male**	45.6	44.7	43.3	39.5		*	ns	**
	Female	48.7	45.9	44.4	45.9		ns	ns	ns
Grade	**7**	57.1	51.9	54.0	55.1		ns	ns	ns
	8	50.4	49.7	48.7	48.0		ns	ns	ns
	9	45.3	45.4	38.5	42.1		ns	ns	ns
	10	44.7	36.8	42.3	36.8		ns	ns	*
	11	38.1	44.7	37.5	36.6		ns	ns	ns
	12	47.5	42.9	40.8	38.3		ns	ns	*
District	**West Bay**	47.8	46.5	48.1	45.3		ns	ns	ns
	George Town	49.0	43.9	43.5	40.4		**	ns	***
	Bodden Town	47.7	44.5	37.8	42.7		*	ns	ns
	East End	40.6	54.5	43.5	38.3		ns	ns	ns
	North Side	36.6	50.0	45.0	43.5		ns	ns	ns
	Cayman Brac	41.3	43.7	47.0	51.3		ns	ns	ns

Notes: (1) * p<.05; ** p<.01; *** p<.001; ns=not significant; (2) sex*year interaction=ns, grade*year interaction=ns, district*year interaction=ns.

Question: "Do you disapprove of people (age 18 or older) smoking one or more packs of cigarettes a day?"

3.0 COMPARISONS WITH OTHER STUDENT SURVEYS

In this section, we compare the 2006 CISDUS tobacco-related findings with those from similar school surveys in order to gain some perspective as to the extent of smoking among Cayman Islands students. Table 7 compares indicators among students in grades 8, 10 and 12 in the Cayman Islands, Ontario, Canada, and the United States. Generally, Cayman Islands students in all three grades are less likely to smoke, regardless smoking measure used, compared to students in Ontario and in the United States. For example, 15.2% of 12th-graders in the Cayman Islands are past-year smokers, while this estimate is 22.9% among 12th-graders in Ontario. As another example, 1.5% of 8th-graders in the Cayman Islands are past-month smokers and this is much less than the estimate found for 8th-graders in the United States (8.7%).

Table 7. Smoking-Related Behaviors for Grades 8, 10, and 12: Comparing the 2006 CISDUS, 2005 OSDUS, and 2006 MTF Survey Findings

	Grade 8			Grade 10			Grade 12		
	2006 CISDUS	2005 OSDUS	2006 MTF	2006 CISDUS	2005 OSDUS	2006 MTF	2006 CISDUS	2005 OSDUS	2006 MTF
Past Year Smoking	**2.4**	5.8	n/a	**8.0**	17.9	n/a	**15.2**	22.9	n/a
Past Month Smoking	**1.5**	n/a	8.7	**5.4**	n/a	14.5	**11.9**	n/a	21.6
Daily Smoking	**1.7**	2.6	4.0	**5.5**	10.2	7.6	**10.6**	15.1	12.2

Notes: (1) OSDUS is the *Ontario Student Drug Use Survey*, which was conducted in Ontario, Canada; MTF is the *Monitoring the Future* survey, which was conducted across the USA; (2) the time frame used for Daily Smoking is the past 12 months for the CISDUS and OSDUS, and the past month for the MTF.

4.0 SUMMARY

As with all studies, there are some limitations that must be acknowledged before any discussion of results and implications can take place. Self-reported data cannot be easily verified. However, under conditions of anonymity, such as class administration, there is evidence that reports of substance use are reasonably accurate. Nevertheless, we must accept that self-reported substance use rates are underestimated to some unknown degree. Fortunately, underreporting would likely not change over time, and thus estimates of change remain valid and unbiased. The high response rate of the study has increased the validity of the results by reducing the bias due to non-responses from students present or absent from school. And finally, this study cannot be generalized to adolescents who are not attending school, for example drop-outs, street youth and adolescents in the workplace.

Table 8 summarizes the subgroup differences found in the 2006 CISDUS for the main tobacco-related measures.

- There are sex differences in smoking, with males more likely than females to smoke. Females are more likely to see daily smoking as risky and to disapprove.

- Grade level has a significant impact on smoking behavior and attitudes. Smoking tends to increase as grade increases. Smoking onset (new smokers) is likely to occur between grade 9 and grade 10, and again between grade 10 and grade 11.

- District is not a significant predictor of smoking behavior.

Table 9 summarizes the trends found, comparing 2006 to findings from the 2002 and the 1998 surveys, for the total sample of students as well as by subgroup. The points below reflect both encouraging findings and negative findings that should be viewed as warnings for public health professionals and those who work with adolescents.

POSITIVE FINDINGS

- Past year tobacco smoking decreased from 8.5% in 1998 to 6.8% in 2006, although the decrease mainly occurred between 1998 and 2000 (5.9%) and rates have subsequently remained stable.

- Daily smoking remained stable between 1998 and 2006, hovering between 4% and 5%.

- The percentage of students that became new smokers in 2006 is significantly lower than the percentage found in 1998 (8.1% vs 10.4%, respectively).

NEGATIVE FINDINGS

§ The percentage of students in 2006 who believe daily smoking to be a great risk of harm is significantly lower in 2006 (52.2%) compared to 1998 (57.0%).

§ Disapproval of adults smoking one or more packs of cigarettes per day is significantly lower in 2006 (42.8%) compared to 1998 (45.3%).

§ Grade 7 students are showing changes which, if continued, may be early warning signs that smoking rates may increase in the future:

- † Past year smoking among 7th-graders increased between 2002 (0.5%) and 2006 (3.3%).
- † Daily smoking among 7th-graders increased between 2002 (0.2%) and 2006 (2.6%).
- † The percentage of 7th-graders that were new smokers was higher in 2006 (4.6%) compared to 2002 (1.9%).
- † Generally, the age of smoking onset has declined over time. For example, the percentage of 7th-graders who report having their first cigarette by age 10 is higher in 2006 (9.8%) compared to 2000 (6.0%).

Table 8. Significant Subgroup Differences in the 2006 CISDUS

	Past Year Smoking	Past Month Smoking	Daily Smoking	New Smokers	Great Risk to Daily Smoking	Disapproval of Daily Smoking
Males vs Females	*	*	*	ns	***	**
	M -	M -	M -		F -	F -
Overall Grade Effect	***	***	***	***	***	***
	Increases with grade	Increases with grade	Increases with grade	-jump G9 to 10 -jump G10 to 11	Increases with grade	Decreases with grade
Overall District Effect	ns	ns	ns	ns	**	ns
Lowest:					East End	
Highest:					West Bay	

Notes: overall tests of effect are based on a univariate chi-square statistic: *p<.05, **p<.01, ***p<.001, ns=non-significant.

Table 9. Significant Changes Over Time by Subgroup: 2006 vs. 2002 and 2006 vs. 1998, CISDUS

	Past Year Smoking	Daily Smoking	New Smokers	Great Risk to Daily Smoking	Disapproval of Daily Smoking
Total	s		s	s	s
Males					s
Females	s		s	s	
Grade 7	-	-	-		
Grade 8			s		
Grade 9	s	s	– s	-	
Grade 10				s	s
Grade 11	s				
Grade 12				s	s
West Bay	s				
George Town			s		s
Bodden Town		r		s	
East End				s	
North Side					
Cayman Brac		s	s		

Notes: (1) - – significant increase or decrease in 2006 vs. 2002, p<.05;

(2) r s significant increase or decrease in 2006 vs. 1998, p<.05

5.0 APPENDIX

PROCEDURES

With the Ministry of Education's approval, the National Drug Council (NDC) requested permission to survey students, grades 7 to 12, from every public and private high school in the Cayman Islands. In some schools, agreement to participate was conditional upon approval from school boards, teachers and parents. All twelve schools agreed to participate in the survey. An informational flyer was distributed to teachers and parents and students a week before the survey. Unless notified by a parental letter all students were included in the survey.

Volunteers from community service organisations and private corporations agreed to assist with the survey administration. In an effort to standardize survey administration, volunteers attended a training session, which lasted between 20-30 minutes one week prior to conducting the survey, on procedures and guidelines for conducting CISDUS. Two exceptions to these procedures occurred for special needs students with reading difficulties and for Spanish speaking students. In both of these cases, students were read the questions in small groups and recorded the answers themselves. In addition to ensure standardization of administration across islands, seven volunteers were also trained in Cayman Brac to administer the survey. All students recorded their responses directly on the questionnaire, which was then sent to the Institute for Social Research at York University, Toronto for data entry.

THE CISDUS QUESTIONNAIRE

The 2006 CISDUS questionnaire consisted of a total of 148 items presented in booklet form. Most items are in a multiple-choice response format. Students are instructed to choose one answer only, and to not put their names on the questionnaire. The average completion time for the CISDUS is about 45 minutes.

The questionnaire includes two broad areas: substance use outcomes (e.g., prevalence, frequency and consequences of use) and potential risk factors.

Substance Use:

- Lifetime and past year use of alcohol, tobacco, ganja and other drugs
- Problems related to alcohol, tobacco, ganja and other drugs
- New Users and onset of use.

Risk Factors and Correlates of Substance Use:

- Socio-demographic (e.g., sex, age, grade level)
- Family factors (e.g., family structure, parental monitoring)
- School factors (e.g., school performance and attachment)
- Environmental factors (e.g., drug availability, friends' use)
- Psychological health (e.g., self-esteem, depression).

QUESTIONNAIRE DEVELOPMENT: 1998 to 2006

The CISDUS questionnaire is based on an extensive development process, including international and national expert review, expert content review, and student debriefing pilot studies.

1. The initial development of the questionnaire in 1998 began with the evaluation of procedures and items employed by international studies including the Centre for Addiction and Mental Health's *Ontario Student Drug Use Survey*, the American *Monitoring The Future* survey and general guidelines developed by the World Health Organization. Representatives of NDC and CAMH evaluated items for cultural appropriateness and policy and informational needs.

2. National experts then assessed the content of the initial pool of items. The School Committee of the NDC reviewed and amended the questionnaire to ensure cultural and policy relevancy.

3. The questionnaire was administered to three classes (grades 7, 9 and 10) at the George Hicks High School in February 1998. (These students were re-sampled in the full survey because their pilot participation was also anonymous). The results of the pilot study were used to further revise the questionnaire, which was shortened considerably based on timing and content data.

SUBSTANCE USE MEASURES & DEFINITIONS

The CISDUS reports primarily emphasize the prevalence of substance use, i.e., the percentage of students who report using a given drug during the 12 months before the survey. It is important to note that prevalence does not imply regular, frequent or problematic use, but it is an important first-order epidemiological indicator of the size of the population that has, at minimum, tried a substance.

Primary Substance Use Measures Described in the CISDUS Reports

Cigarette Smoking	Percentage smoking more than one cigarette during the last 12 months before the survey
Alcohol Use	Percentage drinking alcohol (liquor, wine or beer) during the 12 months before the survey. Use includes drinking at special events (e.g., weddings, Christmas, etc.) and excludes those who tried a sip of alcohol
Ganja Use	Percentage using ganja (herb or marijuana) at least once during the last 12 months
Inhalant Use	Percentage inhaling glue or solvents in order to get high at least once during the last 12 months
Any Illicit Drug Use (including and excluding ganja)	Percentage reporting use of any of the following illicit drugs at least once during the last 12 months: ganja, sedatives, heroin, methamphetamine ("speed"), crystal methamphetamine ("ice"), stimulants, tranquilizers, LSD, other hallucinogens, cocaine, crack, or MDMA ("ecstasy"). A similar variable with ganja excluded is also presented.