2011 Iowa YRBS

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Youth **R**isk **B**ehavior **S**urvey:
Iowa High Schools

FINAL REPORT

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Introduction

The Youth Risk Behavior Surveillance System is an epidemiologic system established by the U.S. Centers for Disease Control and Prevention (CDC) to help monitor the prevalence of behaviors that put youth at risk for the most serious health and social problems that can occur during adolescence and adulthood. The Youth Risk Behavior Survey (YRBS) is the measurement instrument of this system. This survey is used by the State of Iowa to monitor these behaviors among its young people. Specifically, this survey focuses on students who were attending high schools (Grades 9 through 12) in Iowa during 2010-11.

The YRBS was developed cooperatively by the Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), 19 other federal agencies, 71 state and local departments of education, and national education and health organizations. It was administered in about 40 states in 2011. The survey consists of 86 questions and is presented in Appendix A.

Evidence of Health and Social Problems among Youth in the United States

According to the Iowa Department of Public Health, of Iowa youth aged 15-19 who died, the majority are due to (1) motor vehicle accidents, (2) other unintentional injuries, (3) homicides and legal intervention, and (4) suicides (e.g., Veale, February 2006). These factors also cause acute and chronic morbidity among our youth.

Young people suffer significant morbidity from a high rate of unintended pregnancy that occurs among teenagers every year. This is one factor contributing to an infant mortality rate of 6.4 per 1000 live births occurring in the United States in 2009 (*The World Almanac and Book of Facts 2012*, 2012) and 5.6 per 1000 live births occurring among Iowa residents in 2008 (Iowa Department of Public Health, Center for Health Statistics). It was a primary factor leading to about 1.2 million abortions in the United States and about 6,560 in Iowa, in 2008 (according to the Guttmacher Institute).

In addition, serious health problems result from sexually transmitted diseases (STDs), including Acquired Immune Deficiency Syndrome (AIDS) that are contracted by teenagers every year. According to the National Center for Health Statistics in the U.S. Department of Health and Human Services, 28.5% of the 37,151 cases of AIDS diagnosed in the United States in 2008 were 13 to 34 years old (*The World Almanac and Book of Facts 2012*, 2012). In terms of risk behaviors, male-to-male sexual contact continues to be the highest "exposure category," followed by intravenous (IV) drug abuse. Along with membership in *both* exposure categories, these risk factors were identified as having caused or contributed to about 80% of all AIDS cases among persons in the United States 13 years of age or older, from 1981 to 2009 (ibid.). Thus, from the standpoint of controlling AIDS, unprotected sex and illicit drug use/abuse (especially the intravenous type) are risk behaviors that need to be monitored among our youth. Other STDs include the HPV (human papilloma virus) infection, which has a higher incidence than AIDS, currently has no cure (although a vaccine is now available), and is the leading cause of cervical cancer (ibid.). Unprotected sex is also important to monitor for controlling HPV and other STDs.

Other behaviors that lead to mortality, morbidity, and social problems among teenagers include the following:

- drinking and driving
- alcohol and other drug use (in addition to intravenous type)
- tobacco use (smoking or chewing)

- dietary excesses and imbalances
- insufficient physical activity

Some of these behaviors, such as substance abuse and driving, result in mortality, morbidity, and social problems during the teenage years. Others, such as tobacco use, dietary excesses and imbalances, and physical inactivity are known to lead to diseases which occur later in life (such as cancer, diabetes, and heart disease). *These behaviors and their associated problems are largely preventable (or remediable) through education, counseling, mentoring, treatment, and other programs.*

The Six Risk Areas

In 1988, the CDC began a process to identify and monitor critical health behaviors among youth. Behaviors leading to mortality, morbidity, and social problems were analyzed and categorized into six risk areas:

(1) behaviors that lead to intentional or unintentional injuries

(2) tobacco use

(3) alcohol and other drugs

(4) sexual behaviors that can result in HIV (human immunodeficiency virus) infection, other STDs, or unintended pregnancies

(5) dietary behaviors

(6) physical activity/inactivity

Survey questions addressed behaviors in each of the above six risk areas. In addition, beginning in the 2007 YRBS, two questions about asthma were included.

The purpose of the Iowa Youth Risk Behavior Survey (YRBS) is to assist educators and health professionals in the state in determining the prevalence of behaviors or factors that put Iowa youth at risk. This determination will be used to focus education and prevention/treatment programs in a continuing effort to reduce the prevalence of risk factors that affect Iowa youth.

A national YRBS is also administered to a sample of schools across the United States. This information may be used to assess the degree to which risk factors are more (or less) prevalent in Iowa relative to the country as a whole. In addition, there are other surveys that provide similar information on our state's youth, e.g., the Iowa Youth Survey and the Search Institute Survey. These surveys also provide information on various "protective factors" that can help students avoid becoming involved in risky behaviors. (See Veale (September 2007) for a "cross/comparative" analysis of the YRBS and the Iowa Youth Survey.)

Presentation of the Results of the YRBS

The 2011 Iowa YRBS results are presented for each risk area in tabular form, followed by a brief discussion. Since the 2011 Iowa YRBS data were weighted, *the survey results were generalized to all high school students in Iowa*. Substantial (and statistically significant) differences over years, gender groups, and grade levels were noted. Summary highlights for the 2011 Iowa YRBS total sample are presented graphically for questions selected over the six risk areas. For a more detailed summary of the data, see the document *2011 Youth Risk Behavior Survey Results: Iowa High Schools* (Centers for Disease Control and Prevention, 2011).

Trends for Iowa high school students were established for the period 1997-2011, during which weighted data were achieved four times. For a separate report addressing the trends in various risk behaviors surveyed in at least two of these four years, see *Significant Trends in the Iowa YRBS 1997*

to 2011: Iowa High Schools (Veale, February 2012). A four-page administrative summary highlighting the 2011 YRBS and trend data is also being prepared for dissemination.

The text and graphics were developed using *WordPerfect Office X3* (Corel, Inc.). The map of the state of Iowa superimposed over a map of the United States was available from *WordPerfect Suite 6.1 for Windows* (Corel, Inc.).

[NOTE: In many of the survey questions, a time reference is provided in an attempt to focus the response. For example, "past 12 months" refers to *the 12 months prior to the day on which the respondent answered the survey question* and "yesterday" refers to *the day before the one on which the respondent answered the survey question*. In general, phrases like "past *x* days/weeks/months" refers to the "*x*" units of time before the survey was completed by the respondent.]

Survey Methods and Data Analysis

The 2011 Youth Risk Behavior Survey (YRBS) instrument consisted of 86 questions which were used to assess students in the six critical areas of health risk. Statistical sampling was used to reduce the number of students needed to complete the survey and control the accuracy and precision of the resulting estimates.

Sampling Method

All regular (non-alternative) public schools containing Grades 9, 10, 11, or 12 were included in the sampling frame or population. Schools were selected systematically with probability proportional to size of enrollment in Grades 9 through 12 using a random starting point. Altogether, 40 schools were sampled.[1] This constitutes the school-level part of the sampling process.

All classes meeting during the second period of the day were included in the sampling frame. Systematic equal probability sampling with a random starting point was used to select classes from each school that participated in the survey. This constitutes the student- or class-level part of the sampling process.

Survey Process

Superintendents and principals associated with schools selected for the YRBS were contacted in the winter of 2010-11 to obtain their cooperation. Each participating school submitted a list of second period classes and a random sample of these classes was selected for the survey. The survey booklets and instructions were then mailed to each school. Parent notification forms were provided participating schools to secure parental approval as needed. As stated in those forms, the survey procedures have been designed to protect their child's privacy and allow for anonymous participation. Only group-level statistical data were produced and no student or school name appears in this or any Iowa Department of Education report. Participation in the survey was voluntary.

Response Rates and Weighted Data

At the school level, 30 of the 40 schools participated. Thus, the school level response rate was (30/40) x 100 or 75%. At the classroom level, 1,535 students out of 1,843 (83.3%) completed usable questionnaires. The overall response rate was

$$(.750)(.833) \text{ x } 100\%$$

or 62.5%.

Overall response rates equal to or exceeding 60% are required for the data to be weighted. Thus, *the 2011 YRBS data were weighted*. This means that *these results can be generalized to all high school students in public schools in the state of Iowa* and will be included in the report on the YRBS by the CDC—the results of the national sample and those of the participating states. A weight was associated with each questionnaire to (a) reflect the likelihood of sampling each student and (b) reduce bias by compensating for differing patterns of nonresponse. The full summary of the 2011 Iowa YRBS data by the CDC is available (Centers for Disease Control and Prevention, 2011).

The author believes that the main factors that contributed to the sufficiently high response rate on the 2011 YRBS were the following:

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[1] This (40) was the number of schools selected in 1997, the first year we achieved weighted data in Iowa. Selecting a higher number of schools would increase the opportunity for response and decrease the number of classes that need to be selected in each school, at some increase in administrative cost.

- schools were paid $600 for participating in the survey;

- survey administrators in the school (often a teacher, school nurse, or counselor) were paid $50 for their time and effort;

- teachers in classes selected to be surveyed were each paid $50 for contributing their class time;

- a new checklist was used to monitor and track the surveys;

- a survey assistant provided continuous follow-up with principals of the schools selected to facilitate their timely participation in and completion of the surveys;

- the YRBS was coordinated with the Communities Putting Prevention to Work (CPPW) national health survey in the sampling process.

These factors, along with recommendations for further improving the response rate in 2013, are discussed in a later chapter.

Data Analysis

The completed surveys were shipped to Westat, Inc., a contractor for the CDC. Data analyses were conducted by Westat, which included weighted percentages and breakdowns by gender, grade level, and race/ethnicity. *For the first time in the Iowa YRBS, the number of respondents in one of the non-Caucasian categories (Hispanic/Latino) was sufficient (at least 100) for race/ethnicity comparisons.*

Gender, race/ethnicity, and grade level differences were noted whenever they were statistically significant using the .05 level of significance and substantial. Confidence intervals that did *not* overlap provided evidence of statistically significant differences. Since these intervals were computed taking into account the differential weighting of the responses based on the sampling scheme (and nonresponse patterns), this method was recommended over classical methods for simple random sampling such as Pearson chi-square. For example, the percentages on Question 69 ("During the past 30 days, did you *go without eating for 24 hours or more* (also called fasting) to lose weight or to keep from gaining weight?") answering either A ("Yes") or B ("No"), broken down by gender, yielded the two confidence intervals represented in Figure 1. The fact that these confidence intervals did *not* overlap indicated that the percentages
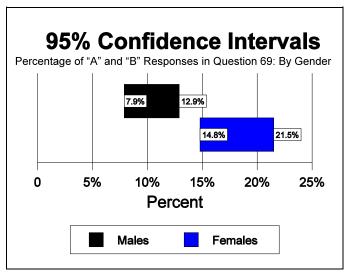
Figure 1: Illustration of non-overlapping 95% confidence intervals (significant differences).

were different for the categories of gender—females were more likely to answer in the affirmative, indicating a greater prevalence of risk for them. Breakdowns that yielded statistically significant (P<.05) differences of percentages of specified responses to the survey questions were noted in the analyses presented in the "Results" section.

> [Note: Regarding the four grade levels, if *at least one* of the 95% confidence intervals for the percentage of specified responses to a survey question failed to overlap with *at least one* of the others, the grade level differences were said to be significantly different for this question. Moreover, the specific order of the differences was usually noted in the analyses presented in the "Results" section. As with gender, only statistically significant differences (P<.05) were noted.]

For some of the gender, race/ethnicity, or grade level differences that were determined to be statistically significant (p<.05), a bar graph illustrating these differences was presented. A table presenting (1) effective sample size and (2) statistically significant differences for the demographic breakdowns is presented in Appendix B. The weighted percentages were presented for the categories (only) when the differences were determined to be statistically significant.

The Sample

A total of 1,537 students completed the 2011 Iowa YRBS. Of these, after data editing, 1,535 student questionnaires were judged to be useable.

Based on this sample, 48.6% were female and 51.4% were male. In terms of race/ethnicity, 85.0% were Caucasian (White, non-Hispanic), 3.0% were African-American (Black, non-Hispanic), 6.4% were Hispanic/Latino, 3.0% were of multiple races, and 2.6% were classified as "all other races" (including, for example, Asian-Americans and Native American Indians). These breakdowns, all weighted percentages, were comparable to the state data for high school students in 2009-10 (the frame used to draw the sample). The percentages in the four grade levels were also comparable to those of the sampling frame or population.

Results

The results of the 2011 Iowa Youth Risk Behavior Survey (YRBS) are presented in two-column format, with the outcome addressed by the survey question in the column on the left. In the column on the right, the percentage of students surveyed who responded in the manner indicated by the outcome statement is presented, along with the total number on which the percentage was based (in parentheses). Comparisons over gender, race/ethnicity (Hispanic/Latino and Caucasian/White), and grade level, as well as trends over the period 1997-2011, are presented in the text following each set of outcomes. Only differences and trends that are *statistically significant* (at the .05 level) are cited.

Risk Area I: Behaviors that Lead to Intentional or Unintentional Injuries

This section contains summaries of survey data on behaviors that lead to intentional or unintentional injuries, including drinking and driving, violent behavior, weapons carrying, and suicide (Questions 8-28). "Students" refers to those who participated in the 2011 YRBS.

1. Helmets, Seat Belts, and Drinking/Driving

Outcome	Percent (N)
8. *Of students who rode a bicycle during the past 12 months, the percentage who never or rarely wore a bicycle helmet.*	88.5% (1,134)
9. *Percentage of students who never or rarely wear a seat belt when riding in a car driven by someone else.*	4.4% (1,535)
10. *Percentage of students who during the past 30 days rode one or more times in a car or other vehicle driven by someone who had been drinking alcohol.*	23.8% (1,535)
11. *Percentage of students who, during the past 30 days, drove a car or other vehicle one or more times when they had been drinking alcohol.*	10.5% (1,527)

No statistically significant gender or race/ethnicity differences were found for any of the above outcomes. On Question 11, proportionately more 11th and 12th graders than 9th graders indicated they drove a car or other vehicle during the past 30 days when they had been drinking. (See Appendix B.) On each of these four outcomes there was a downward trend (reduced risk) during the period 1997-2011.

2. Violent Behavior, Weapons, and Safety

Outcome	Percent (N)
12. *Percentage of students who carried a weapon such as a gun, knife, or club on one or more of the past 30 days.*	15.8% (1,508)
13. *Percentage of students who carried a gun on one or more of the past 30 days.*	5.1% (1,517)
14. *Percentage of students who carried a weapon such as a gun, knife, or club on school property on one or more of the past 30 days.*	4.5% (1,525)
15. *Percentage of students who did not go to school on one or more of the past 30 days because they felt unsafe at school or on their way to or from school.*	4.0% (1,534)

Outcome	Percent (N)
16. *Percentage of students who had been threatened or injured with a weapon on school property one or more times during the past 12 months.*	6.3% (1,534)
17. *Percentage of students who were in a physical fight one or more times during the past 12 months.*	24.4% (1,518)
18. *Percentage of students who were injured in a physical fight and had to be treated by a doctor or nurse one or more times during the past 12 months.*	2.4% (1,528)
19. *Percentage of students who were in a physical fight on school property one or more times during the past 12 months.*	9.6% (1,523)
20. *Percentage of students who were ever hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend during the past 12 months.*	8.0% (1,535)
21. *Percentage of students who have ever been physically forced to have sexual intercourse when they did not want to.*	6.9% (1,533)

There were statistically significant differences by gender in Questions 12-14, 17, and 19 where proportionately more males than females indicated involvement in the corresponding risky behaviors, and in Question 21 where proportionately more females than males indicated they were physically forced to have sexual intercourse against their will. Proportionately more Hispanic/Latino students were involved in at least one physical fight in the last 12 months than were Caucasian/White students. Also, proportionately fewer seniors than 9th graders were involved in physical fights on school property during the past year. (See Appendix B.)

The percentages for the outcomes on weapons carrying and physical fighting (anywhere and on school property) trended downward during 1997-2011, indicating reduced risk in these areas. For example, the percentage who indicated they carried a weapon on school property went from 8.6% in 1997 to 4.5% in 2011.

3. Bullying

Outcome	Percent (N)
22. *Percentage of students who had ever been bullied on school property during the past 12 months.*	22.5% (1,534)
23. *Percentage of students who had ever been electronically bullied during the past 12 months.*	16.8% (1,533)

Question 22 was a new question in the 2009 YRBS (a year in which weighted data were *not* achieved in Iowa). Bullying is aggressive behavior—*deliberately intimidating, persecuting, or attacking those who are weaker*. Proportionately more bullying was indicated by 9th and 10th graders than those in the 12th grade and more bullying was indicated by 9th graders than those in the 11th grade. Thus, bullying seems to be more of a problem among 9th and 10th grade students in Iowa. Question 23 was new in the 2011 YRBS. Proportionately more females (23.5%) indicated they were electronically bullied (e-mail, chat rooms, texting, etc.) than males (10.2%).

4. Suicide

Outcome	Percent (N)
24. *Percentage of students who, during the past 12 months, ever felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some usual activities.*	22.8% (1,535)
25. *Percentage of students who seriously considered attempting suicide during the past 12 months.*	14.6% (1,535)
26. *Percentage of students who made a plan about how they would attempt suicide during the past 12 months.*	11.5% (1,535)
27. *Percentage of students who actually attempted suicide one or more times during the past 12 months.*	6.0% (1,390)
28. *Percentage of students who made a suicide attempt during the past 12 months that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse.*	1.9% (1,385)

On Question 24, proportionately more females than males indicated that they felt sad or hopeless for two weeks in a row that made them stop doing some of their usual activities during the past 12 months (see Figure 2). Note that there were no significant gender differences on the other questions about suicide. This result appears to be primarily due to a reduction of the level of self-reported suicide risk by female students over the past decade in Iowa, which has in turn resulted in substantial reduction in overall percentages in this risk area for Questions 25-28 since 1997 in Iowa. (See the later section on trend results and Appendix B.)

On the other hand, proportionately more Hispanic/Latino students (15.2%) indicated they actually attempted suicide than did Caucasian/White students (5.0%). There were no statistically significant grade level differences regarding suicide.
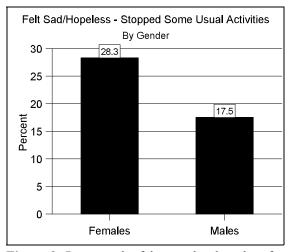
Figure 2: Percent who felt so sad or hopeless for two weeks or more in a row that they stopped doing some of their usual activities during the past 12 months, by gender.

Risk Area II: Tobacco Use

This section contains summaries of survey data on tobacco use, including cigarette smoking, cigar smoking, and the use of smokeless tobacco (Questions 29-39). "Students" refers to those who participated in the 2011 YRBS.

1. Cigarette Smoking

Outcome	Percent (N)
29. *Percentage of students who ever tried cigarette smoking, even one or two puffs.*	39.1% (1,506)

Outcome	Percent (N)
30. *Percentage of students who smoked a whole cigarette for the first time before age 13.*	8.5% (1,500)
31. *(i) Percentage of students who smoked cigarettes on one or more of the past 30 days.*	18.1% (1,502)
31. *(ii) Percentage of students who smoked cigarettes on 20 or more of the past 30 days.*	6.8% (1,502)
32. *Among students who were current smokers, the percentage who smoked more than 10 cigarettes per day on the days they smoked during the past 30 days.*	8.5% (260)
33. *Among students who were less than 18 years of age and current smokers, the percentage who usually got their own cigarettes by buying them in a store or gas station during the past 30 days.*	6.0% (215)
34. *Percentage of students who smoked cigarettes on school property on one or more of the past 30 days.*	3.5% (1,519)
35. *Percentage of students who ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days.*	10.4% (1,515)
36. *Of students who were current smokers, the percentage who tried to quit smoking during the past 12 months.*	45.3% (258)

There were three outcomes on which grade levels differences were statistically significant, corresponding to Questions 29, 31 (i), and 35. On Question 29 the percentages of 11th and 12th graders who ever tried cigarette smoking was significantly greater than for 9th graders. On Question 31 (i), the percentages of 11th and 12th graders who smoked on at least one day in the past month were significantly greater than for 9th graders and the percentage of 12th graders who smoked on at least one day in the past month was significantly greater than that of 10th graders. On Question 35, the percentage of 12th grade students who ever smoked cigarettes *daily* was significantly greater than for 9th and 10th graders. Also, on Question 29, the percentage of Hispanic/Latino students who ever tried cigarette smoking was significantly greater than for Caucasian/White students. There were no statistically significant gender differences regarding cigarette smoking. (See Appendix B.)

The percentages on all of the above questions except Questions 33 and 35 have trended downward since 1997. For example, the percentage of students who indicated they smoked cigarettes on one or more of the past 30 days (prior to the survey) went from 37.5% in 1997 to 18.1% in 2011—a reduction of more than 50%. The only negative outcome was for Question 36—among students who were current smokers, the percentage who indicated they tried to quit smoking during the prior year went from 53.7% in 2005 (the first year the question was asked in the YRBS) to 45.3% in 2011. (See the later section on trend results.)

2. Smokeless Tobacco and Cigar Smoking

Outcome	Percent (N)
37. *Percentage of students who used chewing tobacco, snuff, or dip on one or more of the past 30 days.*	10.4% (1,530)
38. *Percentage of students who used chewing tobacco or snuff on school property on one or more of the past 30 days.*	6.1% (1,530)

Outcome	Percent (N)
39. *Percentage of students who smoked cigars, cigarillos, or little cigars on one or more of the past 30 days.*	12.8% (1,531)

There were statistically significant gender differences on all three of the questions regarding smokeless tobacco and cigar smoking—proportionately more males were more involved in each of these risk areas than were females. On all of these questions, proportionately more students in 11th grade were involved in each of these risk areas than were those in 9th grade. Also, on Question 39, proportionately more students in 11th and 12th grade smoked cigars, cigarillos, or little cigars than did those in 10th and 9th grade, respectively. (See Appendix B.)

3. Summary Question

Outcome	Percent (N)
Percentage of students who smoked cigarettes or cigars, or used chewing tobacco, snuff, or dip on one or more of the past 30 days.	25.3% (1,499)

Significantly more 11th and 12th graders than 9th graders used some form of tobacco in the past month. There were no statistically significant gender or race/ethnicity differences on this summary question regarding tobacco use. (See Appendix B.)

Risk Area III: Alcohol and Other Drugs

This section contains summaries of survey data on the use of alcohol, marijuana, and other drugs, including cocaine (powder, crack, or freebase forms), methamphetamines, ecstasy, inhalants, steroid pills, heroin, and intravenous drugs (Questions 40-59). "Students" refers to those who participated in the 2011 YRBS.

1. Alcohol

Outcome	Percent (N)
40. *Percentage of students who had at least one drink of alcohol on one or more days during their life.*	66.3% (1,521)
41. *Percentage of students who had their first drink of alcohol other than a few sips before age 13.*	15.7% (1,520)
42. *Percentage of students who had at least one drink of alcohol on one or more of the past 30 days.*	37.1% (1,464)
43. *Percentage of students who had five or more drinks of alcohol in a row, that is, within a couple of hours ("binge drinking"), on one or more of the past 30 days.*	23.0% (1,511)
44. *Percentage of students, among those reporting current alcohol use, who usually got the alcohol they drank from someone who gave it to them during the past 30 days.*	42.2% (508)
45. *Percentage of students who had at least one drink of alcohol on school property on one or more of the past 30 days.*	2.3% (1,525)

There was a statistically significant gender difference on Question 44—50.0% of females and 35.3% of males said they obtained the alcohol they drank from someone who gave it to them in the past 30 days. There were statistically significant grade level differences in Questions 40-43, where generally

higher percentages of students in the higher grades indicated involvement in these risk behaviors than did those in the lower grades. The exception was in Question 41, where a higher percentage of 9th graders indicated they had their first drink of alcohol before age 13 than did 12th graders.[2] The result for Question 43 on binge drinking is presented in Figure 3. Note the almost perfect "stair-step" nature of the graph, with binge drinking increasing proportionately in each grade. Finally, the only significant race/ethnicity difference in this risk area was for Question 45 (drinking on school property during the past 30 days), with proportionately more Hispanic/Latino students (6.5%) than Caucasian/White students (1.9%) reporting that they engaged in this behavior. (See Appendix B.)
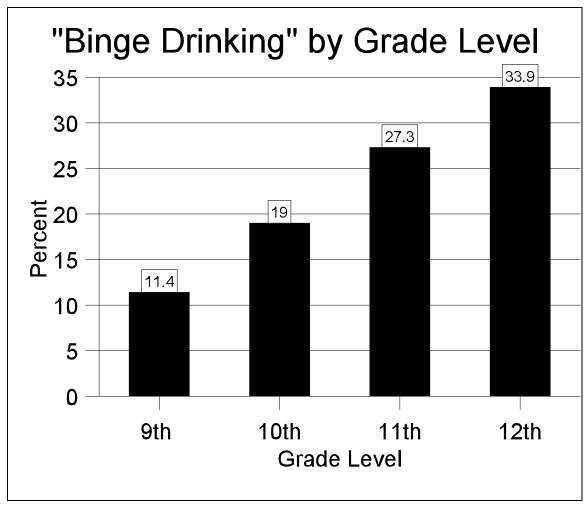
Figure 3: Percentage who engaged in "binge drinking" (5 or more drinks in about 2 hours), by grade level.

The overall percentage for "binge drinking" was significantly lower in 2011 than in 1997. The overall percentages on the other questions in this area also trended downward (except for Question 44, which was asked for the first time in 2007) from 1997 to 2011. (See the later section on trend results.)

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[2] This difference could be due to differential recall for students in the two grades, with the age of 13 being just one or two years ago for 9th graders, but a more distant 4 or 5 years ago for 12th graders.

2. Marijuana

Outcome	Percent (N)
46. *Percentage of students who used marijuana one or more times during their life.*	27.8% (1,523)
47. *Percentage of students who tried marijuana for the first time before age 13.*	4.4% (1,528)
48. *Percentage of students who used marijuana one or more times during the past 30 days.*	14.6% (1,526)
49. *Percentage of students who used marijuana on school property one or more times during the past 30 days.*	3.4% (1,528)

There were statistically significant race/ethnicity differences on Questions 46 and 47, with proportionately more Hispanic/Latino students than Caucasian/White students reporting use of marijuana in their lives and before the age of 13. There were no statistically significant gender or grade level differences in this section. (See Appendix B.)

The percentages who reported they had used marijuana at least once in their life (Question 46) and in the past 30 days (Question 48) have trended downward in the period 1997-2011. (See the later section on trend results.)

3. Other Illegal Drugs

Outcome	Percent (N)
50. *Percentage of students who used any form of cocaine, including powder, crack, or freebase one or more times during their life.*	4.6% (1,525)
51. *Percentage of students who used any form of cocaine, including powder, crack, or freebase one or more times during the past 30 days.*	2.3% (1,526)
52. *Percentage of students who sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paint or spray to get high one or more times during their life.*	8.6% (1,530)
53. *Percentage of students who used heroin one or more times during their life.*	2.4% (1,531)
54. *Percentage of students who used methamphetamines one or more times during their life.*	3.1% (1,531)
55. *Percentage of students who used ecstasy one or more times during their life.*	5.1% (1,531)
56. *Percentage of students who have taken steroid pills or shots without a doctor's prescription one or more times during their life.*	2.5% (1,532)
57. *Percentage of students who have taken a prescription drug (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription one or more times during their life.*	17.4% (1,531)
58. *Percentage of students who used a needle to inject any illegal drug into their body one or more times during their life.*	1.7% (1,533)

Outcome	Percent (N)
59. *Percentage of students who were offered, sold, or given an illegal drug on school property during the past 12 months.*	11.9% (1,532)

There were no statistically significant gender differences in this section. Grade level differences were statistically significant on Questions 55 and 56, with proportionately more 11th grade students reporting use of ecstasy and use of steroid pills (without a doctor's prescription) than 9th grade students. There was a statistically significant race/ethnicity difference on Question 59, with proportionately more Hispanic/Latino students than Caucasian/White students reporting that they were offered, sold, or given an illegal drug on school property during the past 12 months. (See Figure 4 and Appendix B.)

The percentages who reported they had used cocaine at least once in their life; used cocaine in the past 30 days; used inhalants; and were offered, sold, or given an illegal drug on school property during the past year have all trended downward in the period 1997-2011. (See the later section on trend results.)
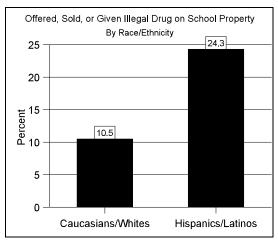
Figure 4: Percent who were offered, sold, or given an illegal drug on school property in past 12 months, by race/ethnicity.

Risk Area IV: Sexual Behaviors that Can Result in HIV Infection, Other STDs, or Unintended Pregnancies

This section includes summaries of survey data on behaviors that can lead to HIV and/or AIDS, other sexually transmitted diseases (STDs), and unintended pregnancies (Questions 60-66 and 84). "Students" refers to those who participated in the 2011 YRBS.

1. Sexual Activity

Outcome	Percent (N)
60. *Percentage of students who have ever had sexual intercourse.*	43.9% (1,488)
61. *Percentage of students who had sexual intercourse for the first time before age 13.*	4.2% (1,490)
62. *Percentage of students who had sexual intercourse with four or more people during their life.*	13.1% (1,489)
63. *Percentage of students who had sexual intercourse with one or more people during the past three months.*	33.0% (1,487)
64. *Among students who had sexual intercourse during the past three months, the percentage who drank alcohol or used drugs before last sexual intercourse.*	18.0% (469)

Outcome	Percent (N)
65. *Among students who had sexual intercourse during the past three months, the percentage who used a condom during their last sexual intercourse.*	61.4% (467)
66. *Among students who had sexual intercourse during the past three months, the percentage who used birth control pills to prevent pregnancy before last sexual intercourse.*	24.5% (449)
Related outcome: *Among students who had sexual intercourse during the past three months, the percentage who used Depo-Provera (or any injectable birth control), Nuva Ring (or any birth control ring), or any IUD to prevent pregnancy before last sexual intercourse.*	12.4% (449)

There were statistically significant grade level differences in Questions 60, 62, and 63—a higher percentage of 10th, 11th, and 12th graders than 9th graders indicated they had sexual intercourse (i) sometime in their lives and (ii) with one or more people in the past three months; and a higher percentage of 12th graders than 9th or 10th graders indicated they had sexual intercourse with four or more people during their lives. There was only one statistically significant gender difference—a higher percentage of males than females indicated they had sexual intercourse for the first time before the age of 13 years. There were no statistically significant race/ethnicity differences on any of the questions in this section. (See Appendix B.)

The percentage who indicated that they had used a condom before their last intercourse increased significantly[3] and the percentage who said they drank alcohol or used drugs before their last intercourse decreased significantly over 1997-2011. These were both positive trend results in this risk area.

2. HIV/AIDS Education

Outcome	Percent (N)
84. *Percentage of students who had ever been taught about AIDS or HIV infection in school.*	84.0% (1,529)

There were no statistically significant gender, race/ethnicity, or grade level differences on this outcome. The percentage on the HIV/AIDS education outcome was significantly lower than in 1997 (92.4%).[4] (See the later section on trend results.)

Risk Area V: Dietary Behaviors

This section contains summaries of survey data on dietary behaviors, including weight and dieting issues, eating disorders, nutrition, and fat intake (Questions 67-78). "Students" refers to those who participated in the 2011 YRBS.

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[3] There were statistically significant linear and *quadratic* effects on this question ($p<.05$). The former represented an overall (straight line) increase, while the latter was a reflection of the increase from 47.6% in 1997 to 66.1% in 2007 with a slight decrease to 61.4% in 2011.

[4] Many students may have been provided this education in middle school and may have forgotten that they received it by the time they were in high school (when they took this survey) (Sara Peterson, personal communication, November 2011).

1. Weight, Dieting, and Eating Disorders

Outcome	Percent (N)
67. *Percentage of students who described themselves as slightly or very overweight.*	30.7% (1,532)
Related outcome 1: Percentage of students who were overweight (at least 85th percentile but less than 95th percentile, based on body mass index).	14.5% (1,432)
Related outcome 2: Percentage of student who were obese (at or above 95th percentile, based on body mass index).	13.2% (1,432)
68. *Percentage of students who were trying to lose weight.*	44.9% (1,531)
69. *Percentage who went without eating for 24 hours or more to lose weight or to keep from gaining weight during the past 30 days.*	13.9% (1,527)
70. *Percentage of students who took diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight during the past 30 days.*	5.3% (1,530)
71. *Percentage of students who vomited or took laxatives to lose weight or to keep from gaining weight during the past 30 days.*	3.8% (1,531)

There were several statistically significant gender differences in this section—on Questions 67, 68, and 69, all with higher percentages for female students. Proportionately more female students than male students described themselves as overweight, although there was no significant gender difference on those actually overweight or obese[5] (see Figure 5.) In addition, proportionately more female students than male students indicated they were trying to lose weight (by some method) and trying to lose weight by going without eating for 24 hours (or more). Also, more Hispanic/Latino students were obese, trying to lose weight, including going without eating for 24 hours (or more), than Caucasian/White students. Finally, more 12th graders than 10th graders took diet pills, powders, or liquids without a doctor's advice to lose weight.

The percentage who vomited or took laxatives to lose (or not gain) weight decreased over the period 1997-2011 in Iowa. (See the section on trend results.)
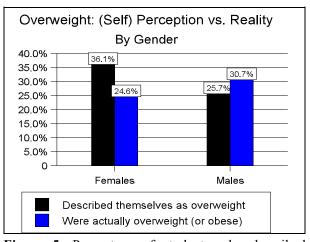
Figure 5: Percentage of students who described themselves as being overweight versus actually being overweight, based on BMI (85th percentile or higher), by gender.

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[5] Note that the definition "actual overweight" according to the students' self-reported height and weight has changed from the 95th percentile of the BMI (body mass index) to the 85th percentile. Previously, the 85th percentile was considered "at-risk" of being overweight and the 95th percentile was actually overweight. Now, the 95th percentile is considered "obese." The percentages of students of each gender who were actually overweight (or obese), as depicted in Figure 5, were obtained by simply adding the (weighted) percentages of each gender who were (1) "overweight" (related outcome 1) and (2) "obese" (related outcome 2). (See the full data report for the gender data (Centers for Disease Control and Prevention, 2011.)

2. Nutrition and Fat Intake

Outcome	Percent (N)
72. *Percentage of students who drank 100% fruit juice one or more times during the past seven days.*	78.8% (1,531)
73. *Percentage of students who ate fruit one or more times during the past seven days.*	90.8% (1,531)
74. *Percentage of students who ate green salad one or more times during the past seven days.*	62.1% (1,530)
75. *Percentage of students who ate potatoes one or more times during the past seven days.*	75.4% (1,530)
76. *Percentage of students who ate carrots one or more times during the past seven days.*	50.9% (1,531)
77. *Percentage of students who ate other vegetables one or more times during the past seven days.*	85.0% (1,531)
Related outcome: *Percentage of students who ate five or more servings of fruits and vegetables per day during the past seven days.*	19.7% (1,527)
78. *Percentage of students who drank a can, bottle, or glass of (non-diet) soda or pop one or more times per day during the past seven days.*	28.1% (1,523)

There were statistically significant gender differences in Questions 77 and 78—proportionately more females than males ate other vegetables one or more times and proportionately more males than females drank at least one soda or pop during the past seven days. These non-diet drinks are typically high in sugar/calories and have no or little nutritional value. The only question on which there was a statistically significant race/ethnicity difference was in Question 75—proportionately more Caucasian/White students ate potatoes at least once in the past seven days than did Hispanics/Latinos. (See Appendix B.)

The percentage who ate fruit at least once in the last seven days increased over the 1997-2011 period in Iowa.

Risk Area VI: Physical Activity/Inactivity

This section contains summaries of survey data related to physical activity/inactivity, including vigorous exercise (such as sports), involvement in physical education and organized sports, watching TV, and playing video/computer games (Questions 79-83). "Students" refers to those who participated in the 2011 YRBS.

Outcome	Percent (N)
79. *(i) Percentage of students who were physically active for a total of 60 minutes or more per day on five or more of the past seven days.*	51.5% (1,530)
79. *(ii) Percentage of students who were physically active for a total of 60 minutes or more per day on (all) seven of the past seven days.*	29.1% (1,530)
80. *Percentage of students who watched three or more hours of TV per day on an average school day.*	23.5% (1,531)

Outcome	Percent (N)
81. *Percentage of students who played video or computer games or used a computer for something that was not school work three or more hours per day on an average school day.*	25.0% (1,530)
82. *(i) Percentage of students who attended physical education (PE) class one or more days in an average school week when they were in school.*	70.8% (1,524)
(ii) Percentage of students who attended physical education (PE) classes daily in an average week when they were in school.	22.6% (1,524)
83. *Percentage of students who played on one or more sports teams during the past 12 months.*	64.1% (1,527)

There were statistically significant gender differences in Questions 79 (both (i) and (ii)), 81, and 83. Proportionately more males than females (1) were physically active for at least 60 minutes per day on (i) five or more and (ii) (all) seven of the past seven days, (2) played on one or more sports teams during the past 12 months, and (3) played video/computer games (or used the computer for something other than school work) three or more hours per day on an average school day. There were statistically significant race/ethnicity differences on Question 80. Proportionately more Hispanic/Latinos than Caucasians/Whites watched three or more hours per day of TV on an average school day. There were no statistically significant grade level differences in these questions.

The percentage of students in Iowa who attended physical education (PE) classes daily in an average week when in school increased over the period 1997-2011. In addition, the percentage of Iowa students who watched three or more hours of TV on an average school day decreased during 2005-2011. These were positive trends for this risk area. On the other hand, the percentage of Iowa students who played video or computer games or used a computer for something that was not school work three or more hours on an average school day *increased* during 2007-2011.[6] The increase in video gaming may be due, in part, to the increase in the number of electronic toys on which to play such games (e.g., smartphones and tablet computers), as well as the emergence of various forms of "social media" on the Internet in the past four years. Such activities are problematic since they take away from students' time that can be used more productively (on school homework/projects) or to improve their health (physical activity). The increased use of the computer for "social" media may be particularly problematic, since such media have been associated with *anti*-social activity such as electronic bullying and physical assaults (e.g., *The Des Moines Register*, February 7, 2012). Recall that 16.8% of Iowa high school students indicated they had been electronically bullied during the past 12 months (YRBS Question 23).

Additional Health Questions: Asthma

This section contains summaries of survey data related to two questions on asthma (Questions 85-86). "Students" refers to those who participated in the 2011 YRBS.

Outcome	Percent (N)
85. *Percentage of students who had ever been told by a doctor or nurse that they had asthma.*	16.0% (1,529)

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[6] Recall that proportionately more males than females indicated involvement in playing video or computer games or using the computer for something that was not school work at least three hours on an average school day. However, students in *each gender* increased their involvement in this activity from 2007 to 2011.

Outcome	Percent (N)
86. Percentage of students who had ever been told by a doctor or nurse that they had asthma and still have asthma (i.e., current asthma)	8.3% (1,527)

There were no significant differences by gender, grade level, or race/ethnicity on these questions. The percentages on these two outcomes were essentially unchanged over 2005-2011 in Iowa.

Highlights of the 2011 Iowa YRBS

Summary highlights of the 2011 Iowa Youth Risk Behavior Survey (YRBS) for high school students are presented in Figure 6 below, with the abbreviated outcome statement on the left and the horizontal bar graph for the total sample on the right. The selection was somewhat subjective, based in part on the seriousness of the consequences of the unhealthy activities, the benefits of the healthy activities, and the magnitude of the response to each.

Note that some of these outcomes are stated negatively (presence of risk factor), while others are stated positively (absence of risk factor). An example of a negative outcome is "ever tried cigarette smoking." An example of a positive outcome is "attended physical education class at least once per school week."

Percentage of 2011 Iowa High School Students who:

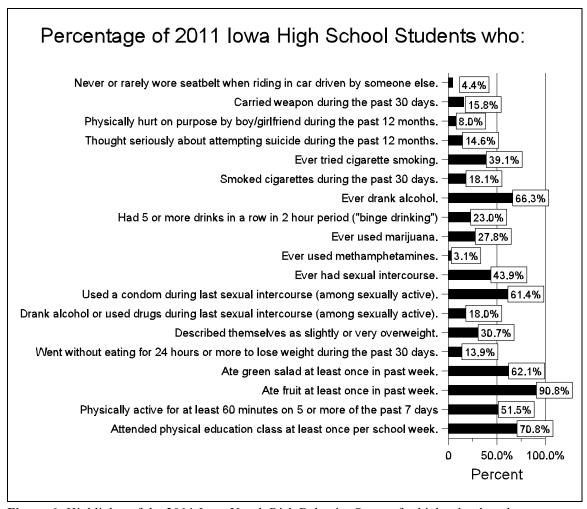| Outcome	Percent
Never or rarely wore seatbelt when riding in car driven by someone else.	4.4%
Carried weapon during the past 30 days.	15.8%
Physically hurt on purpose by boy/girlfriend during the past 12 months.	8.0%
Thought seriously about attempting suicide during the past 12 months.	14.6%
Ever tried cigarette smoking.	39.1%
Smoked cigarettes during the past 30 days.	18.1%
Ever drank alcohol.	66.3%
Had 5 or more drinks in a row in 2 hour period ("binge drinking")	23.0%
Ever used marijuana.	27.8%
Ever used methamphetamines.	3.1%
Ever had sexual intercourse.	43.9%
Used a condom during last sexual intercourse (among sexually active).	61.4%
Drank alcohol or used drugs during last sexual intercourse (among sexually active).	18.0%
Described themselves as slightly or very overweight.	30.7%
Went without eating for 24 hours or more to lose weight during the past 30 days.	13.9%
Ate green salad at least once in past week.	62.1%
Ate fruit at least once in past week.	90.8%
Physically active for at least 60 minutes on 5 or more of the past 7 days	51.5%
Attended physical education class at least once per school week.	70.8%

Figure 6: Highlights of the 2011 Iowa Youth Risk Behavior Survey for high school students.

Iowa YRBS 1997-2011:

Statistically Significant Trends

Comparisons or trends on the YRBS questions from 1997 to 2011 were made using logistic regression analysis, controlling for changes in distributions by sex, race/ethnicity, and grade level. The years, 1997, 2005, 2007, and 2011 were the only years to date in which the Iowa YRBS data were weighted according to current criteria (minimum overall response rate of 60%). Data that were available from 2011 and at least one other of the years 1997, 2005, and 2007 were used in establishing whether of not the linear trend was statistically significant. (Some questions were asked for the first time in some year after 1997.) However, the main focus is on earliest year the question was included in the YRBS (typically, but not always, 1997) and the current year, 2011—and the comparison based on the *difference* in the weighted percentages in those years on the summary questions or outcomes.

The following outcomes corresponding to YRBS survey questions showed *statistically significant linear trend* in responses for the years 1997-2011 in which weighted survey data were available, using data for the total samples. Thirty-eight (38) of the 77 questions asked in at least two of the four years yielded statistically significant changes; of these, all but three yielded positive results (improvement) or about 45%.[7]

Table: Summary of Iowa YRBS trend data 1997-2011

Question # in 2011 YRBS	Risk Area/Outcome	1997 to 2011 Percentage Change (Signed Difference)
8-28	*I - Behaviors that Lead to Intentional or Unintentional Injuries:*	
8	Among students who rode a bicycle during the past 12 months, never or rarely wore a bicycle helmet	-4.5
9	Never or rarely wore a seat belt when riding in a car driven by someone else	- 8.2
10	Rode in a car or other vehicle one or more times during the past 30 days that was driven by someone who had been drinking alcohol	- 16.6
11	Drove a car or other vehicle one or more times during the past 30 days when they had been drinking alcohol	- 9.7
12	Carried a weapon such as a gun, knife, or club on one or more of the past 30 days	- 2.8

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[7] These figures refer to the survey questions. Thus, for example, the two parts of Question 31 (i and ii) are counted as one "question." Also, the questions on height and weight, used to compute the student's body mass index, were counted as one "question," since this information was used to compute the percentage of respondents who were "obese" or "overweight."

Question # in 2011 YRBS	Risk Area/Outcome	1997 to 2011 Percentage Change (Signed Difference)
14	Carried a weapon such as a gun, knife, or club on school property on one or more of the past 30 days	- 4.1
17 [a]	In physical fight one or more times during the past 12 months	- 6.6
19 [b]	In physical fight on school property one or more times during the past 12 months	- 3.9
25	Seriously considered attempting suicide during the past 12 months	- 8.4*
26	Made a plan about how they would attempt suicide during the past 12 months	- 7.1
27	Actually attempted suicide one or more times during the past 12 months	- 3.0
28	Made a suicide attempt during the past 12 months that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse	- 1.3
29-39	*II - Tobacco Use:*	
29	Ever tried cigarette smoking, even one or two puffs	- 27.8
30	Smoked a whole cigarette for the first time before age 13 years	- 11.1
31 (i)	Smoked cigarettes on one or more of the past 30 days	- 19.4
31 (ii)	Smoked cigarettes on 20 or more of the past 30 days	- 11.2
32	Among students who reported current cigarette use, smoked more than 10 cigarettes per day on the days they smoked during the past 30 days	- 9.4
34	Smoked cigarettes on school property on one or more of the past 30 days	- 12.4
36	Among students who reported current cigarette use, ever tried to quit smoking cigarettes during the past 12 months	- 8.4[a]
37	Used chewing tobacco, snuff, or dip on one or more of the past 30 days	- 2.4*
40-59	*III - Alcohol and Other Drugs:*	
40	Had at least one drink of alcohol on one or more days during their life	- 13.6
41	Had their first drink of alcohol other than a few sips before age 13 years	- 13.2

Question # in 2011 YRBS	Risk Area/Outcome	1997 to 2011 Percentage Change (Signed Difference)
42	Had at least one drink of alcohol on one or more of the past 30 days	- 15.0
43	Had five or more drinks of alcohol in a row, that is, within a couple of hours, on one or more of the past 30 days ("binge drinking")	- 14.5
45	Had at least one drink of alcohol on school property on one or more of the past 30 days	- 2.1*
46	Used marijuana one or more times during their life	- 6.7
48	Used marijuana one or more times during the past 30 days	- 2.9
50	Used any form of cocaine, including powder, crack, or freebase one or more times during their life	- 2.1
51	Used any form of cocaine, including powder, crack, or freebase one or more times during the past 30 days	- 1.2
52	Sniffed glue, breathed the contents of aerosol cans, or inhaled any paints or sprays to get high one or more times during their life	- 8.3
59	Was offered, sold, or given an illegal drug on school property by someone during the past 12 months	- 10.9
60-66 & 84	*IV - Sexual Behaviors that Can Result in HIV Infection, Other STDs, or Unintended Pregnancies:*	
64	Among students who had sexual intercourse during the past three months, drank alcohol or used drugs before last sexual intercourse	- 6.3
65	Among students who had sexual intercourse during the past three months, used a condom during last sexual intercourse	13.8*
84	Had ever been taught in school about AIDS or HIV infection	- 8.4
67-78	*V - Weight Management and Dietary Behaviors:*	
71	Vomited or took laxatives to lose weight or to keep from gaining weight during the past 30 days	- 1.2
73	Ate fruit one or more times during the past seven days	2.8[a]
79-83	*VI - Physical Activity:*	
80	Watched three or more hours of TV per day on an average school day	- 5.1[a]

Question # in 2011 YRBS	Risk Area/Outcome	1997 to 2011 Percentage Change (Signed Difference)
81	Played video or computer games or used a computer for something that was not school work three or more hours per day on an average school day	8.8[b]
82	Attended physical education (PE) classes daily in an average week when they were in school	13.5

[a] Amount of change between 2005 (first year question asked) and 2011. [b] Amount of change between 2007 (first year question asked) and 2011. * Quadratic change also statistically significant, due to a leveling off and increase (or decrease) in the percentage on this outcome.

Most all of the above statistically significant results were considered positive or desirable (negative outcomes had negative percentage change, positive ones had positive percentage change)—except for three outcomes: (1) among students who reported current cigarette use, ever tried to quit smoking cigarettes during the past 12 months; (2) played video/computer games or used a computer for something not related to school work; and (3) ever been taught in school about AIDS or HIV infection. These outcomes were addressed in Questions 36, 81, and 84, respectively.

Behaviors that lead to intentional or unintentional injuries (e.g., violent behavior and suicide), tobacco use, and alcohol and other drug abuse were risk areas showing the most statistically significant improvement from 1997 to 2011. For example, the percentage who reported being in a physical fight during the past 30 days decreased from 31.0% in 1997 to 24.4% in 2011; the percentage who reported smoking cigarettes on at least one of the past 30 days decreased from 37.5% in 1997 to 18.1% in 2011; and the percentage of students involved in "binge drinking" decreased from 37.5% in 1997 to 23.0% in 2011. In fact, some degree of improvement was evidenced in all of the health risk areas by high school students in Iowa from 1997 to 2011, even in the area of physical activity/inactivity where no improvement was previously demonstrated. Many of these improvements were in the average magnitude of 1-2% per year, in terms of students' responses to the various questions.

The YRBS is a monitoring or surveillance system that is not linked to any educational program or treatment. Although causal relationships are not provable, drug and violence prevention programs, Iowa's School-Based Youth Services and similar collaborative services programs, Success 4, Positive Behavior Supports, character education, HIV prevention education and refusal skill-building, and other programs and legislation supporting children and families in Iowa have undoubtedly contributed to some of these positive results. The dramatic improvement in the risk area of tobacco use may be due in part to federal rules regarding cigarette advertising directed to children, increased and improved education regarding tobacco use as a serious health risk, and the increasing social unacceptability of smoking—in particular, the recent passage of state laws against smoking in restaurants and bars. *Iowa's K-12 public education system itself deserves credit for at least some of these positive results in the health of our students.* From our survey conducted in the even years (the School Health Profiles) we have learned that most schools have provided HIV and other STD prevention education, adopted tobacco-use policies for students and staff, increased student knowledge about the health risk of smoking, improved student knowledge of violence prevention, provided action plans for students with asthma, required physical education, and taught the benefits of physical activity and health-related fitness (Veale, February 2011).

For more statistical detail and analysis, see the "Trend Report" section of the 2011 Iowa YRBS statistical report (Centers for Disease Control and Prevention, 2011) and Veale (February 2012).

Process Review of the 2011 Iowa YRBS and Recommendations

The 2011 Iowa YRBS for high schools was conducted according to strict guidelines for two-stage cluster sampling provided by Westat, Inc., a CDC contractor. The sample was approved and recommended procedures for administering the survey were followed. The sampling response rate was sufficient for "weighting" the data. This means that the results were generalizable to all high school students in Iowa in 2011. In this chapter we review factors that may have contributed to this response rate and make recommendations for improving it in the next YRBS scheduled for 2013.

Factors Contributing to the Response Rate

In 1999 through 2003, we experienced severely reduced school-level response to the YRBS in Iowa. This downward trend was reversed in 2005, when the school-level response rate rebounded to just under the 1997 level (see Figure 7).

The author and Sara Peterson (HIV/AIDS Education Project, Iowa Department of Education) attended workshops conducted by Westat, Inc. in Rockville, Maryland in 2004 and 2010. The purpose of these workshops was to instruct participants regarding the administration of the next YRBS. In the process of the training sessions, many helpful suggestions were provided on how to improve our response rate.

Figure 7: School-level response rate in Iowa YRBS from 1997 to 2011.

Based on ideas generated in the 2004 workshop and internal discussions about improving the response rate, we decided to provide financial remuneration ($500) to schools that participated in the 2005 YRBS. This remuneration was increased to $600 in the 2009 and 2011 YRBS. In addition, we decided to pay each school survey administrator (typically, a school counselor or teacher) $25 for their time and effort in the 2005 survey. The payment for survey administrators was increased to $50 in 2009 and 2011.

In 2011, teachers who gave up a class period for their students to participate in the survey were paid $50 each. Also, in 2011, we subcontracted with an individual to conduct monitoring and follow-up with principals who were considering participation to facilitate the timely completion of the surveys. We feel that these factors were critical to our exceeding the 60% response rate required for weighted data in 2011.

Recommendations for Improving the Response Rate in the 2013 Iowa YRBS

According to the CDC, Iowa data have been weighted via current requirements four times (in 1997, 2005, 2007, and 2011)[8] since the YRBS was first conducted in the state in 1989.[9] The following are recommendations for improving the school-level response rate in the 2013 Iowa YRBS:

- Increase the financial reward to cooperating schools and survey administrators provided by the school or school district.

- Continue to provide a financial reward to cooperating classroom teachers, since they are the ones who are giving up their class time for the survey.

- *Start the survey administration process in the fall semester of the school year (around October 1, 2012) with the initial contact to get principals on board with the survey.* Then get the surveys to them early in the winter semester to give educators a chance to budget school time to complete the survey.

- Continue to coordinate the sampling process with other national health surveys and include any Iowa schools selected for the national YRBS in the state sample.

- As part of the agreement to participate, have schools set a date for the administration of the survey. If they are not able to administer the survey on that date, suggest another date and consider use of an on-site survey administrator to insure that the surveys get completed.

- Encourage the schools to use passive (rather than active) permission, which is sufficient for this survey, since it is funded by the Department of Health and Human Services.

- Make sure the classroom documentation forms are completed properly so we know that the classes selected were actually surveyed and have accurate information regarding actual enrollment in those classes.

- Utilize a survey assistant to follow up schools that are considering participation or have agreed to participate, to insure that surveys are completed and returned in a timely manner.

- Utilize the checklist developed for the 2011 YRBS to keep track of schools that have agreed to participate, those who have been sent the surveys, and those who have sent their completed surveys back. This will guard against problems with postal delivery mishaps, misplaced surveys, etc. (See table below.)

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[8] In 1997, an overall response rate slightly over 70% was achieved in the Iowa YRBS (Veale, January 1998). This was considered sufficient for weighting the Iowa data that year. Generally, response rates over 70% are considered very good in mail surveys (Mangionne, 1995). In 2005 and 2007, the overall response rates were 65% and 60%, respectively.

[9] The Iowa YRBS was "weighted" in 1989, but according to a Westat representative, only a 50% overall response rate was required at that time (Nancy Speicher, personal communication, July, 2003). The data from that year would *not* have been weighted according to the *current* requirement of 60%.

School # (Name)	Agree to participate?	Class list provided?	Survey date	Surveys sent (to school)?	Surveys received (by school)?	Surveys completed and returned (to DE)?
1						
...						
40						

We will continue to work closely with Westat, Inc. and the CDC to maintain or improve our response rates and achieve data that are generalizable to all Iowa high school students in 2013.

Recommendations for Reducing Health Risk Behaviors among Iowa's Youth

Progress has been made over the past 14 years in *all six* of the major health risk areas among Iowa's high school students. This progress in self-reported student health behaviors is a *major success story* for Iowa's public education system.

Of course, many health risk behaviors remain among our high school students. Obesity has been identified as a major health issue with long term implications for our state. The percentage of Iowa's high school students who were classified as either overweight or obese has remained at around 27-28% since 2005. The increases in the percentages of students who indicated they attended physical education classes daily in an average school week and who ate fruit regularly is encouraging. Continued improvement in the areas of physical activity and nutrition should help to reduce the percentages of students who are overweight or obese.

1. Tobacco, Alcohol, Marijuana, and Other Drug Use/Abuse

The progress in the areas of tobacco, alcohol, and other drug use among high school youth in Iowa has been especially dramatic. The reduction in tobacco use/abuse may be due in part to federal rules regarding cigarette advertising directed to children, as well as increased and improved education regarding tobacco use as a serious health risk, the increasing social unacceptability of smoking, and the recent Iowa state law making smoking illegal in restaurants and bars.

The progress in reducing marijuana and cocaine use/abuse may be related, in part, to the progress regarding tobacco. Tobacco has been considered a "gateway drug"—a drug that may be used by students to learn the *totally unnatural behavior* of smoking and then apply this learned behavior to experiment with other drugs such as marijuana, (crack) cocaine, and methamphetamines. Fortunately, our data indicate that most do not and the percentages using/abusing marijuana and cocaine (as well as inhalants) are also trending downward in Iowa.[10] The percentage who indicated they had used methamphetamines has remained around 3-5% of Iowa high school students since 2005.[11] The fact that this percentage hasn't increased may be due, in large part, to tough state laws enacted early in the last decade that (1) imposed life sentences upon persons convicted of selling methamphetamines to minors and (2) established controls on the purchase of cold medicines containing ingredients used to produce the drug. ("Meth" is a dangerous illicit drug that is either smoked, injected, or snorted.)

There were several grade level differences in these risk areas, with students in higher grades proportionateley more involved in tobacco and other substance use/abuse than those in the lower grades (e.g., the result for binge drinking). There were also several race/ethnicity differences, with Hispanic/Latino students indicating proportionately greater involvement in tobacco and other

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[10] On three of the four marijuana questions, there was a slight up-tick in the percentages indicating use/abuse of that illicit drug in 2011 (compared with those of 2007), but this (quadratic) effect was not statistically significant.

[11] The percentage who reported using methamphetamines one or more times in their life was reduced slightly (from 4.3% in 2005 to 3.1%) in 2011, but this change was not statistically significant.

substance use/abuse (on and off school property) than did Caucasian/White students. Thus, students in higher grades and Hispanic/Latino students are more at-risk in these health risk areas.

The newer synthetic drugs such as salvia, K-2, and bath salts (which are smoked) are not yet being monitored in the YRBS. A question concerning the use of these and other "designer drugs" should be added to the YRBS in 2013.

2. "Medical Marijuana" and Risk Behaviors

The smoking of marijuana has now been made legal for "medical use" in 14 states—not, yet, in Iowa.[12] Some research studies have shown this drug to have a palliative effect on chronic pain and to be an appetite stimulant, e.g., for cancer or AIDS patients. Other research studies have shown it to have negative effects on memory and tobacco-smoking cessation (making it harder to quit). Loss of control from marijuana use/abuse could also lead to unprotected sex and a resulting increase in the incidence of STDs, including HIV infection and AIDS. There is also the issue of second-hand marijuana smoke (e.g., for a spouse and/or children living in a home, neighbors in an apartment complex or nursing home, or people riding in a car—where someone is smoking marijuana), which may be as serious as second-hand tobacco smoke. (A good resource for research on marijuana is the National Institute on Drug Abuse (NIDA), which is part of the National Institutes of Health (NIH), a component of the U.S. Department of Health and Human Services. Their web page:

http://www.drugabuse.gov/ResearchReports/marijuana/marijuana3.html

contains useful summaries and references to many research articles.)

Regarding the issue of legalizing the smoking of marijuana for medical use (or full legalization of the drug) in Iowa, it is important to consider *all* research data, both favorable and unfavorable, as well as the data from surveys like the YRBS and the Iowa Youth Survey, when considering the potential impact on our population. Political agendas aside, we do not want to see a reversal in the critical gains we have made on these risk factors among our youth during the past 14 years. According to our surveys, most high school students in Iowa are *not* smoking cigarettes, binge drinking, or using/abusing marijuana or other illicit drugs—and the percentage who report that they are engaging in these risky behaviors is, in most cases, on the decline. It is *not* true that "Everybody is doing it." Moreover, it is important to continue to reduce *all* of these risk behaviors among our young people, who are our future. *We need federal and state laws and/or rules—as well as health education policies and programs—that work toward this end (like those concerning tobacco and methamphetamines), not against it.*

3. Co-occurring Risk Behaviors

These health risk behaviors do not exist as isolated problems for high school students. For example, *smoking cigarettes is associated with several other risk behaviors*, including problem alcohol behavior, marijuana use/abuse, other drug use/abuse, unprotected sex, persistent sadness, and fighting. Among US high school students in 2007 who were then self-reported (tobacco) smokers, 75% also had problem alcohol behavior (either "binge" drinking or driving while intoxicated), 70% used marijuana in the past month, 63% had used other drugs (e.g., crack cocaine or meth), 44% had persistent sadness, 43% had unprotected sex (during their last intercourse), and 42% had been in two or more fights, based on data from the YRBS national survey (Fox, McManus, & Arnold, 2010). Similarly, students who were self-reported marijuana smokers in that school year showed a high

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[12] The *smoking* of marijuana for "medical use" is referred to as "medical marijuana" by its proponents. This may be confusing to some, since Marinol—a pharmaceutical product that contains synthetic THC (the active ingredient in marijuana), already has Food and Drug Administration (FDA) approval, and is *ingested as a pill*—is also sometimes referred to as medical marijuana. This approved drug has been used to treat nausea in cancer patients and to stimulate appetite in AIDS patients. Research is being conducted on other THC "delivery systems," such as a patch and vaporization, which may be more effective than Marinol for some patients, and more efficient, less offensive, and less likely to lead to "recreational" use/abuse or addiction than smoking marijuana.

likelihood of many of these co-occurring risk behaviors, including problem alcohol behavior, other drug use/abuse, persistent sadness, and fighting (ibid.).

This does *not* mean that smoking tobacco (or marijuana) *causes* the other risk behaviors, but rather that they are relatively likely to co-occur as student health risk behaviors. Specifically, there were a greater number of risk areas associated with smoking tobacco and marijuana, and at higher levels of occurrence, than with almost all other risk areas considered. The one exception was sexual intercourse before age 13, which had about the same number of associated risk areas, and similarly high levels of occurrence, as did smoking tobacco (ibid.). (See the section "Sexual Risk Behaviors" below for more on this risk factor.)

Regarding remediation, a holistic approach to dealing with these issues is deemed more effective than treatment for any single risk behavior. Risk assessment tools are available for identifying student needs based on these and other risk behaviors (e.g., Morley & Veale, 2005), as are programs and processes for effectuating positive outcomes in students (e.g., Veale, July 2010, 2011).

4. Prescription Drug Abuse

According to Substance Abuse and Mental Health Services Administration's National Survey on Drug Use and health, approximately 2.8 million teens have abused prescription drugs. Dealing with pressures and school-related stress are reasons cited for adolescents' misuse of prescription drugs (U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA), 2009). Drug "diversion"—the use or reselling of any medication by people who do not have a prescription for it—is a serious problem in this country. (The legalization of smoking marijuana for "medical" purposes would undoubtedly add to this problem in Iowa and make this drug more readily accessible for "recreational" purposes.) A question was added to the YRBS questionnaire dealing with this health risk issue in 2011, based in part on recommendations by educators and evaluators in the states using this survey.

In 2011, 17.4% of Iowa's high school students reported using prescription drugs without a doctor's prescription. The data on this question provide a baseline by which to measure the impact of policies/programs to reduce the prevalence of this serious health risk behavior in the future.

5. Sexual Risk Behaviors

Regarding sexual risk behaviors, progress was made in (1) increasing the percentage of students who reported using condoms and (2) decreasing the percentage of students who reported using alcohol or (illegal) drugs, before their last intercourse. These results indicate that Iowa students are at least being more careful regarding their sexual behavior. On the other hand, the percentages of Iowa high school students engaged in sexual intercourse have been fairly constant at a high level (42-44%) during the past 14 years. Since the most effective protection against HIV/AIDS or other STDs is *postponement* of sexual activity, more improvement is needed on this outcome.

Finally, the only question in this risk area on which there was a statistically significant gender difference was the one regarding age of first sexual intercourse. On this question, 4.2% of Iowa high school students responded either "12 years old" or "11 years old or younger," i.e., under 13 years. Proportionately, more than twice as many males (5.6%) as females (2.5%) indicated they had sexual intercourse before the age of 13 years—a statistically significant difference, indicating that boys are more at-risk in this health risk area. How many of these Iowa students had sexual intercourse with (a) the opposite sex and (b) the same sex (either primarily or exclusively) before the age of 13 is unknown. However, according to national YRBS results for nine sites (five states, not including Iowa, and four major cities) in which high school students were asked to indicate their sexual orientation, about *four times* as many self-identified homosexuals (just under 20%) responded affirmatively to the question about sexual intercourse before age 13 compared with self-identified

heterosexuals, indicating that gay students may be more at-risk than "straight" students in this regard[13] (Centers for Disease Control and Prevention, June 6, 2011, web document).

It is not known how many of these students in the national survey (or those in Iowa) had sexual intercourse before age 13 with *adults* (of the same or opposite sex), which would be criminal behavior on the part of the adults. This would be good information to collect and monitor, beginning with the 2013 YRBS. Moreover, any student who confides with school teachers, counselors, or administrators about such assaults needs to be supported and protected—as much as possible—against further assaults. In light of the many scandals of recent years in churches, state universities, secondary and even elementary public schools involving allegations of pedophilia, schools need to make sure that they have rules in place to provide such protection, including required reporting of these (alleged) assaults to local law enforcement.

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[13] This was based on the median percentages responding affirmatively to this question among the nine states in which this information was obtained.

Acknowledgments

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APPENDIX A

The 2011 Iowa Youth Risk Behavior Survey

APPENDIX B

Table of Effective Sample Sizes

and Statistically Significant Differences

by Gender, Race/Ethnicity, and Grade Level

Table of Effective Sample Sizes
and Statistically Significant Differences
by Gender, Race/Ethnicity, and Grade Level

The total sample size, total number of students participating in the 2011 YRBS in Iowa and producing useable surveys, was 1,535. However, the *effective* sample size for any particular survey question—the number of students on which the percentage responding in a specified manner was based—was usually less than this number. Some students omitted certain questions because they may have felt they were too "personal," not relevant to them, or because they did not understand the question. In some cases, the effective sample size for a question was less than the total sample size because of intentional conditioning or filtering. For example, in the summary version of Question 65 ("The **last time** you had sexual intercourse, did you or your partner use a condom?") those responding C-H to Question 63 (i.e., they had sexual intercourse with one or more persons in the past 3 months) and either B or C (Yes or No) to Question 65 were included as the denominator in computing the percentage of students who used a condom, in order to focus on the most relevant population for this question (those sexually active). The result of such filtering was often a smaller "N" (467 in Question 65) and correspondingly wider confidence intervals, which in turn yielded (1) reduced precision of estimation and (2) reduced likelihood of detecting significant gender, race/ethnicity, or grade level differences. Of course, the breakdowns by gender, race/ethnicity, and grade level resulted in smaller sample sizes in each group, with correspondingly wider confidence intervals for the percentages therein. This was particularly evident in the race/ethnicity breakdown, where the number of Hispanic/Latino students was only about one-tenth that of the Caucasian/White category (reflecting their relative size in the population of Iowa's high school students).

Table B1: Effective sample size (N) and statistical significance (with the percentages given for each group) or nonsignificance (NS) of gender, race/ethnicity, and grade level differences on the survey questions 8-86

| Survey Question # | Effective Sample Size (N) | Statistical Significance (% for Each Group)/ Nonsignificance (NS) | | | | | | | |
| | | Gender | | Race/ Ethnicity | | Grade Level | | | |
		Female	Male	Hispanic/ Latino	Caucasian/ White	9	10	11	12
8	1,134	NS		-	-	NS			
9	1,535	NS		NS		NS			
10	1,535	NS		NS		NS			
11	1,527	NS		NS		3.4	7.7	11.6	18.7
12	1,508	3.9	27.0	NS		NS			
13	1,517	0.6	9.3	NS		NS			
14	1,525	1.8	6.6	NS		NS			
15	1,534	NS		NS		NS			
16	1,534	NS		NS		NS			
17	1,518	16.6	31.7	36.0	21.8	NS			
18	1,528	NS		NS		NS			

Survey Question #	Effective Sample Size (N)	Gender		Race/Ethnicity		Grade Level			
		Female	Male	Hispanic/Latino	Caucasian/White	9	10	11	12
19	1,523	6.2	12.7	NS		14.7	10.1	8.4	4.5
20	1,535	NS		NS		NS			
21	1,533	10.0	3.8	NS		NS			
22	1,534	NS		NS		30.0	25.1	19.7	14.6
23	1,533	23.5	10.2	NS		NS			
24	1,535	28.3	17.5	NS		NS			
25	1,535	NS		NS		NS			
26	1,535	NS		NS		NS			
27	1,390	NS		15.2	5.0	NS			
28	1,385	NS		NS		NS			
29	1,506	NS		56.1	36.8	27.2	35.9	43.4	49.3
30	1,500	NS		NS		NS			
31 (i)	1,502	NS		NS		10.9	14.8	20.9	25.7
31 (ii)	1,502	NS		NS		NS			
32	260	NS		-		-			
33	215	NS		-		-			
34	1,519	NS		NS		NS			
35	1,515	NS		NS		5.9	8.7	10.9	16.0
36	258	NS		-		-			
37	1,530	2.8	17.5	NS		6.4	10.0	15.5	9.5
38	1,530	1.6	10.2	NS		2.4	6.4	9.5	5.7
39	1,531	7.8	17.2	NS		7.2	8.1	16.9	18.5
Summary Question (smoking)	1,499	NS		NS		15.4	20.7	30.4	34.5
40	1,521	NS		NS		58.4	59.1	71.0	76.5
41	1,520	NS		NS		22.2	15.6	15.8	8.9
42	1,464	NS		NS		26.4	30.8	41.8	48.8
43	1,511	NS		NS		11.4	19.0	27.3	33.9
44	508	50.0	35.3	-		NS			
45	1,525	NS		6.5	1.9	NS			

The heading spanning Gender, Race/Ethnicity, and Grade Level reads: Statistical Significance (% for Each Group)/ Nonsignificance (NS)

| Survey Question # | Effective Sample Size (N) | Statistical Significance (% for Each Group)/ Nonsignificance (NS) | | | | | | | |
| | | Gender | | Race/ Ethnicity | | Grade Level | | | |
		Female	Male	Hispanic/ Latino	Caucasian/ White	9	10	11	12
46	1,523	NS		43.9	24.7	NS			
47	1,528	NS		10.0	3.2	NS			
48	1,526	NS		NS		NS			
49	1,528	NS		NS		NS			
50	1,525	NS		NS		NS			
51	1,526	NS		NS		NS			
52	1,530	NS		NS		NS			
53	1,531	NS		NS		NS			
54	1,531	NS		NS		NS			
55	1,531	NS		NS		3.4	3.6	7.7	5.6
56	1,532	NS		NS		0.9	2.1	4.9	2.0
57	1,531	NS		NS		NS			
58	1,533	NS		NS		NS			
59	1,532	NS		24.3	10.5	NS			
60	1,488	NS		NS		21.0	39.9	55.7	58.4
61	1,490	2.5	5.6	NS		NS			
62	1,489	NS		NS		7.1	9.3	14.4	20.8
63	1,487	NS		NS		12.2	31.6	42.8	44.6
64	469	NS		-		NS			
65	467	NS		-		NS			
66	449	NS		-		NS			
Related out-come (used Depo-Provera)	449	NS		-		NS			
67	1,532	36.1	25.7	NS		NS			
Related out-come 1 (over-weight)	1,432	NS		NS		NS			
Related out-come 2 (obese)	1,432	NS		27.3	11.4	NS			

Survey Question #	Effective Sample Size (N)	Statistical Significance (% for Each Group)/ Nonsignificance (NS)							
		Gender		Race/ Ethnicity		Grade Level			
		Female	Male	Hispanic/ Latino	Caucasian/ White	9	10	11	12
68	1,531	60.1	30.4	56.7	43.2	NS			
69	1,527	17.9	10.1	22.8	13.0	NS			
70	1,530	NS		NS		3.7	2.9	5.6	8.9
71	1,531	NS		NS		NS			
72	1,531	NS		NS		NS			
73	1,531	NS		NS		NS			
74	1,530	NS		NS		NS			
75	1,530	NS		59.6	77.6	NS			
76	1,531	NS		NS		NS			
77	1,531	88.3	82.0	NS		NS			
Related outcome (5 or more helpings of fruits and vegetables)	1,527	NS		NS		NS			
78	1,523	21.2	34.8	NS		NS			
79 (i)	1,530	41.9	60.6	NS		NS			
79 (ii)	1,530	19.9	37.7	NS		NS			
80	1,531	NS		40.1	21.2	NS			
81	1,530	18.0	31.7	NS		NS			
82 (i)	1,524	NS		NS		NS			
82 (ii)	1,524	NS		NS		NS			
83	1,527	60.0	68.1	NS		73.1	62.1	60.3	61.2
84	1,529	NS		NS		NS			
85	1,529	NS		NS		NS			
86	1,527	NS		NS		NS			