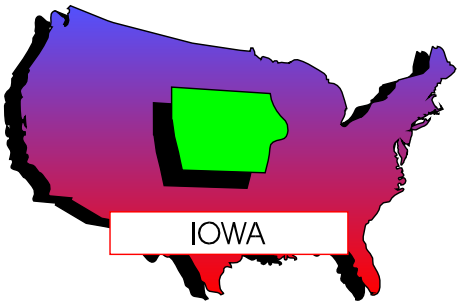
HIV/AIDS Education Project

2007 Iowa YRBS



Youth Risk Behavior Survey:
Iowa High Schools

FINAL REPORT

Prepared for:
Iowa Department of Education,
Nutrition, Health and Transportation Services

Author: James R. Veale, Ph.D.

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State of Iowa
DEPARTMENT OF EDUCATION
Grimes State Office Building
Des Moines, Iowa 50319-0146

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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, traditional and alternative schools) in Iowa during 2006-07.

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 2007. The survey consists of 87 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 6.8 per 1000 live births occurring in the United States in 2004 (Centers for Disease Control and Prevention, August 21, 2007) and 5.1 per 1000 live births occurring among Iowa residents in 2004 (Deb Roeder, personal communication, February 16, 2006). It was a primary factor leading to about 1.3 million abortions in the United States and about 6,000 in Iowa in 2000 (*The World Almanac and Book of Facts 2006*, 2006).

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, 13.8% of the 41,897 cases of AIDS diagnosed in the United States in 2005 were 13 to 29 years old (*The 2008 New York Times Almanac*, 2008). In terms of risk behaviors, next to male-to-male sexual contact, intravenous (IV) drug abuse is the highest "exposure category." Along with those in *both* exposure categories, these risk factors were identified as having caused or contributed to 75% of AIDS cases among adults and adolescents from 1981 to 2005. Thus, from the standpoint of controlling AIDS, unprotected sex and drug abuse (especially the intravenous type) are risk behaviors that need to be monitored among our youth.

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 drinking 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 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 infection, other STDs, or unintended pregnancies

(5) dietary behaviors

(6) physical inactivity

Survey questions addressed behaviors in each of the above six risk areas. In addition, 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 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 2007 Iowa YRBS results are presented for each risk area in tabular form, followed by a brief discussion. Graphics are used selectively to illuminate differences over gender and/or grade level categories. Comparisons over years are presented to demonstrate improvement or worsening on specific outcomes measured in the Iowa YRBS. In addition, summary highlights for the 2007 Iowa YRBS total sample are presented graphically. For a more detailed summary of the data, see the document *2007 Youth Risk Behavior Survey Results: Iowa High Schools* (Centers for Disease Control and Prevention, 2007).

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 2007 Youth Risk Behavior Survey (YRBS) instrument consisted of 87 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 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 2006-07 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, 29 of the 40 schools participated and one school was declared ineligible (due to an extraordinarily heavy assessment and exam schedule). Thus, the school level response rate was (29/39) x 100 or 74.4%. At the classroom level, 1,440 out of 1,787 of the students sampled (80.6%) completed usable questionnaires.

The overall response rate was

$$(.74)(.81) \times 100\%$$

or 60% (rounding up). Overall response rates equal to or exceeding 60% are required for the data to be weighted. Thus, *the 2007 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 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 details of the weighting process and the above data are presented in the "Sample and Weighting Information"

[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.

section of the full summary of the 2007 Iowa YRBS data by the CDC (Centers for Disease Control and Prevention, 2007).

The author believes that the main factors that contributed to the sufficient response to the 2007 YRBS were (1) schools were paid $500 for participating in the survey, (2) survey administrators in the school (often a teacher, school nurse, or counselor) were paid $25 for their time and effort, (3) data from one Iowa school selected for the national YRBS were included in the Iowa YRBS sample, and (4) the YRBS was coordinated with the tobacco survey in the sampling process. The response rate would have been considerably higher if several schools that had agreed to participate had been able to complete their surveys. These factors, along with recommendations for improving the response rate in 2009, 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. Since the number of respondents in the non-Caucasian categories was low (each was less than 100), only the gender and grade level breakdowns were used in this report.

Gender and grade level differences were noted whenever they were statistically significant using the .05 level of significance. 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 non-response patterns), this method was recommended over classical methods for simple random sampling such as Pearson chi-square. For example, the percentages on Question 9 ("How often do you wear a seat belt when **riding in** a car driven by someone else?") answering either A ("Never") or B ("Rarely"), broken down by gender, yielded the two confidence intervals represented in Figure 1. The fact that these confidence intervals did not overlap (although very nearly so) indicated that the percentages were different for the categories of gender—males were more likely to answer that they never or rarely wore a seat belt when riding in a car, 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.

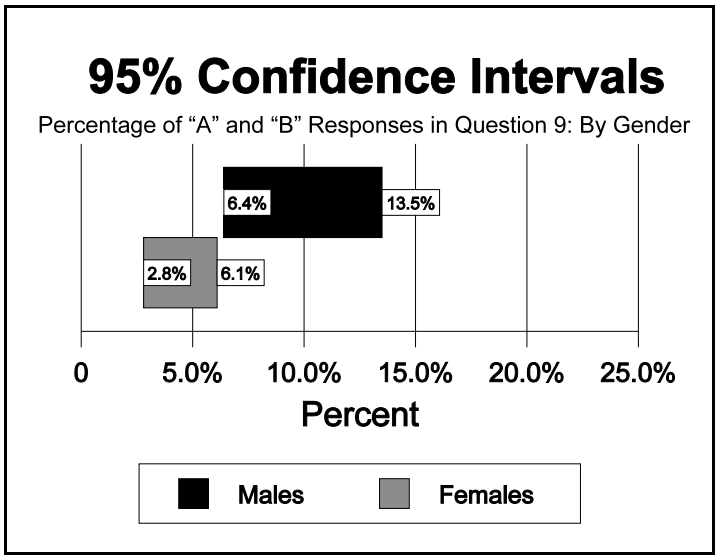

Figure 1: Illustration of non-overlapping 95% confidence intervals (significant differences).

> [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 and magnitude 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 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) statistical significant/nonsignificant differences for the gender and grade level

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 1,440 students completed the 2007 Iowa YRBS. Excluding the missing data (4 students), 49.1% were female and 50.9% were male. In terms of race/ethnicity, excluding the missing data, 88.3% were Caucasian, 2.5% were African-American (black), 4.2% were Hispanic/Latino, 2.6% were of multiple races, and 2.4% were classified as "all other races" (including, for example, Asian-Americans and Native American Indians). These breakdowns, all weighted percentages, were roughly comparable to the state data for high school students in 2006-07.

On the other hand, in terms of the raw percentages, Grade 9 was somewhat over-represented (443 students or 30.8%) and Grade 12 somewhat under-represented (267 students or 18.5%). This may be attributed, in part, to the following: (1) seniors had many activities in connection with graduation during the time this survey was administered that lessened their likelihood of participation and (2) sampling by classes at the second stage often tends to yield larger classes for the lower grades (e.g., 9th grade). Although weighting the data attempts to compensate and adjust for these variations from the state percentages, it could be that the seniors who did not participate in the survey were in some way(s) different from those who did and this could be have affected some of these risk assessments. Females were also somewhat over-represented (53.6%) in terms of the raw percentage. These should be considered limitations of the data, especially considering the fact that the response rate was just sufficient (60%) for weighting the data.

Results

The results of the 2007 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).

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 8-27). "Students" refers to those who participated in the 2007 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.	90.7% (963)
9. Percentage of students who never or rarely wear a seat belt when riding in a car driven by someone else.	6.8% (1,440)
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.	26.5% (1,440)
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.	12.6% (1,423)

There were statistically significant differences by gender in Question 9, where proportionately more males than females never or rarely wore a seat belt when riding in a car driven by someone else (see Figure 1, p. 4). In addition, there were statistically significant differences by grade level in Question 11, where proportionately (a) more 11th graders than 9th graders and (b) more 12th graders than 9th or 10th graders responded that they had driven a car or other vehicle in the past month when they had been drinking alcohol. (See Appendix B.)

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.	12.8% (1,424)
13. Percentage of students who carried a gun on one or more of the past 30 days.	3.9% (1,433)
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.	4.4% (1,432)
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.	4.9% (1,437)

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.*	7.1% (1,439)
17. *Percentage of students who have had property, such as their car, clothing, or books stolen or deliberately damaged on school property during the past 12 months.*	27.5% (1,439)
18. *Percentage of students who were in a physical fight one or more times during the past 12 months.*	24.0% (1,426)
19. *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.*	3.0% (1,432)
20. *Percentage of students who were in a physical fight on school property one or more times during the past 12 months.*	9.1% (1,429)
21. *Percentage of students who were ever hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend during the past 12 months.*	7.2% (1,438)
22. *Percentage of students who have ever been forced to have sexual intercourse when they did not want to.*	6.3% (1,437)

There were statistically significant differences by gender in Questions 12-14, 18, and 20 where proportionately more males than females indicated involvement in the corresponding risky behaviors, and in Question 22 where proportionately more females than males indicated such involvement. In addition, there were statistically significant differences by grade level in Questions 16-18, where (1) proportionately more 9th than 12th graders responded that they had been threatened or injured with a weapon on school property in the past 12 months, (2) proportionately more 11th than 10th graders had property stolen or damaged on school property, and (3) proportionately more 9th and 10th graders than 12th graders responded that they had been in a physical fight one or more times in the past 12 months. (See Appendix B.)

3. Suicide

Outcome	Percent (N)
23. *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.*	22.1% (1,439)
24. *Percentage of students who seriously considered attempting suicide during the past 12 months.*	12.3% (1,437)
25. *Percentage of students who made a plan about how they would attempt suicide during the past 12 months.*	9.6% (1,439)
26. *Percentage of students who actually attempted suicide one or more times during the past 12 months.*	6.7% (1,306)
27. *Percentage of students whose attempted suicide during the past 12 months resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse.*	1.7% (1,296)

On Question 23, 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 appears to be primarily due to a reduction of the level of self-reported risk in this area by female students over the past decade in Iowa (cp., Veale, January 1998). This has resulted in substantial reduction in overall percentages for this risk area since 1997 in Iowa. (See later chapter on trend results and Appendix B.)

There were no statistically significant grade level differences regarding suicide.

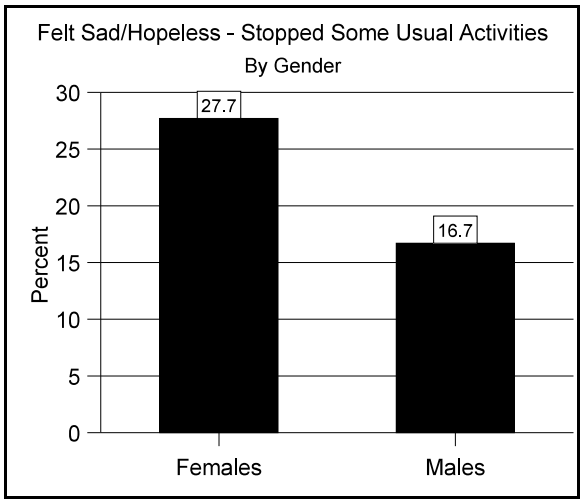

Figure 2: Percent who felt so sad or hopeless for two weeks or more in a row that they stopped doing some of their usual activities during the past 12 months, by gender.

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 28-38). "Students" refers to those who participated in the 2007 YRBS.

1. Cigarette Smoking

Outcome	Percent (N)
28. Percentage of students who ever tried cigarette smoking, even one or two puffs.	43.3% (1,426)
29. Percentage of students who smoked a whole cigarette for the first time before age 13.	10.4% (1,419)
30. (i) Percentage of students who smoked cigarettes on one or more of the past 30 days.	18.9% (1,407)
30. (ii) Percentage of students who smoked cigarettes on 20 or more of the past 30 days.	8.1% (1,407)
31. 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.	5.0% (256)
32. 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.	5.3% (204)
33. Percentage of students who smoked cigarettes on school property on one or more of the past 30 days.	4.6% (1,436)
34. Percentage of students who ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days.	11.6% (1,431)
35. Of students who were current smokers, the percentage who tried to quit smoking during the past 12 months.	57.0% (255)

There were three outcomes on which grade levels differences were statistically significant, corresponding to Questions 30 (i) and (ii) and Question 34. On Question 30 (i), the percentage of 12th graders who smoked on at least one day in the past month was significantly greater than for 9th graders. On Question 30 (ii), the percentage of 11th graders who smoked on 20 or more days in the past month was significantly greater than for 9th graders. On Question 34, the percentages of 11th and 12th grade students who ever smoked cigarettes *daily* were significantly greater than for 9th graders. (See Appendix B.)

There were no statistically significant gender differences regarding cigarette smoking.

2. Smokeless Tobacco and Cigar Smoking

Outcome	Percent (N)
36. Percentage of students who used chewing tobacco, snuff, or dip on one or more of the past 30 days.	8.1% (1,436)
37. Percentage of students who used chewing tobacco or snuff on school property on one or more of the past 30 days.	4.1% (1,434)
38. Percentage of students who smoked cigars, cigarillos, or little cigars on one or more of the past 30 days.	11.7% (1,437)

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 Question 38 about smoking cigars, cigarillos, or little cigars, proportionately more students in 12th grade were involved with those forms of tobacco than were those in 9th grade. (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.	25.5% (1,404)

Significantly more 12th graders than 9th or 10th graders used some form of tobacco in the past month. There were no statistically significant gender differences on this summary question regarding tobacco use. (See Appendix B.)

The percentages indicating involvement in tobacco use have trended downward on many of these questions. (See later chapter on trend results.)

Risk Area III: Alcohol and Other Drugs

This section contains summaries of survey data on substance abuse, including alcohol, marijuana, and other drugs including cocaine (powder, crack, or freebase forms), methamphetamines, ecstasy, inhalants, steroid pills, heroin, and intravenous drugs (Questions 39-57). "Students" refers to those who participated in the 2007 YRBS.

1. Alcohol

Outcome	Percent (N)
39. Percentage of students who had at least one drink of alcohol on one or more days during their life.	72.6% (1,422)

Outcome	Percent (N)
40. *Percentage of students who had their first drink of alcohol other than a few sips before age 13.*	18.3% (1,434)
41. *Percentage of students who had at least one drink of alcohol on one or more of the past 30 days.*	41.0% (1,357)
42. *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.*	26.1% (1,430)
43. *Percentage of students, among those reporting current alcohol use, who usually got the alcohol they drank by buying it in a store, such as a liquor store, convenience store, supermarket, discount store, or gas station during the past 30 days.*	2.4% (542)
44. *Percentage of students who had at least one drink of alcohol on school property on one or more of the past 30 days.*	3.4% (1,432)

There was a statistically significant gender difference only in Question 43, regarding purchasing the alcohol they drank from a store during the past month—4.7% of males and only 0.2% of females said they engaged in this behavior.

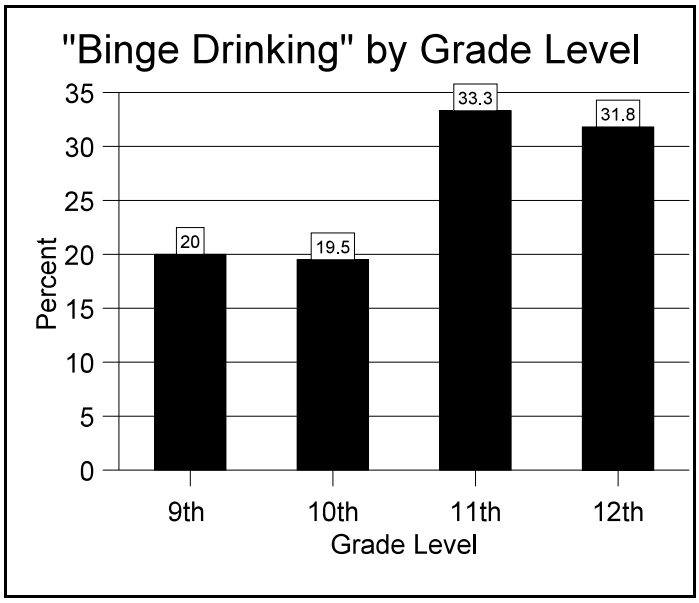

Figure 3: Percentage who engaged in "binge drinking" (5 or more drinks in about 2 hours), by grade level.

There were statistically significant grade level differences in Questions 39-42—a higher percentage of 12th graders had at least one drink of alcohol in their lives than did 9th or 10th graders; a higher percentage of 10th graders had their first drink of alcohol before age 13 than did 12th graders; a higher percentage of 12th graders had at least one drink of alcohol during the past month than did 10th graders; and a higher percentage of 11th graders engaged in "binge drinking" during the past month than did 9th graders. The result for Question 42 on binge drinking is presented in Figure 3. (See Appendix B.) The overall percentage for "binge drinking" was significantly lower than in 1997 and 2005. (See later chapter on trend results.)

2. Marijuana

Outcome	Percent (N)
45. *Percentage of students who used marijuana one or more times during their life.*	24.0% (1,417)
46. *Percentage of students who tried marijuana for the first time before age 13.*	4.4% (1,424)

Outcome	Percent (N)
47. Percentage of students who used marijuana one or more times during the past 30 days.	11.5% (1,432)
48. Percentage of students who used marijuana on school property one or more times during the past 30 days.	2.5% (1,437)

There were no statistically significant gender or grade level differences in this section.

3. Other Illegal Drugs

Outcome	Percent (N)
49. Percentage of students who used any form of cocaine, including powder, crack, or freebase one or more times during their life.	5.2% (1,437)
50. Percentage of students who used any form of cocaine, including powder, crack, or freebase one or more times during the past 30 days.	1.7% (1,436)
51. 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.	9.8% (1,438)
52. Percentage of students who used heroin one or more times during their life.	1.4% (1,437)
53. Percentage of students who used methamphetamines one or more times during their life.	3.6% (1,437)
54. Percentage of students who used ecstasy one or more times during their life.	3.0% (1,436)
55. Percentage of students who have taken steroid pills or shots without a doctor's prescription one or more times during their life.	1.8% (1,439)
56. Percentage of students who used a needle to inject any illegal drug into their body one or more times during their life.	1.1% (1,427)
57. Percentage of students who were offered, sold, or given an illegal drug on school property during the past 12 months.	10.1% (1,434)

There were no statistically significant gender or grade level differences in this section.

As with binge drinking, the percentages indicating involvement in alcohol, marijuana, and other drugs have trended downward on many of these questions. (See later chapter on trend results.)

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, and unintended pregnancies (Questions 58-64 and 85). "Students" refers to those who participated in the 2007 YRBS.

1. Sexual Activity

Outcome	Percent (N)
58. Percentage of students who have ever had sexual intercourse.	43.3% (1,410)
59. Percentage of students who had sexual intercourse for the first time before age 13.	3.7% (1,411)
60. Percentage of students who had sexual intercourse with four or more people during their life.	12.7% (1,409)
61. Percentage of students who had sexual intercourse with one or more people during the past three months.	33.6% (1,410)
62. Of students who had sexual intercourse during the past three months, the percentage who drank alcohol or used drugs before last sexual intercourse.	18.0% (456)
63. Of students who had sexual intercourse during the past three months, the percentage who used a condom during their last sexual intercourse.	66.1% (454)
64. Of students who had sexual intercourse during the past three months, the percentage who used birth control pills to prevent pregnancy before last sexual intercourse.	23.8% (437)

There were statistically significant grade level differences in Questions 58, 60, and 61—a higher percentage of 11th graders than 9th graders and a higher percentage of 12th graders than either 9th or 10th graders said they had sexual intercourse sometime in their lives, a higher percentage of 12th graders than 9th or 10th graders said they had sexual intercourse with four or more people during their lives, and a higher percentage of 11th and 12th graders than 9th or 10th graders indicated they had sexual intercourse with one or more people during the past three months. (See Appendix B.)

Most of these percentages have been fairly stable over the past decade in Iowa. The one exception was, among those who had sexual intercourse in the past three months (prior to the survey), the percentage who indicated that they had used a condom increased significantly from 1997. (See the later chapter on trend results.)

There were no statistically significant gender differences on any of the questions in this section.

2. HIV/AIDS Education

Outcome	Percent (N)
85. Percentage of students who had ever been taught about AIDS or HIV infection in school.	87.5% (1,438)

There were no statistically significant gender or grade level differences on the HIV/AIDS education question.

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 65-79). “Students” refers to those who participated in the 2007 YRBS.

1. Weight, Dieting, and Eating Disorders

Outcome	Percent (N)
65. *Percentage of students who described themselves as slightly or very overweight.*	30.8% (1,439)
Related outcome 1: *Percentage of students who are at risk for becoming overweight (at least 85th percentile but less than 95th percentile, based on body mass index).*	13.5% (1,307)
Related outcome 2: *Percentage of student who are overweight (at or above 95th percentile, based on body mass index).*	11.3% (1,307)
66. *Percentage of students who were trying to lose weight.*	45.0% (1,438)
67. *Percentage of students who exercised to lose weight or to keep from gaining weight during the past 30 days.*	59.8% (1,437)
68. *Percentage of students who ate less food, fewer calories, or foods low in fat to lose weight or to keep from gaining weight during the past 30 days.*	40.6% (1,438)
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.*	10.6% (1,437)
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.*	5.6% (1,437)
71. *Percentage of students who vomited or took laxatives to lose weight or to keep from gaining weight during the past 30 days.*	3.9% (1,437)

There were many statistically significant gender differences in this section—on Questions 66-69, all with higher percentages for female students. Proportionately more female students than male students indicated they were trying to lose weight through various means. This includes exercising, eating less or foods low in fat, and going without eating for 24 hours or more. Exercising and eating less are generally considered positive behaviors. However, *when they become obsessive*, they may be indicators of eating disorders. Going without eating for a day or longer is definitely considered a negative (risk) behavior. (See Appendix B.)

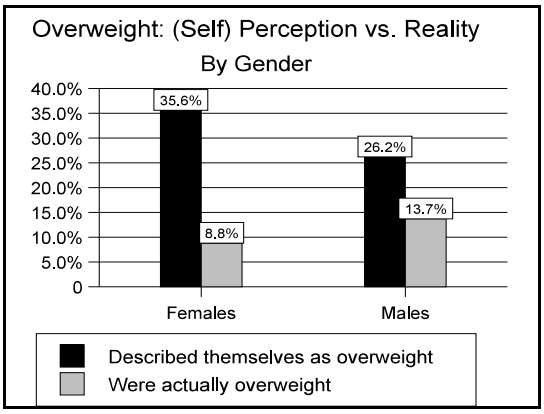

Figure 4: Percentage who view themselves as being overweight versus the percentage who are actually overweight based on body mass index, by gender.

The percentage of female students surveyed who described themselves as being overweight (35.6%) was somewhat higher than that of males (26.2%), although the difference was not quite statistically significant. Yet proportionately fewer females were actually overweight (8.8%) than males (13.7%), based on body mass index (BMI) as determined by their reported height and weight (see Figure 4). For both genders, many more perceived themselves as being overweight than were actually overweight based on their BMI.

There were no statistically significant grade level differences in this section.

The percentage indicating involvement in exercising to lose (or not gain) weight increased and the percentage who vomited or took laxatives to lose (or not gain) weight decreased over the past decade in Iowa. (See later chapter on trend results.)

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.	81.9% (1,438)
73. Percentage of students who ate fruit one or more times during the past seven days.	90.4% (1,436)
74. Percentage of students who ate green salad one or more times during the past seven days.	66.8% (1,439)
75. Percentage of students who ate potatoes one or more times during the past seven days.	77.8% (1,440)
76. Percentage of students who ate carrots one or more times during the past seven days.	51.5% (1,440)
77. Percentage of students who ate other vegetables one or more times during the past seven days.	87.4% (1,437)
Related outcome: *Percentage of students who ate five or more servings of fruits and vegetables per day during the past seven days.*	18.9% (1,433)
78. Percentage of students who drank a can, bottle, or glass of soda or pop one or more times per day during the past 7 days.	32.6% (1,439)
79. Percentage of students who drank three or more glasses of milk per day during the past seven days.	24.9% (1,438)

There were statistically significant gender differences in Questions 73, 78, and 79—proportionately more females than males ate fruit at least once, while more males than females drank (1) at least one soda or pop and (2) three or more glasses of milk per day, during the past week (see Figure 5 and Appendix B). The result on fruit consumption is a positive one, especially for females. The results for milk were more positive for males, although the percentages for both genders were low. (It should be noted that the question did not differentiate between whole milk and the more healthy lower fat varieties.) The result on (non-diet) soda/pop consumption is problematic, especially for males. These non-diet drinks are typically high in sugar and calories, and have no or little nutritional value.

There were no statistically significant grade level differences in these questions.

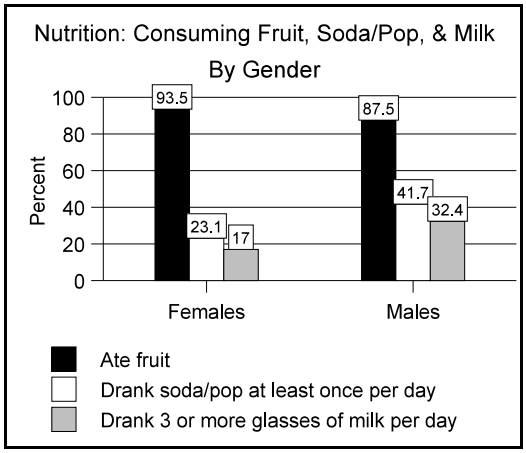

Figure 5: Percentage who (i) ate fruit and (ii) drank at least 3 glasses of milk per day, during the past week, by gender.

Risk Area VI: Physical 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 80-84). "Students" refers to those who participated in the 2007 YRBS.

Outcome	Percent (N)
80. 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.	49.9% (1,439)
81. Percentage of students who watched three or more hours of TV per day on an average school day.	24.9% (1,439)
82. 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.	16.2% (1,439)
83. Percentage of students who attended physical education (PE) class one or more days in an average school week when they were in school.	69.6% (1,434)
Related outcome: *Percentage of students who attended physical education (PE) classes daily in an average week when they were in school.*	20.0% (1,434)
84. Percentage of students who played on one or more sports teams during the past 12 months.	65.4% (1,438)

There were statistically significant gender differences in Questions 80 and 82. Proportionately more males than females (1) were physically active for at least 60 minutes per day on five or more of the past seven days and (2) 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. (See Appendix B.)

There were no statistically significant grade level differences in these questions.

Additional Health Questions: Asthma

This section contains summaries of survey data related to two questions on asthma (Questions 86-87). "Students" refers to those who participated in the 2007 YRBS.

Outcome	Percent (N)
86. Percentage of students who had ever been told by a doctor or nurse that they had asthma.	15.4% (1,437)
87. 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)	8.8% (1,430)

There were no statistically significant differences by gender or grade level on the questions relating to asthma.

1997, 2005, and 2007 Iowa YRBS: Statistically Significant Trends

Comparisons or trends on the YRBS questions from 1997 to 2007 for the three years the Iowa YRBS data were weighted (1997, 2005, and 2007) were made using logistic regression analysis, controlling for changes in distributions by sex, race/ethnicity, and grade level. These three years were the only years to date in which the Iowa YRBS data were weighted according to current criteria (minimum overall response rate of 60%). *Only outcomes for questions on which there was data on all three years were included in the table below*. The following outcomes corresponding to YRBS survey questions showed *statistically significant (linear) changes* in response (negative results shaded):

Question #	Risk Area/Outcome	1997 to 2007 Percentage Change (Signed Difference)
8-27	*I - Behaviors that Lead to Intentional or Unintentional Injuries:*	
9	Never or rarely wore a seat belt when riding in a car driven by someone else	- 5.8
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	- 13.9
11	Drove a car or other vehicle one or more times during the past 30 days when they had been drinking alcohol	- 7.6
12	Carried a weapon such as a gun, knife, or club on one or more of the past 30 days	- 5.8
14	Carried a weapon such as a gun, knife, or club on school property on one or more of the past 30 days	- 4.2
15	Did not go to school on one or more of the past 30 days because they felt they would be unsafe at school or on their way to or from school	2.2
17	Had property such as their car, clothing, or books stolen or deliberately damaged on school property one or more times during the past 12 months	- 10.8
18	In physical fight one or more times during the past 12 months	- 7.0
20	In physical fight on school property one or more times during the past 12 months	- 4.4
24	Seriously considered attempting suicide during the past 12 months	- 10.7
25	Made a plan about how they would attempt suicide during the past 12 months	- 9.0

Question #	Risk Area/Outcome	1997 to 2007 Percentage Change (Signed Difference)
26	Actually attempted suicide one or more times during the past 12 months	- 2.3
27	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	- 1.5
28-38	*II - Tobacco Use:*	
28	Ever tried cigarette smoking, even one or two puffs	- 23.6
29	Smoked a whole cigarette for the first time before age 13 years	- 9.2
30 (i)	Smoked cigarettes on one or more of the past 30 days	- 18.6
30 (ii)	Smoked cigarettes on 20 or more of the past 30 days	- 9.9
31	Among students who are current smokers, smoked more than 10 cigarettes per day on the days they smoked during the past 30 days	- 12.9
33	Smoked cigarettes on school property on one or more of the past 30 days	- 11.3
36	Used chewing tobacco, snuff, or dip on one or more of the past 30 days	- 4.7
37	Used chewing tobacco, snuff, or dip on school property on one or more of the past 30 days	- 2.5
39-57	*III - Alcohol and Other Drugs:*	
39	Had at least one drink of alcohol on one or more days during their life	- 7.3
40	Had their first drink of alcohol other than a few sips before age 13 years	- 10.6
41	Had at least one drink of alcohol on one or more of the past 30 days	- 11.1
42	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”)	- 11.4
45	Used marijuana one or more times during their life	- 10.5
47	Used marijuana one or more times during the past 30 days	- 6.0
48	Used marijuana on school property one or more times during the past 30 days	- 2.0

Question #	Risk Area/Outcome	1997 to 2007 Percentage Change (Signed Difference)
50	Used any form of cocaine, including powder, crack, or freebase one or more times during the past 30 days	- 1.8
51	Sniffed glue, breathed the contents of aerosol cans, or inhaled any paints or sprays to get high one or more times during their life	- 7.1
57	Was offered, sold, or given an illegal drug on school property by someone during the past 12 months	- 12.7
58-64 & 85	*IV - Sexual Behaviors that Can Result in HIV Infection, Other STDs, or Unintended Pregnancies:*	
63	Among students who had sexual intercourse during the past three months, used a condom during last sexual intercourse	18.5
85	Had ever been taught in school about AIDS or HIV infection	- 4.9
65-79	*V - Dietary Behaviors:*	
67	Exercised to lose weight or to keep from gaining weight during the past 30 days	5.6*
71	Vomited or took laxatives to lose weight or to keep from gaining weight during the past 30 days	- 1.1

* Quadratic change also statistically significant, due to a leveling off and reduction in the percentage on this outcome.

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 (1) did not go to school on one or more of the past 30 days because they felt they would be unsafe at school or on their way to or from school and (2) had ever been taught in school about AIDS or HIV infection*, which were addressed in Questions 15 and 85, respectively. The percentage of students who did not go to school on one or more of the past 30 days because they felt unsafe increased from 2.7% in 1997 to 4.9% in 2007.[2] The percentage of students who indicated they had been taught about HIV or AIDS decreased significantly from 92.4% in 1997 to 87.5% in 2007.

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 2007. "Binge drinking" was an important area showing improvement—the percentage of students involved in this risky behavior decreased from 37.5% in 1997 to 26.1% in 2007. The percentage of students who indicated they used marijuana was also reduced dramatically over this decade in Iowa. In fact, some degree of improvement was evidenced in all of the health risk

[2] This question was worded in such a way ("double-barreled") that it was not possible to determine how much of the problem was feeling unsafe *at school* and how much was feeling unsafe *on their way to or from school*. This question should be revised to be more diagnostic of the specific nature of the risk factor.

areas by high school students in Iowa from 1997 to 2007, except for the area of physical inactivity.[3] 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 and 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 skill building, and other programs and legislation supporting children and families in Iowa have undoubtedly contributed to some of these positive results. In terms of the dramatic improvement in the risk area of tobacco use, this 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. See, also, the "Trend Report" section of the 2007 Iowa YRBS statistical report (Centers for Disease Control and Prevention, 2007).

[3] The lack of positive (or negative) trend results for Risk Area VI (physical inactivity) was in part due to the fact that three of the five questions were revised since 1997 and thus, only two years of data were available for them.

Highlights of the 2007 Iowa YRBS

Summary highlights of the 2007 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."

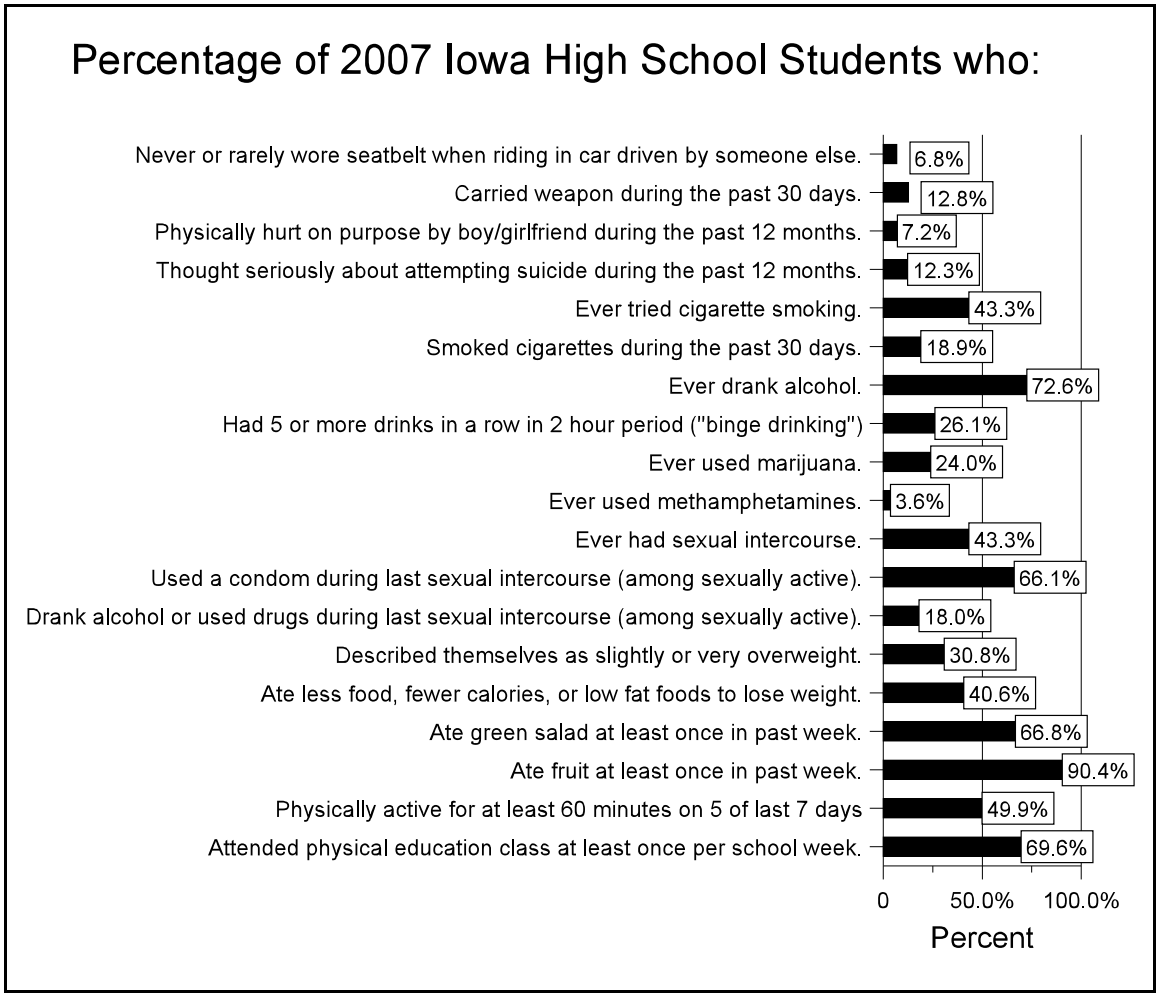

Figure 6: Highlights of the 2007 Iowa Youth Risk Behavior Survey for high school students.

Process Review of the 2007 Iowa YRBS and Recommendations for 2009

The 2007 Iowa YRBS for high schools was conducted according to strict guidelines for two-stage cluster sampling provided by Westat, Inc., a CDC contractor for the YRBS. The sample was approved and recommended procedures for administering the survey were followed. The sampling response rate was (just) sufficient for "weighting" the data. This means that the results were generalizable to all high school students in Iowa in 2007. In this chapter we review factors that may have contributed to the acceptable response rate and make recommendations for the next YRBS scheduled for 2009.

Factors Contributing to Improved Response Rate and Weighted Data in the 2007 Iowa YRBS

In recent years (1999 through 2003), we have experienced reduced school-level response to the YRBS in Iowa. There were a number of factors identified as potential causes of this trend (Veale, January 2004). This downward trend was reversed in 2005 and 2007, when the school-level response rate rebounded to just under the 1997 level (see Figure 7). Several factors contributed to this improved response rate and a successful YRBS in Iowa in those years.

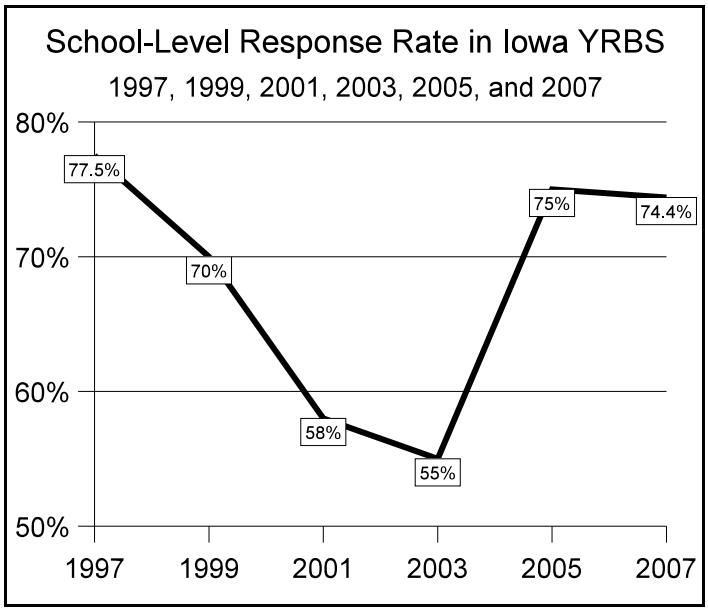

Figure 7: School-level response rate in Iowa YRBS, showing downward trend from 1997 to 2007.

The author and Sara Peterson (HIV/AIDS Education Project, Iowa Department of Education) attended a workshop conducted by Westat, Inc. in Rockville, Maryland on August 31-September 2, 2004. The purpose of this workshop was to instruct participants regarding the administration of the 2005 YRBS. In the process of the training, many helpful suggestions were provided on how to improve our response rate.

Based on ideas generated in the aforementioned workshop and internal discussions on improving the response rate, we decided to provide financial remuneration ($500) to schools that participated in the 2005 YRBS. This remuneration was also provided in the 2007 YRBS. In addition, we decided to pay each school survey administrator (typically, a school counselor or teacher) $25 for their time and effort. A third factor that helped to improve our response rate was the fact that one of the schools selected was also selected for the *national* YRBS sample in 2007. This school agreed to participate in the YRBS. The CDC allowed us to use their data from the national survey in the Iowa YRBS.[4]

[4] Schools participating in the national YRBS were also paid $500, so the financial incentive for the school was the same as for other schools in the state YRBS. Moreover, the CDC provided their own survey administrators, perhaps increasing the likelihood of participation.

The response rate would have been considerably higher if several schools who agreed to participate had been able to complete their surveys. Apparently, time got away from them and they were unable to follow through with this survey. Also, the use of active (rather than passive) permission in at least one school and other administrative factors reduced the classroom level response from our usual 85-90% to only 81%. If (1) all schools that agreed to participate had been able to complete their surveys and (2) the classroom response been typical of our past results, we would have exceeded 70% response overall.

Sampling Issues

In 2001, it was observed in Iowa that some schools were selected nearly every time in the YRBS. For example, two schools with fairly large enrollments were selected in 1997, 1999, and in 2001. This, however, did not appear to be explainable solely by an increased likelihood of selection due to large enrollments. There were several schools as large as the two aforementioned ones which were not selected in any of these three years. Moreover, there were smaller schools that were selected in at least two of the these three years.

A simulation was performed by Westat, Inc. in response to the author's concerns. Using the 2001 sampling frame, it was found that the two aforementioned large schools that appeared in the samples of all three years (1997, 1999, and 2001) would have appeared in 19 and 20 out of the 25 years of the simulation, respectively (Annie Lo, personal communication, June 6, 2001). This is an extremely high rate of involvement for any school with such a labor- and time-intensive survey. In contrast, two schools that were of comparable size occurred in only about one-fourth of the samples over the 25 years of the simulation (ibid.). It appears that once a school with large enrollment is selected it was increasingly likely to be selected again. This was considered to be a factor in the downward trend in school-level response rates in Iowa since achieving weighted data in 1997, through 2001 (see Figure 7). An alternative sampling plan, suggested by the author, was used in the 2003 Iowa YRBS (Veale, January 2004). Random sampling was employed at the first stage (school-level), as well as the second stage (classroom-level). This alleviated the aforementioned problem of certain schools being selected repeatedly in Iowa. Unfortunately, this change in sampling methodology did not reverse the downward trend in school-level response rate, although it did level off somewhat in 2003 (see Figure 7).

In 2005 we went back to the standard two-stage sampling procedure recommended by Westat, since we were coordinating our sampling process with the tobacco survey conducted by the Iowa Department of Public Health (to insure that we did not "double up" on any school) and they were using the standard sampling procedure. The aforementioned problem with repeated selection of certain schools seemed to be somewhat mitigated in 2005 and 2007. This may have been, in part, due to coordinating the sampling process with the tobacco survey.

Recommendations for the 2009 Iowa YRBS

According to the CDC, Iowa data have been weighted via current requirements three times (in 1997, 2005, and 2007)[5] since the YRBS was first conducted in the state in 1989.[6] The following are recommendations for maintaining or improving the school-level response rate in the 2009 Iowa YRBS:

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[5] 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, as stated earlier, the overall response rates were 65% and 60%, respectively.

[6] 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 current requirement of 60%.

- Increase the financial reward, to cooperating schools and/or survey administrators provided by the school or school district.
- Continue starting the survey administration process early in the spring semester of the school year to give educators a chance to budget school time to complete the survey.
- Continue to coordinate the sampling process with the tobacco survey.
- Continue to include the 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.

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 again in 2009.

Acknowledgments

The 2007 Iowa YRBS was coordinated by the Iowa Department of Education. This survey was directed by Ms. Sara Peterson of the HIV/AIDS Education Project in Nutrition, Health and Transportation Services of the Iowa Department of Education.

Thanks go to the following individuals, groups, or organizations for their support and cooperation in the conduct of the 2007 Iowa YRBS:

- Dr. Xiaoping Wang of the Iowa Department of Education for providing data on high schools in Iowa in 2006-07, which was used to draw the school-level sample for the 2007 YRBS;
- Ms. Jennifer Williams for assistance in obtaining the classroom-level samples and administering the various mailings for the 2007 YRBS, contacting schools for their participation, tracking the surveys completed, and checking and organizing the surveys for processing;
- Westat, Inc., for technical assistance, drawing the sample, survey data processing, and training;
- the Centers for Disease Control and Prevention (CDC), which provided training and funding for the project;
- Dr. Laura Kann, of the Division of Adolescent and School Health in the CDC, for technical support;
- participating superintendents, principals, teachers, and counselors of school districts for administering the surveys;
- the students who participated by completing the YRBS in 2007.

References

Centers for Disease Control and Prevention (2007). *2007 Youth Risk Behavior Survey Results: Iowa High Schools*. Statistical report prepared for the Iowa Department of Education. Atlanta, GA.

Centers for Disease Control and Prevention (August 21, 2007). Deaths: Final Data for 2004, *National Vital Statistics Reports*, Vol. 55, No. 19. Atlanta, GA.

Mangione, T. (1995). *Mail surveys: Improving the quality*. Thousand Oaks, CA: Sage Publications, Inc.

The 2008 New York Times almanac: The almanac of record (2008). New York: Penguin Group (USA), Inc.

The world almanac and book of facts 2006 (2006). New York: World Almanac Education Group, Inc.

Veale, J. (January 1998). *1997 Iowa YRBS: Youth Risk Behavior Survey (FINAL REPORT)*. Prepared for the Iowa Department of Education, Bureau of Instructional Services. Des Moines, IA.

Veale, J. (January 2004). *2003 Iowa YRBS—Youth Risk Behavior Survey: Regular High Schools (FINAL REPORT)*. Prepared for the Iowa Department of Education, Bureau of Instructional Services. Des Moines, IA.

Veale, J. (February 2006). *2005 Iowa YRBS—Youth Risk Behavior Survey: Iowa High Schools (FINAL REPORT)*. Prepared for the Iowa Department of Education, Bureau of Instructional Services. Des Moines, IA.

Veale, J. (September 2007). *Cross/comparative analyses: Iowa Youth Survey and Youth Risk Behavior Survey*. Prepared for the Iowa Department of Education, Student and Family Support Services, Division of PK-12 Education. Des Moines, IA.

APPENDIX A

The 2007 Iowa Youth Risk Behavior Survey

APPENDIX B

Table of Effective Sample Sizes

and Statistically Significant/Nonsignificant Differences

by Gender and Grade Level

Table of Effective Sample Sizes and Statistically Significant/Nonsignificant Differences by Gender and Grade Level

The total sample size—total number of students participating in the 2007 YRBS in Iowa—was 1,440. 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 63 ("The **last time** you had sexual intercourse, did you or your partner use a condom?") those responding C-H to Question 61 (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 63 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" (454 in Question 63) and correspondingly wider confidence intervals, which in turn yielded (1) reduced precision of estimation and (2) reduced likelihood of detecting significant gender or grade level differences.

Table B1: Effective sample size (N) and statistical significance (with the percentages given for each group) or nonsignificance (NS) of gender and grade level differences on the survey questions 8-87

Survey Question #	Effective Sample Size (N)	Statistical Significance (% for Each Group)/ Nonsignificance (NS)					
		Gender		Grade Level			
		Males	Females	9	10	11	12
8	963	NS		NS			
9	1,440	9.3	4.1	NS			
10	1,440	NS		NS			
11	1,423	NS		6.5	7.7	16.1	20.1
12	1,424	21.7	3.6	NS			
13	1,433	7.1	0.6	NS			
14	1,432	7.4	1.2	NS			
15	1,437	NS		NS			
16	1,439	NS		11.4	6.9	5.6	4.4
17	1,439	NS		29.7	21.3	34.4	24.7
18	1,426	29.6	18.2	30.9	26.0	22.5	16.7
19	1,432	NS		NS			
20	1,429	12.4	5.6	NS			
21	1,438	NS		NS			

Survey Question #	Effective Sample Size (N)	Statistical Significance (% for Each Group)/ Nonsignificance (NS)					
		Gender		Grade Level			
		Males	Females	9	10	11	12
22	1,437	3.5	9.3	NS			
23	1,439	16.7	27.7	NS			
24	1,437	NS		NS			
25	1,439	NS		NS			
26	1,306	NS		NS			
27	1,296	NS		NS			
28	1,426	NS		NS			
29	1,419	NS		NS			
30 (i)	1,407	NS		13.3	15.4	20.8	26.0
30 (ii)	1,407	NS		4.3	6.2	11.3	10.7
31	256	NS		-			
32	204	-		-			
33	1,436	NS		NS			
34	1,431	NS		7.2	9.5	14.2	15.5
35	255	NS		-			
36	1,436	13.8	2.0	NS			
37	1,434	7.2	0.7	NS			
38	1,437	16.2	7.0	8.2	9.0	10.5	19.0
Summary Question (smoking)	1,404	NS		20.0	19.7	27.4	34.6
39	1,422	NS		62.0	67.0	78.8	82.2
40	1,434	NS		22.0	20.5	19.6	11.1
41	1,357	NS		33.9	33.1	46.8	50.3
42	1,430	NS		20.0	19.5	33.3	31.8
43	542	4.7	0.2	NS			
44	1,432	NS		NS			
45	1,417	NS		NS			

Survey Question #	Effective Sample Size (N)	Statistical Significance (% for Each Group)/ Nonsignificance (NS)					
		Gender		Grade Level			
		Males	Females	9	10	11	12
46	1,424	NS		NS			
47	1,432	NS		NS			
48	1,437	NS		NS			
49	1,437	NS		NS			
50	1,436	NS		NS			
51	1,438	NS		NS			
52	1,437	NS		NS			
53	1,437	NS		NS			
54	1,436	NS		NS			
55	1,439	NS		NS			
56	1,427	NS		NS			
57	1,434	NS		NS			
58	1,410	NS		26.8	36.9	50.6	58.5
59	1,411	NS		NS			
60	1,409	NS		7.1	7.0	14.5	21.9
61	1,410	NS		19.5	25.9	41.5	46.9
62	456	NS		NS			
63	454	NS		NS			
64	437	NS		NS			
65	1,439	NS		NS			
Related outcome 1 (at-risk of being overweight)	1,307	NS		NS			
Related outcome 2 (overweight)	1,307	NS		NS			
66	1,438	29.9	60.5	NS			
67	1,437	50.0	69.9	NS			
68	1,438	24.9	56.8	NS			

Survey Question #	Effective Sample Size (N)	Statistical Significance (% for Each Group)/ Nonsignificance (NS)					
		Gender		Grade Level			
		Males	Females	9	10	11	12
69	1,437	6.4	14.9	NS			
70	1,437	NS		NS			
71	1,437	NS		NS			
72	1,438	NS		NS			
73	1,436	87.5	93.5	NS			
74	1,439	NS		NS			
75	1,440	NS		NS			
76	1,440	NS		NS			
77	1,437	NS		NS			
Related outcome (5 or more helpings of fruits and vegetables)	1,433	NS		NS			
78	1,439	41.7	23.1	NS			
79	1,438	32.4	17.0	NS			
80	1,439	56.9	42.7	NS			
81	1,439	NS		NS			
82	1,439	20.7	11.4	NS			
83	1,434	NS		NS			
Related outcome (attended PE class daily)	1,434	NS		NS			
84	1,438	NS		NS			
85	1,438	NS		NS			
86	1,437	NS		NS			
87	1,430	NS		NS			

Note: The "-" symbol indicates there were fewer than 100 responses in the subgroups, so statistical significance could not be determined.