

## Effective youth suicide prevention: evidence from Kentucky

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### Chapter IV

#### Methodology 3: Data source and analysis

It is claimed that 72% of all deaths among adolescents and young adults in the US is due to four causes: car accidents, other unintentional injuries, homicides, and suicide<sup>1,2</sup>. The Centers for Disease Control and Prevention (CDC) developed the Youth Risk Behavioral Surveillance System (YRBS)<sup>3</sup> to monitor priority health risk behaviors among high school students, including risk behaviors known to be related to suicide ideation, planning, and suicide attempts. A brief introduction to the survey methodology is presented in this chapter, for a more detailed discussion the reader is referred to Brener et al<sup>4</sup>.

The YRBS is a survey of a sample of students in grades 9-12 in the 50 US States and District of Columbia. The sampling frame for this sample consisted of all public and private schools catering for students in at least one of grades 9-12. A three-stage cluster sampling design was adopted to produce a nationally representative sample of students in grade 9-12 in public and private schools<sup>3</sup>.

In the first-stage 1,276 primary sampling units (PSUs) were selected consisting of counties, subareas of large counties, or groups of smaller, adjacent counties<sup>3</sup>. The 1,276 PSUs were stratified into 16 strata according to their metropolitan statistical area (MSA) status (i.e., urban city) and the percentages of black and Hispanic students in the PSUs<sup>3</sup>. From the 1,276 PSUs, 57 were sampled with probability proportional to overall school enrolment size for the PSU.

Sampling of schools and students was carried out in stage two and three<sup>3</sup>. In the second stage of sampling, 194 schools with any of grades 9–12 were sampled with probability proportional to school enrolment size. The third stage of sampling consisted of random sampling in each of grades 9–12, one or two classrooms from either a required subject (e.g., English or social studies) or a required period (e.g., homeroom or second

period). All students in sampled classes were eligible to participate. Schools, classes, and students that refused to participate were not replaced<sup>3</sup>.

A self-administered questionnaire during a class period was used for data collection. This process included data collection under the US's data protection and privacy laws including obtaining parental consent<sup>3</sup>.

Information about the reliability of the standard questionnaire has been published elsewhere<sup>5</sup>. The standard and national YRBS questionnaires are available at [http://www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm).

Data were analysed as follows<sup>3</sup>:

“Statistical analyses were conducted on weighted data using SAS<sup>6</sup> and SUDAAN<sup>7</sup> software to account for the complex sampling designs. Prevalence estimates and confidence intervals were computed for all variables and all data sets. In addition, for the national YRBS data, t tests were used to determine pairwise differences between subpopulations<sup>8</sup>. Differences between prevalence estimates were considered statistically significant if the t test p value was <0.05 for main effects (sex, race/ethnicity, and grade) and for interactions (sex by race/ethnicity, sex by grade, race/ethnicity by sex, and grade by sex). In the results section, only statistically significant differences in prevalence estimates are reported in the following order: sex, sex by race/ethnicity, sex by grade, race/ethnicity, race/ethnicity by sex, grade, and grade by sex. To identify long-term temporal changes in health-risk behaviors nationwide, prevalence estimates from the earliest year of data collection to 2011 for each variable assessed with identically worded questions in three or more survey years were examined. Logistic regression analyses were used to account for all available estimates; control for sex, grade, and racial/ ethnic changes over time; and simultaneously assess orthogonal linear and quadratic time effects<sup>8</sup>.”

As described above, YRBS data are publically available through Youth Online<sup>1</sup>. Youth Online is a data tool that allows national and state-level analysis, including by race/ethnicity, gender, grade, and health topics. Youth Online allows comparison between two groups or two time periods, provides a p-value from a t-test to determine if the percentage of students engaged in a particular risky behavior is significantly different between the two groups/time points, and offers an interpretation of the test results at level of significance  $\alpha=0.05$ . For this paper, the percentage of Kentucky High School Students (KyHSS) engaged in a specific risky behavior in 2013 is compared to the percentages reported for 2011 in order to identify areas of improvement as well as areas where more work is needed in the coming years. KyHSS were also compared with U.S. HSS in 2013.

Significant gender-specific differences on given questions were highlighted. The readers can find complete data on the youth risk behavior survey by querying Youth Online

(<http://nccd.cdc.gov/YouthOnline/>).

Using YRBS data, the objectives of this study were to assess recent changes, 2011-2013, in prevalence of suicide-related risk behaviors among Kentucky High School Students (KyHSS), to assess how the KyHSS compared to their U.S. peers, and to identify areas where state and local interventions are needed to reduce the suicide risk among KyHSS. The results of this comparative study are presented in the next chapter.

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