

## Trend Analysis Report Documentation

**Purpose** The Trend Analysis Report describes whether the prevalence of each behavior has increased, decreased, or stayed the same over time overall and by sex, and race/ethnicity.

**Example**

2012 YOUTH RISK BEHAVIOR SURVEY RESULTS																										
Metropolis High School Survey																										
Trend Analysis Report																										
Total Injury and Violence	Health Risk Behavior and Percentages											Linear Change <sup>*</sup>	Quadratic Change <sup>*</sup>	Change from 2010-2012 <sup>†</sup>												
	1991	1993	1995	1997	1999	2001	2003	2005	2007	2008	2010				2012											
QN10: Percentage of students who rode one or more times during the past 30 days in a car or other vehicle driven by someone who had been drinking alcohol													24.7	21.1	18.9	Decreased, 2008-2012	Not available <sup>‡</sup>	No change								
QN14: Percentage of students who carried a gun on one or more of the past 30 days													9.5	5.8		3.5		3.6	5.3	6.0	Decreased, 1993-2012	Decreased, 1993-1999 No change, 1999-2012	No change			
QN15: 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													13.1	9.7		7.2					5.6	8.1	6.4	Decreased, 1993-2012	Decreased, 1993-1999 No change, 1999-2012	No change
QN16: Percentage of students who 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													9.2	7.1		5.7					5.5	5.1	3.9	Decreased, 1993-2012	No quadratic change	No change

<sup>\*</sup>Based on trend analyses using a logistic regression model controlling for sex, race/ethnicity, and grade, p < 0.05.  
<sup>†</sup>Based on t-test analysis, p < 0.05.  
<sup>‡</sup>Not enough years of data to calculate.

**Inclusion Criteria** Sites with weighted data in 2013 and at least one other year since 1991 receive the Trend Analysis Report. All variables calculated from the 2013 standard questions and site added questions that have been asked in at least one previous survey are included in this report. In addition, all weighted survey years are included for each variable unless the question(s) that variable is based on was not asked in one of the weighted survey years. In those cases, only data from 2013 back to that point will be included in this Trend Analysis Report.

For example, if a site has weighted data in 2005, 2007, 2009, 2011, and 2013, the site will get a Trend Analysis Report. The report will include all 2013 variables based on question(s) asked in at least one previous survey.

However, if a question was asked in 2005, 2009, 2011, and 2013, but not in 2007 then trend analyses for the variable(s) based on that question will only be conducted on the 2009, 2011, and 2013 data. The 2005 data will not be used in the trend analysis because this question was not used in 2007.

**Content**

The Trend Analysis Reports contain the following columns:

<b>Column</b>	<b>Content</b>
Health Risk Behavior and Percentage	All variables calculated from standard questions and site added questions. Variables are grouped by risk behavior category. Variables based on site added questions are listed after the variables based on standard questions.  Prevalence estimates for each variable for each year used in the trend analyses.  Note: A blank in this column signifies that weighted data were not available, that the question was not asked, or that fewer than 100 students responded or were included in the analysis.
Linear Change	Indicates whether there was a statistically significant linear change in the prevalence over time and the years during which the linear change occurred. That is, did the prevalence increase, decrease, or stay the same? At least two years of data are required to test for a linear change.
Quadratic Change	Indicates whether there was a statistically significant quadratic change in prevalence over time and the years when both components of the quadratic change occurred. At least 6 years of data are needed to test for a quadratic change “Not available” in this column indicates there are less than 6 years of data.
Change from 2011-2013	Indicates whether there was a statistically significant increase or decrease in prevalence between 2011 and 2013. That is, did the prevalence increase, decrease, or stay the same?

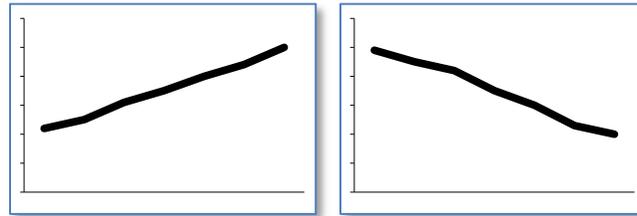
**How to Interpret the Trend Analysis Report**

Linear and quadratic changes occur independently of each other. It is possible to have one, both, or neither. One is not better or worse than the other. There are four possible combinations of linear and quadratic changes.

**Linear change = YES; Quadratic change = NO**

If there is a linear change but no quadratic change, then the prevalence either

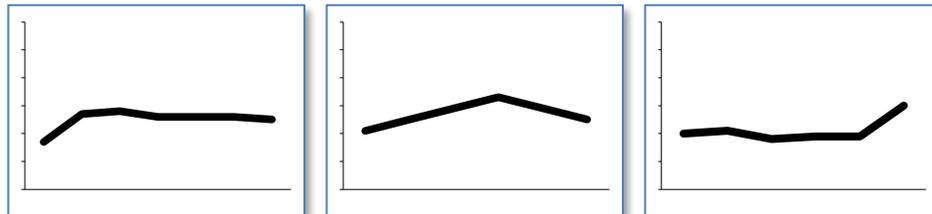
increased linearly (Graph A) or decreased linearly (Graph B) significantly over time. A graph of the trend line will be relatively straight.



Graph A Graph B

**Linear change = NO; Quadratic change = YES**

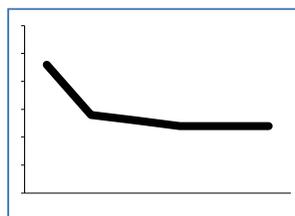
If there is no linear change but there is a quadratic change, then the prevalence increased or decreased slightly over time, but not enough to be a significant linear change, and then leveled off (Graph C); the prevalence increased or decreased and then went in the opposite direction (Graph D); or the prevalence started out level and then increased or decreased over time, but not enough to be a significant linear change (Graph E). A graph of the trend line will have a bend in it. This report refers to the year when the bend occurs as the “inflection point”.



Graph C Graph D Graph E

**Linear change = YES; Quadratic change = YES**

If there is a linear change and a quadratic change, then while there was an overall significant increase or decrease in prevalence over time, the prevalence has either leveled off or begun to move in the opposite direction (Graph F). A graph of the trend line will have a bend in it.

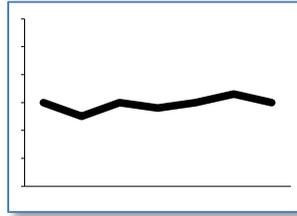


Graph F

**Linear change = NO; Quadratic change = NO**

If there is neither a linear change nor a quadratic change, then there was no

significant change in the prevalence over time. A graph of the trend line will be relatively flat (Graph G).



Graph G

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#### Notes

The analyses in the Trend Analysis Report are run using SUDAAN and Joinpoint statistical software.

SUDAAN logistic regression analysis is used to test for linear and quadratic changes. The regression models control for changes in distributions by sex, race/ethnicity, and grade in the populations and assess linear and quadratic time effects. Logistic regression analysis uses all available years of data. It does not consider only the oldest and the most recent data points. Logistic regression analysis provides an appropriate test of change over long periods of time.

When SUDAAN detects a quadratic trend, Joinpoint is used to determine the inflection point. That is, the year the “bend” occurs. Then SUDAAN is used again to test for linear trends on either side of the inflection point. The result for each of these tests is reported in the Trend Analysis Report.

SUDAAN t-test analysis is as used to test for changes between 2011 and 2013.

Special care should be used in interpreting trend analysis results for variables with very low prevalence. Trend analyses can be sensitive to the small number of students in the numerator. See [Interpretation of YRBS Trend Data](#) on the [YRBS website](#) for more information on interpreting trend analysis data.

See [Software for Analysis of YRBS Data](#) on the [YRBS website](#) for more information about analyzing YRBS data.

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