Adolescent Depression and Suicidality in the USA: A Look at YRBS Profiles and Health Risk Behaviors as Predictors in the Past 10 Years

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ABSTRACT

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Depressed mood is one of the most common of all psychiatric symptoms occurring in children and adolescents. Population studies suggest a point prevalence of between 10 to 15% of children and adolescents having symptoms of depression. Further, depressed adolescents are also significantly more apt to demonstrate suicidal ideation accompanied by a concomitant sense of helplessness and hopelessness. The overall aim of the study was to identify and characterize profiles of depression and suicidal behavior within the adolescents of the USA in the past 10 years. This study utilized epidemiological, cross-sectional, data from the Youth Risk Behavior Surveillance System (YRBSS), a biennial census that monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth. Latent classes of the indicators were generated utilizing latent class regression modeling. Predictors were then regressed on class membership in a multinomial logistic regression simultaneously to assess significance. Finally, a juxtaposition of the profiles and significant predictors followed to allow for observation of differences in number of profiles and other qualities (i.e., proportions of sample in each class, etc.) as well as to visualize and note "carryover" predictors across the past 10 years. Findings revealed a relatively stable pattern of profiles and predictors over the years with the exception of 2015. In the analysis of demographic variables, membership of the "*low-risk non-depressed*" class was consistently or more frequently associated with being male, older, not of an ethnic minority, and non-ethnically bi-or multiracial, across all time points. Three clusters of behaviors and factors emerged as significant predictors of depressed mood and

suicidality. The first cluster consisted of typical adolescent risk behaviors that includes delinquent behaviors (i.e., fight, weapon carrying, or use of over-the-counter drugs), smoking, alcohol use, as well as consensual (non-violent) sexual activity. The second cluster of predictors that was significant consisted of experiences of traumatic events such as bullying, sexual assault, and intimate partner violence. Finally, a third cluster that showed significance consisted of self-destructive behavior such as the use of illicit or hard drugs and maladaptive dieting, restricting or purging behavior. Several protective factors such as having sufficient physical activity and getting at least 8 hours of sleep daily also emerged as significant. Limitations to the YRBS and this study were discussed, and recommendations that tie to the implications of the findings were proposed. Future directions for research were also presented in light of the limitations of the study.

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Chapter I: Introduction and Background

Overall purpose of the study

The overall aim of the proposed study is to identify and characterize symptom profiles of depression and suicidal behavior within the adolescents of the USA in the past 10 years, and investigate factors that may potentially affect any change in trends. This will be achieved through analyzing national epidemiological, cross-sectional, data from the Youth Risk Behavior Surveillance System (YRBSS), a biennial census that monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth, including behaviors that contribute to unintentional injuries and violence; sexual behaviors related to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use unhealthy dietary behaviors; and insufficient physical activity. The survey (Youth Risk Behavior Survey [YRBS]) is implemented at multiple levels of the education system with the national school-based survey conducted by the Center for Disease Control and Prevention (CDC); and state, territorial, tribal, and local surveys conducted by state, territorial, and local education and health agencies and tribal governments (Kolbe, Kann & Collins, 1993). Additionally, the proposed study aims to identify relevant policies that may have affected the identified trends over the years through a systematic review of mental health, education, and youth-targeted policies implemented in the past 10 years. Specifically, the proposed study has three aims: 1) to identify and characterize symptoms profiles of depressed mood and suicidal behavior in adolescents aged 12 to 17 in the years 2007, 2009, 2011, 2013, and 2015; 2) to investigate the correlates and cross-sectional predictors of the different profiles over the years; and 3) to descriptively compare trends of the profiles over time, as well as the correlates that may vary across the 10 years.

Adolescent depression in the USA

Depressed mood is one of the most common of all psychiatric symptoms occurring in children and adolescents. Population studies suggest a point prevalence of between 10 to 15% of children and adolescents having symptoms of depression (Smucker *et al*, 1986). Several other studies have suggested a lifetime prevalence of elevated depressive symptoms to range from 15% to 20% in adolescents (Merikangas *et al.*, 2010; Anderson and McGee, 1994; Fleming and Offord, 1990; Kashani *et al.*, 1987a,b; Lewinsohn *et al*., 1986, 1994), and going up to as high as 25% in high school students (Lewinsohn *et al*., 1993a). This estimated prevalence rate for depressed mood and depressive symptoms in adolescents is comparable with the lifetime rate of MDD found in adult populations, suggesting that the conversion into clinical depression in adults often begins in adolescence (Merikangas, Nakamura & Kessler, 2009; Kessler *et al*., 1994a; Lewinsohn *et al*., 1986, 1993a,b). Additionally, 20% to 40% of children with elevated depressive symptoms or diagnosed clinical depression often recover and then relapse within 2 years, and 70% will do so by adulthood (Kovacs *et al.*, 1994; Lewinsohn *et al*., 1994).

It is important, however, to note the distinction between depressed mood from clinical depression. While depressed mood is associated with feelings of unhappiness or sadness which may last a couple of hours or possibly days, symptoms that last over a period of 2 or more weeks and are associated with other symptoms that interfere with daily living would then be typically seen as symptoms of clinical depression (Paxton *et al.*, 2007). Given that depressed mood can commonly lead to clinical depression (Teasdale, 1983), it is therefore important to examine the indicators of depressed mood and its correlates such as suicidal behavior and health risk behaviors (HRB) when investigating mental health characteristics in adolescents.

Looking at suicidality in conjunction with depressed mood

Adolescent suicide is often devastating for families and communities, and represents a significant and preventable loss of life (Jiang, Perry & Hesser, 2010). When looking at adolescent depressed mood, it is important to also look at suicidality as a significant correlate. Past studies have found depressed adolescents, when compared to adults, to demonstrate a more variable course, exhibiting more interpersonal difficulties, and being more likely to overeat and under-sleep. Adolescents with depressed mood are also significantly more apt at demonstrating suicidal ideation accompanied by a concomitant sense of helplessness and hopelessness (Simeon, 1989; Harrington 1989; Kaufman, Martin & Charney, 2001). In the United States, suicide accounts for 12% of all deaths among youths and young adults aged 10 to 24 years (Eaton *et al.*, 2008) and ranks as the fourth leading cause of death among adolescents (The National Center for Chronic Disease Prevention and Health Promotion, 2009). In 2007, the YRBS results indicated 28.5% of high school students reported being sad or having hopeless feelings, 14.5% having seriously considered attempting suicide, 11.3% having made a plan about suicide, 6.9% having attempted suicide, and 2.0% having attempted a suicide that resulted in an injury needing treatment by a doctor or nurse (Eaton *et al.*, 2008). Significantly, attempts are much more common than completed suicides among youths by a ratio of as much as 150 to 1 (Chatterji *et al.*, 2004).

As such, arguments have been made for the necessity to increase public awareness of adolescent suicide and risk factors, identify at-risk youths, and provide appropriate mental health services to them. In recent research, studies have typically used a variety of indicators to assess suicide risk. While many published papers have examined relationships between specific suicide indicators and various predictors by using multiple logistic regression models (Witte *et al.*, 2008; Dunn *et al.*, 2008; Whetstone, Morrissey, & Cummings, 2007), results often show a considerable

overlap between individual suicide indicators which tend to confound the inferences made of the predictors since they are often correlated with one another (Jiang, Perry & Hesser, 2010).

Chapter II: Literature Review and Aims

Trends of depression in adolescents

Given the risk of depression significantly increasing during transition into adolescence (Merikangas *et al.*, 2010), there have been longitudinal studies looking at the trends of mental health in the nation. With studies and reports having shown increased antidepressant medication use by adolescents before the Food and Drug Administration (FDA) 2003 black-box warning (Olfson, Marcus & Druss, 2008; Zito *et al.*, 2003) and indirect evidence of increased lifetime prevalence of major depressive disorder in successive birth cohorts (Kessler *et al.*, 2003), there have been more concerns about the increasing prevalence of depression among adolescents. However, there is still little direct information on national trends in prevalence of depression in adolescents and young adults.

Looking at trends of depression in other industrialized countries, we find studies providing a range of mixed results depending on the availability of census and epidemiological information in those countries (Collishaw, 2015). Although an increasing trend over the past 3 decades was found with studies based on rating scales of depressive symptoms (Mojtabai, Olfson, & Han, 2016), a 2006 meta-analysis of 26 epidemiologic studies on rates of current depressive disorder among adolescents found no significant change between the mid-1960s and mid-1990s (Jane Costello, Erkanli, & Angold, 2006). Interestingly, a more recent study by Olfson, Druss, and Marcus (2015) that assessed general trends of mental health (without specific examination of disorders) based on parent reports found that the prevalence of severe impairment among US adolescents from 1996–1998 to 2010–2012 was declining.

Given the mixed results of trends of mental health in recent studies and the lack of studies that looked at trends of depressed mood in adolescents in the past 10 years and its comorbidity

with suicidality, a strong argument to examine temporal trends in prevalence of depression among young people can be made. Such an examination would have implications for evaluating whether young poeple have benefited from increasing use of mental health treatments (Haro *et al.*, 2006) and inform community efforts to improve access to mental health services for young people (Mojtabai, Olfson, & Han, 2016).

Constructs and variables of interest as correlates of depression and suicidality

Gender differences. When examining depressed mood in adolescents, sociodemographic variables that often affect the profiles of the population should be taken into account. In adolescents, the female-to-male ratio for depressed mood is approximately 2:1, paralleling the ratio reported in adult clinical depression (Fleming and Offord, 1990; Kessler *et al.*, 1994a; Lewinsohn *et al.*, 1994). While the nature of this sex difference needs further investigation, it has been attributed to genetics, increased prevalence of anxiety disorders in females, biological changes associated with puberty, cognitive predisposition, and socio-cultural factors (Breslau *et al.*, 1995; Reinherz *et al.*, 1989; Rutter, 1991). In a systematic review of studies on adolescent depression and its covariates, Hoeksema and Girgus (1994) showed that girls appeared to develop more risk factors for depression than boys before adolescence, commonly compounded with having to face more new challenges in early adolescence – and hence these two factors combined generated the gender differences in depression beginning in early adolescence. More recent studies such as one by Hankin, Mermelstein & Roesch (2007), presented similar findings in that girls reported more depressive symptoms and stressors in certain contexts (e.g., interpersonal) than boys. They concluded that sex differences in depression can be partially explained by girls reporting more stressors, especially peer events and the observation of girls reacting more strongly to stressors in the form of depression.

Relatedly, Jiang, Perry and Hesser (2010) found that female students were twice as likely as male students to consider and plan suicide and 3 times as likely to both plan and attempt suicide, although they were less likely to attempt suicide without forethought. Other studies have also found that while male adolescents were more likely to have completed suicide, female adolescents were more likely to think about, plan and attempt suicide (Eaton *et al.*, 2005; Chatterji *et al.*, 2004). Additionally, some evidence suggests that female adolescents who attempted suicide were more likely than male adolescents to have family dysfunction, low self-esteem, anxiety disorders, and a history of sexual abuse; while boys who attempted suicide were more likely than girls to report chronic stress, alcohol problems, and financial problems (Chatterji *et al.*, 2004). Some studies of health risk behaviors also demonstrated that while girls were less likely than boys to engage in high-risk behaviors, those who did tended to be more vulnerable to depression, suicidal ideation, and suicide attempt (Hallfors *et al.*, 2004). In a more recent study, Mojtabai, Olfson, and Han (2015) found that in their sample of 172,495 adolescents, those with depression were more likely to be girls, with the trend being similar in their study of depression in young adulthood comprising of 178,755 young adults.

Ethnocultural differences. Several studies in the past have suggested that adolescents belonging to an ethnic minority report greater levels of depressive symptoms (Emslie *et al.*, 1990; Schoenbach *et al.*, 1982). In one study, Weinberg and Emslie (1987) found that Anglo Americans had the lowest rates of depression on both the BDI and the Weinberg Screening Affective Scale (WSAS), with African Americans having intermediate rates, and Mexican Americans having the highest rates. Another study comparing symptom levels of Anglo, African, Mexican origin, and other Hispanic Americans in a national sample of adolescents using a 12-item version of the CES-D found that Mexican origin adolescents reported more depressive

symptoms than adolescents of other origins (Roberts & Sobhan, 1992). Attempting to replicate the findings, Roberts and Chen (1995) examined depressive symptoms and suicidal ideation among Anglo and Mexican origin adolescents, and found that minority adolescents reported significantly more symptoms of depression and thoughts of suicide than their Anglo counterparts. A more recent study by Roberts, Roberts and Chen (1997) found prevalence rates for depression were as high as 6.6% for those of Mexican descent. The study suggested that African and Mexican American youths had significantly higher rates of depression, with Mexican American youths having significantly elevated risk for depression, both with or without impairment (Roberts, Roberts & Chen, 1997). Additionally, some studies have also suggested that language and acculturation, particularly acculturative stress, affect the risk of depression and suicidal behaviors independent of ethnic status (Roberts & Chen, 1995; Vega, Gil, Zimmerman, & Warheit, 1993).

In 2002, Hjern, Lindblad and Vinnerljung (2002) showed that youths from immigrant families were at greater risk of engaging in risk behaviors. Their study on immigrants in Sweden showed that children from immigrant families were more likely to die from suicide, to attempt suicide, to be admitted for a psychiatric disorder, to abuse drugs or alcohol, or to commit a crime. Further, findings by Jiang, Perry and Hesser (2010) utilizing the YRBS data indicated that immigrant status might be a risk factor for depressed mood and suicide among public high school students. More recently, a study by Stein and colleagues (2016) found that African American and Latino youth who experienced increases in perceived peer discrimination reported greater depressive symptoms over time. They also found that in general, perceived ethnic/racial discrimination appeared to play a significant role in the development of depressive symptoms for ethnic minority youth.

SES and academic performance. In 2003, Goodman, Slap and Huang (2003) showed that SES has a broad and important influence on health across the population. Their study suggested that lower household income and lower parental education each were associated with approximately one third of depression and obesity in a national sample (Goodman, Slap & Huang, 2003). They, like other researchers before them, also posited that separate components of SES, such as income and education, may act through different pathways to produce health differentials – with education levels relating more to differences in coping styles and other interpersonal skills, such as communication and income being more strongly associated with material goods and services (Adler & Ostrove, 1999; Goodman & Huang, 2001; Duncan & Magnuson, 2003; Goodman, Slap & Huang, 2003). Additionally, Richardson *et al.* (2005) reported that students with low academic performance had a higher suicide rate than all other students, and concluded that perceived low academic performance was an indicator of risk for attempted suicide in adolescents. Further, a more recent study by Jiang, Perry and Hesser (2010) found a significant correlation between low grades ("C"s; and "D"s and "F"s) and considering and planning suicide as well as planning and attempting suicide.

Sexual orientation. Theories in the past posited that students who are gay, lesbian, bisexual, or "unsure" frequently encounter social and environmental situations that contribute to suicide and suicide attempts, including prejudice, discrimination, harassment, alienation, isolation, victimization, stress associated with sexual orientation, limited support structures, HIV/AIDS, drugs, and alcohol (Millard, 1995; Miller *et al.*, 1999). A study by Pinhey and Millman (2002) using Guam's 2001 YRBS data found that same-sex orientation was associated with a greater risk of suicide attempt, especially for males. The YRBS data in 2003 also indicated that sexual minority youths were 2 to 3 times more likely than heterosexual youths to

attempt suicide, and suggested that internalized homophobia and fear of rejection often lead to depression, anxiety, and substance use and other high-risk behaviors (The Rhode Island Task Force for Lesbian, Gay, Bisexual, Transgender, Queer and Questioning Youth, 2006). Further, the more recent study by Jiang, Perry and Hesser (2010) conformed with findings from other previous studies, indicating that gay, lesbian, bisexual, or unsure students were more likely associated with depressed mood and suicidal behaviors (Pinhey & Millman, 2004; Silenzio *et al.*, 2007; Russell & Joyner, 2001). More recently, a study by Ybarra, Mitchell, Kosciw, and Korchmaros (2015) also found rates of recent suicidal ideation to be higher for bisexual youth compared with heterosexual youth, and that the difference persisted even when other factors are taken into account.

A recent meta-analytic study by Lucassen and colleagues (2017) examining studies that reported depressive symptom data or the prevalence of depressive disorder in population-based samples of adolescents (which included sexual minority youth and heterosexual young people) found that sexual minority youth reported higher rates of depressive symptoms and depressive disorder in comparison to heterosexual young people. While they also found that female sexual minority youth were more likely to report depressive symptoms when compared to male sexual minority youth, they concluded that there was robust evidence that rates of depressive disorder and depressive symptoms are generally elevated in sexual minority youth in comparison to heterosexual young people.

Unsafe feelings, interpersonal difficulties, and bullying. In addition to being a sexual minority, feelings of being unsafe due to other reasons was also significantly associated with suicidal behavior and depressed mood (Jiang, Perry & Hesser, 2010). Furthermore, the association between bullying and depressed mood is notable in adolescents, with those who

report being involved in bullying experiencing depressed mood more frequently than those not involved (Saluja *et al.*, 2004). Additionally, adolescents who report depressed mood or have a diagnosis of clinical depression tend to experience interpersonal difficulties with peers and are also more likely than others to be involved in physical fights (Brooks *et al*, 2002; Shaffer & Craft, 1999).

More recently, a study by Ybarra, Mitchell, Kosciw, and Korchmaros (2015) that examined 5,542 13- to 18-year-olds youth from a national online survey found that the odds of suicidal ideation twice as high for youth who were victims of bullying and peer harassment than for non-victims, and also higher for victims of bullying than of peer harassment. This finding also corresponds with an earlier study by Bauman, Toomey, and Walker (2013) utilizing the YRBSS data that found high school students' experiences with traditional bullying and cyberbullying to be associated with suicidal behaviors. Their findings revealed that traditional bullying and victimization were stronger predictors of suicidal thoughts, plans, and attempts than cyberbullying and victimization. Interestingly, they also found that cyber victimization was strongly related to depression, which in turn was associated with suicide attempts, particularly for females. This association may be due to cyberbullying having increased more dramatically among girls than boys (Kessel Schneider, O'Donnell, & Smith, 2015). Furthermore, problematic mobile phone use among young people that may lead to cyberbullying has also been linked to depressed mood (Augner & Hacker, 2012).

Sexual activity and forced sexual intercourse. In 2006, Clements-Nolle, Marx and Katz (2006) found that forced sexual intercourse was a predictor for suicidal behaviors among transgender persons. Later, Andover, Zlotnick and Miller (2007) showed that childhood physical and sexual abuse were both associated with later suicide attempts. These findings corroborated

with earlier findings by Laederach *et al.* (1999) and Silverman *et al.* (1996) that suggested sexual abuse in childhood was a main risk factor for suicide in late adolescence and early adulthood. Jiang, Perry and Hesser's (2010) study only confirmed the findings of the previous studies, identifying that students physically forced to have sexual intercourse were significantly more likely to endorse depressed mood and suicidal behavior.

A more recent study by Anderson, Hayden, and Tomasula (2015) utilizing only the 2009 and 2011 YRBS data looking at forced sexual intercourse and suicidal behavior found elevated risk for suicide among all adolescents reporting sexual assault regardless of gender. They also noted that in both the years examined, at least one quarter to over a third of all adolescents reporting sexual assault had attempted suicide in the 12 months prior to the YRBS survey. Their finding of elevation of suicidal risk in adolescents who have experienced sexual assault was consistent with previous studies such as those by Tomasula, Anderson, Littleton, and Riley-Tillman (2012), Rhodes et al. (2011), as well as by Olshen, McVeigh, Wunsch-Hitzig, and Rickert (2007). Additionally, Kosunen and colleagues (2003) also found that depressed mood was associated with an increased number of sexual partners and nonuse of contraception at the most recent sexual intercourse.

Body image and perceptions of being overweight. As depression is tied to low self-esteem and self-perception, overweight children who often feel isolated or discriminated against in social situations may be associated with higher chances of depression (Judge & Jahns, 2007). Previous studies have shown that overweight adolescents were more likely to have higher rates of depressed mood and low self-esteem (Judge & Jahns, 2007; Taras & Potts-Datema, 2005) and that negative body image or weight dissatisfaction were both associated with depression, anxiety, and low self-esteem (Xie *et al.*, 2006). Another study by Whetstone *et al.* (2007) that utilized

YRBS data also showed that middle school students who perceived themselves to be overweight were more likely to report suicide ideation and attempts. The results also indicated that girls were more likely than were boys to perceive themselves as overweight, to report more body dissatisfaction, and to be concerned about their weight (Whetstone *et al.*, 2007). Furthermore, Jiang, Perry and Hesser's (2010) study also showed significantly stronger associations between perceived overweight and depressed mood and suicidal behavior.

A more recent study by Voelker, Reel and Greenleaf (2015) found that weight status directly affected psychological outcomes. Additionally, they also found that childhood overweight and current BMI had direct effects on body image dissatisfaction, which went on to have a direct effect on depressive symptoms. Their findings corroborated with another study by Hunger and Major (2015) showing that perceived weight discrimination mediated the relationship between BMI and poor psychological health.

In looking at this link between depressed mood and being overweight, it is also important to note that depressed adolescents are at increased risk for the development and persistence of obesity during adolescence. A prospective cohort study of adolescents in grades 7 through 12 (through the National Longitudinal Study of Adolescent Health) found that having depressed mood at baseline independently predicted obesity at follow-up a year later, even after controlling for typical demographic and socioeconomic covariates (Goodman & Whitaker, 2002). Interestingly, another longitudinal study of a birth cohort of children born New Zealand not only found that depression in late adolescence is associated with later obesity, but that depressed late adolescent girls were at a greater than 2-fold increased risk for obesity in adulthood compared with their nondepressed female peers (Richardson *et al.*, 2003).

Smoking and substance use. A community study on adolescents found that adolescents who exhibited depressed mood were reported to have a higher daily smoking of cigarettes, weekly use of alcohol, and a higher likelihood of lifetime use of illicit substances (Armstrong & Costello, 2002). Further, Hallfors *et al.* (2004) found that involvement in any smoking or drinking activity was also associated with significantly increased likelihood of depression, suicidal ideation, and suicide attempts. Additionally, older studies such as one by Swedo *et al.* (1991) suggested that adolescents who were either planning or attempting suicide were more likely to smoke, drink, or use drugs compared to the not-at-risk adolescents. Kelder *et al.* (2001) also found a significant association between smoking and symptoms of poor emotional health in minority race/ethnicity middle school students. Similarly, Jiang, Perry and Hesser's (2010) study found that cigarette smokers were indicated to have significantly higher odds of having depressed mood coupled with suicidal planning and/or attempt.

More recently, a systematic review by Fluharty and colleagues (2016) found mixed evidence of the directionality of association between smoking variables and depressive symptoms. Their findings showed a range of evidence for positive associations in both directions (smoking to later mental health and mental health to later smoking) with nearly half the studies having reported that baseline depression/anxiety was associated with some type of later smoking behavior, while over a third having found evidence that a smoking exposure was associated with later depression/anxiety. However, despite the lack of conclusive evidence on the directionality of these associations, it is still notable that there was a general confirmation of the association between smoking and depressive symptoms.

Further, using the National Longitudinal Study of Adolescent to Adult Health, Wilkinson, Halpern and Herring (2016) found that depressive symptoms were associated with increases in later smoking frequency for females and marijuana use frequency for males. They also found

that smoking frequency was also associated with later increases in depressive symptoms for both males and females, with the relationship being stronger for females. The authors postulated that this association exists perhaps due to cigarettes having been linked with increases in positive affect and decreases in negative affect, both of which are implicated in depression and which have been shown in other studies as well (Audrain-McGovern, Rodriguez, & Leventhal, 2015).

Clustering of health risk behaviors and other correlates

While depressed mood in children and adolescents is commonly associated with a number of preventable health risk behaviors (Birmaher *et al.*,1996; Weissman *et al.*, 1997), many of these health risk behaviors have been found to cluster in higher prevalences independently of depressed mood. According to estimates from the 2003 YRBSS, while depressed mood and risk behaviors were widespread among teens with 28% of adolescent respondents reporting depressed mood for a period of 2 weeks or more in the past year, health risk behaviors were recorded at high percentages in their own right – 46.7% reporting ever having sexual intercourse, 33% reporting being involved in a physical fight within the past 12 months, 44.9% reporting drinking alcohol, 21.9% reporting smoking cigarettes in the month prior to the survey, and 17% reporting carrying a weapon in the month prior to the survey (Grunbaum, 2004).

As previous researchers have purported that correlations exist among multiple-risk behaviors (Jessor & Jessor, 1977), those findings have been corroborated by current literature, suggesting that risk behaviors tend to cluster or co-occur rather than occur in isolation (Dryfoos, 1990; Elliott, Huizinga & Menard, 2012; Rosal *et al.*, 2012). Mensch & Kandel (1988) also found that adolescents involved in one kind of behavior, such as drug use and abuse, are vulnerable for other health risk behaviors. Further, associations were found between sexual intercourse, substance use, and cigarette smoking, as well as aggression, substance use, and

suicidal behavior (Milstein *et al.*, 1992; Garrison *et al.*, 1993). A later study also suggested that behaviors typically reported by adolescents such as drinking alcohol, smoking cigarettes, and having sexual intercourse constituted a cluster, which however was distinct from more destructive behaviors such as hard drug use, violent and suicidal behaviors (Basen-Engquist, Edmundson & Parcel, 1996). Given the co-occurring and clustering nature of these behaviors, it is therefore helpful to frame the variables/predictors that will be examined in this study into three general clusters – normal adolescent risk; experiences with traumatic events; and self-destructive behaviors.

Normal adolescent risk. Corroborating with earlier findings, Dong and Ding (2012) examined risk behaviors of early adolescents (grades 6 to 10) and concluded that typical risk behaviors among these adolescents were delinquent behaviors (i.e., fight, weapon carrying, or use of over-the-counter drugs), smoking, or alcohol use. As such, this cluster of risk behaviors could be considered part of *"normal" adolescent risk* and can also include other behaviors such as consensual (non-violent) sexual activity (Basen-Engquist, Edmundson & Parcel, 1996).

Experiences with traumatic events. Another conceptual cluster that can be seen in health risk behaviors or predictors of risk for pathology is the cluster of *experiences with traumatic events*. Predictors that fall within this cluster would include experiences of being bullied, feelings of being unsafe in school, violent or forced sexual activity, as well as physical assault from romantic partners. Notably, all these correlates have also been shown to have more significant effects on mental health in early and late adolescents (Jiang, Perry & Hesser, 2010; Ybarra, Mitchell, Kosciw, & Korchmaros, 2015; Anderson, Hayden, & Tomasula, 2015).

Self-destructive behavior. Finally, a third cluster that can be seen in health risk behaviors is one that comprises of more destructive behaviors such as illicit or hard drug use and maladaptive dieting, restricting or purging behavior due to significant negative perceptions of

self-image. These behaviors, although being on the rise and significantly more impairing to the development of adolescents, are not considered typical risk behaviors (Dong & Ding, 2012; Herpertz-Dahlmann, 2015).

Aims and Hypotheses

The overarching aim of the proposed study is to identify and characterize profiles of depression and suicidal behavior within the adolescents of the USA in the past 10 years. The specific aims of the proposed study are:

Aim 1. To identify and characterize depression and suicidal behavior profiles of adolescents aged 12 to 17 in the years 2007, 2009, 2011, 2013, and 2015.

Hypothesis 1. Each year's data will exhibit several profiles of depressed mood and suicidal behavior. There would be an estimated four profiles within each year generated by the modeling, similar to that of findings by Jiang, Perry, and Hesser (2010) – an emotionally healthy profile, a "considered and planned suicide" profile, an "attempted suicide" profile, and a "both planned and attempted suicide" profile. However, to be true to the nature of the profile given that we do not have indicators of actual emotional health but rather absence of sad mood and suicidal behaviors, for the purpose of this study the emotionally healthy profile will be renamed as the "low-risk non-depressed" profile.

Aim 2. To identify correlates and cross-sectional predictors of the different profiles over the years. Based on previous research, the following groups of correlates will be studied: (a) sociodemographic and socioeconomic factors (i.e., age, gender, ethnicity, SES, food security); (b) developmental correlates (i.e., sexual orientation, body image, interpersonal difficulties); (c) societal correlates (i.e., unsafe feelings, unwanted sexual activity, bullying); and (d) health risk behaviors (HRBs) (i.e., unsafe sexual activity, smoking, substance use).

Hypothesis 2a. The factors, correlates, and HRBs, will all predict profile memberships with different levels of magnitude.

Hypothesis 2b. Positive indication on the developmental and societal correlates will predict stronger membership in the "low-risk non-depressed" profile.

Hypothesis 2c. Negative indication on the developmental and societal correlates as well as endorsement of HRBs will predict stronger membership in the depressed mood and suicidal profiles.

Aim 3. To descriptively compare trends of the profiles over time, as well as the correlates that may vary across the 10 years.

Hypothesis 3a. Profiles over the past 10 years will remain relatively stable, exhibiting a steady trend with minor differences.

Hypothesis 3b. Predictors of each profile will differ slightly throughout the 10 years due to changes in school climate and implementation of health and behavioral policies.

Chapter III: Methods

Setting and Participants

This study will utilize epidemiological, cross-sectional data from the Youth Risk Behavior Surveillance System (YRBSS), a biennial census that monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth, including — behaviors that contribute to unintentional injuries and violence; sexual behaviors related to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use unhealthy dietary behaviors; and insufficient physical activity. The survey (Youth Risk Behavior Survey [YRBS]) is implemented at the national level through school-based survey conducted by the Center for Disease Control and Prevention (CDC) (Kolbe, Kann & Collins, 1993).

The proposed study will draw from YRBS data since 2007 up to 2015. All regular public, Catholic, and other private school students, in grades 9 through 12, in the 50 States and the District of Columbia were included in the sampling frame, with 47 of the 50 states participating. Puerto Rico, the trust territories and the Virgin Islands were excluded from the frame. Schools were selected systematically with probability proportional to enrollment in grades 9 through 12 using a random start. Number of schools sampled from range from 180 to 196 schools over the span of the past 10 years. Response rates for sampled schools that participated ranged from 69% to 81% for the 5 data sets. Sample size of student responses ranged from 13,633 to 16,460 across the 10 years, corresponding to response rates ranging from 77% to 88% for sampled students that participated (CDC, 2007; 2009; 2011; 2013; 2015). A breakdown of the response rates by year is presented in Table 1. The final usable samples as well as all the breakdowns of each demographic variable and items of interest are listed in Table 2.

Table 1. Breakdown of response rates for YRBS by year.

Year	Responded & Usable (*N*)	Sampled (*N*)	Response Rate (%)
2015			
School	125	180	69
Students	15,624	18,165	86
2013			
School	148	193	77
Students	13,583	15,480	88
2011			
School	158	194	81
Students	15,425	17,672	87
2009			
School	158	196	81
Students	16,410	18,573	88
2007			
School	157	195	81
Students	14,103	16,662	84
Average			
School	**149**	**191**	**78**
Students	**15029**	**17310**	**87**

Table 2. General sample descriptives for each year.

Variables		**2007** *N* (%)	**2009** *N* (%)	**2011** *N* (%)	**2013** *N* (%)	**2015** *N* (%)
N for usable sample (including cases with missing data)		14041	16410	15425	13583	15624
Sex	Male	6992 (49.8)	8065 (49.1)	7658 (49.6)	6951 (51.2)	7749 (49.6)
	Female	7036 (50.1)	8280 (50.5)	7708 (50.0)	6621 (48.7)	7757 (49.6)
Age	Mean	16.3 (*SD* = 1.23)	16.1 (*SD* = 1.24)	16.1 (SD = 1.24)	16.2 (SD = 1.26)	16.0 (SD = 1.24)
Ethnic Minority	Yes	8018 (57.1) *1 (2.1) *2 (3.0) *3 (20.9) *4 (0.7) *5 (14.3) *6 (16.0)	9220 (56.2) *1 (0.8) *2 (4.6) *3 (17.3) *4 (1.1) *5 (18.5) *6 (13.9)	8939 (58.0) *1 (1.9) *2 (3.1) *3 (17.9) *4 (0.8) *5 (14.4) *6 (19.8)	7816 (57.5) *1 (0.9) *2 (3.6) *3 (22.0) *4 (1.0) *5 (12.8) *6 (17.2)	8417 (53.9) *1 (1.0) *2 (4.0) *3 (10.7) *4 (0.6) *5 (15.1) *6 (22.4)
	No	5775 (41.1)	6889 (42.0)	6171 (40.0)	5449 (40.1)	6849 (43.8)
Bi- or Multiracial	Yes	2251 (16.0)	2281 (13.9)	3051 (19.8)	2342 (17.2)	3495 (22.4)
	No	11542 (82.2)	13828 (84.3)	12059 (78.2)	10923 (80.4)	11771 (75.3)
Items of Interest						
Sad or depressed mood		4153 (29.6)	4525 (27.6)	4537 (29.4)	4086 (30.1)	4789 (30.7)
Considered suicide		2092 (14.9)	2349 (14.3)	2424 (15.7)	2259 (16.6)	2808 (18.0)
Planned suicide		1648 (11.7)	1873 (11.4)	2015 (13.1)	1874 (13.8)	2331 (14.9)
Attempted suicide		1002 (7.1)	1053 (6.4)	1179 (7.6)	1015 (7.5)	1203 (7.7)
Injured from attempt		290 (2.1)	332 (2.0)	348 (2.3)	324 (2.4)	399 (2.6)

Note: Breakdown for race within the ethnic minority are noted by the categories below
**1 – American Indian or Native Alaskan*
**2 – Asian*
**3 – Black or African American*
**4 – Native Hawaiian or other Pacific Islander*
**5 – Hispanic or Latino*
**6 – Other*

Procedure

The National Youth Risk Behavior Survey (YRBS) uses a three-stage cluster sample design to produce a representative sample of 9th through 12th grade students. The target population consists of all public, Catholic, and other private school students in grades 9 through 12. A weighting factor was applied to each student record to adjust for nonresponse and the oversampling of black and Hispanic students in the sample. The final, overall weights were scaled so the weighted count of students was equal to the total sample size, and the weighted proportions of students in each grade matched population projections for each survey year (CDC, 2007; 2009; 2011; 2013; 2015).

Measures

The YRBS is an anonymous, voluntary, self-administered survey of randomly sampled public high school students that asks about risk behaviors related to the major causes of mortality, disease, injury, and social problems among youths and adults in the United States. The YRBS questions (number ranging from 92 to 99 questions depending on year) addresses demographics; safety; violence; sad feelings and attempted suicide; tobacco use; alcohol, marijuana, and other drug use; sexual behavior; body weight; nutrition; physical activity; and other health-related topics. It is administered only in English and is written for comprehension at a 6th grade level. For the full list of questions in the YRBS, see *Appendix*.

Overall reliability of the YRBS has been shown to be high. A study by Brenner *et al*. (1995) presented results from a test-retest reliability study of the YRBS, conducted by administering the YRBS questionnaire to 1,679 students in grades 7 through 12 on two occasions 14 days apart. They compared group prevalence estimates across the two testing occasions and

found no significant differences. Their results indicated 71.7% of the items were rated as having "substantial" or higher reliability (kappa = 61-100%).

Indicators. Five questions on the YRBS, representing the continuum of depressed mood and suicide-related behavior, will serve as the intended indicators of study. The questions appeared as follows:

> *The next 5 questions ask about sad feelings and attempted suicide during the past 12 months. (1) Did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities? [felt sad or hopeless]; (2) Did you ever seriously consider attempting suicide? [considered suicide]; (3) Did you make a plan about how you would attempt suicide? [planned suicide]; (4) How many times did you actually attempt suicide? [attempted suicide]; (5) If you attempted suicide, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse? [suicide attempt treated by a physician or nurse].*

These suicide questions have demonstrated substantial reliability. The 2-week test–retest conducted by CDC affiliates and researchers showed Kappas of 83.8% for suicidal ideation and 76.4% for suicide attempts (Eaton *et al*., 2005; Brenner *et al.*, 2002).

Predictors. Categories of predictors for this study include items that address: gender, ethnicity, grade level in school (grade), academic performance, language spoken at home (home language), sexual orientation, bullying, feeling unsafe going to or at school, smoking, alcohol use, illicit substance use, sexual activity and forced sexual intercourse, and self-perception of weight (perceived weight). These questions have demonstrated substantial reliability (Brenner *et al.*, 2002). All YRBS questionnaires are open access and can be obtained from the CDC website.

Data Analysis

Study Aim 1. The primary goal of this analysis will be to examine the relationships among several categorical indicators in relation to latent (not directly observable) discrete patterns or classes within each year's data cross-sectionally. The study will utilize latent class regression model, a statistical technique for categorical data that is used to identify implicit classes of respondents and examine the association between predictors and those classes (Flaherty, 2002). The presence of distinct patterns of endorsement of the indicator variables will be identified and compared through a progressive number of classes with MPLUS 7 using Robust Maximum Likelihood estimation (Muthen & Muthen, 1998-2012). Relative fit will be assessed with conventional indices, including the Bayesian information criterion (BIC), sample-size adjusted Bayesian Information Criterion (SSBIC), Aikaike information criterion (AIC) indices, entropy values, as well as considerations made for parsimony and interpretability, with the greatest weight placed on the BIC and SSBIC due to evidence that it is the strongest indicator under these analytic circumstances (Nylund, Asparouhov & Muthén, 2007). The least weight will be placed on the AIC because of evidence that it tends to favor overspecification (Nylund, Asparouhov & Muthén, 2007; Henson, Reise & Kim, 2007). Entropy values ranging from 0 to 1 will indicate the clarity of class specification, with scores closer to 1 indicating better fit of the data into the prescribed class structure (Duncan, Duncan & Strycker, 2006). This model highlights the set of identified latent classes rather than considering the observed indicators separately as do logistic or linear regression models. For this stage of analysis, conventional latent class models excluding predictors will be fitted to the depressed mood or suicide indicator data, starting with a 1-class model and progressing to a 4-class model for each year. An example of a model with 4 latent classes is presented in Figure 1.

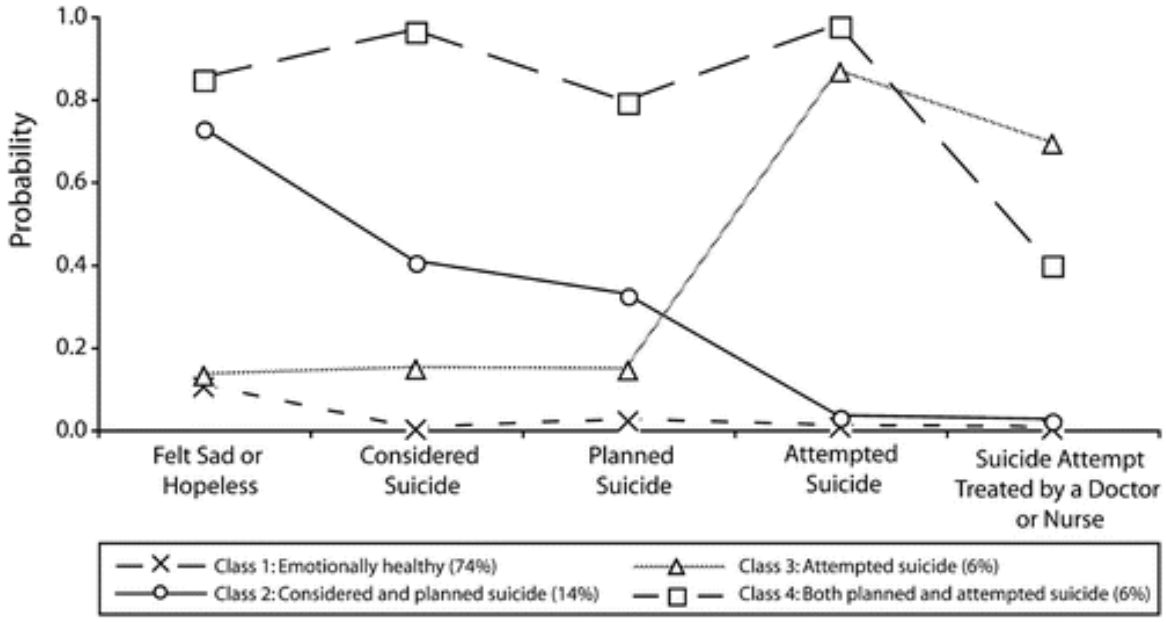

Figure 1. Example of model with 4 latent classes by Jiang, Perry and Hesser (2010).

Study Aim 2. To identify correlates and cross-sectional predictors of the different profiles over the years, the best fitting models for each year from *Study Aim 1* will be remodeled with predictors included. Predictor covariates will be regressed on class membership in a multinomial logistic regression simultaneously to assess if subjects within class differ significantly on these characteristics. Best fitting predictors will be selected based on lowest Bayesian Information Criterion scores. T-tests will be used to identify statistically significant relationships (2-sided $P \leq .05$) between predictors. Reference groups in the latent class regression model will be the hypothesized "low-risk non-depressed profile" that has the lowest risk for the depressed mood or suicide indicators.

Study Aim 3. To compare trends of the profiles over time, the best-fit models for each year from *Study Aim 1* will be juxtaposed to allow for observation of differences in number of profiles and other qualities (i.e., slopes of profiles, class membership, percentage of sample in

each class, etc.). Additionally, a table listing the significant predictors of class membership within each year will be constructed to visualize and note "carryover" predictors across the past 10 years. Differences in magnitude of the odds ratios for each predictor will also be noted for discussion.

Chapter IV: Results

Year 2007

Study Aim 1 – Looking for profiles. Results of the individual depressed mood or suicide indicators during the 12 months prior to the 2007 YRBS survey were as follows: 29.6% students felt sad or hopeless, 14.9% had considered suicide, 11.7% had planned suicide, 7.1% had attempted suicide, and 2.1% had a suicide attempt injury treated by a physician or nurse. On the basis of utilizing latent class regression modeling examining the relationships among the 5 categorical indicators in relation to the latent classes within the year's data cross-sectionally, we tested groupings of the nationally representative sample of students into several latent classes of suicide risk. Table 3 presents the information indices and likelihood tests for the one- to four-class models. These indices showed improved fit as the number of classes increased, with the exception of a negligible reduction in entropy. Overall consideration of the indices while taking into the account of the proportion breakdowns, suggested that the three-class model provided a better fit than either the two-or four-class model. Consequently we chose the three-class model as optimal and fitted the conditional model that controls for covariates (see Figure 2). Table 4 presents the probabilities for each of the 5 indicators for each class. In our final conditional model, Class 1 (83.15% of students) was defined as "low-risk non-depressed", Class 2 (9.18%) was defined as "considered and planned suicide", and Class 3 (7.67%) was defined as "attempted suicide".

Table 3. Fit Criteria of Unconditional Models for 2007 (N = 13905)

Fit Index	One-class	Two-classes	Three-Classes	Four-classes
AIC	48506.08	38575.52	38050.51	38011.42
BIC	48543.78	38658.46	38178.69	38184.84
SSBIC	48527.89	38623.50	38124.67	38111.74
Entropy	-	0.915	0.875	0.895
LRT	-	$p < .001$	$p < .001$	$p < .001$
BLRT	-	$p < .001$	$p < .001$	$p < .001$

Table 4. Probabilities for each indicator by class (2007)

Class	Sad	SI	SP	SA	SA & Injury
1	0.20	0.01	0.01	0.00	0.00
2	0.71	0.67	0.51	0.00	0.00
3	0.78	0.91	0.72	1.00	0.31

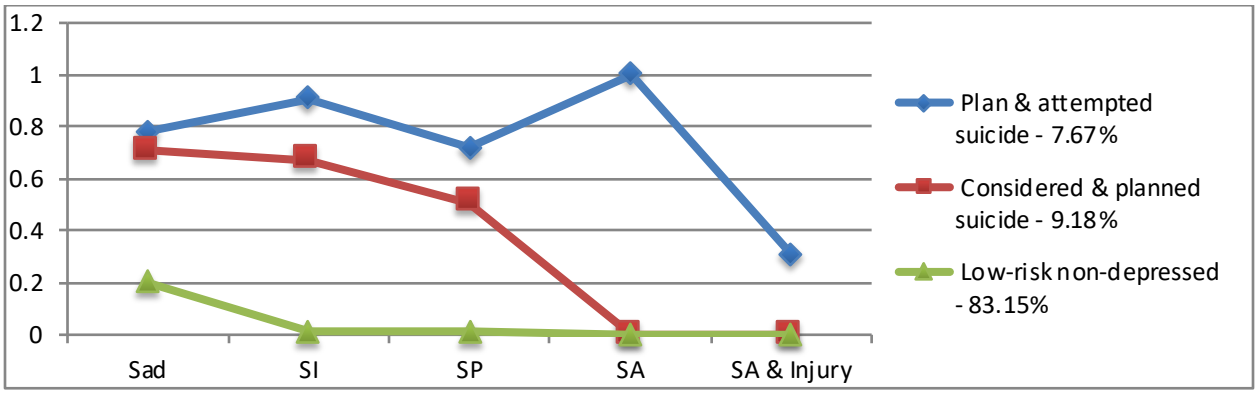

Figure 2. Three-class conditional latent profiles of indicators for 2007 (*N* = 13645)

Study Aim 2 – Examining predictors of profiles. For the models of each year, we nested participants' sex, age, minority status, and racial status (bi- or multiracial) in the model to examine the potential role of these covariates in predicting class membership. To assist in convergence, the age variable was standardized. Data for several of the covariates were missing across the years; however the pattern of missing data did not differ across latent class membership.

Regression estimates for the 2007 model are displayed in Table 5. In the first set of comparisons the "*low-risk non-depressed*" class served as the reference class. Compared to the "*low-risk non-depressed*" class, students in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes were more likely to be female and be bi- or multiracial. Students in the "*planned and attempted suicide*" class were also more likely to be racial minorities. In a second set of analyses, the "*planned and attempted suicide*" class served as the

reference class. Compared to the "*planned and attempted suicide*" class, students in the "*considered and planned suicide*" class were more likely to be male, older, and not of a racial minority.

Table 5. Multinomial Logistic Regression Odds Ratios for 3-Class Model (YRBSS 2007)

	Covariate	Odds Ratio	S.E.
Compared to "Low-risk non-depressed"			
Planned & attempted suicide	Sex	-0.89*	0.07
	Age	-0.03	0.03
	Racial Minority	0.36*	0.08
	Bi- or multiracial	-0.28*	0.09
Considered & planned suicide	Sex	-0.67*	0.07
	Age	0.05	0.03
	Racal Minority	-0.15	0.08
	Bi- or multiracial	-0.32*	0.10
Compared to "Planned & attempted suicide"			
Considered & planned suicide	Sex	0.22*	0.10
	Age	0.08*	0.04
	Racial Minority	-0.51*	0.11
	Bi- or multiracial	-0.04	0.13

*$p < 0.05$

Exploring further, results showed a significant difference between the "*low-risk non-depressed*" class versus the other two classes ("*considered and planned suicide*" and the "*planned and attempted suicide*" classes) in terms of predictors of depression and suicidal behavior. The binomial logistic regression of symptom groups predicting membership in the two other classes showed numerous covariates being significant predictors (see Table 6). Students were more likely to be in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes if they carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, had their property stolen at school in the past year, were hit by a boyfriend or girlfriend in the past year, ever had sex, were forced to

have sex in the past, had sex before the age of 13, smoked a cigarette before the age of 13, smokes at least 10 cigarettes a day in the past month, smoked at school in the past month, had their first drink before the age of 13, had at least one drink in the past month, had 5 or more drinks at least once in the past month, drank at school in the past month, had tried marijuana in their life, tried sniffing glue, used ecstasy before, used LSD before, took steroids before, injected illicit drugs before, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, were trying to lose weight, fasted to lose weight in the past month, took pills to lose weight in the past month, vomited to lose weight in the past month, or described their own health as fair or poor. Conversely, students were more likely to be in the "*low-risk non-depressed*" class if they exercised to lose weight in the past month, had vigorous exercise in the past week, or got at least 8 hours of sleep daily.

Table 6. Binomial Logistic Regression Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" (YRBSS 2007)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.10	0.94	1.28
Carried gun 1+ times in past month	0.87	0.70	1.08
Carried weapon school 1+ times in past month	1.91*	1.56	2.35
Fought 1+ times in past year	1.82*	1.63	2.04
Fought in school 1+ times in past year	1.31*	1.14	1.52
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	2.63*	2.27	3.06
Threatened at school 1+ times in past year	2.14*	1.86	2.48
Property stolen at school in past year	1.44*	1.30	1.59
Bullied at school in past year	-	-	-
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	1.96*	1.71	2.25
Ever had sex	1.35*	1.16	1.57

Forced to have sex in the past	3.31*	2.86	3.82
Had sex before 13 years old	1.22*	1.03	1.45
Had sex with 4+ people in life	1.01	0.88	1.16
Had sex with 1+ people in past 3 months	1.07	0.92	1.24
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.47*	1.20	1.81
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.61*	1.12	2.31
Got cigarettes in store month	-	-	-
Smoked at school 1+ times in past month	1.69*	1.36	2.10
Alcohol use			
Had first drink before 13	1.61*	1.45	1.80
Had 1+ drinks past month	1.50*	1.31	1.72
Five+ drinks 1+ past month	1.32*	1.15	1.51
Had 1+ drinks at school 1+ month	1.69*	1.41	2.02
Other substance use			
Tried marijuana 1+ times in life	1.41*	1.24	1.60
Tried marijuana before 13 years old	0.90	0.75	1.07
Used marijuana 1+ times in past month	1.08	0.93	1.25
Used marijuana in school 1+ times in past month	0.92	0.73	1.16
Used cocaine 1+ times in life	1.08	0.86	1.36
Used cocaine 1+ times in past month	1.20	0.88	1.64
Sniffed glue 1+ times in life	2.22*	1.94	2.53
Used heroin 1+ times in life	0.68	0.46	1.01
Used meth 1+ times in life	1.14	0.89	1.46
Used ecstasy 1+ times in life	1.32*	1.07	1.62
Used LSD 1+ times in life	2.94*	2.53	3.41
Took steroids 1+ times in life	1.61*	1.25	2.07
Injected drugs 1+ times in life	3.55*	2.51	5.03
Offered/sold drugs at school in past year	1.68*	1.50	1.88
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.27*	1.13	1.44
Trying to lose weight	1.21*	1.06	1.38
Exercised to lose weight in past month	0.78*	0.69	0.87
Ate less to lose weight in past month	1.13	0.99	1.28
Fasted to lose weight in past month	2.90*	2.53	3.32
Took pills to lose weight in past month	1.82*	1.51	2.18
Vomited to lose weight in past month	2.53*	2.07	3.10

Other behaviors			
Attended PE class daily	0.97	0.87	1.09
Played on 1+ sports teams in past year	0.93	0.83	1.03
Vigorous exercise in past week	0.84*	0.75	0.94
Moderate exercise in past week	1.09	0.97	1.22
Get 8+ hours sleep	0.62*	0.55	0.69
Described own health as fair or poor	2.58*	2.30	2.90

*$p < 0.05$

Analysis exploring the differences between the "*planned and attempted suicide*" class versus the "*considered and planned suicide*" class also showed numerous covariates being significant predictors (see Table 7). Students were more likely to be in the "*planned and attempted suicide*" class if they carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were hit by a boyfriend or girlfriend in the past year, were forced to have sex in the past, smoked at school in the past month, had their first drink before the age of 13, drank at school in the past month, tried sniffing glue, took steroids before, injected illicit drugs before, perceived themselves to be slightly or very overweight, fasted to lose weight in the past month, vomited to lose weight in the past month, or described their own health as fair or poor. Interestingly, students were more likely to be in the "*considered and planned suicide*" class if they had used LSD before.

Table 7. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Planned and Attempted Suicide*" class instead of the "*Considered and Planned suicide*" class (2007)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	0.94	0.71	1.23
Carried gun 1+ times in past month	1.40	0.95	2.06
Carried weapon school 1+ times in past month	1.75*	1.22	2.51
Fought 1+ times in past year	1.35*	1.09	1.66
Fought in school 1+ times in past year	1.49*	1.15	1.91
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.70*	1.34	2.17
Threatened at school 1+ times in past year	1.62*	1.27	2.06
Property stolen at school in past year	1.01	0.85	1.22
Bullied at school in past year	-	-	-
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	1.32*	1.05	1.67
Ever had sex	1.22	0.92	1.63
Forced to have sex in the past	2.11*	1.66	2.68
Had sex before 13 years old	1.19	0.89	1.60
Had sex with 4+ people in life	0.92	0.73	1.18
Had sex with 1+ people in past 3 months	1.28	0.98	1.67
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.29	0.89	1.86
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.96	0.96	4.01
Got cigarettes in store month	1.02	0.59	1.78
Smoked at school 1+ times in past month	1.74*	1.18	2.57
Alcohol use			
Had first drink before 13	1.42*	1.17	1.30
Had 1+ drinks past month	1.28	1.00	1.64
Five+ drinks 1+ past month	1.18	0.93	1.51
Had 1+ drinks at school 1+ month	2.07*	1.52	2.83
Other substance use			
Tried marijuana 1+ times in life	1.22	0.96	1.56
Tried marijuana before 13 years old	0.99	0.73	1.35

Used marijuana 1+ times in past month	1.07	0.82	1.40
Used marijuana in school 1+ times in past month	1.42	0.97	2.11
Used cocaine 1+ times in life	1.00	0.67	1.48
Used cocaine 1+ times in past month	1.29	0.78	2.13
Sniffed glue 1+ times in life	1.35*	1.08	1.69
Used heroin 1+ times in life	0.97	0.51	1.84
Used meth 1+ times in life	1.16	0.77	1.75
Used ecstasy 1+ times in life	1.25	0.88	1.79
Used LSD 1+ times in life	0.62*	0.43	0.91
Took steroids 1+ times in life	1.82*	1.21	2.74
Injected drugs 1+ times in life	1.97*	1.03	3.77
Offered/sold drugs at school in past year	1.07	0.87	1.32
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.24*	1.01	1.52
Trying to lose weight	0.82	0.65	1.04
Exercised to lose weight in past month	1.20	0.97	1.47
Ate less to lose weight in past month	0.85	0.68	1.07
Fasted to lose weight in past month	2.10*	1.68	2.62
Took pills to lose weight in past month	1.21	0.91	1.60
Vomited to lose weight in past month	1.35*	1.01	1.82
Other behaviors			
Attended PE class daily	1.02	0.83	1.25
Played on 1+ sports teams in past year	0.84	0.70	1.01
Vigorous exercise in past week	0.96	0.78	1.17
Moderate exercise in past week	1.20	0.96	1.49
Get 8+ hours sleep	0.93	0.74	1.15
Described own health as fair or poor	1.56*	1.27	1.90

*$p < 0.05$

Year 2009

Study Aim 1 – Looking for profiles. Results of the individual depressed mood or suicide indicators during the 12 months prior to the 2009 YRBS survey were as follows: 27.6% students felt sad or hopeless, 14.3% had considered suicide, 11.4% had planned suicide, 6.4% had attempted suicide, and 2.0% had a suicide attempt injury treated by a physician or nurse. Again, utilizing latent class regression modeling, we tested groupings of the nationally

representative sample of students into several latent classes of suicide risk. Table 8 presents the information indices and likelihood tests for the one- to four-class models. These indices showed improved fit as the number of classes increased, with the exception of a negligible reduction in entropy. Overall consideration of the indices while taking into the account of the proportion breakdowns, suggested that the three-class model provided a better fit than either the two-or four-class model. Consequently we chose the three-class model as optimal and fitted the conditional model that controls for covariates (see Figure 3). Table 9 presents the probabilities for each of the 5 indicators for each class. In our final conditional model, Class 1 (83.41% of students) was defined as "low-risk non-depressed", Class 2 (9.72%) was defined as "considered and planned suicide", and Class 3 (6.88%) was defined as "attempted suicide".

Table 8. Fit Criteria of Unconditional Models for 2009 (N = 16259)

Fit Index	One-class	Two-classes	Three-Classes	Four-classes
AIC	54977.036	43624.459	42955.432	42855.472
BIC	55015.518	43709.119	43086.271	43032.489
SSBIC	54999.628	43674.162	43032.246	42959.397
Entropy	-	0.918	0.887	0.896
LRT	-	$p < .001$	$p < .001$	$p < .001$
BLRT	-	$p < .001$	$p < .001$	$p < .001$

Table 9. Probabilities for each indicator by class (2009)

Class	Sad	SI	SP	SA	SA & Injury
1	0.18	0.01	0.01	0.00	0.00
2	0.66	0.67	0.46	0.00	0.00
3	0.78	0.91	0.75	1.00	0.33

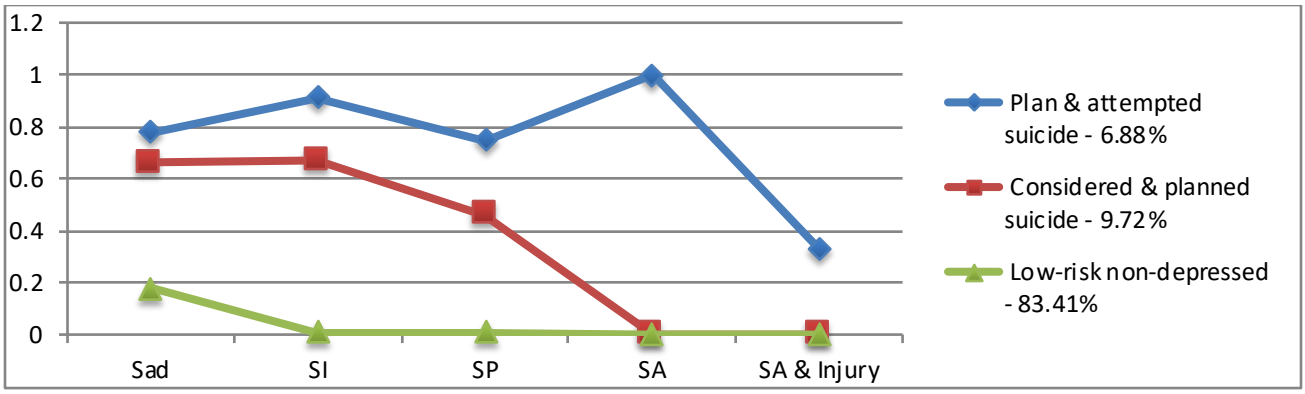

Figure 3. Three-class conditional latent profiles of indicators for 2009 (*N* = 15923)

Study Aim 2 – Examining predictors of profiles. Regression estimates for the model are displayed in Table 10. In the first set of comparisons, again the "*low-risk non-depressed*" class served as the reference class. Compared to the "*low-risk non-depressed*" class, students in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes were more likely to be female and be bi- or multiracial. Students in the "*planned and attempted suicide*" class were also more likely to be younger and racial minorities; while students in the "*considered and planned suicide*" were less likely to be racial minorities. In the second set of analyses, the "*planned and attempted suicide*" class served as the reference class. Compared to the "*planned and attempted suicide*" class, students in the "*considered and planned suicide*" class were more likely to be male, older, and not of a racial minority.

Table 10. Multinomial Logistic Regression Odds Ratios for 3-Class Model (YRBSS 2009)

	Covariate	Est.	S.E.
Compared to "Low-risk non-depressed"			
Planned & attempted suicide	Sex	-0.78*	0.07
	Age	-0.11*	0.02
	Minority	0.24*	0.07
	Bi- or multiracial	-0.53*	0.09
Considered & planned suicide	Sex	-0.68*	0.07
	Age	-0.01	0.03
	Minority	-0.20*	0.08
	Bi- or multiracial	-0.36*	0.10
Compared to "Planned & attempted suicide"			
Considered & planned suicide	Sex	0.11*	0.10
	Age	0.10*	0.04
	Minority	-0.43*	0.11
	Bi- or multiracial	0.17	0.13

*$p < 0.05$

Exploring further again, results showed a significant difference between the "*low-risk non-depressed*" class versus the other two classes ("*considered and planned suicide*" and the "*planned and attempted suicide*" classes) in terms of predictors of depression and suicidal behavior. The binomial logistic regression of symptom groups predicting membership in the two other classes showed numerous covariates being significant predictors (see Table 11). Students were more likely to be in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes if they carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were bullied at school, were hit by a boyfriend or girlfriend in the past year, were forced to have sex in the past, had sex before the age of 13, smoked a cigarette before the age of 13, smokes at least 10 cigarettes a day in the past month, smoked at school in the past month, had their first drink before the age of 13, had at least one drink in the past month, drank at school in the past month, had tried marijuana in their life,

tried sniffing glue, took steroids before, injected illicit drugs before, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, were trying to lose weight, ate less to lose weight in the past month, fasted to lose weight in the past month, took pills to lose weight in the past month, vomited to lose weight in the past month, or getting bad grades in school. Conversely, students were more likely to be in the "*low-risk non-depressed*" class if they exercised to lose weight in the past month, had played on at least one sports team in the past year, had vigorous exercise in the past week, or got at least 8 hours of sleep daily. Interestingly, students were also likely to be "*low-risk non-depressed*" if they got cigarettes in the store in the past month.

Table 11. Binomial Logistic Regression Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" (YRBSS 2009)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.05	0.90	1.23
Carried gun 1+ times in past month	1.03	0.85	1.26
Carried weapon school 1+ times in past month	2.00*	1.65	2.43
Fought 1+ times in past year	1.75*	1.57	1.95
Fought in school 1+ times in past year	1.32*	1.15	1.52
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	2.21*	1.89	2.59
Threatened at school 1+ times in past year	2.18*	1.90	2.50
Property stolen at school in past year	-	-	-
Bullied at school in past year	2.57*	2.32	2.83
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	2.09*	1.83	2.38
Ever had sex	1.09	0.95	1.26
Forced to have sex in the past	3.32*	2.88	3.81
Had sex before 13 years old	1.29*	1.08	1.54
Had sex with 4+ people in life	1.05	0.92	1.21
Had sex with 1+ people in past 3 months	1.08	0.93	1.25

Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.70*	1.39	2.07
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.50*	1.05	2.14
Got cigarettes in store in the past month	0.60*	0.45	0.81
Smoked at school 1+ times in past month	1.63*	1.32	2.02
Alcohol use			
Had first drink before 13	1.79*	1.61	1.99
Had 1+ drinks past month	1.46*	1.29	1.66
Five+ drinks 1+ past month	1.11	0.97	1.27
Had 1+ drinks at school 1+ month	1.98*	1.67	2.35
Other substance use			
Tried marijuana 1+ times in life	1.16*	1.02	1.32
Tried marijuana before 13 years old	1.04	0.87	1.24
Used marijuana 1+ times in past month	0.97	0.84	1.13
Used marijuana in school 1+ times in past month	1.03	0.82	1.28
Used cocaine 1+ times in life	1.10	0.89	1.38
Used cocaine 1+ times in past month	1.09	0.80	1.49
Sniffed glue 1+ times in life	2.67*	2.34	3.03
Used heroin 1+ times in life	0.90	0.61	1.33
Used meth 1+ times in life	1.18	0.90	1.53
Used ecstasy 1+ times in life	1.18	0.96	1.45
Used LSD 1+ times in life	1.21	0.99	1.48
Took steroids 1+ times in life	1.30*	1.01	1.67
Injected drugs 1+ times in life	1.68*	1.15	2.44
Offered/sold drugs at school in past year	1.59*	1.43	1.78
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.22*	1.09	1.35
Trying to lose weight	1.13*	1.01	1.28
Exercised to lose weight in past month	0.82*	0.74	0.92
Ate less to lose weight in past month	1.24*	1.11	1.39
Fasted to lose weight in past month	2.73*	2.40	3.09
Took pills to lose weight in past month	1.36*	1.14	1.63
Vomited to lose weight in past month	2.67*	2.22	3.20

Other behaviors			
Attended PE class daily	0.91	0.82	1.01
Played on 1+ sports teams in past year	0.88*	0.80	0.97
Vigorous exercise in past week	0.78*	0.70	0.86
Moderate exercise in past week	1.09	0.98	1.21
Get 8+ hours sleep	0.58*	0.52	0.64
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	2.12*	1.83	2.47

*$p < 0.05$

Analysis exploring the differences between the "*planned and attempted suicide*" class versus the "*considered and planned suicide*" class again showed numerous covariates being significant predictors (see Table 12). Students were more likely to be in the "*planned and attempted suicide*" class if they carried a weapon in the past month, carried a gun in the past month, carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, were hit by a boyfriend or girlfriend in the past year, were forced to have sex in the past, had sex before the age of 13, smoked a cigarette before the age of 13, smokes at least 10 cigarettes a day in the past month, smoked at school in the past month, had at least one drink in the past month, had drank at school in the past month, had tried marijuana before the age of 13, had used cocaine in their life, tried sniffing glue, tried ecstasy before, injected illicit drugs before, fasted to lose weight in the past month, took pills to lose weight in the past month, vomited to lose weight in the past month, or got bad grades at school. Interestingly, students were more likely to be in the "*considered and planned suicide*" class if they got cigarettes in the store in the past month, or ate less to lose weight in the past month. Not surprising, they were also less likely to be in the "*planned and attempted suicide*" class if they got at least 8 hours of sleep daily.

Table 12. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Planned and Attempted Suicide*" class instead of the "*Considered and Planned suicide*" class (2009)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	0.70*	0.53	0.92
Carried gun 1+ times in past month	1.52*	1.07	2.18
Carried weapon school 1+ times in past month	2.26*	1.59	3.19
Fought 1+ times in past year	1.53*	1.25	1.87
Fought in school 1+ times in past year	1.35*	1.05	1.72
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.74	1.35	2.24
Threatened at school 1+ times in past year	1.88	1.50	2.36
Property stolen at school in past year	-	-	-
Bullied at school in past year	1.36	1.14	1.61
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	1.33*	1.07	1.66
Ever had sex	1.21	0.92	1.59
Forced to have sex in the past	2.40*	1.91	3.01
Had sex before 13 years old	1.77*	1.32	2.37
Had sex with 4+ people in life	1.02	0.80	1.30
Had sex with 1+ people in past 3 months	1.07	0.82	1.40
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.66*	1.18	2.32
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.91*	1.05	3.47
Got cigarettes in store in the past month	0.53*	0.31	0.90
Smoked at school 1+ times in past month	2.34*	1.62	3.38
Alcohol use			
Had first drink before 13	1.57*	1.30	1.90
Had 1+ drinks past month	1.33*	1.05	1.68
Five+ drinks 1+ past month	0.97	0.77	1.23
Had 1+ drinks at school 1+ month	2.50*	1.87	3.33
Other substance use			
Tried marijuana 1+ times in life	1.10	0.86	1.40
Tried marijuana before 13 years old	1.66*	1.24	2.24

Used marijuana 1+ times in past month	0.76	0.58	1.01
Used marijuana in school 1+ times in past month	1.39	0.96	2.03
Used cocaine 1+ times in life	1.54*	1.07	2.22
Used cocaine 1+ times in past month	0.84	0.50	1.41
Sniffed glue 1+ times in life	1.67*	1.35	2.07
Used heroin 1+ times in life	1.25	0.68	2.32
Used meth 1+ times in life	1.09	0.70	1.69
Used ecstasy 1+ times in life	1.44*	1.02	2.03
Used LSD 1+ times in life	0.78	0.55	1.10
Took steroids 1+ times in life	1.22	0.80	1.86
Injected drugs 1+ times in life	1.88	1.04	3.41
Offered/sold drugs at school in past year	0.92	0.76	1.12
Body image & perceived overweight			
Perceived self to be slightly/very overweight	0.89	0.74	1.08
Trying to lose weight	0.94	0.76	1.17
Exercised to lose weight in past month	0.99	0.81	1.20
Ate less to lose weight in past month	0.75*	0.61	0.92
Fasted to lose weight in past month	2.26*	1.83	2.79
Took pills to lose weight in past month	1.51*	1.15	2.00
Vomited to lose weight in past month	1.77*	1.35	2.31
Other behaviors			
Attended PE class daily	1.01	0.85	1.22
Played on 1+ sports teams in past year	0.98	0.82	1.16
Vigorous exercise in past week	1.05	0.87	1.26
Moderate exercise in past week	0.90	0.74	1.10
Get 8+ hours sleep	0.78*	0.64	0.96
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	1.68*	1.30	2.16

*$p < 0.05$

Year 2011

Study Aim 1 – Looking for profiles. Results of the individual depressed mood or suicide indicators during the 12 months prior to the 2011 YRBS survey were as follows: 29.4% students felt sad or hopeless, 15.7% had considered suicide, 13.1% had planned suicide, 7.6% had attempted suicide, and 2.3% had a suicide attempt injury treated by a physician or nurse.

Similar to analyses for previous years, we tested groupings of the nationally representative sample of students into several latent classes of suicide risk. Table 13 presents the information indices and likelihood tests for the one- to four-class models. These indices showed improved fit as the number of classes increased, with the exception of a negligible reduction in entropy. Overall consideration of the indices while taking into the account of the proportion breakdowns, again suggested that the three-class model provided a better fit than either the two-or four-class model. Consequently we chose the three-class model as optimal and fitted the conditional model that controls for covariates (see Figure 4). Table 14 presents the probabilities for each of the 5 indicators for each class. In our final conditional model, Class 1 (81.99% of students) was defined as "low-risk non-depressed", Class 2 (10.12%) was defined as "considered and planned suicide", and Class 3 (7.89%) was defined as "attempted suicide".

Table 13. Fit Criteria of Unconditional Models for 2011 (N = 15353)

Fit Index	One-class	Two-classes	Three-Classes	Four-classes
AIC	55084.761	43655.625	42975.392	42809.218
BIC	55122.957	43739.654	43105.256	42984.916
SSBIC	55107.067	43704.697	43051.231	42911.824
Entropy	-	0.908	0.89	0.889
LRT	-	$p < .001$	$p < .001$	$p < .001$
BLRT	-	$p < .001$	$p < .001$	$p < .001$

Table 14. Probabilities for each indicator by class (2011)

Class	Sad	SI	SP	SA	SA & Injury
1	0.19	0.01	0.02	0.01	0.00
2	0.72	0.71	0.49	0.00	0.00
3	0.80	0.90	0.78	1.00	0.33

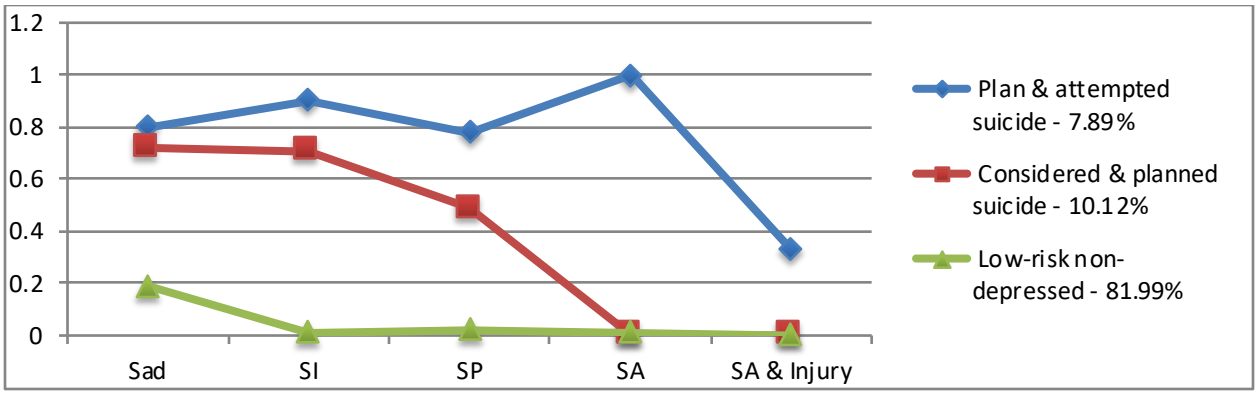

Figure 4. Three-class conditional latent profiles of indicators for 2011 (*N* = 15014)

Study Aim 2 – Examining predictors of profiles. Regression estimates for the model are displayed in Table 15. In the first set of comparisons, the "*low-risk non-depressed*" class served as the reference class. Compared to the "*low-risk non-depressed*" class, students in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes were more likely to be female and be bi- or multiracial. Students in the "*planned and attempted suicide*" class were also more likely to be younger and racial minorities. In the second set of analyses, the "*planned and attempted suicide*" class served as the reference class. Compared to the "*planned and attempted suicide*" class, students in the "*considered and planned suicide*" class were more likely to be older and of a racial minority.

Table 15. Multinomial Logistic Regression Odds Ratios for 3-Class Model (YRBSS 2011)

	Covariate	Est.	S.E.
Compared to "Low-risk non-depressed"			
Planned & attempted suicide	Sex	-0.70*	0.07
	Age	-0.12*	0.03
	Minority	0.21*	0.08
	Bi- or multiracial	-0.18*	0.08
Considered & planned suicide	Sex	-0.50*	0.07
	Age	-0.02	0.03
	Minority	0.13	0.08
	Bi- or multiracial	-0.19*	0.10
Compared to "Planned & attempted suicide"			
Considered & planned suicide	Sex	0.20	0.09
	Age	0.10*	0.04
	Minority	0.34*	0.10
	Bi- or multiracial	0.18	0.11

*$p < 0.05$

In further analyses, results showed a significant difference between the "*low-risk non-depressed*" class versus the other two classes ("*considered and planned suicide*" and the "*planned and attempted suicide*" classes) in terms of predictors of depression and suicidal behavior. The binomial logistic regression of symptom groups predicting membership in the two other classes showed numerous covariates being significant predictors (see Table 16). Students were more likely to be in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes if they carried a weapon in the past month, carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were bullied at school in the past year, were electronically bullied in the past year, were hit by a boyfriend or girlfriend in the past year, ever had sex, were forced to have sex in the past, had sex before the age of 13, smoked a cigarette before the age of 13, smokes at least 10 cigarettes a day in the past month, smoked at school in the past month, had their first drink before the age of 13,

had at least one drink in the past month, drank at school in the past month, had tried marijuana in their life, tried sniffing glue, had taken prescriptions drugs without prescription, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, fasted to lose weight in the past month, took pills to lose weight in the past month, vomited to lose weight in the past month, or had talked to a teacher about a problem. Conversely, students were more likely to be in the "*low-risk non-depressed*" class if they attended PE class daily, had played on at least one sports team in the past year, or got at least 8 hours of sleep daily. Interestingly again, students were also likely to be "*low-risk non-depressed*" if they got cigarettes in the store in the past month.

Table 16. Binomial Logistic Regression Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" (YRBSS 2011)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.30*	1.13	1.51
Carried gun 1+ times in past month	0.90	0.73	1.11
Carried weapon school 1+ times in past month	2.13*	1.75	2.60
Fought 1+ times in past year	1.63*	1.46	1.82
Fought in school 1+ times in past year	1.24*	1.08	1.43
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.83*	1.54	2.16
Threatened at school 1+ times in past year	2.44*	2.09	2.84
Property stolen at school in past year	-	-	-
Bullied at school in past year	2.05*	1.83	2.29
Electronically bullied in the past year	2.50*	2.22	2.82
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	2.12*	1.85	2.41
Ever had sex	1.24*	1.08	1.42
Forced to have sex in the past	3.61*	3.14	4.15
Had sex before 13 years old	1.40*	1.18	1.66
Had sex with 4+ people in life	0.87	0.76	1.00
Had sex with 1+ people in past 3 months	1.05	0.92	1.21

Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.30*	1.03	1.63
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	2.38*	1.58	3.58
Got cigarettes in store in the past month	0.55*	0.39	0.76
Smoked at school 1+ times in past month	1.43*	1.13	1.81
Alcohol use			
Had first drink before 13	1.59*	1.43	1.77
Had 1+ drinks past month	1.63*	1.44	1.85
Five+ drinks 1+ past month	1.03	0.91	1.18
Had 1+ drinks at school 1+ month	2.07*	1.75	2.44
Other substance use			
Tried marijuana 1+ times in life	1.33*	1.15	1.53
Tried marijuana before 13 years old	0.91	0.75	1.10
Used marijuana 1+ times in past month	0.93	0.80	1.10
Used marijuana in school 1+ times in past month	1.09	0.88	1.37
Used cocaine 1+ times in life	1.03	0.81	1.32
Used cocaine 1+ times in past month	0.77	0.54	1.09
Sniffed glue 1+ times in life	2.30*	1.98	2.66
Used heroin 1+ times in life	1.43	0.93	2.21
Used meth 1+ times in life	1.19	0.88	1.62
Used ecstasy 1+ times in life	1.14	0.92	1.40
Used LSD 1+ times in life	1.00	0.80	1.24
Took steroids 1+ times in life	1.30	0.97	1.73
Taken prescription drugs w/o prescription	1.61*	1.41	1.85
Injected drugs 1+ times in life	1.28	0.82	2.01
Offered/sold drugs at school in past year	1.55*	1.37	1.74
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.41*	1.26	1.56
Trying to lose weight	1.08	0.97	1.20
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	3.37*	3.00	3.79
Took pills to lose weight in past month	1.50*	1.26	1.80
Vomited to lose weight in past month	2.45*	2.04	2.95
Other behaviors			

Attended PE class daily	0.89*	0.80	0.99
Played on 1+ sports teams in past year	0.72*	0.66	0.80
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.60*	0.53	0.67
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Talked to teacher about problem	2.03*	1.84	2.24

*$p < 0.05$

Analysis exploring the differences between the "*planned and attempted suicide*" class versus the "*considered and planned suicide*" class also showed numerous covariates being significant predictors (see Table 17). Students were more likely to be in the "*planned and attempted suicide*" class if they carried a weapon to school in the past month, fought at least one time in the past year, fought in school at least once in the past year, missed school in the past month due to feeling unsafe, were electronically bullied in the past year, were hit by a boyfriend or girlfriend in the past year, were forced to have sex in the past, had sex before the age of 13, had sex with one or more partners in the past 3 months, smoked at school in the past month, had their first drink before age 13, had 5 or more drinks at least once in the past month, had drank at school in the past month, had taken steroids before, fasted to lose weight in the past month, took pills to lose weight in the past month, or vomited to lose weight in the past month. Interestingly, students were less likely to be in the "*planned and attempted suicide*" class if they were bullied at school in the past year or trying to lose weight in the past month.

Table 17. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Planned and Attempted Suicide*" class instead of the "*Considered and Planned suicide*" class (2011)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	0.98	0.76	1.27
Carried gun 1+ times in past month	1.32	0.92	1.89
Carried weapon school 1+ times in past month	1.57*	1.12	2.20
Fought 1+ times in past year	1.66*	1.37	2.03
Fought in school 1+ times in past year	1.36*	1.07	1.75
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	2.18*	1.69	2.82
Threatened at school 1+ times in past year	1.67	1.33	2.11
Property stolen at school in past year	-	-	-
Bullied at school in past year	0.98*	0.81	1.18
Electronically bullied in the past year	1.24*	1.03	1.50
Sexual activity & forced sexual intercourse			
Hit by bf/gf in past year	1.50*	1.21	1.86
Ever had sex	1.28	1.00	1.65
Forced to have sex in the past	2.08*	1.67	2.59
Had sex before 13 years old	1.43*	1.07	1.90
Had sex with 4+ people in life	0.83	0.65	1.06
Had sex with 1+ people in past 3 months	1.40*	1.09	1.79
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.33	0.90	1.95
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.27	0.68	2.36
Got cigarettes in store in the past month	0.70	0.39	1.24
Smoked at school 1+ times in past month	1.99*	1.33	2.98
Alcohol use			
Had first drink before 13	1.29*	1.07	1.55
Had 1+ drinks past month	1.10	0.88	1.38
Five+ drinks 1+ past month	1.66*	1.31	2.10
Had 1+ drinks at school 1+ month	1.49*	1.13	1.96
Other substance use			
Tried marijuana 1+ times in life	1.03	0.79	1.34

Tried marijuana before 13 years old	1.24	0.90	1.71
Used marijuana 1+ times in past month	1.30	0.98	1.72
Used marijuana in school 1+ times in the past month	0.88	0.61	1.28
Used cocaine 1+ times in life	1.22	0.83	1.81
Used cocaine 1+ times in past month	1.06	0.61	1.85
Sniffed glue 1+ times in life	1.25	0.98	1.58
Used heroin 1+ times in life	0.91	0.48	1.75
Used meth 1+ times in life	1.20	0.74	1.94
Used ecstasy 1+ times in life	1.10	0.79	1.53
Used LSD 1+ times in life	1.38	0.98	1.94
Took steroids 1+ times in life	1.98*	1.24	3.16
Taken prescription drugs w/o prescription	1.10	0.87	1.39
Injected drugs 1+ times in life	1.30	0.67	2.54
Offered/sold drugs at school in past year	0.86	0.70	1.06
Body image & perceived overweight			
Perceived self to be slightly/very overweight	0.90	0.75	1.09
Trying to lose weight	0.81*	0.67	0.98
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	1.69*	1.40	2.05
Took pills to lose weight in past month	1.36*	1.04	1.79
Vomited to lose weight in past month	1.79*	1.37	2.34
Other behaviors			
Attended PE class daily	1.20	0.99	1.46
Played on 1+ sports teams in past year	0.90	0.75	1.07
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	1.00	0.81	1.24
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Talked to teacher about problem	1.16	0.98	1.39

*$p < 0.05$

Year 2013

Study Aim 1 – Looking for profiles. Results of the individual depressed mood or suicide indicators during the 12 months prior to the 2013 YRBS survey were as follows: 30.1% students felt sad or hopeless, 16.6% had considered suicide, 13.8% had planned suicide, 7.5% had attempted suicide, and 2.4% had a suicide attempt injury treated by a physician or nurse. Similar to analyses for previous years, we tested groupings of the nationally representative sample of students into several latent classes of suicide risk. Table 18 presents the information indices and likelihood tests for the one- to four-class models. These indices showed improved fit as the number of classes increased, with the exception of a negligible reduction in entropy and a non-significant result for Lo-Mendell test for the five-class model. This indicated that the four-class model failed to fit the data better than the three-class model. Overall consideration of the indices while taking into the account of the proportion breakdowns, again suggested that the three-class model provided a better fit than either the two-or four-class model. Consequently we chose the three-class model as optimal and fitted the conditional model that controls for covariates (see Figure 5). Table 19 presents the probabilities for each of the 5 indicators for each class. In our final conditional model, Class 1 (81.45% of students) was defined as "low-risk non-depressed", Class 2 (10.47%) was defined as "considered and planned suicide", and Class 3 (8.08%) was defined as "attempted suicide".

Table 18. Fit Criteria of Unconditional Models for 2013 (N = 13534)

Fit Index	One-class	Two-classes	Three-Classes	Four-classes
AIC	49540.778	37956.187	37253.757	37208.19
BIC	49578.342	38038.829	37381.478	37380.988
SSBIC	49562.453	38003.872	37327.453	37307.896
Entropy	-	0.92	0.886	0.901
LRT	-	$p < .001$	$p < .001$	$p > .001$
BLRT	-	$p < .001$	$p < .001$	$p > .001$

Table 19. Probabilities for each indicator by class (2013)

Class	Sad	SI	SP	SA	SA & Injury
1	0.18	0.01	0.01	0.00	0.00
2	0.77	0.70	0.52	0.03	0.00
3	0.82	0.94	0.81	1.00	0.35

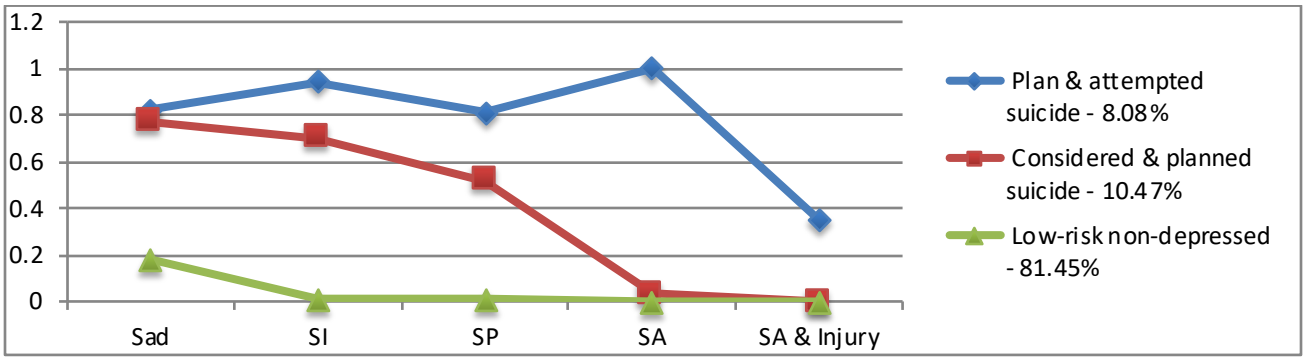

Figure 5. Three-class conditional latent profiles of indicators for 2013 (*N* = 13207)

Study Aim 2 – Examining predictors of profiles. Regression estimates for the model are displayed in Table 20. In the first set of comparisons, the "*low-risk non-depressed*" class served as the reference class. Compared to the "*low-risk non-depressed*" class, students in both the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes were more likely to be female and be bi- or multiracial. Students in the "*planned and attempted suicide*" class were also more likely to be younger that those of the "*low-risk non-depressed*" class, while students in the "*considered and planned suicide*" class were more likely to be of a racial minority. In the second set of analyses, the "*planned and attempted suicide*" class served as the reference class. Compared to the "*planned and attempted suicide*" class, students in the "*considered and planned suicide*" class were more likely to be older and of a racial minority.

Table 20. Multinomial Logistic Regression Odds Ratios for 3-Class Model (YRBSS 2013)

	Covariate	Est.	S.E.
Compared to "Low-risk non-depressed"			
Planned & attempted suicide	Sex	-0.96*	0.08
	Age	-0.14*	0.03
	Minority	0.12	0.08
	Bi- or multiracial	-0.55*	0.09
Considered & planned suicide	Sex	-0.77*	0.07
	Age	0.00	0.03
	Minority	0.24*	0.08
	Bi- or multiracial	-0.45*	0.10
Compared to "Planned & attempted suicide"			
Considered & planned suicide	Sex	0.18	0.11
	Age	0.13*	0.04
	Minority	0.36*	0.12
	Bi- or multiracial	0.10	0.14

*$p < 0.05$

Further analyses of predictors showed a significant difference between the "*low-risk non-depressed*" class versus the other two classes ("*considered and planned suicide*" and the "*planned and attempted suicide*" classes). The binomial logistic regression of symptom groups predicting membership in the two other classes showed numerous covariates being significant predictors (see Table 21). Students were more likely to be in the "*considered and planned suicide*" and the "*planned and attempted suicide*" classes if they carried a weapon in the past month, carried a gun in the past month, carried a weapon to school in the past month, fought at least one time in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were bullied at school in the past year, were electronically bullied in the past year, were hurt by a date in the past year, ever had sex, were forced to have sex in the past, were forced to have sex by a date in the past year, had sex in the past 3 months, smoked a cigarette before the age of 13, smoked at school in the past month, had their first drink before the age of 13, had at least one drink in the past month, had tried marijuana in their life, use marijuana in the past month, tried sniffing glue, had used meth in their life, had taken

prescriptions drugs without prescription, had injected illicit drugs, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, were trying to lose weight, fasted to lose weight in the past month, took pills to lose weight in the past month, or vomited to lose weight in the past month. Conversely, students were more likely to be in the "*low-risk non-depressed*" class if they had played on at least one sports team in the past year, or got at least 8 hours of sleep daily. Interestingly again, students were also likely to be "*low-risk non-depressed*" if they got cigarettes in the store in the past month.

Table 21. Binomial Logistic Regression Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" (YRBSS 2013)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.34*	1.16	1.55
Carried gun 1+ times in past month	0.79*	0.64	0.98
Carried weapon school 1+ times in past month	1.91*	1.54	2.36
Fought 1+ times in past year	1.87*	1.67	2.10
Fought in school 1+ times in past year	1.09	0.93	1.28
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.65*	1.42	1.93
Threatened at school 1+ times in past year	2.13*	1.82	2.49
Property stolen at school in past year	-	-	-
Bullied at school in past year	2.51*	2.24	2.81
Electronically bullied in the past year	2.44*	2.16	2.76
Sexual activity & forced sexual intercourse			
Hurt by date in past year	2.20*	1.87	2.59
Ever had sex	1.39*	1.18	1.63
Forced to have sex in the past	2.82*	2.36	3.36
Forced to have sex by date in the past year	2.09*	1.76	2.48
Had sex before 13 years old	0.98	0.80	1.19
Had sex with 4+ people in life	0.91	0.78	1.06
Had sex with 1+ people in past 3 months	0.85*	0.73	0.99

Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.43*	1.11	1.84
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.40	0.90	2.18
Got cigarettes in store in the past month	0.60*	0.43	0.83
Smoked at school 1+ times in past month	1.76*	1.34	2.32
Alcohol use			
Had first drink before 13	1.68*	1.50	1.89
Had 1+ drinks past month	1.75*	1.53	2.00
Five+ drinks 1+ past month	1.08	0.92	1.26
Had 1+ drinks at school 1+ times in past month	-	-	-
Had 10+ drinks in a row in the past month	1.22	1.00	1.49
Other substance use			
Tried marijuana 1+ times in life	1.18*	1.04	1.35
Tried marijuana before 13 years old	0.95	0.81	1.13
Used marijuana 1+ times in past month	1.15*	1.00	1.33
Used marijuana in school 1+ times in past month	-	-	-
Used cocaine 1+ times in life	1.12	0.88	1.43
Used cocaine 1+ times in past month	-	-	-
Sniffed glue 1+ times in life	2.35*	2.01	2.74
Used heroin 1+ times in life	0.69	0.44	1.08
Used meth 1+ times in life	1.43*	1.04	1.98
Used ecstasy 1+ times in life	1.00	0.81	1.24
Used LSD 1+ times in life	1.05	0.85	1.30
Took steroids 1+ times in life	1.01	0.75	1.35
Taken prescription drugs w/o prescription	1.61*	1.41	1.84
Injected drugs 1+ times in life	1.89*	1.21	2.96
Offered/sold drugs at school in past year	1.75*	1.57	1.95
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.31*	1.17	1.47
Trying to lose weight	1.20*	1.07	1.34
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	3.61*	3.20	4.07
Took pills to lose weight in past month	1.53*	1.26	1.84
Vomited to lose weight in past month	2.44*	2.00	2.99
Other behaviors			

Attended PE class daily	0.93	0.84	1.03
Played on 1+ sports teams in past year	0.74*	0.67	0.81
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.59*	0.53	0.66
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Talked to teacher about problem	-	-	-

*$p < 0.05$

Analysis exploring the differences between the "*planned and attempted suicide*" class versus the "*considered and planned suicide*" class also showed numerous covariates being significant predictors (see Table 22). Students were more likely to be in the "*planned and attempted suicide*" class if they carried a weapon to school in the past month, fought at least one time in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were electronically bullied in the past year, were hurt by a date in the past year, were forced to have sex in the past, had sex before the age of 13, smoked a cigarette before the age of 13, had their first drink before age 13, had 5 or more drinks at least once in the past month, had sniffed glue, had taken steroids before, had injected illicit drugs, fasted to lose weight in the past month, took pills to lose weight in the past month, or vomited to lose weight in the past month. Conversely, students were less likely to be in the "*planned and attempted suicide*" class if they attended PE classes daily.

Table 22. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Planned and Attempted Suicide*" class instead of the "*Considered and Planned suicide*" class (2013)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.00	0.78	1.29
Carried gun 1+ times in past month	1.30	0.90	1.89
Carried weapon school 1+ times in past month	1.69*	1.18	2.41
Fought 1+ times in past year	1.53*	1.25	1.87
Fought in school 1+ times in past year	1.18	0.89	1.56
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	2.01*	1.58	2.57
Threatened at school 1+ times in past year	1.84*	1.45	2.33
Property stolen at school in past year	-	-	-
Bullied at school in past year	1.01	0.83	1.22
Electronically bullied in the past year	1.51*	1.24	1.83
Sexual activity & forced sexual intercourse			
Hurt by date in past year	1.61*	1.25	2.08
Ever had sex	1.06	0.79	1.41
Forced to have sex in the past	1.83*	1.40	2.40
Forced to have sex by date in the past year	1.25	0.96	1.62
Had sex before 13 years old	1.46*	1.03	2.06
Had sex with 4+ people in life	1.06	0.82	1.39
Had sex with 1+ people in past 3 months	1.13	0.86	1.49
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.62*	1.09	2.43
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.75	0.87	3.50
Got cigarettes in store in the past month	0.76	0.44	1.31
Smoked at school 1+ times in past month	1.06	0.68	1.65
Alcohol use			
Had first drink before 13	1.70*	1.39	2.08
Had 1+ drinks past month	1.19	0.94	1.52
Five+ drinks 1+ past month	1.37*	1.05	1.80
Had 1+ drinks at school 1+ times in past month	-	-	-
Had 10+ drinks in a row in the past month	1.05	0.75	1.47

Other substance use			
Tried marijuana 1+ times in life	1.17	0.92	1.49
Tried marijuana before 13 years old	1.21	0.91	1.60
Used marijuana 1+ times in past month	1.15	0.90	1.47
Used marijuana in school 1+ times in the past month	-	-	-
Used cocaine 1+ times in life	1.38	0.95	1.99
Used cocaine 1+ times in past month	-	-	-
Sniffed glue 1+ times in life	1.44*	1.13	1.83
Used heroin 1+ times in life	0.60	0.28	1.28
Used meth 1+ times in life	0.90	0.56	1.44
Used ecstasy 1+ times in life	1.13	0.79	1.61
Used LSD 1+ times in life	0.75	0.53	1.06
Took steroids 1+ times in life	2.06*	1.26	3.38
Taken prescription drugs w/o prescription	1.23	0.99	1.52
Injected drugs 1+ times in life	3.34*	1.55	7.20
Offered/sold drugs at school in past year	1.09	0.90	1.31
Body image & perceived overweight			
Perceived self to be slightly/very overweight	0.87	0.72	1.06
Trying to lose weight	0.89	0.73	1.09
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	1.78*	1.47	2.16
Took pills to lose weight in past month	1.47*	1.10	1.96
Vomited to lose weight in past month	1.80*	1.35	2.40
Other behaviors			
Attended PE class daily	1.24*	1.03	1.50
Played on 1+ sports teams in past year	0.95	0.80	1.13
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.93	0.76	1.14
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Talked to teacher about problem	-	-	-

*$p < 0.05$

Year 2015

Study Aim 1 – Looking for profiles. Results of the individual depressed mood or suicide indicators during the 12 months prior to the 2015 YRBS survey were as follows: 30.7% students felt sad or hopeless, 18.0% had considered suicide, 14.9% had planned suicide, 7.7% had attempted suicide, and 2.6% had a suicide attempt injury treated by a physician or nurse. Similar to analyses for previous years, we tested groupings of the nationally representative sample of students into several latent classes of suicide risk. Table 23 presents the information indices and likelihood tests for the one- to four-class models. These indices showed improved fit as the number of classes increased, with the exception of a negligible reduction in entropy. Overall consideration of the indices while taking into the account of the proportion breakdowns, this time suggested that the four-class model provided a better fit than either the three-class model. Consequently we chose the four-class model as optimal and fitted the conditional model that controls for covariates (see Figure 6). Table 24 presents the probabilities for each of the 5 indicators for each class. In our final conditional model, Class 1 (65.52% of students) was defined as "low-risk non-depressed", Class 2 (16.29%) was defined as "depressed mood only", Class 3 (9.09%) was defined as "considered and planned suicide", and Class 4 (9.10%) was defined as "attempted suicide".

Table 23. Fit Criteria of Unconditional Models for 2015 (N = 15530)

Fit Index	One-class	Two-classes	Three-Classes	Four-classes
AIC	58245.471	44504.729	43667.309	43474.559
BIC	58283.724	44588.885	43797.368	43650.521
SSBIC	58267.834	44553.928	43743.343	43577.429
Entropy	-	0.911	0.887	0.89
LRT	-	$p < .001$	$p < .001$	$p < .001$
BLRT	-	$p < .001$	$p < .001$	$p < .001$

Table 24. Probabilities for each indicator by class (2015)

Class	Sad	SI	SP	SA	SA & Injury
1	0	0.01	0.02	0	0
2	0.84	0.04	0.1	0	0
3	0.78	1	0.6	0	0
4	0.84	0.92	0.81	1	0.35

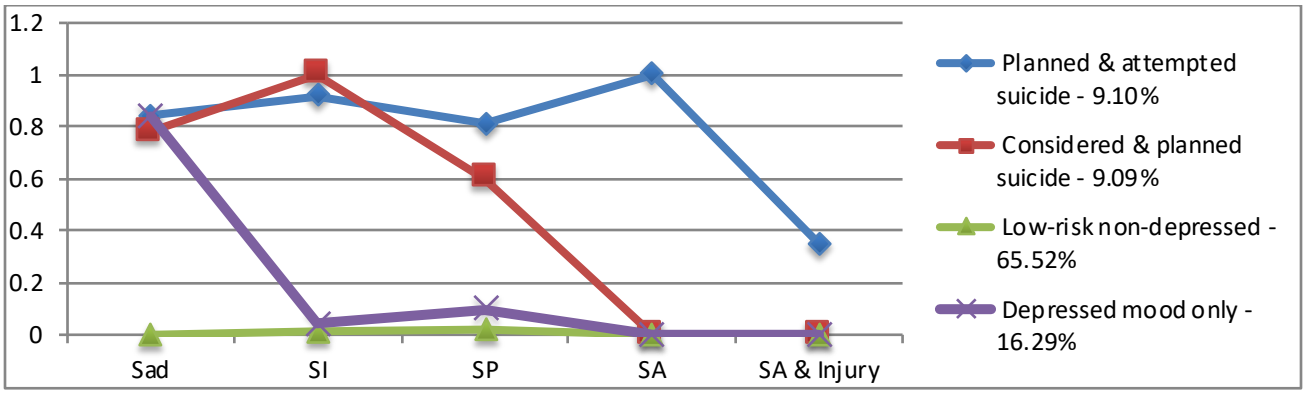

Figure 6. Four-class conditional latent profiles of indicators for 2015 (*N* = 15111)

Study Aim 2 – Examining predictors of profiles. Regression estimates for the model are displayed in Table 25. As this year's model had 4 latent classes, in the first set of comparisons, the "*low-risk non-depressed*" class served as the reference class against the students in all three other classes - the "*depressed mood only*" class, the "*considered and planned suicide*" class, and the "*planned and attempted suicide*" class. Students in those three classes were more likely to be female and be bi- or multiracial. Students in the "*planned and attempted suicide*" class were also more likely to be younger that those of the "*low-risk non-depressed*" class, while students in the "*depressed mood only*" class were more likely to be older. Compared to the "*low-risk non-depressed*" class, students in both the "*planned and attempted suicide*" and "*considered and planned suicide*" classes were more likely to be of a racial minority, while students in the "*depressed only*" class were less likely to be a racial minority. In the second set of analyses, the "*planned and attempted suicide*" class served as the reference class. Compared

to the "*planned and attempted suicide*" class, students in the "*considered and planned suicide*" class were more likely to be a racial minority, while the students in the "*depressed mood only*" class were more like to be male and older. Finally, a third set of analyses was done to compare the "*considered and planned suicide*" class to the "*depressed mood only*" class, and results showed that students in the "*depressed mood only*" class were less likely to be a racial minority.

Table 25. Multinomial Logistic Regression Odds Ratios for 3-Class Model (YRBSS 2015)

	Covariate	Est.	S.E.
Compared to "Low-risk non-depressed"			
Planned & attempted suicide	Sex	-1.21*	0.08
	Age	-0.10*	0.03
	Minority	0.29*	0.08
	Bi- or multiracial	-0.29*	0.08
Considered & planned suicide	Sex	-0.92*	0.08
	Age	0.06	0.03
	Minority	0.33*	0.12
	Bi- or multiracial	-0.37*	0.10
Depressed mood only	Sex	-0.87*	0.06
	Age	0.08*	0.02
	Minority	-0.27*	0.06
	Bi- or multiracial	-0.14*	0.06
Compared to "Planned & attempted suicide"			
Considered & planned suicide	Sex	0.29	0.10
	Age	0.16	0.04
	Minority	0.62*	0.13
	Bi- or multiracial	-0.08	0.12
Depressed mood only	Sex	0.34*	0.08
	Age	0.18*	0.03
	Minority	0.02	0.09
	Bi- or multiracial	0.15	0.09
Compared to "Considered & planned suicide"			
Depressed mood only	Sex	0.05	0.08
	Age	0.02	0.04
	Minority	-0.60*	0.11
	Bi- or multiracial	0.23	0.11

*$p < 0.05$

Further analyses of predictors showed a significant difference between the "*low-risk non-depressed*" class versus the other three classes ("*considered and planned suicide*", "*planned and attempted suicide*", and the "*depressed only*" classes). The binomial logistic regression of symptom groups predicting membership in the three other classes showed numerous covariates being significant predictors (see Table 26). Students were more likely to be in the other three classes if they carried a weapon in the past month, carried a gun in the past month, carried a weapon to school in the past month, fought at least one time in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were bullied at school in the past year, were electronically bullied in the past year, were hurt by a date in the past year, ever had sex, were forced to have sex in the past, were forced to have sex by a date in the past year, had sex with 4 or more people in their life, had their first drink before age 13, had at least one drink in the past month, had 5 or more drinks at least once in the past month, had tried marijuana in their life, use marijuana in the past month, tried sniffing glue, had taken prescriptions drugs without prescription, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, were trying to lose weight, had problems with concentration, memory and decision-making, or identified as gay, lesbian, or bisexual. Conversely, students were more likely to be in the "*low-risk non-depressed*" class if they had attended PE classes daily, had played on at least one sports team in the past year, got at least 8 hours of sleep daily, or spoke English well or very well. Interestingly again, students were also likely to be "*low-risk non-depressed*" if they got cigarettes in the store in the past month or tried marijuana before age 13.

Table 26. Binomial Logistic Regression Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" (YRBSS 2015)

Variable	OR	95% CI for OR	
		Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.18*	1.04	1.35
Carried gun 1+ times in past month	0.65*	0.53	0.80
Carried weapon school 1+ times in past month	1.49*	1.21	1.83
Fought 1+ times in past year	1.94*	1.75	2.16
Fought in school 1+ times in past year	1.08	0.91	1.27
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	2.60*	2.21	3.06
Threatened at school 1+ times in past year	1.46*	1.25	1.72
Property stolen at school in past year	-	-	-
Bullied at school in past year	2.19*	1.99	2.42
Electronically bullied in the past year	3.05*	2.73	3.41
Sexual activity & forced sexual intercourse			
Hurt by date in past year	2.70*	2.28	3.19
Ever had sex	1.21*	1.05	1.39
Forced to have sex in the past	2.68*	2.25	3.20
Forced to have sex by date in the past year	2.32*	1.97	2.73
Had sex before 13 years old	0.88	0.71	1.09
Had sex with 4+ people in life	0.86*	0.74	0.99
Had sex with 1+ people in past 3 months	1.13	0.98	1.30
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.09	0.82	1.46
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.13	0.65	1.96
Got cigarettes in store in the past month	0.64*	0.44	0.93
Smoked at school 1+ times in past month	-	-	-
Alcohol use			
Had first drink before 13	1.55*	1.39	1.73
Had 1+ drinks past month	1.67*	1.49	1.88
Five+ drinks 1+ past month	1.21*	1.05	1.40
Had 1+ drinks at school 1+ month	-	-	-
Had 10+ drinks in a row in the past month	0.86	0.70	1.06
Other substance use			
Tried marijuana 1+ times in life	1.44*	1.29	1.61
Tried marijuana before 13 years old	0.78*	0.66	0.91
Used marijuana 1+ times in past month	1.15*	1.01	1.30
Used marijuana in school 1+ times in past month	-	-	-
Used cocaine 1+ times in life	0.90	0.71	1.13
Used cocaine 1+ times in past month	-	-	-
Sniffed glue 1+ times in life	2.38*	1.99	2.84

Used heroin 1+ times in life	1.25	0.76	2.06
Used meth 1+ times in life	0.72	0.52	1.01
Used ecstasy 1+ times in life	1.04	0.82	1.32
Used synthetic marijuana 1+ times in life	1.13	0.96	1.33
Used LSD 1+ times in life	1.03	0.83	1.27
Took steroids 1+ times in life	1.25	0.96	1.63
Taken prescription drugs w/o prescription	1.60*	1.42	1.80
Injected drugs 1+ times in life	1.28	0.78	2.08
Offered/sold drugs at school in past year	1.66*	1.50	1.83
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.21*	1.11	1.33
Trying to lose weight	1.56*	1.43	1.69
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	-	-	-
Took pills to lose weight in past month	-	-	-
Vomited to lose weight in past month	-	-	-
Other behaviors			
Attended PE class daily	0.91*	0.82	1.00
Played on 1+ sports teams in past year	0.77*	0.70	0.84
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.62*	0.56	0.68
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Getting mostly As and Bs in class	0.83*	0.75	0.91
Talked to teacher about problem	-	-	-
Have problems with concentration, memory, and decision-making	5.39*	4.92	5.91
Speaks English well or very well	0.64*	0.47	0.89
Sexuality			
Identified as gay, lesbian, or bisexual	4.30*	3.79	4.87

*$p < 0.05$

Analysis exploring the differences between the "*planned and attempted suicide*" class versus the "*considered and planned suicide*" class also showed numerous covariates being significant predictors (see Table 27). Students were more likely to be in the "*planned and attempted suicide*" class if they carried a weapon to school in the past month, fought at least one time in the past year, missed school in the past month due to feeling unsafe, were threatened at school in the past year, were electronically bullied in the past year, were hurt by a date in the past year, were forced to have sex in the past, had their first drink before age 13, had drank at least once in the

past month, had used marijuana in the past month, had sniffed glue, had problems with concentration, memory and decision-making, or identified as gay, lesbian, or bisexual. Conversely, students were less likely to be in the "*planned and attempted suicide*" class if they were getting mostly As and Bs in class, or spoke English well or very well.

Table 27. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Planned and Attempted Suicide*" class instead of the "*Considered and Planned suicide*" class (2015)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	0.95	0.72	1.25
Carried gun 1+ times in past month	0.87	0.58	1.31
Carried weapon school 1+ times in past month	1.56*	1.06	2.30
Fought 1+ times in past year	2.12*	1.71	2.63
Fought in school 1+ times in past year	1.29	0.94	1.77
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.91*	1.50	2.44
Threatened at school 1+ times in past year	1.59*	1.24	2.04
Property stolen at school in past year	-	-	-
Bullied at school in past year	1.12	0.93	1.35
Electronically bullied in the past year	1.54*	1.28	1.86
Sexual activity & forced sexual intercourse			
Hurt by date in past year	1.93*	1.50	2.49
Ever had sex	1.13	0.83	1.54
Forced to have sex in the past	1.86*	1.43	2.42
Forced to have sex by date in the past year	1.06	0.82	1.37
Had sex before 13 years old	1.38	0.94	2.03
Had sex with 4+ people in life	0.87	0.66	1.15
Had sex with 1+ people in past 3 months	0.83	0.62	1.11
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.44	0.89	2.34
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	0.86	0.36	2.05
Got cigarettes in store in the past month	1.67	0.76	3.67
Smoked at school 1+ times in past month	-	-	-
Alcohol use			
Had first drink before 13	1.55*	1.25	1.92
Had 1+ drinks past month	1.41*	1.10	1.80
Five+ drinks 1+ past month	1.08	0.82	1.43
Had 1+ drinks at school 1+ month	-	-	-
Had 10+ drinks in a row in the past month	1.21	0.81	1.80

Other substance use			
Tried marijuana 1+ times in life	1.08	0.84	1.39
Tried marijuana before 13 years old	1.35	0.99	1.84
Used marijuana 1+ times in past month	1.58*	1.22	2.05
Used marijuana in school 1+ times in past month	-	-	-
Used cocaine 1+ times in life	0.90	0.59	1.37
Used cocaine 1+ times in past month	-	-	-
Sniffed glue 1+ times in life	1.78*	1.34	2.35
Used heroin 1+ times in life	1.19	0.55	2.56
Used meth 1+ times in life	0.89	0.52	1.54
Used ecstasy 1+ times in life	0.83	0.55	1.26
Used synthetic marijuana 1+ times in life	0.91	0.68	1.22
Used LSD 1+ times in life	1.29	0.90	1.84
Took steroids 1+ times in life	0.98	0.65	1.48
Taken prescription drugs w/o prescription	1.22	0.97	1.53
Injected drugs 1+ times in life	2.06	0.93	4.56
Offered/sold drugs at school in past year	1.11	0.91	1.35
Body image & perceived overweight			
Perceived self to be slightly/very overweight	0.97	0.80	1.16
Trying to lose weight	1.13	0.94	1.36
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	-	-	-
Took pills to lose weight in past month	-	-	-
Vomited to lose weight in past month	-	-	-
Other behaviors			
Attended PE class daily	1.26	1.03	1.54
Played on 1+ sports teams in past year	1.07	0.89	1.30
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.93	0.73	1.17
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Getting mostly As and Bs in class	0.68*	0.56	0.82
Talked to teacher about problem	-	-	-
Have problems with concentration, memory, and decision-making	1.66*	1.37	2.02
Speaks English well or very well	0.40*	0.23	0.72
Sexuality			
Identified as gay, lesbian, or bisexual	1.88*	1.55	2.28

*$p < 0.05$

For the data of Year 2015, a third set of analyses of predictors was done as the latent class analysis revealed 4 classes. As such, analysis exploring the differences between the "*considered and planned suicide*" class versus the "*depressed only*" class was done to differentiate the

students who only exhibited depressed mood from those who had suicidal ideation as well. Results showed numerous covariates being significant predictors (see Table 28). Students were more likely to be in the "*considered and planned suicide*" class if they carried a weapon to school in the past month, were bullied at school in the past year, were electronically bullied in the past year, were forced to have sex in the past, were forced to have sex by a date in the past year, were offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight, had problems with concentration, memory and decision-making, or identified as gay, lesbian, or bisexual. Interestingly, there were no significant predictors for students to be less likely in the "*planned and attempted suicide*" class.

Table 28. Binomial Logistic Regression Odds Ratios of Predictors for being in the "*Considered and Planned suicide*" class instead of the "*Depressed only*" class (2015)

		95% CI for OR	
Variable	OR	Lower	Upper
Aggressive risk behaviors			
Carried weapon 1+ times in past month	1.05	0.83	1.34
Carried gun 1+ times in past month	1.16	0.78	1.71
Carried weapon school 1+ times in past month	1.74*	1.17	2.58
Fought 1+ times in past year	1.01	0.83	1.23
Fought in school 1+ times in past year	0.90	0.66	1.24
Feelings of unsafe / being bullied			
Missed school due to feeling unsafe 1+ times in past month	1.05	0.82	1.35
Threatened at school 1+ times in past year	1.13	0.87	1.46
Property stolen at school in past year	-	-	-
Bullied at school in past year	1.52*	1.28	1.79
Electronically bullied in the past year	1.32*	1.11	1.57
Sexual activity & forced sexual intercourse			
Hurt by date in past year	1.26	0.97	1.63
Ever had sex	1.04	0.80	1.36
Forced to have sex in the past	1.33*	1.01	1.74
Forced to have sex by date in the past year	1.47*	1.15	1.89
Had sex before 13 years old	0.97	0.66	1.43
Had sex with 4+ people in life	1.11	0.86	1.43
Had sex with 1+ people in past 3 months	1.13	0.87	1.47
Tobacco use			
Ever tried cigarettes	-	-	-
Smoked cigarette before 13 years old	1.56	0.91	2.68
Smoked 1+ times in past month	-	-	-
Smoked 10+ cigarettes/day in past month	1.38	0.49	3.87

Got cigarettes in store in the past month	0.49	0.22	1.12
Smoked at school 1+ times in past month	-	-	-
Alcohol use			
Had first drink before 13	1.12	0.92	1.36
Had 1+ drinks past month	1.18	0.95	1.46
Five+ drinks 1+ past month	1.00	0.77	1.30
Had 1+ drinks at school 1+ month	-	-	-
Had 10+ drinks in a row in the past month	0.96	0.65	1.40
Other substance use			
Tried marijuana 1+ times in life	1.00	0.81	1.23
Tried marijuana before 13 years old	0.94	0.69	1.28
Used marijuana 1+ times in past month	0.90	0.71	1.13
Used marijuana in school 1+ times in past month	-	-	-
Used cocaine 1+ times in life	0.85	0.56	1.28
Used cocaine 1+ times in past month	-	-	-
Sniffed glue 1+ times in life	1.29	0.97	1.72
Used heroin 1+ times in life	1.69	0.70	4.08
Used meth 1+ times in life	1.32	0.75	2.32
Used ecstasy 1+ times in life	0.91	0.61	1.36
Used synthetic marijuana 1+ times in life	0.93	0.70	1.23
Used LSD 1+ times in life	1.01	0.69	1.46
Took steroids 1+ times in life	1.35	0.88	2.07
Taken prescription drugs w/o prescription	1.21	0.98	1.50
Injected drugs 1+ times in life	0.98	0.38	2.55
Offered/sold drugs at school in past year	1.27*	1.07	1.52
Body image & perceived overweight			
Perceived self to be slightly/very overweight	1.32*	1.11	1.56
Trying to lose weight	1.06	0.89	1.25
Exercised to lose weight in past month	-	-	-
Ate less to lose weight in past month	-	-	-
Fasted to lose weight in past month	-	-	-
Took pills to lose weight in past month	-	-	-
Vomited to lose weight in past month	-	-	-
Other behaviors			
Attended PE class daily	0.84	0.71	1.00
Played on 1+ sports teams in past year	0.91	0.77	1.07
Vigorous exercise in past week	-	-	-
Moderate exercise in past week	-	-	-
Get 8+ hours sleep	0.86	0.71	1.04
Described own health as fair or poor	-	-	-
Getting mostly Ds and Fs in class	-	-	-
Getting mostly As and Bs in class	1.06	0.90	1.26
Talked to teacher about problem	-	-	-
Have problems with concentration, memory, and decision-making	1.62*	1.38	1.90
Speaks English well or very well	0.88	0.48	1.60
Sexuality			
Identified as gay, lesbian, or bisexual	1.54*	1.26	1.87

*$p < 0.05$

Comparing Profiles and Predictors over Time (Study Aim 3)

Looking at latent classes over time. From the results of latent class profile analysis from *Study Aim 1* and the predictors analyses from *Study Aim 2*, we are able to compare and contrast the fitted models from all 5 times points across the 10 years to identify changes in trends, and persistence of significant predictors of the classes of students. Figure 7 shows the fitted models and their latent profiles for all 5 times points – 2007, 2009, 2011, 2013, and 2015.

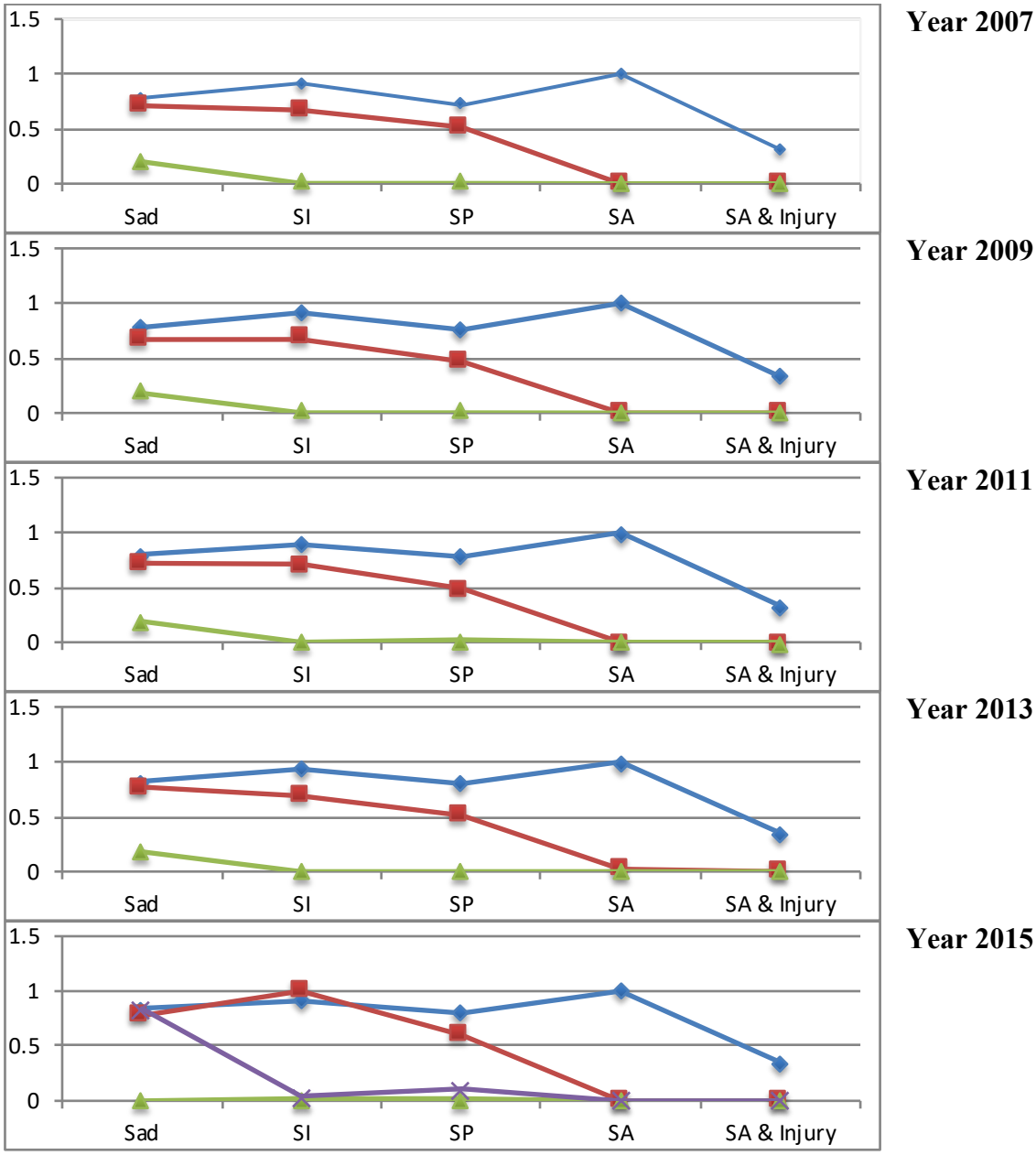

Figure 7. Conditional latent profiles of indicators for years 2007 to 2015

The profiles of the latent classes seem to stay relatively consistent from 2007 through 2013 with each year exhibiting 3 classes – the "*low-risk non-depressed*", the "*considered and planned suicide*", and the "*planned and attempted suicide*" classes. In 2015 however, the best-fitted model exhibited the addition of another class – the "*depressed only*" class. Class proportions also seemed to stay consistent, except for 2015. Table 29 displays the breakdowns of each year's classes and their proportions.

Table 29. Profile breakdown of latent classes and their proportions for 2007 to 2015

	2007	2009	2011	2013	2015
Sample Size (N)	13645	15923	15014	13207	15111
Proportions (%)					
"Planned and Attempted Suicide" class	7.67	6.88	7.89	8.08	9.10
"Considered and Planned Suicide" class	9.18	9.72	10.12	10.47	9.09
"Low-risk non-depressed" class	83.15	83.41	81.99	81.45	65.52
"Depressed Only" class	-	-	-	-	16.29

Looking at demographic predictors of latent classes over time. In *Study Aim 2*, we analyzed the demographic predictors for each latent class in each of the years, and found several significant variables that differentiated the students between the classes. Over the years, only a few demographic predictors remained significant for the class comparisons for each year. When comparing the "*low-risk non-depressed*" class to the "*planned and attempted suicide*" and "*considered and planned suicide*" classes, the students in the "*low-risk non-depressed*" class were consistently more likely to be female, or bi- or multiracial across all 10 years. When compared to the "*planned and attempted suicide*" class only, students in the "*low-risk non-depressed*" class were consistently likely to be younger starting from year 2009. These students were also consistently more likely to be of a racial minority except for the year 2013, where the racial minority predictor was not significant. Comparing the "*planned and attempted suicide*" to the "*considered and planned suicide*" classes, students in the latter class were consistently more

likely to be older up until year 2013. The racial minority predictor variable also showed up significantly across all the years for this comparison, however changed in direction from students in the "*considered and planned suicide*" class being less likely to be of a racial minority in 2007 and 2009, to more likely to be of a racial minority from 2011 to 2015. Table 30 lists all the odds ratios of the demographic predictor variables and their significance by year.

Table 30. Demographic predictors and odds ratios of latent classes for 2007 to 2015

	Covariate	2007	2009	2011	2013	2015
Compared to "Low-risk non-depressed"						
Planned & attempted suicide	Sex	-0.89*	-0.78*	-0.70*	-0.96*	-1.21*
	Age	-0.03	-0.11*	-0.12*	-0.14*	-0.10*
	Minority	0.36*	0.24*	0.21*	0.12	0.29*
	Bi- or multiracial	-0.28*	-0.53*	-0.18*	-0.55*	-0.29*
Considered & planned suicide	Sex	-0.67*	-0.68*	-0.50*	-0.77*	-0.92*
	Age	0.05	-0.01	-0.02	0.00	0.06
	Minority	-0.15	-0.20*	0.13	0.24*	0.33*
	Bi- or multiracial	-0.32*	-0.36*	-0.19*	-0.45*	-0.37*
Depressed mood only	Sex	-	-	-	-	-0.87*
	Age	-	-	-	-	0.08*
	Minority	-	-	-	-	-0.27*
	Bi- or multiracial	-	-	-	-	-0.14*
Compared to "Planned & attempted suicide"						
Considered & planned suicide	Sex	0.22*	0.11*	0.20	0.18	0.29
	Age	0.08*	0.10*	0.10*	0.13*	0.16
	Minority	-0.51*	-0.43*	0.34*	0.36*	0.62*
	Bi- or multiracial	-0.04	0.17	0.18	0.10	-0.08
Depressed mood only	Sex	-	-	-	-	0.34*
	Age	-	-	-	-	0.18*
	Minority	-	-	-	-	0.02
	Bi- or multiracial	-	-	-	-	0.15
Compared to "Considered & planned suicide"						
Depressed mood only	Sex	-	-	-	-	0.05
	Age	-	-	-	-	0.02
	Minority	-	-	-	-	-0.60*
	Bi- or multiracial	-	-	-	-	0.23

*$p < 0.05$

Looking at factors predicting membership in the "*low-risk non-depressed*" class over time. In *Study Aim 2*, we also analyzed the all the other factors that may predict membership for each latent class in each of the years, and found numerous significant variables that differentiated the students between the classes. Over the years, several of these predictors remained significant for the class comparison between the "*low-risk non-depressed*" and other classes (Table 31). These predictors showed that students were consistently more likely to be in the other classes other than the "*low-risk non-depressed*" class if they carried a weapon to school in the past month, fought at least once in the past year, missed school due to feeling unsafe at least once in the past month, were threatened at school at least once in the past year, were hit by a date in the past year, were forced to have sex in the past, had their first drink before age 13, had at least once drink in the past month, had tried marijuana at least once in their life, had sniffed glue at least once in their life, had been offered or sold drugs at school in the past year, perceived themselves to be slightly or very overweight. Conversely, students were consistently more likely to be in the "*low-risk non-depressed*" class if they got at least 8 hours of sleep daily.

For the same comparison, there were also predictors that showed significance whenever they were asked in the survey for at least 3 time points in a row. These predictors predicted students to be less likely in the "*low-risk non-depressed*" class is they were bullied in the school in the past year (2009 – 2015), were electronically bulled in the past year (2011 – 2015), obtained cigarettes in the store in the past month (2009 – 2015), smoked at school at least once in the past month (2007 – 2013), had drank in school at least once in the past month (2007 – 2011), had taken prescription drugs without a prescription (2011 – 2015), had fasted to lose weight in the past month (2007 – 2011), had taken pills to lose weight in the past month (2007 – 2011), or had vomited to lose weight in the past month (2007 – 2011).

In the same analysis comparing other classes to the "*low-risk non-depressed*" class, several predictors that were measured in all 10 years were also significant for the majority of the years (at least 3 out of 5 time points) although they were not always consistent or had breaks in between the years. Students were again less likely to be in the "*low-risk non-depressed*" class if they carried a weapon in the past month (not for 2007 & 2009), ever had sex (not for 2009), had sex before age 13 (not for 2013 & 2015), had smoked a cigarette before age 13 (not for 2015), smoked at least 10 cigarettes per day in the past month (not for 2013 & 2015), had injected drugs at least once in their life (not for 2011 & 2015), were trying to lose weight (not for 2011), and conversely more likely to be in the "*low-risk non-depressed*" class is they had played on at least one sports team in the past year (not for 2007).

Table 31. Odds Ratios of Predictors for being in Other Classes instead of "*Low-risk Non-depressed*" for 2007 to 2015

Variable	2007	2009	2011	2013	2015
Aggressive risk behaviors					
Carried weapon 1+ times in past month [c]	1.10	1.05	1.30*	1.34*	1.18*
Carried gun 1+ times in past month	0.87	1.03	0.90	0.79*	0.65*
Carried weapon school 1+ times in past month [a]	1.91*	2.00*	2.13*	1.91*	1.49*
Fought 1+ times in past year [a]	1.82*	1.75*	1.63*	1.87*	1.94*
Fought in school 1+ times in past year [c]	1.31*	1.32*	1.24*	1.09	1.08
Feelings of unsafe / being bullied					
Missed school due to feeling unsafe 1+ times in past month [a]	2.63*	2.21*	1.83*	1.65*	2.60*
Threatened at school 1+ times in past year [a]	2.14*	2.18*	2.44*	2.13*	1.46*
Property stolen at school in past year	1.44*	-	-	-	-
Bullied at school in past year [b]	-	2.57*	2.05*	2.51*	2.19*
Electronically bullied in the past year [b]	-	-	2.50*	2.44*	3.05*
Sexual activity & forced sexual intercourse					
Hit by bf/gf or date in past year [a]	1.96*	2.09*	2.12*	2.20*	2.70*
Ever had sex [c]	1.35*	1.09	1.24*	1.39*	1.21*
Forced to have sex in the past [a]	3.31*	3.32*	3.61*	2.82*	2.68*
Forced to have sex by date in the past year				2.09*	2.32*
Had sex before 13 years old [c]	1.22*	1.29*	1.40*	0.98	0.88
Had sex with 4+ people in life	1.01	1.05	0.87	0.91	0.86*
Had sex with 1+ in past 3 months	1.07	1.08	1.05	0.85*	1.13

Tobacco use					
Smoked cigarette before 13 years old [c]	1.47*	1.70*	1.30*	1.43*	1.09
Smoked 10+ cigarettes/day in past month [c]	1.61*	1.50*	2.38*	1.40	1.13
Got cigarettes in store in past month [b]	-	0.60*	0.55*	0.60*	0.64*
Smoked at school 1+ times in past month [b]	1.69*	1.63*	1.43*	1.76*	-
Alcohol use					
Had first drink before 13 [a]	1.61*	1.79*	1.59*	1.68*	1.55*
Had 1+ drinks past month [a]	1.50*	1.46*	1.63*	1.75*	1.67*
Five+ drinks 1+ past month	1.32*	1.11	1.03	1.08	1.21*
Had 1+ drinks at school 1+ in past month [b]	1.69*	1.98*	2.07*	-	-
Had 10+ drinks in a row in the past month	-	-	-	1.22	0.86
Other substance use					
Tried marijuana 1+ times in life [a]	1.41*	1.16*	1.33*	1.18*	1.44*
Tried marijuana before 13 years old	0.90	1.04	0.91	0.95	0.78*
Used marijuana 1+ times in past month	1.08	0.97	0.93	1.15*	1.15*
Used marijuana school 1+ times in past month	0.92	1.03	1.09	-	-
Used cocaine 1+ times in life	1.08	1.10	1.03	1.12	0.90
Used cocaine 1+ times in past month	1.20	1.09	0.77	-	-
Sniffed glue 1+ times in life [a]	2.22*	2.67*	2.30*	2.35*	2.38*
Used heroin 1+ times in life	0.68	0.90	1.43	0.69	1.25
Used meth 1+ times in life	1.14	1.18	1.19	1.43*	0.72
Used ecstasy 1+ times in life	1.32*	1.18	1.14	1.00	1.04
Used synthetic marijuana 1+ times in life	-	-	-	-	1.13
Used LSD 1+ times in life	2.94*	1.21	1.00	1.05	1.03
Took steroids 1+ times in life	1.61*	1.30*	1.30	1.01	1.25
Taken prescription drugs w/o prescription [b]	-	-	1.61*	1.61*	1.60*
Injected drugs 1+ times in life [c]	3.55*	1.68*	1.28	1.89*	1.28
Offered/sold drugs at school in past year [a]	1.68*	1.59*	1.55*	1.75*	1.66*
Body image & perceived overweight					
Perceived self to be slightly/very overweight [a]	1.27*	1.22*	1.41*	1.31*	1.21*
Trying to lose weight [c]	1.21*	1.13*	1.08	1.20*	1.56*
Exercised to lose weight in past month	0.78*	0.82*	-	-	-
Ate less to lose weight in past month	1.13	1.24*	-	-	-
Fasted to lose weight in past month [b]	2.90*	2.73*	3.37*	3.61*	-
Took pills to lose weight in past month [b]	1.82*	1.36*	1.50*	1.53*	-
Vomited to lose weight in past month [b]	2.53*	2.67*	2.45*	2.44*	-

Other behaviors					
Attended PE class daily	0.97	0.91	0.89*	0.93	0.91*
Played on 1+ sports teams in past year [c]	0.93	0.88*	0.72*	0.74*	0.77*
Vigorous exercise in past week	0.84*	0.78*	-	-	-
Moderate exercise in past week	1.09	1.09	-	-	-
Get 8+ hours sleep daily [a]	0.62*	0.58*	0.60*	0.59*	0.62*
Described own health as fair or poor	2.58*	-	-	-	-
Getting mostly Ds and Fs in class	-	2.12*	-	-	-
Getting mostly As and Bs in class	-	-	-	-	0.83*
Talked to teacher about problem	-	-	2.03*	-	-
Have problems with concentration, memory, and decision-making	-	-	-	-	5.39*
Speaks English well or very well	-	-	-	-	0.64*
Sexuality					
Identified as gay, lesbian, or bisexual	-	-	-	-	4.30*

*$p < 0.05$
[a] predictor remained significant throughout all 10 years
[b] predictor was significant whenever asked in survey for at least 3 time points in a row
[c] predictor was significant for at least 3 out of 5 time points

Looking at factors predicting membership in the "*planned & attempted suicide*" class instead of "*considered & planned suicide*" class over time. Following the analysis of predictors of students being in the "*low-risk non-depressed*" class, we also investigated factors that may predict membership for students being in the "*planned & attempted suicide*" class instead of the "*considered & planned suicide*". Over the years, several of these predictors remained significant for the class comparison between these two classes (Table 32). These predictors showed that students were consistently more likely to be in the "*planned & attempted suicide*" class if they carried a weapon to school in the past month, fought at least once in the past year, were hit by a date in the past year, were forced to have sex in the past, or had their first drink before age 13. For the same comparison, the significant predictors (whenever they were asked in the survey for at least 3 time points in a row) of students more likely being in the "*planned & attempted suicide*" class were if they were electronically bullied in the school in the past year (2011 – 2015), had drank in school at least once in the past month (2007 – 2011), had fasted to lose

weight in the past month (2007 – 2011), or had vomited to lose weight in the past month (2007 – 2011). Additionally, several predictors that were measured in all 10 years were also significant for the majority of the years (at least 3 out of 5 time points) although they were not always consistent or had breaks in between the years. Students were again more likely to be in the "*planned & attempted suicide*" class if they fought in school at least once in the past year (not for 2013 & 2015), missed school due to feeling unsafe in the past month (not for 2009), were threatened at school at least once in the past year (not for 2009 and 2011), had sex before age 13 (not for 2007 and 2015), had smoked in school at least once in the past month (not for 2013 and 2015), had sniffed glue before (not for 2011), had taken steroids before (not for 2009 and 2015), or had injected drugs at least once in their life (not for 2011 & 2015).

Table 32. Odds Ratios of Predictors for being in the "*Planned & attempted suicide*" class instead of "*Considered & planned suicide*" class for 2007 to 2015

Variable	2007	2009	2011	2013	2015
Aggressive risk behaviors					
Carried weapon 1+ times in past month	0.94	0.70*	0.98	1.00	0.95
Carried gun 1+ times in past month	1.40	1.52*	1.32	1.30	0.87
Carried weapon school 1+ times in past month [a]	1.75*	2.26*	1.57*	1.69*	1.56*
Fought 1+ times in past year [a]	1.35*	1.53*	1.66*	1.53*	2.12*
Fought in school 1+ times in past year [c]	1.49*	1.35*	1.36*	1.18	1.29
Feelings of unsafe / being bullied					
Missed school due to feeling unsafe 1+ times in past month [c]	1.70*	1.74	2.18*	2.01*	1.91*
Threatened at school 1+ times in past year [c]	1.62*	1.88	1.67	1.84*	1.59*
Property stolen at school in past year	1.01	-	-	-	-
Bullied at school in past year	-	1.36	0.98*	1.01	1.12
Electronically bullied in the past year [b]	-	-	1.24*	1.51*	1.54*
Sexual activity & forced sexual intercourse					
Hit by bf/gf or date in past year [a]	1.32*	1.33*	1.50*	1.61*	1.93*
Ever had sex	1.22	1.21	1.28	1.06	1.13
Forced to have sex in the past [a]	2.11*	2.40*	2.08*	1.83*	1.86*
Forced to have sex by date in the past year	-	-	-	1.25	1.06

Had sex before 13 years old [c]	1.19	1.77*	1.43*	1.46*	1.38
Had sex with 4+ people in life	0.92	1.02	0.83	1.06	0.87
Had sex with 1+ people in past 3 months	1.28	1.07	1.40*	1.13	0.83
Tobacco use					
Smoked cigarette before 13 years old	1.29	1.66*	1.33	1.62*	1.44
Smoked 10+ cigarettes/day in past month	1.96	1.91*	1.27	1.75	0.86
Got cigarettes in store in past month	1.02	0.53*	0.70	0.76	1.67
Smoked at school 1+ times in past month [c]	1.74*	2.34*	1.99*	1.06	-
Alcohol use					
Had first drink before 13 [a]	1.42*	1.57*	1.29*	1.70*	1.55*
Had 1+ drinks in past month	1.28	1.33*	1.10	1.19	1.41*
Five+ drinks 1+ in past month	1.18	0.97	1.66*	1.37*	1.08
Had 1+ drinks at school 1+ times in past month [b]	2.07*	2.50*	1.49*	-	-
Had 10+ drinks in a row in the past month	-	-	-	1.05	1.21
Other substance use					
Tried marijuana 1+ times in life	1.22	1.10	1.03	1.17	1.08
Tried marijuana before 13 years old	0.99	1.66*	1.24	1.21	1.35
Used marijuana 1+ times in past month	1.07	0.76	1.30	1.15	1.58*
Used marijuana school 1+ times in past month	1.42	1.39	0.88	-	-
Used cocaine 1+ times in life	1.00	1.54*	1.22	1.38	0.90
Used cocaine 1+ times in past month	1.29	0.84	1.06	-	-
Sniffed glue 1+ times in life [c]	1.35*	1.67*	1.25	1.44*	1.78*
Used heroin 1+ times in life	0.97	1.25	0.91	0.60	1.19
Used meth 1+ times in life	1.16	1.09	1.20	0.90	0.89
Used ecstasy 1+ times in life	1.25	1.44*	1.10	1.13	0.83
Used synthetic marijuana 1+ times in life	-	-	-		0.91
Used LSD 1+ times in life	0.62*	0.78	1.38	0.75	1.29
Took steroids 1+ times in life [c]	1.82*	1.22	1.98*	2.06*	0.98
Taken prescription drugs w/o prescription	-	-	1.10	1.23	1.22
Injected drugs 1+ times in life [c]	1.97*	1.88*	1.30	3.34*	2.06
Offered/sold drugs at school in past year	1.07	0.92	0.86	1.09	1.11
Body image & perceived overweight					
Perceived self to be slightly/very overweight	1.24*	0.89	0.90	0.87	0.97
Trying to lose weight	0.82	0.94	0.81*	0.89	1.13
Exercised to lose weight in past month	1.20	0.99	-	-	-
Ate less to lose weight in past month	0.85	0.75*	-	-	-
Fasted to lose weight in past month [b]	2.10*	2.26*	1.69*	1.78*	-
Took pills to lose weight in past month	1.21	1.51*	1.36*	1.47*	-
Vomited to lose weight in past month [b]	1.35*	1.77*	1.79*	1.80*	-

Other behaviors					
Attended PE class daily	1.02	1.01	1.20	1.24*	1.26
Played on 1+ sports teams in past year	0.84	0.98	0.90	0.95	1.07
Vigorous exercise in past week	0.96	1.05	-	-	-
Moderate exercise in past week	1.20	0.90	-	-	-
Get 8+ hours sleep	0.93	0.78*	1.00	0.93	0.93
Described own health as fair or poor	1.56*	-	-	-	-
Getting mostly Ds and Fs in class	-	1.68*	-	-	-
Getting mostly As and Bs in class	-	-			0.68*
Talked to teacher about problem	-	-	1.16	-	-
Have problems with concentration, memory, and decision-making	-	-	-	-	1.66*
Speaks English well or very well	-	-	-	-	0.40*
Sexuality					
Identified as gay, lesbian, or bisexual	-	-	-	-	1.88*

*$p < 0.05$

[a] predictor remained significant throughout all 10 years

[b] predictor was significant whenever asked in survey for at least 3 time points in a row

[c] predictor was significant for at least 3 out of 5 time points

Chapter V: Discussion

Summary

In this study we used large, epidemiological, cross-sectional, school-based samples with a retrospective cohort design to identify and characterize profiles of depressed mood and suicidal behavior across the past 10 years in the nation. While a number of population-based studies have used latent class analysis to examine health risk behaviors profiles in smaller samples of adolescents (Thullen, Taliaferro, & Muehlenkamp, 2016; Jiang, Perry and Hesser, 2010) and in other contexts of psychopathology trajectories (Bonanno et al., 2012; Bryant et al., 2015; Galatzer-Levy and Bonanno, 2012), this is the first study to utilize data that is not only large and epidemiological but also nationally representative to identify and compare profiles over several years. In doing so, this study enables not only quantitative comparison of behaviors of interest in predicting the symptomatology profiles of the national sample within each time point, but also qualitative comparison of these behaviors in predicting profiles of the national samples across time points.

Consistent with studies looking at health risk behaviors profiles in smaller samples of adolescents (Thullen, Taliaferro, & Muehlenkamp, 2016; Jiang, Perry and Hesser, 2010) we found that a multi-class model (3- or 4-class) best represented the data over the years: a class characterized by low endorsement of depressed mood or suicidal behavior (*"low-risk non-depressed" class* – around 81% to 84% for 2007-2013, and 65% for 2015), a class that showed depressed mood and suicidal ideation and plan (*"considered and planned suicide" class* – around 9% to 10% for all the years), a class that showed significant depressed mood with suicidal ideation and attempt (*"planned and attempted suicide" class* – around 6% to 9% for all the years), and a class that appeared only in the year 2015 that is characterized by significant depressed mood only without any suicidal behavior (*"depressed only" class* – 16%). These

classes are largely consistent with other profile studies of smaller samples with single time points in that there is a profile that suggests a majority asymptomatic subgroup as expected, another that suggests a significantly smaller subgroup endorsing moderately severe symptoms (depressed mood, suicidal ideation, and plan for this study) and one that suggests a typically smallest subgroup that endorses severe symptomatology (suicide attempts for this study) (Jiang, Perry and Hesser, 2010; Beekman, et al., 2002), but with the addition of a profile that suggests a subgroup that experiences less severe symptoms (depressed mood only for year 2015).

Stability of profiles and prevalence. Although investigation of trends of mental health and depressed mood in adolescents in the past few decades have shown mixed results (Mojtabai, Olfson, & Han, 2016; Olfson, Druss, & Marcus, 2015; Jane Costello, Erkanli, & Angold, 2006), the results from this study have shown that the prevalence and trends of depressed mood and suicidality have remained relatively stable over the past decade in adolescents aged 12 to 18 (see *Table 2* on page 21 and *Table 29* on page 69), at least until 2014. While a common and more recent perception has emerged that the prevalence of psychopathology (depression especially) may be increasing over time, this perception could largely be attributable to an increase in psychopharmacology use, as well as a greater awareness of depression within the general public (Patten *et al.*, 2015). The stability of the prevalence and trends however, may be attributed to the causally complex etiology of psychopathology where studies have shown that the interplay of psychobiological and environmental factors may balance each other out, leading to the manifestation of pathology at a stable rate across time and generations (Murphy *et al*., 1984). Some studies have also shown that genetic effects explained around 40% of the phenotypic variance at each age beyond age 7 years, and contribute greatly to the stability in psychopathology across time (Nivard *et al.*, 2015).

Difference in the nature of students for the year 2015. Nonetheless, given the generally relative stability of proportions in the classes of students over the years, the data from 2015 still show a significant shift in the break-off of the majority "*low-risk non-depressed*" class to having a smaller subgroup endorsing just depressed mood without any suicidal behavior. This new subgroup which accounted for approximately 16% of the sample, proved to be of an enigmatic nature given the lack of suicidal behaviors that typically accompany significant depressed mood. Interestingly, this class of students differed only slightly from the class that had suicidal ideations, in that only a few variables were significant in predicting the likelihood of being "suicidal" (see *Table 28* on page 66), compared to all the other comparisons made within and across the various years which showed numerous significant predictors of differences. As such, much still needs to be investigated of this emerging class, as there may be a cohort effect of the students for this year (students born between the years of 1997 – 2003).

One plausible contributor to the cohort effect that may be driving this difference is the increased use of smartphones or other smart electronic devices that may be tied to other causes of depressed mood. A survey by the Pew Research Center in 2015 found that 73% of teens had access to a smartphone with 91% of teens using the internet on a mobile device, 92% of teens reporting going online daily (including 24% who say they go online "almost constantly"), and more than half (56%) of the teens (ages 13 to 17) going online several times a day (Lenhart, 2015). As there are clear and significant increases in problematic mobile phone use among young people that propagate behaviors such as cyberbullying (Augner & Hacker, 2012), studies have also suggested that electronic media use may cause sleep disturbance, which in turn may cause daytime dysfunction such as increased depressive symptoms (Oshima *et al.*, 2012; Lemola *et al.*, 2011; Cain & Gradisar, 2010; Primack *et al.*, 2009). Lemola and colleagues (2015) also replicated this finding more recently, where they demonstrated that electronic media use in the

bed before sleep was related to higher levels of depressive symptoms, as this use was related to shorter sleep duration and more sleep difficulties that mediated the relationship between electronic media use and depressive symptoms. Indeed, we found that in our study, there was a significant difference in the proportions of students who did not get at least 8 hours of sleep daily compared to those who did in the 2015 sample [X^2 (4, N = 66003) = 48.93, $p < .01$], with a significantly larger amount of students reporting not getting at least 8 hours of sleep compared to all the other years. Relatedly, we also found that starting from the year 2011 when students were inquired about being cyberbullied, there was no difference in the proportions of those who experienced cyberbullying versus those who did not [X^2 (2, N = 42843) = 5.82, $p > .05$], indicating an area of concern given the lack of difference in these proportions. Although not causal, these two exploratory findings provide the basis for an argument that there might indeed be a cohort effect within the 2015 sample, with students experiencing less/poorer sleep due to probable increases in problematic use of mobile phones and social media that also highly correlates with the endorsement of having been cyberbullied.

Demographic predictors. In this study we investigated a myriad of potential predictors of class membership in addition to demographic characteristics of the students. Of the demographic variables, membership of the "*low-risk non-depressed*" class was consistently or more frequently associated with being male, older, not of an ethnic minority, and non-ethnically bi-or multiracial, across all time points.

Gender differences. The gender difference finding should however be interpreted with caution, as there may be other underlying factors or predictors that play into the difference between male and female endorsement of depressed mood and suicidal behavior. One such possible moderating factor was shown as risk varying by gender among overweight and obese

adolescents specifically in a study by Eaton *et al.* (2005). Chatterji *et al*. (2004) also found that female adolescents who attempted suicide were more likely than were male adolescents to have family dysfunction, low self-esteem, anxiety disorders, and a history of sexual abuse, while on the other hand, adolescent males who attempted suicide were more likely than were their female counterparts to report chronic stress, alcohol problems, and financial problems. Additionally, although male adolescents have been statistically shown to more likely to die from suicide, female adolescents were more likely to plan and attempt suicide (Jiang, Perry, & Hesser, 2010). As indicated in previous years of high school YRBS data, more females than males reported thinking, planning, or trying suicide (Eaton *et al.*, 2005), and although completed suicides were much more common among male adolescents, female adolescents were about twice as likely as male adolescents to report suicide attempts (Chatterji *et al*., 2004). As such, due to these complexities in gender differences being driven by other moderators and mediators, this finding indicates only a general descriptive quality of the difference in class membership and should be taken into account with all other possible risk behaviors and correlates.

Age as a predictor. Given the findings in this study that showed younger students frequently being more likely to have depressed mood and suicidal behavior, these higher odds of them being at risk for considering and planning suicide could be attributed at least in part to high school dropout patterns. As most states have laws that students have to stay in school until the age of 16, most 9th- and 10th-grade students are not old enough to drop out, while older students may begin dropping out in 11th grade with high-risk students being more likely than are low-risk students to drop out (Jiang, Perry, & Hesser, 2010). As such, it is likely that older students who are at risk of depressed mood and suicidality due to risk factors that would likely cause them to have already dropped out are not being captured by the survey. Additionally, entry into high

school typically comes as a major transition for students around the age of 12 to 14 that requires significant adjustments at a time in life when students may experience greater stress.

Ethnic minority status. In this study, we also found that being of an ethnic minority more often than not predicted students not being in the "*low-risk non-depressed*" class across the years. This finding is consistent with well-established literature that purports minority adolescents reporting greater levels of depressive symptoms (Emslie *et al.*, 1990; Schoenbach *et al.*, 1982) and Anglo Americans having the lowest rates of depression compared to African and Hispanic Americans (Roberts, Roberts & Chen, 1997; Roberts & Sobhan, 1992; Weinberg & Emslie, 1987). This could possibly be tied to immigrant status as well, given that findings by Jiang, Perry and Hesser (2010) indicated that immigrant status might be a risk factor for depressed mood and suicide among public high school students. Importantly, the findings on ethnic minority status in this study also supports findings from Stein and colleagues (2016) that perceived ethnic/racial discrimination which is a common experience in school may play a significant role in the development of depressive symptoms for ethnic minority youth.

Bi- or multiraciality. Further, the findings also revealed that a consistently significant factor in predicting the membership of a student not being in the "*low-risk non-depressed*" class was if a student was ethnically bi- or multiracial. This predictor, similar to that of being an ethnic minority, could arguably be a further demonstration and extrapolation of the factors and mechanisms that exacerbate depressive symptoms in students of minority status, given the significantly smaller proportions of bi- and multiraciality within the domain of ethnic minority. This finding is consistent with previous studies indicating that multiracial adolescents reported significantly higher levels of depressive symptoms than African American and Caucasian adolescents (Fisher *et al.*, 2014), significantly more mental health issues than monoracial Caucasians and African Americans (Fisher *et al.*, 2014), and in general, higher levels of

depressive symptoms than adolescents from other ethnic groups (Cooney & Radina, 2000; Milan & Keiley, 2000). As such, this finding contributes to current theories in the field that posit that the complex nature of identity development for multiracial youth may make them more vulnerable to mental health issues (Fisher *et al.*, 2014; Williams & Thornton, 1998; Brown, 1990;

Key Findings

What are normal adolescent risk behaviors? As presented earlier in the literature review, several risk behaviors tend to cluster together and are considered typical risk behaviors among adolescents. These behaviors tend to be delinquent behaviors (i.e., fight, weapon carrying, or use of over-the-counter drugs), smoking, alcohol use, as well as consensual (non-violent) sexual activity, and could be considered part of *"normal"* adolescent risk that is common across age groups and geographic regions (Dong & Ding, 2012; Basen-Engquist, Edmundson & Parcel, 1996). In this study, we found that several of the behaviors in this cluster consistently or frequently predicted students not being in the "*low-risk non-depressed*" class across the years. The delinquent behaviors that predicted a lower likelihood of low-risk and non-depressed mood were if a student carried a weapon in the past month, carried a weapon to school in the past month, fought at least once in the past year, fought at least once in school in the past year, or had taken prescription drugs without a prescription. For smoking behaviors, a student would less likely be in the "*low-risk non-depressed*" class if they had smoked a cigarette before age 13, smoked at least 10 cigarettes per day in the past month, smoked at school at least once in the past month, or had tried marijuana before. In terms of alcohol use, predictors were if a student had their first drink before age 13, had at least once drink in the past month, or had drank in school at least once in the past month. And as for sexual behaviors, a student who ever had sex

or had sex before the age of 13 would also more likely exhibit depressed mood and suicidal behavior. More importantly, some of these behaviors also went on to predict students being in the class that "*planned and attempted suicide*" instead of just having depressed mood and suicidal ideation. Notably, students who endorsed behaviors such as having carried a weapon to school in the past month, having fought (in school as well) in the past year, having had sex before 13 years old, having smoked at school in the past month, having had a drink before the age of 13, or having drank in school in the past month, all had significantly higher odds of having attempted suicide.

This cluster of behaviors is consistent with findings from previous studies that demonstrated strong associations between delinquency and depressive symptoms (Milstein *et al.*, 1992; Garrison *et al.*, 1993). Additionally, the observed trend of smoking, alcohol use and sexual activity also contributes to the literature that posits the involvement in any smoking, drinking activity, or sexual intercourse being strongly associated with significantly increased likelihood of depression, suicidal ideation, and suicide attempts (Hallfors *et al.*, 2004; Armstrong & Costello, 2002; Garrison *et al.*, 1993; Milstein *et al.*, 1992). Further, it corroborates with more recent findings that reveal notable associations between smoking and depressive symptoms as well as significantly higher odds of having depressed mood coupled with suicidal planning and/or attempt among cigarette smokers (Wilkinson, Halpern & Herring, 2016; Fluharty *et al.*, 2016; Jiang, Perry & Hesser, 2010).

The significance of fear and trauma. Aside from "*normal"* adolescent risk behaviors, it is not uncommon for adolescents to have experienced traumatic events in their developments that can lead to potential psychopathology and other negative coping mechanisms. Potentially traumatic events such as being bullied in school or cyberbullied on the internet (or over social

media) and identifying as a sexual minority may create feelings of unsafe in school and among peers that can lead to adverse effects on the adolescent's self-esteem (Lucassen *et al.*, 2017, Ybarra, Mitchell, Kosciw, & Korchmaros, 2015). Additionally, sexual or intimate violence, which include forced sexual intercourse and physical assault by a romantic partner, typically have lasting effects on an adolescent's emotional development and outlook on life (Anderson, Hayden, & Tomasula, 2015). The findings in this study show that several experiences in this cluster of correlates significantly and consistently predicted an adolescent's non-membership in the "*low-risk non-depressed*" class across the years. Experiences such as having missed school due to feeling unsafe at least once in the past month, having been threatened at school at least once in the past year, having been bullied in the school in the past year, having been electronically bulled in the past year, having been hit by a date in the past year, having been forced to have sex in the past, and having been forced to have sex by a date in the past year were all significantly predictive with high odds ratios ranging from 1.46 to as high as 3.61 for having depressed mood and suicidal behavior. Moreover, the majority of these predictors also went on to significantly predict membership in the "*planned and attempted suicide*" class as opposed to the class who "*considered and planned suicide*" but without attempt. Additionally, identifying as a sexual minority increased the odds of having depressed mood and suicidal behavior by over 4-fold and further predicted belonging to the class who "*planned and attempted suicide*" by close to twice the odds. This shows the gravity of these experiences in contributing to the hopelessness that adolescents may feel in the face of fear and trauma. As such, these results are highly consistent with previous findings, demonstrating that feelings of being unsafe or having experienced peer harassment and bullying (Ybarra *et al.*, 2015; Bauman, Toomey & Walker, 2013; Jiang, Perry & Hesser, 2010; Saluja *et al.*, 2004) as well as having been physically forced to have sexual intercourse or having been a victim of sexual assault (Anderson, Hayden &

Tomasula, 2015; Tomasula, Anderson, Littleton & Riley-Tillman, 2012; Rhodes *et al.*, 2011; Jiang, Perry & Hesser, 2010; Olshen, McVeigh, Wunsch-Hitzig & Rickert, 2007) are highly associated with significant endorsement of depressed mood and an elevated risk of suicidal behavior.

Teetering towards the extreme: self-destructive behavior. The last but probably the most extreme of clusters involve self-destructive behavior that may reflect the profound hopelessness and helplessness that some adolescents experience in the face of their stressors and distress. These behaviors include the use of illicit or hard drugs and maladaptive dieting, restricting or purging behavior due to significant negative perceptions of self-image, and are more atypical of adolescent development (Dong & Ding, 2012; Herpertz-Dahlmann, 2015). In this study, we found that adolescents who had sniffed glue, had injected drugs intravenously, had offered or sold drugs at school, had perceived themselves to be overweight which led to weight loss attempts that included fasting, taking laxatives, and induced vomiting, were significantly and consistently more likely to have depressed mood coupled with suicidal behaviors across all time points. Further, glue sniffing, intravenous drug injection, and previous steroid use, significantly predicted membership in the class that "*planned and attempted suicide*" over just having depressed mood or suicidal ideation. This membership prediction was also similar for the maladaptive weight loss behaviors that are fasting, taking laxatives, and induced vomiting. These findings are again consistent with previous studies having shown that adolescents who exhibited depressed mood or who were either planning or attempting suicide were reported to have a higher likelihood of lifetime use of drugs or illicit substances (Hussong, Ennett, Cox, & Haroon, 2017; Armstrong & Costello, 2002; Swedo *et al.*, 1991) as well as stronger associations with perceived overweight, and maladaptive dieting, restricting or purging behavior (Voelker, Reel &

Greenleaf, 2015; Brechan & Kvalem, 2015; Jiang, Perry & Hesser, 2010; Whetstone *et al.*, 2007; Xie *et al.*, 2006).

Other correlates and predictors. While the majority of significant predictors found in this study have been risk factors, the study also revealed a few predictors that seemed to be significant protective factors across the years. These predictors included if a student had played on a sports team in the past year or had gotten at least 8 hours of sleep daily. Complementary to these predictors were some significant protective behaviors that were only surveyed in 2007 and 2009 – if a student exercised to lose weight in the past month, or if they had vigorous exercise in the past week. Conversely, in 2007, the item of a student describing themselves as having only fair to poor health predicted non-membership of the "*low-risk non-depressed*" class. Consistent with previous findings, these predictors contribute to the growing evidence that healthy and adequate engagement in physical activity is associated with resilience towards developing depressive symptoms (Hallgren *et al.*, 2016; McPhie & Rawana, 2015), while bad sleep hygiene and sleep disturbance in adolescence may predict the development of depression (Lemola *et al.*, 2015; Lovato & Gradisar, 2014).

There were also a few "stragglers", predictors that did not fall clearly into the aforementioned clusters but that appeared to be significant in the years they were assessed. These items were if a student performed well or poorly in terms of their grades, if a student spoke English very well, and if they were having problems with concentration, memory and decision-making. Unsurprisingly, these variables all predicted class membership in the expected directions, with poor academic performance, and having problems with concentration, memory and decision-making predicting depressed mood and suicidal behavior; and speaking English very well predicting membership in the "*low-risk non-depressed*" class. Again, these findings

were consistent with previous studies showing positive associations between high academic performance and good English skills (an indicator of SES) with a lower likelihood of depression (Jiang, Perry & Hesser, 2010; Richardson *et al.*, 2005). As for the item of a student endorsing problems with concentration, memory, and decision-making, it was naturally expected to be in the direction found given that it is in itself a depressive symptom.

Limitations

Cross-sectional design. There are several limitations to the YRBS and this study. The first being that this study utilized cross-sectional data for all time points, and the results therefore cannot speak to causality or directionality among the factors included. Using a longitudinal design for this model would be ideal so that directionality of the factors may be determined, particularly between depressed mood and risk behaviors as well as suicide ideation and the latter variables. Additionally, it is notable that the current study evaluated the time-consistent predictors only in a descriptive and qualitative manner, without the ability to investigate the chronicity of the predictors in a statistical model. However, the current study's use of cross-sectional data does provide interesting information upon which to build future longitudinal studies.

Self-report. Second, the use of all self-report measures is another limitation of the study. As the YRBS only collects self-reported data, all variables are affected by recall bias. Additionally, while attempts were made to ensure anonymity of the adolescents while completing the measures, there is always the risk of responses being affected by social desirability which may cause students to under- or over-report behaviors. Given this limitation however, the survey questions have demonstrated good test-retest reliability in the past (Brener

et al., 2002 [a]), although the extent of under- or over-reporting cannot be determined because there is no "gold standard" to validate these behaviors (Brener *et al.*, 2002 [b]).

Indicators of suicidal behavior. As suicide is a human behavior that results from the confluence of many factors (Eaton *et al.*, 2005), this study was not able to assess the contribution of several factors commonly associated with depressed mood and suicidal behavior, such as mental illness and family function. Further, while the suicide indicators in the YRBS are beneficial, they are lumped together with possible non-suicidal self-injurious behaviors (self-harming behaviors such as cutting or stabbing without the intent to kill oneself) (Emelianchik-Key, Byrd & La Guardia, 2016). This contributes to the lack of understanding of how self-injurious behaviors are connected to suicidal intent, and clinicians diagnosing suicidal intent out of fear that the injury could result in unintentional death while ignoring the intention of the act (McAllister, 2003; Trepal & Wester, 2007). As such, this measurement confound adds to the limitations of this study in that the further examination of self-injury and the important differentiation between self-injury and suicide intent among various ethnicities, cultures and genders, could not be done.

False dichotomization of variables. In this study, the risk factors and other potential predictors examined were dichotomized, which could have further impacted the findings. One good example of the limitations this puts on the interpretation of the findings is with the ethnocultural variable whereby *minority status* is dichotomized as "white versus non-white". This false dichotomy would clearly impact the understanding of the effects of race on depressed mood and suicidal behavior in association with risk behaviors, given previous studies having found more nuanced differences between the more common ethnic minority groups such as

African Americans, Asian Americans and Hispanic Americans. Given this limitation, dichotomization however has been shown to generate findings that are both easily understandable and do not decrease the strength of associations (Farrington & Loeber, 2000).

Subpopulations not captured by the survey. As the YRBS only included public and private schools, there were a few subpopulations that were not included in the sampling procedure. These included non-traditional school settings such as home-schools and religious schools held in places of worship. Additionally, the sample also excludes students who were incarcerated or involved with the juvenile justice systems simply due to their likely absence when the YRBS was administered in their schools.

Lack of major contextual correlates. It is also notable that the YRBS does not assess other significant contextual correlates that have shown to affect the endorsement of depressed mood and risk behaviors. One such important group of variables that was left out was that of SES. Given the wealth of literature that has shown the broad and important influence of SES on health across populations (Goodman, Slap & Huang, 2003), this study was not able to examine the extent of the effects of SES on the interaction of depressed mood and suicidal behaviors with health risk behaviors. Future studies should perhaps look at separate components of SES, such as income and education, as these factors have been posited to act through different pathways to produce health differentials – with education levels relating more to differences in coping styles and other interpersonal skills, such as communication, and income being more strongly associated with material goods and services (Adler & Ostrove, 1999; Goodman & Huang, 2001; Duncan & Magnuson, 2003; Goodman, Slap & Huang, 2003). Additionally, family factors such as child maltreatment, divorce, poor parenting, dysfunctional families, and environmental factors

such as immigrant or refugee status (where level of spoken English might be a proxy for) that are all causally related to depression and unhealthy behaviors were not available.

Implications & Recommendations

Notwithstanding the limitations, the present study extends our understanding of high school students' experiences of their school environment by showing that several different internalizing and externalizing problems consistently interact with depressive symptoms and suicidal behavior. Although there are significant limitations on the assessment of suicidality in the YRBS, it is important to note that the tool is not designed to be a clinical assessment or diagnostic tool, but rather one that provides us with information on the nature of the student population which contributes to the preventive nature of this research. When looking at the numerous significant predictors of depressed mood and suicidal behavior, the important question then becomes "What may be creating the environment that makes a student depressed?" Based on our findings within each of the clusters of risk factors, we can see that while normal adolescent risk factors are typical in predicting some depressed mood and suicidality, the presence of fear and trauma that may stem from social discrimination and sexual assault seem to be even more significant in pushing students over into the more severe classes. Further, we also see that hopelessness and helplessness could possibly push students into the most extreme of behaviors that are significantly dangerous and self-destructive. As such, one possible mediating factor that has shown to be associated with all three clusters of predictors has been school-connectedness. As studies have shown that as school-connectedness declines across middle school years into high school years (Wang & Dishion, 2012), both externalizing and internalizing problems may start to increase in adolescents who have had prior negative experiences in school or have other factors that predispose them to elevated risks for

psychopathology (Conway *et al.*, 2016), and youth who engaged in risky behaviors may not demonstrate particularly salient suicide risk unless they also experience a lack of family or school connectedness and safety (Thullen, Taliaferro, & Muehlenkamp, 2016). Additionally, recent findings have also shown that externalizing symptoms robustly predict adolescent substance use with possible moderation of the relationship between internalizing problems and use (Colder *et al.*, 2018), and that youth engaging in NSSI and maladaptive dieting represent a unique group at risk for depression and suicidality, distinct from general vulnerability associated with participation in multiple risk behaviors (Thullen, Taliaferro, & Muehlenkamp, 2016).

Given these implications, when research determines specific relationships in data, it is important to identify the best ways to intervene with at-risk populations. Jiang, Perry, and Hesser (2010) outlined several recommendations that are significantly applicable to the findings of this study that can be made for all the various levels of stakeholders. One general recommendation is that parents and educators should increasingly work together to screen adolescents for depression and risk of suicide if they exhibit high-risk behaviors or certain patterns of behaviors. An example of a model that addresses this recommendation is the 'Model School Policy on Suicide Prevention' that was collaboratively developed by the American Foundation for Suicide Prevention, the American School Counselor Association, the National Association of School Psychologists, and The Trevor Project. This model policy assists school districts in forming policies and procedures that covers actions that take place in the school, on school property, at school-sponsored functions and activities, on school buses or vehicles and at bus stops, and at school sponsored out-of-school events where school staff are present; as well as provides appropriate school responses to suicidal or high risk behaviors that take place outside of the school environment. Importantly, this policy applies to the entire school community, including educators, school and district staff, students, parents/guardians, and volunteers.

Further, given the findings on the correlations between protective factors such as adequate sleep, exercise and socialization, it may be useful for national- and state-level programs to work together to develop and test programs aimed at preventing suicide by increasing positive behaviors through meaningful after-school and evening activities such as sports, tutoring, and music, and educating teenagers about the importance of sleep; as well as provide youths with programs that allow for opportunities for contact with helpful adults and for learning emotional problem solving. Publicly funded programs to train school professionals, parents, and students to recognize the warning signs for depression and suicide would also prove useful in increasing the early detection and identification of adolescent depression. Additionally, it would be beneficial to implement community outreach programs for parents of adolescents to address and provide psychoeducation about depression, suicidal ideation, and the impact of a supportive family in prevention and intervention (Brausch & Decker, 2014).

Importantly, health care professionals should also consider screening adolescents for risk behaviors as part of routine primary care given the importance of not overlookin suicide risk, as suicide is preventable. As previous research has shown, when underlying issues related to trauma, depression or other related stressors are not addressed, suicidal and self-injurious behaviors are likely to reoccur later in life even after they have ceased for a number of years (Conaghan & Davidson, 2002). Emelianchik-Key, Byrd, and La Guardia (2016) also posited that if other presenting behaviors, such as self-injurious aggression, are not recognized as a similar coping mechanism or way of emotionally regulating distressing feelings, appropriate diagnosis and treatment might be elusive, time-consuming and expensive. As such, therapeutic interventions need to match the client's presenting concerns and the underlying purpose driving the behavior. Notably, interventions from a variety of therapy and counseling perspectives would

offer clinicians more treatment choices, and more treatment choices could translate into greater success in addressing a client's problem (Emelianchik-Key, Byrd, & La Guardia, 2016).

Moreover, as collaborative programs to prevent smoking, marijuana use, and overweight have proven to be effective, the results highlight the importance of engagement in physical activity in promoting mental well-being among adolescents and emerging adults. Moreover, the findings suggest that engagement in physical activity is not only important for reducing obesity among youth (Janssen, Katzmarzyk, Boyce, King, & Pickett, 2004), but also for mental health issues, such as depression. Adolescents might also benefit from education regarding sleep hygiene and the risk of electronic media use at night, as improving sleep quality may be a key factor in the prevention of depression. As an Australian study (Moseley & Gradisar, 2009) utilizing the 'Improving Adolescent Well-Being: Day and Night' program, found an increase in sleep knowledge and a subsequent change in sleep behavior (i.e., improving out of bed times) for adolescents with delayed sleep timing, it may prove beneficial for schools to included sleep education modules in PE classes. Additionally, protocols and programs to help school psychologists identify and refer adolescents suffering from excessive media use and a sleep disorder to cognitive behavioral treatment of insomnia should also be promoted given the growing evidence that maintaining healthy sleep patterns in adolescents may reduce the incidence of depression in adolescence (Lovato & Gradisar 2014).

Finally, given all the limitations in the YRBS datasets, a more nuanced epidemiological questionnaire that includes items assessing students' perceived discrimination, violence experienced in multiple settings, as well as family factors such as child maltreatment, divorce, poor parenting, dysfunction in family, household income, parental education level, and environmental factors such as immigrant or refugee status, might provide us with stronger more

comprehensive data that would allow for the discovery of a better and more holistic understanding of adolescent risk behaviors in relation to depressed mood and suicidality.

Future Directions and Papers

In light of the limitations of the study and the implications of the findings presented, several suggestions for future directions can be made. Firstly, if one considers the differences between males and females in suicide ideation and attempts as a moderator in itself (Chatterji, Dave, Kaestner, & Markowitz, 2004; Eaton *et al.*, 2005), running separate latent class regression models by gender might be useful. Given the large sample sizes for each time point and the availability of multiple time points, it would be advantageous to compare possible differences in class profiles between the genders across the years to help gain more understanding of the moderating factors of gender in depressed mood, suicidal behavior, and the associations with internalizing versus externalizing health risk behaviors. It may be possible that each gender may produce different numbers of classes or class profiles.

Another future research that could prove beneficial would be to tease out the data by grade level. Given that students' age do not always correspond with their grade levels, it may be more suitable to identify and analyze profiles of these adolescents according to grade breakdowns that will allow us to speak to more developmental implications in terms of the school environment. Additionally, inferences drawn from this analysis could speak more towards the limitation of school dropout at higher grades, as well as address the more local cohort effects that come with students moving forward together as a class.

Importantly, as the current study did not assess possible NSSI through the provided indicators of suicidal behavior, it may be valuable to assess for possible NSSI within the YRBS by doing the following as shown by Emelianchik-Key, Byrd, and La Guardia (2016):

Items pertaining to NSSI will be pulled out and and recoded into dichotomous variables to include the following questions: "During the past 12 months, how many times did you actually attempt suicide?" and "If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?" If the participant attempted suicide six or more times but the injury did not require medical attention, the behavior would be considered to possibly represent NSSI, since self-injury has been shown to have overlapping qualities with suicidal attempts.

By doing this, we would then be able to look a little more into the complicated and nuanced differences between suicidal and para-suicidal or NSSI behaviors and their associations with health risk behaviors and other risk factors. Findings from this analysis could potentially inform our understanding of trends over time on the underlying issues related to trauma, depression or other related stressors.

Last but not least, future research should include the expansion of the analytic model of this study on the upcoming data for year 2017. Identification and characterization of profiles within the 2017 data would prove extremely useful in seeing if the emerging trend of having 4 classes as shown in the 2015 data would carry over to the year 2017 as well. Additionally, findings from analyzing the 2017 data could help in providing a more current picture of the consistency of predictors over time, and possibly confirm some of the consistent trends found in this study.

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Demographics														
How old are you? A. 12 years old or younger B. 13 years old C. 14 years old D. 15 years old E. 16 years old F. 17 years old G. 18 years old	Q1	—	—	—	—	—	—	—	—	—	—	—	—	—
How old are you? H. 12 years old or younger I. 13 years old J. 14 years old K. 15 years old L. 16 years old M. 17 years old N. 18 years old or older	—	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
What is your sex? A. Female B. Male	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2
In what grade are you? A. 9th grade B. 10th grade C. 11th grade D. 12th grade E. Ungraded or other	Q3	Q3	Q3	Q3	—	—	—	—	—	—	—	—	—	—
In what grade are you? A. 9th grade B. 10th grade C. 11th grade D. 12th grade E. Ungraded or other grade	—	—	—	—	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3

— Question was not asked on the standard high school questionnaire or the national questionnaire in this cycle.
* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How do you describe yourself? A. White - not Hispanic B. Black - not Hispanic C. Hispanic D. Asian or Pacific Islander E. Native American or Alaskan Native F. Other	Q4	Q4	—	—	—	—	—	—	—	—	—	—	—	—
How do you describe yourself? A. White - not Hispanic B. Black - not Hispanic C. Hispanic or Latino D. Asian or Pacific Islander E. Native American or Alaskan Native F. Other	—	—	Q4	Q4	—	—	—	—	—	—	—	—	—	—
How do you describe yourself? (Select one or more responses.) A. American Indian or Alaska Native B. Asian C. Black or African American D. Hispanic or Latino E. Native Hawaiian or Other Pacific Islander F. White	—	—	—	—	Q4	Q4	Q4	—	—	—	—	—	—	—
Are you Hispanic or Latino? A. Yes B. No	—	—	—	—	—	—	—	*Q4	Q4	Q4	Q4	Q4	Q4	Q4
What is your race? (Select one or more responses.) A. American Indian or Alaska Native B. Asian C. Black or African American D. Native Hawaiian or Other Pacific Islander E. White	—	—	—	—	—	—	—	(*Q5)	Q5	Q5	Q5	Q5	Q5	Q5
[Back to table of contents]														
Height and Weight														
How tall are you without your shoes on? Directions: Write your height in the shaded blank boxes. Fill in the matching oval below each number.	—	—	—	—	Q5	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6	Q6

— Question was not asked on the standard high school questionnaire or the national questionnaire in this cycle.
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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How much do you weigh without your shoes on? Directions: Write your weight in the shaded blank boxes. Fill in the matching oval below each number.	—	—	—	—	Q6	Q7	Q7	Q7	Q7	Q7	Q7	Q7	Q7	Q7
[Back to table of contents]														
Unintentional Injuries and Violence														
During the past 12 months, how many times did you ride a motorcycle? A. 0 times B. 1 to 10 times C. 11 to 20 times D. 21 to 39 times E. 40 or more times	Q7	Q7	Q6	Q6	—	—	—	—	—	—	—	—	—	—
When you rode a motorcycle during the past 12 months, how often did you wear a helmet? A. I did not ride a motorcycle during the past 12 months B. Never wore a helmet C. Rarely wore a helmet D. Sometimes wore a helmet E. Most of the time wore a helmet F. Always wore a helmet	Q8	Q8	Q7	Q7	Q7	Q8	—	— (*Q88)	— (*Q88)	— (*Q88)	—	—	—	—
During the past 12 months, how many times did you ride a bicycle? A. 0 times B. 1 to 10 times C. 11 to 20 times D. 21 to 39 times E. 40 or more times	Q9	Q9	Q8	Q8	—	—	—	—	—	—	—	—	—	—
When you rode a bicycle during the past 12 months, how often did you wear a helmet? A. I did not ride a bicycle during the past 12 months B. Never wore a helmet C. Rarely wore a helmet D. Sometimes wore a helmet E. Most of the time wore a helmet F. Always wore a helmet	Q10	Q10	Q9	Q9	Q8	Q9	Q8	Q8	Q8	Q8	Q8	Q8	Q8	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How often do you wear a seat belt when riding in a car driven by someone else? A. Never B. Rarely C. Sometimes D. Most of the time E. Always	Q6	Q6	Q5	Q5	Q9	Q10	Q9	Q9	Q9	Q9	Q9	Q9	Q9	Q8
During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times	Q11	Q11	Q10	Q10	Q10	Q11	Q10	Q10	Q10	Q10	Q10	Q10	Q10	Q9
During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times	Q12	Q12	Q11	Q11	Q11	Q12	Q11	Q11	Q11	Q11	Q11	—	—	—
During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol? A. I did not drive a car or other vehicle during the past 30 days B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times	—	—	—	—	—	—	—	—	—	—	—	Q11	Q11	Q10
During the past 12 months, when you went swimming in places such as a pool, lake, or ocean, how often was an adult or a lifeguard watching you? A. I did not go swimming during the past 12 months B. Never C. Rarely D. Sometimes E. Most of the time F. Always	Q13	Q23	—	—	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you text or e-mail while driving a car or other vehicle? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	—	—	—	—	—	— (*Q87)	Q12	Q12	Q11
During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club? A. 0 days B. 1 day C. 2 or 3 days D. 4 or 5 days E. 6 or more days	Q14	Q13	Q12	Q12	Q12	Q13	Q12	Q12	Q12	Q12	Q12	Q13	Q13	Q12
During the past 30 days, what one kind of weapon did you carry most often? A. I did not carry a weapon during the past 30 days B. A handgun C. Other guns, such as a rifle or shotgun D. A knife or razor E. A club, stick, bat, or pipe F. Some other weapon	Q15	—	—	—	—	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you carry a gun? A. 0 days B. 1 day C. 2 or 3 days D. 4 or 5 days E. 6 or more days	—	Q14	Q13	Q13	Q13	Q14	Q13	Q13	Q13	Q13	Q13	Q14	Q14	—
During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club on school property? A. 0 days B. 1 day C. 2 or 3 days D. 4 or 5 days E. 6 or more days	—	Q15	Q14	Q14	Q14	Q15	Q14	Q14	Q14	Q14	Q14	Q15	Q15	Q13

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, on how many days did you carry a gun? (Do not count the days when you carried a gun only for hunting or for a sport, such as target shooting.) A. 0 days B. 1 day C. 2 or 3 days D. 4 or 5 days E. 6 or more days	—	—	—	—	—	—	—	—	—	—	—	—	—	Q14
During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school? A. 0 days B. 1 day C. 2 or 3 days D. 4 or 5 days E. 6 or more days	—	Q16	Q15	Q15	Q15	Q16	Q15	Q15	Q15	Q15	Q15	Q16	Q16	Q15
During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times	—	Q17	Q16	Q16	Q16	Q17	Q16	Q16	Q16	Q16	Q16	Q17	Q17	Q16
During the past 12 months, how many times has someone stolen or deliberately damaged your property such as your car, clothing, or books on school property? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times	—	Q18	Q17	Q17	—	—	Q17	Q17	Q17	—	— (*Q88)	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, how many times were you in a physical fight? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times	Q16	Q19	Q18	Q18	Q17	Q18	Q18	Q18	Q18	Q17	Q17	Q18	Q18	Q17
The last time you were in a physical fight, with whom did you fight? A. I have never been in a physical fight B. A total stranger C. A friend or someone I know D. A boyfriend, girlfriend, or date E. A parent, brother, sister, or other family member F. Someone not listed above G. More than one of the persons listed above	Q17	Q20	Q21	Q21	—	—	—	—	—	—	—	—	—	—
During the past 12 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times	Q18	Q21	Q19	Q19	Q18	Q19	Q19	Q19	Q19	Q18	Q18	Q19	Q19	—
During the past 12 months, how many times were you in a physical fight on school property? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times	—	Q22	Q20	Q20	Q19	Q20	Q20	Q20	Q20	Q19	Q19	Q20	Q20	Q18

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose? A. Yes B. No	—	—	—	—	Q20	Q21	Q21	Q21	Q21	Q20	Q20	—	—	—
During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon.) A. I did not date or go out with anyone during the past 12 months B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times	—	—	—	—	—	—	—	—	—	—	—	Q22	Q22	Q22
Have you ever been forced to have sexual intercourse when you did not want to? A. Yes B. No	—	—	—	—	Q21	—	—	—	—	—	—	—	—	—
Have you ever been physically forced to have sexual intercourse when you did not want to? A. Yes B. No	—	—	—	—	—	Q22	Q22	Q22	Q22	Q21	Q21	Q21	Q21	Q19
During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.) A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times	—	—	—	—	—	—	—	—	—	—	—	—	—	Q20

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, how many times did someone you were dating or going out with force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.) A. I did not date or go out with anyone during the past 12 months B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times	—	—	—	—	—	—	—	—	—	—	—	Q23	Q23	Q21
During the past 12 months, have you ever been bullied on school property? A. Yes B. No	—	—	—	—	—	—	—	—	—	Q22	Q22	Q24	Q24	Q23
During the past 12 months, have you ever been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, websites, or texting.) A. Yes B. No	—	—	—	—	—	—	—	—	—	—	Q23	Q25	Q25	—
During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.) A. Yes B. No	—	—	—	—	—	—	—	—	—	—	—	—	—	Q24
During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities? A. Yes B. No	—	—	—	—	Q22	Q23	Q23	Q23	Q23	Q23	Q24	Q26	Q26	Q25
During the past 12 months, did you ever seriously consider attempting suicide? A. Yes B. No	Q19	Q24	Q22	Q22	Q23	Q24	Q24	Q24	Q24	Q24	Q25	Q27	Q27	Q26
During the past 12 months, did you make a plan about how you would attempt suicide? A. Yes B. No	Q20	Q25	Q23	Q23	Q24	Q25	Q25	Q25	Q25	Q25	Q26	Q28	Q28	Q27

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, how many times did you actually attempt suicide? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times	Q21	Q26	Q24	Q24	Q25	Q26	Q26	Q26	Q26	Q26	Q27	Q29	Q29	Q28
If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse? A. I did not attempt suicide during the past 12 months B. Yes C. No	Q22	Q27	Q25	Q25	Q26	Q27	Q27	Q27	Q27	Q27	Q28	Q30	Q30	Q29
[Back to table of contents]														
Tobacco Use														
Have you ever tried cigarette smoking, even one or two puffs? A. Yes B. No	Q23	Q28	Q26	Q26	Q27	Q28	Q28	Q28	Q28	Q28	Q29	Q31	Q31	Q30
Do you think you will try cigarette smoking during the next 12 months? A. I have already tried cigarette smoking B. Yes, I think I will try cigarette smoking during the next 12 months C. No, I think I will not try cigarette smoking during the next 12 months	Q24	—	—	—	—	—	—	—	—	—	—	—	—	—
How old were you when you smoked a whole cigarette for the first time? A. I have never smoked a whole cigarette B. Less than 9 years old C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	Q25	—	—	—	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you first tried cigarette smoking, even one or two puffs? A. I have never tried cigarette smoking, not even one or two puffs B. 8 years old or younger C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 years old or older	—	—	—	—	—	—	—	—	—	—	—	—	—	Q31
How old were you when you smoked a whole cigarette for the first time? A. I have never smoked a whole cigarette B. 8 years old or younger C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 years old or older	—	Q29	Q27	Q27	Q28	Q29	Q29	Q29	Q29	Q29	Q30	Q32	Q32	—
Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days? A. Yes B. No	Q26	Q30	— (*Q85)	— (*Q85)	Q34	—	—	—	—	—	—	—	—	—
How old were you when you first started smoking cigarettes regularly? (at least one cigarette every day for 30 days) A. I have never smoked cigarettes regularly B. Less than 9 years old C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	Q27	—	—	—	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you first started smoking cigarettes regularly? (at least one cigarette every day for 30 days) A. I have never smoked cigarettes regularly B. 8 years old or younger C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	—	Q31	— (*Q86)	—	—	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you smoke cigarettes? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	Q28	Q32	Q28	Q28	Q29	Q30	Q30	Q30	Q30	Q30	Q31	Q33	Q33	Q32
During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day? A. I did not smoke cigarettes during the past 30 days B. Less than 1 cigarette per day C. 1 cigarette per day D. 2 to 5 cigarettes per day E. 6 to 10 cigarettes per day F. 11 to 20 cigarettes per day G. More than 20 cigarettes per day	Q29	Q33	Q29	Q29	Q30	Q31	Q31	Q31	Q31	Q31	Q32	Q34	Q34	Q33
During the past 30 days, how did you usually get your own cigarettes? (Select only one response). A. I did not smoke cigarettes during the past 30 days B. I bought them in a store such as a convenience store, supermarket, or gas station C. I bought them from a vending machine D. I gave someone else money to buy them for me E. I borrowed them from someone else F. I stole them G. I got them some other way	—	—	Q30	Q30	Q31	—	—	—	—	—	—	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store such as a convenience store, supermarket, discount store, or gas station C. I bought them from a vending machine D. I gave someone else money to buy them for me E. I borrowed (or bummed) them from someone else F. A person 18 years old or older gave them to me G. I took them from a store or family member H. I got them some other way	—	—	—	—	—	Q32	Q32	Q32	Q32	Q32	Q33	Q35	—	—
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store such as a convenience store, supermarket, discount store, or gas station C. I got them on the Internet D. I gave someone else money to buy them for me E. I borrowed (or bummed) them from someone else F. A person 18 years old or older gave them to me G. I took them from a store or family member H. I got them some other way	—	—	—	—	—	—	—	—	—	—	—	—	Q35	—
When you bought cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not smoke cigarettes during the past 30 days B. I did not buy cigarettes in a store during the past 30 days C. Yes, I was asked to show proof of age D. No, I was not asked to show proof of age	—	—	Q31	Q31	—	—	—	—	—	—	—	—	—	—
When you bought cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not buy cigarettes in a store during the past 30 days B. Yes C. No	—	—	—	—	Q32	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
When you bought or tried to buy cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not try to buy cigarettes in a store during the past 30 days B. Yes, I was asked to show proof of age C. No, I was not asked to show proof of age	—	—	—	—	—	Q33	— (*Q89)	— (*Q89)	—	—	—	—	—	—
During the past 30 days, on how many days did you smoke cigarettes on school property? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	Q34	Q32	Q32	Q33	Q34	Q33	Q33	Q33	Q33	Q34	Q36	—	—
Have you ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days? A. Yes B. No						Q35	Q34	Q34	Q34	Q34	Q35	Q37	—	—
During the past 6 months, did you try to quit smoking cigarettes? A. I did not smoke cigarettes during the past 6 months B. Yes C. No	Q30	Q35	—	—	—	—	—	—	—	—	—	—	—	—
Have you ever tried to quit smoking cigarettes? A. Yes B. No	—	—	Q33	Q33	Q35	—	—	—	—	—	—	—	—	—
During the past 12 months, did you ever try to quit smoking cigarettes? A. I did not smoke during the past 12 months B. Yes C. No	—	—	—	—	—	Q36	Q35	Q35	Q35	Q35	Q36	Q38	Q36	

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, did you use chewing tobacco, such as Redman, Levi Garrett, or Beechnut, or snuff, such as Skoal, Skoal Bandits, or Copenhagen? A. No, I did not use chewing tobacco or snuff during the past 30 days B. Yes, chewing tobacco only C. Yes, snuff only D. Yes, both chewing tobacco and snuff	Q31	Q36	—	—	—	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco or snuff, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	Q34	Q34	Q36	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen? A. 0 days B. 1 to 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	Q37	Q36	Q36	Q36	Q36	Q37	Q39	Q37	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, Copenhagen, Camel Snus, Marlboro Snus, General Snus, Ariva, Stonewall, or Camel Orbs? (Do not count any electronic vapor products.) A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	—	—	—	—	—	—	—	—	Q37
During the past 30 days, did you use chewing tobacco, such as Redman, Levi Garrett, or Beechnut, or snuff, such as Skoal, Skoal Bandits, or Copenhagen on school property? A. No, I did not use chewing tobacco or snuff on school property B. Yes, chewing tobacco only C. Yes, snuff only D. Yes, both chewing tobacco and snuff	—	Q37	—	—	—	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco or snuff on school property? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	Q35	Q35	Q37	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip on school property? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	Q38	Q37	Q37	Q37	Q37	Q38	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	Q38	Q39	Q38	Q38	Q38	Q38	Q39	Q40	Q38	Q38
During the past 12 months, did you ever try to quit using all tobacco products, including cigarettes, cigars, smokeless tobacco, shisha or hookah tobacco, and electronic vapor products? A. I did not use any tobacco products during the past 12 months B. Yes C. No	—	—	—	—	—	—	—	—	—	—	—	—	—	Q39
[Back to table of contents]														
Electronic Vapor Product Use														
Have you ever used an electronic vapor product? A. Yes B. No	—	—	—	—	—	—	—	—	—	—	—	—	Q39	Q34
During the past 30 days, on how many days did you use an electronic vapor product? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	—	—	—	—	—	—	—	Q40	Q35
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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Alcohol and Other Drug Use														
During your life, on how many days have you had at least one drink of alcohol? A. 0 days B. 1 or 2 days C. 3 to 9 days D. 10 to 19 days E. 20 to 39 days F. 40 to 99 days G. 100 or more days	Q33	Q39	Q37	Q37	Q39	Q40	Q39	Q39	Q39	Q39	Q40	Q41	Q41	Q40
How old were you when you had your first drink of alcohol other than a few sips? A. I have never had a drink of alcohol other than a few sips B. Less than 9 years old C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	Q32	Q38	—	—	—	—	—	—	—	—	—	—	—	—
How old were you when you had your first drink of alcohol other than a few sips? A. I have never had a drink of alcohol other than a few sips B. 8 years old or younger C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 years old or older	—	—	Q36	Q36	Q40	Q41	Q40	Q40	Q40	Q40	Q41	Q42	Q42	Q41
During the past 30 days, on how many days did you have at least one drink of alcohol? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	Q34	Q40	Q38	Q38	Q41	Q42	Q41	Q41	Q41	Q41	Q42	Q43	Q43	Q42

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours? A. 0 days B. 1 day C. 2 days D. 3 to 5 days E. 6 to 9 days F. 10 to 19 days G. 20 or more days	Q35	Q41	Q39	Q39	Q42	Q43	Q42	Q42	Q42	Q42	Q43	Q44	Q44	—
During the past 30 days, what is the largest number of alcoholic drinks you had in a row, that is, within a couple of hours? A. I did not drink alcohol during the past 30 days B. 1 or 2 drinks C. 3 drinks D. 4 drinks E. 5 drinks F. 6 or 7 drinks G. 8 or 9 drinks H. 10 or more drinks	—	—	—	—	—	—	—	—	—	—	—	Q45	Q45	—
During the past 30 days, how did you usually get the alcohol you drank? A. I did not drink alcohol during the past 30 days B. I bought it in a store such as a liquor store, convenience store, supermarket, discount store, or gas station C. I bought it at a restaurant, bar, or club D. I bought it at a public event such as a concert or sporting event E. I gave someone else money to buy it for me F. Someone gave it to me G. I took it from a store or family member H. I got it some other way	—	—	—	—	—	—	—	—	Q43	Q43	Q44	Q46	Q46	Q43

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you have 4 or more drinks of alcohol in a row (if you are female) or 5 or more drinks of alcohol in a row (if you are male)? A. 0 days B. 1 day C. 2 days D. 3 to 5 days E. 6 to 9 days F. 10 to 19 days G. 20 or more days	—	—	—	—	—	—	—	—	—	—	—	—	—	Q44
During the past 30 days, on how many days did you have at least one drink of alcohol on school property? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	Q42	Q40	Q40	Q43	Q44	Q43	Q43	Q44	Q44	Q45	—	—	—
During the past 30 days, what is the largest number of alcoholic drinks you had in a row? A. I did not drink alcohol during the past 30 days B. 1 or 2 drinks C. 3 drinks D. 4 drinks E. 5 drinks F. 6 or 7 drinks G. 8 or 9 drinks H. 10 or more drinks	—	—	—	—	—	—	—	—	—	—	—	—	—	Q45
During your life, how many times have you used marijuana? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 to 99 times G. 100 or more times	Q37	Q44	Q42	Q42	Q44	Q45	Q44	Q44	Q45	Q45	Q46	Q47	Q47	Q46

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YRBS Questionnaire Content
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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you tried marijuana for the first time? A. I have never tried marijuana B. Less than 9 years old C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	Q36	Q43	—	—	—	—	—	—	—	—	—	—	—	—
How old were you when you tried marijuana for the first time? A. I have never tried marijuana B. 8 years old or younger C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 years old or older	—	—	Q41	Q41	Q45	Q46	Q45	Q45	Q46	Q46	Q47	Q48	Q48	Q47
During the past 30 days, how many times did you use marijuana? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q38	Q45	Q43	Q43	Q46	Q47	Q46	Q46	Q47	Q47	Q48	Q49	Q49	Q48
During the past 30 days, how many times did you use marijuana on school property? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	Q46	Q44	Q44	Q47	Q48	Q47	Q47	Q48	Q48	Q49	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time? A. I have never tried cocaine B. Less than 9 years old C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 or more years old	Q39	Q47	—	—	—	—	—	—	—	—	—	—	—	—
How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time? A. I have never tried cocaine B. 8 years old or younger` C. 9 or 10 years old D. 11 or 12 years old E. 13 or 14 years old F. 15 or 16 years old G. 17 years old or older	—	—	Q45	Q45	—	—	—	—	—	—	—	—	—	—
During your life, how many times have you used any form of cocaine, including powder, crack, or freebase? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q40	Q48	Q46	Q46	Q48	Q49	Q48	Q48	Q49	Q49	Q50	Q50	Q50	Q49
During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q41	Q49	Q47	Q47	Q49	Q50	Q49	Q49	Q50	Q50	Q51	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During your life, how many times have you used the crack or freebase forms of cocaine? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q42	Q50	Q48	Q48	—	—	—	—	—	—	—	—	—	—
During your life, how many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	Q49	Q49	Q50	—	—	—	—	—	—	—	—	—
During your life, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	Q51	Q50	Q50	Q51	Q51	Q52	Q51	Q51	Q50
During the past 30 days, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	Q51	Q52	Q51	—	—	—	—	—	—	—

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YRBS Questionnaire Content
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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During your life, how many times have you used heroin (also called smack, junk, or China White)? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	Q52	Q53	Q52	Q51	Q52	Q52	Q53	Q52	Q52	Q51
During your life, how many times have you used methamphetamines (also called speed, crystal, crank, or ice)? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	Q53	Q54	Q53	Q52	Q53	Q53	Q54	Q53	Q53	Q52
During your life, how many times have you used any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor's prescription? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q43	Q51	—	—	—	—	—	—	—	—	—	—	—	—
During your life, how many times have you used any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	Q51	Q51	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During your life, how many times have you used ecstasy (also called MDMA)? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	— (*Q90)	Q54	Q53	Q54	Q54	Q55	Q54	Q54	Q53
During your life, how many times have you used synthetic marijuana (also called K2, Spice, fake weed, King Kong, Yucatan Fire, Skunk, or Moon Rocks)? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	—	—	—	Q55	Q54
During your life, how many times have you taken steroid pills or shots without a doctor's prescription? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	Q44	Q52	Q50	Q50	Q54	Q55	Q55	Q54	Q55	Q55	Q56	Q55	Q56	Q55
During your life, how many times have you taken a prescription drug (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	—	Q57	Q56	Q57	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During your life, how many times have you taken prescription pain medicine without a doctor's prescription or differently than how a doctor told you to use it? (Count drugs such as codeine, Vicodin, OxyContin, Hydrocodone, and Percocet.) A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	—	—	—	—	Q56
During your life, have you ever injected (shot up) any illegal drug? A. Yes B. No	Q45	Q53	—	—	—	—	—	—	—	—	—	—	—	—
During your life, how many times have you used a needle to inject any illegal drug into your body? A. 0 times B. 1 time C. 2 or more times	—	—	Q52	Q52	Q55	Q56	Q56	Q55	Q56	Q56	Q58	Q57	Q58	Q57
During the past 12 months, has anyone offered, sold, or given you an illegal drug on school property? A. Yes B. No	—	Q54	Q53	Q53	Q56	Q57	Q57	Q56	Q57	Q57	Q59	Q58	Q59	Q58
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Sexual Behaviors that Contribute to Unintended Pregnancy and Sexually Transmitted Diseases (STDs), Including Human Immunodeficiency Virus (HIV) Infection														
Have you ever had sexual intercourse? A. Yes B. No	Q48	Q57	Q56	Q56	Q57	Q58	Q58	Q57	Q58	Q58	Q60	Q59	Q60	Q59

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you had sexual intercourse for the first time? A. I have never had sexual intercourse B. Less than 12 years old C. 12 years old D. 13 years old E. 14 years old F. 15 years old G. 16 years old H. 17 or more years old	Q49	Q58	—	—	—	—	—	—	—	—	—	—	—	—
How old were you when you had sexual intercourse for the first time? A. I have never had sexual intercourse B. 11 years old or younger C. 12 years old D. 13 years old E. 14 years old F. 15 years old G. 16 years old H. 17 years old or older	—	—	Q57	Q57	Q58	Q59	Q59	Q58	Q59	Q59	Q61	Q60	Q61	Q60
During your life, with how many people have you had sexual intercourse? A. I have never had sexual intercourse B. 1 person C. 2 people D. 3 people E. 4 people F. 5 people G. 6 or more people	Q50	Q59	Q58	Q58	Q59	Q60	Q60	Q59	Q60	Q60	Q62	Q61	Q62	Q61

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 3 months, with how many people did you have sexual intercourse? A. I have never had sexual intercourse B. I have had sexual intercourse, but not during the past 3 months C. 1 person D. 2 people E. 3 people F. 4 people G. 5 people H. 6 or more people	Q51	Q60	Q59	Q59	Q60	Q61	Q61	Q60	Q61	Q61	Q63	Q62	Q63	Q62
Did you drink alcohol or use drugs before you had sexual intercourse the last time? A. I have never had sexual intercourse B. Yes C. No	Q52	Q61	Q60	Q60	Q61	Q62	Q62	Q61	Q62	Q62	Q64	Q63	Q64	Q63
The last time you had sexual intercourse, did you or your partner use a condom? A. I have never had sexual intercourse B. Yes C. No	Q53	Q62	Q61	Q61	Q62	Q63	Q63	Q62	Q63	Q63	Q65	Q64	Q65	Q64
The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.) A. I have never had sexual intercourse B. No method was used to prevent pregnancy C. Birth control pills D. Condoms E. Withdrawal F. Some other method G. Not sure	Q54	Q63	Q62	Q62	—	—	—	—	—	—	—	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.) A. I have never had sexual intercourse B. No method was used to prevent pregnancy C. Birth control pills D. Condoms E. Depo-Provera (injectable birth control) F. Withdrawal G. Some other method H. Not sure	—	—	—	—	Q63	Q64	Q64	Q63	Q64	Q64	—	—	—	—
The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.) A. I have never had sexual intercourse B. No method was used to prevent pregnancy C. Birth control pills D. Condoms E. Depo-Provera (or any injectable birth control), Nuva Ring (or any birth control ring), Implanon (or any implant), or any IUD F. Withdrawal G. Some other method H. Not sure	—	—	—	—	—	—	—	—	—	—	Q66	—	—	—
The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.) A. I have never had sexual intercourse B. No method was used to prevent pregnancy C. Birth control pills D. Condoms E. An IUD (such as Mirena or ParaGard) or implant (such as Implanon or Nexplanon) F. A Shot (such as Depo-Provera), patch (such as Ortho Evra), or birth control ring (such as NuvaRing) G. Withdrawal or some other method H. Not sure	—	—	—	—	—	—	—	—	—	—	—	Q65	Q66	Q65

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How many times have you been pregnant or gotten someone pregnant? A. 0 times B. 1 time C. 2 or more times D. Not sure	Q55	Q64	Q63	Q63	Q64	Q65	Q65	—	—	—	—	—	—	—
During your life, with whom have you had sexual contact? A. I have never had sexual contact B. Females C. Males D. Females and males	—	—	—	—	—	—	—	—	—	—	—	—	Q67	Q66
Which of the following best describes you? A. Heterosexual (straight) B. Gay or lesbian C. Bisexual D. Not sure	—	—	—	—	—	—	—	—	—	—	—	—	Q68	Q67
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Weight Management														
How do you think of yourself? A. Very underweight B. Slightly underweight C. About the right weight D. Slightly overweight E. Very overweight	Q57	Q66	—	—	—	—	—	—	—	—	—	—	—	—
How do you describe your weight? A. Very underweight B. Slightly underweight C. About the right weight D. Slightly overweight E. Very overweight	—	—	Q64	Q64	Q65	Q66	Q66	Q64	Q65	Q65	Q67	Q66	Q69	Q68
Which of the following are you trying to do? A. Lose weight B. Gain weight C. Stay the same weight D. I am not trying to do anything about my weight	Q58	Q67	—	—	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Which of the following are you trying to do about your weight? A. Lose weight B. Gain weight C. Stay the same weight D. I am not trying to do anything about my weight	—	—	Q65	Q65	Q66	Q67	Q67	Q65	Q66	Q66	Q68	Q67	Q70	Q69
During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight? A. I did not try to lose weight or keep from gaining weight B. I dieted C. I exercised D. I exercised and dieted E. I used some other method, but I did not exercise or diet	Q59	Q68	—	—	—	—	—	—	—	—	—	—	—	—
During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight? A. I did not try to lose weight or keep from gaining weight B. I made myself vomit C. I took diet pills D. I made myself vomit and took diet pills E. I used some other method, but I did not vomit or take diet pills	Q60	Q69	—	—	—	—	—	—	—	—	—	—	—	—
During the past 30 days, did you diet to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q66	Q66	—	—	—	—	—	—	—	—	—	—
During the past 30 days, did you exercise to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q67	Q67	Q67	Q68	Q68	Q66	Q67	Q67	—	—	—	—
During the past 30 days, did you eat less food, fewer calories, or foods low in fat to lose weight or to keep from gaining weight? A. Yes B. No	—	—	—	—	Q68	Q69	Q69	Q67	Q68	Q68	—	—	—	—
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? A. Yes B. No	—	—	—	—	Q69	Q70	Q70	Q68	Q69	Q69	Q69	Q68	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, did you take any diet pills, powders, or liquids without a doctor's advice to lose weight? (Do not include meal replacement products such as Slim Fast.) A. Yes B. No	—	—	—	—	Q70	—	—	—	—	—	—	—	—	—
During the past 30 days, did you take any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight? (Do not include meal replacement products such as Slim Fast.) A. Yes B. No	—	—	—	—	—	Q71	Q71	Q69	Q70	Q70	Q70	Q69	—	—
During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q68	Q68	Q71	Q72	Q72	Q70	Q71	Q71	Q71	Q70	—	—
During the past 30 days, did you take diet pills to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q69	Q69	—	—	—	—	—	—	—	—	—	—
[Back to table of contents]														
Dietary Behaviors														
Yesterday, did you drink fruit juice? A. No B. Yes, once only C. Yes, twice or more	Q62	Q71	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you drink fruit juice? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q71	Q71	—	—	—	—	—	—	—	—	—	—

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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.) A. I did not drink 100% fruit juice during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q72	Q73	Q73	Q71	Q72	Q72	Q72	Q71	Q71	Q70
Yesterday, did you eat fruit? A. No B. Yes, once only C. Yes, twice or more	Q61	Q70	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat fruit? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q70	Q70	—	—	—	—	—	—	—	—	—	—
During the past 7 days, how many times did you eat fruit? (Do not count fruit juice.) A. I did not eat fruit during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q73	Q74	Q74	Q72	Q73	Q73	Q73	Q72	Q72	Q71
Yesterday, did you eat green salad? A. No B. Yes, once only C. Yes, twice or more	Q63	Q72	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat green salad? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q72	Q72	—	—	—	—	—	—	—	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 7 days, how many times did you eat green salad? A. I did not eat green salad during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q74	Q75	Q75	Q73	Q74	Q74	Q74	Q73	Q73	Q72
Yesterday, did you eat cooked vegetables? A. No B. Yes, once only C. Yes, twice or more	Q64	Q73	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat cooked vegetables? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q73	Q73	—	—	—	—	—	—	—	—	—	—
Yesterday, did you eat hamburger, hot dogs, or sausage? A. No B. Yes, once only C. Yes, twice or more	Q65	Q74	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat hamburger, hot dogs, or sausage? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q74	Q74	—	—	—	—	—	—	—	—	—	—
Yesterday, did you eat french fries or potato chips? A. No B. Yes, once only C. Yes, twice or more	Q66	Q75	—	—	—	—	—	—	—	—	—	—	—	—
Yesterday, did you eat cookies, doughnuts, pie, or cake? A. No B. Yes, once only C. Yes, twice or more	Q67	Q76	—	—	—	—	—	—	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Yesterday, how many times did you eat french fries or potato chips? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q75	Q75	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat cookies, doughnuts, pie, or cake? A. 0 times B. 1 time C. 2 times D. 3 or more times	—	—	Q76	Q76	—	—	—	—	—	—	—	—	—	—
During the past 7 days, how many times did you eat potatoes? (Do not count french fries, fried potatoes, or potato chips.) A. I did not eat potatoes during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q75	Q76	Q76	Q74	Q75	Q75	Q75	Q74	Q74	Q73
During the past 7 days, how many times did you eat carrots? A. I did not eat carrots during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q76	Q77	Q77	Q75	Q76	Q76	Q76	Q75	Q75	Q74
During the past 7 days, how many times did you eat other vegetables? (Do not count green salad, potatoes, or carrots.) A. I did not eat other vegetables during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	Q77	Q78	Q78	Q76	Q77	Q77	Q77	Q76	Q76	Q75

— Question was not asked on the standard high school questionnaire or the national questionnaire in this cycle.

* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.) A. I did not drink soda or pop during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	—	—	—	—	Q78	Q78	—	—	—	—
During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not count diet soda or diet pop.) A. I did not drink soda or pop during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	—	—	—	—	—	—	Q78	Q77	Q77	Q76
During the past 7 days, how many glasses of milk did you drink? (Include the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.) A. I did not drink milk during the past 7 days B. 1 to 3 glasses during the past 7 days C. 4 to 6 glasses during the past 7 days D. 1 glass per day E. 2 glasses per day F. 3 glasses per day G. 4 or more glasses per day	—	—	—	—	Q78	Q79	Q79	Q77	Q79	Q79	—	—	—	—

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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 7 days, how many glasses of milk did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.) A. I did not drink milk during the past 7 days B. 1 to 3 glasses during the past 7 days C. 4 to 6 glasses during the past 7 days D. 1 glass per day E. 2 glasses per day F. 3 glasses per day G. 4 or more glasses per day	—	—	—	—	—	—	—	—	—	—	— (*Q90)	Q78	Q78	Q77
During the past 7 days, on how many days did you eat breakfast? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days											— (*Q91)	Q79	Q79	Q78
													[Back to table of contents]	
Physical Inactivity														
On how many of the past 7 days did you exercise or participate in sports activities that made you sweat and breathe hard, such as basketball, jogging, fast dancing, swimming laps, tennis, fast bicycling, or similar aerobic activities? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	Q68	—	—	—	—	—	—	—	—	—	—	—	—	—

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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On how many of the past 7 days did you exercise or participate in sports activities for at least 20 minutes that made you sweat and breathe hard, such as basketball, jogging, swimming laps, tennis, fast bicycling, or similar aerobic activities? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	Q77	Q77	Q77	—	—	—	—	—	—	—	—	—	—
On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	Q79	Q80	Q80	Q78	— (*Q90)	— (*Q91)	—	—	—	—
On how many of the past 7 days did you participate in physical activity for at least 30 minutes that did not make you sweat or breathe hard, such as fast walking, slow bicycling, skating, pushing a lawn mower, or mopping floors? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	Q80	Q81	Q81	Q79	— (*Q91)	— (*Q92)	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On how many of the past 7 days did you do stretching exercises, such as toe touching, knee bending, or leg stretching? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	Q69	Q78	Q78	Q78	—	—	—	—	—	—	—	—	—	—
On how many of the past 7 days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	Q70	Q79	Q79	Q79	Q81	Q82	Q82	—	—	—	— (*Q92)	— (*Q88)	—	—
During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spend in any kind of physical activity that increases your heart rate and makes you breathe hard some of the time.) A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	—	—	—	Q80	Q80	—	—	—	—	—

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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.) A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	—	—	—	—	—	Q80	Q79	Q80	Q80	Q79
Yesterday, did you walk or bicycle for at least 30 minutes at a time? (Include walking or bicycling to or from school.) A. Yes B. No	Q71	—	—	—	—	—	—	—	—	—	—	—	—	—
On how many of the past 7 days did you walk or bicycle for at least 30 minutes at a time? (Include walking or bicycling to or from school.) A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	Q80	Q80	Q80	—	—	—	—	—	—	—	—	—	—
On an average school day, how many hours do you watch TV? A. I do not watch TV on an average school day B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	Q82	Q83	Q83	Q81	Q81	Q81	Q80	Q81	Q81	Q80

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Nintendo, Game Boy, PlayStation, Xbox, computer games, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	Q82	Q82	—	—	—	—
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Xbox, PlayStation, an iPod, an iPad, or other tablet, a smartphone, YouTube, Facebook or other social networking tool, or the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	—	—	Q81	—	—	—
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent on things such as Xbox, PlayStation, an iPod, an iPad or other tablet, a smartphone, YouTube, Facebook or other social networking tools, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	—	—	—	Q82	Q82	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent on things such as Xbox, PlayStation, an iPad or other tablet, a smartphone, texting, YouTube, Instagram, Facebook, or other social media.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	—	—	—	—	—	Q81
In an average week when you are in school, on how many days do you go to physical education (PE) classes? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days	Q72	Q81	Q81	Q81	Q83	Q84	Q84	Q82	Q83	Q83	Q82	Q83	Q83	Q82
During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports? A. I do not take PE B. Less than 10 minutes C. 10 to 20 minutes D. 21 to 30 minutes E. More than 30 minutes	Q73	Q82	Q82	Q82	Q84	—	—	—	—	—	—	—	—	—
During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports? A. I do not take PE B. Less than 10 minutes C. 10 to 20 minutes D. 21 to 30 minutes E. 31 to 40 minutes F. 41 to 50 minutes G. 51 to 60 minutes H. More than 60 minutes	—	—	—	—	—	Q85	Q85	Q83	— (*Q92)	— (*Q93)	—	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, on how many sports teams run by your school did you play? (Do not include PE classes.) A. None B. 1 team C. 2 teams D. 3 or more teams	Q74	—	—	—	—	—	—	—	—	—	—	—	—	—
During the past 12 months, on how many sports teams run by your school, did you play? (Do not include PE classes.) A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	Q83	Q83	Q83	—	—	—	—	—	—	—	—	—	—
During the past 12 months, on how many sports teams run by organizations outside of your school, did you play? A. None B. 1 team C. 2 teams D. 3 or more teams	Q75	—	—	—	—	—	—	—	—	—	—	—	—	—
During the past 12 months, on how many sports teams run by organizations outside of your school, did you play? A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	Q84	Q84	Q84	—	—	—	—	—	—	—	—	—	—
During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.) A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	—	—	—	Q85	Q86	Q86	Q84	Q84	Q84	—	—	—	—
During the past 12 months, on how many sports teams did you play? (Count any teams run by your school or community groups.) A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	—	—	—	—	—	—	—	—	—	Q83	Q84	Q84	Q83

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* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, how many times were you injured while exercising, playing sports, or being physically active and had to be treated by a doctor or nurse? A. 0 times B. 1 time C. 2 times D. 3 times E. 4 times F. 5 or more times	—	—	—	—	Q86	—	—	—	—	—	—	—	—	—
During the past 12 months, how many times did you have a concussion from playing a sport or being physically active? A. 0 times B. 1 time C. 2 times D. 3 times E. 4 or more times	—	—	—	—	—	—	—	—	—	—	—	—	—	Q84
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HIV														
Have you ever been told by a doctor or nurse that you had a sexually transmitted disease such as genital herpes, genital warts, chlamydia, syphilis, gonorrhea, AIDS, or HIV infection? A. Yes B. No	Q56	Q65	—	—	—	—	—	—	—	—	—	—	—	—
Have you ever talked about AIDS/HIV infection with your parents or other adults in your family? A. Yes B. No C. Not sure	Q47	—	—	—	—	—	—	—	—	—	—	—	—	—
Have you ever talked about AIDS or HIV infection with your parents or other adults in your family? A. Yes B. No C. Not sure	—	Q56	Q55	Q55	—	—	—	—	—	—	—	—	—	—

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Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever been taught about AIDS or HIV infection in school? A. Yes B. No C. Not sure	Q46	Q55	Q54	Q54	Q87	Q87	Q87	Q85	Q85	Q85	Q84	Q85	—	—
Have you ever been tested for HIV, the virus that causes AIDS? (Do not count tests done if you donated blood.) A. Yes B. No C. Not sure	—	—	—	—	—	—	—	— (*Q93)	— (*Q94)	— (*Q94)	— (*Q93)	— (*Q89)	Q85	Q85
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Other Topics														
When was the last time you saw a dentist for a check-up, exam, teeth cleaning, or other dental work? A. During the past 12 months B. Between 12 and 24 months ago C. More than 24 months ago D. Never E. Not sure	—	—	—	—	— (*Q91)	— (*Q94)	— (*Q94)	—	—	—	—	—	Q86	Q86
Has a doctor or nurse ever told you that you have asthma? A. Yes B. No C. Not sure	—	—	—	—	—	—	— (*Q96)	Q86	Q86	Q86	Q85	Q86	Q87	Q87
Do you still have asthma? A. I have never had asthma B. Yes C. No D. Not sure	—	—	—	—	—	—	—	—	Q87	Q87	Q86	—	—	—
During the past 12 months, have you had an episode of asthma or an asthma attack? A. I do not have asthma B. No, I have asthma, but I have not had an episode of asthma or an asthma attack during the past 12 months C. Yes, I have had an episode of asthma or an asthma attack during the past 12 months D. Not sure	—	—	—	—	—	—	— (*Q97)	Q87	—	—	—	—	—	—

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YRBS Questionnaire Content
1991 – 2017

Standard and National High School Questionnaire Content														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school night, how many hours of sleep do you get? A. 4 or less hours B. 5 hours C. 6 hours D. 7 hours E. 8 hours F. 9 hours G. 10 or more hours	—	—	—	—	—	—	—	—	— (*Q97)	— (*Q97)	— (*Q96)	— (*Q92)	Q88	Q88
Compared to other students in your class, what kind of student would you say you are? A. One of the best B. Far above the middle C. A little above the middle D. In the middle E. A little below the middle F. Far below the middle G. Near the bottom	Q5	Q5	—	—	—	—	—	—	—	—	—	—	—	—
During the past 12 months, how would you describe your grades in school? A. Mostly A's B. Mostly B's C. Mostly C's D. Mostly D's E. Mostly F's F. None of these grades G. Not sure	—	—	—	—	—	Q5	Q5	—	—	— (*Q98)	—	—	Q89	Q89
How do you describe your health in general? A. Excellent B. Very good C. Good D. Fair E. Poor	—	—	—	—	—	—	—	Q5	— (*Q98)	—	—	—	—	—

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— Question was not asked on the standard high school questionnaire or the national questionnaire in this cycle.
* Question was asked on the national questionnaire but not on the standard high school questionnaire in this cycle.

Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Demographics														
During the past 30 days, how many times did you drive a car or other vehicle when you had been using marijuana (also called grass, pot, or weed)? A. I did not drive a car or other vehicle during the past 30 days B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times	—	—	—	—	—	—	—	—	—	—	—	—	—	Q11
How far in school did your mother go? A. Did not finish high school B. Graduated from high school C. Some after high school D. Graduated from college E. Not sure	—	Q86	—	—	—	—	—	—	—	—	—	—	—	—
How much education does your mother have? A. She did not finish high school B. She graduated from high school C. She had some education after high school D. She graduated from college E. Not sure	—	—	Q87	Q88	—	—	—	—	—	—	—	—	—	—
How far in school did your father go? A. Did not finish high school B. Graduated from high school C. Some after high school D. Graduated from college E. Not sure	—	Q87	—	—	—	—	—	—	—	—	—	—	—	—
How much education does your father have? A. He did not finish high school B. He graduated from high school C. He had some education after high school D. He graduated from college E. Not sure	—	—	Q88	Q89	—	—	—	—	—	—	—	—	—	—

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Behaviors that Contribute to Unintentional Injuries and Violence														
How often do you wear a seatbelt when driving a car? A. I do not drive a car B. Never wear a seatbelt C. Rarely wear a seatbelt D. Sometimes wear a seatbelt E. Most of the time wear a seatbelt F. Always wear a seatbelt	—	—	—	—	—	Q88	Q88	—	—	—	—	—	—	—
During the past 30 days, did you see a doctor or nurse for an injury that happened while exercising or playing sports? A. I did not exercise or play sports during the past 30 days B. Yes C. No	—	—	—	—	—	Q92	Q93	Q92	Q93	—	—	—	—	—
[Back to table of contents]														
Tobacco Use														
During the past 30 days, what brand of cigarettes did you usually smoke? A. I did not smoke cigarettes during the past 30 days B. I do not have a usual brand C. Camel D. Marlboro E. Newport F. Virginia Slims G. GPC, Basic, or Doral H. Some other brand	—	—	—	—	Q88	Q89	Q90	—	—	—	—	—	—	—
During the past 30 days, on how many days did you smoke any cigars, cigarillos, or little cigars? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	Q86	—	—	—	—	—	—	—	—	—	—
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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Alcohol and Other Drug Use														
During the past 30 days, how did you usually use marijuana? A. I did not use marijuana during the past 30 days B. I smoked it in a joint, bong, pipe, or blunt C. I ate it in food such as brownies, cakes, cookies, or candy D. I drank it in tea, cola, alcohol, or other drinks E. I vaporized it F. I used it some other way	—	—	—	—	—	—	—	—	—	—	—	—	Q90	—
During your life, how many times have you used hallucinogenic drugs, such as LSD, acid, PCP, angel dust, mescaline, or mushrooms? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	Q91	Q91	Q90	Q89	Q89	Q89	Q87	Q91	Q55
During your life, how many times have you taken a prescription drug (such as OxyContin, Percocet, Vicodin, Adderall, Ritalin, or Xanax) without a doctor's prescription? A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	Q90	—	—	—	—

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Sexual Behaviors that Contribute to Unintended Pregnancy and Sexually Transmitted Diseases (STDs), Including Human Immunodeficiency Virus (HIV) Infection														
The last time you had sexual intercourse, how old was your partner? A. I have never had sexual intercourse B. 14 years old or younger C. 15 or 16 years old D. 17 or 18 years old E. 19 or 20 years old F. 21 years old or older G. Not sure	—	—	—	Q87	—	—	—	—	—	—	—	—	—	—
[Back to table of contents]														
Physical Inactivity														
During the past 7 days, how many days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	—	—	—	—	—	—	—	—	Q86	Q85

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Nintendo, Game Boy, PlayStation, computer games, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	Q92	Q91	—	—	—	—	—	—
[Back to table of contents]														
Dietary Behaviors														
During the past 7 days, how many times did you drink a can, bottle, or glass of a sports drink such as Gatorade or PowerAde? (Do not count low-calorie sports drinks such as Propel or G2.) A. I did not drink sports drinks during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	—	—	—	—	—	—	—	—	Q92	Q79
During the past 7 days, how many times did you drink a bottle or glass of plain water? (Count tap, bottled, and unflavored sparkling water.) A. I did not drink water during the past 7 days B. 1 to 3 times during the past 7 days C. 4 to 6 times during the past 7 days D. 1 time per day E. 2 times per day F. 3 times per day G. 4 or more times per day	—	—	—	—	—	—	—	—	—	—	—	—	Q93	Q80

Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Are there any foods that you have to avoid because eating the food could cause an allergic reaction, like skin rashes, swelling, itching, vomiting, coughing, or trouble breathing? A. Yes B. No C. Not sure	—	—	—	—	—	—	—	—	—	—	—	—	Q94	Q83
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Other Topics														
During this school year, in how many class periods were you taught about AIDS/HIV infection? A. 0 periods B. 1 or 2 periods C. 3 to 5 periods D. 6 to 10 periods E. 11 or more periods F. Not sure	—	Q85	—	—	—	—	—	—	—	—	—	—	—	—
When was the last time you saw a doctor or health care provider for a check-up or physical exam when you were not sick or injured? A. During the past 12 months B. Between 12 and 24 months ago C. More than 24 months ago D. Never E. Not sure	—	—	—	—	Q89	—	—	—	—	—	—	—	—	—
When was the last time you saw a doctor or nurse for a check-up or physical exam when you were not sick or injured? A. During the past 12 months B. Between 12 and 24 months ago C. More than 24 months ago D. Never E. Not sure	—	—	—	—	—	Q93	—	—	—	—	—	—	—	—

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During your last check-up, did your doctor or nurse discuss ways to prevent pregnancy, AIDS, or other sexually transmitted diseases (STDs)? A. Yes B. No C. Not sure	—	—	—	—	Q90	—	—	—	—	—	—	—	—	—
How often do you wear sunscreen or sun block with an SPF of 15 or higher when you are outside for more than one hour on a sunny day? A. Never B. Rarely C. Sometimes D. Most of the time E. Always	—	—	—	—	Q92	Q95	Q95	—	—	—	—	—	—	—
When you are outside for more than one hour on a sunny day, how often do you wear sunscreen with an SPF of 15 or higher? A. Never B. Rarely C. Sometimes D. Most of the time E. Always	—	—	—	—	—	—	—	Q94	Q95	Q95	Q94	Q90	—	—
When you are outside for more than one hour on a sunny day, how often do you do one or more of the following: stay in the shade, wear long pants, wear a long-sleeved shirt, or wear a hat that shades your face, ears, and neck? A. Never B. Rarely C. Sometimes D. Most of the time E. Always	—	—	—	—	—	—	—	Q95	Q96	—	—	—	—	—
Do you have any physical disabilities or long-term health problems? (Long term means 6 months or more.) A. Yes B. No C. Not sure	—	—	—	—	—	—	—	Q96	—	—	—	—	—	—

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you miss classes or school without permission? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 0 or more days	—	—	—	—	—	—	—	Q97	—	—	—	—	—	—
During the past 12 months, how many times did you use an indoor tanning device such as a sunlamp, sunbed, or tanning booth? (Do not include getting a spray-on tan.) A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	Q96	Q95	Q91	Q96	—
During the past 12 months, how many times did you use an indoor tanning device such as a sunlamp, sunbed, or tanning booth? (Do not count getting a spray-on tan.) A. 0 times B. 1 or 2 times C. 3 to 9 times D. 10 to 19 times E. 20 to 39 times F. 40 or more times	—	—	—	—	—	—	—	—	—	—	—	—	—	Q92
During the past 12 months, how many times have you had a sunburn? (Count the number of times even a small part of your skin turned red or hurt for 12 hours or more after being outside in the sun or after using a sunlamp or other indoor tanning device.) A. 0 times B. 1 time C. 2 times D. 3 times E. 4 times F. 5 or more times	—	—	—	—	—	—	—	—	—	—	—	—	Q97	Q93

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Questions on National Questionnaire Only These questions have been on the national questionnaire but have never been on a standard questionnaire.														
Question and Response Options	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, did you talk to a teacher or other adult in your school about a personal problem you had? A. Yes B. No	—	—	—	—	—	—	—	—	—	—	Q97	—	—	—
Because of a physical, mental, or emotional problem, do you have serious difficulty concentrating, remembering, or making decisions? A. Yes B. No	—	—	—	—	—	—	—	—	—	—	—	—	Q98	Q98
How well do you speak English? A. Very well B. Well C. Not well D. Not at all	—	—	—	—	—	—	—	—	—	—	—	—	Q99	Q99

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Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Demographics												
How old are you? A. 10 years old or younger B. 11 years old C. 12 years old D. 13 years old E. 14 years old F. 15 years old G. 16 years old or older	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
What is your sex? A. Female B. Male	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2
In what grade are you? A. 6th grade B. 7th grade C. 8th grade D. Other	Q3	Q3	Q3	Q3	Q3	Q3	—	—	—	—	—	—
In what grade are you? A. 6th grade B. 7th grade C. 8th grade D. Ungraded or other grade	—	—	—	—	—	—	Q3	Q3	Q3	Q3	Q3	Q3
How do you describe yourself? A. White B. Black C. Hispanic or Latino D. Asian or Pacific Islander E. American Indian or Alaskan Native F. Other	—	Q4	—	—	—	—	—	—	—	—	—	—
How do you describe yourself? (Select one or more responses.) A. American Indian or Alaska Native B. Asian C. Black or African American D. Hispanic or Latino E. Native Hawaiian or Other Pacific Islander F. White	—	—	Q4	Q4	Q4	Q4	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Are you Hispanic or Latino? A. Yes B. No	—	—	—	—	—	—	Q4	Q4	Q4	Q4	Q4	Q4
What is your race? (Select one or more responses.) A. American Indian or Alaska Native B. Asian C. Black or African American D. Native Hawaiian or Other Pacific Islander E. White	—	—	—	—	—	—	Q5	Q5	Q5	Q5	Q5	Q5
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Height and Weight												
How tall are you without your shoes on? Directions: Write your height in the shaded blank boxes. Fill in the matching oval below each number.	—	—	Q5	Q6	Q6	Q6	—	—	—	—	—	—
How much do you weigh without your shoes on? Directions: Write your weight in the shaded blank boxes. Fill in the matching oval below each number.	—	—	Q6	Q7	Q7	Q7	—	—	—	—	—	—
[Back to table of contents]												
Unintentional Injuries and Violence												
When you ride a bicycle, how often do you wear a helmet? A. I do not ride a bicycle B. Never wear a helmet C. Rarely wear a helmet D. Sometimes wear a helmet E. Most of the time wear a helmet F. Always wear a helmet	Q5	Q6	Q8	Q9	Q9	Q9	Q6	Q6	Q6	Q6	Q6	Q6
When you rollerblade or ride a skateboard, how often do you wear a helmet? A. I do not rollerblade or ride a skateboard B. Never wear a helmet C. Rarely wear a helmet D. Sometimes wear a helmet E. Most of the time wear a helmet F. Always wear a helmet	Q6	Q7	Q9	Q10	Q10	Q10	Q7	Q7	Q7	Q7	Q7	Q7

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How often do you wear a seat belt when riding in a car? A. Never B. Rarely C. Sometimes D. Most of the time E. Always	Q4	Q5	Q7	Q8	Q8	Q8	Q8	Q8	Q8	Q8	Q8	Q8
Have you ever ridden in a car driven by someone who had been drinking alcohol? A. Yes B. No C. Not sure	Q7	Q8	Q10	Q11	Q11	Q11	Q9	Q9	Q9	Q9	Q9	Q9
Have you ever carried a gun? A. Yes B. No	Q8	Q9	—	—	—	—	—	—	—	—	—	—
Have you ever carried any other type of weapon, such as a knife or club? A. Yes B. No	Q9	Q10	—	—	—	—	—	—	—	—	—	—
Have you ever carried a weapon, such as a gun, knife, or club? A. Yes B. No	—	—	Q11	Q12	Q12	Q12	Q10	Q10	Q10	Q10	Q10	Q10
Have you ever been in a physical fight? A. Yes B. No	Q10	Q11	Q12	Q13	Q13	Q13	Q11	Q11	Q11	Q11	Q11	Q11
Have you ever been in a physical fight in which you were hurt and had to be treated by a doctor or nurse? A. Yes B. No	Q11	Q12	Q13	Q14	Q14	Q14	Q12	Q12	Q12	Q12	Q12	—
Have you ever been bullied on school property? A. Yes B. No	—	—	—	—	—	—	—	Q13	Q13	Q13	Q13	Q12
Have you ever been electronically bullied? (Count being bullied through e-mail, chat rooms, instant messaging, websites, or texting.) A. Yes B. No	—	—	—	—	—	—	—	—	Q14	Q14	Q14	—

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Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.) A. Yes B. No	—	—	—	—	—	—	—	—	—	—	—	Q13
Have you ever seriously thought about killing yourself? A. Yes B. No	Q12	Q13	Q14	Q15	Q15	Q15	Q13	Q14	Q15	Q15	Q15	Q14
Have you ever made a plan about how you would kill yourself? A. Yes B. No	Q13	Q14	Q15	Q16	Q16	Q16	Q14	Q15	Q16	Q16	Q16	Q15
Have you ever tried to kill yourself? A. Yes B. No	Q14	Q15	Q16	Q17	Q17	Q17	Q15	Q16	Q17	Q17	Q17	Q16
[Back to table of contents]												
Tobacco Use												
Have you ever tried cigarette smoking? A. Yes B. No	Q15	Q16	—	—	—	—	—	—	—	—	—	—
Have you ever tried cigarette smoking, even one or two puffs? A. Yes B. No	—	—	Q17	Q18	Q18	Q18	Q16	Q17	Q18	Q18	Q18	Q17
How old were you when you smoked a whole cigarette for the first time? A. I have never smoked a whole cigarette B. 9 years old or younger C. 10 years old D. 11 years old E. 12 years old F. 13 years old G. 14 years old H. 15 years old or older	Q16	Q17	—	—	—	—	—	—	—	—	—	—

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you first tried cigarette smoking, even one or two puffs? A. I have never tried cigarette smoking, not even one or two puffs B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old or older	—	—	—	—	—	—	—	—	—	—	—	Q18
How old were you when you smoked a whole cigarette for the first time? A. I have never smoked a whole cigarette B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old H. 14 years old or older	—	—	Q18	Q19	Q19	Q19	—	—	—	—	—	—
How old were you when you smoked a whole cigarette for the first time? A. I have never smoked a whole cigarette B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old or older	—	—	—	—	—	—	Q17	Q18	Q19	Q19	Q19	—
During the past 30 days, on how many days did you smoke cigarettes? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	Q17	Q18	Q19	Q20	Q20	Q20	Q18	Q19	Q20	Q20	Q20	Q19

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Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day? A. I did not smoke cigarettes during the past 30 days B. Less than 1 cigarette per day C. 1 cigarette per day D. 2 to 5 cigarettes per day E. 6 to 10 cigarettes per day F. 11 to 20 cigarettes per day G. More than 20 cigarettes per day	Q18	Q19	Q20	Q21	Q21	Q21	Q19	Q20	Q21	Q21	Q21	Q20
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store C. I bought them from a vending machine D. I gave someone else money to buy them for me E. I borrowed them from someone else F. I stole them G. I got them some other way	Q19	Q20	—	—	—	—	—	—	—	—	—	—
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store, such a convenience store, super market, or gas station C. I bought them from a vending machine D. I gave someone else money to buy them for me E. I borrowed them from someone else F. I stole them G. I got them some other way	—	—	Q21	—	—	—	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store such as a convenience store, supermarket, discount store, or gas station C. I bought them from a vending machine D. I gave someone else money to buy them for me E. I borrowed (or bummed) them from someone else F. A person 18 years old or older gave them to me G. I took them from a store or family member H. I got them some other way	—	—	—	Q22	Q22	Q22	Q20	Q21	Q22	Q22	—	—
During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) A. I did not smoke cigarettes during the past 30 days B. I bought them in a store such as a convenience store, supermarket, discount store, or gas station C. I got them on the Internet D. I gave someone else money to buy them for me E. I borrowed (or bummed) them from someone else F. A person 18 years old or older gave them to me G. I took them from a store or family member H. I got them some other way	—	—	—	—	—	—	—	—	—	—	Q22	—
When you bought cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not smoke cigarettes during the past 30 days B. I did not buy cigarettes during the past 30 days C. Yes, I was asked to show proof of age D. No, I was not asked to show proof of age	Q20	Q21	—	—	—	—	—	—	—	—	—	—
When you bought cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not buy cigarettes during the past 30 days B. Yes C. No	—	—	Q22	—	—	—	—	—	—	—	—	—
When you bought or tried to buy cigarettes in a store during the past 30 days, were you ever asked to show proof of age? A. I did not try to buy cigarettes in a store during the past 30 days B. Yes, I was asked to show proof of age C. No, I was not asked to show proof of age	—	—	—	Q23	—	—	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days? A. Yes B. No	—	—	Q23	—	—	—	—	—	—	—	—	—
Have you ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days? A. Yes B. No	—	—	—	Q24	Q23	Q23	Q21	Q22	Q23	Q23	—	—
Have you ever used chewing tobacco or snuff, such as Redman, Skoal Bandits, or Copenhagen? A. Yes B. No	Q21	Q22	—	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco or snuff, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	Q24	—	—	—	—	—	—	—	—	—
During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	Q25	Q24	Q24	Q22	Q23	Q24	Q24	Q23	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, Copenhagen, Camel Snus, Marlboro Snus, General Snus, Ariva, Stonewall, or Camel Orbs? (Do not count any electronic vapor products.) A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	—	—	—	—	—	—	Q24
During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	Q25	Q26	Q25	Q25	Q23	Q24	Q25	Q25	Q24	Q25
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Electronic Vapor Product Use												
Have you ever used an electronic vapor product? A. Yes B. No	—	—	—	—	—	—	—	—	—	—	Q25	Q21
During the past 30 days, on how many days did you use an electronic vapor product? A. 0 days B. 1 or 2 days C. 3 to 5 days D. 6 to 9 days E. 10 to 19 days F. 20 to 29 days G. All 30 days	—	—	—	—	—	—	—	—	—	—	Q26	Q22

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 30 days, how did you usually get your own electronic vapor products? (Select only one response.) A. I did not use any electronic vapor products during the past 30 days B. I bought them in a store such as a convenience store, supermarket, discount store, gas station, or vape store C. I got them on the Internet D. I gave someone else money to buy them for me E. I borrowed them from someone else F. A person 18 years old or older gave them to me G. I took them from a store or another person H. I got them some other way	—	—	—	—	—	—	—	—	—	—	—	Q23
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Alcohol and Other Drug Use												
Have you ever had a drink of alcohol, other than for religious reasons? A. Yes B. No	Q22	Q23	—	—	—	—	—	—	—	—	—	—
Have you ever had a drink of alcohol, other than a few sips? A. Yes B. No	—	—	Q26	Q27	Q26	Q26	Q24	Q25	Q26	Q26	Q27	Q26
How old were you when you had your first drink of alcohol? A. I have never had a drink of alcohol other than for religious reasons B. 9 years old or younger C. 10 years old D. 11 years old E. 12 years old F. 13 years old G. 14 years old H. 15 years old or older	Q23	Q24	—	—	—	—	—	—	—	—	—	—
How old were you when you had your first drink of alcohol other than a few sips? A. I have never had a drink of alcohol other than a few sips B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old H. 14 years old or older	—	—	Q27	Q28	Q27	Q27	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you had your first drink of alcohol other than a few sips? A. I have never had a drink of alcohol other than a few sips B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old or older	—	—	—	—	—	—	Q25	Q26	Q27	Q27	Q28	Q27
Have you ever used marijuana? A. Yes B. No	Q24	Q25	Q28	Q29	Q28	Q28	Q26	Q27	Q28	Q28	Q29	Q28
How old were you when you tried marijuana for the first time? A. I have never tried marijuana B. 9 years old or younger C. 10 years old D. 11 years old E. 12 years old F. 13 years old G. 14 years old H. 15 years old or older	Q25	Q26	—	—	—	—	—	—	—	—	—	—
How old were you when you tried marijuana for the first time? A. I have never tried marijuana B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old H. 14 years old or older	—	—	Q29	Q30	Q29	Q29	—	—	—	—	—	—
How old were you when you tried marijuana for the first time? A. I have never tried marijuana B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old or older	—	—	—	—	—	—	Q27	Q28	Q29	Q29	Q30	Q29

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever used any form of cocaine? A. Yes B. No	Q26	Q27	—	—	—	—	—	—	—	—	—	—
Have you ever used any form of cocaine, including powder, crack, or freebase? A. Yes B. No	—	—	Q30	Q31	Q30	Q30	Q28	Q29	Q30	Q30	Q31	Q30
How old were you when you tried any form of cocaine for the first time? A. I have never tried cocaine B. 9 years old or younger C. 10 years old D. 11 years old E. 12 years old F. 13 years old G. 14 years old H. 15 years old or older	Q27	Q28	—	—	—	—	—	—	—	—	—	—
Have you ever used the crack or freebase forms of cocaine? A. Yes B. No	Q28	Q29	—	—	—	—	—	—	—	—	—	—
Have you ever sniffed glue, or breathed the contents of spray cans, or inhaled any paints or sprays to get high? A. Yes B. No	Q29	Q30	Q31	Q32	Q31	Q31	Q29	Q30	—	—	—	—
Have you ever sniffed glue, breathed the contents of spray cans, or inhaled any paints or sprays to get high? A. Yes B. No	—	—	—	—	—	—	—	—	Q31	Q31	Q32	Q31
Have you ever used steroids? A. Yes B. No	Q30	Q31	Q32	Q33	Q32	Q32	—	—	—	—	—	—
Have you ever taken steroid pills or shots without a doctor's prescription? A. Yes B. No	—	—	—	—	—	—	Q30	Q31	Q32	Q32	Q33	Q32
Have you ever used a needle to inject any illegal drug into your body? A. Yes B. No	Q31	Q32	Q33	Q34	Q33	Q33	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever taken a prescription drug (such as OxyContin, Percocet, Vicodin, codeine, Adderall, Ritalin, or Xanax) without a doctor's prescription? A. Yes B. No	—	—	—	—	—	—	—	—	Q33	Q33	Q34	—
Have you ever taken prescription pain medicine without a doctor's prescription or differently than how a doctor told you to use it? (Count drugs such as codeine, Vicodin, OxyContin, Hydrocodone, and Percocet.) A. Yes B. No	—	—	—	—	—	—	—	—	—	—	—	Q33
[Back to table of contents]												
Sexual Behaviors												
Have you ever had sexual intercourse? A. Yes B. No	Q34	Q35	Q34	Q35	Q34	Q34	Q31	Q32	Q34	Q34	Q35	Q34
How old were you when you had sexual intercourse for the first time? A. I have never had sexual intercourse B. 9 years old or younger C. 10 years old D. 11 years old E. 12 years old F. 13 years old G. 14 years old H. 15 years old or older	Q35	Q36	—	—	—	—	—	—	—	—	—	—
How old were you when you had sexual intercourse for the first time? A. I have never had sexual intercourse B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old H. 14 years old or older	—	—	Q35	Q36	Q35	Q35	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
How old were you when you had sexual intercourse for the first time? A. I have never had sexual intercourse B. 8 years old or younger C. 9 years old D. 10 years old E. 11 years old F. 12 years old G. 13 years old or older	—	—	—	—	—	—	Q32	Q33	Q35	Q35	Q36	Q35
With how many different people have you ever had sexual intercourse? A. I have never had sexual intercourse B. 1 person C. 2 people D. 3 or more people	Q36	Q37	—	—	—	—	—	—	—	—	—	—
With how many people have you ever had sexual intercourse? A. I have never had sexual intercourse B. 1 person C. 2 people D. 3 people E. 4 or more people	—	—	Q36	Q37	Q36	Q36	—	—	—	—	—	—
With how many people have you ever had sexual intercourse? A. I have never had sexual intercourse B. 1 person C. 2 people D. 3 people E. 4 people F. 5 people G. 6 or more people	—	—	—	—	—	—	Q33	Q34	Q36	Q36	Q37	Q36
The last time you had sexual intercourse, did you or your partner use a condom? A. I have never had sexual intercourse B. Yes C. No	Q37	Q38	Q37	Q38	Q37	Q37	Q34	Q35	Q37	Q37	Q38	Q37

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— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Weight Management												
How do you describe your weight? A. Very underweight B. Slightly underweight C. About the right weight D. Slightly overweight E. Very overweight	Q38	Q39	Q38	Q39	Q38	Q38	Q35	Q36	Q38	Q38	Q39	Q38
Which of the following are you trying to do about your weight? A. Lose weight B. Gain weight C. Stay the same weight D. I am not trying to do anything about my weight	Q39	Q40	Q39	Q40	Q39	Q39	Q36	Q37	Q39	Q39	Q40	Q39
Have you ever dieted to lose weight or to keep from gaining weight? A. Yes B. No	Q40	Q41	—	—	—	—	—	—	—	—	—	—
Have you ever exercised to lose weight or to keep from gaining weight? A. Yes B. No	Q41	Q42	Q40	Q41	Q40	Q40	Q37	Q38	—	—	—	—
Have you ever eaten less food, fewer calories, or foods low in fat to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q41	Q42	Q41	Q41	Q38	Q39	—	—	—	—
Have you ever gone without eating for 24 hours or more (also called fasting) to lose weight or to keep from gaining weight? A. Yes B. No	—	—	Q42	Q43	Q42	Q42	Q39	Q40	Q40	Q40	—	—
Have you ever taken diet pills to lose weight or to keep from gaining weight? A. Yes B. No	Q43	Q44	—	—	—	—	—	—	—	—	—	—
Have you ever taken any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight? (Do not include meal replacement products such as Slim Fast.) A. Yes B. No	—	—	Q43	Q44	Q43	Q43	Q40	Q41	Q41	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever taken any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight? (Do not count meal replacement products such as Slim Fast.) A. Yes B. No	—	—	—	—	—	—	—	—	—	Q41	—	—
Have you ever vomited or taken laxatives to lose weight or to keep from gaining weight? A. Yes B. No	Q42	Q43	Q44	Q45	Q44	Q44	Q41	Q42	Q42	Q42	—	—
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Dietary Behaviors												
Yesterday, how many times did you eat fruit? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q44	Q45	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you drink fruit juice? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q45	Q46	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat green salad? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q46	Q47	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat cooked vegetables? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q47	Q48	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat hamburger, hot dogs, or sausage? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q48	Q49	—	—	—	—	—	—	—	—	—	—

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Yesterday, how many times did you eat french fries or potato chips? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q49	Q50	—	—	—	—	—	—	—	—	—	—
Yesterday, how many times did you eat cookies, doughnuts, pie, or cake? A. 0 times B. 1 time C. 2 times D. 3 or more times	Q50	Q51	—	—	—	—	—	—	—	—	—	—
During the past 7 days, on how many days did you eat breakfast? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	—	—	—	—	—	Q43	Q41	Q40
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Physical Inactivity												
On how many of the past 7 days did you exercise or play sports such as basketball, soccer, running, swimming laps, tennis, or fast bicycling? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	Q51	Q52	—	—	—	—	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	Q45	Q46	Q45	Q45	—	—	—	—	—	—
During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.) A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days G. 6 days H. 7 days	—	—	—	—	—	—	Q42	Q43	Q43	Q44	Q42	Q41
On an average school day, how many hours do you watch TV? A. I do not watch TV on an average school day B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	Q46	Q47	Q46	Q46	Q43	Q44	Q44	Q45	Q43	Q42

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Nintendo, Game Boy, PlayStation, Xbox computer games, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	Q44	—	—	—	—	—
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Xbox, PlayStation, Nintendo DS, iPod touch, Facebook, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	Q45	Q45	—	—	—
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent on things such as Xbox, PlayStation, an iPod, an iPad or other tablet, a smartphone, YouTube, Facebook or other social networking tools, and the Internet.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	—	Q46	Q44	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Count time spent on things such as Xbox, PlayStation, an iPad or other tablet, a smartphone, texting, YouTube, Instagram, Facebook, or other social media.) A. I do not play video or computer games or use a computer for something that is not school work B. Less than 1 hour per day C. 1 hour per day D. 2 hours per day E. 3 hours per day F. 4 hours per day G. 5 or more hours per day	—	—	—	—	—	—	—	—	—	—	—	Q43
How many days per week do you usually go to physical education (PE) or gym class? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days	Q52	Q53	—	—	—	—	—	—	—	—	—	—
In an average week when you are in school, on how many days do you go to physical education (PE) classes? A. 0 days B. 1 day C. 2 days D. 3 days E. 4 days F. 5 days	—	—	Q47	Q48	Q47	Q47	Q45	Q46	Q46	Q47	Q45	Q44
Do you play on any sports teams run by your school or by other organizations outside your school? A. Yes B. No	Q53	Q54	—	—	—	—	—	—	—	—	—	—
Do you play on any sports teams? (Include any teams run by your school or community groups.) A. Yes B. No	—	—	Q48	Q49	Q48	Q48	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.) A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	—	—	—	—	—	Q46	Q47	—	—	—	—
During the past 12 months, on how many sports teams did you play? (Count any teams run by your school or community groups.) A. 0 teams B. 1 team C. 2 teams D. 3 or more teams	—	—	—	—	—	—	—	—	Q47	Q48	Q46	Q45
Do you do any other organized physical activity besides sports teams, such as dance, gymnastics, or swimming? A. Yes B. No	Q54	Q55	—	—	—	—	—	—	—	—	—	—
Have you ever been injured while exercising, playing sports, or being physically active and had to be treated by a doctor or nurse? A. Yes B. No	—	—	Q49	—	—	—	—	—	—	—	—	—
During the past 12 months, how many times did you have a concussion from playing a sport or being physically active? A. 0 times B. 1 time C. 2 times D. 3 times E. 4 or more times	—	—	—	—	—	—	—	—	—	—	—	Q46
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Other Topics												
How do you describe your health in general? A. Excellent B. Very good C. Good D. Fair E. Poor	—	—	—	—	—	Q5	—	—	—	—	—	—

— Question was not asked on the standard middle school questionnaire in this year.

Standard Middle School Questionnaire Content												
Question and Response Options	**1995**	**1997**	**1999**	**2001**	**2003**	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**
Have you ever been taught about AIDS or HIV infection in school? A. Yes B. No C. Not sure	Q32	Q33	Q50	Q50	Q49	Q49	Q47	Q48	Q48	Q49	—	—
Have you ever talked about AIDS or HIV infection with your parents or other adults in your family? A. Yes B. No C. Not sure	Q33	Q34	—	—	—	—	—	—	—	—	—	—
Has a doctor or nurse ever told you that you have asthma? A. Yes B. No C. Not sure	—	—	—	—	—	—	Q48	Q49	Q49	Q50	Q47	Q47
Do you still have asthma? A. I have never had asthma B. Yes C. No D. Not sure	—	—	—	—	—	—	Q49	Q50	Q50	—	—	—
On an average school night, how many hours of sleep do you get? A. 4 or less hours B. 5 hours C. 6 hours D. 7 hours E. 8 hours F. 9 hours G. 10 or more hours	—	—	—	—	—	—	—	—	—	—	Q48	Q48
During the past 12 months, how would you describe your grades in school? A. Mostly A's B. Mostly B's C. Mostly C's D. Mostly D's E. Mostly F's F. None of these grades G. Not sure	—	—	—	Q5	Q5	—	—	—	—	—	Q49	Q49

— Question was not asked on the standard middle school questionnaire in this year.