ICPSR | INTER-UNIVERSITY CONSORTIUM FOR POLITICAL AND SOCIAL RESEARCH

ICPSR 21600

National Longitudinal Study of Adolescent Health (Add Health), 1994-2008

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Wave 3, Public Use Education Data, Data Collection Instrument and User Guide

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National Longitudinal Study of Adolescent Health

Wave III Education Data Index

Catherine Riegle-Crumb, Chandra Muller, Kenneth Frank, and Kathryn S. Schiller

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University of North Carolina at Chapel Hill

July 2005

This research was funded by a grant from the National Institute of Child Health and Human Development under grant R01 HD40428-02 to the Population Research Center, University of Texas at Austin; Chandra Muller (PI) and the National Science Foundation grant number REC-0126167, Chandra Muller (PI).
Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu).

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Acknowledgement

In addition to the Add Health acknowledgment, researchers using these data should include in each written report or other publication based on analysis of data from Adolescent Health and Academic Achievement (AHAA), the following statement:

The AHAA study was funded by grants from the National Institute of Child Health and Human Development (01 HD40428-02) to the Population Research Center, University of Texas at Austin, Chandra Muller (PI), and from the National Science Foundation (REC-0126167) to the Population Research Center, University of Texas at Austin, Chandra Muller and Pedro Reyes (Co-PI).

National Longitudinal Study of Adolescent Health

Wave III Public-use Education Data

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July 2005

This research was funded by a grant from the National Institute of Child Health and Human Development under grant R01 HD40428-02 to the Population Research Center, University of Texas at Austin; Chandra Muller (PI) and the National Science Foundation grant number REC-0126167, Chandra Muller (PI).
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Overview and Background

Study Objectives

The Adolescent Health and Academic Achievement (AHAA) study provides an opportunity to examine the health behaviors and human relationships of adolescents in the 1990s with necessary attention to their education, one of the most defining aspects of adolescents' lives. It expands the *National Longitudinal Study of Adolescent Health* (Add Health) to include detailed measures of academic achievement and experiences by collecting transcripts for the Wave III Add Health sample members. The AHAA data provide indicators of (1) educational achievement, (2) course taking patterns on multiple levels, (3) curricular exposure, and (4) educational contexts within and between schools, all linked to the Add Health survey data. The 1990s was a period of widespread, decentralized school reform policy, including changes in curriculum, implementation of prevention and school safety programs, and attention to the needs of special populations. AHAA provides an opportunity to examine these policy initiatives and compare this period with the preceding and subsequent decades.

This guide briefly describes the theoretical background for the study and the variables included in this first data release, followed by a description of the data collection and coding procedures, and a detailed explanation of the variables included in this first release.

Background

High school is the major social institution that provides future opportunity for adolescents. Over two decades ago researchers recognized that the grouping of students according to preparation and ability—tracking—is a mechanism through which the intergenerational transmission of socioeconomic advantage or disadvantage is reinforced or disrupted. Students' experiences and opportunities to learn, as measured by how they are grouped in courses, explain much of the difference between family background and students' attainment. Public schools usually stratify students within the school, with course placements indicating opportunities that are associated with attainment (Gamoran 1987; Oakes 1985; Oakes and Guiton 1995). Schools' "detracking" policies have made contemporary practices more complex, though course taking patterns still reflect opportunities to learn (Lucas 1999; Lucas and Berends 2002; Oakes, Wells, and Jones 1997; Schneider, Swanson, and Riegle-Crumb 1998; Stevenson, Schiller, and Schneider 1994).

Students' experiences with the formal organization of schools are not monolithic (Powell, Farrar, and Cohen 1985), but are rather defined by the specific sets of courses in which they participate (Barr and Dreeben 1983; Dreeben 1994; Gamoran 1991). In high schools today, students taking advanced courses and multiple years of foreign language experience a different social context than those taking vocational education courses or a few basic years of core subjects. These patterns of stratification are similar to an "occupational structure" or status system for high school students in which everyday life and current and future opportunities are shaped by status and position in this structure (Rosenbaum 1986; Sorensen 1987), although the particular structure of opportunity within a school may be different from school to school. The AHAA study builds on the foundation of research in sociology and education that links high school transcript data to social stratification processes.

As students progress through the high school years toward graduation, some students accumulate knowledge and course credit that prepares them for post-secondary educational opportunities while others struggle to complete minimum graduation requirements. Although

these requirements vary among states, districts, and even school programs, all states require the satisfactory completion of multiple years of core academic courses such as math and English. Consequently, some students are able to complete graduation requirements in fewer than four years of high school. For others, academic trajectories that include course failures and non-credit courses may result in slowed progress toward graduation, even requiring students to complete more than four years of high school to graduate. In a given year, students' coursework may be in more than one grade level (for further discussion, see the discussion of Linking Indicators). As a result, the concept of grade level retention or skipping a grade does not apply to the high school years as it does in the elementary and middle school grades.

Stratification in schools is most clearly observed in students' course enrollment patterns. Typically, the high school curriculum is organized into sequences of courses in which subject knowledge gained from one course prepares a student for the next course (Schneider et al. 1998; Stevenson et al. 1994). The hierarchical nature of course sequences, where movement from less to more advanced classes in a subject is generally based on successful completion of prerequisites, results in limited mobility for those students who begin high school taking lower level courses. For example, students who take Geometry as freshman are in a position of advantage for reaching advanced courses such as Calculus by their senior year, compared to students who begin high school taking Pre-Algebra. Additionally, scheduling requirements (Pallas, Natriello, and Riehl 1994), the homogeneity of course composition based on students' prior achievement, and other features of high school organization, all observed in course enrollment patterns, shape opportunity for social interaction and the broader high school experience, in addition to curricular exposure.

More than two decades of research on stratification in schools has shown that students' exposure to curriculum leads to a variety of outcomes. Access to advanced courses is directly related to future opportunity to learn (Gamoran 1987; Stevenson et al. 1994), to performance on achievement tests such as college entrance exams (Pallas and Alexander 1983), and to college enrollment (Schneider et al. 1998) and success (Moreno and Muller 1999). Thus, examining students' academic achievement in high school provides not only valuable information on inequality during adolescence, but also on the foundation of social and occupational stratification in adulthood.

The next two sections detail the data collection and coding procedures used in AHAA, and discuss how the AHAA study design relates to the Add Health data collection waves

Data Collection and Coding Procedures

Data Collection

Wave III of the Add Health study targeted all Wave I respondents and was conducted from July 2001 to April 2002 when these respondents were between the ages of 18 and 26. Wave III respondents were asked to sign a Transcript Release Form (TRF) authorizing Add Health to request official transcripts from the high schools they last attended. Approximately 91.5% of Wave III respondents (N = 13,901) signed a valid TRF and from August 2001 through June 2002, AHAA collected high school transcripts for most respondents (N = 12,241). Of the 4,882 public-use respondents, 3.947 have transcript data. Importantly, the data collection procedure used for AHAA was student-based in that transcripts were collected from the final school respondents attended. This meant that transcripts were not just collected from the original Add Health schools, but from the more than 1,400 high schools Add Health respondents last attended. Transcripts were not collected from two original Add Health schools that served only special education students and did not keep transcript records; however, a few respondents who entered the Add Health sample through one of these two schools do have transcript records in the AHAA data base because they last attended another school that did keep transcript records.

Transcript Coding

In order to provide high quality, accurate, and consistent coding, AHAA used the Classification of Secondary School Curriculum (CSSC) to code the courses appearing on student transcripts, as well as all courses offered at Add Health schools and eligible non-Add Health schools. For every course on a student's high school transcript, CSSC codes indicate the general subject, such as English or Math, as well as the more detailed subject, such as English I Honors or Algebra II. This taxonomy or coding scheme, which has been refined and standardized over the years, was used for High School and Beyond (HS&B), the National Educational Longitudinal Study of 1988 (NELS), and all of the National Assessment of Educational Progress (NAEP) High School Transcripts Studies (HSTS) conducted in the last decade and a half (Ingels et al. 1995; Legum, Caldwell, Davis, and Haynes 1997). The AHAA coding procedures were developed to ensure compatibility with data produced for the 1987, 1990, 1994, 1998, and 2000 NAEP HSTS, HS&B and NELS, making AHAA comparable to these other landmark education data sets.

Several important distinctions of the AHAA are worth noting. First, any coursework taken at an Add Health high school was identified as having been taken at that school, even if a student later transferred to another high school. This step allows analysts to place students in their respective Add Health schools prior to transferring and minimizes the amount of missing data reported for school-specific information. Second, in contrast to the previous high school transcripts studies which simply demanded students' transcripts from schools without explicit student permission, the AHAA study received respondents' permissions, which may have made the collection of these transcripts more successful. Third, similar to NELS and HS&B and in contrast to the NAEP HSTS, the AHAA collected transcripts for students who did and did not complete a high school degree.

The AHAA Design in Relation to the Add Health Waves

Using the AHAA data requires attention to the temporal order of Add Health survey administration relative to the academic or school years in which students were in high school and taking courses. Figure 1, below, illustrates these temporally ordered relationships for each Add Health grade level cohort. Add Health sampled approximately equal numbers of students in each of six grade levels (7 to 12). Each of these grade level cohorts are identified in the far left column, and the academic years in which each cohort is likely to be enrolled in high school are identified in each row with the designation of Years 1 to 4 (with Year 1 referring to the 1st year of high school, and so forth). The numbering system of Years 1 to 4 refers to the organization of the AHAA transcript-based constructed variables, described below in detail. The shaded cells in Figure 1 represent academic years in which a survey was administered.[1] Notice that Add Health sample members who entered the study as 7th graders in the 1994-95 academic year generally began high school coursework after the administration of the Wave II survey. In contrast, students who entered the study as high school seniors in the 1994-95 academic year generally completed most of their high school coursework before they responded to the In-School survey.

Figure 1. Intersection of Add Health survey data with AHAA high school coursework data from transcripts.

Add Health Surveys				**In-School & Wave I**	**Wave II**					**Wave III**
Academic Year	**91-92**	**92-93**	**93-94**	**94-95**	**95-96**	**96-97**	**97-98**	**98-99**	**99-00**	**01-02**
Cohort										
7th grade				*7*	*8*	**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**	
8th grade				*8*	**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**		
9th grade				**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**			
10th grade			**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**				
11th grade		**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**					
12th grade	**9 Year 1**	**10 Year 2**	**11 Year 3**	**12 Year 4**						

The varying intersection between survey data and transcript data for the different Add Health cohorts results in several issues of which analysts should be aware. First, not all cohorts of students should necessarily be included in every analysis. Because the Add Health design was grade stratified, students are nationally representative of adolescents in their grade level in 1994-95, allowing for a narrowing of the sample to accurately reflect the research question of interest. For example, if an analyst wants to determine how students' attitudes (as reported in the In-School survey) in the early years of high school influence subsequent academic achievement (as measured with AHAA data), only the 9th and 10th grade cohorts should be

[1] It is worth noting that a substantial proportion of Wave I sample members were surveyed during the 1995 summer months.

chosen for the analysis. Second, to use the AHAA academic indicators, analysts will often need to refer to different years of course-taking data for students from different cohorts. For example, if an analyst wanted to examine students' grades (as reported on their transcript from AHAA) in the year immediately preceding an outcome measured at Wave II, this would necessitate referring to Year 1 data for the 9th grade cohort, Year 2 data for the 10th grade cohort, and Year 3 data for the 11th grade cohort. (Note that most 12th graders were not included in Wave II of Add Health.) Third, using the AHAA academic indicators that measure the level of students' courses (see the section on Math and Science Course-Sequence Indicators) also requires attention to the fact that the meaning of taking a lower-level course changes according to when students take it. The following example illustrates the third issue, as well as the previous two issues, that must be considered when using Add Health survey data and AHAA high school transcript data.

Suppose a researcher is interested in estimating the effects of parent's education and student's grades and math course level on student's educational aspirations. The dependent variable, educational aspirations, is measured at Wave II. Parent's education is available from either the In-School or the Wave I survey. To measure students' grades and math course level prior to the timing of the dependent measure at Wave II, several steps must be taken. First, the analyst should select only grade level cohorts who were enrolled in high school in Wave I. This excludes the 7th and 8th grade cohorts. The 12th grade cohort, who was generally not interviewed at Wave II, would also be excluded because the dependent variable is not measured for this group. Thus, the analyst would select only the 9th, 10th, and 11th grade cohorts and use as independent variables parent's education, reported in 1994-95 (from either the In-School or Wave I survey), and grades and math course level from that academic year. The organization of the transcript data, described in more detail below, would require that the analyst use students' grades in Year 1 for 9th grade cohort, grades in Year 2 for 10th grade cohort, and grades in Year 3 for 11th grade cohort to predict the Wave II survey item, educational aspirations. Accurately capturing the math course level requires an additional step, since the meaning of taking Algebra I as a 9th grader is different than taking Algebra I as a 11th grader. For this example, the analyst might choose to calculate the modal level of the math course sequence separately for each cohort of 9th graders, 10th graders, and 11th graders, and then create a new variable to indicate whether each student's math course is above, below, or at the mode for his or her cohort.

In contrast to the complexity involved in linking AHAA data to survey data from the In-School survey and Waves I and II of Add Health, linking AHAA data to Wave III data is less difficult. As seen in Figure 1, because students from all cohorts have completed their high school course taking by Wave III (with the exception of a small number of students who were in high school for longer than four years) this simplifies predicting Wave III outcomes with AHAA data. The AHAA data provide common benchmarks for all students, such as cumulative indicators of high school achievement or an educational indicator from students' last year of high school, that could be used to predict educational, occupational, or social outcomes in Wave III. (However the analyst should consider that the time between the end of high school and the Wave III outcome varies by cohort.)

It is important to note that for analysts primarily interested in examining issues of adolescents' educational experiences, the AHAA data provide a wealth of information on the complete high school careers of six nationally representative cohorts of students in the 1990's. The Add Health survey provides related information on students' family background and history that precede the high school careers of students from all cohorts. For an illustration of research using this approach with these data, see Riegle-Crumb 2005.

The first release of the AHAA data encompasses a range of indicators which fall into four general categories, and their organizations are described later in this and accompanying documents. Most of the variables in the first release are constructed from transcript data. They include the linking indicators (part I) designed to help analysts link transcript data to academic or school years and to the Add Health surveys, and the constructed academic-course indicators (part II, to be released) which measure aspects of students' course-taking enrollment and performance in each year and cumulatively over all years of high school. In addition, the first release includes indicators related to transcript reported graduation or exit status and sample weights. Descriptions of the graduation indicators are in Wave III Graduation Data. Information concerning sample weights is in Wave III Education Data Weights Code Book and Wave III Education Data Weights.

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First Release Indicators

I. Linking Indicators

Section 1: School-Year Indicators

ELYEAR1 to ELYEAR6

These variables refer to the school years in which students were taking high school courses, and allow analysts to infer the duration of their high school career. ELYEAR1 is the school year that corresponds to the 1st year of high school course-taking data for each student. ELYEAR2 is the 2nd school year of high school course-taking data for each student, and so forth. A small number of students had more than four years of high school course-taking data. ELYEAR5 refers to the 5th year of course-taking data and ELYEAR6 refers to the 6th year of course taking. Approximately 40 students had more than six years of data. For these students, all information used for the constructed academic indicators from subsequent years (such as grades) is collapsed together with their information from their 6th year. Therefore, for this small group of students, their value on ELYEAR6 does not correspond to their last year of course taking.

All of the constructed academic course indicators discussed in Sections 3 to 5 have names ending with a number as the last character, which refers to these years of course taking. For example, EAMGPA1 is students' math GPA for the 1st of their course taking, or ELYEAR1. It is important to note that while school years run from the fall of one year to the spring of the subsequent year, for shorthand purposes all years are coded according to the fall. Therefore a value of "1994" on the ELYEAR1 variable corresponds to the school year 1994-95.

In general, ELYEAR1 corresponds to students' 9th grade or freshman year (see the discussion of ELY1NINE below), ELYEAR2 corresponds to their 10th grade or sophomore year, and so forth. Yet careful examination of students' transcripts revealed that the grade level assigned to students' courses sometimes varies within a given year. For example, some courses in a student's 2nd year of high school might be labeled as 9th grade on their transcript and others labeled as 10th grade. The meaning of grade level in high school is further complicated by the fact that some students take courses for longer than four years, and others for less. Additionally, the meaning of retention in high school is not clear, as students are unlikely to be "held back" and required to retake an entire year's worth of courses in the same manner as students in primary school. Thus, the AHAA variables ELYEAR1-6 indicate students' course-taking years with a numbering scheme (i.e., the 1st of high school course taking, the 2nd year, etc.) rather than referring directly to their 9th grade year, their 10th grade year, etc. Indicators are provided, however, to supply analysts with information about the grade level of students' courses recorded on their transcripts. (See the discussion of ELY1NINE and ELGLV945 below.)

Because ELYEAR1 represents the 1st of high school course taking for all students whose transcripts were collected, there are no missing values for this variable. For subsequent years (ELYEAR2-6), a missing value of 9992 indicates that the student has graduated from or is no longer in high school, or at the very least, that there is no additional course-taking information available for that student.

There are a small number of students with one- or two-year-long gaps in their high school transcripts where no courses are recorded. This could be due to a transcript error, or could indicate that the student was not attending high school in that school year. These students

have a valid value for the ELYEAR variables corresponding to the time of the gap, but are assigned a missing value of 9992 (no course-taking data in year) for all constructed academic indicators in that year, such as grade point average (GPA). Consequently, the number of students with a missing value of 9992 on an ELYEAR variable in a given year is slightly smaller than the number of students with a missing value of 9992 on any corresponding constructed academic course indicator. This difference indicates the number of students who have no course-taking information in that year, but who do have course-taking information recorded in one or more subsequent years.

ELMAT945

Due to the multi-cohort design of Add Health, students' high school careers overlap differently with the survey years. For example, students who entered Add Health as 11th or 12th graders, have academic information from the AHAA study that precedes their survey responses. For those students who entered the Add Health survey as 7th and 8th graders, most of their survey data occur before they enter high school, and therefore precedes all of the AHAA constructed academic course indicators created from their high school transcripts. The ELMAT945 variable allows analysts to easily match students' high school course-taking information to the school year 1994-95, when the In-School survey was conducted, and therefore provides a link between survey data from Add Health and data from AHAA. For example, if an analyst is interested in examining students' overall GPA at the same time point as their responses to survey questions from the In-School survey, ELMAT945 would indicate which of the students' overall GPA variables to use (selecting from: EAOGPA1, EAOGPA2, EAOGPA3, EAOGPA4, EAOGPA5, EAOGPA6).

Additionally, because all of the questions answered in Wave I refer to students' experiences during the school year 1994-95, the ELMAT945 variable also indicates the school year that these students referred to when responding to Wave I questions. Analysts may still wish to exercise caution with those Add Health students who responded to the Wave I survey during the end of the summer of the 1994-95 school year, as well as those who answered it in the beginning months of the 1995-96 school year.

A small number of students' last year of course taking preceded 1994-95, and are assigned a missing code of 9994 on ELMAT945. Because Add Health began in that year, it is likely that these students were in high school in 1994-95, but have incomplete transcript information. Also, there are a few students whose value for ELYEAR6 is 1993 (for the school-year 1993-94), but their value on ELMAT945 is 6 (for 6th year of course taking = 1994-95). Note that this is due to the convention of collapsing years 7 to 12 course-taking information with Year 6 information, and that these students were actually in their 7th year of course taking in 1994-95.

Section 2: Grade-Level Indicators

ELGLV945 and ELY1NINE

ELGLV945 indicates students' grade level in the school year 1994-95 (the year of the In-School survey of Add Health). Because each course a student took in a given year is assigned a grade level on his/her transcript, this variable was calculated as the mean grade level of all courses taken in that year. For most students, all of the courses taken in a given school year had the same grade level, and therefore they have a whole number value for ELGLV945. However, some students had courses marked with different grade levels during the same school year,

and therefore do not have a whole number value on ELGLV945.

It should be noted that this variable is calculated using only information from students' high school transcripts. Official school records of students' grade level may differ from students' survey reports of their grade level. Schools may treat grade level as a function of credits accrued towards graduation requirements, and therefore take account of course failures or difficulty of courses when assigning grade level. By contrast, students may consider grade level as a function of their length of time in school. In the majority of cases, there is direct correspondence between grade levels reported by students and those reported by schools. Yet discrepancies do exist. For these reasons, analysts may choose to compare values on ELGLV945 to students' self-reported grade level from the Add Health surveys.

While ELGLV945 provides information about students' transcript-indicated grade level in the school year 1994-95, ELY1NINE is a dichotomous indicator of whether or not students' ELYEAR1, or the 1st of high school course-taking data, generally corresponds to their 9th grade year. This is determined by the mean grade level assigned to all courses students took in ELYEAR1. For students whose average grade level was exactly 9 (which was the large majority of students), or greater than 9 but less than 10, we can generally conclude that the 1st of course-taking data is their 9th grade year. These students have a value of 1 on ELY1NINE.

Students with a value of 0 on ELY1NINE had a transcript-indicated average grade level that was 10 or higher for their 1st of course-taking data. This could indicate that the student's transcript was incomplete and did not include their 9th grade courses, or instead that the student began high school at a relatively accelerated position, taking 10th grade courses or higher.

Analysts familiar with Add Health are aware that it includes several high schools with a grade range of only 10th to 12th grades. Because high school transcripts nationwide include students' course-taking information from grades 9 to 12, students attending these schools still have 9th grade courses listed on their transcripts.

II. Constructed Academic-Course Indicators

Section 3: Math- and Science- Course-Sequence Indicators

EAMSQ1-6, EAMSQH, EASSQ1-6, EASSQH

These course-sequence indicators were developed to capture the academic level of students' courses in core high school subjects, and are therefore key indicators of academic achievement. Math and science courses in high school are organized into hierarchical sequences, such that certain courses are recognized as being more advanced and generally requiring more prerequisites compared to others. These indicators reflect students' location in these math and science course-taking hierarchies within each year of high school, as well as the ultimate level of course taking attained in these subjects by the end of high school.

These indicators were constructed using Classification of Secondary School Courses (CSSC) codes, which are attached to each course on a student's transcript. CSSC codes specify not only the general subject (math), but the specific course subject (such as Algebra I). Using this detailed coding scheme, ordinal indicators of course sequences were developed based on major course subjects within math and science.

The subject categories of the math course sequence include: 1, Basic/Remedial Math; 2, General/Applied Math; 3, Pre-algebra; 4, Algebra I; 5, Geometry; 6, Algebra II; 7, Advanced Math (Algebra III, Finite Math, Statistics); 8, Pre-calculus (includes Trigonometry); and 9, Calculus. The subject categories for the science course sequence include: 1, Basic/Remedial Science; 2, General/Earth Science; 3, Biology I; 4, Chemistry; 5, Advanced Science (Biology II, Chemistry II); and 6, Physics. These categories reflect a hierarchy of courses ranging from less to more advanced. Note that students do not have to pass through each category of the sequence. For instance, students might take either Advanced Math or Pre-calculus, but not both. Additionally, while most students' course-taking patterns reflect a linear movement through the sequence, a minority of students may have different patterns (i.e., Chemistry may not always precede Physics).

All of the yearly course-sequence indicators (EAMSQ1-6, EASSQ1-6) are named to indicate the students' course-taking year to which it corresponds. For example, EAMSQ2 is students' math course-sequence level for their 2nd year of course taking (ELYEAR2). Students who did not take a math or science course in a given year are assigned a value of 0. Those small number of students who did not have any math courses or any science courses recorded on their high school transcripts are assigned a missing value of 9993 for all sequence variables in that subject. For each year of course taking, students are assigned to the category that reflects the highest level class they took for one semester or more, regardless of whether or not they received credit for the course. If a student took two different math courses in one year for example (such as Algebra II and Geometry), they are placed in the higher category (i.e., Algebra II).

In addition to the series of variables capturing students' course-taking level for each year, AHAA provides cumulative measures that capture the highest level course taken by the end of high school for these two subjects (EAMSQH, EASSQH). For these cumulative indicators, there is no value of 0, as students had to have taken at least one math or one science course to be included in the construction of the variables (those that did not are assigned a missing value as discussed above). It is also important to note that using students' sequence level in the last year they attended high school (such as EAMSQ4 for students who attended for four years) is not the same as the highest level course the student ever took, as many students do not take a math or a science course their senior year of high school.

EAMSQB1-6, EAMSQBH, EASSQB1-6, EASSQBH

"B versions" of the sequence variables were also created, where students are placed at a given level of the variable only if they receive some credit for the course taken. Students' transcripts indicate the amount of standardized credits, or Carnegie units, they receive for each course taken. In most cases, not receiving credit for a course is the result of the student failing the course. For the B version of the sequence variables, if students took a course but received no credit in a given year, they are placed in the "0" category ("No Math" or "No Science"). If students took two separate courses and failed one, they are assigned to the category for the course that they passed.

Additionally, there are also cumulative measures that represent the highest level course for which a student received credit in high school for each subject (EAMSQBH, EASSQBH). The decision to use the regular or B versions of the course-sequence indicators depends on the particular research question of interest. The analyst must decide whether it is more relevant to consider if students have taken certain levels of courses, or instead if they earned credit for certain levels of courses.

Overall, these math and science sequence variables (both the regular and the B version) provide analysts with measures of students' academic achievement at the end of high school, as well as in each year of their school course taking, regardless of the actual school years when this occurred. For example, EAMSQ1 provides analysts with a measure of the level of math course each student took at the beginning of high school (although as mentioned before, the analysts might choose to exercise caution and restrict this to students whose ELYEAR1 corresponds to 9th grade, as indicated by ELY1NINE). The variable EAMSQ1 could also be dichotomized to capture whether the student began high school by taking Algebra I or a higher course, or entered high school taking Pre-Algebra or a lower course.

There is a very strong connection between the level of students' math and science course taking at the beginning and the end of high school, such that students who begin at a higher level tend to end at a higher level. When using the variables for the highest level attained by the end of high school (EASSQH, EASSQBH or EAMSQH, EAMSQBH) as outcome variables, it is recommended that the student's placement at the beginning of high school should be included as a covariate in the analysis (EAMSQ1 or EAMSQB1, EASSQ1 or EASSQB1), to control on initial placement. The variables for highest level attained by end of high school can also be dichotomized as dependent variables, for example, whether or not a student took Algebra II or Chemistry by the end of high school. Analysts may also choose to use EAMSQH or EASSQH (or the B versions) as measures of ultimate high school achievement, and use them to predict later adult outcomes as measured in Wave III of Add Health.

Finally, as mentioned in the section "The AHAA Design in Relation to the Add Health Waves" (beginning on page 6), analysts wanting to use these course-sequence indicators in conjunction with survey data from Add Health need to carefully consider issues of temporal order. For example, while EAMSQ1 is the benchmark for students' level of math course at the beginning of high school, it could be used as a measure of academic achievement occurring prior to Wave I outcomes for the older cohorts (11th and 12th graders), but it should only be used as a predictor of Wave II outcomes for the 9th grade cohort. If an analyst wants to predict a Wave II outcome for students from several cohorts controlling on students' math course level at Wave I, the analyst would first need to determine which year of the math course-sequence indicator to use for each cohort (EAMSQ1-4), and could then determine whether each student was advanced, regular, or below based on the modal sequence level for their cohort.

Section 4: Course Grades

EAMGPA1-6, EAMGPAC, EASGPA1-6, EASGPAC, EAOGPA1-6, EAOGPAC

These variables capture students' academic performance for each year of their high school course taking, as well as cumulatively across all years of high school. GPA indicators were created separately for students' math courses (EAMGPA1-6, EAMGPAC) and science courses (EASGPA1-6, EASGPAC). GPA indicators were also created to measure students' performance in courses across all subjects taken (EAOGPA1-6, EAOGPAC), including electives.

The majority of students in AHAA took courses on a semester basis, such that schools recorded two separate entries for a year-long course on the transcript, each designated with a grade. The GPA variables are calculated as the average grade across semester-length courses in a given year (for the yearly indicators), or across all years of students' course taking (for the cumulative indicators). Less than 1% of all courses taken by the entire sample of AHAA students occurred on a trimester basis. For the purposes of the construction of academic

indicators, trimesters are considered equivalent to semesters. Students who took courses designated as year long (and with only one grade recorded) are treated as having received the same grade for two semester-length courses. Fs are coded as 0, Ds are coded as 1, Cs are coded as 2, Bs are coded as 3, and As are coded as 4. When students received a P for pass, a NG for not graded, a W for withdrew, a WF for withdrew failing, a WP for withdrew passing, or an I for incomplete, these courses were not included in the calculation of GPA. Students who did not take a course assigned a grade of A to F in a given year, but who did take a course that year, have a missing value of 9995 on the corresponding GPA variable (for math courses, science courses, or overall courses).

All of the GPA variables are named to indicate the students' course-taking year to which it corresponds (for example, EAMGPA2 is the students' math GPA for the 2nd year of high school course taking), with the exception of the cumulative measures that represent GPA for all years of course taking (designated with a C as the last character of the variable, such as EAMGPAC). Students who were not taking a math or science course in a given year are assigned a missing value for the corresponding GPA variable.

Additionally, analysts should note that the cumulative indicators represent the average across all years for which the student was taking courses (or taking math or science courses for the subject-specific indicators). If a student has only two years of course-taking data, for example, his or her value on EAOGPAC would be calculated based on only two years of data, in contrast to the typical student with four years of data.

These measures provide analysts with yearly indicators of students' academic performance in the core curricular subjects of math and science as well as across all subjects taken. In contrast to self-reported data, these are official indicators of performance as recorded on the students' high school transcripts. They provide analysts with parallel measures of academic performance for students from all different cohorts. For example, by using EAOGPA1, the analyst has a base measure of academic performance at the beginning of high school for all students, regardless of what school year they began high school. (Note that in the example mentioned, a careful analyst might choose to restrict the analysis only to students' whose transcript-indicated grade level in ELYEAR1 corresponded to 9th grade by using ELY1NINE).

Finally, as mentioned in the section on the "The AHAA Design in Relation to the Add Health Waves" (beginning on page 6), analysts interested in examining students' grades in conjunction with survey data from Add Health are advised to consider issues of temporal order of their variables.

Section 5: Course Failures

EAMFIX1-6, EAMFIXC, EASFIX1-6, EASFIXC, EAOFIX1-6, EAOFIXC

While GPA captures the range of student performance, the failure index variables capture the extreme end of low academic performance. These variables are proportions that correspond to the number of semester-length courses failed (in each year or across all years of high school) divided by the number of semester-length courses attempted (in each year or cumulatively). Courses not assigned a grade of A to F are not included in the calculation of failure. Separate indicators are constructed for math and science as well as overall indicators of failures across all subjects. Failures are defined as they were for the GPA variables, relying only on the grade received, and not on whether the student's transcript indicated that he/she had received credit for the course. (However, in the vast majority of cases students who received a grade of F in a

given course did not receive any credit.)

A value of 0 on a failure index variable indicates no failures, while a value of 1 indicates that the student failed all courses in a given year or cumulatively (in math, in science, or across subjects). Students whose values fall between 0 and 1 therefore failed some proportion of the courses they attempted for a grade. Although the failure variables are continuous in nature, analysts should take care when using them in this format, given that the majority of students have a value of 0 on each of the variables. Instead, analysts might choose to create a dichotomous indicator (any failure vs. none), or choose certain threshold values based on the particular analysis or research question being addressed.

Additionally, unless a student fails all of his/her courses in a given subject or across subjects, the student will have a corresponding GPA measure that is greater than 0. For example, if a student took two semesters of math in ELYEAR2, and failed the first semester but received a C the second semester, he/she would have a value of .5 for EAMFIDX2 and a value of 1 for EAMGPA2.

Quick Reference Guide to Variables

I. Linking Indicators

Section 1: School-Year Indicators

ELYEAR1
ELYEAR2
ELYEAR3
ELYEAR4
ELYEAR5
ELYEAR6

School years of students' course taking in high school, beginning with their 1st and continuing through their 2nd, 3rd, and 4th. Students with more than four years of high school course taking have valid values for ELYERAR5 and in a few cases, ELYEAR6.

ELMAT945 Match between student's course-taking years (ELYEAR1-6) and the school year 1994-95.

Section 2: Grade-Level Indicators

ELGLV945 Students' high school grade level for the school year 1994-95, calculated as the mean grade level of all courses listed on their transcript for that school year.

ELY1NINE Dichotomous variable indicating whether or not students' 1st of course taking (ELYEAR1) corresponds to their 9th grade year, as indicated by the mean grade level of courses listed on their transcript in that year.

II. Constructed Academic Course Indicators

Section 3: Math and Science Course Indicators

Math

EAMSQ1
EAMSQ2
EAMSQ3
EAMSQ4
EAMSQ5
EAMSQ6
EAMSQH

Ordinal variables that represent the highest level math course taken in each year of students' high school course taking (EAMSQ1-6), and the highest level math course taken by the end of high school (EAMSQH).

Math B Version

EAMSQB1
EAMSQB2
EAMSQB3
EAMSQB4
EAMSQB5
EAMSQB6
EAMSQBH

B Version: Ordinal variables that represent the highest level math course for which a student received credit in each year (EASMSQB1-6), and the highest level math course for which the student received credit by the end of high school (EAMSQBH).

Science

EASSQ1 EASSQ2 EASSQ3 EASSQ4 EASSQ5 EASSQ6 EASSQH	Ordinal variables that represent the highest level science course taken in each year of students' high school course taking (EASSQ1-6), and the highest level science course taken by the end of high school (EASSQH).

Science B Version

EASSQB1 EASSQB2 EASSQB3 EASSQB4 EASSQB5 EASSQB6 EASSQBH	B Version: Ordinal variables that represent the highest level science course for which a student received credit in each year (EASSQB1-6), and the highest level science course for which the student received credit by the end of high school (EAHSSQB).

Section 4: Course Grades

Math GPA

EAMGPA1 EAMGPA2 EAMGPA3 EAMGPA4 EAMGPA5 EAMGPA6 EAMGPAC	GPA of math courses taken in each year (EAMGPA1-6) and cumulatively (EAMGPAC).

Science GPA

EASGPA1 EASGPA2 EASGPA3 EASGPA4 EASGPA5 EASGPA6 EASGPAC	GPA of science courses taken in each year (EASGPA1-6) and cumulatively (EASGPAC).

Overall GPA

EAOGPA1 EAOGPA2 EAOGPA3 EAOGPA4 EAOGPA5 EAOGPA6	Overall GPA for all courses taken in each year (EAOGPA1-6) and cumulatively (EAOGPAC).

EASOPAC

Section 5: Course Failures

Math Failure Index

EAMFIX1 EAMFIX2 EAMFIX3 EAMFIX4 EAMFIX5 EAMFIX6 EAMFIXC	Proportion of math courses that students failed in each year (EAMFIX1-6) and cumulatively (EAMFIXC).

Science Failure Index

EASFIX1 EASFIX2 EASFIX3 EASFIX4 EASFIX5 EASFIX6 EASFIXC	Proportion of science courses that students failed in each year (EASFIX1-6) and cumulatively (EASFIXC).

Overall Failure Index

EAOFIX1 EAOFIX2 EAOFIX3 EAOFIX4 EAOFIX5 EAOFIX6 EAOFIXC	Proportion of all courses that students failed in each year (EAOFIX1-6) and cumulatively (EAOFIXC).

Frequency	Code	Response	Variable Name	Type/ Length
Respondent Identifier			**AID**	char 8
3947		range 10000000 to 99999999		
I. Constructed Academic Status Indicators				
Section 1: School-Year Linking Indicators				
1st Year of High School Course Taking			**ELYEAR1**	num 8
1	1987	1987-1998		
3	1988	1998-1999		
3	1989	1989-1990		
20	1990	1990-1991		
590	1991	1991-1992		
707	1992	1992-1993		
686	1993	1993-1994		
661	1994	1994-1995		
597	1995	1995-1996		
637	1996	1996-1997		
27	1997	1997-1998		
4	1998	1998-1999		
11	1999	1999-2000		
2nd Year of High School Course Taking			**ELYEAR2**	num 8
3	1989	1989-1990		
3	1990	1990-1991		
20	1991	1991-1992		
590	1992	1992-1993		
705	1993	1993-1994		
677	1994	1994-1995		
638	1995	1995-1996		
579	1996	1996-1997		
613	1997	1997-1998		
17	1998	1998-1999		
2	1999	1999-2000		
100	9992	no course taking data in year 2		

Frequency	Code	Response	Variable Name	Type/ Length
3rd Year of High School Course Taking			**ELYEAR3**	num 8
3	1990	1990-1991		
3	1991	1991-1992		
20	1992	1992-1993		
588	1993	1993-1994		
692	1994	1994-1995		
649	1995	1995-1996		
615	1996	1996-1997		
549	1997	1997-1998		
587	1998	1998-1999		
12	1999	1999-2000		
229	9992	no course-taking data in year 3		
4th Year of High School Course Taking			**ELYEAR4**	num 8
3	1991	1991-1992		
3	1992	1992-1993		
19	1993	1993-1994		
568	1994	1994-1995		
656	1995	1995-1996		
616	1996	1996-1997		
578	1997	1997-1998		
520	1998	1998-1999		
550	1999	1999-2000		
2	2000	1999-2000		
432	9992	no course-taking data in year 4		
5th Year of High School Course Taking			**ELYEAR5**	num 8
3	1992	1992-1993		
2	1993	1993-1994		
15	1994	1994-1995		
34	1995	1995-1996		
30	1996	1996-1997		
34	1997	1997-1998		

Frequency	Code	Response	Variable Name	Type/ Length
26	1998	1998-1999		
20	1999	1999-2000		
3783	9992	no course-taking data in year 5		
6th Year of High School Course Taking			**ELYEAR6**	num 8
2	1993	1993-1994		
2	1994	1994-1995		
4	1995	1995-1996		
6	1996	1996-1997		
11	1997	1997-1998		
7	1998	1998-1999		
6	1999	1999-2000		
3909	9992	no course-taking data in year 6		
Match Between EAYEAR1-6 and 1994-95			**ELMAT945**	num 8
661	1	year 1 = 1994-95		
677	2	year 2 = 1994-95		
692	3	year 3 = 1994-95		
568	4	year 4 = 1994-95		
15	5	year 5 = 1994-95		
4	6	year6 = 1994-95		
1276	9993	year 1 after 1994-95		
54	9994	last year of course-taking data before 1995-95		
Section 2: Grade Level Indicators				
Mean Grade Level of Courses in 1994-95			**ELGLV945**	num 8
652	9	9th grade		
20	9.1			
2	9.2			
4	9.5			
2	9.9			
659	10	10th grade		
18	10.1			
1	10.2			

Frequency	Code	Response	Variable Name	Type/ Length
4	10.3			
1	10.4			
1	10.5			
1	10.7			
1	10.8			
667	11	11th grade		
19	11.1			
1	11.4			
2	11.5			
1	11.6			
1	11.7			
2	11.8			
3	11.9			
550	12	12th grade		
1276	9993	year 1 after 1994-95		
54	9994	last year of course-taking data before 1994-95		
5	9995	no courses recorded in 1994-95		
Grade Level Year 1			**ELY1NINE**	num 8
68	0	mean grade level of year 1 courses is greater than or equal to 10		
3879	1	mean grade level of year 1 courses is between 9 and 10		
II. Academic Courses Indicators				
Section 3: Math- and Science- Course-Sequence Indicators				
Math Sequence Level Year 1			**EAMSQ1**	num 8
93	0	no math		
192	1	basic/remedial math		
422	2	general/applied math		
482	3	pre-algebra		
1979	4	algebra I		
541	5	geometry		
167	6	algebra II		
20	7	advanced math		

Frequency	Code	Response	Variable Name	Type/ Length
16	8	pre-calculus		
3	9	calculus		
32	9993	no math courses on transcript in any year		
Math Sequence Level Year 2			**EAMSQ2**	num 8
118	0	no math		
117	1	basic/remedial math		
305	2	general/applied math		
154	3	pre-algebra		
825	4	algebra I		
1358	5	geometry		
722	6	algebra II		
78	7	advanced math		
133	8	pre-calculus		
14	9	calculus		
112	9992	no course-taking data in year 2		
11	9993	no math courses on transcript in any year		
Math Sequence Level Year 3			**EAMSQ3**	num 8
342	0	no math		
68	1	basic/remedial math		
262	2	general/applied math		
78	3	pre-algebra		
341	4	algebra I		
706	5	geometry		
935	6	algebra II		
193	7	advanced math		
717	8	pre-calculus		
47	9	calculus		
248	9992	no course-taking data in year 3		
10	9993	no math courses on transcript in any year		
Math Sequence Level Year 4			**EAMSQ4**	num 8
1178	0	no math		

Frequency	Code	Response	Variable Name	Type/ Length
54	1	basic/remedial math		
294	2	general/applied math		
23	3	pre-algebra		
139	4	algebra I		
248	5	geometry		
341	6	algebra II		
236	7	advanced math		
606	8	pre-calculus		
379	9	calculus		
443	9992	no course-taking data in year 4		
6	9993	no math courses on transcript in any year		
Math Sequence Level Year 5			**EAMSQ5**	num 8
58	0	no math		
7	1	basic/remedial math		
14	2	general/applied math		
8	3	pre-algebra		
18	4	algebra I		
20	5	geometry		
6	6	algebra II		
6	7	advanced math		
4	8	pre-calculus		
10	9	calculus		
3794	9992	no course-taking data in year 5		
2	9993	no math courses on transcript in any year		
Math Sequence Level Year 6+			**EAMSQ6**	num 8
16	0	no math		
6	1	basic/remedial math		
1	2	general/applied math		
4	3	pre-algebra		
3	4	algebra I		
1	5	geometry		

Frequency	Code	Response	Variable Name	Type/ Length
3	6	algebra II		
2	7	advanced math		
2	8	pre-calculus		
1	9	calculus		
3909	9992	no course-taking data in year 6+		
1	9993	no math courses on transcript in any year		
Highest Math Level Taken in All Years			**EAMSQH**	num 8
53	1	basic/remedial math		
146	2	general/applied math		
142	3	pre-algebra		
451	4	algebra I		
587	5	geometry		
953	6	algebra II		
264	7	advanced math		
903	8	pre-calculus		
416	9	calculus		
32	9993	no math courses on transcript in any year		
Math Level with Credit Year 1			**EAMSQB1**	num 8
382	0	no math		
170	1	basic/remedial math		
376	2	general/applied math		
435	3	pre-algebra		
1822	4	algebra I		
533	5	geometry		
163	6	algebra II		
17	7	advanced math		
14	8	pre-calculus		
3	9	calculus		
32	9993	no math courses on transcript in any year		
Math Level with Credit Year 2			**EAMSQB2**	num 8
568	0	no math		

Frequency	Code	Response	Variable Name	Type/ Length
104	1	basic/remedial math		
258	2	general/applied math		
34	3	pre-algebra		
672	4	algebra I		
1280	5	geometry		
688	6	algebra II		
76	7	advanced math		
130	8	pre-calculus		
14	9	calculus		
112	9992	no course-taking data in year 2		
11	9993	no math courses on transcript in any year		
Math Level with Credit Year 3			**EAMSQB3**	num 8
692	0	no math		
53	1	basic/remedial math		
238	2	general/applied math		
60	3	pre-algebra		
253	4	algebra I		
613	5	geometry		
854	6	algebra II		
179	7	advanced math		
700	8	pre-calculus		
47	9	calculus		
248	9992	no course-taking data in year 3		
10	9993	no math courses on transcript in any year		
Math Level with Credit Year 4			**EAMSQB4**	num 8
1405	0	no math		
44	1	basic/remedial math		
276	2	general/applied math		
17	3	pre-algebra		
115	4	algebra I		
200	5	geometry		

Frequency	Code	Response	Variable Name	Type/ Length
291	6	algebra II		
220	7	advanced math		
567	8	pre-calculus		
363	9	calculus		
443	9992	no course-taking data in year 4		
6	9993	no math courses on transcript in any year		
Math Level with Credit Year 5			**EAMSQB5**	num 8
73	0	no math		
7	1	basic/remedial math		
12	2	general/applied math		
5	3	pre-algebra		
15	4	algebra I		
15	5	geometry		
6	6	algebra II		
5	7	advanced math		
3	8	pre-calculus		
10	9	calculus		
3794	9992	no course-taking data in year 5		
2	9993	no math courses on transcript in any year		
Math Level with Credit Year 6+			**EAMSQB6**	num 8
18	0	no math		
6	2	general/applied math		
1	3	pre-algebra		
2	4	algebra I		
3	5	geometry		
1	6	algebra II		
3	7	advanced math		
2	8	pre-calculus		
1	9	calculus		
3909	9992	no course-taking data in year 6+		
1	9993	no math courses on transcript in any year		

Frequency	Code	Response	Variable Name	Type/ Length
Highest Math Level (Credit) All Years			**EAMSQBH**	num 8
100	0	no math		
59	1	basic/remedial math		
195	2	general/applied math		
137	3	pre-algebra		
436	4	algebra I		
570	5	geometry		
899	6	algebra II		
245	7	advanced math		
874	8	pre-calculus		
400	9	calculus		
32	9993	no math courses on transcript in any year		
Science Sequence Level Year 1			**EASSQ1**	num 8
339	0	no science		
34	1	basic/remedial science		
2182	2	general/earth science		
1156	3	biology		
30	4	chemistry		
55	5	advanced science		
97	6	physics		
54	9993	no science courses on transcript in any year		
Science Sequence Level Year 2			**EASSQ2**	num 8
219	0	no science		
30	1	basic/remedial science		
497	2	general/earth science		
2145	3	biology		
604	4	chemistry		
242	5	advanced science		
72	6	physics		
112	9992	no course-taking data in year 2		
26	9993	no science courses on transcript in any year		

Frequency	Code	Response	Variable Name	Type/ Length
Science Sequence Level Year 3			**EASSQ3**	num 8
715	0	no science		
11	1	basic/remedial science		
394	2	general/earth science		
416	3	biology		
1235	4	chemistry		
566	5	advanced science		
343	6	physics		
248	9992	no course-taking data in year 3		
19	9993	no science courses on transcript in any year		
Science Sequence Level Year 4			**EASSQ4**	num 8
1676	0	no science		
9	1	basic/remedial science		
260	2	general/earth science		
138	3	biology		
267	4	chemistry		
521	5	advanced science		
616	6	physics		
443	9992	no course-taking data in year 4		
17	9993	no science courses on transcript in any year		
Science Sequence Level Year 5			**EASSQ5**	num 8
72	0	no science		
3	1	basic/remedial science		
26	2	general/earth science		
17	3	biology		
5	4	chemistry		
12	5	advanced science		
16	6	physics		
3794	9992	no course-taking data in year 5		
2	9993	no science courses on transcript in any year		
Science Sequence Level Year 6+			**EASSQ6**	num 8

Frequency	Code	Response	Variable Name	Type/ Length
21	0	no science		
3	2	general/earth science		
6	3	biology		
1	4	chemistry		
4	5	advanced science		
2	6	physics		
3909	9992	no course-taking data in year 6+		
1	9993	no science courses on transcript in any year		
Highest Science Level Taken in All Years			**EASSQH**	num 8
19	1	basic/remedial science		
191	2	general/earth science		
970	3	biology		
806	4	chemistry		
863	5	advanced science		
1044	6	physics		
54	9993	no science courses on transcript in any year		
Science Level with Credit Year 1			**EASSQB1**	num 8
563	0	no science		
31	1	basic/remedial science		
2038	2	general/earth science		
1094	3	biology		
27	4	chemistry		
47	5	advanced science		
93	6	physics		
54	9993	no science courses on transcript in any year		
Science Level with Credit Year 2			**EASSQB2**	num 8
461	0	no science		
27	1	basic/remedial science		
441	2	general/earth science		
1992	3	biology		
584	4	chemistry		

Frequency	Code	Response	Variable Name	Type/ Length
235	5	advanced science		
69	6	physics		
112	9992	no course-taking data in year 2		
26	9993	no science courses on transcript in any year		
Science Level with Credit Year 3			**EASSQB3**	num 8
959	0	no science		
11	1	basic/remedial science		
355	2	general/earth science		
349	3	biology		
1142	4	chemistry		
530	5	advanced science		
334	6	physics		
248	9992	no course-taking data in year 3		
19	9993	no science courses on transcript in any year		
Science Level with Credit Year 4			**EASSQB4**	num 8
1797	0	no science		
8	1	basic/remedial science		
234	2	general/earth science		
115	3	biology		
234	4	chemistry		
499	5	advanced science		
600	6	physics		
443	9992	no course-taking data in year 4		
17	9993	no science courses on transcript in any year		
Science Level with Credit Year 5			**EASSQB5**	num 8
86	0	no science		
3	1	basic/remedial science		
21	2	general/earth science		
11	3	biology		
3	4	chemistry		
12	5	advanced science		

Frequency	Code	Response	Variable Name	Type/ Length
15	6	physics		
3794	9992	no course-taking data in year 5		
2	9993	no science courses on transcript in any year		
Science Level with Credit Year 6+			**EASSQB6**	num 8
22	0	no science		
3	2	general/earth science		
5	3	biology		
1	4	chemistry		
4	5	advanced science		
2	6	physics		
3909	9992	no course-taking data in year 6+		
1	9993	no science courses on transcript in any year		
Highest Science Level (Credit) All Years			**EASSQBH**	num 8
94	0	no science		
22	1	basic/remedial science		
244	2	general/earth science		
951	3	biology		
732	4	chemistry		
828	5	advanced science		
1022	6	physics		
54	9993	no science courses on transcript in any year		
Section 4: Course Grades				
Math GPA Year 1			**EAMGPA1**	num 8
214	0			
151		range 0.25 to 0.75		
408	1			
294		range 1.2 to 1.833		
754	2			
401		range 2.25 to 2.8		
778	3			
258		range 3.2 to 3.75		

Frequency	Code	Response	Variable Name	Type/ Length
539	4			
32	9993	no math courses on transcript in any year		
93	9994	no math course in year 1		
25	9995	no graded math course in year 1		
Math GPA Year 2			**EAMGPA2**	num 8
260	0			
150		range 0.333 to 0.75		
454	1			
302		range 1.2 to 1.75		
725	2			
326		range 2.125 to 2.833		
717	3			
237		range 3.25 to 3.75		
502	4			
112	9992	no course-taking data in year 2		
11	9993	no math courses on transcript in any year		
118	9994	no math course in year 2		
33	9995	no graded math course in year 2		
Math GPA Year 3			**EAMGPA3**	num 8
249	0			
143		range 0.25 to 0.8		
429	1			
258		range 1.25 to 1.75		
757	2			
279		range 2.25 to 2.75		
581	3			
210		range 3.2 to 3.75		
409	4			
248	9992	no course-taking data in year 3		
10	9993	no math courses on transcript in any year		
342	9994	no math course in year 3		

Frequency	Code	Response	Variable Name	Type/ Length
32	9995	no graded math course in year 3		
Math GPA Year 4			**EAMGPA4**	num 8
148	0			
73		range 0.333 to 0.8		
284	1			
148		range 1.2 to 1.8		
495	2			
188		range 2.2 to 2.75		
447	3			
149		range 3.25 to 3.8		
351	4			
443	9992	no course-taking data in year 4		
6	9993	no math courses on transcript in any year		
1178	9994	no math course in year 4		
37	9995	no graded math course in year 4		
Math GPA Year 5			**EAMGPA5**	num 8
10	0			
3		range 0.333 to 0.667		
17	1			
6		range 1.333 to 1.667		
19	2			
2		range 2.333 to 2.5		
18	3			
4		range 3.5 to 3.75		
11	4			
3794	9992	no course-taking data in year 5		
2	9993	no math courses on transcript in any year		
58	9994	no math course in year 5		
3	9995	no graded math course in year 5		
Math GPA Year 6+			**EAMGPA6**	num 8
1	0			

Frequency	Code	Response	Variable Name	Type/ Length
3	1			
2		range 1.143 to 1.5		
5	2			
1	2.5			
6	3			
2	4			
3809	9992	no course-taking data in year 6+		
1	9993	no math courses on transcript in any year		
16	9994	no math course in year 6+		
1	9995	no graded math course in year 6+		
Cumulative Math GPA Across All Years			**EAMGPAC**	num 8
68	0			
256		range 0.125 to 0.909		
154	1			
1005		range 1.056 to 1.917		
294	2			
1162		range 2.1 to 2.938		
178	3			
626		range 3.083 to 3.923		
156	4			
32	9993	no math courses on transcript in any year		
16	9995	no graded math course in years 1 to 6+		
Science GPA Year 1			**EASGPA1**	num 8
194	0			
121		range 0.333 to 0.75		
384	1			
214		range 1.25 to 1.75		
697	2			
322		range 2.25 to 2.75		
784	3			
236		range 3.25 to 3.75		

Frequency	Code	Response	Variable Name	Type/ Length
577	4			
54	9993	no science courses on transcript in any year		
339	9994	no science course in year 1		
25	9995	no graded science course in year 1		
Science GPA Year 2			**EASGPA2**	num 8
210	0			
101		range 0.25 to 0.75		
380	1			
241		range 1.25 to 1.75		
753	2			
307		range 2.25 to 2.75		
827	3			
210		range 3.2 to 3.75		
542	4			
112	9992	no course-taking data in year 2		
26	9993	no science courses on transcript in any year		
219	9994	no science course in year 2		
19	9995	no graded science course in year 2		
Science GPA Year 3			**EASGPA3**	num 8
193	0			
61		range 0.2 to 0.75		
331	1			
193		range 1.25 to 1.8		
605	2			
282		range 2.167 to 2.75		
612	3			
220		range 3.2 to 3.75		
438	4			
248	9992	no course-taking data in year 3		
19	9993	no science courses on transcript in any year		
715	9994	no science course in year 3		

Frequency	Code	Response	Variable Name	Type/ Length
30	9995	no graded science course in year 3		
Science GPA Year 4			**EASGPA4**	num 8
88	0			
35		range 0.25 to 0.75		
172	1			
65		range 1.25 to 1.75		
357	2			
144		range 2.25 to 2.833		
404	3			
131		range 3.25 to 3.75		
392	4			
443	9992	no course-taking data in year 4		
17	9993	no science courses on transcript in any year		
1676	9994	no science course in year 4		
23	9995	no graded science course in year 4		
Science GPA Year 5			**EASGPA5**	num 8
11	0			
3		range 0.5 to 0.667		
11	1			
9		range 1.25 to 1.6		
16	2			
3		range 2.5 to 2.8		
14	3			
2		range 3.5 to 3.667		
6	4			
3794	9992	no course-taking data in year 5		
2	9993	no science courses on transcript in any year		
72	9994	no science course in year 5		
4	9995	no graded science course in year 5		
Science GPA Year 6+			**EASGPA6**	num 8
1	0			

Frequency	Code	Response	Variable Name	Type/ Length
2		range 0.333 to 0.6		
3	1			
1	1.5			
4	2			
3		range 2.333 to 2.75		
1	3			
3909	9992	no course-taking data in year 6+		
1	9993	no science courses on transcript in any year		
21	9994	no science course in year 6+		
1	9995	no graded science course in year 6+		
Cumulative Science GPA Across All Years			**EASGPAC**	num 8
82	0			
214		range 0.091 to 0.929		
176	1			
773		range 1.1 to 1.923		
348	2			
1095		range 2.083 to 2.917		
294	3			
720		range 3.083 to 3.929		
180	4			
54	9993	no science courses on transcript in any year		
11	9995	no graded science course in years 1 to 6+		
Overall GPA Year 1			**EAOGPA1**	num 8
25	0			
154		range 0.077 to 0.95		
46	1			
676		range 1.059 to 1.938		
124	2			
1332		range 2.056 to 2.944		
177	3			
1192		range 3.038 to 3.947		

Frequency	Code	Response	Variable Name	Type/ Length
182	4			
39	9995	no graded science course in year 6+		
Overall GPA Year 2			**EAOGPA2**	num 8
38	0			
149		range 0.083 to 0.95		
32	1			
659		range 1.063 to 1.95		
113	2			
1358		range 2.059 to 2.958		
159	3			
1160		range 3.063 to 3.967		
149	4			
112	9992	no course-taking data in year 2		
18	9995	no graded course in year 2		
Overall GPA Year 3			**EAOGPA3**	num 8
32	0			
152		range 0.071 to 0.941		
23	1			
635		range 1.063 to 1.941		
117	2			
1303		range 2.063 to 2.947		
163	3			
1125		range 3.059 to 3.95		
131	4			
248	9992	no course-taking data in year 3		
18	9995	no graded course in year 3		
Overall GPA Year 4			**EAOGPA4**	num 8
25	0			
84		range 0.125 to 0.933		
28	1			
448		range 1.053 to 1.941		

Frequency	Code	Response	Variable Name	Type/ Length
119	2			
1093		range 2.063 to 2.947		
189	3			
1322		range 3.056 to 3.95		
170	4			
443	9992	no course-taking data in year 4		
26	9995	no graded course in year 4		
Overall GPA Year 5			**EAOGPA5**	num 8
6	0			
11		range 0.143 to 0.875		
4	1			
29		range 1.1 to 1.917		
9	2			
39		range 2.071 to 2.889		
13	3			
32		range 3.111 to 3.909		
4	4			
3794	9992	no course-taking data in year 5		
6	9995	no graded course in year 5		
Overall GPA Year 6+			**EAOGPA6**	num 8
1	0			
3		range 0.286 to 0.75		
1	1			
6		range 1.075 to 1.857		
5	2			
12		range 2.333 to 2.9		
3	3			
3		range 3.192 to 3.267		
2	4			
3909	9992	no course-taking data in year 6+		
2	9995	no graded course in year 6+		

Frequency	Code	Response	Variable Name	Type/ Length
Cumulative GPA Across All Years			**EAOGPAC**	num 8
13	0			
151		range 0.053 to 0.964		
13	1			
726		range 1.016 to 1.985		
34	2			
1585		range 2.018 to 2.985		
34	3			
1310		range 3.016 to 3.985		
53	4			
28	9995	no graded course in years 1 to 6+		
Section 5: Course Failures				
Math Failure Index Year 1			**EAMFIX1**	num 8
3276	0			
307		range 0.167 to 0.75		
214	1			
32	9993	no math courses on transcript in any year		
93	9994	no math course in year 1		
25	9995	no graded math course in year 1		
Math Failure Index Year 2			**EAMFIX2**	num 8
3099	0			
314		range 0.2 to 0.75		
260	1			
112	9992	no course-taking data in year 2		
11	9993	no math courses on transcript in any year		
118	9994	no math course in year 2		
33	9995	no graded math course in year 2		
Math Failure Index Year 3			**EAMFIX3**	num 8
2769	0			
297		range 0.2 to 0.8		

Frequency	Code	Response	Variable Name	Type/ Length
249	1			
248	9992	no course-taking data in year 3		
10	9993	no math courses on transcript in any year		
342	9994	no math course in year 3		
32	9995	no graded math course in year 3		
Math Failure Index Year 4			**EAMFIX4**	num 8
1973	0			
162		range 0.2 to 0.833		
148	1			
443	9992	no course-taking data in year 4		
6	9993	no math courses on transcript in any year		
1178	9994	no math course in year 4		
37	9995	no graded math course in year 4		
Math Failure Index Year 5			**EAMFIX5**	num 8
72	0			
8		range 0.333 to 0.667		
10	1			
3794	9992	no course-taking data in year 5		
2	9993	no math courses on transcript in any year		
58	9994	no math course in year 5		
3	9995	no graded math course in year 5		
Math Failure Index Year 6+			**EAMFIX6**	num 8
15	0			
4		range 0.333 to 0.5		
1	1			
3909	9992	no course-taking data in year 6+		
1	9993	no math courses on transcript in any year		
16	9994	no math course in year 6+		
1	9995	no graded math course in year 6+		
Math Failure Index Across All Years			**EAMFIXC**	num 8
2592	0			

1239		range 0.071 to 0.875		
68	1			
32	9993	no math courses on transcript in any year		
16	9995	no graded math course in years 1 to 6+		
Science Failure Index Year 1			**EASFIX1**	num 8
3116	0			
219		range 0.25 to 0.75		
194	1			
54	9993	no science courses on transcript in any year		
339	9994	no science course in year 1		
25	9995	no graded science course in year 1		
Science Failure Index Year 2			**EASFIX2**	num 8
3155	0			
206		range 0.25 to 0.75		
210	1			
112	9992	no course-taking data in year 2		
26	9993	no science courses on transcript in any year		
219	9994	no science course in year 2		
19	9995	no graded science course in year 2		
Science Failure Index Year 3			**EASFIX3**	num 8
2571	0			
171		range 0.2 to 0.8		
193	1			
248	9992	no course-taking data in year 3		
19	9993	no science courses on transcript in any year		
715	9994	no science course in year 3		
30	9995	no graded science course in year 3		
Science Failure Index Year 4			**EASFIX4**	num 8
1626	0			
74		range 0.25 to 0.75		
88	1			
443	9992	no course-taking data in year 4		
17	9993	no science courses on transcript in any year		
1676	9994	no science course in year 4		

23	9995	no graded science course in year 4		
Science Failure Index Year 5			**EASFIX5**	num 8
57	0			
7		range 0.2 to 0.667		
11	1			
3794	9992	no course-taking data in year 5		
2	9993	no science courses on transcript in any year		
72	9994	no science course in year 5		
4	9995	no graded science course in year 5		
Science Failure Index Year 6+			**EASFIX6**	num 8
11	0			
3		range 0.5 to 0.833		
1	1			
3909	9992	no course-taking data in year 6+		
1	9993	no science courses on transcript in any year		
21	9994	no science course in year 6+		
1	9995	no graded science course in year 6+		
Science Failure Index Across All Years			**EASFIXC**	num 8
2927	0			
873		range 0.071 to 0.909		
82	1			
54	9993	no science courses on transcript in any year		
11	9995	no graded science course in years 1 to 6+		
Overall Failure Index Year 1			**EAOFIX1**	num 8
2869	0			
1014		range 0.042 to 0.938		
25	1			
39	9995	no graded course in year 1		
Overall Failure Index Year 2			**EAOFIX2**	num 8
2721	0			
1058		range 0.056 to 0.929		
38	1			
112	9992	no course-taking data in year 2		
18	9995	no graded course in year 2		

Frequency	Code	Response	Variable Name	Type/ Length
Overall Failure Index Year 3			**EAOFIX3**	num 8
2545	0			
1104		range 0.05 to 0.929		
32	1			
248	9992	no course-taking data in year 3		
18	9995	no graded course in year 3		
Overall Failure Index Year 4			**EAOFIX4**	num 8
2693	0			
760		range 0.038 to 0.933		
25	1			
443	9992	no course-taking data in year 4		
26	9995	no graded course in year 4		
Overall Failure Index Year 5			**EAOFIX5**	num 8
90	0			
51		range 0.037 to 0.938		
6	1			
3794	9992	no course-taking data in year 5		
6	9995	no graded course in year 5		
Overall Failure Index Year 6+			**EAOFIX6**	num 8
25	0			
10		range 0.125 to 0.75		
1	1			
3909	9992	no course-taking data in year 6+		
2	9995	no graded course in year 6+		
Overall Failure Index Across All Years			**EAOFIXC**	num 8
1989	0			
1917		range 0.014 to 0.963		
13	1			
28	9995	no graded course in years 1 to 6+		

Acknowledgment

In addition to the Add Health acknowledgment, researchers using these data should include in each written report or other publication based on analysis of data from Adolescent Health and Academic Achievement (AHAA), the following statement:

The AHAA study was funded by grants from the National Institute of Child Health and Human Development (01 HD40428-02) to the Population Research Center, University of Texas at Austin, Chandra Muller (PI), and from the National Science Foundation (REC-0126167) to the Population Research Center, University of Texas at Austin, Chandra Muller and Pedro Reyes (Co-PI).