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AN INTRODUCTION TO SCHOOL-TO-WORK
PROGRAMS IN THE NLSY97: HOW PREVALENT ARE
THEY, AND WHICH YOUTHS DO THEY SERVE?

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An Introduction to School-To-Work Programs in the NLSY97:
How Prevalent are They, and Which Youths do They Serve?

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ABSTRACT

In the wake of the 1994 School-to-Work Opportunities Act (STWOA), we introduce and study two new data sources to estimate the extent to which school-to-work programs have been implemented in U.S. high schools, and the extent to which high school students are participating in these programs. The first data source, the National Longitudinal Survey of Youth, 1997 (NLSY97), provides information directly from students on whether they participated in these programs. The second source, the 1996 School Administrators's Survey, was administered to schools attended by NLSY97 interviewees, and provides information directly from schools on whether they offered any school-to-work programs.

Findings from the 1996 School Administrator's Survey show that school-to-work programs are commonly offered, with over 60 percent of schools providing at least one such program. Findings from the NLSY97 show that a fair number of high school students participate in school-to-work programs, with about 38 percent of students reporting participation in at least one program. The findings concerning whether schools with disadvantaged student populations are more likely to offer school-to-work programs, or whether less-advantaged students are more likely to participate in these programs, are mixed.

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In 1994 Congress passed the School-to-Work Opportunities Act (STWOA) that provided federally-funded grants to States and local partnerships of business, government, education and community organizations to develop “school-to-work systems.”¹ The law encouraged States and their local partners to develop the model that would work best for them. As a result, the features of school-to-work programs are hard to describe and can vary from grant to grant. The Act did, however, outline three core elements that school-to-work programs must have: a school-based learning component; a work-based learning component; and a connecting activities component.²

- *School-based learning* encompasses rigorous classroom instruction that is linked to workplace experiences and provides students with the information and skills needed to identify and prepare for promising careers.
- *Work-based learning* includes work experience, structured training, and other workplace learning experiences appropriate to students’ career interests and linked to school curricula.
- *Connecting activities* are efforts undertaken to help employers and schools forge and maintain links between the school-based and work-based components.

The general goal of the STWOA is to improve the transitions from school to work for all youths in the U.S . The Act points to a “lack of a comprehensive and coherent system to help youths acquire the knowledge, skills, abilities, and information about and access to the labor market that are necessary to make an effective transition from school to work or further education.”³

In the wake of the STWOA of 1994, we are interested in studying the extent to which school-to-work programs have been implemented in our nation’s high schools and the extent to which high school students are choosing to participate in these programs. To do this, we use two exciting new data sources. The first source, the National Longitudinal Survey of Youth, 1997 (NLSY97), provides information directly from students on whether they participated in these programs. The second source, the 1996 School Administrator’s Survey (SAS96), was administered to schools attended by NLSY97 interviewees, and provides information directly from schools on whether they offered any school-to-work programs. Using these two data sources, we can examine the prevalence

of school-to-work programs from two different perspectives and also investigate what types of schools tend to offer the programs and what types of students tend to participate in school-to-work programs.

There are several attractive features of these data. First, the two surveys asked about a number of different types of school-to-work programs, thus allowing analysis to be done on both work-based and school-based activities. Second, the two surveys asked about the same programs and used similar definitions. Third, responses for the schools in the SAS96 can be linked to those for individuals in the NLSY97. Finally, the surveys collected extensive information on the characteristics of the schools and the youths, thus allowing researchers to examine the characteristics of the high schools that offer school-to-work programs as well as the characteristics of the students who participate. Ultimately these data will also be an excellent source for studying the effectiveness of school-to-work programs in helping students settle into their careers, but the currently available data do not yet support this line of inquiry.⁴

Data

1996 School Administrator's Survey (SAS96). The National School-to-Work Office sponsored a supplemental data collection effort within the NLSY97 to support their overall research interest in understanding the effectiveness of the STWOA. The purpose of the SAS96 was to measure at the school level the extent to which schools offer school-to-work programs and to determine which types of schools have these programs. The sample for the survey was all schools with a 12th grade within the Primary Sampling Units (PSUs)⁵ of the NLSY97. The questionnaire asked questions on the following items: school policies; student, teacher, and administrator characteristics; and school-to-work programs. The SAS96 questionnaire was mailed to 7,985 schools in September of 1996. Of these schools, 595 were found to be out-of-scope either because the school no longer existed or

because it did not contain a 12th grade. Of the 7,390 remaining schools, responses were received from 5,295, or 71.6% of the sample. Among these 5,295 responses, 42 failed to answer any of the first 11 questions in the school-to-work section and were dropped from the analysis.

Table 1 provides descriptive statistics on the 5,253 schools used in the analysis.⁶ We focus on characteristics of the school that are related to the quality of the school, as well as characteristics that indicate something about the socioeconomic status of the school's student population. These characteristics include: whether the school is private or public; school size; school location; the graduation rate at the school; the percent of the school's graduates that enroll in a 4-year college; the racial and ethnic composition of the students; and whether or not the school offered a school breakfast program, Title I services,⁷ or a dropout prevention program.

NLSY97. The first round of the National Longitudinal Survey of Youth, 1997, was administered in 1997 to a nationally representative sample of 8,984 young men and women who were ages 12 to 16 as of December 31, 1996. The survey was administered through personal interviews with the youth and one of his or her parents and gathered extensive information on the youth's labor market behavior, education and training, family and community background, as well as important life events such as marriage or the birth a child. These youths will continue to be surveyed annually as they make the transition from school to work.

In the 1997 interview, youths who have attended 9th grade or higher were asked a number of questions about participation in school programs designed to help them prepare for the world of work. Of the 8,984 respondents, 4,484 were asked the school-to-work questions.⁸ The analysis in this paper is restricted to these respondents and table 2 provides some basic descriptive information on this group. The first column of table 2 provides the number of respondents with a particular

characteristic and the second column provides the weighted percentage that those respondents represent in the national population of youths born between 1980 and 1984.

The sample contains roughly equal numbers of girls and boys. However, given the ages of the NLSY97 cohort, the majority of the high school respondents were in 9th and 10th grades in 1997. Only 74 respondents of the 4,484 were in 12th grade or higher. To the extent that participation in school-to-work programs is greater in the upper grades of high school, which we suspect is likely, our estimates of overall participation from the NLSY97 would underestimate school-to-work participation in high school.⁹ The other variables listed in table 2 are characteristics of the youth that we thought may be related to participation in school-to-work programs. These characteristics can be divided into two groups. The first set consists of characteristics related to socioeconomic status and is aimed at assessing the extent to which disadvantaged youths are targeted for school-to-work programs. These characteristics include: gender; race; ethnicity; household income; education level of the youth's biological mother; whether the youth attends a public or private school; and whether the youth lives in an urban or rural location. The second set includes other characteristics that are related to the youth's work or school performance and are aimed at investigating what kinds of students tend to participate in these programs. These include: grades in 8th grade; whether or not the youth is currently working; his or her expectations for completing college; and the course of study the youth is pursuing in high school.

School-to-work programs

Under the guidance of the National School-to-Work Office, a limited number of school-to-work programs were chosen for inclusion in both the SAS96 and the NLSY97 questionnaires. These programs are: internship/apprenticeship (asked about separately in SAS96 but combined in NLSY97); job shadowing; mentoring; school-sponsored enterprise; career major; and cooperative

education. The definitions given to respondents in the two surveys are similar but not identical. (See Appendix 1.)

Even though the two surveys ask about the same programs, the students and the school administrators may not interpret the questions in exactly the same way. For example, a student who has received some career counseling may incorrectly respond that they participated in a “career major” program, whereas a school administrator, who may have read the definition more closely, would not categorize career counseling as a “career major” program.

Given that the schools in the SAS96 were selected from the PSUs where the NLSY97 youths live, we are able to match the NLSY97 youths with the high schools that they attend to examine the consistency in reporting of school-to-work programs between youths and schools. If the school reports offering a program and the student does not report participating, then no inconsistency need exist, since some students may not participate. On the other hand, if a school reports not offering a particular program and the student reports participating in this program then there is a potential inconsistency. However, there are instances where this may be valid. In the NLSY97 survey, the youth was asked whether they “ever” participated in these programs and not whether they participated in the programs at their current school, so it is possible that the youth could have participated in the program at another school or through an another organization (i.e., church, business group, or civic organization).

Table 3 shows participation rates in school-to-work programs for four different groups of youths who have attended 9th grade or higher: all youths; youths in schools that reported having the program; youths in schools that reported no corresponding program; youths in schools that did not participate in the SAS96.

The results in Table 3 are troubling as the participation rates among youths in schools with a particular program are very similar to (although slightly higher than) those of youths in schools not offering the program. It is not clear whether the schools or the youths are incorrectly reporting. One problem with the school survey data is the substantial non-response to individual questions about school-to-work programs; roughly 12 to 18 percent of administrators did not respond to individual questions on whether or not the school offered a particular program. In defining whether a school offered a program in table 3, we treated non-responses as “no” responses. For instance, if a school administrator did not respond to the question on whether the school offered an apprenticeship program then it was assumed that the school did not have the program. Because this approach could result in misclassifying a school as not offering a program when in fact they do (but just failed to respond), we recalculated table 3 treating non-responses to a particular program as non-respondents (i.e., we moved youths in these schools to the last column). This reduced the discrepancy slightly but by no means eliminated it. Another possible explanation for the potential inconsistency between school and youth reports is misclassification on the part of the youth. It may be that youths do not fully understand the definitions of the various school-to-work programs and thus misreport their participation. It may be that youths participated in some type of program, but it did not meet the definition provided in the school survey.

Short of conducting a validation study, we have no way of knowing the source of the reporting error. As a result, the actual levels of participation rates by youths and incidence rates by schools should be viewed as rough estimates. However, unless reporting errors vary systematically by youth or school characteristics, differences across groups in participation or offering rates should be less affected by measurement error.

Incidence rates in the SAS96

According to the 1996 School Administrator's Survey as reported in table 4, 64.2 percent of schools with a 12th grade offered at least one school-to-work program to their students.¹⁰ The most prevalent work-based activity offered by schools was job shadowing, with roughly 29 percent of schools offering such programs. Job shadowing was followed by internship, mentoring, apprenticeship, and school-sponsored enterprise programs, with incidence rates for these programs ranging from 13 to 17 percent. In 1996, school-based activities were more commonly offered by schools than were work-based activities. Tech prep and cooperative education programs were the most common school-based activities and were offered by approximately 33 percent of schools. Career major programs were the least prevalent, with 13.2 percent of schools offering them.

In table 5, we examine the extent to which schools offer more than one of these school-to-work programs. While 64 percent of schools offered at least one program, 26 percent offered three or more programs and about 9 percent offered five or more programs. About 22 percent of schools offered only one program, while 31 percent of schools offered at least one work-based and one school-based activity.

Table 6 shows the proportion of schools offering various school-to-work programs by characteristics of the school and its student body. In the discussion that follows, we only mention differences in incidence rates that were found to be statistically significant.¹¹ In general, private schools have much smaller incidence rates for school-to-work programs. Only 24 percent of private schools offered at least one school-to-work program in 1996, compared with 78 percent of public schools. Incidence rates for each individual school-to-work program were also considerably lower among private schools than public schools. Among public schools, the percent of schools providing any school-to-work program was highest among medium-size schools (i.e., schools with 750-1,500

students). This size pattern among public schools also holds for most of the individual school-to-work programs. Among private schools, the largest schools (i.e., schools with more than 300 students) were more likely to offer any school-to-work programs. However, this size pattern does not consistently hold for all of the various school-to-work programs.

In 1996, a higher percentage of suburban schools offered school-to-work programs than did urban or rural schools. This was particularly true for apprenticeship, school-sponsored enterprise, cooperative education, and tech prep programs. School-to-work programs were considerably less prevalent in schools with high graduation rates and a high percentage of graduates who go on to attend 4-year colleges. Table 6 shows that schools where 98 percent or more of the students graduate had incidence rates for any school-to-work programs of 43 percent compared to roughly 70 percent for schools with lower graduation rates. Similar differences are found between schools where 68 percent or more of the students attend a 4-year college and schools with lower college enrollment rates. These elite high schools were also less likely to offer each of the individual types of school-to-work programs.

As previously mentioned, the STWOA emphasizes the need to improve the transition from school to work for all students but especially students from disadvantaged backgrounds. To see if school-to-work programs are more typical for such students, we next show how incidence rates of school-to-work programs vary with our descriptors for disadvantaged student bodies.

Schools in which 25-75 percent of the student body is black tended to have higher incidence rates for any school-to-work programs than did schools where less than 25 percent of the student body is black. This pattern also holds for the provision of apprenticeship, internship, mentoring, career major, and cooperative education programs. Provision of job shadowing programs, however, was highest among schools with the lowest percentage of black students. The provision of school-

to-work programs does not appear to vary systematically by the percentage of Hispanic students. However, schools that offer a breakfast program or a dropout prevention program were more likely to provide school-to-work programs. The results for Title I schools were mixed, with higher incidence rates than non-Title I schools for some school-to-work programs and lower incidence rates for other programs.

So far in the analysis, we have separately shown incidence rates for school-to-work programs by various characteristics of the schools. In the following, we use logistic regression analysis to estimate the probability that a school with any given set of characteristics offers school-to-work programs. This approach allows us to see the independent relationship of a particular characteristic with incidence rates while holding constant the relationship of school-to-work programs to other characteristics.

We ran logistic regressions for three different dependent variables: provision of any school-to-work program; provision of any work-based program; and provision of any school-based program. Table 7 provides the odds ratios obtained from the logistic regressions. The odds ratios indicate how much more likely schools that differ with respect to a particular characteristic (e.g., private schools) are to offer a given program compared to other schools (e.g., public schools). An odds ratio of 2 on the dummy variable for private school indicates that private schools are twice as likely to offer school-to-work programs as public schools; similarly, an odds ratios of 1 indicates that they are equally likely and an odds ratio of .5 indicates that they are half as likely. For characteristics that are continuous such as school size, the odds ratio tells us how much more likely schools that are 1 unit away from the mean for that characteristic are to offer a given program compared to schools at the mean for that characteristic. Since a 1-unit change is not always the most meaningful, we divided school size by 100 and the percent black and Hispanic by 10 before entering

them into the logistic analysis. By doing this, the resulting odds ratio for school size represents the change attributable to a change in school size of 100, and the odds ratio for percent black or Hispanic represents the change attributable to a 10 percentage-point change in the percent black or Hispanic.

The results from the logistic regression analysis for the most part confirm findings from the crosstab analysis. Namely, private schools are significantly less likely to provide school-to-work programs than are public schools. They are .3 times as likely as public schools to provide any work-based programs and .1 as likely to provided any school-based programs. School size is slightly positively related to provision of school-to-work programs, particularly school-based programs. However, among private schools, large school are slightly less likely to offer school-to-work programs. In terms of location, urban schools are less likely than suburban schools to provide school-based programs, while rural schools are less likely than suburban schools to provide work-based programs.

Schools with the highest graduation rates are less likely than other schools to provide any school-to-work programs, work-based programs, or school-based programs. Schools with the highest percentage of graduates going on to 4-year colleges are also less likely to provide any school-to-work program, but particularly school-based programs.

The findings concerning whether schools with disadvantaged student populations are more likely to offer school-to-work programs are mixed. The percent of black students at a school does not significantly affect the probability of providing school-to-work programs, whereas the percent Hispanic is slightly negatively related to provision of these programs. Furthermore, Title I schools are slightly less likely than non-Title I schools to offer school-to-work programs, but schools with dropout prevention programs are more likely to offer school-to-work programs.

Participation rates in NLSY97

After examining how many and what types of schools report offering school-to-work programs, we now turn to the question of how many students report participation in these programs and what kinds of students participate. To examine participation in school-to-work programs, we use data from the NLSY97. As reported in table 8, that survey shows that 38 percent of youths who have attended 9th grade or higher participated in at least one of the school-to-work programs covered in the survey.

Among work-based activities, job shadowing was the most prevalent with nearly 13 percent of youths participating in such programs, followed by school-sponsored enterprise at 9.1 percent, and apprenticeships/internships and mentoring programs with participation rates of roughly 4 percent. In terms of school-based learning activities, the most common program was career major, with 18.2 percent of youths reporting having participated in such a program. This was followed by tech prep at 7.6 percent and cooperative education at 6.8 percent.

Table 9 shows the extent to which youths participate in more than one of these school-to-work programs. Participation in multiple programs is not all that common. Only 6 percent of youths participated in 3 or more programs and less than 1 percent participated in 5 or more programs. About 10 percent of youths who have attended grade 9 or higher participated in at least one work-based activity and one school-based activity. The majority of students that participated in at least one program tended to participate in only one, as 23 percent of youths reported participating in only one activity.

What types of students tend to participate in school-to-work programs? Table 10 shows participation rates in the various programs by characteristics of the youth that may influence the quality of worker that the youth ultimately may become when he or she joins the workforce. In the

discussion that follows, we only mention differences in participation rates across groups that were found to be statistically significant.¹²

Participation in any school-to-work program does not vary by youths' average grades in 8th grade. However, participation rates in certain programs do differ by grade point average. For example, youths who received mostly Cs and Bs had higher participation rates in apprenticeship/internship programs than youths with higher grades. Participation in job shadowing was highest for students who received mostly As and Bs.

Youths who are working are also more likely to participate in school-to-work programs. Forty-three percent of the youths who reported working during the survey week participated in at least one school-to-work program, compared with 36 percent of the youths who did not work. Participation rates in most of the individual programs were also higher for working youths.

As was already mentioned, the STWOA emphasizes the need to make school-to-work programs available to all students. But are youths who do not intend or expect to receive any formal education after high school as likely to participate in these programs as college-bound youths? In order to address this question, we examine how participation in various school-to-work programs differs by the youth's self-reported expectations about completing college, while recognizing that these expectations may be influenced by school-to-work programs. In the NLSY97 questionnaire, youths were asked: "What is the percent chance that you will have a four-year college degree by the time you turn 30?" Youths were then placed into four groups: those who said they had zero chance of receiving a college degree; a 1-33 percent chance; a 34-66 percent chance; and over a 66 percent chance. Surprisingly, almost 70 percent of the youths reported a greater than 66 percent chance of obtaining a 4-year college degree and only 5 percent said they had no expectations of completing a degree (see table 2). Findings in Table 10 show that, if anything, individuals who perceive

themselves as more likely to complete college have greater participation in school-to-work programs.

Participation in school-to-work programs was considerably higher for youths who characterized their course of study in high school as being a vocational, technical, or business program as compared to a general or college preparatory program. This strong positive relationship is not surprising given that vocational, technical, or business-oriented programs are by their nature more focused on linking educational curricula to careers.

Table 11 shows participation rates in the various programs by characteristics of the youth that are related to his or her socioeconomic status. These characteristics are of interest given the emphasis placed in the STWOA on providing school-to-work opportunities to youths that may ultimately become school dropouts or have difficulties in the workforce.

Although labor force participation rates of women are approaching those for men, gender differences still exist in terms of occupational choices and long-term attachment to the workforce, which may influence boys' and girls' decisions to participate in certain school-to-work programs. Overall, participation rates in school-to-work programs are similar for males and females. However, high school girls are more likely than their male counterparts to participate in a job shadowing program and high school boys are more likely than their female counterparts to participate in a tech prep program.

Findings from NLSY97 indicate that black youths are more likely than other racial groups to participate in at least one school-to-work program. Blacks also had higher participation rates than whites in the following programs: apprenticeship or internship; mentoring; career major; cooperative education; and tech prep programs. Hispanics, on the other hand, were less likely than non-

Hispanics to participate in at least one school-to-work program, with significantly lower participation in job shadowing, school-sponsored enterprise, and career major programs.

As part of the interview with the youth's parent, information was collected on total income for the household in which the youth resides. Using this information, we were able to group the youths into four equal-sized income groups to see if participation in school-to-work programs varies by household income. Participation rates in any school-to-work program do not vary systematically by income level. However, some differences do exist for individual programs. Youths in the highest income group were more likely to participate in job shadowing programs than youths in the lowest income group. And youths in the bottom two income groups were more likely to participate in a career major program than were youths in the highest income group. Youths in the highest income group were also less likely than youths in the lowest income group to participate in cooperative education programs.

Although participation rates did not vary much by students' college expectations, the education level of the youth's biological mother does appear to be negatively related to participation in school-to-work programs. Youths whose mothers are college graduates are less likely to participate in at least one school-to-work program than are youths whose mothers are only high school graduates. This relationship also holds for participation in apprenticeship or internship, career major, cooperative education, and tech prep programs. Youths whose mothers have less than a high school education are less likely to participate in at least one school-to-work program than are youths whose mothers are high school graduates.

Consistent with the finding from the school survey, youths attending private high schools are less likely to participate in school-to-work programs compared to those attending public schools.

Approximately 26 percent of youths in private schools participated in at least one school-to-work program, whereas nearly 39 percent of public school students did.

Similar to the strategy used in analyzing the school data, we now turn to our logistic regression analyses that estimate the probability that a youth with any given set of characteristics participates in school-to-work programs. This approach allows us to see the independent relationship of a particular characteristic with participation rates while holding constant the relationship of other characteristics.

We ran logistic regressions for three different dependent variables: participation in any school-to-work program; participation in any work-based program; and participation in any school-based program. Table 12 provides the odds ratios obtained from the logistic regressions.

Findings from the logistic regression analysis confirm many of the crosstab results previously discussed. Youths who work are more likely (about 1.3 times more likely) to participate in any school-to-work program and any work-based program. Youths who characterized their course of study as general are less likely than college preparatory students to participate in any school-to-work program and any work-based program, whereas those who characterized their course of study as vocational, technical, or business-oriented are more than twice as likely as college preparatory students to participate in any school-to-work program and any school-based program. Black youths are more likely than white youths to participate in any program, any work-based program, and any school-based program. Students who attend private schools are less likely to participate in any program, any work-based program, and any school-based program than are students who attend public school. Lastly, students whose mothers are college graduates are slightly less likely to participate in any program and any school-based program than are students whose mothers are only high school graduates.

Summary

In this article we have examined the question “How common are school-to-work programs?” from two different perspectives: the first from the perspective of the nation’s high schools; and the second from the perspective of the students. Findings from the 1996 School Administrator’s Survey show that school-to-work programs are commonly offered in American high schools, with over 60 percent of schools providing at least one such program. Findings from the National Longitudinal Survey of Youth, 1997, show that a fair number of high school students are participating in school-to-work programs, with about 38 percent of students reporting having participated in at least one program. However, we have some concerns about the quality of the school-to-work data from these two sources, as sizable numbers of students in schools that supposedly do not have school-to-work programs reported participating in them.

In addition to the question of prevalence, we also addressed the questions “What types of schools offer school-to-work programs?” and “What types of students participate in them?” The findings indicate that private and elite (i.e., high graduation and college attendance rates) high schools are less likely to offer school-to-work programs. The findings concerning whether schools with disadvantaged student populations are more likely to offer school-to-work programs are mixed. On the one hand, schools with dropout prevention programs are more likely to offer school-to-work programs, but on the other hand schools with high percentages of Hispanic students and schools receiving Title I funding are less likely to offer these programs. In terms of students, youths who are working are more likely to participate in school-to-work programs, as are youths who reported their course of study in high school as technical, vocational, or business-oriented. Also, blacks are more likely than whites to participate in school-to-work programs, whereas youths with high household incomes and youths whose mothers are highly educated are less likely to participate.

Appendix 1

Definitions of school-to-work programs in the NLSY97 and SAS96

NLSY97 interviewers were instructed to show the respondents a card with the school-to-work programs and their definitions. The interviewers then asked “Here is a list of some of the kinds of programs schools offer to help students prepare for the world of work. Have you ever participated in any of these programs through your school?”

The following is the list of programs and their definitions (listed in the order in which they were asked):

- *Career major program*, which is a defined sequence of courses based upon an occupational goal.
- *Job shadowing*, which is to spend time following workers at a work site.
- *Mentoring*, which involves being matched with an individual in an occupation.
- *Cooperative education*, which combines academic and vocational studies with a job in a related field.
- *School-sponsored enterprise*, which involves the production of goods or services by students for sale to or use by others.
- *Tech prep*, which is a planned program of study with a defined career focus that links secondary and post-secondary education.
- *Internship or apprenticeship*, which is work for an employer to learn about a particular occupation or industry.

The SAS96 is a paper questionnaire that was filled out by school administrators and mailed back to the National Opinion Research Center. The specific school-to-work programs were asked about in a grid style question with each column pertaining to a different program. The grid was preceded by the following instructions and definition of terms: *The questions on the following pages are about work-based and career-oriented activities offered at your school. Please refer to the glossary below for definitions of activities and terms referenced in this section.*

- *Apprenticeship*: Typically, multi-year programs that combine school- and work-based learning in specific occupational areas or occupational clusters and are designed to lead directly into either a related post-secondary program, entry-level job, or registered apprenticeship program. May or may not include paid work experiences.
- *Career major*: A coherent sequence of courses based upon an occupational goal.
- *Cooperative education*: A method of instruction whereby students alternate or parallel their academic and vocational studies with a job in a related field. May or may not include paid work experiences.
- *Internship*: For a specified period of time, students work for an employer to learn about a particular industry or occupation. Students' workplace activities may include special projects, a sample of tasks from different jobs, or tasks from a single occupation. May or may not include paid work experiences.
- *Job shadowing*: Typically as part of career exploration activities in early high school, a student follows an employee for one or more days to learn about a particular occupation or industry. Job shadowing is intended to help students hone their career objectives and select a career major for the latter part of high school.
- *Mentoring*: Pairing a student with an employee over an extended period of time during which the employee helps the student master certain skills and knowledge the employee possesses, models workplace behavior, challenges the student to perform well, and assesses the student's performance. Mentoring may be combined with other work-based learning activities, such as internships or on-the-job training.
- *School-sponsored enterprise*: The production of goods or services by students for sale to or use by others. School-sponsored enterprises typically involve students in the management of the project. Enterprises may be undertaken on or off the school site.
- *Tech prep*: A planned program of study with a defined career focus that links secondary and post-secondary education.

Table 1
Descriptive statistics on SAS96 sample of schools with 12th grade

Characteristic	Unweighted N	Weighted percentage
Total	5253	100.0
Type		
Public	3401	73.9
Private	1852	26.1
Size		
Public		
Small (<750 students)	1680	72.2
Medium (750-1500 students)	1295	22.6
Large (>1500 students)	426	5.2
Private		
Small (<100 students)	818	53.3
Medium (100-300 students)	624	34.6
Large (>300 students)	410	12.1
Location		
Urban	1765	33.2
Suburban	2822	44.4
Rural	571	20.8
Graduation rate quartiles*		
1 st quartile (less than 85%)	1574	29.1
2 nd quartile (86%-94%)	1066	22.8
3 rd quartile (94.8%-97%)	1016	26.6
4 th quartile (98% or more)	826	21.5
Percent of graduates who attend 4-year college*		
1 st quartile (less than 30%)	1073	29.3
2 nd quartile (31%-44%)	702	21.0
3 rd quartile (45%-67%)	1133	24.9
4 th quartile (68% or more)	1584	24.8

Table 1 (cont.)
Descriptive statistics on SAS96 sample of schools with 12th grade

Characteristic	Unweighted N	Weighted percentage
Total	5253	100.0
Percent of student body who are black		
Less than 25 percent	3633	83.3
25-75 percent	696	12.4
More than 75 percent	265	4.4
Percent of student body who are Hispanic		
Less than 25 percent	3457	89.8
25-75 percent	709	9.1
More than 75 percent	166	1.1
School breakfast program		
Yes	2521	52.3
No	2732	47.7
Title I		
Yes	1763	43.1
No	3490	56.9
Dropout prevention program		
Yes	2028	42.5
No	3225	57.5

Note: Missing information on a particular characteristic will result in Ns that do not add up to 5,253. For entries designated with a ‘*’, because of bunching the weighted percentage in each quartile does not necessarily equal 25.

Table 2
Descriptive statistics on NLSY97 sample of youths in 9th grade or higher in 1997

Characteristic	Unweighted N	Weighted percentage
Total	4484	100.0
Sex		
Male	2213	50.4
Female	2271	49.6
Grade level		
9 th	1925	41.5
10 th	1635	36.3
11 th	850	20.3
12 th or higher	74	1.9
Race		
White	2625	72.4
Black	1176	15.3
Other	643	11.5
Unknown	40	0.8
Ethnicity		
Hispanic	935	13.0
Non-Hispanic	3537	87.0
Household income		
1 st quartile: Less than \$26,000	1002	25.1
2 nd quartile: \$26,001 to 45,015	774	24.9
3 rd quartile: \$45,016 to 70,002	689	25.0
4 th quartile: \$70,003+	665	25.0
Biological mother's education		
Less than high school	710	11.7
GED	227	5.0
High school graduate	1413	32.6
Some college, no degree	641	15.1
Associates degree	388	9.4
College graduate	1059	26.3

Table 2 (cont.)
Descriptive statistics on NLSY97 sample of youths in 9th grade or higher in 1997

Characteristic	Unweighted N	Weighted percentage
Total	4484	100.0
School type		
Public	4013	90.2
Private	276	6.9
Other	158	2.9
Location		
Urban	2631	54.4
Rural	1853	45.6
GPA in 8 th grade		
Low (Cs and/or Ds)	469	9.9
Med. (Cs and/or Bs)	2359	50.2
High (As and/or Bs)	1656	39.9
Employment status last week		
Working	1279	32.5
Not working	3205	67.5
College expectations		
0% chance	164	5.3
1-33% chance	297	8.2
34-66% chance	628	17.7
+66% chance	2250	68.9
Course of study in high school		
General	2593	56.0
Vocational, technical, or business	500	10.4
College prep	1391	33.6

Note: Missing information on a particular characteristic will result in Ns that do not add up to 4,484.

Table 3
Participation rates in school-to-work programs by school reports

	Participation rates of youths attending 9 th grade or higher			
	Total	Youths in schools reporting program	Youths in schools reporting no program	Youths in schools not surveyed or not responding
Any school- or work-based activity	38.3	38.5	36.4	38.7
Any work-based activity	24.2	26.1	23.7	22.4
Job shadowing	12.6	15.1	12.1	11.5
School-sponsored enterprise	9.1	13.5	8.7	8.3
Mentoring	4.8	5.9	4.7	4.3
Apprenticeship/internship	4.3	4.6	2.9	5.9
Any school-based activity	24.9	25.1	21.0	26.6
Career major	18.1	19.6	16.6	19.9
Tech prep	7.6	7.4	6.5	8.9
Cooperative education	6.8	6.3	6.5	7.5

Table 4
Prevalence of school-to-work programs in schools with a 12th grade

	SAS96
	Percentage of schools in 1996 that offered:
Any school- or work-based activity	64.2
Any work-based activity	44.9
Job shadowing	28.7
Internship	16.6
Mentoring	15.1
Apprenticeship	13.9
School-sponsored enterprise	12.7
Any school-based activity	50.4
Cooperative education	32.5
Tech prep	33.2
Career major	13.2

Table 5
Co-existence of school-to-work activities in schools with 12th grade

	SAS96
	Percentage of schools in 1996 that offered:
Total activities	
At least 1	64.2
At least 2	42.6
At least 3	26.0
At least 4	15.2
At least 5	9.1
Work-based activities	
At least 1	44.9
At least 2	23.3
At least 3	11.6
School-based activities	
At least 1	50.4
At least 2	22.7
At least 3	5.7
Exactly one school-to-work activity	21.6
At least one work-based and one-school based activity	31.2

Table 6
Prevalence of selected work-based and school-based activities by school characteristics

	Percentage of schools								
Characteristic	Any	Work-based activities					School-based activities		
		Apprentice-ship	Internship	Job shadowing	Mentoring	School-sponsored enterprise	Career major	Cooperative education	Tech prep
Total	64.2	13.9	16.6	28.7	15.1	12.7	13.2	32.5	33.2
Type									
Public	78.3	17.8	20.1	36.1	19.2	15.0	17.0	42.1	43.4
Private	24.2	3.1	6.9	7.9	3.7	6.0	2.3	5.3	4.3
Size									
Public									
Small	75.3	16.0	16.4	34.3	15.6	12.3	14.8	36.1	40.3
Medium	87.3	23.2	30.0	43.4	29.6	23.2	22.8	57.8	54.7
Large	82.1	18.4	28.1	30.5	23.9	18.2	23.7	57.3	38.1
Private									
Small	22.3	5.0	8.3	5.9	4.6	5.1	2.4	5.8	2.6
Medium	24.6	0.7	5.6	9.0	3.0	8.0	1.8	3.8	5.4
Large	31.2	1.5	4.6	13.4	1.7	4.3	3.8	7.6	8.6
Location									
Urban	57.5	12.6	20.4	26.9	17.5	13.7	13.7	30.6	26.7
Suburban	67.4	16.2	18.9	29.5	18.4	16.0	14.3	36.2	40.7
Rural	64.2	10.9	11.1	29.6	9.6	7.2	11.6	30.1	28.0
Graduation rates quartile									
1 st quartile (<85%)	67.9	14.4	20.0	31.8	23.9	15.5	20.4	35.3	37.2
2 nd quartile (86-94%)	71.6	17.3	18.6	33.4	13.1	14.1	11.2	45.3	42.9
3 rd quartile (94.8-97%)	72.3	14.2	18.7	40.3	14.7	15.3	12.8	28.9	38.5
4 th quartile (>=98%)	42.5	7.9	7.3	10.3	7.3	4.4	7.1	18.8	14.7

Table 6 (cont.)
Prevalence of selected work-based and school-based activities by school characteristics

Characteristic	Percentage of schools								
	Any	Work-based activities					School-based activities		
		Apprentice-ship	Internship	Job shadowing	Mentoring	School-sponsored enterprise	Career major	Cooperative education	Tech prep
Percent of graduates who attend 4-year college									
1 st quartile (< 30%)	70.3	10.8	15.9	30.8	15.9	14.8	16.2	33.9	35.7
2 nd quartile (31%-44%)	76.7	23.0	23.6	45.7	26.9	20.3	15.0	47.0	44.1
3 rd quartile (45%-67%)	74.6	18.3	22.0	35.5	17.1	13.4	15.2	35.2	44.6
4 th quartile (>=68%)	42.5	5.7	11.0	14.0	6.6	5.8	3.9	15.9	18.2
Percent black									
Less than 25 percent	67.0	14.5	16.3	32.4	15.6	14.0	11.2	34.0	37.6
25-75 percent	72.8	17.6	22.8	26.6	22.0	13.1	23.4	41.8	35.6
More than 75 percent	67.3	21.8	15.9	17.5	16.7	17.2	32.2	24.1	23.4
Percent Hispanic									
Less than 25 percent	69.8	14.8	18.1	33.3	16.3	14.6	12.1	35.0	37.4
25-75 percent	69.1	10.2	17.9	24.9	19.7	13.3	28.4	39.0	34.3
More than 75 percent	67.6	18.1	24.1	22.7	22.0	13.9	26.9	39.4	41.4
School breakfast									
Yes	78.2	17.3	20.5	33.4	18.4	14.7	18.3	41.4	40.6
No	48.8	10.2	12.3	23.6	11.5	10.5	7.6	22.7	25.1
Title I									
Yes	68.1	11.1	15.4	30.3	13.5	10.5	14.4	32.7	34.6
No	61.2	16.1	17.5	27.5	16.4	14.3	12.3	32.3	32.1
Dropout prevention									
Yes	73.8	18.7	21.5	35.0	19.0	15.6	18.7	43.3	38.7
No	57.1	10.4	13.0	24.0	12.3	10.5	9.1	24.5	29.1

Table 7
 Logistic regression results for probability of offering school-to-work programs

Characteristic	Odds ratio		
	Any	Work-based	School-based
Private school	0.14*	0.26*	0.11*
School size/100	1.03*	1.01	1.05*
Private*school size/100	0.92*	0.91*	0.95*
Urban	0.97	1.12	0.84*
Rural	0.85	0.78*	1.03
Highest graduation rate quartile (98+ percent)	0.74*	0.69*	0.80*
Highest 4-year college enrollment rate quartile (68+ percent)	0.68*	0.93	0.48*
Percent black/10	0.97	0.99	1.01
Percent Hispanic/10	0.92*	0.94*	0.96*
Breakfast program	1.04	1.06	1.08
Title I	0.78*	0.86*	0.89*
Dropout prevention program	1.18*	1.22*	1.33*

* Significant at 5-percent level

Table 8
Participation rates in school-to-work programs

	NLSY97
	Percentage of students in 9 th grade or higher in 1997 who participated in:
Any school- or work-based activity	38.3
Any work-based activity	24.2
Job shadowing	12.6
School-sponsored enterprise	9.1
Mentoring	4.7
Apprenticeship/internship	4.3
Any school-based activity	24.9
Career major	18.2
Tech prep	7.6
Cooperative education	6.8

Table 9
Participation in multiple school-to-work activities

	NLSY97
	Percentage of students in 9 th grade or higher in 1997 who participated in:
Total activities	
At least 1	38.3
At least 2	16.1
At least 3	5.6
At least 4	1.9
At least 5	0.8
Work-based activities	
At least 1	24.2
At least 2	5.3
At least 3	1.1
School-based activities	
At least 1	24.9
At least 2	6.7
At least 3	1.0
Exactly one school to work activity	22.7
At least one work-based and one-school based activity	10.3

Table 10
Participation in school-to-work programs by worker-related characteristics

Characteristic	Percentage of youths in 9 th grade or higher in 1997 who participated in:							
	Any program	Work-based activities				School-based activities		
		Apprentice- ship or internship	Job shadowing	Mentoring	School- sponsored enterprise	Career major	Cooperative education	Tech prep
Total	38.3	4.3	12.6	4.8	9.1	18.1	6.8	7.6
GPA in 8 th grade								
Low (Cs and/or Ds)	38.8	3.8	10.4	4.2	6.9	16.1	8.3	10.0
Med. (Cs and/or Bs)	38.6	5.4	11.7	5.0	9.0	19.1	6.8	7.7
High (As and/or Bs)	37.8	3.1	14.3	4.6	9.7	17.6	6.4	6.9
Employment status last week								
Working	43.1	4.7	14.3	5.9	11.4	20.1	8.1	7.0
Not working	36.0	4.1	11.8	4.2	8.0	17.2	6.1	7.9
College expectations								
0% chance	34.2	3.7	9.4	2.5	7.9	15.6	7.0	8.5
1-33% chance	37.3	6.2	8.8	4.4	7.3	19.4	6.3	9.9
34-66% chance	37.9	3.9	11.7	4.5	8.2	20.7	8.7	7.8
+66% chance	40.5	4.9	14.2	5.6	10.1	18.8	6.6	8.0
Course of study in high school								
General	33.7	3.7	11.0	3.8	7.4	16.0	5.3	5.7
Voc./tech. or bus.	63.5	10.7	13.8	6.6	14.9	36.5	20.0	20.7
College prep	38.1	3.4	15.0	5.8	10.0	16.1	5.2	6.8

Table 11
Participation in school-to-work programs by socioeconomic status-related characteristics

Characteristic	Percentage of youths in 9 th grade or higher in 1997 who participated in:							
	Any program	Work-based activities				School-based activities		
		Apprenticeship or internship	Job shadowing	Mentoring	School-sponsored enterprise	Career major	Cooperative Education	Tech prep
Sex								
Male	38.4	4.3	11.0	4.6	9.0	18.9	7.3	8.7
Female	38.2	4.3	14.3	5.0	9.2	17.4	6.3	6.6
Race								
White	37.7	3.9	13.2	4.2	8.6	17.4	6.2	7.2
Black	44.8	6.7	11.1	6.2	10.3	24.2	10.1	10.7
Other	34.5	4.3	10.9	6.0	10.5	15.9	5.6	6.5
Ethnicity								
Hispanic	32.0	4.1	8.9	4.7	7.3	15.8	5.4	6.9
Non-Hispanic	39.2	4.4	13.1	4.8	9.4	18.5	7.0	7.7
Household income								
Less than \$26,000	39.5	6.1	11.3	3.9	8.1	20.5	8.5	7.7
\$26,001 to 45,015	40.8	3.2	12.6	5.7	10.0	19.2	6.9	8.6
\$45,016 to 70,002	38.8	3.6	14.1	5.4	10.2	18.0	5.5	8.7
\$70,003+	38.6	4.3	14.7	4.3	9.2	15.1	6.0	6.3
Biological mother's education								
Less than HS	36.3	4.3	9.7	5.0	8.2	19.0	7.1	7.4
GED	42.0	7.9	13.0	5.8	9.4	17.9	10.0	9.6
HS graduate	41.1	5.5	12.7	4.6	9.0	21.5	7.8	8.2
Some college, no degree	41.1	2.8	14.1	5.5	11.1	17.1	6.6	9.0
Associates degree	40.1	4.3	13.8	5.4	10.3	19.7	5.1	8.2
College graduate	32.9	3.0	12.7	4.0	8.1	13.6	5.4	5.5

Table 11 (cont.)
 Participation in school-to-work programs by socioeconomic status-related characteristics

Characteristic	Percentage of youths in 9 th grade or higher in 1997 who participated in:							
	Any program	Work-based activities				School-based activities		
		Apprentice-ship or internship	Job shadowing	Mentoring	School-sponsored enterprise	Career major	Cooperative education	Tech prep
School type								
Public	38.5	4.0	12.8	4.7	9.0	18.6	6.5	7.5
Private	25.9	3.2	9.5	2.5	8.6	6.8	3.5	1.8
Location								
Urban	37.6	4.6	11.7	4.8	9.6	17.7	6.6	7.4
Rural	39.2	4.0	13.8	4.7	8.5	18.8	7.0	7.9

Table 12
 Logistic regression results for probability of participating in school-to-work programs

Characteristic	Odds ratio		
	Any	Work-based	School-based
Worker-related characteristics			
Low grades in 8 th (Cs and/or Ds)	0.97	0.95	0.93
Medium grades in 8 th (Cs and/or Bs)	0.98	1.05	0.90
Working	1.31*	1.31*	1.15
0% chance of completing 4-year college	0.68*	0.77	0.69
1-33% chance of completing 4-year college	0.73*	0.72	0.76
34-66% chance of completing 4-year college	0.80*	0.73*	0.90
General course of study in high school	0.81*	0.75*	0.87
Vocational, technical or business program	2.26*	1.26	2.70*
Socio-economic status related characteristics			
Female	0.99	1.13	0.82*
Black	1.33*	1.22*	1.41*
Other	1.06	1.24	0.90
Hispanic	0.85	0.76	0.95
Log of annual household income	1.05	1.07	0.99
Biological mother has less than high school degree	0.97	1.09	0.95
Biological mother has GED	1.07	1.13	0.87
Biological mother has some college, no degree	1.10	1.21	0.90
Biological mother has associates degree	0.99	1.03	0.99
Biological mother has college degree	0.97*	1.00	0.93*
Private school	0.55*	0.73*	0.36*
Other type of school	1.36	1.18	1.68*
Urban	0.97	1.03	0.90

* Significant at 5-percent level

Endnotes

¹ The Act called for approximately \$300 million dollars to be appropriated for fiscal year 1995, with equal amounts being available for fiscal years 1996 through 1999. Federal funding for school-to-work programs is to end in 2001.

² Concise definitions of these three components were not provided in the Act. The definitions that follow were developed by Mathematica Policy Research, Inc., an organization that has been involved in a large scale study to evaluate school-to-work grants. See *The First National Survey of Local School-to-Work Partnerships: Data Summary*, August 1997.

³ A copy of the STWOA is available at the following website:
www.stw.ed.gov/factsht/act.htm.

⁴ The NLSY97 is an annual survey that will interview youths while they make their transition from school to the workforce. However, when we did this analyses, data were available from only one interview with these youths, and most of the youths were still attending school. Nonetheless, for results of the effects of school-to-work programs on early youth outcomes see David Neumark and Mary Joyce, "Evaluating School-To-Work Programs Using the New NLSY," 2000.

⁵ PSUs are geographical constructs comprised of either a metropolitan area or a county.

⁶ Throughout this paper, all estimates of means, proportions, and percentages are sample-weighted. The logistic regression estimates are not weighted.

⁷ "Title I" is short for "Part A of Title I of the Improving America's Schools Act of 1994, Reauthorization of the Elementary and Secondary Education Act of 1965." Title I is the largest federal aid program for our nation's schools and is aimed at providing educational services to children who are the furthest from meeting the standards the state has set for all children

⁸ Actually, 4,489 were asked these questions but 5 of them had missing or ambiguous information on the current grade that they were attending so they were dropped from the analysis.

⁹ Clearly we will be able to examine this using later waves of the survey.

¹⁰ As mentioned above, a non-response to the question on whether the school offered a particular program was treated as a "no" response. To the extent that this is not the case, the percent of schools estimated to have these programs will be underestimated.

¹¹ That is, we conducted a statistical test that incorporated the standard error associated with each estimate and found that the hypothesis that the two estimates are equal could be rejected at the 5-percent significance level.

¹² See previous endnote.