

An Assessment of the Post High School Employment Outcomes of the Jobs for America's Graduates Class of 2015: Executive Summary

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August 2017



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Executive Summary

Work experience plays an important role in the development of young men and women, providing them with a set of proficiencies that are highly valued in the jobs market, both in the present and the future. Early work experience is thought to especially bolster social skills and behavioral traits that are often cited by employers as in short supply, especially among teens.¹ Since 2000 labor market conditions have deteriorated substantially for young people, at least as measured by the enormous decline in the share of the nation's teens and young adults that are working across the nation. Some observers see declining youth employment as a positive development, since they view work as a substitute and not a complement to school.² However, there is quite strong evidence that teens and young adults have strong job desires and greatly benefit from early work experience.³

A fundamental (but not exclusive) focus of the JAG program is to assist teens in navigating the job market and bolster their chances of working after high school. This study assesses JAG's efforts to help young people transition from high school to work, by examining the employment status of JAG high school graduates from the Class of 2015 with a reference population derived from the Current Population Survey consisting of young adults aged 18 to 20 who reside in the same JAG states as the Class of 2015 graduates. We place the JAG outcomes in the context of teen/young adult employment experiences in two ways: First we examine JAG employment to population ratios (E/P), that is a measure of the share of a population group that has a job at a point in time, relative to the E/P ratio of 18 to 20 year old high school graduates with no college degree or diplomas. This first assessment is conducted across demographic and socio-economic groups, we refer to this as the CPS unadjusted reference population. The second assessment uses logistic regression to account for the sharply different mix of demographic and socio-economic population of the JAG graduates compared to the average of all 18- to 20-year-olds in a state (as well as for differences in state labor market conditions). This adjustment is important since JAG resources are specifically targeted at serving low income, minority students who are not as academically proficient as their higher income counterparts.

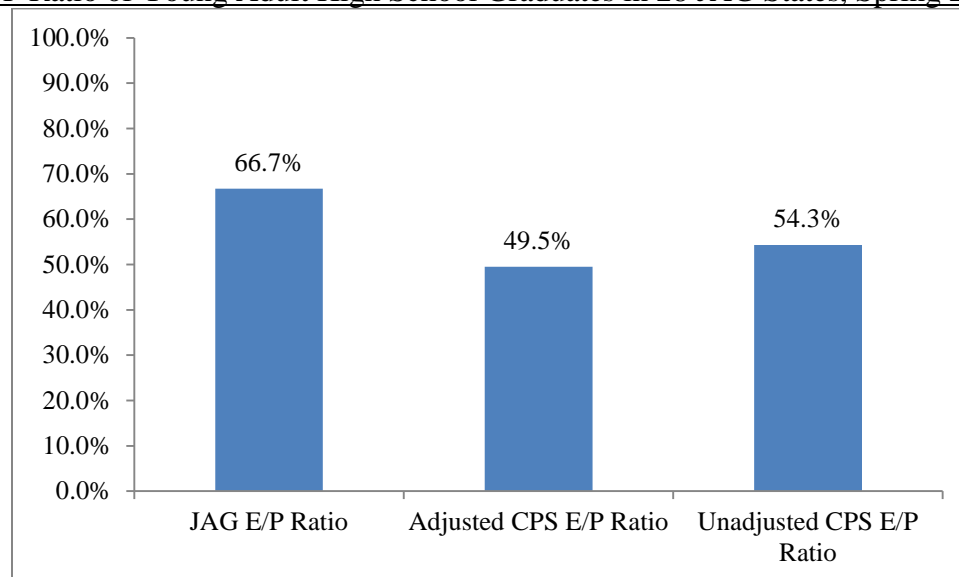
¹ Paul Harrington and Nancy Snyder: *Signaling Success: Boosting Teen Employment Prospects*, Commonwealth Corporation, Boston, April 2013

² Maria Canon and Marianna Kudluk, "Youth Labor Force Participation Continues to Fall, but It Might be for a Good Reason", *The Regional Economist* Federal Reserve Bank of St. Louis, 2015

³ Paul Harrington and Ishwar Khatiwada, "U.S. Teens Want to Work" *Communities and Banking*, Federal Reserve Bank of Boston, Spring 2016

The logistic regression models predict the probability of employment for the CPS reference groups after adjusting for difference in traits known to affect the chances of employment for young people. In this way, we place the JAG graduate employment outcomes in a population context that is more appropriate to its own characteristics (we refer to this population group as the adjusted CPS population) The first assessment represents the lower bound of differences between the JAG program E/P ratio and that of the population of like young high school graduates, since it does not account for the difference in the mix of personal characteristics. The second more statistically rigorous assessment uses logistic regression to estimate the probability of an individual within the CPS reference population being employed after accounting for key differences in personal characteristics. This regression adjusted reference population is a more realistic reflection of the population served by the JAG program.

Chart 1:
E/P Ratio of Young Adult High School Graduates in 28 JAG States, Spring 2016



Among the most important findings are large and statistically significant differences in the E/P ratios between class of 2015 JAG graduates, the unadjusted reference population and the adjusted reference population:

- About two-thirds (66.7%) of all JAG graduates (both in college and out of school, combined) were employed during the spring of 2016, one year after high school graduation. Among the adjusted CPS reference population that is most similar to the JAG

high school graduate population, the E/P ratio was 49.5 percent; it was 54.3 percent for all young adult high school graduates in the 28 JAG states.

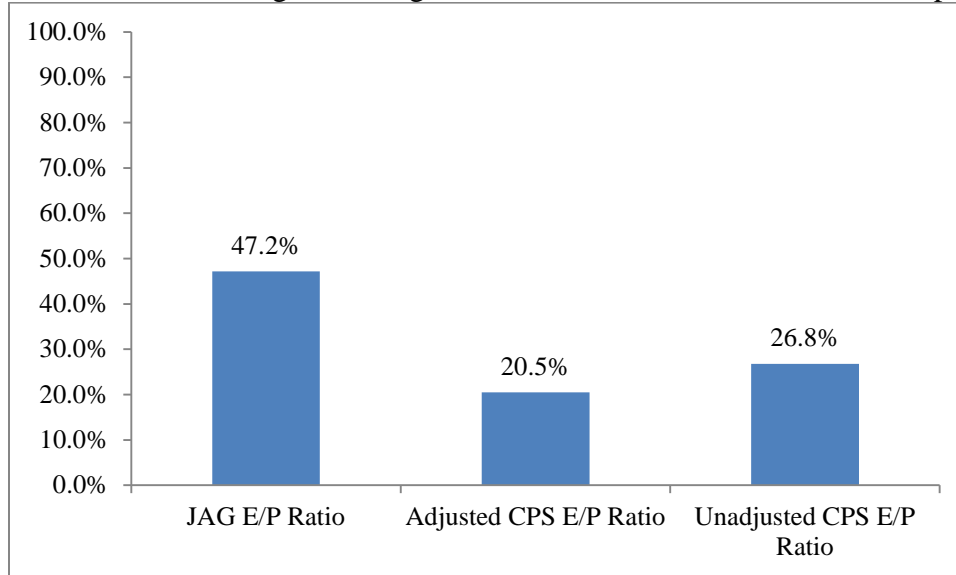
- 2015 JAG high school graduates had large E/P advantages across all demographic and socio-economic groups relative to the adjusted reference population. Black JAG graduates had an E/P ratio of 57.2, while the Black adjusted reference population had an employment rate of 43.0 percent, a 14 percentage point difference. Hispanic JAG graduates posted an employment rate of 74.5 percent in the spring of 2016, while the Hispanic adjusted reference population had an employment rate of 55.0 percent, a 19.5 percentage point difference.
- The low income JAG high school graduates had an employment rate of 63.8 percent, 17.5 percentage points higher than that observed for the low income adjusted reference population.

Full-time employment is an important outcome for young high school graduates. In addition to the obvious gains in weekly earnings, there are also gains with respect to higher hourly wages and better non-wage compensation including health insurance and retirement benefits. Those employed in full-time positions use basic skills including reading, writing and math at much higher rates than those employed in part-time jobs.⁴ We measured the proportion of JAG high school graduates that were employed in full-time jobs during the spring of 2016 as well as the full time E/P ratios for both the unadjusted and adjusted reference populations of high school graduates in the 28 JAG states during the same time period. JAG graduates had much higher E/P ratios relative to those observed for both CPS reference populations.

- The full-time employment rate for JAG graduates from the class of 2015 was 47.2 percent, while just one in five 18-20 year olds in the adjusted reference population had a full-time job at that time.

⁴ Neeta Fogg, Paul Harrington, Ishwar Khatiwada, and Jack Warner, *Literacy and Numeracy Utilization on the Job and the Pay-offs to Post Secondary Certificates and Associate's Degrees*, Educational Testing Service, Princeton, New Jersey (Forthcoming) February 2018.

Chart 2:
Full-time E/P Ratio of Young Adult High School Graduates in 28 JAG States, Spring 2016

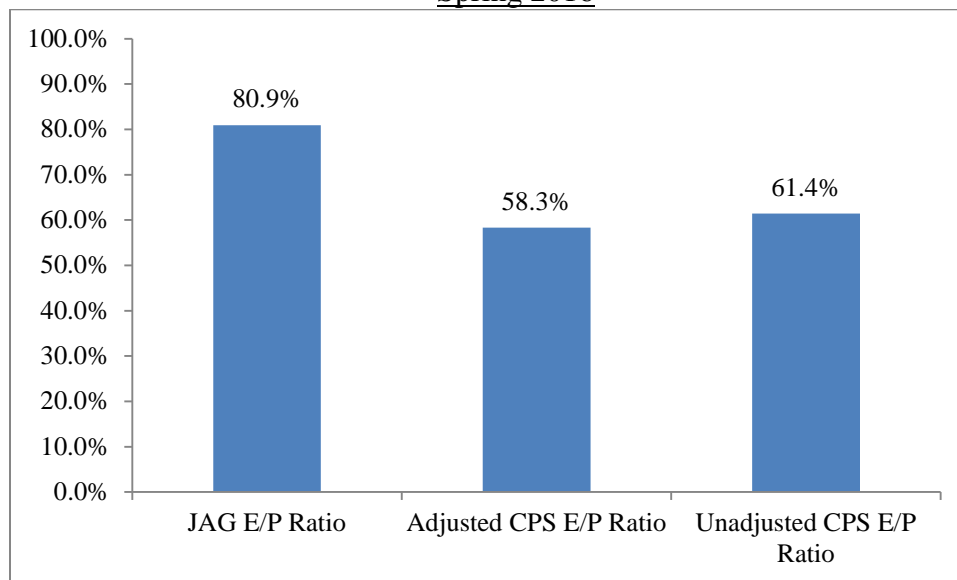


- The full-time employment advantage for both young male and female JAG graduates was quite large (25.6 and 27.6 percentage points, respectively, relative to the young men and women in the adjusted reference population).
- Large full-time E/P ratio gains were observed for JAG graduates from all race-ethnicity groups: 39 percent of the Black, non-Hispanic JAG graduates worked in a full-time job, while just 13.6 percent of their counterparts in the adjusted reference population worked full-time. Hispanic JAG graduates had a full-time employment rate that was 23.3 percentage points higher than that of the adjusted reference population.
- The lowest income JAG participants had a full-time employment rate of 45.2 percent, while the adjusted CPS population had an E/P ratio of just 18.5 percent.

While a slight majority of all the graduates of the JAG class of 2015 were enrolled in college one year after high school graduation, a sizeable share of graduates opted not to enroll. For those who did not choose college, work becomes the primary option for human capital development and in many instances their primary life of activity. JAG 2015 graduates who were not enrolled in the spring of 2016 had an E/P ratio of 80.9 percent; 22.6 percentage points higher than the E/P ratio of 58.3 percent among the adjusted non-enrolled high school graduate reference population.

- Both out of school young men and women who were JAG program high school graduates had higher employment rates than the adjusted reference population, although the size of the employment rate difference from the adjusted reference population was slightly larger for females (23.8 percentage points) compared to males (21.5 percentage points)
- Across all race-ethnicity groups, JAG graduates who were out of school were much more likely to work than graduates in the adjusted reference population. The JAG employment rate for out of school high school graduates was consistently higher relative to the adjusted reference population by 20 percentage points or higher.
- The lowest income JAG graduates who opted not to enroll in college had an E/P ratio of 78.4 percent, 24.2 percentage points higher than the 54.2 percent for the adjusted reference population.

Chart 3:
E/P Ratio of Non-Enrolled Young Adult High School Graduates in 28 JAG States,
Spring 2016

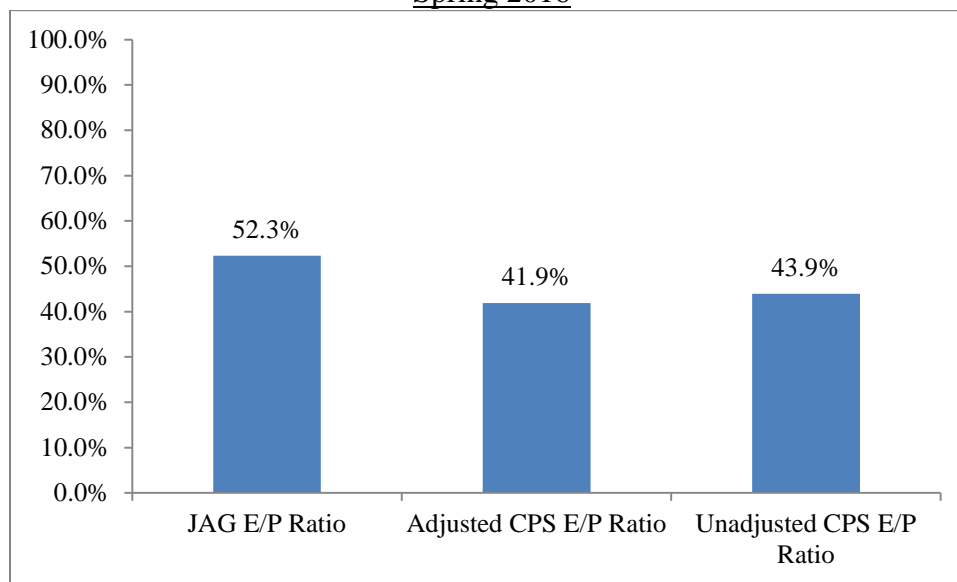


JAG high school graduates from the class of 2015 who did opt to enroll in college mixed work and school at higher rates than their counterparts in the adjusted reference population. College enrolled JAG graduates from the high school class of 2015 worked at relatively high rates while in school in the spring term one year after high school graduation. The E/P ratio for

in-school JAG graduates was 52.3 percent at the time of the follow-up, whereas the adjusted reference population had an employment rate of 41.9 percent, a 10.4 percentage point difference.

- Enrolled female JAG graduates were somewhat more likely to work while in school. These young women had an 11.2 percentage point E/P ratio advantage relative to the adjusted reference population, while enrolled male JAG graduates had an 8.5 percentage point advantage relative to the adjusted reference population.

Chart 4:
E/P Ratio of College Enrolled Young Adult High School Graduates in 28 JAG States,
Spring 2016



- Black, non-Hispanic JAG graduates were only slightly more likely to work while enrolled in school relative to the adjusted reference population, but enrolled Hispanic and Asian JAG graduates had much higher employment rates than the adjusted reference population.
- Low income JAG graduates who enrolled in college had an employment rate of 48.4 percent while the low income adjusted reference population who were enrolled in college had an E/P ratio of 40.0 percent.

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Introduction

A fundamental task of the Jobs for America's Graduates (JAG) program is to help high school students who are economically disadvantaged and who often do not have top academic performance records to make a successful transition from high school to employment, post-secondary education, or enlistment in the military. Andrew Sum, the long-time evaluator of the JAG program, emphasized the importance of a new graduate's successful transition from high school given the path dependent nature of labor market outcomes. Sum argued that labor market success is 'path dependent' which means that the more work experience a person has at an earlier age, the better their chances of future labor market success.¹

Work experience is an important predictor of the chances of long-term success, yet teen and young adults across the U.S have seen their employment rates fall sharply over the past 16 years. The fraction of teens who work has fallen sharply since the turn of the century. Over most of the post-World War II period, the annual average share of teens that had a job in any given month was in the 40 percent to 50 percent range. During periods of rapid economic growth, teen employment rates reached nearly 50 percent and during economic downturns often fell to the 40 percent level. Between 1948 and 2000 the employment to population ratio of teens aged 16 to 19-years-old averaged 44 percent per year.

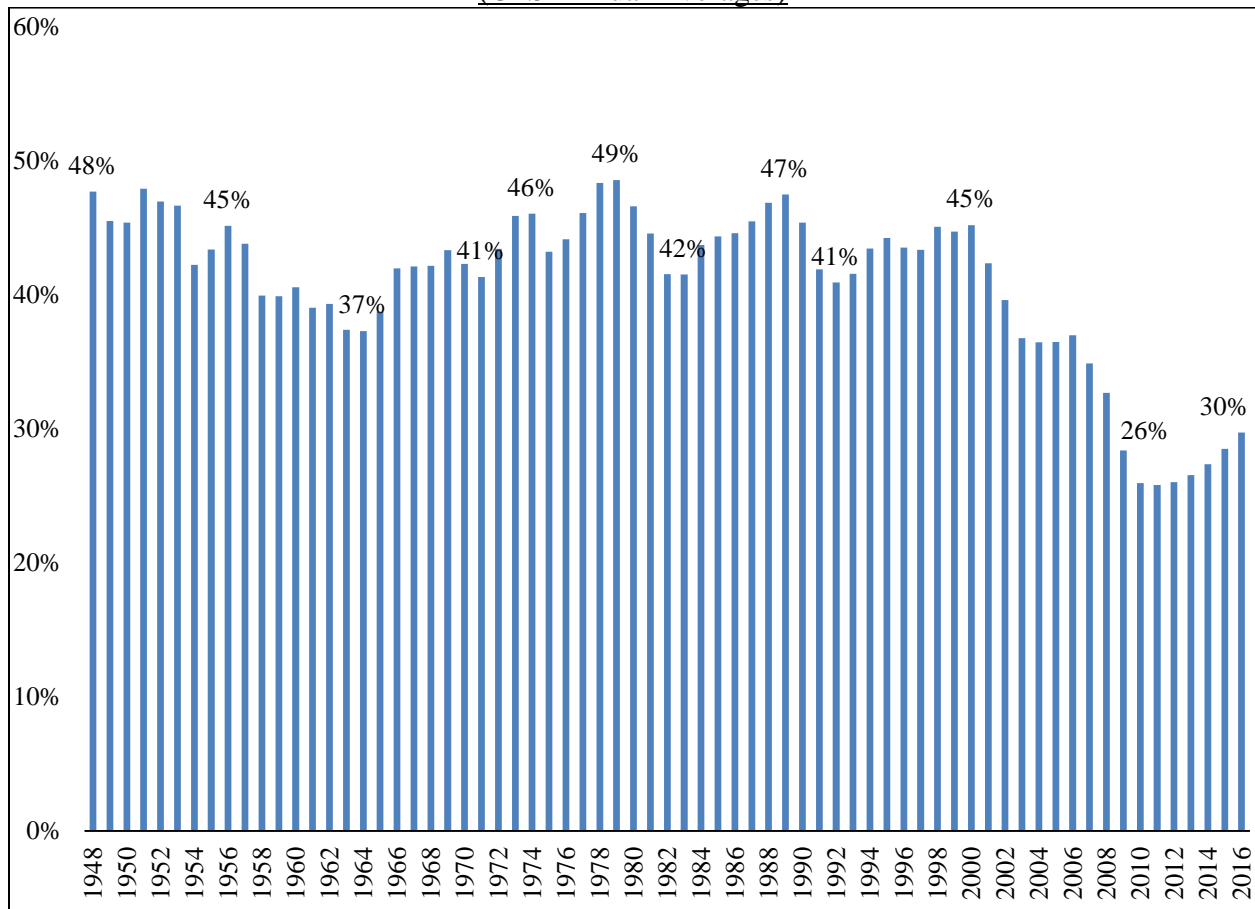
Since 2000, the nation's teen employment rate and the chances of early work experience have declined steadily and sharply. Between 2001 and 2016 the teen employment to population ratio in the U.S. fluctuated from a high of 41percent in 2001 (at the beginning of the dot.com recession) to a low of just 26 percent during 2011 as the massive job losses associated with the Great Recession had an especially powerful adverse impact on the chances of teen employment. Over the entire 2001 to 2016 period the teen employment rate averaged just 32 percent per year, down by more than one-quarter from the post-WW II level of 44 percent (Chart 1).

The nation's recovery from the Great Recession has provided only slow and weak gains in the nation's teen employment rate. Since the teen employment to population ratio reached it's all time low during 2011, only very modest gains in teens' employment chances have occurred in recent years. After 6 years of recovery in the nation's job market, the teen employment rate rose to just 30 percent by 2016 - a remarkably low share of teens working in a 'near' full employment

¹ Andrew Sum, *The Continued Crisis in the School-To-Work Transition for the Nation's Non-College Bound Youth: The Early College/Employment Experiences of JAG Graduates from the Class of 2011*, Center for Labor Market Studies, Northeastern University, Boston, Ma, July 2012

labor market environment.² This means that the labor market environment for teens and young adults leaving high school to begin their careers through work is far removed from the conditions that their parents confronted when they left high school. Work options for teens and young adults have deteriorated badly beginning in 2001, both with respect to the chances of finding work as well as in terms of working in a broad range of industries/occupations as the kinds of jobs available to teens since then have narrowed sharply.³

Chart 1:
Trends in Civilian Employment-Population Ratio of Teens (16-to-19) in the U.S., 1948-2016
(CPS Annual Averages)



Source: U.S. Bureau of Labor Statistics, Current Population Survey, 1948 to 2016, authors tabulations.

The JAG program has developed a set of internal performance measures that reflect the organization’s ambitions around a variety of outcomes for its participants. Performance measures

² The ratio of unemployed workers to vacant jobs in the U.S. was nearly 7 to 1 during the bottom of the Great Recession, but fell to 1.4 unemployed workers per vacant jobs, a near full employment job market condition. See: Paul E. Harrington. *The Labor Market Age Twist and Labor Market Imbalances*, Democratic Policy and Communications Caucus, United States Senate, June 8, 2017

³ Neeta Fogg and Paul Harrington, *Experience Required: The Diminished Employment Prospects of Teens and Young Adults in Los Angeles*, Center for Labor Markets and Policy, Drexel University, August 2016

such as these are important for any workforce development program to both establish a set of quantitative objectives and to monitor program performance relative to those objectives in order to adjust program organization, management, staffing, and curricula based on the information about state and local programs' ability to achieve outcomes. However, as the findings suggest above, the labor market outcomes attained by workforce development efforts are also influenced by the labor market context in which the program operates.

The purpose of this paper is to provide the appropriate teen and young adult job market context in which JAG employment outcomes for recent graduates might best be considered. Using public use microdata files from the Current Population Survey this paper places the JAG post high school employment and schooling outcomes in the context of outcomes for similarly aged high school graduates in states where JAG affiliates graduated a substantial number of participants during 2015. We accomplish this task in two ways: first, we provide information about the employment rates and enrollment status of all high school graduates aged 18 to 20 years of age aggregated across all states where JAG affiliates reported substantial numbers of graduates. Second, we follow this with measures of the expected employment rate of JAG graduates in these states using multivariate regression models that are helpful to account for differences in key socio-economic and demographic traits known to influence the probability of employment for young working age high school graduates.

Data and Methods

The Current Population Survey (CPS) is a survey of nearly 60,000 households conducted monthly in every state by the U.S Bureau of the Census. The CPS collects a wide range of social and economic information and its labor force questions serve as the basis of the nation's measure of labor force status of working age Americans, including the official unemployment rate that is reported each month by the U.S. Bureau of Labor Statistics in its *Employment Situation* news release. The Census Bureau makes available Public Use Microdata Sample files (commonly referred to as PUMS data files) that contain individual survey responses for all household members included within the scope of the survey. We use the CPS PUMS data collected from respondents who were high school graduates aged 18 to 20 during the first five months of 2016—approximately the same time period in which the JAG one-year follow-up of the class of 2015 was conducted. Our analysis includes CPS observations of all 18- to 20-year-old high

school graduates who had not completed a full year of college and were residents in one of the 28 participating JAG states with substantial numbers of high school graduates.⁴

Labor market conditions vary considerably for teens and young adults depending on state of residence during the first five months of 2016. The findings provided in Table 1 display the employment to population ratio of 18- to 20-year-old high school graduates across the 28 states included within the scope of this study.

Table 1:
Average Monthly Employment to Population (E/P) Ratio of the 18- to 20-Year-Old High School Graduate Population in the 28 JAG States, 2016 (January to May Averages)

| State | E/P Ratio | State | E/P Ratio |
|-------------|-----------|----------------|-----------|
| Alabama | 51.8% | Mississippi | 46.6% |
| Arizona | 45.0% | Missouri | 62.8% |
| Arkansas | 58.9% | Montana | 63.8% |
| Connecticut | 38.1% | Nevada | 59.7% |
| Delaware | 47.3% | New Hampshire | 54.7% |
| Florida | 50.8% | New Jersey | 35.8% |
| Georgia | 47.3% | New Mexico | 58.6% |
| Illinois | 52.7% | Ohio | 69.6% |
| Indiana | 61.7% | South Carolina | 57.1% |
| Iowa | 71.0% | Tennessee | 57.6% |
| Kansas | 65.6% | Virginia | 50.4% |
| Louisiana | 50.8% | Washington | 60.7% |
| Maine | 59.1% | West Virginia | 47.2% |
| Michigan | 56.9% | Wisconsin | 51.1% |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017

The data reveal quite large geographic differences in the employment rates for young high school graduates across states. The share of 18- to 20-year-old persons who were employed during the first five months of 2016 was highest in Iowa, where 71 percent of this group had a job during the first half of 2016. The E/P ratio for this subset of young adults with a high school diploma was also quite high in Ohio averaging 69.6 percent over the time period. In contrast, the

⁴ We included only states with 60 or more JAG participants who graduated from high school during 2016. These 28 states accounted for more than 99 percent of all JAG graduates in that year.

18- to 20-year-old E/P ratio was just 35.8 percent in New Jersey—an employment rate equal to about one-half of those observed in Iowa and Ohio. Connecticut had a similarly low employment rate among its young adult high school graduate population. Only 38.1 percent of this group of young people in Connecticut had a job, on average, during the first five months of 2016. The labor market context and local employment situation in which JAG affiliates provide counseling and placement services can exert an important influence on the chances of achieving positive outcomes. We use the state specific findings in our statistical models as a measure of the relative strength of the young adult labor market across the 28 states that can account for quite large differences in the labor market conditions among states.

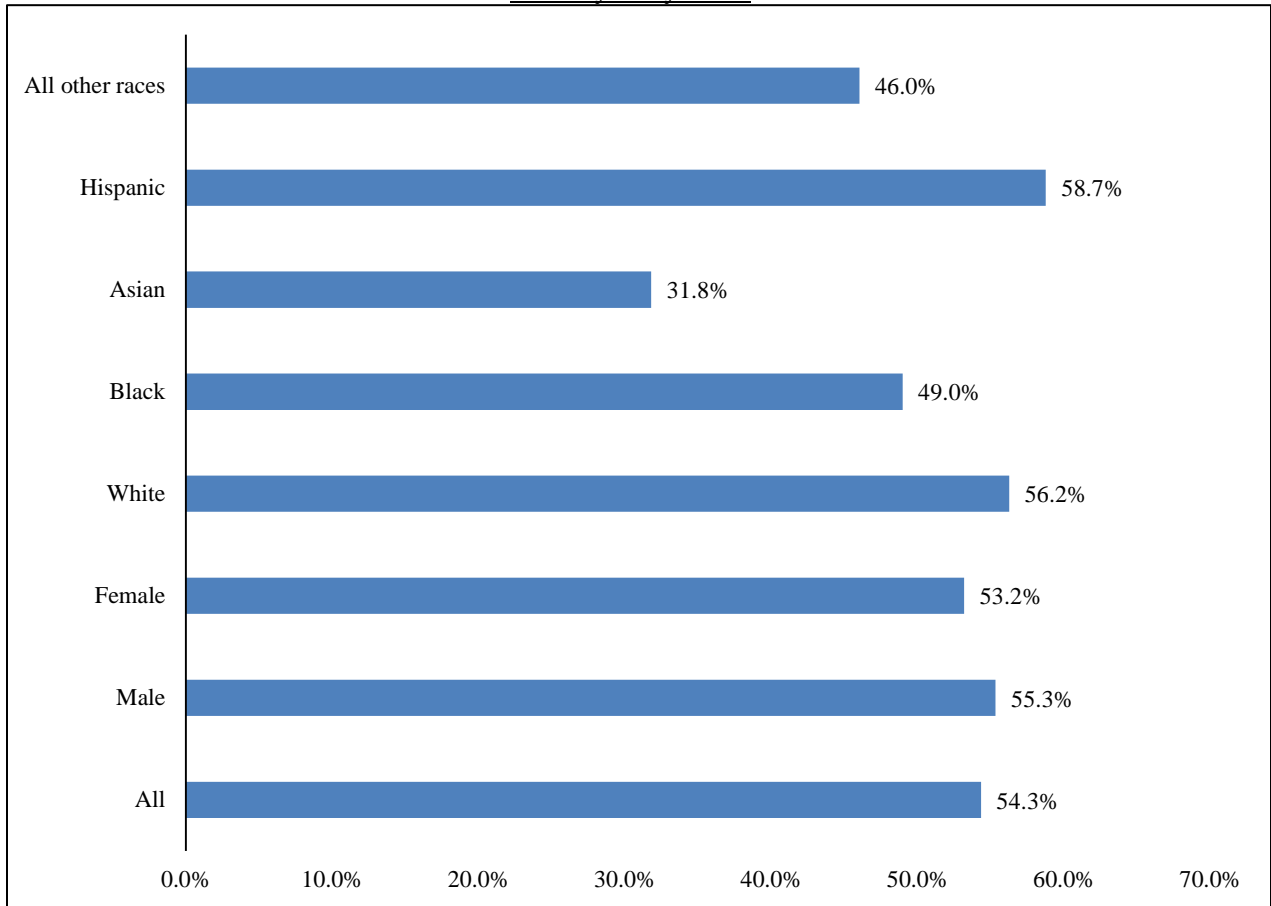
Labor market conditions are not the only factor that determines the chances of employment success for young adults. Demographic characteristics of young people also exert an influence on the chances of success after high school.⁵ Chart 2 presents findings on the employment rates of 18- to 20-year-old high school graduates who resided in one of the 28 JAG reference states, by gender and race/ethnic traits. The data reveal that young adult high school graduates' employment rates do vary by their demographic characteristics.

The overall employment to population ratio of 18- to 20-year-old high school graduate residents in these states averaged 54 percent. However, Black, non-Hispanic and Asian young adults had a sharply reduced chance of working during the first half of 2016. Just 32 percent of Asian young adults with a high school diploma were employed, about 45 percent lower than the average of all White, non-Hispanic young high school graduates. Similarly, Black, non-Hispanic young adults with a high school diploma had an E/P ratio of 49 percent, compared to 56 percent for White, non-Hispanics, a relative E/P ratio about 13 percent lower than their White counterparts. The job market experiences of Hispanics aged 18 to 20 with a high school diploma were considerably different than other race/ethnic minority groups. Hispanic young adults with a high school diploma had an employment rate of 58.7 percent, about 4 percent higher than their White counterparts.

The data also found small gender differences with the employment rate for young men averaging 55.3 percent during the first five months of 2016, while young women had a slightly lower E/P ratio of 53.2 percent, a relative advantage for males of about 4 percent at that time.

⁵ Neeta Fogg et.al, *Background Characteristics of the Jobs for America's Graduates Class of 2015*, Center for Labor Markets and Policy, Drexel University, June 2017

Chart 2:
Average Monthly Employment to Population Ratio of the 18- to 20-Year-Old High School
Graduate Population in the 28 Reference States, by Gender and Race/Ethnicity,
January-May 2016

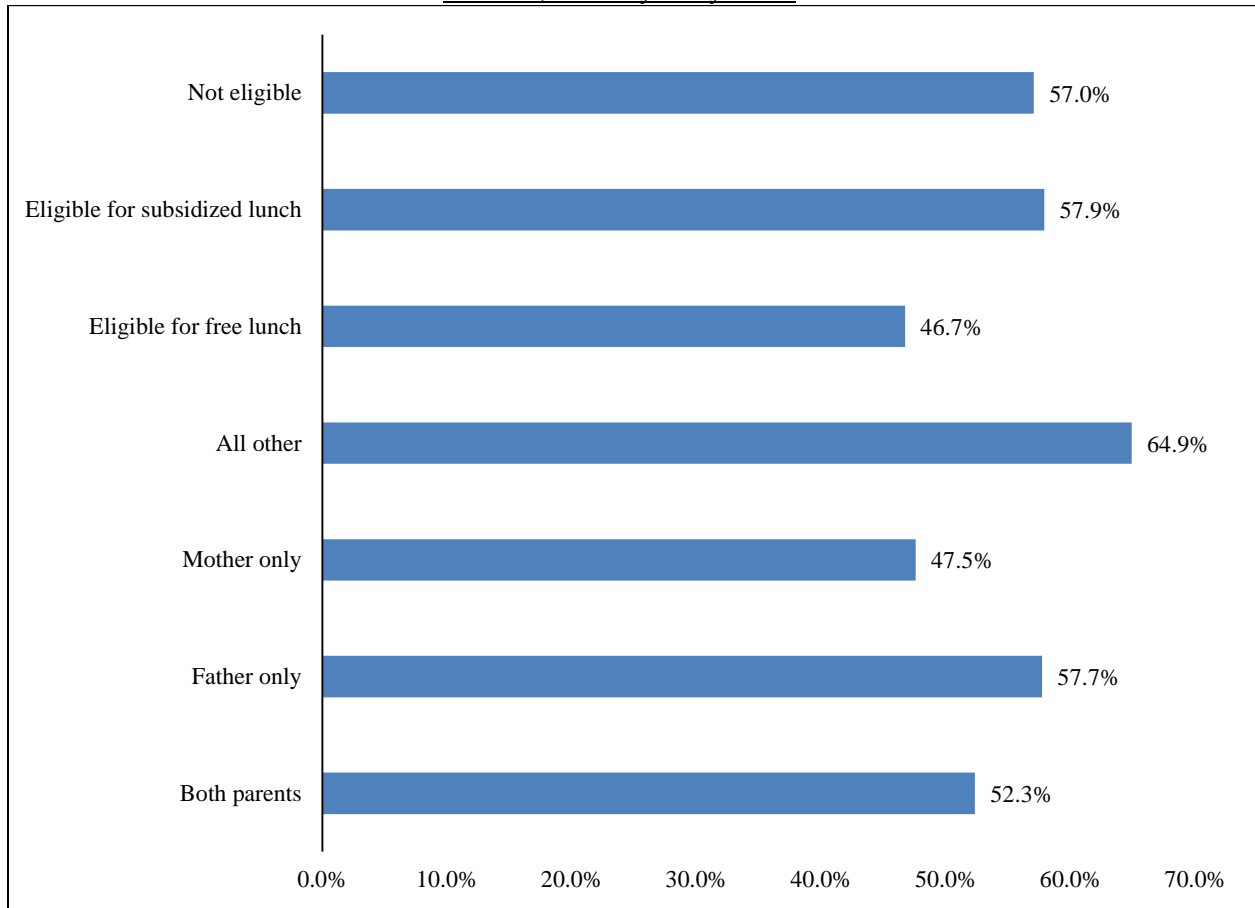


Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017

The likelihood of a young adult finding work is also influenced by their socio-economic background traits. The CPS household survey also includes two measures that provide us with insight into the socio-economic status of respondents: household living arrangement and family income as defined by eligibility for free lunch and subsidized lunch programs.

The employment rate of young adult high school graduates varied somewhat by their living arrangements. Young adult graduates residing in the 28 reference states who lived with both parents had an employment rate of 52.3 percent. However, those who lived with a single parent had markedly different chances of employment. Those who lived with their fathers only had an E/P ratio of 57.7 percent on average during the first half of 2016. In contrast, those who

Chart 3:
Average Monthly Employment to Population Ratio of the 18- to 20-Year-Old High School Graduate Population in the 28 Reference States by Family Living Arrangements and Family Income, January-May 2016



Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017

lived with their mothers were less likely to work with an employment rate of 47.5 percent. Young adults aged 18 to 20 who lived in other arrangements including non-family households had a well above average employment rate of nearly 65 percent (Chart 3).

Since demographic and socio-economic status of young high school graduates influences their chances of employment after high school, it is important to account for differences in these traits between the CPS reference population of young adults and the JAG Class of 2015 if we are to provide a fair-minded context in which to assess the post high school outcomes of the JAG graduates. The findings in Table 2 examine differences in the gender and race/ethnic composition between JAG graduates and those of the 18- to 20-year-old counterpart residing in the 28 JAG reference states included in the scope of this study.

The data reveal that race/ethnic composition of the 2015 JAG high school graduate population was much more heavily concentrated among Black, non-Hispanic individuals than their high school graduate counterparts in the reference states. Among all 18- to 20-year-old high school graduate residents of the 28 reference states, 18 percent were Black, compared to 41.8 percent of JAG high school graduates—thus JAG programs in these states were 2.3 times as likely to graduate a Black, non-Hispanic student than the average of all high schools in these states. In contrast, Hispanic students in these 28 JAG states accounted for 16 percent of all 18- to 20-year-old high school graduates, but just 8 percent of the JAG graduating class was Hispanic. Given our earlier discussion of the considerable variability in the employment rates of young high school graduates by race, if we are to provide a proper context in which to assess the post high school outcomes of JAG graduates then it is important that we account for the race/ethnic and gender characteristics of the CPS reference population of young graduates relative to JAG high school graduates in reference states (Table 2).

Table 2:
Comparison of Selected Demographic Characteristics of 18- to 20-Year-Old High School Graduates CPS 28 State Reference Population and the JAG Class of 2015

| | CPS 18-20-Year-Old High School Graduates (Col. A) | JAG Class of 2015 High School Graduates (Col. B) | Ratio of Col. B to Col. A |
|-----------------|---|--|---------------------------|
| Male | 53.5% | 45.1% | 0.84 |
| Female | 46.5% | 54.9% | 1.18 |
| White | 59.2% | 43.2% | 0.73 |
| Black | 18.0% | 41.8% | 2.32 |
| Asian | 2.3% | 0.7% | 0.30 |
| Hispanic | 16.1% | 8.2% | 0.51 |
| All other races | 4.5% | 6.0% | 1.33 |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017

We observed earlier that the likelihood of a young adult high school graduate being employed also varied by living arrangement and family/household income status. Given those findings, it is once again important to account for differences in the distribution of these key socio-economic traits between the CPS reference population and the JAG graduating class of 2015.

The findings provided in Table 3 compare the living arrangements and family/household income status of the CPS reference population of 18- to 20-year-old high school graduates resident in the 28 JAG program states with those of the JAG class of 2015. The data reveal that JAG graduates are much likely to reside in single parent households—especially female headed families relative to the CPS reference population. The data on income status reveal that JAG participants tend to reside in low-income households where income is below 130 percent of the nation’s poverty measure. JAG participants were 2.4 times more likely to live in a low-income household compared to all young high school graduates included in the CPS reference population.

Table 3:
Comparison of Selected Socio-Economic Characteristics of 18- to 20-Year-Old High School Graduates CPS 28 State Reference Group and the JAG Class of 2015

| | CPS 18-20-Year-Old High School Graduates (Col. A) | JAG Class of 2015 High School Graduates (Col. B) | Ratio of Col. B to Col. A |
|-------------------------------|---|--|---------------------------|
| Both parents | 48.6% | 42.9% | 0.88 |
| Father only | 9.0% | 7.0% | 0.78 |
| Mother only | 21.9% | 39.3% | 1.80 |
| All other | 20.5% | 10.8% | 0.53 |
| Eligible for free lunch | 27.3% | 66.2% | 2.42 |
| Eligible for subsidized lunch | 13.7% | 8.3% | 0.61 |
| Not eligible | 59.0% | 25.5% | 0.43 |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017

We present two sets of findings on employment status of the CPS references populations. We provide information on the employment status for demographic and socio-economic groups of young adult high school graduates in the 28 states in which JAG affiliates generated a substantial number of graduates during 2015. The JAG graduate data are derived from the 12-month follow-up that JAG conducted during the spring of 2016 to ascertain the employment and school enrollment status of the program’s 2015 graduates. The CPS reference population data is composed of 18- to 20-year-old high school graduates, had not completed a full year of college and were residents in one of the 28 states during the first five months of 2016.

We first present findings on the class of 2015 JAG graduates’ employment and educational outcomes relative to the CPS reference population and observe the simple

differences in employment and school enrollment measures. It is important to note that these comparisons do not account for the large differences that we observed in the demographic and socio-economic characteristics between the CPS reference population and the class of 2015 JAG graduates. We provide a second set of findings to at least partially account for these differences using multivariate regression methods.

The JAG program is targeted toward educationally and economically disadvantaged populations of students, thus, the population of students served by JAG is by design quite different relative to other high school graduates of the same age in these states. Indeed, our analysis reveals that JAG served a population that includes sharply above average shares of low-income single parent students from the African American community. Therefore, we developed three multivariate regression models that yielded coefficients that were used along with data on the characteristics of JAG program participants to develop a measure of the predicted employment and education outcomes of JAG graduates, after accounting for differences in key demographic and socio-economic traits between them and the CPS reference population. The purpose of these models is to develop a carefully constructed reference population in which the outcomes of the JAG program could be more properly assessed—a reference population more reflective of the characteristics of JAG graduates than those of the average of all young high school graduates in the 28 reference states.

Using CPS data for the young adult high school graduate population in the 28 JAG states three logistic regression models to estimate predicted employment rates, predicted full-time employment rates, and predicted college enrollment rates. The dependent variables used in the population CPS reference population regressions were those that are comparable to those demographic and socio-economic traits included in the unit record data files provided us by JAG. We also include a variable that includes the E/P ratio for the 18- to 20-year-old population in each of the 28 states included in this analysis. The young adult employment rate variable is used to account for differences in state labor market conditions for young people making the transition to work and to higher education. Appendix A in this report display regression results from CPS reference population universe.

Differences between JAG and Unadjusted CPS Reference Population Employment Rates

Our assessment of JAG post high school employment outcomes begins by comparing the employment rates of JAG program graduates with the unadjusted CPS reference population of the 28 JAG states. The findings in Table 4 simply compare employment rates of JAG completers one year after high school with those of all 18- to 20-year-old high school graduates selected in CPS reference population at that time. The findings reveal that JAG employment rates were consistently substantially higher than those measured for their high school graduate contemporaries in the unadjusted reference population. JAG graduates had an overall

Table 4:
Employment to Population Ratios of the Class of 2015 JAG Graduates
and the *Unadjusted* CPS Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | Unadjusted CPS Reference Population E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|---|------------------------------|
| All | 66.7% | 54.3% | 12.4% |
| Gender | | | |
| Male | 68.3% | 55.3% | 13.0% |
| Female | 65.5% | 53.2% | 12.4% |
| Race/Ethnicity | | | |
| White | 75.1% | 56.2% | 18.8% |
| Black | 57.2% | 49.0% | 8.3% |
| Asian | 55.6% | 31.8% | 23.8% |
| Hispanic | 74.5% | 58.7% | 15.7% |
| Other | 63.4% | 46.0% | 17.4% |
| Living Arrangements | | | |
| Both parents | 69.4% | 52.3% | 17.1% |
| Mother only | 63.9% | 57.7% | 6.2% |
| Father only | 68.8% | 47.5% | 21.3% |
| Other | 65.4% | 64.9% | 0.6% |
| Income Status | | | |
| Eligible for free lunch | 63.8% | 46.7% | 17.1% |
| Eligible for subsidized lunch | 69.6% | 57.9% | 11.8% |
| Not eligible | 73.3% | 57.0% | 16.3k% |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

employment rate of 66.7 percent compared to 54.3 percent E/P ratio found for the unadjusted reference population. Male JAG graduates were slightly more likely to work than female graduates with 68.3 percent and 65.5 percent employment rates, respectively - a 12 to 13 percentage point difference relative to the unadjusted high school graduate reference population.

JAG employment rates did vary quite substantially across race/ethnic groups, as was the case for the unadjusted reference population, albeit at substantially lower rates. White, non-Hispanic JAG graduates had the highest employment rates of 75.1 percent and 74.5 percent respectively among all JAG graduates. In both instances, these rates were sharply above those of White, non-Hispanic and Hispanic graduates in the unadjusted reference population. Black and Asian JAG graduates had E/P ratios that were sharply below those of White and Hispanic JAG completers at the time of the follow-up survey. Black JAG graduates' E/P ratio was 57.2 percent and that for Asian graduates was 55.6 percent, employment rates that were 17 to 20 percentage points below their White and Hispanic JAG counterparts.

While Black and Asian JAG graduates had much lower E/P ratios than other JAG graduates, we found that Black and Asian graduates in the unadjusted reference population had employment rates that were substantially lower than those observed among JAG graduates. Black JAG graduates had an E/P ratio that was 8.3 percentage points higher than the 49.0 percent observed for their counterparts in the unadjusted reference population. Asian JAG completers had an E/P ratio at the time of the follow-up that was 15.7 percentage points greater than Asians in the unadjusted reference population.

JAG graduate E/P ratios were consistently and substantially higher across measures of socio-economic status than those observed for high school graduates in the unadjusted reference population. The JAG E/P ratio did vary somewhat by family/household income status with an employment rate of 63.8 percent for the lowest income graduates, compared to 73.3 percent for the graduates who resided in households with income levels above the free-subsidized lunch eligibility cut-off. However, the JAG graduate E/P ratio of 63.8 percent among its lowest income completers was about 17 percentage points higher than the 46.7 percent relative to the low-income reference population. JAG graduates also had higher employment rates for graduates who lived with their families relative to the reference population. The JAG E/P ratio ranged from about 64 percent to 68 percent among those who lived with parents, yielding an employment rate advantage that ranged from 6 percentage points for those living with their mothers to 21

percentage points for those living with their fathers. JAG graduates who were living in non-family households had an employment rate of 65.4 percent, about the same as the 64.9 percent observed for the reference population that lived in non-family households.

JAG graduates who were employed at the time of the follow-up were likely to work in a full-time (35 or more hours per week). Indeed, about 70 percent of JAG graduates employed at the time of the follow-up survey worked full-time.

Table 5:
Full-Time Employment to Population Ratios of the Class of 2015 JAG Graduates
and the *Unadjusted* CPS Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | Unadjusted CPS Reference Population E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|---|------------------------------|
| All | 47.2% | 26.8% | 20.4% |
| Gender | | | |
| Male | 50.8% | 30.0% | 20.9% |
| Female | 44.4% | 23.2% | 21.2% |
| Race/Ethnicity | | | |
| White | 54.5% | 27.7% | 26.8% |
| Black | 39.1% | 19.4% | 19.7% |
| Asian | 28.6% | 13.6% | 15.0% |
| Hispanic | 53.6% | 36.7% | 16.8% |
| Other | 45.1% | 16.8% | 28.4% |
| Living Arrangements | | | |
| Both parents | 49.5% | 21.5% | 28.0% |
| Mother only | 44.3% | 31.5% | 12.9% |
| Father only | 48.0% | 22.3% | 25.7% |
| Other | 48.6% | 42.3% | 6.2% |
| Income Status | | | |
| Eligible for free lunch | 45.2% | 23.8% | 21.4% |
| Eligible for subsidized lunch | 50.0% | 29.4% | 20.6% |
| Not eligible | 51.7% | 27.7% | 24.0% |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

The findings in Table 5 above examine the full-time employment rate of JAG graduates relative to the unadjusted CPS reference population. The full-time E/P ratio is a measure of the

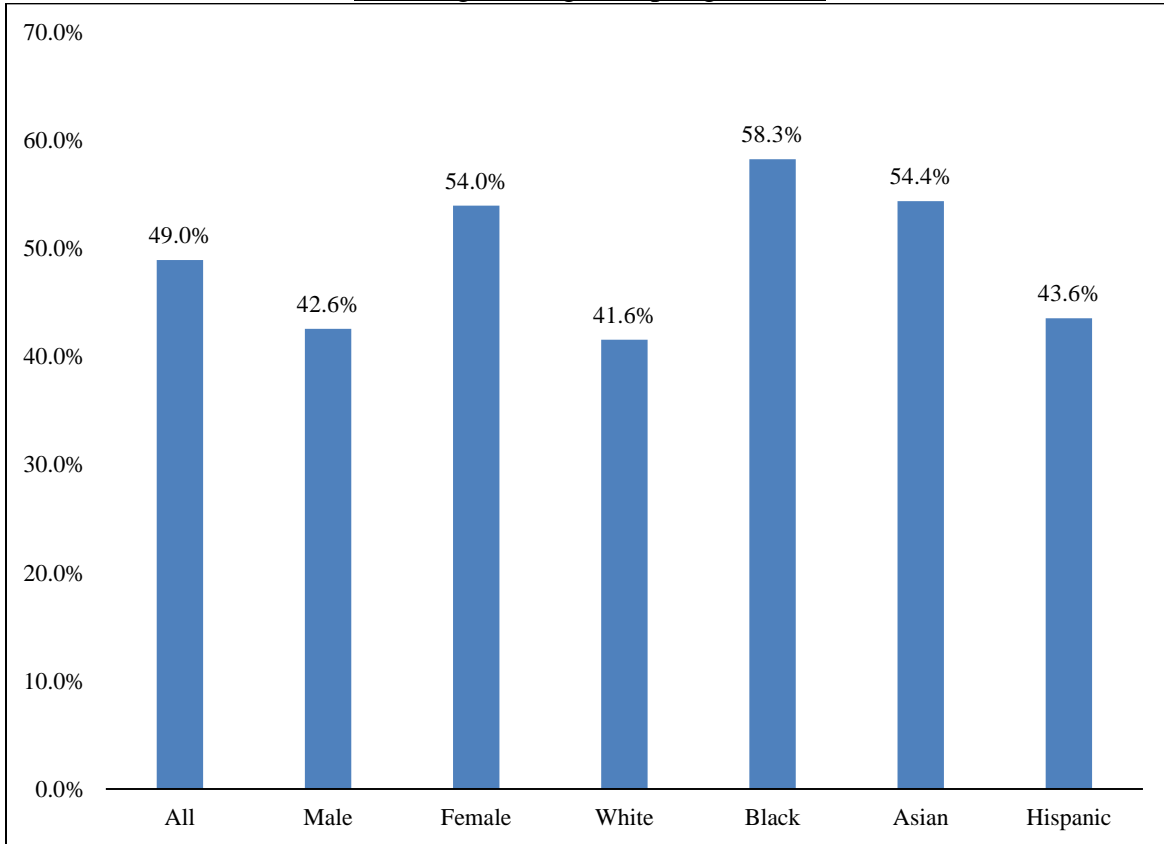
share of a population that is employed in full-time jobs. Overall, JAG program graduates had a full-time E/P ratio of 47.2 percent, that is 47 of 100 JAG graduates from the class of 2015 had a full-time job at the time of the spring 2016 follow-up study, a full-time E/P ratio that was 20 percentage points higher than the 26.8 percent full-time employment rate observed among the CPS reference population. Young men who graduated from the JAG program in 2015 were somewhat more likely to work in a full-time job (50.8%) compared to young women who were JAG graduates in that year (44.4%). A similar gender difference in the full-time employment rate occurred among the CPS reference population. However, both male and female graduates were much more likely to work in a full-time position than their counterparts in the reference population.

Large differences in full-time E/P ratios between JAG graduates and the unadjusted comparison group were also observed across race/ethnic groups included in the study. White and Hispanic JAG graduates had the highest full-time employment rates among all graduates - 54.5 percent and 53.6 percent, respectively. These full-time work rates were sharply above the 27.7 and 36.7 percent full-time employment rates found respectively among Whites and Hispanics in the unadjusted CPS reference population.

JAG graduates had full-time employment rates that were 21.4 percentage points higher for its lowest income graduates relative to their counterparts in reference population. Indeed, the data reveal that JAG graduates had much higher full-time employment rates than their counterparts in the reference population for each income grouping. The CPS low-income population had a full-time E/P ratio of only 23.8 percent, while 45.2 percent of low-income JAG graduates were employed in full-time positions at the time of the follow-up.

A substantial proportion of the JAG class of 2015 were enrolled in college or engaged in other post-high school educational activities. At the time of the follow-up surveys in the spring of 2016, almost one-half (49 percent) of all JAG graduates were enrolled in an institution of higher education including 2- and 4-year colleges as well as in other post-secondary schools including non-degree certificate programs and proprietary schools. There were large gender gaps in school enrollment rates with 54 percent female JAG high school graduates enrolled in school at the time of the follow-up compared to just 42.6 percent college enrollment among male members of the JAG class of 2015. Thus, female JAG graduates were 1.26 times more likely to enroll in college than their male counterparts.

Chart 4:
Share of JAG Class of 2015 Graduates Enrolled
in College during the Spring of 2016



Source: JAG Unit Record Data Files, Graduating Class of 2015

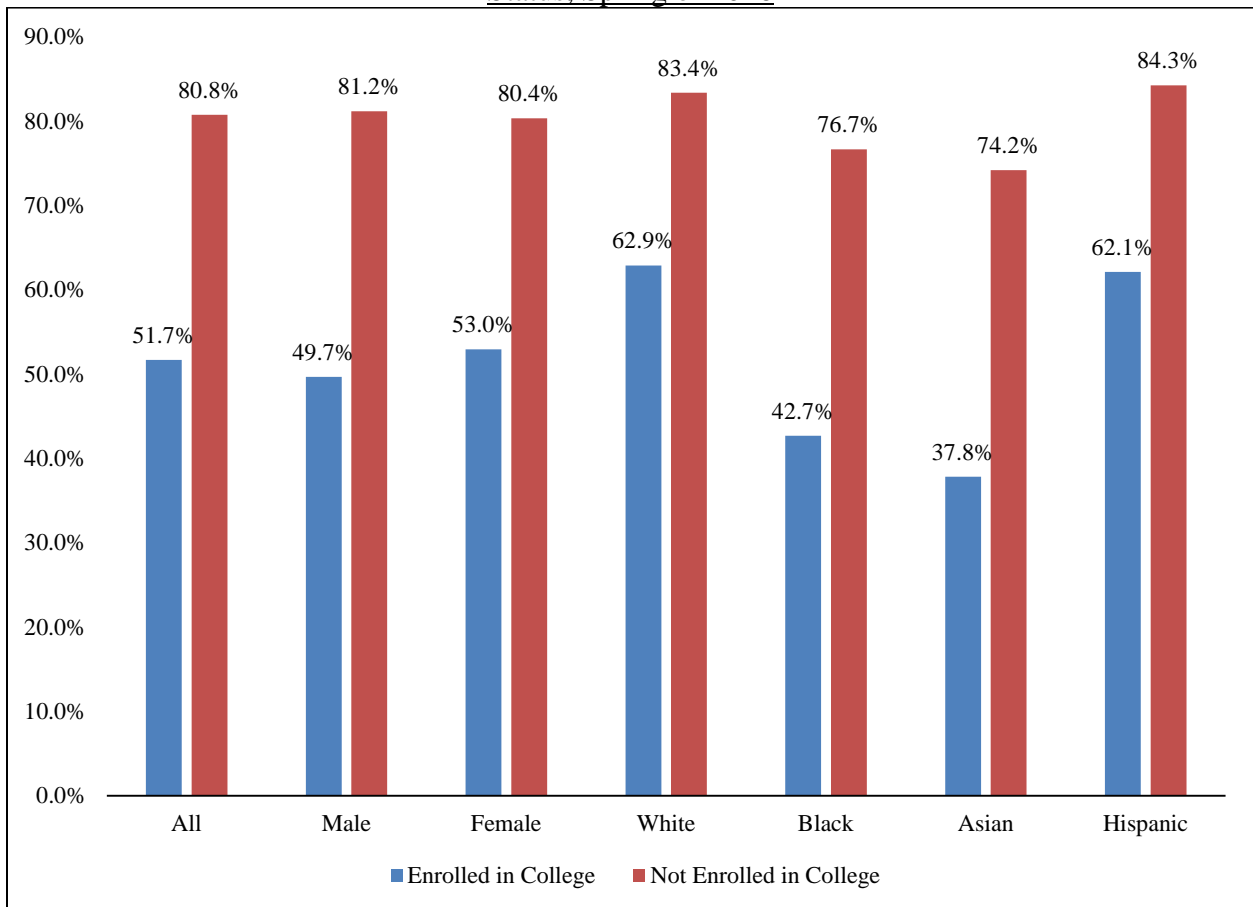
Sharp differences also existed in college enrollment rates of JAG graduates across race/ethnic groups. Black, non-Hispanic students had the highest college enrollment rate, with 58.3 percent of these students enrolled in college at the time of the follow-up study. Asian students also had well above average college enrollment with 54.5 percent of Asian graduates enrolled in school one year after graduation. White and Hispanic JAG graduates had much lower college enrollment rates than other JAG participants. Just under 42 percent of White graduates were enrolled in school one year after high school with a slightly higher share of Hispanics (43.6 percent) reporting that they were enrolled in college.

College enrollment status exerts a substantial influence on the chances that a JAG graduate is employed a year after high school, despite the fact that the majority of JAG graduates who are enrolled in college also work while they are enrolled in school. The findings in Chart 5 below compare the employment to population ratios of JAG high school graduates by college



enrollment status at the time of the one-year follow-up study. The data reveal that 81 percent of JAG graduates who were not enrolled one year after high school were employed compared to 51.7 of their counterparts, not enrolled. This suggests a relatively strong connection between college enrollment status and the chance of employment. These findings suggest that demographic and socio-economic groups of students with above average college enrollment shares are likely to have lower employment rates since college students are less likely to work.

Chart 5:
Employment to Population Ratios of the JAG Class of 2015 Graduates, by College Enrollment Status, Spring of 2016



Source: JAG Unit Record Data Files, Graduating Class of 2015

Among students who were not enrolled in college the data reveal nearly identical employment rates between males and females of 81.2 percent and 80.4 percent, respectively. Somewhat surprisingly, however, enrolled female JAG graduates were somewhat more likely to work than their male counterparts, with 53 percent of female college students employed compared to 49.7 percent of men. Larger differences were observed in the chance of employment by enrollment status by the race/ethnicity characteristics of JAG graduates. White and Hispanic

JAG graduates had the highest employment rates for both enrolled and non-enrolled graduates at the time of May 2016 follow-up survey. Non-enrolled White and Hispanic graduates had employment rates of 83.4 percent and 84.3 percent, respectively, and their enrolled counterparts had E/P ratios of 62.9 percent and 62.1 percent, respectively. Black and Asian JAG graduates enrolled in school had much lower employment rates than their White and Hispanic counterparts. Black and Asian enrolled graduates had employment rates that were equal to just 60 to 70 percent of those of their White and Hispanic enrolled counterparts. Non-enrolled Black and Asian JAG graduates were also somewhat less likely to work, but the relative size of the difference was much smaller than that observed for their non-enrolled White and Hispanic counterparts.

About 61 percent of all employed JAG graduates were not enrolled in school. Among those not enrolled who worked, most (80 percent) held full-time jobs at the time of the follow-up. Thus, a major focus of their life activity and their primary human capital development efforts were associated with work.

The findings in Table 6 examine the E/P ratio of non-enrolled class of 2015 graduates in relation to the employment status of their not enrolled counterpart members of the CPS reference population. The data reveal that JAG graduates not enrolled in school had an employment rate of 80.9 percent. Their counterparts in the unadjusted CPS reference group had an E/P ratio of 61.4 percent, a 19.5 percentage point difference. Both male and female non-enrolled JAG graduates also had much higher employment rates than their reference population counterparts with the differences in the 19 to 20 percentage point range. A comparison across race/ethnic groups also reveals large differences in E/P ratios between non-enrolled JAG graduates and the reference population. These differences range from about 19 percentage points for Whites (83.5% for JAG graduates vs. 64.8% for the reference group) to a high of about 24 percentage points advantage for Asian non-enrolled JAG graduates relative to their counterparts in the reference group.

An examination of these findings by household/family income status reveal an especially high employment rate for non-enrolled JAG graduates in low-income households compared to their counterparts in the reference population. Non-enrolled JAG graduates from low-income households had an E/P ratio of 78.4 percent, a 27 percentage point difference relative to the reference population's E/P ratio of 51.2 percent.

Table 6:
Employment to Population Ratios of the Class of 2015 JAG Graduates *Not Enrolled* in College
and the *Unadjusted* CPS Reference Group, Spring 2016

| Group | JAG Graduate E/P Ratio | Unadjusted CPS Reference Population E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|---|------------------------------|
| All | 80.9% | 61.4% | 19.5% |
| Gender | | | |
| Male | 81.7% | 62.7% | 18.9% |
| Female | 80.1% | 59.7% | 20.4% |
| Race/Ethnicity | | | |
| White | 83.5% | 64.8% | 18.7% |
| Black | 76.8% | 54.2% | 22.6% |
| Asian | 75.0% | 51.1% | 23.9% |
| Hispanic | 84.3% | 62.8% | 21.5% |
| Living Arrangements | | | |
| Both parents | 84.2% | 62.2% | 22.1% |
| Mother only | 78.6% | 64.9% | 13.7% |
| Father only | 82.1% | 50.3% | 31.9% |
| Other | 76.3% | 68.5% | 7.8% |
| Income Status | | | |
| Eligible for free lunch | 78.4% | 51.2% | 27.2% |
| Eligible for subsidized lunch | 80.0% | 61.7% | 18.3% |
| Not eligible | 87.9% | 67.3% | 20.6% |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

The size of the employment rate advantage of JAG graduates who were enrolled in college was substantially smaller than that found for their fellow graduates who were not enrolled at the time of the follow-up survey. The E/P ratio of enrolled JAG graduates was 52.0 percent during the spring of 2016 compared to 43.9 percent for the enrolled reference population, an advantage of 8.1 percentage points. Young women who graduated from the JAG program and enrolled in college had an enrollment rate of 53.1 percent compared to 44.3 percent for the unadjusted reference group.

Table 7:
Employment to Population Ratios of the Class of 2015 JAG Graduates Enrolled in College
and the Unadjusted CPS Reference Population, Spring, 2016

| Group | JAG Graduate E/P Ratio | Unadjusted CPS Reference Population E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|---|------------------------------|
| All | 52.0% | 43.9% | 8.1% |
| Gender | | | |
| Male | 50.2% | 43.6% | 6.6% |
| Female | 53.1% | 44.3% | 8.8% |
| Race/Ethnicity | | | |
| White | 63.1% | 44.0% | 19.1% |
| Black | 43.2% | 41.1% | 2.2% |
| Asian | 40.0% | 23.3% | 16.7% |
| Hispanic | 62.2% | 51.1% | 11.1% |
| Other | 45.4% | 50.3% | -4.9% |
| Living Arrangements | | | |
| Both parents | 54.9% | 41.9% | 13.0% |
| Mother only | 49.6% | 43.2% | 6.4% |
| Father only | 52.3% | 43.2% | 9.1% |
| Other | 48.7% | 54.4% | -5.7% |
| Income Status | | | |
| Eligible for free lunch | 48.4% | 36.9% | 11.5% |
| Eligible for subsidized lunch | 58.7% | 50.1% | 8.5% |
| Not eligible | 58.9% | 45.1% | 13.9% |

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

Substantial differences occurred across race/ethnic groups in the size of the college enrolled employment rate advantage. White JAG graduates enrolled in college at the time of the follow-up had an E/P ratio of 63.1 percent, 19 percentage points higher than the 44.0 percent E/P ratio found among the White, enrolled reference population. In contrast, JAG graduates who enrolled in college had an E/P ratio of 43.2 percent, just 2.2 percentage points higher than the E/P ratio of their counterparts in reference group population.

Low-income JAG graduates enrolled in college had a substantial employment advantage compared to the reference population. College enrolled low-income JAG graduates' E/P ratios

averaged 48.4 percent compared to the low-income reference group population who had an E/P ratio of 36.9 percent, resulting in an 11.5 percentage points employment rate advantage for low-income JAG graduates who opted to enroll in college.

Differences between JAG and CPS Regression Predicted Reference Population Employment Rates

The discussion above examined the employment outcomes of JAG high school graduates from the class of 2015 relative to an unadjusted reference group of high school graduate residents of the same 28 states in which the JAG program operates substantial programs during the spring of 2016, about one year after the JAG participants had graduated from high school. Comparisons were made between the JAG participants and the unadjusted reference group across a variety of demographic and socio-economic groups, yet even with these direct within group comparisons, the findings above do not properly account for very substantial differences between the characteristics of JAG graduates and the unadjusted comparison group.

The JAG program serves a more disadvantaged population compared to the average of all young adult high school graduates included in the unadjusted comparison group. JAG graduates are much more likely to be from economically disadvantaged households, members of underrepresented minority groups, and below average academic performers while in high school. Indeed, a fundamental objective of the JAG program is to serve exactly these at-risk students. Because JAG serves a more disadvantaged population than the average high schools, our comparison with the unadjusted reference group of ‘average high school’ graduates is unable to account for important differences between the average high school graduate and those of more disadvantaged JAG graduates. Thus, the differences between the JAG employment outcomes and those of the unadjusted reference group might best be thought of as a lower bound on the differences in employment outcomes between the two groups.

We developed several logistic regression models designed to at least partially compensate for the important differences between the JAG graduating class of 2015 and the unadjusted reference population of young adult high school graduates in each of the 28 JAG states included in this study. These logistic regression models predict the probability of employment for the reference group and the coefficients generated from the models are used to estimate the predicted probability of a JAG graduate with the same traits becoming employed. The regression models

are used to develop a more relevant CPS reference population through regression adjustment of the CPS reference data to better reflect the characteristics of JAG graduates. These regression adjustments, in part, account for the more disadvantaged nature of the JAG participants relative to the unadjusted reference group.⁶ Their use results in substantially larger differences in employment rate outcomes for the JAG graduates than we observed when the unadjusted CPS reference population was used to measure differences in these rates.

Table 8:
Employment to Population Ratios of the Class of 2015 JAG Graduates
and Regression Adjusted CPS Predicated Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | CPS Regression Predicted E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|------------------------------------|------------------------------|
| All | 66.7% | 49.5% | 17.2% *** |
| Gender | | | |
| Male | 68.3% | 52.0% | 16.3% *** |
| Female | 65.5% | 47.6% | 18.0% *** |
| Race/Ethnicity | | | |
| White | 75.1% | 55.4% | 19.6% *** |
| Black | 57.2% | 43.3% | 14.0% *** |
| Asian | 55.6% | 35.5% | 20.1% *** |
| Hispanic | 74.5% | 55.0% | 19.5% *** |
| Living Arrangements | | | |
| Both parents | 69.4% | 50.7% | 18.6% *** |
| Mother only | 63.9% | 44.4% | 19.5% *** |
| Father only | 68.8% | 54.6% | 14.2% *** |
| Other | 65.4% | 60.2% | 5.2% *** |
| Income Status | | | |
| Eligible for free lunch | 63.8% | 46.4% | 17.5% *** |
| Eligible for subsidized lunch | 69.6% | 47.2% | 22.4% *** |
| Not eligible | 73.3% | 58.4% | 14.9% *** |

Note: *** Statistically significant at .01 level.

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015.

⁶ The dependent variables used in the models included demographic and socio-economic traits as well as measures of the strength of young adult labor market during the first half of 2016. See Appendix A for a more complete description of these models.

The findings provided in Table 8 above examine the JAG graduate E/P ratio in relation to the expected E/P ratio estimated after applying the results of our CPS logistic regression model. The actual employment rate of JAG graduates at the time of the follow-up was 17.2 percentage points higher than the 49.5 percent predicted E/P ratio. The size of the employment rate advantage for JAG program high school graduates was quite substantial for both male and female graduates (16.3% and 18.0% respectively) compared to the predicted ratio for this population.

The size of the employment rate differences varied somewhat across race/ethnic categories of students. White students had an E/P ratio of 75.1 percent at the time of the spring 2016 follow-up while the adjusted reference population had an estimated employment rate of 55.4 percent, a 19.6 percentage point difference. Hispanic JAG graduates had similarly high E/P ratio and employment rate advantage. Asian JAG graduates also had a quite large adjusted employment rate advantage of 20.1 percentage points. Black JAG graduates had an E/P ratio of 57.2 percent relative to a regression estimated 43.3 percent for the adjusted reference measure. Large employment rate advantages were also found for low-income JAG high school graduates. The lowest income JAG high school graduates had an employment rate of 63.8 percent at the time of the follow-up, while the E/P ratio predicted for the adjusted reference population was 46.4 percent—a difference of 17.5 percentage points.

The differences in full-time employment rates between JAG graduates and the CPS predicted reference E/P ratios were quite large. As we observed earlier, JAG graduates were very likely to work in full-time positions a year after high school completion with 47 out of 100 JAG graduates employed in full-time positions. The JAG graduate full-time employment rate was 26.7 percentage points higher than the predicted E/P of 20.6 percent ratio for the reference population. Similarly, large and positive differences were found in full-time employment rates for both young men and women graduates as well as for race/ethnic groups.

The full-time E/P ratio for young men who were members of the JAG class of 2015 had an employment rate of 54.5 percent, 25.6 percentage points higher than the CPS regression predicted full-time E/P ratio of 25.3 percent. Young women who participated in the JAG program had an actual full-time E/P ratio that was 27.6 percentage points higher than that predicted for the reference population. White, non-Hispanic JAG graduates had a full-time E/P ratio advantage of 28.4 percent, with Black and Hispanic JAG graduates achieving similar full-

time employment rate advantages of 25.5 and 23.3 percentage points, respectively. The 28.6 percent full-time employment rate of Asian JAG graduates was much lower than for other

Table 9:
Full-Time Employment to Population Ratios of the Class of 2015 JAG Graduates and Regression Adjusted CPS Predicted Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | CPS Regression Predicted E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|------------------------------------|------------------------------|
| All | 47.2% | 20.5% | 26.7% *** |
| Gender | | | |
| Male | 50.8% | 25.3% | 25.6% *** |
| Female | 44.4% | 16.8% | 27.6% *** |
| Race/Ethnicity | | | |
| White | 54.5% | 26.1% | 28.4% *** |
| Black | 39.1% | 13.6% | 25.5% *** |
| Asian | 28.6% | 16.8% | 11.8% *** |
| Hispanic | 53.6% | 30.3% | 23.3% *** |
| Other | 45.1% | 15.3% | 29.8% *** |
| Living Arrangements | | | |
| Both parents | 49.5% | 19.7% | 29.8% *** |
| Mother only | 44.3% | 17.1% | 27.2% *** |
| Father only | 48.0% | 26.0% | 22.0% *** |
| Other | 48.6% | 32.5% | 16.1% *** |
| Income Status | | | |
| Eligible for free lunch | 45.2% | 18.5% | 26.7% *** |
| Eligible for subsidized lunch | 50.0% | 18.5% | 31.5% *** |
| Not eligible | 51.7% | 26.4% | 25.3% *** |

Note: *** Statistically significant at .01 level.

** Statistically significant at .05 level.

* Statistically significant at .10 level.

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

race/ethnic groups, yet this rate was 11.8 percentage points higher than that predicted for Asians from the CPS full-time employment regression model.

The JAG graduate full-time employment rate was quite substantial across all three income group classification included in our analysis. The full-time E/P ratio for the lowest

income students was 45.2 percent, a 26.7 percentage point advantage relative to the predicted full-time E/P ratio for the low-income reference population.

We noted earlier that nearly one-half of all JAG graduates were not enrolled in college at the time of the follow-up survey. For these individuals, work experience becomes the primary potential source of further human capital development and is the primary context in which they are making important life decisions about many important decisions about family, work, and

Table 10:
Employment to Population Ratios of the Class of 2015 JAG Graduates *Not Enrolled in College* and Regression Adjusted CPS Predicted Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | CPS Regression Predicted E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|------------------------------------|------------------------------|
| All | 80.9% | 58.3% | 22.6% *** |
| Gender | | | |
| Male | 81.7% | 60.2% | 21.5% *** |
| Female | 80.1% | 56.4% | 23.8% *** |
| Race/Ethnicity | | | |
| White | 83.5% | 64.0% | 19.5% *** |
| Black | 76.8% | 51.8% | 25.1% *** |
| Asian | 75.0% | 53.9% | 21.1% *** |
| Hispanic | 84.3% | 61.2% | 23.1% *** |
| Other | 78.5% | 43.4% | 35.1% *** |
| Living Arrangements | | | |
| Both parents | 84.2% | 62.0% | 22.2% *** |
| Mother only | 78.6% | 50.4% | 28.2% *** |
| Father only | 82.1% | 65.1% | 17.1% *** |
| Other | 76.3% | 65.6% | 10.7% *** |
| Income Status | | | |
| Eligible for free lunch | 78.4% | 54.2% | 24.2% *** |
| Eligible for subsidized lunch | 80.0% | 55.9% | 24.1% *** |
| Not eligible | 87.9% | 69.9% | 18.0% *** |

Note: *** Statistically significant at .01 level.

** Statistically significant at .05 level.

* Statistically significant at .10 level.

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

school as well as important short-term decisions that can exert powerful long-term life impacts.⁷

The employment rate of out of school JAG graduates is sharply above the CPS regression predicted employment rate for the adjusted reference population. The JAG non-enrolled high school graduate E/P ratio was 80.9 percent during the spring of 2016, a 22.6 percentage point advantage relative to predicted employment rate of 58.3 percent. Non-enrolled JAG males had a 21.5 percentage points E/P ratio advantage while JAG female graduates had an employment rate advantage of 23.8 percentage points.

The E/P ratios for non-enrolled JAG graduates were much greater for all four race/ethnic categories relative to the adjusted reference population. The CPS regression findings when compared with JAG graduate follow-up data predicted an employment rate advantage of 19.5 percent for non-enrolled White graduates, a 25.1 percent advantage for non-enrolled Black JAG graduates, a 21.1 percent advantage for Asian graduates, and a 23 percent advantage for non-enrolled Hispanic graduates.

The employment rates of non-enrolled low-income JAG graduates were substantially higher than those observed in the adjusted reference population measure. Out of school JAG graduates in the lowest income category had an E/P ratio of 78.4 percent compared to their adjusted reference group counterparts who had a predicted employment rate of 24.2 percent.

Nearly one-half of all JAG graduates from the class of 2015 were enrolled in college during the spring of 2015. In a prior section of this paper we found that JAG graduates who were enrolled in school often engaged in work activities as well. Motives for students working while in school can vary sharply, but whatever the motive, students who work while in school are developing their human capital along two dimensions: independent gains to long-term employability and earnings power associated with additional work experience and the potential employment and earnings gains that are achieved if a degree or certificate is earned from an institution of higher learning.

JAG graduates who were enrolled in college during the spring of 2016 had an employment rate of 52.0 percent, an E/P ratio that was 10.1 percentage points higher than the 41.9 percent predicted for the adjusted CPS reference population. The size of the employment

⁷ See Sally Satel, "Taking on the Scourge of Opioids", *National Affairs*, Number 32, Summer, 2017. For the role that the absence of work potentially plays in opioid abuse and the subsequent life consequences of this abuse.

rate advantage for enrolled JAG graduates was somewhat higher for young women (+11.2%) relative to young men (+ 8.5%).

Table 11:
Employment to Population Ratios of the Class of 2015 JAG Graduates *Enrolled in College* and Regression Adjusted CPS Predicted Reference Population, Spring 2016

| Group | JAG Graduate E/P Ratio | CPS Regression Predicted E/P Ratio | Percentage Points Difference |
|-------------------------------|------------------------|------------------------------------|------------------------------|
| All | 52.0% | 41.9% | 10.1% *** |
| Gender | | | |
| Male | 50.2% | 41.7% | 8.5% *** |
| Female | 53.1% | 41.9% | 11.2% *** |
| Race/Ethnicity | | | |
| White | 63.1% | 44.0% | 19.1% *** |
| Black | 43.2% | 38.8% | 4.4% *** |
| Asian | 40.0% | 24.5% | 15.5% * |
| Hispanic | 62.2% | 49.3% | 12.9% *** |
| Other | 45.4% | 48.0% | -2.6% |
| Living Arrangements | | | |
| Both parents | 54.9% | 40.5% | 14.4% *** |
| Mother only | 49.6% | 40.9% | 8.7% *** |
| Father only | 52.3% | 41.9% | 10.4% *** |
| Other | 48.7% | 53.2% | -4.4% * |
| Income Status | | | |
| Eligible for free lunch | 48.4% | 40.0% | 8.4% *** |
| Eligible for subsidized lunch | 58.7% | 40.3% | 18.3% *** |
| Not eligible | 58.9% | 47.1% | 11.9% *** |

Note: *** Statistically significant at .01 level.

** Statistically significant at .05 level.

* Statistically significant at .10 level.

Source: U.S. Bureau of the Census, Current Population Survey, PUMS files January-May 2016, tabulations by Center for Labor Markets and Policy, Drexel University, July 2017 and JAG Unit Record Data Files, Graduating Class of 2015

JAG graduate members of various race/ethnic groups who were enrolled in college generally were substantially more likely to work while in school relative to the adjusted reference population. White, Asian, and Hispanic enrolled graduates had employment rates that were 19.1, 15.5, and 12.9 percentage points higher than the predicted E/P ratio for the reference

population. The lowest income JAG graduates were less likely to work while enrolled in college with an employment rate of 48.8 percent compared to higher income JAG graduates. However, their employment rate was still 8.4 percentage points higher than that predicted for the reference population.

For example, the JAG population is disproportionately concentrated among Black, single mother, and low-income status graduates. Each one of the population groups are likely to have a lower employment rate, however, when all three traits are found in one individual they are likely to interact in a way that further reduces the probability of employment for that person. Unfortunately, these types of interactions inhibit the ability of direct comparisons of outcomes even when such comparisons are made within demographic and socio-economic groups as we did above. The simple comparison that we provide above can best be thought of as the lower limit of the difference between the JAG employment outcomes and those of the unadjusted reference group.

This is unsurprising given that the adjusted reference group partially accounts for the more disadvantaged population served by JAG relative to the general population of young adult high school graduates in the reference states.

Appendix A-1: A Listing and Definitions of the Dependent and Independent Variables Appearing in the Logit Regression Models

In this report, three sets of logit regression models were used to predict probability of employment/full-time employment at the time of the January-May 2016 CPS surveys for CPS reference high school graduate population, 18- to 20-year-old, residing in 28 JAG states used in the report. In logit regression model, the effects of predictor variables on a dichotomous (0, 1) dependent variable are estimated.

$$\text{Logit}(p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + e ,$$

Where, $\text{Logit}(p) = \ln(p/[1-p])$

Here, p = probability of outcome of dichotomous variable (0, 1),

$\ln(p/[1-p])$ = natural log of the odds of the outcome of dichotomous dependent variable,

β_0 = regression intercept

$\beta_1 \dots \beta_n$ = regression coefficients of predictor variables ($X_1 \dots X_n$)

e = error term in regression

When predicting probability of employment/full-time employment for an individual from logit regression coefficients, the following formula was used,

| |
|---|
| $\text{Probability of employment} = \frac{1}{e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n)} + 1}$ |
|---|

where e stands for the exponent and $\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$, stand for the predicted parameters of the logit model.

The three sets of regression were for (1) all high school graduates (enrolled and non-enrolled combined), (2) high school graduates enrolled in colleges, and (3) high school graduates not enrolled in colleges. Tables in Appendix A-2 and A-3 display logit regression results for the groups selected in the study. Descriptions of the variables used in these models are presented below.

| Variable | Definition |
|-------------------------------------|--|
| <u>Dependent Variables</u> | |
| employed | Employment status of the respondent 1 = if employed at a time of January to May 2016 CPS survey 0 = otherwise |
| ft_employed | Full time employment of the respondent (weekly hours \geq 35) 1 = if employed full-time at a January to May 2016 CPS survey 0 = otherwise |
| <u>Independent Variables</u> | |
| male | The gender of the respondent 1 = if male 0 = if female |
| white | The race/ethnic status of the respondent 1 = White, not Hispanic 0 = all other |
| black | The race/ethnic status of the respondent 1 = Black, not Hispanic 0 = all other |
| hispanic | The race/ethnic status of the respondent 1 = Hispanic 0 = all other |
| asian | The race/ethnic status of the respondent 1 = Asian, not Hispanic 0 = all other |
| other_races | The race/ethnic status of the respondent 1 = All "Other" Races, not Hispanic 0 = all other |
| age_18 | The age of the respondent 1 = if 18 at the time of follow-up 0 = otherwise |
| age_20 | The age of the respondent 1 = if 20 at the time of follow-up 0 = otherwise |
| free_sub | The income status of the respondent's family 1 = if the respondent belongs to a low-income family (eligible for free/subsidized lunch) 0 = all other |
| liv_father | The living arrangements at the time of the interview 1 = if the respondent lived with father only. Mother is not present 0 = all other |

| | |
|------------------|--|
| liv_mother | The living arrangement at the time of the interview 1 = if the respondent lived with mother only. Father is not present 0 = all other |
| liv_allother | The living arrangements at the time of the interview 1 = if the respondent lived by himself, with other relatives, etc. 0 = all other |
| college_enrolled | Follow up status of the respondent 1 = if the respondent was enrolled in college at the time of January to May 2016 CPS survey 0 = not enrolled in college |
| teen_st_ep_2016 | State employment to population ratio of 16-to-19 year old in 2016* |

Note: * Estimates of employment-to-population ratio of teens in 2016 by state were taken from the U.S. Bureau of Labor Statistic's publication.

Appendix A-2: Results of Logit Regressions Analysis of Probability of Employment for CPS Reference Group Used in the Study with January-May 2016 CPS Data

Table A2-1:
Logit Regression on Probability of Employment of All 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err. | z | P>z |
|------------------|--------|-----------|------|-------|
| male | 0.083 | 0.06 | 1.3 | 0.190 |
| black | -0.092 | 0.09 | -1.1 | 0.292 |
| hispanic | 0.216 | 0.09 | 2.4 | 0.016 |
| asian | -0.740 | 0.22 | -3.3 | 0.001 |
| other_races | -0.341 | 0.15 | -2.3 | 0.025 |
| age_18 | -0.256 | 0.08 | -3.2 | 0.002 |
| age_20 | 0.065 | 0.07 | 0.9 | 0.377 |
| free_sub | -0.452 | 0.07 | -6.6 | 0.000 |
| liv_father | 0.175 | 0.11 | 1.5 | 0.124 |
| liv_mother | -0.096 | 0.08 | -1.1 | 0.256 |
| liv_allother | 0.486 | 0.09 | 5.4 | 0.000 |
| college_enrolled | -0.655 | 0.07 | -9.9 | 0.000 |
| teen_st_ep_2016 | 0.027 | 0.00 | 5.9 | 0.000 |
| constant | -0.283 | 0.17 | -1.7 | 0.092 |
| N | 4,487 | | | |

Table A2-1:
Logit Regression on Probability of Employment of **College Enrolled** 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err. | z | P>z |
|-----------------|--------|-----------|------|-------|
| male | -0.014 | 0.10 | -0.2 | 0.884 |
| black | -0.040 | 0.14 | -0.3 | 0.774 |
| hispanic | 0.373 | 0.15 | 2.5 | 0.012 |
| asian | -0.877 | 0.30 | -2.9 | 0.003 |
| other_races | 0.232 | 0.24 | 1.0 | 0.337 |
| age_18 | -0.062 | 0.12 | -0.5 | 0.592 |
| age_20 | 0.069 | 0.13 | 0.5 | 0.593 |
| free_sub | -0.319 | 0.12 | -2.7 | 0.007 |
| liv_father | 0.106 | 0.19 | 0.6 | 0.580 |
| liv_mother | 0.141 | 0.14 | 1.0 | 0.304 |
| liv_allother | 0.629 | 0.16 | 3.9 | 0.000 |
| teen_st_ep_2016 | 0.022 | 0.01 | 3.1 | 0.002 |
| constant | -0.944 | 0.25 | -3.8 | 0.000 |
| N | 1,748 | | | |

Table A2-1:
Logit Regression on Probability of Employment of **Not College Enrolled** 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err | z | P>z |
|-----------------|--------|----------|------|-------|
| male | 0.118 | 0.08 | 1.4 | 0.156 |
| black | -0.142 | 0.11 | -1.3 | 0.208 |
| hispanic | 0.109 | 0.11 | 1.0 | 0.334 |
| asian | -0.449 | 0.37 | -1.2 | 0.222 |
| other_races | -0.713 | 0.19 | -3.7 | 0.000 |
| age_18 | -0.466 | 0.11 | -4.1 | 0.000 |
| age_20 | -0.010 | 0.09 | -0.1 | 0.917 |
| free_sub | -0.547 | 0.08 | -6.5 | 0.000 |
| liv_father | 0.163 | 0.14 | 1.1 | 0.259 |
| liv_mother | -0.285 | 0.11 | -2.7 | 0.008 |
| liv_allother | 0.369 | 0.11 | 3.4 | 0.001 |
| teen_st_ep_2016 | 0.030 | 0.01 | 5.1 | 0.000 |
| constant | -0.169 | 0.22 | -0.8 | 0.439 |
| N | 2,739 | | | |

Appendix A-3: Results of Logit Regressions Analysis of Probability of Full-Time Employment for CPS Reference Group Used in the Study with January-May 2016 CPS Data

TableA3-1:
Logit Regression on Probability of Full-Time Employment of All 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err. | z | P>z |
|------------------|--------|-----------|-------|-------|
| male | 0.356 | 0.08 | 4.7 | 0.000 |
| black | -0.399 | 0.11 | -3.6 | 0.000 |
| hispanic | 0.523 | 0.10 | 5.2 | 0.000 |
| asian | -0.356 | 0.31 | -1.1 | 0.257 |
| other_races | -0.593 | 0.21 | -2.9 | 0.004 |
| age_18 | -0.503 | 0.11 | -4.6 | 0.000 |
| age_20 | 0.367 | 0.08 | 4.4 | 0.000 |
| free_sub | -0.526 | 0.08 | -6.5 | 0.000 |
| liv_father | 0.388 | 0.13 | 3.0 | 0.003 |
| liv_mother | 0.115 | 0.10 | 1.1 | 0.271 |
| liv_allother | 0.866 | 0.10 | 8.9 | 0.000 |
| college_enrolled | -1.616 | 0.09 | -17.4 | 0.000 |
| teen_st_ep_2016 | 0.019 | 0.01 | 3.7 | 0.000 |
| constant | -1.418 | 0.20 | -7.1 | 0.000 |
| N | 4,487 | | | |

Table A3-2:
Logit Regression on Probability of Full-Time Employment of **College Enrolled** 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err. | z | P>z |
|-----------------|--------|-----------|------|-------|
| male | -0.008 | 0.17 | 0.0 | 0.964 |
| black | -0.174 | 0.25 | -0.7 | 0.491 |
| hispanic | 1.039 | 0.20 | 5.1 | 0.000 |
| asian | -2.545 | 1.37 | -1.9 | 0.062 |
| other_races | -1.634 | 0.84 | -1.9 | 0.052 |
| age_18 | -0.481 | 0.23 | -2.1 | 0.038 |
| age_20 | 0.639 | 0.20 | 3.3 | 0.001 |
| free_sub | -0.276 | 0.20 | -1.4 | 0.162 |
| liv_father | 0.533 | 0.30 | 1.8 | 0.076 |
| liv_mother | 0.112 | 0.24 | 0.5 | 0.644 |
| liv_allother | 0.962 | 0.24 | 4.1 | 0.000 |
| teen_st_ep_2016 | 0.016 | 0.01 | 1.3 | 0.183 |
| constant | -3.023 | 0.43 | -7.1 | 0.000 |
| N | 1,748 | | | |

Table A3-3:
Logit Regression on Probability of Full-Time Employment of **Not College Enrolled** 18- to 20-Year-Old High School Graduates Residing in 28 JAG States, January-May 2016

| | Coef. | Std. Err. | z | P.z |
|-----------------|--------|-----------|------|-------|
| male | 0.450 | 0.09 | 5.3 | 0.000 |
| black | -0.459 | 0.12 | -3.8 | 0.000 |
| hispanic | 0.363 | 0.11 | 3.3 | 0.001 |
| asian | 0.291 | 0.38 | 0.8 | 0.442 |
| other_races | -0.465 | 0.22 | -2.1 | 0.032 |
| age_18 | -0.512 | 0.13 | -4.1 | 0.000 |
| age_20 | 0.298 | 0.09 | 3.3 | 0.001 |
| free_sub | -0.580 | 0.09 | -6.7 | 0.000 |
| liv_father | 0.340 | 0.14 | 2.4 | 0.017 |
| liv_mother | 0.078 | 0.12 | 0.7 | 0.500 |
| liv_allother | 0.836 | 0.11 | 7.8 | 0.000 |
| teen_st_ep_2016 | 0.020 | 0.01 | 3.5 | 0.001 |
| constant | -1.398 | 0.22 | -6.3 | 0.000 |
| N | 2,739 | | | |