

## APPENDIX 1

### BLS Education and Training Brief

BLS education and training requirements for occupations as part of their projections methodology remain somewhat vague. Based on comparisons with actual survey data (ACS and CPS), the BLS often assigns disproportional career pathways, particularly for those with relatively lower education levels. In this appendix, we demonstrate the extent of the disparities.

TABLE 1 : Share of current employment by educational attainment vs. BLS suggested education required for entry

		Share of current employment (%)						
		Less than high school	High school diploma	Some college/ no degree	Associate's degree	Bachelor's degree	Master's degree	PhD or professional
Typical education for entry	Less than high school	27	42	18	5	6	1	0
	High school diploma	13	37	25	9	13	3	1
	Some college/no degree	4	21	27	11	29	7	1
	Postsecondary/no degree	7	31	31	14	14	2	1
	Associate's degree	3	18	26	25	23	4	2
	Bachelor's degree	1	8	14	7	42	21	7
	Master's degree	1	4	7	5	27	41	16
	PhD or professional degree	0	1	3	2	15	15	63

■ We use green shading when the largest share of jobs requires the same education level that the BLS typically requires for entry.

■ We use yellow shading when the largest share of jobs requires the same education level that the BLS typically requires for entry.

Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010. Row percentages may not sum up to 100 percent due to rounding.

**TABLE 1: SHARE OF CURRENT EMPLOYMENT BY EDUCATIONAL ATTAINMENT VS. BLS SUGGESTED EDUCATION REQUIRED FOR ENTRY**

Table 1 compares the BLS suggested education required for an entry-level position and the actual education-levels held by workers in those occupations, as seen in the Census data. For the typical job requiring less than high school, 27 percent are high school dropouts, but 42 percent have high school diplomas. Thus, over 70 percent of occupations suited for those with less than a high school diploma, according to the BLS, are in fact held by higher-educated workers. Further, these workers are paid a wage premium—more than their high school colleagues are paid for the same position—suggesting that higher educated workers in these jobs cannot simply be designated as over-qualified. Rather postsecondary education conditions the occupation and adds value to the way tasks are performed. For this reason, employers willing to pay a wage premium reflect the increasing marginal productivity of labor with postsecondary education.

On the other hand, occupations requiring relatively higher-education, particularly those requiring a Bachelor's degree or better, tend to demonstrate the greatest amount of consistency between BLS assignments and survey data. That is, those entering the labor force with higher educational attainment end up working alongside similarly educated colleagues. In other words, far fewer lower-educated workers hold a significant share of employment in occupations that typically require a PhD or a professional degree for job market entry. This is not true for lower-skilled positions, however. Similarly, those with some college/ no degree see their respective share of employment (27%) sandwiched between college graduates (29%) share and high school graduates (21%). The “high school for entry” assignment is consistent as reflected by the dominant share of high-school graduate employment (37%), but nearly half of workers in these jobs are better educated.

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**TABLE 2: AVERAGE EDUCATION DISTRIBUTION WITHIN EACH BLS EDUCATION AND TRAINING CATEGORY**

Table 2 demonstrates similar consistency when it comes to higher-educated career paths. On average, occupations that are deemed to require a Bachelor's or better in fact employ a majority share of such workers. It can also be seen that jobs demanding on-the-job training are predominantly taken by workers with less than a college degree. For example, over half of workers employed in occupations that rely on medium-term on-the-job-training have no more than a high school degree.

**SUGGESTED “ON-THE-JOB TRAINING” AND “EDUCATION FOR ENTRY” USED BY THE BLS ARE:**

- *Internship/residency*: preparation in a field such as medicine or teaching. This training is conducted under supervision in a professional setting, such as a hospital or classroom. Completion is mandatory for state licensure or certification in many fields including medicine, counseling, architecture, and teaching.
- *Apprenticeship*: formal relationship between a worker and sponsor. The apprenticeship combines on-the-job training and occupation-specific technical instruction, during which the worker learns the practical and theoretical aspects of an occupation. Completion typically requires 144 hours of technical instruction and 2,000 hours on-the-job training per year for three to five years.
- *Long-term on-the-job training*: more than 12 months of training or combined work experience and formal class instruction needed to attain competency. This training does not include apprenticeships.

TABLE 2: Average education distribution within each BLS education and training category.

	Less than high school	High school diploma	Some college/ no degree	Associate's degree	Bachelor's degree	Master's degree	PhD or professional degree
PhD or professional degree	0.2	1.2	3.1	2.2	14.8	15.1	63.4
Master's degree	0.6	3.6	7.2	4.6	27	41.4	15.5
Bachelor's degree or better, with work experience	1.3	8.2	15.1	6.5	39.2	20.2	9.6
Bachelor's degree	1.2	7.8	13.2	7.3	43.2	21.0	6.3
Associate's degree	2.6	17.6	25.9	25.3	22.8	4.2	1.6
Postsecondary vocational training	6.8	30.7	31	14.3	13.9	2.3	1.0
Work experience in a related occupation	10.4	27.4	20.9	8.9	19.5	8.2	4.7
Long-term, on-the-job-training	9.4	30.8	25.8	10.7	17.7	4.4	1.0
Moderate-term, on-the-job-training	14.1	37	23.1	8.1	13.1	3.0	1.6
Short-term, on-the-job-training	17.0	36.3	23.4	8.0	11.8	2.3	1.2

Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

TABLE 3: Comparison of BLS education and training requirements and education among employed workers in 2008, and 2010.

\* Note: In this particular case, the column variables are mutually exclusive.

	BLS 2008		Labor Market		BLS 2010 <sup>a</sup>		Labor Market <sup>b</sup>	
	Education level (%)	Jobs in the economy ('000)	Education level (%)	Jobs in the economy ('000)	Education level (%)	Jobs in the economy ('000) <sup>c</sup>	Education level (%)	Jobs in the economy ('000) <sup>c</sup>
Total, all occupations	100	150,932	100	144,462	100	143,068	100	140,600
Postsecondary education <sup>d</sup>	25.1	37,884	57	82,340	25.2	36,053	59	82,950
First professional degree	1.3	2,001	2	2,890			2	2,810
PhD or professional degree	1.4	2,085	1	1,140	2.1	3,052	1	1,410
Master's degree	1.7	2,531	7	10,110	2.9	4,197	8	11,250
Bachelor's degree or better, with work experience	4.3	6,516	Unavailable	Unavailable	5.1	7,249	Unavailable	Unavailable
Bachelor's degree	12.3	18,584	20	28,890	11.2	16,024	21	29,530
Associate's degree	4.1	6,129	10	14,450	3.9	5,532	10	14,060
Some college/no degree	Unavailable	Unavailable	17	24,560	NA	NA	17	23,900
High school diploma or less	Unavailable	Unavailable	43	62,120	0.5	763	41	57,650
Post-secondary vocational training	5.8	8,787	Unavailable	Unavailable	5.1	7,249	Unavailable	Unavailable
Work experience in a related occupation	9.6	14,517	Unavailable	Unavailable	10.1	14,498	Unavailable	Unavailable
Long-term on-the-job-training	7.2	10,815	Unavailable	Unavailable	9.2	13,162	Unavailable	Unavailable
Moderate-term on-the-job-training	16.3	24,569	Unavailable	Unavailable	27.3	39,105	Unavailable	Unavailable
Short-term on-the-job-training	36	54,396	Unavailable	Unavailable	22.5	32,238	Unavailable	Unavailable

<sup>a</sup>Calculated using BLS training requirements data.

<sup>b</sup>CPS figures for prime-age workers (from projections tables).

<sup>c</sup>Disparity between number of jobs for BLS and labor market is a projection error.

<sup>d</sup>Postsecondary education includes all education levels higher than a high school diploma.

- *Moderate-term, on-the-job training*: roughly 1 to 12 months of training for workers to acquire the necessary skills. This training is occupation-specific, as opposed to job-specific; thus skills learned should be transferable. It includes employer-sponsored training programs.
- *Short-term, on-the-job training*: a month or less of on-the-job experience and informal training suffices competency in an occupation. Skills learned should be transferable.
- *Postsecondary/non-degree award*: entry leads to an award or certification, not a degree. Training can last from several weeks to a few years. Examples of occupations in this group include nursing aides, EMTs, and hair stylists.

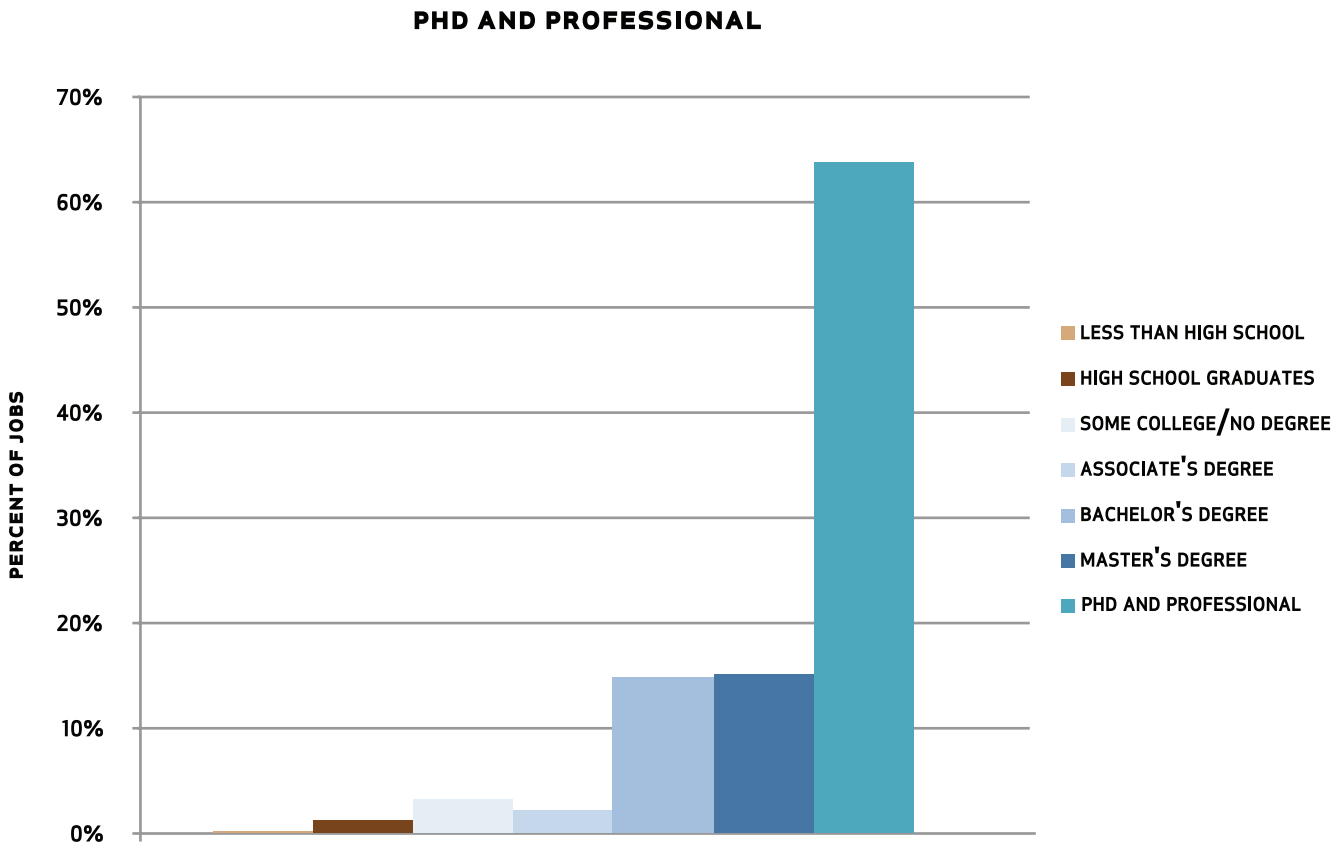
**TABLE 3. COMPARISON OF BLS EDUCATION AND TRAINING REQUIREMENTS AND EDUCATION AMONG EMPLOYED WORKERS IN 2008 AND 2010.**

Overall, 10 percent of occupations are assigned some sort of work experience and 59 percent come with a predetermined level of on-the-job training (excluding internships/residencies and apprenticeships). While there is no discernible pattern for on-the-job training and work experience assignments in “non-parity” occupations whose educational employment distribution is misaligned with the BLS assignment, Table 3 does reveal a recent BLS preference towards moderate-term on-the-job-training. Conversely, the share of occupations requiring short-term on-the-job training plunged 13.5 percentage points, from 36 percent to 22.5 percent. Finally, despite a rapidly changing job market, the BLS education requirements exhibit virtually no change in the share of jobs requiring postsecondary education.

**PHD OR PROFESSIONAL DEGREE DEMANDED FOR ENTRY**

Of the 25 occupations that typically require a PhD or professional degree for job entry, most had a dominant share of corresponding levels of educational attainment (Figure 1). All but eight occupations are suited for PhD/professional degrees. Master’s degree-holders represented a larger share of employment, yet none of the eight required experience or formal training.

FIGURE 1: PhD or professional degree for entry vs. true PhD employment



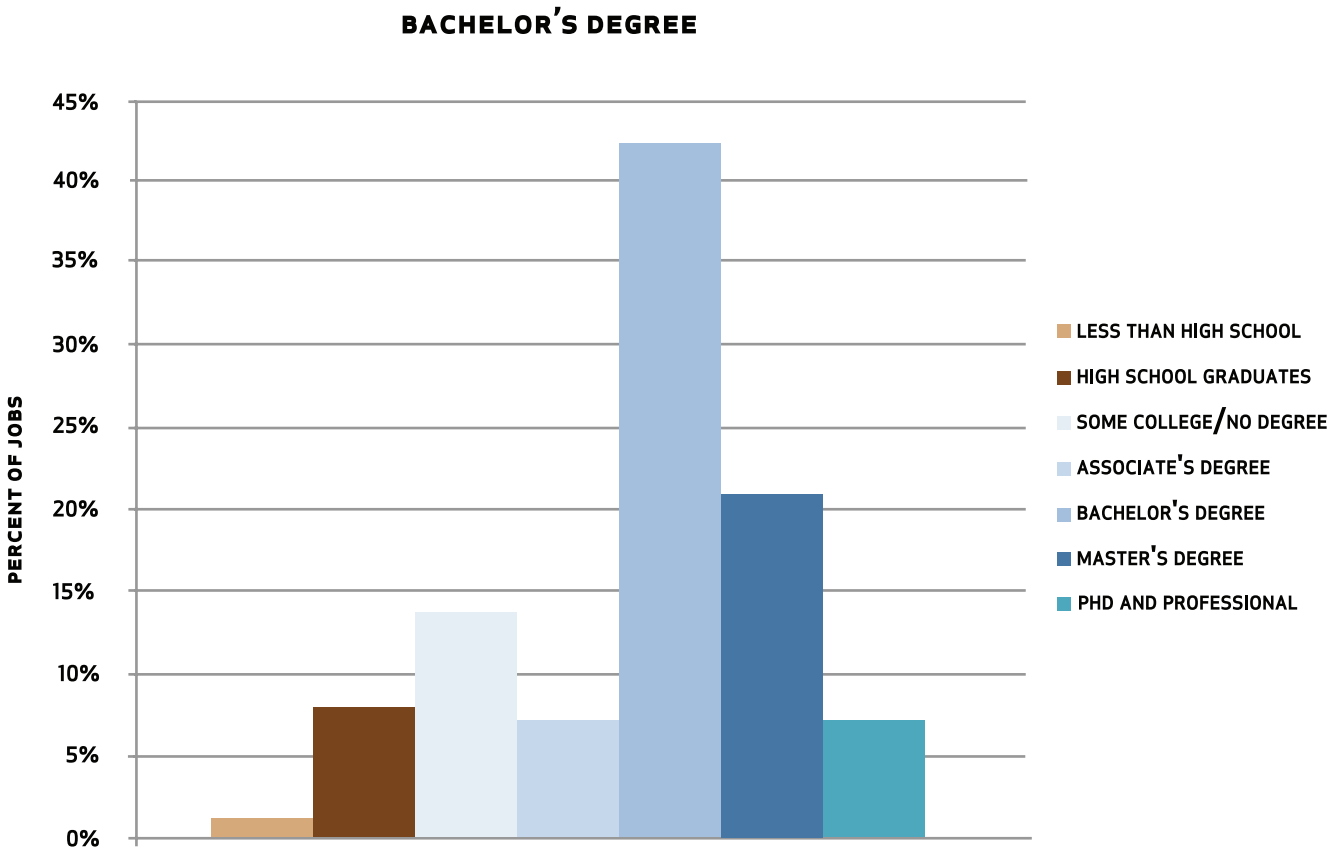
Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

**BACHELOR’S DEGREE DEMANDED FOR ENTRY**

Figure 2 is skewed left—as it should be. This group of occupations is the most balanced with respect to college graduates being employed in occupations appropriate for their degree level. While no occupations have a majority

of lower-educated workers, 20 occupations (13%) reveal higher educational standards, notably those with master’s degrees. Moreover, five of these 20 occupations seek internship or residency experience but not minimal on-the-job training.

FIGURE 2: Bachelor’s degree for entry vs. true employment



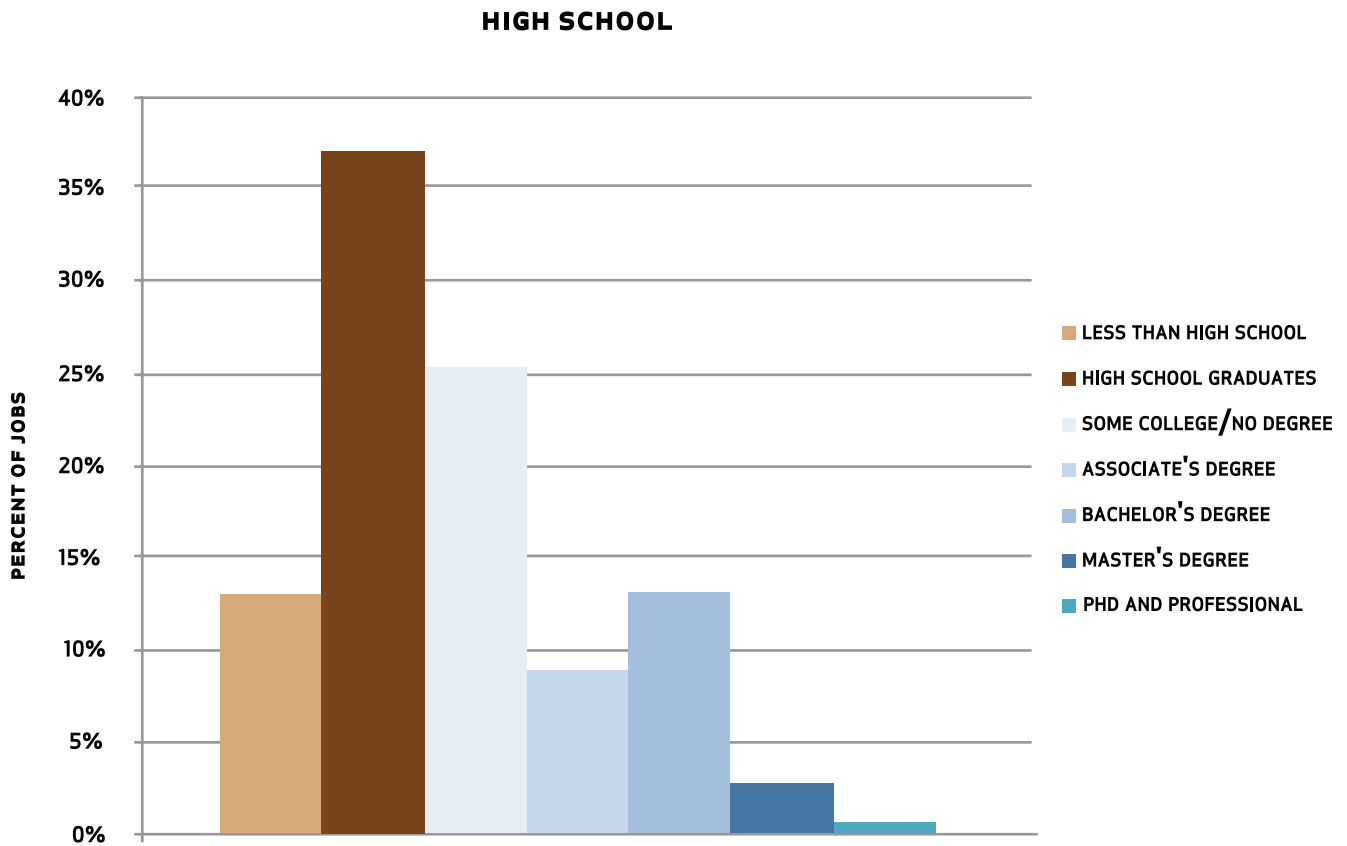
Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

**HIGH SCHOOL DEGREE DEMANDED FOR ENTRY**

Figure 3 shows that although high school graduates make up the bulk of their respective employment, a significant portion of better-educated workers are also employed within these occupations. More specifically, 108 of the 350 “high school entry” occupations are predominantly composed of workers with “some college” experience. These “over-qualified” occupations are also more likely to

demand some form of previous experience: 21 of 108 occupations compared to 22 of 237 “parity” occupations. On the other hand, occupations that are indeed dominated by high school graduates are deemed to require most of the apprenticeship experience. Only five cases show workers with less than high school hold a controlling share of “high school entry” occupations.

FIGURE 3: High school diploma for entry vs. true employment

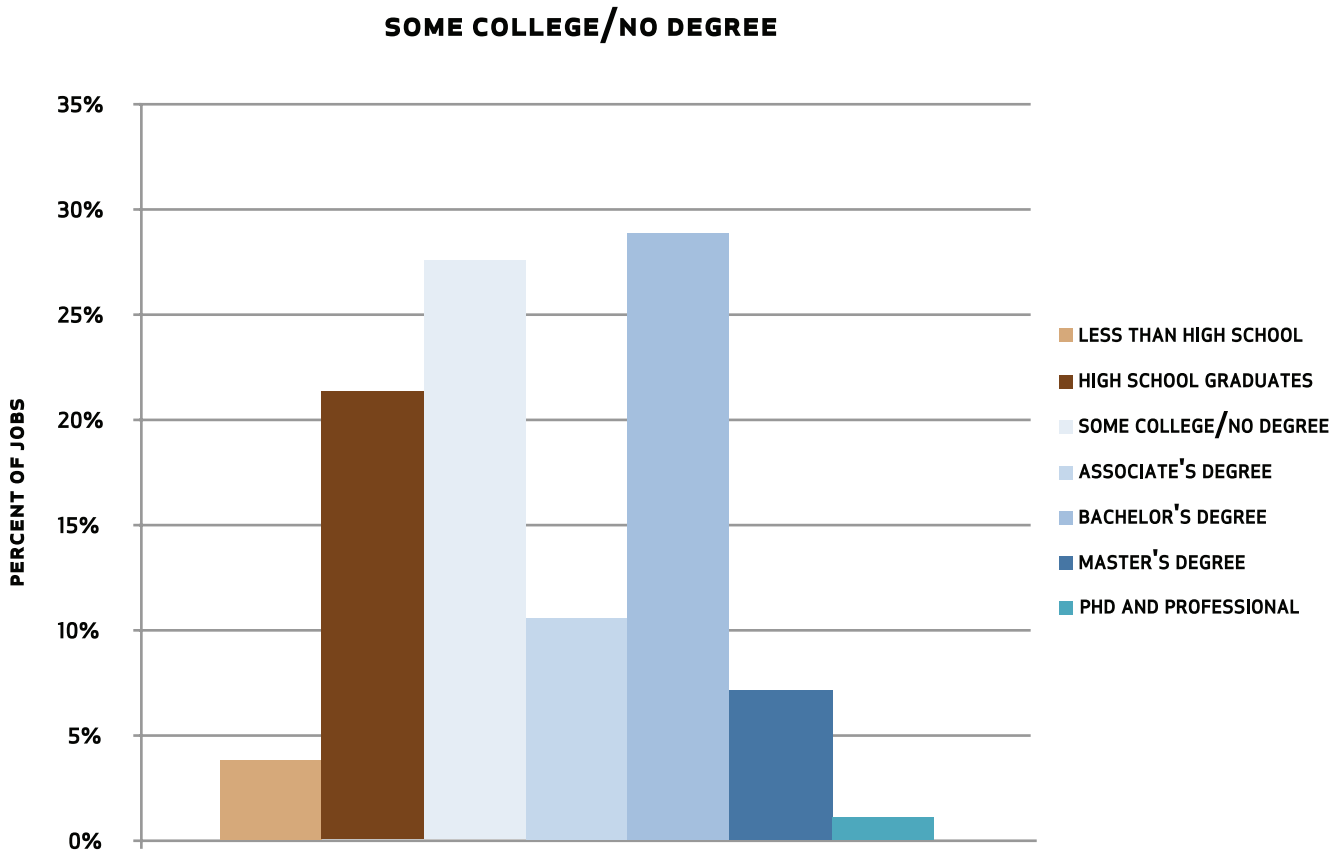


Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

### SOME COLLEGE/NO DEGREE DEMANDED FOR ENTRY

The mere six occupations making up this category are split with respect to educational distribution (Figure 4). However, in terms of overall employment, college graduates (28.8%) are a larger force in “some college” jobs than those with “some college” experience, which account for 27.4 percent of the employment.

FIGURE 4: Some college/no degree for entry vs. true employment

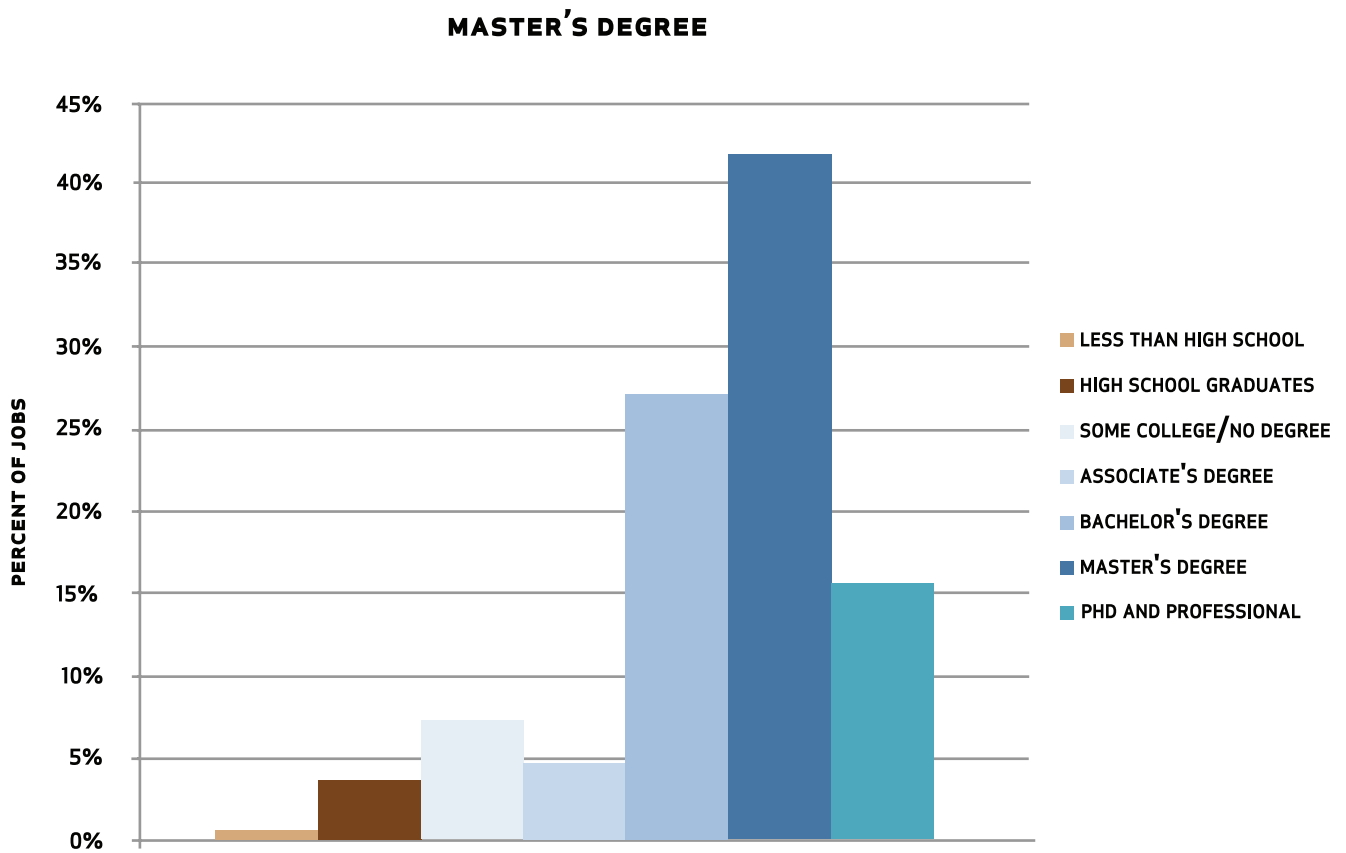


Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

### MASTER'S DEGREE DEMANDED FOR ENTRY

With well over half of individual occupations and 48 percent of total employment in “master’s entry” jobs, this is the second most consistent group of occupations after bachelor’s degrees (Figure 5). Previous training or experience is relatively insignificant for these occupations.

FIGURE 5: Master’s degree for entry vs. true employment



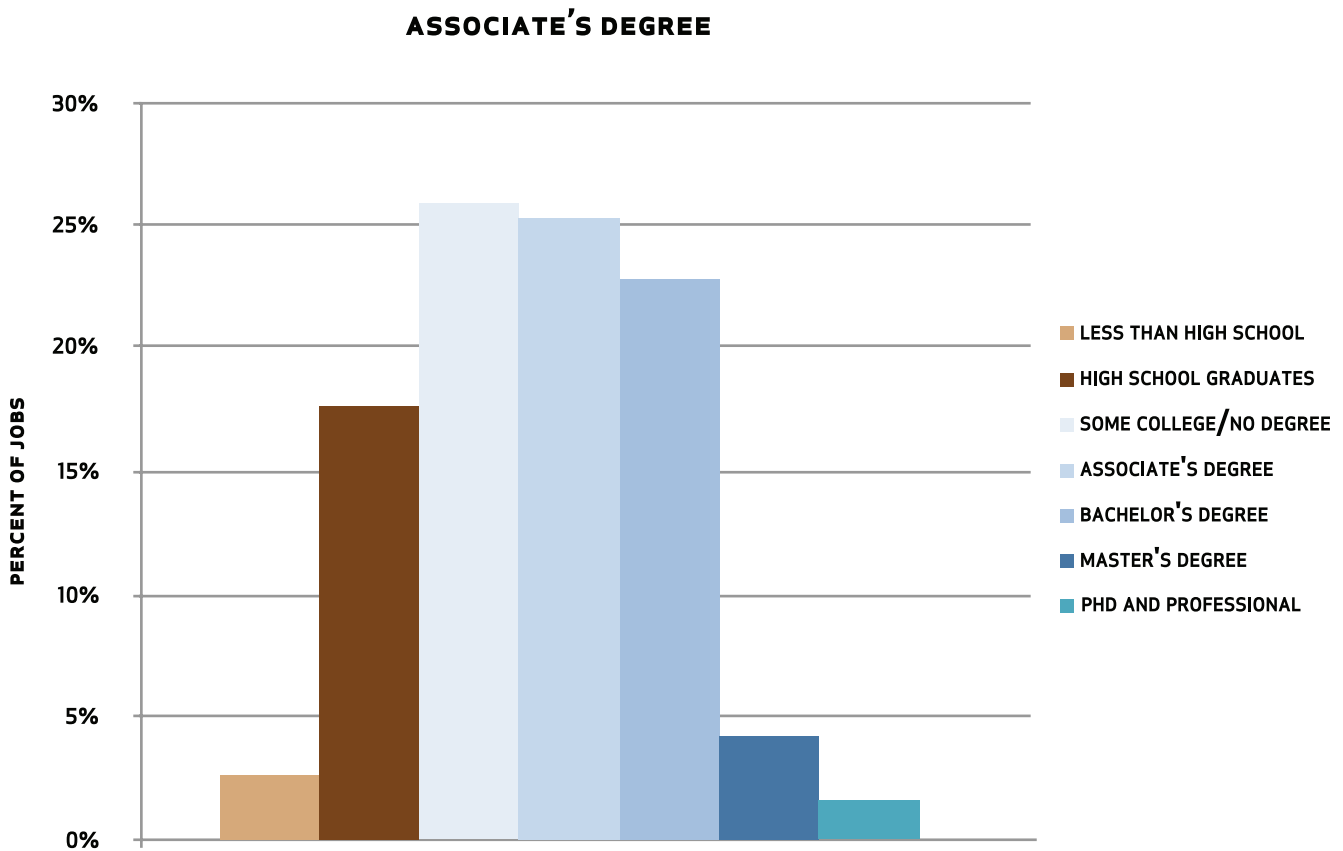
Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010



### ASSOCIATE'S DEGREE DEMANDED FOR ENTRY

This category is one of the most inconsistent with respect to employment distribution relative to its BLS assignment (Figure 6). The majority of occupations have either a bigger share of better-educated workers or alternatively, more lower-educated workers. The 32 occupations with a greater share of under-educated workers also tend to call for the bulk of on-the-job training requirements.

FIGURE 6: Associate's degree for entry vs. true employment

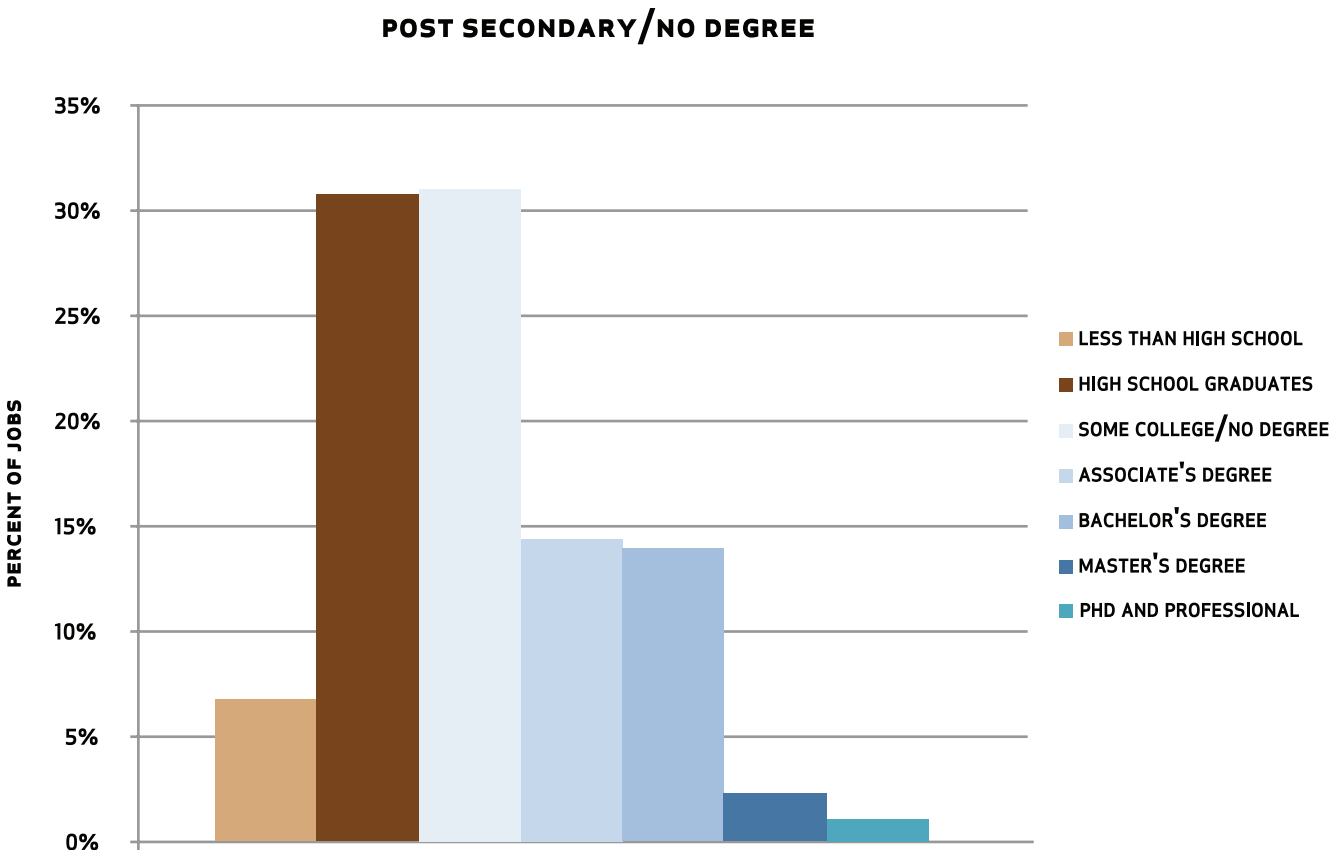


Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

**POSTSECONDARY/  
NO DEGREE EDUCATION DEMANDED FOR ENTRY**

The majority of occupations in this group are dominated either by high school graduates or those with some college experience (Figure 7). In the few cases of higher-educated workers controlling the larger share of the employment pie, such as for commercial pilots, these are college graduates, not associate’s degree-holders.

FIGURE 7: Postsecondary (no degree) for entry vs. true employment

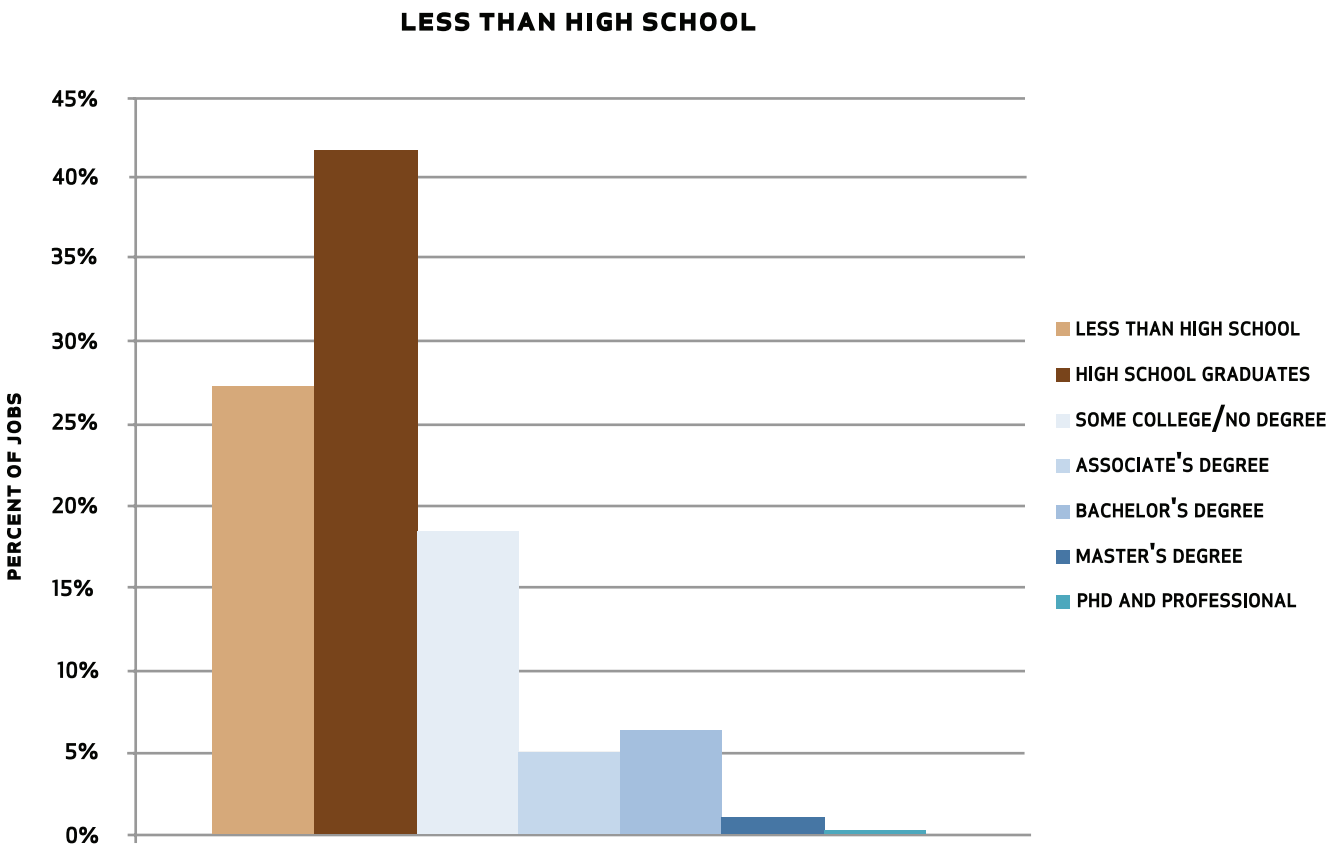


Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010

### LESS THAN HIGH SCHOOL DEMANDED FOR ENTRY

“Less than high school entry” is not as skewed right as the PhD assignment group is skewed left (Figure 8). This declining share of the labor force reflects the current premium for better-educated workers. The bulk of occupations (78 of 97) have a larger share of high school graduates than workers with less than high school. By the same token on-the-job training or previous experience is also reflected in this group.

FIGURE 8: Less than high school for entry vs. true employment



Source : Center on Education and the Workforce analysis of Current Population (CPS) and Bureau of Labor Statistics (BLS) data, 2008, 2010