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## **Building Blocks of Labor Market Success**

Evidence from O\*NET Job Analysis  
Surveys

**April 2013**





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# **Building Blocks of Labor Market Success**

Evidence from O\*NET Job Analysis Surveys

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**April 2013**

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# The Human Capital Requirements of Occupations

## EXECUTIVE SUMMARY

Over the last 20 years the U.S. Department of Labor's Employment and Training Administration has developed a comprehensive data system designed to systematically measure the human capital and related requirements of a wide range of occupations in the American economy. The Occupational Analysis Network, or O\*NET as it is commonly known, collects and analyzes information gathered from incumbent workers, supervisors, and occupational experts about a wide array of characteristics of each of over 900 occupations and of workers who are employed in these occupations. Based on an on-going sample surveys of well over 100,000 respondents, O\*NET develops a set of measures of worker abilities and behavioral traits as well as measures of occupational requirements including basic skills and occupational knowledge requirements.<sup>1</sup>

Data derived from these surveys are available to researchers to gain insight into key features of individual occupations or combined groups of occupations and better understand both worker traits and employer requirements of occupations. We have used these data to help provide some understanding of the human capital requirements of entry-level occupations where teen employment is most heavily concentrated. Furthermore, analysis of O\*NET data allow us to place the findings from our teen employer survey and from interviews with employers in the context of a large scale, systematic survey of the entire range of occupations in the nation's labor markets.

This report is a companion to a teen employment study released by Commonwealth Corporation and conducted by Drexel University's Center on Labor Markets and Policy and Commonwealth Corporation called Signaling Success: Boosting Teen Employment Prospects. The Signaling Success study summarizes findings from surveys, interviews and focus groups of 200 employers in industries that hire entry-level employees. The analysis of O\*NET data reinforces what we heard from employers. The following key findings emerge from analysis of O\*NET data:

- The skill requirements for most teen jobs are low and should not present a barrier to employment;
- Within skills that are required, oral comprehension and active listening ability appear to be the most critical in occupations in which teens work;
- In regard to behavioral traits, there is very little difference between the requirements of entry-level jobs/lower skilled jobs and higher skilled jobs. The behaviors: dependability, self-control, cooperation and integrity are important for all types of jobs.

<sup>1</sup> The O\*NET model is described in The O\*NET Content Model, National Center for O\*NET Development, undated [http://www.onetcenter.org/dl\\_files/ContentModel\\_Summary.pdf](http://www.onetcenter.org/dl_files/ContentModel_Summary.pdf)

<sup>2</sup> The O\*NET model is described in The O\*NET Content Model, National Center for O\*NET Development, undated [http://www.onetcenter.org/dl\\_files/ContentModel\\_Summary.pdf](http://www.onetcenter.org/dl_files/ContentModel_Summary.pdf)

<sup>3</sup> For example, the Job Zone hierarchy was recently used to develop a more objective definition of college labor market

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## THE HUMAN CAPITAL REQUIREMENTS OF OCCUPATIONS

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The ability of workers to contribute to the production and distribution of goods and services depends on the knowledge, skills, abilities and behaviors that workers bring to the production process, as well as the degree to which these human capital and behavioral traits are elements of the actual job duties associated with work in a given occupation. Indeed, at the heart of the hiring process is the need to match the human capital proficiencies of jobs seekers with the human capital requirements of a given occupation. Over the last 20 years the U.S. Department of Labor's Employment and Training Administration has developed a comprehensive data system designed to systematically measure the human capital and related requirements of a wide range of occupations in the American economy. The Occupational Analysis Network, or O\*NET as it is commonly known, collects and analyzes information gathered from incumbent workers, supervisors, and occupational experts about a wide array of characteristics of each of nearly 1000 occupations and of workers who are employed in these occupations. Based on an on-going sample survey of well over 100,000 respondents, O\*NET develops a set of measures of worker abilities and behavioral traits as well as measures of occupational requirements including basic skills and occupational knowledge requirements.<sup>2</sup>

The information used to develop the range of measures in O\*NET to gain insight into the nature of employment in an occupation is derived from a number of questionnaires that are administered to survey respondents. Each questionnaire focuses on different kinds of information about an occupation—ranging from basic skills requirements to worker behavioral traits. The O\*NET system employs 277 descriptors that provide occupation-specific information about the work tasks, skills, abilities, knowledge areas, work content, and work styles for each of the nearly 1,000 occupations in the Standard Occupational Classification system.

Data derived from these surveys are available to researchers to gain insight into key features of individual occupations or combined groups of occupations to better understand both worker traits and employer requirements of occupations. We have used these data to help provide some understanding of the human capital requirements of entry-level occupations where teen employment is most heavily concentrated. Furthermore, analysis of O\*NET data allow us to place the findings from our teen employer survey and from interviews with employers in the context of a large scale, systematic survey of the entire range of occupations in the nation's labor markets.

The O\*NET provides Job Zone classification of each occupation. Based on data gathered from occupational experts and incumbent workers regarding levels of education, experience, and training required to work in each occupation, the O\*NET classifies occupations into five levels of the Job Zone system. Each occupation in the O\*NET system is assigned to one of the five Job Zone levels that define the level of education, experience, job training, and specific

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<sup>2</sup> The O\*NET model is described in [The O\\*NET Content Model](http://www.onetcenter.org/dl_files/ContentModel_Summary.pdf), National Center for O\*NET Development, undated [http://www.onetcenter.org/dl\\_files/ContentModel\\_Summary.pdf](http://www.onetcenter.org/dl_files/ContentModel_Summary.pdf)



vocational training required to perform work in each occupation. Figure 1 contains descriptions of the five Job Zones in the O\*NET system (National Center for O\*NET Development, 2008). Job Zones serve as a shorthand way of identifying the education, training and experience required to perform work in an occupation and has been used to help identify key segments of the American labor market.<sup>3</sup>

**Figure 1**  
O\*NET  
Description of Job  
Zones

Requirement	Job Zone 1: Little or No Preparation Needed
Overall Experience	No previous work-related skill, knowledge, or experience needed
Job Training	Few days to a few months
Education	May require a high school diploma or GED; some may require a formal training course to obtain a license
Requirement	Job Zone 2: Some Preparation Needed
Overall Experience	Some previous work-related skill, knowledge, or experience may be helpful but is usually not needed
Job Training	Few months to one year
Education	Usually require a high school diploma and may require some vocational training or job-related course work
Requirement	Job Zone 3: Medium Preparation Needed
Overall Experience	Previous work-related skill, knowledge, or experience required
Job Training	One to two years
Education	Usually require training in vocational schools, related on-the-job experience, or associate's degree; some may require bachelor's degree
Requirement	Job Zone 4: Considerable Preparation Needed
Overall Experience	Minimum of two to four years of work-related skill, knowledge, or experience is needed
Job Training	Usually require several years of work-related experience, on-the-job training, and/or vocational training
Education	Usually require four-year bachelor's degree, but some do not
Requirement	Job Zone 5: Extensive Preparation Needed
Overall Experience	Extensive skill, knowledge, and experience are needed; many require more than five years of experience
Job Training	May require some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training
Education	Bachelor's degree is the minimum formal education required; however, many also require graduate school—for example, may require master's degree, and some require Ph.D., M.D., or J.D. (law degree).

Source: National Center for O\*NET Development. (2008). Procedures for O\*NET Job Zone Assignment. Raleigh, NC: the Center. Appendix (pp. 11-13). Available from [http://www.onetcenter.org/dl\\_files/JobZoneProcedure.pdf](http://www.onetcenter.org/dl_files/JobZoneProcedure.pdf)

<sup>3</sup> For example, the Job Zone hierarchy was recently used to develop a more objective definition of college labor market occupations in the U.S., that focused on the skills abilities and education required to perform work in these occupations. See: Neeta P. Fogg and Paul E. Harrington, *Mal-Employment Problems among College Educated Immigrants in the United States*, Center for Labor Markets and Policy, Drexel University, U.S. Department of Education Contract ED-VAE-11-0-0018, October 2012

Figure 1 provides a brief summary of the education, training and experience required to work in each of the five Job Zones developed by the O\*NET system. Job Zone 4 and 5 are composed of occupations that require a college education and are used as the basis for defining the occupations that comprise the college labor market. Job Zone 3 is composed of those occupations that require a considerable amount of some combination of education, training and work experience. Some occupations in this group are also considered to be part of the college labor market since the knowledge and skills utilized in these occupations are heavily drawn from a college education (for example the nursing and engineering technologists occupations). But other Job Zone 3 occupations are not included in the definition of the college labor market since proficiencies required to work in these occupations are primarily developed through job training and work experience. Concierges, crane operators, plumbers and secretaries are examples of occupations classified in Job Zone 3 where much of the knowledge and skills requirements are developed through job training and work experience rather than through a college education.

Occupations included in Job Zone 2 are characterized by relatively low levels of educational attainment-generally just a high school diploma and comparatively limited levels of occupational preparation. Auto glass installers, bill collectors, bus drivers and childcare workers represent the kinds of occupations classified in Job Zone 2. The lowest rung on the O\*NET Job Zone hierarchy is Job Zone 1 which is composed of occupations that require little schooling and minimal training or work experience. By definition one could consider Job Zone 1 occupations as entry level insofar as they require little preparation for employment. Examples of occupations in Job Zone 1 include food service counter attendants, cab drivers and cashiers.

Using O\*NET data files that are made available for research purposes, we have produced estimates of key human capital traits required to work in different occupations by their distribution across the O\*NET Job Zone hierarchy. As noted earlier, O\*NET employs 277 descriptors to portray a wide array of dimensions of an occupation. We have chosen a small number of the most important of these descriptors to illustrate the human capital requirements of occupations in each of the five job zones with respect to ability, knowledge, skills, and work activities requirements. For most descriptors used in the analysis of each occupation, O\*NET surveys pose two questions designed to measure the importance of a given job trait (summarized in a descriptor) to perform work in the occupation and the relative level of the job trait that is required to work effectively in the occupation.

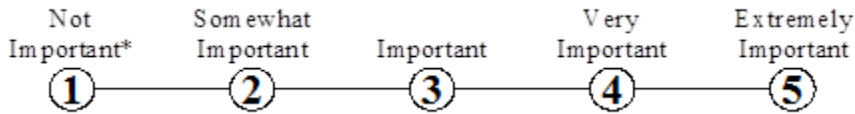
A key descriptor of ability is related to the oral comprehension which is described on the O\*NET survey questionnaire as, “the ability to listen and understand information and ideas presented through spoken words and sentences.” Respondents are asked first to assess how important the oral comprehension ability is to performing work in their occupation. Respondents are asked to report relative importance on a Likert scale ranging from 1(not important) to 5 (extremely important.)





**Oral Comprehension:**

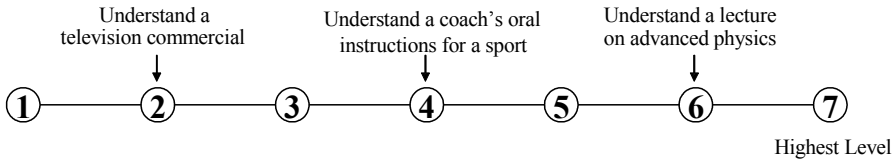
**A. How important is ORAL COMPREHENSION to the performance of your current job?**



Respondents are then asked to assess the level of oral comprehension that is needed to perform effectively in their occupation. Respondents are provided a seven point Likert Scale that includes examples of levels of oral comprehension from which they are to select a level reflective of the oral comprehension requirements of their occupation. As the question below reveals, a level of 2 (understand a television commercial) would indicate that the occupation requires the need to understand less complex information that is presented orally than a level of 6 (understand a lecture on advanced physics).



**B. What level of ORAL COMPREHENSION is needed to perform your current job?**



We have used the importance (IM) and level (LV) of each descriptor provided in the O\*NET database to compute a combined measure of the importance *and* level of the descriptor to effectively perform work in each occupation. The combined measure is the product of IM and LV; the IMLV index which ranges from 1 (when both importance and level are rated lowest, 1\*1=1) to 35 (when both importance and level are rated highest, 5\*7=35). The IMLV index that we have developed measures both the importance and intensity of the particular descriptor to an occupation.

The data provided in Table 1 summarizes the results of our analysis of oral comprehension ability requirements in occupations included in each Job Zone. We found that the average importance of the oral comprehension ability for occupations included in Job Zone 5 was 4.12 on a scale of 1 to 5. This score declined as the Job Zone level fell. Oral comprehension was somewhat less important for Job Zone 4 occupations with a mean importance score of 3.41 as well as Job Zone 3 (3.74) and Job Zone 2 (3.42) occupations. Job Zone 1 occupations had the lowest importance score (3.19) for the oral comprehension descriptor.

The level of complexity of oral comprehension required to perform on the job averaged 4.83 on a scale ranging from 1 to 7 for Job Zone 5 occupations. The mean level score for Job Zone's 2, 3 and 4 ranged from 3.47 to 3.90. The level of oral comprehension required for Job Zone 1 occupations was much lower; just 3.01 on a 7-point scale.

**Table I**  
Mean Importance and Level Scores for Oral Comprehension Ability by Job Zone Category

Job Zone	Importance (IM)	Level (LV)	IMLV (IM*LV)
5	4.12	4.83	19.90
4	3.41	3.73	13.26
3	3.74	3.90	13.73
2	3.42	3.47	11.95
1	3.19	3.01	9.70

We use the product of the Importance (IM) score and the Level (LV) score to create the IMLV index, representing in the present case, a composite indicator of the relative importance and degree of complexity of oral comprehension ability requirements. The mean IMLV score for oral comprehension ability is greatest for occupations in Job Zone 5 since these occupations have the highest scores for both the importance and the level of complexity of oral comprehension ability required compared to occupations categorized in lower level job zones. Job Zones 4 and 3 have mean IMLV scores for oral comprehension ability of 13.3 and 13.7 respectively, well below the IMLV score for Job Zone 5, but well above the mean IMLV oral comprehension ability score for occupations in Job Zone 2 and especially in Job Zone 1.

**Chart I**  
Mean IMLV Scores of Oral Comprehension Ability for Occupations in Each O\*NET Job Zone Category

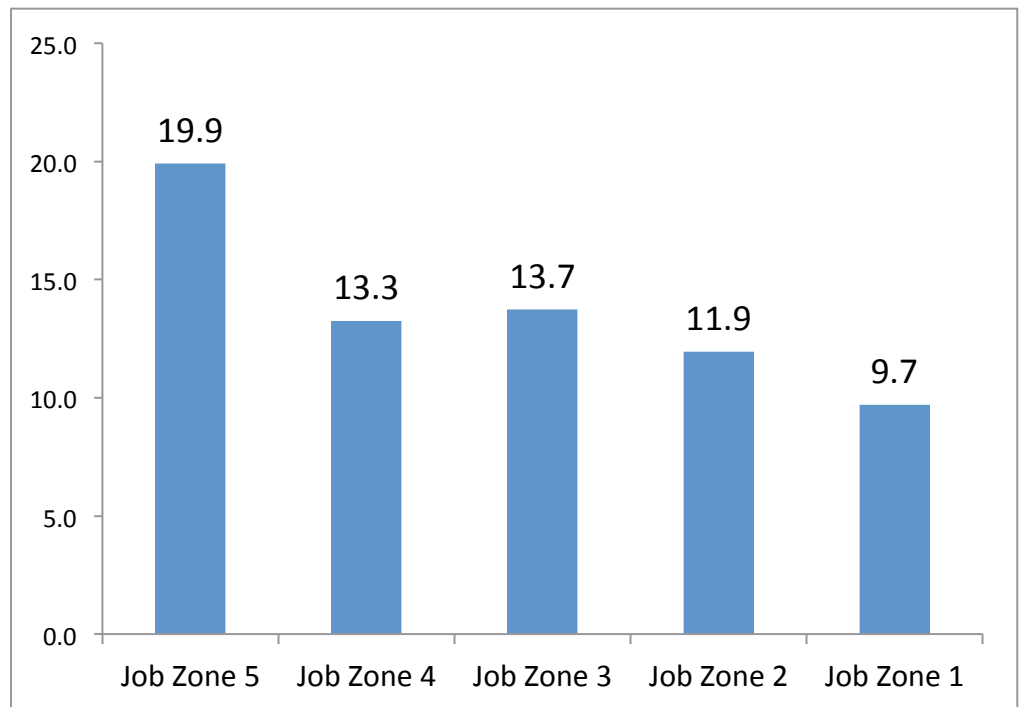




Table 2 presents findings on the mean IMLV score for a number of the most important human capital proficiencies including measures of ability, basic skills, knowledge areas, and work activities for each of the five Job Zone categories employed by the O\*NET system. These findings reveal that the ability, skill and knowledge requirements of Job Zone 1 occupations are the lowest in the U.S. economy. Entry-level occupations not only have minimal educational requirements, but the underlying ability, knowledge, skill requirements are also quite low. This finding is quite consistent with the results of our employer survey and interviews. Employers told us that the abilities and skills of never-employed teens, whether high school graduates or not was not a major barrier to employment—since the skill requirements of these jobs was quite minimal. These findings provide strong support to this view.

**Table 2**  
Mean IMLV Score  
for All Occupations  
Classified in a Job  
Zone, by Specific  
Proficiency

Abilities	Job Zone 5	Job Zone 4	Job Zone 3	Job Zone 2	Job Zone 1
Oral Comprehension	19.9	13.3	13.7	11.9	9.7
Written Comprehension	19.2	10.1	11.5	9.2	6.5
<b>Knowledge</b>					
Math	14.3	14.0	10.8	7.8	5.7
English Language	21.4	17.2	12.5	8.8	6.7
<b>Skills</b>					
Critical Thinking	17.1	15.3	11.2	9.6	7.4
Active Listening	15.3	15.1	11.1	9.8	7.9
<b>Work Activities</b>					
Getting Information	23.7	21.0	16.9	13.4	9.7
Communicating with Supervisors	20.2	20.7	16.3	14.1	10.6

**THE HUMAN CAPITAL REQUIREMENTS OF TEEN OCCUPATIONS**

Employment of teens aged 16 to 19 is heavily concentrated into a relatively small number of occupations that generally require little education or training and have cognitive, knowledge and skill requirements that are substantially below those of many other occupations in the nation’s economy. Our analysis of the 2009-2010 American Community Survey found a high degree of concentration of teen employment in ten key occupations listed in Table 3. The data reveal that more than half (51 percent) of all employed teens (including both those enrolled in school as well as those teens not enrolled in school) worked in just 10 occupations. The data reveal that more than one in five teens (22%) were employed as cashiers and waiters and waitresses. Both these occupations are classified in the O\*NET system as part of Job Zone One. Overall five of the ten occupations where teens most often work are classified by O\*NET as part of Job Zone One. Together these five occupations account for one-third of all teen employment in the nation. Employment in these Job Zone One occupations is characterized by little education or training requirements and little need for previous work experience, skill or knowledge to become employed in these occupations. New hires in these occupations receive limited on-the-job training.

**Table 3**  
Share of Total Teen  
(16-19)  
Employment in the  
Ten Most  
Important Sources  
of Teen  
Employment, 2009-  
2010

Ranking	Occupation	O*NET Job Zone Category	Total Employment	Share of Employment
1	Cashiers	1	754,228	15%
2	Waiters and waitresses	1	325,253	7%
3	Retail salespersons	2	313,725	6%
4	Cooks	1	267,348	5%
5	Laborers and freight, stock,	2	192,633	4%
6	Food preparation workers	1	159,591	3%
7	Stock clerks and order fillers	2	143,331	3%
8	Childcare workers	2	135,638	3%
9	Customer service representatives	2	129,920	3%
10	Misc. food prep and serving related	1	125,531	3%
<b>Total Top 10 Teen Occupations</b>			2,547,198	51%
<b>Total Teen Employment</b>			4,975,297	100%

Source: American Community Surveys, Public Use Micro Data File, 2009 and 2010. Tabulations by Center for Labor Markets and Policy, Drexel University

The remaining five occupations (out of the top ten teen occupations) are assigned to Job Zone Two and account for just under one fifth of all teen workers. Occupations in this Job Zone category have modest education and training requirements usually requiring a high school diploma. Prior knowledge or skills are thought to be helpful, but not necessary for employment in these occupations. Training time for these occupations can range from a few months to a year. Like Job Zone One occupations, teen occupations in Job Zone two have minimal knowledge or skill requirements from potential new hires and are characterized by minimal educational demands. Rather, for occupations in both Job Zone One and Job Zone Two categories, new hires develop the needed proficiencies almost entirely through informal on-the-job training after hiring. These findings, once again, reveal that in the teen labor market, employers have very minimal education, skill and knowledge requirements in making hiring decisions.

In order to better understand the kinds of proficiencies that employers desire we have produced estimates of the IMLV scores for each of the individual top ten teen occupations for selected ability and knowledge proficiencies, work skills and work activities and work behaviors. Once again we find that O\*NET based data are quite consistent with the findings of our study of employer hiring decisions.

Table 4 includes IMLV scores for both ability and knowledge requirements for the ten largest occupational sources of employment for teens. Abilities refer to 'enduring traits' of a worker that will influence their performance on the job. We have included IMLV scores for oral comprehension and written comprehension ability as well as math and English language knowledge for each of the ten occupations as well as overall weighted average scores for the



top ten teen occupations. The data reveal that for the two ability measures (oral and written comprehension), IMLV scores for teen occupations are comparable with IMLV scores (in Table 2) for all Job Zone One and Two occupations in the nation.

The oral comprehension ability is a measure of the ability of a worker to listen and understand information and ideas through the spoken word. Employers whom we interviewed sometimes referred to this ability as listening skills or communication skills. The scores for the oral comprehension ability varied considerably among the top ten teen occupations. Retail sales workers, stock clerks and child care workers had oral comprehension IMLV scores that were quite high relative to many other occupations in the U.S. job market (see Table 2 for comparison data for all occupations). This means that employers in these occupations place a high value on workers who have the ability to understand customer, co-worker and supervisor conversations related to a particular aspect of the occupation. It is unsurprising that many teen occupations have high oral comprehension requirements since these jobs are characterized by a high degree of interaction with customers, co-workers and supervisors. Indeed, the hallmark of customer service representatives, cashiers, waiters and waitress and retail sales workers is their primary role in interacting with customers. Firms such as grocery stores, restaurants and retail sales establishments often place a strong emphasis on customer service and at the heart of this activity is the ability to understand and respond to a customer, co-worker or supervisor. In contrast, we find that the food preparation occupation has much lower requirements for the oral comprehension ability. This reflects the nature of work in these occupations where workers such as busboys or vegetable preparation workers rarely interact with customers.

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The overall IMLV score of 12.48 suggests that for many teen occupations the oral comprehension ability is an important proficiency. Employers in our study also expressed the importance of this ability by assigning high values to the need for strong communication abilities among those they hired.

Written comprehension, the ability to read and understand information and ideas presented in writing was a less important ability among the top ten teen occupations than was the case for the oral comprehension ability. However, IMLV scores on this ability did vary sharply, with the customer service occupation, along with childcare workers, stock clerks and retail sales positions requiring relatively high levels of the ability to understand written communications. In contrast the need for the ability to understand written communications for employment in essentially all of the food service-related occupations is quite low.

**Table 4**  
Selected Ability and Knowledge Proficiency Requirements of Top Ten Teen Occupations

Occupation	IMLV Scores			
	Oral Comprehension Ability	Written Comprehension Ability	Math Knowledge	English Language Knowledge
Cashiers	12.67	9.73	12.74	8.65
Waiters and waitresses	12.00	6.55	2.71	7.35
Retail salespersons	15.99	10.56	8.62	9.44
Cooks	11.77	7.86	8.91	8.33
Laborers and freight, stock	10.56	9.39	12.82	9.64
Food preparation workers	8.25	5.36	5.42	6.44
Stock clerks and order fillers	14.06	11.29	8.21	13.54
Childcare workers	13.58	11.42	11.26	10.17
Customer service representatives	14.91	12.25	4.51	7.28
Misc. food prep and serving related	8.25	5.36	5.42	6.44
Total top 10 teen occupations weighted mean IMLV Score	12.48	9.02	8.98	8.66

We have also provided IMLV scores to measure math and English knowledge requirements for employment in these top ten teen occupations. It is important to note the difference between knowledge and ability as used in the O\*NET system to measure occupational requirements. As we noted, ability refers to enduring attributes associated in this instance with cognitive skills. Abilities are different than knowledge in part because the proficiency is enduring and less likely to change over time. In contrast, knowledge refers to an understanding of a set of organized principles and facts in a given domain or area of specialty. Unlike abilities, the knowledge that individuals possess changes over time as they develop expertise in a given area. For example, an individual may develop knowledge in areas such as mathematics, medicine, engineering, public safety or a foreign language, to name a few domains of specialized proficiency.

We selected two knowledge descriptors, math and English language proficiency out of a wide variety of knowledge descriptors available in the O\*NET system. We chose these two areas since they are the closest measures of what are commonly referred to as basic skills. English language knowledge refers to understanding of the structure and content of the English language and includes proficiencies like spelling and understanding the rules of grammar. Mathematics knowledge includes an understanding of arithmetic, algebra, calculus, and statistics. Our survey found that in general employers were satisfied with the level of reading, writing and math skills (or basic skills) of teens. Part of the reason that employers did not attribute poor basic skills proficiency among youth (relative to other



workers) as a barrier to employment is that the basic skill requirements for employment in teen occupations are relatively low.

Across the top ten teen occupations, IMLV scores for both English language and math skills averaged about 9.0; a level consistent with Job Zone 2 occupations that require little formal preparation for work. However, once again we see a high degree of variability across the teen occupations. Math requirements were higher for cashiers, laborers and childcare workers, but were quite low for waiters and waitresses and food service workers other than cooks who had about average math requirements for a Job Zone 2 occupation. English language knowledge requirements for the top ten teen occupations are about the same as those of all Job Zone 2 entry level occupations. English language needs for stock clerks were much greater than those of other teen occupations.

Table 5 examines IMLV scores for selected skill and work activities for the top ten teen occupations. In the world of workforce development, the term “skills” most often refer to what the O\*NET system measures as knowledge (for example developing the skill to fix brakes on an auto would be considered skills training in the workforce development system, but in the O\*NET content model, it is part of automotive knowledge domain). The O\*NET system defines skill as the ability to perform a task and can often be used in many jobs (as opposed to knowledge where a given domain of knowledge is used in a limited number of closely connected occupations). We have selected critical thinking skills and active listening skills as examples of skills from the O\*NET taxonomy that parallel some of the skill issues that we raised with employers as part of our study.

**Table 5**  
Selected Skills  
Proficiency  
Requirements  
of Top Ten Teen  
Occupations

Occupation	IMLV Scores	
	Critical Thinking Skills	Active Listening Skills
Cashiers	8.29	9.73
Waiters and waitresses	8.58	9.70
Retail salespersons	10.55	13.58
Cooks	6.88	8.86
Laborers and freight, stock	7.86	8.58
Food preparation workers	5.24	7.02
Stock clerks and order fillers	9.00	13.10
Childcare workers	11.42	10.56
Customer service representatives	11.83	14.55
Misc. food prep and serving related	5.24	7.02
<b>Total Top 10 Teen Occupations</b>	<b>8.47</b>	<b>10.20</b>

Critical thinking skill refers to using reasoning to identify strengths and weaknesses of alternative solutions or approaches to a problem. Examples of critical thinking include determining if a subordinate’s excuse for an absence is valid or evaluating a customer’s complaint to determine an appropriate response. Critical thinking IMLV scores averaged 8.47

among the top ten teen occupations, placing these proficiencies well within the Job Zone 1-2 range representing entry level occupations. Once again we see a high degree of variability in critical thinking requirements across the top ten teen occupations. Customer service occupations, childcare workers and retail sales workers all had IMLV scores for critical thinking that were above the mean for the top ten teen occupations. Cashiers and waiters and waitresses had IMLV scores that were in line with Job Zone 1 and 2 critical reasoning skill requirements, while cooks and food service workers had well below average IMLV scores in critical thinking skills.

Active listening skills are closely connected to the oral comprehension ability that we discussed earlier. Active listening is a skill that involves giving one's full attention to the speaker, taking time to understand the points that the speaker makes in the discussion and asking appropriate questions. Examples of active listening would include taking a customer's order at a restaurant or answering a question about a retailer's refund policy for specific products. IMLV scores for active listening are quite high for the top ten teen occupations relative to other entry level occupations. We found an overall mean IMLV score for active listening skills of 11.10, a score well above that found in Job Zone 1 and 2 entry level occupations. Indeed, this score is equal to the mean score of all Job Zone 3 occupations that require considerably more work experience and formal education and training than is the case in entry level Job Zone 1 and 2 occupations. Careful listening is a highly valued proficiency at the entry level and is unsurprisingly most strongly valued in occupations characterized by a high degree of customer interaction. A considerable number of these teen occupations require a high degree of interpersonal exchanges between workers, customers and supervisors. The active listening IMLV score for the customer service occupation was 14.55; a score that would place this proficiency in the range commonly found in Job Zones 3 and 4. The retail sales worker occupation also required strong listening skills to be successful in the occupation, with IMLV scores in the Job Zone 3 and 4 range and well above the requirements for this proficiency in most entry level occupations.

The human capital requirements of occupations where teen employment is heavily concentrated do not seem to act as major barriers to employment. Our review of the data found that, teen employment tends to be concentrated in occupations that require little in the way of education, training or work experience in order to become employed. Occupations that compose the ten largest sources of employment for teens are all classified by the O\*NET system as in Job Zone 1 or Job Zone 2; both entry-level categories. Even the top 20 teen occupations that account for two-thirds of all teen employment comprise of mostly entry-level occupations. Based on these data and analysis it is fair to say that most teens work in entry level occupations that are characterized by relatively low requirements for cognitive abilities, occupational knowledge and skills in order to be hired. Training times for these occupations are short.

When we examine a few of the specific human capital proficiencies required in the top ten teen occupations we found that oral comprehension ability and active listening skill requirements were quite high relative to most other Job Zone 1 and 2 occupations. This finding parallels what we found in our study of employers. In our survey and interviews with



employers, we found that they place a high value on communications abilities in making hiring decisions in entry-level occupations.

## BEHAVIORAL TRAITS

An additional set of worker traits that are captured in the O\*NET system are the set of personal characteristics that can influence how effectively a worker performs on the job. The O\*NET system refers to these personal traits as work style proficiencies, but they are more commonly thought of as work behavior traits or non-cognitive proficiencies. Unlike measures of human capital descriptors such as those discussed above, the O\*NET system's measure of behavioral traits only includes only a measure of the importance (IM) of the trait to the effectiveness of workers in a given occupation, but not a measure of the level (LV) of the behavioral trait. O\*NET survey responders are asked to assess how important a given behavioral trait is to work productively in a given occupation, using a Likert scale ranging from a score of 1 representing not important to a score of 5 representing extremely important. An example of a behavioral trait (work style) of dependability is provided below:

**How important is DEPENDABILITY to the performance of your current job**

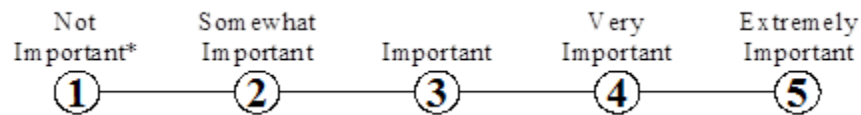


Table 6 includes mean importance scores for all occupations included in the O\*NET system for four different behavioral traits that are often thought of as among the most important attributes that employers desire in their employees. These four behavioral traits include dependability, self-control, integrity and cooperation. We produced mean importance scores for each of these traits for all occupations in each of the five job zones as well as mean scores for the ten occupations that are the largest employers of teens aged 16 to 19. Our analysis of IMLV scores for ability, knowledge and skill measures all revealed that as the education and training requirements for employment in an occupation increased (as measured by Job Zone classification) the IMLV proficiency scores of human capital descriptors increased. Thus, the O\*NET data we reviewed suggests a strong positive connection between employer hiring requirements and human capital proficiencies required to perform effectively in a given occupation. Such a finding is unsurprising since education, training and work experience are fundamental in the development these kinds of human capital traits. Yet a review of the findings on mean importance scores for the four critical behavioral traits suggests that the differences in the importance of work behaviors are not very substantial across job zones. Furthermore, in the top ten teen occupations where just over half of all teens work, the mean importance scores of behavioral traits are quite high.

**Table 6**  
 Mean Importance Scores (Scale 1-5) for Selected Behavioral Trait Proficiency Requirements by Job Zone and for the Top Ten Teen Occupations

Work Styles	Job Zones					All Teen Occupations Mean Importance Score
	5	4	3	2	1	
	Mean Importance Score					
Dependability	4.52	4.46	4.49	4.30	4.14	4.41
Self-Control	4.17	3.99	4.11	3.95	3.75	4.18
Integrity	4.68	4.48	4.36	3.97	3.71	4.15
Cooperation	4.19	4.19	4.16	4.00	3.88	4.18

Our survey and subsequent meetings with employers found that aspects of worker dependability, especially related to attendance, were of central importance to employers in making hiring decisions. The O\*NET system defines dependability as a job requirement of an individual being reliable and responsible, that is, fulfilling obligations at work. Certainly, a fundamental work obligation is attendance. The mean importance scores for dependability are all concentrated in a very narrow range of responses - with the mean importance scores somewhere between very important (score of 4) and extremely important (score of 5) across each of the five Job Zones. Even occupations with essentially no education, training or work experience requirements classified in Job Zone 1 had a mean importance score of 4.14 for dependability; indicating that the dependability trait is very important in occupations in this Job Zone. Similarly, Job Zone 2 occupations have a mean dependability importance score of 4.3. The remaining three Job Zones had mean importance scores for dependability of about 4.5. These data suggest that while the requirements for abilities, knowledge and skills vary widely across occupations in the U.S. economy; the requirement for dependability does not. These findings indicate that dependability is a fundamental occupational requirement common to virtually every occupation in the American economy.

We also computed the mean dependability importance score for the ten occupations in which teen employment is most heavily concentrated. We found that the dependability score for these most common teen occupations was equal to that of those occupations with the most sophisticated human capital requirements in the U.S. labor market. The mean importance score for the dependability trait in teen occupations was 4.41, a score placing the importance of dependability as a job requirement between very important and extremely important. An importance score of this level suggests that this behavior is essential for success in these entry-level jobs. Persons who lack dependability are unlikely to succeed working in these teen occupations or in fact in any other occupation in the American economy.

The trait of self-control refers to keeping emotions in check, controlling anger and maintaining composure, even in difficult situations. Sometimes this trait is referred to as maturity or emotional intelligence by employers. Self-control is a work behavioral trait that appears to be universally valued across most occupations in the nation. The mean importance scores for self-control varied little across each of the five Job Zones ranging from a mean score of 3.75 for Job Zone 1 occupations to 4.17 for occupations classified in Job Zone 5. Once again, we see that unlike other human capital traits for which the importance and required levels vary sharply across occupations, little difference is found in the

importance of self-control across occupations. The need for self-control is very important in most occupations and again is an essential work behavior. The mean importance score for self-control in our top ten teen occupations is 4.18, slightly above the scores for the five Job Zones. As we noted earlier, many of the teen occupations are involved in 'meet and deal' situations requiring regular interactions with customers-especially in cashier, waiter and waitress and retail sales occupations as well as child care workers that suggest substantial requirement for self-control.

The degree of variability in the mean score for the integrity requirement across job zones was greater than that for the other three behavioral traits included in Table 6. The O\*NET defines integrity requirement as the need for honest and ethical. Findings in Table 6 reveal a clear and positive connection between the requirement for integrity and job zones; increasing as the level of education, training and work experience requirements increase across Job Zones. The mean integrity score for Job Zone 1 occupations was 3.71 suggesting that this trait is quite important at the entry level. However, as the level of human capital requirements and the complexity of work in an occupation increases, the requirement for integrity increases by almost a full point. Indeed, in Job Zone 5 occupations, integrity appears to be a trait of the greatest importance with a mean score of 4.68; a score that is among the highest of any mean importance scores among all of the 277 descriptors available in the O\*NET system for Job Zone 5 occupations.

One explanation for the greater degree of variability in the integrity trait relative to the other three behavioral traits in table 6 may be associated with the costs of effectively monitoring or supervising workers. In lower level occupations, monitoring costs are relatively low as worker activities including workers shirking their jobs duties are more readily observable. In contrast, in many of the more complex occupations, the cost of monitoring individual worker activities and job performance can be very difficult and the time between when a worker is hired and the discovery of work shirking can be quite long. In these occupations, employers often pay a higher wage, in order to avoid employees shirking work. Integrity is likely an important trait in high level professional occupations where expertise is very specific and the cost of identifying poor performance or shirking can be high. Medical professions, legal and criminal justice fields as well as academic, teaching and scientific research fields, to name a few, can be characterized by high monitoring costs, which make the role of integrity central to employment in these fields. In comparison, integrity is not as important for employment in less complex occupations like dishwashers and food prep workers where monitoring worker performance is much more straightforward and much less costly. In these instances, we would expect the importance of integrity to be lower since the risks and costs associated with shirking are potentially lower compared to high level occupations.

A fourth worker characteristic that is commonly thought to be important in the workplace is that of cooperation. Sometimes referred to as working in teams, cooperation is characterized as being pleasant with others and displaying a good-natured attitude on the job. Our analysis of this descriptor found only a small difference in mean importance scores of this trait across each of the Job Zone categories. The mean importance score for cooperation in Job Zone 1 occupations was 3.88 suggesting that cooperation is a very

important trait for these entry-level occupations. The mean cooperation score for Job Zones 4 and 5 of 4.19 is just 0.3 percentage points greater than the Job Zone 1 score. The mean score for cooperation trait in the top ten teen occupations is 4.18, a score essentially identical to that observed in Job Zone 4 and 5.

A look at the mean importance scores for the individual top ten teen occupations reveals that these four behavioral traits are almost universally assessed as somewhere between very important and extremely important to perform effectively in these occupations.

**Table 7**  
Mean Importance Scores for Selected Behavioral Trait Proficiency Requirements of Each of the Top Ten Teen Occupations

Occupation	Job Zone	Mean Importance Scores			
		Dependability	Self-Control	Integrity	Cooperation
Cashiers	1	4.47	4.46	4.44	4.07
Waiters and waitresses	1	4.22	4.06	3.78	4.12
Retail salespersons	2	4.47	4.43	4.41	4.44
Cooks	1	4.36	3.93	3.76	4.32
Laborers and freight, stock	2	4.08	3.76	3.91	3.80
Food preparation workers	1	4.45	3.51	3.78	4.21
Stock clerks and order fillers	2	4.68	4.47	4.65	4.52
Childcare workers	2	4.66	4.56	4.36	4.39
Customer service representatives	2	4.26	4.17	4.05	4.05
Misc. food prep and serving related	1	4.45	3.51	3.78	4.21
<b>Total Top 10 Teen Occupations</b>		<b>4.41</b>	<b>4.18</b>	<b>4.15</b>	<b>4.18</b>

## CONCLUSION

Our analysis of the proficiencies required to perform effectively in a range of occupations reveals the importance of the development of human capital proficiencies including knowledge skills and abilities in order to advance in the occupational hierarchy. These proficiencies are developed by combinations of investment in formal schooling, job training and work experience.

Occupational demands for education, training, and work experience rise as the level and importance of ability, knowledge and skill increases. However, we find that this is not the case with respect to behavioral traits. Instead, we found that the requirements for dependability, self-control, cooperation and integrity (although to a lesser extent) do not vary much across occupations. The need for workers to possess strong behavioral characteristics appears to be universal and does not vary much across a wide swath of occupations. Indeed, the evidence we have presented suggests that these behavioral characteristics are the fundamental building blocks of job market success—a finding strongly in line with the views expressed by employers that we surveyed and met with over the course of this effort.

the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2002).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that the health care system is able to meet the needs of older people. The Department of Health (2000) has published a strategy for older people, which sets out the government's commitment to improve the health and well-being of older people, and to ensure that the health care system is able to meet the needs of older people.

The strategy for older people is based on three main principles: (1) to improve the health and well-being of older people; (2) to ensure that the health care system is able to meet the needs of older people; and (3) to ensure that older people are able to live independently and actively in their communities. The strategy sets out a range of measures to be taken to achieve these aims, including: (1) to improve the health and well-being of older people; (2) to ensure that the health care system is able to meet the needs of older people; and (3) to ensure that older people are able to live independently and actively in their communities.

The strategy for older people is a key document in the development of health care for older people. It sets out the government's commitment to improve the health and well-being of older people, and to ensure that the health care system is able to meet the needs of older people. The strategy sets out a range of measures to be taken to achieve these aims, including: (1) to improve the health and well-being of older people; (2) to ensure that the health care system is able to meet the needs of older people; and (3) to ensure that older people are able to live independently and actively in their communities.

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