

Oregon Open Campus 2008 & 2020 Workforce Assessment

Lena Etuk
Social Demographer
Oregon State University Extension – Family & Community Health
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Executive Summary

The goal of Oregon Open Campus is to provide local access to learning that meets the needs of individuals, families, businesses, and communities. In order to understand the potential demand for continuing education and higher education opportunities among residents of the Oregon Open Campus pilot communities (Tillamook County, Crook County, and Jefferson County) it is useful to understand the potential need for higher education among residents. Typically, demand for education is related to labor market conditions. The goal of this analysis was to understand just that: the current and future labor markets of the Oregon Open Campus pilot communities as they relate to education.

In order to understand the labor markets in these areas of Oregon, the attributes of current labor force participants in each of the pilot counties and regions were examined and profiles of local jobs currently available in each community were created, paying particular attention to the educational requirements of jobs. These profiles of labor force participants and jobs were then used to estimate the match between jobs available to local residents and local labor force participants age 25 to 64 who were available to local area employers, by education. This mismatch assessment represents the recent state of affairs in these three counties and two regions of the state. In order to gain some insight into potential future demand for educational opportunities offered through Open Campus a projection of labor market mismatch was estimated for 2020 in these counties and regions. Though all findings should be interpreted carefully, the results of these three quantitative analyses can be used to shed some light on the labor market context of Tillamook, Crook, and Jefferson counties now and in the future.

The labor supply profile revealed that the labor force in each of these areas on average, between 2006 and 2008, was diverse with respect to educational attainment, but that the majority of individuals had only a high school education, had some college experience, or had an Associate's degree. Large proportions of labor force participants commuted outside their counties for work in 2008, and were thus not available to local employers. In addition, significant proportions of labor force participants in these rural counties were self-employed between 2006 and 2008, and were likely not seeking wage or salary work provided by a third-party employer.

The 2008 job market in the three pilot counties favored low-skill work, as the vast majority of jobs required only a high school education or less. The 2008 profile of the job market in these communities also revealed that significant proportions of county jobs were not held by county residents, and were thus not available to the county labor force.

Combining the information about local jobs and local labor force participants for the mismatch assessment, both current and future, proved challenging; and the findings should be interpreted

cautiously. Due to intention of this assessment to understand current and future matches between the number of labor force participants with certain education levels and the number of jobs that require those education credentials it was necessary to have data about the educational attainment of labor force participants by age and gender. As the only source of information about the educational attainment of labor force participants by age and gender come from the US Census Bureau's American Community Survey, the analysis was limited by the data published by this source. Unfortunately, the data about the educational attainment of the labor force was limited to those ages 25 to 64. Labor force participants age 25 to 64 represent the majority of all labor force participants, but those age 16 to 24 and 65 and older also represent a significant proportion of the labor force. It is impossible to know exactly how much the omission of this population biases the assessment of current and projected mismatches in the counties and regions. For this reason it is not possible to use these findings alone to help set education policy for the pilot communities. The findings should be used in conjunction with other considerations and information about demand for educational opportunities in the three counties.

The mismatch assessments led to three overarching findings. For one, the assessments revealed that the nature of the economy plays a significant role in shaping the demand for workers with particular education levels. The competitiveness of the labor market, which is dictated by the nature of the economy, affects both the size and direction of mismatches between labor force participants age 25 to 64 and available jobs in all communities. In addition, the mismatch assessment revealed that the sizes of mismatch between labor force participants age 25 to 64 and available jobs by education vary by location. Finally, the assessment revealed that the nature of the projected 2020 labor market mismatch is very similar to the nature of the 2008 labor market mismatch. The similarity between 2008 and 2020 mismatch assessment findings suggest that the current labor market situation provides enough justification for future changes.

These findings suggest a number of factors should be borne in mind when planning a human capital investment program, such as Oregon Open Campus, in these three counties and two regions. For one, the demand for educational opportunities will likely wax and wane among local residents who are seeking work in the county. This demand will fluctuate with the economy; in times of low unemployment, the majority of labor force participants will not be highly motivated to increase their human capital and in times of high unemployment, the number of labor force participants interested in increasing their education will increase. That is not to say that demand for educational opportunities will not exist during times of economic boom, quite to the contrary, demand for education will likely exist, but if the demand is not motivated by local employment prospects it will be motivated by personal development desires or desires to find work outside the county. Increasing the education of local labor force participants without local job opportunities that require those skills will facilitate the out-migration of these individuals, the employment of these individuals in jobs for which they are over-qualified, unemployment among these individuals, or the need for these individuals to commute to work outside the county. It may be necessary for the structure of the Oregon Open Campus model in these areas to be flexible to the economic context; growing in times of high unemployment and shrinking in times of low unemployment.

The second factor to be borne in mind when planning the Oregon Open Campus model in these three counties is that if the idea is to increase the local stock of human capital for local employment, then the nature of Open Campus should reflect the unique county contexts. In Tillamook County and Crook County, the data suggest that Open Campus would likely serve the communities best by providing Bachelor's degrees and advanced degrees and helping individuals age 16 and over complete high school or obtain a GED. Based on the labor market mismatch by education data for Jefferson County, Open Campus in this county could meet local labor market needs by helping individuals age 16 and over complete high school or obtain a GED, providing Bachelor's degrees or more advanced degrees, and be flexible to providing some Associate's degrees or certificates if the market takes a turn for the worst.

These findings represent rough estimates of potential education demand for the labor force population in these communities, and should be used in conjunction with information from local employers, local economic development districts, and local labor force participants about the potential for human capital investments. Despite deficiencies in the current job market for certain types of jobs, the future is not set in stone and opportunities will change. These changes have not been anticipated in the employment or labor force projections used here. It is possible to change the nature of the job market by changing the nature of the labor force, so long as potential employers are privy to the changes in the labor force and they act quickly.¹

¹ LeRoy, Greg. (2005) *The Great American Jobs Scam: Corporate tax dodging and the myth of job creation*. Berrett-Koehler Publishers, Inc: San Francisco, CA.
Blakely, Edward J. (1994). *Planning Local Economic Development: Theory and practice*. (2nd edition). Sage Publications: Thousand Oaks, CA.

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Introduction

Oregon Open Campus is a partnership among Oregon State University, the Association of Oregon Counties, and many of Oregon's community colleges, K-12 education system, economic development, and local businesses.

The goal of Oregon Open Campus is simple – provide local access to learning that meets the needs of individuals, families, businesses, and communities. Workforce training, professional certification, personal enrichment, and academic credit are only a few of the possibilities.

Oregon Open Campus' purpose is to improve the quality of community and business through education. What makes Oregon Open Campus unique is its focus on extraordinary community engagement in developing new modes and opportunities to access learning. Development of learning opportunities is driven entirely by needs identified by local communities and individuals. Education is offered locally, using distance technology, face-to-face learning and partnership that blend strengths and resources.

In order to understand the potential demand for continuing education and higher education opportunities among residents of OR Open Campus pilot communities it is useful to understand the potential need for higher education among residents. Typically, demand for education is related to labor market conditions. If, for example, the majority of a community's employment opportunities require a Bachelor's degree or higher and the majority of the adults in the labor force have only a high school education, this mismatch would indicate a demand for higher education opportunities that OR Open Campus could provide.

In this paper I assess the mismatch of the labor market by education in the Oregon Open Campus pilot communities of Crook County, Jefferson County, and Tillamook County. Though the ultimate goal of the assessment is to understand the future labor market mismatch by education in the three counties, a fair amount of attention is paid to understanding current labor market trends. Current trends play a significant role in shaping the future, and are relied upon to produce a projection of future trends, thus understanding them is important. The labor market mismatch by education projection can be used to anticipate future education needs if no changes to the educational environment were to occur in these counties between 2008 and 2020. If demographic and economic aspects of the counties change, but educational attainment trends stay constant, this mismatch projection can illuminate the number of people whose education could be improved to better suit the job market. These people are the potential beneficiaries or clients of Oregon Open Campus; it is critical to understand the size of this user market in each of the pilot counties.

Methods

The goals of this research project were two-fold:

1. Reveal current labor market conditions in Tillamook, Crook, and Jefferson counties with respect to the educational attainment of the labor force and the educational requirements of jobs
2. Examine the future labor market conditions in these three counties, again with respect to the educational attainment of the labor force and the educational requirements of jobs, using projected data about the labor force and jobs in the three counties

In order to address the first goal of the research project, the most recent information about the local labor force was needed: their education levels, their employment status, and their commuting patterns. For these local labor force data the 2006-2008 American Community Survey and the 2008 publication of Local Employment Dynamics data from the US Census Bureau were relied upon. To get a sense of the current local job market, data about the educational requirements of jobs and the number of jobs available to local residents were needed. For data about the educational requirements of jobs the Oregon Employment Department's occupation projections database, which provides 2008 education requirements for all occupations prevalent in a particular part of the state during the year, was used.² For information about the number of jobs available to residents of the Open campus pilot counties the 2008 publication of Local Employment Dynamics data from the US Census Bureau was used again, in conjunction with data from the OR Employment Department. Appendix 1 provides a detailed description of each of these data sources and their methods.

The data were analyzed first to yield two profiles of the current local labor market: one of local labor force participants, corresponding to the supply side of the market, and another of local jobs, corresponding to the demand side of the market. Descriptive statistics were calculated to summarize the labor force participation of local residents by age and sex, self-employment of local residents, unemployment rates, and commuting behaviors of area residents. Summary statistics were also calculated for job data; here the emphasis was on revealing the prevalence of jobs with various educational requirements and the availability of local jobs to local residents. Second, the data were analyzed to produce estimates of the mismatch of available jobs to local labor force participants by education. The method used to produce the current labor market mismatch estimates had four distinct steps.

The first step of the mismatch analysis required honing in on the number of jobs available to area labor force participants (at the regional level and for each of the three pilot counties). To do so, the count of

² Unfortunately, the job statistics provided by the Oregon Employment Department were only available at the regional level, and not for single counties. Tillamook County is part of Region 1 with Clatsop and Columbia counties. Crook and Jefferson counties, along with Deschutes County make up Region 10. Due to the regionalization of employment data from OED, the analysis was conducted at a regional level first. An additional analysis at the county level was conducted in which OED data are re-estimated based on shares of jobs by occupation for each county in a workforce region using data from the 2000 US decennial census.

jobs in the regions and counties were combined with data about commuting patterns to yield the total number of jobs by education held by residents. Multiplying the percentage of jobs held by residents by the total number of jobs produced this estimate. In Table 9 through Table 13, columns A and E contain the products of this calculation.

In the second step of the analysis, attention turned to the supply side. At this point the self-employment of labor force participants age 25 to 64 was accounted for. Area-specific self-employment rate data from the 2006-2008 American Community Survey were applied equally to each of the labor force populations, regardless of education, to obtain counts of the labor force age 25 to 64 in each education category that were not self-employed in 2008. These are the labor force participants who are most likely to be working in wage or salary jobs, or looking for work in wage or salary positions. Though self-employed individuals may benefit from the offerings of Oregon Open Campus, it was impossible to include them in this labor market assessment. In Tables 9 through 13, the total numbers of labor force participants in each area and each education category, age 25 to 64, who are not self-employed, are included in columns B and F.

The third step of the analysis required accounting for the commuting patterns of workers in the area. In one of the areas included in this assessment, only 51% of residents work in the area and the remaining 49% commute to other counties. This means that 49% of the resident labor force participant population is not available to employers in the region. It was therefore necessary to reduce the labor force counts in each area under study by the proportion of people who commute to jobs outside the area. In order to do so, the percentage of workers who work within each area was multiplied by the total number of labor force participants who are not self-employed in the area. Though commuting patterns might vary by education, there is not enough information to know if and how, in order to adjust the numbers accordingly. For this reason, an assumption was made that equal proportions of workers commute in each education category. In tables 9 through 13, the total number of labor force participants age 25 to 64 with each level of education, who are not self-employed, and who are expected to work within or be looking for work within each area are displayed in columns C and G.

The fourth and final step of the current year mismatch analysis involved subtracting the total number of available labor force participants in the area from the total number of available jobs in the area. This calculation reveals the extent of the match between jobs and labor force participants, by education. A couple of assumptions were made in this step, which are worthy of some attention. First, in this step an assumption was made that each labor force participant in an area is matched to only one job in the area. This assumption does not reflect reality; many individuals work multiple jobs to make ends meet. The problem is that the number of people who work multiple jobs is an unknown number, therefore impossible to integrate into the analysis. Second, in this step we assume that the only process matching workers to jobs is selection based on educational attainment. This is erroneous for a couple of reasons: for one, many other characteristics of individuals influence their employment including age, gender, and work experience; another point to bear in mind is that many individuals work in jobs for which they are over-qualified, simply in order to have a job and an income. Unfortunately, it was impossible to integrate these elements of the true labor market matching process into the assessment, as data do not exist at the local level. Third, this step of the assessment is limited to the population age 25 to 64. This

assumes that people over the age of 64 or below the age of 25 are not available to area employers; an assumption that is clearly incorrect. This assumption had to be made because of data limitations of the American Community Survey. The Census Bureau does not publish ACS data about the educational attainment of labor force participants age 16 to 25, and there were no publicly-available data about the age of workers in jobs that could be used. If either of these two pieces of information had been available, the analysis would not be limited to matching all jobs (some fraction of which are occupied or open to people below the age of 25 or over the age of 64) to a sub-population of labor force participants. Given the lack of data, it was therefore impossible to shift the analysis accordingly. For all three of these reasons, it must be understood that the mismatch result is only an estimate of the extent to which local labor market demand for workers with certain levels of education can be satisfied by local labor market supply.

In order to address the second goal of this research project, information about the future workforce and future jobs in these counties was needed. Projections about the size of the population in each of these areas in 2020, by age and sex, were obtained from the Oregon Office of Economic Analysis. Simply knowing the total size of the population in the future is not enough to do the labor market analysis however. Projections about the labor force participation rates of the population (by age and sex) were needed to determine the future size of the labor force, bearing in mind changes to labor force attachment that occur over time and that vary by age and gender. Labor force participation projections for 2020 were obtained from the US Bureau of Labor Statistics (BLS) and correspond to the US as a whole. Oregon has not recently deviated greatly from the national average, with respect to labor force participation, so an assumption was made that this trend will continue into the future. Also, because labor force participation varies by age and gender, projected labor force participation rates by age and gender (calculated by the BLS) were used and applied to the population projections specific to each age and gender group. These data form the basis of the projections for the size of the labor force in 2020 in each of the Open campus pilot counties, and are supplemented by information from 2008 about commuting patterns and self-employment. Appendix 2 provides a description of these two new data sources along with their methodologies.

Information about the number of projected jobs comes from the Oregon Employment Department. As discussed above, the OED projects the number of jobs by occupation and industry ten years into the future. The last projection conducted by the OED corresponded to the 2008 to 2018 period. These projections were linearly extrapolated two additional years in order to bring the job projections in line with the 2020 workforce projections calculated from the OR Office of Economic Analysis and the Bureau of Labor Statistics data. Appendix 2 provides a description of the OED data along with the projection methodology.

The first step of the projected mismatch analysis required honing in on the number of jobs available to area labor force participants in 2020. To do so, the 2020 projected count of jobs in each of the workforce regions were utilized to yield 2020 projected job counts for the regions, by occupation and subsequently by education required. The regional job counts were then multiplied by the share of workers in each occupation who lived in each county in 2000 to produce county-specific projected job counts. The projected estimates of jobs in the three counties and two regions were then combined with

data about commuting patterns from 2008 to yield the total projected number of jobs by education that will be held by residents of the regions or counties in 2020. Multiplying the percentage of jobs held by residents in 2008 by the total projected number of jobs in 2020 produces this estimate. The assumption made in this step was that 2008 commuting patterns would hold for 2020. In Table 14 through Table 18, columns A and E contain the product of this calculation.

In the second step of the future mismatch analysis a projected count of the number of labor force participants with certain levels of education for each county and region under study in 2020 was produced. In order to produce these projected counts, 2020 projected counts of the population by age and sex published by the Oregon Office of Economic Analysis (OEA) were combined with age and sex specific 2020 projected labor force participation rate data from the US Bureau of Labor Statistics (BLS). The product of the calculation for a particular age and sex group yielded the total number of men or women of a particular age (such as 25 to 34) expected to be part of the labor force in 2020. The age and sex specific counts were then summed for each county and for each region to yield the total projected number of labor force participants age 25 to 64 in 2020 for each area. These totals were then combined with educational attainment data (rates) from the 2006-2008 American Community Survey to produce 2020 projected counts of labor force participants age 25 to 64 with one of four levels of education. Here, the assumption was made that the educational attainment trends of 2006 to 2008 will hold true to 2020. This is an important assumption, and a central question of this assessment: if educational opportunities and the desire for higher education do not change in the future, how many labor force participants will there be in the labor market in 2020 with certain levels of education?³ From this second step of the analysis process a projected count of the number of labor force participants age 25 to 64 in each area in 2020 with education levels that reflect stagnation in education demand and supply from 2008 were obtained. The assumption for this assessment is that the 2020 education environment will be the same as the 2008 education environment.

The third step of the analysis required accounting for the self-employment of labor force participants age 25 to 64 in 2020. Here again, the assumption was made that self-employment trends in 2020 will be the same as they were in 2006-2008. Therefore the self-employment rates used in the 2008 analysis were applied to each area of study for the 2020 analysis the same way as before; the proportion of people who were not self employed in 2006-2008 was multiplied by the projected count of labor force participants age 25 to 64 in each region, regardless of education. In Tables 14 through 18, the total numbers of labor force participants age 25 to 64 in each region and each education category in 2020, who are not self-employed, are included in columns B and F.

The fourth step of the 2020 mismatch analysis required accounting for the commuting patterns of workers in the area. The commuting patterns observed in 2008 were assumed to prevail in 2020. Thus the 2008 percentage of workers who worked within each region or county was multiplied by the total number of labor force participants in 2020 who are not self-employed uniformly across education level. In tables 14 through 18, the total number of labor force participants age 25 to 64 with each level of

³ These numbers can then be compared to the number of jobs projected in 2020 to provide valuable insight for the planning of OR Open Campus.

education in 2020, who are not self-employed, and who are expected to work within or be looking for work within the region or county are displayed in columns C and G.

The fifth and final step of the mismatch analysis involved subtracting the total number of available labor force participants in each of the counties and regions in 2020 from the total number of available jobs in the areas in 2020. This calculation reveals the extent of the match between jobs and labor force participants, by education expected in 2020 if commuting does not change from 2008 patterns, if self-employment rates do not change from 2008, and if 2008 educational attainment trends remain in 2020. Also, the assumptions regarding holding multiple jobs, job-matching solely on the basis of education, and labor force participants age 16 to 24 or 65 and older were made in this step again. As stated earlier, given all of these assumptions, it is very important to understand that the 2020 mismatch result is only an estimate of the extent to which future local labor market demand for workers with certain levels of education will be satisfied by future local labor market supply. This estimate is also not a prediction of what the labor market will look like in 2020; it is simply a projection of what the labor market might look like in a certain scenario.

Results

A Profile of Current Labor Market Supply

In order to understand the supply side of the labor market in the Oregon Open Campus pilot counties it is important to understand the employment dynamics among those who are in the labor force. An examination of the employment dynamics of the regions and counties will illuminate the number and characteristics of people in each county who are potential employees of local employers. In this section we explore not only how many people are in the labor force, but also their rates of self-employment, their commuting behaviors, and their educational attainment.

Labor Force Participation

The labor force in a given area and at a given time corresponds to the total number of people age 16 and older who are employed for pay outside the home or unemployed and seeking paid work and who live in that area. People who are not included as part of the labor force include children (under the age of 16) and people over the age of 15 who are not working for pay and not seeking work for pay for any number of reasons. According to the American Community Survey data collected between 2006 and 2008 displayed in Table 1, the labor force in Tillamook, Crook, and Jefferson counties were roughly similar in size: around 10,000 people, while the labor force of Region 1 (Clatsop, Tillamook, and Columbia counties) was about half the size of the labor force in Region 10 (Crook, Deschutes, and Jefferson counties). Tillamook County had the largest labor force at almost 12,000 people and Jefferson County was smallest, about 9,500 people.

Table 1

	Tillamook County, 2006-2008	CCT - Region 1, 2006-2008	Crook County, 2006-2008	Jefferson County, 2006-2008	CDJ - Region 10, 2006-2008
Size of Labor Force (age 16+)	11,969	56,157	11,520	9,580	102,586
Labor Force Participation Rate (age 16+)	58%	62%	63%	62%	65%
<i>Source: 2006-2008 American Community Survey, US Census Bureau</i>					

Relative to the entire population age 16 and older, Table 1 also reveals that not all individuals in these communities participated in the labor force between 2006 and 2008. Indeed, Tillamook County's average labor force participation rate between 2006 and 2008 was the lowest, estimated at 58%. In other words, the 11,969 people in the labor force in 2006 to 2008 in Tillamook County represented 58% of the entire population age 16 and over in the county. Crook and Jefferson counties had about equal rates of average labor force participation in the three year time span at around 62 and 63 percent, though slightly lower than the tri-county region (Region 10: Crook, Deschutes, Jefferson).

Labor force participation rates are not uniform across age or gender in any of these places, nor have they remained static over time. As Table 2 indicates, each of these counties' labor force participation rates followed similar time trends between 2000 and 2006-2008. Generally, among men age 16 to 54, labor force participation decreased between 2000 and 2006-2008, while labor force participation among men age 65 and over increased in the time period. Jefferson County stands out as an outlier for changes to the labor force participation of men age 55 to 64, however, as men in this county declined in their participation between 2000 and 2006-2008 while labor force participation among men in this age group in Tillamook and Crook counties increased. Among women, again common changes to labor force participation across the three counties are apparent. In general, between 2000 and 2006-2008, women increased their labor force participation rates with only one age-specific exception (women age 25 to 44) and only three county-specific exceptions (Tillamook County women age 45-54 declined slightly and Crook and Jefferson counties' women age 65 and over declined very slightly).

Table 2

Labor Force Participation Rates by Sex and Age - 2000 & 2006-2008						
	Tillamook County		Crook County		Jefferson County	
MALES	2000	2006-2008	2000	2006-2008	2000	2006-2008
16-24	75%	54%	54%	66%	65%	53%
25-44	86%	86%	91%	96%	90%	90%
45-54	87%	79%	90%	83%	88%	86%
55-64	59%	70%	63%	74%	61%	55%
65+	14%	14%	11%	13%	17%	19%
FEMALES						
16-24	65%	74%	54%	58%	45%	67%
25-44	77%	72%	75%	73%	76%	71%
45-54	74%	74%	67%	79%	81%	80%
55-64	49%	53%	39%	55%	51%	55%
65+	9%	12%	8%	6%	10%	8%

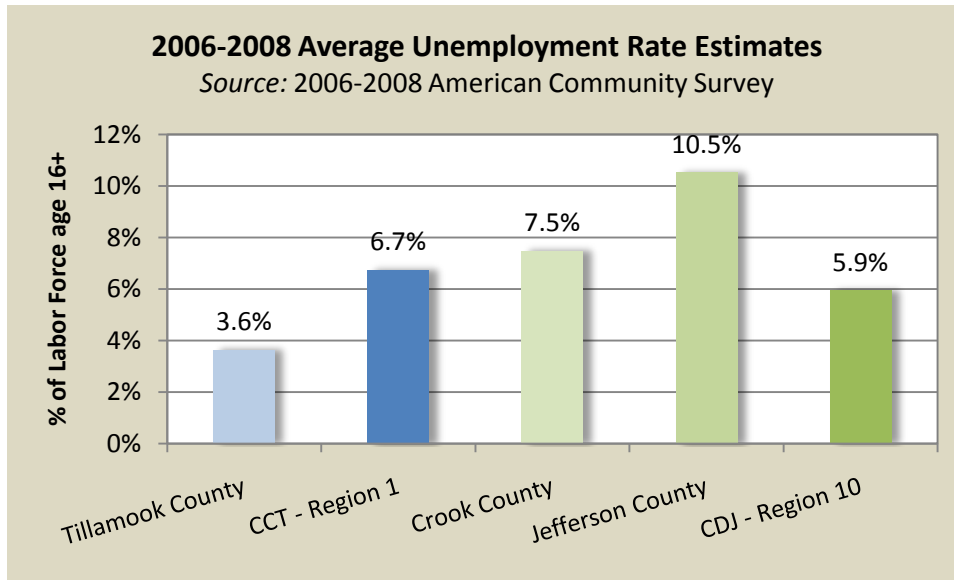
*Sources: 2006-2008 American Community Survey, US Census Bureau
2000 US Census, Long-Form Sample, US Census Bureau*

From Table 2 we also note that generally, women participated at lower rates than men in almost all age groups in 2000 and 2006-2008, with the exception of women age 16 to 24 in 2006-2008 (though not in Crook County). Also, among men, labor force participation rates were highest among those ages 25-44, while for women labor force participation rates were generally highest among those ages 45 to 54. This gender difference in peak ages of labor force participation is not surprising given child-bearing biology and gendered child-rearing practices. These statistics also reveal that labor force participation rates vary by county. For men, Crook County generally had higher participation rates in 2006-2008, but for women overall no county stood out as dominant. By age, the largest differences in labor force participation rates in 2006-2008 between counties were found among women age 16 to 24. Clear from table 2 is that labor force participation varies over time, is gender-specific and age-specific, and varies by location to some degree.

Unemployment

Among those who participated in the labor force between 2006 and 2008, rates of unemployment varied across each of these geographic areas according to data from the American Community Survey. As Figure 1 shows, on average between 2006 and 2008 Tillamook County's unemployment rate was an estimated 3.6%, compared to an estimated 6.7% for the tri-county region. Crook County and Jefferson County both had average estimated unemployment rates higher than that found for the region, and Jefferson County's was notably higher (almost 11%).

Figure 1



Self-Employment

Another labor force statistic that will be useful in understanding the match between those looking for wage or salary jobs and the number of available wage and salary jobs is the prevalence of self-employment. Self-employed individuals are those who own their own businesses, and are not typically looking for a wage or salary job provided by a third party employer. The self-employed are not included in counts of wage and salary workers used in this assessment nor are their positions included in tallies of wage and salary jobs used here. For these reasons it is important to get a sense of the prevalence of self-employment among those in the labor force before the labor market mismatch in the future is projected. Table 3 presents statistics for the number of self-employed individuals in each area and the proportion of the labor force these individuals represent.

Table 3

	Tillamook County, 2006-2008	CCT - Region 1, 2006-2008	Crook County, 2006-2008	Jefferson County, 2006-2008	CDJ - Region 10, 2006-2008
Number of Self-Employed (age 16+)	2,496	6,834	1,886	1,258	17,647
% of Labor Force, Self-Employed (age 16+)	21%	12%	16%	13%	17%

Source: 2006-2008 American Community Survey, US Census Bureau

According to the 2006-2008 American Community Survey displayed in Table 3, across the three year time-span, there were on average about 2,500 self-employed individuals in Tillamook County. The self-employed represented an estimated 21% of the labor force in the county during that time. The

estimated rate of self-employment in Tillamook County was the highest of the three pilot counties in 2006-2008. Crook County's estimated average self-employment rate was five percentage points lower than Tillamook's and Jefferson County's was eight percentage points lower. Overall, however, from these statistics we note that in these three counties and in the two regions a fair proportion of individuals work for themselves, and must be excluded from the analysis of mismatch between jobs and potential workers because their positions are not included in the count of jobs by occupation provided by the OED.

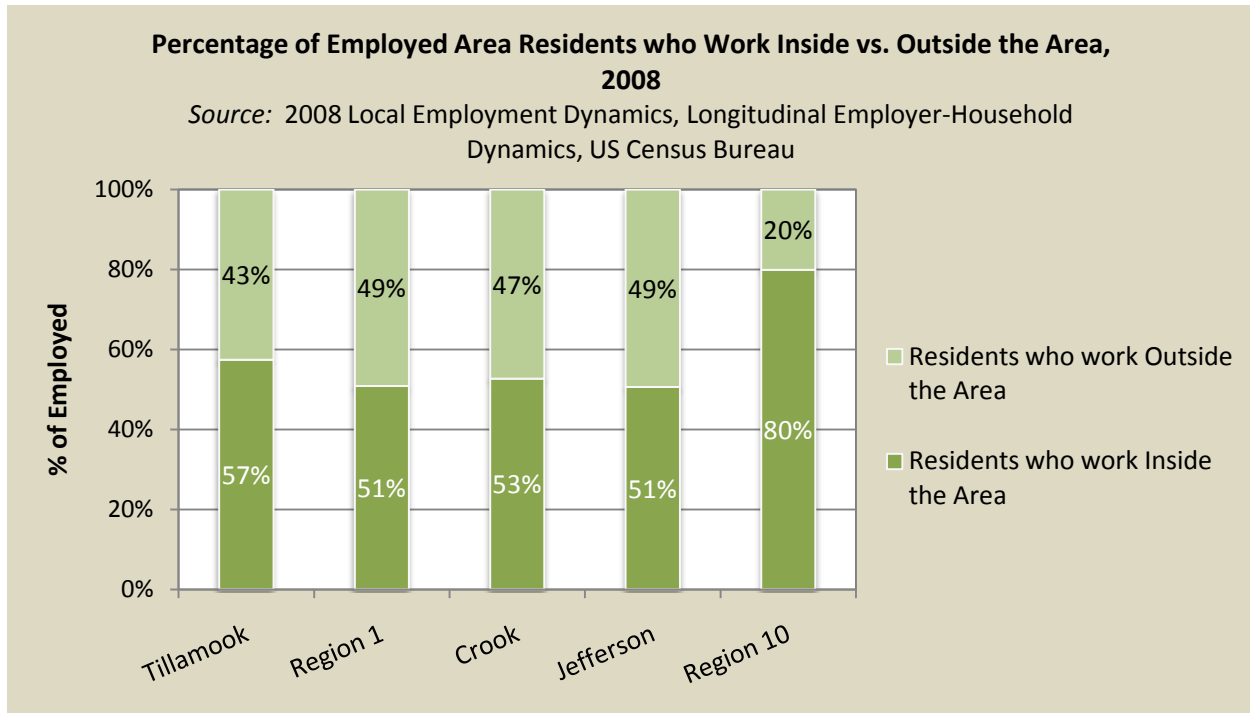
Commuting

The purpose of this assessment is to get an understanding of the match of labor force participants in Tillamook, Jefferson, and Crook counties to jobs in these three counties. Unfortunately, not all labor force participants who reside in these three counties actually work inside the county or will work inside the county. In addition, not all jobs in these counties are held by county residents or will be held by county residents. Partly due to the mismatch between skills of workers and available jobs, many people commute to jobs outside their county lines in order to make ends meet. In order to do this mismatch analysis correctly, the commuting patterns within the regions must be accounted for. Labor force participants who live in the Oregon Open Campus pilot counties but work outside of them should be subtracted from the pool of available labor force participants.

To understand the commuting patterns of the Open Campus pilot counties data from the US Census Bureau was relied upon. Using data collected in 2008 as part of the Local Employment Dynamics project of the Census Bureau estimates of the percentage of residents who work inside the county were produced.

Figure 2 illustrates the proportion of employed residents of the county and regional areas who work within the area and the proportion who work outside the area.

Figure 2



Evident from Figure 2 is that large proportions of Crook and Jefferson county residents commute outside the county, but the proportion of workers who commute to a job outside the region is quite low by contrast. Almost half of the employed residents of Crook and Jefferson counties commute outside of the county for work, but they must largely be commuting within the tri-county region as the Region 10 percentage of workers who commute to a job outside the region is only 20%. This finding points to the tightness of the Crook, Deschutes, and Jefferson county regional labor shed.

In Tillamook County, 57% of employed residents work within the county and 43% commute to a job in another county. Based on the regional percentage of residents who work inside the region it is evident that the labor shed of Region 1 extends beyond Clatsop, Tillamook, and Columbia counties for a fair number of residents. The tightness of the Region 1 labor shed is influenced heavily by its proximity to the Portland metropolitan area. About 15% of Tillamook County residents commute to jobs in Multnomah and Washington counties and nearly 30% of Columbia County residents commute to Multnomah County for work.

These data about commuting behaviors reveal that only a sub-set of people in the labor force in these Open campus pilot counties are potentially available to local employers. While many may hope for a change to the commuting patterns of workers in these labor sheds it is unlikely that there will ever be a complete match between people who reside in a community and the jobs available in that community. Because the purpose of the OR Open Campus is to improve the human capital of the local labor force for jobs in the local community, then the people not working in the area must be accounted for. In subsequent portions of this report, these commuting figures will be applied in calculations of the mismatch between jobs and labor force participants.

Educational Attainment

Now that we have a better sense of the labor market dynamics in the OR Open Campus pilot counties we turn our attention to the key attributes of labor force participants in these areas, as they pertain to the Oregon Open Campus idea. In particular, understanding the educational attainment of labor force participants is crucial to developing OR Open Campus in these communities.

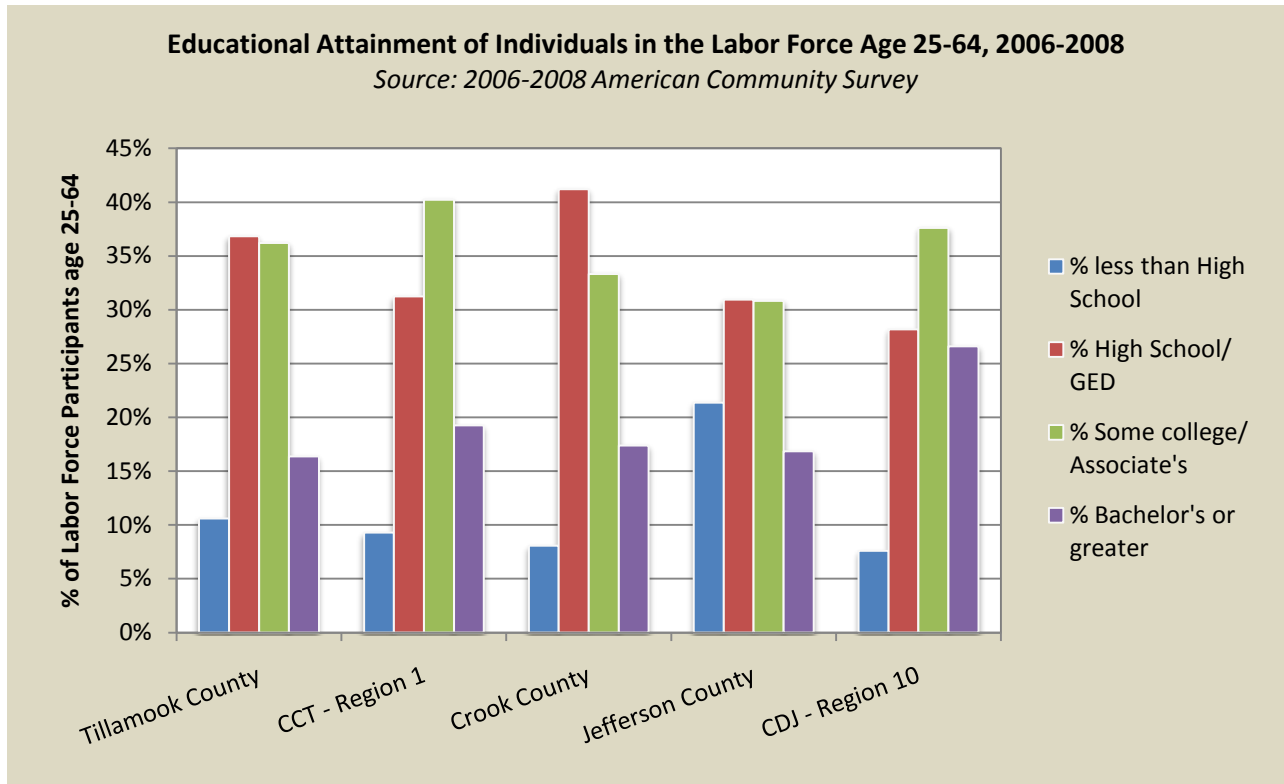
Data about the educational attainment of the labor force come from the 2006-2008 American Community Survey and are limited to the population age 25 to 64 (displayed in Table 4). Though it would be ideal to have data about the educational attainment of those age 16 and older who participate in the labor force, this set of statistics is not released by the Census Bureau. The analysis of the mismatch between local labor force participants and local jobs will be limited due to this reliance on a bracketed age group (age 25-64). For the counties, this reduces the labor force participant population by about 2,000 people. In Region 1, there are an estimated 9,825 labor force participants age 16 to 24 and 65 and older who will be excluded from the analysis, and in Region 10 an estimated 16,922 labor force participants will be excluded.

Table 4

Educational Attainment of Individuals in the Labor force Age 25-64, 2006-2008										
	Tillamook County		CCT - Region 1		Crook County		Jefferson County		CDJ - Region 10	
	%	#	%	#	%	#	%	#	%	#
Less than High School	11%	1,054	9%	4,303	8%	775	21%	1,681	8%	6,521
High School/ GED	37%	3,660	31%	14,476	41%	3,955	31%	2,434	28%	24,148
Some college/ Associate's Degree	36%	3,597	40%	18,637	33%	3,198	31%	2,426	38%	32,207
Bachelor's Degree or greater	16%	1,626	19%	8,916	17%	1,667	17%	1,325	27%	22,788
Total	100%	9,937	100%	46,332	100%	9,595	100%	7,866	100%	85,664

Source: 2006-2008 American Community Survey

Figure 3



According to the statistics in Table 4, graphed in Figure 3, in Tillamook County and in its tri-county region, the majority of labor force participants age 25 to 64 between 2006 and 2008 had a high school education, some college, or an Associate’s degree (around 70%). In Tillamook County, approximately equal proportions of these labor force participants had a high school education as had some college/an Associate’s degree. In Region 1, however, a greater proportion of the labor force had some college or an Associate’s degree, compared to the percentage with only a high school diploma. The smallest percentages of labor force participants in Tillamook County and the Northwest region of the state had less than a high school diploma in the 2006 to 2008 period, but only 16% of Tillamook County labor force participants had a Bachelor’s degree or greater and only 19% of the regional labor force had a Bachelor’s degree or greater. The bulk of the labor force in both the county and the region had only a high school education or some college/ an Associate’s degree between 2006 and 2008.

Crook and Jefferson counties differed markedly from Tillamook County in the educational attainment of their labor forces on average between 2006 and 2008. According to the American Community Survey, in Crook County, the greatest percentage of labor force participants had only a high school education (41%), followed by those with some college or an Associate’s degree (33%). The proportion of Crook County labor force participants who had a Bachelor’s degree or greater was similar to Tillamook County, as was the proportion with less than a high school education. Jefferson County, by contrast, had a larger representation of labor force participants with less than a high school education. Nearly a quarter of

labor force participants in Jefferson County had less than a high school education, which equated to almost 1,700 people on average between 2006 and 2008. Equal percentages of Jefferson County labor force participants had a high school diploma or some college/ an Associate's degree, and cumulatively these people made up 62% of the labor force population age 25 to 64. An estimated 17% of the labor force in Jefferson County had a Bachelor's degree or more during this time period.

For the Crook, Deschutes, and Jefferson county region, educational attainment of the labor force is weighted more heavily towards higher education; influenced heavily by the characteristics of Deschutes County. In Region 10, over a quarter of labor force participants had a Bachelor's degree or more and nearly 40% have some college or an Associate's degree on average between 2006 and 2008. Less than 30% of the labor force age 25 to 64 had only a high school education in the region, and less than ten percent of the labor force had less than a high school education on average during this time period.

Table 4 and Figure 3 also illustrate that around 50 percent of the labor force in all three of these counties already have some college education or more, and represent a sizable number of county residents who may not need higher education, but may need continuing education opportunities offered through an Open Campus forum. The statistics also reveal the converse is true; approximately 50 percent of the labor force age 25-64 in these three counties had a high school education or less on average between 2006 and 2008. If a large number of jobs in these counties required more than a high school education during this time, then the need for higher education opportunities through Open Campus would have been clear.

Summary: Current Labor Market Supply

This profile of the labor market supply of the three Oregon Open Campus pilot counties and their regions brought to light some characteristics of the labor force that the areas shared between 2006 and 2008, and some unique characteristics particular to counties or regions.

The data illustrated that the labor force participation rates in these areas of the state ranged, on average, between 2006 and 2008 from 58% to 65%. The pilot counties tended to have slightly lower labor force participation rates than their regions, but overall, the majority of the county population age 16 and over participated in the labor force. Also, the data confirmed that in the past labor force participation has varied by sex, age, time point, and location. These differences should be accounted for in the mismatch analysis, particularly projecting into the future.

Unemployment in the three pilot counties was estimated to have varied markedly between 2006 and 2008 on average. Tillamook County had the lowest estimated unemployment rate at the time (4%), while Jefferson County was estimated to have had the highest unemployment rate (11%). These unemployment rates were not seasonally adjusted, so the differences may be attributable to seasonal fluctuations in each economy.

Self-employment rate estimates varied from 12% to 21% in the Oregon Open Campus pilot counties and regions for the 2006 to 2008 time period. Of the three pilot counties, Tillamook County had the highest estimated self-employment rate on average and Jefferson County had the lowest. The match between the self-employed and jobs requiring their skills in these areas will not be assessed in this paper,

therefore it is helpful to understand the prevalence of the self-employed in the population. In fact, the labor force estimates calculated for the mismatch assessment will not include the self-employed at all; the data profiled above will be used to adjust the labor force estimates down by the estimated rates of self-employment for each area under study.

This profile of labor force participants also revealed that large proportions of employed residents in the three pilot counties commute outside their counties for work. Only about half of each county's labor force work within their counties and see the county as their likely workplace despite their desires perhaps to the contrary. The reality is that the labor markets in these three pilot counties are regional in nature, not county-specific. If the Oregon Open Campus idea is to help local county residents prepare for local county jobs, then the estimated size of the county labor force should be adjusted down to reflect the preponderance of county residents who are not part of that local labor market.

With respect to the education of labor force participants in the Oregon Open Campus pilot counties and their respective regions, the profile was limited to those ages 25 to 64. As the only source of information about the educational attainment of labor force participants by age and gender come from the US Census Bureau's American Community Survey, the analysis is limited by the data published by this source. Among this sub-population of labor force participants, the data revealed that about 70% of these individuals had a high school education, some college, or an Associate's degree in the three counties and two regions on average between 2006 and 2008. The remaining 30% of labor force participants age 25 to 64 had either very little education or 16+ years of education. The proportion with 16+ years of education was higher than the proportion with very little education in all counties and regions on average between 2006 and 2008. Without information about the job market in these areas it would appear that a sizeable number of labor force participants age 25 to 64 could be served by educational opportunities from Oregon Open Campus. Many adults might be interested in opportunities to receive a GED or complete some form of post-secondary training be it degree-granting or certificate-granting. Indeed, these individuals may be interested in these opportunities, but if the job market does not reward these human capital investments with jobs that require higher education and pay accordingly, increasing the education of the workforce could encourage out-migration and over-qualified employment. For this reason, the mismatch assessment is needed.

A Profile of Current Labor Market Demand: Jobs

Moving from the supply side of the labor market to the demand side, in this section we examine the number of jobs available within the OR Open Campus pilot regions and counties along with the educational requirements thereof.

Data about the educational requirements of jobs were provided by the Oregon Employment Department (OED) for occupations in 2008. For each detailed occupational category two educational requirements were assigned, one minimum and one competitive. The OED used educational requirement categories that did not correspond to educational attainment categories used by the Census Bureau for publication of the American Community Survey (ACS) data, therefore the OED

educational requirement concepts had to be mapped onto the educational attainment categories from the ACS. Table 5, below, illustrates how these two educational categorizations were aligned for the purpose of this assessment.

Table 5

Alignment of OED Educational Requirement Categories and ACS Educational Attainment Categories	
OR Employment Department Educational Requirement Categories	American Community Survey Education Categories
Short-term on the job training	Less than High School
Moderate-term on the job training, Long-term on the job training, Work experience	High School/ GED
Post-secondary certificate, Associate’s degree	Some college/ Associate’s degree
Bachelor's degree, Master's degree, Doctoral degree, Professional degree	Bachelor's or greater

Table 5 illustrates that the OED uses more detailed educational requirement categories than the American Community Survey provides about the educational attainment of labor force participants. The analysis of mismatch conducted for this report will therefore lose some of the nuance inherent to the OED educational requirement classification system.

Educational Requirements of Jobs by Region

According to the Oregon Employment Department there were 37,720 wage or salary jobs available in Region 1 (Tillamook, Clatsop, and Columbia counties) in 2008. In Region 10 (Crook, Deschutes, and Jefferson counties), there were 81,087 wage or salary jobs in 2008.⁴ Table 6 displays the number of jobs in each region that required each of the four levels of education reported by the Census Bureau for the American Community Survey. The top portion of the table coincides with the minimum education level required by employers and the bottom portion of the table displays the number of jobs in each competitive education level.

⁴ Jobs held by the self-employed are not included in these figures.

Table 6

Number of Jobs by Educational Requirements – Region 1 and Region 10		
MINIMUM EDUCATION REQUIREMENTS		
Educational Requirement	# of Jobs in Region 1 (Tillamook, Clatsop, Columbia) 2008	# of Jobs in Region 10 (Crook, Deschutes, Jefferson) 2008
Less than High School	15,914	30,633
High School/ GED	12,076	26,910
Some college/ Associate’s Degree	4,505	11,331
Bachelor's Degree or greater	4,680	11,388
No Education requirement stipulated	545	825
Total	37,720	81,087
COMPETITIVE EDUCATION REQUIREMENTS		
Educational Requirement	# of Jobs in Region 1 (Tillamook, Clatsop, Columbia) 2008	# of Jobs in Region 10 (Crook, Deschutes, Jefferson) 2008
Less than High School	0	0
High School/ GED	18,525	36,362
Some college/ Associate’s Degree	11,967	26,455
Bachelor's Degree or greater	6,683	17,445
No Education requirement stipulated	545	825
Total	37,720	81,087
<i>Source: OR Employment Department</i>		

As Table 6 indicates, in both regions of the state, if only the minimum educational requirements hold, the number of jobs that did not require any formal education (less than high school) was the greatest of the job types in 2008. If the unemployment rate had gone up, however, allowing employers to be more selective in their hiring, the number of jobs for which less than a high school education would have sufficed would reduce to zero. The numbers of jobs in the regions did not change under the different requirement settings in 2008, the jobs simply shuffled from one education category to another.

Also, generally-speaking, in each region and in each requirement setting (competitive and minimum) the higher the educational requirement, the fewer jobs there were in 2008. In the minimum education requirement setting, about 40% of jobs did not require any formal education (less than high school), about a third of jobs required only a high school education, roughly 13% of jobs required some college or an Associate’s degree, and about 13% of jobs required a Bachelor’s degree or greater. In the minimum education requirement setting, roughly equal numbers of jobs required some college/an Associate’s degree as required a Bachelor’s or greater. This parity disappeared in the competitive educational requirement environment, however, making the relationship between educational requirements and the number of jobs starker. In the competitive employment context, almost half of all jobs in the regions required only a high school education, a third required some college or an Associate’s

degree, and around 20% required a Bachelor’s degree or greater. As the data indicate, as education requirements increased in 2008 the number of jobs in the regions decreased, though the magnitude of the relationship fluctuated slightly depending on the economic context.

There were a handful of occupations for which the OR Employment Department could not assign educational requirements in 2008. These occupations were: leased workers, home care workers, sheltered workshop workers, and non-covered agricultural workers. These four occupations were associated with 545 jobs in Region 1 and 825 jobs in Region 10. Unfortunately, as these jobs have no educational requirements associated with them, it will not be possible to formally include them in the analysis of mismatch between local labor force participants and local jobs, based on education.

Educational Requirements of Jobs by County

Unfortunately, the Oregon Employment Department (OED) only publishes regional reports for the number of jobs that require certain education levels. In order to understand the labor market demand in each of the three Open Campus pilot counties in 2008, the number of jobs by education required in each county had to be estimated. Census data from 2000 on the occupations of workers by region and by county provided the basis from which to construct these estimates.

To estimate the number of jobs by occupation (and consequently by educational requirement) in 2008 for each county, the share of the regional occupational employment for each county was calculated for each occupation in 2000. That share of the regional jobs by occupation was then applied to the 2008 data provided by the OED. For example, according to the 2000 US census, 23% of the workers in management occupations in Region 1 were residents of Tillamook County. Assuming that that share held for 2008; 23% of the Region 1 management jobs in 2008 were Tillamook County jobs. The same share was applied to all sub-occupations to yield estimates of the number of jobs in each detailed OED occupational category. Table 7 provides some examples of how this calculation was made.

Table 7

Occupation Title	2008 Region 1 Jobs	2008 Tillamook share of Region 1 Jobs	2008 Tillamook Jobs
Management Occupations		23%, based on 2000 census data	= 23% of Region 1 Jobs
Chief Executives	21	23%	5
General and Operations Managers	360	23%	83
Legislators	1	23%	0
Financial Specialists		20%, based on 2000 census data	= 20% of Region 1 Jobs
Accountants and Auditors	173	20%	35
Appraisers and Assessors of Real Estate	36	20%	7
Credit Analysts	7	20%	1

Once the estimates of the number of jobs in each occupational category were created, then the OR Employment Department database was re-assessed to generate the number of jobs in each pilot county that required each of the four education level categories. Those results are displayed in Table 8, below.

Table 8

Estimated Number of Jobs by Educational Requirements – Tillamook, Crook, and Jefferson counties			
MINIMUM EDUCATION REQUIREMENTS			
Educational Requirement	# of Jobs in Tillamook County 2008	# of Jobs in Crook County 2008	# of Jobs in Jefferson County 2008
Less than High School	3,824	3,528	3,597
High School/ GED	2,838	3,209	3,085
Some college/ Associate's Degree	944	1,081	1,052
Bachelor's Degree or greater	1,226	993	1,011
No Education requirement stipulated	133	91	91
Total	8,965	8,902	8,836
COMPETITIVE EDUCATION REQUIREMENTS			
Educational Requirement	# of Jobs in Tillamook County 2008	# of Jobs in Crook County 2008	# of Jobs in Jefferson County 2008
Less than High School	0	0	0
High School/ GED	4,540	4,350	4,499
Some college/ Associate's Degree	2,585	2,897	2,694
Bachelor's Degree or greater	1,707	1,564	1,553
No Education requirement stipulated	133	91	91
Total	8,965	8,902	8,836
<i>Source: OR Employment Department, 2000 US Census</i>			

According to the data displayed in Table 8, the three counties and the two regions share trends in the number of jobs by education required if unemployment had been low in 2008. In the minimum education environment, the greatest number of jobs in 2008 in the three counties required less than a high school education (around 3,500 jobs in each county), and the number of jobs requiring a high school diploma or GED was similar (around 3,000 jobs in each county). As seen at the regional level, the number of jobs that would have required some college/an Associate's degree or higher in the counties in the minimum educational context in 2008 was markedly lower than the number requiring a high school education or less. Also, the number of jobs requiring an Associate's degree or some college in each of the three counties were about equal to the number of jobs requiring a Bachelor's degree or greater. This relationship was also seen at the regional level in 2008.

Turning to the competitive education portion of the table, around 50% of jobs would have required only a high school education in each county in 2008, the same proportion observed at the regional level.

Around a third of jobs would have required some college or an Associate’s degree in 2008 in each of the counties, and approximately 20% of jobs would have required a Bachelor’s degree or greater. These figures reveal that the regions and these three counties share a trend: as educational requirements increased, the number of jobs decreased in 2008. This trend is projected to continue into the future.

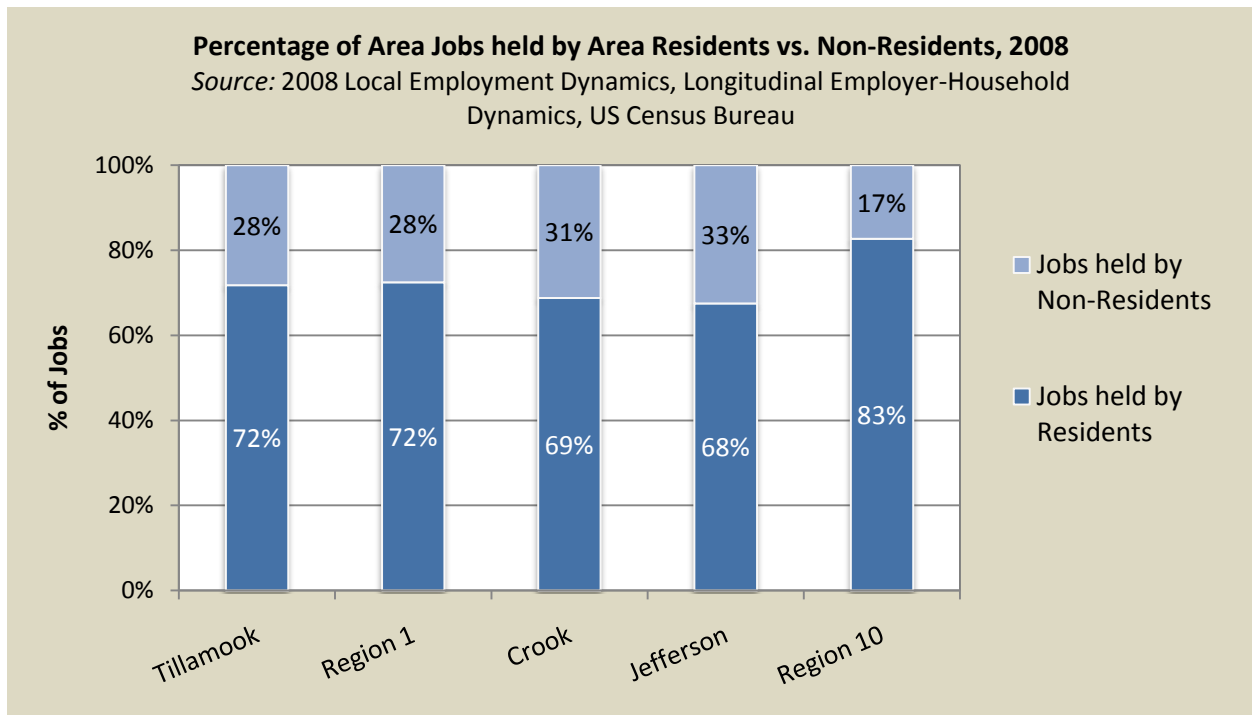
Commuting

In the profile of the labor force above, commuting patterns were used to illuminate the proportion of resident labor force participants who actually work within their counties and regions of residence. This proportion can be thought of as the labor force population available to local employers. The same technique can be applied to county and regional jobs. Using information about the resident locations of county or regional workers the proportion of jobs available to local residents can be estimated. Not all jobs in these counties are held by county residents or will be held by county residents. Jobs in the Open Campus pilot counties that are held by non-residents must be subtracted from the number of jobs available to resident labor force participants.

To understand the resident locations of county and regional workers, commuting pattern data from the US Census Bureau were used. Data collected in 2008 as part of the Local Employment Dynamics project of the Census Bureau were used to create estimates of the percentage of jobs in the county held by non-residents.

Figure 4 displays the proportion of jobs that were held in 2008 by residents versus non-residents for each county and region.

Figure 4



Apparent from Figure 4 is that in 2008 between 17 and 33 percent of jobs in these three counties and two regions were held by non-residents. Non-resident workers were people who may have lived in the next county over, another part of the state, or in a different state. Most non-resident job holders lived close to the county or region, however.

Based on the proportion of jobs held by residents in Region 10 (83%) it is clear again that the Crook, Deschutes, and Jefferson region is a relatively tight labor shed. Within Crook and Jefferson counties nearly a third of jobs are held by non-residents, but the majority must be residents of the region, because the regional proportion of jobs held by non-regional residents is only 17%. By contrast, the Region 1 labor shed extends outside the tri-county area to a greater extent. Almost a third of the region's jobs are held by people who do not live in Clatsop, Columbia, or Tillamook counties; a pattern which holds for Tillamook County as well.

Summary: Current Labor Market Demand

This profile of jobs in 2008 in the three Oregon Open Campus pilot counties and their two regions focused on illuminating the prevalence of jobs with particular education requirements and the number of jobs available to local labor force participants.

With respect to the prevalence of jobs with particular education requirements, the data revealed that in 2008, jobs that required a high school education or less were the most abundant in all three counties and in both regions. In the regions there were between 18,000 and 50,000 jobs in each area that required a high school education or less, depending on the nature of the economy at the time and the region. In the counties there were between 4,000 and 6,000 of these jobs in each county in 2008, depending on the competition in the labor market.

Compared to the number of jobs requiring a high school education or less, there were far fewer jobs that required some college education or more in 2008 in the counties and regions. In the regions, between 8,000 and 40,000 jobs required some college or post-secondary training, depending on the economic context and region. In the three counties, the number of jobs that required some college, an Associate's degree or greater ranged from about 2,000 to 4,000, depending on the level of competition in the labor market in 2008. Noteworthy for the Open Campus conversation is that in 2008, jobs requiring only some college or an Associate's degree were typically more abundant in the regions and counties than jobs requiring a Bachelor's degree or greater. The job markets of the Open Campus pilot communities are not weighted heavily toward high-skill or high education jobs, to the contrary, the vast majority of jobs in these areas are low-skill.

By examining the commuting behaviors of individuals who work within the pilot counties and regions insight into the geographic tightness of the labor markets was gained. According to the 2008 statistics, though the majority of county and regional jobs are held by residents nearly 30% are not. Region 10 stands out as exceptionally tight geographically, however, as only 17% of regional jobs are held by non-residents. For the other areas, 30% represents a significant number of local jobs that are not available to local residents. Though it is unclear exactly why so many local jobs are occupied by non-residents it may be because local residents do not possess the skills. Potentially, Oregon Open Campus opportunities

could help make local residents more attractive to local employers, but because it is not known why so many jobs are occupied by non-residents it is impossible to predict the impact Oregon Open Campus could have on this commuting pattern. Given this lack of information, it is most important to simply account for the pattern in the mismatch analysis, and recognize that some proportion of local jobs is not available to local residents.

2008 Match of Local Jobs to Local Labor Force by Education

The purpose of this data analysis effort is to understand the match of local jobs that require specific levels of education to local workers with those education credentials. In order to conduct such an analysis the information about labor market supply and demand discussed above will be used to yield a total count of labor force participants by educational attainment and a total count of jobs by educational requirement for 2008. First, the mismatch will be assessed for the two regions in which the OR Open Campus pilot counties are situated, and then the same analysis will be conducted for the single counties. Tables 9 and 10 present the results of the assessment for Region 1 and Region 10, respectively, and Tables 11, 12, and 13 present the results of the assessment for each of the pilot counties.

Findings

Region 1

Applying the current year mismatch assessment methods discussed earlier to the jobs and labor force data for Region 1 produces an estimate of the labor market mismatch by education presented in Table 9. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 9

REGION 1 - Clatsop, Columbia, Tillamook counties				
Mismatch Assessment (2006-2008)				
MINIMUM EDUCATION REQUIREMENTS	A	B	C	D
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to Region 1 employers	Mismatch
	<i>Does not include jobs held by non-residents</i>	<i>Given 12% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	11,458	3,787	1,931	-9527
High School/ GED	8,695	12,739	6,497	-2198
Some college/ Associate's Degree	3,244	16,401	8,364	5,121
Bachelor's Degree or greater	3,370	7,846	4,002	632
No Education requirement stipulated	392	--	--	--
Total	27,158	40,772	20,794	-6,365

REGION 1 - Clatsop, Columbia, Tillamook counties Mismatch Assessment (2006-2008) continued				
COMPETITIVE EDUCATION REQUIREMENTS	E	F	G	H
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to Region 1 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non- residents</i>	<i>Given 12% self- employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	3,787	1,931	1,931
High School/ GED	13,338	12,739	6,497	-6,841
Some college/ Associate's Degree	8,616	16,401	8,364	-252
Bachelor's Degree or greater	4,812	7,846	4,002	-810
No Education requirement stipulated	392	--	--	--
Total	27,158	40,772	20,794	-6,365

According to the data in Table 9, in 2008 there was an overall undersupply of labor force participants in Region 1 of about 6,000 people (column H and D, row "Total"). This overall undersupply was likely filled by workers with multiple jobs and some proportion of the 9,825 people age 16 to 24 or over the age of 64 in the region, because there was not a negative unemployment rate observed in Region 1 in 2008.

In 2008, if the minimum education requirements prevailed among employers there would have been an undersupply of labor force participants in Region 1 with a high school education or less. In other words, there would have been more jobs that required little education than there would have been labor force participants with little education. If the excess jobs were not held by people with more than one job or by any of the 9,825 people age 16 to 24 or 65+ not included in the analysis, then it is possible that individuals with more than a high school education could have taken the jobs, or that many of these jobs could have gone unfilled in 2008. By contrast, the data reveal that there would have been an oversupply of labor force participants with some college/an Associate's degree or greater in 2008, if employers required only the minimum levels of education for jobs. There would have been about 5,000 more people with some college or an Associate's degree in Region 1 than there would have been jobs in Region 1 that required some college or an Associate's degree. Also, there would have been just over 600 more people with a Bachelor's degree or higher in Region 1 looking for work or employed than there would have been jobs that required a Bachelor's degree or higher in the minimum education requirement context.

If the competitive education requirements had prevailed among employers in 2008, there would have been an estimated undersupply of labor force participants with any level of education over 11th grade in

Region 1.⁵ There would have been almost 7,000 more jobs that required a high school education than there would have been labor force participants with only a high school education. The undersupply of workers in the upper level jobs would have been less stark, but still apparent. If 2008 had been characterized by a competitive education requirement setting there would have been about 250 more jobs in Region 1 that required some college or an Associate's degree than there would have been labor force participants with that level of education, and there would have been about 800 more jobs that required a Bachelor's degree or greater than potential workers with a Bachelor's degree or greater. Again, these shortages assume that the labor force population ages 25 to 64 were the only potential employees of local employers. Clearly, the labor force age 16 to 24 or over the age of 65 could have occupied many of these jobs, but there is no way to know which jobs they could have been matched to. Perhaps 15% of these 9,825 individuals were attempting to occupy jobs that required less than high school education, while 70% occupied or tried to occupy jobs that required only high school, 10% could have been matched to jobs that required some college or an Associate's degree, and the remaining 5% could have been matched to jobs requiring a Bachelor's degree or more. These percentages are mere speculation, however. If there were data on the education of these labor force participants they would have been included in the mismatch assessment to improve its accuracy, unfortunately, there were not.

In sum, it is clear that the estimation of labor market mismatch by education in Region 1 for 2008 was highly dependent on the nature of the labor market as competitive or not. In the non-competitive environment, there was an estimated oversupply of labor force participants age 25 to 64 with post-secondary education. In the competitive environment, there was an estimated undersupply of labor force participants age 25 to 64 with post-secondary education. If the OR Open Campus idea intends to provide post-secondary training or education to labor force participants in the counties, then it will need to be sensitive to the fluctuations of the economy which will provide varying incentives and disincentives to people for seeking advanced education.

Region 10

Table 10 presents the 2008 estimates of labor market mismatch for Region 10. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

⁵ It is highly likely that this competitive educational environment prevailed in 2008, as the year corresponded to the beginning of a recessionary period.

Table 10

REGION 10 - Crook, Deschutes, Jefferson counties				
Mismatch Assessment (2006-2008)				
MINIMUM EDUCATION REQUIREMENTS	A	B	C	D
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to Region 10 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 17% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	25,425	5,412	4,330	-21,095
High School/ GED	22,335	20,043	16,034	-6,301
Some college/ Associate's Degree	9,405	26,732	21,385	11,981
Bachelor's Degree or greater	9,452	18,914	15,131	5,679
No Education requirement stipulated	685	--	--	--
Total	67,302	71,101	56,881	-10,421
COMPETITIVE EDUCATION REQUIREMENTS	E	F	G	H
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to Region 10 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 17% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	5,412	4,330	4,330
High School/ GED	30,180	20,043	16,034	-14,146
Some college/ Associate's Degree	21,958	26,732	21,385	-572
Bachelor's Degree or greater	14,479	18,914	15,131	652
No Education requirement stipulated	685	--	--	--
Total	67,302	71,101	56,881	-10,421

According to the mismatch assessment conducted on Region 10, in 2008 overall there was an undersupply of about 10,000 labor force participants for the labor market. As discussed for Region 1, here again, this overall supply estimate should not be used as an estimate of the match of the total labor force to all jobs. Instead, this figure represents the number of jobs available to the 16,992 labor force participants age 16 to 24 or 65 and older in the region and those age 25 to 64 in the region who desire more than one job.

By education level, in the minimum education requirement scenario, there would have been far fewer labor force participants with a high school education or less, age 25 to 64, than there would have been jobs requiring a high school education or less in Region 10 in 2008 (approximately 27,000 excess jobs). Table 10 also reveals that there would have been a serious oversupply of about 19,000 labor force participants with some college/an Associate's degree or greater if the minimum education requirement environment characterized the labor market in 2008. As we know, the 2008 economy was characterized by rising unemployment for the state; therefore it is likely that a more competitive education requirement environment characterized the Region 10 labor market in 2008.

According to Table 10, if the Region 10 labor market was highly competitive in 2008 then there would have been an oversupply of labor force participants with less than a high school education, a large undersupply of labor force participants age 25 to 64 with only a high school education (14,146), and a slight undersupply of labor force participants age 25 to 64 with some college education or an Associate's degree (572). These labor shortages could have been filled by any of the 16,992 labor force participants age 16 to 24 or over the age of 65, potentially reducing any shortages to zero. For Region 10, in contrast to Region 1, even in the competitive education environment in 2008 there was still an estimated oversupply of labor force participants age 25 to 64 with a Bachelor's degree or greater.

In sum, for Region 10 we note again the significant effect the competitive nature of the labor market has on the size and direction of the mismatch between labor force participants with certain education backgrounds and jobs that require particular education levels. Though the size of the oversupply of labor force participants age 25 to 64 with a Bachelor's degree or greater declined significantly from the non-competitive labor market setting to the competitive labor market setting, the oversupply remained. If this oversupply of the highly educated remains into the future, Open Campus in the central Oregon region may not be serving the community appropriately by providing many Bachelor's or advanced professional degree options. Also, the data suggest that the demand for professional certificates or Associate's degrees will fluctuate greatly depending on the nature of the economy in this region. There may be some demand for this type of education in times of recession, but the size of the demand will likely be low. Of course there may be high demand for post-secondary education among residents of this region, but that demand will not be driven largely by local labor market demand for workers with certain credentials.

Tillamook County

Turning now to mismatch estimates by county, Table 11 displays the data for Tillamook County. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 11

Tillamook County (TC) Mismatch Assessment (2006-2008)				
MINIMUM EDUCATION REQUIREMENTS	A	B	C	D
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to TC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 21% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	2,753	822	469	-2,284
High School/ GED	2,043	2,855	1,627	-416
Some college/ Associate's Degree	680	2,806	1,599	919
Bachelor's Degree or greater	883	1,268	723	-160
No Education requirement stipulated	96	--	--	--
Total	6,455	7,751	4,418	-1,941
COMPETITIVE EDUCATION REQUIREMENTS	E	F	G	H
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to TC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 21% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	822	469	469
High School/ GED	3,269	2,855	1,627	-1,641
Some college/ Associate's Degree	1,861	2,806	1,599	-262
Bachelor's Degree or greater	1,229	1,268	723	-506
No Education requirement stipulated	96	--	--	--
Total	6,455	7,751	4,418	-1,941

According to the data in Table 11, regardless of the competitive nature of the economy in Tillamook County, in 2008 there were more jobs requiring a Bachelor's degree or greater than labor force participants age 25 to 64 with a Bachelor's degree or greater. The magnitude of this estimated undersupply would have been higher in the competitive environment than in the non-competitive environment, however.

In the non-competitive employment context, there would have been an undersupply of labor force participants age 25 to 64 with less than a high school education (~2,300), a high school diploma (~400),

and a Bachelor's degree or greater (~160) in Tillamook County in 2008. Only labor force participants with some college or an Associate's degree would have been oversupplied if the Tillamook County labor market had not been competitive in 2008 (about 900 excess labor force participants).

In the competitive employment context, there would have been only an oversupply of labor force participants with less than a high school education in Tillamook County in 2008. This is due to the way in which the OED estimates competitive education requirements; there are no jobs for any county or region in this context that would not require at least a high school diploma or GED. For all other education levels in Tillamook County in 2008, if the competitive labor market had prevailed there would have been undersupplies of the labor force. The undersupply of labor would have been greatest for jobs that required a high school diploma or GED, followed by jobs that required a Bachelor's degree or greater (a shortage of about 500 workers). Finally, the undersupply of labor force participants in the county with some college or an Associate's degree would have been smallest, around 250 workers.

In sum, given the recession of the late 2000's, Tillamook County likely experienced some shortages of labor ages 25 to 64 with particular educational backgrounds. These shortages were likely seen most in the jobs that require some college/an Associate's degree or greater in tough economic times. These shortages were likely filled by the labor force age 20 to 24 or 65+, though it is unknown how many. It is also likely that the jobs in which only a high school education was required in 2008 were filled mostly by labor force participants age 16 to 19, so the shortage seen in the estimates may not have been a real shortage at all. Given the data limitations of the mismatch analysis that constrain the assessment to labor force participants age 25 to 64, it is very difficult to estimate the true mismatch of Tillamook County labor force participants to local jobs by education. These findings therefore represent very rough estimates of potential education demand for the population age 25 to 64 in Tillamook County if these individuals were seeking to replace labor force participants age 16 to 24 or 65 and over in the labor market.

These data for Tillamook County in 2008 also reinforce the conclusion reached in the previous assessments; depending on the state of the economy, the demand for workers with certain types of education will wax and wane.

Crook County

Table 12, below, reports the same type of mismatch estimates, but for Crook County. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 12

Crook County (CC) Mismatch Assessment (2006-2008)				
MINIMUM EDUCATION REQUIREMENTS	A	B	C	D
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to CC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 18% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	2,435	636	337	-2,098
High School/ GED	2,214	3,243	1,719	-496
Some college/ Associate's Degree	746	2,622	1,390	644
Bachelor's Degree or greater	685	1,367	724	39
No Education requirement stipulated	63	--	--	--
Total	6,143	7,868	4,170	-1,910
COMPETITIVE EDUCATION REQUIREMENTS	E	F	G	H
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to CC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 18% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	636	337	337
High School/ GED	3,002	3,243	1,719	-1,283
Some college/ Associate's Degree	1,999	2,622	1,390	-609
Bachelor's Degree or greater	1,079	1,367	724	-355
No Education requirement stipulated	63	--	--	--
Total	6,143	7,868	4,170	-1,910

As Table 12 illustrates, if 2008 was characterized by a non-competitive labor market environment in Crook County there would have been an undersupply of labor force participants age 25 to 64 with a high school education or less in the labor market (about 2,500 workers). In the higher education categories, there would have been oversupplies, but the oversupply would have been only slight in the Bachelor's degree or greater category (fewer than 50 individuals).

If 2008 had been characterized by a competitive labor market environment in Crook County, there would only have been an oversupply of those with less than high school education, but shortages of all

other types of labor force participants. There would have been about 900 more jobs that required some college/ an Associate's degree or greater than there were labor force participants with those levels of education in 2008. The more competitive market scenario yields a labor undersupply in the upper education levels that is not apparent in the minimum education requirement context.

In Crook County, there is again evidence that the economic context has a significant impact on the magnitude and direction of labor market mismatch by education. In the non-competitive economic environment (boom economy) there would have been a glut of highly educated labor force participants, but in the competitive economic environment (bust economy) there would not have been enough highly educated labor force participants age 25 to 64. The undersupply could have been as high as 900 Crook County workers with some post-secondary education age 25 to 64 in 2008. It is of course highly likely that some fraction of the 1,925 labor force participants age 16 to 24 and 65 and over in Crook County not included in this assessment could have filled or did fill these open positions.

Jefferson County

Table 13 presents mismatch estimates for Jefferson County. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 13

Jefferson County (JC) Mismatch Assessment (2006-2008)				
MINIMUM EDUCATION REQUIREMENTS	A	B	C	D
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to JC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 15% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	2,446	1,429	729	-1,717
High School/ GED	2,098	2,069	1,055	-1,043
Some college/ Associate's Degree	715	2,062	1,052	336
Bachelor's Degree or greater	688	1,126	574	-113
No Education requirement stipulated	62	--	--	--
Total	6,009	6,686	3,410	-2,537

Jefferson County (JC) Mismatch Assessment (2006-2008) continued				
COMPETITIVE EDUCATION REQUIREMENTS	E	F	G	H
	# of Jobs	'06-'08 Labor Force 25-64, Not self-employed	'06-'08 Labor Force 25-64 available to JC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non- residents</i>	<i>Given 15% self- employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	1,429	729	729
High School/ GED	3,059	2,069	1,055	-2,004
Some college/ Associate's Degree	1,832	2,062	1,052	-780
Bachelor's Degree or greater	1,056	1,126	574	-481
No Education requirement stipulated	62	--	--	--
Total	6,009	6,686	3,410	-2,537

According to the data in Table 13, in 2008 there was an overall undersupply of labor force participants in Jefferson County of about 2,500 people (columns H and D, row "Total"). This overall undersupply was likely filled by workers with multiple jobs and some proportion of the 1,741 labor force participants age 16 to 24 or over the age of 64 in the county not included in the analysis. Of note, is the fact that there were fewer labor force participants not included in the analysis than there were available jobs in the county. This means that Jefferson County would still have experienced labor shortages if all labor force participants were employed, based on education, and if all labor force participants only had one job. This observation gives some strength to the estimated mismatch between jobs and the labor force in Jefferson County that the other area estimates lack. That said, there was not zero unemployment in Jefferson County in 2008, so the estimates are not 100% accurate, but the estimates of mismatch by education may be somewhat more reliable for Jefferson County than for other areas.

According to the data presented in Table 13, regardless of the nature of the labor market, in 2008 Jefferson County faced estimated shortages of labor force participants with a high school education and with a Bachelor's degree or greater. The magnitudes of the shortages were less in the minimum education requirement context, but present. The estimated shortage of labor force participants with a Bachelor's degree or greater ranged from about 100 to 500, depending on the economy. The estimated shortage of labor force participants with a high school education ranged from about 1,000 to 2,000, depending on the labor market context.

Jefferson County would have been characterized in 2008 by an undersupply of about 1,700 labor force participants age 25 to 64 with less than a high school education if the labor market had been non-competitive. By contrast, if the county had faced a competitive market context there would have been an oversupply of about 700 of these labor force participants in 2008. Clearly the nature of the economy

has a large impact on the labor market mismatch of this group of labor force participants and jobs in Jefferson County.

If Jefferson County's labor market in 2008 had not been competitive, there would have been an oversupply of about 300 labor force participants with some college or an Associate's degree. If the county's labor market had been competitive in 2008, however, there would have been a large undersupply of labor force participants age 25 to 64 with some college or an Associate's degree (~780).

In sum, regardless of the nature of the economy, in 2008 Jefferson County may have been well-served by having access to higher education opportunities for its workforce, in particular opportunities for advanced professional degrees.

Summary: 2008 Match of Local Jobs to Local Labor Force by Education

The analysis of the 2008 mismatch between the number of labor force participants with particular levels of education in the Oregon Open Campus pilot counties and the number of jobs requiring certain levels of education in these same areas revealed some general trends for all areas and some unique issues for some locations. It is important to note, however, that the assessment was limited to the labor force population age 25 to 64, and therefore represents only an estimate of labor market mismatch in the areas. Used in conjunction with other information about Oregon Open Campus demand these findings can still be useful in planning the campuses in each of these areas.

Overall, the data indicate that in 2008 the nature of the economy played a significant role in shaping the demand for workers with particular education levels. This translated into effects on the size and direction of mismatches between labor force participants age 25 to 64 and available jobs. If the labor market had not been competitive, there would have been shortages in the number of labor force participants with a high school education or less age 25 to 64 in all areas. These jobs were probably sought after and occupied by some proportion of the labor force population age 16 to 24 and 65+, but it is not clear how many. By contrast, during this timeframe and in this same economic context, for all areas there would have been an overabundance of labor force participants with some college/ an Associate's degree. If the labor market had been competitive in 2008, however, there would have been an oversupply of labor force participants with less than a high school education and an undersupply of labor force participants age 25 to 64 with high school or greater education in all three counties and both regions. The over-abundance and short supply of labor force participants with certain education levels in all of these areas in 2008 depended heavily on the level of competition that characterized the labor market.

In addition, the data revealed that in 2008 the size of the mismatch between labor supply and labor demand varied by location. In the competitive labor market context, which most likely characterized the market in 2008, the estimated magnitude of the undersupply of labor force participants age 25 to 64 with some college or more education was highest in Jefferson County and Region 1. In Tillamook County, the undersupply was estimated at about 700 labor force participants, and in Crook County the shortage was estimated to be around 900 labor force participants. In Jefferson County, the shortage in 2008 was estimated at around 1,300 labor force participants with some college or more; a higher number than the

other two counties that is not explained by differences in labor force participant population size.⁶ Though some fraction of labor force participants age 20 to 24 or 65 and over would have had some college education or greater to fill this gap in Jefferson County, the size of the mismatch in the county indicates there may still have been some shortage of workers with some college or greater education. Region 1, containing Clatsop, Columbia, and Tillamook counties, would have faced a shortfall of about 1,000 labor force participants age 25 to 64 with some college or more if 2008 had been characterized by a competitive labor market. By contrast, Region 10 stands out as it would have faced an oversupply of labor force participants with some college or more (around 100 people). Each of these areas faced different extents of estimated labor market mismatch in 2008. These differing sizes of mismatch did not solely reflect differences in population size between the areas, they reflected differences in the composition of their workforces and local jobs.

2020 Match of Local Jobs to Local Labor Force by Education

The purpose of this data analysis effort was to understand the current and future match of local jobs that require specific levels of education to local workers with those education credentials. First, attention concentrated on understanding the match in the most recent labor market contexts of the Open Campus pilot counties for which data were available. Now, our attention turns to the future; 2020 projections of the match between local labor force participants and local jobs. In order to conduct such an analysis, all of the information about labor market supply and demand in 2008 discussed earlier will be used in conjunction with projections produced by federal and state agencies to yield a total count of labor force participants by educational attainment and a total count of jobs by educational requirement for 2020. First, the mismatch will be assessed for the two regions in which the OR Open Campus pilot counties are located, and then the same analysis will be conducted for the single counties. Tables 14 and 15 present the results of the assessment for Region 1 and Region 10, respectively, and Tables 16, 17, and 18 present the results of the assessment for each of the pilot counties.

Findings

Region 1

The methods for producing the 2020 projections of the match between jobs and labor force participants by education were discussed earlier in this paper. Those methods were applied to Region 1 and overall, the data reveal that from 2008 to 2020 the number of jobs in Region 1 is projected to grow about 11%, while the population of labor force participants age 25 to 64 is projected to grow about four percent. These variable growth rates will mean larger gaps in the mismatch between available jobs and potential workers in the region than observed for 2008. Sometimes that increase in the magnitude of mismatch will be seen in particular education level mismatches, but primarily the increased magnitude will be seen in the total match of jobs to labor force participants age 25 to 64 in 2020. Table 14 presents the detailed 2020 mismatch projection for Region 1. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

⁶ The size of the Jefferson County labor force in 2008, age 25 to 64, was smaller than the labor forces in Tillamook and Crook counties.

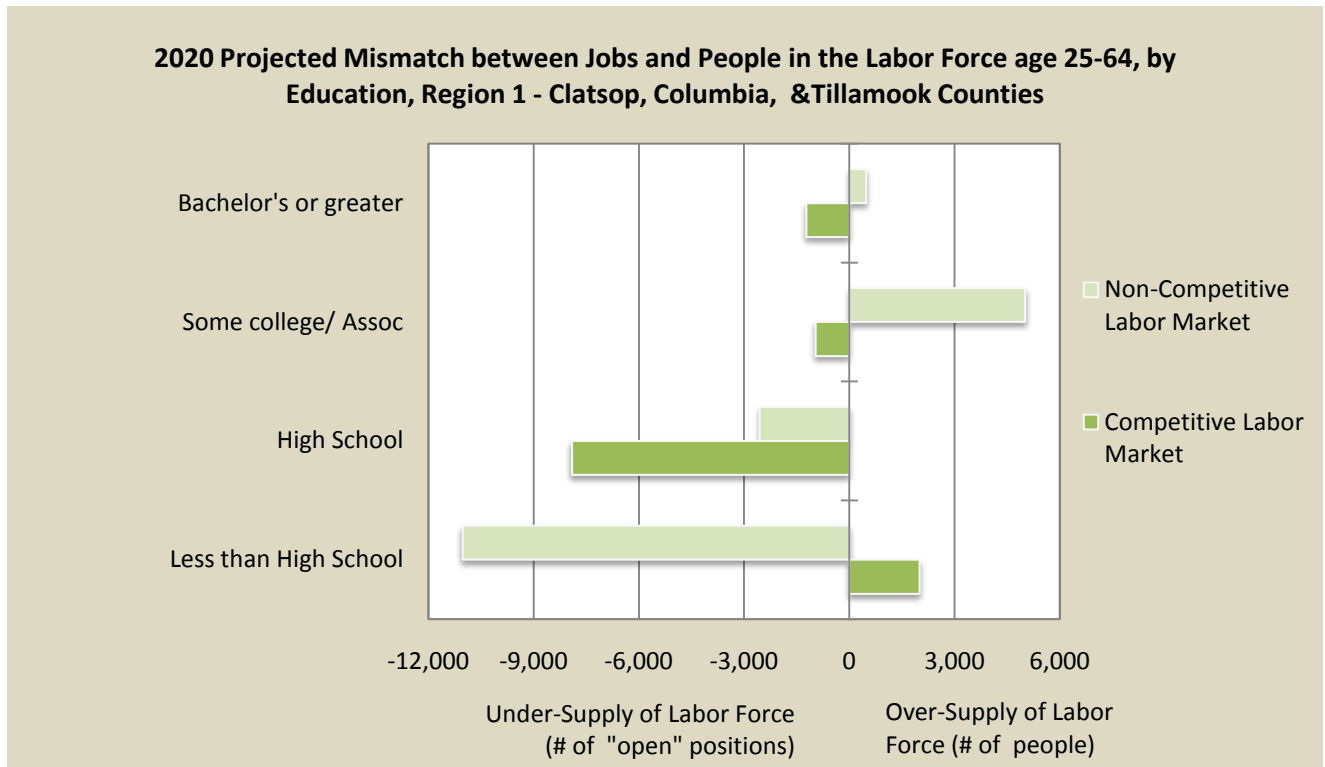
Table 14

REGION 1 - Clatsop, Columbia, Tillamook counties				
Mismatch Projection to 2020				
MINIMUM EDUCATION	A	B	C	D
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to Region 1 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 12% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	13,038	3,940	2,010	-11,029
High School/ GED	9,314	13,256	6,761	-2,554
Some college/ Associate's Degree	3,691	17,066	8,704	5,013
Bachelor's Degree or greater	3,685	8,165	4,164	479
No Education requirement stipulated	452	--	--	--
Total	30,180	42,427	21,638	-8,542
COMPETITIVE EDUCATION	E	F	G	H
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to Region 1 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 12% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	3,940	2,010	2,010
High School/ GED	14,665	13,256	6,761	-7,904
Some college/ Associate's Degree	9,669	17,066	8,704	-965
Bachelor's Degree or greater	5,391	8,165	4,164	-1,227
No Education requirement stipulated	452	--	--	--
Total	30,177	42,427	21,638	-8,539

According to the data presented in Table 14, if 2020 is a time of economic boom (where employers cannot be highly selective in their hiring processes) an oversupply of highly educated workers age 25 to 64 in the Clatsop, Columbia, and Tillamook county region is expected. If, however, 2020 is characterized by high unemployment when employers can be more selective about whom they hire, an undersupply of workers with some college or more in the tri-county region can be expected. Specifically, in Region 1 a shortage of almost 2,000 labor force participants with some college or more education in 2020 is projected, if the economy is characterized by high unemployment.

Figure 5 illustrates the labor market mismatch projected for 2020 in Region 1 graphically.

Figure 5



As Figure 5 illustrates, the non-competitive labor market, in which only the minimum education requirements will be expected by employers, will yield an overabundance of labor force participants with some college/an Associate’s degree or more and a serious undersupply of labor force participants with a high school education or less in 2020. It is likely that in 2020, labor force participants age 16 to 24 or 65+ will fill in for this demand for workers with little education, but it is unclear how many people this will be. If there are not enough workers age 16 to 24 or 65 and over to take on these lower-skilled jobs in 2020, then they will either remain unfilled, be filled by non-residents, or be filled by over-qualified residents.

If the competitive labor market prevails in the Region 1 2020 economy, then there are projected to be shortages of all types of labor force participants age 25 to 64 except of those with less than a high school education. As Figure 5 illustrates nicely, the largest undersupply of labor force participants in Region 1 that can be expected for 2020 (if the projection scenario holds) is among those with a high school education. The undersupply of labor force participants with some college or more advanced degrees will be relatively less, though still sizeable at around 2,000. These 2,000 “open” positions could be filled by those who increased their education in the prior years, but if the under-supply of workers with only a high school education remains high, there might be little motivation, save potential wage increases, for those with less education to go on to higher education for a relatively smaller number of open jobs.

As observed in the 2008 data, the competitiveness of the labor market is projected to have a significant effect on the size and direction of the mismatch in the 2020 labor market for Region 1. Most importantly, the nature of the competitiveness has the pronounced effect of switching the direction of mismatch for labor force participants age 25 to 64 with some college or more education from an oversupply in the non-competitive environment to an undersupply in the competitive environment. This effect is important to note. Rarely will a labor market be characterized so purely as one or the other; it is more likely that the region will be some mix of the two types of labor markets. If the labor market is a mix of competitive and non-competitive it is difficult to know exactly if there will be an over- or undersupply of labor force participants age 25 to 64 overall with some college or more education in the market. Most likely, there will be undersupplies of these more highly educated workers in some occupations and oversupplies in other occupations. Given that the shortage in a highly competitive market is projected at about 1,000 workers age 25 to 64 and the oversupply in the highly non-competitive market is projected at only about 400, if the competition is actually somewhere in between, then there may still be a shortage, but less than 1,000.

Region 10

Table 15 contains data about the projected mismatch of the labor force age 25 to 64 to jobs in Region 10 in 2020. Overall, the projected growth rate of the labor force population age 25 to 64 in Region 10 from 2008 to 2020 is 23%, up from about 57,000 labor force participants age 25 to 64 in 2008 to about 70,000 in 2020. The projected growth rate of jobs in that 12 year period is about 17% for this region. The projections have Region 10 growing faster in population than in jobs in the future, the opposite of what was projected for Region 1. As the growth rate of population is projected to exceed that of jobs in Region 10, the overall shortage of labor force participants age 25 to 64 found in 2008 is projected to shrink in 2020. This is the opposite of the change in mismatch projected for Region 1 between 2008 and 2020.

Table 15

REGION 10 - Crook, Deschutes, Jefferson counties				
Mismatch Projection to 2020				
MINIMUM EDUCATION	A	B	C	D
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to Region 10 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 17% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	29,768	6,659	5,327	-24,441
High School/ GED	25,624	24,658	19,727	-5,897
Some college/ Associate's Degree	11,293	32,888	26,310	15,017
Bachelor's Degree or greater	11,163	23,270	18,616	7,452
No Education requirement stipulated	780	--	--	--
Total	78,628	87,474	69,979	-8,649
COMPETITIVE EDUCATION	E	F	G	H
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to Region 10 employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 17% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	6,659	5,327	5,327
High School/ GED	34,745	24,658	19,727	-15,018
Some college/ Associate's Degree	25,818	32,888	26,310	492
Bachelor's Degree or greater	17,285	23,270	18,616	1,331
No Education requirement stipulated	780	--	--	--
Total	78,628	87,474	69,979	-8,649

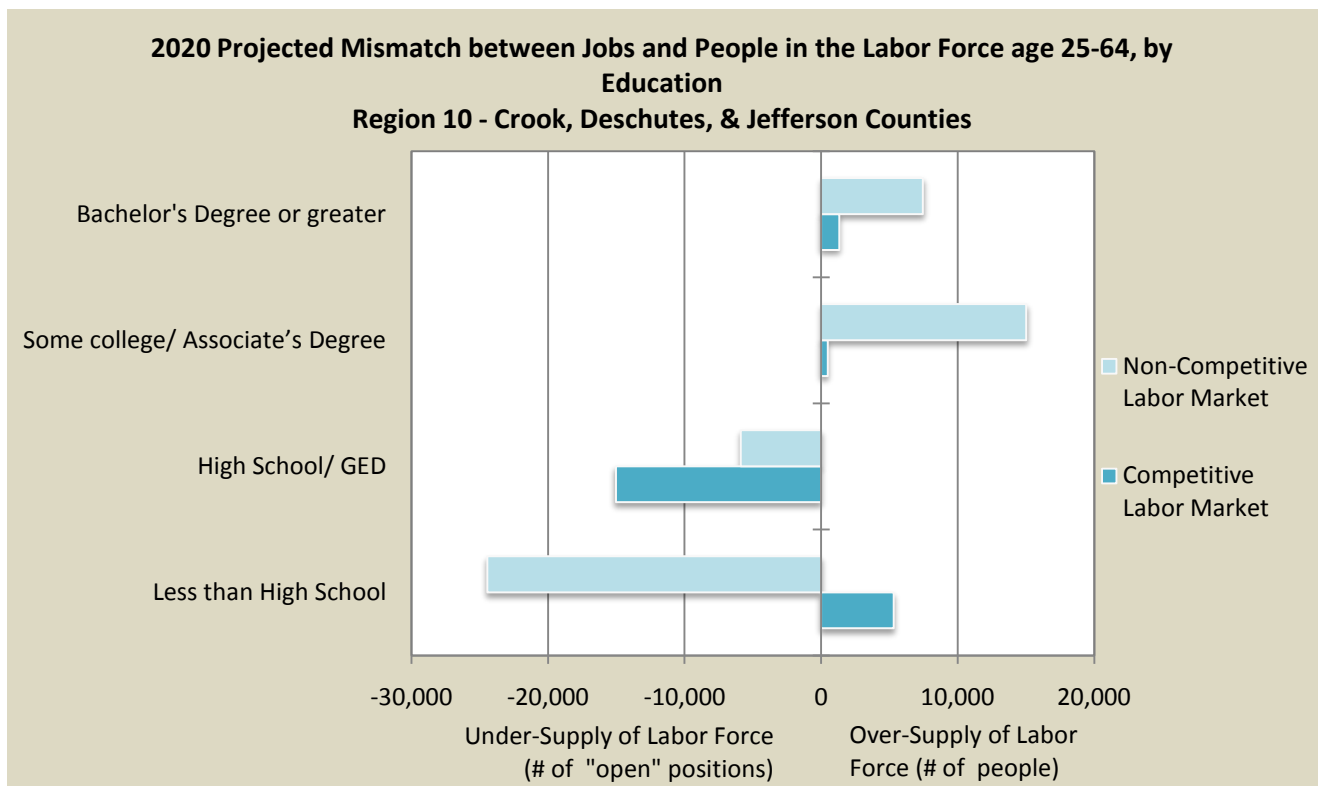
As Table 15 shows, if 2008 trends in commuting, self-employment, and educational attainment hold true in 2020, and the size of the labor force increases along with the number of jobs, Region 10 in a non-competitive labor market context will have an oversupply of around 22,000 labor force participants age 25 to 64 with some college or more education in 2020. This oversupply will likely lead to underemployment and out-migration as those with high educations settle for jobs they are over-qualified for and shift out of the region entirely in search of work.

Table 15 also reveals there will be a projected undersupply of around 30,000 labor force participants age 25 to 64 with a high school education or less in the 2020 Region 10 labor market, if the market is not highly competitive. Again, the jobs that require only a high school education or less will likely be filled by Region 10 residents age 16 to 24 or over the age of 64, non-residents, over-qualified individuals, or remain unfilled.

If the 2020 Region 10 labor market is characterized by high unemployment, however, Table 15 shows that there will still be an oversupply of labor force participants with some college, an Associate’s degree, a Bachelor’s degree, or an advanced professional degree. In the competitive environment the oversupply is reduced, however, to about 1,800 people. According to the 2020 mismatch projection, there will be an undersupply of approximately 15,000 labor force participants with a high school education, and an oversupply of more than 5,000 people with less than a high school education if there is high unemployment in the region in 2020.

Figure 6 presents the mismatch data in graphic form to convey how the two labor market contexts affect the extent of mismatch.

Figure 6



According to the data presented in Figure 6, the competitiveness of the labor market has some marked effects on the size of the projected mismatch between labor force participants and available jobs in 2020, but only in the case of jobs and individuals with less than a high school education does the direction of the mismatch change. The oversupply of labor force participants age 25 to 64 with a

Bachelor’s degree or greater is reduced from about 7,500 to around 1,000, and the oversupply of labor force participants with some college or an Associate’s degree is reduced even more, but even in the competitive labor market context there will be an oversupply in 2020. Similar to the mismatch projected for Region 1, in Region 10 the projection indicates there will be an undersupply of labor force participants age 25 to 64 with a high school education in 2020 regardless of the competition in the labor market, but the undersupply is smaller in magnitude in the non-competitive context.

The data indicate that the nature of the Region 10 labor market in 2020 will have a significant effect on the match between jobs and the workforce age 25 to 64, but we can expect there to be a consistent oversupply of labor force participants age 25 to 64 with some college or more in the region. By contrast, the data reveal that in 2020 there is likely to be a consistent undersupply of labor force participants age 25 to 64 with a high school education; this undersupply should not be cause for concern, however, as the jobs will likely be filled by those under the age of 25.

These findings suggest that there will not be significant demand at the regional level for higher education opportunities that could be offered through Open Campus. There may be demand for post-secondary education among residents of this region, but that demand will not be driven by local labor market demand for workers with certain credentials. The county level data may tell a different story, however.

Tillamook County

Turning to the county level projection estimates of mismatch, Table 16 presents the findings for the Tillamook County 2020 assessment. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 16

Tillamook County (TC) Mismatch Projection to 2020				
MINIMUM EDUCATION	A	B	C	D
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to TC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 21% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	3,125	947	540	-2,585
High School/ GED	2,183	3,289	1,875	-308
Some college/ Associate’s Degree	776	3,232	1,842	1,067
Bachelor's Degree or greater	978	1,461	833	-145
No Education requirement stipulated	109	--	--	--
Total	7,171	8,929	5,090	-1,972

Tillamook County (TC) Mismatch Projection to 2020 (continued)				
COMPETITIVE EDUCATION	E	F	G	H
	Jobs available 2020	2020 Labor Force 25-64, Not self- employed	2020 Labor Force 25- 64 available to TC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non- residents</i>	<i>Given 21% self- employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	947	540	540
High School/ GED	3,579	3,289	1,875	-1,704
Some college/ Associate's Degree	2,099	3,232	1,842	-257
Bachelor's Degree or greater	1,384	1,461	833	-551
No Education requirement stipulated	109	--	--	--
Total	7,171	8,929	5,090	-1,972

The Oregon Employment Department estimates that there will be about 10,000 jobs in Tillamook County in 2020. Removing the estimated number of county jobs that will be held by non-residents in 2020 reduces the number of jobs available to Tillamook County residents in 2020 to about 7,000.⁷ Seven thousand Tillamook County jobs available to local residents in 2020 is up from the estimated 6,500 available jobs in 2008 and represents a growth rate of about 7%.

Based on the population and labor force participation projections from the US Bureau of Labor Statistics and the OR Office of Economic Analysis, the total number of labor force participants age 25 to 64 in Tillamook County in 2020 is projected to be around 11,500 people. Accounting for the self-employment and commuting behaviors of the population reduces the size of the labor force age 25 to 64 to about 5,000 people, but this is greater than the population estimate of about 4,400 in 2008. The growth rate of the labor force population age 25 to 64 is thus projected to be about 15% for Tillamook County from 2008 to 2020.

As the size of the labor force age 25 to 64 is projected to grow faster than the number of jobs in Tillamook County between 2008 and 2020, the labor force shortage in 2020 is expected to be less than the shortage observed in 2008 for Tillamook County, if the projection scenario and assumptions hold. Though slight, the projected overall shortages do differ; for 2020 the overall shortage is projected at about 1,972 labor force participants age 25 to 64 and the shortage for 2008 was 1,941.

According to Table 16, if the 2020 labor market of Tillamook County is not particularly competitive there will be an estimated shortage of about 2,800 labor force participants age 25 to 64 with a high school education or less. The projections estimate there will be an oversupply of about 1,000 labor force

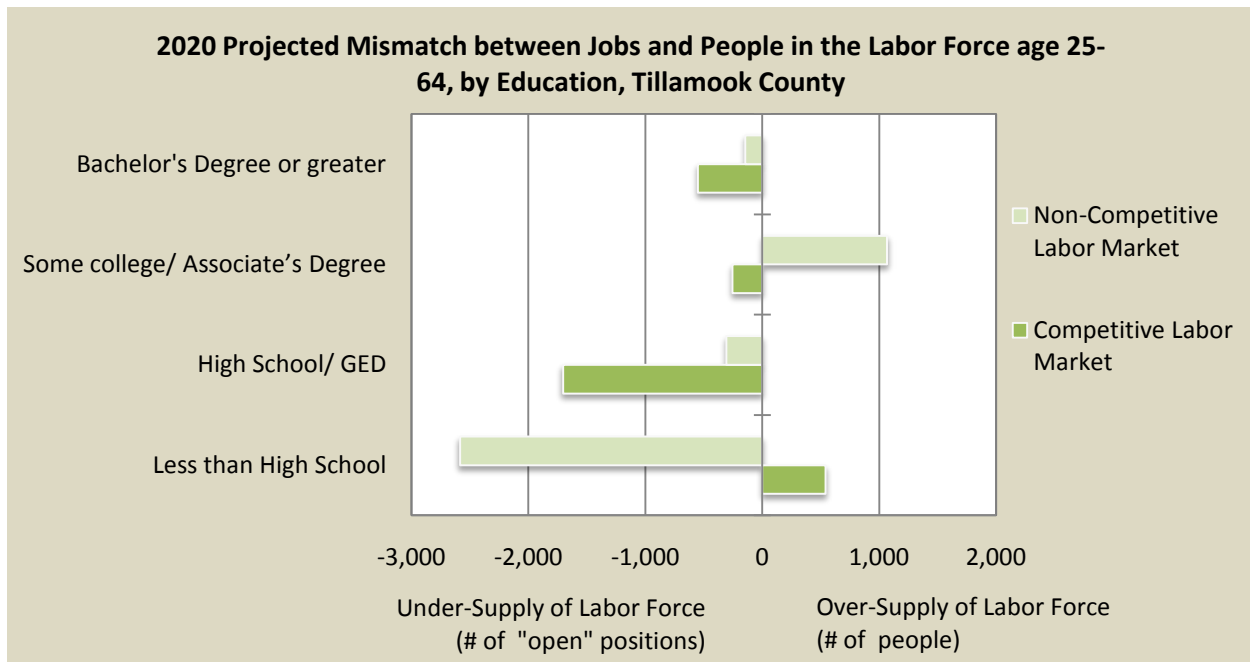
⁷ This calculation assumed that 2020 commuting patterns will be the same as they were in 2008.

participants with some college or an Associate’s degree, but a shortage of about 150 labor force participants with a Bachelor’s degree or higher. If the 2020 labor market in Tillamook County is highly competitive there is projected to be an oversupply of over 500 labor force participants age 25 to 64 with less than a high school education and a shortage of about 1,700 labor force participants with a high school education. If the market is competitive in the county in 2020 and the projection assumptions and scenario holds there will be an undersupply of 257 individuals with some college or an Associate’s degree and a shortage of about 550 labor force participants with a Bachelor’s degree or more.

None of these projected over- or undersupplies of labor are very different than the estimates for 2008. This consistency indicates that the mismatch trends current labor force participants in Tillamook County face are projected to hold in the future. Many individuals in the county may already be aware of the oversupplies and undersupplies of workers and acting on these observations or preparing to act on these observations. Oregon Open Campus may be able to use this as an opportunity to use the current situation and its projected continuation as motivation to help current labor force participants seek educational opportunities.

Figure 7 illustrates the 2020 projected labor market mismatch in Tillamook County graphically, to help illustrate the influence of the labor market context on the extent of the mismatch.

Figure 7



As Figure 7 reveals, in 2020 there is an undersupply of labor force participants age 25 to 64 with only a high school education projected, regardless of the competition in the labor market in Tillamook County. The competitiveness of the labor market does have an effect on the direction of the mismatch for those with less than a high school education, however. There will be an undersupply of labor force participants

age 25 to 64 with less than high school in 2020 if the labor market is not competitive, but if the market is competitive there will be an oversupply of these labor force participants.

The competitiveness of the labor market will also have a marked effect on the direction of the mismatch between labor force participants age 25 to 64 with some college or an Associate's degree and jobs that require some college or an Associate's degree. If the labor market is not competitive, and employers only require the minimum level of education to fill positions, then there will be an oversupply of labor force participants with this level of education in 2020. If, however, the labor market is competitive, then there will be a projected undersupply of labor force participants age 25 to 64 with some college or an Associate's degree in Tillamook County. Chances are, the 2020 labor market context will be somewhere between perfectly competitive and perfectly non-competitive, which would suggest that the labor market will have an oversupply of labor force participants with some college or an Associate's degree to some degree (less than 1,000).

Comparing the projected number of labor force participants with advanced professional degrees in 2020 in Tillamook County to the projected number of jobs in 2020 requiring advanced professional degrees reveals that if the labor market is not competitive there is a projected undersupply of around 100 labor force participants age 25 to 64 with a Bachelor's degree or greater. If the labor market is competitive, this undersupply is projected to increase to about 550 in 2020. Thus, regardless of the nature of the labor market, there is an undersupply of labor force participants age 25 to 64 with a Bachelor's degree or greater expected for 2020 if the analysis scenario holds. It is possible that Tillamook County labor force participants age 22 to 24 or those age 65 and older could fill this gap in 2020 and it is possible that unanticipated numbers of labor force participants age 25 to 64 could fill these jobs. The range of projected shortage therefore reveals the number of labor force participants age 22 to 24 and over the age of 64 with a Bachelor's degree or greater the market could provide jobs for in 2020 and the number of labor force participants age 25 to 64 with less than a Bachelor's degree whose education could be improved prior to 2020 who could fill the slots in 2020.

If the assumptions of the analysis hold, the 2020 mismatch projection provides some evidence that Tillamook County could be well-served in the future if OR Open Campus were to provide access to 4-year college degrees or post-graduate degrees. The findings discussed here suggest the Tillamook Open Campus not focus a lot of attention on providing Associate's degrees, however. That said, there may be demand in the county for particular Associate's degrees or for Associate's degrees overall, but that demand will not be driven largely by aggregate local labor market signals; that demand will be driven by regional, state, or national labor market trends, or by desires on the part of individuals for personal growth opportunities.

Crook County

Turning now to the central Oregon counties, Table 17 contains the results of the 2020 mismatch projection for Crook County. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 17

Crook County (CC) Mismatch Projection to 2020				
MINIMUM EDUCATION	A	B	C	D
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to CC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 18% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	2,844	755	400	-2,444
High School/ GED	2,539	3,853	2,042	-497
Some college/ Associate's Degree	884	3,116	1,651	768
Bachelor's Degree or greater	808	1,624	861	53
No Education requirement stipulated	71	--	--	--
Total	7,146	9,348	4,954	-2,120
COMPETITIVE EDUCATION	E	F	G	H
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to CC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 18% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	755	400	400
High School/ GED	3,444	3,853	2,042	-1,402
Some college/ Associate's Degree	2,355	3,116	1,651	-704
Bachelor's Degree or greater	1,276	1,624	861	-415
No Education requirement stipulated	71	--	--	--
Total	7,146	9,348	4,954	-2,120

If 2008 trends in commuting, self-employment, and educational attainment hold for Crook County in 2020, but the labor force population grows about 19% and the number of jobs grows about 16% from 2008, the size of the overall mismatch between jobs and workers will increase slightly from the 2008 shortage of about 1,900 people. Table 17 illustrates that in both the competitive and non-competitive labor market contexts, for all education levels the sizes of the projected mismatches in 2020 are similar to the sizes of the estimated mismatches in 2008. The labor market in 2020 is projected to be similar to

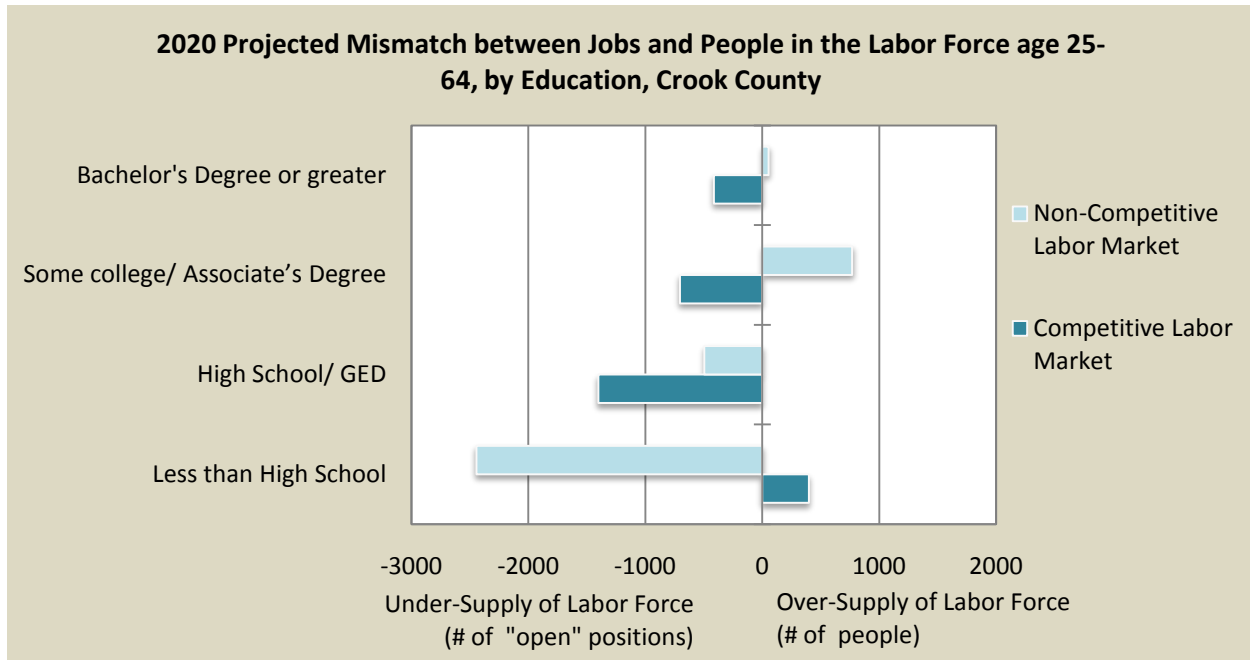
the labor market in 2008, thus recent trends can be relied on to justify actions in the near future. The future does not threaten to be markedly different for the Crook County labor market.

Table 17 also illustrates the magnitude and direction of labor market mismatch projected for Crook County in 2020. If the county labor market in 2020 is non-competitive there will be an oversupply of around 800 labor force participants age 25 to 64 with some college or more education projected for 2020. This projected oversupply will likely lead to out-migration, commuting out of county for work, unemployment, or employment of these individuals in jobs for which they are overqualified. By contrast, if the 2020 labor market is characterized by high competition, there will be a shortage of about 1,100 labor force participants age 25 to 64 with some college or greater. In this context, individuals who do not have any post-secondary education would have an incentive to increasing their education levels to fill some of these open positions. Also, labor force participants age 19 to 24 and over the age of 65 may have the opportunity to take these positions if their education levels meet the job requirements.

If the labor market is a mix between perfectly competitive and perfectly non-competitive then it is difficult to say exactly if there will be an over- or undersupply of workers with some college or more in Crook County in 2020. Specifically for Crook County labor force participants age 25 to 64 with some post-secondary education, if the labor market is somewhere between perfectly competitive and perfectly non-competitive, then those with a Bachelor's degree or more will likely be in slight undersupply. In this kind of market context, it is not highly likely, however, that there will be a particularly large shortage or oversupply of labor force participants with some college or an Associate's degree in 2020 in Crook County. This is because the estimated oversupply is about the same as the estimated undersupply in the two economic scenarios.

According to the 2020 projection mismatch analysis data presented in Figure 8, regardless of the competition in the labor market there will not be enough labor force participants age 25 to 64 with only a high school education to satisfy demand for individuals with this level of education. It is likely that these jobs will be filled by younger labor force participants, participants over the age of 64, overqualified labor force participants age 25 to 64, or by people who commute to Crook County from elsewhere. It may also be possible for labor force participants age 25 to 64 who had less than a high school education prior to 2020 to get a GED before 2020 and thus qualify for these positions.

Figure 8



Finally, in 2020 the mismatch projected between jobs that require less than a high school education and labor force participants age 25 to 64 with less than a high school education is estimated to be between negative 2,000 and positive 400. Depending on the competition in the labor market Crook County is projected to experience a shortage or an overabundance of labor force participants ages 25 to 64 with less than a high school education.

The 2020 projection of the labor market mismatch between labor force participants and jobs suggests that the form of Oregon Open Campus in Crook County may need to adjust based on the market context. Also the potential demand for workers with Bachelor's degrees or more advanced degrees and those with a high school education suggests that Oregon Open Campus in Crook County could help meet those demands.

Jefferson County

Between 2008 and 2020 the number of jobs available to Jefferson County residents is projected to grow by 17%. The number of labor force participants age 25 to 64 is projected to grow by 27% between 2008 and 2020 in the county. The overall mismatch of workers to jobs in the county in 2020 is projected to be very similar to the estimated mismatch for 2008, namely a shortage of about 2,500 labor force participants age 25 to 64. In each education category, the differences in mismatch between 2008 and 2020 are not great, suggesting that future labor market mismatch patterns should not affect current decision-making more than current patterns. Detailed results of the Jefferson County projection of labor market mismatch for 2020 are presented below, in Table 18. Columns C and G were subtracted from columns A and E, respectively, to produce the mismatch estimates in columns D and H.

Table 18

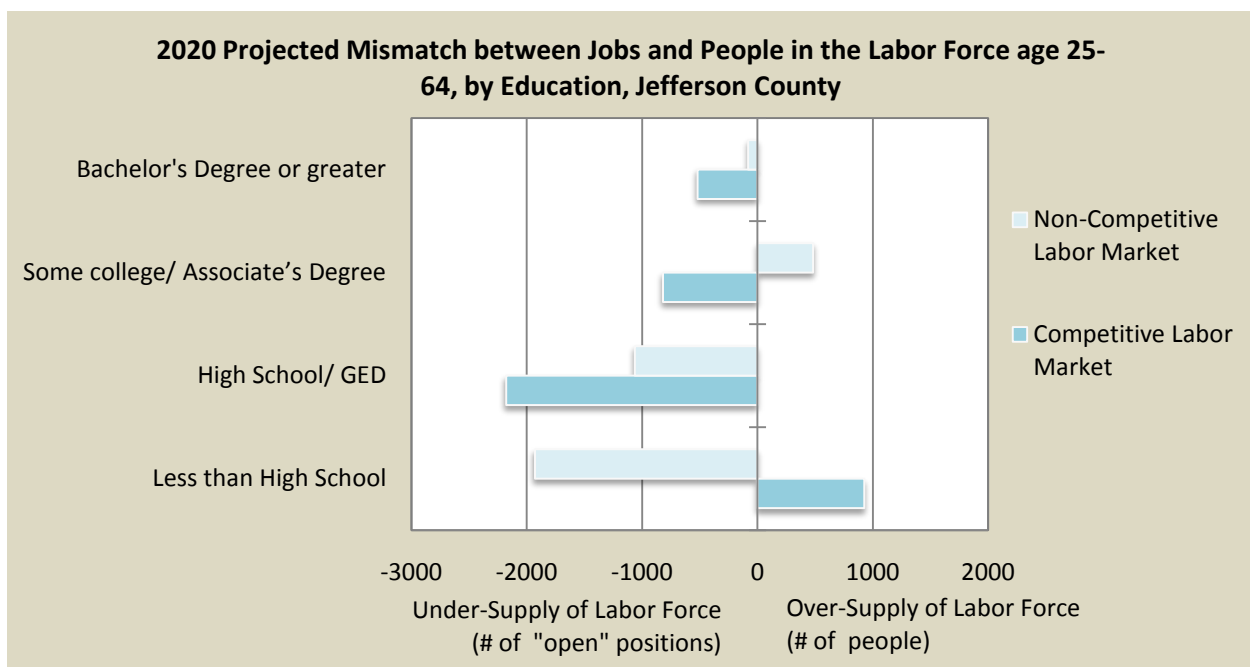
Jefferson County (JC) Mismatch Projection to 2020				
MINIMUM EDUCATION	A	B	C	D
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to JC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 15% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	2,856	1,816	926	-1,930
High School/ GED	2,406	2,629	1,341	-1,065
Some college/ Associate's Degree	854	2,621	1,337	483
Bachelor's Degree or greater	811	1,431	730	-81
No Education requirement stipulated	70	--	--	--
Total	6,996	8,497	4,334	-2,592
COMPETITIVE EDUCATION	E	F	G	H
	Jobs available 2020	2020 Labor Force 25-64, Not self-employed	2020 Labor Force 25-64 available to JC employers	<u>Mismatch</u>
	<i>Does not include jobs held by non-residents</i>	<i>Given 15% self-employment rate</i>	<i>Does not include residents who commute to jobs outside area</i>	<i>Under (-) or Over (+) Supply of Labor</i>
Less than High School	0	1,816	926	926
High School/ GED	3,519	2,629	1,341	-2,178
Some college/ Associate's Degree	2,156	2,621	1,337	-820
Bachelor's Degree or greater	1,251	1,431	730	-521
No Education requirement stipulated	70	--	--	--
Total	6,996	8,497	4,334	-2,592

The 2020 projection of the labor market mismatch for Jefferson County, displayed in Table 18, reveals that if trends in self-employment, educational attainment, and commuting stay constant between 2008 and 2020, and the economy is good there will be a shortage of about 2,000 labor force participants age 25 to 64 with less than a high school education. There will also be a projected shortage of about 1,000 labor force participants age 25 to 64 with high school educations, an overabundance of people in the labor force with some college or an Associate's degree, and a very small shortage of participants age 25 to 64 with a Bachelor's degree or greater. If the economy is bad, and jobs are scarce, the shortage of

people with less than a high school education will become an overabundance of about 1,000, there will be a shortage of about 2,000 labor force participants age 25 to 64 with a high school education, a need for 820 additional labor force participants with some college or an Associate’s degree, and a shortage of over 500 labor force participants age 25 to 64 with a Bachelor’s degree. These demands for more labor force participants could be filled by individuals age 16 to 24 or 65 and older as well as unanticipated numbers of labor force participants age 25 to 64 who increase their educational attainment by 2020.

In Jefferson County, as observed for all other areas of this study, the level of competition in the labor market has a significant effect on the magnitude and sometimes the direction of the match of jobs to potential workers. Figure 9 illustrates that effect graphically.

Figure 9



According to Figure 9, the competition in the labor market has the greatest directional effect on the mismatch in Jefferson County for jobs requiring less than high school education. In the non-competitive market a shortage of these types of workers is projected, but if the market shifts there will be a large oversupply. By contrast, in both types of economic contexts there is projected to be a shortage of labor force participants with a high school education in Jefferson County in 2020. This persistent shortage is echoed in the other counties under study and likely characterizes many Oregon counties. If 2020 is characterized by a strong economy and low unemployment, the projections indicate that there will be too many labor force participants in Jefferson County with some college or an Associate’s degree. If, however, the 2020 labor market in Jefferson County is a bit more competitive and employers raise their standards for wage and salary jobs, then there will be a shortage of labor force participants with some college or an Associate’s degree in the county. This economic context would encourage Jefferson County residents with only a high school education to pursue higher education, perhaps at the Associate’s degree level.

According to the 2020 projection analysis, regardless of the nature of the labor market there will be a shortage of labor force participants age 25 to 64 with a Bachelor's degree or greater in Jefferson County. If the market is not particularly competitive this shortage will be slight, but if the market is highly competitive the shortage could be about 500 people.

In Jefferson County, the projected 2020 mismatch is affected by the nature of the labor market. This sensitivity of the mismatch to the labor market context suggests that the Oregon Open Campus concept in Jefferson County should be flexible to the economic environment in the county. A focus on providing Bachelor's degrees and advanced degrees to local residents would likely serve many in the community, but retaining the ability to provide more Associate's degrees and post-secondary professional training in tough economic times would also be ideal. It is also important to recognize, however, that labor force participants not included in this analysis could also fill the labor demand needs of employers.

Summary: 2020 Match of Local Jobs to Local Labor Force by Education

The analysis of the 2020 projected mismatch between the number of labor force participants age 25 to 64 with particular levels of education in the Oregon Open Campus pilot counties and the number of jobs requiring certain levels of education in these same areas revealed some critical pieces of information. The findings of the assessment should be useful in planning the OR Open Campuses in each of these areas, but should be used cautiously as they are based on a number of assumptions and represent a particular scenario. It is highly unlikely that the assumptions and the scenario will be the reality of the future, thus the findings should not be interpreted as predictions. Also, because the assessment was limited to the labor force age 25 to 64 it is important to recognize that any projected shortages could be filled by other labor force participants.

First, the projection exercise suggests that 2020 does not promise to be vastly different from 2008 in the size and direction of labor market mismatch in the three counties and two regions, despite changes to the population structure and jobs. This finding is premised on a number of assumptions however, including that the population projections from the Oregon Office of Economic Analysis (OEA) are correct for 2020. This may not be the case, as the recession of the late 2000s was particularly devastating to the central Oregon area and may have encouraged out-migration that is not reflected in the OEA projection.⁸ The finding that 2020 labor market mismatch will not be much different from the 2008 mismatch also assumes that self-employment rates and commuting patterns will remain unchanged between 2008 and 2020. It is highly unlikely that this will be the case, but it was a necessary assumption for the analysis. This assumption forces a fair amount of homogeneity between 2008 and 2020, meaning that it is perhaps not surprising that the 2020 projected mismatches for all areas in the study do not differ greatly from 2008. That said, one would anticipate the retirement of the baby-boom generation to result in noticeable differences in the nature of mismatch because baby-boomers represented a sizeable proportion of the labor force in 2008. Instead, the retirement of this population did not appear to have a

⁸ The OEA makes its projections for 2020 based on trends in the 1990s and uses the year 2000 as the launch year. This method may make the population projections upon which the entire mismatch projection assessment is based incorrect, increasing the size of the error of the mismatch projection. It is unknown how much the error of the 2020 mismatch projection is affected by any error in the OEA population projections, however.

large effect on the nature of the labor market mismatch between 2008 and 2020. This may be due to the rising rates of labor force participation among younger generations.

Second, the 2020 mismatch assessment indicates that the nature of the economy will continue to play a significant role in shaping the size and direction of any mismatches between labor force participants age 25 to 64 and available jobs in the future. If the labor market is not competitive in 2020, for instance, the projection scenario estimates there will be a net oversupply of labor force participants age 25 to 64 with some college, an Associate's degree, a Bachelor's degree, or greater in all pilot communities. If the labor market is competitive in 2020, however, the projection scenario estimates there will be a need for more labor force participants with some college education or more in all counties and regions except for Region 10 (Crook, Deschutes, and Jefferson). This labor need could be filled by labor force participants age 16 to 24 or 65 and older with some college or greater education, it could also be filled by non-residents or labor force participants age 25 to 64 who have changed their educational credentials to qualify for these positions in 2020. Regardless of how the mismatch is addressed, the 2020 projection revealed that the over-abundance and short supply of labor force participants age 25 to 64 with certain education levels in all of these areas in 2020 will depend heavily on the level of competition that characterizes the labor market.

Finally, the data revealed that in 2020 the size of the mismatch between labor supply and labor demand will vary by location under either economic scenario. The projected magnitudes do not differ greatly from those estimated for 2008. 2008 estimates can thus safely be used in planning the types of programs in these counties and the size of OR Open Campus in these counties to reflect differences in each labor market.

Conclusion

The goal of Oregon Open Campus is to provide local access to learning that meets the needs of individuals, families, businesses, and communities. In order to understand the potential demand for continuing education and higher education opportunities among residents of the Oregon Open Campus pilot communities (Tillamook County, Crook County, and Jefferson County) it is useful to understand the potential need for higher education among residents. Typically, demand for education is related to labor market conditions. The goal of this analysis was to understand just that: the current and future labor markets of the Oregon Open Campus pilot communities as they relate to education.

In order to understand the labor markets in these areas of Oregon, the attributes of current labor force participants in each of the pilot counties and regions were examined and profiles of local jobs currently available in each community were created, paying particular attention to the educational requirements of jobs. These profiles of labor force participants and jobs were then used to estimate the match between jobs available to local residents and local labor force participants age 25 to 64 who were available to local area employers, by education. This mismatch assessment represents the recent state of affairs in these three counties and two regions of the state. In order to gain some insight into potential future demand for educational opportunities offered through Open Campus a projection of

labor market mismatch was estimated for 2020 in these counties and regions. Though all findings should be interpreted carefully, the results of these three quantitative analyses can be used to shed some light on the labor market context of Tillamook, Crook, and Jefferson counties now and in the future.

The labor supply profile revealed that the labor force in each of these areas on average, between 2006 and 2008, was diverse with respect to educational attainment, but that the majority of individuals had only a high school education, had some college experience, or had an Associate's degree. Large proportions of labor force participants commuted outside their counties for work in 2008, and were thus not available to local employers. In addition, significant proportions of labor force participants in these rural counties were self-employed between 2006 and 2008, and were likely not seeking wage or salary work provided by a third-party employer.

The 2008 job market in the three pilot counties favored low-skill work, as the vast majority of jobs required only a high school education or less. The 2008 profile of the job market in these communities also revealed that significant proportions of county jobs were not held by county residents, and were thus not available to the county labor force.

Combining the information about local jobs and local labor force participants for the mismatch assessment, both current and future, proved challenging; and the findings should be interpreted cautiously. Due to intention of this assessment to understand current and future matches between the number of labor force participants with certain education levels and the number of jobs that require those education credentials it was necessary to have data about the educational attainment of labor force participants by age and gender. As the only source of information about the educational attainment of labor force participants by age and gender come from the US Census Bureau's American Community Survey, the analysis was limited by the data published by this source. Unfortunately, the data about the educational attainment of the labor force was limited to those ages 25 to 64. Labor force participants age 25 to 64 represent the majority of all labor force participants, but those age 16 to 24 and 65 and older also represent a significant proportion of the labor force. It is impossible to know exactly how much the omission of this population biases the assessment of current and projected mismatches in the counties and regions. For this reason it is not possible to use these findings alone to help set education policy for the pilot communities. The findings should be used in conjunction with other considerations and information about demand for educational opportunities in the three counties.

The mismatch assessments led to three overarching findings. For one, the assessments revealed that the nature of the economy plays a significant role in shaping the demand for workers with particular education levels. The competitiveness of the labor market, which is dictated by the nature of the economy, affects both the size and direction of mismatches between labor force participants age 25 to 64 and available jobs in all communities. In addition, the mismatch assessment revealed that the sizes of mismatch between labor force participants age 25 to 64 and available jobs by education vary by location. Finally, the assessment revealed that the nature of the projected 2020 labor market mismatch is very similar to the nature of the 2008 labor market mismatch. The similarity between 2008 and 2020 mismatch assessment findings suggest that the current labor market situation provides enough justification for future changes.

These findings suggest a number of factors should be borne in mind when planning a human capital investment program, such as Oregon Open Campus, in these three counties and two regions. For one, the demand for educational opportunities will likely wax and wane among local residents who are seeking work in the county. This demand will fluctuate with the economy; in times of low unemployment, the majority of labor force participants will not be highly motivated to increase their human capital and in times of high unemployment, the number of labor force participants interested in increasing their education will increase. That is not to say that demand for educational opportunities will not exist during times of economic boom, quite to the contrary, demand for education will likely exist, but if the demand is not motivated by local employment prospects it will be motivated by personal development desires or desires to find work outside the county. Increasing the education of local labor force participants without local job opportunities that require those skills will facilitate the out-migration of these individuals, the employment of these individuals in jobs for which they are over-qualified, unemployment among these individuals, or the need for these individuals to commute to work outside the county. It may be necessary for the structure of the Oregon Open Campus model in these areas to be flexible to the economic context; growing in times of high unemployment and shrinking in times of low unemployment.

The second factor to be borne in mind when planning the Oregon Open Campus model in these three counties is that if the idea is to increase the local stock of human capital for local employment, then the nature of Open Campus should reflect the unique county contexts. In Tillamook County and Crook County, the data suggest that Open Campus would likely serve the communities best by providing Bachelor's degrees and advanced degrees and helping individuals age 16 and over complete high school or obtain a GED. Based on the labor market mismatch by education data for Jefferson County, Open Campus in this county could meet local labor market needs by helping individuals age 16 and over complete high school or obtain a GED, providing Bachelor's degrees or more advanced degrees, and be flexible to providing some Associate's degrees or certificates if the market takes a turn for the worst.

These findings represent rough estimates of potential education demand for the labor force population in these communities, and should be used in conjunction with information from local employers, local economic development districts, and local labor force participants about the potential for human capital investments. Despite deficiencies in the current job market for certain types of jobs, the future is not set in stone and opportunities will change. These changes have not been anticipated in the employment or labor force projections used here. It is possible to change the nature of the job market by changing the nature of the labor force, so long as potential employers are privy to the changes in the labor force and they act quickly.⁹

⁹ LeRoy, Greg. (2005) *The Great American Jobs Scam: Corporate tax dodging and the myth of job creation*. Berrett-Koehler Publishers, Inc: San Francisco, CA.

Blakely, Edward J. (1994). *Planning Local Economic Development: Theory and practice*. (2nd edition). Sage Publications: Thousand Oaks, CA.

Appendix 1

2006-2008 American Community Survey

The American Community Survey (ACS) is administered by the US Census Bureau, and is the replacement for the long form of the decennial census. The ACS is distributed to a sample of households throughout the year, and has been distributed since 2000. The Census Bureau releases ACS data annually, but as rolling averages corresponding to a single year, three years, or five years depending on the size of geographic areas. Due to the population sizes of Tillamook, Crook, and Jefferson counties three year rolling average data corresponding to the time period 2006-2008 were the most recent data available.

The American Community Survey questionnaire covers a broad range of topics including labor force and education related issues. For the purposes of this report, data about labor force participation, which includes people employed for pay and people unemployed, but seeking employment, unemployment, and self-employment were used to get an understanding of the size of the labor force. In addition ACS data were used to provide a baseline understanding of the educational attainment of those in the labor force. Unfortunately, the only labor force statistics by education level that were available from the American Community Survey correspond to the population age 25 to 64, therefore our analysis of the mismatch between the labor force and jobs is limited to this population.

2008 Local Employment Dynamics data

The Longitudinal Employer-Household Dynamics (LEHD) program is a program within the U.S. Census Bureau that uses various statistical methods to combine census data and surveys with federal and state administrative data on employers and employees to provide a complete picture of local labor force dynamics on an annual basis. The LEHD makes these statistics available through a few different venues, one of which is the Local Employment Dynamics dataset. From the Local Employment Dynamics dataset, using OnTheMap Version 4 (<http://lehdmap4.did.census.gov/themap4/>), it is possible to access information about the home locations of workers in an area and the work locations of residents in an area. These data provide crucial insight into the commuting behaviors of a local labor force. In this report, the 2008 commuting patterns of workers in and residents of Tillamook, Jefferson, and Crook counties were used to estimate the proportion of jobs available to county residents and the proportion of residents available to county employers.

OR Employment Department – 2008 Educational Requirements by Occupation

Every other year, the Oregon Employment Department (OED) produces projections of jobs by occupation for each workforce region of the state. Included in these projections are counts of jobs in the current year and counts of jobs ten years into the future. It is important to note that this count of jobs only includes wage and salary positions, not sole proprietorships (the self-employed).

Along with the number of jobs in each occupation, the OED provides information about each occupation's educational requirements. In order to estimate the educational requirements of jobs, according to Brenda Turner of the OED (personal communication, 4/22/10), the OED compiles information provided by the federal government about the educational requirements of each

occupation. These data correspond to a national assessment of education by occupation, however, and thus may not mirror the Oregon employment context. For this reason the OED augments the federal data based on an assessment of the Oregon educational environment (e.g., certificates, degrees, and programs available from institutions across the state), state licensing requirements for various occupations, and an analysis of educational requirements posted at the time by employers in the state (data come from the iMatchSkills online tool for jobseekers and employers: https://empportal.emp.state.or.us/imp_imsod_dad/!pkg_startup.proc_new_home). The OED assigns minimum educational requirements to occupations and competitive educational requirements to each occupational category based on this assessment. The minimum educational requirements are those that typically reflect the reality of a less competitive labor market during economic boom periods (when there are more job openings than job seekers), while the competitive educational requirements are those that reflect the reality of a more competitive labor market during economic busts (when there are more job seekers than job openings). The federal database of educational requirements by occupation is then updated based on this OED supplementary assessment and published in the latest projection of jobs by occupation report.

In this report, the 2008-2018 employment projections by occupation from the Oregon Employment Department were utilized to provide an overall tally of jobs, but also to create a count of jobs by educational requirement (minimum and competitive) in the current and future labor markets. Unfortunately, the job statistics provided by the OED were only available at the regional level, and not for single counties. Tillamook County is part of Region 1 with Clatsop and Columbia counties. Crook and Jefferson counties, along with Deschutes County make up Region 10. Due to the regionalization of employment data from OED, the analysis was conducted at a regional level first. An additional analysis at the county level was conducted in which OED data are re-estimated based on shares of jobs by occupation for each county in a workforce region using data from the 2000 US decennial census.

Appendix 2

Oregon Office of Economic Analysis – Population Projections

The population projections used for the 2020 mismatch assessment were calculated by the Oregon Office of Economic Analysis and Portland State University's Population Research Center. The Population Research Center is the official state data center of Oregon, and as such is authorized by the US Census Bureau to produce the official state and local population projections for Oregon.

According to the OR Office of Economic Analysis:

"The current long-term population forecasts for Oregon and its Counties are developed using the widely used cohort-component projection procedure. This forecasting model "survives" the initial population distribution by age and sex to the future years. The population is subjected to projected age-sex-specific birth and death rates to determine the number of births and deaths during a given period. A separate assumption is made for the migration estimates and they are subjected to the same vital rates. In the current forecast, the July 1, 2000 population by five-year age groups is projected subject to specific

assumptions about vital events and migrations. All the County numbers are raked to add up to the State total.

Births

Numbers of births are calculated by applying age-specific fertility rates (ASFR) to the women in corresponding age groups. The Census Bureau has projected ASFR for the nation. The rates for Oregon and its Counties were determined based on their historical rates and projected U.S. rates.

Deaths

Based on the historical change in life expectancies, U.S. and Oregon's life expectancies estimated for 2040 and for the intervening years. Separate life tables for Oregon's males and females for the year 2000 were constructed. The life tables were adjusted to yield the projected life expectancies for each of the forecast period. In the forecast model, survival rates derived from the life tables were used to estimate the number surviving and dying by age and sex during a forecast cycle. The state survival rates were modified to fit the expected number of deaths in each of the counties.

Migration

Age/sex-specific in-and-out migration rates for Oregon and its Counties were determined for each of the five year period from 1980 through 2000 (1980-85, 1985-90, 1990-95, and 1995-2000). Detailed in-and-out migration data from the 1990 and 2000 Censuses were modified and utilized to reflect the recent net migration trend.”

US Bureau of Labor Statistics – Labor Force Participation Rate Projections

The US Bureau of Labor Statistics (BLS) has been producing the official labor force projections for the US since 1960. As the BLS prepares projections of the size, employment status, and industrial or occupational composition of the labor force it must estimate a projected labor force participation rate. To estimate the projected labor force participation rates, the BLS employs the following procedure:

“For 136 age, gender, race and ethnic groups, BLS maintains a data base of annual averages of CPS [Current Population Survey] labor force participation rates. BLS analysts examine trends and past behavior of participation rates for all categories. First, the historical participation rates for these groups are smoothed. Second, the smoothed data are transformed into logits, or natural log of the odds ratio. Finally, the logits of the participation rates are extrapolated linearly by regressing against time and then extending the fitted series to or beyond the target year. When the series are transformed back into participation rates, the projected path is nonlinear.

In addition, projected labor force participation rates are reviewed for consistency. The time-path, cross-section in the target year, and cohort patterns of participation are all reviewed and, if necessary, modified.”

These projected labor force participation rates were used in this assessment to construct the projected size of the labor force in Oregon in 2020.