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An economic and labor market analysis of the State of Utah

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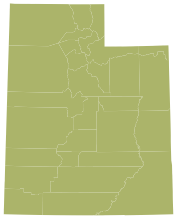
Industrial Diversity in Utah's Economy



BY MARK KNOLD, SUPERVISING ECONOMIST

The Summer 2013 Utah Insights explored the industrial diversity of the Utah economy. The analysis concluded that Utah has a very diverse economic base, or that its distribution of employment is desirably spread out across various industries. In other words, Utah has its industrial eggs in many different baskets. The United States economy is viewed as the most diverse standard against which to measure a local economy and its industry employment distribution. Utah's economic diversity measured .976 on the Hachman Index, meaning the Utah economy is 97.6 percent as diverse as the United States economy.

This issue peers more deeply into the Utah economy to show where that diversity is located. Taken as a whole, the Utah economy is quite diverse, but when dissected by individual counties, many industrially-concentrated economies emerge. The majority of the state's diversification occurs in Salt Lake County, which accounts for nearly half of all Utah employment. Add in the industrial diversity of fellow metro counties Davis, Utah and Weber—which combine 80 percent of the state's economy—and Utah's diversity is accounted for.

Figure 1 lists Utah's counties in descending order of Hachman Index. Here we use a general rule that an economy at 80 percent (0.8 in Figure 1) or more of the United States diversity is considered diverse. Economies at 80 percent or higher have less economic variation and weather the ups and downs of the business cycle better. Given this threshold, 23 Utah counties are below 80 percent, ranging from Tooele County's 77 percent to Duchesne County's 9 percent.

A diverse economy is an outcome of regional market factors. Rather than being artificially created, a local economy's industrial diversity is developed organically depending on the size of the population and the endowment of natural resources. Thus, it is less likely for less populated counties to be economically diverse because they have a smaller distribution of residents and resources. So naturally, Utah's numerous small counties have less diverse economies.

Figure 1: Utah 2012 Hachman Index

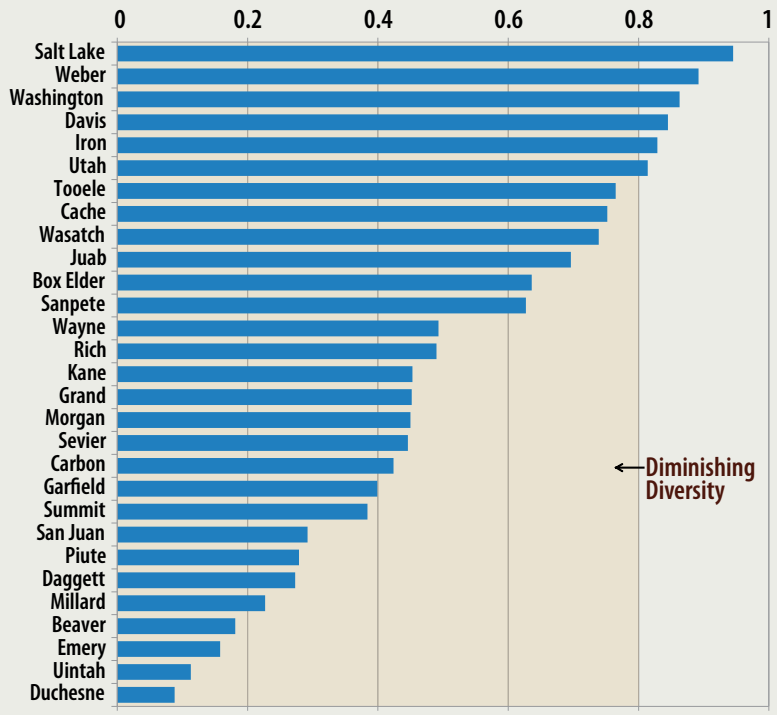
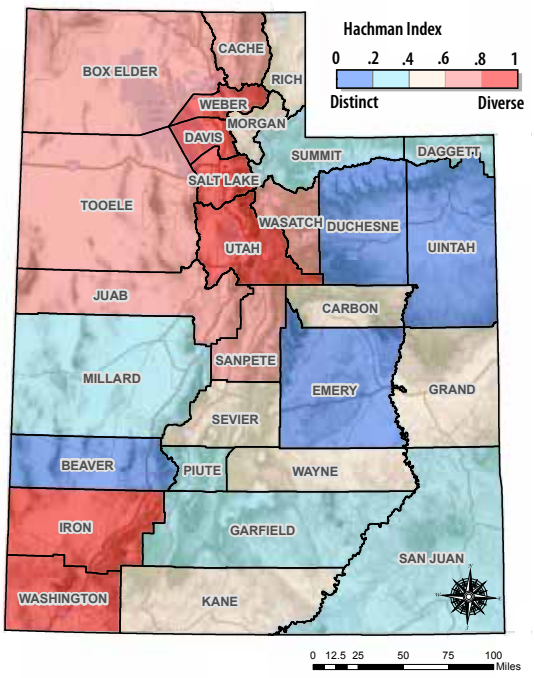


Figure 2: Utah's Industry Employment Diversity by County



*The Hachman Index is a measure of diversity. The higher number, the more diversity

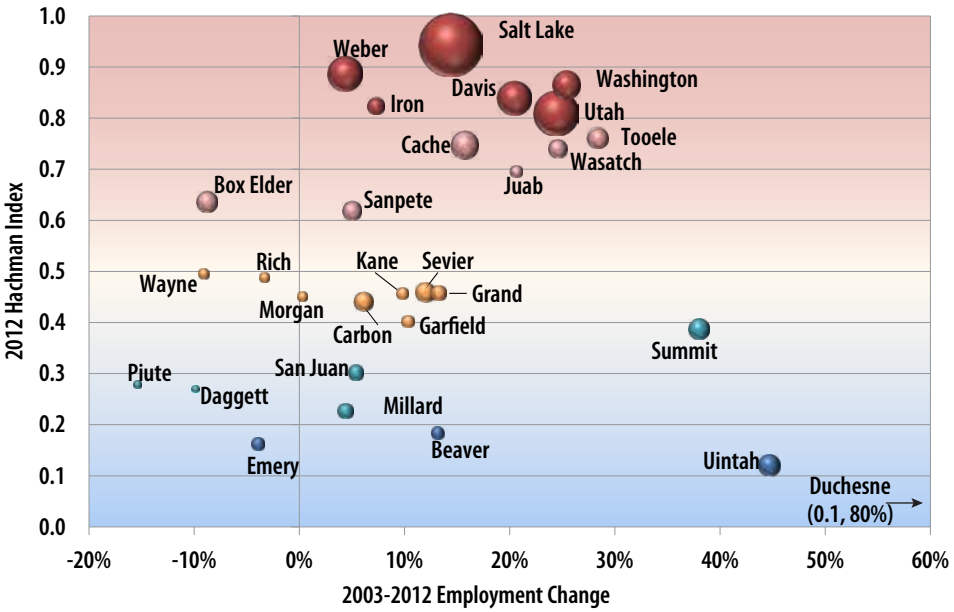
Mapping the diversity reveals a regional look (Figure 2). The core of high diversity in the Wasatch Front metropolitan counties stands out. Counties surrounding this core then offer the next lower level of industrial diversity. Economic concentration increases in Utah's rural areas. Many of these counties have only small, scattered communities and lack the population base to create diversified economies.

Industrial concentration does not translate into lack of economic success, nor does high diversity guarantee success, there will always be exceptions. However, the general premise is that areas with high diversity have more stable employment growth rates and less variation over time. Less diversification, on the other hand, can foster wider swings in economic success or failure. A single economic event can dictate either good or bad times, often characterized as booms or busts, depending on the industry that dominates a less diverse economy.

Take the case of Uintah and Duchesne counties in Figure 3. The percentage change in total employment for each county over a ten year span is presented on the x-axis. The two least diversified counties (Duchesne and Uintah) had the highest rates of employment growth. Those counties have a heavy concentration within energy-production. When energy production is going well, those county economies often grow at lavish rates. History reveals periods of economic boom and bust for those counties, all tied to the performance of energy. The variation in their economic performance has been extreme and can be tied to low industrial diversification.

Utah's economy is characterized with overall economic diversity. This offers Utah a consistent and relatively stable employment growth performance over time (exceptions like the Great Recession notwithstanding). Yet Utah's diverse economy does not spread diversely throughout its geographic scope. This makes for an interesting oxymoron, where a diverse economy can have segments of industrial concentration. For a more in-depth look at each county's industrial diversity, review the regional issues of Local Insights.

Figure 3: 2003–2012 County Employment Growth and Hachman Index



Utah's economy is characterized with overall economic diversity, offering Utah a consistent and relatively stable employment growth over time.

Utah Economic Conversation

BY MARK KNOLD, SUPERVISING ECONOMIST

The 2013 employment performance is tabulated and Utah's economy had another vigorous year. Employment growth totaled 41,100 new jobs, a 3.3 percent growth rate as Utah generated the second straight year of above-average growth. There are still lingering relics from the Great Recession, like under utilized labor and an employment count only 37,500 higher than the 2008 pre-recession level, but the current rebound is vibrant and likely sustainable.

In the face of a federal government shutdown, questions surrounding budget negotiations and the debt ceiling hovering like a cloud over the fourth-quarter economy, Utah largely shrugged off those worries. Employment growth in the fourth quarter out-performed the forecast at 3.2 percent, driven by job gains in nearly all employment sectors.

Professional and business services led the way with 7.1 percent job growth. The health care industry pitched in 4.4 percent growth. Construction was up 4.6 percent, financial activities grew by 3.8 percent, and leisure and hospitality by 3.4 percent; all robust growth rates which speak to the Utah economic rebound's vibrancy. The only notable employment setbacks were in mining (copper and coal) and the federal government.

Accompanying this robust 2013 employment growth is less than robust average wage growth—only 1.0 percent, the lowest average wage increase in over 20 years, but this must be examined in depth. Average wages are equal to total wages divided by total employment.[1] During the recession, the average wage rose moderately as the Utah economy shed jobs, suggesting that lower-paid, less-tenured workers were let go and the tenured, higher-

paid workers retained. As a result, the cumulative average wage of the retained workforce increased. Now, as the economy expands, new openings are filled by entry-level workers and entry-level wages. This pattern of wage growth typically occurs during the business cycle and can slow the overall growth in the average wage.

Additionally, higher-paid federal government jobs are being lost and. the expiration of the payroll tax break at the end of 2012 meant higher taxes upon payrolls in 2013. Historically, bonuses and other wage offerings are frontloaded into the tax-break year with the following year devoid of those payouts and bonuses. The past year was no exception with the 2013 wage calculation appearing weak against the 2012 additions. There are multiple factors that can come into play and many are speculated upon. But one evident factor is that even with a low unemployment rate, there is still enough idle and underlying labor available to keep upward pressure on wages minimal.

Recovery from Recession

The Great Recession continues to cast a long shadow across the breadth of the United States economy. Two-thirds of all states have yet to regain their pre-recession employment. Fortunately, Utah is one of the one-third, having achieved its recovery in late 2012.

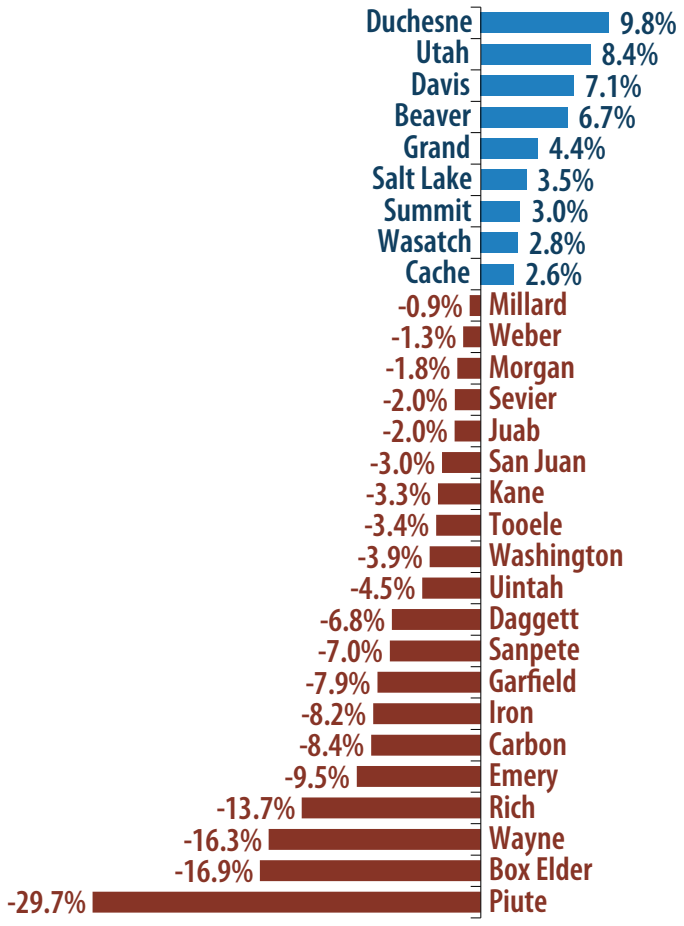
The whole of Utah's performance is often synonymous with the combined Salt Lake and Utah County performances as they make up nearly two-thirds of all Utah employment. That concentration can overshadow the remainder of Utah's economy. Just as only one-third of all states have reached or surpassed their pre-recession employment, only one-third of Utah's counties have recaptured their pre-recession employment (Figure 4).

Salt Lake and Utah counties have surpassed pre-recession levels. Utah County has done particularly well and is regularly cited nationally as one of the nation's best-performing large metropolitan areas. Utah County dropped around 10,000 jobs during the recession, but gained them back by late 2011 and added another 20,000 since. Construction has been the lead driver, but additional contributions come from all industries, notably trade, healthcare, restaurants, and professional services.

Salt Lake County also receives national recognition for its post-recession growth. Though its 3.5-percent rebound is less robust than Utah County's 8.4 percent, its larger size makes for a larger job count—52,600 jobs above the pre-recession level. Salt Lake County surpassed its pre-recession employment in 2012. Trade, professional and technical services, education, health care, and restaurants were the main employment drivers.

Add in Davis County's 7.1 percent post-recession growth and 10,300 more jobs and the statewide post-recession growth is largely accounted for. Proportionally, the best post-recession rebound is in Duchesne County, where new fracking techniques and horizontal drilling breathed new life into its oil fields. With a 9.8-percent recession low to 2013, the rebound was 1,900 jobs and employment

Figure 4: Utah Recession Employment Rebound



825 above its pre-recession level. The most recent data shows this employment boom has run out of steam.

Most counties follow a similar pattern. Pre-recession employment peaks in 2008, then a sharp two-year slide ensues with the general employment bottom in 2010. From there, employment rebounds, with some counties surpassing pre-recession employment. For some counties, the exuberance in the pre-recession housing market pushed construction employment to non-sustainable levels. Therefore, the pre-recession employment was over-inflated and not a level to desire to return to, unless coupled with significant population growth.

Washington County was Utah's most impacted metropolitan area during the recession and one whose employment was inflated by the housing-bubble. Pre-recession employment peaked in 2007, one year before all other counties and bottomed out in 2010 with employment down 15 percent across three years. Employment is currently at its 2008 level, but remains 2,000 below peak. This should be equaled and then passed in 2014. Washington County experienced enough population growth since the recession began to justify employment levels at the pre-recession peak and beyond.

Most of Utah's counties that remain below pre-recession peak are recession victims—but not all. Working from the bottom up on Figure 4, small Piute County felt the recession. Box Elder County offers a different view. The making of rocket motors was a big part of Box Elder County's employment base. With NASA ending the Space Shuttle program, rocket motor demand is down. Box Elder's setback appears to have another spontaneous factor at work rather than a direct recession impact.

Similarly, Wayne County's largest employer closed in 2011 bringing employment its current employment down. But Wayne's 2010 employment was higher than in 2008, so the recession did not necessarily produce the lower employment level.

Emery and Carbon counties are special cases. Emery's economy is largely made up of coal production and coal-fired power plants. Large power plant maintenance projects kept employment up during the recession but with coal rapidly falling out of favor as an energy source, employment levels have fallen off in 2012 and 2013. The same can largely be told for coal-mining dependent Carbon County.

The remaining lagging counties can all be pointed to as recession casualties, with the possible exception of Uintah County. Natural gas production and exploration were strong leading up to the end of 2008. Then energy prices fell sharply in 2009 and employment slid. Energy prices bounced back in 2010 and thereafter, but unlike oil-dependent Duchesne County, Uintah County is more natural gas oriented, and natural gas did not experience the energy rebound as seen in the oil industry.

As 2014 unfolds, it is anticipated that Millard, Weber, Morgan, Juab, and Washington counties will equal or exceed their pre-recession employment. The remaining counties will still be looking to the future to cross that threshold.

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[1] Total wages and employment are quantified through unemployment insurance reporting. That system does not compile wage data in detail. There is no distinction between full-time and part-time earnings, and hourly pay rates and hours worked are not required.

Salt Lake County has received national recognition for its post-recession growth and surpassed its pre-recession employment in 2012. Trade, professional and technical services, education, health care and restaurants were the main employment drivers.

Profiling Utah's Advanced Industries

BY MARK KNOLD, SUPERVISING ECONOMIST

A recent Brookings Institute report promoted the concept of Advanced Industries,[1] endorsing them as crucial drivers of global competitiveness. This grouping of industries relies heavily on a STEM-trained[2] labor force. They account for 80 percent of private-sector research and development in America and they support the development of other businesses through long supply chains. Advanced Industries are valuable because they invent the technologies that increase productivity in other industries, and because high earnings for these employees stimulate secondary and tertiary jobs in local economies.

Advanced Industries are "those that display above-average research and development spending as a share of total sales and employ a workforce in which the average worker is expert in at least one discrete STEM field." The "Advanced" designation is made based on the level of research involved and the inventiveness that follows. These products move the rest of the economy forward, furthering societal and economic advancement.

Brookings identified 23 discrete Advanced Industries (see Figure 5). The majority are manufacturing industries with a handful of service industries also in the mix. Many of the discrete Advanced Industries are looked upon as export industries, those that sell products outside the Utah market pulling income into the state from the outside and increasing regional wealth.

A state economy is not expected to have a sizeable presence in all discrete Advanced Industries, but successful states have a higher-than-average affinity toward these industries and will have a strong presence in several.

A standard way to evaluate the presence and proportion of an industry locally is to compare that industry's local employment

Figure 5: 2012 Advanced Industries Employment

Total Employment	Utah	US
	1,215,983	131,696,378

Industry	NAICS Code	Utah Employment	US Employment	Location Quotient
Manufacturing				
Pharmaceuticals	3254	4,915	269,660	1.97
Industrial Machinery	3332	255	104,607	0.26
Commercial Industry Machinery	3333	827	89,371	1.00
Eng., Turbine, Power Equip.	3336	406	101,580	0.43
Computer and Peripheral Equip.	3341	451	157,703	0.31
Communications Equip.	3342	749	109,671	0.74
Audio and Video Equip.	3343	535	20,316	2.85
Semiconductors	3344	4,053	382,700	1.15
Electronic Control Instruments	3345	8,113	400,066	2.20
Magnetic and Optical Media	3346	522	20,335	2.78
Household Appliances	3352	276	56,676	0.53
Electrical Equip.	3353	206	143,108	0.16
Other Elec. Equip.	3359	988	126,928	0.84
Motor Vehicles	3361	-	173,169	0.00
Motor Vehicle Parts	3363	3,836	483,686	0.86
Aerospace Products and Parts	3364	5,926	490,864	1.31
Medical Equip. and Supplies	3391	8,316	307,540	2.93
Services				
Software Publishers	5112	6,919	157,225	4.77
Other Telecommunications	5179	1,656	108,446	1.65
Data Processing and Hosting	5182	6,266	258,682	2.62
Computer Systems Design	5415	17,353	1,630,641	1.15
Mgmt., Scien., Tech. Consulting	5416	9,201	1,130,143	0.88
Scientific Research and Development	5417	4,656	654,755	0.77
Total Advanced Industry Employment		86,425	7,377,872	1.27
Percent of Total Employment		7.1%	5.6%	

share against that industry's corresponding national employment share. The resulting comparison yields a Location Quotient (LQ).[3] When the proportions are equal, the LQ is 1.0. If a state were to have a higher proportion, then the LQ would be above 1.0.

Eleven of the 23 discrete Advanced Industries in Utah are above the national proportion. Therefore, Utah identifies these Advanced Industries as its strong points. When employment in all Utah Advanced Industries is aggregated, Utah bears an LQ of 1.27. A general rule is that a ratio of 1.2 or higher is above average and identifies a local economy as being sufficiently represented within that industry.

Utah joins only 11 other states with above average employment in Advanced Industries (Figure 6). Massachusetts and Virginia lead the way, fueled by computer and software design and scientific research. Utah is ranked eighth nationally, joining predictable powerhouses like California, Washington, Maryland, and Connecticut. It outshines larger states like New York, Texas, Florida, and Ohio.

With nearly half of all Utah employment located in Salt Lake County, it is not surprising that 53 percent of Utah Advanced Industries employment occurs in this county. Utah County follows at 19 percent and does have more semiconductor and software employment than Salt Lake County. Davis and Weber counties each have 8 percent of Advanced Industries employment. The remainder of the state rounds out the remaining 12 percent.

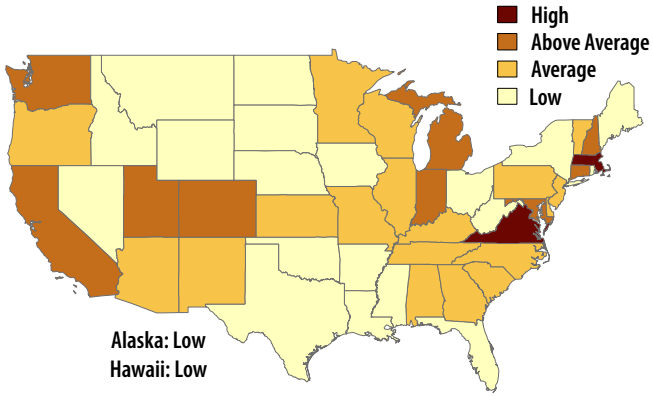
High wages are one appeal of encouraging Advanced Industries. In 2012, the average Utah Advanced Industries salary was $67,870, 67 percent higher than the overall Utah average of $40,645. Some discrete Advanced Industries are even higher. Software publishers paid $88,563, computer and peripheral equipment $87,238, and electronic control instruments $76,917. These high earnings stimulate above average spending within the local economy and trickle down, creating additional jobs and incomes.

Utah's highest Advanced Industries employment is in computer systems design, with over 17,300 jobs. That proportion though, isn't much higher than the national proportion. Utah's highest Advanced Industries proportion—where it shows a marked difference from the national employment—is in software publishing. Utah's share is nearly five times the national average. The Provo area has a strong presence in software publishing.

Jobs in medical equipment and supplies in Utah are nearly three times the national average with much of this employment centered in Salt Lake County. Audio and video equipment manufacturing is also close to three times the national average, as is magnetic and optical media manufacturing. Figure 7 focuses on Utah's above average discrete Advanced Industries, and lists some of Utah's largest employers in these fields.

[1] http://www.brookings.edu/research/reports/2014/02/19-advanced-industries-state-by-state-muro-fikri-andes
[2] STEM—Science, technology, engineering, and math.
[3] LQ = (Utah specific industry employment/Utah total employment)/(national specific industry employment/national total employment).

Figure 6: Prevalence of Advanced Industries



* Employment Location Quotient; Base U.S. Employment

Source: U.S. Bureau of Labor Statistics, QCEW

Figure 7: Select Utah Advanced Industry Employers

Manufacturing	**Medical Equipment**
Pharmaceuticals	Merit Medical Systems
USANA	Becton Dickinson
Anesta	Fresenius USA
Cornerstone Nutritional Labs	**Services**
Audio and Video Equipment	**Software Publishers**
Harman Professional	Adobe Systemsz
Skullcandy	Dentrix Dental Systems
Semiconductors	Sorenson Communications
IM Flash Technologies	**Other Telecommunications**
Fairchild Semiconductor	inContact
Control Instruments	Verio
L3 Communications	Big Planet Holdings
Northrop Gurmman	**Data Processing and Hosting**
Varian Medical Systems	Marriott Rewards
Magnetic and Optical Media	Bluehost.com
Moduslink	Mediconnect.net
Integracore	**Computer Systems Design**
Aerospace	Xactware Solutions
ATK	ADP AdvancedMD
Boeing	3M Health Information Systems
Fiber Science Division	Boostability

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The Influence of Industrial Diversity

BY MELAUNI JENSEN, LMI ANALYST

Labor market economists don't always agree about the most favorable structure for a thriving economy; all theories, tools and applications have their pluses and minuses. The same holds true for the discussion about industrial diversification and its influence on local economies.

A diverse economy has a broad and balanced variety of industries and doesn't rely on related businesses that provide or produce the same products or services. As we saw in the Summer 2013 issue of Local Insights, industry data provide important information about local conditions. The Quarterly Census of Employment and Wages (QCEW) derived from Utah employer's Unemployment Insurance (UI) reports provides us with this view. This comprehensive database quantifies business establishments, shows an accurate reflection of Utah employment and allows us to profile a geographic area and evaluate its diversity.

Industry diversity can lead to lower unemployment in an area. Less diverse local economies are more prone to experience higher employment instability. Diversity on the other hand, offers more options. For instance, a worker who is unemployed from one industry may find work in another industry desiring their skill set. Occupations such as accountants or sales representatives could work in many different industries and may have an easier time finding opportunities than those who are skilled for specific industries like coal miners and skin care specialists. When one industry loses workers, the others in the area may be adding jobs. Industrial diversity can minimize this risk of unemployment and temper a downturn, or recession in the economy.

To measure industry diversity, DWS economists look to the Hachman Index. This tool was developed by Frank Hachman, an economics professor from the University of Utah. Using QCEW data and its industry classification coding system (NAICS) to identify industries, the Hachman Index compares the variety of industries in a local economy to the national variety. Economists use this formula to calculate the variable comparisons.

Utah currently ranks fourth in the nation for industrial diversity. This diversity has been a contributing factor to Utah's relatively speedy economic recovery.

Industrial diversity is one tool economists use to evaluate the underlying strength and performance of a local economy. In this issue of Local Insights, industrial diversity will be looked upon at the county level, and some revealing factors will emerge.