MEMORANDUM

DATE: January 14, 2014

TO: Alice Cannon
CITY OF TUALATIN

FROM: Chris Blakney
JOHNSON ECONOMICS

SUBJECT: Executive Summary for Industry Cluster Analysis in the City of Tualatin

Introduction

JOHNSON ECONOMICS was retained by the CITY OF TUALATIN to develop an assessment of industry clusters in the local economy. The primary objective of this analysis was to identify active business clusters in Tualatin and their impacts as a function of the regional economy. The report was commissioned to inform Tualatin's on-going economic action plan. The analysis identified five primary clusters in the local economy, with representative industries ranging from Health Care and Manufacturing to Professional Services. Taken together, the identified clusters represent over 58% of employment in Tualatin and account for nearly $1.6 billion in value-added output annually.

Looking forward, Tualatin's clusters are generally well positioned to exhibit continued economic prosperity over the next economic cycle. The Health Care cluster should benefit from regional growth that is expected to average 3.1% annually in the region over the next ten years[1]. At the same time, the manufacturing outlook in many of Tualatin's goods producing industries is strong in light of falling input prices and an anticipated return of production to domestic sources.

Overview of Approach

The scope of our work was empirical in nature, relying on data analysis to draw conclusions about potential clusters. Information that would typically inform a cluster analysis as a result of discussions with firms, industry groups, etc. was not within the scope of this report. The Oregon Employment Department QCEW covered employment data series and impact data sets from the Minnesota IMPLAN Group (MIG) were the primary sources of information in this analysis.

[1] *Oregon Employment Department. Employment Forecast by Industry (2012)*

Industry Clusters Defined

Sound regional economies are best organized around a healthy set of industry clusters—similar and related businesses and industries that are mutually supportive, regionally competitive, attract capital investment, and encourage entrepreneurship. Generally, clusters develop as an agglomeration of businesses in a geography that holds an innate competitive advantage in that industry—whether it is natural resources, human capital, political policies, or geography. For example, Oregon's oldest industries—namely forestry and agriculture, emerged from physical and environmental attributes such as its climate, trees, soils, and access to shipping and distribution networks. In turn, these industries spawned interrelated clusters that include Food Processing & Manufacturing, Wood Product Manufacturing, Wholesaling & Distribution, Machinery Manufacturing, and host of other industries. In many local economies, we find also that a large firm or group of firms can often anchor a local cluster—for example, in Tualatin Legacy Meridian Hospital anchors a health care cluster.

All too often in the economic development world, industry sector analysis is erroneously branded as an evaluation of clusters. A cluster goes beyond a high concentration of employment or output within a given sector or group of similar sectors. Rather, it is the vertical integration of supply chains, distribution, wholesaling, or even competitively unrelated industries that share common inputs such as materials and trained labor. In our analysis, we attempt to draw inferences about the organization of Tualatin's clusters across anchor, primary, and ancillary industries.

Summary of Process

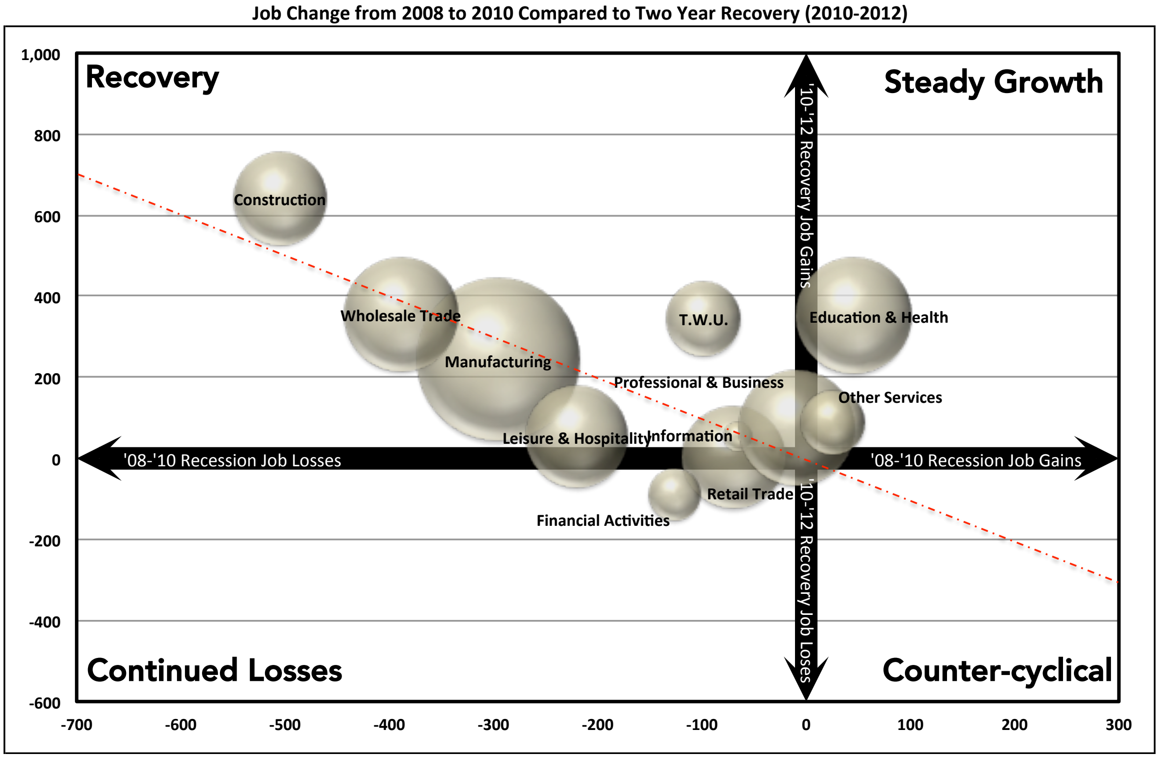
Our analysis began with a geocoded data set of employment and payroll from the Oregon Employment Department's QCEW data. This data set includes all private firms that are covered by unemployment insurance. This data does not include sole-proprietors, self-employed, and solely commission based employment. We began by identifying sector level performance in the local economy to better understand recent trends in the current business cycle.

<u>Industrial Performance</u>

Figure 1 exhibits industry sector performance in the Tualatin economy during the recent recession (2008-2010) and a two-year recovery period (2010-2012). The x-axis exhibits how a industry performed during the recession, with negative values indicating job losses and positive values indicating job gains. Similarly, the y-axis tracks losses and gains during the two-year recovery (the size of the bubbles indicate the relative size of the sector in terms of employment). By comparing the two axes, we can classify industry sectors into one of four performance quadrants:

> ***Recovery****: Industries that lost jobs during the recession but have since recovered some of previous losses. Industries above the indicated red line are those that have at least fully recovered from the recession.*
>
> ***Continued Losses****: Industries that lost jobs during the recession and have continued on a downward trend during the recovery.*
>
> ***Counter-Cyclical****: Industries that gained jobs during the recession but have since exhibited losses during the recovery. Tualatin did not have any sectors in this quadrant.*
>
> ***Steady Growth****: Industries that gained jobs during the recession and have since continued on an upward trend.*

Figure 1: Industry Sector Economic Performance, City of Tualatin



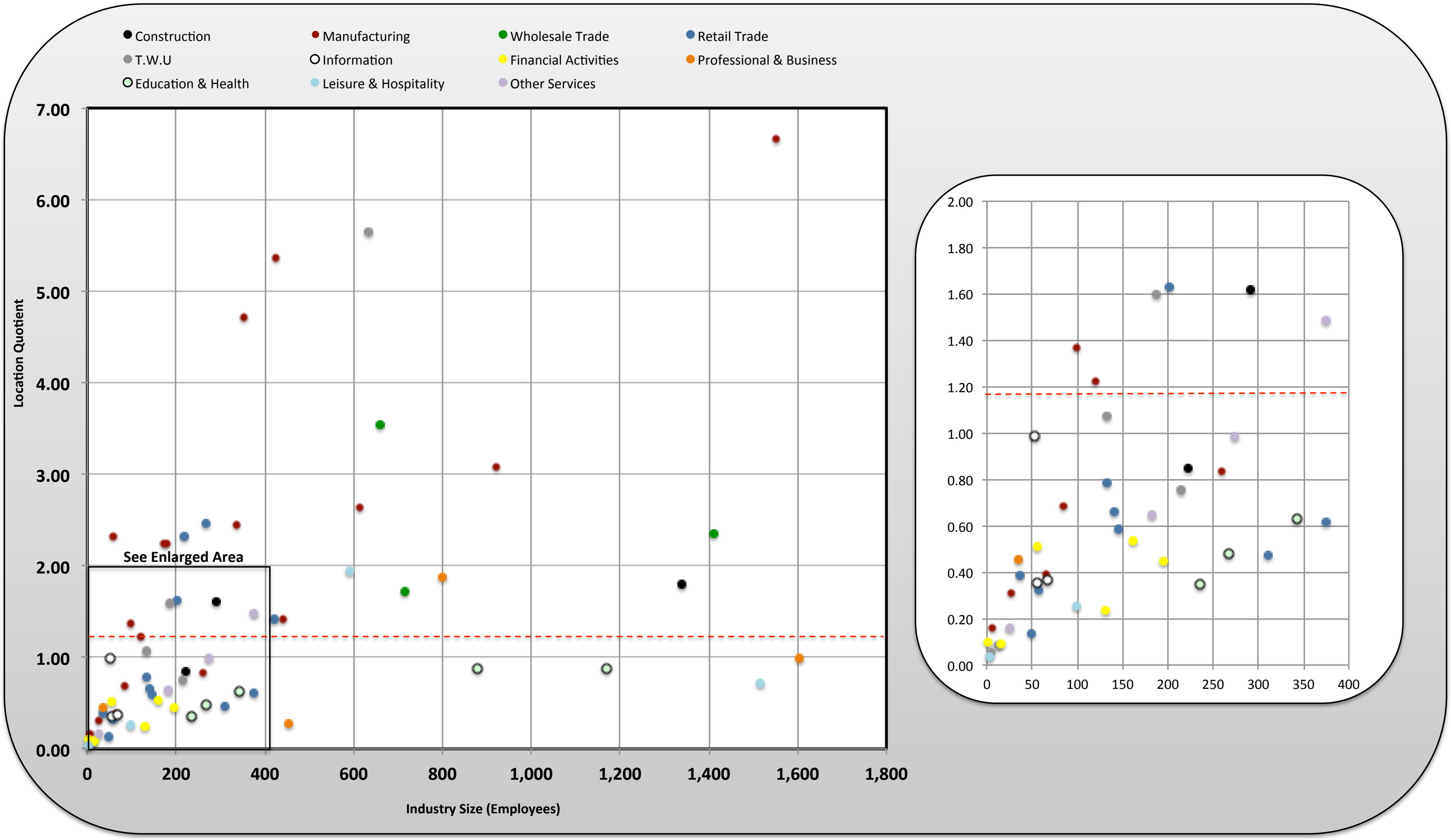
Over the course of the recession and subsequent economic recovery some sectors have clearly outperformed others. During the recession, Construction, Wholesaling, and Manufacturing were the hardest hit industries, combining to account for 70% of net job losses in the Portland Metro region between 2008 and 2010. Most sectors lost between 10 and 15 percent of their job base during the recession. Other Services and Education & Health Services were the only two sectors that did not decline, with Professional & Business Services remaining stagnant. In the recovery, it has been the hardest hit industries recovering the fastest, demonstrating the resiliency of the local economy.

Specialization Metrics: Location Quotient

The second phase of our analysis was to evaluate the specialization and size of industries in Tualatin at a more granular level—in this case at the 3-digit NAICS[2] level. A common metric of specialization is a Location Quotient. This metric compares the concentration of employment in an industry at the local level to a larger geography. For example, a Location Quotient of 1.50 for widget manufacturing would indicate that the share of employment in widget manufacturing locally was 50% higher than the national average. Generally, 1.50 is a common threshold indicating a relatively high specialization. Large industries are also obviously considerable components of the local economy and should also be considered. When we plot these industries graphically by size, specialization, and sector, we can begin to see some patterns in the data.

[2] *North American Industrial Classification System. The standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.*

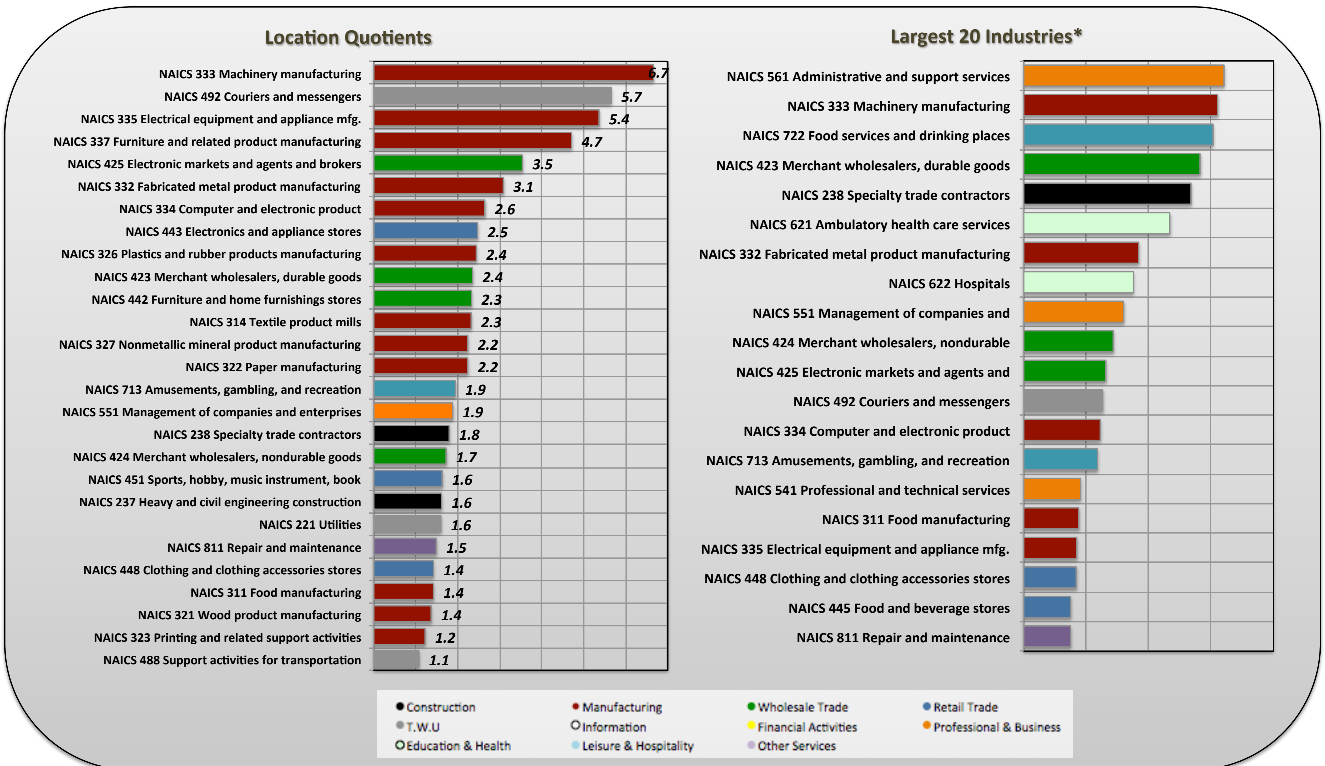
Figure 2: Industry Sector Specialization, City of Tualatin



We see groupings of industries within specific sectors by size and specialization, with outliers that have exceedingly high specialization, are among the largest industries in the Tualatin economy, or both. Industries or groups of industries with these features are the best candidates for our cluster anchors. For example, two of the largest ten industries in the economy are Health Services related and nearly half of the industries with a high specialization were in manufacturing.

The data for the top industries is provided in Figure 3.

Figure 3: Industry Sector Specialization Detail, City of Tualatin



* Sizes are relative. Actual reporting is prohibited under Oregon's confidentiality rules

The next analytical step is was to determine what we know about the industries and firms that operate locally to draw some conclusions about potential cluster agglomerations in Tualatin. This led to the identification of five primary clusters locally. Theses cluster are profiled in detail in our cluster analysis, and briefly summarized here.

Health Care and Related

While the Health Care and Medical Related Cluster does not necessarily represent high level of specialization locally, it represents at least 12% of local employment. Moreover, the cluster shares workforce and occupational training with elements of Tualatin's Advanced Manufacturing cluster, which includes medical device and component manufacturing and wholesaling. By and large, the cluster is anchored by Legacy Meridian Park Medical Center, among Tualatin's largest employers. By extension, associated industries including clinics, laboratories, physician offices, and assisted living centers have agglomerated in the city.

Corporate & Business Services

Tualatin has a moderately high specialization in the Management of Companies sector, anchored by Portland General Electric. While this sector certainly provides support for related business and administrative services, the cluster is more broadly anchored by Tualatin's diverse economic agglomerations. Key industries in Tualatin's business support sector include an average concentration of Professional & Technical Services in addition to a high concentration of Temporary Help Services. Professional & Technical Services in Tualatin include a handful of emerging Software and Computer Systems Design firms. Tualatin's concentration of larger corporate firms also supports a higher than average number of firms in more remedial enterprises such as security, landscaping, and janitorial services.

Advanced Manufacturing

The Advanced Manufacturing Cluster is the core economic driver of the Tualatin economy, accounting for roughly 22% of all employment. The cluster functions in the context of broader regional metals, technology, and machinery manufacturing specialization. Locally, large producers of high-tech machinery and components anchor the cluster. By extension, other industries developing machinery and construction of high-tech clean rooms have agglomerated locally as well. With the establishment of a large technically trained workforce, additional metals, machinery, and computer equipment manufacturing firms have been attracted to Tualatin locations. Beyond manufacturing, the cluster has extended into a considerably scaled Wholesaling sector specializing in electronic, machinery, and equipment wholesalers and brokers.

Food Processing, Distribution, & Wholesale

The Tualatin Food Cluster is primarily a wholesaling cluster, with a diverse range of merchant wholesalers supporting nearly 600 jobs in the community. The manufacturing component of the cluster is anchored by Pacific Foods, which manufactures a range of pre-packaged food products. Relative to other clusters, the cluster is rather small at 4% of local employment. However, the concentration of employment in the cluster reflects a high level of specialization. The wholesaling nature of the cluster would suggest that the cluster is anchored by Tualatin’s advantages for wholesaling, including strong transportation access and proximity to diverse agriculture in the Willamette Valley.

Wood, Paper, Printing, and Related

This cluster represents an agglomeration of businesses in the production of goods rooted in wood and paper products. The cluster has a strong specialization in the manufacturing and sale of construction materials and furniture, specifically widows, doors, and kitchen materials. The cluster includes a niche commercial printing industry as well as a range of merchant wholesalers. Anchored by several large employers, dozens of smaller to medium sized firms collectively represent offshoot businesses as a result of workforce and vendor specialization. Taken together, the cluster shares a trained workforce that totals nearly 1,400 jobs locally.

Key Findings

- Our analysis identified five primary clusters in the local economy. In total, firms conducting business in these clusters account for 58% of employment in the local economy and a direct contribution of $1.6 billion in direct economic output (GDP).

- While Wholesale trade and transportation related industries are among the largest and most specialized in the local economy, we do not see these activities as a stand-alone cluster. Rather, these activities exist as an ancillary function to the area's manufacturing base.

- While more susceptible to business cycle fluctuations, Tualatin's concentration in manufacturing has sweeping ancillary benefits both locally and regionally. High indirect and induced impact multipliers result from high rates of local and regional production input utilization and elevated household impacts derived from high wages, respectively. Indirect/Induced impacts are larger per job in this sector than any other sector.

- Different clusters are very clearly agglomerated geographically in the City. For example, health related firms near Legacy Meridian Park and Advanced Manufacturing concentrations along Tualatin Sherwood Road.

- Retail Trade is among the largest sectors in the local economy. We do not classify it as a cluster because it has less impact on other segments of the economy. However, the sector is grounded in Tualatin's locational competitive advantages, has a strong regional draw bringing dollars from outside the community, employs 2,300 people, and contributes over $150 million in output to the regional economy.

- While grouped in static clusters for the purposes of estimating scale and impacts, it is important to understand that Tualatin's clusters do not function in a bubble locally or regionally. There are certainly firms and industries that operate and specialize across clusters or as a derivative of a broader regional cluster[3]. For example, the Advanced Manufacturing cluster has a specialization in medical devices and components that may share some trained workforce with the Health Care cluster. Similarly, the Truck Transportation sector supports a broad range of industries in the local economy.

Potential Outlook

Looking forward, prospects for local economic growth are generally positive. While manufacturing has typically exhibited a negative trend nationally in recent cycles (in terms of employment), this trend may be reversing. For example, many experts anticipate a wave of "on-shoring" during this business cycle—where manufacturers are bringing production back to the United States. What is driving this supposition? Many manufacturing processes are requiring increasingly skilled labor for one. Concerns over proprietary trade secrets are another. Strengthening global markets and increased purchasing power abroad increases global demand, while increased wealth and wages in developing countries is narrowing the labor production advantage in those markets. Some consider a wave of cheap and accessible natural gas as an important element in reducing domestic production costs in some industries. These industries include those requiring high heat such as fabricated metals and machinery, both with high specializations locally.

[3] Recall this analysis was rooted in data from within the Tualatin City Limits and did not rely heavily on anecdotal information on how firms operate regionally.

Another growth opportunity locally would be an expansion of the Professional Services sector. By-and-large, this sector has exhibited lackluster performance since the recession. One opportunity of this sector, when combined with parts of the Information sector, is Software Publishing and Computer Systems Programming. This is a cluster anchor that is emerging regionally as a strong candidate for growth. While these firms generally prefer more urban locations closer to the central city, they have a high attrition rate and also critically require access to affordable and flexible office space. Such space is increasingly scarce in the central city and reflects a potential competitive advantage for communities like Tualatin.

And finally, Tualatin's Health Care and Related sector is poised to benefit from on-going structural growth in that sector resulting from a range of regulatory, technical, and demographic factors. For example, the Oregon Employment Department estimates that the tri-county area will add roughly 31,500 (3.1% AAGR) Health Care jobs over the next 10 years.

Industry Cluster Summary

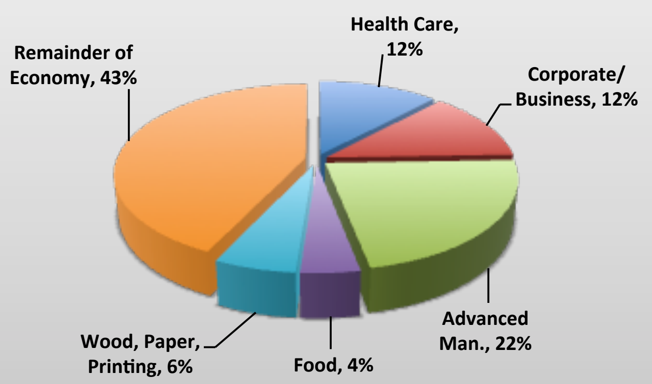
An evaluation of the Tualatin economy revealed five industry clusters; Health Care & Related, Corporate & Business Support, Advanced Manufacturing, Food Processing & Distribution, and Wood, Paper, Printing, & Related Industries. Combined, these clusters represent 57% of local employment (12,731 jobs) and a direct impact of over $1.6 billion in annual value-added output. Indirect and induced impacts total an additional 16,600 jobs and $1.5 billion in annual output. Taken together, the average income among cluster jobs is $85,000 compared to a total average of $50,000. Tualatin's clusters are generally organized around a principal institution or agglomeration of large employers. Examples include Legacy Meridian Hospital, Lam Research, Precision Wire, Pacific Foods, Portland General Electric, and Milgard.

- Health Care & Medical Related
- Corporate & Professional Services
- Advanced Manufacturing & Related
- Food Processing & Distribution
- Wood, Paper, Printing, & Related

Forward Outlook:

Tualatin's clusters are generally well positioned to exhibit continued economic prosperity over the next economic cycle. The Health Care cluster should benefit from regional growth that is expected to average 3.1% annually in the region over the next ten years. At the same time, the manufacturing outlook in many of Tualatin's goods producing industries is strong in light of falling input prices and an anticipated return of production to domestic sources.

Distribution of Employment



Economic Impact Summary

JOBS	Health Care	Corporate/Bus.	Advanced Man.	Food	Wood/Paper	Total
Direct	2,341	2,875	5,115	1,020	1,380	**12,731**
Indirect	791	745	3,939	1,660	778	**7,912**
Induced	1,315	1,343	4,335	1,110	833	**8,937**
TOTAL	**4,447**	**4,963**	**13,389**	**3,790**	**2,991**	**29,580**

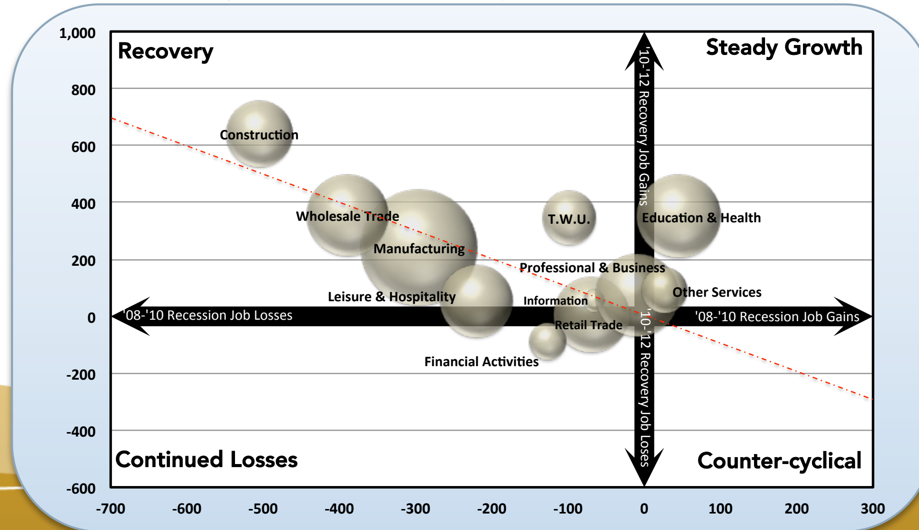
LABOR INCOME (In Millions)	Health Care	Corporate/Bus.	Advanced Man.	Food	Wood/Paper	Total
Direct	$188.0	$197.9	$501.5	$92.8	$97.3	**$1,077.6**
Indirect	$47.2	$42.8	$275.0	$105.9	$51.9	**$522.8**
Induced	$63.5	$64.8	$209.3	$53.6	$40.2	**$431.4**
TOTAL	**$298.7**	**$305.5**	**$985.8**	**$252.4**	**$189.5**	**$2,031.8**

OUTPUT (In Millions)	Health Care	Corporate/Bus.	Advanced Man.	Food	Wood/Paper	Total
Direct	$215.5	$230.7	$882.0	$149.2	$143.4	**$1,620.8**
Indirect	$75.8	$67.2	$439.8	$166.1	$81.6	**$830.5**
Induced	$106.7	$109.0	$352.0	$90.1	$67.6	**$725.5**
TOTAL	**$398.0**	**$406.9**	**$1,673.8**	**$405.5**	**$292.6**	**$3,176.8**

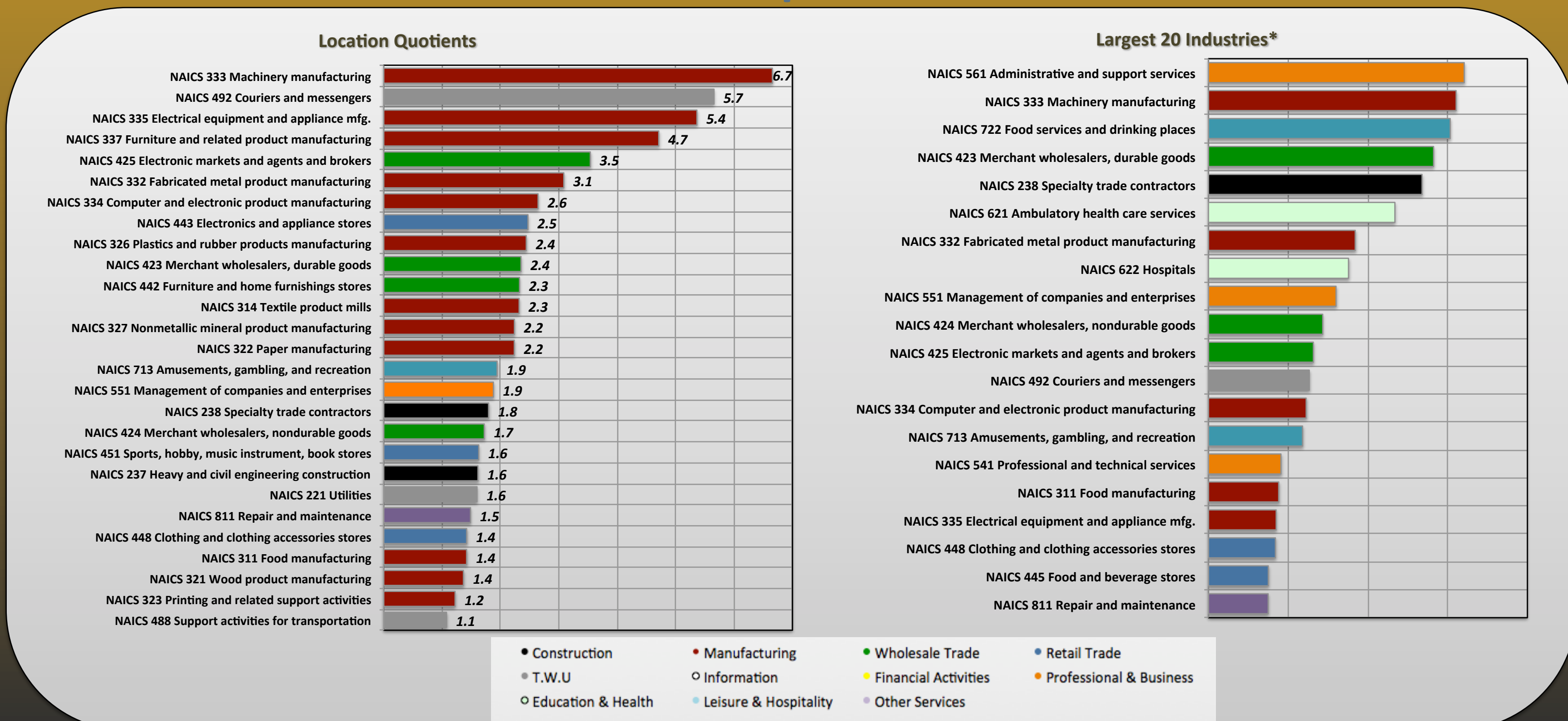
Sector Performance

Over the course of the recession and subsequent economic recovery some sectors have clearly outperformed others. During the recession, Construction, Wholesaling, and Manufacturing were the hardest hit industries, combining to account for 70% of net job losses in the Portland Metro region between 2008 and 2010. Most sectors lost between 10 and 15 percent of their job base during the recession. Other Services and Education & Health Services were the only two sectors that did not decline, with Professional & Business Services remaining stagnant. In the recovery, it has been the hardest hit industries recovering the fastest, demonstrating the resiliency of the local economy.

Job Change from '08 to '10 Compared to Two-Year Recovery



Industrial Specialization



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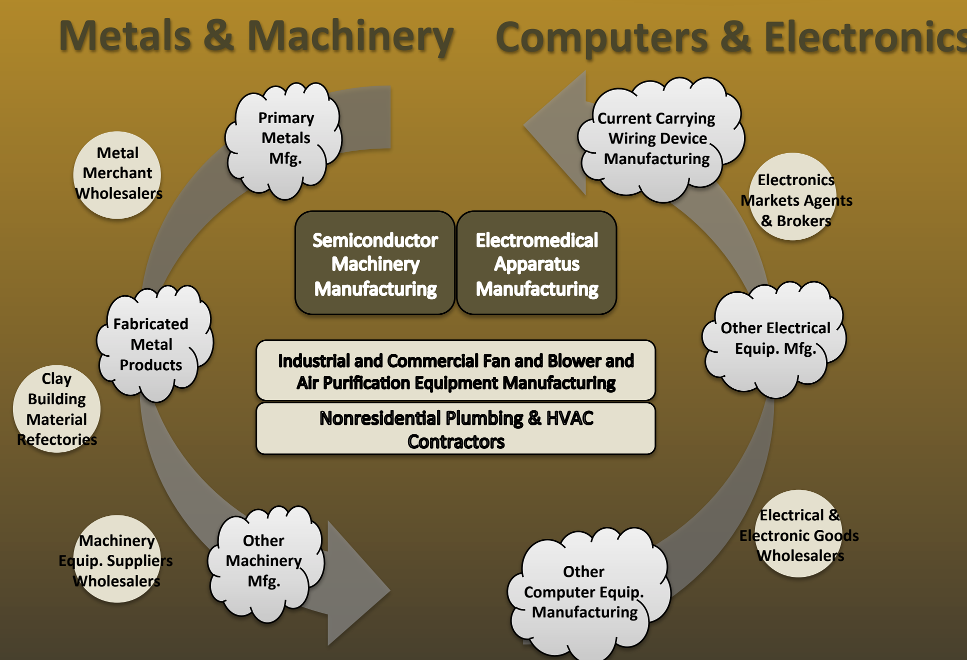
Advanced Manufacturing & Related

The Advanced Manufacturing Cluster is the core economic driver of the Tualatin economy, accounting for roughly 22% of all employment. The cluster functions in the context of broader regional metals, technology, and machinery manufacturing specialization. Locally, large producers of high-tech machinery and components anchor the cluster. By extension, other industries developing machinery and construction of high-tech clean rooms have agglomerated locally as well. With the establishment of a large technically trained workforce, additional metals, machinery, and computer equipment manufacturing firms have been attracted to Tualatin locations. Beyond manufacturing, the cluster has extended into a considerably scaled Wholesaling sector specializing in electronic, machinery, and equipment wholesalers and brokers. The average income in the cluster is over $98,000 annually.

Representative Industries

NAICS Industry Description	Location Quotient Specialization
331 Primary Metal Manufacturing	LOW
333242 Semiconductor Machinery Manufacturing	HIGH
334510 Electromedical & Electrotherapeutic Apparatus Man.	HIGH
333413 Ind. & Com. Fan, Blower & Air Purification Equip. Man.	HIGH
335931 Current-Carrying Wiring Device Manufacturing	HIGH
332 Fabricated Metal Product Manufacturing	HIGH
** Other Machinery, Computer, Electronic, & Equip Man.	HIGH
42351 Metal Service Ctrs. & Other Metal Merchant Wholesalers	HIGH
42361 Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	HIGH
4238 Machinery, Equip., & Supplies Merchant Wholesalers	HIGH
4251 Wholesale Electronic Markets and Agents and Brokers	HIGH
238222 Nonresidential plumbing and HVAC contractors	HIGH
TOTAL FOR CLUSTER	**HIGH**

Cluster Organization



Top 10 Cluster Employers

- Lam Research
- Precision Wire Components
- Huntair
- Charter Mechanical
- Acosta
- JAE Oregon
- Levition Manufacturing
- Kershaw USA
- Pioneer Metal Finishing
- Ichor Systems

SOURCE: Oregon Employment Department and JOHNSON ECONOMICS

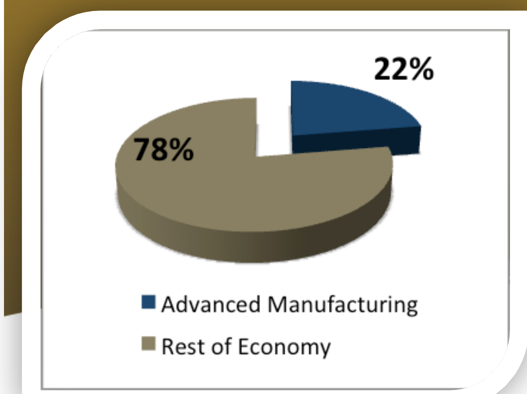
Economic Impacts

Direct impacts from the Advanced Manufacturing & Related Cluster total over 5,100 jobs and an $881 million contribution toward regional GDP. Secondary impacts account for an additional 8,200 jobs and $791 million in output.

	Jobs	Labor Income	GDP*
Direct	5,115	$501,544,894	$881,986,998
Indirect	3,939	$274,966,327	$439,756,444
Induced	4,335	$209,287,457	$352,023,085
Total	***13,389***	***$985,798,679***	***$1,673,766,526***

** Value-Added*
SOURCE: IMPLAN

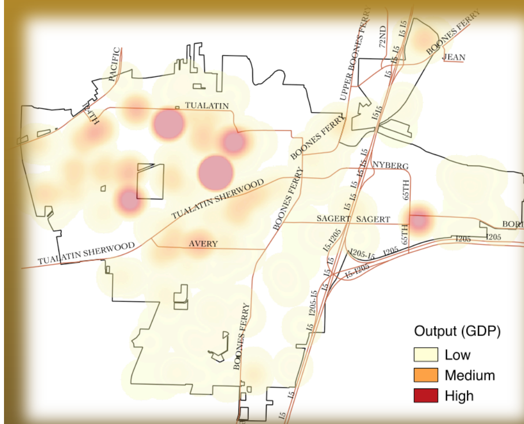
Share of Local Employment



SOURCE: Oregon Employment Department

Advanced Manufacturing & Related

Economic Concentration By GDP Contribution



SOURCE: IMPLAN and JOHNSON ECONOMICS

City of Tualatin

18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

www.tualatinoregon.gov

Primary Ancillary Industries Impacted

- **Real Estate Establishments**
- **Management of Companies & Enterprises**
- **Semiconductor & Related Device Manufacturing**
- **Monetary Authorities and Depository Institutions**
- **Food Services & Drinking Places**
- **Offices of Physicians, Dentists, and Other Health Care Practitioners**
- **Private Hospitals**
- **Advertising & Related Services**

Economic and Ancillary Impacts retained in the Portland MSA

City of Tualatin Economic Development

Prepared by Johnson Economics

City of Tualatin

JOHNSON ECONOMICS

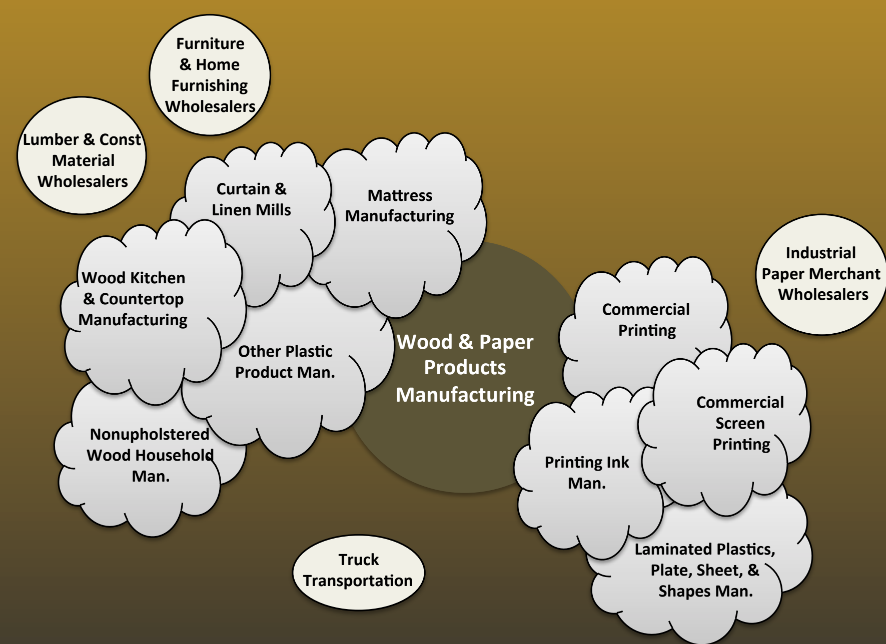
Wood, Paper, Printing, and Related

This cluster represents an agglomeration of businesses in the production of goods rooted in wood and paper products. The cluster has a strong specialization in the manufacturing and sale of construction materials and furniture, specifically widows, doors, and kitchen materials. The cluster includes a niche commercial printing industry as well as a range of merchant wholesalers. Anchored by several large employers, dozens of smaller to medium sized firms collectively represent offshoot businesses as a result of workforce and vendor specialization. Taken together, the cluster shares a trained workforce that totals nearly 1,400 jobs locally. The average income in the cluster is roughly $70,500 annually.

Representative Industries

NAICS	Description	Location Quotient Specialization
4232	Furniture and Home Furnishing Merchant Wholesalers	AVERAGE
321	Wood Product Manufacturing	ABOVE AVG.
323113	Commercial Screen Printing	ABOVE AVG.
31412	Curtain and Linen Mills	HIGH
322	Paper Manufacturing	HIGH
323111	Commercial Printing (except Screen and Books)	HIGH
32591	Printing Ink Manufacturing	HIGH
326	Plastics and Rubber Products Manufacturing	HIGH
33711	Wood Kitchen Cabinet and Countertop Manufacturing	HIGH
337122	Nonupholstered Wood Household Furniture Man.	HIGH
33791	Mattress Manufacturing	HIGH
4233	Lumber & Other Construction Mat. Merchant Wholesalers	HIGH
42413	Ind. & Personal Service Paper Merchant Wholesalers	HIGH
TOTAL FOR CLUSTER		**HIGH**

Cluster Organization



Top 10 Cluster Employers

- Columbia Corrugated Box
- Milgard
- Anthro Corporation
- Cascade Windows
- Tualatin Sleep Products
- Suburban Door Company
- Plasti-Fab
- Paramount Bedding
- Hartman & Forbes
- Strategic Printing Solutions

SOURCE: Oregon Employment Department and JOHNSON ECONOMICS

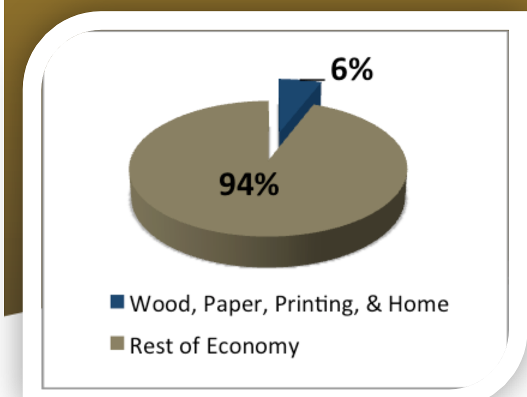
Economic Impacts

Direct impacts from the Wood, Paper, Printing, & Related Cluster total nearly 1,400 jobs and a $143 million contribution toward regional GDP. Secondary impacts account for an additional 1,600 jobs and $149 million in output.

	Jobs	Labor Income	GDP*
Direct	1,380	$97,346,841	$143,414,241
Indirect	778	$51,907,286	$81,579,771
Induced	833	$40,215,197	$67,635,743
Total	***2,991***	***$189,469,324***	***$292,629,756***

** Value-Added*
SOURCE: IMPLAN

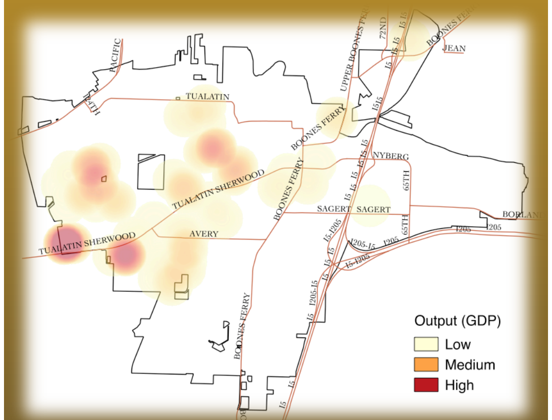
Share of Local Employment



SOURCE: Oregon Employment Department

Wood, Paper, Printing, & Related

Economic Concentration By GDP Contribution



SOURCE: IMPLAN and JOHNSON ECONOMICS

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Primary Ancillary Industries Impacted

- **Management of Companies & Enterprises**
- **Real Estate Establishments**
- **Monetary Authorities and Depository Institutions**
- **Food Services & Drinking Places**
- **Advertising & Related Services**
- **Offices of Physicians, Dentists, and other Health Practitioners**
- **Private Hospitals**
- **Truck Transportation**

Economic and Ancillary Impacts retained in the Portland MSA

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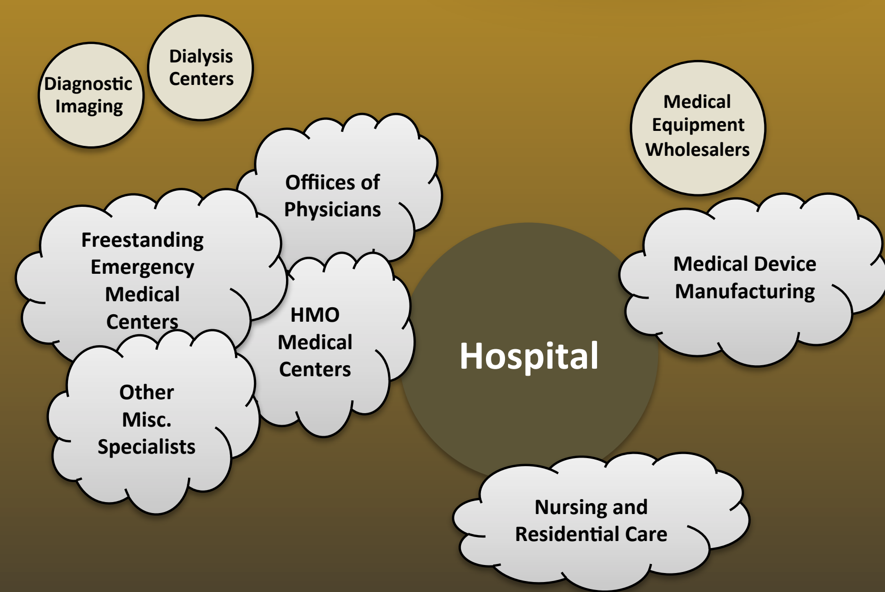
Health Care & Medical Related

While the Health Care and Medical Related Cluster does not necessarily represent high level of specialization locally, it represents at least 12% of local employment. Moreover, the cluster shares workforce and occupational training with elements of Tualatin's Advanced Manufacturing cluster, which includes medical device and component manufacturing and wholesaling. By and large, the cluster is anchored by Legacy Meridian Park Medical Center, among Tualatin's largest employers. By extension, associated industries including clinics, laboratories, physician offices, and assisted living centers have agglomerated in the city. The average income in the cluster is roughly $80,300 annually.

Representative Industries

NAICS	Description	Location Quotient Specialization
623	Nursing and Residential Care Facilities	LOW
621210	Offices of Dentists	LOW
33911	Medical Device Manufacturing	BELOW AVG.
423450	Medical Equipment Wholesalers	BELOW AVG.
622	Hospitals	AVERAGE
621340	Offices of Specialty Therapists	AVERAGE
325412	Pharmaceutical Prep Manufacturing	AVERAGE
621111	Offices of Physicians	ABOVE AVG.
621492	Kidney Dialysis Centers	ABOVE AVG.
621491	HMO Medical Centers	HIGH
621339	Offices of Misc. health Practitioners	HIGH
621493	Freestanding Emergency Medical Centers	HIGH
621512	Diagnostic Imaging Centers	HIGH
TOTAL FOR CLUSTER		**AVERAGE**

Cluster Organization



Top 10 Cluster Employers

- Legacy Meridian Park Hospital
- Marquis at Home
- Kaiser Foundation Health Plan of Oregon
- Farmington Square Tualatin
- Gastroenterology Specialists of Oregon
- Women's Healthcare Associates
- Cedar Crest Alzheimer's Special Care
- The Children's Clinic
- Bethesda Lutheran Communities
- River Valley Landing

SOURCE: Oregon Employment Department and JOHNSON ECONOMICS

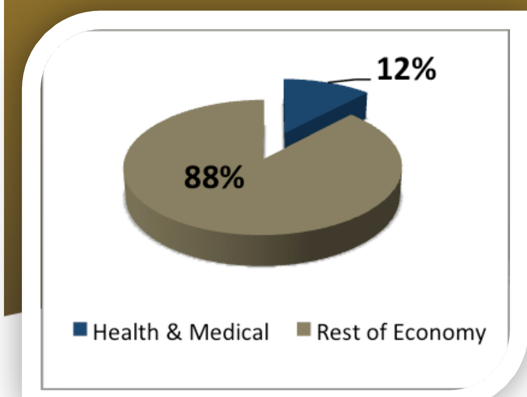
Economic Impacts

Direct impacts from the Health and Medical Related Cluster total over 2,340 jobs and a $215 million contribution toward regional GDP. Secondary impacts account for an additional 2,100 jobs and $182 million in output.

	Jobs	Labor Income	GDP
Direct	2,341	$188,019,235	$215,482,128
Indirect	791	$47,203,461	$75,822,388
Induced	1,315	$63,460,282	$106,723,951
Total	***4,447***	***$298,682,978***	***$398,028,467***

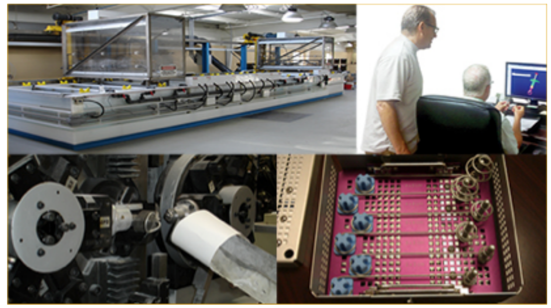
** Value-Added*
SOURCE: IMPLAN

Share of Local Employment

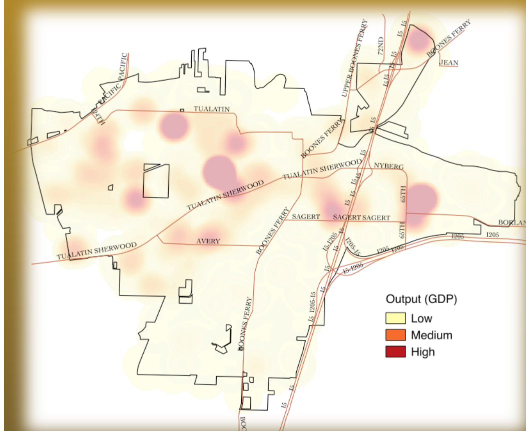


SOURCE: Oregon Employment Department

Health Care & Medical Related



Economic Concentration By GDP Contribution



SOURCE: IMPLAN and JOHNSON ECONOMICS

City of Tualatin

18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

www.tualatinoregon.gov

Primary Ancillary Industries Impacted

- **Real Estate Establishments**
- **Management of Companies & Enterprises**
- **Monetary Authorities and Depository Institutions**
- **Food Services & Drinking Places**
- **Insurance Carriers**
- **Employment Services**
- **Legal Services**
- **Advertising & Related Services**
- **Management, Scientific, and Technical Consulting**

Economic and Ancillary Impacts retained in the Portland MSA

City of Tualatin Economic Development

Prepared by Johnson Economics

City of Tualatin

Johnson Economics

Food Processing & Distribution

The Tualatin Food Cluster is primarily a wholesaling cluster, with a diverse range of merchant wholesalers supporting nearly 600 jobs in the community. The manufacturing component of the cluster is anchored by Pacific Foods, which manufactures a range of pre-packaged food products. Relative to other clusters, the cluster is rather small at 4% of local employment. However, the concentration of employment in the cluster reflects a high level of specialization. The wholesaling nature of the cluster would suggest that the cluster is anchored by Tualatin's advantages for wholesaling, including strong transportation access and proximity to diverse agriculture in the Willamette Valley. The average income in the cluster is $91,000 annually.

Representative Industries

NAICS	Description	Location Quotient Specialization
42445	Confectionery Merchant Wholesalers	LOW
42448	Fresh Fruit and Vegetable Merchant Wholesalers	LOW
311	Food Manufacturing	HIGH
42441	General Line Grocery Merchant Wholesalers	HIGH
42442	Packaged Frozen Food Merchant Wholesalers	HIGH
42443	Dairy Prod. (excl. Dried/Canned) Merchant Wholesalers	HIGH
42449	Other Grocery & Related Prod. Merchant Wholesalers	HIGH
TOTAL FOR CLUSTER		HIGH

Cluster Organization

Top 10 Cluster Employers

- Pacific Foods
- DPI Specialty Foods NW
- McLane Foodservice
- Caruso Produce
- ITO Inc.
- Frito-Lay
- Schwan's
- Transcold Distribution
- Hauge Provisions
- Distribution Plus

SOURCE: Oregon Employment Department and JOHNSON ECONOMICS

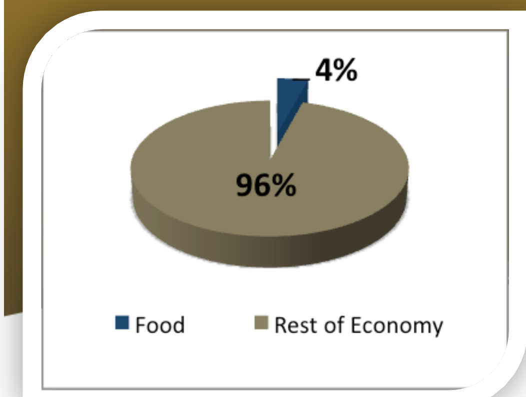
Economic Impacts

Direct impacts from the Food Processing & Distribution Cluster total over 1,000 jobs and a nearly $150 million contribution toward regional GDP. Secondary impacts account for an additional 2,770 jobs and $256 million in output.

	Jobs	Labor Income	GDP*
Direct	1,020	$92,819,416	$149,238,712
Indirect	1,660	$105,944,171	$166,133,233
Induced	1,110	$53,590,890	$90,128,899
Total	***3,790***	***$252,354,478***	***$405,500,844***

** Value-Added*
SOURCE: IMPLAN

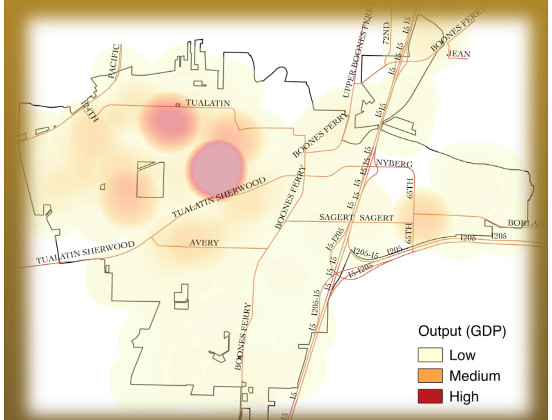
Share of Local Employment



SOURCE: Oregon Employment Department

Food Processing & Distribution

Economic Concentration By GDP Contribution



SOURCE: IMPLAN and JOHNSON ECONOMICS

City of Tualatin

18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

www.tualatinoregon.gov

Primary Ancillary Industries Impacted

- **Management of Companies & Enterprises**
- **Real Estate Establishments**
- **Monetary Authorities and Depository Institutions**
- **Truck Transportation**
- **Food Services & Drinking Places**
- **Advertising & Related Services**
- **All Other Misc. Professional, Scientific, & Technical Services**
- **Electric Power Generation**
- **Private Hospitals**

Economic and Ancillary Impacts retained in the Portland MSA

City of Tualatin Economic Development

Prepared by Johnson Economics

City of Tualatin

Johnson Economics

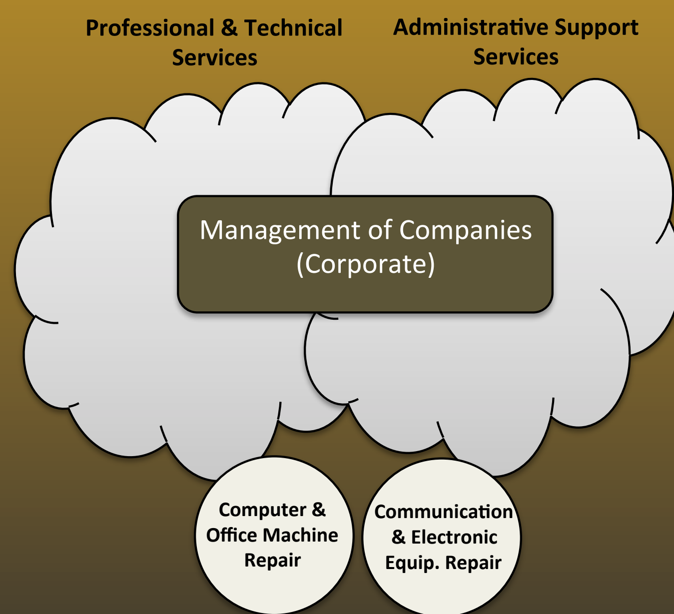
Corporate & Business Support

The City has a moderately high specialization in the Management of Companies sector, anchored by Portland General Electric. While this sector certainly provides support for related business and administrative services, the cluster is more broadly anchored by Tualatin's diverse economic agglomerations. Key industries in Tualatin's business support sector include an average concentration of Professional & Technical Services in addition to a high concentration of Temporary Help Services. Professional & Technical Services in Tualatin include a handful of emerging Software and Computer Systems Design firms. Tualatin's concentration of larger corporate firms also supports a higher than average number of firms in more remedial enterprises such as security, landscaping, and janitorial services. The average income in the cluster is nearly $69,000 annually.

Representative Industries

NAICS	Description	Location Quotient Specialization
5415	Computer Systems Design and Related Services	LOW
5416	Management, Scientific, & Tech. Consulting Services	LOW
5417	Scientific Research and Development Services	LOW
5418	Advertising, Public Relations, and Related Services	LOW
5419	Other Professional, Scientific, and Technical Services	AVERAGE
561	Administrative and Support Services	AVERAGE
551	Management of Companies and Enterprises	HIGH
8112	Electronic & Precision Equip. Repair & Maintenance	HIGH
8113	Com. & Ind. Machinery & Equip. Repair & Maintenance	HIGH
TOTAL FOR CLUSTER		AVERAGE

Cluster Organization



Top 10 Cluster Employers

Express Employment Professionals
Portland General Electric
A-CTI
Enterprise Rent-a-Car
Expresso Building Services
AT&T Mobility services
Integrity Staffing
Richmar Associates
Kneedraggers
Simplex Grinnell

SOURCE: Oregon Employment Department and JOHNSON ECONOMICS

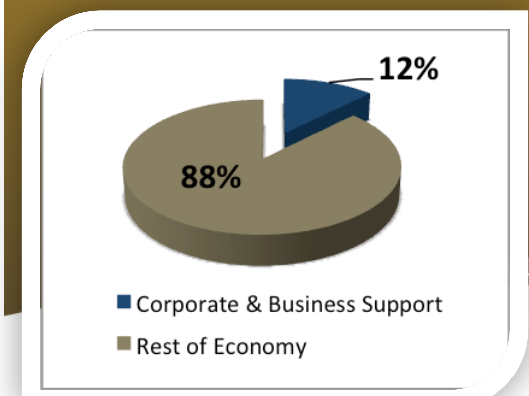
Economic Impacts

Direct impacts from the Corporate & Business Support Cluster total over 2,875 jobs and a $230 million contribution toward regional GDP. Secondary impacts account for an additional 2,000 jobs and $176 million in output.

	Jobs	Labor Income	GDP*
Direct	2,875	$197,858,729	$230,661,610
Indirect	745	$42,776,815	$67,197,560
Induced	1,343	$64,832,523	$109,028,337
Total	***4,963***	***$305,468,067***	***$406,887,507***

** Value-Added*
SOURCE: IMPLAN

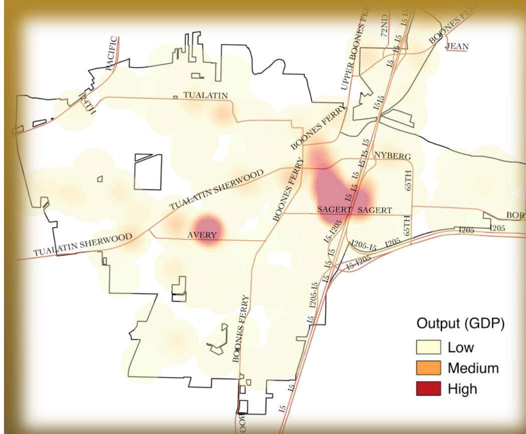
Share of Local Employment



SOURCE: Oregon Employment Department

Corporate & Business Support

Economic Concentration By GDP Contribution



SOURCE: IMPLAN and JOHNSON ECONOMICS

City of Tualatin

18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

www.tualatinoregon.gov

Primary Ancillary Industries Impacted

- **Real Estate Establishments**
- **Monetary Authorities and Depository Institutions**
- **Wholesale Trade**
- **Food Services & Drinking Places**
- **Offices of Physicians, Dentists, and Other Health Care Practitioners**
- **Private Hospitals**
- **Legal Services**
- **Telecommunications**
- **Insurance Carriers**

Economic and Ancillary Impacts retained in the Portland MSA

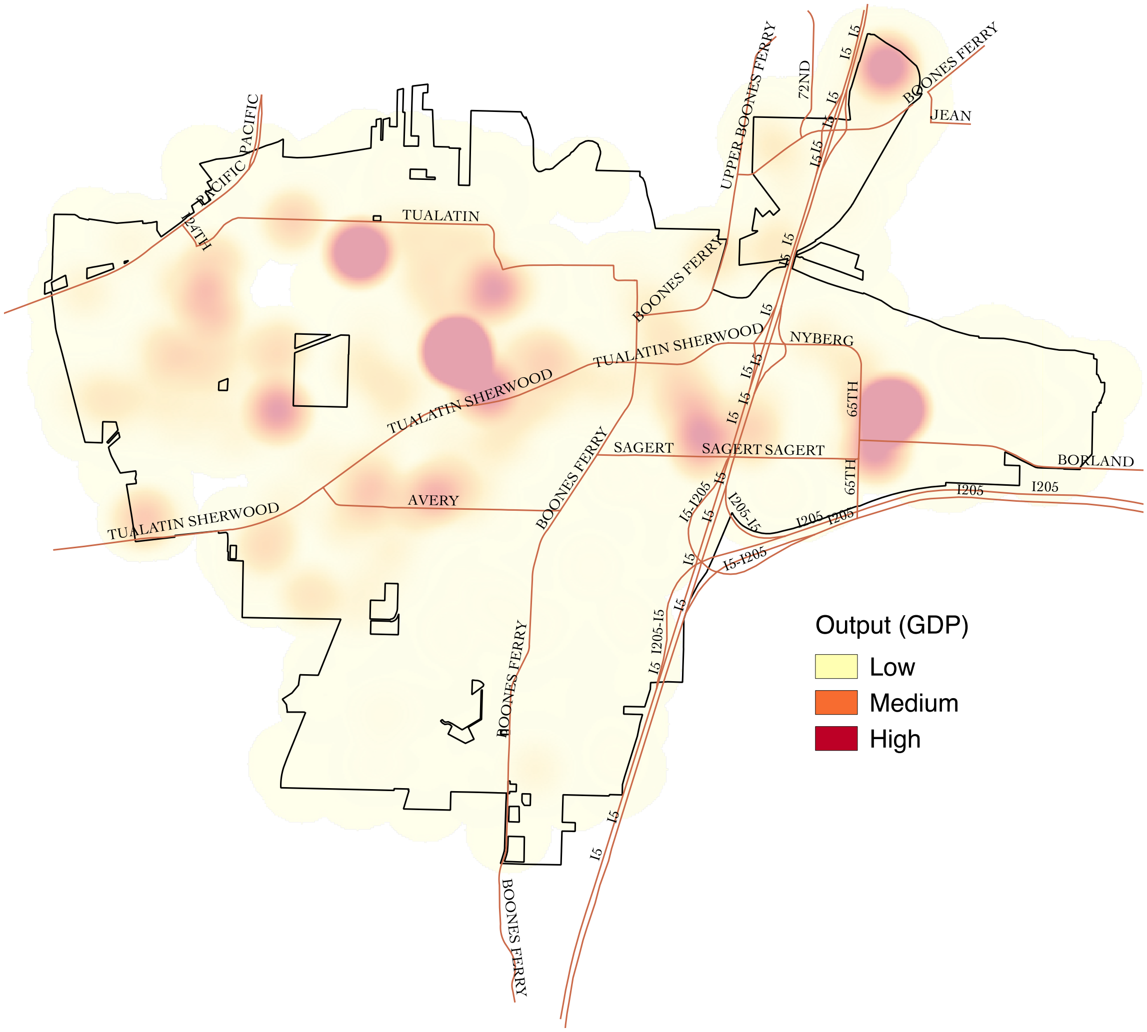
City of Tualatin Economic Development

Prepared by Johnson Economics

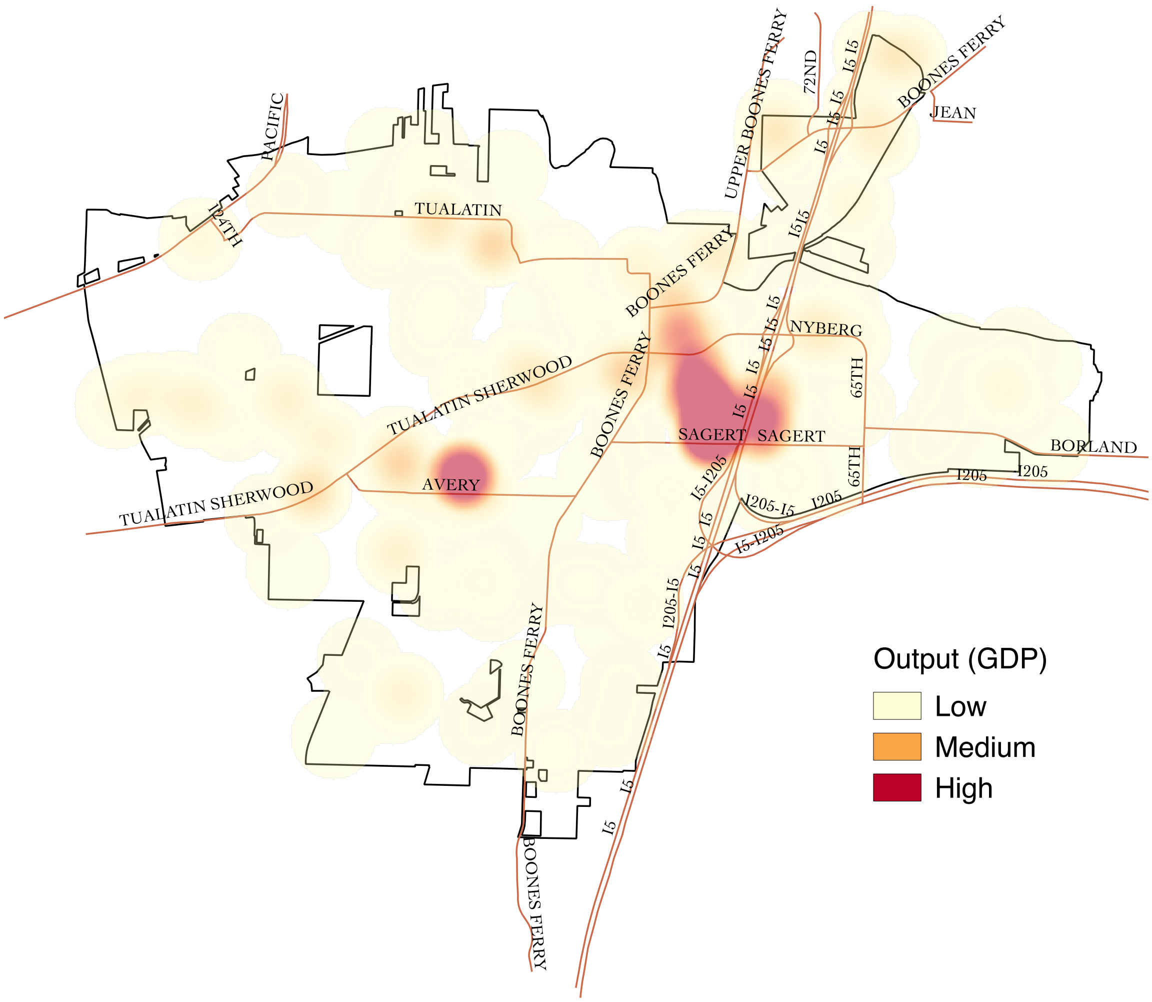
City of Tualatin

Johnson Economics

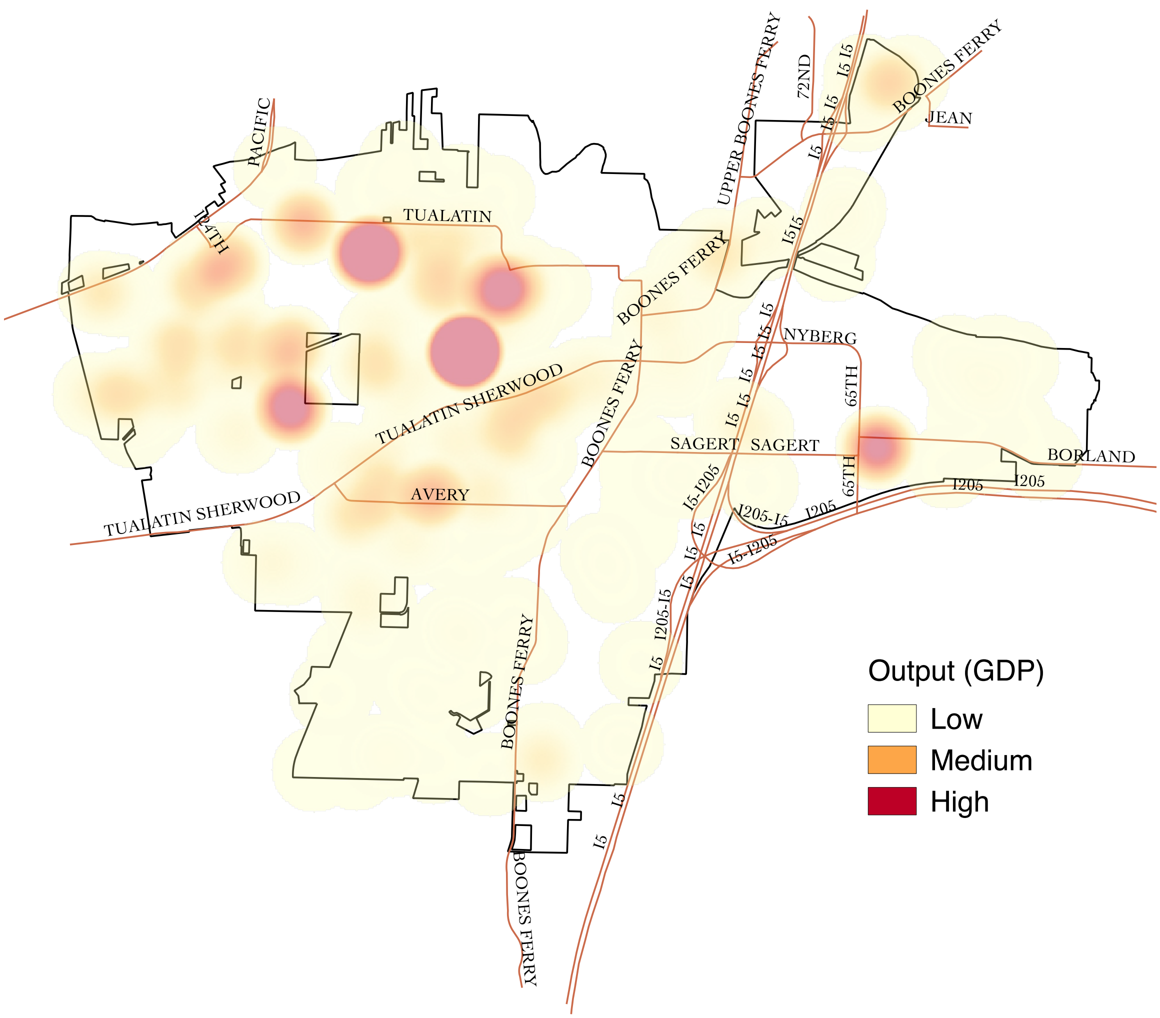
HEALTH CARE AND MEDICAL RELATED



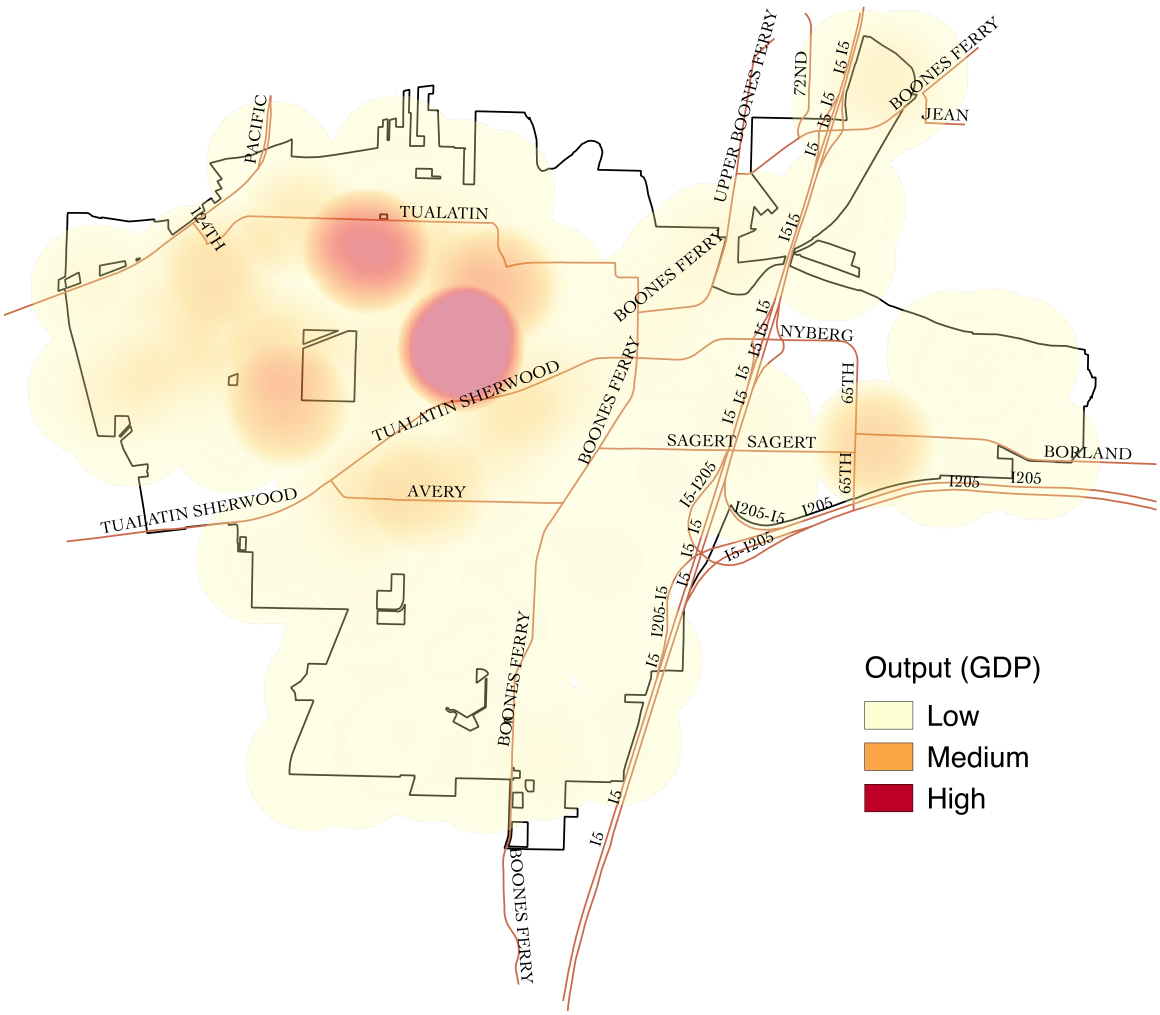
CORPORATE & BUSINESS SUPPORT



ADVANCED MANUFACTURING & RELATED



FOOD PROCESSING & DISTRIBUTION



WOOD, PAPER, PRINTING, & RELATED