

A Comparison of Cluster Formation in Spokane and Similar MSAs

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With this latest monograph from the Institute for Public Policy & Economic Analysis, I welcome you to Eastern Washington University. I hope this research will inform your knowledge of the Inland Northwest. Efforts like this Institute monograph series are manifestations of this University's commitment to serve the region. I applaud the initiative of Eastern's Board of Trustees to launch this Institute.

Teaching remains our core mission at Eastern Washington University. Increasingly, teaching and research are interwoven. Our faculty members stay professionally current when publishing in peer-reviewed journals. These achievements, in turn, allow them to better convey the evolving knowledge base of our academic disciplines.

Our students receive an enhanced education if their classroom experience is informed by the content and enthusiasm of their professor's research. Increasingly, we ask students to conduct research projects of their own. Whether conducting their own projects or assisting professors, our students acquire a richer learning experience through research.

Research for academic journals is not the only area our faculty members target, however. Our University also asks its faculty to engage the communities and region from which we draw our students. This research provides a greater sense of place and a commitment by our faculty to it. It also translates academic methods and findings into a broader, and ultimately more relevant, arena: the lives of the residents of the Inland Northwest.

The overarching goal of the Institute for Public Policy & Economic Analysis is to serve the region by translating knowledge. It does this through a variety of activities, including this series, annual economic forecasts, contract research and the Community Indicators Initiative. I invite you to explore its web site (www.ewu.edu/policyinstitute) to learn more.

I have tremendous optimism that by collaborating with EWU's faculty, staff and partners, I will continue to ensure our institution will be anchored into the daily course of life throughout the Inland Northwest. During these difficult economic times, our collective future depends on an educated and informed citizenry. Helping our region reach higher levels of knowledge is something this University can and will do.

My office and that of the Institute director welcome all comments on how we might better serve.

A handwritten signature in black ink that reads "Rodolfo Arévalo". The signature is written in a cursive, flowing style.

Rodolfo Arévalo, PhD
President

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I. Executive Summary

In recent years, state and local governments have looked to cluster development as a means of elevating economic performance in their regions and as a way to improve the standard of living for their constituents. This heightened interest in clusters and their formation has provided momentum to regional initiatives fostering their development. Porter (1998, 2003) shows that regions derive significant competitive and economic advantage when there are concentrations of firms (economic clusters) in home markets of similar or related industries. Research posits that these competitive advantages derive from the locational relationships of firms within these clusters, resulting in benefits from knowledge spillover, ease of access to skilled labor, better acquisition and assembly of the inputs of production, and competitive pressures to innovate and increase productivity.

In this study, Porter's (2003) cluster definition as "a geographic proximate group of interconnected companies, suppliers, service providers, and associated institutions in a particular field, linked by externalities of various types" was used. The existence and strength of clusters are measured by *location quotients* (LQs). Based on employment levels, LQs measure the concentration of a particular industry in a particular local economy, relative to the national average. An industry with an LQ > 1 is interpreted as showing a cluster.

The purpose of this monograph is to profile cluster as well as economic development in Spokane and seven other comparable Metropolitan Statistical Areas (MSAs): Boise, ID; Colorado Springs, CO; Salt Lake City, UT; Provo, UT; Reno, NV; Tucson, AZ; and Albuquerque, NM. The study looks at the impact of cluster development within Spokane and the seven comparable MSAs

(the competitive set), as measured by average wage, average wage growth, average number of employees, average annual employee growth, traded firm growth, and patenting (a benchmark for innovation). In addition, the monograph reports on how cluster formation has advanced in Spokane since 1990. Drawing on data from Harvard's Cluster Mapping Project, we arrive at the following conclusions.

Economic Performance

Spokane experienced higher employment growth than the national average over the period 1990-2004, averaging 2.2 percent during the period while the US averaged 1.5 percent. Employment growth in the competitive set ranged from 2.2 percent in Spokane to 4.1 percent in Boise during this period.

Average annual wage in Spokane in 2004 was \$31,725, compared to the national average of \$36,967. Spokane's average annual wage was higher than Albuquerque, Tucson, and Provo and ranked fifth highest of the MSAs studied. Average wage ranged from \$27,526 (Provo) to \$35,043 (Reno). The average wage growth for Spokane over the 1990-2004 period was 3.4 percent, compared to 3.6 percent for the US. Average wage growth across the MSAs ranged from 3.4 percent in Spokane to 4.1 percent in Tucson.

Spokane's employment showed a slightly greater percentage of employment associated with *local* clusters than with traded clusters, in comparison to the comparable cities. However, this difference apparently did not negatively influence average annual wage. Local clusters are made up of local industries. Local industries provide goods and services almost exclusively for the area in which they are

located, which explains why they must spread all across the country. Consequently, local industries show employment in every region, and employment is roughly proportional to regional population.

On the other hand, *traded* clusters are made up of industries that sell products and services across economic areas, and are concentrated in the specific regions where they choose to locate production, due to the competitive advantages afforded by these locations. Employment levels in traded industries vary greatly by region, and have no clear link to regional population levels. Traded cluster development in an area will inevitably have an impact upon local industries, as local services are used by the traded industries in support operations (Porter, 2003).

The study found that the majority of employment in Spokane and in the competitive set MSAs could be accounted for by companies associated with local clusters. Provo proved to be the exception. Employment in companies associated with traded clusters accounted for the next highest level of employment across the eight MSAs. Thus, local and traded industries account for 99 percent of employment within the MSAs studied. The third cluster type, *natural resource-dependent*, contributed very little to any of the MSAs studied.

Innovation Output

There was a marked difference in innovation output across the MSAs studied, as proxied by utility patents. Patents per 10,000 employees in 2004 ranged from an average of 4.35 for Spokane to 76.95 for Boise. The US national average was 7.92.

A similar pattern was also seen in average annual patent growth from 1990-2004. Annual patenting growth rate ranged from 3.8 percent in Salt Lake City to 23.9 percent

in Boise. Spokane's patent growth rate was 4.7 percent over this period, placing it sixth among the MSAs studied. The US national average was 4.4 percent over the same period. Patenting activity was closely associated with certain traded industries whose processes or output involve technology, industries like Information Technology or Biopharmaceuticals. Spokane did not have these cluster types present within its economy. In contrast, six of the seven comparable cities had Information Technology clusters; only Reno, besides Spokane, lacked an IT cluster.

Traded firm establishment growth showed Provo with the highest average rate of traded firm formation during the period 1990-2004, averaging 8.4 percent per year, versus an average 3.6 percent per year in Spokane. The US average was 3.2 percent over this same period.

Evolution of Clusters in the Spokane MSA

Local clusters dominated overall cluster development within Spokane. The top five clusters in the Spokane MSA by employment were associated with local industries. Of the top ten clusters by employment in Spokane, local health services employed the most people in 2004. Provo, with seven, had the highest number of traded clusters within their top ten clusters, while Spokane, Albuquerque, and Tucson, at three, had the lowest number of such clusters within the top ten overall. Spokane's economy appears somewhat more diversified with respect to traded cluster development than are the comparable MSAs.

In Spokane, no one traded cluster appears to dominate the economy. Spokane's average LQ for traded clusters was 1.4 with a standard deviation of 0.40. This standard deviation was one-third of that for the next lowest comparable MSA (Salt Lake City),

reflecting a relatively even distribution of traded cluster employment in Spokane by comparison. This characteristic is consequential, in that it may serve to protect Spokane's economy from the negative effects of industry shock that occurs in economic cycles.

There has been noteworthy cluster formation in Spokane between 1990 and 2004. In 1990, of the top ten clusters present in Spokane, nine were local cluster types. In 2004, there were three traded cluster types within Spokane's top ten clusters. This development reflected an economy that was increasingly becoming more involved in the larger US economy and depended less on the local market. In addition, the findings show that no one traded cluster dominates the Spokane economy.

In fact, Spokane's economic growth was most significant in terms of traded cluster development. In 1990, traded clusters accounted for only 3.3 percent of employment in Spokane's top clusters, yet by 2004 this had risen to 15.2 percent. Two traded clusters, Education and Knowledge Creation as well as Financial Services, grew to the point that they could be recognized within Spokane's top ten clusters.

Spokane appeared most similar to Albuquerque and Tucson in terms of its economic performance indicators. It shares only two traded clusters with Albuquerque (Entertainment and Heavy Equipment Services) yet shares four with Tucson (Entertainment and Heavy Equipment Services; Building Fixtures; Equipment & Services; and Aerospace Vehicles and Defense). By contrast, Spokane appears least similar to Provo, which has seven traded clusters in its top ten clusters. Also, Spokane and Provo have only two traded clusters (Education and Knowledge Creation and Heavy Equipment Services) in common.

Finally, the data suggest that not all traded industries are the same in terms of their impact on economies. It appears that some local cluster types may have greater economic impact on local economies than some traded cluster types. Spokane's large Local Health Services cluster is a good example: It employs a large number of people at above average wages. Consequently, a local cluster such as Local Health Services might more positively impact an economy than a traded cluster, such as leather works, important to Reno and therefore be more desirable for economic development than some traded clusters.