

ECONOMIC ANALYSIS OF THE WALLA WALLA WINE CLUSTER: PAST, PRESENT, AND FUTURE



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CREDITS

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FACT SHEET: THE WALLA WALLA WINE INDUSTRY

Total current jobs in wine production and wine tourism	1,094 Jobs
Annual average growth in direct wine cluster employment, past 10 years	25% Annual Growth
Total earnings generated by the wine cluster alone	\$46.7 Million
Other jobs dependent on the wine cluster due to multiplier effects	2,169 Jobs
Total regional earnings generated through direct, indirect, and induced effects	\$103.2 Million
Total jobs projected to be dependent on the wine cluster in 2017	6,670 Jobs
Percent of all jobs dependent on wine cluster in 2007	8.5%
Projected percent of all jobs dependent on wine cluster in 2017	15.8%
Overall growth in the regional economy since 1997	6%
Overall growth in the regional economy since 1997, absent the wine cluster	-2%

EXECUTIVE SUMMARY & CONCLUSIONS

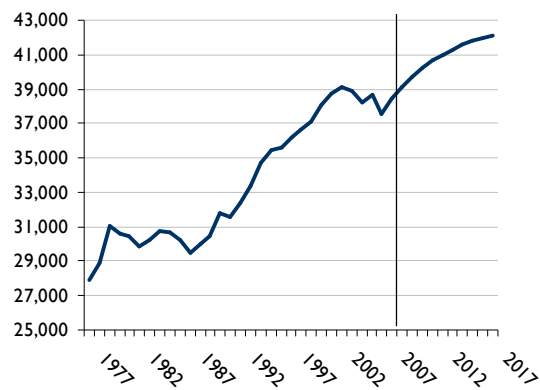
Walla Walla's Shifting Economy

The Walla Walla regional economy (**Figure A**) has seen significant ups and downs in the last 25 years and is just emerging from a six-year period of basically no economic growth. With economic rebound projected for the region (**Figure B**), the time is now right to consider carefully the area's economic development goals and strategies for securing long-term economic growth and stability.

Fig. A: The Functional Economic Region



Fig. B: Historic and Projected Total Employment, Entire Region (1977-2017)



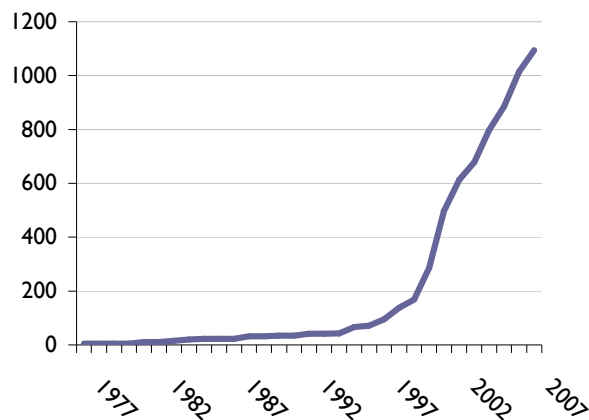
Enter a Thriving Wine Industry

In the midst of these economic changes, the area's wine industry has entered as an entirely new player on the regional scene. From a tiny novelty industry just two decades ago, wineries, vineyards and related tourism activity has surged to about 1,100 directly wine-related jobs today (**Figure C**).

The wine industry and related economic activities connected to wine tourism are poised to join the

major historic pillars of the region's economy (Government, Higher Education, Agriculture, Manufacturing¹) over the next 10 years.

Fig. C: Wine Cluster Employment, Entire Region (1977-2007)



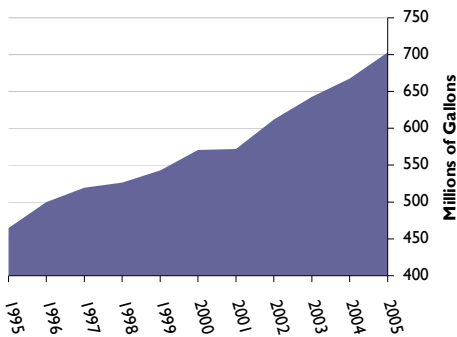
The future growth of the regional wine industry will be driven by a number of trends. First, domestic and global wine consumption has been increasing and is likely to remain strong in the foreseeable future (see section below). Second, the area's climate and soil have been proven to be well suited for quality wine production. This geographic advantage shields the industry from future job loss due to globalization trends that have sapped employment in some U.S. industries, particularly manufacturing. Finally, the regional wine industry will enjoy positive synergies with other local amenities such as a relatively mild climate, educational opportunities, social and cultural activities, fine dining and shopping, and low cost of living. These synergies will draw not only traditional weekend visitors but also summer home owners, mobile professionals, retirees, and leisure households drawn by the area's quality of life, in which the presence of vineyards, wineries, and auxiliary industries will play an increasingly important role.

¹ The convention in this report is to capitalize industry sector names that match the official 2-digit NAICS (North American Industry Classification System) titles.

Context: The Global Wine Industry

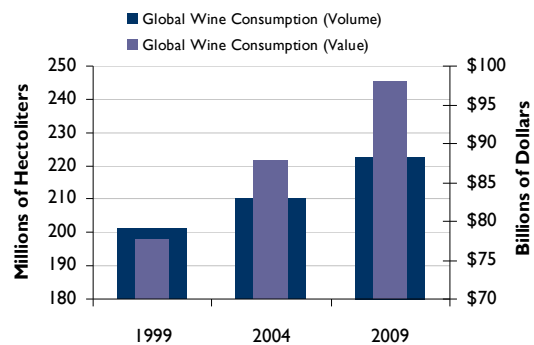
Figures D and E indicate the growing consumption and the even faster-growing value of wine worldwide. Both these trends indicate a positive outlook for Walla Walla Valley wines, and in particular mid- to high-value wines branded and marketed as artisan-crafted products rather than mass-produced commodities.

Fig. D: Recent U.S. Wine Consumption



Source: The Wine Institute

Fig. E: Recent and Projected Global Wine Consumption



Source: Vinexpo, Global Wine and Spirits Market & 5 Year Forecast (2006)

The Walla Walla Region’s “Wine Cluster”—A Growing Economic Force

We define the region’s “wine cluster” as a group of industries that share common interests and economic interdependencies. The cluster not only includes vineyards and wineries but also “auxiliary” industries such as hotels, restaurants, recreational services, and specialty retail stores. These auxiliaries establish the area’s reputation as a center of wine tourism and not simply wine production. In this report, auxiliary jobs counted as part of the wine cluster have been strictly limited to a survey-based estimate of auxiliary industry jobs directly related to the presence of wineries in the region.

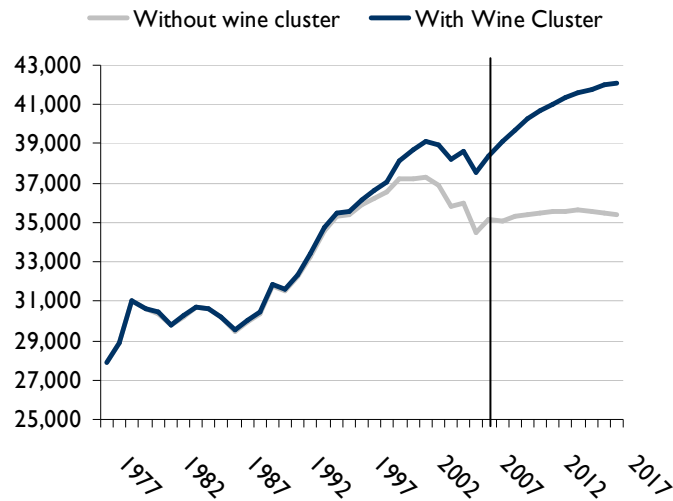
The region’s wine cluster directly accounts for nearly 1,100 jobs in the region today, having grown exponentially since the late 1990s (**Figure C**). Beyond these direct jobs, the wine cluster creates

additional “ripple effect” jobs throughout the economy as cluster businesses purchase local goods and services and create new household incomes in the area. There are also jobs induced by the household incomes of quality-of-life migrants who are attracted to the region by wine cluster amenities. When all these indirect and induced jobs are added up, they amount to about 2,169 jobs in 2007, or roughly two additional jobs for every direct wine cluster job. Along with the original direct jobs, the total jobs attributable to the wine cluster is estimated to be 3,263 in 2007, or 8.5% of the entire regional economy. Projections indicate that this number will double by 2017 to 6,670 total jobs, or nearly 16% of all regional jobs in 2017.

An Otherwise Fragile Economy Bolstered by Wine Cluster Developments

As shown in **Figure F**, thirty years of Walla Walla history indicate a modestly growing economy interrupted by periods of slump and decline. The most recent slowdown set overall employment levels back five or six years, but would have been much more severe without the significant new job growth in the wine cluster. Without it, the slowdown would have set the region’s total job count back to levels not seen since the early 1990s. Wine production and related industries are thus making indispensable contributions to a more stable regional economy.

Fig. F: Historic and Projected Three-County Region Total Employment (1977-2017)



Looking forward, the role of wine becomes even more pivotal. Over the next ten years, the role of wine and related industry in Walla Walla's economic base will roughly double, from 8.5% of all jobs in 2007 to nearly 16% in 2017. Perhaps more indicative of wine's increasing economic importance, we project that over the next ten years wine cluster growth will explain virtually all growth in the Walla Walla regional economy. Without it, the region would have expected to see little or no economic growth.

Next Steps

Based on the results of this study, we believe several things can be done to maximize the Walla Walla wine region's potential.

- Research on visitors and in-migrants would help the region market itself and improve its infrastructure and amenities.
- A fiscal impact model would enable decision makers to estimate the local public finance effects of wine industry related policies.

- A survey-based gap analysis could identify wine-cluster supplying industries with potential to locate in the Walla Walla region, and thus contribute to the recruitment of complementary businesses.
- Finally, additional efforts should be made to inform the business community of their shared interest in wine cluster development. Sharing the findings of the present report would contribute to this effort. The benefit of this education process is near the policy heart of cluster-led economic development; specifically, that otherwise unrelated firms recognize a common interest and thereby contribute to the economic success of cluster activities.

With a shared vision, timely information, and some wise decision making, the Walla Walla regional economy should see great benefits from a growing, economically-integrated wine cluster.

CHAPTER 1: STATE OF THE ECONOMY REPORT

1.1. Chapter Plan

In order to understand the economic role of the area's wine cluster, we must see it against the backdrop of the entire regional economy, past and present. Accordingly, this chapter briefly surveys the Walla Walla region's economy to provide a context for the detailed industry cluster analysis in **Chapter 2**. After defining the region's geographic boundaries, we review major industry sectors by current jobs, earnings, and regional specialization. Then we review economic trends in the region since 1980 to set the historical context for the cluster analysis.

1.2. The Economy Today

1.2.1. Region Definition

Before analyzing a region's economy, we must establish a boundary that accurately captures the functional economic area (i.e., a mainly closed market for labor and consumer goods and services), as opposed to a region defined by more artificial political jurisdictions.² For this report we defined the region as the shaded area shown in **Figure 1.1**. This custom-defined region consists of ZIP codes 97862, 99324, 99328, 99329, 99348, 99359, 99360, 99361, 99362, and 99363. It includes all of Walla Walla County except for the westernmost edge, all of Columbia County, and the northernmost portion of Umatilla County (Oregon).

² We are not dismissing the importance of political boundaries in economic relationships, but for the purposes of this analysis it is more crucial to capture the area that includes vineyards, wineries, and their auxiliary industries, and the spread of economic multiplier effects.



Fig. 1.1: The Walla Walla wine region functional economic area

The western edge of Walla Walla County (Burbank, Wallula and surroundings) is part of a separate functional economy centered on the Tri-Cities. Similarly, southern Umatilla County is part of a separate functional economy centered on Pendleton. Thus these areas are excluded from the present analysis.

For clarity's sake the data and analysis in this report will for the most part be given for the entire functional region as defined by the ZIP codes in **Figure 1.1**. This will be called the “three-county Walla Walla functional economic area,” or abbreviated to “the three-county region” even though it does not cover the entirety of the three counties. Detailed data for the area’s three sub-regions—which will be called “Greater Walla Walla,” “Greater Milton-Freewater,” and Columbia County (or “Greater Dayton”) appear mostly in the appendices.

1.2.2. Jobs and Earnings by Industry

Table 1.1 displays total employment and labor income (called “earnings”) in the three-county functional economy for calendar year 2006. Data are displayed according to industry sectors defined by NAICS (North American Industry Classification System). The NAICS system organizes

industries into groups or sectors that produce similar types of outputs, e.g., “Manufacturing,” “Health Care,” “Government” “Agriculture,” and so on.³

Table 1.1: Three-County Region Jobs and Earnings, 2006

NAICS Code	Description	Jobs	% of All Jobs	Total Earnings (x1000)	% of All Earnings
11	Agriculture, forestry, fishing and hunting	3,170	8.4%	\$79,005	5.9%
21	Mining	36	0.1%	\$1,404	0.1%
22	Utilities	105	0.3%	\$17,661	1.3%
23	Construction	1,874	5.0%	\$72,468	5.4%
42	Wholesale trade	807	2.1%	\$36,550	2.7%
48	Transportation and warehousing	493	1.3%	\$28,109	2.1%
51	Information	394	1.0%	\$20,719	1.6%
52	Finance and insurance	1,002	2.7%	\$66,462	5.0%
53	Real estate and rental and leasing	850	2.3%	\$16,771	1.3%
54	Professional and technical services	945	2.5%	\$30,026	2.2%
55	Management of companies and enterprises	<10	--	--	--
56	Administrative and waste services	917	2.4%	\$22,126	1.7%
61	Educational services	2,122	5.7%	\$33,914	2.5%
62	Health care and social assistance	5,125	13.6%	\$208,260	15.6%
71	Arts, entertainment, and recreation	654	1.7%	\$12,216	0.9%
72	Accommodation and food services	2,015	5.4%	\$30,293	2.3%
81	Other services, except public administration	2,798	7.4%	\$44,195	3.3%
90	Government	6,419	17.1%	\$330,738	24.8%
31-33	Manufacturing	3,231	8.6%	\$181,647	13.6%
44-45	Retail trade	4,600	12.2%	\$102,835	7.7%
Total		37,560	100.0%	1,335,400	100.0%

Source: Economic Modeling Specialists, Inc. - 6/07

As shown in **Table 1.1**, the Government sector is the largest in total employment (accounting for over 17% of all jobs) and the largest source of labor income (accounting for nearly 25% of all labor income). Government in the three-county economy includes for example, the Washington State Penitentiary in Walla Walla county.

³ NAICS sectors are generally very different from the “industry clusters” we consider in Chapter 2. As discussed there, industry clusters are made up of industries (often in disparate NAICS sectors) that share some common interest and sometimes support each other through shared supply chain relationships and labor pools.

1.2.3. Regional Industry Specialization

Table 1.2 shows the area’s industry “specialties” by ranking their location quotients. Location quotients or LQs are a way of quantifying how “concentrated” an industry sector is in a region compared to a larger geographic area, such as the nation as a whole—or, in other words, how much a region is uniquely specialized in certain industries. So, suppose that a certain industry accounts for 4% of all regional jobs but only .5% of all national jobs. The region’s LQ for that industry would then be $(4 / .5) = 8$, meaning that the region is 8 times more specialized in that industry than the national average.

Table 1.2: Three-County Region Industry Location Quotients

NAICS Code	Description	2006 Jobs	2006 LQ
11	Agriculture, forestry, fishing and hunting	3170	3.99
21	Mining	36	0.20
22	Utilities	105	0.88
23	Construction	1874	0.78
42	Wholesale trade	807	0.58
48	Transportation and warehousing	493	0.36
51	Information	394	0.53
52	Finance and insurance	1002	0.61
53	Real estate and rental and leasing	850	0.59
54	Professional and technical services	945	0.37
55	Management of companies and enterprises	<10	--
56	Administrative and waste services	917	0.40
61	Educational services	2122	2.74
62	Health care and social assistance	5125	1.34
71	Arts, entertainment, and recreation	654	0.84
72	Accommodation and food services	2015	0.79
81	Other services, except public administration	2798	1.34
90	Government	6419	1.28
31-33	Manufacturing	3231	1.03
44-45	Retail trade	4600	1.13

Source: Economic Modeling Specialists, Inc. - 6/07

Location quotient tells a much different story than mere job numbers. Industries with a high LQ are typically export-oriented⁴ industries, which are important because they bring money into the region rather than simply circulating money that is already in the region, as trade- or service-based industries typically do.

The three-county region's economy is highly specialized in Agriculture, Educational Services, Health Care & Social Assistance, and Government. It is moderately specialized in Retail Trade and "Other" Services. The numbers reveal the importance of traditional agriculture and the strong presence of college and government employment.

The region's specialization in higher education (classified above under both Government and Educational Services) has the potential to benefit and profit from the wine industry, although the reasons may not be immediately obvious. One reason is that higher education opportunities and the cultural events associated with higher education are very important quality-of-life assets that can work synergistically with the region's "wine country" reputation to attract retirees and mobile professionals to relocate in the region. These individuals often have outside sources of income which they bring to the region, and they can also spur entrepreneurial activity as they invest their capital in new or existing local businesses. Another reason is that the wine industry's contributions to raising regional quality of life can attract more students. Even if they are indifferent to wine per se, they can take advantage of better shopping, dining, and recreational opportunities that accompany increased tourism in the area.

⁴ The term "export" is used from a regional perspective, so it refers to exports from the region to both foreign nations and other regions in the United States. Also note that exports can be intangibles—for example, a college town is in effect "exporting" higher education. From a regional economic perspective, such exports are treated in the same way as tangible exports such as grain or manufactured goods because they all bring money into the region from outside sources.

Specialization in Health Care & Social Assistance points to the region's role in providing those services to surrounding rural areas, as well as indicating an above-average senior citizen population—a point confirmed by the area's demographics. This is also good news for the wine cluster, since readily available health services and the leisure atmosphere of wine country can work together to attract retirees to the area, bringing the positive effects described above.

Specialization in Retail Trade can mean several things, the two likeliest being: (1) the region draws visitors' shopping dollars from surrounding areas; or (2) shopping dollars drawn from a large student and/or retiree population with outside, non-earnings sources of income. This also is good news for the wine industry, since an abundance of shopping opportunities serves to draw more visitors, many of whom may visit wineries and purchase local wines.

Even while the region's Retail sector shows a high concentration, Accommodation & Food Services appears to be significantly underdeveloped, having a share in the regional economy below the national average (location quotient of 0.79). The region's hospitality and tourism industries (including those that depend on wine tourism) seem to have room to grow before they reach maturity.

1.2.4. Relationship of the "Wine Cluster" to NAICS Sectors

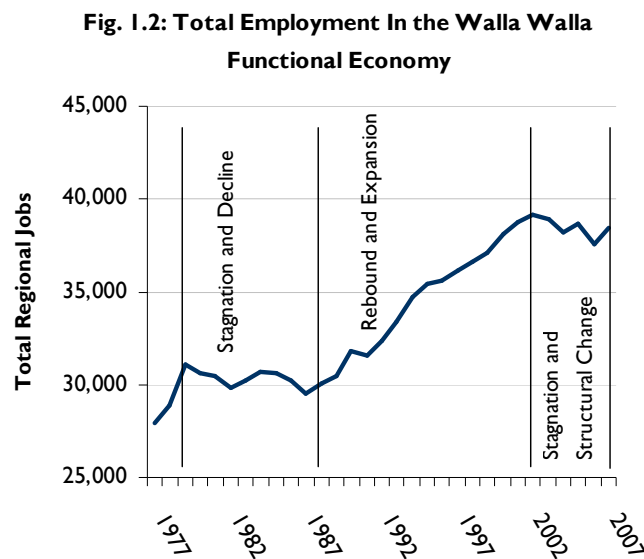
Note that the "wine cluster," as we have defined it, falls into several NAICS sectors. In the NAICS categories, vineyards fall under Agriculture, wineries (and combined vineyard/wineries) under Manufacturing, and wine-tourism related jobs under Accommodation & Food Services, Retail Trade, or Arts, Entertainment, & Recreation. We will examine all these wine cluster jobs separately in **Chapter 2**. For now, the larger perspective reminds us that wine and related industries are still a

relatively small part of the region's economy, which remains heavily dependent on state and local government, health care, manufacturing, traditional agriculture, and the area's colleges.

1.3. Thirty-Year Economic Trends

1.3.1. Three Periods: Decline, Rebound, and Decline Again

Figure 1.2 shows economic change in terms of total jobs in the three-county Walla Walla functional economy over the past thirty years. The data show a modestly growing economy troubled by periods of economic stagnation and decline.



The economy experienced a nearly ten-year period of slow decline from 1979 to 1988, registering an overall net loss of over 600 jobs, about 2% of all jobs. The loss cannot be blamed on national or Washington state trends: during the same period, national employment grew by roughly 21%, while Washington state employment grew by approximately 33%.⁵

⁵ Growth rates are based on data from the U.S. Department of Commerce, Regional Economic Information System.

Things turned around beginning in 1989. From 1989 to 2002 the three-county economy added nearly 7,300 jobs, an average annual growth rate of roughly 2%. As impressive as this growth was, however, it did no more than match the Washington State growth rate of roughly 2% per year for this same period.

Beginning in 2003, the three-county economy turned down again, partly due to a number of food processing plant closures and cutbacks, including the loss of the Green Giant plant in Dayton. There were also job losses at Key Technology and JR Simplot, in addition to reductions in the agricultural sector. Overall employment declined by just over 750 jobs (a loss of roughly 190 per year), so that by 2007 the three-county Walla Walla functional economy provided roughly 2% fewer jobs than it did in 2003.

1.3.2. Conclusion: The Wine Cluster in Historical Context

The two downturns in the Walla Walla economy in the past thirty years point to a degree of fragility in the region's economic base. In the next two chapters, we look more deeply at the internal structure of the economy, focusing not only on the region's emerging wine cluster but its other industry clusters as well. In addition, we look forward at future economic trends to show how a thriving wine cluster will become an increasingly important source for regional economic growth and stability.

CHAPTER 2: INDUSTRY CLUSTER REPORT

2.1. Why Use Industry Clusters?

The notion of “cluster-led economic development” is relatively new, but its underpinnings in the academic literature are well established.⁶ The idea is that a collection of different industries have some common interest (through shared supply chains or labor pools, inter-industry trade, etc.) and actions that benefit one industry within the cluster benefit the entire cluster. Economic development is better served by recognizing these clusters, spreading awareness of their joint interests, and taking actions to enhance their efficiency.

In this report, the term “wine cluster” refers to all industries involved in wine production and wine tourism—from vineyards and wineries to hotels, fine restaurants, recreational enterprises, and specialty retail stores. (We estimate only the portion of these wine-related industries that are actually dependent on the wine industry.) Cluster analysis is useful in this current project because it captures jobs that might otherwise be missed. If we simply focused on the “wine industry,” we would capture vineyards and wineries but would miss other industries whose interests are closely tied to it.

⁶ The most well known proponent of cluster development is Michael Porter of Harvard Business School. See www.isc.hbs.edu/econ-clusters.htm.

2.2. The Walla Walla Wine Cluster

2.2.1. The Entire Three-County Region

Table 2.1 presents the results of a survey measuring historic employment (1977 to 2007) in the three-county Walla Walla region's wine cluster.⁷ Numbers include all full- and part-time annual jobs.

Table 2.1: Direct Wine Cluster Employment, Walla Walla Functional Economy

Year	# Wineries	Winery Jobs				Auxiliary Jobs				Totals		
		Prod.	Sales	Vineyard Jobs	Lodging	Dining	Specialty Retail	Misc.	Primary Jobs	Auxiliary Jobs	Wine Cluster Jobs	
1977	1	1	0	4	0	0	0	0	5	0	5	
1978	1	1	0	4	0	0	0	0	5	0	5	
1979	1	1	0	4	0	0	0	0	5	0	5	
1980	1	1	0	4	0	0	0	0	5	0	5	
1981	2	2	0	8	0	0	0	0	10	0	10	
1982	2	2	0	8	0	0	0	0	10	0	10	
1983	3	3	0	12	0	0	0	0	15	0	15	
1984	4	4	0	17	0	0	0	0	21	0	21	
1985	4	4	1	17	0	0	0	0	22	0	22	
1986	4	4	1	17	0	0	0	0	22	0	22	
1987	4	4	1	17	0	0	0	0	22	0	22	
1988	6	6	1	25	0	0	0	0	32	0	32	
1989	6	6	1	25	0	0	0	0	32	0	32	
1990	6	8	2	25	0	0	0	0	35	0	35	
1991	6	8	2	25	0	0	0	0	35	0	35	
1992	7	10	3	28	0	0	0	0	41	0	41	
1993	7	10	3	28	0	0	0	0	41	0	41	
1994	7	10	4	28	0	0	0	0	42	0	42	
1995	11	15	6	45	0	0	0	0	66	0	66	
1996	11	18	8	45	0	0	0	0	71	0	71	
1997	14	25	13	57	0	0	0	0	95	0	95	
1998	20	36	20	82	0	0	0	0	138	0	138	
1999	24	44	26	98	0	0	0	0	168	0	168	
2000	31	54	37	122	15	45	8	5	213	73	286	
2001	42	76	56	170	60	100	13	22	302	195	497	
2002	54	98	80	220	63	111	19	23	398	215	613	
2003	59	107	96	244	66	123	19	24	447	232	678	
2004	72	131	131	285	70	136	20	25	547	251	797	
2005	78	142	156	309	74	150	29	26	607	279	886	
2006	89	160	195	358	77	166	30	28	713	302	1015	
2007	92	165	223	370	81	184	41	29	758	336	1094	

Economic Modeling Specialists, Inc., 2007

⁷ The survey effort was led by Jordan Small, Wine Industry Economic Development Grant Coordinator, and Nicholas Velluzzi, Doctoral Candidate, Department of Geography, University of Washington. In the early months of 2007, Small and Velluzzi conducted some 35 direct interviews with representatives of Walla Walla's wine industry. Timeline gaps were filled in where needed by EMSI, assuming natural growth rates. Current (2007) data on winery employment is from the U.S. Department of Commerce (REIS). Current vineyard employment estimates were obtained from WorkSource Walla Walla 2006 Agricultural Employer Survey. The current number of wineries was obtained through a blending of lists obtained from three sources: the Walla Walla Wine Alliance, the U.S. Alcohol and Tobacco Trade Bureau, and the Washington State Liquor Control Board. The historic number of wineries, winery and vineyard jobs, and the breakdown of winery employment between sales and production were obtained through direct wine industry interviews. Auxiliary job estimates were formed on an assortment of interviews with area hospitality industry representatives.

Note the terminology: “Winery and Vineyard Jobs” is self explanatory,⁸ though we do find it useful to distinguish between “Winery Sales” (i.e., persons working in tasting rooms) and other winery jobs (called simply “Production”). All these wineries and vineyards are unambiguous members of the wine cluster, and so are labeled the “Primary” wine cluster industries.

But there are other types of industries intimately involved in wine tourism, including some portion of local lodging, dining, and retail establishments that are dependent on wine tourists. We refer to these jobs as the “Auxiliary” portion of the wine cluster. Auxiliary jobs were estimated through a direct survey of leading employers in affected businesses. The sum of the primary and auxiliary jobs equal the total “direct” jobs in the wine cluster. Later we will add multiplier effect jobs (called “indirect” jobs) as well as “induced” jobs to arrive at the total economic effect of area wine cluster activity.

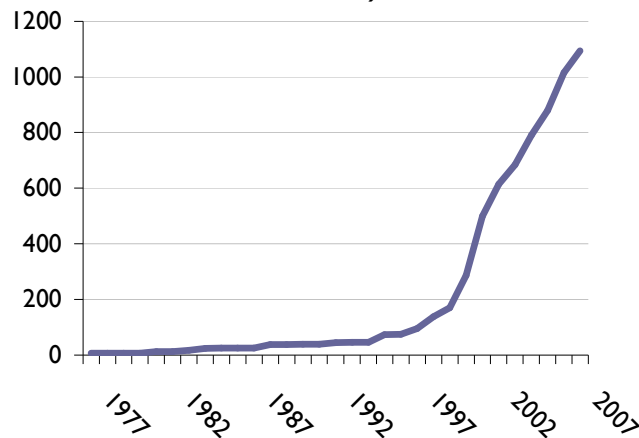
It is instructive to break our wine cluster data into three periods: 1) the early years, up to 1985; 2) the middle years, 1985 to 1999, and 3) the later years, 2000 and beyond. In 1977, the three-county region hosted 1 winery with 1 employee. In addition, there were an estimated 4 additional jobs in vineyards. There were thus 5 direct winery and vineyard jobs in 1977. The beginning of the “middle years” in 1985 was marked by the appearance of the first tasting room. By 1985 the number of wineries had grown to 4, providing 5 jobs (4 production jobs and 1 tasting room job), and 17 vineyard jobs; there were thus 22 direct winery and vineyard jobs in 1985. The year 2000 is the start of the “later years,” marked by the first appearances of “auxiliary jobs.” By 2000 the three-county region’s wineries had grown to 31, winery employment had grown to 91 (54 jobs in wine production and 37 in wine sales), and vineyard jobs had grown to 122. Added to these winery and vineyard jobs were some 73 auxiliary jobs: 15 in lodging, 45 in eating and drinking places, and 13 miscellaneous

⁸ Wineries are listed as NAICS industry 312130, while vineyards appear as part of NAICS 115112.

and specialty retail. Altogether, direct jobs in Walla Walla’s wine cluster had grown to 286 jobs by the year 2000.

Growth in wine cluster employment has been sharp since 2000. By 2007 the total number of wineries had grown to 92 and total direct wine cluster employment had grown to 1,094. It is interesting to note the quickening of direct wine cluster growth. In the “early years” (1977 through 1984), the region’s wine cluster grew by roughly 2 jobs per year. During the “middle years” (1985 through 1999), the annual addition of jobs had grown to about 10. During the “later years” (2000 to 2007) direct wine cluster growth has added an average of 116 jobs per year. **Figure 2.1** shows total direct wine cluster jobs growth since 1977, clearly showing the brisk growth in the “later years” starting in 2000.

Fig. 2.1: Wine Cluster Employment, Walla Walla Functional Economy (1977-2007)



2.2.2. Wine Cluster Detail by Sub-Region

While the entire three-county Walla Walla functional economy stands to benefit from wine cluster development, as of 2007 direct employment in that cluster is predominately focused in Walla Walla

County. **Tables 2.2, 2.3, and 2.4** break the three-county wine cluster employment data of **Table 2.1** out to the three separate political subregions: respectively, Walla Walla County (trimmed as per **Figure 1.1**), Milton-Freewater, and Columbia County.

Table 2.2: Wine Cluster Employment: Greater Walla Walla

Year	# Wineries	Winery Jobs			Auxiliary Jobs				Totals		
		Prod.	Sales	Vineyard Jobs	Lodging	Dining	Specialty Retail	Misc.	Primary Jobs	Auxiliary Jobs	Wine Cluster Jobs
1977	1	1	0	4	0	0	0	0	5	0	5
1978	1	1	0	4	0	0	0	0	5	0	5
1979	1	1	0	4	0	0	0	0	5	0	5
1980	1	1	0	4	0	0	0	0	5	0	5
1981	2	2	0	5	0	0	0	0	7	0	7
1982	2	2	0	5	0	0	0	0	7	0	7
1983	3	3	0	7	0	0	0	0	10	0	10
1984	4	4	0	10	0	0	0	0	14	0	14
1985	4	4	1	10	0	0	0	0	15	0	15
1986	4	4	1	10	0	0	0	0	15	0	15
1987	4	4	1	10	0	0	0	0	15	0	15
1988	5	5	1	15	0	0	0	0	21	0	21
1989	5	5	1	15	0	0	0	0	21	0	21
1990	5	7	2	15	0	0	0	0	24	0	24
1991	5	7	2	15	0	0	0	0	24	0	24
1992	6	9	2	17	0	0	0	0	28	0	28
1993	6	9	2	17	0	0	0	0	28	0	28
1994	6	9	3	17	0	0	0	0	29	0	29
1995	10	14	5	27	0	0	0	0	46	0	46
1996	10	17	7	27	0	0	0	0	51	0	51
1997	13	24	12	34	0	0	0	0	70	0	70
1998	19	35	19	49	0	0	0	0	103	0	103
1999	23	43	25	59	0	0	0	0	127	0	127
2000	30	53	36	73	15	45	5	5	162	71	233
2001	41	75	55	102	60	100	9	22	232	191	423
2002	52	95	77	132	63	111	13	23	304	209	513
2003	56	103	92	146	66	123	13	24	341	226	567
2004	68	125	126	171	70	136	13	25	422	244	666
2005	74	136	151	185	74	150	20	26	472	270	742
2006	83	151	188	215	77	166	20	28	554	292	846
2007	86	156	216	222	81	184	29	29	594	324	918

Economic Modeling Specialists, Inc., 2007

Examination of the tables shows that the great bulk of wine activity has been in Walla Walla County: As of 2007, Walla Walla County accounted for 918 (84%) of the 1,094 jobs in the three-county region's wine cluster. This is not to say that the Milton-Freewater region has not seen considerable growth. As shown in **Table 2.3**, since 1999 (the eve of the rapidly growing later years), wine cluster

employment in the Milton-Freewater region has grown by better than a factor of four: from 41 jobs in 1999 to 168 in 2007. Compare this, however, to the Walla Walla County’s wine cluster growth during the same period: As shown in Table 2.2, since 1999, wine cluster employment in Walla Walla County has grown by more than a factor of seven, from 127 jobs in 1999 to 918 in 2007.

Table 2.3: Wine Cluster Employment: Greater Milton-Freewater

Year	# Wineries	Winery Jobs			Auxiliary Jobs				Totals		
		Prod.	Sales	Vineyard Jobs	Lodging	Dining	Specialty Retail	Misc.	Primary Jobs	Auxiliary Jobs	Wine Cluster Jobs
1977	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	3	0	0	0	0	3	0	3
1982	0	0	0	3	0	0	0	0	3	0	3
1983	0	0	0	5	0	0	0	0	5	0	5
1984	0	0	0	7	0	0	0	0	7	0	7
1985	0	0	0	7	0	0	0	0	7	0	7
1986	0	0	0	7	0	0	0	0	7	0	7
1987	0	0	0	7	0	0	0	0	7	0	7
1988	1	1	0	10	0	0	0	0	11	0	11
1989	1	1	0	10	0	0	0	0	11	0	11
1990	1	1	0	10	0	0	0	0	11	0	11
1991	1	1	0	10	0	0	0	0	11	0	11
1992	1	1	1	11	0	0	0	0	13	0	13
1993	1	1	1	11	0	0	0	0	13	0	13
1994	1	1	1	11	0	0	0	0	13	0	13
1995	1	1	1	18	0	0	0	0	20	0	20
1996	1	1	1	18	0	0	0	0	20	0	20
1997	1	1	1	23	0	0	0	0	25	0	25
1998	1	1	1	33	0	0	0	0	35	0	35
1999	1	1	1	39	0	0	0	0	41	0	41
2000	0	0	0	49	0	0	2	0	49	2	50
2001	0	0	0	68	0	0	3	0	68	3	71
2002	1	2	2	88	0	0	4	0	92	4	96
2003	1	2	2	98	0	0	4	0	102	4	106
2004	2	4	3	114	0	0	4	0	121	4	125
2005	2	4	3	124	0	0	6	0	131	6	137
2006	4	7	5	143	0	0	6	0	155	6	162
2007	4	7	5	148	0	0	8	0	160	8	168

Economic Modeling Specialists, Inc., 2007

Table 2.4: Wine Cluster Employment, Greater Dayton

Year	# Wineries	Winery Jobs			Auxiliary Jobs				Totals		
		Prod.	Sales	Vineyard Jobs	Lodging	Dining	Specialty Retail	Misc.	Primary Jobs	Auxiliary Jobs	Wine Cluster Jobs
2000	1	1	1	0	0	0	1	0	2	1	3
2001	1	1	1	0	0	0	1	0	2	1	3
2002	1	1	1	0	0	0	2	0	2	2	4
2003	2	2	2	0	0	0	2	0	4	2	6
2004	2	2	2	0	0	0	2	0	4	2	6
2005	2	2	2	0	0	0	3	0	4	3	7
2006	2	2	2	0	0	0	3	0	4	3	7
2007	2	2	2	0	0	0	4	0	4	4	8

Economic Modeling Specialists, Inc., 2007

Table 2.4 details Columbia County’s share of the larger region’s wine cluster employment. With an estimated 8 total jobs attributable to the cluster in 2007, clearly wine cluster activities are at a much earlier stage here compared to elsewhere in the three-county region. This is not to say the potential may not be substantial. Dayton City (the bulk of economic activity in Columbia County) stands to benefit from wine tourists entering the area from the east. These revenues could be significant in themselves, depending of course on the future growth of the wine cluster further west (the future of wine cluster employment is discussed in **Chapter 3**). Wine tourism could provide a welcome source of revenue offsetting that which is unavailable in non-winter months with the annual closure of the Ski Bluewood Resort.

2.3. The Wine Cluster Compared to Other Regional Clusters

We now compare the wine cluster to other regional clusters in an “apples to apples” fashion. Our original economy overview in **Chapter 1** dealt with industry sectors, based on the federal government’s NAICS categorization of industries using similar production processes and generally producing similar products. The comparison here, however, deals with industry *clusters*, which are groups of interdependent industries, related by common supply chains, shared labor-pools, inter-

industry trade, and so on. The two categorization schemes are very different, so numbers in this chapter should not be compared to numbers in **Chapter 1**.

Table 2.5 summarizes a cluster analysis of the 2006 three-county Walla Walla functional economy. Cluster categorization is based on a scheme used by EMSI and others.⁹ Clusters are presented in terms of total jobs in the industries included in the clusters, and ranked from the largest to the smallest. Importantly, the final entry, “All Other,” does not refer to a cluster, but rather catches all the industries that are not properly part of a cluster defined here. These include mainly resident household-serving industries such as plumbers, barbers and the like, local entertainment, most retail stores, and so on.

Table 2.5: Walla Walla Functional Economy Industry Clusters (2007)

Cluster Name	Jobs	Jobs %	Current LQ
Government and civic organizations	6047	15.7%	1.42
Agriculture and food production	5853	15.2%	2.74
Health and Life Sci	5062	13.2%	1.21
Higher Education	3781	9.8%	1.49
Business and professional services	3471	9.0%	0.47
Entertainment and travel	2783	7.2%	0.80
Building and construction	2098	5.5%	0.73
Lumber wood and paper manufacturing	1335	3.5%	2.19
Wine	1094	2.8%	54.06
Information and communication	795	2.1%	0.41
Utilities	324	0.8%	1.07
Metal and metal fabrication	176	0.5%	0.29
Printing services	145	0.4%	0.93
All Other	5,453	14.2%	--
Total	38,417	100%	1.00

Source: Economic Modeling Specialists, Inc. · 4/07

Table 2.5’s far right column displays cluster location quotients (LQs). Cluster LQs indicate how specialized the regional economy is in a particular cluster compared to the U.S. economy as a whole.

⁹ See for example, Pennsylvania Department of Labor and Industry, Center for Workforce Information and Analysis: “Pennsylvania’s Targeted Industry Clusters,” 2004.

LQs of 1.0 indicate jobs in the cluster account for the same portion regionally as they do nationally. LQs less than 1.0 indicate a cluster that is relatively underrepresented in the region, while LQs greater than 1.0 indicate relative overrepresentation (and therefore regional specialization).¹⁰

The three-county region's largest cluster is "Government and Civic Organizations (Excluding Higher Education)." This sector includes all the many offices of county government, K-12 public school employment, offices of the Federal Government (e.g., the Forest Service, the Army Corps of Engineers, the Army National Guard, the USDA), and assorted state government agencies and offices. The largest of the state agencies and offices is, of course, the Washington State Penitentiary. As indicated by the LQ, Government in the three-county Walla Walla regional economy accounts for approximately 40% more of all regional jobs than it does nationally.¹¹

Agriculture and Food Production ranks as the three-county region's next largest cluster, accounting for 15.2% of all regional jobs. And with an LQ of 2.7, Agriculture and Food Production is 2.7 times more concentrated in the regional economy as it is in the national economy. "Health and Life Sciences" comes in as the region's third largest cluster. Included here are area hospitals, all doctor and dentist offices, a collection of laboratories, and all other human health-related establishments. The LQ of 1.22 indicates that human health-related activities are moderately overrepresented in the three-county economy.

"Higher Education" (Walla Walla Community College, Whitman College, Walla Walla University etc.) comes in fourth, accounting for nearly 10% of all jobs. Its LQ of 1.49 also reflects a strong regional specialization, revealing the obvious importance of local colleges to the region's economy.

¹⁰ A cluster that accounts for 10% of all regional jobs but 20% of all national jobs will indicate an LQ of 0.5. At the same time, a cluster that accounts for 20% of all regional jobs but 10% of all national jobs will indicate an LQ of 2.0.

¹¹ Nationally, government less higher education accounts for some 11.2% of all jobs, while locally, as indicated in Table 2.5, it accounts for 15.8%. The table's government LQ of 1.41 is obtained as 15.8% divided by 11.2%.

The next three clusters, “Business and professional services,” “Entertainment and travel,” and “Building construction,” provide relatively large numbers of jobs, but exhibit LQs less than 1.0 indicating they are not overly represented in the economy. “Lumber and wood products,” once a Walla Walla mainstay, now accounts for only 3.5% of all jobs, though still exhibiting an LQ of over 2.0.

Finally, the “Wine” cluster shows a very large location quotient of 54, which is to be expected given the rarity of small economies in the U.S. that have significant wine production. We should remember, though, that the cluster remains relatively small with a 2.8% share of all regional jobs. The economy is still dominated by Food Products & Services (which includes production, processing, and sales jobs—but obviously excludes winery/vineyard jobs), Government, Health, and Education.

2.4. Components of the Wine Cluster’s Total Impact

Thus far we have outlined the direct elements of wine cluster, which consist of the obvious primary members (wineries and vineyards) and the auxiliary members (the portion of businesses that cater to wine tourists). These direct jobs were tabulated in **Tables 2.1-2.4**. The total economic impact of the wine cluster, however, goes beyond these direct elements. It also includes jobs created as the result of regional economic multiplier effects, both those generated “indirectly” as a result of primary and auxiliary industry input (business-to-business) purchases, and those “induced” by added employee spending.¹²

¹² The terminology “indirect” and “induced” is common to the regional economic impact literature. “Indirect” refers to business input supply chain while “induced” refers personal consumption spending impacts spawned from new employee incomes.

There is yet another component to the wine cluster's total economic impact. It is widely felt that at least in part because of the amenities associated with the region's emerging wine cluster, the three-county region is attracting increasing numbers of what are often called "quality of life migrants." Some of these are retirees, others are footloose entrepreneurs, and still others are high-tech telecommuters. What they have in common is that they generally draw their incomes from outside sources. When these new residents spend a portion of their incomes locally on goods and services (e.g., new home construction or common consumer goods and services), they created an additional economic impact, and some portion of this is properly included as part of the wine cluster's total economic impact.

Figure 2.2 summarizes the components of the cluster's total economic impact. The direct component includes the primary and auxiliary businesses of the cluster itself (shaded in the figure), and the quality of life migrants. Indirect effects stem from businesses that supply the direct members of the wine cluster, and all additional business input spending linked to these. Finally, induced effects include all the jobs created as a result of consumer spending, by employees of the direct wine cluster industries, by employees of indirectly affected industries, and as a result of the spending on the part of the quality of life migrants. The remainder of this section examines these several effects in detail.

Figure 2.2: Economic Effects

		Economic Effects		
		Direct	Indirect	Induced
Industries	Primary	Winery Vineyard	Direct suppliers	Generated by household incomes
	Auxiliary	Hotel Eating Specialty Retail Entertainment Recreation	Auxiliary suppliers	
	Other	Quality of life Migrants	N/A	

Economic Modeling Specialists, Inc., 2007

2.4.1. Direct Effects

Direct effects of a cluster are related to the jobs in the cluster itself. We have already defined and totaled the “direct” wine cluster jobs: These appear in **Tables 2.1-2.4**. The primary industries, vineyards and wineries, are the most obvious creators of direct jobs, but there are also the “auxiliary” industries, which derive at least some income from sales to wine tourists. Auxiliary businesses include hotels and full-service dining places, followed by miscellaneous visitor-serving retail places (e.g., gas stations and convenience stores), specialty retail (e.g., chocolatiers, pastry shops, limousine services), and entertainment/recreation providers such as art galleries, museums, golf courses, resorts, and similar arts, entertainment, recreation, and cultural enrichment industries.

Among the direct effects of the wine cluster shown in **Figure 2.2** we include those quality of life migrants who are specifically attracted to the region because of its assorted wine cluster amenities. However, they are not properly part of the wine cluster itself, and unlike the direct cluster industries,

there is normally no associated direct employment measure associated with quality of life migrants.¹³ Rather, we assume that their economic impact stems entirely from their consumer spending (i.e., “induced” and not indirect effects). Further discussion of migrants’ economic impacts occurs in conjunction with induced impacts in section 2.5.2 below.

2.4.2. Indirect Effects

The simplest way to understand indirect effects is to imagine a new business starting or moving into an area. It immediately begins spending money, a portion of which stays in the area and another portion which goes to businesses outside the area. Wineries, for example, need accounting and other business services, electricity, office supplies, and a varied collection of wine producing supplies. As a result of the local portion of this spending, local supplier businesses have a little more income to spend for their own supply needs, a portion of which also stays in the area, and so on. For all these “ripples” of the original spending, the portion that stays in the area supports local economic growth. Indirect effects are a standard part of regional analysis, and estimating them requires a specialized economic impact model.¹⁴ Note from **Figure 2.2** that quality of life migrants produce no indirect

¹³ Precise calculation of the direct effects of migrants is beyond available data and estimates. Retired and leisure migrants, obviously, do not have jobs and thus do not directly increase the regional job count. Telecommuters’ jobs actually show up in government data under the region where their employer has a physical location. Only self-employed and business-owning migrants would really be considered part of the “direct effect” and would thus also create indirect effects. Because of the lack of data, we conservatively assume that all migrants are non-working retirees or leisure persons, and thus all their effects are induced (i.e., they purchase no business-related inputs).

¹⁴ Regional scientists estimate the chain of indirect and induced economic impacts using so-called “regional input-output” models. Input-output theory dates to 19th century classical economics and before. In 1973 American economist Wassily Leontief received the Nobel Prize in Economics for his development nearly 30 years earlier of input-output in its contemporary form. Regional input-output modeling software is today available from the U.S. Department of Commerce (RIMSII Model), Regional Economic Modeling Inc. (REMI Model), the Minnesota IMPLAN Group (IMPLAN Model), Rutgers University’s Center for Urban Policy Research (RECON Model), Economic Modeling Specialists Inc. (EMSI EI Model), and others. The above modeling approaches all have extensive client bases, and all rely on variations of so-called “data reduction methods” for regionalizing the U.S. National Input-Output Model. The essence of data reduction technology is found in many places: for example Miller, R.E. and P. Blair, 1985, *Input-Output Analysis: Foundations and Extensions*, Englewood Cliffs, NJ: Prentice Hall. We use the EMSI EI Model for the work completed in this study. With its sub-county data and modeling capability, its export base and cluster functionality, and its tie to economic projections, the EMSI EI Model is particularly well suited to the needs of the current project.

effects: we assume quality of life migrants are not generally businesses, and so purchase no business inputs, and therefore generate no indirect effects (see footnote 13).

2.4.3. Induced Effects

Direct and indirect effects generate local jobs and personal income, large portions of which are spent in the area for consumer goods and services. This leads to more growth in local businesses that supply these goods and services, with continuing ripples of spending to those businesses' suppliers, and so on. These are called "induced effects." Likewise, spending from wine cluster-attracted quality of life migrants stems from personal incomes, and is also included among the induced effects. As with indirect effects, induced effects are estimated with the aid of a regional economic model. Note that all the regional job impact of quality of life migrants appears under the heading of induced effects (see footnote 13).

2.5 Estimating the Effect of Wine Cluster Quality of Life Migrants

2.5.1. Wine Culture and Quality-of-Life Migrants

Residents widely believe that the Walla Walla region has recently seen more relatively high-income second-home owners as well as permanent in-migrants attracted to the region because of the amenities associated with the emerging wine sector. It is certainly true that Walla Walla has recently gained national attention for its quality of life. In 2006, Walla Walla was named first of the "Top 5 Places to Retire" by *CNN Money Magazine*.¹⁵ The article placed special emphasis on the region's wines and wine culture in explaining its selection—in addition to low local taxes. This media attention not only points to a current trend of retiree in-migration but also is likely to result in further in-migration due to increased awareness of the region among the retirement-age population.

¹⁵ See <http://money.cnn.com/magazines/moneymag/bpretire/2006/index.html>.

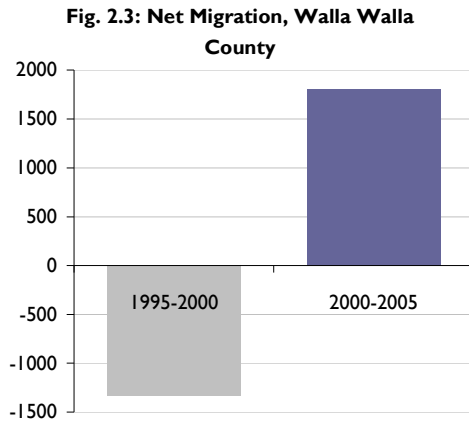
Recent studies indicate that such “quality of life migrants” may be a significant factor in Western rural and small-town economic growth.¹⁶ Studies describe quality of life migrants as people who move to an area primarily for its physical, social, or cultural amenities rather than its business or job opportunities. These migrants usually fall into two broad categories: retired persons or mobile, self-employed professionals whose jobs do not depend heavily on physical location (so-called “Lone Eagles”). Retired persons may be younger individuals with non-earnings sources of income (rents, investments, royalties, etc.). Many retired migrants may also actually be semi-retired, working full-time in a former hobby or in an entrepreneurial enterprise which they do not need for primary income. Quality of life migrants can be important in rural economic development because they spend and invest their outside income in the local community and/or launch new small businesses, spurring economic growth (especially in the service and construction industries).

2.5.2. Measuring Wine Cluster-Related Quality of Life Migration

At the present time there exists no hard data on the number of in-migrants specifically attracted by wine-related activities. In our “Next Steps” chapter (see Chapter 3, sections 3.2.1-3.2.2) we recommend research to shed more light on this potentially important source of wine-related economic development. In the meantime, to get some idea of the magnitude of this source of economic impact, we generate a set of estimates based on a few assumptions and U.S. Census data on overall area migration.

¹⁶ An excellent review of the literature and survey of the issues can be found in William B. Beyers and Peter B. Nelson, “Contemporary Development Forces in the Nonmetropolitan West: New Insights from Rapidly Growing Communities,” *Journal of Rural Studies* 16 (2000): 459-474.

Figure 2.3 pictures overall migration in the three-county area based on Census data.¹⁷ The figure shows net out-migration from 1995–2000, followed by a trend of net in-migration.



Sources: US Census 2000 (Residence 5 years ago), US Census Annual County Population Estimates

In-migrants in Census data are reported as number of persons. We converted persons to households assuming the average three-county family size of 2.53 as indicated in Census 2000. We assumed that wine-cluster amenities played a leading role in the migration decision for 50% of the in-migrating households. We also assumed that the household income of wine-cluster-attracted in-migrating families is \$50,000 per year.¹⁸ We then ran the associated total incomes through our economic model to arrive at an estimate of their overall economic impact, expressed as number of jobs.

Table 2.6 assembles our calculations. The first data column shows our estimates of cumulative in-migrating households whose decisions were significantly dependent on wine cluster presence. The

¹⁷ The data are assembled from the Census 2000 “Residence 5 years ago” report, and from more recent annual Census Bureau Population Estimates. The Milton-Freewater portion of Umatilla County is assumed to have seen migration proportional to that shown in neighboring Walla Walla County.

¹⁸ This is roughly double the \$25,040 average household income indicated in Census 2000 for the three-county region. We are simply assuming that families who make the decision to move based on the presence of wine cluster amenities are considerably more affluent than the average area family (especially considering that the “average area family” includes a large low-income student population).

growth in household numbers by 2005 equals half the Census-estimated households for that year (recall that **Figure 2.3** shows persons, while **Table 2.6** shows households). Annual growth up to the 2005 cumulative total, and beyond to 2006 and 2007, is projected based on the growth rate of direct employment in the wine-cluster (see: Table 2.1).¹⁹ We are assuming no notable wine-cluster quality of life migration prior to 1997.**

Table 2.6: Estimated Households Attracted to the Region by Wine Cluster Ammenities

Year	Cumulative Households	Total Household Income (K)	Induced Jobs
2000	116	\$5,800	58
2001	202	\$10,100	101
2002	249	\$12,450	125
2003	277	\$13,850	139
2004	321	\$16,050	161
2005	357	\$17,850	179
2006	412	\$20,600	206
2007	444	\$22,200	222

Source: Economic Modeling Specialists, Inc. - 6/07

The second data column is simply the first multiplied by \$50,000 per year: This yields an estimate of added personal income in the three-county functional economy due to quality of life migrants.

Finally, the last column shows the aggregate of new regional employment created by the spending of the added personal income. These numbers are obtained by feeding the new personal income into our three-county economic impact model. In 2007, we estimate that 222 jobs were generated by the spending of wine-cluster-attracted quality of life migrants.²⁰

¹⁹ It is assumed that the quality of life migrant is attracted by the amenities of the wine cluster, including wineries and auxiliary activities such as restaurants, shopping, recreation activities, and such. It is further assumed that growth in direct wine-cluster employment suitably measures of growth in these amenities.

²⁰ The economic impact model takes new personal income, deducts out-of-area taxes, savings, and out-of-area consumer goods purchases. What remain are moneys spent on locally produced consumer goods and services, and local tax payments and these generate the area economic impacts.

2.6 Estimating the Wine Cluster's Total Economic Impact

We can now assemble the several economic impact components of the wine cluster and thereby obtain the total economic impact. **Table 2.7** details the individual components, sums these to the total impact, and examines this as a percent of overall area employment.

Table 2.7: Total Economic Impact of Wine Cluster Related Employment (1987-2007)

Year	Direct Jobs	Indirect and Induced Jobs	Jobs Due to Related In-Migration	Total Wine and Related Jobs	Total Regional Jobs	% Wine-Related Jobs
1987	22	38	0	60	29,506	0.2%
1988	32	57	0	89	30,031	0.3%
1989	32	57	0	89	30,416	0.3%
1990	35	62	0	97	31,834	0.3%
1991	35	62	0	97	31,588	0.3%
1992	41	74	0	115	32,363	0.4%
1993	41	74	0	115	33,391	0.3%
1994	42	75	0	117	34,725	0.3%
1995	66	117	0	183	35,469	0.5%
1996	71	126	0	197	35,574	0.6%
1997	95	169	19	283	36,178	0.8%
1998	138	245	28	411	36,637	1.1%
1999	168	300	34	502	37,064	1.4%
2000	286	509	58	853	38,097	2.2%
2001	497	885	101	1,483	38,721	3.8%
2002	613	1,092	125	1,830	39,131	4.7%
2003	678	1,207	139	2,024	38,919	5.2%
2004	797	1,419	161	2,377	38,200	6.2%
2005	886	1,577	179	2,642	38,643	6.8%
2006	1,015	1,806	206	3,027	37,560	8.1%
2007	1,094	1,947	222	3,263	38,417	8.5%

Source: Economic Modeling Specialists, Inc. - 6/07

The first data column is simply a repeat of direct wine cluster jobs (wineries, vineyards and auxiliary) as these appear in **Table 2.1**. The second data column presents estimated sum of the indirect and induced jobs created as a result of purchases and incomes in the direct sectors. The next column shows the jobs induced by the spending of wine-cluster-attracted quality of life migrants (from **Table 2.6**). Finally, the fourth data column sums the direct jobs, the associated indirect and induced jobs, and the jobs induced by the quality of life migrants—the total jobs attributable to the wine cluster in the three-county Walla Walla functional economy.

The final two columns in **Table 2.7** provide a relative analysis. The first of these simply shows historic regional employment in all industries. The last column shows wine-related jobs as a percent of total jobs. By 2007, wine cluster and associated activities had grown to explain 8.5% of all jobs in the three-county region. As recently as ten years ago, the wine and related employment figure was a mere 0.8%—this is significant growth.

What effect has wine cluster growth had on overall three-county regional growth? **Table 2.8** shows twenty years of total employment data for the three-county region.

Table 2.8: Total Wine Cluster Impact on Regional Growth

Year	Total Actual Jobs	Total Jobs Without Wine Cluster	Annual Growth	Growth Without Wine Cluster
1987	29,506	29,446	n/a	n/a
1988	30,031	29,942	1.8%	1.7%
1989	30,416	30,327	1.3%	1.3%
1990	31,834	31,737	4.7%	4.6%
1991	31,588	31,491	-0.8%	-0.8%
1992	32,363	32,248	2.5%	2.4%
1993	33,391	33,276	3.2%	3.2%
1994	34,725	34,608	4.0%	4.0%
1995	35,469	35,286	2.1%	2.0%
1996	35,574	35,377	0.3%	0.3%
1997	36,178	35,895	1.7%	1.5%
1998	36,637	36,226	1.3%	0.9%
1999	37,064	36,562	1.2%	0.9%
2000	38,097	37,244	2.8%	1.9%
2001	38,721	37,238	1.6%	0.0%
2002	39,131	37,301	1.1%	0.2%
2003	38,919	36,895	-0.5%	-1.1%
2004	38,200	35,823	-1.8%	-2.9%
2005	38,643	36,001	1.2%	0.5%
2006	37,560	34,533	-2.8%	-4.1%
2007	38,417	35,154	2.3%	1.8%

Source: Economic Modeling Specialists, Inc. · 4/07

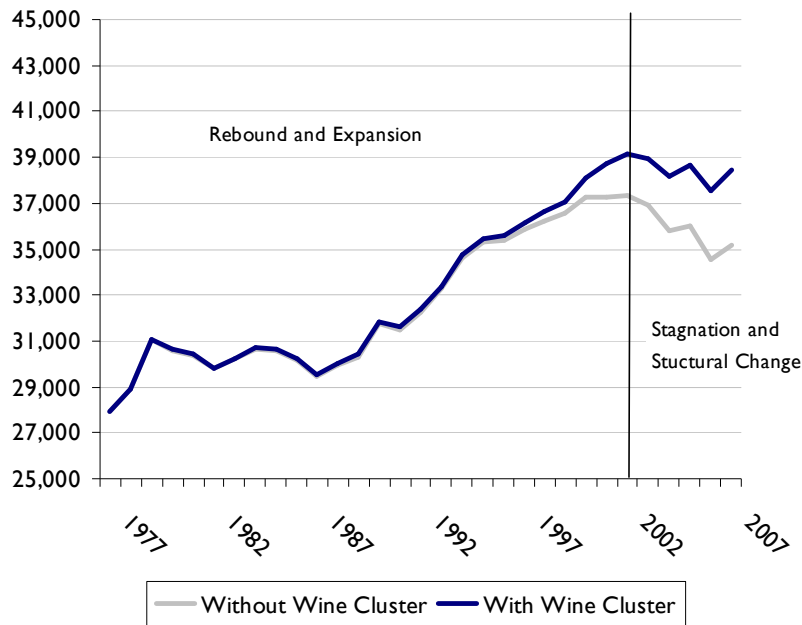
Four series are shown. The first series are simply observed total jobs 1987 through 2007 as reported by U.S. government sources.²¹ For example, in 1987 there were 29,506 jobs in the three-county

²¹ Employment data are primarily from U.S. Dept. of Commerce, REIS, allocated to subcounty regions using principally U.S. Census Bureau Zip Code Business Patterns data. The 2007 estimates are EMSI projections of historic data.

region, and by 2007 this had grown to 38,417. The second series is simply the first series less all wine cluster and related jobs: direct, indirect and induced, and induced by wine quality of life migrants. The second series simulates the three-county economy absent wine cluster and related development. In 1987, it is estimated that without wine and related employment, the three-county economy would have provided approximately 60 fewer full and part-time jobs than it actually did in that year ($60 = 29,506 - 29,446$).²² But by 2007 wine and related employment due to indirect and induced effects had grown to account for 3,263 jobs in the three-county region ($38,417 - 35,154$).

Figure 2.4 presents the two employment series graphically. Included are the labels for historic economic periods that we defined in **Chapter 1**.

Figure 2.4: Walla Walla Functional Economy With and Without the Wine Cluster



²² The 60 jobs include the 22 direct wine cluster jobs for 1987 shown in Table 2.1 plus some 38 direct and indirect jobs in other sectors estimated using our three-county Walla Walla export-base/input-output economic impact model.

To the right of the two employment columns in **Table 2.8** appear a pair of percentage columns. These simply show annual growth rates.²³ With one decimal of precision, in the early years wine growth barely registered in percentage terms. The contribution grows, however, until by 2001 wine fundamentally accounts for all growth in the region: From 2000 to 2001 the three-county economy grew by 1.6%. Absent wine, the growth would have been 0%. In more recent years, wine cluster and related jobs have significantly softened the region's total employment decline.

For a different look at wine's contribution to recent regional growth, consider the entire ten year period 1997 to 2007. A measure of growth absent wine is obtained by subtracting the 2007 job figure absent wine (35,154) and subtracting the no-wine figure for 1997 (35,895). The difference is a negative 741 jobs: Absent wine cluster and related growth, the three-county regional economy in 2007 would have 741 fewer jobs than it had ten years earlier, in 1997. In reality, the economy actually grew by 2,239 jobs—growth entirely attributable to estimated wine cluster and related employment growth.²⁴ Thus, without wine cluster growth, we estimate that the three-county economy as a whole would be experiencing a period of contraction rather than the growth it has actually seen.

2.7: Summary and Conclusions

Though growth in the three-county region's wine cluster has been dramatic, in terms of direct jobs it is still small compared to the largest clusters: Government, Other Agriculture, Health, and Higher Education. The wine cluster's recent rapid growth is nonetheless likely the most noteworthy change in the recent regional economy. Over the past decade (1997 to 2007), growth in the wine cluster

²³ Annual growth rates are computed in the usual fashion. For example, the rate next to 1995 is computed as the change in jobs from 1994 to 1995, divided by the total jobs in 1994.

²⁴ The actual impact of wine cluster and related growth is 2,980: the 2,239 observed growth plus the 741 jobs that would have actually been lost absent the wine cluster.

basically accounts for all growth in the three-county economy, and without it, the region would have experienced a considerable downturn. In the next chapter we look ahead to future years, and consider how wine cluster growth may contribute to the economy in those years.

CHAPTER 3: NEXT STEPS REPORT

In **Chapter 1** we examined the overall state of the three-county Walla Walla functional economy. In **Chapter 2** we turned our analysis to industry clusters: we defined the region's wine cluster, presented associated job estimates, and considered the wine cluster alongside the region's other industry clusters. We turned next to multiplier effects, and estimated these including jobs induced by wine cluster related quality of life migration. We concluded that chapter with a look at recent economic growth and the role of wine and related activity in that growth.

In this chapter we look ahead. We project overall economic activity and examine the specific role of wine cluster growth in that projection. With our projections as background, we conclude by considering next steps: analytic and monitoring needs as well as some suggestions for implementing a wine cluster policy strategy.

3.1. The Projected Future of the Region's Economy

Table 3.1 provides a continuation of **Table 2.8's** employment trends into future years: It provides a projection of total three-county employment, with and without wine and related employment, for 2007 through 2017. The employment series on the left shows total employment, while the one on the right shows total employment less wine cluster and multiplier-related jobs. We obtained the total employment projection using standard methods that incorporate past trends and a mix of state and federal published industry employment projections.²⁵

²⁵ The employment projections shown as Table 3.1's left series were obtained from EMSI's Strategic Advantage forecasting tool. EMSI employs a standard, best-practice forecasting method that allocates U.S. Department of Labor job forecasts for the entire U.S. economy to the 50 U.S. states and then to the approximately 3,000 U.S. counties. The allocation method relies in the first instance on a simple extrapolation of historic job growth in counties. These extrapolations are then controlled to projections produced by the several states, e.g., the Washington Employment

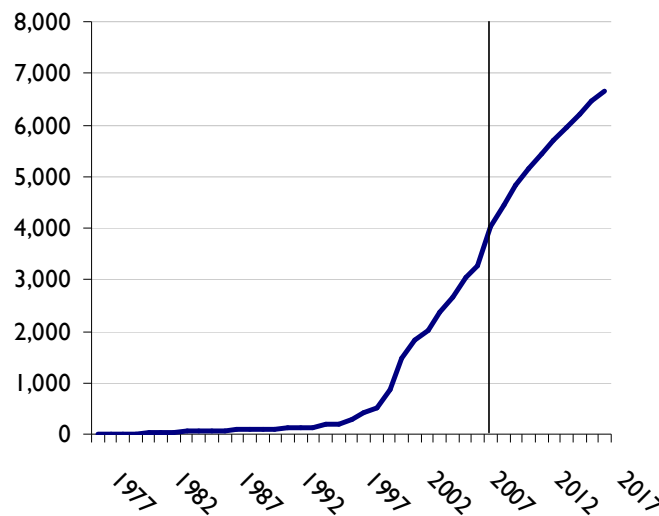
Table 3.1: Projected Three-County Wine and Related Jobs

Year	Direct Jobs	Indirect and Induced Jobs	Jobs Due to Wine-Related Migration	Total Wine and Related Jobs	Total Regional Jobs	% Wine Related Jobs
2007	1,094	1,947	222	3,263	38,417	8.5%
2008	1,353	2,408	275	4,036	39,128	10.3%
2009	1,488	2,649	302	4,439	39,737	11.2%
2010	1,620	2,884	329	4,833	40,264	12.0%
2011	1,724	3,069	350	5,143	40,654	12.7%
2012	1,819	3,238	369	5,426	41,010	13.2%
2013	1,914	3,407	388	5,709	41,317	13.8%
2014	1,995	3,551	405	5,951	41,579	14.3%
2015	2,080	3,702	422	6,204	41,796	14.8%
2016	2,164	3,852	439	6,455	41,970	15.4%
2017	2,236	3,980	454	6,670	42,103	15.8%

Source: Economic Modeling Specialists, Inc. - 6/07

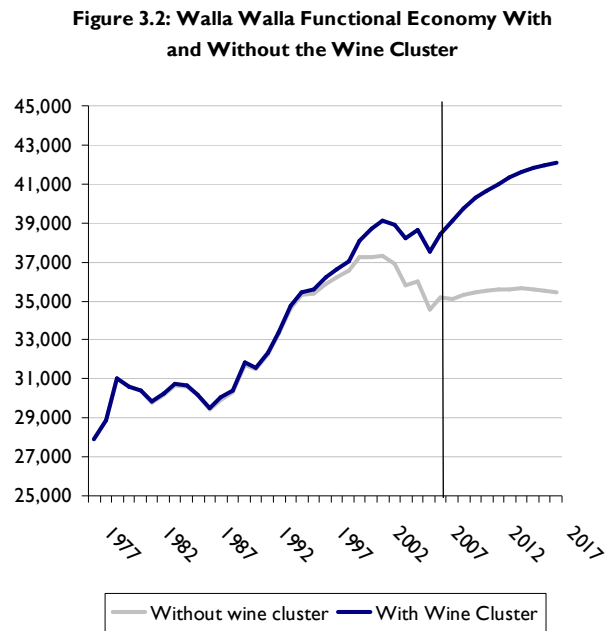
Figure 3.1 shows the same projection of wine cluster and multiplier-related employment, including quality of life migrant effects, in graphical form.

Fig. 3.1: Direct Wine Cluster and Related Employment for the Walla Walla Functional Economy



Security Department, and then in turn to the U.S. Department of Labor forecasts. Additional detail on the EMSI projection model are available by calling EMSI at 208-883-3500.

Finally, **Figure 3.2** shows projected employment with and without the wine cluster through 2017 (the upper series show total jobs with wine and related jobs, while the lower lighter shaded series shows total employment without wine and related jobs).



It goes without saying that predicting future regional employment is a speculative venture. If the projections shown in **Figure 3.2** prove to be substantially correct, we can make two important observations regarding the future economy of the three-county region. First, *wine cluster growth will play an increasingly important role in overall growth of the three-county region*. Absent growth in wine cluster jobs, regional growth would be all but flat in the next decade. Second, *wine cluster and related jobs will become an increasingly important part of the regional economy*. In 2007, wine cluster and related jobs

accounted for 8.5% of all jobs in the three-county region.²⁶ In contrast, by 2017 wine cluster and related jobs are projected to account for over 15.8% of all jobs.²⁷

Not shown in **Table 3.1**, **Figure 3.1**, or **Figure 3.2** is an evolving structural change projected for the three-county Walla Walla economy. The analysis is rather technical and therefore consigned to an appendix (see **Appendix B**). A summary of highlights:

- The region's wine cluster growth rate is projected to outpace other U.S. wine regions.
- Other strong regional clusters will be Agriculture & Food Production and Business & Professional Services.
- The Lumber & Wood Products cluster will continue to decline.
- Growth in the Health cluster, though substantial, will be lower than the rate projected for the U.S. as a whole.

Briefly, For additional detail on our structural analysis, see Appendix B.

3.2. Further Research

We have identified three areas in which the three-county region could develop the wine cluster in the coming years: gathering in-migrant and visitor data, creating a fiscal impact model, and conducting a gap analysis of wine cluster inputs to reduce its dependence on imports.

3.2.1 In-Migrant and Visitor Data

As the regional wine cluster has matured, jobs in auxiliary industries (hotels, eating and drinking places, specialty retail, arts and recreation, etc.) have become increasingly important relative to direct

²⁶ This number is shown in the three-county region economic base Table A.1, or it can be calculated from values shown in Table 2.8 (subtract 2006 “without wine” jobs from total jobs and divide by total jobs).

²⁷ From Table 3.1, $15.8\% = (42,103 - 35,433) / 42,103$.

winery and vineyard jobs. To encourage this trend, the region needs more data describing how its “wine country” reputation is drawing visitors and quality-of-life migrants.

Quality of life migrants are a particular blind spot in our current understanding of wine region potential. A survey of new and recent in-migrants would help the region define a profile of these in-migrants, the role the wine industry played in their decision to move into the region, and their original place of residence (Seattle area, Yakima, Boise, California, etc.). Based on the results, regional leaders can create targeted marketing efforts and ensure that the Walla Walla region becomes increasingly attractive to strategically important occupational groups and relevant demographic and lifestyle groups.

Similar efforts can be made to profile the extent and character of wine-related tourism. Wineries might be prevailed upon to distribute a brief questionnaire to tasting room clients aimed at determining the home-towns of Walla Walla wine tourists. What portion comes from the three-county region itself, the Tri-Cities, Portland area, Puget Sound, California, Idaho, or other areas? This information would not only assist in targeting marketing materials, but would prove useful in planning for in-route wine-tourist-catering developments. The information would be particularly useful to policy makers in Columbia County: do they focus on attracting the traditional Walla Walla wine tourist, or do they focus on those visitors traveling from the east (i.e., from Lewiston/Clarkston, Pullman/Moscow and elsewhere)? The information would be useful in planning future transportation improvements.

3.2.2. Creation of a Fiscal Impact Model

The present project has isolated the three-county region’s wine cluster, constructed a regional economic impact model, and developed a projection of future job growth, including wine cluster

growth in particular. The next step is for decision makers to use this information, and the economic impact model, to frame policies that will make the most of the region's wine cluster potential. As decision makers consider policy options, an additional and important piece of information will be the impacts of policy alternatives on county and local government outlays and receipts. A regional fiscal impact model, incorporating information about the several and sometimes overlapping layers of government, can provide this information. In its simplest terms, and given a policy option, the fiscal impact model indicates either a government surplus, deficit, or no fiscal impact. Because wages in wine cluster industries tend to be lower than average, the need for a fiscal impact model is all the more necessary.²⁸

3.2.3. A Gap Analysis of Wine Cluster Input Suppliers

Economists often speak of regional economic development in terms of import substitution. The idea is that some more or less large portion of regional industry needs are imported from other regions, and when this occurs, moneys leak out of the region. The idea is tied to the concept of the economic impact multiplier. Moneys that stay in the region, for example when inputs are obtained locally, continue to circulate and create added multiplier effects. When moneys leak out, the multiplier process ends.

The policy implication of this is simple: identify imported goods that can be produced locally instead, and attract these industries. The result: local goods are in effect substituted for imports, and multiplier effects and thereby regional incomes increase.

²⁸ An important principle of local public finance is that government revenues tend to be a function of regional income, while government expenditures are a function of population. Where economic growth occurs in industries with lower than average wages, population can increase faster than regional income, thus putting a strain on regional governments' budgets.

Table 3.2 provides an analysis of wine cluster imports in the three-county economy. The data in the table are based entirely on parameters from the EMSI economic impact model. The first column indicates the overall need for the commodities (listed with associated NAICS industry codes) shown on rows. The overall need is shown on a per dollar of gross output basis. For example, for every dollar taken in by wine cluster industries (specifically direct wine cluster industries), a little more than 5 cents (0.0507) is spent on the output of the “Glass Container Manufacturing” (NAICS 327213) sector. Notable other input needs include “Wholesale Trade,” “Commercial Printing,” “Packaging Machinery Manufacturing,” and others.

Table 3.2: Walla Walla Wine Import Industries

NAICS Code	Description	Average Input needs	Needs provided in region	imports	% of needs Imported
327213	Glass container manufacturing	0.0507	0.0000	0.0507	100%
420000	Wholesale trade	0.0956	0.0483	0.0472	49%
32311A	Commercial printing	0.0425	0.0029	0.0397	93%
550000	Management of companies and enterprises	0.0289	0.0000	0.0289	100%
333993	Packaging machinery manufacturing	0.0245	0.0000	0.0245	100%
484000	Truck transportation	0.0200	0.0081	0.0118	59%
322210	Paperboard container manufacturing	0.0095	0.0000	0.0095	100%
541800	Advertising and related services	0.0060	0.0007	0.0052	88%
334413	Semiconductors and related device manufacturing	0.0051	0.0000	0.0051	100%
481000	Air transportation	0.0051	0.0004	0.0047	93%
522A00	Nondepository credit intermediation and related activities	0.0041	0.0000	0.0041	100%
33441A	All other electronic component manufacturing	0.0040	0.0000	0.0040	100%
517A00	Telecommunications, not counting cable and other program distribution	0.0041	0.0006	0.0035	87%
311221	Wet corn milling	0.0035	0.0000	0.0035	100%
5419A0	All other misc. prof. & technical services	0.0057	0.0022	0.0035	62%

Economic Modeling Specialists, Inc., 2007

Again based on model parameters, the second column of **Table 3.2** shows the input need obtained locally. Note that many of these show zeros, indicating no local purchase, while others show only a fraction of the total need. The second-to-last column is the first column less the second, and

indicates the import purchase. Finally, the far-right column shows the import as a percent of the total need.

The principal indication of these numbers is that a great many of the production input needs of the three-county region's wine cluster are imported from other regions. Are there opportunities for economic development through wine cluster import substitution—that is, growing regional businesses to serve these needs so that these dollars stay in the region? We would have to say “yes,” with at least two caveats.

First, observe that the largest input to the wine cluster (as with most clusters) is labor, and labor is not explicitly shown in **Table 3.2**. Partly by definition, the three-county Walla Walla functional economy is a closed labor market, which means there is little room to substitute local for non-local (i.e., incommuter) labor. Second, observe that the table is based on economic model parameters that are derived based on assumptions (albeit common assumptions) regarding regional versus national production technique.²⁹ It would be wise to engage some considerable “ground-truthing” (or verification through surveying wineries and vineyards about their purchasing patterns) before investing too many resources in industry recruitment efforts.

Caveats notwithstanding, the information in **Table 3.2** is a logical starting point for a business recruitment effort. What needs to be done is a parallel analysis based on actual wine industry input information. Such an effort need not be overly invasive in terms of confidential business information. What is needed is a more refined set of sectoral categories than the ones appearing in

²⁹ The modeling framework and parameters used in this study were derived using the the EMSI EI (Economic Impact) model. The Walla Walla regional EI model was constructed using common “non-survey data-reduction regional input-output modeling techniques.” Briefly, these techniques take the U.S. National Input-Output Model (produced by the U.S. Department of Commerce), and using long standing best practice techniques, “regionalize” the national model. For details on non-survey data-reduction methods see Miller, R.E. and P. Blair. 1985. *Input-Output Analysis: Foundations and Extensions*. Englewood Cliffs, NJ: Prentice Hall. For details on the EMSI EI Model, see: the *EMSI Strategic Advantage User's Manual*.

the table, e.g., producers of advertising materials and brochures, wine label printers, and such should be broken out from “Commercial Printing.” The same might be done for the other principal inputs of wine cluster industries.

With specific industries such as this identified, at least some cursory analysis of minimum feasible scale³⁰ should be considered to identify sectors that might have a chance of thriving in the Walla Walla region. With this additional data in place, and using the information in **Table 3.2** as the point of departure, a successful industry recruitment effort based on the notion of substituting away from imports should be entirely possible.

3.2.4. Educate the Local Business Community on the Workings and Benefits of Wine Cluster Development

A key element in successful wine cluster economic development is recognition of a common interest among otherwise unrelated businesses. Perhaps the classic example of this is afforded by the auxiliary/primary industries of our wine cluster. Under other circumstances, one might not see how changes in the hospitality industry would benefit the winery sector, and vice versa. But here it is: a new hotel is built with the perhaps unintended effect of increasing the overall attractiveness of the region’s wine cluster. Word about the area’s increased attractiveness gets out and wine tourism increases. The hotel sector benefits, the wineries benefit, and the whole economy benefits through associated multiplier effects.

Without awareness of these mutually beneficial linkages, efforts to enhance the wine cluster (including building general business community support) may fall well short of achieving optimal results. Education would appear the only way to avoid this sort of self-defeating business

³⁰ Economists use the concept of “minimum feasible scale” to identify the size threshold for a profitable business. At scales of operation below the minimum feasible, fixed costs are normally spread across too little output to yield a profit.

community apathy. Education might start with the promotion and community discussion of some of the findings in the present report.

APPENDIX A: REGIONAL ECONOMIC BASE ANALYSIS

A.1. Introduction

Economic base analysis is an application of the concepts of direct, indirect, and induced jobs. When we total all wine cluster-linked jobs (the direct, indirect, and induced) and compare them to the total direct, indirect, and induced jobs generated by other major industry clusters, we have a good idea of the wine cluster's real impact on the community. The process of identifying which clusters in an area are responsible for the *most* indirect and induced jobs is called "economic base analysis."

A.2. Brief Explanation of Economic Base Theory & Analysis

Economic base analysis is important because it reveals the heart of a region's economy. For example, suppose a small town has a single large employer, a factory that employs 20% of the town's residents. The rest of the jobs in the town are in restaurants, grocery and retail stores, banking, and so on, but they primarily serve the town's residents or sell goods and services to the factory itself. An economic base analysis might show that the factory's indirect and induced effects amount to 50% of the town's total jobs, meaning that the factory accounts for 50% of the town's "economic base." So, if the factory were to close down, its workers would lose their jobs, and neither they nor the factory would purchase goods and services from local businesses. These supporting businesses (the grocery stores, banks, restaurants, and so on) would then lose jobs as well, as would their local suppliers, and so on. When all was said and done, the town would have 50% fewer jobs because of the factory closure, even though the factory only directly employed 20% of the town's population.

Another way of understanding economic base is by visualizing a community's industries as being of two fundamental types: (1) those that sell to non-residents and thereby bring outside income into

the community, and (2) those that sell to residents and thereby intercept income already circulating within the community. Respectively, these industries are termed “basic” and “non-basic.” Non-basic industries ultimately depend heavily on local basic industries (and/or their employees) for income. A community can grow by adding either basic or non-basic industry, but without basic industry (i.e., outside income) the community cannot exist, and long-term growth is not possible.³¹

To clarify even further, imagine the flow of money into and out of a region. When a visitor purchases a bottle of local wine, new money flows into the region, which means that wine production is a basic industry. When a resident purchases a shirt from a local retailer, however, that money was already present in the region as part of the resident’s income. Furthermore, much of that money will now flow out of the region to the shirt’s wholesaler and manufacturer, or as profits to the national retail chain if the store is part of one. The retailer’s sales to residents, therefore, are not basic industry, because they depend on money previously brought into the region by some other business (e.g., the shirt buyer’s employer), which may in turn depend upon other businesses that bring in outside money. When you can trace this money back to industries that sell mainly to non-residents or non-local businesses, you have found the region’s basic industries. Area residents and businesses can only purchase imports from other regions or other nations (like the shirt) to the extent that they have first exported something else (such as the bottle of wine) or otherwise obtained money from outside the region.

Historically, basic industry usually meant extractive activities, such as agriculture, timber, and mining, or finished-product manufacturing such as food processing, textiles, and wood products. Today the

³¹ Without outside income, the residents of the community have no way to purchase imports of any kind. Thus, everything consumed at the community must be produced at the community. Now Robinson Crusoe and Friday could survive in their fictional tropical island situation by producing all goods and services locally, but the rest of us need items from the national and world market. Note also that the applicability of economic base theory generally varies inversely with the size of the region. Thus, the world economy imports nothing, while an economy the size of the U.S. imports a great deal but nonetheless produces the great majority of what it consumes (including practically all services). At the level of a small town, most of what it consumes is produced by outsiders, with community exports providing the funds to purchase those imports.

list will often include non-labor incomes of retired and leisure persons (e.g., recreational home owners) and tourism. The key, from the standpoint of the community economy, is to obtain the outside income needed to purchase imports.

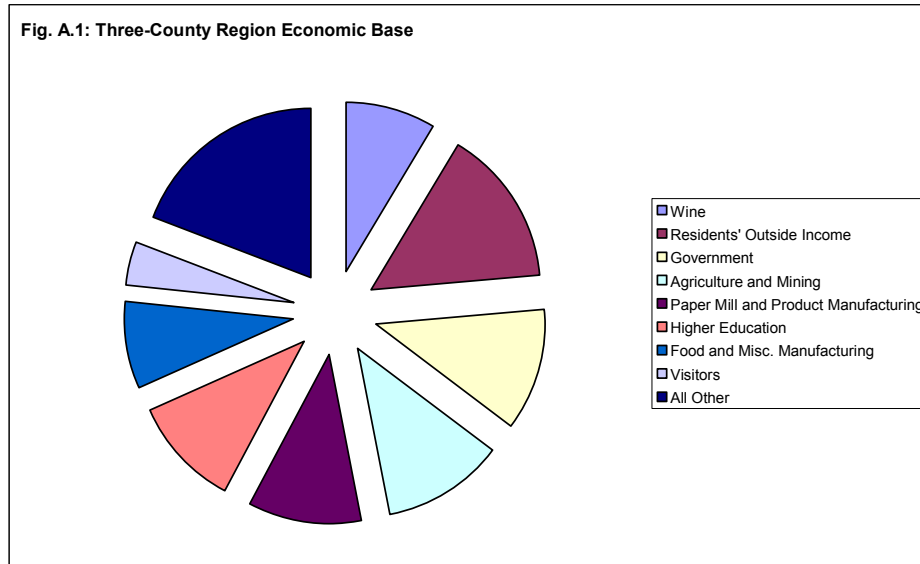
A.3. The Three-County Region's Economic Base

To portray the community economic base, total jobs and incomes are explained in terms of the basic jobs and incomes (the jobs and incomes in the industries that bring outside money to the community). The following table (**Table A.1**), shows the major industries that make up the Walla Walla region's economic base. Each category includes direct, indirect, and induced jobs and earnings that can be attributed to each. Note that these categories are again distinct from both the NAICS sectors and the industry clusters used earlier in the report. The categories below are a custom grouping of all the area's similar basic industries.

Table A.1: Economic Base: Walla Walla Functional Economy (2007)

Sector	Jobs	% of Total Jobs	Earnings (x1000)	% of Total Earnings	Earnings per Worker (x1000)
Wine	3,263	8.5%	\$103,213	8%	\$32
Residents' Outside Income	5,815	15.1%	\$157,758	12%	\$27
Government	4,522	11.8%	\$248,524	18%	\$47
Agriculture and Mining	4,487	11.7%	\$115,774	8%	\$26
Paper Mill and Product Manufacturing	4,136	10.8%	\$175,286	13%	\$46
Higher Education	4,061	10.6%	\$158,695	12%	\$43
Food and Misc. Manufacturing	3,169	8.3%	\$117,812	9%	\$36
Visitors	1,620	4.2%	\$37,114	3%	\$23
All Other	7,344	19.1%	\$257,172	19%	\$39
Total	38,417	100%	\$1,371,348	100%	n/a

Economic Modeling Specialists, Inc., 2007



The wine cluster thus accounts for a total of about 3,263 jobs rather than merely the 1,094 direct jobs seen in the early part of **Chapter 2**. This means that every wine cluster job creates approximately two more additional jobs, effectively tripling the total impact of wine cluster growth. It is worth noting, however, that wine cluster jobs and associated indirect/induced jobs do not pay extremely well—probably due to the large number of jobs in agriculture (vineyards), retail, eating and drinking places, and other tourism industries, which are normally on the lower end of the pay scale. The sector has an earnings per worker of about \$32,000 per year, below Government, Higher Education, and other manufacturing industries.

A.4. Sub-Regional Economic Base Analysis

Table A.2: Economic Base: Greater Walla Walla

Sector	Jobs	% of Total Jobs	Earnings (x1000)	% of Total Earnings	Earnings per Worker (x1000)
Wine	2,645	8.3%	\$84,640.00	7.4%	\$32
Residents' Outside Income	4,579	14.4%	\$127,034.34	11.1%	\$28
Paper Mill and Product Manufacturing	4,101	12.9%	\$173,748.22	15.2%	\$42
Higher Education	4,027	12.7%	\$157,302.94	13.8%	\$39
Agriculture and Mining	3,451	10.9%	\$89,840.17	7.9%	\$26
Government	3,061	9.6%	\$168,994.82	14.8%	\$55
Food and Misc. Manufacturing	2,483	7.8%	\$95,563.90	8.4%	\$38
Central Functions	1,967	6.2%	\$63,626.55	5.6%	\$32
Visitors	1,389	4.4%	\$32,112.08	2.8%	\$23
All Other	4,069	12.8%	\$151,095.41	13.2%	\$37
Total	31,771	100%	\$1,143,958	100%	n/a

Economic Modeling Specialists, Inc., 2007

Table A.3: Economic Base: Greater Milton Freewater

Sector	Jobs	% of Total Jobs	Earnings (x1000)	% of Total Earnings	Earnings per Worker (x1000)
Wine	607	13.2%	\$18,210	7.1%	\$30
Government	1000	21.7%	\$45,042	17.5%	\$45
Residents' Outside Income	793	17.2%	\$22,027	8.6%	\$28
Agriculture and Mining	656	14.2%	\$19,469	7.6%	\$30
Food and Misc. Manufacturing	437	9.5%	\$15,334	6.0%	\$35
Sykes enterprises	391	8.5%	\$16,283	6.3%	\$42
Visitors	137	3.0%	\$4,090	1.6%	\$30
All Other	589	12.8%	\$27,990	10.9%	\$48
Total	4610	87%	\$140,455	100%	n/a

Source: Economic Modeling Specialists, Inc. • 3/07

Table A.4: Economic Base: Greater Dayton

Sector	Jobs	% of Total Jobs	Earnings (x1000)	% of Total Earnings	Earnings per Worker (x1000)
Wine	11	0.5%	\$363	0.2%	\$33
Government	461	22.6%	\$22,044	48.5%	\$48
Residents' Outside Income	443	21.8%	\$9,895	17.4%	\$22
Agriculture and Mining	378	18.6%	\$7,593	13.3%	\$20
Food and Misc. Manufacturing	249	12.2%	\$7,701	13.5%	\$31
Visitors	94	4.6%	\$1,383	2.7%	\$15
All Other	400	19.6%	\$4,296	4.3%	\$11
Total	2036	100%	\$53,275	100%	n/a

Source: Economic Modeling Specialists, Inc. • 3/07

APPENDIX B: WINE CLUSTER GROWTH AND PROJECTED ECONOMIC STRUCTURAL CHANGE

Regional economists use a technique called “shift-share analysis” to examine regional economic structural change over time. Given historic data, shift-share can be used to examine past economic structural change, or, given projected data, it can be used to examine projected economic structural change. We use shift-share to examine projected economic structural change in terms of the three-county region’s industry clusters.

Shift-share uses employment projections at the national level to obtain a regional projection *that assumes national average levels of industry performance* (we might call this “expected change” because it refers to job growth that might be expected in the region if regional industries follow national projected growth rates). This projection is compared to the projection created using the standard, region- and state-specific methods described in the previous section. Where regional projected growth falls short of the “expected change” (from the national average projection) the region loses its national share in that industry. Conversely, where regional projected growth exceeds the expected change, the region gains share in that industry. We view changes in national share in terms of industry clusters: regional structural change is indicated as various clusters become more or less important to the overall regional economy.

Table B.1 shows our shift-share analysis projected structural change in the three-county Walla Walla functional economy. As with **Table 3.1**, the projection years run from 2007 to 2017. Let us start with the table’s “Total” row: Based on the particular clusters present in the region, and given projected growth trends in *national* employment, the three-county region would be expected to grow

by 3,430 jobs rather than the 3,686 indicated in **Table 3.1**.³² The “competitive effect,” defined as the region’s over- (or under-) performance relative to the nation, equals 256 jobs—positive, but not very significant given the inexact science of projecting employment into the future.

Table B.1: Walla Walla Functional Economy Shift Share 2007-2017

Cluster Name	Job Change (Jobs)	Expected Change (Jobs)	Competitive Effect (Jobs)
Agriculture and food production	309	-25	334
Building and construction	212	119	93
Business and professional services	639	447	192
Education	402	669	-267
Entertainment and travel	160	373	-213
Government and civic organizations	373	444	-71
Health and Life Sci	562	924	-362
Information and communication	171	40	131
Lumber wood and paper manufacturing	-390	-79	-311
Metal and metal fabrication	35	-15	50
Printing services	34	-2	36
Utilities	81	58	23
Wine	1142	521	621
All Other	-44	-44	0
Total	3,686	3,430	256

Source: Economic Modeling Specialists, Inc. · 4/07

Now consider individual cluster entries. The national trend in “Agriculture and Food Production” would suggest a loss of 25 regional jobs in that cluster. In contrast, our projections indicate a gain of 309 jobs: a “competitive effect” of 334 jobs (an avoided loss of 25 plus a gain of another 309 jobs). The “Building and Construction” cluster grows at almost twice the expected rate (212 more jobs compared to the expected 119). “Business and Professional Services” likewise outperforms the national projections (projected growth = 639, expected growth = 447).

The “Education” cluster (which includes Walla Walla Community College, Walla Walla University, and Whitman College) is projected to add 402 jobs, yet this falls short of the 669 added jobs that

³² From Table 3.1: 2007 total jobs equal 38,417. 2017 total jobs equal 42,103. $3,686 = 42,103 - 38,417$.

would be expected given national projected growth rates in that cluster. “Health and Life Sciences” likewise will grow at less than projected national average rates. Note that in “Lumber, Wood and Paper Products” the change given by national average rates is a loss of 79 jobs while our regional projected change indicates a loss of 390 jobs: There is clearly a significant structural change as the three-county economy moves further away from this cluster.

Finally, notice the projection figures for the wine cluster. We have already seen how the three-county region’s wine cluster has grown to provide some 1,094 direct jobs as of 2007 (**Table 2.1**). Moreover, the growth in wine production (and consumption) nationally has been noted (see the **Executive Summary**). Given this, and national trends, it is not surprising that over the next ten years the expected performance of Walla Walla’s wine cluster industries suggests significant growth: applying national average growth rates would indicate 521 more regional wine cluster jobs by 2017. Our projection (using localized data) for the three-county Walla Walla region is, however, much higher than the national average projection: 1,142 new wine cluster jobs as opposed to the 521 jobs assuming national average growth. This means that the three-county region’s wine cluster adds a significant competitive advantage to the region (i.e., increasing its share of national wine production), and that the region will grow increasingly specialized in wine production and related activities.