



ATTACHMENT B

R2R CORRIDOR ECONOMIC ANALYSIS



Business Development Opportunities in the Ravenna-Rootstown Corridor¹

This chapter will suggest a variety of industries with the potential to assist in revitalizing the Ravenna-Rootstown corridor. The basic premise is that the most successful opportunities are those meeting the needs of key industries in the area.

An important point to bear in mind is that efforts to enhance the success of the corridor will provide benefits beyond the corridor itself. Targeted entrepreneurial opportunities will broaden the ability of members of the community to own or work in the new businesses, increasing household incomes and decreasing the unemployment rate. A more vibrant corridor will increase property values in the surrounding neighborhoods, thereby providing more equity to households wishing to improve their homes and increasing the local property tax base.

Data limitations force us to consider two different areas in the analysis. The business analysis will cover two ZIP codes: Ravenna's 44266 and Rootstown's 44272. The demographic analysis will consider a collection of census tracts encompassing the City of Ravenna, the surrounding Ravenna Township, and Rootstown Township. Additionally, as will be explained later, the identification of business development opportunities must consider Portage County and the Akron Metropolitan Statistical Area (MSA) which consists of Portage and Summit Counties.

The following two sections present an economic and demographic survey of the area, which will set the stage for the subsequent analysis of opportunities that follows.

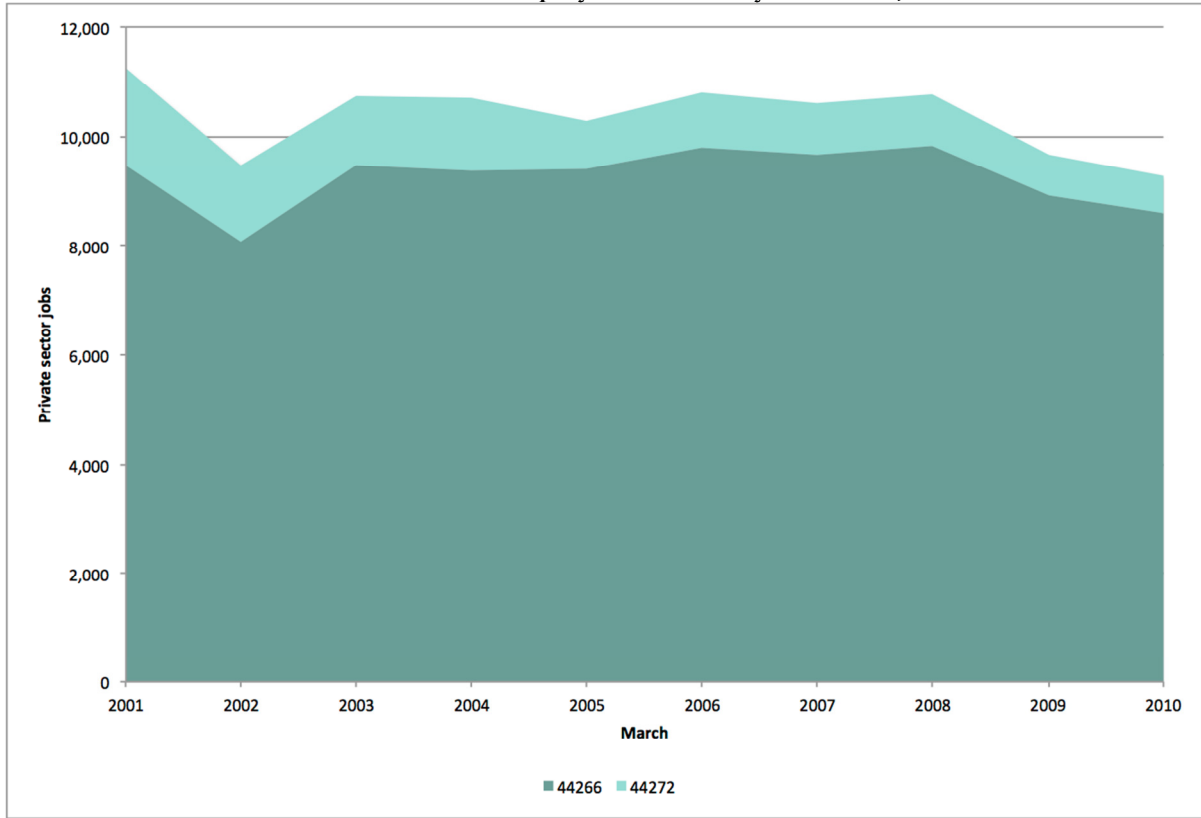
Economic Conditions

The data source for the ZIP code-based analyses is the Census Bureau's ZIP Code Business Patterns database. This database is the only publicly-available source for neighborhood-level business establishment data, but it has some important limitations. First, data are available only as of March of each year, and are currently available only through March 2010. Certain industry sectors, such as retail, recreation, and transportation, are seasonally low in March, as is total employment. Consequently, the employment total understates the annual average employment, and industry employment percentages are somewhat distorted. (This problem is not as great if different areas are compared using the same database – as most of this analysis in this chapter does.) Second, the database omits both railroad and government employment, so the results are applicable to the private sector only.

Exhibit 1 on the next page shows private-sector job totals in the two ZIP codes and overall over the past decade. The 44266 ZIP has held the vast majority of jobs throughout the decade, but its share of total employment has increased as employment in Rootstown's 44272 ZIP steadily declined. Employment in the 44272 ZIP in March 2010 was 682, 7.3 percent of the 9,290 jobs in the total area. The 682 jobs represented a decline of 62 percent from the 1,792 jobs in March 2001, which accounted for nearly 16 percent of the area's jobs in that year.

¹ The analysis and discussion in this chapter were prepared by Bill LaFayette, Ph.D., owner of Regionomics®, a Columbus-based economic and workforce strategy firm.

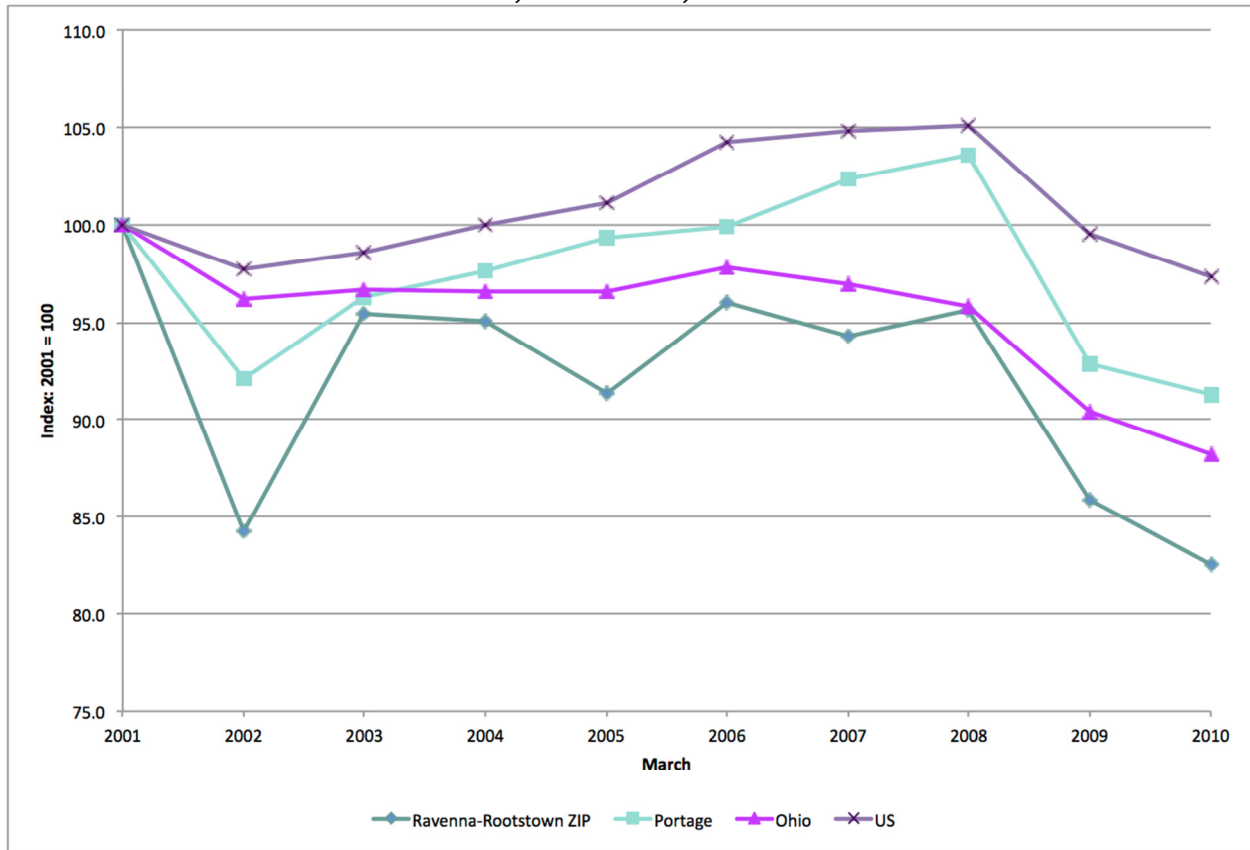
Exhibit 1
Ravenna-Rootstown Employment totals by ZIP Code, 2001-2010



Source: ZIP Code Business Patterns, U.S. Census Bureau.

Exhibit 2 compares growth in jobs in the Ravenna-Rootstown ZIP code area between 2001 and 2010 to that of Portage County, the Akron MSA, Ohio, and the U.S. The chart shows employment on an index basis with employment in March 2001 set to 100 in all areas; thus, the chart shows cumulative employment growth over the decade. Ravenna-Rootstown employment declined 15.7 percent in the recession of 2001 – twice the 7.9 percent Portage County decline. Ravenna-Rootstown employment bounced back just as sharply when employment growth resumed in 2003. Although growth during the remainder of the expansion was erratic, it amounted to 13.5 percent, better than Portage County’s 12.4 percent and the 7.6 percent national average. However, the recession loss of 17.5 percent exceeded the 8.7 percent loss suffered by Portage County.

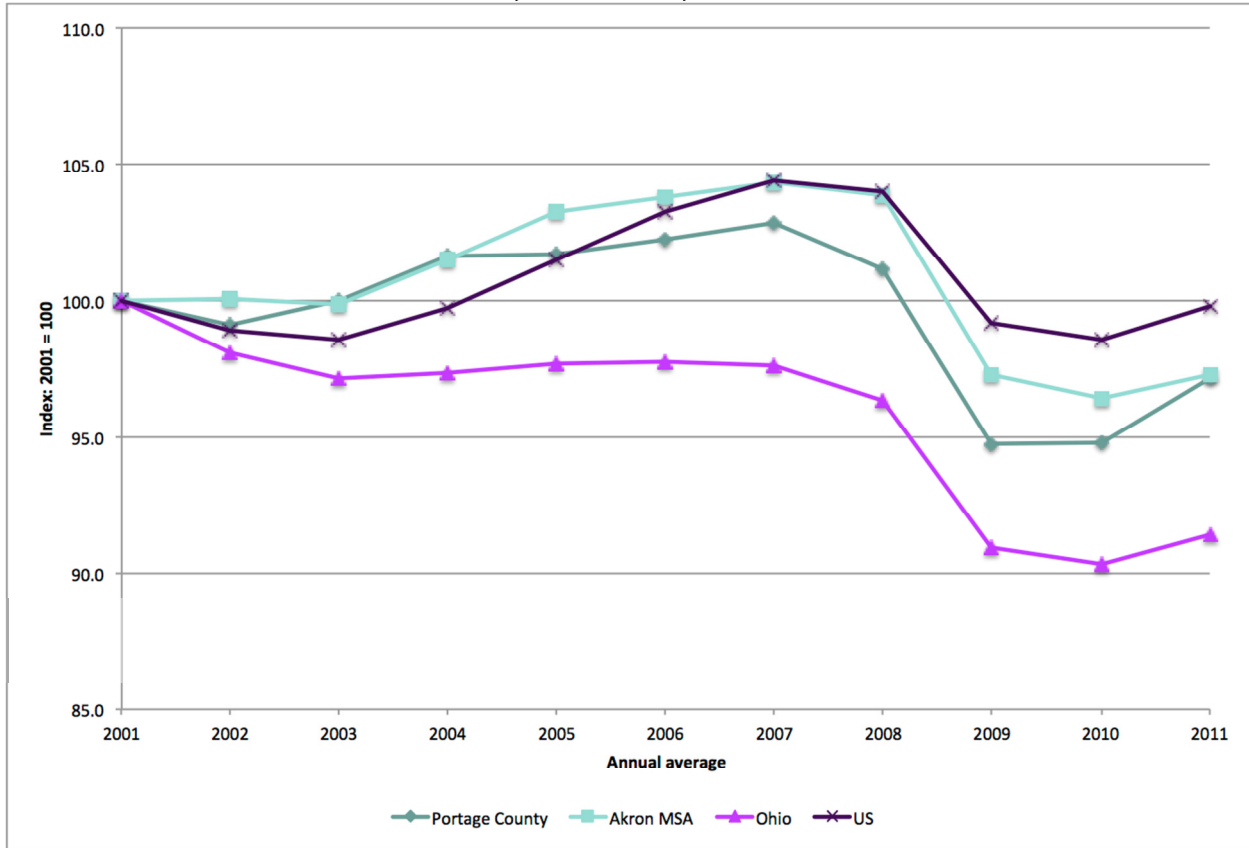
Exhibit 2
Cumulative Employment Growth of Ravenna-Rootstown, Portage County, Ohio, and the U.S., 2001-2010



Source: ZIP Code Business Patterns, U.S. Census Bureau.

As indicated earlier, the ZIP Code Business Patterns database suffers the limitations of employment being available only for March, only for the private sector, and no later than 2010. A different database, the Quarterly Census of Employment and Wages (QCEW) of the U.S. Bureau of Employment Statistics, includes government employment (but not that of railroads) and is available for the year as a whole and through 2011. While Ravenna-Rootstown employment is not available, QCEW gives a more complete and current view of the employment growth of the larger areas shown in Exhibit 2. Employment growth measured by QCEW for these areas – as well as the Akron MSA – is shown in Exhibit 3.

Exhibit 3
Cumulative Employment Growth of Portage County, the Akron MSA, Ohio, and the U.S., 2001-2011



Source: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics.

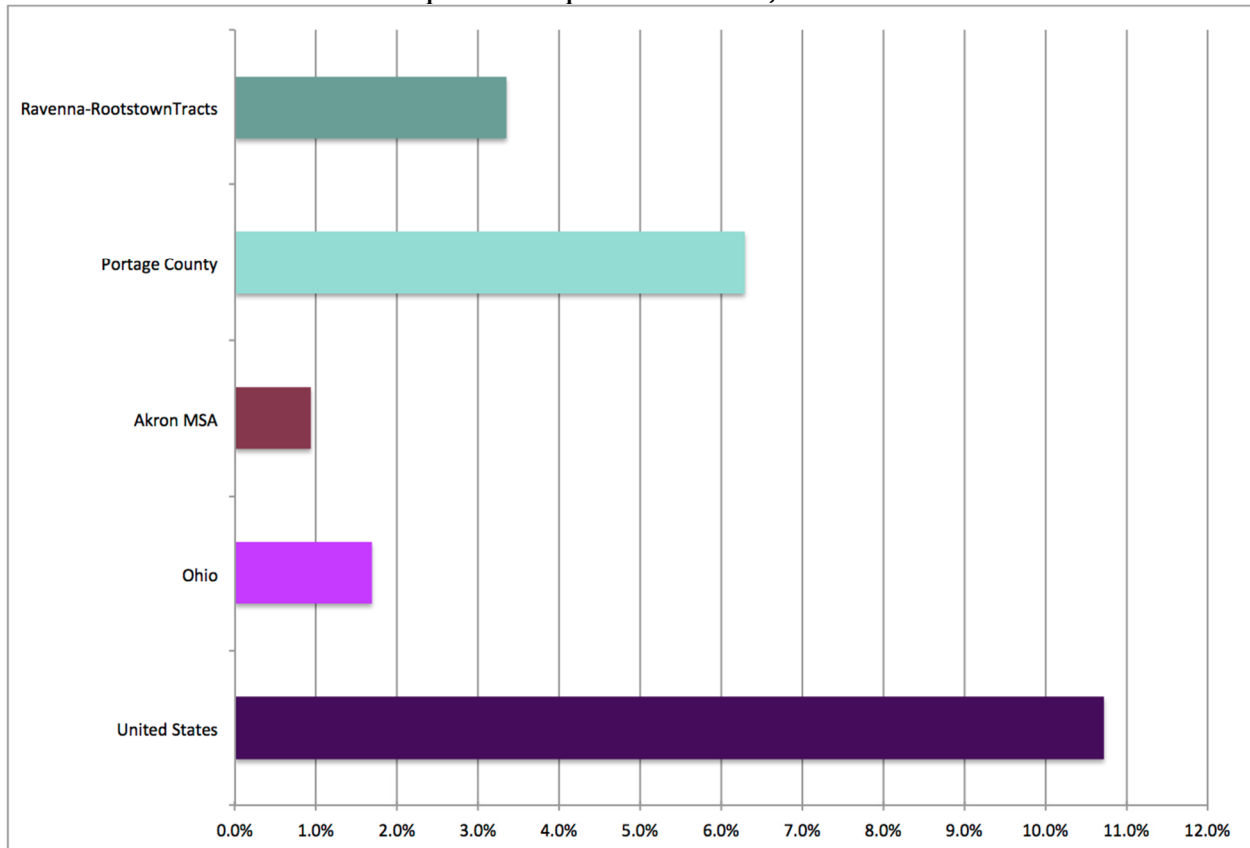
The patterns of annual average employment growth in Exhibit 3 are generally comparable to the March-to-March patterns in Exhibit 2 except for smaller declines in 2002 and 2010. Employment declines diminished in the final months of 2009 and growth resumed at the beginning of 2010 – leading to a more favorable 2009-2010 comparison and positive growth from 2010 to 2011. It is likely that the differences in the Ravenna-Rootstown corridor would be similar if the annual average trend could be measured. As Exhibit 3 also shows, the Akron MSA’s employment growth was somewhat better than that of Portage County through 2010, but better growth in Portage County in 2011 exactly made up for the accumulated deficiency.

Demographic Conditions

The following analysis is based on census tracts encompassing the two townships and the city of Ravenna. The Census Bureau estimates that this area had a population of 29,199 on July 1, 2011 – 18.1 percent of the Portage County total. As shown in Exhibit 4, the 3.3 percent growth in the area’s population between 2000 and 2011 was well below the 6.3 percent of Portage County but greater than the Akron MSA’s 0.9 percent.²

² The low MSA population growth rate was caused by a loss of 3,000 (0.6 percent) from Summit County over the 11-year period.

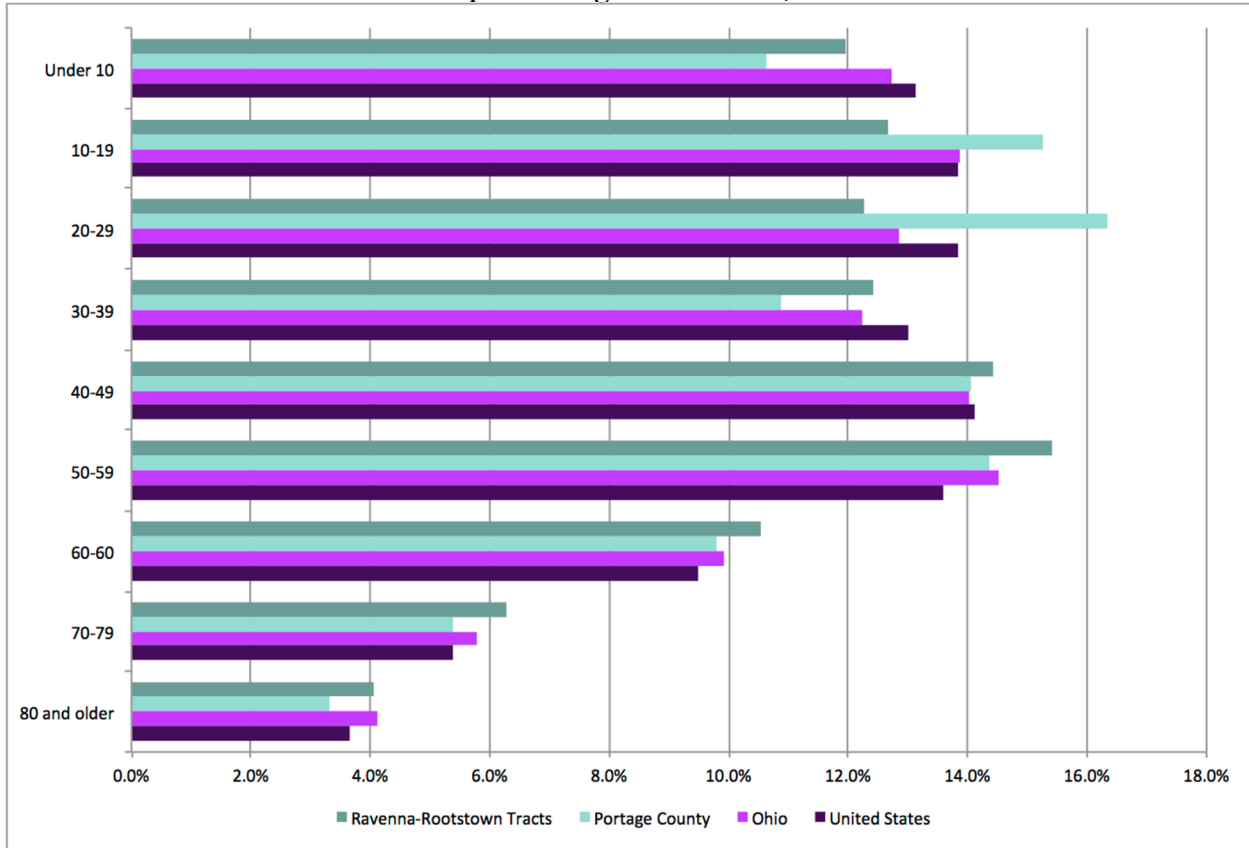
Exhibit 4
Comparative Population Growth, 2001-2011



Source: Census 2000 and 2011 Population Estimates, U.S. Census Bureau.

Exhibit 5 compares the age distribution of the Ravenna-Rootstown census tracts with that of Portage County, the state, and the U.S. The local age profile is older than the comparatively young Portage County population and the U.S. population as well. Those 65 and older comprise 14.8 percent of the Ravenna-Rootstown corridor's population, but only 12.9 percent of the Portage County population and 13 percent of the U.S. population. A key age group is the 20 to 60-year group. This group has the highest labor force participation rates and is thus the core of the area's labor force. This group comprises 54.5 percent of the Ravenna-Rootstown population – a total of 15,893 in 2010 – equal to the national average but less than the 55.6 percent of the Portage County population.

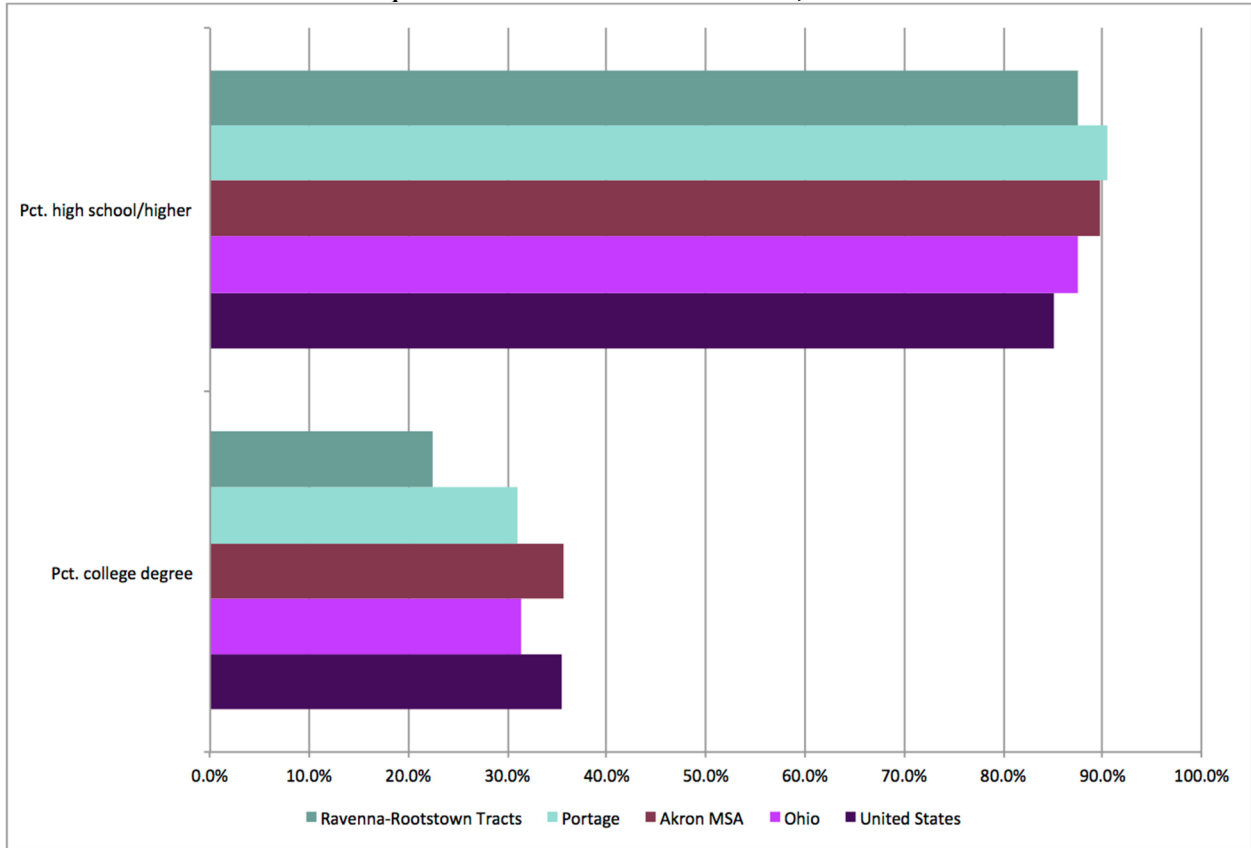
**Exhibit 5
Comparative Age Distribution, 2010**



Source: Census 2010, U.S. Census Bureau.

The educational attainment of the adult population is an important indication of the quality of the labor force. This is shown in Exhibit 6. The percentage of adults 25 or older with at least a high school diploma is higher than the national average, as it is statewide and in most Ohio counties. The 22 percent with a college diploma, however, is much less than the 35 percent rates in the Akron MSA and nationwide and the 31 percent in Portage County. One shortcoming of the Census Bureau’s definition of educational attainment is that it does not include the percentage holding technical certifications – an important consideration in a manufacturing-oriented area such as Ravenna. However, the low percentage of college degrees is a challenge for the effort to grow high-income occupations.

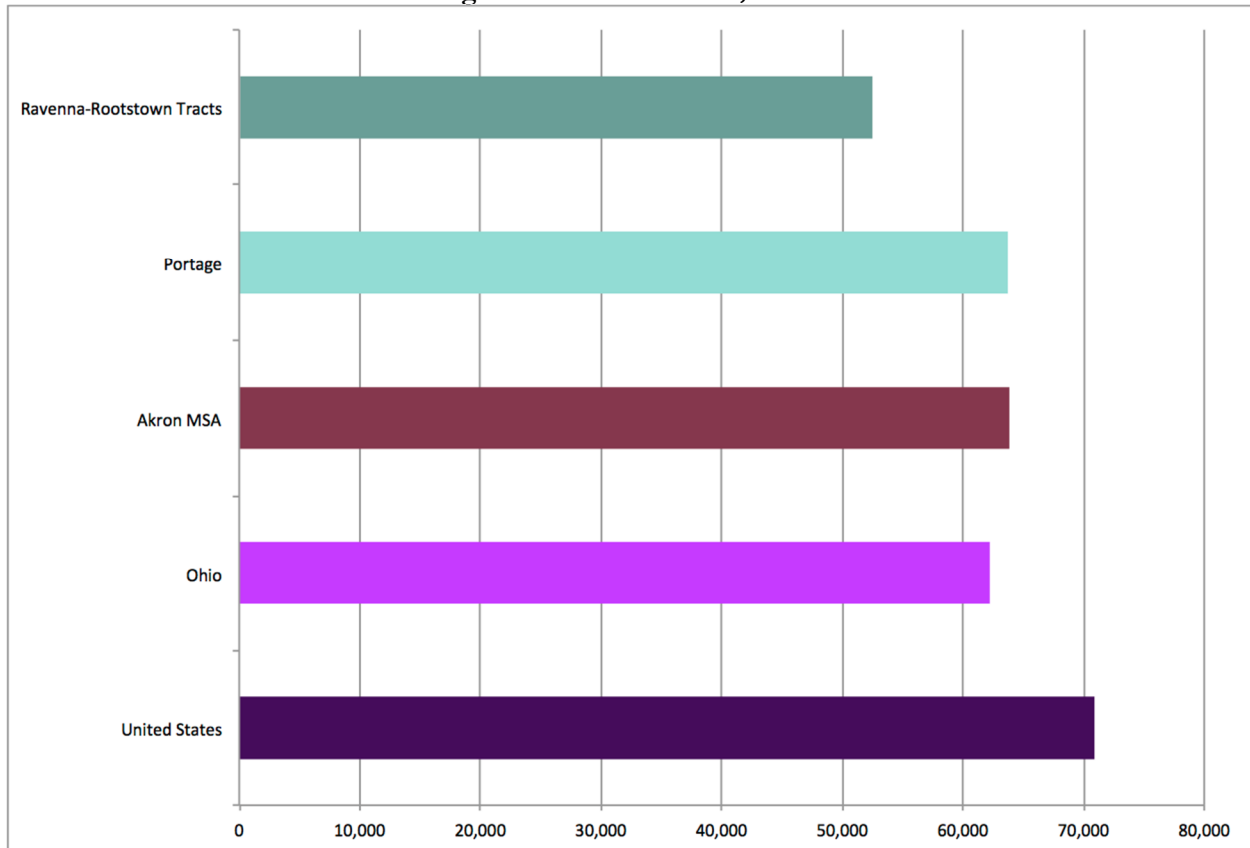
Exhibit 6
Comparative Educational Attainment, 2006-2010



Source: American Community Survey Five-Year Estimates, U.S. Census Bureau.

This below-average educational attainment manifests itself in the below-average income of Ravenna-Rootstown households. This is shown in Exhibit 7. Average household income in the Ravenna-Rootstown corridor during 2006-2010 was \$52,500, 18 percent less than the Portage County and Akron MSA average and 26 percent less than the U.S. average.

Exhibit 7
Average Household Income, 2006-2010



Source: American Community Survey Five-Year Estimates, U.S. Census Bureau.

Business Development Opportunities in the Ravenna-Rootstown Corridor

With the demographic and economic characteristics of the Ravenna-Rootstown corridor in hand, we can turn to the real point of this analysis: an identification of specific business development opportunities. Some of these opportunities are appropriate for entrepreneurs, while others require a larger development scale and so are potential candidates for business expansion and attraction efforts by local economic development offices.

The underlying idea of the approach is that the most promising opportunities are those that meet the needs of key industries and households in the corridor and are currently underrepresented. The degree to which industries are present in the corridor is measured by a statistic called the location quotient. This is the percentage of total employment in a given industry in the two-ZIP code area divided by the percentage of total employment in that industry nationally. Thus, a location quotient greater than 1.0 implies that the industry has a larger-than-average share of total employment. Key industries are those with relatively large employment and location quotients far above one. Conversely, underrepresented industries are those with location quotients much less than one. If these underrepresented industries are also suppliers to the key industries, then they represent a development opportunity.

However, it is important to bear in mind that an industry's satisfying these conditions does not guarantee success. The firms in the key industries are currently meeting their needs for these goods and services somehow, so establishing a successful supplier business requires crafting a compelling case that their purchase patterns should change. Likewise, a supplier industry's high location quotient does not necessarily mean that

a new entrant to that industry in that corridor is doomed to failure. If a new supplier firm can meet the needs of their customers more effectively, they can take business from existing suppliers.

This analysis relies on the Census Bureau's ZIP Code Business Patterns database discussed above (County Business Patterns for the larger areas in the comparative analysis). One challenge in using the ZIP code database is that the only employment total given is that for all sectors. However, the database provides a count of establishments in various employment size ranges for each sector and industry as defined by the North American Industry Classification System (NAICS).³ An initial employment estimate for individual industries can be obtained by assuming that employment for all firms in a given size range is at the midpoint of the size range. The resulting estimates for all industries are then summed and adjusted proportionally to equal the total employment for the ZIP code as given – checking to ensure that each industry's employment remains neither greater than the maximum nor less than the minimum implied by the size ranges. Employment totals for Portage County, the Akron MSA, and the U.S. are also needed for the analysis. Most of these industry employment totals are included in the County Business Patterns data, but some county-level totals are suppressed in cases where they would disclose individual establishments' employment totals, which are confidential. These can be estimated as described above, but in some cases they can be derived exactly.

NAICS is a hierarchical system, with 25 primary sectors with two-digit codes. These are composed of subsectors signified by a third digit, industry groups signified by a fourth digit, and industries signified by fifth and sixth digits. The bulk of the analysis focuses on the three-digit subsectors, but some of these must be broken down to the industry group level to yield worthwhile results. The estimated private-sector employment totals for all available subsectors as of March 2010 are shown in the Appendix Exhibit A-1, together with corridor, Portage County, and Akron MSA location quotients.

The key subsectors in the 44266 and 44272 ZIP codes – those with the highest location quotients – are the ones for which we need lists of supplier industries. Also required are estimates of the output of these establishments and their supplier purchases. These can be obtained through two interrelated tools: the Regional Impact Modeling System (RIMS II) and the Input-Output (I-O) Accounts, both from the U.S. Bureau of Economic Analysis. RIMS II multipliers are most often used in economic impact analysis – studies that measure the impacts on regional output and employment of firms, activities, and projects – but the model can also be used to estimate the output of an industry employing a given number of workers. The I-O Account coefficients provide estimates of the amount required from each supplier industry nationwide to generate one dollar of output (goods or services) in a given industry. Thus, once the individual outputs are calculated from the RIMS II multipliers, the I-O coefficients can be used to generate lists of supplier industries and an order-of-magnitude estimate of the annual nationwide purchases from each supplier industry.

The key subsectors in the 44266 and 44272 ZIP codes – those with the highest location quotients – are presented in Exhibit 8. The list includes 21 subsectors (of the 90 subsectors in Exhibit A-1) with estimated employment of 6,433 – nearly 70 percent of the corridor total. The location quotients from Exhibit A-1 are also included, together with the output of these firms within the corridor as derived from RIMS II and their total supplier demand from the I-O coefficients. These firms together generate \$730.8 million in output annually (based on their 2010 employment) and make purchases from suppliers nationwide totaling \$717.9 million.

³ For details on NAICS, see <http://www.census.gov/eos/www/naics/>.

Exhibit 8
Key Subsectors' Annual Output and Supplier Purchases

NAICS code	Description	Estimated employmt.	Location quotient	Output (\$000)	Supplier (\$000)
211	Oil and gas extraction	44	4.856	11,837	9,722
313	Textile mills	43	4.742	12,550	20,894
322	Paper manufacturing	152	5.018	38,511	58,719
326	Plastics and rubber products manufacturing	585	10.561	107,099	146,360
331	Primary metal manufacturing	95	3.250	16,988	21,721
332	Fabricated metal product manufacturing	240	2.267	58,639	62,190
335	Electrical equipment, appliance, and component manufacturing	152	5.564	47,312	73,518
445	Food and beverage stores	278	1.187	18,893	10,072
446	Health and personal care stores	241	2.892	16,378	8,732
447	Gasoline stations	98	1.386	6,660	3,551
452	General merchandise stores	344	1.483	23,378	12,463
484	Truck transportation	191	1.820	28,797	28,903
493	Warehousing and storage	78	1.438	6,865	4,555
511	Publishing industries (except internet)	152	2.020	20,022	15,505
562	Waste management and remediation services	45	1.550	9,034	7,214
622	Hospitals	1,675	3.573	191,086	145,333
623	Nursing and residential care facilities	416	1.550	22,256	13,450
624	Social assistance	324	1.437	15,539	11,252
722	Food services and drinking places	855	1.086	40,027	36,553
811	Repair and maintenance	140	1.460	15,401	13,253
812	Personal and laundry services	285	2.621	23,519	13,957
	Total	6,433		730,792	717,914

Source: Author's calculations; see text.

What are these supplier industries and to what extent are they already represented in the local area? Supplier industries can be identified and the purchases from them can be calculated from the I-O Accounts. The dollar purchases of each key subsector from each of their supplier industries are calculated and the purchases from each supplier industry with at least \$10,000 in sales to the key industry are totaled across subsectors. The results are given in Appendix Exhibit A-2. The classification scheme for these suppliers is that in the I-O Accounts – based on NAICS and very similar to that in RIMS II. (Again, the dollar totals are order-of-magnitude estimates but do give an idea of the scale of these purchases.) These suppliers account for \$486.7 million, 68 percent of the total in Exhibit 8.⁴

Many supplier firms also have location quotients in Portage County and the Akron MSA well above one. This is not surprising: proximity to customers is a factor contributing to firms' success. Some industries, however, seem to be promising. These include nonresidential building maintenance and repair (230301); data processing and hosting (518200); insurance services (524100 and 524200); and real estate services (531000 – likely real estate leasing and management).

Four sectors require further exploration, however, by estimating employment and computing location quotients at the four-digit NAICS industry group level. Professional, scientific, and technical services (NAICS code 54) and administrative support and waste management services (NAICS code 56) are well-represented on the list of suppliers. These are broad sectors without detail at the three-digit level, but have

⁴ The \$45.7 million demand for services from the management of companies sector (NAICS 55) is somewhat misleading. This sector includes corporate and regional headquarters offices, so an example of these services would be those provided by the headquarters of a manufacturing firm to its plants.

location quotients that are unusually low for a metropolitan area as large as Akron.⁵ Wholesale trade (NAICS code 42) has a high location quotient but with \$38 million of demand by the drivers, it would be well to take a more detailed look at the sector to see if gaps exist. Finally, retail trade (NAICS code 44-45) has some demand by the key industries, but obviously significant demand from the households in the area.

Employment at the four-digit level in the Ravenna-Rootstown corridor and location quotients are presented in Appendix Exhibit A-3. Of the \$38 million of purchases from wholesalers by the key subsectors, \$25 million are by manufacturing firms and another \$6.3 million are by healthcare providers. This suggests that industrial and medical supply firms are the most significant wholesale providers to the key subsectors. These would include wholesalers of commercial equipment (NAICS code 4234); metal and mineral wholesalers (4235); electrical goods (4236); drugs (4242); and chemicals (4246). Most of these industry groups have high location quotients at the county and/or MSA level, so the opportunities here may be somewhat limited. Still, a knowledgeable supplier of a specific class of goods required by these firms can carve out a share of a very large market – both in the immediate Ravenna area and beyond.

Some of the location quotients in the retail industry groups are potentially too high. Retail is different from many other sectors in that it serves mostly a local market. Other firms, such as manufacturers, may serve a national or international market and thus have a much greater growth potential. The implication is that the location quotient for manufacturing industries can be very high – as they are for many industries in the Ravenna-Rootstown corridor – without signaling a problem. A very high location quotient in retail, however, without extenuating circumstances suggests overconcentration. One circumstance can be a primary regional shopping center located in an outlying county of a large metropolitan area – such as the Polaris Fashion Place and the surrounding shopping centers in Delaware County, which attract shoppers from throughout the Columbus area and beyond. It appears that Portage County is a net attractor of retail activity for the area: Summit County's location quotient is a fairly low 0.989 and the 1.04 location quotient for the MSA is not overly high. But the fact remains that households in the Ravenna-Rootstown corridor have a great deal of retail located relatively close by. Furniture and home furnishing stores (NAICS 442) are one opportunity; these industry groups are low for both Portage County and the MSA as a whole. Many other retail needs are clearly being met by general department stores, which lead to the extremely high location quotients in the corridor and Portage County. Still, opportunities may exist for small, specialized retailers to carve out a niche by offering specialized goods and outstanding service. Food and beverage stores other than grocery stores (NAICS 445) may offer one such opportunity, as may sporting goods and hobby stores (NAICS 4511), florists (NAICS 4531) and office supply stores (NAICS 4532). Qualifying these opportunities will require a careful, detailed assessment of the location and offerings of competitive stores and a clear sense of the value proposition of the new store.

The two business service sectors, professional and technical services and administrative and support services, are another matter entirely. These location quotients are low both for the county and the MSA, so opportunities may exist to open new establishments that meet the needs of the corridor's key subsectors. Returning to the estimates of supplier demand in Appendix Exhibit A-2, legal services, accounting services, consulting services, employment services (such as temporary employment agencies), and services to buildings all have fairly large demands. Of these, none is highly represented in the corridor and only services to buildings is well-represented at the county level.

To summarize, the following may represent opportunities for business development in the Ravenna-Rootstown corridor:

- Nonresidential building maintenance and repair
- Data processing and hosting
- Insurance carriers and brokers

⁵ These two sectors' location quotients are much higher in Cleveland. Thus, it is likely that firms in the Ravenna area currently obtain many of these services there, but may be attracted to businesses located more conveniently.

- Commercial real estate leasing and management
- Furniture and home furnishing stores
- Specialized food and beverage stores
- Sporting goods and hobby stores
- Florists
- Office supply stores
- Legal services
- Accounting and bookkeeping services
- Management, scientific, and technical consulting services
- Employment services

The caveat discussed earlier bears repeating: the existence of business and household demand documented in this analysis does not guarantee success of start-up firms in these industries, and the high location quotients of other demand industries does not imply that new entrants to these industries will be unsuccessful. In both cases, success requires convincing potential customers to alter their current buying habits by offering goods and services more effectively. Many of these new firms will be entrepreneurial start-ups, so the effort to enhance the Ravenna-Rootstown corridor must also include responsive, effective, and accessible entrepreneurial and business development assistance – such as that offered by the Small Business Administration and its network of Small Business Development Centers and some economic development offices and chambers of commerce. One-on-one business owner mentoring programs are another possibility. There already appears to be a healthy climate of entrepreneurship in Portage County. The location quotient for non-farm business proprietors in the county was a respectable 1.142 in 2010, based on statistics from the U.S. Bureau of Economic Analysis. The efforts to enhance the Ravenna-Rootstown corridor can enhance that measure as well.

Exhibit A-1
Estimated Private-Sector Subsector Employment in
44266 and 44272 ZIP Codes and Location Quotients, March 2010

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
-----	Total for all sectors	9,290	1.000	1.000	1.000
11----	Forestry, fishing, hunting, and agriculture support	1	0.067	0.176	0.053
111	Crop production	n/a	n/a	n/a	n/a
112	Animal production	n/a	n/a	n/a	n/a
113	Forestry and logging			0.103	0.015
114	Fishing, hunting and trapping				
115	Support activities for agriculture & forestry	1	0.110	0.232	0.079
21----	Mining, quarrying, and oil & gas extraction	66	1.366	0.855	0.187
211	Oil and gas extraction	44	4.856	1.334	0.417
212	Mining (except oil and gas)	9	0.564	0.914	0.151
213	Support Activities for Mining	13	0.560	0.628	0.123
22----	Utilities	14	0.262	0.164	1.853
221	Utilities	14	0.262	0.164	1.853
23----	Construction	399	0.892	0.730	0.918
236	Construction of buildings	81	0.839	0.770	0.714
237	Heavy and civil engineering construction	7	0.100	0.568	1.970
238	Specialty trade contractors	311	1.108	0.757	0.726
31----	Manufacturing	1,446	1.604	2.224	1.296
311	Food manufacturing	19	0.160	0.535	0.411
312	Beverage and tobacco product manufacturing	1	0.086	0.315	0.745
313	Textile mills	43	4.742	1.308	0.201
314	Textile product mills			0.173	0.164
315	Apparel manufacturing			1.709	0.381
316	Leather and allied product manufacturing				0.030
321	Wood product manufacturing	8	0.275	0.369	0.227
322	Paper manufacturing	152	5.018	1.987	1.216
323	Printing and related support activities	7	0.169	4.109	1.773
324	Petroleum and coal products manufacturing			0.165	0.112
325	Chemical manufacturing	19	0.317	1.366	1.641
326	Plastics and rubber products manufacturing	585	10.561	10.103	4.038
327	Nonmetallic mineral product manufacturing	30	1.051	1.678	0.508
331	Primary metal manufacturing	95	3.250	1.084	1.377
332	Fabricated metal product manufacturing	240	2.267	2.549	1.668
333	Machinery manufacturing	62	0.805	2.335	1.712
334	Computer and electronic product manufacturing			1.270	0.577
335	Electrical equipment, appliance, and component manufacturing	152	5.564	7.421	1.817
336	Transportation equipment manufacturing			0.601	1.050
337	Furniture and related product manufacturing	30	1.037	0.457	0.590
339	Miscellaneous manufacturing	2	0.043	2.683	1.876
42----	Wholesale trade	204	0.439	1.678	1.218
423	Merchant wholesalers, durable goods	154	0.592	1.906	1.460
424	Merchant wholesalers, nondurable goods	49	0.273	1.363	0.875
425	Wholesale electronic markets and agents and brokers	1	0.040	1.557	1.162
44----	Retail trade	1,236	1.028	1.334	1.041
441	Motor vehicle and parts dealers	122	0.899	1.357	1.220

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
442	Furniture and home furnishings stores			0.403	0.692
443	Electronics and appliance stores	12	0.351	0.614	1.198
444	Building material and garden equipment and supplies dealers	77	0.768	1.578	0.977
445	Food and beverage stores	278	1.187	0.968	1.025
446	Health and personal care stores	241	2.892	1.530	1.317
447	Gasoline stations	98	1.386	1.577	0.871
448	Clothing and Clothing Accessories Stores	7	0.055	1.305	0.825
451	Sporting goods, hobby, book, and music stores	2	0.044	0.818	1.019
452	General merchandise stores	344	1.483	1.857	0.897
453	Miscellaneous store retailers	36	0.602	1.088	1.068
454	Nonstore retailers	18	0.403	1.398	1.973
48----	Transportation and warehousing	325	0.977	0.991	0.886
481	Air transportation				0.228
482	Rail transportation	n/a	n/a	n/a	n/a
483	Water transportation				1.671
484	Truck transportation	191	1.820	1.827	1.566
485	Transit & ground passenger transportation	19	0.519	0.280	0.394
486	Pipeline transportation			1.359	0.205
487	Scenic and sightseeing transportation				0.293
488	Support activities for transportation	37	0.762	0.258	0.410
491	Postal service	n/a	n/a	n/a	n/a
492	Couriers and messengers			0.053	0.618
493	Warehousing and storage	78	1.438	1.989	0.955
51----	Information	184	0.710	0.291	0.739
511	Publishing industries (except internet)	152	2.020	0.361	0.689
512	Motion picture and sound recording industries			0.500	0.475
515	Broadcasting (except internet)			0.355	0.611
517	Telecommunications	31	0.335	0.232	1.020
518	Data processing, hosting and related services	1	0.031	0.186	0.454
519	Other information services				0.446
52----	Finance and insurance	192	0.390	0.367	0.710
521	Monetary authorities-central bank				
522	Credit intermediation and related activities	134	0.586	0.563	0.614
523	Securities, commodity contracts, and other financial investments and related activities	3	0.041	0.182	0.540
524	Insurance carriers and related activities	54	0.286	0.204	0.899
525	Funds, trusts, and other financial vehicles				
53----	Real estate and rental and leasing	45	0.279	0.719	0.697
531	Real estate	30	0.257	0.601	0.611
532	Rental and leasing services	15	0.355	1.068	0.959
533	Lessors of nonfinancial intangible assets (except copyrighted works)			0.282	0.284
54----	Professional, scientific, and technical services	204	0.314	0.427	0.890
541	Professional, scientific, and technical services	204	0.314	0.427	0.890
55----	Management of companies and enterprises	32	0.137	0.711	1.746
551	Management of companies and enterprises	32	0.137	0.711	1.746
56----	Administrative and support and waste mgt. and remediation services	233	0.313	0.480	0.730
561	Administrative and support services	188	0.263	0.459	0.736
562	Waste management and remediation services	45	1.550	0.997	0.591
61----	Educational services	214	0.789	0.835	0.658
611	Educational services	214	0.789	0.835	0.658

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
62----	Health care and social assistance	2,950	1.999	0.814	1.126
621	Ambulatory health care services	536	1.045	0.648	1.108
622	Hospitals	1,675	3.573	0.625	1.080
623	Nursing and residential care facilities	416	1.550	1.266	1.198
624	Social assistance	324	1.437	1.049	1.176
71----	Arts, entertainment, and recreation	16	0.099	0.609	0.742
711	Performing arts, spectator sports, and related industries	1	0.028	0.168	0.590
712	Museums, historical sites, and similar institutions			0.022	1.152
713	Amusement, gambling, and recreation industries	16	0.133	0.789	0.751
72----	Accommodation and food services	856	0.912	1.090	0.923
721	Accommodation	1	0.007	0.478	0.329
722	Food services and drinking places	855	1.086	1.207	1.037
81----	Other services (except public administration)	654	1.515	1.080	1.102
811	Repair and maintenance	140	1.460	1.106	1.242
812	Personal and laundry services	285	2.621	1.619	1.272
813	Religious, grantmaking, civic, professional, and similar organizations	230	1.012	0.811	0.962

Blank cells indicate no employment in the subsector; “n/a” indicates that the subsector is not included in the Business Patterns data.

Source: ZIP Code and County Business Patterns, U.S. Census Bureau; author’s calculations – see text.

Exhibit A-2
Estimated Supplier Purchases by Ravenna-Rootstown Firms in Key Subsectors

I-O code	Description	Purchases by key subsectors (\$000)	3-digit location quotients	
			Portage	MSA
23----	Construction			
230301	Nonresidential maintenance and repair	6,945	0.770	0.714
31----	Manufacturing			
31161A	Animal (except poultry) slaughtering, rendering, and processing	2,958	0.535	0.411
313230	Nonwoven fabric mills	2,362	1.308	0.201
321100	Sawmills and wood preservation	2,042	0.369	0.227
322120	Paper mills	13,457	1.987	1.216
322130	Paperboard mills	9,371	1.987	1.216
322210	Paperboard container manufacturing	5,844	1.987	1.216
323110	Printing	5,681	4.109	1.773
324110	Petroleum refineries	12,082	0.165	0.112
325110	Petrochemical manufacturing	6,320	1.366	1.641
325188	All other basic inorganic chemical manufacturing	2,252	1.366	1.641
325190	Other basic organic chemical manufacturing	10,689	1.366	1.641
325211	Plastics material and resin manufacturing	17,040	1.366	1.641
325412	Pharmaceutical preparation manufacturing	5,508	1.366	1.641
325413	In-vitro diagnostic substance manufacturing	2,011	1.366	1.641
3259A0	All other chemical product and preparation manufacturing	3,977	1.366	1.641
326110	Plastics packaging materials and unlaminated film and sheet manufacturing	6,738	10.103	4.038
32619A	Other plastics product manufacturing	4,386	10.103	4.038
327215	Glass product manufacturing made of purchased glass	3,440	1.678	0.508
331110	Iron and steel mills and ferroalloy manufacturing	5,068	1.084	1.377
33131A	Alumina refining and primary aluminum production	2,638	1.084	1.377
331420	Copper rolling, drawing, extruding and alloying	3,198	1.084	1.377
331520	Nonferrous metal foundries	5,565	1.084	1.377
332710	Machine shops	3,330	2.549	1.668
332720	Turned product and screw, nut, and bolt manufacturing	2,372	2.549	1.668
332800	Coating, engraving, heat treating and allied activities	2,519	2.549	1.668
334413	Semiconductor and related device manufacturing	4,086	1.270	0.577
334418	Printed circuit assembly (electronic assembly) manufacturing	3,194	1.270	0.577
336300	Motor vehicle parts manufacturing	6,944	0.601	1.050
42----	Wholesale trade			
420000	Wholesale trade	38,348	1.678	1.218
44----	Retail trade			
4A0000	Retail trade	3,162	1.334	1.041
48----	Transportation and warehousing			
48A000	Scenic and sightseeing transportation and support activities for transportation	3,516	0.280	0.394
482000	Rail transportation	3,745	n/a	n/a
484000	Truck transportation	9,444	1.827	1.566
491000	Postal service	5,298	n/a	n/a
492000	Couriers and messengers	4,865	0.053	0.618
493000	Warehousing and storage	3,695	1.989	0.955
51----	Information			
515100	Radio and television broadcasting	3,314	0.355	0.611

I-O code	Description	Purchases by key subsectors (\$000)	3-digit location quotients	
			Portage	MSA
517000	Telecommunications	10,315	0.232	1.020
518200	Data processing, hosting, and related services	3,092	0.186	0.454
52----	Finance and insurance			
52A000	Monetary authorities and depository credit intermediation	12,407	0.563	0.614
522A00	Nondepository credit intermediation and related activities	7,104	0.563	0.614
523000	Securities, commodity contracts, investments, and related activities	7,100	0.182	0.540
524100	Insurance carriers	10,641	0.204	0.899
524200	Insurance agencies, brokerages, and related activities	3,939	0.204	0.899
53----	Real estate and rental and leasing			
531000	Real estate	45,832	0.601	0.611
532400	Commercial and industrial machinery and equipment rental and leasing	2,683	1.068	0.959
533000	Lessors of nonfinancial intangible assets	10,175	0.282	0.284
54----	Professional, scientific, and technical services			
541100	Legal services	7,443	0.427	0.890
541200	Accounting, tax preparation, bookkeeping, and payroll services	6,315	0.427	0.890
541300	Architectural, engineering, and related services	4,550	0.427	0.890
54151A	Other computer related services, including facilities management	2,245	0.427	0.890
541610	Management, scientific, and technical consulting services	7,036	0.427	0.890
541700	Scientific research and development services	4,768	0.427	0.890
541800	Advertising and related services	5,556	0.427	0.890
5419A0	All other miscellaneous professional, scientific, and technical services	4,484	0.427	0.890
55----	Management of companies and enterprises			
550000	Management of companies and enterprises	45,747	0.711	1.746
56----	Administrative and support and waste mgt. and remediation services			
561100	Office administrative services	2,563	0.459	0.736
561300	Employment services	11,819	0.459	0.736
561400	Business support services	3,127	0.459	0.736
561700	Services to buildings and dwellings	6,319	0.459	0.736
561900	Other support services	2,071	0.459	0.736
562000	Waste management and remediation services	2,594	0.997	0.591
62----	Health care and social assistance			
621B00	Medical and diagnostic labs and outpatient and other ambulatory care services	3,816	0.648	1.108
72----	Accommodation and food services			
7211A0	Hotels and motels, including casino hotels	2,688	0.478	0.329
722000	Food services and drinking places	6,024	1.207	1.037
81----	Other services (except public administration)			
8111A0	Automotive repair and maintenance, except car washes	3,662	1.106	1.242
811300	Commercial and industrial machinery and equipment repair and maintenance	3,071	1.106	1.242

Source: Author's calculations; see text.

Exhibit A-3
Estimated Private-Sector Industry Group Employment in
44266 and 44272 ZIP Codes and Location Quotients, March 2010

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
42----	Wholesale trade	204	0.439	1.678	1.218
423	Merchant Wholesalers, Durable Goods	154	0.592	1.906	1.460
4231	Motor Vehicles, Parts and Supplies Wholesalers	44	1.519	1.629	2.005
4232	Furniture & Home Furnishings Wholesalers	1	0.090	2.831	1.559
4233	Lumber and Other Construction Materials Wholesalers	2	0.122	0.598	1.117
4234	Professional and Commercial Equipment and Supplies Wholesalers			1.120	1.263
4235	Metal and Mineral (exc. Petroleum) Wholesalers			2.905	2.660
4236	Electrical and Electronic Goods Wholesalers	13	0.324	1.638	1.100
4237	Hardware, and Plumbing and Heating Equipment and Supplies Wholesalers			1.790	1.619
4238	Machinery, Equipment, and Supplies Wholesalers	14	0.259	3.226	1.581
4239	Miscellaneous Durable Goods Wholesalers	80	3.119	1.618	1.111
424	Merchant Wholesalers, Nondurable Goods	49	0.273	1.363	0.875
4241	Paper and Paper Product Wholesalers	1	0.081	1.129	0.871
4242	Drugs and Druggists Sundries Wholesalers			5.430	1.013
4243	Apparel, Piece Goods, and Notions Wholesalers	6	0.401	0.168	0.299
4244	Grocery and Related Product Wholesalers	31	0.493	0.812	0.918
4245	Farm Product Raw Material Wholesalers			2.255	0.464
4246	Chemical and Allied Products Wholesalers	2	0.173	0.888	3.033
4247	Petroleum and Petroleum Products Wholesalers	1	0.114	0.026	0.407
4248	Beer, Wine, and Distilled Alcoholic Beverage Wholesalers			1.906	0.471
4249	Miscellaneous Nondurable Goods Wholesalers	9	0.332	0.286	0.510
425	Wholesale Electronic Markets and Agents and Brokers	1	0.040	1.557	1.162
4251	Wholesale Electronic Markets and Agents and Brokers	1	0.040	1.557	1.162
44----	Retail trade	1,236	1.028	1.334	1.041
441	Motor Vehicle and Parts Dealers	122	0.899	1.357	1.220
4411	Automobile Dealers	74	0.859	1.585	1.296
4412	Other Motor Vehicle Dealers	3	0.296	0.809	0.922
4413	Automotive Parts, Accessories, and Tire Stores	45	1.141	1.000	1.130
442	Furniture & Home Furnishings Stores			0.403	0.692
4421	Furniture Stores			0.321	0.674
4422	Home Furnishings Stores			0.479	0.709
443	Electronics and Appliance Stores	12	0.351	0.614	1.198
4431	Electronics and Appliance Stores	12	0.351	0.614	1.198
444	Building Material and Garden Equipment and Supplies Dealers	77	0.768	1.578	0.977
4441	Building Material and Supplies Dealers	24	0.273	1.624	1.007
4442	Lawn and Garden Equipment and Supplies Stores	53	4.298	1.258	0.767
445	Food and Beverage Stores	278	1.187	0.968	1.025
4451	Grocery Stores	268	1.278	0.967	0.992
4452	Specialty Food Stores	7	0.569	1.094	1.962
4453	Beer, Wine, and Liquor Stores	3	0.244	0.854	0.646
446	Health and Personal Care Stores	241	2.892	1.530	1.317

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
4461	Health and Personal Care Stores	241	2.892	1.530	1.317
447	Gasoline Stations	98	1.386	1.577	0.871
4471	Gasoline Stations	98	1.386	1.577	0.871
448	Clothing and Clothing Accessories Stores	7	0.055	1.305	0.825
4481	Clothing Stores			1.296	0.810
4482	Shoe Stores			1.712	0.855
4483	Jewelry, Luggage, and Leather Goods Stores	7	0.659	0.773	0.923
451	Sporting Goods, Hobby, Book, and Music Stores	2	0.044	0.818	1.019
4511	Sporting Goods, Hobby, and Musical Instrument Stores	2	0.060	0.876	1.064
4512	Book, Periodical, and Music Stores			0.653	0.891
452	General Merchandise Stores	344	1.483	1.857	0.897
4521	Department Stores	325	3.359	2.456	1.498
4529	Other General Merchandise Stores	19	0.140	1.428	0.467
453	Miscellaneous Store Retailers	36	0.602	1.088	1.068
4531	Florists	1	0.171	0.662	0.910
4532	Office Supplies, Stationery, and Gift Stores	7	0.311	0.638	0.860
4533	Used Merchandise Stores	7	0.585	1.259	1.328
4539	Other Miscellaneous Store Retailers	21	1.080	1.630	1.197
454	Nonstore Retailers	18	0.403	1.398	1.973
4541	Electronic Shopping and Mail-Order Houses	1	0.039	1.648	2.886
4542	Vending Machine Operators	1	0.329	0.225	1.243
4543	Direct Selling Establishments	16	1.014	1.213	0.618
54----	Professional, Scientific, and Technical Services	204	0.314	0.427	0.890
541	Professional, Scientific, and Technical Services	204	0.314	0.427	0.890
5411	Legal Services	33	0.344	0.224	0.779
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	77	0.710	0.435	0.873
5413	Architectural, Engineering, and Related Services	49	0.457	0.253	1.081
5414	Specialized Design Services			0.467	0.850
5415	Computer Systems Design and Related Services	5	0.042	0.744	0.998
5416	Management, Scientific, and Technical Consulting Services	18	0.244	0.518	0.917
5417	Scientific Research and Development Services			0.200	0.621
5418	Advertising, Public Relations, and Related Services			0.227	0.818
5419	Other Professional, Scientific, and Technical Services	21	0.432	0.671	0.784
56----	Administrative and Support and Waste Mang and Remediation Srvs	233	0.313	0.480	0.730
561	Administrative and Support Services	188	0.263	0.459	0.736
5611	Office Administrative Services	2	0.055	0.303	0.963
5612	Facilities Support Services			0.000	0.238
5613	Employment Services	102	0.286	0.271	0.613
5614	Business Support Services	2	0.031	0.541	1.597
5615	Travel Arrangement & Reservation Services	7	0.371	0.181	0.391
5616	Investigation and Security Services	3	0.046	0.600	0.438
5617	Services to Buildings and Dwellings	60	0.444	1.004	0.766
5619	Other Support Services	13	0.599	0.410	1.286
562	Waste Management and Remediation Services	45	1.550	0.997	0.591

NAICS code	Description	Estimated employmt.	Location quotients		
			Corridor	Portage	MSA
5621	Waste Collection	32	2.071	0.989	0.601
5622	Waste Treatment and Disposal			1.549	0.398
5629	Remediation and Other Waste Management Services	13	1.352	0.783	0.654

Blank cells indicate no employment in the industry group.

Source: ZIP Code and County Business Patterns, U.S. Census Bureau; author's calculations – see text.