

Measuring the Growth Momentum of Employment in Indiana

What are the high employment growth industries in Indiana? This is a frequently asked question that does not have a simple answer. Let's explore different employment growth measures in an attempt to identify high-employment-growth industries using Covered Employment and Wage data for first quarter 2000 and first quarter 1995. Data for some industries have been suppressed due to disclosure restrictions, resulting in a list of 316 industry sectors at the three-digit SIC level.

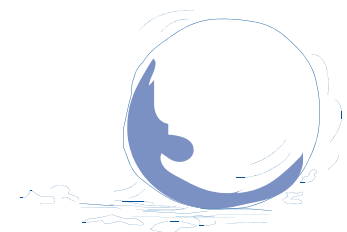
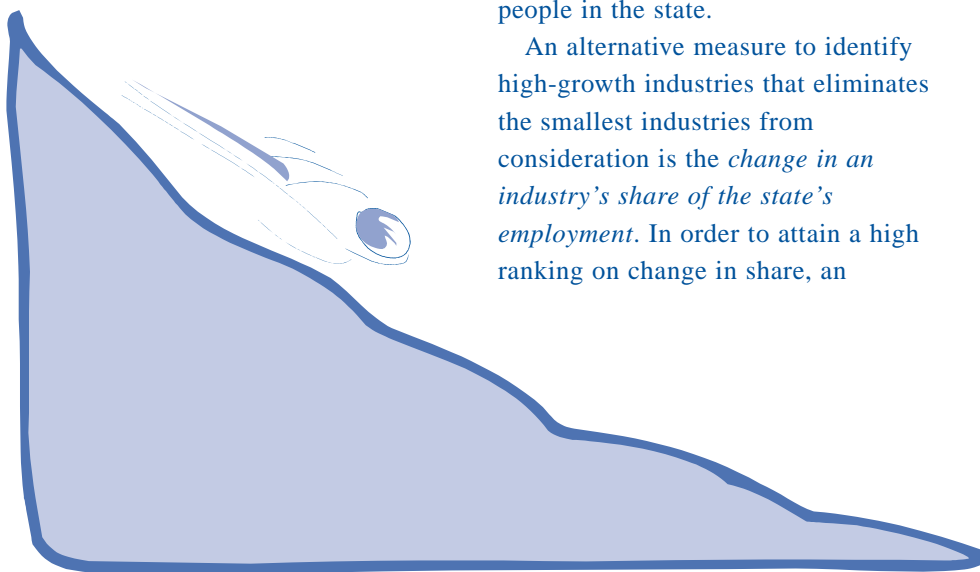
Two common measures of employment growth are *change in employment* and *percent change in employment*. Change in employment tends to overlook significant growth in smaller industries, while percent change can overemphasize very rapid growth in extremely small industries. For example, employment in the fastest-growing telegraph and other message communications sector grew by 450% between 1995 and 2000, but this sector still employs less than 100 people in the state.

An alternative measure to identify high-growth industries that eliminates the smallest industries from consideration is the *change in an industry's share of the state's employment*. In order to attain a high ranking on change in share, an

industry must satisfy two criteria: a fast rate of growth, and large enough in employment size so that its growth results in a noticeable change in the industry's share of statewide employment. In the case of the telegraph and other message communications industry, which grew by 450% over five years, only the growth rate criterion is satisfied. Even in 2000, after experiencing rapid growth, the industry's employment size of fewer than 100 workers leaves this sector with a microscopically small change in its share of total state employment.

However, a drawback to this measure is its treatment of the state's largest industry sectors that are growing, but not as rapidly as the average state growth. For instance, if a very large industry has a growth rate that matches the state average, the industry's change in share is zero. Furthermore, if a large industry's growth rate is slightly below the state average, the industry will show a decline in its share of the state's employment. Between 1995 and 2000, the state's largest sector, Eating and Drinking Places, grew by almost 14,000 in employment, ranking as the state's fourth largest in numeric growth. However the sector's growth rate of 7.5% was below the state average 8.7%, resulting in a decline in

Growth momentum: Picture each industry sector as a snowball, growing as it rolls down a hill.



share. In fact, the sector ranked 298th out of 316 industries, despite healthy growth in an already large sector.

Is there a measure that incorporates both numeric growth and the growth rate? In physics, momentum of an object is calculated as the mass of the object times its velocity. A fast-moving small object and a larger but more slowly moving object might have the same momentum. If two objects have the same mass, then the one that is moving faster will have the larger

momentum. Similarly, if two objects are moving at the same speed, then the object with more mass will have the larger momentum.

Let's put together a simple measure of employment *growth momentum* by multiplying the change in employment for an industry (similar to mass) by the growth rate for that industry (similar to velocity). The result is an attempt to quantify employment growth in industry sectors, using both numeric growth amounts and growth rates. For

industry sectors experiencing decline in employment, the momentum is multiplied by negative one, resulting in negative values of momentum for these sectors.

Table 1 illustrates employment for first quarter 2000, change and percent change in employment between 1995 and 2000, and the growth momentum measure for a subset of industry sectors. The subset of sectors includes any industry that ranks in the top 10 in *(continued on page 11)*

Table 1: Employment Growth Measures, Covered Employment and Wage Data, 1995:1 to 2000:1

SIC	INDUSTRY • Bold: Top 10 in Numeric Change • <i>Italicized: Top 10 in Percent Change</i>	Employment 2000:1	Numeric Change 1995 to 2000	Percent Change 1995 to 2000	Growth Momentum
799	Misc. Amusement, Recreation Services	27,522	15,731	133	2,098,756
451	Air Transportation, Scheduled	19,363	12,082	166	2,004,872
961	<i>Admin. of General Economic Programs</i>	5,264	3,795	258	980,397
736	Personnel Supply Services	67,245	19,597	41	805,999
737	Computer and Data Processing Services	17,763	6,760	61	415,319
874	<i>Management and Public Relations</i>	9,614	4,522	89	401,581
011	<i>Cash Grains</i>	2,181	1,439	194	279,073
821	Elementary and Secondary Schools	164,954	18,069	12	222,275
539	<i>Misc. General Merchandise Stores</i>	7,825	3,181	68	217,889
594	<i>Miscellaneous Shopping Goods Stores</i>	23,316	5,726	33	186,396
371	Motor Vehicles and Equipment	103,936	12,044	13	157,857
801	Offices & Clinics of Medical Doctors	41,616	7,082	21	145,233
581	Eating and Drinking Places	197,763	13,841	8	104,160
822	Colleges and Universities	65,436	6,992	12	83,649
628	<i>Security and Commodity Services</i>	1,155	636	123	77,938
671	<i>Holding Offices</i>	1,072	569	113	64,366
531	Department Stores	72,180	5,807	9	50,806
919	<i>General Government, NEC</i>	69,583	4,977	8	38,341
024	<i>Dairy Farms</i>	514	264	106	27,878
019	<i>General Farms, Primarily Crop</i>	396	219	124	27,097
482	<i>Telegraph & Other Communications</i>	66	54	450	24,300
559	<i>Automotive Dealers, NEC</i>	167	101	153	15,456
806	<i>Hospitals</i>	123,006	4,257	4	15,261
541	<i>Grocery Stores</i>	59,094	-5,180	-8	-41,747
421	<i>Trucking & Courier Services, Ex. Air</i>	56,246	-6,241	-10	-62,333

Source: Indiana Business Research Center and Indiana Department of Workforce Development

Table 2: Ranks of Employment Growth Measures, Covered Employment and Wage Data, 1995:1 to 2000:1

SIC	INDUSTRY • Bold: Top 10 in Numeric Change • <i>Italicized: Top 10 in Percent Change</i>	Employment 2000:1	Numeric Change 1995 to 2000	Percent Change 1995 to 2000	Growth Momentum
799	Misc. Amusement, Recreation Services	12	3	6	1
451	Air Transportation, Scheduled	14	5	4	2
961	<i>Admin. of General Economic Programs</i>	18	15	2	3
736	Personnel Supply Services	7	1	14	4
737	Computer and Data Processing Services	15	9	13	5
874	Management and Public Relations	16	13	11	6
011	<i>Cash Grains</i>	19	17	3	7
821	Elementary and Secondary Schools	2	2	18	8
539	Misc. General Merchandise Stores	17	16	12	9
594	Miscellaneous Shopping Goods Stores	13	11	15	10
371	Motor Vehicles and Equipment	4	6	17	11
801	Offices & Clinics of Medical Doctors	11	7	16	12
581	Eating and Drinking Places	1	4	22	13
822	Colleges and Universities	8	8	19	14
628	<i>Security and Commodity Services</i>	20	18	8	15
671	<i>Holding Offices</i>	21	19	9	16
531	Department Stores	5	10	20	17
919	General Government, NEC	6	12	21	18
024	<i>Dairy Farms</i>	22	20	10	19
019	<i>General Farms, Primarily Crop</i>	23	21	7	20
482	<i>Telegraph & Other Communications</i>	25	23	1	21
559	<i>Automotive Dealers, NEC</i>	24	22	5	22
806	Hospitals	3	14	23	23
541	Grocery Stores	9	24	24	24
421	Trucking & Courier Services, Ex. Air	10	25	25	25

Source: Indiana Business Research Center and Indiana Department of Workforce Development

Table 3: Top 10 Sectors in Employment Growth Momentum

SIC	Sector	Examples of Types of Establishments (from SIC manual, 1987)
799	Misc. Amusement, Recreation Services	Riverboat casinos, amusement parks, public golf courses
451	Air Transportation, Scheduled	Air passenger and cargo carriers, courier services
961	Admin. of General Economic Programs	Government economic development agencies
736	Personnel Supply Services	Employment agencies, temporary and office help
737	Computer and Data Processing Services	Programming, design & development of software, systems development, computer repair
874	Management and Public Relations	Business management and public relations services, consultants
011	Cash Grains	Wheat, rice, corn, soybeans
821	Elementary and Secondary Schools	Schools, academies, boarding schools
539	Misc. General Merchandise Stores	Stores selling department store commodities in limited amounts
594	Miscellaneous Shopping Goods Stores	Sporting goods and bicycle shops, book, jewelry, hobby and gift stores

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employment, change, percent change, change in share or growth momentum.

The result is a list of industry sectors that includes large amounts of employment, large numeric growth, high percent growth, large increases in share of the state's employment and high momentum. This allows us to compare the various growth measures and subsequent rankings for these highest-ranking industry sectors. Table 2 contains the rankings for each growth measure for these industries. The industry sectors are listed in descending order of momentum in both tables.

The top 10 sectors in terms of momentum have numeric employment growth figures that range from 1,400 (cash grains) to almost 20,000 (personnel supply services). Employment growth rates range from 12% (elementary and secondary schools) to 258% (administration of general economic programs). Examples of the types of establishments found in each of the top 10 momentum sectors can be found in Table 3.

Picture each industry sector as a snowball, growing as it rolls down a hill. The sectors that are experiencing the largest amounts of numeric growth in employment are the ones that are adding the most snow. The sectors with the largest growth rates are moving the fastest. Figure 1 is a scatterplot that shows numeric growth and percent change in employment between 1995 and 2000 for each of the top 10 momentum sectors.

Faster-moving sectors that are

adding larger numbers of employees are miscellaneous amusement and recreation services, and air transportation, scheduled, and air courier services. These are the two sectors that are rolling quickly (growth rate more than 100%) and adding large amounts of snow (more than 10,000 employees).

Fastest-moving sectors that are adding fewer employees are administration of general economic programs and cash grains. These are the two snowballs that are moving very quickly but not adding as much snow as the sectors above (less than 10,000 employees).

Sectors that are adding the largest numbers of employees but are moving more slowly are personnel supply services, and elementary and

secondary schools. Sectors that are adding smaller numbers (less than 10,000 employees) and moving more slowly (growth rate less than 100%) are computer, data processing and other computer-related services; miscellaneous shopping goods stores; management and public relations services; and miscellaneous general merchandise stores.

It is important to note that terms such as "more slowly" and "smaller numbers" are relative. These 10 industry sectors are those with the highest employment growth momentum measures in the state economy. Each of these industries is growing faster than the state average of 8.7% between 1995 and 2000, and each industry added a large number of new employees.

Figure 1: Top 10 Sectors in Employment Growth Momentum

SIC codes 451 and 799 stand out with high growth numbers and rates

