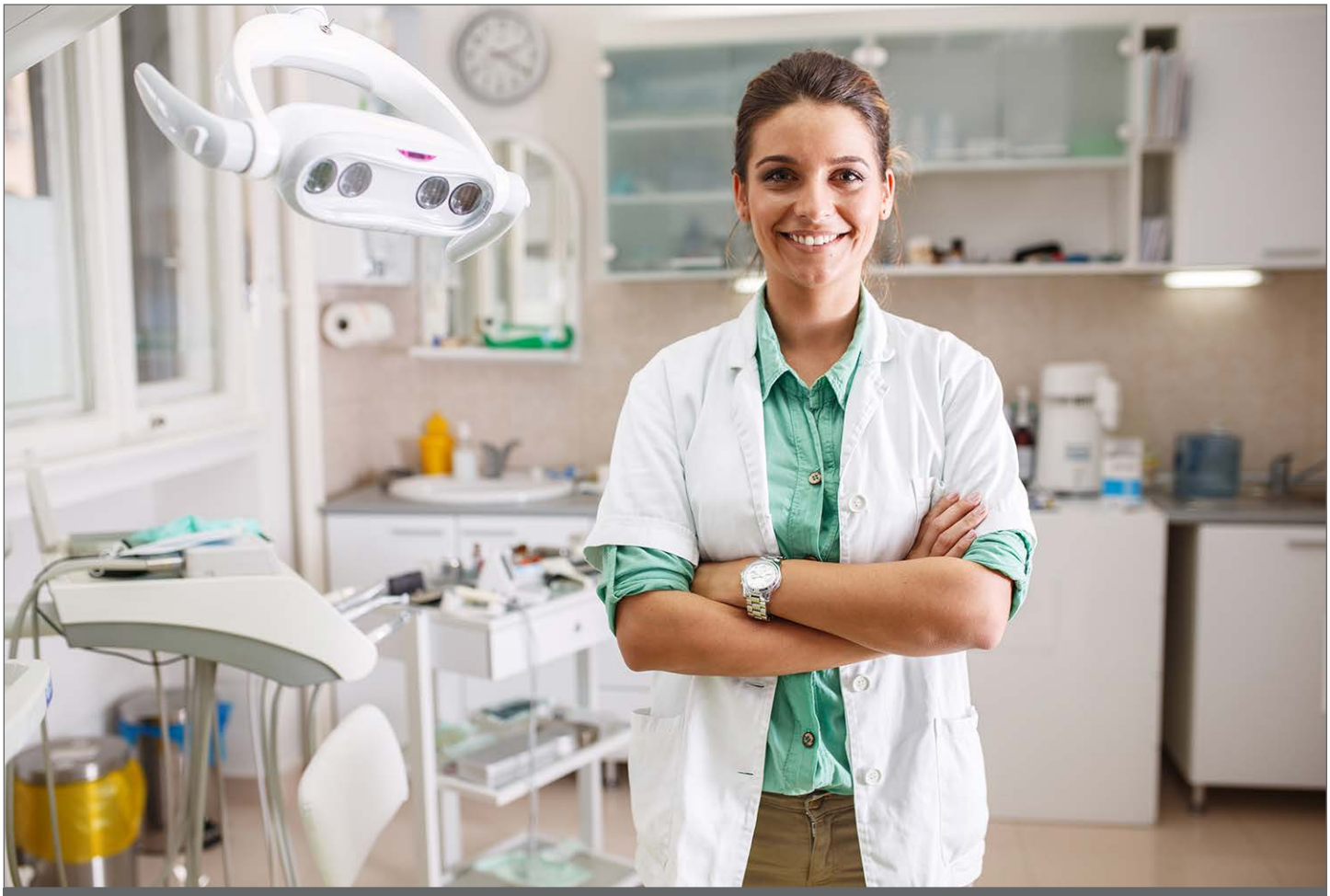
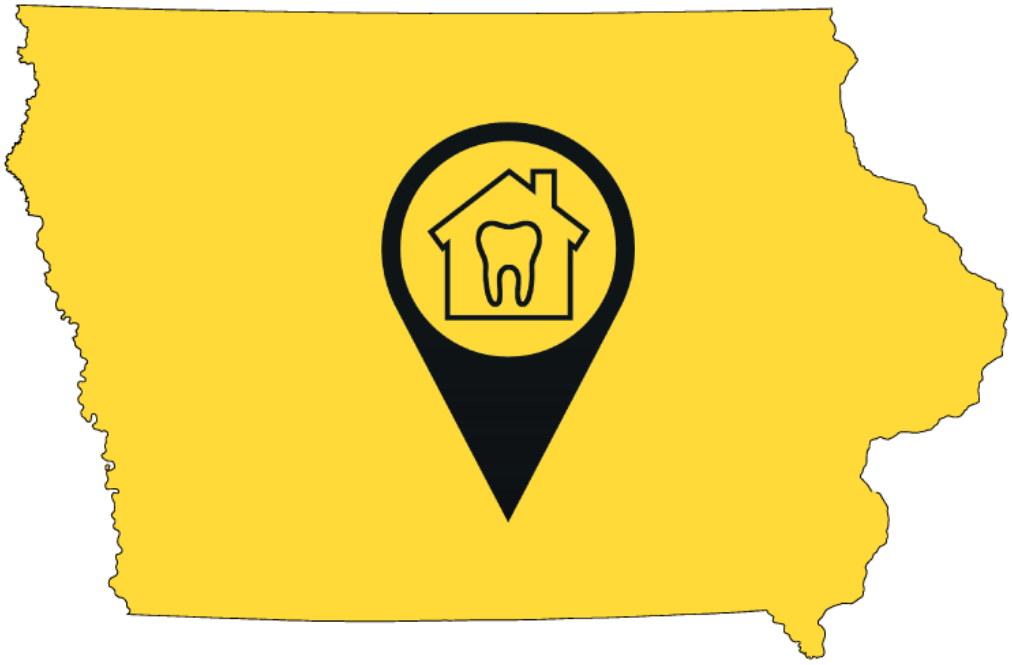


Iowa Dentist Workforce Atlas, 1997-2016: 20 Years of the Iowa Dentist Tracking System



County-Level Data

Population Change

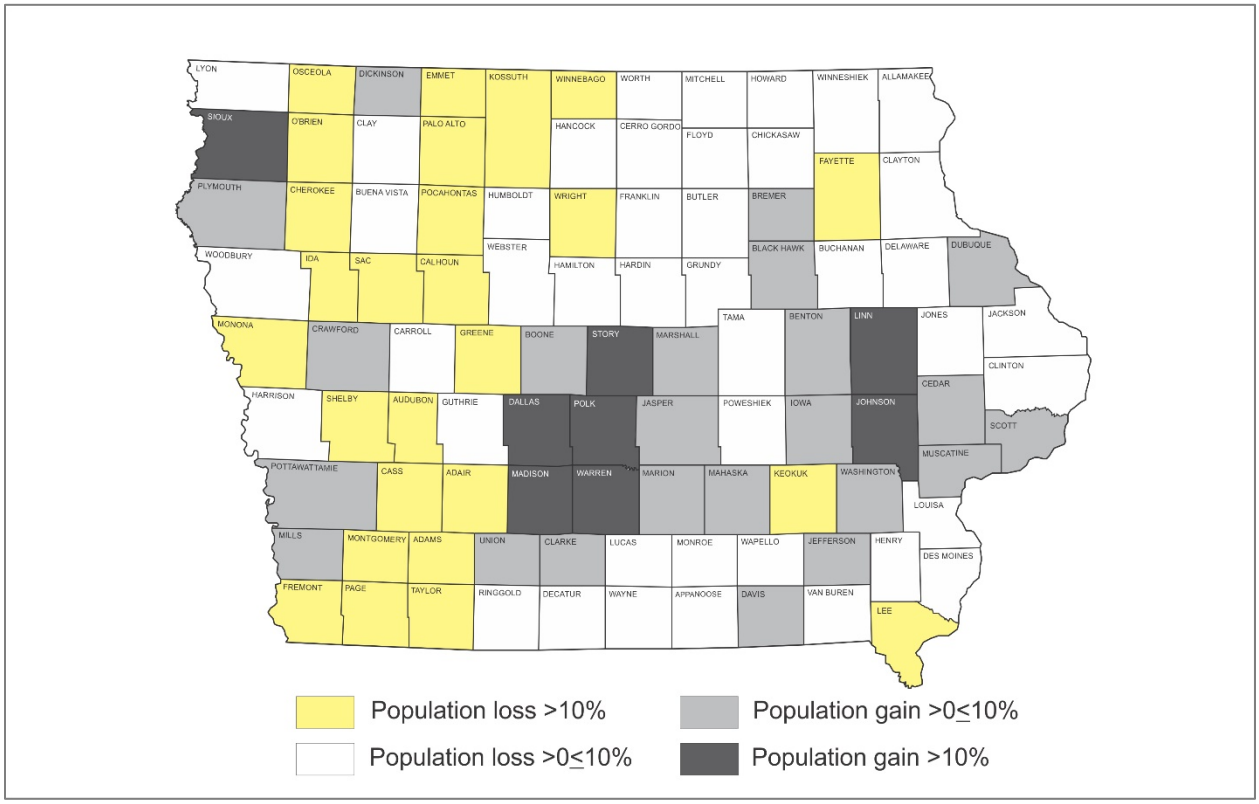


Figure 1311. Estimated population gain/loss in percentages for Iowa counties, 2000-2017

Although migration patterns have shifted throughout the 20th century, there was a profound change in 1980s Iowa with the confluence of (1) the farm crisis, which adversely impacted the economic well-being of small, farming-dependent communities, (2) metro- and micropolitan towns built several regional malls, which shifted retail opportunities away from small, isolated communities, and (3) the introduction of large discount stores (e.g., Walmart) in the state, which created severe competition with small retail stores in the same geographic region. The growth of regional economies within Iowa led to an outmigration from many rural communities.

Iowa's population growth during the past few decades has primarily been across the middle of the state. Conversely, many rural counties in the northern tier and southern two tiers have been losing population for nearly the entire century.

With the exception of Latino immigration into the state, Iowa's population growth during the past quarter century has been negligible. The Latino population now accounts for slightly more than 5% of the state's population and approximately 10% of the 18 and under population. Between 2000 and 2015, only 3 Iowa counties saw a decline in Latino population.

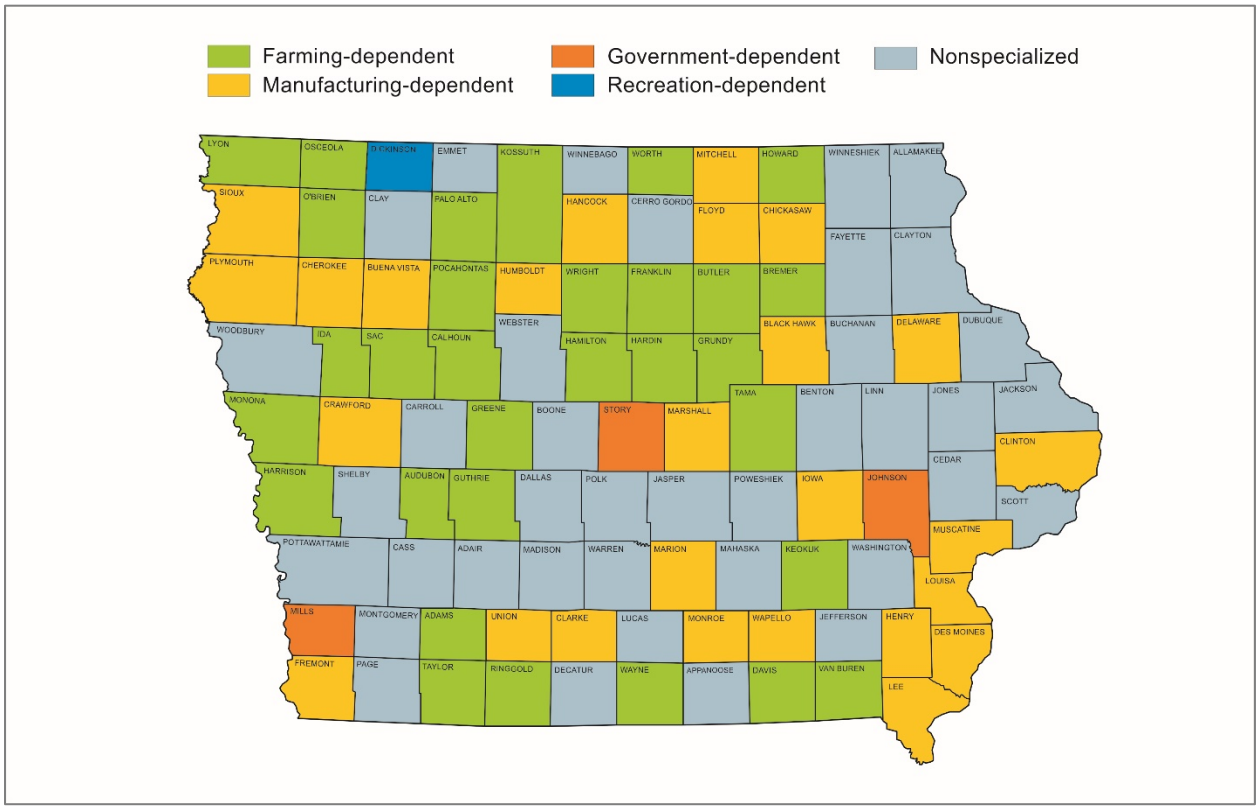
Two of the principal employment sectors of traditional rural counties have been agriculture and manufacturing. Agriculture in rural counties has seen some shifts since last decade's Great Recession. While agricultural employment in northern Iowa grew, the two southernmost tiers experienced a loss in agricultural employment.

While manufacturing employment generally declined statewide during the Great Recession, Iowa's urban areas appear to be recovering faster than their rural counterparts. The exceptions for micropolitan and metropolitan areas were in Jasper, Marion, Muscatine, and Woodbury counties. The loss of jobs in Jasper and Marion is likely associated with the closure of Maytag Industries in Newton.

Sources:

- Kusmin L. *Rural America at a Glance: 2016 Edition*. Washington, DC: Economic Research Service, US Department of Agriculture; November 2016, Economic Information No. EIB-162.
- *A Snapshot of Rural Iowa*. Ames, Iowa: Iowa State University Extension and Outreach. June 30, 2015.

County Economic Typology



Source: US Department of Agriculture, Economic Research Service

Figure 1322. Iowa county non-overlapping economic typology codes, 2015

This figure provides 2015 typological information about each county, which is based on data from the US Department of Agriculture's Economic Research Service. The map shows the non-overlapping economic types, determined by the most prevalent job source. However, there are 7 counties that reach the threshold for inclusion in more than one category (i.e., overlapping indicators). Although farming was the most common employment source for Hamilton, Howard, and Kossuth Counties, nonetheless each county also reached the threshold for manufacturing. Conversely, in Adams, Ida, Van Buren, and Webster Counties manufacturing was the primary employment source, but each still met the threshold for farming, as well. Counties coded as "nonspecialized" did not meet minimum percentage thresholds to be earmarked for one of the other non-overlapping categories.

The US Department of Agriculture classifies all US counties "according to six mutually exclusive categories of economic dependence" including: farming, mining, manufacturing, federal/state government, recreation, and non-specialized. (http://www.ers.usda.gov/data-products/county-typology-codes/documentation.aspx).

- **Farming**-dependent: farming accounted for 25% or more of the county's earnings or 16% of more of the total employment, averaged during the years 2010-2012.

- **Mining**-dependent: mining accounted for 13% or more of the county's earning or 8% or more of the total employment, averaged during the years 2010-2012. (There are no Iowa counties that fit this category.)
- **Manufacturing**-dependent: manufacturing accounted for 23% or more of the county's earnings or 16% or more of the total employment, averaged during the years 2010-2012.
- **Federal/state government**-dependent: federal or state government accounted for 14% or more of the county's earnings or 9% or more of the employment, averaged during the years 2010-2012.
- **Recreation**-dependent: a combination of employment, earnings and seasonal housing were converted to z-scores. An index score of 0.67 or higher was necessary to be included as a recreation-dependent county.
- **Non-specialized**: the county did not qualify as dependent on any of the farming, mining, manufacturing, government, or recreation categories.

Table 11. National versus Iowa typology[8]

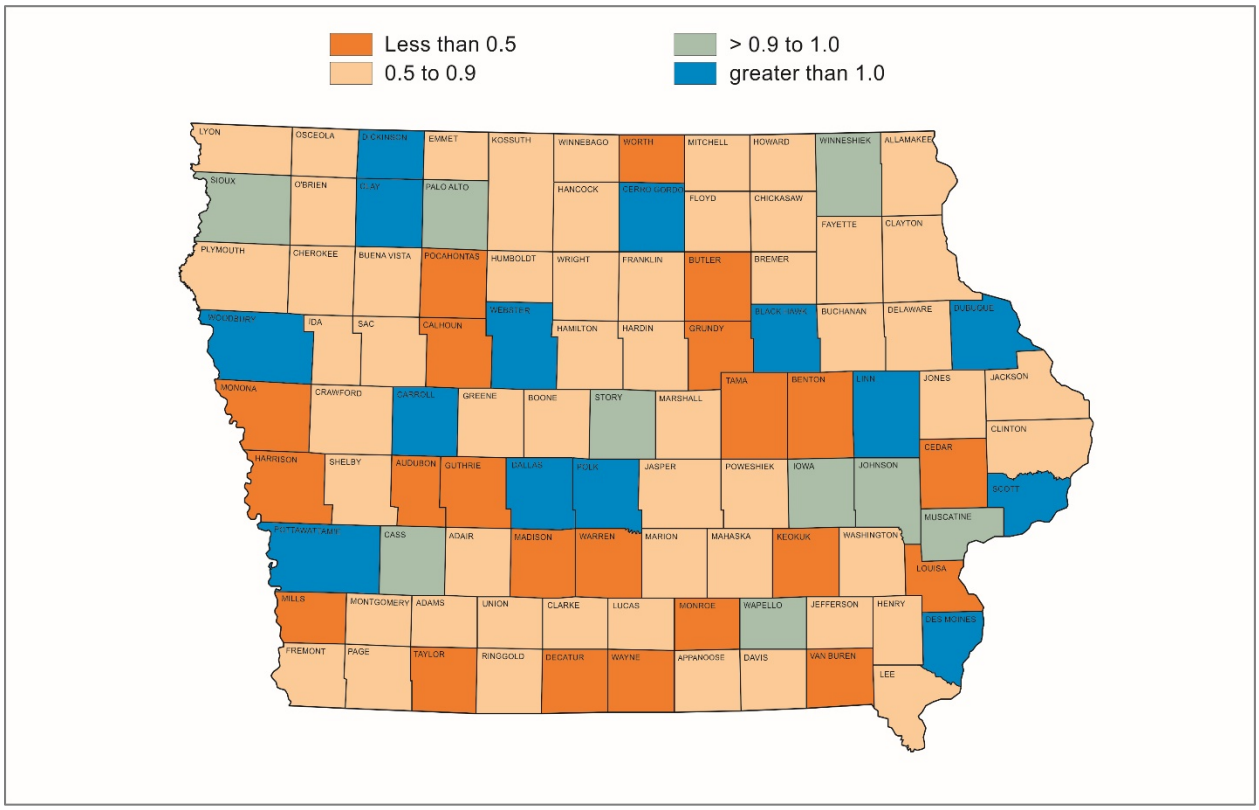
Non-overlapping Categories	US Counties (N=1976)	Iowa Counties (N=99)
Farming-dependent	19.8%	26.3%
Mining-dependent	9.3%	0.0%
Manufacturing-dependent	17.8%	30.3%
Government-dependent	12.0%	3.0%
Recreation	11.5%	1.0%
Non-specialized	29.6%	39.4%
TOTAL	100%	100%

Additional items from the USDA ERS data source include:

- Buena Vista and Crawford were the only Iowa counties in which more than 20% of its residents age 25 to 64 did not have a high school diploma or equivalent (2008-2012);
- No Iowa county was classified as having persistent poverty (i.e., 20% or more residents were poor as measured by the 1980, 1990, and 2000 censuses, plus the 2007-2011 American Community Survey [ACS] estimate);
- However, Ringgold had the distinction of being the only Iowa county with persistent child poverty, using the same census data and ACS estimate; and
- Dallas was the only Iowa county where the number of residents 60 years and older grew by 15% or more between the years 2000 and 2010.

[8] Description and maps. County economic types. (2015 edition). County typology codes. US Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/data-products/county-typology-codes/descriptions-and-maps/ Updated: May 31, 2017.

Pull Factor



Source: Iowa State University Department of Economics, Retail Trade Analysis

Figure 1333. Iowa county pull factor: regional trade patterns, 2017

Generally, there are three measures that assess retail sales performance: trade surplus or leakage, trade area capture, and pull factor ratio.

Trade area capture estimates the number of consumers within an area for which the retail needs are satisfied. The trade area capture is determined by dividing the community's (e.g., county) actual total sales by the estimated mean annual retail needs of its residents. When the number is in excess of the population, then the trade area is seen to go beyond the county boundary. The opposite is true when the trade area either overlaps or is subsumed by a contiguous county.

In turn, pull factor ratio is created by dividing the trade area capture by the county population. A pull factor ratio of 1.0 indicates that the local merchants satisfy the retail demands of county residents. If the ratio is in excess of 1.0, it would indicate that merchants are drawing consumers from outside the county. A ratio below 1.0 indicates that local merchants cannot meet the county's retail needs.

Why is this important? There is ample literature that suggests consumers tend to select dentists who are near active consumer markets. Thus, it will probably be economically disadvantageous for a dentist to locate in a county where the pull factor ratio is low, all other factors considered.

Table 12. 30 largest Iowa cities, by population (based on 2016 US Census population estimates)

Rank	City	Population 2016	Population Change Since 2000	County	County Seat?	Total Dentists 2016	Private Practice Dentists 2016				
							GPs	Specialists	Solo	Group	Corporate
1	Des Moines	215,472	16,790	Polk, Warren	Y	101	73	14	38	41	7
2	Cedar Rapids	131,127	10,369	Linn	Y	90	64	24	30	54	4
3	Davenport	102,612	4,253	Scott	Y	62	46	14	31	26	3
4	Sioux City	82,872	-2,141	Woodbury, Plymouth	Y	54	39	9	17	24	6
5	Iowa City	74,398	12,178	Johnson	Y	109	29	11	16	22	2
6	Waterloo	67,934	-813	Black Hawk	Y	40	28	8	16	18	2
7	Ames	66,191	15,460	Story		37	25	11	10	24	2
8	West Des Moines	64,560	18,157	Polk, Warren, Dallas		76	45	30	22	46	6
9	Council Bluffs	62,524	4,256	Pottawattamie	Y	43	30	11	14	20	7
10	Ankeny	58,627	31,510	Polk		32	26	6	9	18	3
11	Dubuque	58,531	845	Dubuque	Y	61	39	19	11	44	3
12	Urbandale	43,018	13,946	Polk, Dallas		19	17	2	7	12	0
13	Cedar Falls	41,390	5,245	Black Hawk		24	16	8	13	10	1
14	Marion	38,480	12,186	Linn		9	9	0	6	3	0
15	Bettendorf	35,727	4,452	Scott		32	20	12	9	23	0
16	Mason City	27,430	-1,742	Cerro Gordo	Y	22	17	5	7	14	1
17	Marshalltown	27,328	1,319	Marshall	Y	17	12	2	6	8	0
18	Clinton	25,719	-2,053	Clinton	Y	20	14	4	5	13	0
19	Burlington	25,277	-1,562	Des Moines	Y	11	8	3	6	5	0
20	Ottumwa	24,487	-511	Wapello	Y	16	10	3	11	2	0
21	Fort Dodge	24,441	-695	Webster	Y	15	9	5	9	3	2
22	Muscatine	23,914	1,217	Muscatine	Y	9	7	2	8	1	0
23	Johnston	21,114	12,465	Polk		10	9	0	5	4	0
24	Coralville	20,397	5,274	Johnson		28	14	9	10	12	1

Rank	City	Population 2016	Population Change Since 2000	County	County Seat?	Total Dentists 2016	Private Practice Dentists 2016				
							GPs	Specialists	Solo	Group	Corporate
25	Waukee	19,284	14,158	Dallas		5	4	1	1	4	0
26	North Liberty	18,520	13,153	Johnson		10	7	3	1	9	0
27	Altoona	17,938	7,593	Polk		7	6	1	4	2	0
28	Clive	17,546	4,691	Dallas, Polk		9	9	0	5	2	2
29	Indianola	15,785	2,787	Warren	Y	8	8	0	3	5	0
30	Newton	15,034	-545	Jasper	Y	11	7	3	5	2	2

Since 2000, 22 of the 30 largest cities in Iowa gained population. Of these cities, 17 are county seats.

In 2016, 64.5% of all Iowa dentists – including 62% of private practitioners -- were located in these 30 cities. Of private practitioners in these communities, 57% and 84.3% were general practice dentists and dental specialists, respectively.

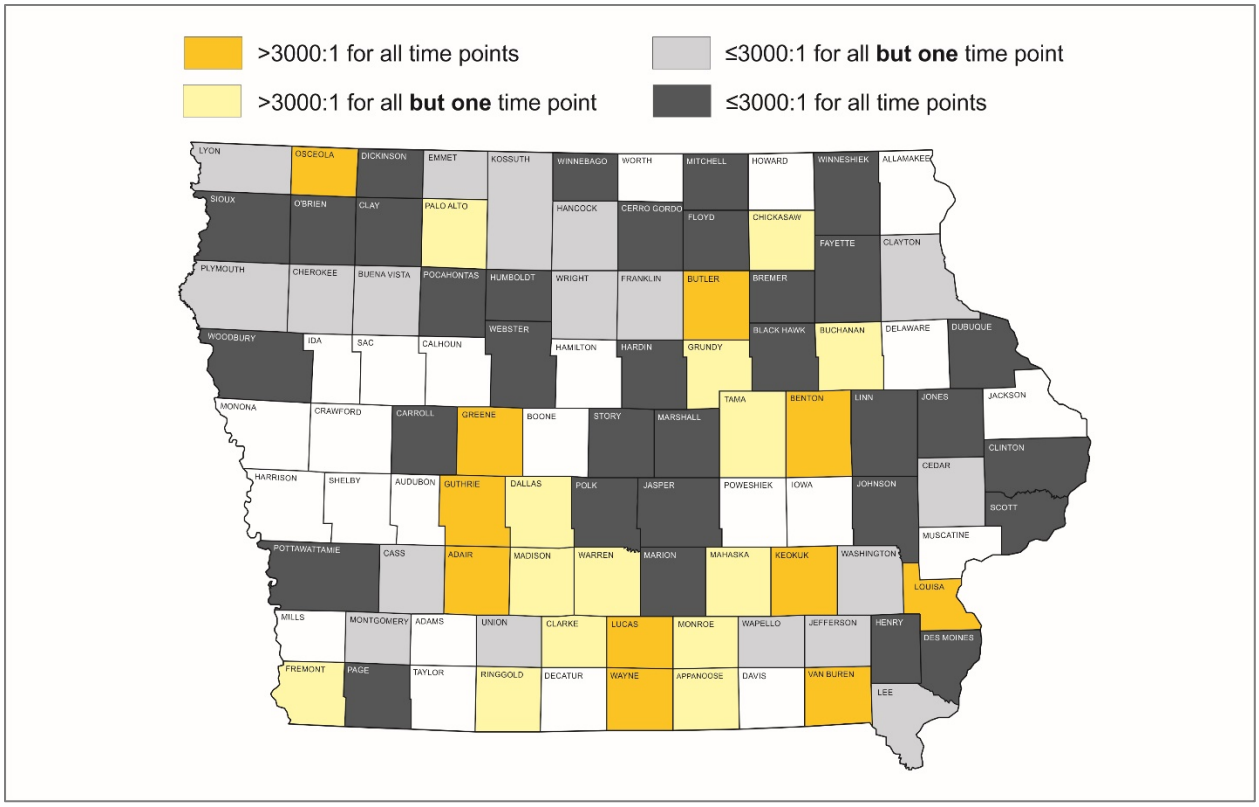


Figure 1344. County population-to-dentist ratio trends, 1965 through 2016

This figure displays 4 different levels of population-to-dentist ratios during the past half century:

1. Counties where the population-to-dentist ratio exceeded 3,000:1 for each of the sentinel years (n=11);
2. Counties where the population-to-dentist ratio exceeded 3,000:1 for 5 of the 6 sentinel years (n=14);
3. Counties where the population-to-dentist ratio was less than or equal to 3,000:1 for 5 of the 6 sentinel years (n=18); and
4. Counties where the population-to-dentist ratio was less than or equal to 3,000:1 for each of the sentinel years (n=33).

This graph visually demonstrates which counties persistently were at the higher and lower ends of the population-to-dentist spectrum. Although it may be altruistic to select those counties with the highest population-to-dentist ratios for dentist recruitment efforts, it might be more prudent to concentrate efforts for those counties where both recruitment and retention are most likely to occur.

Two counties, Butler and Van Buren, had a population-to-dentist ratio of greater than 5,000:1 for each of the sentinel years. Conversely, Johnson County was always below 1,000:1.