



Dental Hygiene Workforce in Iowa

Snapshot and Recommendations for a Workforce Monitoring System

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Iowa Dental Board
Iowa Dental Hygienists' Association
Iowa Dental Hygiene Education
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Iowa Department of Public Health
Iowa Workforce Development

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Background

In 2012, the Delta Dental of Iowa Foundation (DDIF) convened a workgroup of stakeholder organizations to investigate factors related to the labor market environment for dental hygienists in Iowa. The initiation of this workgroup came from a paucity of information about hygienist workforce in the state, as well as anecdotes that a workforce surplus is causing difficulty for hygienists trying to find employment.

With the intent to create an ongoing data collection system to monitor trends in Iowa dental hygiene workforce, the DDIF initially invited the Iowa Dental Board (IDB) and the Iowa Workforce Development (IWD), as these groups hold ongoing sources of data about Iowa hygienists. The workgroup then invited representatives from additional stakeholder organizations to solicit broad input on the content and format of a workforce monitoring system. These organizations include the Iowa Dental Hygienists' Association (IDHA), the Iowa Department of Public Health (IDPH), and dental hygiene training programs.

Concurrently, the University of Iowa Public Policy Center (PPC) received an oral health workforce grant from the Health Resources and Services Administration (HRSA) to coordinate and improve oral health workforce activities in Iowa. When the stakeholder group learned of this, representatives from the PPC were invited to collaborate. In order to provide a backdrop on information that had already been collected from dental hygienists in Iowa, the PPC team created a database containing 1) dental hygiene surveys that had been administered in Iowa, and 2) other state dental hygiene surveys for comparison.

The PPC team identified five key data sources for recent information on dental hygienists in the state:

- IDHA survey (2005)
- Allen College survey (2012)
- IDB relicensure data (updated every odd-numbered year)
- IDPH Public Health Supervision data (updated on an ongoing basis)
- Iowa Workforce Development data (updated every year)

This report contains a compilation and synthesis of these existing data sources, and is intended to serve as both a source of background information on the supply of dental hygienists in Iowa as well as a guide for developing an ongoing data collection system for monitoring dental hygiene workforce trends in the future.

Note: most of the data presented in this report are cross-sectional, using different points in time. Therefore, comparisons across data sources should be made with caution. Additionally, all reported proportions are rounded to the nearest whole number; therefore all numbers may not add up to 100%.

Key Findings

Demographics and Distribution

- In 2013, Iowa had 2074 licensed dental hygienists. Of those, 87% are actively practicing dental hygiene in Iowa. Of those not actively practicing in Iowa, half practice outside the state and half are not practicing dental hygiene.
- The highest level of education for more than two thirds of practicing dental hygienists is an associate's degree. Sixty percent of hygienists age 60+ have a baccalaureate degree compared to 22% of those age 20-29.
- Over half of practicing hygienists live within five miles of their workplace, and the majority live in Metropolitan counties.
- Four Iowa counties have zero practicing dental hygienists, and 20 counties have a population-to-dental hygienist ratio of greater than 5,000:1.
- There are 1.06 practicing hygienists for every active dentist statewide.

Education Programs

- The two most reported education programs attended by practicing hygienists were Des Moines Area Community College (24%) and Hawkeye Community College (22%). Collectively, the 5 current dental hygiene programs in Iowa graduate approximately 91 students per year.
- Of those practicing hygienists who received their education in Iowa, 47% work within 30 miles of their education program, and almost one-fifth work over 100 miles away.

Practice Information

- Approximately half of all licensed Iowa hygienists work full time (at least 32 hours per week). The mean number of hours worked per week, on average, was 27 hours (s.d. 11, range 0-81).

Attitudes Regarding Past, Present, and Future Employment

- 70% of respondents to a 2012 survey of Iowa dental hygienists reported that they were "very satisfied" with their choice of dental hygiene as a career, and 27% reported that they were "somewhat satisfied."

Wages and Benefits

- Iowa dental hygienists have a mean hourly wage of \$32.

Public Health Supervision

- There are currently 110 dental hygienists with public health supervision agreements in Iowa. The most common settings that they work are: schools (76%), government public health programs (e.g. WIC clinics) (54%), Head Start programs (52%), and childcare (including preschools) (36%).

Data Source Background and Methodology

2005 IDHA Workforce Survey

In 2005, the Iowa Dental Hygienists Association (IDHA) learned of plans to initiate several new dental hygiene training programs across the state. They also learned that no one had assessed the need for new training programs, so they initiated a study to investigate dental hygiene workforce and education needs in Iowa. They surveyed four dental hygiene training programs, as well as random stratified samples of Iowa dentists and dental hygienists. Response rates were 100% (n=4), 74% (n=411), and 79% (n=378), respectively (1). Descriptive and bivariate statistics were generated from the survey data. We present select findings as presented in their final report. The three survey instruments can be found in **Appendix 1**.

2012 Allen College Survey

In 2012, Allen College, a small private non-for-profit college in Waterloo, IA, administered a 20-item survey to all licensed dental hygienists in Iowa to investigate the demand for a baccalaureate dental hygiene program. Fifty-three percent (n=1074) of surveys were returned. Upon inquiry from the PPC about the current status of the data, Allen College shared all raw data and gave permission to analyze and disseminate findings. Respondents who self-identified as not active in the profession (n=89) were not included in our analysis. Reasons for not being active included the following: retired (n=17), unable to attain a dental hygiene position (n=28), temporarily not in the work force for medical reasons (n=2), temporarily not in the workforce for nonmedical reasons (e.g., child-rearing) (n=21), or employed in another field (n=25).¹ The Allen College survey instrument can be found in **Appendix 2**.

2013 Iowa Dental Board Licensure Renewal

The Iowa Dental Board (IDB) requires all licensed Iowa dental hygienists to renew their license every two years. The renewal application contains several questions that are pertinent to dental hygiene workforce in the state, including practice setting, location, and demographic information. The IDB shared deidentified data for those questions from the 2013 dental hygiene licensure renewal applications, and we performed descriptive analyses. Iowa had 2074 total licensed dental hygienists in 2013. Ninety percent of licensed hygienists reported a valid work address inside Iowa, which we used to generate maps of variables by county. Seven percent (n=149) of licensed dental hygienists reported a work address outside of the state of Iowa. **Appendix 3** lists the states and countries of hygienists working outside of Iowa who maintain an Iowa license. Of those who are not working outside the state, 130 (6.3% of total licensed) dental hygienists reported zero hours worked per week and were considered “inactive.” Due to limitations with the online renewal system, this was our only method for determining practice status.

Hygienists working outside the state and those reporting zero working hours per week were not included in our analysis. One exception, Table

¹ Note that three respondents checked both ‘unable to attain a dental hygiene position’ and ‘employed in another field’.

5 where we report hours worked per week, includes those reporting zero hours (p. 31).

2013 Iowa Department of Public Health – Public Health Supervision

In 2004, the Iowa Dental Board ruled that dental hygienists could practice in public health settings under the public health supervision of a dentist. Several factors characterize public health supervision: 1) a dental hygienist may provide any preventive services that he/she has been delegated to provide by a dentist, 2) these services are provided in a public health setting as defined by the Iowa Dental Board, and 3) an examination by a dentist is not required prior to the provision of these services. This is in contrast to “general” or “direct” supervision in which a dentist must have completed an exam before a dental hygienist can provide any preventive services. In order to practice under public health supervision, hygienists must have at least three years of clinical practice experience and have a written supervisory agreement with an Iowa dentist.

The Iowa Department of Public Health monitors all dental hygienists who have public health supervision status in the state. The written supervisory agreement with an Iowa dentist must include: 1) which preventive services the hygienist may provide, and 2) the public health settings in which those services will be provided. These written agreements are updated on an ongoing basis. The IDPH shared their public health supervision agreements under the Freedom of Information Act, which we then compiled and analyzed. There were 110 total agreements, and 18 were not included in our analysis because they were missing key information.

2014 Iowa Workforce Development Wage and Employment Information

The Iowa Workforce Development (IWD) monitors wage and employment projection information for a large number of occupations in Iowa. Two IWD sources contain information pertinent to dental hygienist workforce in Iowa: the Iowa Wage Survey and their Occupational Projections. The 2013 Iowa Wage Survey is a state-specific update of the national 2012 Occupational Employment Statistics (OES) Wage Survey, a random, stratified, mail-based survey of employment establishments nationwide (2). Approximately 7000 establishments in Iowa are contacted every year as part of the OES Wage Survey (3).

The Occupational Projection estimates are based on annual industry employment data and 2nd quarter occupational employment data (4). Wage and employment information are population-level estimates and therefore cannot be analyzed with other variables.

The following sections outline key findings about dental hygienist workforce in Iowa from these five data sources, and are supplemented with additional citations where appropriate. Information is presented in seven categories – demographics and distribution; education programs; practice information; attitudes regarding past, present, and future employment; wages and benefits; labor market factors; and public health supervision.

Demographics and Distribution

This section describes characteristics of Iowa dental hygienists and where they are located. The mean age of practicing licensed dental hygienists in 2013 was 42.3 (range 22-78) years. The largest proportion of hygienists are age 30-39, 99% are female, and the majority were between age 20-25 years when they graduated from dental hygiene school (**Table 1**). The highest level of education for more than two thirds of practicing dental hygienists is an associate's degree. Sixty percent of hygienists age 60+ have a baccalaureate degree compared to 22% of those age 20-29 (**Table 2**). In 2013, similar proportions of dental hygienists had been licensed in dental hygiene for five years or less and for more than 20 years (**Table 1**).

Over half of practicing hygienists live within five miles of their workplace, and the majority live in Metropolitan Counties (**Table 1**). A Metropolitan County is defined as a county in a metropolitan statistical area (MSA), which is a region with high population density (5).

In 2005, 85% of dental hygienists were married, 10% were separated or divorced, 4% were never married, and 1% were widowed (1).

Of 99 counties in Iowa, 28 have two or fewer licensed hygienists, and 16 have more than 20 (**Figure 1**). **Figure 2** shows the number who are actively practicing; that is, the number who report practicing more than zero hours per week. Fifteen counties have at least one licensed hygienist who is not practicing.

In 14 counties, more than 30% of practicing hygienists are over age 50 (**Figure 3**).

In addition to the four counties without any active dental hygienists, 20 Iowa counties have a population-to-active dental hygienist ratio of greater than 5,000:1 (**Figure 4**). The Health Resources and Services Administration (HRSA) designates a county as a dental health profession shortage area (HPSA) if it has a population-to-*full time equivalent* (FTE) dentist ratio of 5,000:1 or greater. Due to the fact that a considerable proportion of hygienists work part-time, the population-to-dental hygienist ratios in **Figure 4** are an underestimate of the equivalent population-to-FTE dental hygienist ratios.

In 51 counties, population-to-dental hygienist ratios are greater than population-to-dentist ratios²; in 19 counties they are equal; and in 29 counties the population-to-dental hygienist ratios are less than population-to-dentist ratios (**Figure 5**). In total, the statewide ratio of the number of actively practicing dental hygienists (1647) to the total number of dentists (1551) is 1.06 (6).

2 Note: neither population-to-dental hygienist nor population-to-dentist ratios adjust for FTE status.

Table 1. Demographics and distribution of dental hygienists in Iowa

Age (IDB, 2013)	n=1795
≤29 years	17%
30-39 years	31%
40-49 years	26%
50-59 years	20%
60+ years	7%
Gender (IDB, 2013)	n=1795
Female	99%
Male	1%
Highest level of education (Allen College, 2012)	n=983
Associate degree	68%
Bachelor's degree	27%
Dental hygiene certificate (granted prior to 1967)	2%
Master's or Doctorate degree	2%
Age at graduation from dental hygiene school (IDB, 2013)	n=1791
20-25 years	63%
26-30 years	19%
31-35 years	9%
36-40 years	5%
41+ years	4%
Number of years licensed in Iowa (IDB, 2013)	n=1795
<1 year	2%
1-5 years	25%
6-10 years	20%
11-20 years	25%
21-30 years	16%
31-40 years	10%
40+ years	2%
Distance between home and work (IDB, 2013)	n=1601
Less than 1 mile	18%
1.1-5 miles	35%
5.1-10 miles	18%
10.1-20 miles	15%
20.1-30 miles	7%
30.1-40 miles	3%
40.1-60 miles	2%
60.1-100 miles	1%
More than 100 miles	<1%
Practice location (Allen College, 2012)	n=947
Metropolitan County	64%
Non-metropolitan County	36%

Table 2. Dental hygienist age by highest level of education (Allen College Survey, 2012)

	Associate's Degree (n=701)	Certificate in Dental Hygiene (n=26)	Baccalaureate Degree (n=306)	Master's Degree (n=24)	Doctorate (n=2)
Age (years)					
20-29	76%	3%	22%	<1%	0%
30-39	81%	3%	17%	0%	0%
40-49	68%	2%	29%	1%	0%
50-59	53%	1%	41%	4%	0%
60+	18%	8%	60%	12%	3%

Figure 1. All Licensed Dental Hygienists, by County (2013)

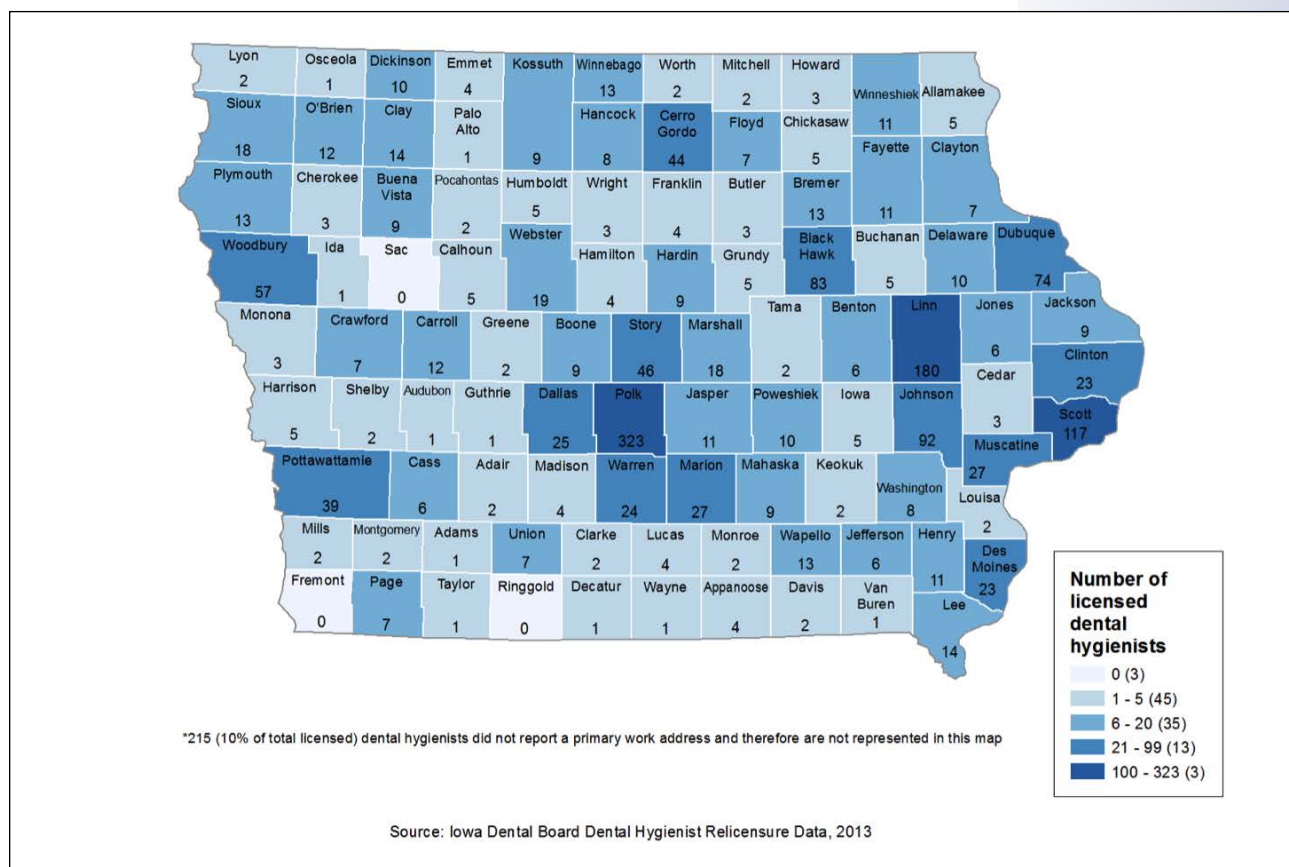


Figure 2. Active Dental Hygienists Only, by County (2013)

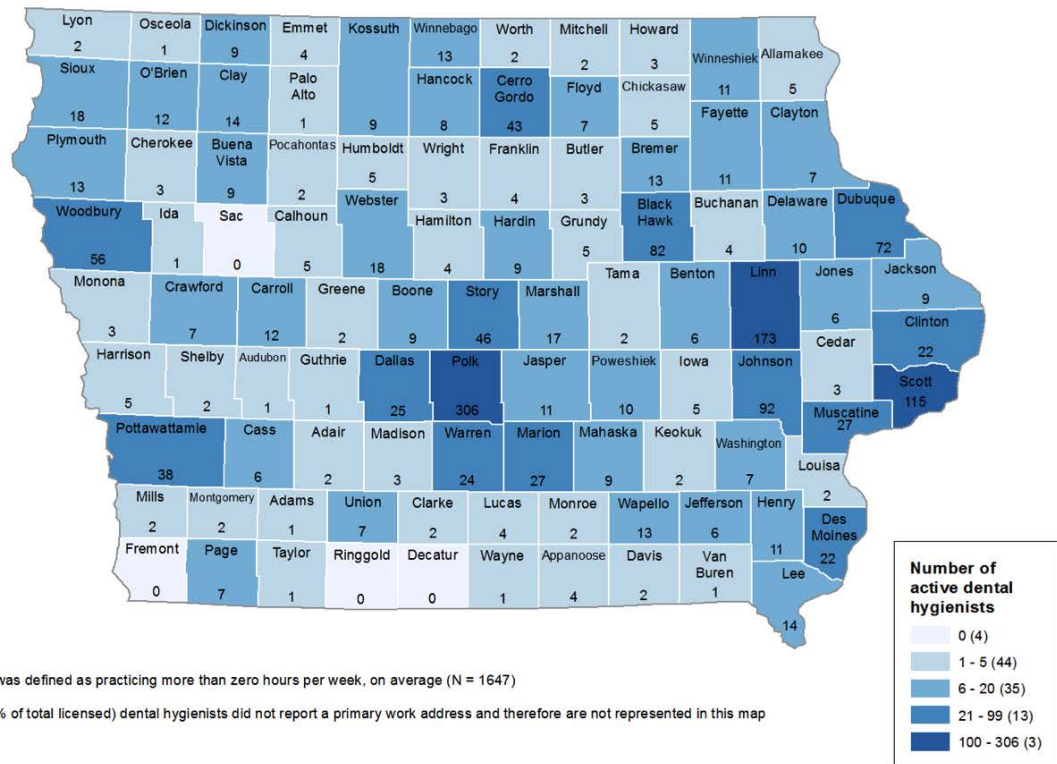


Figure 3. Active dental hygienists over age 50, by county (2013)

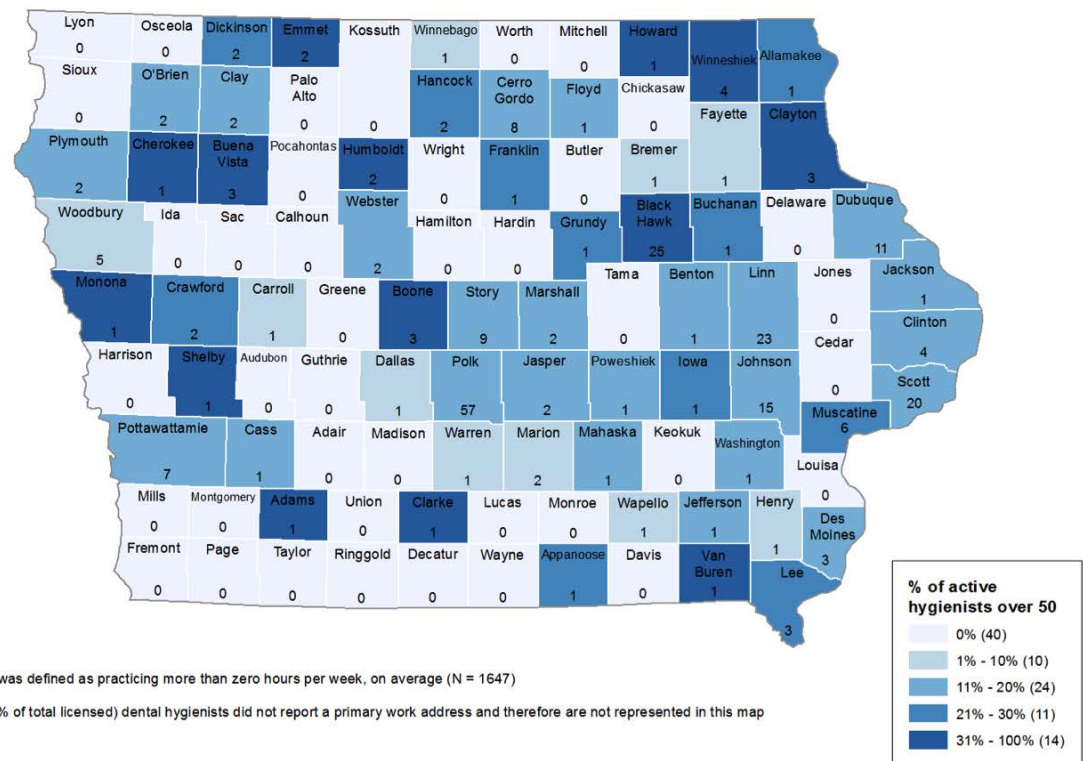
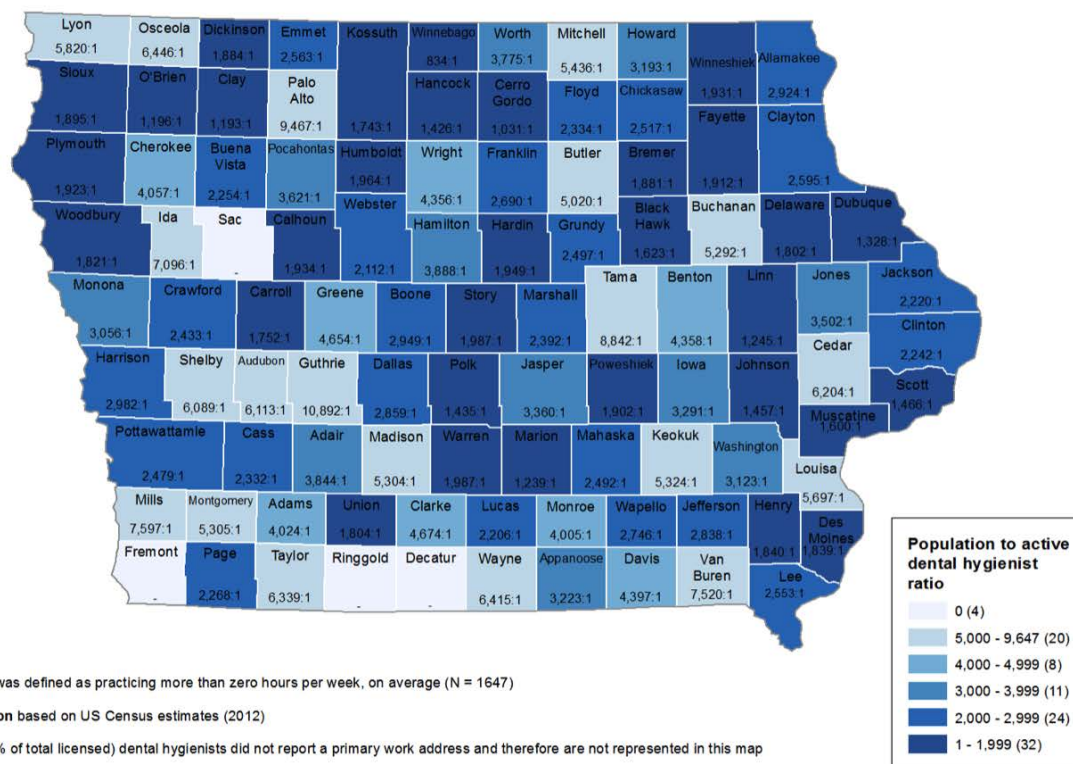
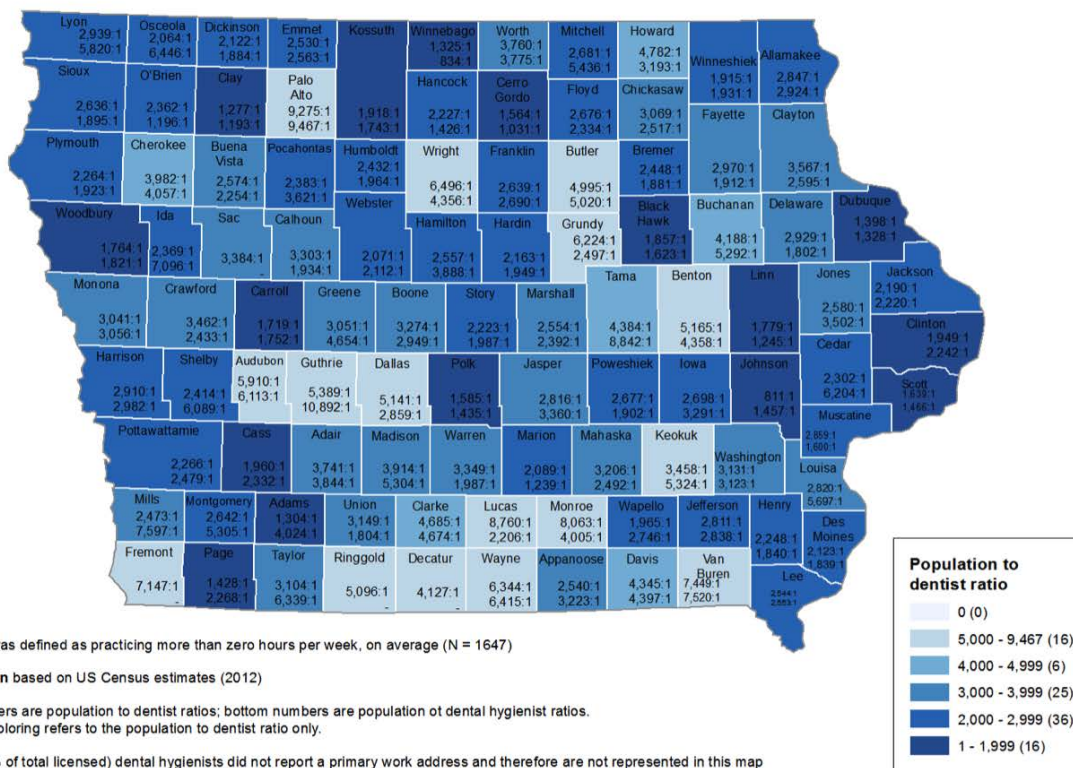


Figure 4. Population to Active Dental Hygienist Ratio, by County (2013)



Source: Iowa Dental Board Dental Hygienist Relicensure Data, 2013

Figure 5. Population to dentist ratio (2012) vs. population to active dental hygienist ratio (2013), by county



Source: Iowa Dentist Tracking System, 2012
Iowa Dental Board Dental Hygienist Relicensure Data, 2013

Education Programs

Iowa currently has five dental hygiene education programs³ that collectively graduated 91 hygienists per year, on average, between 2008-2012. Two programs opened in the early-mid 1970s; two opened in the late 1990s; and one opened in 2006 (**Table 3**). All programs require prerequisite courses in order to be accepted for admission; two require the equivalent of one year of college and three require less than one year. The mean graduating class size from 2008-2012, which is the time period that all five education programs have been open, ranges from 17-22. All five programs offer Associate's degrees only; there are not currently any dental hygiene baccalaureate programs in Iowa. The University of Iowa had the only baccalaureate program in the state from 1953-1995 (7).

The highest proportions of practicing hygienists received their education at the Des Moines Area Community College (DMACC) and Hawkeye Community College (**Table 3**). A relatively high proportion of practicing Iowa dental hygienists, particularly in the northwestern part of the state, were educated at the University of South Dakota in Vermillion, SD. The low proportion of Iowa dental hygienists who graduated from Iowa Western Community College is noteworthy, as it opened one year before Kirkwood Community College and has only slightly smaller graduating class sizes. Therefore, it is possible that many of its graduates are practicing outside of Iowa's borders.

The five dental hygiene programs in Iowa have shown mild fluctuations in class size over the course of that past decade (**Figure 6**). Iowa Western Community College dental hygiene program increased their enrollment in 2012 by 50%, resulting in a graduating class size of approximately 30 students per year starting in 2013 (personal communication, 30 Oct 2014). Table 3 and Figure 6 do not reflect this increase as they include data on graduates through 2012.

All programs except for the newest one, Iowa Central Community College dental hygiene program, graduate a comparable number of students each year, generally between 15 and 25 students, whereas Iowa Central has graduated considerably fewer students since it opened in 2006.

³ A sixth dental hygiene program is planned to begin accepting students in 2016. Indian Hills Community College in Ottumwa will use funds from a federal grant to hire staff, and purchase major equipment and supplies to initiate this program (11).

Table 3. Dental hygiene training program characteristics

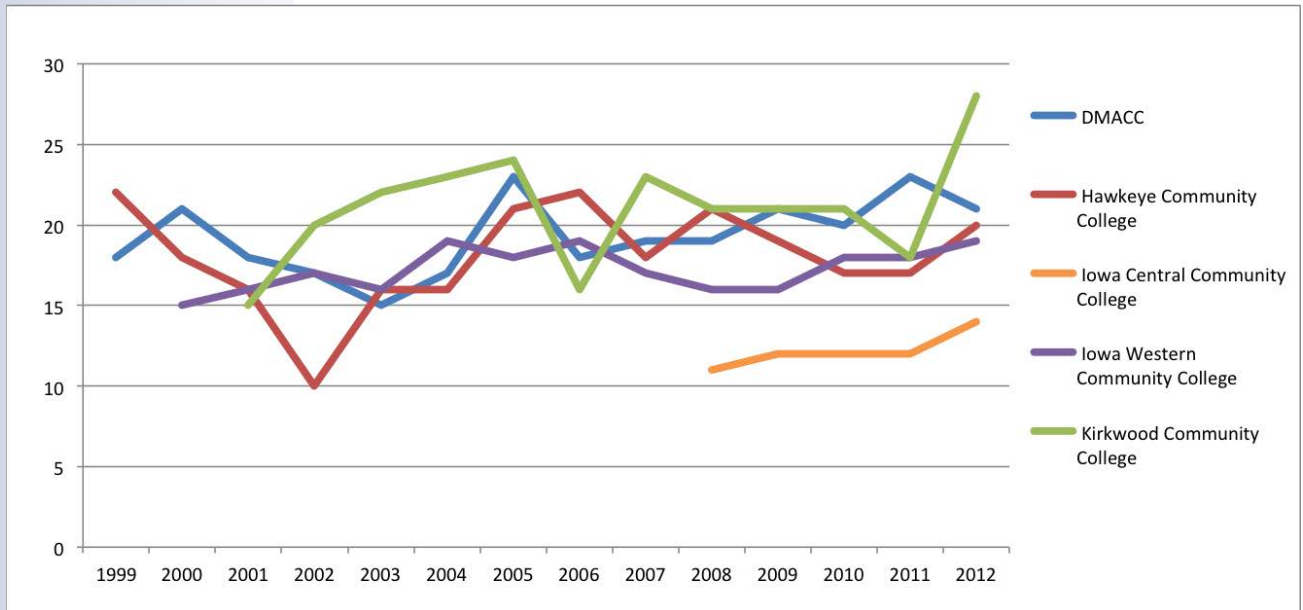
Training Program	Year Program Opened*	Minimum Educational Requirement§	Mean Graduating Class Size (2008-2012)*	Practicing Iowa Hygienists by Education Program Attended (n=1786)†
Des Moines Area Community College Ankeny, IA	1973	One year of college	20.8	24%
Hawkeye Community College Waterloo, IA	1975	Less than one year of college	18.8	22%
Iowa Western Community College Council Bluffs, IA	1998	One year of college	17.4	3%
Kirkwood Community College Cedar Rapids, IA	1999	Less than one year of college	21.8	12%
Iowa Central Community College Fort Dodge, IA	2006	Less than one year of college	12.2	3%
University of South Dakota Vermillion, SD	1969	One year of college	31.4	8%
University of Iowa (discontinued 1995) Iowa City, IA	1953			11%
Other out of state programs				17%

* Personal communication, Commission on Dental Accreditation, 29 Jul 2014.

§ American Dental Association Survey of Allied Dental Education Annual Reports, 1999-2011.

† Iowa Dental Board. Dental Hygienist Licensure Renewal Data. 2013.

Figure 6. Trends in graduating class size among Iowa's dental hygiene training programs, 1999-2012⁴



Hygienists generally practice in the same region of the state as the program where they were educated. **Figures 7-17** show the location of active dental hygienists categorized by their education program. **Figures 8-17** provide a more detailed view of counties that have high concentrations of dental hygienists. The northwest region contains a large number of hygienists who graduated from the University of South Dakota (**Figure 7**). The northern and eastern borders also have considerable numbers of graduates from education programs outside of Iowa.

For those hygienists who attended one of the five currently operating dental hygiene education programs in Iowa or the discontinued University of Iowa program, we calculated the distance from that education program to their current work address to quantify how people spread geographically from where they were educated. The mean distance between work address and education program is 53 miles (median 35, s.d. 60, range 0.1-406). Forty-seven percent of hygienists work within 30 miles of where they were educated, and almost one-fifth work over 100 miles away (**Table 4**).

Table 4. Distance between work and Iowa dental hygiene education program

Distance between work and education program (IDB, 2013)	n=1367
Less than 5 miles	21%
5.1-10 miles	12%
10.1-20 miles	9%
20.1-30 miles	5%
30.1-40 miles	7%
40.1-60 miles	14%
60.1-100 miles	14%
More than 100 miles	19%

⁴ Data are from the American Dental Association Survey of Allied Dental Education Annual Reports, 1999-2011.

Figure 7. Locations of active dental hygienists categorized by their education program, 2013 (N=1647)

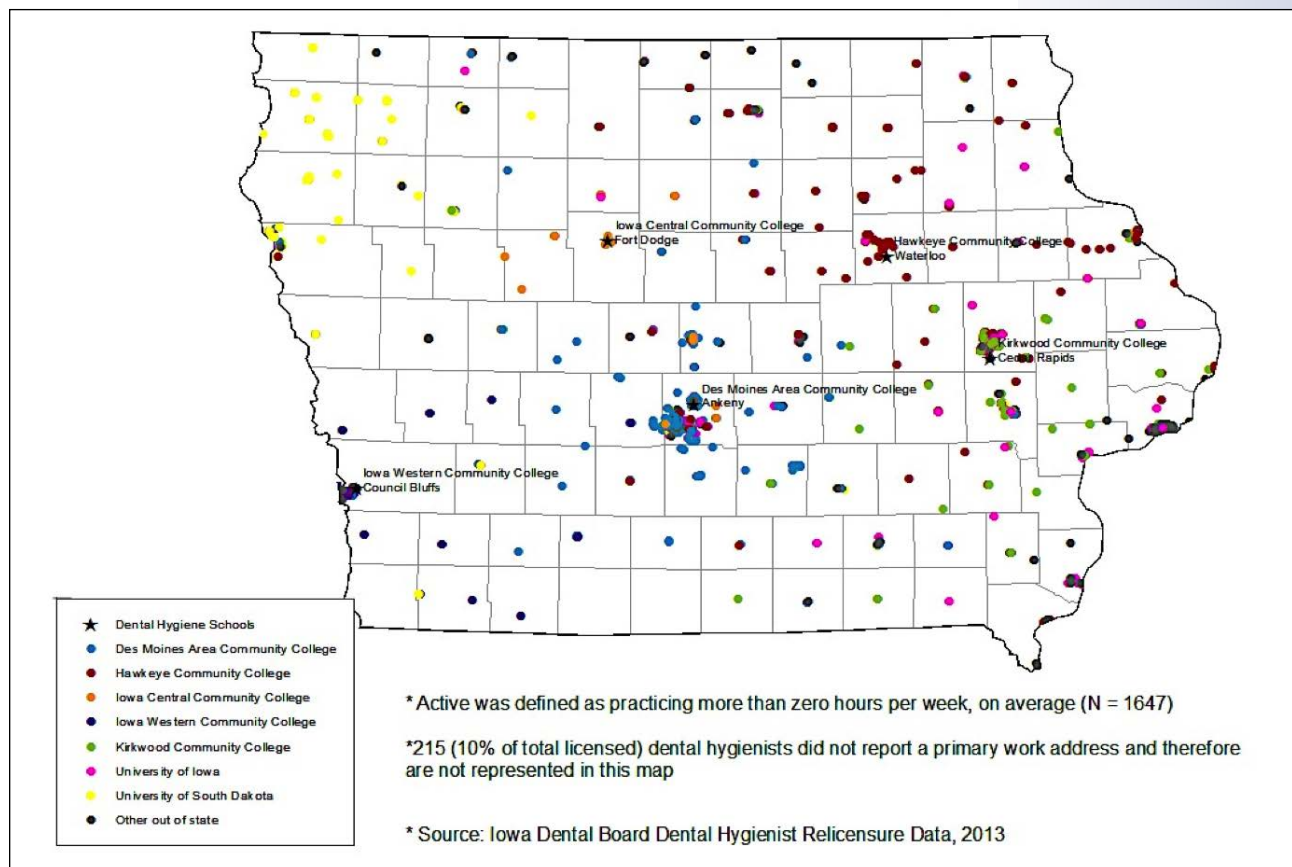


Figure 8. Locations of active dental hygienists categorized by their education program, Black Hawk County, 2013 (N=82)

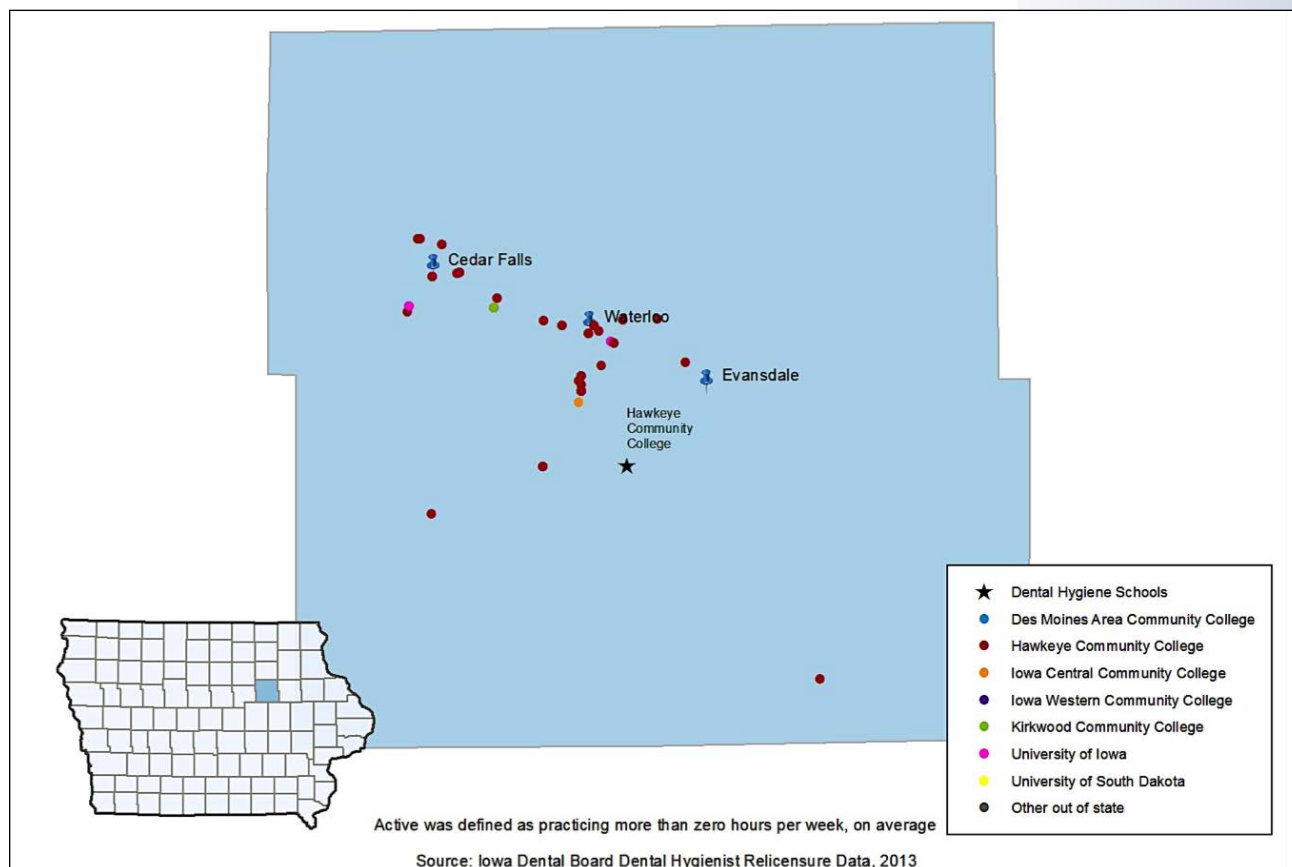


Figure 9. Locations of active dental hygienists categorized by their education program, Cerro Gordo County, 2013 (N=43)

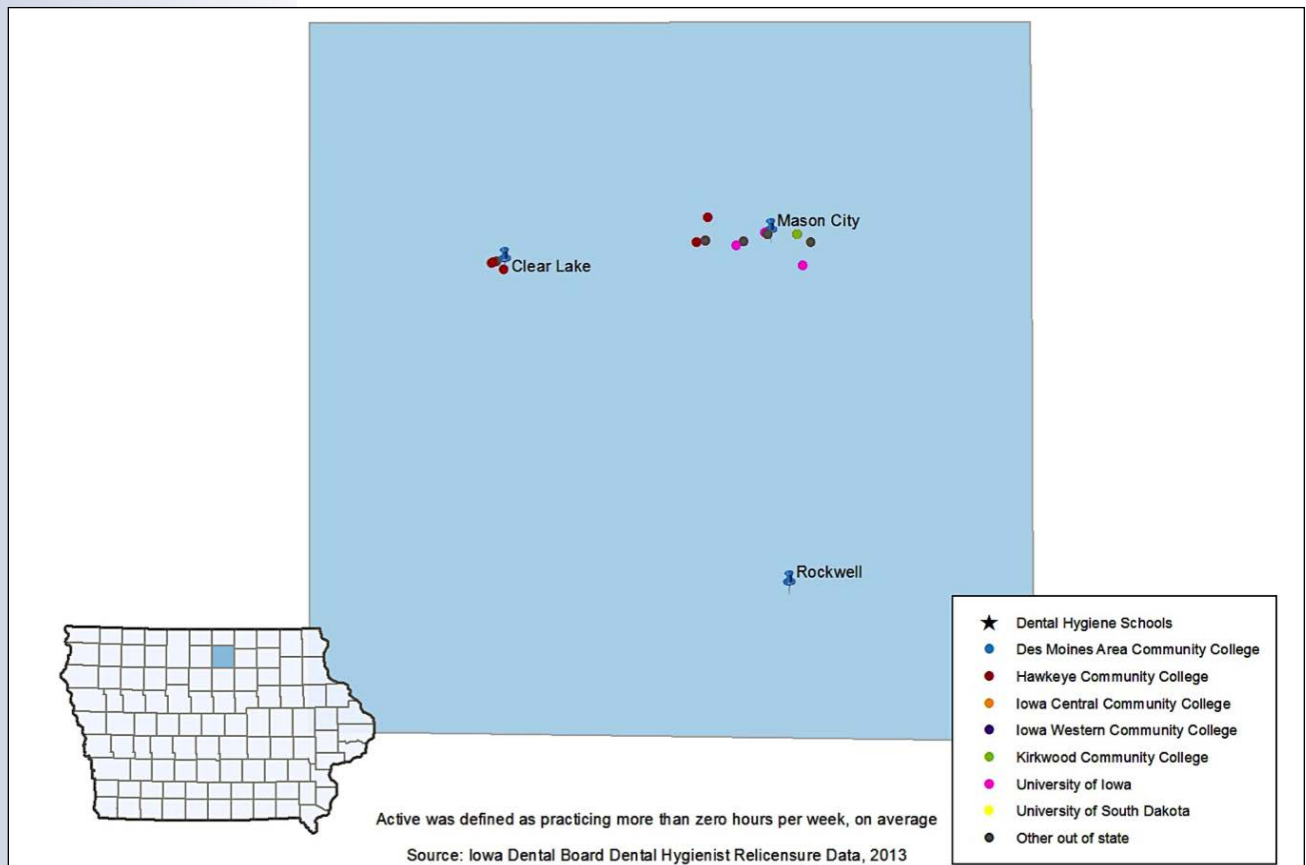


Figure 10. Locations of active dental hygienists categorized by their education program, Des Moines County, 2013 (N=22)

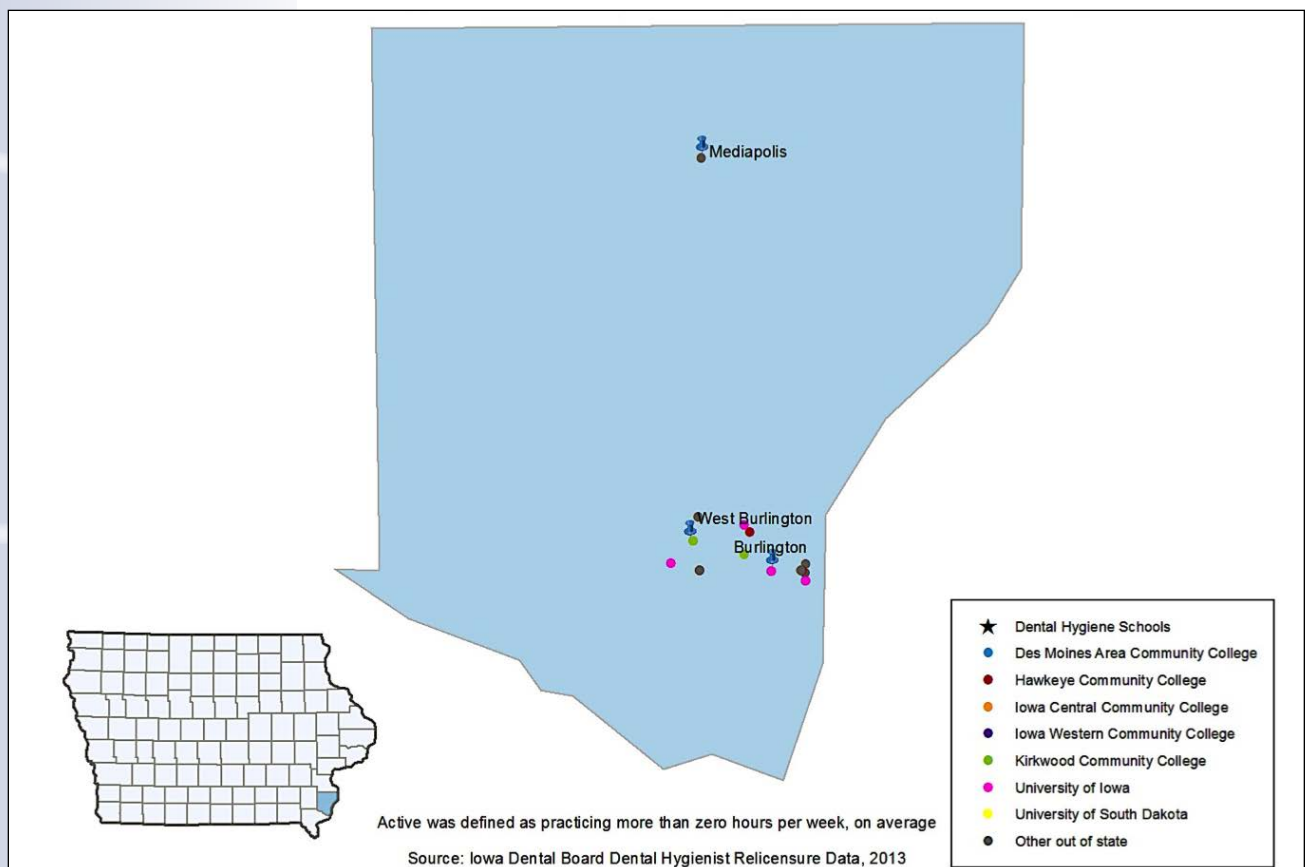


Figure 11. Locations of active dental hygienists categorized by their education program, Dubuque County, 2013 (N=72)

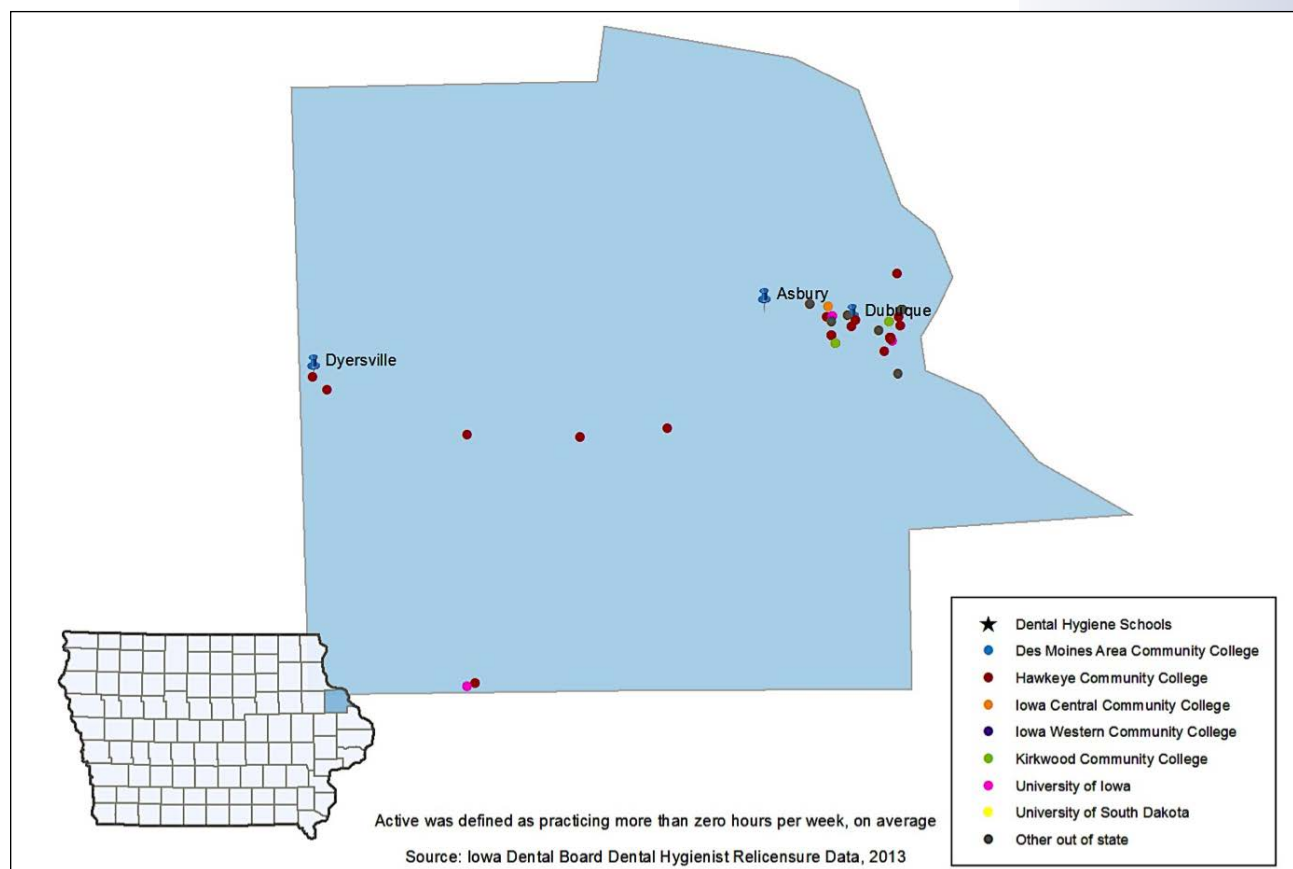


Figure 12. Locations of active dental hygienists categorized by their education program, Johnson and Linn Counties, 2013 (N=265)

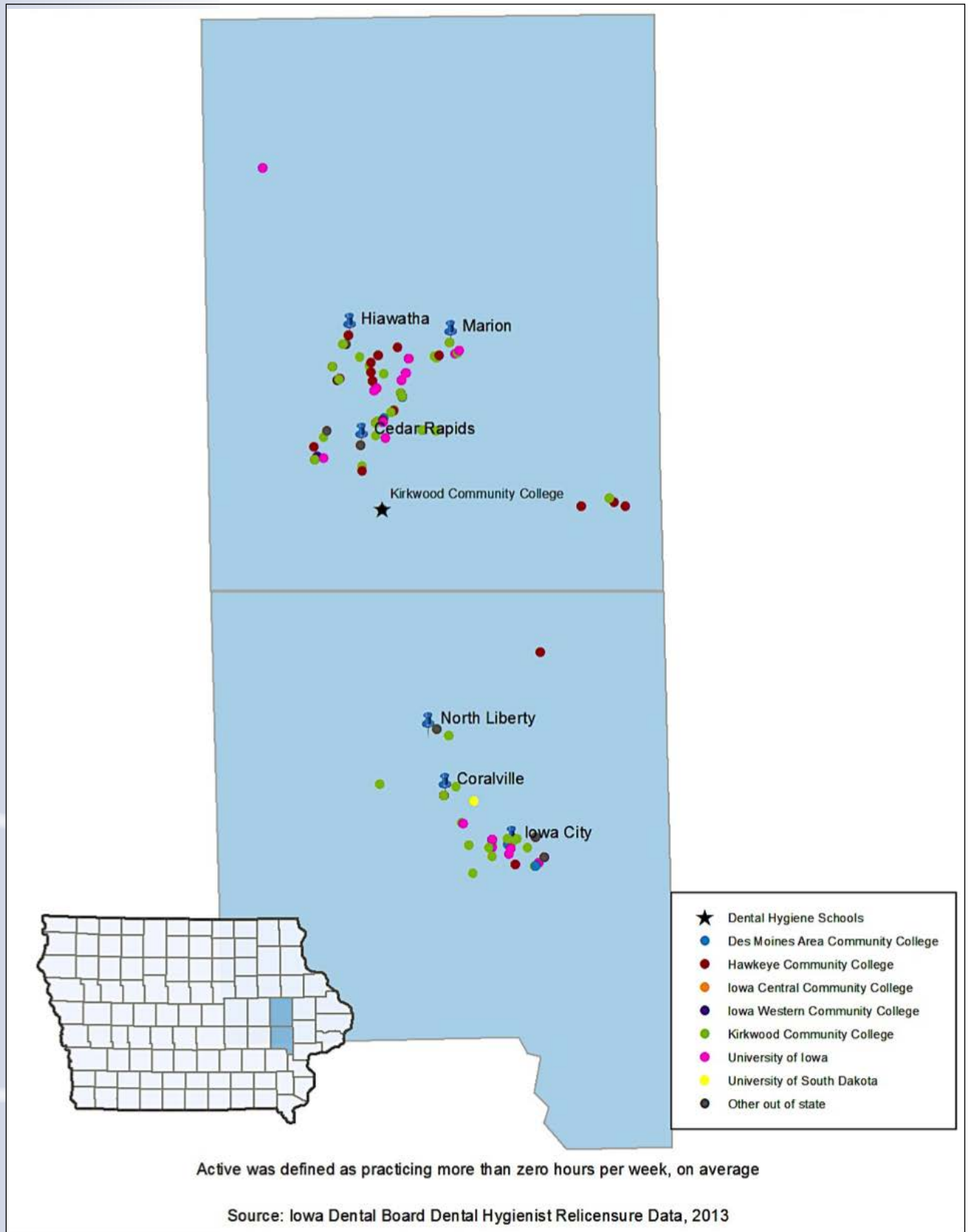


Figure 13. Locations of active dental hygienists categorized by their education program, Story and Polk Counties, 2013 (N=352)

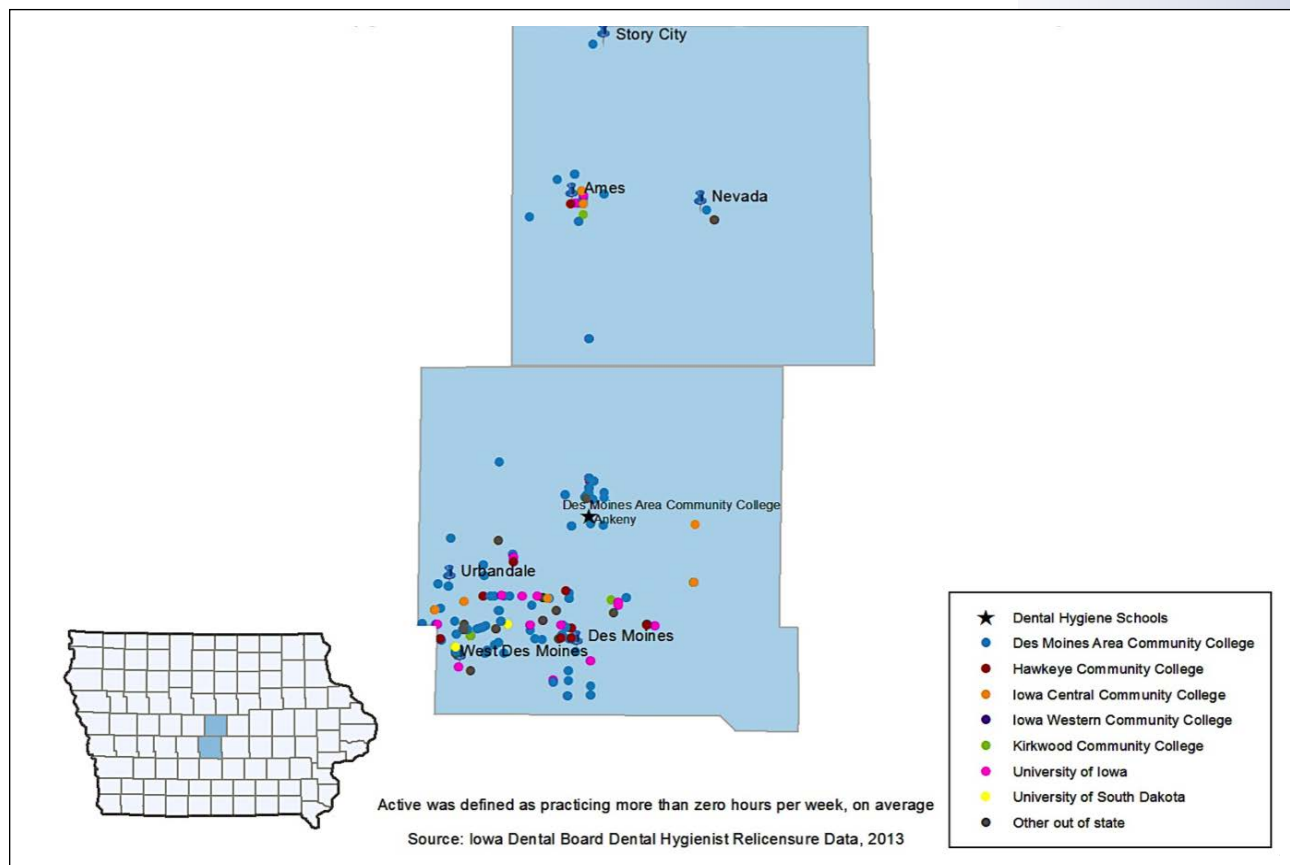


Figure 14. Locations of active dental hygienists categorized by their education program, Pottawattamie County, 2013 (N=38)

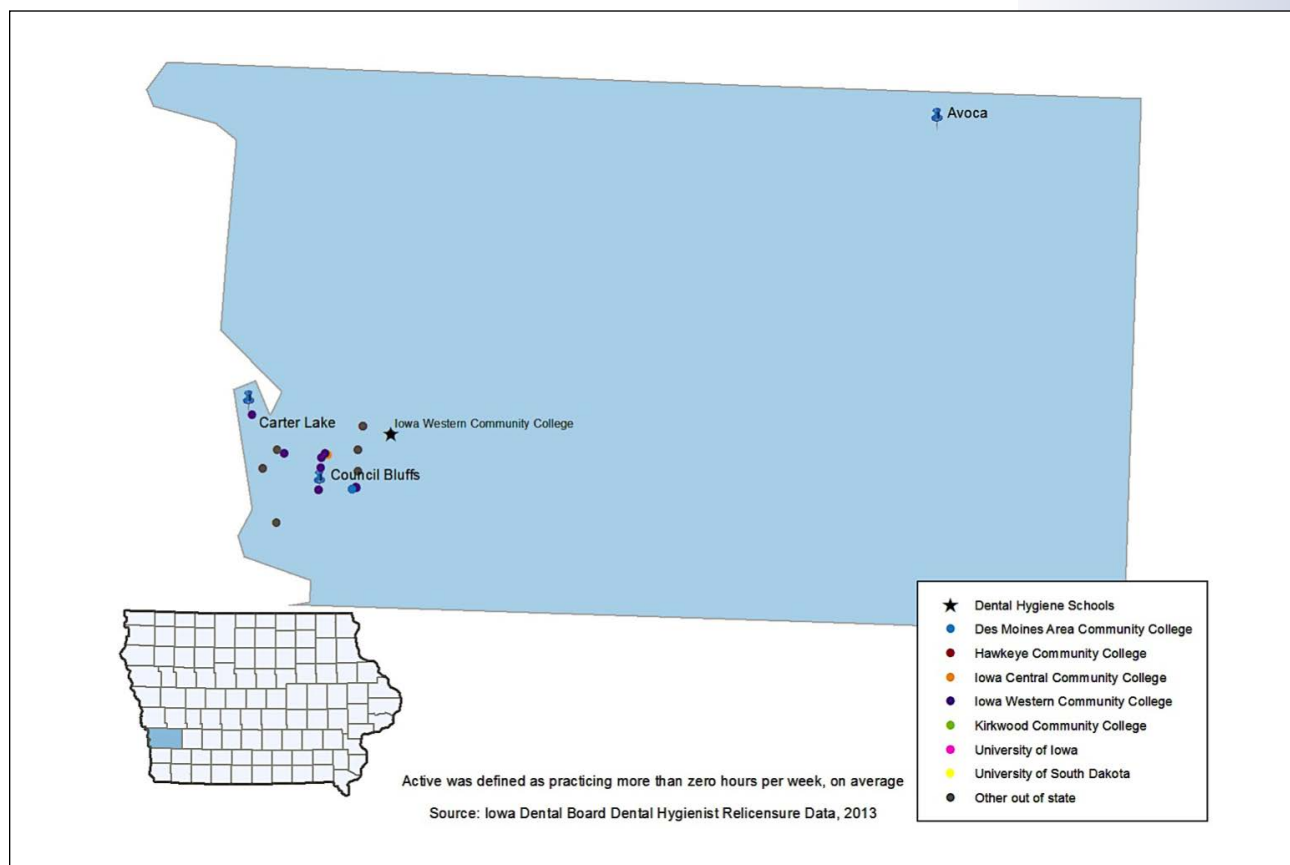


Figure 15. Locations of active dental hygienists categorized by their education program, Scott and Muscatine Counties, 2013 (N=142)

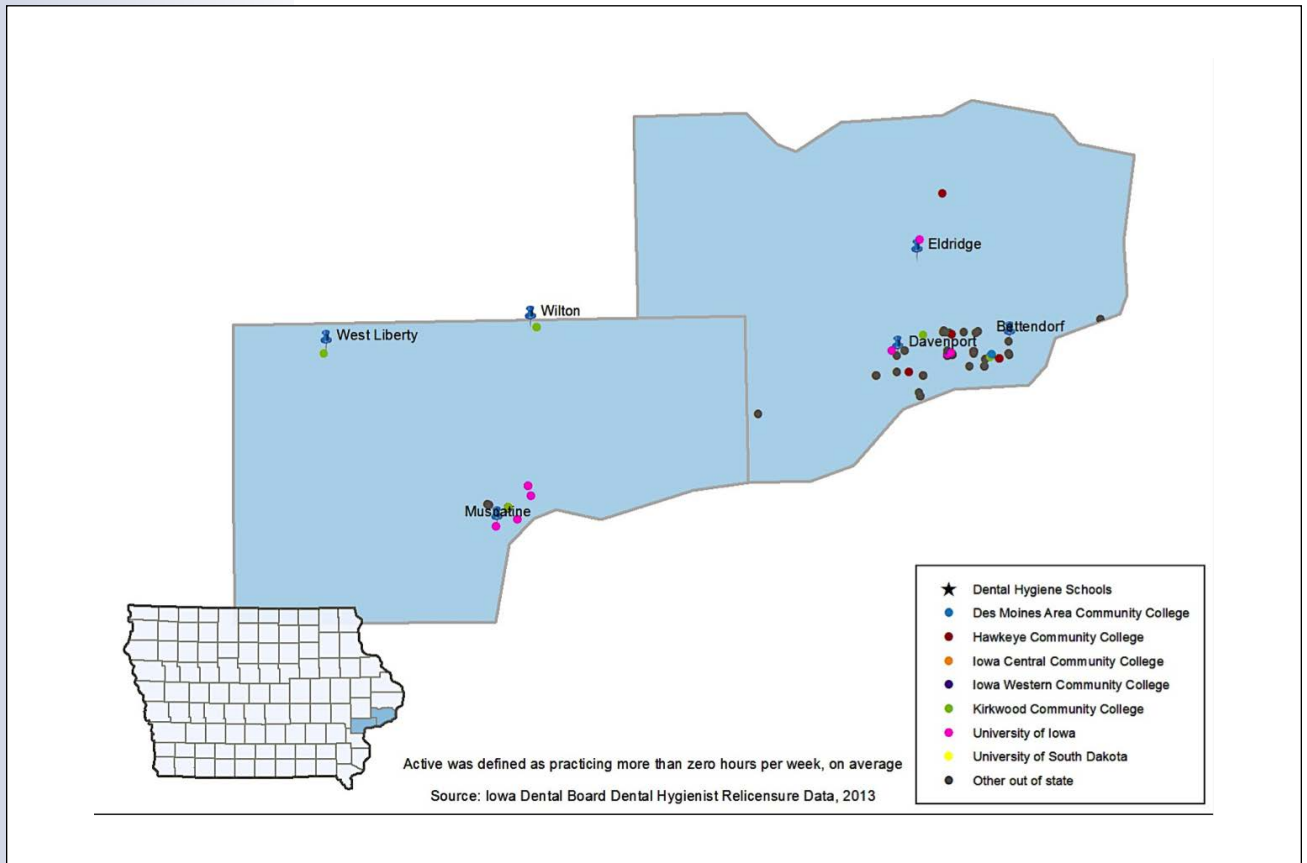
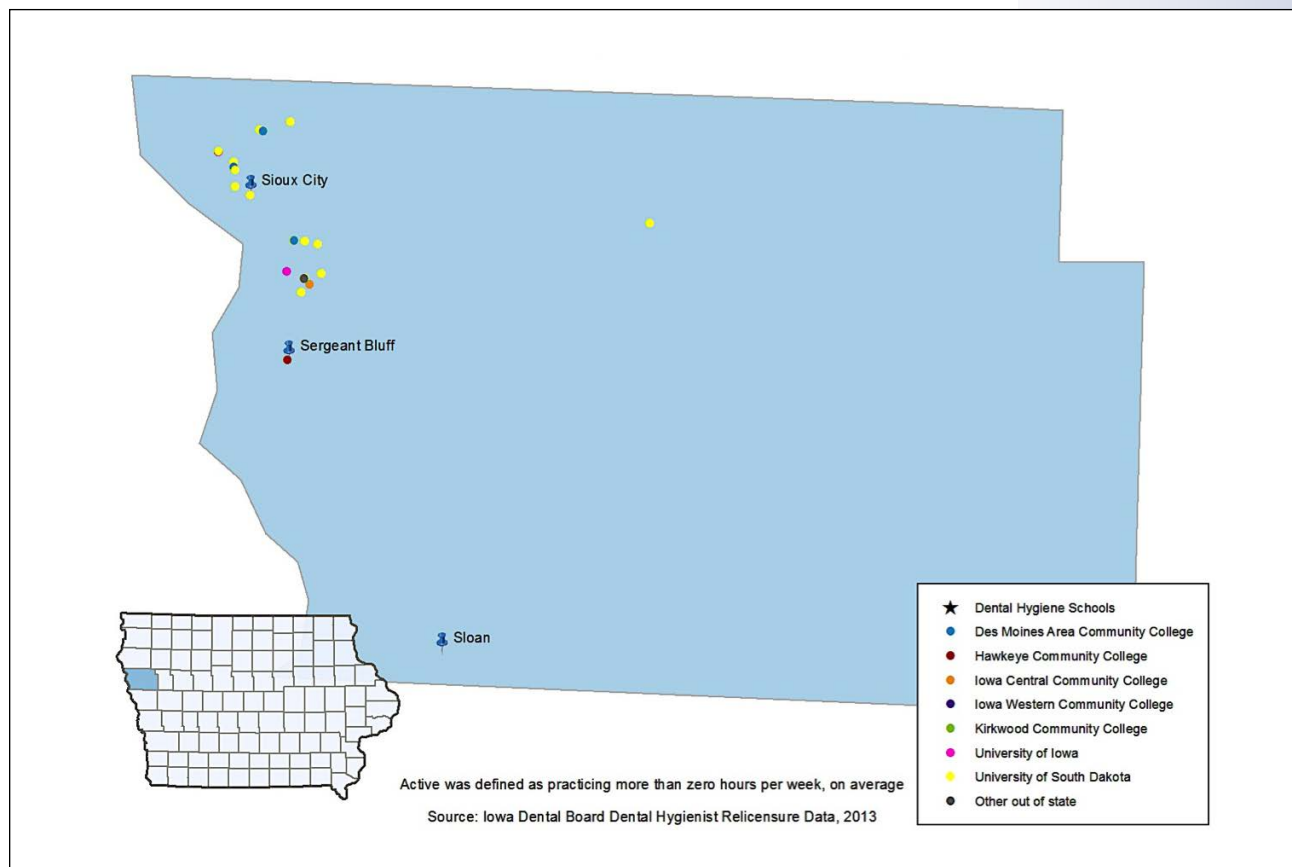


Figure 16. Locations of active dental hygienists categorized by their education program, Webster County, 2013 (N=18)



Figure 17. Locations of active dental hygienists categorized by their education program, Woodbury County, 2013 (N=56)



Practice Information

This section describes dental hygienists' reported practice of dental hygiene, including their practice setting, whether they work in multiple locations, hours worked, and whether they provide certain clinical services.

The most commonly reported practice settings are solo and group dental practices (**Table 5**). More than four in five dental hygienists work in only one location, and approximately half of all licensed hygienists work full time (at least 32 hours per week).⁵ Licensed hygienists work a mean of 27 hours (s.d. 11, range 0-81) per week, on average. When broken down by county, fourteen counties have zero hygienists working full time, and 21 counties have more than three fourths of hygienists working full time (**Figure 18**).

In Iowa, dental hygienists must receive training to administer nitrous oxide, and certification to administer local anesthesia. Both of these services must be provided under the direct supervision of a dentist. The majority of dental hygienists are not currently administering nitrous oxide, however 75% administer local anesthesia (**Table 5**). It is important to note that these questions do not distinguish between whether hygienists are certified to administer these services or whether they do so routinely in their regular practice of dental hygiene.

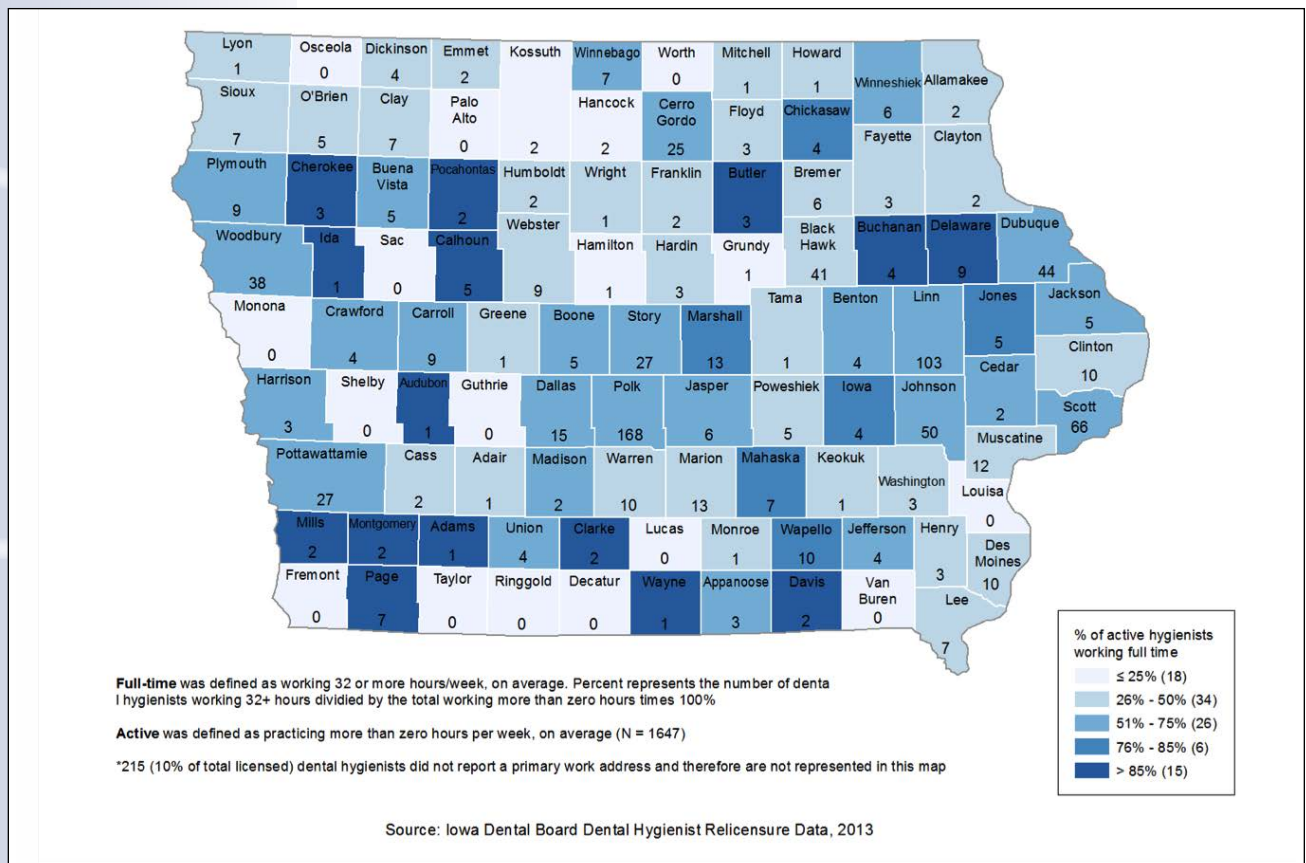
⁵ The question regarding practice location did not specify whether the locations represented discrete practices or just separate clinics within the same practice.

Table 5. Iowa dental hygienists' practice information

Practice Setting (IDB, 2013)*	n=1795
Solo practice	47%
Group practice	20%
Public Health	6%
Education	2%
Unknown	26%
Practice in more than one location (IDB, 2013)	n=1554
Yes	17%
No	84%
Average hours worked in patient care per week (IDB, 2013)	n=1973
0	7%
1-10	6%
11-20	12%
21-31.5	25%
≥32	51%
Administer nitrous oxide (IDB, 2013)	n=1790
Yes	45%
No	55%
Administer local anesthesia (IDB, 2013)	n=1792
Yes	75%
No	25%

* Almost one fourth of hygienists practice settings are unknown due to limitations with the online renewal system.

Figure 18. Full-time active dental hygienists, by county, N (2013)



Attitudes Regarding Past, Present, and Future Employment

In the IDHA 2005 workforce survey, participants were asked several questions regarding their job situation when they graduated from dental hygiene school. Of those responding to the survey, 89% were able to find the full-time or part-time job they wanted within six months of graduation (1). Regarding preferences on full time vs. part time and the their desire to work in more than one practice, 89% wanted full time work at one job immediately after graduation, 8% wanted part time work at one job, 2% wanted full time work at more than one job, and 1% wanted part time work at more than one job.

When asked in which region they wished to work upon graduation from their education program, the largest proportion (26%) wanted to work in Northwest Iowa, with 23% wanting to work in Northeast Iowa, 19% in Central Iowa, 18% in a state other than Iowa, 10% in Southeast Iowa, and 4% in Southwest Iowa (1). (See explanation of the geographic regions in Question 19, page 49.) Ninety percent reported being able to find a job in the geographic area that they wanted within three months after graduation.

At the time of the survey, 18% of respondents had personally looked for clinical dental hygiene employment in the past year (2004), and 6% of respondents said they were willing to relocate for a clinical dental hygiene job (1). Further, at the time they sought their current position, 63% of surveyed hygienists wanted full time work at one job, 30% wanted part time work at one job, 4% wanted part time work at more than one job, and 3% wanted full time work at more than one job.

The Allen College survey inquired about the level of job satisfaction of dental hygienists, and 97% of hygienists reported that they were “very” or “somewhat satisfied” with their choice of dental hygiene as a career (**Table 6**). The most common settings in which dental hygienists wish to work in the future were private practice, public health, and dental hygiene education. When asked how many years they plan to work in clinical dental hygiene, 47% of respondents to the IDHA workforce survey said until retirement age; 30% said at least 10 more years; 16% said at least five more years; 4% said they will probably will never work again in clinical dental hygiene; and 2% said they plan to work at least one more year.

Table 6. Dental hygienist perspectives on employment

Job satisfaction level (Allen College, 2012)	n=972
Very satisfied	70%
Somewhat satisfied	27%
Not satisfied	2%
Very unsatisfied	1%
Settings in which dental hygienists would like to work in the future (Allen College, 2012)*	n=985
Clinical/private practice dental hygiene	77%
Public health	38%
Dental hygiene education	34%
Mid-level practitioner/dental therapist	30%
Corporate/business	20%
Long-term care facility	18%
Hospital	17%
Other	5%

* Respondents could select more than one choice

Wages and Benefits

In 2005, 84% of hygienists who worked in clinical dental hygiene positions were paid hourly, whereas 6% were paid with a yearly salary, 5% were paid on commission, and 4% were paid in some other manner (1). The mean hourly rate of payment among Allen College survey respondents was \$31.80 (s.d. \$4.36, range \$20-\$80). The Iowa Workforce Development's statewide mean estimate of dental hygienist hourly wages was similarly \$31.88, with a mean statewide annualized salary of \$66,313⁶ (8). While the IWD does not provide wage estimates for dental hygienists by county due to sample limitations, the smallest geographic estimates they provide are by IWD region. Region 13 has both the highest mean and entry hourly wages for dental hygienists (**Table 7**). See **Appendix 4** for a map of Iowa Workforce Development regions.

The most common fringe benefits that dental hygienists in Iowa receive are paid vacation, paid holidays, and continuing education costs, while the least common are maternity leave, disability insurance, and liability insurance (**Table 8**). According to Allen College survey data, dental hygienists receive a mean of 5.1 (s.d. 2.6; range 0-12) fringe benefits in addition to salary.

Table 7. Dental hygienist hourly wages by region⁷

Region*	Mean Wage	Entry Wage
1	\$29.77	\$22.76
2	\$34.00	\$31.96
3-4	\$35.63	\$32.38
5	\$27.48	\$20.27
6	-	-
7	\$29.27	\$25.53
8	-	-
9	\$30.00	\$25.63
10	\$33.05	\$29.47
11	\$32.91	\$29.35
12	\$30.83	\$25.03
13	\$34.30	\$30.93
14	-	-
15	\$32.83	\$32.27
16	\$26.09	\$25.99

* See Appendix 4 for a map of Iowa Workforce Development regions.

Table 8. Dental hygienist fringe benefits

Benefits received in additional to salary (Allen College, 2012)	n=985
Paid vacation	80%
Paid holidays	75%
Continuing education costs	70%
Retirement plan	66%
Uniform allowance	60%
Paid sick leave	45%
Medical insurance	27%
Profit sharing plan	26%
ADHA/IDHA dues	25%
Liability insurance	12%
Disability insurance	11%
Maternity leave	11%

Labor Market Factors

There is currently limited information being collected on dental hygienist employment rates from any source in Iowa. As 6% of hygienists reported zero hours per week in patient care at the 2013 licensure renewal, this can be considered a rough proxy for an unemployment rate. However, it does not take into account hours worked outside of patient care, such as administration, teaching, or outreach, nor does it distinguish between those who are seeking employment from those who are not.

The IWD projects that there will be an annual growth rate of 2.7% from 2012-2022 in the field of dental hygiene, and that there will be approximately 105 job openings annually, which includes 55 new job

⁷ Data are from 2013 Iowa Workforce Development Wage Survey Regional Reports. Data are not available for regions marked with “-”

openings and 50 replacement job openings (4).

The Iowa Department of Education and IWD recently released a report that tracked employment for recent graduates of Iowa's community colleges who did not pursue further postsecondary education, including dental hygiene programs (9). Of those who graduated from one of Iowa's dental hygiene programs between 2010-2012, 81-94% were employed in the Health Care and Social Assistance sector⁸ in 2012-2013 (**Table 9**). A higher proportion, 97-99%, were employed in any sector during the same time period, indicating that a subset of graduates were employed in fields outside of dental hygiene.⁹

Table 9. Employment of recent graduates of Iowa dental hygiene programs¹⁰

Graduation Year	Year of Employment	N in Cohort	N(%) Employed in Any Sector	N(%) Employed in Health Care & Social Assistance Sector
2010	2012	83	82 (98.8)	75 (90.4)
	2013	83	82 (98.8)	75 (90.4)
2011	2012	78	77 (98.7)	66 (84.6)
	2013	78	77 (98.7)	73 (93.6)
2012	2013	94	91 (96.8)	76 (80.9)

Public Health Supervision

There are currently 110 dental hygienists with public health supervision agreements in Iowa. We eliminated 18 of these from our analysis if the supervision agreements were missing key information. The remaining 92 hygienists hold supervisory agreements with a total of 64 dentists. The highest number of supervision agreements that any one dentist has is four. **Figure 19** displays the location of dental hygienists with current Public Health Supervision agreements.

Dental hygienists with public health supervision have been working in the field of dental hygiene for a mean of 14 (range 3-42) years; 26% (n=24) have been practicing for more than 20 years.

Public health supervision agreement forms inquire about the settings in which dental hygienists will work, as well as the services they are designated to provide. The most common settings that dental hygienists with public health supervision work are: schools, government public health programs (e.g. WIC clinics), Head Start programs, and childcare (including preschools) (**Table 10**). Of those working in those top four settings, the mean number of practice *sites* per hygienist are: 25 schools (s.d. 29.7; range 1-166), 6 government public health programs (s.d. 3.9; range 1-16), 8 Head Start sites (s.d. 6.8; range 1-31), and 25 childcare settings (s.d. 16.5; range 1-67).

The most commonly reported services that dental hygienists under public

⁸ This is the most detailed level of employment provided by IWD, therefore it is not possible to report on the actual position title of the individual.

⁹ Individuals were only counted in the industry sector in which they earned the most wages, regardless of whether they worked more than one part-time job.

¹⁰ Data extracted from: Iowa Department of Education and Iowa Workforce Development. Education Outcomes: Certificate, Diploma, and Associate Degree Programs. Iowa Community Colleges FY 2010 to FY 2012. 2014.

health supervision are delegated to provide are assessment/screening, fluoride varnish, and sealants (**Table 11**). The mean number of delegated services per hygienist is 3.6 (s.d. 1.2; range 1-6).

In 2013, dental hygienists with public health supervision provided almost 40,000 dentist referrals for regular care, and almost 7,000 referrals for urgent care, for clients age 0-20. For clients age 21+, they referred 1,306 for regular care and 411 for urgent care that year (10).

Table 10. Settings in which public health supervision dental hygienists provide services, 2014*

Setting (IDPH, 2014)	n=88
School (all levels but preschool)	76%
Government Public Health Program (e.g. WIC)	54%
Head Start	52%
Childcare (including preschool)	36%
Federally Qualified Health Center	5%
Nursing Facility	5%
Free Clinic	3%
Nonprofit Community Health Center	2%
Public Health Van	0%

* Respondents could select more than one choice

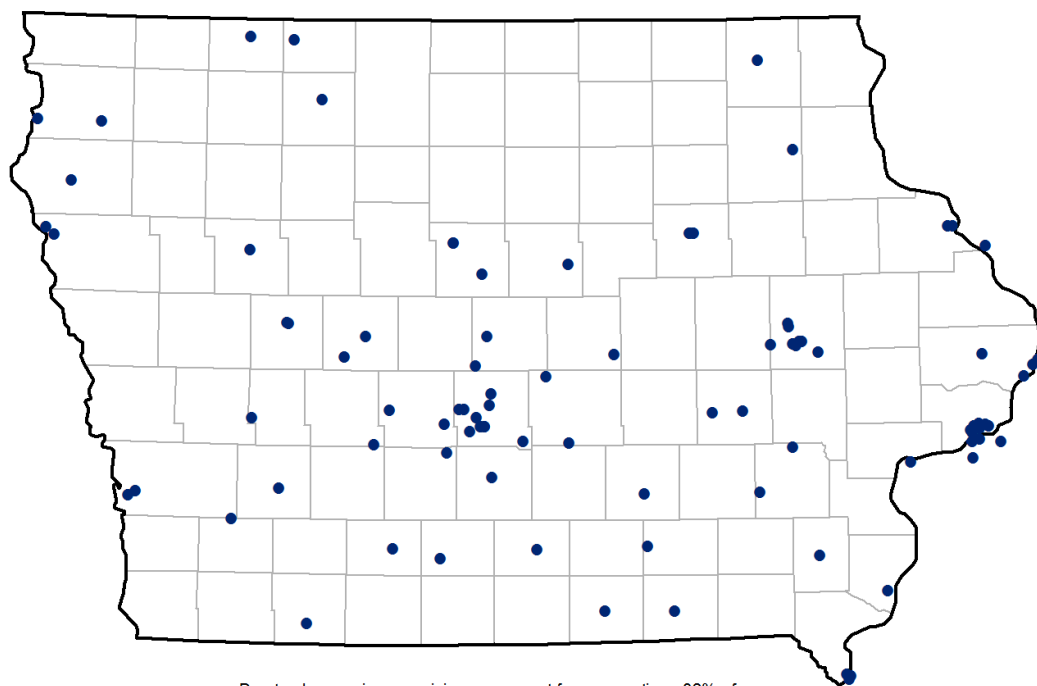
Table 11. Services public health supervision dental hygienists are delegated to provide, 2014

Service (IDPH, 2014)	Delegated to Provide Service (n=89)	Total Services Provided in 2013†
Assessment/Screening	99%	78,522
Fluoride varnish	87%	50,408
Individual Sealants	66%	33,905
Educational Services	60%*	42,303 (individual) 1,196 (group)
Oral prophylaxis	38%	801
Radiographs	11%	202

† Source: Iowa Department of Public Health. Calendar Year 2013 Services Report: Public Health Supervision of Dental Hygienists. <http://www.idph.state.ia.us/IDPHChannelsService/file.ashx?file=ID367742-9D3F-4A62-B43C-4673E6D26FEB>

* "Educational services" was not present as an option on some agreement form iterations, reducing the proportion reporting that they are delegated to provide that service.

Figure 19. Location of Iowa Dental Hygienists with Public Health Supervision Agreements (n=92), 2014



Due to changes in supervision agreement forms over time, 82% of locations represent home addresses and 18% represent work addresses

Source: Iowa Department of Public Health, Dental Hygiene Public Health Supervision Agreement Data, 2014

Policy Recommendations

In this background report, we have compiled various sources of information that have been collected on dental hygienist workforce in Iowa. Clearly, a large amount of information is available, with some collected routinely and others more irregularly. Hygienists' perceptions about their employment is one major category of information that is not being collected recurrently. Therefore, we recommend two phases for an ongoing monitoring system for dental hygiene workforce:

- I. Improve the quality of data that is collected every two years by the Iowa Dental Board for licensure renewal. This will allow for some consistency in the questions that are asked of registrants and provide useful trends for planners.
- II. Increase the quantity of the data that is collected to include information about dental hygienists' attitudes regarding employment and other labor market factors. Two potential routes for this include:
 - a) Add an external, tagalong survey to the IDB relicensure system when there are important policy questions that should be asked, but which are outside of the IDB's mission.
 - b) Standardize the questions that dental hygiene education programs ask their recent graduates regarding employment, and perform these surveys on a recurring basis.

Appendix 5 lists potential survey items that may be of interest to dental hygiene education programs. For comparison, however, all educational programs should ask the same core questions.

To have an ongoing source of data about dental hygiene workforce in Iowa would be a great benefit to many stakeholders in the state. The Iowa Dental Board's involvement in any ongoing monitoring system is critical because they are virtually the only resource for complete data.

Improving upon the data that is already regularly collected and utilizing a combination of that data and other supplementary data, as we have done in this report, would provide a rich resource from which to monitor workforce trends over time. High quality, comprehensive data will build a foundation for policy change regarding Iowa dental hygiene workforce in the future.

References

1. Thompson NJ, Boyer EM. IDHA 2005 Manpower Report. 2006.
2. Bureau of Labor Statistics. Survey Methods and Reliability Statement for the May 2013 Occupational Employment Statistics Survey. 2013.
3. Iowa Workforce Information Network. IWIN Wages and Income [Internet]. 2014 [cited 2014 Jun 30]. Available from: <http://iwin.iwd.state.ia.us/iowa/OlmisZine?zineid=00000012>
4. Labor Market and Workforce Information Division. 2012-2022 State of Iowa Occupational Projections by Major Occupational Group [Internet]. 2014. Available from: [http://iwin.iwd.state.ia.us/pubs/statewide/2012-2022 State Occ Proj, 10-2014 %2820 AO, 2014 Wages%29.pdf](http://iwin.iwd.state.ia.us/pubs/statewide/2012-2022%20State%20Occ%20Proj,%2010-2014%20AO,%202014%20Wages.pdf)
5. Ingram D, Franco S. 2013 NCHS Urban-Rural Classification Scheme for Counties [Internet]. Washington, DC; 2014. Available from: http://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf
6. Iowa Dentist Tracking System. 2012 Iowa Dentist Tracking System Annual Report [Internet]. 2012. Available from: [http://www.medicine.uiowa.edu/uploadedFiles/Administrative_Units/OSCEP/Content/2012 YearEnd DDS Book.pdf](http://www.medicine.uiowa.edu/uploadedFiles/Administrative_Units/OSCEP/Content/2012%20YearEnd%20DDS%20Book.pdf)
7. Iowa Women's Archives. U of I Dental Hygiene Program Records [Internet]. University of Iowa Libraries. [cited 2014 Aug 4]. Available from: <http://sdr.lib.uiowa.edu/iwa/findingaids/html/UIIDentalHygiene.htm>
8. Labor Force and Occupational Analysis Bureau. May 2013 Iowa Wage Survey Statewide [Internet]. 2013. Available from: [http://iwin.iwd.state.ia.us/pubs/iowawage/statewide/Statewide Iowa Wage Survey 2013.pdf](http://iwin.iwd.state.ia.us/pubs/iowawage/statewide/Statewide%20Iowa%20Wage%20Survey%202013.pdf)
9. Iowa Department of Education and Iowa Workforce Development. Education Outcomes: Certificate, Diploma, and Associate Degree Programs. Iowa Community Colleges FY 2010 to FY 2012 [Internet]. 2014. Available from: [https://www.educateiowa.gov/sites/files/ed/documents/CC Program Report 2014.pdf](https://www.educateiowa.gov/sites/files/ed/documents/CC%20Program%20Report%202014.pdf)
10. Iowa Department of Public Health. Calendar Year 2013 Services Report: Public Health Supervision of Dental Hygienists [Internet]. Des Moines, IA; 2013. Available from: <http://www.idph.state.ia.us/IDPHChannelsService/file.ashx?file=1D367742-9D3F-4A62-B43C-4673E6D26FEB>
11. Indian Hills Community College. What's going on? The internal communication of Indian Hills Community College. 2014.

Appendix 1 - 2005 IDHA Workforce Surveys

Dental hygiene education program survey instrument

1. Which year did the first class of dental hygienists graduate? _____ (year in 4 digits)

2. List the number of patient chairs available for dental hygiene student clinic use. _____ #

3. How many full-and part-time DH faculty members are currently employed by degree?

	<u>Full-time</u>	<u>Part-time</u>
DDS/DMD	_____	_____
RDH, PhD	_____	_____
RDH, Masters in DH	_____	_____
RDH, Masters Other	_____	_____
RDH, Bachelors	_____	_____
RDH, Associate	_____	_____
Other, _____	_____	_____
Other, _____	_____	_____

4. For each time period, how many students enrolled in the DH program and how many graduated two years later?

<u># Enrolled</u>	<u># Graduated</u>
_____ enrolled in 2002 and _____	_____ graduated in 2004
_____ enrolled in 2001 and _____	_____ graduated in 2003
_____ enrolled in 2000 and _____	_____ graduated in 2002
_____ enrolled in 1999 and _____	_____ graduated in 2001
_____ enrolled in 1998 and _____	_____ graduated in 2000

5. Rank the following items from 1 to 4 with 1 being the most frequent reason and 4 the least frequent reason that students do not complete the dental hygiene program in two years.

- _____ Drop-out of program because did not like the field of dental hygiene (grades okay)
 _____ Drop-out of program as not achieving high enough grades
 _____ Repeat failed or incomplete courses and eventually graduate
 _____ Take fewer courses a term and eventually graduate (grades okay)

6. Do you have adequate applicants, facility and faculty to enroll more dental hygiene students?

- _____ Yes, we could increase our enrollment from _____ to a total of _____ students.
 _____ No, because (check all that apply)
 _____ we do not have adequate qualified applicants to increase enrollment.
 _____ we do not have an adequate facility to increase enrollment.
 _____ we do not have, or are not able to employ, adequate faculty to increase size.

7. For each of the following, please check if it is a requirement for admission; and, if checked "yes" write in both the minimum admission standard and the average score for DH enrollees.

	<u>Required</u>		<u>Minimum Std</u>	<u>Average for DH Enrollees</u>
	<u>Yes</u>	<u>No</u>	<u>(GPA/score)</u>	<u>(GPA/score)</u>
High School GPA	()	()	_____	_____
Prerequisite science courses	()	()	_____	_____
Prerequisite English/soc. science courses	()	()	_____	_____
ACT	()	()	_____	_____
SAT	()	()	_____	_____
Personal Interview	()	()	_____	_____
Other, _____	()	()	_____	_____

8. Do you ever enroll students who do not meet each and everyone of the admission standards?

- _____ Yes
 _____ No

9. Which of the following best describes your admissions decision system?

- ☐ All applicants who meet minimum admission standards are offered enrollment based on the date application received.
☐ All applicants who meet minimum admission standards are offered enrollment based on a lottery.
☐ Applicants are selected in descending order of merit; i.e., highest aggregate or weighted score accepted first.
☐ Applicants are selected on merit but there is leeway in the system.

Please list the factors or characteristics considered for final selection. _____

10. Does your DH program have an arrangement to save seats for students attending a community college without a dental hygiene program?

☐ Yes Please list the colleges and number of seats. _____

☐ No. Would your college consider pursuing an arrangement? ☐ Yes ☐ No

11. Is there a wait list for enrolling in the DH program? If yes, answer additional items.

- ☐ Yes a) On average, the number of students per year on wait list (WL) is _____
b) How many years before WL applicant is enrolled? _____ yr
c) Must WL applicant reapply each year? ☐ yes ☐ no
d) Must applicants meet each and every admission standard to be on WL? ☐ Yes ☐ No
☐ No. We do not have a wait list.

12. Thinking of Iowa divided into four sections by I-35 and I-80 with a fifth central part-around Marshalltown, Ames, Des Moines-where (approximate %) are your applicants & enrollees from?

	<u>Applicants</u>	<u>Enrollees</u>
NE Iowa	_____ %	_____ %
SE Iowa	_____ %	_____ %
Central Iowa	_____ %	_____ %
NW Iowa	_____ %	_____ %
SW Iowa	_____ %	_____ %
Out-of State	_____ %	_____ %

Each column should total 100 %

13. For the classes below, how many applicants were there & by admission requirements (req)?

	<u># of Applicants</u>	<u># Meet req.</u>	<u>#Not meet req.</u>
2004 Graduating Class (entered 2002)	_____	_____	_____
Current 2nd Year Class (entered 2003)	_____	_____	_____
Current 1st Year Class (entered 2004)	_____	_____	_____

14. For these same classes, how many were offered enrollment in the DH program & by req.?

	<u>#Offered to Enroll</u>	<u># Meet req.</u>	<u># Not meet req.</u>
2004 Graduating Class (entered 2002)	_____	_____	_____
Current 2nd Year Class (entered 2003)	_____	_____	_____
Current 1st Year Class (entered 2004)	_____	_____	_____

15. For these same classes, how many enrolled in DH program & by admission requirements?

	<u># Enrolled</u>	<u># Met require.</u>	<u># Not meet require.</u>
2004 Graduating Class (entered 2002)	_____	_____	_____
Current 2nd Year Class (entered 2003)	_____	_____	_____
Current 1st Year Class (entered 2004)	_____	_____	_____

16. For each class, how many DH graduates passed boards on the first or subsequent try?

	<u>National Boards</u>		<u>Regional Clinical Boards</u>	
	<u># First Try</u>	<u># Subseq. Try</u>	<u># First Try</u>	<u>#Subseq. Try</u>
2004 Graduating Class	_____	_____	_____	_____
2003 Graduating Class	_____	_____	_____	_____
2002 Graduating Class	_____	_____	_____	_____

17. In your best estimate, how many DH graduates looked for full-time (FT-32 to 40 hours/week) work and how many for part-time (PT-4 to 31 hours/week) work?

	<u># Wanted</u>	<u># Wanted</u>	<u># Wanted</u>
	<u>FT at 1 job</u>	<u>FT more than 1 job</u>	<u>Only PT job</u>
2004 Graduating Class	_____	_____	_____
2003 Graduating Class	_____	_____	_____
2002 Graduating Class	_____	_____	_____

18. In your best estimate, what % of DH graduates found jobs before graduation and how many at each point of time listed after graduation? (Rows should total 100)

	<u>Time after Graduation to Find a Job</u>		
	<u>Before Grad</u>	<u>1 to 2 Months</u>	<u>3 or more Months</u>
2004 Graduating Class	_____ %	_____ %	_____ % =100%
2003 Graduating Class	_____ %	_____ %	_____ % =100%
2002 Graduating Class	_____ %	_____ %	_____ % =100%

19. Again thinking of Iowa divided into four sections by I-35 and I-80 with a fifth central part (around Marshalltown, Ames, Des Moines), in your best estimate, where by approximate percentage did your last three graduating classes accept employment?

	<u>2004 Grads</u>	<u>2003 Grads</u>	<u>2002 Grads</u>	(Columns total 100%)
NE Iowa	_____ %	_____ %	_____ %	
SE Iowa	_____ %	_____ %	_____ %	
Central Iowa	_____ %	_____ %	_____ %	
NW Iowa	_____ %	_____ %	_____ %	
SW Iowa	_____ %	_____ %	_____ %	
Out-of State	_____ %	_____ %	_____ %	

20. How much of an influence do you think two new dental hygiene programs in Northwest Iowa and one in Des Moines would have on YOUR DH program and graduates?

	<u>Great Amount</u>	<u>Some</u>	<u>A Little</u>	<u>None</u>
ability to hire dental hygiene faculty	_____	_____	_____	_____
pool of qualified student applicants	_____	_____	_____	_____
pool of qualified student enrollees	_____	_____	_____	_____
graduates' ability to get jobs	_____	_____	_____	_____
graduates' pay	_____	_____	_____	_____

Dear Doctor: (Dentist survey instrument)

The Iowa Dental Hygienists' Association has developed this survey to complement assessment efforts of schools interested in opening additional dental hygiene programs in Iowa. We need a response rate of at least 75% to be able to measure the dental hygiene job market accurately. You are part of a randomly selected sample which does not allow us to substitute another dentist's input for yours. All information will be handled in a confidential manner and all data will be reported in an anonymous manner. If you have any questions or comments, please feel free to call me at 319-384-4137 at the College of Public Health, University of Iowa.

Dr. Nancy Thompson

Please indicate your response by putting a check mark or writing in the requested information.

1. Do you currently employ one or more dental hygienists?

_____ Yes, go to item 2

_____ No, go to item 7

2. For each dental hygienist you currently employ, how many hours a week does she/he work at your office and how many years has she/he worked there?

	<u>Hours per week</u>	<u>Years worked for you</u>
Dental Hygienist 1	_____	_____
Dental Hygienist 2*	_____	_____
Dental Hygienist 3*	_____	_____
Dental Hygienist 4*	_____	_____
Dental Hygienist 5*	_____	_____

3. *If you employ more than one dental hygienist, do you pay them by the same method and offer them the same fringe benefits?

_____ Yes

_____ No, For items 4 and 5, answer for the hygienist who works the most hours in your office.

4. Which method of compensation do you use to pay your dental hygienist?

_____ Hourly Wage

_____ Commission

_____ Yearly Salary

_____ Other, please describe _____

5. For each fringe benefit, check whether you offer or do not offer it to your dental hygienist?

<u>Offer</u>	<u>Not Offer</u>		<u>Offer</u>	<u>Not Offer</u>	
()	()	Free or reduced fee dental care	()	()	Paid sick leave
()	()	Health insurance	()	()	Paid holidays
()	()	Disability insurance	()	()	Paid maternity leave
()	()	Separate malpractice insurance	()	()	Paid health days
()	()	Continuing educ-program fees	()	()	ADHA dues
()	()	Continuing educ-hotels/food	()	()	Profit sharing
()	()	Retirement/pension plan	()	()	Incentive program
()	()	1-5 Paid vacation days per year	()	()	Life insurance
()	()	6-10 or more paid vacation days per year	()	()	Family leave time
()	()	Dental insurance	()	()	Other _____

6. How many of your currently employed dental hygienists do you think you will need to replace in the next five years? Answer separately for full-time (32-40 hours per week) and part-time (4-31 hours per week) dental hygienists.

To Replace Current Full-time

- ☐ None (0)
- ☐ One
- ☐ Two
- ☐ Three or more

To Replace Current Part-time

- ☐ None (0)
- ☐ One
- ☐ Two
- ☐ Three or more

7. How many new full-time (32-40 hr/week) and new part-time (4-31 hr/week) dental hygiene positions do you think you will add to your office in the next five years? (Both those who do not employ and those who do employ dental hygienists should answer this item. For those currently employing, dental hygienists, these positions would be in addition to those you already employ.)

Number of New Full-time Positions

- ☐ None (0)
- ☐ One
- ☐ Two
- ☐ Three or more

Number of New Part-time Positions

- ☐ None (0)
- ☐ One
- ☐ Two
- ☐ Three or more

8. What is the population size of the town/city where your practice is located?

- | | |
|--|--|
| <input type="checkbox"/> 1000 or less | <input type="checkbox"/> slightly more than 10,000 to 20,000 |
| <input type="checkbox"/> slightly more than 1000 to 5000 | <input type="checkbox"/> slightly more than 25,000 to 50,000 |
| <input type="checkbox"/> slightly more than 5000 to 10,000 | <input type="checkbox"/> over 50,000 |

9. Are you a general practitioner or an ADA specialist?

- ☐ General practitioner
- ☐ Periodontist
- ☐ Pediatric dentist
- ☐ Other ADA recognized specialist

10. How many dentists work in this dental practice?

- ☐ One, I am the only dentist in this practice
- ☐ Two
- ☐ Three
- ☐ Four or more

11. What year did your dental office open in your current community? _____

12. How many hours a week do you spend in direct patient care?

- | | |
|--|--|
| <input type="checkbox"/> 4 to 8 hours per week | <input type="checkbox"/> 25 to 32 hours per week |
| <input type="checkbox"/> 9 to 16 hours per week | <input type="checkbox"/> 33 to 40 hours per week |
| <input type="checkbox"/> 17 to 24 hours per week | <input type="checkbox"/> 41 to 48 hours per week |

13. What year did you graduate from dental school? _____

14. Which one of the following best summarizes your future work in clinical dentistry?

- | | |
|---|---|
| <input type="checkbox"/> Work 5 years or less | <input type="checkbox"/> Work 21 to 30 more years |
| <input type="checkbox"/> Work 6 to 10 more years | <input type="checkbox"/> Work until 65 years of age |
| <input type="checkbox"/> Work 11 to 20 more years | <input type="checkbox"/> Work until 70 or 75 years of age |

Thank you for your participation.

Dear Fellow Dental Hygienist, (Dental hygiene survey instrument)

IDHA has developed this survey to complement assessment efforts of colleges which have expressed an interest in opening additional dental hygiene programs in Iowa. As of March 11, we have a response rate of 57%, but we need a response rate of at least 75% to be able to measure the job market accurately. You are part of a randomly selected sample which does not allow us to substitute another hygienist's input for yours. All information will be handled in a confidential manner and will be reported in an anonymous manner. If you have any questions or comments please feel free to write them on the questionnaire or call me at 319-384-4137. Dr. Nancy Thompson, IDHA representative

If you are not currently employed, item 1 will direct you to the correct item and area. Please check only one answer, unless instructed otherwise, and fill in the blanks where indicated.

1. What is your current employment status (Check only one) and, if you work, how many hours per week do you work at each job?

<u>Current work--(Check only one)</u>	<u>Hours work per week</u>	<u>Clinical DH</u>	<u>Other</u>
____ (1) Only, Clinical dental hygienist (Private practice, hospital, COD, etc)	_____	_____	_____
____ (2) Only, Public health dental hygienist (Education, sealants, etc for state, county, etc)	_____	_____	_____
____ (3) Only, Dental hygiene educator (Dental hygiene educational program)	_____	_____	_____
____ (4) Both, Clinical dental hygiene and Public health dental hygiene	_____	_____ and _____	_____
____ (5) Both, Clinical dental hygiene and Dental hygiene education	_____	_____ and _____	_____
____ (6) Both in Non-dental hygiene work and Clinical dental hygiene work	_____	_____ and _____	_____
____ (7) Only Employed in Non-dental hygiene work,	_____	_____	_____
____ Not employed, Go to item 7			
____ Other, please list _____		_____ and _____	_____

2. How many years have you worked at your current job or each job? Please list town/city of job site (s).

<u>Current Job</u>	<u>Years worked in current job</u>	<u>Town/City job located</u>
Clinical dental hygiene	_____	_____
Public health dental hygiene (PH dh)	_____	_____
Dental hygiene education (DH Educ)	_____	_____
Non-dental hygiene work (Non DH)	_____	_____
Other, please list _____	_____	_____

3. Check each fringe benefit you receive at your current job or each current job by work type.

	<u>Clinical dh</u>	<u>PH dh</u>	<u>DH Educ</u>	<u>Non DH</u>
Free dental care	_____	_____	_____	_____
Reduced-fee dental care	_____	_____	_____	_____
Health/Medical insurance	_____	_____	_____	_____
Dental insurance	_____	_____	_____	_____
Disability insurance	_____	_____	_____	_____
Separate malpractice insurance	_____	_____	_____	_____
Life insurance	_____	_____	_____	_____
Profit sharing	_____	_____	_____	_____
Retirement/pension plan	_____	_____	_____	_____
Paid sick leave	_____	_____	_____	_____
Paid holidays	_____	_____	_____	_____
Paid vacation days--list # days/yr	_____	_____	_____	_____
Paid maternity leave	_____	_____	_____	_____
Paid family leave days	_____	_____	_____	_____
Paid health days	_____	_____	_____	_____
ADHA dues	_____	_____	_____	_____
Continuing educ--program fees	_____	_____	_____	_____
Continuing educ--hotel/meals	_____	_____	_____	_____
Incentive program	_____	_____	_____	_____

4. Which method of payment do you have at your current job or each current job

	<u>Clinical dh</u>	<u>PH dh</u>	<u>DH Educ</u>	<u>Non DH</u>
Hourly pay	_____	_____	_____	_____
Salary per year	_____	_____	_____	_____
Commission	_____	_____	_____	_____
Other, please list _____	_____	_____	_____	_____

5. How much are you paid per hour at your current job or each current job? If not paid by the hour, calculate hourly pay by dividing your pay per time period by number hours worked in same time period.

_____ hourly pay clinical dental hygiene	_____ hourly pay PH dh
_____ hourly pay non-dental hygiene	_____ hourly pay DH Educ

6. When you were looking for your current job, which type of employment did you want?

_____ Full-time (32-40 hrs/week) at one job	_____ Part-time (4-31 hrs/wk) at one job
_____ Full-time (32-40 hrs/week) at more than one job	_____ Part-time (4-31 hr/wk) at more than one job

The next items ask about your DH career to date. Clinical dh is scaling, root planing, polishing etc. and usually done in private practice, hospitals, etc

7. How many years of your total dental hygiene career have been, or were, spent providing clinical dental hygiene services? _____ years (If never worked clinical dh, put "0" & go to # 13)

8. How many years of clinical dental hygiene work were full-time (32-40 hr/week)? _____ yrs

9. How many different full-time clinical dental hygiene jobs have you held during your dental hygiene career? _____ # full-time jobs

10. How many years of clinical dental hygiene work were part-time (4-31 hr/week)? _____ yrs

11. How many different part-time clinical dental hygiene jobs (do not include temporary jobs) have you held during your dental hygiene career? _____ # part-time jobs

12. In the past 5 years, have you voluntarily left; i.e., quit, any clinical dental hygiene jobs?

_____ Yes. How many jobs? _____ Why did you leave? _____
 _____ No

13. In the past 5 years, have you involuntarily left; i.e., let go or fired, any clinical dental hygiene jobs?

_____ Yes. How many jobs? _____ Why was that? _____
 _____ No

14. Have you ever been unable to find the amount of work you needed in clinical dental hygiene?

_____ Yes, When and why was that? _____
 _____ No

15. What year did you become licensed as a dental hygienist in Iowa? _____ year IA license

16. Which dental hygiene program (DH) did you attend? _____ (name) _____ state

17. What year did you graduate DH and what degree did you receive? _____ year _____ degree

18. When you first graduated from dental hygiene school, which type of dental hygiene employment did you most want? (Full-time is 32-40 hrs/week and Part-time is 4-31 hrs/week)

_____ Full-time work at one job	_____ Part-time work at one job
_____ Full-time work at more than one job	_____ Part-time work at more than one job

18 b. Were you able to find the FT or PT job you wanted within 3 months? _____ Yes _____ No

Appendix 2 – 2012 Allen College Survey

2012 CENSUS FOR DENTAL HYGIENISTS

EDUCATION

1. What is your highest level of education?

- | | |
|--------------------------|---|
| <input type="checkbox"/> | Associate |
| <input type="checkbox"/> | Certificate in DH (granted prior to 1967) |
| <input type="checkbox"/> | Baccalaureate |
| <input type="checkbox"/> | Master's Degree |
| <input type="checkbox"/> | Doctorate |

2. If there was a mechanism to complete your bachelor's degree would you pursue it?

- | | |
|--------------------------|-------------------------------|
| <input type="checkbox"/> | No (If no, skip to item 7)Yes |
| <input type="checkbox"/> | Yes |
| <input type="checkbox"/> | Maybe |
| <input type="checkbox"/> | Not applicable |

3. If yes, which degree major would you prefer?

- | | |
|--------------------------|------------------------|
| <input type="checkbox"/> | Dental Hygiene |
| <input type="checkbox"/> | Public Health |
| <input type="checkbox"/> | Other--please specify: |
-

4. In what time span would you be most likely to complete the degree?

- | | |
|--------------------------|------------|
| <input type="checkbox"/> | 1-3 years |
| <input type="checkbox"/> | 4-6 years |
| <input type="checkbox"/> | 7-10 years |

5. Would you prefer to attend:

- | | |
|--------------------------|-----------|
| <input type="checkbox"/> | Full-time |
| <input type="checkbox"/> | Part-time |

6. Would you prefer:

- | | |
|--------------------------|----------------------|
| <input type="checkbox"/> | Face-to-face classes |
| <input type="checkbox"/> | Online classes |
| <input type="checkbox"/> | Combination of both |

7. Have you ever taken an online course for academic credit?

- | | |
|--------------------------|-----|
| <input type="checkbox"/> | Yes |
| <input type="checkbox"/> | No |

DENTAL HYGIENE PRACTICE

8. Please indicate your age

<input type="checkbox"/>	20-29	<input type="checkbox"/>	40-49	<input type="checkbox"/>	60 plus
<input type="checkbox"/>	30-39	<input type="checkbox"/>	50-59		

9. How many years have you practiced dental hygiene?

<input type="checkbox"/>	Less than 1 year	<input type="checkbox"/>	11-15 years	<input type="checkbox"/>	26-30 years	<input type="checkbox"/>	40+ years
<input type="checkbox"/>	1-5 years	<input type="checkbox"/>	16-20 years	<input type="checkbox"/>	31-35 years		
<input type="checkbox"/>	6-10 years	<input type="checkbox"/>	21-25 years	<input type="checkbox"/>	36-40 years		

10. How satisfied are you that you chose dental hygiene as your career?

<input type="checkbox"/>	Very satisfied
<input type="checkbox"/>	Somewhat satisfied
<input type="checkbox"/>	Not satisfied
<input type="checkbox"/>	Very unsatisfied

11. If you are licensed but are not actively practicing as a dental hygienist, please indicate why:

<input type="checkbox"/>	Unable to attain a dental hygiene position
<input type="checkbox"/>	Temporarily not in work force for non-medical reasons (e.g., child-rearing)
<input type="checkbox"/>	Temporarily not in work force for medical reasons
<input type="checkbox"/>	Employed in another field of work
<input type="checkbox"/>	Retired

12. If you are actively practicing dental hygiene, please indicate

<input type="checkbox"/>	Number of hours per week in one office
<input type="checkbox"/>	Number of hours per week in a second office
<input type="checkbox"/>	Number of hours per week in a third office

13.

If you are not working as many hours as you would like in dental hygiene, how many additional hours would you like to work per week?

14.

Please indicate your true hourly rate of payment (not including benefits).

15. Please indicate any benefits you receive in addition to salary as a dental hygienist:

<input type="checkbox"/>	Paid vacation	<input type="checkbox"/>	Paid sick leave	<input type="checkbox"/>	Paid holidays
<input type="checkbox"/>	ADHA/IDHA dues	<input type="checkbox"/>	Con Ed costs	<input type="checkbox"/>	Uniform allowance
<input type="checkbox"/>	Medical insurance	<input type="checkbox"/>	Liability insurance	<input type="checkbox"/>	Maternity leave
<input type="checkbox"/>	Disability insurance	<input type="checkbox"/>	Retirement plan	<input type="checkbox"/>	Profit sharing plan

FUTURE

16. Please specify the setting(s) in which you would like to work as a dental hygienist in the future (check all that apply)

- ☐ Clinical/private practice dental hygiene
- ☐ Public Health
- ☐ Long-term care facility
- ☐ Hospital
- ☐ Corporate/Business
- ☐ Dental Hygiene Education
- ☐ Mid-Level Practitioner/Dental Therapist
- ☐ Other (please specify _____)

17. Of the settings you checked in the previous question for which settings do you feel you would need additional training and/or education in order to provide quality care? (check all that apply)

- ☐ Public Health
- ☐ Long-term care facility
- ☐ Hospital
- ☐ Corporate/Business
- ☐ Dental Hygiene Education
- ☐ Mid-Level Practitioner/Dental Therapist
- ☐ Other (please specify _____)

18. Are you familiar with the function and duties of a Mid-Level Practitioner/Dental Therapist, now legal in some states?

- ☐ Yes
- ☐ No

In which Iowa county do you reside? _____

If you reside outside the state, in which Iowa county do you work? _____

If you would like to be kept informed about a bachelor's degree in dental hygiene that is under consideration, please provide the following information

Name:	_____
Email:	_____

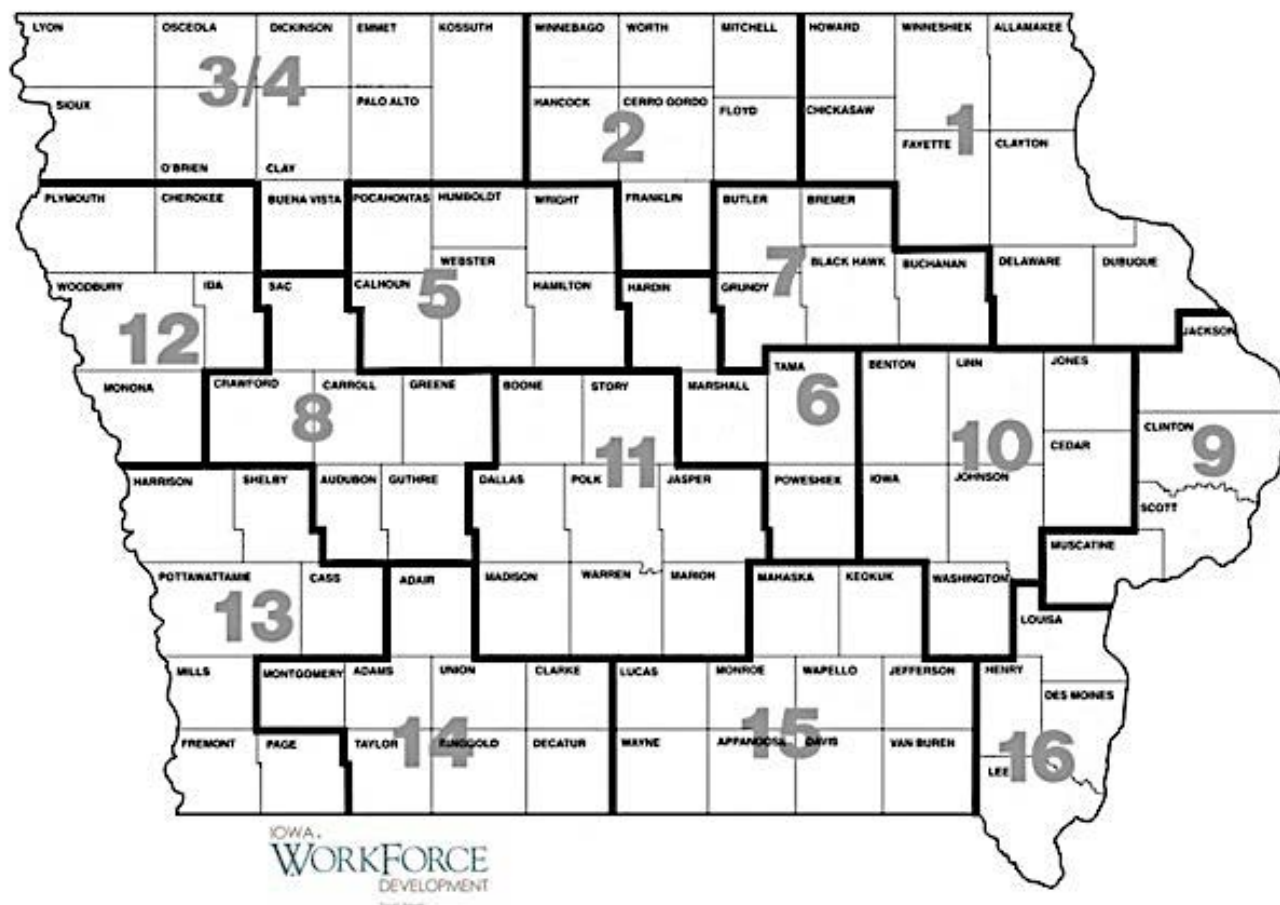
THANK YOU FOR PARTICIPATING IN THIS SURVEY!

Appendix 3 – Location of Out-of-State Dental Hygienists Maintaining an Iowa License

Table. State and country of reported work address for out-of-state dental hygienists maintaining an Iowa license (IDB, 2013)

State/Country of Reported Work Address	N
AK	1
AZ	2
CA	3
CO	2
FL	1
ID	2
IL	44
KS	3
MN	14
MO	4
NC	1
NE	36
NV	2
NY	1
SD	14
TX	2
VA	1
WA	2
WI	11
Saudi Arabia	1
Switzerland	1
Virgin Islands	1
TOTAL	149

Appendix 4 – Map of Iowa Workforce Development Regions¹



¹ Iowa Workforce Development. Local Area/Regional Web Sites. <http://www.iowaworkforce.org/centers/regional/sites.htm>

Appendix 5 – Potential Survey Questions for Dental Hygiene Education Programs

1. When you were looking for your current job, which type of employment did you want? (*adapted from IDHA Workforce Survey*)
 - ☐ Full-time (32–40 hours/week) at one job
 - ☐ Full-time across more than one job
 - ☐ Part-time (4–31 hours/week) at one job
 - ☐ Part-time across more than one job
 - ☐ I am not currently employed

2. Have you ever been unable to find the amount of work you needed in clinical dental hygiene? (*IDHA Workforce Survey*)
 - ☐ Yes. If yes, when and why was that? _____

 - ☐ No

3. When you first graduated from dental hygiene school, which type of dental hygiene employment did you most want? (*IDHA Workforce Survey*)
 - ☐ Full time (32–40 hours/week) work at one job
 - ☐ Full-time work across more than one job
 - ☐ Part-time (4–31 hours/week) work at one job
 - ☐ Part-time work across more than one job

4. Were you able to find the part-time or full-time job you wanted within three months of graduation? (*IDHA Workforce Survey*)
 - ☐ Yes
 - ☐ No

5. Were you able to find a job in the location that you wanted within three months of graduation? (*IDHA Workforce Survey*)
 - ☐ Yes
 - ☐ No

6. During the past year, did you notice any dental hygiene job openings in Iowa through any of the following methods? Please circle the appropriate response for each method. (*IDHA Workforce Survey*)

Newspaper advertisements	Yes	No
General mass mailing	Yes	No
Personal letter	Yes	No
Telephone call	Yes	No
Personal conversation	Yes	No
E-mail/internet	Yes	No

7. If you are licensed but are not actively practicing as a dental hygienist, please indicate why: (*Allen College survey*)

- ☐ Unable to attain a dental hygiene position
- ☐ Temporarily not in workforce for medical reasons
- ☐ Temporarily not in workforce for non-medical reasons (e.g. child-rearing)
- ☐ Employed in another field
- ☐ Retired
- ☐ Not applicable, I am actively practicing

8. If you sought a dental hygiene position within the last year, how long was the time between when you started job searching to being hired? (*adapted from Massachusetts dental hygiene survey²*)

- ☐ <1 week
- ☐ 1–2 weeks
- ☐ 2–4 weeks
- ☐ 4–8 weeks
- ☐ 8–11 weeks
- ☐ 3 months or longer
- ☐ Didn't look for a new position

9. Please assess the degree of difficulty securing employment faced by dental hygienists in the geographic area in which you live/work? (*Maine dental hygiene survey³*)

- ☐ Very easy
- ☐ Somewhat easy
- ☐ Neither easy nor difficult
- ☐ Somewhat difficult
- ☐ Very difficult

2 Massachusetts Department of Public Health. A Report on the Commonwealth's Dental Hygiene Workforce: Results and Recommendations from a 2007 Statewide Survey. December 2007.

3 The Center for Health Workforce Studies, School of Public Health, State University of New York. The Oral Health Workforce in Maine. December 2012.

☐ Don't know

10. If you answered somewhat or very difficult, what are the reasons that securing employment is difficult? *(adapted from Maine dental hygiene survey)*

☐ There are too few dentists working in the area

☐ There are too many RDHs in the area

☐ Dentists hire dental assistants to provide some services usually provided by dental hygienists

☐ Education programs in Iowa graduate too many dental hygienists annually

☐ Other_____

☐ Not applicable

11. Please indicate your anticipated plans for the next five years: *(adapted from Maine dental hygiene survey)*

☐ I expect to remain in my current position

☐ I expect to seek a similar position in another setting

☐ I expect to leave dental hygiene and seek employment in another field

☐ I expect to retire

☐ I don't know

☐ Other_____

12. Are you working as many hours in dental hygiene as you would like? *(Michigan dental hygiene survey⁴)*

☐ Yes

☐ No

13. If you answered no, about how many more hours per week would you like to be working? *(adapted from Michigan dental hygiene survey)*

☐ 1–4 hours

☐ 5–8 hours

☐ 9–12 hours

☐ More than 12 hours

14. If you are not working as a dental hygienist or you are unemployed and seeking work as a hygienist, why is this the case? *(Michigan dental hygiene survey)*

☐ Difficult to find hygienist position

☐ Better salary in other type of work

☐ Work environment prevents me from practicing effectively

☐ Other position more rewarding professionally

4 Michigan Department of Community Health. Survey of Dental Hygienists: Survey Findings 2009.

- ☐ Disability/physical demands of the job
- ☐ Taking care of home/family
- ☐ Not applicable, I am currently working as a dental hygienist

15. How much longer do you plan to remain working in dental hygiene? (*Pennsylvania dental hygiene survey*⁵)

- ☐ 0–2 years
- ☐ 3–5 years
- ☐ 6–10 years
- ☐ 11–15 years
- ☐ 16+ years
- ☐ Currently not in practice

16. If you plan to leave direct patient care within the next 5 years, indicate your principal reason below: (*Pennsylvania dental hygiene survey*)

- ☐ Career change
- ☐ Family reasons
- ☐ Financial reasons – salary/benefits
- ☐ Financial reasons – other
- ☐ Physical reasons
- ☐ Retirement
- ☐ Return to school
- ☐ Stress/Burnout
- ☐ Other _____
- ☐ Not applicable, I plan to work in patient care for more than 5 years

17. In the past year did you... (check all that apply)⁶ (*Virginia Healthcare Workforce Data Center Methodology*)

- ☐ Experience involuntary unemployment
- ☐ Experience voluntary unemployment
- ☐ Work part-time or temporary positions, but would have preferred a full-time/permanent position
- ☐ Work two or more positions at the same time
- ☐ Switch employers or practices

⁵ Bureau of Health Planning, Pennsylvania Department of Health. 2011 Pulse of Pennsylvania's Dentist and Dental Hygienist Workforce: A Report in the 2011 Survey of Dentists and Dental Hygienists. November 2012.

⁶ Experiencing at least 1 indicates employment instability.