Dentists in Delaware
2016

prepared for

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

by

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Executive Summary

The *Dentists in Delaware 2016* survey follows its predecessors fielded in 2012, 2008, 2005, and 1998. The Center for Applied Demography and Survey Research (CADSR) prepared this report for the Delaware Department of Health and Social Services, Division of Public Health. This project is jointly supported by the Bureau of Oral Health and the Bureau of Health Planning and Resources Management. Funding for this report is made possible through federal grant funding (Health Resources Services Administration, Bureau of Health Workforce and the Office of Rural Health Policy) as well as state funding.

This report is important for oral health care advocates, policy-makers, and other stakeholders to better understand the supply and distribution of dentists across Delaware. This information is utilized to help identify potential dental Health Professional Shortage Areas (HPSAs) in the state. If an area is deemed a HPSA by the federal Office of Shortage Designation, then facilities located there are eligible for participation in a variety of recruitment programs such as the Conrad State 30/J-1 Visa Waiver Program, the National Health Services Corps, and the State Loan Repayment Program. Additionally, this information may be utilized by recruitment programs to determine whether a dentist should be placed in a particular area.

The results of the survey indicate that Delaware has 352 dentists working in general/pediatric dentistry and 85 dentists working in other specialties. In addition to these findings, the following can be drawn from the data:

- Overall, the number of active dentists increased since 2012 from 380 to 437 in 2016.
- The number of general/pediatric dentists increased from 309 in 2012 to 352 in 2016, while the number of specialists increased from 71 to 85.
- The full-time equivalent (FTE) (using federal guidelines) general/pediatric dentist count decreased from 326 in 2012 to 305 in 2016. The FTE count of specialists (using FTE adjustment only) increased from 55 in 2012 to 65 in 2016.
- The population-to-dentist (general/pediatric) ratio (using federal guidelines) increased from 2,806 persons per FTE dentist in 2012 to 3,128 persons in 2016.

- If entire counties are considered rational service areas, neither Kent nor New Castle counties would be considered underserved areas. However, Sussex County exceeds the HPSA threshold of 5,000:1. The population-to-provider ratio is only one of the variables used for HPSA designation.

- The proportion of Asian dentists decreased slightly from 8.1 percent in 2012 to 6.7 percent in 2016. African American dentists increased by about 1.5 percentage points since 2012. The proportion of dentists reporting "other" as their race (including multi-racial) rose from about 2.4 percent to about 4.1 percent statewide.

- Nearly 45 percent of dentists statewide are 55 years of age or older. Just over 23 percent are 65 years of age or older.

- About 21 percent of Delaware dentists will either not be practicing dentistry in five years or are unsure if they will be practicing.

- About 98 percent of general/pediatric dentists and specialists in Delaware are accepting new patients.

- General/pediatric dentists in Kent and Sussex counties see more patients per week than their colleagues in New Castle County. Weekly patient encounters for general/pediatric dentists are 109 patients per week in Kent County and 106 patients per week in Sussex County, while general/pediatric dentists in New Castle County see 89 patients per week.

- Waiting times for new patients seeking an appointment with a general/pediatric dentist are somewhat longer in Kent County (26 days) than in Sussex County (16 days) or New Castle County (nine days).

- Most dentists in Delaware participate in dental insurance plans, offer flexible payment plans, and provide charity care.

- Medicaid is accepted by about 62 percent of general/pediatric dentists, fewer than 59 percent of specialists accept Medicaid.

- Almost all dentists use resources provided by hygienists and dental assistants. Dental technicians were not addressed in this survey.

- Many of Delaware's dentists offer flexible hours by remaining open at night and on Saturday. General/pediatric dentists are more likely to offer such hours than are specialists.

- Approximately 41 percent of dentists practicing in Delaware accept pediatric patients under 3 years of age.

Overview

This report provides new information and analysis for assessing the need for dental services and understanding trends that impact the supply of dental services.

In 1998, the Division of Public Health (DPH) began to measure the number and spatial distribution of dentists practicing in Delaware. DPH repeated the study in 2005, 2008, 2012, and again in 2016. The objective was to identify underserved areas and to understand any existing or developing trends that could impact the supply of dental services. The 2016 survey instrument replicated what was used in previous years. One improvement is a verification of providers and addresses provided by DPH using publicly available sources.

The method chosen to gather the information was a self-administered mail survey to all of Delaware's 472 dentists. This approach included a pre-letter and an initial mail survey, coupled with three follow-up mailings to non-respondents. By the project's conclusion, 432 dentists were contacted. Responses were received from 194 dentists. The effective response rate in 2016 was 41 percent, compared to 70.4 percent in 2012. The significant decrease in the response rate is attributed to another unrelated dentists survey fielded by a separate entity at the time of this data collection.

As of March 2016, Delaware had 472 dentists. (This is an increase of 10 licensed dentists from 2012, when Delaware had 462 licensed dentists). Of those 472 dentists, by performing a search of publicly available sources, 472 dental provider addresses were identified in Delaware. However, this does not mean they are active or that they have a Delaware practice. Similarly, dentists living in other states may have an active practice in Delaware. Based on the survey results, adjusted for non-respondents, approximately 437 dentists actively practice in Delaware. This total is used to produce all estimates presented throughout this report.[1] The adjustment for non-respondents is based on geographic weights. The weights are calculated as a ratio of dentists in a Census County Division and the number of responses

received from that Census County Division. This weight is then applied to all responses received.

This report focuses on all dentists. This population includes general/pediatric dentists and specialists. Using the survey data, it is estimated that in 2016, 352 dentists worked as general/pediatric dentists and 85 dentists practiced in specialty areas. In the balance of this report, most responses are reported for these two major groups.

It is important to note that the term 'general/pediatric dentists' used in the report refers to dentists who chose the following three self-designated practice codes when asked about their specialty: general/pediatric dentistry (DG), pediatric dentistry (PED DENT), and general practice residency (GRP). For a listing of all codes, see Appendix A. The decision to include these dentists among general/pediatric dentists is based on the Health Professional Shortage Area (HPSA) designation criteria (see Appendix B, Part I – Geographic Area/B. Methodology/ 3. Counting Dental Practitioners). The term 'specialist' refers to dentists who selected one of the eight specialties (see Appendix A, page 5). The only exception to the above use of the term 'specialist' is on page 20, Figure 2.13, where pediatricians are listed/tabulated among specialists for comparison purposes only.

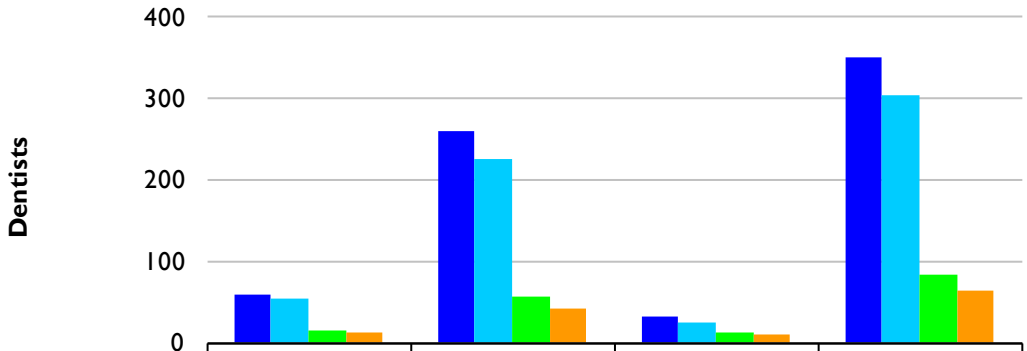
Not all dentists practice full time. To account for this, according to the Federal Health HPSA guidelines[2], adjustments are necessary to allow for a true measure of dental service capacity within a given geographic area from year to year. This adjustment provides the number of FTE dentists. For example, a dentist engaged in delivering care directly to patients 40 or more hours per week is defined as a full-time dentist. Less than 40 hours is considered less than full time. For each four hours less than 40 hours, 0.1 FTE is deducted. Anything more than 40 hours is considered only as full time. A dentist delivering 60 hours per week of care is still counted as one full-time equivalent dentist.

[1] On occasion, the data in the tables may not add to the total of 368 dentists because some information was not reported.

[2] Federal Register/Vol.45, No.223/ Monday, November17, 1980, Part IV Department of Health and Human Services, 42 CFR Part 5, p.76004.

The Federal HPSA guidelines indicate that general and pediatric dentists' FTEs should be further adjusted to reflect variations in productivity measured by the number of auxiliary staff members employed to assist in the practice. A dentist's FTE is increased incrementally for each dental hygienist and/or dental assistant employed. Also, since age is often a factor in a dentist's availability, adjustments are further made to account for the practitioner's age in line with criteria outlined by the rules governing HPSA designations. Thus, beginning at the age of 55, a dentist's FTE is incrementally decreased. These factors are used to calculate the FTE.FED number of dentists in Delaware (FTE.FED stands for Full Time Equivalent calculated using the federal government's productivity factor). These adjustments are further described in Appendix B.

Figure 1.1
Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	60	260	32	352
General/Pediatric FTE.FED	54	225	26	305
Specialist	15	57	13	85
Specialist FTE	12	43	10	65

Source: Center for Applied Demography & Survey Research
University of Delaware

Although the federal HPSA guidelines for determining dental shortage areas refer to Doctors of Dental Surgery (DDS) or Doctors of Dental Medicine (DMD) who practice general and/or pediatric dentistry, this study applies the time adjustment formula described above (FTE formula only) to account for the service capacity of specialists throughout the state. Thus, following the federal guidelines, the FTE calculation is used to report the full-time equivalent number of specialists while the FTE.FED number is used to report the full-time equivalent

number of those who practice general or pediatric dentistry, taking into account recommended productivity measures.

Figure 1.1 summarizes the current number of dentists practicing in Delaware by county of practice. The number of active dentists is provided in Figure 1.1 along with FTE estimates. The FTE.FED is calculated using the federal guidelines which applies to general practitioners and pediatric dental specialists. FTE's for specialists are computed based on 40 hours of direct patient care and do not reflect either the age adjustment or an adjustment for hygienists or dental assistants.

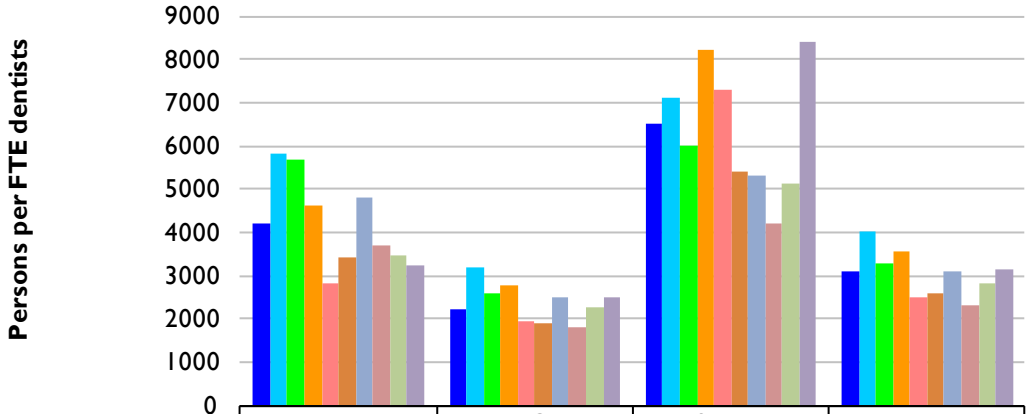
The actual number of general/pediatric dentists practicing increased from 309 in 2012 to 352 in 2016. Delaware also experienced an increase in the number of specialists since 2012. In 2016, 85 specialists were practicing in Delaware, up from 71 in 2012.

The shift in general/pediatric full-time equivalencies (FTE.FED) is attributed to the decrease in the number of practitioners, coupled with an aging dental practitioner population and fewer hours engaged in direct patient care. The increase in the number of specialists contributes to the increase in this classification's full-time equivalency.

Given Delaware's 2016 population of 954,077[3], each "FTE.FED" dentist serves about 3,128 persons, an increase from 2,806 persons per FTE.FED dentist since 2012 (Figure 1.2). These ratios reflect only those dentists in general/pediatric or pediatric practice. For the three counties, the estimates for each FTE.FED dentist are 3,243 persons in Kent County (down from 3,470 in 2012); 2,490 persons in New Castle County (up from 2,281 in 2012); and 8,416 in Sussex County (up from 5,124 in 2012). The proportion reported for Sussex County deserves qualifications. It will be important to re-visit this ratio in the next round of the survey to understand if this is a reflection of the real situation on the ground or an artifact of a lower survey response rate.

[3] Annual Population Projections, Delaware Population Consortium, October 27, 2016, v 2016.0, Delaware

Figure 1.2
Delaware Population to Dentist (General/Pediatric) Ratios 1998 to 2016
by County



	Kent	New Castle	Sussex	Delaware
1998-FTE Ratio	4200	2200	6500	3100
2005-FTE Ratio	5800	3200	7100	4000
2008-FTE Ratio	5700	2600	6000	3300
2012-FTE Ratio	4627	2785	8200	3573
2016-FTE Ratio	2824	1938	7294	2504
1998-FTE.FED Ratio	3400	1900	5400	2600
2005-FTE.FED Ratio	4800	2500	5300	3100
2008-FTE.FED Ratio	3700	1800	4200	2300
2012-FTE.FED Ratio	3470	2281	5124	2806
2016-FTE.FED Ratio	3243	2490	8416	3128

Source: Center for Applied Demography & Survey Research
University of Delaware

The data labeled simply "FTE Ratio" represents full-time equivalencies without making the federal productivity adjustments for age and auxiliaries and is shown for reference purposes only. Only the hours of direct patient care are considered. The data items labeled as "FTE.FED Ratio" represent full-time equivalencies with adjusted ratios for age and auxiliaries. Improvements in both ratios are shown in Kent and New Castle counties. For Sussex County, only the FTE ratio shows improvement; the FTE.FED ratio worsened. Future survey rounds

will determine if this is the real situation on the ground; or an artifact of a lower survey response rate.

One of the main criteria used by the federal government to determine a dental Health Professional Shortage Area (HPSA) is the ratio of persons per FTE.FED dentist.[4] The threshold of 5,000 persons per FTE.FED dentists must be reached for an area to be considered a shortage area. In 2016, using that criteria alone, neither Kent nor New Castle counties would come close to qualifying. However, Sussex County exceeds the HPSA threshold.

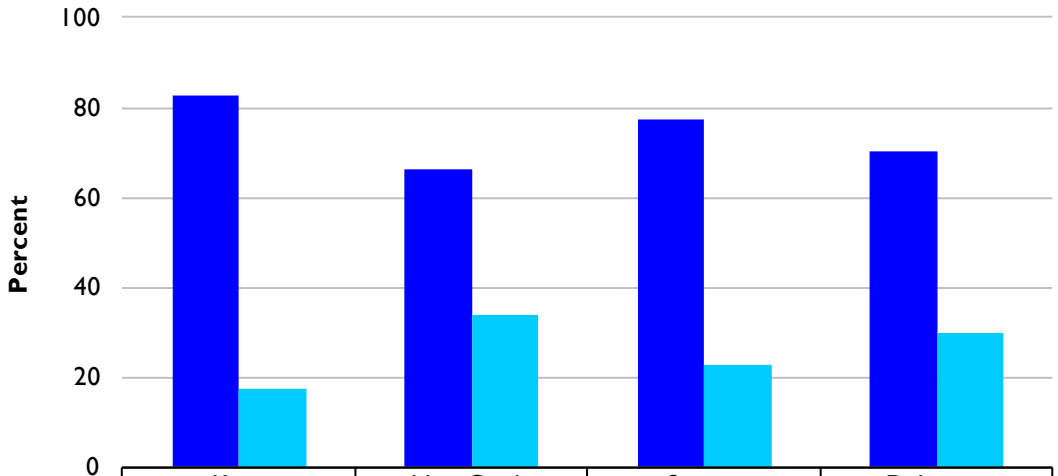
As the population increases throughout the state and the demographic landscape shifts, recruitment and retention efforts are evaluated on a regular basis to assure that necessary dental services continue to be available to a wide range of people varying in age, ethnicity, and racial backgrounds. The remainder of this report examines different aspects of dentists practicing in Delaware and his/her practices. Overall, the objective is to present the attributes that affect the availability of dental services across population groups throughout the state.

[4] In special cases this threshold is lower as described in Appendix B, Dental HPSA Designation Criteria.

Demographics

The dental community in Delaware is 70 percent male (Figure 2.1). There is, however, some variation among the counties. Kent County has about 13 percentage points fewer female dentists than the state overall. In New Castle County, 34 percent of the dentists are female, compared to 23 percent in Sussex County.

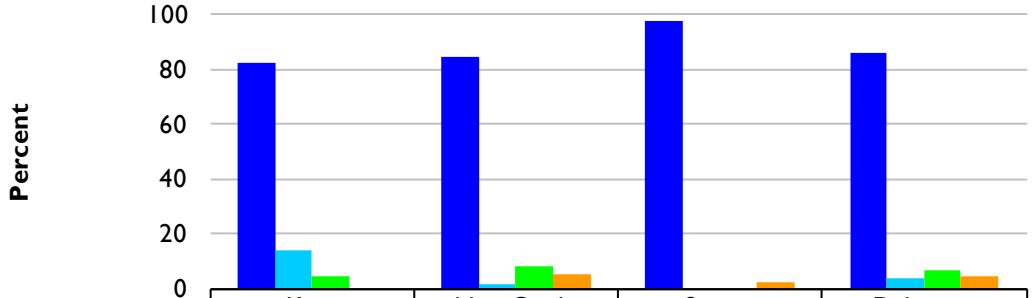
Figure 2.1
Gender of Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
Male	82.7	66.0	77.3	70.0
Female	17.3	34.0	22.7	30.0

Source: Center for Applied Demography & Survey Research
University of Delaware

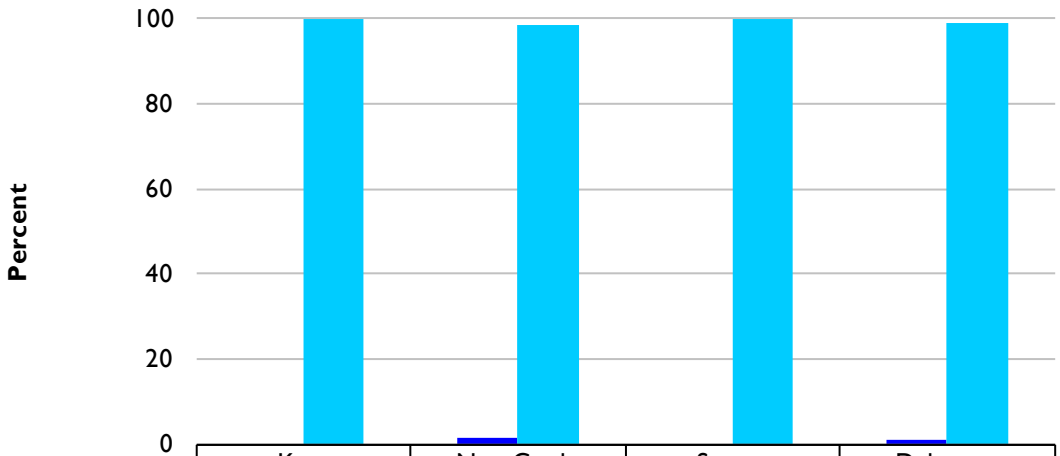
Figure 2.2
Race of Delaware Dentists 2016
by County



	Kent	New Castle	Sussex	Delaware
Caucasian	82.4	85.0	97.6	85.8
African American	13.5	1.3	0.0	3.4
Asian	4.1	8.3	0.0	6.7
Other	0.0	5.3	2.4	4.1

Source: Center for Applied Demography & Survey Research
University of Delaware

Figure 2.3
Hispanic Origin of Delaware Dentists 2016
by County



	Kent	New Castle	Sussex	Delaware
Hispanic	0.0	1.3	0.0	0.9
Non-Hispanic	100.0	98.7	100.0	99.1

Source: Center for Applied Demography & Survey Research
University of Delaware

The racial distribution of dentists by county is shown in Figure 2.2. The most striking aspect of this table is the low proportion of African American dentists relative to the proportion of African Americans in Delaware. African Americans account for more than 21.4[5] percent of Delaware's population, yet only 3.4 percent of Delaware dentists are African American. This is an decrease of about 2 percentage points since the last survey in 2012. The proportion of Asian dentists also decreased about two points since the 2012 survey.

Dentists identifying themselves as "other," including multi-racial, rose from 2.4 percent in 2012 to 4.1 percent in 2016 statewide. At the county level, Kent County experienced the greatest shift in racial diversity among its dentists. In 2012, about 11 percent of dentists in Kent County were racial minorities. By 2016, roughly 18 percent of Kent County dentists identified themselves as African American or Asian. About 98 percent of Sussex County dentists report being Caucasian.

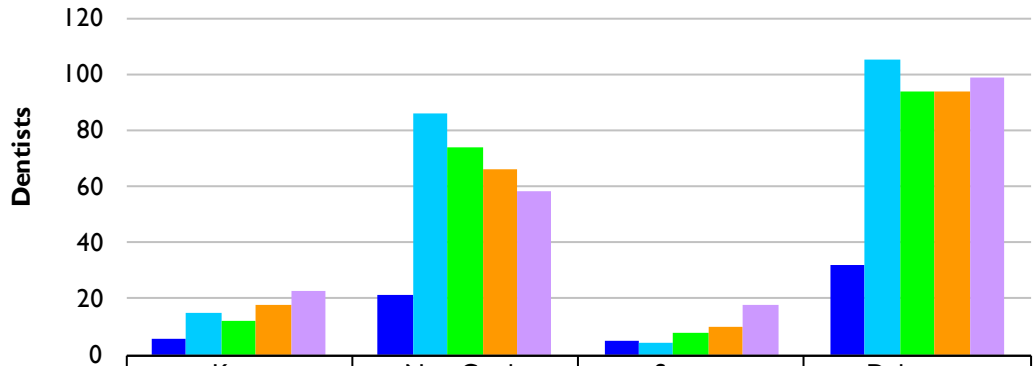
Practitioners of Hispanic origin are of particular interest because beginning in the 1990s, Delaware experienced a rapid growth in its Hispanic population, particularly in Sussex County. Currently, Delaware's Hispanic population is approximately 9 percent while the dentist population is only about 1 percent. No Hispanic dentist reported from Kent or Sussex counties (Figure 2.3).

The U.S. Department of Health and Social Services suggests that greater diversity within health professions positively correlates with improved public health outcomes. Greater diversity has been found to increase access to care for underserved populations and better enables minority patients to see practitioners with whom they share a common race, ethnicity, or language.[6] As Delaware's population diversifies, there may be a need to recruit or train more African American and Spanish-speaking dentists and/or staff, particularly in New Castle and Sussex counties.

[5] Annual Population Projections, Delaware Population Consortium, October 27, 2016, v 2016.0, Delaware

[6] U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions. *The Rationale for Diversity in the Health Professions: A Review of the Evidence.* October 2006.

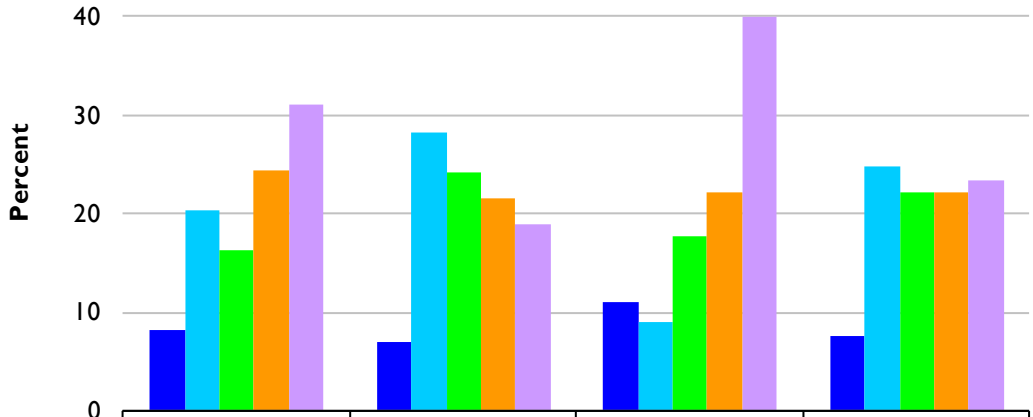
Figure 2.4
Age of Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
Under 35	6	21	5	32
35-44	15	86	4	105
45-54	12	74	8	94
55-64	18	66	10	94
65+	23	58	18	99

Source: Center for Applied Demography & Survey Research
University of Delaware

Figure 2.5
Age Distribution of Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
Under 35	8.1	6.9	11.1	7.5
35-44	20.3	28.2	8.9	24.8
45-54	16.2	24.3	17.8	22.2
55-64	24.3	21.6	22.2	22.2
65+	31.1	19.0	40.0	23.3

Source: Center for Applied Demography & Survey Research
University of Delaware

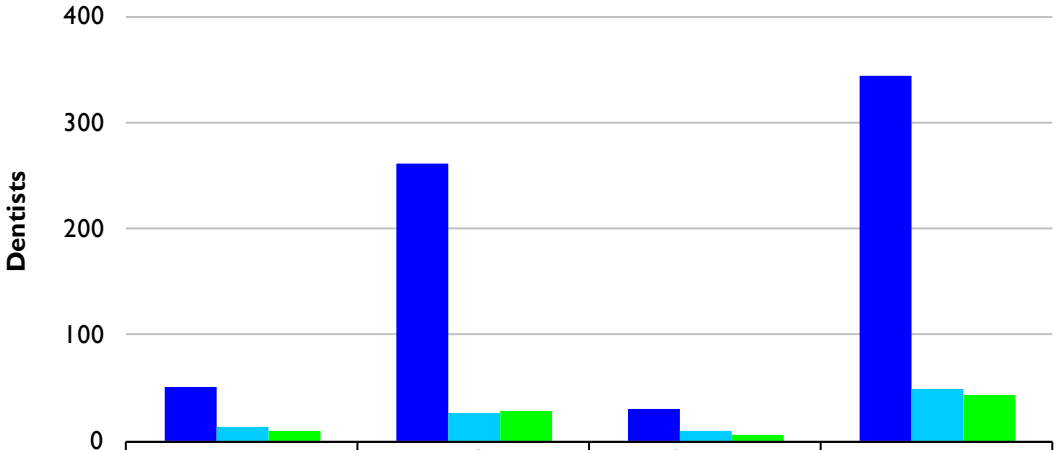
The number of dentists by age and county is shown in Figure 2.4, followed by the age distribution in Figure 2.5. While in 2012 there were 43 dentists under age 35 in Delaware, in 2016 there are only 32 in this age bracket. The proportion of young dentists decreased in Kent and New Castle counties but increased in Sussex County.

Yet, the majority of Delaware dentists are 45 years of age or older, and 23 percent are 65 years of age or older. The average age of Delaware dentists is 59. Sussex County has the highest proportion of dentists 65 and older (40 percent), followed by Kent County (19 percent).

The guidelines governing federal HPSA designations suggest that age factors into productivity levels. The HPSA guidelines include a reduction in full-time equivalency (FTE) estimates beginning at age 55 to more accurately assess dental service capacity at the aggregate level. Overall, 45 percent of Delaware dentists are 55 years of age or older. Unless proactive measures are taken, the state will continue to see a decline in the number of dental practitioners working at full capacity. Sussex and Kent counties will be most impacted by this downward trend.

Dentists were asked if they planned to be active in dentistry in five years (Figures 2.6 and 2.7). About 11 percent of Delaware dentists do not expect to be practicing five years from now, and about 10 percent are unsure. Given the age distribution of dentists in Kent and Sussex counties, fewer dentists practicing in these counties should be expected, as reflected by the data herein. About 20 percent of Sussex County dentists and roughly 17 percent of Kent County dentists indicate that they have no intention to practice in 2021. Approximately 9 percent of New Castle County dentists indicated not being active by 2021.

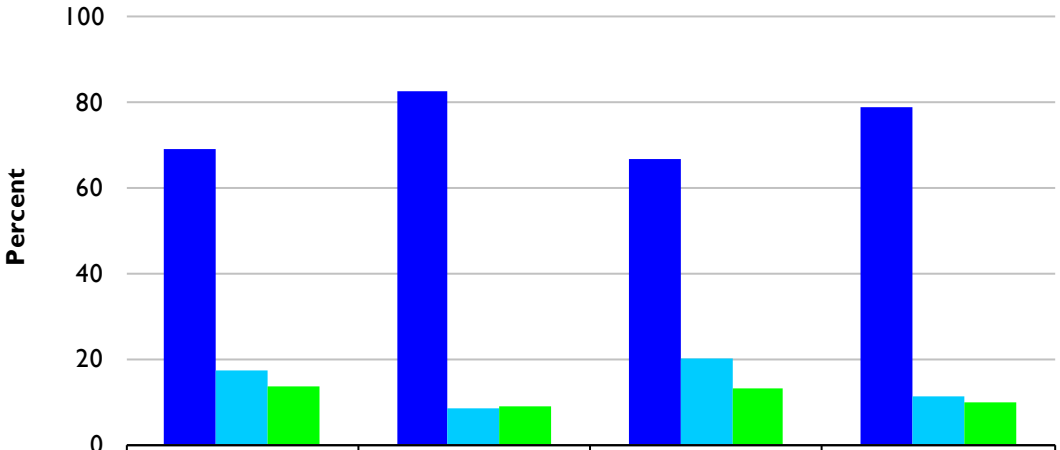
Figure 2.6
Number of Delaware Dentists 2016 Active in Five Years by County



	Kent	New Castle	Sussex	Delaware
Yes	51	262	30	343
No	13	27	9	49
Unsure	10	28	6	44

Source: Center for Applied Demography & Survey Research
University of Delaware

Figure 2.7
Percentage of Delaware Dentists 2016 Active in Five Years by County

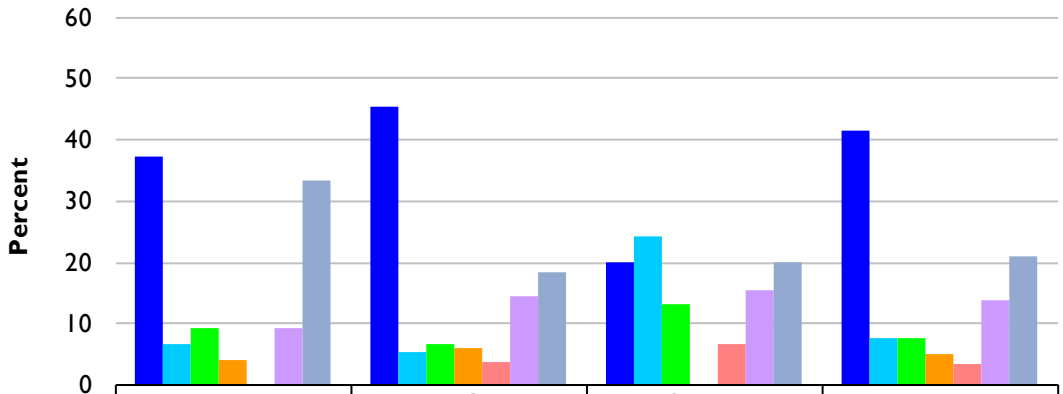


	Kent	New Castle	Sussex	Delaware
Yes	68.9	82.6	66.7	78.7
No	17.6	8.5	20.0	11.2
Unsure	13.5	8.8	13.3	10.1

Source: Center for Applied Demography & Survey Research

To better understand why some dentists choose to practice in Delaware and others practice in other states, it is necessary to study several factors that affect the supply of dental providers who serve Delaware residents. Several pieces of information are useful for this purpose. First, where did this dentist originally reside as measured by the state from which he/she graduated high school? Second, in what state did the dentist attend dental school? Third, in what state did the dentist complete his/her residency?

Figure 2.8
State of High School Graduation of Delaware Dentists 2016
by County



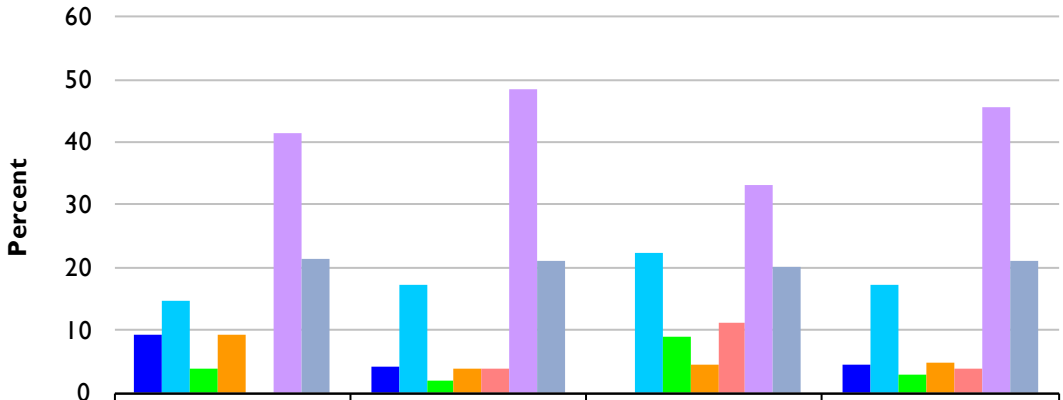
	Kent	New Castle	Sussex	Delaware
DE	37.3	45.4	20.0	41.4
MD	6.7	5.4	24.4	7.6
NJ	9.3	6.6	13.3	7.8
NY	4.0	6.0	0.0	5.0
OH	0.0	3.8	6.7	3.4
PA	9.3	14.5	15.6	13.7
Other	33.3	18.3	20.0	21.1

Source: Center for Applied Demography & Survey Research
University of Delaware

About 79 percent of Delaware's dentists graduated from a high school in Delaware or one of the surrounding states (Maryland, New Jersey, New York, Ohio, or Pennsylvania), thereby suggesting that they grew up in the region (Figure 2.8). These findings mirror the 2012 survey results. It appears that there is some variation in preferred practice location relative to the state in which dentists (presumably) grew up. Delaware dentists who grew up in Maryland

are more prominent in Sussex County than the northern parts of the state. In the past, dentists originating from Pennsylvania used to be more oriented toward New Castle County, but now they also show up in Sussex County. Kent County hosts a far larger percentage (33 percent) of dentists who come from outside the region. Retired U.S. Air Force dentists from either current or past associations with Dover Air Force Base may contribute to this finding.

Figure 2.9
State of Dental School Attendance of Delaware Dentists 2016
by County



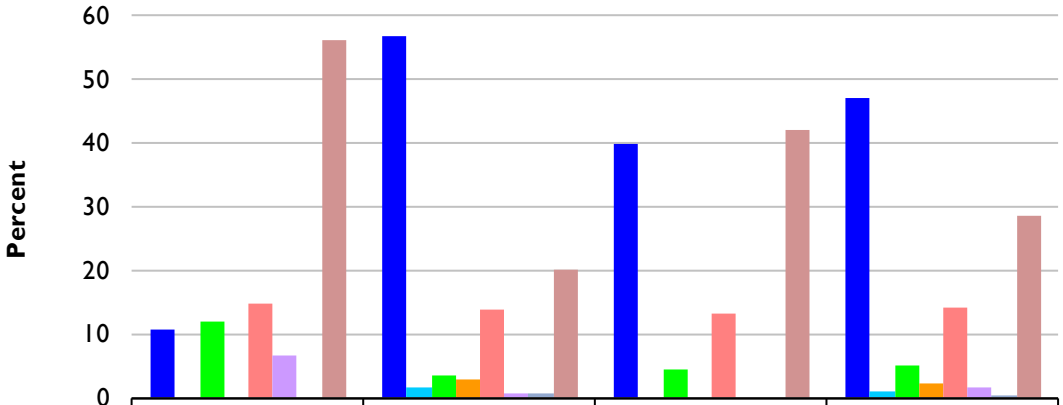
	Kent	New Castle	Sussex	Delaware
DC	9.3	4.1	0.0	4.6
MD	14.7	17.2	22.2	17.3
NJ	4.0	1.9	8.9	3.0
NY	9.3	3.8	4.4	4.8
OH	0.0	3.8	11.1	3.9
PA	41.3	48.3	33.3	45.6
Other	21.3	21.0	20.0	21.0

Source: Center for Applied Demography & Survey Research
University of Delaware

About 45 percent of Delaware dentists graduated from dental schools in Pennsylvania, down from 50 in 2012 (Figure 2.9). The second highest proportion graduated from Maryland dental schools (17 percent). The distribution among the other states is not all that different among the counties, with the exception of Kent County. About 21 percent of Delaware dentists graduated from dental schools outside of the region surrounding Delaware.

Over half of Delaware dentists who indicated completing a residency completed it in Delaware. (Figure 2.10 reflects the state in which Delaware dentists indicated having completed a residency program.) However, dentists practicing in Kent County are least likely to have completed their residency program in Delaware. Only about 11 percent of Kent County dentists completed their residency in the state, compared to 57 percent of dentists practicing in New Castle County and nearly 40 percent practicing in Sussex County.

Figure 2.10
State of Dental Residency Program of Delaware Dentists 2016
by County



	Kent	New Castle	Sussex	Delaware
DE	10.7	56.8	40.0	47.1
CT	0.0	1.6	0.0	1.1
MD	12.0	3.5	4.4	5.0
NY	0.0	2.8	0.0	2.1
PA	14.7	13.9	13.3	14.0
TX	6.7	0.6	0.0	1.6
VA	0.0	0.6	0.0	0.5
OTHER	56.0	20.2	42.2	28.6

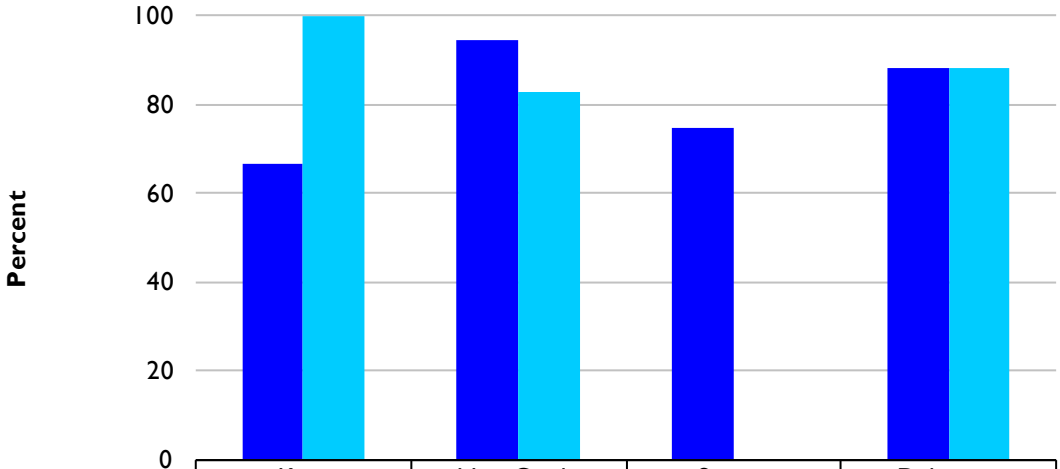
Source: Center for Applied Demography & Survey Research
University of Delaware

There is clearly a geographic orientation exhibited by these responses. It is plausible to suggest that similar patterns might emerge with the state of the dentist's residency. However, these findings demonstrate that most dentists attend college within several hundred miles of their homes, and they go to dental school within several hundred miles of where they attended

college. Just like in previous years, about 75 percent of those who graduated from high school in Delaware went to dental school in the region. This information may prove valuable to those recruiting new dentists to Delaware.

Not all dentists have completed a residency program. Although Delaware law requires that licensees have done so, there are two exceptions. Dentists who practiced for three years elsewhere may be granted a waiver. In addition, there is a waiver for those who practiced dentistry for two years while on active military duty. That explains, in part, the 88 percent completion rate (Figure 2.11).

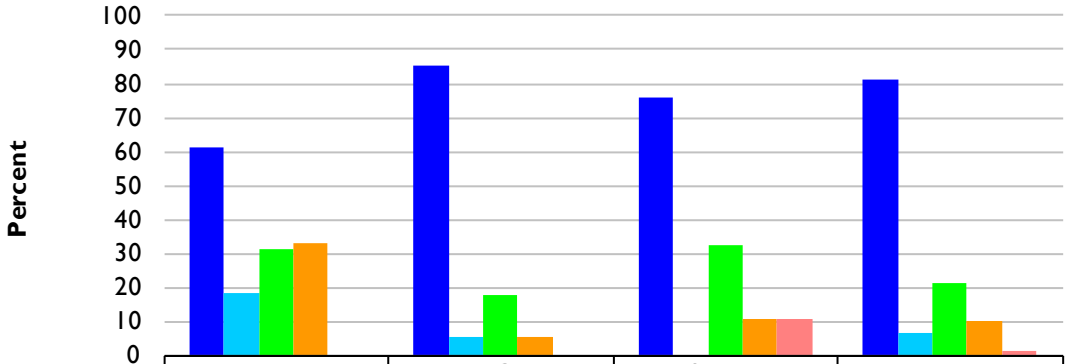
Figure 2.11
Dental Residency Program Completion by Delaware Dentists 2016
By County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	66.7	94.6	75.0	88.1
Specialist	100.0	82.8	0.0	88.4

Source: Center for Applied Demography & Survey Research
University of Delaware

Figure 2.12
Type of Dental Residency Program by Delaware Dentists 2016
By County



	Kent	New Castle	Sussex	Total
General	61.1	85.4	75.7	81.0
Advanced (AEGD)*	18.2	5.4	0.0	6.7
Specialized	30.9	17.7	32.4	21.0
Military	32.7	5.5	10.8	9.9
Other	0.0	0.0	10.8	1.0

*AEGD - Advanced Education in General Dentistry

Source: Center for Applied Demography & Survey Research
University of Delaware

The types of residency programs respondents completed are found in Figure 2.12. Responses are tabulated only for dentists who indicated having completed a residency. The totals will not add to 100 percent because some dentists, particularly those with military service, reported more than one type of residency.[7] The types of dental residency programs varied widely within the state. First, fewer dentists practicing in Kent County reported completing a general/pediatric dental residency than in the other two counties. Second, Kent County has the highest proportion of dentists who reported training associated with the military. Presumably this is related to Dover Air Force Base being located in Kent County. Third, 31 percent of Sussex County dentists and 32 percent of Kent County dentists were

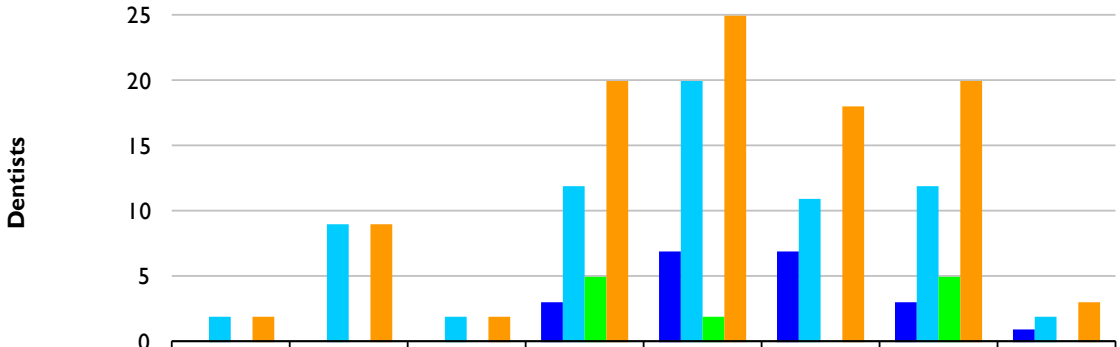
[7] AEGD is not generally recognized as meeting the requirement of having had a residency for licensure in the State of Delaware. However, it is included for reference purposes.

more likely to have completed a specialized dentistry residency program, compared to 14 percent of New Castle County dentists.

The number of specialist dentists is found in Figure 2.13 below. Those with a specialty in pediatric dentistry are shown here even though they are included in the General/Pediatric category for the FTE.FED calculation. This allows for an estimate of the number of active providers specializing in pediatric dentistry in each county.

Overall, specialists are more likely to practice in New Castle County than in Kent or Sussex counties. Increasing specialists in areas of the state that lack dental specialist services can be a focus of recruitment efforts.

Figure 2.13
Delaware Dental Specialists 2016
By County



	DPH	ENDO	OMP	OMS	ORTHO	PED DENT	PERIO	PROS
Kent	0	0	0	3	7	7	3	1
New Castle	2	9	2	12	20	11	12	2
Sussex	0	0	0	5	2	0	5	0
Delaware	2	9	2	20	29	18	20	3

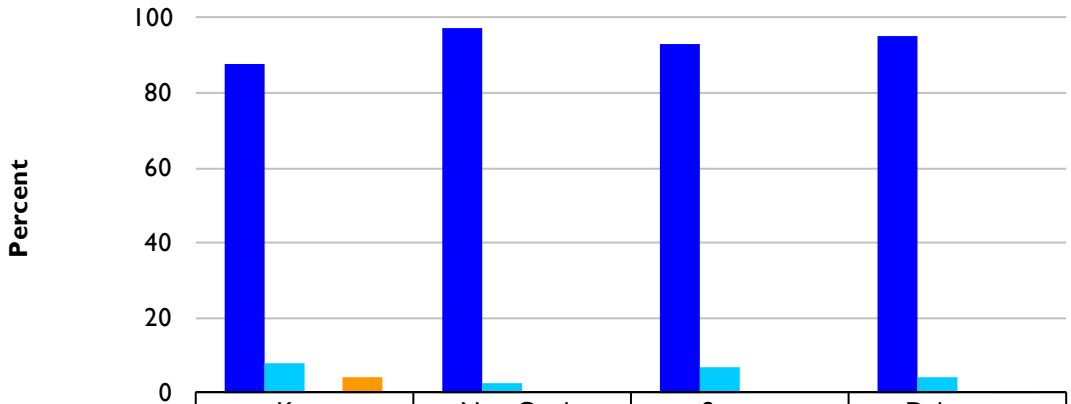
Source: Center for Applied Demography & Survey Research
University of Delaware

DPH	dental public health		ORTHO	orthodontics and dentofacial orthopedics
ENDO	endodontics		PED DENT	pediatric dentistry
OMP	oral and maxillofacial pathology		PERIO	periodontics
OMS	oral and maxillofacial surgery		PROS	prosthodontics

Practice Characteristics

This section examines the practice characteristics of the 437 dentists actively practicing in Delaware. These characteristics can be roughly divided into four areas. First, some broad attributes of the practices are presented. Second, issues related to accessibility are reviewed. Third, characteristics that affect payment for services are reported. Finally, information related to hiring qualified dental staff is provided.

Figure 3.1
Type of Practice of Delaware Dentists 2016
by County



	Kent	New Castle	Sussex	Delaware
Private Office	87.8	97.2	93.3	95.2
Clinic	8.1	2.8	6.7	4.1
Hospital	0.0	0.0	0.0	0.0
Other	4.1	0.0	0.0	0.7

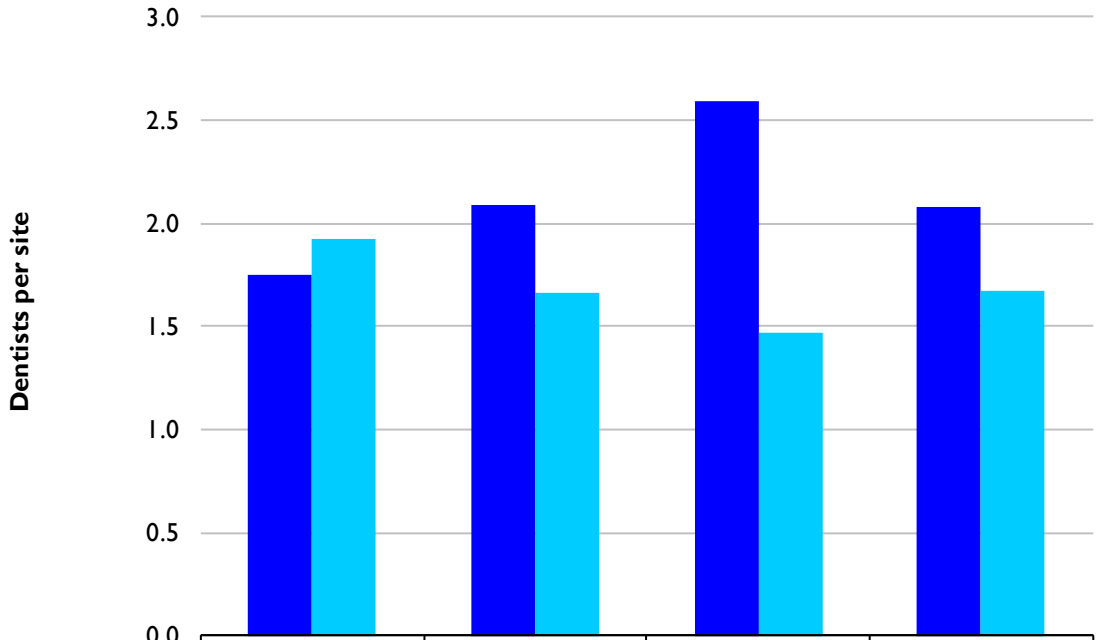
Source: Center for Applied Demography & Survey Research
University of Delaware

Respondents were asked about the setting of their primary employment (Figure 3.1). The overwhelming majority of dentists are operating in private practitioners' offices. However, other types of settings were listed, meaning that the responses supplied throughout the survey include elements outside the private sector. There was less diversity of settings in Kent and Sussex counties when compared to New Castle County. The zero percent reported for

'hospital setting' is likely related to question wording, as respondents were asked to identify the setting of their primary employment.

Dental practices are generally small, at least in terms of the number of dentists located at the practice site (Figure 3.2). Statewide, about 43 percent of practices have only one dentist on staff. The average number of general/pediatric dentists reported for practices is about two. Sussex County's dentists report a relatively larger average number of general/pediatric dentists per site.

Figure 3.2
Average Number of Delaware Dentists at the Primary Site 2016
by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	1.75	2.09	2.60	2.08
Specialist	1.93	1.66	1.47	1.68

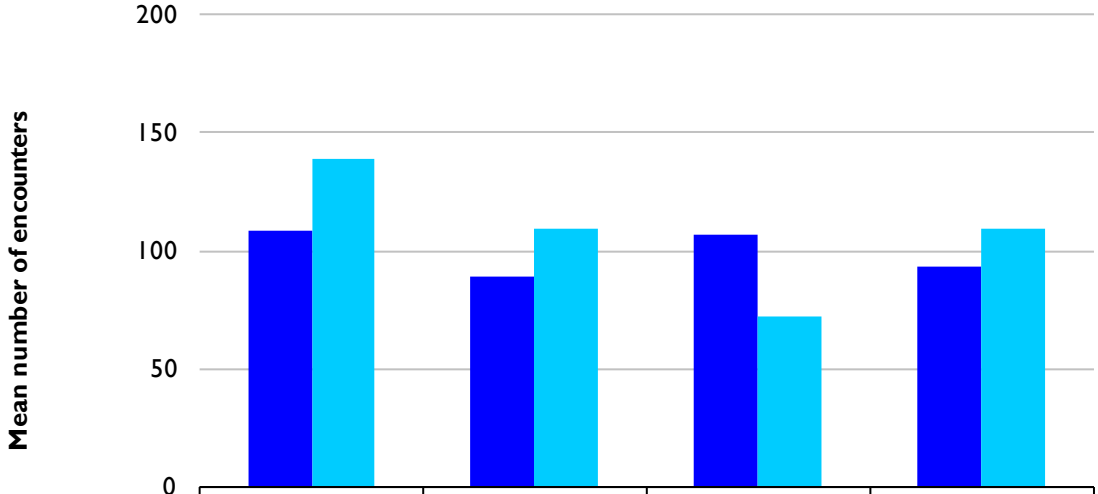
Source: Center for Applied Demography & Survey Research
University of Delaware

Another measure of size and capacity is the patient flow. The survey attempted to measure this by asking for the number of weekly patient encounters by the dentists or associated hygienists. Data was collected for the total number of patient encounters, number of patients for treatment, post-treatment evaluation, and the number of hygiene patients. For all

of these, the results mirror the results for the number of patient encounters by dentists found in Figure 3.3.

On average, Delaware dentists see about 100 patients per week at their primary practice location. As shown in Figure 3.3, in Kent County, general/pediatric dentists see an average of 109 patients per week, up from 87 patients per week in 2012. Specialists in Kent County see about 139 patients per week, up from about 92 in 2012. In New Castle County, the average number of patient encounters among general/pediatric dentists remained about the same (89). However, the average number of patient encounters of specialists in New Castle County increased from about 98 per week in 2012 to 109 per week in 2016. Sussex County experienced the greatest decline in the average number of weekly patient encounters. General/pediatric dentists in Sussex County see about 106 patients per week, compared to 113 per week in 2012. Specialists in Sussex County report fewer patient encounters: 72 per week in 2016, compared to 84 per week in 2012.

Figure 3.3
Average Weekly Patient Encounters of Delaware Dentists 2016
by County

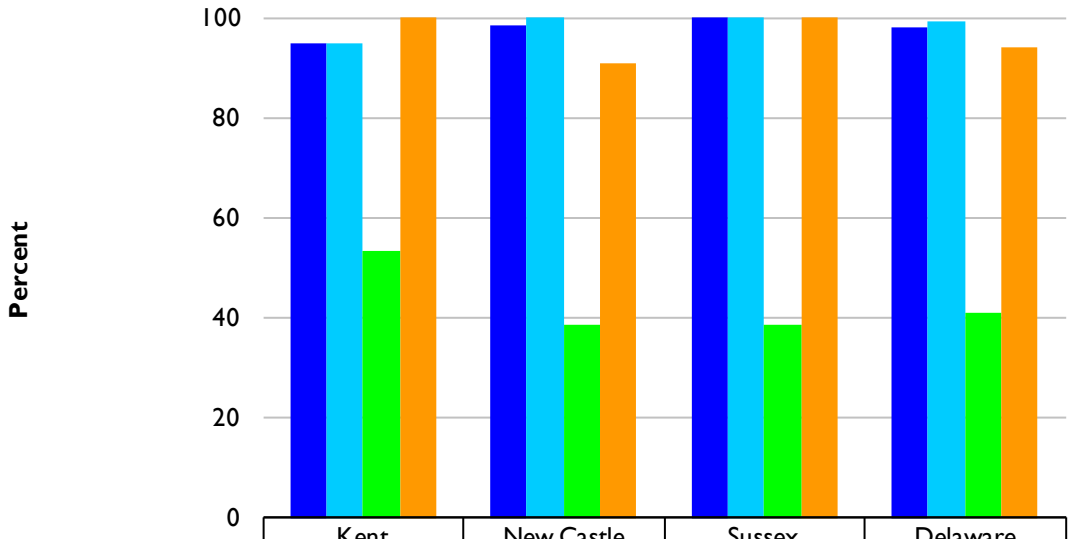


	Kent	New Castle	Sussex	Delaware
General/Pediatric	109	89	106	94
Specialist	139	109	72	110

Source: Center for Applied Demography & Survey Research
University of Delaware

The calculation of full-time equivalencies discussed in the first section made allowances for "auxiliaries" (dental hygienists and dental assistants) in determining the productivity of a dentist. These resources are used to provide many dental services (e.g., teeth cleaning, radiographs, etc.) that would otherwise have to be performed by the dentist. The utilization of such resources is quite high, as shown in Figure 3.4.

Figure 3.4
Use of Non-Dentist Resources by Delaware Dentists 2016
by County



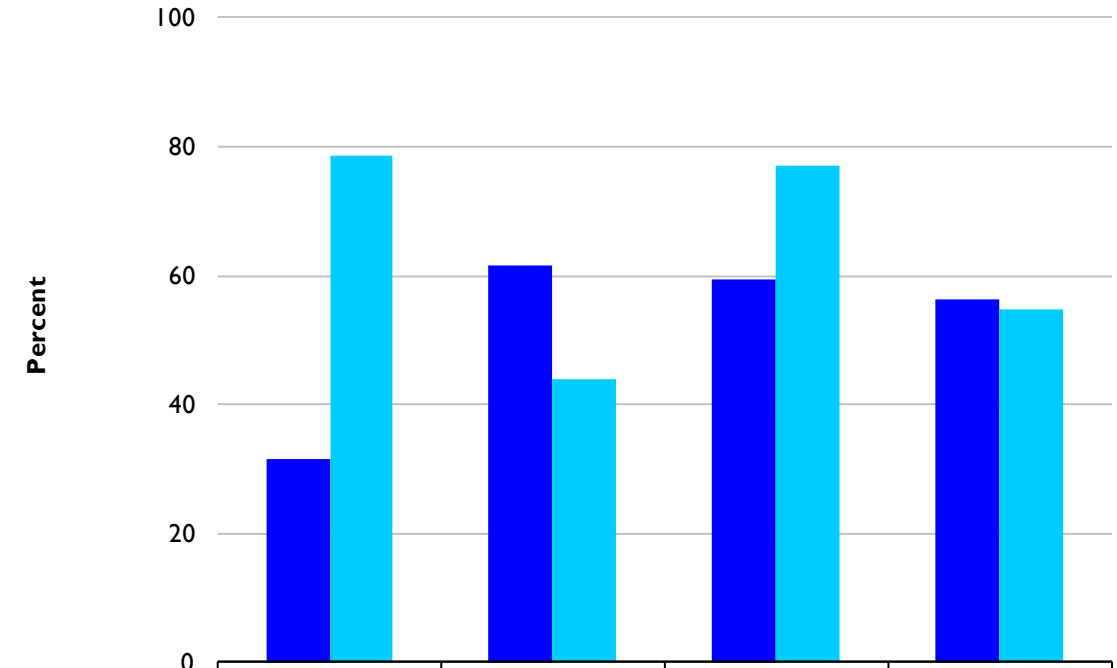
	Kent	New Castle	Sussex	Delaware
General/Pediatric Hygienists	95.0	98.5	100.0	98.0
General/Pediatric Assistants	95.0	100.0	100.0	99.1
Specialist Hygienists	53.3	38.6	38.5	41.2
Specialist Assistants	100.0	90.9	100.0	94.0

Source: Center for Applied Demography & Survey Research
University of Delaware

Around 100 percent of those practicing general/pediatric dentistry in New Castle and Sussex counties use both dental assistants and hygienists to provide the necessary services expected of a general dental practice. In fact, there is little difference in the distributions between those counties. The result for Kent County in both categories suggests a lower utilization rate by general/pediatric dentists for both categories of employees. This is consistent with findings from 2012.

The lower utilization of hygienists by dental specialists reflects differences between the specialties and not a lack of interest in using non-dentist resources. For example, a periodontist would rely heavily on hygienists, while an endodontist would not. Their use of dental assistants is comparable to the use of dental assistants in general/pediatric dentistry.

Figure 3.5
Languages Other than English Spoken at Delaware Dentists' Practices 2016
by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	31.7	61.6	59.4	56.3
Specialist	78.6	43.9	76.9	54.8

Source: Center for Applied Demography & Survey Research
University of Delaware

The population of Delaware is becoming more diverse. For example, the number of Hispanic Delawareans nearly doubled between 2000 and 2010.[8] Currently about 9 percent[9] of the population is Hispanic. For many, English is a second language or is not spoken at all. This presents a challenge for the dental community as they try to provide services to this population.

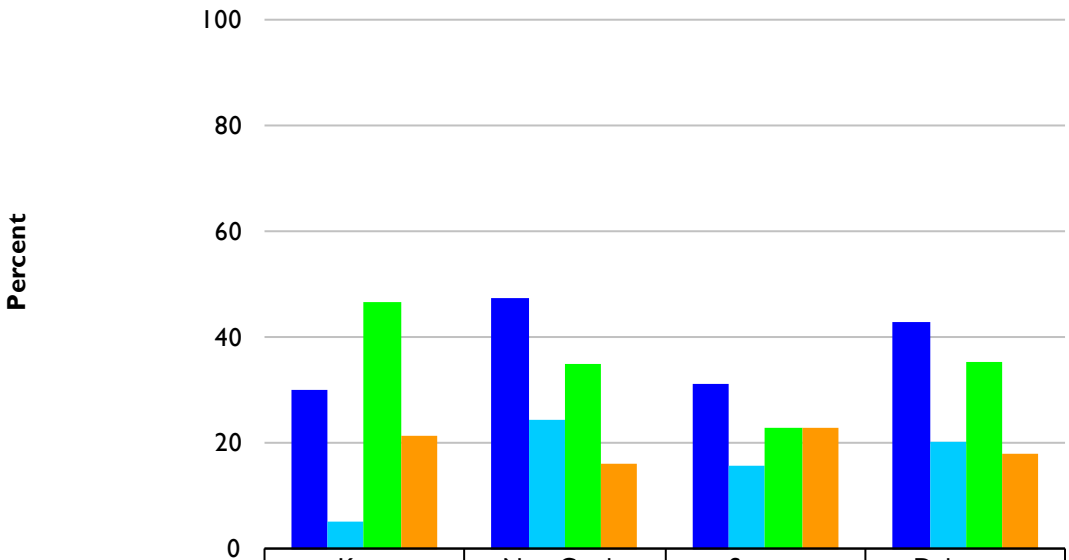
[8] U.S. Census Bureau, 2000 and 2010 Census, retrieved from http://www.census.gov/
[9] Annual Population Projections, Delaware Population Consortium, October 27, 2016, v 2016.0, Delaware

Respondents were asked if languages other than English were spoken at their practice site (Figure 3.5).

Across the state, almost 56 percent of general/pediatric dentists and about 55 percent of dental specialists in Delaware have the capability of communicating in a language other than English. Spanish was the most frequently mentioned language. Few differences exist between counties for both types of dental practices.

Another dimension of accessibility to dental services is having non-traditional office hours, i.e. hours other than 9:00 a.m. to 5:00 p.m., Monday through Friday. Respondents were asked if they provided either Saturday or evening office hours. Their responses are tabulated in Figure 3.6.

Figure 3.6
Saturday and/or Evening Hours of Delaware Dentists 2016
by County

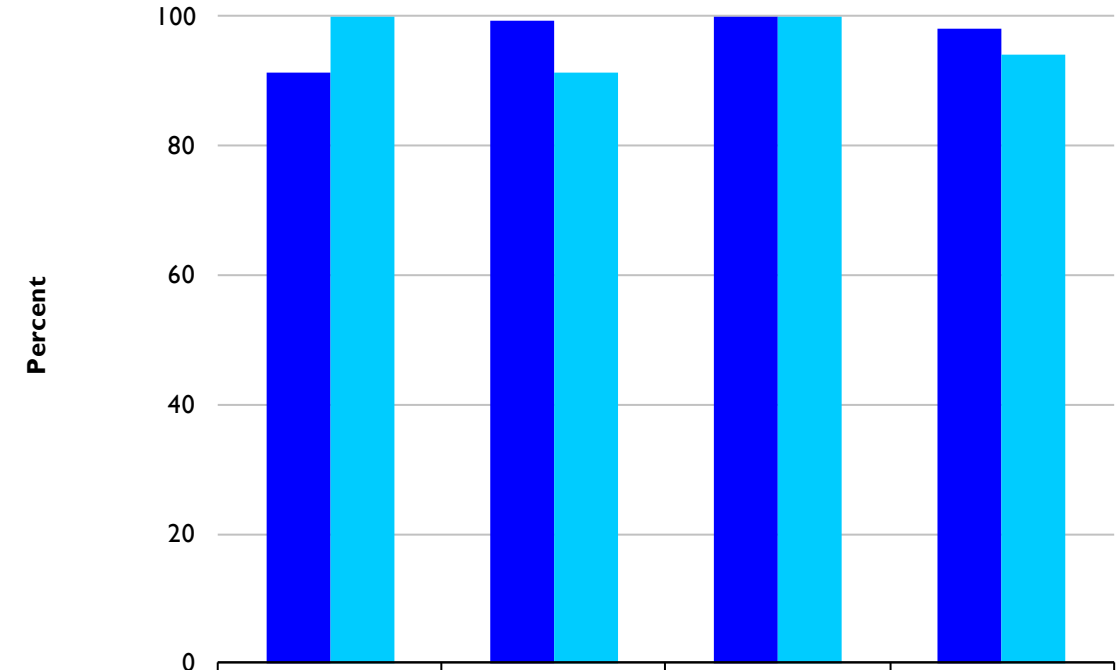


	Kent	New Castle	Sussex	Delaware
General/Pediatric Evening	30.0	47.2	31.3	42.8
General/Pediatric Saturday	5.0	24.5	15.6	20.3
Specialist Evening	46.7	35.1	23.1	35.3
Specialist Saturday	21.4	16.0	23.1	18.2

Source: Center for Applied Demography & Survey Research
University of Delaware

Overall, general/pediatric dentists are more likely to offer non-traditional office hours than specialists. Offering evening hours is roughly two times more popular than providing Saturday hours. Dentists in New Castle County are much more likely to offer non-traditional hours than dentists located in Kent County. Specialists in Kent County are more likely (47 percent) to offer evening hours than specialists in New Castle or Sussex counties.

Figure 3.7
Delaware Dentists Accepting New Patients 2016
by County



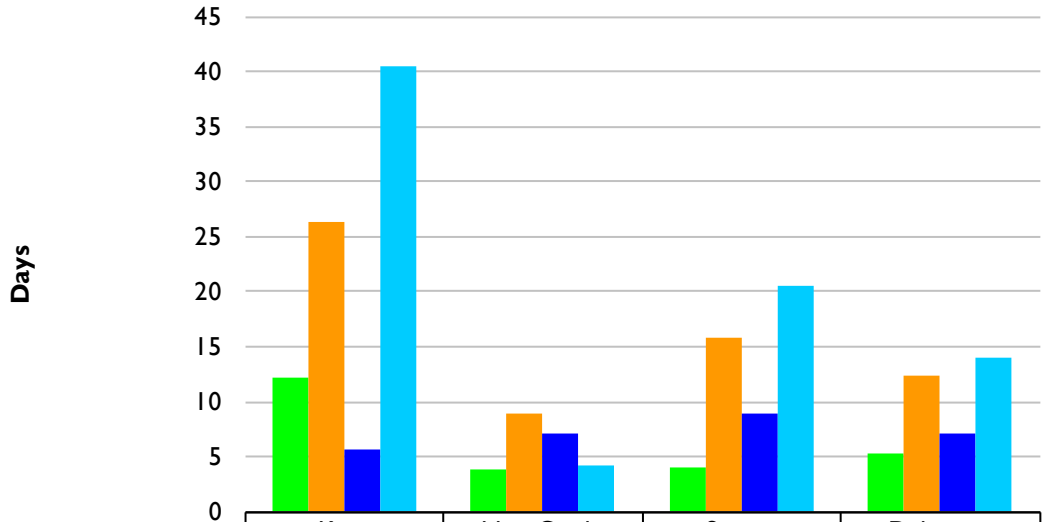
	Kent	New Castle	Sussex	Delaware
General/Pediatric	91.2	99.2	100.0	98.0
Specialist	100.0	91.4	100.0	94.2

Source: Center for Applied Demography & Survey Research
University of Delaware

A more direct measure of accessibility is whether dentists are accepting new patients. Similar to 2012, almost all dentists (generalists and specialists alike) are accepting new patients. Accessibility marginally decreased in Kent County; in 2016, 91.2 percent of generalists were accepting new patients, down from about 93 percent in 2012. In Sussex County, the number of

generalists accepting new patients increased from 94.3 percent in 2012 to 100 percent in 2016. The rate of new patient acceptance among specialists remained unchanged (100 percent) in Kent and Sussex counties but decreased from 96.2 percent in 2012 to 91.4 percent in 2016.

Figure 3.8
Average Wait Time for New and Established Patients for Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
Genereal/Pediatric Established	12.2	3.9	4.0	5.3
General/Pediatric New	26.4	9.0	15.8	12.4
Specialist Established	5.7	7.0	8.9	7.1
Specialist New	40.5	4.2	20.6	13.9

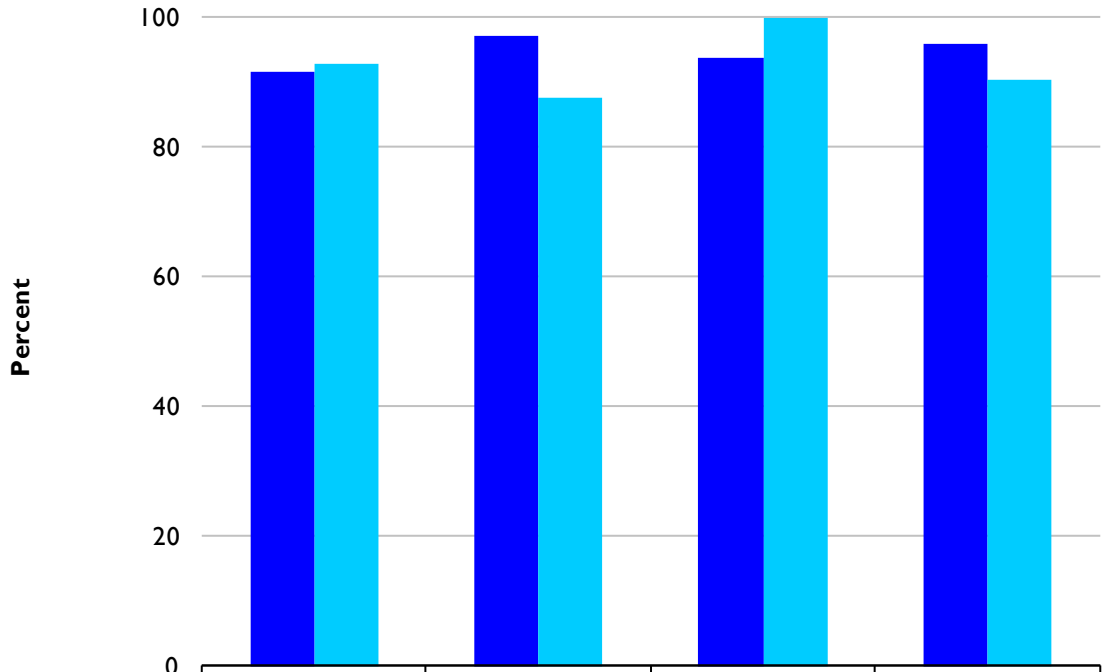
Source: Center for Applied Demography & Survey Research
University of Delaware

Another measure of capacity is the "wait time," or how long a person must wait for an appointment once they have called the dentist's office. This time varies significantly, depending on whether the problem is characterized as an emergency. Most dentists leave openings to handle emergency cases. Respondents were asked about "wait time" for non-emergency cases (Figure 3.8).

In 2016, wait times for dental specialists are generally longer than they are for general/pediatric dentists. However, in Kent County, new patients seeking an appointment with a dentist providing general/pediatric dental care will wait about 26 days, compared to nine days

in New Castle County. In Sussex County, the average wait time for new patients for general/pediatric dentists is around 16 days. In 2016, a new patient needing to see a specialist in Kent County will have to wait around 40 days. Closer examination of the data reveals a handful of outliers reporting wait times of 365 days; these numbers skew the mean reported here. It remains to be seen if this uptick is the beginning of a trend or a temporary situation.

Figure 3.9
Delaware Dentists Serving Pediatric Patients 2016
by County



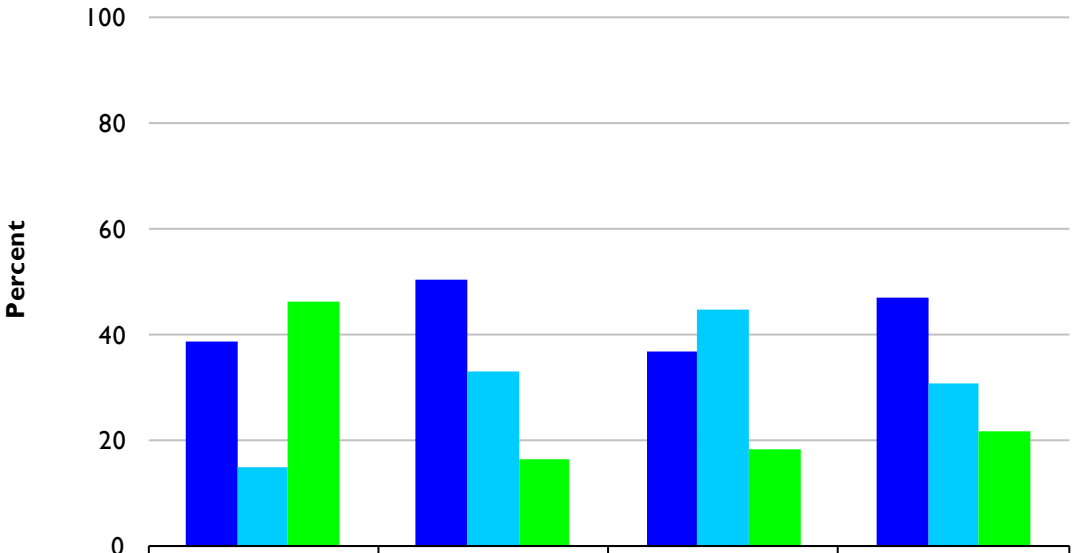
	Kent	New Castle	Sussex	Delaware
General/Pediatric	91.7	97.3	93.8	96.0
Specialist	92.9	87.7	100.0	90.5

Source: Center for Applied Demography & Survey Research
University of Delaware

Another area of interest is that of pediatric patients. According to the results found in Figure 3.9, many dentists serve pediatric patients. However, Sussex County's specialists stand out (just like in 2012) because 100 percent of the specialists in Sussex County indicate seeing pediatric patients.

Although the American Dental Association[10] and the American Academy of Pediatric Dentistry[11] recommend that a child's first dental checkup occur no later than his/her first birthday, many children do not see the dentist until around the age of 3 years or older. In Delaware, about 47 percent of dentists evaluate and/or treat children under the age of 3 (up from 41 percent in 2012). About 22 percent of dentists report seeing children older than 3.

Figure 3.10
Age of Youngest Pediatric Patients Treated by Delaware Dentists 2016
by County

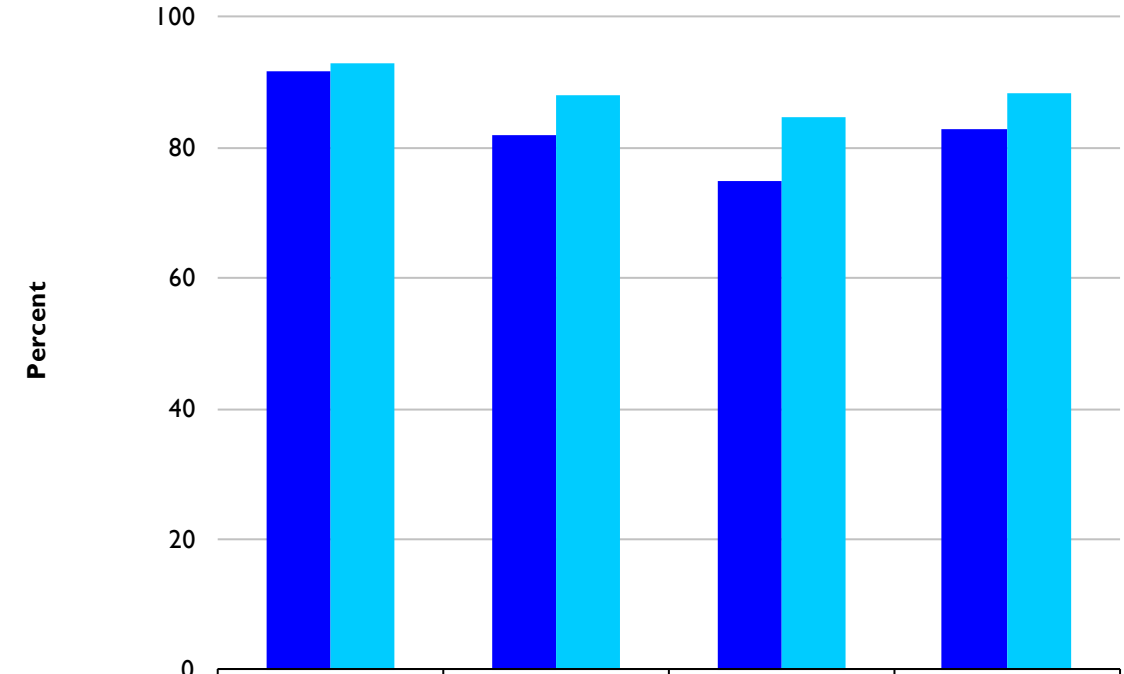


	Kent	New Castle	Sussex	Delaware
< 3 years	38.8	50.4	36.8	47.0
3 years	14.9	33.1	44.7	31.1
> 3 years	46.3	16.5	18.4	21.9

Source: Center for Applied Demography & Survey Research
University of Delaware

[10] https://www.ada.org/sections/scienceAndResearch/pdfs/patient_11.pdf
[11] http://www.aapd.org/resources/frequently_asked_questions/

Figure 3.11
Dental Insurance Plans Participation by Delaware Dentists in 2016
by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	91.7	81.9	75.0	83.0
Specialist	92.9	87.9	84.6	88.2

Source: Center for Applied Demography & Survey Research
University of Delaware

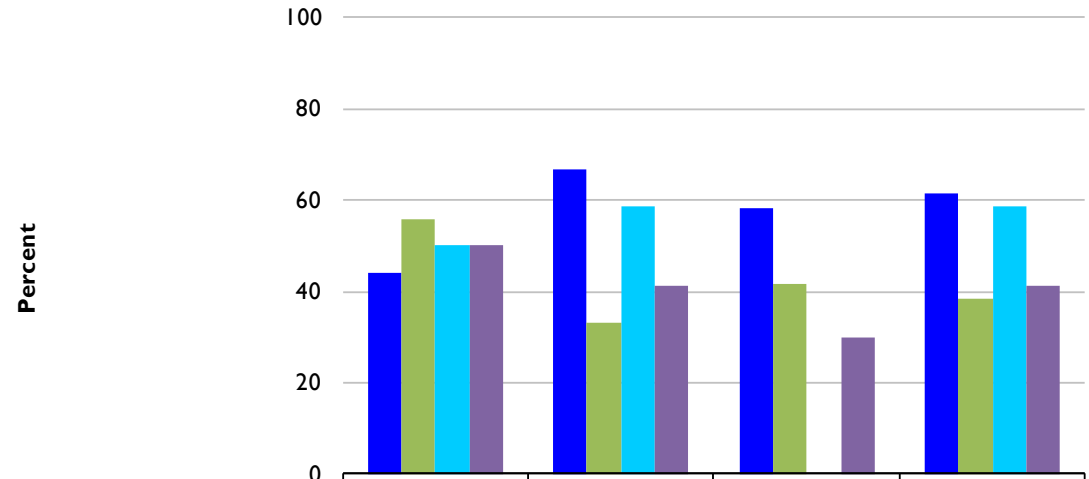
Accessibility can be influenced by the acceptance of dental insurance plans. Respondents were asked if they participated in such plans (Figure 3.11). Overall, 80 percent of dentists in Delaware indicate participating in dental insurance programs, including Medicaid.

In New Castle County, there was little change in the percentage of general/pediatric dentists accepting dental insurance since 2012. This does not hold true for Kent and Sussex counties. The proportion of general/pediatric dentists accepting dental insurance plans in Sussex County decreased by about 8 percentage points (from roughly 83 percent in 2012 to 75 percent in 2016), and decreased by about 6 percentage points in Kent County since 2012). The situation of specialists is different. Here, the proportion of specialists increased across all counties. For Kent County, the proportion of specialists accepting dental insurance increased 7

percentage points since 2012, 10 percentage points in New Castle County, and almost 5 percent in Sussex County.

Accessibility of dental services can also be influenced by the patient's ability to pay for services rendered. This has been an issue for those qualifying for dental coverage under Medicaid. This population group has traditionally had difficulty accessing dental care due to the limited number of dentists accepting Medicaid. To assess the availability of dental services to this population group, respondents were asked what types of insurance plans they accepted (Figure 3.12).

Figure 3.12
Participation in Medicaid and Non-Medicaid Insurance Programs by Delaware Dentists 2016 by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric Medicaid	44.2	66.7	58.3	61.6
General/Pediatric Non-Medicaid	55.8	33.3	41.7	38.4
SpecialistMedicaid	50.0	58.7	0.0	58.6
Specialist Non-Medicaid	50.0	41.3	30.0	41.4

Source: Center for Applied Demography & Survey Research
University of Delaware

The proportion of general/pediatric dentists accepting Medicaid consistently increased between the 1998 and 2012 surveys but decreased in the 2016 survey. When this survey was fielded in 1998, less than 4 percent of dentists statewide indicated they accepted Medicaid. In the 2005 survey, more than a third of dentists accepted Medicaid payments. In the 2008 survey,

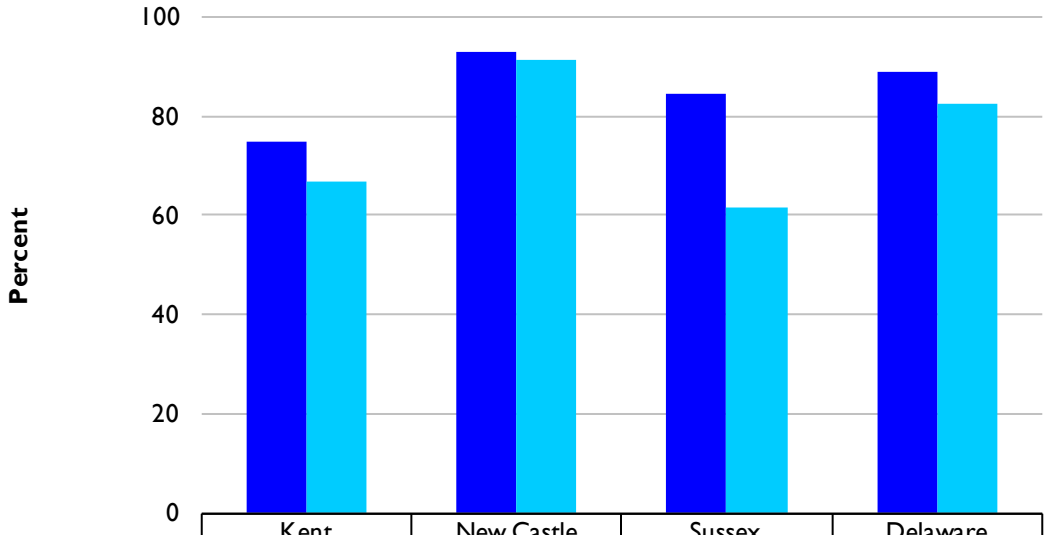
almost 46 percent accepted Medicaid, and that percentage rose to 67 percent in 2012. There was a downturn in the 2016 survey, to approximately 62 percent of general/pediatric dentists who accept Medicaid payments. Similarly, the proportion of specialists accepting Medicaid remained about the same between 2008 and 2012, but decreased from 77 percent in 2012 to 59 percent in 2016. The survey itself does not provide an explanation to this downturn. It remains to be seen if this continues in the future rounds of data collection.

Respondents were also asked if they provided flexible payment plans or installment plans (Figure 3.13). Dentists practicing in New Castle County are more likely than those practicing in Kent or Sussex counties to provide flexible payment options. In Sussex County, specialists are less likely than their general/pediatric counterparts to provide such options. Overall, about 90 percent of all Delaware dentists offer flexible payment or installment plans for their patients.

Given that medically necessary dental care is not always affordable, respondents were also asked if they provided any type of charity care. For purposes of this study, charity care is defined as providing a service for which the dentist understood that he/she would not be paid. Bad debt was excluded from the definition of charity care. The results are shown below in Figure 3.14.

Overall, about 77 percent of all dentists provide some form of charity care in their offices, and specialists are more likely than general/pediatric dentists to provide such care. This pattern is similar across the counties with the exception of Sussex County. Only 60 percent of specialists in Sussex County provide charity care inside their offices, compared to about 75 percent of general/pediatric dentists. In addition, approximately 38 percent of dentists in Delaware provide charity care outside their offices, presumably in clinics and other similar settings.

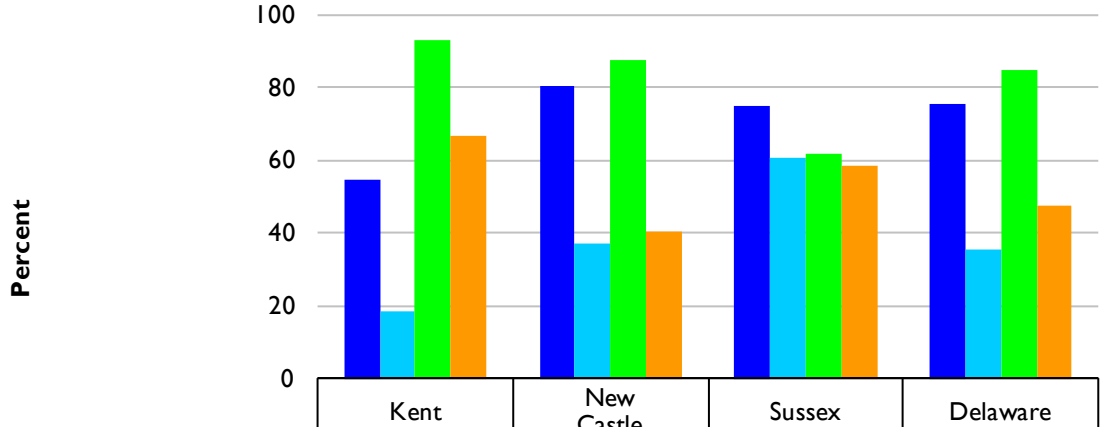
Figure 3.13
Delaware Dentists Providing Flexible Payment Plans 2016
by County



	Kent	New Castle	Sussex	Delaware
General/Pediatric	75.0	92.9	84.4	89.0
Specialist	66.7	91.4	61.5	82.6

Source: Center for Applied Demography & Survey Research
University of Delaware

Figure 3.14
Delaware Dentists Providing Charity Care In/Out of Office 2016
by County

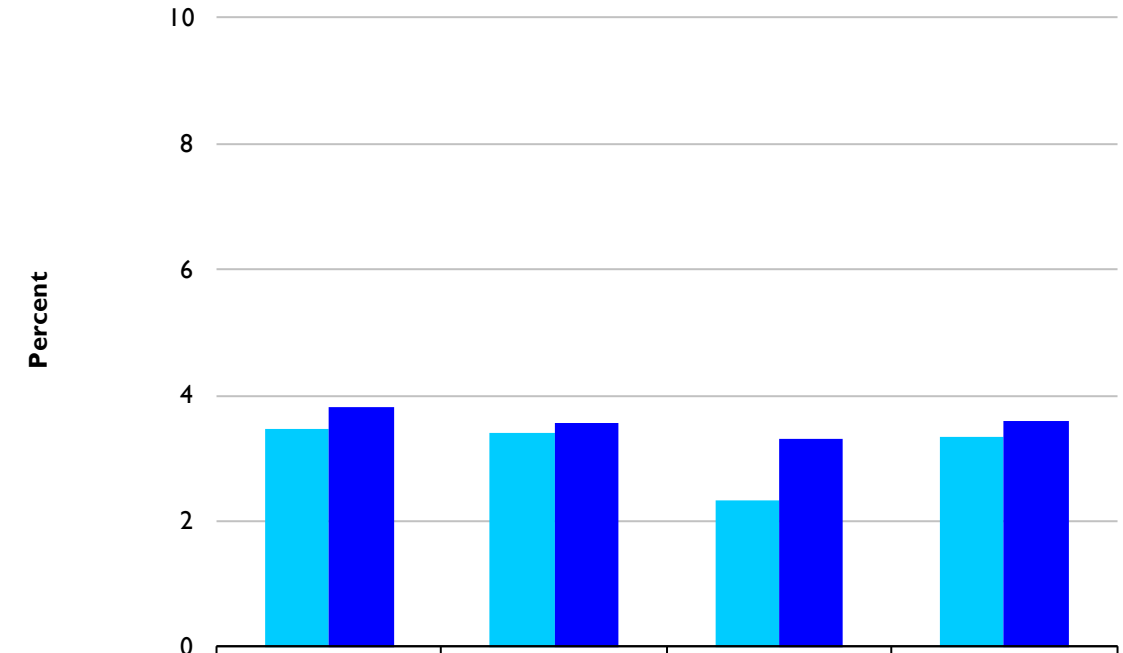


	Kent	New Castle	Sussex	Delaware
General/Pediatric Inside	54.4	80.2	75.0	75.4
General/Pediatric Outside	18.3	36.9	60.7	35.6
Specialist Inside	92.9	87.7	61.5	84.5
Specialist Outside	66.7	40.4	58.3	47.6

Source: Center for Applied Demography & Survey Research
University of Delaware

Survey respondents were asked what proportion of their gross fees were unreimbursed, including uncollectables, non-charity, or discounts. Those results are found in Figure 3.15, and they are consistent with those provided by other health professionals. The proportion of unreimbursable fees dropped from about 10 percent in 2012 to about 3.5 percent in 2016.

Figure 3.15
Percent of Gross Fees Unreimbursed of Delaware Dentists 2016
by County



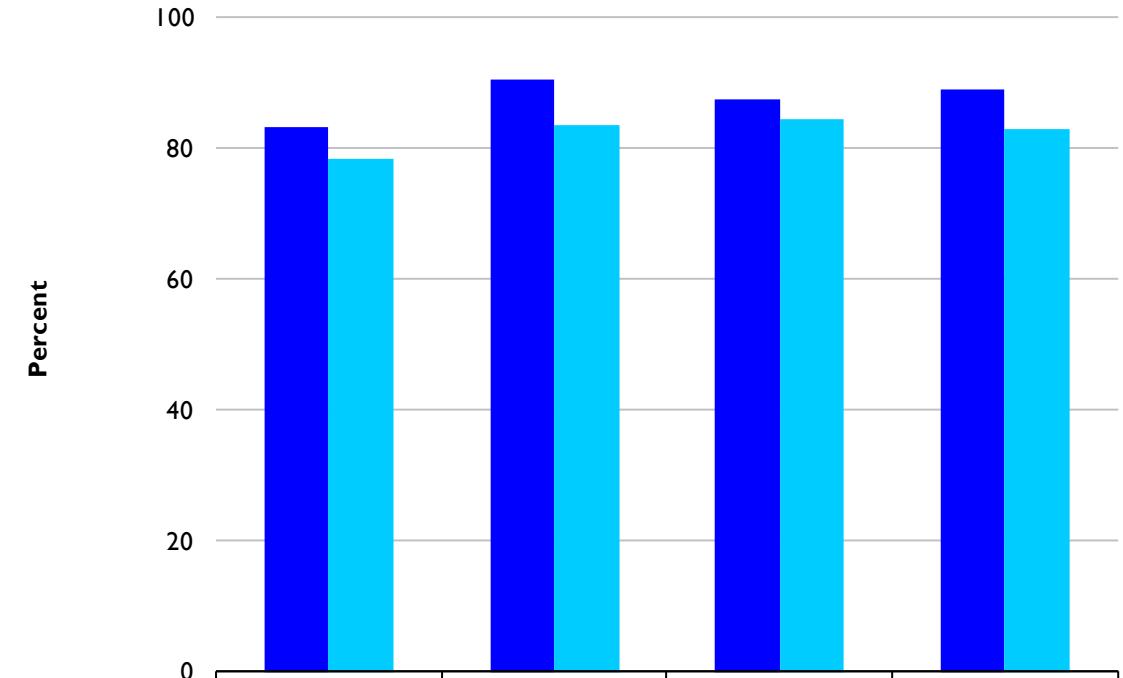
	Kent	New Castle	Sussex	Delaware
General/Pediatric	3.5	3.4	2.3	3.3
Specialist	3.8	3.6	3.3	3.6

Source: Center for Applied Demography & Survey Research
University of Delaware

For dentists to be highly productive, it is imperative that they be able to obtain qualified hygienists, dental assistants, and office staff. These are force multipliers and impact the calculated federal FTE's (FED.FTE). The first issue was to measure what percent of dentists consider their facility to be fully staffed (Figure 3.16).

About 89 percent of general/pediatric dentists believe their offices are fully staffed. The highest rate is measured among New Castle County's general/pediatric dentists where the percentage reporting being fully staffed stands at about 91 percent. Specialists report worse staffing levels than the general/pediatric dentists, with 83 percent believing that they are fully staffed. Staffing needs are different for specialists and general/pediatric dentists.

Figure 3.16
Delaware Dentists Indicating Fully Staffed Offices 2016
by County



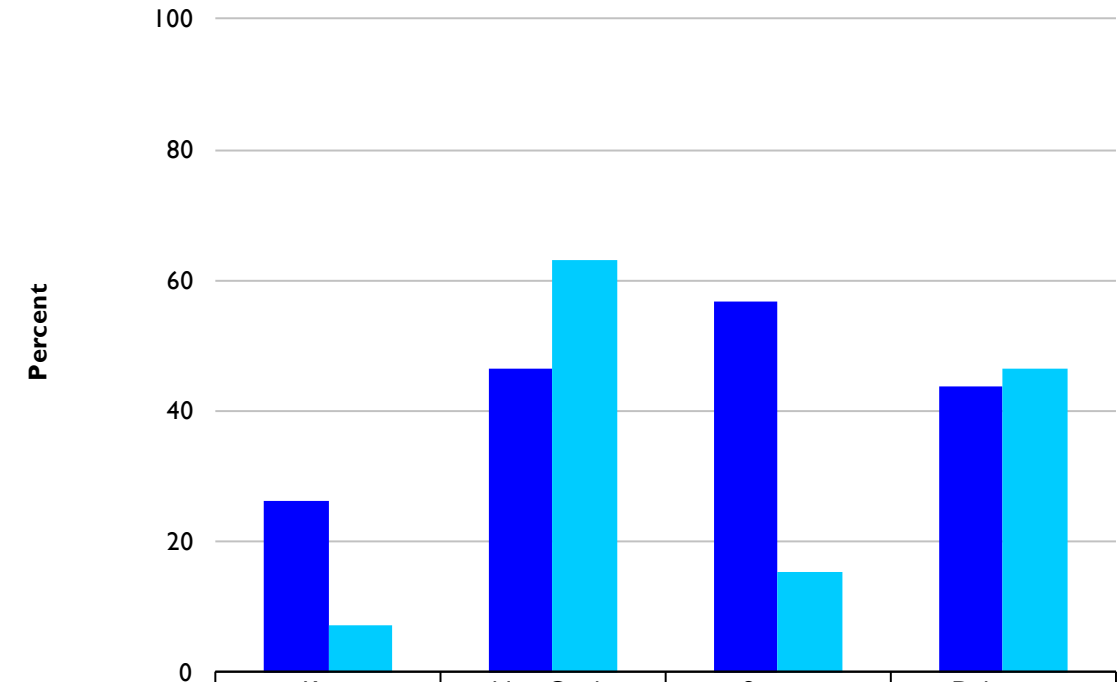
	Kent	New Castle	Sussex	Delaware
General/Pediatric	83.3	90.7	87.5	89.1
Specialist	78.6	83.6	84.6	82.9

Source: Center for Applied Demography & Survey Research
University of Delaware

The survey asked whether or not there is a shortage of qualified dental staff, a question directed toward the difficulty of filling positions whether the dentist is fully staffed or not (Figure 3.17).

In 2016, about 44 percent of general/pediatric dentists and about 46 percent of specialists report a perceived shortage of qualified dental staff. The situation across countries varies; Sussex County's general/pediatric dentists are more likely (57 percent) to report shortages, compared to their counterparts in Kent (26 percent) and New Castle (46 percent) counties. In the case of specialists, about 63 percent of specialists in New Castle County report a shortage of qualified dental staff, compared to only 7 percent of specialists reporting the same in Kent County.

Figure 3.17
Delaware Dentists Indicating Shortage of Qualified Dental Staff 2016 by County

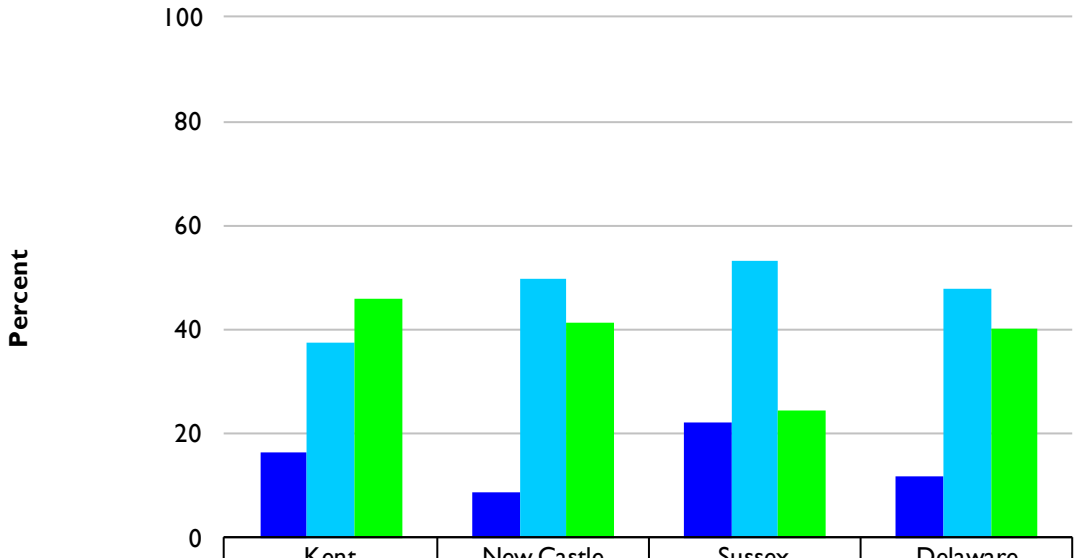


	Kent	New Castle	Sussex	Delaware
General/Pediatric	26.3	46.4	56.7	43.9
Specialist	7.1	63.2	15.4	46.4

Source: Center for Applied Demography & Survey Research
University of Delaware

The final issue addressed in the survey was the degree of difficulty in filling different categories of non-dentist positions. The respondents' perceptions are provided in Figure 3.18. The responses vary. It appears that Sussex County's dentists have more difficulty filling dental assistant and hygienist positions than those in Kent and New Castle counties. New Castle County dentists report the lowest level (9) of having difficulty filling hygienist positions.

Figure 3.18
Most Difficult Positions to Fill Identified by Delaware Dentists 2016
by County



	Kent	New Castle	Sussex	Delaware
Hygienist	16.7	8.9	22.2	11.7
Dental Assistant	37.5	49.7	53.3	48.0
Ofice Staff	45.8	41.4	24.4	40.3

Source: Center for Applied Demography & Survey Research
University of Delaware

Spatial Distribution

In the first section of this report, Sussex County was identified as an area having the worst population-to-FTE.FED dentist ratio. In New Castle and Sussex counties, the population-to-FTE.FED dentist ratio increased since 2012. The population-to-dentist ratio decreased in Kent County.

The federal government recognizes the importance of having an adequate number of dentists in areas smaller than states or counties. The federal guidelines governing the shortage area designation program for dentally underserved areas and populations among others indicate: (For an excerpt from the rule governing HPSA designation, see Appendix B.)

a) Rational areas for the delivery of primary dental care services can be counties, parts of counties, and neighborhoods within metropolitan areas with a strong identity and a population of 20,000.

b) In general, an underserved area will have a ratio of 5000:1 or higher to qualify. The population-to-dentist ratio is only one of the criteria used for shortage area designation.

c) The distance criterion, which defines such areas in Delaware, is roughly 25 miles between centers.

Good examples for such markets in Sussex County include Lewes/Rehoboth, Georgetown, Milford, Millsboro, and Seaford. In Delaware, these general areas are census county divisions (CCDs). These work well in Sussex County because it has many distinct town centers. The distinctions are not quite as clear in Kent County, where Dover and its suburbs are an additional example to consider. The Smyrna and Harrington areas are the best examples of distinct CCDs. Wilmington, Newark, New Castle, and Middletown are the most distinct areas, although their suburban fringes are not well defined. However, Delaware's 27 CCDs are the most useful for the spatial examination presented in this report. Alternative geographical

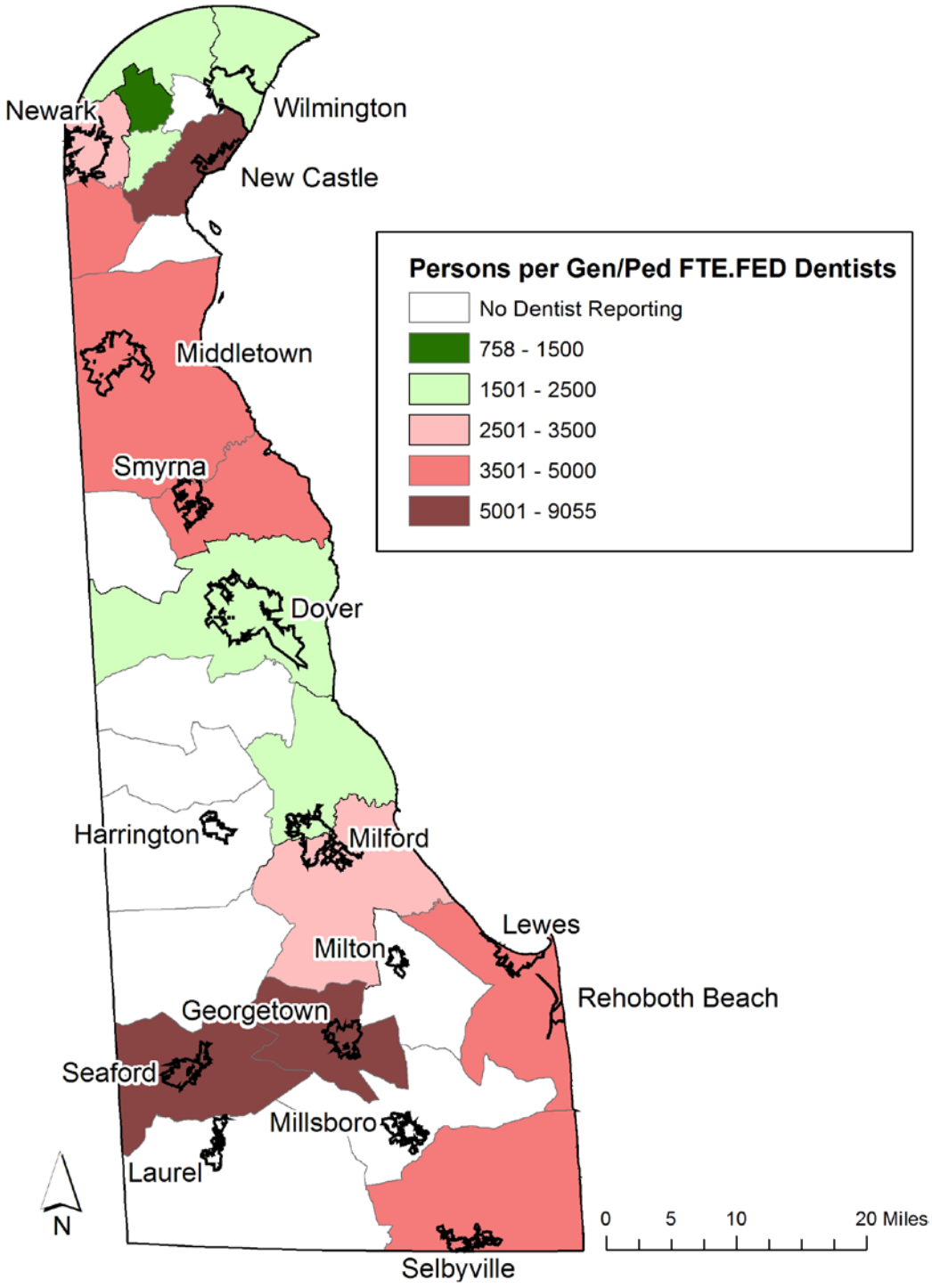
designations are possible for the definition of a rational service area and additional criteria are used for HPSA designations.

The spatial distribution of general/pediatric dentists relative to population CCD in Delaware is found in Figure 4.1. The important areas to look at are those in shades of red. Those in burgundy are already too high with too few FTE dentists for the resident population. Figure 4.1 shows that New Castle County is generally well served by dentists, even though they are unevenly distributed, with many located in northern New Castle County. While the distances are short and certainly within the federal 25-mile criteria, there may still be reason for concern as transportation, personal finances, and convenient office hours may be an access barrier to some areas and among certain populations.

The New Castle CCD (in burgundy) is above the 5000:1 ratio, indicating a potential dental shortage area. Two areas, the Red Lion and Lower Christiana census county divisions, are reporting no dentists. In the case of Red Lion, the population is too small to be considered a rational service area. Lower Christiana's population is above 20,000 but the perceived shortage is potentially alleviated by the surrounding CCDs. Also, Wilmington seemingly has a sufficient supply of dentists but those dentists also see patients from outside the city. This may leave the minority community with too few dentists to meet their needs.

Kent County has a very different profile. The majority of the dentists practicing in Kent County appear to be focused around Smyrna, Dover, and Milford North CCDs. In four of the census county divisions (Kenton, Central Kent, Felton, and Harrington) there are no dentists reporting. Central Kent is the addition since 2012. With the exception of Dover (the pink area in the middle of Kent County with a population of around 77,000), Smyrna (the red area north of Dover with a population around 23,000), and Central Kent (the blank area south of Dover with a population around 25,000), none of the other CCDs reach a population of 20,000; thus they do not meet the criteria for a rational service area and thus could not be considered ad separate HPSA areas.

Figure 4.1
Persons per FTE General/Pediatric Dentists in Delaware 2016
by Census County Division

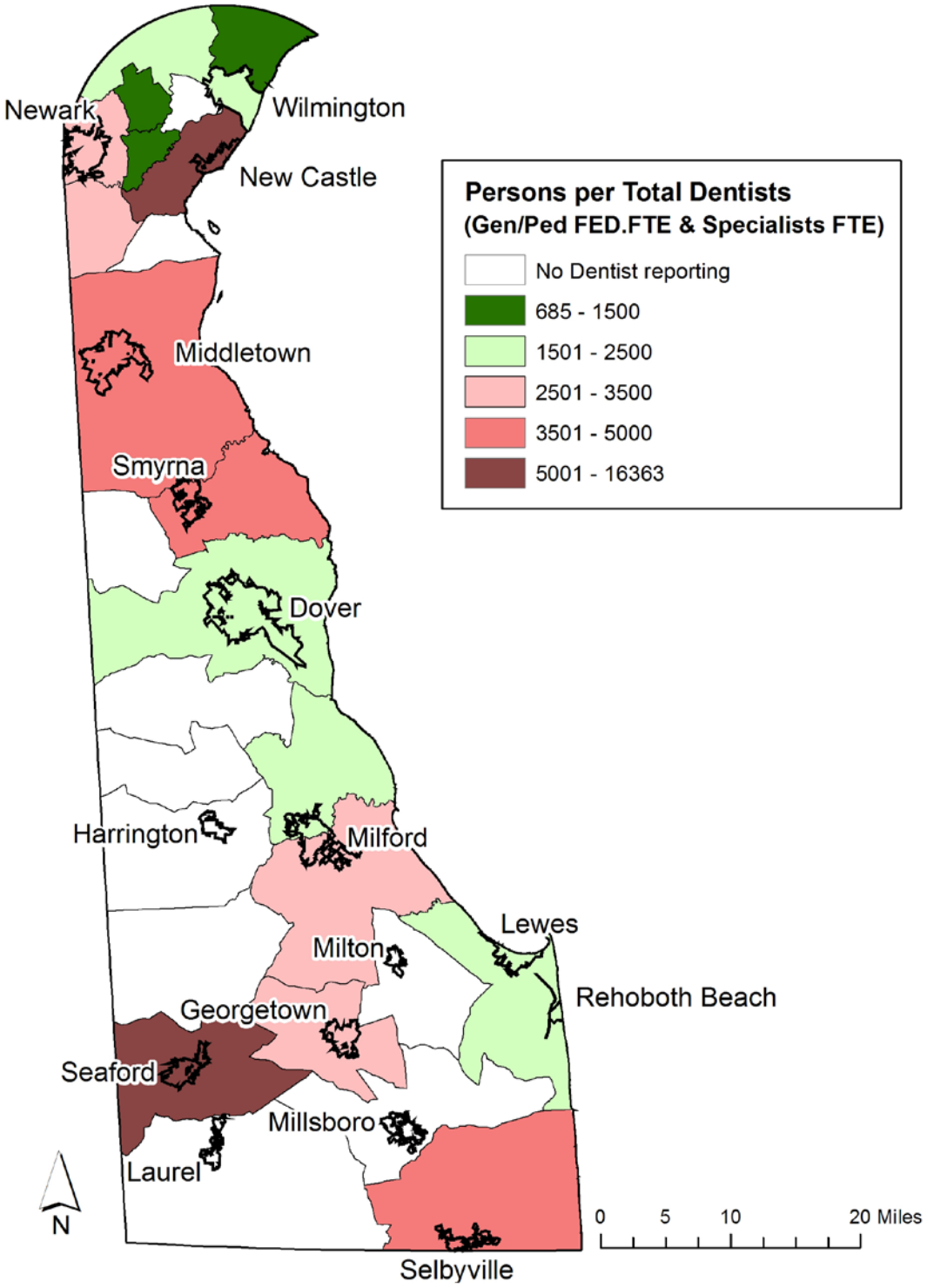


Source: Center for Applied Demography & Survey Research
University of Delaware

In Sussex County, four out of nine CCDs (Bridgeville-Greenwood, Laurel-Delmar, Millsboro, and Milton) report no dentists (up from one in 2012, in the Bridgeville-Greenwood CCD). Two areas, the Lewes and Selbyville CCDs, are on the verge of meeting the 5000:1 ratio. Two other CCDs (Seaford and Georgetown) exceed the federal guideline of 5000:1. Dentists are in short supply throughout Sussex County.

In Figure 4.2, ratios are calculated by pooling the general/pediatric dentists and specialists. However, the conclusions reached by pooling both types of dentists are essentially the same as Figure 4.1, which depicts general/pediatric dentists only. Improvements in the FTE-per-population ratio are observable in only four CCDs: Brandywine, Upper Christiana, Glasgow, and Lewes.

Figure 4.2
Persons per Total Dentists (General/Pediatric FED.FTE & Specialist FTE) in Delaware 2016 by Census County Division



Source: Center for Applied Demography & Survey Research
University of Delaware

Appendix A

Survey Questionnaire

DELAWARE DENTIST SURVEY 2016/2017

Commissioned by Delaware Health and Social Services

(ID)

INSTRUCTIONS

- **Mail your completed form** in the attached prepaid envelope or mail it to:
  University of Delaware
  CADSR - Graham Hall
  Newark, DE 19716
- Use either a pen or pencil when completing the questionnaire.
- Follow all "SKIP" instructions after answering a question. If no instructions are provided, continue to the next question.
- If you have any questions, contact the **Center for Applied Demography & Survey Research** at the **University of Delaware** by calling (**302) 831-3320.**

NOTICE OF CONFIDENTIALITY – The information you report on this questionnaire is confidential. It will never be linked to you as a respondent. Responses will be analyzed in an aggregate form only.

RESPONSES – The tracking information printed on the form permits follow up contacts to ensure the highest quality data. When you return the completed questionnaire, your name will be deleted from the mailing list and we will not contact you.

PURPOSE – Results from the survey will be used to help state and local governments along with employers and educational institutions to plan for an adequate supply of health professionals in the state.

SCOPE – All dentists licensed to practice in the State of Delaware. **Even if you do not practice in Delaware please complete the questionnaire.**

PARTICIPATION – Your participation is voluntary. However, your responses are important to ensure adequate health care for Delaware's residents.

If you would like to see a copy of the report based on the survey conducted in 2012, point your browser to:

http://www.cadsr.udel.edu/searchresultopen.cfml?idd=696

1. Are you currently active in clinical dentistry in Delaware? (i.e.: seeing patients and/or doing things necessary for the care of patients):

1 ☐ Yes, in training
2 ☐ Yes, working full time
3 ☐ Yes, working part time
4 ☐ No, retired **(GO TO QUESTION 33)**
5 ☐ No, inactive **(GO TO QUESTION 33)**
6 ☐ No, other (*specify*): _____ **(GO TO QUESTION 33)**
7 ☐ Not practicing in Delaware **(GO TO QUESTION 33)**

IF RETIRED, INACTIVE, OTHER, OR NOT PRACTICING IN DELAWARE, PLEASE SKIP TO PAGE 4, QUESTION 33

2. On average, how many hours per week do <u>you</u> spend on each of the following activities:

____ Hours - Direct patient care or services and related paperwork
____ Hours - Administration and related paperwork
____ Hours - Teaching medical courses
____ Hours - Research
____ Hours - Other (*specify):* _____

3. What is the setting of your primary employment (*check all that apply*):

1 ☐ **Clinical Care Settings:**
  1 ☐ Practitioner's Office (solo, partner of group practice)
  2 ☐ Hospital (except federal)
  3 ☐ Nursing Home
  4 ☐ Freestanding Clinic (administratively distinct from a hospital, nursing home, etc.)
  5 ☐ Federally Qualified Health Center
  6 ☐ Treatment Facility for the Handicapped or Disabled
  7 ☐ Public Health Dental Clinic
  8 ☐ Other (*specify*): _____

2 ☐ **Federal Health Facility:**
  1 ☐ Veterans' Administration (VA hospital)
  2 ☐ Other (*specify*): _____

3 ☐ **School:**
  1 ☐ School-of Dentistry
  2 ☐ Other University or College
  3 ☐ Other (*specify*): _____

4 ☐ **Miscellaneous Setting:**
  1 ☐ Dental Research Institution or Establishment
  2 ☐ Professional Association (e.g. ADA)
  3 ☐ Manufacturing or Industrial Establishment
  4 ☐ Other (*specify*): _____

CONTINUE ON PAGE 2

4. What is the form of your primary employment (*check all that apply*):

1 ☐ **Self-Employed:**
- 1 ☐ Solo Practice
- 2 ☐ Partner of Group Practice
- 3 ☐ Professional Corporation
- 4 ☐ Other (*specify*): _____

2 ☐ **Salaried, Employed by**:
- 1 ☐ Commissioned Associate
- 2 ☐ Partnership of Group Practitioners
- 3 ☐ Other Non-Government Employer (hospital, school, etc.)
- 4 ☐ Federal Government
- 5 ☐ Federally Qualified Health Center
- 6 ☐ State Government
- 7 ☐ Other (*specify*): _____

5. What are the practice name, facility name, address and zip code for *each* of the locations <u>in Delaware</u> where you practice?

1 ☐ **Primary Location (most time delivering care)**

Practice Name (example: Bear-Glasgow Dental)

Facility Name (People's Plaza)

Street Address

City State ZIP code

2 ☐ **Secondary Location**

Practice Name (example: Bear-Glasgow Dental)

Facility Name (People's Plaza)

Street Address

City State ZIP code

3 ☐ **Tertiary Location**

Practice Name (example: Bear-Glasgow Dental)

Facility Name (People's Plaza)

Street Address

City State ZIP code

6. What percentage of <u>your</u> working hours <u>in Delaware</u> do you spend at each of the locations listed above?

1 ____ Percent – Primary Location

2 ____ Percent – Secondary Location

3 ____ Percent – Tertiary Location

<u>100</u> Percent – Total

QUESTIONS BELOW PERTAIN TO YOUR <u>PRIMARY LOCATION IN DELAWARE</u> ONLY

7. How long have you been practicing at this primary location?

Years

8. What type of site is at the primary location?

1 ☐ Private Office
2 ☐ Clinic
3 ☐ Hospital
4 ☐ Other (*specify*): _____

9. Using the ADA self-designated practice codes found on page 5, please identify your specialty in the space provided below. (*include all specialties that apply to you*)

Specialty Code

10. How many dentists (including yourself) currently practice at this site (*in case of shared space count only those that are in your practice*)

Number

11. About how many total patient encounters do you <u>personally</u> have per week?

Total Number of patients per week

How many of these patient encounters per week are with patients receiving treatment, how many with patients presenting for post-treatment evaluation and how many are hygiene patients?

Number of patients for treatment | Number for post treatment evaluation | Number of hygiene patients

12. Do you see pediatric patients at this site?

1 ☐ Yes
2 ☐ No

If YES, beginning at what age do you see patients?

Age

13. Do you offer Saturday and Evening hours?

Saturday: 1 ☐ Yes 2 ☐ No

Evening: 1 ☐ Yes 2 ☐ No

CONTINUE ON PAGE 3

14. **When a patient calls your office to request a routine (non-emergency) appointment, what is the usual elapsed time between the request and the resulting appointment for new and established patients (days)?**

New patients _____ Days — 1 ☐ Not Applicable

Existing Patients _____ Days — 1 ☐ Not Applicable

15. **Are you currently accepting new patients?**

1 ☐ Yes
2 ☐ No

16. **If you are NOT accepting new patients or at times are unable to make emergency appointments, do you provide any type of referral?**

1 ☐ Yes
2 ☐ No

If YES, to what source(s) do you refer patients? (*check all that apply*)

1 ☐ Private Practice Dentist
2 ☐ Hospital Emergency Room
3 ☐ Other (*specify*): _____

17. **Do you participate in dental insurance plans?**

1 ☐ Yes
2 ☐ No

If YES, indicate in which type of plans you participate (*check all that apply*)

1 ☐ Capitation
2 ☐ Reduced fee for service
3 ☐ Medicaid
4 ☐ Traditional insurance with balance billing
5 ☐ Other (*specify*): _____

18. **What are the three biggest problems your practice encounters when dealing with insurance companies?**

1 _____

2 _____

3 _____

19. **Do you use Certified Dental Technology (CDT) codes when submitting bills and other related paperwork to insurance companies?**

1 ☐ Yes
2 ☐ No
3 ☐ Not Applicable

20. **How do you <u>currently</u> submit bills and other related paperwork to your patients' insurance companies? (*check all that apply*)**

1 ☐ Mail bills directly to insurance companies
2 ☐ Electronic Transfer
3 ☐ Other (*specify*): _____

21. **Does this site employ <u>dental hygienists</u>?**

1 ☐ Yes
2 ☐ No

If YES, please indicate how many hygienists are employed and how many patients in total do <u>all the hygienists see per week</u>:

_____ Number of hygienists

_____ Total number of patients seen by all hygienists per week

22. **Does this site employ <u>dental assistants</u>?**

1 ☐ Yes
2 ☐ No

If YES, indicate the number of dental assistants that are part time (less than 30 hours per week) and full time (30 hours or more per week)

_____ Number of part time (less than 30 hrs per week) dental assistants

_____ Number of full time (30 hrs or more per week) dental assistants

23. **Is this dental office fully staffed?**

1 ☐ Yes
2 ☐ No

If NO, what positions need to be filled?

1 ☐ Hygienist
2 ☐ Dental Assistant
3 ☐ Office Staff

If NOT fully staffed, how long have you actively been trying to fill these positions?

1 ☐ less than 2 months
2 ☐ 2-4 months
3 ☐ more than 4 months , less than 6 months
4 ☐ more than 6 months

24. **When was the last time you hired a new employee?**

1 ☐ Within the past 6 months
2 ☐ more than 6 months but fewer than 12 months ago
3 ☐ more than 12 months but fewer than 24 months ago
4 ☐ more than 24 months ago

25. **When you hired your last employee, how long did it take you to fill the position?**

1 ☐ less than 2 months
2 ☐ 2-4 months
3 ☐ more than 4 months , less than 6 months
4 ☐ more than 6 months

26. **In the past, which position has been the most difficult to fill?**

1 ☐ Hygienist
2 ☐ Dental Assistant
3 ☐ Office Staff

CONTINUE ON PAGE 4

27. **Do you perceive a shortage in qualified applicants for dental staff positions (hygienists, assistants)?**

1 ☐ Yes
2 ☐ No

28. **Are there people at this site who have the ability to communicate with patients in a language other than English?**

1 ☐ Yes
2 ☐ No

If YES, which one (check all that apply)?

1 ☐ Spanish
2 ☐ French
3 ☐ Arabic
4 ☐ Asian
5 ☐ Sign Language
6 ☐ Other (*specify*): _____

29. **What <u>percentage</u> of your practice's gross fees are <u>unreimbursed</u> (includes uncollectables, not charity or discounts)? (*chose one number*)**

1 ☐ 0%
2 ☐ 5%
3 ☐ 10%
4 ☐ 15%
5 ☐ 20%
6 ☐ 25%
7 ☐ 30%
8 ☐ 35%
9 ☐ 40%
10 ☐ 45%
11 ☐ 50%

30. **Do you provide charity care (no fee expected) inside your office?**

1 ☐ Yes
2 ☐ No

31. **Do you provide charity care (no fee expected) outside your office?**

1 ☐ Yes
2 ☐ No

If YES, Where (school, prison etc.)?

_____
Location

If YES, How many times in the last 12 months did you provide charity care outside of your office?

_____
Number of times

32. **Do you offer flexible or installment payment plans, which would allow patients to pay for services over a period of time?**

1 ☐ Yes
2 ☐ No

33. **Do you expect to be active in clinical dentistry in Delaware 5 years from now?**

1 ☐ Yes
2 ☐ No
3 ☐ Unsure

34. **State (or country if applicable) of residence at time of high school graduation.**

_____
State (country if applicable)

35. **From which dental school did you graduate?**

_____ _____
Name of dental school Year (YYYY)

_____
State (country if applicable)

36. **Did you complete a dental residency?**

1 ☐ Yes
2 ☐ No

If YES, please indicate the states where you did your residency

_____ _____ _____
State State State

37. **If you completed a dental residency, what type of a dental residency was it (*check all that apply*)?**

1 ☐ General Practice Residency (GPR)
2 ☐ Advanced Education in General Dentistry (AEGD)
3 ☐ Specialized Dental Residency (*specify):* _____
4 ☐ Military Service
5 ☐ Other (*specify*): _____

38. **In which states are you currently licensed to practice dentistry?**

_____ _____ _____
State State State

39. **What is your race?**

1 ☐ Caucasian or White
2 ☐ African American or Black
3 ☐ Native American or Alaskan
4 ☐ Asian or Pacific Islander
5 ☐ Multi-Racial
6 ☐ Other (*specify*): _____

40. **Are you of Hispanic origin?**

1 ☐ Yes
2 ☐ No

41. **Gender?**

1 ☐ Male
2 ☐ Female

42. **Date of Birth?**

_____ / _____ / _____
Month (MM) Day (DD) Year (YYYY)

43. **Do you have a Delaware <u>business</u> license?**

1 ☐ Yes
2 ☐ No

44. **If you have any comments, please feel free to include them in the space provided below.**

Thank you for completing the Delaware Dentist Survey 2016/2017.

Return the completed form to:
University of Delaware, CADSR, Graham Hall, Newark, DE 19716

ADA Self-Designated Practice Codes

(Listed alphabetically by specialty name)

CBMX PROS	-	prosthodontics/maxillofacial prosthetic
DG	-	general dentistry
DPH	-	dental public health
ENDO	-	endodontics
GRP	-	general practice residency
MX PROS	-	maxillofacial prosthetic
OMP	-	oral and maxillofacial pathology
OMS	-	oral and maxillofacial surgery
ORTHO	-	orthodontics and dentofacial orthopedics
PED DENT	-	pediatric dentistry
PERIO	-	periodontics
PROS	-	prosthodontics

Appendix B
Dental Health Professional Shortage Area Designation Criteria (excerpt)

Dental HPSA Designation Criteria (relevant excerpts)
(http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/dentalhpsacriteria.html)

Part I -- Geographic Areas

A. Criteria.

A geographic area will be designated as having a dental professional shortage if the following three criteria are met:

1. The area is a rational area for the delivery of dental services.

2. One of the following conditions prevails in the area:

(a) The area has a population to full-time-equivalent dentist ratio of at least 5,000:1, or

(b) The area has a population to full-time-equivalent dentist ratio of less than 5,000:1 but greater than 4,000:1 and has unusually high needs for dental services or insufficient capacity of existing dental providers.

3. Dental professionals in contiguous areas are overutilized, excessively distant, or inaccessible to the population of the area under consideration.

B. Methodology.

In determining whether an area meets the criteria established by paragraph A of this part, the following methodology will be used:

1. Rational Area for the Delivery of Dental Services.

(a) The following areas will be considered rational areas for the delivery of dental health services:

(i) A county, or a group of several contiguous counties whose population centers are within 40 minutes travel time of each other.

(ii) A portion of a county (or an area made up of portions of more than one county) whose population, because of topography, market or transportation patterns, distinctive population characteristics, or other factors, has limited access to contiguous area resources, as measured generally by a travel time of greater than 40 minutes to such resources.

(iii) Established neighborhoods and communities within metropolitan areas which display a strong self-identity (as indicated by a homogenous socioeconomic or demographic structure and/or a traditional of interaction or intradependency), have limited interaction with contiguous areas, and which, in general, have a minimum population of 20,000.

(b) The following distances will be used as guidelines in determining distances corresponding to 40 minutes travel time:

(i) Under normal conditions with primary roads available: 25 miles.

(ii) In mountainous terrain or in areas with only secondary roads available: 20 miles.

(iii) In flat terrain or in areas connected by interstate highways: 30 miles.

Within inner portions of metropolitan areas, information on the public transportation system will be used to determine the distance corresponding to 40 minutes travel time.

2. Population Count.

The population count use will be the total permanent resident civilian population of the area, excluding inmates of institutions, with the following adjustments:

(a) Seasonal residents, i.e., those who maintain a residence in the area but inhabit it for only 2 to 8 months per year, may be included but must be weighted in proportion to the fraction of the year they are present in the area.

(b) Migratory workers and their families may be included in an area's population using the following formula: Effective migrant contribution to population = (fraction of year migrants are present in area) x (average daily number of migrants during portion of year that migrants are present).

3. Counting of Dental Practitioners.

(a) All non-Federal dentists providing patient care will be counted, except in those areas where it is shown that specialists (those dentists not in general practice or pedodontics) are serving a larger area and are not addressing the general dental care needs of the area under consideration.

(b) Full-time equivalent (FTE) figures will be used to reflect productivity differences among dental practices based on the age of the dentists, the number of auxiliaries employed, and the number of hours worked per week. In general, the number of FTE dentists will be computed using weights obtained from the matrix in Table 1, which is based on the productivity of dentists at various ages, with different numbers of auxiliaries, as compared with the average productivity of all dentists. For the purposes of these determinations, an auxiliary is defined as any non-dentist staff employed by the dentist to assist in operation of the practice.

TABLE 1 - EQUIVALENCY WEIGHTS, BY AGE AND NUMBER OF AUXILIARIES

	<55	55-59	60-64	65+
No auxiliaries	0.8	0.7	0.6	0.5
One auxiliary	1.0	0.9	0.8	0.7
Two auxiliaries	1.2	1.0	1.0	0.8
Three auxiliaries	1.4	1.2	1.0	1.0
Four auxiliaries	1.5	1.5	1.3	1.2

If information on the number of auxiliaries employed by the dentist is not available, Table 2 will be used to compute the number of full-time equivalent dentists.

TABLE 2 - EQUIVALENCY WEIGHTS, BY AGE

	<55	55-59	60-64	65+
Equivalency Weights	1.2	0.9	0.8	0.6

The number of FTE dentists within a particular age group (or age/auxiliary group) will be obtained by multiplying the number of dentists within that group by its corresponding equivalency weight. The total supply of FTE dentists within an area is then computed as the sum of those dentists within each age (or age/auxiliary) group.

(c) The equivalency weights specified in tables 1 and 2 assume that dentists within a particular group are working full-time (40 hours per week). Where appropriate data are available, adjusted equivalency figures for dentists who are semi-retired, who operate a reduced practice due to infirmity or other limiting conditions, or who are available to the population of an area only on a part-time basis will be used to reflect the reduced availability of these dentists. In computing these equivalency figures, every 4 hours (or 1/2 day) spent in the dental practice will be counted as 0.1 FTE except that each dentist working more than 40 hours a week will be counted as 1.0. The count obtained for a particular age group of dentists will then be multiplied by the appropriate equivalency weight from table 1 or 2 to obtain a full-time equivalent figure for dentists within that particular age orage/auxiliary category.

4. Determination of Unusually High Needs for Dental Services.

An area will be considered as having unusually high needs for dental services if at least one of the following criteria is met:

(a) More than 20% of the population (or of all households) has incomes below the poverty level.

(b) The majority of the area's population does not have a fluoridated water supply.

5. Determination of Insufficient Capacity of Existing Dental Care Providers.

An area's existing dental care providers will be considered to have insufficient capacity if at least two of the following criteria are met:

(a) More than 5,000 visits per year per FTE dentist serving the area.

(b) Unusually long waits for appointments for routine dental services (i.e., more than 6 weeks).

(c) A substantial proportion (2/3 or more) of the area's dentists do not accept new patients.

6. Contiguous Area Considerations.

Dental professional(s) in areas contiguous to an area being considered for designation will be considered excessively distant, overutilized or inaccessible to the population of the area under consideration if one of the following conditions prevails in each contiguous area:

(a) Dental professional(s) in the contiguous area are more than 40 minutes travel time from the center of the area being considered for designation (measured in accordance with Paragraph B.1.(b) of this part).

(b) Contiguous area population-to-(FTE) dentist ratios are in excess of 3,000:1, indicating that resources in contiguous areas cannot be expected to help alleviate the shortage situation in the area being considered for designation.

(c) Dental professional(s) in the contiguous area are inaccessible to the population of the area under consideration because of specified access barriers, such as:

(i) Significant differences between the demographic (or socioeconomic) characteristics of the area under consideration and those of the contiguous area, indicating that the population of the area under consideration may be effectively isolated from nearby resources. Such isolation could be indicated, for example, by an unusually high proportion of non-English-speaking persons.

(ii) A lack of economic access to contiguous area resources, particularly where a very high proportion of the population of the area under consideration is poor (i.e., where more than 20 percent of the population or of the households have incomes below the poverty level) and Medicaid-covered or public dental services are not available in the contiguous area.

Part II -- Population Groups

A. Criteria.

1. In general, specified population groups within particular geographic areas will be designated as having a shortage of dental care professional(s) if the following three criteria are met:

a. The area in which they reside is rational for the delivery of dental care services, as defined in paragraph B.1 of part I of this appendix.

b. Access barriers prevent the population group from use of the area's dental providers.

c. The ratio (R) of the number of persons in the population group to the number of dentists practicing in the area and serving the population group is at least 4,000:1.

2. Indians and Alaska Natives will be considered for designation as having shortages of dental professional(s) as follows:

(a) Groups of members of Indian tribes (as defined in section 4(d) of Pub. L. 94 - 437, the Indian Health Care Improvement Act of 1976) are automatically designated.

(b) Other groups of Indians or Alaska Natives (as defined in section 4(c) of Pub. L. 94 - 437) will be designated if the general criteria in paragraph 1 are met.

RELEVANT EXCERPTS FROM 42 CODE OF FEDERAL REGULATIONS (CFR), CHAPTER 1, PART 5, Appendix B (October 1, 1993, pp. 34-48)
Criteria for Designation of Areas Having Shortages of Dental Professionals [45 FR 76000, Nov. 17, 1980, as amended at 54 FR 8738, Mar. 2, 1989; 57 FR 2480, Jan. 22, 1992]

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Center for Applied Demography & Survey Research (CADSR) is a project - oriented, policy analysis and survey research center. The Center's primary mission is to ensure that the best possible data and information on important public issues are developed and made available to members of the College, its clients, and, most importantly, to the policy-makers who affect the way we all live and work in Delaware. This mission is accomplished in four different ways: by acting as a clearinghouse for large data sets supplied by local, state, regional, and federal agencies; by maintaining an active survey research capability; by developing and designing custom databases of text, graphical information (including both raster and vector data), drawn from client files; and by using an array of information system technologies.