

**Dentists in Delaware
2005**

prepared for

**Delaware Department of Health and Social Services
Division of Public Health**

by

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Overview

In 1998 the Division of Public Health began an effort to measure the number and spatial distribution of dentists practicing in Delaware. The objective was to identify underserved areas and to understand any existing or developing trends that could impact the supply of dental services. In 2005, the survey was fielded again replicating much of the instrument used in 1998. This report provides new information and analysis for assessing the need for dental services and understanding trends impacting the supply of dental services.

The method chosen to gather the information was an initial mail survey coupled with two follow-up mailings to non-respondents. By the conclusion of the project, 381 dentists had been contacted. Of those responding, 238 dentists (91%) were practicing dentistry either full or part-time.

Delaware currently (January 2006) has licensed 423 dentists to practice dentistry in Delaware. Of those, 357 have a Delaware address but it 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, the number of dentists with an active practice in Delaware is approximately 332. This total is used to produce all estimates presented throughout this report.¹

This report focuses on all dentists. This population includes dentists practicing general dentistry and pediatric dentistry along with specialists in nine areas. Using the survey data received to date, it is estimated that there are 261 dentists working in general or family practice and 71 dentists practicing in one of the nine specialties. In 1998, 243 dentists were in general or family practice while 59 dentists were practicing in one of the nine specialties. In the balance of this report, most responses will be reported for these two major groups.

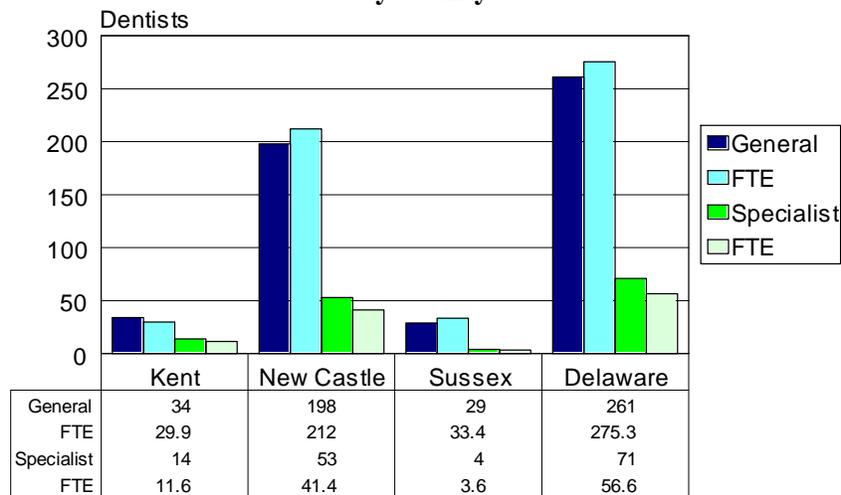
Not all dentists practice full-time. To give a more realistic view of the full-time equivalent (FTE) dentists available, a second calculation was required. A dentist who was engaged in delivering care directly to patients 40 or more hours per week was defined as a full-time dentist. Anything less than 40 hours was considered as less than full-time. For each four

¹ On occasion, the data in the tables may not add to the total of 332 dentists because some information was not reported.

hours less than 40 hours, 0.1 FTE was deducted. Anything more than 40 hours was considered only as full-time.²

In other words, a dentist delivering 60 hours per week of primary care was still counted as one full-time equivalent dentist. The federal government also applies a productivity factor in determining full-time equivalency. They increase the FTE according to the number of dental hygienists and dental assistants employed.³ Further, they begin to decrease the FTE as the dentist reaches the age of 55. All of these factors are used in determining the FTE dentists in Delaware.

Figure 1.1
Dentists
by County



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

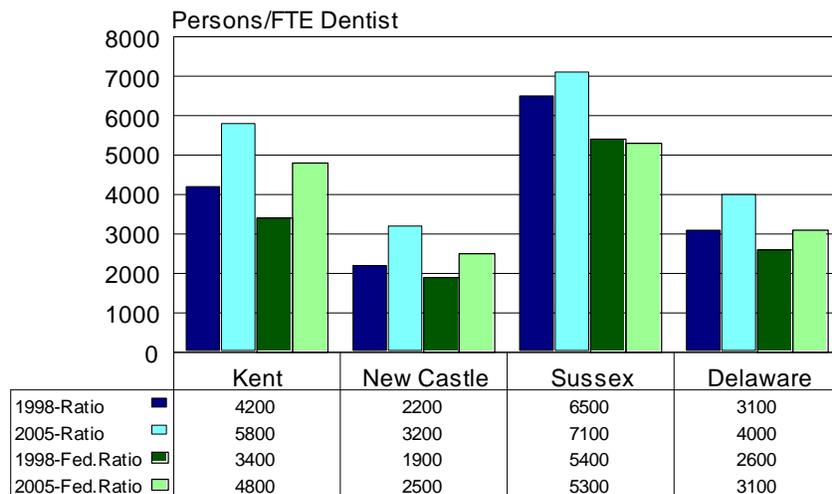
Figure 1.1 above summarizes the current number of dentists practicing in Delaware by county of practice. The number of dentists is provided in Figure 1.1 along with estimates of full-time equivalents. The category labeled *General* includes only those dentists practicing general/family dentistry or pediatric dentistry; and the FTE's are calculated using the federal guidelines. 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.

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

³ For some sites it was impossible to determine if the reported auxiliaries were supporting multiple dentists. An alternative calculation suggests 3 less FTE dentists statewide.

Given Delaware's 2005 population of 844,000, there are about 3,100 persons served by each FTE dentist which is an increase of 500 persons per FTE dentist since 1998. (*Fed Ratio* in Figure 1.2). **These ratios reflect only those dentists in general/family or pediatric practice.** For the three counties, the estimates are 4,800 persons for each FTE dentist in Kent County up from 3,400 in 1998, 2,500 for New Castle County up from 1,900 in 1998, and 5,300 for Sussex County down from 5,400 in 1998. The federal government defines a dentally underserved area as one with more than 5,000 persons per FTE dentist. Clearly, the situation in Sussex County is far from optimal and exceeds the federal standard. The data labeled simply *Ratio* represents full-time equivalencies without making the federal productivity adjustments for age and auxiliaries. Only the hours of direct patient care are considered. In general, both ratios are larger than in 1998 largely because the population has increased much faster than the dental profession.

Figure 1.2
Population to Dentist Ratios
by County 1998 and 2005



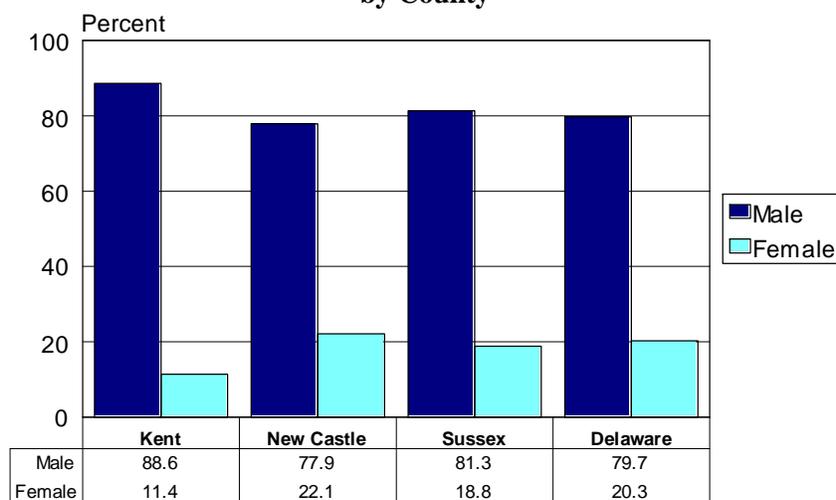
Source: Center for Applied Demography & Survey Research,
University of Delaware

In the remainder of this report, different aspects of dentists practicing in Delaware and his/her practices will be examined. Overall the objective is to touch on those attributes that affect the availability of dental services.

Demographics

The topic of demographic diversity within the dental community may seem irrelevant. However, some patients may feel more comfortable with and are able to communicate better with dentists having particular characteristics.

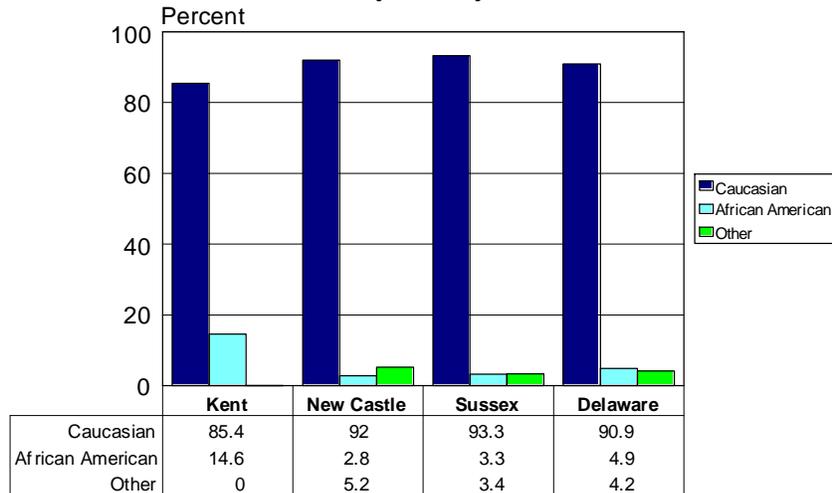
**Figure 2.1
Gender of Dentists
by County**



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

The dental community in Delaware is somewhat less than 80% male. There is however some variation between the counties. Kent County has about 9% fewer female dentists than the state overall. The proportion of female dentists in New Castle County is significantly higher than that found in either of the two lower counties. It is interesting that women are slightly less likely (21% versus 17%) to choose one of the dental specialties (not general dentistry or pediatric). At the same time those female dentists practicing a specialty are more likely to locate in New Castle County. The proportion of female dentists increased by five percentage points since the last survey in 1998.

Figure 2.2
Race of Dentists
by County



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

The racial distribution of primary care dentists by county is shown in Figure 2.2 above. Probably the most interesting aspect of this table is the lack of African American dentists. African Americans account for more than 17% of Delaware's population, yet only 4.9% of Delaware's dentists are African American. However, since the last survey in 1998 the percentage of African American dentists has doubled from 2.4%.

Hispanic origin is of particular interest in Delaware given the rapid growth of that population in the 1990s, particularly in Sussex County. The distribution of dentists by Hispanic Origin is found in Figure 2.3.

Today, Delaware's population is approximately 6% Hispanic while the dentist population is about 2%. The highest proportion of Hispanic dentists is found in Sussex County (3.3%) where nearly 7% of the population is now Hispanic. Overall, just over 44% (an increase from 35% in 1998) of the practice sites in the state had someone available who could speak another language and Spanish was the language reported most often. That proportion was highest in Sussex County where 41% of the sites reported speaking another language and all of those employed someone who spoke Spanish.

Figure 2.3
Hispanic Origin of Dentists
by County

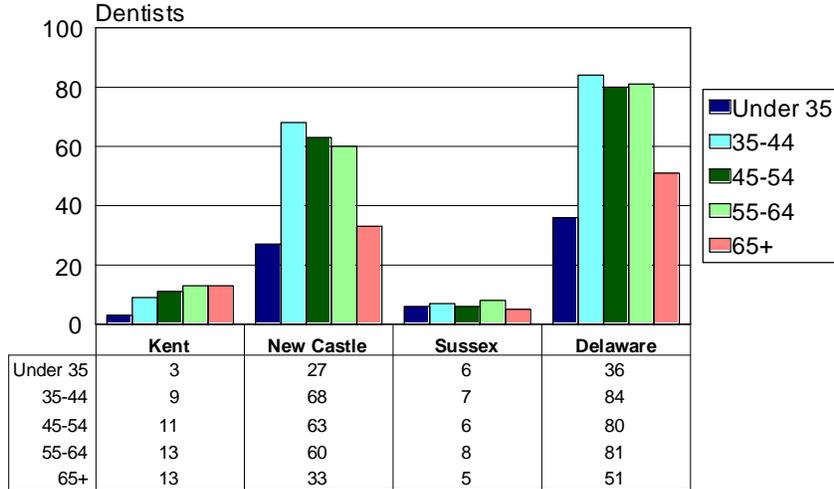


Source: Center for Applied Demography & Survey Research,
 University of Delaware

The age of dentists is a factor in their availability. In calculating the productivity of dentists, the federal government begins reducing the full-time equivalency after age 55. The number of dentists by age and county is shown in Figure 2.4 followed by the age distribution in Figure 2.5.

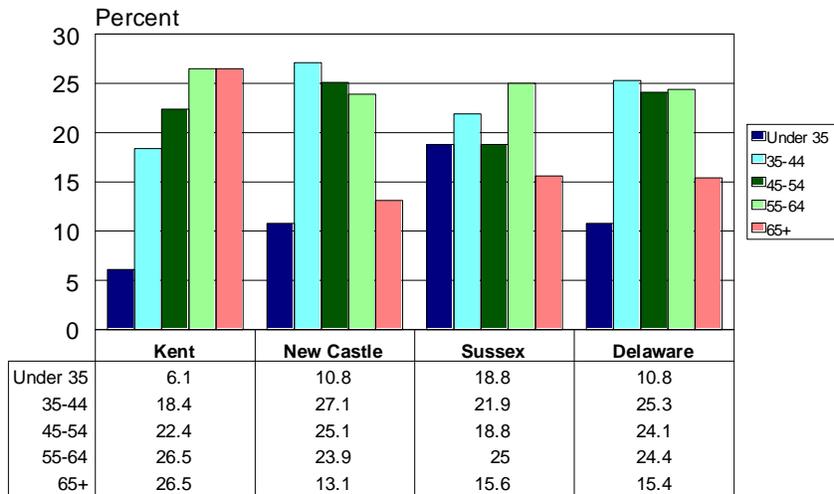
There are several points of interest in this display. In 1998, a disproportionate share of the youngest dentists was found in New Castle County. This situation does not appear in the 2005 survey where newly graduated dentists increased significantly in lower Delaware. On the other hand, Kent County now has a somewhat larger proportion of dentists in the 65+ age group who are less likely to remain active. The shortage of dentists in Sussex County will probably remain a problem although the number of dentists in the county grew faster than population since 1998. However, it might be reasonable to expect that the older population would need more specialized care. Kent County has been growing rapidly in the last three years and that growth is likely to produce many of the same problems observed in Sussex County. Kent County is now a borderline shortage area and is likely to have difficulty attracting younger dentists in the future although the percentage has increased since 1998.

Figure 2.4
Dentists
by Age and County



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

Figure 2.5
Age Distribution of Dentists
by County

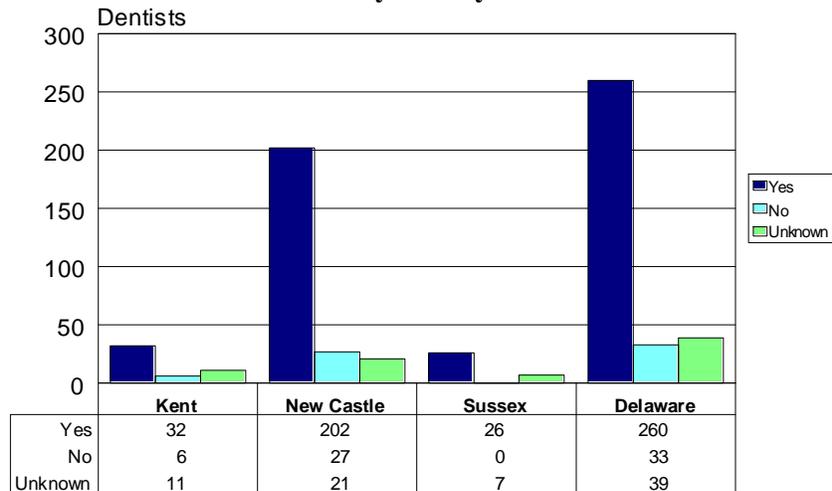


Source: Center for Applied Demography & Survey Research, University of Delaware

Dentists were asked if they planned to be active in dentistry five years from now. Those answers are summarized in Figure 2.6 and Figure 2.7. In general, more than 95% of the three youngest age groups (under 55) expect to be active five years from now. That drops to 64% for the next age group and 24% for those already of age 65 and over. There are really two break

points with respect to this data. The first occurs at about age 55 when the affirmative answers drop to about 64% and more become unsure. The second point is at age 65.

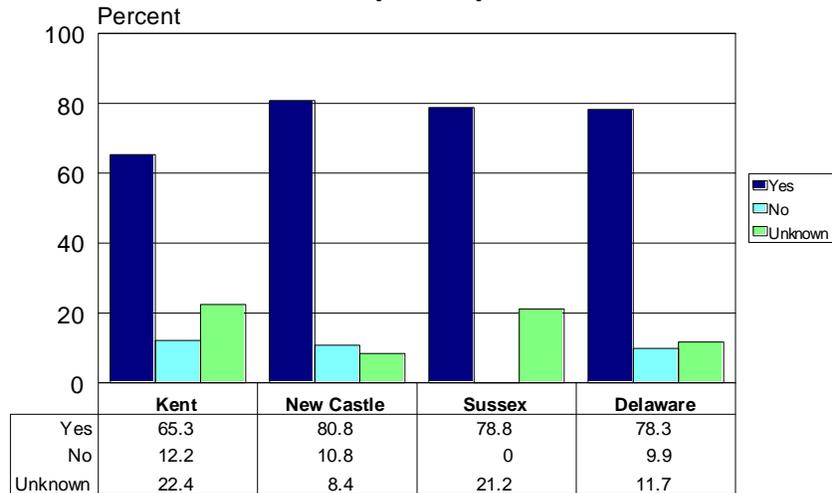
Figure 2.6
Number of Dentists Active in Five Years
by County



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

New Castle County dentists are the least sure about their plans with more than 10% (Figure 2.7) expressing some reservation. However, dentists in Kent and Sussex counties were about twice as likely to say they would not be active in five years. Considering the calculated shortages in both those counties, the current situation is not likely to improve anytime soon. More than 20% of the dentists currently active in these counties are less than positive about their status in five years.

Figure 2.7
Percentage of Dentists Active in Five Years
by County

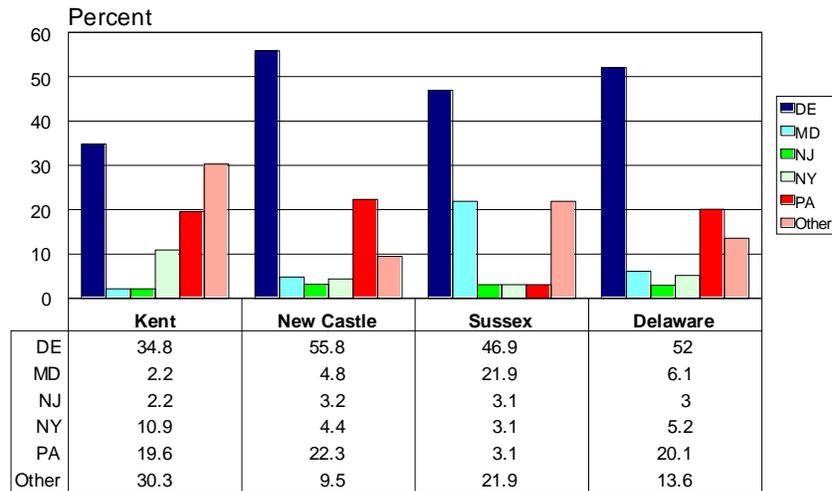


Source: Center for Applied Demography & Survey Research,
 University of Delaware

To better understand why some dentists choose to practice in Delaware and others practice in other states, it is necessary to look at several factors. The way this choice is made determines the adequacy of the supply for serving Delaware's 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?

In Figure 2.8, the distribution of the state of the dentists's high school graduation is shown. The first interesting aspect of this figure is that 86% of Delaware's dentists grew up in the region and approximately 52% are from Delaware. There also appears a different orientation by county as well. Dentists who grew up in Maryland are more likely to locate in Sussex County. In contrast, dentists from Pennsylvania are more oriented toward New Castle or Kent counties. Kent County hosts a far larger percentage of dentists who come from outside the region. Retired Air Force dentists from either current or past association with Dover Air Force Base undoubtedly contributes this finding as well.

Figure 2.8
State of High School Graduation
by County

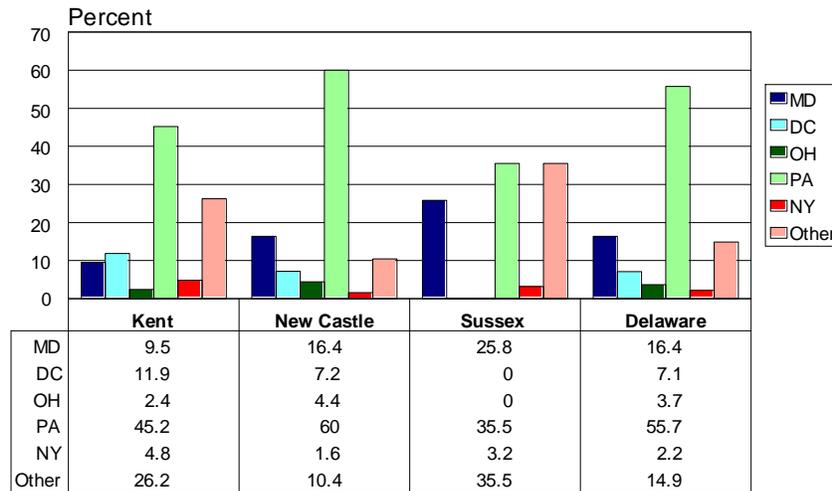


Source: Center for Applied Demography & Survey Research,
 University of Delaware

The majority of Delaware dentists come from dental schools in Pennsylvania (see Figure 2.9). The distribution among the other states is not all that different among the counties. The same cannot be said for the state of dental residency (see Figure 2.10). Kent County dentists exhibit a very different pattern. Fifty percent did their residency from the region and 26.5% did their residency in Delaware, much less than in the other counties. They were far more likely to have completed a residency in Maryland. In contrast, dentists in New Castle and Sussex counties are much more alike with respect to this attribute.

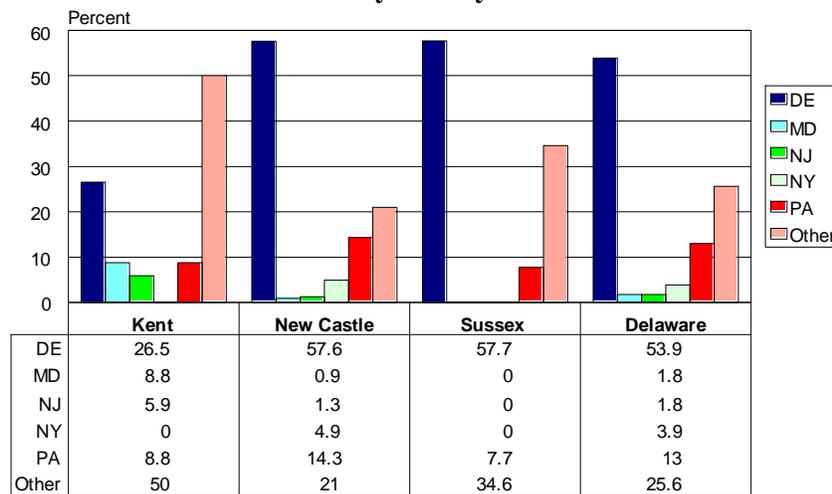
There clearly is a geographic orientation exhibited by these responses. It is plausible to suggest that similar patterns might emerge with the state of the dentist's residency. In fact, that relationship might be even stronger. However, all of these findings also reflect the fact that most people go to college within several hundred miles of their homes and also go to dental school within several hundred miles of where they went to college. More than eighty percent of those who graduated from high school in Delaware went to dental school in the region. Comparable percentages for other states in the region were: Maryland-96%, New Jersey-60%, Pennsylvania-92%, and New York-88%. Almost 80% of the dentists who graduated from high school outside

Figure 2.9
State of Dental School
by County



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

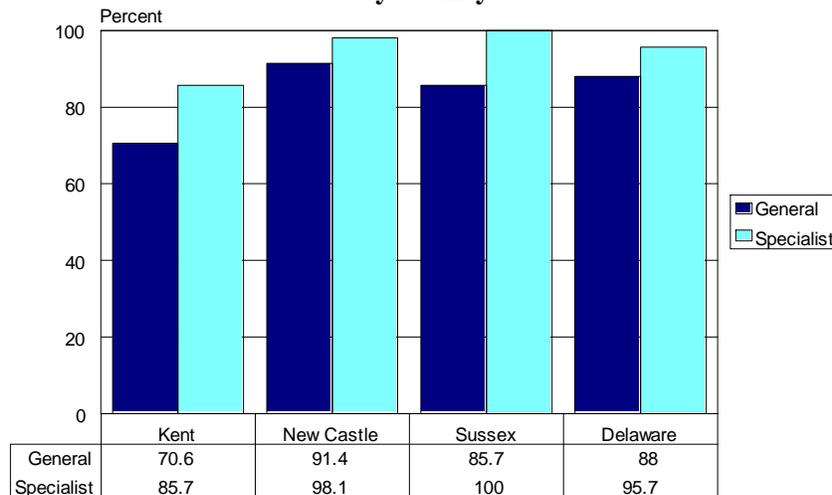
Figure 2.10
State of Dental Residency Program
by County



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

of the region also went to dental school outside of the region. This information may prove valuable to those making an effort to recruit new dentists for Delaware.

Figure 2.11
Completion of Dental Residency Program
by County

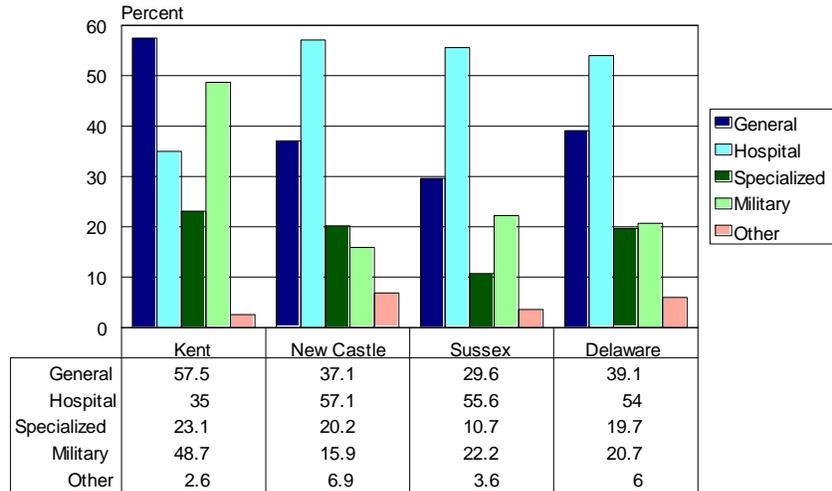


**Source: Center for Applied Demography & Survey Research,
University of Delaware**

Finally, the respondents provided other details about their dental residency program. Not all dentists have completed a residency. This might seem inaccurate since Delaware law requires that licensees have done so. However, there are two exceptions. Dentists that have practiced for three years elsewhere may be granted a waiver. In addition, there was a waiver for those that practiced dentistry for two years while on active military duty. That explains in part, the 93% completion rate among non-specialists reported in Figure 2.11, above. That proportion will increase over time since the waiver for military service dentistry was discontinued in 1990.

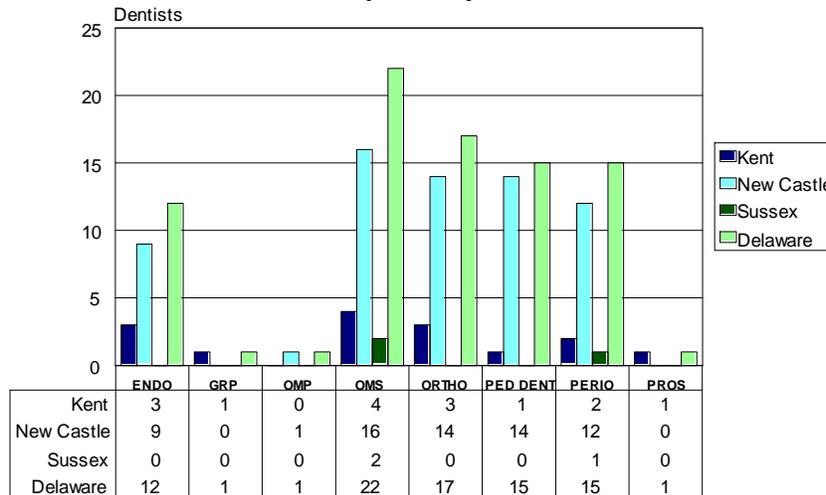
The types of residency programs respondents reported having completed are found in Figure 2.12. The totals will not add to 100% because some dentists reported more than one type of residency. This was particularly true for those with military service. The distribution of types of residency programs dentists reported having completed by county is different in several ways. First, fewer dentists in Sussex County reported doing a general/family dental residency than in either of the other two counties. Second, Kent County has the highest proportion reporting training associated with the military. Presumably this is related to Dover Air Force Base being located in Kent County.

Figure 2.12
Type of Dental Residency Program
by County



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

Figure 2.13
Dental Specialists
by County



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

The number of dentists by specialty⁴, excluding those engaged in general dentistry, is found in Figure 2.13, above. (Those with a specialty in pediatric dentistry are shown here even though they are included in the general category for FTE calculation purposes). Probably the

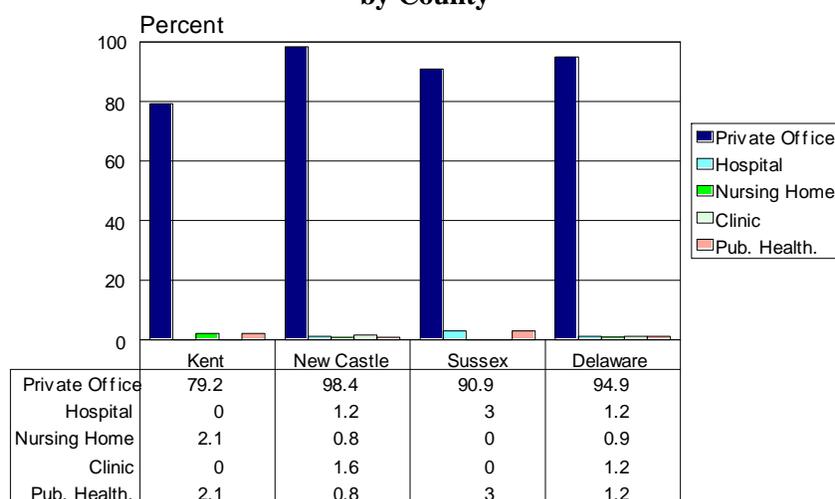
⁴ A more detailed description of the dental special codes is provided in the Appendix.

single most striking feature of this chart is the lack of so many specialties in Sussex County. This suggests that there is perhaps a shortage of specialists as well as generalists in the county. However, the relatively higher proportion of specialists located in Kent County may influence the perceived shortage of specialists in Sussex County.

Practice Characteristics

In this section, the practice characteristics of the 332 dentists actively practicing in Delaware are examined. These characteristics can be roughly divided into three areas. First, some broad attributes of the practice are presented. Second, issues related to accessibility are reviewed. Third, characteristics that affect payment for services are reported. Finally, information related to hiring of qualified dental staff is provided.

Figure 3.1
Type of Practice
by County

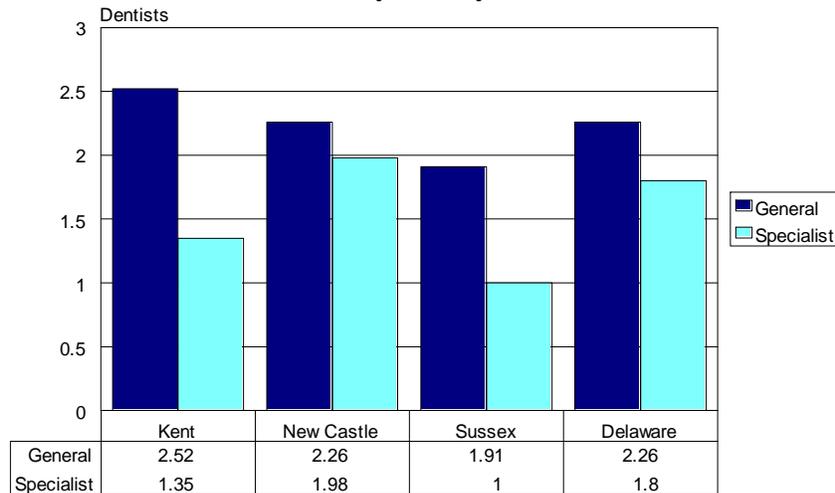


**Source: Center for Applied Demography & Survey Research,
University of Delaware**

Respondents were asked about the setting of their primary employment. Those responses are summarized in Figure 3.1 above. (Since some dentists characterized the setting in more than one way the percentages will not add to 100%.) The overwhelming majority of dentists were operating in private practitioner's offices. However, it is important to note that other types of settings were listed. This means that the responses supplied throughout the survey include elements outside the private sector. The diversity of settings was somewhat less in Sussex County when compared to New Castle County.

Dentist practices are generally small at least in terms of the number of dentists located at the practice site (see Figure 3.2). In general, one would expect to find one or two dentists in most practices. Fifty eight percent of the practices in Kent County have more than one dentist. That percentage is somewhat lower in Sussex County (42%), and is similar in New Castle County (54%). In general, the practice of specialists tends to be slightly smaller.

Figure 3.2
Average Dentists at the Primary Site
by County



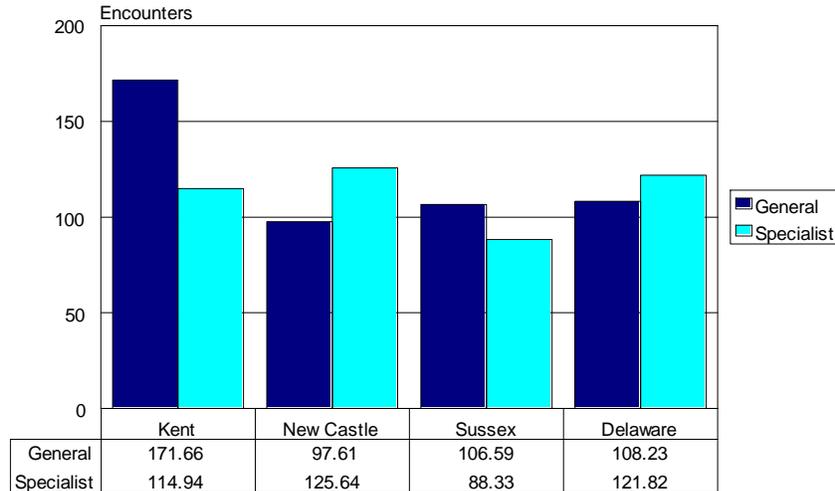
Source: Center for Applied Demography & Survey Research,
 University of Delaware

Another measure of size and capacity is the patient flow. The survey attempted to measure this by asking for the number of patient encounters the dentist or associated hygienists served each week. Those results are found in Figure 3.3, below.

On average, the typical dentist sees more than one hundred patients per week. One of the more interesting features of this figure is that the encounters are higher in Kent and Sussex counties where the dentist to population ratio is more than double that found in New Castle County. This information also suggests that dentists operating in Kent and Sussex counties are more likely to be operating closer to their maximum capacity for service delivery.

The same relationships do not hold for specialists. Specialists seem to have smaller practices in Kent and Sussex counties, at least relative to New Castle County. However, this result is probably also related to differences in the types of dental specialties in each county.

Figure 3.3
Weekly Patient Encounters
by County



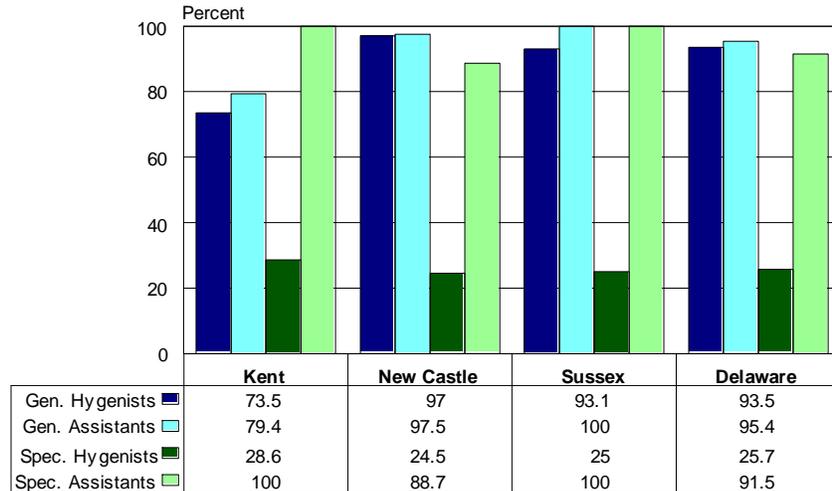
**Source: Center for Applied Demography & Survey Research,
 University of Delaware**

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 non-dentist resources are used to provide services that might otherwise have to be performed by the dentist. The utilization of such resources is quite high as is shown in Figure 3.4.

More than 90% of those practicing general dentistry in New Castle and Sussex counties use both dental assistants and hygienists to provide the necessary services expected of a general practitioner. In fact, there is little, if any difference in the distributions between those counties. The result for Kent County in both categories suggests a lower utilization rate by general dentists for both categories of employees.

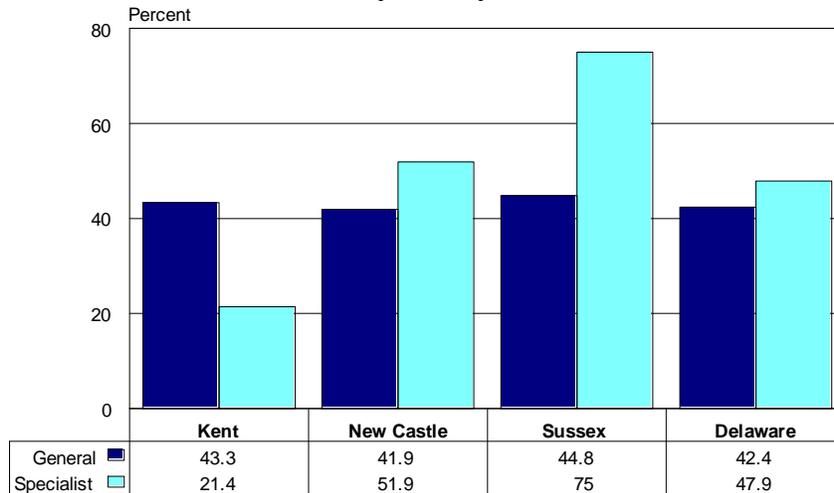
The lower utilization of hygienists by dental specialists reflects differences between the specialties and not a lack of interest in using non-dentist resources. For example, a periodontist would rely heavily on hygienists, while an endodontist would not. Their use of dental assistants is comparable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

Figure 3.4
Use of Non-Dentist Resources
by County⁵



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

Figure 3.5
Languages Other than English Spoken
by County



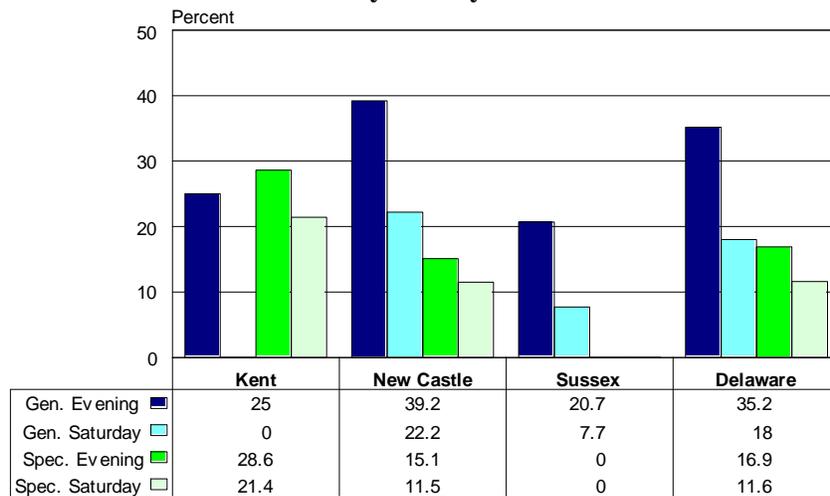
Source: Center for Applied Demography & Survey Research,
 University of Delaware

⁵ The abbreviation *Gen* refers to dentists in general practice in contrast to *Spec* which refers to those practicing a dental specialty.

The population of Delaware is becoming more diverse. For example, there has been a significant increase in the number of Hispanic Delawareans, particularly in Sussex County. For many of these new arrivals, English is a second language or is not spoken at all. This presents a challenge for the dental community as they try to provide service to this population. Respondents were asked if languages other than English were spoken at their practice site. The results are detailed in Figure 3.5.

Across the state, more than forty percent of general dentists and dental specialists have the capability of dealing in a language other than English. Spanish was by far the most frequently mentioned language. There are clearly differences between the counties. Sussex County has the largest need and dentists in Sussex have reacted to that need particularly among specialists. Kent County has a much smaller population of Hispanics and their growth rate is much lower than that observed in Sussex County. For that reason, far fewer specialists provide that capability.

Figure 3.6
Saturday and/or Evening Hours
by County⁶



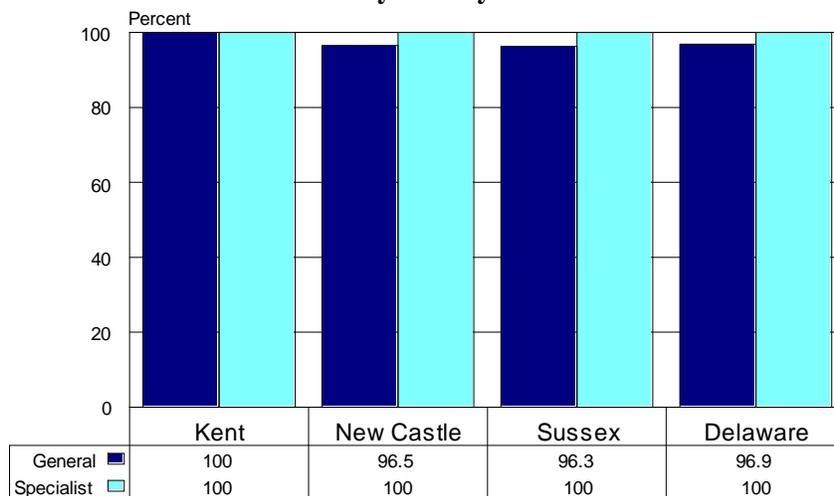
Source: Center for Applied Demography & Survey Research,
University of Delaware

⁶ The abbreviation *Gen* refers to those in general practice in contrast to *Spec* which refers to dental specialists.

Accessibility to dental services has many dimensions. One of those dimensions is flexible office hours, i.e. hours other than the typical hours that people are working. Respondents were asked if they provided either Saturday or evening office hours. Their responses are tabulated in Figure 3.6.

General dentists are more likely to offer flexible office hours than specialists. Offering evening hours is roughly twice as popular as providing Saturday hours. Dentists in New Castle County are much more likely to offer flexible hours than dentists located in Kent or Sussex counties. This difference is probably driven by capacity. The weekly encounters are much higher downstate and the population ratios are certainly less favorable than those found in New Castle County.

**Figure 3.7
Accepting New Patients
by County**



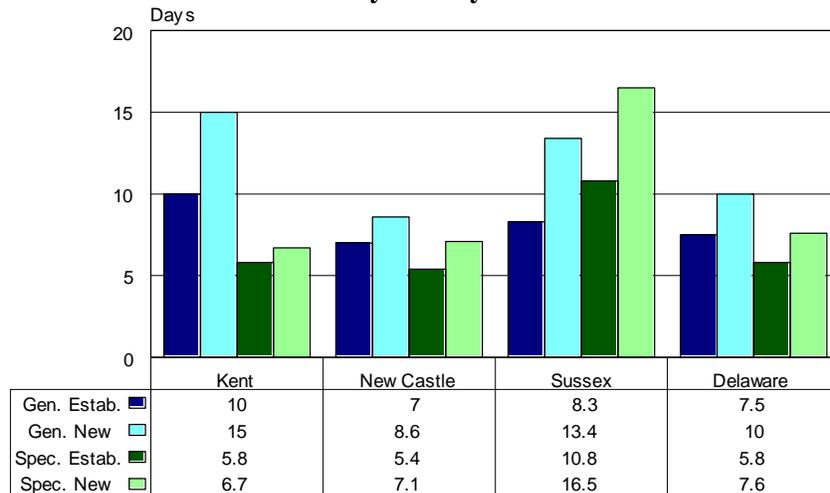
Source: Center for Applied Demography & Survey Research,
University of Delaware

A more direct measure of accessibility is whether dentists are accepting new patients. Respondents were asked this question and the results are found in Figure 3.7, above.

Almost all dental generalists and specialists are accepting new patients and this situation is similar across the counties. This situation has improved significantly in both Kent and Sussex counties when the same question was asked in 1998. Clearly the addition of dentists in those counties has had an impact even though other factors have suppressed the federal FTE.

Another measure of capacity is the “wait time” or how long a person has to wait for an appointment once they have called the dentist’s office. This time will vary significantly depending on whether the problem can be characterized as an emergency. Most dentists leave openings to handle emergency cases. Respondents were asked about “wait time” for non-emergency cases. The results are found in Figure 3.8, below.

Figure 3.8
Average Wait Time for New and Established Patients
by County⁷



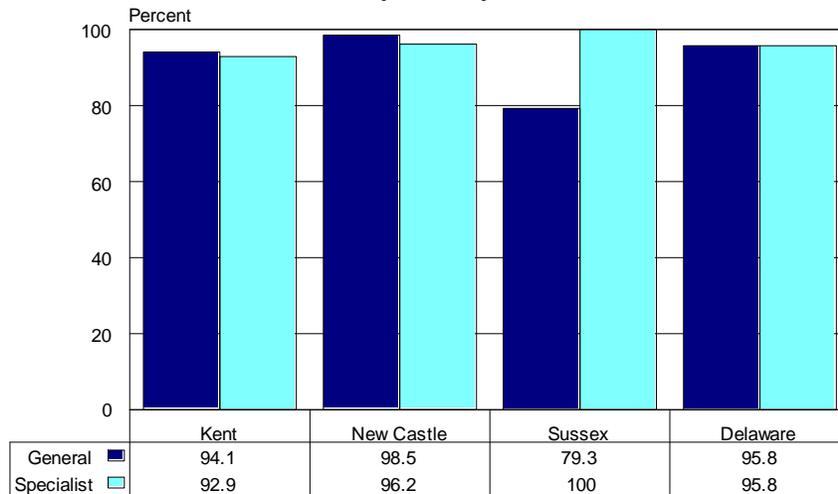
Source: Center for Applied Demography & Survey Research,
University of Delaware

Wait times are in general less for dental specialists than they are for general dentists. This result is consistent with the proportions that are accepting new patients. The estimates for Kent County relative to New Castle County are consistent both with the weekly encounter estimates and the proportion accepting new patients. Kent County wait times are 30% higher than those provided by New Castle County dentists.

In Sussex County general dentists have wait times similar to Kent County. However wait times for specialists in Sussex County are substantively higher than in the other two counties. Presumably this reflects the paucity of specialists in Sussex County in general. There is little

difference between the wait times for new and established patients in New Castle County because both the encounter estimates and the smaller population to dentist ratios are favorable. In both Kent and Sussex counties, the penalty for being a new patient is a 50% increase in the wait time.

Figure 3.9
Serving Pediatric Patients
by County

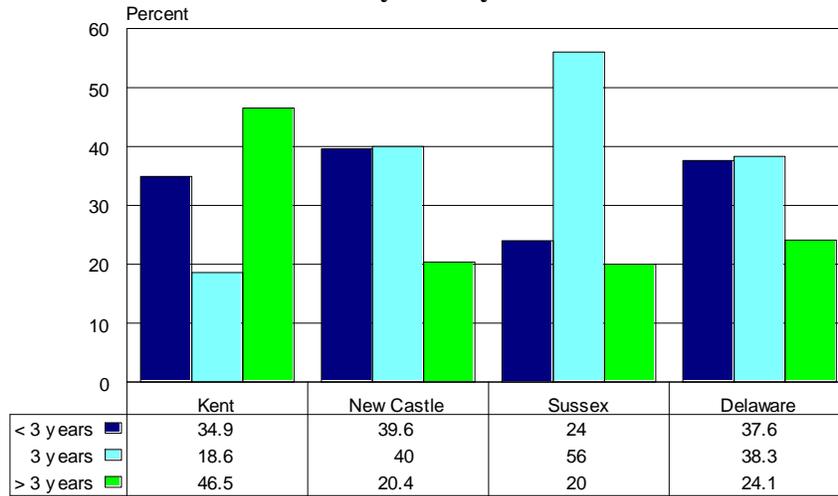


Source: Center for Applied Demography & Survey Research,
University of Delaware

Another area of interest is that of pediatric patients. According to the results found in Figure 3.9, most dentists do serve pediatric patients. This result holds across counties and between general dentists and specialists. The Sussex County result showing a somewhat lower percentage among general dentists probably reflects the smaller percentage of children in the county. The age of the child is important as is shown in Figure 3.10. About 38% of dentists will serve a child under three years of age. The distribution is variable among the counties.

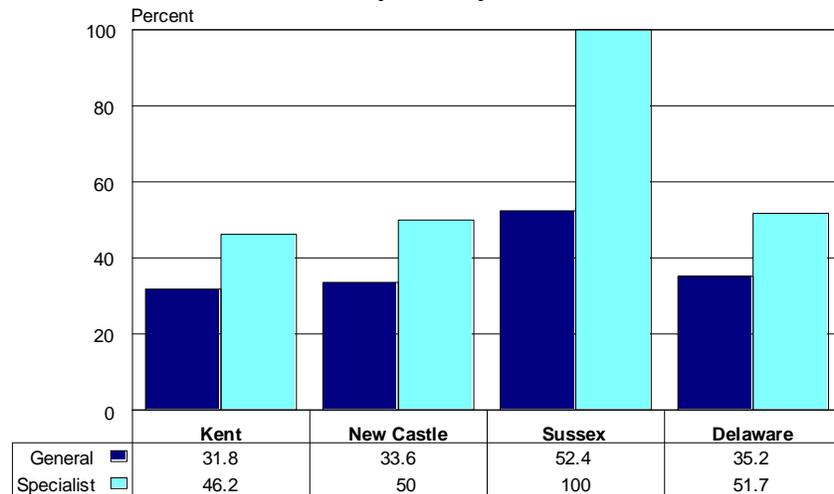
⁷ The abbreviation *Gen* refers to those in general practice in contrast to *Spec* which refers to dental specialists. *Estab* refers to established patients in contrast to *New* patients.

Figure 3.10
Youngest Age of Pediatric Patients
by County



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

Figure 3.11
Participate in Medicaid
by County

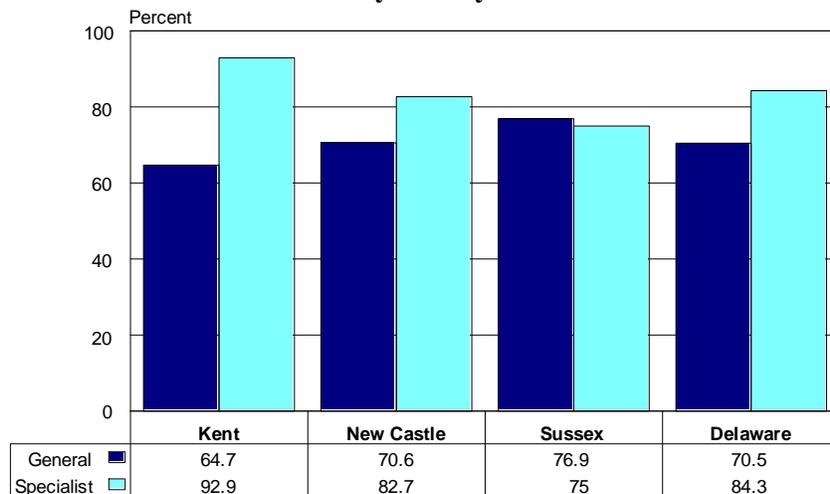


Source: Center for Applied Demography & Survey Research,
 University of Delaware

Accessibility of dental services can also be affected by the way the patient pays for services rendered. This has been an issue for those qualifying for Medicaid dental coverage that have traditionally had difficulty in accessing dental care. For that reason, respondents were asked what types of insurance plans they accepted. One of the potential responses was Medicaid. The results are shown in Figure 3.11, above.

At the time of the 1998 survey, less than 4% of general dentists statewide indicated they accepted Medicaid. The proportion accepting Medicaid among dental specialists was much higher, almost 25%. Since October 1998, more than 50 dentists have agreed to serve Medicaid patients. The 2005 survey reveals that more than a third of dentists now accept Medicaid payments across the state and the proportions are substantially higher in Sussex County.

Figure 3.12
Participate in Dental Insurance Plans
by County



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

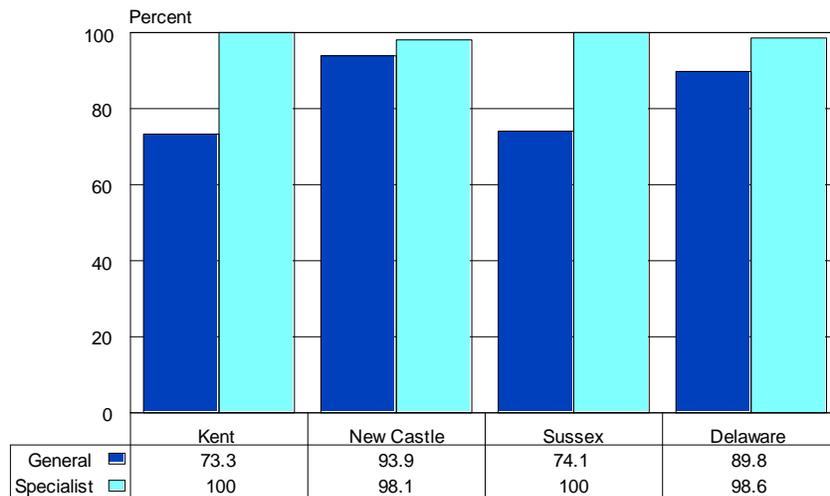
Accessibility can also be affected by the acceptance of dental insurance plans. Respondents were asked if they participated in such plans. The responses are found in Figure 3.12.

In contrast to the 1998 survey, where general dentists were more likely to participate in dental insurance plans than specialists, the opposite is true in 2005. Presumably, this increase is related to the growth of dental plans over the past seven years. Overall, slightly more than 20% of all dentists do not accept some form of dental insurance. There are differences between the counties. Kent County specialists are much more likely to accept these plans than dentists located in New Castle County or Sussex County. Dentists in Sussex County are the least likely to accept dental insurance plans by a small margin.

Respondents were also asked if they provided flexible payment plans. Those responses are summarized in Figure 3.13. Specialists are more likely to offer such plans than are general dentists. However over 90% of all dentists provide this option. The difference is probably related

to the likelihood of the service being covered by dental insurance. Specialists are now more likely to accept dental insurance plans.

Figure 3.13
Provide Flexible Payment Plans
by County

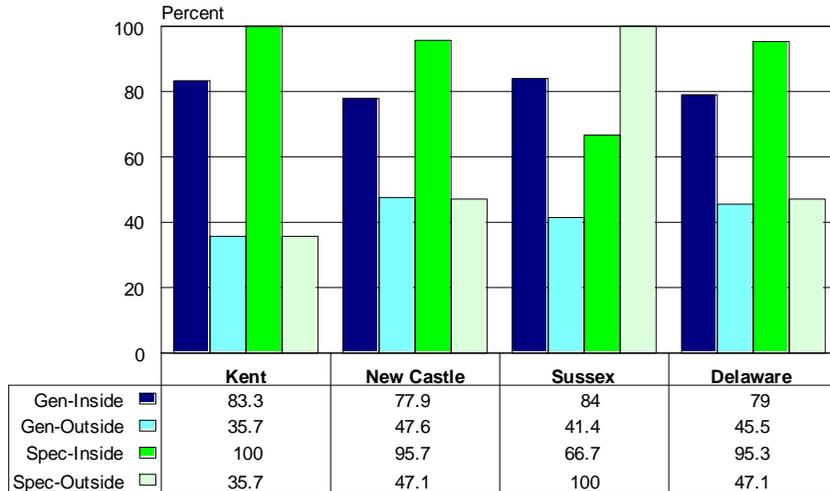


**Source: Center for Applied Demography & Survey Research,
University of Delaware**

While dental care is usually much more of an elective procedure than many medically related problems, there will still be people who need services and cannot pay for them. Respondents were asked if they provided any type of charity care. Charity care was 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 found in Figure 3.14.

Almost three-quarters of all dentists provide some charity care in their offices. This holds true for general dentists and dental specialists. About 40% of dentists provide some charity care outside of their offices, presumably in clinics and other like settings. The pattern is similar across the counties with the proportions generally lower in Kent and Sussex counties. This finding is probably influenced by the higher workload. Given the lower incomes and higher poverty rates in the lower counties, one might expect that the need is even greater.

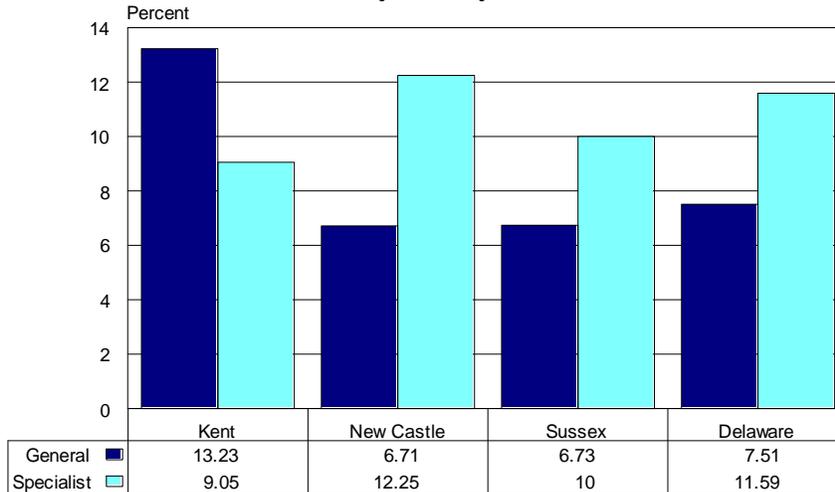
Figure 3.14
Provide Charity Care In/Out of Office
by County⁸



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

Respondents were asked what proportion of their gross fees were unreimbursed. Those results are found in Figure 3.15, and they are consistent with those provided by other health professionals. Kent County general dentists are the most burdened.

Figure 3.15
Percent of Gross Fees Unreimbursed
by County

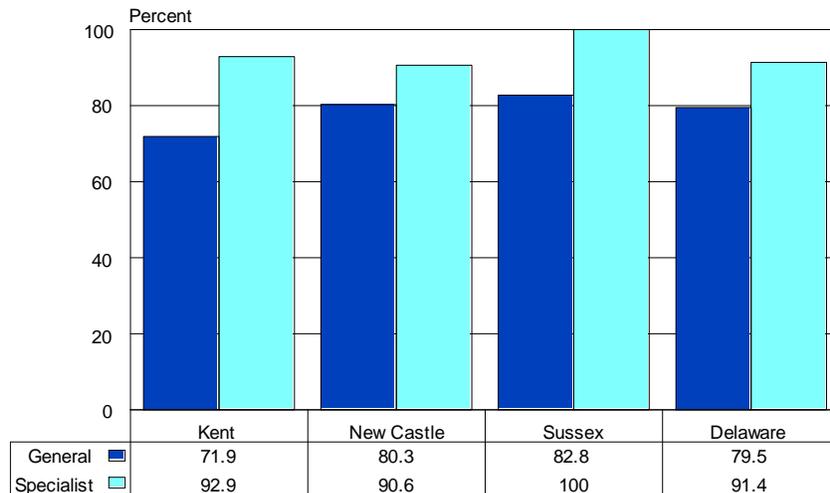


Source: Center for Applied Demography & Survey Research, University of Delaware

⁸ The abbreviation *Gen* refers to those in general practice in contrast to *Spec*, which refers to dental specialists. *Inside* refers to charity care provided within the dentist’s primary office. *Outside* refers to dental services provided at a location other than the dentist’s primary office.

In order for dentists to be as productive as possible 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. To ascertain the sufficiency and availability of staff, several questions were added to the 2005 survey. The first issue was to measure what percent of dentists consider their facility to be fully staffed. The results are found in Figure 3.16.

Figure 3.16
My Office is Fully Staffed
by County



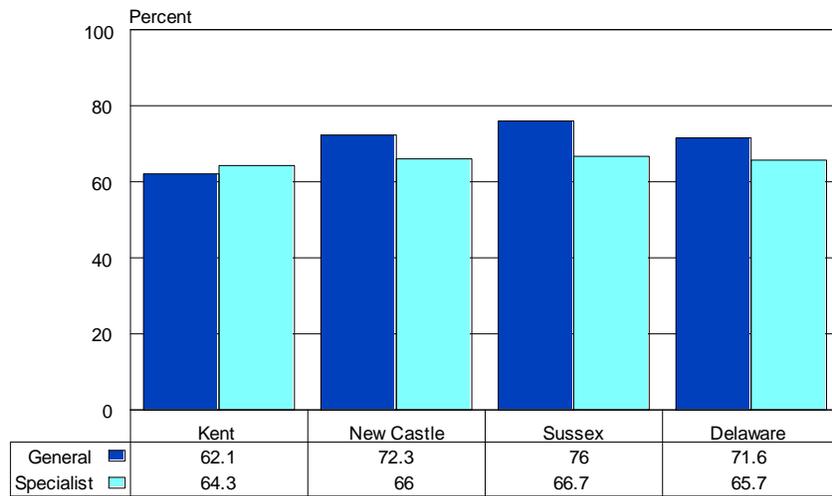
Source: Center for Applied Demography & Survey Research,
University of Delaware

About 80% of general dentists feel that their offices are fully staffed. It would appear that the problem is more acute in Kent County where the percentage falls to 72%. Specialists report better staffing levels than the general dentists with more than 90% believing they are fully staffed. One needs to remember that the staffing needs are different for specialists and general dentists. Only 25% of specialists report using hygienists compared with 94% of general dentists.

The second major issue was whether or not there is a shortage of qualified dental applicants. The intent of this question is more directed toward the difficulty of filling a position whether the dentist is fully staffed or not. The results are shown in Figure 3.17.

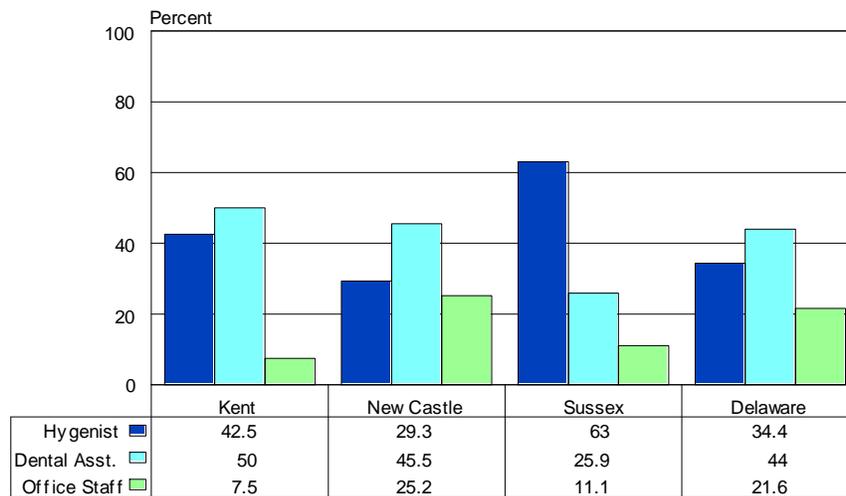
There is broad agreement among both general dentists and specialists that there is a shortage of qualified dental applicants. More than 60% of both groups agree with this proposition and there is only minor variation between counties.

Figure 3.17
Perceived Shortage of Qualified Dental Applicants
by County



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

Figure 3.18
Most Difficult Positions to Fill
by County



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

The final issue addressed in the survey was the degree of difficulty in filling the different categories of non-dentist positions. The respondents' opinions are provided in Figure 3.18.

There is a good deal of variation in the responses. Office staff was generally seen as the least problem. Presumably, the skill set for this position is less specialized and more available. Even here though, finding people in New Castle County to fill office staff positions is substantially more difficult. Hygienists were selected as the most difficult to fill by 34% of dentists. Once again there were substantial differences between the counties. It is twice as difficult to fill a hygienist's position in Sussex County as in New Castle County. Dental assistant positions were the most difficult to fill according to 44% of all dentists. The problem is more acute in Kent and New Castle counties where the proportion of specialists is substantially higher than in Sussex County. This also explains why hygienists are more in demand in Sussex County.

Spatial Distribution

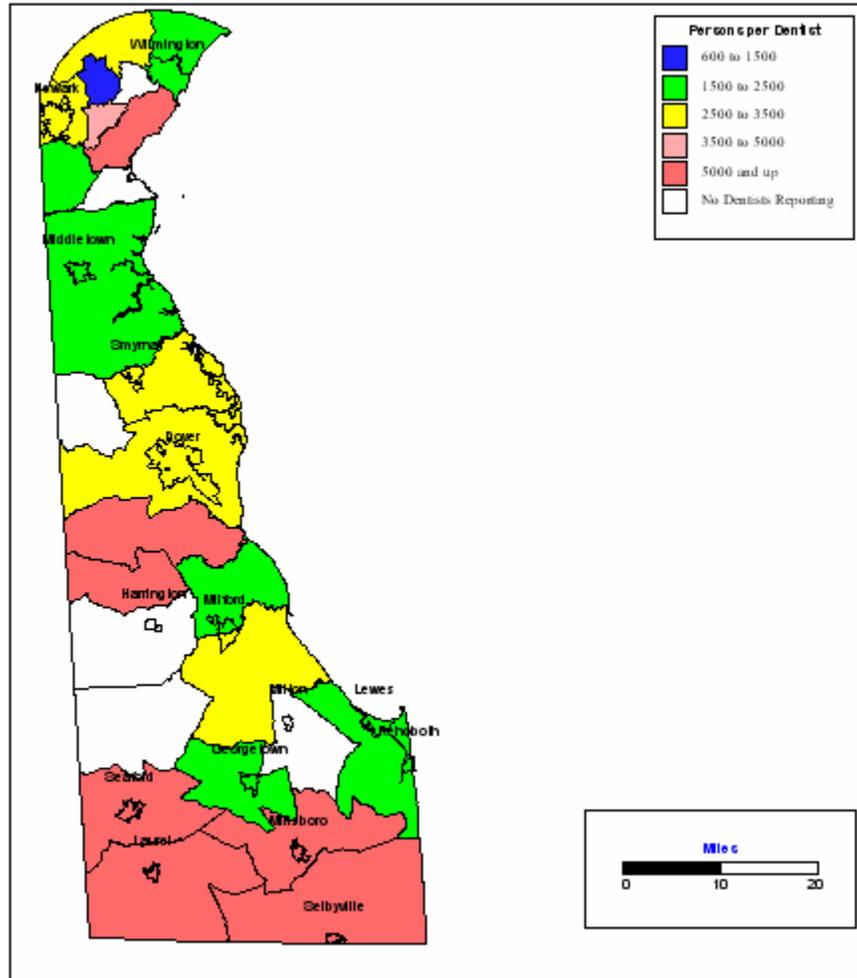
In the first section of this report, Sussex County was identified as an area that does not have a sufficient supply of general/family practice dentists using the federal definition of one FTE dentist for 5000 persons. Further, the situation in Kent County is not optimal. Only New Castle County meets the criteria of the federal government.

The federal government recognizes the importance of having an adequate number of dentists in areas smaller than states or even counties. In their program for dentally underserved areas and populations, “rational areas for the delivery of primary dental care services” can be counties, parts of counties, and even neighborhoods within metropolitan areas with a strong identity and a population of 20,000. In general, an underserved area will have a ratio of 5000:1 (in special cases 4000:1) or higher to qualify. Obviously, only Sussex County would qualify if that were the spatial area considered.

The distance criterion, which defines such areas in Delaware, is roughly 25 miles between centers. Good examples for such markets in Sussex County would include Lewes/Rehoboth, Georgetown, Milford, Millsboro, and Seaford. In Delaware, these general areas are census county divisions. These work well in Sussex County because of the number of distinct town centers. The distinctions are not quite as clear in Kent County where Dover and its suburbs are paramount. The Smyrna and Harrington areas are the best examples. The issue is just as murky in New Castle County because of the dominance of population in unincorporated areas. Wilmington, Newark, New Castle, and Middletown are the most distinct areas although their suburban fringes are not well defined. Still, the census county division of which there are 27 in Delaware is the most useful for this spatial examination.

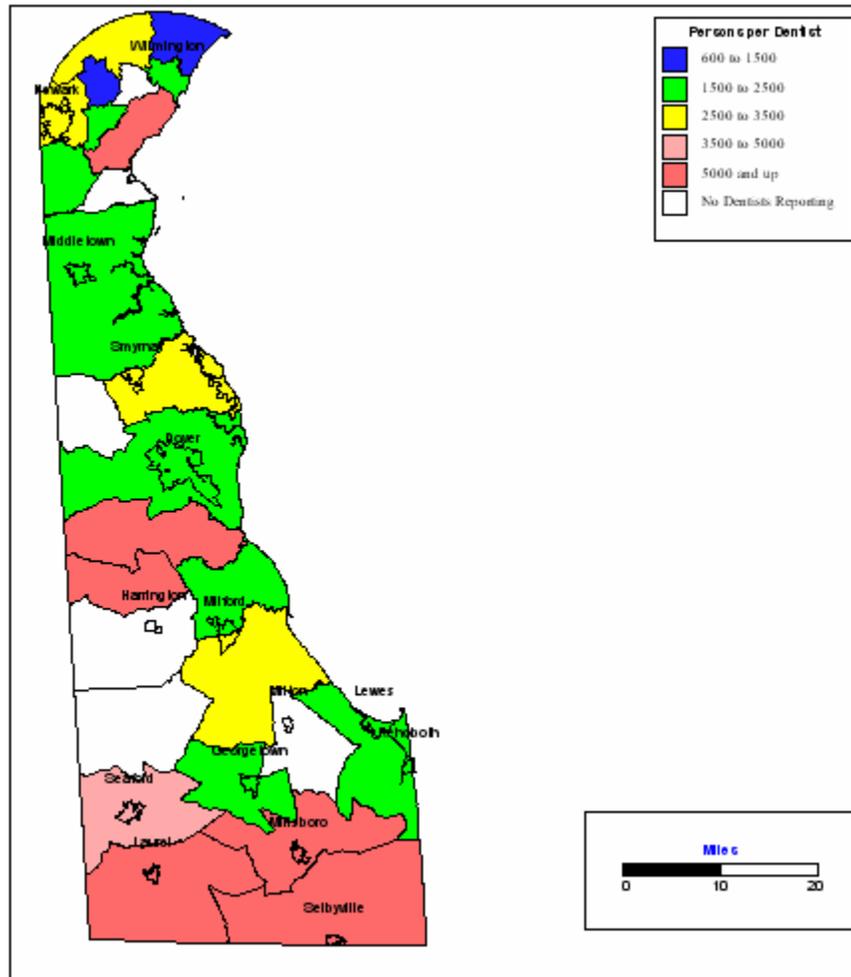
There is one other factor that is potentially important especially in Sussex County. There are a significant number of part-year residents who live in their vacation homes during the summer. For most, this is largely weekend activity; for others it may be full-time during the summer or during their vacation. In addition, there are a very large number of tourists who come on the weekends or perhaps for a week. All of these are potentially in need of dental services at some point, although at a much lower frequency than are full-time residents. These populations are not considered in the spatial distributions that follow.

Figure 4.1
Persons per FTE General/Family/Pediatric Dentist
By Census County Division



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

Figure 4.2
Persons per FTE Dentist
By Census County Division



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

The spatial distribution of general/family/pediatric dentists relative to population by census county division (CCD) in Delaware is found in Figure 4.1. The important areas to look at are those in yellow and shades of red. Those in dark red are already too high with too few FTE dentists for the resident population. This map shows that dentists are unevenly distributed across New Castle County. Every area, which is potentially short of dentists, is adjacent to one that has an abundance of dentists. 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 convenience

of dentist office hours may be a barrier to access in some areas and populations. The areas in dark red are above the 5000:1 ratio indicating a potential dental shortage area. One of those, the Red Lion census county division, currently has a population of about 5,000 people with no dentists reporting, but that population is too few to be considered a rational dental service area. All of the other divisions meet the 20,000+ population criteria. No dentists responded from the Lower Christina CCD this year although there is a significant population.

This does not mean that there may not be isolated pockets within the other census county divisions that are dentally underserved. Wilmington, for example, 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. Most of the dentists appear to be focused around Dover and Smyrna. None of the dentists surveyed reported working in two of the census county divisions (Kenton, and Harrington); those along with Lower Christina and Red Lion in New Castle County and Bridgeville and Milton in Sussex County were the only CCDs in the state without any dentists reporting. With the exception of Dover (the green area in the middle of Kent County with a population of 66,000), none of the other census county divisions reach a population of 20,000. Central Kent (the red area just south of Dover) contains almost 18,000 persons but is so close to Dover that dentists are more likely to locate in the city. The southern areas of Felton and Harrington are clearly short of dentists but are small (7,000 and 11,000 respectively).

With the exception of Georgetown and Lewes, dentists are in short supply throughout Sussex County. While the Lewes CCD has an adequate supply, the significant part-year resident population has not even been considered. Under normal circumstances, The Millsboro and Selbyville CCD's might not be considered a problem since they are adjacent to both Georgetown and Lewes. However that ignores the part-year resident population problem as well. The real shortage appears to be in the western part of Sussex County from Bridgeville to Laurel where the ratios exceed even the federal guideline of 5000:1.

In Figure 4.2, ratios are calculated by pooling the generalists and the specialists. Suggestions have been made that there are more dental specialists in Delaware relative to general dentists. Further, the argument has been advanced that the 59 dental specialists are fully trained and capable of providing the same services as those practicing general dentistry. That does not

mean that are in fact doing so but that they could do so. This is particularly true in those cases where auxiliaries working in specialist's offices perform many of the same tasks as those working in the office of a general dentist. However, the conclusions reached by pooling both types of dentists are essentially the same. A few of the green areas are now blue and some of the light red areas are now yellow. However, all but one of the dark red areas remains dark red.

OBSERVATIONS

The Survey of Delaware Dentists 2005 follows its predecessor fielded in 1998. It is intended to provide information that is needed to guide policy-makers in the State of Delaware. With approximately 78% of the 332 active dentists responding, the database, while not complete, is substantial. There are still refinements to be made to better measure the key items and, at the same time, to eliminate those items that add to the dentist's burden without adding to needed knowledge. Even without complete reporting a number of findings can be drawn from the data.

- The number of dentists in Sussex County is such that the area is considered dentally underserved according to federal guidelines. Kent County is approaching the point of qualifying as an underserved area. There are a sufficient number of dentists in New Castle County.
- There may be a need to encourage more African American and Spanish speaking dentists and/or staff, as the population becomes more diverse particularly in Sussex County. However the dentist community has become more diverse since 1998.
- More than 20% of Delaware's dentists will either not be active in five years or are at this point unsure. Younger dentists are more likely to locate in Sussex County.
- There are distinct patterns in both the state in which the dentist graduated from high school and dental school and the state in which he/she currently practice. Similar patterns are found with respect to the state where they completed residency programs.
- More than 95% of general dentists and specialists statewide are accepting new patients. This is an improvement since 1998.
- Weekly patient encounters are higher in both Kent and Sussex counties.
- Waiting times for both new and established patients are higher in Kent County. Waiting times are higher to see a general dentist than to see a specialist.
- Until recently Medicaid was acceptable to 4% of general dentists and 25% of dental specialists. That percentage has been increased from 4% to 35% in early 2005.
- Almost all dentists use non-dentist 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 dentists are more likely to offer such hours than are specialists. Such hours are more likely to be found in New Castle County.
- Most dentists in Delaware participate in dental insurance plans, offer flexible payment plans, and provide charity care.

APPENDIX

4. What is the form of your **primary employment**:

1[] **Self-Employed/Principal** (*please check all that apply*):

- 1[] Solo Practice
- 2[] Partner in Group Practice
- 3[] Professional Corporation
- 4[] Other (*please specify*): _____

2[] **Salaried, Employed by** (*please check all that apply*):

- 01[] Commissioned Associate
- 02[] Partnership of Group Practitioners
- 04[] Other Non-Government Employer (hospital, school, etc.)
- 05[] Federal Government
- 06[] Federally Qualified Health Center
- 07[] State Government
- 08[] Other (*please specify*): _____

PLEASE PROVIDE THE FOLLOWING INFORMATION FOR YOUR PRIMARY DELAWARE-BASED PRACTICE SITE.

5. What is the **facility name, address and zip code** of **your primary DELAWARE-BASED practice site**?

(Facility Name)

(Street Address)

(City) (State) (Zip Code)

6. How long have you been practicing at this location? _____

7. What type of site is this?

- 1[] Private Office
- 2[] Clinic
- 3[] Hospital
- 4[] Other _____

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

Specialty Code:

9. How many dentists currently practice at this site (only those in your practice in case of shared space)? _____

10. About how many patient encounters do you have in a week, including hygiene patients? _____

11. Do you see pediatric patients (under 21 years)? 1[] Yes 2[] No

a. If YES to above, beginning at what age do you see patients? _____

12. Do you offer **Saturday or evening hours**?

- a. Offer Saturday appointments: 1[] Yes 2[] No
- b. Offer evening hours: 1[] Yes 2[] No

13. 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 (please provide the number of days **OR** weeks):
- a. New patients: _____ Days _____ Weeks
- b. Established patients: _____ Days _____ Weeks
14. When a patient calls your office with a true **dental emergency**, what is the usual elapsed time between the request and the resulting dental treatment for new and established patients (please check one box):
- a. New patients: [] Hours [] Days
- b. Established patients: [] Hours [] Days
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 patient referral? 1[] Yes 2[] No
- a. If YES to above, to what source(s)? (**check all that apply**) :
- 1[] Private Practice Dentist
- 2[] Hospital Emergency Room
- 3[] Other (*please specify*) _____
17. Do you participate in dental insurance plans? 1[] Yes 2[] No
- a. If YES to above, please indicate which plans you participate in (**check all that apply**):
- 1[] Capitation
- 2[] Reduced fee for service
- 3[] Medicaid
- 4[] Traditional insurance with balance billing
- 5[] Other (*please 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 **currently** 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 (*please specify*): _____
21. Does this site employ dental hygienists? 1[] Yes 2[] No
- a. If YES to above, please indicate how many you employ: _____
- b. If YES to above, how many patients in total do **all of your hygienists** see per week: _____
22. Does this site employ dental assistants? 1[] Yes 2[] No
- a. If YES to above, please indicate how many are: _____ Part time (29 hours or less)
- _____ Full time (more than 30 hours)

ALL RESPONDENTS:

PLEASE COMPLETE THE FOLLOWING QUESTIONS

33. Do you expect to be active in clinical dentistry 5 years from now? ₁[] Yes ₂[] No ₃[] Unsure

34. State of residence at time of high school graduation: _____

35. From which dental school did you graduate: _____ Year _____

In what state is the school located: _____

36. Did you complete a dental residency? ₁[] Yes ₂[] No

a. If **YES to above**, what type of dental residency was it? (**check all that apply**):

₁[] General or Family Dental Residency

₂[] Hospital Dental Residency

₃[] Specialized Dental Residency (*please specify*): _____

₄[] Military Service

₅[] Other (*please specify*): _____

b. If **YES to above**, please indicate the state(s) where you did your residency:

State: _____

State: _____

State: _____

37. In which states are you currently licensed to practice dentistry? (*Please specify below*):

State: _____

State: _____

State: _____

38. What is your race:

₁[] Caucasian or White

₂[] African American or Black

₃[] Native American or Alaskan Native

₄[] Asian or Pacific Islander

₅[] Multi-Racial

₆[] Other (*please specify*): _____

THANK YOU FOR YOUR TIME AND COOPERATION IN COMPLETING THIS FORM.

39. Are you of Hispanic origin: ₁[] Yes ₂[] No

40. Gender: ₁[] Male ₂[] Female

41. Date of Birth: ____/____/____ (*month/day/year*)

42. Do you have a Delaware business license? ₁[] Yes ₂[] No

**IF YOU HAVE ANY ADDITIONAL COMMENTS,
PLEASE FEEL FREE TO INCLUDE THEM IN THE SPACE BELOW.**

ADA Self-Designated Practice Codes

| | | |
|------------------|---|--|
| CBMX PROS | - | prosthodontics/maxillofacial prosthetic |
| DG | - | general dentistry |
| CBMX PROS | - | prosthodontics/maxillofacial prosthetic |
| 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 |