

**Primary Care Physicians in Delaware  
2006**

**prepared for**

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

**produced by**

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## TABLE OF CONTENTS

	<b>Page</b>
Acknowledgements .....	iii
List of Figures .....	v
Overview .....	1
Demographics .....	5
Practice Characteristics .....	13
Spatial Distribution .....	27
Observations.....	37
APPENDIX .....	38

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## LIST OF FIGURES

<b>Figure</b>		<b>Page</b>
1.1	Primary Care Physicians by County.....	3
1.2	FTE Primary Care Physicians by County and Year.....	4
2.1	Gender of Primary Care Physicians by County.....	5
2.2	Race of Primary Care Physicians by County.....	6
2.3	Hispanic Origin of Primary Care Physicians by County.....	7
2.4	Age of Primary Care Physicians by County.....	8
2.5	Active Five Years from Now by County.....	9
2.6	State of High School Graduation by County.....	10
2.7	State of Medical School Graduation by County.....	11
2.8	State of Medical Residency by County.....	12
3.1	Specialty of FTE Primary Care Physicians by County.....	13
3.2	Distribution of Primary Care Specialties by County.....	14
3.3	Provide Selected Specialty Services by County.....	15
3.4	Accepting New Primary Care Patients by County.....	16
3.5	Accepting New Medicare Patients by County.....	17
3.6	Accepting New Medicaid Patients by County.....	18
3.7	Percent of Time Serving Selected Patient Groups by County.....	19
3.8	Practice Geriatrics as a Sub-specialty by County.....	20
3.9	Average Wait Times for Types of Patients by County.....	21
3.10	Use of Non-Physician Resources by County.....	22
3.11	Use of Non-Physician Resources by Year.....	23
3.12	Member of Managed Care Networks by County.....	24
3.13	Electronic Access to Patient's Clinical Information – Interest to Participate.....	25
3.14	Amount Willing to Pay Per Transaction to Access Clinical Information by County ...	26
4.1	Number of Persons per Primary Care Physician by Census County Division.....	29
4.2	Number of Persons per Family Practice Physician by Census County Division.....	33
4.3	Number of Women (15-64) per OBGYN by Census County Division.....	34
4.4	Number of Youth (0 to 19) per Pediatrician by Census County Division.....	35
4.5	Number of Persons per Internist by Census County Division.....	36

## Overview

In 1995, the Division of Public Health began an effort to measure the number and spatial distribution of primary care physicians practicing in Delaware. The objective was to identify medically underserved areas and to understand any existing or developing trends that could impact the supply of primary care services.

The method chosen to gather the information was a mail survey combined with telephone follow-up of non-respondents. Subsequent surveys were conducted in 1995, 1997, 1998, 2001, and 2006. Each time the survey instrument was refined and shortened with the objective of reducing the burden on the responding physician and improving the quality and relevance of the data gathered. As new information was gathered, it would either replace information supplied by the physician at an earlier date or in the case of a first time respondent, it would extend the coverage of the database. At the same time, responses from physicians in prior years, who no longer had an active Delaware license as determined from the state license file, were eliminated from the database. The resulting database, upon which this report is based, contains information gathered from 1995 through 2006 from physicians who currently hold a Delaware medical license and provide clinical medical services in Delaware.

Delaware currently has 2,268 physicians licensed to practice clinical medicine in Delaware. Of those, 2,147 have a Delaware address but it does not mean they are active or that they have a Delaware practice. Similarly, physicians living in other states may have an active practice in Delaware. For the purposes of updating the database and producing this report, all physicians licensed in Delaware were contacted. Of those, 1,026 responded to the survey and 971 provided usable data.

Based on the database that combines survey results from 2006 with the results over the past four years, the number of physicians with an active practice in Delaware is estimated at approximately 1,734. This total is used to produce all estimates presented throughout this report.

Primary care physicians are the focus of this report. This group includes physicians practicing in five specialties: family practice, general practice, internal medicine, pediatrics, and obstetrics/gynecology. The survey database to date has identified 587 physicians with these primary specialties. After weighting for non-respondents, the expected number of primary care physicians is estimated at 781.

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Not all physicians practice full-time. Others practice full-time but do not deliver direct patient care on a full-time basis. To give a more realistic view of the primary care physicians available, full time equivalents (FTE) were calculated. A physician who was engaged in delivering primary care directly to patients 40 or more hours per week was defined as a full-time primary care physician. Anything less than 40 hours was considered as less than full-time. For each four hours less than 40 hours 0.1 FTE was deducted. Anything more than 40 hours was considered only as full-time.<sup>1</sup> In other words, a physician delivering 60 hours per week of primary care was still counted as one full-time equivalent physician.

Finally, it is important to note that the estimates provided here exclude the foreign doctors with J-1 visas who are permitted to practice primary care for three years.<sup>2</sup> A J-1 Exchange Visitor visa allows international medical graduates (IMG) the opportunity to obtain residency training at an American medical training institution which agrees to sponsor him/her. The graduate must return to his/her home country for a minimum of two years upon completing the residency program before he/she can apply for re-entry to the US. A J-1 visa waiver allows an IMG to remain in the US without having to return to his/her home country for the two-year period. In order to receive a J-1 visa waiver, an IMG must obtain employment to practice medicine full-time in a federally designated health professional shortage area or a medically underserved area. Physicians that obtain waivers are required to practice in these shortage areas for a minimum of three years. While these physicians have an impact on access to care, they cannot be counted since they are not required to remain in the area upon completing their three-year waiver requirement.

Figure 1.1 below summarizes the current number of primary care physicians in Delaware by county of practice. The number of physicians is provided along with estimates of full-time equivalents (FTE). Given Delaware's population of 853,149<sup>3</sup>, there are about 1,271 persons served by each full-time equivalent primary care physician in 2006. For the three counties, the estimates are 1,575 for Kent County, 1,138 for New Castle County, and 1,565 for Sussex County.

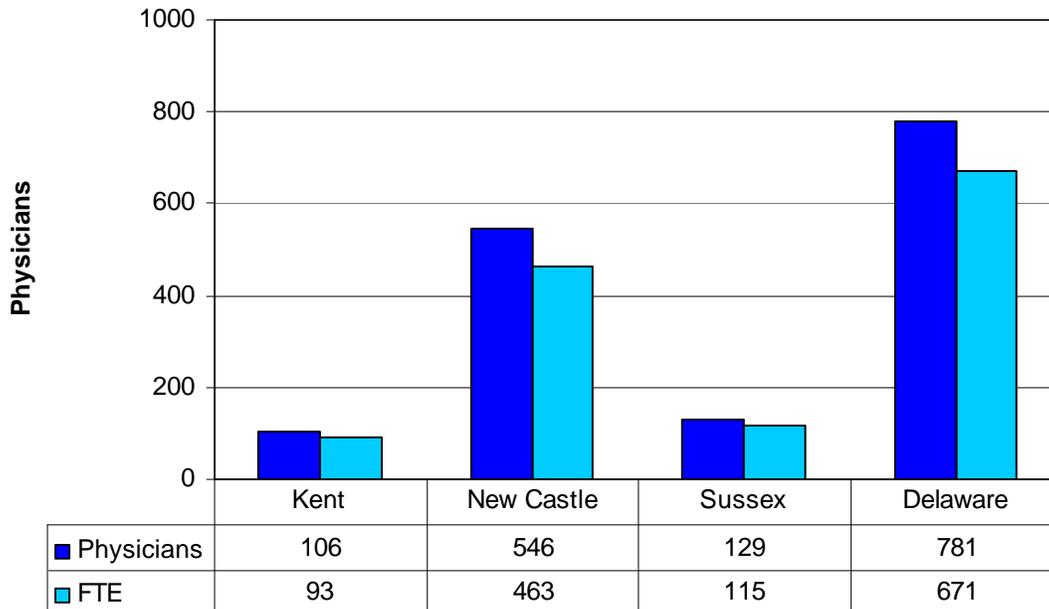
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<sup>1</sup> Federal Register/Vol.45, No.223/ Monday, November17, 1980, Part IV Department of Health and Human Services, 42 CFR Part 5, p.76002.

<sup>2</sup> Federal Register/Vol.45, No.223/ Monday, November17, 1980, Part IV Department of Health and Human Services, 42 CFR Part 5, p.76002.

<sup>3</sup> Population Estimates, Center for Applied Demography & Survey Research, University of Delaware

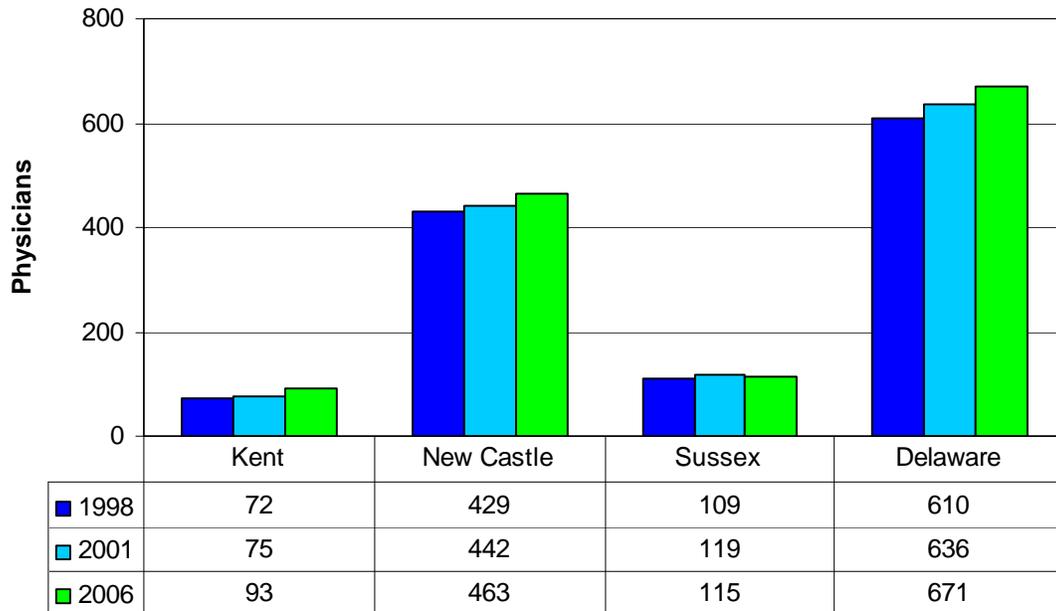
**Figure 1.1  
Primary Care Physicians  
by County**



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

When interviewed, physicians were asked for a Delaware address where they actually practiced. This address might or might not be the same as the address used when applying for a medical license. Clearly for those who applied from out-of-state, the Delaware practice address would never be the same. Overall, 5% of physicians responding were at a different location than they were 12 months ago. Usually this happens because the business moves, but it can also reflect the fact that the physician joined a different practice. Figure 1.2 below compares the number of physicians for the last 3 survey periods. The net number of primary physicians in the state has increased slightly since the last survey in 2001. The survey in 2006 indicates an increase in the number of physicians in Kent County, slight increase in New Castle County and leveling in Sussex County.

**Figure 1.2**  
**FTE Primary Care Physicians**  
**by County and Year**



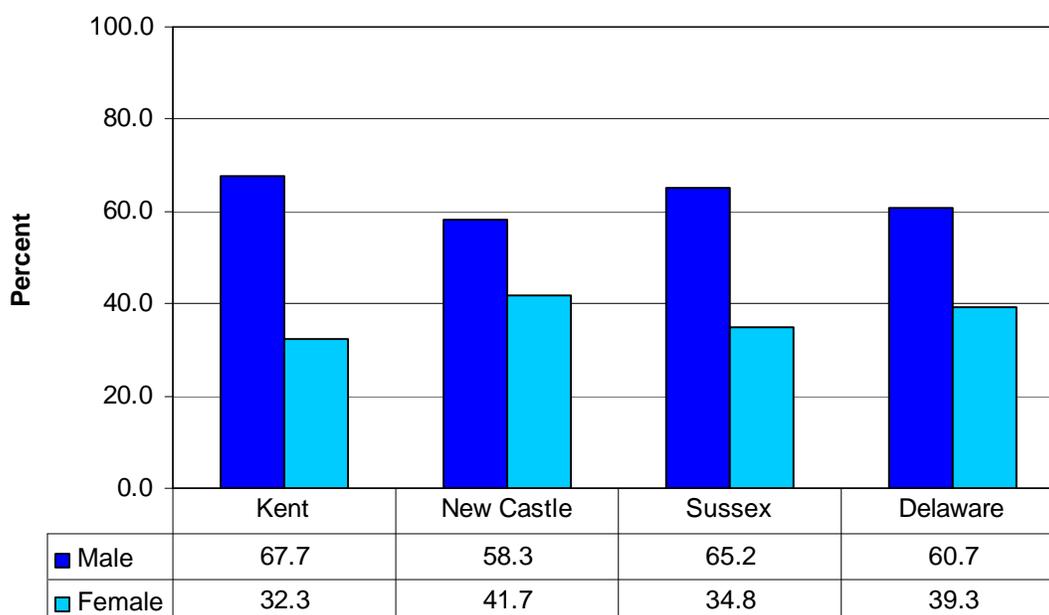
Source: Center for Applied Demography & Survey Research,  
 University of Delaware

In the remainder of this report different aspects of primary care physicians and their practices will be examined. Overall, the objective is to touch on those attributes that affect the availability of primary care services. In the section that follows, the basic demographics of the primary care physician population are discussed. Of particular interest is the age structure and diversity of these practitioners. The next section deals with practice characteristics. Important issues such as waiting times for patient appointments and the acceptance of new patients are among the topics addressed. Finally, in the last section, the spatial distribution of primary care physicians at the sub-county level is addressed.

## Demographics

The topic of demographic diversity within the primary care physician community is important as changes occur in the population of Delaware. Some patients may feel more comfortable with and are able to communicate better with physicians having particular characteristics. In addition, physicians with particular demographic characteristics may be more likely to train in one of the primary care specialties.

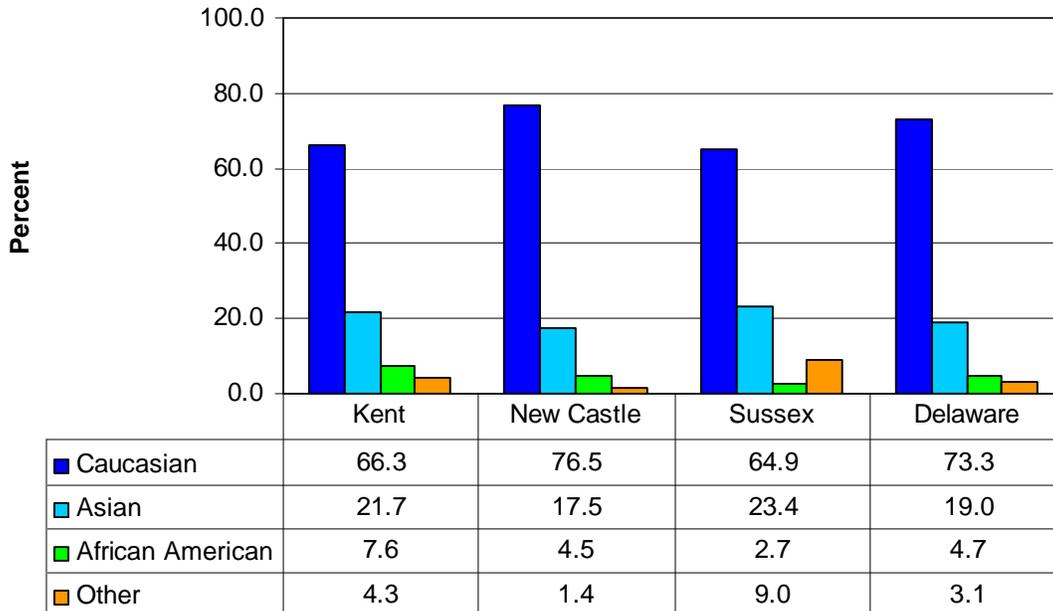
**Figure 2.1  
Gender of Primary Care Physicians  
by County**



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

The primary care physician community in Delaware is somewhat more than 60% male. There is however some variation between the counties. Kent and Sussex counties have relatively more male primary care physicians than does New Castle County. The data provide no readily apparent explanation for this difference. It is interesting that women are more likely to choose one of the primary care specialties. When looking at the entire physician database, 61% of women were in one of those specialties while only 39% of men chose primary care.

**Figure 2.2  
Race of Primary Care Physicians  
by County**



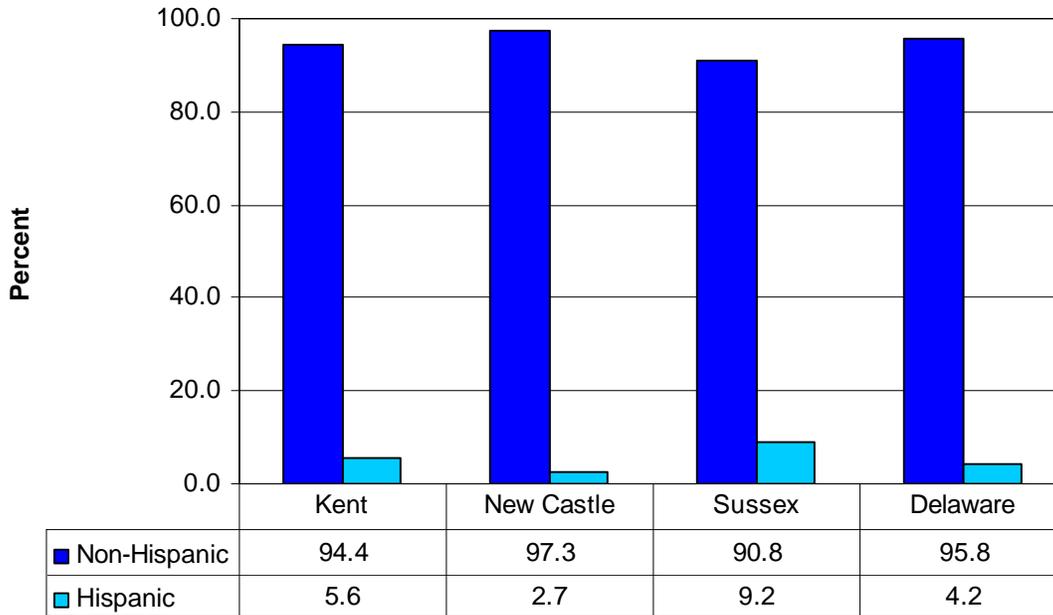
**Source: Center for Applied Demography & Survey Research,  
University of Delaware**

The racial distribution of primary care physicians by county is shown in Figure 2.2 above. The most interesting aspect of this table is the lack of African American primary care physicians and the preponderance of Asian physicians.

The reason for the paucity of African American physicians in Sussex County is not understood. While the proportion of African Americans in Sussex County is slightly lower than for the state as a whole, one would expect to see 4% rather than 2% of physicians falling into this group thus reflecting the general population characteristics in Sussex County. On average, African American physicians are more likely to choose a primary care specialty (54%) in comparison with Caucasians (43%) and Asians (56%).

Hispanic origin has taken on a particular interest in Delaware with the rapid growth of that population in the 1990s, particularly in Sussex County. The distribution of primary care physicians by Hispanic origin is found in Figure 2.3.

**Figure 2.3**  
**Hispanic Origin of Primary Care Physicians**  
**by County**



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

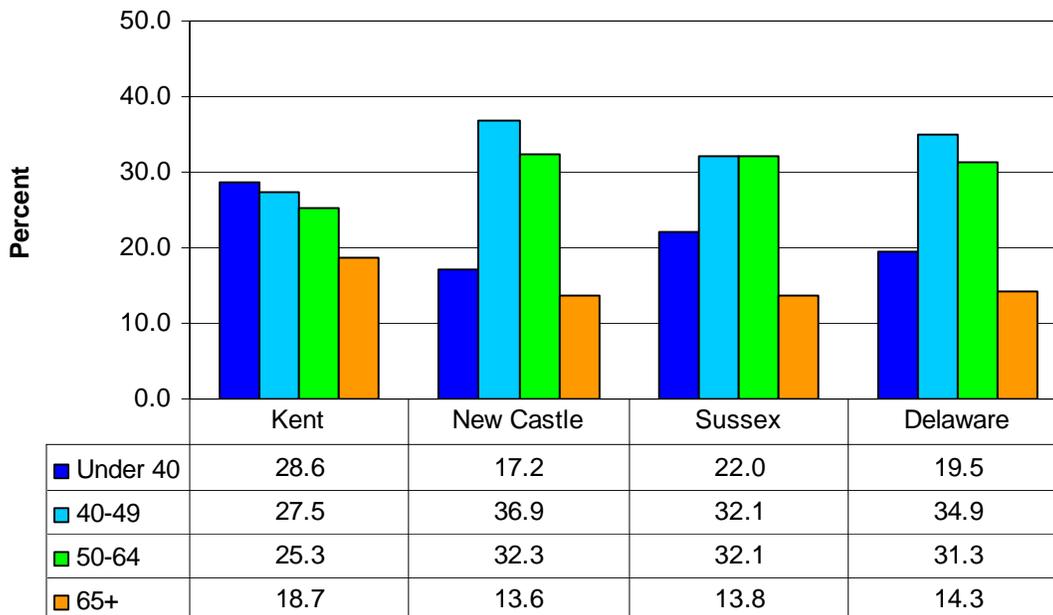
Today, Delaware’s population is nearly 5% Hispanic and the physician population essentially mirrors that. The highest proportion of Hispanic physicians is found in Sussex County (9%) where nearly 7% of the population is now Hispanic. Overall, just over 38% of the practice sites in the state had someone available who could speak Spanish. This proportion was the same in Sussex County where the need is increasing.

The age of primary care physicians is ultimately a factor in their availability. In addition, there are differences in primary care specialties related to age. A physician who is currently age 40 or less is more likely to practice a primary care specialty (65%) when compared to those that are older (42%). This suggests that physicians training today are more likely to choose one of the primary care specialties than they were ten years ago. Over the next ten years then, it would be reasonable to expect an increase in primary care physicians even if the total number of physicians in the state was constant.

The age distribution of primary care physicians is found in Figure 2.4, below. There are several points of interest in this display. First, the highest proportion of primary care physicians under 40 is found in Kent County (29%), the county with the youngest resident population (59% of the population in Kent County is under 40, compared to 58% in New Castle and 43% in Sussex County<sup>4</sup>). Overall, in Delaware, about 19% of physicians are younger than 40. Interestingly the highest proportion (19%) of physicians aged 65 and above is also in Kent County.

New Castle County stands out with the lowest proportion (17%) of physicians under 40 years old along with rates for middle aged physicians comparable to Sussex County – the county with the oldest resident population.

**Figure 2.4**  
**Age of Primary Care Physicians**  
**by County**



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

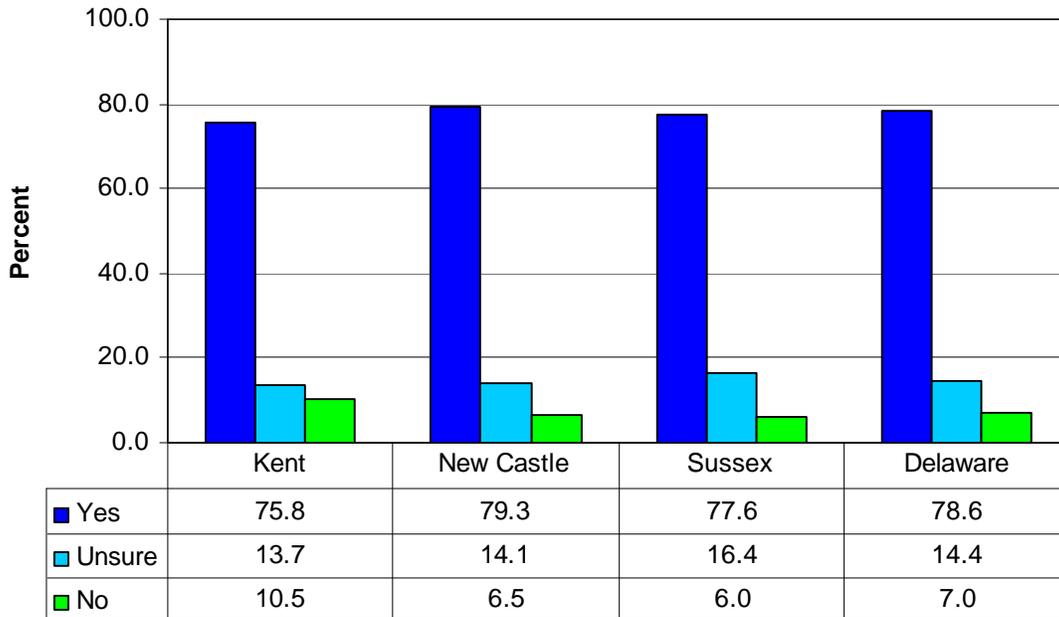
Physicians were asked if they planned to be active in clinical medicine five years from now. Those answers are summarized in Figure 2.5. In general, almost 80% of physicians expect

<sup>4</sup> Annual Population Projections, October 26, 2006, Delaware Population Consortium

to be active in five years. The lowest proportion (76%) of physicians indicating that they will be active five years from now is found in Kent County, along with the highest proportion (10%) of those who will not be active as physicians five years from now. This undoubtedly relates to the large group in the 65+ age group shown in Figure 2.4.

The data for Sussex County show a large group who is *unsure*. This again, relates to the large group in the 50-64 age group and 65+ group shown in Figure 2.4. Overall, nearly 85% of the younger age groups (under 50) expect to be active five years from now. That drops to 79% for the next age group and 50% for those already 65 and over.

**Figure 2.5**  
**Active Five Years from Now**  
**by County**



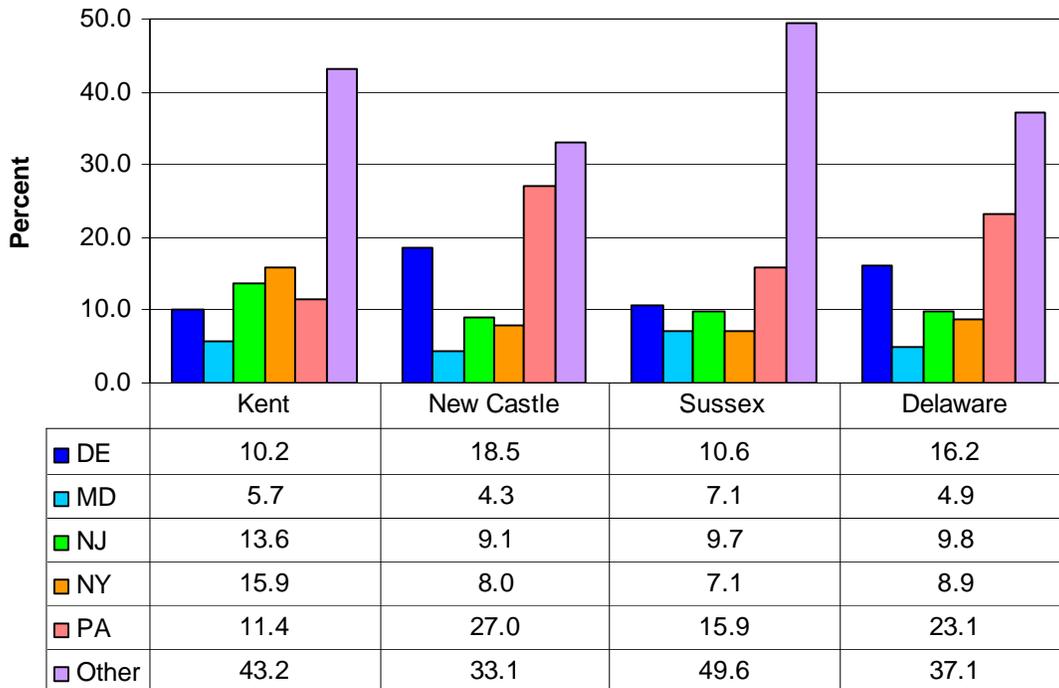
Source: Center for Applied Demography & Survey Research,  
 University of Delaware

It is necessary to analyze why some physicians choose to practice in Delaware and others choose to practice in other states. The way this choice is made determines the adequacy of the supply to serve Delaware’s residents. Several pieces of information are useful for this purpose. First, where did this physician originally reside at the time they graduated high school? Second,

in what state did the physician attend medical school? A third key variable is the state in which the physician did his/her residency.

In Figure 2.6, the distribution of the state of the physician’s high school graduation is shown. The first interesting aspect of this figure is that two thirds of Delaware’s primary care physicians grew up in the region (DE, MD, PA, NJ and NY) and approximately 16% are from Delaware. However these figures vary significantly across counties. Almost 50% of physicians practicing in Sussex County resided outside of the region at the time they graduated high school, while only 33% of New Castle County’s physicians come from outside of the region. Over 18% of New Castle County’s physicians resided in Delaware at the time of their graduation from high school while only about 10% of Sussex and Kent county’s physicians are from Delaware.

**Figure 2.6**  
**State of High School Graduation**  
**by County**

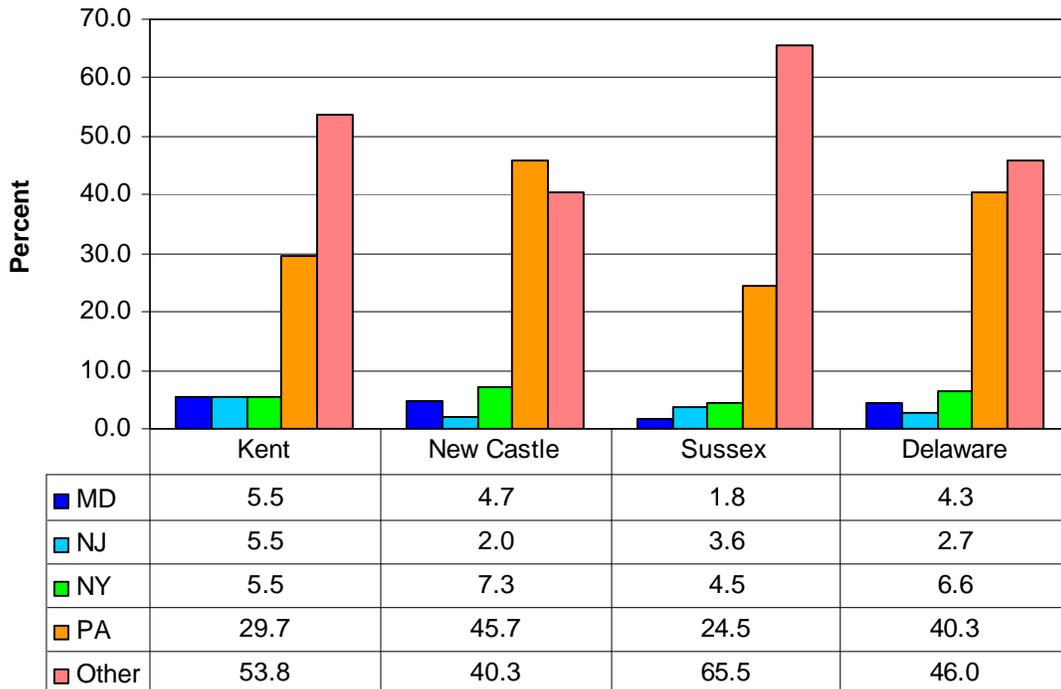


Source: Center for Applied Demography & Survey Research,  
University of Delaware

Physicians who grew up in Maryland are more likely to locate in Kent or Sussex counties. In contrast, physicians from Pennsylvania are more oriented toward New Castle County.

The pattern observed for the state of high school graduation is replicated in part for the state of medical school graduation (Figure 2.7). Significantly more primary care physicians graduating from medical schools in Maryland locate in Kent County. Those from medical schools in Pennsylvania are more likely to locate in New Castle County.

**Figure 2.7  
State of Medical School Graduation  
by County**

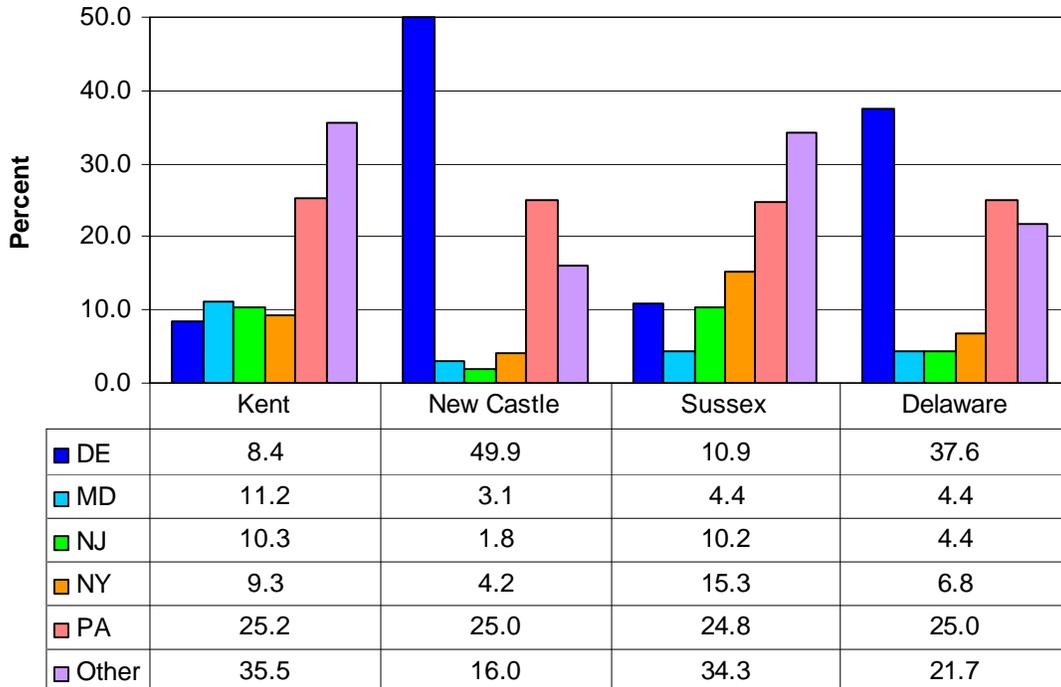


Source: Center for Applied Demography & Survey Research, University of Delaware

There clearly is a geographic orientation exhibited by these responses. Similar patterns emerge with the state of the physician’s medical residency, presented in Figure 2.8. Almost 50% of New Castle County’s physicians completed their medical residency in Delaware, while only about 10% of primary care physicians in Kent and Sussex counties completed their residency in Delaware. In all counties about 25% of primary care physicians completed their residency in

Pennsylvania. Overall, only about 20% of Delaware’s physicians completed their medical residency outside of the region.

**Figure 2.8**  
**State of Medical Residency**  
**by County**



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

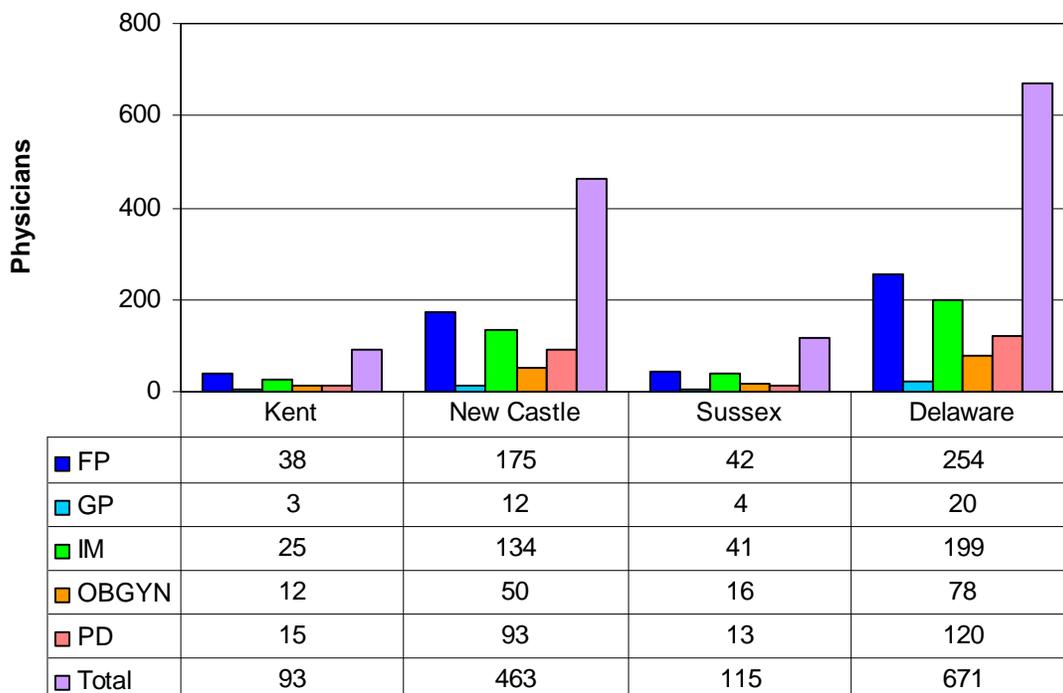
It might prove valuable to those making an effort to recruit new primary care physicians for Delaware to point out that all of these findings reflect three facts. First, most of Delaware’s primary care physicians (63%) resided in the region at the time of high school graduation. Second, most of Delaware’s primary care physicians (54%) went to medical school within several hundred miles of where they practice today. Third, an overwhelming majority of Delaware’s primary care physicians (80%) completed their medical residency in the region.

## Practice Characteristics

The 781 primary care physicians in Delaware are distributed across different specialties and have different types of practices. In this section, some of the key characteristics of those practices are discussed. The attributes selected for analysis largely relate to capacity and availability for patient care.

While in theory primary care physicians deliver similar services, they also practice in their reported specialties. For comparison, Figure 3.1 contains the estimates for these specialties by county by full time equivalents.

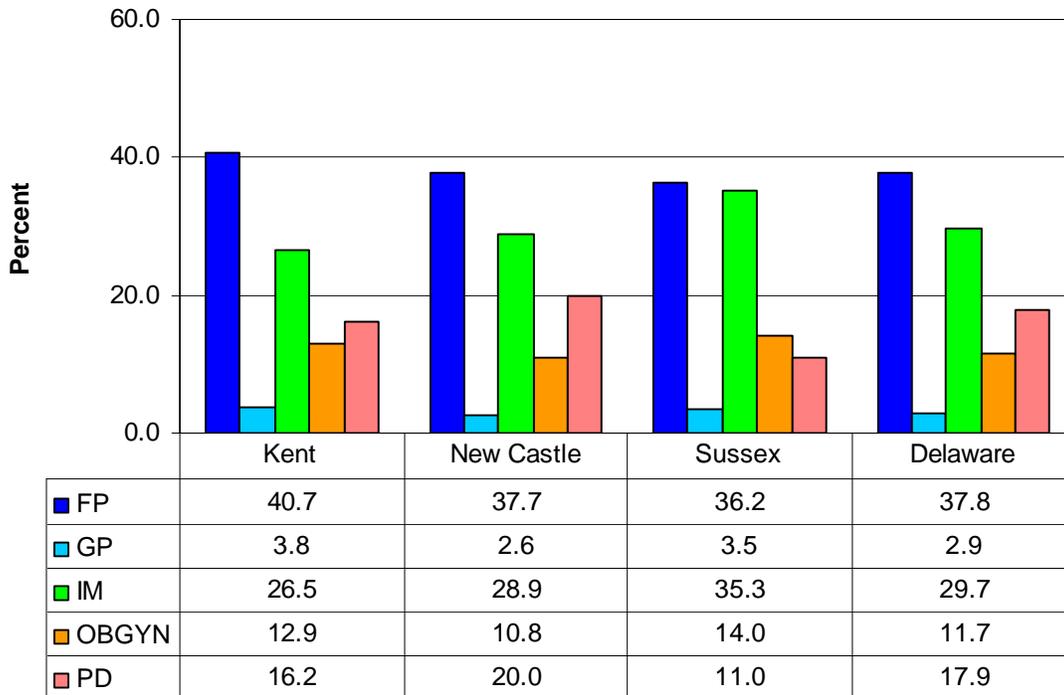
**Figure 3.1**  
**Specialty of FTE Primary Care Physicians**  
**by County**



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

No one specialization really dominates the distribution. In general, physicians in family practice are most populous followed closely by physicians in internal medicine. Those classified as general practitioners are declining and the vast majority of those are over the age of 65.

**Figure 3.2**  
**Distribution of Primary Care Specialties**  
**by County**



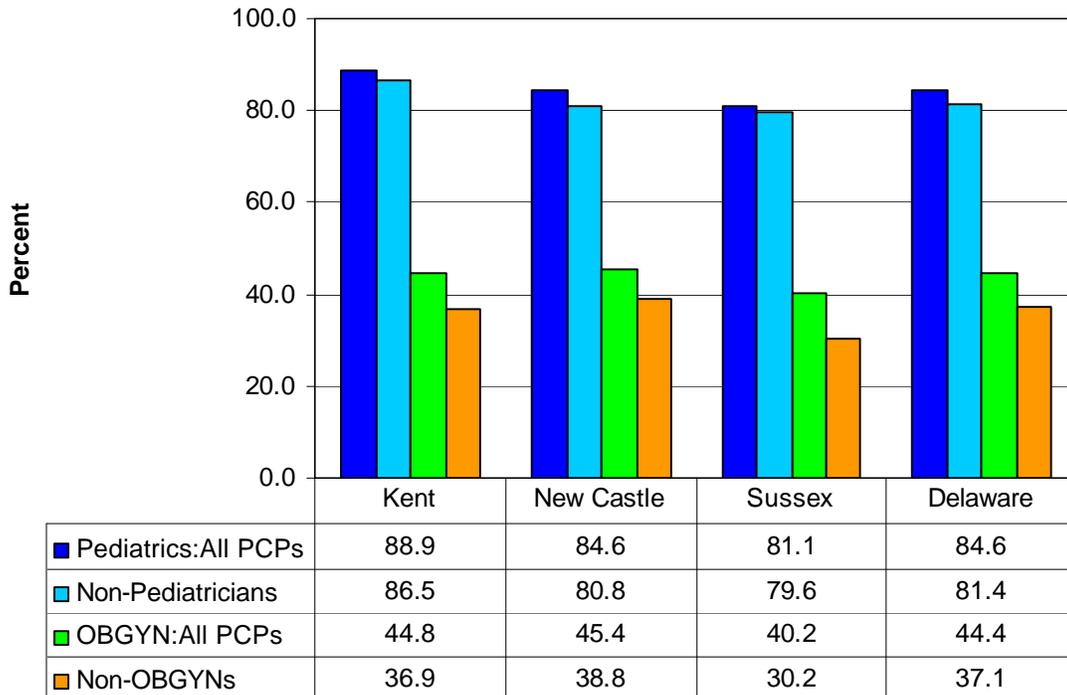
Source: Center for Applied Demography & Survey Research, University of Delaware

The distribution in Figure 3.2 shows that primary care physicians are distributed essentially in three major groups. Just over 40% are family/general practitioners; one third are internists who focus on adults; and one third are primary care physicians focused on smaller groups of patients (OBGYN+PD). It is interesting to see that Kent County has a significantly larger proportion of primary care physicians in the “full-service” groups.

Primary care physicians with family practice or internal medicine specialties may provide pediatric and OBGYN services. The extent of this crossover between the specialties is shown in Figure 3.3, below. First of all, the table needs some explanation. The lines labeled *Pediatric* and *OBGYN* include all primary care physicians. The lines directly beneath exclude the specialists in those areas. Thus, 89% of primary care physicians in Kent County provide pediatric services and 86% of non-pediatric primary care physicians provide those services. Perhaps the most interesting part of this

information is that compared to the other counties a larger proportion of New Castle County’s non-OBGYN physicians is providing OBGYN services. This is consistent with the much smaller proportion of OBGYNs available in New Castle County. There are relatively many pediatricians in Kent County than elsewhere; however the proportion of non-pediatric physicians providing pediatric services is not lower as would be expected. On the contrary, the proportion of non-pediatric physicians providing those services is highest among all of Delaware’s counties. This certainly relates to the younger age distribution of the general population in Kent County.

**Figure 3.3  
Provide Selected Specialty Services  
by County**

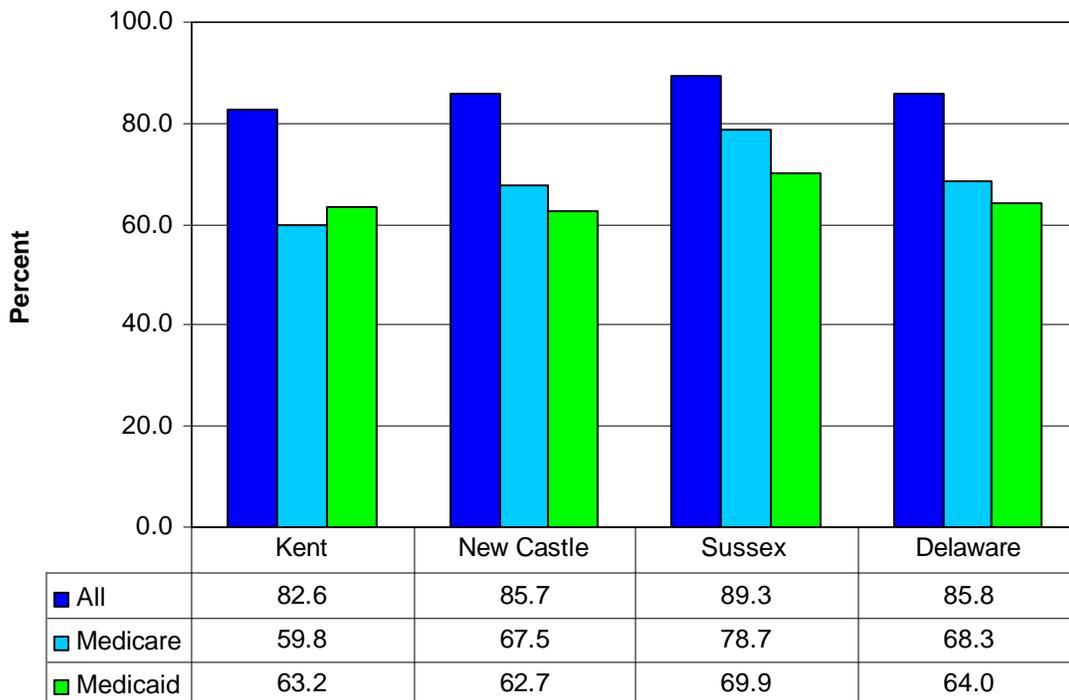


Source: Center for Applied Demography & Survey Research, University of Delaware

One of the most critical issues with respect to the capacity of primary care physicians is whether they are accepting new patients. The data with respect to this question is found in Figure 3.4. Between 83% and 89% of primary care physicians report that they are accepting new patients. The proportion is lowest in Kent County.

Primary care physicians were also asked if they were accepting new Medicare and/or Medicaid patients. Those results are also found in Figure 3.4, below. A cautionary note is needed for interpreting the Medicare results. Pediatricians comprise almost 20% of primary care physicians. However, they only see a very small set of Medicare patients, i.e. those situations where one of the special programs allows a child to have access to Medicare through SSI (Social Security Insurance). In reality, about 80% of non-pediatric primary care physicians are accepting new Medicare patients in contrast to the 68% indicated in the table. Still, that is below the estimates for all patients. This may reflect the fact that older patients will occupy substantially more of a given physicians time than younger patients.

**Figure 3.4**  
**Accepting New Primary Care Patients**  
**by County**



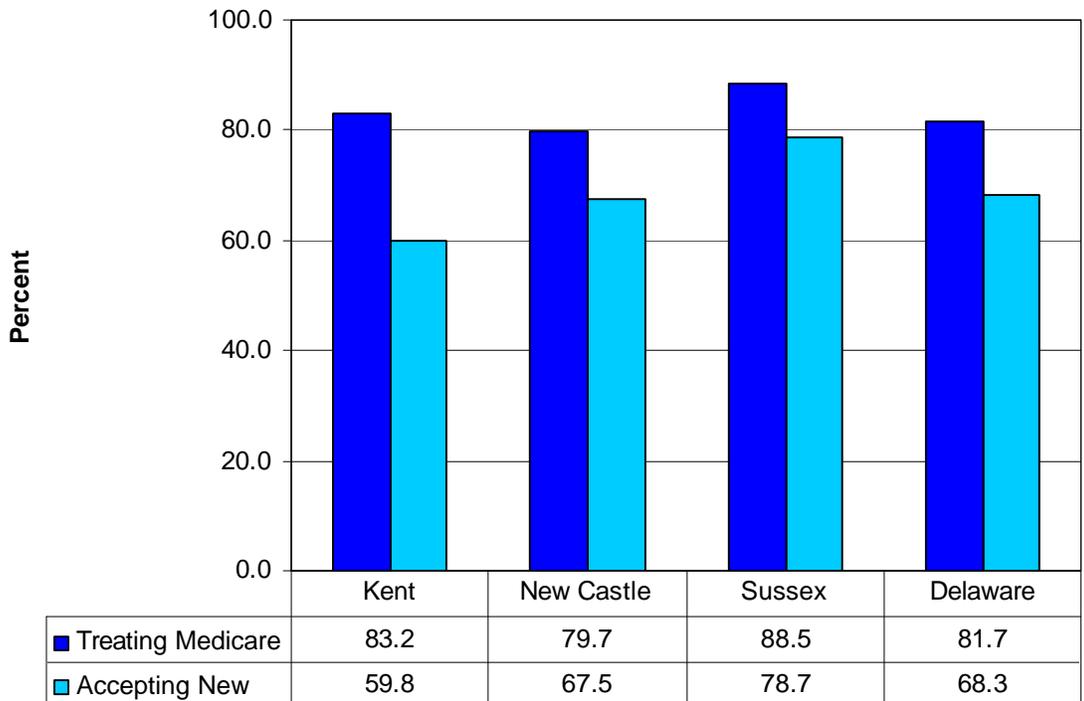
Source: Center for Applied Demography & Survey Research,  
 University of Delaware

The results regarding the acceptance of new Medicaid patients are similar to those for Medicare but without the cautionary note. There are differences between counties with physicians in Kent County and New Castle County being the least willing to accept new patients

of this type. The fact that Kent County has the fewest primary care physicians per person undoubtedly influences this result.

The difference between primary care physicians who are currently treating Medicare patients and accepting new Medicare patients is shown in Figure 3.5, below. The spread between these two estimates is on the average thirteen percentage points. These differences are most severe in Kent County where the difference is almost 20 %. This suggests that those migrating to the state to retire or those who lose their current physician for any of a number of reasons could have a difficult time finding a new one.

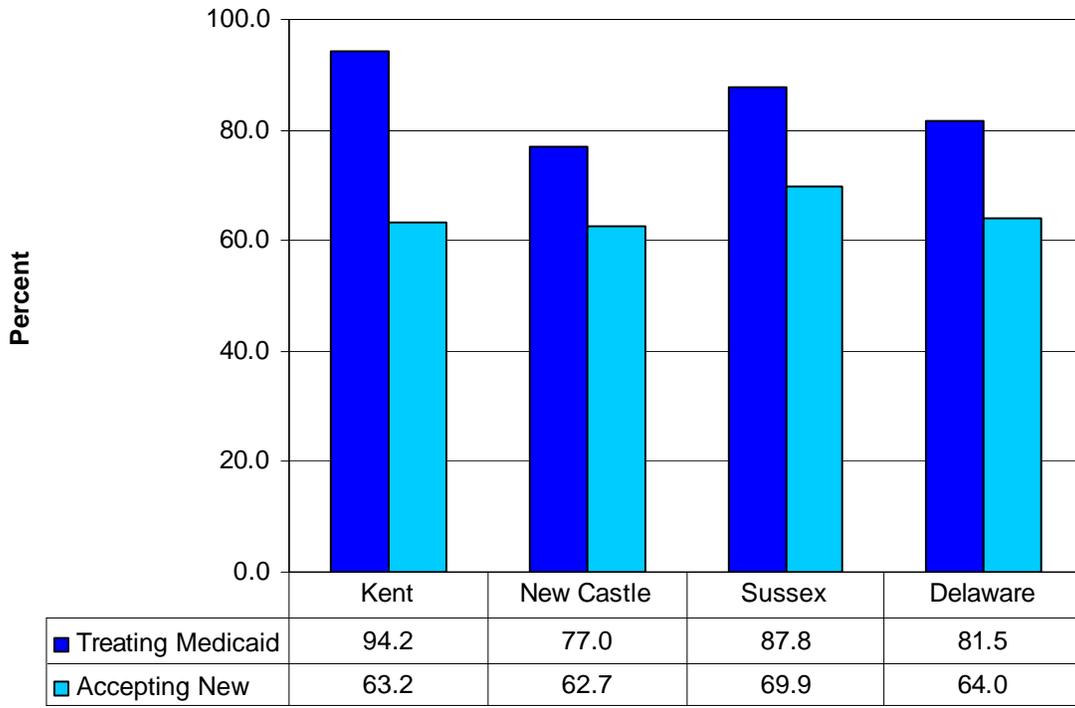
**Figure 3.5**  
**Accepting New Medicare Patients**  
**by County**



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

The situation for Medicaid patients is probably even more difficult (Figure 3.6). There is a difference of over 17 percentage points between those that are currently treating Medicaid patients and those that will accept new ones.

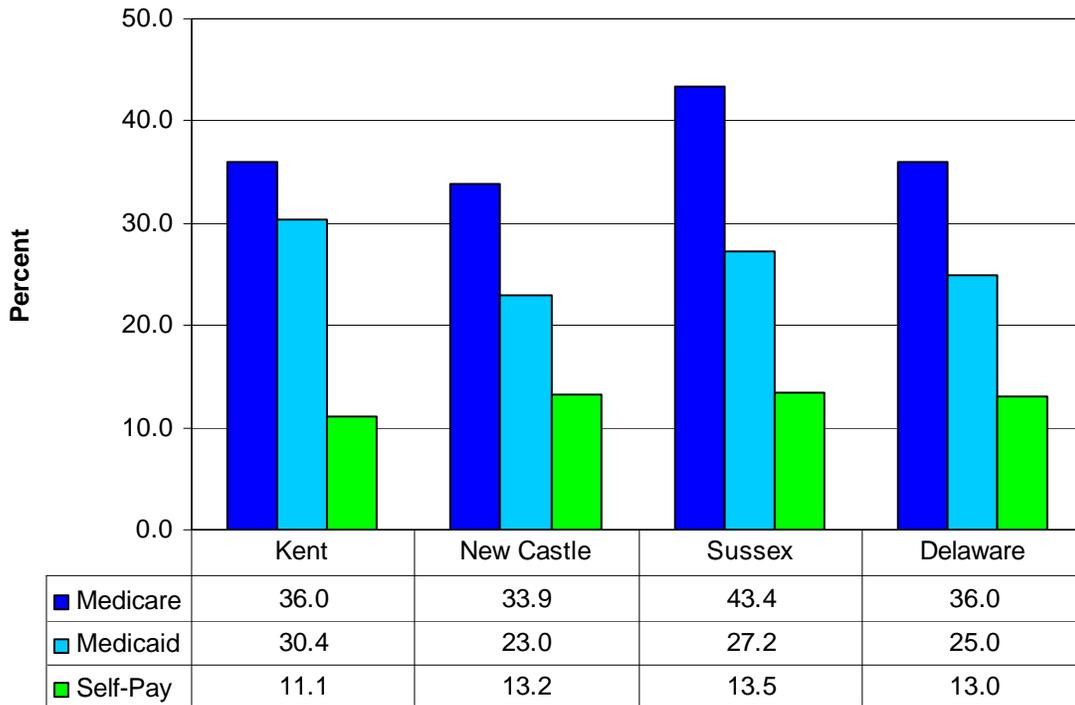
**Figure 3.6**  
**Accepting New Medicaid Patients**  
**by County**



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

Part of the explanation for this less than enthusiastic response about taking on new Medicare and Medicaid patients may lie in the current amount of time devoted by primary care physicians to these two populations (Figure 3.7). Over one third of physician time is devoted to Medicare patients. This is about 2.5 times more than would be expected given their share of the population. However, older people need significantly larger amounts of physician time. As a typical physician’s clientele ages, the physician’s ability to absorb new patients declines. The estimates in Sussex County are highest because the older population is relatively higher there.

**Figure 3.7**  
**Percent of Time Serving Selected Patient Groups**  
**by County**

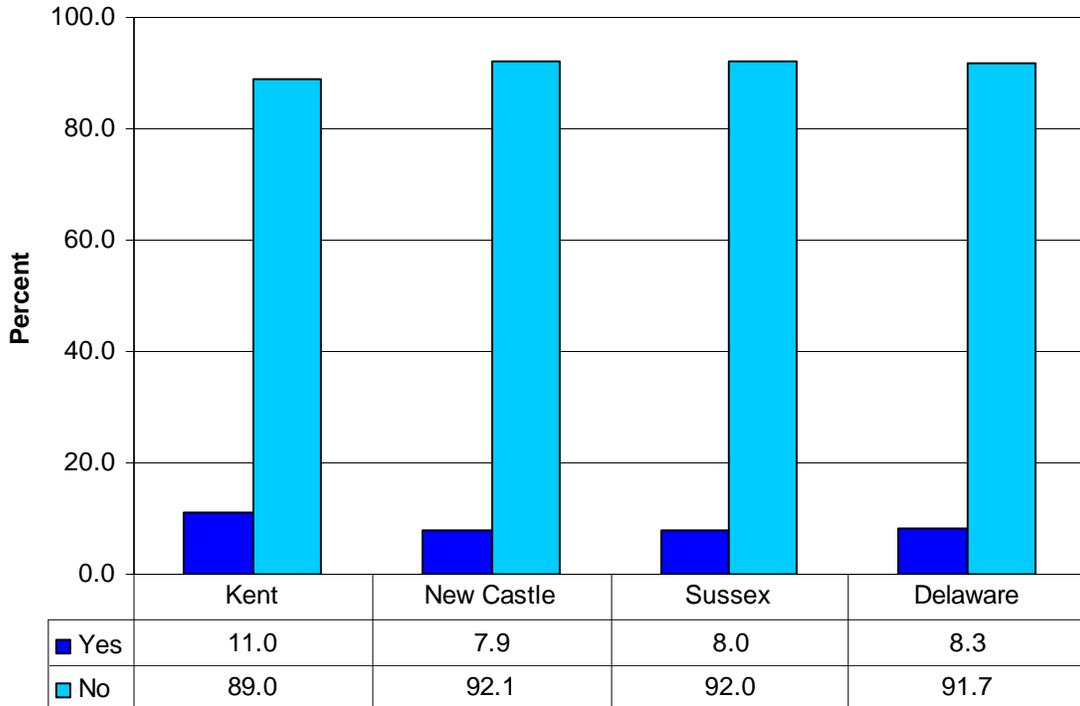


Source: Center for Applied Demography & Survey Research,  
 University of Delaware

The estimates for time spent on providing care to Medicaid patients are somewhat surprising although it is consistent across all three counties. Medicaid patients use about 25% of a physician’s time although 12% of the population uses Medicaid sometime during the year. Since children are a significant part of that population perhaps that explains part of the difference.

Primary care physicians were asked to indicate whether they practice geriatrics as a sub-specialty since it will take greater importance in the years to come with the aging of the baby boomers. Overall 8% of primary care physicians have this sub-specialty (see Figure 3.8, below). Given the age of Sussex County’s population one might hope for a greater prevalence there rather than in Kent County, which has the youngest population.

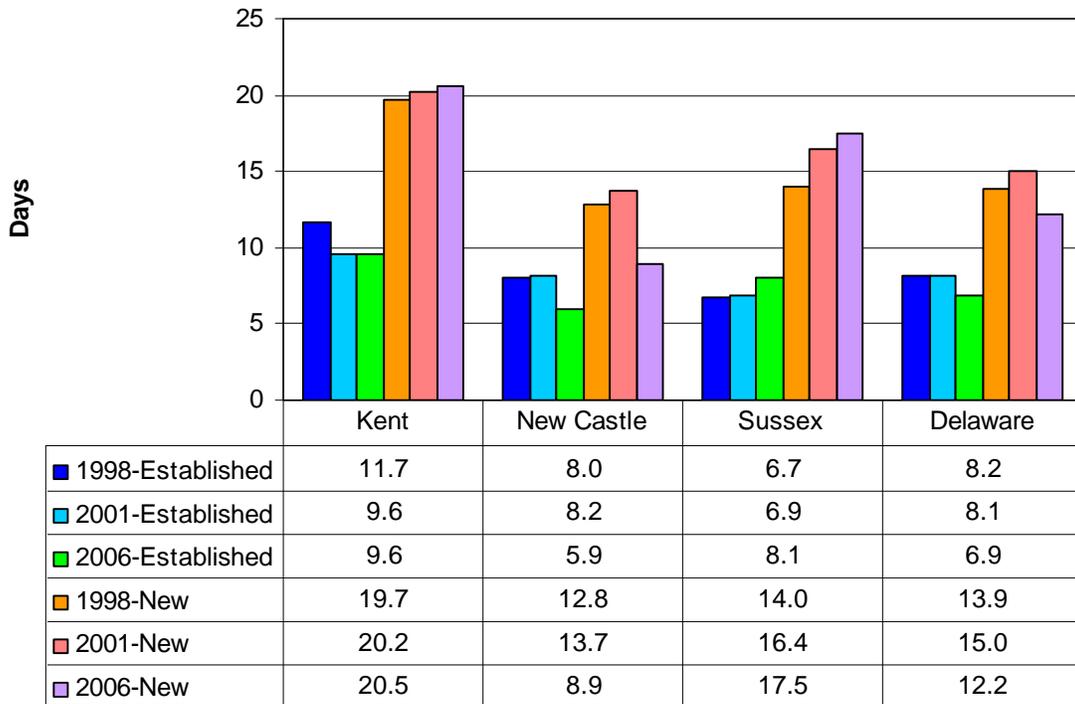
**Figure 3.8**  
**Practice Geriatrics as a Sub-specialty**  
**by County**



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

Primary care physicians were also asked how long a person would have to wait for an appointment in a non-emergency situation (Figure 3.9). On the average, an established patient will wait about a week. In contrast, the new patient will wait almost two weeks. Since the last survey in 2001, the situation for established patients has improved in New Castle County and improved marginally in Sussex County. However, in Kent County, where the wait is the longest no improvement has materialized. This is very likely because of the highest ratio of people per physician. New Castle County appears to be in the best condition, which is consistent with the favorable distribution of primary care physicians discussed earlier. The wait time for new patients basically mirrors that of the established patients. The exception is Sussex County where since the last survey in 2001, the situation for new patients has gotten marginally worse.

**Figure 3.9**  
**Average Wait Time for Types of Patients**  
**by County**

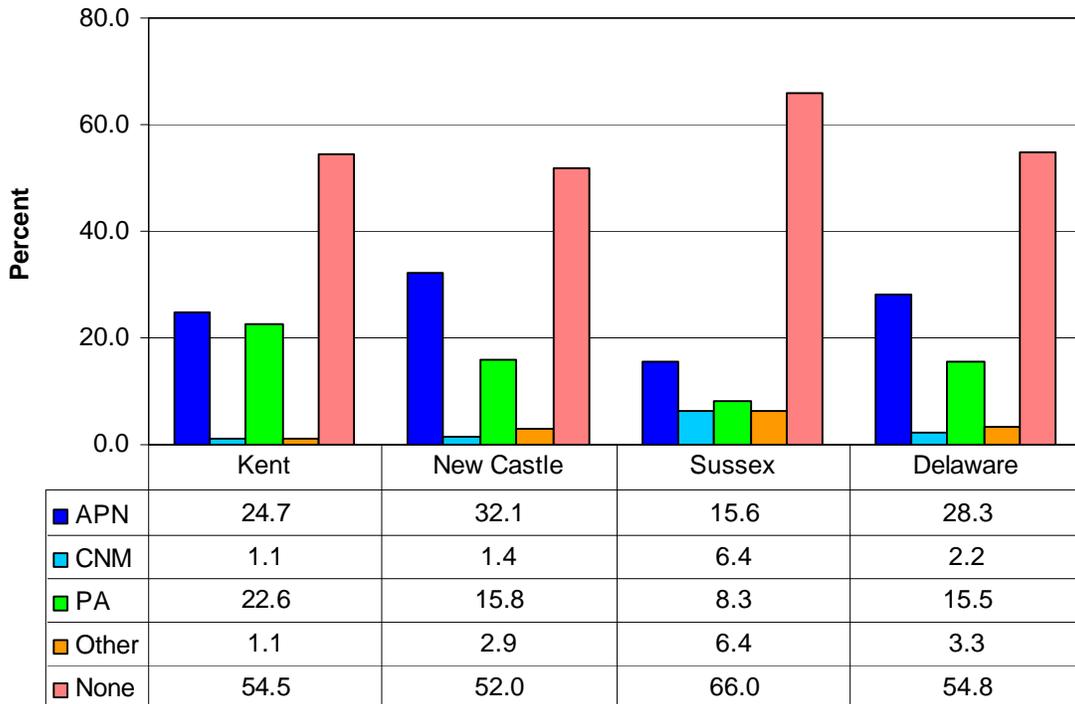


Source: Center for Applied Demography & Survey Research,  
 University of Delaware

Primary care physicians have available to them resources to extend their own abilities to serve patients. The advanced practice nurse (APN), the certified nurse midwife (CNM), and the physician’s assistant (PA) are the most typical such resources. The responses of the primary care physicians on the use of these non-physician resources are tabulated in Figure 3.10. There are differences between the counties but these are not necessarily consistent with the relative need for primary care physicians. It is puzzling that Kent County, the county with the greatest need, is using alternative resources at the same level as New Castle County with the most advantageous patient to physician ratio. This is likely to be explained by the age structure of primary care physicians in Kent County – highest proportion of over 65, the group that is least likely to use non-physician resources. Clearly, Sussex County primary care physicians are using the alternative resources the least. There are significant differences between the specialties where the

OBGYN and pediatric primary care physicians are far more likely to employ any and all of these alternative resources.

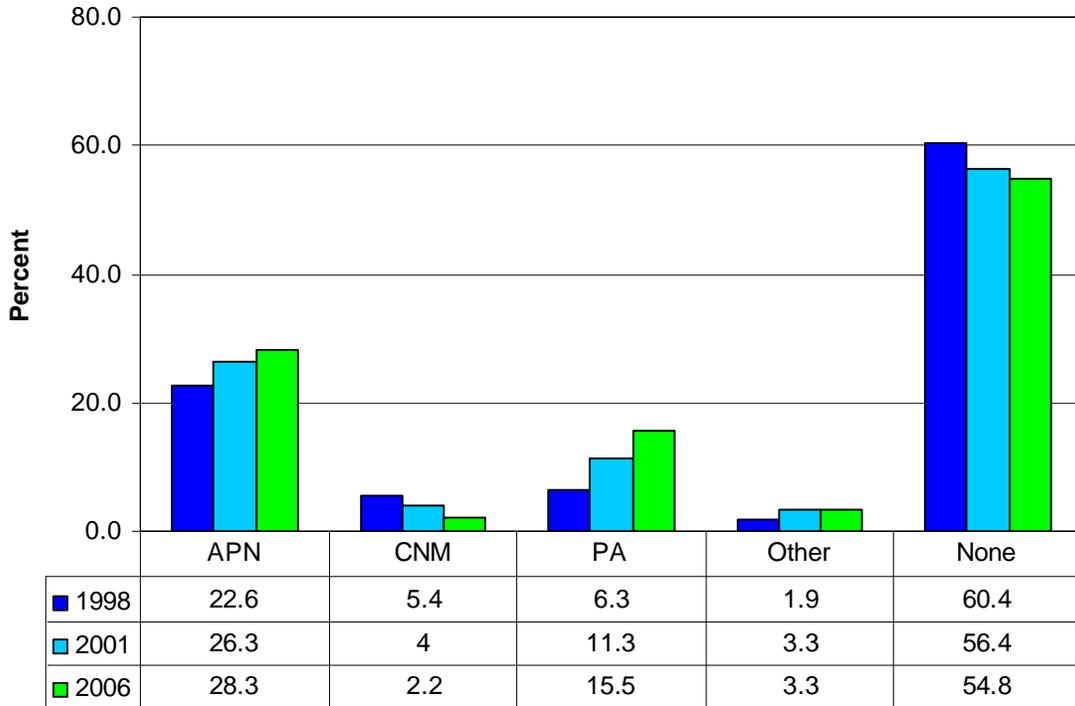
**Figure 3.10**  
**Use of Non-Physician Resources**  
**by County**



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

A comparison of non-physician clinicians for the last three survey periods is shown in Figure 3.11, below. The differences are not large enough to draw any real conclusions although there does seem to be indications of movement toward these resources. With the exception of CNMs, all the percentages are positive with a relatively large move in the use of physician assistants. Still, the majority of physicians are not using these resources.

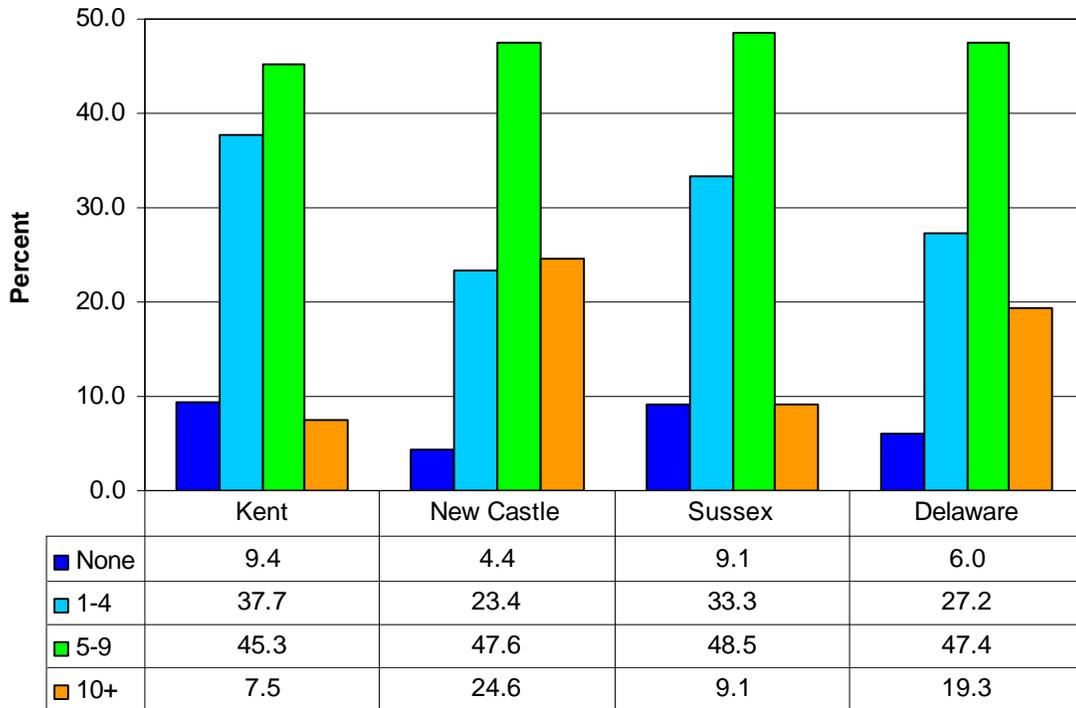
**Figure 3.11**  
**Use of Non-Physician Resources**  
**by Year**



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

Access to primary care is impacted by the coverage that a patient presents to the physician. Membership in one or more managed care networks allows a primary care physician to extend services to a wider range of patients. The responses to this question are found in Figure 3.12, below. Six percent of Delaware’s primary care physicians do not belong to any of the networks (significant decrease from 2001 when 23% did not belong to a network). Proportion wise, the largest contingent is found in Kent and Sussex counties, where 9% of the primary care physicians do not belong to a managed care network.

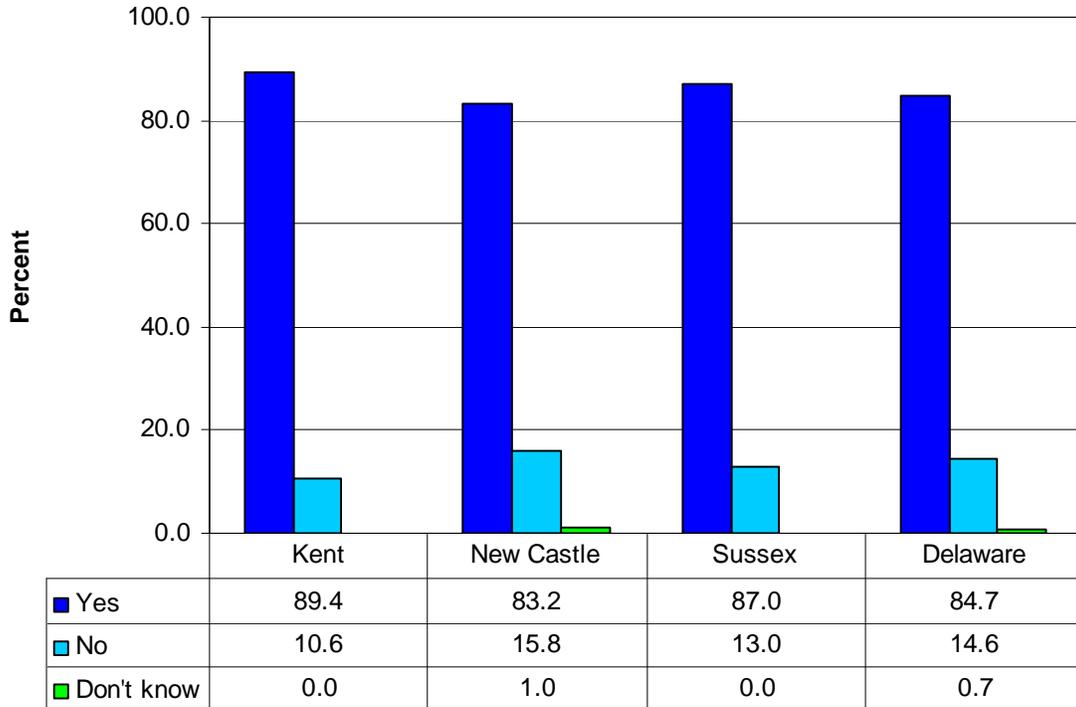
**Figure 3.12**  
**Member of Managed Care Networks**  
**by County**



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

Finally, given the current development in electronic access to patient’s clinical health information, respondents were asked to indicate their interest to participate in a service that might potentially be offered by the State of Delaware that would allow physicians to access their patient’s clinical health information housed at other facilities (Figure 3.13 below). Around 85% of Delaware’s primary care physicians indicated that they would participate in such a system.

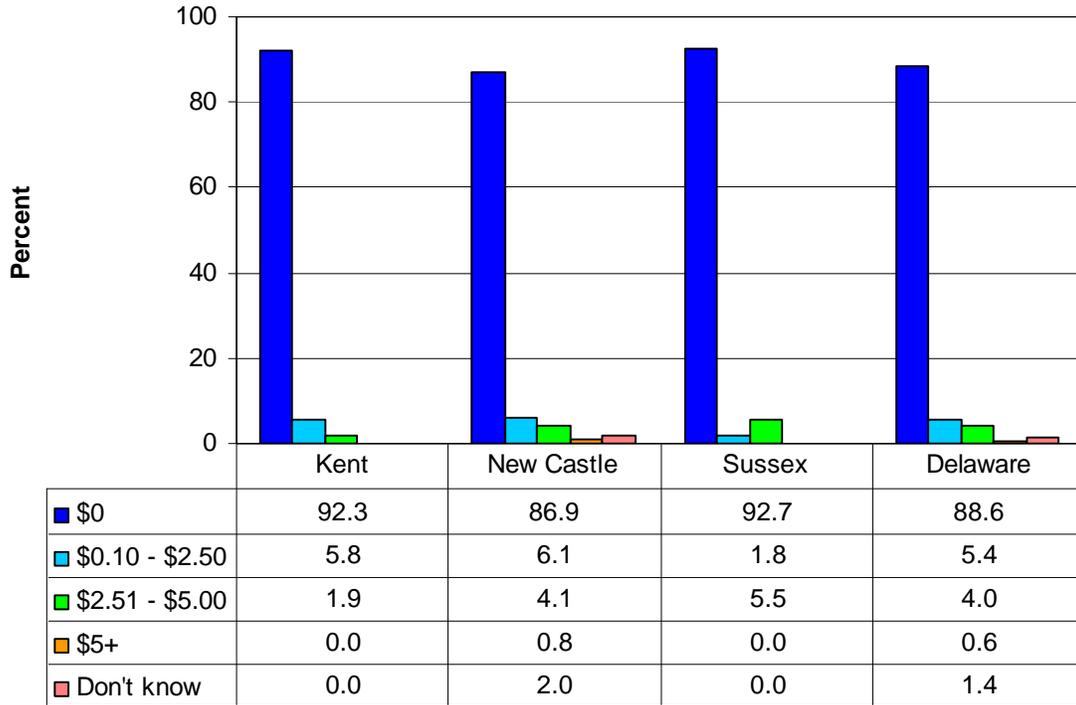
**Figure 3.13**  
**Electronic Access to Patient's Clinical Information**  
**- Interest to Participate**  
**by County**



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

Primary care physicians were also asked to indicate the amount of money they would be willing to pay for each transaction (Figure 3.14 below). From those who are interested in participating in this service almost 89% indicated that they would not be willing to pay any fee for accessing their patient’s clinical health information housed at other facilities. Around 5% would be willing to pay up to \$2.50 per transaction and around 4% would be willing to pay between \$2.51 and \$5 per transaction to access their patient’s clinical information at other facilities.

**Figure 3.14**  
**Amount Willing to Pay Per Transaction**  
**to Access Clinical Information**  
**by County**



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

## Spatial Distribution

Delaware probably has a sufficient supply of primary care physicians if they were spatially distributed with the population. According to the Council on Graduate Medical Education (CGME), a ratio of 1,250:1 of persons per primary care physician corresponds to the lower end of the acceptable range for supply of primary care providers. Delaware currently has a ratio of 1,271:1 without considering nonphysician providers or international medical school graduates holding J-1 visas. The ratios are 1,575:1, 1,138:1, and 1,565:1 for Kent, New Castle, and Sussex counties respectively. As such, Delaware exceeds CGME acceptable ratio in Kent and Sussex counties and is within the acceptable ration in New Castle County.

The federal government recognizes the importance of having an adequate number of primary care physicians in areas smaller than states or even counties. In their program for medically underserved areas and populations (MUA/P), “rational areas for the delivery of primary medical care services” can be counties, parts of counties, and even neighborhoods within metropolitan areas with a strong identity and a population of 20,000.<sup>5</sup> In general, an underserved area will have a ratio of 3,500:1 (in special cases 3,000:1) or higher to qualify. Obviously, none of the counties would qualify if they were the spatial areas considered.

The distance criterion, which defines such areas in Delaware, is roughly 20 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 since they both have town centers. 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

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<sup>5</sup> In the September 1,1998 Federal Register DHHS proposed new regulations for medically underserved populations (MUP) and health professional shortage areas (HPSA), the Department of Health and Human Services generally recognizes a ratio of 3000:1 as sufficient for an area to be classified as a HPSA. To be classified as an MUP an index of primary care shortage (IPCS) is computed utilizing a number of factors: (1) population to primary care ratio, (2) percent below 200% of the poverty level, (3) infant mortality rate, (4) low birth weight rate, (5) percent of a racial minority, (6) percent of Hispanic ethnicity, (7) percent linguistically isolated, and (8) population density.

county division of which there are 27 in Delaware, is useful for this spatial examination. Before looking at these sub-county differences, some caveats are in order.

The characteristics of the population do matter. Two areas with equal populations and equal numbers of primary care physicians are not necessarily in the same condition. For example, one area may have a much larger proportion of persons who are over the age of 74. Survey data suggests that this elderly group will require three times as many physician encounters as do those who are 18 to 64. Similarly the very young, less than 5 years of age, will require twice as much medical care compared to those in the 5-17 age group.<sup>6</sup> When the populations of the counties are adjusted to reflect the age distribution, the adjusted population is actually lower in all three counties. This suggests that, at least at the county level, the ratios are even more favorable.

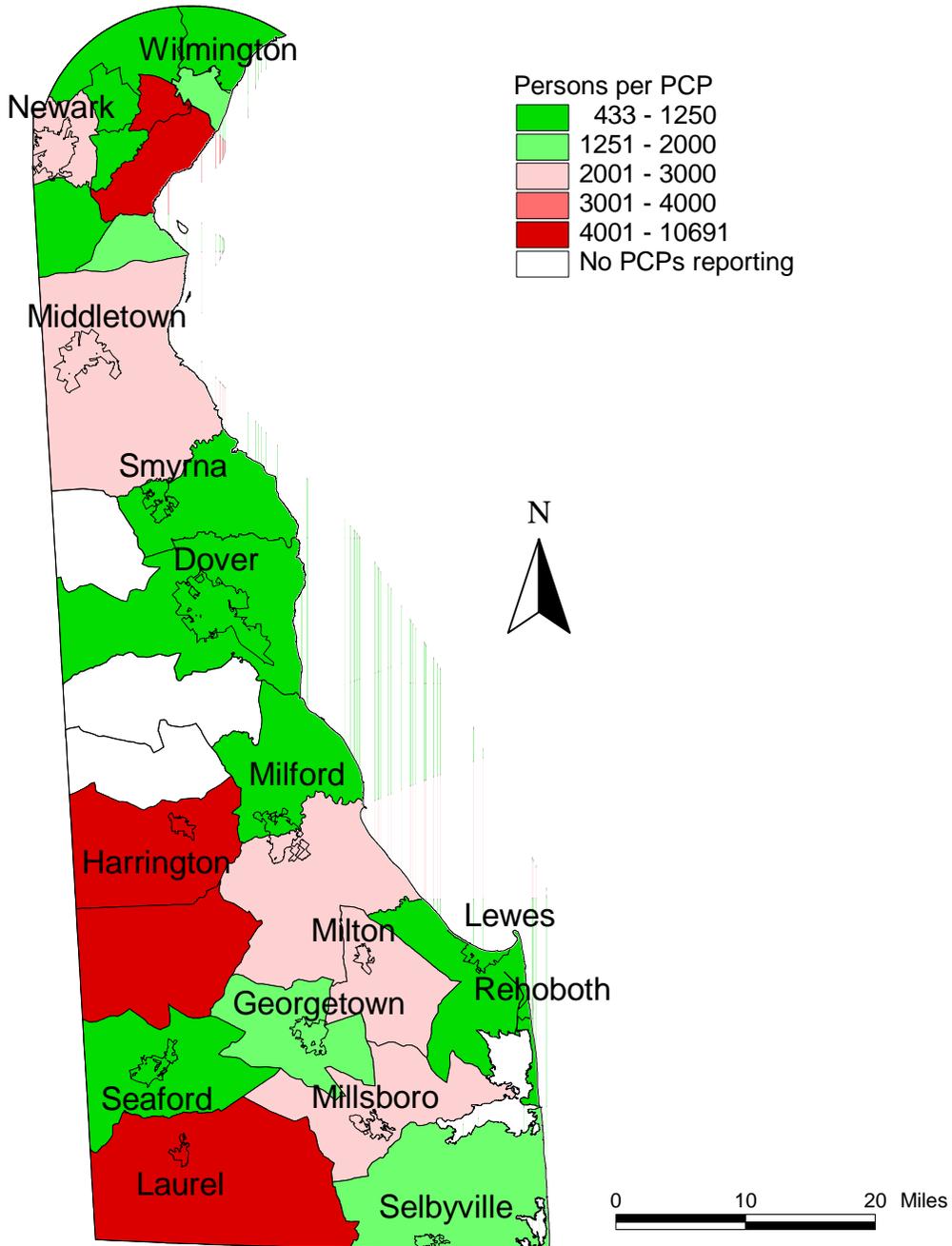
Age is not the only demographic area that can make a difference. Traditionally, people who live in households that are under the poverty line will likely need more medical care than those who are above it. Further, higher infant mortality in an area may suggest less access to primary care physicians. Additional variables currently being considered are low birth weight births, percent of a racial minority, percent Hispanic, percent linguistically isolated, and population density. Many of these variables are also correlated with poverty and infant mortality. Even if everything else is equal (i.e. population, population characteristics, and the number of primary care physicians), the more spread out the population is in the medical service area, the harder it is to serve.

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

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<sup>6</sup> 1992 National Health Interview Survey.

**Figure 4.1**  
**Number of Persons per Primary Care Physician**  
**by Census County Division**



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

The spatial distribution of primary care physicians relative to population by census county division in Delaware is found in Figure 4.1 above. The important areas to look at are those in pink and shades of red. The pink areas may be close to crossing the 3000:1 threshold. Those dark red are already too high with too few primary care physicians per population. It's important to point out that no census county division falls in the 3,001-4,000 (red) range. This indicates that county divisions with a potential shortage are just about to cross the 3,000:1 ratio or are significantly over that threshold.

Across Delaware there are 5 census county divisions that are likely to have a significant shortage of primary care physicians – depicted in dark red. However, every area with this shortage is adjacent to one that has an abundance of primary care physicians. While the distances are short and certainly within the federal 20-mile criteria there may still be reason for concern as transportation, personal finances and convenience of physician office hours may be a barrier to access in some areas and populations.

This does not mean that there may not be isolated pockets within the other census county divisions that are medically underserved. Wilmington, for example, seemingly has a sufficient supply of primary care physicians but they also see patients from outside the city. This may leave the minority community with too few physicians to meet their needs.

In New Castle County there are two census county divisions (Lower Christiana and New Castle) with a need for additional primary care physicians. Both of these divisions meet the 20,000+ population criteria to be considered a rational primary care medical service area. This map primarily shows that physicians are unevenly distributed across New Castle County.

Kent County has a very different profile. Most of the primary care physicians appear to be focused around Dover, Smyrna and Milford. None of the physicians surveyed reported working in three of the census county divisions (Kenton, Central Kent and Felton); those were the only CCDs in the state without any primary care physicians reporting. With the exception of Dover and Central Kent, none of the other census county divisions reaches a population of 20,000. Central Kent (the white area just south of Dover) contains almost 21,400 persons but is so close to Dover, physicians are more likely to locate in the city. The Harrington census county division is clearly lacking in primary care physicians but is smaller (13,400) and is adjacent to areas with more physicians.

Primary care physicians are unevenly distributed throughout Sussex County. Seaford and Lewes census county divisions are all well supplied with primary care physicians. Georgetown and Selbyville census county divisions also have an adequate number of primary care physicians. It should be noted that the Milton and Millsboro census county divisions just about cross the 3,000:1 adequacy ratio and it is expected that their summertime populations could well place strain on the supply of their primary care physicians. Bridgeville and Laurel census county divisions are likely to have a significant shortage of primary care physicians.

Figures 4.2 through 4.4 show the distribution by primary care specialty. There are no specific standards related to these specialties like there are for primary care physicians in general. Therefore the scale and associated colors vary between maps and differ from Figure 4.1, above.

Family practice physicians, who are about one third of all primary care physicians, are distributed similarly to primary care physicians in general (Figure 4.2). Thus, one would expect a general movement from a dark green/pink map to a red/dark red map. There are a few interesting exceptions. Piedmont, Red Lion, and Selbyville stayed the same color (dark green or green) indicating that family practice physicians are more prevalent than the one third that might have been expected. Overall however, the distribution was as expected.

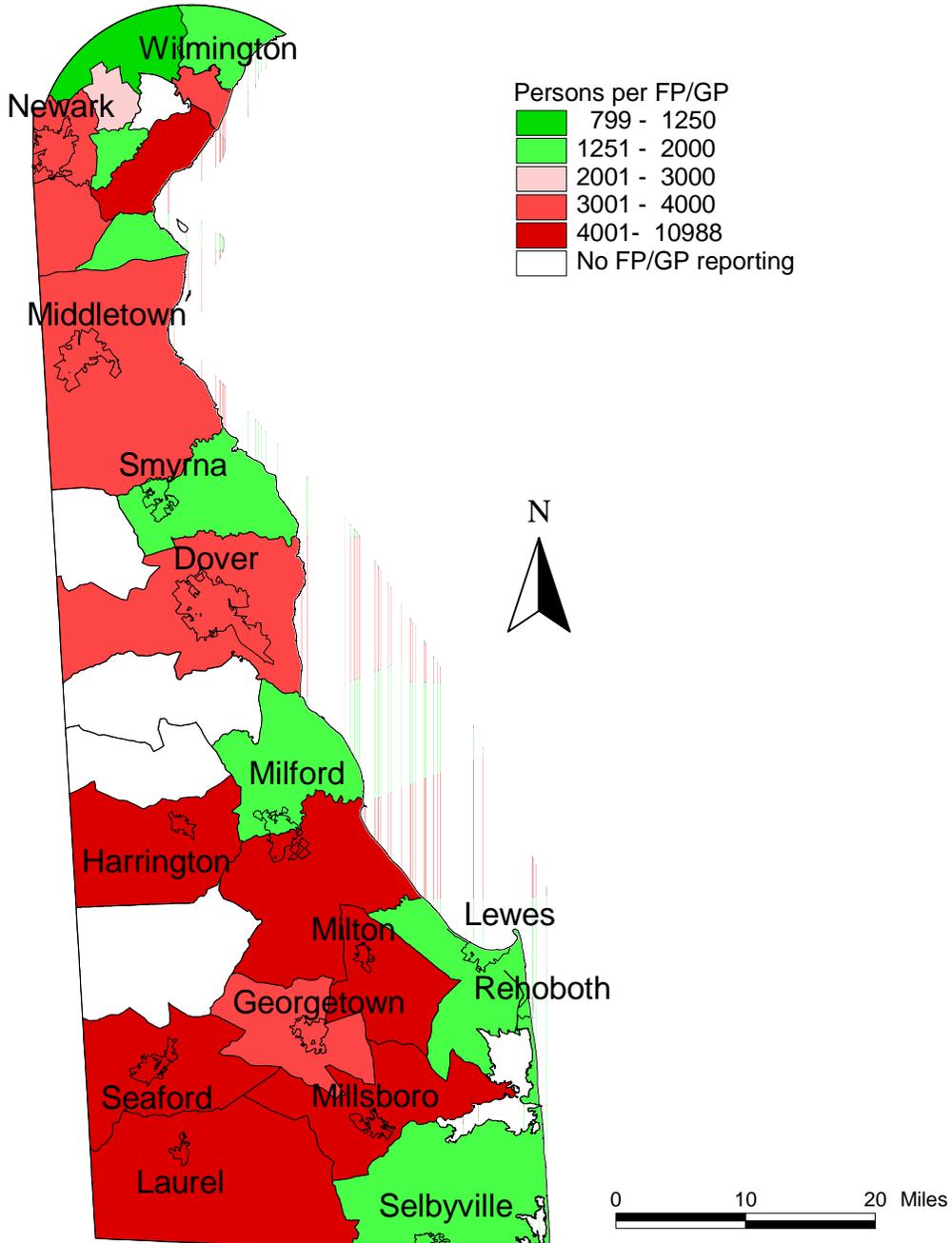
OBGYNs are spatially much more concentrated than all other primary care physicians according to this survey. Only 13 of the 27 CCDs had OBGYN practice sites. These practice sites were likely to be associated with a CCD that had a hospital or was adjacent to a CCD with a hospital. There were a few exceptions in New Castle County, but the ratios were low. Undoubtedly, both the type of practice and the need to have immediate access to a hospital influences this spatial relationship. It also suggests that women requiring the services of an OBGYN can expect to travel. The unevenness of the spatial distribution will also impact the accessibility of OBGYNs as primary care physicians of which they are 11.5%.

In Figure 4.4, the ratio of pediatricians to the youth population is displayed. Pediatricians are almost 18% of the primary care physicians. They are spatially distributed more broadly than OBGYNs (16 CCDs compared to 13) but less so than primary care physicians in general. There is an orientation toward hospitals but not anywhere near the degree of OBGYNs. Probably the most underserved areas with respect to this specialty are southern Kent (40,000 people) and southern Sussex counties (72,000 people).

Finally, the population per internist is found in Figure 4.5, below. The distribution is again very uneven. In Kent County there are no CCDs with a person per Internist ratio of 1500:1 or better (all are pink or not reporting). The map indicates internists are primarily concentrated in Northern New Castle County (Piedmont and Pike Creek Central CCDs) with some pockets around Lewes and Seaford.

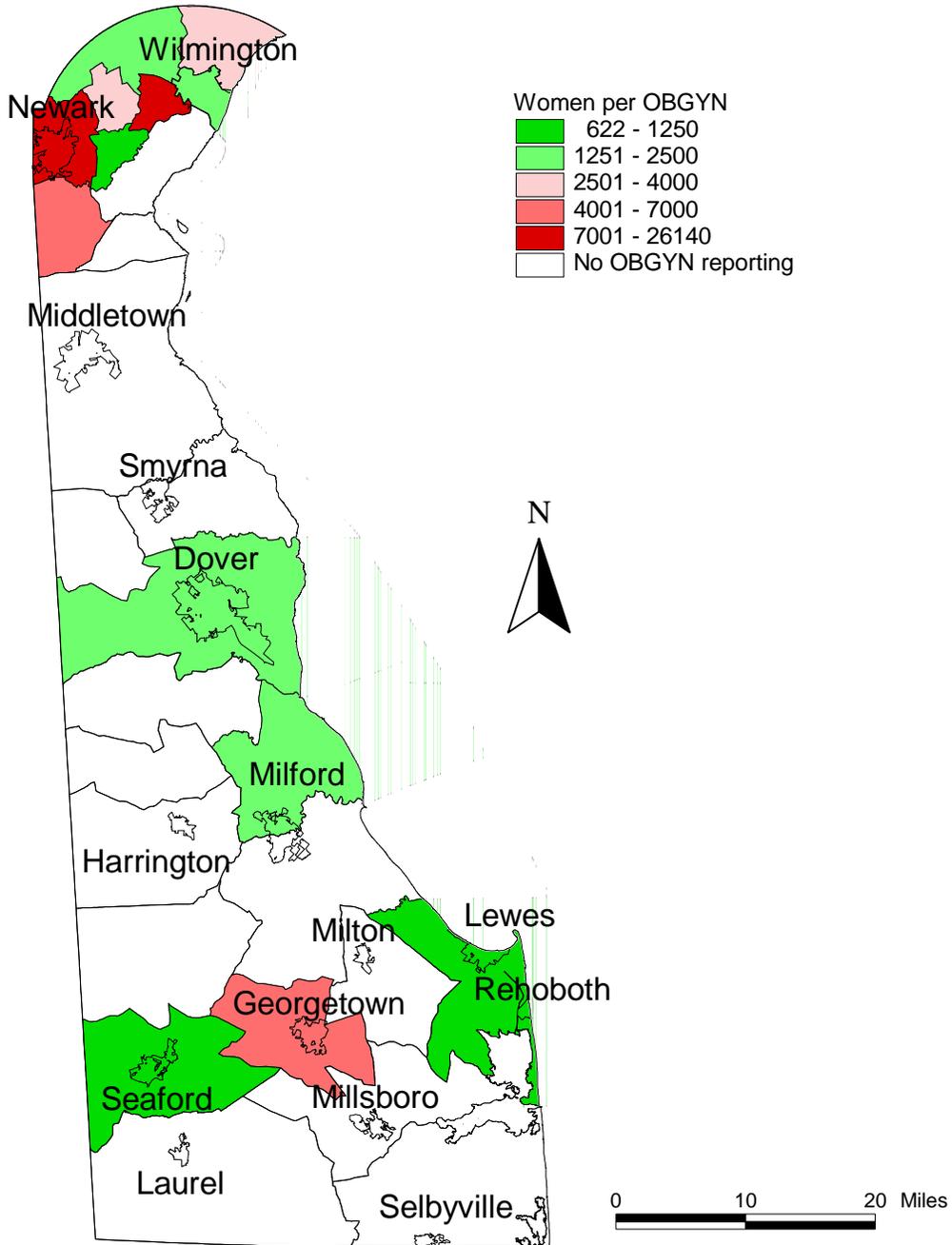
These differing spatial distributions coupled with the differences by county shown in Figure 3.2 earlier add to the complexity of the recruiting process intended to increase primary care physicians in Delaware.

**Figure 4.2**  
**Number of Persons per Family Practice Physician**  
**by Census County Division**



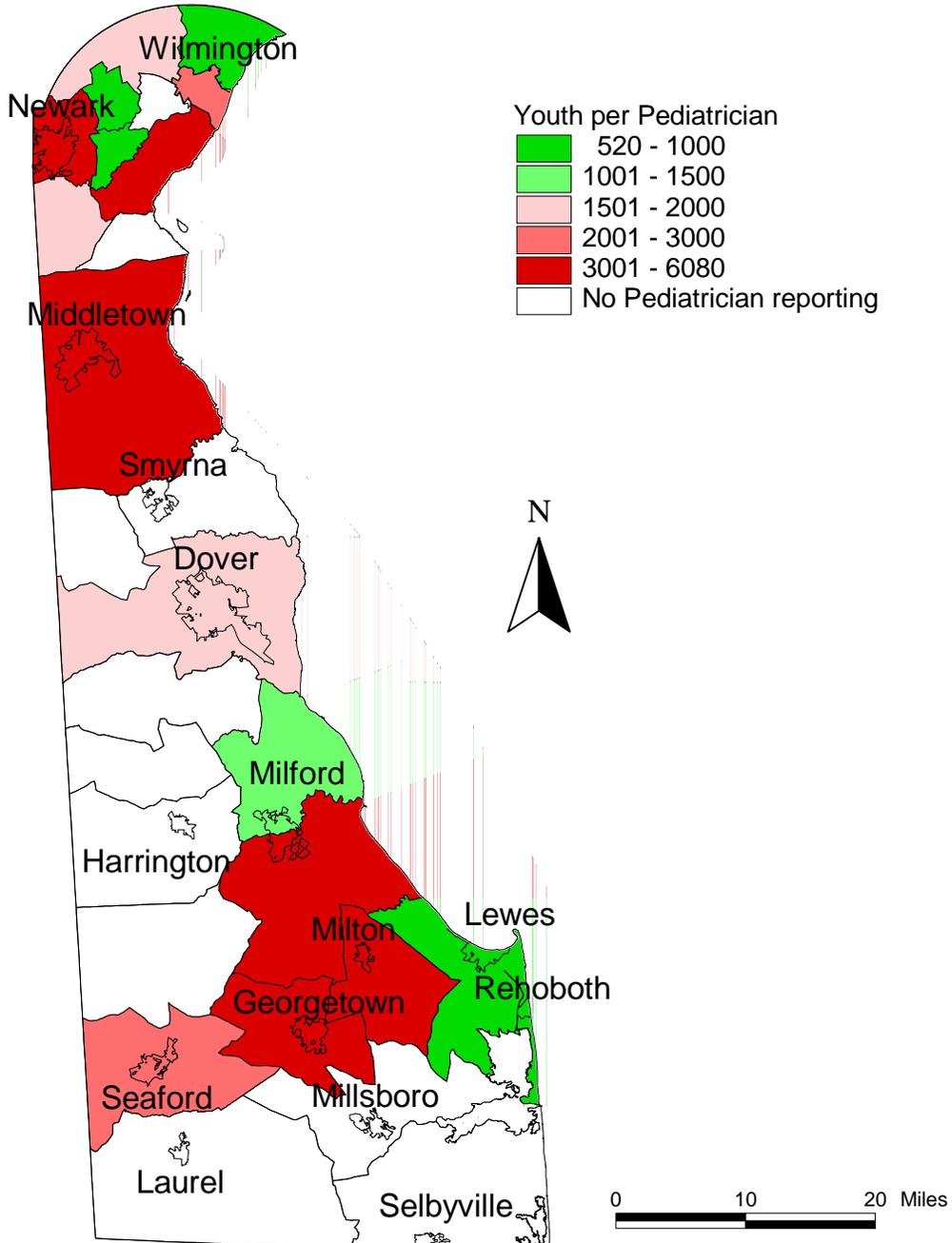
Source: Center for Applied Demography & Survey Research,  
University of Delaware

**Figure 4.3**  
**Number of Women (15-64) per OBGYN**  
**by Census County Division**



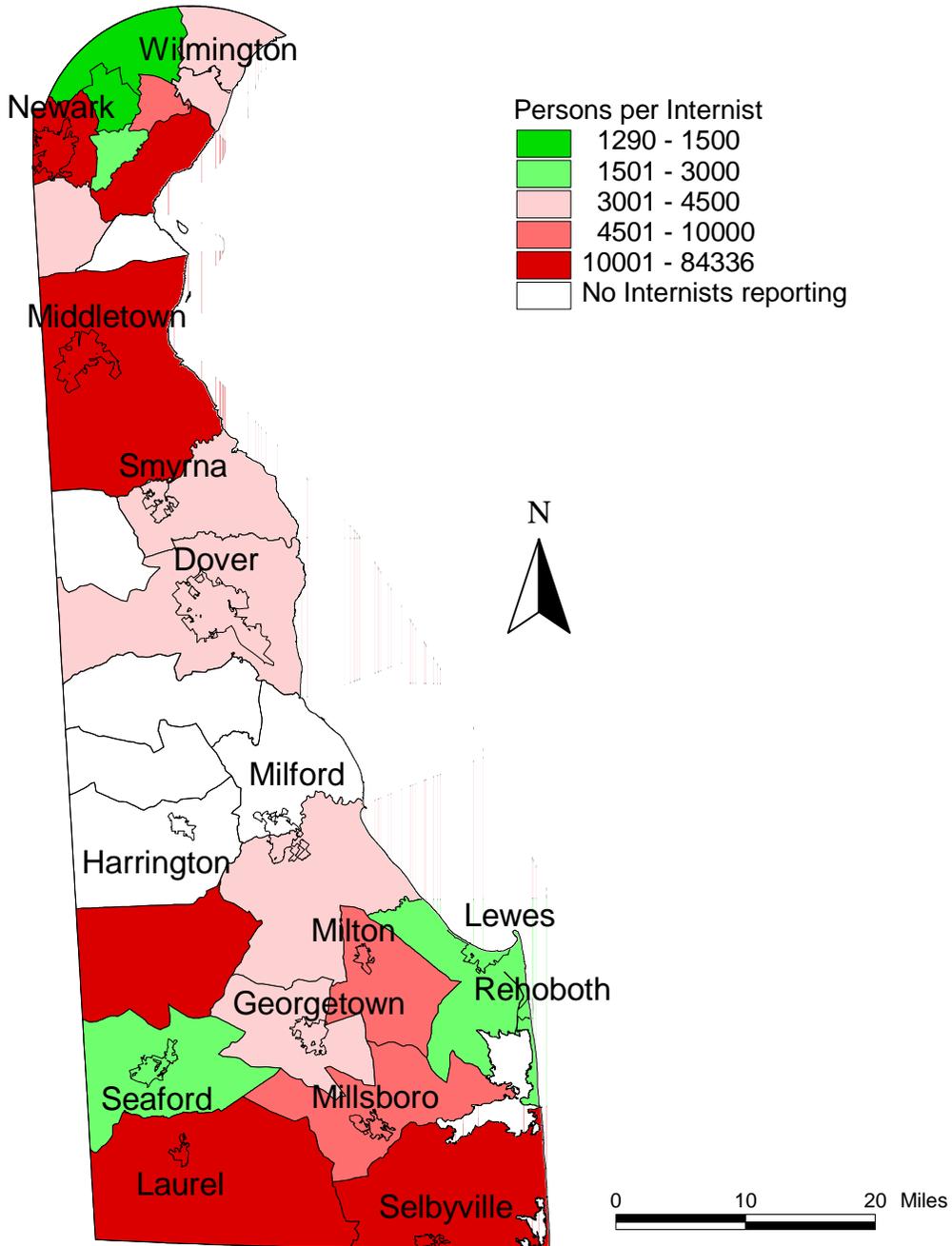
Source: Center for Applied Demography & Survey Research,  
University of Delaware

**Figure 4.4**  
**Number of Youth (0-19) per Pediatrician**  
**by Census County Division**



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

**Figure 4.5**  
**Number of Persons per Internist**  
**by Census County Division**



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

## Observations

The Delaware Physicians Survey in its fifth year is beginning to provide the information that is needed to guide policy-makers in the State of Delaware. 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 physician's burden of participation in the survey without adding to needed knowledge. Even without complete reporting a number of findings can be drawn from the data.

- There are probably sufficient primary care physicians in Delaware (1,271:1) although their location and specialty is probably not optimal.
- While today, there are currently sufficient numbers of physicians, their numbers are at the upper range of what is desirable (1,250:1). Both Kent County (1,575:1) and Sussex County (1,565:1) are well above that target now.
- There may be a need to encourage more Hispanic physicians and Spanish-speaking physicians and staff, as that population grows more numerous in the state particularly in Sussex County.
- Almost 2/3 of Delaware's physicians went to high school in the region; over half of them graduated from a medical school in the region, and almost 80% of them completed their medical residency in the region.
- Over 85% of primary care physicians are accepting new patients but the proportion accepting new Medicare and Medicaid patients (68-64%) is significantly lower.
- Sixty percent of primary care physician's time is devoted to serving Medicare and Medicaid patients while these populations represent less than 20% of the population.
- Wait times for appointments vary significantly between established and new patients and by county.
- About 45% of primary care physicians employ non-physician services from advanced practice nurses, physician assistants, and others.
- About 6% of Delaware's primary care physicians do not belong to any managed care network. The rate of physicians that do not belong to any managed care network is highest in Kent County (9%).
- Primary care physicians are fairly well distributed in sub-areas of Delaware's counties. The only exception to this finding is for OBGYNs that tend to be located in close proximity to hospitals.

## **APPENDIX**

# DELAWARE PHYSICIAN SURVEY

**PLEASE COMPLETE THIS QUESTIONNAIRE & RETURN IN THE ENCLOSED STAMPED ENVELOPE**

1. Are you currently active in **clinical medicine** (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
  - 5[ ] No, inactive
  - 6[ ] No, other (*specify*): \_\_\_\_\_
  - 7[ ] Not practicing in Delaware

**IF RETIRED, INACTIVE, OTHER, OR NOT PRACTICING IN DELAWARE, PLEASE SKIP TO PAGE 5, QUESTION 7**

2. Were you active in **clinical medicine** 12 months ago:

- 1[ ] No
- 2[ ] Yes, at the same location as now
- 3[ ] Yes, but at a different location (*please specify location below*):

\_\_\_\_\_  
(City)

\_\_\_\_\_  
(State)

\_\_\_\_\_  
(Zip Code)

3. On average, how many hours per week do you 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 (*please specify*): \_\_\_\_\_

4. Setting of primary employment is (*please 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[ ] Other (*please specify*): \_\_\_\_\_

2[ ] **Federal Health Facility:**

- 1[ ] Veterans' Administration (VA hospital)
- 2[ ] Other (*please specify*): \_\_\_\_\_

3[ ] **School:**

- 1[ ] School-Based Health Clinic
- 2[ ] Primary or Secondary School Site; School District
- 3[ ] School of Medicine
- 4[ ] Other University or College
- 5[ ] Other (*please specify*): \_\_\_\_\_

4[ ] **Miscellaneous Setting:**

- 1[ ] Medical Research Institution or Establishment
- 2[ ] Professional Association
- 3[ ] Administrative Duties in a Managed Care Setting (e.g.: HMO, PPO, etc.)
- 4[ ] Manufacturing or Industrial Establishment
- 5[ ] Other (*please specify*): \_\_\_\_\_



- d. Do you see obstetrical and/or gynecological patients at this site?  Yes  No
- e. Do you see pediatric patients (under 21 years)?  Yes  No  
 If **YES**, to what age do you continue to see pediatric patients? (*Please check the box which reflects the **oldest** pediatric patient you typically accept*):
- |   |  |
|---|--|
| <input type="checkbox"/> 0-3 year-olds  | <input type="checkbox"/> 11-13 year-olds |
| <input type="checkbox"/> 4-5 year-olds  | <input type="checkbox"/> 14-16 year-olds |
| <input type="checkbox"/> 6-10 year-olds | <input type="checkbox"/> 17-18 year-olds |
|   | <input type="checkbox"/> 19-21 year-olds |
- f. Do you offer **Saturday** or **evening** hours?
- Offer Saturday appointments:  Yes  No
  - Offer evening hours:  Yes  No
- g. 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 patients: \_\_\_\_\_ Days \_\_\_\_\_ Weeks \_\_\_\_\_ Not Applicable
  - Established patients: \_\_\_\_\_ Days \_\_\_\_\_ Weeks \_\_\_\_\_ Not Applicable
- h. Are you currently accepting new patients?  Yes  No
- 
- i. Are you currently treating **MEDICAID** patients?  Yes  No
- If **YES**, about what percentage of your total hours are spent delivering primary care to **MEDICAID** patients at this site? (*Please circle one number, below*):  
 00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
  - If **YES**, which of the following **MEDICAID** managed care plans do you accept? (*Please check all that apply*):  
 Diamond State Partners  Delaware Physicians Care, Inc.
- j. Are you currently accepting new **MEDICAID** patients?  Yes  No
- If **YES**, about what percentage of your total hours do you anticipate you will spend delivering primary care to **MEDICAID** patients at this site, **12 months from now**? (*Please circle one number, below*):  
 00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 
- k. Are you currently treating **MEDICARE** patients?  Yes  No
- If **YES**, about what percentage of your total hours are spent delivering primary care to **MEDICARE** patients at this site? (*Please circle one number, below*):  
 00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- l. Are you currently accepting new **MEDICARE** patients?  Yes  No
- If **YES**, about what percentage of your total hours do you anticipate you will spend delivering primary care to **MEDICARE** patients at this site, **12 months from now**? (*Please circle one number, below*):  
 00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
- 
- m. Do you practice geriatrics as a subspecialty?
- Yes  No
- n. Does this site employ any non-physician clinicians: including **advanced practice nurses (APN)**, **certified nurse midwives (CNM)**, **physician assistants (PA)** or similar advanced practitioners in primary care (*check all that apply*)?
- APN  CNM  PA  Other  None

PLEASE CONTINUE PRIMARY PRACTICE SITE ON THE FOLLOWING PAGE

o. If non-physician clinicians are employed, what percentage of the practice is treated by them?

00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

p. 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**, please check all that apply:

1[ ] Spanish

2[ ] French

3[ ] Arabic

4[ ] Asian (*please specify*):\_\_\_\_\_

5[ ] Sign Language

6[ ] Other (*please specify*):\_\_\_\_\_

q. On average, what percentage of your time is spent delivering primary care to **self-paying patients**? (*Circle one number below*):

00% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

r. Do you offer a sliding fee scale, in which the professional fee is a percentage based on the patient's family income:

1[ ] Yes

2[ ] No

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

1[ ] Yes

2[ ] No

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

1[ ] Yes

2[ ] No

u. 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

v. Do you belong to a **managed care provider network**?

1[ ] Yes (*how many different networks?*\_\_\_\_\_)

2[ ] No

## PLEASE COMPLETE THE FOLLOWING QUESTIONS

7. Do you expect to be active in **clinical medicine** in Delaware 5 years from now? <sub>1</sub>[ ] Yes <sub>2</sub>[ ] No <sub>3</sub>[ ] Unsure

If **YES**, use the medical specialty codes (located on page 6) to indicate what you expect your primary and, if applicable, secondary and tertiary specialties and the percentage of clinical time you plan to spend in each:

	<u>Code</u>	<u>Percentage</u>	<u>Indicate expected status for each specialty</u>	
Primary	_____	_____	[ ] <sub>1</sub> Board Certified	[ ] <sub>2</sub> Board Eligible
Secondary	_____	_____	[ ] <sub>1</sub> Board Certified	[ ] <sub>2</sub> Board Eligible
Tertiary	_____	_____	[ ] <sub>1</sub> Board Certified	[ ] <sub>2</sub> Board Eligible

7. a. If no or unsure, what are the primary reasons you might not be practicing in Delaware? \_\_\_\_\_

8. State of residence at time of high school graduation: \_\_\_\_\_

9. From which medical school did you graduate: \_\_\_\_\_ Year \_\_\_\_\_

In what state is the school located: \_\_\_\_\_

10. Please indicate the hospital(s) and state(s) where you did your residency:

Hospital: _____	State: _____
Hospital: _____	State: _____
Hospital: _____	State: _____

11. What is your race:

<sub>1</sub> [ ] Caucasian or White	<sub>4</sub> [ ] Asian or Pacific Islander
<sub>2</sub> [ ] African American or Black	<sub>5</sub> [ ] Multi-Racial
<sub>3</sub> [ ] Native American or Alaskan Native	<sub>6</sub> [ ] Other(Please Specify): _____

12. Are you of Hispanic origin: <sub>1</sub>[ ] Yes <sub>2</sub>[ ] No

13. Gender: <sub>1</sub>[ ] Male <sub>2</sub>[ ] Female

14. Date of Birth: \_\_\_\_/\_\_\_\_/\_\_\_\_ (day/month/year)

15. Do you have a **Delaware business license**? <sub>1</sub>[ ] Yes <sub>2</sub>[ ] No

16. Please describe the type of internet connection you have in your practice office.

<sub>01</sub> [ ] Dial up	<sub>05</sub> [ ] No internet access
<sub>02</sub> [ ] High speed DSL	<sub>06</sub> [ ] Other (please specify): _____
<sub>03</sub> [ ] Cable	<sub>07</sub> [ ] No computer in Office <u>Skip to Question 19</u>
<sub>04</sub> [ ] Satellite	

17. Does your practice use computers for any of the following (check all that apply):

[ ] Billing	[ ] Electronic order entry
[ ] Scheduling	[ ] E-prescribing
[ ] E-mail	[ ] Electronic lab/radiology result reporting
[ ] Internet	[ ] Other (please specify): _____
[ ] Electronic patient records	

18. Is your office computer(s) connected to a local area network (LAN)?

<sub>1</sub>[ ] Yes  
<sub>2</sub>[ ] No

19. If the State of Delaware offered a service that allowed you to access your patient's clinical health information, which is housed at other facilities (i.e., hospitals, labs, radiology facilities, pharmacies), via a secured web browser, would you participate?

1[ ] Yes      2[ ] No

If no, why not? \_\_\_\_\_

a. If yes, each time you retrieved new information from the system, how much would you be willing to pay per transaction?

1[ ] \$0 \_\_\_\_\_      2[ ] Up to \$2.50 \_\_\_\_\_      3[ ] \$2.51 to \$5.00 \_\_\_\_\_      4[ ] More than \$5.00 \_\_\_\_\_

20. Is your facility compliant with the Americans with Disabilities Act (ADA) (e.g., do you have access ramps, doors wide enough for a wheelchair and exam tables that lower to accommodate persons in wheelchairs)?

1[ ] Yes      2[ ] No

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

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

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## AMA Self-Designated Practice Specialty Codes

(Listed alphabetically by specialty name)

AS	Abdominal Surgery	FP	Family Practice	APM	Pain Management (Anesthesiology)
ADM	Addiction Medicine	FOP	Forensic Pathology	PMD	Pain Medicine
ADP	Addiction Psychiatry	GE	Gastroenterology	PDA	Pediatric Allergy
ADL	Adolescent Medicine	GP	General Practice	PDC	Pediatric Cardiology
OAR	Adult Reconstructive Orthopedics	GPM	General Preventive Medicine	CCP	Pediatric Critical Care Medicine
AM	Aerospace Medicine	VS	General Vascular Surgery	PEM	Pediatric Emergency Medicine
A	Allergy	GS	General Surgery	PDE	Pediatric Endocrinology
AI	Allergy & Immunology	FPG	Geriatric Medicine (Family Practice)	PG	Pediatric Gastroenterology
ALI	Allergy & Immunology/Clinical and Laboratory Immun.	IMG	Geriatric Medicine internal Medicine)	PHO	Pediatric Hernatology/Oncology
PTH	Anatomic/Clinical Pathology	PYG	Geriatric Psychiatry	PN	Pediatric Nephrology
ATP	Anatomic Pathology	GYN	Gynecology	PO	Pediatric Ophthalmology
OP	Pediatric Orthopedics	GO	Gynecological Oncology		
AN	Anesthesiology	HSD	Hand Surgery (Orthopedic Surgery)	POO	Pediatric Otolaryngology
BBK	Blood Banking Transfusion Medicine	HNS	Head & Neck Surgery	PIP	Pediatric Pathology
ICE	Cardiac Electrophysiology	HEM	Hematology (internal Medicinal	POP	Pediatric Pulmonology
CD	Cardiovascular Disease	HMP	Hematology Pathology)	PDR	Pediatric Radiology
CDS	Cardiovascular Surgery	HEP	Hepatology	PPR	Pediatric Rheumatology
PCH	Chemical Pathology	IG	Immunology	NSP	Pediatric Surgery (Neurology)
CHP	Child and Adolescent Psychiatry	PIP	Immunopathology	PDS	Pediatric Surgery (Surgery)
CHN	Child Neurology	ID	Infectious Disease	UP	Pediatric Urology
CEIG	Clinical Biochemical Genetics	IM	Internal Medicine	PD	Pediatrics
CCG	Clinical Cytogenetics	LM	Legal Medicine	PM	Physical Medicine & Rehabilitation
CG	Clinical Genetics	MFM	Maternal & Fetal Medicine	PS	Plastic Surgery
DDL	Clinical and Laboratory Dermatological Immunology	MG	Medical Genetics	P	Psychiatry
ILI	Clinical and Laboratory Immunology (internal Medicine)	MM	Medical Microbiology	PYA	Psychoanalysis
PLI	Clinical and Laboratory Immunology (Pediatrics)	ON	Medical Oncology	PH	Public Health and General Preventive Medicine
CMG	Clinical Molecular Genetics	ETX	Medical Toxicology (Emergency Medicine)	PUD	Pulmonary Disease
CN	Clinical Neurophysiology	PDT	Medical Toxicology (Pediatrics)	RO	Radiation Oncology
CLP	Clinical Pathology	PTX	Medical Toxicology (Preventive Medicine)	RP	Radiological Physics
PA	Clinical Pharmacology	OMO	Musculoskeletal Oncology	R	Radiology
CRS	Colon & Rectal Surgery	NPM	Neonatal-Perinatal Medicine	RIP	Radioisotopic Pathology
CCA	Critical Care Medicine (Anesthesiology)	NEP	Nephrology	REN	Reproductive Endocrinology
CCM	Critical Care Medicine (Internal Medicine)	N	Neurology	RHU	Rheumatology
NNC	Critical Care Medicine (Neurological Surgery)	NS	Neurological Surgery	ESM	Sports Medicine (Emergency Medicine)
OCC	Critical Care Medicine (Obstetrics & Gynecology)	NP	Neuropathology	F.3 M	Sports Medicine (Family Practice)
PCP	Cytopathology	RNR	Neuroradiology	ISM	Sports Medicine (Internal Medicine)
D	Dermatology	NM	Nuclear Medicine	OSM	Sports Medicine (Orthopedic Surgery)
DMP	Dermatopathology	NR	Nuclear Radiology	PSM	Sports Medicine (Pediatrics)
DIA	Diabetes	NTR	Nutrition	HSP	Surgery of the Hand (Plastic Surgery)
DR	Diagnostic Radiology	OBS	Obstetrics	HSS	Surgery of the Hand (Surgery)
EM	Emergency Medicine	OBG	Obstetrics & Gynecology	CCS	Surgical Critical Care (Surgery)
END	Endocrinology, Diabetes and Metabolism	OM	Occupational Medicine	TS	Thoracic Surgery
FPS	Facial Plastic Surgery	OPH	Ophthalmology	TRS	Traumatic Surgery
		ORS	Orthopedic Surgery	LIM	Underseas Medicine
		OSS	Orthopedic Surgery of the Spine	U	Urology
		OTR	Orthopedic Trauma	VIR	Vascular and Interventional Radiology
		OTO	Otolaryngology	OS	Other (i.e., a specialty other than those appearing above)
		OT	Otology		