# Changes in the Physician Workforce in South Carolina: 2009 - 2015

Over the last 35 years the number of physicians practicing in South Carolina for every 100,000 persons in the state more than doubled. Growth slowed during the decade between 2000 and 2010. Since then the number of physicians practicing in the state has grown by about 20%. This report summarizes the ways in which the physician workforce in the state changed between 2009 and 2015. The data is based on information provided by physicians when renewing their license to practice in 2009 and 2015.
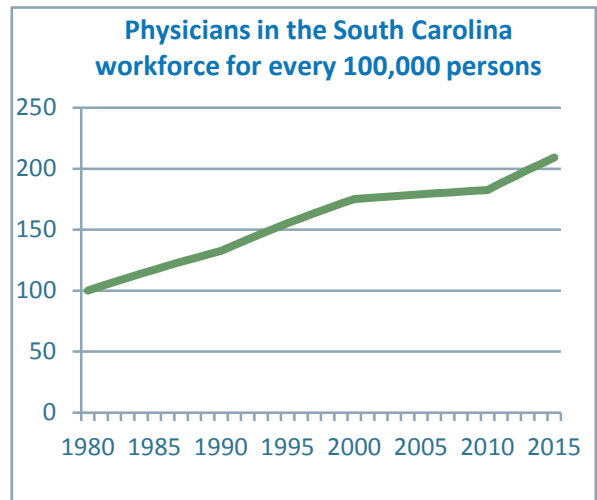
The physician workforce can be counted in several ways: the potential workforce - those with an active license which allows them to practice in the state; the actual workforce -

Physicians in the South Carolina workforce for every 100,000 persons

those who actually do practice in the state; and the direct care workforce - those involved in direct patient care. Additionally, counts may or may not include physicians who are in graduate-level medical education (i.e. residency) training programs. Physicians working in Veterans Administration or military facilities are generally not included. See Table 1 for a breakdown of these definitional groups.

Table 1. Licensed Physicians in South Carolina: 2009 and 2015

	2009 Head count	2015 Head count	Six-year Growth %
# with an active license to practice in South Carolina	15,516	18,348	18.3%
# who had an active practice site within South Carolina	10,163	12,467	22.7%
Of those who practice in South Carolina:			
# who practiced in federal/military facilities [a]	259	295	13.9%
# in residency training programs	1,289	1,933	50.0%
# of active "established" physicians (i.e. not federal or residents in training)	8,615	10,239	18.9%
# of established physicians involved in direct patient care	8,426	10,055	19.4%

a Department of Defense and other federal healthcare facilities do not require that physicians hold an active license to practice in the facility's state as long as they are actively licensed somewhere. Thus, the figures in this table may be an under-count of the actual number of physicians practicing in military facilities within South Carolina.

Table 2 reports physicians by their clinical specialty, using the AMA's taxonomy for defining specialty groups. The year 2013 is included in the table because that is the most recent data available from the AMA and allows comparisons between South Carolina and the United States. Because the AMA figures include residents in training, they are also included in all the South Carolina numbers in Table 2. Based on counts from 2013, the size of South Carolina's physician workforce (for every 100,000 persons) is similar to national patterns for the specialty groups with a few exceptions. In an absolute sense, our state had only 80% of the total number of physicians for every 100,000 persons as did the country as a whole in 2013 (see Table 2 - 232.4 is 80% of 290.8). Beyond this generally smaller workforce overall, South Carolina has a significantly smaller supply of Internal Medicine physicans but a larger supply of Family Medicine physicians compared to the Unites States.

Table 2. Physician Workforce Counts per 100,000 in South Carolina and the U.S. by Specialty Area

Clinical Specialty	South Carolina Physician Workforce per 100,000 Population		Growth Rate % 2009 to 2015	South Carolina Physician Workforce per 100,000 in 2013	United States Physician Workforce per 100,000 in 2013
	2009	2015			
All Physicians	*215.8*	*248.6*	*15.2%*	*232.4*	*290.8*
Internal Medicine	36.1	43.8	21.5%	40.4	58.6
Family Medicine	34.3	37.7	10.0%	36.2	34.9
Pediatrics	19.4	23.3	20.2%	21.6	27.9
Emergency Medicine	12.9	16.5	27.7%	14.5	13.6
Obstetrics & Gynecology	12.9	13.3	3.3%	12.7	14.9
General Surgery	11.9	12.2	2.5%	11.8	12.8
Anesthesiology	10.0	12.2	21.0%	11.3	15.6
Psychiatry	10.3	11.0	6.2%	10.7	13.4
Orthopedic Surgery	8.2	9.5	15.6%	8.6	8.8
Cardiovascular Disease	5.8	6.5	12.4%	6.3	7.7
Ophthalmology	5.7	5.7	0.2%	5.5	6.3
Diagnostic Radiology	4.2	5.7	34.5%	4.5	8.9
Radiology	3.7	4.6	23.3%	4.2	3.4
Anatomic/Clinical Pathology	4.1	4.4	6.7%	4.3	6.2
Neurology	3.3	4.3	31.2%	4.0	5.9
Gastroenterology	3.5	3.8	7.7%	3.4	4.7
Pulmonary Diseases	2.5	3.4	34.2%	3.0	4.2
Urology	3.4	3.4	-1.5%	3.4	3.6
Dermatology	2.9	3.2	11.4%	3.1	4.0
Otolaryngology	2.7	3.1	14.6%	3.1	3.5
General Practice	2.4	2.3	-5.4%	2.3	2.8
Neurological Surgery	1.7	2.1	28.3%	1.7	2.0
Physical Medicine & Rehabilitation	1.5	2.0	39.9%	1.8	3.8
Plastic Surgery	1.7	2.0	18.1%	2.2	2.6
Child/Adolescent Psychiatry	1.7	1.7	2.3%	1.7	2.8
Allergy and Immunology	1.2	1.4	12.2%	1.3	1.5
Radiation Oncology	1.1	1.4	28.2%	1.3	1.7
Pediatric Cardiology	0.7	0.9	43.7%	0.8	0.8
Thoracic Surgery	0.7	0.9	31.2%	0.8	1.5
Occupational Medicine	0.9	0.7	-15.6%	0.7	0.8
Colon & Rectal Surgery	0.4	0.5	25.0%	0.5	0.6
Public Health/Preventive Medicine	0.4	0.3	-16.7%	0.3	0.4
General Preventive Medicine	0.2	0.3	56.2%	0.2	0.9
Medical Genetics	0.3	0.3	-18.0%	0.2	0.2
Forensic Pathology	0.2	0.2	-6.3%	0.2	0.2
Transplant Surgery	0.2	0.1	-27.1%	0.2	0.1
Nuclear Medicine	0.1	0.1	25.0%	0.1	0.5
Aerospace Medicine	0.1	0.0	-76.6%	0.1	0.1
Vascular Medicine	0.0	0.0	0%	0.0	0.01
Other Specialties	2.4	3.4	41.9%	2.9	2.1
Unknown Specialty Type	0.2	0.4	106.2%	0.3	6.5

Note: "Unknown" and "Other Specialties" contain physicians who reported specialty areas outside of the AMA taxonomy or reported none at all. Residents in training are included in this table in order to facilitate comparison to national figures.

Comparing the first two columns in Table 2 reveals which specialty groups grew between 2009 and 2015. The third column reports the growth rate and whether it was positive or negative. In most of the specialty groups the supply increased – in many cases by 20% or more. But some critically important fields show relatively slow growth: Psychiatry (both General and Child/Adolescent), General Surgery, Ob/Gyn, Ophthalmology, Urology, and Family Medicine. Be aware that slight changes in small specialty groups result in large percentage growth rates.

Another important aspect of judging the size of the physician workforce and how it might be changing is to account for the level of work effort each week. During the license renewal process, physicians report the number of hours they work in an average week. We use 40 hours per week to define a full time equivalent physician, or 1 FTE. Many physicians work more than 40 hours in a typical week, but some work less. By measuring the workforce in terms of FTEs it is possible to see how changes in work patterns (which often vary by age and gender) are affecting the overall size of the workforce.

Table 3 reports both head counts and FTE counts for all established physicians actively practicing in South Carolina. Residents have been removed from the counts, as has the standardization by population. Comparing the number of physicians in the workforce with the number of FTEs reveals that physicians - as a group - tend to work more than 40 hours per week as evidenced by FTE numbers being larger than head counts in a given year. (The average hours worked per week for all physicians was 50.9 in 2009 and 49.5 in 2015.) Also, the growth rate for head counts from 2009 to 2015 is higher than for FTEs in most specialty groups. Notable exceptions include General Surgery, Neurology, Plastic Surgery, Neurological Surgery, and Thoracic Surgery where the data suggests *more* hours being worked per week in 2015 than in 2009. On the other hand, among groups where the number of physicians has declined (e.g. General Practice, Occupational Medicine) the reduction in the FTE workforce tends to be even larger between 2009 and 2015.

Table 4 refines the physician workforce further by focusing on only those physicians involved in direct patient care. Physicians report how many hours per week are spent on a variety of activities: patient care, research, teaching, administration, training, and other duties. Table 4 reports both the head count and the FTE count of physicians in the South Carolina workforce engaged in direct patient care activities. A physician spending 40 hours per week in direct patient care was assigned an FTE value of 1.0. Someone spending 20 hours per week would have an FTE value of 0.5. Compare the growth rate for head counts in a specialty to the growth rate based on FTEs to see that even a group whose numbers are increasing may be shrinking in terms of their full time equivalents. One example would be Ophthalmologists whose numbers in the active workforce grew by 2.9% between 2009 and 2015, but whose FTE counts declined by 1.3%.

In both 2009 and 2015 98% of all physicians in the workforce spent some time in direct patient care, but the amount of time (total hours per week) varied across specialties and across time. The average number of hours reported by physicians for direct patient care activities was 43.3 in 2009 and 41.1 in 2015. In the 2015 workforce most physicians (93%) spent at least half of their weekly hours on direct patient care activities, and 77% spent at least three-quarters of their weekly hours on direct patient care.

Table 3. Established Physician Workforce – Head Counts (Persons) and FTEs by Specialty Area

Clinical Specialty	Established Physician Workforce				Growth Rate %	
	2009		2015			
	Persons	FTEs	Persons	FTEs	Persons	FTEs
All Specialties Total:	**8,615**	**10,974.0**	**10,239**	**12,696.2**	**18.9%**	**15.7%**
Internal Medicine	1,410	1,836.8	1,813	2,309.8	28.6%	25.8%
Family Medicine	1,343	1,623.1	1,469	1,723.7	9.4%	6.2%
Pediatrics	730	880.9	880	1,031.9	20.5%	17.1%
Emergency Medicine	533	587.4	714	750.8	34.0%	27.8%
Obstetrics & Gynecology	516	725.6	554	753.9	7.4%	3.9%
Anesthesiology	417	581.5	512	686.0	22.8%	18.0%
General Surgery	389	583.1	443	667.9	13.9%	14.5%
Psychiatry	380	403.8	404	412.5	6.3%	2.2%
Orthopedic Surgery	329	452.9	392	523.5	19.1%	15.6%
Cardiovascular Disease	260	386.8	298	436.3	14.6%	12.8%
Diagnostic Radiology	185	223.3	268	298.6	44.9%	33.7%
Ophthalmology	243	282.5	247	282.8	1.6%	0.1%
Radiology	150	189.6	189	236.7	26.0%	24.9%
Anatomic/Clinical Pathology	163	200.0	176	201.2	8.0%	0.6%
Gastroenterology	158	225.6	173	245.0	9.5%	8.6%
Neurology	129	175.3	162	223.6	25.6%	27.6%
Urology	152	220.6	154	222.0	1.3%	0.6%
Pulmonary Diseases	110	167.7	151	225.1	37.3%	34.3%
Dermatology	125	131.1	142	143.9	13.6%	9.8%
Otolaryngology	114	153.9	137	184.4	20.2%	19.8%
General Practice	110	114.5	104	98.1	-5.5%	-14.3%
Physical Medicine & Rehabilitation	66	80.5	98	112.3	48.5%	39.4%
Plastic Surgery	76	111.4	94	138.8	23.7%	24.6%
Neurological Surgery	72	92.8	93	123.6	29.2%	33.2%
Child/Adolescent Psychiatry	66	71.7	70	74.9	6.1%	4.5%
Allergy and Immunology	56	59.5	67	68.1	19.6%	14.4%
Radiation Oncology	44	51.7	57	63.7	29.5%	23.2%
Pediatric Cardiology	27	37.1	41	54.2	51.9%	46.0%
Occupational Medicine	40	41.3	36	33.7	-10.0%	-18.3%
Thoracic Surgery	27	42.6	35	61.0	29.6%	43.1%
Colon & Rectal Surgery	18	30.9	24	35.6	33.3%	15.0%
Public Health/Preventive Medicine	18	17.9	15	13.6	-16.7%	-24.4%
Medical Genetics	16	21.0	13	17.0	-18.8%	-19.0%
General Preventive Medicine	8	7.4	12	11.4	50.0%	54.2%
Forensic Pathology	11	12.4	10	10.8	-9.1%	-12.9%
Transplant Surgery	8	13.1	6	10.5	-25.0%	-19.5%
Nuclear Medicine	3	3.7	2	2.0	-33.3%	-46.9%
Aerospace Medicine	3	1.8	1	0.5	-66.7%	-70.0%

Note: Physicians reporting their specialty as 'other' or missing that information are not included in this table. Residents in training are not included in this table.

Table 4. Direct Patient Care Physicians - Head Counts (Persons) and FTEs by Specialty Area

Clinical Specialty	Established Physician Workforce Engaged in Direct Patient Care Activities				Growth Rate %	
	2009 Persons	2009 FTEs	2015 Persons	2015 FTEs	2009 - 2015 Persons	FTEs
All Specialties Total:	**8,427**	**9,319.4**	**10,055**	**10,535.5**	**19.3%**	**13.0%**
Internal Medicine	1,386	1,570.3	1,782	1,926.0	28.6%	22.7%
Family Medicine	1,316	1,393.4	1,447	1,424.9	10.0%	2.3%
Pediatrics	710	722.9	857	805.5	20.7%	11.4%
Emergency Medicine	529	514.6	706	648.6	33.5%	26.0%
Obstetrics & Gynecology	508	628.6	550	646.8	8.3%	2.9%
Anesthesiology	415	529.2	510	620.7	23.1%	17.3%
General Surgery	378	483.9	437	542.2	15.6%	12.1%
Psychiatry	368	314.5	399	324.4	8.4%	3.2%
Orthopedic Surgery	329	392.9	389	436.4	18.2%	11.1%
Cardiovascular Disease	254	343.2	292	376.1	15.0%	9.6%
Diagnostic Radiology	184	207.5	265	276.8	44.0%	33.4%
Ophthalmology	239	241.3	246	238.1	2.9%	-1.3%
Radiology	147	172.7	184	205.0	25.2%	18.7%
Anatomic/Clinical Pathology	158	161.5	169	160.2	7.0%	-0.8%
Gastroenterology	154	200.3	171	220.7	11.0%	10.2%
Neurology	128	145.0	162	176.9	26.6%	22.0%
Urology	151	199.2	153	194.4	1.3%	-2.4%
Pulmonary Diseases	109	139.9	148	181.0	35.8%	29.4%
Dermatology	122	108.1	140	118.1	14.8%	9.2%
Otolaryngology	114	129.9	137	151.9	20.2%	16.9%
General Practice	109	104.0	102	84.2	-6.4%	-19.0%
Physical Medicine & Rehabilitation	64	67.2	97	93.5	51.6%	39.1%
Plastic Surgery	75	89.6	91	104.6	21.3%	16.7%
Neurological Surgery	72	80.4	93	100.6	29.2%	25.1%
Child/Adolescent Psychiatry	65	57.7	68	59.1	4.6%	2.5%
Allergy and Immunology	56	49.6	65	58.1	16.1%	17.3%
Radiation Oncology	44	46.5	57	54.5	29.5%	17.0%
Pediatric Cardiology	25	21.7	39	34.4	56.0%	58.5%
Occupational Medicine	39	33.1	35	26.3	-10.3%	-20.6%
Thoracic Surgery	27	35.7	35	49.0	29.6%	37.0%
Colon & Rectal Surgery	18	27.2	24	30.1	33.3%	10.6%
Public Health/Preventive Medicine	10	3.6	11	4.9	10.0%	37.3%
Medical Genetics	16	13.7	13	9.7	-18.8%	-28.9%
General Preventive Medicine	4	2.6	9	6.5	125.0%	151.0%
Forensic Pathology	9	7.9	9	6.3	0.0%	-20.3%
Transplant Surgery	8	7.8	6	5.6	-25.0%	-27.9%
Nuclear Medicine	3	2.5	2	1.0	-33.3%	-60.4%
Aerospace Medicine	3	1.5	1	0.3	-66.7%	-81.4%

Note: Physicians reporting their specialty as 'other' or missing that information are not included in this table. Residents in training are not included in this table.

Table 5 reveals how the physician workforce differs in size and growth rate across the different regions of the state. Because the regions vary in size the physician workforce figures are standardized per 100,000 persons based on region population figures. Overall, the physician workforce is growing across the state (see the right-most set of columns in Table 5). The specialty workforce is growing at a slightly faster pace than the primary care physician workforce.

Table 5. Primary and Specialty Care Physician Workforce per 100,000 population by AHEC Region

AHEC Regions	Primary Care Physicians per 100,000 Population		Growth %	Specialty Physicians per 100,000 Population		Growth %	Total Physicians per 100,000 Population		Growth %
	2009	**2015**		**2009**	**2015**		**2009**	**2015**	
Lowcountry	102.1	110.9	8.6%	132.4	147.0	11.0%	234.6	257.9	10.0%
Mid-Carolina	80.7	85.5	6.0%	87.6	100.7	15.0%	168.3	186.3	10.7%
Pee Dee	79.7	85.8	7.7%	77.4	84.9	9.7%	157.1	170.7	8.7%
Upstate	96.6	109.5	13.4%	97.1	107.4	10.6%	193.7	217.0	12.0%
State Totals:	**90.1**	**98.4**	**9.3%**	**98.8**	**110.7**	**12.0%**	**188.9**	**209.1**	**10.7%**

Notes: Residents are excluded from these counts. Primary care physicians include those whose practice is primarily in General Practice, Family Medicine, Internal Medicine, Pediatrics, Obstetrics and Gynecology. Specialty physicians include any physician whose clinical specialty falls outside of primary care. These figures are based on head counts.

Another way of looking at regions within the state is to define counties by their level of urbanization. Metropolitan and Micropolitan statistical areas are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. A Metropolitan area contains a core urban area population of 50,000 or more. A Micropolitan area contains an urban core population of at least 10,000 but less than 50,000. Each Metro or Micro area consists of one or more counties and includes the county(s) containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration with the urban core (as measured by commuting to work). Any county that is not designated a Metropolitan or Micropolitan area is designated as a Non-Metro area. These Non-Metro areas are rural in nature – their population is geographically dispersed and not closely integrated with nearby urban areas. (See the end notes for a list of South Carolina counties by their Metro/Micro/Non-Metro status.)

Table 6a uses these categories to examine changes in the physician workforce. Not surprisingly, Metropolitan counties had the largest number of physicians per 100,000 population in both 2009 and 2015. But the highest growth rate in both the general workforce and among primary care physicians was seen in Micropolitan counties. Surprisingly, growth of the specialty care workforce was highest in the Non-Metro/Rural counties. That growth was spread over 18 different specialties. Cardiologists, ophthalmologists and emergency medicine physicians had the largest rates of growth, while the number of general surgeons decreased. Other specialty groups saw an increase or decrease of just 1 or 2 physicians between 2009 and 2015.

Of concern is the 9% *decline* from 2009 to 2015 in primary care physicians in Non-Metro/Rural counties.   Table 6b explores this finding by detailing which primary care specialty groups are actually declining, and at what rate. The results reveal that the losses are occurring among physicians most likely to treat adults and seniors. On the other hand, the increase in the number of pediatricians and obstetric/gynecology physicians is good news in these counties that have traditionally been underserved by those specialties.

Table 6a. Physician Workforce per 100,000 in Metropolitan/Micropolitan/Non-Metro (Rural) Areas

	Primary Care Physicians per 100,000 Population		Growth %	Specialty Physicians per 100,000 Population		Growth %	Total Physicians per 100,000 Population		Growth %
	2009	**2015**		**2009**	**2015**		**2009**	**2015**	
Metropolitan	94.5	103.1	9.1%	107.4	119.7	11.4%	201.9	222.8	10.3%
Micropolitan	80.1	91.0	13.6%	77.6	83.6	7.7%	157.7	174.6	10.7%
Non-Metro (Rural)	50.5	46.0	-9.0%	23.7	28.4	19.9%	74.2	74.3	0.2%

Notes: Residents are excluded from these counts. Metropolitan areas are highly urbanized. Micropolitan areas have smaller urban areas. Non-Metropolitan areas have no urbanized areas larger than 10,000 people. See the endnotes for a more explicit definition and a list of counties in each category.

Table 6b. Gains and Losses in the Primary Care Physician Workforce in Non-Metro (Rural) Areas

	Physician Workforce Head Counts		Physicians per 100,000 Population in Non-Metro Counties		Per 100,000 Growth/ Decline %
	2009	**2015**	**2009**	**2015**	
All Primary Care Physicians	*158*	*141*	*50.5*	*46.0*	*-9.0%*
General Practice	6	5	1.9	1.6	-15.0%
Family Medicine	79	68	25.3	22.2	-12.1%
Internal Medicine	39	26	12.5	8.5	-32.0%
Pediatrics	21	25	6.7	8.2	21.5%
Obstetrics/Gynecology	13	17	4.2	5.5	33.2%

Notes: Residents are excluded from these counts. See the endnotes for a list of counties classified as 'non-metro' based on the 2010 census.

End Notes and References

Table 1 note: Eight physicians in residency training in 2009 and 23 in 2015 were employed in military/federal facilities. They were counted in the "federal/military" figures but not included in the count of residents.

Table 2 note: National physician counts for 2013 are from the AMA's *Physician Characteristics and Distribution in the U.S. (2015 edition). Be aware that these national counts* include only physicians working greater than 20 hours per week while the South Carolina numbers include all physicians with 1 or more reported work hours. Also, Military/Federal physicians are included in the national counts but excluded from the state counts. Population numbers used in Table 2 are from 2 sources (https://factfinder.census.gov; http://abstract.sc.gov/chapter14/pop22.html) and are as follows: SC 2009 - 4,589,872, SC 2013 - 4,771,929 SC 2015 - 4,896,146, and (U.S. 2013 - 316,128,839.

Table 4 notes: Residents in training are omitted from this table. A patient-care FTE is defined as 40 direct-patient-care hours worked per week. Table 4 is sorted by 2015 SC workforce head count, which is found in Table 3.

Table 5 notes: 2009 Population estimates are from County Population Estimates by Age 2000-2009 Release Date: March 2010, downloaded from http://www.sciway.net/statistics/population.html   2015 Population estimates are from the 2015 bridged-race postcensal estimates released by the National Center for Health Statistics downloaded from https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm .

Table 6 notes: Metropolitan and micropolitan statistical areas are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. A metro area contains a core urban area of 50,000 or more population. A micropolitan area contains an urban core of at least 10,000 but less than 50,000 population. Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration with the urban core (as measured by commuting to work). Any county that is not designated a metropolitan or micropolitan area is designated as a non-metro area.

The analyses in Tables 6a and 6b used the Metropolitan status designations based on the 2010 census and released by the OMB in 2013. South Carolina counties have the following designations based on the 2010 census results:

Metropolitan: Aiken, Anderson, Beaufort, Berkeley, Calhoun, Charleston, Chester, Darlington, Dorchester, Edgefield, Fairfield, Florence, Greenville, Horry, Jasper, Kershaw, Lancaster, Laurens, Lexington, Pickens, Richland, Saluda, Spartanburg, Sumter, Union, York

Micropolitan: Abbeville, Cherokee, Georgetown, Greenwood, Marlboro, Newberry, Oconee, Orangeburg

Non-Metro / Rural: Allendale, Bamberg, Barnwell, Chesterfield, Clarendon, Colleton, Dillon, Hampton, Lee, McCormick, Marion, Williamsburg

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