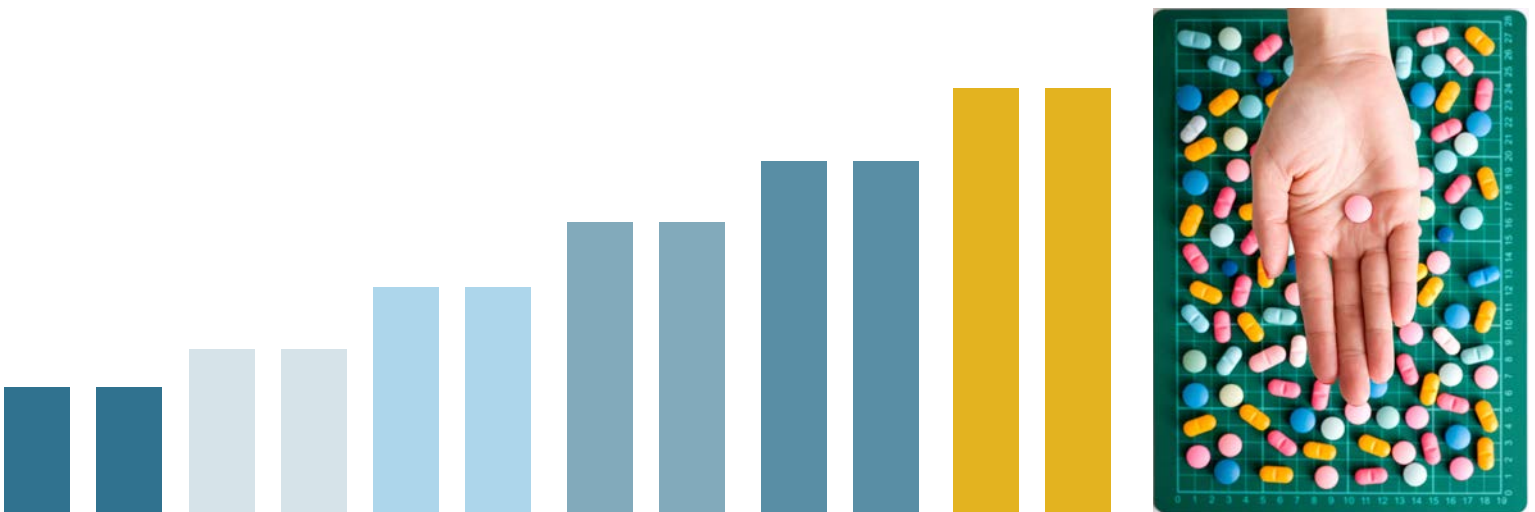




The Pharmacist Workforce in South Carolina

February 2014



The Office for Healthcare Workforce Analysis and Planning (OHW) is a collaborative partnership of the South Carolina Area Health Education Consortium (AHEC), the South Carolina Budget and Control Board Office of Research and Statistics Health and Demographics Section, and the University of South Carolina College of Nursing Office of Healthcare Workforce Research for Nursing. We are dedicated to studying supply and demand issues affecting a wide variety of healthcare professions and occupations in South Carolina. Our primary purpose is the development and analysis of accurate, reliable data on the supply of healthcare professionals and the demand for health services, in order to support workforce planning efforts.

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The Pharmacist Workforce in South Carolina

Pharmacists play an increasingly important role in our healthcare system. The traditional role of the pharmacist has been to compound and dispense medications. While still an important part of what pharmacists do, their role in healthcare is expanding beyond the dispensary role to a more active role as part of a healthcare team directly involved in patient care. Pharmacists not only dispense medication, they also help people to manage chronic health conditions such as diabetes, hypertension, lipid disorders, post-transplant care, and other conditions. Pharmacists consult with patients and their healthcare providers about medication regimens, helping to identify the most effective pharmaceutical treatments and avoid potential drug interactions. Pharmacists also are involved in wellness programs and disease prevention initiatives, providing smoking cessation and weight reduction programs, as well as administering a large portion of immunizations each year.

Knowing the size and characteristics of the current pharmacist workforce in the state is valuable information for educators and policy makers concerned with ensuring an adequate supply of pharmacists for South Carolinians. This report provides information about the number and type of pharmacists practicing in the state, their demographic characteristics, information about where and how much they practice, wages, and an estimate of the current balance between the supply of and demand for pharmacists in South Carolina.

Data Sources

The majority of information in this report is based on data gathered from pharmacists as part of their initial application for a license to practice in South Carolina and during the license renewal process in the years 2008, 2009, 2011, and 2012. Pharmacists renew their license between March 1 and April 30 each year. The information is initially collected by the South Carolina Department of Labor Licensing and Regulation, Division of Professional and Occupational Licensing Boards. The South Carolina Budget and Control Board Office of Research and Statistics cleans and maintains the data as the official repository of health professional licensure information for the state. The data files used for this analysis were obtained from the Health and Demographics section of the South Carolina Office of Research and Statistics. It should be noted that in 2009 the license renewal period for pharmacists changed from an annual event to a two-year renewal cycle. However, in 2011 the annual renewal cycle was reinstated. Readers should keep this change in data collection periods in mind since any data changes between 2009 and 2011 are the result of a two-year period of time, rather than a one-year period of time. In some instances, annual measures of change have been created by dividing the change over the two-year period from 2009 to 2011 in half to approximate what would be expected for a one year period.

Information about pharmacy education programs in the state was obtained by contacting each school directly. Information about wages was obtained from the Bureau of Labor Statistics, Occupational

Employment Survey. Prescription volume and sales data was obtained from the Henry J. Kaiser Family Foundation website in the State Health Facts section. Estimations of the demand for pharmacists come from the Pharmacy Manpower Project Inc., Aggregate Demand Index. All of these sources are cited in the bibliography.

Pharmacists Licensed to Practice in South Carolina

As of April 30, 2012, there were 4,393 licensed pharmacists actively practicing in South Carolina. Of those, 4,272 pharmacists were available to the civilian population (see Table 1) and constitute the active workforce in the state.¹

Table 1. The Pharmacist Workforce in South Carolina: 2008-2012

Licensed pharmacists in South Carolina	2008	2009	2011	2012
# with an active license to practice in South Carolina	5,871	6,268	6,795	6,969
# who are licensed and actively practicing within SC	3,871	4,112	4,345	4,393
Of those who practice in SC:				
# who practice in military facilities and have an SC license	102	107	117	121
Total # of pharmacists in the South Carolina workforce	3,769	4,005	4,228	4,272

From 2008 to 2012, the size of the pharmacist workforce increased a total of 13.3%. However, the annual rates of growth have been declining in both the number of licensed pharmacists and those in the active South Carolina workforce. See Table 2 for the growth in numbers as well as the annual rates of growth.

Table 2. Changes in the Number of Pharmacists and the Annual Rate of Growth

	2009		2011 *		2012	
	# Added since previous period	Annual Rate of Growth	# Added since previous period	Annual Rate of Growth	# Added since previous period	Annual Rate of Growth
All licensed pharmacists	397	6.8%	263	4.2%	174	2.6%
Pharmacists actively practicing in SC	236	6.3%	112	2.8%	44	1.0%
* These figures for 2011 have been annualized to adjust for the two year period between 2011 and 2009 by dividing the actual number added in half.						

¹ Pharmacists working in military facilities have been removed from this study as they are not available to the civilian population, and thus are not considered to be part of the active workforce.

Gains and Losses

Changes in the number of pharmacists licensed to practice in the state is a function of the number of new pharmacists applying for and receiving a license, and those who allow their license to lapse in any given year. This combination of 'gains' and 'losses' determines whether the number of pharmacists available to practice in the state grows or declines over time. In order to understand why the annual rate of growth among pharmacists in South Carolina has been slowing over the past five years, it helps to know how the gains and losses have been changing.

Figure 1 illustrates the balance between gains and losses that have occurred from one license renewal period to the next in recent years. The time periods range from the end of the license renewal period (April 30th) in the first year to the end of the license renewal period in the second year. Gains are measured as the number of pharmacists who did not have an active license to practice in South Carolina in the first year of the period, but did have an active license to practice in the second year of the period. These 'gains' to the pool of actively licensed pharmacists contain some who had previously held an active license in the state but had let it lapse for one or more renewal periods. Losses are measured as the number of pharmacists who held an active license in the first year of the period, but not in the second year. The losses numbers include some pharmacists who might later reactivate their license.

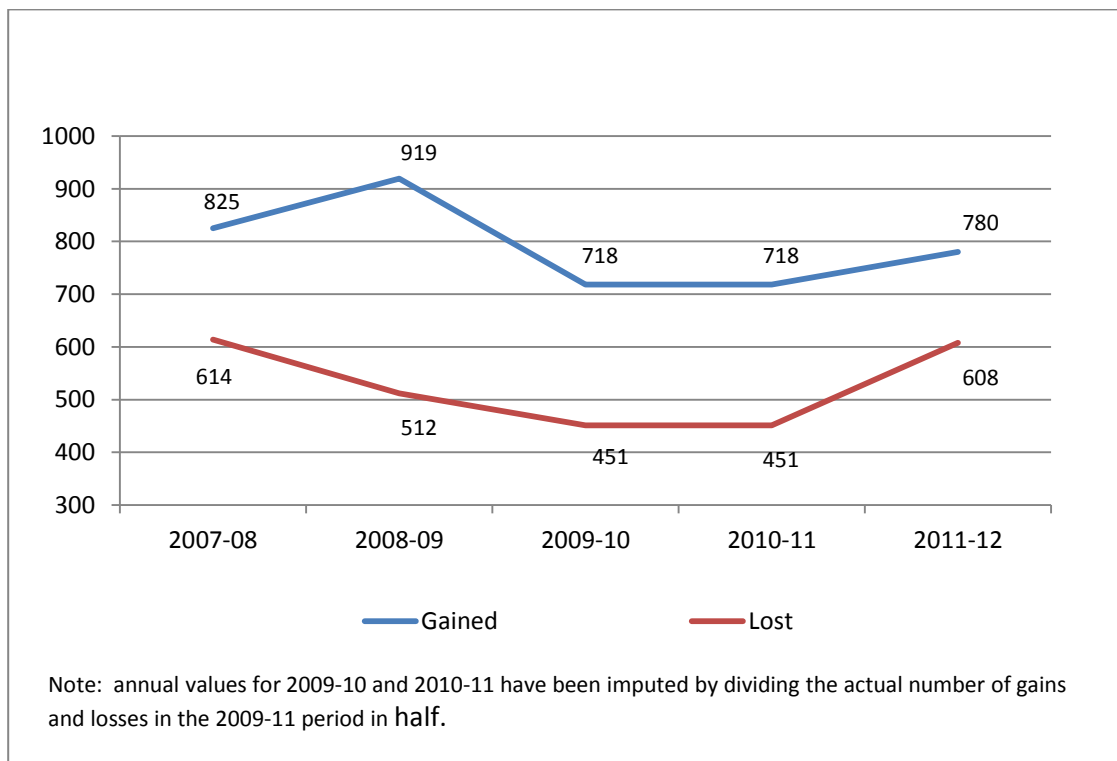


Figure 1. Gains and Losses to the Number of Pharmacists with an Active License to Practice in South Carolina

During the study period covered by this analysis, a significant number of pharmacists who allowed their license to lapse also reactivated their license at some point. For example, of the 614 pharmacists who held an active license in 2007 but allowed it to lapse in 2008, a total of 233 of them (38% of the 614) had reactivated their license by 2012, most (n=134, 21.8% of the 614) within a single renewal cycle – in this case by 2009. Similarly, of the 512 with an active license in 2008 who allowed their license to lapse by the 2009 renewal period, 132 (25.8%) reactivated that license by either 2011 (19.1% of the 512) or 2012 (6.6% of the 512). Of the 902 who had an active license in 2009, but allowed it to lapse by the 2011 renewal period, 91 (10.1%) reactivated their license by the end of the 2012 renewal period.

Note that the reactivation rates over a single renewal period decline over time during the study period. It should be noted that, because this five year period of time coincided with a severe economic downturn in our economy, reactivation rates during this study period may have been higher than normal. One indication that reactivation rates were related, at least in part, to the economic recession is the fact that a higher reactivation rate occurs in the early part of the study period when economic conditions were worse and lower rates occurred toward the end of the study period when economic conditions were improving.

By far, the largest number of pharmacists being ‘gained’ during each license cycle are under the age of 30 and, as a proportion of all new or reactivated licensees, has been increasing over the past five years as illustrated in Figure 2.

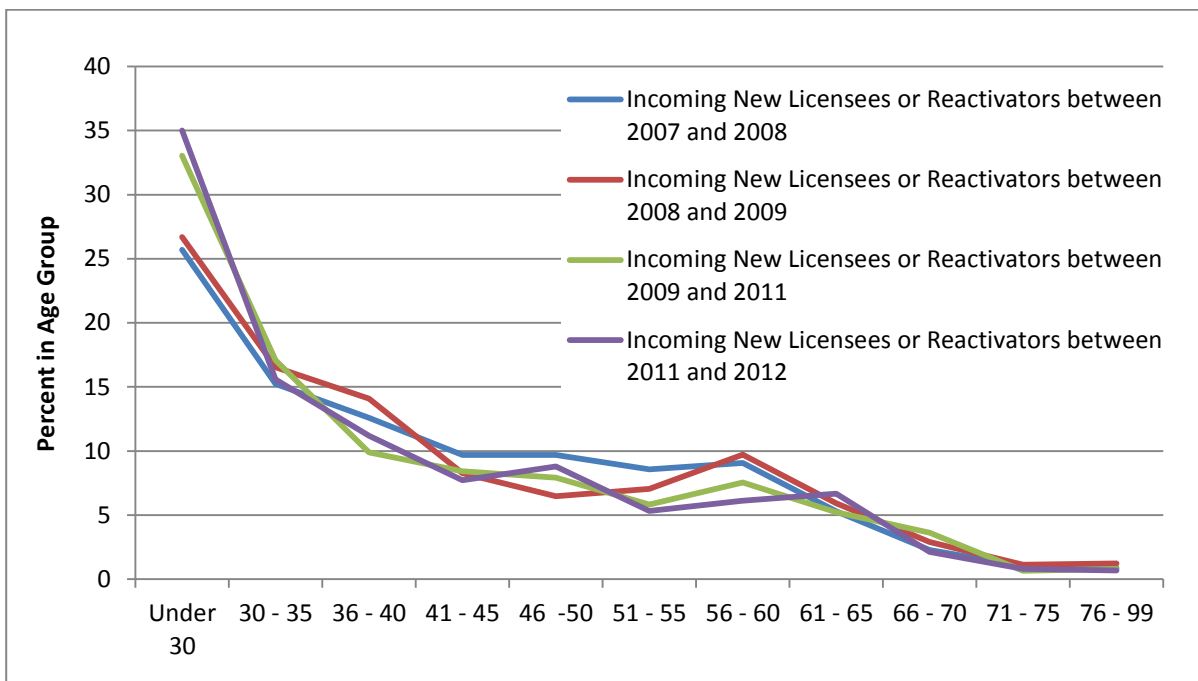


Figure 2. Age Distribution of Incoming/Reactivating Pharmacists (Gains)

The age distribution of those who allow their South Carolina license to lapse each year shows a bimodal pattern across the age groups, indicating that pharmacists in the early stages of their career, or in the later stages of their career, are more likely than those in mid-career age groups to allow their South Carolina license to lapse in any given year (see Figure 3).

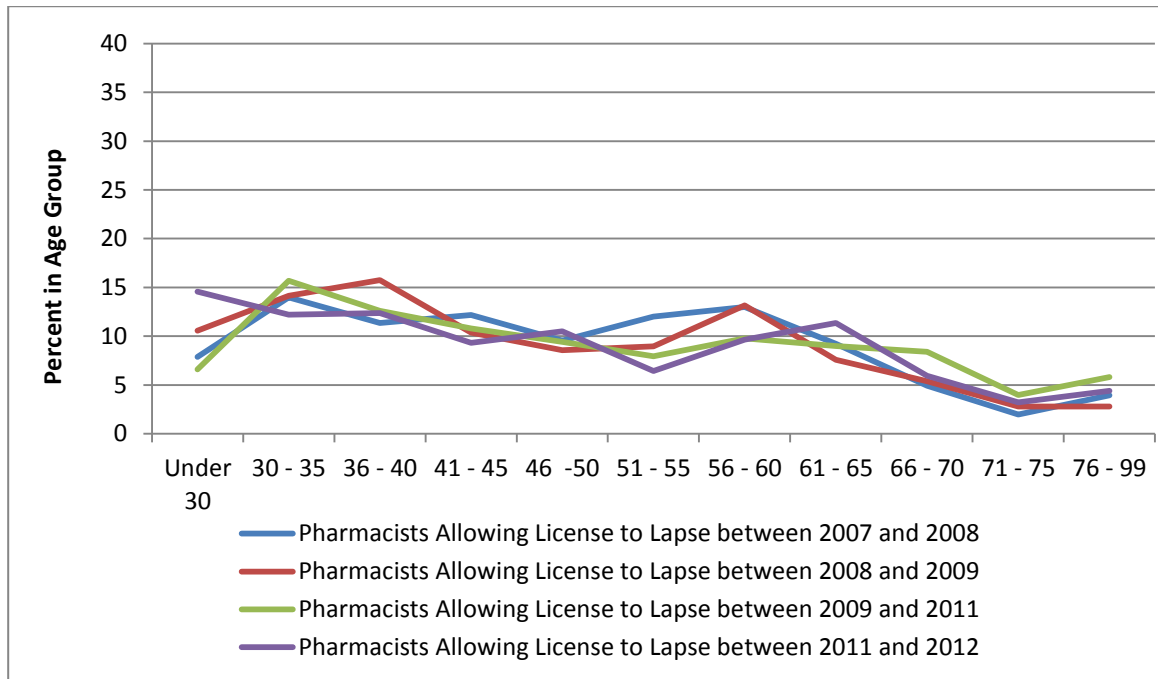


Figure 3. Age Distribution of Pharmacists Allowing License to Lapse (Losses)

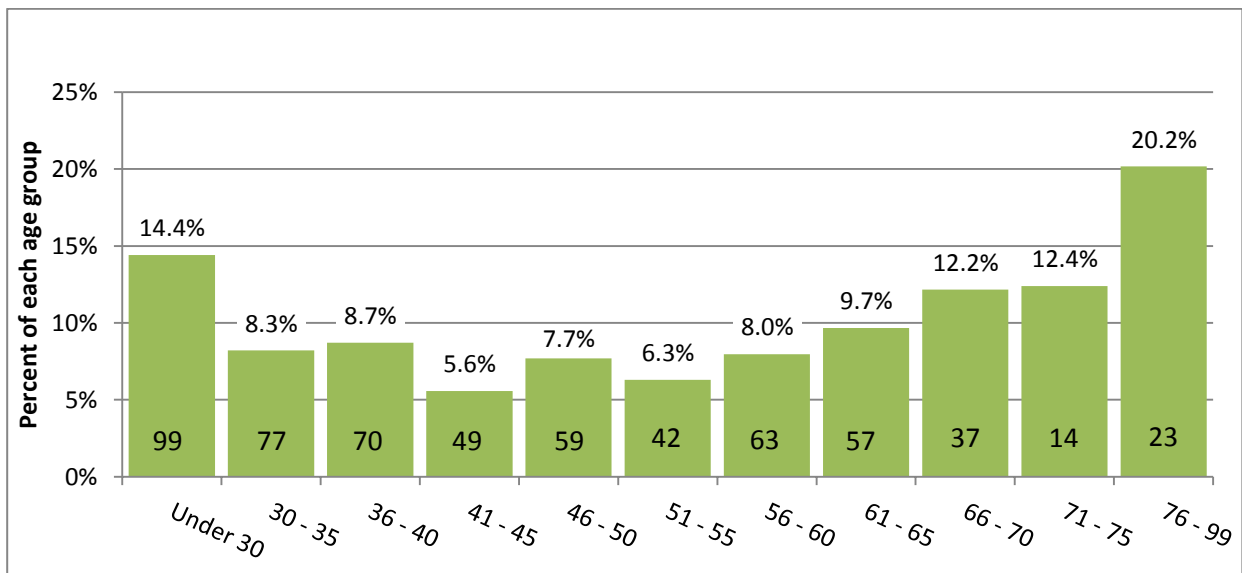


Figure 4. Percentage of Pharmacists in Each Age Group Allowing Their SC License to Lapse Between 2011 and 2012 and the Number Lapsed

Another way to look at this issue is to examine the percentage of each age group that allows their South Carolina license to lapse in a given year. That is, what percentage of licensed pharmacists under age 30 allows their license to lapse in a given year? Or what percentage of those age 61 to 65 allows their license to lapse in a given year? Figure 4 shows the age group percentages and counts for those who allowed their license to lapse between the renewal periods in 2011 and 2012. Not surprisingly, the percentages increase as age increases, in part because the number of pharmacists in the older age groups is smaller than in the younger age groups (see Figure 3 and the downward slope of the lines), but also because these are the years when pharmacists retire. The counts in each age group show that a greater number of pharmacists age 35 or younger allowed their South Carolina license to lapse than was true of those age 60 or older.

Demographic Characteristics of Pharmacists in the Workforce

Education

Over the past decade the entry level degree for pharmacists has changed from a Bachelor of Science (B.S.Pharm) degree to a Doctor of Pharmacy (Pharm.D.). Most Pharmacy doctorate programs consist of four years of pharmacy school preceded by at least two years of pre-pharmacy preparatory classes. Accelerated programs condense the four year curriculum into three years of study, with the same prerequisite requirements.

Prior to 2000, the entry level degree was a five year curriculum in a baccalaureate program resulting in a B.S.Pharm degree, and the doctorate level Pharm.D. degree was an advanced degree option for pharmacists. Within the active pharmacist workforce in South Carolina in 2012, the majority of pharmacists (55.1%, n=2,353) held a BS degree in pharmacy as their highest professional degree. The remaining 44.9% held a Pharm.D. degree, most of them (n=1,542) as their sole degree, but a small number (n=361) as a second degree beyond the pharmacy baccalaureate. As a general rule, younger pharmacists have a doctoral degree, while older pharmacists are more likely to have a baccalaureate degree in pharmacy.

In 2013, South Carolina had three schools of pharmacy accepting students. These include the South Carolina College of Pharmacy (SCCP), established in 2004 when the long-established Colleges of Pharmacy at the University of South Carolina and the Medical University of South Carolina integrated their separate programs; Presbyterian College School of Pharmacy, and South University School of Pharmacy— both of which began accepting students in 2010. The South Carolina College of Pharmacy and Presbyterian College School of Pharmacy offer a traditional four-year curriculum in which students are admitted after completing the prerequisite course work. South University offers an accelerated full-time 12 quarter program providing four academic years of study within three calendar years. This program provides total course work hours similar to that of traditional programs.

All three schools were surveyed regarding their applicant pools, enrollments, graduates, and future expansion plans. Results are summarized in Table 3. The total number of applicants to the SCCP program decreased slightly with the opening of the two new programs in the state, but that has not affected the number of students admitted or enrolled at SCCP in recent years. Females continue to outnumber males in the incoming classes. Among first year students enrolled at SCCP in the 2012-13 academic year, two-thirds (69.1%) were women and 30.9% were men. Similarly, 32% of first-year enrollees for the 2012-13 academic year at South University were male and 68% were female.

Table 3. South Carolina Pharmacist Education Pipeline

		2008 09	2009 10	2010 11	2011 12	2012 13
South Carolina	# of applicants	584	526	567	439	495
College of Pharmacy	# admitted	212	224	227	230	241
	# 1st year enrollees	192	192	192	193	195
	# of graduates	198	185	182	177	186
Presbyterian College	# of applicants	NA	NA	155	357	440
	# admitted	NA	NA	147	147	147
	# 1st year enrollees	NA	NA	78	80	80
	# of graduates	NA	NA	NA	NA	NA
South University	# of applicants*	NA	NA	1,102	858	1,015
	# admitted	NA	NA	99	101	81
	# 1st year enrollees	NA	NA	68	72	65
	# of graduates	NA	NA	NA	NA	57 ^a
* Applicants can apply to either the Columbia, SC campus, the Savannah, GA campus, or both. These total include all applications regardless of campus location.						
^a Eight students in the original entering class did not graduate in 2013 but are still in the program.						
NA = not applicable						

The opening of two new programs within the past four years is beginning to have a sizeable impact on the number of new pharmacists being produced in the state. Figure 5 illustrates the number of recent graduates and a projection of the number of new graduates expected in the next five years.² Based on these projections, by 2018 the number of new pharmacists produced in South Carolina will increase by 65% over the 2009 level.

²Projections of graduate numbers in future years assume that 97% of the first year class will graduate on time.

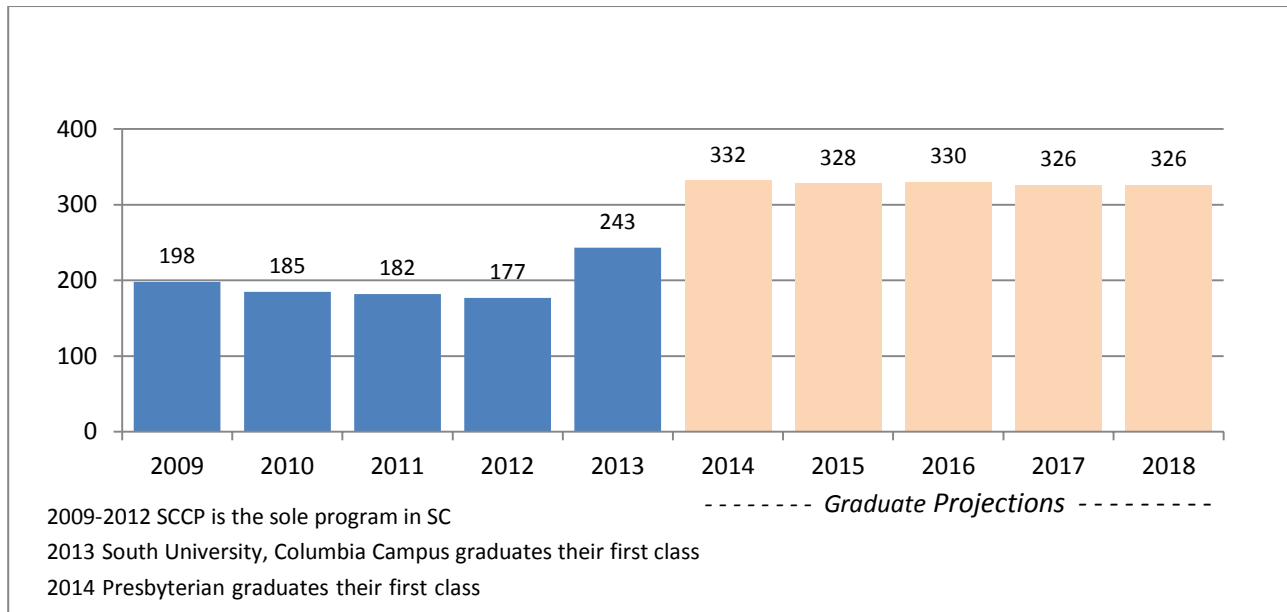


Figure 5. Trends in the Number of South Carolina Pharmacy Program Graduates

In 2012 the overwhelming majority (97.72%) of pharmacists in the South Carolina workforce received some or all of their professional education in the USA. A very small percent (2.3%) were educated outside of the United States.³ Of those pharmacists educated in the USA, 71.3% were educated in South Carolina and 28.7% in other states. Georgia, North Carolina and Pennsylvania are the top three contributing states to the South Carolina pharmacist workforce.

Gender

Over the last 30 years there has been a gender shift in the pharmacy profession. The number of women in the profession has steadily increased, changing the face of pharmacy. Women have been graduating from schools of pharmacy at a higher rate than men, and men are retiring at a faster rate than women, resulting in a greater representation of women in the pharmacist workforce.ⁱ In the mid-1960s, only 8% of licensed pharmacists in the U.S. were female and the industry was dominated by self-employed males.ⁱⁱ In comparison, in 2012 slightly more than half (55%) of all active pharmacists in the U.S. were women.ⁱⁱⁱ By 2020, approximately 62 percent of active pharmacists are expected to be women.^{iv} Female pharmacists tend to work slightly fewer hours per year than their male colleagues, so the full-time equivalent supply of pharmacists is expected to grow at a slightly lower rate than the actual number of practicing pharmacists.

³ For the purpose of this study a pharmacist was determined to be educated in the USA if they graduated from a school in the USA for one or more of their pharmacy degrees. (Prior to 2000, entry-level pharmacy degrees were awarded at the baccalaureate level, but some pharmacists received additional professional education.)

Goldin and Katz (2012) assert that changes in the industry have made the profession more family-friendly and female-friendly, with higher earnings and a lower gender earnings gap than other fields. The industry has moved from one that was dominated by independent pharmacies operated by mostly male owners to one that is dominated by national pharmacy chains and hospitals. In addition, most prescription drugs are now produced by pharmaceutical companies, not compounded in pharmacies and hospitals.^v These industry changes have allowed more workplace flexibility and job sharing without imposing salary-related penalties. The ratio of female-to-male pharmacists' earnings (median, for full-time, full-year workers) grew from 0.66 in 1970 to 0.92 in 2010, representing the lowest gender wage gap within healthcare professions and considerably smaller than in most other high-wage professions.^{vi} For example, female attorneys earned approximately 82% of what their male colleagues earned in 2012, all other things being equal.^{vii}

In recent years, female pharmacists have grown from 53.3% of the South Carolina pharmacist workforce in 2008 to 56.2% in 2012 (see Table 4). The change in the gender balance within the pharmacist workforce can be seen more clearly when looking at the age distribution by gender. In 2012, females made up the majority of pharmacists between the ages of 20 and 55. Of those pharmacists over age 55, the majority are males (see Figure 6).

Table 4. Gender Distribution of South Carolina Pharmacists

	2008		2009		2011		2012	
	N	%	N	%	N	%	N	%
Male	1,723	46.7%	1,807	46.3%	1,802	44.4%	1,783	43.8%
Female	1,964	53.3%	2,094	53.7%	2,255	55.6%	2,284	56.2%

Note: Pharmacists who did not report gender information have been removed from this analysis.

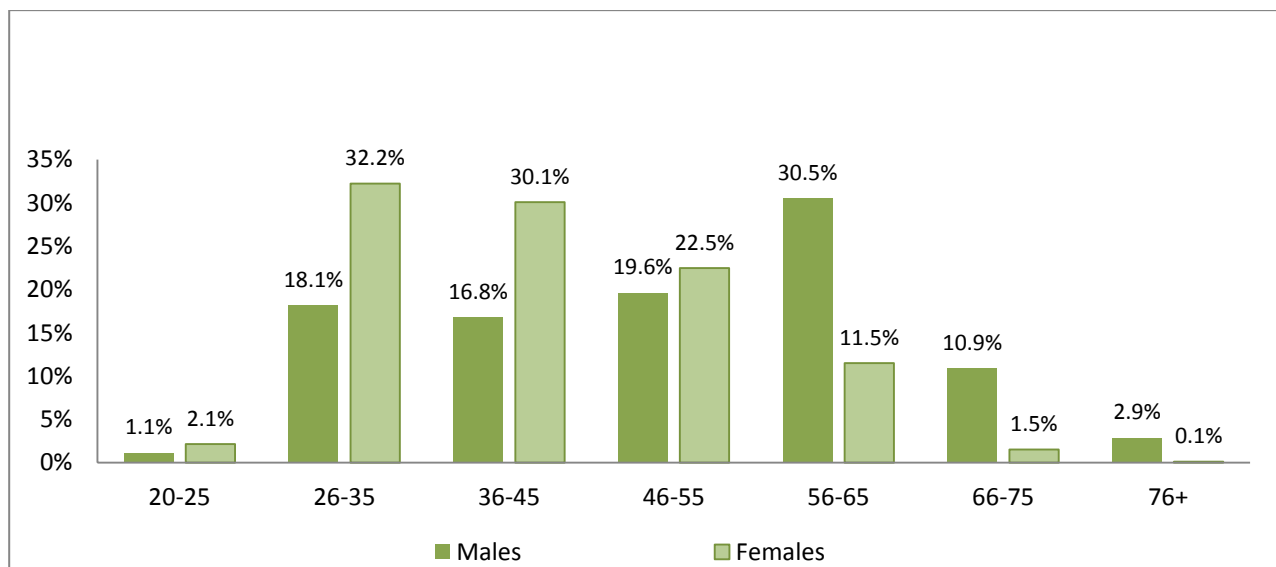


Figure 6. Distribution of the 2012 Pharmacist Workforce by Gender Across Age Categories

Race

Caucasians made up approximately 88% of the pharmacist workforce in 2008. However, by 2012, as more minorities have come into the profession, the percentage of pharmacists of Caucasian descent decreased to approximately 81%. In 2012, African Americans represented the largest minority group in the active workforce (4.7%), followed by Asians (3.3%). Asians and Hispanics represent the fastest growing minority groups in the profession. Both groups have grown by about 35% between 2008 and 2012, although the actual numbers of Asian and Hispanic pharmacists are very different (see Table 5).

Table 5. Race of Pharmacists in the Workforce in SC

	2008		2009		2011		2012	
	N	%	N	%	N	%	N	%
Caucasian	3,314	87.9%	3,465	86.5%	3,500	82.8%	3,471	81.3%
African American	184	4.9%	194	4.8%	198	4.7%	199	4.7%
American Indian	4	0.1%	4	0.1%	4	0.1%	4	0.1%
Asian	103	2.7%	121	3.0%	137	3.2%	139	3.3%
All Other Minority Groups	19	0.5%	23	0.6%	20	0.5%	24	0.6%
Hispanic	23	0.6%	26	0.6%	28	0.7%	31	0.7%
Race unknown	122	3.2%	172	4.3%	341	8.1%	404	9.5%
Total Pharmacist Workforce	3,769	100%	4,005	100%	4,228	100%	4,272	100%

When looking at only the minority groups within the workforce, African Americans represent slightly more than half of all minority pharmacists. However, the balance of minority groups within the pharmacist workforce has been changing in recent years. While African Americans dropped from 55.3% of the minority pharmacist workforce in 2008 to 50.1% in 2012, Asians have increased from 30.9% in 2008 to 35.0% in 2012.

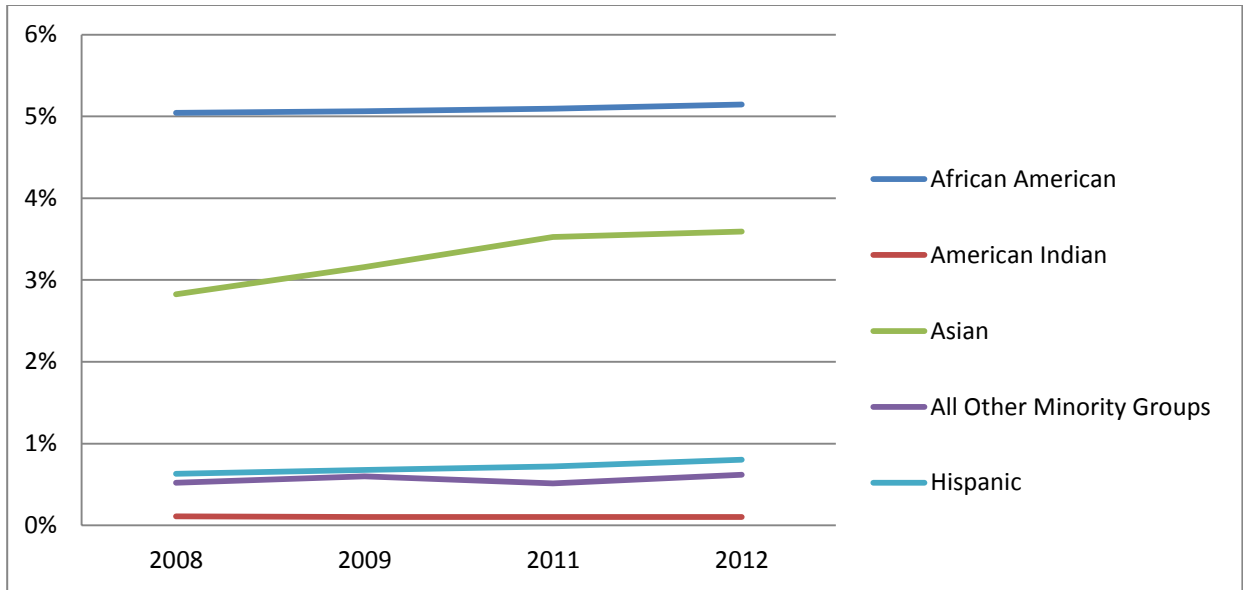


Figure 7. Percentage of Minority Groups in the SC Pharmacist Workforce: 2008 - 2012

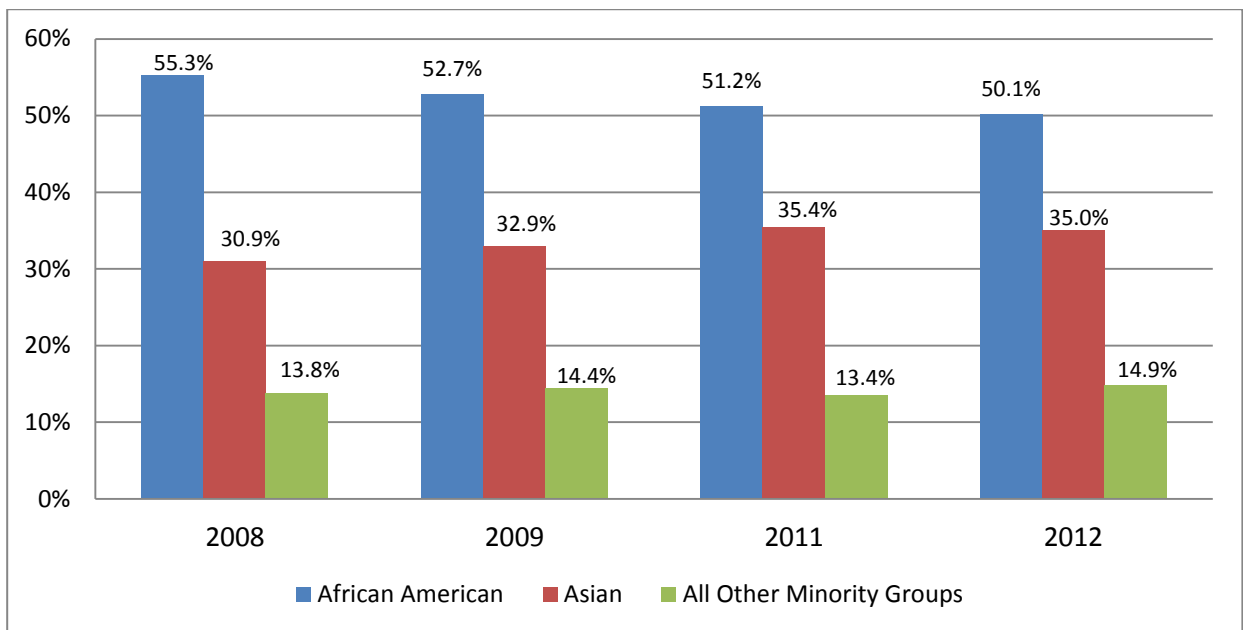


Figure 8. Change Over Time in the Relative Balance of Minority Group Representation within the SC Pharmacist Workforce

Figure 9 compares pharmacists in our state to the racial composition of the national pharmacist workforce in 2009. At that time the biggest difference was that South Carolina had a higher percent of African American pharmacists, and less representation from Asian and other minority groups than was true in the national workforce.

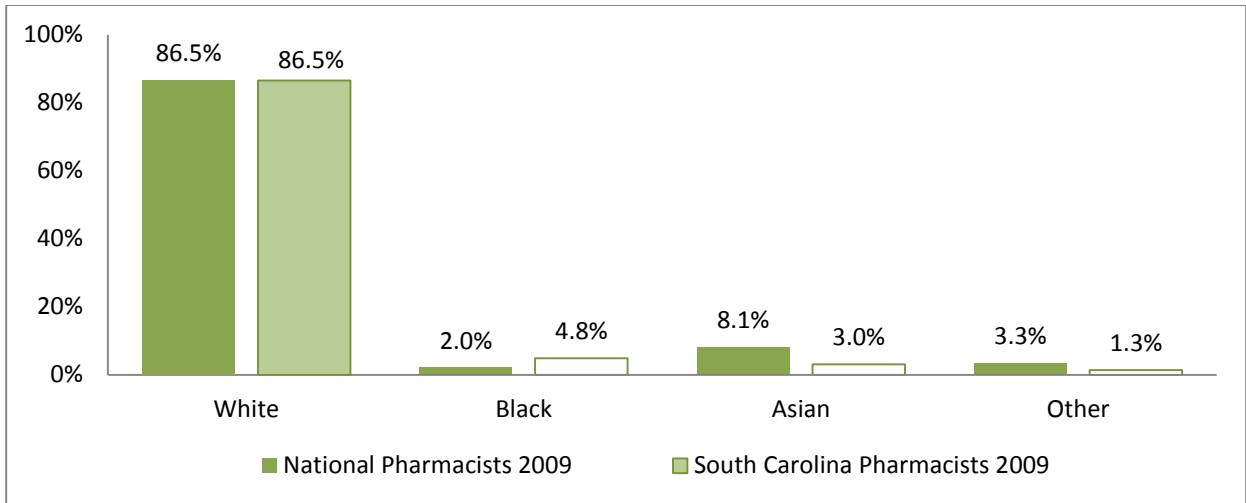


Figure 9. Racial Characteristics in the South Carolina and National Pharmacist Workforce in 2009

The racial characteristics of the pharmacist workforce in South Carolina do not reflect the general population in South Carolina (see Figure 10). According to the results of the 2010 census, Caucasians account for about 66% of the state’s population and African Americans about 28%. In the 2011 pharmacist workforce, 83% were Caucasian and about 5% were African American. Asians are the only racial group that is more represented among South Carolina pharmacists than in the general population.

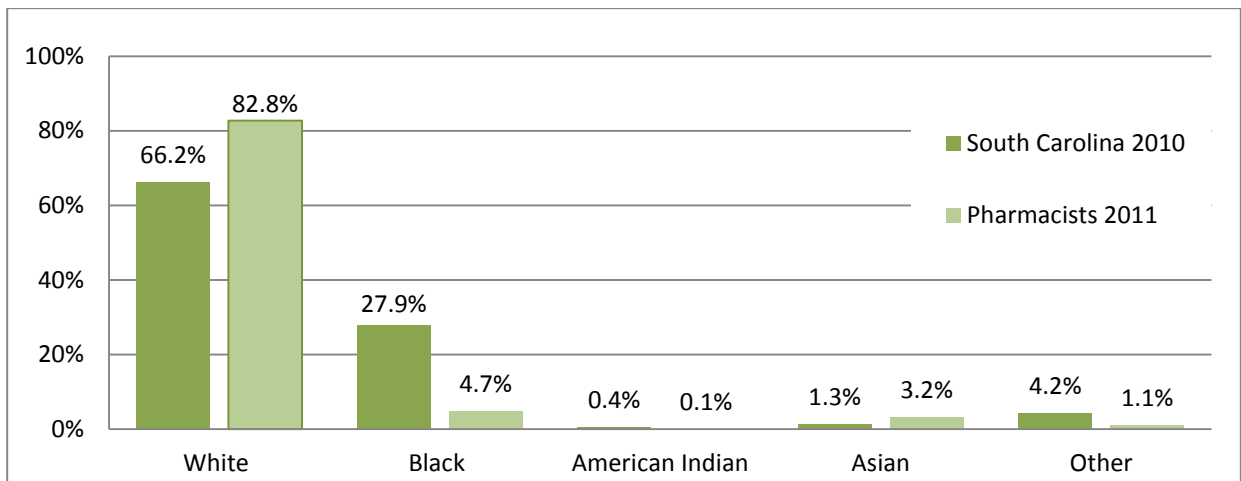


Figure 10. Racial Characteristics of the General Population in South Carolina and the Pharmacist Workforce

The changes in minority representation within the pharmacist workforce differ slightly by gender. Table 6 and Table 7 show the distribution of racial characteristics for male and female pharmacists. Female pharmacists, as a group, are more racially diverse than their male colleagues. The biggest difference between the genders is that a larger proportion of female pharmacists are likely to be African American or Hispanic. Figures 11 through 14 illustrate how the intersection of gender and race within the South Carolina pharmacist workforce has been changing in recent years.

Table 6. Racial Distribution of Male Pharmacists 2008 - 2012

Race	2008		2009		2011		2012	
	N	%	N	%	N	%	N	%
Caucasian	1,594	93.4%	1,657	92.9%	1,603	92.1%	1,570	91.9%
African American	52	3.0%	56	3.1%	62	3.6%	59	3.5%
American Indian	2	0.1%	2	0.1%	2	0.1%	2	0.1%
Asian	45	2.6%	52	2.9%	59	3.4%	59	3.5%
All Other Minority Groups	11	0.6%	12	0.7%	10	0.6%	11	0.6%
Hispanic	3	0.2%	5	0.3%	5	0.3%	7	0.4%
Total	1,707	100%	1,783	100%	1,741	100%	1,708	100%

Table 7. Racial Distribution of Female Pharmacists 2008 - 2012

Race	2008		2009		2011		2012	
	N	%	N	%	N	%	N	%
Caucasian	1,717	88.6%	1,807	88.2%	1,895	88.4%	1,899	88.0%
African American	132	6.8%	138	6.7%	136	6.3%	140	6.5%
American Indian	2	0.1%	2	0.1%	2	0.1%	2	0.1%
Asian	58	3.0%	69	3.4%	78	3.6%	80	3.7%
All Other Minority Groups	8	0.4%	11	0.5%	10	0.5%	13	0.6%
Hispanic	20	1.0%	21	1.0%	23	1.1%	24	1.1%
Total	1,937	100%	2,049	100%	2,144	100%	2,158	100%

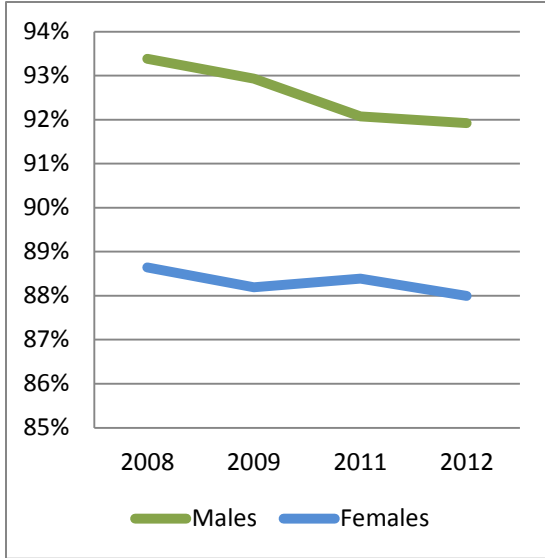


Figure 11. Percentage of Pharmacists Who Are Caucasian - by Gender

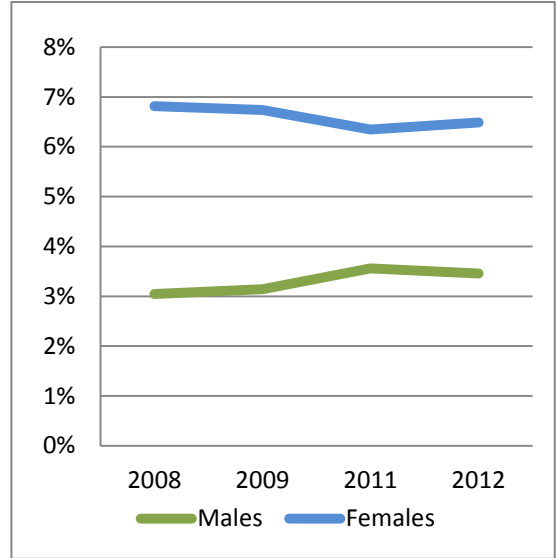


Figure 12. Percentage of Pharmacists Who Are African American - by Gender

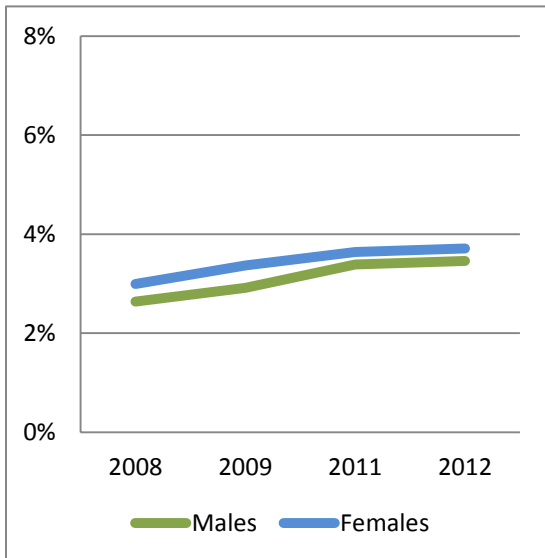


Figure 13. Percentage of Pharmacists Who Are Asian - by Gender

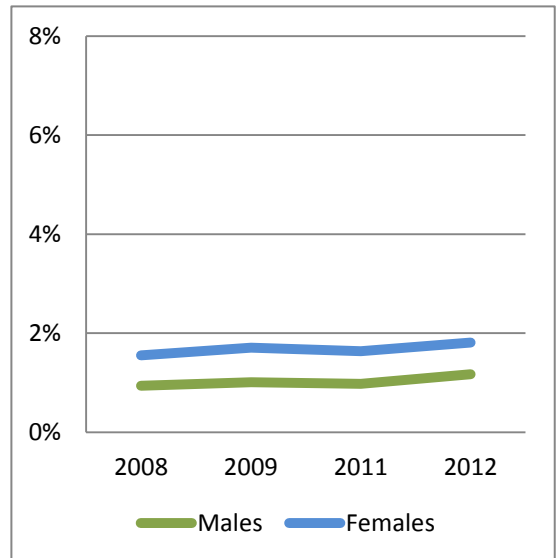


Figure 14. Percentage of Pharmacists From All Other Minority Groups - by Gender

Age

Table 8 and Figure 15 both show how the age distribution of actively practicing pharmacists has changed in recent years. In 2008 and 2009 the largest age group was those 36 to 45 years old. But in 2011 and 2012 the largest age group has shifted to those age 26 to 35. However, even as younger pharmacists are on the increase, there has also been a small increase in the proportion of pharmacists in the 56 to 65 age group.

Table 8. Changes in the Age Distribution of the Pharmacist Workforce

Age Group	2008	2009	2011	2012
20-25	2.1%	2.8%	2.3%	1.9%
26-35	23.8%	23.4%	26.5%	26.9%
36-45	26.2%	25.5%	23.7%	23.9%
46-55	23.8%	23.2%	21.4%	20.9%
56-65	17.6%	18.1%	19.1%	19.6%
66-75	5.1%	5.5%	5.6%	5.5%
76+	1.4%	1.7%	1.3%	1.3%

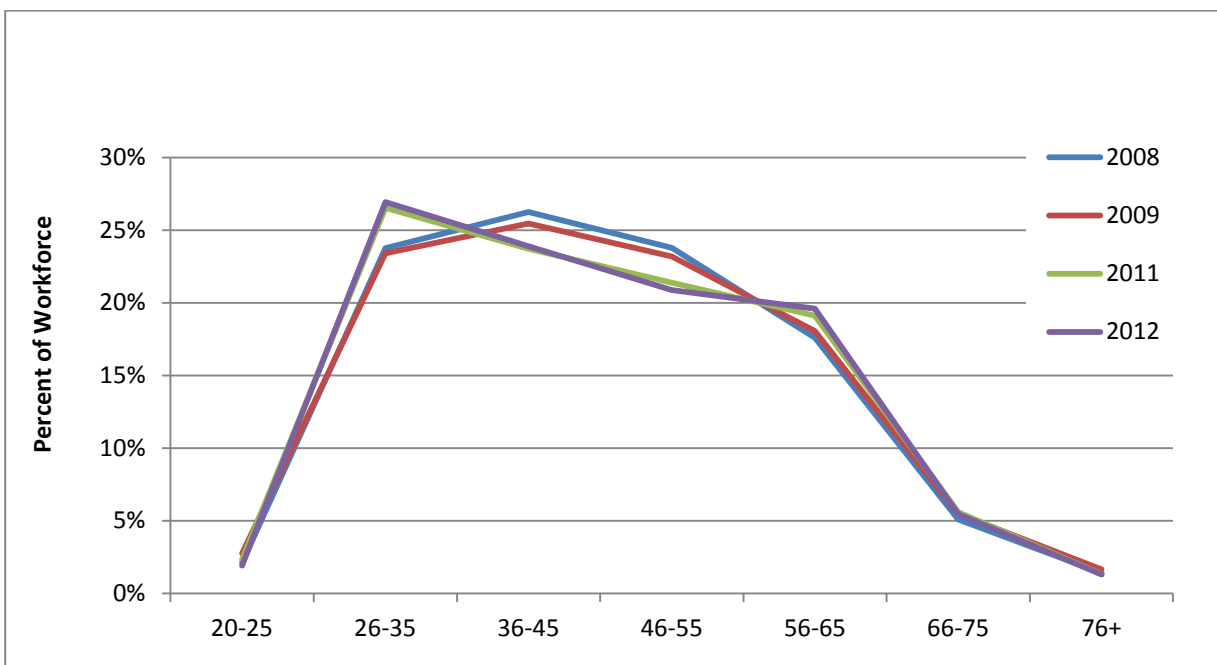


Figure 15. Changes in the Age Distribution of SC Pharmacists: 2008 - 2012

In the national pharmacist workforce, 32.5% were over age 55 in 2009. In South Carolina, pharmacists over age 55 make up a smaller proportion of the workforce: 24.1% in 2008; 25.3% in 2009; 26.0% in 2011; and 26.4% in 2012. Even though our Pharmacist workforce is not aging as rapidly as some other health professions, and is younger than the national workforce, having one-quarter of active pharmacists approaching or beyond traditional retirement age suggests there may be a large number of pharmacists retiring within the next decade.

Age and Gender

Due to the relatively recent influx of women into the profession, female pharmacists are, as a group, younger than their male colleagues. Figure 16 shows how males and females are distributed within the various age groups in the pharmacist workforce. Note that the percentages sum to 100% for each age group.

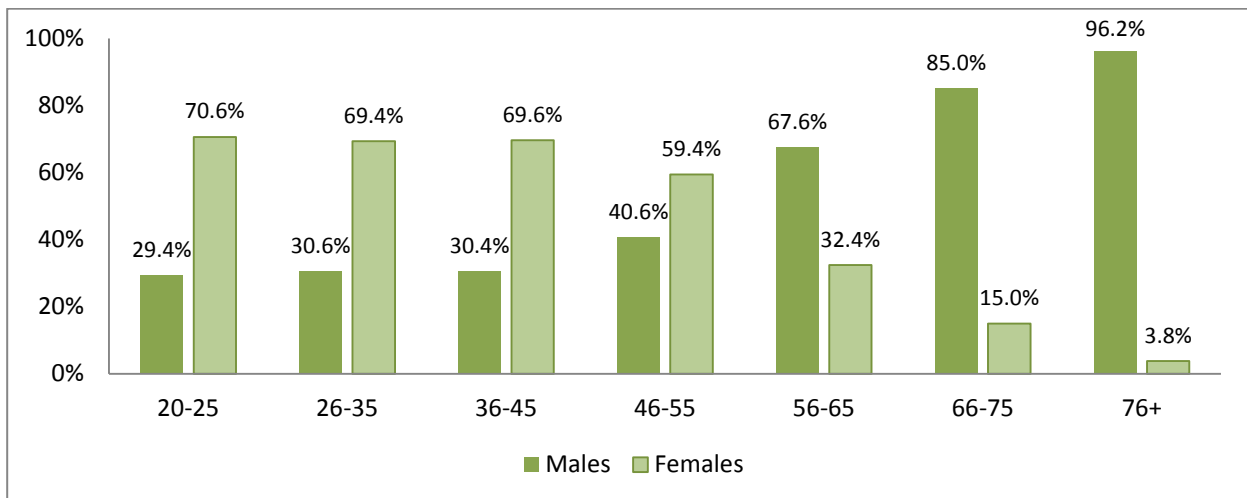


Figure 16. Gender Distribution within Age Groups in the 2012 Pharmacist Workforce

The average age of females has increased from 40.6 in 2008 to 41.7 in 2012. In comparison, the average age of the male workforce has decreased slightly over time from 51.4 in 2008 to 50.9 in 2012. These two trends cancel each other out when looking at the entire workforce since the groups are similar in size. The result is that the average age for the entire workforce does not appear to change much during the study period. (See Figure 17)

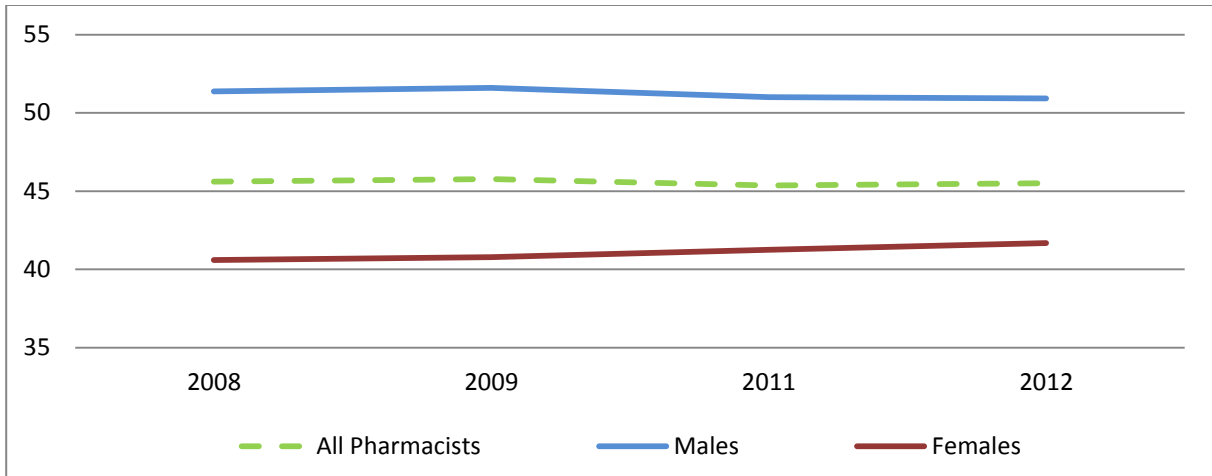


Figure 17. Change Over Time – Average Age of Pharmacists by Gender

Age and Race

In 2012, 89.7% of pharmacists identified themselves as Caucasian and 10.3% with other races. Not surprisingly, given efforts in recent years to increase the diversity of healthcare professionals, younger pharmacists are more racially diverse than older pharmacists. The results in Figure 18 show more African Americans, Asians and other minority groups among those age 45 and younger than among older age groups in the workforce. Percentages in Figure 18 do not include Caucasians in order to emphasize the differences between the different minority groups in each age category. See Table 9 for complete percentages for all races within each age category.

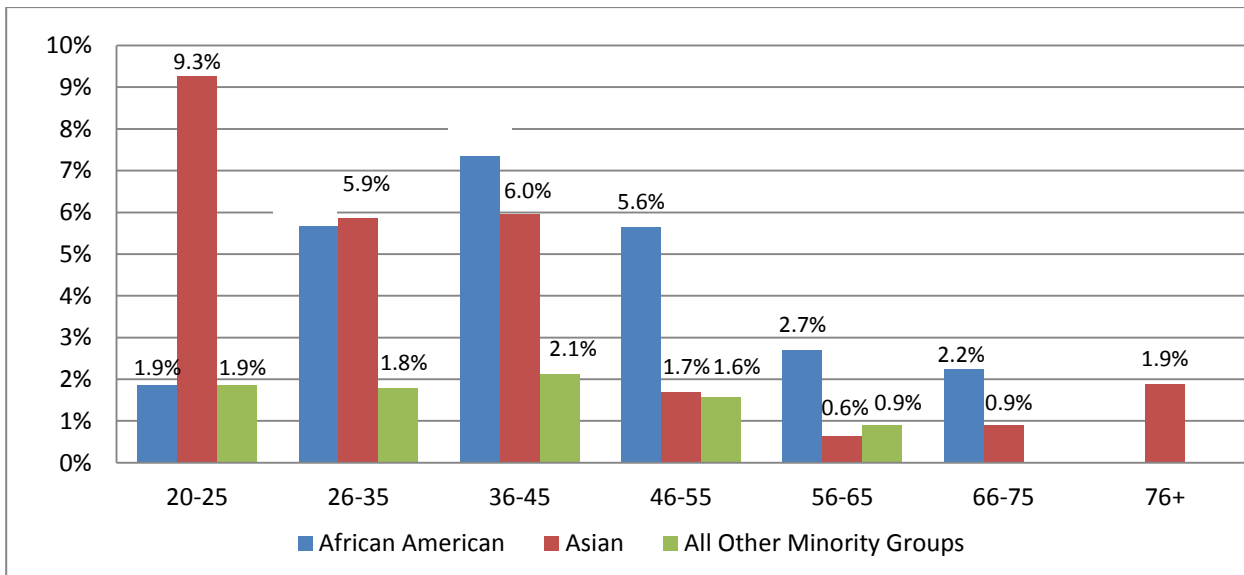


Figure 18. Minority Race Percentages within Pharmacist Age Groups in 2012

Table 9. 2012 Pharmacist Race within Age Groups

Age	Caucasian		African American		Asian		All Other Minority Groups		Age Group Total
	N	%	N	%	N	%	N	%	N
20-25	47	87.0%	1	1.9%	5	9.3%	1	1.9%	54
26-35	827	86.7%	54	5.7%	56	5.9%	17	1.8%	954
36-45	794	84.6%	69	7.3%	56	6.0%	20	2.1%	939
46-55	758	91.1%	47	5.6%	14	1.7%	13	1.6%	832
56-65	748	95.8%	21	2.7%	5	0.6%	7	0.9%	781
66-75	217	96.9%	5	2.2%	2	0.9%	0	0.0%	224
76+	52	98.1%	0	0.0%	1	1.9%	0	0.0%	53
Total	3,443	89.7%	197	5.1%	139	3.6%	58	1.5%	3,837

Pharmacists at Work

The work environment for pharmacists has been changing over the past decade as smaller, independent pharmacies, many of them owner-operated, have given way to larger retail chains. At the same time, pharmaceutical companies are producing more of the drugs needed by consumers, resulting in fewer pharmacies and hospitals needing to compound their own drugs. In addition, an aging population, drug coverage through Medicare Part D, and advances in medicine have all resulted in the increased use of prescription drugs for a wide variety of episodic and chronic diseases. This section of the report examines the ways in which work settings and work patterns have been changing in recent years for the South Carolina pharmacist workforce.

Employment Settings

Almost half of the pharmacists working in South Carolina are employed by large retail chain pharmacies: 47.3% in 2012. General hospitals and independent community pharmacies make up the other two major employment sectors. The distribution of pharmacists across work settings did not change significantly between 2008 and 2012. (See Table 10.)

Table 10. Distribution of Pharmacists Across Work Settings by Year

Work Setting	2008	2009	2011	2012	2012
	%	%	%	%	N
Large Chain	47.9%	47.9%	46.9%	47.3%	2,020
General Hospital	21.7%	22.3%	23.5%	23.2%	989
Independent Community Pharmacy	17.1%	17.1%	16.8%	16.3%	694
Medical Bldg/Clinic Pharmacy	1.6%	2.5%	2.0%	2.3%	99
College Of Pharmacy	1.5%	1.5%	1.8%	2.0%	84
Government Setting Other than Hospital	1.6%	1.6%	1.8%	1.5%	64
Nursing Home	0.6%	0.5%	0.1%	1.3%	57
Psychiatric Hospital	0.7%	0.6%	0.7%	0.7%	28
Pharmacy Manufacturer	0.6%	0.5%	0.3%	0.4%	16
Rehabilitation Hospital	0.3%	0.2%	0.3%	0.3%	13
Pharmacy Wholesale	0.1%	0.1%	0.1%	0.1%	3
Mail Order	NA	NA	NA	0.1%	3
Small Chain	0.4%	0.9%	0.0%	0.0%	0
Other College Or University	0.1%	NA	NA	NA	NA
Other	5.8%	4.1%	5.5%	4.7%	202
Total	100%	100%	100%	100%	4,272

Note: Over time the categories used to describe settings in which pharmacists work have changed in the license renewal forms. This table includes the setting categories available in 2008 which contained data, plus a new category added in 2012. An 'NA' indicates that the setting category was not available in that year.

Forms of Employment

Pharmacists also report their form of practice or employment. In 2012, the majority of pharmacists (67.3%) were employed as Staff Pharmacists. Management positions such as Chief Pharmacist, Pharmacy Director, or Pharmacist in Charge made up the second largest grouping, accounting for 26.5% of all actively practicing pharmacists in the state in 2012. The remainder of the workforce is distributed across a variety of employment and ownership categories. Figure 19 shows the numbers for the 2012 pharmacist workforce. One role for pharmacists that may not be familiar to those outside the profession is the Pharmacist in Charge (PIC). Pharmacists in this role manage pharmacy operations and supervise staff. The PIC is responsible for ordering and inventory control of medications, as well as verifying that accurate records are maintained in accordance with requirements from regulatory agencies. The PIC may provide functional supervision to professional, paraprofessional, and support staff, which may include training, assigning duties, and providing performance evaluations for all subordinate staff.

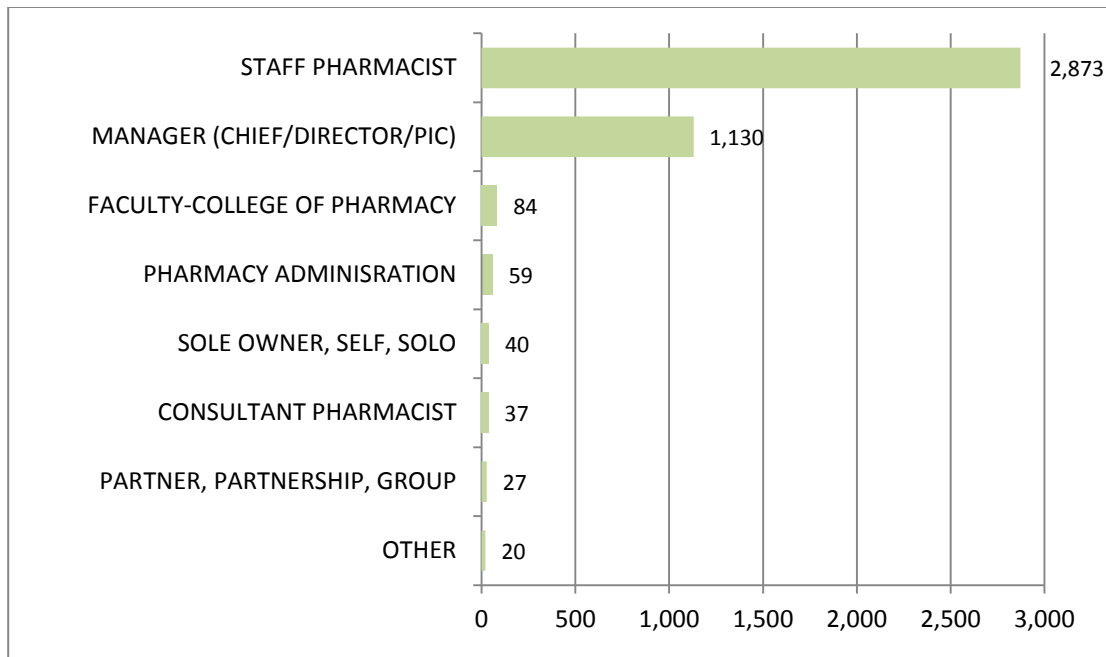


Figure 19. Types of Employment in the 2012 Pharmacist Workforce

Table 11. Changes in the Form of Pharmacist Employment: 2008 - 2012

	2008		2009		2011		2012	
	N	%	N	%	N	%	N	%
Staff Pharmacist	2,321	61.6%	2,693	67.2%	2,812	66.6%	2,873	67.3%
Manager (Chief/Director/PIC)	1,035	27.5%	1,019	25.4%	1,136	26.9%	1,130	26.5%
Sole Owner, Self, Solo	98	2.6%	90	2.2%	46	1.1%	40	0.9%
Pharmacy Administration	73	1.9%	52	1.3%	69	1.6%	59	1.4%
Faculty-College Of Pharmacy	60	1.6%	62	1.5%	77	1.8%	84	2.0%
Consultant Pharmacist	59	1.6%	18	0.4%	34	0.8%	37	0.9%
Partner, Partnership, Group	52	1.4%	50	1.2%	31	0.7%	27	0.6%
Assistant Manager	9	0.2%	0	0.0%	0	0.0%	0	0.0%
Federal Civilian (USPHS)	4	0.1%	0	0.0%	1	0.0%	0	0.0%
State Government	3	0.1%	0	0.0%	1	0.0%	0	0.0%
Other	55	1.5%	21	0.5%	17	0.4%	22	0.5%
Total	3,769	100%	4,005	100%	4,224	100%	4,272	100%

Over the past five years, there have been some subtle shifts in the types of jobs held by pharmacists. The number employed as a Staff Pharmacist has grown from 2,321 in 2008 (61.6% of the workforce that year) to 2,873 in 2012 (67.3% of the 2012 workforce) — an increase of 552 persons in that role. That equates to a 23.8% growth rate in the number of Staff Pharmacists over that time period. The number in pharmacy manager positions has also grown, but only by 9.2% over the same time period. This suggests that pharmacy managers are now supervising a larger number of staff pharmacists than was true in 2008.

The number of pharmacists in ownership roles has also changed markedly in recent years. The number of self-employed or sole owners actively practicing has decreased from 98 in 2008 to 40 in 2012 — a decrease of 59%. Fifty-two pharmacists who were active in the workforce reported being in a partnership in 2008. That number declined to 27 in 2012 — a decrease of 48%. These declines in the number of working owners and partners occurred across all age groups, as can be seen in Table 12. It may be that some owners have sold their interests to corporate entities and thus changed their type of employment to another category or older pharmacists who were in the owner or partnership categories have left the workforce for retirement. Recall, too, that changes between 2009 and 2011 in total numbers in these employment type categories seen in Table 12 encompasses a two year period of time, while the difference between other rows in the table cover only a one year period of time. This makes the change from 2009 to 2011 seem even larger than it is.

Table 12. Changes in the Number of Owners/Partners in the Workforce by Age Group

Age Group:	20 25	26 35	36 45	46 55	56 65	66 76	76 +	Age Unknown	Total N
Self-employed/sole owners/solo practitioners									
In 2008	0	2	13	35	38	5	4	1	98
In 2009	0	0	12	33	34	7	3	1	90
In 2011	0	1	5	12	21	5	1	1	46
In 2012	0	1	4	7	19	7	1	1	40
Partner/Partnership/ Group Ownership									
In 2008	1	2	10	21	14	3	1	0	52
In 2009	0	1	11	18	15	3	2	0	50
In 2011	0	2	8	10	8	3	0	0	31
In 2012	0	1	7	7	8	3	1	0	27

One group that has grown in recent years is pharmacists who serve as faculty members in a college of pharmacy. Over the past five years the number in that role has grown from 60 in 2008 to a total of 84 in 2012 — a growth rate of 40%. This is undoubtedly related to the establishment of two new schools of pharmacy in the state during that same period. See Table 11 for the number and percentage of pharmacists in various types of employment and how those are changing over time. Figures 20 through 25 illustrate how employment roles are distributed within the largest practice settings for pharmacists in South Carolina in 2012.

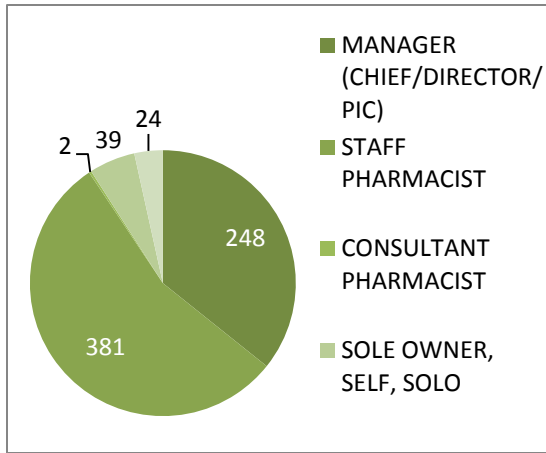


Figure 20. Independent Community Pharmacies: 2012

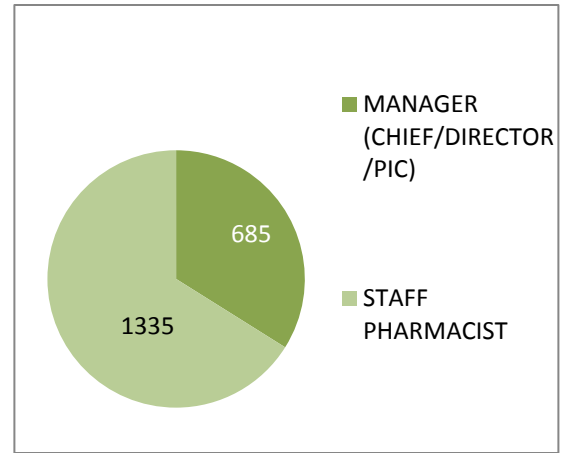


Figure 21. Large Retail Chain Pharmacies: 2012

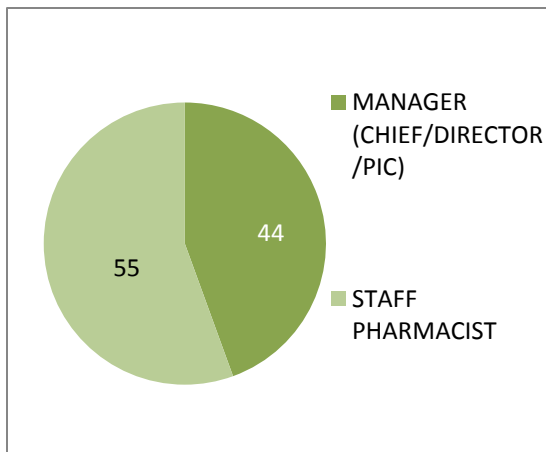


Figure 22. Medical Building/Clinical Pharmacies: 2012

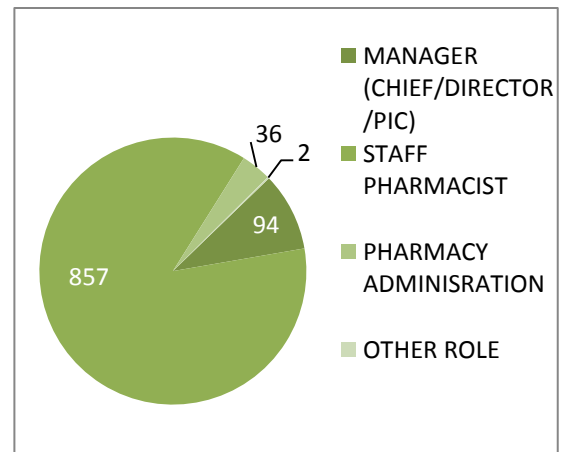


Figure 23. General Hospitals: 2012

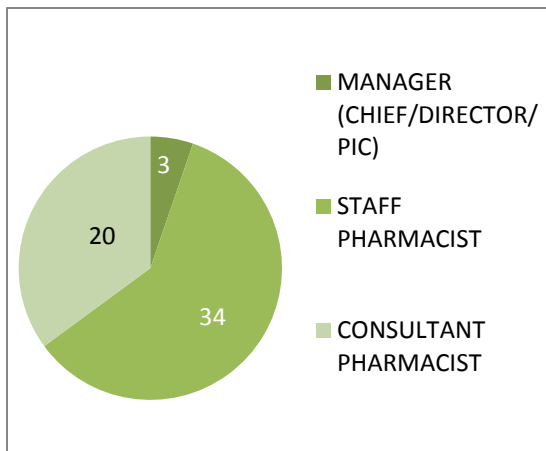


Figure 24. Nursing Homes: 2012

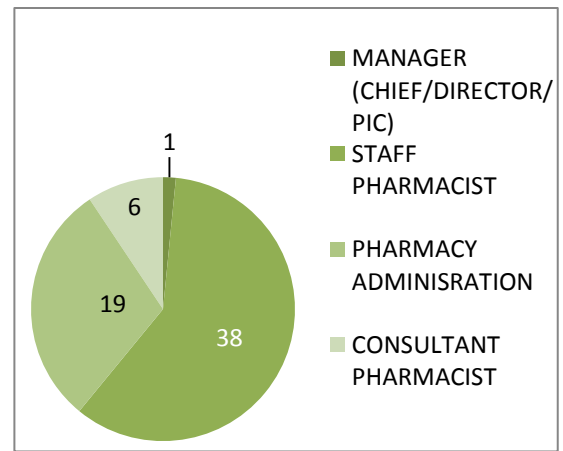


Figure 25. Government (Non-Hospital): 2012

Prescription Drug Volumes and Workload

The majority of a Staff Pharmacist’s time is spent dispensing drugs. In 2011 South Carolina pharmacists dispensed 53,849,819 retail prescription drugs, which accounted for 1.4% of the total number of retail prescriptions filled in the United States.^{viii} Total retail sales of prescriptions in South Carolina that year were \$3,625,734,647, which was 1.6% of the total retail sales for prescriptions in the U.S.^{ix} (See Table 13).

Table 13. 2011 Prescription Drug Volumes Filled at Pharmacies in South Carolina and the U.S.

	Total Retail Sales for Prescriptions filled at Pharmacies	% of Total Retail Sales for Prescriptions	Total # of Retail Prescription Drugs filled at Pharmacies	% of Total # of Retail Prescription Drugs filled at Pharmacies
USA	\$227,551,806,436	100%	3,764,698,318	100%
South Carolina	\$3,625,734,647	1.6%	53,849,819	1.4%

On a per capita basis, retail prescription volume in the United States has been fairly steady since 2006, measuring 12.7 in 2007 and 12.9 in 2010 compared to 11.2 prescriptions dispensed per person in 2011.^x Retail prescriptions per capita in 2011 were slightly lower than 2010 for both the U.S. (12.1) and South Carolina (11.5).^{xi}

The current downward trend in prescription volume is unlikely to last very long. Prescription volume differs by the age of patients (see Table 14). The number of seniors age 65 and older in South Carolina is expected to increase by more than 100% between 2010 and 2030. As our population ages there will likely be a greater demand for pharmacists and their services. In addition, the implementation of the Affordable Care Act may lead to more demand for pharmacy services as more people become covered by drug insurance benefits.

Table 14. Retail Prescription Drugs Filled at Pharmacies (Annual per Capita by Age)

	Age 0 18	Age 19 64	Age 65+
South Carolina	4.1	11.2	25.7

Source: Kaiser Family Foundation. (2013). Retail Prescription Drugs Filled at Pharmacies (Annual per Capita by Age).

Work Hours

In 2012, the average number of hours worked per week, across all work settings, and for all types of employment was 37.3 hours. That overall average has declined slightly from 37.8 hours per week in 2008 to 37.5 in 2011 and to 37.3 in 2012. The most common value reported by pharmacists over the past five years has been a 40 hour work week. Among Staff Pharmacists, 51.6% reported working a 40 hour work week in 2012; 18.7% worked 30 – 39 hours per week; 20% reported fewer than 30 hours per week; and 9.7% reported working more than 40 hours in a typical week.

Work hours vary both by the type of employment role held by a pharmacist (see Figure 26), and by the setting in which the work occurs. Figure 27 reports the average weekly work hours for those employed as Staff Pharmacists in the four largest settings in South Carolina. The capped lines in the chart show the 95% confidence intervals around the mean. That analysis reveals that Staff Pharmacists who work in large retail chain stores and in hospitals work significantly more hours per week, on average, than those who are employed in independent community pharmacies or in medical building or clinic pharmacies.

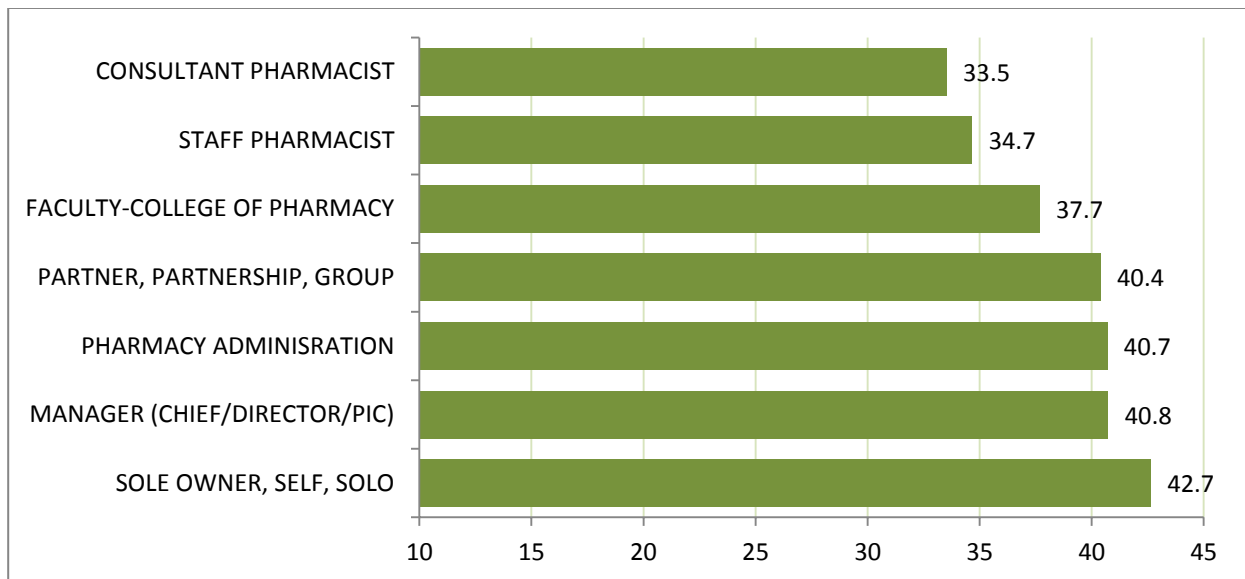


Figure 26. Average Total Work Hours per Week by Type of Employment: 2012

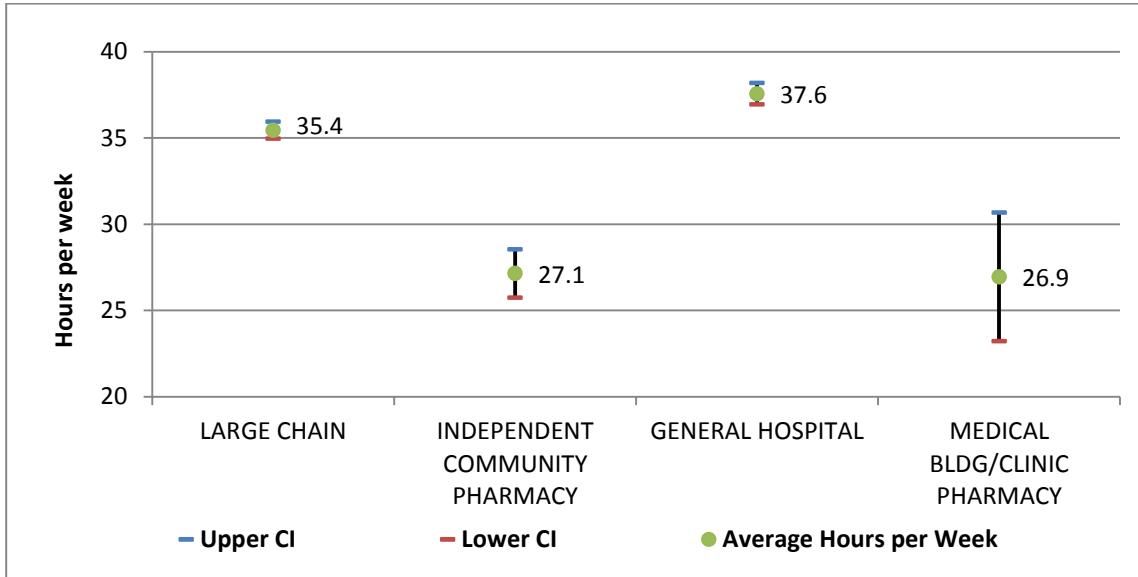


Figure 27. Staff Pharmacists Average Weekly Hours and 95% Confidence Intervals in the Primary Setting

Work Hours and Gender

Work patterns also vary by gender and by age. In the past, male pharmacists have been more likely to work more hours per week than their female colleagues. However, the average hours worked per week by males has been declining since 2008. The difference between the genders in terms of weekly work hours is shrinking. (See Table 15 and Figure 28.) In 2012, male pharmacists worked 2 hours more per week, on average, than did female pharmacists. In 2008 the difference was 2.6 hours.

Table 15. Average Total Hours Worked per Week

	2008	2009	2011	2012
Males	39.2	38.9	38.5	38.4
Females	36.6	36.8	36.6	36.4

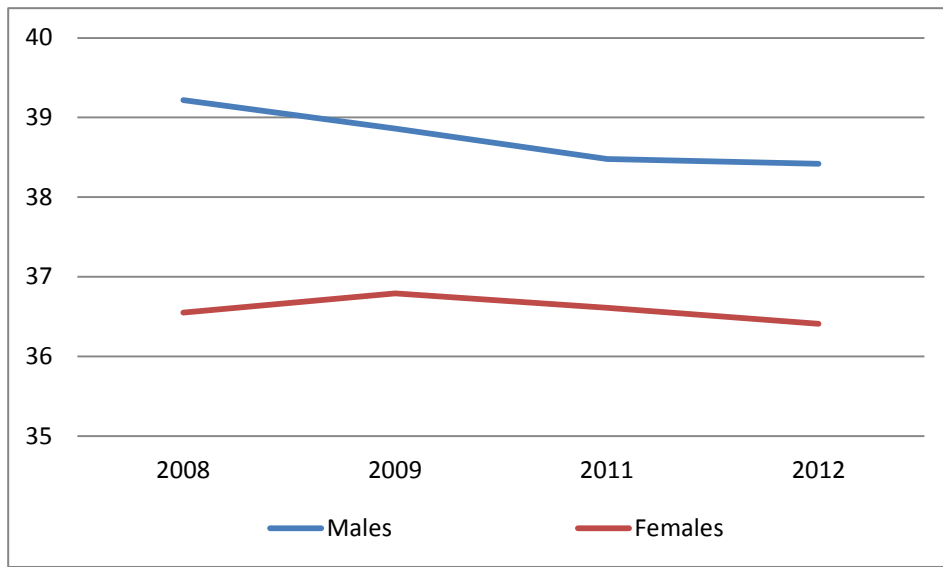


Figure 28. Change Over Time – Average Hours Worked per Week by Gender

Table 16 shows that the average number of hours worked per week has been declining slightly for most age groups within the pharmacist workforce over the past five years. It also shows that as pharmacists age they tend to work fewer hours per week.

Table 16. Average Total Hours Worked per Week by Age Groups

Age Group	2008	2009	2011	2012
20-25	42.3	42.9	39.8	41.1
26-35	38.8	39.0	39.4	39.6
36-45	37.1	37.2	36.8	36.7
46-55	39.5	39.4	38.3	37.9
56-65	38.6	38.4	38.0	37.6
66-75	28.4	28.8	29.0	29.4
76+	22.7	21.1	20.1	19.4

Both age and gender influence the number of hours that pharmacists work per week. Figure 29 illustrates how these three characteristics interact. Male pharmacists work close to 40 hours per week, on average, from their early twenties into their mid-50s, and then slightly less until the age of 65 when their work hours drop off sharply. Female pharmacists show a very different pattern. Those in their twenties work only slightly less than their male colleagues. Work hours drop off for female pharmacists in their late thirties and early forties and then stabilize at around 35 hours per week, on average, until the age of 65 when work hours fall off in a pattern similar to their male colleagues.

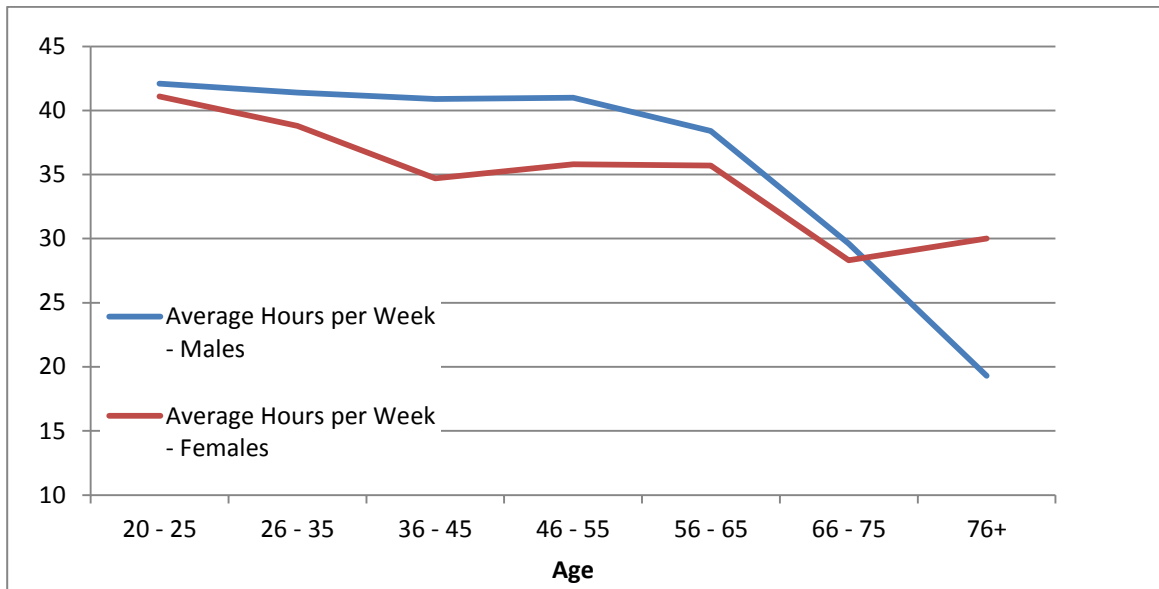


Figure 29. Average Weekly Work Hours by Age and Gender in the 2012 Pharmacist Workforce

Pharmacists over the age of 55 made up 26.4% of the active workforce in 2012. As Figure 29 suggests, these pharmacists can be expected to either cut back their working hours in the next few years or leave the workforce altogether. Table 17 reveals where retirements are likely to be concentrated in the next decade for the largest practice settings.

Table 17. Percentage of Older Pharmacists by Setting in 2012

	Total # Employed	% Age 56 - 65	% Age 66 +
Large Pharmacy Chains	1,958	16.5	4.1
General Hospitals	956	20.1	2.4
Independent Community Pharmacies	682	25.2	17.7
Medical Bldg/Clinic Pharmacies	97	20.6	21.6
Colleges Of Pharmacy	84	21.4	3.6
Nursing Home	55	20.0	0
All Practice Settings	4,272	19.1	6.6

Full Time Equivalents in the Pharmacist Workforce

Because work patterns are affected by age and gender, and those characteristics have been changing over time in the pharmacist workforce, it is important to use a standard measure of the work effort occurring in the workforce as a whole. Even if the total number of pharmacists remains the same over time, any shift in the characteristics that affect work behavior will either lessen or increase the total amount of work effort. The most common approach is to create a measure of full-time equivalency (FTE) based on the number of hours worked in a typical week.

Since 40 hours was the most common work week among South Carolina pharmacists, 40 hours was used as the denominator in our FTE measure. A pharmacist reporting a 40 hour work week has been assigned an FTE value of 1.0. A pharmacist working 30 hours per week has been assigned an FTE value of 0.75. Table 19 displays the sum total number of pharmacist FTEs practicing in each county from 2008 through 2012⁴ and the estimated number of FTEs in 2010 for every 10,000 residents in that county, based on the 2010 census population figures. This last measure provides some insight into where the pharmacist workforce is highly concentrated, relative to the population base being served.

Although many small towns have a pharmacy, only about 22% of the FTE pharmacist workforce was employed in rural counties in 2012, less than the 30% of the general population that live in such areas, according to the 2010 census.⁵ The map in Figure 30 shows how the concentration of pharmacist FTEs relative to county population levels differs across the state. Not surprisingly, the pharmacist workforce is most concentrated around our urban centers.

⁴ Some pharmacists work more than one job and may work in more than one county in a typical week. The county-specific FTE counts were based on all hours reported by pharmacists as worked at an employment site within that county, regardless of whether that county was their primary work site or a secondary work site.

⁵ Rural was defined as any county with fewer than 156 persons per square mile of land area, based on 2010 census counts.

Table 18. Number of FTEs Practicing in Each County: 2008 – 2012 and Total Density per 10,000 Population

County	2008 Total FTEs	2009 Total FTEs	2011 Total FTEs	2012 Total FTEs	Change in Total FTEs from 2008 to 2012	Pharmacist FTEs in 2010 per 10,000 residents
Abbeville	7.2	6.7	10.5	7.5	0.4	3.4
Aiken	89.7	89.8	100.0	100.7	11.0	5.9
Allendale	4.6	4.8	4.5	3.1	-1.5	4.5
Anderson	140.5	147.5	152.7	141.8	1.3	8.0
Bamberg	11.4	9.4	9.9	8.2	-3.2	6.0
Barnwell	13.7	16.0	16.2	16.0	2.3	7.1
Beaufort	86.7	95.5	93.9	102.9	16.2	5.8
Berkeley	60.6	67.9	65.8	82.5	21.9	3.8
Calhoun	4.9	5.5	7.8	7.6	2.7	4.4
Charleston	528.7	554.7	578.9	590.5	61.8	16.2
Cherokee	24.4	23.9	26.4	26.0	1.5	4.5
Chester	19.8	17.8	16.4	16.2	-3.6	5.2
Chesterfield	21.5	20.1	26.6	25.0	3.5	5.0
Clarendon	14.7	22.1	24.6	21.9	7.2	6.7
Colleton	24.6	23.5	27.5	27.0	2.4	6.6
Darlington	44.8	51.1	50.5	48.7	3.8	7.4
Dillon	15.4	21.9	18.2	17.4	2.0	6.3
Dorchester	71.5	79.0	75.4	63.5	-8.0	5.6
Edgefield	8.2	8.3	9.5	11.0	2.8	3.3
Fairfield	7.5	8.6	7.3	7.7	0.2	3.3
Florence	138.4	144.1	158.1	161.1	22.8	11.0
Georgetown	60.8	78.4	82.5	70.4	9.7	13.4
Greenville	423.1	445.6	458.9	461.8	38.7	10.0
Greenwood	65.1	71.7	74.7	70.7	5.6	10.5
Hampton	10.9	13.2	15.3	13.6	2.8	6.7
Horry	193.7	199.0	195.0	205.3	11.6	7.3
Jasper	16.0	13.9	15.4	19.7	3.7	5.9
Kershaw	38.2	37.5	32.9	36.2	-2.1	5.7
Lancaster	29.2	29.9	45.5	46.3	17.1	4.9
Laurens	31.8	33.7	43.6	49.1	17.3	5.8
Lee	6.1	5.8	5.2	5.0	-1.2	2.8
Lexington	214.0	235.8	263.4	251.2	37.2	9.5
McCormick	3.0	2.6	2.1	2.1	-0.9	2.3
Marion	24.4	25.7	21.7	25.2	0.8	7.2
Marlboro	10.8	11.3	13.4	14.7	3.9	4.3
Newberry	22.1	22.9	22.2	23.6	1.5	6.0
Oconee	52.2	56.7	57.6	54.6	2.4	7.7
Orangeburg	65.7	69.5	68.1	63.7	-2.0	7.4
Pickens	88.9	93.5	93.2	89.1	0.2	7.8
Richland	424.9	433.9	436.3	452.9	28.1	11.3
Saluda	6.1	7.7	6.1	8.2	2.1	3.5
Spartanburg	222.0	248.6	260.6	276.3	54.3	9.0
Sumter	61.5	67.2	66.8	65.6	4.1	6.2
Union	16.4	15.4	16.1	16.4	0.0	5.4
Williamsburg	14.5	15.4	18.9	14.8	0.3	5.0
York	121.2	127.8	137.0	134.5	13.3	5.9
South Carolina	3560.8	3780.4	3932.7	3956.7	+395.9	

Note: An estimate of Pharmacist FTEs in 2010 was calculated by averaging the # of FTEs in 2009 and 2011.

Concentration of Pharmacist FTEs per 10,000 County Population

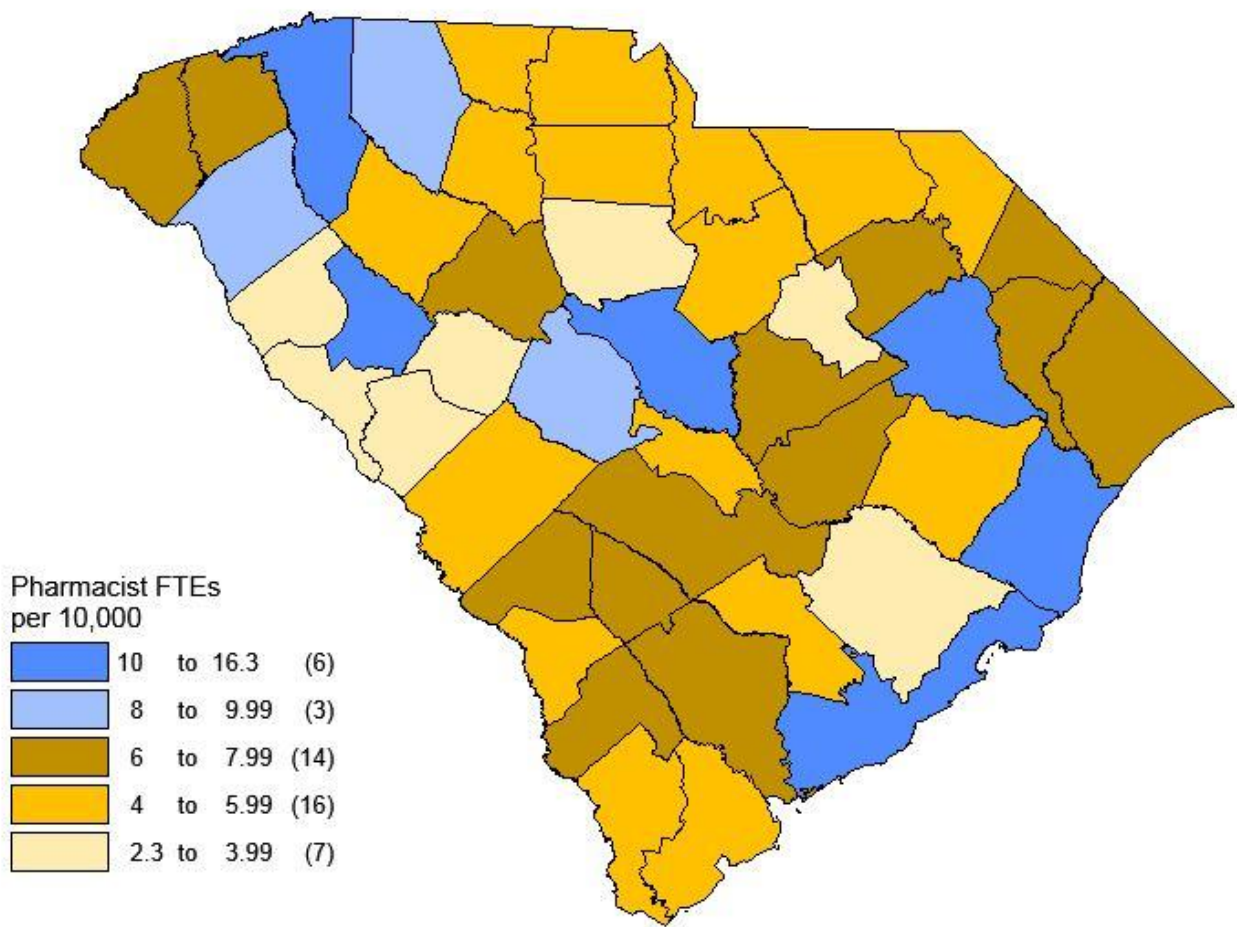


Figure 30. Concentration of Pharmacist FTEs per 10,000 County Population

Wages

Earnings and wages are not part of the data provided by pharmacists in South Carolina when they renew their license to practice. However, the federal Bureau of Labor and Statistics conducts a semi-annual Occupational Employment Statistics (OES) survey to estimate occupational employment and wages across all the states at detailed levels of geography, industry, and occupation. Their wage estimates for pharmacists in South Carolina in 2012 are reported in Table 19.^{xii} Note that South Carolina wages were very close to the national average in 2012. Average wage values did vary between different geographic regions of the state, most likely in response to the balance of supply and demand for pharmacists in those areas. The map in Figure 31 shows how pharmacists' wages in South Carolina compare to surrounding states in the southeastern United States.

Table 19. 2012 BLS Pharmacist Wage Estimates for South Carolina

	Hourly Median Wage	Hourly Average Wage	Annual Average Wage
United States	\$56.09	\$55.27	\$114,950
South Carolina	\$56.45	\$55.24	\$114,900
Metropolitan Areas			
Anderson	\$60.20	\$58.37	\$121,420
Augusta – Richmond County, GA-SC	\$55.60	\$54.95	\$114,300
Charleston - North Charleston - Summerville	\$55.47	\$52.11	\$108,308
Charlotte – Gastonia - Rock Hill, NC-SC	\$59.18	\$57.15	\$118,870
Columbia	\$54.03	\$51.10	\$106,290
Florence	\$59.29	\$59.76	\$124,300
Greenville	\$56.89	\$57.18	\$118,930
Myrtle Beach - North Myrtle Beach - Conway	\$60.27	\$58.70	\$122,090
Spartanburg	\$55.95	\$56.46	\$117,430
Sumter	\$55.29	\$55.22	\$114,850
Non-Metropolitan Areas			
Low Country	\$61.66	\$59.09	\$122,900
Upper Savannah	\$61.72	\$59.22	\$123,190
Pee Dee	\$54.59	\$52.90	\$110,040
Lower Savannah	\$53.08	\$52.81	\$109,840
Source: Bureau of Labor and Statistics: www.bls.gov/ocs/current/ocs_sc.htm			

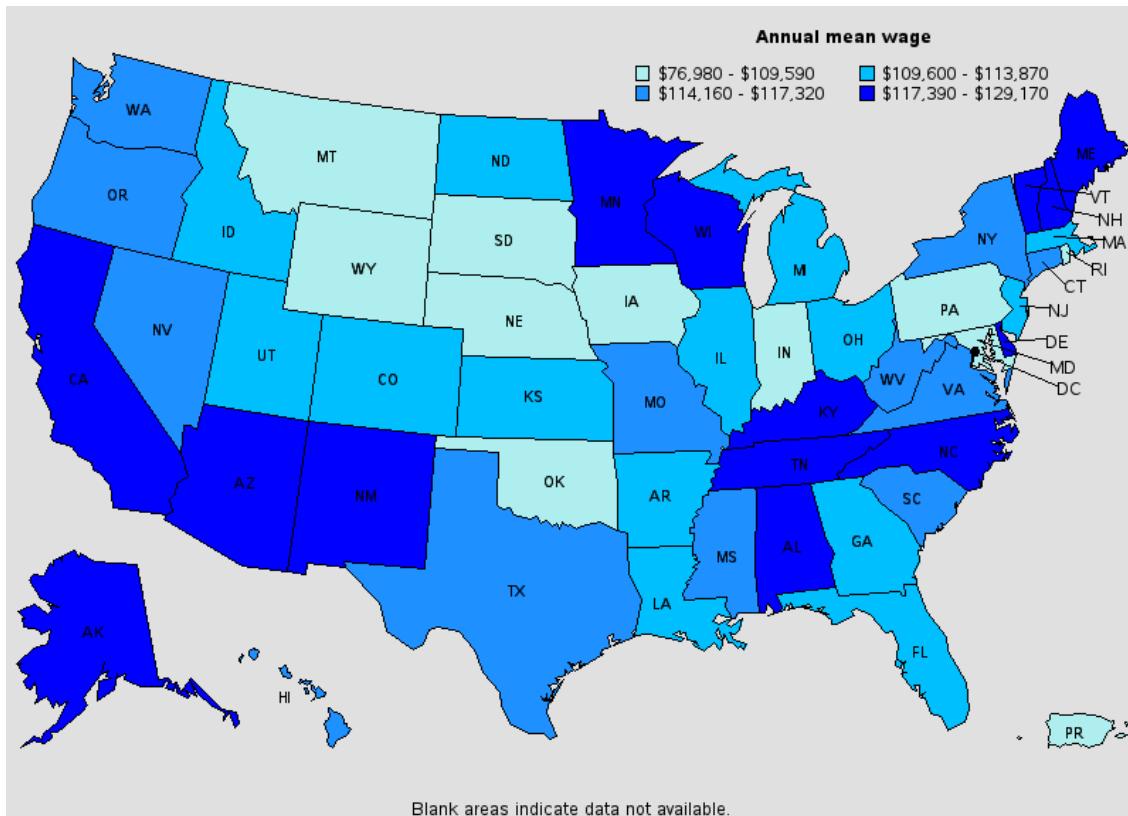


Figure 31. Annual Mean Wage of Pharmacists by State, May 2012 source: <http://www.bls.gov/oes/current/oes291051.htm>

Demand for Pharmacists in South Carolina

The Pharmacy Manpower Project (PMP) collects, analyzes and disseminates data on the demand for pharmacy services and related pharmacy workforce issues across the United States. They produce an Aggregated Demand Index that estimates the balance between the supply of pharmacists and the demand for pharmacists in each state using a scale of 1 to 5 where:

- 5 = High demand: difficult to fill open positions
- 4 = Moderate demand: some difficulty filling open positions
- 3 = Demand in balance with supply
- 2 = Demand is less than the Pharmacist supply available
- 1 = Demand is much less than the Pharmacist supply available^{xiii}

In July 2013, the Index value for the U.S. as a whole was 3.21. For South Carolina the Index value was 3.14 (see Figure 32). These values suggest that overall, the demand of pharmacists is currently in balance with supply in both the country as a whole and the state of South Carolina. However, changing population demographics and the ways in which pharmacists are utilized within the healthcare system are expected to increase the demand for pharmacists nationally and in South Carolina in the future. Some of the factors likely to influence the balance of supply and demand in the future include:

- Population growth—especially growth of the elderly population – which is expected to increase the demand for pharmacists for both dispensing duties and direct patient counseling and care
- Increased use of pharmacists by hospitals and primary care practices to review drug regimens, and to counsel and educate patients as drugs become more complex and a growing portion of the population receives pharmaceutical treatment for chronic conditions.
- Increased use of pharmacy technicians and dispensing technologies that may improve productivity, potentially dampening growth in demand for pharmacists even as per capita consumption increases.^{xiv}

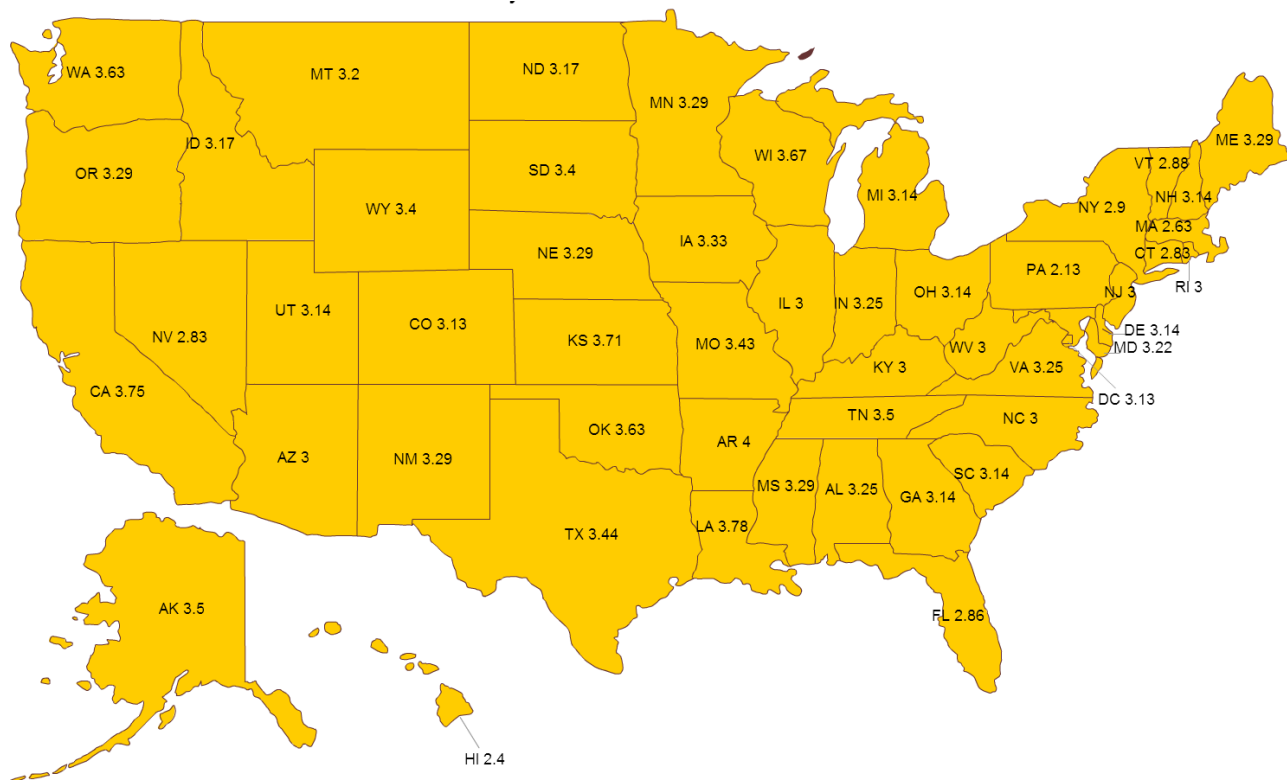


Figure 32. National Pharmacist Demand by State, July 2013

Conclusions

While the pharmacist workforce is growing in South Carolina, it appears that the rate of growth has been slowing over the past 5 years. However, our analysis period of 2008 to 2012 happened to coincide with an unusually deep economic recession that may have encouraged an unusually large number of pharmacists to re-enter the workforce during the early part of the recession. This notion is reinforced by the relatively large percentage of new or reactivating licensees in 2008 and 2009 who were in their 40s and 50s. Temporary re-entry into the pharmacist workforce in order to deal with poor economic conditions by those who had already retired or taken up other types of work would have inflated workforce growth rates early in the study period beyond what would be expected under more normal economic conditions. Future rates of growth will be impacted by two concurrent events: the opening of two new schools of pharmacy in the state that will increase new graduate production by 65%, and the fact that an increasing proportion of new pharmacists are female – and females tend to work slightly fewer hours per week than their male colleagues.

The consolidation of pharmacists into retail chains and out of independent pharmacies is something that has been occurring for at least a decade, but is clearly illustrated by a sharp decline in the number of solo or partner owners over the past 5 years. This change in the ownership characteristic of the pharmacist workforce may have a positive impact on the overall productivity of pharmacists, as larger retail chain pharmacies are more likely to employ pharmacy technicians as well as technologies that increase productivity.

Increases in productivity will become more important as the general population in South Carolina ages over the next decade. The number of seniors age 65 and older in South Carolina is expected to increase by more than 100% between 2010 and 2030. And, given that prescription volume is much higher for seniors than any other age group, it is reasonable to expect increasing demand for pharmacists and their services. In addition, the demand for pharmacists is likely to be even larger as pharmacists become more incorporated into direct patient care outside of the pharmacy. New models of care delivery such as medical homes and accountable care organizations are already partnering with pharmacists to review drug regimens, provide vaccines, and counsel patients as pharmaceutical treatments become more complex and a growing portion of the population uses drugs to combat chronic conditions.

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