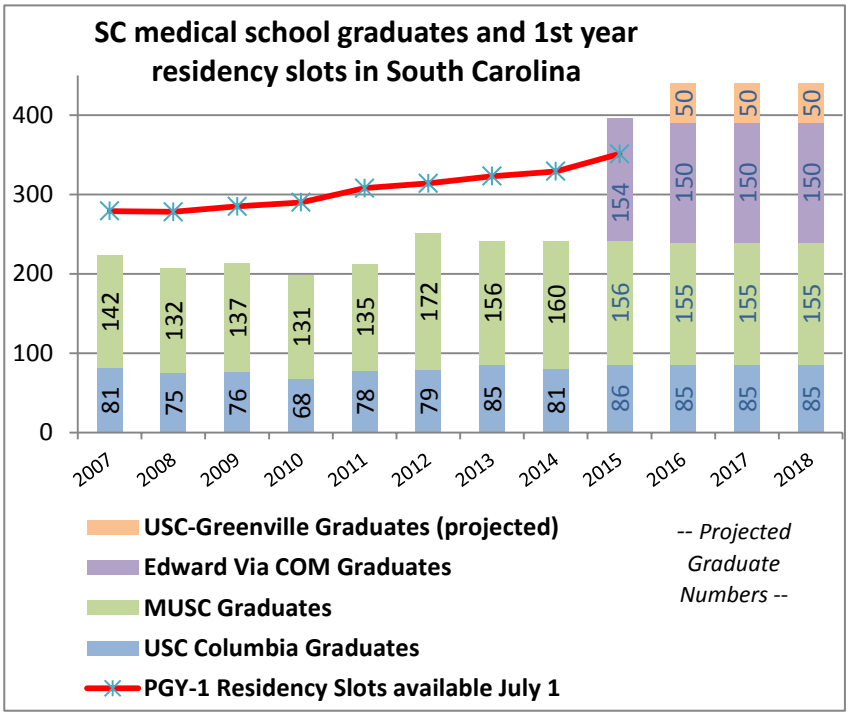
South Carolina Medical School Graduates and GME Training Location Placements 2013 - 2015

In 2006, in response to an anticipated physician shortage, the Association of American Medical Colleges (AAMC) recommended a 30% increase in medical school enrollments by 2015. In response, many existing schools across the country expanded student enrollments and new schools were established. As a result, student enrollments in allopathic (MD) medical schools have increased by 23% and osteopathic (DO) enrollments have increased 129% over 2002 levels for a total increase of 39% nationally.[i] Historically the graduate medical education (GME) system in the country has had many more entry-level positions available than there have been U.S. medical graduates to fill them. The same has been true in South Carolina. A recent analysis published in the New England Journal of Medicine reveals that the national GME system is growing almost as fast as the growth in new medical graduates in the United States and that the large number of international medical graduates (IMGs) who have been able to obtain entry-level placements (over 6,300 in 2015) indicates there will be more than enough available positions for U.S. graduates over the coming decade.[ii]

In South Carolina two new medical schools have opened in the last five years, resulting in a total of four medical schools in our state. Both new schools are in the western region of the state and will bring needed resources to that growing area. However, the very rapid increase in the number of medical school graduates from a total of 213 in 2010 to 396 in 2015 – an 86% increase - may be putting pressure on the GME training system in our state if, in fact, a large number of South Carolina graduates want to stay in state for GME training. See the chart to the left for the number of graduates in recent years and the number of post-graduate year 1 (PGY-1) slots available to new graduates in the state's GME training programs.



Students Staying in State

In order to understand the ins and outs of the GME training system in South Carolina, we first examined how many South Carolina medical school graduates remained in the state for their residency training (in-state retention). This was done by analyzing the state location of the GME programs that recent graduates matched to during their final year in medical school. (See Page 2 for a description of the National Residency Match Program process.) Table 1 summarizes the results within the clinical specialty areas chosen by graduates. The percent of students remaining in state varies greatly by year and by clinical specialty. Overall, the total percent of medical school graduates that stayed in-state ranged from 30% to 27% between 2013 and 2015.

Table 1.

Percent of South Carolina Medical School Graduates Choosing a Particular Specialty Who Stayed in South Carolina for GME Training

	2013	2014	2015
Anesthesiology	15%	23%	26%
Emergency Medicine	13%	14%	31%
Family Medicine	38%	43%	32%
Internal Medicine	35%	33%	17%
Obstetrics/Gynecology	44%	29%	31%
Pediatrics	30%	27%	37%
Psychiatry	60%	57%	22%
Surgery (General and Preliminary)	25%	22%	46%
All Clinical Specialties Chosen:	30%	28%	27%

Note: Only clinical specialties chosen by at least 10 students are included in this table.
See the appendix tables for additional program statistics.

GME First Year Slots Filled by SC Graduates

Another perspective is gained by looking at how many of the entry level (PGY-1) slots in South Carolina GME programs were filled by South Carolina medical school graduates in recent years. That analysis combined data from the National Residency Match Program (NRMP) with the previous information about the GME programs chosen by South Carolina graduates. Osteopathic graduates were included in the 2015 data from both data sources.

Not all PGY-1 positions in GME programs are filled by new graduates: some go to experienced physicians who are changing their clinical specialty; others go to IMGs and a few go to new physicians who were unable to match with a program in a previous year. Over the period 2013 – 2015 about 80% of all South Carolina PGY-1 slots filled through the Match went to new graduates educated in the United States.[iii] South Carolina medical school graduates accounted for 25% of those placements in 2013 and 2014, and 33% in 2015.[iv] These percentages differ widely from one clinical area to another and from one year to another as illustrated in Table 2.

National Residency Match Program

During their last year in medical school, students around the country decide on a clinical specialty and interview with the GME training programs they are interested in. In February they submit a ranked list of their preferences to the National Residency Match Program (NRMP).

Each GME program in the country creates a ranked list of the medical students to whom they would like to offer a position. This ranked list also goes to the NRMP. A computer program sorts through the preferences of thousands of students and GME programs to create a match acceptable to both parties. Match results are released in March each year.

Neither students or GME programs are guaranteed to get their first choices, but in the 2015 Match 94% of participating seniors were matched to a GME program and 78% got one of their top 3 choices. Ninety nine percent of all available GME program positions were filled in the initial Match process that year. Any remaining positions are made available through the Supplemental Offer and Acceptance Program (SOAP) and most are filled before the July 1 start date when new physicians begin their residency program training.

Table 2.

Percent of South Carolina GME PGY-1 Slots Filled by US Seniors that were SC Medical School Seniors (New Graduates)

	2013	2014	2015
Anesthesiology	13%	21%	36%
Emergency medicine	20%	19%	44%
Family Medicine	23%	26%	30%
Internal Medicine	31%	33%	25%
Obstetrics/Gynecology	53%	43%	56%
Pediatrics	18%	24%	43%
Psychiatry	53%	47%	20%
Surgery (General and Preliminary)	18%	13%	45%
Transitional Year	8%	0%	33%
All SC GME Training Programs	25%	25%	33%

Note: Specialty areas in this table were chosen to match Table 1 above for comparison purposes.
See the appendix tables for additional program statistics.

For many years, the GME training system in this country and in South Carolina has been much larger than the number of graduating medical students. The gap has mainly been filled by physicians who were educated outside of the U.S. - generally referred to as International Medical Graduates (IMGs) - a large number of whom are U.S. citizens and some may be South Carolina citizens. In 2014, 10% of the residents in South Carolina GME programs accredited by the ACGME were IMGs, a much lower percentage than occurs in most states. The median percentage for all states is 22.2%. South Carolina ranked 44th out of 50 states in this regard in 2014.

Conclusion:

It is likely that a significant portion of our medical school graduates will continue to choose a GME training program in another state for a variety of reasons. But that does not prohibit them from coming back to practice in South Carolina. Similarly, there are good reasons for GME programs to choose one candidate over another even if extra points are awarded for having a South Carolina connection. And many of those who come into the state for GME training stay and establish their practice here.[v] Data published by the Association of American Medical Colleges reveals that South Carolina has historically had one of the highest retention rates in the country[vi] when students both graduate from an in-state school and receive their GME training in this state. However, it is becoming more difficult for physicians to choose where they practice as more and more of them become employees of health care systems rather than owning their own practice.

We have not addressed the question of whether additional GME slots are currently needed in the state, or whether added GME programs will solve the maldistribution problem of too few physicians in our rural areas. Additional research is needed to investigate those concerns. While graduate medical education is a critical part of creating the physician workforce needed in South Carolina, the number of new physicians produced each year is relatively small. Additional policy initiatives designed to increase the number of physicians with specific clinical specialties or those willing to practice in rural or underserved areas may also be worth considering.

Data sources: This analysis was conducted by the Office for Healthcare Workforce Analysis and Planning. The National Residency Match Program (NRMP) reports information on the number of entry-level slots available in each of the Graduate Medical Education programs in each state, along with the number of students that filled those available slots in the initial match process. We reviewed that data for 2013, 2014 and 2015. Information about the state origin of students filling entry-level slots during the Supplemental Offer and Acceptance Program was gathered from the various GME programs affected. All counts of slots and students in South Carolina GME programs have been summarized by clinical specialty areas. This was necessary because of the way the NRMP reports their data. In some specialty areas there are multiple GME residency programs available in the state and in others only a single program may be available. Information about the type and location of GME programs chosen by medical school graduates in 2013, 2014 and 2015 was provided by the medical schools: College of Medicine, University of South Carolina; College of Medicine, Medical University of South Carolina; and the Edward Via College of Osteopathic Medicine, South Carolina Campus, which had their first graduating class in 2015. In cases where students reported making more than one match, the first match listed was used in this analysis.

[i] Results of the 2014 Medical School Enrollment Survey, American Association of Medical Colleges Center for Workforce Studies, April 2015. Downloaded from the AAMC website October 22, 2015.

[ii] "Why a GME Squeeze is Unlikely," F. Mullan, E. Salsberg and K. Weider. December 2015. New England Journal of Medicine, Vol. 373, No. 25, p. 2397-2399. See also "Results from the 2015 GME Matches: GME Positions Continue to Grow." Edward Salsberg, Health Affairs Blog. Downloaded from the Health Affairs Blog site October 14, 2015.

[iii] In our analysis of the NRMP data we removed any GME program PGY-1 slots that were reserved for experienced physicians. Slots filled by DOs were included only in the 2015 data since that was the first year South Carolina had DO students graduating.

[iv] These statistics were generated by examining the NRMP annual reports for PGY-1 slots filled during the initial match and during the Supplemental Offer and Acceptance Program (SOAP). Information about slots filled during the SOAP was obtained directly from the GME programs affected.

[v] 45% as reported in the 2015 State Physician Workforce Data Book published by the AAMC, November, 2015.

[vi] 77% as reported in the 2015 State Physician Workforce Data Book published by the AAMC, November, 2015.

Table 1. Summary of the Clinical Specialty Areas Chosen by 2013 South Carolina Medical School Graduates in the 2013 Match and the In-state/Out-of-state Location of the Programs They Matched To

Clinical specialty area chosen by 2013 South Carolina medical school graduates in the 2013 National Residency Match Program	Total # of 2013 SC graduates matching in this specialty	Total number matched to a SC GME program	Total number matching to an out-of-state GME program	% of 2013 SC graduates choosing this specialty who stayed in state for GME training
Anesthesiology (PGY-1)	13	2	11	15%
Child Neurology (PGY-1)	2	1	1	50%
Dermatology (PGY-2)	4	1	3	25%
Emergency Medicine (PGY-1)	24	3	21	13%
Family Medicine (PGY-1)	26	10	16	38%
Internal Medicine (PGY-1) *	46	16	30	35%
Internal Medicine/Pediatrics (PGY-1)	6	2	4	33%
Neurological Surgery (PGY-1)	2	0	2	0%
Neurology (PGY-1)	3	0	3	0%
Obstetrics and Gynecology (PGY-1)	18	8	10	44%
Opthalmology	9	2	7	22%
Orthopedic Surgery (PGY-1)	4	1	3	25%
Otolaryngology (PGY-1)	4	0	4	0%
Pathology (PGY-1)	5	1	4	20%
Pediatrics (PGY-1)	20	6	14	30%
Physical Medicine and Rehab	2	0	2	0%
Psychiatry (PGY-1)	15	9	6	60%
Radiation Oncology (PGY-2)	1	0	1	0%
Radiology-Diagnostic (PGY2)	5	1	4	20%
Surgery (PGY-1) *	24	6	18	25%
Transitional Year (PGY-1)	2	1	1	50%
Urology	1	1	0	100%
Totals:	**236**	**71**	**165**	**30%**

Student specialty choice is based on student-GME matches provided by the Colleges of Medicine at the University of South Carolina and the Medical University of South Carolina.

* Surgery numbers include preliminary years

* Internal Medicine numbers include preliminary years

Table 1. Summary of the Clinical Specialty Areas Chosen by 2014 South Carolina Medical School Graduates in the 2014 Match and the In-state/Out-of-state Location of the Programs They Matched To

Clinical specialty area chosen by 2014 South Carolina medical school graduates in the 2014 National Residency Match Program	Total # of 2014 SC graduates matching in this specialty	Total number matched to a SC GME program	Total number matching to an out-of-state GME program	% of 2014 SC graduates choosing this specialty who stayed in state for GME training
Anesthesiology (PGY-1)	13	3	10	23%
Child Neurology (PGY-1)	1	0	1	0%
Dermatology (PGY-2)	4	1	3	25%
Emergency Medicine (PGY-1)	22	3	19	14%
Family Medicine (PGY-1)	23	10	13	43%
* Internal Medicine (PGY-1)	45	15	30	33%
Internal Medicine/Pediatrics (PGY-1)	5	2	3	40%
Internal Medicine/Psychiatry (PGY-1)	0	0	0	na
Neurological Surgery (PGY-1)	0	0	0	na
Neurology (PGY-1)	7	1	6	14%
Obstetrics and Gynecology (PGY-1)	21	6	15	29%
Orthopedic Surgery (PGY-1)	9	1	8	11%
Otolaryngology (PGY-1)	7	0	7	0%
Pathology (PGY-1)	4	1	3	25%
Pediatrics (PGY-1)	30	8	22	27%
Psychiatry (PGY-1)	14	8	6	57%
Psychiatry/Neurology (PGY-1)	0	0	0	na
Radiation Oncology (PGY-2)	4	1	3	25%
Radiology-Diagnostic (PGY2)	8	2	6	25%
Surgery (PGY-1) *	18	4	14	22%
Thoracic Surgery (PGY-1)	0	0	0	na
Transitional Year (PGY-1)	2	0	2	0%
Vascular Surgery (PGY-1)	0	0	0	na

Specialty Areas Chosen by SC Graduates Not Included in the NRMP List of SC GME programs:

Orthopedic Research	1	1	0	
Otolaryngology Research	1	1	0	
Plastic Surgery	2	0	2	
Totals:	**241**	**68**	**173**	**28%**

South Carolina graduate match information provided by the Colleges of Medicine at the University of South Carolina and the Medical University of South Carolina.

* Surgery numbers include preliminary years

* Internal Medicine numbers include preliminary years

Table 1. Summary of the Clinical Specialty Areas Chosen by 2015 South Carolina Medical School Graduates in the 2015 Match and the In-State/Out-of-state Location of the Programs They Matched To

Clinical specialty area chosen by 2015 South Carolina medical school graduates in the 2015 National Residency Match Program	Total # of 2015 SC graduates matching in this specialty	Total number matched to a SC GME program	Total number matching to an out-of-state GME program	% of 2015 SC graduates choosing this specialty who stayed in state for GME training
Anesthesiology (PGY-1)	19	5	14	26%
Child Neurology (PGY-1)	2	1	1	50%
Dermatology (PGY-2)	2	1	1	50%
Emergency Medicine (PGY-1)	26	8	18	31%
Family Medicine (PGY-1)	54	17	37	31%
Internal Medicine (PGY-1) *	90	15	75	17%
Internal Medicine/Pediatrics (PGY-1)	4	0	4	0%
Internal Medicine/Psychiatry (PGY-1)	2	1	1	50%
Neurological Surgery (PGY-1)	3	0	3	0%
Neurology (PGY-1)	4	1	3	25%
Obstetrics and Gynecology (PGY-1)	29	9	20	31%
Orthopedic Surgery (PGY-1)	7	2	5	29%
Otolaryngology (PGY-1)	4	1	3	25%
Pathology (PGY-1)	7	0	7	0%
Pediatrics (PGY-1)	43	16	27	37%
Psychiatry (PGY-1)	18	4	14	22%
Psychiatry/Neurology (PGY-1)	1	0	1	0%
Radiation Oncology (PGY-2)	0	0	0	na
Radiology-Diagnostic (PGY2)	2	0	2	0%
Surgery (PGY-1) *	41	19	22	46%
Thoracic Surgery (PGY-1)	1	1	0	100%
Transitional Year/Rotating Internship (PGY-1)	27	4	23	15%
Vascular Surgery (PGY-1)	0	0	0	na
Specialty Areas Chosen by SC Graduates Not Included in the NRMP List of SC GME programs:				
Pediatrics/psych/child psych	1	0		
Physical Medicine and Rehabilitation	3	1		
Plastic Surgery (Integrated)	2	0		
Research Fellowship	1	1		
Totals:	**393**	**107**	**286**	**27%**

South Carolina student-GME match information provided by the Colleges of Medicine at the University of South Carolina, the Medical University of South Carolina and by the Edward Via College of Osteopathic Medicine for their inaugural graduating class.

* Surgery numbers include preliminary years

* Internal Medicine numbers include Neuromuscular Medicine and preliminary years

Table 2. Number and Percent of South Carolina GME PGY-1 Slots in the 2013 Match and Supplemental Offer and Acceptance Program (SOAP) filled by SC Medical School Graduates

National Residency Match Program statistics for 2013 have been combined with information about the number of 2013 SC medical graduates who matched to SC GME programs in that specialty area. Information about matches during the SOAP was obtained from the individual GME programs affected.

South Carolina GME PGY-1 slots by specialty area in 2013	# of available positions	# filled in the Match	# filled in the SOAP	# filled by US allopathic seniors	# of 2013 SC graduates who matched in 2013	% of SC slots filled by US seniors that were SC graduates
Anesthesiology (PGY-1)	18	15	unknown	15	2	13.3%
Child Neurology (PGY-1)	2	1	0	1	1	100.0%
Dermatology (PGY-2)	3	3	na	3	1	33.3%
Emergency Medicine (PGY-1)	16	16	na	15	3	20.0%
Family Medicine (PGY-1)	64	64	na	44	10	22.7%
*Internal Medicine (PGY-1)	59	58	1	51	16	31.4%
Internal Medicine/Pediatrics (PGY-1)	7	7	na	7	2	28.6%
Internal Medicine/Psychiatry (PGY-1)	1	1	na	1	0	0.0%
Neurological Surgery (PGY-1)	1	1	na	1	0	0.0%
Neurology (PGY-1)	12	8	3	6	0	0.0%
Obstetrics and Gynecology (PGY-1)	16	16	na	15	8	53.3%
Orthopedic Surgery (PGY-1)	9	9	na	9	1	11.1%
Otolaryngology (PGY-1)	3	3	na	3	0	0.0%
Pathology (PGY-1)	6	6	na	5	1	20.0%
Pediatrics (PGY-1)	39	39	na	34	6	17.6%
Psychiatry (PGY-1)	23	23	na	17	9	52.9%
Psychiatry/Neurology (PGY-1)	1	1	na	1	0	0.0%
Radiation Oncology (PGY-2)	1	1	na	1	0	0.0%
Radiology-Diagnostic (pgy2)	8	8	na	6	1	16.7%
* Surgery (PGY-1)	40	30	10	34	6	17.6%
Thoracic Surgery (PGY-1)	1	1	na	1	0	0.0%
Transitional Year (PGY-1)	12	12	na	12	1	8.3%
Vascular Surgery (PGY-1)	1	1	na	1	0	0.0%
Totals:	**343**	**324**	**14**	**283**	**68**	**25.1%**
Ophthalmology (considered Prelim Surgery for PGY1s)					2	
Urology (considered Prelim Surgery for PGY1s)					1	
				Total:	**71**	

Data sources: National Residency Match Results by State and Specialty 2013 report. South Carolina graduate matches provided by the Colleges of Medicine at University of South Carolina and Medical University of South Carolina.

* Note that the Surgery category includes both general surgery and surgery-preliminary

* Note that Internal Medicine includes preliminary slots and placements

Table 2. Number and Percent of South Carolina GME PGY-1 Slots in the 2014 Match and Supplemental Offer and Acceptance Program (SOAP) Filled by SC Medical School Graduates

National Residency Match Program statistics for 2014 have been combined with information about the number of 2014 SC medical graduates who matched to SC GME programs in that specialty area. Information about matches during the SOAP was obtained from the individual GME programs affected.

South Carolina GME PGY-1 slots by specialty area in 2014	# of available positions	# filled in the Match	# who filled in the SOAP	# filled by US allopathic seniors	# of 2014 SC graduates who matched in 2014	% of SC slots filled by US seniors that were SC graduates
Anesthesiology (PGY-1)	15	13	2	14	3	21%
Child Neurology (PGY-1)	1	0	1	0	0	0%
Dermatology (PGY-2)	3	3	na	3	1	33%
Emergency Medicine (PGY-1)	16	16	na	16	3	19%
Family Medicine (PGY-1)	64	58	6	39	10	26%
Internal Medicine (PGY-1) *	59	57	2	46	15	33%
Internal Medicine/Pediatrics (PGY-1)	7	7	na	7	2	29%
Internal Medicine/Psychiatry (PGY-1)	2	2	na	2	0	0%
Neurological Surgery (PGY-1)	2	2	na	2	0	0%
Neurology (PGY-1)	8	8	na	5	1	20%
Obstetrics and Gynecology (PGY-1)	16	16	na	14	6	43%
Orthopedic Surgery (PGY-1)	9	9	na	9	1	11%
Otolaryngology (PGY-1)	3	3	na	3	0	0%
Pathology (PGY-1)	5	5	na	5	1	20%
Pediatrics (PGY-1)	39	39	na	34	8	24%
Psychiatry (PGY-1)	23	23	na	17	8	47%
Psychiatry/Neurology (PGY-1)	1	1	na	1	0	0%
Radiation Oncology (PGY-2)	2	2	na	2	1	50%
Radiology-Diagnostic (PGY2)	9	9	na	8	2	25%
Surgery (PGY-1) *	40	35	5	32	4	13%
Thoracic Surgery (PGY-1)	1	1	na	1	0	0%
Transitional Year (PGY-1)	12	12	na	11	0	0%
Vascular Surgery (PGY-1)	1	1	na	1	0	0%
Totals:	**338**	**322**	**16**	**272**	**see below**	**25%**

Program types in student records but not in NRMP report:

Orthopedic Research		1
Otolaryngology Research		1
	Total:	**68**

Data sources: National Residency Match Results by State and Specialty 2014 report. South Carolina graduate matches provided by the Colleges of Medicine at University of South Carolina and Medical University of South Carolina.

* Note that the Surgery category includes both general surgery and surgery-preliminary

* Note that the Internal Medicine category includes preliminary slots and placements

Table 2. Number and Percent of South Carolina GME PGY-1 Slots in the 2015 Match and Supplemental Offer and Acceptance Program (SOAP) Filled by SC Medical School Graduates

National Residency Match Program statistics for 2015 have been combined with information about the number of 2015 SC medical graduates who matched to SC GME programs in that specialty area. Information about matches during the SOAP was obtained from the individual GME programs affected.

South Carolina GME PGY-1 slots by specialty area in 2015	# of available positions	# filled in the Match	# filled in the SOAP	# filled by US allopathic seniors	# filled by osteopathic seniors and graduates	# of 2015 SC graduates who matched in 2015	% of SC slots filled by US seniors that were SC graduates
Anesthesiology (PGY-1)	15	15	na	14	0	5	36%
Child Neurology (PGY-1)	1	0	1	1	0	1	100%
Dermatology (PGY-2)	3	3	na	3	0	1	33%
Emergency Medicine (PGY-1)	19	19	na	15	3	8	44%
Family Medicine (PGY-1)	65	57	8	44	12	17	30%
Internal Medicine (PGY-1)	68	68	na	47	13	15	25%
Internal Medicine/Pediatrics (PGY-1)	7	7	na	6	1	0	0%
Internal Medicine/Psychiatry (PGY-1)	2	2	na	1	1	1	50%
Neurological Surgery (PGY-1)	2	2	na	1	0	0	0%
Neurology (PGY-1)	9	9	na	4	0	1	25%
Obstetrics and Gynecology (PGY-1)	16	16	na	12	4	9	56%
Orthopedic Surgery (PGY-1)	10	10	na	9	0	2	22%
Otolaryngology (PGY-1)	4	4	na	4	0	1	25%
Pathology (PGY-1)	5	5	na	4	0	0	0%
Pediatrics (PGY-1)	39	39	na	30	7	16	43%
Psychiatry (PGY-1)	23	23	na	16	4	4	20%
Radiation Oncology (PGY-2)	1	1	na	1	0	0	0%
Radiology-Diagnostic (PGY2)	9	9	na	7	2	0	0%
Surgery (PGY-1) *	46	37	9	37	5	19	45%
Thoracic Surgery (PGY-1)	1	1	na	1	0	1	100%
Transitional Year (PGY-1)	12	12	na	11	1	4	33%
Vascular Surgery (PGY-1)	1	1	na	1	0	0	0%
Totals:	**358**	**340**	**18**	**269**	**53**	**see below**	**33%**

Program types in student records but not in NRMP report:

Research Fellowship	1
Physical Medicine and Rehabilitation	1
Totals:	**107**

Data sources: National Residency Match Results by State and Specialty 2015 report. South Carolina graduate matches provided by the Colleges of Medicine at University of South Carolina, Medical University of South Carolina and the Edward Via College of Osteopathic Medicine, South Carolina Campus, which had their first graduating class in 2015.

* Note that the Surgery category includes both general surgery and surgery-preliminary

* Note that Internal Medicine includes preliminary slots and placements