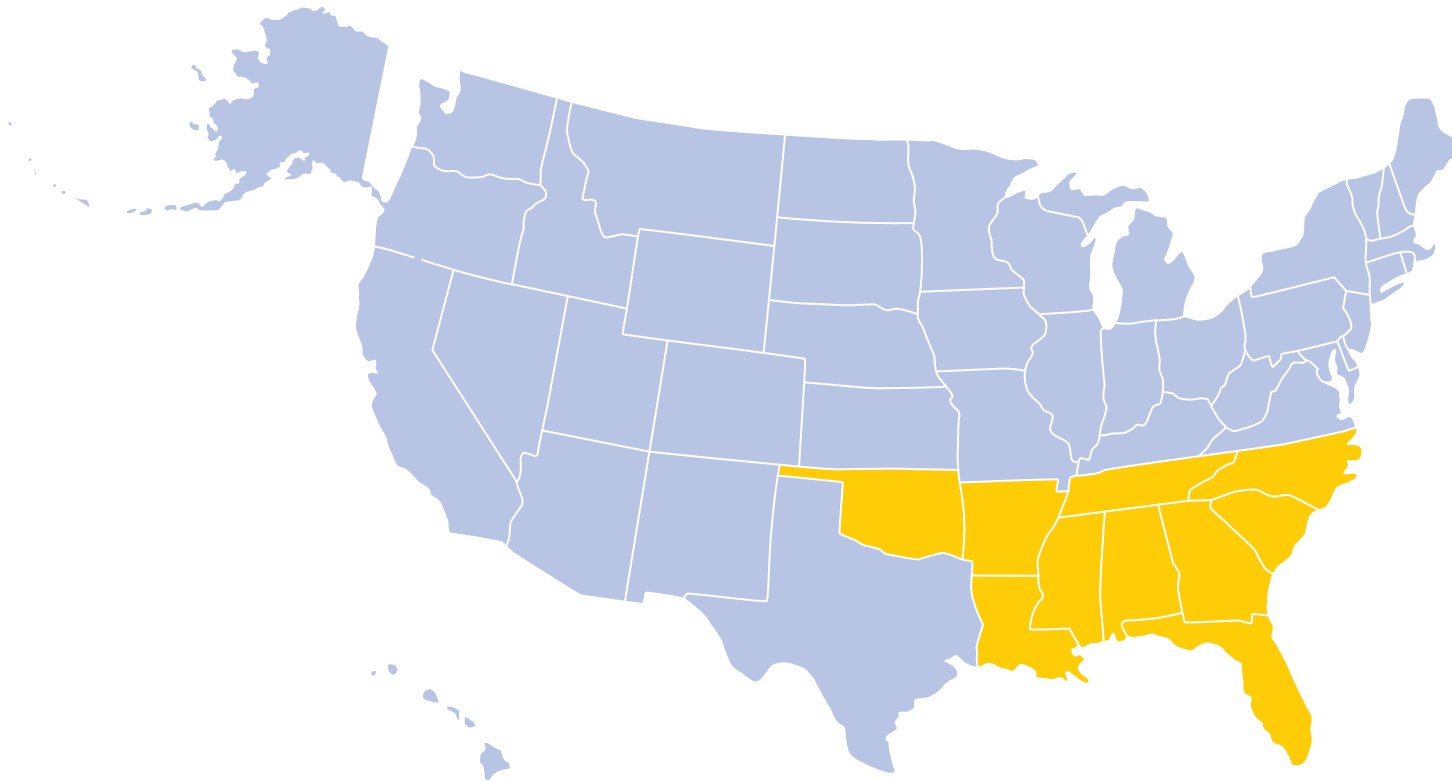


# ANESTHESIA WORKFORCE SUMMARY

## SOUTHERN CAUCUS



HEALTH POLICY RESEARCH DEPARTMENT

FEBRUARY 2015

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## INTRODUCTION

The purpose of this report is to summarize the anesthesia workforce supply<sup>1</sup> in the Midwest Caucus states to help inform ASA member discussions on workforce trends and related issues. The information presented in this inaugural report is based on publicly available data from:

- the National Provider Identifier (NPI) dataset,
- the Medicare Physician Compare National Downloadable File (Physician Compare),
- the American Medical Association (AMA),
- an anesthesia workforce analysis by the RAND Corporation (RAND), and
- the U.S. Census Bureau.



THREE MAJOR  
WORKFORCE  
DATA SOURCES

The three workforce data sources used in this report (NPI, Physician Compare, and the AMA) are the likely sources used in most published reports on the anesthesia and perioperative workforce. The development and purpose of the data are different for each source and understanding these differences is essential for any review of information using these data. The NPI data are updated weekly; the Physician Compare dataset is as of December 2014; and AMA data represent 2013 information. Both the NPI and Physician Compare data include nurse anesthetists. The AMA data used in this report are derived from the AMA Physician Masterfile. **APPENDIX A** contains additional information about the three data sources used in this report.

This anesthesia workforce summary includes several state-level and inter-caucus comparisons. The composition of anesthesia practices within a local market may be quite different; and it is important to recognize these differences. The workforce summary can help caucuses better understand differences among their state members and identify regional and national trends. The data should prove useful for evaluating membership goals and understanding differences in policy priorities among states. This information can be supplemented with state society data and other local data sources to form a more accurate profile of the anesthesia workforce in the caucus states.

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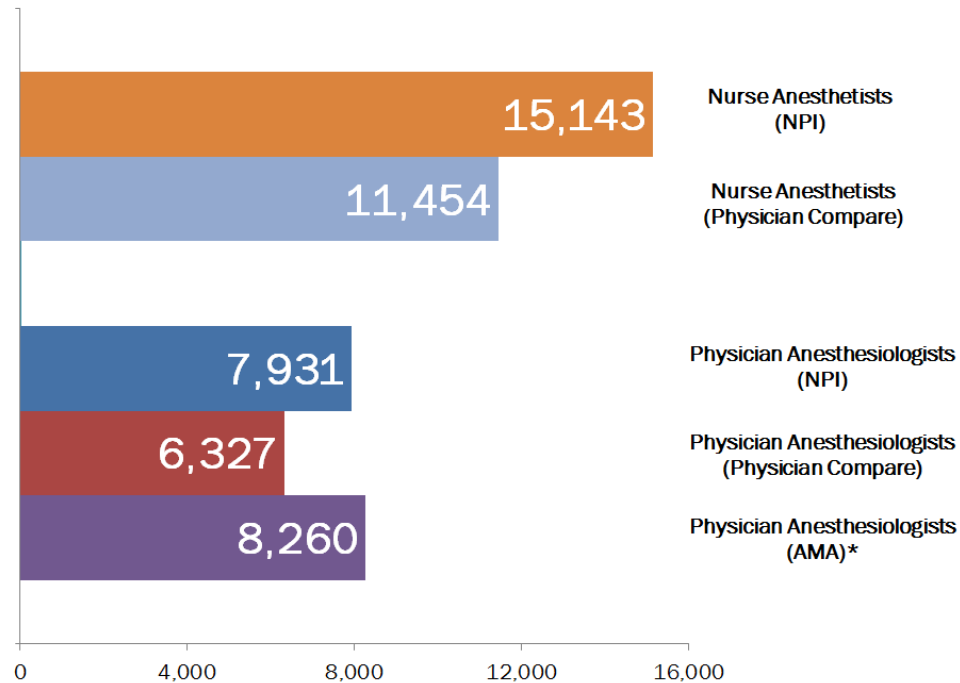
<sup>1</sup>The data reflect total counts for physician and nurse anesthesia professionals and not full-time equivalents (FTEs). That is, the workforce data are not adjusted to account for differences in work hours or productivity.

## SUMMARY OF SOUTHERN ANESTHESIA WORKFORCE

Physician anesthesiologists and nurse anesthetists in the Southern Caucus states account for 17.4 percent and 32.5 percent of their respective total workforces in the United States (U.S.) (based on NPI data).

FIGURE 1

SOUTHERN CAUCUS NURSE ANESTHETISTS AND PHYSICIAN ANESTHESIOLOGISTS BY DATA SOURCE

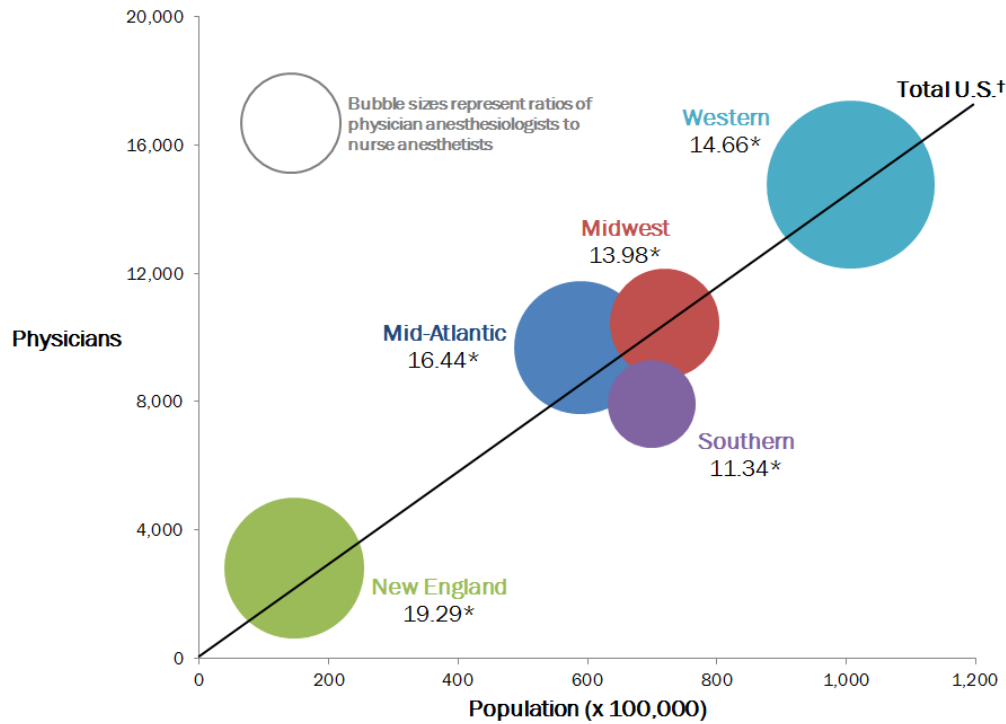


\*Includes only physicians who self-reported as being involved in patient care activity.

FIGURE 1 compares anesthesia workforce counts between the three datasets used in this analysis. The ratio of physicians to nurses based on NPI and Physician Compare data are 0.52 and 0.55, respectively. The numbers of physician anesthesiologists in AMA and NPI data are relatively close (<5% difference). The workforce counts based on Physician Compare data are 75-80 percent of the NPI counts.

**FIGURE 2**

**NUMBER OF PHYSICIANS, POPULATION AND WORKFORCE RATIOS BY CAUCUS, JANUARY 2015**



Southern Caucus Anesthesia Workforce Ratio	Compared to Rest of U.S., Is:
Physicians to Population	26% LOWER
Nurses to Population	70% HIGHER
Physicians to Nurses	57% LOWER
Total‡ to Population	22% HIGHER

‡Total includes physician anesthesiologists, nurse anesthetists and anesthesiologist assistants.

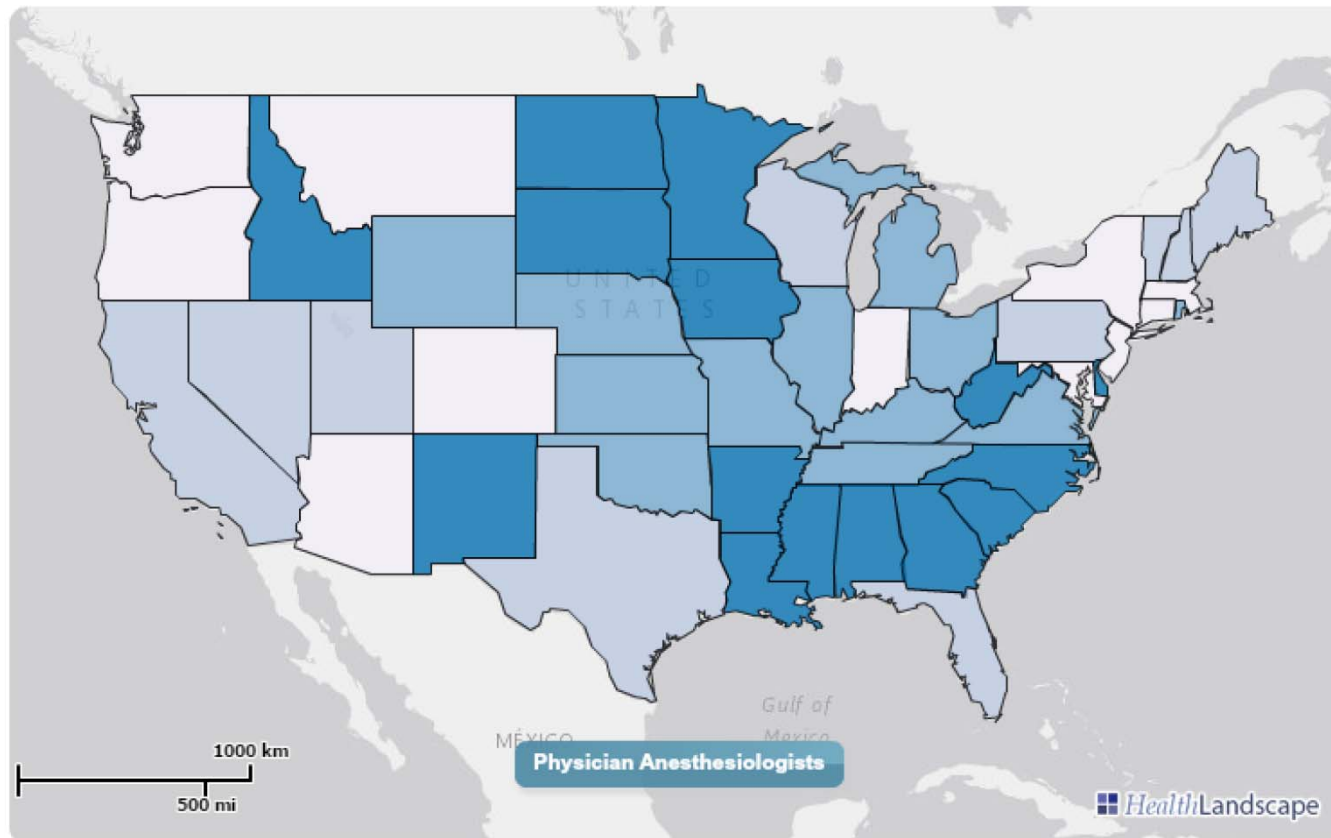
\*Represents ratio of physicians per 100,000 population.

†Slope of line represents overall U.S. ratio of physicians per 100,000 population (14.44).

Sources: Workforce data from Medicare National Plan & Provider Enumeration System (NPPES). Population data from U.S. Census Bureau (estimates for July 2013). Calculations by ASA Health Policy Research Department.

**FIGURE 2** compares physician anesthesiologist workforces across all five ASA caucuses, including ratios of physician anesthesiologists to population and to nurse anesthetists. The accompanying table compares anesthesia workforce ratios for the Southern Caucus with the combined other four caucuses.

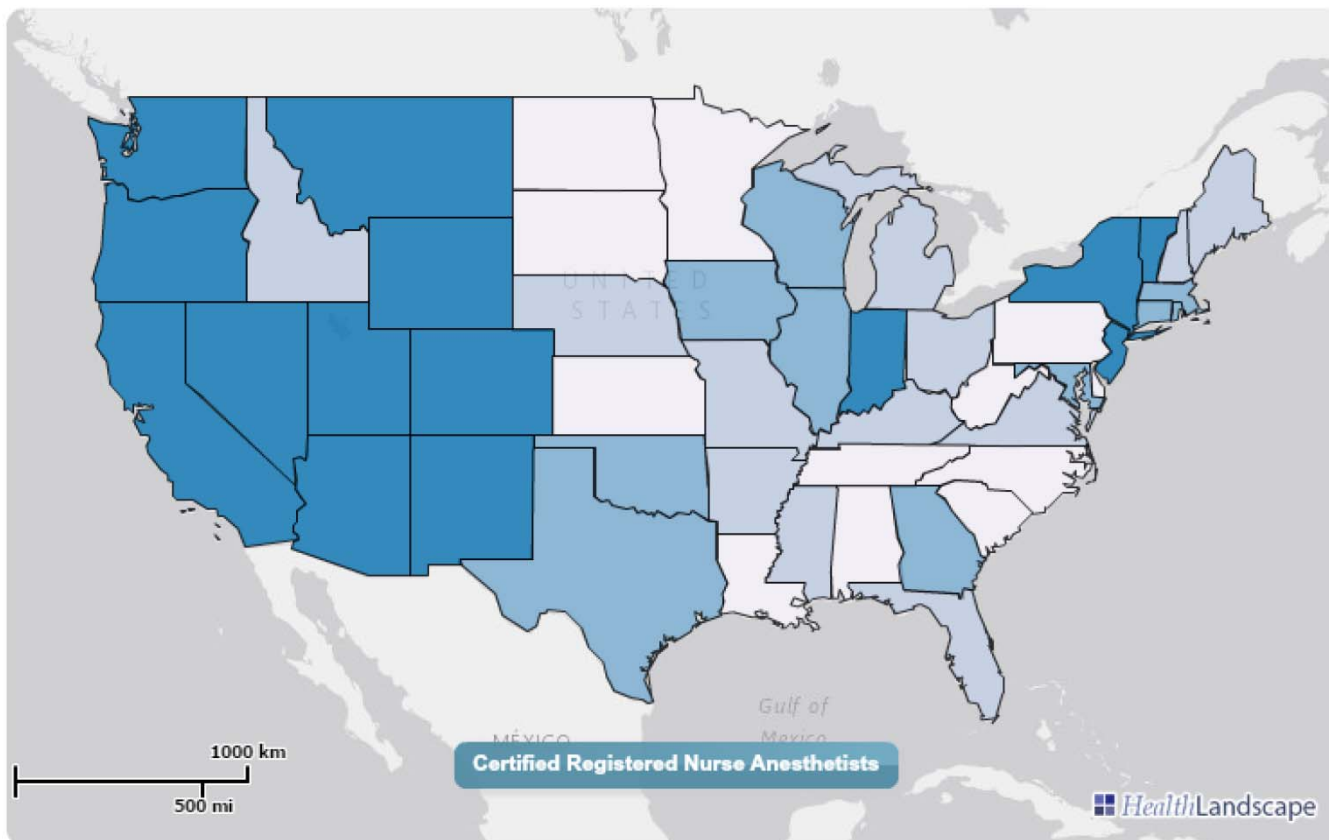
**FIGURE 3**  
**RATIO OF POPULATION TO PHYSICIAN ANESTHESIOLOGIST WORKFORCE BY STATE, 2013**  
Created with AMA Health Workforce Mapper



**Population per Provider**  
2,686 to 7,056  
7,142 to 7,925  
8,246 to 9,976  
10,077 to 14,251

Source: American Medical Association Health Workforce Mapper. Accessed February 18, 2015 from <http://www.ama-assn.org/ama/priv/advocacy/state-advocacy-arc/health-workforce-mapper-a.page>.

**FIGURE 4**  
**RATIO OF POPULATION TO NURSE ANESTHETIST WORKFORCE BY STATE, 2013**  
Created with AMA Health Workforce Mapper



Population per Provider  
2,460 to 4,376  
4,486 to 6,585  
6,913 to 9,954  
11,051 to 27,278

Source: American Medical Association Health Workforce Mapper. Accessed February 18, 2015 from <http://www.ama-assn.org/ama/priv/advocacy/state-advocacy-arc/health-workforce-mapper-a.page>.



## SOUTHERN CAUCUS ANESTHESIA WORKFORCE PROFILE

FIGURE 5 and TABLES 1-3 (pages 7-10) profile the anesthesia workforce based on the three datasets used in this report: NPI, Physician Compare, and AMA. Key observations are provided below.

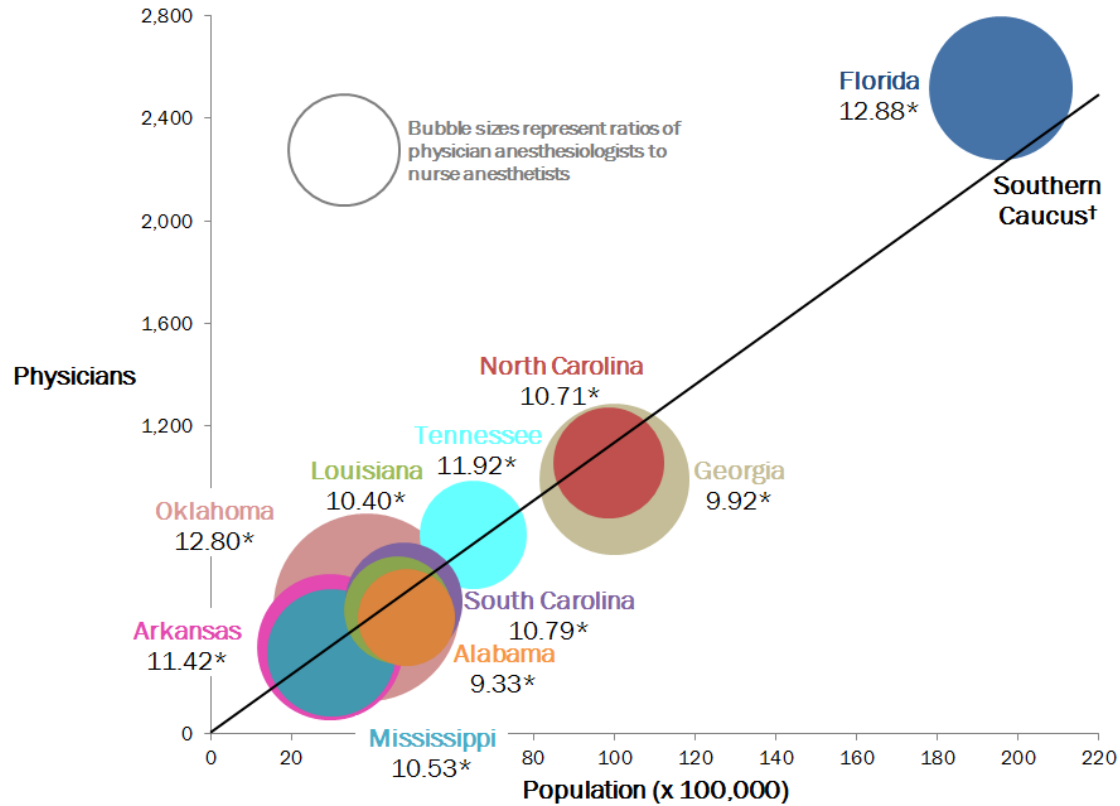
- There is relatively little variation in the concentration of the anesthesia workforce by state<sup>2</sup>.
  - 9 out of 10 states have a ratio of physicians to nurses that is less than 1.
  - Based on AMA data, the ratio of physicians to population ranges from 9.09 (MS) to 13.78 (FL) (patient care physicians).
- All 10 states had an increase in the anesthesia workforce (physicians and nurses) between 2008 and 2013 (based on AMA data) and between December 2012 and January 2015 (based on NPI data).
- Based on NPI data, **Alabama** has the lowest ratio of physicians to population and the second-highest ratio of nurses to population.
  - Based on AMA data, **Mississippi** has the lowest ratio of physicians to population.
- Based on NPI data, **South Carolina** had the highest increase in the number of physicians between December 2012 and January 2015 by a wide margin.
  - Based on AMA data, **South Carolina** had the second-highest increase in the number of patient care physicians between 2008 and 2013.

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<sup>2</sup>Assessment by ASA Health Policy Research Department based on comparison of standard errors between caucuses.

**FIGURE 5**

**NUMBER OF PHYSICIANS, POPULATION AND WORKFORCE RATIOS IN SOUTHERN CAUCUS BY STATE, JANUARY 2015**



\*Represents ratio of physicians per 100,000 population.

†Slope of line represents overall Southern Caucus ratio of physicians per 100,000 population (11.34).

Sources: Workforce data from Medicare National Plan & Provider Enumeration System (NPPES). Population data from U.S. Census Bureau (estimates for July 2013). Calculations by ASA Health Policy Research Department.

**FIGURE 5** compares physician anesthesiologist workforces across all 10 states in the Southern Caucus, including ratios of physician anesthesiologists to population and to nurse anesthetists.

**TABLE 1**  
**ANESTHESIA WORKFORCE BASED ON NATIONAL PROVIDER IDENTIFIER (NPI) DATASET, JANUARY 2015**

State	Number of Professionals		25-month Change (%)†		Ratio of Physicians to Nurses	Number per 100,000 Population		
	Physicians	Nurses	Physicians	Nurses		Physicians	Nurses	Total*
Alabama	451	1,471	4.4	9.9	0.31	9.33	30.43	40.03
Arkansas	338	483	2.1	14.5	0.70	11.42	16.32	27.84
Florida	2,518	3,749	4.4	13.2	0.67	12.88	19.17	33.03
Georgia	991	1,335	5.9	11.7	0.74	9.92	13.36	32.03
Louisiana	481	1,292	7.4	9.0	0.37	10.40	27.93	38.48
Mississippi	315	588	7.5	5.6	0.54	10.53	19.66	30.26
North Carolina	1,055	2,623	4.2	10.8	0.40	10.71	26.63	37.46
Oklahoma	493	432	3.4	14.3	1.14	12.80	11.22	24.15
South Carolina	515	1,139	13.9	9.3	0.45	10.79	23.85	35.14
Tennessee	<u>774</u>	<u>2,031</u>	4.6	9.0	0.38	11.92	31.27	43.21
<b>Southern Caucus</b>	<b>7,931</b>	<b>15,143</b>	<b>5.3</b>	<b>10.9</b>	<b>0.52</b>	<b>11.34</b>	<b>21.66</b>	<b>34.62</b>
<b>Other Caucuses</b>	<b><u>37,704</u></b>	<b><u>31,409</u></b>	<b>5.9</b>	<b>12.8</b>	<b>1.20</b>	<b>15.31</b>	<b>12.76</b>	<b>28.32</b>
<b>Total U.S.</b>	<b>45,635</b>	<b>46,552</b>	<b>5.8</b>	<b>12.1</b>	<b>0.98</b>	<b>14.44</b>	<b>14.73</b>	<b>29.72</b>

\*Total includes physician anesthesiologists, nurse anesthetists and anesthesiologist assistants.

†Based on data for December 2012 and January 2015.

Sources: Workforce data from Medicare National Plan & Provider Enumeration System (NPPES). Population data from U.S. Census Bureau (estimates for July 2013). Calculations by ASA Health Policy Research Department.

**TABLE 2**  
**ANESTHESIA WORKFORCE BASED ON PHYSICIAN COMPARE, 2014**

State	Number of Professionals		Ratio of Physicians to Nurses	Number per 100,000 Population		
	Physicians	Nurses		Physicians	Nurses	Total*
Alabama	447	1,166	0.38	9.25	24.12	33.63
Arkansas	220	404	0.55	7.43	13.63	21.07
Florida	1,873	2,566	0.73	9.58	13.12	23.49
Georgia	793	978	0.81	7.94	9.79	24.82
Louisiana	428	1,043	0.41	9.24	22.54	31.78
Mississippi	225	478	0.47	7.52	15.98	23.50
North Carolina	926	2,037	0.45	9.40	20.69	30.15
Oklahoma	380	394	0.96	9.87	10.23	20.13
South Carolina	429	904	0.47	8.98	18.93	28.37
Tennessee	606	1,485	0.41	9.34	22.86	32.19
<b>Southern Caucus</b>	<b>6,327</b>	<b>11,454</b>	<b>0.55</b>	<b>9.05</b>	<b>16.38</b>	<b>26.72</b>
<b>Other Caucuses</b>	<b>29,123</b>	<b>24,399</b>	<b>1.19</b>	<b>11.83</b>	<b>9.91</b>	<b>21.93</b>
<b>Total U.S.</b>	<b>35,450</b>	<b>35,853</b>	<b>0.99</b>	<b>11.21</b>	<b>11.34</b>	<b>22.99</b>

\*Total includes physician anesthesiologists, nurse anesthetists and anesthesiologist assistants.

Sources: Workforce data from Medicare Physician Compare. Population data from U.S. Census Bureau (estimates for July 2013).  
Calculations by ASA Health Policy Research Department.

**TABLE 3**  
**ANESTHESIA WORKFORCE BASED ON AMERICAN MEDICAL ASSOCIATION (AMA) DATA, 2013**

State	Number of Physicians		Five-Year Change in Physicians (%)†		Physicians per 100,000 Population	
	Total	Patient Care	Total	Patient Care	Total	Patient Care
Alabama	543	532	10.1	11.3	11.23	11.01
Arkansas	310	305	4.0	4.1	10.48	10.31
Florida	2,742	2,694	3.9	4.0	14.02	13.78
Georgia	1,068	1,048	6.3	6.2	10.69	10.49
Louisiana	595	587	14.0	13.8	12.86	12.69
Mississippi	277	272	6.5	7.1	9.26	9.09
North Carolina	1,116	1,074	10.3	9.6	11.33	10.91
Oklahoma	399	393	9.3	8.9	10.36	10.21
South Carolina	545	534	12.6	12.4	11.41	11.18
Tennessee	850	821	10.0	8.9	13.09	12.64
<b>Southern Caucus</b>	<b>8,445</b>	<b>8,260</b>	<b>7.6</b>	<b>7.4</b>	<b>12.08</b>	<b>11.81</b>
<b>Other Caucuses</b>	<b>37,489</b>	<b>36,475</b>	<b>9.8</b>	<b>9.6</b>	<b>15.23</b>	<b>14.81</b>
<b>Total U.S.</b>	<b>45,934</b>	<b>44,735</b>	<b>9.4</b>	<b>9.2</b>	<b>14.53</b>	<b>14.15</b>

†Based on AMA data for 2008 and 2013.

Sources: Workforce data from American Medical Association's *Physician Characteristics and Distribution in the US (2015 edition)*. "Patient Care" numbers include physicians who self-reported as being involved in patient care activity. Population data from U.S. Census Bureau (estimates for July 2013). Calculations by ASA Health Policy Research Department.

## ANESTHESIOLOGY AND SURGICAL<sup>3</sup> WORKFORCES IN THE SOUTHERN CAUCUS

TABLE 4 profiles the anesthesia and surgical workforces based on AMA and NPI data. Key observations are provided below.

- The Southern Caucus has lower ratios of physician anesthesiologists to GI physicians (gastroenterologist) and to OB/GYN physicians than the rest of the U.S.
  - They have relatively similar ratios of physician anesthesiologists to Other Surgeons and Total Surgeons compared to the rest of the U.S.
- There is relatively little variation in ratios of anesthesia to surgical workforce between states (across all subspecialties and both datasets).
- **Georgia** has the lowest ratio of physician anesthesiologists to OB/GYN physicians in both datasets.
- **North Carolina** has the lowest ratio of physician anesthesiologists to GI physicians in both datasets.
- **Louisiana** has the lowest ratio of physician anesthesiologists to Total Surgeons based on NPI, and is tied for the lowest in this ratio based on AMA (**Mississippi** is the other).
- There is no agreement between datasets on the highest ratios of anesthesia workforce to surgical workforce (across Total and all subspecialty ratios).

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<sup>3</sup>For purposes of this report, “surgical” also includes OB/GYN physicians and gastroenterologists.

**TABLE 4**  
**ANESTHESIOLOGY AND SURGICAL WORKFORCE RATIOS BASED ON NPI AND AMA DATASETS**

State	Ratios of Anesthesiologists to Surgeons Based on NPI Data, 2015				Ratios of Anesthesiologists to Surgeons Based on AMA Data*, 2013			
	GI§	OB/GYN	Other Surgeons†	TOTAL	GI§	OB/GYN	Other Surgeons†	TOTAL
Alabama	2.62	0.91	0.29	0.20	3.35	0.92	0.30	0.21
Arkansas	3.84	1.28	0.37	0.27	3.55	1.08	0.34	0.24
Florida	2.47	1.11	0.33	0.23	2.81	1.16	0.36	0.25
Georgia	2.45	0.77	0.29	0.20	2.78	0.77	0.31	0.21
Louisiana	2.32	0.81	0.27	0.18	2.89	0.81	0.27	0.19
Mississippi	2.69	0.92	0.33	0.22	2.59	0.81	0.28	0.19
North Carolina	2.17	0.80	0.29	0.19	2.54	0.81	0.29	0.20
Oklahoma	3.57	1.17	0.36	0.26	3.57	1.18	0.37	0.26
South Carolina	2.60	0.80	0.27	0.19	3.10	0.86	0.31	0.21
Tennessee	2.38	1.03	0.31	0.22	3.01	0.92	0.30	0.21
<b>Southern Caucus</b>	<b>2.51</b>	<b>0.95</b>	<b>0.31</b>	<b>0.21</b>	<b>2.88</b>	<b>0.94</b>	<b>0.32</b>	<b>0.22</b>
<b>Other Caucuses</b>	<b>3.09</b>	<b>1.13</b>	<b>0.38</b>	<b>0.26</b>	<b>3.40</b>	<b>1.09</b>	<b>0.37</b>	<b>0.26</b>
<b>Total U.S.</b>	<b>2.97</b>	<b>1.09</b>	<b>0.37</b>	<b>0.25</b>	<b>3.29</b>	<b>1.06</b>	<b>0.36</b>	<b>0.25</b>

\*Includes physicians who self-reported as being involved in patient care activity.

§Gastroenterology

†Other Surgeons include the following surgical specialties: Colon and Rectal Surgery, General Surgery, Neurological Surgery, Ophthalmology, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Thoracic Surgery and Urology, and Transplant Surgery.

Sources: Medicare National Plan & Provider Enumeration System (NPPES) and American Medical Association's *Physician Characteristics and Distribution in the US (2015 edition)*. Calculations by ASA Health Policy Research Department.

## SOUTHERN CAUCUS PAIN MEDICINE\* WORKFORCE PROFILE

TABLE 5 profiles the pain medicine workforce based on NPI data. Key observations are provided below.

- Anesthesia pain physicians and pain medicine physicians in the Southern Caucus states account for 21.9 and 29.2 percent of their respective total workforces in the U.S.
- The Southern Caucus has higher ratios of pain medicine physicians and total pain physicians to population than the rest of the U.S.
  - They have a similar ratio of anesthesia pain physicians to population as the rest of the U.S.
- The Southern Caucus has a lower ratio of anesthesia pain physicians to pain medicine physicians than the rest of the U.S.
- There is relatively little variation between states in the ratios of pain physicians to population (total and both subspecialties).
  - **Florida** is the exception, which has significantly higher ratios of pain physicians to population than the rest of the Southern Caucus (total and both subspecialties).
- There is relatively high variation between states in the ratio of anesthesia pain physicians to pain medicine physicians.
  - This ratio ranges from 0.53 (GA) to 1.85 (TN).
- **Arkansas** was the only state with a percentage decrease in either pain subspecialty between December 2012 and January 2015.
- **Mississippi** had an exceptionally high percentage increase in pain medicine physicians between December 2012 and January 2015.

\*NOTE: For purposes of this report, the Pain Medicine workforce is based on the following primary NPI taxonomies: **Pain Medicine** (likely not an anesthesiologist: 208VP0014X, Interventional Pain Medicine; and 208VP0000X, Pain Medicine) and **Anesthesia Pain** (207LP2900X, Anesthesiology-Pain).



**TABLE 5**  
**PAIN MEDICINE\* WORKFORCE BASED ON NPI DATASET, 2013**

State	Number of Professionals		25-month Change (%)†		Ratio of Anesthesia Pain to Pain Medicine	Number per 100,000 Population		
	Anesthesia Pain	Pain Medicine	Anesthesia Pain	Pain Medicine		Anesthesia Pain	Pain Medicine	Total*
	Alabama	31	32	14.81		23.08	0.97	0.64
Arkansas	16	13	-5.88	0.00	1.23	0.54	0.44	0.98
Florida	292	265	5.04	18.83	1.10	1.49	1.36	2.85
Georgia	65	123	14.04	24.24	0.53	0.65	1.23	1.88
Louisiana	32	36	28.00	33.33	0.89	0.69	0.78	1.47
Mississippi	28	22	7.69	83.33	1.27	0.94	0.74	1.67
North Carolina	69	49	13.11	8.89	1.41	0.70	0.50	1.20
Oklahoma	27	30	8.00	15.39	0.90	0.70	0.78	1.48
South Carolina	30	33	25.00	17.86	0.91	0.63	0.69	1.32
Tennessee	61	33	7.02	13.79	1.85	0.94	0.51	1.45
<b>Southern Caucus</b>	<b>651</b>	<b>636</b>	<b>0.09</b>	<b>0.20</b>	<b>1.02</b>	<b>0.93</b>	<b>0.91</b>	<b>1.84</b>
<b>Other Caucuses</b>	<b>2,328</b>	<b>1,542</b>	<b>0.13</b>	<b>0.19</b>	<b>1.51</b>	<b>0.95</b>	<b>0.63</b>	<b>1.57</b>
<b>Total U.S.</b>	<b>2,979</b>	<b>2,178</b>	<b>0.12</b>	<b>0.19</b>	<b>1.37</b>	<b>0.94</b>	<b>0.69</b>	<b>1.63</b>

\*For purposes of this report, the Pain Medicine workforce is based on the following primary NPI taxonomies: **Pain Medicine** (likely not an anesthesiologist: 208VP0014X, Interventional Pain Medicine; and 208VP0000X, Pain Medicine) and **Anesthesia Pain** (207LP2900X, Anesthesiology-Pain).

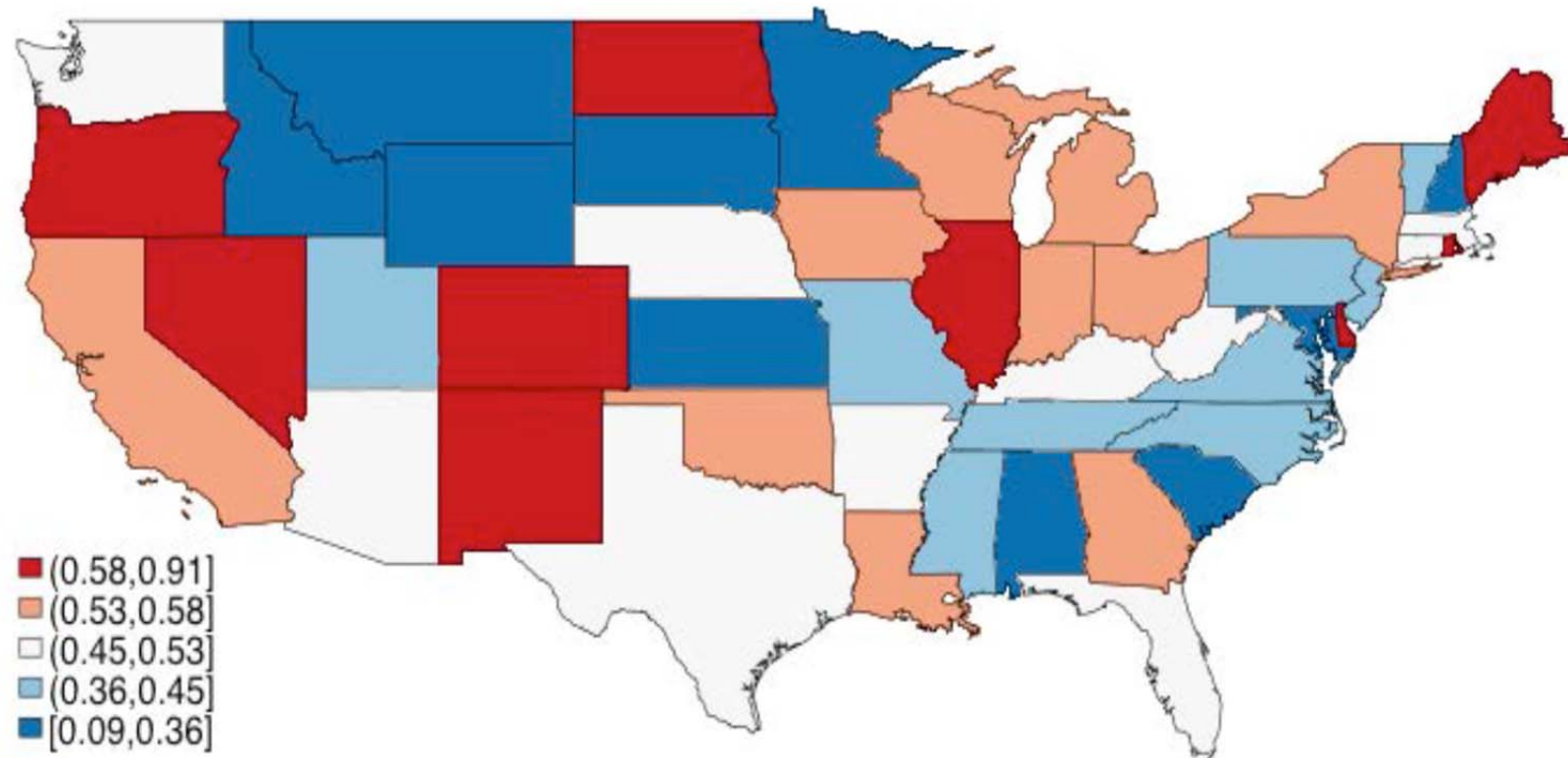
†Based on data for December 2012 and January 2015.

‡Total may not foot due to rounding.

Sources: Workforce data from Medicare National Plan & Provider Enumeration System (NPPES). Population data from U.S. Census Bureau (estimates for July 2013). Calculations by ASA Health Policy Research Department.

FIGURE 6

PROPORTION OF ANESTHESIOLOGISTS REPORTING A NEED FOR MORE ANESTHESIOLOGISTS\* BY STATE  
 From 2014 RAND Research Report: *The Anesthesiologist Workforce in 2013*



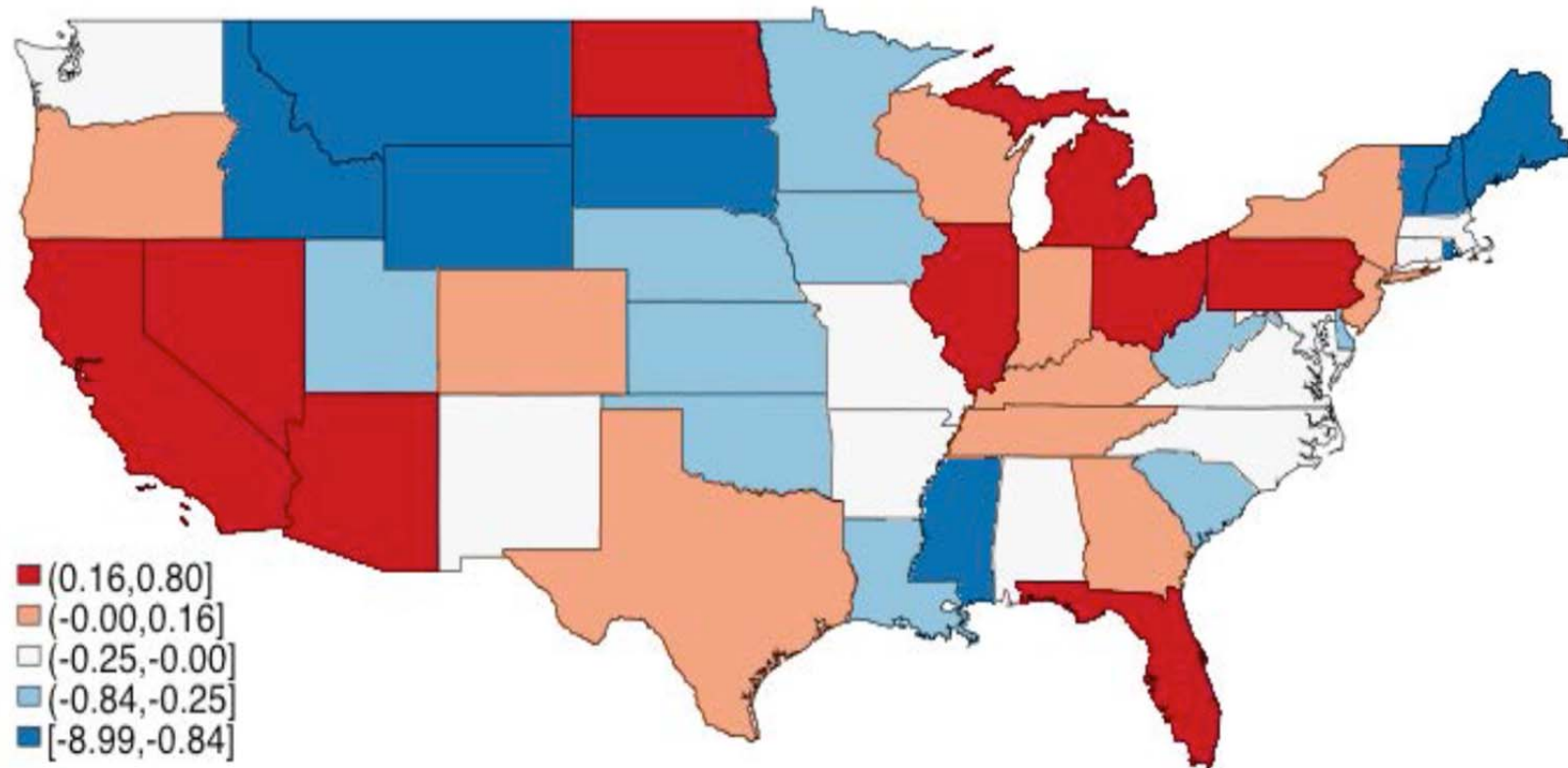
In the legend above, square brackets indicate that the endpoint number is included in the range; parentheses indicate that the endpoint is not included in the range.

\*Defined as respondents who reported “My facility would prefer more anesthesiologists to cover current demand.”

Source: The RAND Corporation: *The Anesthesiologist Workforce in 2013*. RAND Research Report 2014.  
[\[http://www.rand.org/pubs/research\\_reports/RR650.html\]](http://www.rand.org/pubs/research_reports/RR650.html)

FIGURE 7

SHORTAGE OF ANESTHESIOLOGISTS BY STATE  
 From 2014 RAND Research Report: *The Anesthesiologist Workforce in 2013*



NOTES: Based on results from a survey conducted by RAND in April and May of 2013. The numbers in the bracket represent the shortage of anesthesiologists divided by the total number of anesthesiologists in the state (full time equivalents). RAND aggregated a series of shortage indicators from their survey (e.g. facility prefers more anesthesiologists, number of open anesthesiologist positions, elasticity of labor supply, change in wages) into a single shortage variable which they used to estimate the probability that a state is in shortage. Dark red states have a shortage, while darker blue states have a greater surplus. In the legend, square brackets indicate that the endpoint number is included in the range; parentheses indicate that the endpoint is not included in the range.

Source: The RAND Corporation: *The Anesthesiologist Workforce in 2013*. RAND Research Report 2014.  
[\[http://www.rand.org/pubs/research\\_reports/RR650.html\]](http://www.rand.org/pubs/research_reports/RR650.html)

## Health Policy Research Department and Supplemental Information

The ASA Health Policy Research Department (HPRD) will provide regular updates to the caucus workforce summaries. If you have any questions or feedback regarding this inaugural report or the data upon which it is based, please email an HPRD staff member listed below or send your comments, suggestions and questions to [ask.HPR@asahq.org](mailto:ask.HPR@asahq.org). Additional anesthesia workforce data may be available through state medical boards and societies. HPRD encourages ASA members to reach out to these organizations to identify available resources.

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**Additional references for selected  
supplemental workforce  
information are provided  
on the following page.**

For information about other ongoing HPR projects, visit:

<http://www.asahq.org/resources/quality-improvement/health-policy-research/hpr-projects>

To view HPR Policy Briefs, NEWSLETTER Articles, Reports and other documents, visit:

<http://www.asahq.org/resources/quality-improvement/health-policy-research/hpr-resources>

## Selected Additional Workforce References

Brief Description	Reference
<b>ACGME Resource Book</b>	Accreditation Council for Graduate Medical Education: ACGME Data Resource Book, Academic Year 2013-2014. 2014: Chicago, IL.
<b>AAMC: Two reports</b>	Association of American Medical Colleges ( <a href="http://www.aamc.org/data/workforce">www.aamc.org/data/workforce</a> ) (1) 2013 State Physician Workforce Data Book. 2013: Washington, DC. (2) Recent Studies and Reports on Physician Shortages in the US. 2012: Washington, DC.
<b>Example of state analysis: CA</b>	California HealthCare Foundation ( <a href="http://www.chcf.org/publications/2014/03/california-physicians">www.chcf.org/publications/2014/03/california-physicians</a> ) California Physicians: Surplus or Scarcity? 2014: Oakland, CA.
<b>JAMA article</b>	Cooper RA: Unraveling the physician supply dilemma. JAMA 2013;310(18):1931-2.
<b>Anesthesia job postings</b>	GasWork.com ( <a href="http://www.gaswork.com/section/Anesthesiologist">www.gaswork.com/section/Anesthesiologist</a> )
<b>Example of state analysis: MA</b>	Massachusetts Medical Society. ( <a href="http://www.massmed.org/workforce2013">www.massmed.org/workforce2013</a> ) 2013 MMS Physician Workforce Study.
<b>Article by ASA member</b>	Schubert A, Eckhout GV, Ngo AL, Tremper KK, Peterson MD: Status of the anesthesia workforce in 2011: Evolution during the last decade and future outlook. Anesthesia and Analgesia 2012; 115(2):407-27.
<b>Resource and example of state analysis: NY</b>	State University of New York at Albany Center for Health Workforce Studies ( <a href="http://chws.albany.edu">http://chws.albany.edu</a> ) New York Physician Supply and Demand through 2030. 2009: Albany, NY.
<b>Resource: BLS</b>	United States Bureau of Labor Statistics ( <a href="http://www.bls.gov">www.bls.gov</a> ).
<b>HRSA report on methodology in workforce studies</b>	United States Department of Health and Human Services, Health Resources and Services Administration, Council on Graduate Medical Education Resource Paper: Evaluation of Specialty Physician Workforce Methodologies. 2000: Washington, DC.
<b>HRSA report noting shortages</b>	United States Department of Health and Human Services, Health Resources and Services Administration: Physician Supply and Demand: Projections to 2020. 2006: Washington, DC.
<b>Resource</b>	University of North Carolina Cecil G. Sheps Center for Health Services Research ( <a href="http://www.healthworkforce.unc.edu">www.healthworkforce.unc.edu</a> ).
<b>Example of state analysis: UT</b>	Utah Medical Education Council ( <a href="http://www.utahmec.org">www.utahmec.org</a> ) Utah's Physician Workforce, 2012: A Study on the Supply and Distribution of Physicians in Utah. 2012.
<b>State medical boards data</b>	Young A, Chaudhry HJ, Rhyne J, Dugan M: A census of actively licensed physicians in the United States, 2010. Journal of Medical Regulation 2011; 96(4):10-20.

**APPENDIX A**  
**DESCRIPTIONS OF DATA SOURCES**

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 DESCRIPTIONS OF DATA SOURCES
 

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**NPPES Downloadable File**

(<https://nppes.cms.hhs.gov>)

NOTE: ASA HPRD has monthly data beginning December 2012

Established as a standard in 2004, the National Provider Identifier (NPI) is a 10-digit unique identification number assigned to health care providers created to improve electronic transmission of health information. NPI identifiers are assigned, maintained and updated using the National Plan & Provider Enumeration System (NPPES) which disseminates the NPPES Downloadable File. Downloadable files are available as full replacement monthly files or weekly incremental files.

NPI Taxonomies used for this report:

**Anesthesiologist Assistant** (367H00000X), **Anesthesiology Pain** (207LP2900X), **Nurse Anesthetist** (367500000X), **Pain Medicine** (208VP0014X, 208VP0000X), **Physician Anesthesiologist** (207L00000X, 207LA0401X, 207LC0200X, 207LH0002X, 207LP30000X), **Surgeon** (208C00000X, 207T00000X, 207W00000X, 204E00000X, 207X00000X, 207XS0114X, 207XX0004X, 207XS0106X, 207XS0117X, 207XX0801X, 207XP3100X, 207Y00000X, 207YS0123X, 207YX0602X, 207YX0905X, 207YX0901X, 207YP0228X, 207YX0007X, 207YS0012X, 208200000X, 2082S0099X, 2082S0105X, 208600000X, 2086S0120X, 2086S0122X, 2086S0105X, 2086S0102X, 2086X0206X, 2086S0127X, 2086S0129X, 208G00000X, 204F00000X, 208800000X, 2088F0040X, 2088P0231X), **Gastroenterology** (207RG0100X, 2080P0206X), and **OB/GYN** (207V00000X, 207VB0002X, 207VF0040X, 207VX0201X, 207VG0400X, 207VM0101X, 207VX0000X).

**Physician Compare National Downloadable File**

([www.medicare.gov/physiciancompare](http://www.medicare.gov/physiciancompare))

NOTE: Only 2013 dataset is available as of Feb 2015.

The Physician Compare National Downloadable file contains data about physicians and other health care professionals currently enrolled in Medicare. This file is an extension of the Physician Compare website established by the Centers for Medicare & Medicaid Services (CMS) as required by the Section 10331 of the Patient Protection and Affordable Care Act (ACA) of 2010. This information is being made available to help consumers make informed decisions and to improve physician performance. The Physician Compare data was first made available to the public in March 2014 and is updated quarterly.

Specialties used for this report:

Anesthesiology, Certified Registered Nurse Anesthetist, and Anesthesiologist Assistant

**American Medical Association Physician Masterfile**

([www.ama-assn.org/go/masterfile](http://www.ama-assn.org/go/masterfile))

Established in 1906, the AMA Physician Masterfile includes current and historical data for over 1.4 million physicians, residents and medical students in the U.S. Physicians are presented with their Masterfile information and asked to submit updates through electronic or written methods. It is maintained by the AMA Division of Survey and Data Resources. The AMA aggregates data from the Physician Masterfile into *Physician Characteristics and Distribution in the U.S.*, an annual publication that includes a variety of data elements about national, international and state physician workforces.

Specialties used for this report:

Anesthesiology, Colon and Rectal Surgery, Gastroenterology, General Surgery, Neurological Surgery, Obstetrics & Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Thoracic Surgery, and Transplant Surgery.

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**APPENDIX B**  
**SUPPLEMENTAL DATA: POPULATION AND SURGICAL WORKFORCE**



**TABLE B1**  
**2013 POPULATION BY STATE AND CHANGE FROM 2008**

State	2013 Population			Five-Year Change in Population (%)†	
	Total	65+	%65+	Total	65+
Alabama	4,833,722	721,166	14.9	3.7	12.4
Arkansas	2,959,373	454,420	15.4	3.6	11.6
Florida	19,552,860	3,647,617	18.7	6.7	14.4
Georgia	9,992,167	1,195,955	12.0	3.2	21.9
Louisiana	4,625,470	613,486	13.3	4.9	13.5
Mississippi	2,991,207	416,300	13.9	1.8	12.0
North Carolina	9,848,060	1,407,099	14.3	6.8	23.5
Oklahoma	3,850,568	549,121	14.3	5.7	11.9
South Carolina	4,774,839	727,768	15.2	6.6	22.0
Tennessee	6,495,978	952,376	14.7	4.5	16.2
<b>Southern Caucus</b>	<b>69,924,244</b>	<b>10,685,308</b>	<b>15.3</b>	<b>5.2</b>	<b>16.5</b>
<b>Other Caucuses</b>	<b>246,204,595</b>	<b>34,018,766</b>	<b>13.8</b>	<b>3.6</b>	<b>14.6</b>
<b>Total U.S.</b>	<b>316,128,839</b>	<b>44,704,074</b>	<b>14.1</b>	<b>4.0</b>	<b>15.0</b>

†Based on U.S. Census population estimates for July 2008 and July 2013.

Source: U.S. Census Bureau (estimates for July 2013 and July 2008). Calculations by ASA Health Policy Research Department.

**TABLE B2**  
**SURGICAL WORKFORCE BASED ON NPI AND AMA DATA**

State	Number of Surgeons Based on NPI Data, 2015				Number of Surgeons Based on AMA Data*, 2013			
	GI <sup>§</sup>	OB/GYN	Other Surgeons <sup>†</sup>	TOTAL	GI <sup>§</sup>	OB/GYN	Other Surgeons <sup>†</sup>	TOTAL
Alabama	172	498	1,533	2,203	159	581	1,756	2,496
Arkansas	88	265	904	1,257	86	282	891	1,259
Florida	1020	2263	7,584	10,867	959	2321	7,513	10,793
Georgia	405	1282	3,375	5,062	377	1369	3,363	5,109
Louisiana	207	597	1,804	2,608	203	728	2,161	3,092
Mississippi	117	344	968	1,429	105	335	963	1,403
North Carolina	487	1316	3,621	5,424	423	1327	3,708	5,458
Oklahoma	138	421	1,362	1,921	110	333	1,066	1,509
South Carolina	198	641	1,884	2,723	172	620	1,708	2,500
Tennessee	325	753	2,461	3,539	273	892	2,783	3,948
<b>Southern Caucus</b>	<b>3,157</b>	<b>8,380</b>	<b>25,496</b>	<b>37,033</b>	<b>2,867</b>	<b>8,788</b>	<b>25,912</b>	<b>37,567</b>
<b>Other Caucuses</b>	<b>12,187</b>	<b>33,379</b>	<b>99,056</b>	<b>144,622</b>	<b>10,729</b>	<b>33,587</b>	<b>97,946</b>	<b>142,262</b>
<b>Total U.S.</b>	<b>15,344</b>	<b>41,759</b>	<b>124,552</b>	<b>181,655</b>	<b>13,596</b>	<b>42,375</b>	<b>123,858</b>	<b>179,829</b>

\*Includes physicians who self-reported as being involved in patient care activity.

<sup>§</sup>Gastroenterology

<sup>†</sup>Other Surgeons include the following surgical specialties: Colon and Rectal Surgery, General Surgery, Neurological Surgery, Ophthalmology, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Thoracic Surgery and Urology, and Transplant Surgery.

Sources: Medicare National Plan & Provider Enumeration System (NPPES) and American Medical Association's *Physician Characteristics and Distribution in the US (2015 edition)*. Calculations by ASA Health Policy Research Department.