

The Supply of Surgeons in the United States: Mapping the 50 States

March 2010



Introduction

One of the recognized strengths of the U.S. health care system is the high quality of its clinical practitioners. In fact, access to well trained surgeons is a hallmark of health care in the United States. That came to be because of the steady expansion of medical schools and graduate training programs from the 1950s to the 1970s. However, after 1980 growth in physician training slowed, few new medical schools were built, and federal funding for the graduate medical education system that supported surgical training was capped. Repercussions from those cut backs in the pipeline to surgical practice are now beginning to be felt as the population continues to grow, life expectancy increases, and the number of new surgeons coming into practice remains relatively constant.

Estimates of the gap between the number of surgeons needed to meet population demand for care and the current (2010) supply suggest an undersupply of between 10% and 30%. General surgeons are in short supply, especially in small communities, with perhaps as many as 1,300 needed to fill current gaps. The number of general surgeons in practice is predicted to decline between 7% and 10% by 2025 due to subspecialization and retirement, according to projections from the Bureau of Health Professions, HRSA. This situation is developing at a time when policy makers are trying to expand insurance coverage for Americans, which may cause greater demand for surgical care.

This collection of state-level maps is intended to provide a snapshot of where surgeons are practicing relative to the population in 2009. The distribution of surgeons described in this document is likely to change due to provider migration and shifts in area population. Places with greater resources and better living situations attract practitioners with relative ease; while areas with fewer amenities and struggling economies may be challenged to retain surgeons or attract new ones.

This publication presents county-by-county maps for each state of the surgeon-to-population ratio for general surgeons and all surgical specialties combined. We are highlighting places where the supply appears to meet estimates of “adequacy” but there is no clear consensus on what a ratio of surgeons to population should be in any given place. Our goal is to show the geographic distribution of surgeons relative to populations in order to help practitioners, policy makers and patients anticipate the distribution of the future and identify places with limited access to surgical services.

Data and Definitions

The primary data source for these maps is the 2009 American Medical Association (AMA) Physician Masterfile. Population data are drawn from the 2009 Pop-Facts database for Census Tracts by Nielsen Claritas Inc. Data include non-federal, non-resident, clinically active physicians less than 70 years old reporting a primary specialty identified in the table below for total surgeons; General Surgeons include physicians with a primary specialty of GS (General Surgery). Primary specialty is self-designated based upon a listing of more than 200 specialty categories on the annual survey; physician location is based upon self-reported primary practice address.

Surgical Subspecialties include the following AMA Masterfile Specialty Codes

AS	Abdominal Surgery	OMO	Musculoskeletal Medicine
CCS	Surgical Critical Care	OP	Pediatric Orthopedics
CDS	Cardiovascular Surgery	OPH	Ophthalmology
CFS	Craniofacial Surgery	ORS	Orthopedic Surgery
CRS	Colorectal Surgery	OSM	Sports Medicine
CS	Cosmetic Surgery	OSS	Orthopedic Spine Surgery
CTS	Cardiothoracic Surgery	OT	Otolology
DS	Dermatologic Surgery	OTO	Otolaryngology
ESN	Endovascular Surgical Neuroradiology	OTR	Orthopedic Trauma
FPS	Facial Plastic Surgery	PCS	Pediatric Cardiothoracic Surgery
GO	Gynecology Oncology	PDO	Pediatric Otolaryngology
GS	General Surgery	PDS	Pediatric Surgery
GYN	Gynecology	PO	Pediatric Ophthalmology
HNS	Head and Neck Surgery	PRD	Procedural Dermatology
HS	Hand Surgery	PRO	Proctology
HSO	Hand Surgery Orthopedics	PS	Plastic Surgery
HSP	Hand Surgery (Plastics)	PSH	Plastic Surgery within the Head & Neck
HSS	Hand Surgery (Surgery)	PSI	Plastic Surgery Integrated
NO	Otology/Neurotology	SO	Surgical Oncology
NS	Neurological Surgery	TRS	Trauma Surgery
NSP	Pediatric Neurological Surgery	TS	Thoracic Surgery
OAR	Adult Reconstructive Orthopedics	TSI	Thoracic Surgery Integrated
OBG	Obstetrics	TTS	Transplant Surgery
OBS	Obstetrics	U	Urology
OCC	Critical Care Medicine (OB-GYN)	UP	Pediatric Urology
OFA	Foot & Ankle Surgery	VS	Vascular Surgery
OMF	Oral and Maxillofacial Surgery	VSI	Vascular Surgery Integrated

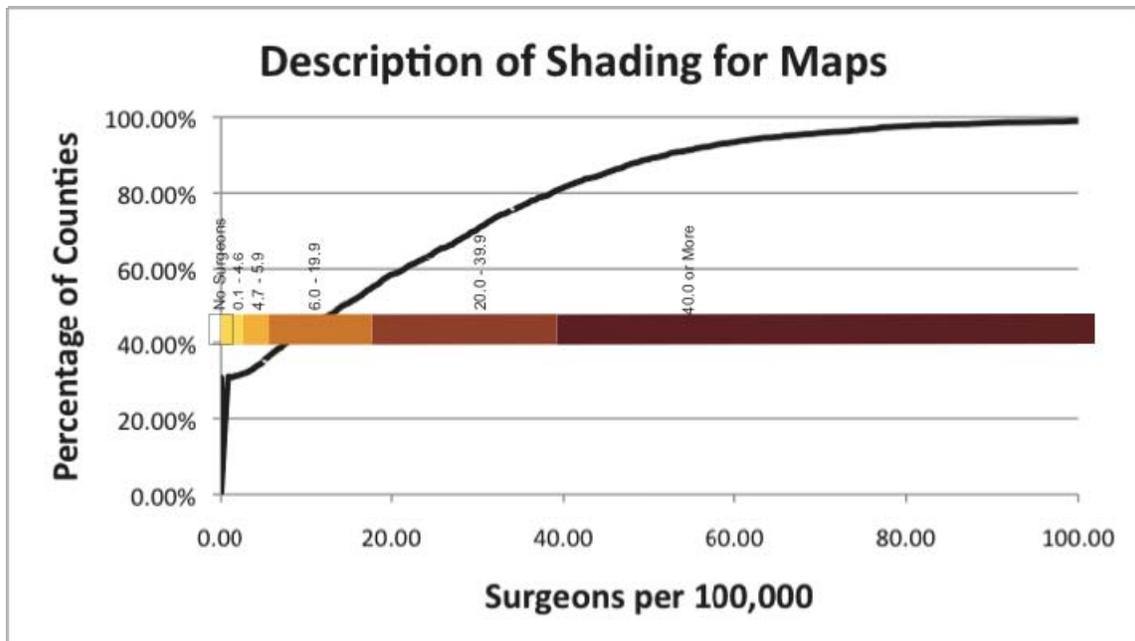
Technical notes regarding the maps

The shading in the maps indicates the “density” of surgeons per 100,000 population, with darker shading indicating more surgeons and lighter shading less. Where there is no color, there are no actively practicing surgeons in the county, parish or borough. The categories of the shading are designed to reflect two threshold levels commonly referenced in assessing the adequacy of surgical services. In 1980, the Graduate Medical Education National Advisory Committee (GMENAC) report to the Secretary of the Department of Health and Human Services recommended no fewer than 4.7 surgeons per 100,000 personsⁱ. A 2004 Solucient, Inc. report proposed an alternative minimum surgeon to population ratio of 6.0 per 100,000 personsⁱⁱ.

The distribution of surgeons is classified into 6 categories for both all and general surgeons. The intervals for the classifications are summarized in the table below.

<i>All Surgeons</i>			<i>General Surgeons</i>		
<i>range</i>	Number of Counties	Percent of Counties	<i>range</i>	Number of Counties	Percent of Counties
40.00 or More	574	18.5%	25.00 or More	9	0.3%
20.00 to 39.99	949	30.5%	10.00 to 24.99	222	7.1%
6.00 to 19.99	441	14.2%	6.00 to 9.99	1066	34.3%
4.70 to 5.99	77	2.5%	4.70 to 5.99	263	8.5%
0.01 to 4.69	108	3.5%	0.01 to 4.69	364	11.7%
No Surgeons	958	30.8%	No Surgeons	1183	38.1%

The graph below indicates the distribution of counties in each category for the entire United States. The black curve is the cumulative number of counties and the location of the line on the vertical axis is the equal to the proportion of counties with ratios of surgeon per 100,000 on the horizontal scale. The portion of the curve associated with the lightest yellow bar represents places with surgeon to population ratios up to 4.6 per 100,000. The darkest bar represents counties with surgeon to population ratios equal to or greater than 40 per 100,000 (the largest ratio value was 513, an outlier county; the scale was “censored” at 100). The vertical distance of the curve associated with the darkest bar covers indicates that approximately 18% of counties had a ratio equal to or greater than 40 surgeons per 100,000.



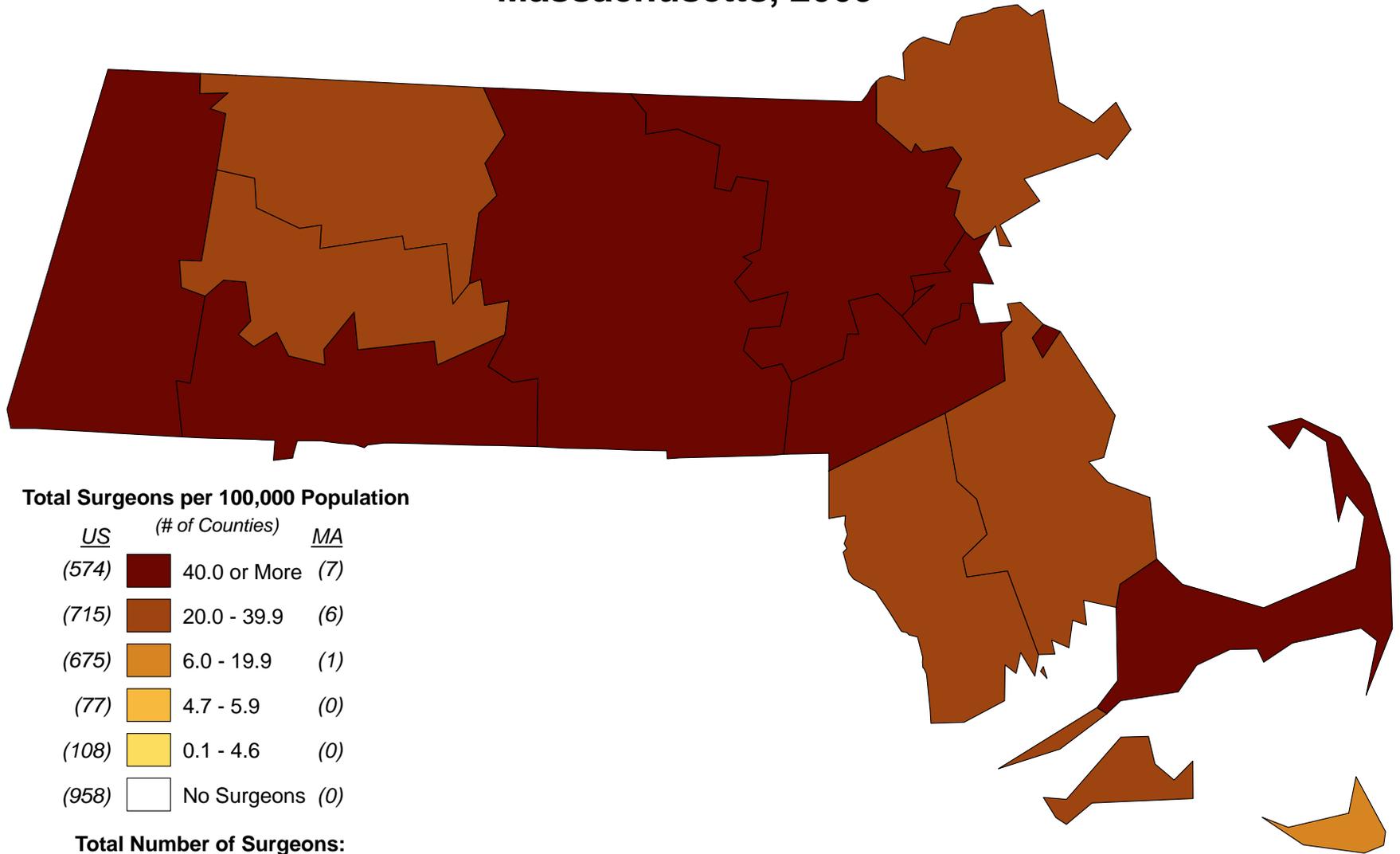
Acknowledgements

The maps in this collection have been generated by a team of analysts at the American College of Surgeons Health Policy Research Institute (ACS HPRI), including Katherine Gaul Frizzelle, Stephanie Poley, Jennifer Groves and Elizabeth Walker, under the guidance of Thomas Ricketts. The maps are a first step in the creation of an online Atlas of Surgery Policy being developed by the ACS HPRI.

ⁱ Health Resources Administration (1980). Report of the Graduate Medical Education Advisory Committee to the Secretary, Department of Health and Human Services. Volume II: GMENAC Member's Commentaries and Appendix. Report No. HRA-81-651, HRA-81-652, HRA-81-653.

ⁱⁱ Solucient, Inc. Physician Community Requirements in the 21st Century: The 2003 Physicians to Population Ratios

Total Surgeons per 100,000 Population Massachusetts, 2009



Total Surgeons per 100,000 Population

<u>US</u>	(# of Counties)	<u>MA</u>
(574)	40.0 or More	(7)
(715)	20.0 - 39.9	(6)
(675)	6.0 - 19.9	(1)
(77)	4.7 - 5.9	(0)
(108)	0.1 - 4.6	(0)
(958)	No Surgeons	(0)

Total Number of Surgeons:

MA: 3,848
US: 136,515

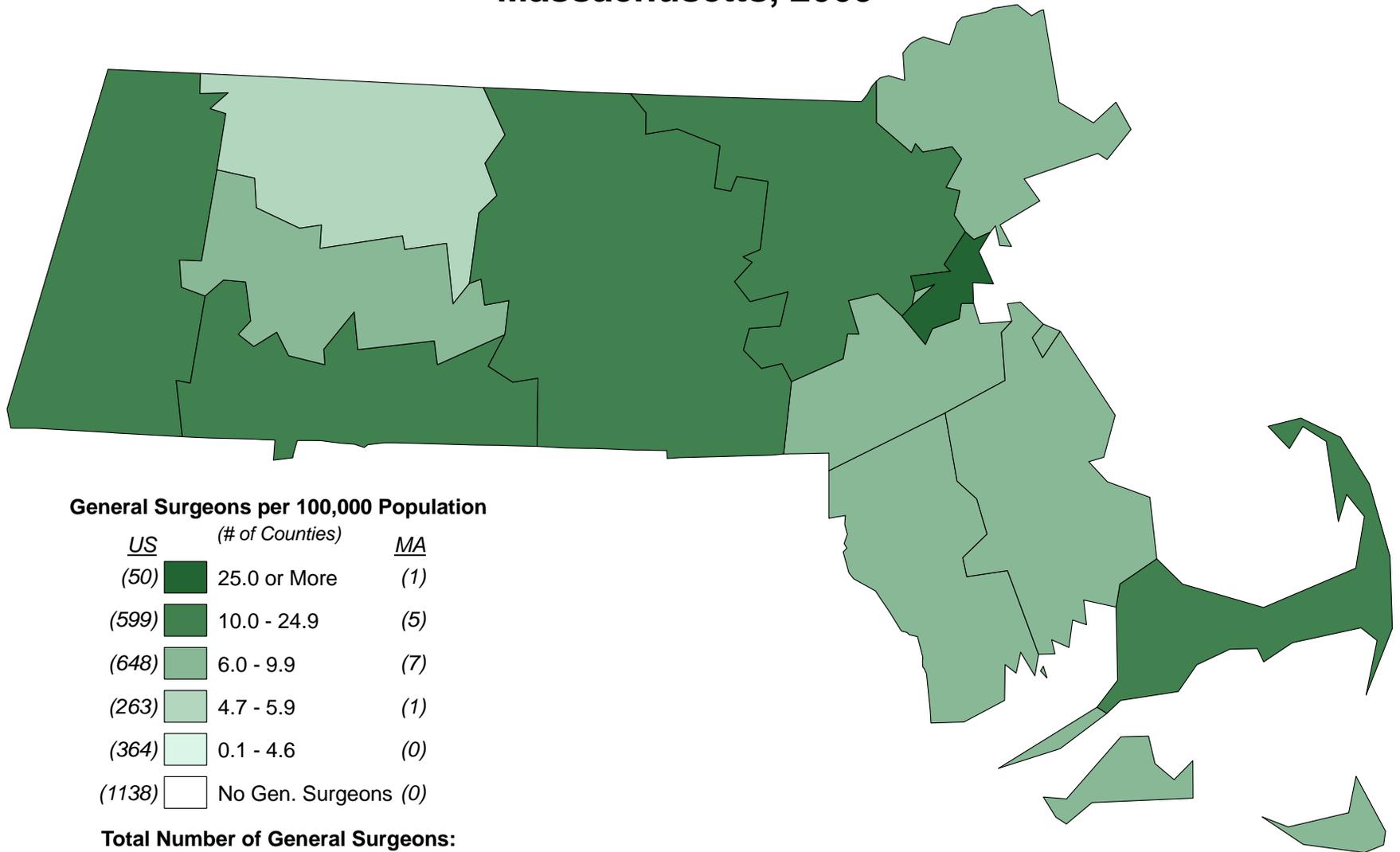
Sources: AMA Physician Masterfile, 2009; Pop-Facts database for Census Tracts, Nielsen Claritas Inc., Ithaca, NY, 2009.

Data include non-federal, non-resident, clinically active physicians less than 70 years old reporting a primary specialty classified by the ACS HPRI as surgery.

Produced By: ACS HPRI, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, March 5, 2010.

Note: GMENAC (1980) minimum surgeon to population ratio recommendation 4.7-4.9 per 100,000. Solucient (2004) minimum surgeon to population ratio recommendation 6 per 100,000.

General Surgeons per 100,000 Population Massachusetts, 2009



General Surgeons per 100,000 Population

<u>US</u>	(# of Counties)	<u>MA</u>
(50)	25.0 or More	(1)
(599)	10.0 - 24.9	(5)
(648)	6.0 - 9.9	(7)
(263)	4.7 - 5.9	(1)
(364)	0.1 - 4.6	(0)
(1138)	No Gen. Surgeons	(0)

Total Number of General Surgeons:

MA: 897
US: 29,095

Sources: AMA Physician Masterfile, 2009; Pop-Facts database for Census Tracts, Nielsen Claritas Inc., Ithaca, NY, 2009.

Data include non-federal, non-resident, clinically active physicians less than 70 years old reporting a primary specialty classified by the ACS HPRI as general surgery.

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