

**2012 Wisconsin Physician Workforce Study
Technical Notes**

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A. Identifying the active physician population for analysis

The population for the survey is all physicians licensed in Wisconsin as of September 1, 2011 who renewed their licenses by March 1, 2012. All physicians licensed as of 9-1-11 would have had to renew their licenses and update their records with DSPS during this period in order to remain in practice in Wisconsin. If not renewed, MD licenses expired on October 31, 2011 and DO licenses on February 29, 2012. The physician survey was available from September 1, 2011 through November 15, 2011 and again from January 5, 2012 through February 29, 2012. Every physician who renewed their license during this period had an opportunity to take the survey.

Almost all post-graduate trainees in the first or second year of a medical residency are not included in this population, since Wisconsin does not issue licenses until after completion of one year of post-graduate training and the Step III UWMLE exam. Most licenses for PG2s are issued from late fall through the following June. All medical residents must be licensed at the beginning of the PG3 year in July.

B. Adjustments to the DSPS data set

The data set received from DSPS was adjusted as follows so it comprised the population defined above:

- 1) Removed from the dataset the 716 individuals who received their first license on 9-1-11 or later. These can be readily identified by the license issue date.
- 2) Removed any duplicate entries in the DSPS data.

*These adjustments resulted in a total population of 22,766 records in the DSPS data.
Of these 15,715 provided an address in Wisconsin (per information in the "state" column)*

C. Adjustments to the DWD survey data set

1) For consistency, we removed responses from any individuals who completed the survey but who did not hold a license as of 9-1-11. (This probably occurred because of our campaign to increase survey response. Several individuals who received their first license after 9-1-11 accessed the survey and completed it.) There were 16 surveys in this category.

2) We removed any duplicate responses. The process DSPS put in place should have prevented duplicate responses – anyone returning to complete a survey started earlier would have resumed the original survey. We have found just one duplicate response ID involving an initial partial response during the first survey period and a subsequent complete response from the second survey period. The first (partial) response was deleted from the data set:

These adjustments resulted in a final total survey response of 6780 (6593 complete and 187 partial)

The overall response rate is then 29.8% .

D. Identifying medical residents and fellows for the purpose of estimating the non-trainee active physician population

Individuals currently completing a residency or fellowship are identified via Question 3 in the survey data (residency=1, fellowship=2, neither=3). To avoid confusion with multiple meanings of the word “resident,” we will refer to medical residents and fellows as “postgraduate trainees” or “trainees”.

Unfortunately, there is nothing in the DSPS data that allows us to positively identify trainees. We can estimate, based on medical school graduation year and specialty, but this method misses those who took time out between medical school and residency, or time out during residency, as well as foreign medical graduates whose degree date does not have the same relationship to the start of postgraduate training in the U.S. as it does for U.S. medical graduates.

Estimates based on medical school graduation and specialty in the DSPS data yield:

Post-graduate year	Trainees licensed in Wisconsin and living in Wisconsin	Wisconsin-licensed but in training program outside Wisconsin
PG-1		
PG-2	7	
PG-3 and 3/4	536	78
PG-4 and 4/5	123	19
PG-5 and 5/6	142	11
PG-6 and 6/7	71	8
PG-7	50	7
PG7+	27	
	956	123

ACGME data on Wisconsin postgraduate trainee positions:

Post-graduate year	Positions filled as of December 2011	Subtotals
PG-1	414	
PG-2	411	825
PG-3	397	
PG-4	288	
PG-5	197	
PG-6	90	
PG-7	13	
Off cycle	8	993
Total	1818	1818

When using DSPS data on in-state physicians only (physicians providing a Wisconsin address), we estimated the number of physicians in practice (exclusive of trainees) by first eliminating the few individuals less than two years post graduation (PG1s or PG2s) who were already licensed as of 9-1-11. We then subtracted from the total remaining the number of individuals in ACGME-approved residencies at the PG3-level and above (993 as of December 2011), we then had a comparable population to the group who responded “neither” to Question 3 on the survey.

Why consider the trainees separately?

1) The survey was not designed well for trainees. As evidenced by the respondent comments, the hours of work and work location questions were problematic, as were the questions related to practice organization. While

there may be some valuable information about trainees in the survey data, it needs to be handled separately from the information on practicing physicians because they come to the survey from a fundamentally different perspective.

2) Preliminary analysis indicates that postgraduate trainees are over-represented in the survey sample.

3) The most recent AAMC estimates of the current physician population and projections of future supply are based on a definition of active physicians that excludes residents and fellows. For comparison to other estimates, we wanted to be able to include or exclude trainees, depending on the source data.

Identifying post-graduate trainees (residents and fellows) in the DSPS data:

Year of MD or DO degree	Presumed PG year	Comment	Action
2011	PG-1 WI total: 414	Should be few or none in the DSPS data – they are not eligible for a license until completion of one postgraduate year.	Any individuals with this degree date can be presumed to be still in residency training. (Actually, no one with this degree date should be in the DSPS data since they are not yet eligible for a license.)
2010	PG-2 WI total: 411	For most residents, the license is issued sometime during the second year (July – June). A few will have the license in the fall. There will be increasing numbers of PG-2s showing up in the DSPS data until June.	Any individuals with this degree date can be presumed to be still in residency training. Possible exceptions: someone listing “general practice” or “preventive medicine” could be in practice. (There should be very few individuals with this degree data in the DSPS data- most licenses have not yet been issued to 2010 grads.)
2009	PG-3 WI total: 397	Almost all will be licensed and in the DSPS data (a few will still be awaiting exam results.) None will have finished the residency, however.	Any individuals with this degree date can be presumed to be still in residency training. Possible exceptions: someone listing “general practice” or “preventive medicine” could be in practice.
2008	PG-4 WI total: 288	The following groups have now completed residency and should be presumed to be in practice: 41 Family Medicine 04 Internal Medicine* 18 Pediatrics* 31 Emergency Medicine 09 Preventive Medicine 08 General Practice	Other than those indicating a primary care specialty or emergency medicine, anyone with this degree date can be presumed to be still in training. *The group indicating Internal Medicine or Pediatrics will have to be examined carefully, as DSPS specialty labels do not clearly identify primary care. Location will be helpful in determining who might still be in residency and who is likely in practice, along with comparison to ACGME information. Subspecialties of some 3 year programs that take an extra year and would still be in training in PG4 year if done right after residency: Geriatrics Hospice and Palliative medicine Sleep Medicine Sports Medicine
2007	PG-5 WI total: 197	The following groups have now completed residency and should be presumed to be in practice: 41 Family Medicine 04 Internal Medicine* 18 Pediatrics* 31 Emergency Medicine 09 Preventive Medicine 08 General Practice	<u>Individuals in all other specialties can be presumed to be still in training</u> (total should be about 197): *The group indicating Internal Medicine or Pediatrics will have to be examined carefully, as DSPS specialty labels do not clearly identify primary care. Location will be helpful in determining who might still be in residency and who is likely in practice, along with comparison to ACGME information.

		02 Anesthesiology 03 Dermatology 61 Genetics 29 Geriatrics 10 Neurology 23 Nuclear Medicine 12 OB/Gyn 13 Ophthalmology 16 Pathology 17 Pathology-clinical 72 Pathology-surgical anatomic 19 Physical Medicine and Rehab. 20 Psychiatry 68 Radiology-Nuclear Medicine	Subspecialties of 4 year programs that take an extra year and could still be in training in PG5 year: Pediatric Anesthesiology, Adult cardiothoracic anesthesiology Addiction psychiatry Child and adolescent psychiatry (3+2) Cytopathology Forensic Pathology Child Neurology (2+3) Vascular neurology Pain medicine Blood Banking/transfusion medicine Clinical neurophysiology And a few others
2006	PG-6 WI total: 90		<u>Only individuals in these specialties can be presumed to be still in training</u> (total should be about 90): 11 Surgery-Neurological (1-2) 59 Surgery-Peripheral Vascular (2) 27 Surgery Thoracic (1-2) na Surgery-Pediatric (1) 05 Cardiology (17) 06 Gastroenterology (8) 38 Oncology na Hematology-Oncology (7) 64 Hand Surgery (2) 46 Hebiatrics (Adolescent Med) 45 Internal Medicine-Pulmonary (8) 63 Neonatology (4) na Pediatric ENT (1) na Pediatric Emergency Med (3) 60 Pediatrics-Other (15) na Radiology-subspecialty (16) 58 Surgery-Maxillofacial, Craniofacial
2005	PG-7 WI total: 13		<u>Only individuals in these specialties can be presumed to be still in training</u> (total should be about 13): 11 Surgery-Neurological (1-2) 59 Surgery-Peripheral Vascular (2) 27 Surgery-Thoracic (1-2) na Surgery-Pediatric (1) na Medicine-Interventional Cardiology(5) na Medicine-Cardiac electrophysiology (1) na Medicine-Transplant Hepatology (1)
2004			Presume all to be in practice
	WI total: 1818	Per ACGME, December 2011	

Expected number still in Wisconsin-based residency at each level was based on ACGME information.

This procedure for identifying residents will miss some who are off-cycle, took a year out, etc. Total of those identified as PG-3, 4, 5, 6, and 7 should be compared to expectations from ACGME data and adjustments made as necessary. See detail below.

The DSPTS data did not always allow us to identify sub-specialty Pediatrics and sub-specialty Medicine at the PG4,5,and 6 levels. Using location helped in making the determination.

Internal Medicine & Peds subspecialty PG4, PG5 and PG6

Degree Year		Subspecialty Medicine Still in residency	Subspecialty Pediatrics Still in residency
2008	PG-4	<p>03 Dermatology (2 Marshfield, 2MCW, 2UW) 29 Geriatrics (3 UW, 2 MCW, 2 Aurora)</p> <p>01 Allergy-Immunology (1 UW, 2 MCW) na Critical Care Medicine 56 Endocrinology (3 UW, 3 MCW) 07 Hematology 47 Immunology-Infectious Diseases (2 UW, 2 MCW) 40 Nephrology (1 UW, 6 MCW) 57 Rheumatology (1 UW, 2 MCW)</p> <p>05 Cardiology (3 UW, 3 MCW, 6 Aurora) 06 Gastroenterology (1 Aurora, 3 UW, 5 MCW) 38 Oncology na Hematology-Oncology (3 UW, 2 MCW, 2 Gundersen)</p> <p>45 Internal Medicine-Pulmonary (3 UW, 3 MCW)</p>	<p>na Internal Medicine/Pediatrics (3 Marshfield, 7 MCW)</p> <p>46 Hebiatrics (Adolescent Med) (1 MCW) 63 Neonatology (0 UW, 3 MCW) na Pediatric ENT (1) na Pediatric Emergency Med (3) 60 Pediatrics-Other (see below)</p> <p>na Pediatric Cardiology (3 MCW) na Pediatric Critical Care Medicine (2 UW, 5 MCW) na Pediatric Endocrinology (1 UW, 2 MCW) na Pediatric Gastroenterology(2 MCW) na Pediatric Hematology/Oncology (1 UW, 2 MCW) na Pediatric Nephrology na Pediatric Pulmonology (0 UW, 2 MCW) na Pediatric Rheumatology (1 MCW) na Neonatal-Perinatal medicine na Child Abuse Pediatrics</p>
2007	PG-5	<p>na Procedural dermatology (1 UW) na Internal Medicine/Dermatology (1 UW) na Internal Medicine/Neurology (1 MCW)</p> <p>01 Allergy-Immunology (5 UW, 2 MCW) na Critical Care Medicine (1 MCW) 56 Endocrinology (3 UW, 1 MCW) 07 Hematology (1 UW, 1 MCW) 47 Immunology-Infectious Diseases (2 UW, 2 MCW) 40 Nephrology (3 UW, 0 MCW) 57 Rheumatology (1 UW, 3 MCW)</p> <p>05 Cardiology (3 UW, 2 MCW, 6 Aurora) 06 Gastroenterology (1 Aurora, 3 UW, 3 MCW) 38 Oncology na Hematology-Oncology (4 UW, 4 MCW) 45 Internal Medicine-Pulmonary (3 UW, 4 MCW)</p>	<p>46 Hebiatrics (Adolescent Med) (2 MCW)</p> <p>63 Neonatology (0 UW, 3 MCW) na Pediatric ENT (1) na Pediatric Emergency Med (3) 60 Pediatrics-Other (see below)</p> <p>na Pediatric Cardiology (4 MCW) na Pediatric Critical Care Medicine (0 UW, 5 MCW) na Pediatric Endocrinology (1 UW, 2 MCW) na Pediatric Gastroenterology (2 MCW) na Pediatric Hematology/Oncology (1 UW, 3 MCW) na Pediatric Nephrology na Pediatric Pulmonology (1 UW, 1 MCW) na Pediatric Rheumatology(1 MCW) na Neonatal-Perinatal medicine na Child Abuse Pediatrics</p>
2006	PG-6	<p>05 Cardiology (3 UW, 8 MCW, 6 Aurora) 06 Gastroenterology (1 Aurora, 2 UW, 5 MCW) 38 Oncology na Hematology-Oncology (4 UW, 3 MCW) 45 Internal Medicine-Pulmonary (3 UW, 5 MCW)</p>	<p>46 Hebiatrics (Adolescent Med) (0 MCW)</p> <p>63 Neonatology (1 UW, 3 MCW) na Pediatric ENT (1) na Pediatric Emergency Med (3) 60 Pediatrics-Other (see below)</p> <p>na Pediatric Cardiology (2 MCW) na Pediatric Critical Care Medicine (0 UW, 5 MCW) na Pediatric Endocrinology (1 UW, 1 MCW) na Pediatric Gastroenterology (2 MCW) na Pediatric Hematology/Oncology (1 UW, 0 MCW) na Pediatric Nephrology na Pediatric Pulmonology (0 UW, 2 MCW) na Pediatric Rheumatology (1 MCW) na Neonatal-Perinatal medicine na Child Abuse Pediatrics</p>

2005	PG-7	na Medicine-Interventional Cardiology(2 UW, 3 Aurora) na Medicine-Cardiac electrophysiology (1 Aurora) na Medicine-Transplant Hepatology (1 UW)	
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For the records that included survey responses, results of the procedure outlined above were checked against the survey responses to be sure that the trainee designation matched information provided by the respondent.

E. Determining physician specialty

DSPS Specialty consists of a string of specialties that the licensee revises or adds to when the license is renewed. DSPS provides a standard list to choose from. The order in the DSPS data set has no particular significance - the first specialty listed is not necessarily the principal specialty. If more than one specialty is listed, the coding rules outlined below were used.

While the survey did ask for principal practice specialty, we elected to use the DSPS data only to determine specialty. This will allow us to repeat elements of the study in subsequent years with updated DSPS data in the absence of another survey.

SPECIALTY CODING RULES

These specialties were coded for the patient care specialty if one was listed

Academic Medicine + a patient care specialty = the patient care specialty
 Administrative Medicine + a patient care specialty = the patient care specialty
 Aerospace Medicine, Aviation Medicine + a patient care specialty = the patient care specialty
 Occupational Medicine + a patient care specialty = the patient care specialty
 Institutional Medicine + a patient care specialty = the patient care specialty
 Preventive medicine or Public Health + a patient care specialty = the patient care specialty
 Preventive medicine or Public Health + occupational medicine = occupational medicine
 Research + a patient care specialty = the patient care specialty
 Preventive Medicine + Public Health only = non-patient care

Selecting the principal specialty if more than one patient care specialty listed:

General Practice, if followed by a specialty or subspecialty was coded for the specialty (for example, General Practice | Surgery was coded as Surgery.)

Allergy&Immunology or another specialty with ENT or Otolaryngology = Otolaryngology (3.4)

Internal Medicine listed alone was coded as primary care internal medicine

Internal Medicine listed with any other **medical** subspecialty is coded as the subspecialty

IM + another medical subspecialty = subspecialty Internal Medicine

But Note:

IM + Allergy & Immunology = Allergy & Immunology

IM + Cardiology = Cardiology

IM + Dermatology = Dermatology

The Cardiology designation was used for any internal medicine subspecialty involving cardiology

(in the survey, specialty codes #12, 13, 19, 24, 76)

Pediatrics listed alone was coded as primary care pediatrics

Pediatrics listed with a **Medical** subspecialty is coded as Subspecialty Pediatrics, except for
Allergy & Immunology + Pediatrics - Coded for A&I even if Peds second specialty
Dermatology + Pediatrics - coded as Dermatology even if Peds is the second specialty
Surgery and surgical specialties + Pediatrics - Coded for the surgical specialty
Anesthesiology + Pediatrics - coded as Anesthesia even if Peds is second
Cardiology + Pediatrics - coded as Cardiology even if Peds is second

Peds + Fam Med or Geriatrics = Fam Med
Peds + Neonatology = subspecialty Peds
Peds + Peds-Other = subspecialty Peds

Internal Medicine|Pediatrics has its own code, under primary care
Med + Peds or Peds + Med = Med-Peds

Geriatrics has its own code under primary care, whether Fam Med or Internal Med
IM + Geriatrics = Internal Medicine, with subcode for Geriatrics
Fam Med + Geriatrics = Family Medicine, with subcode for Geriatrics
Geriatrics only = Geriatrics (but grouped with Internal Medicine in many of the tables)

OB/Gyn + Family Practice = Family Practice
Peds + Family Practice = Family Practice

Emergency Medicine + Family Medicine, General Internal Medicine or General Pediatrics is coded for Emergency Medicine

Emergency Medicine + any other patient care specialty is coded for the other specialty

IM+Psych or Psych +IM = Psychiatry
Peds+Psych or Psych+Peds = Psychiatry
Family Practice+Psych or Psych+FamPractice = Psychiatry
Psychiatry+anything else = Psychiatry

Surgery + anything else, or vice versa = Surgery
Radiology + anything else, or vice versa = Radiology
Radiation Oncology + anything else, or vice versa = radiation oncology
Pathology + anything else, or vice versa = pathology
Neurology + anything else, or vice versa = Neurology
Phys Med & Rehabilitation + anything else, or vice versa = PM&R

Retired + any specialty field = Retired

A few specialties that were missing in DSPS but provided in a survey response were added to the DSPS information. Otherwise, unknown specialties are coded as "Unknown".

The same group codes were used for the principal practice specialty indicated in the survey data. Codes were based only on the principal practice specialty listed and no other survey information.

F. COMMON DATA ELEMENTS: DSPS Data and 2011/12 Physician Workforce Survey

<p>Department of Safety and Professional Services (DSPS) data 22,766 records for individuals who held a license prior to the start of the survey (9/1/11)</p> <p>15,725 have a DSPS address in Wisconsin</p>	<p>Physician Workforce Survey data</p> <p>6779 surveys from individuals who held a license prior to the start of the survey (9/1/11) 6669 surveys match to a DSPS record; unable to match the remaining 110 because survey ID missing in the DSPS data</p> <p>4659 surveys match to a DSPS record with an address in Wisconsin</p>
DSPS RECORD_IDENTIFIER	Survey record identifier
DSPS SURVEY_COMPLETED (Yes/No)	Survey completed (complete/partial)
DSPS SURVEY_ID	DSPS Survey ID
DSPS BIRTH_YEAR	Q6 Year of birth
DSPS Age Group (<35, 35-44, 45-54, 55-64, 65-74, 75+)	Q6 Survey Age Group (<35, 35-44, 45-54, 55-64, 65-74, 75+)
DSPS GENDER	Q7 Gender
DSPS STATE_CODE (DSPS mailing address – could be either place of work or place of residence)	Q14 place of residence-state (place of work is covered in a separate series of questions and was asked only of those working in Wisconsin)
DSPS CITY_NAME (DSPS mailing address – could be either place of work or place of residence)	Q14 place of residence-city
DSPS ZIP_CODE (DSPS mailing address – could be either place of work or place of residence)	Q14 place of residence-zipcode
	Q14 place of residence-county
Primary County (associated with DSPS Zipcode – could be either place of work or place of residence))	Q14 County based on respondent entry for county of residence, or on principal county associated with the zipcode or city entered for place of residence.
WDA Region (from DSPS Zipcode – could be either place of work or place of residence))	Q14 WDA Region based on respondent entry for county of residence, or on principal county associated with the zipcode or city entered for place of residence.
Rural-Urban (from DSPS Zipcode and AHEC rural-urban indicators)	Q14 Rural-urban based on respondent entry for county of residence, or on principal county associated with the zipcode or city entered for place of residence.
DSPS PROFESSION (MD or DO degree)	Q16 Medical degree (MD, DO, MBBS/MBChB)
Med School location (state – included in grad school field, below)	Q17 Location of medical school (country, state if in US)
DSPS GRAD_SCHOOL	Q18 Name of school (UW, MCW, other-please specify)
DSPS GRAD_DATE	Q19 Year degree completed
IMG status (from Med School location)	Survey IMG status (from medical school location)
DSPS SPECIALTY	Q29 principal and secondary specialty
DSPS Specialty Group (see attached)	Survey Specialty Group (based on principal specialty only)
DSPS Trainee Status (Based on survey information, if available. If not, based on years since MD degree, location and specialty. Overall specialty mix based on ACGME spaces filled as of December 2011)	Q3/4/5 Resident/Fellow status , year of training, additional years anticipated
DSPS _GRANTED_DATE (Date first licensed in WI)	(Not asked)

G. Physician Survey Weighting Procedure

Given the approximate 30% response rate on the 2011-2012 physician survey, we weight the survey data to ensure that it is representative of the entire physician population in Wisconsin. Each survey response is assigned a weight showing the number of physicians in the state that this survey response represents. Assigning weights to the survey responses compensates for potential over- or under-sampling of physicians with certain characteristics.

Residents and trainees were excluded from the dataset prior to performing the weighting procedure .

DSPS data is used to represent our prior belief about the distribution of physicians in the state. DSPS data is used to calculate the distribution of the entire physician population in the state based on four variables. The four variables used in the weighting procedure are age, gender, specialty, and geographic region. Using a statistical software package STATA, each survey response is classified into one of the possible combinations (or cells) of these four variables (for example, one combination is male, 35-44, urban location, and ob/gyn). Similarly, each DSPS observation is classified into one of the possible cells. The number of physicians in each cell of the DSPS data is counted and this number is then divided by the total DSPS population to determine the percentage of the total physician population in the DSPS data contained in that cell. These proportions are then used to calibrate the actual survey data to arrive at the weights for each survey response.

This weighting method assumes that the physician distribution from the DSPS data based on these four variables is reliable. Since we are only weighting the survey responses based on these four variables, the survey is representative only with respect to these four variables. The advantage of this method is that it does not assume independence across variables but it looks at their joint probability distribution. That is to say that using this method gender and specialty are no longer considered independent of each other and we are now capturing their correlation.

There are three cases where a cell without any observations can occur: case a) cells that are empty in both the survey and the DSPS data: this case is not an issue and these cells are just dropped since they don't affect the weights; case b) cells that are empty in the survey but are not empty in the DSPS data: these cells we can't do anything about since these cells include the physicians who didn't take the survey; case c) cells that are empty in the DSPS data but are not empty in the survey: there were no such cells identified.

The weighting method uses age, gender, region, and specialty data from the DSPS data for all of the matched survey responses. For a few unmatched survey responses, the survey age data were used.

The following are the groupings used during the weighting procedure. Groupings for the four variables are only important to the extent that these are the groups we think will make the survey data representative of the entire physician population. Once every survey response gets its own weight representing the entire physician population, you can group it any way you want for any future analyses and for the forecasting purposes.

Final weighting dataset:

The weighting procedure was performed on two versions of the dataset: the first version (called "all groups") is a broad dataset which includes all physicians with in- or out-of-state address in the DSPS data excluding residents and trainees, the second version (called "only group 1") includes only physicians with Wisconsin address in the DSPS data excluding residents and trainees.

"All groups" Dataset:

After the residents/fellows were removed from the "all groups" dataset (1,162 observations removed), here are the final population numbers:

6,250 = survey population

21,604 = DSPS population

The primary weights used to weight the survey data in the report are based on six age groups, three gender groups (includes “unknown”), six location groups, and thirteen specialty groups (weight3): $6 \times 3 \times 6 \times 13 = 1,404$ possible cells.

This method allows every physician to fall into one of these 1,404 cells. Of these 1,404 cells, there are 938 nonempty cells in the DSPS data (nonempty cell is a cell that has at least one physician in it). This means that our prior belief about the distribution of physicians in Wisconsin is within these 938 cells. Every physician with the current DSPS record falls into one of these 938 cells. On the survey side, however, only 640 cells are nonempty. The difference between these two nonempty cell numbers (938 and 640) tells us that physicians that fell into any of these cells did not respond to the survey. Most of these cells contain only one or two physicians so that most of the nonempty DSPS cells were represented via some responses from the survey.

Distributions of the DSPS data and the survey data (not weighed) are below.

Age groups:

Age Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
below 35	1,519	7.0	396	6.3
35-44	5,504	25.5	1,307	20.9
45-54	6,288	29.1	1,684	26.9
55-64	5,446	25.2	1,831	29.3
65-74	2,099	9.7	799	12.8
75+	748	3.5	233	3.7
Total	21,604	100	6,250	100

Gender groups:

Gender	number (DSPS)	% (DSPS)	number (survey)	% (survey)
male	15,155	70.1	4,461	71.4
female	5,757	26.7	1,789	28.6
unknown	692	3.2		
Total	21,604	100	6,250	100

Location groups (based on community size): (Location is based on the place of residence data available for all respondents in the DSPS data, rather than place of work that was available only for survey respondents.)

Location Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
R1, R1-M	611	2.8	213	3.4
R2, R2-M	1,039	4.8	313	5.0
R3, R3-M	1,366	6.3	355	5.7
Urban	6,503	30.1	1,858	29.7
Milw Cty, Urban-Milw Metro	5,203	24.1	1,554	24.9
out of state	6,882	31.9	1,957	31.3
Total	21,604	100	6,250	100

Specialty groups:

Specialty Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
General Practice & Family Medicine	3,543	16.4	1,117	17.9
General Internal Medicine & Geriatrics	2,495	11.6	723	11.6
General Pediatrics & Med-Peds	1,248	5.8	417	6.7
Subspecialty Medicine & Other Subspecialty Patient Care	2,359	10.9	702	11.2
Subspecialty Pediatrics	363	1.7	164	2.6
Neurology and Physical Medicine & Rehabilitation	1,122	5.2	367	5.9
Psychiatry	1,053	4.9	390	6.2
OB/Gyn	927	4.3	282	4.5
Dermatology, Allergy & Immunology, Radiation Oncology, Ophthalmology	1,162	5.4	267	4.3
Emergency Medicine, Anesthesiology, Radiology, Pathology	4,401	20.4	1,175	18.8
General Surgery	747	3.5	184	2.9
Subspecialty Surgery	2,029	9.4	438	7.0
Unknown	155	0.7	24	0.4
Total	21,604	100	6,250	100

In order to analyze detailed specialty data from the survey responses, a different weight based on the detailed specialty grouping was prepared. These weights were calculated using the same six age groups, three gender groups, and in- or out-of-state region identifier.

Specialty Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
General Practice and Family Medicine	3,543	16.4	1,117	17.9
General Internal Medicine & Geriatrics	2,495	11.6	723	11.6
General Pediatrics & Med--Peds	1,248	5.8	417	6.7
Subspecialty Medicine & Other subspecialty Patient Care	2,359	10.9	702	11.2
Subspecialty Pediatrics	363	1.7	164	2.6
Neurology	423	2	120	1.9
Physical Medicine & Rehabilitation	311	1.4	96	1.5
Psychiatry	1,053	4.9	390	6.2
OB/Gyn	927	4.3	282	4.5
Dermatology	293	1.4	72	1.2
Allergy & Immunology	148	0.7	34	0.5
Radiation Oncology	167	0.8	56	0.9
Ophthalmology	554	2.6	105	1.7
Emergency Medicine	1,142	5.3	344	5.5
Anesthesiology	1,296	6.0	407	6.5
Radiology	1,708	7.9	344	5.5

Pathology	643	3.0	231	3.7
General Surgery	747	3.5	184	2.9
Subspecialty Surgery	2,029	9.4	438	7
Unknown	155	0.7	24	0.4
Total	21,604	100	6,250	100

Location Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
in state	14,723	68.2	4,294	68.7
out of state	6,881	31.9	1,956	31.2
Total	21,604	100	6,250	100

“Only Group 1” Dataset:

The final population numbers:

4,293 = survey population

14,722 = DSPS population

We used six age groups, three gender groups (includes “unknown”), six location groups, and thirteen specialty groups (weight3): $6 \times 3 \times 6 \times 13 = 1,404$ possible cells.

This method allows every physician to fall into one of these 1,404 cells. Of these 1,404 cells, there are 742 nonempty cells in the DSPS data (nonempty cell is a cell that has at least one physician in it). This means that our prior belief about the distribution of physicians in Wisconsin is within these 742 cells. Every physician with the current DSPS record falls into one of these 742 cells. On the survey side, however, only 493 cells are nonempty. The difference between these two nonempty cell numbers (742 and 493) tells us that physicians that fell into any of these cells did not respond to the survey. Most of these cells contain only one or two physicians so that most of the nonempty DSPS cells were represented via some responses from the survey.

Distributions of the DSPS data and the survey data (not weighted) are below.

Age groups:

Age Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
below 35	1,112	7.6	316	7.4
35-44	3,815	25.9	954	22.2
45-54	4,277	29.1	1,147	26.7
55-64	3,598	24.4	1,205	28.1
65-74	1,377	9.4	503	11.7
75+	543	3.7	168	3.9
Total	14,722	100	4,293	100

Gender groups:

Gender	number (DSPS)	% (DSPS)	number (survey)	% (survey)
male	10,009	68.0	2,956	68.9
female	4,195	28.5	1,337	31.1
unknown	518	3.5		
Total	14,722	100	4,293	100

Location groups (based on community size): (Location is based on the place of residence data available for all respondents in the DSPS date, rather than place of work that was available only for survey respondents)

Location Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
R1, R1-M	611	4.2	213	5.0
R2, R2-M	1,039	7.1	313	7.3
R3, R3-M	1,366	9.3	355	8.3
Urban	6,503	44.2	1,858	43.3
Milw Cty, Urban-Milw Metro	5,203	35.3	1,554	36.2
Total	14,722	100	4,293	100

Specialty groups:

Specialty Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
General Practice & Family Medicine	2,717	18.5	861	20.1
General Internal Medicine & Geriatrics	1,892	12.9	557	13.0
General Pediatrics & Med--Peds	992	6.7	323	7.5
Subspecialty Medicine & Other Subspecialty Patient Care	1,544	10.5	488	11.4
Subspecialty Pediatrics	237	1.6	104	2.4
Neurology and Physical Medicine & Rehabilitation	701	4.8	234	5.5
Psychiatry	731	5.0	269	6.3
OB/Gyn	694	4.7	216	5.0
Dermatology, Allergy & Immunology, Radiation Oncology, Ophthalmology	787	5.4	161	3.8
Emergency Medicine, Anesthesiology, Radiology, Pathology	2,489	16.9	694	16.2
General Surgery	526	3.6	117	2.7
Subspecialty Surgery	1,338	9.1	259	6.0
Unknown	74	0.5	10	0.2
Total	14,722	100	4,293	100

Finally, the weighting process was repeated for more a more detailed list of specialties to facilitate closer analysis of individual specialties (weight7).

Detailed specialty weighting:

Specialty Group	number (DSPS)	% (DSPS)	number (survey)	% (survey)
General Practice and Family Medicine	2,717	18.5	861	20.1
General Internal Medicine & Geriatrics	1,892	12.9	557	13.0
General Pediatrics & Med--Peds	992	6.7	323	7.5
Subspecialty Medicine & Other subspecialty Patient Care	1,544	10.5	488	11.4
Subspecialty Pediatrics	237	1.6	104	2.4
Neurology	262	1.8	69	1.6
Physical Medicine & Rehabilitation	220	1.5	68	1.6
Psychiatry	731	5.0	269	6.3
OB/Gyn	694	4.7	216	5.0
Dermatology	209	1.4	44	1.0
Allergy & Immunology	105	0.7	26	0.6
Radiation Oncology	88	0.6	24	0.6
Ophthalmology	385	2.6	67	1.6
Emergency Medicine	723	4.9	219	5.1
Anesthesiology	863	5.9	257	6.0
Radiology	773	5.3	186	4.3
Pathology	349	2.4	129	3.0
General Surgery	526	3.6	117	2.7
Subspecialty Surgery	1,338	9.1	259	6.0
Unknown	74	0.5	10	0.2
Total	14,722	100	4,293	100

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