

# The Relationship Between Provider Age and Opioid Prescribing Behavior

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**T**he increase in the volume of opioids prescribed and the harms from opioid use over the past 2 decades are well known.<sup>1,2</sup> Evidence indicates that provider behavior has played a key role in expanding opioid use (we refer to prescribers of opioids as providers, which includes physicians, nurse practitioners, and physicians' assistants) and that at least some of this expansion is medically inappropriate.<sup>3</sup>

Although the volume of opioids prescribed peaked in 2011 and then decreased each year through 2016,<sup>4</sup> opioid use remains far above its 2000 level. Understanding the role of provider characteristics in opioid prescribing and the potential role of changing provider characteristics on prescribing trends is essential for developing an appropriate policy response.

Available evidence shows that there is variation across providers in opioid prescribing. There are differences in opioid prescribing among specialties,<sup>5</sup> among physicians in the same specialty, and even among physicians in the same emergency department, with consequent increases in long-term opioid use among patients treated by physicians who prescribe large amounts of opioids.<sup>6</sup> Other work shows that physicians trained at less selective medical schools write significantly more opioid prescriptions than those trained at more selective schools.<sup>7</sup>

Although this work provides important insights, no work has investigated whether the decline in opioid volume since 2011 has been due to changes in provider characteristics—or in spite of them. In particular, no work has investigated the association between opioid prescribing and one of the most basic provider characteristics: age.

Provider age might be an important determinant of opioid prescribing behavior for several reasons. On one hand, older providers' greater experience might lead them to write fewer inappropriate opioid prescriptions.<sup>8</sup> On the other hand, evidence suggests that older physicians can be less likely to adhere to and be aware of current evidence-based standards of care, such as the recommendation to use episiotomy only in limited circumstances.<sup>9</sup> (Episiotomy is a surgical procedure to enlarge the vaginal opening during childbirth. Episiotomy was used routinely into the 1990s, but has since been

## ABSTRACT

**OBJECTIVES:** The relationship between provider age and quality of care is theoretically indeterminate. Older providers are more experienced, which could lead to a positive relationship between age and quality, but providers' practice patterns could become outdated as technology and scientific knowledge change, which could lead to a negative relationship between age and quality. However, little work has investigated the provider age/quality relationship, and no work has investigated the relationship between provider age and opioid prescribing behavior.

**STUDY DESIGN:** We analyze Medicare Part D data to investigate how opioid prescribing differs by provider age.

**METHODS:** We use regression analysis to estimate the effect of provider age, holding other factors constant.

**RESULTS:** We find that older providers prescribe significantly more opioids, with the gap between older and younger providers increasing from 2010 to 2015.

**CONCLUSIONS:** Assuming that older physicians follow patterns of previous generations, anticipated retirement of older providers and entry by younger providers will tend to reduce opioid volumes, undoing at least in part the rapid increase since 2000.

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## TAKEAWAY POINTS

- ▶ Holding other factors constant, we find that older providers prescribe significantly more opioids, with the gap between older and younger providers increasing from 2010 to 2015.
- ▶ Policies to improve prescribing practice may have a greater impact if they are targeted at older providers.
- ▶ Anticipated retirement of older providers and entry by younger providers will tend to reduce opioid volumes, undoing at least in part the rapid increase since 2000.

shown to be clinically beneficial only in limited circumstances.) Other work has found that older primary care physicians have higher rates of use of low-value services<sup>10</sup> and higher mortality of patients treated in the hospital.<sup>11</sup> To the extent that at least part of the expansion of opioid prescribing was not medically appropriate, this work would predict a positive association between provider age and opioid prescription volume.

To investigate whether opioid prescribing behavior differs by provider age, we analyze prescription drug claims from a 20% random sample of Medicare Part D beneficiaries in 2010 and 2015. Using the methods described below, we calculate for each provider the number of days supplied of opioids they prescribed per attributed patient, along with several other measures of the intensity and appropriateness of opioid prescribing. We examine whether these measures vary across providers of different age cohorts, adjusted for the characteristics of the providers and their patients. Then, we create illustrative forecasts of opioid prescription volume for each age cohort of providers in 2020 and 2025 under different assumptions about cohorts' future prescribing behavior, and aggregate to the population of providers, in order to provide insights into the effects on the overall future volume of prescribed opioids that could be possible based on our estimates. Our forecasts are not intended to represent what will actually occur in the future. Instead, they are intended to represent what would occur under simple assumptions about trends in provider and prescribing behavior, in order to illustrate how these factors might contribute to future opioid volume.

Differences in opioid prescribing behavior by provider age have several implications for policy. Differences by provider age can suggest targeted approaches to improving prescribing practice and may indicate how future opioid prescribing behavior could be affected by the age distribution of the physician workforce as older doctors retire over time and younger doctors enter practice.

## DATA AND METHODS

We begin with all the providers serving Medicare beneficiaries with Part D coverage in our 20% sample in 2010 or 2015. We include providers serving both traditional Medicare fee-for-service and Medicare Advantage beneficiaries. We report the fraction of patients enrolled in Medicare Advantage by provider age group in the [eAppendix](#) (available at [ajmc.com](#)).

We match each provider in the sample by National Provider Identifier (NPI) to records in the Medicare Provider Practice and Specialty file (MD-PPAS) to obtain the provider's age, gender, and 62-category specialty. We match each provider by NPI to records in the National Plan and Provider Enumeration System (NPPES) to obtain county of practice. We limit our analysis sample to those providers with valid age, gender, and location information in MD-PPAS and

NPPES who were aged at least 30 years in 2010 or 2015. We assign providers to nine 5-year age cohorts: 30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54, 55 to 59, 60 to 64, 65 to 69, and 70 years and older. We also present the full distribution of provider ages in the eAppendix.

In 2010 and again in 2015, we attribute to each provider all the unique beneficiaries for whom the provider wrote any prescriptions in that year. Based on this, we calculate the age cohort, gender, race (Black vs non-Black), and original Medicare eligibility status (disabled vs aged) mix of the provider's patients in the year. We group patients into different age cohorts (0-39, 40-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-98,  $\geq 99$  years) than providers because the distribution of patients is highly skewed to older ages.

We also calculate days supplied of opioids prescribed by the provider to their attributed patients in that year. We determine which drug claims are for opioids based on the National Drug Code on the claim and the CDC's drug classification system,<sup>12</sup> and we sum days supplied of each opioid prescription across claims from each provider's attributed patients.

To determine the relationship between provider age group and opioid prescription patterns, we estimate regressions across providers, by year, of days supplied of opioids per attributed patient on a set of indicator variables for the characteristics of each provider and their patients. Provider characteristics include age cohort; gender; specialty; county of practice; and patients' age cohort, gender, race, and eligibility status mix.

We provide the full set of regression results, and the mean and SD of each variable, in the eAppendix. We calculate the adjusted days supplied per patient for each provider age cohort in a given year as the predicted value of days supplied per patient at the sample average of all the indicator variables in the regression (except those for provider age cohort).

To obtain insight into how changes over time in the age distribution of physicians in practice could affect opioid prescribing, we use our regression results to construct illustrative forecasts of days supplied per patient for 2020 and 2025 using 2 methods. The first method assumes that number of days supplied by a provider age cohort changes from 2015 to 2020 and from 2020 to 2025 at the same rate that it changed between 2010 and 2015. So, for example, the forecast days supplied by providers aged 35 to 39 years in 2020 would be equal to days supplied by providers aged 30 to 34 years in 2015, multiplied by the ratio of days supplied by providers aged 35 to 39 years in 2015 to days supplied by providers aged 30 to 34

years in 2010. Days supplied by providers aged 30 to 34 years in 2020 is not determined by this model, so we assume it is equal to days supplied by providers aged 30 to 34 years in 2015. We describe this as the “cohort-specific growth” model.

The second method assumes that the numbers of days supplied by a provider age cohort in 2020 and 2025 are exactly the same as they were for that cohort in 2015. So, for example, the forecast days supplied by providers aged 35 to 39 years in 2020 would be equal to days supplied by providers aged 30 to 34 years in 2015. Numbers of days supplied by providers aged 30 to 34 years in 2020 and 2025 are also not determined by this model, so we assume they are equal to days supplied by providers aged 30 to 34 years in 2015. We describe this as the “cohort-stable growth” model.

We aggregate forecast days supplied by provider age to the population of providers based on the 2015 age distribution of providers. In doing so, our forecasts implicitly assume that the age distribution of providers will remain stable into the future. This abstracts away from the 2 opposing forces that are likely to drive the future provider age distribution: the aging of the physician population and the increase in the share of providers who are (younger) nurse practitioners and physician assistants.

To both validate and extend our main analysis, we calculate for 2010 and 2015 several other measures of the intensity and appropriateness of opioid prescribing in addition to days supplied. Other measures of intensity and appropriateness include the count of opioid prescriptions per patient, the average daily dose in morphine milligram equivalents (MME) per prescribed day, the count of high-dose opioid prescriptions (> 90 MME/day) per patient,<sup>13</sup> and the share of patients with an opioid prescription who also had an overlapping prescription for a benzodiazepine.<sup>14</sup> (This is a standard measure of inappropriate prescribing because of the danger, especially in older individuals, of concomitant use of opioids and benzodiazepines.)

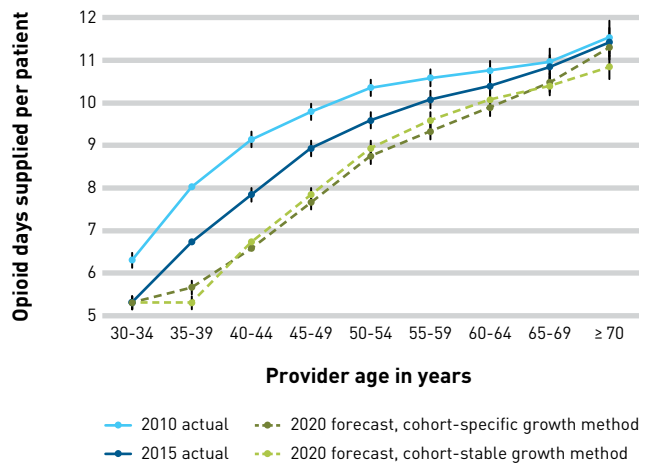
We also calculate the number of days supplied of 2 nonopioid pain medications, nonsteroidal anti-inflammatory drugs (NSAIDs) and gabapentin/pregabalin, to investigate whether differences in opioid prescribing by age are driven by opioid prescribing specifically or could be related to differences in providers’ willingness to treat pain more broadly.<sup>15</sup>

## RESULTS

**Figure 1** presents, by provider age cohort, opioid days supplied per patient for 2010 and 2015, as well as forecast days supplied per patient for 2020 according to the 2 methods described above. All values in Figure 1 are adjusted for differences across age cohorts in the patient and provider characteristics described above.

Figure 1 shows that, on average, days supplied in 2010 and 2015 rise with provider age, steeply as providers age into their 40s and gradually thereafter. For example, in 2010, the average provider aged 30 to 34 years prescribed 6.3 days per patient, rising to approximately 8.0 days for providers aged 35 to 39 years and 9.1 days for providers

**FIGURE 1.** Number of Opioid Days Supplied by Provider Age<sup>a</sup>



<sup>a</sup>Authors’ calculations using Medicare Part D claims, National Plan and Provider Enumeration System, and Medicare Provider Practice and Specialty files. Error bars show 95% CIs for provider age group relative to age 35-39 years (age 40-44 years for 2020 forecast). Cohort-specific and cohort-stable growth methods defined in text.

aged 40 to 44 years. After age 40 to 44 years, the number of days supplied continues to rise but more gradually. In 2010, the average provider aged 45 to 49 years prescribed 9.8 days, increasing to 10.8 days for providers aged 60 to 64 years, 11.0 days for providers aged 65 to 69 years, and 11.5 days for providers 70 years and older. All differences between providers aged 30 to 34 years and older age cohorts are statistically significant at the 1% level.

Figure 1 also shows that the number of days supplied per patient by providers in a given age group in 2015 was lower than the number of days supplied by providers in the same age group in 2010. This difference is apparent for all providers but is larger for younger than for older providers. In particular, for the average provider aged 30 to 34 years, days supplied per patient declined from approximately 6.3 in 2010 to 5.3 in 2015, or 15.9%, but for the average provider aged 60 to 64 years, days supplied per patient declined from approximately 10.8 in 2010 to 10.4 in 2015, or 3.7%. This foreshadows our main finding—that as older providers retire and younger providers enter practice, the replacement of older with younger providers is expected to lead to declines in the volume of opioids prescribed.

Figure 1 also reports our illustrative forecasts of 2020 days supplied per patient based on our 2 methods. The dark green line reports 2020 forecast days supplied, assuming that days supplied by a provider age cohort changes from 2015 to 2020 at the same rate that it changed from 2010 to 2015. Over the middle range of provider ages, days supplied continues to fall from 2015 to 2020; at the top of the provider age distribution, days supplied remains relatively stable. The largest decline in days supplied occurs for providers aged 40 to 44 years, for whom it declined by 1.3 from 2015 to 2020 forecast. The light green line reports our illustrative forecast for 2020 days supplied, assuming that days supplied by a provider age

**TABLE.** Number of Opioid Days Supplied, 2010-2025\*

	Actual		Forecast		Percentage change		
	2010	2015	2020	2025	2010-2015	2015-2020	2020-2025
Actual	9.47	8.62			-8.98%		
Forecast using cohort-specific growth method			7.83	7.13		-9.14%	-8.96%
Forecast using cohort-stable method			7.88	7.21		-8.60%	-8.48%

\*Authors' calculations using Medicare Part D claims, National Plan and Provider Enumeration System, and Medicare Provider Practice and Specialty files. Cohort-specific and cohort-stable growth methods defined in text.

to the effective replacement of older higher-prescribing providers with younger providers.

To further investigate the importance of entries and retirements to the overall trend in days supplied, we redid the analysis underlying the Table using only those providers who appeared in both the 2010 and 2015 samples. Days supplied from this fixed cohort therefore include the effects of within-cohort trends but exclude the effect of entries and retirements. Among providers in this fixed cohort, days supplied by the average provider actually

increased slightly from 9.6 in 2010 to 9.8 in 2015 (not in any exhibit)—suggesting that entries and retirements were largely responsible for the observed overall decline in days supplied. Although the fixed cohort excludes entries and retirements, it also excludes (1) providers who wrote so few prescriptions that they wrote no prescription for a Part D beneficiary in our 20% random sample in 1 but not both years and (2) providers who fail to appear in both years for reasons other than entry or retirement. If these providers are more likely not to prescribe opioids, then the fixed-cohort analysis would overstate the effect of entries and retirements relative to other factors.

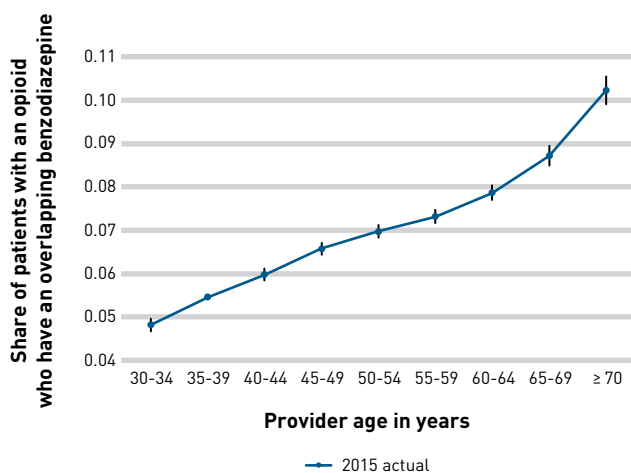
We examine 2 other measures of the intensity of opioid prescribing to validate our main result: the regression-adjusted count of opioid prescriptions per patient and mean daily dose in MME per prescribed day. The results of these analyses, presented in the eAppendix, show the same pattern across provider cohorts and over time as do days supplied.

Other analyses of inappropriate prescribing show a significant gradient across provider age cohorts. For example, in 2015, whereas 4.8% of patients with an opioid prescription from the average provider aged 30 to 34 years had an overlapping benzodiazepine prescription from that provider (regression adjusted), 10.2% of patients with an opioid from the average provider 70 years or older had an overlapping benzodiazepine—more than double the level (Figure 2). (Because benzodiazepines were not covered by Part D in 2010, we calculate only the 2015 rate of opioid/benzodiazepine overlap.)

In addition, although the count of high-dose opioid prescriptions per patient declined dramatically from 2010 to 2015 (from 0.093 to 0.057, or by 38.7%), the provider age gradient remained substantial. In 2015, whereas providers aged 30 to 34 years wrote 0.027 high-dose opioid prescriptions per patient on average, providers 70 years and older wrote 0.088—more than triple the level (Figure 3).

The provider-age gradient in opioid prescribing is also present for other pain relievers. For example, in both 2010 and 2015, the average provider aged 30 to 34 years prescribed approximately 3 days of NSAIDs per patient, rising to approximately 5 days for providers aged 50 to 54 years and 6 days for providers 70 years and older (Figure 4). Although the provider-age gradient in gabapentin/pregabalin prescribing is less pronounced, particularly in 2010, older providers prescribe more of these drugs as well (eAppendix).

**FIGURE 2.** Patients With an Opioid Prescription Who Have an Overlapping Benzodiazepine Prescription by Provider Age<sup>a</sup>



<sup>a</sup>Authors' calculations using Medicare Part D claims, National Plan and Provider Enumeration System, and Medicare Provider Practice and Specialty files. Error bars show 95% CIs for provider age group relative to age 35-39 years.

cohort in 2020 is exactly the same as it was in 2015. By construction, the number of days supplied by the average provider aged 35 to 39 years in the 2020 forecast is exactly the same as the number of days supplied by providers aged 30 to 34 years in the 2020 forecast: Both are equal to the number of days supplied by providers aged 30 to 34 years in 2015. With the exception of providers aged 35 to 39 years, 2020 forecast days are remarkably similar across forecast methods. This suggests that the most important determinant of our forecasts is the (common) replacement of higher-prescribing older providers with lower-prescribing younger providers.

The Table aggregates the age-specific results presented in Figure 1. The first row of the Table shows that, for the average provider, actual days supplied per patient decline from 2010 to 2015 by approximately 9%, from 9.5 to 8.6. The second and third rows of the Table show that, at the 2015 age distribution of providers, forecast 2020 days supplied per patient would decline between approximately 8.6% and 9.1%. The 2 methods forecast continuing declines in days supplied through 2025 because of continuing retirements that lead

## DISCUSSION

Medically inappropriate use of opioids in the United States is an important social problem, and provider prescribing behavior plays a key role. However, no work has investigated the association between opioid prescribing and provider age. This gap is surprising, as other work has found less adherence to evidence-based standards of care and lower-quality outcomes on average for older providers compared with their younger counterparts. Extended to the context of opioid prescriptions, such work suggests that a disproportionate share of opioid overuse could be attributable to the prescribing behavior of older providers.

We analyze data from Medicare Part D to investigate whether opioid prescribing behavior differs by provider age. We find that it does. In 2010, adjusted for the characteristics of providers and their patients, the average provider 70 years or older prescribed 11.5 days supplied per patient vs 6.3 days for the average provider aged 30 to 34 years—approximately 83% more. Although days supplied fell in every provider age cohort from 2010 to 2015, consistent with the overall decline in opioid prescribing documented elsewhere, they fell more for younger than for older providers. Indeed, even as days fell overall from 2010 to 2015, the gap in days across provider cohorts widened: from 5.2 days for providers 70 years and older vs 30 to 34 years in 2010 to 6.1 days for providers 70 years and older vs 30 to 34 years in 2015.

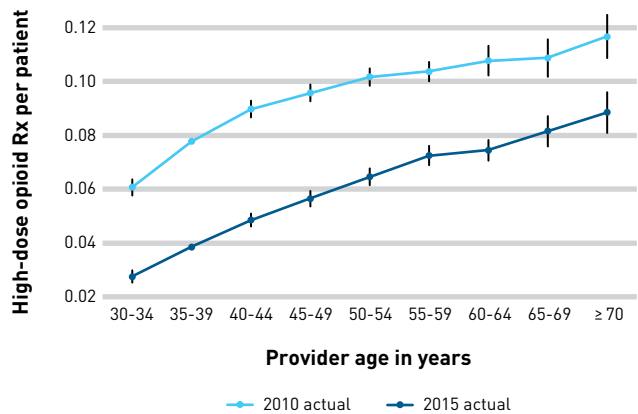
On average, older providers not only prescribe a greater volume of opioids in terms of days supplied, but also prescribe opioids less appropriately. In 2015, compared with providers aged 30 to 34 years, the average provider 70 years or older wrote more than twice as many concomitant benzodiazepine prescriptions for patients for whom they had prescribed an opioid. Similarly, in 2015, compared with providers aged 30 to 34 years, the average provider 70 years or older wrote more than 3 times as many high-dose opioid prescriptions per patient. Although comparisons of potentially inappropriate prescribing were most dramatic at the end points of the provider age distribution, there were also very large differences in the distribution's interior. This appears to be due to a higher level of pain treatment prescribing more broadly, rather than opioid prescribing specifically: Older providers also prescribe more of other, nonopioid pain relievers.

### Limitations

Our findings have at least 3 limitations. First, we cannot definitively rule out the possibility that the observed difference in opioid volume by provider age is due to unobserved differences in the health of the 2 groups' patient populations. To address this concern, we control for the variables described above, but other differences in the health of the groups' patient populations may remain. However, even if there are differences in the groups' patient populations, those differences would have to be very large and growing to explain our findings.

We took an additional step to further investigate whether the observed difference in opioid volume by provider age is due

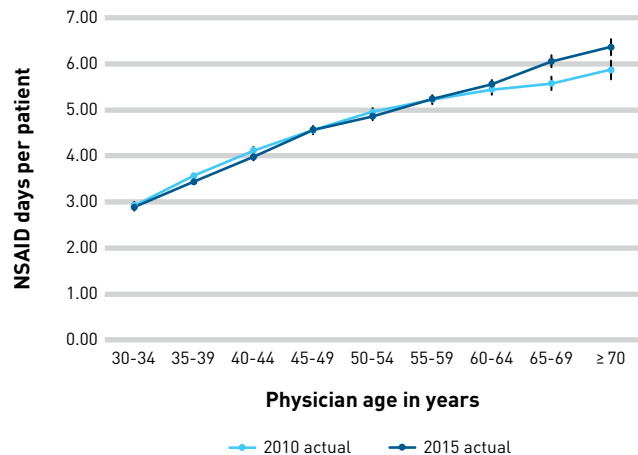
**FIGURE 3.** Count of High-Dose Opioid Prescriptions (> 90 MME/day) by Provider Age<sup>a</sup>



MME, morphine milligram equivalents; Rx, prescription.

<sup>a</sup>Authors' calculations using Medicare Part D claims, National Plan and Provider Enumeration System, and Medicare Provider Practice and Specialty files. Error bars show 95% CIs for provider age group relative to age 35-39 years.

**FIGURE 4.** Number of NSAID Days Supplied by Provider Age, 2010 and 2015<sup>a</sup>



NSAID, nonsteroidal anti-inflammatory drug.

<sup>a</sup>Authors' calculations using Medicare Part D claims, National Plan and Provider Enumeration System, and Medicare Provider Practice and Specialty files. Error bars show 95% CIs for provider age group relative to age 35-39 years.

to unobserved differences in patients' health. The Medicare Fee-for-Service (FFS) Provider Utilization and Payment Data Part D Prescriber Public Use File (PUF) reports the mean Hierarchical Condition Category (HCC) risk score for each provider serving Part D beneficiaries. These PUFs exist for 2013 to 2017 only. We reestimated the 2015 regression on which our estimates of adjusted differences in opioid volume by provider age are based including the providers' FFS HCC score as reported in the PUF. When we did



this, adjusted differences in opioid volume between younger and older providers actually *increased*, although by a relatively small amount (approximately 5%).

Second, our construction of the size of each provider's patient panel based on Part D prescription drug data rather than other Medicare data could bias our results. If older providers are more likely to have patients with no prescribed medications, then our use of Part D data to construct panel sizes would lead us to understate older providers' panel sizes and in turn overstate older providers' days supplied per patient. However, this source of bias is unlikely to be important: Of the 39.5 million beneficiaries enrolled in Part D in 2015, 38.9 million (or 98.5%) had at least 1 outpatient prescription drug claim.<sup>16</sup>

Third, because our study population is disproportionately older, we cannot identify the extent to which the provider age effect accounts for trends in opioid prescribing in the younger population. Other work shows that the decline in opioid prescriptions in recent years was much greater for younger than for older patients.<sup>17</sup> Differences between older and younger patients may be important, particularly in light of work showing a large recent decline in initial opioid prescriptions in the younger population,<sup>18</sup> which could translate into even greater declines in overall opioid use in the future, given opioids' addictive nature. Future work might seek to investigate this hypothesis, along with the mechanisms through which provider age affects prescribing behavior, in order to improve public policy.

## CONCLUSIONS

Holding other factors constant, we find that older providers prescribe significantly more opioids, with the gap between older and younger providers increasing from 2010 to 2015. We conclude that policies to improve prescribing practice may have a greater impact if they are targeted at older providers. In addition, we conclude that the anticipated retirement of older providers and entry by younger providers will tend to reduce opioid volumes, undoing at least in part the rapid increase since 2000. ■

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**Authorship Information:** Concept and design (LCB, DPK, GKV); acquisition of data (LCB, DPK, GKV); analysis and interpretation of data (LCB, DPK, GKV); drafting of the manuscript (DPK, GKV); critical revision of the manuscript for important intellectual content (LCB, DPK, GKV); statistical analysis (LCB, DPK, GKV); provision of patients or study materials (DPK, GKV); administrative, technical, or logistic support (LCB, DPK, GKV).

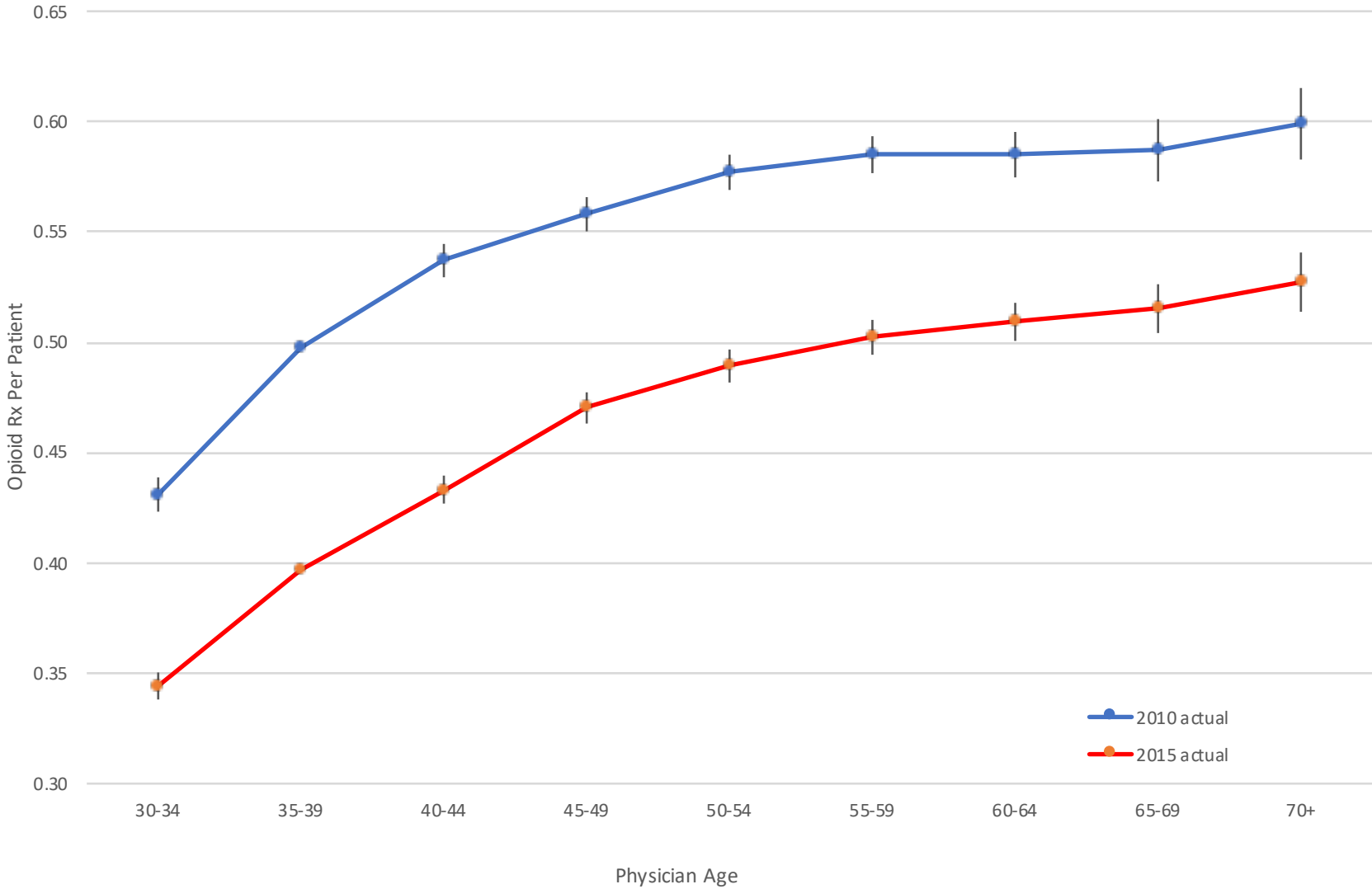
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## REFERENCES

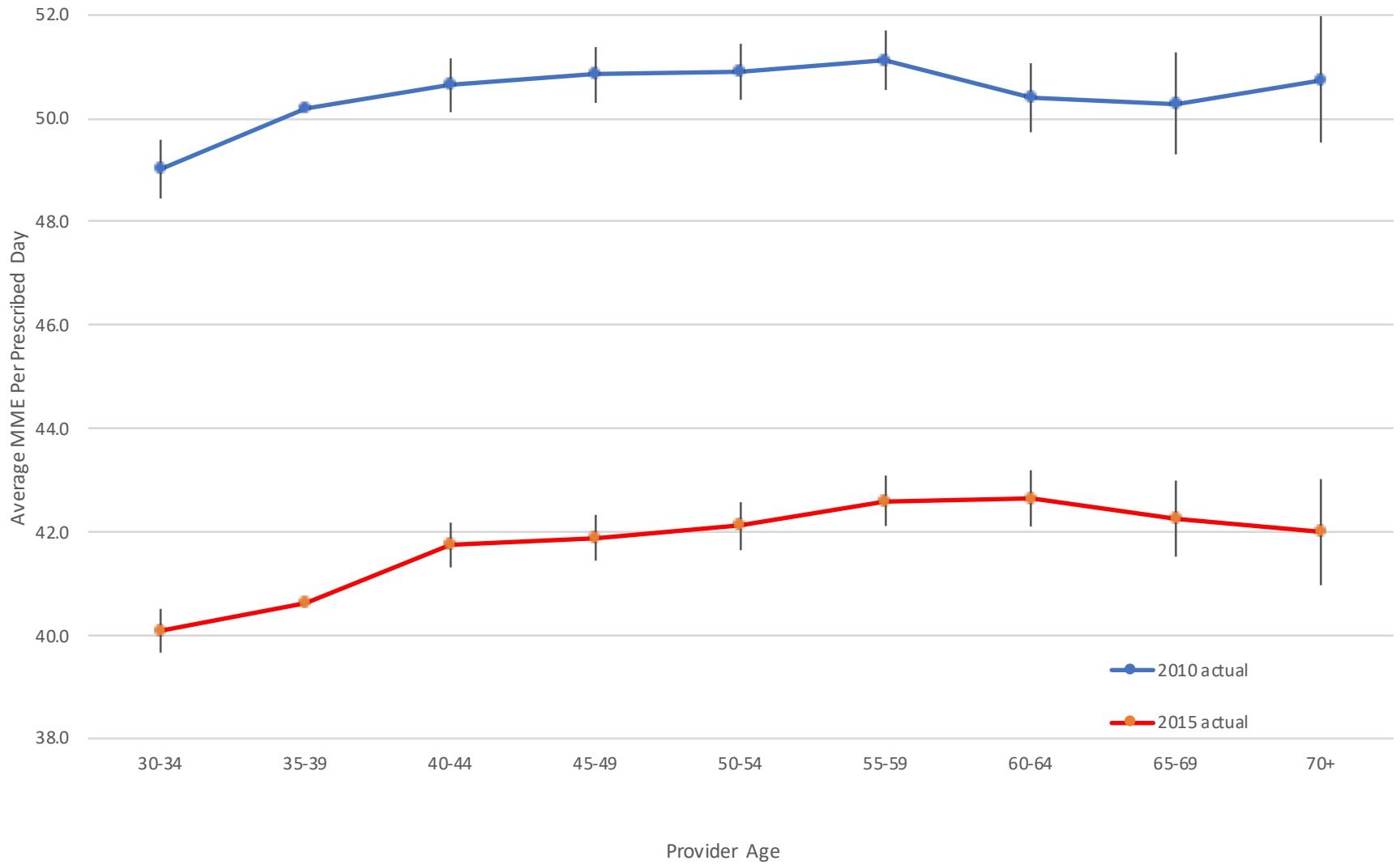
- Guy GP Jr, Zhang K, Bohm MK, et al. Vital signs: changes in opioid prescribing in the United States, 2006-2015. *MMWR Morb Mortal Wkly Rep*. 2017;66(26):697-704. doi:10.15585/mmwr.mm6626a4
- Paulozzi LJ, Jones CM, Mack KA, Rudd RA. Vital signs: overdoses of prescription opioid pain relievers - United States, 1999-2008. *MMWR Morb Mortal Wkly Rep*. 2011;60(43):1487-1492.
- Liu Y, Logan JE, Paulozzi LJ, Zhang K, Jones CM. Potential misuse and inappropriate prescription practices involving opioid analgesics. *Am J Manag Care*. 2013;19(8):648-658.
- Piper BJ, Shah DT, Simoyan OM, McCall KL, Nichols SD. Trends in medical use of opioids in the U.S., 2006-2016. *Am J Prev Med*. 2018;54(5):652-660. doi:10.1016/j.amepre.2018.01.034
- Levy B, Paulozzi L, Mack KA, Jones CM. Trends in opioid analgesic-prescribing rates by specialty, U.S., 2007-2012. *Am J Prev Med*. 2015;49(3):409-413. doi:10.1016/j.amepre.2015.02.020
- Barnett ML, Olenski AR, Jena AB. Opioid-prescribing patterns of emergency physicians and risk of long-term use. *N Engl J Med*. 2017;376(7):663-673. doi:10.1056/NEJMsa1610524
- Schell M, Currie J. Addressing the opioid epidemic: is there a role for physician education? *Am J Health Econ*. 2018;4(3):383-410. doi:10.1162/ajhe\_a\_00113
- Choudhry NK, Fletcher RH, Soumerai SB. Systematic review: the relationship between clinical experience and quality of health care. *Ann Intern Med*. 2005;142(4):260-273. doi:10.7326/0003-4819-142-4-200502150-00008
- Howard DH, Hockenberry J. Physician age and the abandonment of episiotomy. *Health Serv Res*. 2019;54(3):650-657. doi:10.1111/1475-6773.13132
- Schwartz AL, Jena AB, Zaslavsky AM, McWilliams JM. Analysis of physician variation in provision of low-value services. *JAMA Intern Med*. 2019;179(1):16-25. doi:10.1001/jamainternmed.2018.5086
- Tsugawa Y, Newhouse JP, Zaslavsky AM, Blumenthal DM, Jena AB. Physician age and outcomes in elderly patients in hospital in the US: observational study. *BMJ*. 2017;357:j1797. doi:10.1136/bmj.j1797
- Opioid prescription data resources. CDC. Accessed April 14, 2022. <https://www.cdc.gov/opioids/data-resources/index.html>
- Strickler GK, Kreiner PW, Halpin JF, Doyle E, Paulozzi LJ. Opioid prescribing behavior - prescription behavior surveillance system, 11 states, 2010-2016. *MMWR Surveill Summ*. 2020;69(11):1-14. doi:10.15585/mmwr.ss6901a1
- Hwang CS, Kang EM, Kornegay CJ, Staffa JA, Jones CM, McAninch JK. Trends in the concomitant prescribing of opioids and benzodiazepines, 2002-2014. *Am J Prev Med*. 2016;51(2):151-160. doi:10.1016/j.amepre.2016.02.014
- Table DDE-E. National Committee for Quality Assurance. 2017. Accessed April 14, 2022. [https://www.ncqa.org/wp-content/uploads/2018/08/DDE-E\\_2017-final.xlsx](https://www.ncqa.org/wp-content/uploads/2018/08/DDE-E_2017-final.xlsx)
- Medicare Part D enrollment and utilization by state, calendar year 2015. CMS. Accessed April 14, 2022. [https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Downloads/Medicare\\_Part\\_D\\_Enrollees\\_and\\_Utilizers\\_by\\_State\\_CY2015.zip](https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Downloads/Medicare_Part_D_Enrollees_and_Utilizers_by_State_CY2015.zip)
- Schieber LZ, Guy GP Jr, Seth P, Losby JL. Variation in adult outpatient opioid prescription dispensing by age and sex - United States, 2008-2018. *MMWR Morb Mortal Wkly Rep*. 2020;69(11):298-302. doi:10.15585/mmwr.mm6911a5
- Zhu W, Chernew ME, Sherry TB, Maestas N. Initial opioid prescriptions among U.S. commercially insured patients, 2012-2017. *N Engl J Med*. 2019;380(11):1043-1052. doi:10.1056/NEJMsa1807069

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Count of Opioid Prescriptions By Provider Age

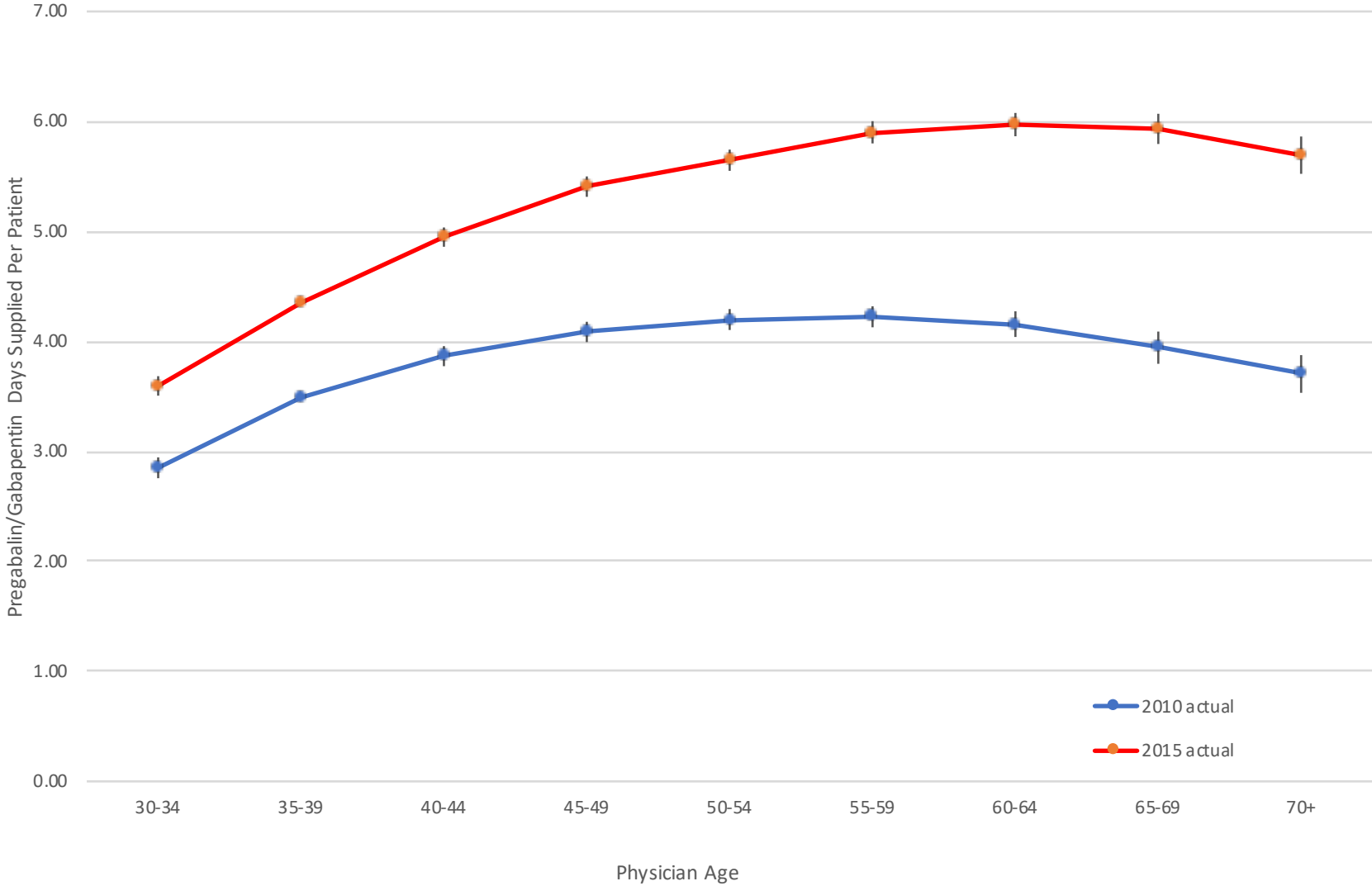


Average Daily Dose of Opioid Prescriptions (in MME) by Provider Age





Pregabalin/Gabapentin Days Supplied By Provider Age



Online Appendix Table 2

	Days Supplied / Patient		# Opioid Rx / Patient		MME / Rx Day		Overlapping	# Opioid Rx >90 MME	Per	
	2010	2015	2010	2015	2010	2015	Benzo Rx / Opioid Patient 2015	Rx Day / # Opioid Rx 2010	2015	NSAID Days Sup 2010
age30_34	-1.717***	-1.425***	-0.0670***	-0.0533***	-1.182***	-0.519**	-0.00639***	-0.0165***	-0.0109***	-0.654***
t-stat	(-18.83)	(-18.53)	(-16.90)	(-17.05)	(-4.08)	(-2.40)	(-8.77)	(-10.94)	(-9.58)	(-15.11)
SE	0.09118428	0.076902321	0.003964497	0.0031261	0.289705882	0.21625	0.00072862	0.001508227	0.001137787	0.043282594
age35_39										
age40_44	1.115***	1.110***	0.0389***	0.0364***	0.441*	1.140***	0.00518***	0.0121***	0.00975***	0.539***
	(11.99)	(13.51)	(10.10)	(11.26)	(1.66)	(5.16)	(7.39)	(7.68)	(7.85)	(13.15)
SE	0.092994162	0.082161362	0.003851485	0.003232682	0.265662651	0.220930233	0.000700947	0.001575521	0.001242038	0.040988593
age45_49	1.768***	2.198***	0.0602***	0.0730***	0.640**	1.280***	0.0112***	0.0178***	0.0183***	0.985***
	(18.42)	(23.72)	(15.21)	(20.24)	(2.32)	(5.66)	(15.39)	(11.00)	(12.34)	(23.19)
SE	0.095982628	0.092664418	0.003957922	0.003606719	0.275862069	0.22614841	0.000727745	0.001618182	0.001482982	0.042475205
age50_54	2.331***	2.860***	0.0787***	0.0922***	0.702**	1.504***	0.0152***	0.0235***	0.0262***	1.376***
	(23.63)	(29.04)	(19.31)	(24.16)	(2.54)	(6.35)	(20.05)	(14.03)	(16.54)	(31.54)
SE	0.098645789	0.098484848	0.004075608	0.003816225	0.276377953	0.236850394	0.000758105	0.001674982	0.001584039	0.04362714
age55_59	2.561***	3.341***	0.0872***	0.105***	0.926***	1.996***	0.0186***	0.0259***	0.0338***	1.646***
	(25.22)	(31.98)	(20.43)	(26.07)	(3.15)	(8.01)	(23.75)	(14.10)	(18.66)	(35.84)
SE	0.101546392	0.104471545	0.004268233	0.004027618	0.293968254	0.249188514	0.000783158	0.001836879	0.001811361	0.045926339
age60_64	2.733***	3.665***	0.0868***	0.112***	0.201	2.042***	0.0241***	0.0299***	0.0358***	1.866***
	(23.03)	(32.93)	(16.52)	(25.44)	(0.59)	(7.35)	(27.82)	(10.68)	(18.32)	(34.03)
SE	0.118671298	0.11129669	0.005254237	0.004402516	0.340677966	0.277823129	0.000866283	0.002799625	0.001954148	0.05483397
age65_69	2.940***	4.113***	0.0887***	0.118***	0.0906	1.651***	0.0326***	0.0308***	0.0431***	1.998***
	(18.20)	(28.82)	(12.31)	(20.92)	(0.18)	(4.40)	(28.10)	(8.69)	(15.27)	(26.59)
SE	0.161538462	0.142713393	0.007205524	0.005640535	0.503333333	0.375227273	0.001160142	0.003544304	0.002822528	0.07514103
age70+	3.513***	4.694***	0.101***	0.130***	0.555	1.389***	0.0477***	0.0392***	0.0497***	2.298***
	(17.86)	(27.70)	(12.22)	(18.97)	(0.89)	(2.65)	(28.92)	(9.58)	(12.96)	(22.02)
SE	0.196696529	0.169458484	0.008265139	0.006852926	0.623595506	0.524150943	0.001649378	0.004091858	0.003834877	0.104359673
female	-1.132***	-1.070***	-0.0906***	-0.0743***	-1.464***	-2.108***	-0.00186***	-0.0189***	-0.0106***	-0.428***
	(-16.71)	(-17.35)	(-32.02)	(-30.72)	(-7.13)	(-12.97)	(-3.60)	(-14.61)	(-9.75)	(-13.95)
pat_female	1.813***	1.679***	0.0871***	0.0621***	-4.076***	-7.981***	0.0266***	0.00473	-0.0120***	1.019***
	(13.73)	(12.62)	(14.26)	(11.27)	(-8.63)	(-17.81)	(20.40)	(1.52)	(-4.08)	(15.59)
pat_disable	10.33***	13.36***	0.443***	0.520***	4.837***	8.958***	0.0451***	0.0907***	0.100***	0.372***
	(50.26)	(58.39)	(48.19)	(60.82)	(7.42)	(14.56)	(21.54)	(25.95)	(31.62)	(3.35)
pat_black	-2.825***	-3.050***	-0.0760***	-0.0821***	-11.48***	-11.29***	-0.0476***	-0.0638***	-0.0546***	-0.139**
	(-17.75)	(-18.97)	(-10.71)	(-12.01)	(-23.88)	(-25.15)	(-35.38)	(-19.18)	(-16.18)	(-1.98)
pat_age0_39	-4.097***	-7.524***	-0.0967***	-0.237***	15.41***	25.93***	-0.0425***	0.0350***	0.0540***	-1.909***
	(-12.93)	(-21.94)	(-6.45)	(-16.04)	(11.07)	(15.51)	(-11.45)	(4.84)	(6.00)	(-13.08)
pat_age40_54	7.571***	6.236***	0.331***	0.255***	17.50***	22.45***	0.00244	0.149***	0.163***	-0.376***
	(23.37)	(16.57)	(22.13)	(17.31)	(17.87)	(20.12)	(0.79)	(18.70)	(19.93)	(-2.61)
pat_age55_64	4.460***	5.876***	0.161***	0.213***	7.555***	8.703***	0.00439	0.0694***	0.0892***	-0.192
	(15.59)	(19.43)	(12.90)	(17.94)	(8.51)	(9.90)	(1.58)	(13.29)	(16.52)	(-1.44)

pat\_age65\_69

pat_age70_74	-0.0698 (-0.45)	-0.0445 (-0.27)	-0.00998 (-1.38)	-0.00606 (-0.89)	-1.261** (-2.00)	-2.241*** (-3.92)	-0.00283 (-1.35)	-0.00147 (-0.52)	-0.0123*** (-5.28)	-0.0962 (-0.86)
pat_age75_79	-0.277* (-1.66)	-0.741*** (-4.24)	-0.0151** (-1.97)	-0.0304*** (-4.24)	-4.027*** (-5.73)	-6.717*** (-11.19)	-0.00168 (-0.73)	-0.0128*** (-4.62)	-0.0285*** (-12.27)	-0.513*** (-4.67)
pat_age80_84	0.532*** (2.63)	-0.541*** (-2.75)	0.0194* (1.95)	-0.00643 (-0.78)	-5.084*** (-6.93)	-6.945*** (-9.80)	0.00336 (1.28)	-0.0114*** (-4.13)	-0.0269*** (-10.44)	-0.872*** (-6.55)
pat_age85_98	3.182*** (15.36)	2.204*** (11.49)	0.191*** (18.85)	0.152*** (17.86)	-2.457*** (-3.41)	-3.349*** (-5.10)	0.0375*** (14.65)	0.0194*** (5.83)	-0.00477* (-1.91)	-1.571*** (-12.16)
pat_age99_up	10.29*** (6.33)	9.204*** (4.78)	0.599*** (7.47)	0.736*** (3.85)	5.937 (1.03)	13.46** (1.96)	0.0726*** (2.92)	0.0809*** (3.61)	0.0915** (1.97)	-1.108 (-0.62)

spec\_1  
General Practice

spec_2 General Surgeon	-13.81*** (-30.67)	-13.73*** (-26.34)	-0.170*** (-9.20)	-0.150*** (-7.34)	3.620*** (4.51)	-2.712*** (-2.75)	-0.107*** (-35.91)	-0.0595*** (-6.44)	-0.112*** (-10.64)	-10.59*** (-46.86)
spec_3 Allergy/Immunc	-16.49*** (-36.08)	-16.13*** (-30.78)	-0.799*** (-43.06)	-0.719*** (-35.35)	-4.605** (-2.19)	-11.56*** (-6.11)	-0.0795*** (-9.06)	-0.153*** (-16.82)	-0.127*** (-12.09)	-10.65*** (-44.60)
spec_4 Otolaryngology	-15.97*** (-35.73)	-15.54*** (-30.07)	-0.670*** (-36.71)	-0.599*** (-29.76)	1.687* (1.91)	-3.174*** (-3.17)	-0.0899*** (-27.58)	-0.131*** (-14.49)	-0.117*** (-11.25)	-10.96*** (-48.72)
spec_5 Anesthesiology	17.11*** (18.54)	25.76*** (23.93)	0.515*** (14.42)	0.826*** (21.23)	18.65*** (13.55)	12.93*** (9.36)	-0.0842*** (-23.50)	0.203*** (12.29)	0.206*** (12.14)	-6.761*** (-22.53)
spec_6 Cardiology	-14.60*** (-32.94)	-14.86*** (-28.85)	-0.716*** (-40.03)	-0.676*** (-33.84)	-0.805 (-0.90)	-11.30*** (-10.84)	-0.0542*** (-14.71)	-0.125*** (-13.89)	-0.110*** (-10.61)	-10.10*** (-44.93)
spec_7 Dermatology	-15.21*** (-34.39)	-14.57*** (-28.34)	-0.711*** (-39.78)	-0.630*** (-31.52)	-0.701 (-0.66)	-10.50*** (-9.87)	-0.0949*** (-27.15)	-0.126*** (-14.07)	-0.106*** (-10.29)	-10.83*** (-48.53)
spec_8 Family Practice	-0.738 (-1.64)	-2.126*** (-4.09)	-0.0703*** (-3.88)	-0.129*** (-6.38)	1.036 (1.33)	-3.091*** (-3.17)	-0.00725** (-2.42)	-0.0261*** (-2.86)	-0.0508*** (-4.87)	-0.919*** (-4.06)
spec_9 Interventional F	78.40*** (37.84)	94.22*** (40.35)	2.668*** (36.41)	3.207*** (39.08)	20.94*** (13.37)	12.66*** (9.11)	-0.0865*** (-24.31)	0.769*** (20.97)	0.699*** (18.17)	-2.799*** (-7.72)
spec_10 Gastroenterology	-16.14*** (-36.05)	-16.81*** (-32.49)	-0.785*** (-43.47)	-0.748*** (-37.18)	-4.422*** (-3.56)	-12.51*** (-11.42)	-0.0853*** (-23.21)	-0.149*** (-16.48)	-0.134*** (-12.83)	-10.77*** (-47.49)
spec_11 Internal Medicine	-3.454*** (-7.73)	-5.624*** (-10.85)	-0.192*** (-10.64)	-0.254*** (-12.59)	1.318* (1.70)	-1.754* (-1.80)	-0.0150*** (-5.01)	-0.0465*** (-5.15)	-0.0617*** (-5.91)	-3.521*** (-15.60)
spec_12 Osteopathic Ma	3.116 (1.32)	0.220 (0.12)	0.129 (1.42)	0.0203 (0.28)	7.134 (1.54)	-0.933 (-0.35)	-0.0175* (-1.67)	0.0781 (1.54)	0.0265 (0.75)	-2.690*** (-2.58)

spec_13 Neurology	-9.631*** (-18.93)	-11.46*** (-20.30)	-0.530*** (-26.20)	-0.554*** (-25.43)	-5.831*** (-5.79)	-11.23*** (-10.01)	-0.0339*** (-8.87)	-0.105*** (-10.59)	-0.107*** (-9.48)	-8.390*** (-35.90)
spec_14 Neurosurgery	0.395 (0.61)	-3.495*** (-5.63)	0.486*** (16.47)	0.145*** (5.85)	1.370 (1.48)	-2.289** (-2.13)	-0.0735*** (-20.51)	0.0335*** (2.76)	-0.0648*** (-5.70)	-6.789*** (-23.75)
spec_15 Obstetrics/Gyne	-16.61*** (-36.98)	-16.64*** (-31.92)	-0.710*** (-38.99)	-0.658*** (-32.39)	3.643*** (4.05)	-3.482*** (-3.25)	-0.101*** (-31.20)	-0.137*** (-14.99)	-0.128*** (-12.03)	-10.39*** (-45.90)
spec_16 Hospice And Pal	5.172*** (3.17)	16.60*** (8.12)	0.228*** (3.31)	0.669*** (8.77)	55.31*** (9.28)	50.26*** (15.22)	-0.00765 (-0.90)	0.350*** (6.88)	0.460*** (9.89)	-7.585*** (-20.75)
spec_17 Ophthalmology	-15.06*** (-34.17)	-14.70*** (-28.68)	-0.721*** (-40.50)	-0.650*** (-32.63)	2.489*** (2.62)	-5.439*** (-5.25)	-0.0980*** (-29.47)	-0.117*** (-13.08)	-0.0958*** (-9.29)	-11.04*** (-49.59)
spec_18 Orthopedic Surg	-3.017*** (-6.45)	-4.643*** (-8.74)	0.583*** (29.93)	0.303*** (14.62)	1.524* (1.94)	-4.095*** (-4.19)	-0.106*** (-35.67)	0.0695*** (7.26)	-0.0579*** (-5.46)	1.842*** (7.19)
spec_19 Cardiac Electroph	-14.41*** (-31.24)	-14.29*** (-27.47)	-0.677*** (-35.88)	-0.633*** (-31.20)	5.304*** (2.73)	-8.741*** (-7.62)	-0.0993*** (-26.93)	-0.116*** (-12.61)	-0.100*** (-9.63)	-10.25*** (-37.86)
spec_20 Pathology	-9.857*** (-5.88)	-12.53*** (-9.31)	-0.478*** (-7.39)	-0.527*** (-9.30)	-2.452 (-0.59)	13.96 (1.41)	-0.0666*** (-3.42)	-0.118*** (-8.08)	-0.0688** (-2.47)	-6.286*** (-3.86)
spec_21 Sports Medicine	-4.399*** (-4.22)	-5.932*** (-6.47)	0.209*** (4.36)	0.00975 (0.26)	-2.332 (-1.43)	-11.37*** (-8.76)	-0.0857*** (-19.83)	-0.00547 (-0.28)	-0.0700*** (-3.66)	1.772** (2.39)
spec_22 Plastic And Recc	-12.93*** (-27.58)	-12.66*** (-23.90)	-0.0497** (-2.28)	-0.00394 (-0.18)	6.746*** (7.02)	0.416 (0.39)	-0.0658*** (-16.80)	-0.0275*** (-2.69)	-0.0885*** (-7.76)	-10.64*** (-44.18)
spec_23 Physical Medicin	34.38*** (33.39)	35.63*** (33.16)	1.235*** (32.34)	1.261*** (32.36)	9.221*** (8.84)	3.822*** (3.19)	-0.0622*** (-18.70)	0.333*** (17.98)	0.278*** (15.43)	-1.946*** (-6.14)
spec_24 Psychiatry	-20.01*** (-42.52)	-20.80*** (-38.87)	-0.952*** (-49.79)	-0.889*** (-42.47)	62.39*** (24.61)	91.57*** (33.11)	0.125*** (20.94)	-0.176*** (-17.71)	-0.145*** (-12.76)	-10.60*** (-46.64)
spec_25 Geriatric Psychi	-17.62*** (-24.14)	-17.37*** (-18.41)	-0.850*** (-28.07)	-0.769*** (-20.93)	15.53 (0.86)	29.62 (1.45)	-0.00439 (-0.09)	-0.164*** (-14.57)	-0.132*** (-5.26)	-10.69*** (-36.82)
spec_26 Colorectal Surg	-12.79*** (-25.69)	-13.14*** (-24.50)	-0.318*** (-13.57)	-0.318*** (-14.22)	9.422*** (6.81)	1.518 (1.16)	-0.0924*** (-23.60)	-0.0650*** (-6.04)	-0.103*** (-9.71)	-10.52*** (-43.54)
spec_27 Pulmonary Dise	-14.74*** (-31.81)	-15.99*** (-30.47)	-0.719*** (-38.56)	-0.712*** (-34.45)	0.636 (0.57)	-4.185*** (-3.52)	-0.0348*** (-7.50)	-0.133*** (-14.30)	-0.122*** (-11.38)	-9.980*** (-43.45)
spec_28 Diagnostic Radi	-14.32*** (-29.21)	-14.30*** (-25.74)	-0.579*** (-28.04)	-0.529*** (-23.71)	1.414 (1.02)	1.061 (0.59)	-0.0824*** (-16.29)	-0.122*** (-13.00)	-0.103*** (-9.21)	-9.568*** (-33.40)
spec_29 Anesthesiology	-15.04*** (-4.27)	-11.94*** (-6.09)	-0.670*** (-4.98)	-0.474*** (-3.78)	-18.62*** (-3.70)	-9.103 (-0.63)	-0.107*** (-8.72)	-0.161*** (-5.47)	-0.0892*** (-4.46)	-7.625*** (-3.60)
spec_30 Thoracic Surger	-11.18*** (-21.50)	-11.67*** (-20.44)	-0.106*** (-4.40)	-0.177*** (-6.09)	9.532*** (8.54)	-1.421 (-1.25)	-0.0968*** (-26.42)	-0.0175 (-1.48)	-0.0842*** (-4.22)	-10.76*** (-45.29)

spec_31 Urology	-14.66*** (-32.86)	-14.34*** (-27.73)	-0.605*** (-33.43)	-0.548*** (-27.26)	0.402 (0.47)	-4.924*** (-4.90)	-0.0938*** (-30.41)	-0.118*** (-12.96)	-0.107*** (-10.34)	-10.72*** (-47.82)
spec_32 Nuclear Medicin	-10.42*** (-2.64)	-13.73*** (-11.26)	-0.558*** (-4.14)	-0.604*** (-13.00)	-0.988 (-0.14)	6.379 (0.59)	-0.0447 (-1.28)	-0.0311 (-0.31)	-0.103*** (-5.53)	-8.557*** (-4.50)
spec_33 Geriatric Medic	2.361*** (3.67)	-0.0146 (-0.02)	0.154*** (5.33)	0.0616** (2.09)	0.177 (0.15)	1.330 (1.01)	-0.0182*** (-4.16)	0.00271 (0.24)	-0.00986 (-0.84)	-5.615*** (-18.66)
spec_34 Nephrology	-13.58*** (-29.48)	-15.54*** (-29.49)	-0.657*** (-35.28)	-0.702*** (-34.33)	-14.03*** (-15.47)	-19.79*** (-18.44)	-0.0462*** (-12.18)	-0.144*** (-15.82)	-0.144*** (-13.74)	-9.972*** (-43.90)
spec_35 Hand Surgery	-10.88*** (-22.10)	-11.02*** (-20.46)	0.277*** (10.74)	0.196*** (8.55)	3.197*** (2.95)	-3.249*** (-2.98)	-0.112*** (-35.82)	0.0242** (2.03)	-0.0905*** (-8.35)	-6.606*** (-18.83)
spec_36 Optometry	-16.31*** (-36.72)	-15.80*** (-30.71)	-0.807*** (-44.98)	-0.721*** (-36.10)	-0.146 (-0.07)	-6.711*** (-3.18)	-0.0966*** (-12.09)	-0.132*** (-14.71)	-0.101*** (-9.74)	-11.40*** (-50.96)
spec_37 Certified Registr	-12.12*** (-12.51)	-13.02*** (-11.44)	-0.530*** (-13.80)	-0.562*** (-12.79)	-0.411 (-0.17)	0.529 (0.13)	-0.0735*** (-4.36)	-0.0738*** (-3.55)	-0.0784*** (-3.82)	-9.520*** (-25.23)
spec_38 Infectious Disea	-12.66*** (-20.75)	-15.19*** (-26.39)	-0.616*** (-22.77)	-0.675*** (-30.06)	3.466* (1.90)	-4.818*** (-2.85)	-0.0391*** (-7.18)	-0.121*** (-9.62)	-0.137*** (-12.00)	-8.133*** (-30.10)
spec_39 Endocrinology	-15.34*** (-33.52)	-16.04*** (-30.87)	-0.752*** (-40.80)	-0.719*** (-35.65)	-4.866*** (-3.27)	-10.56*** (-6.52)	-0.0650*** (-11.93)	-0.140*** (-15.42)	-0.129*** (-12.40)	-9.898*** (-42.94)
spec_40 Podiatry	-14.60*** (-32.40)	-14.97*** (-28.85)	-0.515*** (-27.45)	-0.526*** (-25.90)	-2.195*** (-2.60)	-9.031*** (-9.09)	-0.112*** (-37.07)	-0.112*** (-12.20)	-0.121*** (-11.54)	-6.250*** (-26.10)
spec_41 Nurse Practitior	-10.32*** (-22.41)	-10.65*** (-20.33)	-0.451*** (-24.29)	-0.422*** (-20.73)	-1.250 (-1.50)	-6.787*** (-6.87)	-0.0458*** (-14.94)	-0.0862*** (-9.31)	-0.0902*** (-8.59)	-7.679*** (-33.61)
spec_42 Rheumatology	11.72*** (18.95)	6.221*** (9.59)	0.175*** (7.55)	0.0127 (0.53)	-9.805*** (-11.11)	-13.79*** (-12.84)	-0.0920*** (-29.07)	-0.0312*** (-3.07)	-0.0829*** (-7.56)	16.12*** (36.32)
spec_43 Pain Managemen	75.76*** (36.28)	86.83*** (40.99)	2.568*** (33.86)	2.943*** (39.11)	22.36*** (14.32)	13.16*** (9.15)	-0.0843*** (-24.03)	0.775*** (18.33)	0.691*** (16.69)	-2.659*** (-6.45)
spec_44 Peripheral Vasc	-14.46*** (-17.68)	-14.72*** (-18.74)	-0.628*** (-14.12)	-0.571*** (-12.95)	-1.631 (-0.35)	-5.865 (-1.43)	-0.0918*** (-5.53)	-0.115*** (-6.75)	-0.0998*** (-5.60)	-3.788 (-0.63)
spec_45 Vascular Surger	-12.72*** (-27.20)	-13.35*** (-25.08)	-0.177*** (-8.06)	-0.253*** (-11.39)	1.772* (1.87)	-5.645*** (-5.29)	-0.0974*** (-28.89)	-0.0640*** (-6.50)	-0.112*** (-10.53)	-10.56*** (-45.58)
spec_46 Cardiac Surgery	-12.41*** (-26.20)	-13.19*** (-23.70)	-0.197*** (-8.31)	-0.308*** (-12.84)	11.61*** (8.47)	-3.191** (-2.48)	-0.0888*** (-19.14)	-0.0221* (-1.91)	-0.115*** (-10.82)	-11.01*** (-47.15)
spec_47 Addiction Medic	30.45*** (5.23)	46.26*** (6.90)	1.274*** (4.95)	2.321*** (7.21)	205.5*** (10.71)	265.5*** (18.15)	-0.0690*** (-6.21)	1.429*** (6.29)	2.423*** (8.70)	-5.594*** (-7.32)
spec_48 Critical Care	-13.93*** (-26.64)	-14.93*** (-25.09)	-0.623*** (-27.44)	-0.609*** (-25.30)	0.682 (0.40)	-1.412 (-0.63)	-0.0508*** (-6.11)	-0.117*** (-10.90)	-0.113*** (-8.88)	-9.618*** (-36.83)

spec_49 Hematology	-1.070 (-0.84)	-1.774 (-1.54)	-0.0322 (-0.58)	-0.0118 (-0.21)	30.73*** (8.99)	25.87*** (8.36)	-0.0223** (-2.42)	0.106*** (3.10)	0.106*** (3.04)	-9.534*** (-30.09)
spec_50 Hematology/On	-1.016** (-2.01)	-1.084* (-1.94)	-0.0153 (-0.73)	-0.0244 (-1.11)	32.67*** (29.06)	28.34*** (24.59)	-0.0258*** (-7.40)	0.0816*** (7.71)	0.0565*** (4.86)	-9.800*** (-41.55)
spec_51 Preventative M	-1.976 (-0.65)	-4.628* (-1.75)	-0.0874 (-0.75)	-0.219** (-2.28)	0.906 (0.15)	4.950 (0.83)	-0.0583*** (-4.77)	0.0546 (0.85)	0.0314 (0.51)	-6.913*** (-10.23)
spec_52 Neuropsychiatry	-11.36*** (-3.74)	-8.378 (-1.61)	-0.614*** (-5.39)	-0.399* (-1.86)	20.11 (1.41)	25.56 (1.44)	0.0718 (1.52)	-0.0847* (-1.65)	0.112 (0.66)	-9.383*** (-10.63)
spec_53 Medical Oncology	-1.353** (-2.35)	-2.078*** (-3.49)	-0.0380 (-1.58)	-0.0741*** (-3.16)	33.88*** (17.69)	28.61*** (20.28)	-0.0320*** (-7.56)	0.0731*** (5.72)	0.0326*** (2.74)	-9.722*** (-40.03)
spec_54 Surgical Oncology	-11.81*** (-21.56)	-10.63*** (-17.88)	-0.141*** (-4.37)	-0.0570** (-1.97)	11.46*** (4.15)	1.777 (1.45)	-0.0946*** (-21.68)	-0.0290** (-2.02)	-0.0868*** (-7.94)	-10.50*** (-40.33)
spec_55 Radiation Oncology	-8.714*** (-17.72)	-8.716*** (-16.10)	-0.290*** (-13.53)	-0.280*** (-13.03)	18.67*** (14.95)	14.53*** (11.59)	-0.0730*** (-19.50)	-0.0294*** (-2.86)	-0.0478*** (-4.37)	-10.59*** (-46.05)
spec_56 Emergency Medicine	-16.49*** (-36.72)	-16.39*** (-31.58)	-0.475*** (-26.18)	-0.458*** (-22.71)	-8.352*** (-10.61)	-13.42*** (-13.54)	-0.0955*** (-32.02)	-0.135*** (-14.64)	-0.135*** (-12.81)	-9.731*** (-43.50)
spec_57 Interventional Family	-13.95*** (-18.83)	-12.92*** (-13.35)	-0.440*** (-11.12)	-0.375*** (-10.09)	-0.938 (-0.46)	-5.862*** (-3.84)	-0.100*** (-24.16)	-0.113*** (-8.43)	-0.0970*** (-5.16)	-9.672*** (-26.29)
spec_58 Physician Assistant	-10.71*** (-23.35)	-10.24*** (-19.50)	-0.340*** (-18.32)	-0.318*** (-15.59)	-3.341*** (-4.12)	-8.319*** (-8.44)	-0.0696*** (-23.01)	-0.0753*** (-8.13)	-0.0871*** (-8.31)	-6.942*** (-30.26)
spec_59 Gynecological/Clinical	-11.17*** (-18.69)	-10.82*** (-17.78)	-0.274*** (-9.47)	-0.218*** (-8.11)	10.52*** (6.42)	8.526*** (5.49)	-0.0918*** (-18.84)	-0.0538*** (-4.37)	-0.0685*** (-5.47)	-10.54*** (-42.71)
spec_60 Undefined Physician	-12.07*** (-7.57)	-13.06*** (-9.19)	-0.439*** (-7.18)	-0.467*** (-8.72)	0.672 (0.20)	-2.947 (-0.99)	-0.0809*** (-7.40)	-0.0940*** (-5.50)	-0.0965*** (-4.79)	-9.949*** (-32.69)
spec_61 Sleep Medicine	-15.57*** (-22.06)	-15.35*** (-21.55)	-0.778*** (-26.88)	-0.713*** (-26.64)	-10.04** (-2.41)	-16.09*** (-4.90)	-0.0126 (-0.52)	-0.151*** (-12.60)	-0.136*** (-11.94)	-9.488*** (-25.24)
spec_62 Interventional Cardiology	-15.40*** (-34.15)	-15.38*** (-29.64)	-0.766*** (-41.89)	-0.709*** (-35.18)	0.542 (0.34)	-10.79*** (-8.45)	-0.0714*** (-11.43)	-0.131*** (-14.46)	-0.106*** (-10.24)	-10.56*** (-45.77)
spec_99 Other specialties	-14.47*** (-29.99)	-14.81*** (-27.39)	-0.481*** (-22.45)	-0.490*** (-22.91)	-3.167*** (-3.29)	-8.175*** (-7.14)	-0.0822*** (-23.07)	-0.111*** (-8.43)	-0.137*** (-12.47)	-9.292*** (-38.35)
Constant	10.43*** (22.45)	9.488*** (17.86)	0.567*** (29.73)	0.491*** (23.76)	48.16*** (51.56)	44.75*** (41.67)	0.0770*** (23.09)	0.0901*** (9.43)	0.0742*** (7.06)	10.12*** (42.92)
N	569963	692157	569963	692157	379926	453255	453255	569963	692157	569963
average of dependent	9.474	8.621	0.545	0.455	50.52	41.69	0.0667	0.0928	0.0572	4.506
number of providers	2677	2658	2677	2658	2664	2643	2643	2677	2658	2677

Notes: t-statistics on regression coefficients reported in parentheses.

Patient age categories for 2017 are 0-64, 75-84, 85+.

=\*\* p<0.1

\*\* p<0.05

\*\*\* p<0.01"



Pregabalin/Gabapentin Days											
Days Supplied / Patient		Supplied / Patient		Mean (Standard Deviation)		Days Supplied / Patient		# Opioid Rx / Patient			
2015	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015	
-0.552*** (-15.68)	-0.631*** (-13.06)	-0.758*** (-16.77)	0.101	0.118			age30_34 age35_39	0.09118428	0.076902321	0.003964497	0.0031261
0.035204082	0.048315467	0.045199761	0.147	0.144			age40_44 age45_49 age50_54 age55_59 age60_64 age65_69 age70+	0.092994162 0.095982628 0.098645789 0.101546392 0.118671298 0.161538462 0.196696529	0.082161362 0.092664418 0.098484848 0.104471545 0.11129669 0.142713393 0.169458484	0.003851485 0.003957922 0.004075608 0.004268233 0.005254237 0.007205524 0.008265139	0.003232682 0.003606719 0.003816225 0.004027618 0.004402516 0.005640535 0.006852926
0.542*** (14.94)	0.384*** (8.26)	0.595*** (13.31)	0.147	0.147							
0.036278447	0.046489104	0.044703231				t-stats	age30_34 age35_39 age40_44 age45_49 age50_54 age55_59 age60_64 age65_69 age70+	0.17872119 0 0.182268557 0.18812595 0.193345747 0.199030928 0.232595745 0.316615385 0.385525196	0.150728548 0 0.161036269 0.18162226 0.193030303 0.204764228 0.218141512 0.279718251 0.332138628	0.007770414 0 0.007548911 0.007757528 0.007988193 0.008365737 0.010298305 0.014122827 0.016199673	0.006127155 0 0.006336057 0.00706917 0.007479801 0.007894131 0.008628931 0.011055449 0.013431734
1.131*** (29.00)	0.604*** (12.81)	1.054*** (22.27)	0.148	0.133							
0.039	0.047150664	0.047328244					age30_34 age35_39 age40_44 age45_49 age50_54 age55_59 age60_64 age65_69 age70+	0.150728548 0 0.161036269 0.18162226 0.193030303 0.204764228 0.218141512 0.279718251 0.332138628	cohort stable 2020 0.150728548 0.150728548 0 0.161036269 0.18162226 0.193030303 0.204764228 0.218141512 0.279718251 0.332138628	specific growth 1 1.068038991 0.977266569 0.977085724 0.979533651 0.972725621 0.982201345 1.008150634 1.042117358	
1.421*** (36.11)	0.717*** (14.77)	1.294*** (26.29)	0.152	0.129							
0.03935198	0.048544347	0.049220236									
1.799*** (42.71)	0.742*** (15.22)	1.548*** (30.01)	0.136	0.126							
0.042121283	0.048751643	0.051582806				1.96*t-stat	age30_34 age35_39 age40_44 age45_49 age50_54 age55_59 age60_64 age65_69 age70+	0.316615385 0.385525196	0.279718251 0.332138628	0.014122827 0.016199673	0.011055449 0.013431734
2.123*** (44.78)	0.675*** (11.34)	1.618*** (29.96)	0.092	0.104							
0.047409558	0.05952381	0.05400534					age30_34 age35_39 age40_44 age45_49 age50_54 age55_59 age60_64 age65_69 age70+	0.150728548 0.150728548 0 0.161036269 0.18162226 0.193030303 0.204764228 0.218141512 0.279718251 0.332138628	cohort stable 2020 0.150728548 0.150728548 0 0.161036269 0.18162226 0.193030303 0.204764228 0.218141512 0.279718251 0.332138628	specific growth 1 1.068038991 0.977266569 0.977085724 0.979533651 0.972725621 0.982201345 1.008150634 1.042117358	
2.616*** (40.01)	0.461*** (6.17)	1.579*** (22.54)	0.046	0.060							
0.065383654	0.07471637	0.070053239									
2.928*** (33.25)	0.222*** (2.54)	1.340*** (15.48)	0.033	0.040							
0.08806015	0.087401575	0.086563307									
-0.421*** (-15.82)	0.295*** (7.94)	0.309*** (9.22)	0.317	0.390							
1.082*** (16.01)	0.956*** (11.98)	1.493*** (17.92)	0.633	0.619							
0.197* (1.85)	2.847*** (23.44)	4.733*** (32.77)	0.388	0.372							
-0.194*** (-2.81)	-1.141*** (-13.99)	-1.080*** (-13.06)	0.130	0.129							
-2.071*** (-14.46)	-2.400*** (-12.83)	-4.946*** (-22.94)	0.058	0.049							
-0.0767 (-0.54)	0.791*** (4.56)	0.185 (0.86)	0.132	0.106							
0.530*** (3.90)	0.728*** (4.54)	0.843*** (4.51)	0.125	0.136							
								age30_34 age35_39 age40_44 age45_49		age30_34 age35_39 age40_44 age45_49	

			0.206 (0.203)	0.224 (0.188)	age50_54 age55_59 age60_64 age65_69 age70+	age50_54 age55_59 age60_64 age65_69 age70+
-0.260** (-2.22)	0.208* (1.90)	0.153 (1.24)	0.166 (0.180)	0.182 (0.166)		
-0.762*** (-6.02)	0.350*** (2.86)	0.501*** (3.62)	0.129 (0.159)	0.129 (0.140)		
-1.612*** (-12.46)	0.852*** (6.04)	0.216 (1.48)	0.099 (0.140)	0.089 (0.118)		
-2.759*** (-22.23)	1.413*** (11.16)	1.246*** (8.57)	0.085 (0.138)	0.084 (0.129)		
-4.084*** (-3.29)	3.697*** (4.65)	3.609** (2.05)	0.001 (0.014)	0.001 (0.014)		
			0.010	0.007		
-11.77*** (-43.01)	-4.990*** (-36.33)	-8.627*** (-43.92)	0.030	0.027		
-11.92*** (-42.08)	-4.891*** (-34.37)	-8.290*** (-40.89)	0.006	0.005		
-12.08*** (-43.41)	-4.908*** (-35.61)	-8.340*** (-42.73)	0.015	0.013		
-6.476*** (-17.68)	3.083*** (10.48)	3.139*** (8.69)	0.011	0.010		
-11.35*** (-41.62)	-4.249*** (-31.17)	-7.620*** (-39.22)	0.033	0.029		
-11.84*** (-43.59)	-4.786*** (-35.64)	-7.960*** (-41.04)	0.017	0.016		
-1.692*** (-6.18)	0.921*** (6.70)	0.455** (2.33)	0.133	0.121		
-2.147*** (-4.98)	14.21*** (27.68)	15.65*** (27.47)	0.003	0.002		
-12.11*** (-44.51)	-4.970*** (-36.70)	-8.660*** (-44.76)	0.021	0.019		
-5.060*** (-18.53)	0.488*** (3.54)	-1.301*** (-6.67)	0.143	0.139		
-3.814*** (-5.78)	0.172 (0.17)	-1.796** (-2.38)	0.001	0.001		

-9.659*** (-34.72)	15.59*** (60.23)	14.25*** (49.13)	0.020	0.019
-8.147*** (-25.26)	2.899*** (8.65)	0.486 (1.49)	0.007	0.006
-11.50*** (-41.94)	-5.265*** (-37.86)	-8.849*** (-44.61)	0.047	0.042
-9.384*** (-27.12)	1.335 (1.60)	-0.759 (-0.78)	0.001	0.001
-12.02*** (-44.31)	-4.905*** (-36.29)	-8.385*** (-43.55)	0.029	0.025
2.885*** (9.59)	-3.627*** (-25.37)	-6.480*** (-32.17)	0.034	0.030
-11.54*** (-42.19)	-4.634*** (-31.45)	-8.019*** (-40.63)	0.003	0.003
-10.49*** (-13.36)	-2.717*** (-3.30)	-7.486*** (-13.95)	0.001	0.000
3.126*** (5.10)	-2.179*** (-5.23)	-5.013*** (-12.83)	0.001	0.001
-11.74*** (-41.71)	-4.868*** (-32.26)	-8.317*** (-35.26)	0.007	0.007
-2.384*** (-7.20)	10.92*** (30.66)	11.53*** (30.90)	0.011	0.010
-12.09*** (-44.21)	-0.671*** (-3.78)	-2.803*** (-12.36)	0.040	0.036
-11.41*** (-28.51)	-1.616** (-2.26)	-3.830*** (-4.76)	0.000	0.000
-11.65*** (-41.67)	-4.743*** (-31.49)	-8.300*** (-41.06)	0.002	0.002
-11.44*** (-41.00)	-4.085*** (-27.22)	-7.620*** (-37.42)	0.014	0.013
-10.77*** (-31.76)	-4.276*** (-20.72)	-7.544*** (-29.42)	0.009	0.008
-6.264 (-1.23)	-5.770*** (-16.37)	-8.735*** (-14.15)	0.000	0.000
-11.66*** (-33.73)	-4.187*** (-22.13)	-7.629*** (-33.37)	0.003	0.003

-11.74*** (-42.86)	-4.638*** (-33.67)	-8.010*** (-41.06)	0.015	0.013
-10.81*** (-11.34)	-4.528*** (-12.80)	-7.080*** (-11.09)	0.000	0.000
-6.564*** (-20.03)	3.751*** (11.90)	3.262*** (9.12)	0.003	0.003
-11.25*** (-41.04)	-1.923*** (-12.28)	-4.840*** (-22.89)	0.013	0.012
-6.850*** (-18.94)	-4.585*** (-25.93)	-7.859*** (-34.49)	0.002	0.002
-12.50*** (-46.18)	-5.366*** (-39.68)	-8.967*** (-46.49)	0.032	0.034
-10.76*** (-24.84)	-3.381*** (-7.69)	-5.890*** (-8.54)	0.002	0.001
-9.522*** (-31.14)	-1.803*** (-6.90)	-5.847*** (-23.47)	0.007	0.007
-11.29*** (-40.32)	-2.141*** (-12.59)	-5.191*** (-24.53)	0.008	0.008
-7.237*** (-25.58)	-1.067*** (-6.09)	-3.711*** (-17.07)	0.023	0.021
-8.479*** (-31.12)	-2.782*** (-19.22)	-4.894*** (-24.83)	0.067	0.110
14.62*** (33.53)	4.513*** (18.22)	4.621*** (15.89)	0.007	0.007
-1.612*** (-3.84)	14.81*** (24.53)	17.92*** (30.47)	0.003	0.003
-10.68*** (-17.82)	-3.675*** (-5.89)	-6.675*** (-9.66)	0.000	0.000
-11.62*** (-41.89)	-3.379*** (-16.98)	-6.400*** (-25.90)	0.004	0.004
-12.20*** (-42.40)	-4.226*** (-13.11)	-8.019*** (-32.89)	0.002	0.002
-8.635*** (-10.92)	2.576* (1.85)	2.406* (1.65)	0.000	0.000
-10.64*** (-27.11)	-3.213*** (-8.44)	-7.304*** (-26.53)	0.003	0.003

-10.44*** (-26.51)	-2.483*** (-7.38)	-4.715*** (-11.74)	0.001	0.001
-11.08*** (-40.08)	-2.049*** (-12.20)	-4.442*** (-20.77)	0.012	0.012
-7.461*** (-8.80)	-1.516** (-2.09)	-5.347*** (-7.28)	0.001	0.001
-10.37*** (-12.23)	5.765** (2.52)	2.995* (1.83)	0.000	0.000
-11.31*** (-40.46)	-1.992*** (-9.24)	-4.622*** (-19.33)	0.005	0.004
-11.83*** (-41.10)	-3.413*** (-5.15)	-8.045*** (-33.51)	0.001	0.001
-11.69*** (-42.28)	-4.254*** (-23.57)	-7.521*** (-35.94)	0.006	0.006
-10.87*** (-40.08)	-5.110*** (-37.75)	-8.694*** (-45.02)	0.058	0.058
-11.03*** (-34.79)	-4.166*** (-11.67)	-7.315*** (-20.08)	0.001	0.001
-7.648*** (-27.94)	-3.515*** (-24.92)	-5.876*** (-29.98)	0.048	0.069
-11.21*** (-37.59)	-3.790*** (-11.35)	-6.373*** (-19.16)	0.001	0.001
-10.89*** (-31.79)	-3.303*** (-4.53)	-6.806*** (-14.67)	0.000	0.000
-11.48*** (-37.54)	3.095** (2.15)	4.537*** (2.81)	0.000	0.001
-11.72*** (-42.92)	-4.591*** (-31.79)	-8.046*** (-40.70)	0.004	0.004
-10.22*** (-35.77)	-3.186*** (-15.62)	-6.131*** (-25.81)	0.018	0.016
11.20*** (39.59)	3.150*** (19.54)	5.655*** (26.56)	1.000	1.000
692157 4.509 2658	569963 3.864 2677	692157 5.170 2658		

MME / Rx Day 2010	Overlapping Benzo Rx, # Opioid Rx >90 MME			Per Rx NSAID Days Supplied / Patient			Pregabalin/Gabapentin Days Supplied / Patient			
	2015	2015	2010	2015	2010	2015	2010	2015		
0.289705882	0.21625	0.00072862	0.001508227	0.001137787	0.043282594	0.035204082	0.048315467	0.045199761		
0.265662651	0.220930233	0.000700947	0.001575521	0.001242038	0.040988593	0.036278447	0.046489104	0.044703231		
0.275862069	0.22614841	0.000727745	0.001618182	0.001482982	0.042475205	0.039	0.047150664	0.047328244		
0.276377953	0.236850394	0.000758105	0.001674982	0.001584039	0.04362714	0.03935198	0.048544347	0.049220236		
0.293968254	0.249188514	0.000783158	0.001836879	0.001811361	0.045926339	0.042121283	0.048751643	0.051582806		
0.340677966	0.277823129	0.000866283	0.002799625	0.001954148	0.05483397	0.047409558	0.05952381	0.05400534		
0.503333333	0.375227273	0.001160142	0.003544304	0.002822528	0.07514103	0.065383654	0.07471637	0.070053239		
0.623595506	0.524150943	0.001649378	0.004091858	0.003834877	0.104359673	0.08806015	0.087401575	0.086563307		
0.567823529	0.42385	0.001428096	0.002956124	0.002230063	0.084833885	0.069	0.094698315	0.088591532		
0	0	0	0	0	0	0	0	0		
0.520698795	0.433023256	0.001373857	0.003088021	0.002434395	0.080337643	0.071105756	0.091118644	0.087618332		
0.540689655	0.443250883	0.001426381	0.003171636	0.002906645	0.083251401	0.07644	0.092415301	0.092763359		
0.541700787	0.464226772	0.001485885	0.003282965	0.003104716	0.085509195	0.077129881	0.095146919	0.096471662		
0.576177778	0.488409488	0.001534989	0.003600284	0.003550268	0.090015625	0.082557715	0.095553219	0.101102299		
0.667728814	0.544533333	0.001697915	0.005487266	0.003830131	0.107474581	0.092922733	0.116666667	0.105850467		
0.986533333	0.735445455	0.002273879	0.006946835	0.005532155	0.14727642	0.128151962	0.146444084	0.137304348		
1.222247191	1.027335849	0.00323278	0.008020042	0.007516358	0.204544959	0.172597895	0.171307087	0.169664083		
adjusted CI										
0.150728548			Age in Year	30-34	35-39	40-44	45-49	50-54	55-59	
0.160983967			specific growth rat		1	1.068038991	0.977266569	0.977085724	0.979533651	0.972725621
0.15734624										
0.177905115										
0.187765521										
0.2011197										
0.219919504				Age in Year	specific growth rate					
0.291499245				30-34	1					
				35-39	1.068038991					
						40-44	0.977266569			
						45-49	0.977085724			
						50-54	0.979533651			
55-59	60-64	65-69	70+			55-59	0.972725621			
9.327230101	9.890529371	10.47847322	11.29838369			60-64	0.982201345			
9.588757509	10.06975751	10.39375751	10.84175751			65-69	1.008150634			
0.972725621	0.982201345	1.008150634	1.042117358			70+	1.042117358			

2015	2020 stable	Adjustment factor	2020 specific
0.151	0.151	1	0.151
0	0.151	1.068	0.161
0.161	0	0.977	0
0.182	0.161	0.977	0.157



0.193	0.182	0.980	0.178
0.205	0.193	0.973	0.188
0.218	0.205	0.982	0.201
0.280	0.218	1.008	0.220
0.332	0.280	1.042	0.291







60-64	65-69	70+
0.982201345	1.008150634	1.042117358











## Underlying Data

Age in Year	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Overall		
2010 # days regression coef	-1.721	0.000	1.115	1.768	2.331	2.561	2.733	2.940	3.513	9.474		
2015 # days regression coef	-1.425	0.000	1.110	2.198	2.860	3.341	3.665	4.113	4.694	8.621		
2010 adj	6.300	8.021	9.136	9.789	10.352	10.582	10.754	10.961	11.534	2010 actua	9.474	
2015 adj	5.304	6.729	7.839	8.927	9.589	10.070	10.394	10.842	11.423	2015 actua	8.621	, decline=-9.0%
cohortspecific grow 2020	5.304	5.665	6.576	7.659	8.744	9.327	9.891	10.478	11.298	2020 cohort	7.832	, decline=-9.1%
cohortstable 2020	5.304	5.304	6.729	7.839	8.927	9.589	10.070	10.394	10.842	2020 f cast	7.878	, decline=-8.6%
cohortspecific 2025	5.304	5.665	5.536	6.425	7.502	8.506	9.161	9.971	10.920		7.130	
cohortstable 2025	5.304	5.304	5.304	6.729	7.839	8.927	9.589	10.070	10.394		7.210	
2010 # rx regression coef	-0.067	0.000	0.039	0.060	0.079	0.087	0.087	0.089	0.101	0.545		
2015 # rx regression coef	-0.053	0.000	0.036	0.073	0.092	0.105	0.112	0.118	0.130	0.455		
2010 adj	0.431	0.498	0.537	0.558	0.577	0.585	0.585	0.587	0.599	2010 actua	0.545	
2015 adj	0.344	0.397	0.433	0.470	0.489	0.502	0.509	0.515	0.527	2015 actua	0.455	, decline=-16.5%
2010 avg daily dose (MME) regression coef	-1.182	0.000	0.441	0.640	0.702	0.926	0.201	0.091	0.555	50.520		
2015 avg daily dose (MME) regression coef	-0.519	0.000	1.140	1.280	1.504	1.996	2.042	1.651	1.389	41.690		
2010 adj	49.018	50.200	50.641	50.840	50.902	51.126	50.401	50.291	50.755	2010 actua	50.520	
2015 adj	40.085	40.604	41.744	41.884	42.108	42.600	42.646	42.255	41.993	2015 actua	41.690	, decline=-17.5%
2015 % of op patients with bz overlap regression coef	-0.006	0.000	0.005	0.011	0.015	0.019	0.024	0.033	0.048	0.067		
2015 adj	0.048	0.055	0.060	0.066	0.070	0.073	0.079	0.087	0.102	2015 actua	0.066	
2010 # of high dose opioid rx regression coef	-0.017	0.000	0.012	0.018	0.024	0.026	0.030	0.031	0.039	0.093		
2015 # of high dose opioid rx regression coef	-0.011	0.000	0.010	0.018	0.026	0.034	0.036	0.043	0.050	0.057		
2010 adj	0.061	0.078	0.090	0.096	0.102	0.104	0.108	0.109	0.117	2010 actua	0.093	
2015 adj	0.027	0.038	0.048	0.056	0.064	0.072	0.074	0.081	0.088	2015 actua	0.057	, decline=-38.7%
2010 # NSAID days regression coef	-0.654	0.000	0.539	0.985	1.376	1.646	1.866	1.998	2.298	4.506		
2015 # NSAID days regression coef	-0.552	0.000	0.542	1.131	1.421	1.799	2.123	2.616	2.928	4.509		
2010 adj	2.923	3.577	4.116	4.562	4.953	5.223	5.443	5.575	5.875	2010 actua	4.506	
2015 adj	2.888	3.440	3.982	4.571	4.861	5.239	5.563	6.056	6.368	2015 actua	4.509	, decline=0.1%
2010 # pregabalin/gabapentin days regression coef	-0.631	0.000	0.384	0.604	0.717	0.742	0.675	0.461	0.222	3.864		
2015 # pregabalin/gabapentin days regression coef	-0.758	0.000	0.595	1.054	1.294	1.548	1.618	1.579	1.340	5.170		
2010 adj	2.851	3.482	3.866	4.086	4.199	4.224	4.157	3.943	3.704	2010 actua	3.864	
2015 adj	3.596	4.354	4.949	5.408	5.648	5.902	5.972	5.933	5.694	2015 actua	5.170	, decline=33.8%
2010 # of physicians	57,434	83,801	83,667	84,189	86,580	77,289	52,313	26,033	18,657	569,963		
2015 # of physicians	81,375	99,542	101,599	92,282	89,338	87,136	71,752	41,363	27,770	692,157		
2010 share	0.101	0.147	0.147	0.148	0.152	0.136	0.092	0.046	0.033			
2015 share	0.118	0.144	0.147	0.133	0.129	0.126	0.104	0.060	0.040			
2010 # (phys w/ >=1 op rx)	36,986	56,675	58,422	57,400	58,501	51,675	34,059	15,840	10,368	379,926		

2015 # (phys w/ >=1 op rx)	52,942	65,492	68,177	63,396	59,535	57,319	46,043	25,203	15,148	453,255
2010 share (phys w/ >=1 op rx)	0.097	0.149	0.154	0.151	0.154	0.136	0.090	0.042	0.027	
2015 share (phys w/ >=1 op rx)	0.117	0.144	0.150	0.140	0.131	0.126	0.102	0.056	0.033	
2010 avg # of patients	15.784	20.891	24.661	26.673	27.973	28.739	28.057	24.700	21.204	24.766
2015 avg # of patients	25.271	30.248	36.126	40.552	42.544	43.494	43.367	40.399	31.764	37.182

Online Appendix Table 1

	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
2010 # opioid days supplied per patient	6.506	8.217	9.552	10.167	10.538	10.306	10.027	9.778	10.408
2015 # opioid days supplied per patient	5.470	6.872	7.883	9.218	9.910	10.183	10.054	9.968	10.077
2010 # opioid scripts per patient	0.432	0.507	0.559	0.574	0.581	0.573	0.558	0.545	0.545
2015 # opioid scripts per patient	0.348	0.405	0.437	0.485	0.502	0.505	0.495	0.481	0.472
2010 Average daily dose (MME)	48.215	49.823	50.576	51.132	51.216	51.092	50.551	51.223	51.010
2015 Average daily dose (MME)	39.279	40.482	41.235	41.604	42.222	42.976	42.920	43.301	44.267
2015 % of op patients with bz overlap	0.044	0.051	0.058	0.066	0.070	0.076	0.083	0.093	0.113
2010 # of opioid scripts >90mme/day per patient	0.061	0.079	0.094	0.100	0.103	0.100	0.101	0.100	0.104
2015 # of opioid scripts >90mme/day per patient	0.031	0.042	0.048	0.058	0.067	0.073	0.071	0.075	0.079
2010 # NSAID days supplied per patient	2.890987	3.611437	4.210366	4.504255	4.946595	5.247149	5.376642	5.337088	6.111769
2015 # NSAID days supplied per patient	2.922492	3.333896	3.977004	4.66099	4.835187	5.248682	5.630308	6.014251	6.303263
2010 # pregabalin/gabapentin days supplied per patie	2.835973	3.466114	3.984593	4.164129	4.249355	4.19901	4.02553	3.640662	3.614968
2015 # pregabalin/gabapentin days supplied per patie	3.624664	4.330401	4.912654	5.52619	5.68585	5.934292	5.947601	5.757791	5.523187
2010 # of physicians	57434	83801	83667	84189	86580	77289	52313	26033	18657
2015 # of physicians	81375	99542	101599	92282	89338	87136	71752	41363	27770
2010 share	0.101	0.147	0.147	0.148	0.152	0.136	0.092	0.046	0.033
2015 share	0.118	0.144	0.147	0.133	0.129	0.126	0.104	0.060	0.040
2010 # (phys w/ >=1 op rx)	52942	65492	68177	63396	59535	57319	46043	25203	15148
2015 # (phys w/ >=1 op rx)	36986	56675	58422	57400	58501	51675	34059	15840	10368
2010 share (phys w/ >=1 op rx)	0.117	0.144	0.150	0.140	0.131	0.126	0.102	0.056	0.033
2015 share (phys w/ >=1 op rx)	0.097	0.149	0.154	0.151	0.154	0.136	0.090	0.042	0.027
2010 avg # of patients	15.784	20.891	24.661	26.673	27.973	28.739	28.057	24.700	21.204
2015 avg # of patients	25.271	30.248	36.126	40.552	42.544	43.494	43.367	40.399	31.764



PUF (omits prescribers with 1-10 opioid Rx)

2015 # opioid days supplied per patient	7.364	9.128	10.411	11.916	12.905	13.178	12.947	12.993	13.612
2015 # of physicians	56566	70321	73622	68765	65966	64813	53252	29602	18842
2017 # opioid days supplied per patient	6.657	7.927	9.102	10.234	11.441	11.762	11.745	11.194	11.715
2017 # of physicians	59117	65743	69391	70518	63844	62036	56870	34077	23076

Overall

9.474

8.621

0.545

0.455

50.466

41.697

0.066

0.093

0.057

4.506

4.509

3.864

5.170

569963

692157

453255

379926

24.766

37.182

11.320

501749

10.000

504672

Online Appendix Table 2

	Days Supplied / Patient		# Opioid Rx / Patient		MME / Rx Day		Overlapping	# Opioid Rx >90	Per	NSAID Days Sup
	2010	2015	2010	2015	2010	2015	Benzo Rx / Opioid Patient	Rx Day / # Opioid Rx	2015	
age30_34	-1.717*** (-18.83)	-1.425*** (-18.53)	-0.0670*** (-16.90)	-0.0533*** (-17.05)	-1.182*** (-4.08)	-0.519** (-2.40)	-0.00639*** (-8.77)	-0.0165*** (-10.94)	-0.0109*** (-9.58)	-0.654*** (-15.11)
age35_39										
age40_44	1.115*** (11.99)	1.110*** (13.51)	0.0389*** (10.10)	0.0364*** (11.26)	0.441* (1.66)	1.140*** (5.16)	0.00518*** (7.39)	0.0121*** (7.68)	0.00975*** (7.85)	0.539*** (13.15)
age45_49	1.768*** (18.42)	2.198*** (23.72)	0.0602*** (15.21)	0.0730*** (20.24)	0.640** (2.32)	1.280*** (5.66)	0.0112*** (15.39)	0.0178*** (11.00)	0.0183*** (12.34)	0.985*** (23.19)
age50_54	2.331*** (23.63)	2.860*** (29.04)	0.0787*** (19.31)	0.0922*** (24.16)	0.702** (2.54)	1.504*** (6.35)	0.0152*** (20.05)	0.0235*** (14.03)	0.0262*** (16.54)	1.376*** (31.54)
age55_59	2.561*** (25.22)	3.341*** (31.98)	0.0872*** (20.43)	0.105*** (26.07)	0.926*** (3.15)	1.996*** (8.01)	0.0186*** (23.75)	0.0259*** (14.10)	0.0338*** (18.66)	1.646*** (35.84)
age60_64	2.733*** (23.03)	3.665*** (32.93)	0.0868*** (16.52)	0.112*** (25.44)	0.201 (0.59)	2.042*** (7.35)	0.0241*** (27.82)	0.0299*** (10.68)	0.0358*** (18.32)	1.866*** (34.03)
age65_69	2.940*** (18.20)	4.113*** (28.82)	0.0887*** (12.31)	0.118*** (20.92)	0.0906 (0.18)	1.651*** (4.40)	0.0326*** (28.10)	0.0308*** (8.69)	0.0431*** (15.27)	1.998*** (26.59)
age70+	3.513*** (17.86)	4.694*** (27.70)	0.101*** (12.22)	0.130*** (18.97)	0.555 (0.89)	1.389*** (2.65)	0.0477*** (28.92)	0.0392*** (9.58)	0.0497*** (12.96)	2.298*** (22.02)
female	-1.132*** (-16.71)	-1.070*** (-17.35)	-0.0906*** (-32.02)	-0.0743*** (-30.72)	-1.464*** (-7.13)	-2.108*** (-12.97)	-0.00186*** (-3.60)	-0.0189*** (-14.61)	-0.0106*** (-9.75)	-0.428*** (-13.95)
pat_female	1.813*** (13.73)	1.679*** (12.62)	0.0871*** (14.26)	0.0621*** (11.27)	-4.076*** (-8.63)	-7.981*** (-17.81)	0.0266*** (20.40)	0.00473 (1.52)	-0.0120*** (-4.08)	1.019*** (15.59)
pat_disable	10.33*** (50.26)	13.36*** (58.39)	0.443*** (48.19)	0.520*** (60.82)	4.837*** (7.42)	8.958*** (14.56)	0.0451*** (21.54)	0.0907*** (25.95)	0.100*** (31.62)	0.372*** (3.35)
pat_black	-2.825*** (-17.75)	-3.050*** (-18.97)	-0.0760*** (-10.71)	-0.0821*** (-12.01)	-11.48*** (-23.88)	-11.29*** (-25.15)	-0.0476*** (-35.38)	-0.0638*** (-19.18)	-0.0546*** (-16.18)	-0.139** (-1.98)
pat_age0_39	-4.097*** (-12.93)	-7.524*** (-21.94)	-0.0967*** (-6.45)	-0.237*** (-16.04)	15.41*** (11.07)	25.93*** (15.51)	-0.0425*** (-11.45)	0.0350*** (4.84)	0.0540*** (6.00)	-1.909*** (-13.08)
pat_age40_54	7.571*** (23.37)	6.236*** (16.57)	0.331*** (22.13)	0.255*** (17.31)	17.50*** (17.87)	22.45*** (20.12)	0.00244 (0.79)	0.149*** (18.70)	0.163*** (19.93)	-0.376*** (-2.61)
pat_age55_64	4.460*** (15.59)	5.876*** (19.43)	0.161*** (12.90)	0.213*** (17.94)	7.555*** (8.51)	8.703*** (9.90)	0.00439 (1.58)	0.0694*** (13.29)	0.0892*** (16.52)	-0.192 (-1.44)

pat\_age65\_69

pat_age70_74	-0.0698 (-0.45)	-0.0445 (-0.27)	-0.00998 (-1.38)	-0.00606 (-0.89)	-1.261** (-2.00)	-2.241*** (-3.92)	-0.00283 (-1.35)	-0.00147 (-0.52)	-0.0123*** (-5.28)	-0.0962 (-0.86)
pat_age75_79	-0.277* (-1.66)	-0.741*** (-4.24)	-0.0151** (-1.97)	-0.0304*** (-4.24)	-4.027*** (-5.73)	-6.717*** (-11.19)	-0.00168 (-0.73)	-0.0128*** (-4.62)	-0.0285*** (-12.27)	-0.513*** (-4.67)
pat_age80_84	0.532*** (2.63)	-0.541*** (-2.75)	0.0194* (1.95)	-0.00643 (-0.78)	-5.084*** (-6.93)	-6.945*** (-9.80)	0.00336 (1.28)	-0.0114*** (-4.13)	-0.0269*** (-10.44)	-0.872*** (-6.55)
pat_age85_98	3.182*** (15.36)	2.204*** (11.49)	0.191*** (18.85)	0.152*** (17.86)	-2.457*** (-3.41)	-3.349*** (-5.10)	0.0375*** (14.65)	0.0194*** (5.83)	-0.00477* (-1.91)	-1.571*** (-12.16)
pat_age99_up	10.29*** (6.33)	9.204*** (4.78)	0.599*** (7.47)	0.736*** (3.85)	5.937 (1.03)	13.46** (1.96)	0.0726*** (2.92)	0.0809*** (3.61)	0.0915** (1.97)	-1.108 (-0.62)

spec\_1  
General Practice

spec_2 General Surgeon	-13.81*** (-30.67)	-13.73*** (-26.34)	-0.170*** (-9.20)	-0.150*** (-7.34)	3.620*** (4.51)	-2.712*** (-2.75)	-0.107*** (-35.91)	-0.0595*** (-6.44)	-0.112*** (-10.64)	-10.59*** (-46.86)
spec_3 Allergy/Immunc	-16.49*** (-36.08)	-16.13*** (-30.78)	-0.799*** (-43.06)	-0.719*** (-35.35)	-4.605** (-2.19)	-11.56*** (-6.11)	-0.0795*** (-9.06)	-0.153*** (-16.82)	-0.127*** (-12.09)	-10.65*** (-44.60)
spec_4 Otolaryngology	-15.97*** (-35.73)	-15.54*** (-30.07)	-0.670*** (-36.71)	-0.599*** (-29.76)	1.687* (1.91)	-3.174*** (-3.17)	-0.0899*** (-27.58)	-0.131*** (-14.49)	-0.117*** (-11.25)	-10.96*** (-48.72)
spec_5 Anesthesiology	17.11*** (18.54)	25.76*** (23.93)	0.515*** (14.42)	0.826*** (21.23)	18.65*** (13.55)	12.93*** (9.36)	-0.0842*** (-23.50)	0.203*** (12.29)	0.206*** (12.14)	-6.761*** (-22.53)
spec_6 Cardiology	-14.60*** (-32.94)	-14.86*** (-28.85)	-0.716*** (-40.03)	-0.676*** (-33.84)	-0.805 (-0.90)	-11.30*** (-10.84)	-0.0542*** (-14.71)	-0.125*** (-13.89)	-0.110*** (-10.61)	-10.10*** (-44.93)
spec_7 Dermatology	-15.21*** (-34.39)	-14.57*** (-28.34)	-0.711*** (-39.78)	-0.630*** (-31.52)	-0.701 (-0.66)	-10.50*** (-9.87)	-0.0949*** (-27.15)	-0.126*** (-14.07)	-0.106*** (-10.29)	-10.83*** (-48.53)
spec_8 Family Practice	-0.738 (-1.64)	-2.126*** (-4.09)	-0.0703*** (-3.88)	-0.129*** (-6.38)	1.036 (1.33)	-3.091*** (-3.17)	-0.00725** (-2.42)	-0.0261*** (-2.86)	-0.0508*** (-4.87)	-0.919*** (-4.06)
spec_9 Interventional F	78.40*** (37.84)	94.22*** (40.35)	2.668*** (36.41)	3.207*** (39.08)	20.94*** (13.37)	12.66*** (9.11)	-0.0865*** (-24.31)	0.769*** (20.97)	0.699*** (18.17)	-2.799*** (-7.72)
spec_10 Gastroenterology	-16.14*** (-36.05)	-16.81*** (-32.49)	-0.785*** (-43.47)	-0.748*** (-37.18)	-4.422*** (-3.56)	-12.51*** (-11.42)	-0.0853*** (-23.21)	-0.149*** (-16.48)	-0.134*** (-12.83)	-10.77*** (-47.49)
spec_11 Internal Medicine	-3.454*** (-7.73)	-5.624*** (-10.85)	-0.192*** (-10.64)	-0.254*** (-12.59)	1.318* (1.70)	-1.754* (-1.80)	-0.0150*** (-5.01)	-0.0465*** (-5.15)	-0.0617*** (-5.91)	-3.521*** (-15.60)
spec_12 Osteopathic Ma	3.116 (1.32)	0.220 (0.12)	0.129 (1.42)	0.0203 (0.28)	7.134 (1.54)	-0.933 (-0.35)	-0.0175* (-1.67)	0.0781 (1.54)	0.0265 (0.75)	-2.690*** (-2.58)

spec_13 Neurology	-9.631*** (-18.93)	-11.46*** (-20.30)	-0.530*** (-26.20)	-0.554*** (-25.43)	-5.831*** (-5.79)	-11.23*** (-10.01)	-0.0339*** (-8.87)	-0.105*** (-10.59)	-0.107*** (-9.48)	-8.390*** (-35.90)
spec_14 Neurosurgery	0.395 (0.61)	-3.495*** (-5.63)	0.486*** (16.47)	0.145*** (5.85)	1.370 (1.48)	-2.289** (-2.13)	-0.0735*** (-20.51)	0.0335*** (2.76)	-0.0648*** (-5.70)	-6.789*** (-23.75)
spec_15 Obstetrics/Gyne	-16.61*** (-36.98)	-16.64*** (-31.92)	-0.710*** (-38.99)	-0.658*** (-32.39)	3.643*** (4.05)	-3.482*** (-3.25)	-0.101*** (-31.20)	-0.137*** (-14.99)	-0.128*** (-12.03)	-10.39*** (-45.90)
spec_16 Hospice And Pal	5.172*** (3.17)	16.60*** (8.12)	0.228*** (3.31)	0.669*** (8.77)	55.31*** (9.28)	50.26*** (15.22)	-0.00765 (-0.90)	0.350*** (6.88)	0.460*** (9.89)	-7.585*** (-20.75)
spec_17 Ophthalmology	-15.06*** (-34.17)	-14.70*** (-28.68)	-0.721*** (-40.50)	-0.650*** (-32.63)	2.489*** (2.62)	-5.439*** (-5.25)	-0.0980*** (-29.47)	-0.117*** (-13.08)	-0.0958*** (-9.29)	-11.04*** (-49.59)
spec_18 Orthopedic Surg	-3.017*** (-6.45)	-4.643*** (-8.74)	0.583*** (29.93)	0.303*** (14.62)	1.524* (1.94)	-4.095*** (-4.19)	-0.106*** (-35.67)	0.0695*** (7.26)	-0.0579*** (-5.46)	1.842*** (7.19)
spec_19 Cardiac Electroph	-14.41*** (-31.24)	-14.29*** (-27.47)	-0.677*** (-35.88)	-0.633*** (-31.20)	5.304*** (2.73)	-8.741*** (-7.62)	-0.0993*** (-26.93)	-0.116*** (-12.61)	-0.100*** (-9.63)	-10.25*** (-37.86)
spec_20 Pathology	-9.857*** (-5.88)	-12.53*** (-9.31)	-0.478*** (-7.39)	-0.527*** (-9.30)	-2.452 (-0.59)	13.96 (1.41)	-0.0666*** (-3.42)	-0.118*** (-8.08)	-0.0688** (-2.47)	-6.286*** (-3.86)
spec_21 Sports Medicine	-4.399*** (-4.22)	-5.932*** (-6.47)	0.209*** (4.36)	0.00975 (0.26)	-2.332 (-1.43)	-11.37*** (-8.76)	-0.0857*** (-19.83)	-0.00547 (-0.28)	-0.0700*** (-3.66)	1.772** (2.39)
spec_22 Plastic And Recc	-12.93*** (-27.58)	-12.66*** (-23.90)	-0.0497** (-2.28)	-0.00394 (-0.18)	6.746*** (7.02)	0.416 (0.39)	-0.0658*** (-16.80)	-0.0275*** (-2.69)	-0.0885*** (-7.76)	-10.64*** (-44.18)
spec_23 Physical Medicin	34.38*** (33.39)	35.63*** (33.16)	1.235*** (32.34)	1.261*** (32.36)	9.221*** (8.84)	3.822*** (3.19)	-0.0622*** (-18.70)	0.333*** (17.98)	0.278*** (15.43)	-1.946*** (-6.14)
spec_24 Psychiatry	-20.01*** (-42.52)	-20.80*** (-38.87)	-0.952*** (-49.79)	-0.889*** (-42.47)	62.39*** (24.61)	91.57*** (33.11)	0.125*** (20.94)	-0.176*** (-17.71)	-0.145*** (-12.76)	-10.60*** (-46.64)
spec_25 Geriatric Psychi	-17.62*** (-24.14)	-17.37*** (-18.41)	-0.850*** (-28.07)	-0.769*** (-20.93)	15.53 (0.86)	29.62 (1.45)	-0.00439 (-0.09)	-0.164*** (-14.57)	-0.132*** (-5.26)	-10.69*** (-36.82)
spec_26 Colorectal Surg	-12.79*** (-25.69)	-13.14*** (-24.50)	-0.318*** (-13.57)	-0.318*** (-14.22)	9.422*** (6.81)	1.518 (1.16)	-0.0924*** (-23.60)	-0.0650*** (-6.04)	-0.103*** (-9.71)	-10.52*** (-43.54)
spec_27 Pulmonary Dise	-14.74*** (-31.81)	-15.99*** (-30.47)	-0.719*** (-38.56)	-0.712*** (-34.45)	0.636 (0.57)	-4.185*** (-3.52)	-0.0348*** (-7.50)	-0.133*** (-14.30)	-0.122*** (-11.38)	-9.980*** (-43.45)
spec_28 Diagnostic Radi	-14.32*** (-29.21)	-14.30*** (-25.74)	-0.579*** (-28.04)	-0.529*** (-23.71)	1.414 (1.02)	1.061 (0.59)	-0.0824*** (-16.29)	-0.122*** (-13.00)	-0.103*** (-9.21)	-9.568*** (-33.40)
spec_29 Anesthesiology	-15.04*** (-4.27)	-11.94*** (-6.09)	-0.670*** (-4.98)	-0.474*** (-3.78)	-18.62*** (-3.70)	-9.103 (-0.63)	-0.107*** (-8.72)	-0.161*** (-5.47)	-0.0892*** (-4.46)	-7.625*** (-3.60)
spec_30 Thoracic Surger	-11.18*** (-21.50)	-11.67*** (-20.44)	-0.106*** (-4.40)	-0.177*** (-6.09)	9.532*** (8.54)	-1.421 (-1.25)	-0.0968*** (-26.42)	-0.0175 (-1.48)	-0.0842*** (-4.22)	-10.76*** (-45.29)

spec_31 Urology	-14.66*** (-32.86)	-14.34*** (-27.73)	-0.605*** (-33.43)	-0.548*** (-27.26)	0.402 (0.47)	-4.924*** (-4.90)	-0.0938*** (-30.41)	-0.118*** (-12.96)	-0.107*** (-10.34)	-10.72*** (-47.82)
spec_32 Nuclear Medicin	-10.42*** (-2.64)	-13.73*** (-11.26)	-0.558*** (-4.14)	-0.604*** (-13.00)	-0.988 (-0.14)	6.379 (0.59)	-0.0447 (-1.28)	-0.0311 (-0.31)	-0.103*** (-5.53)	-8.557*** (-4.50)
spec_33 Geriatric Medic	2.361*** (3.67)	-0.0146 (-0.02)	0.154*** (5.33)	0.0616** (2.09)	0.177 (0.15)	1.330 (1.01)	-0.0182*** (-4.16)	0.00271 (0.24)	-0.00986 (-0.84)	-5.615*** (-18.66)
spec_34 Nephrology	-13.58*** (-29.48)	-15.54*** (-29.49)	-0.657*** (-35.28)	-0.702*** (-34.33)	-14.03*** (-15.47)	-19.79*** (-18.44)	-0.0462*** (-12.18)	-0.144*** (-15.82)	-0.144*** (-13.74)	-9.972*** (-43.90)
spec_35 Hand Surgery	-10.88*** (-22.10)	-11.02*** (-20.46)	0.277*** (10.74)	0.196*** (8.55)	3.197*** (2.95)	-3.249*** (-2.98)	-0.112*** (-35.82)	0.0242** (2.03)	-0.0905*** (-8.35)	-6.606*** (-18.83)
spec_36 Optometry	-16.31*** (-36.72)	-15.80*** (-30.71)	-0.807*** (-44.98)	-0.721*** (-36.10)	-0.146 (-0.07)	-6.711*** (-3.18)	-0.0966*** (-12.09)	-0.132*** (-14.71)	-0.101*** (-9.74)	-11.40*** (-50.96)
spec_37 Certified Registr	-12.12*** (-12.51)	-13.02*** (-11.44)	-0.530*** (-13.80)	-0.562*** (-12.79)	-0.411 (-0.17)	0.529 (0.13)	-0.0735*** (-4.36)	-0.0738*** (-3.55)	-0.0784*** (-3.82)	-9.520*** (-25.23)
spec_38 Infectious Disea	-12.66*** (-20.75)	-15.19*** (-26.39)	-0.616*** (-22.77)	-0.675*** (-30.06)	3.466* (1.90)	-4.818*** (-2.85)	-0.0391*** (-7.18)	-0.121*** (-9.62)	-0.137*** (-12.00)	-8.133*** (-30.10)
spec_39 Endocrinology	-15.34*** (-33.52)	-16.04*** (-30.87)	-0.752*** (-40.80)	-0.719*** (-35.65)	-4.866*** (-3.27)	-10.56*** (-6.52)	-0.0650*** (-11.93)	-0.140*** (-15.42)	-0.129*** (-12.40)	-9.898*** (-42.94)
spec_40 Podiatry	-14.60*** (-32.40)	-14.97*** (-28.85)	-0.515*** (-27.45)	-0.526*** (-25.90)	-2.195*** (-2.60)	-9.031*** (-9.09)	-0.112*** (-37.07)	-0.112*** (-12.20)	-0.121*** (-11.54)	-6.250*** (-26.10)
spec_41 Nurse Practitior	-10.32*** (-22.41)	-10.65*** (-20.33)	-0.451*** (-24.29)	-0.422*** (-20.73)	-1.250 (-1.50)	-6.787*** (-6.87)	-0.0458*** (-14.94)	-0.0862*** (-9.31)	-0.0902*** (-8.59)	-7.679*** (-33.61)
spec_42 Rheumatology	11.72*** (18.95)	6.221*** (9.59)	0.175*** (7.55)	0.0127 (0.53)	-9.805*** (-11.11)	-13.79*** (-12.84)	-0.0920*** (-29.07)	-0.0312*** (-3.07)	-0.0829*** (-7.56)	16.12*** (36.32)
spec_43 Pain Managemen	75.76*** (36.28)	86.83*** (40.99)	2.568*** (33.86)	2.943*** (39.11)	22.36*** (14.32)	13.16*** (9.15)	-0.0843*** (-24.03)	0.775*** (18.33)	0.691*** (16.69)	-2.659*** (-6.45)
spec_44 Peripheral Vasc	-14.46*** (-17.68)	-14.72*** (-18.74)	-0.628*** (-14.12)	-0.571*** (-12.95)	-1.631 (-0.35)	-5.865 (-1.43)	-0.0918*** (-5.53)	-0.115*** (-6.75)	-0.0998*** (-5.60)	-3.788 (-0.63)
spec_45 Vascular Surger	-12.72*** (-27.20)	-13.35*** (-25.08)	-0.177*** (-8.06)	-0.253*** (-11.39)	1.772* (1.87)	-5.645*** (-5.29)	-0.0974*** (-28.89)	-0.0640*** (-6.50)	-0.112*** (-10.53)	-10.56*** (-45.58)
spec_46 Cardiac Surgery	-12.41*** (-26.20)	-13.19*** (-23.70)	-0.197*** (-8.31)	-0.308*** (-12.84)	11.61*** (8.47)	-3.191** (-2.48)	-0.0888*** (-19.14)	-0.0221* (-1.91)	-0.115*** (-10.82)	-11.01*** (-47.15)
spec_47 Addiction Medic	30.45*** (5.23)	46.26*** (6.90)	1.274*** (4.95)	2.321*** (7.21)	205.5*** (10.71)	265.5*** (18.15)	-0.0690*** (-6.21)	1.429*** (6.29)	2.423*** (8.70)	-5.594*** (-7.32)
spec_48 Critical Care	-13.93*** (-26.64)	-14.93*** (-25.09)	-0.623*** (-27.44)	-0.609*** (-25.30)	0.682 (0.40)	-1.412 (-0.63)	-0.0508*** (-6.11)	-0.117*** (-10.90)	-0.113*** (-8.88)	-9.618*** (-36.83)

spec_49 Hematology	-1.070 (-0.84)	-1.774 (-1.54)	-0.0322 (-0.58)	-0.0118 (-0.21)	30.73*** (8.99)	25.87*** (8.36)	-0.0223** (-2.42)	0.106*** (3.10)	0.106*** (3.04)	-9.534*** (-30.09)
spec_50 Hematology/On	-1.016** (-2.01)	-1.084* (-1.94)	-0.0153 (-0.73)	-0.0244 (-1.11)	32.67*** (29.06)	28.34*** (24.59)	-0.0258*** (-7.40)	0.0816*** (7.71)	0.0565*** (4.86)	-9.800*** (-41.55)
spec_51 Preventative M	-1.976 (-0.65)	-4.628* (-1.75)	-0.0874 (-0.75)	-0.219** (-2.28)	0.906 (0.15)	4.950 (0.83)	-0.0583*** (-4.77)	0.0546 (0.85)	0.0314 (0.51)	-6.913*** (-10.23)
spec_52 Neuropsychiatry	-11.36*** (-3.74)	-8.378 (-1.61)	-0.614*** (-5.39)	-0.399* (-1.86)	20.11 (1.41)	25.56 (1.44)	0.0718 (1.52)	-0.0847* (-1.65)	0.112 (0.66)	-9.383*** (-10.63)
spec_53 Medical Oncology	-1.353** (-2.35)	-2.078*** (-3.49)	-0.0380 (-1.58)	-0.0741*** (-3.16)	33.88*** (17.69)	28.61*** (20.28)	-0.0320*** (-7.56)	0.0731*** (5.72)	0.0326*** (2.74)	-9.722*** (-40.03)
spec_54 Surgical Oncology	-11.81*** (-21.56)	-10.63*** (-17.88)	-0.141*** (-4.37)	-0.0570** (-1.97)	11.46*** (4.15)	1.777 (1.45)	-0.0946*** (-21.68)	-0.0290** (-2.02)	-0.0868*** (-7.94)	-10.50*** (-40.33)
spec_55 Radiation Oncology	-8.714*** (-17.72)	-8.716*** (-16.10)	-0.290*** (-13.53)	-0.280*** (-13.03)	18.67*** (14.95)	14.53*** (11.59)	-0.0730*** (-19.50)	-0.0294*** (-2.86)	-0.0478*** (-4.37)	-10.59*** (-46.05)
spec_56 Emergency Medicine	-16.49*** (-36.72)	-16.39*** (-31.58)	-0.475*** (-26.18)	-0.458*** (-22.71)	-8.352*** (-10.61)	-13.42*** (-13.54)	-0.0955*** (-32.02)	-0.135*** (-14.64)	-0.135*** (-12.81)	-9.731*** (-43.50)
spec_57 Interventional Family	-13.95*** (-18.83)	-12.92*** (-13.35)	-0.440*** (-11.12)	-0.375*** (-10.09)	-0.938 (-0.46)	-5.862*** (-3.84)	-0.100*** (-24.16)	-0.113*** (-8.43)	-0.0970*** (-5.16)	-9.672*** (-26.29)
spec_58 Physician Assistant	-10.71*** (-23.35)	-10.24*** (-19.50)	-0.340*** (-18.32)	-0.318*** (-15.59)	-3.341*** (-4.12)	-8.319*** (-8.44)	-0.0696*** (-23.01)	-0.0753*** (-8.13)	-0.0871*** (-8.31)	-6.942*** (-30.26)
spec_59 Gynecological/Clinical	-11.17*** (-18.69)	-10.82*** (-17.78)	-0.274*** (-9.47)	-0.218*** (-8.11)	10.52*** (6.42)	8.526*** (5.49)	-0.0918*** (-18.84)	-0.0538*** (-4.37)	-0.0685*** (-5.47)	-10.54*** (-42.71)
spec_60 Undefined Physician	-12.07*** (-7.57)	-13.06*** (-9.19)	-0.439*** (-7.18)	-0.467*** (-8.72)	0.672 (0.20)	-2.947 (-0.99)	-0.0809*** (-7.40)	-0.0940*** (-5.50)	-0.0965*** (-4.79)	-9.949*** (-32.69)
spec_61 Sleep Medicine	-15.57*** (-22.06)	-15.35*** (-21.55)	-0.778*** (-26.88)	-0.713*** (-26.64)	-10.04** (-2.41)	-16.09*** (-4.90)	-0.0126 (-0.52)	-0.151*** (-12.60)	-0.136*** (-11.94)	-9.488*** (-25.24)
spec_62 Interventional Cardiology	-15.40*** (-34.15)	-15.38*** (-29.64)	-0.766*** (-41.89)	-0.709*** (-35.18)	0.542 (0.34)	-10.79*** (-8.45)	-0.0714*** (-11.43)	-0.131*** (-14.46)	-0.106*** (-10.24)	-10.56*** (-45.77)
spec_99 Other specialties	-14.47*** (-29.99)	-14.81*** (-27.39)	-0.481*** (-22.45)	-0.490*** (-22.91)	-3.167*** (-3.29)	-8.175*** (-7.14)	-0.0822*** (-23.07)	-0.111*** (-8.43)	-0.137*** (-12.47)	-9.292*** (-38.35)
Constant	10.43*** (22.45)	9.488*** (17.86)	0.567*** (29.73)	0.491*** (23.76)	48.16*** (51.56)	44.75*** (41.67)	0.0770*** (23.09)	0.0901*** (9.43)	0.0742*** (7.06)	10.12*** (42.92)
N	569963	692157	569963	692157	379926	453255	453255	569963	692157	569963
average of dependent	9.474	8.621	0.545	0.455	50.52	41.69	0.0667	0.0928	0.0572	4.506
number of providers	2677	2658	2677	2658	2664	2643	2643	2677	2658	2677

Notes: t-statistics on regression coefficients reported in parentheses.

Patient age categories for 2017 are 0-64, 75-84, 85+.

=\*\* p<0.1

\*\* p<0.05

\*\*\* p<0.01"



Applied / Patient	Pregabalin/Gabapentin Days			Mean (Standard Deviation)	
	2015	2010	2015	2010	2015
	Supplied / Patient	Supplied / Patient	Supplied / Patient		
-0.552*** (-15.68)	-0.631*** (-13.06)	-0.758*** (-16.77)	0.101	0.118	
			0.147	0.144	
0.542*** (14.94)	0.384*** (8.26)	0.595*** (13.31)	0.147	0.147	
1.131*** (29.00)	0.604*** (12.81)	1.054*** (22.27)	0.148	0.133	
1.421*** (36.11)	0.717*** (14.77)	1.294*** (26.29)	0.152	0.129	
1.799*** (42.71)	0.742*** (15.22)	1.548*** (30.01)	0.136	0.126	
2.123*** (44.78)	0.675*** (11.34)	1.618*** (29.96)	0.092	0.104	
2.616*** (40.01)	0.461*** (6.17)	1.579*** (22.54)	0.046	0.060	
2.928*** (33.25)	0.222** (2.54)	1.340*** (15.48)	0.033	0.040	
-0.421*** (-15.82)	0.295*** (7.94)	0.309*** (9.22)	0.317	0.390	
1.082*** (16.01)	0.956*** (11.98)	1.493*** (17.92)	0.633 (0.256)	0.619 (0.237)	
0.197* (1.85)	2.847*** (23.44)	4.733*** (32.77)	0.388 (0.298)	0.372 (0.276)	
-0.194*** (-2.81)	-1.141*** (-13.99)	-1.080*** (-13.06)	0.130 (0.225)	0.129 (0.213)	
-2.071*** (-14.46)	-2.400*** (-12.83)	-4.946*** (-22.94)	0.058 (0.142)	0.049 (0.129)	
-0.0767 (-0.54)	0.791*** (4.56)	0.185 (0.86)	0.132 (0.194)	0.106 (0.158)	
0.530*** (3.90)	0.728*** (4.54)	0.843*** (4.51)	0.125 (0.167)	0.136 (0.157)	

			0.206 (0.203)	0.224 (0.188)
-0.260** (-2.22)	0.208* (1.90)	0.153 (1.24)	0.166 (0.180)	0.182 (0.166)
-0.762*** (-6.02)	0.350*** (2.86)	0.501*** (3.62)	0.129 (0.159)	0.129 (0.140)
-1.612*** (-12.46)	0.852*** (6.04)	0.216 (1.48)	0.099 (0.140)	0.089 (0.118)
-2.759*** (-22.23)	1.413*** (11.16)	1.246*** (8.57)	0.085 (0.138)	0.084 (0.129)
-4.084*** (-3.29)	3.697*** (4.65)	3.609** (2.05)	0.001 (0.014)	0.001 (0.014)
			0.010	0.007
-11.77*** (-43.01)	-4.990*** (-36.33)	-8.627*** (-43.92)	0.030	0.027
-11.92*** (-42.08)	-4.891*** (-34.37)	-8.290*** (-40.89)	0.006	0.005
-12.08*** (-43.41)	-4.908*** (-35.61)	-8.340*** (-42.73)	0.015	0.013
-6.476*** (-17.68)	3.083*** (10.48)	3.139*** (8.69)	0.011	0.010
-11.35*** (-41.62)	-4.249*** (-31.17)	-7.620*** (-39.22)	0.033	0.029
-11.84*** (-43.59)	-4.786*** (-35.64)	-7.960*** (-41.04)	0.017	0.016
-1.692*** (-6.18)	0.921*** (6.70)	0.455** (2.33)	0.133	0.121
-2.147*** (-4.98)	14.21*** (27.68)	15.65*** (27.47)	0.003	0.002
-12.11*** (-44.51)	-4.970*** (-36.70)	-8.660*** (-44.76)	0.021	0.019
-5.060*** (-18.53)	0.488*** (3.54)	-1.301*** (-6.67)	0.143	0.139
-3.814*** (-5.78)	0.172 (0.17)	-1.796** (-2.38)	0.001	0.001

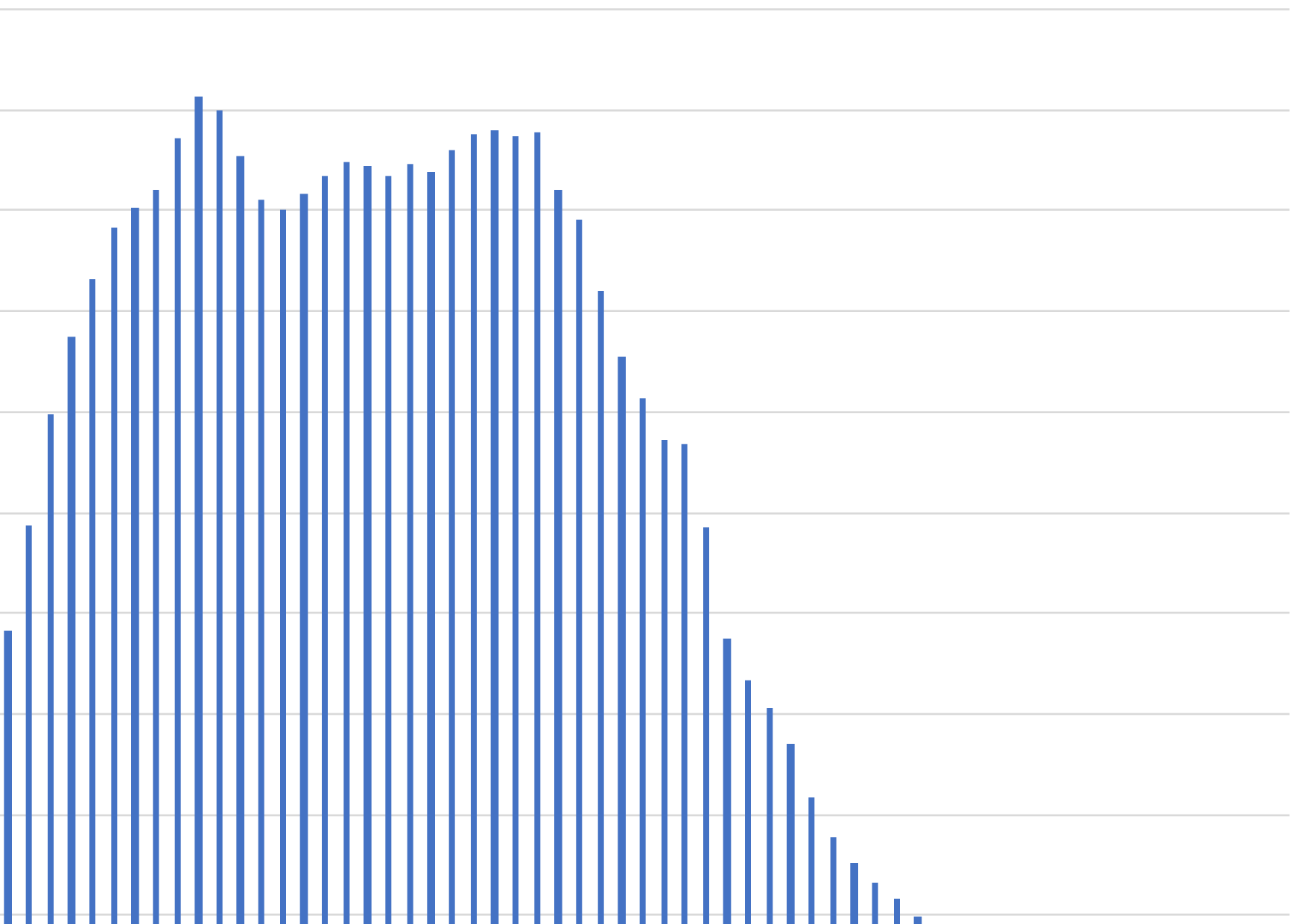
-9.659*** (-34.72)	15.59*** (60.23)	14.25*** (49.13)	0.020	0.019
-8.147*** (-25.26)	2.899*** (8.65)	0.486 (1.49)	0.007	0.006
-11.50*** (-41.94)	-5.265*** (-37.86)	-8.849*** (-44.61)	0.047	0.042
-9.384*** (-27.12)	1.335 (1.60)	-0.759 (-0.78)	0.001	0.001
-12.02*** (-44.31)	-4.905*** (-36.29)	-8.385*** (-43.55)	0.029	0.025
2.885*** (9.59)	-3.627*** (-25.37)	-6.480*** (-32.17)	0.034	0.030
-11.54*** (-42.19)	-4.634*** (-31.45)	-8.019*** (-40.63)	0.003	0.003
-10.49*** (-13.36)	-2.717*** (-3.30)	-7.486*** (-13.95)	0.001	0.000
3.126*** (5.10)	-2.179*** (-5.23)	-5.013*** (-12.83)	0.001	0.001
-11.74*** (-41.71)	-4.868*** (-32.26)	-8.317*** (-35.26)	0.007	0.007
-2.384*** (-7.20)	10.92*** (30.66)	11.53*** (30.90)	0.011	0.010
-12.09*** (-44.21)	-0.671*** (-3.78)	-2.803*** (-12.36)	0.040	0.036
-11.41*** (-28.51)	-1.616** (-2.26)	-3.830*** (-4.76)	0.000	0.000
-11.65*** (-41.67)	-4.743*** (-31.49)	-8.300*** (-41.06)	0.002	0.002
-11.44*** (-41.00)	-4.085*** (-27.22)	-7.620*** (-37.42)	0.014	0.013
-10.77*** (-31.76)	-4.276*** (-20.72)	-7.544*** (-29.42)	0.009	0.008
-6.264 (-1.23)	-5.770*** (-16.37)	-8.735*** (-14.15)	0.000	0.000
-11.66*** (-33.73)	-4.187*** (-22.13)	-7.629*** (-33.37)	0.003	0.003

-11.74*** (-42.86)	-4.638*** (-33.67)	-8.010*** (-41.06)	0.015	0.013
-10.81*** (-11.34)	-4.528*** (-12.80)	-7.080*** (-11.09)	0.000	0.000
-6.564*** (-20.03)	3.751*** (11.90)	3.262*** (9.12)	0.003	0.003
-11.25*** (-41.04)	-1.923*** (-12.28)	-4.840*** (-22.89)	0.013	0.012
-6.850*** (-18.94)	-4.585*** (-25.93)	-7.859*** (-34.49)	0.002	0.002
-12.50*** (-46.18)	-5.366*** (-39.68)	-8.967*** (-46.49)	0.032	0.034
-10.76*** (-24.84)	-3.381*** (-7.69)	-5.890*** (-8.54)	0.002	0.001
-9.522*** (-31.14)	-1.803*** (-6.90)	-5.847*** (-23.47)	0.007	0.007
-11.29*** (-40.32)	-2.141*** (-12.59)	-5.191*** (-24.53)	0.008	0.008
-7.237*** (-25.58)	-1.067*** (-6.09)	-3.711*** (-17.07)	0.023	0.021
-8.479*** (-31.12)	-2.782*** (-19.22)	-4.894*** (-24.83)	0.067	0.110
14.62*** (33.53)	4.513*** (18.22)	4.621*** (15.89)	0.007	0.007
-1.612*** (-3.84)	14.81*** (24.53)	17.92*** (30.47)	0.003	0.003
-10.68*** (-17.82)	-3.675*** (-5.89)	-6.675*** (-9.66)	0.000	0.000
-11.62*** (-41.89)	-3.379*** (-16.98)	-6.400*** (-25.90)	0.004	0.004
-12.20*** (-42.40)	-4.226*** (-13.11)	-8.019*** (-32.89)	0.002	0.002
-8.635*** (-10.92)	2.576* (1.85)	2.406* (1.65)	0.000	0.000
-10.64*** (-27.11)	-3.213*** (-8.44)	-7.304*** (-26.53)	0.003	0.003

-10.44*** (-26.51)	-2.483*** (-7.38)	-4.715*** (-11.74)	0.001	0.001
-11.08*** (-40.08)	-2.049*** (-12.20)	-4.442*** (-20.77)	0.012	0.012
-7.461*** (-8.80)	-1.516** (-2.09)	-5.347*** (-7.28)	0.001	0.001
-10.37*** (-12.23)	5.765** (2.52)	2.995* (1.83)	0.000	0.000
-11.31*** (-40.46)	-1.992*** (-9.24)	-4.622*** (-19.33)	0.005	0.004
-11.83*** (-41.10)	-3.413*** (-5.15)	-8.045*** (-33.51)	0.001	0.001
-11.69*** (-42.28)	-4.254*** (-23.57)	-7.521*** (-35.94)	0.006	0.006
-10.87*** (-40.08)	-5.110*** (-37.75)	-8.694*** (-45.02)	0.058	0.058
-11.03*** (-34.79)	-4.166*** (-11.67)	-7.315*** (-20.08)	0.001	0.001
-7.648*** (-27.94)	-3.515*** (-24.92)	-5.876*** (-29.98)	0.048	0.069
-11.21*** (-37.59)	-3.790*** (-11.35)	-6.373*** (-19.16)	0.001	0.001
-10.89*** (-31.79)	-3.303*** (-4.53)	-6.806*** (-14.67)	0.000	0.000
-11.48*** (-37.54)	3.095** (2.15)	4.537*** (2.81)	0.000	0.001
-11.72*** (-42.92)	-4.591*** (-31.79)	-8.046*** (-40.70)	0.004	0.004
-10.22*** (-35.77)	-3.186*** (-15.62)	-6.131*** (-25.81)	0.018	0.016
11.20*** (39.59)	3.150*** (19.54)	5.655*** (26.56)	1.000	1.000
692157 4.509 2658	569963 3.864 2677	692157 5.170 2658		

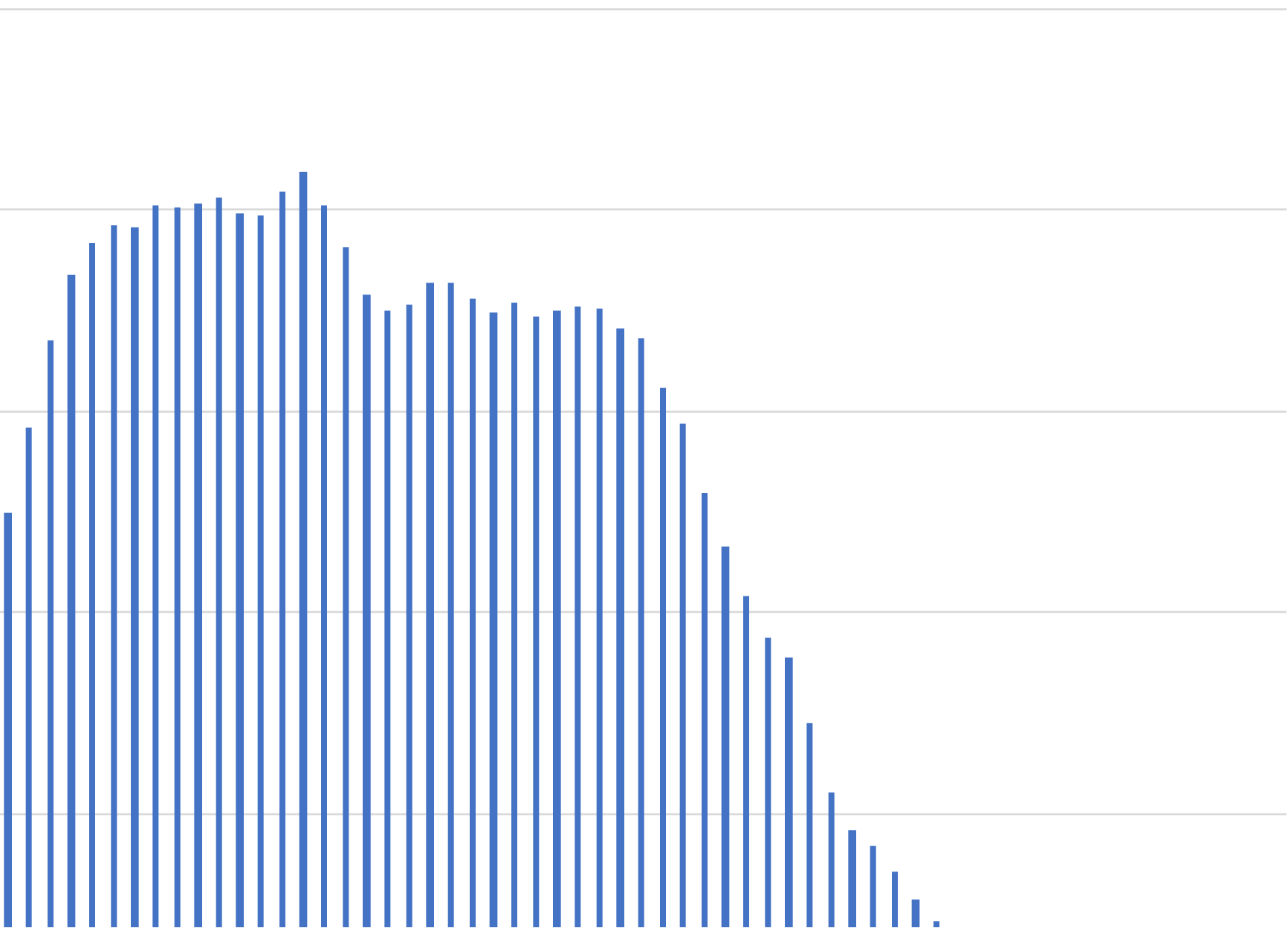
# of physicians (2010)

20000  
18000  
16000  
14000  
12000  
10000  
8000  
6000  
4000  
2000



# of physicians (2015)

25000  
20000  
15000  
10000  
5000



Age	# of physicians (2010)	# of physicians (2015)	% of physicians (2010)	% of physicians (2015)
30	7656	12455	1.343245	1.799447
31	9728	14606	1.706777	2.110215
32	11947	16752	2.096101	2.42026
33	13481	18384	2.365241	2.656045
34	14622	19178	2.56543	2.770759
35	15660	19650	2.747547	2.838951
36	16048	19559	2.815621	2.825804
37	16401	20114	2.877555	2.905988
38	17430	20052	3.058093	2.897031
39	18262	20167	3.204068	2.913645
40	18005	20328	3.158977	2.936906
41	17072	19945	2.995282	2.881572
42	16221	19872	2.845974	2.871025
43	16020	20474	2.810709	2.957999
44	16349	20980	2.868432	3.031104
45	16701	20145	2.93019	2.910467
46	16952	19063	2.974228	2.754144
47	16890	17915	2.96335	2.588286
48	16703	17513	2.930541	2.530206
49	16943	17646	2.972649	2.549422
50	16787	18197	2.945279	2.629028
51	17192	18183	3.016336	2.627005
52	17529	17807	3.075463	2.572682
53	17597	17470	3.087393	2.523994
54	17475	17681	3.065988	2.554478
55	17566	17368	3.081954	2.509257
56	16409	17528	2.878959	2.532373
57	15814	17624	2.774566	2.546243
58	14407	17563	2.527708	2.53743
59	13093	17053	2.297167	2.463747
60	12287	16829	2.155754	2.431385
61	11458	15604	2.010306	2.254402
62	11360	14710	1.993112	2.12524
63	9695	12981	1.700988	1.875442
64	7513	11628	1.318156	1.679966
65	6654	10398	1.167444	1.50226
66	6099	9351	1.070069	1.350994
67	5400	8854	0.9474299	1.27919
68	4337	7235	0.7609266	1.045283
69	3543	5525	0.6216193	0.7982293
70	3036	4578	0.5326662	0.6614106
71	2641	4172	0.4633634	0.6027534
72	2329	3568	0.408623	0.51549
73	1975	2850	0.3465137	0.4117563
74	1672	2321	0.2933524	0.3353285
75	1432	1936	0.2512444	0.2797053
76	1078	1644	0.1891351	0.2375184