

Trends in Availability of Medical Providers in Texas: A Comprehensive Analysis of Medicare Enrollment Data

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Purpose & Impact





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- Texas and the United States as a whole has experienced an increased rate of physician and provider burnout, accelerated since the COVID-19 pandemic (Shanafelt et al., 2022)
- The 65+ population is expected to grow by 34.1% (GlobalData, 2024)
- Expected shortage of 86,000 physicians by 2036 (Association of American Medical Colleges)



Purpose & Impact

- Access to healthcare is critical in managing chronic disease, illness, and reducing disability and death (ODPHP, 2020)
- 19% of the population lives in rural areas, but only 7.9% of physicians practice in those areas (Hu et al., 2021)
- This adds an extra barrier to access care in rural cities and areas of the country
- Texas has been rated as experiencing one of the largest physician shortages, despite being one of the fastest growing states in the nation
- Physician and provider shortages not only result in people unable to access care, but also in extensive wait times for care



Research Questions

1. When looking specifically at Texas, are there cities that are understaffed by any specialty?
2. Are there cities in Texas that do not have any members of a given specialty?
3. What is the general socioeconomic status of the counties that are the least staffed by various specialties?
4. When comparing graduation rates for each given specialty, is there a positive, negative, or no trend from year to year in terms of new Medicare-affiliated members looking towards the present?
5. For each given specialty, where is that physician most likely to practice?
6. Does a physician's gender or specialty have an impact on where they practice?



Methodology





Data

- >2 million rows, 31 columns
- Information on NPI, gender, location, primary specialty, secondary specialty, graduation year, among others
- Multiple values for NPI/provider/physician due to providers practicing in multiple locations

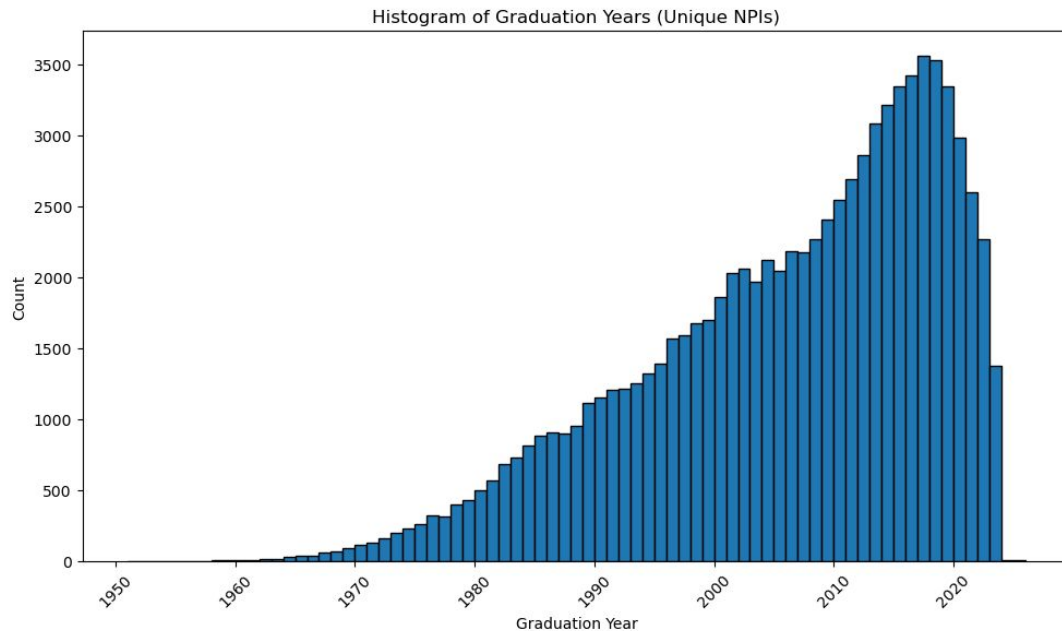
Exploratory Data Analysis & Findings





Findings

- Average graduation year = 2005
- Average tenure = ~18 years
- Top primary specialty = Nurse Practitioner
- Surprising downward trends in graduation rates starting at 2015 across multiple primary specialties



Findings

- Steep decline in number of graduates for various graduation years, starting ~2015 (anesthesiology) and ~2019 (OBGYN), among other specialties
- However, causes are not listed or easily outlined in the given dataset

Figure 2: Number of Physicians in OBGYN by Graduation Year

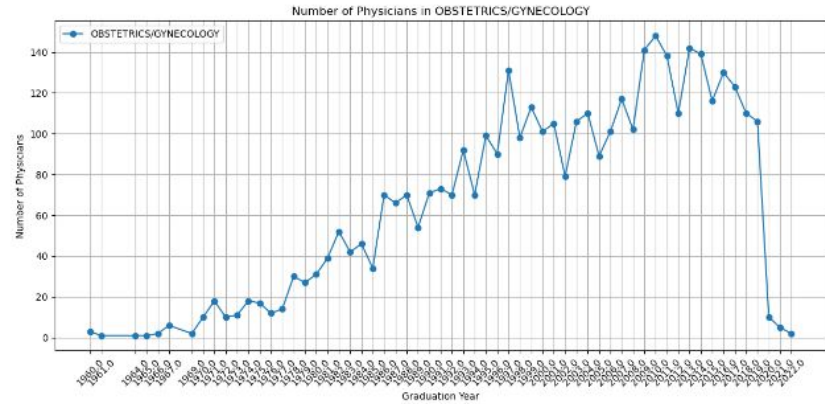
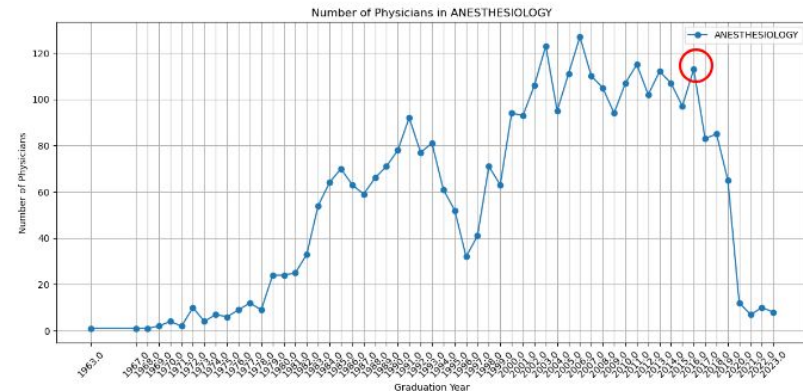


Figure 3: Number of Physicians in Anesthesiology by Graduation Year





Findings

- Most populous cities and cities with the greatest number of providers overlap
 - 65/92 specialties most likely to practice in Houston
- Poorest cities (Prairie View, Mila Doce, Cameron Park) had no data on Medicare-enrolled physicians
- 3 of the least staffed cities had an overall poverty rate of 24%
- Access to care is one of the most critical ways to manage chronic illness
- Limited access = worse health outcomes



Findings

- Physician's gender *does not* appear to impact choice of location
 - Physician's specialty *does not* appear to impact choice of location
 - Physician's gender *is* related to choice of specialty
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- Greatest value of primary specialty was "Nurse Practitioner" - Texas has possibly taken proactive steps to alleviate physician shortages



Discussion





Limitations

- Size of the dataset limited initial analysis to just Texas - additional research with more resources could incorporate national data to compare
- Many cities were not listed at all in the dataset - no Medicare-enrolled physicians or no physicians?
- No reasons for the “slumps” in graduation rates across specialties



Main Takeaways

- The most rural and poverty-stricken areas have the least number of Medicare-enrolled specialists, and the most populous cities have the highest number.
- Relying on supplementary positions (Nurse Practitioners, Physician Assistants) can help alleviate the effects of shortages. Texas appears to have the greatest number of NPs compared to other primary specialties.
- Physician's gender or specialty does not impact their choice of location, meaning that there are additional factors that influence the location choice - possibly ones that are not easily measured via structured data (Hu et al., 2021).



Recommendations





Recommendations

- Demand for physicians and medical providers will continue to increase as the population grows and ages.
 - Need increased recruitment, retention, and redistribution of providers across the state of Texas
 - Expand access to telehealth reimbursement for underserved areas
- Additional research to determine potential causes for steep decline in graduation rates
 - Limited university spots - increase enrollment
 - Limited residency spots - increase federal funding for residency positions
 - Encourage more hospitable economy and practice locations to entice providers to stay in Texas or travel to Texas
 - Recruitment packages, retention bonuses, highlighting benefits of residing in rural areas

References

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