Physician Projection Models: Why the Differences and Why Does It Matter?

Erin Fraher, PhD, MPP; Andy Knapton, MSc;
Ryan Kandrack, BS; and Mark Holmes, PhD

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- The information, conclusions and opinions expressed in this presentation are the authors and no endorsement by The Physicians Foundation or The University of North Carolina is intended or should be inferred
- We have no conflict of interest

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This presentation in one slide

- The physician shortage narrative persists. It causes us to ask, and answer, what I think is the wrong question
- We developed different modeling approach to identify types of health care *visits* in shortage in different geographies. People still asked how many physicians we will need
- When we answered this question, our model yielded similar, but somewhat different, results
- The results of workforce models have potential to shape future health care system

This project is funded by a grant from The Physicians Foundation.

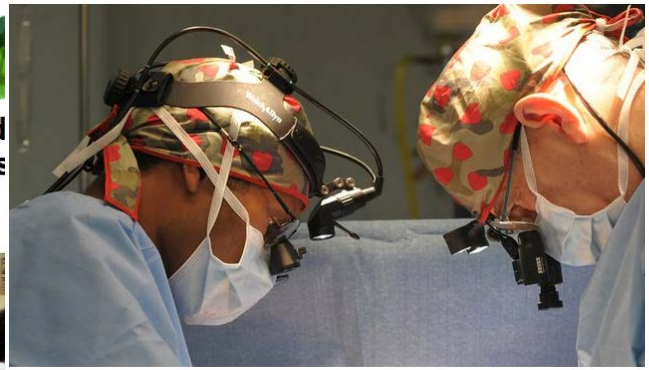
The shortage narrative

Doctor shortage, increased could crash health care sys

By **Jen Christensen**, CNN

updated 5:37 PM EDT, Wed October 2, 2013

Some doctors worry patients who can't get in to see primary care physicians will



BRIEF

Doctor shortage could excee 121K by 2030, report says

AUTHOR

Meg Bryant

Dive Brief:

- Warnings of a worsening physician shortage continue, with new analysis

Worse than ever: Physician shortage could hit 120K by 2030

by Joanne Finnegan | Apr 12, 2018 10:30am

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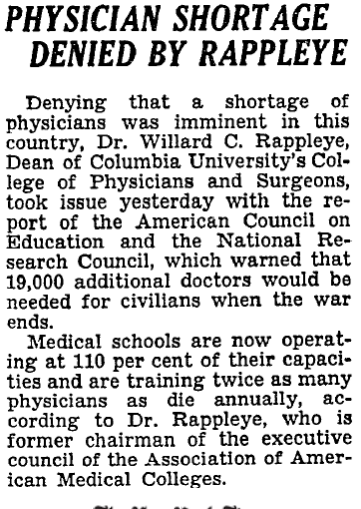
This isn't a new discussion: headlines from the New York Times 1945-1959



PHYSICIAN SHORTAGE DENIED BY RAPPLEYE

Denying that a shortage of physicians was imminent in this country, Dr. Willard C. Rappleye, Dean of Columbia University's College of Physicians and Surgeons, took issue yesterday with the report of the American Council on Education and the National Research Council, which warned that 19,000 additional doctors would be needed for civilians when the war ends.

Medical schools are now operating at 110 per cent of their capacities and are training twice as many physicians as die annually, according to Dr. Rappleye, who is former chairman of the executive council of the Association of American Medical Colleges.

The New York Times

July 14, 1945

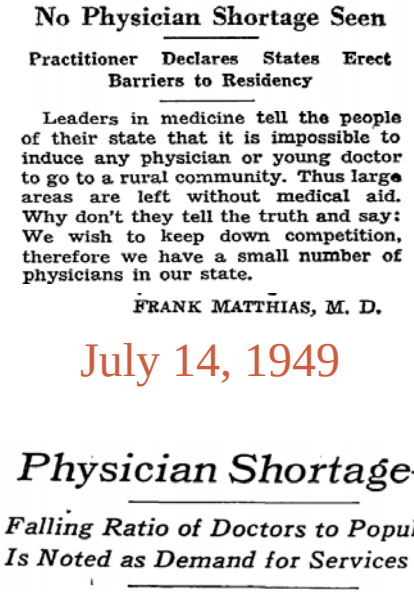
4 DOCTORS ASSAIL BROOKINGS REPORT

Health Committee Members Deny Physician Shortage and Call Study 'Bias'

Four authorities on medical economics, members of the Committee for the Nation's Health, assailed yesterday the recent study of the Brookings Institution that said the United States did not have enough physicians to meet all demands likely to be made under a Federal program of compulsory health insurance.

The New York Times

May 17, 1948



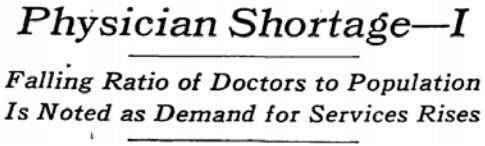
No Physician Shortage Seen

Practitioner Declares States Erect Barriers to Residency

Leaders in medicine tell the people of their state that it is impossible to induce any physician or young doctor to go to a rural community. Thus large areas are left without medical aid. Why don't they tell the truth and say: We wish to keep down competition, therefore we have a small number of physicians in our state.

FRANK MATTHIAS, M. D.

July 14, 1949

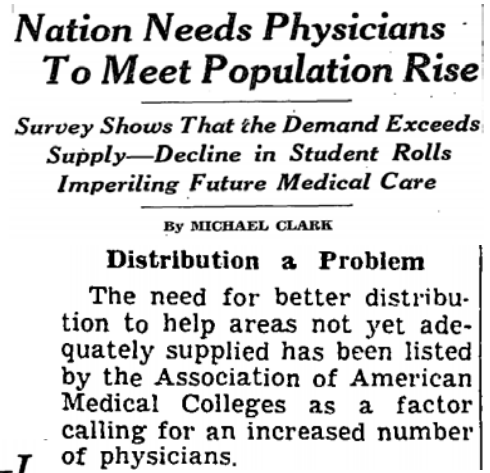


Physician Shortage—I

Falling Ratio of Doctors to Population Is Noted as Demand for Services Rises

The New York Times

November 8, 1959



Nation Needs Physicians To Meet Population Rise

Survey Shows That the Demand Exceeds Supply—Decline in Student Rolls Imperiling Future Medical Care

By MICHAEL CLARK

Distribution a Problem

The need for better distribution to help areas not yet adequately supplied has been listed by the Association of American Medical Colleges as a factor calling for an increased number of physicians.

The New York Times

March 3, 1958

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A brief history of workforce projection models

Many workforce models:

- aim to answer numeric question of too many or too few health professionals
- focus on specific specialties and professions, not patients' needs for health care services
- do not recognize "fungibility" of services provided by different specialties and professions
- have limited impact on reconfiguring workforce and models of care to better meet patient needs

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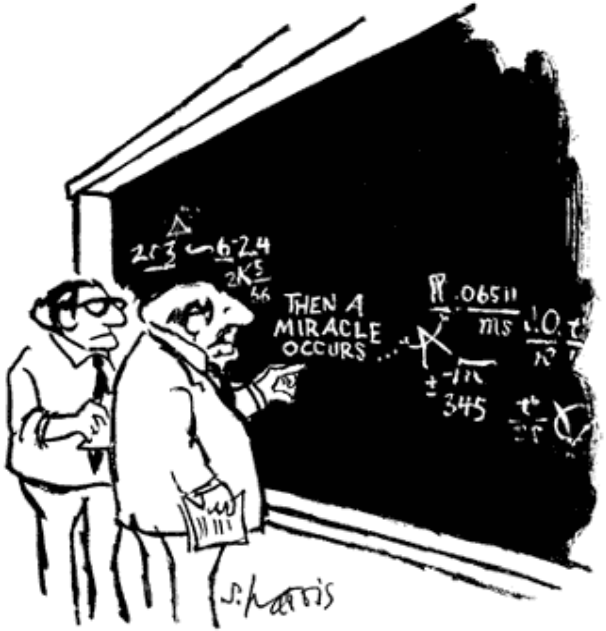
We tried to address some of these issues by developing a model that uses a “Plasticity Matrix”



“I think you should be more explicit here in step two.”

Starting question:

What health services will patients need? Not how many doctors will we need!

Next question:

Which types of specialties and professions provide what types of health services in different settings and geographies?

This project is funded by a grant from The Physicians Foundation.

Key plasticity concepts

- Scope of services provided by different specialties and professions ***overlap*** and are ***dynamic***
- Two types of plasticity:
  - **Between plasticity**: describes differences in scope of services between specialties and professions
  - **Within plasticity**: describes differences in scope of services within same profession or specialty

Article

The Contribution of "Plasticity" to Modeling How a Community's Need for Health Care Services Can Be Met by Different Configurations of Physicians

George M. Holmes, PhD, Marisa Morrison, Donald E. Pathman, MD, MPH, and Erin Fraher, PhD, MPP

Abstract

This article introduces the concept of "plasticity" to health care workforce modeling and policy analysis. The authors define plasticity as the notion that individual physicians within the same specialty each provide a different scope of service, while the scope of service of physicians in different specialties may overlap. This notion represents a departure from the current, silo-based conception of physician supply as physician headcounts by specialty; the implication is that multiple configurations of physicians (and, by further application, other health care professionals) can meet a community's utilization of health care services.

Within-specialty plasticity and between-specialty plasticity are two facets of plasticity. Within-specialty plasticity is the idea that individual physicians within the same specialty may each provide a different mix and scope of services, and between-specialty plasticity is the idea that patterns of service provision overlap across specialties. Changes in physician specialty supply in a community affect both the between-specialty and within-specialty plasticity of that community's physicians. Notably, some physician specialties are more "plastic" than others.

The authors demonstrate how to implement a plasticity matrix by assessing the sufficiency of physician supply in a specific community (Wayne County, North Carolina). Additional literature and data can provide further insights into the influences on (and of) plasticity. Improving this approach and expanding it to include task-shifting across health care professions.

A common approach in physician workforce modeling and policy analysis is to assess whether there is a physician shortage by considering each individual specialty to be distinct, defined by the different training experienced by and unique scope of services provided by its practitioners.[1-4] This "siloed" conception of specialties ignores the reality that the scope of medical services that physicians of different specialties provide often overlaps. This traditional approach also treats all physicians within a single specialty as identical and therefore interchangeable, even though individuals within a given specialty offer different mixes of services because of their particular training and interests.

An alternative health care workforce modeling approach exists. (In this article, we refer to "physicians" for expositional simplicity, although the model could easily be extended to other clinicians such as physician assistants and advanced practice nurses. We use "providers" or "workforce" to refer to this broader group.) The for multiple combinations of physician specialties to provide a specified group of medical services but still recognizes that certain specialties are more likely to provide certain types of health care services.

Heterogeneity in the services provided within a specialty also characterizes physician practice. For instance, some internists devote a greater proportion of their visits to respiratory conditions, whereas others focus more on circulatory conditions. Few researchers have conducted scholarly work exploring either within-specialty heterogeneity or between-specialty service overlap, despite the importance of these realities to the solutions that could flow from physician workforce models. We suggest that these related concepts represent two facets of *physician plasticity*. This article's objective is to describe the concept of plasticity

Dr. Holmes is associate professor, Department of Health Policy and Management, Gillings School of Global Public Health, and senior research fellow, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

Ms. Morrison is a doctoral student, Department of Health Policy and Management, Gillings School of Global Public Health, and graduate research assistant, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

Dr. Pathman is professor and director of research, Department of Family Medicine, University of North Carolina School of Medicine, and director, Program on Health Professions and Primary Care, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

Dr. Fraher is assistant professor, Department of Family Medicine and Department of Surgery, University of North Carolina School of Medicine, and

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How it works: between specialty plasticity for select types of health care services in the United States

Number of visits for select specialties and types of health care services

	Circulatory	Digestive	Endocrine/Immunity	Genitourinary	Neoplasms	Respiratory
Cardiology	38,000,000	85,114	1,160,073	248,770	176,393	598,299
Dermatology	120,110	71,224	97,185	17,165	14,004,117	78,427
Internal Medicine	17,975,183	3,458,440	9,920,149	1,788,739	714,021	6,199,275
Endocrinology	591,622	154,877	12,114,458	289,956	783,927	74,375
Family Medicine	56,001,735	9,160,169	30,323,947	9,697,999	3,365,688	40,067,469
Gastroenterology	458,052	11,700,000	323,485	319,911	1,056,523	143,921
Other Specialties	19,124,199	19,061,658	16,670,324	55,028,338	42,356,094	53,111,491
Total Visits	132,270,901	43,691,482	70,609,621	67,390,878	62,456,763	100,273,257

This project is funded by a grant from The Physicians Foundation.

Physician services are “fungible”—different specialties can meet demand for same types of services

Percent of visits for select specialties and types of health care services

	Circulatory
Cardiology	29%
Dermatology	0%
Internal Medicine	14%
Endocrinology	0%
Family Medicine	42%
Gastroenterology	0%
Other Specialties	14%
Total Visits	100%

How are circulatory visits currently distributed across specialties?

This project is funded by a grant from The Physicians Foundation.

We use plasticity matrix to match supply to utilization

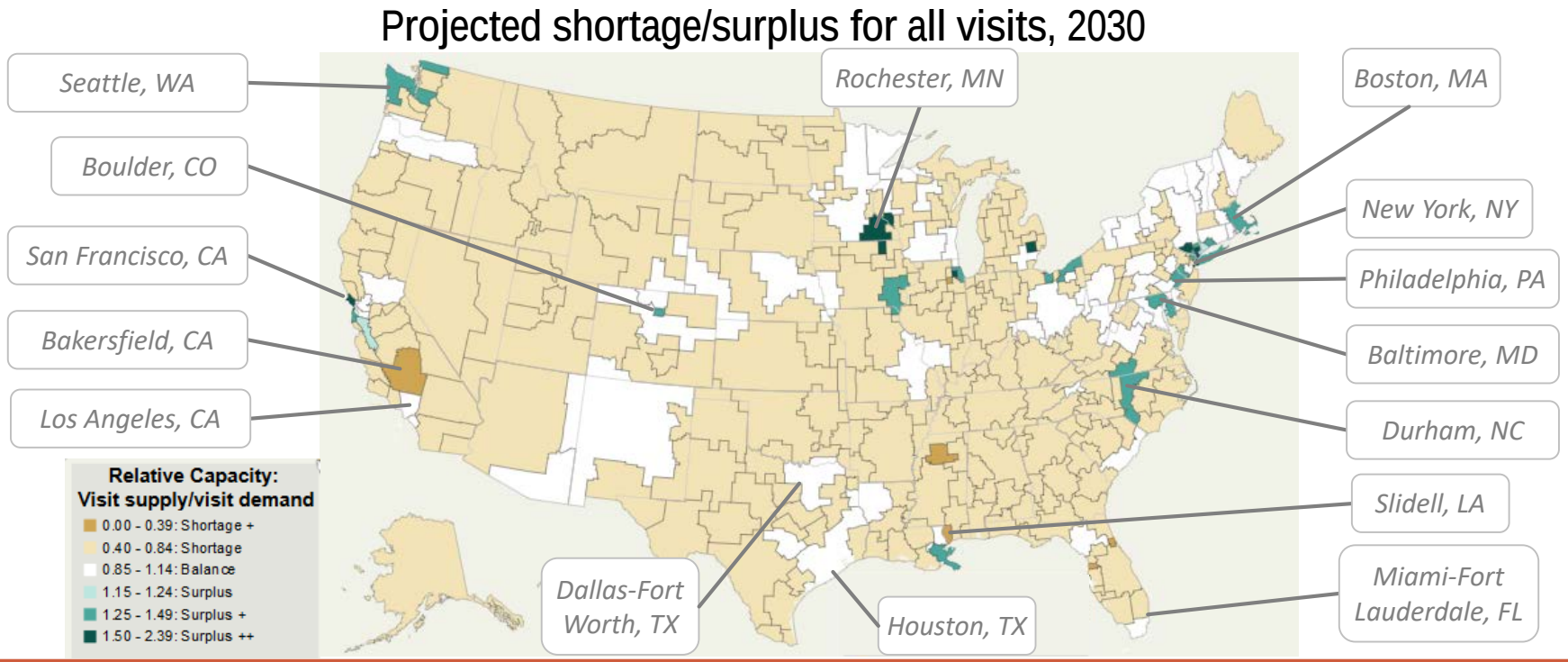
Model calculates "relative capacity" for visits in 19 clinical service areas at state and substate level

= supply of visits that physicians, NPs and PAs in that geography can provide
utilization of visits needed by population in geography

<.85=shortage .85-1.15=in balance >1.15=surplus

This project is funded by a grant from The Physicians Foundation.

You end up with a picture that shows capacity of workforce to meet demand at substate level



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Our hopes and dreams

Wanted to develop a model that:

- Focused on visits needed, not physicians in shortage
- Put emphasis on patient, not profession
- Encouraged stakeholders to use data to redesign workforce and delivery of health care services
- Highlighted geographic disparities, not just supply

But people still asked “how many physicians will we need?”

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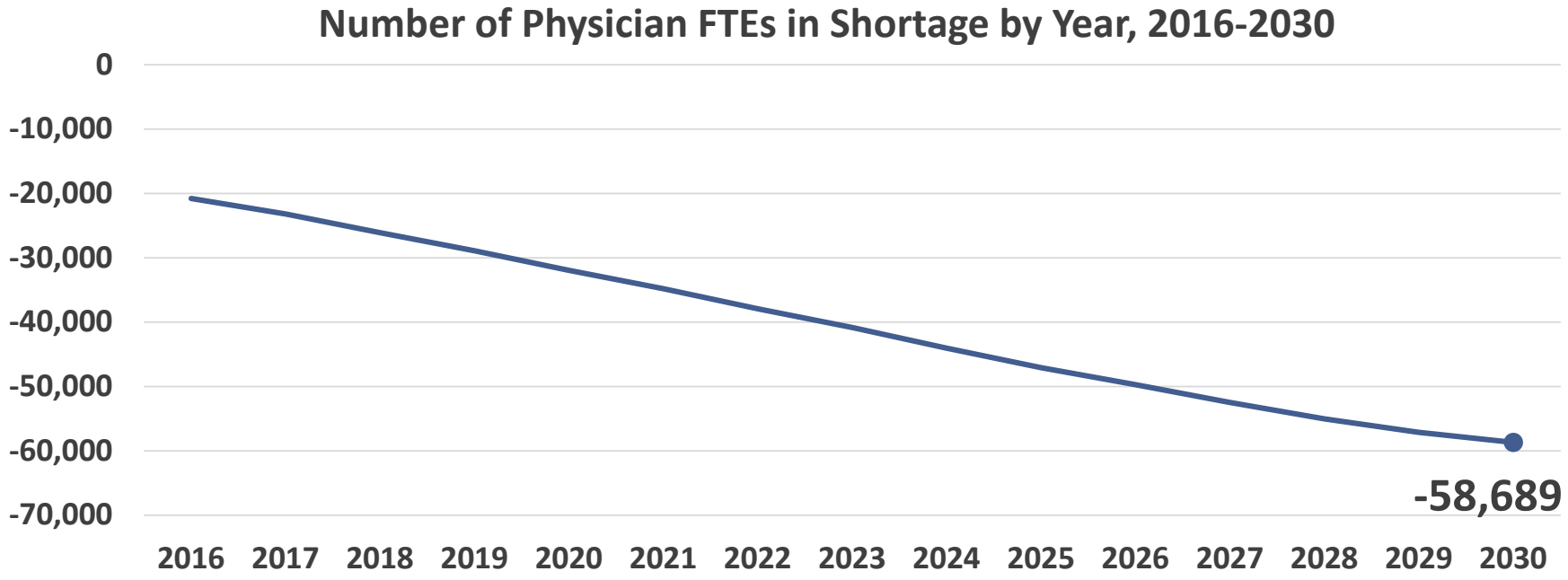
So, we translated visits to FTEs. Our overall estimates of shortage are in line with low end of AAMC estimates



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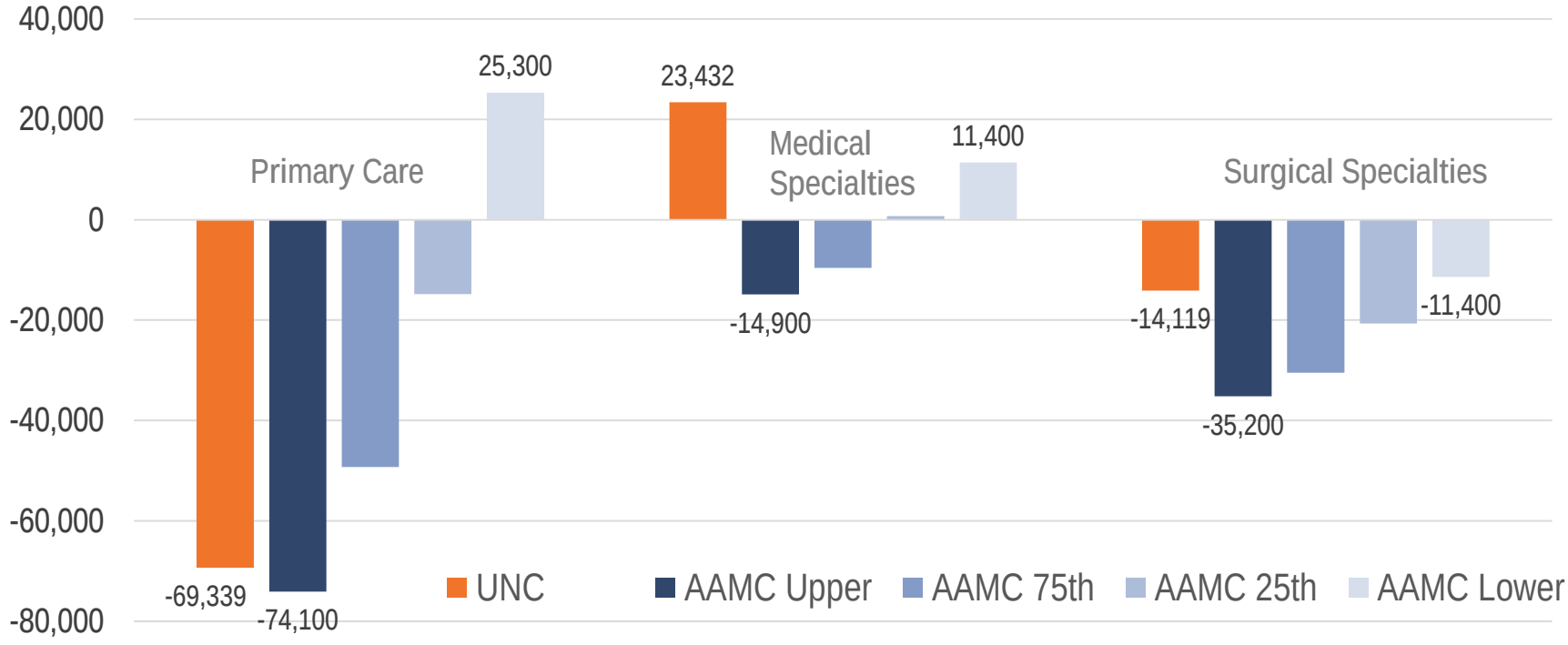
Comparison of estimates of shortage/surplus for primary care, medical specialists and surgical specialists in 2030



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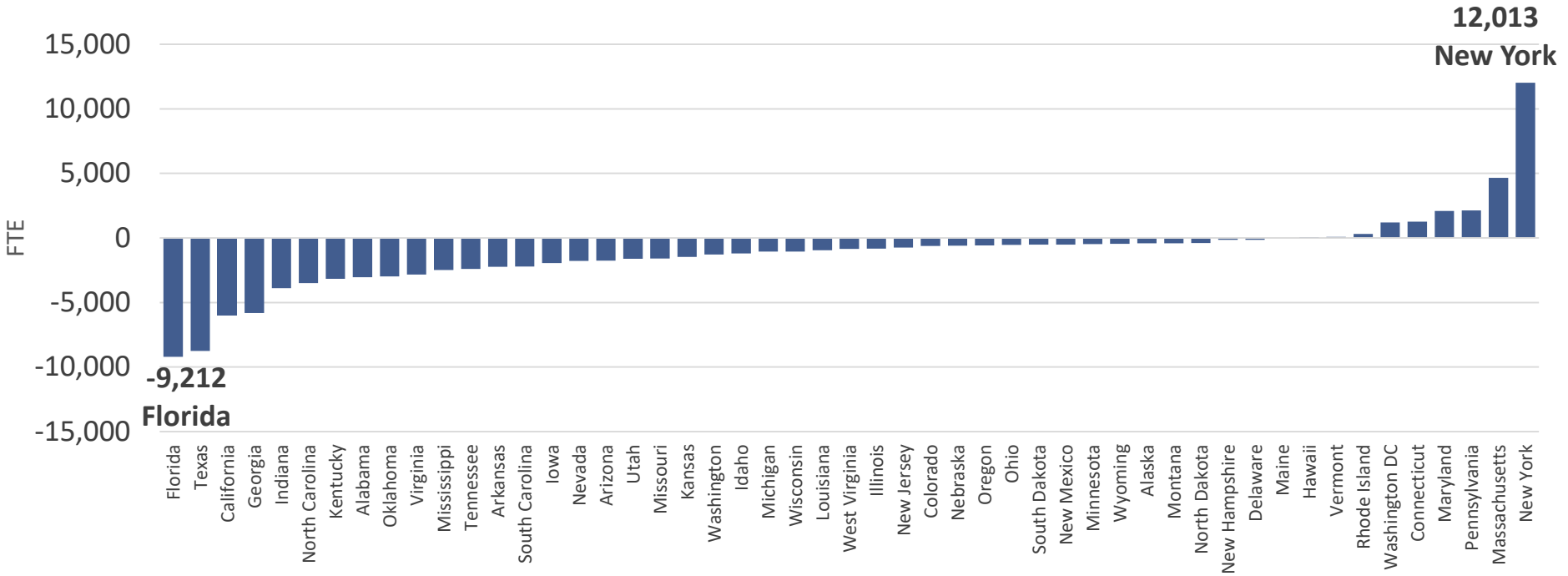
Shortage/Surplus of FTEs by State in 2030



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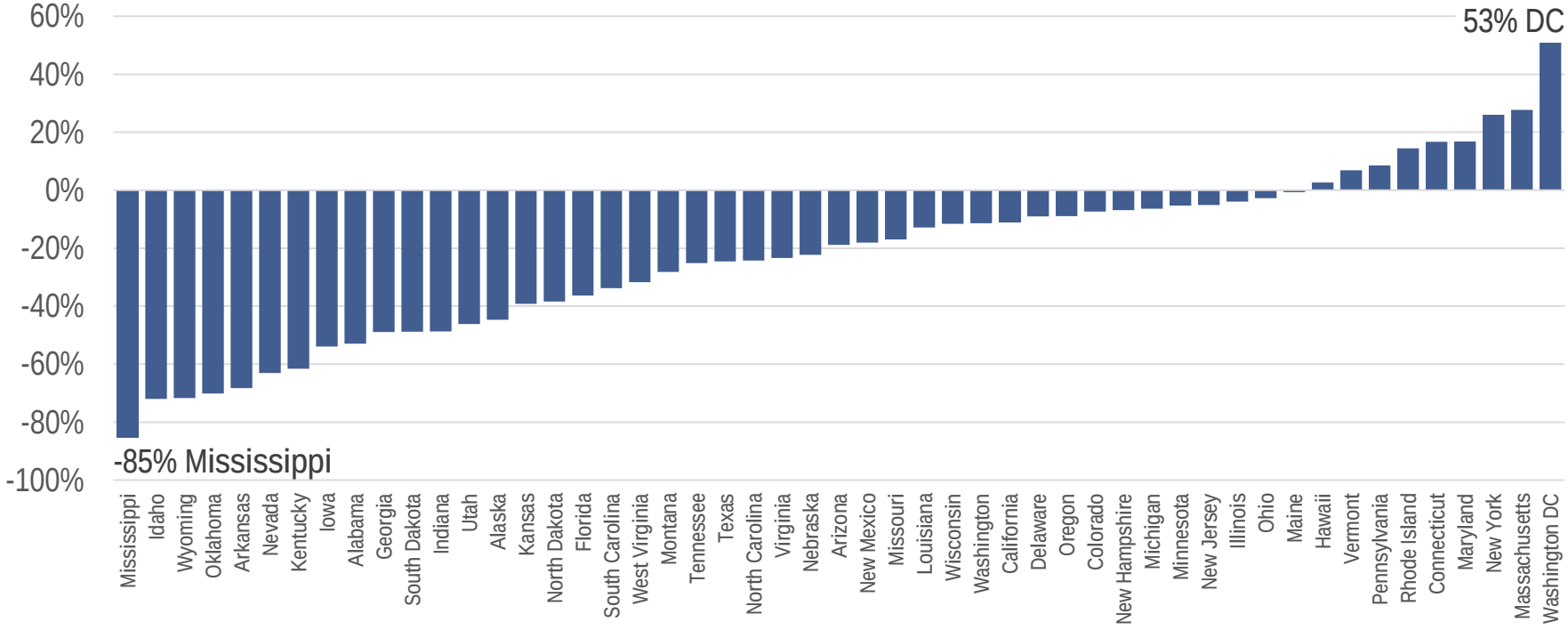
Shortage/Surplus of FTEs As Percentage of Projected Physician Workforce in 2030, by State



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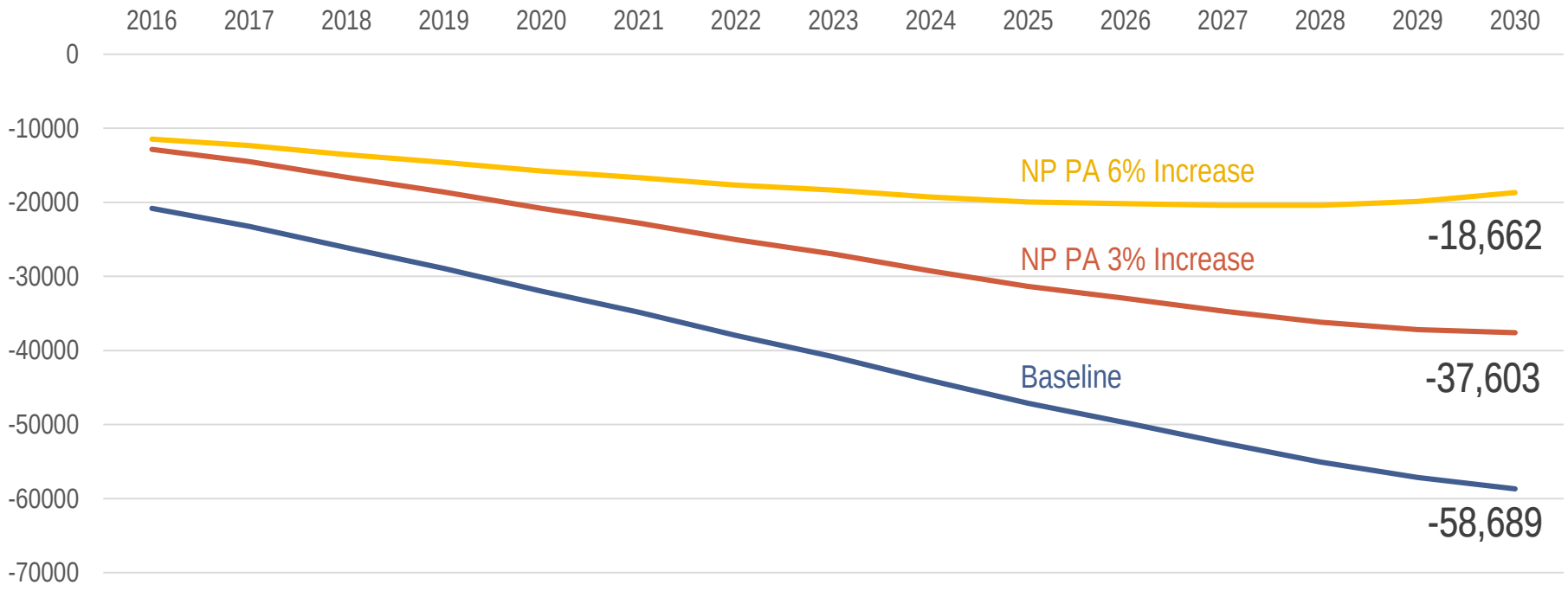
Model Includes Scenario for Increase in NP/PA Supply

- Nation's supply of NPs and PAs growing rapidly
- Modeled a 3% and 6% increase in NP & PA supply per year
- Reflects visits NPs and PAs see that would have been seen by physicians
- We did not model changes in:
  - **Substitution rate**: Increase in # of visits PAs and NPs substitute for physicians
  - **Scope of practice**: Change in volume or breadth of services undertaken by NPs and PAs across different clinical services

This project is funded by a grant from The Physicians Foundation.

Under 3% and 6% growth rates, shortage of physicians is reduced



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Future research needed:
We don't have good data on NP/PA plasticity

How will rapid increase in NP and PA supply affect:

- **NPs and PA plasticity?**
  Will they simply provide more visits for the same types of clinical services or will they widen their scopes of practice? Begin practicing in other geographic areas?
- **Physician plasticity?**
  Will physicians continue to provide the same type of services, presumably concentrating on more complex cases, or will they alter the types of services they provide?

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Future research needed: The local and dynamic nature of plasticity

- Can we use claims data to better understand factors that drive variations in local plasticity?
- Need to design quantitative and qualitative studies to understand how plasticity changes:
  - over time as the balance of services between generalists/specialists and between professions shifts
  - when new practitioners enter/exit practice in a local area
  - as care delivery and payment models change
  - technology creates new roles and eliminates others

This project is funded by a grant from The Physicians Foundation.

Our narrative and our methods can drive health system and workforce redesign

- We need to shift narrative away from physician shortages and give policy makers data to understand effect of changing payment and care delivery models on workforce
- Use plasticity matrix to simulate effect of shifting health care services (and the workforce!):
  - From specialists and generalists
  - Between professions, as roles change and distribution of care shifts
  - Between settings, as care shifts from acute, inpatient settings to outpatient settings and patient's home

This project is funded by a grant from The Physicians Foundation.

Contact info

Erin Fraher
erin_fraher@unc.edu
(919) 966-5012

Program on Health Workforce Research and Policy
http://www.healthworkforce.unc.edu

FutureDocs Forecasting Tool

https://www2.shepscenter.unc.edu/workforce/index.php

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