A Plasticity Approach that Recognizes Overlapping and Dynamic Scopes of Services in Team-Based Models of Care

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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
- overlook pressing issue of geographic maldistribution
- focus on professions, not patients
- model supply of health care services based on professional silos,not teams
- used to feed advocacy agenda of “more”, not redesign delivery of care and health workforce programs

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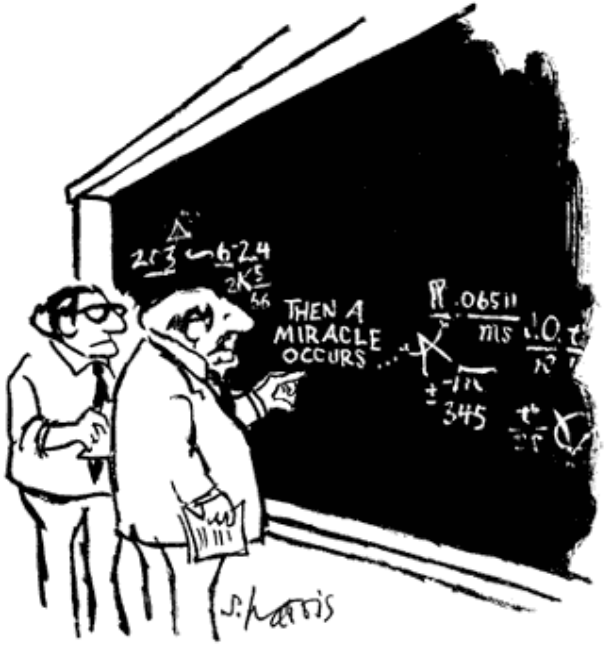
We tried to address these issues by developing a model that uses a “Plasticity Matrix” to map demand to supply



“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?

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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

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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

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An example of plasticity among physician specialties using MEPS data

Number of visits for select specialties and types of health care services in inpatient, outpatient and emergency room settings, 2016

	Mental Health	Circulatory	Digestive	Endocrine/Immunity	Genitourinary	Respiratory
Cardiology	0	38,000,000	85,114	1,160,073	248,770	598,299
Dermatology	0	120,110	71,224	97,185	17,165	78,427
Internal Medicine	1,120,315	17,975,183	3,458,440	9,920,149	1,788,739	6,199,275
Endocrinology	0	591,622	154,877	12,114,458	289,956	74,375
Family Medicine	9,957,279	56,001,735	9,160,169	30,323,947	9,697,999	40,067,469
Psychiatry	53,956,569	458,052	11,700,000	323,485	319,911	143,921
Other Specialties	11,866,400	19,124,199	19,061,658	16,670,324	55,028,338	53,111,491
Total Visits	76,900,563	132,270,901	43,691,482	70,609,621	67,390,878	100,273,257

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An example of physician plasticity for mental health visits

Distribution of mental health visits by specialty

	Mental Health	Circulatory	Digestive	Endocrine/Immunity	Genitourinary	Respiratory
Cardiology	0%					
Dermatology	0%					
Internal Medicine	1%					
Endocrinology	0%					
Family Medicine	**13%**					
Psychiatry	**70%**					
Other Specialties	15%					
Total Visits	100%	100%	100%	100%	100%	100%

How are mental health visits currently distributed across specialties?

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We use plasticity matrix to match supply to utilization and determine “workforce capacity” at sub-state levels

Model calculates ability of projected future workforce to meet projected utilization (visits) for 19 types of health care services

= supply of visits 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

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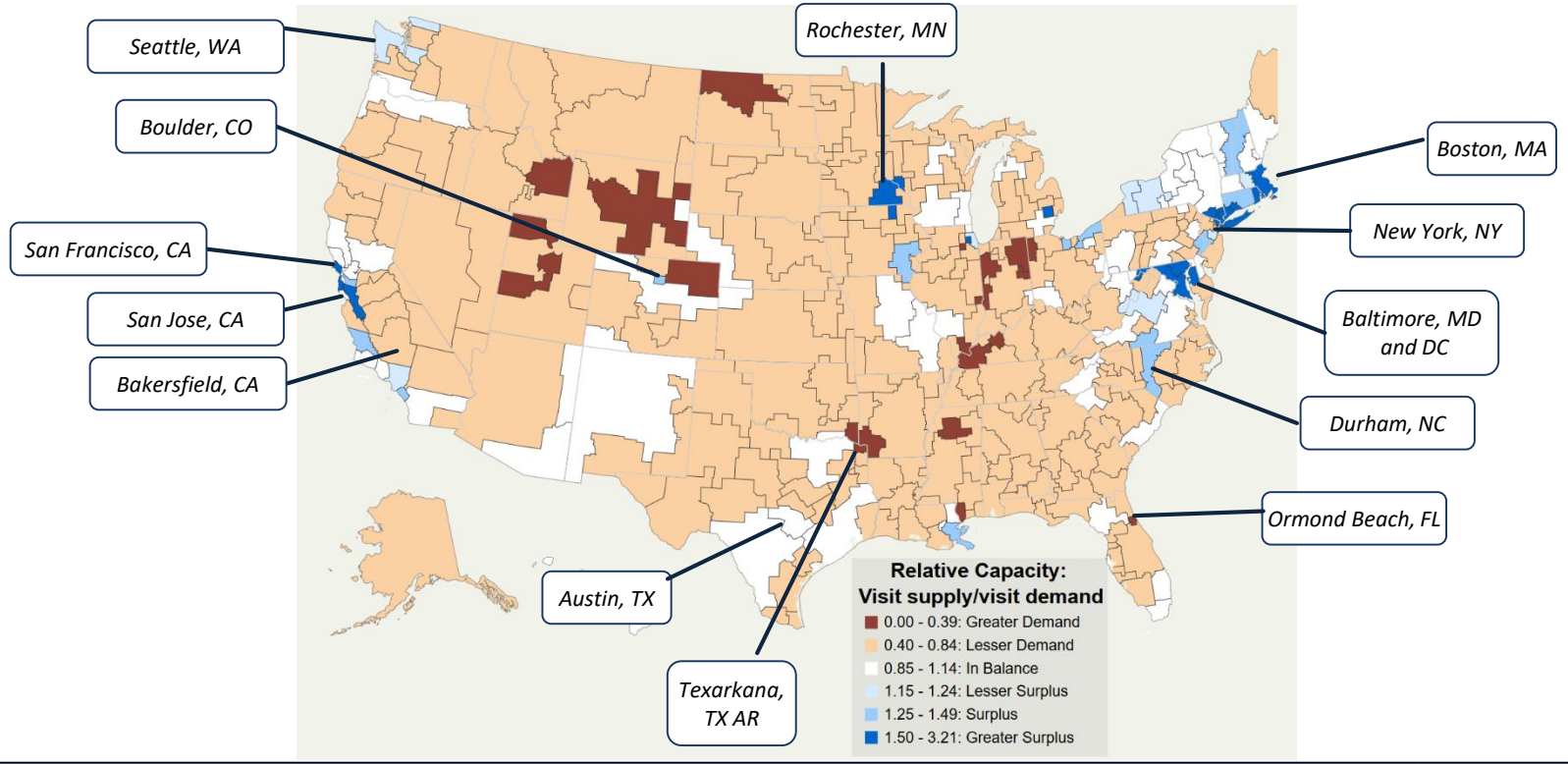
You end up with a picture that shows the projected shortage/surplus for mental health visits in 2030



Plasticity extensions

Future versions of model could account for between profession plasticity:

- How much mental health care provided in primary care could be shifted from primary care physicians to other professionals?
- Could use plasticity matrix to shift visits between professions and simulate effect of integrated behavioral health and primary care

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

Example plasticity matrix for current distribution of visits in primary care

Sample distribution of visits seen by primary care physicians

	Prevention	Diagnosis	Treatment	Chronic Disease Management	Mental Health	Care Coordination	Health promotion, education	Total
# of Visits	151	907	453	605	453	302	151	3,022
% of Visits	5%	30%	15%	20%	15%	10%	5%	100%

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What if we shifted visits from primary care physicians to other health professionals?

	Mental Health	Prevention	Diagnosis	Treatment	Chronic Disease Management	Care Coordination	Health promotion, education	Total
PC Physician	110	49	400	235	0	0	0	794
NPs	80	40	230	218	302	45	35	950
Registered Nurses	32	15	0	50	100	150	87	434
Mental health counselors	50	15	0	18	20	15	30	148
Social Workers	91	30	0	50	33	30	38	272
Marriage and family therapists	30	36	0	33	12	15	12	138
Peer support	30	0	0	0	30	20	45	125
Comm. Health Workers	30	20	0	0	40	36	35	161

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Model Strengths
(Our hopes and dreams)

We wanted to develop a model that:

- Focused on visits needed, not physicians in shortage
- Took “capacity approach” to show how different specialties/professions could meet demand vs silo-based approach
- Encouraged stakeholders to use data to redesign workforce and delivery of health care services
- Highlighted geographic disparities, not just overall supply

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Challenges of taking plasticity approach versus traditional, silo-based approach

- Can we shift the narrative away from physician shortages?
- Do we have the data needed? How do we get it?
- Do we, as workforce planners, have the right skills?
  Do we need more qualitative approaches?
- How can we engage clinicians and employers to help develop plasticity matrices where we don't have data?
- Will we face resistance from professions? Advocates?

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Future directions for plasticity matrix

- Modeling plasticity between health and social care workforce as care shifts upstream toward prevention and addressing social determinants of health
- Modeling shift to outpatient and community-based settings as care shifts away from acute settings
- Adding patient (self-management) to plasticity matrix
- Adding technology (telehealth, social media etc.) to plasticity matrix

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Questions?
Want to know more?

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