

The rural physician workforce: aiming for better access to care

Scott A. Shipman, MD, MPH

CyncHealth Endowed Chair in Population Health
Executive Director, Institute for Population Health
Creighton University

Quick introduction: My career in 3 phases

Academic PCP
(OHSU, Dartmouth)

Research in
workforce supply
variations, policy,
and impact on
access to care

Mostly, pre-2015,
with some ongoing work

AAMC
(Director of Primary Care
Initiatives; Director of
Clinical Innovations)

Clinical redesign to
improve access with
the workforce we
have

2010-2022

Creighton University
(Founding Director,
Institute for Population
Health)

Rethinking interface
of clinical care and
community to
improve population
health

Since Sept 2022

Quick geography lesson

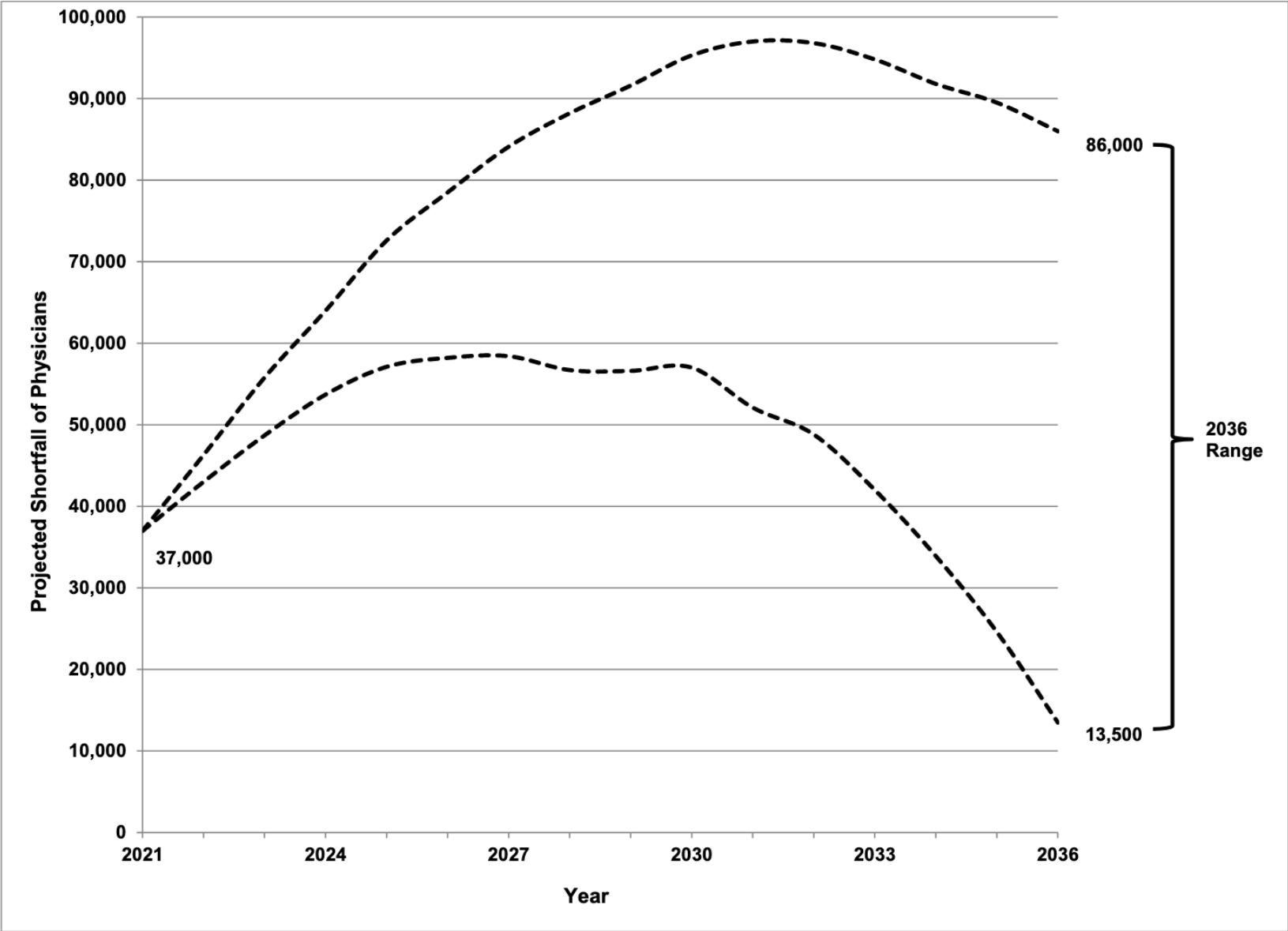


Population: 2 million
(about half in the Omaha metro area)

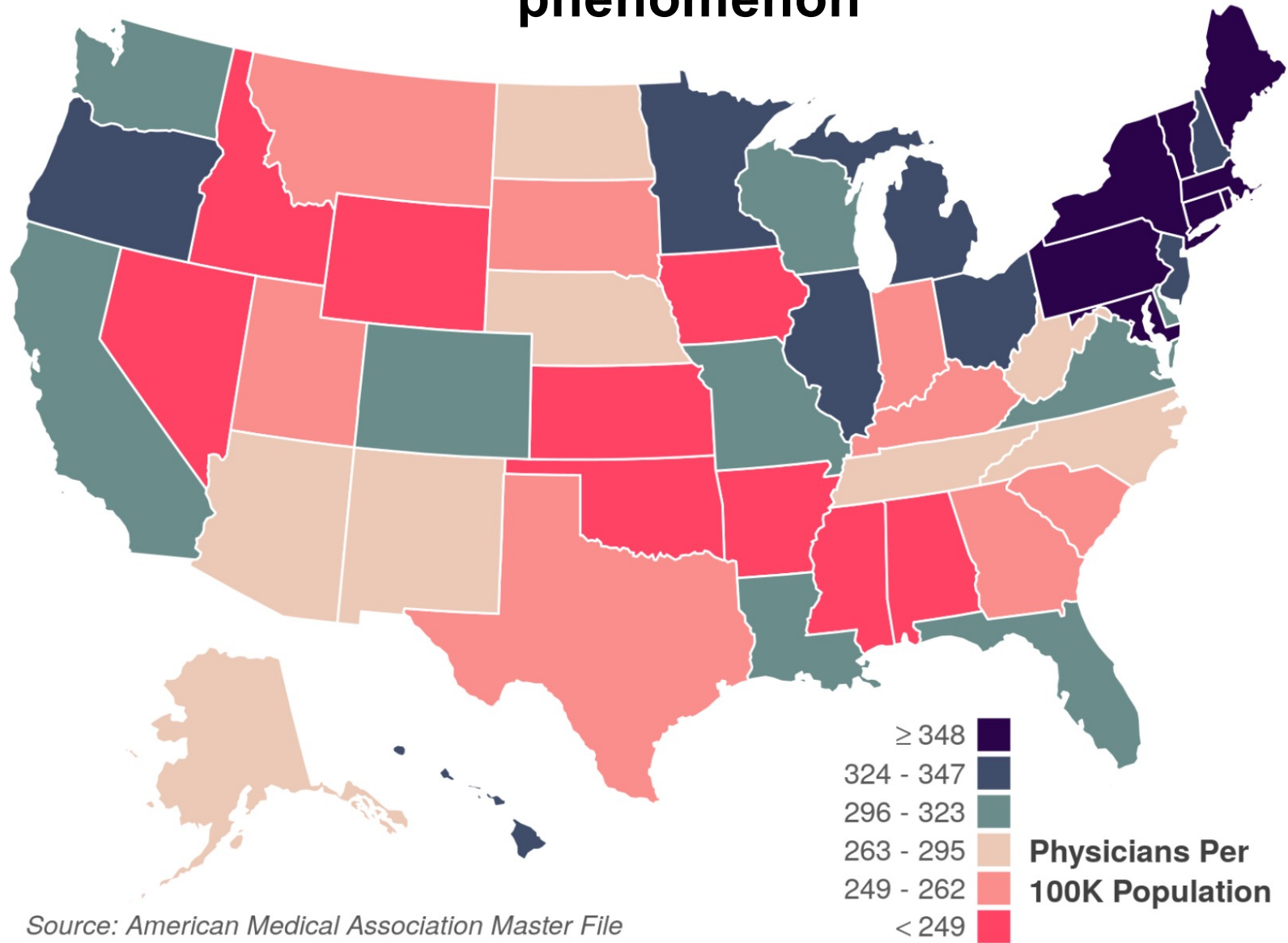
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AAMC Physician Workforce Projections, 2024

Exhibit 1: Total Projected Physician Shortfall Range, 2021-2036

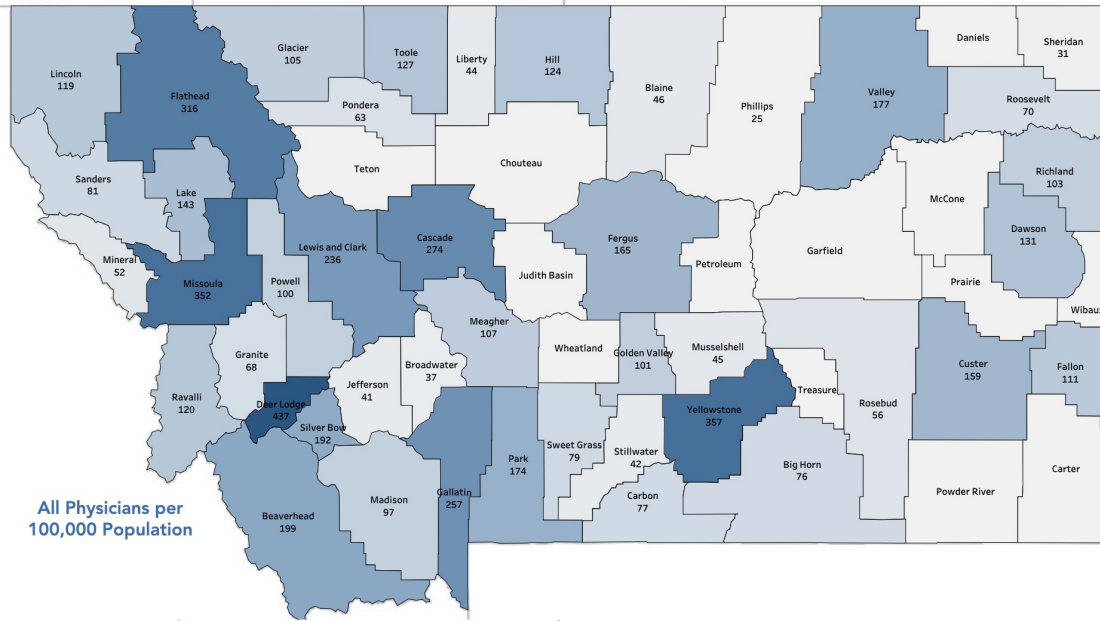


Geographic maldistribution: workforce adequacy is a local phenomenon



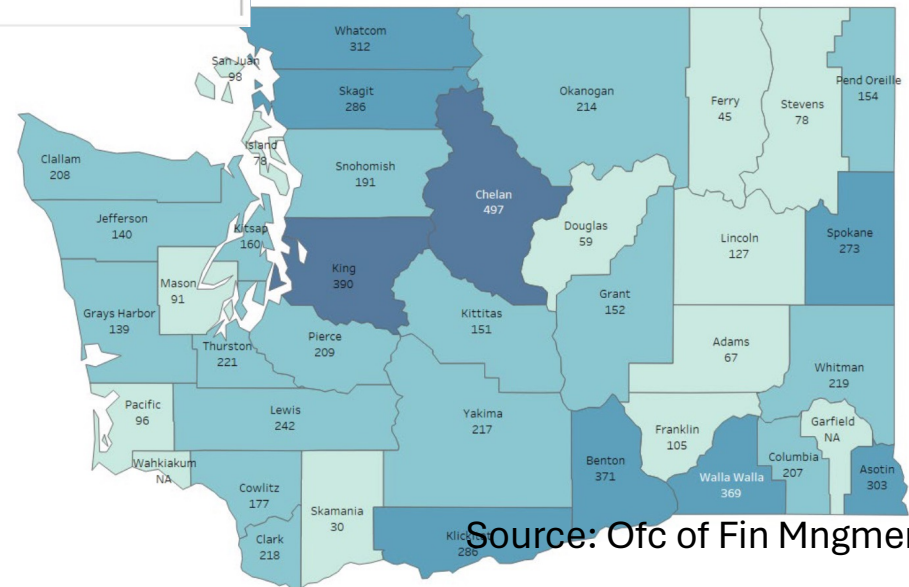
Source: American Medical Association Master File

Figure 4. Montana Physicians* per 100,000 Population in 2021, by County



All Physicians per 100,000 Population

Number of Physicians per 100,000 Population: Counties, 2020



Source: Ofc of Fin Mngmt

Source: UW Center for Health Workforce Studies

Physician supply is not correlated with population need...

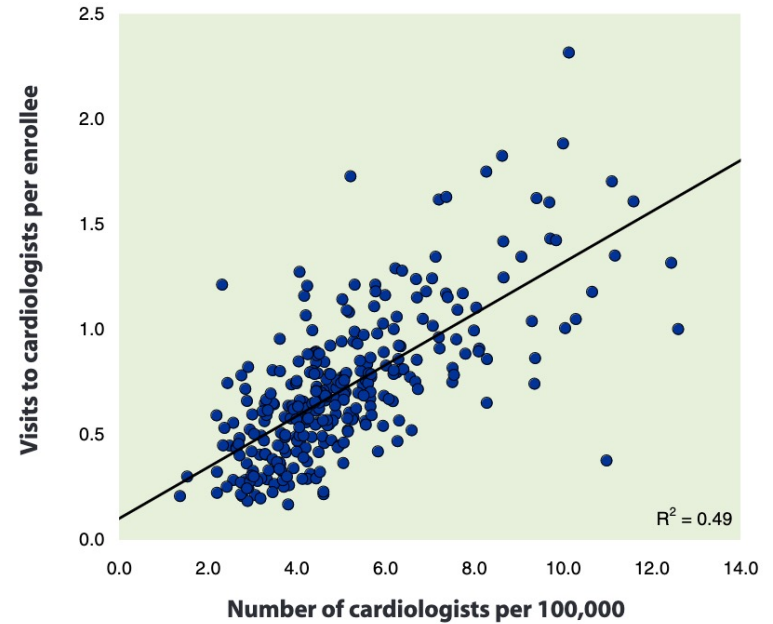
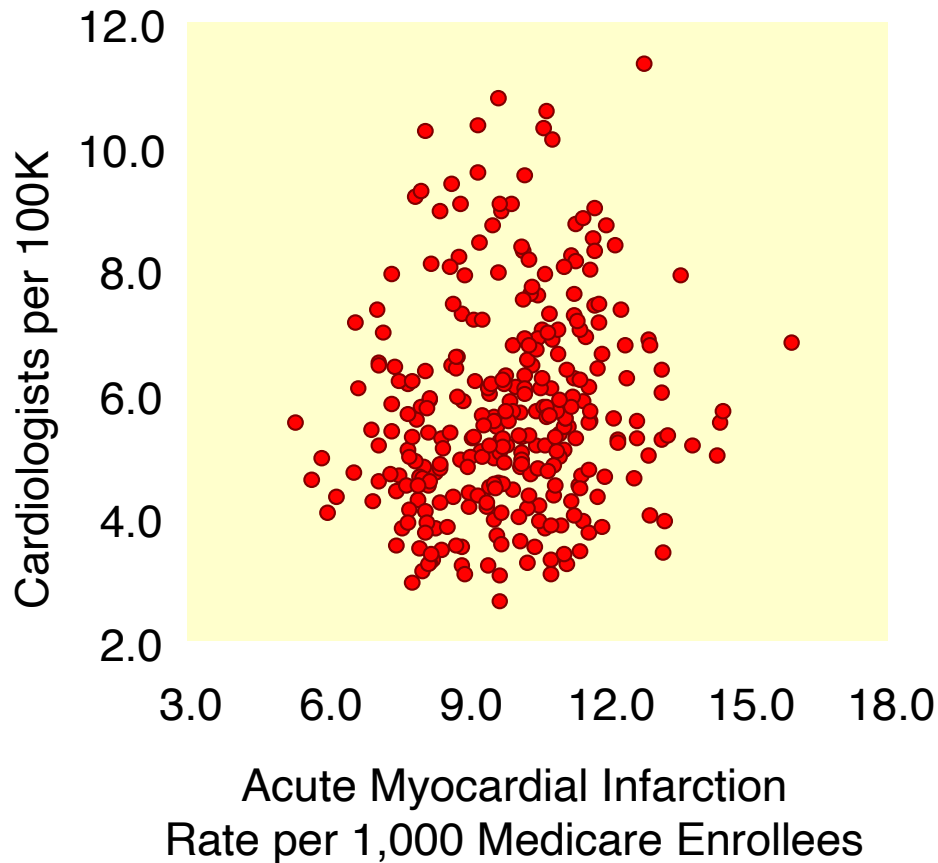


Figure 3. Association between cardiologists and visits per person to cardiologists among Medicare enrollees (1996) in 306 hospital referral regions

...but is correlated with utilization of care (and therefore costs of care)

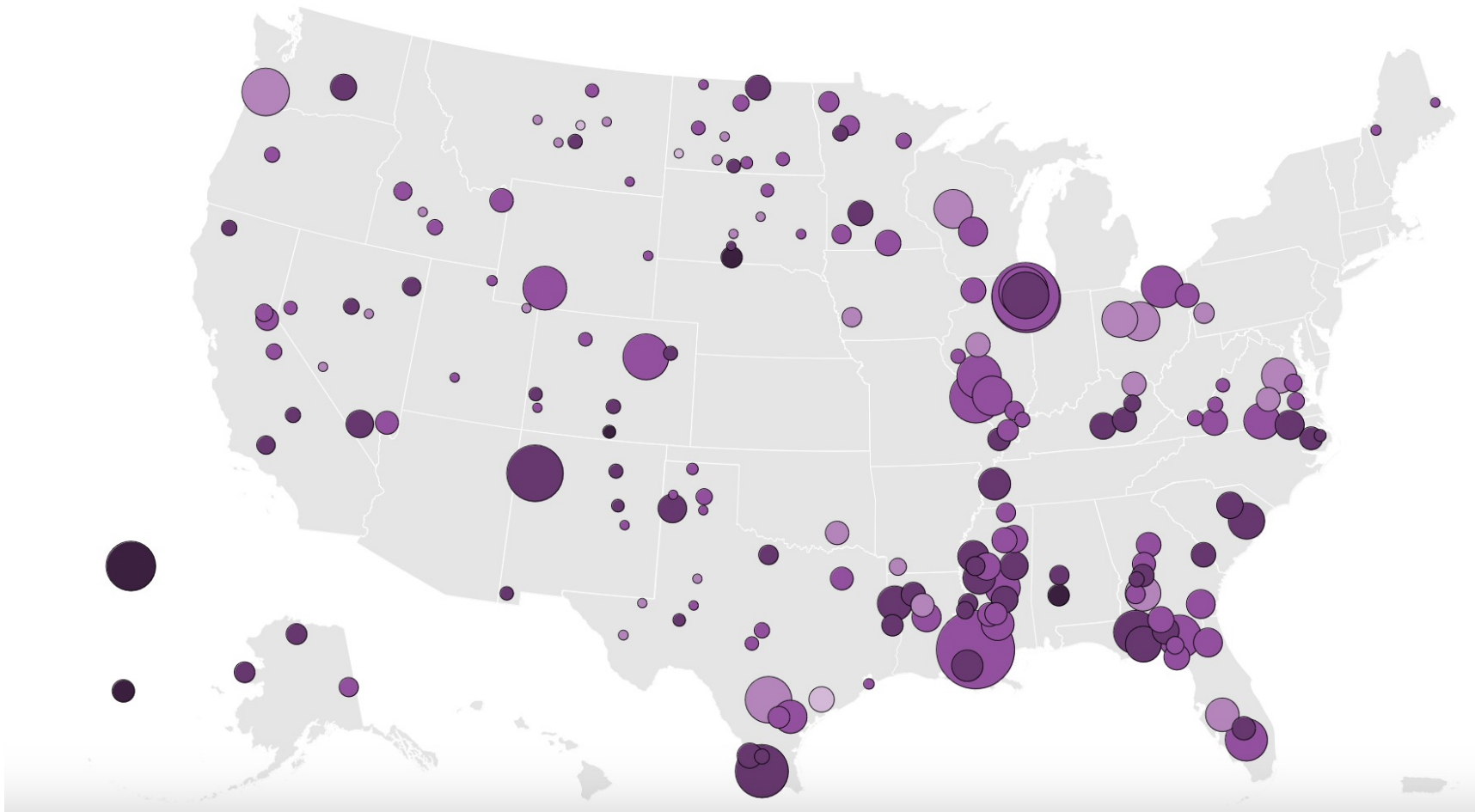
Rural workforce trends worsening

- PCP per capita supply declined in rural counties 2010-2019 (Liu, JAMA Nov 2022)
- Rural surgeon workforce declining, with 60% of rural counties without one (American College of Surgery, Mar 2024)
- In 2015, 54% of rural counties had no maternity services, with 9% lost just in previous decade (Sonenberg, JAMA Forum Jan 2023)

These areas have been primary care HPSAs for 40-plus years

The larger the circle, the more people represented: 2,500 ○ 100,000

The higher the HPSA score, the higher its priority: 1-5 6-10 11-15 16-20 >20



Source: KFF <https://kffhealthnews.org/news/article/primary-care-health-professional-shortage-areas/>

By Justin H. Markowski, Jacob Wallace, and Chima D. Ndumele

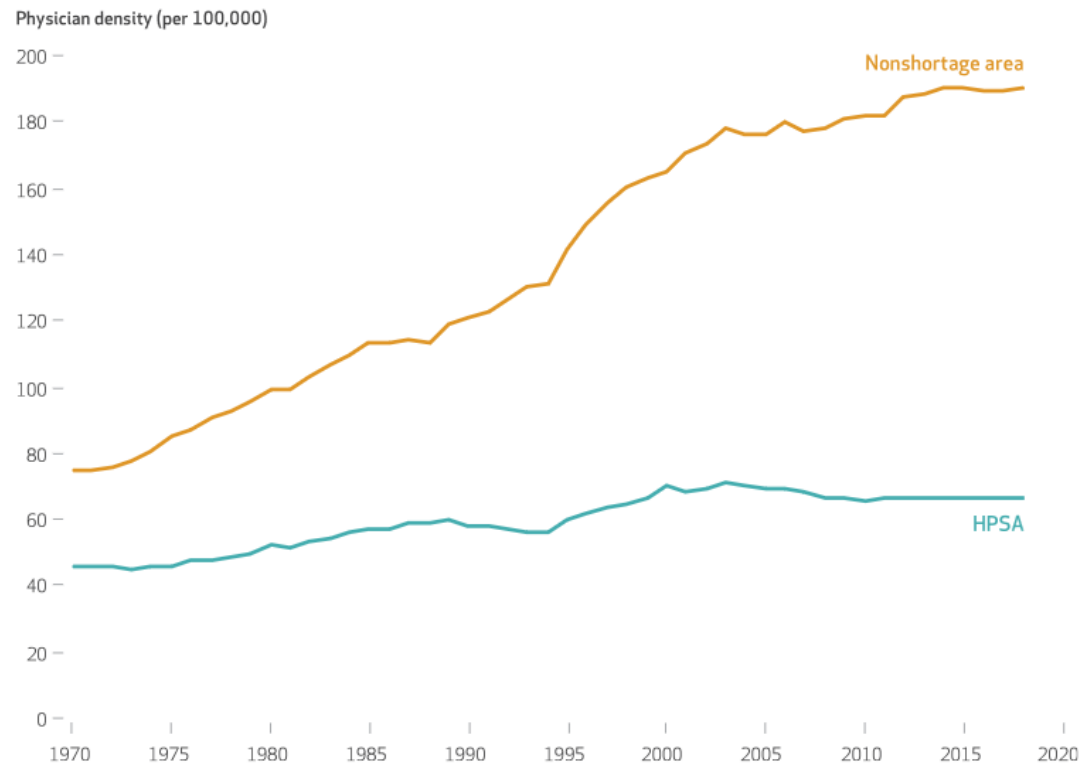
After 50 Years, Health Professional Shortage Areas Had No Significant Impact On Mortality Or Physician Density

ABSTRACT Since 1965, the US has spent billions of dollars on programs to encourage physicians to practice in high-designation of Health Professional Shortage Areas (HPSAs). Being in place for more than 1 billion dollars annually, there is little evidence of effectiveness at reducing geographic disparities in health outcomes. Using a general equilibrium model with matching, we found no significant impact on physician density or physician density from 1970 to 2018. As a result, we found that the program's design and incentives are unlikely to achieve its intended results.

Health Affairs, Nov 2023

EXHIBIT 2

Physician density by Health Professional Shortage Area (HPSA) designation status in US counties, 1970–2018



Meeting rural workforce needs: Inflection points for impact

Pathway
programs

Medical
school

GME

Practice
incentives &
innovations in
delivery

Rural background

Rural training

Addressing needs in practice



The Decline In Rural Medical Students: A Growing Gap In Geographic Diversity Threatens The Rural Physician Workforce

Scott A. Shipman, MD, MPH

Andrea Wendling, MD

Karen C. Jones, MAppStat

Iris Kovar-Gough, MA, MLIS

Janis M. Orłowski, MD

Julie Phillips, MD

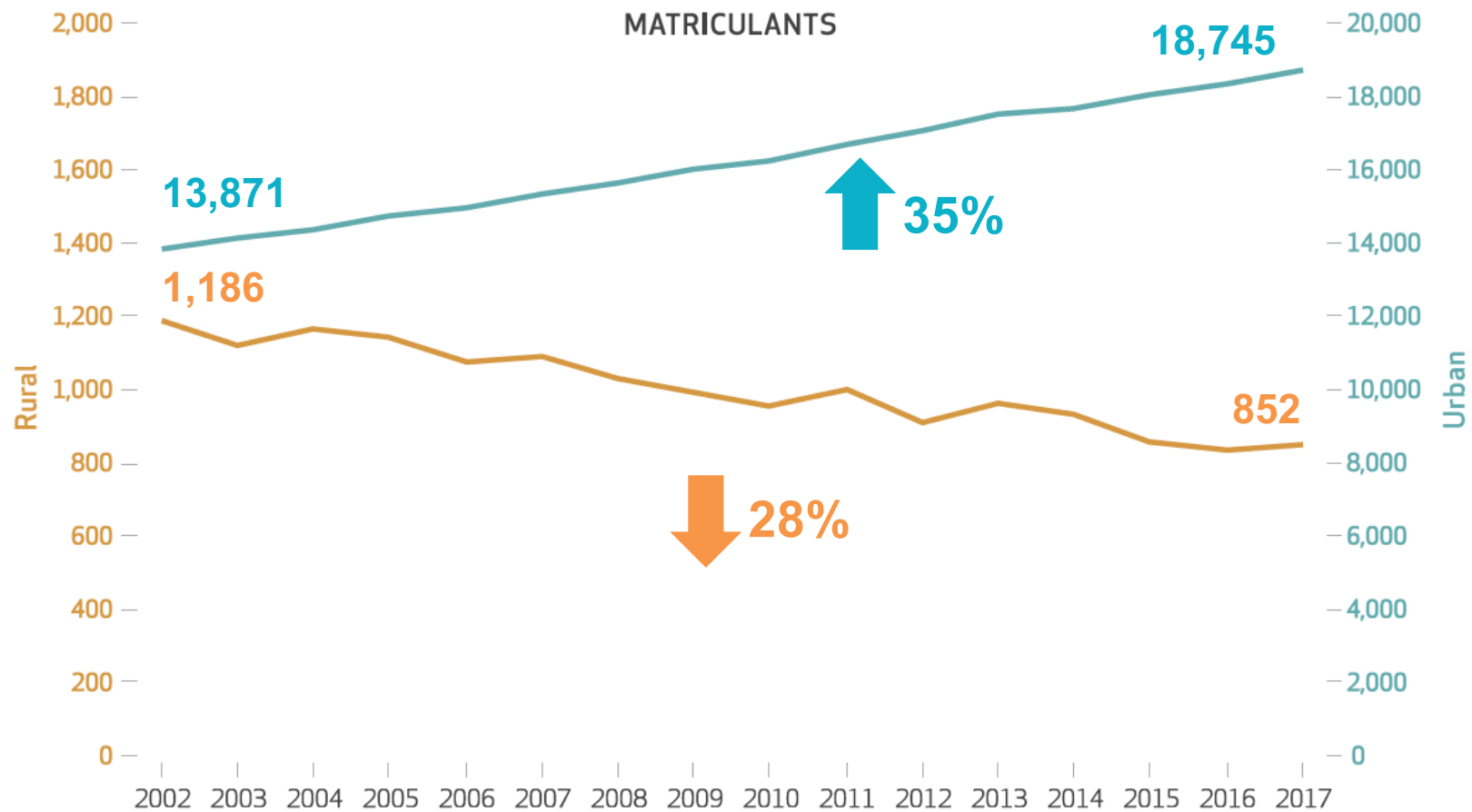
HealthAffairs

Key methods

- **Examined trends in rural and urban applicants and matriculants to all US MD-granting medical schools from 2002-2017**
- **Rural background defined using county of birth or high school graduation, based on Rural-Urban Continuum Codes (Rural codes 6 – 9)**
- **Explored the independent effect of rural background on likelihood of admission to medical school, for underrepresented racial/ ethnic minorities in medicine (URM) and non-URM applicants**

EXHIBIT 3

Matriculants to medical school for academic years beginning 2002-17, by rural or urban background



SOURCE Authors' analysis of data from the American Medical College Application Service for 2002-03 through 2017-18. **NOTE** Rural or urban background could not be ascertained for 2.2 percent of the matriculants included in the study.

EXHIBIT 4

Likelihood ratios for acceptance to medical school for academic years beginning 2002-17, by selected variables

Variable	Likelihood ratio	95% CI
Sex (ref: male)		
Female	1.17	(1.17, 1.18)
MCAT score (ref: quintile 1 [lowest])		
Quintile 2	2.98	(2.93, 3.03)
Quintile 3	4.85	(4.78, 4.93)
Quintile 4	6.33	(6.23, 6.43)
Quintile 5 (highest)	7.32	(7.20, 7.44)
Grade point average (GPA) (ref: median or below)		
Above median	1.69	(1.68, 1.70)
Urban/rural and URM/non-URM (ref: urban non-URM)		
Rural non-URM	1.13	(1.11, 1.14)
Rural URM	1.79	(1.72, 1.86)
Urban URM	1.70	(1.69, 1.72)
Highest parental education (ref: less than bachelor's degree)		
Bachelor's degree	0.97	(0.96, 0.98)
More than bachelor's degree but less than doctorate	1.02	(1.01, 1.02)
Doctorate or higher	1.07	(1.06, 1.08)

Why the decrease in rural med students?

- **18% decrease in number of rural applicants** (while urban applicants increased by 59%)
- Rural applicants appear to be **less competitive for admission**, given medical school admissions' priorities (% of rural applicants admitted dropped during study period)

Conclusions

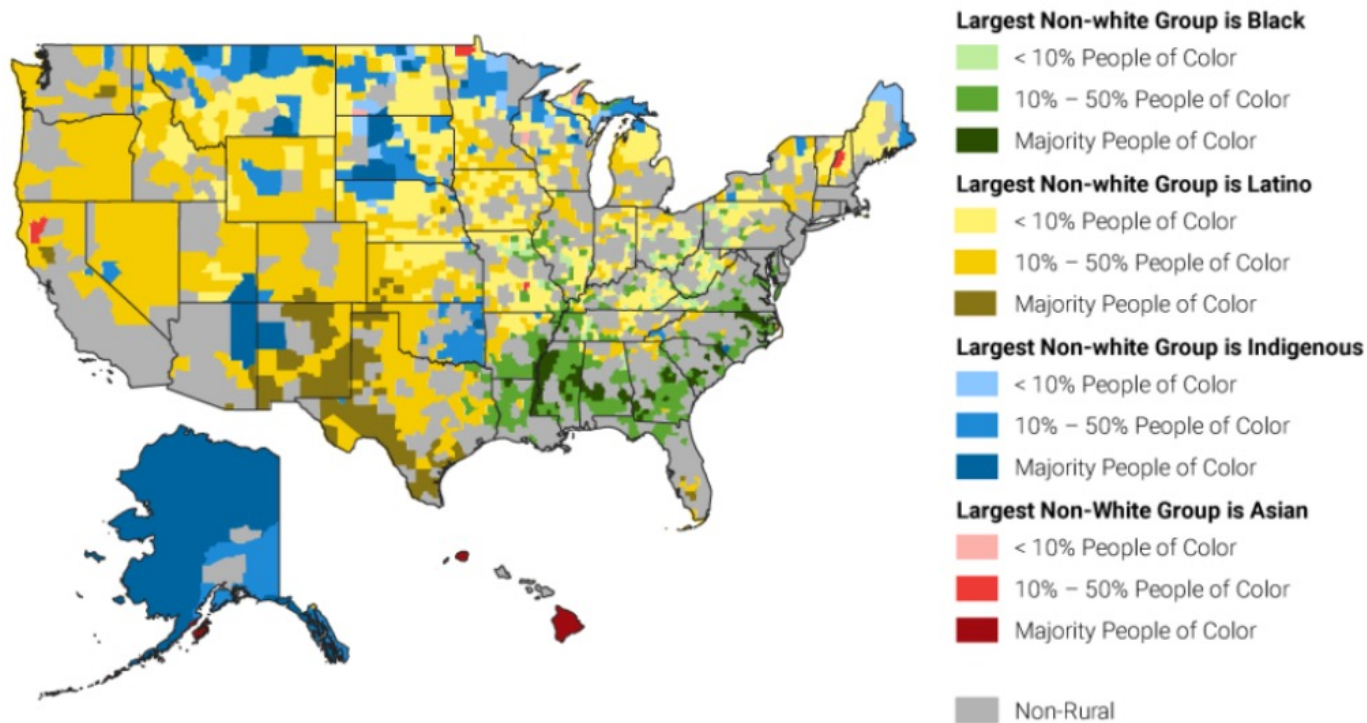
To overcome the 'geographic diversity gap,' need to **QUADRUPLE** the number of medical students from rural backgrounds

Minority rural populations are growing & have disproportionate chronic disease burden, yet **only 1 in 200** entering medical students are rural students from an underrepresented minority group

Need policies to **strengthen rural pipeline** into medicine, or be prepared to target a worsening rural workforce shortage through other means

10% of U.S. rural counties are majority non-white

Figure 2. Rural Americans of Color in 2020



Source: Brookings analysis of 2020 Census data.

B Metropolitan Policy Program
at BROOKINGS

Yet < 0.5%

of incoming MD students have rural, URM backgrounds

How best to determine applicants' rural background at admissions?

AMCAS data

- County of birth
- County of high school graduation
- Self report of childhood county
- Self report of rural upbringing

Study hypothesis: best marker of rural background will be the one most strongly linked to rural practice interest at matriculation, at graduation from medical school

Data: 2012-2017 US medical school (MD granting) matriculants (AMCAS, MSQ, GQ data)

Table 2

Logistic Regression Analysis Results for Each Model, Using Student Questionnaire (MSQ) as the Outcome^a

Rural identity variables	Likelihood of intent to practice origin using current AM		
	No. (%) identified as rural using variable	Odds ratio	95% CI
Birth county ^b	6,097 (6.1)	4.58	4.2–5.0
HS county	8,257 (7.8)	6.51	6.1–7.0
Self-identified childhood county ^b	8,784 (8.1)	6.13	5.7–6.6
Birth ^b or HS county	10,475 (9.2)	5.52	5.3–5.9
Self-declared rural origin	18,662 (16.4)	6.93	6.5–7.3
Combination variable: birth county ^b AND self-declared rural origin	4,229 (3.7)	6.63	6.1–7.2
Combination variable: HS county AND self-declared rural origin	6,604 (5.8)	7.39	6.9–8.0

Table 3

Logistic Regression Analysis Results for Each Model, Using S Graduation Questionnaire (GQ) as the Outcome^a

Rural identity variables	Likelihood of intent to practice origin using current AI		
	No. (%) identified as rural using variable	Odds ratio	95% CI
Birth county ^b	6,097 (6.1)	3.65	3.3–4.1
HS county	8,257 (7.8)	5.40	4.9–6.0
Self-identified childhood county ^b	8,784 (8.1)	5.00	4.5–5.5
Birth ^b or HS county	10,475 (9.2)	4.62	4.2–5.1
Self-declared rural origin	18,662 (16.4)	5.69	5.2–6.2
Combination variable: Birth county ^b AND self-declared rural origin	4,229 (3.7)	5.10	4.5–5.8
Combination variable: HS county AND self-declared rural origin	6,604 (5.8)	5.73	5.2–6.4

Main limitation: Best outcome would be ending up in a rural practice;
Data not available



How much interest is there among matriculating med students in rural practice?

Not interested in rural: 72%

Interested in rural: 10%

Uncertain: 18%

Interest in rural practice at med school matriculation... and graduation

Not interested in rural: 72%

Interested in rural: 10%



Interest in rural practice
at med school
graduation

Yes! 4%

Still no 87%

Unsure. 9%

Interest in rural practice at med school matriculation... and graduation

Not interested in rural: 72%

Interested in rural: 10%



Interest in rural practice
at med school
graduation

Still yes! 43%

Not anymore 44%

Unsure. 13%

Interest in rural practice at med school matriculation... and graduation

Not interested in rural: 72%

Interested in rural: 10%

Uncertain: 18%



Interest in rural practice
at med school
graduation

Yes! 8%

Nope 62%

Still unsure. 30%

**What factors in medical school
impact sustained/ increased interest
in rural practice?**

**How can we build the evidence
base of best practices,
and spread them around?**

Rural background and rural GME training

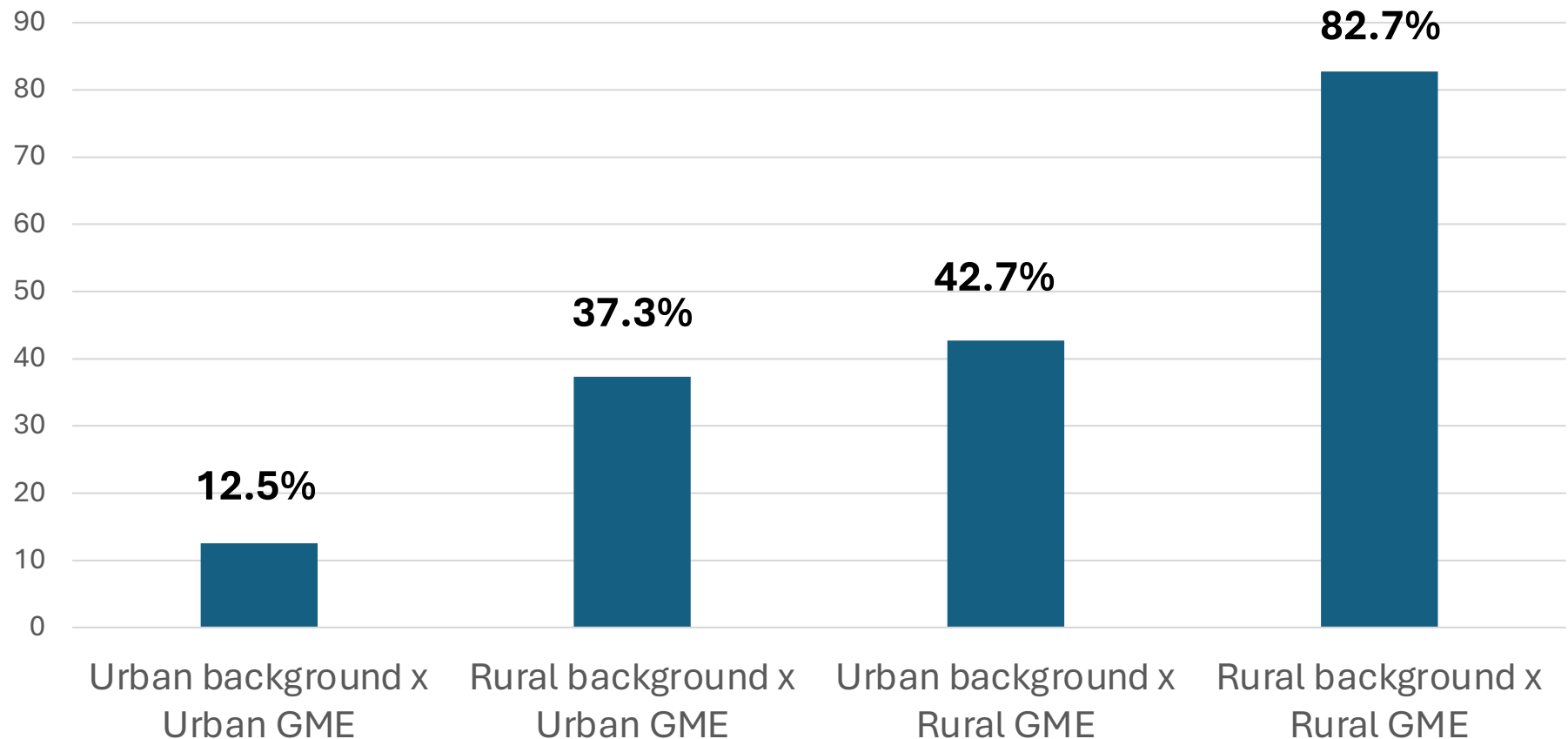
What is the independent effect of rural background and rural residency training on likelihood of rural practice in family medicine?

- Rural practice setting (3 years post-residency) from ABFM
- Rural GME training from ABFM, RTT
- Rural background from AAMC

D Patterson, S Shipman, S Pollack, H Andrilla, D Evans, L Peterson, D Schmitz, R Longnecker, *Health Services Research*, 2023 1-7.

Rural background & rural GME: a powerful combination for rural FM practice

Interaction of Rural Background and Location of GME training in predicting FM rural practice location 2016-2018



Controls for age, gender, GME Census region, IMG/USMG, DO/MD,



Considering clinical innovations in care as a solution to rural access

Enhancing access through eConsults

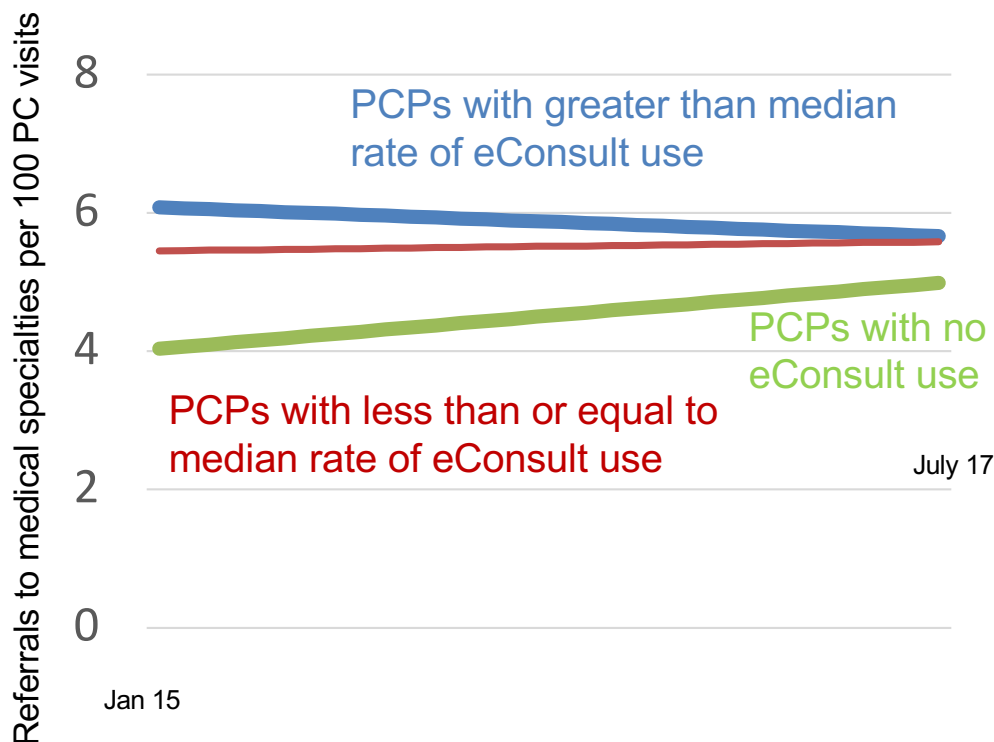
CORE®

- Useful to control costs of care (e.g. value-based care)
- Useful when access to specialists is limited
- Supports comprehensiveness in primary care
- Aligns incentives: Reimbursement to both PCP and specialist for completed eConsults



Impact on Referral Rates from Primary Care Faculty to Medical Specialties

CORE[®]



↓ 13%

Referral rate decreased by 13% for PCPs with above median rates of eConsult use, compared to peers

No compensatory increase in ED, inpt. utilization by patients

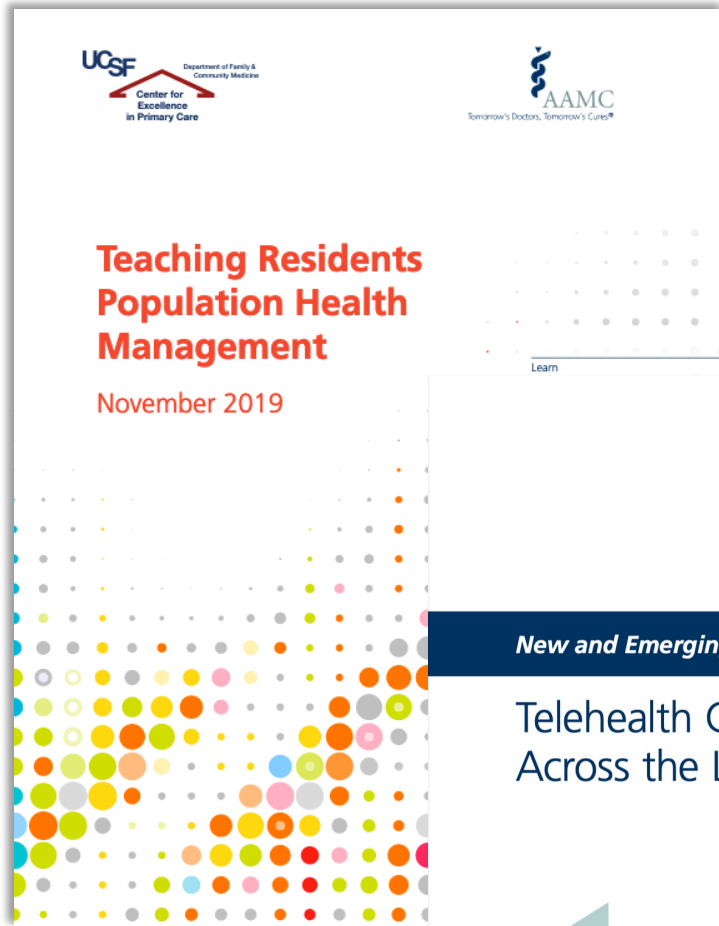
*Source: Vizient, Inc. all-payer analyses (2018)



Considering the role of technology & telehealth in rural access to care

- Mental and behavioral health access and acceptance
- Advances in distance-based physical examination, integration of care models
- Resistance among providers
- Telehealth equity issues must be considered

Resources of potential interest



UCSF Department of Family & Community Medicine
Center for Excellence in Primary Care

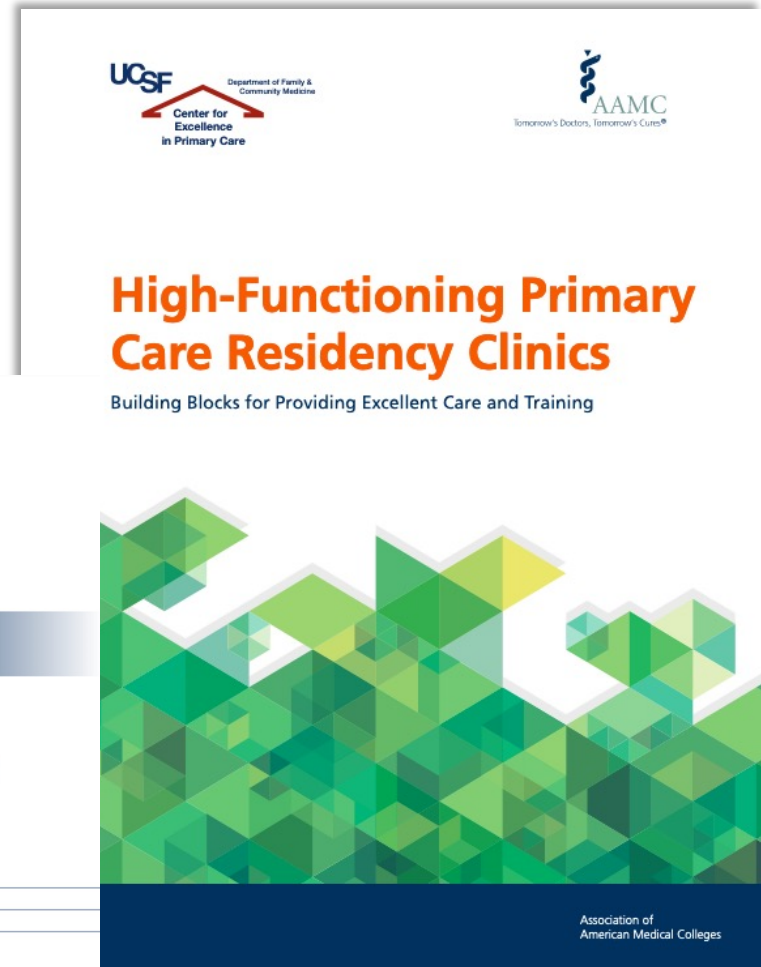
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November 2019

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The cover features a grid of colored dots in shades of blue, yellow, orange, and pink, arranged in a pattern that tapers to the right.



UCSF Department of Family & Community Medicine
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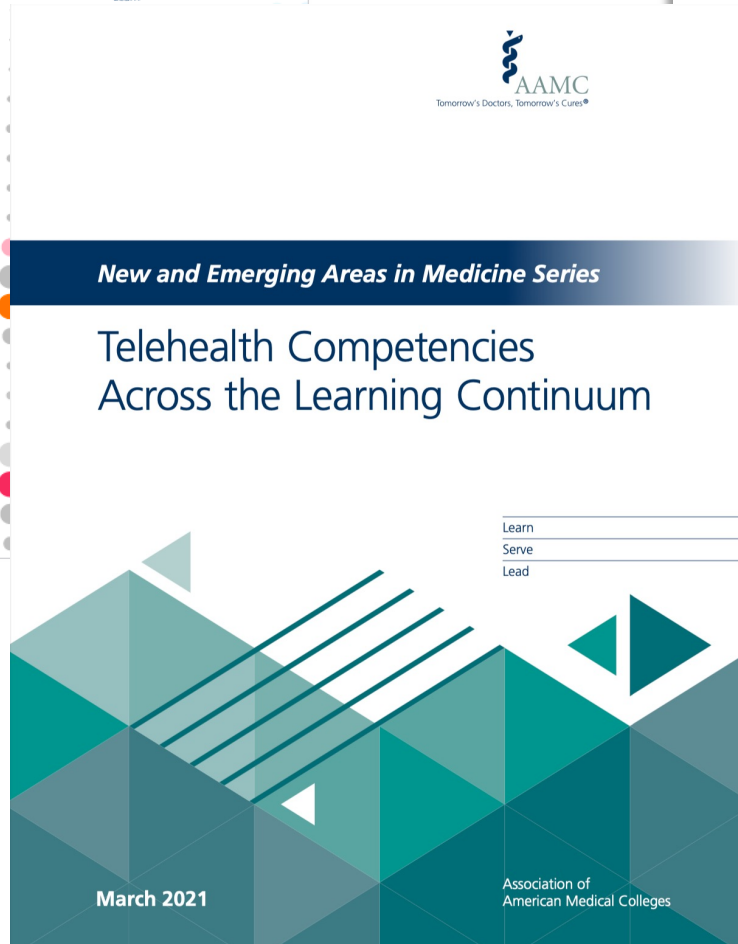
High-Functioning Primary Care Residency Clinics

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Association of American Medical Colleges

The cover features a large, abstract graphic composed of many overlapping triangles in various shades of green and yellow, creating a mountain-like silhouette.



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Telehealth Competencies Across the Learning Continuum

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March 2021

The cover features a geometric design with overlapping triangles and lines in shades of teal and blue, creating a sense of depth and structure.



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Scott Shipman, MD, MPH

scottshipman@creighton.edu

www.creighton.edu/iph

