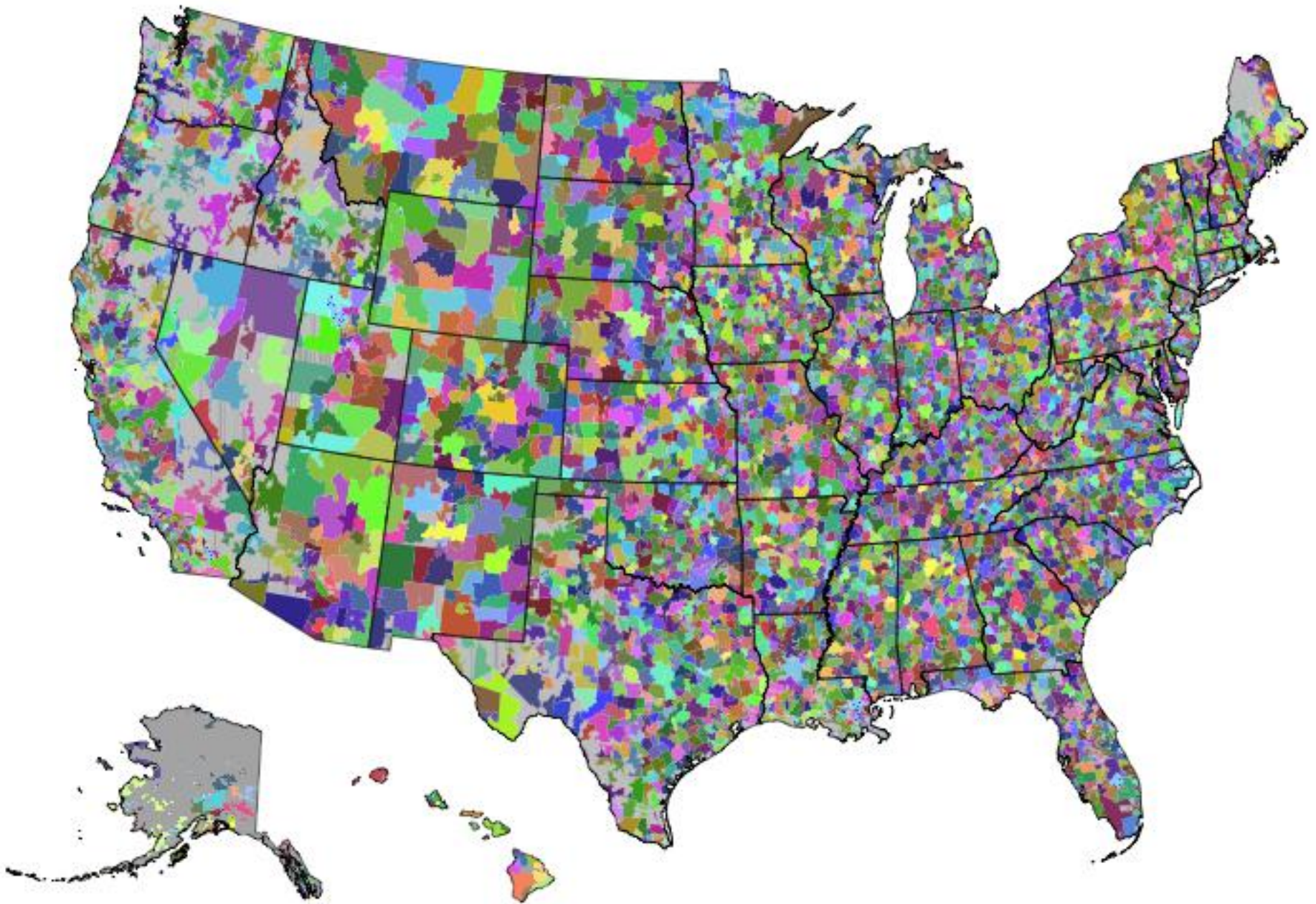


DOES THE NATIONAL SUPPLY OF PRIMARY CARE PHYSICIANS IN THE U.S. INFLUENCE MAMMOGRAPHY RECOMMENDATION AND UTILIZATION?

Tracking Regional Variation in Healthcare
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The Primary Care Service Area Project
 The Center for the Evaluation of Clinical Systems
 Commonwealth Medical Center
 Medical Management (Dean C. Goodrich, MD, MS)
 The Department of Health Administration
 Virginia Commonwealth University
 Commonwealth Management (Deborah Ann, PhD)
 Funded in part by the Health Resources and Services



Primary Care Service Areas, v2.1

PCSAs are randomly colored
 N = 6,542 (v2.1)

- Area boundary
- State boundary
- Water bodies

Data Sources:
 U.S. Census 2000 Demographic
 Boundaries
 2000 Medicare, Outpatient, and
 Provider Data

PRIMARY RESEARCH QUESTIONS

- **Are women residing in PCSAs characterized by greater numbers of primary care doctors more likely to:**
 1. **get a mammogram recommendation from a primary care doctor OR**
 2. **utilize mammography**

DATA (2005 NHIS MERGED WITH PCSA)

Goodman and Shipman, 2007; Goodman 2008; RTI Spatial Impact Data Factor, 2011

Dependent Variable			
		<i>Got Recommendation</i>	<i>Used Mammogram</i>
Total Yes	n	8,764	9,555
	%	61	66

Examples of Individual-level Independent Variables (from 2005 NHIS)

Age	Race/ ethnicity	Health status	Functional Limitations	Education level
Marital status	Usual source of care	Place of birth	Family income	#of MD visits in past year
Region of the Country	Health insurance coverage	Smoking status	Employ- ment status	Urban/ rural residence

Contextual Independent Variables Taken at PCSA level

Different measures of primary care physicians

Poverty level, % of non-Hispanic Whites who got mammography, >50% of population in MUA

Population density
Urban/suburban vs.
Towns/isolated areas

of mammography
providers and distance
to facilities

Mean Characteristics of Selected PCSA Health System Variables By Reported Recent Use of Mammography		Unweighted Sample Size	Unweighted Sample Size
		No Mammogram	Yes Mammogram
Ratio of number of OB-GYNs International Medical Grads to U.S. trained OB-GYNs in PCSA 2006		2704	5013
		.32	.27
Average distance to closest mammography provider in PCSA in 2005		3093	5582
		4.90	4.27
Number of Ob-Gyn per 10,000 PCSA civilian population in 2006		3093	5582
		1.18	1.32
% of non-Hispanic whites within PCSA who utilized mammography in 2005		3092	5581
		23.31	24.13
Number of mammography providers in PCSA 2005		2880	5270
		25.22	27.93
2005 civilian population relative to number of clinically active PCMD in PCSA		3093	5548
		1498.3	1295.3
Number of non-federal PC docs per 10,000 PCSA civilian population in 2006		3093	5584
		7.18	7.65
Number of federally qualified health centers in PCSA 2005		3093	5584
		1.66	1.59
2005 civilian population relative to full-time equivalent primary care provider in PCSA	< 1000 people per PCP	33.79%	38.15
	1000-3000 people per PCP	51.66%	50.24
	>3000 people per PCP	14.54%	11.61

Adjusted Relationship Between PCSA Variables and Outcome Measures

After Controlling for NHIS characteristics

		Saw Dr. and Test Recommended			Got Mammogram Screening		
Variable	Description	OR	CI 95%	Predicted Margin	OR	CI 95%	Predicted Margin
Population/ Full-time equivalent Primary Care Provider	<1000 people per FTEPCP [^] ≤821	1.26*	1.01-1.56	.631	[^] 1.27*	[^] 1.04-1.56	[^] .692
	1000-3000 people per FTEPCP	1.25*	1.02-1.54	.630	-----	-----	-----
	>3000 people per FTEPCP [^] ≥1696	REF	1.00	.580	[^] REF	[^] 1.00	[^] .648
Non-Fed PC docs	per 10,000 people	1.02**	1.01-1.04	.625	-----	-----	-----
OB-GYN Docs	per 10,000 people	1.10***	1.04-1.18	.625	1.11***	1.04-1.18	.666
Ratio of IMG Ob-Gyn to US OB-GYN	clinically active	-----	-----	-----	.826***	0.74-0.93	.673
% NH White Used Mammography		1.02**	1.01-1.04	.624	1.04***	1.02-1.06	.669

NHIS Characteristics Associated With Recommendation Receipt

Less Likely to receive a recommendation

More Likely to receive a recommendation

***Does not have health insurance coverage

*** >1 MD visits per year

***Asian American

***Age 50-64 years

*Family income <\$20,000

***Has usual source of care

*Non-Hispanic Black

**Reported functional limitations

**Unmarried

*Former smoker

N=8870

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

NHIS Characteristics Associated With Recent Mammography

Less Likely to receive a mammography

More Likely to receive a mammography

***Asian American

***Has usual source of care

***Less than high school education

** >1 MD visit in past year

***Unmarried

***College graduate

***Family income \leq \$20,000

**Age 50-64 years

***No health insurance coverage

*Non-Hispanic Black

***Current smoker

*Family income $>$ \$75,000

***Reported fair/poor health status

*Reported functional limitations

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Summary of Major Multivariate Findings

- Larger numbers of PC physicians at the PCSA improve:
 - ▣ Likelihood that women reported recommendation receipt
 - ▣ Use of mammography
- The effect of physician density was attenuated after a control for the percentage of NH White women who had utilized mammography in the PCSA was made
- Utilization of primary care physician visits over the past year conferred independent and additional benefits
 - ▣ Women with 1 MD visit 26% more likely to get a Doctor's recommendation

Interpretation of % NH White Women Utilizing Mammography in PC

- Primary Care Providers locate where consumer demand is strongest
- Individuals respond to the actions of other members in their community via the local health care market
- Need to model interactions among agents to capture peer and medical market effects

CONCLUSIONS

- Increasing PC physician supply may have a limited impact on receipt of a mammogram recommendation or mammography utilization if other factors are more determinant in the decision to “go to the doctor”
- In this study women were less likely to receive a recommendation or get screened if:
 - Unmarried
 - Less educated
 - Asian American
 - No health insurance
 - Low income
- (i.e. indicative of multiplicative disadvantage)