Visualizing Primary Care, Policy & Reform

Andrew Bazemore MD MPH
Health Professional Shortage Area Mapper

Health Professional Shortage Areas (HPSAs) are counties or portions of counties in the United States that have the lowest ratio of physicians to population. Learn more about primary care HPSAs in your area, and determine whether your practice might be eligible for bonus payments or other policy incentives based on location in a HPSA using our new tool:

Health Professional Shortage Area (HPSA) Mapper

THE ROBERT GRAHAM CENTER exists to...

Improve individual and population health by enhancing the delivery of primary care.

The Center aims to achieve this mission through the generation or synthesis of evidence that brings a family medicine and primary care perspective to health policy deliberations from the local to international levels.
Senator Daschle: “Other countries start at the base of the pyramid with primary care, and they work their way up until the money runs out.”

… “We start at the top of the pyramid, and we work our way down until the money runs out…And so we have to change the pyramid. We have to start at the base.”
International Comparison of Spending on Health, 1980–2005

Average spending on health per capita ($US PPP)

Total expenditures on health as percent of GDP

Expenditures vs Primary Care Score

Adapted with permission from Starfield B. Policy relevant determinants of health: an international perspective. Health Policy 2002;60:201-21.
Primary-care score vs health outcomes

*Rank based on patient satisfaction, expenditures per person, 14 health indicators, and medications per person in Australia, Belgium, Canada, Denmark, Finland, Germany, Netherlands, Spain, Sweden, United Kingdom, United States

Preventable Deaths

U.S. Health System Performance: A National Scorecard

The United States would have to improve its performance on key indicators by 50 percent or more to reach benchmark rates.

by Cathy Schoen, Karen Davis, Sabrina K.H. How, and Stephen C. Schoenbaum

US is last among industrial nations in preventable deaths (ranked 19th)

Could prevent 100,000 deaths annually

Health Affairs, Sept, 2006
Mortality Amenable to Health Care
U.S. Rank Fell from 15 to Last out of 19 Countries

Deaths per 100,000 population*

<table>
<thead>
<tr>
<th>Country</th>
<th>1997/98</th>
<th>2002/03</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>76</td>
<td>65</td>
</tr>
<tr>
<td>Japan</td>
<td>81</td>
<td>71</td>
</tr>
<tr>
<td>Australia</td>
<td>88</td>
<td>74</td>
</tr>
<tr>
<td>Spain</td>
<td>84</td>
<td>74</td>
</tr>
<tr>
<td>Italy</td>
<td>89</td>
<td>77</td>
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<td>Canada</td>
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<td>Norway</td>
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<td>Netherlands</td>
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<tr>
<td>Sweden</td>
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<tr>
<td>Greece</td>
<td>97</td>
<td>93</td>
</tr>
<tr>
<td>Austria</td>
<td>109</td>
<td>101</td>
</tr>
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<td>Germany</td>
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<td>103</td>
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<td>Finland</td>
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<td>106</td>
</tr>
<tr>
<td>New Zealand</td>
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<tr>
<td>Denmark</td>
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<tr>
<td>Portugal</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>United States</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>

* Countries’ age-standardized death rates, ages 0–74; includes ischemic heart disease.
<table>
<thead>
<tr>
<th>Country</th>
<th>DALE Rank</th>
<th>Overall Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Japan</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>UK</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Cuba</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>Canada</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>US</td>
<td>72</td>
<td>37</td>
</tr>
</tbody>
</table>

Level of Health=25%  Distribution of Health=25%
Level of Responsiveness=12.5%
Distribution of Responsiveness=12.5%  Fairness of financing=25%
Health Reform...The American Way
Zero Sum Game
HEALTH CARE REFORM WILL PUT A BLOATED, UNGARING BUREAUCRACY BETWEEN YOU AND YOUR DOCTOR!!

Insurance Industry
What is on the policy radar for primary care in the U.S.?
Growing Consensus among US policymakers around Primary Care Reform

- Pipeline
  - Workforce & Training
- Payment Reform
- PCMH
  - Reorganization around a Patient Centered Medical Home

Cholski, NEJM 11/09
Reforming the PC Workforce... or who will you find in the Medical Home?
Primary Care Workforce

- 1 FP/GP for every 3,081 persons
- 1 general internist per 2,443 adults
- 1 general pediatricians for 1,548 children and adolescents
- 238,939 primary care physicians
  - 1 for every 1,260 persons
Physician to Population Ratios
1980-2006
(Physicians per 100,000 persons)
Primary Care Shortage?

- Currently a problem of distribution, composition, and scope
  - Still concentrated in desirable areas
  - Relative shortage in underserved and rural areas, of certain demographics, and of a complete, uniform basket of services
- True for physicians, NPs and PAs
Training Pipeline Issues

- Market vs. Policy: Can Senate/House efforts to rebalance Graduate Medical Education to favor primary care overcome market realities...

- School admission policies, debt, & primary care payment, workload, & prestige all weigh against entry into PC
Status check: Family Medicine

Family Medicine Positions March, 2008

Filled by US Graduates

Positions


3,262 3,293 3,265 3,306 3,096 2,983 2,949 2,884 2,782 2,727 2,621 2,654

2,340 2,179 2,024 1,833 1,516 1,413 1,234 1,198 1,132 1,132 1,107 1,172

- Positions Offered
- Filled U.S. Seniors
Proportion of third-year internal medical residents becoming subspecialists or hospitalists is growing

Note: MedPAC June 2008

Source: Bodenheimer, T. 2006. Primary care—Will it survive? The New England Journal of Medicine 355:861-864. Copyright © 2006 Massachusetts Medical Society. All rights reserved. Updated to include years 2006 and 2007, supplied by Thomas Bodenheimer, who obtained the relevant data from The American College of Physicians.
### Student Interest

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Internal Medicine</td>
<td>2.0%</td>
</tr>
<tr>
<td>Med/Peds</td>
<td>2.7%</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>4.9%</td>
</tr>
<tr>
<td>General Pediatrics</td>
<td>11.7%</td>
</tr>
</tbody>
</table>

**Total:** 21.3%

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K. E. Hauer et al. Choices Regarding Internal Medicine Factors Associated With Medical Students' Career *JAMA* 2008;300(10):1154-1164
Income Gap?

**Figure.** Percentage of Positions Filled With US Seniors vs Mean Overall Income By Specialty

M. H. Ebell. Future Salary and US Residency Fill Rate Revisited/AMA. 2008;300

Income Disparity affects Choice

True in 1989, true now

Is that a surprise?
R.O.A.D Building

\[ r = 0.87 \]

Income change adjusted for inflation 1998-2007

- Family Medicine (-4%)
- Pediatrics (-8%)
- General Internal Medicine (2%)
- Ophthalmology (12%)
- Anesthesiology (21%)
- Dermatology (40%)
- Radiology (25%)
Reliance on International Medical Graduates

Change in Number of IMGs in Training 2002-2006

- Decline in interest among US graduates
- Growth of subspecialty positions

Source: JAMA Medical Education Issues, Ed Salsberg, AAMC
Training Pipeline Issues

- Market vs. Policy: Can Senate/House efforts to rebalance Graduate Medical Education to favor primary care overcome market realities...
- School admission policies, debt, & primary care payment, workload, & prestige all weigh against entry into PC
But there is evidence of the effectiveness of policy across the primary care pipeline.
Primary care is increasingly pushed away from broad scope
## ‘Nothing new under the sun’ – PCMH as Political Construct

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2002</td>
<td>The American Academy of Pediatrics (AAP) releases a policy statement building on the medical home concept initially described by the AAP in 1967, including an operational definition of the medical home as accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective.</td>
</tr>
<tr>
<td>November 2004</td>
<td>The Future of Family Medicine Project and the American Academy of Family Physicians (AAFP) release statements asserting that every American should have a personal medical home.</td>
</tr>
<tr>
<td>January 2006</td>
<td>The American College of Physicians (ACP) releases a policy paper called “The Advanced Medical Home” that proposes use of the medical home as a means of transforming the way primary care is delivered and financed.</td>
</tr>
<tr>
<td>December 2006</td>
<td>The Tax Relief and Health Care Act creates a legislative mandate for a medical home demonstration project within Medicare to be implemented by 2010.</td>
</tr>
<tr>
<td>February 2007</td>
<td>The AAP, AAFP, ACP, and American Osteopathic Association release a consensus statement entitled “Joint Principles of the Patient-Centered Medical Home.”</td>
</tr>
<tr>
<td>November 2007</td>
<td>The National Committee for Quality Assurance announces its Physician Practice Connections, a program that identifies the criteria a medical practice should meet to qualify as a medical home.</td>
</tr>
<tr>
<td>June 2008</td>
<td>The Patient-Centered Primary Care Collaborative estimates that 16 significant state-level or multipayer medical home demonstration projects are under way.</td>
</tr>
<tr>
<td>November 2008</td>
<td>The American Medical Association and more than a dozen specialist physician organizations have joined the four major primary care associations in endorsing the “Joint Principles of the Patient-Centered Medical Home.”</td>
</tr>
<tr>
<td>February 2009</td>
<td>“Initial Lessons from the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home” is published by the AAFP.</td>
</tr>
</tbody>
</table>
Attitude and Cultural Changes

- Team based care
- Asynchronous communication
- Population based
- Proactive
- Patient centered

Process & Structural Changes

- Open access
- EMR
- Group visits
- QI initiatives

*See also: Nutting, et.al. Annals of Family Medicine; Vol. 7, No. 3; May/June 2009*
'A low voter turnout is an indication of fewer people going to the polls'.

- George W Bush [Fmr. President USA]
“Like elaborately plumed birds... we preen and strut and display our t-values”

-Edward Leamer, UCLA Economist
Repacking Evidence for Delivery to Policymakers requires creativity

...and thinking like a 3rd grader
Meeting in the middle:
HSR and the Policymaker

- **One-pagers**: Policy briefs anchored around a single piece of evidence
- **RGC Update**: Annually updated, annotated, referenced policy evidence summaries
- **Factsheets**: State, School or Residency level
- **HealthLandscape**: GIS engine for the common man
Having a Usual Source of Care Reduces ED Visits

Stephen M. Petterson, PhD; David Rabin, MD, MPH; Robert L. Phillips Jr, MD, MSPH; Andrew W. Bazemore, MD, MPH; and Marley S. Dodoo, PhD

The recent growth in the use of emergency departments (EDs) is costly, undesirable, and unnecessary. This trend is partly due to a growing proportion of persons who lack a usual source of care. This group is increasingly likely to rely on EDs for their health care needs compared with those who have a usual source of care.

Between 1995 and 2005, the number of visits to EDs increased 20 percent, from 96.5 to 115.3 million visits.¹ A 2007 report stated that this trend compromises the quality of care in EDs.² Greater reliance on EDs is costly and contributes to uncompensated hospital care and ED closures. Most visits are avoidable with appropriate primary care. Difficulty in accessing primary care, especially for persons who are poor and publicly insured, is one explanation for this trend.

Between 1996 and 2004, the number of adults with low incomes (i.e., incomes less than 200 percent of the

**NOTE:** Data restricted to persons with at least one medical visit per calendar year; ambulatory care visits include all visits to emergency departments, outpatient clinics, and office-based sites.
Graham Center Update

Health Care Expenses

HEALTH, EDUCATION, AND DEFENSE SHARES OF U.S. GDP, 1955 - 2005

- Health
- Education
- Defense

UPDATE: Phillips 6.19.06


Message: Health care spending tracked with education spending as a percent of our economy until 1970 - the year when spending on education, health care, and defense has continued to grow at a steady pace. Information and education have been decreasing since. Nearly a half century ago, the United States spent almost equal amounts of its gross domestic product on education, defense, and health care. No longer. Now we proportion on education, but less on defense (at least prior to the Iraq and Afghanistan Wars), but much, much more on health care. Health care spending approximates education, prisons, defense, farm subsidies, food stamps, and foreign aid combined. There are some who argue that spending more on health care is a good thing if good jobs. There are others who note the relatively poor performance measures concerning health in the United States and suggest that we are spending our resources at the expense of alternative uses of capital for other worthwhile objectives. In biology, cells that grow uncontrollably and crowd out other cells are called "cancer..."
Reframing the GP for the policy audience... as Economic Stimulus?

<table>
<thead>
<tr>
<th>Impact per Family Physician/year (average)</th>
<th>$904,696</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (state to state)</td>
<td>$660,392 - $1,259,838</td>
</tr>
<tr>
<td>Total Nationwide Impact per year</td>
<td>$46,183,968,060</td>
</tr>
</tbody>
</table>
...and considering novel or effective visual display
The Power of Mapped Data
Creating Data Layers

... linking digital data to “geography”

- Street Addresses
- Streets/Rivers/Land Features
- Hospital/Medical Center/ Clinics
- Zip Codes/Counties
- Spatial Analysis – (i.e. travel times)
- Service Demand/Provider Density
Physician to Population Ratios
1980-2006
(Physicians per 100,000 persons)

- Physicians (MD) per 100,000 persons
  - All physicians
  - Sub-Specialists
  - Primary care physicians
Residency Footprint

Virginia Commonwealth University Residency Graduates

- Blackstone
- Chesterfield
- Fairfax
- Riverside
- Hanover
- Shenandoah
  - Blackstone Family Practice Center
  - Chesterfield Family Practice Center
  - Fairfax Family Practice Center
  - Riverside Family Practice Center
“Footprinting” Training Sites – Residency & Medical School Social Accountability

Graduate Practice Characteristics: 160 Graduates

<table>
<thead>
<tr>
<th>Practicing in District of Columbia</th>
<th>Graduates Practicing in HPSA’s*</th>
<th>Graduates Practicing in District of Columbia HPSA’s</th>
<th>Graduates Practicing in Rural Areas</th>
<th>Graduates Practicing in Rural District of Columbia</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 (11%)</td>
<td>41 (26%)</td>
<td>11 (7%)</td>
<td>9 (6%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
Localizing & Translating Complex Analysis...
Customizing Data: Logical Next Step

- Web-based mapping tools
  - Bridges Technology/Cost barriers for users
  - Puts ‘dormant’ data (Provider data, HPSA, Census, Political Boundaries, etc.) in the hands of grassroots primary care users and advocates

- Research & Planning Applications: Expand downstream as users multiply, data is pooled
The cursor is hovering over Missouri. The user has not selected (clicked) any state.

This area represents website where footprint tool is embedded.

This panel is open by default. Users can select the triangle to hide all but the title.

By default, just show state control. Once a user selects a state here (or by map), panel expands and shows medical schools for that state. See next wireframe for details.

There are 3 maps. Users select a thumbnail to display that map. The first map is displayed by default.

This information is displayed only when the user hovers over the map. It updates as the user moves the cursor to another state. When the cursor is not on the map, this area is blank.

National View
Here are a few sentences to describe the data on this map. Such as, shows the number of doctors going into primary care after leaving medical school. These maps use ABC data.

Legend
Medical School Graduates

Missouri
Rural Areas
HPSA
Primary Care
URM

Penetration
Graduates per Total Population

Penetration
Graduates per Population
Putting primary care clinics on the map

- Much policymaking and planning is local
- Clinicians and regional planners think in context of community & geography
- But lack tools to understand
  - Gaps in access, service delivery
  - Impacts of social determinants of health on clinical outcomes
Health Center Mapping Tool

The Health Center Mapping Tool turns your Community Health Center or clinic's data into maps of the patients you serve, the core neighborhoods that comprise your service area, and areas with the densest concentrations of your patients. Also, map U.S. Census data to find populations of interest to you.

Please select a Mapping Tool:

1. Patient Distribution ▶ More info
2. Service Area ▶ More info
3. Penetration Rates ▶ More info
4. Aggregate Service Areas ▶ More info

Other Health Center Tools

1. Map My Populations of Interest ▶ More info
2. Upload Clinical Data ▶ More info
3. My Uploaded Data ▶ More info

HealthLandscape is an interactive web atlas that allows health professionals, policy makers, academic researchers and planners to combine, analyze and display information in ways that promote understanding and improvement of health and healthcare.
Understanding WHERE We Serve
Unity Service Area (2007)

N= 77,400
(Service Area Threshold 70%)
Quality Improvement

Avoidable Hospitalizations
Ages <17 years (2002)

Unity Patients with Asthma-
Ages <17 years (2006)

(DCPCA 2003)

ICD9 used: 493
Conclusions

- U.S. Health Reform Train is speeding forward...
- Alongside a 1000 foot chasm
- On a rusty & poorly maintained track
- Primary & Preventive Care (not PHC) are nominally central to Reform
- Barring derailment, we’ll see real changes to PC Access, Payment and Infrastructure
- But not significant enough... as in Massachusetts, Cost & QI will still demand solutions
Conclusions

- We are as liable for the lack of evidence based policymaking as the policymakers
- Communication of results demands creativity and thoughtful communication
- Health Services & Outcomes vary regionally and even at the practice level... and
- Politics are local
- Consider spatial analytic tools and aspects of your work, and
- Be back here at 2PM if you want to hear more...