Introduction to Variation in Utilization of Health Care

How data can inform health policy and quality improvement

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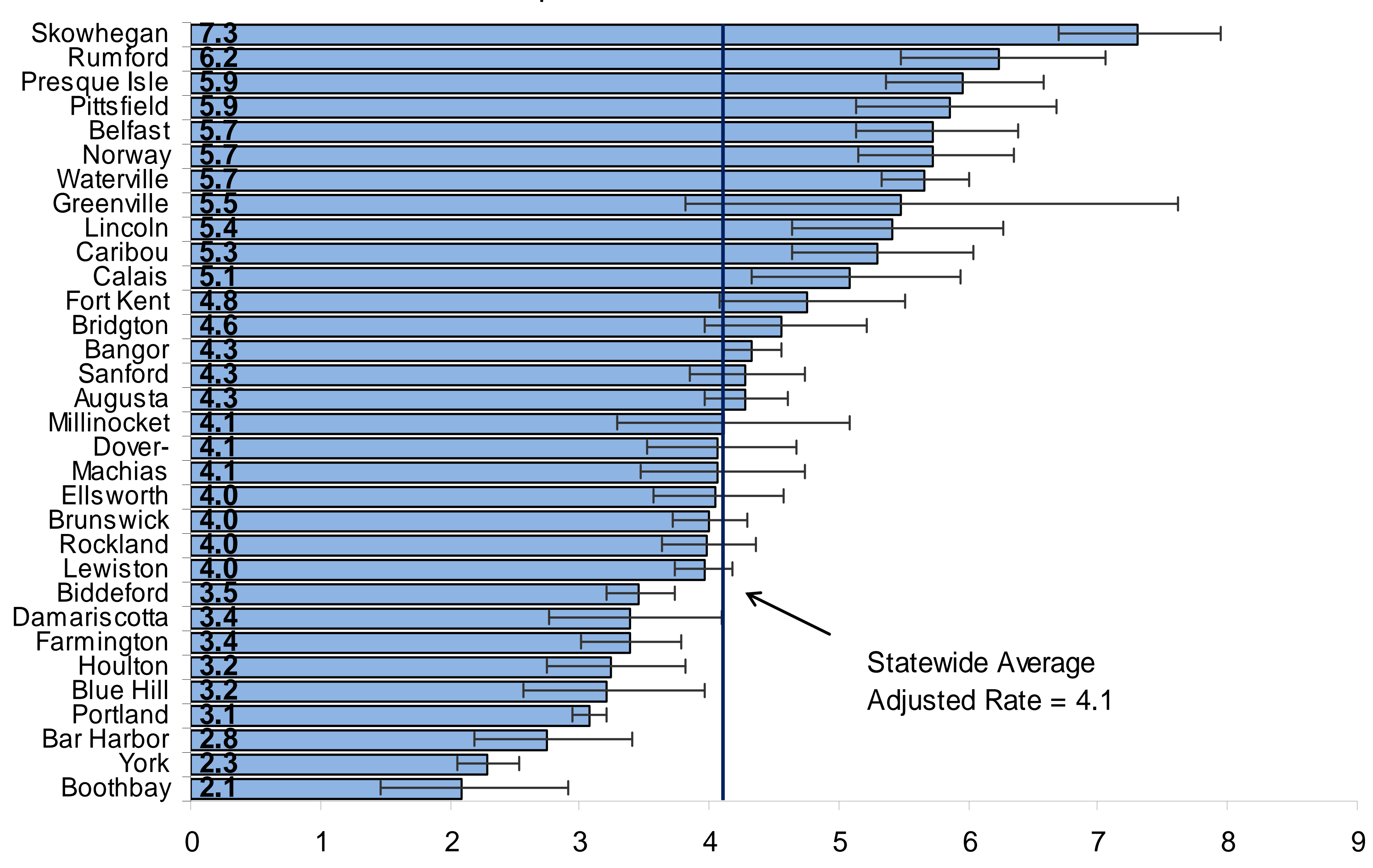
The Pioneers

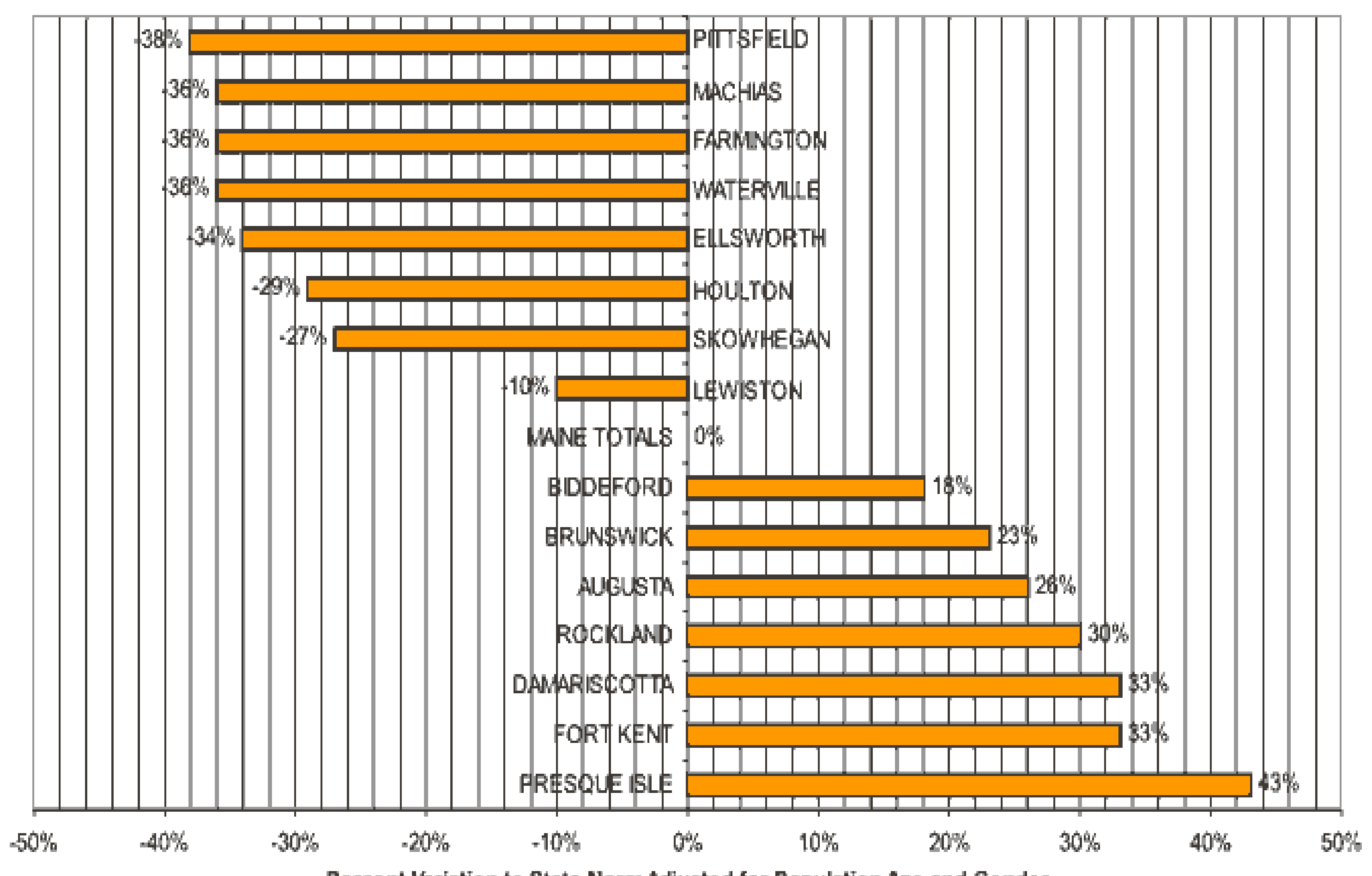
- 1960's - Milton Roemer – use of hospital beds parallels supply of beds
- 1970's – Jack Wennberg – county by county variation in tonsillectomies
  - Stowe VT – 75% by age 12
  - Waterbury VT – 20% by age 12

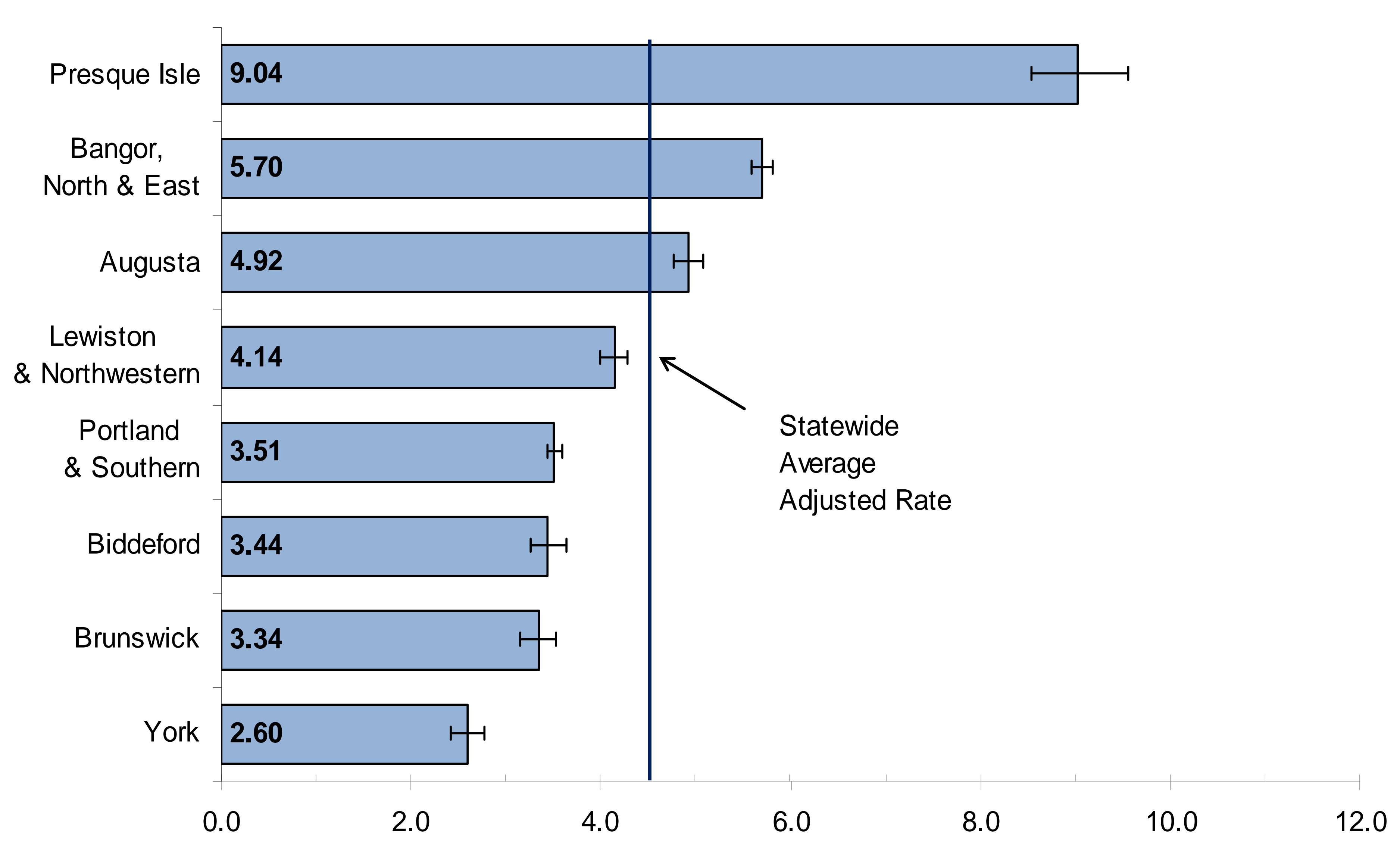
McAllen TX Compared to El Paso Medicare 2006

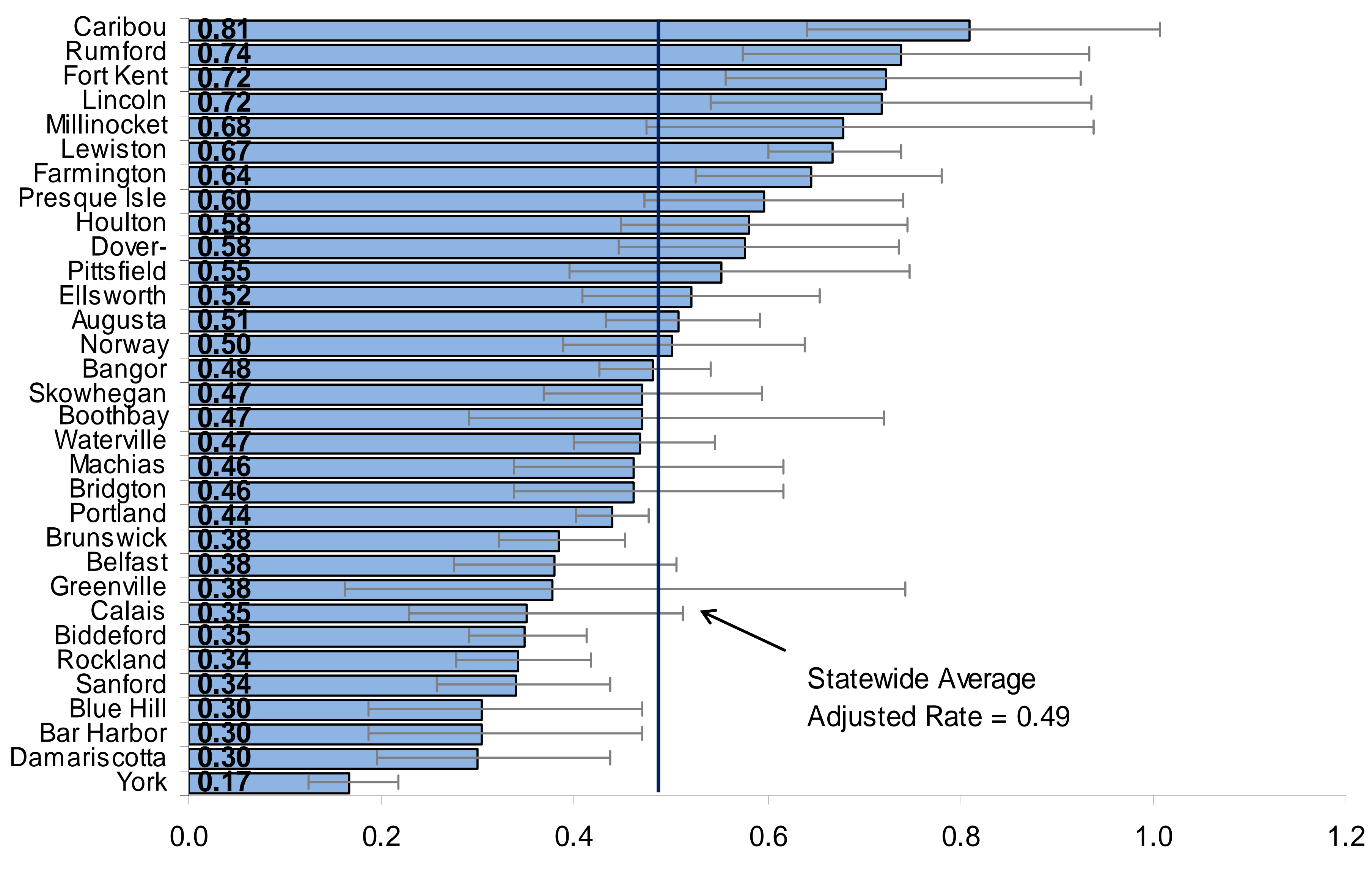
- $15,000 per enrollee compared to $7504
- 2X specialist visits
- 60% more stress tests
- 20-60% more gallbladder, knee surgeries
- 2-3X more pacemakers, cardiac bypass
- 5X more home care

Hysterectomies By Reason: All Non-Cancer (Inpatient)
Age and Gender Adjusted Rate per 1,000 Population
Maine Hospital Service Areas, 2003-2007 Combined

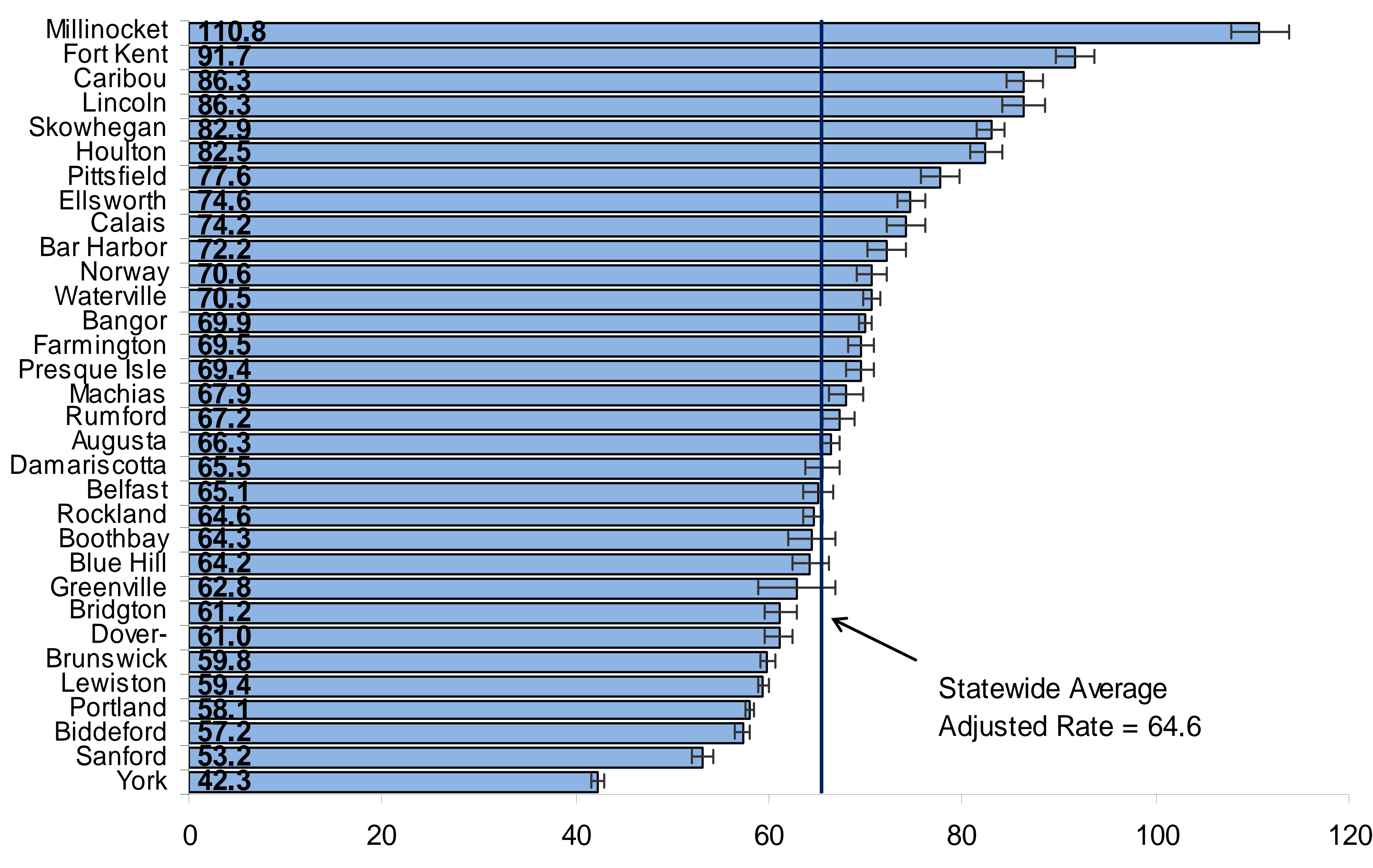



Variation in Admission Rates for Lumbar Disc Surgery Without Fusion by Hospital Service Area, Maine 1998-2002
Hospital Service Areas
-38%
PITTSFIELD
-36%
MACHIAS
-36%
FARMINGTON
-36%
WATERVILLE
-34%
ELLSWORTH
-29%
HOULTON
-27%
SKOWHEGAN
-10%
LEWISTON
MAINE TOTALS
0%
BIDDEFORD
18%
BRUNSWICK
23%
AUGUSTA
26%
ROCKLAND
30%
DAMARISCOTTA
33%
FORT KENT
33%
PRESQUE ISLE
43%
-50%
-40%
-30%
-20%
-10%
0%
10%
20%
30%
40%
50%
Percent Variation to State Norm Adjusted for Population Age and Gender

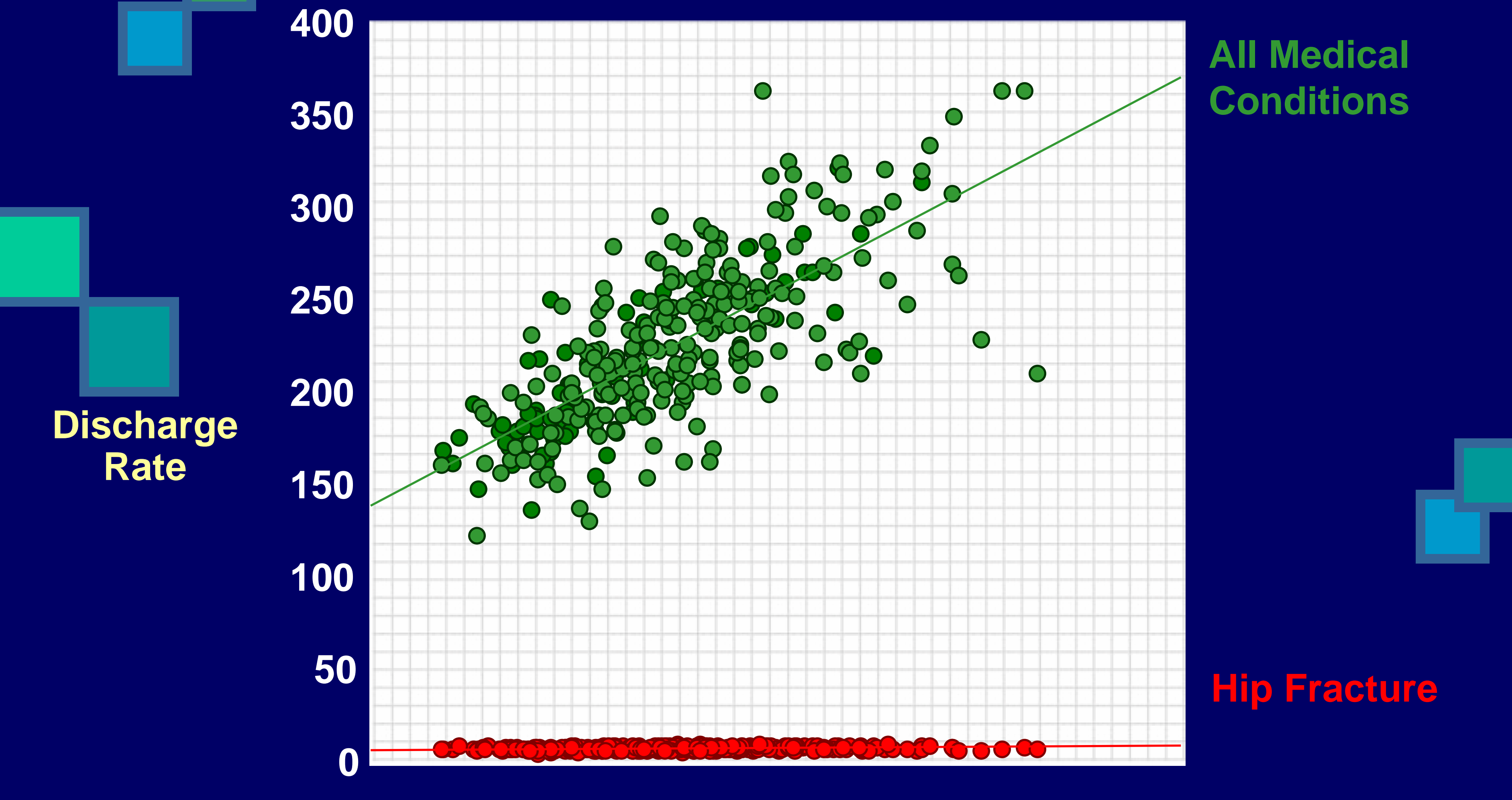

Diagnostic Cardiac Cath (No AMI) - Inpatient & Outpatient
Age and Gender Rate per 1,000 Population
Maine Cardiac Diagnostic Regions, 2002-2006 Combined
Presque Isle
9.04
Bangor, North & East
5.70
Augusta
4.92
Lewiston & Northwestern
4.14
Portland & Southern
3.51
Biddeford
3.44
Brunswick
3.34
York
2.60
Statewide Average Adjusted Rate
0.0
2.0
4.0
6.0
8.0
10.0
12.0



Carotid Endarterectomy (Inpatient)
Age and Gender Adjusted Rate per 1,000 Population
Maine Hospital Service Areas, 2003-2007 Combined
Caribou 0.81
Rumford 0.74
Fort Kent 0.72
Lincoln 0.72
Millinocket 0.68
Lewiston 0.67
Farmington 0.64
Presque Isle 0.60
Houlton 0.58
Dover- 0.58
Pittsfield 0.55
Ellsworth 0.52
Augusta 0.51
Norway 0.50
Bangor 0.48
Skowhegan 0.47
Boothbay 0.47
Waterville 0.47
Machias 0.46
Bridgton 0.46
Portland 0.44
Brunswick 0.38
Belfast 0.38
Greenville 0.38
Calais 0.35
Biddeford 0.35
Rockland 0.34
Sanford 0.34
Blue Hill 0.30
Bar Harbor 0.30
Damariscotta 0.30
York 0.17
Statewide Average
Adjusted Rate = 0.49
0.0
0.2
0.4
0.6
0.8
1.0
1.2


Adult Medical Conditions (No OB/GYN, Psych/Subs Abuse) (Inpatient)
Age and Gender Adjusted Rate per 1,000 Population
Maine Hospital Service Areas, 2003-2007 Combined
Millinocket 110.8
Fort Kent 91.7
Caribou 86.3
Lincoln 86.3
Skowhegan 82.9
Houlton 82.5
Pittsfield 77.6
Ellsworth 74.6
Calais 74.2
Bar Harbor 72.2
Norway 70.6
Waterville 70.5
Bangor 69.9
Farmington 69.5
Presque Isle 69.4
Machias 67.9
Rumford 67.2
Augusta 66.3
Damariscotta 65.5
Belfast 65.1
Rockland 64.6
Boothbay 64.3
Blue Hill 64.2
Greenville 62.8
Bridgton 61.2
Dover- 61.0
Brunswick 59.8
Lewiston 59.4
Portland 58.1
Biddeford 57.2
Sanford 53.2
York 42.3
Statewide Average
Adjusted Rate = 64.6
0
20
40
60
80
100
120

Hospital Utilization and Local Capacity: Effective Care (Hip Fracture) vs. Supply-Sensitive Services (Medical Conditions)



Residual or supply sensitive care: Services whose variation in use cannot be explained on the basis of age, gender, disease prevalence, medical evidence, or patient preference.

Low rates may point to underuse of effective care

- Persons with high blood pressure receive < 65% recommended care
- 45% of heart attack patients receive beta blockers, 61% take aspirin
- <2/3 of at risk Americans are vaccinated against pneumonia
- Only 38% of adults are screened for colorectal cancer

But more is not necessarily better

- Elliott Fisher – increased mortality rates in regions of higher intensity of care. No difference in satisfaction or functional status. Less access to primary care and fewer preventive services.
- Bob Keller – Disc-ectomy for back pain - Maine areas with high rates had poorest outcomes, areas with lowest rates had best outcomes

Outcomes in McAllen vs. El Paso

- Medicare has 25 metrics of care
- On 23/25, McAllen's 5 largest hospitals perform worse than El Paso's
- McAllen may be the most expensive in the country, 2X El Paso, but overall, not better quality of care

Why more may not be better…

- More providers=more fragmentation=no one takes responsibility for whole person
- More providers=more procedures=more adverse side effects
- More providers competing = treatments on persons with less severe conditions where risks outweigh the benefits
- Focus on emergency and hospital services and procedures instead of primary and preventive care, e.g. cholesterol lowering drugs, aspirin that would eliminate the need for the emergencies and the surgeries.

Maybe the patients are sicker…

El Paso and McAllen share same

- Border location
- Poverty
- Number of illegal immigrants
- Number of unemployed
- Number of non-English speakers
- Health risk (smoking, obesity, etc.)

Even if the patients are not the biggest cause of variation….

- Race, gender, age and severity of underlying illness can lead to variation across populations
- Low rates in some populations may signal under-use of effective preventive care or lack of access for specific sub-groups
- In some instances, patient preference may affect utilization

Major cause of variation is variation in the provider system

Supply sensitive care: bed capacity, number of specialists, workforce culture and the way our system is organized

If you build the beds, they will be kept full

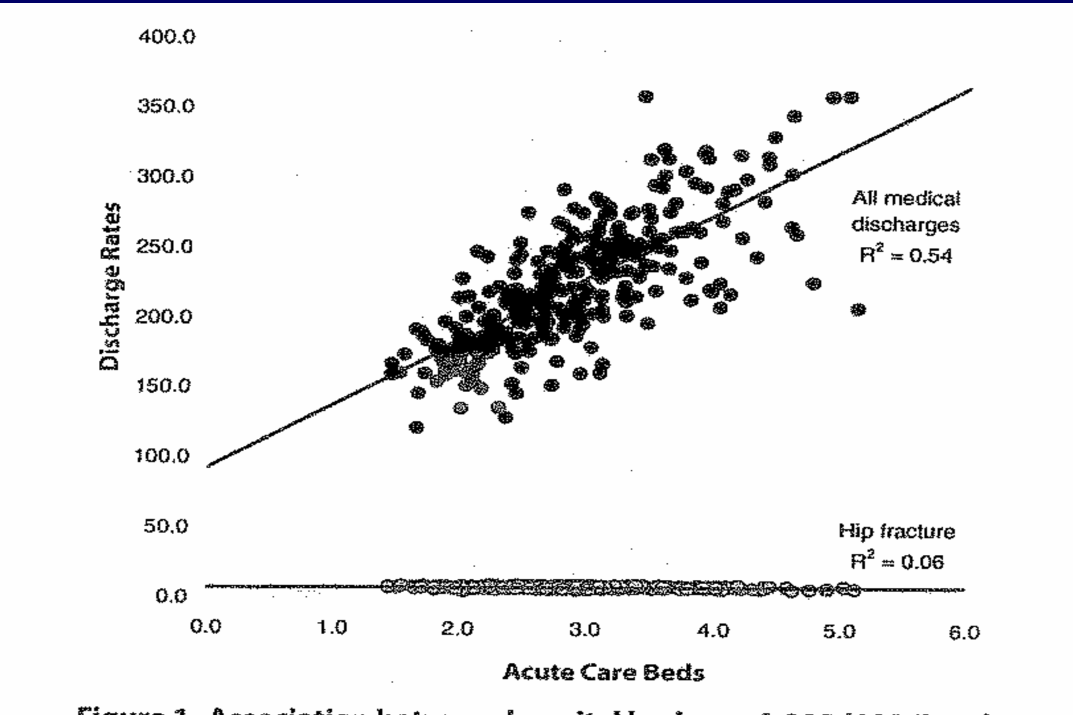


Figure 1. Association between hospital beds per 1,000 (1996) and discharges per 1,000 (1995-96) among Medicare enrollees in 306 hospital referral regions

Specialist visits increase with number of specialists

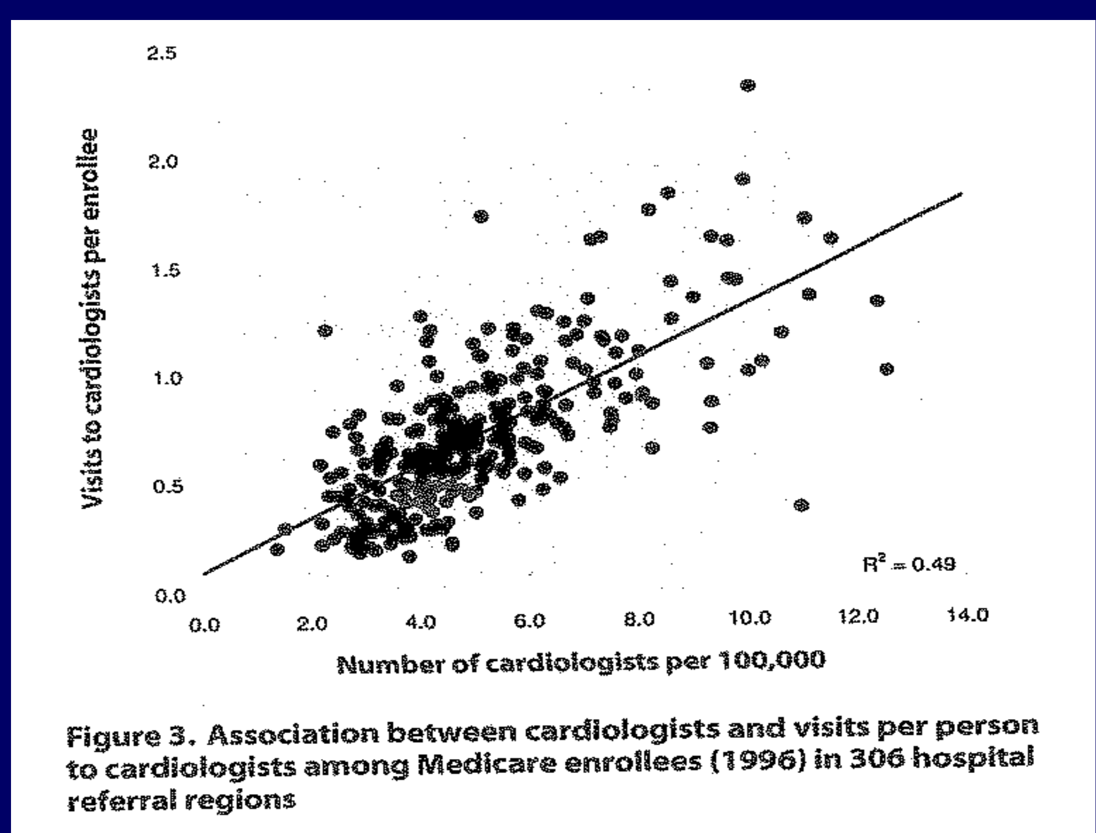


Figure 3. Association between cardiologists and visits per person to cardiologists among Medicare enrollees (1996) in 306 hospital referral regions

Variation among providers

- Less well trained providers unfamiliar with best practices
- Focus on only a specialty part of the whole: knee surgeons do knee surgery
- Sometimes the science is unclear (e.g., breast and prostate cancer)
- Lack of access to data on outcome or variation

Our health care system

- Lack of infrastructure and systems at community level to deliver continuity of care and preventive care
- Fee for service structure incentivizes use of beds, procedures, specialty visits

Does this data about the health system matter for mental health?

- Urban Institute study – 23 states – children enrolled in Medicaid
- Mean % of children with a mental health diagnosis: 7.7%
- Lowest rate of children with a mental health diagnosis: Texas - 5.3%
- Highest rate of children with a mental health diagnosis: Maine – 17.2%

Variations in expenditures

Lowest: Louisiana

- 14.3% of total FFS child expenditures
- $202 per child per year

Highest: Maine

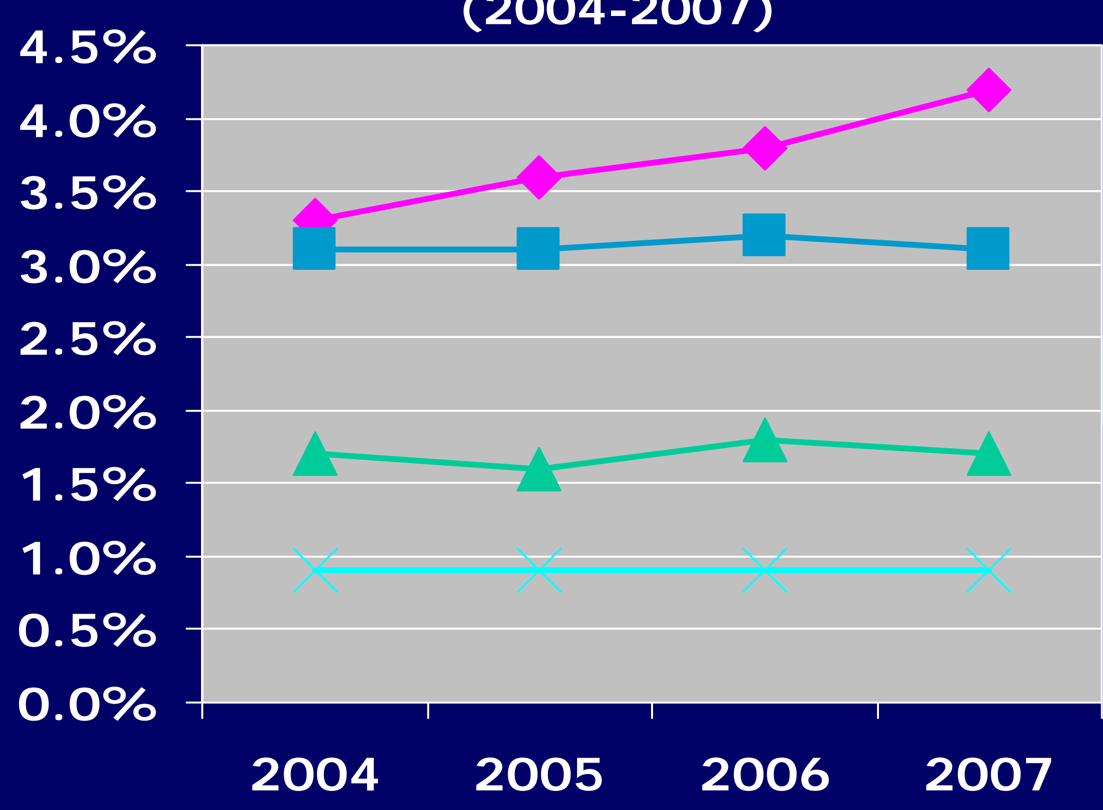
- 61.6% of total
- $2235 per child per year

AP Use Rate 0-18 Years

at least one month MaineCare eligibility

Maine

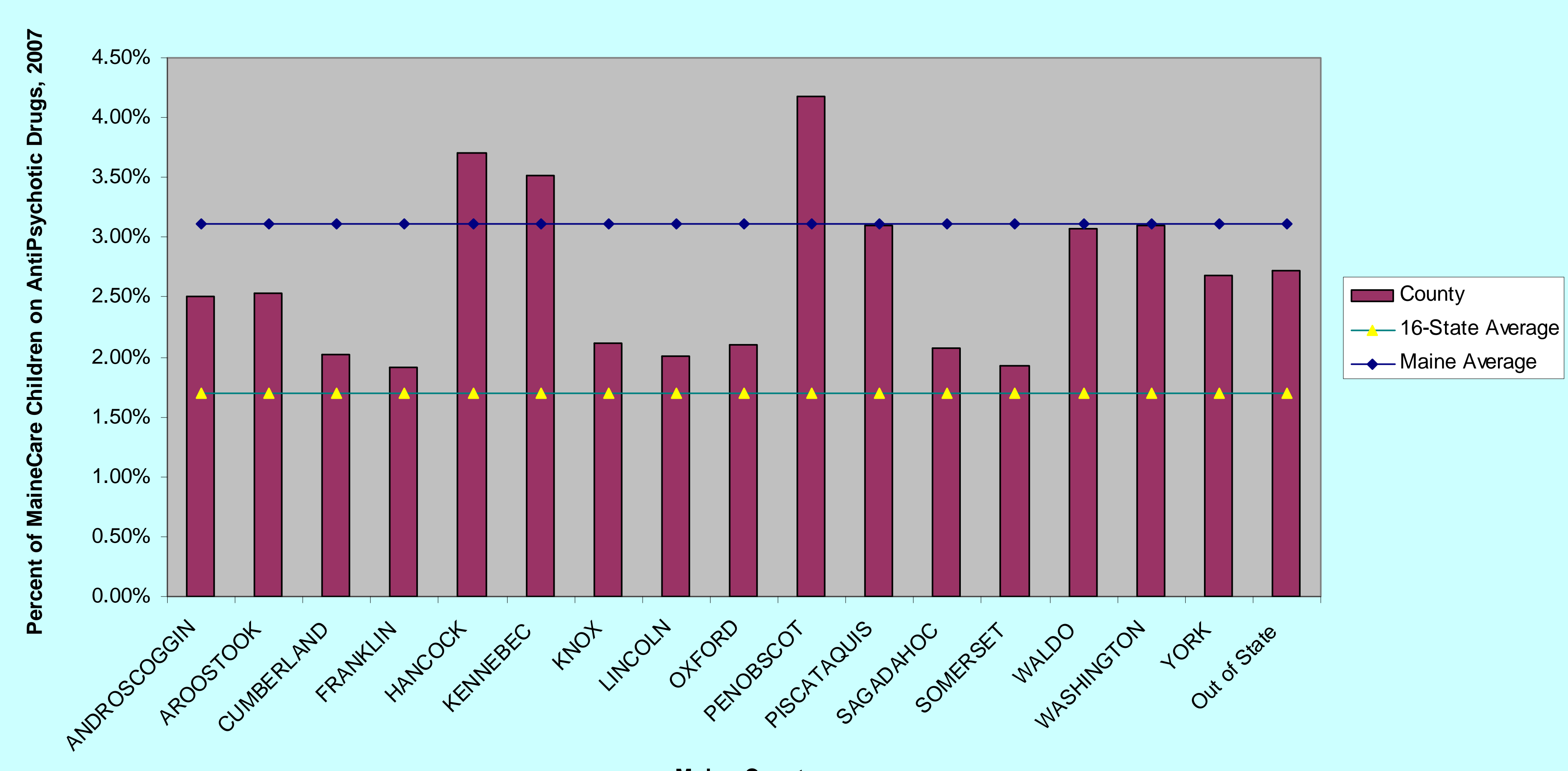
Year	Percentage of Population
2004	3.13%
2005	3.13%
2006	3.16%
2007	3.11%



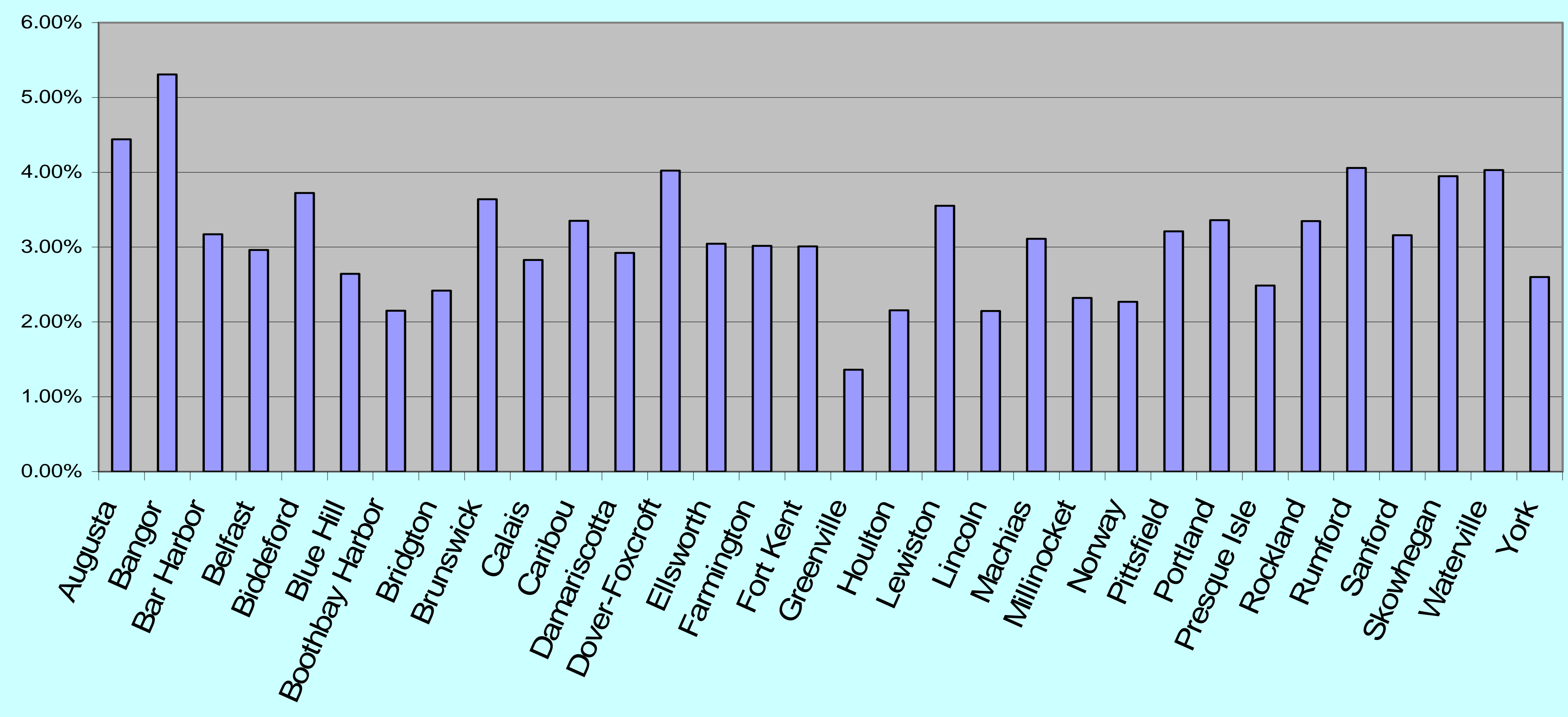
Questions raised by Maine's #1 position

- Are our children sicker?
- Are we seeing the right children?
- Are we delivering the right care?
- Overusing some forms of care?
- Are our outcomes better?
- Is there variation within the state?

2007 Geographic Variation in Use of AntiPsychotics In MaineCare Children by County of Residence



2007 Geographic Variation in Use of AntiPsychotics in MaineCare Adults by Hospital Service Area



2007 MaineCare members 12 months eligibility

% Adult Users by Hospital Service Area

For more information…

- www.dartmouthatlas.org Issue Briefs
- Atul Gawande, New Yorker, June 1,2009
- Fisher E et al, New England Journal of Medicine, Feb 26, 2009
- www.npr.org Oct 8, 2009. The telltale wombs of Lewiston, Maine
- www.maineequalityforum.gov/mqsp06c All payer analysis of variation in health care in Maine

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