

Supply, Demand, and Waiting Times for VA Outpatient Care



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Acknowledgements & Disclaimer

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Motivation

- We can't always get an appointment to see the doctor when we want to.
- More of a problem outside of U.S.
- Waiting times reduce demand when prices are held down— like in VHA.
- VA tried to reduce waits without raising prices; what happened?

Summary of Study

- Jointly model supply and demand functions of waiting times and other variables.
- Use monthly data on appointments requested, appointments scheduled, and waiting times, all VAMCs, 2002-2005.
- Estimate waiting time elasticities of supply and demand.

Research Questions

- Theory says waiting times should increase supply and reduce demand.
- How does VA supply respond to waits?
- How does VA demand respond to waits?
- If VA spends money to increase supply--
Do waits fall? Does demand increase?

Key Concept: Elasticity

- Definition of Elasticity:

$$\textit{Elasticity} = \frac{\% \text{ change in } Y}{\% \text{ change in } X}$$

- Elasticity is a unitless measure of responsiveness.
- In this case, responsiveness of supply or demand to changes in waiting times.

Preview of Results

- Supply elasticity is positive, but very small.
- Demand elasticity is negative and larger.
- If budget expands to reduce waits, roughly **20%** of new money will serve new demand induced by lower wait.

Outline of Talk

- Background
- Conceptual Model
- Statistical Model
- Data and Variables
- Results
- Discussion and Policy Implications

Background: VHA

- 23 million veterans in US; 9 million over 65.
- 25% of elderly Medicare beneficiaries are veterans.
- About 8 million VHA enrollees.
- 5.5 million unique patients treated in FY07.
- 43% of VA patients also use non-VA care in prior 12 months (Shen et al., 2003).
- Current and potential overlap between VA and other health plans/programs.

VA Waiting Times

- Waiting times have been an issue for VA managers and Congress at least since expansion of eligibility (1998).

August 2001

GAO

United States General Accounting Office

Report to the Committee on Veterans'
Affairs, House of Representatives

August 2001

VA HEALTH CARE

More National Action
Needed to Reduce
Waiting Times, but
Some Clinics Have
Made Progress




March 2007

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[Enlarge](#) Chip Somodevilla
Lt. Gen. Kevin C. Kiley, M.D., surgeon general of the Army, holds a news conference after leading members of the news media on tours of outpatient housing at Walter Reed Army Medical Center on Feb. 22, 2007 in Washington, DC. Lt. Gen. Kiley has since been named the interim head of Walter Reed. *Getty Images*

Morning Edition, March 2, 2007 · Questions are being raised about the new commander in charge of the Army's Walter Reed Army Medical Center, a day after the previous general in charge was fired.

The shuffle at Walter Reed takes place two weeks after a series of articles in *The Washington Post* exposed troubling conditions at the Washington, D.C., facility.

The paper described a medical bureaucracy that left hundreds of wounded Iraqi vets wading through mountains of paperwork as they tried to obtain medical

September 2007



**Department of Veterans Affairs
Office of Inspector General**

**Audit of the Veterans
Health Administration's
Outpatient Waiting Times**

VA Policy Responses (since 1998)

- Vets with 50%+ service-connected disability: seen w/in 30 days.
- Vets seeking care for service-connected conditions: 30 days.
- All others: w/in 120 days.
- Requests acted upon w/in 7 days.
- Advanced Clinic Access; System Redesign.
- Closed eligibility for higher income vets (2003-)

VA Waiting Time Data

- VA implemented electronic scheduling and automatic calculation of wait times in 1999.
- Clinic-month average wait times maintained in data available to researchers from 2001.
- VA wait times increase risk of mortality and preventable hospitalization for geriatric clinic patients (Prentice and Pizer, 2007, 2008).

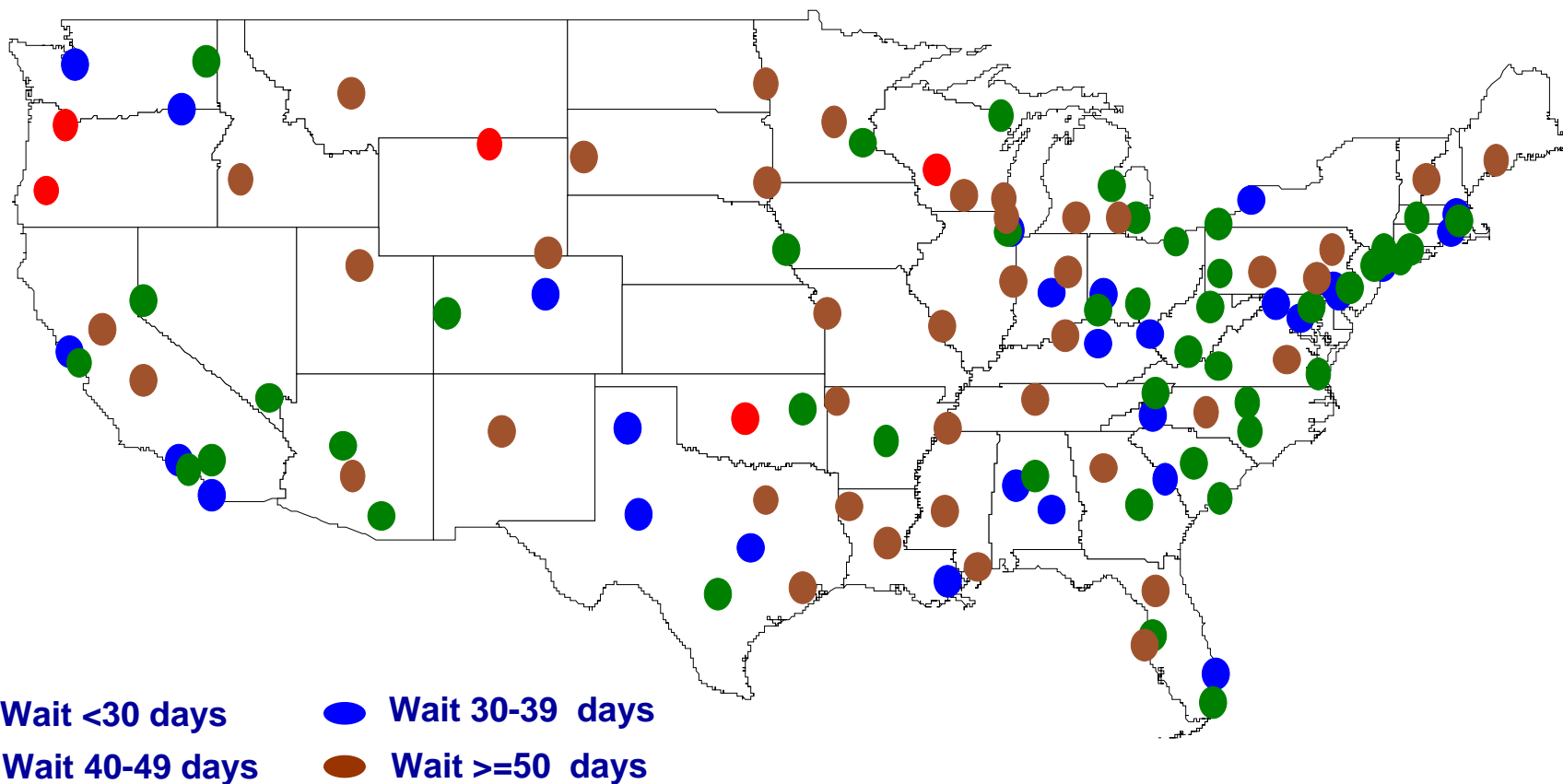
Wait Time Calculation

- Wait times defined as facility average number of days between request and appointment for NEW patient.
 - Avoids confusion with follow-ups.
- Focus on primary care because specialty care patients often travel longer distances between facilities.
- Primary care accounts for about 40% of clinic visits.

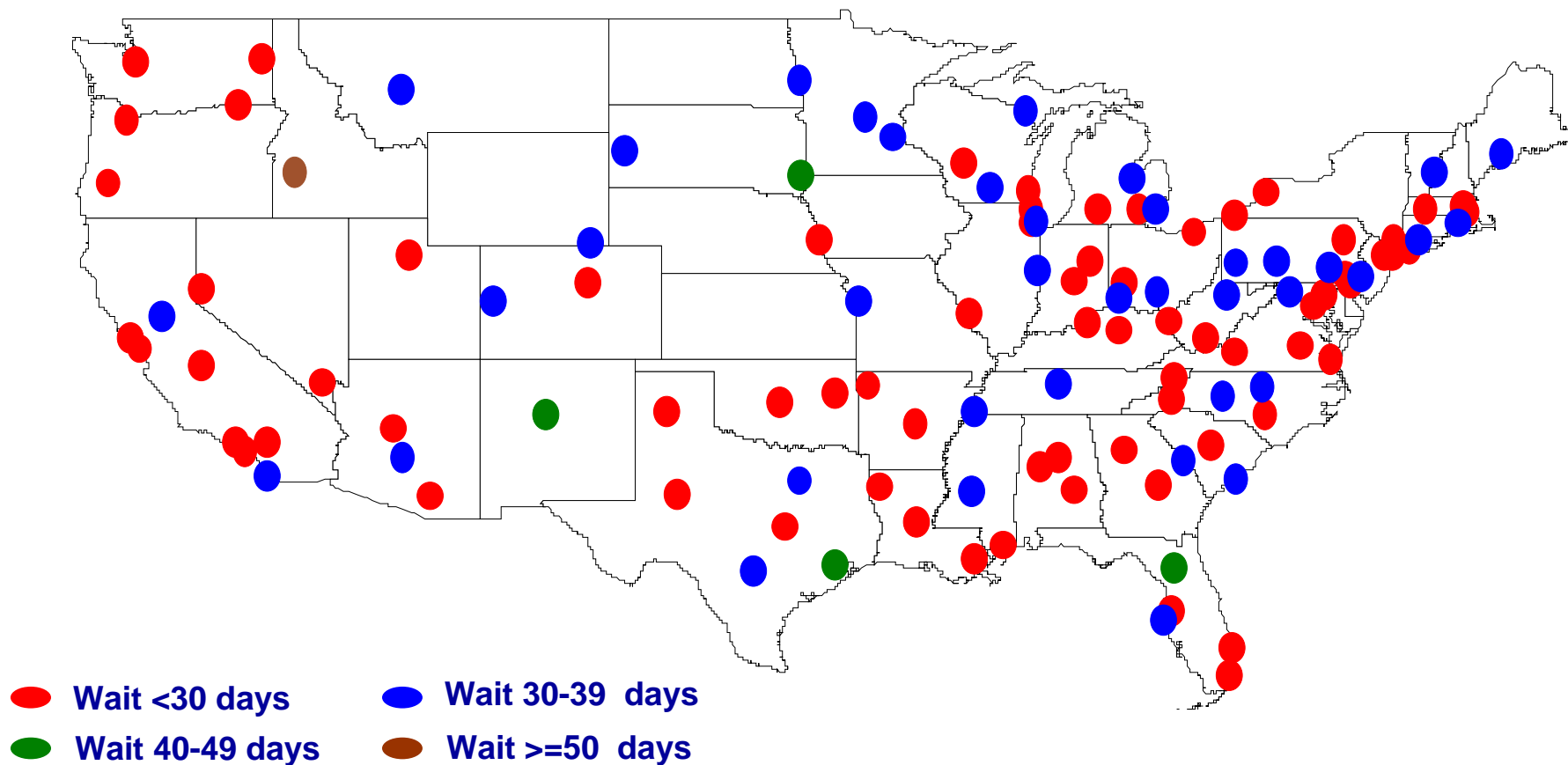
Waiting Time Trends

- Wait times declined from 2002 to 2005.
- Unique VA patients increased sharply (12%) over same years.
- Cost per unique patient increased, but not more than National Health Expenditures.

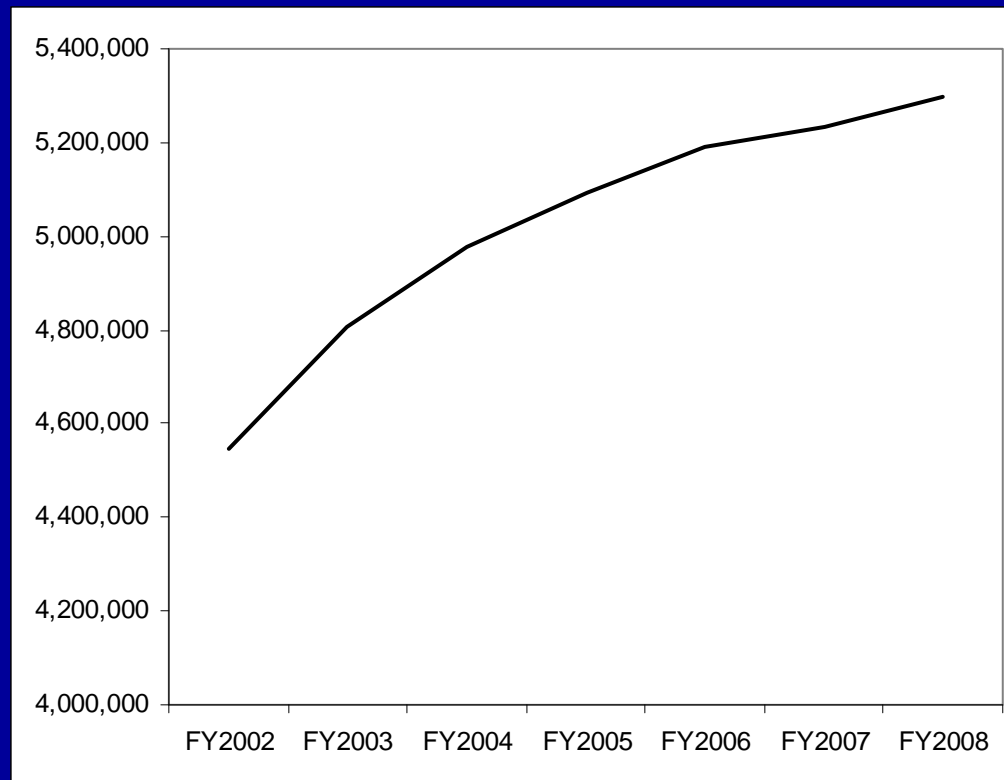
New Patient Waits, 2002



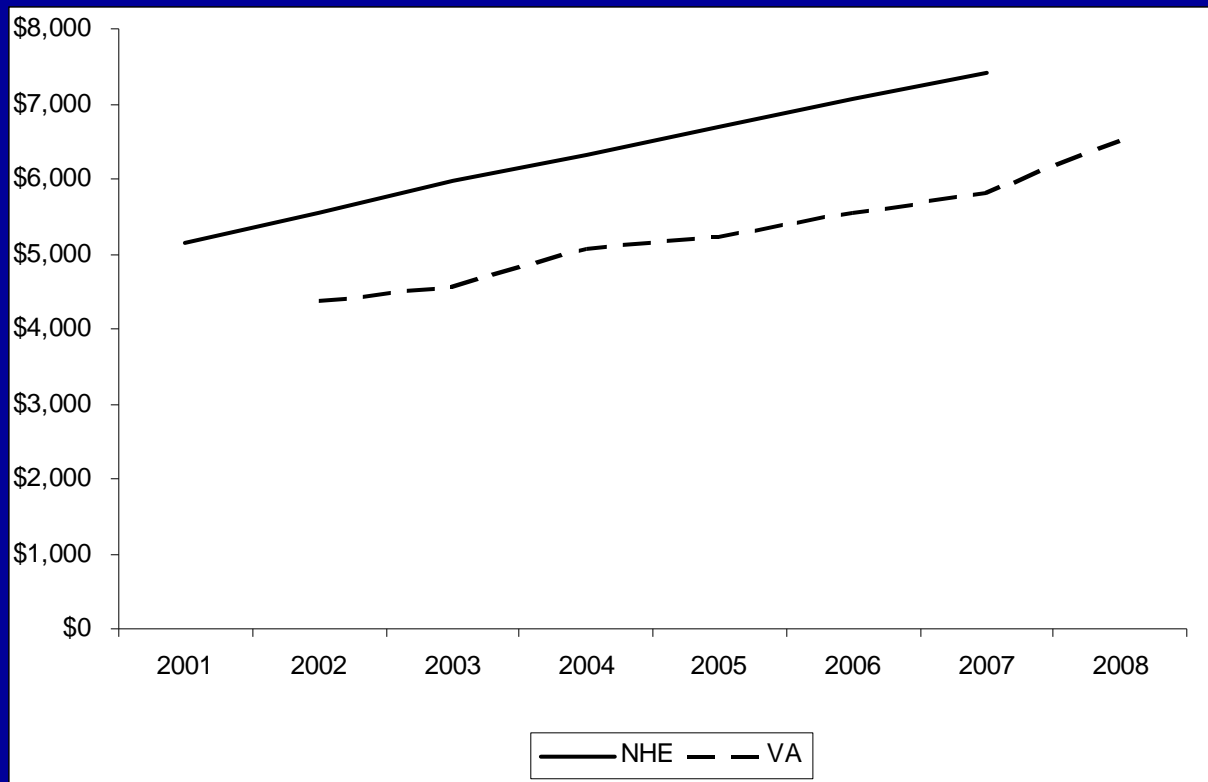
New Patient Waits, 2005



Unique VA Patients



Per Capita National Health Expenditures and VA Cost (DSS)



NHE in calendar years; VA in Federal Fiscal Years

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Research Questions, Again

- Looks like VA found resources internally to reduce waits; demand responded.
- Can we see demand response at local level?
- How much of new resources went to new patients?
- Did local supply respond to waits too?

Conceptual Model: Demand

- Following Martin et al., JHE 2007.
- Patients choose providers based on price and “quality” (wait time, etc.).
- Utility of treatment decays if treatment is delayed from point of diagnosis (Lindsay and Feigenbaum, 1984).
- Derived demand for provider i : $D_i = d(Q_i, c_i, z_i^d)$
 - Q : quality; c : cost; z : demand shifters

Conceptual Model: Supply

- Managers care about volume and quality (motivated by satisfaction and incentives).
- Managers dislike effort, so $U_i = u(S_i, Q_i, e_i)$
- Production function: $f(S_i, Q_i, e_i, z_i^s) = 0$
 - z: budget, labor market . . .
- Choose effort to max U, s.t. f(.), yielding EQ supply: $S_i^* = s(Q_i, c_i, z_i^s, z_i^d)$

Implications of Model

- Behavioral equations: $D_i = d(Q_i, c_i, z_i^d)$
 $S_i^* = s(Q_i, c_i, z_i^s, z_i^d)$
- If $D=S^*$, then $dQ=0$, equilibrium.
- If $D>S^*$, then $dQ<0$, waits increase.
- If $D<S^*$, then $dQ>0$, waits decrease.

Statistical Model: Assumptions

- Quality = waiting time; Cost = distance.
- Supply and Demand simultaneously determined.
- Supply responds to last month's wait.
- Demand responds to this month's wait.
- Joint determination of demand and wait means we need instrument for waiting time: 2-month lag of wait time.

Statistical Model: Specification

$$\ln W_{it} = \alpha + \beta_1 \ln W_{it-2} + \beta_2 z_{it}^d + \beta_3 Year + \beta_4 Month + \varepsilon_{it}^w$$

$$\ln D_{it} = \alpha + \beta_1 \ln W_{it} + \beta_2 z_{it}^d + \beta_3 Year + \beta_4 Month + \varepsilon_{it}^d$$

$$\ln S_{it}^* = \alpha + \beta_1 \ln W_{it-1} + \beta_2 z_{it}^s + \beta_3 z_{it}^d + \beta_4 VISN_i + \beta_5 Year + \beta_6 Month + \varepsilon_{it}^s$$

Estimate 3 equations, clustering on VAMC.

Log-log specification gives elasticity estimates.

S & D residuals are correlated; estimate by 2-stage SUR.

Variables

- $z(s)$: Preliminary budget allocation, number of OP clinics.
- $z(d)$: Distance, poverty, unemployment, uninsurance, hospital beds, physicians, % urban, home values, % college, % construction, % health care, % white collar.

Data Sources

- Distance: PSSG distance by ZIP, weighted by share of medical center or clinic OP visits.
- Budget: Allocation Resource Center.
- Unemployment: Bureau of Labor Statistics.
- Uninsurance: March Current Population Survey (state-year).
- Other $z(d)$: Area Resource File.

Construction of Supply & Demand

- Supply: Total number of primary care appointments scheduled to occur in month t .
- Demand: Total number of primary care appointments requested during month t , regardless of when scheduled to occur.
 - $D(t) = \text{Average appts/day} * \text{Days requested in } t$.
 - $\text{Days requested in } t = \text{Number of business days in } t + \text{Wait}(t) - \text{Wait}(t-1)$.

Sample

	# of VAMCs*	X 12 Months
2002	120	1440
2003	120	1440
2004	120	1440
2005	118	1416
Total	478	5736
Missing/zero waits		-54
Sample for 1st stage		5682

*28 VAMCs were reorganizing/merging during these years.

Results: Stage 1; Current Wait

Variable	Coeff	Std Error	t-statistic
Ln(wait) t-2	0.72	0.02	35.2
Unemployment	0.015	0.008	1.99
Ln(hospbed/pop)	-0.077	0.037	-2.1
Ln(area)	0.048	0.025	1.96
% construction	0.039	0.015	2.65

N=5682; R-sq=0.72

Models include year and month effects

Results: Stage 2; Supply

Ln(wait) t-1	0.06***	% urban	-0.01***
Ln(budget)	0.54***	Ln(home val)	-0.30***
OP clinic count	0.02***	% college	-0.03***
Unemployment	0.03***	% constr	-0.06***
Ln(hosp/pop)	-0.19***	% fish & ag	-0.04***
#Mcare HMOs	0.01***	% health care	-0.03***

N=5,427; R-sq=0.85

217 obs dropped due to demand ≤ 0 .

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***Significant at $P < 0.01$

Results: Stage 2; Demand

Pred. Ln(wait)	-0.19***	Ln(GP/pop)	-0.17***
Ln(MC dist)	0.30***	% urban	-0.01***
Ln(OP dist)	-0.07***	Ln(home val)	-0.68***
% poverty	-0.03***	% college	-0.03***
% uninsured	0.03***	% healthcare	-0.03***
Ln(hosp/pop)	-0.21***	% wh collar	0.04***

N=5,427; R-sq=0.35

www.hcfe.research.va.gov S&D resid correlation=0.35

Discussion

- VA supply responds to waiting times, but elasticity is low.
 - Waits have to grow by 17% to get 1% increase in supply.
- Demand response to waiting times is stronger.
 - 5% increase in waits causes 1% decline in demand.
- Therefore, if VA finds resources to reduce waits, 20% will go to new patients.

Limitations

- Don't have data on requests for appointments that were never scheduled.
- Don't have good data on waits for returning patients.
- No data on demand for non-VA care, so demand shocks could be correlated.
 - Would bias results toward zero.

Policy Implications

- Will National Healthcare Reform lead to longer (non-VA) wait times?

Insurance Reform + Cost Control = Waiting

boston.com

Across Mass., wait to see doctors grows

Access to care, insurance law cited for delays

By Liz Kowalczyk, Globe Staff | September 22, 2008

The wait to see primary care doctors in Massachusetts has grown to as long as 100 days, while the number of primary care doctors has declined in rural areas.

Now, as the state's health insurance mandate threatens to make a chronic doctor shortage worse, the Legislature is considering measures to attract primary care doctors. But healthcare leaders fear the new measures will take several years to ease the shortage.

Senate President Therese Murray, who championed the legislation, said that many of the roughly 439,000 people who are uninsured "take a look at the whole state and you are not going to find a primary care physician anytime soon," she said in a statement.

Access to internists and family practitioners is especially difficult in the western counties, and in Cape Cod, doctors are scarce.

Now a National Concern

The New York Times

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April 27, 2009

Shortage of Doctors Proves Obstacle to Obama Goals

By [ROBERT PEAR](#)

WASHINGTON — Obama administration officials, alarmed at doctor shortages, are looking for ways to increase the size of the health care workforce to cover the needs of the growing population and millions of uninsured people who would gain coverage under legislation championed by the president.

The officials said they were particularly concerned about shortages of primary care providers who are the main source of care for many Americans.

One proposal — to increase [Medicare](#) payments to general practitioners, at the expense of high-paid specialists — has

Blogs Too!

☆ THE COMING DOCTOR CRUNCH.

from Ezra Klein

The Obama administration is right to worry about a coming doctor shortage. We have a medical system that's co-evolved with a health care system that leaves 47 million people uninsured and tens of millions more underinsured. It employs about the number of doctors required for that level of care usage. Imagine, however, that health care reform succeeds beyond everyone's wildest dreams and 45 million more people have health insurance by 2012. It's sort of like giving everyone a coupon for a new TV without building any more Best Buys. Unless someone has an idea for quickly growing doctors from stem cells, the system will quickly be overwhelmed.

But it's not just that: One of the themes in Robert Pear's article is the tension between primary care doctors and specialists. It's widely understood that primary care docs are undercompensated.

It's also pretty well understood that our system is too heavily oriented towards specialty care, with all its attendant costs and incentives. And it's also pretty well understood that the deficit is looking increasingly



Policy Implications

- Expansion of non-VA coverage could reduce VA demand, causing waits to fall.
- Falling waits will reinforce demand, but 10% reduction in wait induces only 2% increase in demand.
- On the other hand, if non-VA waits increase, demand will shift to VA providers, unless VA counters with restricted eligibility.

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