



PEPReC

Partnered Evidence-based Policy
Resource Center
A VA QUERI Program

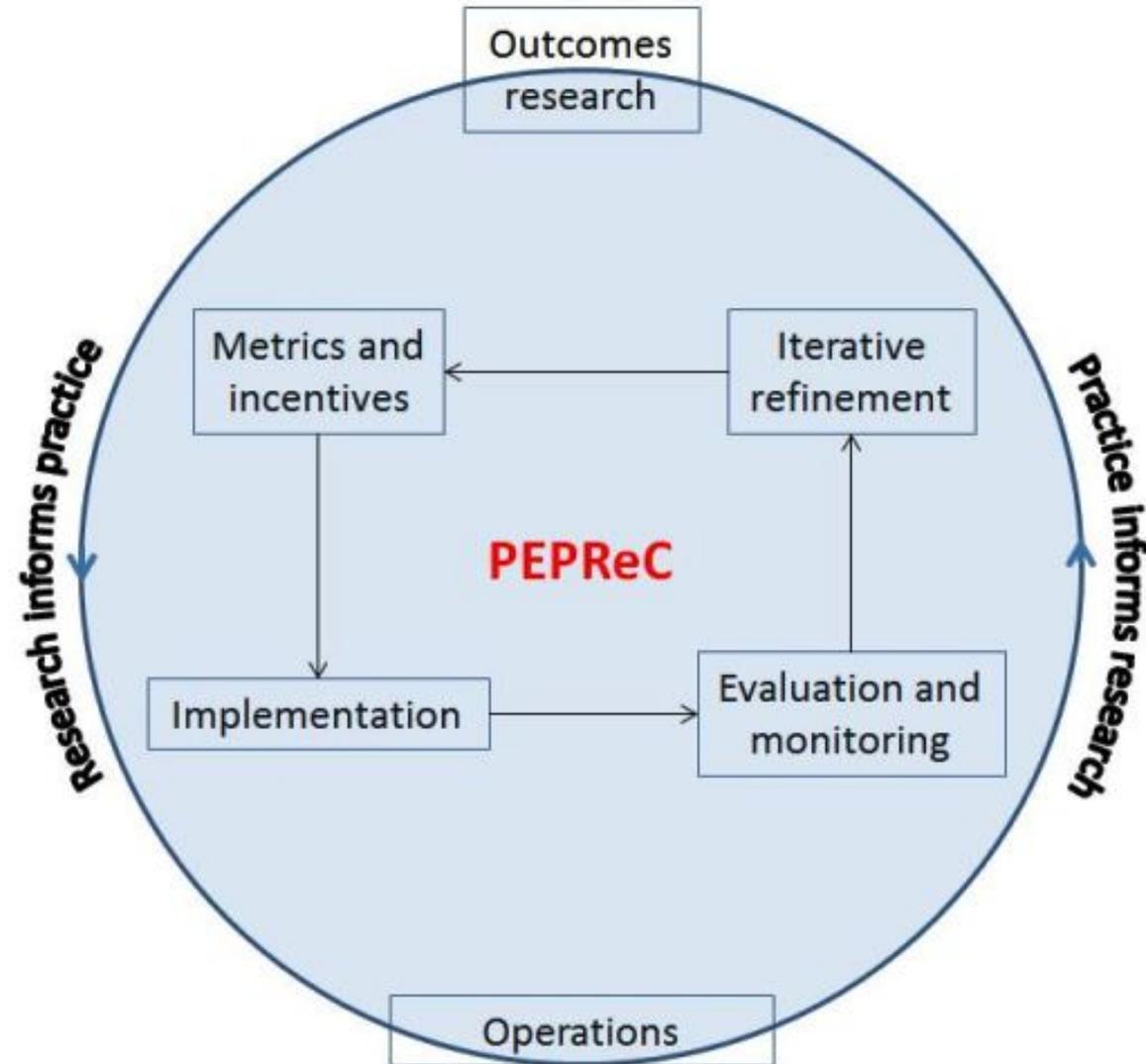
The Effect of Staffing Levels on VA Reliance & Consult Wait Times

Kevin N. Griffith, Yevgeniy Feyman, Steven D. Pizer

PEPReC Overview

PEPReC

Partnered Evidence-based Policy
Resource Center
A VA QUERI Program



Core PEPRReC Missions

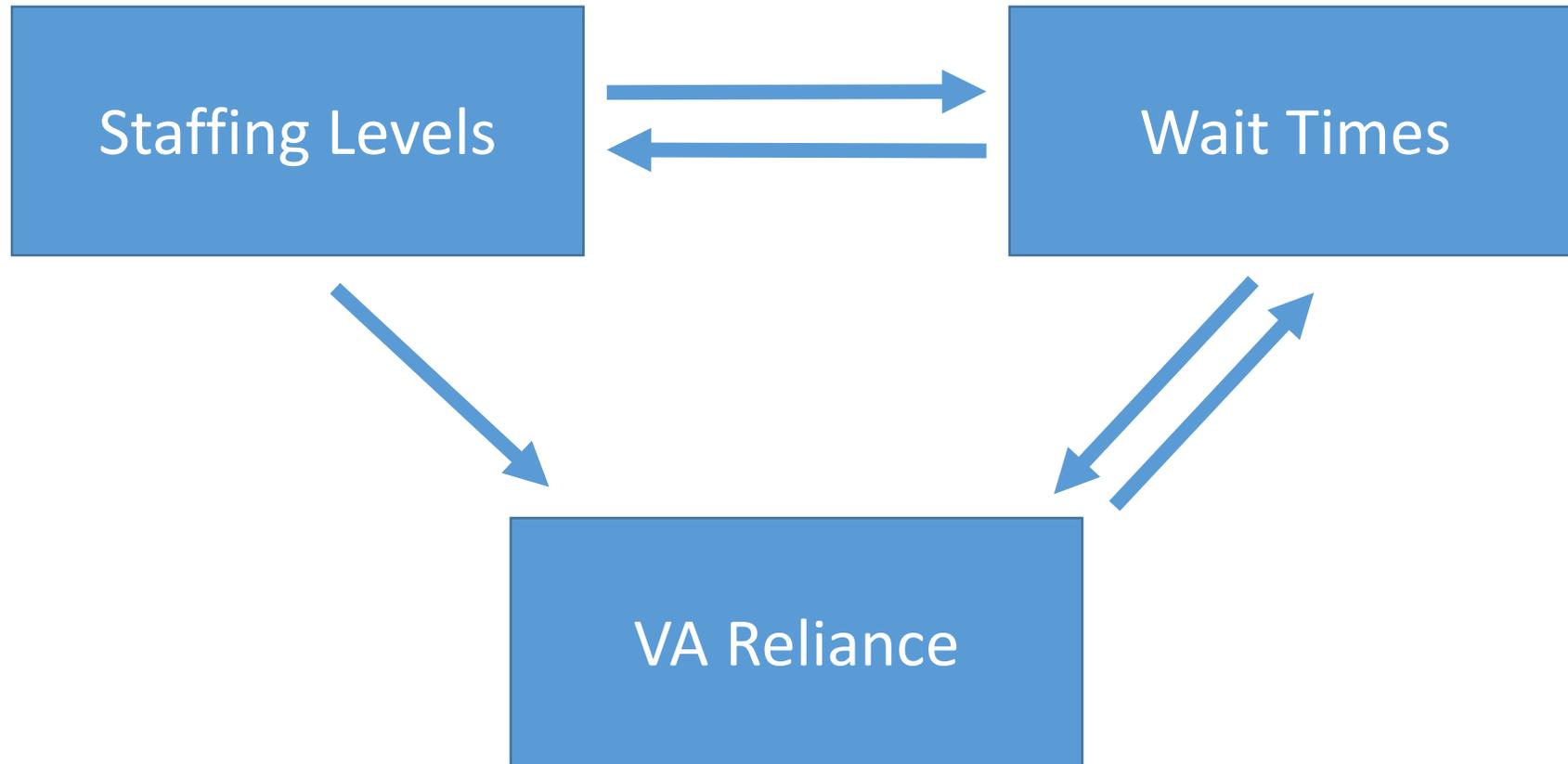
PEPRReC



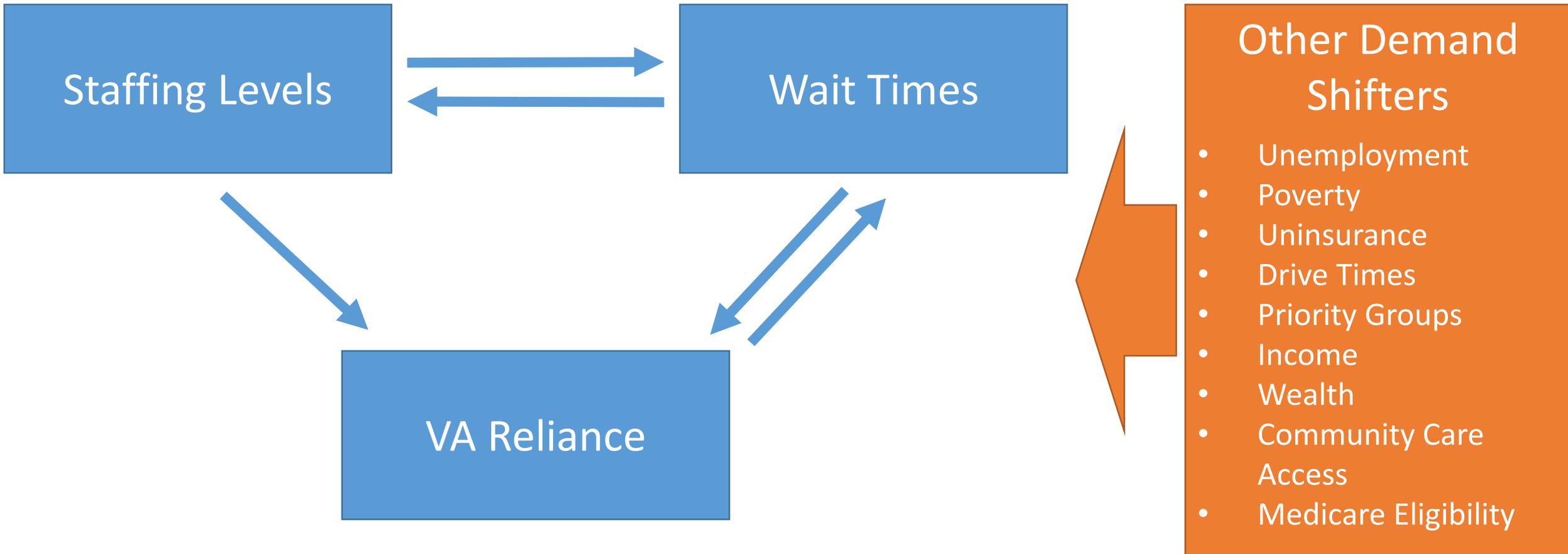
Partnered Evidence-based Policy
Resource Center
A VA QUERI Program

- Core Mission 1: Collaborate with VA operations partners to enhance planning and improve access to and efficiency/quality of care
 - Evidence-based budgeting and forecasting
 - Identifying & mitigating underserved facilities (MISSION Act Section 401 & 402)
- Core Mission 2: Collaborate with operations partners and researchers to design and implement randomized program evaluations
 - Medical scribes
 - Opioid risk stratification and management
- Core Mission 3: Facilitate research consortia to expedite operations-relevant research
 - Community Care Research Consortium/MISSION Act Virtual Research Network
 - Access CORE

The (inter)relationship between provider staffing, reliance & wait times is complex



The (inter)relationship between provider staffing, reliance & wait times is complex



Better understanding of these relationships can help VA managers oversee clinic operations

- What are the expected impacts of changes in budgets/staffing, positive or negative?
- How many specialists do we need to hire to achieve a desired wait time?
- What sort of “woodwork effect” is expected if we lower wait times?

Research Objectives

1. Quantify the relationship between staffing levels and wait times for VA consults
2. Quantify the relationship between staffing levels and Veterans' reliance on the VA
3. Develop forecasting models to predict expected changes in wait times/reliance due to changes in staffing [Future Work]

Research Objectives

1. Quantify the relationship between staffing levels and wait times for VA consults
2. Quantify the relationship between staffing levels and Veterans' reliance on the VA
3. Develop forecasting models to predict expected changes in wait times/reliance due to changes in staffing [Future Work]

Poll Question #1

PEPReC

Partnered Evidence-based Policy
Resource Center
A VA QUERI Program

- What is your primary role in VA?
 - Student, trainee, or fellow
 - Clinician
 - Researcher
 - Administrator, manager or policy-maker
 - Other

Data Sources – Milliman Reliance

- Estimate of share of care veterans receive in and out of the VA at Health Service Category level (FY10-16)
- Age 65+ based on datamatch data restricted to Medicare-eligible enrollees not in MA. Each FY reliance factor based on 3 years of rolling data
- Data for veterans in employer plans is adjusted to align with data from survey of enrollees

Data Sources – Wait Times

- Developed algorithm to calculate wait times for VA & community care (CC) consults
- Data extracted from Corporate Data Warehouse (CDW)
- **For VA**, includes cancelled & discontinued appointments
- **For CC**, identifies specialty and limited to completed appointments

Data Sources – Other

- Health Resources & Services Administration's **Area Health Resources Files** (income, uninsurance, Medicare eligibility, non-federal specialist supply)
- **American Community Survey** (veteran unemployment)
- **Bureau of Labor Statistics** (pop. unemployment)
- **Dept. of Housing & Urban Development** (housing prices)
- **National Bureau of Economic Research** (clinic distance)
- **CDW** (priority groups, clinic locations, enrollment)

Study Design

- 1. Longitudinal:** Looking at changes over time (FY14-FY16)
- 2. County-Level:** Allows for more granularity & variation
- 3. Instrumental Variables Regression:** Used to control for endogeneity
- 4. Double LASSO Variable Selection:** To identify relevant covariates

Focus on 5 specialties, initially: Cardiology, Gastroenterology, Urology, Orthopedics, Ophthalmology

Instrumental Variables (10,000 ft.)

- Commonly used in econometrics
- Addresses issues with endogeneity (outcomes also affects treatment assignment)
- Instead of using the treatment (e.g. staffing) in regression, use an “instrument”
- Allows you to identify ‘true’ correlation between treatment and outcome

Instrumental Variables (10,000 ft.)

- A couple rules for this to work:
 - Instrument must be correlated with treatment assignment
 - Instrument not assumed to have any direct effect on outcome
- In other words, instrument only affects the outcome through treatment assignment (complete mediation)
- **Our instrument: County-level # of non-federal specialists**



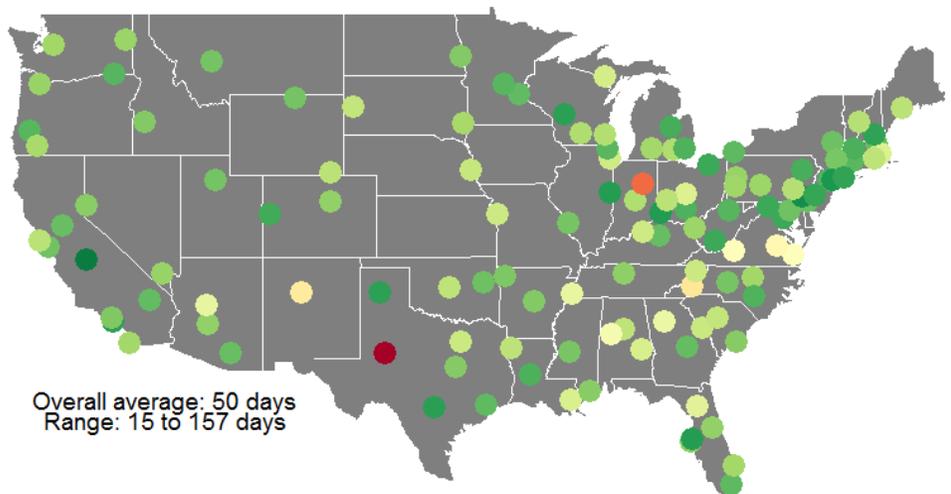
Double LASSO (10,000 ft.)

- **We have a lot of variables – 3,335 including county dummy indicators**
- Newer machine learning technique for data-driven model selection
- Identifies variables associated with either instrument or outcome
- Parsimony is rewarded – with many correlated variables, LASSO prefers one and shrinks/removes others
- Removes unrelated variables from the data

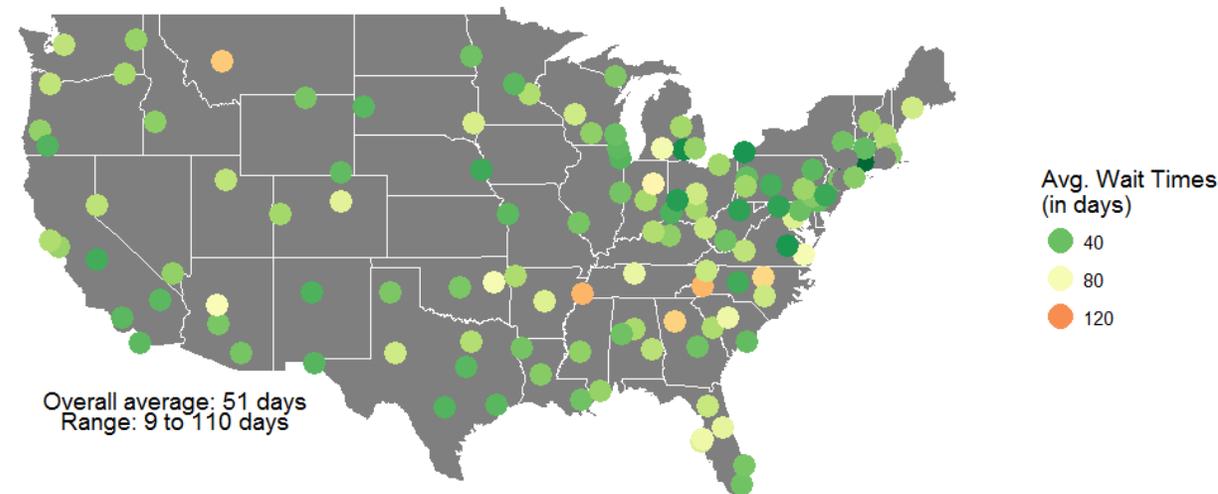
Descriptive Statistics – Consult Wait Times

- **Average wait times vary substantially**, both between stations and within stations over time
- E.g. cardiology consult wait times (March 2019):

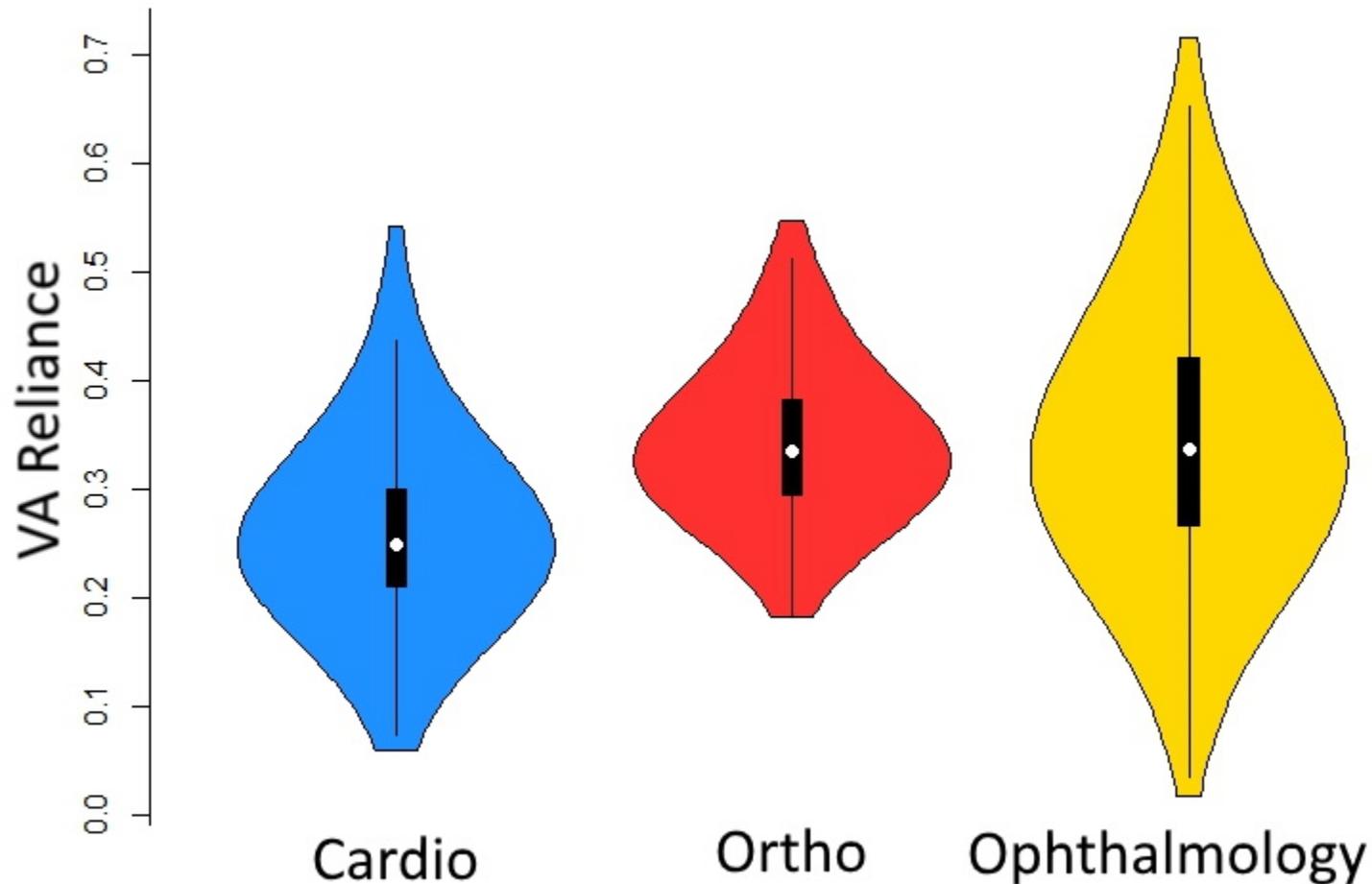
VA



Community Care

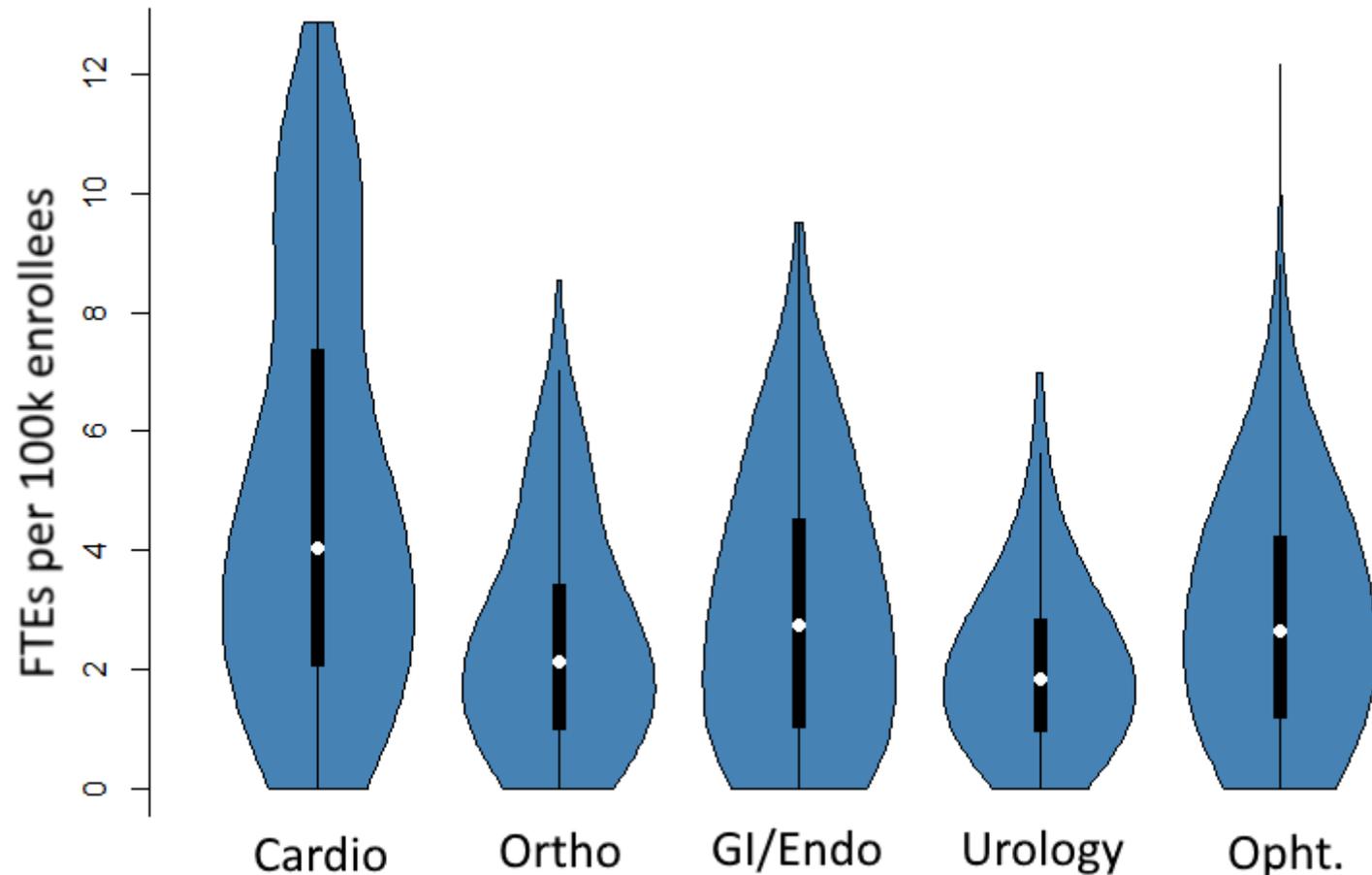


Descriptive Statistics – VA Reliance



- We also see **wide variation** in VA reliance within specialties
- Figure at left is violin plot of county-level VA reliance 2014-2016

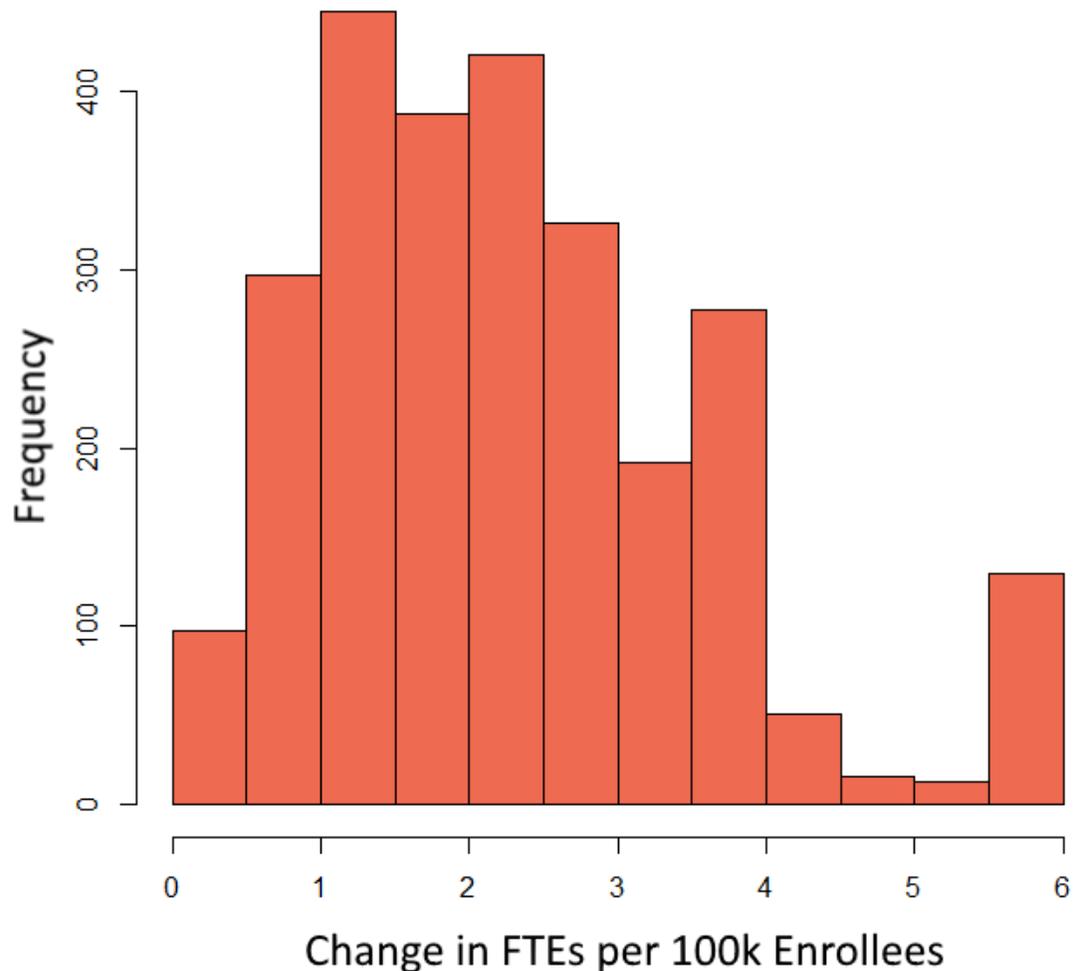
Descriptive Statistics – Staffing Levels



- Veterans' access to VA providers also covers a wide range
- Figure at left is violin plot of FTEs per 100k enrollees 2014-2016

Descriptive Statistics – Staffing Levels

- More importantly, we see changes in staffing levels over time
- Figure depicts county-level changes in provider staffing levels 2014-2016



Increased staffing is associated with lower consult wait times

Specialty	Mean FTEs per 100k enrollees	Consult waits (in days)		
		Mean	Double LASSO Results	
			Beta	95% CI
Cardiology	4.76	32.39	-2.12	(-3.13, -1.10)
Orthotics	2.61	44.73	-61.38	(-70.50, -52.26)
GI/Endoscopy	3.46	51.82	-7.12	(-8.96, -5.29)
Urology	2.21	39.97	-7.22	(-10.70, -3.73)
Ophthalmology	3.08	50.29	2.87	(-31.04, 36.78)

- **Beta:** Estimated change in wait times due to +1 FTE per 100,000 enrollees
- Large change in Orthopedics suggest less pent-up demand
- Insignificant effects for ophthalmology

Increased staffing is associated with higher VA reliance

Specialty	Mean FTEs per 100k enrollees	Reliance		
		Mean	Double LASSO Results	
			Beta	95% CI
Cardiology	4.76	24.76%	17.67%	(14.71%, 20.64%)
Orthotics	2.61	34.27%	1.24%	(1.01%, 1.47%)
GI/Endoscopy	3.46	--	--	--
Urology	2.21	--	--	--
Ophthalmology	3.08	34.50%	20.35%	(18.27%, 22.43%)

- **Beta:** Estimated change in VA reliance due to +1 FTE per 100,000 enrollees
- Small change in orthopedics → less sensitive to changes staffing
- Data not available for GI/endoscopy or urology

Results are similar when using lagged FTEs per enrollee

Specialty	Mean FTEs per 100k enrollees	Reliance		
		Mean	Double LASSO Results	
			Beta	95% CI
Cardiology	4.76	24.76%	11.84%	(9.86%, 13.82%)
Orthotics	2.61	34.27%	1.27%	(0.91%, 1.63%)
GI/Endoscopy	3.46	--	--	--
Urology	2.21	--	--	--
Ophthalmology	3.08	34.50%	14.92%	(13.70%, 16.15%)

- **E.g. using one-month lags**, effects are still significant
- Estimate for orthotics reliance is unchanged
- Cardiology & ophthalmology slightly attenuated

Implications

- Not all specialties are created equal – responses to staffing changes may differ
- Results could allow managers & workforce planners to:
 - Assess changes in utilization due to changes in staffing (reliance)
 - Assess staffing requirements to meet VA performance thresholds
- Models may predict national effects, or account for local station characteristics

Limitations

- Reliance & staffing categories \neq VA stop codes
- Initially limited to 5 specialties (3 for reliance)
- Some data only available annually (e.g. reliance, non-federal specialists)
- ~13% of community care consults could not be categorized
- Double LASSO approach only lets us make inferences on effects of staffing, not other covariates (e.g. unemployment)

Future work

- Examine additional specialties
- Additional robustness checks (e.g. alternative lags, functional forms)
- Test alternative instruments
- Examine effects of other model variables (e.g. CC wait times)
- Develop station-level forecasting model for effects of staffing changes on wait times & reliance

Acknowledgements

- This project was supported by grant #PEC 16-001 from the VA's Quality Enhancement Research Initiative (QUERI) and by the VA Office of Veterans Access to Care (OVAC)
- We are also thankful for support and technical advice from the Office of Policy & Planning



PEPReC

Partnered Evidence-based Policy
Resource Center
A VA QUERI Program

For more information, please contact Kevin Griffith
(kevin.griffith@va.gov)