A Novel Gap Staffing Metric for Primary Care Provider Staffing: Implications for Urban and Rural Clinics

Peter Kaboli, MD, MS
Amy MJ O'Shea, PhD

For the PCAT CRH Access Workgroup
Bjarni Haraldsson, MS
Ariana Shahnazi, PhD

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U.S. Department of Veterans Affairs
Veterans Health Administration
Health Services Research & Development Service

cadre
THE CENTER FOR ACCESS & DELIVERY RESEARCH AND EVALUATION

PRIMARY CARE PROVIDER STAFFING

Veterans Health Administration (VHA) has not been able to consistently determine Primary Care Provider (PCP) staffing gaps at a clinic or national level.

- Aim: Develop a "Gap Staffing" Metric for PCPs in Primary Care clinics.
  - Determine which clinics have a gap.
  - How many PCPs would VHA need to hire (or redistribute) to fully staff all PC clinics.
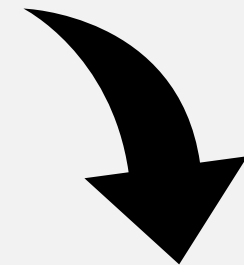 - Rural vs. Urban comparisons.

IMPROVING PATIENT ACCESS TO CARE: BALANCING SUPPLY AND DEMAND

Patient Demands

Provider Availability
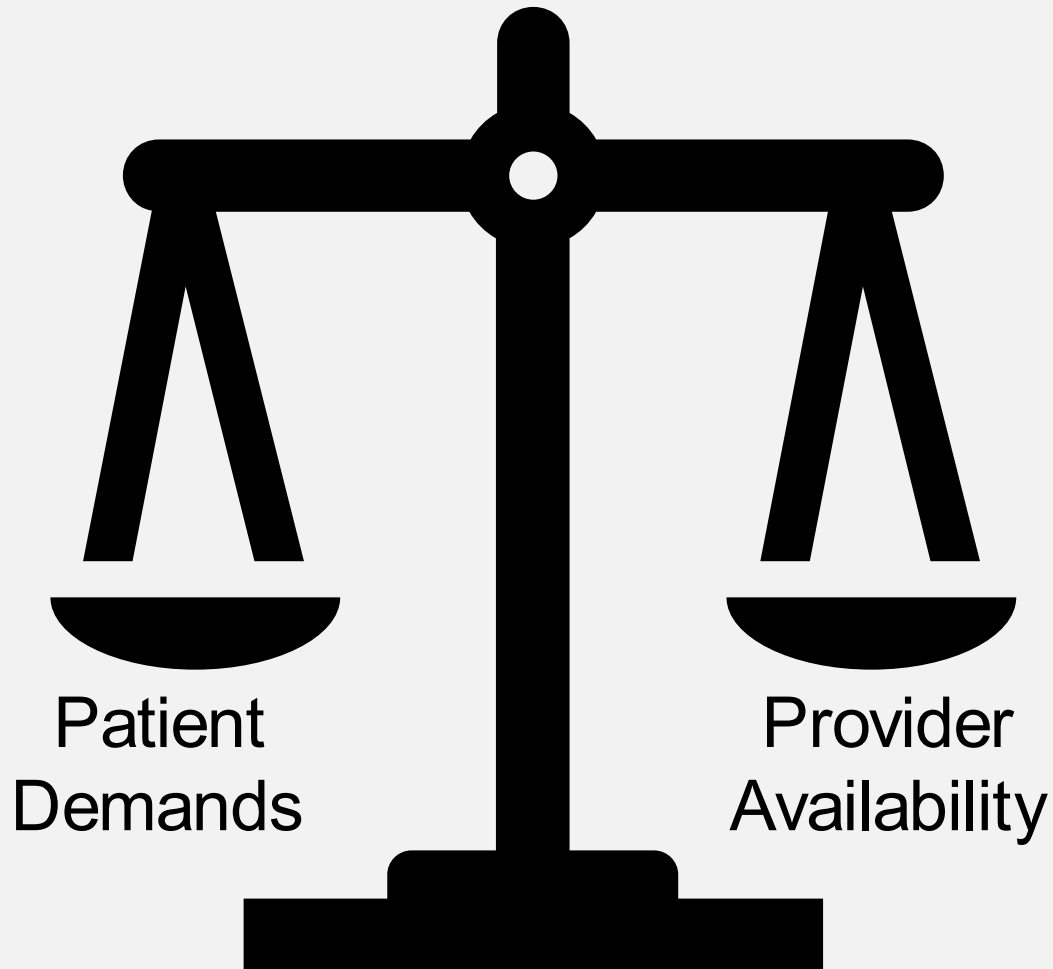
BUT –
There is a limit to how many patients a provider can reasonably see!
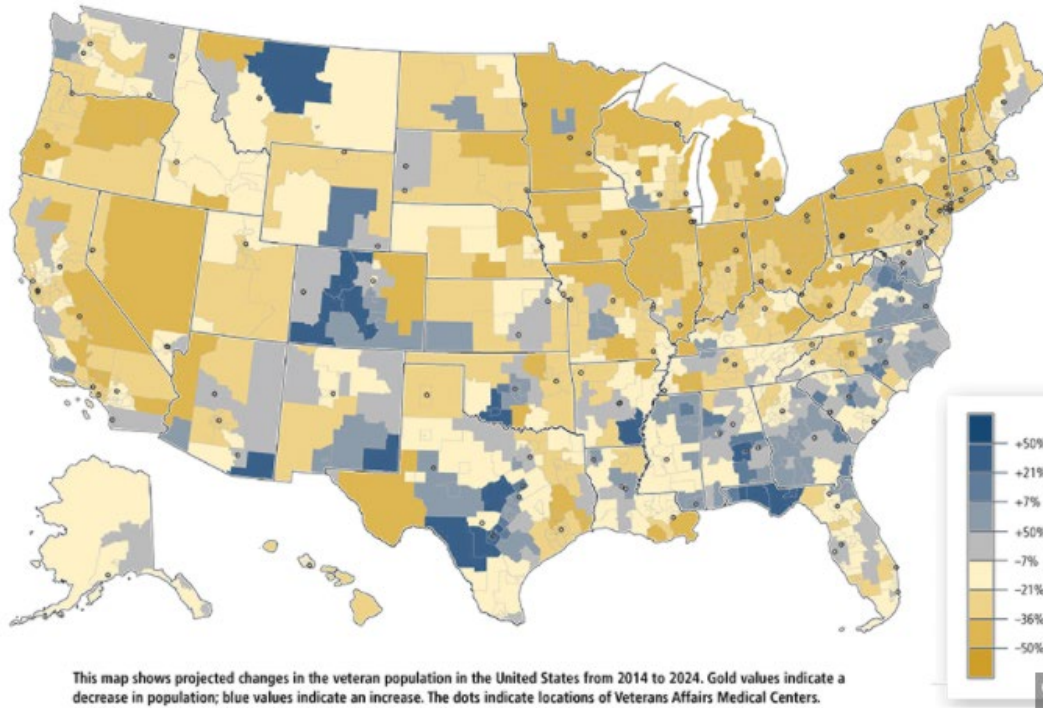
Why?
Time Constraints
Patient Acuity
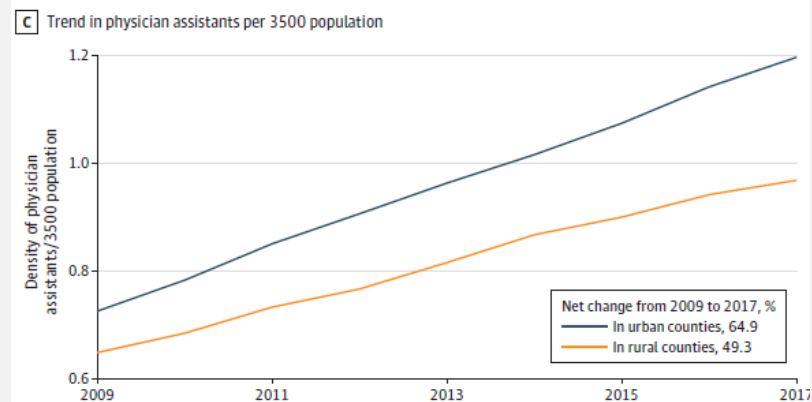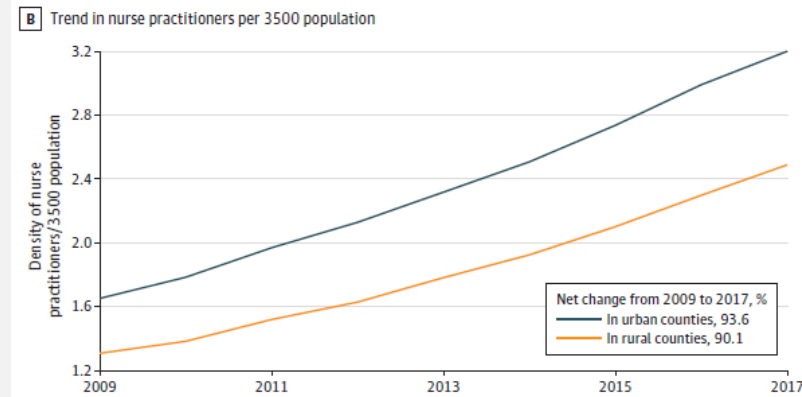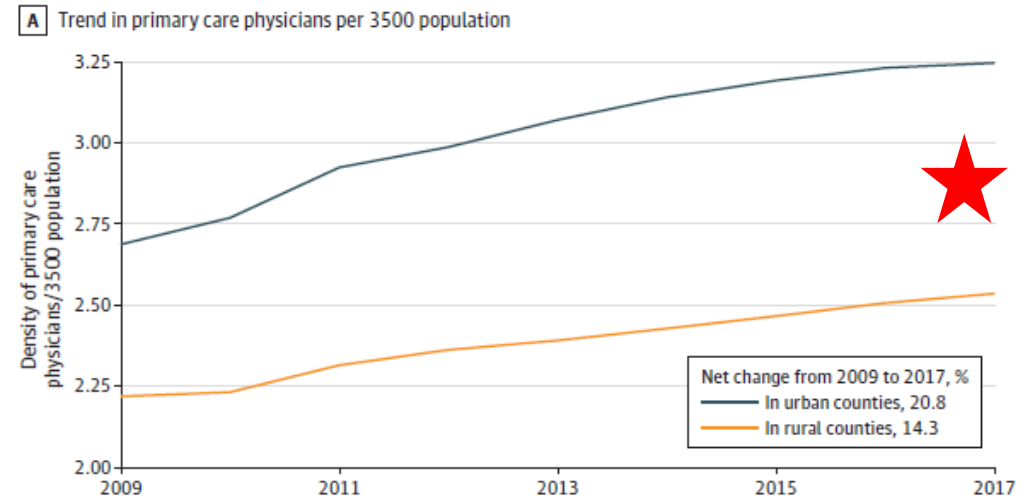Comorbidities
Care Coordination

CHANGES IN SUPPLY AND DEMAND

Figure 4. As the Veteran Population Continues to Shift to the South and West, There Will Be Substantially Fewer Veterans in Some Areas in the Northeast and Upper Midwest

This map shows projected changes in the veteran population in the United States from 2014 to 2024. Gold values indicate a decrease in population; blue values indicate an increase. The dots indicate locations of Veterans Affairs Medical Centers.

https://www.rand.org/pubs/periodicals/health-quarterly/issues/v6/n1/12.html

Figure 2. Trends in the Density of Primary Care Clinicians in US Rural vs Urban Counties From 2009 to 2017

A Trend in primary care physicians per 3500 population

Net change from 2009 to 2017, %
In urban counties, 20.8
In rural counties, 14.3

B Trend in nurse practitioners per 3500 population

Net change from 2009 to 2017, %
In urban counties, 93.6
In rural counties, 90.1

C Trend in physician assistants per 3500 population

Net change from 2009 to 2017, %
In urban counties, 64.9
In rural counties, 49.3

4

QUESTION: WHAT IS THE OPTIMAL PRIMARY CARE PANEL SIZE PER PHYSICIAN FTE?

A. 650
B. 900
C. 1,200
D. 1,500
E. 2,500

QUESTION: WHAT IS THE OPTIMAL PRIMARY CARE PANEL SIZE PER ADVANCED PRACTICE PROVIDER (NP/PA) FTE?

A. 650
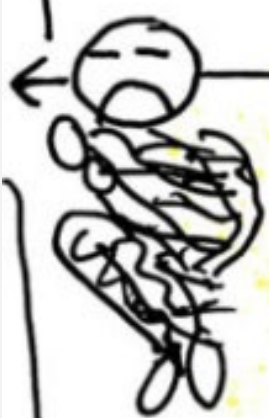B. 900
C. 1,200
D. 1,500
E. 2,500
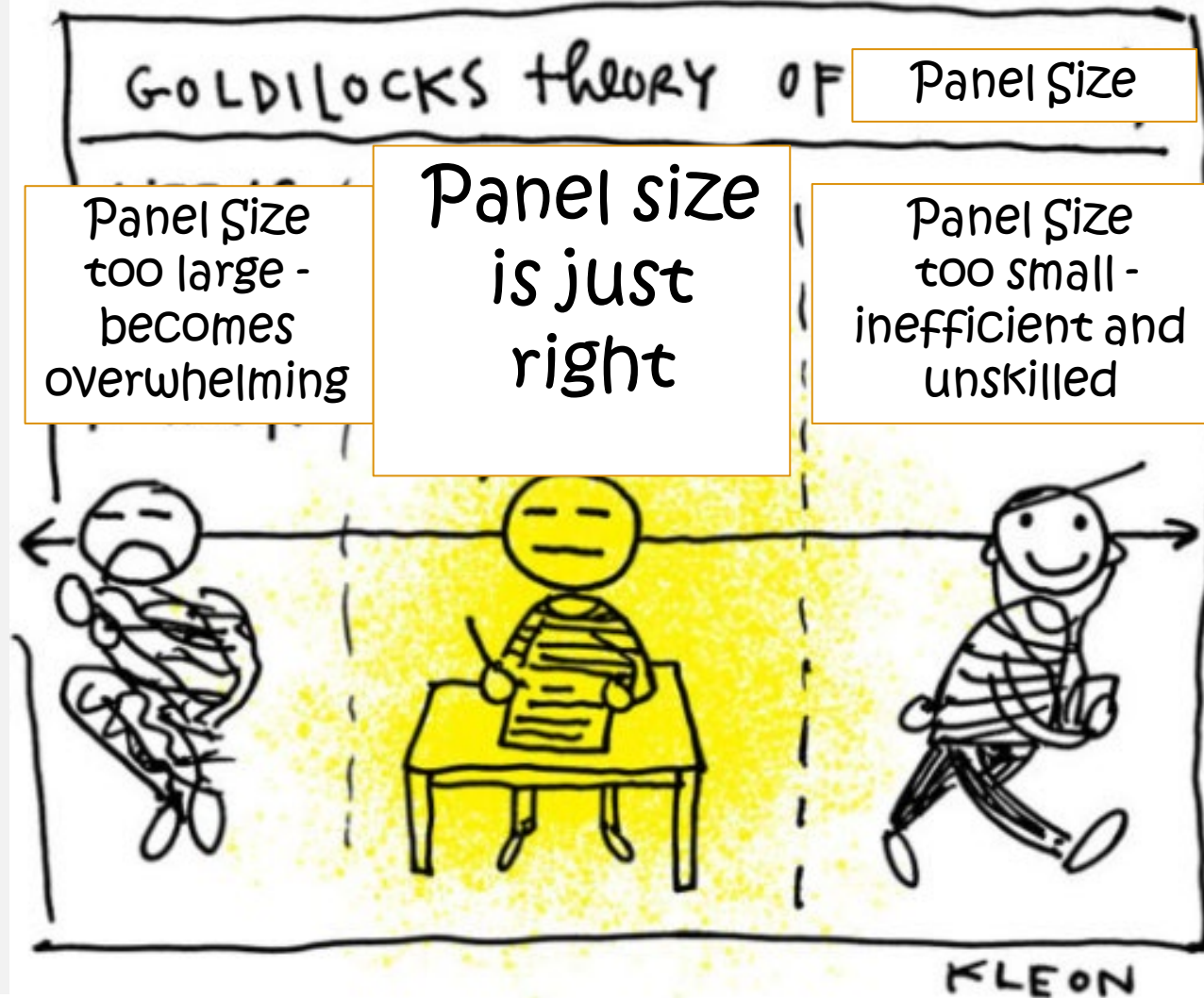
IDEAL PANEL SIZE ANSWER: BETWEEN 500 AND 2,500 PATIENTS/FTE

- Depends on who is asking
- Too small (e.g., <900):
  - Inefficient and likely lack the "volume-outcome" effect.
  - Not cost-effective for a system
  - Not available (if < full time)
- Too large (>2,500):
  - Unable to keep up & burned out.
  - Longer wait times (not enough slots).
  - Can't do everything needed.
- *"What is the ideal practice model that results in the best outcomes for the population in question?"**

Optimal BP Control
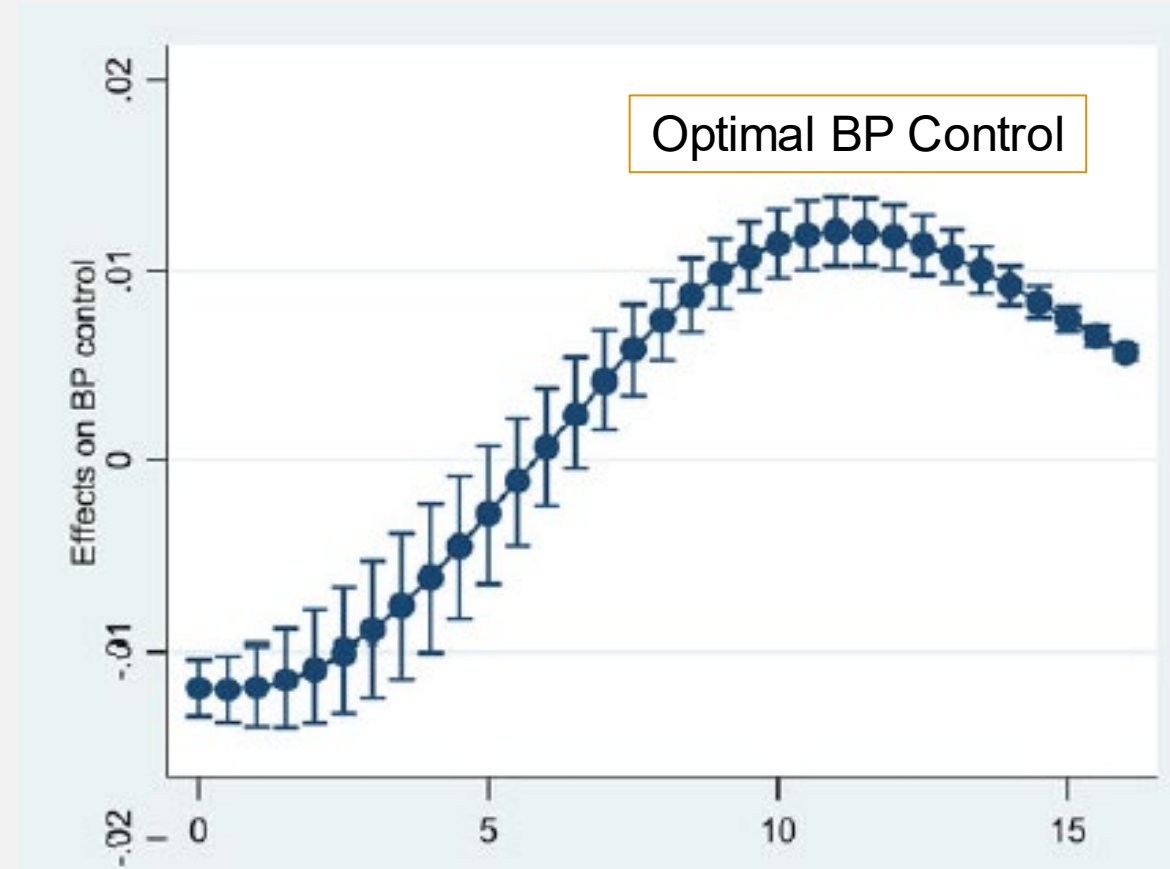
*Sinsky, Optimal Panel Size: Asking the Right Question? *AnnIntMed*.2020

Jing, Panel Size and Health Outcomes. *JGIM* 36(11):340109,2021

What Is the Optimal Primary Care Panel Size?
A Systematic Review

Neil M. Paige, MD, MSHS*; Eric A. Apaydin, PhD, MPP, MS*; Jeremy D. Goldhaber-Fiebert, PhD; Selene Mak, PhD, MPH;
Isomi M. Miake-Lye, PhD; Meron M. Begashaw, MPH; Jessica M. Severin, BS; and Paul G. Shekelle, MD, PhD

- **BLUF**: Insufficient evidence to make evidence-based recs on optimal PC panel size for achieving beneficial health outcomes.
    - Clinical Quality: mixed results
    - Patient Centeredness: no association
    - Access: longer wait time (NS), longer 3rd next available (p<0.01), U-shaped for continuity
    - Efficiency: no data
    - Burnout: Panel size >1,200 higher burnout (53% vs. 48%) (AOR 1.19 [CI 1.01-1.40]*

    - **Take Home Message: Panel size of 1,200/1 FTE MD and 900/1 FTE APP within the VA PACT Model of 3:1 team members (RN, LPN, Clerk) is reasonable.**

*Helfrich, Assoc of workload and staffing with burnout in VA. *JGIM*;32:760-6.2017

GAP STAFFING METRIC FOR PRIMARY CARE

- Since primary care panel size is fixed in the VHA, we can calculate the maximum clinic capacity as:

$$(MD\ FTE*1200) + (APP\ FTE*900)$$

- Calculation represents maximum # of patients clinic can accommodate.

GAP STAFFING METRIC FOR PRIMARY CARE

- PCP Gap Staffing Metric is the ratio of maximum clinic capacity divided by total patients assigned to a clinic

$$\frac{(MD\ FTE*1200) + (APP\ FTE*900)}{Total\ Patients}$$

- Three gap staffing levels were determined:

Ratio $\geq$ 1.2 = Fully Staffed

<1.2 and >1.0 = Marginally Staffed

Ratio < 1.0 = Understaffed

RESULTS

- ■ **939 total Primary Care Clinics -** 23 Excluded (N<450)
  - ▪ 916 Clinics evaluated
    - ▪ 165 Medical Centers
    - ▪ 751 Community Based Outpatient Clinics

Clinic Size	Patient Range	N
Small	(450 - 2,400)	177
Medium	(2,400 - 10,000)	629
Large	10,000+	110

RESULTS (MARCH 2021)

- Total Patients   = 5,014,445
- Total PC clinics = 916
- Total PCP FTE = 6,201 (4,757 MD + 1,444 APP)

- 38% of PC clinics were marginally- or under-staffed (N=351)
  - of which HALF had ≥0.5 FTE gap (N=179)

HOW TO GRAPHICALLY DISPLAY THE STAFFING GAP

Clinical Resource Hub (CRH)
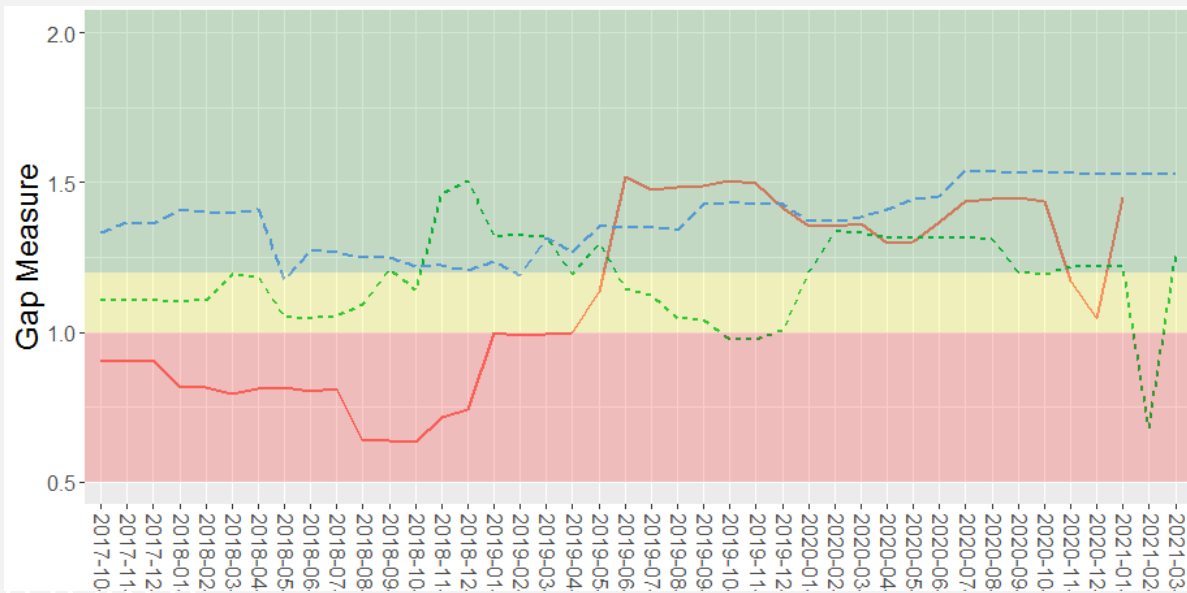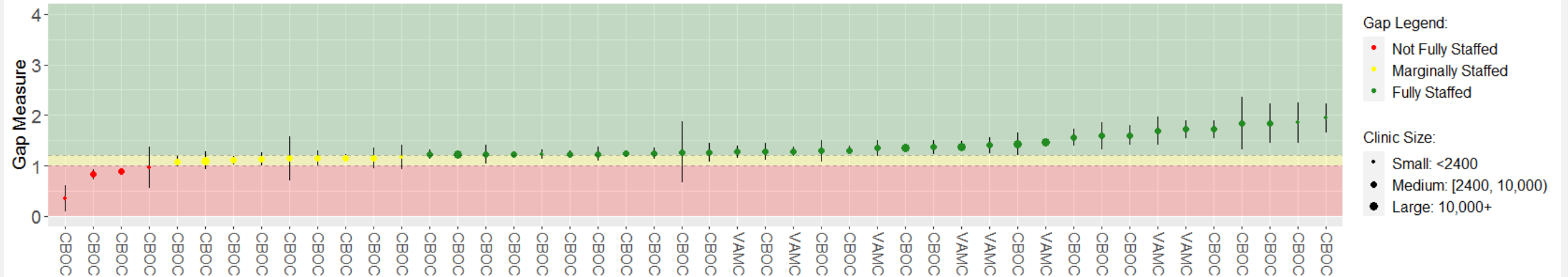
NATIONAL MAP OF THE GAP METRIC

Gap Measure

- < 1.0 (red)
- 1.0 - 1.2 (yellow)
- > 1.2 (green)
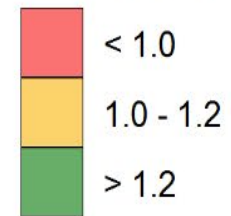
Map of all Primary Care Clinic Locations (N=939) and Gap Metric

THE GAP METRIC OVER TIME
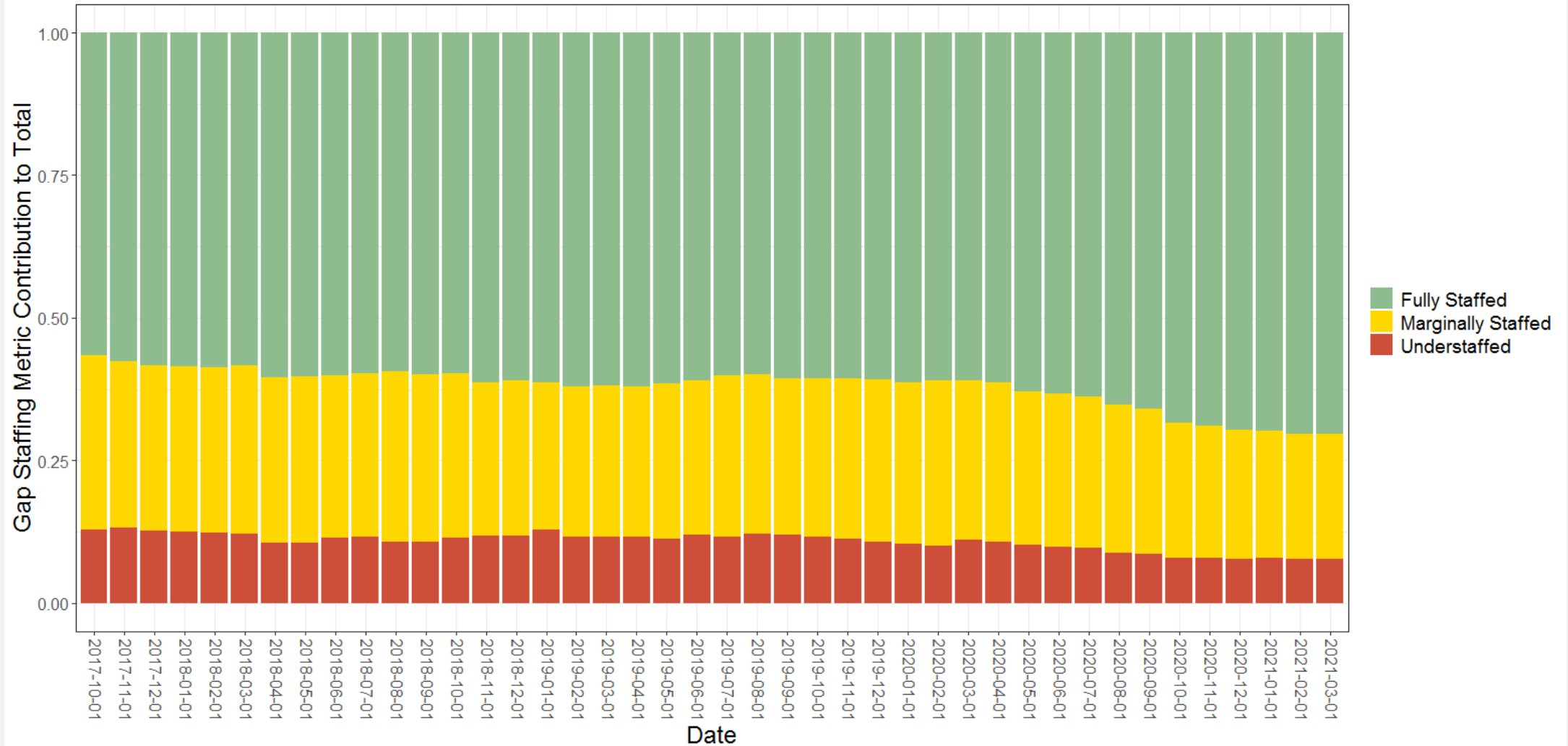
HOW MANY PCPs ARE NEEDED TO FULLY STAFF ALL PC CLINICS?

- Of 351 clinics with a Gap:

  - 179 (51.0%) have a gap ≥0.5 NPP FTE (potential minimum needed to hire)

- Calculate total FTE gap: add all FTE needed to fill all gaps.

  - If filled by MDs (panel = 1,200):

    - 228 FTE distributed across clinics, or 452 MDs if one FTE was hired for every clinic with a gap.
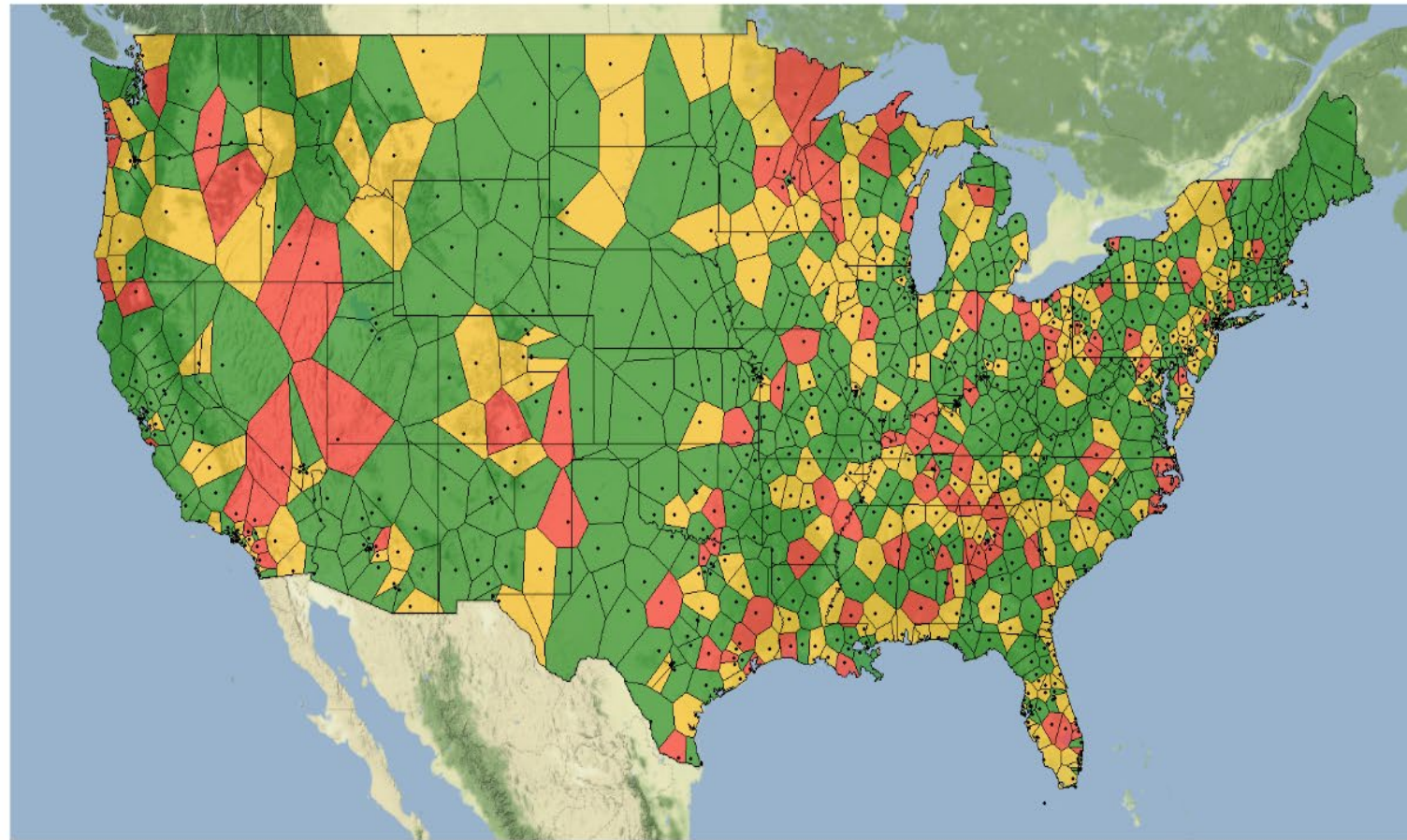
  - If filled by APPs (panel = 900):

    - 304 FTE distributed across clinics, or 521 FTE if one APP were hired for every clinic with a gap.

- VA needs **228-521** PCP FTE to fully staff all PC clinics.

  - **Represents a 3.7-8.4% staffing deficit.**

  - Does not account for excess capacity in some clinics (distribution problem).

CLINIC CAPACITY, ASSIGNED PATIENTS, AND TOTAL PROVIDER FTE BY VISN IN MARCH 2021

VISN	Max VISN Capacity	Patients Assigned to VISN	VISN Level Gap Staffing Metric Value	VISN Level Current Total FTE	VISN Level Current MD FTE	VISN Level Current APP FTE	VISN-Wide FTE "Gap" if MD	VISN-Wide FTE "Gap" if APP	# of Clinics Not Fully Staffed (<1.2)	# Clinics Needing At Least a 0.5 APP FTE
TOTAL	6563334	5014445	1.31	6201.3	4756.7	1444.6	NA		351	179
1	306777	200842	1.53	274.9	220.2	54.8	No Gap at the VISN Level		6	3
2	291036	208050	1.40	282.1	224.4	57.7			26	5
4	309657	239288	1.29	274.5	193.8	80.6			23	13
5	244191	167082	1.46	219.4	185.6	33.7			6	2
6	356751	266422	1.34	397.1	322.7	74.4			11	6
7	431460	379040	1.14	405.7	316.5	89.2	18.9	25.3	35	24
8	557736	438584	1.27	567.3	504.8	62.5	No Gap at the VISN Level		24	15
9	293436	236633	1.24	256.6	181.4	75.2			25	12
10	487758	396765	1.23	464.3	340.7	123.6			30	16
12	297123	220689	1.35	274.1	192.3	81.8			13	3
15	273399	194212	1.41	258.0	176.1	81.9			13	4
16	432627	345199	1.25	389.7	291.2	98.5			30	14
17	427722	333809	1.28	402.0	326.2	75.8			19	10
19	323391	235584	1.37	320.3	228.2	92.1			15	8
20	301365	232617	1.30	284.1	199.5	84.6			14	8
21	380733	257869	1.48	343.5	274.5	69.0			10	4
22	522123	392284	1.33	490.3	364.4	126.0			26	17
23	326049	269476	1.21	297.4	214.2	83.2			25	15

RURAL & URBAN CLINIC DISPARITIES

- Rural clinics tend to be smaller with fewer PCPs serving predominantly rural populations.
  - Greater health care needs, less well insured, and less access to routine care.
  - Greater travel distance to specialty care.
  - Rural clinics are vital resource in rural communities.
  - Density of PCPs in rural counties has increased, but not kept up to urban areas.

- VHA serves a large rural population (~30% of all Veterans).
- Historically faced challenges recruiting PCPs to rural sites.
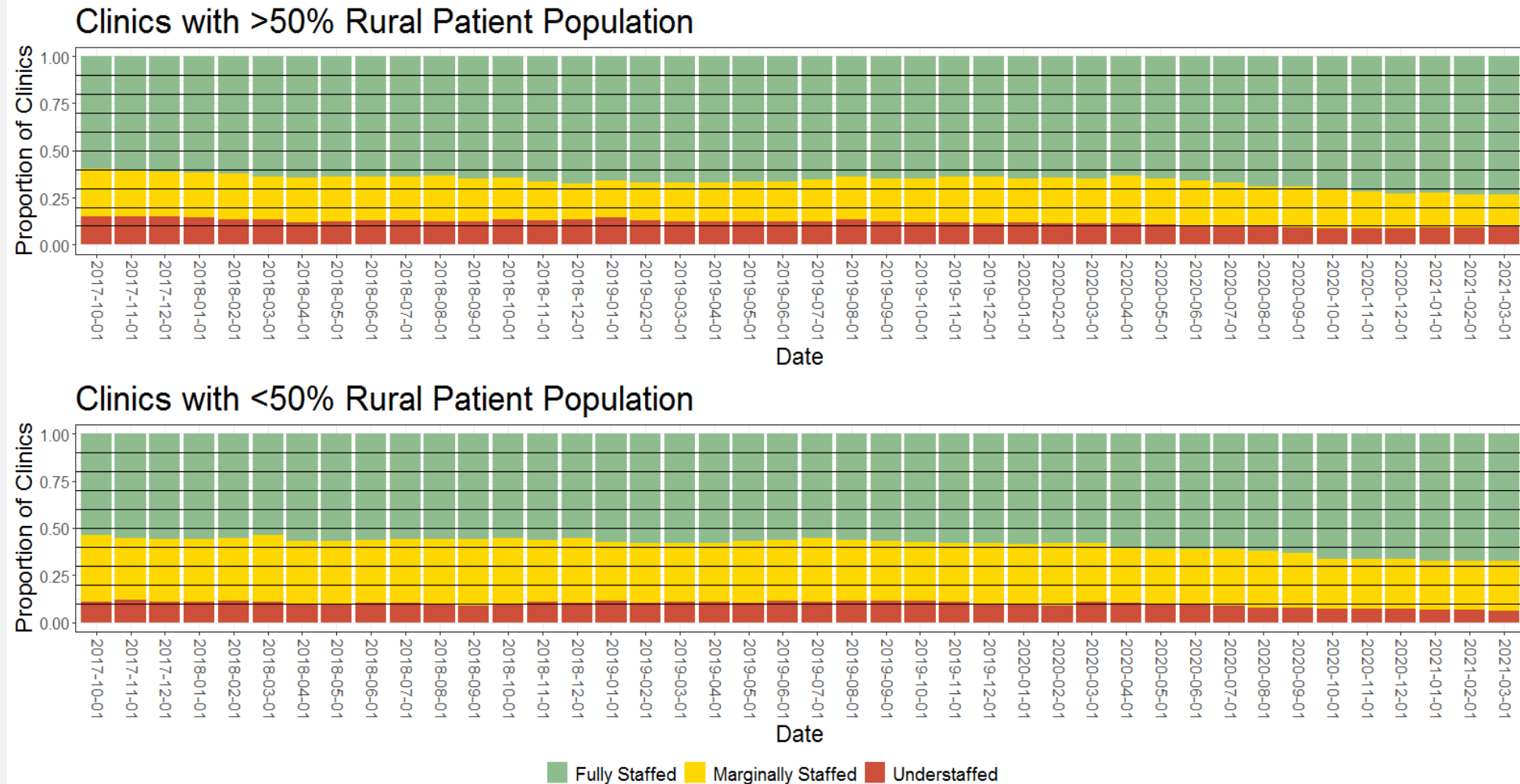
DEFINING CLINICS AS RURAL

- Rural-Urban Commuting Area (RUCA) codes:
  - 30 Mutually Exclusive Categories.
  - Condensed to Urban or Rural Groups.
- Use RUCA codes two ways:
  1) *% of patients assigned to a clinic living in a rural location.*
  2) *Clinic's geographic location.*

% OF MONTHS FULLY STAFFED: RURAL VS. URBAN CLINICS

- Over 42 months, Rural clinics were understaffed 19.0-20.5% of months compared to 13.7-13.8% of months among Urban clinics.
- Rural clinics were 7.6% more likely to be understaffed and experienced 32% greater cumulative time understaffed.

Variable	Percent Rural by Patient Population			Facility Geographic Location		
	≥ 50% Rural Mean	< 50% Rural Mean	p-value	Rural Mean	Urban Mean	p-value
Clinic Sample Size	N=417	N=496		N=332	N=584	
Percent of Months						
Fully Staffed	55.7	50.7	0.056	54.8	52.1	0.320
Marginally Staffed	25.3	35.5	<0.001	24.7	34.2	<0.001
Understaffed	19.0	13.8	0.006	20.5	13.7	<0.001

Clinics with >50% Rural Patient Population

Clinics with <50% Rural Patient Population

Fully Staffed   Marginally Staffed   Understaffed

CLINICS (N=37) CLASSIFIED AS UNDERSTAFFED DURING THE ENTIRE STUDY PERIOD

Station Name	VISN	Clinic Size based on Unique Patients	Clinic Population More Than 50% Rural	Geographic Location of Clinic: Urban or Rural
CBOC 405HE: Keene , NH	1	Small	Yes	Rural
CBOC 436GA: Anaconda , MT	19	Medium	Yes	Rural
CBOC 501GC: Silver City , NM	22	Small	Yes	Rural
CBOC 528G3: Bainbridge , NY	2	Medium	Yes	Rural
CBOC 528GK: Lockport , NY	2	Medium	Yes	Rural
CBOC 528GV: Plattsburgh , NY	2	Medium	Yes	Rural
CBOC 529GB: New Castle , PA	4	Medium	Yes	Rural
CBOC 531GI: Mountain Home , ID	20	Small	Yes	Rural
CBOC 541GJ: New Philadelphia , OH	10	Medium	Yes	Rural
CBOC 548GF: Okeechobee , FL	8	Small	Yes	Rural
CBOC 554GG: La Junta , CO	19	Small	Yes	Rural
CBOC 565GD: Hamlet , NC	6	Medium	Yes	Rural
CBOC 580BZ: Lufkin , TX	16	Medium	Yes	Rural
CBOC 580GC: Galveston , TX	16	Small	Yes	Rural
CBOC 585GB: Rhinelander , WI	12	Medium	Yes	Rural
CBOC 590GC: Elizabeth City , NC	6	Medium	Yes	Rural
CBOC 612GJ: Yreka , CA	21	Small	Yes	Rural
CBOC 614GN: West Helena , AR	9	Small	Yes	Rural
CBOC 626GH: Cookeville , TN	9	Medium	Yes	Rural
CBOC 626GM: Columbia , TN	9	Medium	Yes	Rural
CBOC 635HB: Ardmore , OK	19	Medium	Yes	Rural
CBOC 648GD: Warrenton , OR	20	Medium	Yes	Rural
CBOC 674GB: Brownwood , TX	17	Medium	Yes	Rural
CBOC 508GG: Stockbridge , GA	7	Large	No	Urban
CBOC 520GA: Mobile , AL	16	Large	No	Urban
CBOC 548GA: Fort Pierce , FL	8	Small	No	Urban
CBOC 548GB: Delray Beach , FL	8	Large	No	Urban
CBOC 548GC: Stuart , FL	8	Medium	No	Urban
CBOC 548GD: Boca Raton , FL	8	Small	No	Urban
CBOC 619GF: Montgomery , AL	7	Medium	No	Urban
CBOC 629GA: Houma , LA	16	Medium	No	Urban
CBOC 629GD: Reserve , LA	16	Small	No	Urban
CBOC 640GA: Capitola , CA	21	Medium	No	Urban
CBOC 664GD: Escondido , CA	22	Medium	No	Urban
CBOC 740GC: Corpus Christi , TX	17	Medium	No	Urban
CBOC 626GC: Bowling Green , KY	9	Medium	Yes	Urban
CBOC 501GK: Sante Fe , NM	22	Medium	No	Urban

Note: *Small <2,400, Medium = 2,400-10,000, Large > 10,000 patients*

HOW CAN THE GAP METRIC BE USED?

- Quantify both deficits AND excess FTE to inform strategic workforce planning.

- For clinics needing <0.5 FTE, part-time or shared providers across clinics may be appropriate

- Clinical Resource Hub model can fill gaps from a "hub" to "spokes" using in-person and telehealth.

- Inform best practices for PCP recruitment and retention.

WHAT ABOUT RURAL COMMUNITIES

- Staffing challenges in rural communities aren't new.
- Rural clinics were more likely to operate with less than the prescribed PCP FTE based on assigned panel size.
- A single vacancy in a small clinic has a bigger impact than a large clinic, putting stress on remaining provider(s).
- Improved understanding of what drives vacancies and potential solutions should be considered.

LIMITATIONS

- Calculation is dependent on data accuracy.
  - VHA Provider FTE and patient data should be updated in PCMM.
- Potentially over-simplified approach for complex relationships between patient care and provider availability.
- Associations with access, outcomes, and CRH model not yet explored.
- Ignores the 3:1 PACT staffing ratio for teams.
- Does not account for variations in reliance or demand for VHA care in different markets or existing clinician sharing agreements.

SUMMARY

- Primary Care Gap Staffing Metric can be calculated.
- Of 916 Primary Care clinics <u>38.6% were marginally- or under-staffed (N=351).</u>
  - Half (N=179) had ≥0.5 FTE gap.
- Fully staffing all clinics would require 228 to 521 FTE, a 3.7-8.4% deficit.
  - Or require re-distribution of providers using telemedicine.
- Rural clinics were 7.6% more likely to be understaffed and experienced 32% greater cumulative time understaffed.
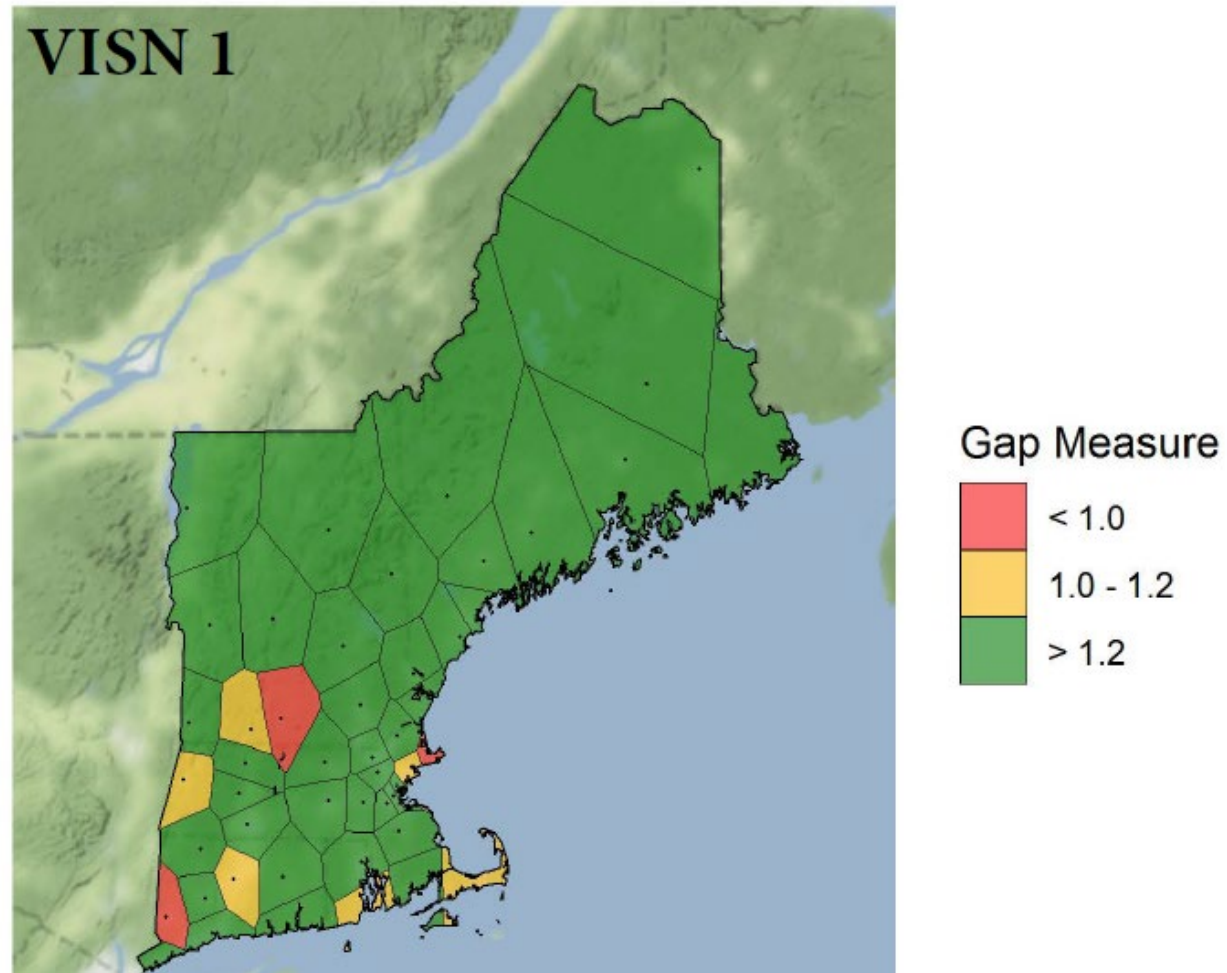
NEXT STEPS

- Calculate Gap Staffing Metric on:
  - Quarterly in year prior to CRH implementation (Oct 2020) and since

- Publish Gap Staffing Metric manuscript and add to online Access Metrics Wiki Compendium
https://vhacdwdwhweb100.vha.med.va.gov/phenotype/index.php/Access:Metrics_Compendium,_VARC_Metrics_Workgroup

- Associate variations in Gap Metric with clinical outcomes and access metrics.
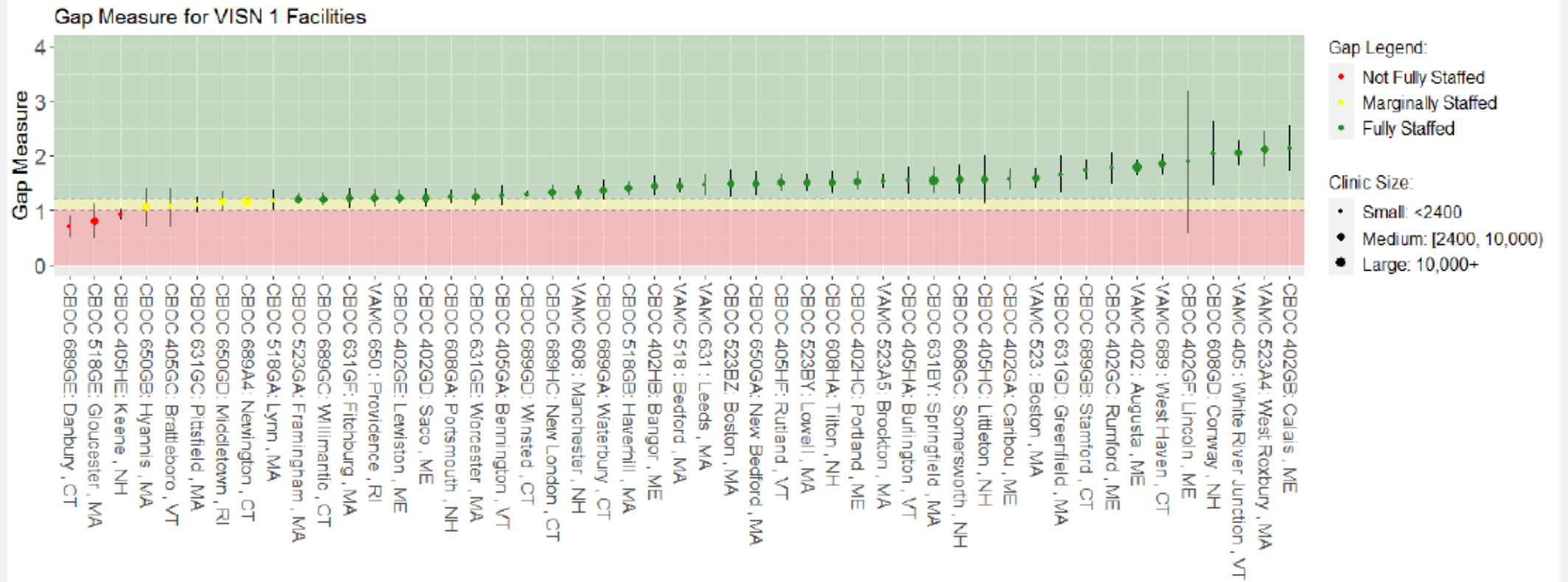
QUESTIONS

Clinical Resource Hub (CRH)

APPENDIX: SPECIFIC EXAMPLE VISN 1 (MARCH 2021)

Clinical Resource Hub (CRH)

Parent Station: VAMC: West Haven CT

Legend:
- CBOC 689A4: Newington , CT
- CBOC 689GA: Waterbury , CT
- CBOC 689GB: Stamford , CT
- CBOC 689GC: Willimantic , CT
- CBOC 689GD: Winsted , CT
- CBOC 689GE: Danbury , CT
- CBOC 689HC: New London , CT
- CBOC 689QA: West Haven , CT
- VAMC 689 : West Haven , CT

Clinical Resource Hub (CRH)