IMPACT ON HIGH-COST HEALTHCARE UTILIZATION DUE TO CHANGES IN PATIENT-CENTERED MEDICAL HOME IMPLEMENTATION 2012 TO 2015

PRIMARY CARE ANALYTICS TEAM

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OVERVIEW

- Patient centered medical home model (PCMH) and VA's Patient Aligned Care Teams (PACT)
- Evidence PCMH impacts healthcare utilization
- VHA Primary Care Analytics Team (PCAT) work on
  - Measuring PACT implementation
  - Association of PACT implementation on outcomes
  - Does improvement in PACT implementation is associated with changes in high-cost utilization

POLL QUESTION #1

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

POLL QUESTION #2

- **What if any is your involvement with PACT?**
  - Provider (Physician, NP, PA)
  - RN Case Manager
  - Mental Health Provider (psychologist, psychiatrist)
  - Other staff
  - Not involved with PACT

PATIENT-CENTERED MEDICAL HOME (PCMH)

- Primary care delivery redesign aimed to provide better quality and lower costs
  - Team-based care
  - Enhance access to care
  - Coordinate care
  - Comprehensiveness
  - Systems approach to quality and safety
  - Sustained partnership with patients

- All major payers including Medicare, commercial payers, and VHA have PCMH models

PRIOR NON-VA RESEARCH ON HIGH-COST UTILIZATION IS MIXED

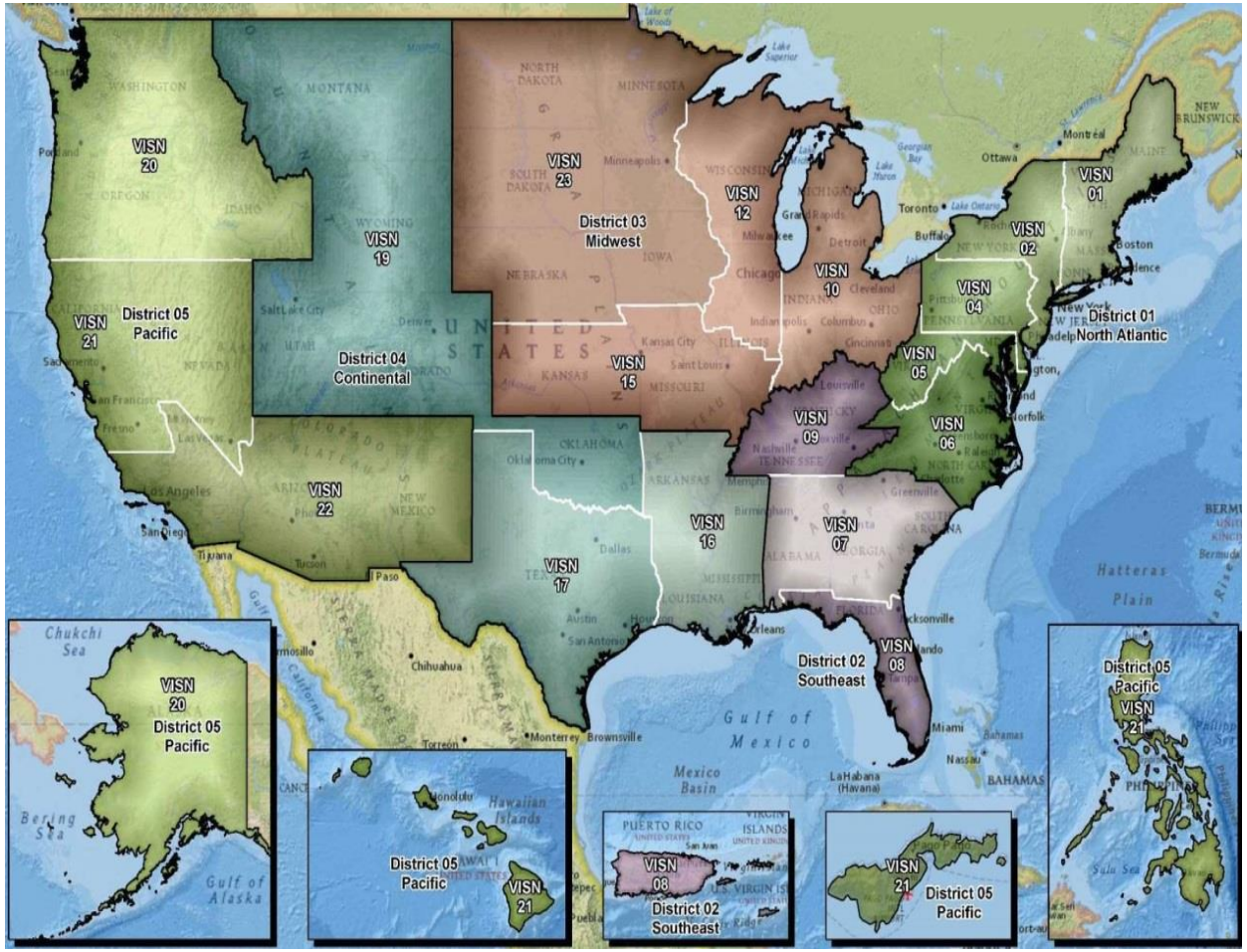
- **Comprehensive primary care initiative**
  - Multi-payer PCMH model of 500 practices. Evaluation used a comparison group of Medicare FFS beneficiaries over 4-years
  - Adjusted Difference-in-Difference that compared the changes in mean patient outcomes
    - CPC practices had 10 fewer ED visits per 1000 ($p < 0.005$) and 5 fewer hospitalizations per 1000
- **Blue Cross Blue Shield Michigan**
  - Practices with higher level of PCMH implementation score had 11.2% reduction in ED utilization and 13.9% reduction in hospitalizations for PCMH-targeted conditions
- **Synthesis Review:** Meta-analysis of 11 PCMH interventions
  - PCMH initiatives were not associated with changes in ED, ACSC hospitalizations, or all-cause hospitalizations

Peikes D, Health Affairs 2018
Green LA HSR 2018
Sinaiko AD, Health Affairs 2017

WHY IS THE EVIDENCE FOR THE PCMH SO MIXED?

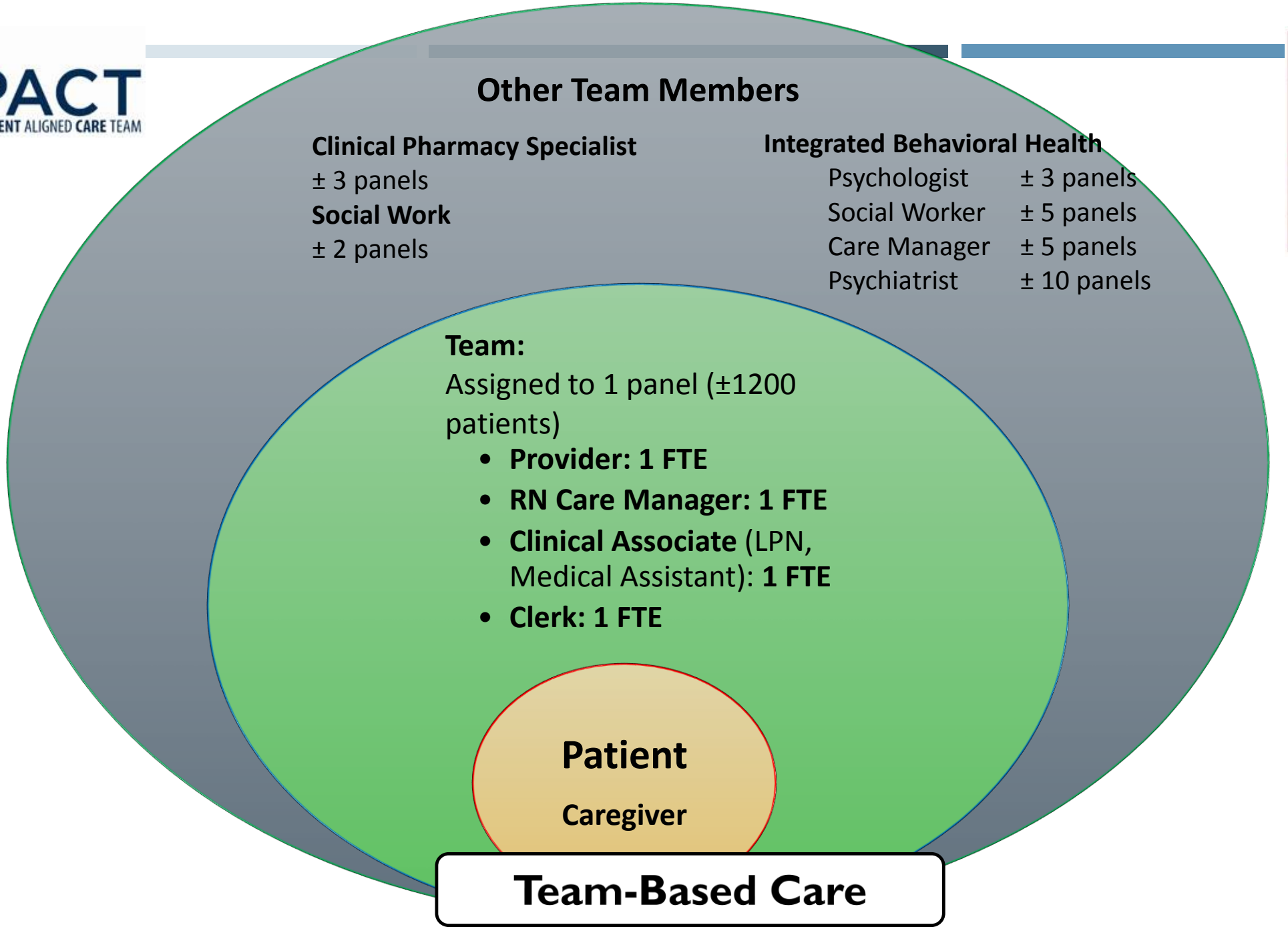
- Few PCMH studies are randomized
- PCMH is a conceptual framework – not a physical thing
- Time to build the infrastructure and the culture of practice to adopt major changes.

VETERANS HEALTH ADMINISTRATION ADOPTED PCMH IN 2010



160 Medical centers, 802 community base outpatient clinics

- 5 million primary care patients (95% empaneled)
- 16 million annual primary care encounters
- Patient-aligned Care Team (PACT) model


Other Team Members
Clinical Pharmacy Specialist
± 3 panels
Social Work
± 2 panels
Integrated Behavioral Health
Psychologist ± 3 panels
Social Worker ± 5 panels
Care Manager ± 5 panels
Psychiatrist ± 10 panels
Team:
Assigned to 1 panel (±1200 patients)
Provider: 1 FTE
RN Care Manager: 1 FTE
Clinical Associate (LPN, Medical Assistant): 1 FTE
Clerk: 1 FTE
Patient
Caregiver
Team-Based Care

PACT IMPLEMENTATION AND OUTCOMES

- Challenges to measuring PACT implementation in VHA
  - Simultaneous rollout, no control group
  - No gold standard to measure PCMH
    - NCQA recognition not as relevant to VHA

MEASURING PACT IMPLEMENTATION: PACT VERSUS NO PACT

ACOS & MEDICAL HOMES

By Paul L. Hebert, Chuan-Fen Liu, Edwin S. Wong, Susan E. Hernandez, Adam Batten, Sophie Lo, Jaclyn M. Lemon, Douglas A. Conrad, David Grembowski, Karin Nelson, and Stephan D. Fihn

Patient-Centered Medical Home Initiative Produced Modest Economic Results For Veterans Health Administration, 2010–12

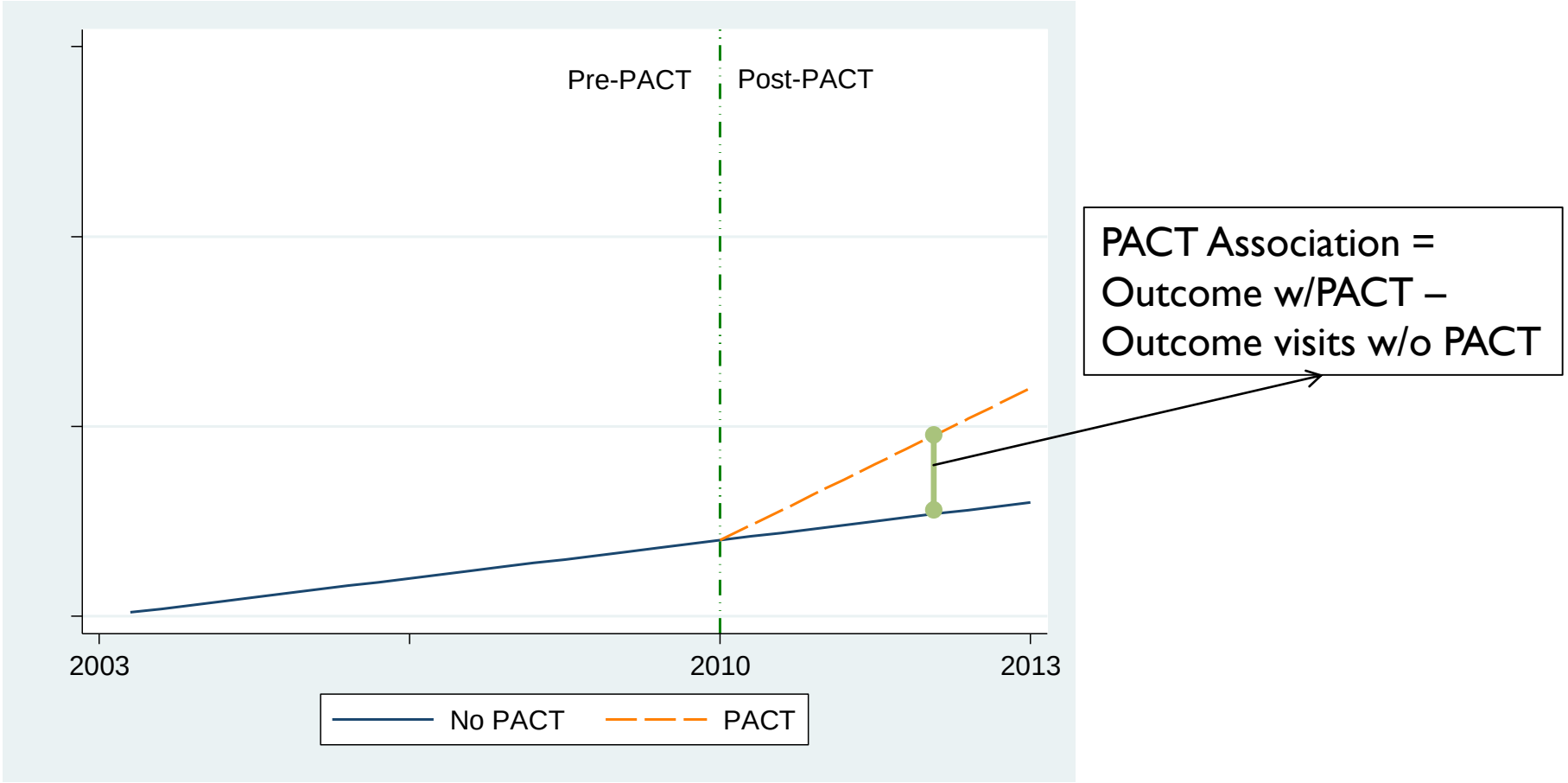
ABSTRACT In 2010 the Veterans Health Administration (VHA) began a nationwide initiative called Patient Aligned Care Teams (PACT) that reorganized care at all VHA primary care clinics in accordance with the patient-centered medical home model. We analyzed data for fiscal years 2003–12 to assess how trends in health care use and costs changed after the implementation of PACT. We found that PACT was associated with modest increases in primary care visits and with modest decreases in

Interrupted time-series (ITS) models

Estimate long-run time trends in utilization

Measured potential deviations from long-run trends following PACT implementation

CALCULATING PACT ASSOCIATIONS USING ITS



PACT IMPLEMENTATION VERSUS NO PACT

- Edwin Wong et al. (SGIM 2018) - Findings persisted using ITS after 4 years:
  - ↓ mental health visits for age <65 patients
  - ↑ primary care visits for age 65+ patients
  - ↓ ambulatory care sensitive condition hospitalizations for age 65+ patients
  - Reductions in total hospitalizations in both cohorts
- Major limitation:
  - Assumes all PACT components were fully adopted at all clinics

MEASURING PACT IMPLEMENTATION

- Development of PACT Implementation Progress Index score (Pi^2)
  - Goal: utilize existing patient, provider, and administrative data
  - Reflects processes & attributes essential to effective primary care
  - Describe variation in implementation across clinic sites

PACT IMPLEMENTATION PROGRESS INDEX (PI^2)

8 Domains	Source of Data	# of Items
Comprehensiveness	Patient surveys (Consumer Assessment of Health Plans=CAHPS-PCMH) n = 75,101	3
Self-management support		2
Patient-centered care & communication		6
Shared decision making		2
Access	Corporate Data Warehouse (CDW) n = >5.6 million & Patient surveys	11
Continuity		3
Coordination of care		8
Team-based care	Primary care personnel survey n = 5,404	18
Total		**53**

Nelson et al, *JAMA Internal Medicine*, 2014

PACT IMPLEMENTATION PROGRESS INDEX (PI^2) SCORES

- Clinic-level rankings generated for each domain
  - Sum of the standardized means for each variable
- PI^2 score calculated for each clinic:

  PI^2 score = (# of domains in the top quartile) –

  (# of domains in the bottom quartile)

  Range from 8 to -8:

PACT IMPLEMENTATION SCORES (PI^2) ASSOCIATED WITH BETTER OUTCOMES

- Cross sectional analysis of Pi^2
- High Pi^2 Score vs. Low Pi^2 score associated with:
  - Higher patient satisfaction, higher performance on clinical quality, lower staff burnout, lower ED visits, lower Ambulatory care-sensitive conditions (ACSC) hospitalizations

Nelson et al, *JAMA Internal Medicine*, 2014
Nelson et al, *JAMA Internal Medicine*, 2017

CURRENT QUESTION

- Is there an association between changes in implementation of PCMH with high-cost health care use?

METHODS

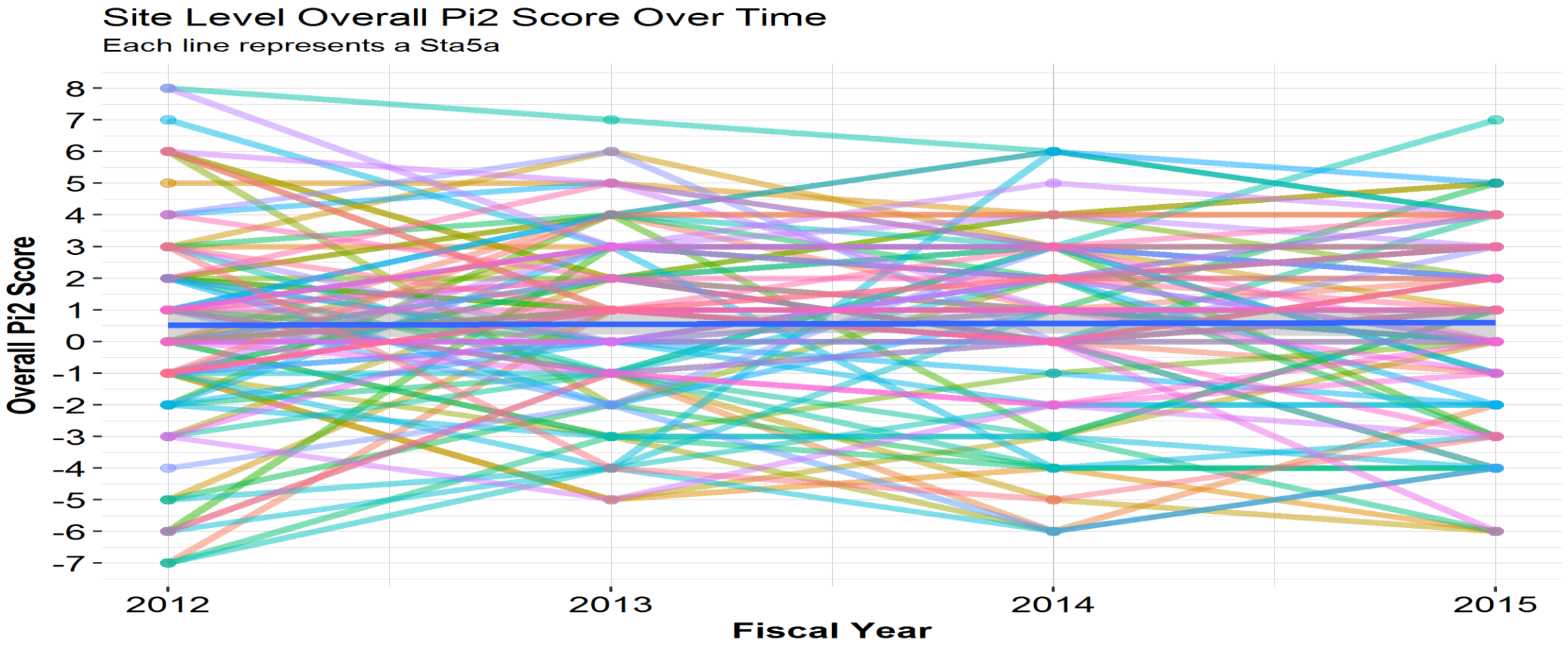
- A longitudinal retrospective cohort study between 2012-2015
  - 2 cohorts: under 65 and over 65
    - Under 65, limited to VA sites with ED
    - Over 65, add Medicare FFS data

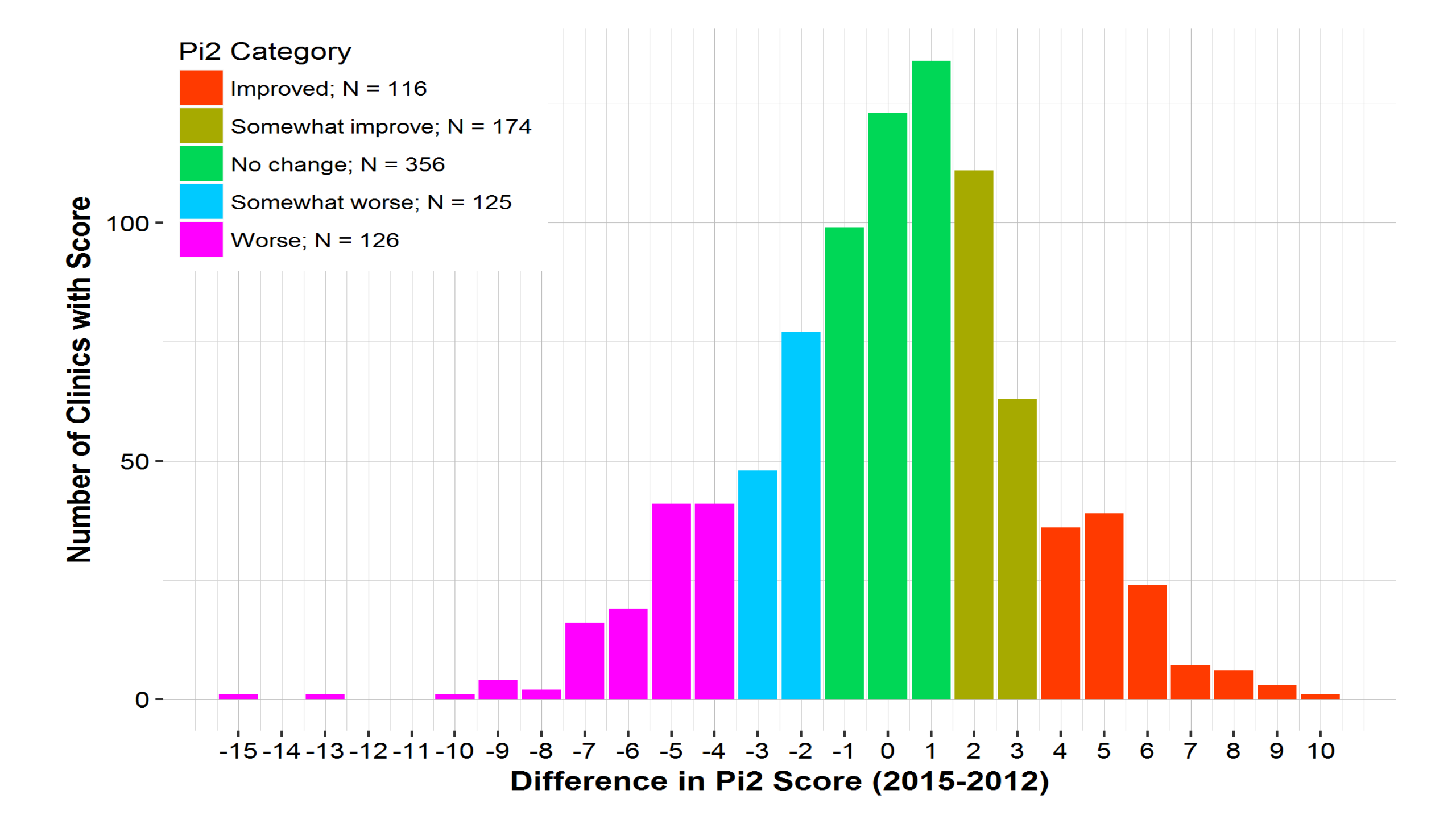
- Primary predictor – Change Pi^2 score (Categorical)
- Primary outcomes – ED visits, ACSC hospitalizations, and all-cause hospitalizations in 2015 (Count)

PACT IMPLEMENTATION PROGRESS INDEX (PI^2) CHANGE SCORE

- Pi^2 score calculated for each clinic:
  - Original Pi^2 score = (# of domains in the top quartile) – (# of domains in the bottom quartile) = Range from 8 to -8
  - Change Pi^2 score = Pi^2 (2015) – Pi^2 (2012) = Range from 16 to - 16

PI^2 VARIABILITY OVER TIME (RANDOM 10%)




Pi2 Category
Improved; N = 116
Somewhat improve; N = 174
No change; N = 356
Somewhat worse; N = 125
Worse; N = 126
Number of Clinics with Score
100
50
0
-15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
Difference in Pi2 Score (2015-2012)

ANALYSIS

Patient-level mixed effects negative binomial and logistic regression models

- 6 models (3 outcomes, 2 cohorts)
- Adjusted for 2012 outcome, patient-level covariates
- Clinic-level random effects

SENSITIVITY ANALYSIS

- VA Reliance: Are patients who use the VA (increase exposure) likely to benefit from PCMH implementation.
  - Among over 65 cohort calculated reliance using combined VA and Medicare data in the baseline year

- Pi^2 clinic baseline score: Stratified analysis to see if VA clinic starting point impacted outcomes.

FINAL ANALYTIC COHORT - DEMOGRAPHICS

	Under 65 (N=664,749)	Over 65 (N =1,646,584)
Race/Ethnicity		
White	367,834 (55.8)	1,385,608 (84.2)
Black	210,121 (31.9)	141,605 (8.6)
Other	80,981 (12.3)	118,754 (7.2)
Age	48.37 (10.72)	74.73 (7.35)
Sex (Male)	566,883 (85.3)	1,618,488 (98.3)
Gagne/Co-morbidity score	0.32	0.35
CBOC**	-	957,610 (59.5)
Rural	59,516 (9.5)	298,144 (18.8)

**No CBOCs have an ER/Urgent Care

MODEL RESULTS – LIKELIHOOD RATIO TEST

	Under 65	Over 65
ED Visits	P < 0.001	P = 0.53
Hospitalizations	P = 0.20	P = 0.10
ACSC hospitalizations	P = 0.99	P = 0.71

INCONSISTENT ASSOCIATION OF CHANGE IN IMPLEMENTATION ON ED VISITS FOR VETERANS UNDER 65

Change in PCMH implementation	IRR	P-value	CI (95%)	Predicted number of events per 1000 patients vs. reference
Worse	0.99	0.77	(0.91 - 1.07)	**-11.0**
Somewhat worse	0.93	<0.001	(0.90 - 0.95)	**-69.0**
No change	1.00	-	-	**Reference**
Somewhat improve	0.99	0.37	(0.97 -1.01)	**-8.0**
Improved	0.88	<0.001	(0.85 - 0.91)	**-110.8**

SENSITIVITY ANALYSIS DID NOT DIFFER FROM MAIN RESULT

- VA Reliance and Pi^2 Clinic starting point did not qualitative or quantitatively differ from our main findings

LIMITATIONS

- Observational study
  - No control group, associations not causal
- Several domains scores rely on self-report from patients and providers
  - Patient experience score do not have much variation

CONCLUSION

- In a retrospective longitudinal cohort analysis we found no association with change in PACT implementation and ED visits, all-cause hospitalizations, and ACSC hospitalizations.

DISCUSSION

- Previous literature has found similar results in measuring PCMH
  - Only 2 previous evaluations have measured PCMH implementation both cross-sectional and longitudinal
    - In both, estimated effects of PCMH were smaller on average in longitudinal analysis
    - Higher Medical Home Index scores were associated with lower rates of ACSC hospitalizations and ED visits (cross-sectional), but no association in a longitudinal analysis
- Outcomes are sensitive to different ways of measuring the medical home

Martsolf GR, Friedberg MW. 2018 Jan 1;56(1):25-30.

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QUESTIONS OR COMMENTS?

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