

COLLEGE OF POPULATION HEALTH

Primary Care Physician Productivity & Patient Satisfaction

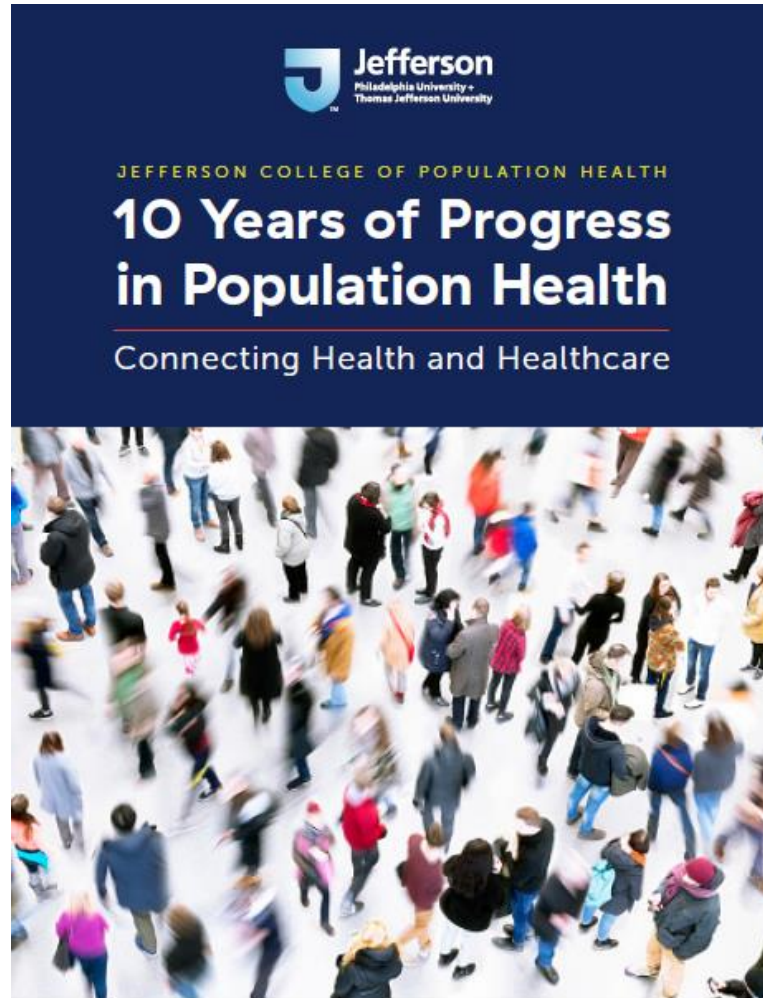
A Mayo Clinic's Community Practice Study

May 20, 2020
12 - 1 pm ET



Jefferson
Thomas Jefferson University

Jefferson College of Population Health



Today's Presenters



Thomas Howell, MD, MS

*Assistant Medical Director, Patient Experience
MCHS Medical Director, Patient Experience
Mayo Clinic Health System*



Mary R. Cooper, MD, JD

*Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association*

19 industrialized countries: Mortality amenable to health care

1997-98

2002-03

	Deaths/ 100,000	Rank	Deaths/ 100,000	difference	rank
France	76	1	65	9	1
Japan	81	2	71	10	2
Spain	84	3	74	9	4
Canada	89	7	77	12	6
Germany	106	11	90	16	12
USA	115	15	110	5	19
UK	130	18	103	27	16
Ireland	134	19	103	27	17

* Table, adopted from Nolte and Mckee (2008) Health Affairs

United States Performance

To Err is Human and Crossing the Quality Chasm:
Called out safety and outcomes issues

Concept of the Triple Aim

Better outcomes

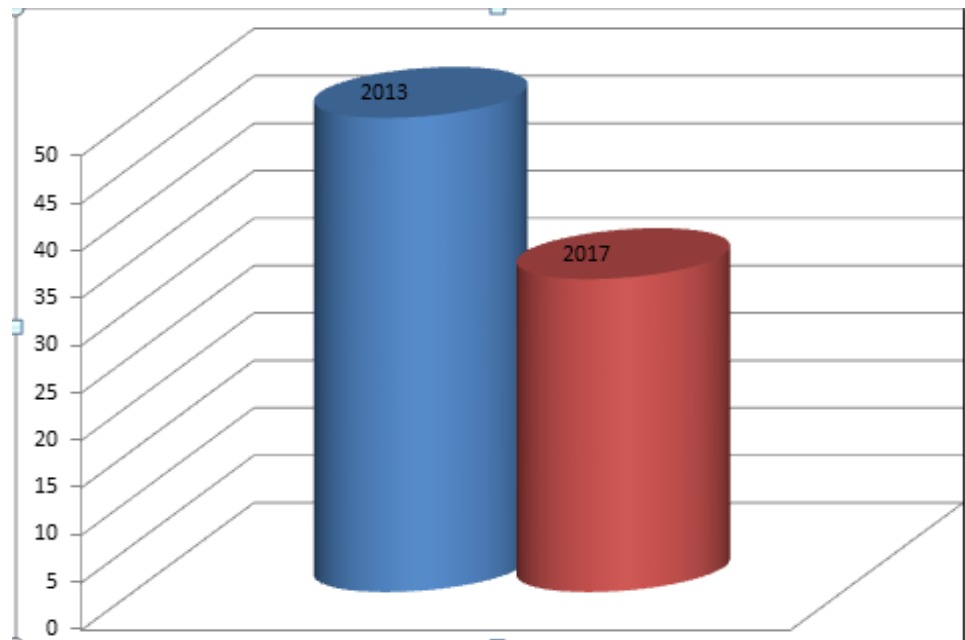
Better patient experience

Less cost per capita

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (2000). *To err is human: Building a safer health system*.
Institute of Medicine (U.S.). (2001). *Crossing the quality chasm: A new health system for the 21st century*.
Berwick, D. (2008) The triple aim: care, health and cost. *Health Affairs*.

Overall improvement in patient satisfaction.

- The same Top Box Percent HCAHPS overall rating
 - 50 percentile performance on HCAHPS in 2013
 - 33 percentile performance in 2017



Mylod, D. et.al. (2019) High reliability organizing and the patient experience. In: Zero Harm: How to achieve patient and workforce safety in healthcare.

Questions about measurement of experience

- Are patients qualified?
- How do we get a large enough return size?
- Are there other patient characteristics that have as much influence on scores as providers do? (45 Residents and 11 staff)
- What is the right reliability level?
 - Research vs Improvement

And, there is this perspective.....

Fenton, J., et.al. (2017) Reliability of physician-level measures of patient experience in primary care.
J Gen Intern Med

Patient Experience and Outcomes

Analysis of risk-adjusted data for 3000 US hospitals as well as a large systematic review showed:
Higher CMS Star ratings associated with improved quality outcomes



“...the data presented display that patient experience is positively associated with clinical effectiveness and patient safety, and support the case for inclusion of patient experience as one of the central pillars of quality in healthcare.” Doyle



Trzeciak, S., et.al. (2016) Association between Medicare summary star ratings for patient experience and clinical outcomes in US hospitals. *Journal of Patient Experience*.

Doyle, c., et.al. (2013) A systematic review of the evidence on the link between clinical safety and effectiveness. *BMJ Open*.

Knowledge Gap

- Berkowitz: analysis of several large studies linking many dynamics, but productivity not included.
- Editorial by T Bodenheimer and C Sinsky: Outcomes, Safety, provider satisfaction and patient satisfaction are linked.

From Triple Aim  Quadruple Aim

The missing data is between satisfaction and productivity.

Berkowitz, B. (2016) The patient experience and patient satisfaction: measurement of a complex dynamic. *OJIN: The Online Journal of Issues in Nursing*.

Bodenheimer, T., & Sinsky, C. (2014) From triple to quadruple aim: care of the patient requires care of the provider. *Annals of Family Medicine*.

What do we know about Volume and patient satisfaction?

- Direct observational study using trained nurses looking at USPTF recommended preventative services
- Patient satisfaction based on immediate, internal, post-visit, non-validated visit rating form
- 108 community-based family medicine offices, 3893 outpatient visits
- ***Patients in high-volume practices were less likely to receive recommended preventative care and had lower satisfaction scores.***

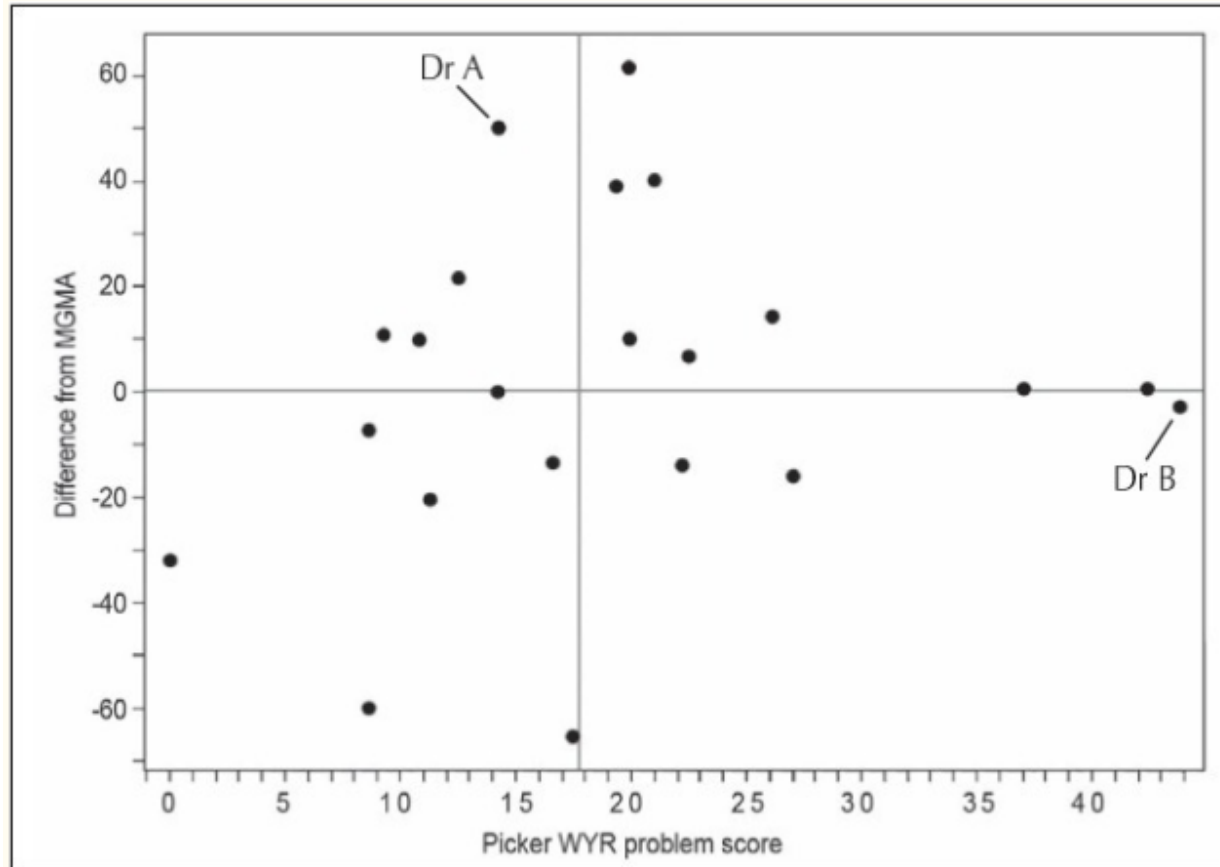
Zyzanski, S., et.al. (1998). Trade-offs in high-volume primary care practice. *The Journal of Family Practice*.

Patient Satisfaction and Productivity

- Boffelli(2012) Study in multispecialty clinic using data from 22 physicians in: Orthopedics, Podiatry, GI, General and Vascular surgery.
- **X axis:** high vs low “problem score” defined as >18% negative response on question: would patient refer friends and family
- **Y axis:** Above or below internal productivity goal of MGMA 63%ile.

Boffelli (2012). Patient experience and physician productivity: debunking the mythical divide in HealthPartners clinics. *The Permanente Journal*

Data from Boffelli



Patient Satisfaction and Productivity

- Wood (2009): hypothesis that patient satisfaction and physician productivity are inversely related
- 2002-2004 data from large system, 427 physicians, 136,000 press Ganey Returns on Medical Practice survey
- Used RVU data to assess productivity**
- Findings:
 - Increased confidence in provider and decreased time spent were associated with increased productivity, relationship was linear
 - Concluded that hypothesis was false, influence of productivity on patient satisfaction appears to be small
 - ***Patient satisfaction and physician productivity do NOT have to be sacrificed for each other***

**** Older data, pre widespread EHR and The ACA**

Wood, G., et.al. (2009) Patient Satisfaction and Physician Productivity: complimentary or mutually exclusive? *American Journal of Medical Quality*.

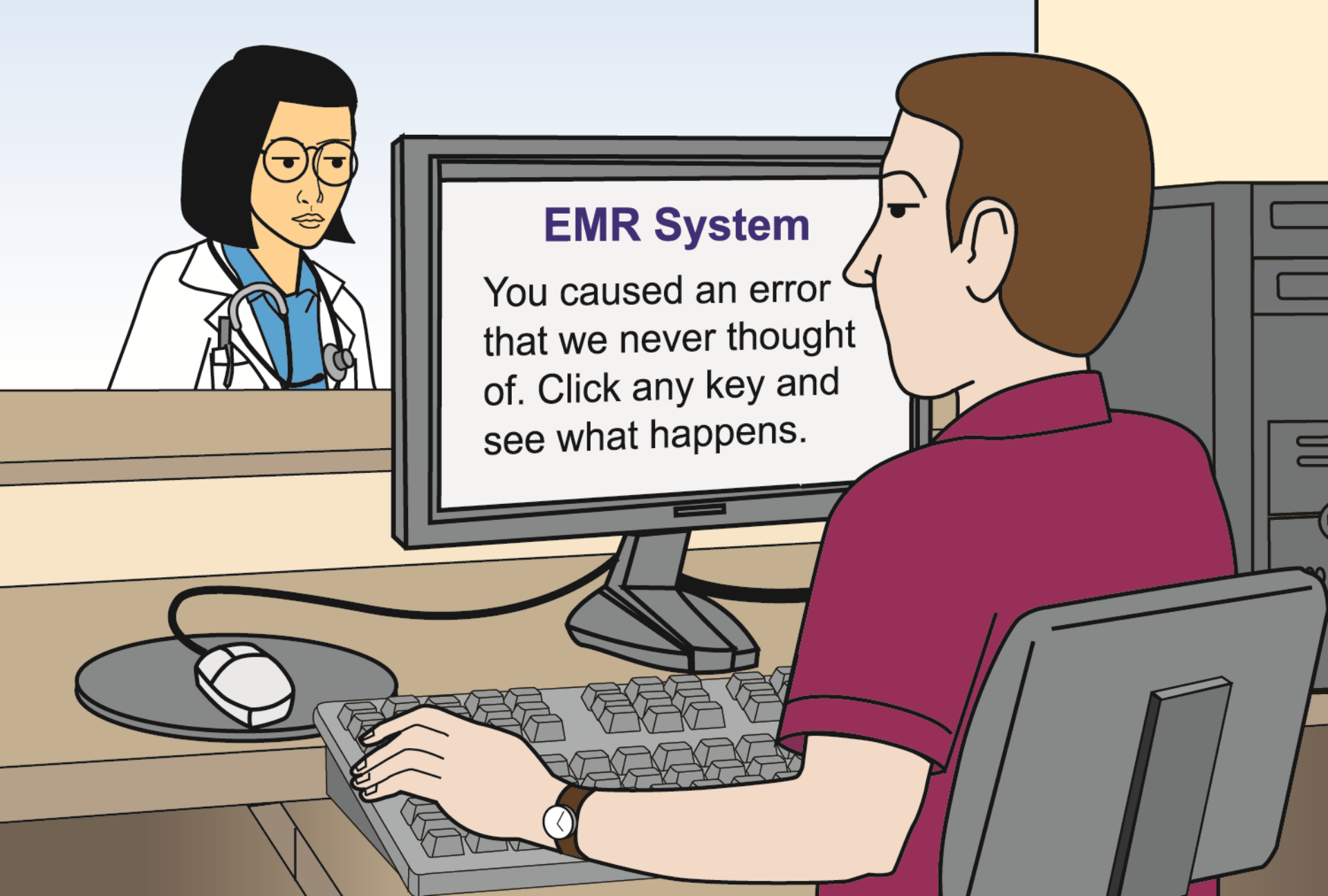
EHR influence

Implementation of EHR has changed experience



Implementation of CPOE decreased both provider productivity as well as patient satisfaction in ED

Bastani, A., et.al. (2010) Computerized order entry decreases patient satisfaction and emergency physician productivity. *Annals of Emergency Medicine*.



EMR System

You caused an error that we never thought of. Click any key and see what happens.

EHR influence

Clerical burden, particularly in primary care is a problem. Large academic study on burnout 2014 vs 2017 with 1774 (95.9%) respondents and 1882 (92.7%) respondents showed *increased burnout from 40.6 to 45.6% with highest in early career physicians (0-10 years post training)*.

Del Carmen, M., et. Al. (2019). Trends and factors associated with physician burnout in multispecialty academic faculty practice organization. *JAMA Network Open*.

Triple Aim Pressures: Influence on Provider Burnout

- Burnout defined as: emotional exhaustion, depersonalization, lack of accomplishment
- Push to perform better on the Triple Aim may have negative consequences on Provider Burnout
- Improved efficiency and experience are part of Triple Aim

“Physicians find practicing medicine harder than ever because it is harder than ever”

Edward Ellison MD, Chairman of the Board Southern California Kaiser Permanente

Ellison, E. (2019). Beyond the economics of burnout. *Annals of Internal Medicine*

Economic costs of burnout.

- Mathematical model estimates annual cost in US of burnout at \$4.6 billion (range 2.6-6.3)
- Worse in younger physicians
- Negative relationship between productivity and burnout in a systematic review.
- Large Meta-analysis showed increased burnout associated with lower patient-reported satisfaction (OR=2.28)

Han, S., et.al. (2019) Estimating the attributable cost of burnout. *Annals of Internal Medicine*.

Dewa, c., et.al. (2014) How does burnout affect physician productivity? A systematic literature review. *BMC Health Services Research*.

Panagiotis, M., et.al. (2018) Association between physician burnout and patient safety, professionalism, and patient satisfaction.: a systematic review and meta-analysis. *JAMA internal Medicine*.

Burnout is epidemic

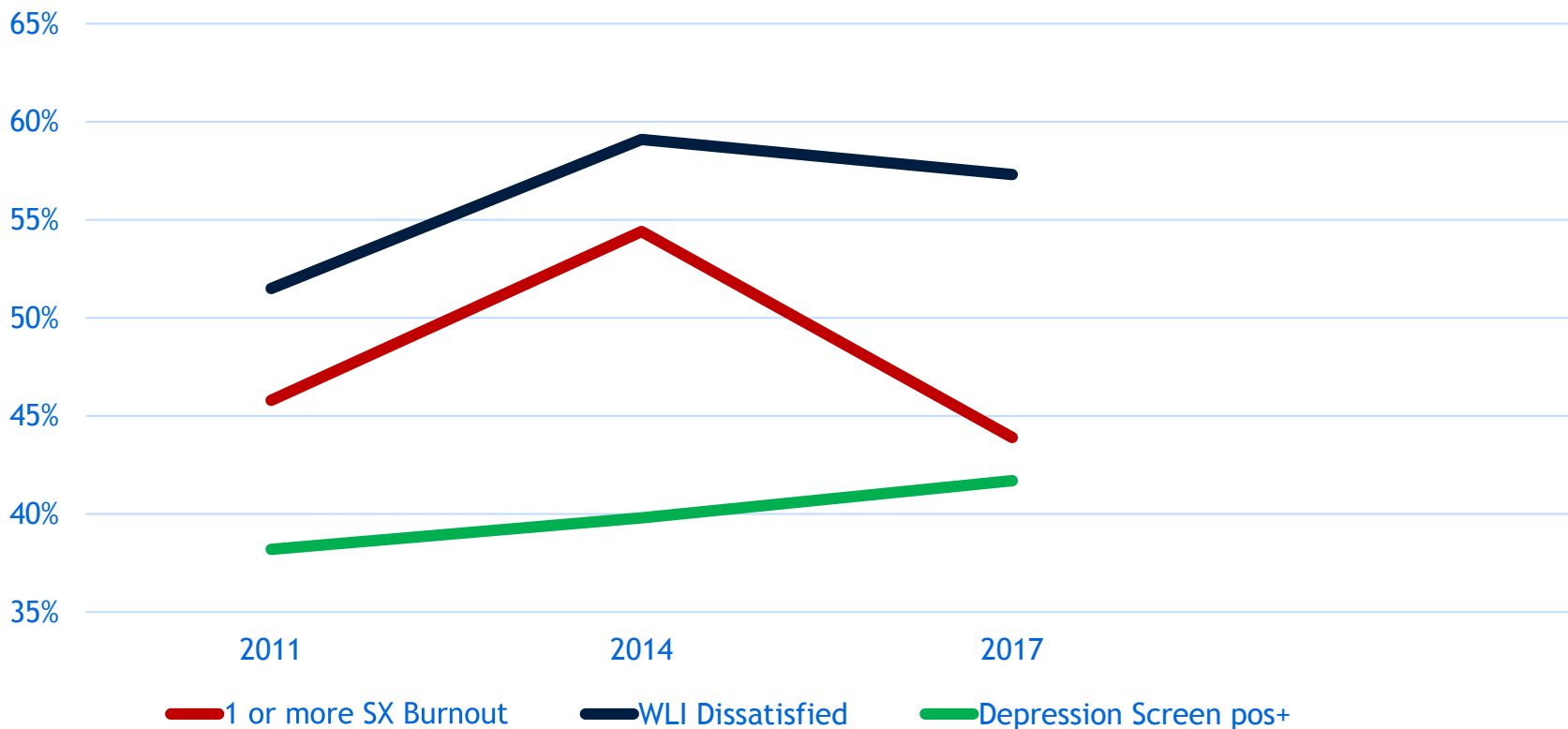
- Shanafelt estimated a decrease 2017 to 2014
- However, still twice that of general US workforce
- Used Maslach Burnout Inventory (MBI), survey of AMA physician database



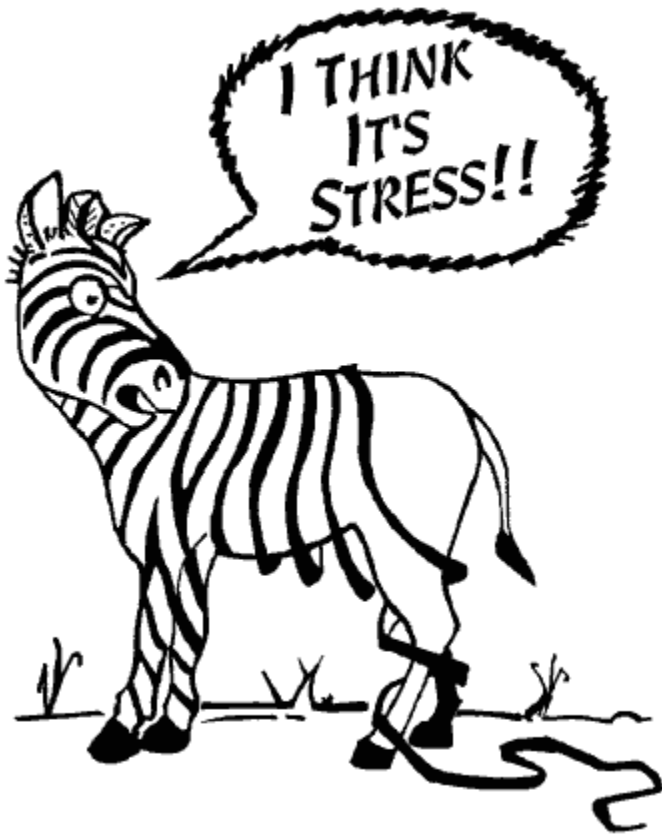
Shanafelt, T., et.al. (2019). Changes in burnout and satisfaction with work-life integration in physicians and the general US working population between 2011 and 2017. *Mayo Clinic Proceedings*.

Shanafelt 2011-2017 Burnout, Work-life Integration, and Depression

Trend Over Time Percent



Has there been improvement or was 2014 a particularly challenging year due to rapid changes associated with ACA?



Burnout: depersonalization and younger physicians

- Some recent studies suggest some aspects of burnout are worse among younger physicians
- Highest rate of depersonalization associated burnout in youngest physicians
- Depersonalization associated with lowest levels of patient satisfaction

Finnegan, J. (2019) A startling 79% of primary care physicians are burned out, new study report finds. *Fierce Healthcare*.

Dyrbe, L.et.al. (2013) Physician satisfaction and burnout at different career stages. *Mayo Clinic Proceedings*.

Qualitative data from Mayo Clinic Health System

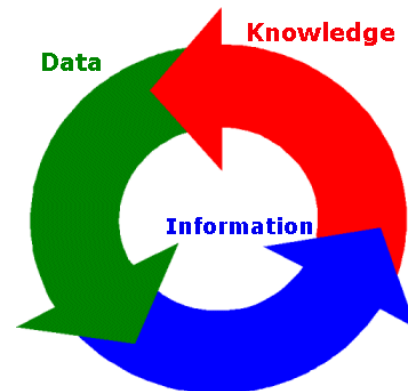
- Belief that the prioritization of patient experience will compete with finances as a priority, according to Senior Vice President in Health System.
- Every Medical Director for Patient Experience consistently hears from physicians that productivity pressures increase burnout and degrade patient experience. (Personal Communication)
- Physicians were strongly concerned about the impact to increase productivity on quality metrics, including patient satisfaction, that were part of the compensation program.

Bunkers, Brian MD. Chair of Mayo Clinic Health System Personnel Committee. *Personal Communication*

The core problem

Lee, Thomas, MD. Chief Medical Officer, Press Ganey. *Personal Communication August 10, 2019.*

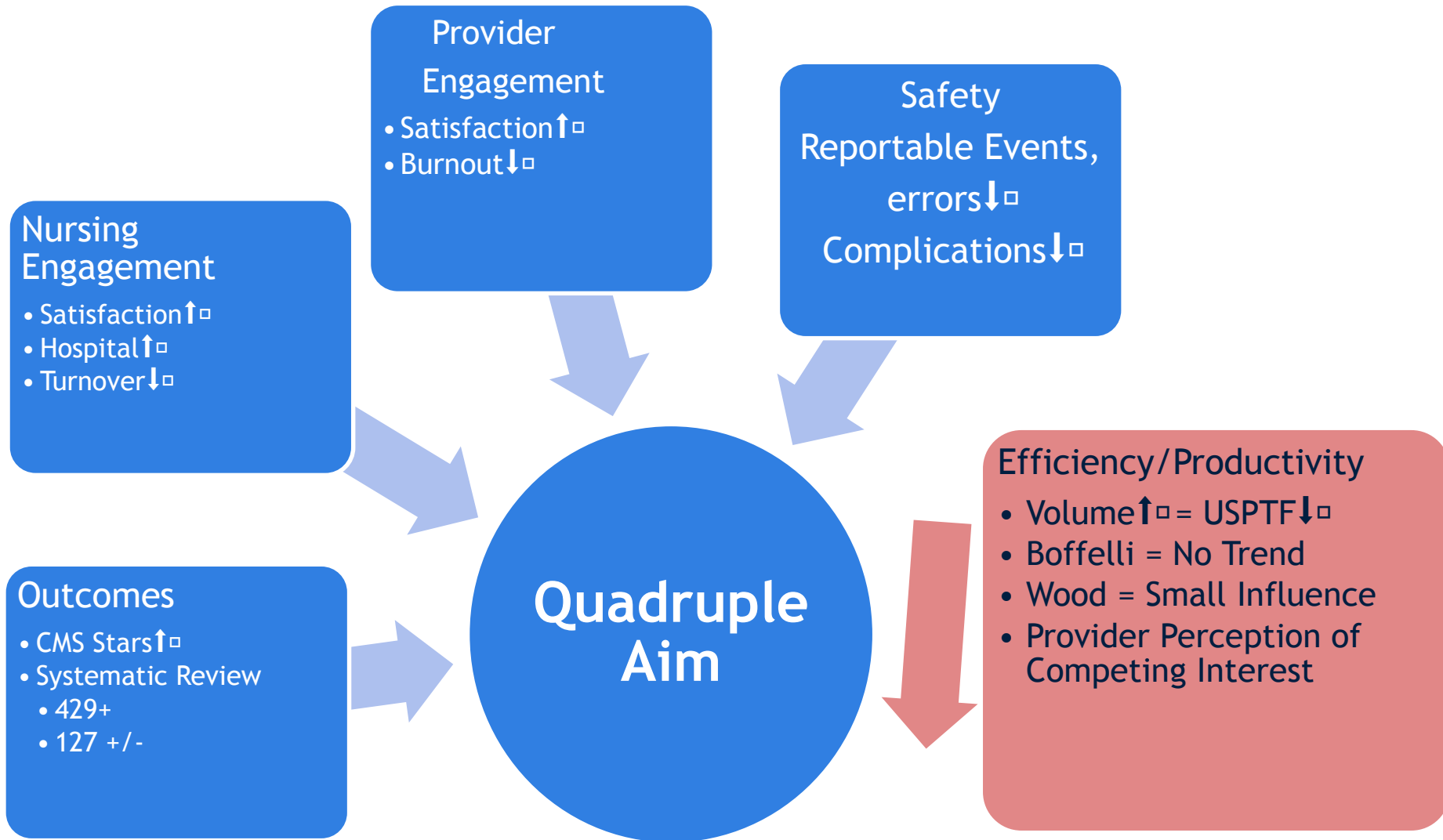
“ I believe that physicians have a suspicion that there is a conflict between patient experience and the performance measures they think of as real quality. And I think business people in healthcare have a concern that there is a tension between patient experience and financial performance”



Where are we in the story so far...?

- Providers feel that there exists a choice between improving productivity and experience.
- While there is much research supporting improved outcomes, safety, as well as provider satisfaction with improved patient satisfaction, there is little direct evidence on the link between productivity and patient satisfaction.
- Previous research suggests a trade-off between quality and productivity.
- Previous research limited by small numbers (Boffelli) or old “Pre-ACA/EHR” data (Wood).

Relationship of Improved Patient Satisfaction to Quadruple Aim

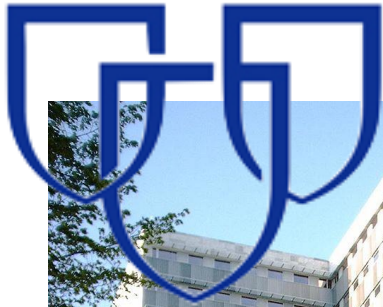


Significance for Our Organization

- Currently setting expectations around productivity (P40)
- Goal to elevate patient satisfaction in community practice
- Improvement of staff and patient experience is one of 4 practice priorities
- Relevant data can be used to modify improvement efforts,
- However, we have minimal data

“No data without stories, no stories not supported by the data.”

MAYO CLINIC



72 Communities, 3 states, >1000 square miles
17 Hospitals (6 PPS, 11 CAH)
72 Clinics (65 owned, 7 Physician Mgmt)
>1000 square miles
Four Regional Management Structures

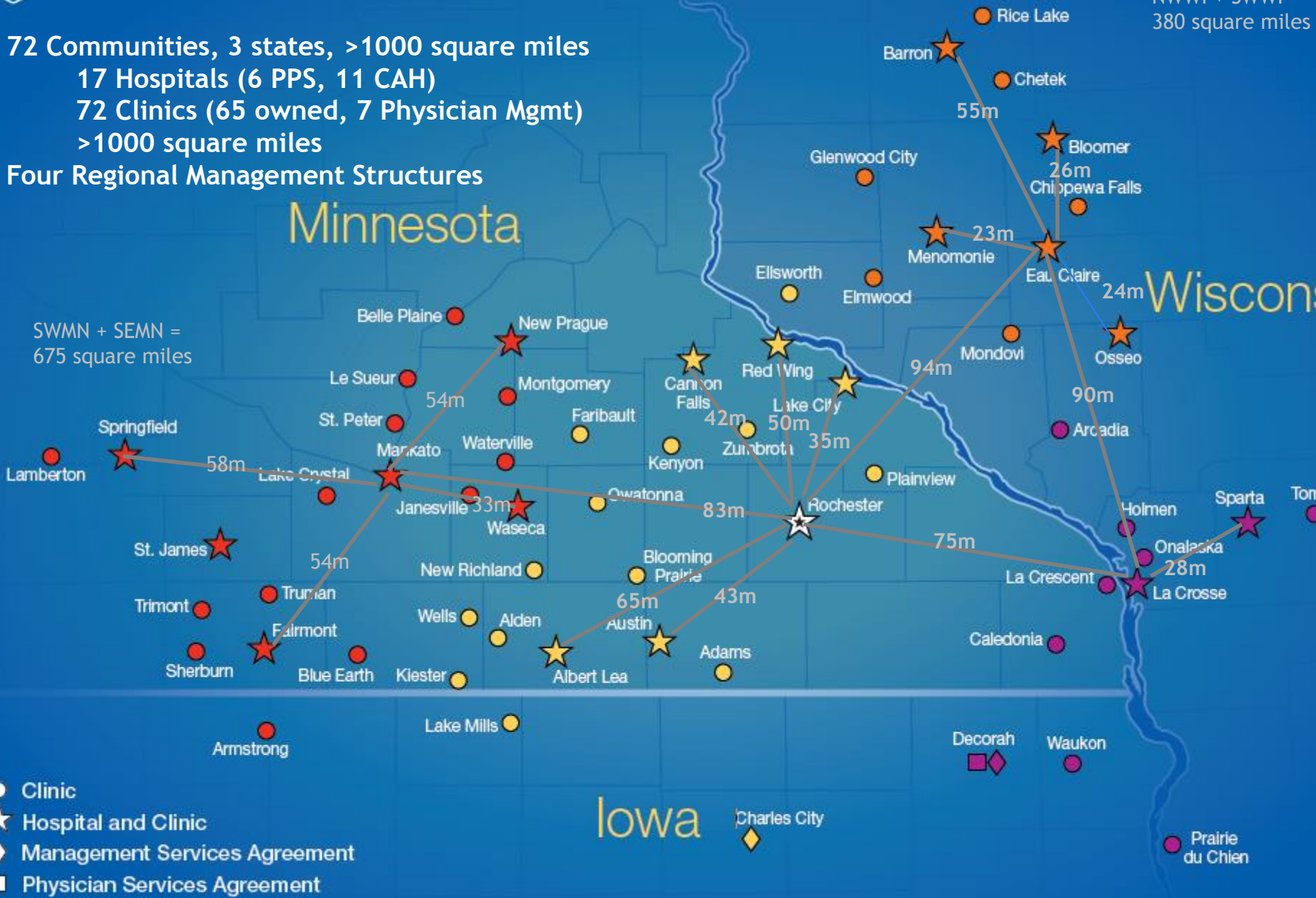
NWWI + SWWI =
380 square miles

Minnesota

Wisconsin

Iowa

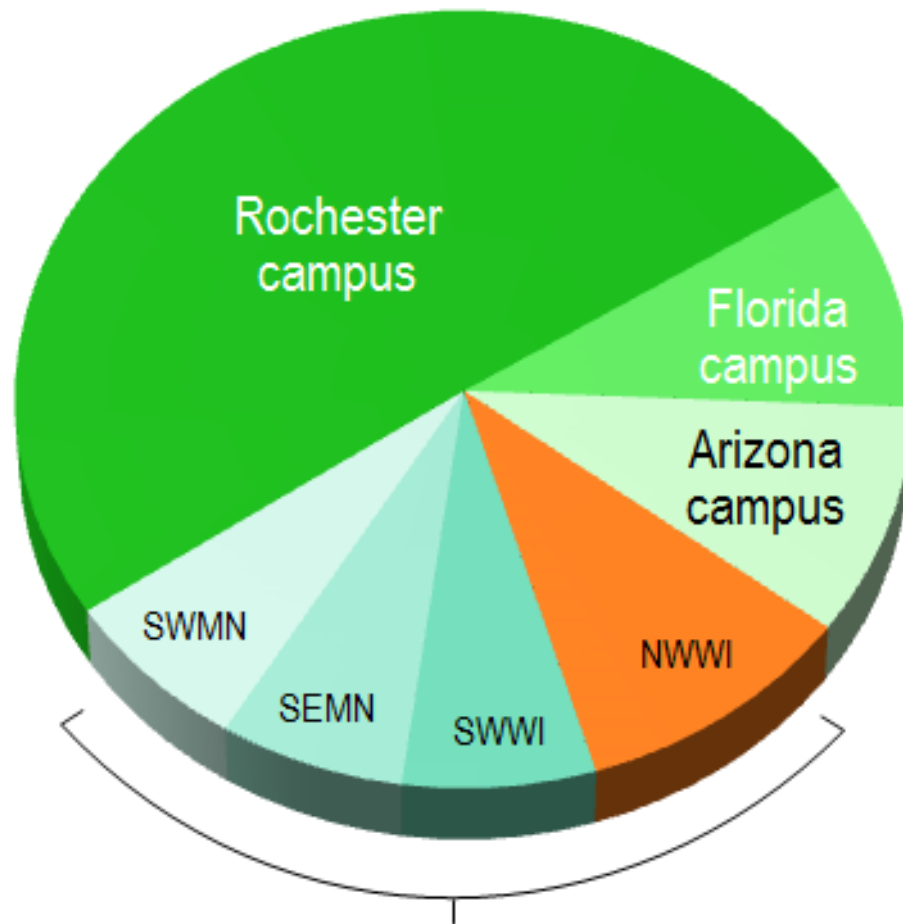
SWMN + SEMN =
675 square miles



- Clinic
- ★ Hospital and Clinic
- ◆ Management Services Agreement
- Physician Services Agreement

The colors on the map represent locations which operate under the same regional management structure.

Mayo Clinic Enterprise



Hypothesis and Design

- There is an correlation between physician productivity and patient satisfaction.
- Optimizing productivity and patient satisfaction with the provider is useful.
- Secondary: there will be a difference based on years of service.
- Design: Cross-sectional stratified research study on the relationship between productivity and patient satisfaction.

Scope And Data

- Mayo Clinic Health System, Outpatient clinic
- Data from Calendar year 2018
- Patient satisfaction data from Press Ganey Medical Practice survey
- Productivity data from Unified Data Platform
- Timeline June, 2019-October 2019
 - Data from calendar year 2018

Sample Press Ganey Medical Practice survey questions

CARE PROVIDER	very				very
	poor	poor	fair	good	good
	1	2	3	4	5

DURING YOUR VISIT, YOUR CARE WAS PROVIDED PRIMARILY BY A DOCTOR, PHYSICIAN ASSISTANT (PA), NURSE PRACTITIONER (NP), OR MIDWIFE. PLEASE ANSWER THE FOLLOWING QUESTIONS WITH THAT HEALTH CARE PROVIDER IN MIND.

- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. Friendliness/courtesy of the care provider | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. Explanations the care provider gave you about your problem or condition | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Concern the care provider showed for your questions or worries | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Care provider's efforts to include you in decisions about your treatment | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Information the care provider gave you about medications (if any) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Instructions the care provider gave you about follow-up care (if any) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. Degree to which care provider talked with you using words you could understand | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. Amount of time the care provider spent with you | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. Your confidence in this care provider | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. Likelihood of your recommending this care provider to others | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Comments (describe good or bad experience): _____

Implementation questions: Patient Satisfaction Options

Mean vs Top Box

- Mean Score: Score on 5 point balanced Likert scale converted to a mean
 - Very Poor, poor, fair, good, very good. Very Poor=0, poor=25, fair=50, good=75, very good=100
 - Gives “partial credit”
 - Scores are tightly bunched
- Top Box
 - Only highest response: very good, counts
 - Percent of patients who gave very good response
 - Inherently more variation as is binary, no “partial credit”
 - Organizationally prevalent metric

Press Ganey Current Mean scores and percentile rank for Provider Section.
 Difference between P25 and P75 is only 2.3 out of possible 100 score.

Lowest Mean	%ile Rank	Lowest Mean	%ile Rank	Lowest Mean	%ile Rank
97.7	99	95.1	66	93.6	33
97.2	98	95.0	65	93.5	32
96.9	97	95.0	64	93.5	31
96.7	96	94.9	63	93.4	30
96.6	95	94.9	62	93.3	29
96.5	94	94.9	61	93.3	28
96.4	93	94.8	60	93.2	27
96.3	92	94.8	59	93.1	26
96.3	91	94.7	58	93.1	25
96.2	90	94.7	57	93.0	24
96.1	89	94.7	56	92.8	23
96.1	88	94.6	55	92.8	22
96.0	87	94.6	54	92.6	21
95.9	86	94.5	53	92.5	20
95.9	85	94.5	52	92.3	19
95.8	84	94.5	51	92.2	18
95.8	83	94.4	50	92.0	17
95.7	82	94.4	49	91.9	16
95.7	81	94.3	48	91.7	15
95.6	80	94.3	47	91.5	14
95.6	79	94.2	46	91.3	13
95.5	78	94.2	45	91.1	12
95.5	77	94.2	44	90.9	11
95.4	76	94.1	43	90.4	10
95.4	75	94.1	42	90.1	9
95.3	74	94.0	41	89.7	8
95.3	73	94.0	40	89.2	7
95.3	72	93.9	39	88.8	6
95.2	71	93.8	38	88.2	5
95.2	70	93.8	37	87.8	4
95.2	69	93.7	36	87.1	3
95.1	68	93.7	35	86.4	2
95.1	67	93.6	34	0.0	1

Which providers to use?

- Original idea was to use all 2000 MCHS providers
- Analysis shows too much variation in data
 - Different specialties have wide variation of average productivity

Median Radiology work rvu=8862



Median Primary Care work rvu=4833



Zuckerman, S., et.al. (2018) Analysis of disparities in physician compensation. A report by the Urban Institute and Sullivan Cotter for the Medicare Payment Advisory Committee. Medpac.gov

Implementation: Providers TB score variation

MCHS Medical Practice Average TB%: April 2018-March 2019

Average Top Box Percent	Overall Care Provider Section	Overall Survey composite
Lowest specialty	69.2%	62.7%
Highest specialty	86.7%	81.3%
Family Medicine	80.8%	73.4%
General Internal Med	81.0%	73.7%
Pediatrics	81.5%	71.6%

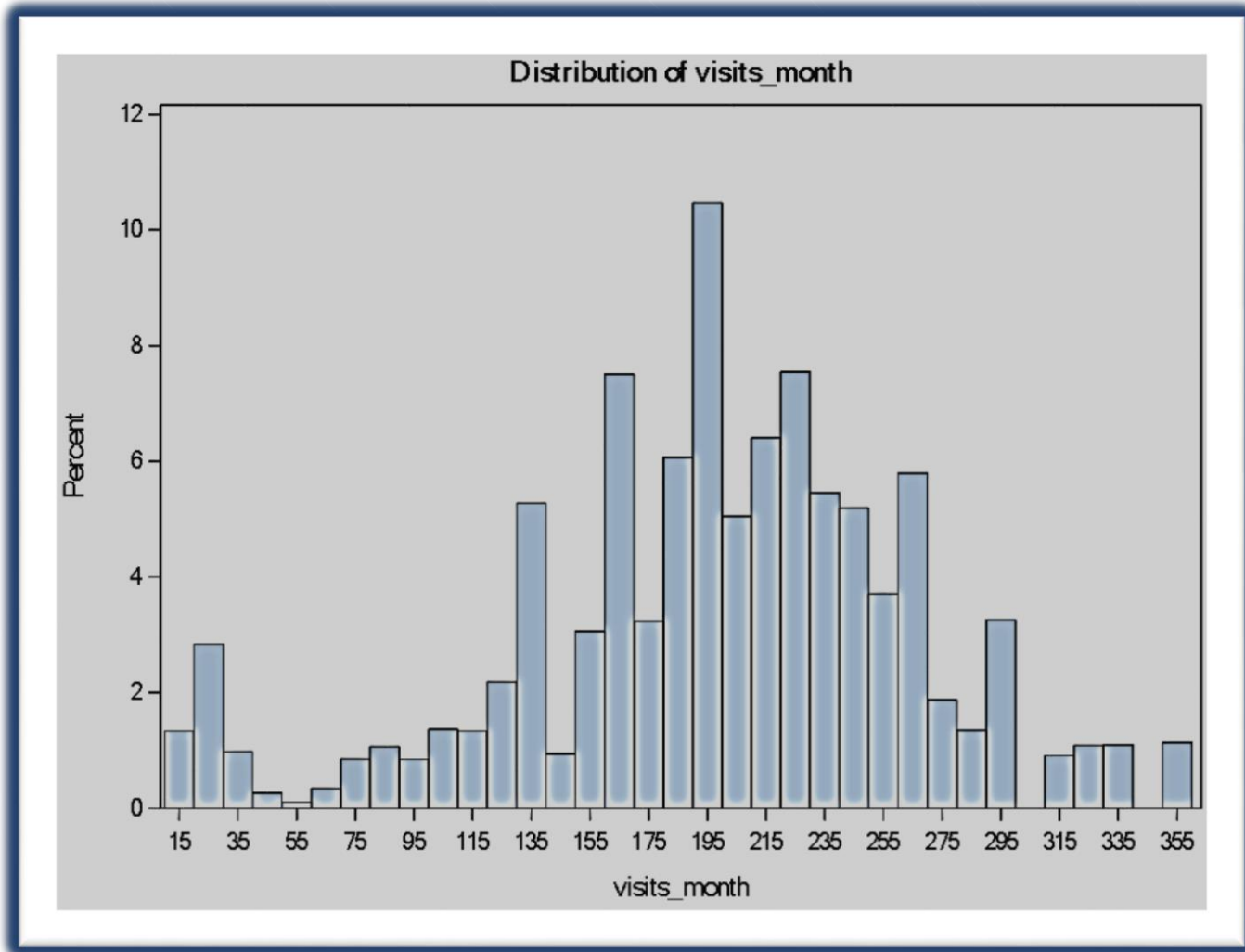
Decisions: how to filter the data

- Medical Practice Survey
- Top Box percent
- Physicians only
- At least 0.8 FTE clinical
- Primary care: FM, GIM, Peds
- Career stage 0-5, 5-10, >10: different than most have done
 - High number of new providers and mandatory trainings

How to measure productivity? 3 options

- RVUs:
 - difficulty with UDP data acquisition
 - ?relevance in future pay for value vs volume
- Panel Size:
 - Not consistently used or defined
- Clinic visits
 - Visit data is attainable
 - Primary care templates are roughly equivalent across regions
 - In clinic, productivity pushed through schedule
 - Measures actual encounters, not procedures or complexity of encounters
 - Distribution looks reasonable

Visits Distribution



Analysis of average visits/month

- How to break down variable of productivity?
 - Continuous as a distribution
 - Above and below median
 - Above and below mean
 - Quartiles
- What are we interested in: do busier physicians have better or worse patient satisfaction scores on LTR practice?
 - Top Quartile are above productivity target of P40 by RVU
 - *240 visits is top quartile*

Physician Characteristics

Years of Service	Physician Count, N(%), Overall Sample = 168
>10 years	90 (53.6%)
5 - 10 years	32 (19.0%)
0 - 5 years	46 (27.4%)

Region	Physician Count, N(%), Overall Sample = 168
NWWI	36 (21.4%)
SEMN	43 (25.6%)
SWMN	37 (22.0%)
SWWI	52 (31.0%)

Table 2. Provider characteristics by number of survey responses received and proportion of top box score for overall likelihood to recommend

Characteristic n (%)	Overall Sample	Top Box Score*	p-value
Years of continuous service			0.142
>10 years	9497 (61.6%)	7448 (62.1%)	
5-10 years	2892 (18.8%)	2247 (18.7%)	
0-5 years	3018 (19.6%)	2294 (19.1%)	
Visits per month			0.021
> or = 241	3748 (24.3%)	2884 (24.1%)	
< 241	11659 (75.7%)	9105 (75.9%)	
Region			0.0001
NWWI	2849 (18.5%)	2267 (18.9%)	
SEMN	3895 (25.3%)	2638 (22.0%)	
SWMN	3544 (23.0%)	2854 (23.8%)	
SWWI	5119 (33.2%)	4230 (35.3%)	

*Top Box represents surveys for which the respondent rated the highest possible category for the question (“Very Good”). Other scores include reported rating that are not top box.

Analysis needed to be nested

- 2 variables needed to be accounted for:
 - Significant regional performance difference with one region (SEMN) significantly underperforming other 3.
 - Variation in returns per provider gave disproportionate weight to those with more returns.

Therefore

Nested model adjusts for:

- Differences in regional practice
- Number of returns per provider

Likelihood of recommending **practice** by years of service and visits per month.

Table 3. Multi-level Mixed-Effect logistic regression* Comparing provider years of Continuous service and with top quartile of monthly visit frequency with likelihood of receiving a top box score for likelihood to recommend practice.

Years of continuous service	Odds Ratio	95% Confidence Interval	p-value
Years of continuous service >10 years (reference)	-	-	-
5-10 years	0.9	0.7-1.2	0.846
0-5 years	0.9	0.7-1.2	-
Visits per month > or = 241 (reference)	-	-	-
< 241	0.7	0.6 -0.9	0.018

*Two-level nested models for provider and region level

Hypothesis and Design: Results

- 1) There is an correlation between physician productivity and patient satisfaction. Unclear, did show that more productive physicians, as we defined that, were more likely to get a top box response on Likelihood of recommending practice.
- 2) Optimizing productivity and patient satisfaction with the provider is useful. Yes, at a minimum to help productivity discussions, remove the “either/or”.
- 3) Secondary: there will be a difference based on years of service. While there is a possible trend between <10 years and >10 years, it was not significant. There are many other possible explanations.

Likelihood of recommending **provider** by years of service and visits per month.

Table 3. Multi-level Mixed-Effect logistic regression* Comparing provider years of Continuous service and with top quartile of monthly visit frequency with likelihood of receiving a top box score for likelihood to recommend provider.

Years of continuous service	Odds Ratio	95% Confidence Interval	p-value
Years of continuous service >10 years (reference)	-	-	-
5-10 years	0.9	0.6-1.2	0.0083
0-5 years	0.6	0.5-0.8	-
Visits per month > or = 241 (reference)	-	-	-
< 241	0.8	0.6 -1.1	0.128

*Two-level nested models for provider and region level

Relative Risk of achieving TB score

Visits Percentile	LTR overall RR	LTR physician RR	Significant
<75	0.7*	0.78	Overall yes, Physician no
>75	1.0	1.0	Reference
Years of service			
0-5	0.9	0.62*	Physician yes, overall no
5-10	0.9	0.86	Both no
>10	1.0	1.0	Reference

Barriers

- Data set is so large, that any difference becomes “statistically significant”.
- Adjusted for that by taking a random 20% sample of the data set for final analysis.
- Is the difference relevant? The Absolute difference in TB score is small.

The message that our busier primary care physicians have better LTR for practice is relevant.



Unanswered questions

- Applicable to other specialties?
 - Is methodology even applicable to procedural specialties?
- Applicable to other practice venues?
 - Is there an optimal patient load for hospitalists?
 - How would we do attribution?
 - Nursing staffing: should PX be an additional consideration?
 - ED?
- Same result with RVUs?
- Is trend data "good enough"? Research vs improvement.
- Why the difference between Physician and overall LTR?
- If we separate out by both years of service & productivity what happens?

Beliefs that hinder us

- If we do not believe we can be successful in improving all aspects of the quadruple aim, we will not be successful.
 - Improved outcomes
 - Improved safety
 - Lower cost for population
- Improved experience of *Patients and Providers*

Be a Gardener not a Mechanic



Questions?

Healthcare Quality and Safety (HQS)

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Questions: JCPH.Admissions@jefferson.edu

Upcoming PopTalk

June 4, 2020 at 12 -1pm ET

Reducing ED Overcrowding by Improving Inpatient Flow



Surekha Bhamidipati, MD, JD
Medical Director, Care Transitions
Christiana Care



Mary R. Cooper, MD, JD
Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association

For more information: [Jefferson.edu/PHLS](https://jefferson.edu/PHLS)

Thank You!