

# Determination of Primary Care Panel Size in a Value Based Compensation Health Care Delivery Environment

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# Disclosure

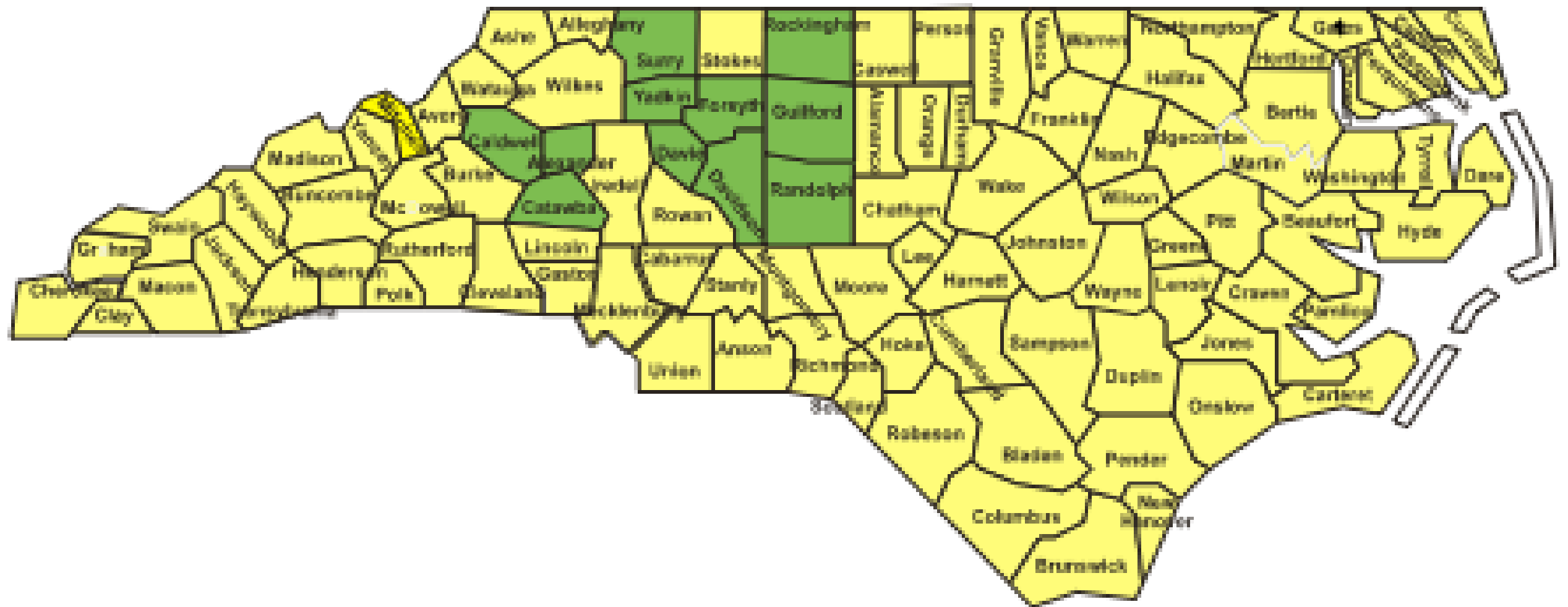
- I am employed by Cornerstone Health Enablement Strategic Solutions, a wholly owned subsidiary of Cornerstone Health Care, P.A., High Point NC.
- I have no conflicting financial interest in any product or enterprise related to this presentation.

# Learning Objectives

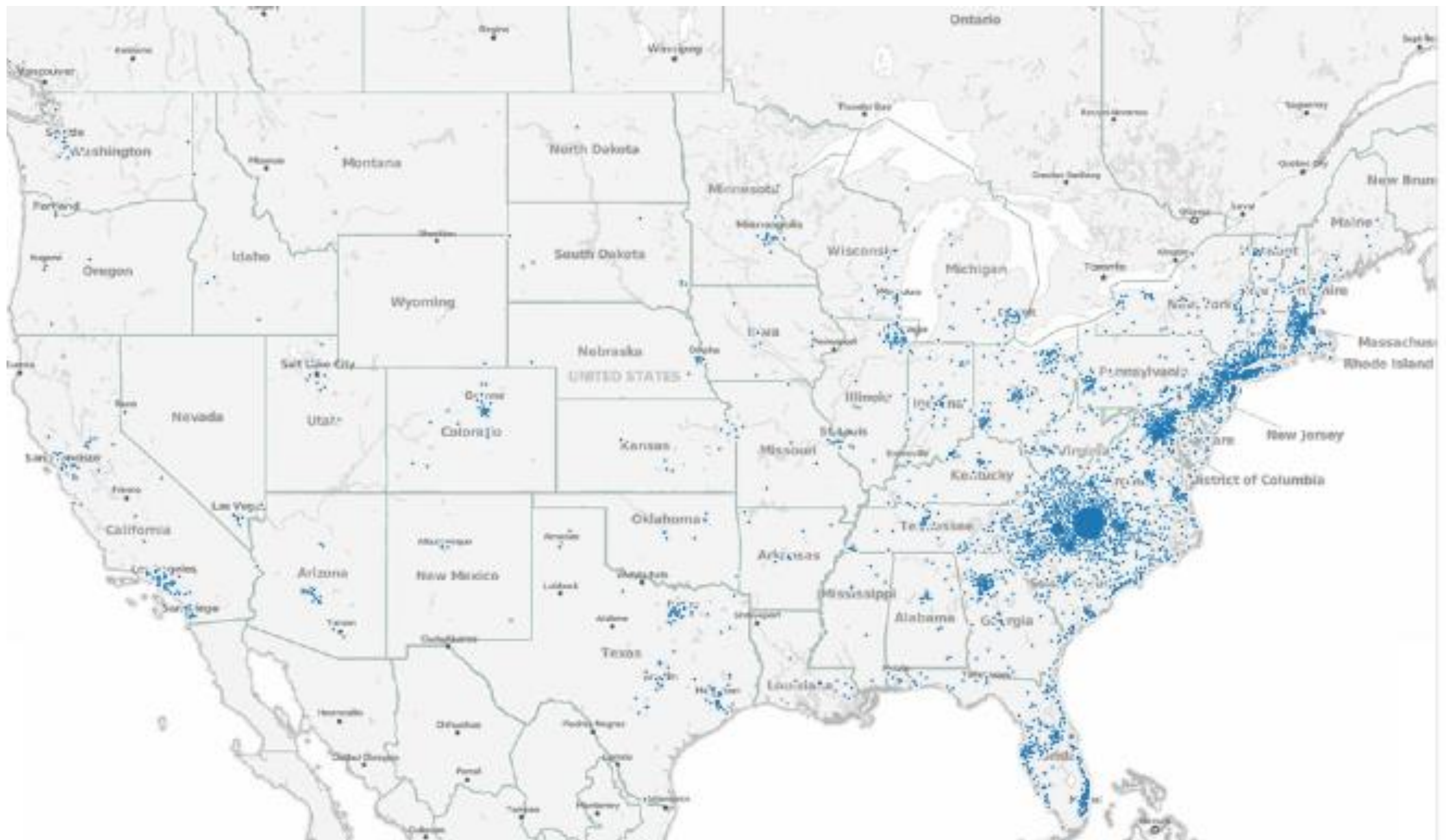
- Understand the concept and different definitions of physician panel size and potential use for equitable workload distribution by adjusting for patient risk
- Understand the potential benefits and risks of using panel size as part of a physician compensation models and value based delivery systems
- Consider different variables of interest for panel size computations
- Understand the concept of “balancing metrics” to assess unintended consequences panel size use in physician compensation models

# Cornerstone Health Care

1995	2013
42 physicians	> 250
2 APPs	111 APPs
8 specialties	36 specialties
221 employees	> 1800 employees
19 locations	115 locations
1 hospital (High Point)	15 hospitals
	29 PCP PCMH level 3



# NC County Coverage



# Patient Locations

# Primary Care Practice Characteristics

- Most physician providers are Cornerstone shareholders, i.e. owners
- Few “employed” physicians, all APPs employed
- Offices and providers manage their own schedules

# Variables of Interest for Risk Adjusted Panel Size Calculations

- Unique patients seen in time frame
- Total time devoted to patient care
- PCP “extenders” including APPs, pharmacists, social workers etc.
- Risk scores for each patient and relationship to work burden
- Non-visit based care delivery



# Traditional Definitions of “Panel Size”

- Unique 12 (U12) and Unique 18 (U) patient visits to a provider in 12 - 18 months

# Patient Panel Size

## Conceptual Framework

- In a value based delivery model transitioning away from strictly fee for service - “panel size” is the number of patients “under care” by a primary care provider.
- “Under care” is loosely defined but may include having seen the PCP in 12 - 18 months
- In a PFV environment - “under care” may include: non-face to face visits, nurse care navigation, social services, dietitians, and even speciality visits arranged by the PCP

# Patient Panel Size Conceptual Framework (cont.)

- FFS revenue =  $fx(\text{Service Volume, Price})$
- PFV revenue =  $fx(\text{Patient Panel, Value})$

# Risk Adjusted Panel Size Rational

- Value based delivery model provider compensation is dictated by volume of effective care delivered by the provider adjusted for patient complexity.

# Compensation Example

- Total PCP compensation for 1200 patients of average disease burden with high quality care = \$240,000 or \$200 PMPY
- Total PCP compensation for 400 patients with disease burden “3 times greater” than average with high quality care = \$240,000 or \$600 PMPY

# Risk Adjusted Panel Size

## Working Definition

- Unique patients managed by a provider for 12 contiguous months adjusted for the clinical risk of the patients

# Definition Problems

- What is a “provider” - PCPs, APPs, nurses, care navigators, social works, etc?
- What is “managed” - E&M visits, specialty referrals, home health visits, telephone consultations, etc?
- What is a “month” - 30 days, visit hours, days worked, hours worked, etc?

# Definition Problems (cont.)

- What is “risk” - demographics, historic cost, Charlson scores, HCC scores, claims based groupers, “complexity,” etc?
- What is “risk adjusted” - ?



# Definition of “Provider”

- Physician and Advanced Practice Practitioner (APP) treated equally

# Definition of “Managed”

- “Managed” = patients with any evidence of ongoing management in time period - in essence, any billable service by a provider evidenced in the EMR

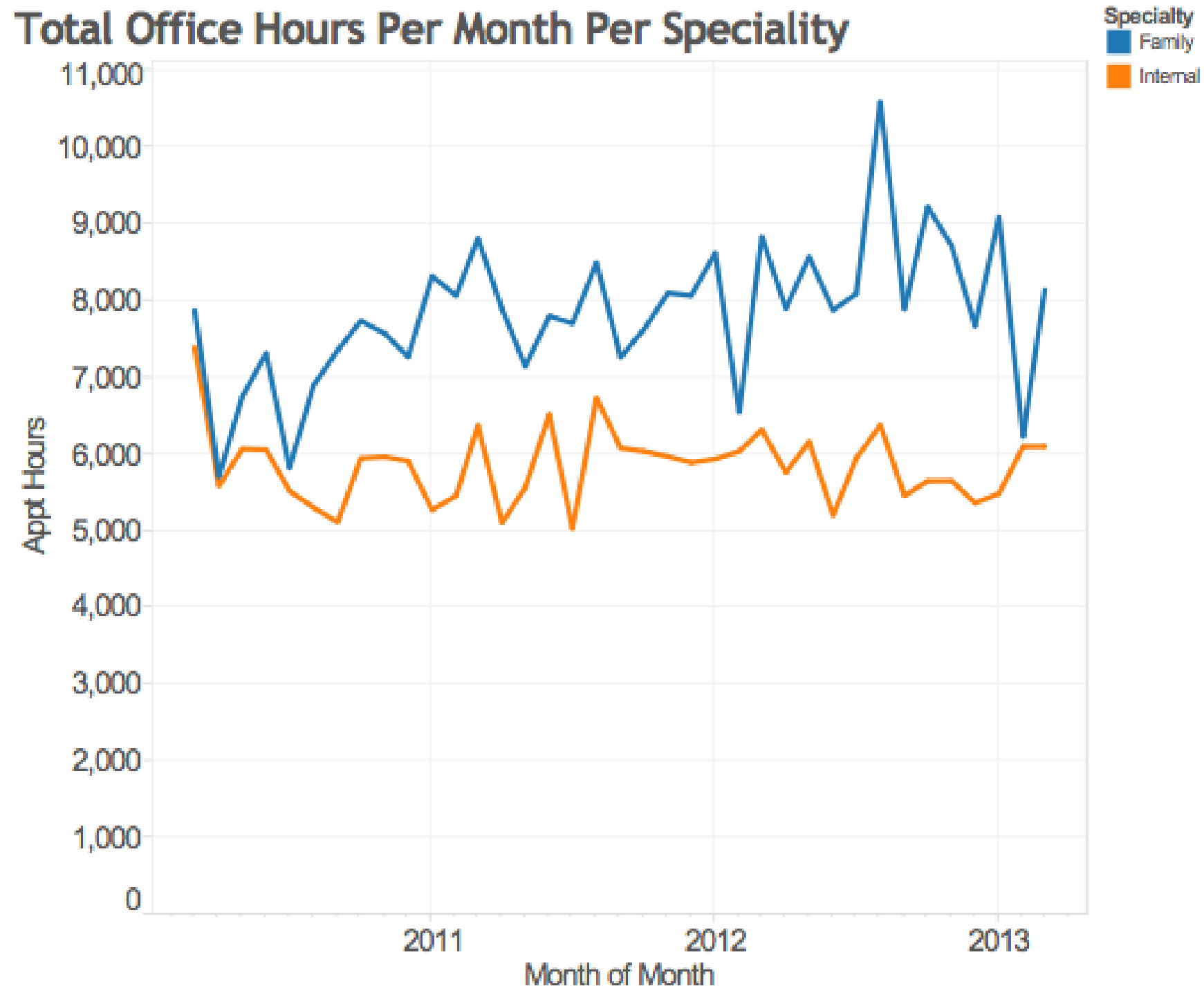
# Definition of “Month”

- Month = median number of available office hours in Cornerstone’s primary care practices per month

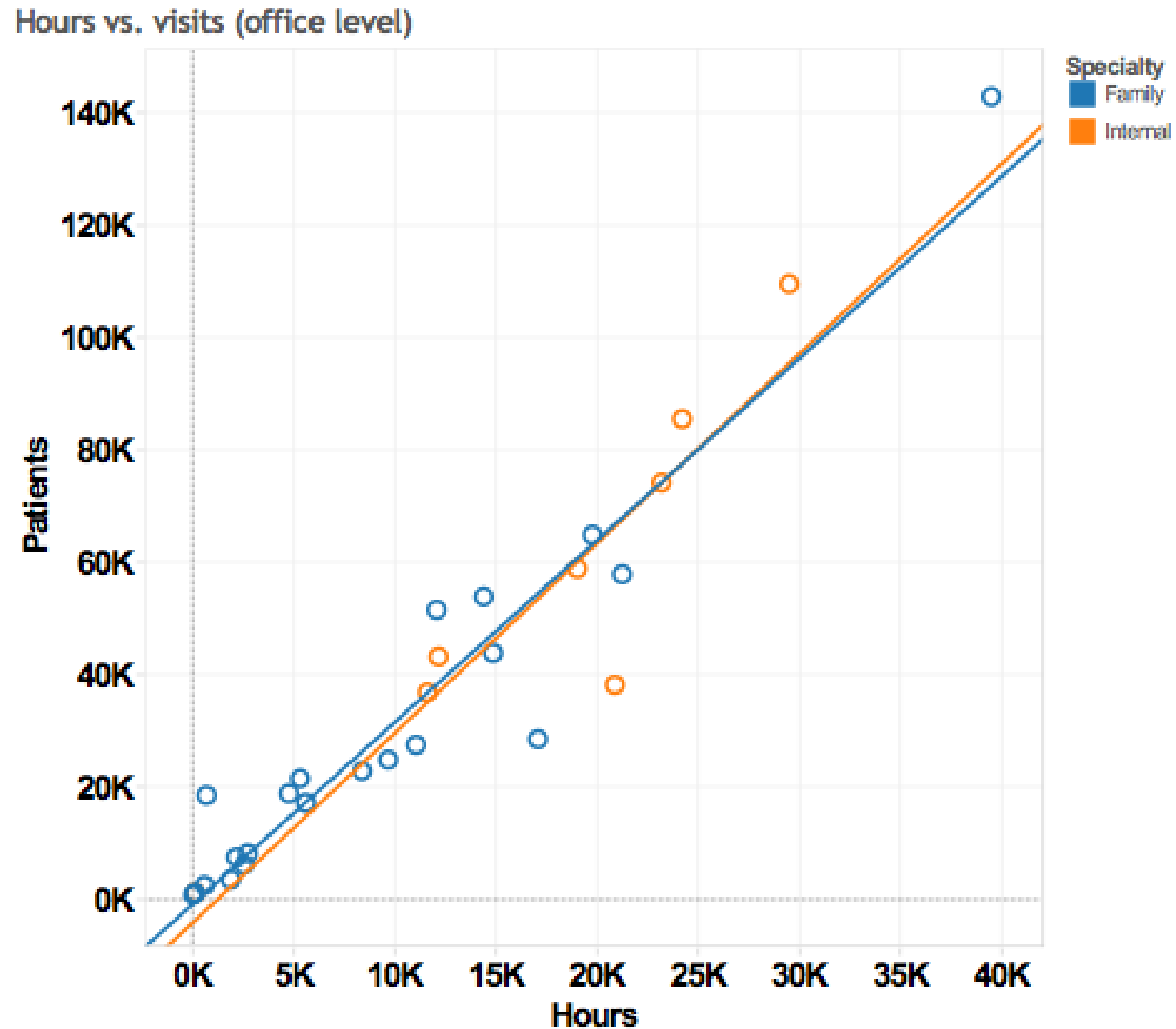
# Panel Size Calculation Methodology

- Primary care practices
- 2 years of billable service counts analyzed by rolling 12 months plotted monthly for 12 months
- **Aggregated for each practice**
- **Normalized by average provider time worked (FTE) within the practice**

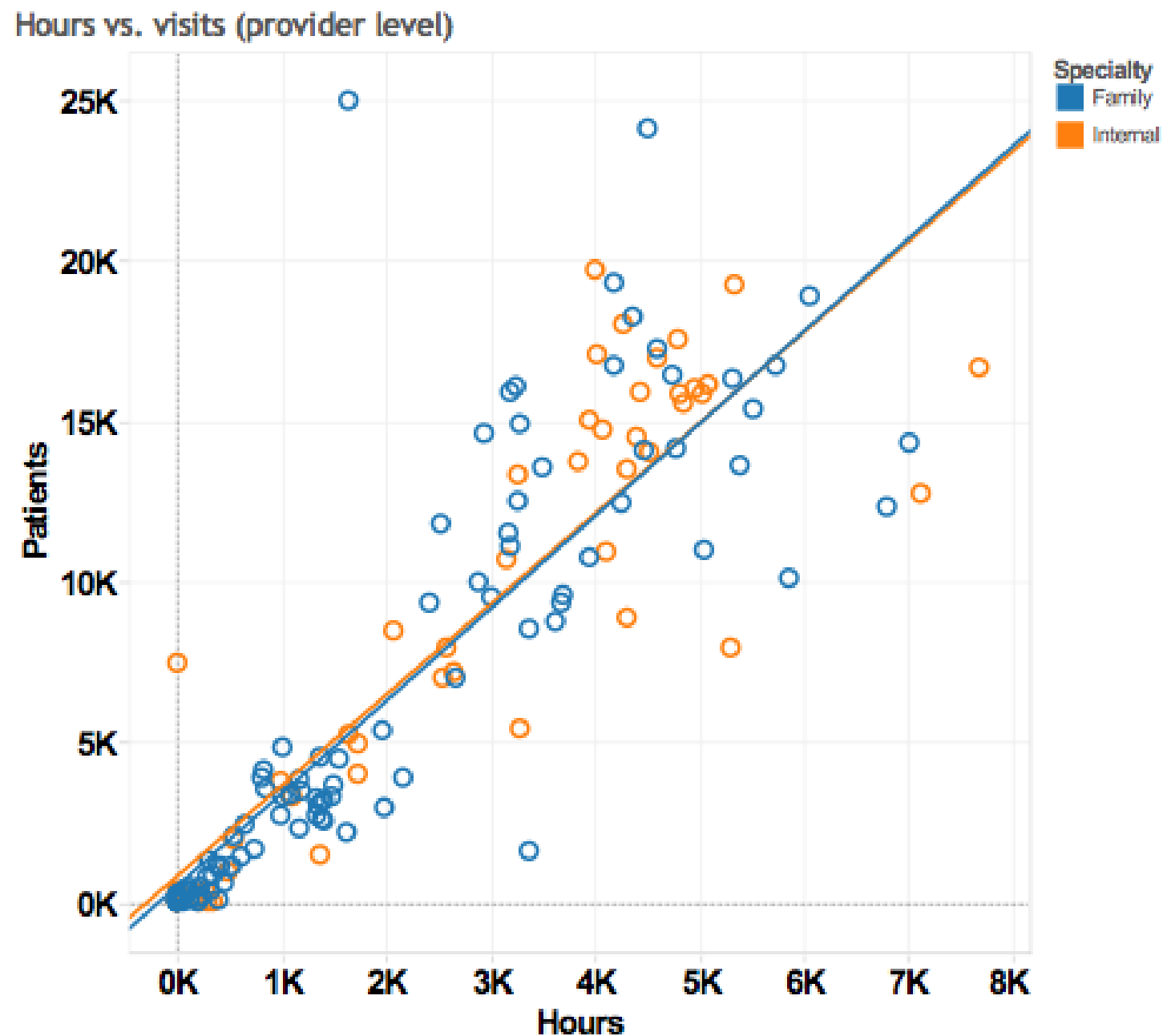
# Monthly Office Hours for 10 PCP Practices



# Practice Hours and Visits

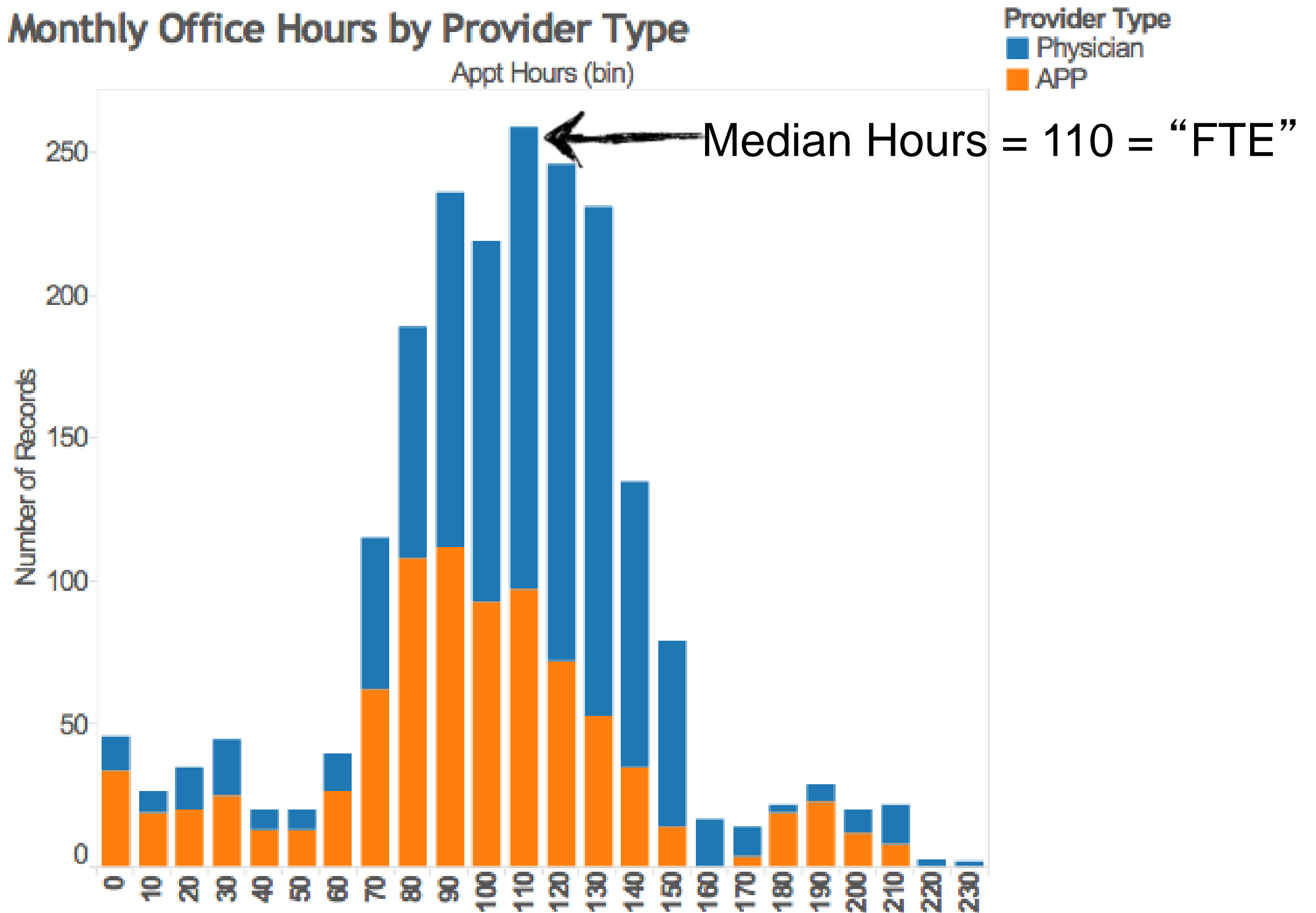


# Provider Hours and Visits



# Appointment Hours

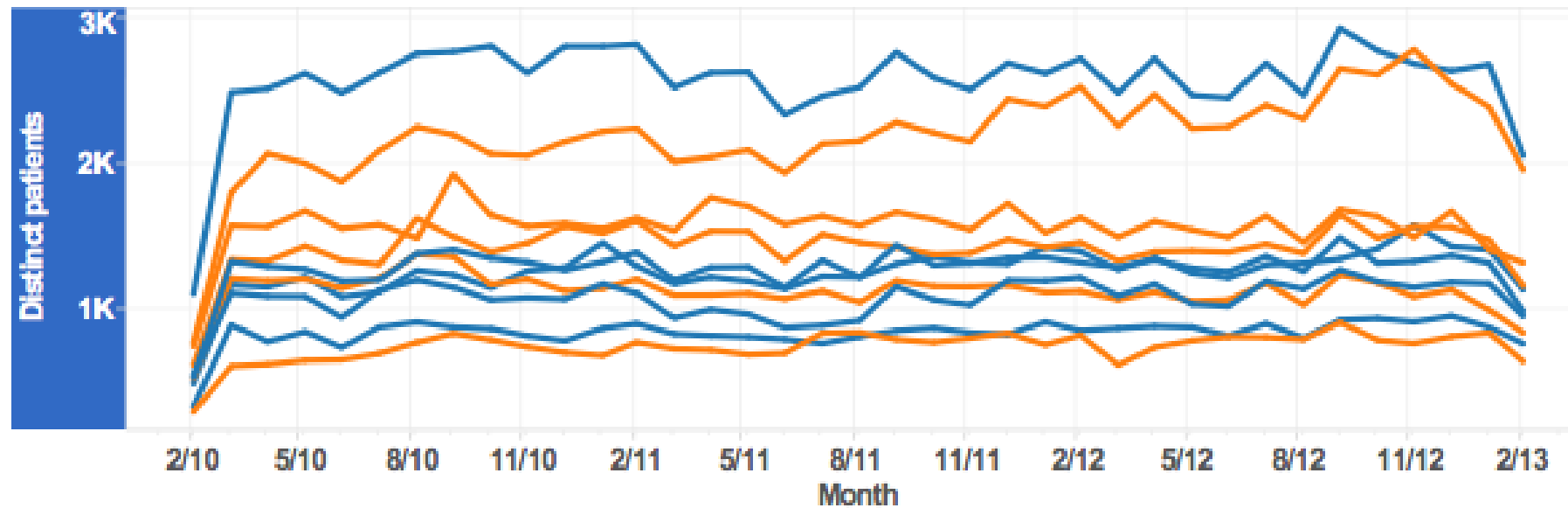
Monthly Office Hours by Provider Type



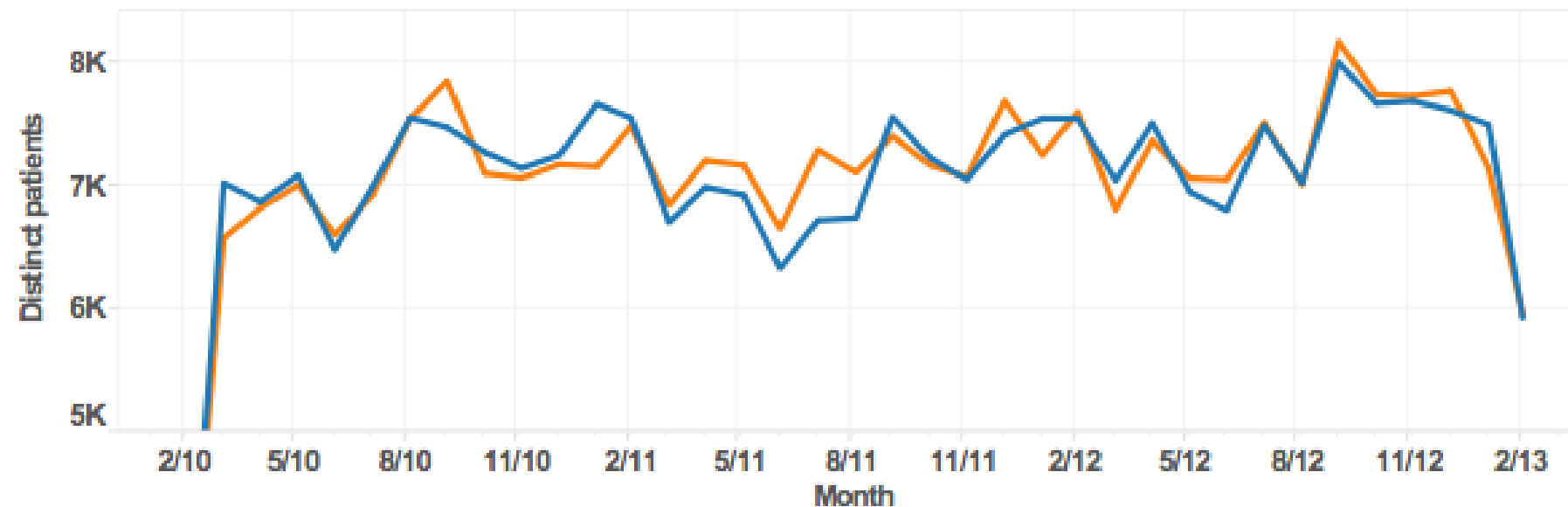


# Unique Patients Per Month

UP 1 month

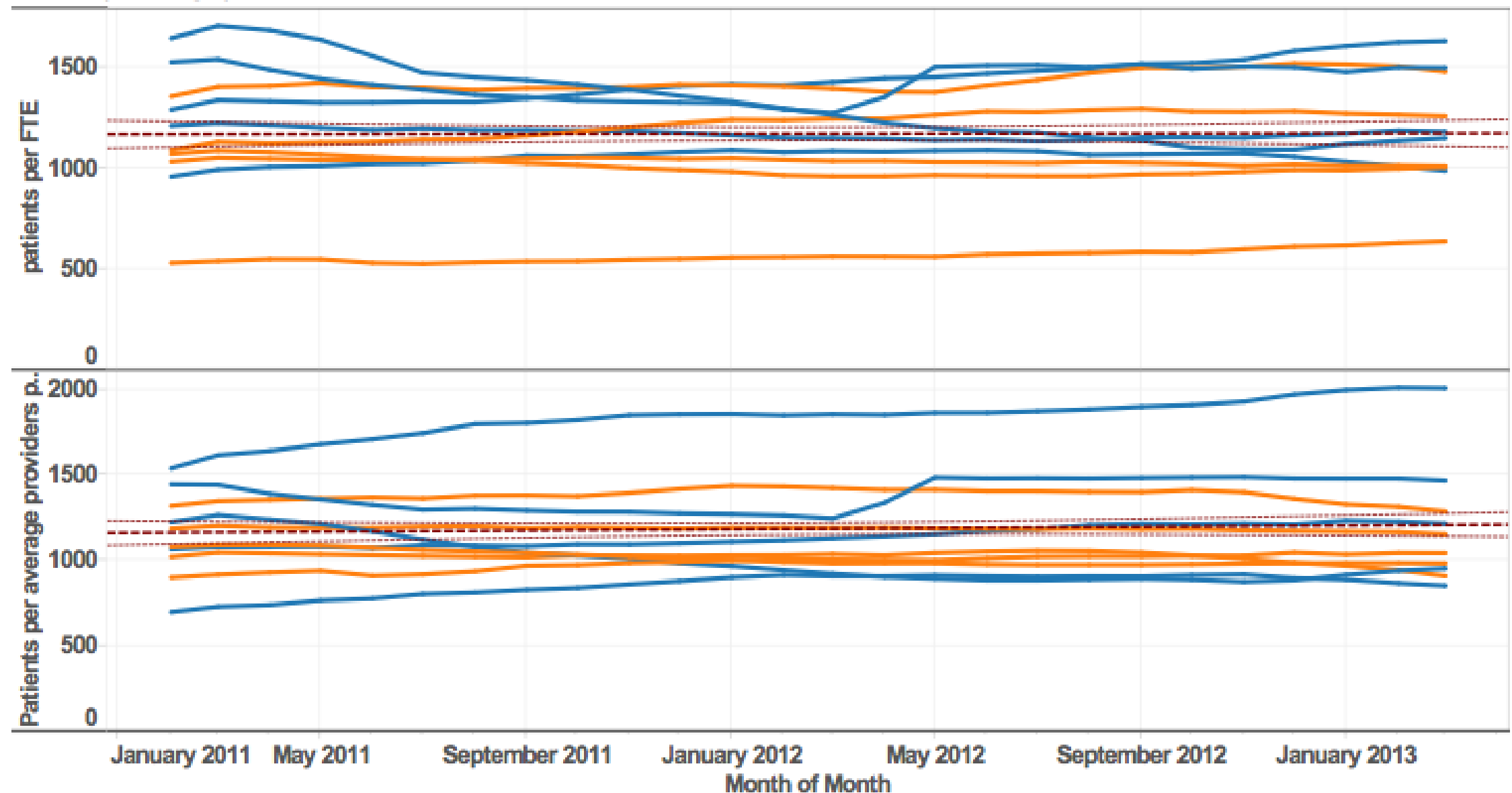


UP 1 mo all practices



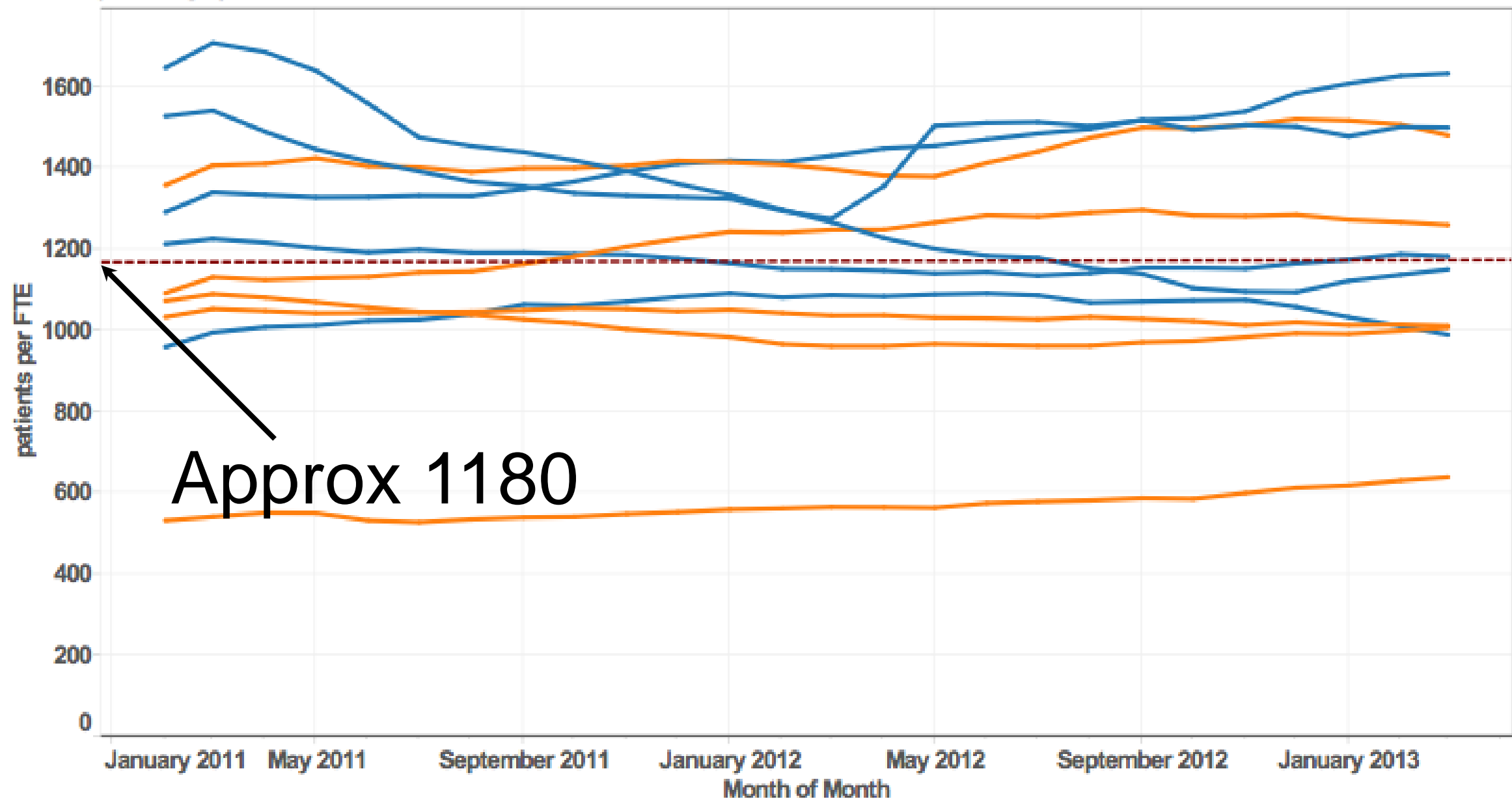
# Unique Patients per Rolling Yr - 2 Ways

Patients per FTE graph



# Rolling U12 Normalized by FTE for 10 PCP Practices

Patients per FTE graph



# Summary of “Month”

- High degree of variability in office hours among providers and over time
- Normalized UP12 by “FTE” based upon office hours estimates an average panel size of approximately 1180
- Some observed difference between FM and IM panel sizes

# Definition of “Risk”

- Several risk scoring methods compared  
- age, HCC, Charlson, Optum Impact Pro.
- **All are inadequate representation of “complexity” or burden of work.**

# Definition of “Risk Adjusted”

- Normalization of U12 counts using methods that **resonates with providers**

# Normalization of Panel Size by Risk Burden

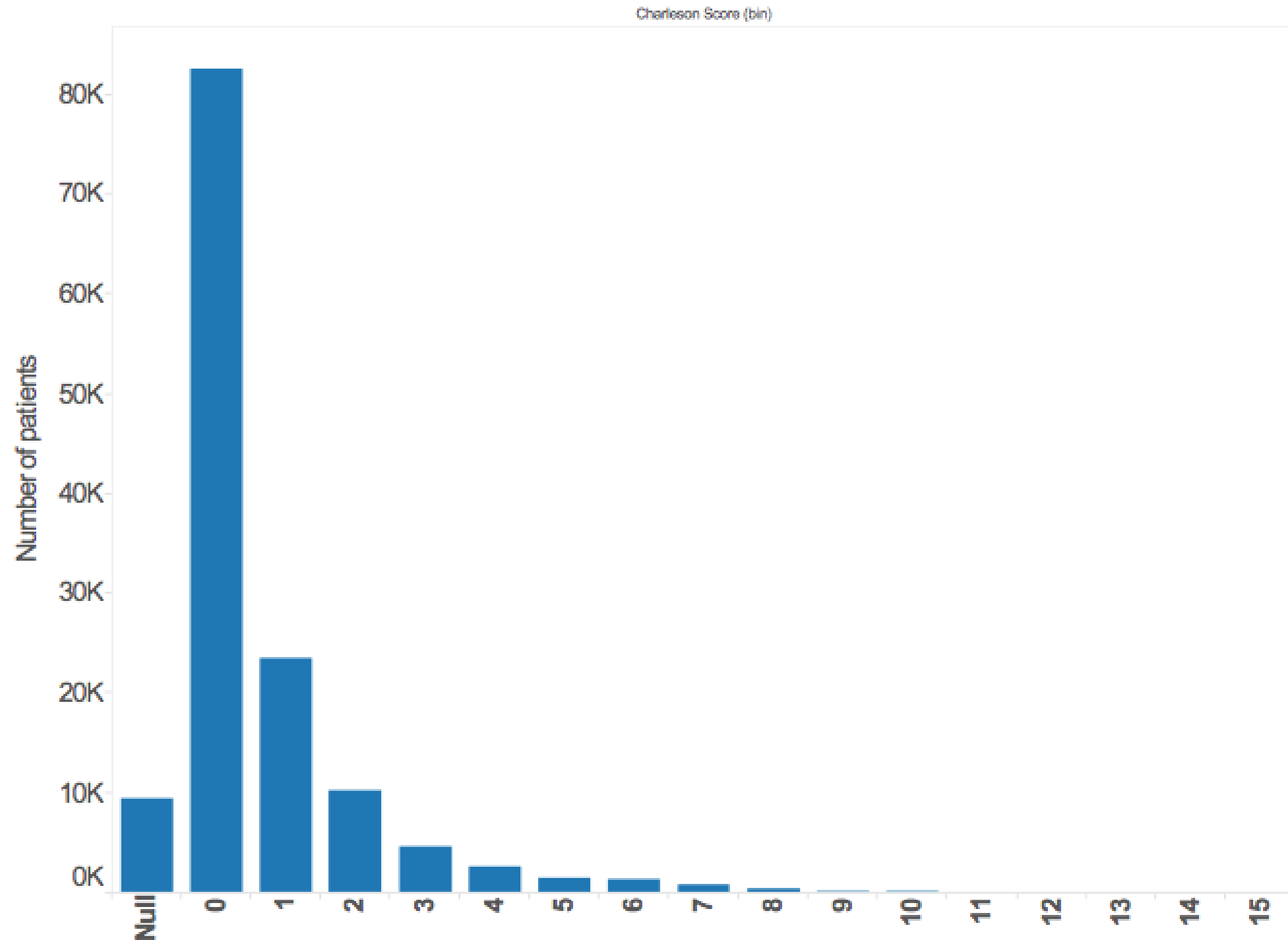
- “Risk burden” used as a surrogate for “work” and “complexity” burden
- Similar concept to RVUs - although RVU calculations are mostly artifacts of documentation
- Age, Charlson Score, Optum Scores, HCC scores analyzed

# Comparison of Risk Scores

- Age
- Charles Scores - based upon age and 16 clinical conditions
- CMS-HCC - CMS Hierarchical Condition Categories: based upon age/sex and submitted claims - very granular measure
- Optum Impact Pro - claims and demographics based

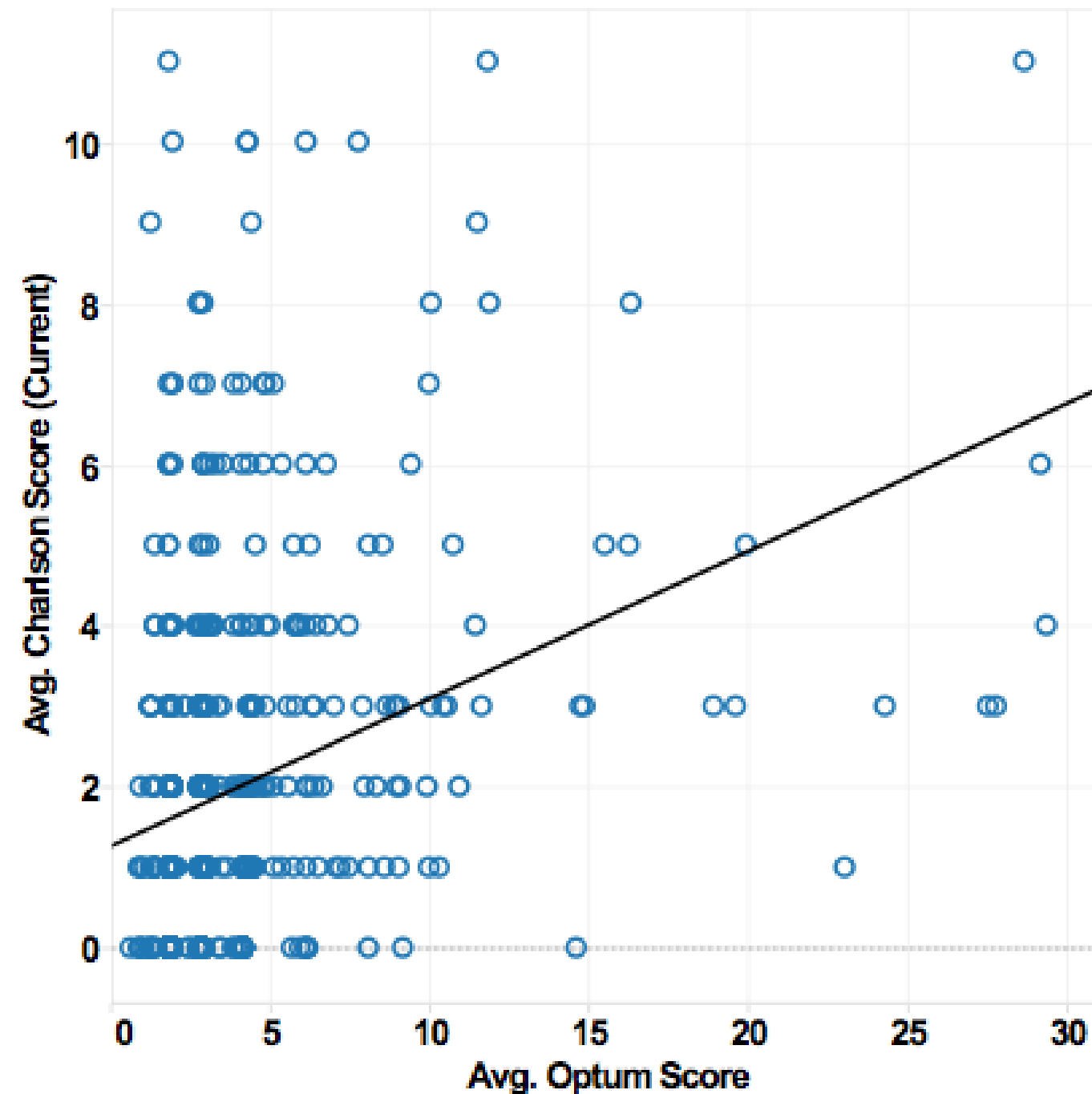


# Charlson Scores All Practices



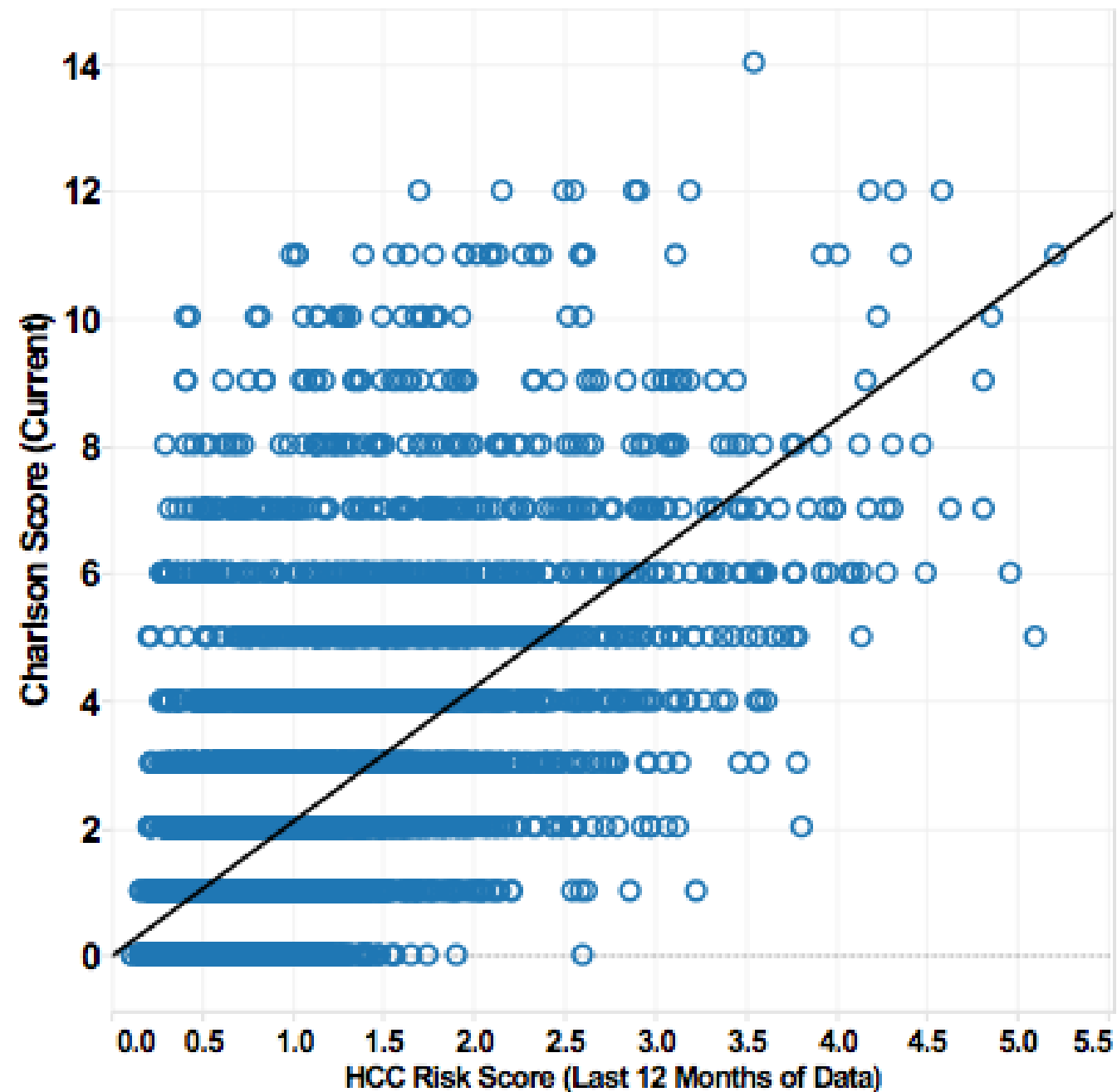
# Optum vs Charlson Scores

Optum Inpt Risk vs Charlson



# HCC vs Charlson

HCC vs Charlson



# Need for Normalized Risk Scoring?

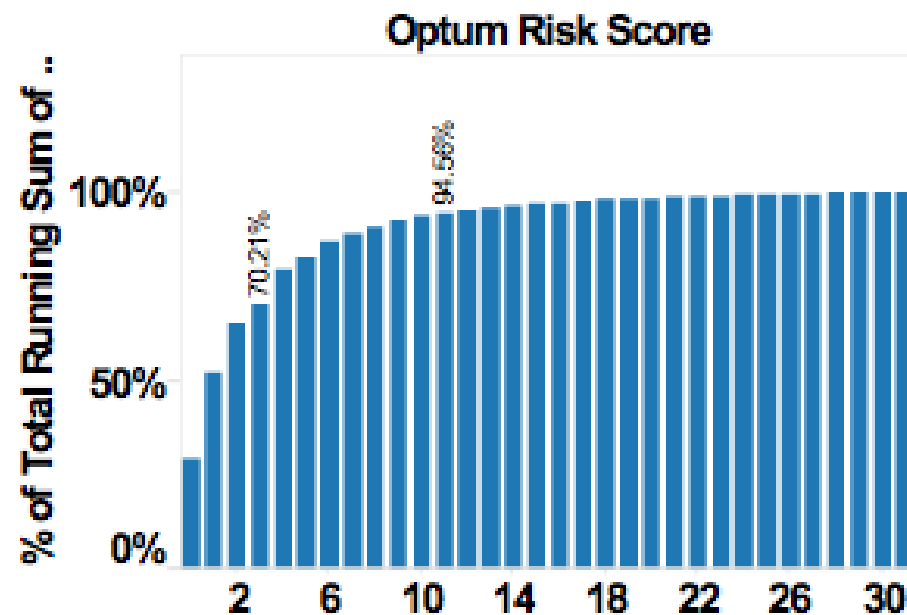
- Method to directly compare the scores with each other (even though they largely measure different things)
- Obviate the problem of a “fractional” patient equivalent score
- Resonate with providers

# Normalizing Risk Scores

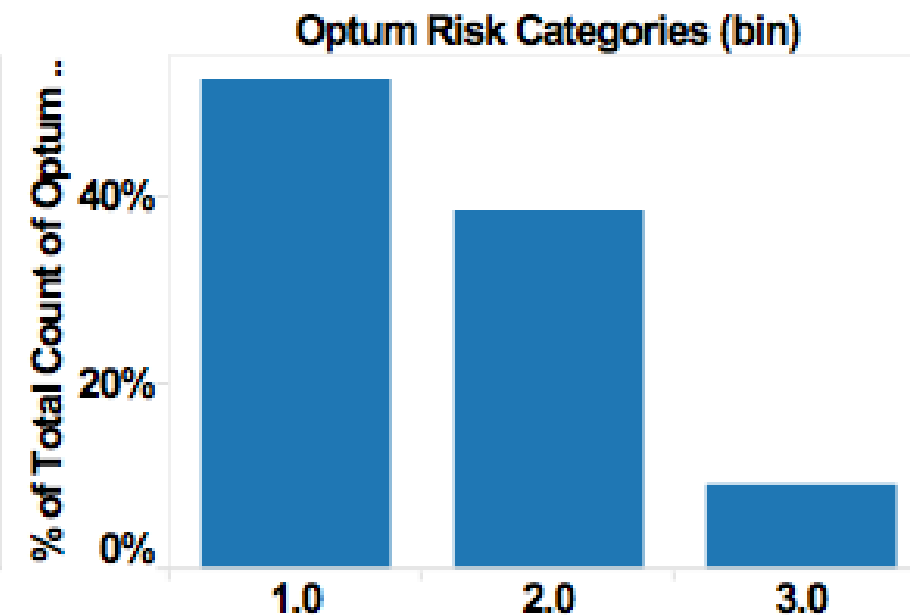
- Convert each individual patient score into discrete value based upon cut point values derived from Pareto distributions
- 0-70% = 1, 71%-95% = 2, >95% = 3

# Optum and Charlson Score Pareto Charts

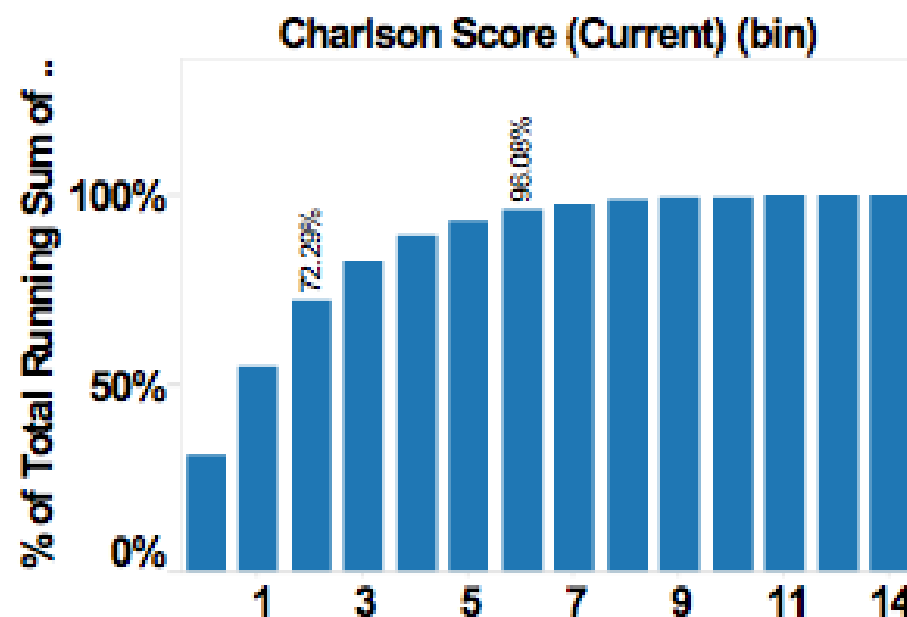
Pareto Optum Inpt Risk



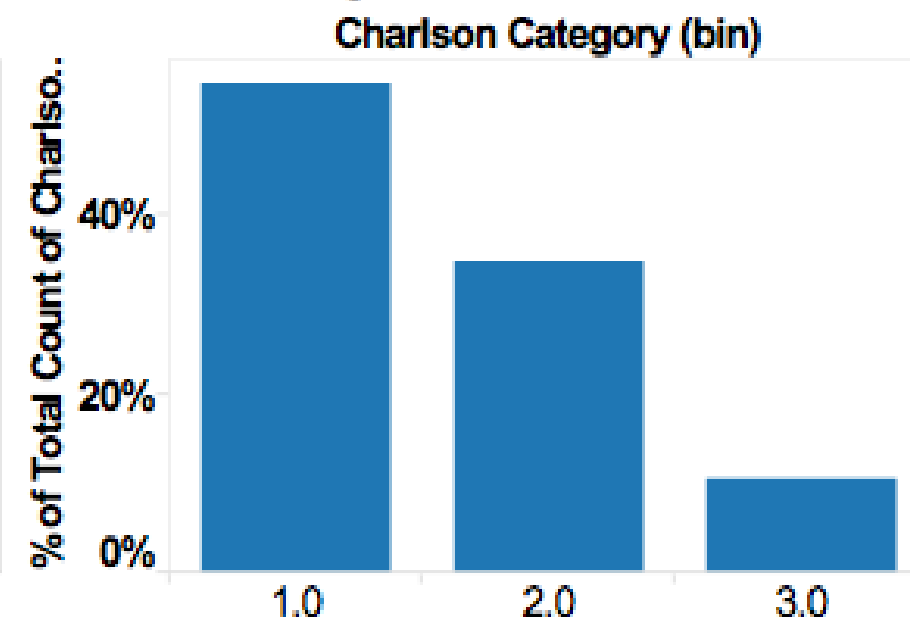
Optum Risk Categories



Pareto Charlson



Charlson Risk Categories

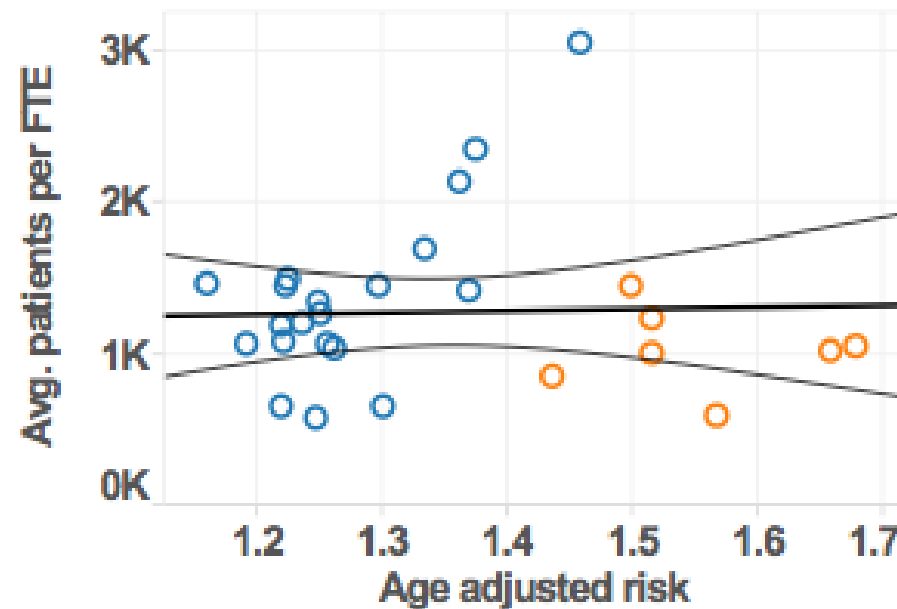


# Risk Burden Calculation

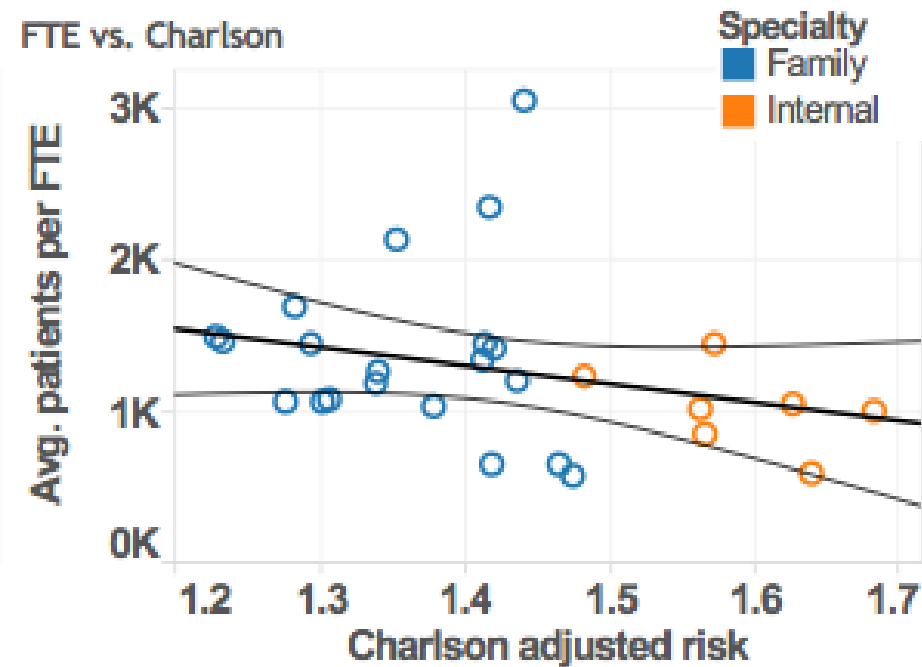
- Sum all normalized risk scores = Risk Burden
- Divide Risk Burden by panel count = Average Normalized Risk Score for a practice (ANRSp)

# Risk Scores and Patient Panel Size

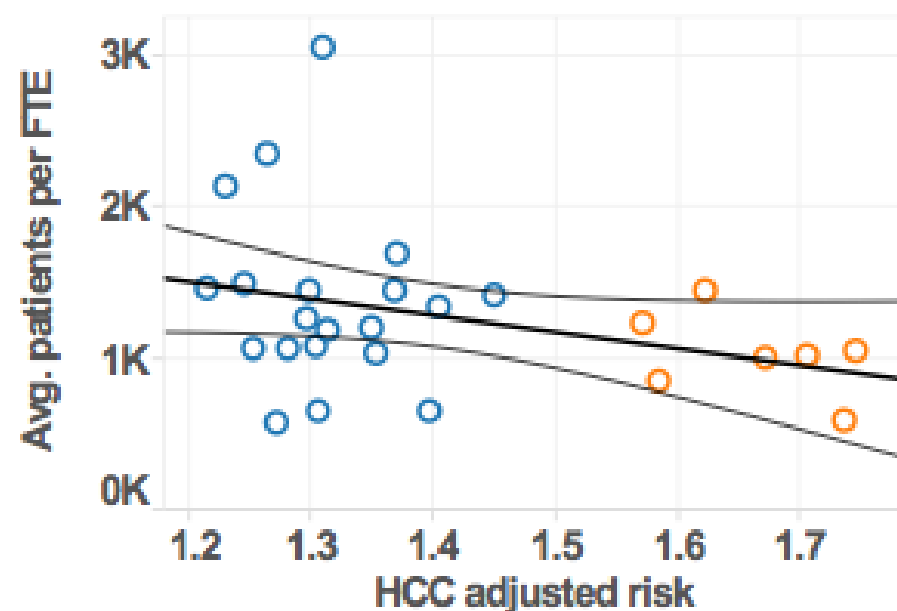
FTEs vs. Age



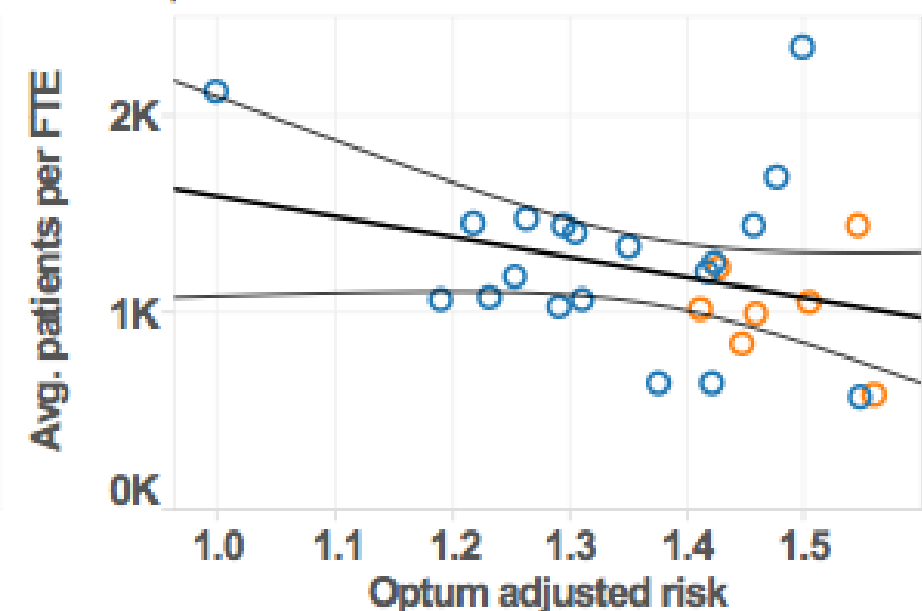
FTE vs. Charlson



FTE vs. HCC



FTE vs. Optum





# Summary of Methods

- Obtain counts of services over 1 year aggregated by practice
- Divide counts by full time equivalent values to derive panel size per FTE
- Sum the Normalized Risk Scores to derive “Risk Burden”
- “Risk Burden” = Risk Adjusted Panel Size
- Calculate ANRSp by dividing Risk Burden by average panel size per FTE

# Hypothetical Risk Adjusted Panel Size Illustration

# Panel Size Heat Map

HCC Panel Size Heat Map

E RICHARD, Family Medicine, 1174556021 4,062 6,920 1,853	H ALDENE, Family Medicine, 1487689345 2,282 3,981 1,014	D TASHA, Pediatrics, 1720294127 1,940 1,992 325	H SUSAN, Pediatrics, 1609972975 1,799 1,851 297	L AIMEE, Family Medicine, 1114981339 1,793 2,778 562	C DAVID, Internal Medicine, 1962407072 1,781 3,492 1,013	T RACQUEL, Internal Medicine, 1124058003 1,764 3,099 881	K SAMUEL, Family Medicine, 1437179603 1,754 2,686 529	M JOHN, Family Medicine, 1770503 1,733 3,088 809		
	A JAMES, Pediatrics, 1952348146 3,351 3,449 546	W FRED, Family Medicine, 1548344450 2,271 3,883 836	R KATHLEEN, Family Medicine, 1487645651 1,872 2,740 613	S LESLIE, Pediatrics, 1356388540 1,679 1,720		B KEVIN, Internal Medicine,	M JOHN, Internal Medicine,	G DANIEL, Family Medicine,	S ALICIA, Family Medicine,	F
J DANIEL, Internal Medicine, 1033149299 2,801 5,624 1,780	E GREGORY, Pediatrics, 1043257231 2,148 2,207	O RICHARD, Internal Medicine, 1992735864 1,858 3,767 1,225	H SUZANNE, Family Medicine, 1518937424 1,600	G ROBERT, Family Medicine, 1265411938 1,180		F SARA, Internal	H MARK, Family	B	F	C
	K STEVEN, Internal Medicine, 1144224890 2,088 4,379 1,452	B BRENT, Family Medicine, 1083798904 1,849 3,172 647	S LAFAYETTE, Internal Medicine, 1205860749 1,544	S SHEILA, Family Medicine, 1508895285 1,173	N JOHN, Family Medicine,		H MARY,	K AILISA, Family Medicine,	Z	
W JOHN, Family Medicine, 1154341311 2,755 4,708 1,066	H DAVID, Family Medicine, 1578583738 2,032 3,615 905	R ROBERT, Internal Medicine, 1053345348 1,823 3,571	S HEATHER, Family Medicine, 1154432862 1,469	M DANIELLE, Family Medicine, 1629094040 1,171	D CARLOS, Family Medicine, 1225017122 1,131	T TRINA, Family Medicine,	C DAVID, Family Medicine,	M DOUGLAS, Family Medicine, 1174503593 A MARY, Pediatrics,	L	
G GREG, Internal Medicine, 1194863538 2,673 5,198 1,610	A RAFAELA, Family Medicine, 1679599096 2,008 3,279 725	S GRADY, Internal Medicine, 1831123371 1,820 3,670	G WARREN, Internal Medicine, 1992726723 1,462	D ROBERT, Family Medicine, 1851344170	D ROBERT, Family Medicine, 1851344170	P SCOTT, Family Medicine,	C DAVID, Family Medicine,	C LISA, Family Medicine,	R SA	
K MICHAEL, Family Medicine, 1073533246 2,407 4,037 915	V GRETCHEN, Internal Medicine, 1528094844 1,972 3,536	T MILLARD, Family Medicine, 1245235373 1,810 2,778	B EVAN, Family Medicine, 1538275912 1,422	K KIRSTEN, Family Medicine, 1184603896	S WILLIAM, Internal Medicine,	F MARK, Family Medicine,	T GR	Intern		
		P NELSON, Internal Medicine, 1821019654 1,808 3,674	W THOMAS, Family Medicine, 1629077862 1,389							

# HCC Sum Heat Map

HCC sum Heatmap

E RICHARD, Family Medicine, 1174556021 4,082 1,853 6,920	R ROBERT, Internal Medicine, 1053345348 1,823 1,123 3,571	G WARREN, Internal Medicine, 1992726723 1,462 993 3,013	W FRED, Family Medicine, 1548344450 2,271 836 3,883	M JOHN, Family Medicine, 1770603930 1,733 809 3,088	A RAFAELA, Family Medicine,	J NICOLA, Family Medicine,	T MILLARD, Family Medicine,	M JOHN, Internal Medicine,
	P NELSON, Internal Medicine, 1821019654 1,808 1,112 3,674	V GRETCHEN, Internal Medicine, 1528094844 1,972 984 3,536	G ROBERT, Family Medicine, 1265411938 1,180	F SARA, Internal Medicine,	G DANIEL, Family Medicine,	L AIMEE, Family Medicine,	A JAMES,	T GRACE, Internal Medicine,
	S GRADY, Internal Medicine, 1831123371 1,820 1,110 3,670	K MICHAEL, Family Medicine, 1073533246 2,407 915 4,037	H SUZANNE, Family Medicine, 1518937424 1,600	C YURI, Internal Medicine, 1558484931 1,035	C DANA, Family Medicine,	M	E	L
J DANIEL, Internal Medicine, 1033149299 2,801 1,780 5,624	W JOHN, Family Medicine, 1154341311 2,756 1,066 4,708	B KEVIN, Internal Medicine, 1710908546 1,378 910 2,762	S HEATHER, Family Medicine, 1154432862 1,469	D ROBERT, Family Medicine, 1851344170	C DAVID, Family Medicine,	K AILISA, Family	H MARK, Family	M
	H ALDENE, Family Medicine, 1487689345 2,262 1,014 3,961	H DAVID, Family Medicine, 1578583738 2,032 905 3,615	R KATHLEEN, Family Medicine, 1487645651 1,872	B EVAN, Family Medicine, 1538275912	N JOHN, Family Medicine,	Z WILLIAM, Family Medicine	G	
G GREG, Internal Medicine, 1194883538 2,673 1,610 5,198	C DAVID, Internal Medicine, 1962407072 1,781 1,013 3,492	T RACQUEL, Internal Medicine, 1124058003 1,764 881 3,099	W THOMAS, Family Medicine, 1629077862 1,389	B MICHAEL, Family Medicine, 1083693980	T TRINA, Family Medicine,	S ALICIA, Family Medicine,	F	
	K STEVEN, Internal Medicine, 1144224890 2,068 1,452 4,379	S LAFAYETTE, Internal Medicine, 1205860749 1,544 857 3,010	F THOMAS, Family Medicine, 1356393185 1,259	D CARLOS, Family Medicine, 1225017122	K KIRSTEN, Family Medicine,	S LESLIE, Pediatrics,	H MARY,	
O RICHARD, Internal Medicine, 1992735884 1,858 1,225 3,767			S WILLIAM, Internal Medicine, 1558320523 927	S SHEILA, Family Medicine, 1508895285	D TASHA, Pediatrics, 1720294127	F MARK, Family	S	

# HCC Score Heat Map

HCC Risk Score Group Heat Map

E RICHARD, Family Medicine, 1174568021 4,062 1,853 6,920	H ALDENE, Family Medicine, 1487689345 2,282 1,014 3,981	V GRETCHEN, Internal Medicine, 1528094844 1,972 984 3,536	G WARREN, Internal Medicine, 1992726723 1,462 993 3,013	S LAFAYETTE, Internal Medicine, 1205860749 1,544 857 3,010	H SUZANNE, Family Medicine, 1518937424 1,600 629 2,833	J NICOLA, Family Medicine, 1780617639 1,720 705 2,825	L AIMEE, Family Medicine, 1114981339 1,793 562 2,778	T MILLAR, Family Medicine, 1245239 1,810 701 2,778
J DANIEL, Internal Medicine, 1033149299 2,801 1,780 5,624	W FRED, Family Medicine, 1548344450 2,271 836 3,883	C DAVID, Internal Medicine, 1962407072 1,781 1,013 3,492	R KATHLEEN, Family Medicine, 1487645651 1,872 613	G ROBERT, Family Medicine, 1265411938	E GREGORY, Pediatrics,	W THOMAS, Family Medicine,	D TASHA, Pediatrics,	F S, Inter Med
G GREG, Internal Medicine, 1194883538 2,673 1,610 5,198	O RICHARD, Internal Medicine, 1992735864 1,858 1,225 3,767	A JAMES, Pediatrics, 1952348146 3,351 546 3,449	K SAMUEL, Family Medicine, 1437179603 1,754	D ROBERT, Family Medicine, 1851344170 1,087	B MICHAEL, Family Medicine,	H MARK, Family Medicine,	L BAXTER, Family Medicine,	S LES, Ped
W JOHN, Family Medicine, 1154341311 2,755 1,066 4,708	P NELSON, Internal Medicine, 1821019654 1,808 1,112 3,674	A RAFAELA, Family Medicine, 1679599096 2,008 725	M JOHN, Internal Medicine, 1780602185 1,279	C DANA, Family Medicine, 1790706224 1,219	T GRACE, Internal Medicine,	C DAVID, Family	M	K A F
K STEVEN, Internal Medicine, 1144224880 2,088 1,452 4,379	S GRADY, Internal Medicine, 1831123371 1,820 1,110 3,670	B BRENT, Family Medicine, 1083798904 1,849 647	B EVAN, Family Medicine, 1538275912 1,422	S SHEILA, Family Medicine, 1506895285 1,173	K KIRSTEN, Family Medicine,	Z WILLIAM, Family Medicine	R DAVID	
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	R ROBERT, Internal Medicine, 1053345348 1,823 1,123 3,571	M JOHN, Family Medicine, 1770503930 1,733 809	G DANIEL, Family Medicine, 1245282078 1,278	D CARLOS, Family Medicine, 1225017122 1,131	P SCOTT, Family Medicine,	C LISA, Family Medicine,	L	
			F THOMAS, Family Medicine, 1356393185 1,259	H SUSAN, Pediatrics, 1609972975 1,799	M DANIELLE, Family Medicine,	G SANFORD, Family Medicine,	A MA, Ped	

# Caveats

- “Risk” does not necessarily = “work burden”
- Although ANRSp using each method are similar in magnitude, the distribution of patients in each category varies greatly
- There is large variability in work output per physician provider (APPs, hrs worked, etc)

# Caveats (cont.)

- Patient panel size is heavily influenced by very busy periods
- Patient management does not always occur via billable visits and this may increase with time

# Balancing Metrics to Consider

- CMS-HCC coding inadequacy: compliance audits
- Inflated panels secondary to patient visit “flurries” and work load imbalance within a practice: frequent panel size assessment, visit volumes per 1000 patients by provider?
- Panel inflation: routine quality and satisfaction feedback.



# Summary

- Provider panel size calculations have many variables to consider (work hours, work load balance, attribution, non-visit, and non-billable encounters, APPs, ancillary services, etc.)
- “Risk” plays a small but perceptible role in observed panel size calculations for PCP

# Summary (cont.)

- Risk adjusted panel sizes, if done carefully, may have a role in value based compensation models

# Further Reading

- Naessens J, Baird M, Van Houten H, et al. Predicting persistently high primary care use: Ann Fam Med 2005;3:324-30.
- Katerndahl D, Wood R, Jaen C, A Method for estimating relative complexity of ambulatory care: Ann Fam Med 2010;8:4 341-347.
- Rosen A, Reid R, Broemeling A, Rokovski C, Applying a risk-adjustment framework to primary care: can we improve on existing measures? Ann Fam Med 2013;1:1 44-51.
- Evans M, et al. Evaluation of the CMS-HCC risk adjustment model, CMS Division of Risk Adjustment and Payment