Academy of Administrators in Academic Emergency Medicine

Benchmark and Salary Survey
Fiscal Year 2017

James Scheulen, PA, MBA
On behalf of the
AAAEM Benchmark Committee
March, 2018

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New this year…

New this year…

- **Our first year of a new approach**
  - **Elevate Benchmark Survey**
    - Data security
    - Expand data access
    - Improved analytics
    - Move toward ease of entry
  - **Panel presentations and discussion**
    - New perspectives on data
    - Expanded participation AACEM and AAAEM
    - Transition to more conversation

Roundtable ANALYTICS

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Plan for today

- **Introduction**
- **Operations Benchmark Panel**
  - J. Scheulen: Basics and New Questions
  - Cathi Harbertson: Trending
  - Greg Archual: Quality and Throughput
  - Greg Volturo: Staffing and Hours

- **Faculty Life Panel**
  - J. Scheulen: Basic Salary Data
  - K. Robbins: Effort, Billing, Productivity
  - S. Maxwell: Research
  - C. King: Clinical Hours, Compensation Plans

- **Questions and Discussion**
- **Data Access and Analytics Tool Interactive Session**
  - K. Lopiano & T. Bohrmann

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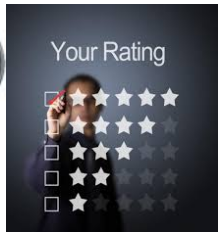
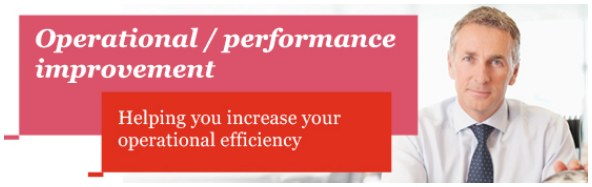
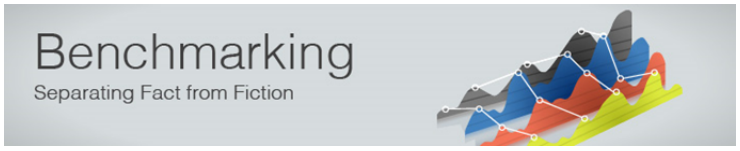
Benchmarking Operations

- **Benchmark Database**
  - ***Benchmark Performance***
    - ***Complexity of operations***
    - ***Understand value: Leadership discussions***
    - **11 years of benchmarking AEM performance**
  - ***Analytics/Planning and Operations Design***
    - **Identify trends**
    - **Spark innovation through analytics**
  - ***Monitor and Improve Practice and Profession***
    - **Salary review**
    - **Promote equity**







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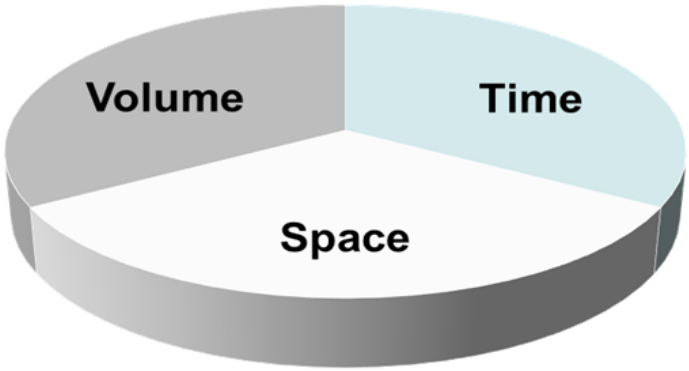
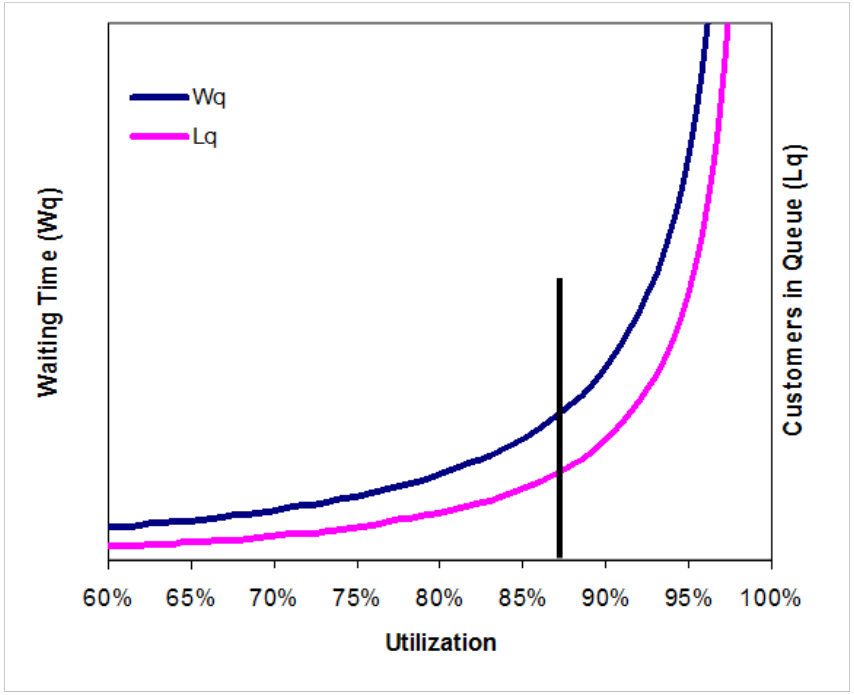
Operational Benchmarks

What's happening to our patient population and how is that impacting our work?

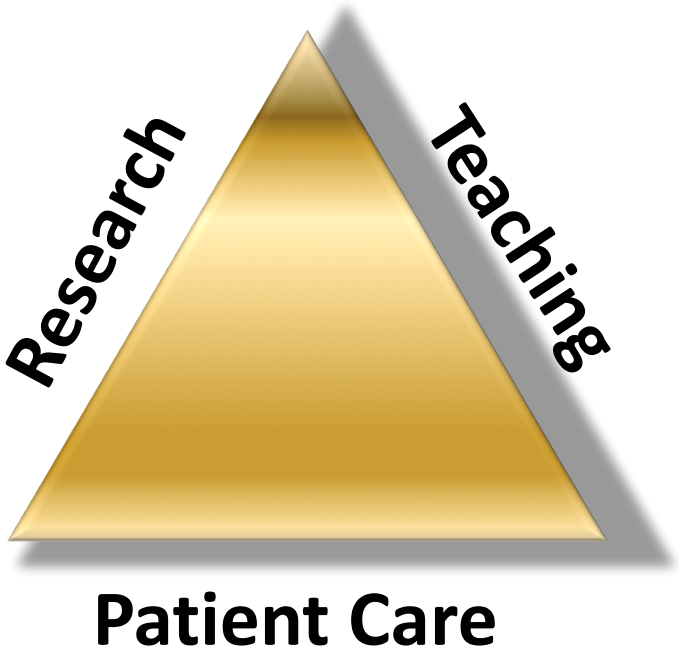


Queuing Theory: Matching fixed resources with unscheduled demand



New this year…

- **New this year:**
  - *Revised Research Questions*
  - *Staffing Question*
  - *Ultrasound Questions*
  - *Sepsis Data*
  - *Clinical Hour Reduction*
  - *Retirement contributions*
  - *Professional Enrichment Allotments*
  - *Clinical track division*
  - **New input tool**
  - **Data access portal**
  - **Continued benchmark collaborations**



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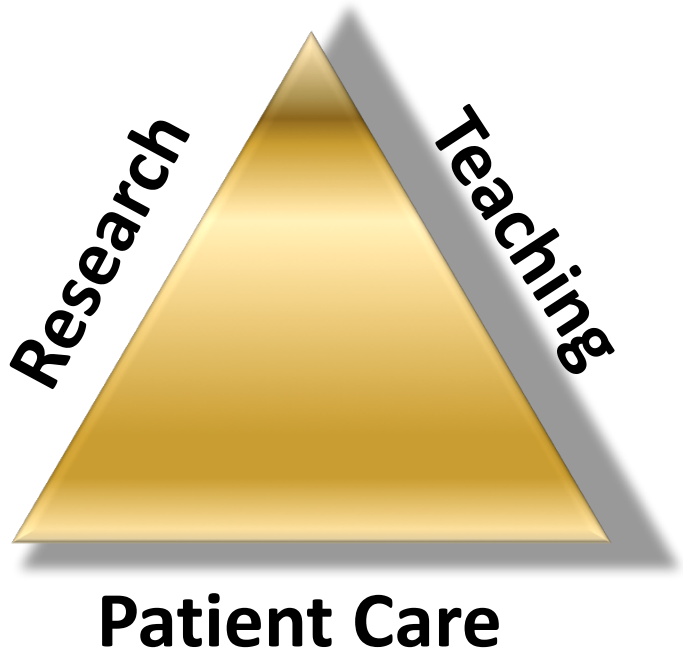
And for next year

- **Thoughts for next year:**
  - Clerkship Directors in Emergency Medicine
    - Undergraduate Medical Education
  - Data access and analysis
  - And….



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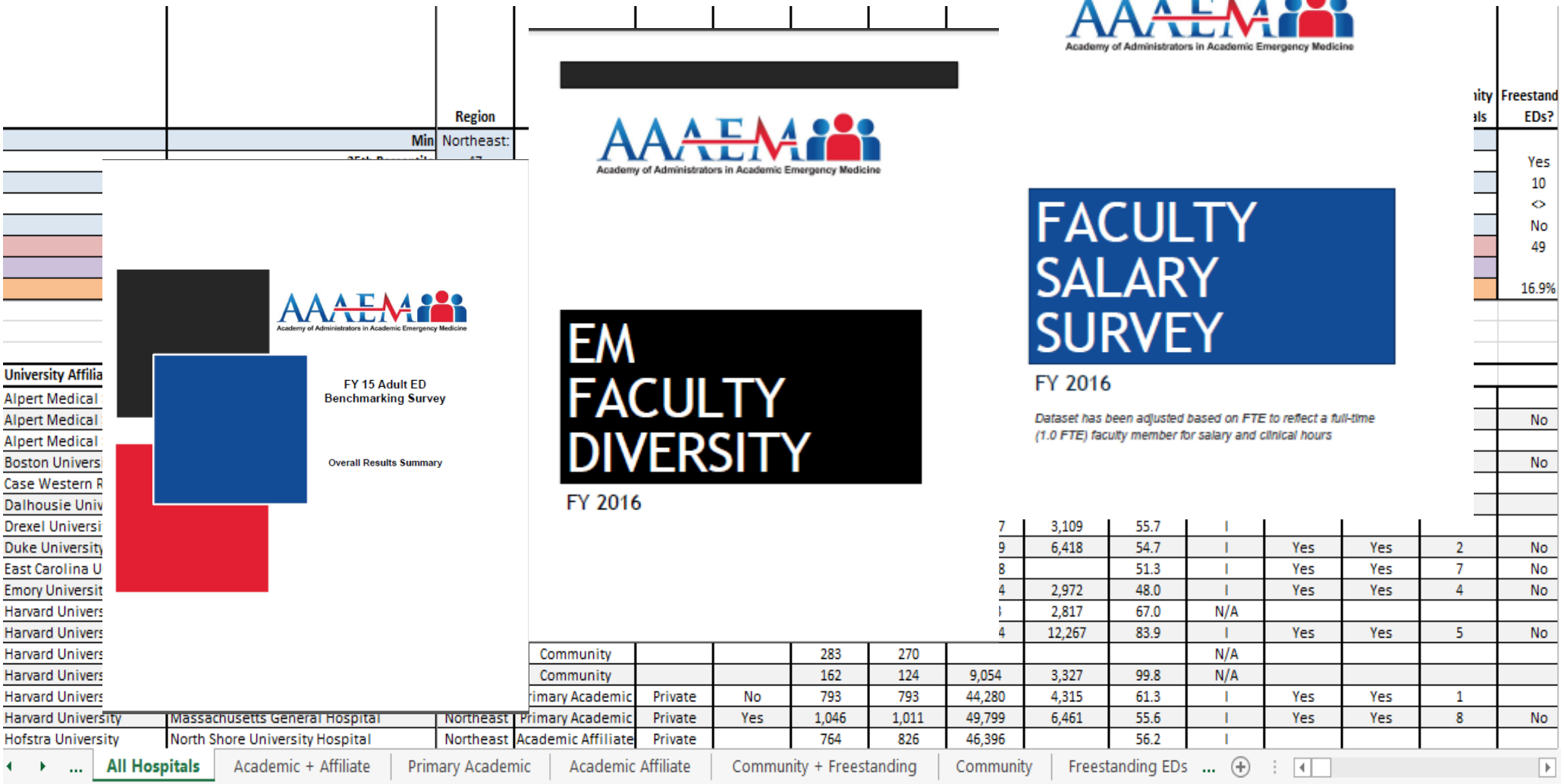
Data Output

Summary Data and Individual Responses:

Academic, Affiliate, Community, Private, Sta ns



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FY 15 Adult ED
Benchmarking Survey

Overall Results Summary

EM
FACULTY
DIVERSITY

FY 2016

FACULTY
SALARY
SURVEY

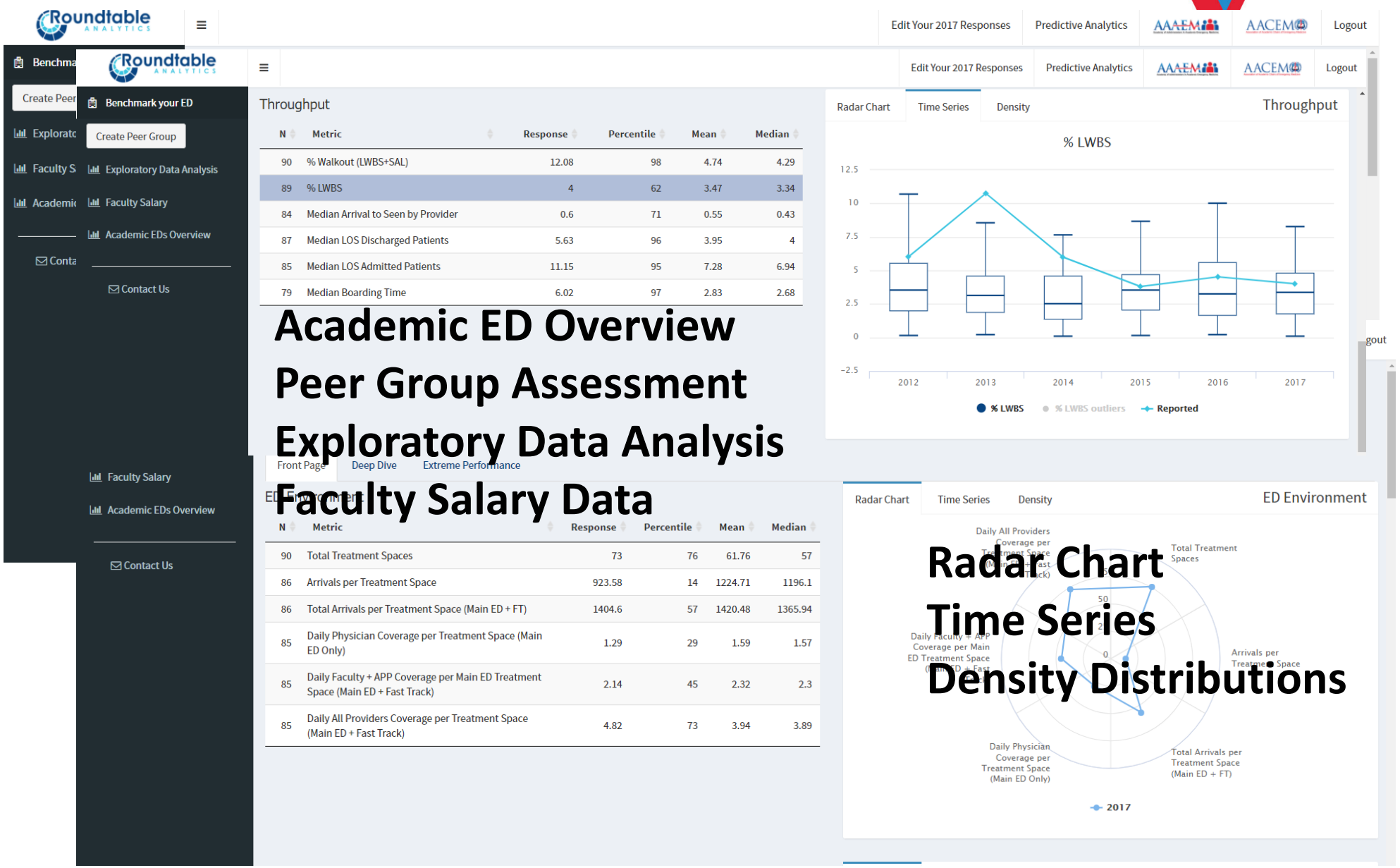
FY 2016

Dataset has been adjusted based on FTE to reflect a full-time (1.0 FTE) faculty member for salary and clinical hours

		Region												
	Min	Northeast:												
University Affilia														
Alpert Medical														
Alpert Medical														No
Alpert Medical														
Boston Universi														No
Case Western R														
Dalhousie Univ														
Drexel Universi								7	3,109	55.7	I			
Duke University								9	6,418	54.7	I	Yes	Yes	2	No
East Carolina U								8		51.3	I	Yes	Yes	7	No
Emory Universit								4	2,972	48.0	I	Yes	Yes	4	No
Harvard Univers									2,817	67.0	N/A				
Harvard Univers								4	12,267	83.9	I	Yes	Yes	5	No
Harvard Univers			Community			283	270				N/A				
Harvard Univers			Community			162	124	9,054	3,327	99.8	N/A				
Harvard Univers			rimary Academic	Private	No	793	793	44,280	4,315	61.3	I	Yes	Yes	1	
Harvard University	Massachusetts General Hospital	Northeast	Primary Academic	Private	Yes	1,046	1,011	49,799	6,461	55.6	I	Yes	Yes	8	No
Hofstra University	North Shore University Hospital	Northeast	Academic Affiliate	Private		764	826	46,396		56.2	I				

All Hospitals | Academic + Affiliate | Primary Academic | Academic Affiliate | Community + Freestanding | Community | Freestanding EDs

Data Output



Academic ED Overview

Peer Group Assessment

Exploratory Data Analysis

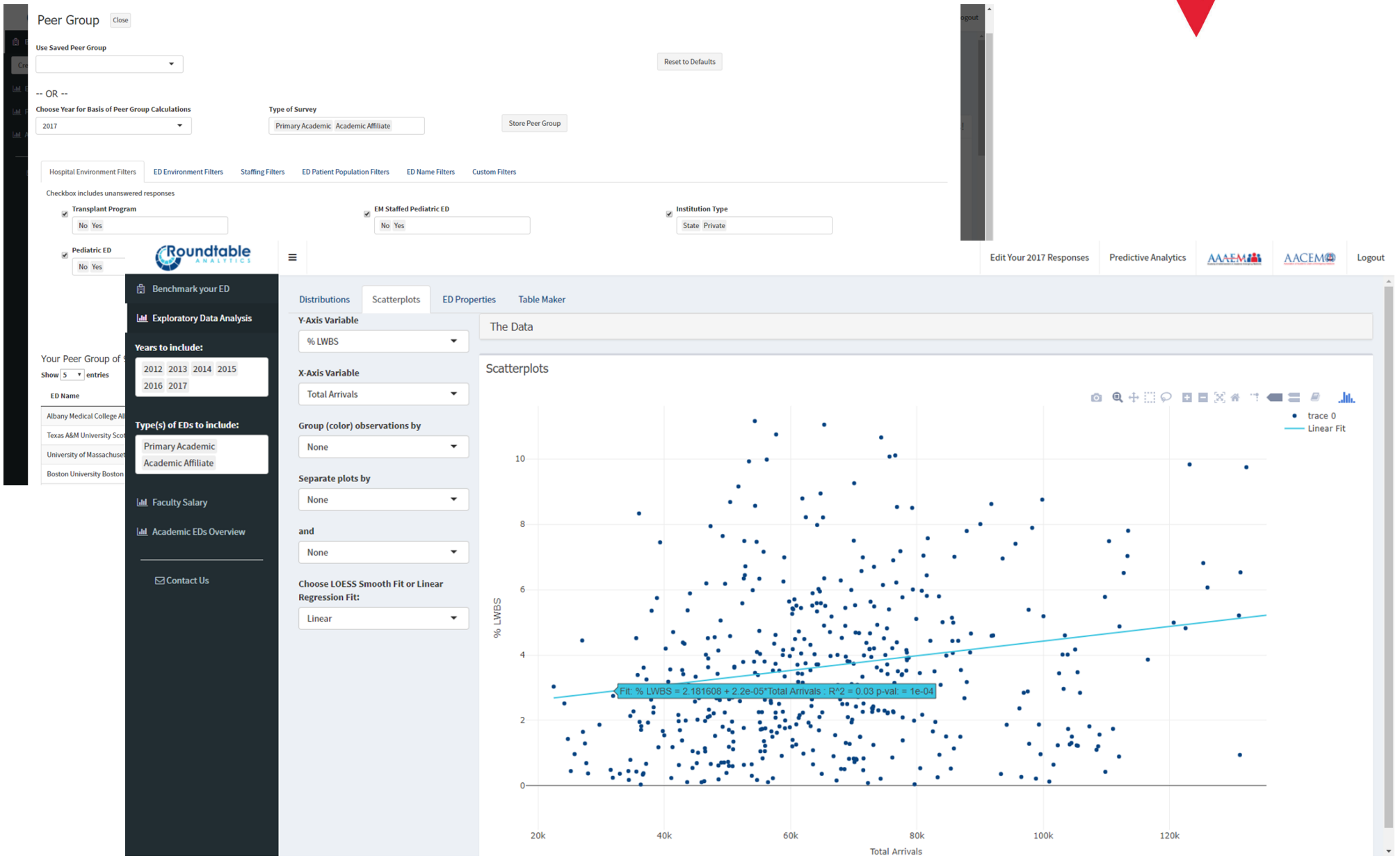
Faculty Salary Data

Radar Chart

Time Series

Density Distributions

Data Output


Peer Group
Close
Use Saved Peer Group
Reset to Defaults
-- OR --
Choose Year for Basis of Peer Group Calculations
2017
Type of Survey
Primary Academic
Academic Affiliate
Store Peer Group
Hospital Environment Filters
ED Environment Filters
Staffing Filters
ED Patient Population Filters
ED Name Filters
Custom Filters
Checkbox includes unanswered responses
Transplant Program
No Yes
EM Staffed Pediatric ED
No Yes
Institution Type
State Private
Pediatric ED
No Yes
Roundtable ANALYTICS
Edit Your 2017 Responses
Predictive Analytics
AAAEM
AACEM
Logout
Benchmark your ED
Exploratory Data Analysis
Years to include:
2012 2013 2014 2015 2016 2017
Type(s) of EDs to include:
Primary Academic
Academic Affiliate
Faculty Salary
Academic EDs Overview
Contact Us
Distributions
Scatterplots
ED Properties
Table Maker
Y-Axis Variable
% LWBS
X-Axis Variable
Total Arrivals
Group (color) observations by
None
Separate plots by
None
and
None
Choose LOESS Smooth Fit or Linear Regression Fit:
Linear
The Data
Scatterplots
trace 0
Linear Fit
% LWBS
Total Arrivals
Fit: % LWBS = 2.181608 + 2.2e-05*Total Arrivals : R^2 = 0.03 p-val: = 1e-04
0
2
4
6
8
10
20k
40k
60k
80k
100k
120k

Data Access

- **All members will have access to “Industry” summary level data**
- **Survey participants will have access to all data and analytic tools**
  - **May have multiple users but under control for first year**
- **This presentation will be posted**

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Publications

- Masden, TE, et al. (October 2017) **Current Status of Gender and Racial/Ethnic Disparities Among Academic Emergency Medicine Physicians:** Academic Emergency Medicine: Vol 24 (10): 1182-1192

- Reznek, M; Scheulen, J; Harbertson, C; Kotkowski, K; Kelen, G; Volturo, G. **Contributions of Academic Emergency Medicine Programs to US Healthcare: Summary of the AAAEM-AACEM benchmarking data in Academic Emergency Medicine:** Academic Emergency Medicine 2017 Oct 26. doi: 10.1111/acem.13337. [Epub ahead of print]

- Peterson, S; Harbertson, C; Scheulen, J; Kelen, G. **Trends and Characterization of Academic Emergency Department Visits—A five year review:** Pending submission

- Scheulen, J; Reznick, M; Harbertson, C; Raja, A. **Clinical Operations in Academic Emergency Departments: Current State in 2017**: Pending submission

- Harbertson, C; Scheulen, J; Kelen, G. **Academic Emergency Physician Salary Survey**: Pending submission

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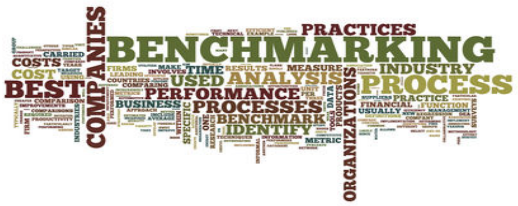
Data Set

	2014	2015	2016	2017	2018
Academic Hospital	54	57	55	75	85
Academic Affiliated	21	18	22	24	13
Academic/Affiliated	75	75	77	99	98
Community	14	12	8	25	21
Freestanding ED	-	-	5	4	3
Adult Departments	89	87	90	128	121
Pediatric ED	14	16	14	19	17
Total ED Reports	103	103	104	147	138



Operating Freestanding ED:	15%
Separate Pediatric ED:	59%
EM staffs Pediatric ED:	45%
Trauma Center (I, II, III)	90%
Transplant Programs:	76%

69% Response rate

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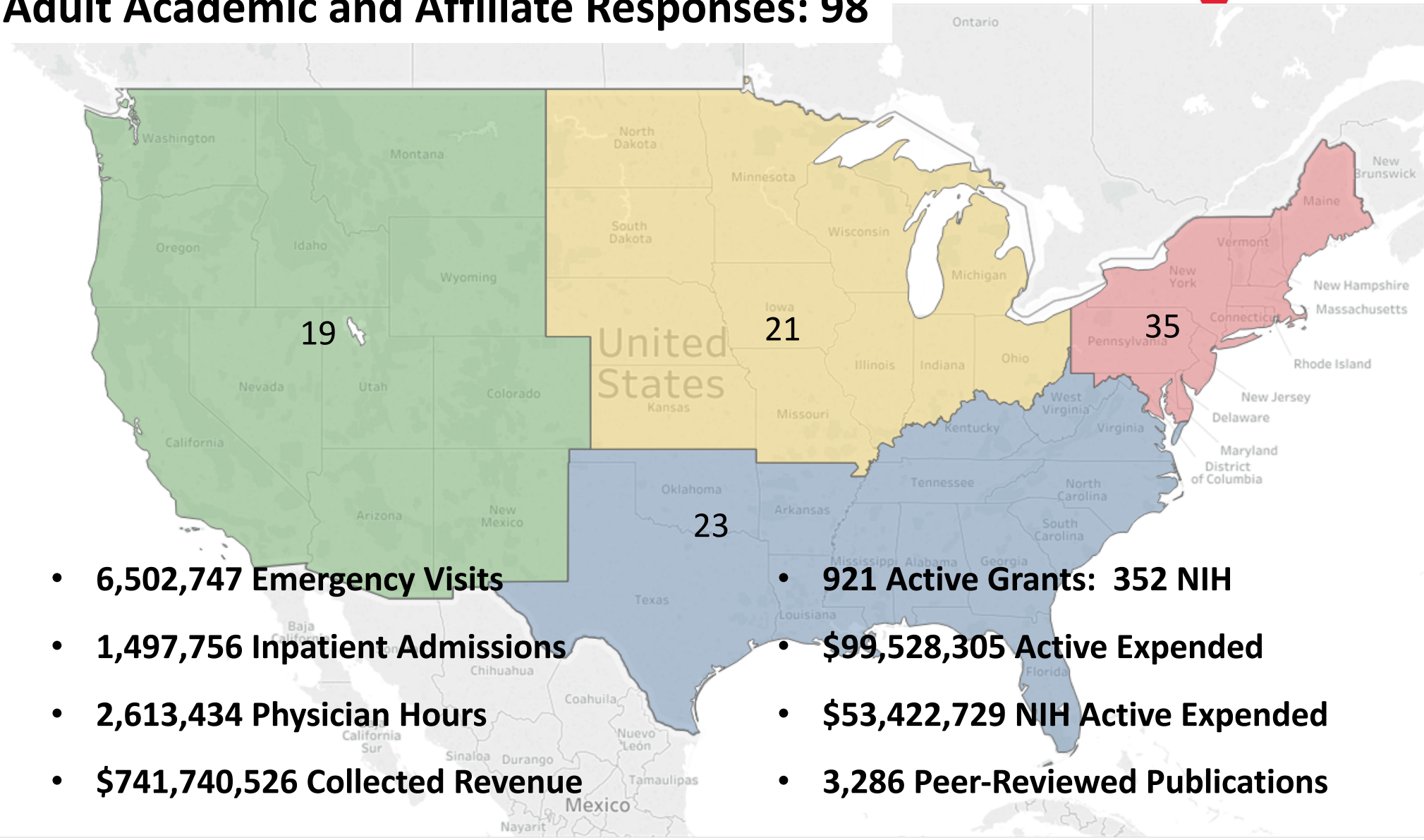
Data Set

Adult Academic and Affiliate Responses: 98



- 6,502,747 Emergency Visits
- 1,497,756 Inpatient Admissions
- 2,613,434 Physician Hours
- $741,740,526 Collected Revenue
- 921 Active Grants: 352 NIH
- $99,528,305 Active Expended
- $53,422,729 NIH Active Expended
- 3,286 Peer-Reviewed Publications

Benchmark Survey

- **Introduction**
- **Operations Benchmark Panel**
  - J. Scheulen: Basics and New Questions
  - Cathi Harbertson: Trending
  - Greg Archual: Quality and Throughput
  - Greg Volturo: Staffing and Hours

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Emergency Department Operations

ED Benchmarks
Benchmark Trending
Quality & Throughput
Provider Staffing

James Scheulen
Cathi Harbertson
Greg Archual
Greg Volturo, MD

March 2018

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The Academic ED

Academic and Affiliated
Range: 27,648 – 160,861

	Median Value
Hospital Beds	628/535*
Licensed ED Beds	54
ED Treat & D/C	48,669
ED Admissions	15,324
Hospital Observation	2,968
Total Visits	69,984
Admission Rate	24.8%
Hospitalization Rate	26.6%
% of Hospital	54.3%

*Licensed vs Staffed Inpatient Beds
93 closed at median/69 closed at mean

	Median	Mean
Total LOS	4.5 hrs	5.4 hrs
LOS Admits	6.9 hrs	8.2 hrs
LOS D/C	4.0 hrs	4.5 hrs
Boarding	2.7 hrs	3.7 hrs
LWBS Rate	3.3%	3.5%
Total W/O	4.3%	4.7%

Patient Populations

	Median
Total	69,984
EMS Arrivals	18,055
EMS Percent	26.0%
EMS Admit Rate	43.4%
Walk in Admit Rate	20.4%
Behavioral Health	4.4%
Patients > 65 Years	17.6%
Pediatric Visits	5.8%
Dedicated Pediatrics	24,812

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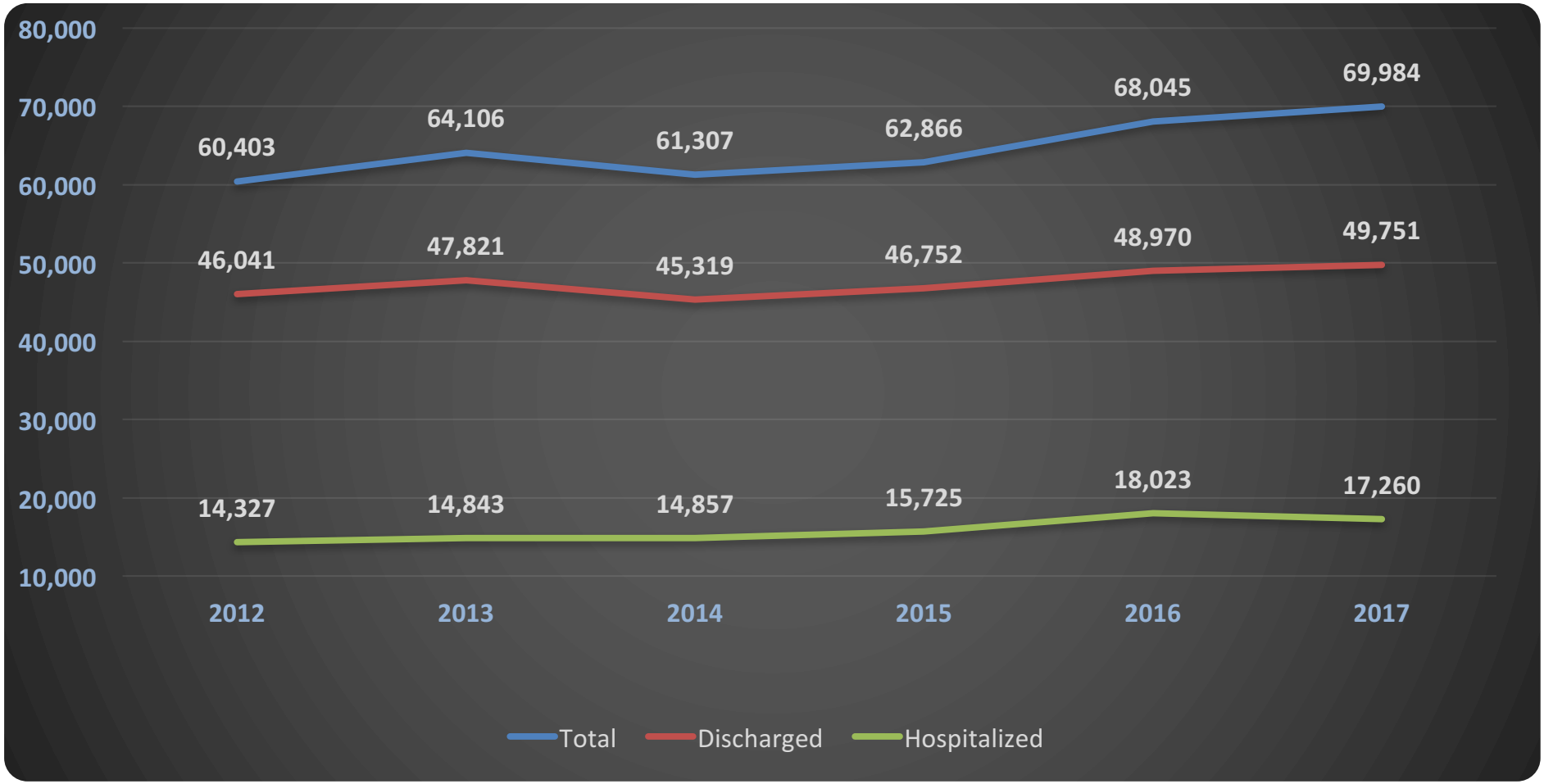
Patient Volume Trend: Median

Patient Volume Trend: All Academic/Affiliated



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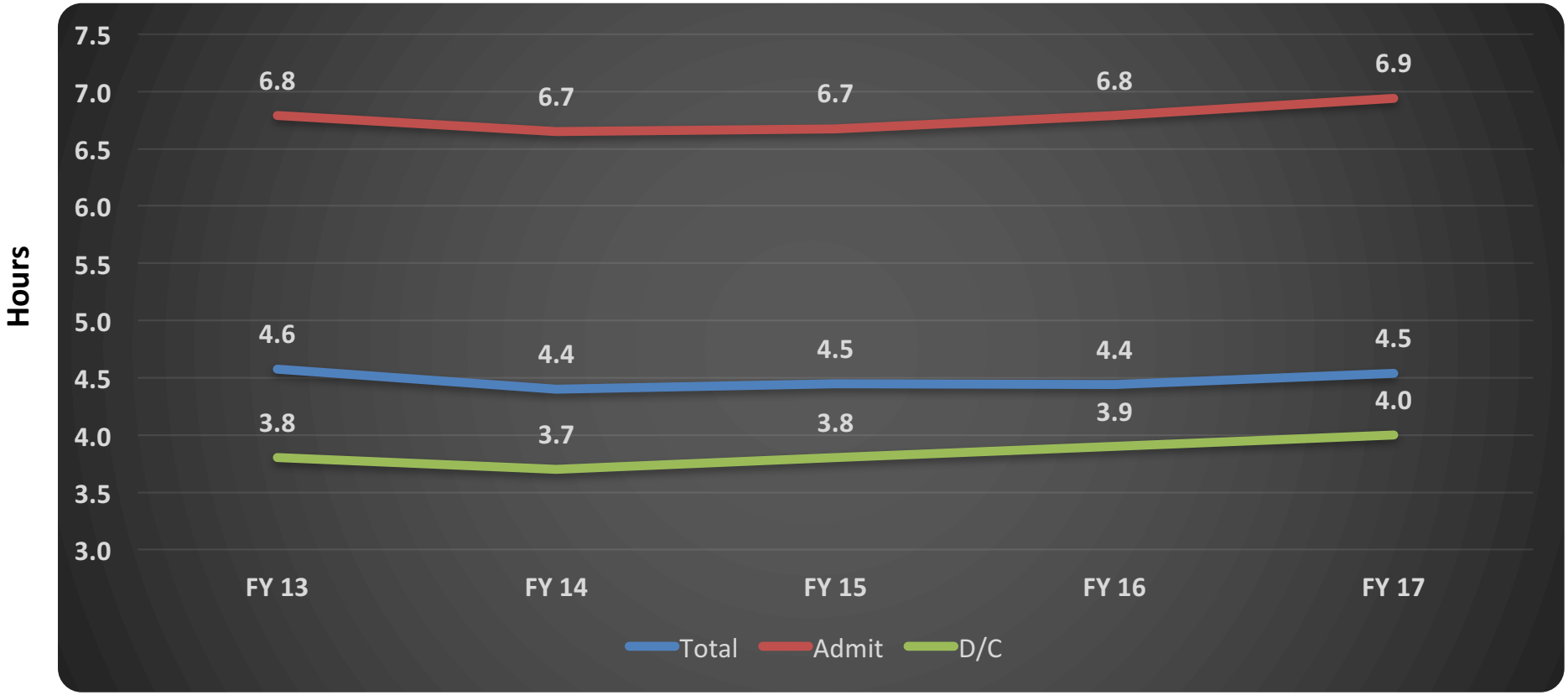
LOS Trend: Median LOS

Median Length of Stay 5 Years



Note: MEAN LOS is approximately 1 hour longer

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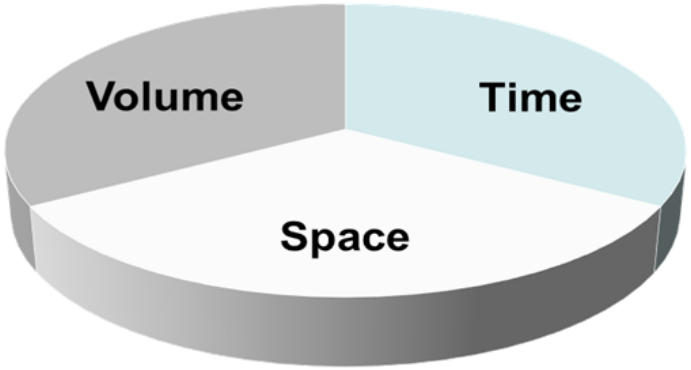
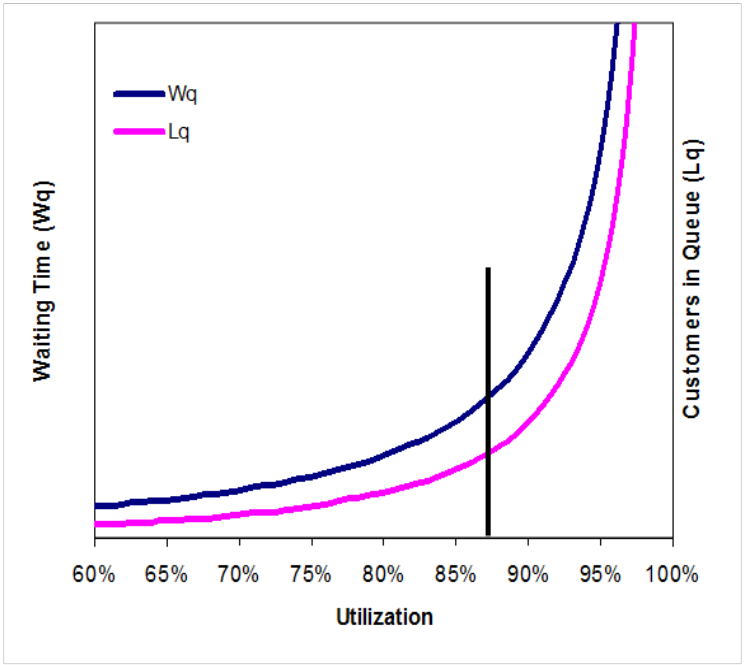
Bed Hour Utilization



JHH Bed Hour Utilization = 91%



Volume increase
LOS level or increased
Bed capacity NO INCREASE

→ **Demand for Bed hours**

INCREASED BED HOUR UTILIZATION
REDUCED OPERATIONAL PERFORMANCE

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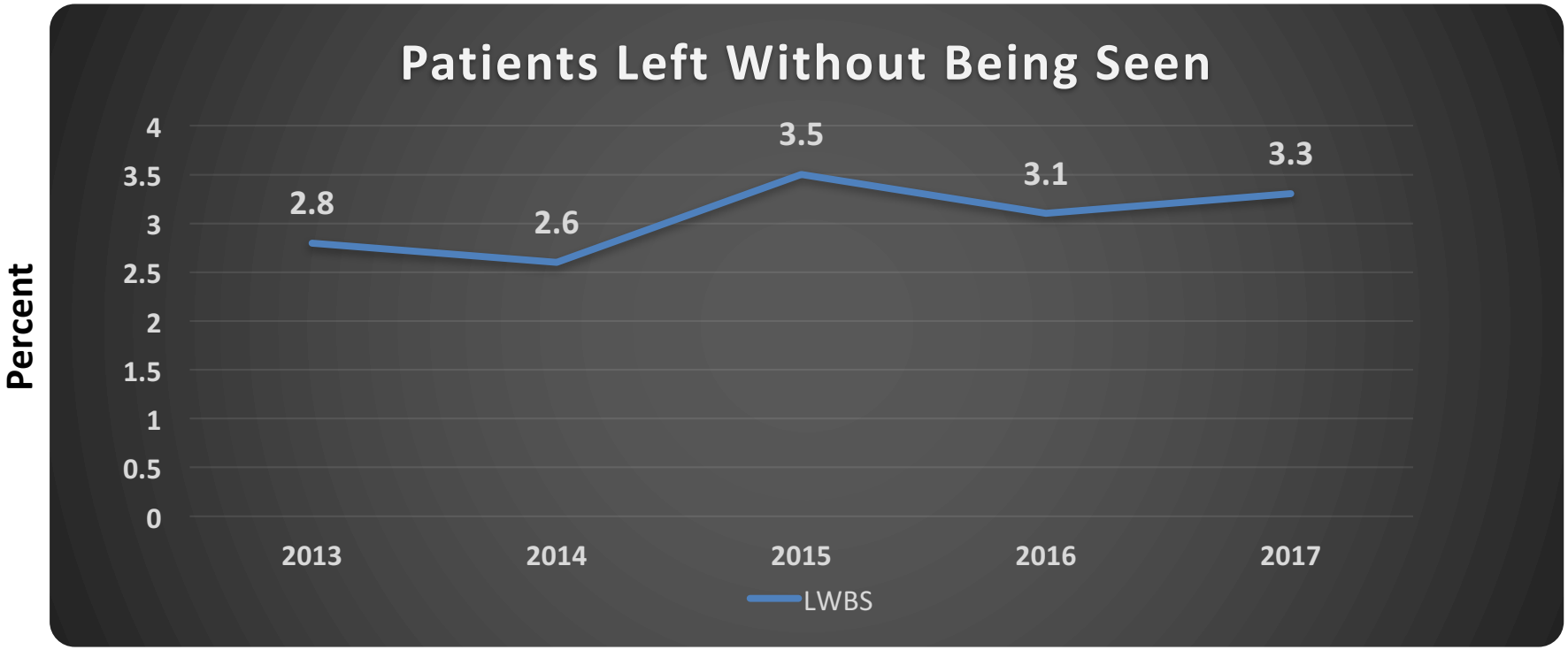
LWBS Trending



LWBS = Safety issue
SAL = Service issue
Total Walkout % = 4.0%
AMA = 0.8%

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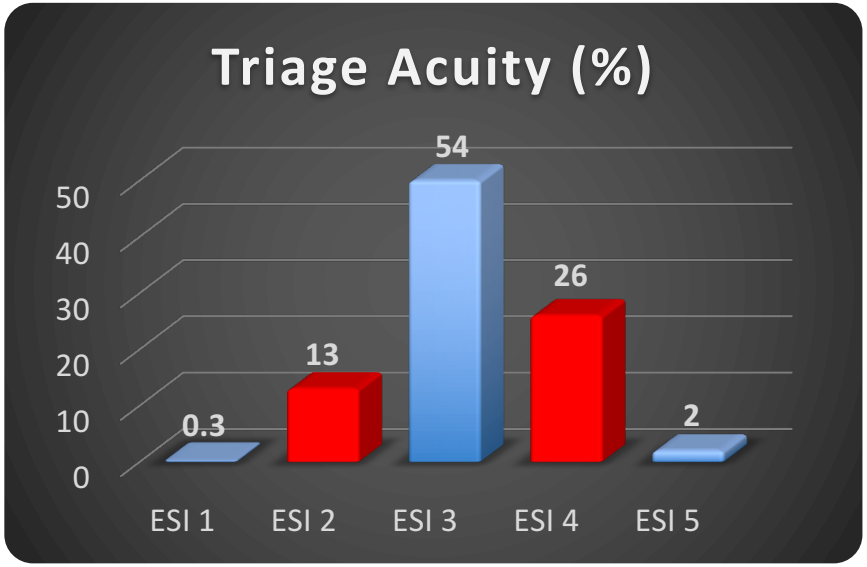
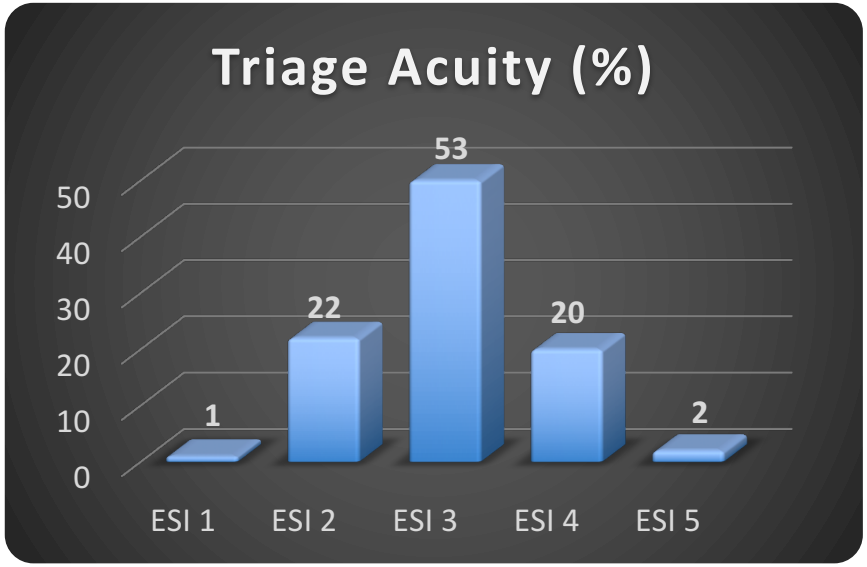
Acuity Metrics

Community and Freestanding



Academic and Affiliated



Academic/Affiliated	High Acuity CPT	Hospitalized Rate
FY 2016	71%	25%
FY 2017	76%	26%

Pediatrics has meaningful impact

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Pediatrics

	Pediatrics	Adult
Patient Volume	24,812	69,948
% Hospitalized	15.7%	26.4%
EMS Arrivals	9.5%	26.0%
EMS Admitted	38.8%	43.4%
Treatment Spaces	13	57
Throughput data	Shorter	Longer
High Acuity E&M Codes	49.4%	72%
Annual Physician Hours	10,220	27,503

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Factors Impacting LOS
LOS for Discharged Patients

Multiple Models
Multiple variables identified
Highest p values—Limit variables

Whether explaining or predicting: Boarding time is the single most impactful variable

Variable	Estimate	Std Error	P-value
Median Boarding Time	0.395	0.085	<0.001
Provider in Triage - Yes	2.805	0.941	0.005
Provider in Triage - No	2.589	0.928	0.008
% ESI 4,5	-0.045	0.019	0.019
% Hospitalized (Admit or Hospital Obs)	0.042	0.02	0.039

Factors Impacting LOS
LOS for Discharged Patients

Modeling indicated Boarding Time of >4.5 hours was the "break point"

Of the 7 hospitals with > 4.5 hours of boarding, the best performer had An LOS of Discharged patients of 4.58 hours….

ED Name	Median LOS D/C Patients
UC Davis Medical Center Primary Academic	4.58
Lyndon B. Johnson Hospital Primary Academic	5.17
Loma Linda University Medical Center Primary Academic	5.48
Johns Hopkins Hospital Primary Academic	5.63
University of New Mexico Hospital Primary Academic	6.19
UF Health Shands Hospital Primary Academic	6.3
UTHS- San Antonio University Hospital Primary Academic	6.32

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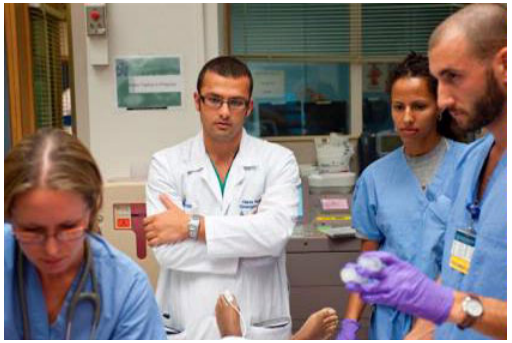
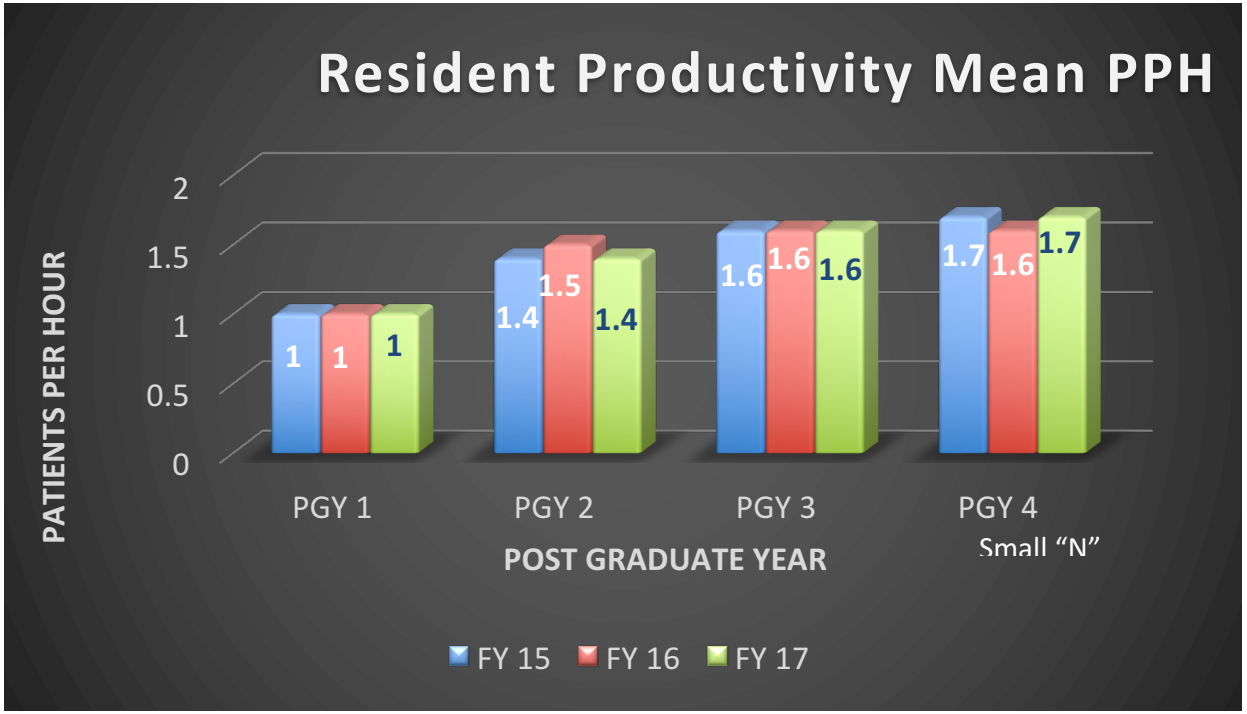
Education: Residency

- **73% of programs are 3 years**
- **12 residents per year**
- **23% with departmental funded residents**
- **Programs have a median of 3 teaching sites**
- **50% report a required EM Clerkship**





New Questions: Staffing

- **On a typical Monday at 3 pm in your main ED/Acute area, how many:**
  - **Patients are in beds or hall spaces**
  - **Attending physicians are working**
  - **APPs are working**
  - **Residents are working**

Census	56
Attending MDs	4
Residents	5
APPs	3
Total Extenders	8
Total Providers	12
Attending Pt Load	17
Pts/Provider (with MD)	5
Pts/Extender	7
Extenders/MD	2

New Questions: Staffing

- **On a typical Monday at 3 pm in your main ED/Acute area….**

	JHH	JHBMC	AAAEM
Patients/Attending	16	16	17
Attending MDs	1	1	1
Residents	2	1	1.5
APPs	1	2	1.5
Total Extenders	3	3	3
Total Providers	4	4	4
Pts/Provider	4	4	5

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New Questions: Ultrasound

- **Do your providers (Residents, APPs and Attendings) perform bedside ultrasound examinations?**
  - **87 responded: 86 Responded "Yes"**
- **If yes, what types of examinations/procedures do the majority of your staff perform? (Select yes or no for each)**
- **Do you bill a technical fee charge for some or all of these bedside ultrasound examinations?**
  - **47% responded "Yes"**
- **Do you bill professional fee charges for some or all of these bedside ultrasound examinations?**
  - **83% responded "Yes"**
  - If yes, what are the Total Professional Fee **charges** for ultrasound CPT codes?
  - If yes, what are the Total Professional Fee **collections** from ultrasound charges?

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New Questions: Ultrasound

	Median	Mean
Charges	$241,656	$374,014
Collections	$47,600	$86,233
Collection %	19.7%	23.1%

Examination	% Yes
Abdominal Aorta	96%
Biliary	91%
Bowel	62%
Cardiac	99%
DVT	73%
FAST/Trauma	100%
1st Trimester OB	93%
Ocular	78%
Renal	95%
Soft tissue/MSK	95%
Thoracic	94%
U/S Guided IV	95%

New Questions: Sepsis

- ACEP 26: Percentage of emergency department visits for patients aged 18 years and older with septic shock who had a ***serum lactate level ordered*** during the emergency department visit

- ACEP 27: Percentage of emergency department visits for patients aged 18 years and older with septic shock who had an ***order for antibiotics*** during the emergency department visit

- ACEP 28: Percentage of emergency department visits for patients aged 18 years and older with septic shock who had an ***order for ≥ 1 L of crystalloids*** during the emergency department visit

- ACEP 29: Percentage of emergency department visits for patients aged 18 years and older with septic shock and an ***elevated serum lactate result (>2mmol/L) with a second serum lactate measurement ordered*** following the elevated serum lactate result during the emergency department visit

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New Questions: Clinical Hour Reduction

- **What is the clinical hours *reduction* from the annual base clinical hours for the following roles?**
  - Chair
  - Chief
  - Vice-chair
  - Residency Director
  - Associate PD
  - Assistant PD
  - Clerkship director
  - Assistant clerkship
  - Fellowship director
  - EMS Director
  - Clinical Operations director
  - Toxicology director
  - Ultrasound director
  - Quality/Safety/Risk director
  - Simulation director

Salary survey asks the opposite question: What is the clinical work load for each of the administrative roles

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New Questions: Retirement and Professional Enrichment

- **Contribution to retirement = $25,413**

- **Professional Enrichment Allotment:**
  - **Allotment for expected CME, license, dues, memberships, travel, subscriptions, etc. Please provide the annual dollar amount.**

	Median
Instructor	$4,450
Assistant Professor	$4,500
Associate Professor	$4,500
Professor	$5,000
Total	$4,500

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Benchmark Data Trends

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AAAEM Trending Dataset

- 6 years of trusted data (FY12-FY17)
- Reporting group medians
- Note that many new sites have responded, especially in last two years
  - FY12-FY15: ~75 responses
  - FY16-FY17: ~98 responses

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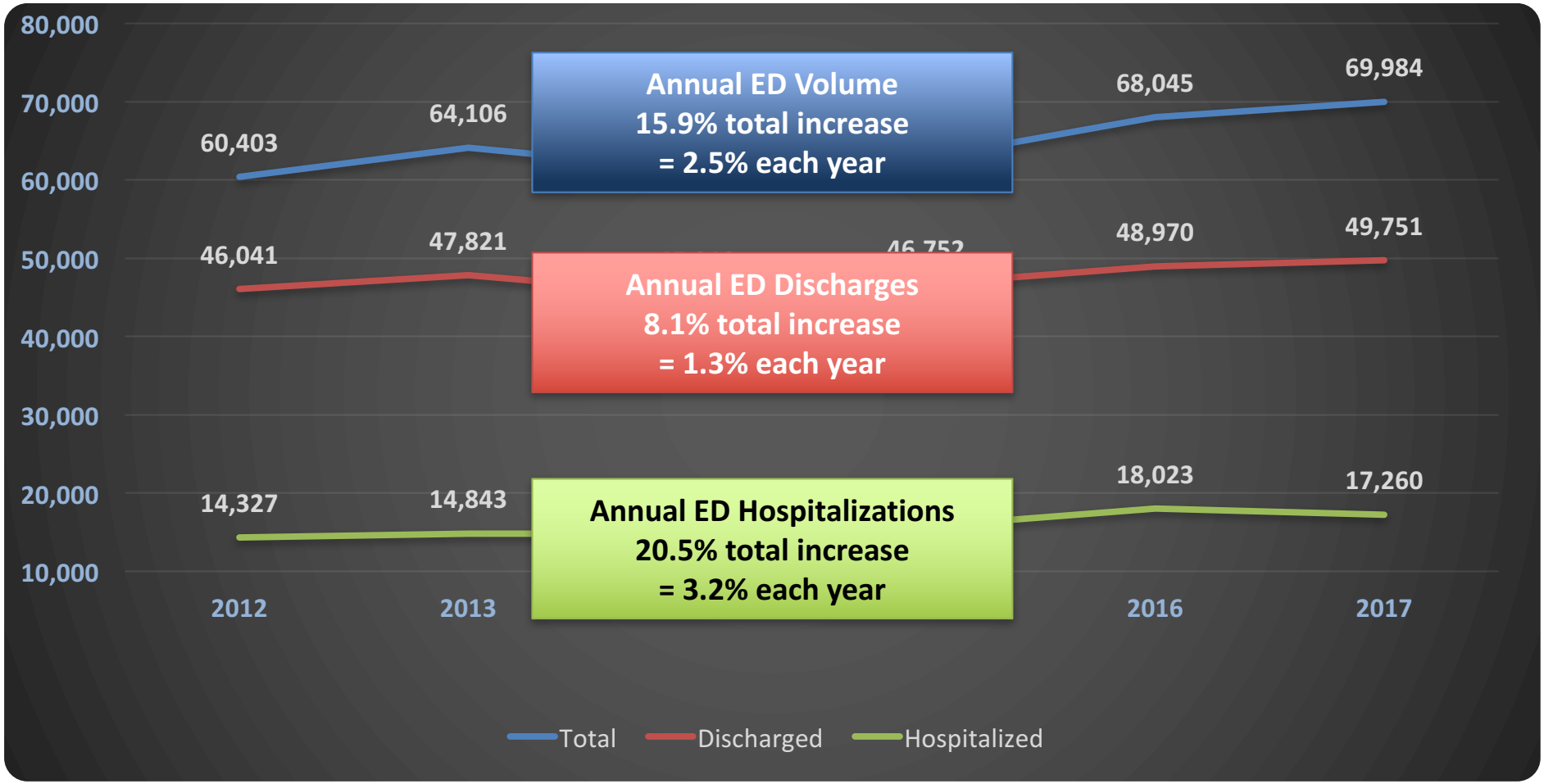
Patient Volume Trend: Median

Patient Volume Trend: All Academic/Affiliated



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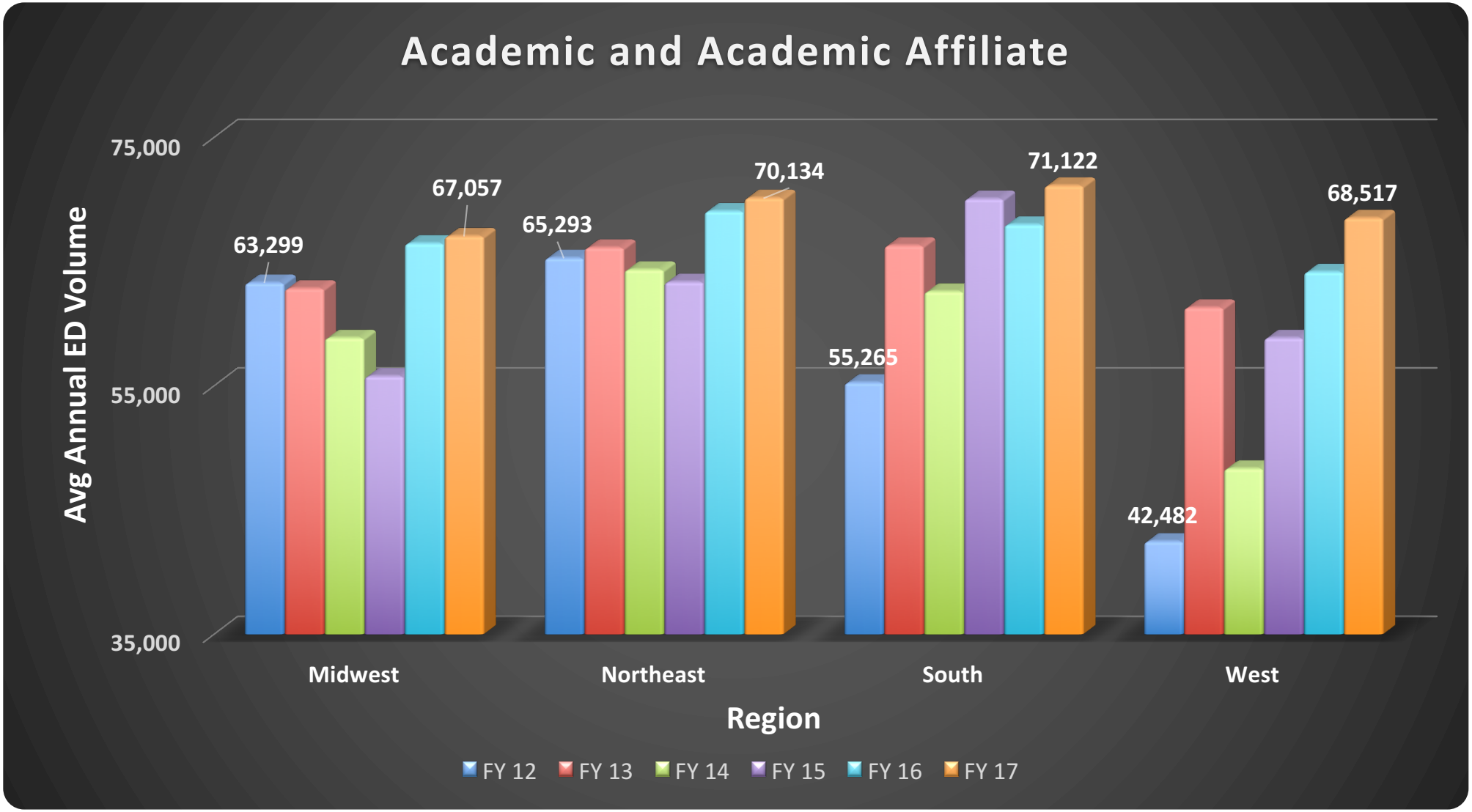
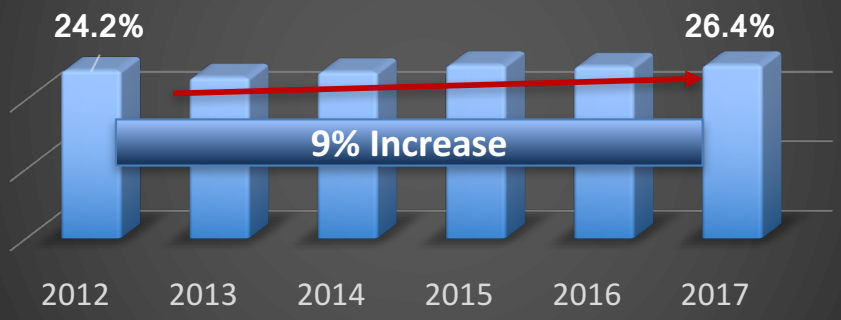
Volume Increases by Region

FY 2012 vs FY 2017

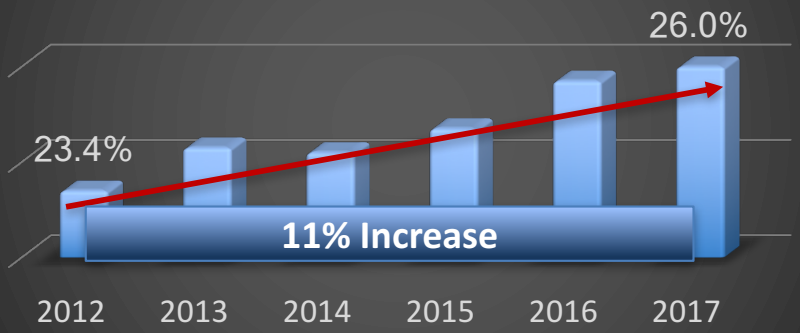


Acuity Metrics: Sicker patients?

Hospitalization Rate

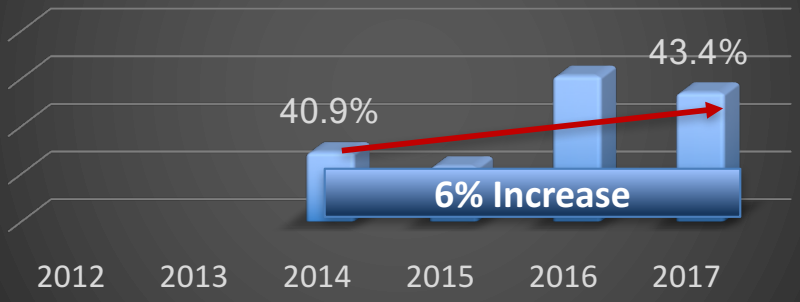


EMS Arrivals

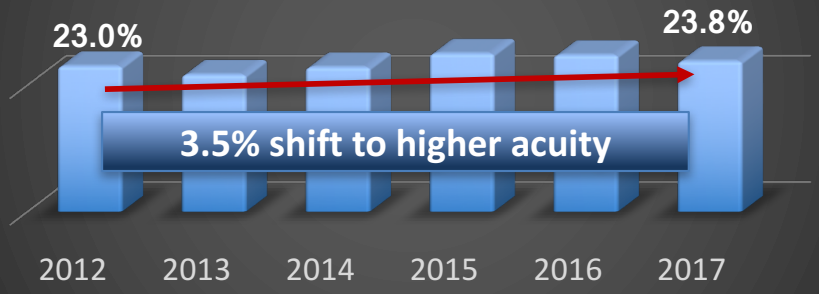


High Acuity Profee Codes

EMS Admissions



Acuity 1/2



Hospitalization Rate increased by 9%
High E&M Codes increased by 7.6%
ESI Acuity Level 1&2 increased by 3.5%
EMS Arrivals increased by 11%
EMS Admissions increased by 6%

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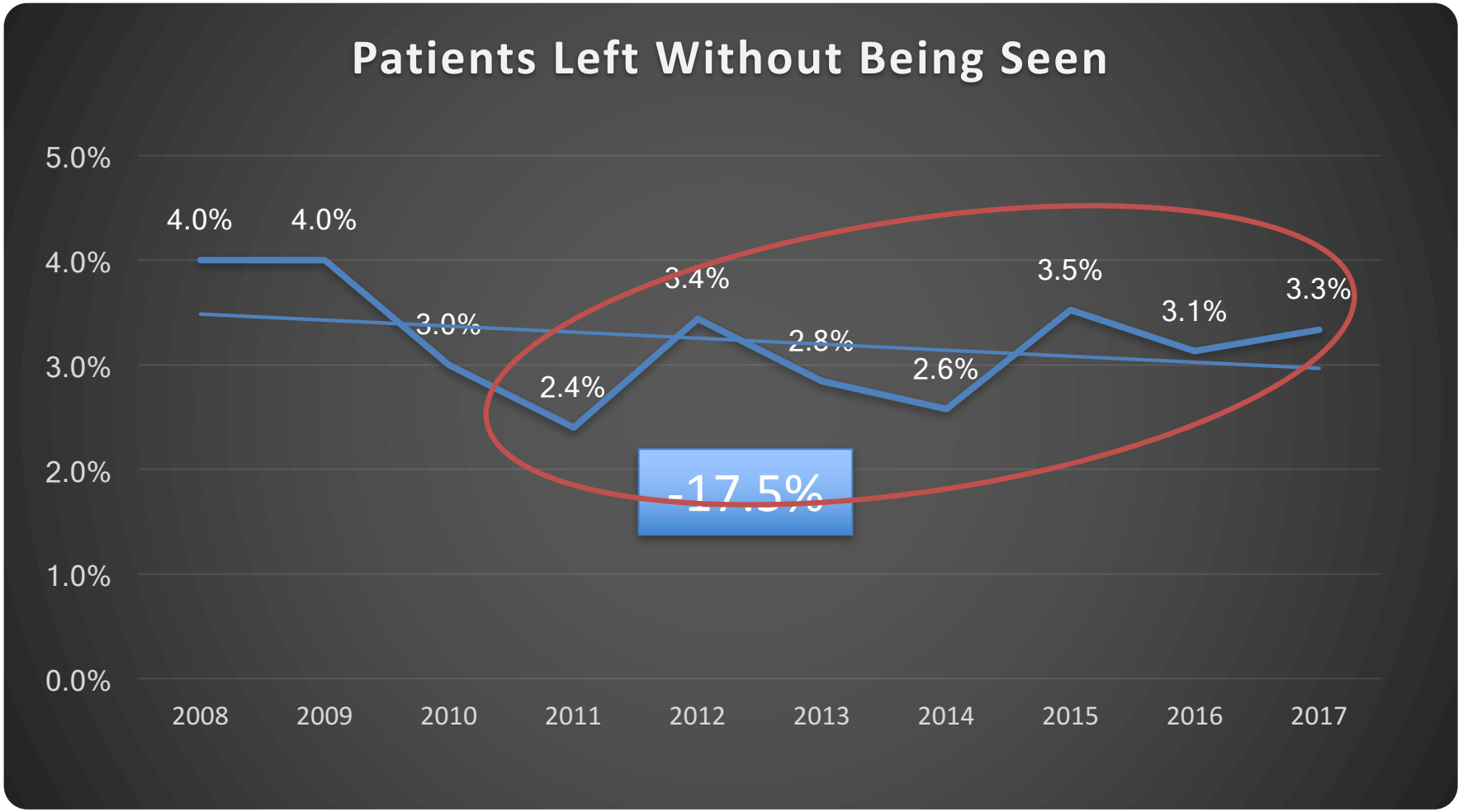
LWBS Trending



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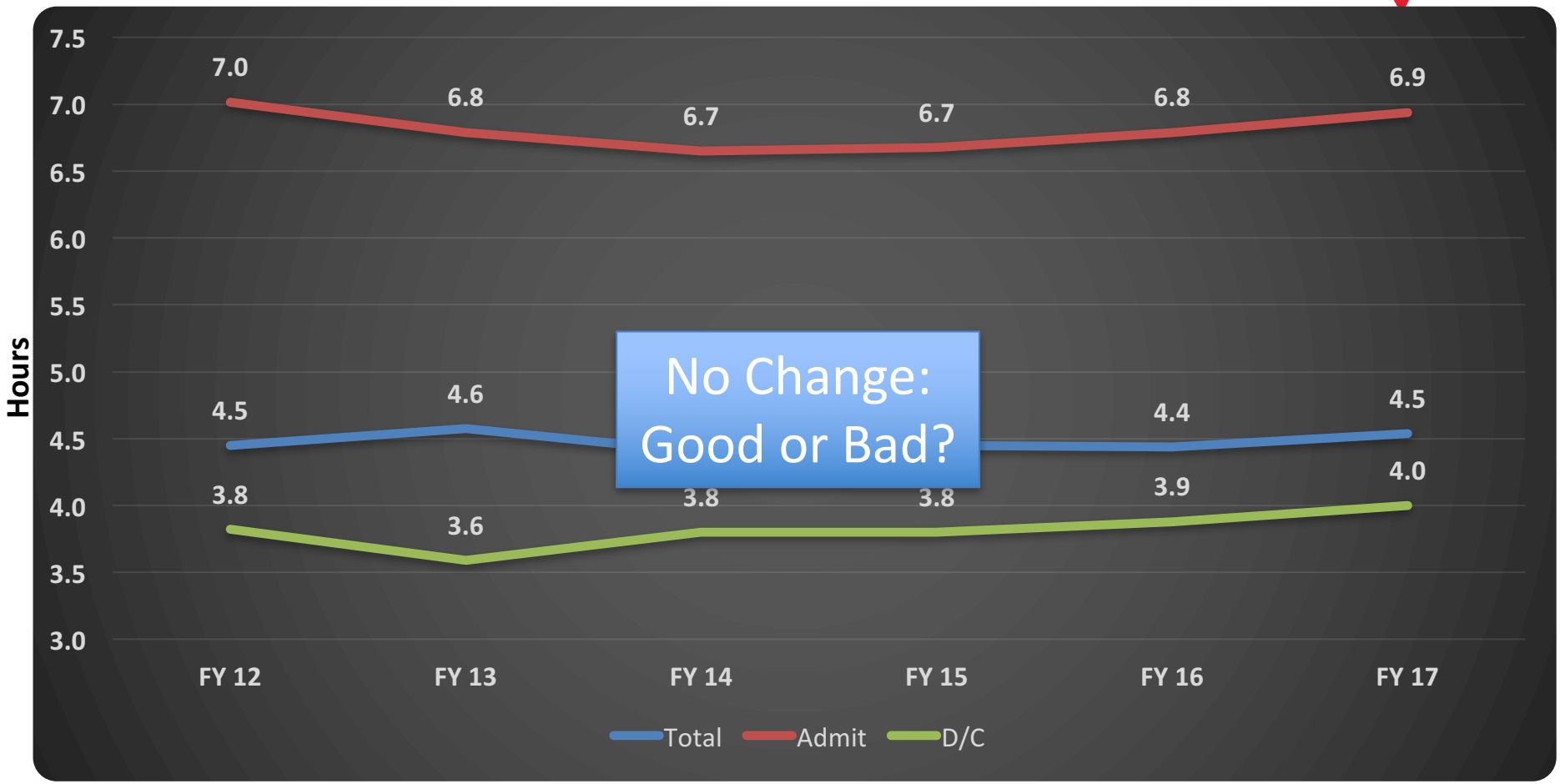
LOS Trend: Median LOS



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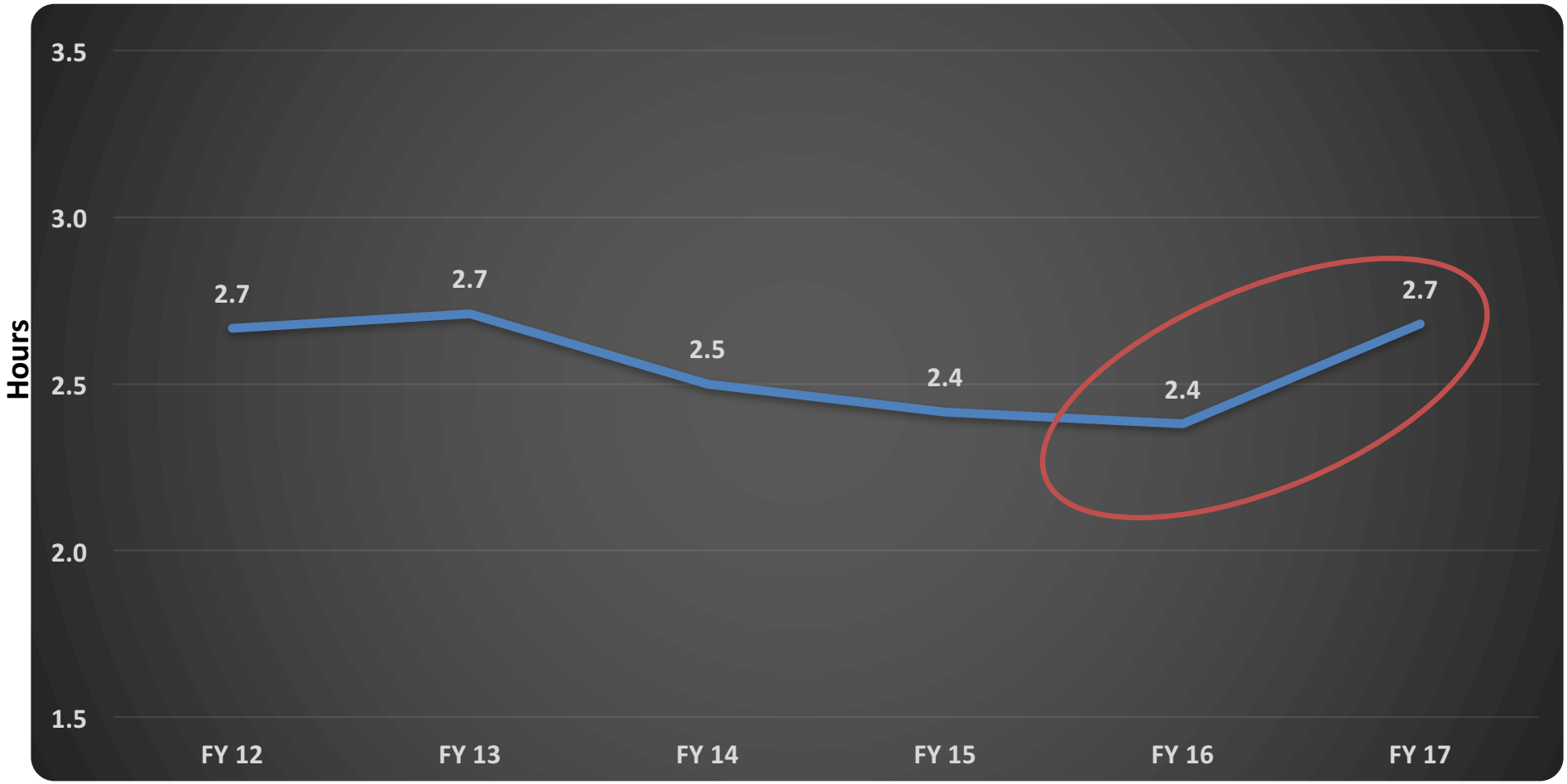
LOS Trend: Median Boarding



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Roundtable Analytics Model

- Applied a linear mixed model to account for the repeated measurements from sites over time
- Tested for and estimated the linear trending in these key metrics from 2012 through 2017
- Considered how growth applied to our “typical” academic ED, which over the last 6 years saw roughly 65,000 arrivals annually

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Model Findings: Typical ED

Metric	Our Typical ED (65,000) Is Adding...	Annual Percentage Growth of Metric
Total Arrivals	1,703 patients/year	2.6%
Total ED Hospitalizations (Admit + Obs)	846 hospitalizations/year	5.2%
Total ED Discharges	874 discharges/year	1.7%
EMS Arrivals	620 arrivals/year	3.7%
EMS Hospitalizations	391 EMS hospitalizations/year	5.4%
% ESI Level 1/2 Patients	416 ESI 1/2 patients/year	2.7%

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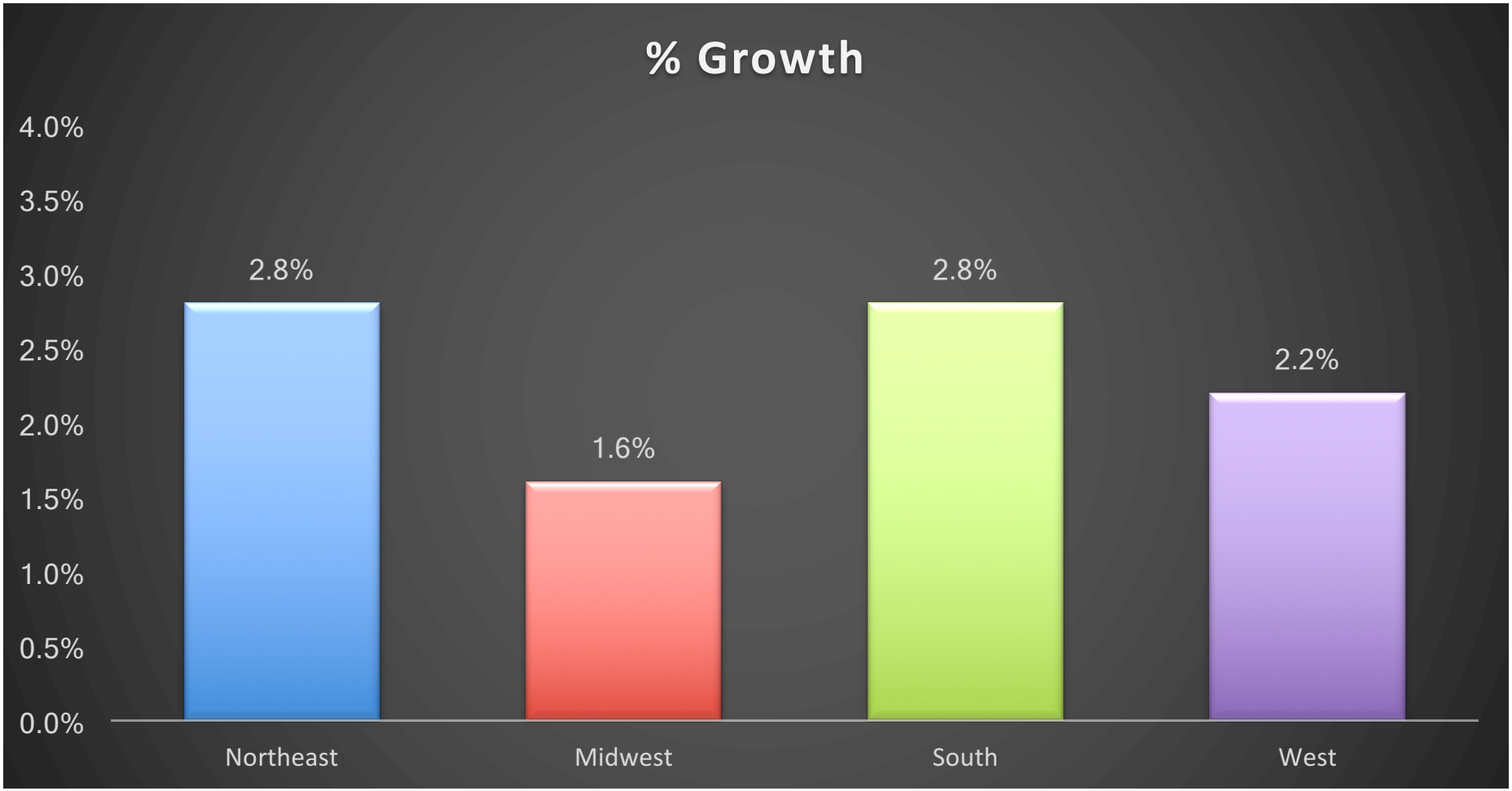
Where Are We Seeing Growth?

Regions



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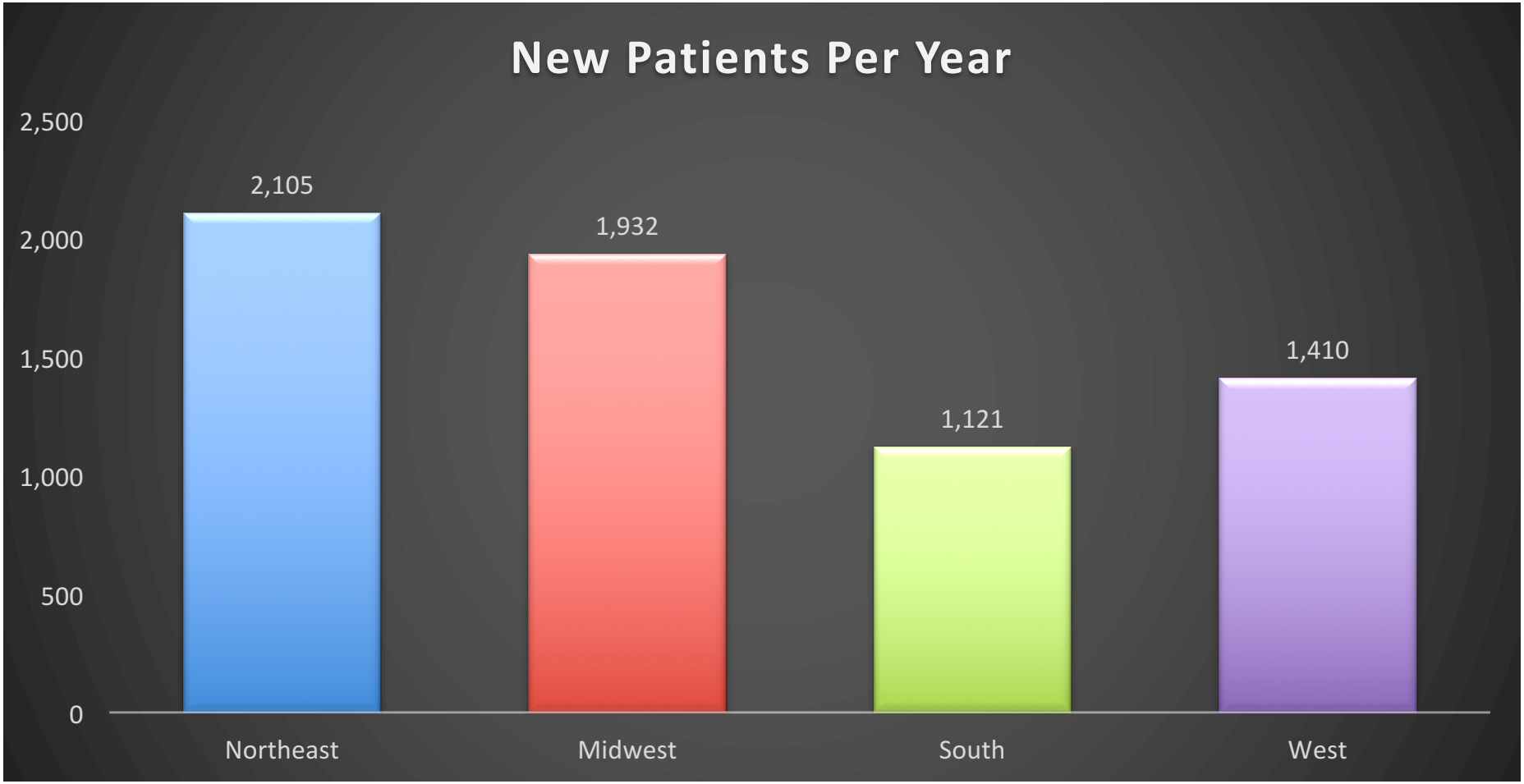
Where Are We Seeing Growth?

Regions



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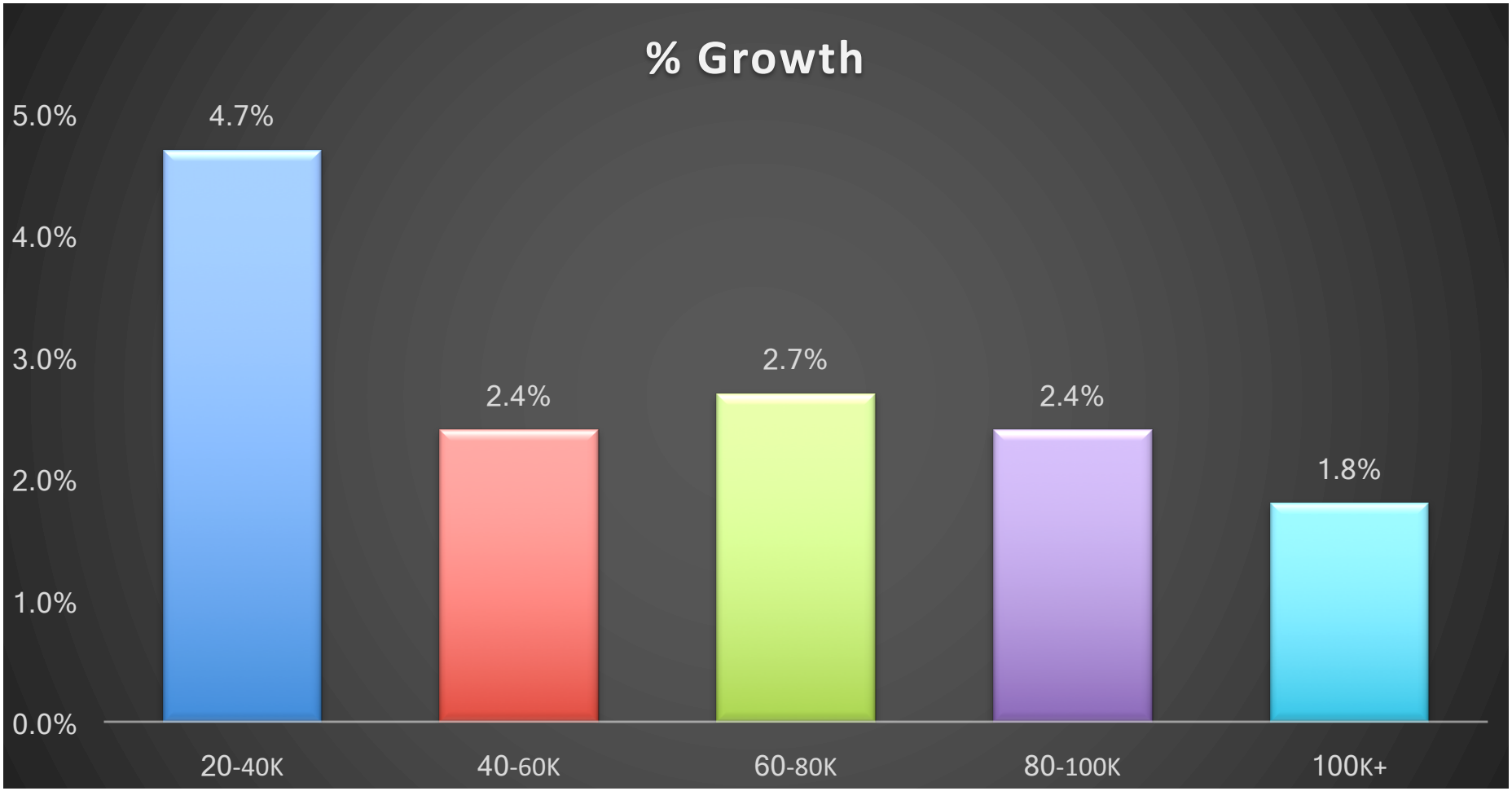
Where Are We Seeing Growth?

ED Visits Cohorts



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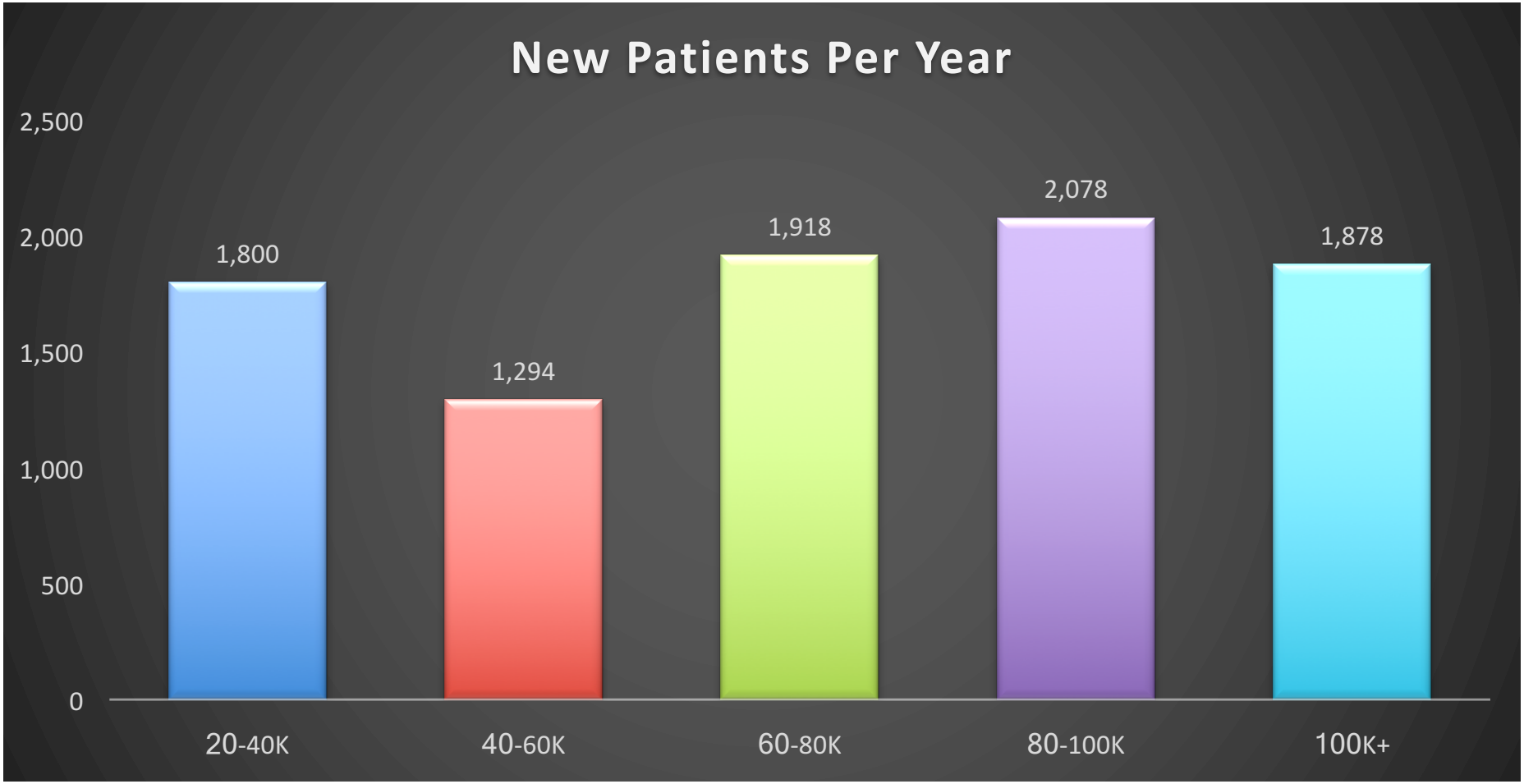
Where Are We Seeing Growth?

ED Visits Cohorts



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Quality and Throughput

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Quality Metrics

Metric	FY 16	FY 17
Left without being seen (LWBS)	3.2%	3.3%
Median LOS Discharged	3.9 hr	4.0 hr
Median LOS Admitted	6.8 hr	6.9 hr
Boarding Time	2.4 hr	2.7 hr
Arrival to Pain: Long Bone	54 min	60 min
Arrival to First EKG	12 min	11 min

Median Values

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Quality Metrics

Septic Shock Metrics	FY 17
% Patients With Lactate Level Measurement	92.2%
% Of Patients With Antibiotic Ordered	88.8%
% Of Patients With Fluid Resuscitation	82.6%
% Patients With Repeat Lactate Level	70.3%

Median Values

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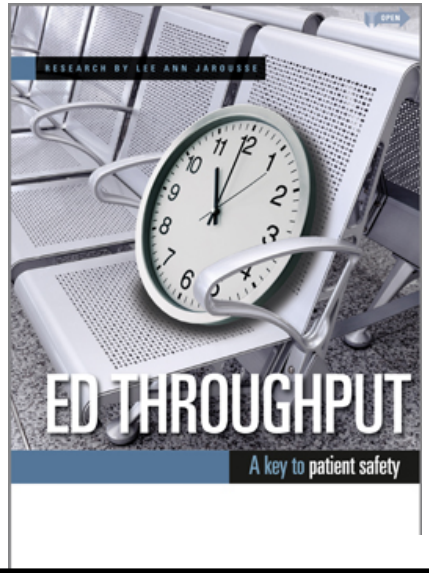
Sub-cycle Time

- **Provider to Decision: Admit = 2.9 hr**
- **Provider to Decision: D/C = 2.4 hr**
- **Decision to Depart: Admit = 2.7 hr**
- **Decision to Depart: D/C = 21 minutes**



	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Door To Provider	38	35	30	30	30	26

- **55% have a provider "up front"**
  - **Door to provider = 25 minutes for that group**

Median Values

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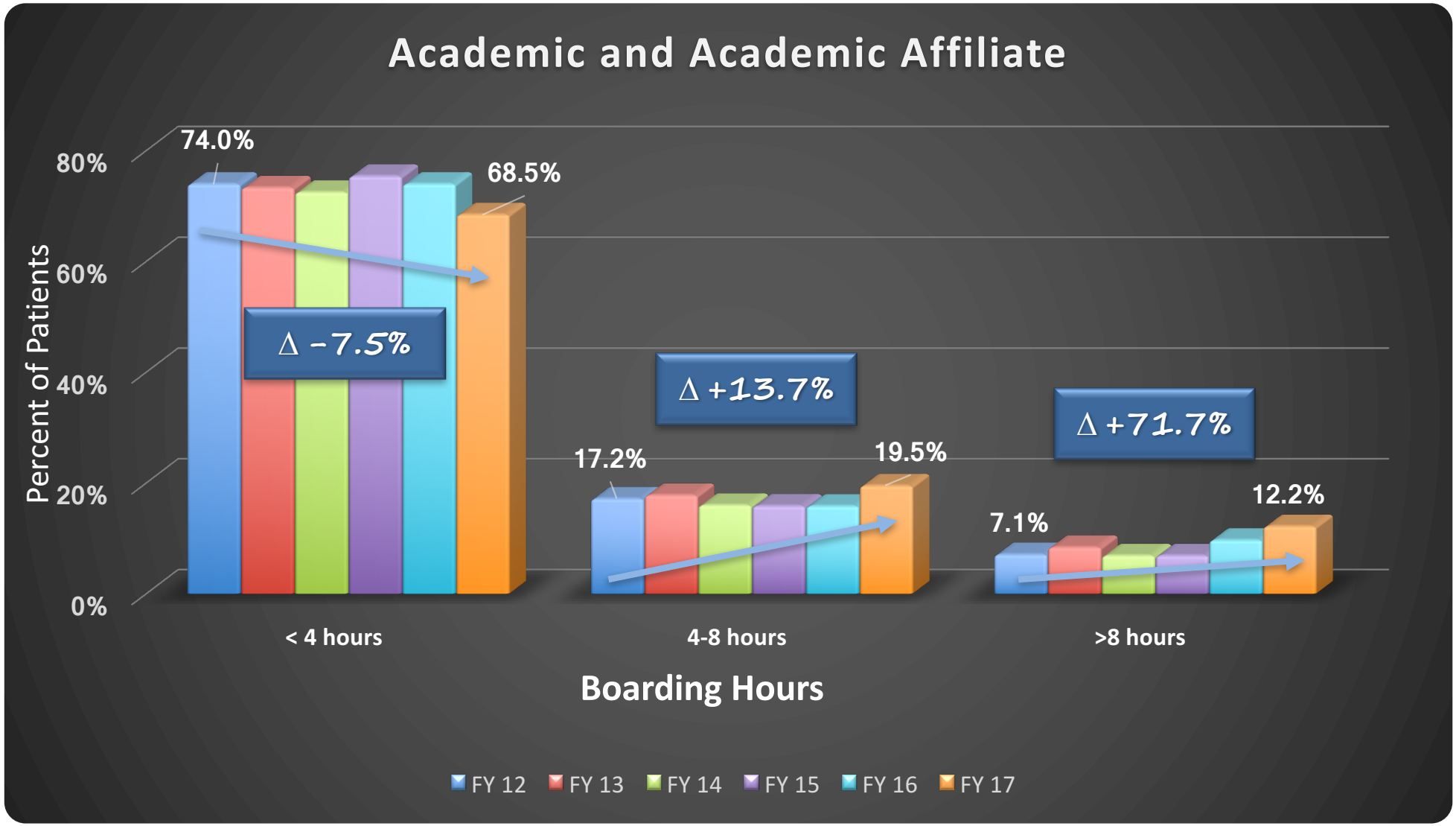
Boarding Time Distribution

FY 2012 vs FY 2017



ED Observation

- **ED Observation Bed Staffing**
  - **34% Report placing patients in ED Observation status**
  - **29% Report ED based Observation Beds**
    - **49% of these EDs Report Dedicated Provider Hours for ED Observation**

Time (Hr)	FY 13	FY 14	FY 15	FY 16	FY 17
Arrival to ED Observation Order	4.06	3.75	4.09	4.27	4.07
ED Observation Order to Decision	15.87	11.06	10.29	10.06	12.10

Mean times

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ED Observation

	FY 14	FY 15	FY 16	FY 17
Number of patients placed in ED Obs	3577	3304	3818	4360
% patients placed in ED Obs	4.9%	4.4%	4.9%	5.7%
% of ED Obs pts admitted	15.1%	20.9%	19.2%	23.0%
% Admit/Hospital Obs or ED Obs	26.7%	27.1%	28.6%	29.4%
% Admit/Hospital Obs or ED Obs**	**29.1%**	**30.1%**	**31.4%**	**34.3%**

Reported as average values

** EDs with ED Obs Status Patients > 0

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Ancillary Resource Utilization

Resource	FY 15	FY 16	FY 17
CT Utilization (% visits)	21.3 %	21.2%	22.5%
MRI Utilization (% visits)	1.2%	2.1%	2.0%
Plain Film (% visits)	42.9%	40.8%	39.4%
Laboratory (% visits)	63.3%	64.9%	63.9%
CT Turnaround	1.5 hr	1.8 hr	1.4 hr
Chest X-ray Turnaround	1.5 hr	1.0 hr	1.0 hr
CBC Turnaround	42 min	48 min	44 min

Median Values

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Patient Satisfaction

- AAAEM stopped reporting Press Ganey (PG) scores in the benchmark survey after FY13 because PG has academic benchmarks
- Began to question if the PG academic benchmark was the most appropriate for academic centers
- Analysis of the FY13 AAAEM benchmark survey PG data revealed it was different than PG benchmarks
- AAAEM collected PG scores again in FY16 and FY17 benchmarking surveys to perform more data comparisons

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Sample Dataset

Physician Scores for FY 2017

Pctile Rank	AAAEM Group Scores	UHC Group Scores	PG Large Db Scores
3	57.076	75.400	77.000
4	57.268	75.800	78.100
5	58.380	77.000	79.000
…			
58	83.072	86.500	87.200
59	83.328	86.600	87.200
…			
95	89.280	91.000	91.400
96	90.296	91.200	91.800

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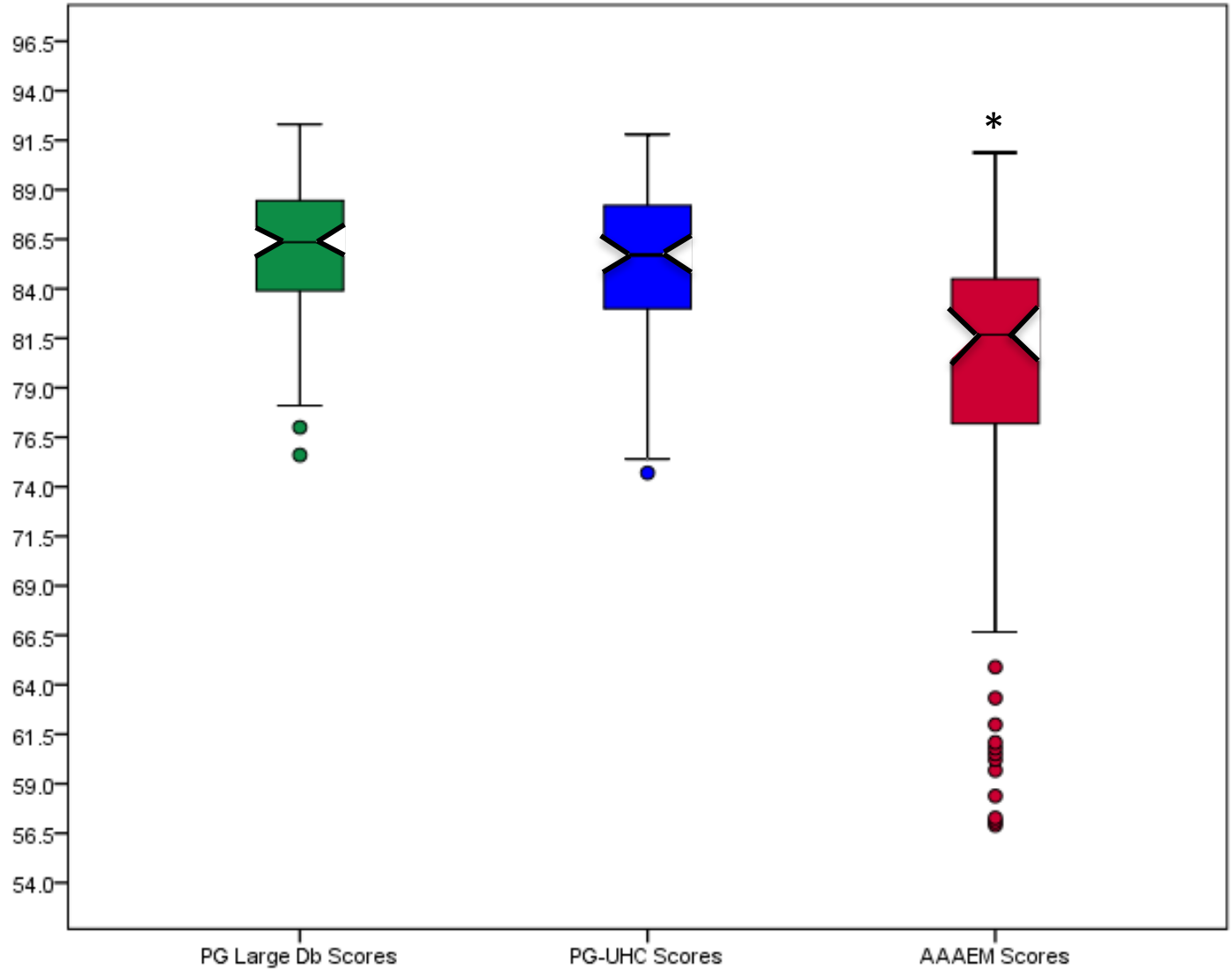
MD Results FY17



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MD Results FY17

	Mean	Std. Deviation	F	df	p	es*
AAAEM Member Database	**78.77**	9.21				
PG UHC Member Report	85.27	4.02	41.22	2	**.000**	**1.11**
PG Large Database Report	86.00	3.63				

*Cohen's d effect size between AAAEM cohort and other two combined

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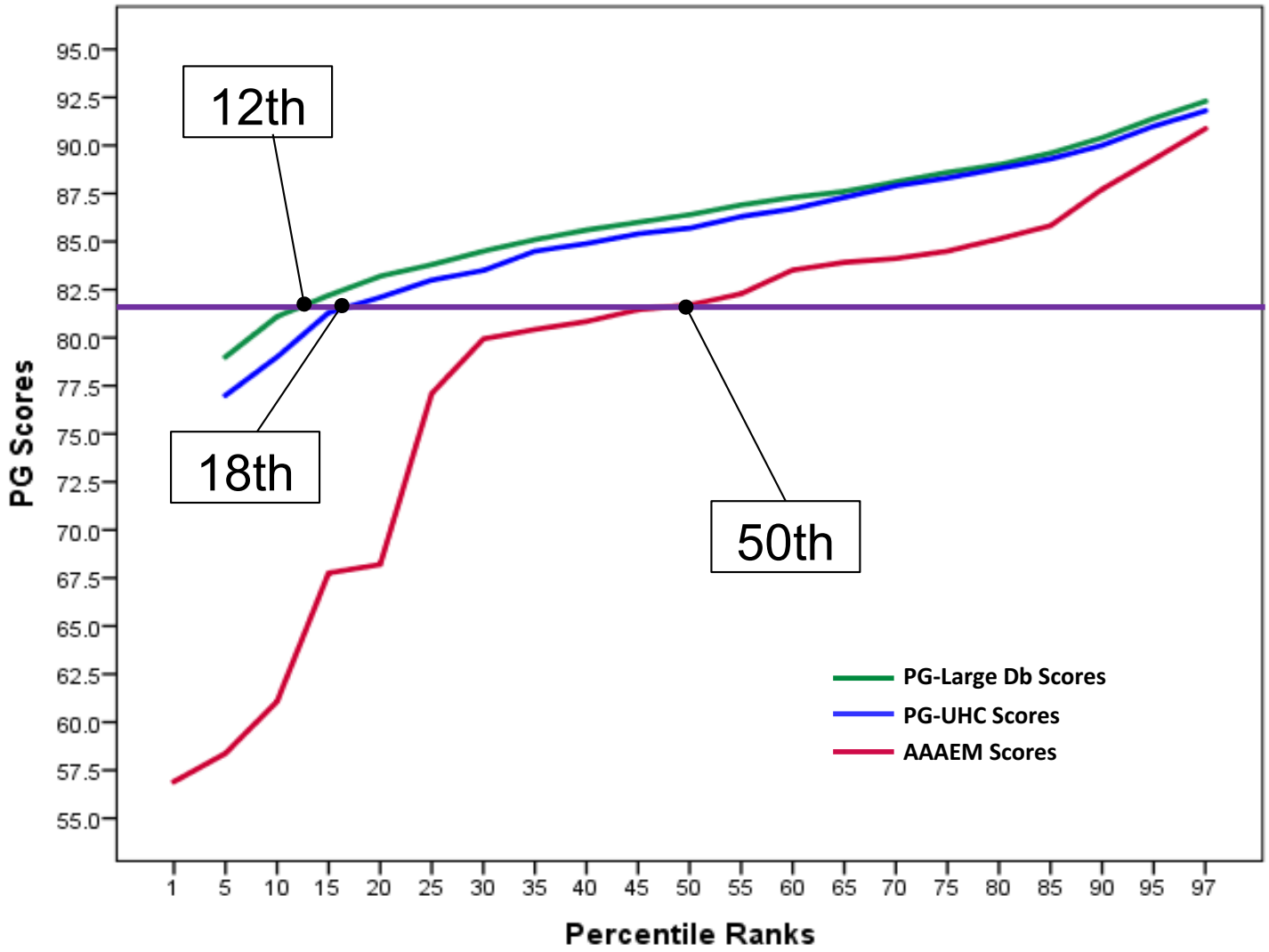
MD Results FY17



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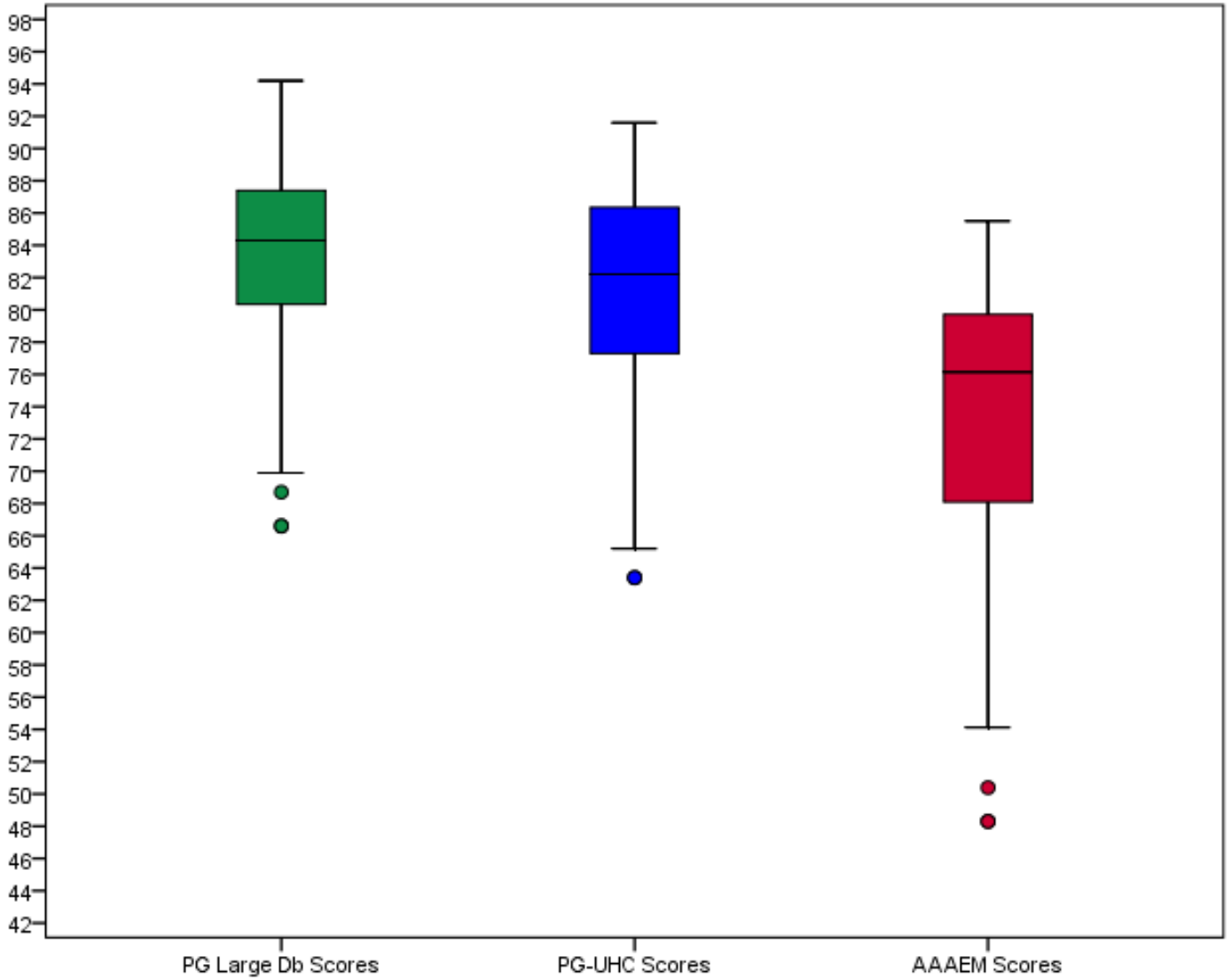
Likely To Recommend Results FY17



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Likely To Recommend Results FY17

- They were DIFFERENT!

	Mean	Std. Deviation	F	df	p	es*
AAAEM Member Database	**72.16**	11.80				
PG UHC Member Report	81.21	6.94	47.2	2	**.000**	**1.17**
PG Large Database Report	83.33	5.83				

- Significantly different with $p<0.001$
- More important, what is the effect size? The Cohen's d effect sizes between AAAEM and the other 2 cohorts combined is considered large.

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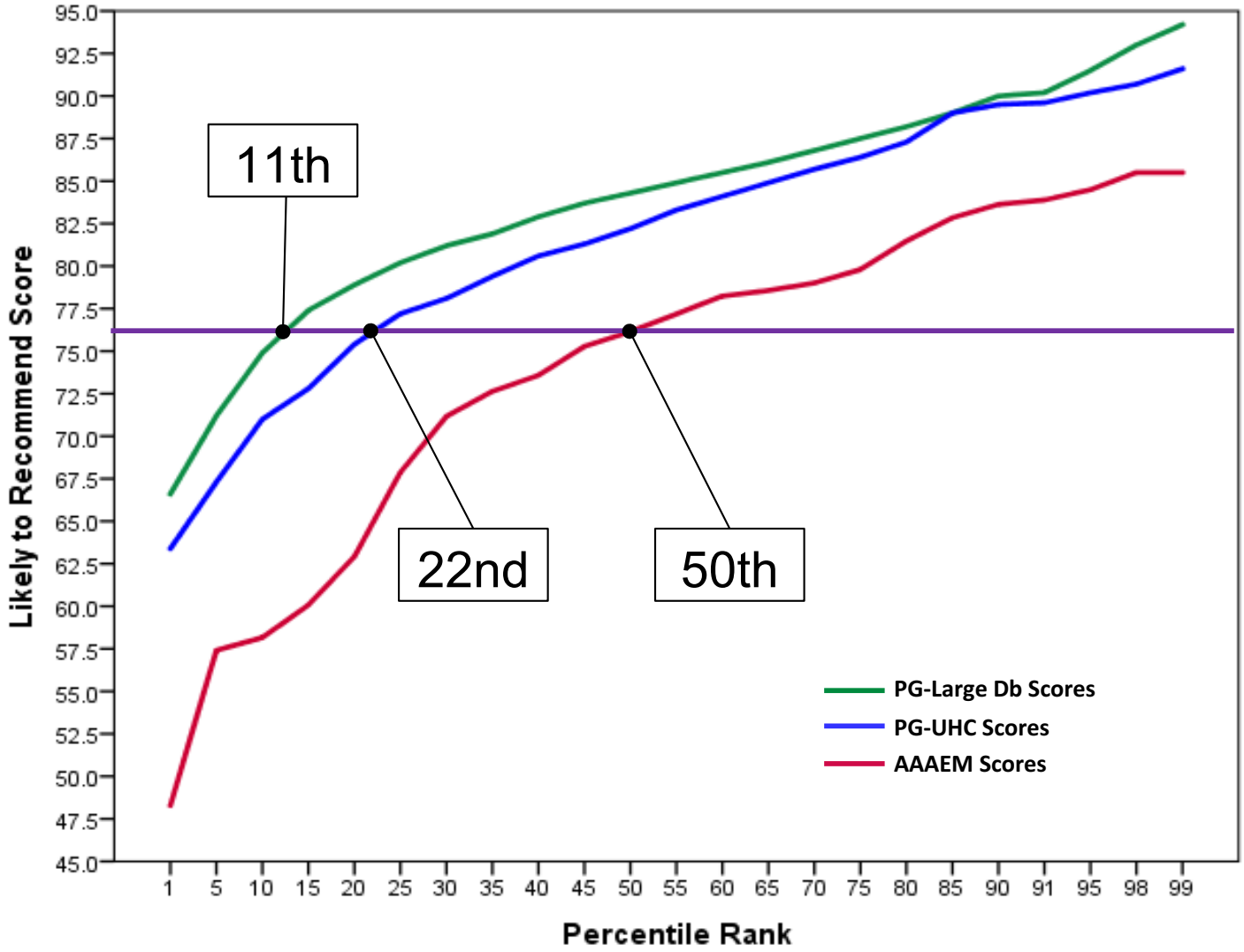
Likely to Recommend Results FY17



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Conclusions: Pt Experience

- Different methods of aggregating Press Ganey scores result in different benchmarks
- At any given percentile, the Large Hospital and UHC score is higher than the AAAEM score
- These differences are statistically different, and are meaningful with medium to large effect sizes
- When using Press Ganey data for high stakes decisions (e.g. physician compensation), choosing the most appropriate comparison cohort is critical

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Benchmark Survey Data
FY 2017
Physician and Provider Hours

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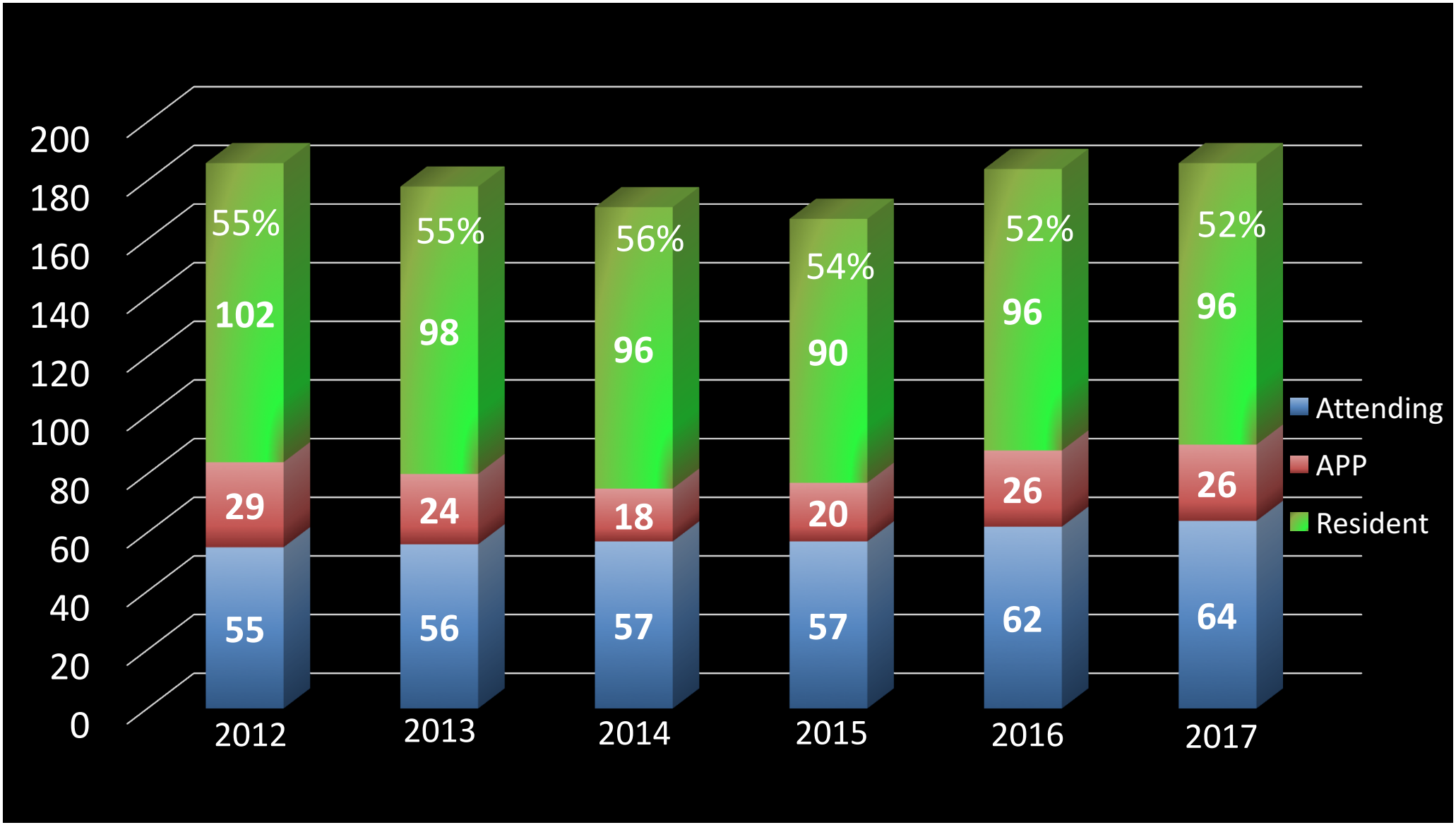
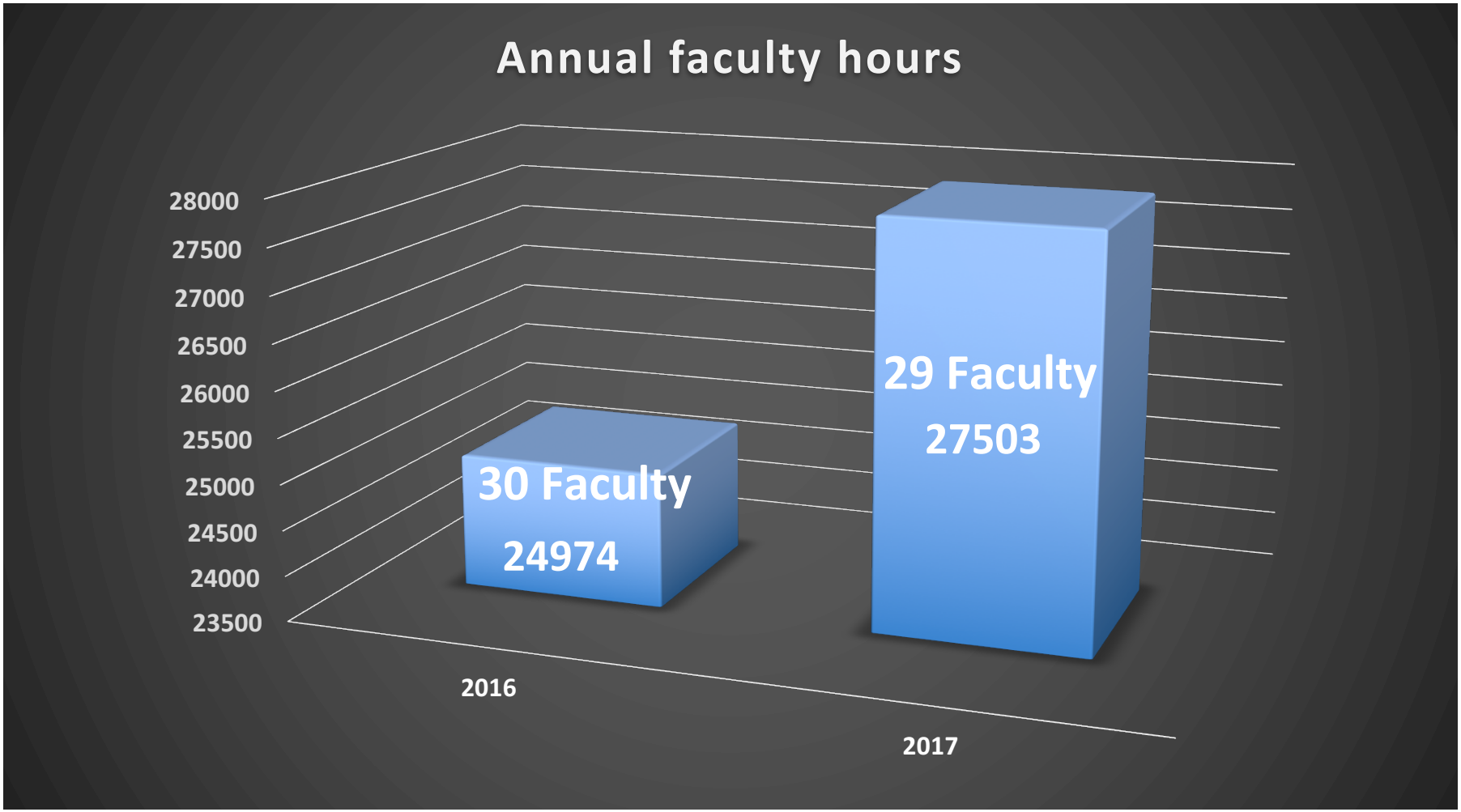
Daily Provider Coverage
Hours per day: Main ED

186 Hours of provider coverage per day in the “main ED”



Physician Staffing



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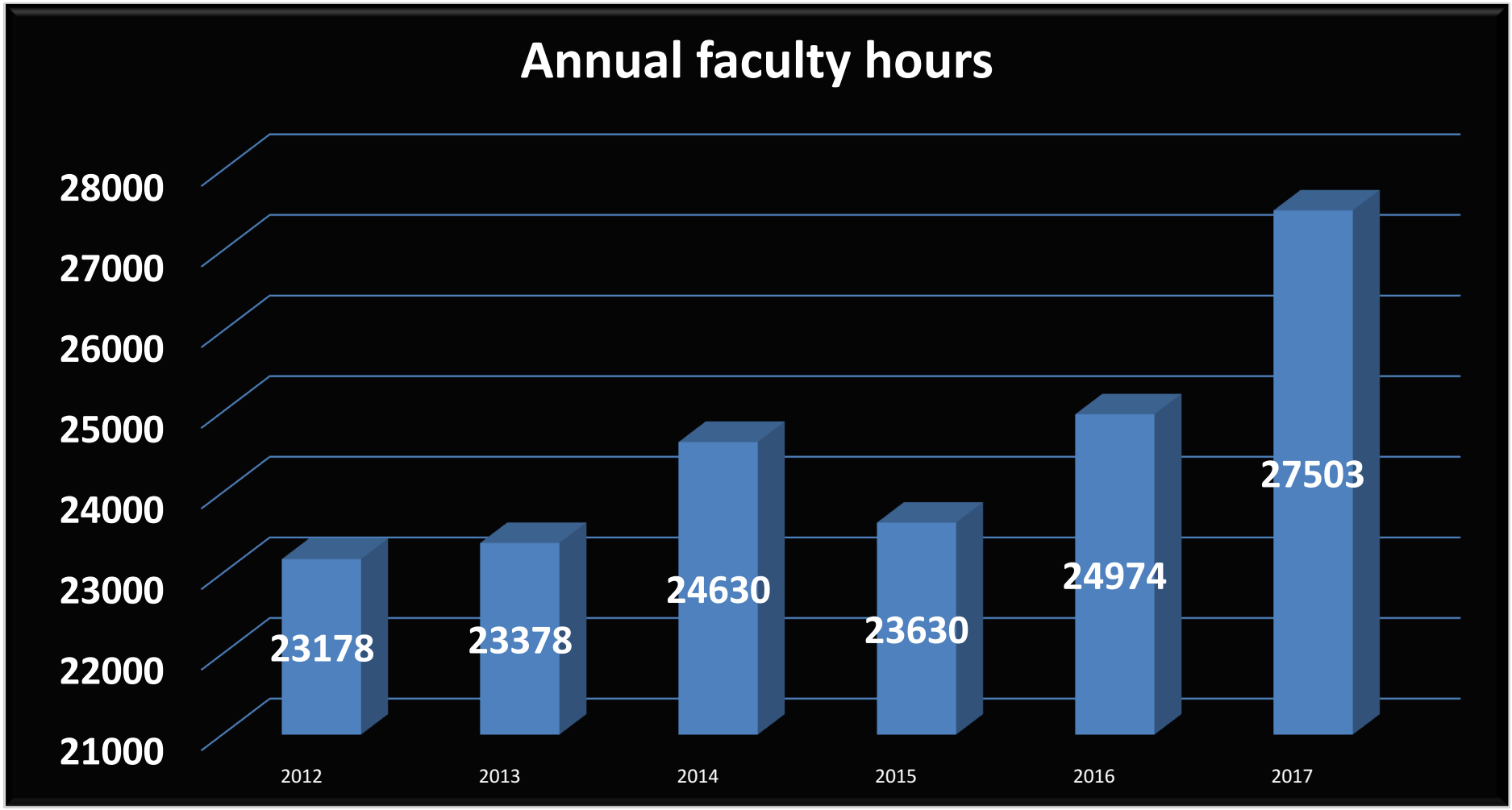
Physician Staffing



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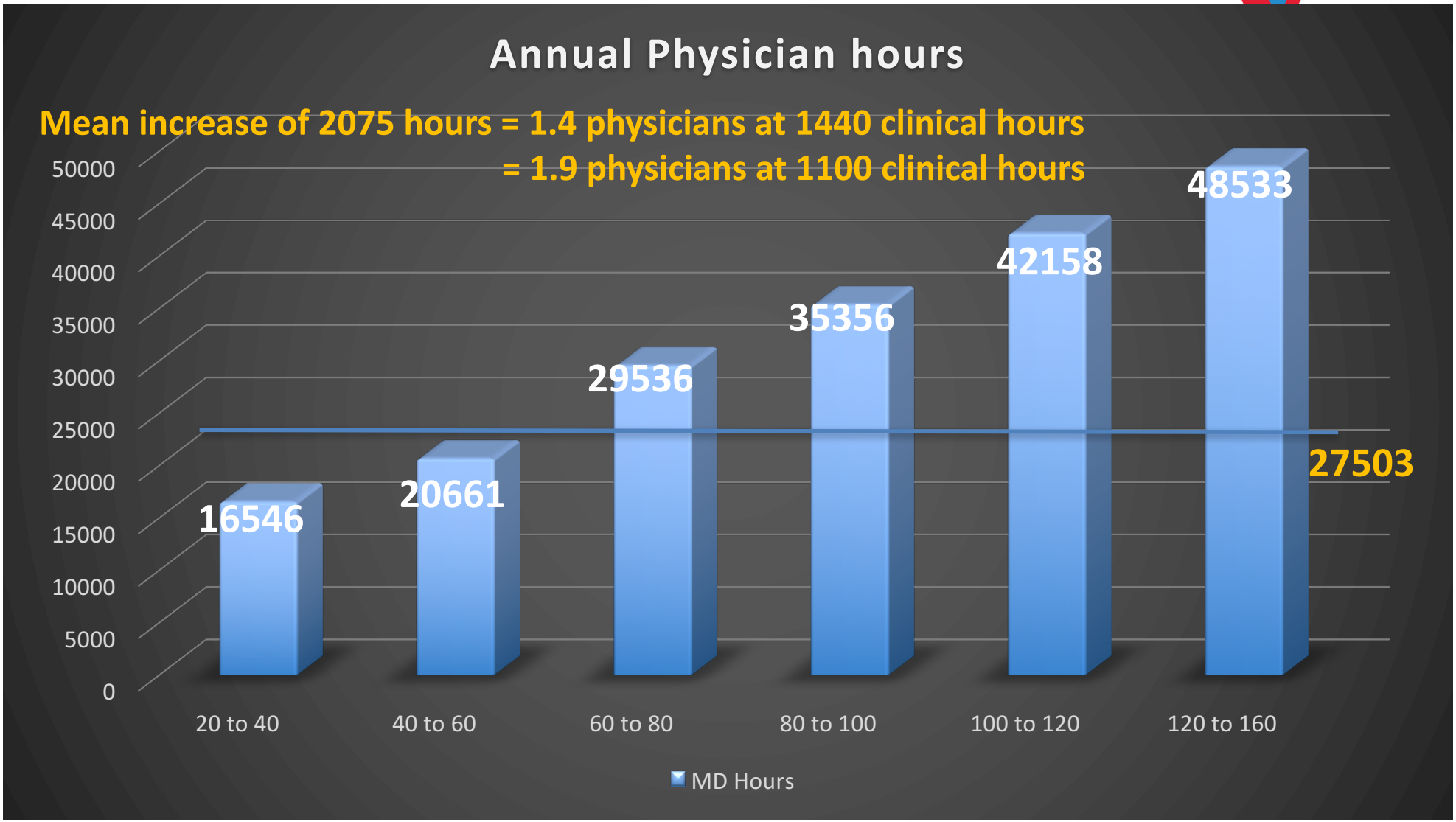
Physician Staffing



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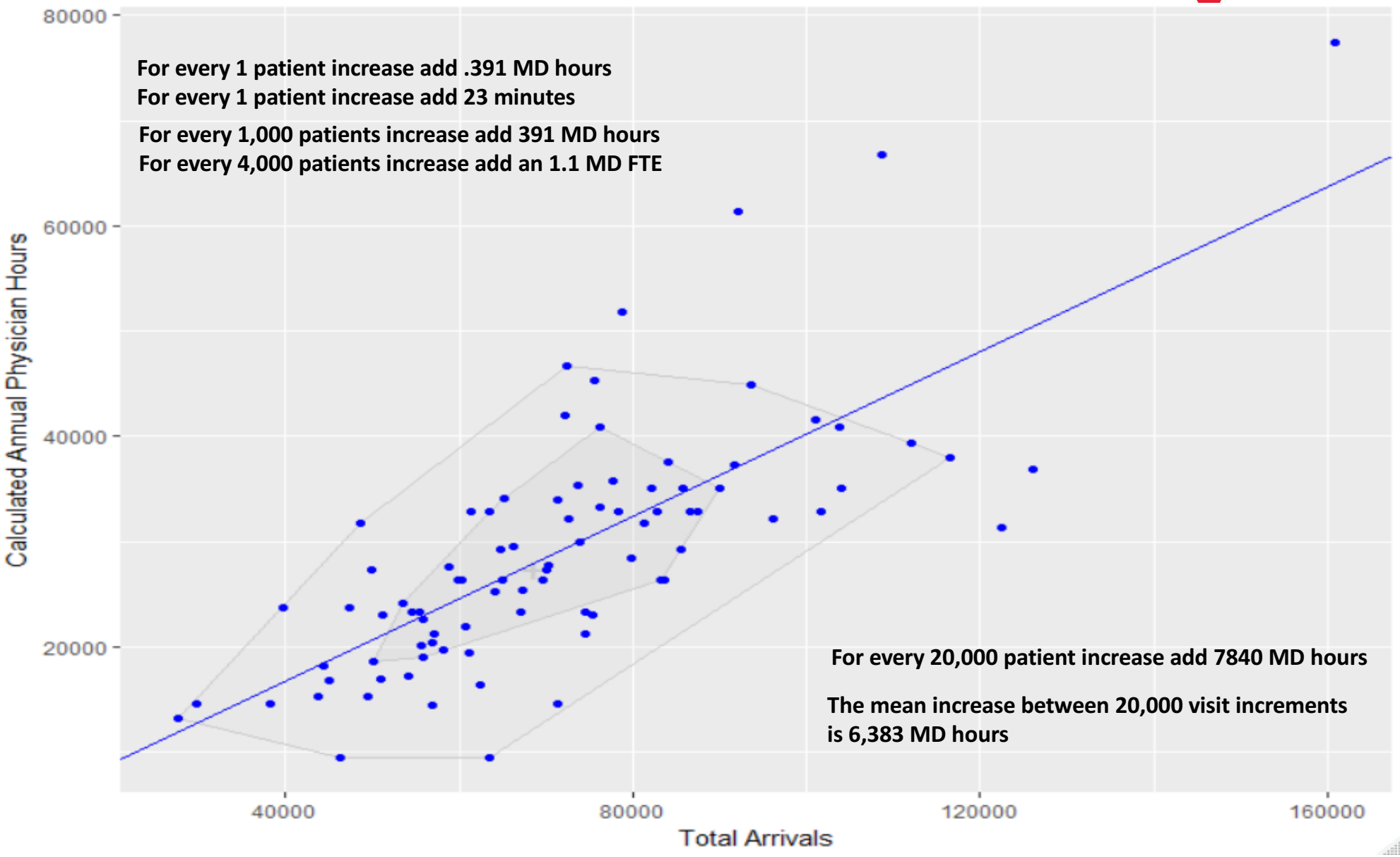
Physician Staffing



Daily Provider Coverage

		MD Hours/Day		APP Hours/Day			
	MD Annual	ED	FT	ED	FT	Resident	Total All areas
20,000-40,000	16546	43	3	8	12	32	98
40,000-60,000	20661	51	6	18	13	69	157
60,000-80,000	29536	71	9	30	16	97	223
80,000-100,000	35356	83	19	37	20	121	280
100,000-120,000	48533	103	15	73	26	134	351

Observation staffing not included

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Daily Provider Coverage: ED

Who provides care in the ED every day?

	MD Annual	MD ED	APP ED	Resident ED	Total ED
20,000-40,000	16546	43	8	32	83
40,000-60,000	20661	51	18	69	138
60,000-80,000	29536	71	30	97	198
80,000-100,000	35356	83	37	121	241
100,000-120,000	48533	103	73	134	310

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Daily Provider Coverage: MD

	MD Hours/Day			APP Hours/Day			
	MD Annual	ED	FT	ED	FT	Resident	Total All areas
20,000-40,000	16546	43					
40,000-60,000	20661	51					
60,000-80,000	29536	71					
80,000-100,000	35356	83			Additional 7-13 hours/day Physician coverage in the ED		
100,000-120,000	48533	103					

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Daily Provider Coverage: MD

		MD Hours/Day		APP Hours/Day			
	MD Annual	ED	FT	ED	FT	Resident	Total All areas
20,000-40,000	16546	43	3				
40,000-60,000	20661	51	6				
60,000-80,000	29536	71	9				
80,000-100,000	35356	83	19				
100,000-120,000	48533	103	15				

Decrease 3-25 hours/day in Fast Track

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Provider Productivity

	Mean	Median
Annual Physician Hrs		
WRVU per MD Hour		
PPH Academic/Affiliated		
Collection / RVU		

	MD Hours	Visits	PPH
20,000-40,000	16546	33854	2.04
40,000-60,000	20661	52739	2.55
60,000-80,000	29536	70104	2.37
80,000-100,000	35356	86586	2.44
100,000-120,000	48533	108780	2.24

Total annual RVU per clinical FTE: Median 10,127

Mean 11,009

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Provider Productivity

	MD Hours
20,000-40,000	16546
40,000-60,000	20661
60,000-80,000	29536
80,000-100,000	35356
100,000-120,000	48533

	MD/APP Hours	Visits	PPH
20,000-40,000	21823	33854	1.55
40,000-60,000	32706	52739	1.61
60,000-80,000	49324	70104	1.42
80,000-100,000	78591	86586	1.1
100,000-120,000	90769	108780	1.19

Annual Physician hours = 2.33 pph
Combined hours = 1.37 pph

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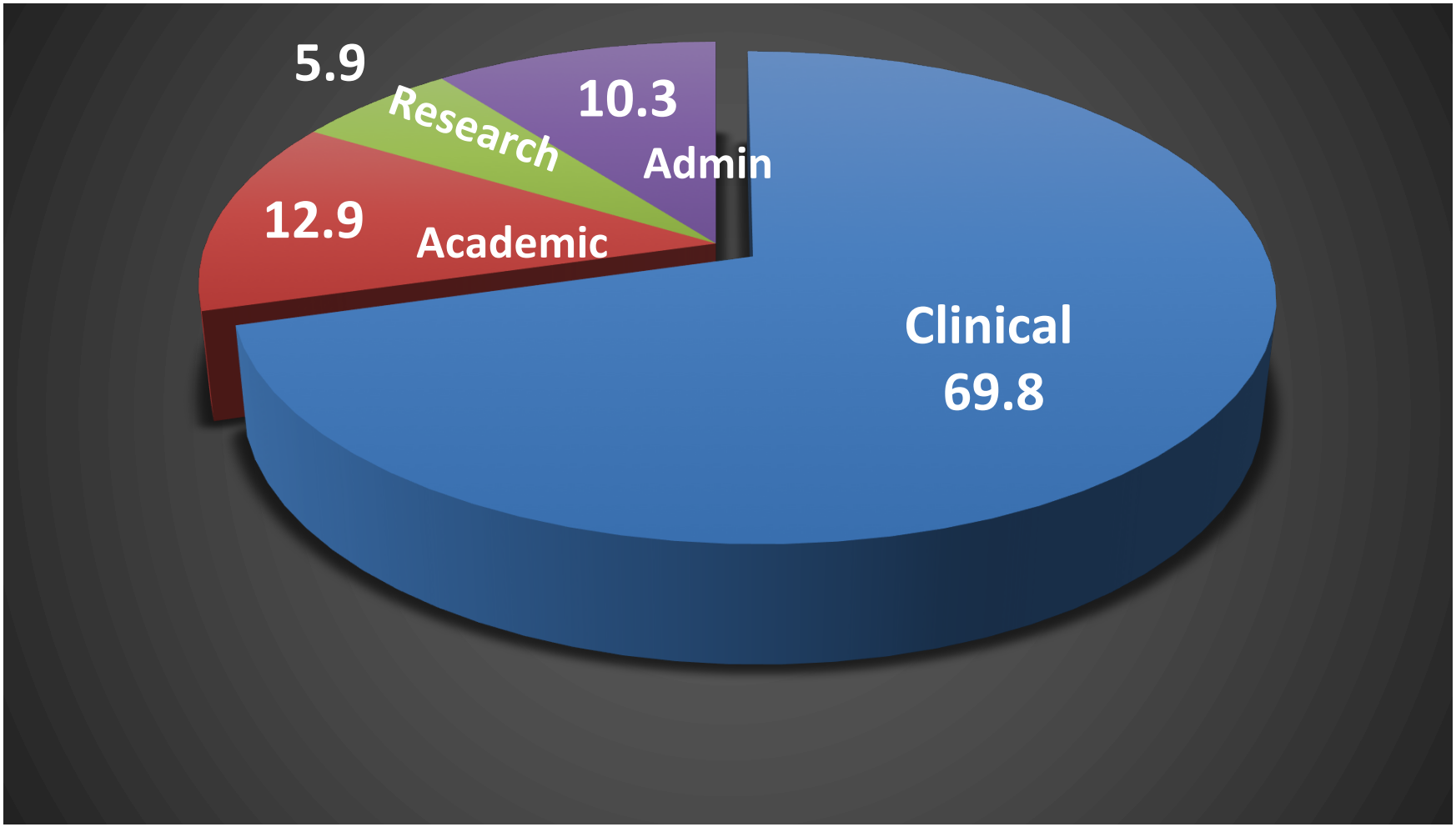
The Academic Physician % Effort



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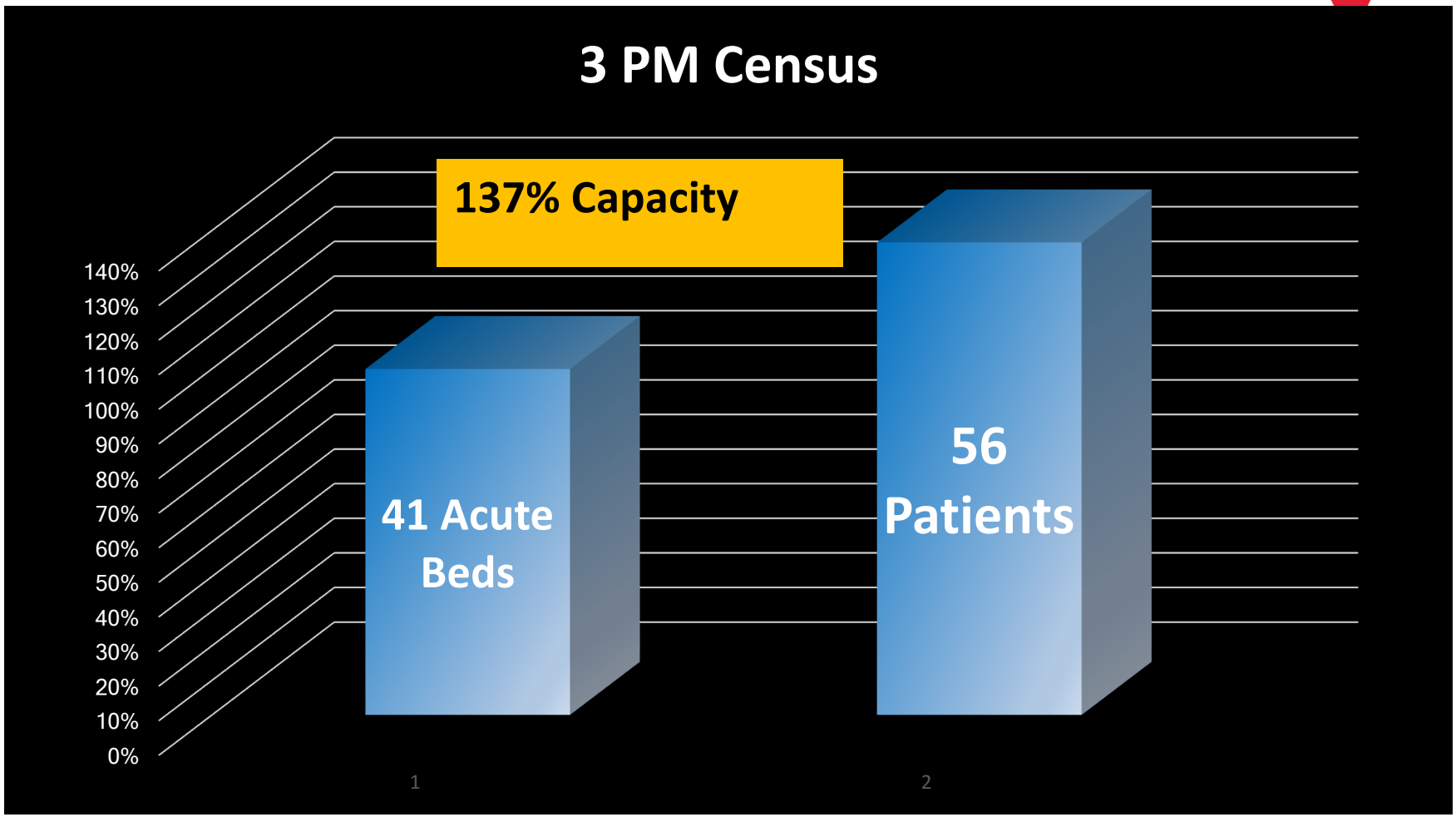
Capacity on Monday at 3PM



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Physician Staffing at 3PM

Census	56
Attending MDs	4
Residents	5
APPs	3
Total Extenders	8
Total Providers	12
Attending Pt Load	15
Pts/Provider (with MD)	5
Pts/Extender	7
Extenders/MD	2

Add some psychiatric patients, trauma and “others

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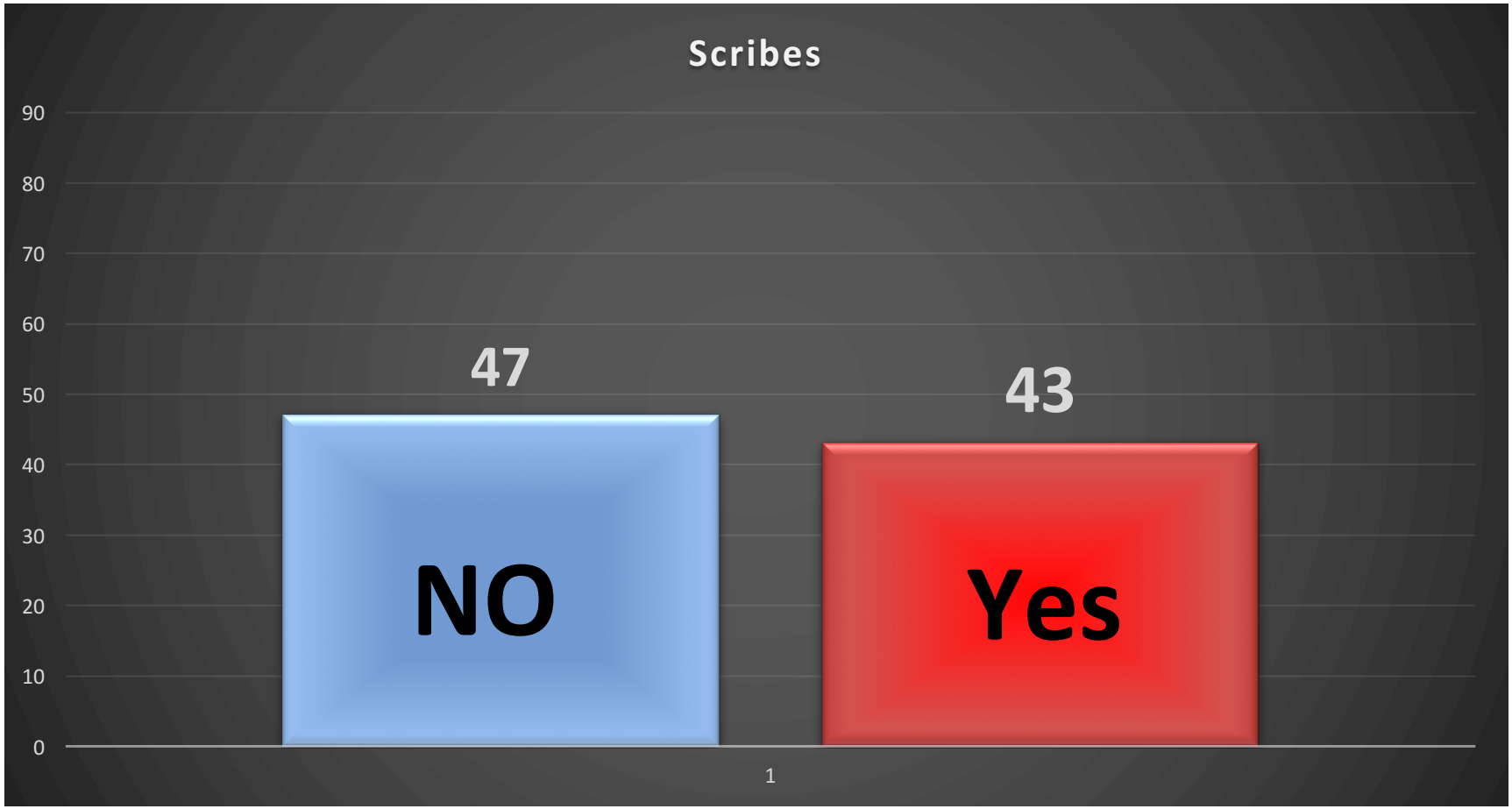
Scribes



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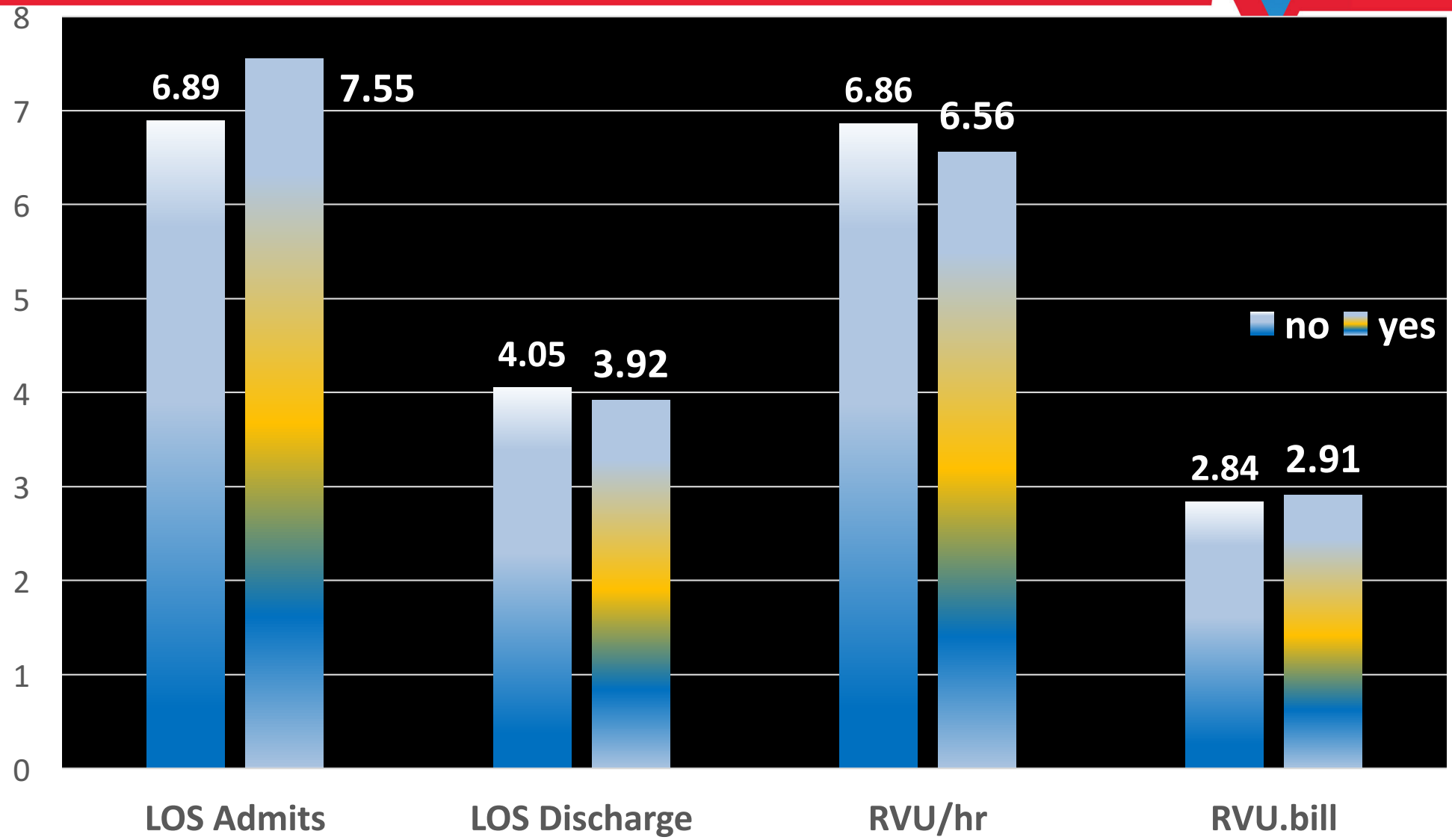
Physician / Scribe Productivity



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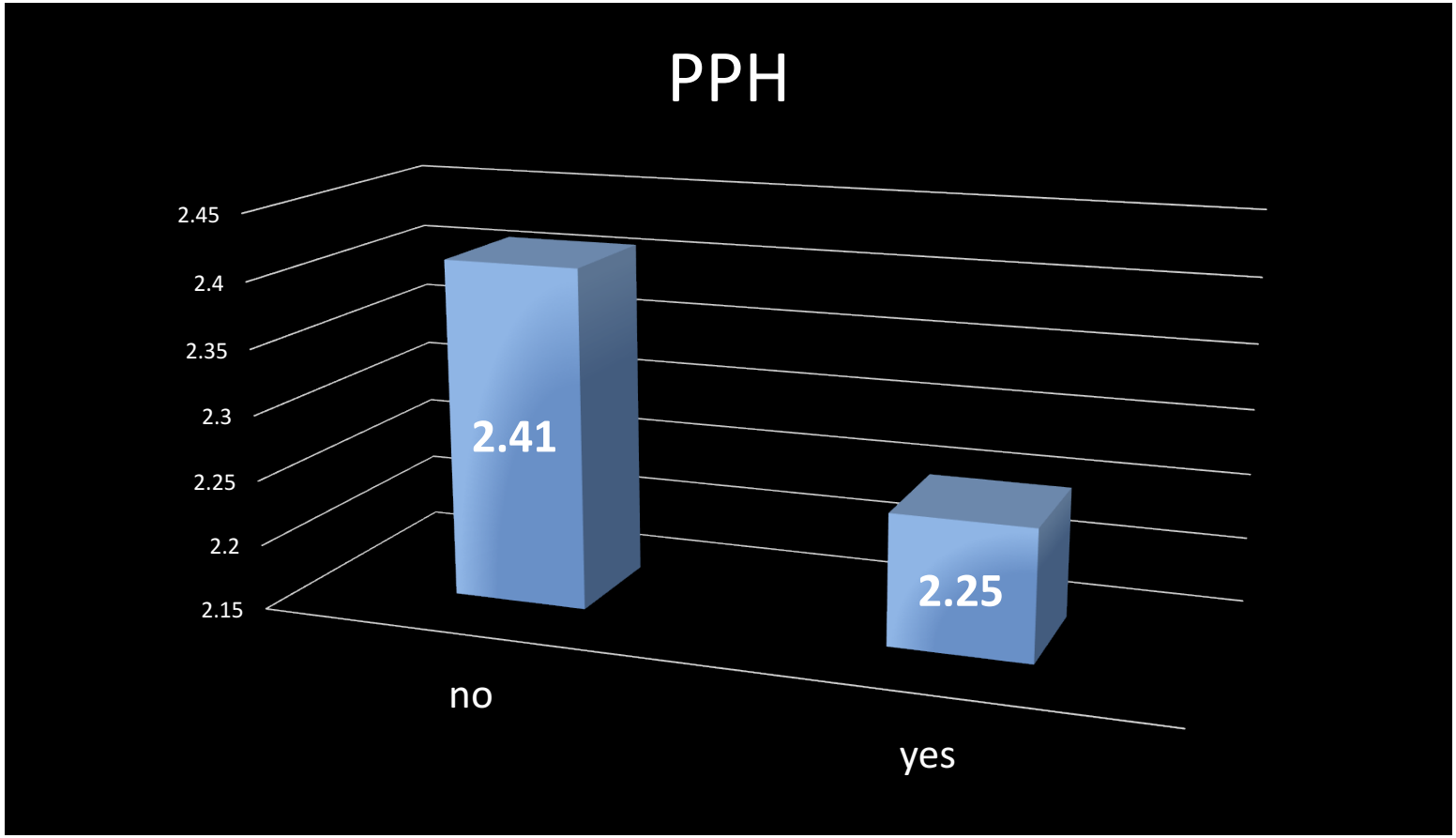
Patients Per Hour



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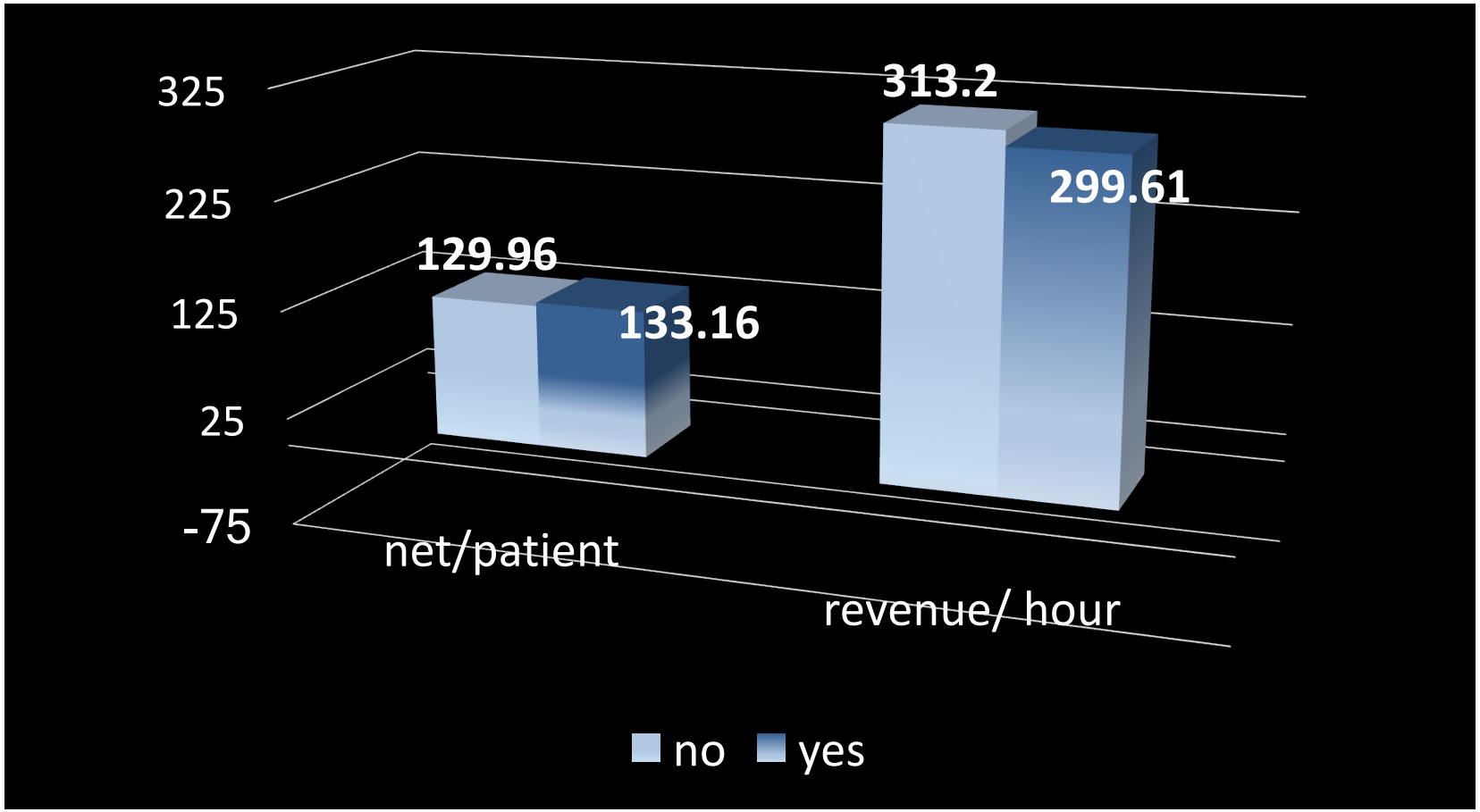
Scribe Revenue



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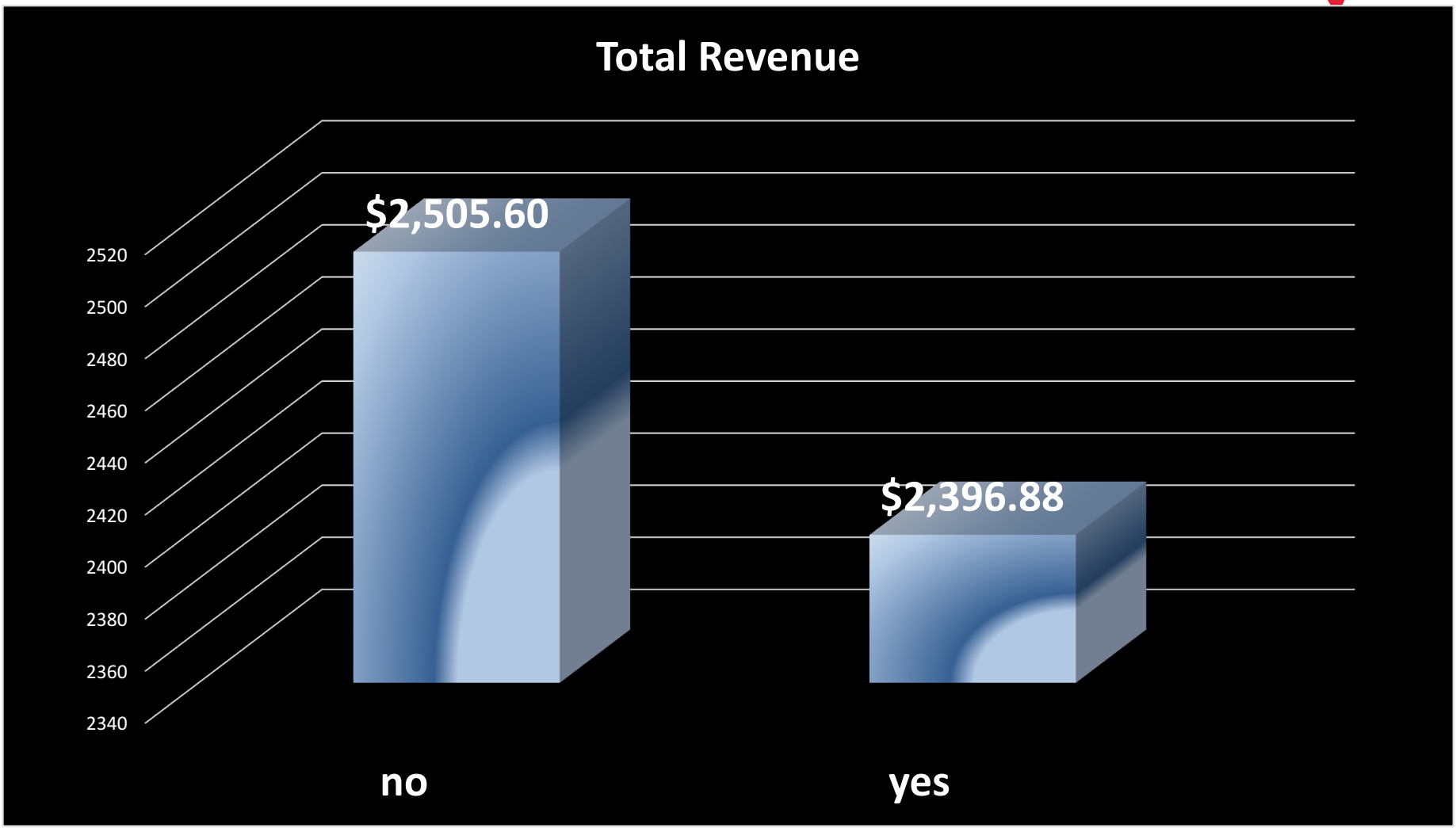
After An Eight Hour Shift



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Academic Faculty Life

Faculty Salary
Faculty Effort
Billing Data
Compensation Plans
Clinical Hours
Research Effort

James Scheulen
Kain Robbins
Steve Maxwell
Christopher King, MD

March 2018

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Faculty Demographics

Faculty Salary

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Faculty Demographics

2017 Salary Survey Demographics

	FY 10	FY 13	FY 15	FY 16	FY 17
# Faculty	1728	1630	1602	2221	2688
Experience					
Years at Current EM	8.6	9.2	8.9	9.1	9.0
Years post Residency	11.8	11.4	11.3	11.4	11.3
Degree					
MD/Master/PhD	92%	96%	96%	97%	96%
DO	5%	3%	4%	3%	4%

APP Salary = 775 PA and NP

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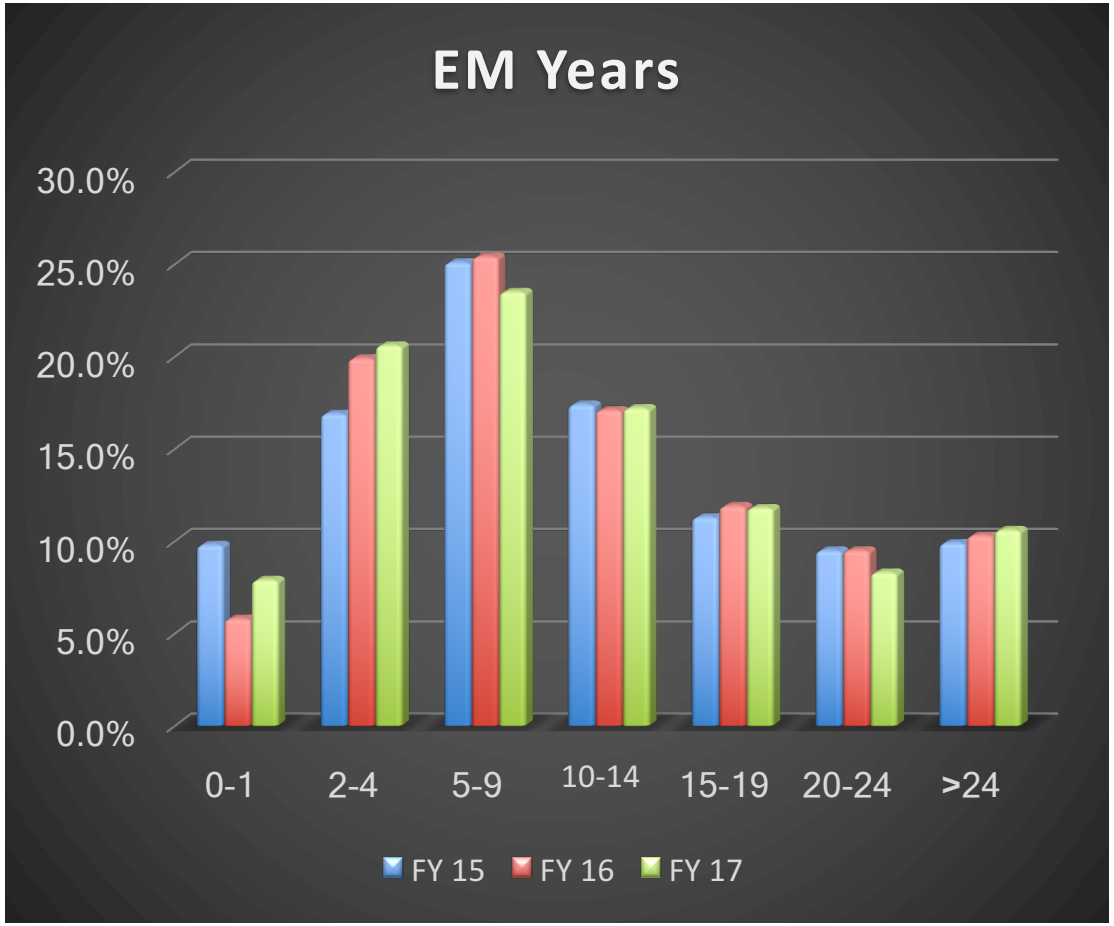
Faculty Demographics

Years in Practice



- **52% in practice < 10 years**
- **28.5% < 5 years**
- **23.5% 5-10 years**

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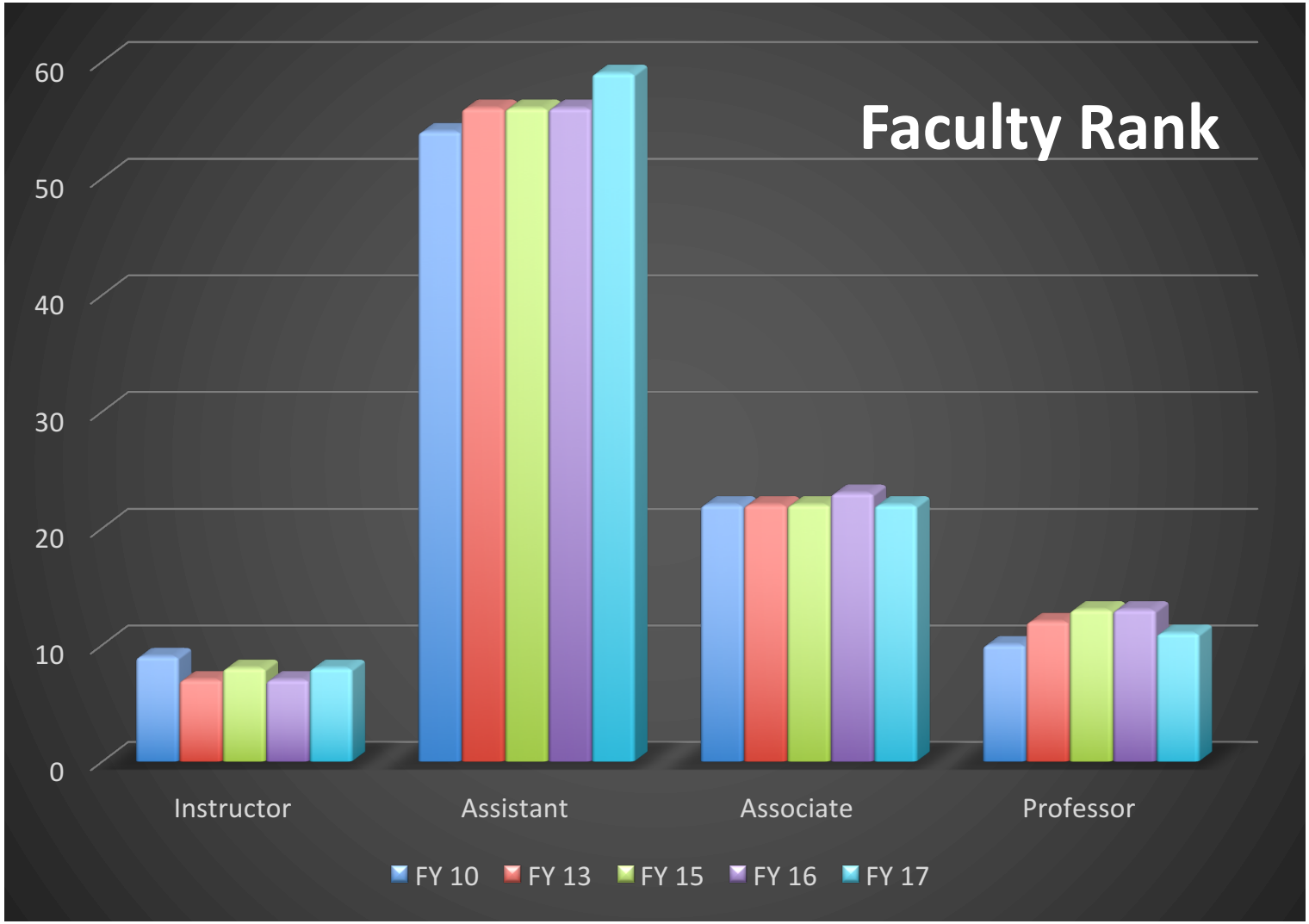
Faculty Demographics



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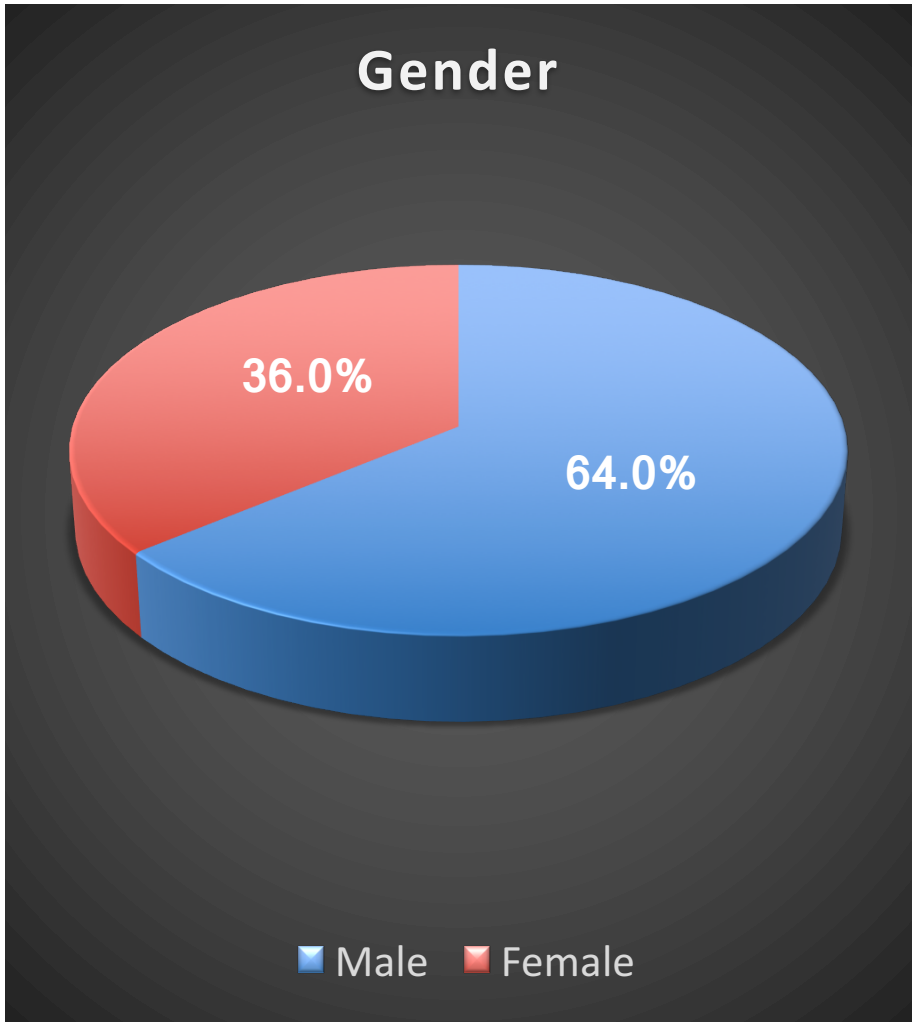
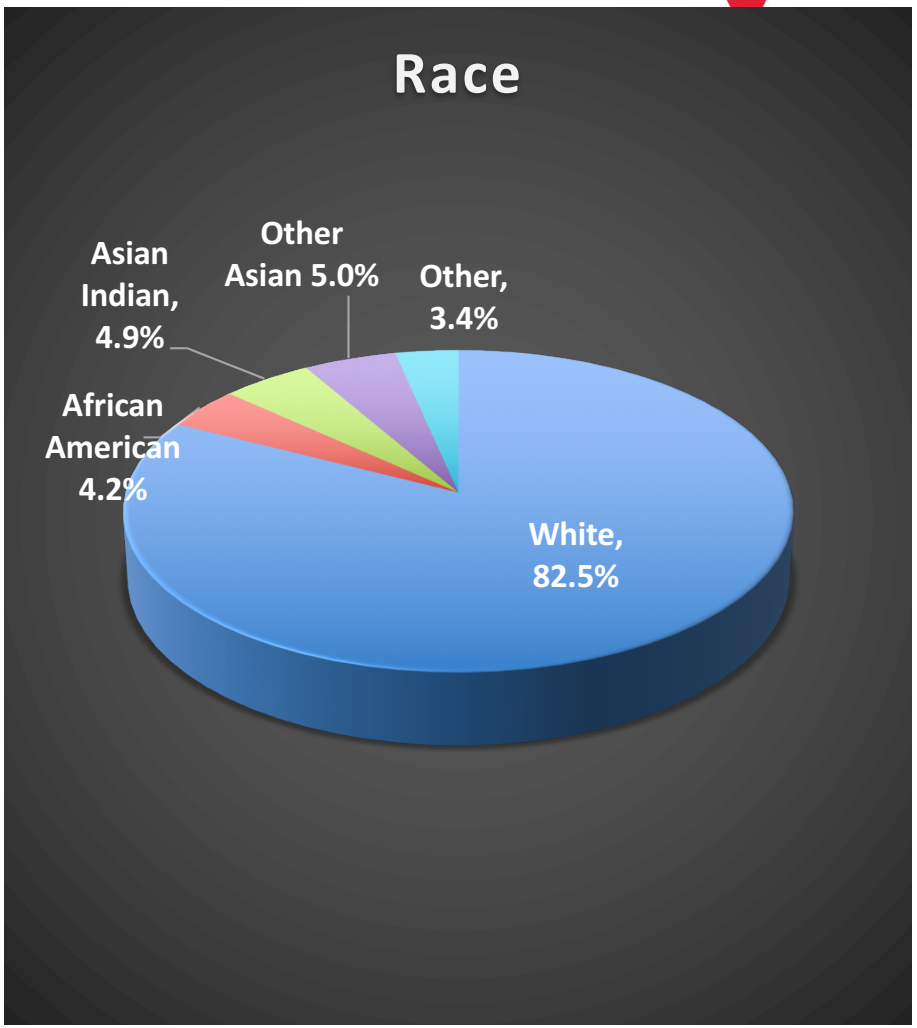
Faculty Demographics





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Faculty Demographics

Rank and Gender

Fiscal Year 2015		60/40	60/40	70/30	80/20	
	Total	Instructor	Assistant	Associate	Professor	Years as Faculty
Male	65.5%	57.0%	60.0%	70.3%	85.4%	12.1
Female	34.5%	43.0%	40.0%	29.7%	14.6%	9.1

Fiscal Year 2016

	Total	Instructor	Assistant	Associate	Professor	Years as Faculty
Male	64.1%	50.0%	58.6%	74.1%	80.2%	12.1
Female	35.9%	50.0%	41.4%	25.9%	19.8%	9.1

Fiscal Year 2017

	Total	Instructor	Assistant	Associate	Professor	Years as Faculty
Male	64.0%	59.6%	58.5%	71.9%	79.1%	12.5
Female	36.0%	40.4%	41.5%	28.1%	20.9%	9.1

Faculty Demographics

% Gender by Years of Experience

	0-1	2-4	5-9	10-14	15-19	20-24	25+	Grand Total
Female	43.4%	40.6%	44.1%	31.4%	29.8%	27.6%	19.4%	**35.5%**
Male	56.6%	59.4%	55.9%	68.6%	70.2%	72.4%	80.6%	**64.5%**
Grand Total								**.0%**

63% of our female faculty are less than 10 years post residency

% Years

	0-1	2-4	5-9	10-14	15-19	20-24	25+	Grand Total
Female	9.7%	23.5%	29.4%	15.2%	9.9%	6.6%	5.7%	100.0%
Male	7.0%	18.9%	20.5%	18.3%	12.8%	9.5%	13.0%	100.0%
Grand Total	**7.9%**	**20.5%**	**23.7%**	**17.2%**	**11.8%**	**8.5%**	**10.4%**	**100.0%**

Salary Survey
Fiscal Year 2017 Data

Faculty Salary

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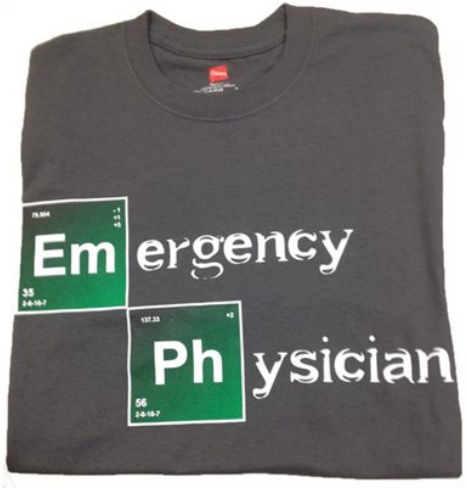
Faculty Salary

- **Factors Associated with EM Faculty Salary**
  - ***Administrative duties***
  - ***Total years as EM faculty***
  - ***Academic rank***
  - ***Region***
  - ***Gender***
  - ***Total clinical hours—Not so fast there…***
  - EM residency trained
  - Degree



- **But, What do I need to pay……**

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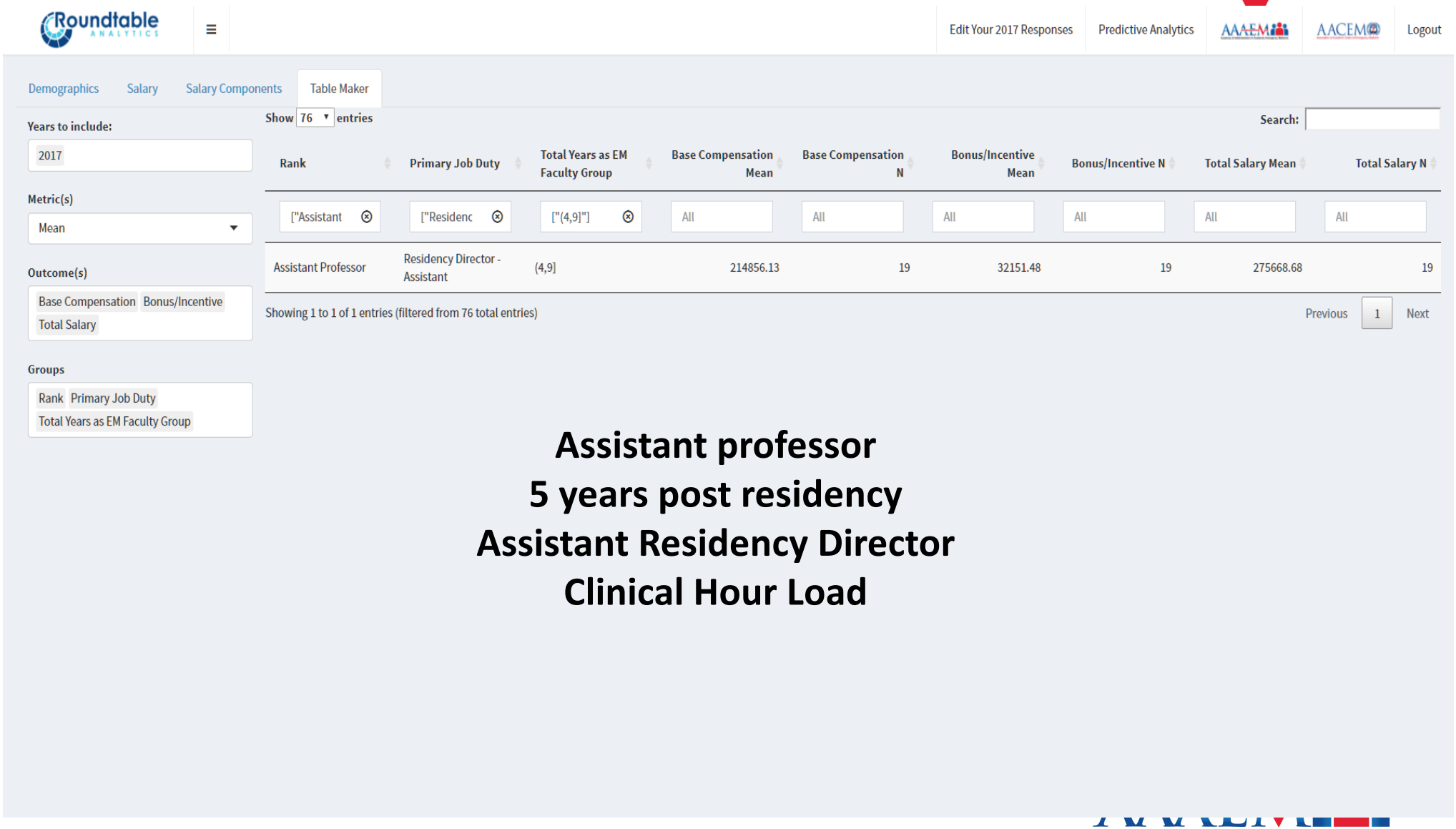
Faculty Salary



Assistant professor

5 years post residency

Assistant Residency Director

Clinical Hour Load

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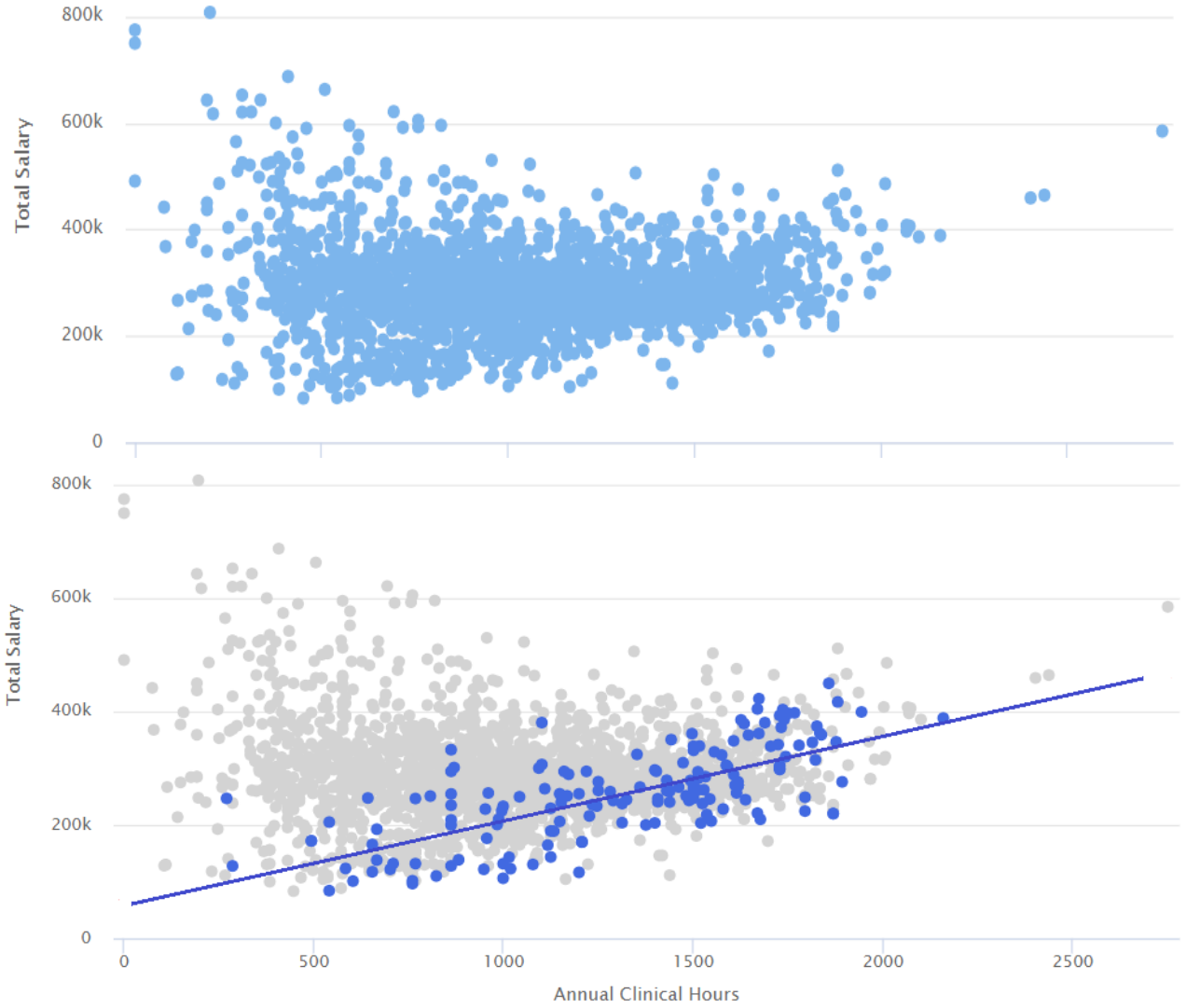
Faculty Salary

Salary and Clinical Hours

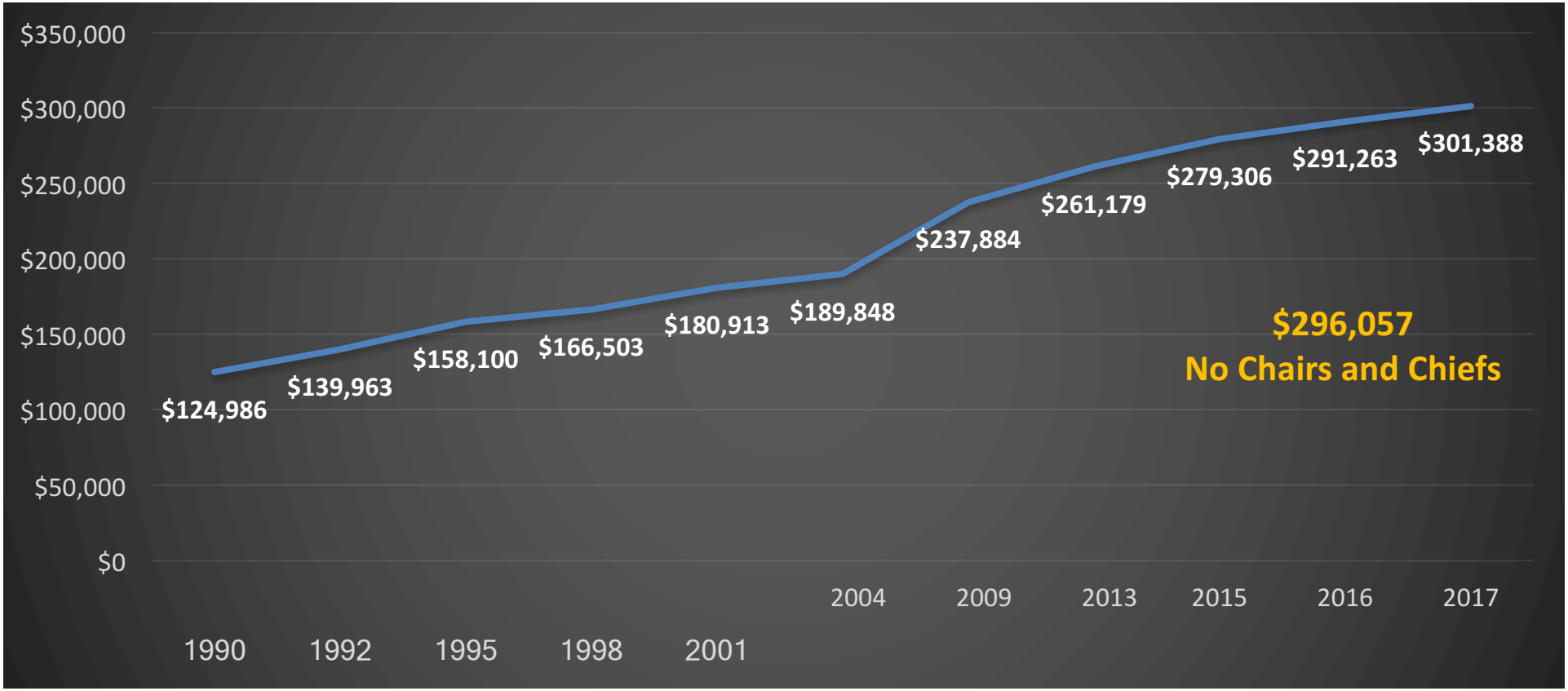
All Faculty

Primary Clinical



Salary Trends

Mean Total Salary = $301,388 (+3.5%)



Chairs and Chiefs included

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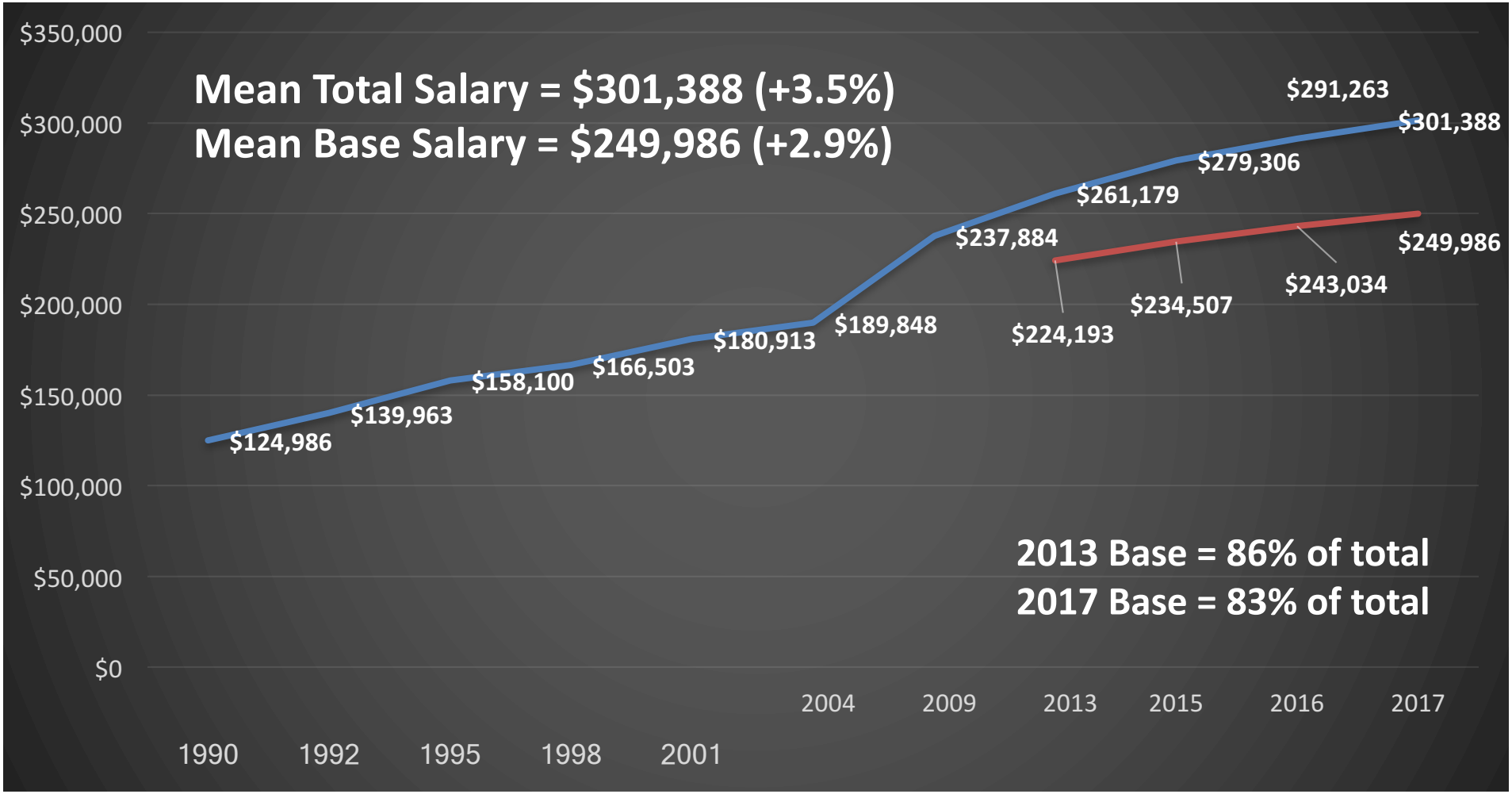
Salary Trends



Chairs and Chiefs included

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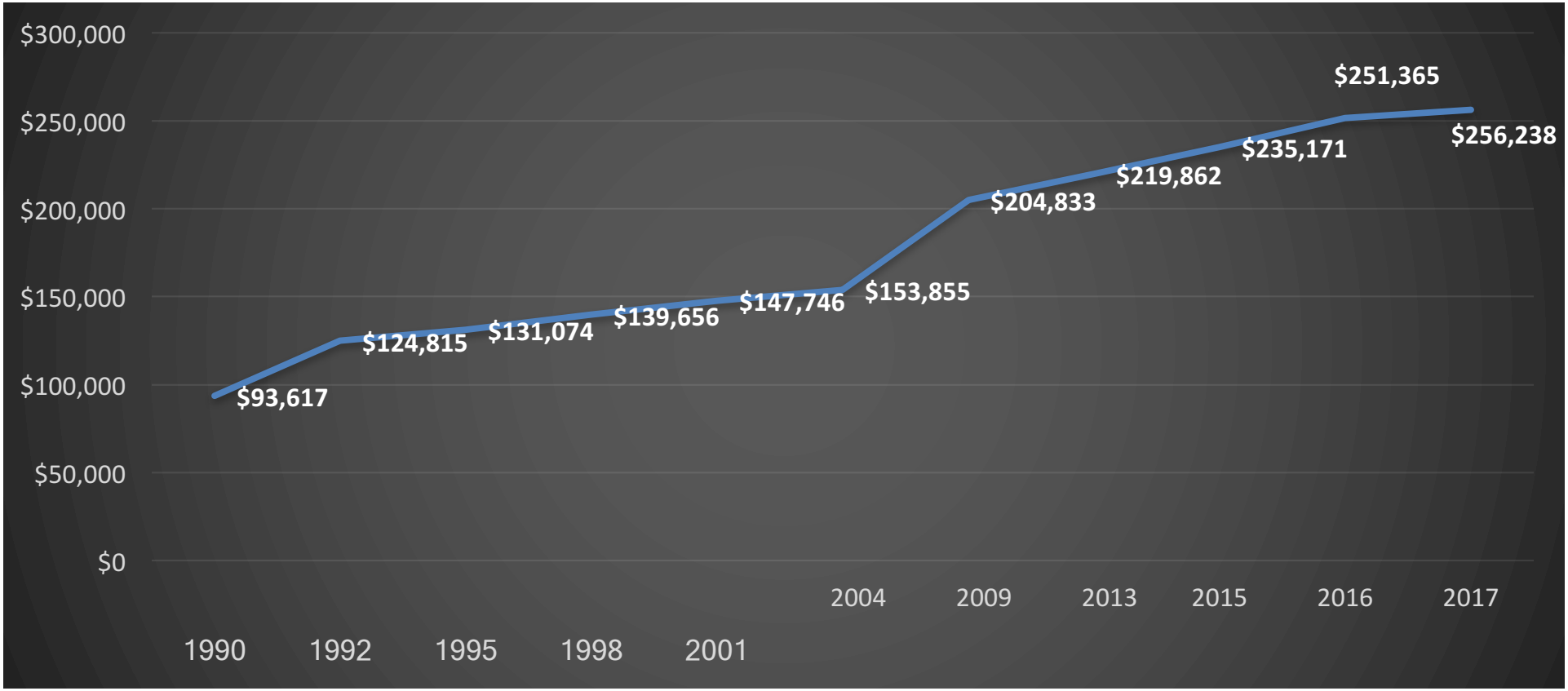
Salary Trends

First Year Faculty
Mean Total Salary = $256,238 (+1.9%)



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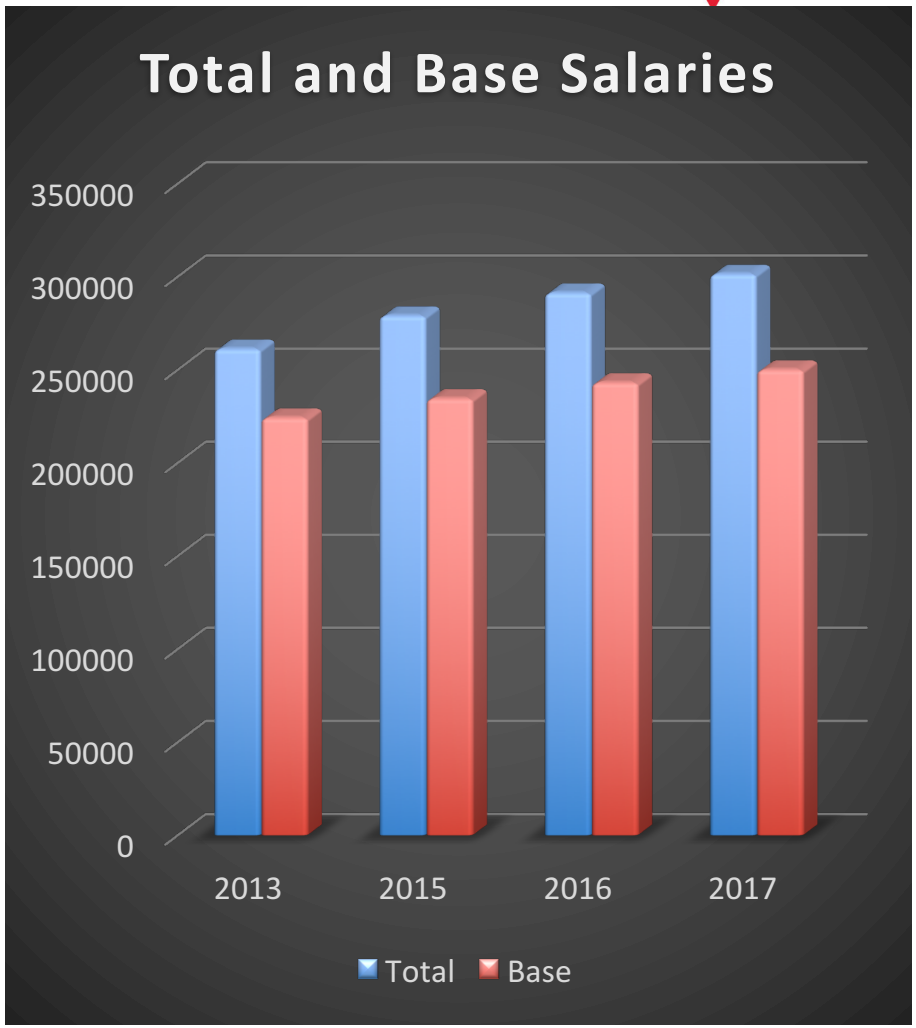
Salary Trends

- Base salary currently represent 83% of total
  - 86% in 2013
  - $36,986 vs $51,402
- Base salaries have risen 11.5% since FY 2013
- Total salaries have risen 15.4% since FY 2013
  - 3.5% increase this year
  - 3.8 % Mean since FY13



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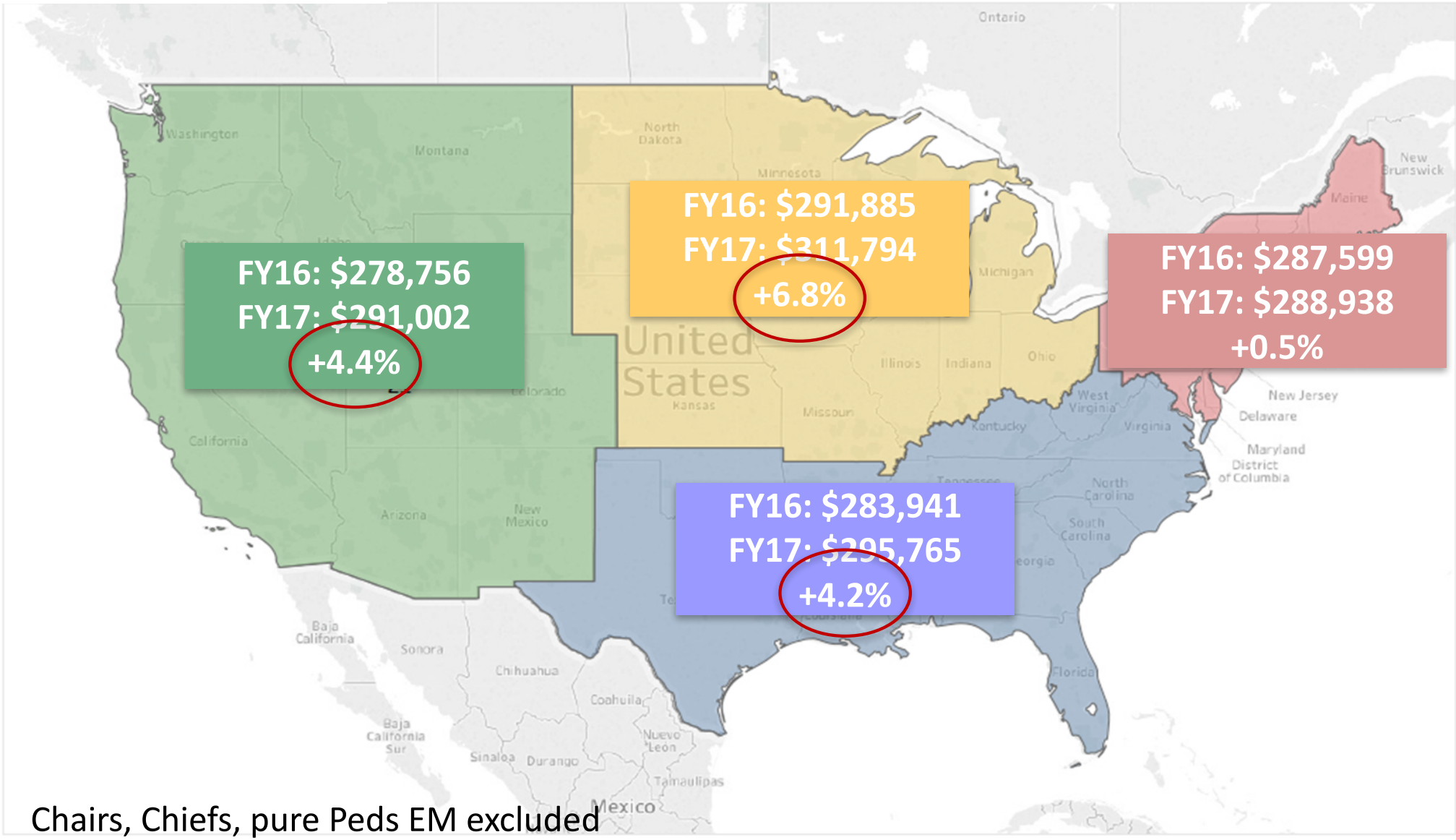
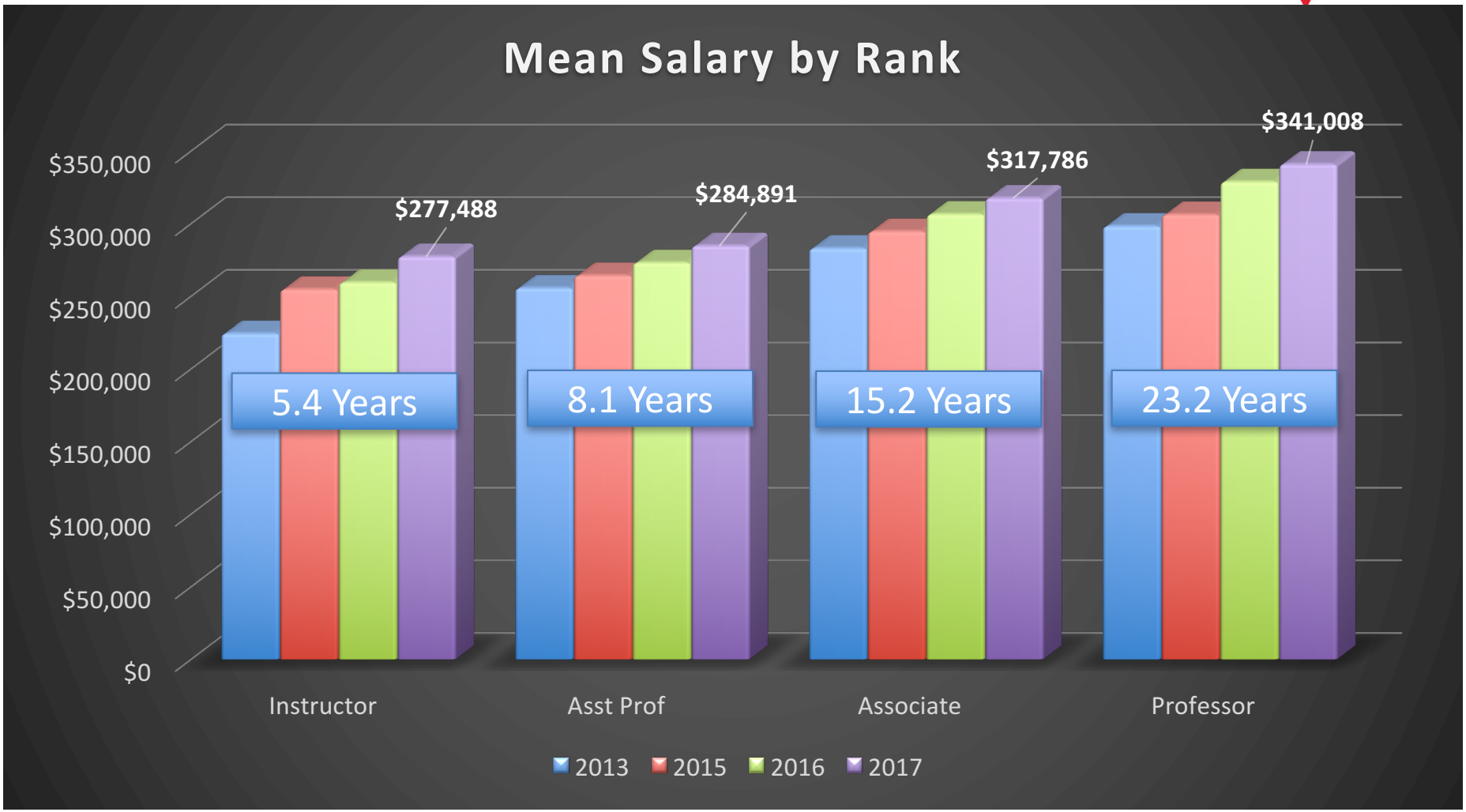
Regional Salary



Chairs, Chiefs, pure Peds EM excluded

Salary by Rank



Chairs, Chiefs, pure Peds EM excluded

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Clinical Track vs Academic

Clinical Track?	Rank	Average Base Clinical Hrs	Average Extra Clincal Shift Hours	Average Total Clinical Hrs (Base + Extra)	Average Base Compensation	Average Bonus/ Incentive	Average Stipend/ Expected/ Non-Guaranteed	Average Salary w/o Extra Hrs	Average Total Salary	Avg Years EM Faculty	Avg. Total Years in Rank	# Faculty
	Total	977	74	1,050	$259,726	$32,547	$12,876	$291,739	$303,959	11.7	5.4	1,142
	Instructor	1,372	84	1,426	$228,186	$14,691	$15,173	$244,645	$260,159	4.6	3.3	73
	Total	1,211	103	1,291	$246,811	$23,542	$13,161	$272,945	$289,548	10.0	5.4	821
Grand Total		1,075	87	1,139	$254,328	$28,570	$12,987	$283,890	$297,940	11.0	5.4	1,963

At every rank, clinicians work more base clinical hours

At every rank, clinicians work more extra clinical hours

At every rank, clinicians work more total clinical hours

At every rank, clinicians earn *less* base salary

At every rank, clinicians earn *less* total salary

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So, the problem for the ages….

Gender	Median Total Salary	N	%
Male	$294,649	1529	64.8%
Female	$275,814	831	35.2%

- **Years post residency**
- **Rank**
- **Region**
- **Administrative duties**
- **Clinical hours??**

Chairs, Chiefs, pure Peds EM excluded

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Controlling the lurking variables

- **Consider fitting a statistical model for base salary:**
  - **Exclude administrative roles**
  - **Account for academic rank**
  - **Accommodate differences in pay among institutions**
  - **Include only full-time faculty (~1 FTE)**
- **Estimate the impact of Gender on base salary**

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Controlling for the variables

- **Fit the model on faculty >5 years**
  - Being male matters….
    - $11,000 (Std. Error $3,200)
- **But, on faculty <5 years**
  - The impact is muted
    - $5,500 (Std. Error $3,100)
- **More work to do---Total Salary**
  - Administrative work and stipends
  - Administrative work = 70%/30%

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PA and NP Salaries

How do we pay our faculty?

Compensation Plans

		Average Base Compensation	% Base	Average Extra Hour Pay	% Extra Hr Pay	Average Bonus/ Incentive	% Bonus / Incentive	Average Stipend/ Expected/ Non-Guaranteed	% Stipend / Expected / Non-Guaranteed	Average Total Salary	# Faculty
2 Part	2 Part: Base + Extra Hrs	$262,287	94.5%	$14,406	5.5%	$0		$0		$276,693	245
	2 Part: Base + Bonus	$258,613	88.0%	$0		$37,093	12.0%	$0		$295,707	467
	2 Part: Base + Stipend	$185,697	68.4%	$0		$0		$88,270	31.6%	$273,967	26
	Total	**$257,264**	**89.4%**	**$9,697**	**5.5%**	**$30,231**	**12.0%**	**$13,500**	**31.6%**	**$288,629**	**738**
3 Part	3 Part: Base + Extra Hrs + Bonus	$244,512	83.7%	$23,637	7.5%	$26,708	8.8%	$0		$294,922	976
	3 Part: Base + Extra Hrs + Stipend	$258,660	81.5%	$16,379	4.9%	$0		$39,531	13.6%	$314,570	80
	3 Part: Base + Bonus + Stipend	$179,472	58.3%	$0		$57,086	17.8%	$74,613	24.0%	$311,171	137
	Total	**$237,992**	**80.7%**	**$21,633**	**7.3%**	**$29,936**	**9.9%**	**$22,918**	**20.1%**	**$298,109**	**1,193**
4 Part	4 Part: Base + Extra Hrs + Bonus + Stipend	$246,595	77.5%	$20,880	6.1%	$30,006	8.8%	$25,375	7.6%	$322,855	232
	Total	**$246,595**	**77.5%**	**$20,880**	**6.1%**	**$30,006**	**8.8%**	**$25,375**	**7.6%**	**$322,855**	**232**
Base Only	Base Only	$269,519	100.0%	$0		$0		$0		$269,519	155
	Total	**$269,519**	**100.0%**	**$0**		**$0**		**$0**		**$269,519**	**155**
Grand Total		**$247,097**	**84.4%**	**$18,557**	**6.8%**	**$29,276**	**10.3%**	**$21,102**	**14.7%**	**$295,654**	**2,318**

Chairs, Chiefs and pure Peds EM faculty excluded

Compensation Plans
and
Clinical Hours

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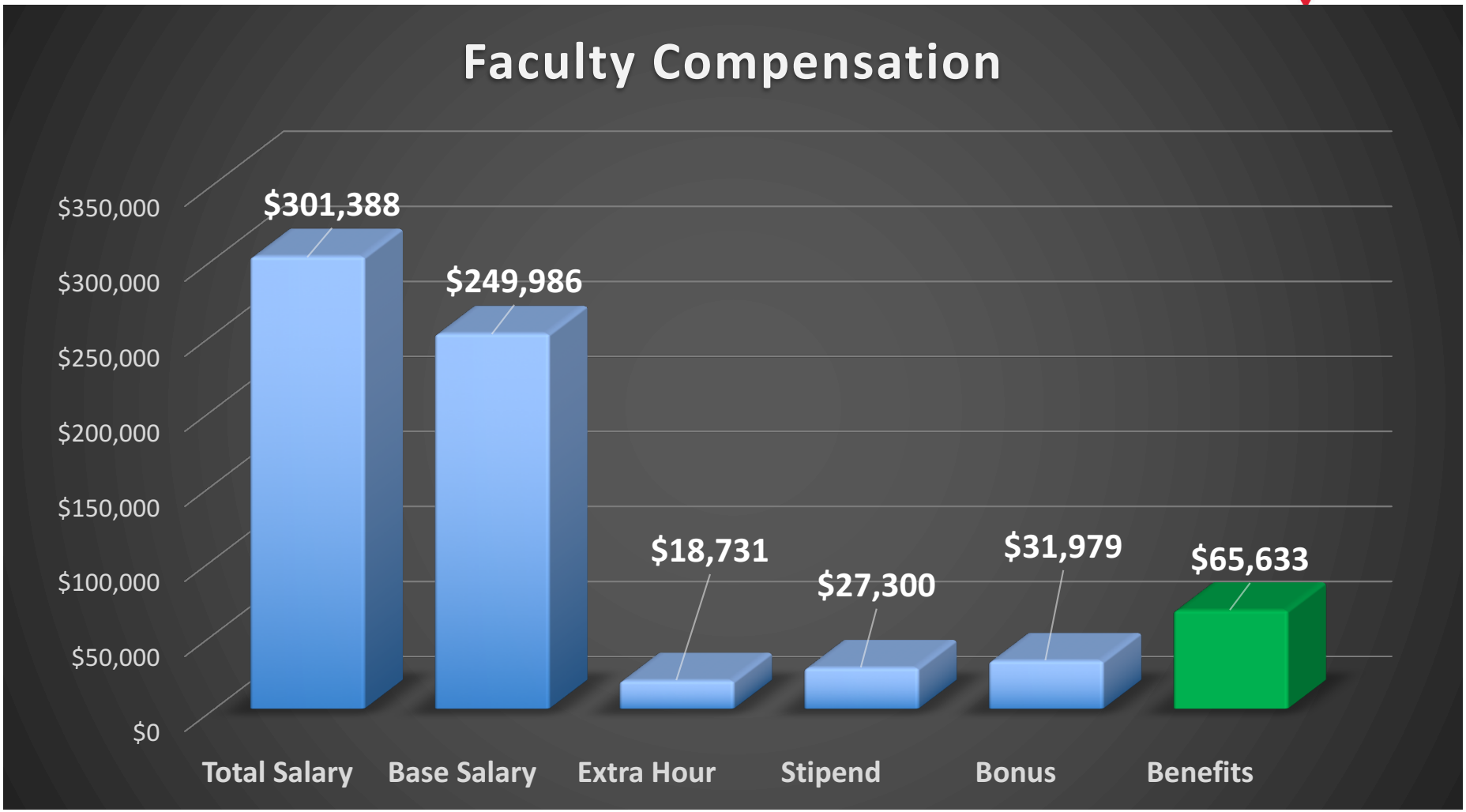
Salary Components



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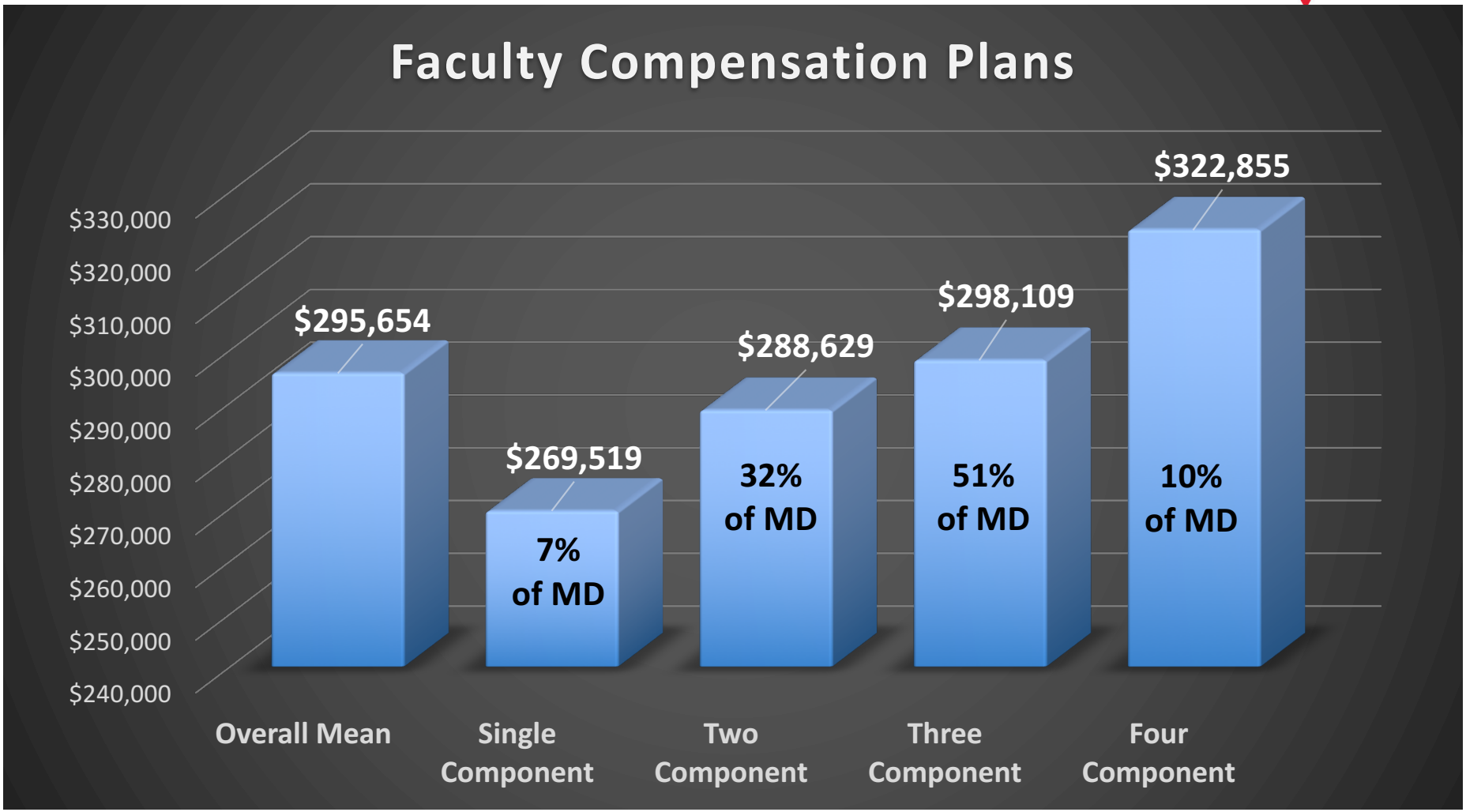
Salary Components



Chairs, Chiefs, pure Peds EM faculty excluded

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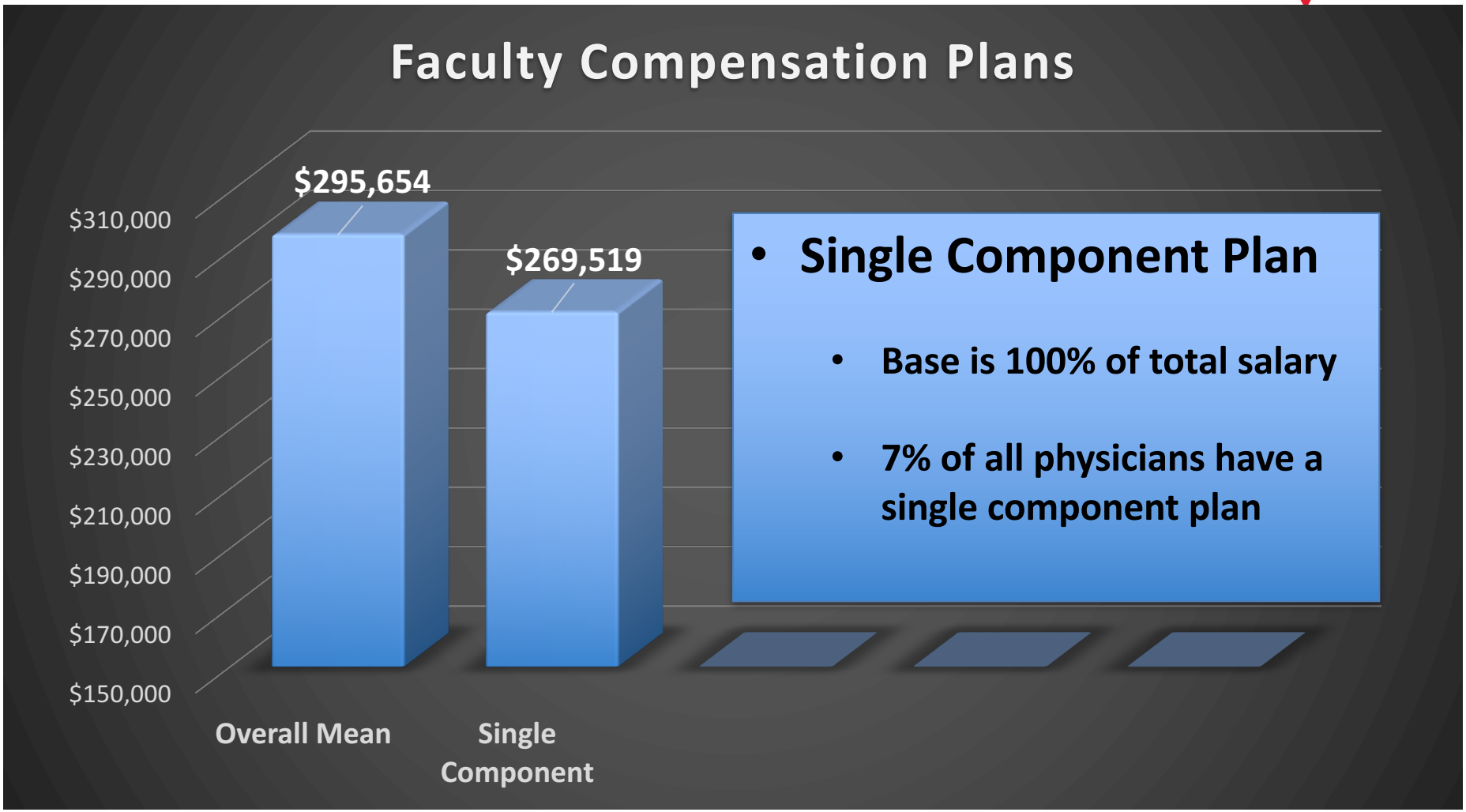
Salary Components



Chairs, Chiefs, pure Peds EM faculty excluded

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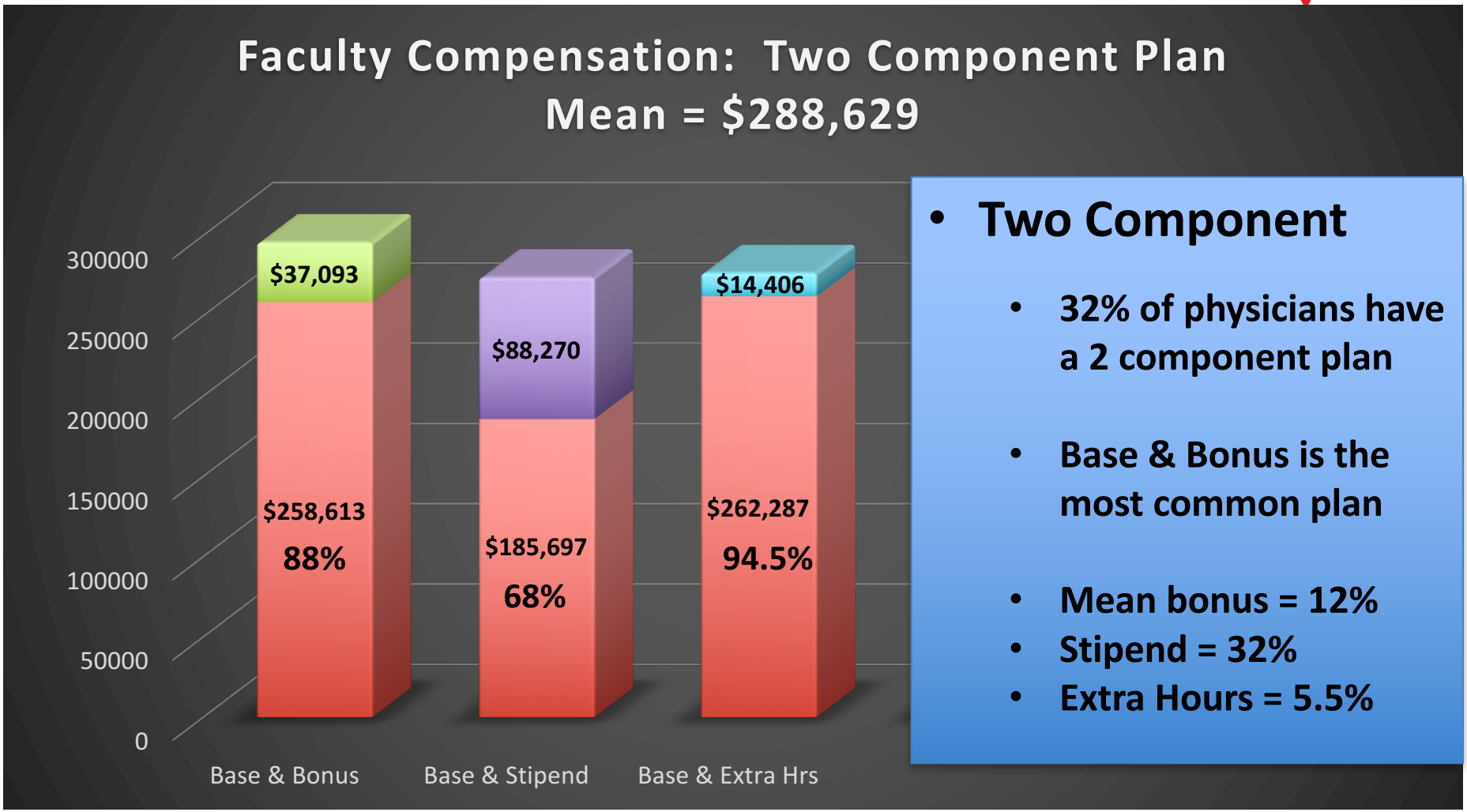
Salary Components



- **Two Component**
  - **32% of physicians have a 2 component plan**
  - **Base & Bonus is the most common plan**
  - **Mean bonus = 12%**
  - **Stipend = 32%**
  - **Extra Hours = 5.5%**

Chairs, Chiefs, pure Peds EM faculty excluded

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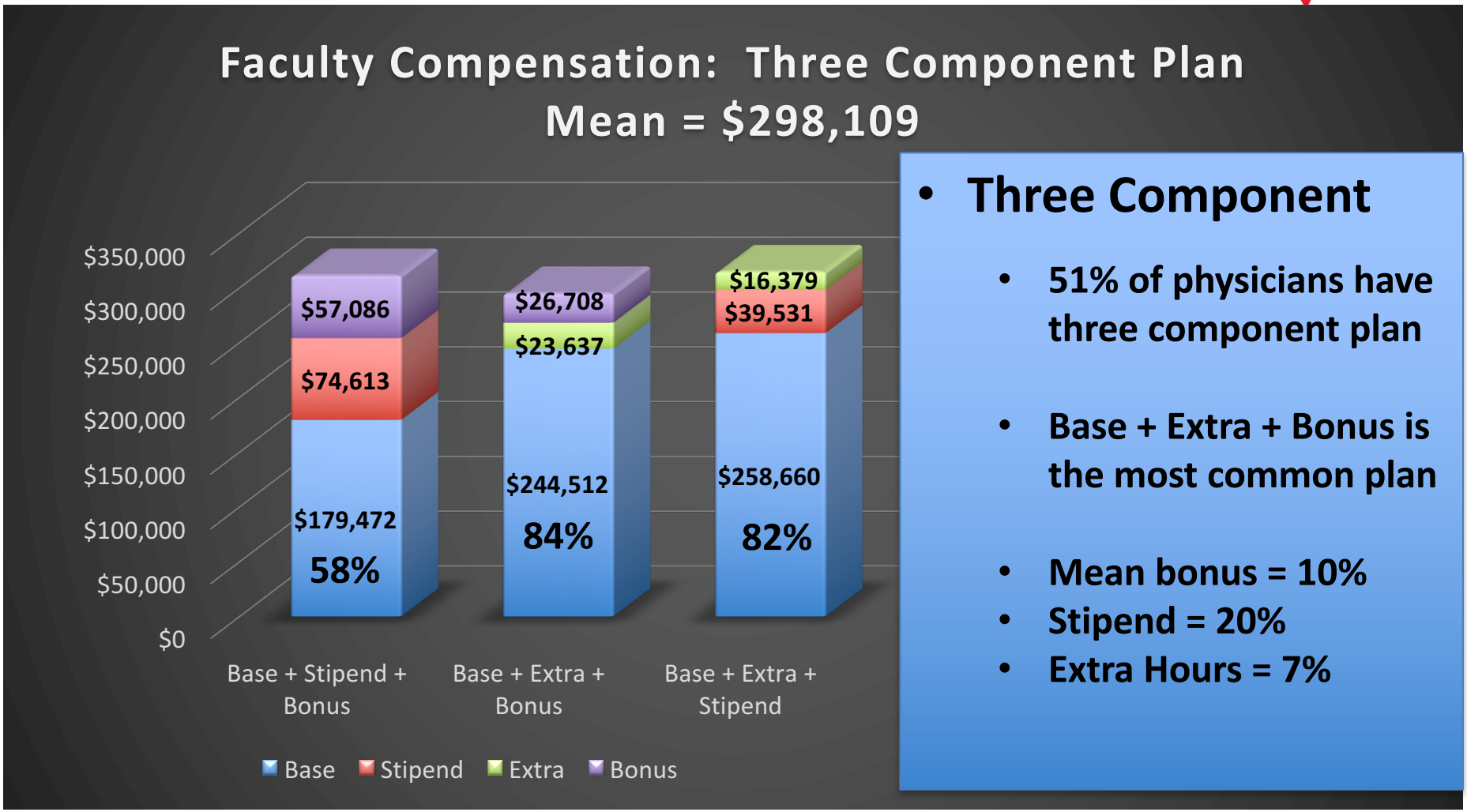
Salary Components



- **Three Component**
  - **51% of physicians have three component plan**
  - **Base + Extra + Bonus is the most common plan**
  - **Mean bonus = 10%**
  - **Stipend = 20%**
  - **Extra Hours = 7%**

Chairs, Chiefs, pure Peds EM faculty excluded

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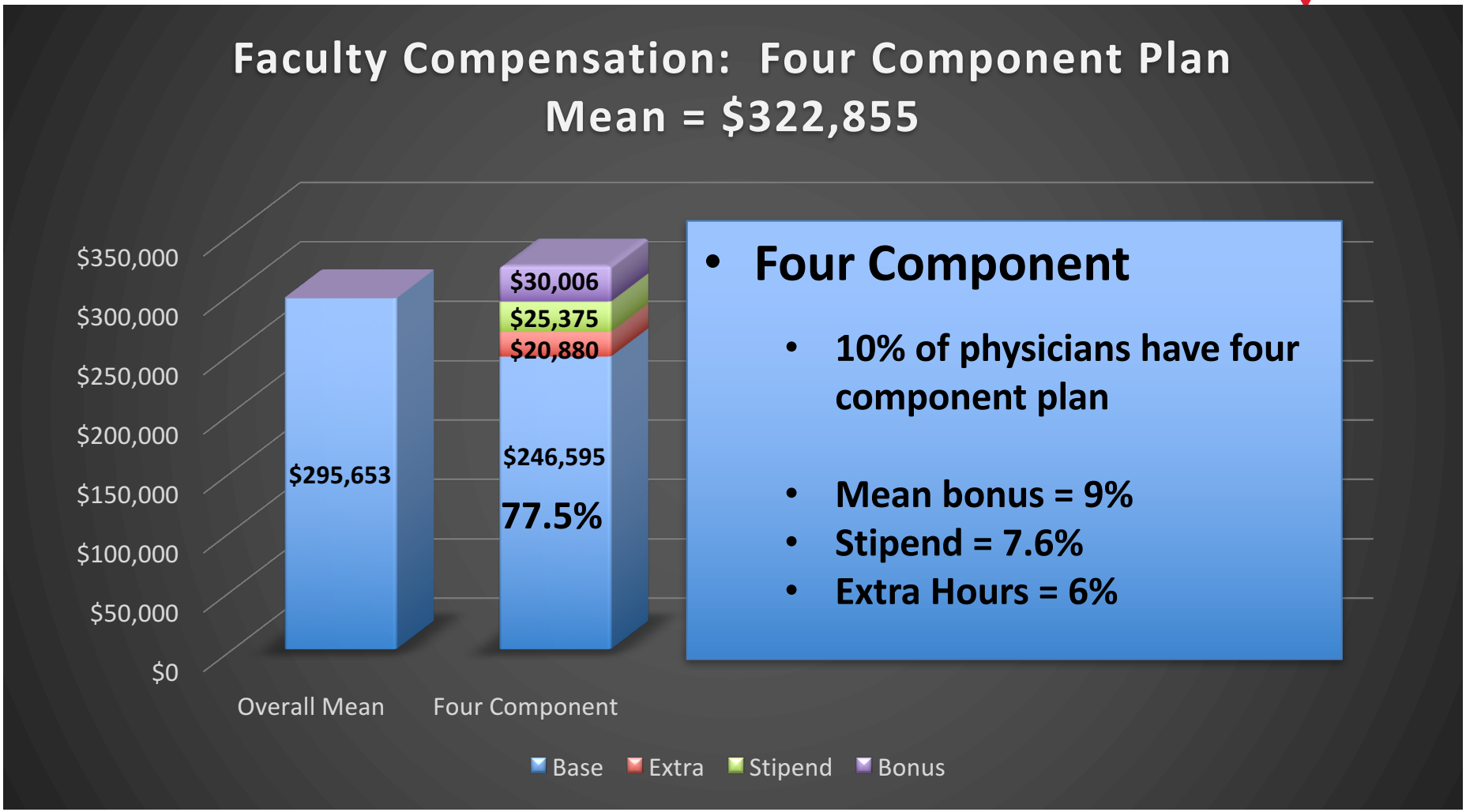
Salary Components



Chairs, Chiefs, pure Peds EM faculty excluded

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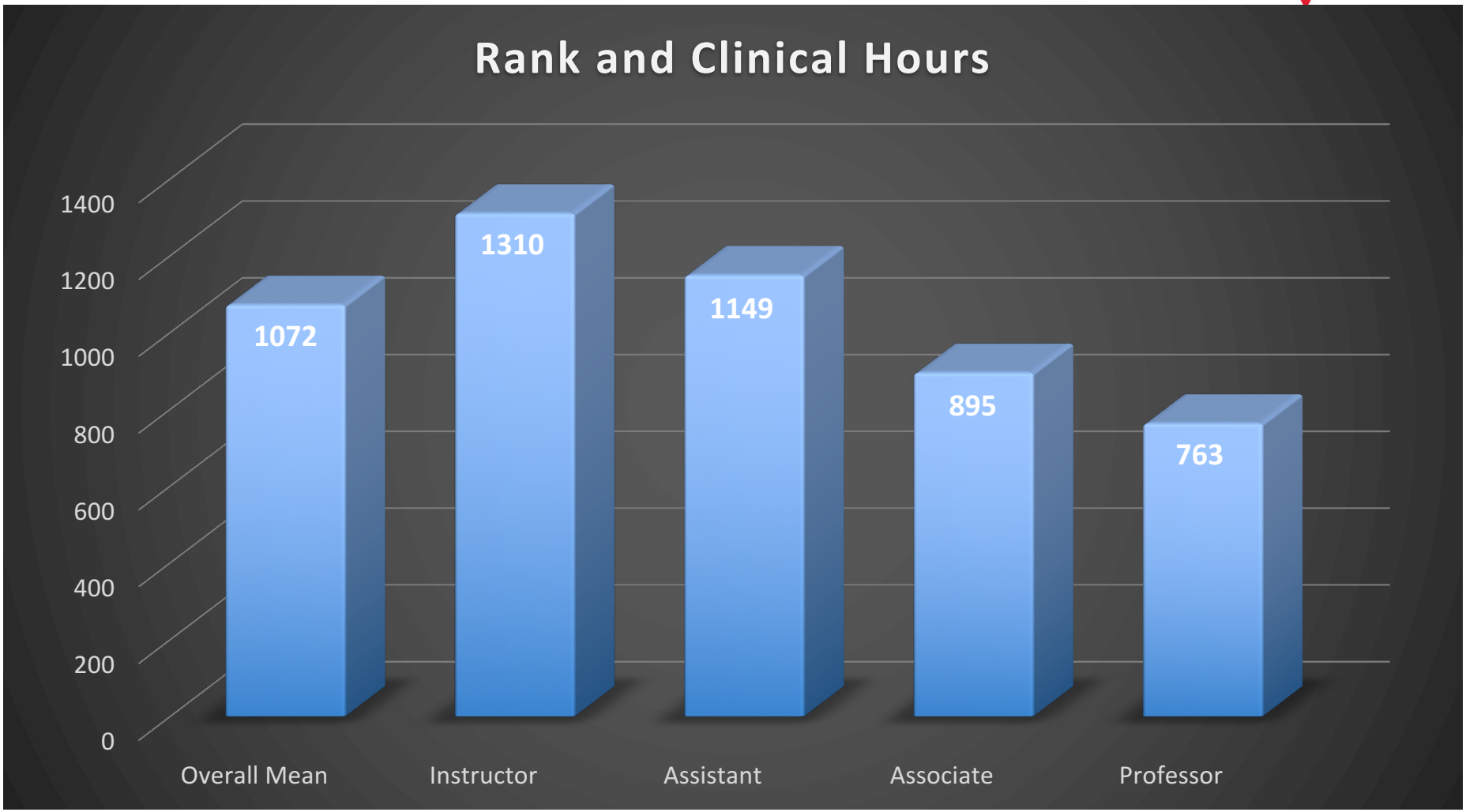
Base Clinical Hours by Rank



Has this changed over the last several years?

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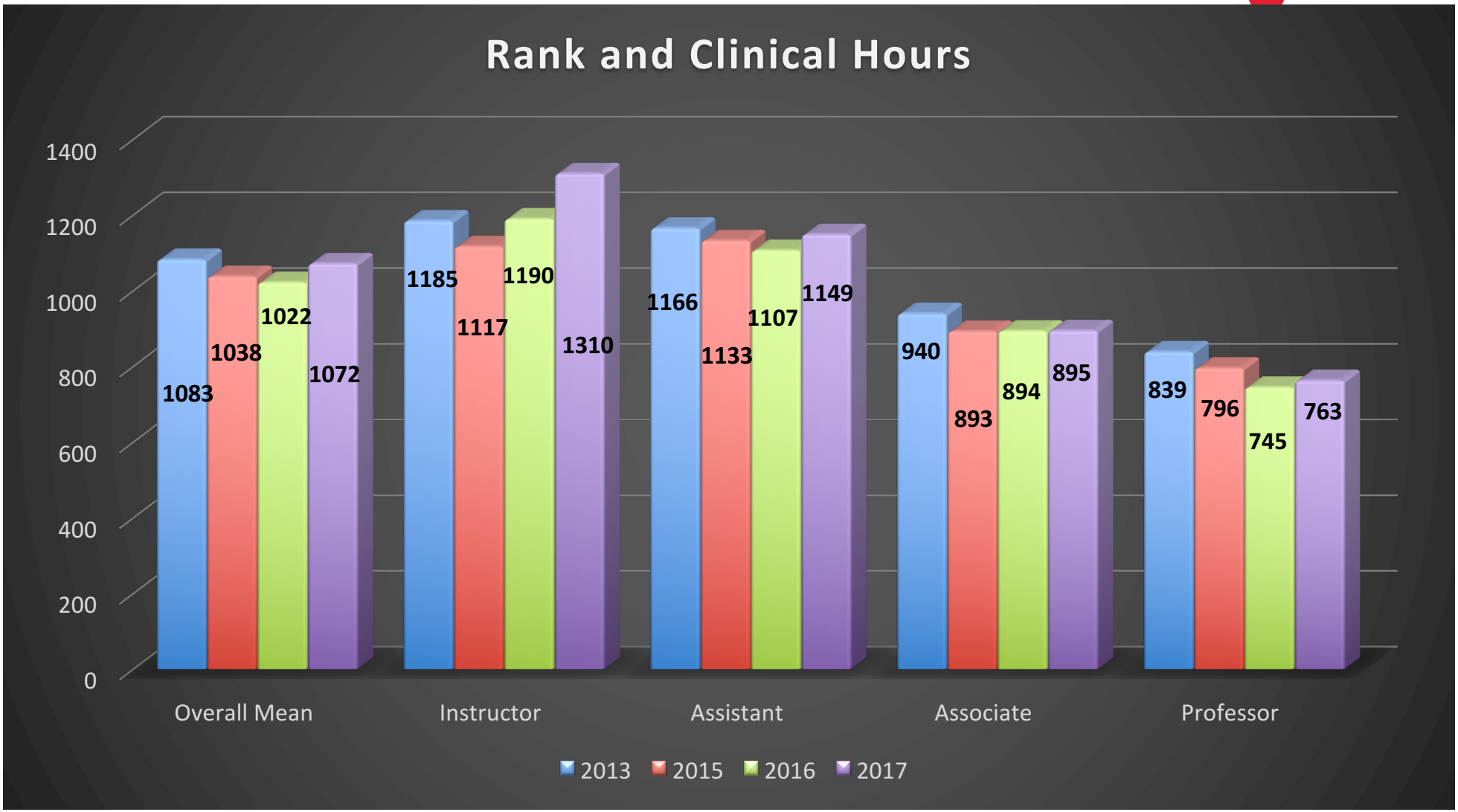
Clinical Hours by Rank



Nope, not a bit. Do years of service matter??

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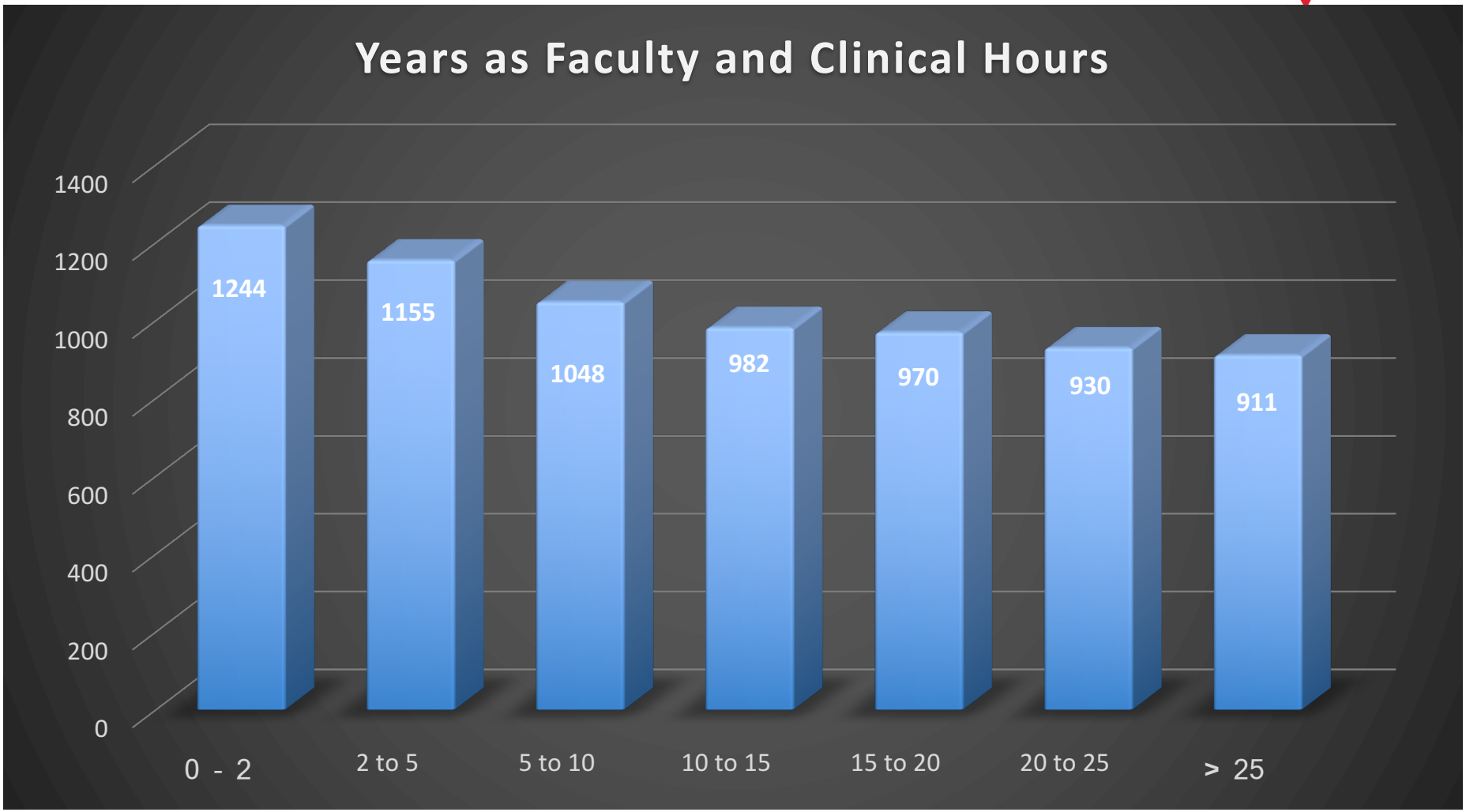
Clinical Hours by Rank



Yes, and that has not changed over the years either

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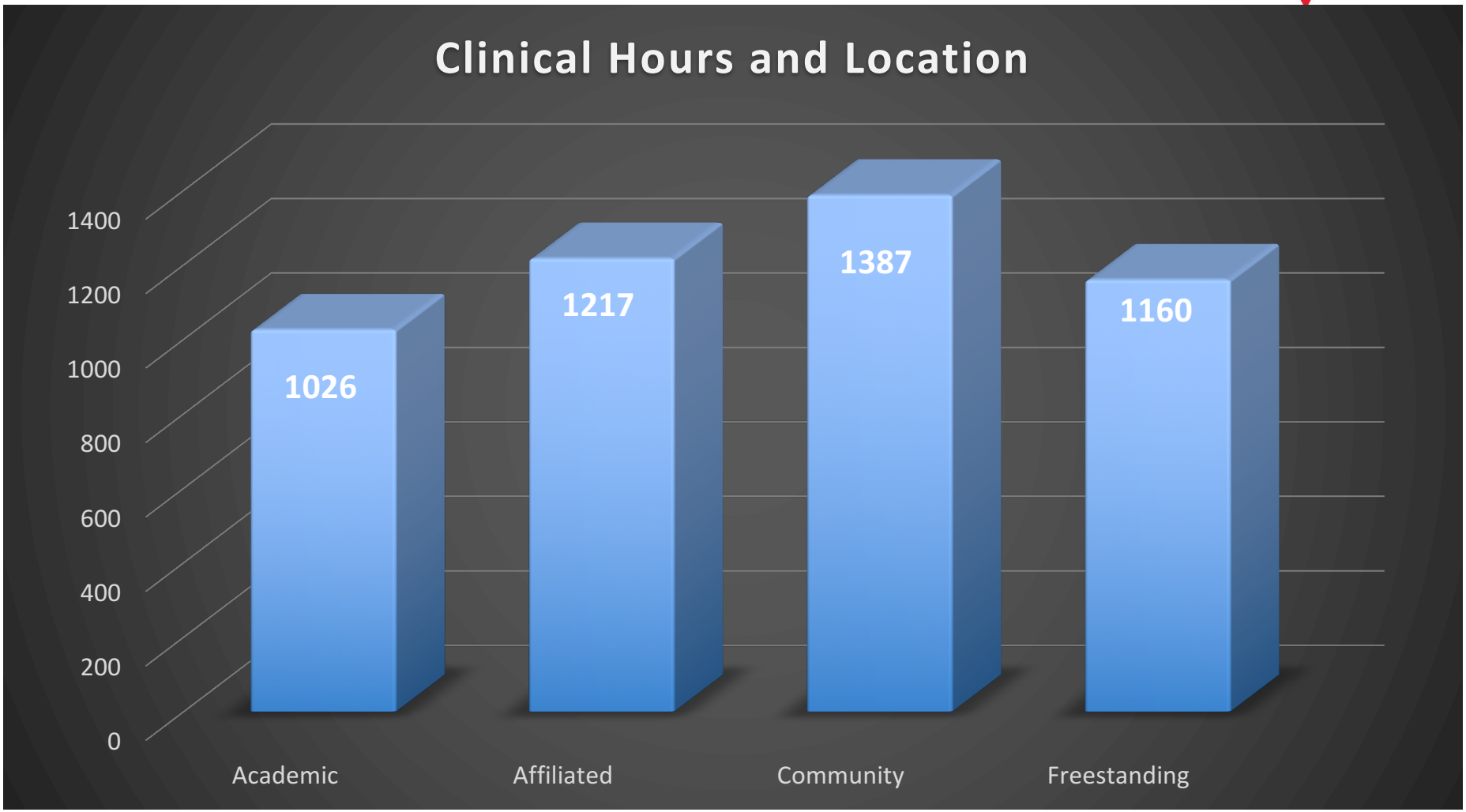
Clinical Hours by Location



And of course—Location, Location, Location

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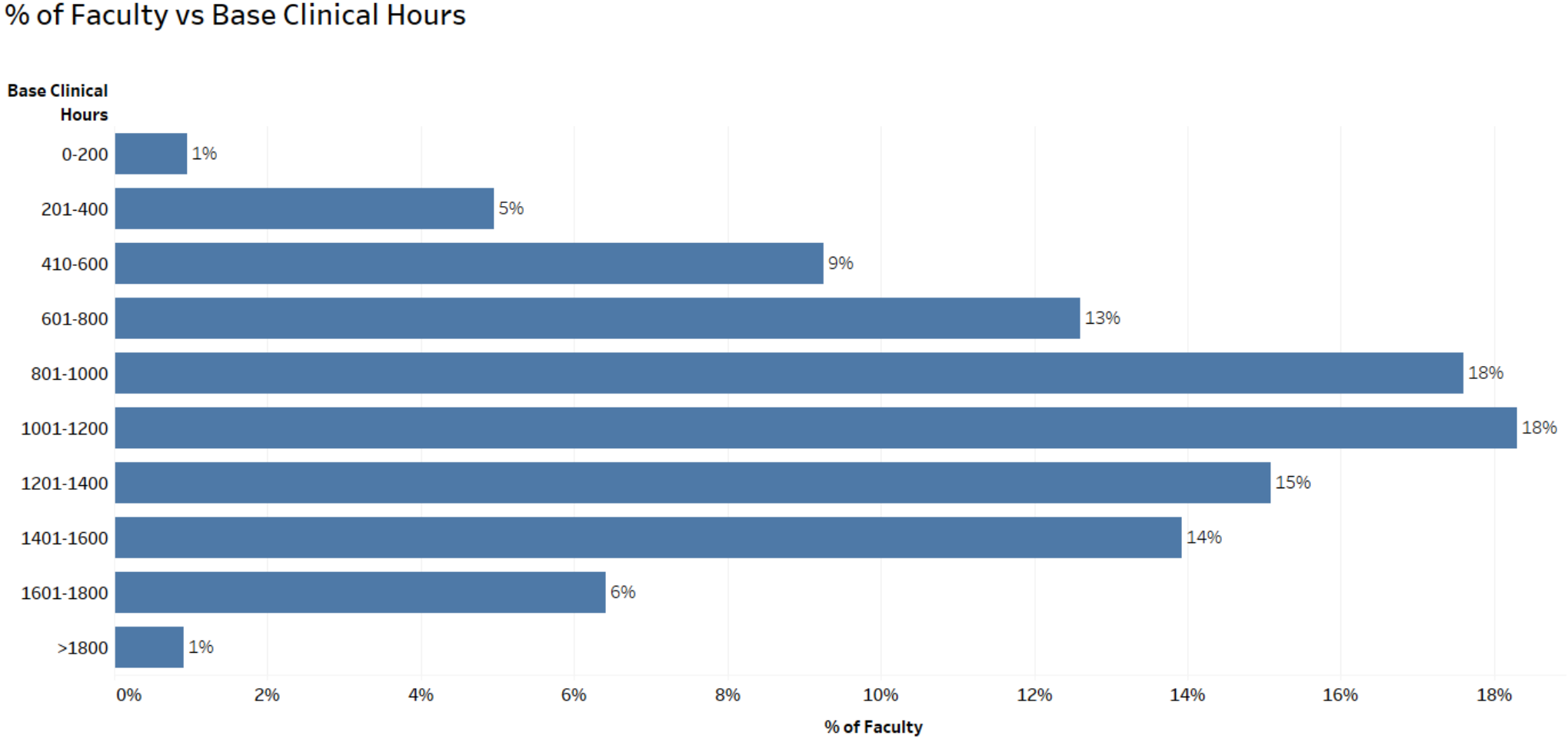
Clinical Hours Distribution



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Job Duty

	Base Clinical Hours	Salary
Chair	468	$487,861
Vice Chair	667	$370,950
Clinical Director	794	$328,821
Residency Director	734	$317,922
Assoc Residency	945	$303,193
Clerkship Director - Required	938	$296,645
Clerkship Director – Elective	1,098	$296,159
EMS Director	839	$299,955
Research Director	789	$312,730
Ultrasound Division Director	919	$299,645
Fellowship Director	959	$291,707
Quality/Risk	925	$303,396
Toxicology	932	$288,440
Peds EM Director	981	$338,722

Chairs, Chiefs, pure Peds EM faculty excluded

- **Administrative Duties**
  - Clinical hours with: 910
  - Clinical hrs without: 1,201
  - Salary with: $310,767
  - Salary without: $285,021
  - Administrative Duties
    - Male: 70%
    - Female: 30%

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Faculty Effort Billing Data

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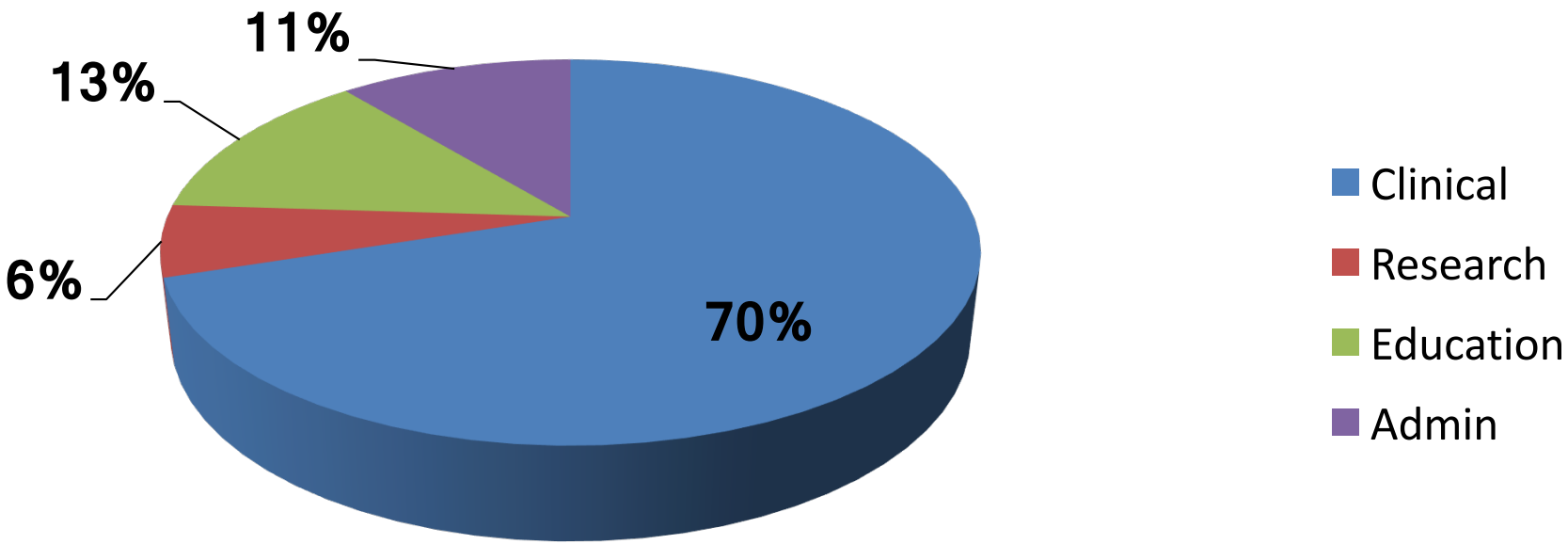
Faculty Effort

Percent Faculty Effort: Multiple Missions



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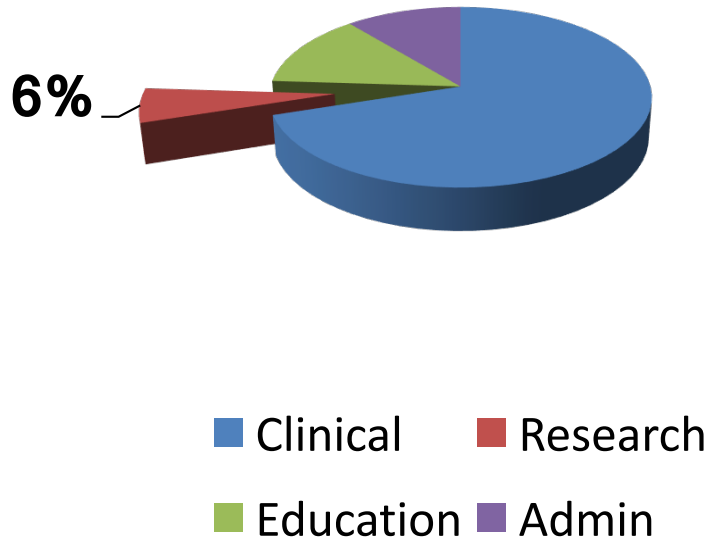
Faculty Effort

Percent Faculty Effort: Multiple Missions

Research Effort:

George Washington
Oregon Health Sciences
Mount Sinai
University of Michigan
Johns Hopkins

Range = 19% -- 23.2%



Research effort is decreasing:

Median FY 17 5.9% from FY 16 of 6.9%
Mean staying at 8%

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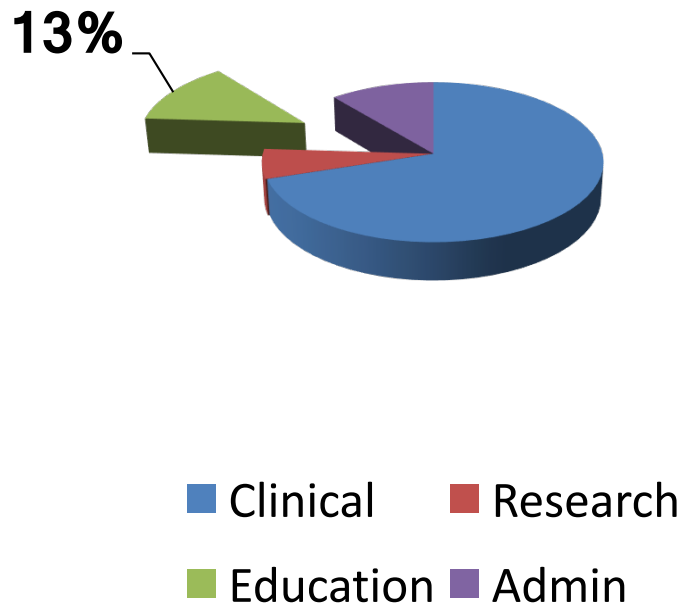
Faculty Effort

Percent Faculty Effort: Multiple Missions

Education Effort:

University of Texas- Houston
University of Louisville
University of California – Irvine
University of Maryland
Washington University

Range = 39% -- 47%



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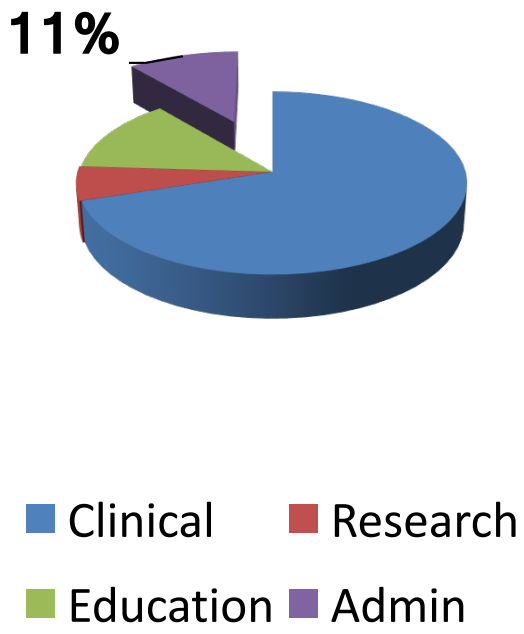
Faculty Effort

Percent Faculty Effort: Multiple Missions

Administrative Effort:

University of Virginia
Oregon Health Sciences
Boston University
University of Michigan
Stanford University

Range = 25% -- 36.4%



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Provider Productivity

	Mean	Median
Annual Physician Hrs	29,038	27,503
WRVU per MD Hour	6.77	6.73
PPH Academic/Affiliated	2.46	2.54

	MD Hours	Visits	PPH
20,000-40,000	16,546	33,854	2.1
40,000-60,000	20,661	52,504	2.5
60,000-80,000	29,536	69,927	2.4
80,000-100,000	35,356	86,957	2.5
100,000 +	44,015	115,710	2.6

Provider Productivity

	MD Hours	Visits	PPH
20,000-40,000	16,546	33,854	2.1
40,000-60,000	2		
60,000-80,000	2		
80,000-100,000	3		
100,000 +	4		

	NPP Hours	Visits	PPH
20,000-40,000	16,952	33,854	2.0
40,000-60,000	37,1		
60,000-80,000	55,3		
80,000-100,000	65,6		
100,000-120,000	80,3		

	MD/NPP Hours	Visits	PPH
20,000-40,000	33,498	33,854	1.02
40,000-60,000	57,821	52,504	.91
60,000-80,000	84,876	69,927	.82
80,000-100,000	100,958	86,957	.86
100,000-120,000	124,341	115,710	.93

Annual Physician hours = 2.54 pph
Annual NPP hours in ED and FT = 1.34 pph
Combined hours = .90 pph

Daily Provider Coverage: ED

		MD Hours/Day		APP Hours/Day		Resident Hours/Day		
	PPH	ED	%	ED	%	Resident	%	Total
20,000-40,000	1.02	45	49%	14	16%	32	35%	74
40,000-60,000	.91	57	36%	33	20%	69	44%	154
60,000-80,000	.82	81	35%	54	23%	97	42%	195
80,000-100,000	.86	97	35%	59	21%	120	44%	207
100,000-120,000	.93	121	35%	96	28%	124	37%	331

OVERALL MIX OF PROVIDERS HAS BEEN CONSISTENT OVER THE PAST 5 YEARS

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Charge Data

	FY 12 Median	FY 13 Median	FY 14 Median	FY 15 Median	FY 16 Median	FY 17 Median
Collection/Work RVU	$38.38	$36.15	$38.74	$41.96	**$43.04**	**$45.76**
Work RVU/Hour	7.01	7.16	6.84	7.22	6.58	6.73
Work RVU/Patient	2.86	2.8	2.84	2.91	2.92	2.86
Collections ($)	$6,231,046	$6,068,449	$6,439,589	$7,409,530	$7,470,695	$7,681,213
Collections/Visit	$102.36	$96.57	$105.07	**$118.81**	**$109.89**	**$109.76**

Increased payment for the same work effort

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Professional Fee Billing

- **Benchmark professional fee billing for procedures and observation charges**

	FY 12 Mean	FY 13 Mean	FY 14 Mean	FY 15 Mean	FY 16 Mean	FY 17 Mean
% Charges from E&M Codes	84.30%	81.70%	83.40%	84.50%	85.10%	84.10%
% Charges from Procedures	14.30%	16.20%	16.10%	16.20%	13.90%	14.20%
% Charges from Observation	1.60%	4.40%	3.70%	5.40%	5.50%	2.70%

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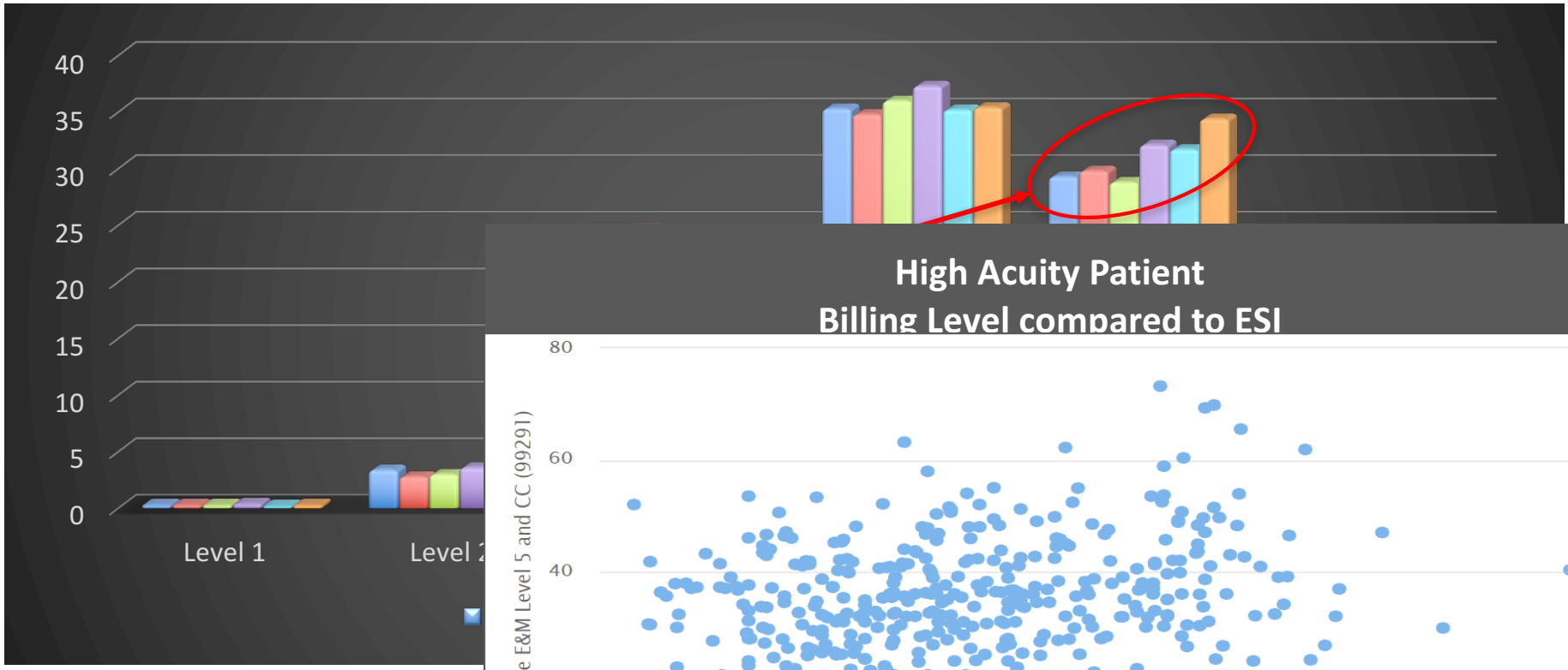
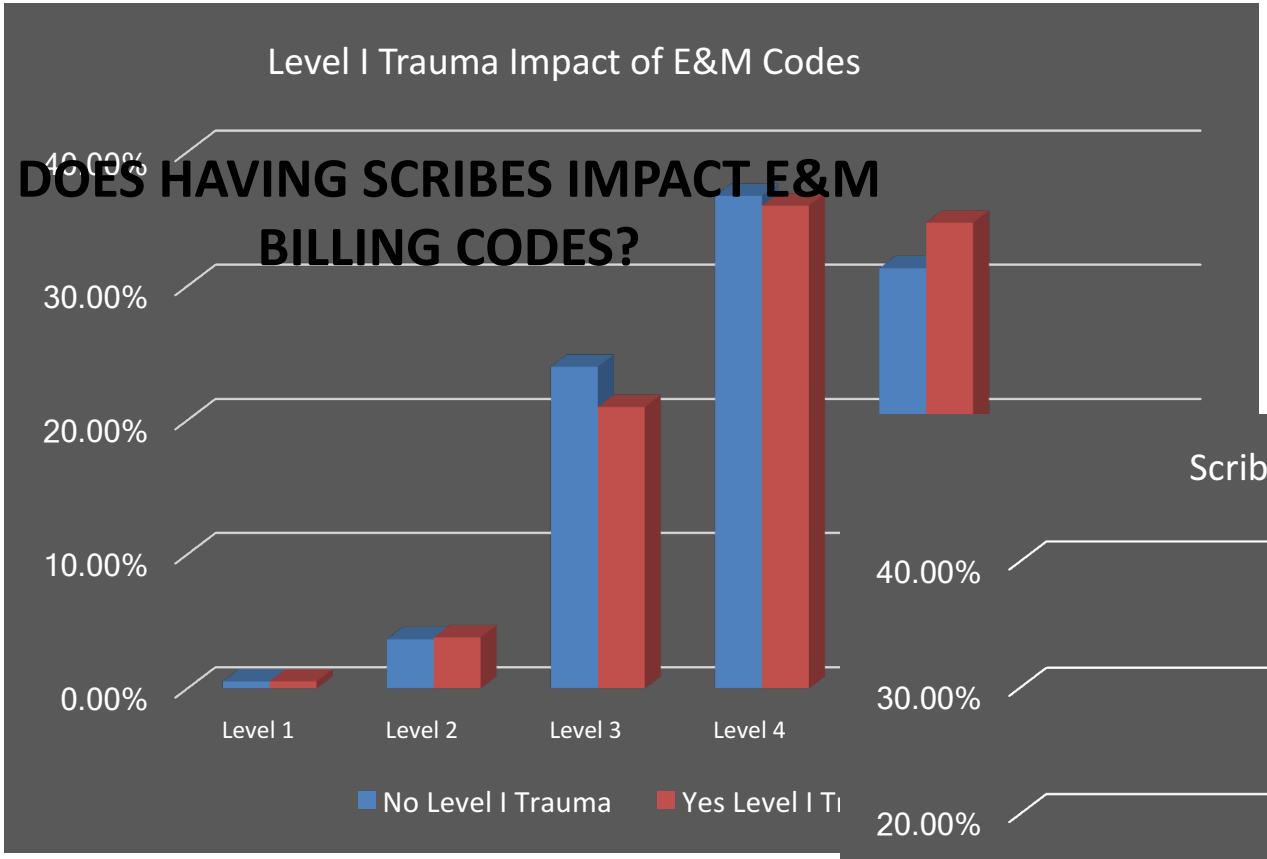
Professional Fee Billing

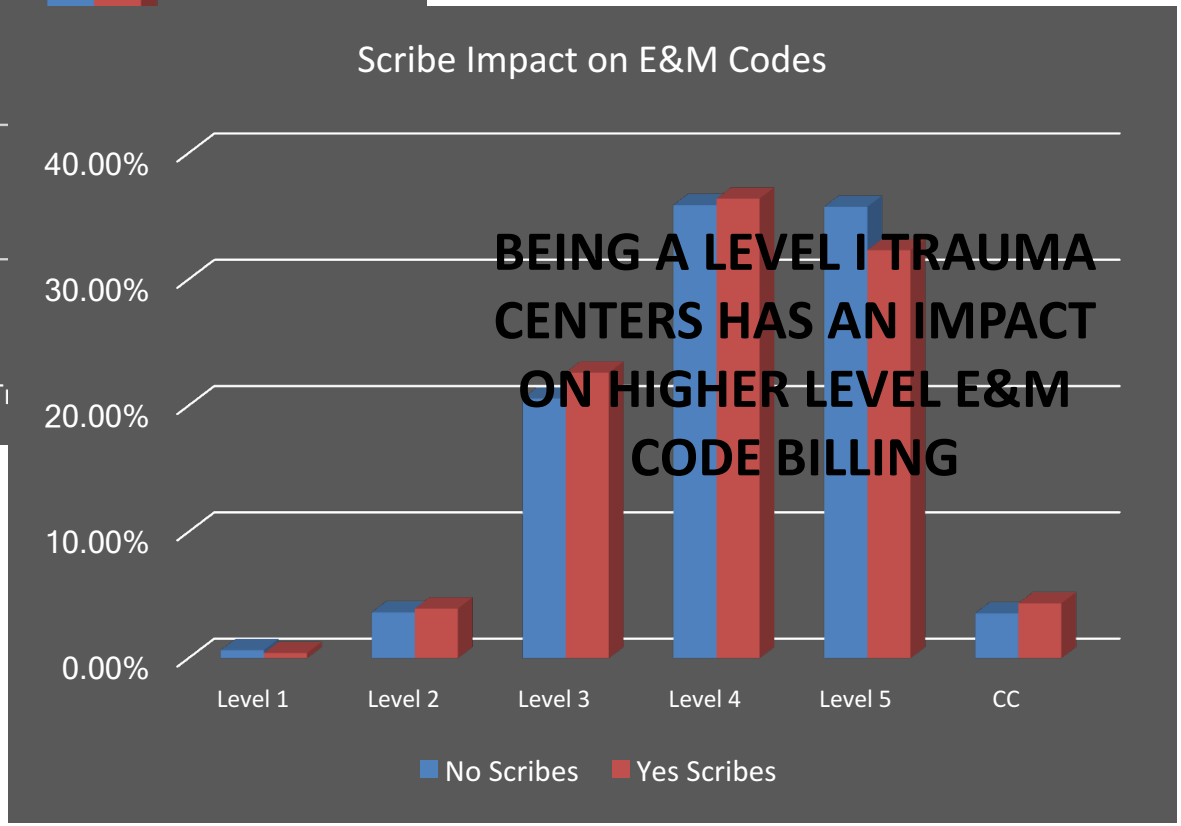
E & M Codes



Impacts on Professional Fee Billing



DOES HAVING SCRIBES IMPACT E&M BILLING CODES?

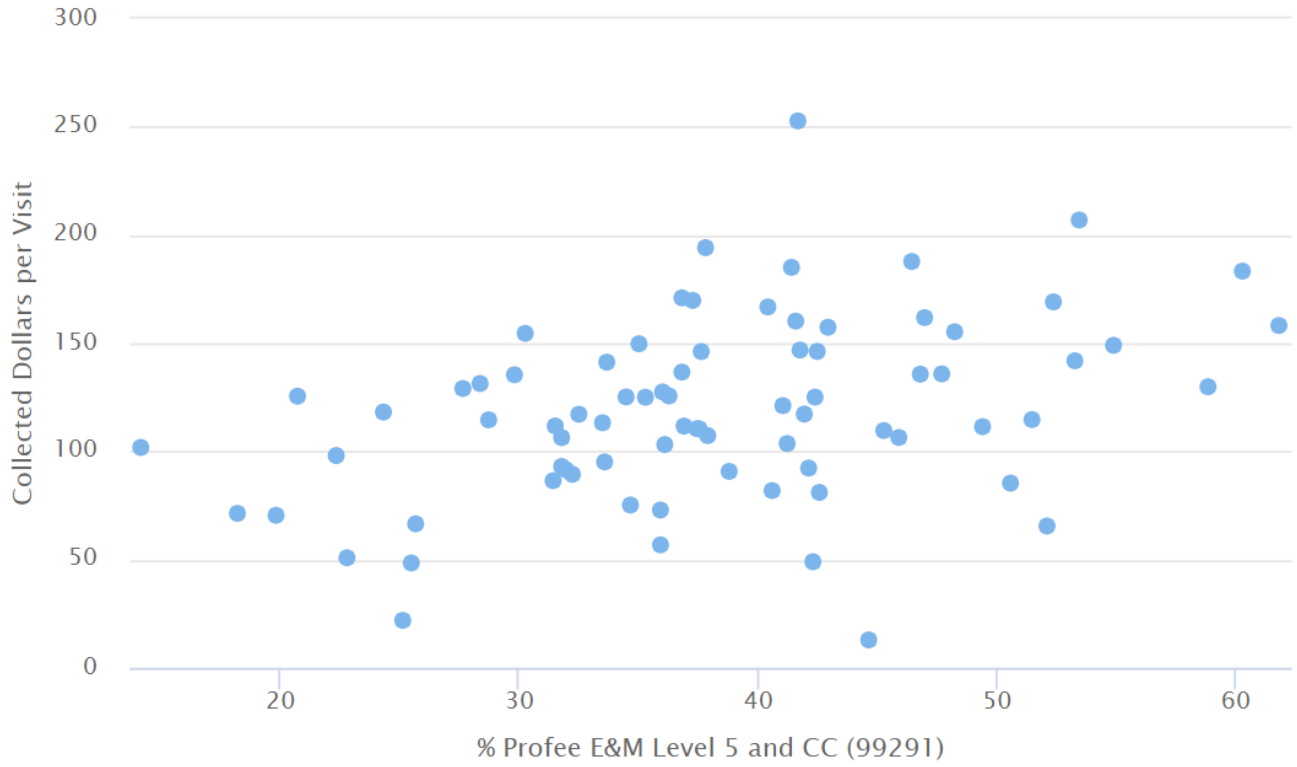


BEING A LEVEL I TRAUMA CENTERS HAS AN IMPACT ON HIGHER LEVEL E&M CODE BILLING

Professional Fee Billing

Strongest correlation to increased collections per visit

- Procedure based CPT codes per visit
- % Of Visits with Profee E&M Level 5 (99285)
- % Of Visits with Profee Critical Care (99291)
- % of Visits with Profee E&M Level 5 and CC (99291)



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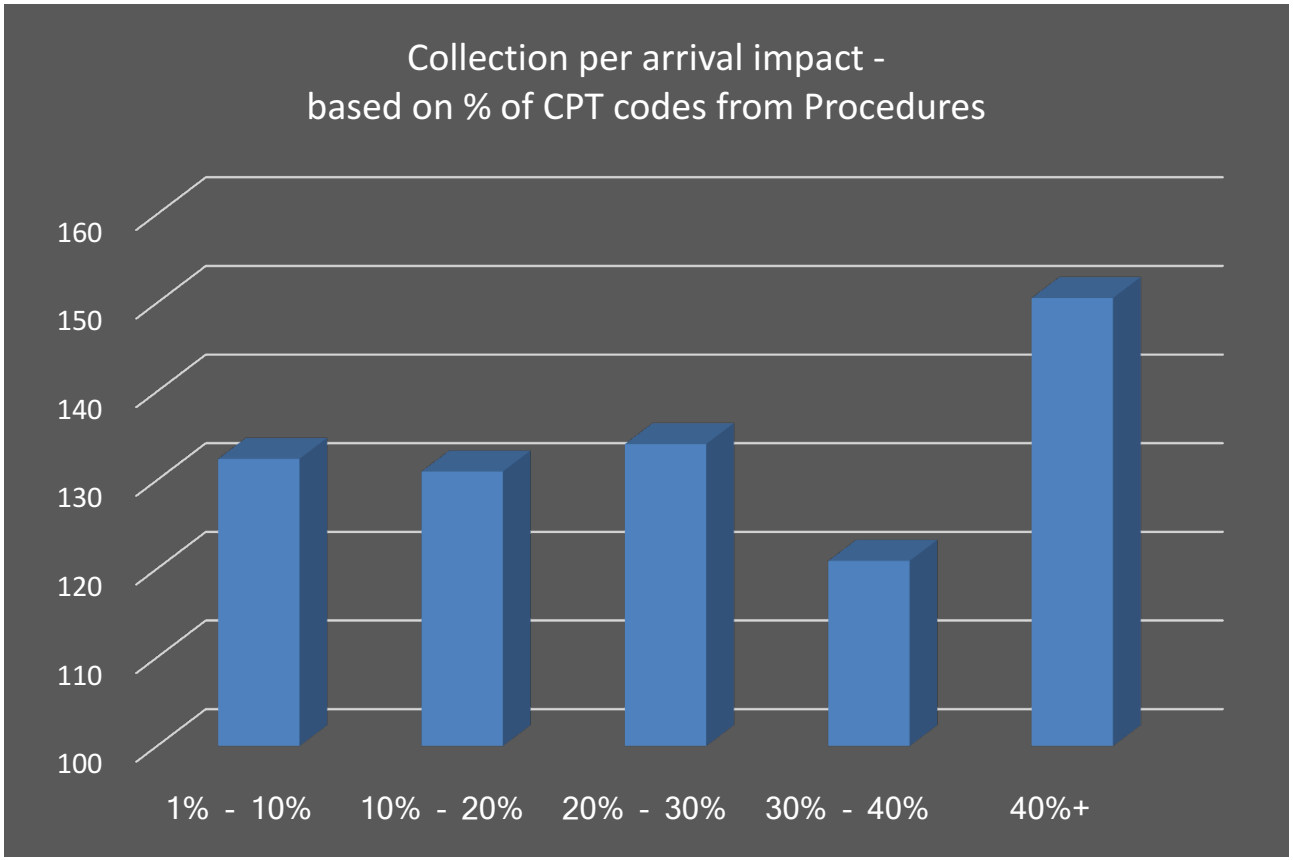
Impacts on Professional Collections

DOES PROCEDURE BILLING CAPTURE SIGNIFICANTLY AFFECT REVENUE?



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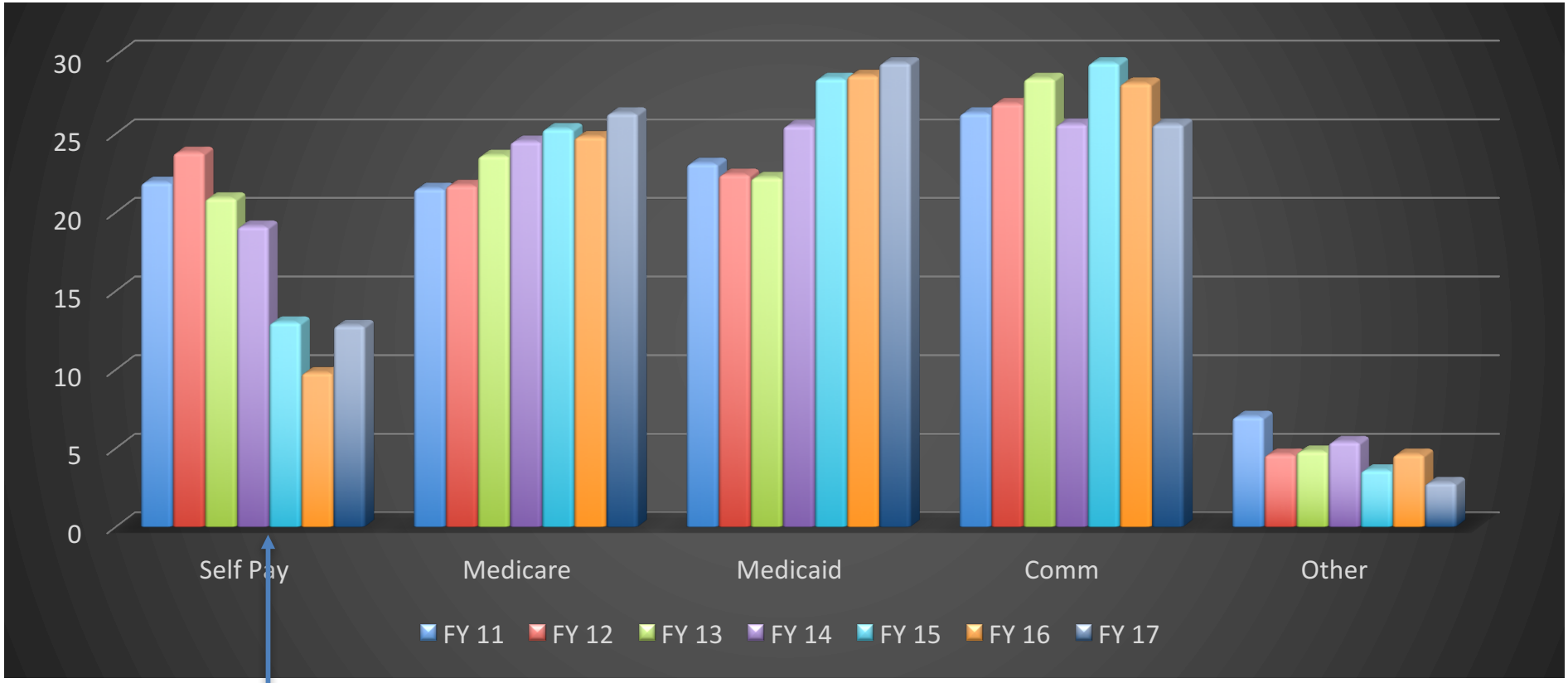
Payer Mix

Mean Payer Mix Distribution



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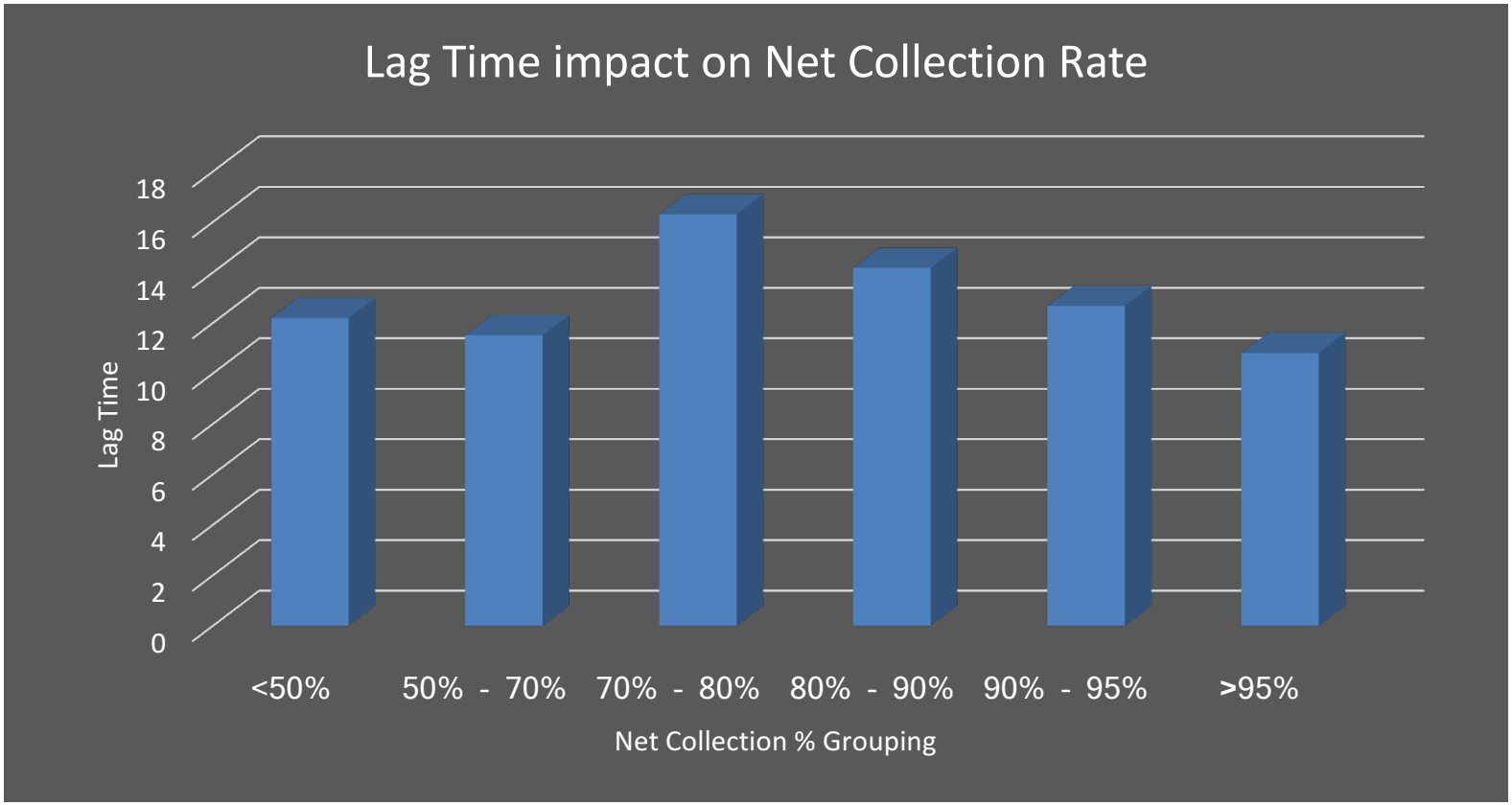
Professional Fee Billing



Research

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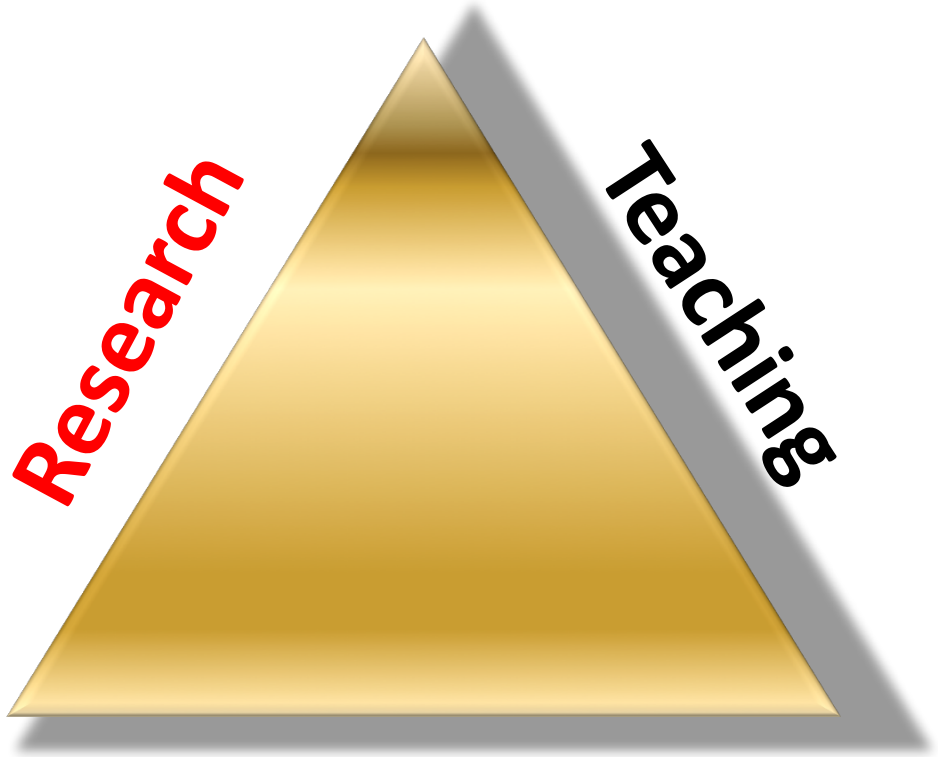
Academic Emergency Medicine
Tripartite Mission



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Research

- **Emergency Medicine Grant Activity FY 17**
  - **Institutions reporting Active Grants: 55**
  - **Institutions reporting Active NIH Grants: 44**

Research – Institutional Profiles

- **Are there differences in institutions reporting research activity on the survey compared to those institutions which do not report research activity?**

Grant Group	Median Licensed Beds	Median Total Arrivals	Median Collected Dollars	Collections per Faculty	Median Collections per Work RVU	Number Sites
NIH Funded	752	72657	$8,817,376	$234,356	$45	44
No Grants Reported	627	76129	$7,032,861	$261,977	$45	27
Non-NIH Funded	504	62411	$7,462,204	$231,607	$45	11

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Research

- **Reported Grant Submissions and Awards FY 17**
  - **Institutions submitting in FY 17: 53 (55 in FY 16)**
  - **Institutions awarded from submission: 50 (53 in FY 16)**

	FY 13	FY 14	FY 15	FY 16	FY 17
Number Submitted	744	784	733	1,026	915
Awarded from Submissions	303	336	342	507	373
Conversion Rate	40.7%	42.9%	46.7%	49.4%	40.7%

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Agency	Total Active Grants	Total FY 2017 Spend	Average Spend per Grant
NIH K	36	$5,265,862.46	$146,274.00
NIH R	139	$21,900,408.03	$157,557.00
NIH P	15	$2,183,086.59	$145,539.00
NIH K and T	8	$2,774,666.93	$346,833.00
NIH Other	164	$21,298,705.22	$129,870.00
CDC	29	$1,902,392.97	$65,600.00
AHRQ	19	$3,400,614.03	$178,980.00
Other Federal	101	$14,384,000.08	$142,416.00
Foundations	156	$9,462,106.61	$60,655.00
Industry	247	$14,182,508.94	$57,419.00
PCORI	17	$2,773,952.64	$163,174.00
CD NonNIH	16	$2,701,361.25	$168,835.00
Other	148	$11,190,317.27	$75,610.00

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Research:

The questions we hope to answer this year?

- Are there relationships between start up funding, protected time and grant funding?
- Are there relationships between grant funding and reported publications?
- Do differences in financial performance allow additional investments in research that drive more grant or publication activity?

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Research: Grants and Publications

Grant Status	Median Publications
Active - Any	51
Active - NIH	62
No Active Grants	24

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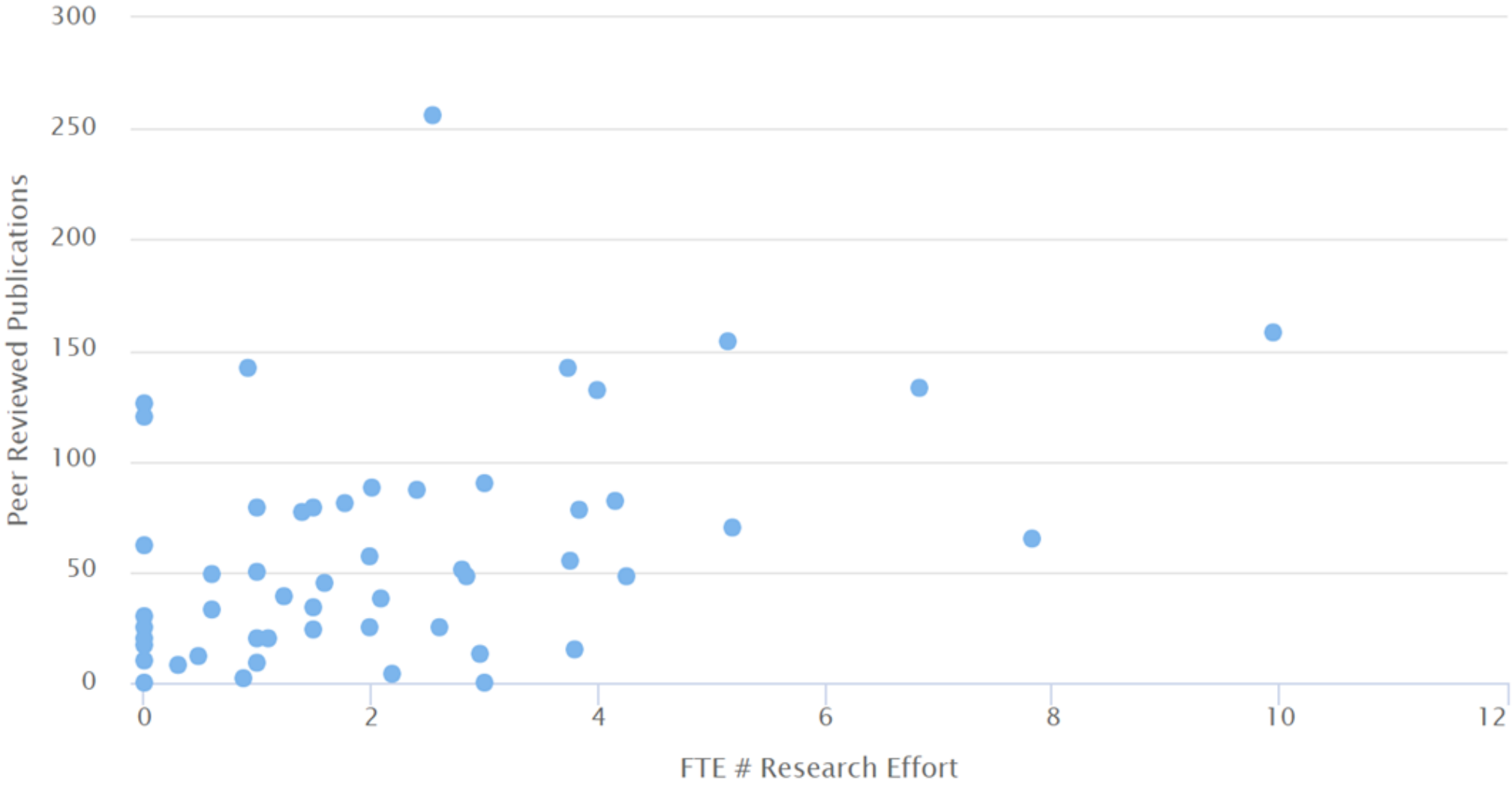
Research: Publications and FTE's



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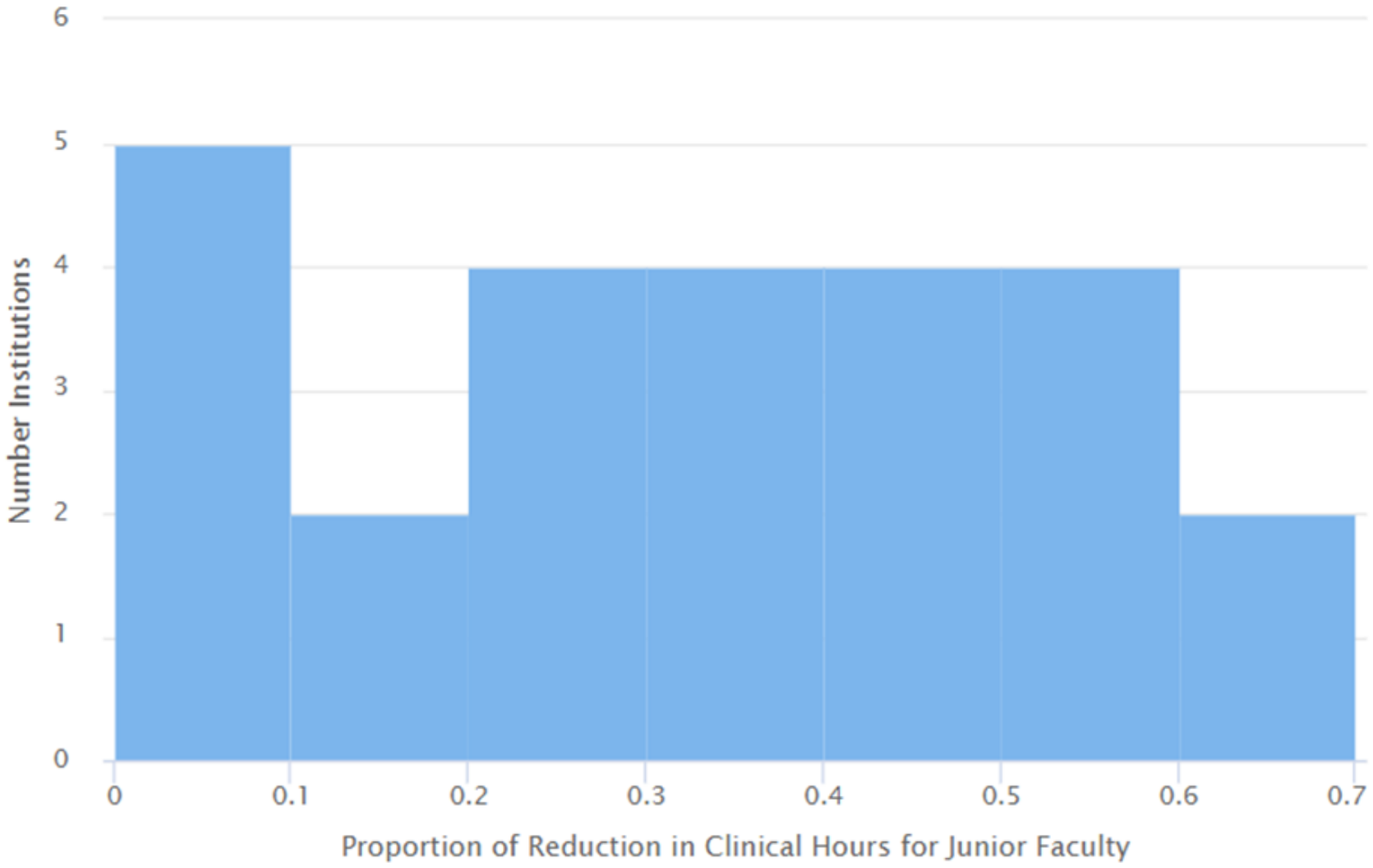
Research:
How do we report FTE's



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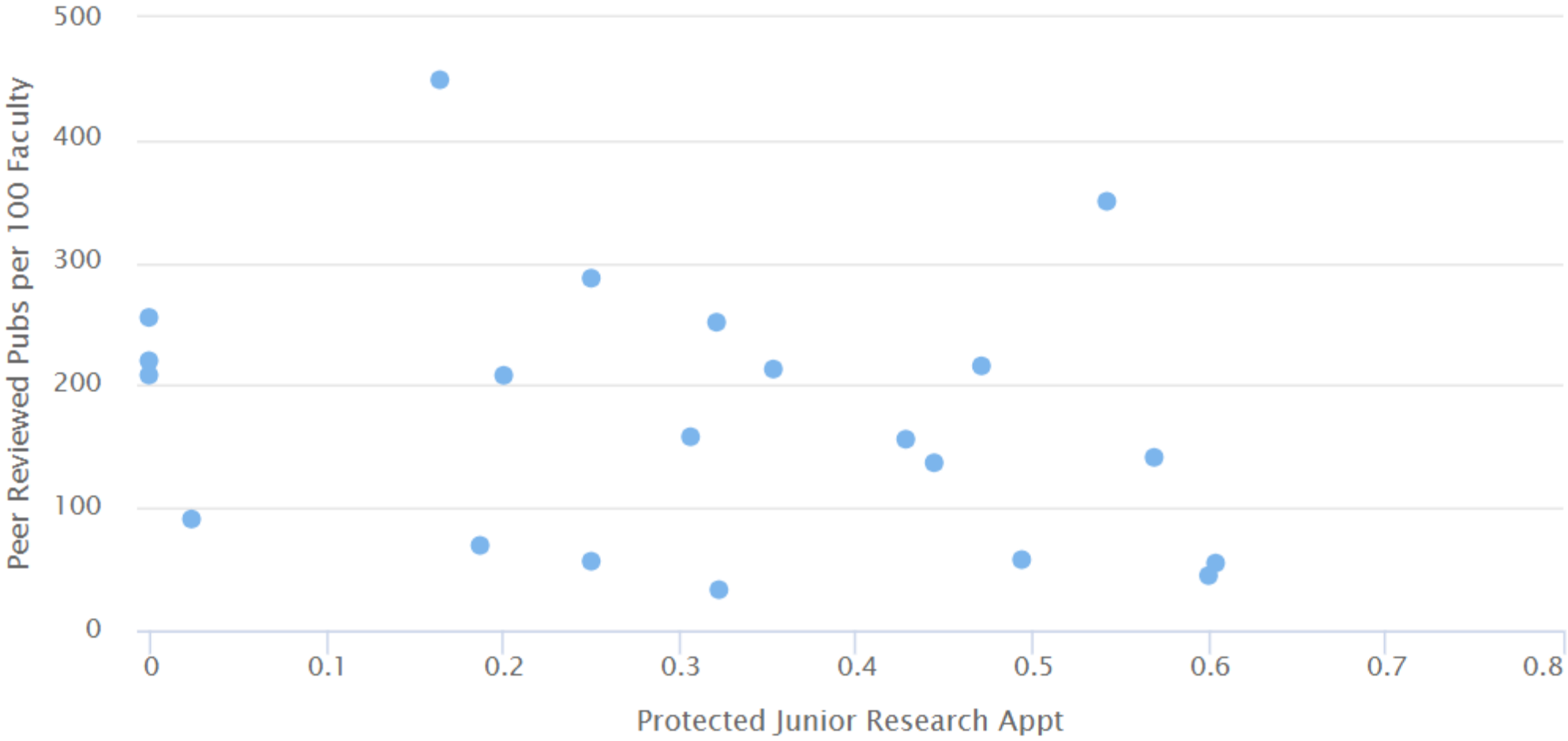
Research:
Publications and Research FTE's



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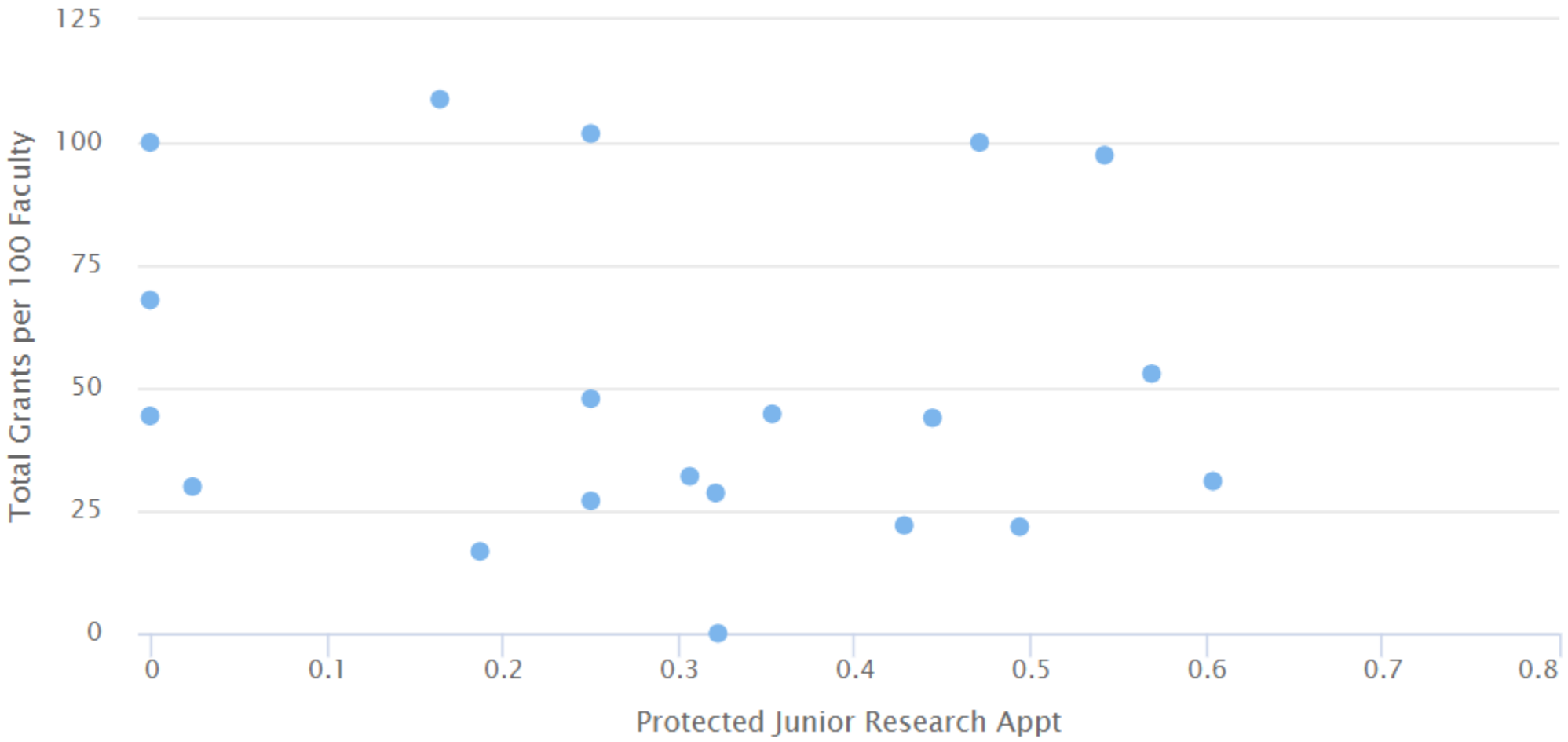
Research:
Grants and Research FTE's



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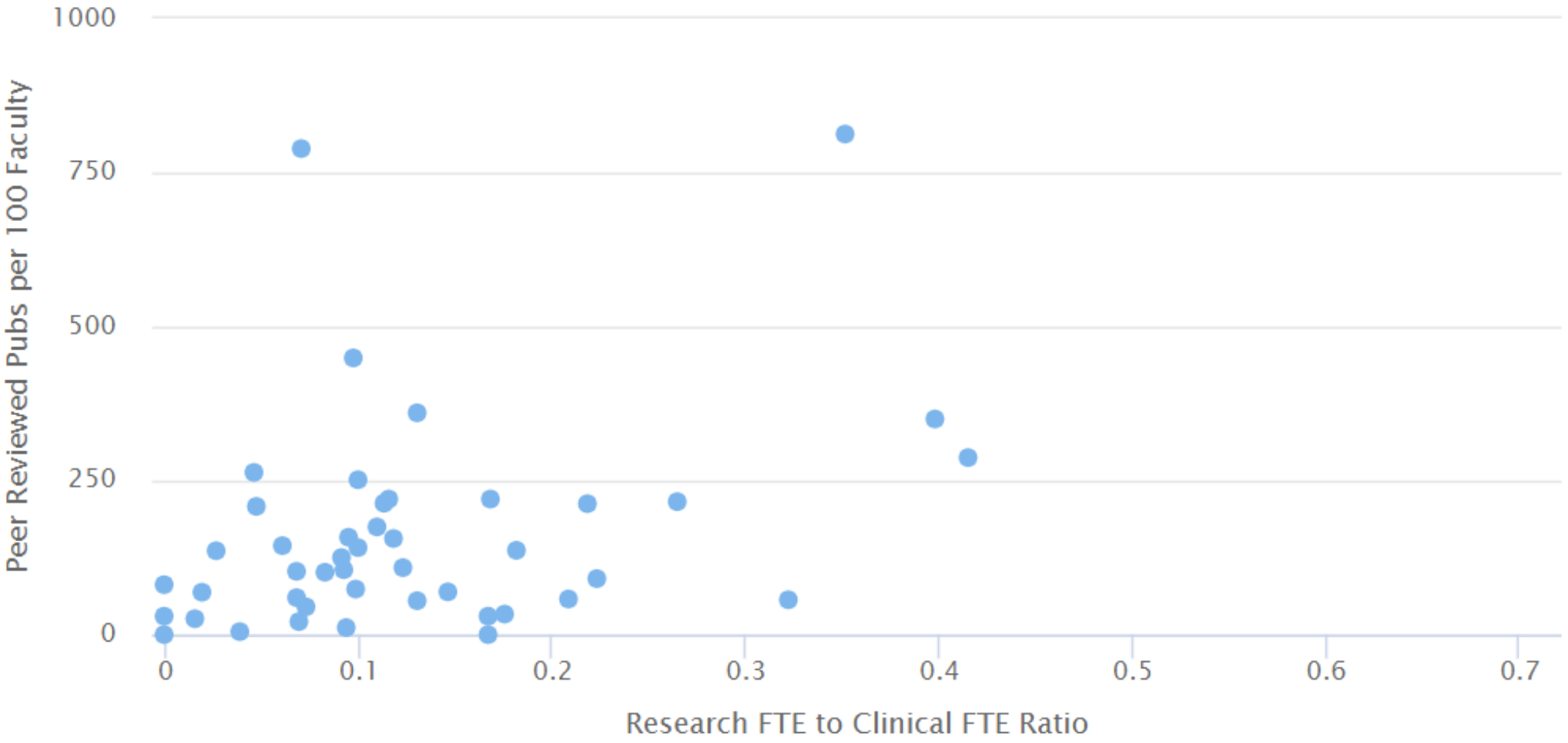
Research:
Publications and Research FTE's



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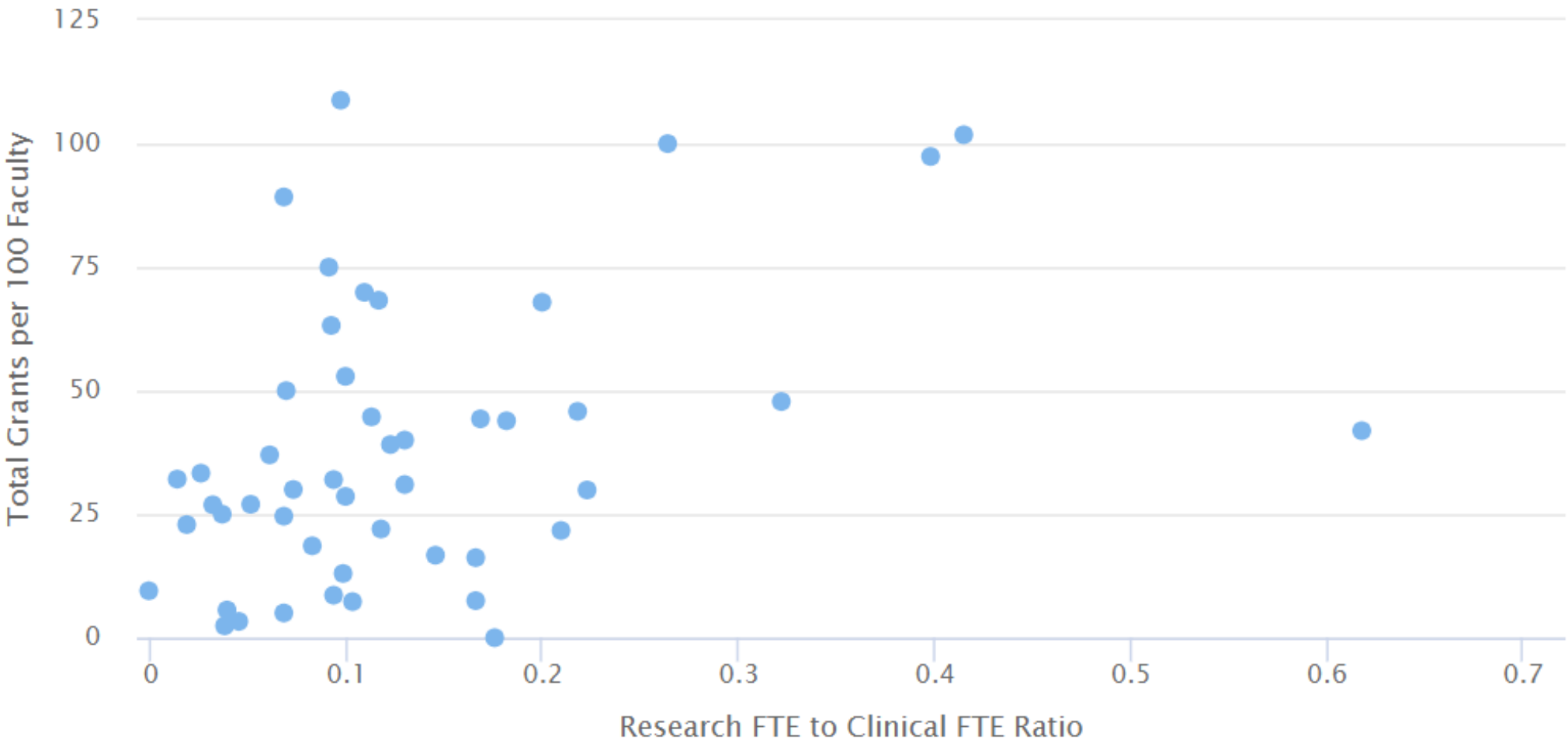
Research:
Grants compared Research FTE's



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Research: What did we learn?

- **Differences in classification of effort, of how a clinical FTE is defined and the definition of publications and grant funding make comparisons difficult.**

- **New data elements should allow for longer term trending to determine the relationship of research investment and the link to publications and grant funding.**

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Questions?

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Summary

- **Strong data set for Academic Emergency Medicine Benchmarks**
- **Consistency = Reliability**
- **Deep dives to follow…..**

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