












AAMC GIP Data and Information Subcommittee

Challenges with Data Driven Metrics for Space Planning

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University of Alabama at Birmingham

Association of American Medical Colleges

Members

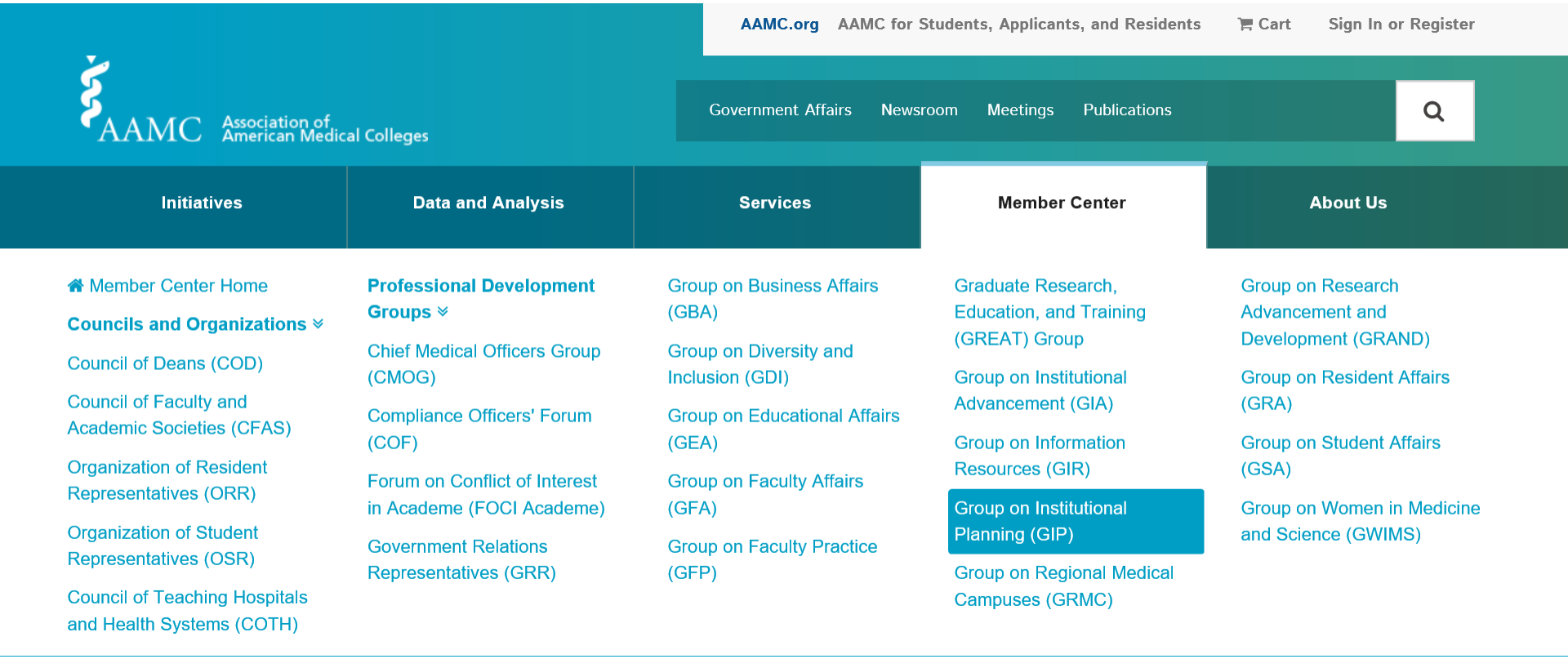
- 145 accredited US medical schools
- 17 accredited Canadian medical schools
- ~400 teaching hospitals/health systems including
  - >50 VA medical centers
- >80 academic societies

Represents

- 148,000 faculty
- 83,000 medical students
- 115,000 resident physicians

AAMC

AAMC – 23 Affinity Groups



AAMC

AAMC Data Resources

Types of Data
Medical school revenues
Faculty and student demographics
Compensation comparisons
Ad hoc data requests

https://www.aamc.org/data/

Data access

- Available by role/permission
- Dean's office
- AAMC Staff
- GIP

Compensation by Department, PhD Faculty, Combined Ranks ($ in Thousands)

	FY15		FY14		FY13		% Change FY14-FY15	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
All Basic Sciences	134.8	122	131.9	119	129.3	117	2.2	2.5
Pharmacology	132.9	119	131.3	118	129.4	117	1.2	0.8

Source: AAMC Faculty Salary Survey Report, Table 33, accessed 01/27/16

AAMC

AAMC Programs and Publications

Programs
Leadership programs
Mentoring programs
Meetings on specific topics
Seminars and webinars

Publications
Academic Medicine
Analysis in Brief
Washington Highlights
Special reports

April 1-2, 2016 **more information**

Executive Development Seminar for Aspiring Leaders
April 28-30, 2016, AAMC Learning Center, Washington, D.C.

Coming in March

Leadership Guide for Department Chairs

AAMC

AAMC Group on Institutional Planning

Mission: "to advance the discipline of planning in academic medicine by enhancing the skills and knowledge of professional planners; to promote the value of planning; and to connect people, resources, and ideas."

- Diverse membership
- Active listserve
- Sponsor symposia, workshops, and webinars
- Provide data and resources
  - Sustainability
  - Strategic planning
  - Emergency planning

What We Wanted to Learn

- Should our expectations (metrics) be the same for “wet” vs. “dry” research spaces?
- Are there comparative space metrics available?
- What components are included in comparative space metrics?

Why Does This Matter to Us?

- Improves decision-making to support priorities
  - Renovate, reuse, re-allocate
  - Build, rent
  - Sell, lease, demolish
- Improves resource utilization
  - Support research programs, faculty, trainees
  - Reduce costs
- Promotes transparency and fairness
  - Setting expectations

Why Might This Matter to You?

- You probably have authority and responsibility
- Supports transparency and equity
  - Setting expectations for faculty
  - Comparisons to other departments
- Improves negotiating ability
  - Recruits
  - Dean's office
- Promotes stewardship and sustainability

Hypothesis

1

Space dollar densities are calculated similarly at different schools

Our GIP Subcommittee Approach

Eric W Boberg, PhD
Executive Director for Research
Northwestern University
Feinberg School of Medicine

What We Learned: Different Types of Space Metrics In Use

- Dollar density:

  surrogate measure for activity

  – Awards/ net square feet

  – Indirect expenses/square feet

- People density:

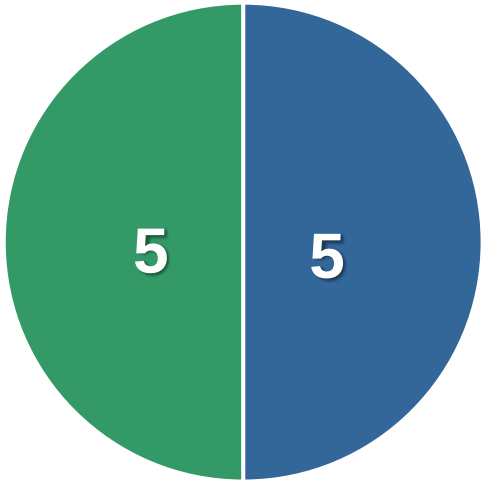
  surrogate measure for occupancy

  – FTE/net square feet

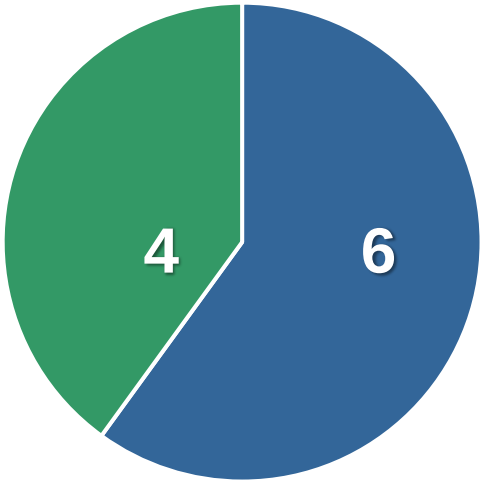
  – Person per kneehole/desk

What We Worry About: Internal Misalignment in Dollars and NSF

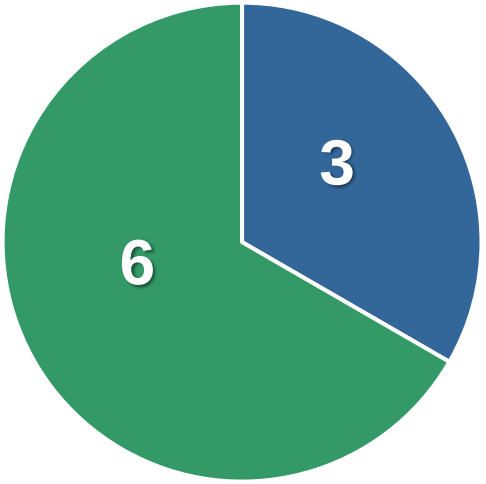
Multi-Investigator Awards



Clinical Research



Centers or Institutes



Misalignment

Aligned

Eric's Idea: If We All Have the Same Data, Will We Use It the Same Way?

- Created a fictitious department of 10 faculty
- Each faculty described in terms of
  - Personnel
  - Grant awards
  - Expenditures
  - Assigned space
  - Shared space
- Participants asked to calculate space utilization value based on current practices

GIP Data & Information Subcommmittee Participants

Eric Boberg, PhD	Northwestern University, Feinberg
Pam Bounelis, PhD (Chair)	University of Alabama at Birmingham
Matthew Darring	University of Virginia
Scott DeBlaze	University of Chicago, Pritzker
Mary Ann Guida	Columbia University
Denise A. Johnson	Saint Louis University
Sucheta Kulkarni	University of Michigan
Lynn K. Meaney	University of Pennsylvania, Perelman
Gregory Robinson	University of Maryland
Jerome Sak	University of California San Francisco
Niki Smith	Vanderbilt University
Jill Stanley	Case Western Reserve University
Rebecca Waltman	University of Iowa
Kim Reed and Heather Sacks	**AAMC GIP Staff**

Hypothesis 1	Space dollar densities are calculated similarly at different schools
Hypothesis 2	Using the same data, Schools will calculate similar or identical $/nsf values

Faculty 1: Lab-Based

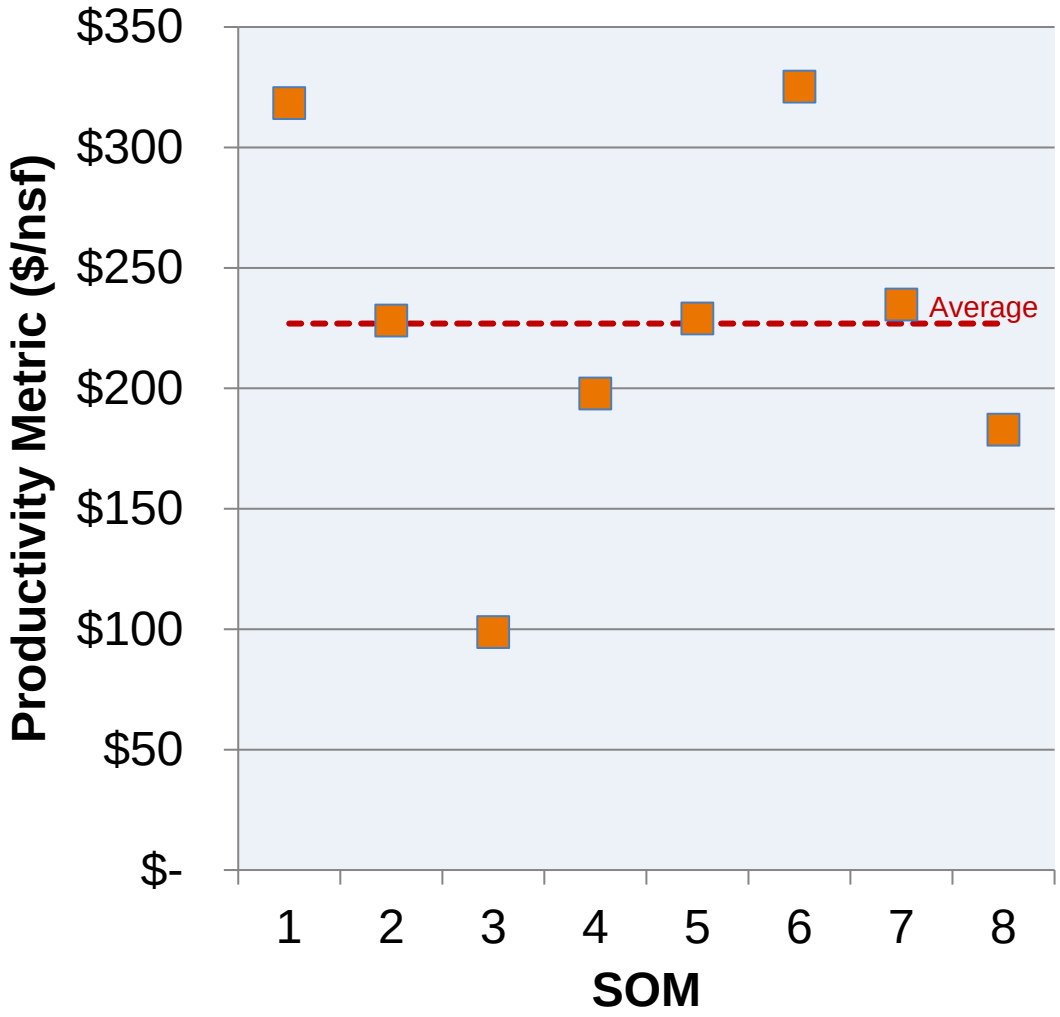
People:
3 students, 1 postdoc, 1 lab tech

Funding:
2 NIH R01s ($250K direct each + F&A)
American Heart Association Award ($100K direct + 10% F&A)

Expenditures:
$540K direct
$490K MTDC

Space (nsf): (2,680 assigned, 190 other)
2,000 assigned lab
- 300 assigned lab service
- 280 assigned office
- 100 assigned animal housing
  - 50 share of common lab space
- 140 share of department admin

Faculty 1: Lab-Based (range = $99 to $325/nsf)



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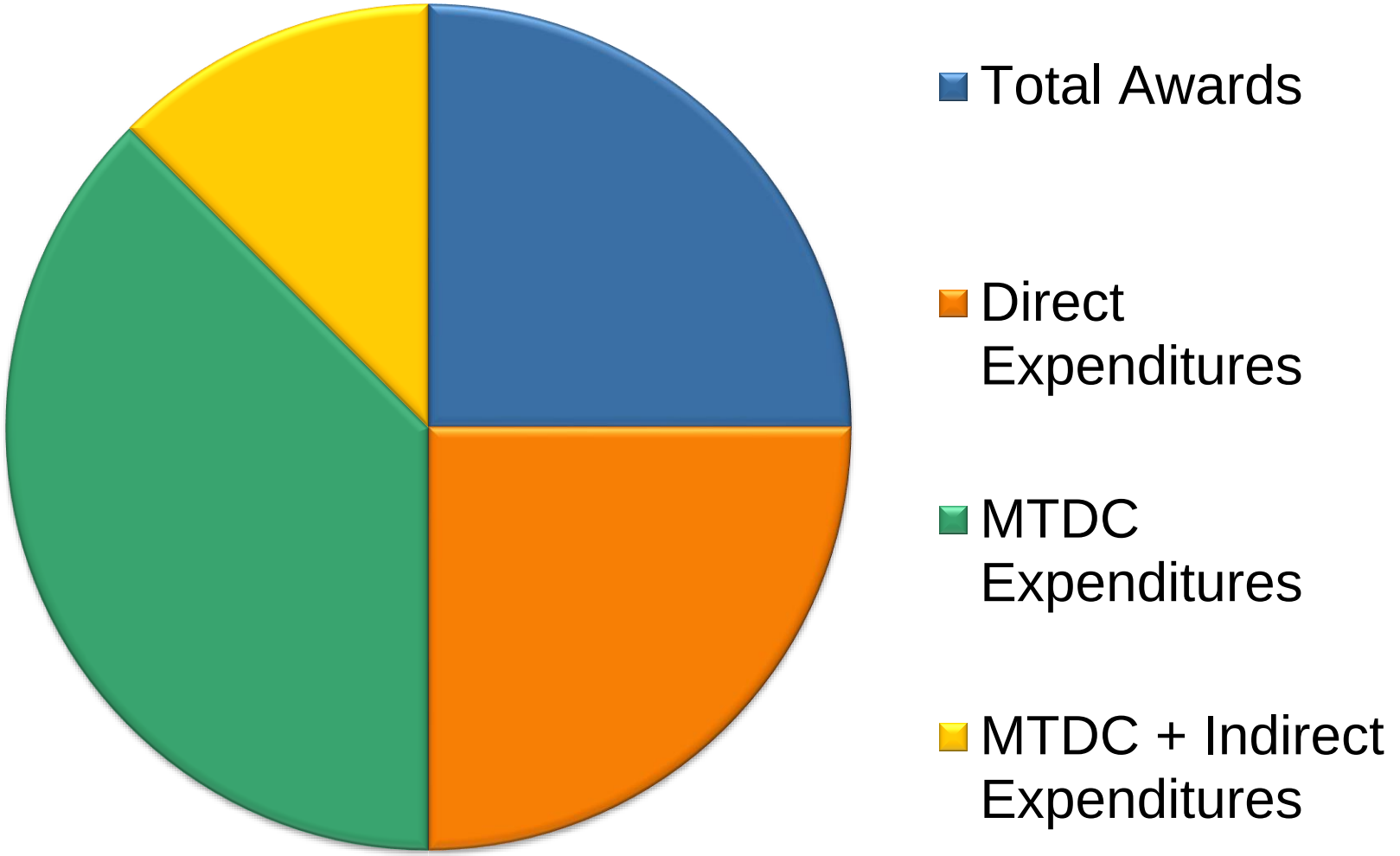
Expenditures:
$540K direct
$490K MTDC

Space (nsf):
2,000 assigned lab
300 assigned lab service
280 assigned office
50 share of common lab space
140 share of department admin
100 assigned animal housing

What Is Contributing to the Variability?

- Types of dollars counted in the measurement
  - Total, direct dollars or indirect dollars
  - Different F&A rates
  - Expenditures vs awards
- Types of spaces counted in the measurement
  - Assigned vs shared
  - Animal housing
  - Lab service areas

Variables in Numerator ($/nsf)



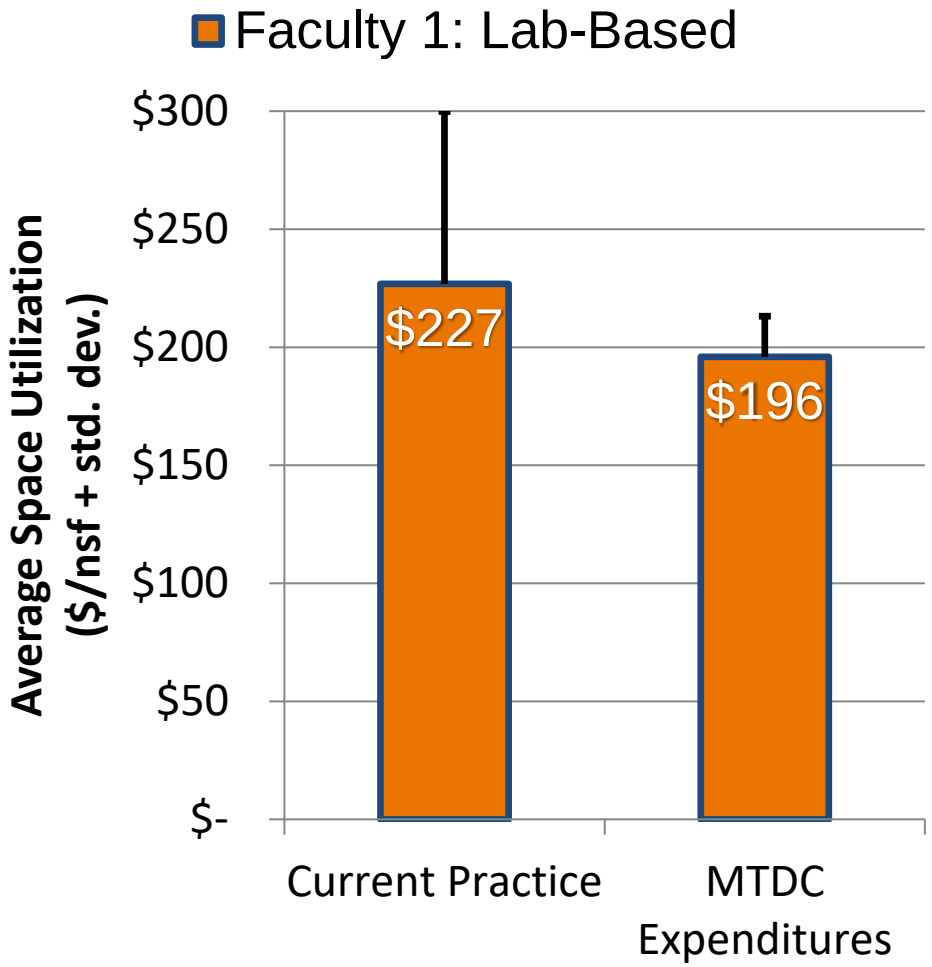
(n=8 SOMs)

Hypothesis 1	Space dollar densities are calculated similarly at different schools
Hypothesis 2	Using the same data, Schools will calculate similar or identical $/nsf values
Hypothesis 3	Space dollar densities calculated using MTDC Expenditures lead to similar or identical $/nsf values

MTDC Expenditures

- *Includes* direct salaries, wages, fringe benefits, materials and supplies, services, travel, up to the first $25K of each subaward
- *Excludes* indirect costs, equipment, capital expenditures, patient care charges, rent, tuition remission, scholarships and fellowships, subaward costs >$25K

Recalculating Using MTDC Expenditures in Numerator of $/nsf Metric



- The mean $/nsf differs by ~$31/nsf
- Standard deviation decreases from $73.01 to $17.20

n=8 SOMs

Faculty 2: Epidemiologist

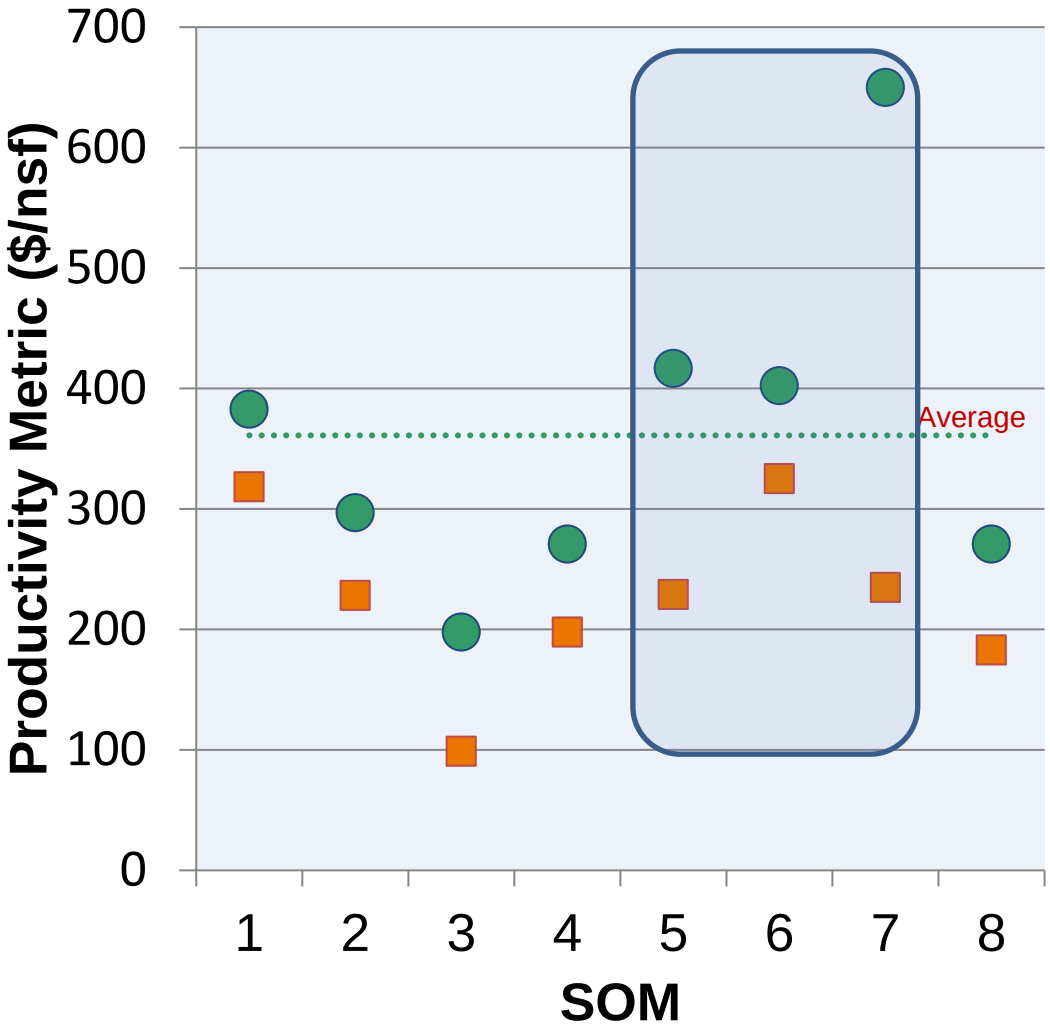
People:
4 data analysts, 1 data coordinator, 1 sample processing technician

Funding:
1 R01 ($250K direct + F&A)
10% salary on someone else's award ($35K direct + F&A)

Expenditures:
$225K direct +F&A
$225K MTDC + F&A
$35K salary coverage + F&A

Space (nsf):
400 assigned lab
140 assigned PI office
120 assigned support office
300 assigned cubicles
140 share of department admin

Faculty 2: Epidemiologist (range = $198 to $650/nsf)



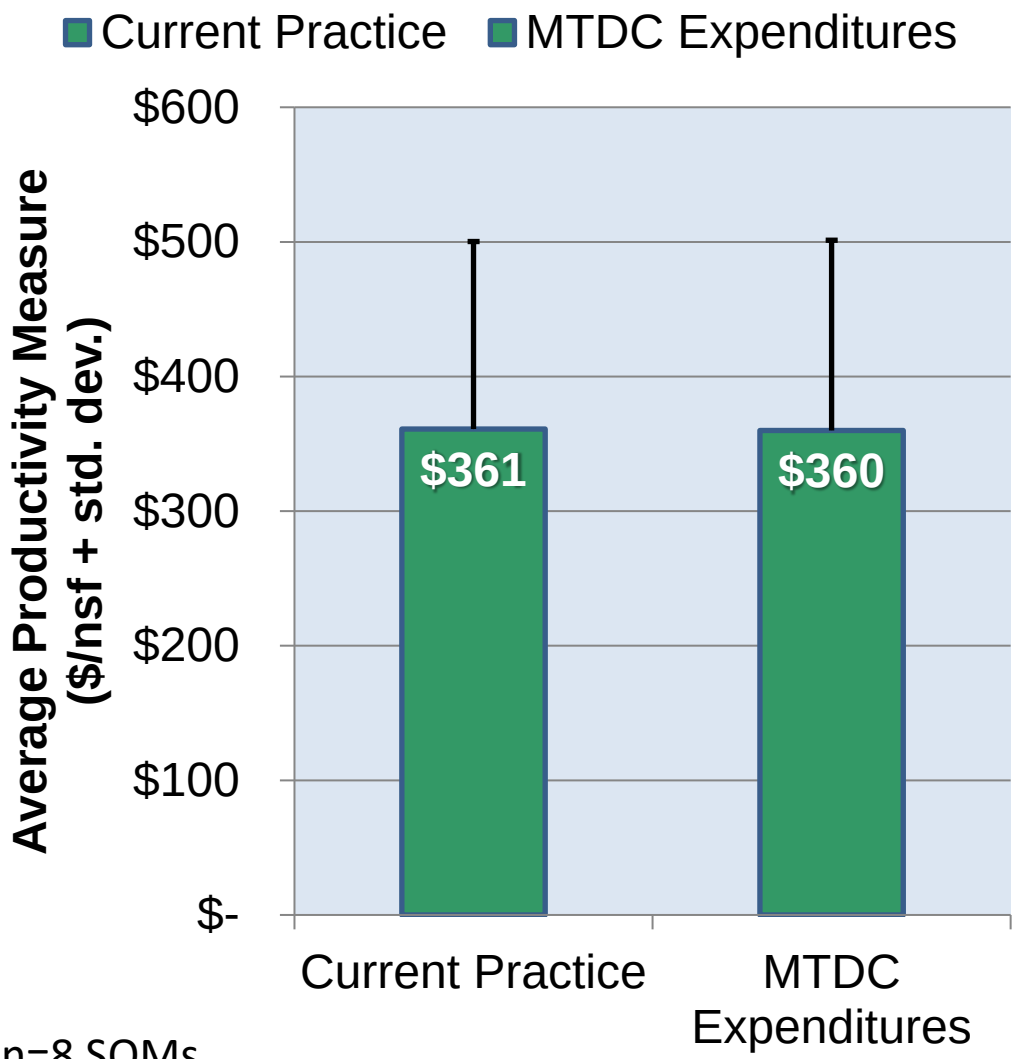
People:
4 data analysts, 1 data coordinator, 1 sample processing technician

Funding:
1 R01s ($250K direct + F&A)
10% salary on someone else's award ($35K direct + F&A)

Expenditures:
$225K direct +F&A
$225K MTDC + F&A
$35K salary coverage + F&A

Space (nsf):
400 assigned lab
140 assigned PI office
120 assigned support office
300 assigned cubicles
140 share of department admin

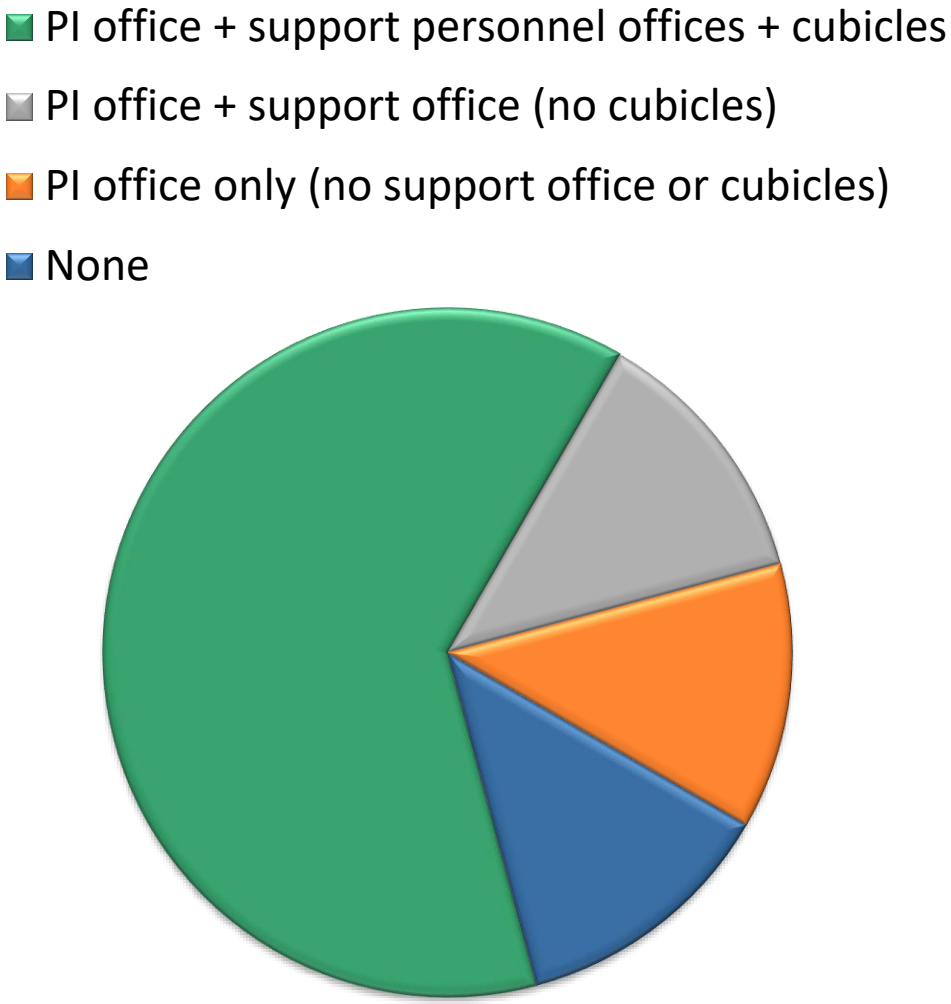
Recalculating Using MTDC Expenditures in Numerator of $/NSF Metric



n=8 SOMs

- The mean $/nsf values are similar
- Standard deviation **increases** from $139 to $141/nsf
- Variability isn't due only to numerator (dollars).
- What are the contributing space variables?

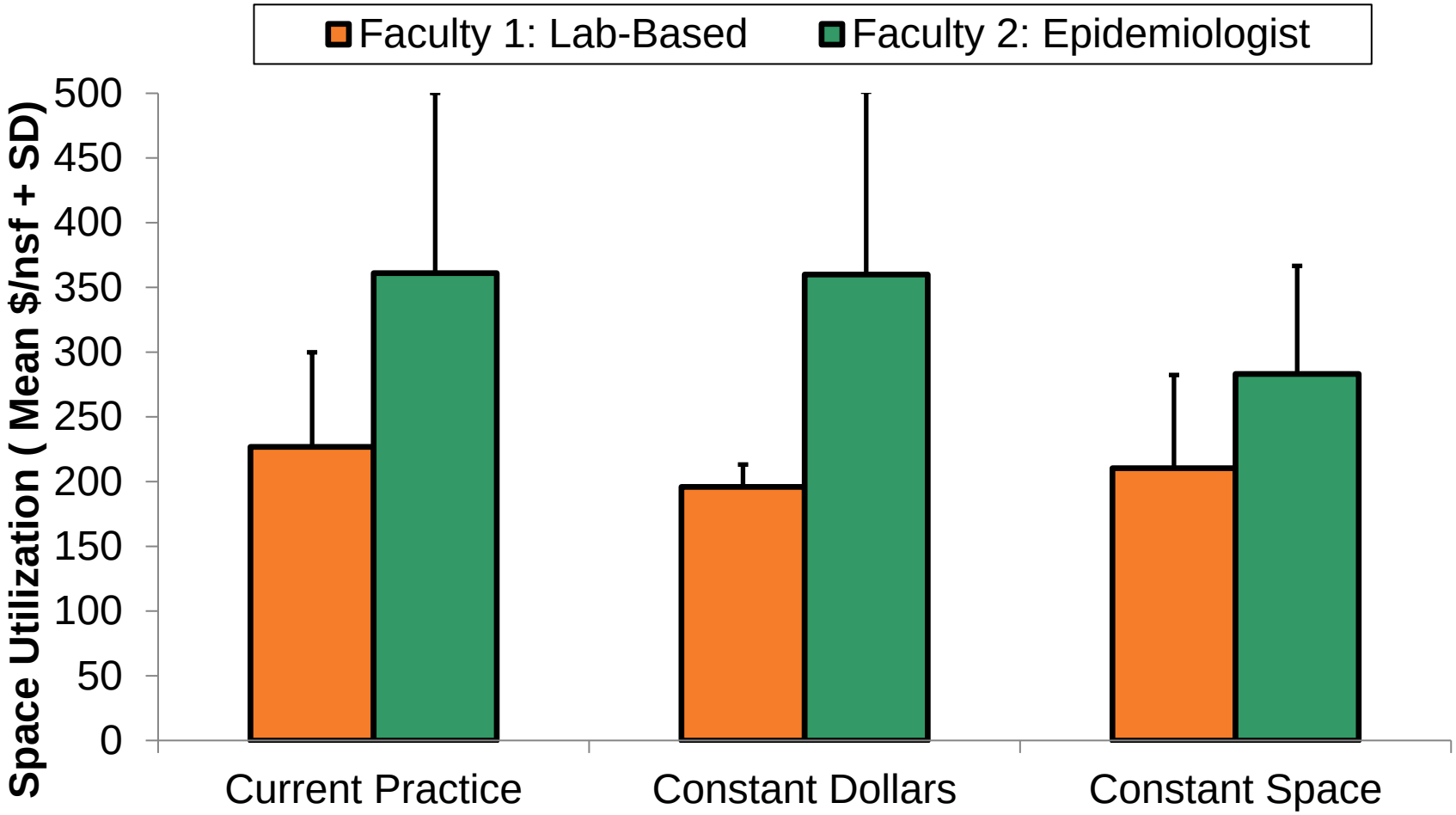
For “Dry Lab” Research, Space Types Included in $/nsf Denominator Are Variable



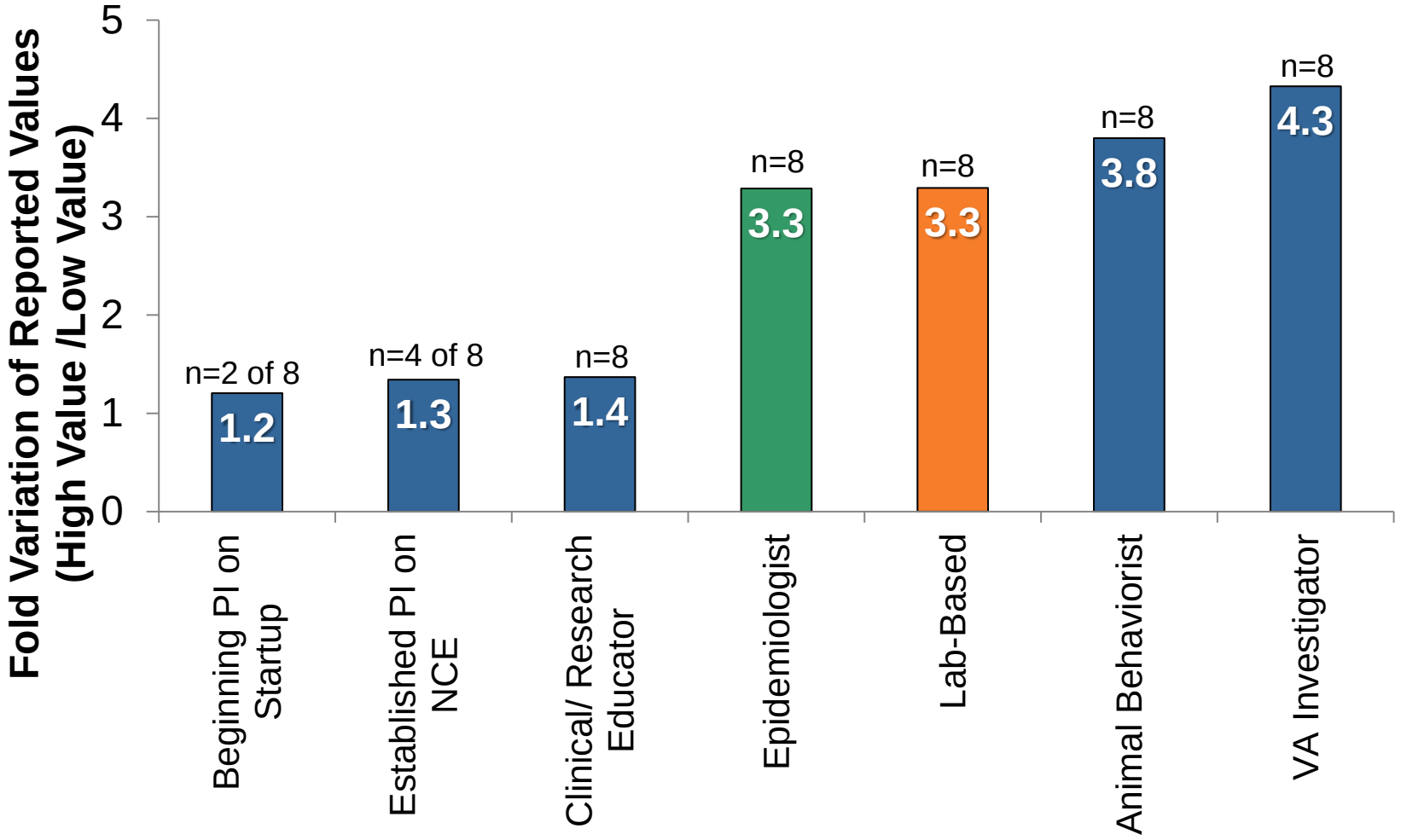
(n=8 SOMs)

Hypothesis 1	Space dollar densities are calculated similarly at different schools
Hypothesis 2	Using the same data, Schools will calculate similar $/NSF values
Hypothesis 3	Calculations using MTDC expenditures will lead to similar/identical $/nsf values
Hypothesis 4	Calculations using the same space components will lead to similar or identical $/nsf values

Recalculating Using Either Constant Dollars or Constant Space



Fold Variation of Reported Values ($/nsf) for Seven Hypothetical Faculty

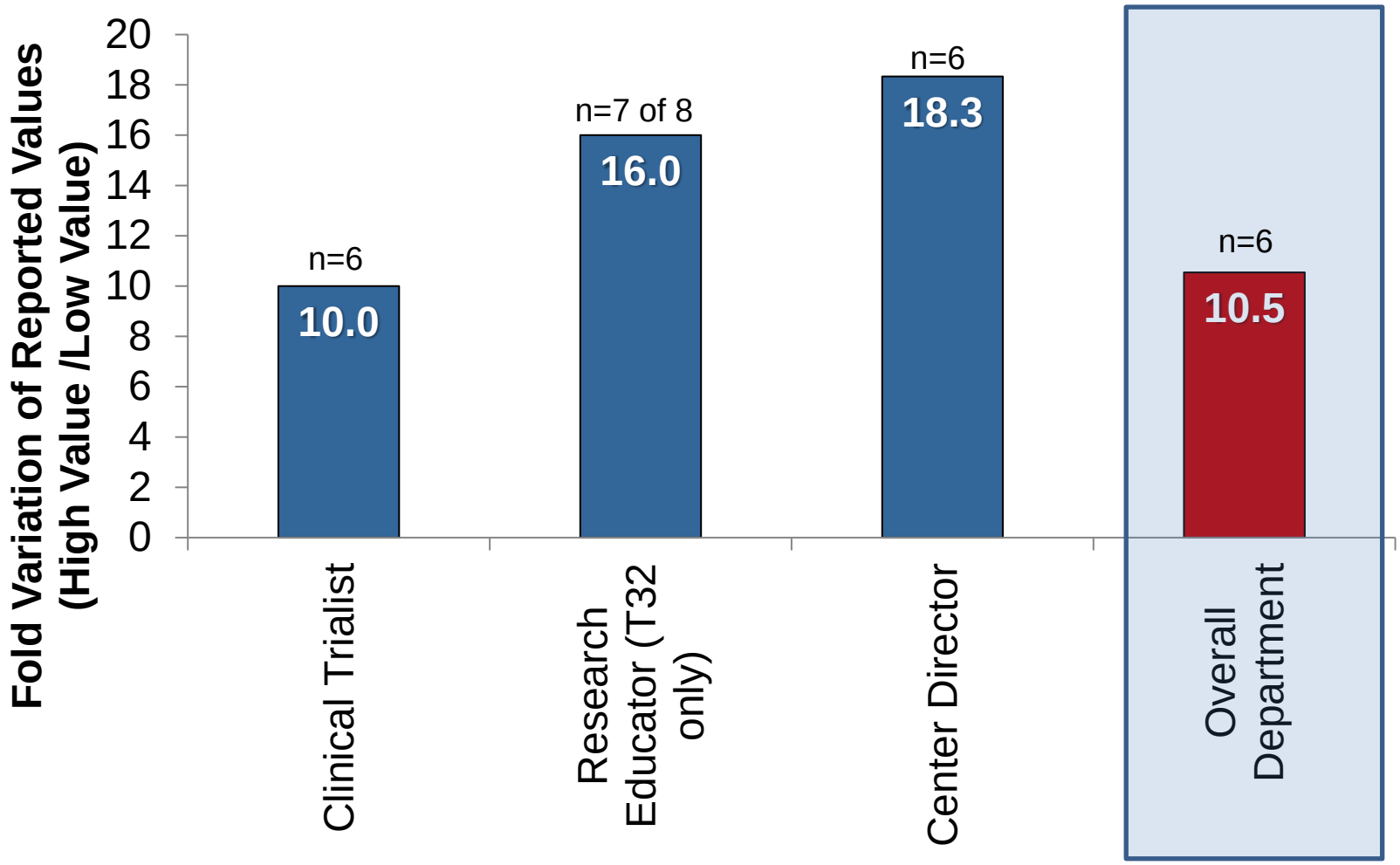


Note: Values of zero were excluded. Reported values as n= x of 8

Reasons for This Range of Variability

- Dollars (expenditures vs. awards)
- F&A rates differ between schools
- Included spaces – offices are problematic
- Misalignment of space and dollars
  - Some *exclude* clinical spaces but *include* dollars related to clinical research
  - Some *exclude* animal space but *include* the dollars for animal costs

Greater Fold Variation of Reported Values ($/NSF) for Other Faculty Phenotypes



What Is a 10-fold Difference?

50 pound dog *vs.*
5 pound puppy

1 ostrich egg *vs.*
2 chicken eggs

2-storey garage *vs.*
20-storey building

More Variables

- Sponsored instructional grants
  - T32s are not counted by all schools
- Centers
  - Dollars don't line up with space for Centers
  - Some schools don't include Center dollars or space as part of their current practice

Other Things We Learned

- Collaboration is important
  - but salary support on a collaborator's project is not valued in space metrics
- Some set $/nsf expectations for early-stage investigators
- None included department admin space
- Some use more than one metric
- Space quality is known but not part of metric

Major Conclusion

- Comparisons of “$/sf” across schools are meaningless (dangerous?) without a complete understanding of the methodologies used
- In other words, caveat utilitor! (let the user beware)

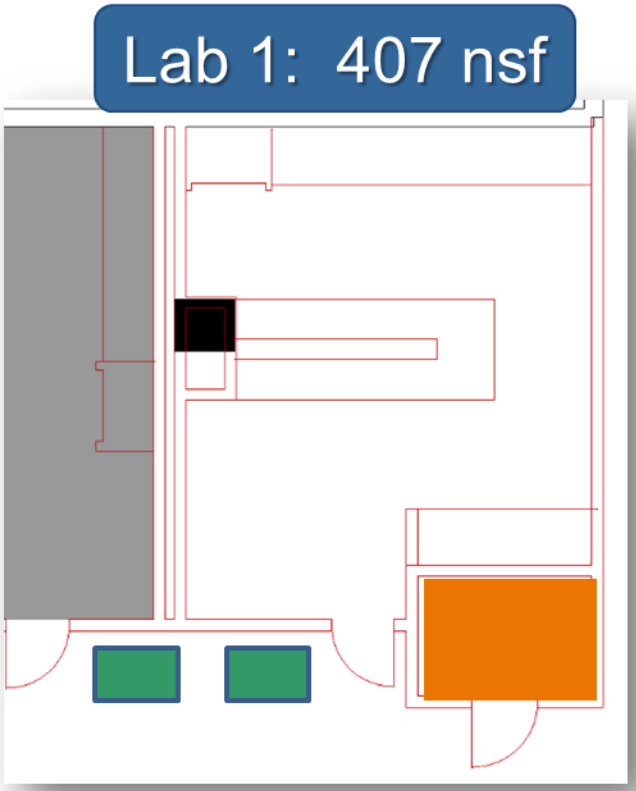
Recommendations for Internal Research Space Metric Discussions

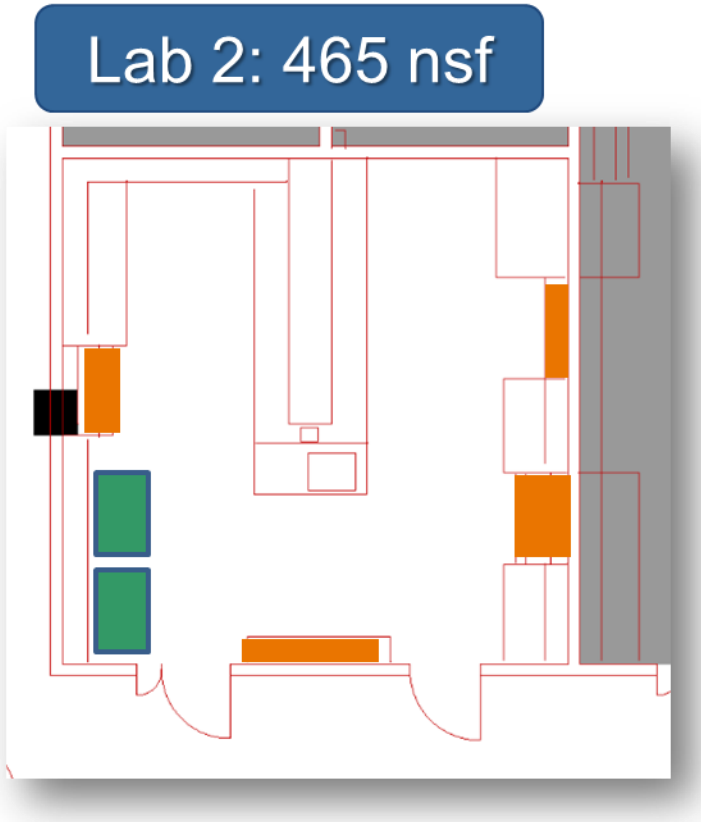
- Dollars and spaces should align
  - Animal research and animal housing
  - Clinical trials and clinics
  - VA awards and VA space
- If you use a dollar/nsf metric, use MTDC expenditures
  - Expenditures are better than awards – reflects activity
  - Reduces variances due to F&A rates by different sponsors
  - Eliminates non-research expenditures, off-site, & one-time costs
- Numbers should be a starting point for discussion

Other Information to Consider

- Career trajectory of faculty – crystal ball
  - is s/he on the rise or not?
  - is there room to grow if even more successful?
  - would a space change help (others)?
- Others in the group
  - trainees, staff, visitors, collaborators
- Location, location, location
  - Are faculty near the equipment, people, services that they need for greatest success?
- Quality and physical layout
  - Does the assigned space support the program?

Layout Can Make a Difference in Metrics





freezer

supplies

~15% difference in $/nsf metric

No real difference in function

Other Considerations

- Are facilities, floors, and rooms being used well?
- Do areas support and accelerate discovery and high-impact work?
- Do areas pose risks to people or research?
- If collaboration is important, how should it be valued?

How Should Shared Facilities Track?

- Do core facility spaces track to a department and/or faculty member?
- If at the department - does managing a core unfairly impact $/nsf space density values?
- Should these track to the Dean's office?

What About Team Science?

- Do financial expenditures, credit for awards, and/or space track to the leader or to team members?
  - Is faculty salary covered, or effort, on projects others lead valued?
  - Are metrics consistent with promotion or tenure policies?
  - Do metrics support faculty satisfaction goals?

Moving From Data to Action

Can we use our business systems to:

1. Know when space is not being used
2. Eliminate the stockpiles (old equipment)
3. Identify failing building components early
4. Eliminate on the job injuries from unsafe conditions

Final Thoughts

- Institutional assets should be used well.
- Metrics should inform decisions, but should not be a substitute for decisions.
  - Hicks, D. et al. *The Leiden Manifesto for Research Metrics*. 2015, Nature 520:429-431.
  - Rigid use may lead to undesired, unintended messages.
- Other types of information should be used with metrics.
- Consistency reinforces transparency and a perception of fairness.

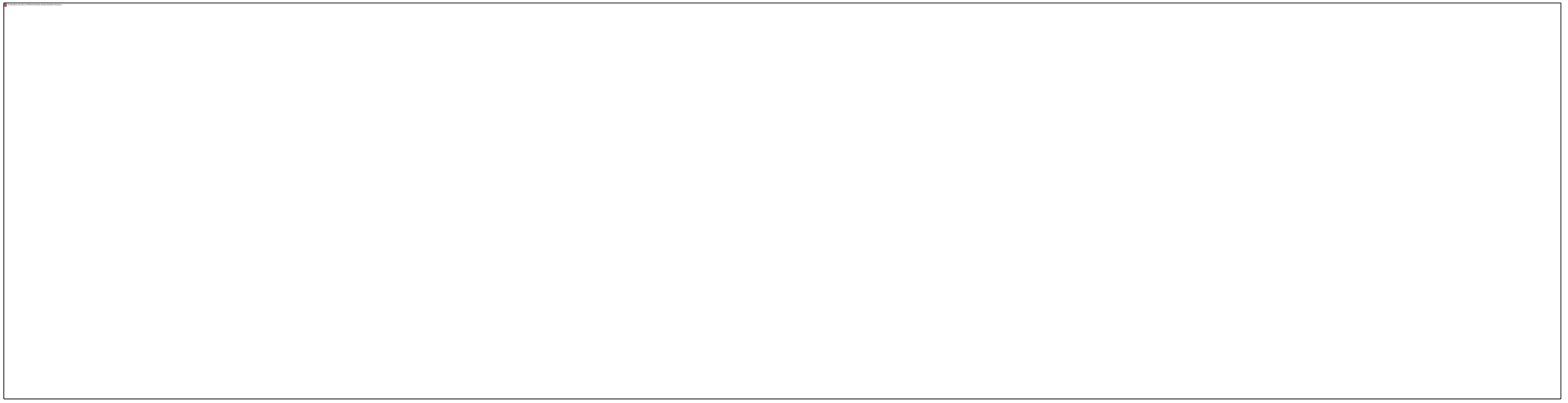
Acknowledgements

- **Mary Ockenden**
  Associate Vice President &
  Director Medical Center Space Planning
  University of Rochester

- **Angela Souza**
  Senior Director, Planning and Facilities
  The University of Arizona
  College of Medicine, Tuscon

How Can the GIP Work With You?

Join Us!



Coming in Fall, 2017 – Space Symposium