

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Research Methods

- Summary of Procedures
- Struggles
- Arrival at Consistency

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Project Report Format

Typologies

Questionnaire Responses

NSF:DGSF

NSF:DGSF

Totals & BGSF Items

All projects have consistent formatting and department lists

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Lessons Learned

- Consistency in Department Names
- Methodology Revisions to Projects
- Procedure for Checking Accuracy
- 1% Rule of Thumb

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Methodology

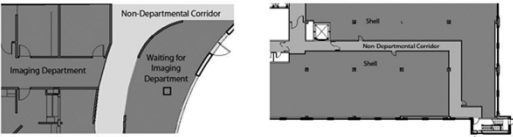
- Begin With AIA 101-95
- Canadian Standards Association
- Measurement vs. Interpretation
- Additions to Resolve Ambiguity
- Arriving at Consistency

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Non-Departmental Corridors

Corridors not in the DGSF are called out as non-departmental corridors in the BGSF Line Items. The boundaries for these corridors are measured from the exterior face of the department boundary wall to the interior face of the exterior wall.



2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

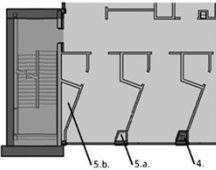
Exterior Wall

4. Exterior Wall Thickness includes the exterior wall material, all columns along the perimeter of the wall and any furr-outs along these columns.

Furr-outs

5.a. If furr-outs do not contain columns, the area measured belongs to the department not to the exterior wall thickness.

5.b. Area measured as part of the adjacent department, not as part of the stairs or elevators.



2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Exterior Wall Comparison

Project Name	Original Measurement: Includes columns along exterior wall	Alt. Measurement: Straight line at columns	Difference in Wall Thickness (sqft)	DGSF:BGSF Orig. vs Alt.	NSF: DGSF Orig. vs Alt.
G (Average)	4.43%	4.08%	564 sqft out of 219,925 (.256%)	1.32 vs 1.32	1.40 vs 1.40
V (Low (Bed tower)	3.72%	3.48%	672 sqft out of 374,861 (.179%)	1.31 vs 1.31	1.46 vs 1.47
F (High)	5.77%	5.35%	757 sqft out of 252,005 (.30%)	1.39 vs 1.39	1.46 vs 1.46

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

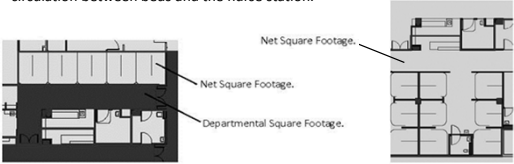
Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Open Bay Areas

The NSF for these spaces will not extend beyond the curtain line that defines the space and the corners will be squared off. All circulation between patient beds and nurse stations will be designated as DGSF.

VS.

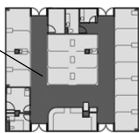
The NSF for these spaces will be considered a suite. The NSF will be drawn as one large space that includes the bays for bed, the nurse station, and the circulation between beds and the nurse station.



2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

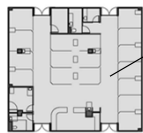
Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

PACU Comparison

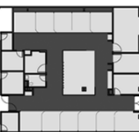


DGSF
1.58

VS.




ALL NSF
1.06



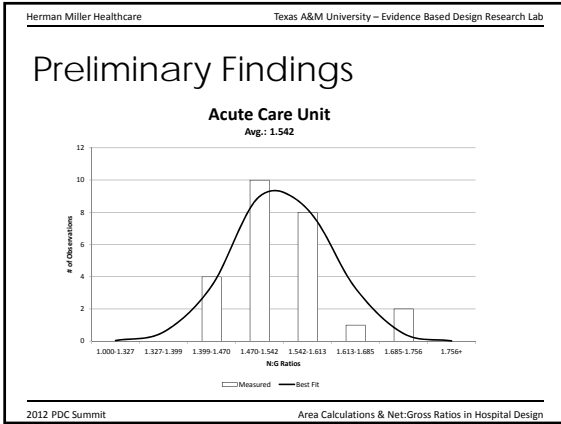
1.60

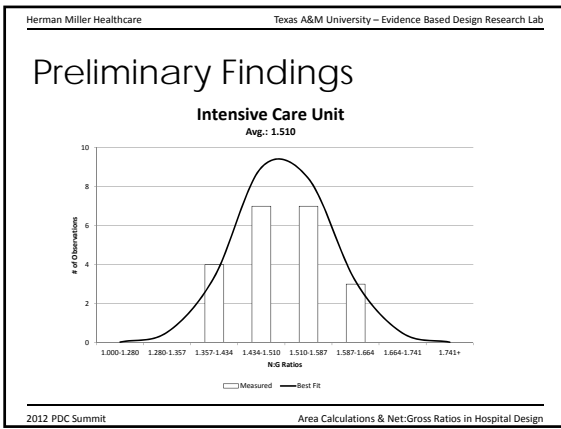
VS.

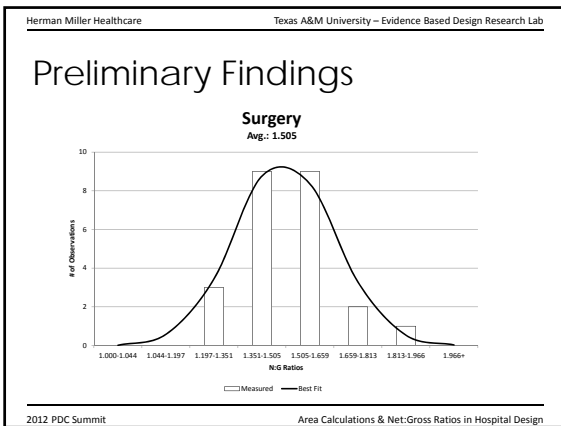


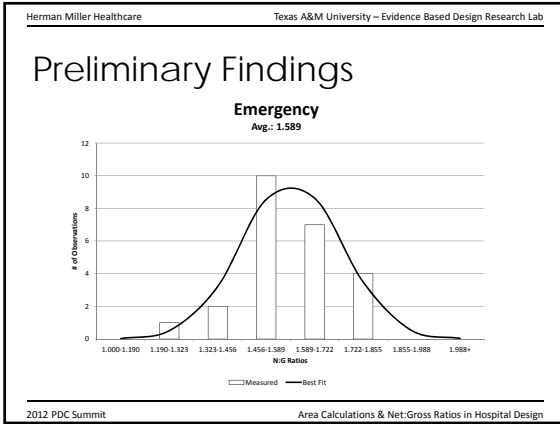
1.07

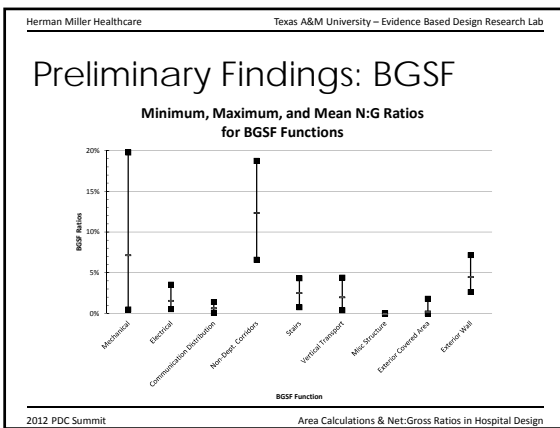
2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design











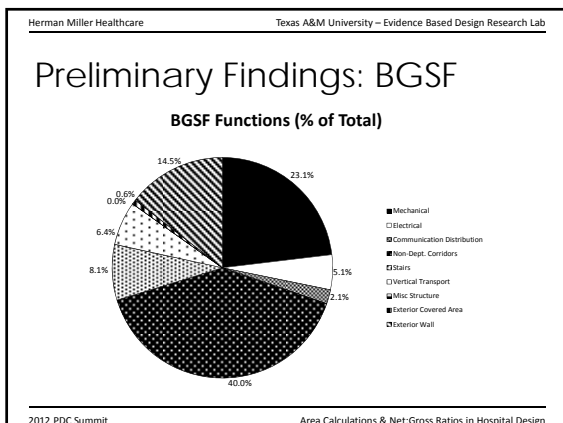
Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

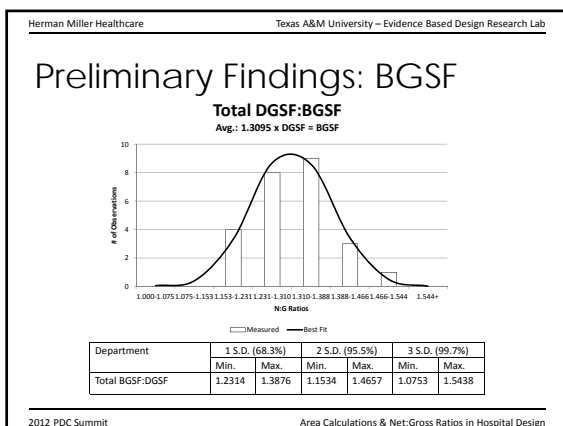
Preliminary Findings: BGSF

Table 5: Mean, Standard Deviation, Minimum, and Maximum values for the BGSF-DGSF ratios, and SD/Mean ratio for BGSF areas:

	N	Mean	Std. Dev.	Minimum	Maximum	SD/Mean
Mechanical	25	7.15%	4.44%	0.49%	19.79%	62.1%
Electrical	25	1.58%	0.80%	0.54%	3.54%	50.6%
Communication distribution	25	0.65%	0.31%	0.10%	1.41%	48.6%
Non-dept. corridors	25	1.37%	3.03%	6.60%	18.75%	24.5%
Stairs	25	2.52%	0.91%	0.77%	4.33%	36.0%
Vertical transport	25	1.99%	0.97%	0.39%	4.40%	48.7%
Misc. structure	25	0.00%	0.01%	0.00%	0.04%	500.0%
Exterior covered area	25	0.20%	0.47%	0.00%	1.81%	239.1%
Exterior wall	25	4.49%	1.02%	2.63%	7.18%	22.7%
Total BGSF-DGSF	25	1.309%	0.0781	1.1829	1.5221	25.2%

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design





Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Sensitivities

- Differences in methodologies among firms and TAMU
- The need for consensus
- Differences may impact N:G factors, but not the building total area.
- BGSF line items have the biggest differences between our past and current measurements
- Arrival at consistency

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Preliminary Conclusions

- Many departments are at or near the old rules of thumb.
- Imaging and Surgery seem more compact than in the past.
- Some departments exhibit wider variation than others (i.e., Surgery, Imaging, ED, PACU).
- Rooftop mechanical systems impact the BGSF when compared with penthouse designs.

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Preliminary Conclusions

- “Half-area” measurements for overhangs, canopies, and partially enclosed space may not give the best explanation of what exists
(measuring convention vs. accuracy).

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Preliminary Conclusions

- Breakdown of BGSF components is potentially important new information.
- Greatest BGSF variation is for Mechanical and Non-Departmental Corridors.
- Many more hospitals need to be measured before significance can be confirmed.

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Limitations

- Sample Size
- Historical Rules of Thumb
- Number of Firms as Sources
- Quality of Submission Documents
- Few Teaching Hospitals
- Difficulties Associated with Partial Projects

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

Call for Additional Projects

- Need to Enlarge the Pool
- Increase by Type (Teaching Hospitals)
- Full replacement facilities vs. additions

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design

Herman Miller Healthcare Texas A&M University – Evidence Based Design Research Lab

How to contact us?

Kirk Hamilton, khamilton@arch.tamu.edu, 979.862.6606

Sarel Lavy, slavy@arch.tamu.edu, 979.845.0632

Thank You!

2012 PDC Summit Area Calculations & Net:Gross Ratios in Hospital Design
