Benchmarking Hospital Facility Expenses: Improving Budget Justification and Forecasting

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Introduction

- PhD Construction Management – Arizona State University
- MS Real Estate – Florida International University
- BS Facilities Management – Brigham Young University

- Professor at Washington State University with research program focused on healthcare facility operations

- 15+ years industry experience leading national and multi-national facility, construction, and real estate programs in healthcare, defense, technology, and manufacturing

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Aging Infrastructure Crisis

- **Without billions of additional dollars being invested in facility infrastructure, the majority of hospitals in the United States will exceed their useful life by 2031**
  - **American Hospital Association**

How did we get here?

1. **Ongoing margin pressures impacting hospital facility operating budgets**
   - **Growing deferred maintenance backlogs**
   - **Compressed asset lifecycle**

2. **Lack of information to understand "return" on hospital facility capital investment**
   - **Limited resources likely going to revenue generating investments**
     - **i.e. new MRI vs. new Roof**

Research by Call et al.

- New tools available to support healthcare facility leaders in attaining resources towards a safe, efficient, and sustainable environment of care:

1. Rationalize facility operating budgets and staffing

2. Justify hospital infrastructure renewal

Deloitte Study…

- **What concerns are keeping hospital administrators up at night?**

Hospital CEOs Top Concerns

(Deloitte 2017 survey of US health system CEOs)

1. Changing Medicaid reimbursement
2. Transition to value-base care
3. Improving margins
4. Recruiting and retaining competent leaders

Facility *Cost Center

- **Facility budgets a primary target for reductions**
  - **A large cost center for hospitals**
  - **Typically not revenue generating**
    - **Plant, EVS, Laundry/Linen, Dietary, Safety/Security, Transportation, Clinical Engineering…**

- ***This is an accounting term, but the narrative around "facilities" should be how it adds value**

Changing the Narrative: Qualitative Value of Facilities

1. **Improves employee recruitment and retention**

2. **Associated to patient satisfaction (overall HCAPS scores)**

3. **Improves "brand" perception/value**
   - **i.e. curb appeal**

Changing the Narrative: Quantitative Value of Facilities

Impacts to the finances of the healthcare business

1. **Baseline "cost of doing business"**
   - **Via CMMS (actual) or benchmarking (comparison)**

2. **ROI**
   - **Adequate operating budgets**
   - **(no) deferred maintenance**
   - **Reliability centered maintenance**
   - **Staff training**

Benchmarking Facility Opex: "Cost of Doing Business"

1. **Internal**
   - Develop and measure internal processes and standards
     - Hint: ensure accounting system breaks out costs by facility
2. **External**
   - Compare processes and standards to peers
3. **Identify performance gaps**
4. **Initiate and manage performance improvements**

Benchmarking Adoption

- **Even though most healthcare FMs recognize value, few hospitals benchmarks their facility operating expenses and/or staffing levels**

Why?

Why Not Benchmark?

Many existing benchmarks are dated, difficult to interpret, and/or not comprehensive

- ASHE O&M Benchmarks for Health Care Facilities 2010
  - Data 12+ years old
  - Only metrics are GSF and "adjusted patient days":
    - Adjusted patient days is calculated by dividing total charges by inpatient charges, then multiplying by the number of inpatient days and admissions. (Gross Revenue/Inpatient Revenue) x Inpatient Patient Days = Adjusted Patient Days
  - No facility salary/compensation data

Caution: IBM Action OI

(Good News…New Benchmark)

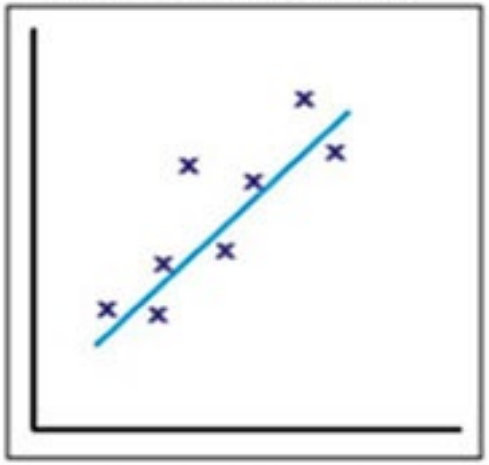
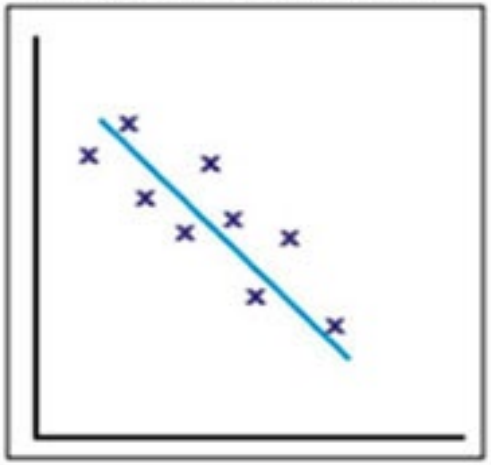
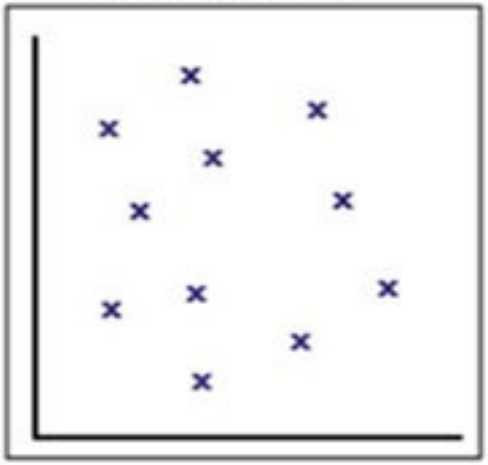
- **IFMA (2020) O&M Healthcare Benchmark Report**

Traditional Benchmarking Approach (GSF)

- **Example:**
  - **Electricity expense per GSF**
  - **On average, hospitals spend ~$2.00 on electricity for every 1 GSF (2:1)**
  - **Perfect correlation would be if every hospital spent $2.00 per 1 GSF, but there are *other factors* that affect a hospital's electricity expense:**
    - **location**
    - **infrastructure age**
    - **medical equipment/services**
    - **climate…**

Is there a better metric, other than GSF, to determine Facility expenses that “holds it ratio” irrespective of other factors?

Correlation ("holding its ratio")

Positive correlation	Negative correlation	No correlation
		
The points lie close to a straight line, which has a positive gradient.	The points lie close to a straight line, which has a negative gradient.	There is no pattern to the points.
This shows that as one variable **increases** the other **increases**.	This shows that as one variable **increases**, the other **decreases**.	This shows that there is **no connection** between the two variables.

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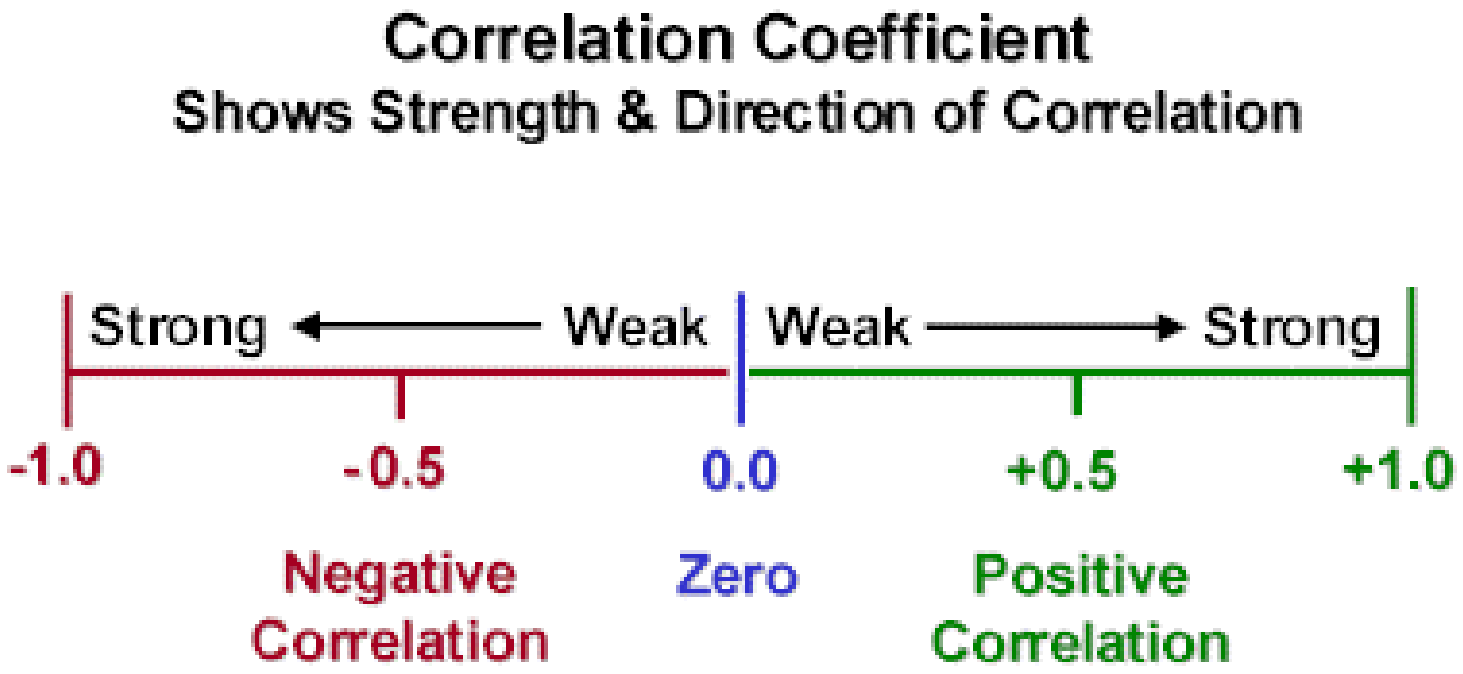
Correlation Strength



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Correlation Coefficients – Large Hospitals

Cost account	Available beds	Patient days	Admissions	GSF	PP&E
Total plant operating expense	.777	.791	.758	.788	.829
Maintenance	.628	.656	.574	.456	.563
Utilities	.685	.736	.674	.849	.864
Salary, wages, and benefits	.699	.726	.636	.626	.850
Depreciation	.689	.522	.632	.725	.622
Other	.662	.700	.712	.494	.516
Total housekeeping operating expense	.868	.907	.837	.849	.831
Salary, wages, and benefits	.842	.870	.807	.772	.726
Supplies	.285	.325	.251	.323	.706
Other	.267	.283	.277	.431	.354

Correlation Coefficients – Small Hospitals

Cost account	Available beds	Patient days	Admissions	GSF	PP&E
Total plant operating expense	.411	.242	.720	.430	.634
Maintenance	.399	.215	.669	.360	.562
Utilities	.285	.148	.468	.744	.546
Salary, wages, and benefits	.274	.128	.651	.456	.662
Depreciation	.405	.383	.546	–.200	–.020
Other	.414	.335	.670	.314	.641
Total housekeeping operating expense	.552	.382	.711	.666	.635
Salary, wages, and benefits	.392	.215	.605	.724	.604
Supplies	.435	.334	.485	.393	.661
Other	.393	.477	.383	–.071	–.049

Key Findings

GSF is an unreliable metric for hospital facility cost benchmarking in small hospitals

Best overall metric for facility cost benchmarking:

1. **Plant, Property, and Equipment (PP&E)**
2. **Admissions**

New RATIO Model

Plant cost account	Ratio for operating expense to metric				
	Plant, property, and equipment	Admission	Gross square feet	Available bed	Patient day
Total OpEx	$0.036*	$1,217*	$21.81	$57,911	$229.17

"Total Opex" roll-up costs =

- Purchased Services
- Utilities
- Compensation (salaries, wages, benefits)
- Depreciation

* Strong correlation ($r > .5$).

Using the New Ratio Model (Operations)

- **Rationalize existing Facility Opex**

Example:

- **For every $1 of PP&E, the average medical center spends ~4 cents on plant operations**

Using the New Ratio Model (pre-construction)

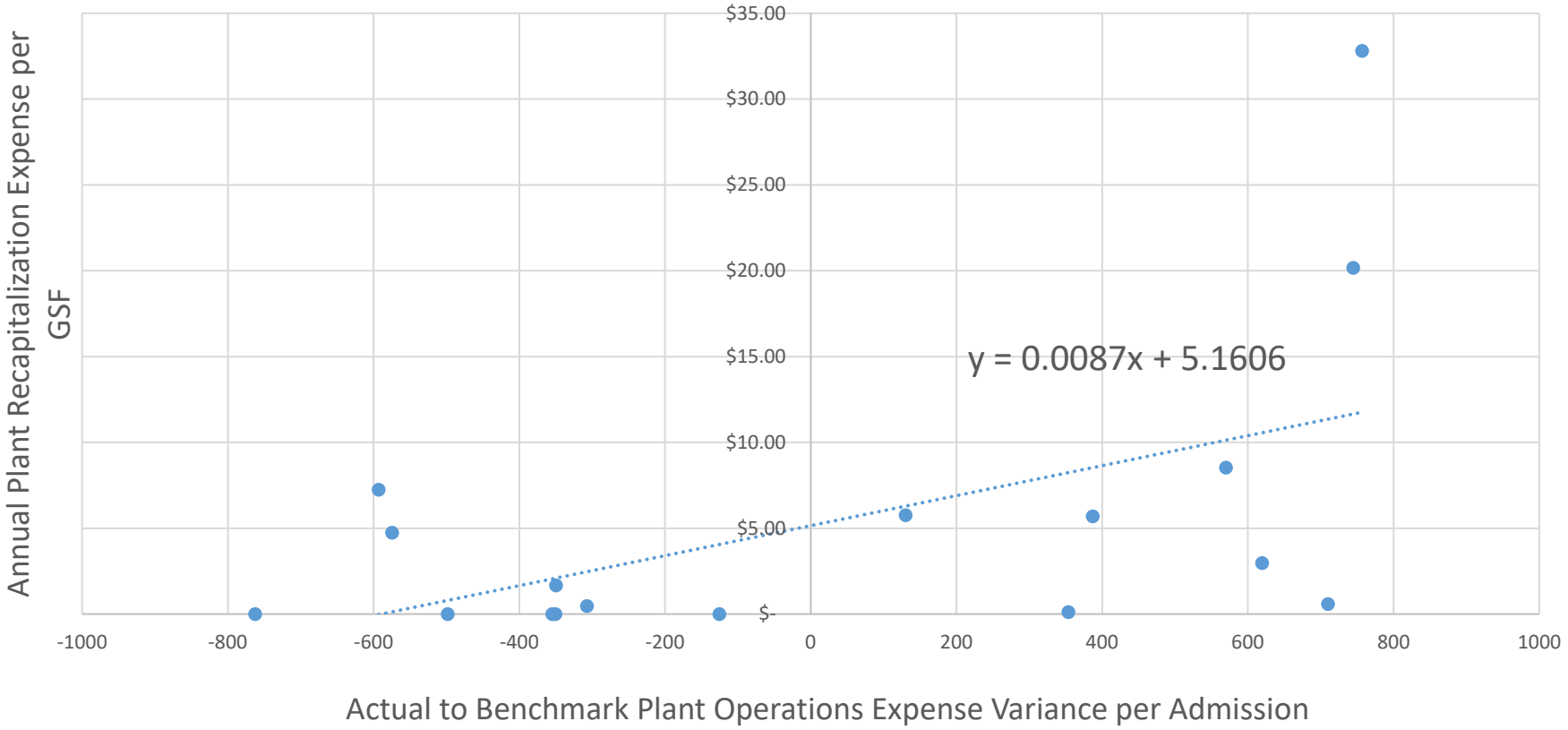
- **PREDICTING future Facility Opex based on *planned construction***
  - **Balance sheet = "Construction Work in Progress (CWIP)" is just PP&E "not yet in service"**

Example:

- **For every $1 of capital budgeted, you should plan on ~4 cents of plant operating expenses ANNUALLY**

New Linear Model

- **Association between hospital facility opex and capital renewal spending**



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Using the New Linear Model (Capital)

- **Hospitals below benchmarks for facility operations spend significantly more in facility capital replacement costs:**

Plant Maintenance Status	Annual Plant Recapitalization Expenses per GSF
Above benchmark	$0.86
Below benchmark	$6.27

Baseline is about $5/GSF annually

Using Linear Model (ROI)

- **Calculate return on investments in facility operating budget from savings in capital replacement costs**

Using Linear Model (Deferred Maintenance)

1. **Predicting existing backlog can be done with high reliability *prior to spending $$$ on FCA* to ensure budget alignment with C-suite:**

= (GSF * age of facility in years * $5) – facility capital replacement spending since occupancy

Assuming facility opex at benchmark

- **This backlog can be considered a "borrowing" cost and thus calculate a return from reducing**
- **Other risks should be considered including revenue impact to unplanned shutdowns**

2. **Forecasting capital costs:**
   - **For new facilities that spend less capital in early years, this can be used to "bank" future costs as balance sheet liability**

How can healthcare facility leaders effectively manage the built environment amidst aging infrastructure and budget pressures?

Communicate the Value of Facilities!!!

Using the New Ratio and Linear Models

1. Externally benchmark “cost of doing business” to rationalize facility operating expenses/staffing levels
2. Predict future facility operating expenses /staffing levels for planned growth
3. Show potential financial returns from investments (increases) to facility operating expenses/staffing levels
4. Calculate deferred maintenance backlog and internal “borrowing” costs/risks
5. Forecast ongoing capital replacement costs
6. Analyze ROI for transition to Reliability Centered Maintenance program

Thank you

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