

15<sup>th</sup> ANNUAL FACILITIES OFFICERS CONFERENCE  
PLANNING FOR HOUSING & SUPPORT FACILITIES

PRESENTED BY PAUL BRAILSFORD | OCTOBER 28TH, 2011

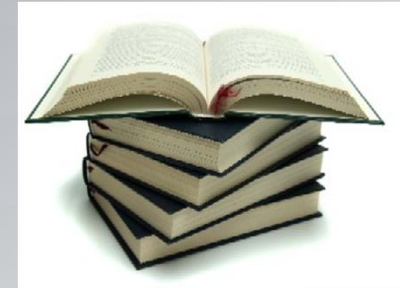


# AGENDA

- ❖ Introduction
- ❖ Studying vs Planning
- ❖ Managing Outcomes
- ❖ Understanding Demand
- ❖ Predictive Modeling
- ❖ Q & A

# STUDYING VS. PLANNING

- ❖ Studying is “The Application of Mental Faculties to the Acquisition of Knowledge”
- ❖ Planning is “The Process of Formulating a Program of Action”



Intellectual Curiosity



Targeted New Reality

# STUDYING VS. PLANNING

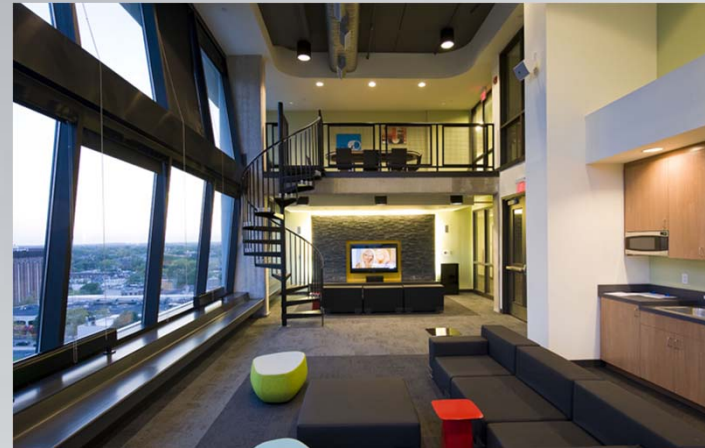
❖ Planning is “The Process of Formulating a Program of Action”

» Action => Investment

» Investment

• Value ← Maximize

• Risk ← Mitigate



Value Mitigates Risk

# STUDYING VS. PLANNING

## Key Risk Categories

- ❖ Supply / Demand Risk
- ❖ Price / Value Risk
- ❖ Demographic Risk
- ❖ Alternative Product Risk
- ❖ Culture Evolution Risk
- ❖ Financing Risk
- ❖ Operating Cost Risk
- ❖ Management Risk

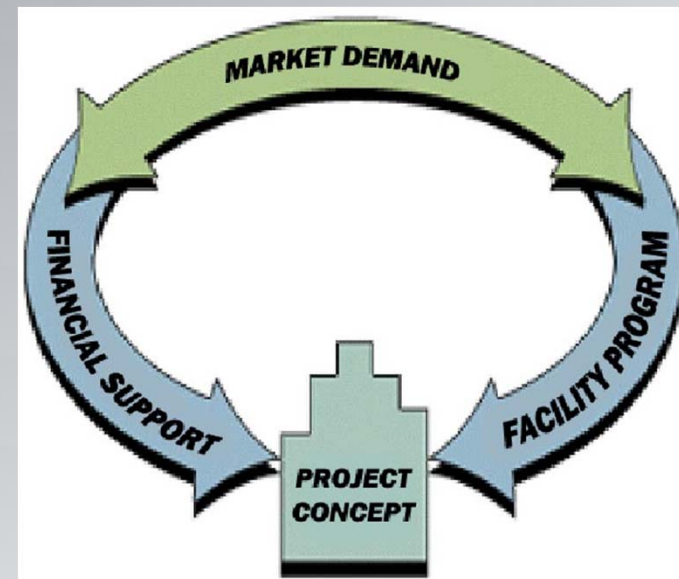
Predictive Analytics  
are the Foundation  
of a Solid Risk  
Mitigation Plan

# STUDYING VS. PLANNING

## Understanding Value – *two types*

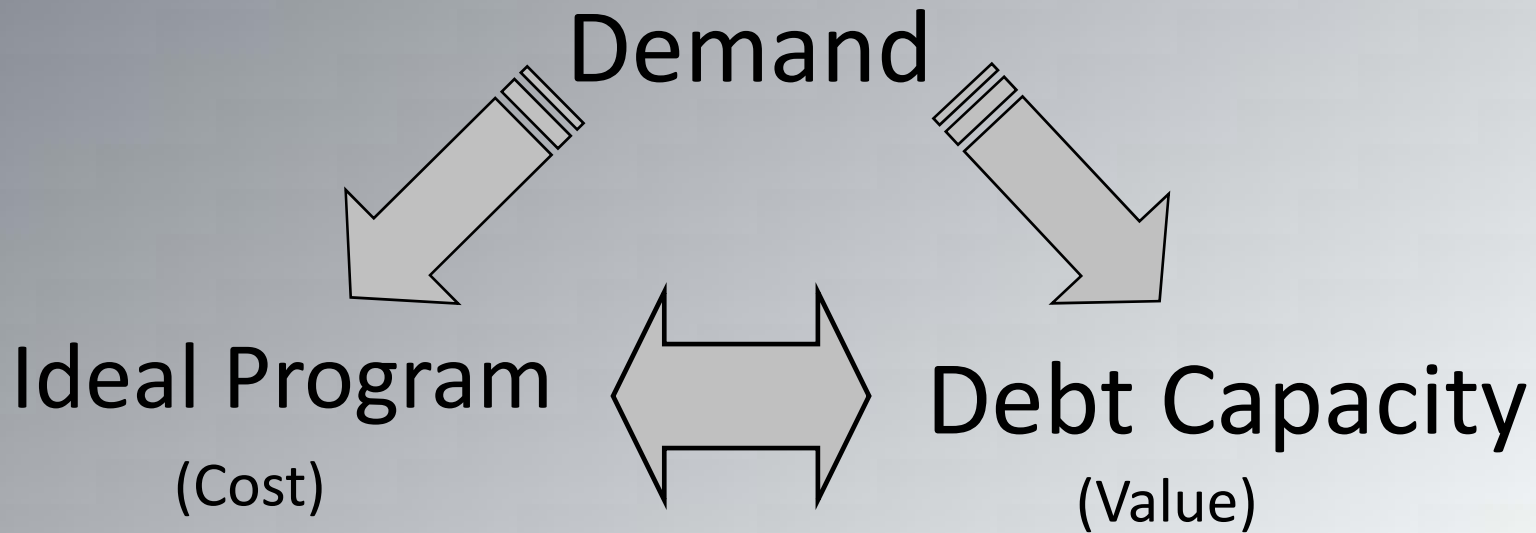
- Residual Land Value
- Strategic Asset Value

Residence halls, recreation centers, student unions and related mixed-use facilities are perfect targets for value creation because they generate revenue.



# STUDYING VS. PLANNING

Residual Land Value



*Value must exceed cost*

# STUDYING VS. PLANNING

## Calculating Residual Value

Dividing the NOI by the Cap Rate yields the project's capitalized value.

**NOI** = Net Operating Income (Revenue less Mandatory Operating Expenses)

**Cap Rate** = (Cost of Debt x % of Debt) + (Cost of Equity x % of Equity)

**Example:**  $(6.25\% \times .75) + (8.5\% \times .25) = 6.81\%$



# STUDYING VS. PLANNING

## Calculating Residual Value

Example: NOI = \$1,000,000

Cap Rate = 6.81%

Value = \$14,678,899 ( $\$1,000,000 / 6.81\%$ )

Subtracting Project Cost from Project Value Determines Residual Value.

Project cost = \$13,900,000

Residual Value = \$778,899 ( $\$14,678,899 - \$13,900,000$ )

# STUDYING VS. PLANNING

## Strategic Asset Value

- Educational Outcomes
- Enrollment Management
- Campus Community

Strategic Asset Value Generates Institutional Will & Defines Required Financial Performance

# STUDYING VS. PLANNING

## Institutional Debt Capacity Dynamics

- ❖ Marginal Debt Capacity Decreases with Increased Debt.
- ❖ Revenue Generating Projects with Positive Residual Value Increase Debt Capacity.
- ❖ High Value Strategic Assets Increase Debt Capacity and Credit Quality Over time.

# MANAGING OUTCOMES

The future is not a result of choices among alternative paths offered by the present, but a place that is created-created first in the mind and will, created next in activity. The future is not some place we are going to, but one we are creating. The paths are not to be found, but made, and the activity of making them, changes both the maker and the destination

*John Schaar*



# MANAGING OUTCOMES

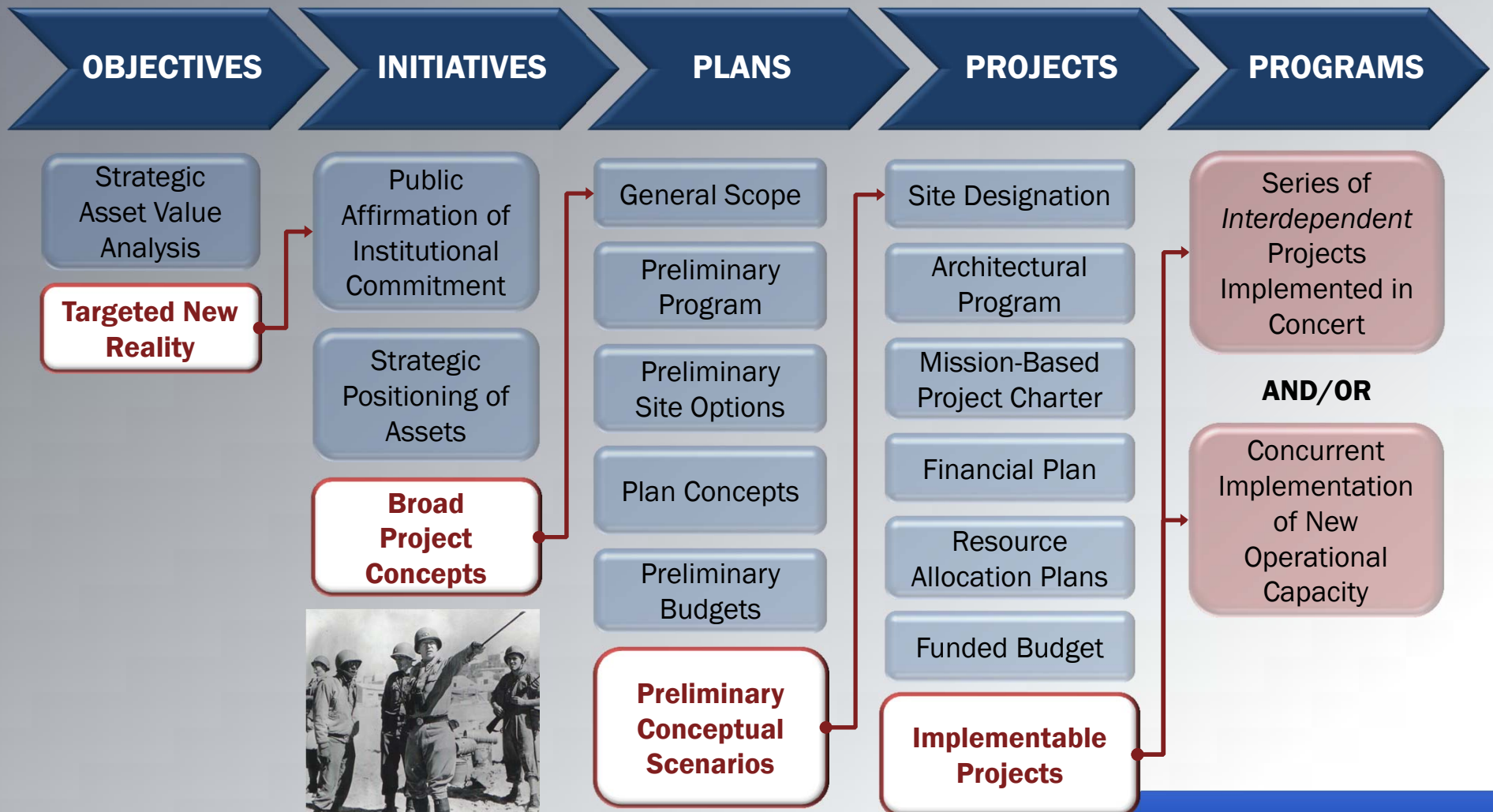
Defining  
feasibility in the  
context of value  
maximization

It's a  
reconciliation  
process

- » Concept / Mission
- » Market Demand / Facility Program
- » Facility Program / Site
- » Site / Budget
- » Program / Budget
- » Quality / Budget
- » Program / Patron Capacity
- » Patron Capacity / Revenue Projections
- » Revenues / Market Depth
- » Budget / Cost
- » Cost / Debt Capacity
- » Revenues / Expenses
- » Debt Capacity / Expenses
- » Mission / Risk Tolerance
- » Risk Tolerance / Ownership Structure
- » Ownership Structure / Capitalization
- » Capitalization / Risk Capacity

# MANAGING OUTCOMES

## “Projectization” Continuum



# MANAGING OUTCOMES

## OBJECTIVES

- » Stakeholder Interviews
- » Demographic Analysis
- » Intercept Interviews
- » Strategic Asset Value Analysis (SAV) / Visioning

- » Concept / Mission
- » Market Demand / Facility Program
- » Facility Program / Site
- » Site / Budget
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# MANAGING OUTCOMES

OBJECTIVES

INITIATIVES

- » Focus Group Interviews
- » Quick & Dirty Program & Financial Modeling
- » Competitive Context Analysis

- » Concept / Mission
- » Market Demand / Facility Program
- » Facility Program / Site
- » Site / Budget
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# MANAGING OUTCOMES



- » Web-based Survey
- » Demand-based Programming (DBP)
- » Comparable Facilities Analysis / Supply Inventory
- » Detailed Financial Model

- » Concept / Mission
- » Market Demand / Facility Program
- » Facility Program / Site
- » Site / Budget
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# MANAGING OUTCOMES



- » Enhanced Financial Modeling
- » Site Selection
- » Analysis of Financing & Ownership Options
- » Sensitivity Analyses / Initial Value Engineering
- » Project Cash Flow Analysis

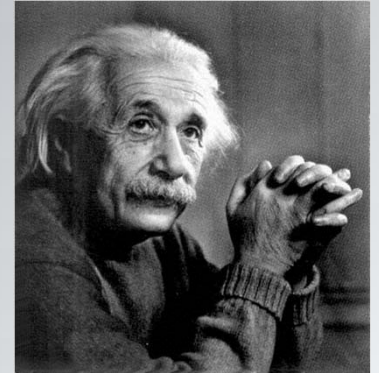
- » Concept / Mission
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# UNDERSTANDING DEMAND

## The Importance of Knowledge

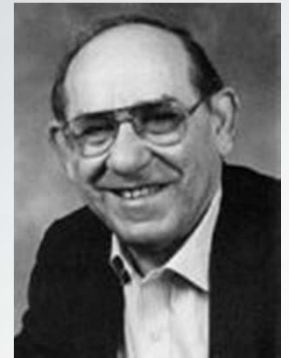
“The greatest impediment to progress is not ignorance, but the illusion of knowledge.”

*Albert Einstein*



“What get us in trouble is not what we don’t know, it’s what we know for certain that just ain’t so.”

*Yogi Berra*



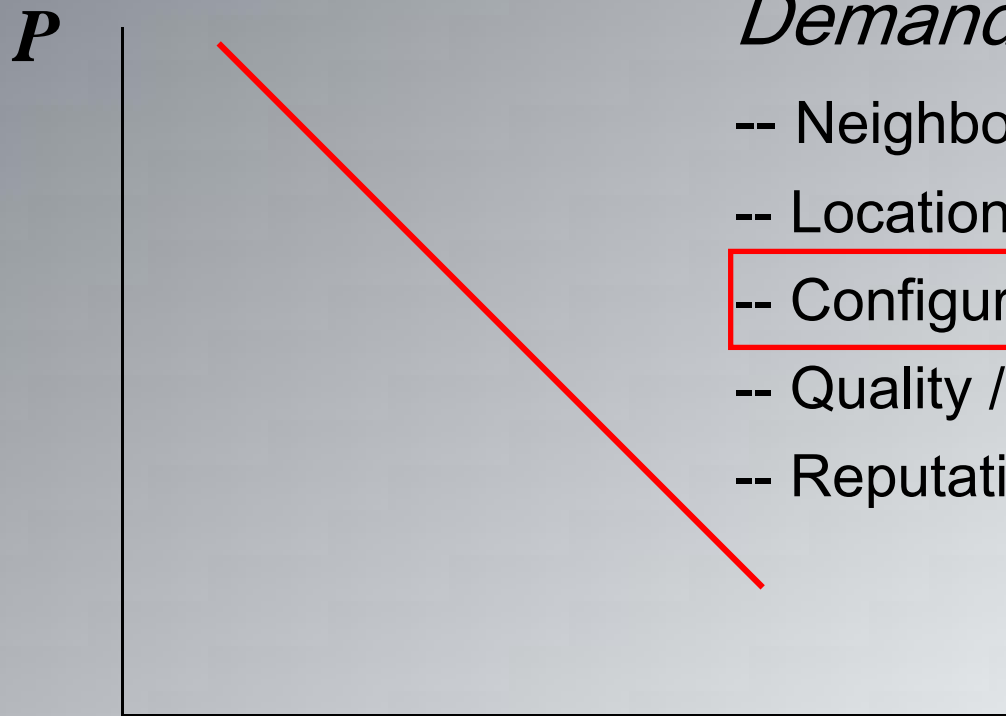
# UNDERSTANDING DEMAND

## What Is Knowable?

- ❖ Market and Submarket Size & Composition
- ❖ Current Behavior by Demographic Characteristics
- ❖ Preference Schedules by Submarket
- ❖ Aversion Schedules by Submarket
- ❖ Supply Inventory & Characteristics
- ❖ Supply Performance
- ❖ Barriers to New Entries

# UNDERSTANDING DEMAND

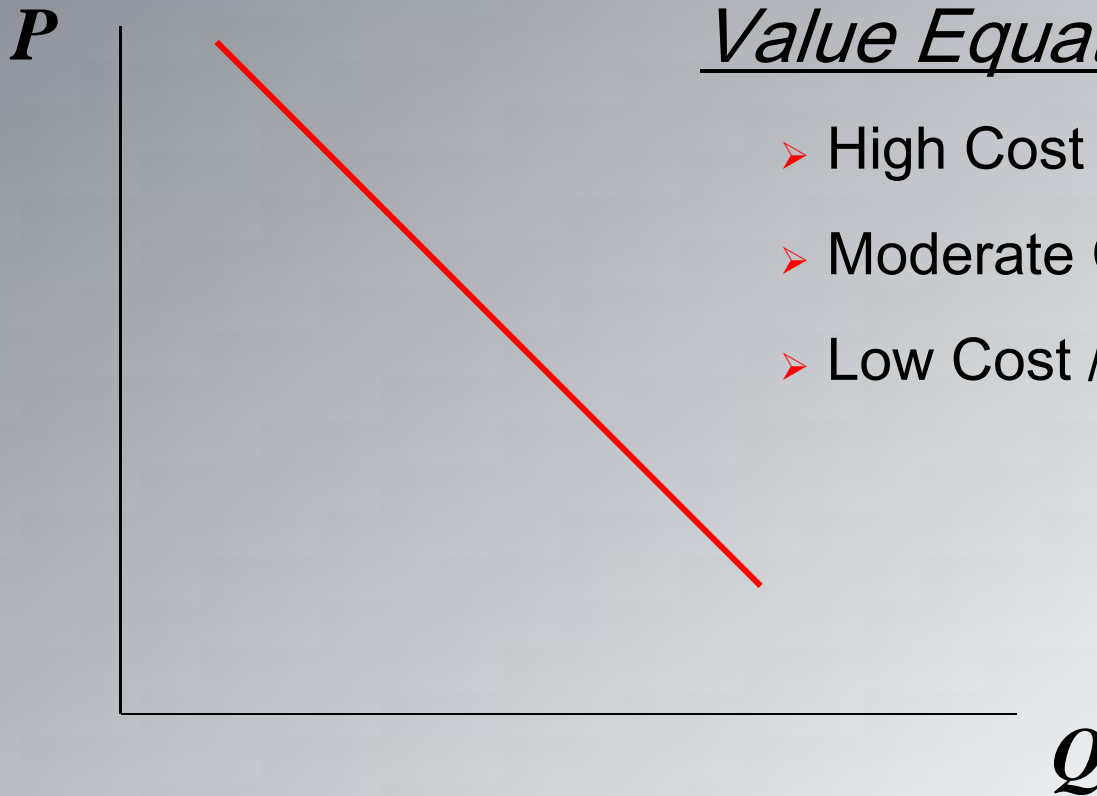
## Student Housing



*Demand is Product Specific*

- Neighborhood Attributes
- Location
- Configuration / Features / Amenities
- Quality / Services
- Reputation

# UNDERSTANDING DEMAND

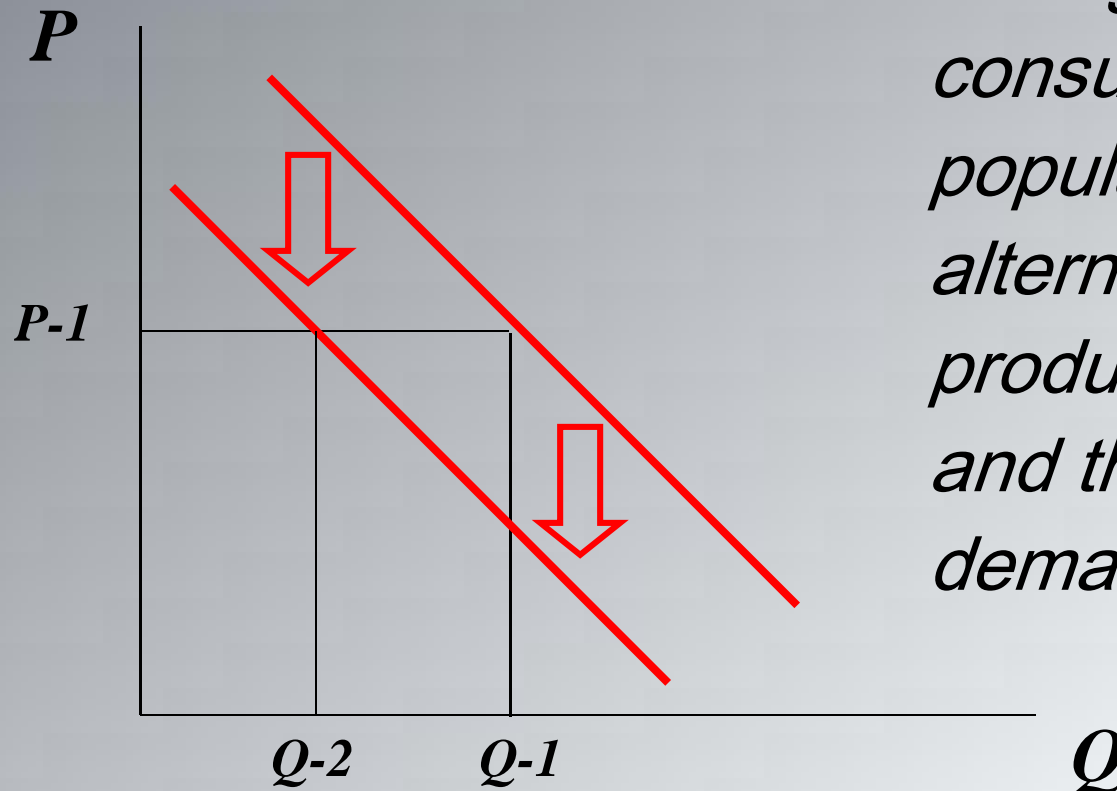


## *Value Equation Drives Choices*

- High Cost / High Value
- Moderate Cost / Moderate Value
- Low Cost / Low Value

# UNDERSTANDING DEMAND

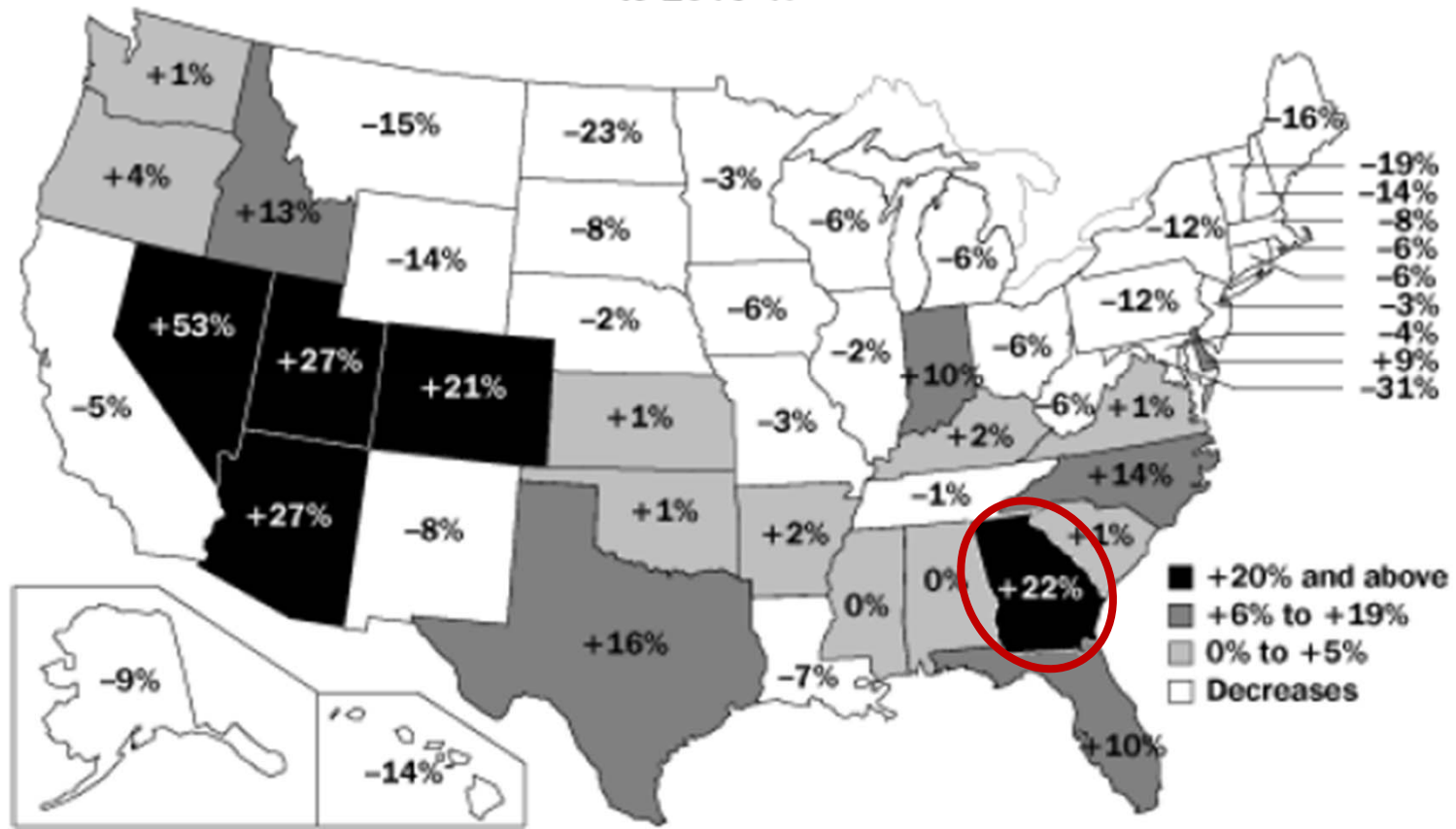
## Demand vs. The Quantity Demanded



*Changes in population, consumer tastes, popular culture, alternative products, product enhancements and the economy shift demand.*

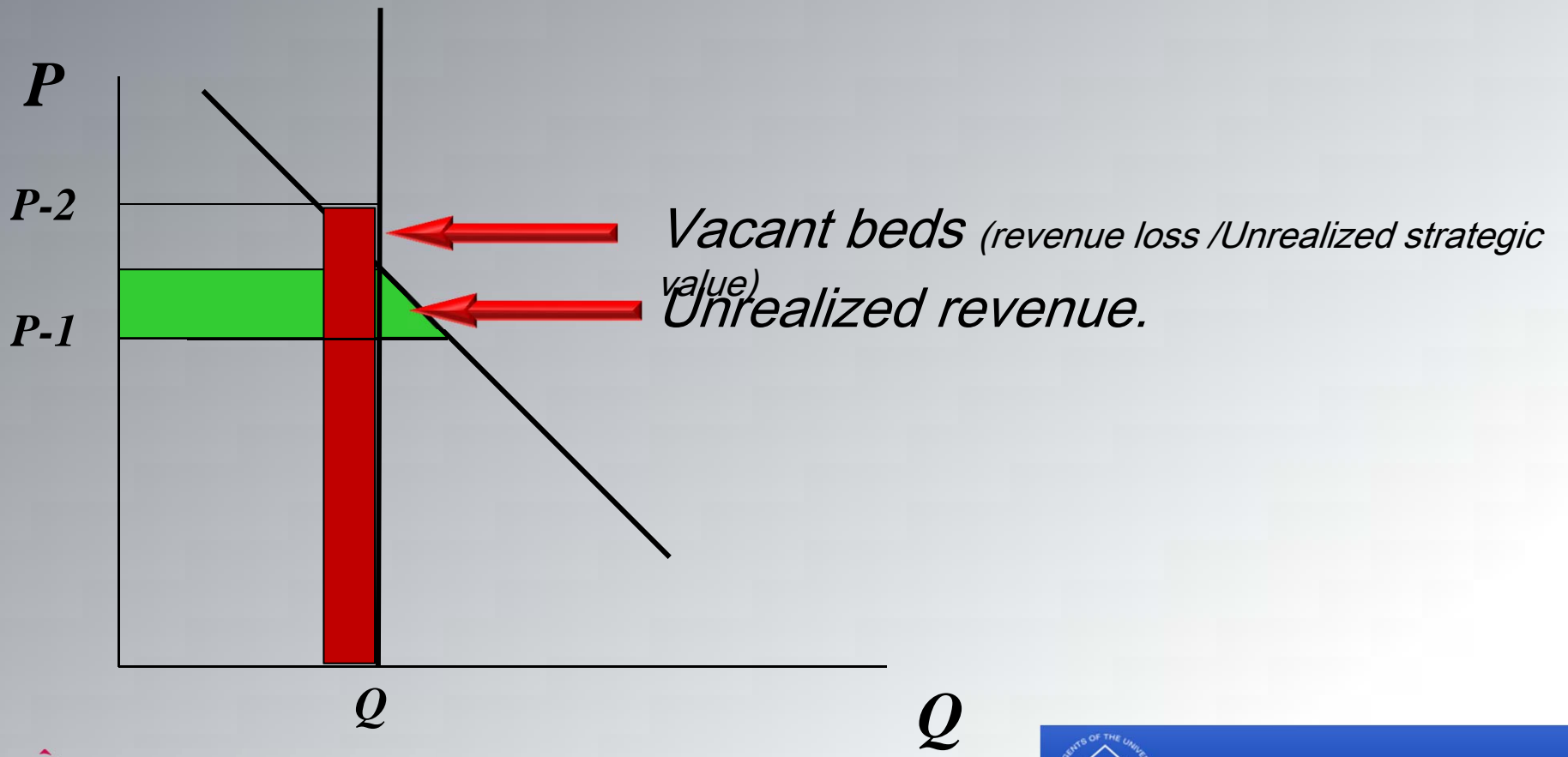
# UNDERSTANDING DEMAND

Exhibit A-1a: Projected Change in the Number of High-School Graduates, 2006-7 to 2016-17





# UNDERSTANDING DEMAND



# UNDERSTANDING DEMAND

Property	Address	Telephone	Distance (miles) From Campus	Driving Time (min.) From Campus	Total # of Units	Available Unit Types	Unit Types / Average Rent / Average Square Feet Per Unit				
							Studio	1BR	2BR	3BR	4BR
1 Applegate (Campus Walk)	333 Foster Street	(770) 834-0031	0.6	2	120	1BR/1BA, 2BR/2BA, 3BR, /BA		\$519 / 528 SF	\$765 / 614 SF	\$945 / 700 SF	
2 Ashley Oaks	1121 Rome Street	(770) 832-7788	2.4	5	80	2BR/2BA, 3BR/3BA			\$655 / 1,153 SF	\$740 / 1457 SF	
3 Azalea Place	106 Azalea Place	(770) 830-6827	2.6	8	42	2BR/1.5BA			\$560 / 950 SF		
4 Beulah Park	123 Beulah Church Road	(770) 836-0559	4.0	8	32	2BR/2BA			\$895 / n/a		
5 Campus Quad	316 Columbia Drive	(770) 214-8435	2.5	6	168	2BD/2BA, 3BD/3BA, 4BD/4BA			\$970 / 1,129 SF	\$1,215 / 1,187 SF	\$1,540 / 1,336 SF
6 Canterbury Heights	101 Mitchell Circle	(770) 836-0559	2.7	7	20	2BR/1BA			\$575 / n/a		
7 Carrollton Place / Crossing	1205 Maple Street	(770) 214-0007	0.3	1	84	4BR/BA					
8 Cedar Street Townhomes	630 Cedar Street	(770) 834-2787	2.4	7	32	2BR/1.5BA			\$568 / n/a		
9 Cedar Villas	624 Cedar Street	(770) 836-0559	2.4	7	15	2BR/2.5BA, 3BR/2.5BA					
10 Chateau	460 Hays Mill Road	(770) 832-9357	1.0	1	208	1BR/1BA, 2BR/2BA, 3BR, 2BA		\$440 / 550 SF	\$525 / 900 SF	\$665 / 1,300 SF	
11 Mandeville Mill Lofts	367 Lovvorn Rd.	(770) 836.7545	1.4	2	78	2BR/1BA, 2BR/2BA, 3BR/1BA, 4BR/1BA, 4BR/2BA, 5BR/2BA	\$440 / 800 SF	\$525 / 800 SF	\$660 / 1,100 SF	\$700 / 1,450 SF	
12 River Place	915 Lovvorn Rd.	(770) 834-9393	1.7	4	132	2BR/2BA, 4BR/4BA			\$920 / 975 SF		\$1,496 / 1,442 SF
13 River's Edge	227 Brumbelow Rd.	(770) 836-1774	1.5	5	48	4BR/4BA					\$1,336 / n/a
14 South Ridge Apartments	705 South St.	(770) 834-6240	0.6	2	50	2BR/1.5A			\$560 / 1,050 SF		
15 The Grove	919 Lovvorn Rd.	(770) 830-7881	1.2	2	162	4BR/4BA					
16 University Lofts	780 Lovvorn Rd.	(770) 830-0010	1.0	3	76	4BR/4BA					\$1,540 / 1,360 SF
17 Waverly Apartments	103 Waverly Way	(770) 836-0559	3.4	7	80	Studio, 1BR/1BA, 2BR/1BA					
18 Westbury Park	124 Williams St.	(770) 836-0559	2.1	4	16	2BR/1.5BA					
19 West Ridge Villas	230 West Ave.	(770) 836-0059	2.0	5	7	2BR/2.5BA, 3BR/2.5BA					
20 Woodglen	114 Danny Dr.	(770) 832-0403	3.9	8	188	2BR/1BA, 2BR/1.5BA, 2BR/2BA			\$535 / 900 SF		

# PREDICTIVE MODELING

## What Can Be Predicted?

- ❖ Product & Market Segment Specific Capture Rates
- ❖ Patron Flow by Day-part and Activity
- ❖ The Impact on Behavior (sales & use) from changes in Market Conditions
- ❖ The Approval Rate for a Student Referendum

## Predictive Analytics & Predictive Modeling





# PREDICTIVE MODELING

## B&D's TARGET MARKET METHODOLOGY

- Purpose: To filter raw survey responses to ensure that the resulting projections represent only those students with a high probability of living on campus based on their current situation, both demographically and financially.

## TARGET MARKET DEFINED

- Full-Time Students
- Single
- Traditionally-Aged
- On-Campus Residents
- OR**
- Renters ( > \$500/month )

# PREDICTIVE MODELING

<b>Students</b>	<b>Dormitories</b>	<b>Suites</b>	<b>Apartments</b>	<b>Total</b>
<b>Freshmen</b>				
<b>Sophomores</b>				
<b>Juniors</b>				
<b>Seniors</b>				
<b>Grads / Profs</b>				
<b>Total Demand</b>				
<b>Total Supply</b>				
<b>Differential</b>				

# PREDICTIVE MODELING

## ❖ Demand Allocation Strategy - SAV #1

Class	Total	First Filter	Second Filter	Trad'l Beds	Suite	Single Apts.	Fam. Apts.
Freshmen	4,474	3,003	1,473	1st	Excl'd	Excl'd	Special
Sophomores	3,788	2,317	1,203	2nd	1st	1st	Special
Juniors	3,639	2,423	1,214	2nd	1st	1st	Special
Seniors	5,325	3,381	1,800	2nd	1st	1st	Special
Grads / Profs	2,824	1,956	1,383	2nd	1st	1st	Special
<b>Total</b>	<b>20,050</b>	<b>13,080</b>	<b>7,073</b>				

# PREDICTIVE MODELING

## ❖ Target Market Demand

<b>Students</b>	<b>Traditional</b>	<b>Suites</b>	<b>Single Apts.</b>	<b>Fam. Apts.</b>	<b>Total</b>
<b>Freshmen</b>	<b>2,619</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>2,689</b>
<b>Sophomores</b>	<b>247</b>	<b>345</b>	<b>440</b>	<b>166</b>	<b>1,198</b>
<b>Juniors</b>	<b>208</b>	<b>278</b>	<b>406</b>	<b>145</b>	<b>1,037</b>
<b>Seniors</b>	<b>138</b>	<b>398</b>	<b>719</b>	<b>262</b>	<b>1,517</b>
<b>Grads / Profs</b>	<b>132</b>	<b>131</b>	<b>342</b>	<b>452</b>	<b>1,057</b>
<b>Total Demand</b>	<b>3,344</b>	<b>1,152</b>	<b>1,907</b>	<b>1,095</b>	<b>7,498</b>
<b>Total Supply</b>	<b>3,736</b>	<b>207</b>	<b>75</b>	<b>427</b>	<b>4,445</b>
<b>Differential</b>	<b>392</b>	<b>(945)</b>	<b>(1,832)</b>	<b>(668)</b>	<b>(3,053)</b>



# PREDICTIVE MODELING

## ❖ Demand Allocation Strategy - SAV #2

Class	Total	First Filter	Second Filter	Trad'l Beds	Suite	Single Apts.	Fam. Apts.
Freshmen	4,474	3,803	3,803	1st	Excl'd	Excl'd	Special
Sophomores	3,788	2,317	1,203	2nd	1st	1st	Special
Juniors	3,639	2,423	1,214	2nd	1st	1st	Special
Seniors	5,325	3,381	1,800	2nd	1st	1st	Special
Grads / Profs	2,824	1,956	1,383	2nd	1st	1st	Special
<b>Total</b>	<b>20,050</b>	<b>13,880</b>	<b>9,403</b>				

# PREDICTIVE MODELING

## ❖ Target Market Demand – SAV #2

Students	Traditional	Suites	Single Apts.	Fam. Apts.	Total
Freshmen	3,803	0	0	70	2,689
Sophomores	247	345	440	166	1,198
Juniors	208	278	406	145	1,037
Seniors	138	398	719	262	1,517
Grads / Profs	132	131	342	452	1,057
<b>Total Demand</b>	<b>4,528</b>	<b>1,152</b>	<b>1,907</b>	<b>1,095</b>	<b>8,682</b>
<b>Current Supply</b>	<b>3,736</b>	<b>207</b>	<b>75</b>	<b>427</b>	<b>4,445</b>
<b>Differential</b>	<b>(792)</b>	<b>(945)</b>	<b>(1,832)</b>	<b>(668)</b>	<b>(4,237)</b>
<b>2010 Supply</b>	<b>4,500</b>	<b>720</b>	<b>1,470</b>	<b>300</b>	<b>6,990</b>
<b>Differential</b>	<b>(28)</b>	<b>(432)</b>	<b>(437)</b>	<b>(795)</b>	<b>(1,692)</b>

# PREDICTIVE MODELING

## 15,000 Student Enrollment Demand Projections (Date: TBD)

Classification	Traditional	Junior Suite	Full Suite	Apartment	Total
Freshmen	291	408	468	1,955	3,122
Sophomores	138	166	281	1,429	2,014
Juniors	36	172	182	599	989
Seniors	65	118	88	327	599
Graduate	1	19	37	95	153
<b>Gross Demand</b>	<b>533</b>	<b>883</b>	<b>1,056</b>	<b>4,405</b>	<b>6,877</b>
OCR	1.10	1.15	1.15	1.40	
<b>OCR Adjusted Demand</b>	<b>485</b>	<b>768</b>	<b>918</b>	<b>3,021</b>	<b>5,192</b>
Inventory As of 2012	0	0	145	2,948	3,093
<b>Net Demand (Surplus)</b>	<b>485</b>	<b>768</b>	<b>773</b>	<b>73</b>	<b>2,099</b>

# PREDICTIVE MODELING

Academic Year (fall year)	2012	2013	2014	2015	2016
<b>Residence Hall</b>					
Bowdon	On-line	Under Reno./Constr.	Renovated	Renovated	Renovated
Boykin	Off-line	Off-line	Off-line	Off-line	Off-line
Downs	Off-line	Off-line	Off-line	Off-line	Off-line
Gunn	On-line	On-line	Under Reno./Constr.	Renovated	Renovated
Strozier Annex	On-line	On-line	On-line	On-line	On-line
Watson	On-line	On-line	On-line	Off-line	Off-line
Tyus	On-line	On-line	On-line	On-line	Under Reno./Constr.
University Suites	On-line	On-line	On-line	On-line	On-line
Arbor View Apartments	On-line	On-line	On-line	On-line	On-line
New Semi Suites @ US	New Housing	New Housing	New Housing	New Housing	New Housing
New Semi Suites @ B/D	Under Reno./Constr.	New Housing	New Housing	New Housing	New Housing
Existing Residence Hall GSF	553,684	494,887	456,971	399,935	348,816
New/Renovated Residence Hall GSF	135,000	238,500	297,297	335,213	335,213
<b>Total Residence Hall GSF</b>	<b>688,684</b>	<b>733,387</b>	<b>754,268</b>	<b>735,148</b>	<b>684,029</b>
Existing Residence Hall Beds	2,322	2,013	1,867	1,569	1,378
New/Renovated Residence Hall Beds	600	1,060	1,369	1,515	1,515

# PREDICTIVE MODELING

Academic Year (fall year)	0 2010	1 2011	2 2012	3 2013	4 2014	5 2015	6 2016	7 2017	8 2018	9 2019	10 2020
Total Bed Supply (including RA's)	2,787	2,787	2,922	3,073	3,236	3,084	2,893	3,084	3,084	3,084	3,084
Total Gross Square Footage	653,970	653,970	688,684	733,387	754,268	792,184	741,065	792,184	792,184	792,184	792,184
<b>Revenue</b>											
Student Room Revenue	\$10,252,000	\$10,663,000	\$12,329,000	\$13,760,000	\$15,232,000	\$15,320,000	\$15,081,000	\$16,672,000	\$17,341,000	\$18,034,000	\$18,756,000
Social Fee	\$56,000	\$57,000	\$62,000	\$67,000	\$72,000	\$71,000	\$69,000	\$75,000	\$78,000	\$80,000	\$82,000
Room Deposit (per bed)	\$496,000	\$511,000	\$567,000	\$612,000	\$677,000	\$667,000	\$648,000	\$711,000	\$732,000	\$752,000	\$776,000
Misc. Revenue & Conferences	\$414,000	\$426,000	\$439,000	\$452,000	\$466,000	\$480,000	\$494,000	\$509,000	\$524,000	\$540,000	\$556,000
<b>Total Revenue</b>	<b>\$11,218,000</b>	<b>\$11,657,000</b>	<b>\$13,397,000</b>	<b>\$14,891,000</b>	<b>\$16,447,000</b>	<b>\$16,538,000</b>	<b>\$16,292,000</b>	<b>\$17,967,000</b>	<b>\$18,675,000</b>	<b>\$19,406,000</b>	<b>\$20,170,000</b>
<b>Expense</b>											
<b>Personnel</b>											
Personal Service	\$1,191,000	\$1,225,000	\$1,070,000	\$984,000	\$1,056,000	\$1,169,000	\$1,092,000	\$1,240,000	\$1,278,000	\$1,315,000	\$1,356,000
Fringe Benefit	\$200,000	\$206,000	\$440,000	\$639,000	\$667,000	\$698,000	\$701,000	\$741,000	\$764,000	\$788,000	\$810,000
Travel	\$11,000	\$11,000	\$53,000	\$88,000	\$90,000	\$95,000	\$98,000	\$102,000	\$104,000	\$107,000	\$109,000
<b>Operating Expense</b>											
Operating	\$2,086,000	\$2,148,000	\$1,873,000	\$1,724,000	\$1,852,000	\$2,047,000	\$1,914,000	\$2,173,000	\$2,237,000	\$2,305,000	\$2,373,000
Operating (R&M)	\$174,000	\$178,000	\$613,000	\$976,000	\$1,012,000	\$1,053,000	\$1,068,000	\$1,117,000	\$1,150,000	\$1,185,000	\$1,221,000
<b>University Offset</b>											
PS Offset	\$1,650,000	\$1,650,000	\$1,397,000	\$1,249,000	\$1,301,000	\$1,397,000	\$1,268,000	\$1,397,000	\$1,397,000	\$1,397,000	\$1,397,000
AE Offset	\$21,000	\$21,000	\$358,000	\$617,000	\$618,000	\$621,000	\$619,000	\$621,000	\$621,000	\$621,000	\$623,000
Travel Offset	\$1,000	\$1,000	\$5,000	\$8,000	\$9,000	\$11,000	\$11,000	\$11,000	\$11,000	\$11,000	\$11,000
Operating Offset	\$1,314,000	\$1,353,000	\$1,181,000	\$1,086,000	\$1,169,000	\$1,291,000	\$1,207,000	\$1,370,000	\$1,411,000	\$1,453,000	\$1,496,000
<b>Total Expense</b>	<b>\$6,648,000</b>	<b>\$6,793,000</b>	<b>\$6,990,000</b>	<b>\$7,371,000</b>	<b>\$7,774,000</b>	<b>\$8,382,000</b>	<b>\$7,978,000</b>	<b>\$8,772,000</b>	<b>\$8,973,000</b>	<b>\$9,182,000</b>	<b>\$9,396,000</b>
<b>Net Operating Income</b>	<b>\$4,570,000</b>	<b>\$4,864,000</b>	<b>\$6,407,000</b>	<b>\$7,520,000</b>	<b>\$8,673,000</b>	<b>\$8,156,000</b>	<b>\$8,314,000</b>	<b>\$9,195,000</b>	<b>\$9,702,000</b>	<b>\$10,224,000</b>	<b>\$10,774,000</b>
<b>Debt Service</b>											
<b>Debt Service</b>											
Existing Debt Service	\$3,354,921	\$3,443,167	\$3,451,731	\$3,475,046	\$3,480,746	\$3,541,372	\$3,571,883	\$3,607,055	\$3,643,722	\$3,661,800	\$3,700,298
Additional Rents	\$462,000	\$477,000	\$504,000	\$534,000	\$590,000	\$589,000	\$617,000	\$648,000	\$674,000	\$708,000	\$738,000
New Debt Service	\$0	\$0	\$1,417,000	\$2,536,000	\$2,536,000	\$3,531,000	\$4,135,000	\$4,135,000	\$4,135,000	\$4,135,000	\$4,135,000
<b>Total Debt Service</b>	<b>\$3,816,921</b>	<b>\$3,920,167</b>	<b>\$5,372,731</b>	<b>\$6,545,046</b>	<b>\$6,606,746</b>	<b>\$7,661,372</b>	<b>\$8,323,883</b>	<b>\$8,390,055</b>	<b>\$8,452,722</b>	<b>\$8,504,800</b>	<b>\$8,573,298</b>
Debt Coverage Ratio	1.20	1.24	1.19	1.15	1.31	1.06	1.00	1.10	1.15	1.20	1.26
<b>Reserves</b>											
<b>Reserves</b>											
Reserves/Depreciation	\$326,000	\$326,000	\$230,000	\$166,000	\$200,000	\$169,000	\$129,000	\$169,000	\$169,000	\$169,000	\$169,000
New Hall Reserves	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Reserves</b>	<b>\$326,000</b>	<b>\$326,000</b>	<b>\$230,000</b>	<b>\$166,000</b>	<b>\$200,000</b>	<b>\$169,000</b>	<b>\$129,000</b>	<b>\$169,000</b>	<b>\$169,000</b>	<b>\$169,000</b>	<b>\$169,000</b>
<b>Cumulative Reserves</b>	<b>\$326,000</b>	<b>\$652,000</b>	<b>\$882,000</b>	<b>\$1,048,000</b>	<b>\$1,248,000</b>	<b>\$1,417,000</b>	<b>\$1,546,000</b>	<b>\$1,715,000</b>	<b>\$1,884,000</b>	<b>\$2,053,000</b>	<b>\$2,222,000</b>
<b>Cash Flow</b>											
<b>Cash Flow</b>											
Total Cash Flow	\$427,079	\$617,833	\$804,269	\$808,954	\$1,866,254	\$325,628	-\$138,883	\$635,945	\$1,080,278	\$1,550,200	\$2,031,702
<b>Cumulative Cash Flow</b>	<b>\$427,079</b>	<b>\$1,044,912</b>	<b>\$1,849,181</b>	<b>\$2,658,135</b>	<b>\$4,524,389</b>	<b>\$4,850,017</b>	<b>\$4,711,134</b>	<b>\$5,347,079</b>	<b>\$6,427,357</b>	<b>\$7,977,557</b>	<b>\$10,009,259</b>

# PREDICTIVE MODELING

## Demand-Based Programming (DBP)

### ❖ Factors

- Type of Activity => Unit Category
- Activity Duration => Patron Turnover per Period
- Time / Frequency From Survey Data

### ❖ Products

- Projected Demand - Number of Users by Time of Day
- Projected Demand – Facility Size Based on Patron Flow

# PREDICTIVE MODELING

How many times/week

How many workouts/time window

ACTIVITY:	1	FREE WEIGHTS	Activity Duration: 0.75 Hours			
Frequency	Period	Activity Frequency	Turnover Factor	Intensity Factor	Number of Users	Demand Projection
Daily	Before 6 AM	0.71	0.75	0.53	126	67
Daily	6 - 8 AM	0.71	0.38	0.27	126	34
Daily	8 AM - noon	0.71	0.19	0.13	126	17
Daily	Noon - 1 PM	0.71	0.75	0.53	0	0
Daily	1- 4 PM	0.71	0.25	0.18	253	45
Daily	4 - 6 PM	0.71	0.38	0.27	506	135
Daily	6 - 9 PM	0.71	0.25	0.18	379	67
Daily	9 PM - Midnight	0.71	0.25	0.18	253	45
Daily	After Midnight	0.71	0.75	0.32	126	41
Daily	Not Sure	0.71	0.00	0.00	253	0
2-4 Times/Week	Before 6 AM	0.43	0.75	0.32	0	0
2-4 Times/Week	6 - 8 AM	0.43	0.38	0.16	1,644	265
2-4 Times/Week	8 AM - noon	0.43	0.19	0.08	3,161	255
2-4 Times/Week	Noon - 1 PM	0.43	0.75	0.32	759	245
2-4 Times/Week	1- 4 PM	0.43	0.25	0.11	3,414	367
2-4 Times/Week	4 - 6 PM	0.43	0.38	0.16	3,414	550
2-4 Times/Week	6 - 9 PM	0.43	0.25	0.11	3,540	381
2-4 Times/Week	9 PM - Midnight	0.43	0.25	0.11	1,770	190
2-4 Times/Week	After Midnight	0.43	0.75	0.32	126	41
2-4 Times/Week	Not Sure	0.43	0.00	0.00	3,414	0

TOTAL NUMBER OF USERS PROJECTED PER PERIOD*:						
Before 6 AM	6 - 8 AM	8 AM - noon	Noon - 1 PM	1- 4 PM	4 - 6 PM	6 - 9 PM
50	232	207	196	325	557	382

SPACE DEMAND						
NUMBER OF SQ. FT. **						
Before 6 AM	6 - 8 AM	8 AM - noon	Noon - 1 PM	1- 4 PM	4 - 6 PM	6 - 9 PM
2,080	9,580	8,550	8,070	13,420	22,990	15,740

New Year's Resolution Discount

Overlap Discount

Number of Users

Square Footage Needed

# PREDICTIVE MODELING

	Activity	Depth	Breadth
1	Cardiovascular fitness machines (treadmills, cycles, and elliptical machines)	57.7%	82.1%
2	Free weights	46.0%	72.6%
3	Weight resistance machines	43.5%	73.9%
4	Indoor jog or walk	26.6%	54.2%
5	Group Ex (aerobics, dance, spinning, step, yoga, pilates)	22.6%	51.5%
6	Lap swimming	13.7%	45.0%
7	Recreational swimming	9.5%	38.6%
8	Martial arts	8.7%	25.6%
9	Water exercise (aerobics, strength training, cardiovascular training, rehabilitation)	8.5%	25.6%
10	Basketball	8.0%	28.4%
11	Rock climbing wall	7.5%	40.0%
12	Indoor tennis	6.7%	26.1%
13	Badminton	5.7%	23.1%
14	Indoor soccer	4.7%	17.7%
15	Volleyball	4.7%	24.1%
16	Racquetball	4.2%	30.3%
17	Roller or floor hockey	2.5%	15.7%
18	Handball	1.2%	9.0%
19	Squash	1.2%	9.5%

Depth = Student Responses Who Will Use the Facility At Least Two Times a Week

Thus, Activity is Critical to Their Life Styles



# PREDICTIVE MODELING

	Activity	Depth	Breadth
1	Cardiovascular fitness machines (treadmills, cycles, and elliptical machines)	57.7%	82.1%
2	Free weights	46.0%	72.6%
3	Weight resistance machines	43.5%	73.9%
4	Indoor jog or walk	26.6%	54.2%
5	Group Ex (aerobics, dance, spinning, step, yoga, pilates)	22.6%	51.5%
6	Lap swimming	13.7%	45.0%
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9	Water exercise (aerobics, strength training, cardiovascular training, rehabilitation)	8.5%	25.6%
10	Basketball	8.0%	28.4%
11	Rock climbing wall	7.5%	40.0%
12	Indoor tennis	6.7%	26.1%
13	Badminton	5.7%	23.1%
14	Indoor soccer	4.7%	17.7%
15	Volleyball	4.7%	24.1%
16	Racquetball	4.2%	30.3%
17	Roller or floor hockey	2.5%	15.7%
18	Handball	1.2%	9.0%
19	Squash	1.2%	9.5%

Breadth = Student Responses Who Will Use the Facility at Least Sometimes

Thus, Activity is Important to Campus Life

# PREDICTIVE MODELING

	Activity	Depth	Breadth	DB Ratio
1	Cardiovascular fitness machines (treadmills, cycles, and elliptical machines)	57.7%	82.1%	1.4
2	Free weights	46.0%	72.6%	1.6
3	Weight resistance machines	43.5%	73.9%	1.7
4	Indoor jog or walk	26.6%	54.2%	2.0
5	Group Ex (aerobics, dance, spinning, step, yoga, pilates)	22.6%	51.5%	2.3
6	Lap swimming	13.7%	45.0%	3.3
7	Recreational swimming	9.5%	38.6%	4.1
8	Martial arts	8.7%	25.6%	2.9
9	Water exercise (aerobics, strength training, cardiovascular training, rehabilitation)	8.5%	25.6%	3.0
10	Basketball	8.0%	28.4%	3.6
11	Rock climbing wall	7.5%	40.0%	5.4
12	Indoor tennis	6.7%	26.1%	3.9
13	Badminton	5.7%	23.1%	4.0
14	Indoor soccer	4.7%	17.7%	3.7
15	Volleyball	4.7%	24.1%	5.1
16	Racquetball	4.2%	30.3%	7.2
17	Roller or floor hockey	2.5%	15.7%	6.3
18	Handball	1.2%	9.0%	7.2
19	Squash	1.2%	9.5%	

1st Priority

2nd Priority

3rd Priority

4th Priority

5th Priority

# PREDICTIVE MODELING

Activity		Peak Accommodation			Space Type	Peak Demand	Space Allocation Based on Prioritization of Demand		
1	Cardiovascular fitness machines (treadmills,	75%	to	85%	Sq. Ft.	16,830	12,600	to	14,300
2	Free weights	75%	to	85%	Sq. Ft.	22,990	17,200	to	19,500
3	Weight resistance machines	75%	to	85%	Sq. Ft.	19,730	14,800	to	16,800
4	Indoor jog or walk	75%	to	85%	Sq. Ft.	15,930	11,900	to	13,500
5	Group Ex (aerobics, dance, spinning, step, y	75%	to	85%	Sq. Ft.	23,920	17,900	to	20,300
6	Lap swimming	55%	to	65%	Lanes	45	25	to	29
7	Recreational swimming	55%	to	65%	Sq. Ft.	14,510	8,000	to	9,400
8	Martial arts	55%	to	65%	Sq. Ft.	14,570	8,000	to	9,500
9	Water exercise (aerobics, strength training, c	55%	to	65%	Sq. Ft.	9,550	5,300	to	6,200
10	Basketball	40%	to	50%	Courts	17	7	to	9
11	Rock climbing wall	40%	to	50%	Ln. Ft.	82	33	to	41
12	Indoor tennis	40%	to	50%	Courts	66	26	to	33
13	Badminton	25%	to	35%	Courts	41	10	to	14
14	Indoor soccer	25%	to	35%	Courts	10	3	to	4
15	Volleyball	25%	to	35%	Courts	10	3	to	4
16	Racquetball	25%	to	35%	Courts	24	6	to	8
17	Roller or floor hockey	10%	to	20%	Courts	7	1	to	1
18	Handball	10%	to	20%	Courts	11	1	to	2
19	Squash	10%	to	20%	Courts	14	1	to	3
1	<b>COMBINED 1:</b> (Fitness Machines, Free Weights and Weight				Sq. Ft.	59,550	44,600	to	50,600
2	<b>COMBINED 2</b> (Group Ex, Martial Arts)				Sq. Ft.	38,490	25,900	to	29,800

If basketball is elevated from third to second priority, need jumps to 9 – 11 courts!

# PREDICTIVE MODELING

## Developing Judgment Capacities

- ❖ Schools included in comparison Group
  - » Indiana
  - » Illinois
  - » Iowa
  - » Michigan
  - » Ohio State

# PREDICTIVE MODELING

## Depth Comparison

**Source  
Data**

			<b>Minnesota</b>
<b>High</b>	<b>Low</b>	<b>Average</b>	<b>Depth</b>
59.7%	40.1%	51.4%	<b>57.7%</b>
48.7%	34.9%	43.9%	<b>46.0%</b>
59.2%	40.8%	47.8%	<b>43.5%</b>
37.8%	20.2%	27.1%	<b>26.6%</b>
23.4%	17.3%	21.3%	<b>22.6%</b>
16.7%	12.0%	13.6%	<b>13.7%</b>
18.2%	5.6%	11.0%	<b>9.5%</b>
8.7%	4.6%	6.6%	<b>8.7%</b>
8.9%	3.6%	6.1%	<b>8.5%</b>
13.7%	7.7%	10.6%	<b>8.0%</b>
15.2%	4.0%	9.9%	<b>7.5%</b>
9.5%	4.3%	6.7%	<b>6.7%</b>
5.7%	2.6%	3.5%	<b>5.7%</b>
6.5%	3.5%	5.2%	<b>4.7%</b>
7.8%	4.4%	5.2%	<b>4.7%</b>
7.4%	3.9%	6.1%	<b>4.2%</b>
10.1%	1.9%	4.1%	<b>2.5%</b>
2.0%	0.4%	1.2%	<b>1.2%</b>

# PREDICTIVE MODELING

## Breadth Comparison

**Source  
Data**

			<b>Minnesota</b>
<b>High</b>	<b>Low</b>	<b>Average</b>	<b>Breadth</b>
82.1%	63.5%	77.0%	<b>82.1%</b>
82.6%	62.8%	74.3%	<b>73.9%</b>
77.9%	59.8%	70.1%	<b>72.6%</b>
70.8%	39.7%	53.6%	<b>54.2%</b>
54.5%	37.2%	48.3%	<b>51.5%</b>
50.9%	29.0%	40.2%	<b>45.0%</b>
57.0%	18.1%	38.9%	<b>40.0%</b>
67.3%	22.2%	42.7%	<b>38.6%</b>
40.9%	19.9%	31.7%	<b>30.3%</b>
49.4%	28.4%	36.0%	<b>28.4%</b>
31.5%	14.6%	25.0%	<b>26.1%</b>
25.6%	10.9%	19.0%	<b>25.6%</b>
30.9%	8.4%	21.6%	<b>25.6%</b>
35.7%	17.5%	25.9%	<b>24.1%</b>
23.1%	6.4%	15.7%	<b>23.1%</b>
25.8%	9.4%	18.8%	<b>17.7%</b>
43.2%	6.2%	18.5%	<b>15.7%</b>
10.4%	3.1%	7.6%	<b>9.5%</b>

# PREDICTIVE MODELING

## Ratio Analysis

**Source  
Data**

			Minnesota	
High	Low	Average	Total	Ratio
1.8	1.3	1.5	139.8%	1.4
1.7	1.4	1.6	117.4%	1.7
1.8	1.4	1.6	118.6%	1.6
2.4	1.7	2.0	80.8%	2.0
2.4	2.0	2.3	74.1%	2.3
3.4	2.3	3.0	58.7%	3.3
5.4	2.4	3.5	34.1%	3.0
3.2	2.4	2.8	34.3%	2.9
4.7	3.3	4.0	48.1%	4.1
7.2	3.8	5.3	34.5%	7.2
5.9	2.5	4.5	28.8%	4.0
5.4	3.2	4.1	47.5%	5.4
4.7	2.6	3.5	36.4%	3.6
4.2	3.2	3.7	32.8%	3.9
4.5	2.7	3.6	22.4%	3.7
6.8	3.9	5.0	28.8%	5.1
6.3	3.2	4.5	18.2%	6.3
8.8	3.9	6.8	10.7%	7.6

# PREDICTIVE MODELING

## Some Quick Rules of Thumb

- » 8.5 to 10.5 Gross Square Feet Per Student
  - Small Residential Campuses Are Higher
  - Large, Urban Non-traditional Campuses Are Lower
- » Add 1 to 1.5 Gross Square Feet Per Employee
- » Add 5 to 7.5 Gross Square Feet Per Alumni / Community Member
- » Add for Non-redundant Academic & Athletic Spaces
- » Subtract Usable Existing Spaces but Consider Sport Clubs & Efficiency of Existing Space

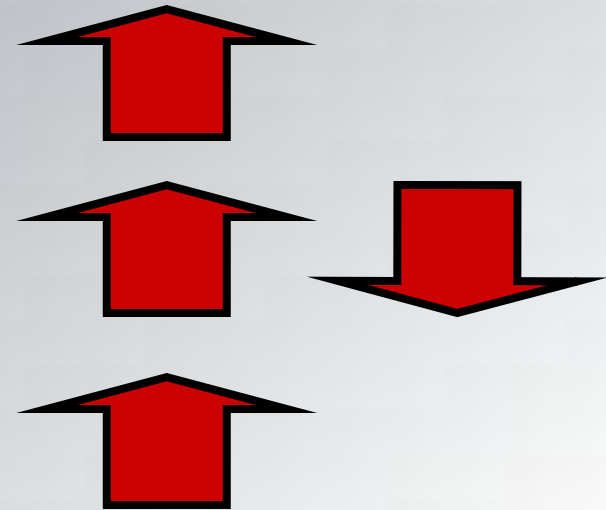


# PREDICTIVE MODELING

## Some Quick Rules of Thumb

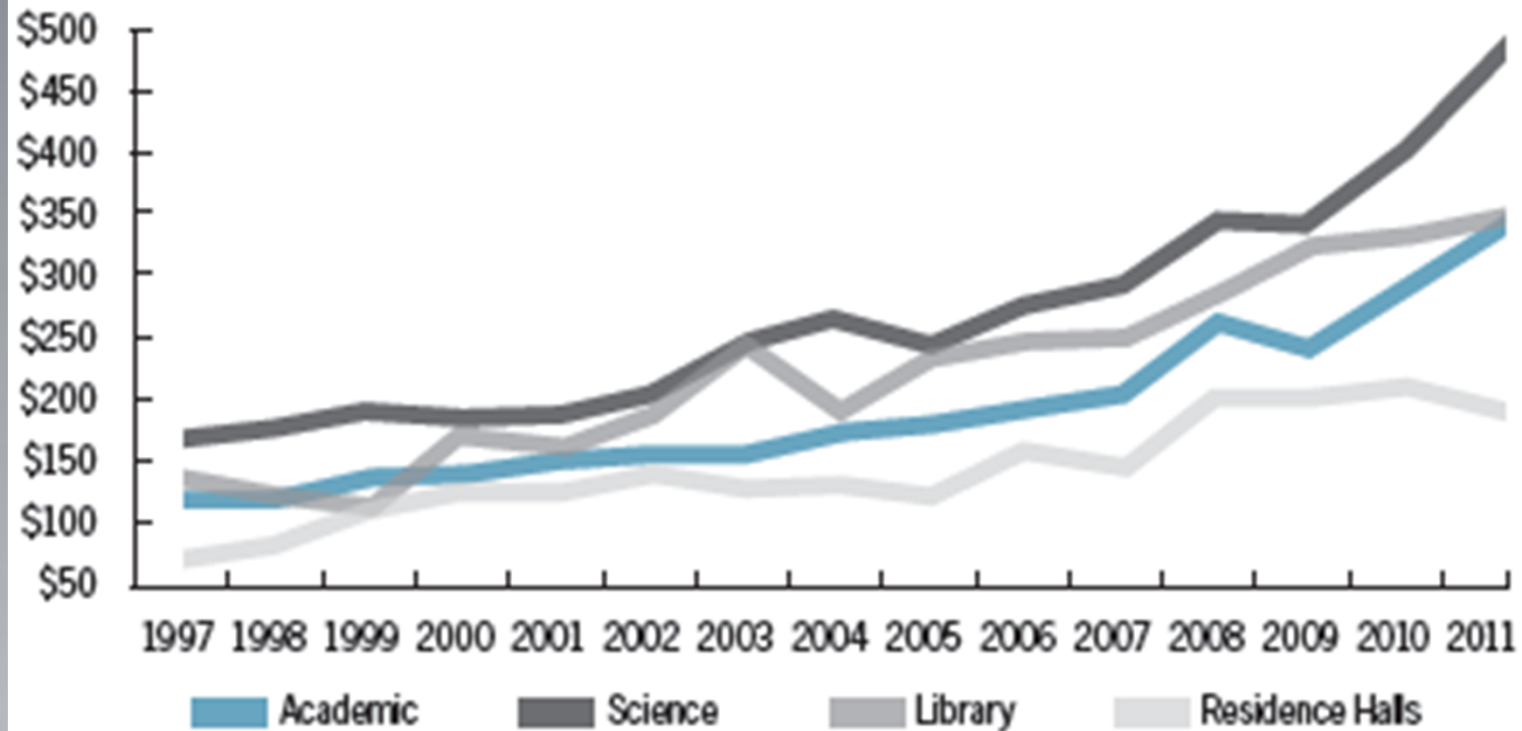
8.5 to 10.5 Gross Square Feet Per Student

- ❖ Projected Enrollment Growth
- ❖ Residential / Commuter Mix
- ❖ Unique Cultural Considerations



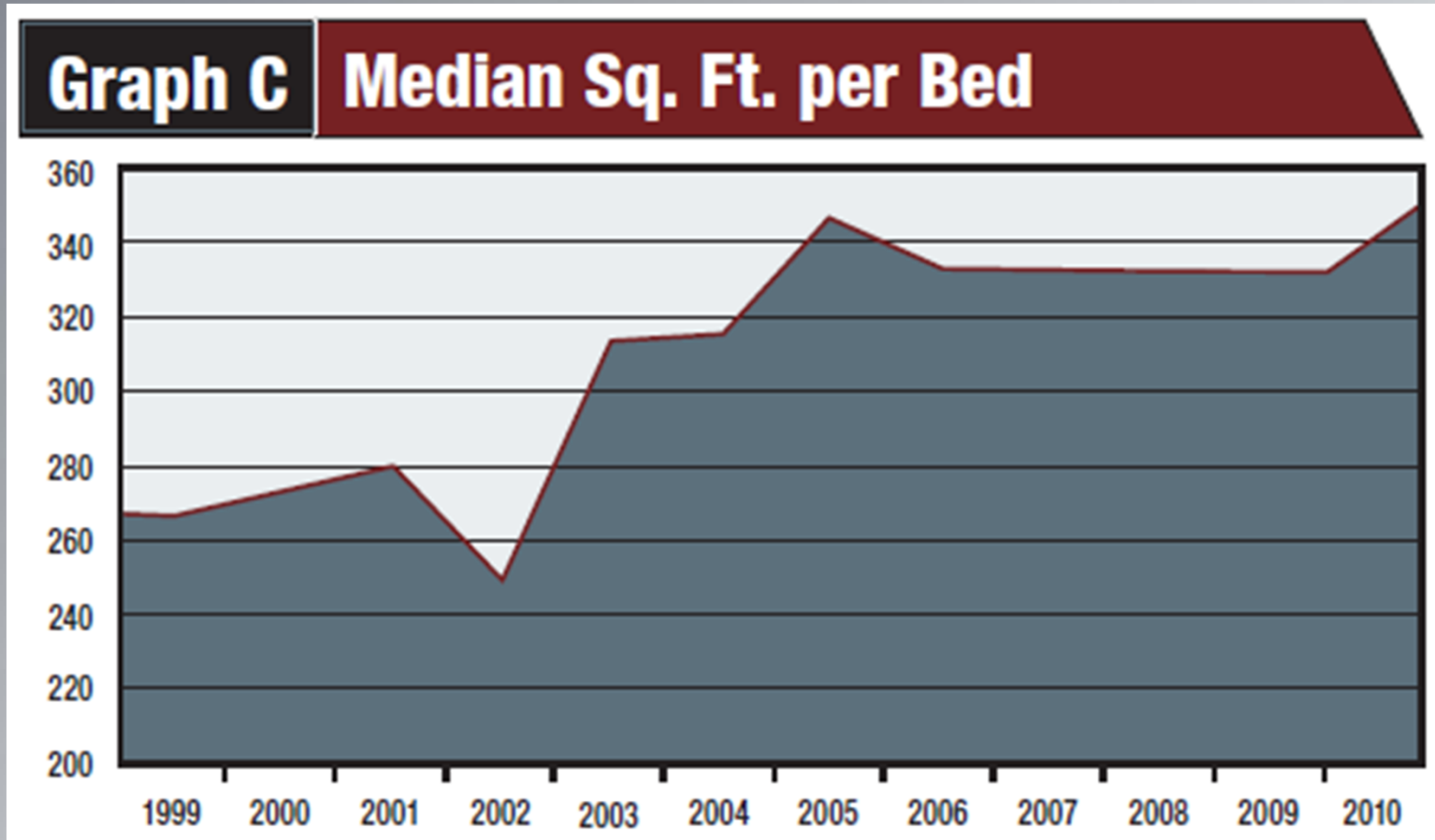
# Q & A

## Graph E: Median Cost per Sq. Ft. for College Buildings



College Planning & Management February 2011  
"The 2011 College Construction Annual Report"

# Q & A



Abramson, Paul. "Living on Campus" 2010 College Housing Report. May 2010 [www.webCPM.com](http://www.webCPM.com).

# Q & A

