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EARLY CARE AND EDUCATION COST MODELING

National Shared Services Learning Community
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Co-sponsored by
Opportunities Exchange
and *BUILD Early Childhood*

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Agenda

- Definition of cost modeling
- How one version of cost modeling works
- How cost modeling can help the ECE sector
- Policy implications

What is a Cost Model?

- Method of calculating likely cost of providing early care and education services, compared with revenues.
 - Excel spreadsheets or online tools
- Design of the model depends on what you're trying to measure or learn about, e.g.:
 - Cost for a center to deliver care at various QRIS levels, or
 - Cost for a FCC Home to deliver care, or
 - Cost for a Shared Service Alliance to provide care across several providers, or
 - Cost for a state to provide subsidies or QRIS incentives under various scenarios; can also develop model for infrastructure costs if desired
 - Implications of number of children served, etc.

Online Cost Models

- PCQC (“Provider Cost of Quality Calculator”)
 - Web-based platform based on spreadsheets developed by Anne Mitchell (today’s example based on same spreadsheets)
 - Designed to help states and providers understand costs at different levels of quality, and degree of gap between revenues and costs
 - To be launched October 2014: www.ECEQualityCalculator.com
- CEM (“Cost Estimation Model”)
 - Online tool designed to help state administrators determine costs of implementing all elements of a QRIS and explore scale-up options
 - Can be used to estimate the cost per year of phasing in QRIS, the cost of certain elements, or the overall cost of a fully implemented QRIS.
 - Available on ACF website: <http://www.acf.hhs.gov/programs/occ/resource/qriscostestimationmodelandresourceguide>

Modeling Financial Challenges of Centers

- This model describes the financial picture of center-based child care.
 - Developed with information from local providers and ECE organizations in the particular state
 - Informed by cost modeling work in several states by Anne Mitchell, Co-Founder of Alliance for Early Childhood Finance
- Provides quantitative evidence of what is common knowledge – in most states, **it is extremely difficult to provide high quality care to low income children and break even**
- Model also provides some guidance about how to address this challenge

Understanding a Center's Bottom Line

Center-focused cost modeling can help answer:

- Given reasonable assumptions, can a center at least break even?
- What is the impact on the bottom line of moving up the quality ladder?
- What are the factors that have a positive, or negative, effect on the bottom line?
 - Revenues
 - Expenses
 - Operating Model (staffing, age mix, family income mix, etc.)
 - Business practices
 - Policy

Model Variables

- Revenues
 - Tuition: Parent fees, government (Subsidy, Head Start, PreK)
 - Other: CACFP, QRIS, tax credits
- Expenses
 - Personnel: Staffing patterns, salaries, benefits
 - Non-personnel (set up as costs per child, costs per classroom, or overall center costs)
- Factors affecting both revenues and expenses:
 - Size of the center (number of classrooms)
 - Ages of children
 - Group sizes and ratios
 - Income mix of families
 - Enrollment levels
 - Fee collectability

Factors That Can Vary by Star Level

- Salaries
- Staffing (e.g. lower ratios or specific types of staff)
- Sub/floater time for breaks, leave and/or training
- Benefits (health insurance)
- Child assessment cost
- Market prices
- Public funding (rates for CCDF, HS/EHS, PreK, QRIS quality bonus and other state-specific or local incentives)



Generic Cost Model - Centers

Items in yellow shaded cells ONLY may be changed to model different scenarios

SIZE	# Children/Age Groups	# of Classrooms	Group Size	Ratios in state regs	FYI: NAEYC (max)
	0 Infants-18 months		8	1:4	2:8
	14 Toddlers (18-36)	1	14	1:7	2:10
	40 Threes	2	20	1:10	2:18
	40 Fours & Fives	2	20	1:10	2:20
TOTAL Children	94	TOTAL Classrooms	5		

INCOME MIX of CHILDREN

60%	185% FPL&above
20%	<185% FPL
20%	<130% FPL

EFFICIENCY	Enrollment as % of total capacity	Typical
	85%	85.0%
EFFICIENCY	Bad Debts as % of tuition revenue	Typical
	3%	3.0%

QUALITY

Regulated	\$538,086	Expense	
	<u>\$618,220</u>	Revenue	
	\$80,134	Profit/(Loss)	Rev less Exp 14.9%

Better	\$699,384	Expense	
	<u>\$618,220</u>	Revenue	
	(\$81,164)	Profit/(Loss)	Rev less Exp -12%

Pro Forma Non-personnel Budget

DO NOT ALTER:used in formulas on other spreadsheets
 can be varied by user IF EVIDENCE IS PROVIDED
 FYI these are opportunities for shared services

	Total Center Annual Cost	Per classroom Annual Cost
Rent /Lease	\$100,000	\$20,000
Utilities	\$10,000	\$2,000
Building Insurance	\$2,500	\$500
Maintenance/Repair/Cleaning	\$28,000	\$5,600

Total Annual Cost	
\$1,491	Per child
\$28,100	Per classroom
\$4,990	Set costs

(Note: Anne Mitchell's model estimates cost per sq. ft.)

Annual Cost per Child

Food & Food Prep	\$1,000	per child	includes food staff
Kitchen Supplies	\$50	per child	
Education. Supplies	\$50	per child	
Education. Equipment	\$100	per child	
Office Supplies	\$30	per child	
Office equipment	\$22	per child	
Insurance (liability, accident, etc.)	\$75	per child	
Payroll service	\$30	per child	
Credi/debit card processing fees	\$20	per child	
Advertising	\$25	per child	
Postage	\$24	per child	
Miscellaneous	\$15	per child	
Consultants/Training	\$50	per child	

Annual Cost - other basis

Telephone & Internet	\$1,440	\$120	per month
Audit	\$3,000		
Fees/Permits	\$550		

Expenses: "Regulated" Quality Level



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= % for daily coverage breaks, opening/closing

	Max Size	5Classrooms	20%
94 TOTAL Children			
0 Infants	8	0	
14 Toddlers	14	1	
40 Preschool: Threes	20	2	
40 Preschool: Fours	20	2	

EXPENSES		<u>Total Cost</u>	<u>Unit Cost</u>	<u>% wages per</u>	<u>BLS occupation</u>
13.0 TOTAL Staff			FTE Wage		
1 Director		\$39,627	\$39,627	90%	CC/Peschool administrator
1 Office Manager (FT if >50 children)		\$26,080	\$26,080	80%	Office & admin support
0 Ed Coordinator (only if >125 children)		\$0	\$55,248	80%	Instructional Coord (Educ)
0.01 Healthcare Consultant		\$738	\$73,770	100%	Registered nurse
5 Lead Teacher (@ 1 classroom)		\$95,400	\$19,080	90%	CC worker
Teacher Assistant (@ 1 classroom)		\$0	\$15,900	75%	CC worker
6 Teacher Aides		\$65,520	\$10,920	100%	min wage
		<u>\$227,365</u>			
Subs for staff training @ hours/year	15	\$866			
Subs for staff leave @ days/year	5	<u>\$2,310</u>			Subs only for non-holidays
	Subtotal Wages	\$230,541			
Mandatory* benefits @ % salary					
FICA: Social Security	6.20%	\$14,294			
FICA: Medicare	1.45%	\$3,343			
Disability (not required)					
Unemployment	0.50%	\$1,153			
Workers Compensation	1.35%	<u>\$3,112</u>			
	Subtotal Mandatory Benefits	9.50% \$21,901			
Additional benefits:					
contribution to health insurance/FTstaff	\$0	\$0			No contribution is typical practice
	Subtotal Personnel	\$252,442		47% of expenses	
Contribution to operating reserve fund		\$0		0% of expenses	No contribution is typical
Nonpersonnel expense		<u>\$285,644</u>		53% of expenses	
	Total Expense =	\$538,086		Cost per child:	\$5,724

Expenses: "Better" Quality Level



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breaks, opening/closing

94 TOTAL Children

	Max Size
0 Infants	8
14 Toddlers	14
40 Preschool: Threes	20
40 Preschool: Fours	20

5 Classrooms

0
1
2
2

30% = % for daily coverage

EXPENSES

14.0 TOTAL Staff

	Total Cost	Unit Cost FTE Wage	% wages per	BLS occupation
1 Director (FT if > 45 children)	\$48,433	\$48,433	110%	CC/Preschool administr.
1 Office Manager (FT if >30 children)	\$30,970	\$30,970	95%	Office & admin support
0 Ed Coordinator (only if >125 children)	\$0	\$65,607	95%	Instructional Coord (Educ)
0.01 Healthcare Consultant	\$738	\$73,770	100%	Registered nurse
5 Lead Teacher (@ 1 classroom)	\$159,000	\$31,800	150%	CC worker
5 Teacher Assistant (@ 1 classroom)	\$106,000	\$21,200	100%	CC worker
2 Teacher Aides	\$25,116	\$12,558	115%	min wage
	\$370,257			

Subs for staff training @ hours/year 20

Subs for staff leave @ days/year 10

Subtotal Wages

\$1,260

\$5,040

\$376,557

Subs only for non-holidays

Mandatory benefits* @ % salary

FICA: Social Security 6.20%

FICA: Medicare 1.45%

Disability (not required)

Unemployment 0.50%

Workers Compensation 1.35%

Subtotal Mandatory Benefits 9.50%

Additional benefits:

contribution to health insurance/FTstaff \$0

Subtotal Personnel

\$0

\$412,330

No contribution is typical practice

59% of expenses

Contribution to operating reserve fund

\$0

0% of expenses

No contribution is typical

Child assessment tool

\$1,410

\$15 annual per child

Nonpersonnel expense

\$285,644

41% of expenses

Total Expense =

\$699,384

Cost per child:

\$7,440

Revenues: "Regulated" Quality Level



REVENUE

		Rates Per Child by period			
Full attendance is:	250	days/year	daily	monthly	annual
CC subsidy max rates (or parent tuition at same rates)	infants	\$0	\$32.25	\$698	\$8,380
	toddlers	\$109,321	\$31.23	\$676	\$8,115
	preschool	<u>\$581,620</u>	\$29.08	\$630	\$7,555
	Subtotal tuition	\$690,941			
CACFP	paid	\$9,447	60%	of children	
	reduced	\$20,398	20%		
	free	<u>\$27,260</u>	20%		
	subtotal CACFP	\$57,105			
QRIS revenue	Award	<u>\$0</u>			
	subtotal QRIS	\$0		0.0% of total revenue	
	Total potential revenue =	\$748,046			
Adjustments to revenue					
Bad debt (as % of tuition)	3%	\$20,728			
Enrollment (as % of capacity)	85%				
	Actual revenue =	\$618,220			
Revenue less Expenses	profit/(loss)	\$80,134			

Revenues: "Better" Quality Level



REVENUE

Full attendance is:	250 days/year	Rates Per Child by period			annual
		daily	monthly	annual	
CC subsidy max rates or parent tuition at same rates)	infants	\$0	\$32.25	\$698	\$8,380
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Subtotal tuition		\$690,941			
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	reduced	\$20,398	20%		
	free	\$27,260	20%		
subtotal CACFP		\$57,105			
PreK funding		\$0			
QRIS revenue	Award	\$0			
subtotal QRIS		\$0	0.0% of total revenue		
Total potential revenue =		\$748,046			
Adjustments to revenue					
Bad debt (as % of tuition)	3%	\$20,728			
Enrollment (as % of capacity)	85%				
Actual revenue =		\$618,220			
Revenue less Expenses profit/(loss)		(\$81,164)			

How the Model Can be Used

- Exploration of how various factors can affect profit or loss, e.g.:
 - Increased scale
 - Income mix of families served
 - Enrollment levels
 - Fee collectability
 - Subsidy policy changes
 - Revenue sources, e.g. state-funded PreK or QRIS
- Creating budget for a proposed center or group of centers
- Calculating cost per child

State Example: LA Results by Star Level



CENTERS

SIZE	Age Groups	# Classrooms	Group Size		
			Reg+Star 2	Star 3-4	Star 5
	0-12 months	1	10	8	8
	1 year	1	14	12	8
	2 year	1	22	16	12
	3 year	1	24	20	16
	4 year	1	24	20	20
	5 year	0	24	20	20
	TOTAL Classrooms	5			

INCOME MIX of CHILDREN

50%	185% FPL & above
25%	<185% FPL
25%	<130% FPL
90%	% of kids <185% FPL that are actually receiving CCAP

EFFICIENCY		Typical	
Enrollment as % of total capacity		85%	85.0%
Uncollected as % of tuition revenue		3%	15.0%

QUALITY	Profit/(Loss)	# children
Regulated	(\$67,957)	94
Star 2	(\$51,081)	94
Star 3	(\$88,579)	76
Star 4	(\$95,277)	76
Star 5	(\$185,814)	64

Source: "LA Cost Model 8029013...rev 5-29-14"

State example:

LA Profit/Loss by Star Level and Management Scenario

	“Base Case”	Older Age Mix	Subsidy Only	“Iron Triangle”
Regulated	(\$67,957)	(\$10,299)	(\$24,012)	\$44,027
Star 2	(\$51,081)	(\$206)	\$22,181	\$64,353
Star 3	(\$88,579)	(\$18,549)	(\$19,028)	\$22,837
Star 4	(\$95,277)	(\$13,546)	(\$14,495)	\$28,828
Star 5	(\$185,814)	(\$98,945)	(\$107,068)	(\$80,301)
Assumptions	5 classrooms 64-94 kids 50% Subsidy-eligible All ages 85% enrollment 15% uncollected	5 classrooms 84-118 kids 50% Subsidy-eligible Ages 2-4 85% enrollment 15% uncollected	5 classrooms 64-94 kids 100% Subsidy-eligible All ages 85% enrollment 15% uncollected	5 classrooms 64-94 kids 50% Subsidy-eligible All ages 95% enrollment 2% uncollected

Source: “LA Cost Model 10-5-12 Shared”

State example: Analysis of PreK and Head Start Funding

Star 5 Center	Infant/Toddler	3-year-old	4-year-old
Average cost per child: \$15,084			
Cost per child by age	\$18,022	\$11,389	\$10,773
Per-child revenue sources:			
EHS/HS	\$10,900	\$6,700	
PreK			\$4,260
CACFP	\$1,493	\$1,493	\$1,493
Parent fees	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Total Revenues	\$12,393	\$8,193	\$5,753
Net revenue/loss (funding gap)	\$5,629	\$3,196	\$5,020

NOTE: these are NOT Louisiana data; for illustrative purposes only

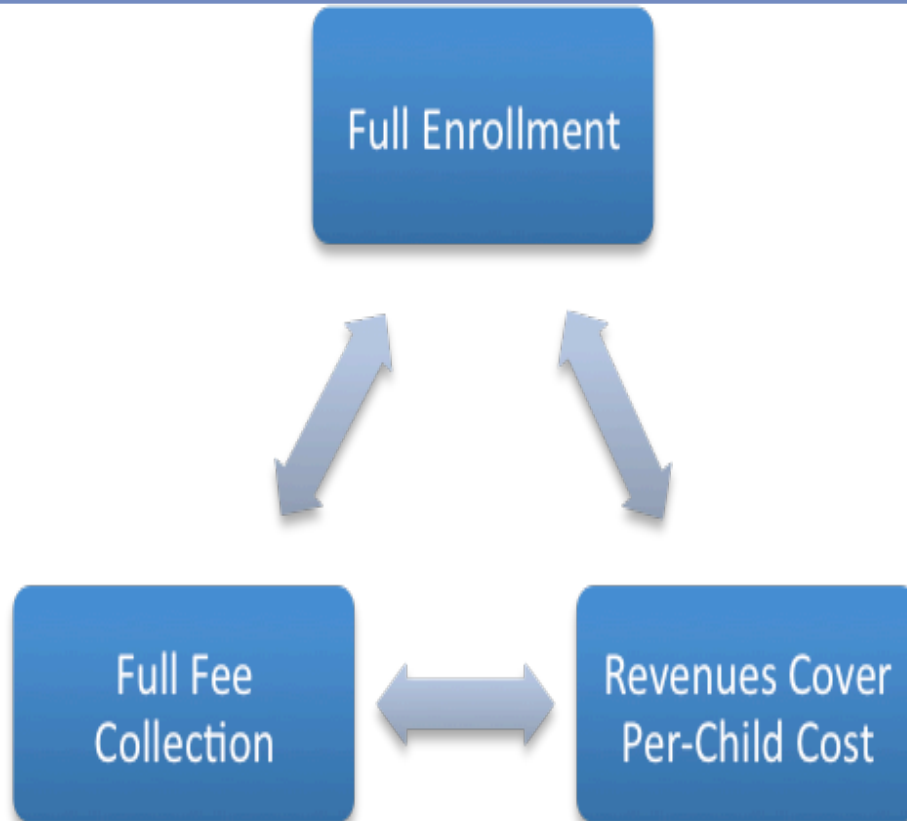
Cost Per Child Calculations

- Straightforward concept: Total expenses ÷ number of children
- Not always a straightforward calculation
 - When looking at particular group of children, e.g. infants, must count expenses within the infant classroom, **as well as** a portion of non-classroom expenses incurred by the center
 - Decide on method for allocating non-classroom expenses
 - Some expenses vary by number of children, e.g. food
 - Some expenses vary by age group, e.g. share of time for Social Worker or Mentor Teacher
- Costs per child vary significantly by age
 - Lower cost groups (e.g. 4-year-olds or school-age) can “subsidize” or offset higher costs of infants/toddlers
- Consider costs per child by classroom when analyzing age and income mix of families, and fee structure

Policy Implications

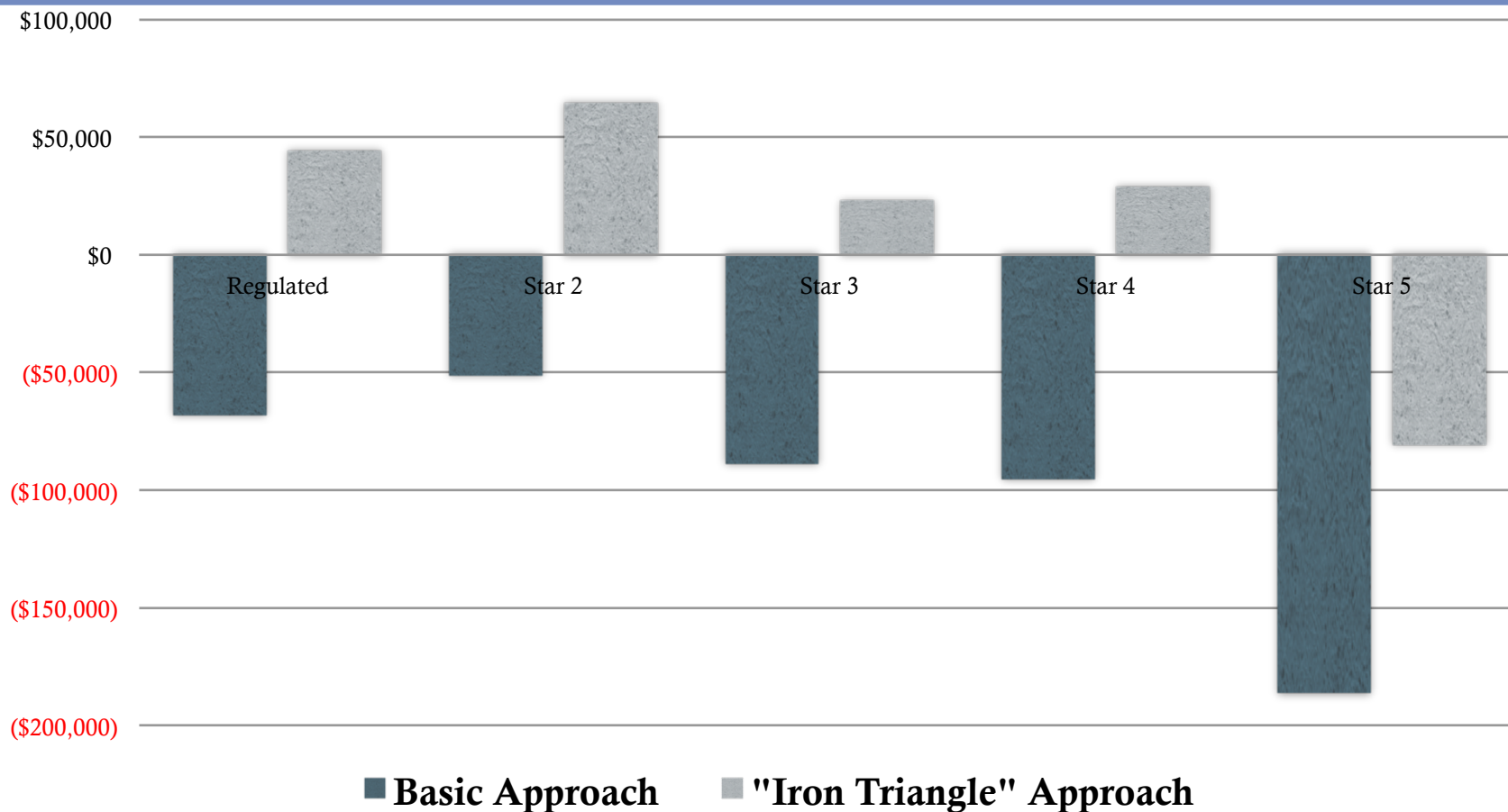
- Ability to demonstrate whether there is a gap between the cost of providing quality services and the revenue sources available to support such a program.
- Knowing the size of the gap at different quality levels for various provider types can inform the design of state financial support and incentive packages.
- Helps states understand the impact of various policies such as allowed child absences, contract vs. voucher payments, etc.
- Helps states understand implications of PreK vs. child care funding

Policy Implications: Modeling the Iron Triangle



- Ensure full enrollment – every day, in every classroom
- Collect tuition and fees – in full and on-time
- Revenue covers per-child cost (tuition, fees + 3rd party funding)

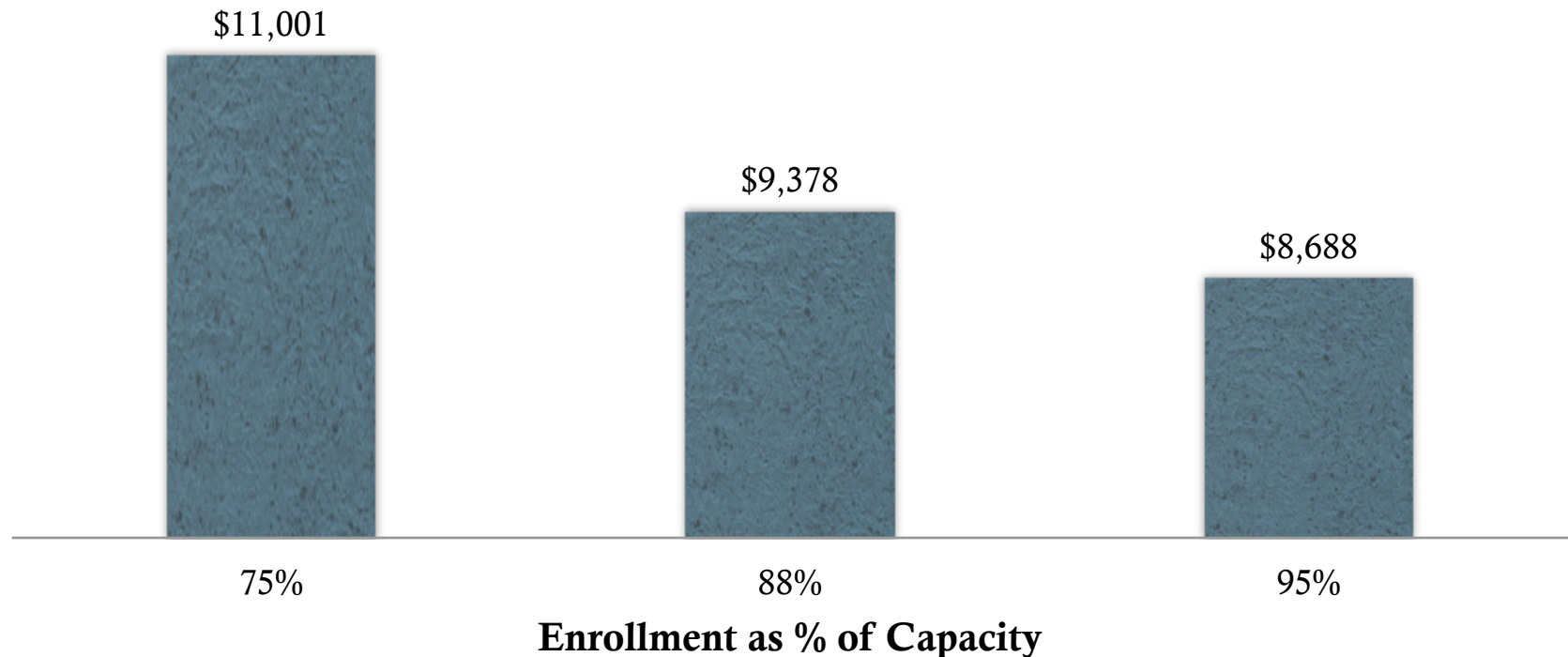
State Example: Modeling the Impact of the Iron Triangle



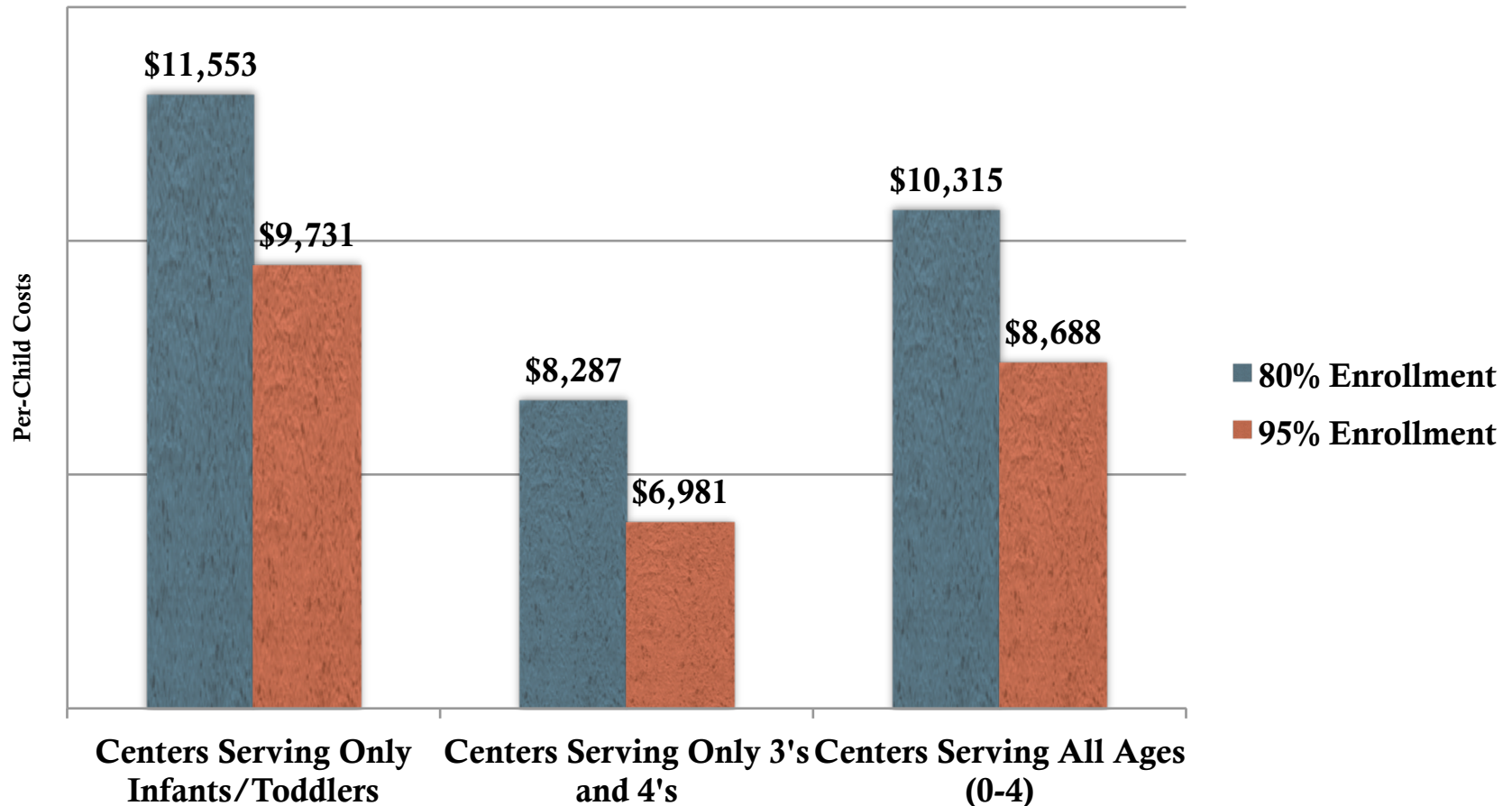
Note: Iron Triangle approach boosts enrollment to 95% and lowers bad debt to 2%

State Example: Impact of Enrollment on Cost-per-child

Annual Cost Per Child
All ages, Star 4 Center in LA
Capacity = 76

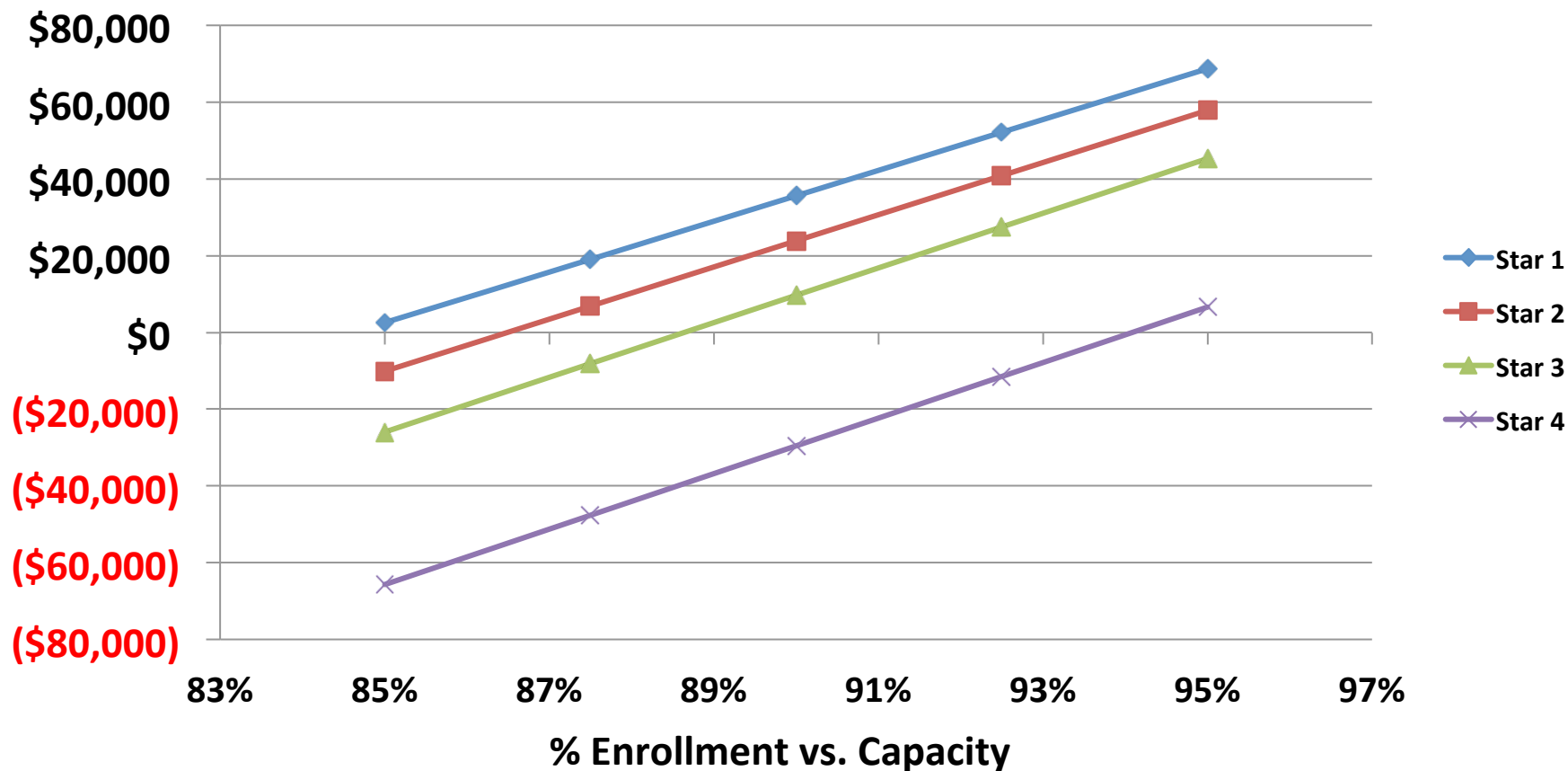


State Example: Per Child Cost by Age and Enrollment



State Example:

Impact of Increasing Enrollment on Net Revenue



NOTE: these are NOT Louisiana data; for illustrative purposes only

State Example: Co-Payments Based on Cost of Care

**Family of 4, parents earn minimum wage,
annual income \$30,160
(New Orleans, LA)**

Weekly Rates	Infant	3-year-old	Total
Private Tuition	\$150.00	\$135.00	\$285.00
Child care subsidy rate ceiling	\$92.50	\$87.50	\$180.00
State payment: 40% of CCAP rate ceiling	\$37.00	\$35.00	\$72.00
Parent costs:			
Parent share of CCAP rate ceiling (60%)	\$55.50	\$81.00	\$136.50
Parent co-pay above CCAP rate ceiling	<u>\$57.50</u>	<u>\$47.50</u>	<u>\$105.00</u>
Total cost to parent	\$113.00	\$100.00	\$213.00
Parent cost as % of weekly income	19.5%	17.2%	36.7%

State example:

Analysis of PreK and Head Start Funding Gap

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Average cost per child: \$15,084			
Cost per child by age	\$18,022	\$11,389	\$10,773
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Total Revenues	\$12,393	\$8,193	\$5,753
Net revenue/loss (funding gap)	\$5,629	\$3,196	\$5,020

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For more cost modeling information:

- Go to the online Provider Cost of Quality Calculator (PCQC): www.ECEQualityCalculator.com
- Contact Opportunities Exchange:
 - www.opportunities-exchange.org
 - Libbie Poppick: libbiep@gmail.com
 - Louise Stoney: louise.stoney@gmail.com