

Planning and Implementing a Cost Analysis

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Annual IES Principal Investigators Meeting January 25-27, 2022 Advancing Equity and Inclusion in the Education Sciences





Agenda

- Welcome
- Overview of the CAP Project
- Overview of Economic Evaluations
- Common Challenges
- Resources and Tools
- Demonstration of CAPCAT 1.2
- Questions and Answers





The Cost Analysis in Practice (CAP) Project

The CAP Project...

- is three-year initiative funded by the Institute of Education Sciences, U.S. Department of Education.
- provides free, on-demand tools, guidance, and technical assistance to researchers and practitioners who are planning or conducting economic evaluations.
- supports cost analysis, cost-feasibility analysis, and costeffectiveness analysis (CEA) of educational programs and practices.





The Cap Project Team for Today



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Overview of Economic Evaluations





Cost Analysis

Why do we need to do a cost analysis, anyway? Cost analysis can have many benefits, some of them non-obvious:

- Help uncover how a theory of action is operationalized or implemented in concrete, resource terms.
- Contextualize measured effects in a broader implementation framework.
- Select among alternative uses of scarce resources with concrete evidence on efficiency, equity, and other criteria.
- Can help determine whether resources are being distributed equitably among students and schools.





	Cost Analysis	Cost-Effectiveness Analysis	Cost-Benefit Analysis	Cost-Utility Analysis
What it is	Accounting of ALL resources required to achieve or replicate measured effect	Analysis of costs relative to a single measured effect	Analysis of costs relative to multiple outcomes expressed in monetary units called benefits	Analysis of the utility - overall well-being created by an intervention - relative to costs
Good for	Determining resource requirements; comparing required resources with budget constraints	Comparing programs with the same outcome	Determining if a single program is worthwhile; comparing programs for overall social value	Comparing multiple interventions, each with the same set of multiple outcomes
Pros	Captures what is needed to replicate effect and can help determine what makes something "work"	Among methods combining costs and effects, most straightforward and fewest assumptions	Can incorporate multiple outcomes and can analyze a single program	Can weigh costs against overall measure of value to compare among interventions
Cons	Generally data-intensive method; costs alone seldom sufficient for decision-making	Cost-effectiveness ratio not directly interpretable on its own; requires choice of single, common outcome measure	Requires sophisticated statistical methodology and numerous assumptions to monetize benefits	Utility not directly interpretable; does not tell you on its own if a single intervention is "worth it"

Stages of a Cost Analysis: Ingredients Method¹



Stage I: **Designing Your Cost Analysis**



Stage III: **Analyzing Cost Data**





- 1. Determine who is the audience for the results of the analysis
- 2. Specify what decision(s) this analysis can inform and timing of decision(s)
- 3. Determine what decision-makers need to know and what type of cost analysis can answer the question
- 4. Clearly define the program
- 5. Decide from whose perspective you will estimate costs (and returns)
- 6. Decide which stages of program development and implementation to include in your cost analysis



Stage II:

Collecting Cost Data

- Determine the timing of cost data collection
- 2. Document the resources needed to implement the program
- 3. Identify sources of data for type and quantity of resources needed to implement the program
- 4. Identify prices for your ingredients



- 1. Assign values to each resource
- 2. Adjust prices
- 3. Calculate costs
- 4. Categorize costs
- 5. Conduct sensitivity analysis



- Identify context and assumptions to report
- 2. Calculate the cost metrics to report
- 3. Present the results

¹Levin, 1975; Levin et al., 2017





DON'T I ALREADY KNOW THE COSTS?

Not necessarily!

- Actual costs may differ from planned expenditures.
- Expenditures ≠ Costs.
- "Opportunity cost."

What are some possible "hidden costs" of interventions?

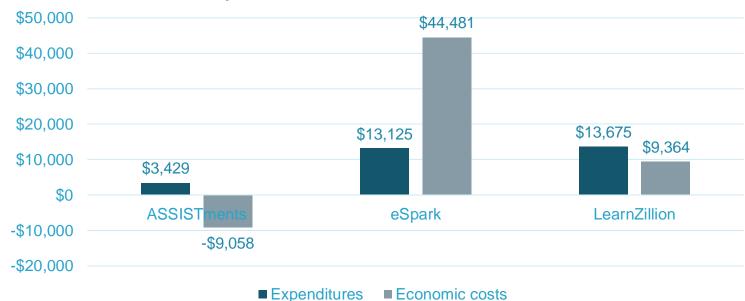
- Resources that are not new but are reallocated from other purposes.
- Resources that are donated or provided in-kind.
- Transfers/subsidies from other agencies, levels of government, etc.
- Participant/family inputs.
- Capital expenditures, facilities costs.
- Administrative overhead.





Expenditures vs costs: Digital Math Tools Example

Expenditures vs. Economic Costs





Common Challenges





Common Challenges in Conducting Cost analysis

- CAP Project team served as a guest bloggers for Inside IES Research to discuss practical details regarding cost studies.
- One blog focused on common challenges in efficacy trials and recommendations to overcome these challenges.
 - Hollands, F., Brodziak, I., Pratt-Williams, J., Shand, R., Drummond, K., and Artzi, L. (2021) Overcoming Challenges in Conducting Cost Analysis as Part of an Efficacy Trial. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation. https://ies.ed.gov/blogs/research/post/overcoming-challenges-in-conducting-cost-analysis-as-part-of-an-efficacy-trial
- Many of these challenges apply to cost analysis more broadly.





The Value of Cost analysis and Navigating Varied Implementation

Challenge 1: Not understanding the value of a cost analysis for educational programs

- Provides insights beyond whether there is adequate budget for the program.
- Estimate the cost of implementation in practice instead of as intended.

Challenge 2: Inconsistent implementation across cohorts

- Minor variation: Document differences to present range of costs.
- Substantial variation: Focus on the cohort for which implementation reflects how the intervention is most likely to be used in the future.





Cost Data Collection

Challenge 3: Balancing accuracy of data against burden on participants and researchers

- Plan in advance.
- Integrate the data collection for the cost analysis.

Challenge 4: Determining whether to use national and/or local prices

- Consider the following:
 - the audience for the results.
 - availability of relevant prices from national or local sources.
 - the number of different sets of local prices that would need to be collected.
 - Research budget for cost analysis data collection.



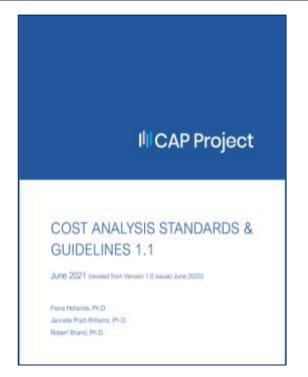


CAP Project Resources and Tools

Visit https://capproject.org/resources for more.



CAP Project Cost Analysis Standards and Guidelines 1.1



Practical guidelines for designing and executing cost analyses of educational programs.



Checklist for Cost Analysis Plans



- Use this checklist to guide your cost analysis plans.
- It is designed to help users plan high quality cost analyses of educational programs/interventions with notes specific to CEA.



Timeline for Cost and Cost-Effectiveness Analysis

IIICAP Project

TIMELINE OF ACTIVITIES FOR COST ANALYSIS

This is to severe provides paid that to analyze his the assuments of a cine required to must in our pulses of our off-uniform analyze 2.50 of the minimum along all to 9 is per well uniform to a 100 fifthing of the other cines proper to which is now mailton to CLEA is concluded constructively with the trapper ratio of the extractive to the cine of the c

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Year I. Planning and design of data collection instruments

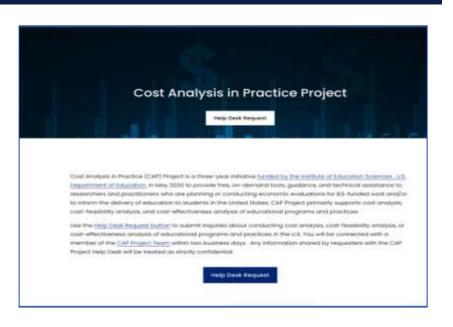
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- Exercise a participant modern modern modern replacement on sand and other replacement trans-
- Recovery any contingener analysis and not proved to the same or cital any other contents on the recovery and continue;
- Purge time tage for the implementation maps and any other present preciously rife participan in one start up-or ingents implementation activities. Called these or lead quarterly.
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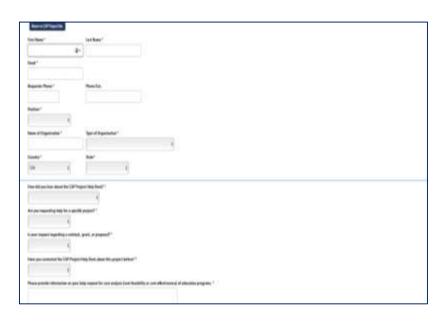
Help Desk Request



- Submit inquiries about conducting cost analysis, costfeasibility analysis, or costeffectiveness analysis of educational programs and practices in the U.S.
- Visit https://capproject.org/ to submit a help desk request and to find these resources.



Request Form



- Complete the request form including information about your project.
- You will be connected with a member of the CAP Project Team within two business days.



Demonstration of CAPCAT 1.2





CAPCAT 1.2

Visit https://capproject.org/templates to download CAPCAT 1.2 and other templates.





CAPCAT 1.2 Demo

- CAPCAT = Cost Analysis in Practice Project Cost Analysis Template
 - https://capproject.org/templates
- CAPCAT 1.2 accommodates:
 - Up to 2 programs
 - Treatment (T) vs. Control (C)
 - Alternative programs being considered for implementation
 - An unlimited number of sites: each may host T, C, or both T and C
 - Up to five years of program implementation
 - Both local and national prices
 - Expenditure analysis as well as economic cost analysis



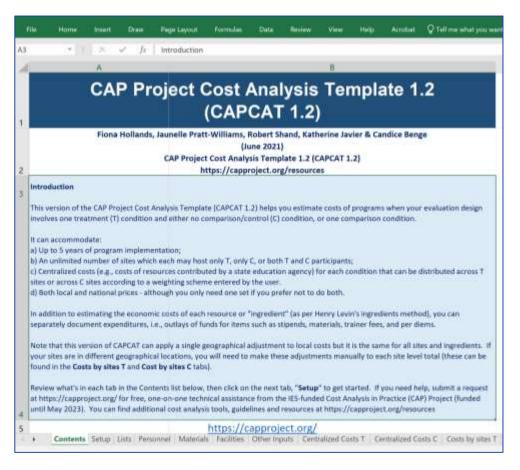


Reading Recovery (RR) vs. Fast ForWord Reading (FFW)

- Reading Recovery (RR) = Treatment program
 - One-on-one reading intervention delivered by trained teachers
- Fast ForWord Reading (FFW) = Control condition
 - Computer-based reading program
- Each program implemented in 15 schools in 2017 (30 schools total)
- All in one district in metropolitan Kentucky

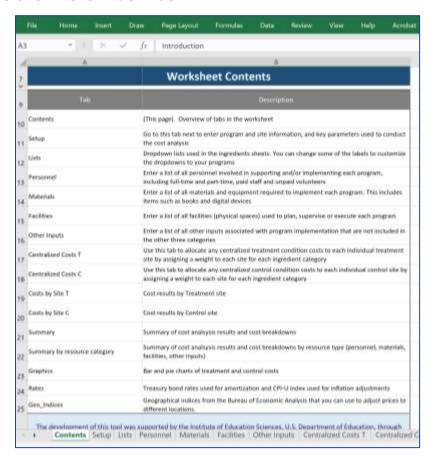






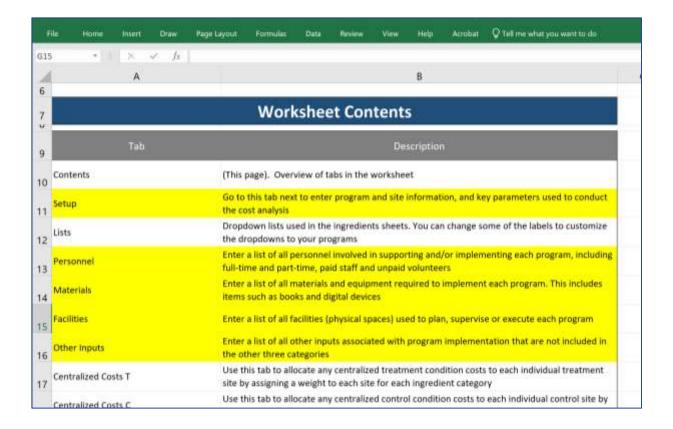


CAPCAT 1.2 List of Contents



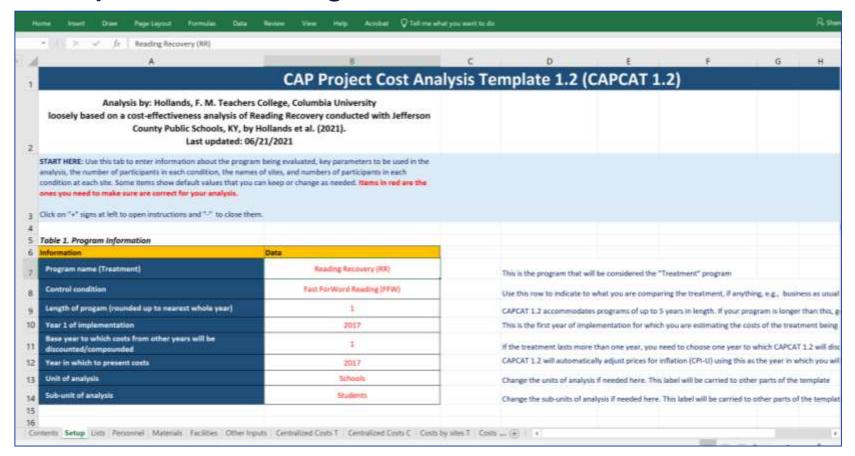


Five Key Tabs to Complete



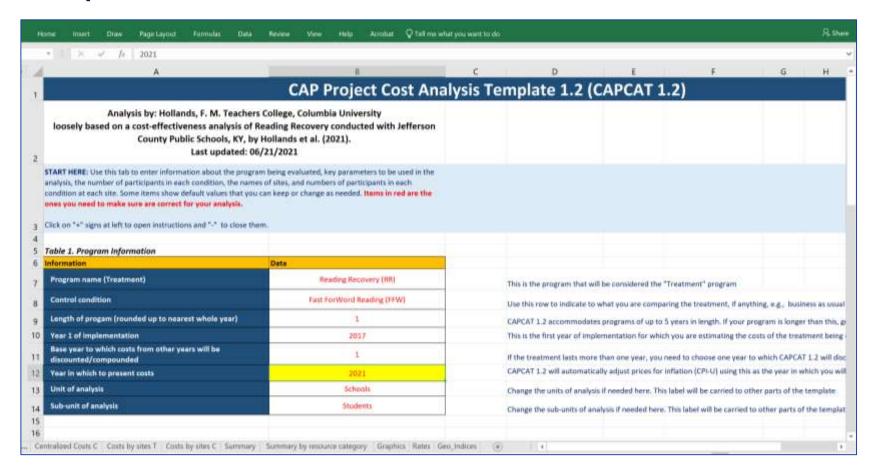


Setup Tab Table 1: Program Information





Setup Tab Table 1: Year in Which to Present Costs





Setup Tab Table 2: Key Parameters

Parameters					
Table 2. Key parameters					
Parameter name	Value ▼				
Index for geographical adjustment of local prices to national	0.90				
equivalent	0.30				
Source of geographical index	[BEA: Kentucky Metropolitan areas]				
Discount rate	2%				
Number of years over which startup and/or personnel training	7				
costs are amortized	,				
Number of years over which materials are amortized	7				
Number of years over which facilities are amortized	30				
Number of years over which other inputs are amortized	7				
Number of Schools in treatment group (T)	15				
Number of Schools in control group (C)	15				
Number of Students in treatment group (T)	195				
Number of Students in control group (C)	195				





Table 3. Interest Rates		
Number of years	▼	Rate (%)
1		0.00%
2		0.40%
3		0.43%
5		0.54%
7		0.73%
10		0.89%
20		1.35%
30		1.56%

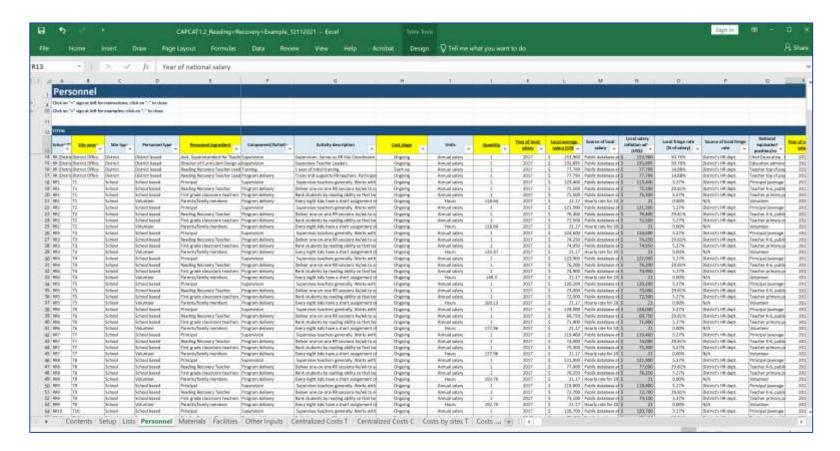






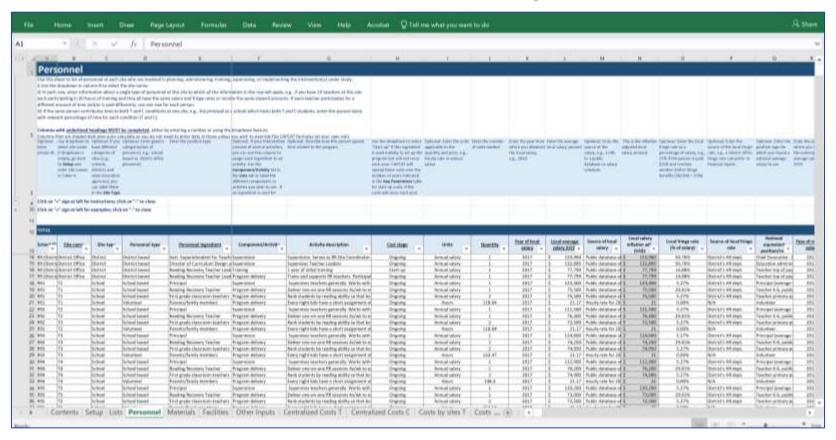
Personnel Tab





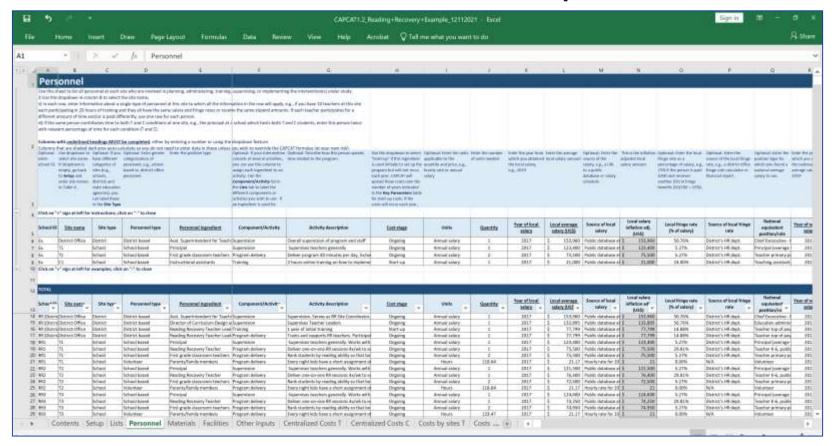


Personnel Tab with Instructions Row Open



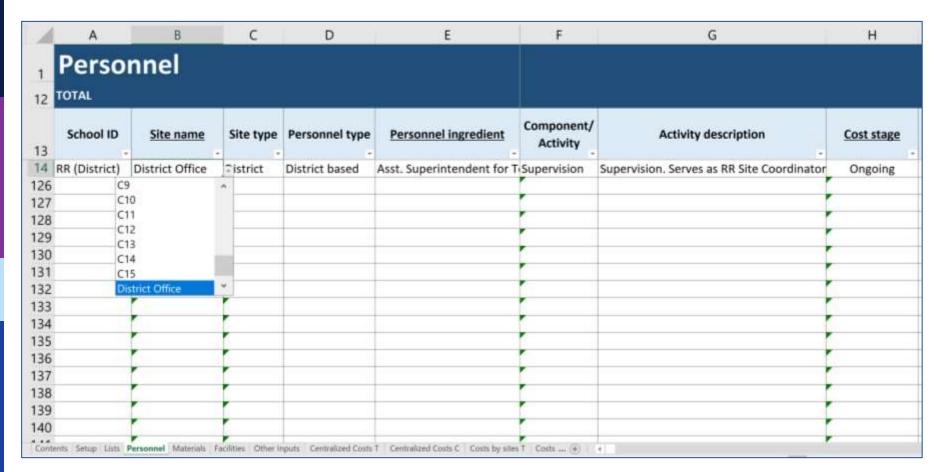


Personnel Tab with Instructions and Examples



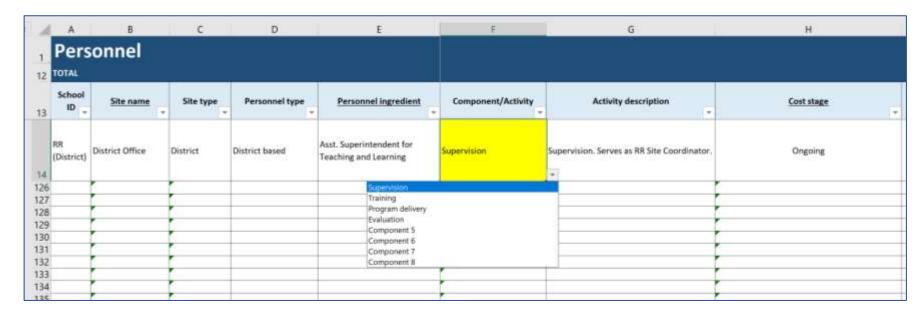
Personnel Tab: Columns A-H











Personnel Tab: Columns I-P



4	E	1	J	K	L	М	N	0	Р
1									
12									
13	Personnel ingredient	Units	Quantity	Year of local salary	Local average salary (US\$)	Source of local salary	Local salary inflation adj. (US\$)	Local fringe rate (% of salary)	Source of local fringe rate
14	Asst. Superintendent for Teaching and Learning	Annual salary	1	2017	\$ 153,960	Public database at www.database.ed u	\$ 153,960	50.76%	District's HR dept.





À	E	Q	R	S	Т	U	٧	W
1								
13	Personnel ingredient	National equivalent position/role	Year of national salary	National average salary (US\$)	Source of national salary	National salary inflation adj. (US\$)	National average fringe rate (% of salary)	Source of national fringe rate
14	Asst. Superintendent for Teaching and Learning	Chief Excecutive - Elementary and Secondary Schools (2017)	2017	\$ 154,580,00	DoL - BLS - OES https://www.bls. gov/oes/current/ oes111011.htm	\$ 154,580.00	54.00%	Elementary & Secondary schools line: Total benefits/Wages and Salaries https://www.bls.gov/news.relea se/ecec.t03.htm





4	E	Х	Y	Z	AA	AB	AC
1							
12							
13	Personnel ingredient	Amount of time worked annually (Hours)	Amount of time spent on program (Hours)	Time spent on program (% of total time)	Period over which the cost is spread (Yrs)	Interest Rate (% per year)	Percentage of costs to include in this analysis
14	Asst. Superintendent for Teaching and Learning	2,080	21	1.0%	1	0.00%	100%

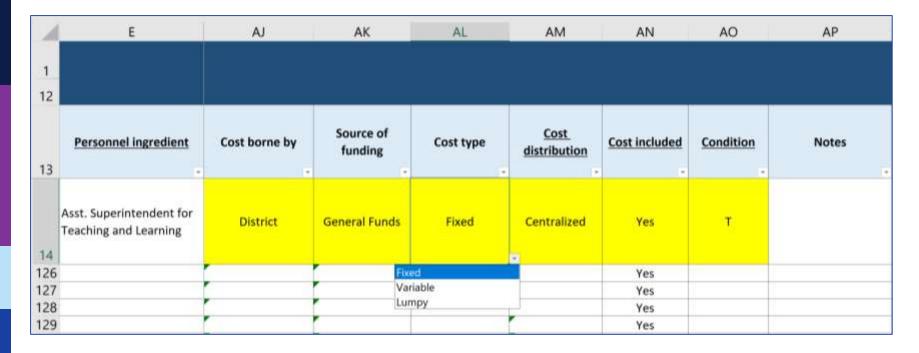




4	E	AD	AE	AF	AG	АН	Al
1 12		\$ 1,428,410.44	\$ 1,473,543.51		\$ 1,428,410.44	\$ 1,473,543.51	\$0
13	Personnel ingredient	Local cost (US\$)	National Cost (US\$)	Year of use	Local cost PV	National cost PV	Expenditures (US\$)
14	Asst. Superintendent for Teaching and Learning	\$ 2,321.10	\$ 2,380.53	1	\$ 2,321.10	\$ 2,380.53	\$ -

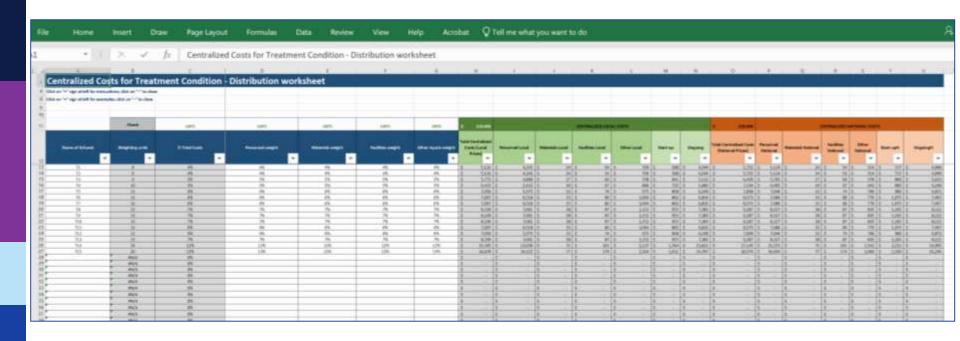






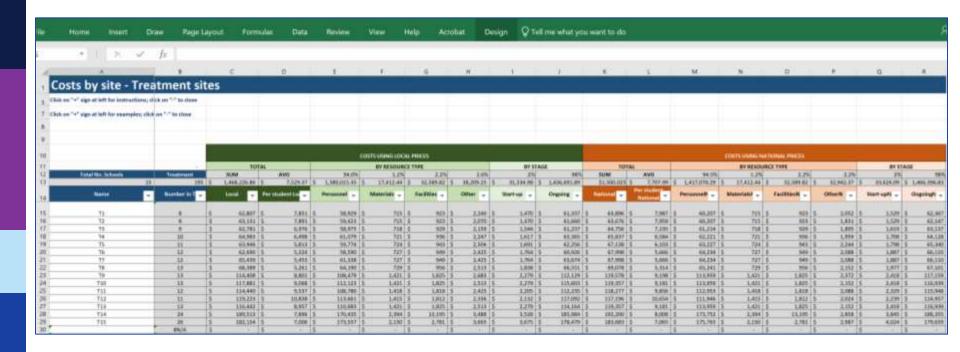


Distributing Centralized Costs Across Sites





Costs by Site Tab for Treatment Sites







4	Α	В		C		D		E	
1		Cost analysis results							
4		Click on "+" sign at left for instructions; click	on "-" to close						
5									
6		Summary metrics							
7		Metric	1	Local prices	Nation	nal average prices	a	ocal prices djusted by raphical index	
8		Cost per Schools in T (average)	\$	97,882	\$	100,002	\$	109,365	
9		Cost per Schools in C (average)	\$	11,668	\$	12,206	\$	13,037	
10		Cost per Students in T (average)	\$	7,529	\$	7,692	\$	8,413	
11		Cost per Students in C (average)	\$	898	\$	939	\$	1,003	
12		Incremental cost per Students	\$	6,632	\$	6,753	\$	7,410	
13		Incremental cost per Schools	\$	86,213	\$	87,795	\$	96,328	
14									
15									



Graphics







Questions

Please join us for a live question and answer session immediately following this recording.



Thank you!

Please visit https://capproject.org if you have questions or would like to reach us.

The development of this presentation was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305U200002 to Teachers College, Columbia University. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.