

Economic Benefits of the Child-Parent Center Intervention at age 37



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Research Question

- What are the midlife estimates of economic returns of a high-quality preschool program?
- With a focus on new information on health in midlife, how do these estimates differ from prior studies of the same program?

Lit Review – Benefit-Cost Analyses

Program	Study	Age	B/C Ratio	Inclusions
Head Start	Kline & Walters, 2016		1.1 to 1.84	adult earnings
Perry	Belfield et al., 2006	40	12.9	higher tax revenues, lower criminal justice system expenditures, and lower welfare payments
	Heckman et al., 2010		12.2	
Abecedarian	Barnett & Masse, 2007	30	2.5	increased lifetime earnings, decreased K-12 schooling costs, and decreased costs related to smoking
Abecedarian	Garcia et al., 2020	30	7.3	full array of benefits such as labor income, parental income, health, and reduced crime
CPC	Reynolds et al., 2001	21	7.1	increased earnings and tax revenues, and averted criminal justice system costs
	Reynolds et al., 2011	26	7 to 11	
Meta-Analysis of 11 studies	Ramon et al., 2018		4.19	Increased earnings, savings from child-care, healthcare, remedial education, & crime

Current Study

- We examine recently-collected survey responses from a cohort of adults at ages 35-37 in the Chicago Longitudinal Study of the **Child-Parent Centers (CPC)**.
- Health benefits of preschool on obesity, diabetes, hypertension, smoking, substance abuse, and depression.
- Benefits of CPC program on education, earning, and crime
- Comparison of benefits versus intervention costs as a **cost-benefit analysis**

Cost Benefit Analysis

Estimates are converted to **2019 dollars** using the Bureau of Labor Statistics' Consumer Price Index

Annual **discount rate of 3%** is used to calculate the Present Value (PV) at age 3.

Benefits are projected through **age 65** for lifetime outcomes.

Program Costs

- Program Costs have been calculated by Reynolds et al., 2002; Reynolds, Temple, White, et al., 2011
- Cost for one year of program = \$6,960 (2019 US Dollars)
- 55% students received a two-year program
- $\text{Cost} = (.55)(\$6,960) + (1.00)(\$6,960/1.03)$
- **Program Cost = \$10,585 in 2019 dollars for approximately 1.5 yrs**

Program Benefits

- reduced private expenditures for child-care services
- reduced public expenditures for school remedial services (i.e., retention and special education)
- reduced criminal justice system expenditures for juvenile and adult criminal behavior
- averted tangible and intangible juvenile and adult criminal victimization costs
- reduced child welfare system and abuse and neglect victimization costs (tangible and intangible)
- **increased lifetime earnings and compensation realized by program participants and associated government tax revenues**
- **reduced costs associated with health benefits**

Program Benefits

Benefit	Reynolds et. al. 2011 (2007 USD)	Adjusted for inflation (2019 USD)
Child-care services	\$4,387	\$5,455
School Remedial Services	\$6,197	\$9,603
Criminal justice system costs	\$9,060	\$14,040
Criminal victimization costs	\$25,620	\$39,702
Reduced child welfare system costs	\$6,794	\$10,528

Program Benefits

Lifetime Earning

- Higher rate of high school completion by 6.2 % points
- Translates to lifetime earning benefits of \$22,561

Program Benefits

Diabetes

- Annual per-capita cost: \$13,723 (2019 USD) (ADA, 2018)
- Includes medical costs, lost productivity, and pre-mature mortality
- Benefits from 1 % point reduction = $0.01 * \$13,723 = \137.23 per year
- From 3.7 % point reduction = $3.7 * \$137.23 = \507.75 per year
- From age 28 to age 65 = \$19,295
- **Discounted to age 3 = \$5,618**

Program Benefits

Smoking

- Annual per-capita cost: \$5,895 (2019 USD) (CDC, 2005; 2008)
- Includes medical costs and lost productivity
- Benefits from 1 % point reduction = $0.01 * \$5,895 = \58.95 per year
- From 5.8 % point reduction = $5.8 * \$58.95 = \341.91 per year
- From age 18 to age 65 = \$16,411
- Discounted to age 3 = \$5,711

Program Benefits

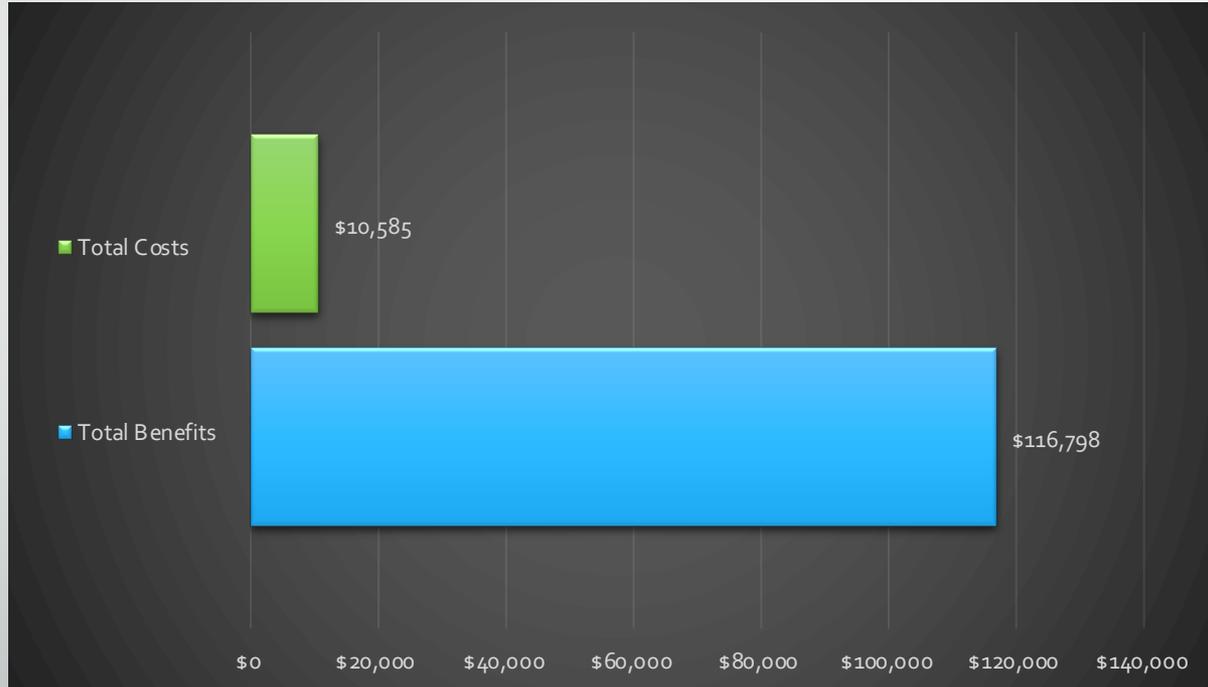
Smoking (contd...)

- Cost of pre-mature mortality
 - Value of Statistical Life (VSL) Method
 - Average present value (at age 3) mortality cost = \$573,659
 - From 5.8 % point reduction = \$33,272
 - Foregone Earning Method
 - Average Annual Income of Sample = \$19,979
 - PV (at age 3) of last 10 years of earning @2% increase = \$61,732
 - From 5.8 % point reduction = \$3,580
- **Total Smoking Benefits = \$9,291 to \$38,983**

Total Benefits

Benefit	Estimates (2019 USD)
Child-care services	\$5,455
School remedial services	\$9,603
Criminal justice system costs	\$14,040
Criminal victimization costs	\$39,702
Reduced child welfare system costs	\$10,528
Increased lifetime earnings	\$22,561
Reduced smoking costs	\$9,291
Reduced Diabetes costs	\$5,618
Total Benefits	\$116,798

Benefit Cost Ratio



Benefit-Cost Ratio = 11.03

Net Benefits = \$106,213

Conclusion

- The program provides an estimated benefit of 11 dollars for every dollar invested
- Existence of these additional benefits for health outcomes are likely to further amplify the rationale for government investments in early education

Limitations and Future Directions

- Sensitivity analysis for different discount rates
- Monte-Carlo analysis for uncertainty in estimates
- Use health data collected through physical health exams
- Evaluate the impact on premature mortality
- Study other determinants of mental health

Value of the Study

- Evaluate the long-term impacts of an Early Childhood Program (mid-adulthood)
- Effects on adult physical and mental health
- Important for the current debate on how much resources to devote to publicly funded preschool and early elementary school programs.
- Providing an example of CBA in prevention programs, using recommended best practices for economic evaluations (Crowley et al., 2018)



Thank You!