Help Me Grow® Florida

Economic Valuation and Assessment Study

– Final Report -

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October 2020

Executive Summary

"Help Me Grow® Florida" (HMGF) contracted with the Florida State University (FSU) Center for Economic Forecasting and Analysis (CEFA) to conduct an economic analysis study of the Help Me Grow® Florida program, in terms of sales/revenues, employment, labor income, and other related indicators.

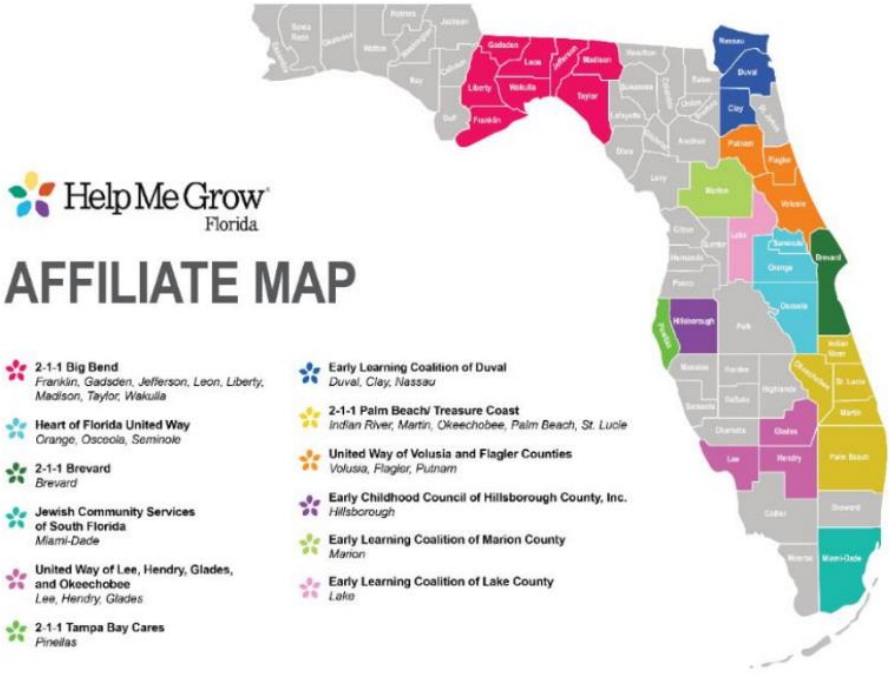

Figure ES1. Help Me Grow® Florida Affiliate Map[1]

From an economic perspective, HMGF activities may be summarized as follows:

- HMGF provides *referral services* to Early Intervention type programs,[2]
- Spending effects that pertain to the "Individual and Family Services" industry, including supply chain spending, and household spending (i.e. direct, indirect, and induced effects), and;
- Investment in "human capital", which is consumed over a lifetime via labor income.

The body of the report begins with a short literature review, specific to the scientific interest in terms of *human capital theory* and the *human capital–production process*. Applied economic research shows that it is not only widely recognized that there is a sizable economic impact from Early Intervention-type programs, but also that early childhood is the most crucial life phase in terms of developmental malleability, when maturation processes are accelerated, and genotypic milestones emerge.

[1] Map retrieved from p.4, Help Me Grow® Florida, (2020). "2019-2020 FY Annual Report" (obtained via HMGF).
[2] Referrals and early intervention may be perceived as complementary goods, i.e. a good or service used in conjunction with another good or service. Usually, the complementary good has little to no value when consumed alone, but when combined with another good or service, it adds to the overall value of the offering.

Some descriptive statistics are provided, based on the HMGF "System for Tracking Access to Referrals" (STAR) database. Some summary points are that referrals seem to be shifting to younger ages, and that each child receives approximately 2.52 referrals on average (both measured over the last four fiscal year's).

The research team took a two-pronged approach regarding the economic analyses (involving the second and third bullet listed above). Before economic impacts can be estimated, the concept of Life-Time-Earnings (LTE) is introduced. This concept is translated in a small abstract model representing human capital. Added LTEs' are estimated based on the difference between a baseline and an alternative scenario, the latter including the costs for referrals. Consequently, economic impacts are calculated using multipliers on both HMGF budget spending, as well as on additional LTE spending.

Economic Impacts of the HMGF Program

Economic impacts are estimated based on both tiers; HMGF budget spending (in two parts: program budget and overhead budget) including ripple effects, and spending of additional LTEs' including ripple effects. The results are shown in Table ES1.

Table ES1. Summary Economic Impact Estimates of Help Me Grow® Florida, FY 2019-2020

Total Economic Impact	Total Output	Total Employment	Total Labor Income
Due to HMGF Program Budget spending	$ 3,259,007	47.1	$ 1,678,444
Due to propensity to consume based on added LTE	$ 6,965,806	43.6	$ 2,336,197
Sub-Total	**$ 10,224,813**	**90.7**	**$ 4,014,641**
Due to Overhead Budget spending	$ 1,335,765	16.5	$ 641,966
Total	**$ 11,560,577**	**107.1**	**$ 4,656,606**

In terms of Return on Investment (ROI):

- HMGF program budget spending ROI 2.38
- HMGF total budget spending ROI 2.54
- LTE spending ROI 5.08
- Total ROI 2.54 + 5.08 = 7.62[3]

Hence, every dollar invested in the HMGF program returns approximately $7.62 in total economic output. If the HMGF program is offered in all Florida counties, instead of the counties presently serviced, all other things being equal (Ceteris Paribus), the total output impact would be over $17.1 million. Based on the HMGF program (and a hypothetical $4.5 million budget in $2020) offered in all counties in Florida, it could be stated that for every dollar invested in the HMGF program returns about $7.62 in total economic impact as a result of the HMGF Program.

[3] 7.62 = 2.54 + 5.08

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Introduction

In June 2020, "Help Me Grow® Florida" (HMGF) contracted with the Florida State University (FSU) Center for Economic Forecasting and Analysis (CEFA) to conduct an economic analysis study of the Help Me Grow® Florida program, in terms of sales/revenues, employment, labor income, and other related indicators.

Early Intervention Program(s) and the Child and Family Services of HMGF

Help Me Grow Florida is a unique, holistic service system that connects, receives, and provides referrals for children and families. Parents contact HMGF via their centralized call center and connect with a care coordinator who assesses the needs of the family. HMGF then offers free preliminary screenings to determine specific developmental or support issues with a child. Based on that screening, the HMGF care coordinator will then refer the family to the necessary local services and support(s). Finally, the care coordinator conducts follow up interviews to assess progress and address any additional concerns.[4] Compared to other child and family service programs, HMGF is distinct in that it combines different family service program aspects into its holistic system of services. HMGF is a holistic provider to both families and children, similar to a wraparound services program, however HMGF also conducts Care Coordination and has a formal follow up procedure such as a case management program. Prior to delving into the Early Intervention (EI), and wraparound literature based on: education, healthcare, and family services, it seems appropriate to define the different types of child and family services in the literature and discuss in what context these definitions can be applied to HMGF.

EI is a set of services available to children with developmental delays or disabilities, and their families. Early Intervention services may include physical therapy, occupational therapy, assistive technology, psychological services, etc.[5] HMGF facilitates early intervention by linking children and families with developmental, behavioral, or educational concerns about their children to community-based services at no cost to parents and caregivers. HGMF refers services for childcare, developmental screening, occupational therapy, funding, parent/child support, parenting education, and more (Zimskind, 2020).[6]

[4] Help Me Grow Florida (2020). "About Help me Grow." Retrieved from: https://www.helpmegrowfl.org/about-hmg/
[5] Center for Disease Control (CDC), (2019). "What is 'Early Intervention'?", December 9. Retrieved from: https://www.cdc.gov/ncbddd/actearly/parents/states.html
[6] Zimskind, L., (2020). "Help Me Grow Orange County Three Year Report 2016 to 2018", First 5 Orange County Children and Families Commission. Retrieved from: https://helpmegrownational.org/resources/help-me-grow-orange-county-three-year-report-2016-2018/

Although U.S. health agencies have a common, or standard, definition of EI, the academic literature uses Early Intervention to describe a wide variety of services and programmatic treatments. To identify some commonalities between EI programs discussed in the literature, Guralnick (2008),[7] the Director of the University of Seattle's Center on Human Development and Disability, developed the following 10-point common principle definition for broadly describing Early Interventions. Guralnick's 10-point principle describes the common features of EI programs as follows:

1. A Developmental Framework Informs all Components of the EI System and Centers on Families.
2. Integration and Coordination at All Levels of the Early Interventions System.
3. Integration and Participation of Children and Families in Typical Community Programs and Activities are Maximized.
4. Early Detection and Identification Procedures are in Place.
5. Surveillance and Monitoring are an Integral Part of the System.
6. All Parts of the System are Individualized.
7. A Strong Evaluation and Feedback Process is Evident.
8. Sensitivity to Cultural Differences and an Understanding of their Developmental Implications.
9. Evidence Based Recommendations to Families and Practices.
10. A Systems Perspective is Maintained, Recognizing Interrelationships Among all Components.

While HMGF facilitates early intervention services through its referrals, HMGF is different from the EI programs discussed in the literature in how it develops case specific intervention strategies. To critically evaluate how the case management aspect of HMGF impacts its services and economic effects, we examine the literature on the wraparound process.

Wraparound is a "team-based process for developing and implementing individualized care plans to meet the complex needs of youth … and their families."[8] It is a holistic, four phase approach to youth intervention that emphasizes individualized plans of care driven by the perspectives of the family and or youth.[9] Based on a 2004 survey of wraparound experts from across the U.S., Bruns and Walker (2006) found that wraparound services involve case specific steps such as: exploring the needs with the family, the creation of goals and indicators for the goals, the determination of strategies and action steps, and more.[10] Where EI describes a broad set of case unspecific services, the wraparound process is an approach for developing a case treatment strategy.

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[7] Guralnick, M., (2008). "International Perspectives on Early Intervention: A Search for Common Ground", Division for Early Childhood, *Journal of Early Intervention,* Vol 30 (2), page 1-12. March 2008. Retrieved from: https://depts.washington.edu/chdd/guralnick/pdfs/International_perspectives_on_EI_JEI_2008.pdf

[8] Coldiron, J.S, E. J. Bruns and H. Quick (2017). A Comprehensive Review of Wraparound Care Coordination Research, 1986–2014. *Journal of Child and Family Studies*: 1-21. doi:10.1007/s10826-016-0639-7

[9] National Wraparound Initiative ©2020, Wraparound Basics or What Is Wraparound: An Introduction. Retrieved September 11, 2020, from https://nwi.pdx.edu/wraparound-basics/

[10] Walker, J.S. and Bruns, E.J. (2006). "Building on Practice-Based Evidence: Using Expert Perspectives to Define the Wraparound Process." *Psychiatric Services.* 57(11) pg.1580-1585. From https://ps.psychiatryonline.org/doi/full/10.1176/ps.2006.57.11.1579

Programmatically, HMGF is like a wraparound service provider in that HMGF emphasizes a comprehensive system of services that expands beyond clinical treatment. HMGF care coordinators meet with families to determine the best objectives for treatment and the most appropriate referral services for the family's needs. However, HMGF differs from wraparound programs discussed in the literature regarding target populations. Based on wraparound literature discussed by Coldiron, Bruns and Quick (2017), examinations of wraparound focus on samples with children at the older spectrum of HMGF's service population i.e. children 5-8 and include children outside HMGF's service population i.e. children 8-16.[11] Wraparound research also tends to focus on youth with some form of serious emotional disorders or other mental health issues as opposed to the youth with developmental delays that HMGF serves.[12]

A quote from the National Help Me Grow® (HMG) website: "Maximizing our communities' potential starts with early childhood systems – education, healthcare, family services – that promote all children's healthy development."[13] The purpose of the quotation is to recognize that: 1) technical assistance is offered to all children (while recognizing that the system is demand-driven), and 2) that it is not about healthcare alone (or savings in healthcare for that matter) but about "developmental promotion for all children, and early detection, referral, and connection to services when needed."[14] Hence, the key for this literature review is, in principle, the economics of early childhood development (as far as assistance is provided) and its economic impact, specifically the impact or contribution of a child's development from an economic perspective.

[11] Coldiron, J.S., E. J. Bruns and H. Quick (2017). A Comprehensive Review of Wraparound Care Coordination Research, 1986–2014. *Journal of Child and Family Studies*: 1-21. doi:10.1007/s10826-016-0639-7
[12] Ibid pg 18
[13] National Help Me Grow® (HMG) website: https://helpmegrownational.org/what-we-do/technical-assistance/
[14] From Mission Statement National Help Me Grow® (HMG) website: https://helpmegrownational.org/what-we-do/technical-assistance/

Literature Review

The study of economic growth from its early beginnings focused on the importance of education. Solow (1957),[15] described growth of national income as resulting from three sources: 1) increases in the stock of physical capital (machines and buildings that are used to produce goods and services), 2) increases in the size of the labor force, and 3) a residual representing all other factors. This residual contributed considerably more to per capita growth than the increase in the capital stock. Solow dubbed the residual "technical progress" and noted that increasing levels of education were one of the factors that contributed to its growth. Later, Solow extended the framework (and models), where education was treated as a separate factor of production. A person year of education is valued at the cost of producing it and all the person years are added up to represent the stock. An alternative approach is to account for the effects of education by assuming it is not a separate factor of production but instead simply increases the productivity of labor (constant returns, Uzawa (1965)),[16] and increasing returns, according to e.g. Maddison (1982),[17] and Lucas (1988).[18]

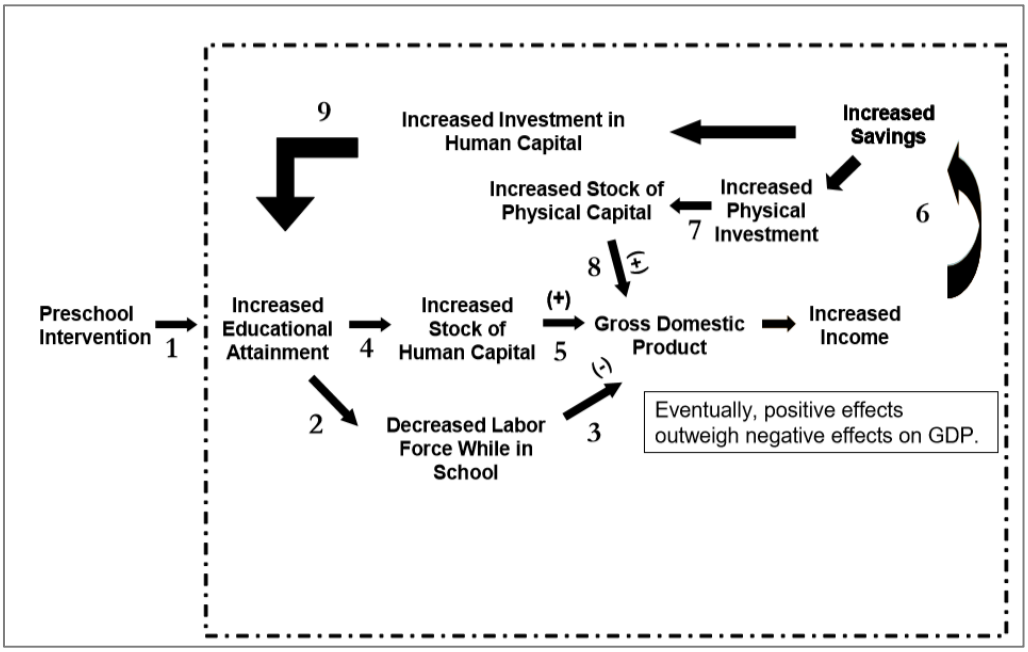
In his book "Human Capital"[19] (1964), Becker introduced the economic concept of human capital. He proposes labor economics to be a part of capital theory. Human capital is described as: "activities that influence future monetary and psychic income by increasing the resource in people."[20] He included in the set of such investments amongst others: on-the-job training, schooling, and migration. In summary, the term human capital encompasses the productive capacities embodied in people and may include knowledge, health, experience, skills, and other characteristics. In his "Treatise on the Family"[21] (1981), he notes that parents determine the optimal capital investments for future generations by acquiring different endowments and market benefits. In Becker's theoretical discussion, he posits that the different endowments that are available to families are dependent on luck and the level of these endowments, which can have lasting impacts on generational income. In real world terms, the "luck" of endowments described by Becker could be applied to the development of children whose parents are seeking HMGF's services (i.e. experiencing some "unusually bad luck").

The model of productive human capacities is called *human capital theory* to highlight the features that are analogous to money, physical capital, and other types of investments. Specifically, it is noted here that human capital develops or is produced over time. This transformation of human capital

[15] Solow, R.M., (1957). "Technical change and the aggregate production function", Review of Economics and Statistics, 39 (3): 312–20. Retrieved from: https://www.semanticscholar.org/paper/TECHNICAL-CHANGE-AND-THE-AGGREGATE-PRODUCTION-Solow/42607bb3d65c74eb44364a379d5496e69567e323
[16] Uzawa, H., (1965). "Optimum Technical Change in an Aggregative Model of Economic Growth", *International Economic Review 6* (January):18–31. Retrieved from: http://kisi.deu.edu.tr/yesim.kustepeli/uzawa1965.pdf
[17] Maddison, A. (1982). Phases of Capitalist Development, Oxford University Press.
[18] Lucas, R.E., (1988), "On the Mechanics of Economic Development", *Journal of Monetary Economics* 22: 3–42, Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=227120
[19] Becker, G.S., (1964), Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Chicago, The University of Chicago Press.
[20] Ibid, p.15.
[21] Becker, G.S., (1981). A Treatise on the Family, Cambridge, MA: Harvard University Press, 1981.

over successive periods is known as a *human capital–production process*. An explanation for this mechanism is depicted in Figure 1.[22]

Figure 1. Flow of Cause and Effect from Early Intervention to Final Outcome of Increasing National Income



The direct growth effect is the growth until the first cohort (who received pre-school education) reaches retirement age. There are two indirect growth effects, namely: 1) when there is an increase in output, savings and investment will increase as well (effect #6 in Figure 1), and; 2) an increase in output causes an increase in years of education (effect #9 in Figure 1). It is noted that effects of physical and human capital accumulation go on year after year, with the persistence of the effects on growth depending on the values of the coefficients on physical capital and human capital in the equation that determines output (otherwise known as the production function).

Dickens, Sawhill, and Tebbs (2006)[23] theorized that preschool education support and EI programs could improve educational attainment, and thus improve economic growth. To test this theory, the authors examined the relationship between pre-school attainment and projected labor outcomes using data from the 2004 Current Population Survey, 1990-2004 Bureau of Economic Analyses (BEA)

[22] Figure taken from p. 22, Dickens, W., I. Sawhill, and J. Tebbs, (2006). "The Effects of Investing in Early Education on Economic Growth", The Brookings Institution, pages 1-24. April. Retrieved from https://www.brookings.edu/research/the-effects-of-investing-in-early-education-on-economic-growth/#:~:text=High%20Estimate%20%20%20%20%20%20%25.%20%204.02%25%20%20%20%242%2C340%20billion%20

[23] Dickens, W., I. Sawhill, and J. Tebbs, (2006). "The Effects of Investing in Early Education on Economic Growth", The Brookings Institution, pages 1-24, April 2006. Retrieved from https://www.brookings.edu/research/the-effects-of-investing-in-early-education-on-economic-growth/#:~:text=High%20Estimate%20%20%20%20%20%20%25.%20%204.02%25%20%20%20%242%2C340%20billion%20

data, Social Security Estimates etc. The authors found that: "The model predicts substantial gains in GDP and the stocks of physical and human capital across a wide range of assumptions about the growth process of the economy. With our preferred assumptions, we predict an increase in GDP in 2080 of over two trillion 2005 dollars—an increase of about 3.5 percent".[24]

More recently, the concept of so-called 'non-cognitive' skills (such as agency, pride, perseverance, emotional stability, self-efficacy, and a sense of inclusion), which have always been central to the research of developmental scientists, has also been incorporated within the human-capital framework, due mainly to the influential work of James Heckman and his colleagues (Cunha and Heckman 2008; Cunha *et al.* 2010; Heckman and Rubinstein 2001; Heckman *et al.* 2006).[25]

The World Bank (2011)[26] in their 10-year education strategy, draws on scientific evidence about the risks to children's developmental potential, now bolstered by the emergent findings from neuroscience, which call for prioritizing investment in pre-natal health and early-childhood development programs as a means of securing brain development in early life, as well as for lifelong learning (Grantham-McGregor *et al.* 2007; Engle *et al.* 2011).[27] Presently, it is widely recognized that early childhood is the most crucial life phase in terms of developmental malleability, when maturation processes are accelerated, and genotypic milestones emerge.

Although there are some significant differences between EI programs as discussed in literature, there has been some research on the effects of the differences between these programs. In Schennach et al. (2007),[28] the authors estimated the rate of substitution between different types of early investment and found the age at which the intervention is administered has a significant impact on the program effectiveness, as depicted in Figure 2.

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[24] Ibid p.19.

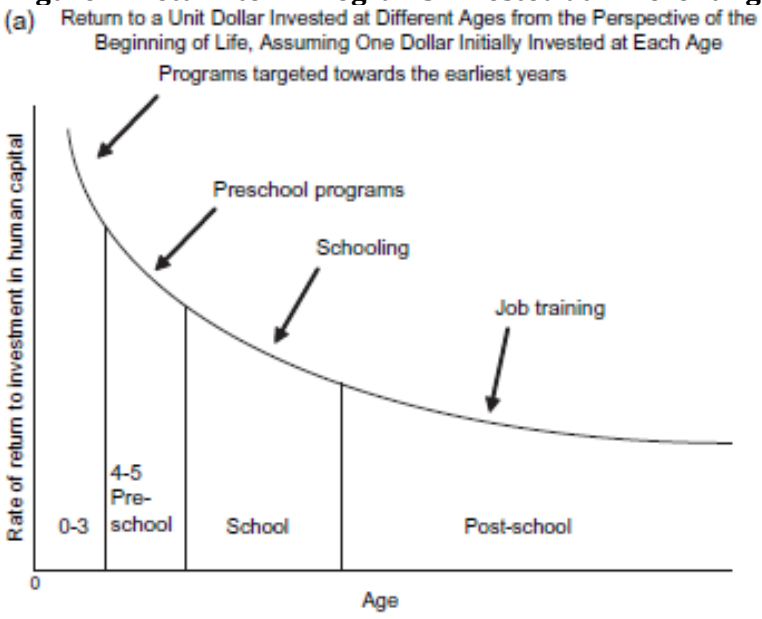
[25] Cunha, F., and J.J. Heckman, (2008), "Formulating, Identifying and Estimating the Technology of Cognitive and Non-cognitive Skill Formation", *Journal of Human Resources,* 43(4): 738–82. Retrieved from: http://jenni.uchicago.edu/papers/Cunha_Heckman_2008_JHR_v43_n4.pdf
Cunha, F., J.J. Heckman, and S.M. Schennach, (2010), "Estimating the Technology of Cognitive and Non-cognitive Skill Formation", *Econometrica,* 78(3): 883–93. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3145373/pdf/nihms203021.pdf
Heckman J.J., and Y. Rubinstein, (2001), "The Importance of Non-cognitive Skills: Lessons from the GED Testing Program," *American Economic Review* 91(2): 145–9. Retrieved from: https://pubs.aeaweb.org/doi/pdfplus/10.1257/aer.91.2.145
Heckman, J.J., J. Stixrud, and S. Urzua, (2006), "The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior", *Journal of Labor Economics,* 24(3): 411–82.Retrieved from: https://www.nber.org/papers/w12006.pdf

[26] World Bank, (2011), Learning for All: Investing in People's Knowledge and Skills to Promote Development, World Bank Group Education Strategy 2020, Washington DC: World Bank. Retrieved from: https://www.younglives.org.uk/sites/www.younglives.org.uk/files/boyden-and-dercon-child-development-and-economic-development.pdf

[27] See Grantham-McGregor, S., et al., and the International Child Development Steering Group, (2007). "Developmental Potential in the First 5 Years for Children in Developing Countries", *The Lancet* 369 (9555): 60–70. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2270351/
and Engle, P., et al., and the Global Child Development Steering Group, (2011). "Strategies for Reducing Inequalities and Improving Developmental Outcomes for Young Children in Low-income and Middle-income Countries", *The Lancet* 378 (9799): 1339–53. Retrieved from: https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1049&context=psycd_fac

[28] Schennach, S., J. Heckman, and F. Cunha, (2007). Estimating the Technology of Cognitive and Noncognitive Skill Formation, Meeting Papers 973, Society for Economic Dynamics. Retrieved from: https://ideas.repec.org/p/red/sed007/973.html

Figure 2. Return to EI Programs Invested at Different Ages



Engle et al. (2011)[29] conducted a qualitative international literature review of 42 Early Interventions effectiveness trails, studied between 2006 and 2010. Studies reviewed must have examined children between the ages of 0-5, had samples greater than 50 subjects, and met the "moderate or strong quality" criteria of the McMaster University Public Health Practice Project Quality Assessment Tool for Quantitative Studies. The authors' conclusions about effective EI programs are listed as follows:

- Parenting education and support can improve children's cognitive and psychological development
  - Effects are larger in more disadvantaged populations.
  - Effects are larger when there are systematic curricula and training opportunities for childcare workers and parents.
  - Effects are larger when there are active strategies to show and promote caregiving behaviors – e.g. practice, role play, or coaching to improve parent-child interactions.
- Center-based early learning programs usually improve children's cognitive functioning, readiness for school, and school performance.
  - Effects are larger for children from disadvantaged circumstances.
  - Effects are larger as a result of higher quality programs, whether formal or informal.
- Promising directions for interventions include expanding educational media for children and linking conditional cash transfers and nutrition with early child development interventions.

[29] Engle, P., et al., and the Global Child Development Steering Group (2011), "Strategies for Reducing Inequalities and Improving Developmental Outcomes for Young Children in Low-income and Middle-income Countries", *The Lancet,* 378 (9799): 1339–53. Retrieved from: https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1049&context=psycd_fac

- Although there are some reports attesting to the effectiveness of interventions for high-risk children in low-income and middle-income countries, evidence is not yet sufficient to establish best approaches.

Generally, the authors concluded: "The most effective early child development programs … provide direct learning experiences for children and their families, are high intensity, targeted towards younger and more disadvantaged children, are integrated with other systems such as nutrition or family support, and are of long duration".[30] In applied terms, the authors examined the pre-school attendance rates of 70 countries from 1997-2008 and concluded that a 25% increase in pre-school enrollment per country would result in a $10.6 billion gain in terms of future labor market productivity.[31]

As mentioned, aside from educational treatments, the EI literature also notes that the development of non-cognitive skills facilitates higher employment outcomes. Based on the Rotter Locus of Control Scale and the Rosenberg Self-Esteem Scale scores, Heckman, Stixrund, and Urzua, (2006)[32] use National Longitudinal Survey of Youth (NLSY) data and find that youth non-cognitive skills improve wages by 4-11 percent among those employed by age 30. This finding is corroborated in Cunha, Heckman, and Schennach (2010),[33] by using NSLY data to evaluate the optimal stage of investment in cognitive and non-cognitive abilities. Based on their model, the authors find that investment in non-cognitive skill formation improves wages regardless of whether that intervention is early or late in the development cycle.

In Heckman et al. (2010),[34] the authors evaluated the Perry Pre-School Program. Although the authors had access to follow-up data with participants at age 40, the costs related to criminal outcomes and some employment outcomes were missing. Additionally, since the effects of the program occur over the lifetime of the participants, the authors needed to project the future outcomes of participants. For employment values, the authors use data from the 1979 NLSY, the 2002 Current Population Survey, and the Panel Study of Income Dynamics. The total lifetime calculation of the Perry Preschool Program is the present value of the program impacts (i.e. the treatment minus the control). The change in the benefits of the Perry Preschool Program (as re-estimated and depicted by the CEA) among age groups is depicted in Figure 3.[35]

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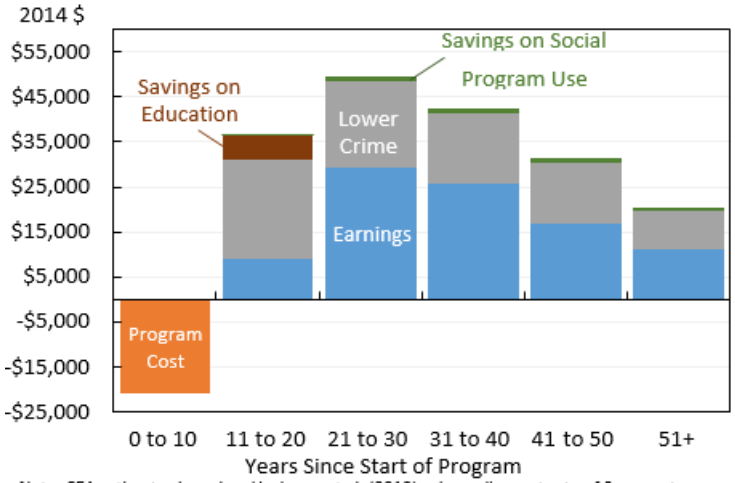
[30] Ibid p.25.
[31] Ibid p.25.
[32] Heckman, J.J., J. Stixrud, and S. Urzua, (2006). "The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior", *Journal of Labor Economics,* 2006, v24 (3 Jul), 411-482. Retrieved from: https://www.nber.org/papers/w12006.pdf
[33] Cunha, F., J.J. Heckman, and S.M. Schennach, (2010). "Estimating the Technology of Cognitive and Non-cognitive Skill Formation", *Econometrica* 78(3): 883–93. Retrieved from: https://onlinelibrary.wiley.com/doi/epdf/10.3982/ECTA6551
[34] Heckman, J.J., S.H. Moona, R. Pintoa, et al., (2010), "The Rate of Return to the High/Scope Perry Preschool Program", *Journal of Public Economics,* 2010 February 1; 94(1-2): 114–128. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3145373/pdf/nihms203021.pdf
[35] Figure taken from (p.33): Council of Economic Advisors (CEA), Executive Office of the President of the United States, (2015). "The Economics of Early Childhood Investments", Jan. 2015. Retrieved from: https://obamawhitehouse.archives.gov/sites/default/files/docs/early_childhood_report_update_final_non-embargo.pdf

Figure 3. Returns to Perry Preschool Program by Age group



Note: CEA estimates based on Heckman et al. (2010) using a discount rate of 3 percent.
Additional benefits, such as health benefits and maternal earnings, have not been quantified.

In 2012 Heckman states: "The highest rate of return in early childhood development comes from investing as early as possible, from birth through age five, in disadvantaged families. Starting at age three or four is too little too late, as it fails to recognize that skills beget skills in a complementary and dynamic way. Efforts should focus on the first years for the greatest efficiency and effectiveness. The best investment is in quality early childhood development from birth to five for disadvantaged children and their families."[36] From the same article: Investing in early childhood education is a cost-effective strategy for promoting economic growth. Our economic future depends on providing the tools for upward mobility and building a highly educated, skilled workforce. Early childhood education is the most efficient way to accomplish these goals:

- Professor Heckman's analysis of the Perry Preschool program shows a 7% to 10% per year return on investment based on increased school and career achievement as well as reduced costs in remedial education, health, and criminal justice system expenditures.
- Professor Heckman's most recent research analyzed Abecedarian/CARE's comprehensive, high-quality, birth-to-five early childhood programs for disadvantaged children, which yielded a 13% return on investment per child, per annum through better education, economic, health, and social outcomes.

As a last reference here, the Executive Office of the President of the United States (2015):[37] "Some of these benefits, such as increases in parental earnings and employment, are realized immediately, while other benefits, such as greater educational attainment and earnings, are realized later when children reach adulthood. In total, the existing research suggests expanding early learning initiatives would provide benefits to society of roughly $8.60 for every $1 spent, about half of which comes from

[36] Heckman J.J., (2012), The Heckman Equation, Invest in Early Childhood Development: Reduce Deficits, Strengthen the Economy, December 2012. Retrieved from: https://heckmanequation.org/resource/invest-in-early-childhood-development-reduce-deficits-strengthen-the-economy/

[37] Council of Economic Advisors (CEA), Executive Office of the President of the United States, (2015). "The Economics of Early Childhood Investments", Jan. 2015. Retrieved from: https://obamawhitehouse.archives.gov/sites/default/files/docs/early_childhood_report_update_final_non-embargo.pdf

increased earnings for children when they grow up."[38] In the same report, benefits to children, parents and society are summed up as follows:[39]

Benefits to Children:

- investments made when children are very young will generate returns that accrue over a child's entire life.
- early childhood investments benefit children's development may be that the flexibility and capacity for change in cognitive functioning and brain development is the greatest for young children, and these changes can have lasting effects on behavior throughout life[40]
- early investments can have large impacts if early skills serve as a multiplier, or complement, for later skills.[41]

Benefits to Parents:

- Access to high-quality care for young children can help parents increase their employment and earnings.

Benefits to Society:

- spillover benefits, what economists call positive externalities, include reductions in crime, and lower expenditures on health care and on remedial education.

It is possible that the wraparound implementation of the treatments above could impact their effectiveness. However, empirical research finds that wraparound processes perform no worse than traditional case management with regards to youth outcomes.

In their examination of the effectiveness of the Department of Defense's wraparound mental health service system for child military dependents, Bickman, et al (2003) conducted a quasi-experimental examination of 111 children ages 4-16 who received wraparound services compared to children who refused wraparound service or were ineligible. Based on Child Behavior Checklist and Youth Self Report data collected at 6 months and 1 year of treatment after the baseline, the authors found that wraparound did not reduce problem behaviors more than traditional treatment. However, the

[38] Ibid. 33, p.2
[39] Ibid. 33, p.7
[40] With reference to:
Knudsen, E.I., J.J. Heckman, J.L. Cameron, and J.P. Shonkoff, (2006). "Economic, Neurobiological, and Behavior Perspectives on Building America's Future Workforce", Proceedings of the National Academy of Science, 103(27): 10155-10162. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1502427/pdf/zpq10155.pdf
[41] With reference to:
Cunha, F., J.J. Heckman, L. Lochner, and D.V. Masterov. (2006). "Interpreting the Evidence on Life Cycle Skill Formation", In Handbook of the Economics of Education, 698-747. 26th ed. Vol. 1. Elsevier B.V. Retrieved from: http://jenni.uchicago.edu/papers/Cunha_Heckman_etal_2006_HEE_v1_ch12.pdf
and
Cunha, F., and J.J. Heckman, (2007). "The Technology of Skill Formation", *American Economic Review*, 97(2): 31-47. Retrieved from: https://www.nber.org/papers/w12840.pdf

authors note that the relatively small sample size and the military specific implementation of the treatment may have impacted their results[42] .

In an experimental examination of wraparound processes, Bruns et al, 2015 examined 93 youths ages 6-17 with severe emotional disorders randomly assigned to either Division of Child and Family Services wraparound treatment or intensive case management (ICM) provided by a private mental health provider. "The authors measured the participants mental health outcome after 6 months and 1 year of treatment using the Strength and Difficulties Questionnaire (SDQ) and the Child and Adolescent Functional Assessment Scale (CAFAS) and controlled for wraparound fidelity, service, and process." The authors also found no greater functioning among the wraparound group than the control group.

Cohen, et. al., 2004 examined California's Title IV-E child welfare waiver for the Intensive Services Component of child welfare services, where five counties adopted wraparound services, while two counties adopted an alternative Family Group Decision Making/Family Conferencing (FGDM) approach. Youth from different counties had slightly different eligibility criteria, but all were either child welfare dependents or probation wards. Subjects were randomly assigned to either treatment or control groups and CAFAS was used to collect data on individual treatment progress. The authors found that children receiving wraparound care had no worse improvement than those receiving FGDM (Cohen, et al, 2004).[43]

Due to the scant amount of financial analyses of wraparound programs, it is difficult to point to a decisive consensus in the literature on wraparound's cost effectiveness compared to more traditional case management programs. Only 17 of the 206 published papers on wraparound programs examined wraparound cost/cost effectiveness.

Bickman, et. al. 2003 found wraparound services to be more expensive, by about $5,443 per child. The authors concluded that one of the main drivers behind the higher costs were the higher amount of nonrestrictive, nontraditional services for the wraparound group. However, the authors also note that 69% of the wraparound costs were due to outpatient and residential services such as hospitalization and in-home treatment. It is possible that Bickman's cost conclusions could not apply to HMGF due to the organization's emphasis on non-clinical, community-based treatment strategies. Cohen, et. al. (2004), found that wraparound services should be cost-neutral or cost no more than traditional services in the context of state sponsored treatment programs.

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[42] Bickman, L., C.M. Smith, E.W. Lambert, A. R. Andrade. (2003)." Evaluation of a Congressionally Mandated Wraparound Demonstration", *Journal of Child and Family Studies, 12(2) pg. 135-156* From: https://psycnet.apa.org/record/2003-08243-002

[43] Cohen, E., Ferguson, C., Berzin, S., Thomas, K., Lorentzen, B. & Dawson, W. (2004). "*California's Title IV-E child welfare waiver demonstration project evaluation: Final report".* Berkeley, CA: University of California, Berkeley, School of Social Welfare, Child Welfare Research Center,

In Stroul, et. al. (2015), the authors calculated the return on investment analysis for wraparound services based on the conclusions of previous research. The authors argue that wraparound services generate millions in cost savings for their communities in the form of Medicaid costs, psychiatric services, reduced detentions, etc. However, due to secondary nature of this analysis i.e. the lack of specific cost saving analyses with subject data, the authors conclusions about cost savings is more suggestive/demonstrative instead of authoritative.[44]

In short, both macroeconomic theory and empirical literature note that higher levels of education improve aggregate economic growth. Based on the literature, it is possible that HMGF services may provide a positive endowment to the family and improve future generational income.

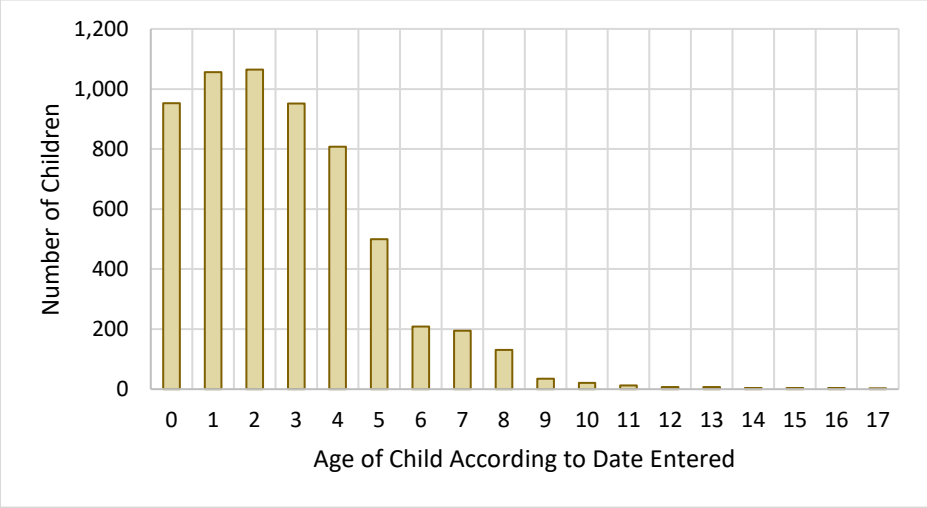
In the next paragraph some descriptive statistics will be provided, based on the System for Tracking Access to Referrals (STAR) database maintained by HMGF.[45] Thereafter the analytic framework is proposed for applied analyses. Finally, results will be presented, followed by a conclusion.

Data

The median age of children entered by HMGF in the STAR database is three years, with a drop to two years in FY 2019-20 (average decimal ages per the four complete FYs are 3.4, 3.0, 2.9, and 2.8, for FYs 2016 – 2019, respectively).[46] Age is mentioned because the earlier a potential setback with a child is detected and potentially resolved, the better it is for the child's subsequent development. The number of children entered in the system by their respective ages in FY 2019-20 is shown in Figure 4.

[44] Stroul, B., S. A. Pires, S. Boyce, A. Krivelyova, C. Walrath (2014). "*Return on investment in systems of care for children with behavioral health challenges*." Washington, DC: Georgetown University Center for Child and Human Development, National Technical Assistance Center for Children's Mental Health.
[45] The HMGFs' STAR database contains four complete fiscal years, namely: FY 2016-17 through FY 2019-20. The STAR database contains no cost data.
[46] Excluding UW of Volusia/ Flagler data, FY 2017-18. Due to the arrival of data too late after the analysis was completed.

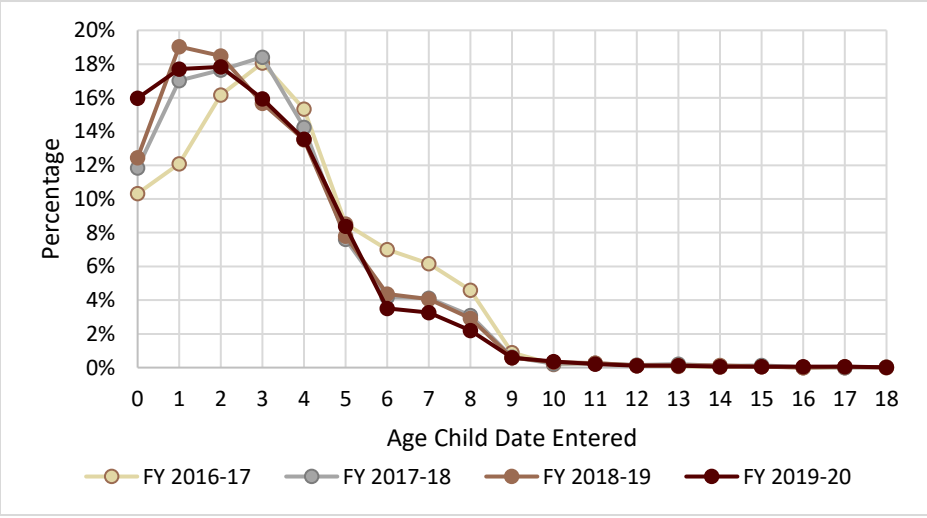
Figure 4. Frequency of Children by Age Entered in the STAR Database, FY 2019-20



The total number of children entered is 5,966. Comparatively, the number was 2,675 in FY 2016-17, 4,341 in FY 2017-18,[47] and 6,311 children in FY 2018-19. From FY-to-FY this indicates a growth of sixty-two percent, forty-five percent, and a drop of five percent, respectively, resulting in an annual average growth of children entered at 31 percent.

Figure 5 depicts the relative age-distribution over the last four FY's.[48]

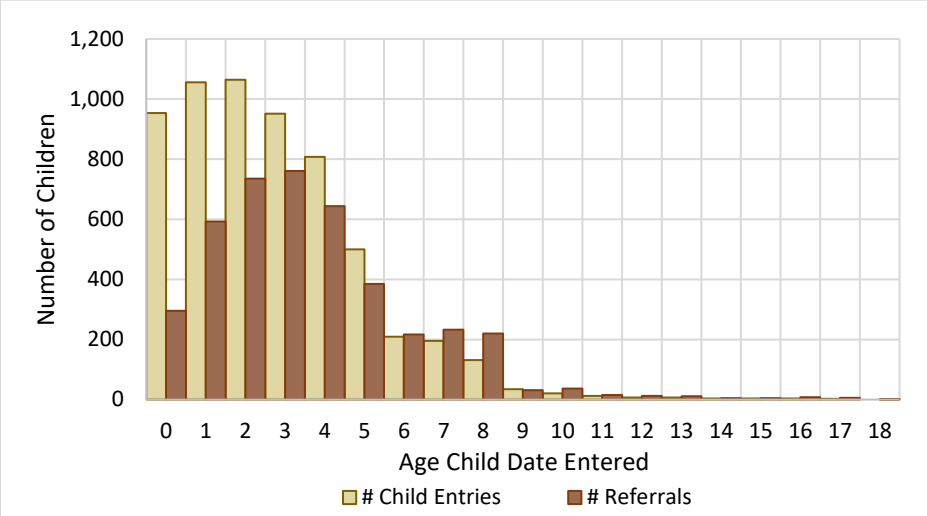
Figure 5. Relative Frequency of Children by Age Entered in the STAR Database, FY 2016-17 Through FY 2019-20



[47] Excluding UW of Volusia/ Flagler data, FY 2017-18.
[48] Excluding UW of Volusia/ Flagler data, FY 2017-18.

From Figure 5 it may be understood that more recent frequencies are a bit more skewed towards younger ages. Figure 6 shows in addition the number of referrals per age for FY 2019-20.

Figure 6. Frequency of Children Entered and Referred by Age in the STAR Database, FY 2019-20



It is observed that referrals do not quite track the number of entries, especially not at an early age. At ages six onwards, referrals outnumber the children entered, hence more than one referral may have been deemed necessary over a time period. Relating to the calculus, the denominator is representative of either the number of referrals, or unique children, serviced. Two approaches were undertaken to un-duplicate the referrals per child to get an idea of the actual, or unique, number of children serviced. The first approach was based on un-duplicating the combinations on Child Intake ID's, the Child ID's, and FY, which resulted in an overall 2.16 referrals per child (or 2.29, 2.46, 2.04, and 1.96 from FY 2016 to 2019, respectively).[49] A second approach included using the same referral date, which resulted in an overall slightly lower number of referrals per child, namely, an average of 2.06 referrals (or 1.97, 2.22, 2.08, and 1.95 per respective from FY 2016 to 2019, respectively).[50] Dropping the FY as a criterion, the approach resulted in an overall average of 2.57 referrals per child in the STAR database (since FY was dropped no reference can be made to a FY year).[51] Finally, the research team settled for the second approach but with the average number of referrals per child of 2.52, taken over the last four FYs (to have some methodological consistency).[52] The results are shown in Figure 7.

[49] Excluding UW of Volusia/ Flagler data, FY 2017-18.
[50] Excluding UW of Volusia/ Flagler data, FY 2017-18.
[51] Excluding UW of Volusia/ Flagler data, FY 2017-18.
[52] With demarcation set on the last four FYs, leaving no arbitrary parts of FY's as data may be available in the STAR database. Excluding UW of Volusia/ Flagler data, FY 2017-18.

Figure 7. Frequency of Children Entered, Referred , and Un-duplicated by Age in the STAR Database, FY 2019-20

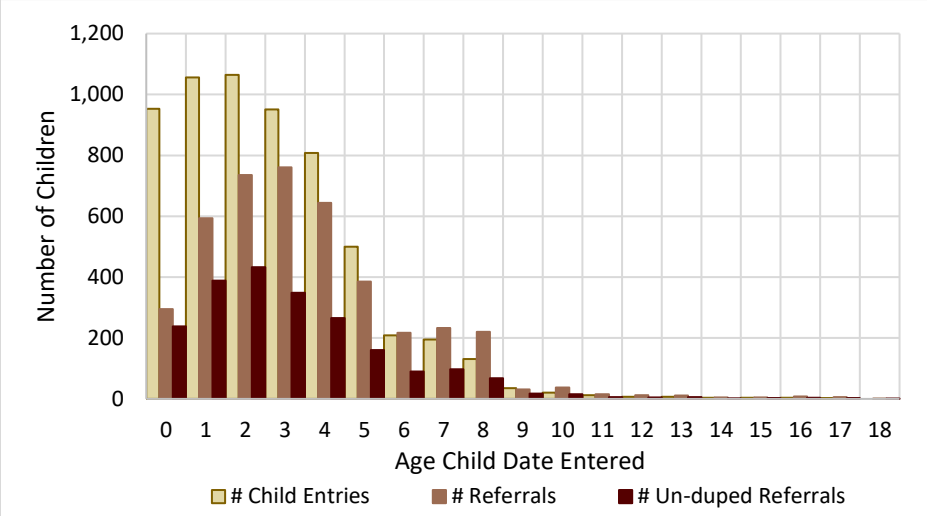


Table 1 shows the result for both the referral and unique child approaches, based on referral counts for FY 2019-20, per affiliate.

Table 1. Referral Counts, Children, and Budget, FY 2019-20

	Affiliate Name	Referral Count	Average Referrals per Child	Unique Children	Budget	Per Referral	Per Unique Child
1	**2-1-1 Big Bend**	277	2.55	109	$ 134,817	$ 486.70	$ 1,240.10
2	**UW of Volusia/ Flagler**	91	1.91	48	$ 134,817	$ 1,481.50	$ 2,828.32
3	**2-1-1 Palm Beach**	391	2.28	172	$ 159,103	$ 406.91	$ 926.29
4	**Heart of Florida UW**	675	2.63	257	$ 154,899	$ 229.48	$ 602.69
5	**2-1-1 Tampa Bay**	731	2.59	282	$ 121,907	$ 166.77	$ 431.67
6	**UW of Lee**	280	2.30	122	$ 159,103	$ 568.22	$ 1,305.03
7	**2-1-1 Brevard**	572	2.56	223	$ 126,447	$ 221.06	$ 567.00
8	**ECC Hillsborough**	242	2.55	95	$ 121,907	$ 503.75	$ 1,286.68
9	**ELC of Lake**	193	3.62	53	$ 121,907	$ 631.64	$ 2,287.80
10	**ELC of Marion**	191	2.38	80	$ 121,907	$ 638.25	$ 1,519.02
11	**Jewish Community Services**	485	2.40	202	-	-	
12	**ELC of Duval**	86	2.69	32	$ 15,000	$174.42	$ 468.86
	Total	**4,214**	**2.52**	**1,675**	**$ 1,371,811**	**$ 325.54**	**$ 819.11**

Source: STAR database

The distinction between referrals and unique children is a matter of preference, as the modus operandi does not change the HMGF budget. Given the idea that a budget is not spent on referrals, but on children, the research team prefers the unique children approach based on the next step of estimation namely the life-time-earnings (LTE) approach. However, in the final economic impact analysis, both approaches arrive necessarily at the same results.

Table 2 shows the frequencies on referral categories for the four fiscal years (excluding the Gap referrals which comprise 0.2 percent of total referrals per FY on average).[53] Shading is provided for visual purposes, showing higher frequencies in orange.

[53] Excluding UW of Volusia/ Flagler data, FY 2017-18.

Table 2. Frequency by Referral Categories, FY 2016-17 Through FY 2019-20

Referral Category ID	Referral Category Label	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
1	Access to Health Insurance	23	25	47	48
2	Advocacy	73	28	20	30
3	Behavioral Services	437	556	872	584
5	Communication / Speech & Language	350	562	700	412
6	Childcare	177	241	182	145
7	Developmental Screening	475	823	894	684
8	Early Literacy	6	7	69	16
9	Educational / Enrichment	154	104	126	115
10	Equipment (including augmentative communication)	1	3	-	1
11	Parent/Caregiver Support	116	124	76	113
12	Funding	13	28	39	24
13	Health / Primary Care	47	55	45	41
14	Health / Medical Subspecialists	12	28	119	43
15	Health / Neurodevelopmental Subspecialists	16	69	-	-
16	Home Visitation	2	6	-	20
17	Inclusion Support	7	64	32	12
18	Legal Assistance	10	15	12	7
19	Mental Health / Counseling	271	288	253	273
20	Occupational Therapy / Physical Therapy	83	99	125	117
21	Parent / Child Participation	4	6	20	19
22	Parenting/Education	51	102	118	175
23	Private Schools	1	7	12	13
25	Psycho-educational Testing	29	38	31	7
27	Recreation	77	30	26	9
28	IDEA Part B / School District (Public)	179	211	365	308
29	Respite / Care Giving Services	13	4	3	2
30	Social Skills	9	11	12	9
31	Other	39	53	79	39
33	Allied Health Professionals	2	-	2	-
34	Basic Needs	121	404	705	419
35	Feeding	8	4	13	17
37	Specialized Services	68	69	50	27
38	Out of County/Area Referral	2	8	8	4
39	Infant Follow-up Clinic	-	-	1	-
40	IDEA/Part C	158	212	461	429
41	Educational Information (HMG)	-	173	1	-
42	Family Support	-	-	38	49
Source: STAR database	**TOTALS**	3,034	4,457[54]	5,556	4,211

As shown in Table 2 that Developmental Screening tops the list of referral services administered, followed by Behavioral Services, Communication/Speech & Language, and Basic Needs.

[54] For UW of Volusia/ Flagler data, FY 2017-18, a total of 136 referrals need to be added, but the breakouts are not available in the STAR database.

HMGF aims to keep track of the results of referrals, categorizing the outcomes in four categories, including: “Closed with Outcomes”, “Closed without Outcomes”, “Open or Partial Outcomes”, and “Open or No Outcome Information”. Through examination of the 4,211 referrals in FY 2019-20, these breakout results, by referral category, are depicted in Table 3. The four result categories are parallel grouped in the table: “with or partial outcomes” (columns three and four), and “no outcomes” (yet) (columns five and six). Of the 4,211 referrals in FY 2019-20 (Table 2), outcomes are available on some 3,008 referrals. Thanks to follow-up by HMGF and assuming the 3,008 to be the reference (instead of the 4,211), outcomes or results in approximately seventy-five percent (71.2% + 4.0%) of referrals are known. The remainder of results is either with outcomes still pending or closed without outcomes.

Table 3. Frequency on Outcomes by Referral Categories, FY 2019-20

Referral Category ID	Referral Category Label	Closed with Outcomes	Open, Partial Outcomes	Closed without Outcomes	Open, No Outcome Information
1	Access to Health Insurance	17	-	14	-
2	Advocacy	19	-	4	1
3	Behavioral Services	336	17	132	12
5	Communication / Speech & Language	222	8	98	8
6	Childcare	75	3	26	2
7	Developmental Screening	215	9	64	4
8	Early Literacy	14	-	-	-
9	Educational / Enrichment	51	2	28	1
10	Equipment (including augmentative communication)	-	-	-	-
11	Parent/Caregiver Support	50	2	22	-
12	Funding	16	1	1	1
13	Health / Primary Care	19	-	16	-
14	Health / Medical Subspecialists	17	6	11	1
15	Health / Neurodevelopmental Subspecialists	-	-	-	-
16	Home Visitation	-	-	-	-
17	Inclusion Support	10	-	1	-
18	Legal Assistance	1	-	-	-
19	Mental Health / Counseling	158	6	42	2
20	Occupational Therapy / Physical Therapy	72	1	21	-
21	Parent / Child Participation	10	-	6	1
22	Parenting/Education	64	1	3	-
23	Private Schools	3	-	9	-
25	Psycho-educational Testing	5	2	-	-
27	Recreation	9	-	-	-
28	IDEA Part B / School District (Public)	175	26	64	9
29	Respite / Care Giving Services	1	-	-	-
30	Social Skills	1	-	3	-
31	Other	25	2	3	-
33	Allied Health Professionals	-	-	-	-
34	Basic Needs	205	12	46	2
35	Feeding	13	-	3	-
37	Specialized Services	15	-	1	-
38	Out of County/Area Referral	2	-	1	-
39	Infant Follow-up Clinic	-	-	-	-
40	IDEA/Part C	300	22	63	10
41	Educational Information (HMG)	-	-	-	-
42	Family Support	22	1	9	-
Source: STAR database	**TOTAL**	**2,142**	**121**	**691**	**54**
	100%	**71.2%**	**4.0%**	**23.0%**	**1.8%**

Specific outcomes may differ. Table 11, in the Appendix, provides some additional information.[55]

Of the 5,966 children who are entered in the STAR database in FY 2019-20, about 4,211 referrals were provided (or 70.6%). Given that children may receive more than one referral (2.52), this referral number represents 1,675 unique children.[56] Regarding the outcomes, some 75.2 percent of

[55] The reason the RT opted to put the referral outcome table in the Appendix is that referral outcomes are beyond the reach of HMGF. The core business of HMGF is in principle referral services, providing an opportunity to unique children.
[56] Note: Total referral number (4,215) divided by average number of referrals (2.52) = 1,675.

referrals are categorized as being with outcomes (including with partial outcomes). Thus, caregivers of about 1,260 children (or 21.1% of the children entered) are aware regarding the child's status, while caregivers of some 415 children are without resolve, or still waiting (e.g., no outcome information). Relating to the economic analyses in the next section, the research team will use 2.52 average number of referrals per child, as the calculation for the estimation of the children's life-time earnings, using the LTE approach.

Methodology

Regarding the following economic analyses, a standard production function is used:

$$Y_t = A_t * f(K_t, N_t)$$

Where:
Y_t = a measure of real aggregate output of goods and services of the private sector,
A_t = a measure of productivity or technical change,
K_t = aggregate stock of nonresidential capital,
N_t = aggregate employment of labor services, and,
t = time indicator

The rationale for a production function is given by a potential change in input (in this case as a result of HMGF activities); i.e. in employment or labor (N), which translates to a change in output (Y), this both in case of a change in physical labor (numerical) as a results of a change in quality of labor (where quality usually is defined in terms of better educated or trained employment, causing higher efficiency hence, higher production). Average labor productivity is denoted as: Y_t/N_t.

Wages[57] (in dollars) are defined by:

$$w_t = \frac{\delta Y_t}{\delta N_t}$$

Given that neither quality (of N) nor production can be readily analyzed, the focus of the economic analysis will be on wages.[58] For applied purposes, average wages for Florida are derived from the US Census,[59] as indicated in Table 4.

[57] Not including substitution and technological change implications.
[58] Estimation of a standard production function typically requires the need to estimate capital as well.
[59] USA Census, American Community Survey (2018), Table B17024: Age by Ratio of Income to Poverty Level in the Past 12 Months (Note: 2018 is the latest data available, data is not available per county. Not used is data on individuals 17 years of age and younger). The ratio's provided are multiplied by the individual Florida poverty salary at $12,490 (in 2019), where results were calibrated with the fiftieth percentile of wages in Florida at $48,200 (total – all occupations wages) per JobsEQ®; chmuraecon.com retrieved from: https://jobseq.eqsuite.com/analytics/occupation-wages?_num=15950147670531
In addition, it is assumed that the 2018 poverty ratios themselves have not changed that much from CY 2018 to FY 2019-20. No attempts are undertaken to differentiate to educational attainment, as attainment prospects are not part of the HMGF database provided.

Table 4. Estimated Average Florida Income per Age Category FY 2019-20

Age Category	Average Income
18 to 24 years	$ 37,460
25 to 34 years	$ 43,996
35 to 44 years	$ 47,206
45 to 54 years	$ 53,999
55 to 64 years	$ 53,788

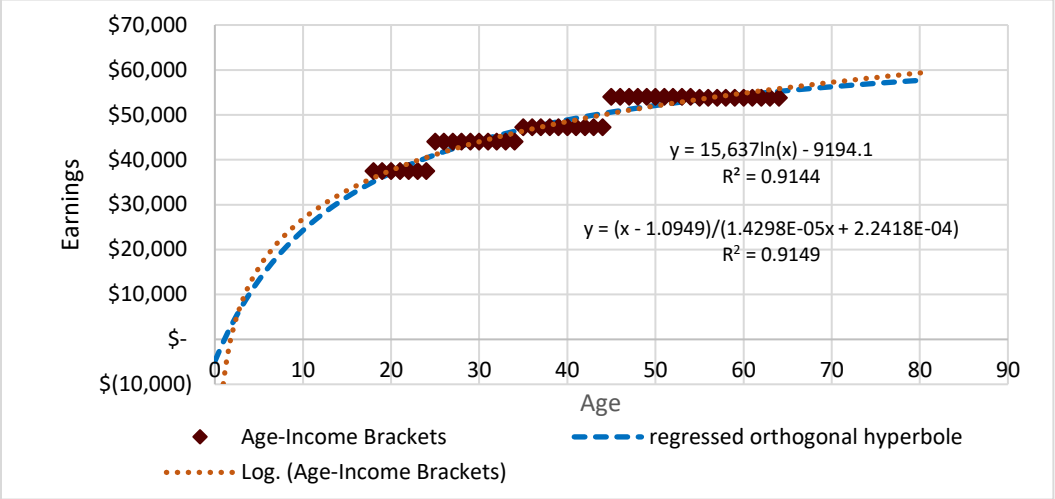
It is next assumed that the earnings estimates are "synthetic", meaning that earnings are "not the actual dollars people earned over the complete working life of the person (which would require us to have retrospective earnings data for the 40 years of their work-life). Instead, they are estimated using data from a one point-in-time cross-sectional survey. Median annual earnings estimates are computed for the point in time of the survey for all ages. …The age group-specific medians are then summed across the category of interest … to construct expected lifetime earnings … if all earnings patterns observed in the cross section were to remain unchanged."[60, 61] Using ordinary least squares (OLS), Figure 8 shows the five age-earnings brackets, as log regressions, and an orthogonal hyperbole regression estimate (derived by iteration).[62]

[60] Julian T. and R. Kominski (2011), Education and Synthetic Work-Life Earnings Estimates, *American Community Survey Reports,* ACS-14, September 2011. Retrieved from: https://www2.census.gov/library/publications/2011/acs/acs-14.pdf

[61] This economic analysis assumes Ceteris Paribus, thus infers the issues of substitution and technological change are of no further consequence.

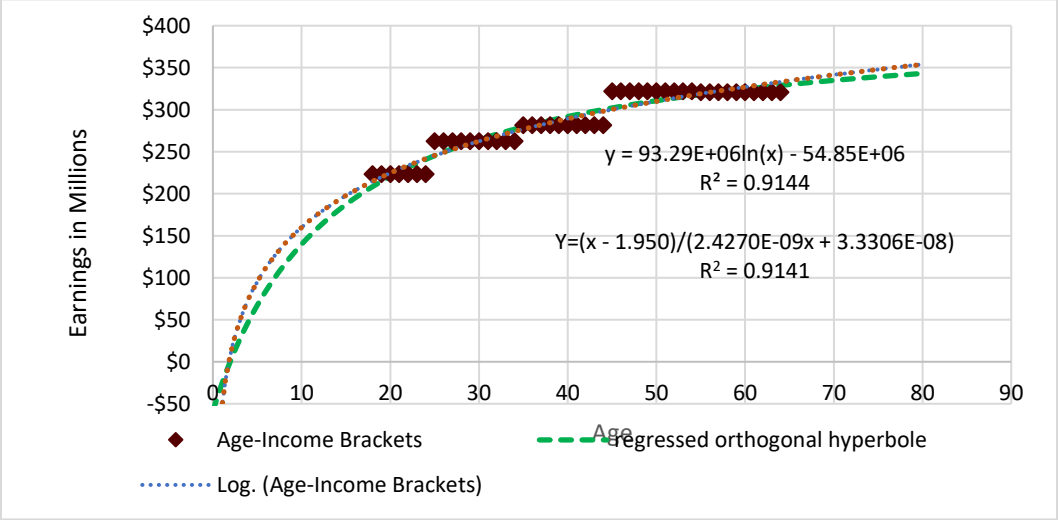
[62] $\int_n^m \frac{x - 1.0949}{1.4298E{-}05x + 2.2428E{-}04}\, dx = 69{,}938.306x - 1{,}173{,}116.978 * ln|x + 15.679| + C$
in which $C \epsilon R$
Local integral between n=18 and m<65 year of age results in $2,262,254.82, where input by age-income brackets summation is $2,252,108.10 or 0.451% difference. Similarly, the local integral between n=25 and m<65 year of age results in $1,994,216.94, where input by age-income brackets summation is $1,989,889.87 or 0.217% difference.

Figure 8. Estimated Synthetic Average Florida Life-Time Earnings (FY 2019-20)



Given the use of averaging in the methodology and provided that the HMGF serviced 5,966 unique children in FY 2019-20,[63] this in principle leads to a cumulative average as shown in Figure 9.[64]

Figure 9. Cumulative Estimated Synthetic Average Florida Life-Time Earnings (FY 2019-20)



Although an aggregate economic analysis has its advantages, especially since neither change based on referrals is specified any further (e.g. based on subsets of educational attainment, or any individual criteria for that matter) or monetized, nor is the budget broken out by referrals or services (pricing),

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[63] The research team opted for calendar year due to data availability and used US Census data.

[64] Likewise developed using the OLS methodology.

$$\int_n^m \frac{x - 1.9500}{2.4270E{-}09x + 3.3306E{-}08}\, dx = 412{,}033{,}336.430x - 6{,}457{,}898{,}111.104 * ln|x + 13.723| + C$$

in which $C \epsilon R$

The local integral between n=18 and m<65 year of age results in $13,496,050,035.25, where input by age-income brackets summation is $13,436,076,896.80 or 0.446% difference. Similarly, the local integral between n=25 and m<65 year of age results in $11,899,461,098.19, where input by age-income brackets summation is $11,871,682,968.13 or 0.234% difference.

the approach involving age frequencies, as depicted in Figures 5 and 6, was not further developed by the research team.[65]

A different approach on wages is used, namely, an approach where "human capital" is treated similar to capital. In case, instead of hiring an employee on a contract for an annual salary, an employer may perceive hiring an employee in a similar fashion as an investment in capital (i.e. an employer is investing in a human capital "package" in which wages/salaries are a proxy for depreciation).

Two similar economic analyses are constructed, one as a baseline and one as an alternative scenario. The input(s) used are the HMGF-cost of provided services, as represented by the annual HMGF budget as provided.

$$BV_{i=18} = \sum_{i=18}^{n=47} w_i$$

$$Tr_i + w_i = \propto BV_{i=18}$$

$$EV_i = BV_i + Tr_i - w_i \qquad Tr_i > 0, and\ w_i > Tr_i$$

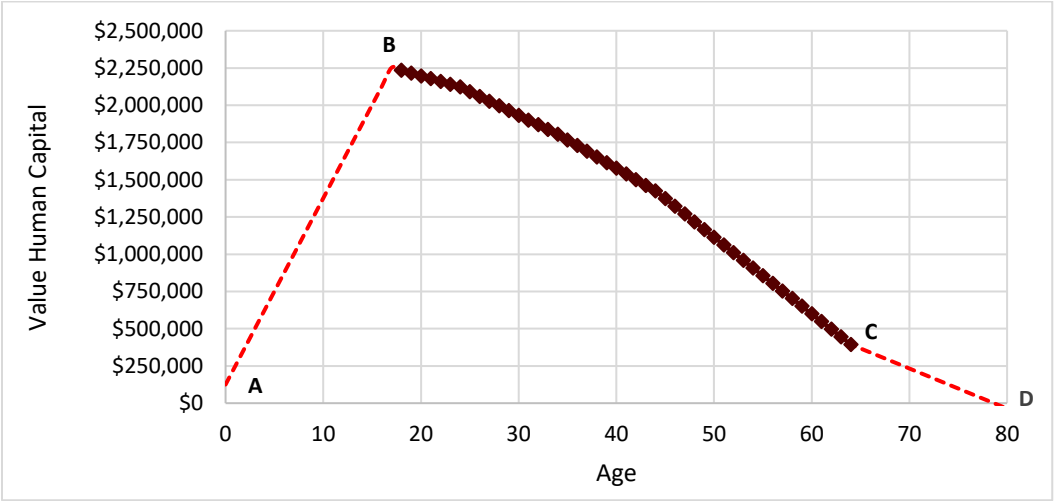
$$BV_{i=n} = EV_{i=n-1}$$

Where:
BV_i = Begin Value human capital
Tr_i = Training (i.e. investments on the job training, schooling, etc.)
w_i = wage
EV_i = End Value human capital
$\propto$ = constant or fixed percentage
i = time indicator

It is assumed that wages are paid from age 18 onwards (till age <65), thus n is equal to 47 years. Some training is added (similar as a periodic investment in a capital asset, e.g. key maintenance) to allow for a linear depreciation on the human capital "package", where training picks up the slack (under the condition that the value of added training is always positive). The end value of each period is carried over to the next period. Finally, wages and training are a fixed percentage of the end value at age 17 (or begin value at age 18) going forward. The approach is visualized in Figure 10.

[65] Although this approach is valid, and set up as a baseline to be compared to an alternative approach including the HMGF budget, the approach was deemed still too sensitive to the small changes with respect to the FY 2019-20 HMGF program budget of $1.37 million.

Figure 10. Total Estimated Synthetic Average Florida Human Capital



The trajectory AB indicates one of many possibilities, building/investing towards an average individual's human capital, yielding an average total (total investment value) of $2,252,108 representing the sum of future average earnings (Table 4). In the alternative scenario the budget of HMGF (per average unique individual child) is added to the value, thus landing at $2,252,927.[66] Next, for trajectory BC, where training values are added to both baseline and alternative scenarios, and the sum of wages is reduced from the total human capital value, at a rate of 2.5 percent (1/40 years career). Additional training, as mentioned, is used as an auxiliary variable, in order to facilitate a linear depreciation. In the alternative scenario, wages (and training) are increased by a margin (all other things being equal) to result at the same relative change of each part; human capital, training, or the sum of both. At point C there is some value left for retirement, which is of no further consequence for the analyses at hand.

In comparing the sum of wages over the years, the HMGF Budget cost of $818.94 per unique child leads to an overall positive difference of $962.25, or a 17.5 percent increase (or compound 0.34% per year on 47 years (i.e. technically 0.40% over 40 years)). Given the comparative approach, between base and alternative scenarios (all other things being equal), the rate of "depreciation" used also does not change the outcome (whether it is the current 2.5 percent (based on 47 years), 3.33 percent (based on 30 years), or even four percent (based on 25 years)). In terms of the HMGF program budget of $1,371,811, this translates to a total return of $1,611,878 (or equally 17.5%).[67]

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[66] The HMGF budget is per SFY 2019-20. An average per referral (n=4,215) is divided by the average number of referrals per child (or 2.52). Hence, an equivalent of 1,675 unique, or individual, children are serviced. Provided the budget of $1.37 million, this result to $818.94 investment per unique child. Although part of the budget is for administrative purposes, it is a necessary part to provide referral services. Hence, it is assumed that any spending by HMGF is done to improve the value of "human capital".

[67] Alternate scenario total human capital (BV_{18} plus added training) $2,252,927 + $394,262 = $2,647,189
Baseline scenario total human capital (BV_{18} plus added training) $2,252,108 + $394,119 = $2,646,227 -
$ 962

$ 962 * 1,675 (n=unique) = $ 1,611,878 or 17.5% over the initial program budget of $1,371,810.85.
Calculations are based on the full stretch of 47 years (18 up to and including 64 years (<65 years of age), as there is no average nor set standard for career duration, even though common sense would dictate 35 or 40 years. Specific career

This principle is applied to all affiliates, alternating the income estimated from Table 4, with relative wage ratios (per region), and the margin as above.

Table 5. Children, Budget, Wages and Added Life-Time earnings, based on FY 2019-20

	Affiliate Name	Unique Children	Budget	Per Unique Child	All Occupation Wages - All Employees[68] relative to Florida	Added LTE Per Unique Child	Total Added LTE
		(1)	(2)	(3)	(4)	(5)	(6)
		(2)/(3)				(6)/(1)	
1	2-1-1 Big Bend	108.7	$ 134,817	$1,240.10	94.1%	$1,457.12	$ 158,410
2	UW of Volusia/ Flagler	47.7	$ 134,817	$2,828.32	87.5%	$3,323.28	$ 158,410
3	2-1-1 Palm Beach	171.8	$ 159,103	$926.29	102.3%	$1,088.39	$ 186,946
4	Heart of Florida UW	257.0	$ 154,899	$602.69	96.4%	$708.16	$ 182,006
5	2-1-1 Tampa Bay	282.4	$ 121,907	$431.67	101.2%	$507.22	$ 143,240
6	UW of Lee	121.9	$ 159,103	$1,305.03	96.1%	$1,533.41	$ 186,946
7	2-1-1 Brevard	223.0	$ 126,447	$567.00	104.4%	$666.23	$ 148,575
8	ECC Hillsborough	94.7	$ 121,907	$1,286.68	107.5%	$1,511.85	$ 143,240
9	ELC of Lake	53.3	$ 121,907	$2,287.80	85.1%	$2,688.16	$ 143,240
10	ELC of Marion	80.3	$ 121,907	$1,519.02	86.5%	$1,784.84	$ 143,240
11	Jewish Community Services	202.0	-		105.4%		-
12	ELC of Duval	32.0	$ 15,000	$468.86	101.2%	$550.91	$ 17,625
	Total	1,675	$ 1,371,811	$819.11	100.0%	$819.11	$ 1,611,878

Source: STAR database

Results

As stated earlier in the report, there are two results of interest to be measured. First, the economic impact of the HMGF budget (representing HMGF spending) for the intended purposes. This economic impact was estimated with multipliers generated using IMPLAN[69] county-specific economic input-output models for the state of Florida (IMPLAN Group, LLC, 2018). IMPLAN is a widely accepted integrated input-output model, used extensively by state and local government agencies to measure proposed legislative and other program and policy economic impacts across the private and public sectors.

time frames also would need to be picked for full-time education after High School. The research team abstained from further differentiating by educational level, as no data is provided via the HMGF database.

[68] Median occupational wages, per county, were obtained from Chmura Economics & Analytics JobsEQ®. Data retrieved from: https://jobseq.eqsuite.com. The Bureau of Economic Analyses (BEA) data on all employees, all industries, all establishment sizes (per county), Census of Employment and Wages, was used for weights. Data retrieved from: https://data.bls.gov (series ENU1200)

[69] IMPLAN Group LLC. See https://implan.com/

There are several advantages to using IMPLAN:

- It is calibrated to local conditions using a relatively large amount of local county level and state of Florida specific data.
- It is based on a strong theoretical foundation, and,
- It uses a well-researched and accepted applied economics impact assessment methodology supported by many years of use across all regions of the U.S.

The economic impact model used for this analysis was specifically developed for the counties of Florida and includes 544 business sectors (based on the North American Industrial Classification System, or NAICS) and latest year 2018 dataset. IMPLAN's principal advantage is that it may be used to estimate direct, indirect, and induced economic impacts for any static (point-in-time) economic stimulus. Through the estimation of economic multipliers, the "ripple" effects of supply chain spending for input purchases are captured (indirect effects), household spending by employees (induced effects) for new final demand to the regional economy, as well as direct spending and employment. Economic multipliers are used to estimate the following economic impacts: economic output or revenue, employment (full-time and part-time jobs), value added (GDP), labor income, among other economic impacts. In particular, the IMPLAN business sector 493 "Individual and Family Services" was used (and applied to each affiliates budget; see Table 5 column 4). The economic impacts of spending of each HMGF affiliates' budget is estimated at the results shown in Table 6.

Table 6. Budget(s) Spending, and Total Economic Impacts, per Affiliate, FY 2019-20

	Affiliate Name	Budget (FY2019-2020)	Total Output	Total Employment	Total Labor Income	Total Value Added
1	**2-1-1 Big Bend**	$ 134,817	$ 333,398	4.8	$ 170,678	$ 208,273
2	**UW of Volusia/ Flagler**	$ 134,817	$ 288,560	4.7	$ 147,333	$ 173,310
3	**2-1-1 Palm Beach**	$ 159,103	$ 359,796	5.2	$ 192,708	$ 227,934
4	**Heart of Florida UW**	$ 154,899	$ 462,919	6.0	$ 221,423	$ 284,274
5	**2-1-1 Tampa Bay**	$ 121,907	$ 341,220	4.1	$ 172,889	$ 214,771
6	**UW of Lee**	$ 159,103	$ 344,132	5.0	$ 188,207	$ 220,126
7	**2-1-1 Brevard**	$ 126,447	$ 280,555	4.5	$ 142,484	$ 168,872
8	**ECC Hillsborough**	$ 121,907	$ 338,187	4.0	$ 175,156	$ 218,912
9	**ELC of Lake**	$ 121,907	$ 230,173	3.7	$ 128,437	$ 145,148
10	**ELC of Marion**	$ 121,907	$ 238,803	4.6	$ 118,435	$ 136,831
11	**Jewish Community Services**	$-	$-	-	$-	$-
12	**ELC of Duval**	$ 15,000	$ 41,264	0.6	$ 20,694	$ 25,742
	Sub-Total	**$ 1,371,811**	**$ 3,259,007**	**47.1**	**$ 1,678,444**	**$ 2,024,193**
	Program Support/Non-direct Services and Administration[70]	$ 437,146	**$ 1,335,765**	**16.5**	**$641,966**	**$821,675**
	Total	**$ 1,808,957**	**$ 4,594,772**	**63.6**	**$ 2,320,410**	**$ 2,845,868**

[70] Program Support/Non-direct Services and Administration is the difference between the sub-total and the Total budget. Instead, the budget should have been $436,141. This small discrepancy is due to information provided in two separate documents by HMGF breakouts v/s totals. By taking the difference the discrepancy is at least considered in the economic impact calculus due to budget spending.

The second result of interest examines the impacts of spending of added HMGF children's LTE's over a lifetime.[71] Given that IMPLAN defines its own industries, a general wage stimulus is a bit hard to calculate with IMPLAN. Hence, recourse was taken to use another model, Chmura's JobsEQ®.[72] Chmura Economics and Analytics LCC was founded in 1998 and is and innovative company specialized in big labor data. Via their models, they provide insights into e.g. labor markets (industries, occupation, education, demographics, labor and wage trends, skill gaps), economic impacts, shift share and other analyses for both private and public clients. To their credit, Chmura's JobsEQ® uses standard industry codes (NAICS), which are rather helpful in weighted analyses of industries. In this case, there is an estimated additional $1,611,878 in employee compensation (see the last column in Table 5). The industry or industries in which employees are earning the added income is irrelevant because there is no a-priori change in production, just an increase in average earnings by existing employees, each exerting a propensity to consume (as broad and as general as consumption goes). This consumption in turn leads to a change in production, and employment. One drawback however is that JobsEQ® does not provide multiplier estimates for Total Value Added (GDP). It is noted that the overhead of $437,146 mentioned earlier (Table 6) is not HMGF-affiliate related, hence it could not be ascertained if and how this value relates to children's future LTE. Therefore, this remains an unknown at this time (knowing there might be some economic impact or spin off, but it could not be determined by what mechanism and how much). The results are shown in Table 7.

Table 7. Added Consumer Spending due to LTE, and Total Economic Impacts Categorized, per Affiliate, FY 2019-20

	Affiliate Name	Added LTE	Total Output	Total Employment	Total Labor Income
1	**2-1-1 Big Bend**	$ 158,410	$ 594,118	4.2	$ 215,961
2	**UW of Volusia/ Flagler**	$ 158,410	$ 690,710	4.6	$ 222,855
3	**2-1-1 Palm Beach**	$ 186,946	$ 802,611	4.4	$ 275,701
4	**Heart of Florida UW**	$ 182,006	$ 816,830	4.9	$ 274,917
5	**2-1-1 Tampa Bay**	$ 143,240	$ 632,331	3.7	$ 213,822
6	**UW of Lee**	$ 186,946	$ 781,397	4.8	$ 265,210
7	**2-1-1 Brevard**	$ 148,575	$ 666,893	4.1	$ 218,247
8	**ECC Hillsborough**	$ 143,240	$ 665,559	3.6	$ 226,457
9	**ELC of Lake**	$ 143,240	$ 603,047	4.3	$ 196,688
10	**ELC of Marion**	$ 143,240	$ 630,234	4.4	$ 199,055
11	**Jewish Community Services**	$-	$-	-	$-
12	**ELC of Duval**	$ 17,625	$ 82,075	0.5	$ 27,283
	Total	**$ 1,611,878**	**$ 6,965,806**	**43.6**	**$ 2,336,197**

Finally, Table 8 shows the combined economic impacts, of the two tiers as indicated.

[71] Noted earlier that this is a "synthetic" approach , as the next SFY will bring on another "batch of children"
[72] JobsEQ® is Copyright © 2020 by Chmura Economics & Analytics LLC. See http://www.chmuraecon.com/jobseq

Table 8. Total Economic Impacts by Affiliate (Including Budget and LTE), FY 2019-20

	Affiliate Name	Total Output	Total Employment	Total Labor Income
1	2-1-1 Big Bend	$ 927,516	8.9	$ 386,639
2	UW of Volusia/ Flagler	$ 979,270	9.3	$ 370,188
3	2-1-1 Palm Beach	$ 1,162,408	9.6	$ 468,409
4	Heart of Florida UW	$ 1,279,749	10.9	$ 496,340
5	2-1-1 Tampa Bay	$ 973,551	7.9	$ 386,711
6	UW of Lee	$ 1,125,528	9.8	$ 453,417
7	2-1-1 Brevard	$ 947,449	8.7	$ 360,731
8	ECC Hillsborough	$ 1,003,746	7.6	$ 401,613
9	ELC of Lake	$ 833,220	7.9	$ 325,124
10	ELC of Marion	$ 869,037	9.0	$ 317,490
11	Jewish Community Services	$-	-	$-
12	ELC of Duval	$ 123,339	1.0	$ 47,977
	Sub-Total	$ 10,224,813	90.7	$ 4,014,641
	Program Support/Non-direct Services and Administration	$ 1,335,765	16.5	$641,966
	Total	$ 11,560,577	107.1	$ 4,656,606

* Summation of Tables 6 and 7 may not equal results in Table 8 due to rounding.

In summary, the program budget of HMGF of $1.37 million, leads to a rise in total output of $3.26 million including indirect impacts, resulting in a return on investment, or an ROI of 2.38 (Table 6). The total HMGF budget of $1.81 million on the other hand leads to $4.59 million in total economic output including indirect impacts, or an ROI of 2.54 (Table 6). In addition, the same program budget leads to higher LTE value of $1.61 million, which in turn has a total output impact of $6.97 million, or an ROI of 5.08 (Table 7). Thus, the grand total ROI is 7.46 (=2.38+5.08). When including the overhead, the total ROI is 7.62 (=2.54+5.08). Every dollar invested in the HMGF program results in $7.62 in total economic output.

Based on a request by the HMGF, what would it mean if the HMGF program is offered in all Florida counties, instead of the counties serviced presently? All things being equal, and as there is no HMGF data (budget) available, a simple cross calculation method was used to derive an estimate of all 67 counties in Florida. Using the US Census population data[73] for population ages from 0 to 17 years (< 18 years of age), shows that the currently HMGF-serviced counties house 67.6 percent of the youth with respect to Florida's total. In this case, the total output impact would be over $17.1 million (=$11,560,577/ 67.6%).

[73] United States Census Bureau, Population projections from ages 0 to 17 years, or under 18 years, of both April 1, 2018 and April 1, 2020 were used to interpolate the target group size at mid-year 2019.
Data retrieved from:
https://data.census.gov/cedsci/table?q=population%20by%20age%20county&g=0400000US12.050000&tid=ACSST1Y2018.S0101&hidePreview=true

Conclusions

From an economic perspective, HMGF activities may be summarized as follows:

- HMGF provides *referral services* to Early Intervention type programs,[74]
- Spending effects that pertain to the "Individual and Family Services" industry, including supply chain spending, and household spending (i.e. direct, indirect, and induced effects), and;
- Investment in "human capital", which is consumed over a lifetime via labor income.

The first bullet identifies the industry, where the second and third bullets represent the two types of economic impact: the HMGF budget spending, and increased LTE spending impacts. The increase in LTE spending is based on an abstract small model applied to both a base and alternative scenario (i.e. including the HMGF Program budget per average referral(s)). All budget components (as far as deemed reasonable) are subjected to appropriate multipliers to derive their economic impacts. The overall economic impacts are shown in Table 9. Table 10 provides the same results in ROI.

Table 9. Total Economic Impacts Categorized by Budget and LTE, FY 2019-20

Total Economic Impact	Total Output	Total Employment	Total Labor Income
Due to HMGF Program Budget spending	$ 3,259,007	47.1	$ 1,678,444
Due to propensity to consume based on added LTE	$ 6,965,806	43.6	$ 2,336,197
Sub-Total	**$ 10,224,813**	**90.7**	**$ 4,014,641**
Due to Overhead Budget spending	$ 1,335,765	16.5	$ 641,966
Total	**$ 11,560,577**	**107.1**	**$ 4,656,606**

Table 10. Total Return on Investment (ROI), FY 2019-20

Program Budget	Total Budget
• HMGF Program Budget spending $ 3,259,007 / $1,371,811 = ROI 2.38 • LTE spending $ 6,965,806 / $1,371,811 = ROI 5.08	• HMGF Total Budget spending $ 4,594,772 / $1,808,957 = ROI 2.54 • LTE spending $ 6,965,806 / $1,371,811 = ROI 5.08
• **Total** **$10,244,813 / $1,371,811 = ROI 7.46**	• **Total** **$11,560,578 / $1,517,569 = ROI 7.62**

Hence, every dollar invested in the HMGF program returns approximately $7.62 in total economic output. If the HMGF program is offered in all Florida counties, instead of the counties presently serviced, all other things being equal, the total output impact would be over $17.1 million. Based on the HMGF program (and a hypothetical $4.5 million budget in $2020) offered in all counties in Florida, it could be stated that for every dollar invested in the HMGF program returns about $7.62 in total economic impact as a result of the HMGF Program.

[74] Referrals and early intervention may be perceived as complementary goods, i.e. a good or service used in conjunction with another good or service. Usually, the complementary good has little to no value when consumed alone, but when combined with another good or service, it adds to the overall value of the offering.

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Appendix

Table 11. Frequency on Results Outcomes by Referral Categories, FY 2019-20

Referral Category ID	Referral Category Label	Agency declined intake	Agency unresponsive	Application pending	Appointment scheduled	Caregiver did not follow through	Caregiver situation change not pursuing referral	Caregiver resolved concern	Caregiver intends to pursue in future	Agency provided service	Received evaluation- eligible- receiving service	Received evaluation - not eligible	Waitlist-eligible not yet receiving service	Waitlist- no appointment yet	Caregiver contacted but is not pursuing referral	Pending authorization	Pending program date	Unknown	Received evaluation- outcome unknown	Caregiver chose to use another HMG referral	Family did not qualify for service (ineligible)
1	Access to Health Insurance	-	-	-	-	2	2	-	-	9	2	-	-	-	-	-	-	-	-	1	1
2	Advocacy	-	-	-	-	-	-	2	3	5	1	-	2	-	-	-	-	-	-	6	-
3	Behavioral Services	4	2	22	52	44	15	13	52	57	13	-	4	2	12	1	-	2	-	49	4
5	Communication / Speech & Language	3	3	3	37	44	10	13	25	27	14	-	2	-	7	1	1	3	-	33	3
6	Childcare	2	1	7	-	4	5	2	11	11	7	2	6	1	4	2	1	-	-	1	9
7	Developmental Screening	-	-	2	1	4	1	5	5	178	24	1	-	-	1	-	-	-	-	-	1
8	Early Literacy	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-
9	Educational / Enrichment	-	-	1	1	1	1	3	13	18	-	-	-	-	-	-	-	5	-	3	6
10	Equipment (including augmentative communication)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Parent/Caregiver Support	-	-	-	-	1	8	2	7	21	3	-	-	-	1	-	1	3	-	1	-
12	Funding	-	-	2	1	-	1	-	1	1	-	-	-	-	-	-	-	-	-	11	-
13	Health / Primary Care	-	-	1	-	-	-	-	2	7	1	-	-	-	1	-	-	-	-	7	-
14	Health / Medical Subspecialists	-	-	-	2	-	-	-	3	4	1	-	1	1	-	-	-	-	-	5	-
15	Health / Neurodevelopmental Subspecialists	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Home Visitation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Inclusion Support	-	-	5	-	-	-	1	1	2	-	-	-	-	-	-	1	-	-	-	-
18	Legal Assistance	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Mental Health / Counseling	4	4	3	13	14	12	2	62	16	8	-	-	1	7	-	-	-	-	13	4
20	Occupational Therapy / Physical Therapy	-	1	1	20	1	1	2	7	7	4	2	-	-	-	4	1	-	-	21	-
21	Parent / Child Participation	-	-	1	-	1	-	1	-	3	2	-	-	-	-	-	-	-	-	1	1
22	Parenting/Education	-	-	5	4	3	1	2	10	25	-	1	-	-	2	-	9	1	-	1	-
23	Private Schools	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-
25	Psycho-educational Testing	-	-	1	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	2	-
27	Recreation	-	-	-	-	1	-	1	4	2	-	-	-	-	1	-	-	-	-	-	-
28	IDEA Part B / School District (Public)	6	-	5	61	7	4	1	23	27	19	8	7	5	5	-	1	2	-	11	3
29	Respite / Care Giving Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
30	Social Skills	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
31	Other	-	-	-	2	1	-	4	17	1	-	-	1	-	-	-	-	-	-	1	-
33	Allied Health Professionals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Basic Needs	1	6	-	-	6	11	1	80	84	13	-	-	4	7	-	1	-	-	-	-
35	Feeding	-	-	-	3	-	-	-	1	7	-	1	-	-	-	-	-	-	-	-	1
37	Specialized Services	-	-	-	6	-	-	1	4	-	-	-	4	-	-	-	-	-	-	-	-
38	Out of County/Area Referral	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
39	Infant Follow-up Clinic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	IDEA/Part C	4	2	14	127	5	6	3	17	20	59	25	3	4	13	-	1	1	2	8	3
41	Educational Information (HMG)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Family Support	-	-	-	-	2	-	1	3	5	-	-	-	-	1	-	-	8	-	3	-
	TOTAL	**24**	**19**	**73**	**330**	**141**	**79**	**60**	**352**	**555**	**171**	**40**	**30**	**20**	**63**	**8**	**17**	**25**	**2**	**180**	**36**
	100%	1%	1%	3%	15%	6%	4%	3%	16%	25%	8%	2%	1%	1%	3%	0%	1%	1%	0%	8%	2%

The column heading in Table 11 is the same as Table 2 and Table 3 as shown in the main body of the text. Outcome labels are provided in the column heading. Shading in the column heading is provided with blue being “Ineligible or Pass”, gray “Pending or Unknown”, and orange “receiving services or appointment”. Of the referral count of 2,263, as depicted in Table 3, about 2,225 referrals have an outcome reference description. The most frequent outcome is “Agency provided service” (25%), followed by “Caregiver intends to pursue in future” (16%), and “Appointment scheduled” (15%). Categorization by color, as indicated, results in 52.4 percent of referrals with “receiving services or appointment” (orange), 42.0 percent “ineligible or pass” (blue), and 5.6 percent “pending or unknown” (gray).