



*Assessing the Economic Impact of the
AOK Family Child Care Licensing Program*

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1 Executive Summary

A growing proportion of the U.S. workforce will have been raised in disadvantaged environments that are associated with relatively high proportions of individuals with diminished cognitive and social skills. A cross-disciplinary examination of research in economics, developmental psychology, and neurobiology reveals a striking convergence on a set of common principles that account for the potent effects of early environment on the capacity for human skill development. Central to these principles are the findings that early experiences have a uniquely powerful influence on the development of cognitive and social skills... These findings lead to the conclusion that the most efficient strategy for strengthening the future workforce, both economically and neurobiologically, and improving its quality of life is to invest in the environments of disadvantaged children during the early childhood years.

Knudsen et al (2006)

For the past seven years, the All Our Kin, Inc. (AOK) Child Care Licensing Program has helped address the New Haven area's vital need for affordable, high-quality child care. To quantify the economic impact of its Program, AOK engaged the Connecticut Center for Economic Analysis (CCEA) to conduct an economic impact study using the Regional Economic Models, Inc. (REMI) platform, in conjunction with survey data gathered directly from the Program's graduates.

Perhaps CCEA's most impressive finding is that the aggregate impact of the AOK Program is achieved at such a modest cost. CCEA estimates that every \$1 of programmatic expense results in between \$15 to \$20 of macro-economic benefit.¹ That AOK's expenditures deliver benefits fifteen to twenty times larger is a testament to the organization and the striking value of this initiative.

CCEA's study demonstrates that in both helping graduates increase their household incomes and facilitating access to child care and thus permitting more parents to enter the workforce, AOK's initiatives result in average annual benefits of:²

- \$7.2 million³ to Connecticut's Gross State Product;
- \$7.4 million New Haven's Gross Regional Product;⁴
- \$12.5 million net fiscal benefit.

The number of AOK graduates in the workforce forms the basis for CCEA's economic impact analysis, particularly as the Program directly impacts work-force participation rates and similar issues in the

¹ Please see Section 4.3 and Appendix 8.1 for additional details.

² The summary benefit statistics presented here include both the past (2006-2009), as well CCEA's projections for the future (2010-2016); Section 4.1 provides specific figures for the benefits provided during each time period.

³ All dollar values included in this report are in 2010-USD.

⁴ Please see Section 3 for a description the terms Gross State Product and Gross Regional Product, as well as additional commentary regarding the differences between the two concepts and specific values.

New Haven area. Survey data indicates that of the thirty-eight AOK graduates CCEA respondents who provided feedback for this study 87% were still working for themselves as child care providers.⁵

By combining AOK's estimates of the future number of graduates with historical figures and survey results, CCEA estimates that approximately twenty-six AOK graduates enter, and remain in, the workforce in any given year. However, the Program's total contribution by 2016 will be 440-450 more⁶ full-time-equivalent employed individuals.

The impact on employment results from, in part, the increase in parents' opportunities to enter the workforce thanks to the presence of reliable, high-quality child care services provided by AOK's graduates. CCEA estimates that four to five adults will join the area workforce for every AOK graduate.

While the macroeconomic benefits of AOK's work are considerable, the Program also has a sizable impact on the quality of life its graduates enjoy. Survey data indicates that most AOK graduates have higher incomes now than they did before entering the Program⁷ and earn, on average, 10% higher wages than the New Haven area's industry mean, as compared to the U.S. Bureau of Labor Statistics data. Survey results show that:

- 55% of graduates were able to decrease their outstanding debt burden;
- 42% opened a new savings account;
- 32% moved into a larger house or apartment.

In addition to direct economic improvements noted above, the survey results make manifest that the AOK Program provides supplementary positive, long-term benefits to its graduates, by helping promote education. Survey data indicates that:

- 60.5% now attend family child care network meetings;
- 57.9% indicated they have received family child care business training;
- 47.4% received their Child Development Associate (CDA) credential;
- 10.5% completed an Associate's degree;
- One person (2.6%) completed her Bachelors degree.

By training individuals from culturally diverse backgrounds to become licensed care providers, the AOK Program directly addresses the critical need for high-quality, culturally-competent child care – a need which all metrics indicate will continue to increase over the next decade.

⁵ The average period of time between when the respondent began her business and when CCEA conducted the survey is 48 months. Please see Section 5 and Appendix 8.4 for additional information.

⁶ The number/range indicates the net increase in total employment; that is, industry specific effects are not considered here, rather, this data-point indicates an increase in the total number of individuals who are able to enter the formal workforce.

⁷ Of the 38 total survey respondents only 2 individuals (5.3%) indicated that their families had less income than before they completed the Program. Similarly, as is discussed in Section 5.2.1, of the 34 respondents who provided feedback for the first part of survey question 25, 30 individuals (94%) indicated that they had either more, or the same amount of, income after completing the Program than they did prior to entering it.

2 Methodology

This study evaluates the economic impact of the AOK Program on the New Haven, CT metropolitan area and surrounding regions. Noted on AOK’s web site, the explicit purpose of the AOK Program is to reach “out to unlicensed caregivers, offering a series of boxes that give them a clear guide for becoming state-licensed family child care providers.” Over the past seven years, 190 individuals have graduated from the AOK Program.

AOK engaged CCEA to develop an economic impact analysis focusing on the AOK Program’s benefits to:

- 1) the region and the State, and
- 2) AOK graduates.

To develop appropriate data CCEA constructed and administered a telephone survey⁸, with the help and support of AOK’s staff, to gather data directly from AOK graduates. The benefits of the AOK Program have never been in doubt to those who know about it. However, the survey data from AOK Graduates about income and quality of life impacts permitted CCEA to quantify the Program’s benefits more precisely. Additionally, the survey allowed CCEA to gather other important, germane data that AOK may use to better understand and provide services to its constituency.

3 Terms and Definitions

Economics has its own specialized concepts and terminology. The key terms used throughout this report are listed below, along with a brief description of each.

- *Gross State Product (GSP)* is the dollar value of all final goods and services produced in the state in one year prior to depreciation of any capital.
- *Gross Regional Product (GRP)* is the dollar value of all final goods and services produced in the region (in this case, the New Haven area) during a year.⁹
- *Personal Income* refers the total amount of money an individual (or household, depending on the context) earns.
- *Real Personal Income* is the amount of Personal Income available to an individual or household after adjusting for the effects of inflation (or deflation).
- *Disposable Income* refers to Real Personal Income adjusted for taxes.¹⁰
- *Net fiscal benefit (NFB)* has two components: (1) the impact of increased/(decreased) revenues from tax collections, and (2) the effects from decreased/(increased) transfer payments (such as welfare and similar social programs, uncompensated care payments, and the like).

⁸ See Appendix 8.2 and 8.3 for additional information.

⁹ Gross State Product and Gross Regional Product are comparable terms in so far as each refers to the total market value of all finished products (goods and services) in a particular area, in this case the State of Connecticut (for GSP) and New Haven metropolitan statistical area (for GRP).

¹⁰ Naturally, disposable income is therefore dependant on (1) the assumptions one makes with regard to tax rates (as well as to different types of taxes), and, like real personal income, (2) the inflation (deflation) expectations assumed when modeling.

4 Findings

The level of education – or, in economic parlance, “human capital” – that an individual possesses is widely recognized as a key metric in facilitating long-term economic prosperity.¹¹ Nobel Laureates Theodore W. Schultz¹² and Gary S. Becker produced the first seminal works in this area. Additionally, Nobel Laureate James Heckman demonstrated the substantial long-term return on investments in high quality early childhood care and education. Other economic research has subsequently confirmed Professor Heckman’s results.

To estimate the macroeconomic impact of the AOK Program at both the regional- and state-levels, CCEA used the Connecticut Economic Model from Regional Economic Models, Inc.¹³ REMI is a multi-sector, dynamic, economic impact model of Connecticut and its eight counties. REMI measures total economic change over time by comparing a baseline forecast (commensurate with the status quo) to an alternative forecast via changing certain variables such as industry employment or sales.

Because the variables in the REMI model are inter-related, a change in any one variable affects many others. For example, if wages rise in one sector, the relative costs of producing a certain output (or outputs) change, and could potentially cause the producer to substitute capital for labor. The change in the capital-labor ratio potentially impacts demand for inputs, which affects employment, wages, and other variables. Higher incomes also attract migrants with resulting impacts on population and educational demands. Such “chain-reactions” flow over time across all sectors of the economy model.

The results of CCEA’s REMI analysis, combined with our survey findings, confirm that the AOK Program has a significant, material, positive impact on AOK graduates, as well as on Connecticut and the New Haven area economies. A summary of CCEA’s analysis, presented below, focuses on two categories of benefits: those to the New Haven area and the state of CT, and those to AOK graduates. We address the specifics of both sets of benefits in sub-sections 4.1 and 4.2.

4.1 Macroeconomic Impacts – Benefits to the Region & State

The number of AOK graduates in the workforce forms the basis for CCEA’s economic impact analysis, particularly as the Program directly impacts work-force participation rates, and similar issues, in the New Haven area. To forecast the AOK Program’s likely future impact, CCEA extrapolated the past trends into the future. Specifically, CCEA used input from AOK’s Leadership regarding the estimated number of graduates during each subsequent year¹⁴ and then adjusted those numbers down to compensate for

¹¹ Economist Arthur Laffer has frequently commented during the recent recession that education is one of the only long-term investments a person can make that has, historically speaking, always increased in value. While the overall benefits of education on an/the economy is a subject beyond the scope of this report, the use of resources which helps or allows individuals to be better educated is one of the few “win-win” situations in economics.

¹² Professor Schultz received his Prize in 1979. Professor Becker received his in 1992. Professor Heckman received his in 2000.

¹³ See Appendix 8.6 for additional details.

¹⁴ Thirty per year is the specific (conservative) figure used for calculations.

individuals who stop providing child care services after each year based on survey data. CCEA estimates that approximately twenty-six AOK graduates enter, and remain in, the workforce in any given year.

The values in Table 1.A summarize the total impact of the AOK Program on the state and the New Haven area economy. As noted in this report’s *Executive Summary*, this study’s results reveal substantial economic benefits to both regions. (See Appendix 8.4 for annual results.)

Table 1.A – Economic Impact Summary – Average of All Years (2006-2016)

	New Haven Area		Connecticut	
	Av Annual Change	Net Present Value	Av Annual Change	Net Present Value
Employment	245	-	240	-
Gross State Product (\$2010)	\$7,405,569	\$65,868,042	\$7,244,687	\$64,611,285
Personal Income per Capita	\$52	\$453	\$16	\$135
Net Fiscal Benefit (\$2010)	\$12,635,608	\$110,133,295	\$12,528,837	\$109,232,127

This study looks at the period from 2006 to 2016. As such, the values listed in Table 1.A in the “Average Annual Change” column are calculated by summing the different values, including the AOK Program’s benefits, and the estimates of what the relevant economic environment would be were the Program not to exist. Positive values indicate the increased benefits of the corresponding metric, while negative values represent decreases. All values are presented in constant 2010 dollars. The discount rate used when calculating the net-present-value figures is 3%.¹⁵

Results from the REMI simulation suggest that the AOK Program contribution to the state and regional economy are substantial. The aggregate value of the benefits to the state is slightly lower than that of the New Haven County, as one would expect given AOK’s location.

Charts 1 and 2 illustrate the total (realized plus projected) impacts of the AOK Program on Connecticut’s Gross State Product. As indicated in Table 1.A and highlighted in this report’s *Executive Summary*, the AOK Program yields substantial benefits to both the state and the New Haven area. Chart 2 illustrates this study’s findings regarding the AOK Program’s benefits to the state and New Haven region, in net-present-value terms.

¹⁵ CCEA used a social discount rate of 3% for all NPV calculations in this report. As per Arrow et al (2004), a reasonable general range for the social discount rate is 3%-6%. Given the time period covered by this study – and the corresponding levels of inflation and the yields on US Treasury bonds – CCEA determined using a value at the lower end of the Arrow et al range would be appropriate.

Chart 1 – GSP Benefits from the AOK Program

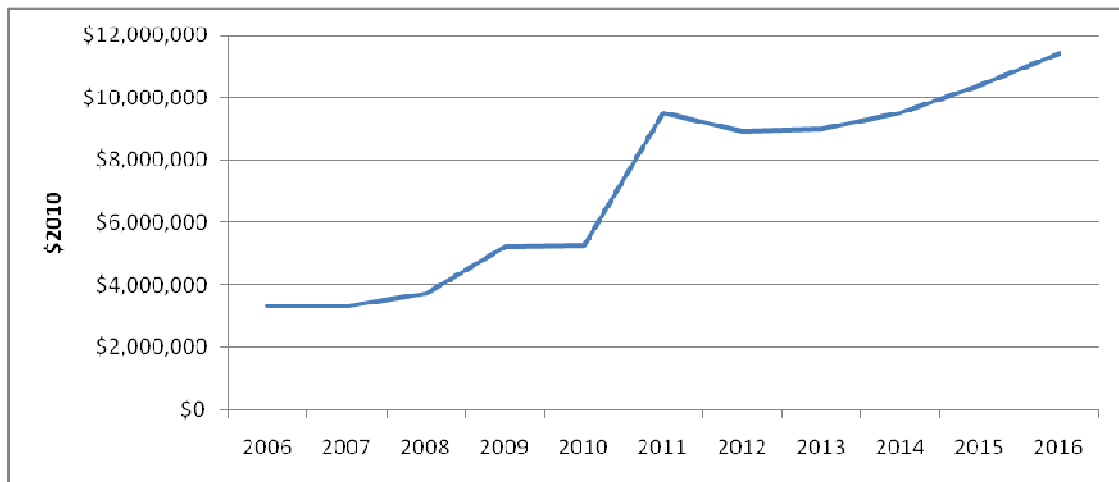
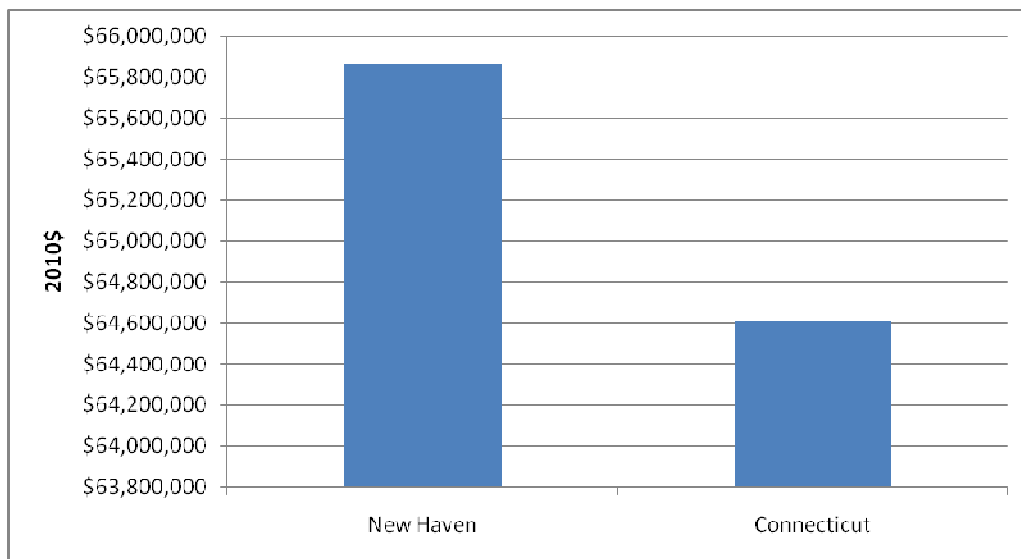


Chart 2 – NPV of GSP and GRP Benefits from the AOK Program



The benefits to the New Haven area are slightly larger (by \$1.2mm) than those to the entire state. However, such results are hardly surprising, as the AOK organization’s concentration is on the New Haven area, and thus draws resources into New Haven. Additionally, while the AOK Program’s benefits to the state are “lower” than those to the New Haven area, the magnitude of this difference is slight, when considering the values being compared.

The values in Table 1.A, while representative on average of the economic benefits that the AOK Program provide, contain both past – that is, previously realized (2006-2009) – values in addition to CCEA’s

forecasts for the future – that is, predicted (2010-2016) – figures. Tables 1.B and 1.C (both below) provide a summary of these same metrics segmented by time; that is, “realized” and “forecasted”.¹⁶

Table 1.B – Economic Impact Summary – Realized (2006-2009)

	New Haven Area		Connecticut	
	Av Annual Change	Net Present Value	Av Annual Change	Net Present Value
Employment	144	-	144	-
Gross State Product (\$2010)	\$3,841,404	\$14,181,864	\$3,909,364	\$14,447,832
Personal Income per Capita	\$17	\$62	\$5	\$18
Net Fiscal Benefit (\$2010)	\$4,636,032	\$16,978,720	\$4,615,910	\$16,909,509

As Table 1.B reveals, the AOK Program has resulted in an average annual increase of nearly \$4 million dollars to the New Haven area and the state of Connecticut. As is true in the figures presented in Table 1.A – which presents the total estimated impact over the eleven year period from 2006 to 2016 (that is, both the “realized” and the “forecast” values) – the impact on the area’s and state’s net tax revenues is even greater than the Program’s benefit to gross state/regional product.

While the past impact that the AOK Program has had is impressive, CCEA’s forecast for the future indicates that the best is yet to come. The “forecast” period, for the purposes of this study, represents the years 2010 to 2016, inclusive. Table 1.C presents the results of CCEA’s analysis.

Table 1.C – Economic Impact Summary – Forecast (2010-2016)

	New Haven Area		Connecticut	
	Av Annual Change	Net Present Value	Av Annual Change	Net Present Value
Employment	302	-	294	-
Gross State Product (\$2010)	\$9,442,234	\$58,173,249	\$9,150,586	\$56,459,409
Personal Income per Capita	\$72	\$440	\$22	\$131
Net Fiscal Benefit (\$2010)	\$17,206,794	\$104,846,295	\$17,050,509	\$103,909,920

The substantial increase between the past and projected average annual values is the result of a number of variables, the chief of which is the iterative, recursive nature of the benefits from job creation and increases to individuals’ financial situation resulting from the AOK Program. This ‘lag-time’ between the initial expenditure of time, energy, and other resources by an organization that seeks to have an

¹⁶ Because of the asymmetry between the number of years included in the realized set (2006-2009) and those in the forecasted set (2010-2016), the average of the two averages is not equal to the average taken over all of the years (2006-2016). Appendix 8.8 contains a comparison table of all the results.

economic impact by promoting entrepreneurial activities within a specific community and the realization of the ultimate economic benefits is to be expected. However, while the benefits may take longer to bear fruit, the community and region ultimately emerge much healthier as the resulting economic growth typically has a greater likelihood of standing the test of time; that is, the economic impact of initiatives like the AOK Program tend to result in more sustainable, long-term benefits to the community and region.¹⁷

As Chart 3 illustrates, both the state and and region benefit substantially in terms of increased Net Tax Revenues.

Chart 3 – Additional Net State & Regional Fiscal Benefits from the AOK Program

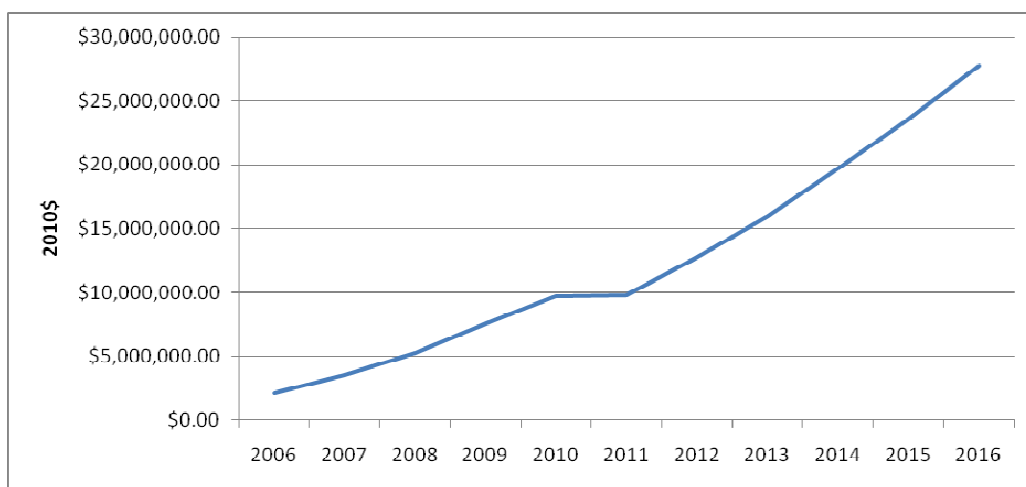
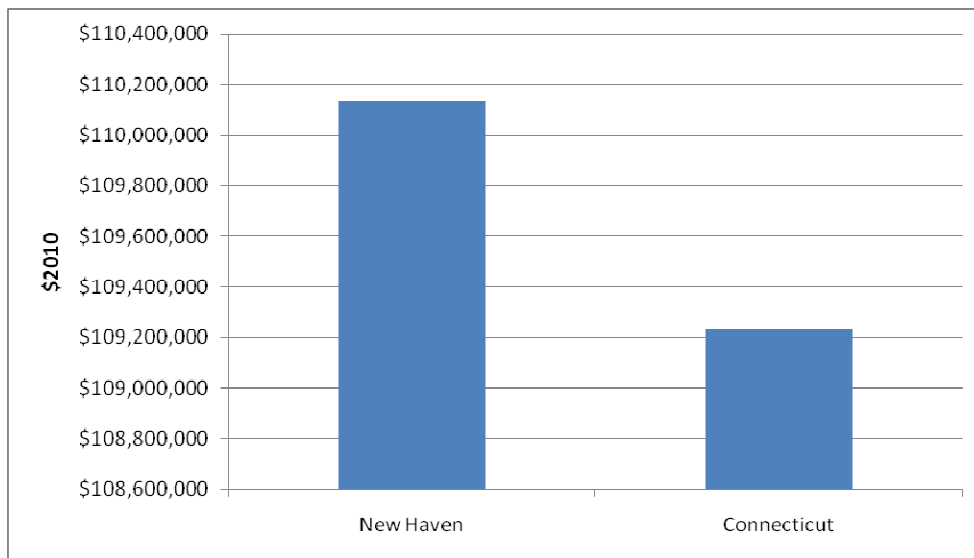


Chart 4 illustrates the difference in benefits at the state and regional levels. The pattern is notably similar to that shown in Chart 2, as too is the explanation of the disparity.

¹⁷ For recent work on the role of, and connection between, entrepreneurship and economic development, see Norman Walzer’s book *Entrepreneurship and Local Economic Development*. (Lexington Books, 2009, ISBN-10: 0739117130) As Walzer notes, “The importance of entrepreneurship in business and regional development can be traced to Schumpeter and others early in the twentieth century (Schumpeter 1934; Wilkend 1979) but research on entrepreneurship has grown rapidly in recent years (Low 2001; Schenkel 2006).” References to those works referred to by Walzer can be found in Appendix 8.9.

Chart 4 – NPV of Net State & Regional Fiscal Benefits from the AOK Program



As Charts 5 and 6 indicate, the total employment contribution of AOK graduates (including working parents) is expected to increase steadily over the foreseeable future. Also, as previously indicated, not only does the AOK Program have a material impact on regional and state employment figures, but also specifically impacts a needed, necessary area of the workforce: culturally-competent childcare providers.

Chart 5 – Increases in Total Employment from the AOK Program

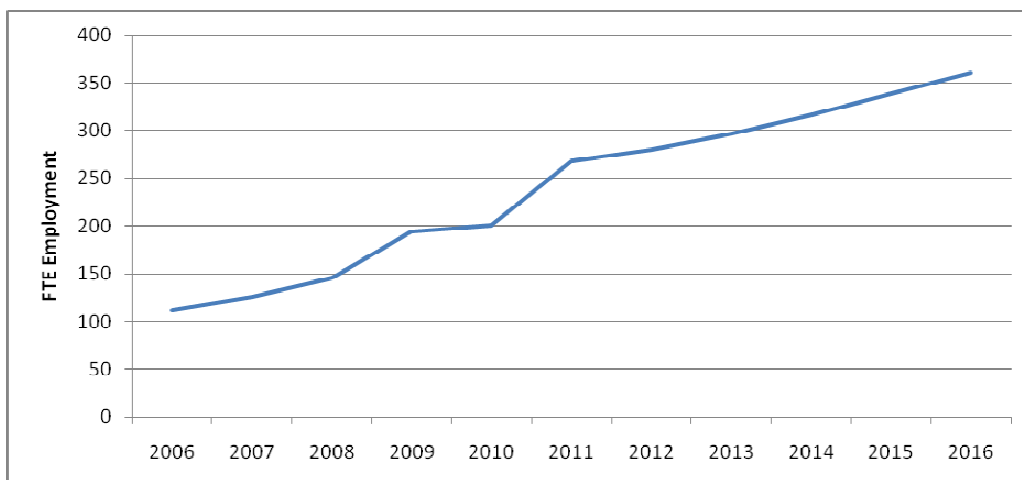
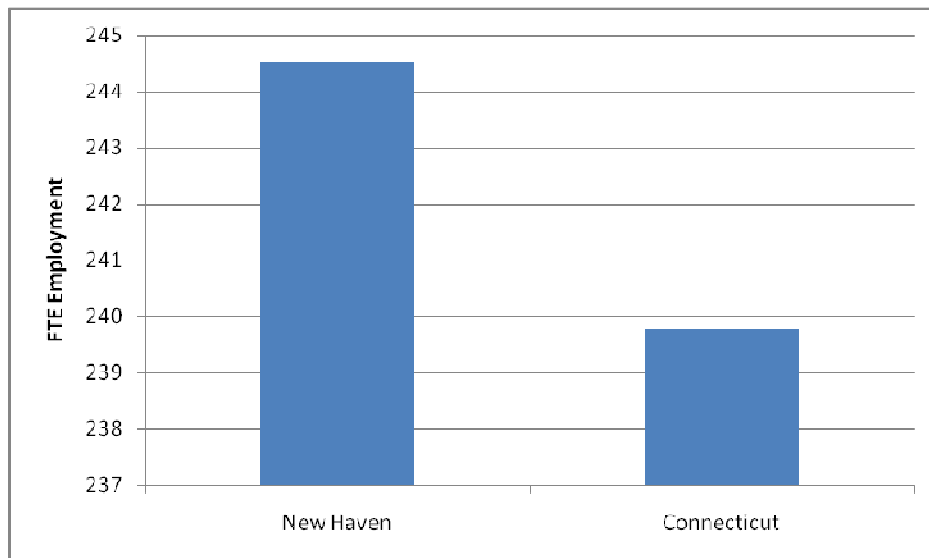


Chart 6 – Total Increases in State/Regional Employment from the AOK Program



CCEA estimates that the Program’s total contribution by 2016 will be 440-450 more¹⁸ full-time-equivalent employed individuals. The impact on employment is due, in part, to the increase in parents’ abilities to enter the workforce thanks to the presence of reliable, high-quality child-care services AOK’s graduates provide.

4.2 Benefits to Individual AOK Graduates

While the aggregate benefits of AOK’s work are notable, the AOK Program has a material impact on the economic quality of life of its graduates. Survey data indicates that 66% of AOK graduates have more income now than they did before completing the Program, with only 5% reporting that they (and their families) currently have less income than they did before graduating.¹⁹ In the face of the recession this is a very positive finding.

Perhaps the most obvious illustration of this impact is the amount of income AOK graduates earn (on average) over and above their counterparts who participate in the same industry. CCEA’s study found that AOK graduates have an average wage which is higher than those reported by the U.S. Bureau of Labor Statistics (BLS) (Sector 399011). The average annual difference, between what a graduate earns versus the New Haven annual average is \$2,678, or 10.4%.²⁰

¹⁸ The number/range indicates the net increase in total employment; that is, industry specific effects are not considered here, rather, this data-point indicates an increase in the total number of individuals who are able to enter the formal workforce.

¹⁹ The remaining 29% of individuals surveyed reported either no change (18.4%), with 10.5% not responding. See question 25 in Appendix 8.3.

²⁰ See the Appendix 8.6 for additional details.

While it is undoubtedly true that individual circumstances can and do vary widely from the averages reported here, it is certainly true that anyone completing the AOK Program can and should expect to make over ten percent more than his/her contemporaries who are working in the same field.

Additionally, as can be seen from the survey respondents' feedback to question number twenty six, the AOK Program's benefits are observed in consumer/saver choices facilitated by the higher personal disposable incomes.

Table 2 – Survey Data – Standard-of-Living Indicators

(26) After completing the program, would you say that your standard of living has changed? (Answer all that apply.)		
Moved to a larger apartment or house	12	31.6%
Bought a house	2	5.3%
Bought or leased a car	9	23.7%
Opened a savings account	16	42.1%
Less debt	21	55.3%
Any other ways in which your standard of living has changed	17	44.7%

It is particularly worth noting that seven respondents indicated significant increases in four or more of the above categories. Additionally, of the 45% of respondents who indicated that their “standard of living” had changed, several AOK graduates indicated that they had been able to:²¹

- Receive their Child Development Associate (CDA) credential (47.4%);
- Increase their education – with four individuals (10.5%) completing Associate degree programs, and one person (2.6%) receiving her Bachelors degree;
- Have more “money for family” (or similar), and an increased ability to pay down debt.

While certainly true that it is, strictly speaking, possible to associate a specific dollar-denominated value to each of the items referenced in the question, the positive aspects of those lifestyle changes have been shown to provide additional benefits to individuals/families above and beyond a specific dollar value.²²

²¹ Additionally, one individual explicitly expressed her “thanks to AOK” as she was now able to afford to move into a larger apartment and decrease her level of outstanding debt.

²² See, for instance, psychologist Elliot Aronson’s classic work *The Social Animal*. Additionally, Akerlof & Dickens (1982), amongst many others, have formally integrated psychological and sociological phenomenon pertaining to non pecuniary benefits into economic theories and models.

4.3 Cost-Benefit Analysis (CBA)

There are a number of empirical and theoretical complications involved in performing a cost-benefit calculation regarding any social program.²³ However, essentially what a CBA does is to describe the relationship between the costs incurred by an initiative with the benefits from that undertaking. The first lines of Prest & Turvey's seminal 1965 study concisely summarize the fundamental purpose of CBA and CCEA's approach:

Cost-benefit analysis is a practical way of assessing the desirability of projects, where it is important to take a long view (in the sense of looking at repercussions in the further, as well as the nearer, future) and a wide view (in the sense of allowing for side-effects of many kinds on many persons, industries, regions, etc.), i.e., it implies the enumeration and evaluation of all the relevant costs and benefits. This involves drawing on a variety of traditional sections of economic study-welfare economics, public finance, resource economics-and trying to weld these components into a coherent whole. (pp. 683)²⁴

Robert Brent's contemporary book²⁵ on this subject not only makes use of Prest & Turvey's definition, but also utilizes the four questions regarding the evaluation of the costs and benefits from a particular initiative that those authors outline in the same 1965 paper.²⁶ For the purposes of this study, the first of Prest & Turvey's questions, which deals directly with estimating the expenses and benefits that should be "included" in the calculation, is most germane.²⁷

Two estimates are required to calculate the benefit-to-cost ratio (BTCR) – presented herein as a multiplier because of the relative size of the numerator and the denominator: one representing the Program's benefits, and one representing cost.²⁸

²³ See James Heckman and Edward Vytlačil's comments in Chapter 70 ("Econometric Evaluation of Social Programs, Part I: Causal Models, Structural Models and Econometric Policy Evaluation") of the *Handbook of Econometrics*, Volume 6B, Elsevier (2008) for a contemporary review of methodology and challenges.

²⁴ Prest & Turvey present a more concrete definition of CBA a few pages later: "The formulation which, as a description, best covers most cost-benefit analyses examined in the literature we are surveying is as follows: the aim is to maximise the present value of all benefits less that of all costs, subject to specified constraints." (pp 686)

²⁵ Brent, Robert J. *Applied Cost-Benefit Analysis*. Edward Elgar Publishing; 2nd edition (March 30, 2008). ISBN-10: 1847206239

²⁶ "This formulation is very general, but it does at least enable us to set out a series of questions, the answers to which constitute the general principles of cost-benefit analysis: 1. Which costs and which benefits are to be included?; 2. How are they to be valued?; 3. At what interest rate are they to be discounted?; 4. What are the relevant constraints? Needless to say, there is bound to be a certain degree of arbitrariness in classifying questions under these four headings, but that cannot be helped." ((Prest & Turvey (1965, pp 686))

²⁷ Question 2 is addressed in the only two ways possible given the available information: first in terms of NPV 2010-USD, and secondly in terms of the qualitative benefits as described in Sections 4.2, 5.2, 5.2.1, and 6 of this report. Question 3 is addressed as indicated in Footnote 16. Question 4 is addressed, with the exception of a précis of some of the pertinent legal and regulatory framework, in Sections 5.1, 6.1, 6.3, and 6.4 of this report.

²⁸ All BTCR numbers are calculated by dividing the Total Benefit by the Total Cost. Therefore, for the purpose of this study, the BTCR figure is calculated by dividing the Total Benefit by \$100,000.

For the purposes of this report – and all BTCR calculations reported herein – CCEA uses information from AOK’s Management Team for the cost basis. Specifically, AOK’s Management indicated that the average expense incurred by the organization for each graduate is approximately \$2,000. Similarly, AOK’s Management indicated that thirty graduates per year is an appropriate “conservative estimate” for forecasting purposes. As such, CCEA used a gross figure of thirty and a net figure of twenty-six (to account for the 13% attrition rate implied by survey results and region-specific macroeconomic data) as the basis for its labor-force projections.

Multiplying the average cost-per-graduate (\$2,000) times the estimated number of graduates-per-year (30)²⁹, we arrive at an annual estimated cost of \$60,000 per year. As an additional precaution against underestimating the Program’s annual cost (which would ultimately result in over-estimating the BTCR), for the BTCRs in this study CCEA uses an annual expense estimate of \$100,000.³⁰

Next, estimating a proper value to represent “benefits” is quite challenging. However, despite the difficulty, determining a reasonable range of estimates is clearly necessary if we are to arrive at a BTCR. As such, CCEA’s approach is first to determining two suitable end-points – a “high” and “low” boundary – to represent the total economic benefits from the AOK Program, and then to compare those results with other economists’ previous work on this subject.

The benefit of employing a recursive, dynamic, integrated analysis tool such as REMI is that this program captures secondary, tertiary, and other subsequent benefits within its model. The sum total of all such benefits constitutes the “induced” effects from a change in one or more economic variables. While it is not necessarily true that the induced benefits from an action are positive when the direct impact is positive (and likewise negative when the direct impact is negative), such is the case here. Ergo, by considering only the direct – and therefore not incorporating the induced – benefit(s) from the AOK Program, CCEA was able to determine a suitably conservative lower-bound in the 4-7 range.³¹

The “high-bound” benefit figure used in the BTCR calculations is simply the average annual NPV impact to the gross state/regional product from REMI. It is worth noting that the results of the REMI analysis are already somewhat conservative as those calculations are based on the gross graduate rate of thirty individuals per year. However, as the REMI results include induced benefits, in the context of calculating a BTCR, the results are suitable for use as a high-bound.

By dividing \$7,405,569, the average increase to New Haven area’s gross regional product, in NPV terms, as indicated in Table 1.A, and \$7,244,687, the equivalent, corresponding value for Connecticut’s gross state product, we find that the BTCRs are 74 and 72, respectively.

²⁹ The gross number of thirty graduates per year is used in for the purposes of BTCR calculations as expenses are incurred by AOK regardless of whether or not the graduate enters into, or remains in, the workforce as a care-provider. The net number (26) is used, however, for benefit calculations.

³⁰ The increase of \$40,000 (from \$60,000 to \$100,000) is admittedly somewhat arbitrary. However, the use of \$100,000 of cost as opposed to the costs indicated by AOK’s Management helps insure that CCEA’s BTCR calculations are conservative.

³¹ See Appendix 8.1 for additional information regarding the calculation of these values.

As indicated, the 4-7 range and 74/72 values represent the low and high estimates of the AOK Program's BPCR. Put simply, based on the specific data gathered for, and utilized in, this study, CCEA's calculations indicate that every \$1 of AOK's program expense results in a low benefit of between \$4-\$7 and a regional economic benefit of between \$74/\$72.

Prior research on the economic benefits of Early Childhood Development (ECD) programs³² indicated that a BPCR in the range of 3 to 9 is appropriate; that is, these authors estimate that the ultimate long-term economic benefit of a \$1 expenditure results in \$3 to \$9 of economic benefit. However, more recent work in this area has indicated long-term benefits of \$17 for every \$1 in expense, in two separate studies by Grunewald & Rolnick, 2003; 2006.

While the AOK Program is not an ECD initiative per se, the evaluation metrics resulting from BPCR calculations are comparable due to the significant increase in providers, with a direct benefit to children.³³ In fact, in addition to incorporating many of the long-term benefits that are realized as the result of ECD projects, as highlighted throughout this study, AOK's Child Care Licensing has a direct, short-term impact which likely materially extends the Program's benefit well beyond the economic benefits of the ECD initiatives used in the report for benchmarking purposes.

Based on feedback from the surveys conducted as part of this study, calculations incorporating REMI results, and the aforementioned research from the germane literature, CCEA conservatively estimates that every \$1 of programmatic expense results in between \$15 to \$20 of macro-economic benefit to the New Haven area and the state of Connecticut.³⁴

³² See Warner & Liu (2006), Case, Fertig, & Paxson (2005), Ribeiro & Warner (2004), Deaton (2003), Blau (2001)

³³ The similarities between the AOK Program's impact and various ECD initiatives are more fully examined in Section 6 of this report.

³⁴ The 15-20 range is certainly consistent with the aforementioned 17-BPCR cited by Grunewald & Rolnick (2006). Additionally, over a twenty year period, the compound annual growth rates (CAGR) implied by a 15- and 20-BPCR are 14.5% and 16.2%, respectively, both of which are similarly in-line with the widely-cited 16% growth rate determined by Grunewald & Rolnick in their earlier (2003) analysis.

5 Data

One of the critical components of any economic, financial, or business-related analysis is the input data on which the modeler (here CCEA) performs calculations and, ultimately, bases their conclusions. For the purposes of this project, CCEA utilized three primary sources of data:

- 1) Input from the telephone survey
- 2) General economic data (via REMI)
- 3) Data regarding wage rates and income expectations

While REMI already contains a wealth of data about income and wages, the information is aggregated into categories based on job-specific similarities. Given the nature of the AOK Program, the appropriate “REMI category” for this analysis is the “Social Assistance” NAICS 2-digit category.

However, the Social Assistance data includes not only individuals involved with child care, but also incorporates salary and wage figures from government employees and other groups which are distinctly different from the work performed by AOK graduates. As such, the CCEA team utilized the BLS data ranking order to provide a better, more germane comparison.

5.1 The Survey

In order to accurately assess the AOK Program’s economic benefits to the impacted area, CCEA required certain pieces of information that are neither public, nor readily available in any way except through direct contact with those individuals who have completed the AOK Program. The most expedient, cost-efficient, and minimally disruptive (to those being surveyed) way to gather such data (for this particular group of individuals) was via a telephone survey.³⁵

It is a testament to both the AOK Program and the AOK organization that the overwhelming majority of individuals the surveyors reached were willing to participate and to provide CCEA with such a large quantity of personal data.³⁶ Prior to any calls being placed by representatives of the CCEA, a letter was sent by the AOK staff to every name on the contact list. The letter described the nature of the survey and confirmed that the CCEA’s surveyors would be acting on behalf of AOK.

³⁵ CCEA prepared and submitted a summary of the survey to the University of Connecticut’s Institutional Review Board (IRB), at the request of the University’s Office of Research Compliance (ORC). It was determined that, for this study, official IRB approval was not necessary. Subsequently, the ORC staff reviewed the survey materials and project plan, and confirmed that all aspects of this initiative complied with all relevant policies.

³⁶ Participation rates are – in most circumstances and after adjusting for other variables – directly related to the participants’ perception of the quality of their experience with the organization or program.

The AOK Administration having mentioned that some Child Care Licensing participants were Spanish speaking, CCEA secured bilingual graduate students to conduct the surveys.³⁷ This fluency in Spanish³⁸ was instrumental in securing the trust and cooperation of those individuals who were contacted for this survey. While the language in which each conversation was conducted was not formally documented, the CCEA staff member who supervised the survey process estimates that approximately 80% of the survey participants chose to speak in Spanish – an estimate confirmed by the surveyors. Survey results were initially reported on paper forms, and then entered into a password-protected database to facilitate analysis.

All survey participants were AOK graduates. And, while a rigorous demographic profile of those individuals was not practical, the relevant statistics for those who participated in the AOK Program is as follows: 20-64 years of age; 98% female; approximately 65% Latino, 30% African American, and 5% Caucasian. Of the approximately 100 AOK graduates' names and numbers provided by AOK, surveyors were able to obtain 38 responses. A full copy of survey results is included in Appendix 8.3.

The aggregated responses from the survey confirm a number of characteristics that the AOK staff had indicated, and shared with CCEA, prior to conducting the Survey:

- Most AOK graduates (87%) work exclusively for themselves, care for fewer than ten children during the week (79%, with 10% not responding), and do not have another employee (74%, with 8% not responding).
- Many (50%) AOK graduates provided unlicensed child-care services prior to attending and completing the licensing Program.
- Most AOK graduates (76%, with 10% not responding) do not have another job where they work for pay.
- 76% (with 15% not responding) indicated their willingness to extend their operating hours given suitable demand.
- A relatively large percentage (42%) of the cared-for children's parents have no formal education at the high school level or above, and, of the remaining portion on which respondents did provide data (24% either did not know, or did not answer the question), all care-providers indicated that less than half of their kids' parents had any education (at the stated levels).

³⁷ All of the individuals who were involved with the survey were required to sign a confidentiality agreement, as well as to attend a training and information session prior to contacting any potential survey participants. Additionally, all contact with the survey participants was done during designated times and under the supervision of a CCEA staff member. See Appendix 8.2 or additional details.

³⁸ The graduate students who conducted the survey are native Spanish speakers.

With regard to economic factors, survey results indicate that the population served by AOK graduates tends to lie in the lower section of the socio-economic continuum:

- Nearly 70% of the children receiving care from AOK graduates are eligible for the *Care 4 Kids* subsidy³⁹ – with over a quarter of respondents indicating that all of the children in their care are eligible. (See Table 3)
- 37% of the Survey’s participants either did not know, or were not willing to provide feedback with regard to, whether the children’s parents were receiving public assistance. However, the available data indicates that 34% are indeed receiving some public assistance. (See Table 4)
- 63% of graduates indicated that they have referred the parents of the children for whom they care to *Birth to Three*, and over 50% indicated that they have provided information regarding other types of community service resources. (See Table 5)

Table 3 – Survey Data – Care4Kids Subsidy Recipients

(17)	How many of the children you care for receive the Care4Kids subsidy?		
	None	5	13.2%
	Some, less than 50%	6	15.8%
	Some, more than or equal to 50%	12	31.6%
	All	10	26.3%
	No data recorded/no longer in business/don't know	5	13.2%
Of the total number of children who receive care from AOK graduates, the survey data (net of the 13.2% of individuals who did not provide feedback) indicates that 66%-68% are eligible for the Care4Kids subsidy.			

Table 4 – Survey Data – Parents on Public Assistance

(18)	Can you estimate how many of the parents are on public assistance?		
	None	11	28.9%
	Some, less than 50%	6	15.8%
	Some, more than or equal to 50%	6	15.8%
	All	1	2.6%
	No data recorded/no longer in business/don't know	14	36.8%

³⁹ “Care 4 Kids helps low to moderate income families in Connecticut pay for child care costs. This program is sponsored by the State of Connecticut’s Department of Social Services (also called DSS).” (<http://www.ctcare4kids.com/>)

Table 5 – Survey Data – Parents on Public Assistance

(28) Since becoming licensed, have you referred any families to the following services?			
			("Yes")
Birth to Three	24		63.2%
Health care or mental health services	12		31.6%
Community agencies that offer services such as meals, food, diapers, or similar assistance?	20		52.6%

5.2 Graduates in the Workforce and Their Income

The number of AOK graduates in the workforce forms the basis for our economic impact analysis, particularly as the Program directly impacts – in a meaningful way, as this study indicates – work-force participation rates and similar issues in the New Haven area. That such large economic impacts are achieved with the resources available to AOK is a great testament to its staff and the Program’s efficacy..

Wage and salary data used for CCEA’s analysis is drawn from two primary sources: (1) the BLS, and (2) information from the Survey. CCEA analysis indicates three advantages from the AOK Program:

- 1) The additional workforce provided by AOK graduates and their employees, in Full Time Equivalents (FTEs), in the New Haven region;
- 2) The additional workforce provided by parents using the AOK graduates’ services;
- 3) The wage of the AOK graduates, and the percentage difference between this set of wages and the average sector wages, indicated by the BLS’ estimates of Childcare Workers⁴⁰ salaries.

Items one and two allow us to simulate the change in the workforce that would occur if the AOK Program were to disappear, thus decreasing the total labor force in the state.⁴¹ The last input serves to mark the difference in the average wages received by AOK graduates (and their employees, where applicable) thanks to their participation in the AOK Program.

For modeling purposes, AOK’s management agreed that a forward estimate of approximately thirty graduates per year is appropriate. By combining that estimate with the Survey results, CCEA estimates that approximately twenty-six AOK graduates enter and remain in the workforce for any given year. On the basis of those figures, CCEA estimates the total FTE-contribution of AOK graduates and their employees to be 440-450⁴² by 2016.⁴³ Of the total estimate of new entrants, based on assumptions

⁴⁰ <http://www.bls.gov/oes/current/oes399011.htm>

⁴¹ In economic jargon, such an approach is referred to as using a “counterfactual.”

⁴² 446 is the specific value used for modeling purposes.

⁴³ CCEA estimates that 4½ individuals will join the workforce for every AOK graduates.

about the number of parents per household (as well as the gender of those individuals, as per the U.S. Census' Parents Employment Rates data), CCEA estimates that slightly over half (56%) are females.⁴⁴

From the survey, we were able to estimate the annual average wage of AOK graduates (including their employees) to be in the \$20,000 to \$25,000 range, with an average income of approximately \$23,000 per year. By comparing this estimated average annual wage from our survey data to the BLS' Childcare Workers average wages, CCEA determined that AOK graduates earn, on average, 10% more than their peers (in the same geographic area) – or, to state the matter more concretely, graduating from the AOK Program results, on average, in an additional \$2,700 per year of income for each graduate.

5.2.1 Changes to Family Income – Survey Analysis

As noted in Section 5.2, the aggregate annual financial benefit to households in which an individual had participated in the AOK Program is \$2,700, or slightly greater than a 10% premium as compared to the average income data reported by BLS for the region. As is true of any average or aggregate number, the normal, expected differences in individual's situations are somewhat obscured. While the use of such estimates is necessary in a macro-economic analysis, the trends from this survey data underscore one of the major trends noted in Section 4.1 concerning the long-term impact of localized, entrepreneurial initiatives such as the AOK Program.

Tables 6.A and 6.B present the individual survey responses from question number 25, which asked respondents to estimate how much their participation in the AOK Program had impacted their annual household income during each period, indicates in which they have been in business.

Of the 34 respondents who provided feedback for the first part of survey question 25, thirty individuals (94%) indicated that they either had more, or the same amount of, income after completing the Program.

⁴⁴ Virtually all (37 of 38 survey respondents) were female. The 56% figure referenced above refers to the total number of individuals who are able to enter the workforce thanks to the services provided by the Program. Not only do some AOK graduates personally enter the workforce as a result of the Program, but other individuals are also able to find employment because of the existence of a viable alternative for child care; that is, because people no longer have to remain at home to care for their (and their relatives') children, overall employment increases, as previously indicated. The demographics of that total change are to what the 56% figure refers.

Table 6.A – Summary of Responses Regarding Changes in Family Income

	0-6 Mo		1st Yr		2nd Yr		3rd Yr		4th Yr		5th Yr +	
	#	%	#	%	#	%	#	%	#	%	#	%
Total survey respondents:	38		38		38		38		38		38	
Number of survey respondents who indicated that they had not been in business long enough to provide information related to question 25:	0	0%	4	11%	7	18%	14	37%	18	47%	21	55%
Number of survey respondents who had been in business long enough to provide information related to question 25, but who did not do so:	11	29%	10	26%	9	24%	10	26%	8	21%	6	16%
Total number of survey respondents who did not provide information related to question 25:	11	29%	14	37%	16	42%	24	63%	26	68%	27	71%
Total number of survey respondents who provided information related to survey question 25:	27	71%	24	63%	22	58%	14	37%	12	32%	11	29%

Table 6.B – Summary of Resulting Income

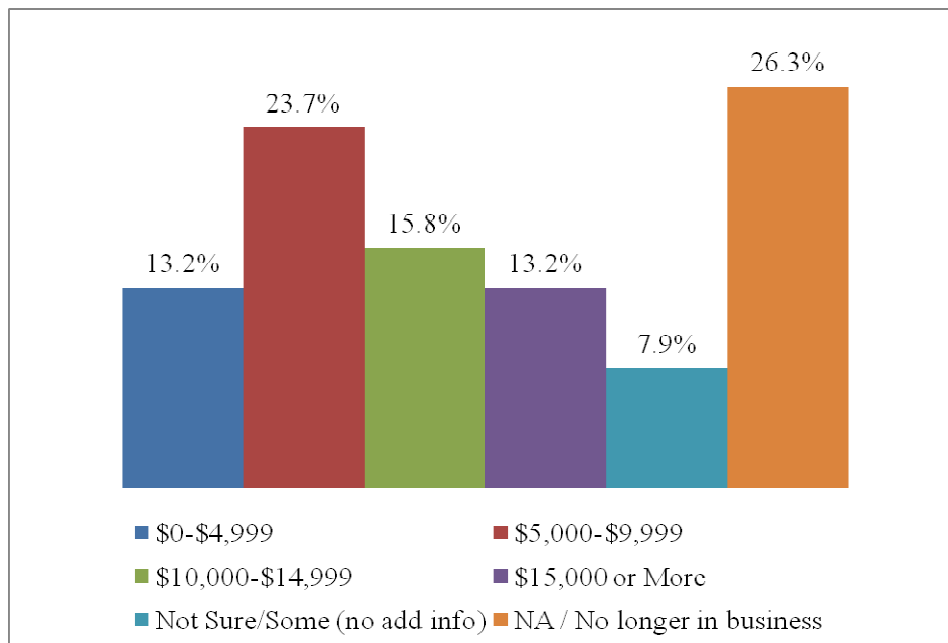
\$1-\$1,000	8	30%	0	0%	0	0%	0	0%	0	0%	0	0%
\$1,000-\$5,000	12	44%	10	42%	6	27%	2	14%	2	17%	2	18%
\$5,000-\$10,000	5	19%	7	29%	6	27%	6	43%	4	33%	3	27%
\$10,000-\$15,000	1	4%	6	25%	9	41%	6	43%	6	50%	6	55%
\$15,000-\$20,000	1	4%	1	4%	1	5%	0	0%	0	0%	0	0%
> \$20,000	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

As the data in Table 6.A and 6.B indicates, those AOK graduates who remain in business see a meaningful increase in their annual household income.⁴⁵ Approximately 60% of providers reported a rise in family income of over \$5,000 in their first year of operation. Although this figure is noteworthy on its own, the economic benefits continue to increase over time. Likewise, 45% of providers’ family incomes increased by over \$10,000 in the second year, and almost three-quarters (73%) of respondents operating in their second year saw income growth of over \$5,000. As is true in any industry, the number

⁴⁵ All percentages cited in this paragraph are calculated using a denominator that is equal to the total number of individuals who had been in business for the necessary amount of time and who also provided feedback to Question number 25 (some individuals either were uncertain about their own specifics, or indicated that they were not comfortable sharing that information with the surveyor).

of respondents who remain in business declines with time. However, those who continue to operate childcare businesses sustain an increased income. In the third year of operation, for example, the vast majority (86%) of providers saw increases of over \$5,000.

**Chart 7 – Annualized Estimated Operating Expense
(Data from survey responses)**



While the margin of error associated with the numbers in Chart 7 is undoubtedly larger than that of the majority of other responses,⁴⁶ the results provide empirical support for the economic rational-actor paradigm; specifically, those individuals who remained in business did so because their revenues

⁴⁶ The statement that “the margin of error pertaining to these numbers is undoubtedly larger than that of the majority of other responses” has both a theoretical and empirical/anecdotal support. All of the respondents operated their business out of their own residence. As such, the assignment (or allocation) of expenses to a “business activity” versus a “household” (or “family”) activity is notoriously difficult. Similarly, the literature on Cost Accounting provides an abundance of documentation regarding the difficulty of allocating certain types of “general” or “overhead” operating expenses amongst the various operating units of any organization. Writing nearly seventy years ago, William Vatter noted: “In the case of an industry producing, from the same plant and equipment, a variety of kinds and grades of products, the exact determination of costs of production is impossible. All that is possible under such circumstances is... the reaching of an estimate resting on theoretical assumptions of necessarily disputable validity... Cost allocation at best is loaded with assumption and in many cases, highly arbitrary methods of apportionment are employed in practice. Certainly it is wise not to take the results of the usual process of internal cost computation too seriously.” (Vatter (1945)) While technology has improved greatly since Vatter’s time, the underlying issue of cost allocation within an integrated entity has not materially changed. Additionally, in discussions with the surveyors themselves (following each calling session), each caller noted that the respondents with whom they spoke had a disproportionately large amount of trouble providing feedback on this topic with many respondents making comments to the effect that they “really didn’t have a good idea.”

exceeded their expenses (including the opportunity cost of time) by a sufficient margin so that remaining in business resulted in increased welfare for the business operator.

6 Literature Review of Transition Mechanisms

After four decades of scientific advances and early childhood program development... program evaluation data tell us that we can improve the life trajectories of children who face the burdens of poverty and social disadvantage, but the quality of program implementation and the magnitude of measured impacts are highly variable... All available information points to the same conclusion—intervention in the early years can make an important difference, and the magnitude of policy and program impacts must be increased.

Shonkoff (2010)

The primary purpose of a literature review is to augment the organization's existing knowledge and expertise by drawing upon the work that has been previously done by other professionals with an interest in the particular field/area. While much of the pertinent research related to the economic and quantitative methods utilized in this study is addressed throughout, previous research on the economic benefits from initiatives such as AOK's Program has not yet been addressed. We now turn our attention to that.

6.1 Quality and Availability of Child Care

With the heightened demand for day care in the United States has come a growing concern with the quality of provision. Purchasers, who are generally the parents of the child, find it difficult to assess the quality of care. In addition, the social consequences of poor quality day care are potentially grave.

Chipy (1995)

Nobel laureate economist James Heckman was a leader in documenting the substantial long-term return on investments into improving the quality of ECD initiatives.⁴⁷ Subsequently, as noted in Section 4.3, many other economists found notable correlations between quality care and future benefits.⁴⁸

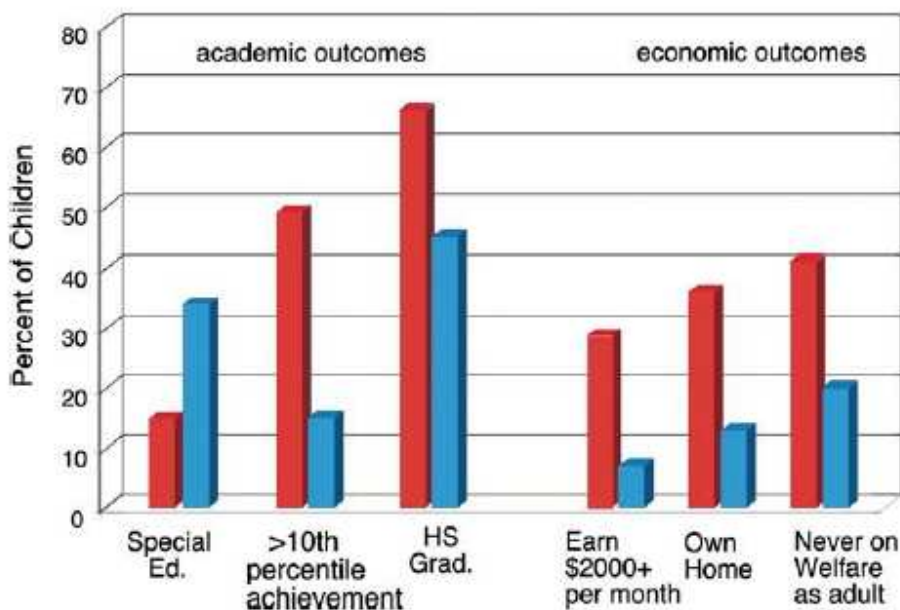
Janet Currie, Professor of Economics at the University of California, Los Angeles and an Associate at the National Bureau of Economic Analysis (NBER) concurs, noting in her review of early childhood education programs (such as Head Start) that, "the evidence concludes that these programs have significant short- and medium-term benefits, and that the effects are often greater for more disadvantaged children." (Currie (2001))

⁴⁷ See Exhibit 5 in Appendix 8.5 for an illustration from Heckman & Masterov (2007) of the disproportionate benefits of human capital investments in younger, as opposed to older, individuals.

⁴⁸ Additionally, see Cornell economics professor Mildred Warner work regarding the relationship between benefits from increased quality in the care-giver industry and aggregate benefits to an area's economy. (<http://government.cce.cornell.edu/doc/reports/childcare/>)

Longitudinal data from two such programs – the High/Scope Education Research Foundation's Perry Preschool Project and the Carolina Abecedarian Project – provide particularly striking examples of the long-term benefits of early childhood intervention. (Knudsen et al, 2006)

Chart 8
Academic & Economic Benefits from the Perry Preschool and Abecedarian Projects
 Knudsen et al (2006)⁴⁹



As indicated in the quote from Professor Currie, there is a particularly compelling case for making strategic investments in children born into “adverse environments.” As James Heckman and Dimitriy Masterov comment, “Substantial evidence shows that these children are more likely to commit crime, have out-of-wedlock births, and drop out of school. Early interventions that partially remediate the effects of adverse environments can reverse some of the harm of disadvantage and have a high economic return.” (Heckman & Masterov (2007)) And the number of children born into such environments is increasing.⁵⁰

While the demographics of children may seem a more suitable subject for a sociology or psychology study, a large (and increasing) body of economic work demonstrates that the early childhood intervention that increases the quality of care results in lower crime rates, higher earning power (and, as

⁴⁹ Description from Knudsen et al’s (2006) report to the National Academy of Sciences: “(A) Data from the Perry Program collected when the individuals were 27 years old (High/Scope). >10th percentile achievement, children who scored above the lowest 10% on the California Achievement Test (1970) at age 14; HS Grad, number of children who graduated high school on time.”

⁵⁰ See Ventura & Bachrach (2000), and Exhibit 6 in Appendix 8.5.

a result, less dependence on welfare in the future), and fewer births to teenage mothers, all of which significantly reduce the social welfare costs borne by states and regional governments. (Heckman & Masterov (2007), Anderson (1999))

In addition to providing a very high long-term rate-of-return, increases in the aggregate professionalism and competency of caregivers has been shown to have short-term benefits.⁵¹ Cornell economics professor Mildred Warner⁵² found that the caregiver industry provides significant aggregate benefits to an area's economy by providing jobs and spurring purchases of various goods and services, which results in tax revenues (from wages) for the region/state.

6.2 Physical and Emotional Benefits of Child Care

High quality child care is one of the critical components with regard to fostering physically and emotionally healthy children. (Barnett (1995), Frede (1995), and Shore (1997)) An increase in the aggregate health of the children living in a particular area (or, in fact, any region) is certainly a good thing in and of itself. However, increases in children's health is not only an inherently good thing, but the economic benefits are also noteworthy as well.

Economists have demonstrated that the overall health of children is itself a critical component to increasing the aggregate welfare of an area's population. (Case, Fertig, & Paxson (2005), and Deaton (2003)) The exact manner in which these benefits are realized varies considerably from area to area. However, examples of these types of benefits not only include "positive" items such as increased future earning potential and ability, on the part of individuals, to adapt to new economic climates and working situations, but also are felt by reducing "negative" economic impacts such as unnecessary utilization of state health and unemployment services.

The Office of the Assistant Secretary for Planning and Evaluation (ASPE), Office of Health Policy, released a report in 2007 on the relationship of health care costs and the economy.⁵³ In Section 3.3 of that report, the authors note, "*The share of health care expenditures financed by public sources (federal, state, and local governments) has risen steadily over the last decade.* Data from the National Health Expenditure Accounts show that the share of health care costs financed by public sources increased from 40.2% in 1990 to 45.4% in 2005."

The rising cost of public expenditures on health care costs – particularly at the state and local level – is ultimately shouldered by taxpayers. The ASPE report states:

For many years, the public sector has faced health care costs that are rising more rapidly than revenues. This exerts pressure on government to increase revenues by raising taxes or

⁵¹ From an economic perspective, "short-term" refers to the time period during which not all characteristics (such as taxes, wage rates, education levels, and the like) can adjust, whereas "long-term" refers to the situation where all factors are variable.

⁵² See <http://government.cce.cornell.edu/doc/reports/childcare/>

⁵³ <http://aspe.hhs.gov/health/reports/08/healthcarecost/report.html>

increasing borrowing and to curb other discretionary spending. Higher taxes reduce the amount of income that firms and households are able to spend on other goods and services, save, or invest... Similarly, increased government borrowing to pay for health care leads to higher interest rates, which raises the cost of capital and reduces the ability of firms and households to obtain resources to invest in other productive activities.

While it is not necessarily true that higher taxes lead to decreased competitiveness at the state level, studies indicate that increases in taxes which are used for transfer payments “significantly retard economic growth.” (Helms, 1985) ⁵⁴

6.3 Regulatory Barriers-to-Entry

Economists, as well as journalists and CNBC talk-show hosts, are known for using the term “unintended consequences.” A particularly germane example of an unintended consequence is the increased difficulty future care-givers face when seeking to become licensed. Economist and University President Stewart Dorsey concisely summarized the issue:

The costs of occupational licensing fall disproportionately on minorities and the poor. Licensing seeks to eliminate the lower-quality, lower-price services that low-income consumers would be more likely to select. Perhaps more important, however, is the impact on workers who are denied entry into the occupation. Recent evidence confirms that licensing regulations exclude less-educated and minority workers more than proportionally. The consequences for these excluded workers include unemployment or lower earnings--either by moving to a less-favored occupation or practicing without a license... Those who fail to obtain the credential (license) are denied access to the trade even if they are no less productive. (Dorsey (1993))

The purpose of virtually all licensing is to provide consumers with information, and help ensure that the public need not dedicate excessive time to “vetting” the goods or services provided by a vendor. The negative aspect of such a system – that is, the unintended consequence – is that individuals who are disadvantaged by their socio-economic situation are unable to enter the field due to the need to navigate the complex (and sometimes convoluted) administrative and/or financial regulatory requirements involved with such a process. The net result of this situation is that many well-qualified, highly competent, enthusiastic caregivers are unintentionally kept out of the profession.

Programs such as AOK’s directly address this barrier, and provide a means to overcome it, thereby increasing the overall quality of care provided in the region (via a higher quality workforce) as well as

⁵⁴ For example, the State of Connecticut has (regrettably) not escaped the national trend of spending an increasing percentage of its resources to help provide proper health care for its citizens. In fact, the State’s transfer payments have increasingly been dedicated to supporting these expenses. In 2009, the State of Connecticut reported \$27.3 billion in transfer payments, of which 46% (\$12.5 billion) went to support medical benefits. The increase in transfer payments noted above is comparable to other states in the New England region. These numbers are included in this report for explanatory purposes, and should not be taken to represent commentary about, or positions regarding, any policy or position taken by the state of Connecticut or its elected officials. (<http://united-states.reaproject.org/>)

positively impacting the lives of the caregivers themselves, as is confirmed by the survey results presented in this report.

6.4 Culturally Competent Care

Over ten years ago, the National Association for the Education of Young Children⁵⁵ wrote in its *Position Statement* that:

The children and families served in early childhood programs reflect the ethnic, cultural, and linguistic diversity of the nation. The nation's children all deserve an early childhood education that is responsive to their families, communities, and racial, ethnic, and cultural backgrounds. For young children to develop and learn optimally, the early childhood professional must be prepared to meet their diverse developmental, cultural, linguistic, and educational needs. (NAEYC (1995))

A little less than three years ago Hannah Matthews, a Senior Policy Analyst at the Center for Law and Social Policy (CLASP)⁵⁶, concisely reiterated many of these same themes, when she summarized the role of cultural factors in children's development, noting that "Culture influences all aspects of child development; it is transformative and encompasses everything in a person's environment—including language, communication, beliefs, customs, practices, interactions, relationships, and behaviors." (Matthews (2008))

The ever-present roles that language, traditions, and heritage play in the development of individuals and social groups have long been recognized by philosophers and social scientists.⁵⁷ Additionally, not only is culture one of the few all-encompassing attributes of life, but the integration of culture with education and child care is particularly crucial. As Matthews writes:

Young children's social and emotional development is supported when there is cultural and linguistic continuity between their experiences at home and in child care. Having providers and caregivers who reflect the home cultures and speak the home languages of babies and toddlers provides a secure environment for babies and toddlers and contributes to effective communication with parents. Infants and toddlers may feel more emotionally secure when they hear their home language in a child care. It also reinforces the importance and value of their cultural background. Providers and caregivers who share the linguistic and cultural backgrounds of families may best be able to explain and communicate potentially sensitive issues, such as those around special needs including physical, emotional, and learning disabilities or delays. Providers who share the cultural background of the children in a child care setting may also share their knowledge of cultural practices with other providers in the setting and translate nuances of culture.

⁵⁵ <http://www.naeyc.org>

⁵⁶ <http://www.clasp.org/>

⁵⁷ Among the works dedicated to, and focusing on, the central role and importance of culture, heritage, and the like, see, for instance, Alasdair MacIntyre's book *After Virtue: A Study in Moral Theory*.

As Matthews’ quote highlights, one of the primary virtues of, and necessities for providing, “Culturally Competent Care” (CCC) is the ability of care-providers to not only share cultural similarities (backgrounds, customs, and the like), but also to have the ability to relate to those individuals for whom they are providing services. As such, not only is a common heritage important, but also is the provider’s ability to connect with the child/parents about their current situation.

While the Survey’s primary purpose was not to estimate the similarities between the care-givers and those for whose children they are caring, the responses to Survey questions numbers eight and fourteen are quite telling, as there appears to be (both in the results shown in Table 6.A, as well as the specific survey responses analyzed by CCEA) a considerable amount of overlap with regard to past work history, particularly with regard to both parents working at full-time jobs.

Table 7 – Survey Data – Prior Work Experience

(8)	Did you work in another field (besides child care) immediately prior to attending AOK?		
	Yes	32	84.2%
	No	3	7.9%
	No data recorded/no longer in business	3	7.9%
	If yes, what was your previous occupation?		
	Related to health- or child-care (incl teacher)	13	34.2%
	Not related to health- or child-care	19	50.0%
	No data recorded/no longer in business	6	15.8%
	If yes, part-time or full-time?		
	Full-time	25	65.8%
	Part-time	7	18.4%
	No data recorded/no longer in business	6	15.8%
(14)	How many of the Mothers and Dads of these children work?		
	Some, less than 50%	2	5.3%
	Some, more than 50%	4	10.5%
	All	27	71.1%
	No data recorded/no longer in business/don't know	5	13.2%

Language is one key aspect of providing CCC – in fact, without a shared language in which both/all parties are comfortable communicating, the benefits of other similarities between the care-provider and the individual receiving that care are severely mitigated. And, while increasing the number of individuals that speak the same native language as the children for who they provide care is not a sufficient condition for enhancing access to culturally competent care givers, the presence of a sufficient number of such people is certainly a necessary condition. As CCEA’s survey summary indicates, for

nearly 50% of the children for whom AOK graduates provide care, English is not the predominant language spoken at home.⁵⁸

One of the central themes present in the literature on CCC in education is that care providers should be cognizant and understanding of the child's situation. AOK's Program does not explicitly aim to provide culturally-competent care providers. However, by assisting individuals who are part of the local community the AOK Program certainly does address the increasing need for high-quality, culturally-competent child care providers.

7 Conclusions

This report lays out CCEA's analysis of the economic impact of the AOK Child Care Licensing Program and provides clear evidence that the AOK Program provides substantial benefits to the New Haven area and the entire State of Connecticut. As previously noted, the AOK Program generates an average annual increase of \$7.2 million and \$7.4 million, respectively, to Connecticut's Gross State Product (GSP) and New Haven's Gross Regional Product (GRP). Additionally, the Program significantly benefits the State's fiscal situation by helping to increase net State tax revenues, while increasing the level of employment.

These macro-benefits are the result of the individual economic improvements in AOK's graduates' lives. As highlighted in Section 4.2 of this report, AOK graduates enjoy 10% higher salaries compared to their peers working in the child care industry. Similarly, CCEA's survey found that the Program helped graduates increase their standard of living in a tangible, meaningful way. In addition to the quantifiable economic benefits highlighted in this report, the AOK Program addresses other, equally real, but more qualitative issues, such as helping participants overcome the (unintended) barrier-to-entry of necessary, but often complex and frequently intimidating, certification requirements.

As the Executive Summary declares, one of the most impressive findings of this study is that the aggregate, beneficial economic impact the AOK Program has is achieved at such a modest cost. That AOK's expenditures result in at least fifteen to twenty times the benefit is truly a testament to the organization, and the initiative's efficacy.

Ninety four percent (94%) of survey respondents indicated that they either had more, or the same amount of, income after completing the Program.

⁵⁸ See Appendix 8.3, question number 16, for additional details.

Appendix

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8.1 Cost-Benefit Analysis: Data and Calculations

In order to obtain the lower-bound estimate, CCEA analyzed what the direct benefits to a single Graduating class would be over an eleven year period. As is true throughout this report, all values are discounted by 3%.

Exhibit 1 – Benefit-to-Cost Ratio (BTCR) Calculations

Years since graduation	1	2	3	4	5	6
Estimated number (for modeling purposes) of Graduating class members who continue to work on their own, providing child-care services	30	26	23	20	17	15
Average annual increase in income for AOK graduates over/above peer group	\$2,678	\$2,678	\$2,678	\$2,678	\$2,678	\$2,678
Total direct benefits to all working child-care providers	\$80,340	\$69,896	\$60,809	\$52,904	\$46,027	\$40,043
Discount factor	1.03	1.06	1.09	1.13	1.16	1.19
PDV	\$78,000	\$65,883	\$55,649	\$47,005	\$39,703	\$33,535

Years since graduation	7	8	9	10	11	Total
Estimated number (for modeling purposes) of Graduating class members who continue to work on their own, providing child-care services	13	11	10	9	7	131
Average annual increase in income for AOK graduates over/above peer group	\$2,678	\$2,678	\$2,678	\$2,678	\$2,678	\$29,458
Total direct benefits to all working child-care providers	\$34,838	\$30,309	\$26,369	\$22,941	\$19,958	\$484,433
Discount factor	1.23	1.27	1.30	1.34	1.38	
PDV	\$28,326	\$23,926	\$20,209	\$17,070	\$14,418	\$423,725

Attrition rate used for modeling (see Section 4.3):	0.13
Social discount rate:	0.03
Total (year-zero) cost incurred by AOK:	
Scenario 1 (as per AOK's Mgmt Team):	\$60,000
Scenario 2 (inflated/more conservative CCEA estimate):	\$100,000

BTCR	
Scenario 1:	7.1
Scenario 2:	4.2

As the calculations in Exhibit 1 illustrate, the BTCR from a single year of the AOK Program's operations would be 4-7 even if no secondary, tertiary, or other induced economic benefits were realized.

8.2 Survey Materials

CONFIDENTIALITY AGREEMENT
CONNECTICUT CENTER FOR ECONOMIC ANALYSIS
UNIVERSITY OF CONNECTICUT

As a condition of my working with the Connecticut Center for Economic Analysis (CCEA) on the All Our Kin, Inc. survey (the Project), I hereby agree to the following:

I acknowledge that as a surveyor associated with the Project, I will have access to and knowledge of Confidential Information related to the participants of the Project. I will not, at any time, directly or indirectly, disclose, reproduce, divulge, or transfer, in whole or in part, any Confidential Information to any party (a) who is not directly associated with the Project, and (b) who does not have a need to know said information.

I agree to protect the identity of individuals and/or organizations referenced in documents, materials, and examples related to the Project; and, to protect the intellectual property, and any apparent product development plans or information that is stated or apparent in any Confidential Information I may be privy to while participating in the Program.

As used herein, "Confidential Information" means any information, including, but not limited to, company or individual names or other identifying information (such as addresses, phone numbers, ages, work affiliation(s), and the like), protocol details or design, research, materials, formulas, processes, financial data, and financial plans related to any of the participants in the Project, the CCEA, All Our Kin, Inc., or the University of Connecticut. The term "Confidential Information" shall not include information that is or later becomes available to the general public through no fault of mine.

ACCEPTED and AGREED:

Name (please print)

Signature

Date

INFORMATION SHEET FOR THE CCEA-ALL OUR KIN, INC. SURVEY

Principle Investigator: Fred Carstensen, PhD, Department of Economics
Title of Study: The Socio-Economic Impacts of All Our Kin and Its Graduates in Connecticut

THE FOLLOWING TEXT MUST BE READ, EXACTLY AS WRITTEN BELOW, TO EACH POTENTIAL SURVEY PARTICIPANT PRIOR TO BEGINNING THE SURVEY. AFTER READING THE FOLLOWING TEXT, AND OBTAINING CONSENT, THE SURVEYER IS INSTRUCTED TO INITIAL NEXT TO THE PARTICIPANTS NAME ON THEIR CALLING LIST IN THE AREA LABELED "AGREES TO PARTICIPATE"

I am working with the Connecticut Center for Economic Analysis at the University of Connecticut in Storrs, CT. The Center is conducting a survey of individuals who have taken part in the All Our Kin toolkit licensing program. This survey does not involve any risk to you, but will benefit All Our Kin, Inc. as well as similar organizations by providing information about the benefits of such programs.

Your participation in this survey is strictly voluntary – you do not have to participate if you would prefer not to – and will take 10-15 minutes. If you choose to participate in the survey, you do not have to answer any specific question that you do not want to for any reason.

Please know that all your answers to survey questions will be treated as confidential, and that all personally-identifiable information (such as your name) will not be able to be directly associated with you; that is, we will not disclose what answers you personally give to any questions.

If you have any further questions about this project, you may contact William Waite at 415-515-9075. Or, you may contact the University of Connecticut Institutional Review Board at 860-486-8802.

Will you agree to take part in this survey?

HOJA INFORMATIVA PARA LA ENCUESTA DEL CCEA-ALL OUR KIN, INC.

Investigador principal: Fred Carstensen, PhD, Departamento de Economía
Título del Estudio: El impacto socio-económico de “all our kin” y sus graduados en connecticut.

EL SIGUIENTE TEXTO DEBE SER LEIDO A CADA PARTICIPANTE POTENCIAL DE LA ENCUESTA TAL COMO ESTA ESCRITO ANTES DE EMPEZAR LA ENTREVISTA. DESPUES DE LEER EL SIGUIENTE TEXTO, Y ADQUIRIR EL CONSENTIMIENTO, EL ENCUESTADOR (A) DEBE FIRMAR SU INICIAL JUNTO AL NOMBRE DEL PARTICIPANTE EN SU LISTA DE LLAMADAS EN EL AREA DENOMINADA “ACEPTA PARTICIPAR”

Estoy trabajando para el Centro de Análisis Económico de la Universidad de Connecticut en Storrs, Connecticut. El Centro está llevando a cabo una encuesta de personas que hayan participado en el programa de herramientas para obtener licencias, desarrollado por la organización “All Our Kin.” Esta encuesta no representa ningún riesgo para usted, sino que beneficiará a “All Our Kin, Inc.” y a otras organizaciones similares al proveer información acerca de los beneficios de este tipo de programas.

Su participación en esta encuesta es estrictamente voluntaria—usted no tiene que participar si prefiere no hacerlo—y durará de 10 a 15 minutos. Si decide participar en la encuesta, usted no está obligado(a) de responder alguna pregunta específica que no quiera contestar por cualquier razón.

Por favor tenga en cuenta que todas sus respuestas a las preguntas de la encuesta serán tratadas como confidenciales, y que toda información personal que lo (la) pueda identificar (como su nombre, por ejemplo) no podrá ser asociada directamente con usted; es decir, no revelaremos qué respuestas usted dio a cada pregunta.

Si usted tiene más preguntas acerca del proyecto, puede contactar a Bill Waite (teléfono: 415-515-9075). O, puede contactar a la Junta de Revisión Institucional de la Universidad de Connecticut (teléfono: 860-486-8802).

¿Acepta ser parte de esta encuesta?

AOK-CCEA Questionnaire

First, confirm that the individual to whom you are speaking is indeed the same person who you have listed on the sheet; that is, double check name and year of graduation from AOK.

Second, please clarify that, when it comes to this questionnaire, "work" means/implies "work for pay."

Third, please remind the individual:

- (1) That this is a strictly VOLUNTARY survey, and that they do not have to participate, or answer any specific question if they would not like to or feel uncomfortable doing so.
- (2) That many of these questions involve estimates (guesses) from them... Please reassure them that their "best guess" is fine.

1. Do you work for:
 - a. Yourself a
 - b. Some other childcare b
 - c. Some other occupation c
 - d. Not at all? d

If respondent answers "not at all" please thank them for their time and conclude the call.

2. Before you participated in the AOK program and became licensed, did you care for children (other than your own) regularly? Yes No
 - a. If so, for approximately how many years did you work before becoming licensed?
 - b. And, approximately, how many kids did you care for each week?
3. After completing the Toolkit project, in what month and year did you begin your child care program? _____
4. Have you hired anyone else? If so, how many employees do you have? # _____
(A response of zero above indicates no additional hiring)
5. What are your normal operating hours?
 - a. Weekdays _____ am to _____ pm
 - b. Weekends _____ am to _____ pm
6. Currently, how many of the children that you care for are 3-years old or less? # _____
7. Given sufficient customer interest, would you be willing to extend your hours of operation?
 - a. Earlier
 - b. Later

8. Did you work in another field (besides child care) immediately prior to attending AOK?
 Yes No
 If yes, what was your previous occupation?
 If yes, part-time or full-time?
9. Do you still have another job where you work for pay?
10. What percentage of your total income comes from a job BESIDES your child care program?
11. How many children do you have in your care each day of the week:
- | | |
|--------------|---------|
| a. Monday | # _____ |
| b. Tuesday | # _____ |
| c. Wednesday | # _____ |
| d. Thursday | # _____ |
| e. Friday | # _____ |
| f. Saturday | # _____ |
| g. Sunday | # _____ |
12. Of the children in your care, what percent are brothers and sisters? # _____
13. How many of the children you care for have only one parent? # _____
14. How many of the Mothers and Dads of these children work? # _____
15. How many of these parents attend school and/or higher education? # _____
16. How many of the parents speak English as a second language? # _____
17. How many of the children you care for receive the Care4Kids subsidy? # _____
18. Can you estimate how many of the parents are on public assistance? # _____
19. Do you have a waiting list for your child care program? Yes No
20. When you enrolled in the Toolkit project, had you participated in any of the following:
- | | |
|--|----------------------------|
| a. CDA training | <input type="checkbox"/> a |
| b. Family child care business training | <input type="checkbox"/> b |
| c. Family child care network meetings | <input type="checkbox"/> c |
| d. Associate's degree program | <input type="checkbox"/> d |
| e. Baccalaureate program | <input type="checkbox"/> e |
| f. Other training related to your work in child care | <input type="checkbox"/> f |

21. Since becoming licensed, have you done any of the following things? Please indicate all of the following that apply to you:

- a. Completed a 1-year degree or more a
- b. Completed a Child Development Associate (CDA) certificate b
- c. Completed 24 hours or more of child care-related training c
- d. Completed a CPR and First Aid course within the past 2 years d
- e. Completed a training in a curriculum such as Creative Curriculum e
 - i. If so, which one? _____
- f. Attended a child care or early education conference f
- g. Participated in the USDA/Child and Adult Care Food Program g
- h. Contracted to follow the Head Start Performance Standards in partnership with an Early Head Start or Head Start program h
- i. Become accredited program through the National Association of Family Child Care i
- j. Obtained health insurance j

22. Have you enrolled in any of the following programs AFTER completing the AOK toolkit licensing program?

- a. CDA training a
- b. Family child care business training b
- c. Family child care network meetings c
- d. Associate's degree program d
- e. Baccalaureate program e
- f. Other training related to your work in child care f
- g. All Our Kin annual conference g
- h. All Our Kin loan and grant program h
- i. Program visits through All Our Kin i

23. Have you COMPLETED or GRADUATED from any of the following programs AFTER completing the AOK toolkit licensing program?

- a. CDA training a
- b. Family child care business training b
- c. Family child care network meetings c
- d. Associate's degree program d
- e. Baccalaureate program e
- f. Other training related to your work in child care f

24. <Only ask this question if the participant indicated (#9) that they had a previous job.>

Will you please identify what your salary was BEFORE you completed the Toolkit project:

- i. \$1 to \$5,000 a
- ii. \$5,000-\$10,000 b
- iii. \$10,000-\$20,000 c
- iv. \$20,000-\$30,000 d
- v. \$30,000-\$50,000 e
- vi. \$50,000-\$100,000 f
- vii. More than \$100,000 g

25. Has your participation in the Toolkit project impacted your annual family income? Please say which of the following statements apply to you.

- a. My family has less income now
- b. My family has the same income now
- c. My family has more income now
- d. If so, how much more than before did you earn during your first six months in business? First year? Second year? Third year? Etc.

<ask all that are appropriate given when the individual completed training>

- i. \$1 to \$1,000 a
- ii. \$1,000-\$5,000 c
- iii. \$5,000-\$10,000 e
- iv. \$10,000-\$15,000 f
- v. \$15,000-\$20,000 g
- vi. More than \$20,000 h

26. After completing the program, would you say that your standard of living has changed?

Please list all that apply

- a. Moved to a larger apartment or house a
- b. Bought a house b
- c. Bought or leased a car c
- d. Opened a savings account d
- e. Less debt e
- f. Any other ways in which your standard of living has changed f

27. How much do you spend on your business each year? Think about the amount you pay for supplies, equipment, and all the other things you need to run your program.

28. Since becoming licensed, have you referred any families to the following services?

- a. Birth to Three Yes No
- b. Health care or mental health services Yes No
- c. Community agencies that offer services such as meals, food, diapers, or similar assistance? Yes No

Thank you for your time.

The CCEA will mail you a \$5 gift card as a token of our appreciation for your help.

8.3 Survey Results

Total responses =	38
-------------------	----

	<u>Number</u>	<u>Percent</u>
(1) Do you work for:		
Yourself	33	86.8%
Some other childcare provider	0	0.0%
Some other occupation	3	7.9%
Not at all	2	5.3%
(2) Before you participated in the AOK program and became licensed, did you care for children (other than your own) regularly?		
Yes	19	50.0%
No	17	44.7%
No data recorded/no longer in business	2	5.3%
If so, for approximately how many years did you work before becoming licensed?		
Less than or equal to 1 yr	5	26.3%
Greater than 1 yr, but less than five yrs	8	42.1%
Five yrs or more	6	31.6%
And, approximately, how many kids did you care for each week?		
Three or fewer	6	31.6%
Four to ten	9	47.4%
More than ten	2	10.5%
No data recorded/no longer in business	2	10.5%
(3) After completing the Toolkit project, in what month and year did you begin your child care program?		
Less than or equal to two yrs	14	36.8%
Greater than two yrs, but less than five yrs	10	26.3%
Five yrs or more	12	31.6%
No data recorded/no longer in business	2	5.3%
(4) Have you hired anyone else?		
Yes	7	18.4%
No	28	73.7%
No data recorded/no longer in business	3	7.9%
If so, how many employees do you have?		
Part-time	2	28.6%
One full-time	4	57.1%
Two full-time	1	14.3%

(5)	What are your normal operating hours?		
	Weekdays		
	Normal' business hrs (morning -- evening)	28	73.7%
	Other -- close much later	6	15.8%
	Not open/no data recorded	4	10.5%
	Weekends		
	Not open/no data recorded	30	78.9%
	Open/available	8	21.1%
(6)	Currently, how many of the children that you care for are 3-years old or less?		
	None	3	7.9%
	One	4	10.5%
	Two	9	23.7%
	Three	10	26.3%
	Four	5	13.2%
	More than four	3	7.9%
	No data recorded/no longer in business	4	10.5%
(7)	Given sufficient customer interest, would you be willing to extend your hours of operation?		
	No	3	7.9%
	Earlier and later	21	55.3%
	Earlier (only)	4	10.5%
	Later (only)	4	10.5%
	No data recorded/no longer in business	6	15.8%
(8)	Did you work in another field (besides child care) immediately prior to attending AOK?		
	Yes	32	84.2%
	No	3	7.9%
	No data recorded/no longer in business	3	7.9%
	If yes, what was your previous occupation?		
	Related to health- or child-care (incl teacher)	13	34.2%
	Not related to health- or child-care	19	50.0%
	No data recorded/no longer in business	6	15.8%
	If yes, part-time or full-time?		
	Full-time	25	65.8%
	Part-time	7	18.4%
	No data recorded/no longer in business	6	15.8%
(9)	Do you still have another job where you work for pay?		
	Yes	5	13.2%
	No	29	76.3%
	No data recorded/no longer in business	4	10.5%

(10) What percentage of your total income comes from a job BESIDES your child care program?		
None (0%)	19	50.0%
Some	7	18.4%
No data recorded/no longer in business	12	31.6%
(11) How many children do you have in your care each day of the week:	See Exhibit 2 for details.	
(12) Of the children in your care, what percent are brothers and sisters? (As % of av num of children, as reported, in care per day.)		
None	8	21.1%
1% -- 25%	4	10.5%
26% -- 50%	12	31.6%
51% -- 75%	3	7.9%
76% -- 100%	5	13.2%
No data recorded/no longer in business/don't know	6	15.8%
(13) How many of the children you care for have only one parent?		
None	6	15.8%
Some, less than 50%	12	31.6%
50%	1	2.6%
Some, more than 50%	8	21.1%
All	6	15.8%
No data recorded/no longer in business/don't know	5	13.2%
(14) How many of the Mothers and Dads of these children work?		
Some, less than 50%	2	5.3%
Some, more than 50%	4	10.5%
All	27	71.1%
No data recorded/no longer in business/don't know	5	13.2%
(15) How many of these parents attend school and/or higher education?		
None	16	42.1%
Some, less than 50%	13	34.2%
No data recorded/no longer in business/don't know	9	23.7%
(16) How many of the parents speak English as a second language?		
None	4	10.5%
Some, less than 50%	5	13.2%
Some, more than or equal to 50%	18	47.4%
All	6	15.8%
No data recorded/no longer in business/don't know	5	13.2%

(17) How many of the children you care for receive the Care4Kids subsidy?		
None	5	13.2%
Some, less than 50%	6	15.8%
Some, more than or equal to 50%	12	31.6%
All	10	26.3%
No data recorded/no longer in business/don't know	5	13.2%

Of the total number of children who receive care from AOK graduates, the survey data (net of the 13.2% of individuals who did not provide feedback) indicates that 66%-68% are eligible for the Care4Kids subsidy.

(18) Can you estimate how many of the parents are on public assistance?		
None	11	28.9%
Some, less than 50%	6	15.8%
Some, more than or equal to 50%	6	15.8%
All	1	2.6%
No data recorded/no longer in business/don't know	14	36.8%

(19) Do you have a waiting list for your child care program?		
Yes	17	44.7%
No	17	44.7%
No data recorded/no longer in business	4	10.5%

(20) No data is reported for these three questions as the number of survey responses is below the threshold
 (21) needed for statistical viability; that is, there were not enough responses to these survey questions to
 (22) ensure that the data for related to these questions is actually indicative of the group's average experience.

(23) Have you COMPLETED or GRADUATED from any of the following programs AFTER completing the AOK toolkit licensing program? (Answer all that apply.)		
CDA training	18	47.4%
Family child care business training	22	57.9%
Family child care network meetings	23	60.5%
Associate's degree program	4	10.5%
Baccalaureate program	1	2.6%
Other training related to your work in child care	26	68.4%

(24) <Only ask this question if the participant indicated (#9) that they had a previous job.>

Will you please identify what your salary was BEFORE you completed the Toolkit project:

\$1 to \$5,000	5	13.2%
\$5,000-\$10,000	5	13.2%
\$10,000-\$20,000	12	31.6%
\$20,000-\$30,000	5	13.2%
\$30,000-\$50,000	3	7.9%
\$50,000-\$100,000	0	0.0%
More than \$100,000	0	0.0%
No data recorded/no longer in business	8	21.1%

(25) Has your participation in the Toolkit project impacted your annual family income? Please say which of the following statements apply to you.

My family has less income now	2	5.3%
My family has the same income now	7	18.4%
My family has more income now	25	65.8%
No data recorded/no longer in business	4	10.5%

If so, how much more than before did you earn during:

- First 6 months
- 1st yr
- 2nd yr
- 3rd yr
- 4th yr
- 5th yr

See Exhibit 3 for details.

(26) After completing the program, would you say that your standard of living has changed?

(Answer all that apply.)

Moved to a larger apartment or house	12	31.6%
Bought a house	2	5.3%
Bought or leased a car	9	23.7%
Opened a savings account	16	42.1%
Less debt	21	55.3%
Any other ways in which your standard of living has changed	17	44.7%

(27) How much do you spend on your business each year?

See Exhibit 4 for details.

(28) Since becoming licensed, have you referred any families to the following services?

		("Yes")
Birth to Three	24	63.2%
Health care or mental health services	12	31.6%
Community agencies that offer services such as meals, food, diapers, or similar assistance?	20	52.6%

Additional data for question number 25:

<u>Began</u>	<u>Months</u>	<u>Yrs</u>	<u>Response from Part 2 of Question 25</u>						
9/1/2010	5	0	a. A						
9/1/2010	5	0	a. A						
10/1/2010	4	0	Sufficient information not recorded						
1/1/2011	1	0	Sufficient information not recorded						
9/1/2009	17	1	a.C	b.E					
9/1/2009	17	1	a.E	b.G					
3/1/2010	11	1	a. C						
4/1/2009	22	2	a. C	b. F	c. F				
6/1/2009	20	2	a. A	b. C	c. C				
6/1/2009	20	2	a. C	b. C	c. E				
8/1/2009	18	2	a.C	b.C	c.C				
6/1/2009	20	2	a. G	b. F	c. G				
3/1/2009	23	2	a. C	b. C	c. C				
6/1/2009	20	2	a. A	b. C	c. C				
6/1/2008	32	3	a. F	b. F	c. E				
6/1/2008	32	3	a. E	b. E	c. E	d. E			
5/1/2008	33	3	Sufficient information not recorded						
1/1/2008	37	3	Sufficient information not recorded						
1/1/2007	49	4	a. A	b. C	c. F	d. E			
8/1/2007	42	4	a. C	b. F	c. F	d. F	e. F		
6/1/2007	44	4	Sufficient information not recorded						
6/1/2006	56	5	a. E	b. F	c. F	d. F	e. E	f. F	
8/1/2006	54	5	a. C	b. C	c. C	d. C	e. C	f. C	
6/1/2006	56	5	a. C	b. E	c. E	d. E	e. E	f. E	
10/1/2005	64	5	a. E	b. E	c. F	d. E	e. E	f. E	
1/1/2005	73	6	a.C	b.C	c.F	d.F	e.F	f.F	
8/1/2005	66	6	a. A	b. E	c. F	d. F	e. F	f. F	
4/1/2005	70	6	a. A	b. C	c. E	d. E	e. F	f. F	
6/1/2005	68	6	a. E	b. E	c. E	d. E	e. E	f. E	
4/1/2002	106	9	a. A	b. F	c. F	d.F	e.F	f..F	
6/1/2002	104	9	a. C	b. C	c. C	d. C	e. C	f. C	
7/1/1997	163	14	a.C	b. E	c. F	d. F	e. F	f. F	
9/1/2005	65	5	Sufficient information not recorded						
6/1/2005	68	6	Sufficient information not recorded						
6/1/2005	68	6	Sufficient information not recorded						
11/1/2004	75	6	Sufficient information not recorded						
1/1/1904	1285	107.1	Sufficient information not recorded						
1/1/1904	1285	107.1	Sufficient information not recorded						

Exhibit 2 – Number of Children Cared for Each Day

(Of the 38 total responses, 33 individuals indicated that they were still in business. As such, in this Exhibit, for purposes of calculating percentages, 33 is used as the denominator.)

	None / NA		1-3		4-7		8 of more	
	#	%	#	%	#	%	#	%
Monday	0	0%	11	33%	19	58%	3	9%
Tuesday	0	0%	11	33%	19	58%	3	9%
Wednesday	0	0%	10	30%	19	58%	4	12%
Thursday	0	0%	10	30%	19	58%	4	12%
Friday	0	0%	10	30%	19	58%	4	12%
Saturday	31	94%	2	6%	0	0%	0	0%
Sunday	31	94%	2	6%	0	0%	0	0%

Exhibit 3 – Summary of Survey Results regarding Changes in Household Income

	0-6 Months		1st Year		2nd Year		3rd Year		4th Year		5th Year +	
	#	%	#	%	#	%	#	%	#	%	#	%

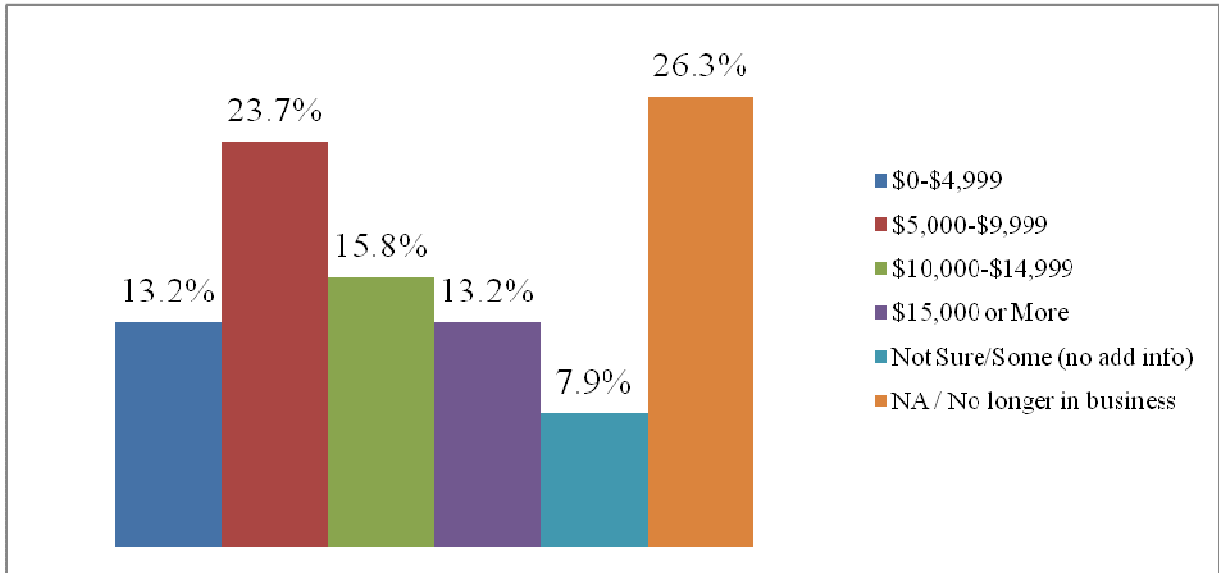
Total num of survey respondents:	38	38	38	38	38	38	38	38	38
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Number of survey respondents who indicated that they had not been in business long enough to provide information related to survey question 25:	0	0%	4	11%	7	18%	14	37%	18	47%	21	55%
Number of survey respondents who had been in business long enough to provide information related to survey question 25, but who did not do so:	11	29%	10	26%	9	24%	10	26%	8	21%	6	16%
Total number of survey respondents who did not provide information related to survey question 25:	11	29%	14	37%	16	42%	24	63%	26	68%	27	71%

Total number of survey respondents provided information related to survey question 25:	27	71%	24	63%	22	58%	14	37%	12	32%	11	29%
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\$1-\$1,000	8	30%	0	0%	0	0%	0	0%	0	0%	0	0%
\$1,000-\$5,000	12	44%	10	42%	6	27%	2	14%	2	17%	2	18%
\$5,000-\$10,000	5	19%	7	29%	6	27%	6	43%	4	33%	3	27%
\$10,000-\$15,000	1	4%	6	25%	9	41%	6	43%	6	50%	6	55%
\$15,000-\$20,000	1	4%	1	4%	1	5%	0	0%	0	0%	0	0%
> \$20,000	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

**Exhibit 4 – Annualized Estimated Operating Expense
(Data from survey responses)**



8.4 REMI Results

	2006	2007	2008	2009	2010
New Haven					
Total Emp (Thous)	110.1	124.5	146.8	196	204.8
Total GRP (Fixed)	\$ 3,093,045	\$ 3,215,643	\$ 3,785,213	\$ 5,271,714	\$ 5,509,247
Personal Income (Nom \$)	\$ (1,014,604)	\$ (3,380,969)	\$ (6,307,525)	\$ (9,892,631)	\$ (14,480,000)
Real Disp Pers Inc (Fixed)	\$ (360,515)	\$ (1,741,913)	\$ (3,457,008)	\$ (5,395,589)	\$ (7,873,090)
Real Pers Inc per Cap (Thous Fixed)	\$ 6.20	\$ 12.25	\$ 19.54	\$ 29.88	\$ 39.56
Real Disp Pers Inc per Cap (Thous Fixed)	\$ 4.87	\$ 9.64	\$ 15.34	\$ 23.49	\$ 31.13
State Revenues at State Average Rates	\$ (198,018)	\$ (445,267)	\$ (750,062)	\$ (1,100,587)	\$ (1,523,974)
State Expenditures at State Av Rates	\$ (2,261,346)	\$ (3,993,184)	\$ (6,022,597)	\$ (8,760,937)	\$ (11,388,780)
Population (Thous)	-117.6	-254.3	-411.4	-614.8	-822.2
Labor Force	429.7	468.9	534.8	696.1	699.4
Economic Migrants	-116.5	-133.3	-151.2	-194.2	-194.3
Net State Revenues	\$ 2,063,327	\$ 3,547,917	\$ 5,272,535	\$ 7,660,349	\$ 9,864,806
Connecticut					
Total Emp (Thous)	111.8	125.5	146	193.8	200.4
Total GRP (Fixed)	\$ 3,321,061	\$ 3,340,039	\$ 3,744,892	\$ 5,231,462	\$ 5,250,440
Personal Income (Nom \$)	\$ (795,611)	\$ (3,414,525)	\$ (6,666,267)	\$ (10,507,169)	\$ (15,550,000)
Real Disp Pers Inc (Fixed)	\$ (19,306)	\$ (1,467,593)	\$ (3,223,644)	\$ (5,018,914)	\$ (7,664,377)
Real Pers Inc per Cap (Thous Fixed)	\$ 1.86	\$ 3.58	\$ 5.72	\$ 8.80	\$ 11.68
Real Disp Pers Inc per Cap (Thous Fixed)	\$ 1.46	\$ 2.84	\$ 4.53	\$ 6.98	\$ 9.27
State Revenues at State Average Rates	\$ (172,296)	\$ (423,743)	\$ (734,116)	\$ (1,062,090)	\$ (1,495,563)
State Expenditures at State Av Rates	\$ (2,283,794)	\$ (3,968,489)	\$ (5,950,547)	\$ (8,653,055)	\$ (11,227,653)
Population (Thous)	-114.7	-250.7	-406.7	-609.4	-816.9
Labor Force	431.3	471.1	537	697.6	700.4
Economic Migrants	-114.4	-131.9	-150.5	-193.3	-194.2
Net State Revenues	\$ 2,111,498	\$ 3,544,746	\$ 5,216,431	\$ 7,590,965	\$ 9,732,091

	2011	2012	2013	2014	2015	2016
New Haven						
Total Emp (Thous)	268	283.8	303.5	326	350.6	375.5
Total GRP (Fixed)	\$ 9,202,512	\$ 8,929,220	\$ 9,226,776	\$ 9,986,628	\$ 11,028,711	\$ 12,212,548
Personal Income (Nom \$)	\$ (10,154,096)	\$ (16,837,688)	\$ (24,530,218)	\$ (32,691,851)	\$ (41,438,222)	\$ (51,018,817)
Real Disp Pers Inc (Fixed)	\$ (5,356,000)	\$ (8,641,881)	\$ (11,967,352)	\$ (15,363,061)	\$ (18,836,670)	\$ (22,450,757)
Real Pers Inc per Cap (Thous Fixed)	\$ 39.40	\$ 52.63	\$ 67.54	\$ 83.99	\$ 101.85	\$ 120.90
Real Disp Pers Inc per Cap (Thous Fixed)	\$ 30.83	\$ 41.35	\$ 53.19	\$ 66.23	\$ 80.39	\$ 95.47
State Revenues at State Average Rates	\$ (1,147,630)	\$ (1,701,206)	\$ (2,250,405)	\$ (2,809,451)	\$ (3,378,343)	\$ (3,962,551)
State Expenditures at State Av Rates	\$ (10,905,222)	\$ (14,484,865)	\$ (18,423,348)	\$ (22,700,978)	\$ (27,252,114)	\$ (32,065,815)
Population (Thous)	-744.4	-1020	-1317	-1629	-1957	-2298
Labor Force	-92.62	983.7	1029	1075	1122	1170
Economic Migrants	91.97	-259.7	-275.8	-286.5	-295.6	-303.6
Net State Revenues	\$ 9,757,592	\$ 12,783,659	\$ 16,172,943	\$ 19,891,537	\$ 23,873,771	\$ 28,103,264
Connecticut						
Total Emp (Thous)	267.6	280.5	296.9	316.2	338.4	360.4
Total GRP (Fixed)	\$ 9,517,846	\$ 8,938,399	\$ 9,015,575	\$ 9,517,846	\$ 10,385,750	\$ 11,428,247
Personal Income (Nom \$)	\$ (10,054,917)	\$ (17,434,475)	\$ (25,880,263)	\$ (34,902,854)	\$ (44,456,133)	\$ (54,804,659)
Real Disp Pers Inc (Fixed)	\$ (4,536,886)	\$ (7,933,857)	\$ (11,447,224)	\$ (14,878,355)	\$ (18,471,427)	\$ (22,026,544)
Real Pers Inc per Cap (Thous Fixed)	\$ 11.70	\$ 15.65	\$ 20.09	\$ 25.06	\$ 30.44	\$ 36.23
Real Disp Pers Inc per Cap (Thous Fixed)	\$ 9.24	\$ 12.41	\$ 15.95	\$ 19.94	\$ 24.23	\$ 28.87
State Revenues at State Average Rates	\$ (1,047,987)	\$ (1,611,447)	\$ (2,178,843)	\$ (2,741,865)	\$ (3,313,634)	\$ (3,891,962)
State Expenditures at State Av Rates	\$ (10,862,509)	\$ (14,354,342)	\$ (18,202,573)	\$ (22,411,577)	\$ (26,904,824)	\$ (31,671,384)
Population (Thous)	-738.3	-1012	-1308	-1621	-1948	-2290
Labor Force	-91.19	986.1	1031	1076	1121	1168
Economic Migrants	92.08	-257.7	-275	-286.5	-295.8	-304.2
Net State Revenues	\$ 9,814,521	\$ 12,742,895	\$ 16,023,731	\$ 19,669,712	\$ 23,591,191	\$ 27,779,423

8.5 Dynamics of Early Childhood Investments

Exhibit 5

“Rates of return to human capital investment in disadvantaged children”
(Heckman & Masterov (2007))

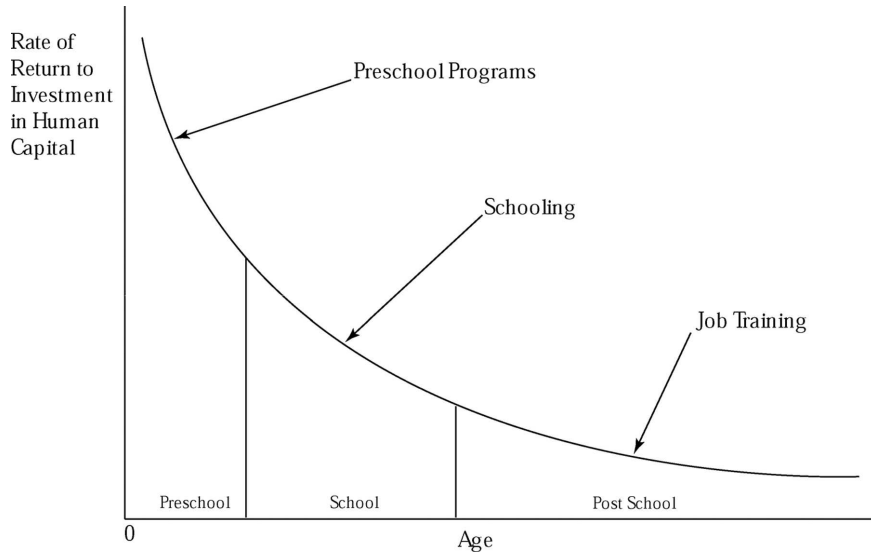
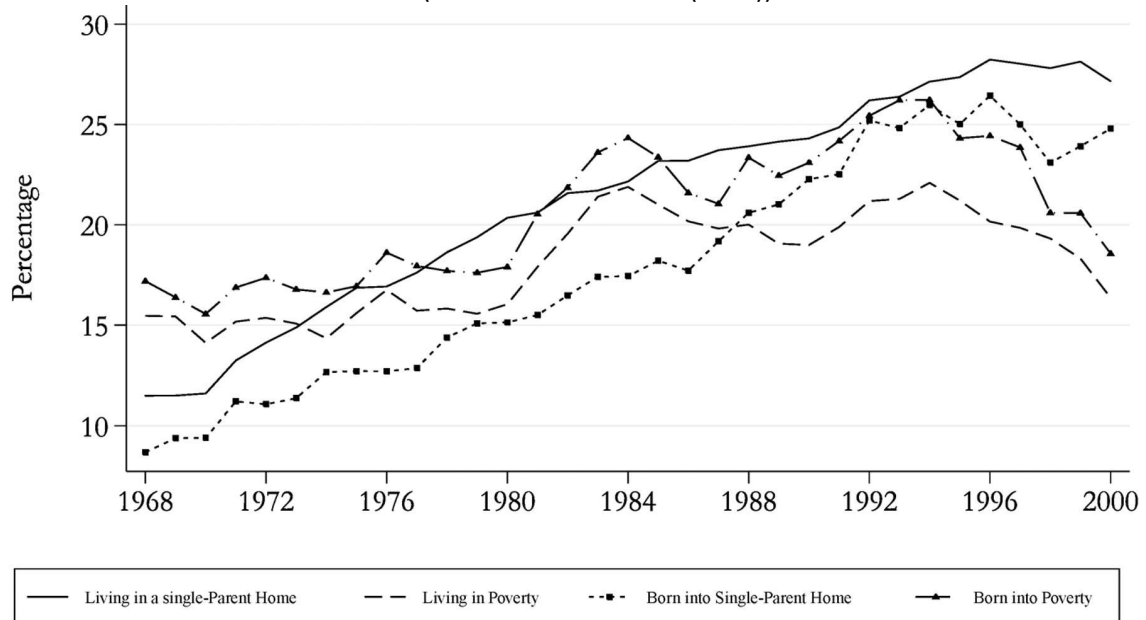


Exhibit 6

“Percentage of all children born or living in adverse environments in each year, 1968–2000”
(Heckman & Masterov (2007))



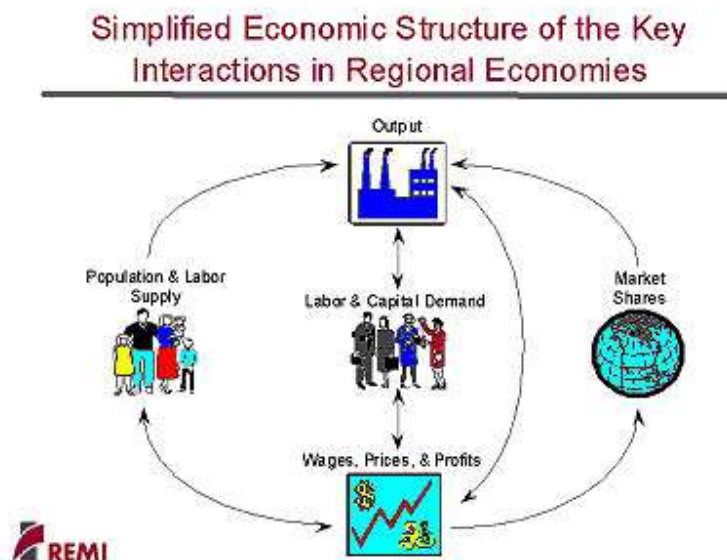
Source: Current Population Survey Annual March Supplement, 1968–2000. Poverty is defined as living in a household with income below the federal poverty line, which is adjusted for age and number of family members. Single-parent homes include cohabiting partners.

8.6 The REMI Model

To estimate the macroeconomic impact of the AOK Program (at both the regional- and state-levels), CCEA used the Connecticut Economic Model from Regional Economic Models, Inc. REMI is a multi-sector, dynamic, economic impact model of Connecticut and its eight counties. REMI measures total economic changes over time by comparing a baseline forecast (or no action), to an alternative forecast via changing certain variables such as industry employment or sales.

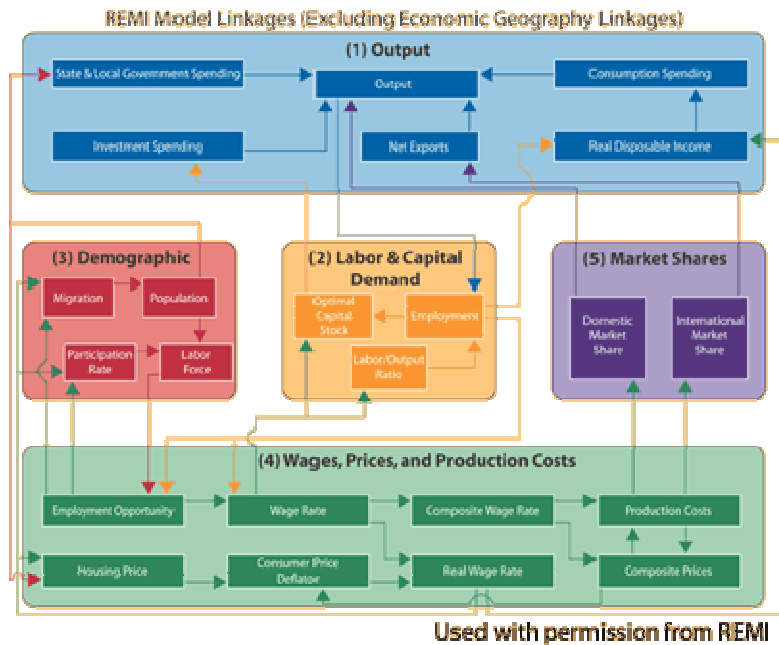
The REMI model includes all of the major inter-industry linkages among 466 private industries, aggregated into 49 industrial sectors. With the addition of farming and three public sectors (state and local government, civilian federal government, and military), there are 53 sectors represented in the model for the eight counties.

Because the variables in the REMI model are inter-related, a change in any one variable affects many others. For example, if wages rise in one sector, the relative costs of producing a certain output (or outputs) change, and could potentially cause the producer to substitute capital for labor. The change in the capital-labor ratio potentially impacts demand for inputs, which affects employment, wages, and other variables. And so on. Such “chain-reactions” propagate in time across all sectors in the model.



The REMI model is based on a nationwide input-output (I/O) model – an approach that was originally developed by Nobel Laureate Wassily Leontief – that the U.S. Department of Commerce (DoC) developed, and continues to maintain. I/O models focus on the inter-relationships between industries and provide information about how changes in specific variables – whether economic variables such as employment or prices in a certain industry, or other variables (such as population) – affect markets. REMI’ CT model scales the U.S. I/O table according to traditional regional relationships and current

conditions, allowing the relationships to adapt at reasonable rates to incorporate changing conditions.



The modeling approach we employed for this project was to measure the impact of the AOK Program (via its benefits to the child-care industry) as a counterfactual; that is, if the benefits from AOK’s work were not (as they are now) in CT’s economy, what would the economic situation “look” like? Put slightly differently, to model the economic impact via the counterfactual, the modeler, using the structure provided by the REMI program, “removes” certain benefits (in our case, the positive impact of the AOK Program). Then, by considering the difference between the “before” and “after” value (of the economic variables of interests), we can calculate the total (economic) benefits for the region/state.

Our REMI analysis covers the ten-year period from 2006 to 2016. From 2006-2010, actual program data derived from the survey drives the model. Forecasts, based on the rates of changes from 1999-2010 - 2016, become the model inputs. While the REMI platform allows for longer time-frames, forecasted values beyond four or five years into the future (from 2011) are notoriously prone to errors resulting from changes to/in: (1) regional and/or national regulations and policies (particularly fiscal and tax policies), (2) demographics, (3) the dynamic nature of entrepreneurial activities and local business conditions, and (4) “spillover” effects of national and/or international macroeconomic circumstances.

The unavoidable variance with regard to forecasting errors does not mean (should not be taken to imply) that long-run forecasts lack explanatory value – quite the contrary, given the amount of economic uncertainty facing the world today, forecasts are increasingly invaluable resources for policy makers. However, given the aforementioned uncertainty associated with these models, little is gained, with regard to expositional clarity, by including overly specific estimates (values).

8.7 AOK-Graduate-BLS Comparison Data

Annual Difference in Earnings AOK Graduates vs BLS Average		
	<u>2000USD/year</u>	<u>AOK Wage %</u>
2005	7275,51	27,69
2006	-1012,10	-5,19
2007	1269,09	5,95
2008	358,22	1,73
2009	1487,73	6,89
2010	700,32	3,32
2011	443,12	2,09
2012	3900,49	15,64
2013	4449,25	17,24
2014	5029,98	18,83
2015	5562,40	20,17
Average	2678,55	10,40

8.8 Average Value Calculations

	Average of All Years (2006-2016)		Average of Realized & Forecast	
	Av Annual Chng	Net Present Value	Av Annual Chng	Net Present Value
New Haven County				
Employment	245	-	223	-
Gross Regional Product (\$2010)	\$7,405,569	\$65,868,042	\$6,641,819	\$72,355,113
Personal Income per Capita	\$52	\$453	\$45	\$502
Net State Tax Rev (\$2010)	\$12,635,608	\$110,133,295	\$10,921,413	\$121,825,014
Connecticut				
Employment	240	-	219	-
Gross State Product (\$2010)	\$7,244,687	\$64,611,285	\$6,529,975	\$70,907,240
Personal Income per Capita	\$16	\$135	\$13	\$149
Net State Tax Rev (\$2010)	\$12,528,837	\$109,232,127	\$10,833,210	\$120,819,429

	Realized (2006-2009)		Forecast (2010-2016)	
	Av Annual Chng	Net Present Value	Av Annual Chng	Net Present Value
New Haven County				
Employment	144	-	302	-
Gross Regional Product (\$2010)	3,841,404	\$14,181,864	\$9,442,234	\$58,173,249
Personal Income per Capita	\$17	\$62	\$72	\$440
Net State Tax Rev (\$2010)	4,636,032	\$16,978,720	\$17,206,794	\$104,846,295
Connecticut				
Employment	144	-	294	-
Gross State Product (\$2010)	\$3,909,364	\$14,447,832	\$9,150,586	\$56,459,409
Personal Income per Capita	\$5	\$18	\$22	\$131
Net State Tax Rev (\$2010)	\$4,615,910	\$16,909,509	\$17,050,509	\$103,909,920

The average values calculated in this report make use of the "AVERAGE()" value in Microsoft Excel. The AVERAGE() function returns the arithmetic average value of all numbers contained in the domain. The arithmetic mean of two sub-sets of the same set are not additively equal to the arithmetic mean of the entire set, except in the situation where the two subsets each contain the same number of elements. More formally,

$$\left(\frac{1}{N}\right) \sum_{i=1}^N x_i \neq \left(\frac{1}{2}\right) \left[\left(\frac{1}{K}\right) \sum_{i=1}^K x_i + \left(\frac{1}{N-K}\right) \sum_{i=K}^{N-K} x_i \right]$$

for $\forall N, K, i \in \mathbb{Z}$ and $\forall x \in \mathbb{R}^+$,

where $K < N$ and $K \neq \frac{N}{2}$.

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