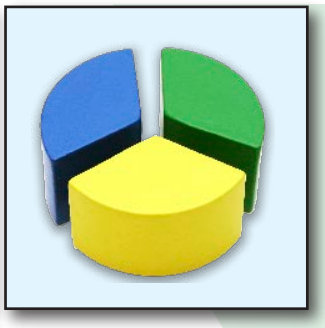
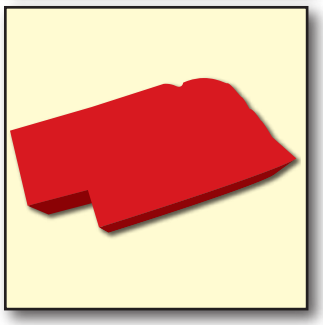


The Economic Impact of the Nebraska Early Care and Education Industry

Prepared at the request of the
Early Childhood Interagency Coordinating Council (ECICC)

Dr. Eric Thompson
Dr. Mary McGarvey
Dr. Matthew Cushing
Dr. Randy Cantrell
Seth Freudenburg
Travis Heller



Bureau of Business Research
Department of Economics
College of Business Administration
University of Nebraska–Lincoln
Dr. Eric Thompson, Director

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Executive Summary

The early care and education industry has both current and long-term economic consequences for the Nebraska economy. The long-term impact is to help to educate and develop children into productive and higher earning adults. This impact is well understood. As stated by Nobel Prize winning economist James Heckman, "Early advantages cumulate; so do early disadvantages… redirecting additional funds toward the early years, before the start of traditional schooling, is a sound investment in the productivity and safety of our society" (Heckman and Masterov, 2005).

In addition to these long-term impacts, the early care and education industry also has current impacts on the economy. These are less well understood, but also are significant. What are these current impacts? First, each year the early care and education industry brings additional jobs and earnings into the state economy as it draws external funds to the state, in the form of federal dollars to support early care. This represents a substantial economic impact on the state economy. Second, and more fundamentally, the early care and education industry provides more parents with an opportunity to work. This increases the workforce available to the Nebraska economy, a critical issue in a state where an aging population may limit future growth in the work force, and where labor force participation rates are already among the highest in the nation.[1] This study focuses on these current impacts that early care and education has on the Nebraska economy. Throughout, estimates are based on what was measurable in the available data, and may be underestimates to the extent that data are unavailable. The following key conclusions were reached:

- The early care and education industry statewide provides services to 100,000 Nebraska children, employs over 12,000 Nebraska workers (including the self-employed), and generates hundreds of millions of dollars of revenue.

- The industry is not only large; it also has a substantial impact on the current economy of Nebraska. The federal funds that Nebraska receives to support the early care and education industry has a statewide economic impact of $241 million, including $87 million in annual earnings by approximately 6,100 workers.

The early care and education industry generates economic activity throughout Nebraska by attracting external funds to the state, creating and supporting thousands of jobs, and increasing tax revenues.

[1] Nebraska has the third highest female labor force participation rate of any state, and the highest male labor force participation rate.

- The early care and education industry expands the size of the Nebraska labor force. For example, consider two government programs that provide resources to parents for early care. The Federal Child and Dependent Care Tax Credit program allows an additional 1,400 mostly middle income married women in Nebraska to hold full-time jobs. The Child Care and Development Fund (CCDF) allows an additional 2,500 lower income single mothers to hold either part-time or full-time jobs in Nebraska. These programs also allow additional lower income married parents, or middle income single parents to work. However, existing economic research does not permit us to estimate these effects.

- Research indicates that early care and education providers, particularly non-profit providers, also receive significant private in-kind donations to support their services. Research further indicates that non-profit early care and education providers have used these donations to lower the cost of early care services to parents or to increase the quality of care.

- Programs that support early care generate new tax revenues. The economic and labor market impact of the CCDF program generates additional income, sales, and property tax revenue for the State of Nebraska. The additional revenue amounts to $16 to $18 million per year. This is equivalent to two-thirds to three-quarters of the $24.1 million annual allocation by the State of Nebraska to the CCDF. This implies that the cost to the people of Nebraska to 1) help lower income parents obtain early care and education for their children, and 2) allow lower income parents to build their skills and earnings capacity through work is one-third as large as it would appear when simply looking at the state outlay for the CCDF program.

The implications of the report, however, are broader than simply the merits and costs of the Child Care and Development Fund, or other programs that receive the support of state government. The broader implication is that the early care and education industry is a significant infrastructure industry for the Nebraska economy. It should remain an important focus for monitoring and input not just by government but also by volunteer organizations, foundations, and private business.

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1 Introduction

An economy is a complex system of employment, trade and production and is composed of hundreds of industries. Each industry produces goods and services valued by society. However, among these industries there are a handful that go beyond simply generating their own products and outputs, and effectively serve as "infrastructure" for the wider economy. These infrastructure industries enhance the output and productivity of other sectors of the economy by raising the quality and availability of resources (workers, capital, etc.) and key inputs to the economy (such as energy). As such, productive and well organized "infrastructure" industries are key to economic development, and more generally, to the success of a state and local economy. The list of infrastructure industries includes transportation, utilities, education and health care, among others. The early care and education industry is among these key infrastructure industries.

In particular, the early care and education industry has both current and long-term economic consequences as basic infrastructure for the Nebraska economy. The long-term impacts are well understood. Early care and education is a critical component of the education process to develop children into productive and higher earning adults. In other words, early care and education is a key to long-term skill development of the Nebraska workforce, and therefore, levels of personal income in the state. As stated by Nobel Prize winning economist James Heckman, "Early advantages cumulate; so do early disadvantages… redirecting additional funds toward the early years, before the start of traditional schooling, is a sound investment in the productivity and safety of our society" (Heckman and Masterov, 2005).

Such long-term impacts are critical, but the early care and education industry also has more immediate impacts on the ***current*** economy. These current impacts are not always well understood, but are significant. First, like many industries, the early care and education industry attracts external funds to the state that generate new economic activity throughout Nebraska. Second, the early care industry helps more parents and caregivers participate in the labor market, which grows the economy and raises per capita income (by increasing the proportion of the adult population in Nebraska who are working). High quality early care and education in particular has a potential to

Early care and education attracts external funds to Nebraska, enables more parents to enter the labor market and can impact the state's per capita income.

raise per capita incomes. Many parents are in a financial position where they only will utilize early care and education and enter the labor force if higher quality care is available.

This report focuses on these ***current*** impacts of the early care and education industry on the economy, rather than the long-term impacts, such as those already described by James Heckman. We examine both the standard economic impact of the early care and education industry (derived from attracting federal funds into the state), and the labor supply created in Nebraska due to government programs that support child care. Throughout, estimates are based on what was measurable in the available data, and may be underestimates to the extent that data are unavailable. The implications of the report however are broader than simply the merits of these programs, or the employment and revenue of the industry. The broader implication is that the early care and education industry is a significant infrastructure industry for the Nebraska economy. It should remain an important focus for monitoring and input, not just by government, but also by volunteer organizations, foundations and private business.

In Chapter 2, we examine a variety of key industry statistics related to the economy such as the number of providers, number of children served, industry revenue, industry employment, and industry wage rates. These data are provided for the state in Chapter 2 and for individual counties in Appendix 1. In Chapter 3, we estimate the economic impact in Nebraska from federal funds that support the early care and education industry. In Chapter 4, we estimate the number of additional Nebraskans who are working due to the Child Care and Development Fund (CCDF), and Federal Child and Dependent Care Tax Credit (FCDCTC). We also examine the role of the non-profit sector within the early care and education industry. In Chapter 5, we estimate the state tax revenue generated due to the labor market and economic impacts of the CCDF program, and compare these revenues to the state expenditures on the program.

2 Early Care and Education Industry Statistics

The early care and education industry makes a large footprint in the state economy in terms of the number of children served, number of early care and education establishments, employment, wages, and industry revenue. This chapter provides data and estimates regarding the size of the industry in the state. Detailed estimates for each Nebraska County also are provided in Appendix 1. Within the early care and education industry, data are provided for child care providers and Head Start providers. Estimates are as inclusive as possible, often reflecting the activity of licensed, exempt from licensure, and unlicensed child care providers.

We begin with an examination of the number of providers, number of children served, provider revenue, employment, and wages in Nebraska. These are measured using approaches which are similar to those described in the Cornell Methodology Guide (Ribeiro and Warner, 2004) for conducting economic studies of early care and education. The last section makes comparisons between the early care and education industry and other relevant industries and occupations, both in terms of employment and wages.

Finally, note that in the tables that follow separate results are presented for Head Start and Nebraska Department of Education early childhood education grant programs. These breakouts are primarily for exposition purposes; however, as many of the providers involved in these programs also are licensed child care providers, and are therefore counted in the estimates for licensed child care providers as well.

A. Number of Providers Sites

Data on the number of early care and education provider sites are presented in Table 2.1. The number of licensed child care providers was taken from the Nebraska Health and Human Services report *Early Childhood Count by County*. The categories of Total Child Care Centers, Family Child Care Home I, Family Child Care Home II, Provisional Family Child Care Home I, Provisional Family Child Care Home II, Preschool, and Provisional Preschool were summed to find the total number of licensed child care and preschool facilities in a particular county and the state as a whole. There are over 4,000 licensed providers in the state as of May 2006.

To determine the number of unlicensed / exempt from licensure child care providers, we first estimated the total number of child care providers in the state based on two business censuses for Nebraska produced by the U.S. Bureau of Census: *County Business Patterns 2004 and Nonemployer Statistics 2003*. The first census counts

businesses with employees while the second counts businesses without employees. We identified the number of child care industry establishments from each source and summed them to estimate 7,592 child care provider sites in the state. We assume this 2004 estimate holds for the year 2006 and then subtract the number of licensed provider sites from this total of 7,592 to produce an estimate of the number of unlicensed / exempt from licensure child care providers in the state for 2006. The estimate is approximately 3,500. County totals are displayed in Table 2.1B in Appendix 1.

The number of Head Start providers was estimated by determining the number of individual sites where Head Start programs are offered. This frequently included multiple sites where Head Start programs were offered by the same grantee in the same county. There were an estimated 139 different sites where Head Start programs were offered in at least one classroom. Multiple classrooms in the same site were still counted as just a single site. Home-based Head Starts were not included.

Table 2.1: Number of Early Care and Education Sites in Nebraska 2006

	Licensed Child Care [1]	Unlicensed/ Exempt Child Care [2,3]	Head Start [4,5]
Nebraska Total	4080	3512	139

[1] Nebraska Health and Human Services *Early Childhood Count by County* May 5, 2006. Note that Child Care equals the sum of Total Child Care Centers, Family Child Care Home I, Family Child Care Home II, Provisional Family Child Care Home I, Provisional Family Child Care Home II, Preschool, and Provisional Preschool.

[2] US Census Bureau Nonemployer Statistics 2003 http://www.census.gov/epcd/nonemployer/ & US Census Bureau County Business Patterns 2004 http://www.census.gov/epcd/cbp/view/cbpview.html. The Industry is NAICS code 6244.

[3] Unlicensed / Exempt from licensure child care providers calculated by adding the number of establishments in the Nonemployer Statistics 2003 and Country Business Patterns 2004. This number was then subtracted from the number of child care establishments in NHHS Early Childhood Count by County.

[4] Nebraska Head Start, Nebraska Head Start Programs December 3, 2006. http://www.nde.state.ne.us/ECH/HeadStart/nestats.html.

[5] Home based Head Starts are not included.

These data are also provided at the county level in Table 2.1B in Appendix 1. Finally, again note that some of these Head Start provider sites also may be counted as one of the 4,080 licensed child care sites.

B. Number of Children Enrolled and Industry Revenue

There is no known official estimate of the number of children who utilize early care and education services in Nebraska. In this section, we provide an estimate. In particular, we make an estimate for children who are enrolled in licensed child care programs. We also obtained data on the number of children enrolled in the Head Start program statewide, and the number enrolled in NDE early childhood education grant programs. Our estimate for the number of children who are enrolled in licensed child care provider sites is based on the capacity of each licensed facility. The Nebraska Department of Health and Human Services reports this capacity for each county in its report, *Early Childhood Capacity Count by County*.

Enrollment in licensed child care provider sites for each county in Nebraska was estimated by adding the maximum capacity in that county of: Total Child Care Centers, Family Child Care Home I, Family Child Care Home II, Provisional Family Child Care Home I, Provisional Family Child Care Home II Preschool, and Provisional Preschool. County estimates are presented in Table 2.2B in Appendix 1. County estimates were totaled to yield state estimates.[2]

[2] The maximum capacity figure is the best estimate of enrollment and it is a balanced estimate. Enrollment could be somewhat lower than capacity at those centers which are not fully utilized. At the same time, some students only attend part-time, which means enrollment could exceed capacity in other centers.

We estimated that there are approximately 100,000 young Nebraskans (ages 0-12) enrolled in licensed child care programs.[3] Our estimate does not include the unknown enrollment at unlicensed child care facilities.

Enrollment estimates also were used to estimate child care industry revenue. Enrollment in each county by type of provider (Child Care Centers, Family Child Care Home I, etc.) was multiplied by the average child care tuition costs (again by type of provider) identified in the *Nebraska Department of Health and Human Services Child Care Market Rate Survey 2005*. The result is an estimate of the revenue of licensed child care providers in each county. County estimates are also reported in Table 2.2B in Appendix 1. County revenue estimates are totaled to a statewide figure. We also added in other revenue sources for child care businesses such as payments from the Child and Adult Care Food Program. The total revenue estimate statewide was $600.1 million.

Statewide Head Start counts in Table 2.2 come from totaling self-reported information from Head Start providers that is consolidated by the Nebraska Head Start State Collaboration Office.[4] County estimates also are provided in Table 2.2B in Appendix 1. Over 5,000 children were served by the Head Start program. Federal revenue was $35.9 million. There were nearly 1,500 children enrolled in Nebraska Department of Education early childhood education grant programs. Revenue for school-based programs was based on $3.5 million in state revenue to the program. The additional match was an additional $7.5 million. The total grant fund revenue was $11.0 million.

Table 2.2: Estimated Numbers of Children Enrolled in Early Care and Education and Industry Revenue in Nebraska 2006

	Licensed Child Care [1]	Unlicensed/Exempt Child Care	Head Start [2]	NDE Early Childhood Education Grant Programs [4]
Enrollment	99,500	N/A	5,112	1,483
Revenue	$600.1 million [3]	N/A	$35.9 million	$11.0 million

[1] Nebraska Health and Human Services *Early Childhood Capacity Count by County* May 5, 2006.

[2] Nebraska Head Start, Nebraska Head Start Programs April 16, 2006. http://www.nde.state.ne.us/ECH/HeadStart/nestats.html.

[3] Revenue estimated by multiplying enrolled children by daily rate information (gathered by the Department of Health and Human Services Annual Rate Survey) and by 260 days per year. Figure also includes the revenue paid to Nebraska child care establishments by the USDA food subsidy program.

[4] Estimate provided by the Nebraska Department of Education. This is the total amount of grant funds ($3.6 million) plus match ($7.4 million).

[3] Per 2005 United States Census estimates, Nebraska had 306,693 children ages 0-12.

[4] Nebraska Head Start State Collaboration Office April 16, 2006. http://www.nde.state.ne.us/ECH/HeadStart/nestats.html.

C. Early Care and Education Employment

The large number of children enrolled in early care and education centers in Nebraska suggests that there is substantial employment in the industry. Table 2.3 provides data on industry employment, and indicates that there are approximately 12,000 child care workers in Nebraska. This figure is the sum of the number of child care establishment employees noted in US Census Bureau's *County Business Patterns 2004* plus the number of non-employer establishments reported in the Census *Bureau's Nonemployer Statistics 2003* publication. Thus the number includes both employees and proprietors. This estimate is a total for all child care establishments whether licensed, exempt from licensure, or unlicensed, but does not include school-based programs.

The U.S. Census data do not distinguish between licensed and unlicensed establishments. The U.S. Census data are also available by county, and county totals are reported in Table 2.3B in Appendix 1. The number of Head Start workers was determined by contacting each of the 21 Head Start grantees operating in the State of Nebraska. The employment estimates therefore are self-reported.[5] The Nebraska Department of Education provided an estimate of the numbers of staff employed in NDE early childhood education grant programs.

Table 2.3: Number of Early Care and Education Workers in Nebraska 2004

	Licensed and Unlicensed / Exempt ChildCare [1]	Head Start [2]	NDE Early Childhood Education Grant Programs [3]
Nebraska Total	11,916	1,451	198

[1] US Census Bureau *Nonemployer Statistics 2003* http://www.census.gov/epcd/nonemployer/ & US Census Bureau *County Business Patterns 2004* http://www.census.gov/epcd/cbp/view/cbpview.html. The industry is NAICS code 6244.

[2] Head Start Website, Program Information Report of 2004.

[3] Estimate provided by the Nebraska Department of Education.

D. Early Care and Education Industry Wages

Using the two U.S. Bureau of Census data sources, we estimated average annual wages for workers in the child care industry. The Census estimate reflects average annual earnings in all child care establishments whether licensed, exempt from licensure, or unlicensed, but does not include school-based programs. The estimates are reported in Table 2.4. Average annual wages of child care industry worker was $11,593 in 2004, the most recent year for which data are available. Interestingly, the average annual earnings for the proprietors of non-employer establishments are very similar at $12,504. Average annual salaries of Head Start teachers in Nebraska are also provided in Table 2.4. These vary between $20,000 and $34,000 per year, depending on educational background.[6]

[5] Most grantees were able to provide employment data. A portion of grantees were not. For those who did provide employment data we calculated a ratio of the average enrolled children per employee. This ratio was then applied to enrollment data to predict employment for grantees who were not able to provide employment data.

[6] It was not possible to aggregate these into a single, overall average for Head Start workers.

Table 2.4: Annual Wages or Salaries of Early Care and Education Workers in Nebraska 2004

	Licensed and Unlicensed / Exempt Child Care
Wages of Industry Workers[1]	$ 11,593
Receipts of Self-Employed Workers[2]	$ 12,504
Head Start Teachers Annual Salaries	
Child Development Associate Credentials[3]	$ 20,664
Associates Degree[3]	$ 20,999
Baccalaureate Degree[3]	$ 22,583
Graduate Degree[3]	$ 33,877

[1] US Census *County Business Patterns 2004* http://www.census.gov/epcd/cbp/view/cbpview.html.

[2] US Census Bureau Nonemployer Statistics 2003. http://www.census.gov/epcd/nonemployer/2003/ne/NE000.HTM.

[3] Nebraska Department of Education, *Head Start Program Information Report for 2004-2005 Program Year*.

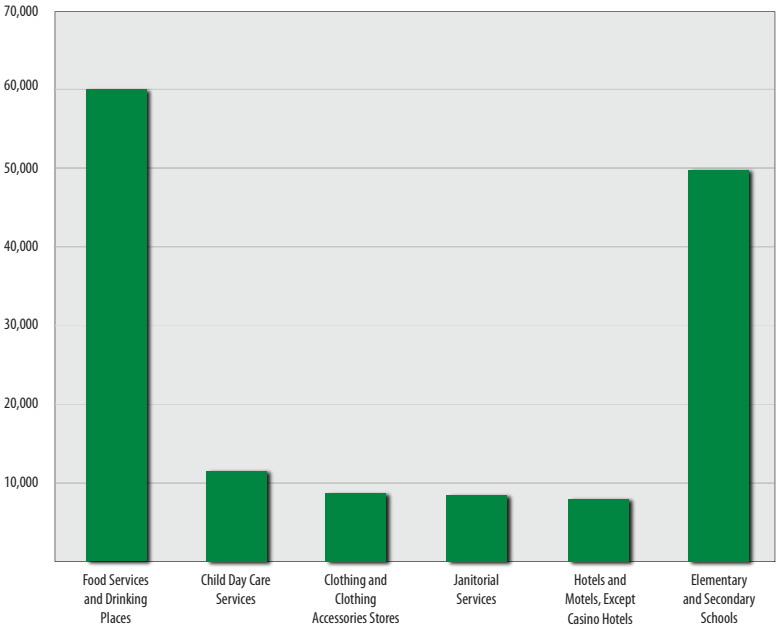
E. Industry and Occupation Comparisons

Raw economic figures can be difficult to interpret. To put the size and wages of the early care and education industry in perspective we compare the child care industry to several other Nebraska industries. Recall that the child care industry as defined in United States Bureau of Census industry statistics includes child care establishments whether licensed, exempt from licensure, or unlicensed, but does not include school based programs. Figure 2.1 (see next page) compares employment. Figures 2.2 and 2.3 compare wages in industries and occupations. Figure 2.1 shows the level of total employment statewide in the child care industry versus four other lower wage industries: 1) food service and drinking places; 2) clothing stores; 3) janitorial services; and 4) hotels and motels.

The sources for this employment data are *County Business Patterns 2004* and *Nonemployer Statistics 2003*. As in Table 2.3, industry workers from *County Business Patterns* are added to proprietors from *Nonemployer Statistics* data set to get total employment. Data are also included for elementary and secondary schools employment. These data come from the U.S. Department of *Labor Quarterly Census of Employment and Wages*. [7]

[7] *The County Business Patterns* publication only reports data for private sector employers. Employment and average annual earnings for this industry are available from this Department of Labor database.

Figure 2.1: Average Employment in the Child Care Industry and Five Comparison Industries in Nebraska 2004

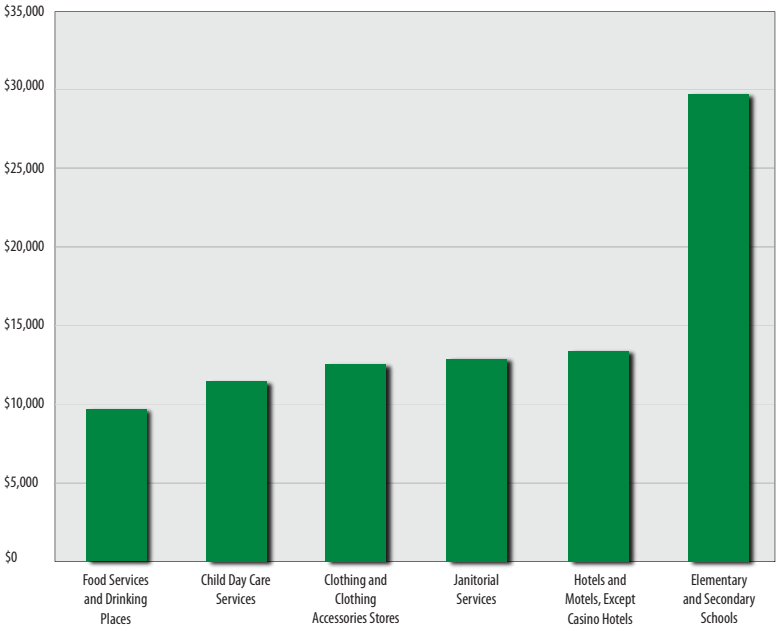


Source: US Census *County Business Patterns 2004* http://www.census.gov/epcd/cbp/view/cbpview.html and US Census *Bureau Nonemployer Statistics 2003*. Data for elementary and secondary schools is from the United States Department of Labor 2004 *Quarterly Census of Employment and Wages*.

The child care industry employs more than either clothing stores or hotels and motels, prominent components of the retail sector and the tourism sector, respectively. However, the child care industry employs fewer workers than food service and drinking places or elementary and secondary schools.

Figure 2.2 reports average annual wages for child care and comparison industries from the U.S. Bureau of Census *County Business Patterns 2004* and the *Non-Employer Statistics 2003* publications. Average annual wages in the child care industry in Nebraska are lower than in four of these industries. Average annual wages are less than half as much as for workers in elementary and secondary schools.

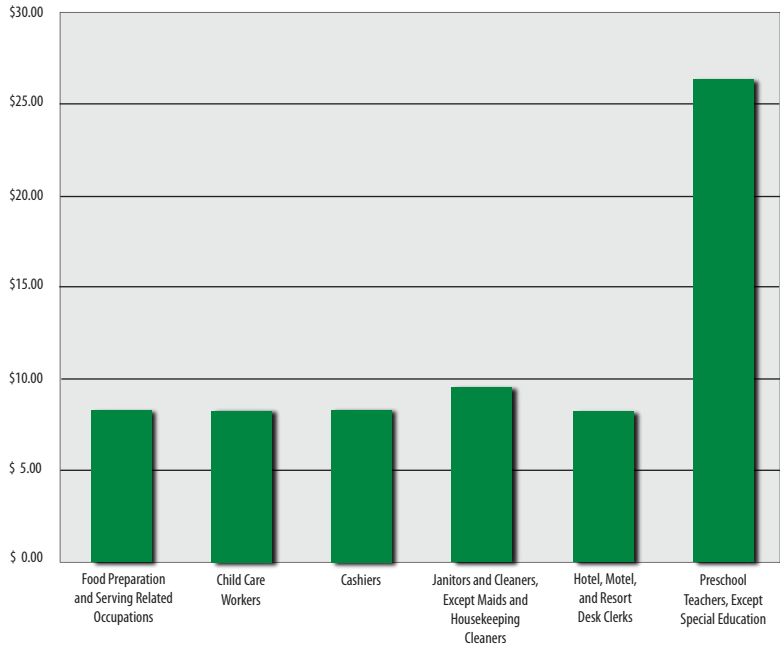
Figure 2.2: Average Annual Wages in the Child Care Industry and Five Comparison Industries in Nebraska 2004



Source: US Census *County Business Patterns 2004* http://www.census.gov/epcd/cbp/view/cbpview.html and US Census Bureau *Nonemployer Statistics 2003*. Data for elementary and secondary schools are from the United States Department of Labor 2004 *Quarterly Census of Employment and Wages*.

These differences in average annual wages would not reflect any differences in the number of hours worked per week, or in the number of months worked per year. Comparisons of hourly wages would correct this problem, but hourly wages are not available for industries from the U.S. Bureau of Census. To get a measure of hourly wages, it is necessary to use ***occupation*** data from the U.S. Department of Labor, as reported in Current Employment Survey program, which utilizes occupation categories rather than industry categories. In Figure 2.3, we report average hourly wages for the principal occupation in each of the 6 industries from Figure 2.2. As is evident, the hourly wages for child care workers is around $8.00, which is similar to the wage in most of the comparison occupations.

Figure 2.3: Average Hourly Wages for Child Care Workers and Five Comparison Occupations 2004

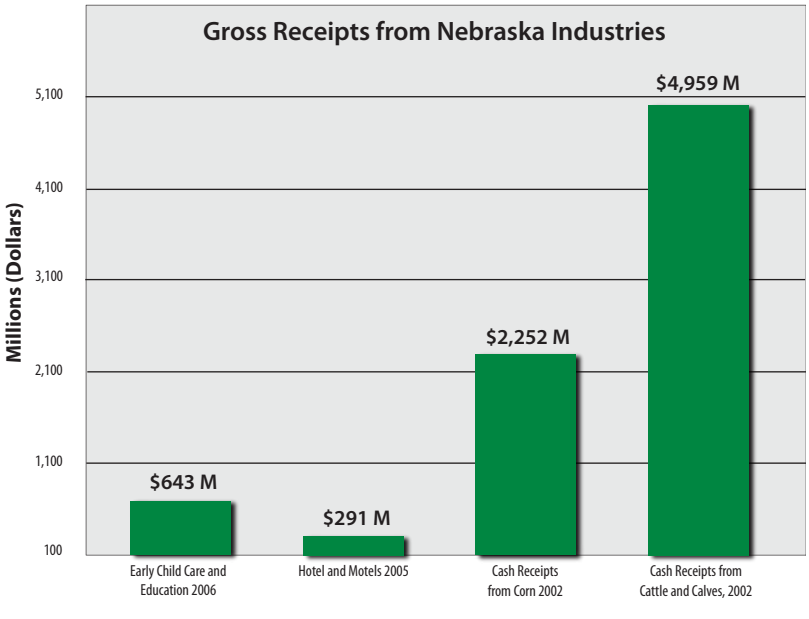


Source: U.S. Department of Labor, Current Employment Survey http://www.bls.gov.

Figure 2.4 compares the revenue of the early care and education industry (Table 2.2) with the gross receipts of several other prominent Nebraska industries. These industries were chosen because each industry is promoted in Nebraska, and annual gross receipts data are available for recent years.

The gross receipts (revenue) of the early care and education industry exceed those in hotels and motels, which is an important part of the state's tourism industry. The gross receipts of the early care and education industry, however, are much smaller than receipts of the state's leading agricultural industries. However, it is interesting to note that the early care and education industry is sufficiently large that its receipts are more than one-quarter as large as the receipts from corn production.

Figure 2.4: Gross Receipts of the Early Care and Education Industry and the Tourism and Agriculture Industries



Sources: Nebraska Department of Economic Development and author's calculations. USDA, National Agricultural Statistical Service, Nebraska Agriculture Rank and Agribusiness Facts (www.usda.govnass/).

3 Economic Impact from Federal Funds

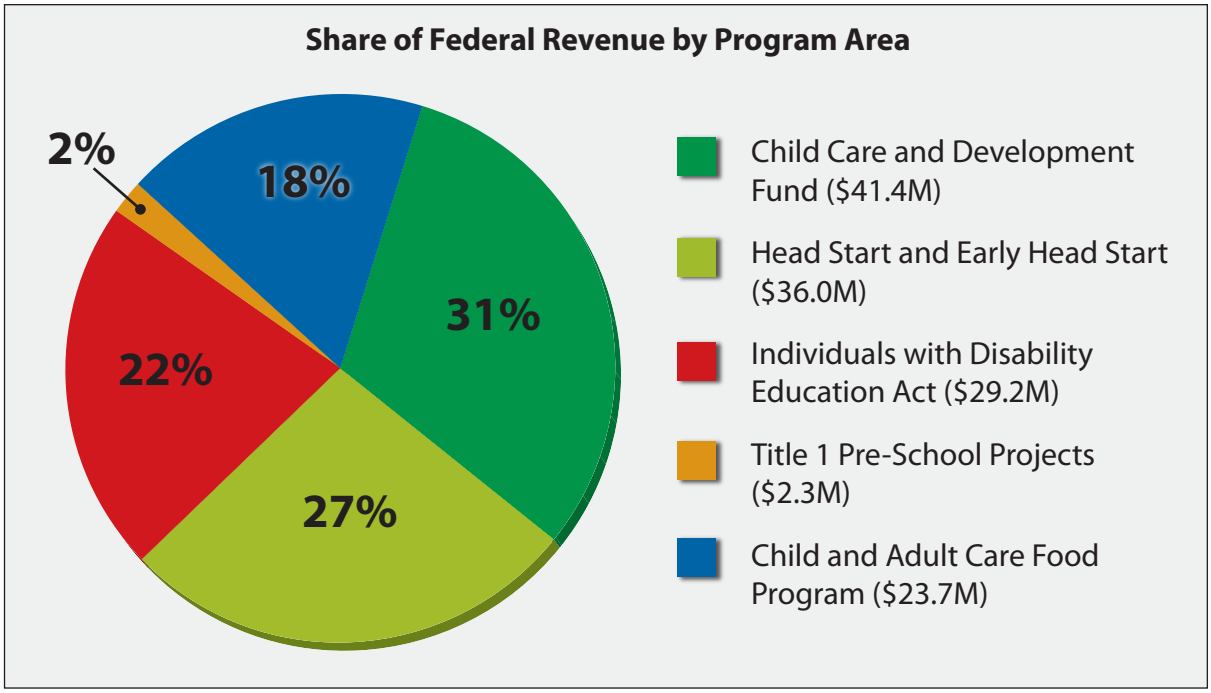
The early care and education industry has a substantial impact on the economy of Nebraska. One important component is the impact generated by the resources that the early care and education industry draws into the Nebraska economy. In particular, the industry attracts over $132 million of federal revenues to Nebraska each year to support a variety of early care and education programs. These federal dollars directly support thousands of jobs and tens of millions in worker earnings in the early care and education industry. In addition to these direct impacts, there is also a "multiplier effect" on the state economy. This term refers to the ability of a state economy to retain new spending that is drawn into the economy. Money is retained when early care and education businesses make purchases of supplies and services from other Nebraska businesses, or when early care and education workers spend their paychecks in the state. Retained revenue becomes income for other Nebraska businesses, and creates employment and earnings opportunities in all sectors of the economy.

This chapter documents the annual economic impact from federal funds that support the Nebraska early care and education industry. In the first place we estimate the amount of federal and state funds that support the early care and education industry. Federal funds represent new income into the Nebraska economy that directly supports employment and wages. In the second place we estimate the magnitude of the multiplier effect in order to measure the total increase in economic activity, jobs, and worker earnings in the Nebraska economy supported by these external funds.

Federal funds attracted to Nebraska's early care and education industry have direct impact on the state's economy. This direct impact is only part of the total economic impact.

There is also a multiplier effect of additional jobs and earnings as money circulates through the economy. The multiplier effect occurs as new money brought into the state due to early care and education programs supports additional business and employment in Nebraska.

Figure 3.1: Sources of Federal Revenue for the Early Care and Education Industry in Nebraska and Annual Revenue During a Recent Year



Source: Estimates gathered by Bureau of Business Research by contacting relevant state agencies.

A. External Revenue

Over $132 million of external, federal funds flow to Nebraska to support the state's early care and education industry each year. These funds come from a variety of programs including the Child Care and Development Fund, the Head Start and Early Head Start Fund, the Individuals with Disability Education Act, Title 1 Pre-School Projects, and the Child and Adult Care Food Program. A total of $132.5 million in funds were attracted to Nebraska from these sources during a recent year. Figure 3.1 (next page) shows the share of federal funding for early care and education that comes from each of these program areas. As is evident, most of the funding sources bring between $20 million and $45 million of federal funds to the state each year.

We do not include state funding for these programs in our revenue figures. The primary reason for this is that state funding is not new money attracted into Nebraska by early care and education. In other words, state government funds do not represent any increase in the final demand on the Nebraska economy. If not spent for early care and education, these funds would likely have been spent in Nebraska in other ways.

B. Economic Impact of External Revenue

Federal funds attracted to Nebraska have a direct impact on the Nebraska economy. This direct impact is only part of the total economic impact, however. There is also a multiplier effect of additional jobs and earnings as money circulates through the economy.

Figure 3.2 illustrates the basic approach to conducting economic impact analysis. The direct impact is derived from federal revenue of $132.5 million. The multiplier effect is calculated and added to the direct impact to yield the total impact. The multiplier effect occurs as new money brought into the state (the direct effect) due to early care and education programs supports additional business and employment in Nebraska.

There are two components to the multiplier effect:

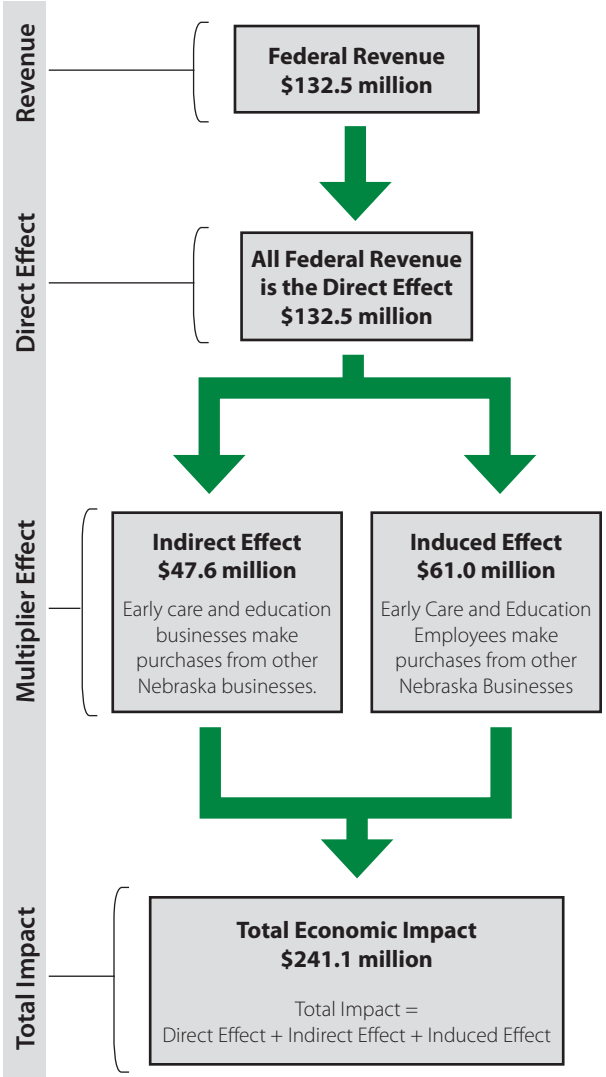
1) ***The indirect effec***t - occurs as early care and education businesses purchase supplies such as school equipment, food, utilities, and cleaning supplies as well as services such as accounting and legal.

2) ***The induced effect*** - occurs as early care and education industry employees spend their income on all the usual types of household expenditure such as housing, insurance, health care, food, apparel, other retail and entertainment.

Both the indirect and induced components of the multiplier effect contribute additional economic activity, employment, and worker earnings to the economy. The total economic impact is the sum of the direct impact and these two components of the multiplier effect.

The indirect and induced effects were estimated using the IMPLAN PRO software package. This package can be used

Figure 3.2: Basic Approach to Economic Impact



to calculate economic multipliers for over 400 individual industries in any U.S. state. We calculated economic multipliers for both the indirect and induced effect for the appropriate industry. Summing both the indirect and induced components of the multiplier effect, the overall economic multiplier averaged 1.81, meaning that each dollar of direct effect lead to an additional 81 cents due to the multiplier effect. This is similar to the economic

multiplier of 1.98 identified for the State of Kansas (Mid-American Regional Council, 2003).[8] Table 3.1 shows the precise calculation of the multiplier effect, and the total economic impact. The direct effect of $132.5 million in revenue leads to a multiplier effect of roughly $108.6 million in revenue for other businesses. The total annual economic impact was approximately $241.1 million.

A portion of the direct effect and total economic impact is in terms of worker earnings; that is, the wages, salaries, and benefits which accrue to workers. Table 3.2 shows the worker earnings associated with the economic impact results in Table 3.1. Table 3.2 also shows the employment associated with that amount of worker earnings.

Economic multipliers from the IMPLAN PRO software package were again used to make these impact estimates. There are annual worker earnings of $87.2 million associated with the $241.1million annual economic impact. There are 6,100 jobs associated with annual worker earnings.

Table 3.1: Total Economic Impact Derived from Federal Funds for the Early Care and Education Industry (In Millions of Dollars in Revenue)

		Multiplier Effect		
Impact Measure	**Direct Impact (millions)**	**Indirect Effect (millions)**	**Induced Effect (millions)**	**Total Impact (millions)**
Output	$132.5 M	$47.6 M	$61.0 M	$241.1 M

Source: IMPLAN and authors' calculations

Table 3.2: Worker Earnings and Employment Associated with the Annual Economic Impact of the Early Care and Education Industry

		Multiplier Effect		
Impact Measure	**Direct Impact (millions)**	**Indirect Effect (millions)**	**Induced Effect (millions)**	**Total Impact (millions)**
Worker Earnings	$52.5 M	$14.9 M	$19.8 M	$87.2 M
Employment	4,900	500	700	6,100

Source: IMPLAN and authors' calculations

[8] Population and employment in Kansas are nearly 50% larger than in Nebraska. Larger states usually have modestly larger economic multipliers.

C. Distribution of Economic Impact by Industry

Indirect and induced impacts primarily occur outside of the early care and education industry. These impacts occur throughout the economy in all types of businesses. Below in Table 3.3, we show how the total economic impact is distributed through major industries of the economy: construction, manufacturing, wholesale and retail trade, services (which includes the early care and education industry), and all other industries. The largest total impact is in the services industry.

Table 3.3: Distribution of the Economic Impact of Early Care and Education Industry by Major Industry Category

Impact Measure	Direct Impact (millions)	Multiplier Effect (millions)	Total Impact (millions)
Construction	$ 0.0 M	$ 15.9 M	$ 15.9 M
Manufacturing	$ 0.0 M	$ 9.8 M	$ 9.8 M
Wholesale & Retail Trade	$ 0.0 M	$ 16.1 M	$ 16.1 M
Services (which includes Early Care and Education)	$ 132.5 M	$ 53.8 M	$ 186.3 M
All Other Industries	$ 0.0 M	$ 13.0 M	$ 13.0 M
Total	$ 132.5 M	$ 108.6 M	$ 241.1 M

Source: IMPLAN and authors' calculations

Much of this impact is the $132.5 million direct impact of the early care and education industry. However, services are the largest part of the economy, and there is also another $53.8 million due to the multiplier effect. Much of this revenue flows to the health care and finance industries. There is a nearly $16.1 million impact in the wholesale and retail industry and a similar impact in the construction industry.

Results in Table 3.3 show that the early care and education industry has a positive impact on many sectors of the economy. This is the case even before we consider other ways in which the early care and education industry affects the economy. In particular, the industry allows more parents and caregivers to enter the formal labor market, which also leads to more jobs and income throughout the industries of the Nebraska economy. This labor supply response is the subject of the next chapter.

4 Labor Supply Impacts of the Early Care and Education Industry

Tens of thousands of parents with young children work in the State of Nebraska. These parents drive the demand for early care and education services in the state. In turn, early care and education services allow more of these parents to enter the workforce or allow parents to participate more in the work force. The presence of an early care and education industry in the state clearly makes the difference in allowing tens of thousands to parents to work in any given year.

The exact number, however, is difficult to estimate. Ultimately, it is a matter of statistical estimation, to tease out what percentage of parents would leave the workforce if the early care and education industry did not exist. But, there is no way to make this estimation – there will always be some early care and education industry in every state and every part of the country. The demand from working parents with the means to pay for the service ensures this. Therefore it is not possible to run a statistical test to determine how the labor market would react if the early care and education industry simply disappeared.

There are, however, differences in the cost of early care and education in different parts of the country. Changes in the price of early care and education will affect usage. There also are changes and differences in the level of government programs to lower the cost of child care in different states, or in different years. These sorts of changes make it possible to run statistical estimates of how participation in the labor market changes given government support for early care. Therefore it is possible to evaluate the impacts of government programs to lower the cost of early care for parents in the labor market.

The first part of this chapter examines this question. In particular, we estimate how many additional single mothers are able to work due to the CCDF program, which pays for a large portion of child care costs for low income families. We focus on single mothers rather than all eligible low income families because the economic research is only available for single mothers. We further examine the increase in the number of parents who work due to the Federal Child and Dependent Care Tax Credit program.

The second part of this chapter examines another type of support for early care and education services: donations or implicit support that lowers the cost of operating early care centers. Early care centers, particularly non-profit centers, often receive implicit support from their parent organization (a hospital, a religious institution, etc). The largest and most evident type of support is free or subsidized building space. We consider the implications of this support for the early care and education industry in the state.

A. Labor Market Implications of Government Support for Early Care[9]

The Child Care and Development Fund (CCDF) and the Federal Child and Dependent Care Tax Credit (FCDCTC) are two major programs which the government uses to lower the cost of child care. The Child Care and Development Fund is a joint federal and state sponsored program that subsidizes early care and education for low income families. The Federal Child and Dependent Care Tax Credit is a federal tax credit program that effectively lowers the cost of early care and education, primarily for middle income parents. Below, we summarize empirical economic research that can be used to estimate how many parents are able to work in full-or part-time jobs due to these programs. We then estimate this labor market response and predict the increase in the number of employed persons in Nebraska.

Based on our review of relevant economic research studies (see Appendix 2), we find that the majority of studies estimate the marginal effect of a change in the price of child care for all mothers on the mothers' child care and employment decisions. These studies find that a fall in child care prices leads to an increase in child care use and a smaller increase in mothers' employment rates. The magnitude of the estimated employment effect, however, depends on the mother's marital status, full-time versus part-time employment status and the specific statistical model. Results from these studies are useful in predicting employment effects due to a uniform change in the price of child care that applies to all mothers.

The second type of empirical study analyzes the employment effects of targeted child care subsidies. Results from this type of study are useful to predict the employment effects due to specific government programs, such as CCDF and the FCDCTC. This report uses the results of two such studies to estimate the ***partial*** employment impact of the CCDF child care subsides in Nebraska and of eliminating the FCDCTC for working parents in Nebraska.

Nebraska Employment Effects of Eliminating the CCDF Subsidy

The Child Care and Development Fund (CCDF), authorized by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, PL 104-193, assists low-income families, families receiving temporary public assistance, and those transitioning from public assistance in obtaining child care so they can work or attend training/education.[10] The Administration for Children and Families estimates that, in fiscal year 2005, the CCDF program served approximately 1,027,800 families in the United States with 7,600 of these living in Nebraska.

This report uses the results from a National Bureau of Economic Research study by Tekin (2004) and U.S. Census Bureau data to estimate the impact of eliminating the CCDF child care subsidy on employment in Nebraska. Tekin (2004) finds that the average employment rate of

[9] Section prepared by Dr. Mary McGarvey.

[10] Child Care Bureau, Administration for Children and Families, U.S. Department of Health and Human Services, http://www.acf.hhs.gov/programs/ccb/.

mothers receiving a child care subsidy is 15 percentage points greater than the employment rate of those not receiving a subsidy based on a nationally representative sample of poor single mothers with at least one child under the age of 6 years.[11] Because previous studies found that employment effects of child care prices differ by marital status, income level, and whether the youngest child is pre-school age, Tekin's results apply directly only to the demographic of his sample. This report, therefore, uses Tekin's results to estimate the impact of eliminating the CCDF child care subsidy on the employment of single mothers in Nebraska whose income is less than 200% of the federal poverty level and whose youngest child is under the age of 6 years.

The Child Care Subsidy Program (CCDF) helps Nebraska families to afford child care so that parents can work or obtain education.

In 2006, approximately 8,012 Nebraska families with an average of 1.8 children per family received child care assistance from the CCDF program in Nebraska. When child care is authorized for a family, the worker must choose one of the allowable reasons for care. These reasons are education, employed, Employment First related, Employment and training/education, and escort/visit child needing medical care. Child care assistance is intended to help the family reach economic self-sufficiency so, in addition to employment and training, families may be authorized care in order to address issues (such as mental and physical health problems, need for housing, etc.) which currently prevent them from working. Of the families who received child care assistance in 2006, 5,634 receive subsidies because of employment and 236 receive subsidies because of training/education and employment.[12]

Approximately 4,756 of the 5,870 Nebraska families who receive a subsidy because of employment have at least one child under the age of 6 years. [13] Of those families, approximately 3,329 are headed by single working mothers.[14] Therefore, elimination of the CCDF child care subsidy affects the employment status of potentially 3,329 single working mothers of children under 6 in Nebraska who are currently receiving the subsidy.

According to Tekin's (2004) results, the employment rate of poor, single mothers with at least one child under the age of 6 years would be approximately 15 percentage points lower without the CCDF child care subsidy. The National Center of Children in Poverty estimates that approximately 56,726 children in Nebraska under the age of 6 years

[11] Tekin analyzes the work and child care decisions of a sample of 2,226 single mothers from the 1999 National Survey of America's Families. The sample contains information on mothers with income less than 200% of the federal poverty line who live in 13 states that contain more than 50% of the U.S. population.

[12] CCDF Family Profile, Nebraska Department of Health and Human Services, February 2006.

[13] According to the Nebraska Department of Health and Human Services on August 2, 2006, 81.02% of all Nebraska families receiving a CCDF subsidy have at least one child under the age of 6 years. This report assumes that this proportion also applies to those families who receive a subsidy because of employment.

[14] This report uses a representative sample of mothers in nine midwestern states (including Nebraska) from the most recent Child Care Topical Module of the Survey of Income and Program Participation (SIPP), U.S. Bureau of the Census, to estimate the distribution of Nebraska's poor mothers' marital status, children's age distribution, and full-time/ part-time employment status. In the SIPPs sample, seventy per cent of working mothers whose income is below 200% of the federal poverty level and who have at least one child under the age of 6 years are single.

live in families whose income is less than 200% of the federal poverty level.[15] Given that families in the Tekin study have, on average, 2.23 children, then there are approximately 25,438 poor mothers in Nebraska with at least one child under age 6. Of these, about 16,280 are single mothers and, of these, approximately 12,058 work.[16] Therefore, the current employment rate of poor, single mothers in Nebraska with at least one child under the age of 6 years is .74. Tekin's study suggests that this employment rate would fall to .59 if the CCDF child care program was eliminated.

Based on the child care study of Tekin and the demographic statistics of representative samples from the U.S. Census, this study concludes that approximately 2,491 fewer single mothers of pre-school-age children would work in Nebraska if the CCDF child care subsidy is eliminated (see Table 4.1). This estimate implies that out of the initial single mothers of preschool-age children who receive a CCDF child care subsidy in Nebraska because of employment, about 25% would continue to work and 75% (2,491 out of 3,329) would stop working if they no longer received the subsidy. As noted earlier, economic research was not available to estimate the impact of the CCDF child care subsidy on the employment of eligible married mothers, or single fathers.

Table 4.1: Nebraska Employment Effects of the Child Care Development Fund and the Federal Child and Dependent Care Tax Credit

Program	Population Included	Employment Effect
Child Care Development Fund[1]	Single Mothers	2,500 full- or part-time jobs
Federal Child and Dependent Care Tax Credit[2]	Married Mothers	1,400 full-time jobs

Source: IMPLAN and authors' calculations
[1] No estimate is available of the labor market reactions of married parents in response to the elimination of the CCDF.
[2] No estimate is available of the labor market reactions of single mothers or married fathers in response to the elimination of the FCDCTC.

Nebraska Employment Effects of Eliminating the Federal Child and Dependent Care Tax Credit

Individuals who pay someone to care for a child or a dependent so they can work or look for work may be able to reduce their federal tax by claiming the Child and Dependent Care Credit on their federal income tax return. They may also be able to claim the credit if they pay someone to care for their dependent who is under age 13 or for a spouse or a dependent of any age who is physically or mentally incapable of self-care. The credit is a percentage of the amount of work-related child and dependent care expenses these individuals pay to a care provider. The credit can be up to 35 percent of qualifying expenses, depending upon income. For 2005, the credit is up to $3,000 of the expenses paid in a year for one qualifying individual, or $6,000 for two or more qualifying individuals. These dollar limits must be reduced by the amount of any dependent care benefits provided by the individuals' employer that are excluded from salary and wage income. [17]

[15] National Center for Children in Poverty, Nebraska Demographics for Low-Income Families, http://www.nccp.org/state_detail_demographic_low_income_NE.html.

[16] The estimates in the text are based on the demographic distribution in the SIPPs sample (see footnote 5), where the average number of children per poor family with at least one child under age 6 years is 2.23 and 64% of the mothers in these families are single. Of these single mothers, 42.6% work full-time and 31.4% work part-time.

[17] http://www.irs.gov/newsroom/article/0,,id=106189,00.html.

In 2002, Nebraskans claimed approximately $19.5 million through the federal child and dependent care tax credit. Almost 75% of the total amount of the federal tax credit in 2002 was claimed by families with adjusted gross income between $30,000 and $100,000. Because mostly middle income families benefit from the federal tax credit whereas only low-income families benefit from the CCDF child care subsidy, employment effects of the federal child care tax credit will primarily affect more middle income workers.

This report uses the results from Michalopoulos and Robins' (M&R) (2000) study and U.S. Census Bureau data to estimate the impact of eliminating the federal child and dependent care tax credit on the employment of married mothers in Nebraska. Unfortunately, statistical estimates were not available to estimate the effect of the tax credit program on single parents. M&R (2000) find that every $100 of tax credit increases the average full-time employment rate of mothers by .0119 and increases the average part-time employment rate of mothers by only .001. The authors base their results on nationally representative samples of Canadian and U.S. married mothers with at least one child under the age of 5 years.[18] Because previous studies found that employment effects of child care prices differ by marital status, income level, and whether the youngest child is pre-school age, M&R's results apply directly only to the demographic of their sample. This report, therefore, uses M&R's results to estimate the impact of eliminating the federal child care tax credit on the employment of married mothers in Nebraska whose youngest child is under the age of 5 years.

Approximately 120,985 children under the age of 5 years live in Nebraska[19] which implies about 58,447 mothers living in Nebraska with at least one child under the age of 5. [20] Of these, about 33,651 are married mothers and, of these, approximately 12,841 work full-time and 12,398 work part-time.[21] Therefore, the current full-time employment rate of married mothers in Nebraska with at least one child under the age of 5 years is .38 and the current part-time employment rate of these mothers in Nebraska is .37. M&R's results suggest that this full-time employment rate would fall to .34 and the part-time employment rate would remain virtually the same if the federal child care tax credit was eliminated.[22] Based on the

As a result of the Federal Child and Dependent Care Tax Credit and the Child Care and Development Fund, approximately 4,000 more parents are able to secure part- or full-time employment – a substantial contribution to the state's work force.

[18] Michalopoulos and Robins analyze the work and child care decisions of married women with at least one child under 5 years living in Canada using the 1988 National Child-Care Survey and living in the U.S. using the 1990 National Child-Care Survey.

[19] 2004 American Community Survey conducted by the U.S. Census Bureau as reported by NACCRRA's 2006 Child Care in the State of Nebraska, http://www.naccrra.org/.

[20] This assumes 2.07 children per family with at least one child < 5 years based on the SIPPs sample of mothers with at least one child under 5.

[21] The estimates in the text are based on the demographic distribution in the SIPPs sample (see footnote 11), where 22% are married and work full-time and 21% are married and work part-time.

[22] Based on the SIPP's sample, the average tax credit for married mothers working full-time is $344 (in 1990 dollars) and for married mothers working part-time is $268 (in 1990 dollars). Multiplying these average tax credits (in units of $100s) by the marginal employment effects found in the M&R study results in the estimated employment rate changes reported in the text.

child care study of Michalopoulos and Robins (2000) and the demographic statistics of representative samples from the U.S. Census, this study concludes that approximately 1,379 fewer married mothers of children under 5 years of age who currently work full-time in Nebraska would work if the federal child and dependent care tax credit were to be eliminated (see Table 4.1). This estimate implies that out of the initial married mothers of preschool-age children who work full-time in Nebraska, about 89% would continue to work full-time and about 11% (1,379 of 12,841) would stop working if they no longer received the tax credit. Our study predicts that elimination of the federal child care tax credit would have a negligible effect on part-time employment of married mothers of pre-school-age children.

Summary

As was seen above, available economic research has tended to focus on the need of mothers for child care and on the employment decision of mothers. We report our results accordingly, with a focus on the employment effects on mothers. We do this, however, recognizing that single parents may be fathers and that child care decisions are made by both mothers and fathers.

Based on available research results, we were able to estimate the labor market effects of two major efforts to lower the cost of early care and education for families for the case of Nebraska. We were able to estimate that the Child Care and Development Fund program to subsidize child care for low income families allows roughly 2,500 additional low income single mothers to hold either full-time or part-time jobs. We were able to estimate that the Federal Child and Dependent Care Tax Credit allowed approximately 1,400 married middle income mothers to hold full-time jobs (there was no part-time employment effect).[23] These programs also allowed additional low income married parents, or middle income single parents to work but the existing research did not permit us to estimate these effects. But, even with these groups excluded, we estimate that there are an additional 4,000 Nebraska parents who are employed because of these two programs, a substantial contribution to the state's work force.

[23] Presumably, the child care tax credit allowed some married mothers to begin working part-time but also allowed others to switch from part-time to full-time status, creating no net gain in the number of part-time workers.

B. Labor Market Implications of Non-Profit Support for Early Care and Education[24]

Like the government, the private sector sometimes acts to reduce the cost of early care and education for parents by providing in-kind donations to early care providers. To give one prominent example, this occurs as organizations that support early care and education centers (hospitals, community organizations, or religious organizations) make key resources available to these centers (such as building space) free or at a reduced cost. These donations go primarily to non-profit early care and education providers (Cleveland and Krashinsky, 2005; Helburn, et al., 1995; and Culkin, Herlburn and Norris, 1990).

This does not imply that non-profit early care and education centers are necessarily less expensive than commercial (for-profit) centers. Non-profit early care and education centers may utilize the cost savings they receive (such as free or reduced cost building space) and devote a larger share of earned revenue from student tuition in ways that raise the quality of early care and education. For example, non-profit providers might pay higher teacher salaries. Some non-profits therefore may not be low cost providers of early care and education services, but simply lower cost providers of high quality early care. From a parent's perspective, non-profits may allow the choice of higher quality at a given price. For some parents, quality of early care and education (at an affordable price) may be the key factor in determining whether parents choose to utilize early care and become employed.

This section of the report utilizes existing research to examine two issues: 1) the level of in-kind donations for non-profit early care and education centers; and 2) the degree to which non-profit early care and education centers provide higher quality services.

The Level of Support Received by Non-Profit Early Care and Education Centers

There is broad consensus in the literature that non-profit child care centers have access to financial resources that for-profit centers can not capture. Preston (1988) argues that non-profits will receive more donations compared to for-profit firms due to non-profits favorable tax treatment and social mission. Cleveland and Krashinsky (2005), using Canadian data, found that "access to subsidized rent or utilities varies dramatically by auspice; only 1% of commercial centers attract these subsidies, compared to 44% of non-profits. Culkin, Helburn, and Norris (1990) found that in-kind donations of space, utilities, or insurance in the Denver area primarily went to non-profit providers. Helburn et al. (1995), in a study of providers in four U.S. states, found that the average in-kind donation received by non-profit providers was worth $0.26 per child per hour of care compared to the $0.05 received by for-profit providers.

Given these results from throughout North America, we made an effort to develop a rough estimate of the relative value of donated building space to non-profit early care providers in Nebraska. To do this, we gathered data from county assessors on the median value of retail and service business space per square foot. This was approximately

[24] Section prepared primarily by Seth Freudenburg, Travis Heller and Dr. Randy Cantrell.

$16 per square foot per year in urban areas versus $10 in non-urban areas. This was multiplied by the minimum space requirement of 35 square feet per child to yield a total cost of providing space per year for each child. This figure was divided by the annual revenue each early care and education center earned from tuition per student, determined using the Nebraska Department of Health and Human Service Child Care Market Rate Survey. This yielded the annual cost for providing building space per child as a share of revenue per child in both the urban and non-urban setting. This ratio is reported in Table 4.2. The value of donated space ranged from 8.2% of revenue in urban areas and 5.0% in non-urban areas.

Table 4.2: Estimated Value of Donated Space for Non-Profits as Share of Revenue in Nebraska

County	Estimated Ratio of Annual Rent to Annual Revenue
Urban	8.2%
Non-Urban	5.0%

Source: Authors' calculations

Non Profit Early Care and Education Centers and Quality

The savings resulting from in-kind donations of space can be used by non-profit early care providers either to lower fees charged to parents, to devote a large share of other revenues to pay higher wages to workers in order to increase the quality of care, or some combination of both. Helburn et al. (1995) found that non-profit early care providers affiliated with religious organizations received more in-kind donations and charged lower fees to parents than for-profit providers. These non-profits were found to have similar levels of quality as for-profit providers. Other non-profit providers (independent, Head Start, or government managed) also received more in-kind donations as well as more public funds but paid higher wages and employed more credentialed workers than for-profit providers on average. These other non-profit providers also had higher measured levels of quality than for-profit providers.

Other researchers found similar results on the relationship between non-profit providers, employee wages and credentials, and measures of care quality. Using data from the Helburn et al. study, Blau and Mocan (1999) also found that average child care quality was higher in non-profit centers, mostly from a large quality difference that existed in North Carolina centers.

Cleveland and Krashinsky (2005) examined child care centers in Canada and found, on average, a substantial difference in quality between commercial and non-profit centers. Including all types of classrooms, non-profits had 10% higher quality, examining just infant and toddler rooms; however, the difference in quality was over 15%. Furthermore, quality differences between non-profits and for-profit centers remained after holding a wide range of variables constant. The authors suggest that there are unobserved quality–enhancing factors associated with non-profit status, such as additional effort and dedication or the encouragement and support given by the sponsoring organization. The authors also found that the wage premium that non-profit employees enjoy is made up

of several factors such as unionization, education, and experience. They conclude that there is no evidence that non-profits drive up wages, except by increasing child care quality.

Cleveland and Hyatt (2002) examined child care facilities in Canada and found that non-profit child care centers paid 13% higher wages to their workers. The researchers found that compensation level differed by the type of organization the center is affiliated with. University and college-based, corporate and hospital-based, and community organization-based centers in Canada paid wages that were 20% higher than commercial centers, while independent, parent co-operative, private school, and government agency-based centers pay wages that were 11 to 14% higher than commercial centers. Finally, non-profit centers affiliated with religious organizations in Canada pay wages that are comparable to commercial centers. Helburn et al. (1995) found similar results using U.S. data.

Finally, it is worth noting that early care quality in Nebraska has been found to be comparable to that of other midwestern states and the nation (Edwards et al., 2002).

C. Summary

Efforts by government to reduce the cost of early care and education services for parents were found to increase labor force participation. The Child Care and Development Fund program for low income families was estimated to increase the number of low income single mothers in the workforce by 2,500. Federal Child and Dependent Care Tax Credits increased the number of married women in the work force by 1,400. These programs also allowed additional lower income married parents or middle income single parents to work but the existing research did not permit us to estimate these effects.

In addition to these government programs, there are significant private donations to early care providers, particularly non-profit providers. Reduced rent or free building space is a notable example of these donations. Previous research from around North America indicates that non-profit child care providers are able to use these savings either to offer early care services at a lower cost to parents, or to employ staff with higher average credentials and training who are able to offer a higher quality of early care services.

5 State Revenue Effects of Programs to Lower Early Care and Education Costs[25]

One consequence of the labor supply responses described in the previous chapter is that due to the early care and education industry, more Nebraskans are working and paying taxes. This would tend to be beneficial for tax revenue for the state. This tax revenue response is particularly interesting in the case of public programs that are designed to lower the cost of child care for Nebraska families. One particularly interesting case is the Child Care and Development Fund, which received $24.1 million in revenue from the state of Nebraska during Fiscal Year 2005-06. With more low income Nebraskans working as a result of the program, how much additional tax revenue would the state receive? And how would this additional revenue compare to the $24.1 million annual allocation for the program by the state? Another interesting case is the Federal Child and Dependent Care Tax Credit. We explore both issues in this chapter.

The issue is examined utilizing a sophisticated model of the Nebraska economy that can simultaneously capture both the labor supply effects discussed in chapter 4 and the economic impacts considered in chapter 3; and do so in a way that captures the inter-relationships between supply, demand, and price in the Nebraska economy. Such a model is needed because the changes in the level of child care subsidies and consequent changes in employment are likely to have direct and indirect implications for the entire Nebraska economy. To analyze these effects we use a Computable General Equilibrium model[26] that is styled after similar models of the California economy[27], and a model of the Nebraska economy developed by the Nebraska Department of Revenue[28]. Our model (Business Research and Analysis in Nebraska model [BRAIN]) emphasizes supply side effects including growth in the supply of both capital and labor. The model is thus well suited for analyzing long run structural issues rather than short run demand side effects.

The current version has over 600 equations describing labor supply and expenditure patterns of nine categories of households. The production side is divided into 16 industries, each making hiring, production and investment decisions.

The government sectors are divided into a federal government sector and one for state and local Government. The revenue side of government is carefully modeled to account for how sales, property and income taxes respond to the level of economic activity across industrial sectors

[25] This Chapter and the BRAIN model were developed by Dr. Matthew Cushing.

[26] In addition to incorporating growth in demand, Computable General Equilibrium models incorporate production technologies and constraints on factor supplies (capital and labor) as well as equilibrium in relevant markets in output, labor and capital markets.

[27] The DRAM and DRAM98 models.

[28] The TRAIN model.

and households. Unlike the California and Nebraska Development of Revenue models, the expenditure side of government is taken as exogenous. That is, the model does not attempt to describe how either the federal or state and local government's spending may react to changes in revenue.

The basic structure of the model reflects expenditure and production patterns existing in 2003. (The major source of this data is the latest version of the IMPLAN data base.) The data are then scaled to reflect state employment and output levels in 2005.

A. Child Care and Development Fund

Using the BRAIN model, we test the economic and fiscal consequences of the CCDF program by considering the full economic implications of eliminating the program. We provide the following inputs to the model.

Input Data:

1. State transfers to low income households are reduced by $60 million. (This reflects estimates of the state annual expenditures on the CCDF program in Fiscal 2006.)

2. Federal transfers to state government are reduced by $36 million. (This reflects the 60% matching funds that would be lost if the program is eliminated.)

3. Household demand for early care and education services are reduced by $42 million, divided equally across the three lowest household income brackets. (This reduction in the demand for early care and education reflects both those who withdraw from the labor market and remove their children from licensed early care and those who remain in the labor force but make alternative arrangements for early care.)

4. Household supply of labor is reduced. The reduction in labor force participation (estimated at 3,300 in chapter 4), both part time and full time is taken to be equal to a reduction of 2400 full time equivalents. Further, because the average wage of these workers ($8.50 per hour) is approximately half the average wage rate in Nebraska we make a further adjustment. We assume the economic impact is equivalent to a reduction in 1200 full time workers making the average Nebraska wage.

Results:

The impacts of losing the CCDF program, as modeled by making the above assumptions, are given in Table 5.1. We provide 3 sets of results based on 3 different experiments. Each experiment reflects differing assumptions concerning the labor supply specifications and the population migration equations. As is evident in Table 5.1, results are fairly robust (unchanging) to these differing assumptions

Experiment 1 assumes no other labor supply response and no migration response.

Experiment 2 assumes a labor supply response but no migration response.

Experiment 3 assumes both a domestic labor supply response and a migration response.

The benefit to the state government of elimination of the CCDF program would be limited to an increase in their budget of between $6 and $8 million. Eliminating the CCDF program would not save the state the program's $24.1 million allocation, rather it would save between $6 and $8 million. This is because the state would lose revenues from the income, property and sales taxes.

In terms of the economy, the cost to the state is a reduction in gross state product of between $30 and $40 million. The cost to households is a loss in state disposable income of between $60 and $70 million. The largest losers are the lowest three income brackets (those earning less than 25K) while some gains accrue to households in higher income brackets. There are also consequences for the mix of employment across sectors. The hardest hit is the health, education and welfare sector which contains the child care sectors. The retail, finance and service sectors also suffer significant employment losses.

This analysis does not take into account what the state government might do with the extra revenue obtained. Strategic tax cuts or strategic expenditures may counter, to some extent, the losses that elimination of this program imposes on the state economy. However, general reductions in state taxes or increases in state spending would do little to reverse the large reduction in state employment and output.

Table 5.1: Lost Economic Activity and State Revenue without CCDF

Economic/Fiscal Measure	Experiment 1	Experiment 2	Experiment 3
Gross Revenue (millions)	-$16.7 M	-$15.5 M	-$18.1 M
Net Revenue (including $24.1 million savings)	$7.4 M	$8.6 M	$6.0 M
Gross State Product (millions)	-$37.3 M	-$29.5 M	-$43.2 M
Employment (FTE)	-1,200	-1,000	-1,400
Household Income All Households (millions)	-$68.8 M	-$60.1 M	-$72.9 M
Group 1: < $10k	-$25.0 M	-$24.9 M	-$32.1M
Group 2: $10 - 15k	-$28.3 M	-$28.1 M	-$36.1M
Group 3: $15 - 25k	-$25.7M	-$25.2 M	-$31.7M
Group 4: $25 - 35k	$3.4 M	$4.1 M	$5.9 M
Group 5: $35 - 50k	$3.5 M	$4.7 M	$6.6 M
Group 6: $50 - 75k	$3.7 M	$6.0 M	$8.0 M
Group 7: $75 - 100k	$3.1 M	$4.5 M	$6.2 M
Group 8: $100 - 150k	$2.7 M	$3.9 M	$5.4 M
Group 9: $150k +	$2.3 M	$3.1 M	$4.3 M

Source: Authors' calculations using Business Research and Analysis in Nebraska (BRAIN) model.

B. The Federal Child and Dependent Care Tax Credit Program

Using the BRAIN model, we also test the economic and fiscal consequences of the FCDCTC program by considering the full economic implications of eliminating the program. We provide the following inputs to the model:

Input Data:

1. Federal taxes on middle income households are increased by $20 million. (This reflects estimates of the total tax credits taken by Nebraska in tax year 2002.)

2. Middle income household demand for child care services are reduced by $14 million, allocated across middle income households. (This reduction in the demand for child care reflects both those who withdraw from the labor market and remove their children from licensed child care and those who remain in the labor force but make alternative arrangements for child care.)

3. Middle income labor force participation is reduced. The reduction in labor force participation, both part time and full time is taken to be equal to a reduction of 1,400 full time equivalents. Further, because these are middle income households we assume that their earnings are equal to the average wage of all Nebraska workers.

Results:

The impacts of the elimination of the FCDCTC program, as modeled by making the above assumptions, are given in Table 5.2. We again provide 3 sets of results based on 3 different experiments. Each experiment reflects differing assumptions concerning the labor supply specifications and the population migration equations. As is evident in Table 5.2, results are fairly robust (unchanging) to these differing assumptions.

Experiment 1 assumes no other labor supply response and no migration response.

Experiment 2 assumes a labor supply response but no migration response.

Experiment 3 assumes both a domestic labor supply response and a migration response.

The cost to the State government from the federal government eliminating the FCDCTC program would be a reduction in their budget balance of between $6.5 and $8 million. This loss reflects reductions in state revenues from income, property and sales taxes.

In terms of the economy, the cost to the state is a reduction in Gross State Product of between $50 and $60 million. The cost to households is a loss in state disposable income of between $34 and $46 million. The largest losers are the middle income households. There are also consequences for the mix of employment across sectors. The hardest hit is the health, education and welfare sector which contains the child care sectors. The retail, finance, business service and service sectors also suffer significant employment losses.

This analysis does not take into account what the federal government might do with the extra revenue obtained, nor does it account for losses in federal government revenue elsewhere as a result of the decline in activity.

C. Summary

Our analysis indicates that the cost to the State of Nebraska for the Child Care and Development Fund is roughly one-third as large as the program's $24.1 million annual state allocation. This is because the program raises the level of labor force participation and attracts federal matching funds to the state, which generates roughly $16 to $18 million in state revenues from income, property and sales taxes. We also examined the revenues that would be lost to the state of Nebraska if the Federal Child and Dependent Care Tax Credit Program were eliminated by the federal government. This program also encourages increased labor force participation among Nebraska residents. This increased participation generates an addition $6.5 to $8 million in state revenues from income, property, and sales taxes.

Table 5.2: Lost Economic Activity and State Revenue without FCDCTC

Economic/Fiscal Measure	Experiment 1	Experiment 2	Experiment 3
Net Revenue (millions)	-$ 8.1 M	-$6.5 M	-$7.8 M
Gross State Product (millions)	-$ 59.7 M	-$49.0 M	-$58.6 M
Employment (FTE)	-1,400	-1,150	-1,400
Household Income All Households (millions)	-$ 46.0 M	-$34.2 M	-$46.0 M
Group 1: < $10k	-$ 0.3 M	-$0.2 M	-$0.3 M
Group 2: $10 - 15k	-$ 0.6 M	-$0.4 M	-$0.6M
Group 3: $15 - 25k	-$ 2.3M	-$1.7 M	-$2.3 M
Group 4: $25 - 35k	-$ 3.9 M	-$2.8 M	-$4.0 M
Group 5: $35 - 50k	-$ 7.9 M	-$6.1 M	-$8.3 M
Group 6: $50 - 75k	-$ 14.9 M	-$11.7 M	-$15.9 M
Group 7: $75 - 100k	-$ 6.7 M	-$4.8 M	-$6.3 M
Group 8: $100 - 150k	-$ 5.6 M	-$3.9 M	-$5.1 M
Group 9: $150k +	-$ 2.5 M	-$1.3 M	-$1.8 M

Source: Authors' calculations using Business Research and Analysis in Nebraska (BRAIN) model.

6 Conclusions

The early care and education industry is a large and vibrant industry that provides services to approximately 100,000 Nebraska children, employs over 12,000 Nebraska workers (including the self-employed), and generates hundreds of millions of dollars of revenue. The industry also is present in nearly every county in the state. The industry is not only large, it also has a substantial impact on the current economy of Nebraska.

The first component of this impact derives from the money that the industry "attracts" to the state. The economic impact of the federal funds that the industry receives is $241 million. This figure includes nearly $87 million in annual earnings by approximately 6,100 workers. There is no current economic impact from parent tuition payments to the early care and education industry as this money presumably would have been spent at other Nebraska businesses if not spent on services of the early care and education industry.

The second component of the early care and education industry on the current economy is in the industry's role as an "infrastructure" industry that makes resources available to other parts of the economy. In particular, the early care and education industry allows many additional Nebraska parents to participate in the labor force. This generates a substantial resource for other sectors of the economy, and raises the percentage of Nebraska adults who work (not just the number). This, in turn, helps raises the standard of living as measured by per capita income.

It is difficult to estimate precisely the labor market effects of the early care and education industry. In particular, it is difficult to know the precise percentage of Nebraska parents who would need to exit the labor force if early care and education providers were not present in the state. Estimates are possible for specific cases, however, when existing economic research studies have carefully identified the relationship between particular programs and labor market participation. Using such studies, we first estimated the number of lower income single mothers who are able to work due to the child care subsidies available to them through the Child Care and Development Fund (CCDF). We estimated that an additional 2,500 single mothers are able to hold either part-time or full-time jobs in Nebraska. Second, we estimated that an additional 1,400 mostly middle income married women were able to hold full-time

Early care and education in Nebraska is an "infrastructure" industry that is present in nearly every county in the state, supporting thousands of jobs and generating hundreds of millions of dollars of revenue.

jobs in Nebraska due to the Federal Child and Dependent Care Tax Credit program (FCDCTC). There are likely others who are able to work because of the programs; for example, married parents who receive subsidies from CCDF, or single parents who received the FCDCTC tax credit. However, there was not economic research available to estimate these effects. The key point is that these two programs allow many persons to joint the Nebraska workforce, including many lower income and middle class residents.

In addition to these government programs, the private sector sometimes acts to lower the cost of early care and education for Nebraska families. In particular, organizations such as hospitals, community groups, or religious institutions which set up non-profit early care and education centers often make in-kind donations to these organizations. Research indicates that non-profit early care and education providers were able to use these donations to lower the cost of early care services to parents or to increase the quality of care. Lower costs or greater quality care at non-profit early care and education providers also would draw additional workers into the Nebraska labor force, though research is not available to estimate the magnitude of this effect.

One implication of these labor market effects is that early care and education programs generate new income, sales tax, and other revenue for the state of Nebraska, by raising the share of Nebraska adults that participate in the workforce. We examined this issue using the example of the Child Care and Development Fund, which helps lower income parents pay for early care. Using an economic model that considers the interactions and adjustments within the economy, we estimated that due to the labor force impact (2,500 workers) and the federal match for the state CCDF program, the State of Nebraska receives an additional $16 to $18 million in tax revenue. This additional revenue is equivalent to two-thirds to three-quarters of the $24.1 million annual allocation by the State of Nebraska to the CCDF. This is two-thirds of the revenue that the state provides to the program. Said another way, the cost to the people of Nebraska to 1) help low income parents obtain early care and education for their children, and 2) allow low income parents to build their skills and earnings capacity through work are one-third as large as the state outlay for the CCDF program.

The implications of the report, however, are broader than simply the merits and costs of Child Care and Development Fund, or other programs that receive the support of government. The broader implication is that the early care and education industry is a significant infrastructure industry for the Nebraska economy. It should remain an important focus for monitoring and input, not just by government but also by volunteer organizations, foundations, and private business. All have a contribution to make, as we demonstrated in our analysis of what non-profit early care and education centers contribute to the industry and the broader economy.

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Appendices

Appendix 1: County Industry Statistics

Table 2.1B: Number of Early Care and Education Sites in Nebraska by County 2006

	Licensed Child Care[1]	Unlicensed/ Exempt Child Care[2,3]	Head Start[4,5]
Nebraska Total	**4080**	**3512**	**139**
Adams	75	62	1
Antelope	13	28	1
Arthur	0	0	0
Banner	0	0	0
Blaine	1	0	0
Boone	19	14	1
Box Butte	30	25	1
Boyd	4	0	0
Brown	12	4	1
Buffalo	131	106	3
Burt	16	30	1
Butler	25	14	0
Cass	50	58	3
Cedar	17	26	1
Chase	10	6	0
Cherry	18	12	1
Cheyenne	21	26	1
Clay	13	24	1
Colfax	22	19	1
Cuming	29	27	2
Custer	27	47	1
Dakota	44	61	2
Dawes	27	13	1
Dawson	66	59	2

	Licensed Child Care[1]	Unlicensed/ Exempt Child Care[2,3]	Head Start[4,5]
Deuel	3	0	0
Dixon	7	27	1
Dodge	69	83	1
Douglas	988	797	23
Dundy	5	0	0
Fillmore	16	16	1
Franklin	6	0	1
Frontier	6	10	0
Furnas	19	9	0
Gage	65	47	2
Garden	4	0	1
Garfield	7	0	1
Gosper	6	4	0
Grant	1	0	0
Greely	6	6	1
Hall	155	169	4
Hamilton	16	0	1
Harlan	6	0	0
Hayes	2	0	0
Hitchcock	6	6	0
Holt	42	29	2
Hooker	3	0	0
Howard	12	18	1
Jefferson	21	15	3
Johnson	15	0	0

Table 2.1B: ***Continued***

	Licensed Child Care[1]	Unlicensed/ Exempt Child Care[2,2]	Head Start[4,5]
Kearney	18	12	1
Keith	20	15	1
Keya Paha	1	0	0
Kimball	8	0	1
Knox	27	17	2
Lancaster	667	498	21
Lincoln	72	100	1
Logan	1	0	0
Loup	0	0	0
Madison	108	92	2
McPherson	0	0	0
Merrick	11	34	1
Morrill	10	16	1
Nance	17	2	1
Nemaha	24	4	1
Nuckolls	18	0	2
Otoe	45	13	2
Pawnee	5	0	1
Perkins	7	8	0
Phelps	33	25	1
Pierce	21	32	1
Platte	78	91	1

	Licensed Child Care[1]	Unlicensed/ Exempt Child Care[2,2]	Head Start[4,5]
Polk	13	16	0
Red Willow	34	16	1
Richardson	21	21	2
Rock	3	0	0
Saline	35	28	2
Sarpy	281	324	3
Saunders	46	62	2
Scotts Bluff	77	69	6
Seward	33	50	1
Sheridan	14	26	2
Sherman	7	0	1
Sioux	0	0	0
Stanton	18	13	1
Thayer	16	16	1
Thomas	1	0	0
Thurston	13	0	3
Valley	13	9	1
Washington	35	54	1
Wayne	33	16	1
Webster	5	0	1
Wheeler	1	0	0
York	34	43	1

[1] Nebraska Health and Human Services *Early Childhood Count by County* May 5, 2006. Note that Child Care equals the sum of Total Child Care Centers, Family Child Care Home I, Family Child Care Home II, Provisional Family Child Care Home I, Provisional Family Child Care Home II, Preschool, and Provisional Preschool.

[2] Nebraska Health and Human Services Early Childhood Count by County May 5, 2006, US Census Bureau Nonemployer Statistics 2003 http://www.census.gov/epcd/nonemployer/ , & US Census Bureau County Business Patterns 2004 http://www.census.gov/epcd/cbp/view/cbpview.html.

[3] Unlicensed / Exempt Child Care providers calculated by adding the number of establishments in the Nonemployer Statistics 2003 and Country Business Patterns 2004. This number was then subtracted from the number of child care establishments in NHHS Early Childhood Count by County.

[4] Nebraska Head Start, Nebraska Head Start Programs December 3, 2006. http://www.nde.state.ne.us/ECH/HeadStart/nestats.html.

[5] Home based Head Starts are not included.

Table 2.2B: Estimated Number of Children Enrolled in Early Care and Education and Industry Revenue in Nebraska by County, 2006

	Licensed Child Care [1]	Head Start*[2]	Estimated Revenue [3]
Nebraska Total	**99,500**	**5,112**	**$600,103,974**
Adams	1,544	162	$7,267,000
Antelope	158	17	$797,680
Arthur	0	0	$0
Banner	0	0	$0
Blaine	10	0	$88,920
Boone	194	18	$1,020,760
Box Butte	403	10	$2,402,192
Boyd	44	0	$203,632
Brown	114	27	$650,831
Buffalo	2,808	116	$14,002,560
Burt	166	17	$829,191
Butler	313	17	$1,677,208
Cass	977	140	$4,986,696
Cedar	205	17	$1,089,088
Chase	154	10	$651,248
Cherry	179	10	$1,006,408
Cheyenne	795	40	$4,224,167
Clay	222	36	$1,212,432
Colfax	274	67	$1,429,376
Cuming	339	36	$1,715,896
Custer	322	29	$1,894,671
Dakota	744	132	$4,615,520
Dawes	389	10	$1,932,423
Dawson	1,140	61	$6,529,744
Deuel	46	15	$228,228
Dixon	107	4	$529,880
Dodge	1,575	125	$7,872,800
Douglas	33,857	1,088	$230,781,460
Dundy	94	10	$256,880
Fillmore	214	17	$1,375,504
Franklin	70	32	$408,511
Frontier	69	10	$394,783
Furnas	210	20	$1,223,872

	Licensed Child Care [1]	Head Start*[2]	Estimated Revenue [3]
Gage	1,034	71	$5,232,344
Garden	96	7	$503,568
Garfield	68	28	$443,871
Gosper	54	10	$316,680
Grant	0	0	$0
Greely	72	26	$341,328
Hall	2,825	185	$13,880,620
Hamilton	152	18	$836,680
Harlan	97	10	$536,120
Hayes	20	0	$89,440
Hitchcock	56	10	$299,520
Holt	528	47	$2,587,728
Hooker	19	0	$135,980
Howard	19	33	$810,056
Jefferson	306	17	$1,653,080
Johnson	201	0	$1,091,376
Kearney	219	17	$1,240,928
Keith	287	17	$1,450,696
Keya Paha	12	0	$53,040
Kimball	122	20	$593,631
Knox	328	52	$1,821,872
Lancaster	16,747	600	$109,017,740
Lincoln	1,665	70	$8,711,040
Logan	12	0	$53,040
Loup	0	0	$0
Madison	1,821	98	$8,972,600
McPherson	0	0	$0
Merrick	159	16	$951,704
Morrill	101	20	$585,000
Nance	144	17	$907, 296
Nemaha	279	32	$1,613,040
Nuckolls	219	35	$1,133,703
Otoe	625	55	$3,084,120
Pawnee	61	17	$358,903

Table 2.2B: ***Continued***

	Licensed Child Care [1]	Head Start*[2]	Estimated Revenue [3]
Perkins	84	10	$461,240
Phelps	435	17	$2,486,847
Pierce	230	4	$1,112,800
Platte	1,399	183	$7,134,920
Polk	180	0	$630,656
Red Willow	579	18	$3,168,984
Richardson	295	52	$1,490,944
Rock	20	0	$150,592
Saline	637	32	$3,250,520
Sarpy	8,266	180	$55,115,840
Saunders	642	44	$3,545,412
Scotts Bluff	1,724	334	$8,696,740
Seward	508	17	$2,736,032

	Licensed Child Care [1]	Head Start*[2]	Estimated Revenue [3]
Sheridan	142	10	$796,640
Sherman	70	27	$382,928
Sioux	0	0	$0
Stanton	186	17	$910,520
Thayer	242	17	$1,306,968
Thomas	0	0	$0
Thurston	330	208	$1,932,320
Valley	153	29	$822,431
Washington	616	18	$3,422,640
Wayne	372	17	$1,998,152
Webster	48	37	$294,528
Wheeler	10	0	$44,720
York	525	47	$2,989,168

[1] Nebraska Health and Human Services Early Childhood Capacity Count by County May 5, 2006

[2] Nebraska Head Start Nebraska Head Start Programs April 16, 2006 http://www.nde.state.ne.us/ECH/HeadStart/nestats.html.

[3] Revenue estimated by multiplying enrolled children by daily rate information (gathered by the Department of Health and Human Services Annual Rate Survey) and by 260 days per year.

Table 2.3B: Number of Early Care and Education Workers in Nebraska by County 2004

	Licensed and Unlicensed / Exempt Child Care
Nebraska Total	**11,916**
Adams	215
Antelope	43
Arthur	0
Banner	0
Blaine	0
Boone	35
Box Butte	55
Boyd	2
Brown	20
Buffalo	276
Burt	46
Butler	45
Cass	146
Cedar	58
Chase	17
Cherry	31
Cheyenne	62
Clay	77
Colfax	55
Cuming	57
Custer	81
Dakota	153
Dawes	46
Dawson	156
Deuel	0
Dixon	50
Dodge	215
Douglas	3,471
Dundy	2
Fillmore	34
Franklin	31
Frontier	17
Furnas	35

	Licensed and Unlicensed / Exempt Child Care
Gage	185
Garden	0
Garfield	2
Gosper	10
Grant	0
Greely	13
Hall	394
Hamilton	2
Harlan	0
Hayes	0
Hitchcock	14
Holt	108
Hooker	0
Howard	34
Jefferson	53
Johnson	0
Kearney	42
Keith	52
Keya Paha	2
Kimball	4
Knox	52
Lancaster	1,888
Lincoln	254
Logan	0
Loup	0
Madison	273
McPherson	0
Merrick	58
Morrill	32
Nance	20
Nemaha	42
Nuckolls	42
Otoe	86
Pawnee	22

	Licensed and Unlicensed / Exempt Child Care
Perkins	15
Phelps	58
Pierce	54
Platte	254
Polk	29
Red Willow	51
Richardson	55
Rock	2
Saline	145
Sarpy	1,055
Saunders	130
Scotts Bluff	231
Seward	100
Sheridan	42
Sherman	78
Sioux	0
Stanton	31
Thayer	36
Thomas	0
Thurston	9
Valley	17
Washington	101
Wayne	48
Webster	69
Wheeler	0
York	91

[1] US Census Bureau *Nonemployer Statistics 2003* http://www.census.gov/epcd/nonemployer/ & US Census Bureau County *Business Patterns 2004* http://www.census.gov/epcd/cbp/view/cbpview.html. The industry is NAICS code 6244.

Appendix 2: Review of Empirical Research on the Early Care and Education Industry's Effect on Labor Supply[29]

Empirical studies in economics employ two types of methodologies to quantify the importance of child care costs on mothers' demand for child care and labor supply decisions. The first type of study estimates labor supply elasticities with respect to the price of child care using a fully-specified structural model and the second type estimates the average employment effect from receiving a specific child care subsidy. Each type of study provides potentially useful, but different, information to policymakers.

Examples using structural methodologies include Anderson and Levine (2000), Ribar (1995), and Connelly and Kimmel (2003).[30] These studies model mothers' child care and labor supply decisions jointly, often disaggregating child care by different modes, such as parental care, center care, non-relative care and relative care. Estimation of these structural models is difficult because many mothers in the sample are not using child care and/or are not working and thus researchers must predict prices and wages to estimate their marginal effects on employment and child care choices. The complicated statistical structures of these studies has resulted in wide ranges of estimated child care price effects, even for studies based on the same data.

Generally, the studies have found that, when looking at all women with young children, the employment response to a change in child care price has been relatively small. However, this may be due in part to the fact that single and married mothers have different responses to price changes because single mothers' resources for child care differ from those of married women. Also, it has been found that the employment effect for part-time workers is smaller than for full-time workers. A recent study by Connelly and Kimmel (2003) finds that part-time employment rate of married mothers increases by .016 for every one dollar fall in hourly child care rates while the full-time employment rate of single mothers increases by .452 for the same one-dollar fall in the price of child care.

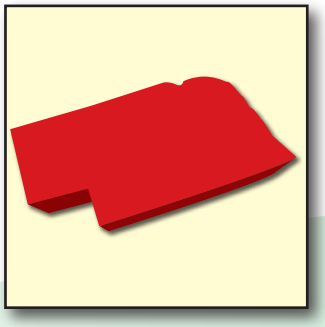
The second type of study estimates the effect of a specific child care subsidy, such as the CCDF subsidy or the dependent care tax credit, on the child care and employment choices of those receiving the subsidy (the treatment group) relative to those not receiving the subsidy (the control group). To interpret any employment difference as the result of the government program, one must account for factors that influence both program participation and mothers' employment choices. Apart from accounting for this potential sample selection problem, the statistical methods used to estimate the employment effect of a specific subsidy program are simpler than those used in structural estimation of the marginal effects of child care prices. The treatment effect of the child care subsidy measures the average difference in child-care use and employment rates between those receiving the subsidy and those not receiving it, for mothers with otherwise identical relevant characteristics.

One example of an empirical studies that estimates the effect of child care subsidies on mothers' employment include Berger and Black (1992), who find a 12%

[29] Appendix prepared by Dr. Mary McGarvey.

[30] For an excellent review of U.S. child-care incentive programs and empirical studies, see Blau (2003).

employment effect from two Kentucky child care subsidy programs. Other studies include Baker, Gruber and Milligan (2005) and Lefebvre and Merrigan (2005), who find mothers with preschool children increased their full time employment rate by 7 to 13 percentage points from a $5/day universal child care program in Canada.

In summary, the majority of studies estimate the marginal effect of a change in the price of child care for all mothers on the mothers' child care and employment decisions. These studies find that a fall in child care prices leads to an increase in child care use and a smaller increase in mothers' employment rates. The magnitude of the estimated employment effect, however, depends on the mother's marital status, full-time versus part-time employment status and the specific statistical model. Results from these studies are useful in predicting employment effects due to a uniform change in the price of child care that applies to all mothers.

The second type of empirical study analyzes the employment effects of targeted child care subsidies. Results from this type of study are useful to predict the employment effects due to specific government programs, such as Child Care and Development Fund (CCDF) and the Federal Child and Dependent Care Tax Credit (FCDCTC). This report used the results of two such studies to estimate the partial employment impact of eliminating CCDF child care subsides in Nebraska and of eliminating the FCDCTC tax credit for Nebraskan working parents.