

Comparing Child Care Multipliers in the Regional Economy: Analysis from 50 States



by Zhilin Liu, Rosaria Ribeiro and Mildred Warner

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CORNELL COOPERATIVE EXTENSION
DEPT. OF CITY AND REGIONAL PLANNING
W. SIBLEY HALL CORNELL UNIVERSITY ITHACA, NY 14853-6701
EMAIL: childcare_econ@cornell.edu
WEBSITE: <http://economicdevelopment.cce.cornell.edu>

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All are available at the Cornell website <http://economicdevelopment.cce.cornell.edu>

Overview of this Report

In the past few years many states and localities have conducted input-output analyses to determine the linkage effects of the child care industry. In this report we construct input-output models for each of the 50 states and the District of Columbia. First we describe the input-output modeling structure of IMPLAN (Chapter 2). Then the multipliers for child care are presented and compared across states and across sectors in each state economy (Chapter 3). We find that child care output multipliers are quite high (93rd percentile across all sectors), indicating that child care has high backward (purchase) linkages in the regional economy. Employment multipliers are not as high, indicating that child care is a labor intensive industry that tends to purchase from industries that are less labor intensive. However, even in employment, child care multipliers compare favorably to other social infrastructure sectors (schools, colleges, hospitals and transportation) and to other labor intensive economic sectors such as retail, hotels and eating and drinking places. These results are consistent across states.

To better understand how IMPLAN treats the child care sector we look inside the IMPLAN model itself (Chapter 4). We look at the production functions for the child care sector and unpack how IMPLAN treats expenditures and value added (labor, proprietor income, etc). Then we look at the sales functions for child care and how IMPLAN treats households, government and exports. We find that total child care sector expenditures (Gross Absorption Coefficient) and the proportion of local purchases by child care in the Services sector are the key sources of differences in child care multipliers across states.

Lastly we bring in demographic, economic structure and child care policy variables to see how they relate to differences in child care multipliers across states (Chapter 5). Correlation analysis shows that states with smaller economies, more poverty and weaker child care policy tend to have lower child care multipliers. When we bring this into a multivariate analysis with key IMPLAN structural variables, we find that the structural variables explain most of the cross state differences.

The Appendices include detailed tables comparing multipliers of child care with other key sectors in each state, as well as providing detail on how IMPLAN structures the child care sector in each state model.

We believe child care practitioners may find the comparative state and sectoral data in Chapter 3 and the Appendices most useful, whereas economists may find the detail on the structure of IMPLAN in Chapter 4 to be of greatest interest.

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Chapter 1

Economic Importance of Child Care in the Regional Economy

Economists and planners are recognizing the important contributions the early care and education sector makes to the economy in both the short and long terms. Across the country, states and localities are using regional economic analysis to estimate the size of the early care and education sector and its linkages to the broader regional economy.¹ This report analyzes the regional linkage effect of child care in all fifty states and the District of Columbia.

Economic development policy often is influenced by estimates of the multiplier, or backward linkage, that expenditures in one sector will have on the broader regional economy. Such estimates are derived from input-output models which develop a matrix of all sectors in the economy and the inter-industry linkages between them. Calculating the regional economic linkage of the child care sector is the primary focus of this report. We map how these linkage effects differ across states and across sectors in the state level regional economy. We also show how the IMPLAN input-output model is structured and what impact this has on the child care results.

One reason policy makers are interested in the short-term regional economic effects is that traditional economic development policy is based largely on short-term goals. Linkage or multiplier effects help economic developers determine which economic sectors will have the greatest impact on the regional economy given an increase in final demand.

¹ A complete data base of these studies is provided on the Cornell website (<http://economicdevelopment.cce.cornell.edu>).



The economic importance of early care and education is not limited to its regional importance, though that is the focus of this report. The Cornell Linking Economic Development and Child Care project conceives of the economic importance of child care as having three components: its effect on places (the regional economy), its effect on parents (social infrastructure

supporting workers and their employers), and its effect on children (investing in human development and education for the future workforce). These three effects are illustrated in the trillium flower above. The educational impact on children has been the primary focus of most child care policy. This is probably the most important effect of the child care industry in the long term, by helping children prepare for school and lead healthier, more productive lives. Long-term studies have found high societal returns from investments in early education (Rolnick and Grunewald, 2003; Masse and Barnett, 2003). The impact on parents is also important as child care helps free parents to work, creating an enhanced labor pool for local employers (Kimmel and Hoffman 2002).

This report focuses on the regional effect, particularly the backward economic linkages measured by multipliers. Multipliers measure the extent to which purchases of goods and services in one sector stimulate activity in other sectors of the regional economy. The child care industry is comprised of many small businesses that contribute directly to growth in jobs and income, and stimulate broader linkage effects in the regional economy. Most U.S. parents

seek care and education for their young children through a private system composed of non-profit, for-profit, and family providers. While typically not viewed as such, these providers are small businesses that form an integral part of the regional economy. Input-output analysis allows us to describe the degree of backward linkage (multipliers) of the child care sector, as well as to examine the effects of a change in demand for child care on an entire economy (impact analysis). For example, policy makers might want to know if expenditures on the child care sector are likely to produce more or less regional economic linkage than expenditures in other sectors such as hotels and lodging, retail or job-training programs, education, water and sewer or transportation (See Warner and Liu 2004 for more discussion).

This report on multipliers is a complement to the *Cornell Methodology Guide* (Ribeiro and Warner 2004) which was designed to help study teams answer basic questions about how to conduct a regional economic analysis of the child care sector. A third report in the series, *Economic Development Strategies to Promote Quality Child Care* (Warner et al 2005), completes the set by showing how economic development policies can be applied to strengthen the performance of the child care sector.

STRUCTURE OF THE REPORT

In this report we describe input-output modeling in more technical detail and provide comparisons of multiplier results for child care across states and across sectors. We describe our methods and the data on which the input-output models are based in Chapter 2. We compare child care multipliers to those of other social and physical infrastructure sectors and to other economic sectors more typically considered as targets of economic development policy in Chapter 3. We find child care output multipliers tend to be higher than many of these other sectors, while employment multipliers tend to be similar or lower. In Chapter 4 we

unpack the IMPLAN model and look at the construction of the production function for child care. We look at the proportion of child care sector purchases from labor and the sales function for the sector. These results help explain the source of differences in multiplier results across states. In Chapter 5 we present correlation and regression analysis which shows how these state differences relate to differences in child care policy, economic and demographic characteristics across states.

This report is intended as a technical report for researchers using IMPLAN who want to understand better how the model works with respect to child care. It also may be useful to state teams doing models to describe regional economic linkage of child care. The Appendix Tables provide comparisons of multipliers by state for 10 aggregated sectors and some specific sectors that are frequently used for comparison to child care. All results are based on IMPLAN data from 2000.

Chapter 2

Methodology and Data

In this study, we construct input-output (I/O) models for the 50 states and the District of Columbia using the IMPLAN modeling system for the regional economy. This chapter starts with a brief overview on how input-output analysis models the regional economy. This is followed by a discussion of the challenges in applying I/O models for economic linkage analysis in service sectors such as child care. We then introduce the IMPLAN modeling system and discuss how the IMPLAN I/O database is structured, and how the industry sectoring scheme (on which IMPLAN models are based) is defined. The last section of this chapter explains our approach to the analysis of child care using IMPLAN I/O analysis.

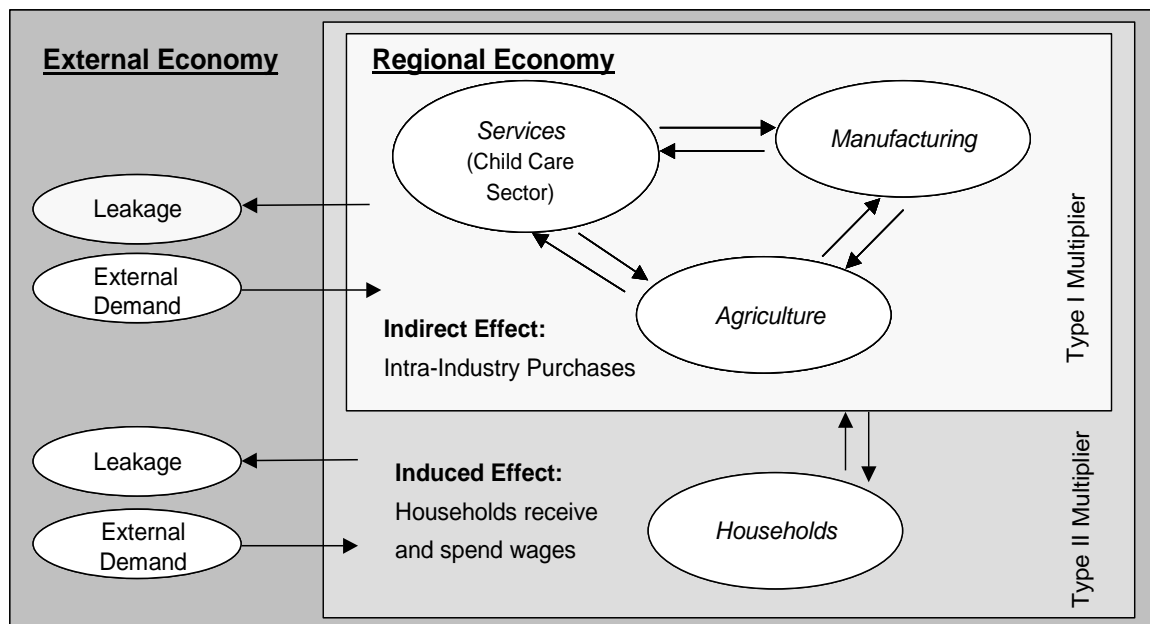
INPUT-OUTPUT ANALYSIS

Child care contributes to the regional economy not only through its direct employment and output, as demonstrated by studies measuring the size of the sector (estimated at 119,000 workers and \$4.7 billion in gross receipts in New York State for example (Warner et al 2004a)), but also through its purchases of goods and services that stimulate economic activity in other industries. In this analysis we use input-output models to determine multipliers for child care in order to measure the backward linkages (purchases) of child care within the state economy.

Input-output analysis provides a model for examining relationships within an economy, between businesses and between businesses and final consumers (IMPLAN Manual, p.95). Figure 2.1 is a simple input-output model of the regional economy. I/O analysis is based on the assumption that final demand (or the ability of local industries to sell to external demanders) is the engine that generates activity in the regional economy. Changes in final demand

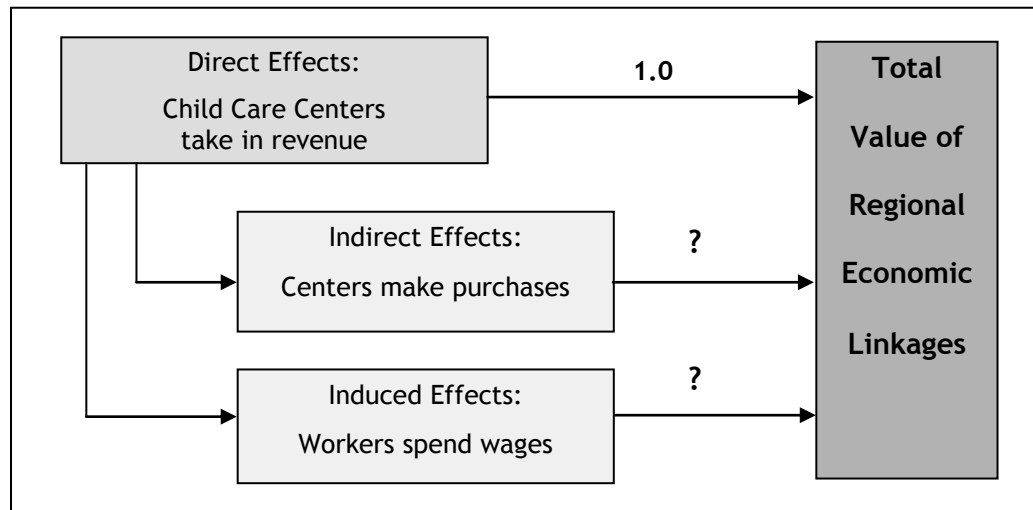
[including consumption (when households are treated as exogenous to the local economy), investment, government, and exports], infuse local industries with new funds, which increase output and employment. They also stimulate the multiple rounds of inter-industry spending captured by multipliers, leading to growth in the overall economy.

Figure 2.1. A simple model of the regional economy



Multipliers generated from input-output models measure the relative strength of backward linkages (the chain of input purchases) in the regional economy. There are two types of linkage effects that multipliers capture. *Indirect effects* count the multiple rounds of inter-industry purchases spurred by child care industry spending. For example, child care businesses purchase food and supplies from other industries, in turn stimulating production output in those industries. *Induced effects* capture the linkage effects of household spending when households are treated endogenously. Child care employees spend their wages in the larger economy and these expenditures generate demand in other industry sectors (housing, groceries, etc.).

Figure 2.2. Model of child care’s linkage effects



Type I multipliers typically are used for changes in internal (regional or household) demand. Type I multipliers treat households as exogenous and include only the direct effects of purchases by the child care sector plus the indirect effects of industry purchases (see Figure 2.1). Type II multipliers include the direct, indirect, and induced effects and are used to calculate the impact of a change in other sources of exogenous demand for child care. Federal funding is external investment that supplements household demand for child care. Because this spending can be treated as new exogenous demand to the regional economy, the Type II multiplier, which includes both the indirect effect of industry purchases *and* the induced effect of household and worker expenditures, can be used to calculate the multiplier effects.² We present both Type 1 and Type 2 multipliers in this report.

² Type SAM (households endogenous) multipliers present another alternative to Type II multipliers. The IMPLAN PRO software now uses the SAM default (which better accounts for savings, taxes and disposable income) to calculate the Type II multiplier. Because SAM multipliers account for transfers of savings, taxes and disposable income in and out of the region, in relation to commuting patterns, Type SAM multipliers are slightly lower than Type II but the relative rankings across sectors are the same. See Appendix VI for these comparisons.

Multipliers, or “linkage effects,” can be calculated for output, employment, labor income and value-added; however output and employment multipliers are the most common and most easily understood. Our analysis will focus on these two kinds of multipliers. An *output multiplier* for the child care industry estimates the total sales that would be generated in the entire economy by each dollar of increased direct spending for child care services. The *employment multiplier* is an estimate of the gross number of jobs that would be created throughout the regional economy from an increase in demand for child care services large enough to stimulate the addition of one new job in the child care industry.

Input-output analysis allows us first to describe the linkages of different sectors in the regional economy. Secondly, it allows us to assess the impact of changes in exogenous demand. Methodological challenges in applying input-output linkage analysis to service sectors such as child care stem from the second, impact-oriented approach. We use the input-output analysis to describe the nature of linkage of the child care sector compared to other sectors in the regional economy.

Regional economic models typically focus on purchases – backward linkages in the regional economy – and that is the focus of this report. We find child care compares favorably with retail and tourism and with other social infrastructure sectors: hospitals, job training, elementary and secondary school and colleges and universities. This reflects the labor intensive nature of these sectors and similar production relationships to other sectors in the regional economy (Warner and Liu 2004). While some of these sectors are targets for economic development policy, child care typically is not.

Whereas input-output models conform to an export-based theory of economic growth, the demand for child care is primarily local - from households. The role of household

consumption, though, is still important in its own right. Economists increasingly recognize the importance of local consumer services for economic development (Williams 1997). Input-output modeling provides a useful means to describe the nature of household linkages in the regional economy. One source of exogenous demand in a state's economy is federal funding for child care which has increased dramatically under welfare reform. Using input-output models to analyze changes in federal funding is similar to using them for export-based demand.

There is a limit to how well input-output purchase multipliers can describe the linkages of service sector industries whose regional economic importance may stem more from their forward linkages (sales - enabling other industries to produce) (Ribeiro and Warner 2004). With the growth in service sector employment (which now comprises 80 percent of all employment nationally), more attention is being focused on how to measure the regional economic importance of services. For child care these forward linkages are very important. The sector contributes to economic development by forming part of the social infrastructure that enables the economy to function. Just as roads, airports, and bridges enable people to get to work and businesses to get their supplies, child care enables parents to work. Work by the Cornell team is addressing the forward linkages using the hypothetical extraction approach (Pratt and Kay 2004), but that work is still experimental and not yet part of practical economic policy discourse.

IMPLAN MODELING PROGRAM: DATA AND STRUCTURE

We use IMPLAN software to study the economic linkage of child care in each state economy. Originally developed by the USDA Forest Service to assist land and resource management planning, IMPLAN is the most commonly used program for the regional

economic analysis of the child care sector. IMPLAN software allows the user to build regional economic models for balanced economic/social accounts, generate multipliers for each industry, and conduct impact analysis to estimate economic changes in a state or region (IMPLAN Manual: p.ii). Users can generate a variety of reports including study area reports, social accounts reports, industry by industry reports, multiplier reports, and impact reports.

Analysis using IMPLAN starts with constructing regional I/O models. These models are based on data provided and regularly updated by IMPLAN. Raw data used by IMPLAN are primarily from federal sources including the Input-Output Accounts from the Bureau of Economic Analysis (BEA), the Covered Employment and Wages Program (ES-202) from the Bureau of Labor Statistics (BLS), and others.

IMPLAN collects raw data at national, state, and county levels every year; however, not all data are available at all levels. At state and county levels, only some data, such as employment and employee compensation information are available. Therefore, to construct a regional I/O model, IMPLAN has to estimate the unavailable data based on national level data. For example, many database components in the state models, particularly data for inter-industry flows, are derived from the national benchmark I/O matrices. Adjustment is made for each state according to comparison of the state-level ratio between employee compensation and employment and the national average ratio. IMPLAN is structured so that all state economies sum to the national level and all county economies sum to the state economy. For a detailed discussion of data sources from which IMPLAN derives national benchmark I/O matrices and estimates regional I/O models, see Chapter 4. The way IMPLAN constructs regional I/O models affects its modeling results, including child care multipliers generated from IMPLAN models analyzed in this report. This will be further discussed in Chapter 4.

We use IMPLAN models based on data from 2000. Upon collecting raw data and adjusting it to the regional level, the IMPLAN 2000 model distributes all data into 528 sectors (4 digit SIC in manufacturing and 2-3 digit for other sectors) including child care. The sectoring is based on the Standard Industrial Code system with the supplement of the Bureau of Economic Analysis I/O Sectoring³. Table 2.1 shows the IMPLAN sectoring scheme and the bridge with 10 sectors for the one-digit SIC code system. In IMPLAN models, sectors 1-509 are private sectors, and sectors 510-528 include public sectors and some special sectors.

Table 2.1. IMPLAN sectoring scheme and bridge with 1-digit SIC aggregated sectors

Type of Sectors	1-digit SIC	IMPLAN Sector Numbers
Private Sectors	Agriculture, Forestry, and Fisheries	1-27
	Mineral Industries	28-47
	Construction Industries	48-57
	Manufacturing	58-432
	Transportation, Communication, and Utilities	433-446
	Wholesale Trade	447
	Retail Trade	448-455
	Finance, Insurance, and Real Estate	456-462
	Services Industries	463-509
Public Sectors	Public Administration	510-515, 519-520, 522-523
Others	Special Sectors and Domestic Services	516-518, 521, 524, 526-528;525

Source: IMPLAN Manual, 2000

There is a distinction between government enterprise and government sectors within the public sectors (Table 2.2). Government enterprises are activities in which more than 50 percent of the budget is covered by revenues from goods or services produced by that agency, whereas government sectors normally involve traditional government services not associated

³ IMPLAN changed to a new sectoring scheme based on the NAICS code system in the 2001 database.

with the private sector (IMPLAN Manual: 238-239). In other words, government enterprises are similar to private sectors and produce goods and services sold to intermediate and final demand, whereas government sectors are not considered in this way. IMPLAN assumes that the indirect effects of government sectors are zero. Because these sectors are treated differently from other sectors in the economy, in our post-modeling analysis of multipliers, we exclude sectors 516 - 528 which IMPLAN generally assumes to have zero indirect effects⁴.

Table 2.2. Description of public sectors in IMPLAN sectoring

Types of public sectors	Levels of government	IMPLAN sector numbers	Special Description
Government Enterprises	State & Local	510-512	Local Passenger Transit; State and Local Electric Utilities; Others
	Federal	513-515	U.S. Postal Service; Federal Electric Utilities; Others
Government Sectors	State & Local	522-523	Education; Non-Education
	Federal	519-520	Military; Non-Military

Source: IMPLAN Manual, 2000

OUR APPROACH

We construct models for each of the 50 states and the District of Columbia using IMPLAN 2000 data, and generate child care multipliers for output and employment at both the Type I and Type II levels. We then map child care multipliers across states to study the spatial variation in backward linkages of child care in the state economy. In Chapter 3 we conduct analysis to understand how child care multipliers compare to other sectors in the state economy in terms of backward linkages. This includes comparing child care across all sectors

⁴Sectors 519 -520 and 522-523 are the governments sectors discussed above. Sector 516-518 and 521 are special sectors such as Noncomparable Imports, Scrap, Used and Secondhand Goods, and Commodity Credit Union, Sector 524 is Domestic Service, and Sector 525 is Rest of the World Industry. Sectors 526-528 are dummies and Inventory Valuation Adjustment.

in each state economy, comparing child care with the 10 aggregated sectors outlined in Table 2.1, and comparing child care with 14 specific sectors including selected infrastructure sectors and other economic development sectors. We believe the way in which IMPLAN structures regional I/O models and treats the child care sector plays a role in determining multipliers. Therefore in Chapter 4, we look inside the IMPLAN modeling structure to unpack the sources of the child care multipliers. Finally, in Chapter 5 we present correlation and regression models to explore the relative contribution of IMPLAN structural variables and external policy and socio-economic variables in explaining the variation in multipliers across states.

Chapter 3

Economic Linkage of the Child Care Sector: Results from IMPLAN

This chapter presents some major results from the input-output analysis of the child care sector in all 50 states and the District of Columbia. The first part discusses different types of child care multipliers and their spatial variation across the states. Later sections present a cross-sector analysis comparing child care across the overall economy, and then comparing child care with aggregated sectors and with selected specific sectors.

SPATIAL VARIATION IN CHILD CARE ECONOMIC LINKAGE

The geographical variation in child care multipliers for both output and employment includes both indirect effects and induced effects of child care. With respect to output multipliers, both Type I and Type II multipliers show great spatial variation. Type I output multipliers range from a low of 1.32 in Mississippi to a high of 1.60 in Minnesota, Missouri, and Pennsylvania (see Table 3.1). Type II output multipliers have even greater variation across states, ranging from a low of 1.64 in Mississippi to a high of 2.17 in Pennsylvania. Indirect effects tend to be higher than induced effects indicating that a greater contribution to economic growth is stimulated through local purchases from child care businesses than from household purchases due to an increase in final demand for child care. The exceptions are four states including California, Massachusetts, Florida and Mississippi where the indirect to induced ratio less than or equal to one. Induced effects, specifically, tend to be smaller in states with smaller economies, such as Alabama, Alaska, D.C, Mississippi, Nevada, North Dakota, and so forth. These states are more likely to see leakages from their state economy due to household spending.

Figure 3.1 shows the map for spatial variation in Type II output multipliers of child care by state. States with lower Type II output multipliers tend to be smaller and have more rural economies such as South Carolina, Mississippi and Alabama. States with relatively high Type II output multipliers tend to be those states with larger economies such as California, New York and Pennsylvania. But a look at the map shows important exceptions - Utah, Oregon and New Mexico. These states have smaller economies but relatively high Type II output multipliers. Isolation due to geographic features (mountains, desert, ocean) may reduce leakage. Diversity as well as size of economy matters. States with more diverse and complex economies are likely to require fewer imports, all else equal.

Similar spatial variation also exists in the child care employment multipliers, though the distribution is not as wide. Type I employment multipliers of child care range from a low of 1.17 in Nevada to a high of 1.34 in New Mexico, whereas Type II employment multipliers range from a low of 1.32 in Nevada to a high of 1.62 in Oregon. Again, indirect effects tend to be larger than induced effects (Table 3.2), though the difference is not as great as in the case of the output multipliers. For the employment multipliers, more states have an indirect to induced ratio less than 1, reflecting more variability in child care employment multipliers.

Figure 3.2 maps the spatial variation in Type II employment multipliers of child care by state. Comparing the maps for output and employment multipliers shows that states with lower child care output multipliers also tend to have lower employment multipliers, generally reflecting the size of the state economy, the proportion of child care business and employee purchases captured within that state economy, and other factors. Many of the southeastern states are low on both maps. However, some states which are in the highest quantile on output multipliers drop to the middle quantile on employment multipliers (New York, Washington).

We also run a Type SAM (households endogenous) model for each state and find Type SAM multipliers are slightly lower than the Type II multipliers reported here. They exhibit similar distribution as the Type II multipliers for employment and output. A comparison table is provided in Appendix VI.

Further analysis of geographical differences can be found in Chapter 5. To better understand these differences across states, Chapter 5 presents correlation analysis of child care multipliers with other economic, demographic and child care policy variables. This is followed by a multivariate regression analysis that also includes basic IMPLAN structural variables (described in more detail in Chapter 4). We find that larger multipliers are found in states with larger economies, lower poverty and higher child care policy standards. However, IMPLAN structural variables explain much of the cross state differences.

Table 3.1. Child care output multipliers by state, 2000

	Direct	Indirect	Induced	Ratio*	Type I**	Typell**
Alabama	1.00	0.44	0.36	1.23	1.44	1.80
Alaska	1.00	0.47	0.34	1.39	1.47	1.81
Arizona	1.00	0.52	0.44	1.16	1.52	1.96
Arkansas	1.00	0.51	0.38	1.35	1.51	1.89
California	1.00	0.52	0.56	0.94	1.52	2.08
Colorado	1.00	0.54	0.50	1.09	1.54	2.04
Connecticut	1.00	0.51	0.44	1.16	1.51	1.96
Washington D.C.	1.00	0.42	0.37	1.13	1.42	1.80
Delaware	1.00	0.44	0.35	1.25	1.44	1.79
Florida	1.00	0.48	0.48	1.00	1.48	1.96
Georgia	1.00	0.45	0.44	1.04	1.45	1.89
Hawaii	1.00	0.48	0.41	1.16	1.48	1.89
Idaho	1.00	0.53	0.36	1.49	1.53	1.89
Illinois	1.00	0.59	0.55	1.08	1.59	2.13
Indiana	1.00	0.43	0.39	1.10	1.43	1.83
Iowa	1.00	0.52	0.36	1.46	1.52	1.88
Kansas	1.00	0.56	0.42	1.34	1.56	1.98
Kentucky	1.00	0.46	0.38	1.20	1.46	1.84
Louisiana	1.00	0.47	0.37	1.25	1.47	1.84
Maine	1.00	0.46	0.41	1.12	1.46	1.87
Maryland	1.00	0.50	0.46	1.08	1.50	1.96
Massachusetts	1.00	0.49	0.52	0.95	1.49	2.01
Michigan	1.00	0.50	0.42	1.19	1.50	1.93
Minnesota	1.00	0.60	0.51	1.16	1.60	2.11
Mississippi	1.00	0.32	0.32	1.00	1.32	1.64
Missouri	1.00	0.60	0.52	1.14	1.60	2.12
Montana	1.00	0.53	0.35	1.48	1.53	1.88
Nebraska	1.00	0.51	0.41	1.25	1.51	1.91
Nevada	1.00	0.37	0.30	1.24	1.37	1.67
New Hampshire	1.00	0.49	0.41	1.20	1.49	1.90
New Jersey	1.00	0.46	0.45	1.03	1.46	1.91
New Mexico	1.00	0.56	0.44	1.27	1.56	1.99
New York	1.00	0.52	0.52	1.00	1.52	2.04
North Carolina	1.00	0.43	0.41	1.07	1.43	1.84
North Dakota	1.00	0.53	0.33	1.64	1.53	1.86
Ohio	1.00	0.50	0.42	1.19	1.50	1.92
Oklahoma	1.00	0.55	0.43	1.28	1.55	1.97
Oregon	1.00	0.52	0.49	1.06	1.52	2.01
Pennsylvania	1.00	0.60	0.56	1.07	1.60	2.17
Rhode Island	1.00	0.43	0.38	1.12	1.43	1.81
South Carolina	1.00	0.38	0.33	1.16	1.38	1.71
South Dakota	1.00	0.45	0.35	1.29	1.45	1.80
Tennessee	1.00	0.50	0.46	1.08	1.50	1.96
Texas	1.00	0.50	0.46	1.09	1.50	1.95
Utah	1.00	0.59	0.46	1.27	1.59	2.05
Vermont	1.00	0.51	0.40	1.25	1.51	1.91
Virginia	1.00	0.46	0.41	1.10	1.46	1.87
Washington	1.00	0.55	0.44	1.25	1.55	1.99
West Virginia	1.00	0.45	0.31	1.46	1.45	1.75
Wisconsin	1.00	0.54	0.44	1.25	1.54	1.98
Wyoming	1.00	0.45	0.31	1.48	1.45	1.76
Average of 50 states & DC	1.00	0.49	0.42	1.20	1.49	1.91
United States	1.00	0.94	1.31	0.72	1.94	3.25

* Ratio = indirect / induced

** Type I = (direct + indirect)/direct; Type II = (direct + indirect + induced)/direct

Source: IMPLAN, 2000

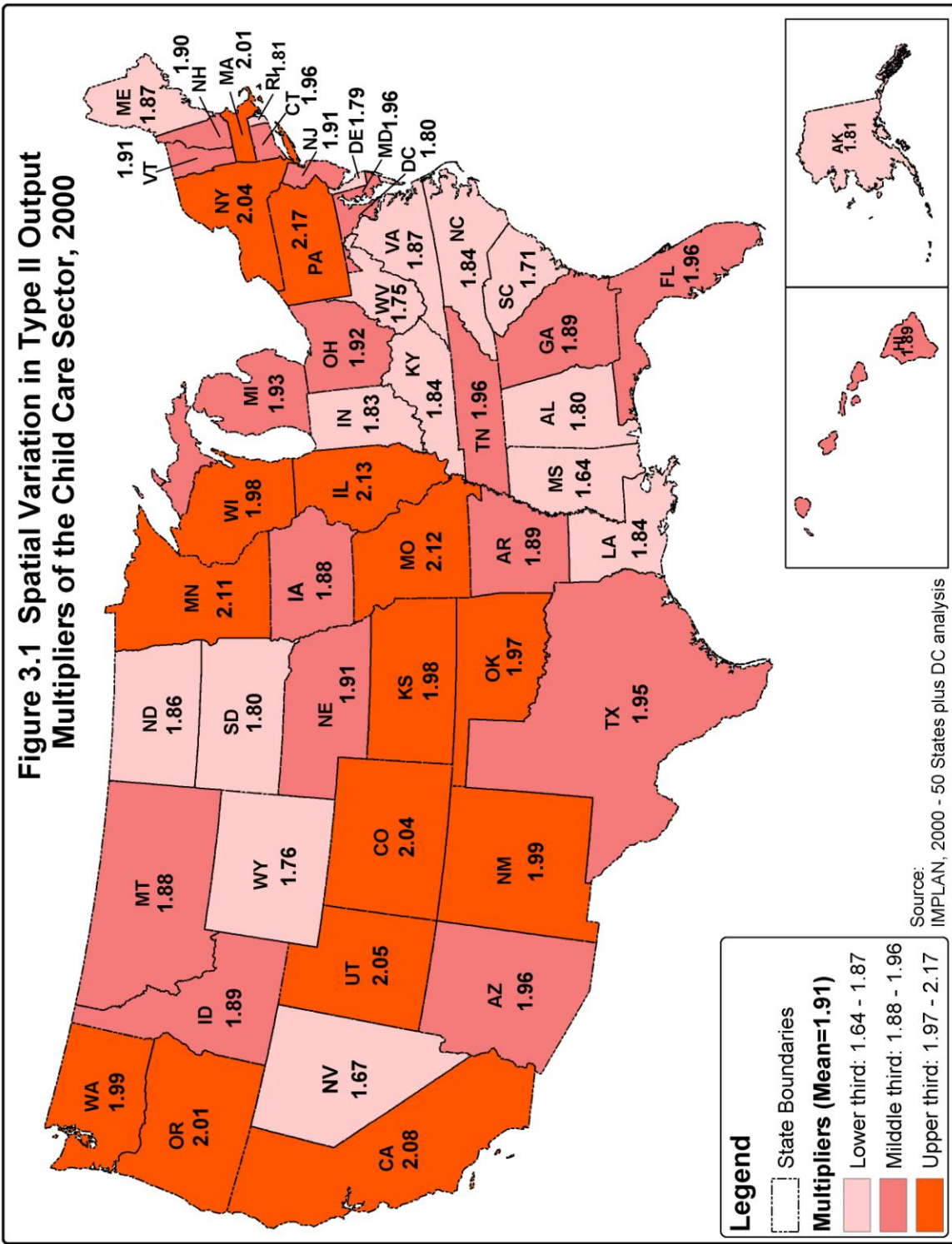


Table 3.2. Child care employment multipliers by state, 2000

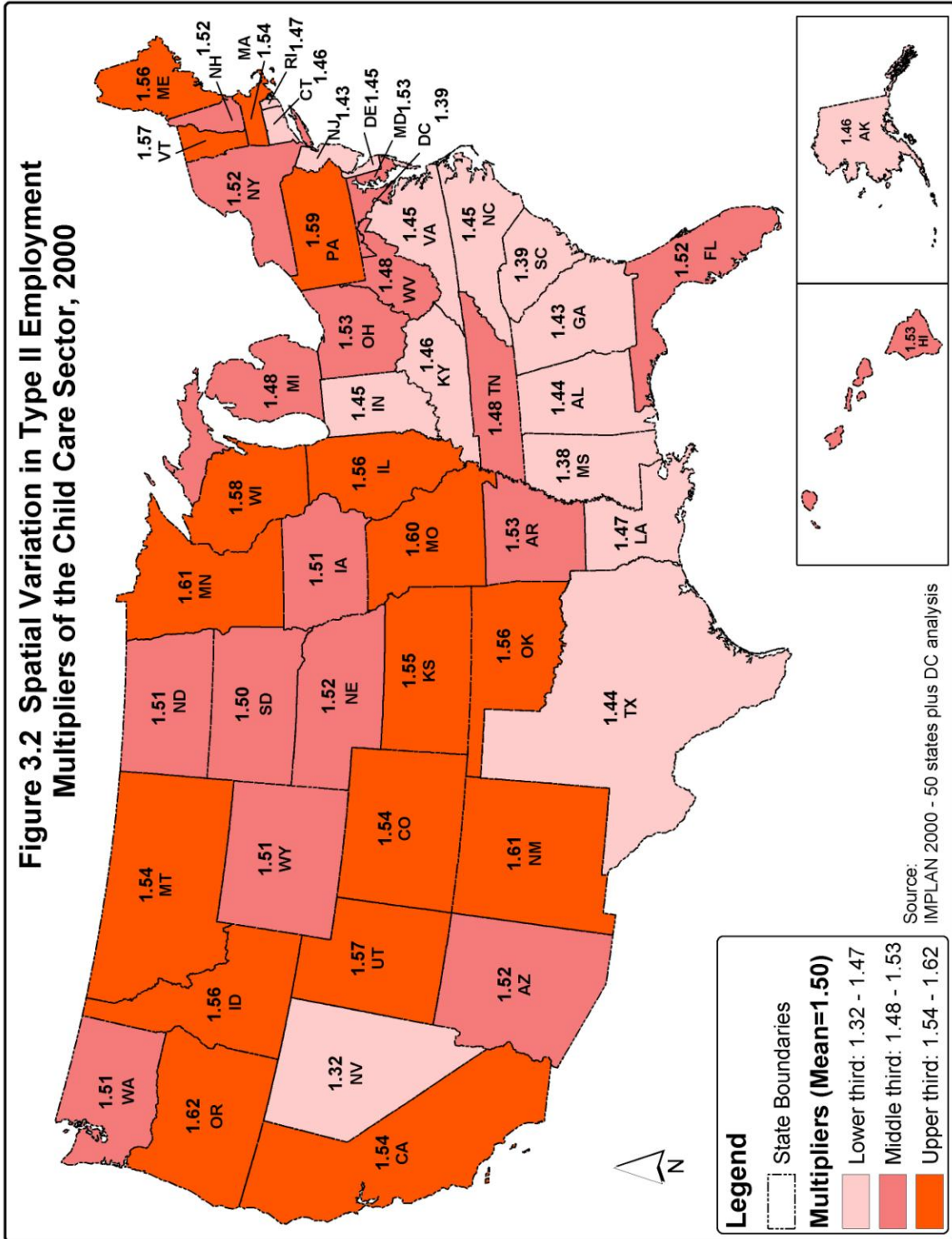
	Direct	Indirect	Induced	Ratio*	Type I**	Type II**
Alabama	1.00	0.24	0.21	1.16	1.24	1.44
Alaska	1.00	0.27	0.19	1.39	1.27	1.46
Arizona	1.00	0.27	0.24	1.10	1.27	1.52
Arkansas	1.00	0.30	0.23	1.34	1.30	1.53
California	1.00	0.25	0.29	0.88	1.25	1.54
Colorado	1.00	0.27	0.27	0.99	1.27	1.54
Connecticut	1.00	0.25	0.22	1.13	1.25	1.46
Washington D.C.	1.00	0.19	0.19	1.00	1.19	1.39
Delaware	1.00	0.25	0.20	1.24	1.25	1.45
Florida	1.00	0.25	0.27	0.91	1.25	1.52
Georgia	1.00	0.20	0.23	0.88	1.20	1.43
Hawaii	1.00	0.29	0.24	1.18	1.29	1.53
Idaho	1.00	0.33	0.23	1.43	1.33	1.56
Illinois	1.00	0.28	0.28	1.00	1.28	1.56
Indiana	1.00	0.23	0.23	1.00	1.23	1.45
Iowa	1.00	0.29	0.21	1.37	1.29	1.51
Kansas	1.00	0.32	0.24	1.31	1.32	1.55
Kentucky	1.00	0.25	0.21	1.15	1.25	1.46
Louisiana	1.00	0.26	0.21	1.20	1.26	1.47
Maine	1.00	0.29	0.27	1.08	1.29	1.56
Maryland	1.00	0.26	0.27	0.98	1.26	1.53
Massachusetts	1.00	0.26	0.29	0.89	1.26	1.54
Michigan	1.00	0.25	0.23	1.10	1.25	1.48
Minnesota	1.00	0.32	0.29	1.10	1.32	1.61
Mississippi	1.00	0.18	0.20	0.93	1.18	1.38
Missouri	1.00	0.31	0.29	1.08	1.31	1.60
Montana	1.00	0.32	0.22	1.41	1.32	1.54
Nebraska	1.00	0.28	0.25	1.13	1.28	1.52
Nevada	1.00	0.17	0.15	1.13	1.17	1.32
New Hampshire	1.00	0.28	0.24	1.16	1.28	1.52
New Jersey	1.00	0.21	0.22	0.95	1.21	1.43
New Mexico	1.00	0.34	0.27	1.23	1.34	1.61
New York	1.00	0.26	0.27	0.97	1.26	1.52
North Carolina	1.00	0.22	0.23	0.99	1.22	1.45
North Dakota	1.00	0.31	0.20	1.59	1.31	1.51
Ohio	1.00	0.28	0.25	1.10	1.28	1.53
Oklahoma	1.00	0.31	0.25	1.24	1.31	1.56
Oregon	1.00	0.31	0.31	1.01	1.31	1.62
Pennsylvania	1.00	0.29	0.29	1.00	1.29	1.59
Rhode Island	1.00	0.24	0.23	1.05	1.24	1.47
South Carolina	1.00	0.20	0.19	1.03	1.20	1.39
South Dakota	1.00	0.27	0.23	1.20	1.27	1.50
Tennessee	1.00	0.24	0.24	0.99	1.24	1.48
Texas	1.00	0.22	0.23	0.97	1.22	1.44
Utah	1.00	0.30	0.26	1.16	1.30	1.57
Vermont	1.00	0.30	0.27	1.14	1.30	1.57
Virginia	1.00	0.22	0.23	0.94	1.22	1.45
Washington	1.00	0.28	0.23	1.23	1.28	1.51
West Virginia	1.00	0.28	0.20	1.46	1.28	1.48
Wisconsin	1.00	0.31	0.27	1.17	1.31	1.58
Wyoming	1.00	0.30	0.21	1.40	1.30	1.51
Average of 50 States & DC	1.00	0.27	0.24	1.13	1.27	1.50
United States	1.00	0.41	0.60	0.67	1.41	2.01

* Ratio = indirect / induced

** Type I = (direct + indirect)/direct; Type II = (direct + indirect + induced)/direct

Data source: IMPLAN, 2000

Figure 3.2 Spatial Variation in Type II Employment Multipliers of the Child Care Sector, 2000



Source: IMPLAN 2000 - 50 states plus DC analysis

Data source: IMPLAN, 2000

SECTOR COMPARISONS ACROSS THE OVERALL ECONOMY

To better understand how the child care sector is linked to the state economy we conduct comparisons of child care multipliers with other sectors in the state economy. We calculate the overall mean, median, minimum, and maximum multipliers across all sectors⁵ for each of the 50 states and D.C, and compare them to child care multipliers. We also calculate the percentile location of the child care multiplier among the multipliers of all sectors for each state economy. This reflects the relative rank of the economic linkage of child care in each state economy. The histograms (Figures 3.3 to 3.6) show the distribution of child care percentiles for all 50 states and D.C. This allows us to see the relative ranks of child care multipliers within all state economies. For complete tables comparing the child care multiplier with the overall mean, median, minimum and maximum multipliers, as well as percentile rank for the child care multiplier in each state, see Appendix I.

Results from our analysis of output multipliers show that, compared to most other sectors, the child care sector tends to have stronger backward linkage within the state economy. In most states, Type I output multipliers of the child care sector locate in the topmost quartile across all sectors, indicating that the child care sector tends to purchase more locally from other sectors in the economy than do other economic sectors (Figure 3.3). Child care Type II output multipliers are in the 93rd percentile over all sectors averaged across all states (Figure 3.4), indicating not only more local purchases by the child care industry, but also

⁵ Calculation of overall mean, median, minimum, and maximum multipliers only includes sectors 1-515 with non- zero direct effects. These are private sectors and government enterprises existing in the state economy. This is also true in the calculation of the percentile ranking of the child care multiplier in each state economy. Sectors 516-528, which are either “special sectors” or government sectors for which IMPLAN assumes zero indirect effects, are excluded from this comparative analysis.

a higher proportion of local consumption by child care employees. Child care Type II output multipliers also tend to be more clustered than Type I multipliers.⁶

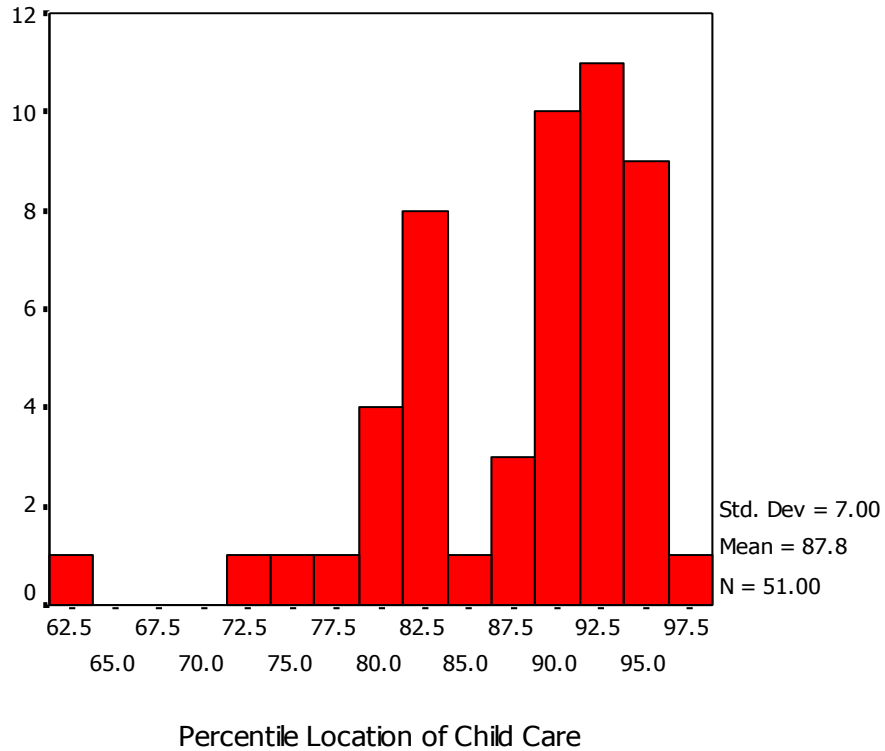


Figure 3.3. Percentile ranks of child care multipliers across all state economies: Type I output multipliers
(Data source: IMPLAN, 2000)

⁶ The percentile distribution of Type SAM output multipliers was similar to Type II output multipliers (mean 93.1, st. dev. 5.2).

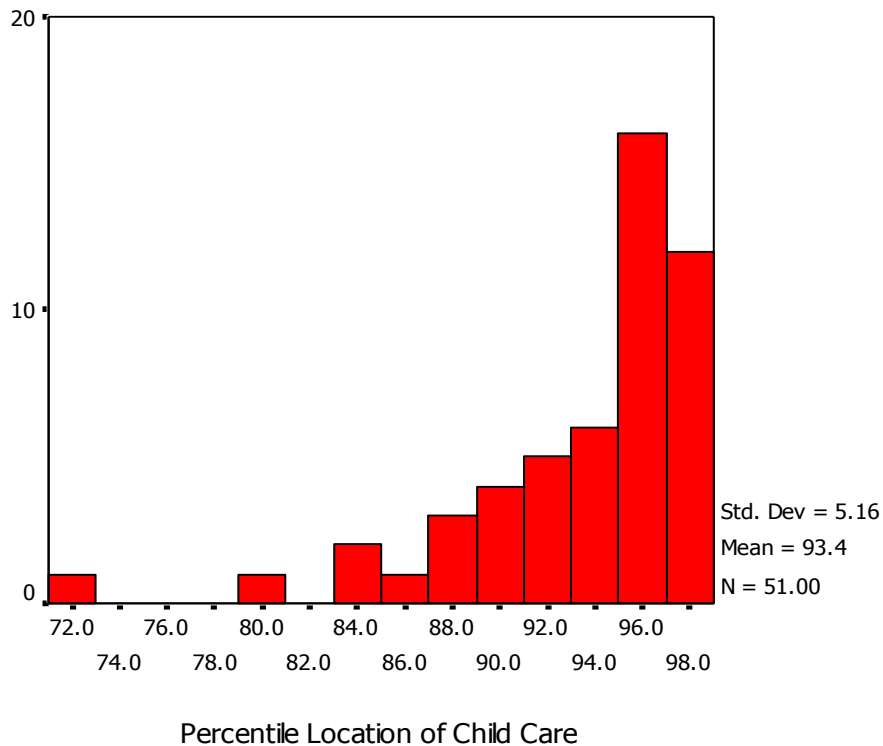
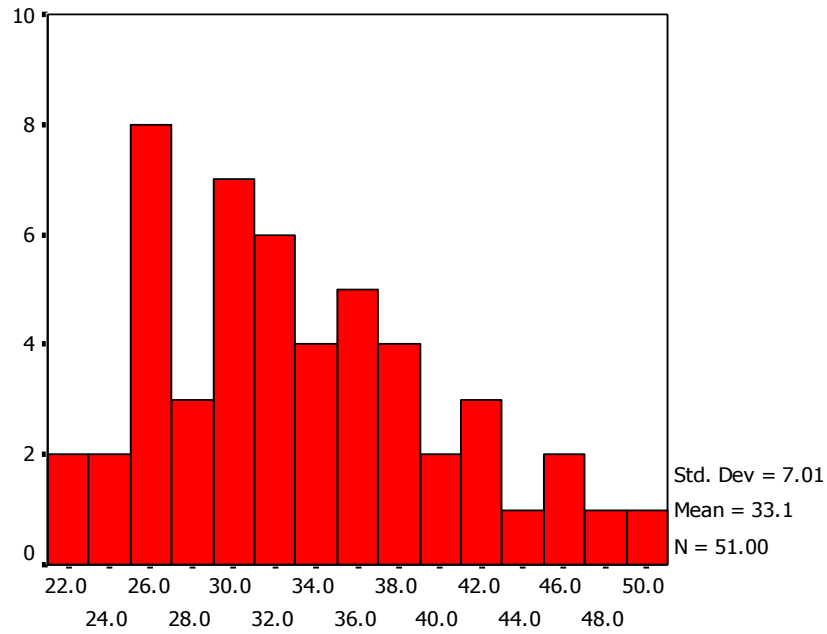


Figure 3.4. Percentile ranks of child care multipliers across all state economies: type II output multipliers

(Data source: IMPLAN, 2000)

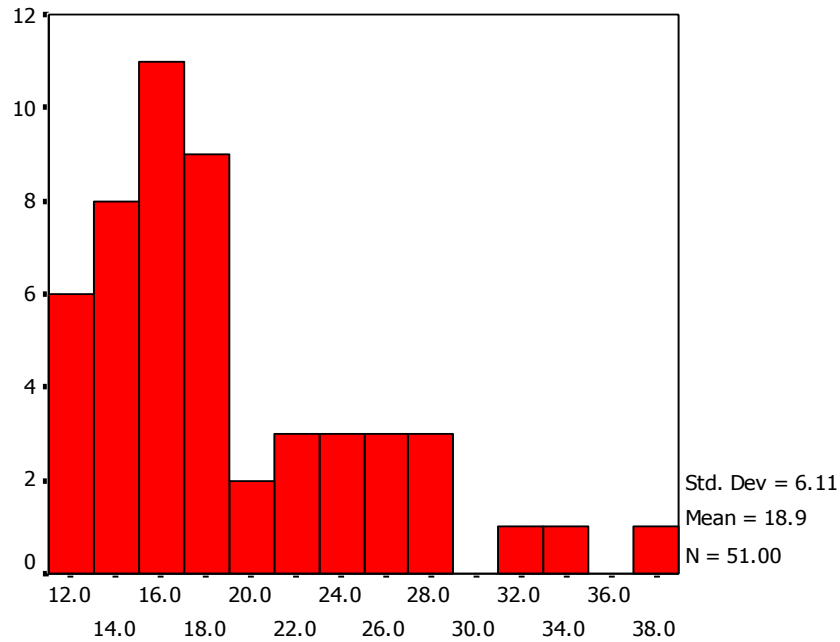
By contrast, the child care sector in most states has lower employment multipliers than other sectors in the state economy. The percentile ranks of child care Type I employment multipliers concentrate in the 25th to 40th percentile range, with the mean percentile being 33 percent (Figure 3.5). Child care Type II employment multipliers are more tightly clustered than Type I employment multipliers, but tend to be clustered at an even lower range with a mean at the 19th percentile (Figure 3.6).⁷ This may be because the child care sector is more job intensive than most other local industries affected by child care’s indirect and induced purchases.

⁷ The percentile distribution of Type SAM employment multipliers was similar to Type II employment multipliers (mean 19.8, st. dev. 6.3).



Percentile Location of Child Care

Figure 3.5. Percentile ranks of child care multipliers across all state economies: Type I employment multipliers
 (Data source: IMPLAN, 2000)



Percentile Location of Child Care

Figure 3.6. Percentile ranks of child care multipliers across all state economies: Type II employment multipliers
 (Data source: IMPLAN, 2000)

COMPARING CHILD CARE TO AGGREGATED SECTORS

Next we compare child care to 10 aggregated sectors based on the 1-digit SIC code system⁸. We use median multipliers across all industries in each aggregated sector as the proxy for the economic linkage of that sector, and compare it to the value of the child care multiplier. Table 3.3 compares the 50 state average of child care multipliers to the 50 state averages of the median multipliers of each of the 10 aggregated sectors. For complete tables comparing child care with aggregated sectors for each individual state, see Appendix II.

Comparing the averages across states shows that child care output multipliers (Type I and Type II) are much higher than the median multipliers of each aggregated sector, indicating strong backward linkages in terms of dollar flows between child care and other sectors in the economy. The services sector, of which child care is a part, tends to have the largest median output multipliers compared to other sectors. However its median is still much lower than the child care output multiplier. This indicates that child care tends to have stronger backward linkages than most of the other service sectors in the economy. Employment multipliers of child care, however, tend to be lower than the median multipliers of aggregated sectors. Child care employment multipliers are particularly lower than the median multipliers of the three topmost sectors: Transportation, Communication and Utilities, Manufacturing, and FIRE (Finance, Insurance and Real Estate).

⁸For the bridge between IMPLAN sectoring and the 1-digit SIC code, see Table 2.2

Table 3.3. 50 State averages of child care multipliers and the median multipliers of 10 aggregated sectors*

Sectors	Output Multipliers		Employment Multipliers	
	Type I	Type II	Type I	Type II
Child care (499)	1.49	1.91	1.27	1.50
Agriculture (1-27)	1.34	1.63	1.27	1.50
Mineral (28-47)	1.28	1.59	1.35	1.98
Construction (48-57)	1.35	1.73	1.45	2.03
Manufacturing (58-432)	1.31	1.61	1.47	2.07
Transportation, Communication, and Utilities (433-446)	1.29	1.67	1.58	2.40
Wholesale (447)	1.22	1.62	1.28	1.86
Retail (448-455)	1.17	1.59	1.07	1.31
FIRE (456-462)	1.25	1.64	1.47	1.99
Services (463-509)	1.29	1.79	1.18	1.49
Public Administration (510-515, 519-520, 522-523)	1.19	1.71	1.18	1.82

*Average of the medians for each aggregated sector in the 50 states and the District of Columbia
Data source: IMPLAN, 2000

We also compare the range in value of child care multipliers to the range of the overall mean and median multipliers for each state and the median multipliers of three selected aggregated sectors – Agriculture (28 sectors), Manufacturing (375 sectors), and Services (47 sectors) - which are considered as primary, secondary, and tertiary sectors respectively. In the following boxplots (Figure 3.7 to 3.10), we show the range in values of child care multipliers across all 50 states and D.C, and the ranges of the overall mean and overall median multipliers. The ranges of the three aggregated sectors represent the center value for all industries in each respective aggregated sector across all states. The actual range of industry multipliers for each aggregated sector would naturally be broader than the range of the median values shown here.

Figure 3.7 and 3.8 present the comparison with respect to output multipliers and show child care output multipliers tend to be higher than the overall mean and median multipliers across all sectors, as well as the median multipliers of Agriculture, Manufacturing, and

Services. Child care Type I output multipliers also show greater variation among the states compared to other benchmarks except for the median multipliers for Agriculture. The wide range in Agriculture reflects wide variation among states in the structure and linkage of their agriculture industry (Figure 3.7). Meanwhile, the median Type II multipliers of Services are generally higher than other medians, but still lower than the child care sector (Figure 3.8).

The child care employment multiplier, by contrast, tends to be lower than both the overall mean and median multipliers for each state economy and the median multipliers of the three aggregated sectors (Figure 3.9 and 3.10). This holds for both Type I and Type II employment multipliers.⁹ Employment multipliers of child care do not show as much variation across states as do the output multipliers. The median employment multipliers for Agriculture show the widest variation across all state economies reflecting, again, the diversity in the structure and linkage of the agriculture sector across states.

⁹ The distribution of Type SAM multipliers (not shown) is similar to the Type II distributions for both output and employment.

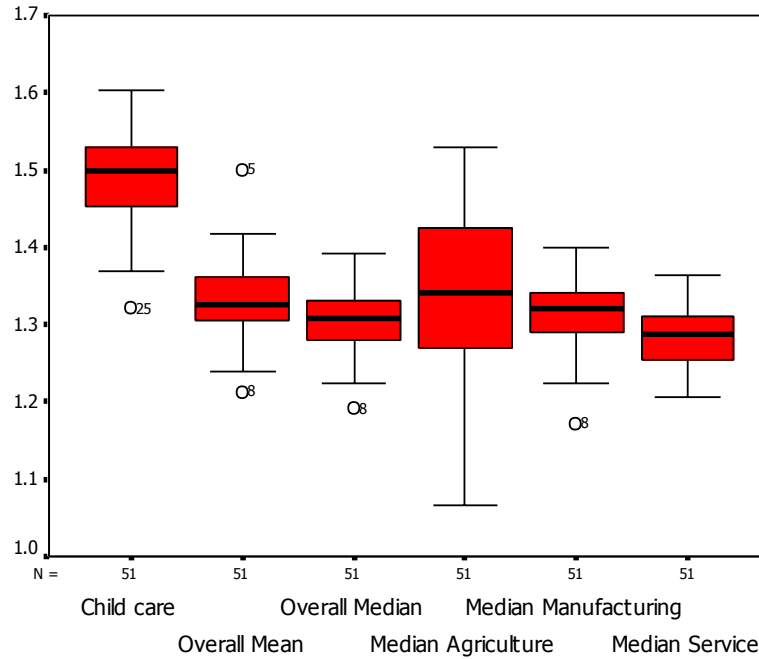


Figure 3.7. Child care multipliers compared to overall mean and median multipliers, and median multipliers of 3 aggregated sectors: Type I output multipliers, 50 States and D.C.

(Data source: IMPLAN, 2000)

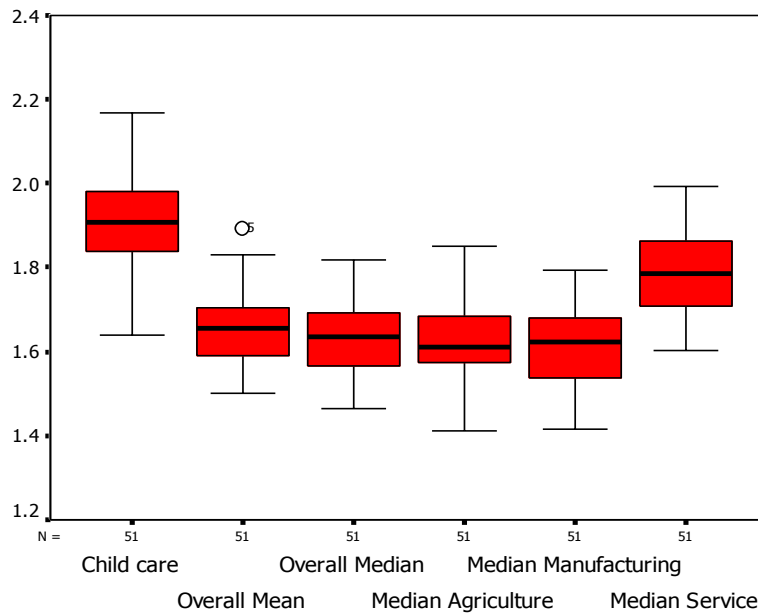


Figure 3.8. Child care multipliers compared to overall mean and median multipliers and median multipliers of 3 aggregated sectors: Type II output multipliers, 50 States and D.C.

(Data source: IMPLAN, 2000)

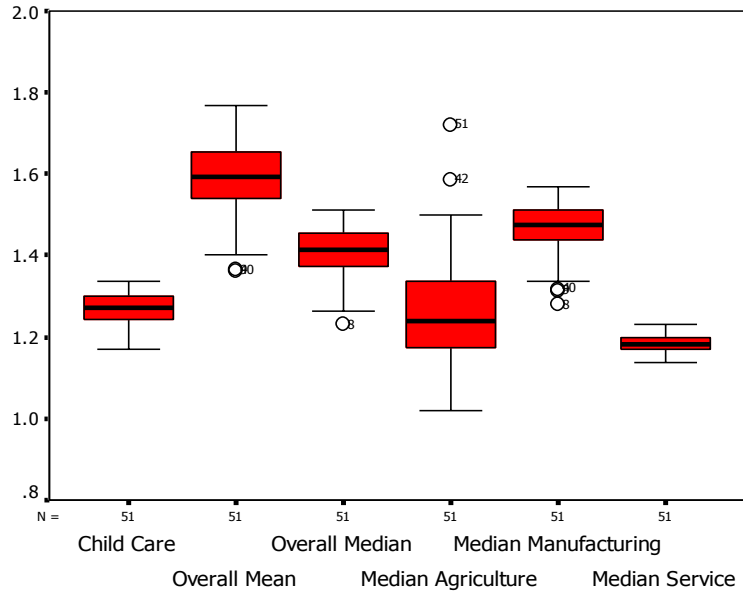


Figure 3.9. Child care multipliers compared to overall mean and median multipliers and median multipliers of 3 aggregated sectors: Type I employment multipliers, 50 States and D.C.
 (Data source: IMPLAN, 2000)

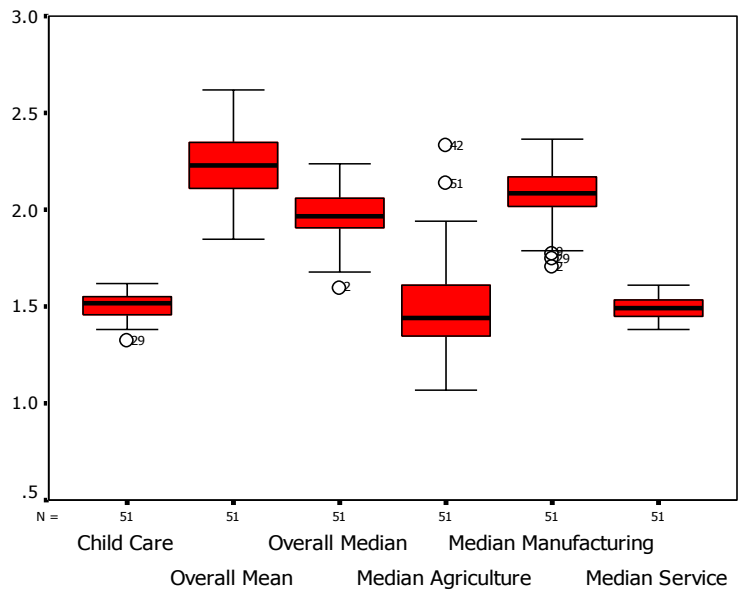


Figure 3.10. Child care multipliers compared to overall mean and median multipliers and median multipliers of 3 aggregated sectors: type II employment multipliers, 50 States and D.C.
 (Data source: IMPLAN, 2000)

COMPARING CHILD CARE TO INFRASTRUCTURE SECTORS

The child care sector is often recognized as an important infrastructure sector, supporting education for children and facilitating parental employment. We compare the child care sector with six specific sectors known as important physical or social infrastructure sectors in the regional economy. We generate both Type I and Type II multipliers for output and employment and compare them to child care multipliers. Table 3.4 compares the 50 state averages of child care multipliers to these infrastructure sectors. For complete tables on each of the 50 states and D.C, see Appendix III.

Results show that child care has similar multipliers to other infrastructure sectors (Table 3.4). Child care multipliers are particularly close to those of social infrastructures such as Hospitals, private Elementary and Secondary Schools, Job Training, and College Education. Compared to the selected two physical infrastructure sectors, Water Supply and Local Passenger Transit, child care has higher Type II output multipliers, reflecting higher proportions of business and employee purchases within the state economy. We believe this is due to similarities in purchase patterns and production functions between child care and other social infrastructure sectors (all are labor intensive). By contrast, physical infrastructure sectors, which purchase more specialized equipment such as buses, railway equipment and sewer systems, are more likely to buy from outside the state economy, leading to more leakage. Typically government subsidy for physical infrastructure is greater than for child care. However, child care ranks among the highest in terms of output multipliers shown by these comparisons (Type I = 1.49 and Type II = 1.91).

Table 3.4. 50 State averages of child care multipliers compared to other infrastructure sectors

Sectors	Output Multipliers		Industry output*	Employment Multipliers		Industry employment
	Type I	Type II		Type I	Type II	
Child care	1.49	1.91	638.76	1.27	1.50	14,221
Elementary and Secondary Schools	1.30	1.91	490.55	1.10	1.31	17,181
Job Training and Related Services	1.32	1.84	258.92	1.23	1.50	6,350
College, Universities and Schools	1.22	1.84	1,239.73	1.09	1.37	32,205
Hospitals	1.25	1.79	6,225.73	1.19	1.67	88,939
Water Supply and Sewage Systems	1.33	1.67	139.67	1.84	2.68	673
Local Interurban Passenger Transit	1.26	1.72	564.10	1.10	1.35	12,306

Average of the 50 states and the District of Columbia.

* millions of dollars

Data source: IMPLAN, 2000

Child care employment multipliers, however, are relatively low, but again are relatively similar to other social infrastructure sectors. The 50 state average of the child care Type I employment multiplier is only 1.27, one third lower than that of water supply and sewage systems. The 50 state average of the child care Type II employment multiplier is 1.50, only slightly higher than half the level of the water supply multiplier. This is due to the different production functions of these sectors. Water supply, as a more capital-intensive sector, purchases from more labor-intensive sectors. Therefore, a one job increase in final demand for water supply may lead to more jobs created in other sectors, resulting in a higher employment multiplier. Local passenger transit, though a physical infrastructure, is also a labor-intensive sector (similar to child care), and may purchase more from capital-intensive sectors, resulting in lower employment multipliers more similar to the other social infrastructure sectors. Job training, education and physical infrastructure are typically viewed as worthy of public tax-

based expenditure, both for their intrinsic value and for their economic development links, while child care is not. However, output and employment multipliers show similar linkage for the child care sector as for these other sectors.

Regional employment effects can be measured by more than the employment multiplier. Direct employment in the sector in question is also of interest. We compare direct sectoral employment and output for each sector and find that child care ranks third among these infrastructure sectors in output and fourth in employment.¹⁰ Overall, our comparison demonstrates that child care is similar to other social infrastructure sectors. The importance of child care in the regional economy comes from its relatively large output and employment and its higher backward linkage, in addition to its longer term effects on human development and its role as a social support. We argue that while more economic development attention has been given to service sectors such as higher education and medical services, child care should not be left out of the picture.

COMPARING CHILD CARE TO OTHER QUALITY OF LIFE SECTORS

In his 2002 book, *The Rise of the Creative Class*, Richard Florida argues there is a creative class of workers who promote innovation and entrepreneurship. He emphasizes the importance of quality of life on the creativity and innovation of workers. He cites coffee shops, museums, recreation and entertainment as important sectors that both attract a ‘creative class’ of workers and promote the kinds of linkages and ‘weak ties’ (Granovetter 1973,

¹⁰ We use IMPLAN data for these comparisons. IMPLAN employment figures come from the CEW and may undercount sectors with large numbers of non-employer firms. This negatively affects the child care sector the most. Other work on child care employment has found IMPLAN numbers catch about half the employment of the sector (see Chapter 4 and Warner et al., 2004). IMPLAN estimates for output are closer because they are based on consumer expenditure surveys.

Saxenian 1994) that encourage information sharing and innovation across industries. Florida has pointed to a new kind of linkage, ‘network of communication’ that the customers of these industries create when they use their services. While a multiplier does not capture this kind of linkage, it does capture the backward purchase connections between these sectors and others in the regional economy. We use Eating and Drinking, and Amusement and Recreation Services as two examples of Florida’s “quality of life” sectors. Like the social and physical infrastructures described above, they primarily meet local consumption demand. Unlike the sectors described above, however, they are not public goods that provide basic social supports to the wider population, but instead represent market-based personal services that primarily serve this ‘creative class.’

Comparing only the traditional backward linkage measured by multipliers, we see these two sectors have lower output and employment multipliers than child care. (Table 3.5) The output multiplier shows that the inter-industry purchase patterns are less likely to be captured locally and the employment multiplier shows these industries are likely to purchase from other industries that are less labor intensive. However both of these sectors are higher in terms of direct output and employment. State economic development policy requires an assessment of the opportunity costs of alternative choices, and multipliers are often used to justify state economic development spending in such sectors (e.g. sports stadiums, Colclough et al. 1994). However, economists at the Federal Reserve have challenged this focus, suggesting child care would be a better investment (Rolnick and Grunewald 2003), both in the short and long term.

Table 3.5. 50 State averages of child care multipliers compared to Quality of Life sectors

Sectors	Output Multipliers		Industry Output*	Employment Multipliers		Industry Employment
	Type I	Type II		Type I	Type II	
Child care	1.49	1.91	638.76	1.27	1.50	14,221
Eating and Drinking	1.34	1.72	6,541.80	1.13	1.31	171,711
Amusement and Recreation Services	1.28	1.69	1,180.51	1.11	1.26	36,518

Average of the 50 states and the District of Columbia.

* millions of dollars

Data source: IMPLAN, 2000

COMPARING CHILD CARE TO ‘TRADED’ SECTORS

Much attention has been given to new productivity based theories of economic development. Michael Porter (1995) has pointed to the role of business clusters and a focus on traded services as a strategy to promote economic revitalization in our nation’s cities. Porter (2003) developed a list of traded sectors which could be identified as clusters for economic development investment. We select six specific sectors for comparison: Wholesale sector, Apparel and Accessory Stores representing a retail sector, Hotel and Lodging Places representing a service sector closely linked to tourism, Banking representing financial services, Management and Consulting Services representing business services, Tool and Die as a critical manufacturing sector. Each of these sectors is a more typical target for economic development policy, partly because of its likelihood to generate more export demand than child care. We use multiplier analysis to compare how the purchase and sale patterns affect linkage in the regional economy across these sectors.

Table 3.6 shows the comparison of average multipliers for child care and these traded sectors for the 50 states and D.C.. Interestingly, none of these sectors has larger output multipliers than child care. The child care sector purchases more locally than these other

sectors and therefore can contribute more to local economic output from one dollar increase in child care final demand.

Child care employment multipliers are relatively similar to Apparel and Accessory Stores and Hotel and Lodging Places. Each of these three industries is labor intensive, as reflected in their high direct employment numbers. Wholesale, Management and Consulting Services, and Tool and Die all have employment multipliers similar to child care at the Type I level but higher at the Type II level. This reflects a different level and/or pattern of employee/household spending in the industries linked to these sectors. Banking has the highest employment multipliers among the group. For complete tables on the 50 states and D.C, see Appendix IV.

Table 3.6. 50 State averages of child care multipliers compared to ‘traded’ sectors

Sectors	Output Multipliers		Industry Output*	Employment Multipliers		Industry Employment
	Type I	Type II		Type I	Type II	
Child care	1.49	1.91	638.76	1.27	1.50	14,221
Wholesale	1.22	1.62	18,830.43	1.28	1.86	148,545
Retail - e.g. Apparel and Accessory Stores	1.22	1.60	1,242.18	1.10	1.30	26,315
Business Services – e.g. Management and Consulting Services	1.34	1.81	3,236.14	1.38	1.91	33,880
Financial services – e.g. Banking	1.24	1.48	10,446.98	1.53	2.20	41,552
Tourism – e.g. Hotel and Lodging Places	1.31	1.71	2,992.06	1.21	1.50	42,303
Manufacturing – e.g. Tool and Die	1.19	1.63	401.93	1.17	1.71	4,126

Average of the 50 states and the District of Columbia

* Millions of dollars

Data source: IMPLAN, 2000

In contrast to the infrastructure sectors, our selected “traded” sectors show greater differences in output and employment multipliers and in their direct output and employment. This demonstrates that being classified as “traded” does not necessarily ensure higher linkage, output or employment in the regional economy. However, being ‘traded’ does suggest that the exogenous demand for these sectors would tend to be higher.

Economic developers use multipliers from input-output modeling to justify new public expenditures in certain key industries. In the analysis above we find that child care’s multipliers compare similarly to those for other infrastructure, quality of life and ‘traded’ sectors. Only wholesale, consulting, banking, and tool and die have higher multipliers than child care and this only at the Type II employment level (indicating stronger employment linkage in the regional economy). While some of these sectors have been the targets of economic development, child care generally has not. The relative rank and size of this regional economic linkage calls for greater attention to be given to the child care sector. This, in addition to the sector’s importance as a social infrastructure supporting both parent workers and human development of the future workforce, makes it a worthy target for economic development policy.

Chapter 4

Unpacking Child Care Multipliers: How IMPLAN Works

The previous chapter presented major findings of our analysis of the economic linkage of child care in the regional economy. We are left with the question: Why are the child care multipliers so high relative to other sectors in the regional economy, and what explains their variation across states? These multipliers are based on a specific input-output modeling system, i.e. the IMPLAN system. The way in which the IMPLAN model is structured, the extent to which raw data are available for building regional IMPLAN models, and the way IMPLAN derives necessary database components to build a regional model all affect our modeling results. This chapter explores how IMPLAN treats the child care sector in the state-level models. We first describe how IMPLAN derives the production function for child care. Then we discuss how it treats labor, and finally we explore the sales function. We find the local dependence of inter-industry purchases explains the higher Type I multipliers for child care. The dominance of lower income households (who tend to make most of their purchases locally), among child care workers and in the service industries where child care makes most of its purchases, help explain why child care's Type II multipliers tend to be higher.

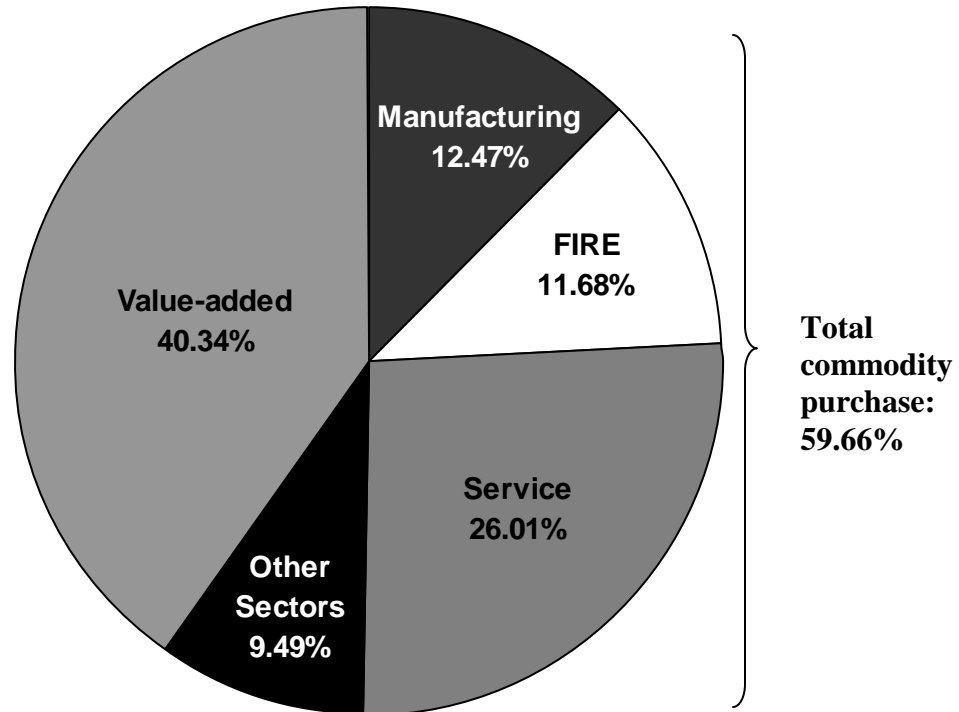
We believe a better understanding of the strengths and weaknesses of IMPLAN will help identify any bias resulting from the particular I/O modeling methodology, and provide a better explanation of modeling results. Such analysis also may lead to areas for improvement in the development of models to analyze the economic linkage of the child care sector and other service sectors.

PRODUCTION FUNCTIONS OF THE CHILD CARE SECTOR

Child care multipliers describe how the whole economy responds to a change in final demand for child care through backward linkages. The production function, which reflects the purchase pattern of child care businesses, is an essential element in determining the child care multiplier. In IMPLAN, the production function is the column of the coefficient matrix, called the ‘A Matrix,’ derived from the regional I/O transaction table by dividing each industry column element (inter-industry purchase) by the column total (total column purchases) (see, IMPLAN Manual, 2000: 101). The production function captures the extent of first-round backward linkages of the child care sector, showing from which sectors and in what proportion child care buys in order to produce one dollar of output, as well as how much it purchases locally. Unpacking the production functions of the child care sector in the state economy models will help us understand the source of the child care multipliers and their geographical differences.

From IMPLAN we are able to generate an *industry balance sheet report* from which the child care production function can be retrieved for each of the 50 states and D.C. This report shows the distribution of child care purchases from each sector. It also includes value-added such as employee compensation. The state production functions are based on the national benchmark I/O matrices developed by the Bureau of Economic Analysis. For child care, the national production function shows 59.66% of child care sector purchases are from commodities and 40.34% are value-added, including employee compensation. See Figure 4.1. Appendix V provides the table of the child care production functions at the aggregated sector level for all 50 states and D.C.

Figure 4.1. National Production Function of the Child Care Sector



Source: IMPLAN 2000 National Benchmark I/O Model

Analysis of our models of the 50 states and D.C. finds the average across the states for total child care expenditure is 61 percent for purchases from other industries (intermediate demand of the child care sector), while the remaining 39 percent is expenditure on value-added elements including Employee Compensation, Proprietor Income, Other Property Type Income, and Indirect Business Taxes (Table 4.1). Among all sectors, child care purchases primarily from the Services sector and secondarily from FIRE and Manufacturing.

Table 4.1. Summary of child care total purchases and local purchases from industry and from three major aggregated sectors

	Purchase as percent of total child care expenditure			Percent locally purchased by child care		
	Mean	Min	Max	Mean	Min	Max
Manufacturing	12.80%	11.08%	14.49%	21.13%	4.68%	31.37%
FIRE	12.00%	10.39%	13.58%	59.13%	32.46%	69.99%
Services	26.72%	23.13%	30.23%	74.40%	40.40%	90.78%
All industries	61.28%	53.04%	69.34%	60.46%	40.64%	71.75%

Notes: Mean: Average proportion across 50 states plus D.C.

Min: Minimum proportion across 50 states plus D.C.

Max: Maximum proportion across 50 states plus D.C.

Data source: IMPLAN, 2000

Child care purchases from industries can come from production by local businesses or from imports. Only local purchases provide linkage effects in the local economy, whereas purchases of imports lead to leakages. Table 4.1 shows that two thirds of the child care sector's commodity purchases are from FIRE and Services (12 percent + 27 percent of 61 percent). However the percent of purchases from commodities does not vary much across states (from a low of 53 percent to a high of 69 percent). The variation is in the percent of these purchases that is made locally (from 41 percent to 72 percent) and this reflects the size and diversity of the state economy. We believe that how much child care purchases locally plays a more significant role in determining variation in child care multipliers by state than the distribution of total child care expenditures across sectors. However the local purchase component reflects, in part the dominance of purchases from Services which are more likely to be provided locally. We found that 74 percent of Services and 59 percent of FIRE purchases by the child care sector are made locally. By contrast, only a fifth of child care purchases come from manufacturing (13 of 61 percent) and only 21 percent of these are made locally.

Thus the local dependence of child care's inter-industry purchases, relative to other sectors (not shown), explains the higher Type I multipliers for child care.

UNPACKING THE PRODUCTION FUNCTIONS FOR CHILD CARE

The production function shows the purchase patterns of child care and is therefore very important in understanding child care multipliers. Generating the A Matrix is the first step in determining industry multipliers in the IMPLAN I/O model. In part due to data availability problems, IMPLAN is not able to construct the regional level models based on raw data, but instead uses a national benchmark model. Therefore, how IMPLAN derives the regional I/O models will affect the modeling results generated from IMPLAN software. This is true in our analysis of child care multipliers, and we believe that unpacking how IMPLAN develops the production function for child care will help us better understand the child care multipliers. We will explain in detail how IMPLAN estimates the child care production function at the state level from the national average function. We will show in turn, how this affects the difference in child care production functions among all states in the IMPLAN I/O models. First, we need to provide some definitions.

- **Production Function:** the relationship between the output of a good or service and the inputs required to produce that good or service for any given industry (IMPLAN Manual, Glossary: p. 287). The production function shows the purchase pattern for a sector, and captures the extent of first-round backward linkage effects of the child care sector. It shows from which sectors and in what proportion child care buys in order to produce one dollar output as well as how much it purchases locally. The production function is the column of the A Matrix in the IMPLAN I/O model.

- **A Matrix:** is the coefficient matrix derived from the regional I/O transaction table. The ratios in the A Matrix are constructed by dividing each industry column element (inter-industry purchase) by the column total (total column purchases) (see, IMPLAN Manual, 2000: 101). The column in the A Matrix shows the share of each element of intermediate demand made by each sector.
- **Gross Absorption Coefficient:** The coefficient of total demand for all commodities / industries from a certain industry relative to that industry's total purchases (including purchase from commodities and value-added).
- **Value Added:** payments made by industry to workers, interests, profits, and indirect business taxes (IMPLAN Manual: p. 289). There are four elements in value-added. *Employee compensation* describes the total payroll costs of each industry - the labor cost of that industry. *Proprietary income* is payments received by self-employed individuals as income. *Other property type income* consists of payments for rents, royalties, and dividends. *Indirect business taxes* consist of excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses (IMPLAN Manual: 125-126).
- **Absorption Adjustment Ratio:** generated by dividing the state gross absorption coefficient by the national average for each sector. The ratio is used to adjust proportionately the national estimate of the production function to the state-specific estimate.
- **Regional Purchase Coefficient (RPC):** Ratios representing the portion of regional demand purchased from local producers (IMPLAN Manual, 2000: p.289). The RPC of any given commodity shows the proportion of demand for this commodity purchased locally. The RPC of child care itself shows the proportion of child care demand that is local. For all but 17

states¹¹ the RPC for child care equals one, meaning all child care demand is local. In the IMPLAN model all demand for child care comes from institutions (including households).

This is described in more detail in Table 4.6.

Figure 4.2. Simplified Input/Output Matrix

		OUTPUT	FINAL DEMAND		
		Industries	Households	Institutions	Exports
INTERMEDIATE INPUT	Industries	<u>A Matrix:</u> Columns – production functions (intermediate purchases from industries) Rows – Sales functions (intermediate sales to industries)	Household Demand	Government Funds	Exports
	Households	Columns – Employee compensation			
VALUE-ADDED	Institutions (Government, Banks, etc.)	Other Value Added			
	Imports	Imports			

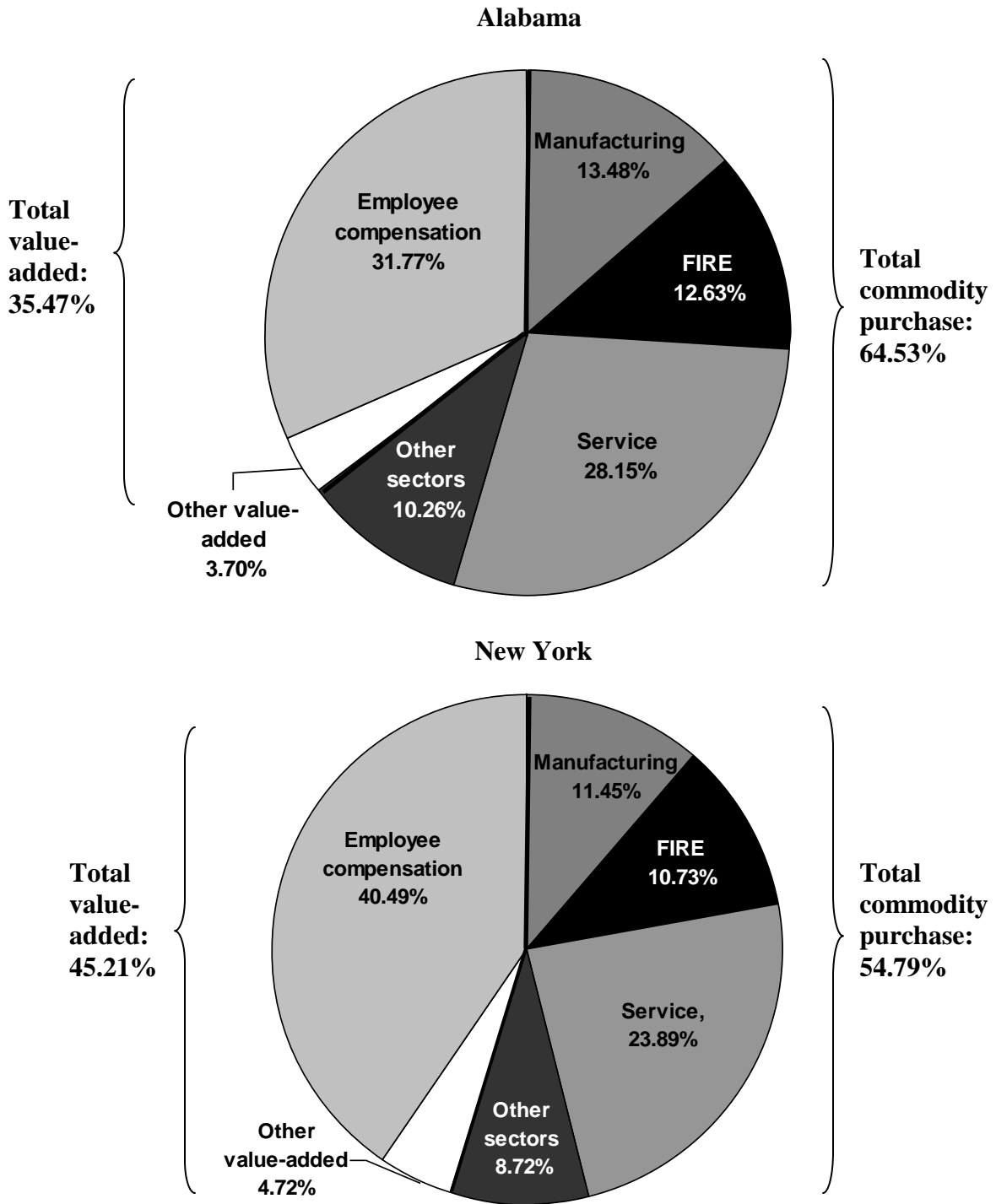
UNDERSTANDING DIFFERENCES BY STATE

First, regional data are available for determining the share of purchase from *value added* sectors (especially, employee compensation) and that from *commodities* (i.e. the total of the gross absorption coefficients). All elements of the value added coefficient and gross

¹¹ The 17 states with RPC less than 1 are MI (.64), WV (.68), CA (.69), UT (.77), ND (.78), NV (.81), IL (.81), KS (.82), IN (.86), MN (.86), ID (.87), OH (.94), WA (.96), SD (.96), PA (.98), FL (.996) and NM (.997). RPCs are difficult to calculate and these estimates are of indeterminate accuracy. For more discussion on RPCs and IMPLAN’s treatment of export demand for child care, see p 47–49 and p 51-54.

absorption coefficients add up to 1.00, and show the relative proportion of purchases from value added or commodities (industries) to produce one dollar of output. We illustrate this by comparing New York State and Alabama – two states expected to have different regional economies. With respect to the child care sector, the proportions for value added and commodities are, respectively, 45 percent and 55 percent in New York State, and 35 percent and 65 percent in Alabama (see Figure 4.3). These coefficients are used to adjust the state-specific production function of child care from the national average *proportionately*. An absorption adjustment ratio is calculated for each state model by dividing the state gross absorption coefficient by the national gross absorption coefficient (59.66 percent for child care). In New York and Alabama, the absorption adjustment ratios are 0.92 and 1.08, respectively, which means that compared to the national average a higher proportion of child care expenditures go to industries rather than labor (value added) in Alabama than in New York (see Table 4.2). This is a reflection of both higher staff:child ratios and higher child care worker wages in New York.

Figure 4.3. Child Care Production Functions, New York and Alabama



Source: IMPLAN 2000 National Benchmark I/O adjusted to state models

Table 4.2. Generating the absorption adjustment ratio of child care, New York and Alabama

	New York	Alabama
Total Gross Absorption Coefficient (Purchases from commodities)	54.79%	64.53%
Value Added Coefficient	45.21%	35.47%
Total Purchases (equal to total output)	100%	100%
<i>National Total Gross Absorption Coefficient</i>	59.66%	59.66%
<i>Absorption Adjustment Ratio</i>	<i>0.9184</i>	<i>1.0816</i>

* Absorption Adjustment Ratio = State Value Added Coefficient / National Gross Absorption Coefficient

Data source: IMPLAN, 2000

Second, regionalization is completed by adjusting the national average of child care coefficients to the state level regional model. This is achieved by multiplying each element of the national average absorption coefficient by the absorption adjustment ratio for each state (Table 4.3). The resulting column shows the estimated proportion of each element of child care purchases in each state model. Thus, the absolute values of the coefficients vary by state as does the percent purchased locally, but the relative share of the elements of purchases remains the same, and is consistent with the national average share.

Table 4.3. Deriving industry specific regional gross absorption coefficients from the national average estimate, New York and Alabama

Gross Absorption coefficients of 10 Aggregated sectors	National Average	New York		Alabama	
		Adjustment Ratio	Gross Absorption*	Adjustment Ratio	Gross Absorption*
Agriculture	0.14%	0.9184	0.12%	1.0816	0.15%
Mineral	0.01%	0.9184	0.01%	1.0816	0.02%
Construction	1.54%	0.9184	1.42%	1.0816	1.67%
Manufacturing	12.47%	0.9184	11.45%	1.0816	13.48%
Transportation/ Communications/ Utilities	4.20%	0.9184	3.85%	1.0816	4.54%
Wholesale	2.21%	0.9184	2.03%	1.0816	2.39%
Retail	0.43%	0.9184	0.39%	1.0816	0.46%
FIRE	11.68%	0.9184	10.73%	1.0816	12.63%
Service	26.01%	0.9184	23.89%	1.0816	28.15%
Public Administration	0.97%	0.9184	0.89%	1.0816	1.05%
Total Gross Absorption Coefficient	59.66%	0.9184	54.79%	1.0816	64.53%

* State Gross Absorption Coefficient = National Average Gross Absorption Coefficient * State Absorption Adjustment Ratio.

Data source: IMPLAN, 2000

In addition, child care purchases from each industry may come from local business as well as imports from other states. The share of local purchases to total purchases is the *regional purchase coefficient (RPC)* of the commodity from which any sector makes purchases. Therefore, the third step in deriving the production function of child care in each state model involves multiplying each element of the state-level gross absorption coefficients by the RPC of the commodity purchased to get the proportion of child care purchase from that commodity made locally (Table 4.4). This is the inter-industry flow for child care in that state.

Table 4.4. Deriving the child care production function based on regional gross absorption coefficients and RPCs, New York and Alabama

Aggregated by 10 major sectors	New York			Alabama		
	Gross Absorption Coefficients	RPCs	Production Function (A _{ij})*	Gross Absorption Coefficients	RPCs	Production Function (A _{ij})*
Agriculture	0.12%	0.4221	0.05%	0.15%	0.6580	0.10%
Mineral	0.01%	0.0590	0.00%	0.02%	0.0796	0.00%
Construction	1.42%	0.9394	1.33%	1.67%	0.9486	1.58%
Manufacturing	11.45%	0.2217	2.54%	13.48%	0.2092	2.82%
Transportation/ Communications/ Utilities	3.85%	0.6511	2.51%	4.54%	0.6458	2.93%
Wholesale	2.03%	0.9949	2.02%	2.39%	0.6711	1.60%
Retail	0.39%	0.7470	0.29%	0.46%	0.8813	0.41%
FIRE	10.73%	0.6999	7.51%	12.63%	0.5521	6.98%
Service	23.89%	0.9078	21.69%	28.15%	0.5963	16.78%
Public Administration	0.89%	0.6456	0.57%	1.05%	0.7449	0.78%
Total	54.79%	0.7030	38.52%	64.53%	0.5266	33.98%

* Production Function = Gross Absorption Coefficients * RPCs

Data source: IMPLAN, 2000

IMPLAN estimates the RPCs for all commodities, for example, how much any sector commodity, such as child care, purchases from a certain commodity locally or through imports. It is believed that IMPLAN estimates the RPC for each industry in each state model through a regression model with a small number of variables including regional employee compensation, regional employment relative to U.S. employment, relative employment shares by industry, and fraction of land area. However, many economists have challenged the accuracy of RPC's (Stevens et al 1989). Modifying the estimates of the RPCs of major purchase components of the child care sector may be an approach to achieve better modeling results. But Lazarus et al (2002) suggest that it may be more valuable to get better estimates of the production function than to seek to improve the regional purchase coefficient.

As in all sectors in the IMPLAN model, the child care production function for each state model is based on one national production function for that sector. That is the national average estimate of the child care production function in the National I/O Benchmark Account. The extent to which the child care production function varies by states comes from both the variation in the state absorption coefficient adjustment ratio as well as from variation in RPCs of each commodity from which child care purchases. The child care production function does vary absolutely by state but the relative share of child care purchases from each sector remains the same (but the local parts of the function are different).

OPPORTUNITIES TO ADJUST THE IMPLAN MODEL

IMPLAN provides flexibility to modify the default production function so that it better reflects the reality of economic structure in each state/county model. IMPLAN has one production function for each of 528 sectors in the state economy. Each sector consists of different types of businesses which may have very distinctive purchase patterns, i.e. in child care, center care versus family care. Thus, adjusting the production functions to reflect differences in sector composition could be integrated into the IMPLAN I/O models to better reflect the actual structure of child care in a particular state.

The most important component for improvement in the child care production function may be in the value-added elements, particularly labor (employee compensation). IMPLAN significantly undercounts the self-employment component of the child care industry, leading to almost zero proportion of child care expenditure on Proprietary Income. By comparison, the state study of New York found 14,000 of 22,000 providers to be self employed (Warner et al 2004). The percentage of child care expenditure on employment compensation is also relatively low (Table 4.5). Typically centers report 75-80 percent of costs are labor, but

IMPLAN shows employee compensation to be 41 percent and 32 percent of total purchases in New York and Alabama respectively. We believe both problems are related to the source of labor and business data that IMPLAN uses to measure the child care sector which primarily counts center-based care.¹²

Table 4.5. Child care expenditure in value-added elements

	New York	Alabama
Total Purchases (equal to total output)	100%	100%
Value Added Coefficient	45.21%	35.47%
Employee Compensation as a share of total purchases	40.49%	31.77%
<i>Employee Compensation as share of Value Added</i>	89.56%	89.56%

* Absorption Adjustment Ratio = State Gross Absorption Coefficient / National Gross Absorption Coefficient

Data source: IMPLAN, 2000

Studies of gross receipts and employment for the entire Early Child Education sector typically include the education portion of the sector, thus yielding higher numbers than those shown for Child Day Care by IMPLAN. For example in the NYS report, Head Start and Universal Pre Kindergarten accounted for one fifth of total gross receipts (Warner et al 2004). Some of the government-funded portion of the sector (e.g. pre kindergarten based in public school settings) is captured elsewhere in the IMPLAN model (such as sector number 522 – State and Local Government-education, or 523-State and Local Government-Noneducation).¹³

¹² IMPLAN uses the Covered Employment and Wages data for employment which is drawn from unemployment insurance reports. With 14,000 of 22,000 registered providers self employed, we can see that this source would significantly undercount family child care. Although IMPLAN adjusts for self-employment, the adjustment for child care still misses a very large portion of employees (more than half of the total in the New York case).

¹³ Child care, or Child Day Care Services (IMPLAN sector number: 499; 1987 4-digit SIC code: 8350; 1982 BEA Commodity code: 77.07), is defined as establishments primarily engaged in the care of infants or children, or in providing pre-kindergarten education, where medical care or delinquency correction is not a major element. This includes child care centers, child day care centers, child group day care centers, Head Start centers (except in conjunction with schools, which are classified in Industry 8211), nursery schools, and preschool centers.

SALES FUNCTIONS OF THE CHILD CARE SECTOR

While the column of the A Matrix shows the purchase pattern of each industry, the industry row shows to which sectors or institutions and in which proportions a sector sells. From IMPLAN we generate reports regarding the sales function of the child care sector. Table 4.6 shows the proportions of each sale component of child care by state. IMPLAN assumes no demand from the Federal Government. Federal funds are generally reflected in demand from State and Local Government. This is justified since Federal funds are channeled through state agencies.

The row reports show that, in all state economies, the child care sector sells all of its output to final demand (e.g. no intermediate sales). Demand comes from institutions such as households, governments and from exports. Among all institutions, child care sells primarily to households and secondarily to State and Local Governments. The proportion of demand from State and Local Governments has little variation across states, ranging from nearly zero to less than 3 percent (Table 4.6). Either IMPLAN is not including government subsidies for low income parents' child care, or it is counting these under household demand (which could be handled in a SAM as government transfers to households), or counting them under other government services. These subsidy payments to parents account for one fifth of gross receipts in the child care sector in New York and amount to almost \$5 billion nationally per year. They are, in fact, a source of external demand for child care that supplements the effective demand of parents.

These establishments may or may not have substantial educational programs. These establishments generally care for pre-kindergarten or preschool children, but may care for older children when they are not in school. Establishments providing babysitting services are classified in Industry 7299.

Table 4.6. Types of demand for child care by state, 2000

	Intermediate Demand	Household Demand	Federal Government	State and Local Government	Exports
Alabama	0.00%	94.90%	0.00%	2.08%	3.02%
Alaska	0.00%	93.94%	0.00%	1.98%	4.09%
Arizona	0.00%	95.14%	0.00%	0.35%	4.51%
Arkansas	0.00%	74.48%	0.00%	1.59%	23.94%
California	0.00%	98.18%	0.00%	1.82%	0.00%
Colorado	0.00%	93.40%	0.00%	1.05%	5.55%
Connecticut	0.00%	95.11%	0.00%	0.25%	4.64%
Delaware	0.00%	80.67%	0.00%	0.09%	19.24%
Washington D.C.	0.00%	57.97%	0.00%	0.03%	42.00%
Florida	0.00%	98.42%	0.00%	1.58%	0.00%
Georgia	0.00%	68.84%	0.00%	2.10%	29.06%
Hawaii	0.00%	95.08%	0.00%	0.21%	4.71%
Idaho	0.00%	98.80%	0.00%	1.20%	0.00%
Illinois	0.00%	97.43%	0.00%	2.57%	0.00%
Indiana	0.00%	97.69%	0.00%	2.31%	0.00%
Iowa	0.00%	91.33%	0.00%	2.69%	5.99%
Kansas	0.00%	97.44%	0.00%	2.56%	0.00%
Kentucky	0.00%	86.30%	0.00%	2.50%	11.20%
Louisiana	0.00%	96.33%	0.00%	2.02%	1.65%
Maine	0.00%	78.93%	0.00%	0.51%	20.56%
Maryland	0.00%	92.35%	0.00%	0.54%	7.11%
Massachusetts	0.00%	76.27%	0.00%	0.34%	23.39%
Michigan	0.00%	97.87%	0.00%	2.13%	0.00%
Minnesota	0.00%	97.36%	0.00%	2.64%	0.00%
Mississippi	0.00%	54.87%	0.00%	1.49%	43.64%
Missouri	0.00%	96.91%	0.00%	2.36%	0.73%
Montana	0.00%	95.97%	0.00%	1.60%	2.43%
Nebraska	0.00%	90.87%	0.00%	2.01%	7.12%
Nevada	0.00%	99.60%	0.00%	0.40%	0.00%
New Hampshire	0.00%	66.27%	0.00%	0.18%	33.56%
New Jersey	0.00%	83.84%	0.00%	0.55%	15.60%
New Mexico	0.00%	98.69%	0.00%	1.31%	0.00%
New York	0.00%	97.20%	0.00%	2.38%	0.42%
North Carolina	0.00%	68.33%	0.00%	1.60%	30.07%
North Dakota	0.00%	98.26%	0.00%	1.74%	0.00%
Ohio	0.00%	97.58%	0.00%	2.42%	0.00%
Oklahoma	0.00%	92.12%	0.00%	1.61%	6.28%
Oregon	0.00%	91.21%	0.00%	1.13%	7.66%
Pennsylvania	0.00%	98.06%	0.00%	1.94%	0.00%
Rhode Island	0.00%	78.06%	0.00%	0.16%	21.77%
South Carolina	0.00%	83.64%	0.00%	1.31%	15.04%
South Dakota	0.00%	98.29%	0.00%	1.71%	0.00%
Tennessee	0.00%	93.78%	0.00%	2.15%	4.08%
Texas	0.00%	87.16%	0.00%	3.28%	9.55%
Utah	0.00%	99.21%	0.00%	0.79%	0.00%
Vermont	0.00%	78.20%	0.00%	0.39%	21.40%
Virginia	0.00%	96.57%	0.00%	2.08%	1.35%
Washington	0.00%	98.94%	0.00%	1.06%	0.00%
West Virginia	0.00%	97.99%	0.00%	2.01%	0.00%
Wisconsin	0.00%	80.34%	0.00%	1.78%	17.88%
Wyoming	0.00%	76.63%	0.00%	0.69%	22.68%
The United States	0.00%	98.05%	0.00%	1.95%	0.00%
Average of 50 states and DC	0.00%	94.66%	0.00%	1.47%	3.87%

Data source: IMPLAN, 2000

Child Care Multipliers: Analysis from 50 States – <http://economicdevelopment.cce.cornell.edu>

Households are the largest component of final demand for child care. The proportion of household demand across the 50 states and D.C. averages 90 percent, but ranges from a low of 55% in Mississippi to a high of 99% in Washington State (Table 4.6). IMPLAN has nine income classes and the household expenditure patterns are based on the BLS Consumer Expenditure Surveys. These data do not vary at the subnational level except as the mix of income classes varies by state. Expenditure patterns vary by income class and for lower income classes expenditures are dominated by basic necessities which are more likely to be available in the state economy. Consumer research finds that low income households spend more than they make¹⁴ and dissavings in an I-O framework would be counted as higher local expenditure. Taxes and savings (which are leakages in an I-O framework) would be higher for higher income classes (Dyner et al 2004). The dominance of low paid households among child care workers and in the service industries where child care makes most of its purchases help explain why Child Care's Type II multipliers are higher than most other sectors. These workers tend to spend all of their income on basic goods and services, which are more likely to be available in the regional economy; while wealthier households are more likely to save, invest or purchase specialty goods or services outside the regional economy.

The expenditure survey provides a measure of what households say they spend on child care, which could be quite different from the economic engineering approaches used by most state child care studies that base their estimates on what providers charge (Ribeiro and Warner 2004). Consumer expenditure reports also may include payments to child care providers not in the regulated system (and thus not in the labor data used by IMPLAN). Indeed the New York

¹⁴ According to the Consumer Expenditure Survey for 2000, households in the lowest quintile of income spent 234 percent of their income, whereas the highest quintile only spent 68 percent (BLS 2000).

State study found that the parent pay portion of gross receipts was much closer to the IMPLAN report on gross receipts (\$2.9 vs \$2.6 billion) than were the employment estimates.

By using two different sources, employment from formal labor reports and sales from consumer reports, the child care sector is left with substantial discrepancy and modeling improvements could be well focused on bringing these estimates more into line.

Table 4.7. Comparing IMPLAN with other source data on child care, New York

	Employment		Receipts
NYS Licensing Data Estimates 2002	119,564	NYS estimate Parent Fees	\$2.9 billion
Employees in Employer Establishments (Co. Bus Patterns 2000)	49,315	NYS Government Subsidies 2002	\$874 million
US Census 2000 Nonemployer Establishments	38,869	NYS Govt Quality Investments 2002	\$828 million
Total Employees and Self Employed 2000	88,184	Total NYS Gross Receipts	\$4.65 billion
IMPLAN (2000)	52,791	Implan Gross Receipts 2000	\$2.6 billion
Source: NYS data based on NYS state report Warner, et al 2004			

Those states with a lower proportion of household demand generally export a larger portion of child care services. The export numbers are striking and worthy of further investigation (See Table 4.6). Are these states where cities are near borders and child care demand could come from out of state? Some states on the list such as Maine, New Hampshire and DC might fit this category. Others such as North Carolina and Wyoming , clearly, do not. We do not believe the Federal child care subsidy funds are included in these export estimates.

There is no intermediate demand for child care from other industries in IMPLAN's sectoring scheme. There has been increasing recognition by businesses and employers of the importance of providing child care for their employees. Although a number of larger firms do provide on-site child care in order to increase employee productivity by reducing turnover and increasing retention (Shellenback 2004), the IMPLAN model does not regard businesses/enterprises as a type of institution which could demand child care, nor does it consider intermediate demand for child care. Therefore, the only role that industries can play in child care sales in the IMPLAN model is reflected through the multiple round of forward linkages, that is, employers provide wages to employees, who use wages to purchase child care services for their households. Forward linkages are not captured in the multiplier and are another area where additional work on the IMPLAN model would be helpful in better analyzing the child care sector and its linkages in the regional economy. This work is currently being done by the Cornell team (Pratt and Kay 2004).

Chapter 5

Modeling Geographic Differences: Correlation and Regression Results

What explains the differences in multipliers across the states? We conduct two additional sets of analyses to better understand geographical differences. First, we conduct a correlation analysis of key demographic, economic and child care policy variables with the child care multipliers. Then we bring these into a multiple regression framework. Results are described below.

CORRELATION ANALYSIS

Multipliers are a measure of regional economic linkage and the maps in Chapter 3 show that multipliers tended to be larger in larger economies where there is greater ability to capture more inter-industry and household purchases and avoid leakage. We see in Table 5.1 that Type II Output multipliers are positively correlated with larger economies as measured by total gross receipts and total state employment. Similarly, more urban economies are more likely to have the diversity of economic sectors to capture more spending within the state. We see that both population and level of urbanization are positively correlated with the Type II Output multiplier. However, none of these measures are significantly correlated with employment multipliers.

Table 5.1. Correlation Results: Economic structure - larger economy, larger multipliers

Variables	Child Care Output Type II Multiplier	Child Care Employment Type II Multiplier
Gross Receipts Total Economy (Logged)	.528(**)	0.016
Employment Total Economy	.470(**)	0.063
Total Population (Logged)	.514(**)	0.055
Percent Urban	.373(**)	-0.057

Source: IMPLAN Multipliers 2000 - 50 States plus DC analysis

** Pearson correlation is significant at the 0.01 level (2-tailed);

* Correlation is significant at the 0.05 level (2-tailed).

Secondly, we look at demographic differences among states. We find states with lower median family income and higher poverty have lower Type II Output multipliers for their child care sectors. In states where households have less purchasing power, linkages are lower. For the correlations with employment multipliers, only children under 6 living with two parents in the labor force is significant and it is positive. This shows that in states with higher parental labor force participation, child care's employment linkages are higher.

Table 5.2. Correlation Results: Demographics - poorer states, lower multipliers

Variables	Child Care Output Type II Multiplier	Child Care Employment Type II Multiplier
Population Below Poverty Line as a Percent of Total Population	-.329(*)	-.267
Family Median Income	.334(*)	.037
Children under 6 living with two parents (both parents in labor force) as a share of total children under 6,	.127	.390(**)

Source: IMPLAN Multipliers 2000 - 50 States plus DC analysis. Census 2000, BLS 2000

** Pearson correlation is significant at the 0.01 level (2-tailed);

* Correlation is significant at the 0.05 level (2-tailed).

Finally we look at several child care policy variables. We find that states that expend more federal funds for child care have higher multipliers. Higher multipliers also are found in states that have higher enrollment in state funded pre-kindergarten which could increase effective demand for early education services. States which set their market rate at more than the 75th percentile have higher multipliers as do states that have higher child care wages. Both of these variables capture higher receipts to the sector and its workers. States with lower child:staff ratios (and thus need more employees per children served) have higher multipliers. These results show a positive correlation between policies which support quality (wages, subsidies, ratios, employment and education) and economic linkage effects as measured by the output multiplier. As before most of the correlations with employment Type II multipliers are

not significant. Only child/staff ratios is significant and it is negative showing that in states which allow higher ratios (more children to staff), the child care employment linkage is lower. These results suggest a mutually reinforcing relationship between economic linkage and state policies promoting investment in quality. However, these results could be confounded by the fact that many of the states promoting quality and investment in child care also have larger economies. To control for these effects a multivariate approach is needed.

Table 5.3. Correlation Results: Child care policy - higher investment, higher multipliers

Variables	Child Care Output Type II Multiplier	Child Care Employment Type II Multiplier
Federal Funds (Logged)	.481(**)	0.041
State Funds (Logged)	.580(**)	0.06
Enrollment in State Funded Pre-Kindergarten	.344(*)	0.025
Child/Staff Ratio for 4yr olds	-.365(**)	-.423(**)
Price of Care (75th Percent of Market Rate)	.402(**)	0.184
Child Care Average Wage	.307(*)	0.05

Source: IMPLAN Multipliers 2000 - 50 States plus DC analysis

** Pearson correlation is significant at the 0.01 level (2-tailed);

* Correlation is significant at the 0.05 level (2-tailed).

REGRESSION ANALYSIS

We build a series of regression models to explain the differences in output and employment multipliers for child care across states. The conceptual model for the regression analysis includes proxies for the structure of the regional economy, demographics, the child care market, and child care policy. The unit of analysis is the 50 states plus the District of Columbia (N=51).

Conceptual Model

Structure of the Regional Economy: We include two broad sets of variables to measure the structure of the regional economy: size and relative linkage. Size is measured by land area (square miles) and population density by percent urban. Relative linkage is measured by median overall multipliers (both output and employment), and IMPLAN's regional purchase coefficient for child care. Larger economies may not necessarily have large multipliers, but states with larger relative linkage as measured by median multipliers, are expected to have larger child care multipliers.

Demographics: We include percent of children living in two-parent households with both parents in the labor force as a measure of potential demand for child care; and median family income, and unemployment rate as measures of economic well being. We expect states with higher family income and lower unemployment and more families with two parents in the labor force will have larger child care sectors and might have higher linkage.

Child Care Market: We include percent of children in paid care, and percent of children receiving subsidies who are in center-based care (licensed and regulated) to capture both parental and government components of child care demand. The average wage for child care workers provides a measure of child care worker spending which also can be captured in the induced effects component of the child care multipliers.

Child Care Policy: We are especially curious to see if differences in child care policy choices are related to differences in multipliers. We include the reimbursement rate at the 75th percentile as a measure of market price and the role that government, as buyer through subsidies, plays in setting that rate. We also measure the extent of government involvement in the child care market by including percent of eligible children receiving subsidies, total federal

Child Care Development Funds CCDF, and total state (CCDF). These policies enhance both provider profitability and effective demand from parents. In economies with greater linkage, these investments would have higher short term regional economic effects.

Descriptive statistics for all model variables and their sources are provided in Table 5.4.

Model Specifications: We run three models for each of our two variables of interest: Type II Child Care Output Multipliers and Type II Child Care Employment Multipliers. In Model 1, we include all IMPLAN-generated variables and exogenous variables on demographics, economic structure and child care policy. In Model 2, we leave out two IMPLAN variables we found (in Chapter 4) to be key sources of difference in the child care production function for each state. These are total child care industry expenditures (the child care gross absorption coefficient) and the proportion of child care expenditures spent on services locally. In Model 3, we include only the IMPLAN variables.

Table 5.4. Descriptive statistics

Variable Names	Min	Max	Mean	Std. Deviation
Output multipliers (Type II) for the child care sector, IMPLAN 2000	1.641	2.167	1.911	0.115
Employment multipliers (Type II) for the child care sector, IMPLAN 2000	1.320	1.621	1.504	0.064
Median output multipliers (Type II) across all sectors, IMPLAN 2000	1.464	1.817	1.635	0.087
Median employment multipliers (Type II) across all sectors, IMPLAN 2000	1.594	2.237	1.958	0.145
Regional Purchase Coefficient for child care, IMPLAN 2000	0.645	1.000	0.949	0.096
Land area in square miles, Census 2000	61	571,951	69,362	85,696
Urban population as a percent of total population, Census 2000	38.2	100.0	72.2	15.3
Non-white Population as a share of total population Census 2000	3.1	75.7	21.48	14.53
Children under 6 living with two parents (both parents in labor force) as a percent of total children under 6, Census 2000	21.0	53.4	38.9	6.5
Families: Median family income in 1999, Census 2000	36,484	65,521	49,184	7,049
Unemployment rate, BLS 2000	2.2	6.7	3.9	1.0
Percent of children under 6 in paid care: Kids Count Data Book 2003 (CPS est. 1999-01)	20.0	47.0	28.8	6.0
Percent eligible children receiving child care subsidies (CCB 1999)	3.00	25.00	11.55	4.37
Reimbursement rate 75 th percentile as of March 2000 (monthly - in dollars), CDF 2000	260	844	473	133
Average annual wage for child care workers, BLS 2000	12,990	21,060	15,828	1,751
Center as percent of total: licensed or regulated, CCB 1999 (missing value -NH)	12.8	97.2	52.1	20.5
Total Fed Fund (Logged), CCB 1999	16.7	21.0	18.6	1.1
Total Child Care Expenditure (Gross Absorption Coefficient) IMPLAN 2000	53.04	69.33	61.28	3.58
Child Care Purchases from the Services Sector (spent locally) IMPLAN 2000	40.4	90.8	74.4	11.97

N= 51, 50 states plus the District of Columbia

Regression on Type II Output Multipliers

Results in Table 5.5 show that most of the difference in output multipliers can be explained by the structure of the IMPLAN model itself. Most of the variation in multipliers is explained by the relative linkage in the total economy (median output multipliers), the gross absorption coefficient for child care, and the proportion of child care Service sector purchases spent locally. The only significant exogenous variable in Model 1 is percent urban, which is a proxy for density/complexity of the state economy. Other exogenous variables are only significant in Model 2 where the key IMPLAN-generated variables describing the child care production function are excluded. In Model 2, we find that states with higher child care wages and larger populations are more likely to have higher multipliers. Similarly, states with lower unemployment and higher percentage of children under six living with two parents in the labor force have higher output multipliers. Ironically, states with higher median family income have lower multipliers but this may reflect the greater savings rate (leakage) among higher income earning groups. Thus we can conclude that while key policy and demographic variables do correlate with higher multipliers, the multipliers are in fact generated by IMPLAN according to the model's own internal logic.¹⁵ This explains the very high R-squares for the IMPLAN variable models.

¹⁵Regression analysis assumes that the independent variables are randomly distributed in the population. Variables derived from the IMPLAN analysis are not random but machine generated by the I/O software. The predictable nature of these relationships is illustrated in the high R^2 s in models 1 and 3. However we ran the model for gross receipts for child care and found that the exogenous variables explained the *size* of the child care sector quite well. The gross receipts values are *not* generated by IMPLAN and thus can be considered randomly occurring. It is also conceptually easier to understand how these exogenous variables can predict size of a sector. Linkage is a more difficult concept and may not be as well captured with exogenous variables. This is why the IMPLAN analysis was conducted in the first place.

Table 5.5. Regression results: child care Type II output multipliers

	Model 1	Model 2	Model 3
	Coefficients	Coefficients	Coefficients
(Constant)	-0.53	-0.473	-0.267
Regional purchase coefficient of child care, IMPLAN 2000	0.039	0.13	0.022
Land area in square miles, Census 2000	-7.76E-08	-1.19E-07	
Urban population as a share of total population, Census 2000	0.001 (**)	0.002 (**)	
Non-white population as a share of total population, Census 2000	9.85E-05	0.001	
Children under 6 living with two parents (both parents in labor force) as a share of total children under 6, Census 2000	0.002	0.009 (*)	
Families: Median family income in 1999, Census 2000	-7.74E-07	-4.59E-06(***)	
Unemployment rate, BLS 2000	0.003	0.023 (***)	
Percent of children under 6 in paid care: Kids Count Data Book 2003 (CPS est. 1999-01)	3.56E-05	-0.002	
Reimbursement rate 75 th percentile as of March 2000 (monthly - in dollars), CDF 2000	3.49E-05	5.47E-05	
Average annual wage for child care workers, BLS 2000	1.34E-06	1.65E -05 (**)	
Center as percent of total: licensed or regulated, CCB 1999	1.18E -04	-0.001	
Percent of eligible children receiving federal child-care subsidies in FY 1999, CCB 1999	3.29E-04	0.001	
Total Fed Funds (CCB 1999) logged	-2.2E-04	-0.017	
Median output multipliers (Type II) across all sectors, IMPLAN 2000	0.982 (*)	1.223 (*)	0.989 (*)
Total CC Expenditure (Gross Absorption Coefficient), IMPLAN 2000	0.004		0.002 (**)
CC purchases from the services sectors (spent locally), IMPLAN 2000	0.005 (*)		0.005 (*)
R square	0.969	0.868	0.956

Notes:

Dependent Variable: Output multipliers (Type II) for the child care sector, IMPLAN 2000

(*) Variable significant at 0.01 level;

(**) Variable significant at 0.05 level;

(***) Variable significant at 0.10 level.

Regression on Type II Employment Multipliers

We run the same three models for employment multipliers as we did for the output multipliers. Model 1 includes all IMPLAN variables and exogenous variables.

Model 2 includes all exogenous variables and leaves out the two key IMPLAN variables which determine the child care production function. These are total child care industry expenditures (the child care gross absorption coefficient) and the proportion of child care expenditures spent on Services locally. Model 3 includes only the IMPLAN variables.

Again we see that most of the variation in employment multipliers is due to the relative linkage in the total economy (median employment multiplier), the gross absorption coefficient for child care, and the proportion of child care Service sector purchases spent locally. More exogenous variables are significant in Model 1 than is the case for output multipliers. We see that higher employment multipliers are related to a higher proportion of children under 6 with two parents in the labor force. These results hold for model 2 where the key IMPLAN generated variables are excluded, except that in Model 2 unemployment rate is also significant and positive. Lower unemployment rates are related to lower employment multipliers. Ironically, percent of children in paid care, centers as a percent of total licensed care, and total Federal CCDF funding all are negatively related to the child care employment multipliers. Recall that the employment multiplier measures the extent of employment linkages generated by increased demand for child care. This suggests that investments in labor intensive sectors such as child care will absorb most of the impact of increased final demand directly and linkage effects will be small since the sector is linked to sectors that are relatively less labor intensive.

Table 5.6. Regression results: child care Type II employment multipliers

	Model 1	Model 2	Model 3
	Coefficients	Coefficients	Coefficients
(Constant)	1.637	0.89	0.442
Regional purchase coefficient of child care, IMPLAN 2000	0.031	0.161 (**)	0.051
Land area in square miles, Census 2000	7.27E-08	3.41E-08	
Urban population as a share of total population, Census 2000	8.23E-05	0.001	
Non-white population as a share of total population, Census 2000	0	0.001	
Children under 6 living with two parents (both parents in labor force) as a share of total children under 6, Census 2000	0.004 (**)	0.006 (**)	
Families: Median family income in 1999, Census 2000	-3.05E-06 (*)	-3.75E-06(**)	
Unemployment rate, BLS 2000	0.007	0.024 (**)	
Percent of children under 6 in paid care: Kids Count Data Book 2003 (CPS est. 1999-01)	-0.001 (***)	-0.003 (**)	
Reimbursement rate 75 th percentile as of March 2000 (monthly - in dollars), CDF 2000	-1.70E-05	8.95E-05	
Average annual wage for child care workers, BLS 2000	-1.05E-05 (**)	6.51E-06	
Center as percent of total: licensed or regulated, CCB 1999	-0.001 (**)	-0.001 (*)	
Percent of eligible children receiving federal child-care subsidies in FY 1999, CCB 1999	0.001	0.002	
Total Fed Funds (CCB 1999) logged	-0.014 (***)	-0.034 (*)	
Median employment multipliers (Type II) across all sectors, IMPLAN 2000	0.27 (*)	0.431(*)	0.193 (*)
Total CC Expenditure (Gross Absorption Coefficient), IMPLAN 2000	-0.008 (*)		0.005 (*)
CC purchases from the services sectors (spent locally), IMPLAN 2000	0.003 (*)		0.004 (*)
R square	0.922	0.77	0.757

Notes: N=51 US States and DC

Dependent Variable: Employment multipliers (Type II) for the child care sector, IMPLAN 2000

(*) Variable significant at 0.01 level;

(**) Variable significant at 0.05 level;

(***) Variable significant at 0.10 level.

Chapter 6

Conclusion

This paper explores the linkage effects of child care in the regional economy across all 50 states. Using input-output modeling we find that child care has output multipliers that are higher than most other sectors. The employment multipliers for child care are more varied across states and tend to be lower on average. This reflects that child care is a labor intensive industry in its own right and thus is more likely to purchase from less labor intensive sectors. Indeed consumer service sectors, such as child care, are some of the highest growth occupational sectors in today's economy (Markusen et al 2004).

Not surprisingly, child care's regional economic linkage is quite similar to other infrastructure sectors such as education and job training. An increase in final demand for child care will have equal or greater output linkage in the state economy as increased demand in other sectors that are more typical targets for economic development policy. These 'more typical' targets include hotels and lodging, eating and drinking, retail, as well as other social and physical infrastructure sectors. The child care sector's high relative economic linkage suggests the sector is a competitive target for economic development policy.

Next we explore geographic differences in child care multipliers across states. We determine that these are primarily due to the way the IMPLAN model is structured and how the national child care production function is adjusted to the state level. These differences are primarily explained by total child care industry expenditures (the child care gross absorption coefficient) and the proportion of child care expenditures spent on Services locally. Child care multipliers tend to be higher in states whose economies have been determined by IMPLAN to have less leakage over all. While this is true in states with larger economies such as New York

and California, our maps show some surprises in states with smaller economies such as Utah and New Mexico and Washington, which are able to capture more of their economic activity within the state economy. Even for states with low relative multipliers, the child care output multipliers tend to be among the highest and thus represent competitive targets for economic development policy.

Although regression models confirm that most of the variation in IMPLAN multipliers is due to the structure of the IMPLAN model itself, we still find strong correlations between policy variables that support quality child care and higher multipliers. Lower child:staff ratios, higher child care worker wages, higher subsidy reimbursement rates and higher government investment overall are positively correlated with higher output multipliers. This suggests that investments in child care can have a positive long term effect on the industry (by increasing effective demand and giving stimulus for quality) and a positive short term effect on the broader state economy as well.

Our analysis of the structure of IMPLAN data sources and modeling assumptions suggests that productive work could be focused on developing state level production functions for child care which more closely capture expenditure patterns, especially with regard to value-added and labor. We also believe closer attention could be given to data on the size of employment in the sector itself. As with many sectors comprised of many micro-enterprises, standard economic data severely undercount employment.

However, despite these limitations, IMPLAN provides a useful basis for comparison between child care and other industries. The internal consistency of IMPLAN's modeling assumptions and data sources across all economic sectors and states makes it possible to bring a comparative analysis to the regional economic linkage of child care relative to other sectors

in the state economy. This analysis shows that child care is a good investment for economic developers – for its short term regional economic linkage as well as its long term investment in human capital development for the next generation of workers.

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Appendices

Appendix I-A. Child care multipliers compared to overall economy: Type I output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care multipliers	Percentile*	Overall mean	Overall median	Overall min	Overall max
Alabama	1.44	80.80	1.33	1.31	1.00	2.38
Alaska	1.47	86.76	1.31	1.27	1.00	3.47
Arizona	1.52	94.42	1.31	1.30	1.00	2.73
Arkansas	1.51	90.68	1.32	1.30	1.00	2.77
California	1.52	81.62	1.50	1.37	1.01	47.94
Colorado	1.54	88.82	1.37	1.36	1.01	2.91
Connecticut	1.51	94.66	1.30	1.29	1.01	2.19
Washington D.C.	1.42	94.22	1.21	1.19	1.00	1.97
Delaware	1.44	93.22	1.25	1.22	1.01	2.87
Florida	1.48	88.80	1.32	1.32	1.01	1.98
Georgia	1.45	77.64	1.35	1.34	1.00	2.11
Hawaii	1.48	94.70	1.28	1.25	1.01	2.84
Idaho	1.53	92.84	1.32	1.29	1.01	1.94
Illinois	1.59	90.93	1.39	1.38	1.01	3.40
Indiana	1.43	81.62	1.33	1.32	1.00	3.01
Iowa	1.52	95.15	1.30	1.29	1.00	2.13
Kansas	1.56	87.99	1.37	1.34	1.01	3.71
Kentucky	1.46	82.85	1.34	1.31	1.01	3.26
Louisiana	1.47	81.25	1.34	1.30	1.00	3.38
Maine	1.46	90.33	1.28	1.26	1.00	1.94
Maryland	1.50	90.74	1.32	1.30	1.00	2.13
Massachusetts	1.49	92.48	1.33	1.32	1.01	2.14
Michigan	1.50	91.79	1.32	1.31	1.00	2.33
Minnesota	1.60	91.11	1.38	1.36	1.01	2.75
Mississippi	1.32	61.88	1.31	1.28	1.00	3.08
Missouri	1.60	89.87	1.39	1.37	1.01	2.24
Montana	1.53	92.45	1.31	1.28	1.00	3.11
Nebraska	1.51	92.71	1.32	1.30	1.00	2.03
Nevada	1.37	86.97	1.26	1.24	1.00	1.96
New Hampshire	1.49	95.42	1.29	1.26	1.01	2.88
New Jersey	1.46	81.78	1.34	1.33	1.00	3.16
New Mexico	1.56	89.22	1.37	1.34	1.00	3.63
New York	1.52	93.20	1.33	1.32	1.01	2.29
North Carolina	1.43	79.87	1.32	1.31	1.00	2.14
North Dakota	1.53	94.29	1.31	1.28	1.01	3.39
Ohio	1.50	94.05	1.29	1.27	1.00	2.78
Oklahoma	1.55	89.66	1.37	1.33	1.00	5.45
Oregon	1.52	83.07	1.37	1.35	1.01	2.11
Pennsylvania	1.60	91.63	1.40	1.38	1.01	3.40
Rhode Island	1.43	96.69	1.24	1.23	1.00	1.89
South Carolina	1.38	75.00	1.31	1.29	1.00	2.08
South Dakota	1.45	85.99	1.30	1.28	1.00	2.14
Tennessee	1.50	81.51	1.37	1.36	1.01	2.45
Texas	1.50	72.51	1.42	1.39	1.01	3.63
Utah	1.59	91.65	1.38	1.36	1.01	3.31
Vermont	1.51	93.27	1.29	1.26	1.01	3.04
Virginia	1.46	80.53	1.33	1.32	1.00	2.18
Washington	1.55	92.19	1.35	1.32	1.00	3.01
West Virginia	1.45	83.09	1.31	1.28	1.01	2.93
Wisconsin	1.54	94.57	1.34	1.32	1.00	2.23
Wyoming	1.45	81.05	1.33	1.28	1.01	3.57
Average of 50 states & DC	1.49	87.83	1.33	1.31	1.01	3.62

Appendix I-B. Child care multipliers compared to overall economy: Type II output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care multipliers	Percentile*	Overall mean	Overall median	Overall min	Overall max
Alabama	1.80	88.84	1.64	1.62	1.20	3.47
Alaska	1.81	90.87	1.58	1.55	1.15	4.48
Arizona	1.96	97.32	1.65	1.64	1.22	3.14
Arkansas	1.89	95.80	1.62	1.61	1.00	3.89
California	2.08	93.48	1.89	1.79	1.25	41.23
Colorado	2.04	94.30	1.76	1.74	1.15	4.27
Connecticut	1.96	98.38	1.65	1.64	1.19	3.33
Washington D.C.	1.80	95.56	1.50	1.46	1.09	2.35
Delaware	1.79	97.63	1.52	1.50	1.22	3.87
Florida	1.96	93.69	1.71	1.70	1.18	3.21
Georgia	1.89	84.60	1.72	1.70	1.20	3.29
Hawaii	1.89	98.11	1.58	1.55	1.20	3.89
Idaho	1.89	95.76	1.60	1.58	1.19	2.93
Illinois	2.13	95.97	1.81	1.80	1.25	4.88
Indiana	1.83	92.34	1.66	1.65	1.21	4.23
Iowa	1.88	97.69	1.59	1.58	1.19	3.00
Kansas	1.98	96.30	1.69	1.66	1.16	4.97
Kentucky	1.84	91.31	1.66	1.64	1.20	4.47
Louisiana	1.84	87.72	1.66	1.62	1.13	4.63
Maine	1.87	95.03	1.59	1.56	1.13	3.05
Maryland	1.96	96.61	1.66	1.64	1.21	3.30
Massachusetts	2.01	96.90	1.70	1.68	1.23	3.37
Michigan	1.93	96.84	1.65	1.64	1.11	3.51
Minnesota	2.11	95.33	1.77	1.75	1.16	4.09
Mississippi	1.64	71.53	1.58	1.56	1.18	4.10
Missouri	2.12	95.91	1.80	1.78	1.25	3.66
Montana	1.88	94.86	1.58	1.54	1.17	4.21
Nebraska	1.91	96.09	1.64	1.61	1.25	3.04
Nevada	1.67	90.16	1.51	1.49	1.17	2.85
New Hampshire	1.90	97.57	1.60	1.57	1.20	3.14
New Jersey	1.91	91.74	1.70	1.69	1.21	4.41
New Mexico	1.99	95.96	1.70	1.69	1.17	4.90
New York	2.04	97.53	1.70	1.69	1.22	3.53
North Carolina	1.84	86.86	1.67	1.65	1.18	3.31
North Dakota	1.86	96.43	1.58	1.55	1.16	4.49
Ohio	1.92	97.13	1.61	1.58	1.19	3.94
Oklahoma	1.97	95.06	1.70	1.69	-3.31	5.09
Oregon	2.01	93.10	1.73	1.71	1.22	3.34
Pennsylvania	2.17	97.14	1.83	1.82	1.26	4.95
Rhode Island	1.81	98.07	1.52	1.50	1.20	2.88
South Carolina	1.71	83.48	1.59	1.58	1.17	3.12
South Dakota	1.80	92.51	1.59	1.57	1.19	2.43
Tennessee	1.96	90.34	1.75	1.73	1.21	3.80
Texas	1.95	80.45	1.81	1.80	1.24	5.03
Utah	2.05	95.94	1.75	1.73	1.24	4.69
Vermont	1.91	97.37	1.59	1.57	1.18	3.22
Virginia	1.87	89.93	1.66	1.64	1.17	3.30
Washington	1.99	94.36	1.68	1.64	1.18	4.23
West Virginia	1.75	91.25	1.56	1.55	1.18	3.90
Wisconsin	1.98	97.17	1.66	1.65	1.20	3.41
Wyoming	1.76	87.72	1.57	1.53	1.13	4.53
Average of 50 states & DC	1.91	93.37	1.66	1.64	1.10	4.52

Appendix I-C. child care multipliers compared to overall economy: Type I employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care multipliers	Percentile*	Overall mean	Overall median	Overall min	Overall max
Alabama	1.24	27.07	1.64	1.43	1.00	11.62
Alaska	1.27	50.00	1.46	1.27	0.00	9.65
Arizona	1.27	32.89	1.57	1.42	1.00	6.98
Arkansas	1.30	36.21	1.64	1.41	1.00	10.99
California	1.25	25.35	1.68	1.48	1.00	7.40
Colorado	1.27	29.23	1.63	1.45	1.00	11.45
Connecticut	1.25	32.79	1.47	1.37	1.00	3.98
Washington D.C.	1.19	42.41	1.40	1.23	1.00	8.50
Delaware	1.25	46.60	1.36	1.26	1.00	3.89
Florida	1.25	26.53	1.73	1.45	1.00	51.90
Georgia	1.20	22.41	1.64	1.44	1.00	15.46
Hawaii	1.29	47.15	1.47	1.32	1.00	5.36
Idaho	1.33	36.70	1.64	1.46	1.00	5.59
Illinois	1.28	29.49	1.64	1.46	1.00	10.61
Indiana	1.23	25.66	1.60	1.42	1.00	17.37
Iowa	1.29	34.49	1.60	1.43	1.00	13.36
Kansas	1.32	35.65	1.69	1.44	1.00	19.28
Kentucky	1.25	27.90	1.70	1.43	1.00	17.97
Louisiana	1.26	32.66	1.62	1.42	1.00	15.58
Maine	1.29	37.67	1.51	1.39	1.00	4.58
Maryland	1.26	29.64	1.57	1.41	1.00	9.10
Massachusetts	1.26	35.92	1.49	1.38	1.00	4.38
Michigan	1.25	30.17	1.59	1.41	1.00	13.34
Minnesota	1.32	34.97	1.69	1.47	1.00	13.54
Mississippi	1.18	25.06	1.58	1.37	1.00	20.41
Missouri	1.31	28.29	1.74	1.50	1.00	17.42
Montana	1.32	42.12	1.57	1.37	1.00	9.33
Nebraska	1.28	32.11	1.64	1.44	1.00	12.69
Nevada	1.17	25.33	1.44	1.31	1.00	10.16
New Hampshire	1.28	40.54	1.46	1.36	1.00	3.88
New Jersey	1.21	26.33	1.53	1.41	1.00	4.66
New Mexico	1.34	38.38	1.68	1.46	1.00	15.41
New York	1.26	33.26	1.54	1.38	1.00	11.99
North Carolina	1.22	25.05	1.59	1.43	1.00	10.14
North Dakota	1.31	44.09	1.60	1.36	1.00	11.34
Ohio	1.28	37.45	1.58	1.37	1.00	16.68
Oklahoma	1.31	30.86	1.77	1.49	1.00	14.01
Oregon	1.31	30.13	1.68	1.51	1.00	5.69
Pennsylvania	1.29	31.08	1.68	1.47	1.00	7.79
Rhode Island	1.24	45.15	1.36	1.27	1.00	3.43
South Carolina	1.20	23.53	1.55	1.39	1.00	13.38
South Dakota	1.27	35.62	1.54	1.39	1.00	9.78
Tennessee	1.24	24.42	1.74	1.47	1.00	25.12
Texas	1.22	21.43	1.70	1.47	1.00	10.05
Utah	1.30	29.90	1.67	1.49	1.00	7.65
Vermont	1.30	39.30	1.53	1.39	1.00	6.18
Virginia	1.22	25.00	1.56	1.41	1.00	8.13
Washington	1.28	33.70	1.57	1.41	1.00	5.06
West Virginia	1.28	38.30	1.56	1.37	1.00	15.07
Wisconsin	1.31	32.03	1.64	1.46	1.00	12.12
Wyoming	1.30	41.90	1.58	1.37	1.00	10.87
Average of 50 states & DC	1.27	33.14	1.59	1.41	0.98	11.58

Appendix I-D. child care multipliers compared to overall economy: Type II employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care multipliers	Percentile*	Overall mean	Overall median	Overall min	Overall max
Alabama	1.44	15.44	2.23	1.96	1.06	14.52
Alaska	1.46	38.53	1.87	S	1.06	14.65
Arizona	1.52	17.45	2.19	1.97	1.04	9.60
Arkansas	1.53	21.50	2.24	1.93	1.05	14.94
California	1.54	15.25	2.47	2.13	1.10	31.70
Colorado	1.54	15.60	2.34	2.10	1.08	17.87
Connecticut	1.46	15.81	2.12	1.94	1.05	7.49
Washington D.C.	1.39	27.23	2.14	1.68	1.00	29.00
Delaware	1.45	24.49	1.90	1.68	1.06	28.06
Florida	1.52	14.49	2.56	2.09	1.09	85.20
Georgia	1.43	12.26	2.34	2.05	1.07	20.23
Hawaii	1.53	34.22	1.91	1.73	1.07	6.56
Idaho	1.56	24.20	2.24	1.95	1.11	8.44
Illinois	1.56	13.33	2.43	2.16	1.09	14.32
Indiana	1.45	12.94	2.24	2.00	1.09	21.12
Iowa	1.51	15.51	2.23	1.99	1.04	17.77
Kansas	1.55	18.52	2.31	1.98	1.08	25.45
Kentucky	1.46	14.96	2.34	2.01	1.06	22.63
Louisiana	1.47	16.78	2.25	1.94	1.04	18.90
Maine	1.56	28.25	2.07	1.91	1.07	6.20
Maryland	1.53	16.97	2.21	2.02	1.07	11.79
Massachusetts	1.54	17.96	2.16	2.02	1.04	6.73
Michigan	1.48	14.35	2.36	2.02	1.09	41.19
Minnesota	1.61	17.15	2.44	2.12	1.07	18.00
Mississippi	1.38	15.14	2.07	1.83	1.05	23.98
Missouri	1.60	14.90	2.54	2.22	1.03	22.35
Montana	1.54	28.18	2.10	1.86	1.04	11.35
Nebraska	1.52	16.97	2.29	1.98	1.05	17.21
Nevada	1.32	11.73	1.86	1.67	1.10	12.64
New Hampshire	1.52	20.00	2.04	1.87	1.03	5.59
New Jersey	1.43	13.16	2.22	2.02	1.07	16.87
New Mexico	1.61	23.78	2.31	1.96	1.09	22.30
New York	1.52	17.36	2.22	1.95	1.08	20.22
North Carolina	1.45	12.53	2.27	2.00	1.07	20.04
North Dakota	1.51	26.52	2.12	1.82	1.07	16.20
Ohio	1.53	19.14	2.22	1.96	1.06	19.60
Oklahoma	1.56	17.79	2.62	2.07	-0.38	21.51
Oregon	1.62	18.75	2.38	2.10	1.10	8.30
Pennsylvania	1.59	15.13	2.51	2.24	1.08	11.34
Rhode Island	1.47	26.87	1.85	1.71	1.04	5.82
South Carolina	1.39	13.51	2.10	1.90	1.05	16.56
South Dakota	1.50	21.24	2.11	1.90	1.09	13.99
Tennessee	1.48	12.42	2.46	2.13	1.04	28.77
Texas	1.44	11.84	2.43	2.11	1.07	16.96
Utah	1.57	16.51	2.39	2.12	1.12	11.74
Vermont	1.57	22.58	2.10	1.92	1.10	9.62
Virginia	1.45	14.25	2.16	1.96	1.05	11.86
Washington	1.51	17.39	2.18	1.94	1.06	7.16
West Virginia	1.48	25.44	2.06	1.83	1.03	19.56
Wisconsin	1.58	17.86	2.31	2.08	1.06	14.56
Wyoming	1.51	31.69	2.05	1.74	1.11	16.30
Average of 50 states & DC	1.50	18.94	2.23	1.97	1.04	17.94

Appendix II-A. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type I output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Alabama	1.44	1.32	1.27	1.35	1.32	1.29	1.20	1.15	1.23	1.25	1.24
Alaska	1.47	1.23	1.45	1.29	1.29	1.28	1.20	1.17	1.23	1.26	1.17
Arizona	1.52	1.28	1.19	1.37	1.31	1.28	1.24	1.18	1.27	1.29	1.18
Arkansas	1.51	1.27	1.23	1.34	1.32	1.31	1.19	1.14	1.21	1.25	1.24
California	1.52	1.41	1.36	1.40	1.38	1.37	1.29	1.21	1.30	1.35	1.31
Colorado	1.54	1.46	1.36	1.40	1.36	1.34	1.27	1.20	1.30	1.34	1.20
Connecticut	1.51	1.13	1.18	1.36	1.31	1.28	1.24	1.18	1.21	1.29	1.17
Washington D.C.	1.42	1.07	1.47	1.27	1.17	1.23	1.21	1.17	1.23	1.22	1.05
Delaware	1.44	1.26	1.25	1.23	1.22	1.21	1.16	1.13	1.19	1.21	1.14
Florida	1.48	1.21	1.20	1.43	1.33	1.28	1.26	1.19	1.31	1.31	1.18
Georgia	1.45	1.28	1.24	1.43	1.35	1.30	1.25	1.19	1.29	1.30	1.20
Hawaii	1.48	1.25	1.28	1.30	1.27	1.26	1.09	1.18	1.25	1.25	1.15
Idaho	1.53	1.32	1.32	1.34	1.30	1.26	1.20	1.15	1.22	1.28	1.17
Illinois	1.59	1.48	1.34	1.41	1.39	1.37	1.28	1.21	1.31	1.34	1.22
Indiana	1.43	1.44	1.24	1.33	1.32	1.30	1.20	1.16	1.22	1.29	1.18
Iowa	1.52	1.36	1.18	1.32	1.29	1.24	1.19	1.14	1.21	1.27	1.08
Kansas	1.56	1.45	1.31	1.35	1.35	1.34	1.23	1.17	1.24	1.30	1.19
Kentucky	1.46	1.24	1.30	1.35	1.34	1.30	1.20	1.14	1.22	1.27	1.24
Louisiana	1.47	1.36	1.36	1.34	1.30	1.32	1.21	1.16	1.24	1.26	1.18
Maine	1.46	1.26	1.17	1.33	1.27	1.21	1.18	1.13	1.21	1.24	1.15
Maryland	1.50	1.29	1.26	1.39	1.31	1.27	1.19	1.24	1.29	1.31	1.18
Massachusetts	1.49	1.31	1.22	1.37	1.33	1.30	1.26	1.19	1.28	1.31	1.18
Michigan	1.50	1.38	1.21	1.34	1.31	1.27	1.23	1.18	1.25	1.31	1.17
Minnesota	1.60	1.45	1.26	1.38	1.37	1.34	1.27	1.20	1.30	1.34	1.20
Mississippi	1.32	1.34	1.28	1.34	1.30	1.28	1.17	1.12	1.20	1.22	1.20
Missouri	1.60	1.52	1.30	1.40	1.38	1.32	1.25	1.19	1.30	1.32	1.21
Montana	1.53	1.35	1.37	1.32	1.28	1.29	1.18	1.14	1.22	1.26	1.17
Nebraska	1.51	1.36	1.26	1.32	1.30	1.27	1.22	1.16	1.26	1.29	1.18
Nevada	1.37	1.26	1.22	1.27	1.24	1.25	1.19	1.15	1.22	1.24	1.15
New Hampshire	1.49	1.32	1.16	1.34	1.27	1.23	1.21	1.16	1.24	1.26	1.15
New Jersey	1.46	1.29	1.25	1.40	1.33	1.32	1.26	1.19	1.28	1.32	1.19
New Mexico	1.56	1.36	1.36	1.36	1.34	1.32	1.25	1.19	1.23	1.31	1.18
New York	1.52	1.36	1.30	1.39	1.33	1.29	1.26	1.19	1.25	1.33	1.18
North Carolina	1.43	1.20	1.19	1.35	1.33	1.27	1.21	1.15	1.23	1.28	1.25
North Dakota	1.53	1.34	1.36	1.27	1.27	1.31	1.19	1.14	1.21	1.26	1.23

Appendix II-A. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type I output multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Ohio	1.50	1.34	1.23	1.35	1.27	1.33	1.22	1.17	1.26	1.30	1.18
Oklahoma	1.55	1.41	1.30	1.42	1.33	1.35	1.23	1.17	1.25	1.31	1.28
Oregon	1.52	1.47	1.27	1.39	1.36	1.30	1.26	1.19	1.28	1.34	1.24
Pennsylvania	1.60	1.42	1.36	1.44	1.39	1.37	1.27	1.20	1.29	1.35	1.20
Rhode Island	1.43	1.17	1.20	1.26	1.24	1.22	1.16	1.12	1.22	1.21	1.06
South Carolina	1.38	1.27	1.21	1.33	1.31	1.22	1.17	1.13	1.22	1.24	1.16
South Dakota	1.45	1.29	1.26	1.30	1.29	1.24	1.17	1.12	1.20	1.25	1.25
Tennessee	1.50	1.53	1.26	1.38	1.36	1.31	1.23	1.17	1.26	1.30	1.27
Texas	1.50	1.45	1.35	1.45	1.40	1.38	1.29	1.21	1.30	1.36	1.21
Utah	1.59	1.43	1.35	1.39	1.36	1.36	1.26	1.19	1.28	1.34	1.22
Vermont	1.51	1.27	1.19	1.32	1.26	1.25	1.21	1.15	1.23	1.28	1.08
Virginia	1.46	1.33	1.24	1.38	1.33	1.30	1.24	1.18	1.25	1.31	1.19
Washington	1.55	1.39	1.36	1.35	1.32	1.30	1.23	1.17	1.27	1.29	1.27
West Virginia	1.45	1.46	1.36	1.29	1.30	1.26	1.17	1.12	1.19	1.22	1.15
Wisconsin	1.54	1.43	1.21	1.34	1.33	1.29	1.22	1.16	1.25	1.31	1.17
Wyoming	1.45	1.43	1.39	1.27	1.27	1.30	1.18	1.14	1.20	1.26	1.17
Average of 50 states & D.C.	1.49	1.34	1.28	1.35	1.31	1.29	1.22	1.17	1.25	1.29	1.19

Appendix II-B. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type II output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Alabama	1.80	1.65	1.57	1.71	1.60	1.63	1.57	1.55	1.59	1.72	1.72
Alaska	1.81	1.54	1.69	1.58	1.47	1.60	1.51	1.50	1.58	1.65	1.61
Arizona	1.96	1.59	1.54	1.77	1.62	1.67	1.66	1.62	1.67	1.82	1.70
Arkansas	1.89	1.62	1.59	1.67	1.58	1.65	1.56	1.54	1.54	1.71	1.70
California	2.08	1.78	1.73	1.90	1.77	1.85	1.77	1.70	1.78	1.96	1.86
Colorado	2.04	1.73	1.78	1.82	1.71	1.82	1.72	1.67	1.72	1.91	1.84
Connecticut	1.96	1.51	1.50	1.76	1.63	1.67	1.64	1.59	1.51	1.81	1.72
Washington D.C.	1.80	1.44	1.67	1.54	1.42	1.52	1.53	1.50	1.57	1.68	1.60
Delaware	1.79	1.49	1.45	1.56	1.47	1.56	1.48	1.48	1.46	1.64	1.57
Florida	1.96	1.66	1.59	1.84	1.68	1.74	1.72	1.68	1.78	1.91	1.74
Georgia	1.89	1.66	1.59	1.87	1.69	1.72	1.68	1.63	1.74	1.86	1.73
Hawaii	1.89	1.49	1.53	1.67	1.53	1.61	1.52	1.56	1.64	1.73	1.62
Idaho	1.89	1.60	1.50	1.66	1.55	1.58	1.55	1.53	1.54	1.70	1.60
Illinois	2.13	1.77	1.72	1.90	1.78	1.84	1.77	1.71	1.80	1.95	1.84
Indiana	1.83	1.69	1.56	1.72	1.63	1.65	1.59	1.58	1.64	1.76	1.67
Iowa	1.88	1.62	1.48	1.66	1.57	1.57	1.56	1.53	1.64	1.71	1.69
Kansas	1.98	1.69	1.69	1.75	1.64	1.69	1.63	1.59	1.65	1.79	1.78
Kentucky	1.84	1.64	1.61	1.73	1.62	1.65	1.59	1.56	1.59	1.75	1.71
Louisiana	1.84	1.66	1.66	1.72	1.59	1.70	1.60	1.58	1.62	1.76	1.69
Maine	1.87	1.52	1.48	1.67	1.53	1.62	1.56	1.54	1.66	1.73	1.66
Maryland	1.96	1.57	1.58	1.77	1.62	1.65	1.62	1.64	1.72	1.86	1.78
Massachusetts	2.01	1.58	1.55	1.80	1.67	1.74	1.69	1.64	1.72	1.88	1.76
Michigan	1.93	1.60	1.55	1.73	1.62	1.70	1.63	1.60	1.63	1.80	1.66
Minnesota	2.11	1.75	1.64	1.85	1.73	1.77	1.72	1.67	1.76	1.91	1.81
Mississippi	1.64	1.62	1.54	1.65	1.53	1.56	1.51	1.49	1.55	1.64	1.62
Missouri	2.12	1.85	1.70	1.88	1.76	1.81	1.75	1.71	1.79	1.95	1.85
Montana	1.88	1.54	1.69	1.62	1.50	1.60	1.54	1.52	1.50	1.71	1.74
Nebraska	1.91	1.59	1.55	1.71	1.59	1.62	1.62	1.58	1.66	1.79	1.67
Nevada	1.67	1.49	1.51	1.58	1.47	1.55	1.50	1.48	1.45	1.63	1.59
New Hampshire	1.90	1.53	1.50	1.70	1.55	1.63	1.58	1.55	1.67	1.75	1.62
New Jersey	1.91	1.59	1.61	1.82	1.68	1.75	1.68	1.62	1.70	1.85	1.73
New Mexico	1.99	1.68	1.71	1.74	1.66	1.70	1.66	1.63	1.58	1.83	1.81
New York	2.04	1.64	1.60	1.80	1.68	1.74	1.70	1.65	1.73	1.87	1.75
North Carolina	1.84	1.62	1.54	1.74	1.64	1.64	1.60	1.57	1.61	1.78	1.64
North Dakota	1.86	1.58	1.57	1.58	1.51	1.61	1.53	1.51	1.49	1.67	1.70

Appendix II-B. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type II output multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Ohio	1.92	1.60	1.56	1.72	1.56	1.70	1.61	1.59	1.64	1.80	1.68
Oklahoma	1.97	1.77	1.69	1.81	1.64	1.73	1.66	1.63	1.66	1.84	1.80
Oregon	2.01	1.74	1.57	1.84	1.70	1.73	1.70	1.64	1.69	1.87	1.75
Pennsylvania	2.17	1.80	1.74	1.94	1.79	1.85	1.78	1.73	1.82	1.99	1.87
Rhode Island	1.81	1.41	1.41	1.57	1.49	1.54	1.50	1.48	1.58	1.66	1.65
South Carolina	1.71	1.56	1.49	1.66	1.57	1.58	1.52	1.50	1.58	1.68	1.60
South Dakota	1.80	1.60	1.51	1.63	1.54	1.58	1.52	1.50	1.56	1.66	1.66
Tennessee	1.96	1.79	1.62	1.83	1.71	1.72	1.69	1.66	1.76	1.88	1.72
Texas	1.95	1.84	1.73	1.92	1.77	1.86	1.75	1.68	1.76	1.93	1.79
Utah	2.05	1.73	1.71	1.81	1.70	1.76	1.72	1.67	1.63	1.92	1.83
Vermont	1.91	1.54	1.46	1.65	1.53	1.62	1.58	1.56	1.62	1.75	1.69
Virginia	1.87	1.60	1.56	1.77	1.62	1.71	1.64	1.60	1.63	1.82	1.77
Washington	1.99	1.67	1.63	1.77	1.63	1.70	1.63	1.59	1.69	1.81	1.69
West Virginia	1.75	1.58	1.62	1.60	1.52	1.55	1.48	1.46	1.48	1.60	1.66
Wisconsin	1.98	1.61	1.53	1.74	1.63	1.67	1.61	1.59	1.69	1.78	1.71
Wyoming	1.76	1.59	1.63	1.55	1.47	1.57	1.47	1.46	1.38	1.61	1.61
Average of 50 states & D.C.	1.91	1.63	1.59	1.73	1.61	1.67	1.62	1.59	1.64	1.79	1.71

Appendix II-C. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type I employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Alabama	1.24	1.16	1.40	1.41	1.51	1.58	1.25	1.06	1.43	1.18	1.28
Alaska	1.27	1.29	1.32	1.45	1.35	1.63	1.21	1.07	1.38	1.14	1.13
Arizona	1.27	1.34	1.25	1.47	1.45	1.63	1.32	1.08	1.64	1.20	1.15
Arkansas	1.30	1.21	1.25	1.44	1.50	1.56	1.24	1.07	1.36	1.18	1.38
California	1.25	1.29	1.60	1.46	1.52	1.62	1.33	1.10	1.61	1.21	1.37
Colorado	1.27	1.43	1.50	1.50	1.48	1.68	1.38	1.08	1.65	1.21	1.16
Connecticut	1.25	1.07	1.38	1.41	1.44	1.51	1.35	1.09	1.39	1.18	1.12
Washington D.C.	1.19	1.02	1.51	1.29	1.28	1.24	1.31	1.06	1.47	1.15	1.04
Delaware	1.25	1.20	1.07	1.30	1.31	1.44	1.22	1.05	1.36	1.14	1.11
Florida	1.25	1.17	1.31	1.53	1.52	1.65	1.34	1.09	1.66	1.21	1.16
Georgia	1.20	1.17	1.30	1.47	1.51	1.55	1.35	1.07	1.56	1.19	1.15
Hawaii	1.29	1.14	1.24	1.49	1.39	1.46	1.21	1.08	1.51	1.16	1.06
Idaho	1.33	1.48	1.49	1.51	1.52	1.62	1.25	1.08	1.42	1.18	1.16
Illinois	1.28	1.28	1.32	1.46	1.51	1.65	1.36	1.08	1.63	1.20	1.15
Indiana	1.23	1.22	1.41	1.39	1.48	1.56	1.25	1.06	1.43	1.18	1.14
Iowa	1.29	1.39	1.21	1.47	1.47	1.55	1.27	1.07	1.42	1.18	1.07
Kansas	1.32	1.33	1.39	1.45	1.50	1.55	1.30	1.07	1.43	1.19	1.14
Kentucky	1.25	1.17	1.41	1.43	1.51	1.55	1.26	1.06	1.39	1.19	1.36
Louisiana	1.26	1.18	1.33	1.42	1.49	1.61	1.25	1.06	1.40	1.18	1.15
Maine	1.29	1.24	1.14	1.42	1.48	1.61	1.23	1.06	1.37	1.17	1.13
Maryland	1.26	1.19	1.50	1.49	1.48	1.64	1.35	1.09	1.58	1.20	1.15
Massachusetts	1.26	1.12	1.22	1.42	1.43	1.62	1.36	1.09	1.55	1.18	1.13
Michigan	1.25	1.26	1.32	1.42	1.45	1.48	1.32	1.07	1.46	1.19	1.13
Minnesota	1.32	1.31	1.26	1.52	1.51	1.54	1.39	1.10	1.58	1.21	1.15
Mississippi	1.18	1.19	1.42	1.40	1.43	1.42	1.20	1.05	1.30	1.16	1.26
Missouri	1.31	1.36	1.43	1.49	1.57	1.67	1.33	1.08	1.53	1.21	1.17
Montana	1.32	1.46	1.38	1.49	1.45	1.56	1.21	1.06	1.38	1.17	1.14
Nebraska	1.28	1.47	1.35	1.49	1.47	1.77	1.27	1.07	1.45	1.18	1.15
Nevada	1.17	1.30	1.27	1.38	1.34	1.46	1.23	1.07	1.46	1.15	1.12
New Hampshire	1.28	1.22	1.34	1.42	1.41	1.52	1.32	1.08	1.41	1.17	1.11
New Jersey	1.21	1.11	1.76	1.42	1.47	1.62	1.35	1.09	1.49	1.18	1.13
New Mexico	1.34	1.40	1.41	1.48	1.51	1.63	1.26	1.08	1.46	1.21	1.16
New York	1.26	1.18	1.27	1.43	1.43	1.51	1.30	1.08	1.49	1.18	1.13
North Carolina	1.22	1.14	1.27	1.43	1.51	1.59	1.25	1.06	1.46	1.18	1.28
North Dakota	1.31	1.50	1.39	1.41	1.41	1.60	1.24	1.06	1.40	1.17	1.33

Appendix II-C. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type I employment multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Ohio	1.28	1.17	1.27	1.43	1.42	1.65	1.30	1.08	1.52	1.20	1.15
Oklahoma	1.31	1.24	1.32	1.51	1.54	1.72	1.28	1.08	1.44	1.20	1.42
Oregon	1.31	1.38	1.24	1.56	1.56	1.66	1.37	1.09	1.54	1.22	1.43
Pennsylvania	1.29	1.23	1.25	1.53	1.55	1.66	1.32	1.08	1.61	1.21	1.15
Rhode Island	1.24	1.08	1.21	1.33	1.32	1.54	1.19	1.06	1.37	1.14	1.05
South Carolina	1.20	1.17	1.21	1.39	1.48	1.58	1.22	1.06	1.42	1.16	1.13
South Dakota	1.27	1.59	1.30	1.47	1.44	1.62	1.21	1.05	1.35	1.16	1.07
Tennessee	1.24	1.21	1.38	1.42	1.55	1.65	1.28	1.07	1.50	1.20	1.34
Texas	1.22	1.26	1.50	1.48	1.53	1.64	1.06	1.10	1.41	1.21	1.39
Utah	1.30	1.30	1.47	1.50	1.55	1.79	1.34	1.08	1.55	1.23	1.17
Vermont	1.30	1.38	1.24	1.48	1.44	1.55	1.25	1.08	1.42	1.17	1.07
Virginia	1.22	1.21	1.38	1.44	1.47	1.61	1.35	1.08	1.55	1.19	1.15
Washington	1.28	1.33	1.38	1.44	1.46	1.57	1.27	1.08	1.51	1.18	1.31
West Virginia	1.28	1.20	1.55	1.37	1.45	1.47	1.20	1.05	1.27	1.15	1.12
Wisconsin	1.31	1.33	1.33	1.52	1.51	1.60	1.29	1.08	1.45	1.19	1.14
Wyoming	1.30	1.72	1.49	1.38	1.44	1.54	1.21	1.06	1.36	1.16	1.14
Average of 50 states & D.C.	1.27	1.27	1.35	1.45	1.47	1.58	1.28	1.07	1.47	1.18	1.18

Appendix II-D. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type II employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Alabama	1.44	1.34	2.11	1.90	2.11	2.20	1.78	1.28	1.87	1.46	1.83
Alaska	1.46	1.48	1.86	1.98	1.70	2.10	1.58	1.27	1.72	1.38	1.65
Arizona	1.52	1.65	1.86	2.08	2.03	2.46	1.95	1.31	2.26	1.53	1.85
Arkansas	1.53	1.50	1.78	1.91	2.06	2.28	1.74	1.29	1.74	1.46	1.96
California	1.54	1.50	2.31	2.16	2.21	2.92	2.00	1.39	2.38	1.58	2.03
Colorado	1.54	1.73	2.40	2.17	2.16	2.75	2.12	1.35	2.30	1.54	1.90
Connecticut	1.46	1.25	2.41	1.98	2.06	2.37	2.04	1.32	2.13	1.50	1.69
Washington D.C.	1.39	1.07	1.80	1.64	1.79	1.70	1.86	1.22	2.13	1.44	1.49
Delaware	1.45	1.37	1.21	1.79	1.77	2.01	1.74	1.24	1.80	1.39	1.70
Florida	1.52	1.47	2.09	2.18	2.19	2.66	2.02	1.37	2.36	1.58	1.95
Georgia	1.43	1.40	1.78	2.05	2.18	2.26	2.07	1.31	2.20	1.51	1.82
Hawaii	1.53	1.27	1.65	2.14	1.88	2.17	1.60	1.31	2.06	1.46	1.62
Idaho	1.56	1.82	2.28	2.07	2.09	2.31	1.73	1.31	1.83	1.44	1.53
Illinois	1.56	1.54	1.84	2.21	2.29	2.75	2.13	1.33	2.40	1.59	1.87
Indiana	1.45	1.39	1.86	1.96	2.14	2.38	1.82	1.28	1.88	1.49	1.83
Iowa	1.51	1.72	1.76	2.05	2.12	2.28	1.83	1.27	1.86	1.49	1.69
Kansas	1.55	1.57	2.12	2.03	2.09	2.33	1.92	1.33	1.88	1.48	1.81
Kentucky	1.46	1.38	2.06	1.96	2.15	2.26	1.82	1.31	1.80	1.47	1.91
Louisiana	1.47	1.37	1.80	1.95	2.08	2.36	1.78	1.28	1.82	1.49	1.89
Maine	1.56	1.46	1.38	1.97	2.08	2.51	1.78	1.32	1.80	1.48	1.87
Maryland	1.53	1.38	2.41	2.14	2.11	2.69	2.03	1.32	2.15	1.54	1.83
Massachusetts	1.54	1.21	1.74	2.07	2.09	2.71	2.15	1.38	2.33	1.54	1.78
Michigan	1.48	1.42	2.03	2.07	2.15	2.39	1.99	1.28	1.94	1.51	1.80
Minnesota	1.61	1.62	1.84	2.25	2.24	2.37	2.17	1.36	2.20	1.58	1.86
Mississippi	1.38	1.35	2.17	1.83	1.91	1.96	1.65	1.24	1.64	1.42	1.77
Missouri	1.60	1.60	1.93	2.21	2.36	2.74	2.06	1.35	2.14	1.59	1.98
Montana	1.54	1.78	2.14	2.02	1.95	2.28	1.68	1.28	1.79	1.44	1.87
Nebraska	1.52	1.86	2.37	2.10	2.09	2.69	1.84	1.29	1.93	1.48	1.88
Nevada	1.32	1.52	1.78	1.89	1.74	2.02	1.64	1.26	1.95	1.39	1.61
New Hampshire	1.52	1.30	2.35	2.00	2.01	2.48	2.03	1.32	1.85	1.48	1.74
New Jersey	1.43	1.26	3.14	2.03	2.09	2.67	2.04	1.33	2.09	1.52	1.71
New Mexico	1.61	1.69	2.16	2.06	2.04	2.40	1.76	1.34	1.91	1.53	1.97
New York	1.52	1.36	1.97	2.01	2.04	2.33	1.96	1.32	2.32	1.50	1.72
North Carolina	1.45	1.41	1.86	1.96	2.14	2.38	1.81	1.29	2.07	1.49	1.85
North Dakota	1.51	1.94	1.74	1.93	1.91	2.24	1.76	1.25	1.80	1.41	1.88

Appendix II–D. Child care multipliers compared to median multipliers of 10 aggregated sectors: Type II employment multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child Care	Agriculture	Mineral	Construction	Manufacturing	Transportation, Communication & Utilities	Wholesale	Retail	FIRE	Service	Public Administration
Ohio	1.53	1.33	1.89	2.02	2.06	2.35	1.92	1.31	2.03	1.51	1.86
Oklahoma	1.56	1.43	1.80	2.08	2.21	2.67	1.86	1.32	1.90	1.51	2.10
Oregon	1.62	1.63	1.63	2.28	2.29	2.50	2.08	1.37	2.08	1.57	2.26
Pennsylvania	1.59	1.41	1.75	2.27	2.35	2.93	2.05	1.36	2.35	1.61	1.93
Rhode Island	1.47	1.24	1.51	1.84	1.80	2.27	1.70	1.26	1.79	1.42	1.60
South Carolina	1.39	1.35	1.72	1.87	2.03	2.22	1.71	1.26	1.88	1.42	1.77
South Dakota	1.50	2.33	1.88	2.02	1.97	2.19	1.71	1.26	1.75	1.42	1.63
Tennessee	1.48	1.32	2.21	2.02	2.26	2.44	1.92	1.36	2.13	1.56	2.03
Texas	1.44	1.44	2.19	2.10	2.19	2.62	1.37	1.34	1.92	1.54	2.07
Utah	1.57	1.56	2.29	2.15	2.26	3.01	2.00	1.34	2.13	1.60	1.92
Vermont	1.57	1.65	1.66	2.05	2.03	2.35	1.80	1.32	1.89	1.50	1.68
Virginia	1.45	1.35	2.11	2.01	2.03	2.54	2.04	1.29	2.10	1.51	1.66
Washington	1.51	1.57	2.04	2.05	2.03	2.40	1.84	1.34	2.03	1.48	1.85
West Virginia	1.48	1.26	2.22	1.82	1.99	2.03	1.63	1.23	1.58	1.40	1.72
Wisconsin	1.58	1.49	1.89	2.20	2.21	2.46	1.89	1.31	1.92	1.52	1.85
Wyoming	1.51	2.13	2.27	1.81	1.82	2.10	1.60	1.24	1.69	1.38	1.72
Average of 50 states & D.C.	1.50	1.50	1.98	2.03	2.07	2.40	1.86	1.31	1.99	1.49	1.82

Appendix III-A. Child care multipliers compared to “like” sectors: Type I output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care (499)	Elementary and Secondary Schools (495)	Job Training and Related Services (498)	Colleges, Universities and Schools (496)	Water Supply and Sewage Systems (445)	Local, Interurban Passenger Transit (434)
Alabama	1.44	1.33	1.25	1.23	1.32	1.23
Alaska	1.47	1.36	1.30	1.21	1.32	1.28
Arizona	1.52	1.29	1.38	1.20	1.32	1.22
Arkansas	1.51	1.33	1.26	1.21	1.32	1.25
California	1.52	1.30	1.41	1.26	1.36	1.33
Colorado	1.54	1.36	1.37	1.29	1.36	1.29
Connecticut	1.51	1.25	1.37	1.19	1.35	1.23
Washington D.C.	1.42	1.16	1.23	1.15	1.22	1.18
Delaware	1.44	1.24	1.27	1.17	1.29	1.24
Florida	1.48	1.27	1.35	1.22	1.32	1.23
Georgia	1.45	1.29	1.32	1.22	1.35	1.26
Hawaii	1.48	1.22	1.33	1.17	1.28	1.27
Idaho	1.53	1.38	1.34	1.23	1.31	1.21
Illinois	1.59	1.34	1.38	1.22	1.39	1.36
Indiana	1.43	1.32	1.32	1.20	1.32	1.28
Iowa	1.52	1.32	1.33	1.19	1.28	1.22
Kansas	1.56	1.31	1.31	1.26	1.30	1.37
Kentucky	1.46	1.28	1.27	1.21	1.30	1.29
Louisiana	1.47	1.32	1.36	1.14	1.33	1.28
Maine	1.46	1.24	1.28	1.17	1.31	1.19
Maryland	1.50	1.29	1.31	1.21	1.36	1.24
Massachusetts	1.49	1.28	1.31	1.21	1.37	1.23
Michigan	1.50	1.34	1.35	1.27	1.34	1.23
Minnesota	1.60	1.35	1.38	1.28	1.37	1.30
Mississippi	1.32	1.25	1.29	1.15	1.28	1.26
Missouri	1.60	1.28	1.35	1.22	1.36	1.27
Montana	1.53	1.35	1.31	1.24	1.32	1.27
Nebraska	1.51	1.30	1.31	1.22	1.30	1.22
Nevada	1.37	1.29	1.30	1.24	1.31	1.16
New Hampshire	1.49	1.27	1.33	1.21	1.33	1.22
New Jersey	1.46	1.29	1.33	1.23	1.38	1.32
New Mexico	1.56	1.30	1.37	1.24	1.31	1.33
New York	1.52	1.28	1.33	1.20	1.35	1.25
North Carolina	1.43	1.28	1.29	1.19	1.33	1.23
North Dakota	1.53	1.29	1.35	1.23	1.31	1.31
Ohio	1.50	1.34	1.32	1.22	1.34	1.26
Oklahoma	1.55	1.32	1.36	1.23	1.34	1.37
Oregon	1.52	1.38	1.39	1.29	1.35	1.24
Pennsylvania	1.60	1.31	1.33	1.21	1.38	1.36
Rhode Island	1.43	1.24	1.30	1.14	1.30	1.17
South Carolina	1.38	1.30	1.32	1.20	1.33	1.21
South Dakota	1.45	1.25	1.27	1.19	1.29	1.20
Tennessee	1.50	1.28	1.30	1.18	1.35	1.24
Texas	1.50	1.32	1.37	1.25	1.34	1.37
Utah	1.59	1.42	1.36	1.27	1.36	1.36
Vermont	1.51	1.28	1.29	1.22	1.31	1.19
Virginia	1.46	1.31	1.34	1.24	1.34	1.24
Washington	1.55	1.33	1.33	1.25	1.35	1.28
West Virginia	1.45	1.30	1.22	1.18	1.28	1.24
Wisconsin	1.54	1.32	1.35	1.21	1.33	1.23
Wyoming	1.45	1.34	1.32	1.28	1.31	1.28
Average of 50 states & D.C.	1.49	1.30	1.32	1.22	1.33	1.26

Appendix III-B. Child care multipliers compared to “like” sectors: Type II output multipliers by state, 2000. Source: IMPLAN 2000.

STATES	Child care (499)	Elementary and Secondary Schools (495)	Job Training and Related Services (498)	Colleges, Universities and Schools (496)	Water Supply and Sewage Systems (445)	Local, Interurban Passenger Transit (434)
Alabama	1.80	1.89	1.73	1.81	1.63	1.66
Alaska	1.81	1.82	1.72	1.68	1.60	1.64
Arizona	1.96	1.93	1.90	1.88	1.67	1.70
Arkansas	1.89	1.87	1.72	1.79	1.64	1.68
California	2.08	2.04	2.05	2.02	1.77	1.91
Colorado	2.04	2.04	1.99	1.99	1.75	1.83
Connecticut	1.96	1.89	1.90	1.84	1.69	1.70
Washington D.C.	1.80	1.66	1.70	1.68	1.45	1.54
Delaware	1.79	1.78	1.67	1.71	1.57	1.62
Florida	1.96	1.98	1.97	1.95	1.70	1.77
Georgia	1.89	1.95	1.88	1.91	1.71	1.76
Hawaii	1.89	1.82	1.83	1.76	1.59	1.69
Idaho	1.89	1.88	1.78	1.76	1.61	1.59
Illinois	2.13	2.08	2.04	2.01	1.81	1.93
Indiana	1.83	1.93	1.85	1.83	1.66	1.74
Iowa	1.88	1.84	1.80	1.77	1.59	1.63
Kansas	1.98	1.90	1.83	1.86	1.63	1.84
Kentucky	1.84	1.88	1.76	1.81	1.64	1.75
Louisiana	1.84	1.91	1.84	1.79	1.67	1.74
Maine	1.87	1.86	1.80	1.79	1.64	1.62
Maryland	1.96	1.94	1.86	1.89	1.72	1.72
Massachusetts	2.01	1.97	1.90	1.93	1.75	1.75
Michigan	1.93	1.95	1.89	1.90	1.69	1.70
Minnesota	2.11	2.04	2.00	2.00	1.76	1.83
Mississippi	1.64	1.76	1.74	1.68	1.56	1.66
Missouri	2.12	2.06	2.00	2.01	1.79	1.83
Montana	1.88	1.88	1.79	1.78	1.64	1.68
Nebraska	1.91	1.88	1.83	1.86	1.63	1.68
Nevada	1.67	1.77	1.71	1.70	1.58	1.54
New Hampshire	1.90	1.87	1.84	1.82	1.65	1.64
New Jersey	1.91	1.94	1.88	1.90	1.74	1.81
New Mexico	1.99	1.93	1.90	1.84	1.65	1.80
New York	2.04	1.97	1.91	1.92	1.73	1.77
North Carolina	1.84	1.92	1.82	1.85	1.68	1.69
North Dakota	1.86	1.82	1.77	1.76	1.61	1.71
Ohio	1.92	1.94	1.83	1.85	1.68	1.71
Oklahoma	1.97	1.96	1.88	1.87	1.70	1.86
Oregon	2.01	2.02	1.96	1.96	1.73	1.75
Pennsylvania	2.17	2.10	2.00	2.05	1.83	1.94
Rhode Island	1.81	1.79	1.72	1.72	1.60	1.56
South Carolina	1.71	1.84	1.76	1.75	1.64	1.61
South Dakota	1.80	1.81	1.76	1.74	1.60	1.60
Tennessee	1.96	2.01	1.91	1.92	1.74	1.78
Texas	1.95	2.00	1.96	1.97	1.72	1.92
Utah	2.05	2.08	1.98	1.98	1.75	1.89
Vermont	1.91	1.88	1.82	1.83	1.64	1.62
Virginia	1.87	1.92	1.85	1.88	1.67	1.70
Washington	1.99	1.95	1.88	1.88	1.70	1.76
West Virginia	1.75	1.75	1.62	1.64	1.55	1.61
Wisconsin	1.98	1.93	1.87	1.86	1.68	1.69
Wyoming	1.76	1.77	1.69	1.65	1.57	1.63
Average of 50 states & D.C.	1.91	1.91	1.84	1.84	1.67	1.72

Appendix III-C. Child care multipliers compared to “like” sectors: Type I employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care	Elementary and Secondary Schools (495)	Job Training and Related Services (498)	Colleges, Universities and Schools (496)	Water Supply and Sewage Systems (445)	Local, Interurban Passenger Transit (434)
Alabama	1.24	1.11	1.18	1.09	1.59	1.10
Alaska	1.27	1.09	1.22	1.07	1.75	1.09
Arizona	1.27	1.10	1.23	1.09	1.68	1.11
Arkansas	1.30	1.12	1.19	1.09	1.54	1.10
California	1.25	1.09	1.25	1.08	2.07	1.12
Colorado	1.27	1.10	1.24	1.09	1.98	1.13
Connecticut	1.25	1.09	1.19	1.08	2.21	1.10
Washington D.C.	1.19	1.06	1.20	1.07	1.20	1.07
Delaware	1.25	1.09	1.17	1.07	1.88	1.08
Florida	1.25	1.11	1.21	1.10	1.76	1.11
Georgia	1.20	1.10	1.20	1.09	1.70	1.10
Hawaii	1.29	1.09	1.24	1.07	2.39	1.09
Idaho	1.33	1.12	1.28	1.09	2.39	1.09
Illinois	1.28	1.10	1.23	1.09	1.80	1.11
Indiana	1.23	1.10	1.21	1.08	1.86	1.09
Iowa	1.29	1.10	1.21	1.09	1.69	1.09
Kansas	1.32	1.10	1.22	1.09	1.42	1.11
Kentucky	1.25	1.11	1.19	1.09	1.67	1.10
Louisiana	1.26	1.11	1.18	1.08	1.57	1.11
Maine	1.29	1.11	1.29	1.09	1.86	1.09
Maryland	1.26	1.11	1.23	1.10	2.12	1.11
Massachusetts	1.26	1.09	1.22	1.08	2.05	1.09
Michigan	1.25	1.10	1.23	1.09	1.89	1.10
Minnesota	1.32	1.11	1.27	1.10	1.79	1.11
Mississippi	1.18	1.09	1.18	1.07	1.44	1.09
Missouri	1.31	1.11	1.23	1.10	1.98	1.11
Montana	1.32	1.12	1.26	1.09	1.54	1.10
Nebraska	1.28	1.10	1.23	1.09	2.49	1.10
Nevada	1.17	1.08	1.16	1.07	1.39	1.11
New Hampshire	1.28	1.10	1.25	1.08	2.01	1.08
New Jersey	1.21	1.09	1.19	1.08	2.63	1.10
New Mexico	1.34	1.12	1.29	1.09	1.58	1.12
New York	1.26	1.09	1.19	1.08	1.97	1.09
North Carolina	1.22	1.11	1.21	1.09	1.67	1.09
North Dakota	1.31	1.11	1.25	1.10	1.68	1.10
Ohio	1.28	1.11	1.23	1.10	1.73	1.09
Oklahoma	1.31	1.12	1.25	1.10	1.93	1.12
Oregon	1.31	1.11	1.28	1.10	1.59	1.12
Pennsylvania	1.29	1.11	1.22	1.10	1.91	1.11
Rhode Island	1.24	1.09	1.19	1.07	3.43	1.07
South Carolina	1.20	1.10	1.20	1.08	1.68	1.09
South Dakota	1.27	1.10	1.22	1.08	1.66	1.09
Tennessee	1.24	1.11	1.22	1.09	1.89	1.11
Texas	1.22	1.09	1.22	1.09	1.74	1.12
Utah	1.30	1.12	1.30	1.11	2.03	1.13
Vermont	1.30	1.12	1.35	1.10	1.61	1.10
Virginia	1.22	1.10	1.23	1.09	1.72	1.10
Washington	1.28	1.09	1.23	1.07	1.60	1.10
West Virginia	1.28	1.10	1.18	1.07	1.69	1.09
Wisconsin	1.31	1.10	1.26	1.09	2.00	1.10
Wyoming	1.30	1.11	1.28	1.08	1.35	1.10
Average of 50 states & D.C.	1.27	1.10	1.23	1.09	1.84	1.10

Appendix III-D. Child care multipliers compared to “like” sectors: Type II employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care	Elementary and Secondary Schools (495)	Job Training and Related Services (498)	Colleges, Universities and Schools (496)	Water Supply and Sewage Systems (445)	Local, Interurban Passenger Transit (434)
Alabama	1.44	1.29	1.44	1.33	2.12	1.34
Alaska	1.46	1.21	1.45	1.23	2.39	1.29
Arizona	1.52	1.33	1.47	1.42	2.39	1.40
Arkansas	1.53	1.29	1.43	1.33	2.04	1.34
California	1.54	1.33	1.52	1.37	3.27	1.43
Colorado	1.54	1.31	1.55	1.35	3.00	1.47
Connecticut	1.46	1.33	1.43	1.42	3.41	1.35
Washington D.C.	1.39	1.26	1.46	1.33	1.41	1.27
Delaware	1.45	1.30	1.35	1.33	2.74	1.27
Florida	1.52	1.38	1.55	1.45	2.62	1.42
Georgia	1.43	1.33	1.47	1.41	2.41	1.35
Hawaii	1.53	1.34	1.49	1.35	3.64	1.30
Idaho	1.56	1.28	1.54	1.32	3.64	1.29
Illinois	1.56	1.33	1.54	1.47	2.74	1.39
Indiana	1.45	1.30	1.49	1.35	2.72	1.34
Iowa	1.51	1.26	1.47	1.37	2.36	1.31
Kansas	1.55	1.28	1.50	1.29	1.86	1.34
Kentucky	1.46	1.31	1.45	1.31	2.31	1.36
Louisiana	1.47	1.29	1.42	1.48	2.13	1.41
Maine	1.56	1.40	1.62	1.42	2.70	1.32
Maryland	1.53	1.36	1.52	1.46	3.23	1.37
Massachusetts	1.54	1.34	1.50	1.42	3.20	1.37
Michigan	1.48	1.30	1.50	1.33	2.84	1.36
Minnesota	1.61	1.33	1.58	1.38	2.62	1.40
Mississippi	1.38	1.26	1.42	1.31	1.85	1.33
Missouri	1.60	1.42	1.57	1.48	3.06	1.39
Montana	1.54	1.29	1.55	1.31	2.03	1.33
Nebraska	1.52	1.29	1.53	1.38	4.11	1.36
Nevada	1.32	1.23	1.35	1.20	1.73	1.40
New Hampshire	1.52	1.35	1.52	1.37	3.03	1.31
New Jersey	1.43	1.31	1.43	1.37	4.29	1.34
New Mexico	1.61	1.35	1.58	1.32	2.16	1.40
New York	1.52	1.32	1.45	1.42	2.97	1.35
North Carolina	1.45	1.34	1.49	1.41	2.30	1.33
North Dakota	1.51	1.30	1.48	1.32	2.29	1.32
Ohio	1.53	1.31	1.49	1.38	2.46	1.33
Oklahoma	1.56	1.33	1.51	1.36	2.83	1.38
Oregon	1.62	1.31	1.57	1.36	2.18	1.40
Pennsylvania	1.59	1.39	1.56	1.53	2.96	1.39
Rhode Island	1.47	1.30	1.38	1.37	5.82	1.28
South Carolina	1.39	1.29	1.42	1.31	2.28	1.29
South Dakota	1.50	1.33	1.54	1.32	2.27	1.31
Tennessee	1.48	1.38	1.54	1.47	2.83	1.42
Texas	1.44	1.30	1.49	1.39	2.57	1.42
Utah	1.57	1.31	1.68	1.42	3.09	1.42
Vermont	1.57	1.37	1.72	1.41	2.19	1.37
Virginia	1.45	1.32	1.48	1.37	2.46	1.35
Washington	1.51	1.28	1.52	1.30	2.21	1.35
West Virginia	1.48	1.23	1.42	1.25	2.31	1.31
Wisconsin	1.58	1.32	1.55	1.40	3.06	1.37
Wyoming	1.51	1.25	1.49	1.18	1.62	1.33
Average of 50 states & D.C.	1.50	1.31	1.50	1.37	2.68	1.35

Appendix IV-A. Child care multipliers compared to “quality of life” and “traded” sectors: Type I output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
Alabama	1.44	1.33	1.26	1.20	1.20	1.30	1.21	1.31	1.24
Alaska	1.47	1.24	1.25	1.20	1.22	1.34	1.20	1.30	0.00
Arizona	1.52	1.32	1.29	1.24	1.24	1.38	1.28	1.32	1.24
Arkansas	1.51	1.33	1.24	1.19	1.19	1.30	1.21	1.29	1.24
California	1.52	1.40	1.35	1.29	1.28	1.42	1.32	1.35	1.28
Colorado	1.54	1.40	1.32	1.27	1.27	1.40	1.33	1.36	1.27
Connecticut	1.51	1.31	1.28	1.24	1.25	1.84	1.25	1.30	1.24
Washington D.C.	1.42	1.22	1.28	1.21	1.23	1.27	1.29	1.25	1.08
Delaware	1.44	1.22	1.21	1.16	1.17	1.22	1.17	1.24	1.16
Florida	1.48	1.33	1.30	1.26	1.26	1.39	1.31	1.33	1.27
Georgia	1.45	1.38	1.33	1.25	1.25	1.35	1.29	1.32	1.26
Hawaii	1.48	1.38	1.26	1.09	1.22	1.35	1.22	1.26	0.00
Idaho	1.53	1.35	1.26	1.20	1.20	1.33	1.21	1.31	1.24
Illinois	1.59	1.41	1.33	1.28	1.28	1.35	1.33	1.35	1.28
Indiana	1.43	1.34	1.25	1.20	1.21	1.30	1.21	1.30	1.25
Iowa	1.52	1.36	1.21	1.19	1.19	1.30	1.20	1.29	1.22
Kansas	1.56	1.36	1.27	1.23	1.22	1.34	1.24	1.32	1.23
Kentucky	1.46	1.32	1.24	1.20	1.19	1.28	1.22	1.28	1.25
Louisiana	1.47	1.31	1.24	1.21	1.21	1.31	1.20	1.28	1.21
Maine	1.46	1.28	1.23	1.18	1.17	1.29	1.19	1.26	1.22
Maryland	1.50	1.34	1.34	1.19	1.26	1.38	1.28	1.29	1.25
Massachusetts	1.49	1.34	1.34	1.26	1.25	1.31	1.28	1.32	1.26
Michigan	1.50	1.34	1.28	1.23	1.23	1.35	1.24	1.34	1.22
Minnesota	1.60	1.44	1.33	1.27	1.26	1.39	1.31	1.36	1.27
Mississippi	1.32	1.28	1.18	1.17	1.17	1.26	1.16	1.23	1.21
Missouri	1.60	1.44	1.31	1.25	1.26	1.36	1.30	1.35	1.27
Montana	1.53	1.28	1.22	1.18	1.18	1.32	1.22	1.29	1.27
Nebraska	1.51	1.38	1.26	1.22	1.21	1.34	1.28	1.33	1.25
Nevada	1.37	1.25	1.22	1.19	1.20	1.29	1.22	1.25	1.21
New Hampshire	1.49	1.26	1.25	1.21	1.21	1.32	1.22	1.29	1.22
New Jersey	1.46	1.35	1.33	1.26	1.26	1.34	1.27	1.30	1.25
New Mexico	1.56	1.34	1.31	1.25	1.25	1.42	1.23	1.35	1.23
New York	1.52	1.35	1.33	1.26	1.26	1.33	1.29	1.30	1.28

DAppendix IV-A. Child care multipliers compared to “quality of life” and “traded” sectors: Type I output multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
North Carolina	1.43	1.33	1.26	1.21	1.20	1.30	1.23	1.30	1.24
North Dakota	1.53	1.32	1.22	1.19	1.19	1.32	1.22	1.29	1.24
Ohio	1.50	1.32	1.30	1.22	1.23	1.35	1.25	1.32	1.23
Oklahoma	1.55	1.38	1.28	1.23	1.23	1.40	1.23	1.35	1.26
Oregon	1.52	1.39	1.33	1.26	1.25	1.44	1.28	1.36	1.27
Pennsylvania	1.60	1.42	1.35	1.27	1.27	1.38	1.29	1.36	1.28
Rhode Island	1.43	1.25	1.19	1.16	1.16	1.24	1.22	1.23	1.19
South Carolina	1.38	1.28	1.21	1.17	1.18	1.26	1.19	1.26	1.22
South Dakota	1.45	1.32	1.19	1.17	1.17	1.29	1.18	1.27	1.21
Tennessee	1.50	1.36	1.30	1.23	1.23	1.33	1.24	1.31	1.27
Texas	1.50	1.41	1.36	1.29	1.28	1.40	1.30	1.36	1.28
Utah	1.59	1.43	1.33	1.26	1.26	1.42	1.28	1.36	1.31
Vermont	1.51	1.31	1.29	1.21	1.21	1.36	1.22	1.29	1.23
Virginia	1.46	1.35	1.31	1.24	1.24	1.34	1.28	1.33	1.25
Washington	1.55	1.35	1.29	1.23	1.23	1.35	1.27	1.32	1.22
West Virginia	1.45	1.25	1.21	1.17	1.16	1.26	1.14	1.24	1.19
Wisconsin	1.54	1.41	1.28	1.22	1.22	1.34	1.25	1.33	1.24
Wyoming	1.45	1.26	1.24	1.18	1.19	1.26	1.20	1.29	1.22
Average of 50 states & D.C.	1.49	1.34	1.28	1.22	1.22	1.34	1.24	1.31	1.19

Appendix IV-B. Child care multipliers compared to “quality of life” and “traded” sectors: Type II output multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
Alabama	1.80	1.68	1.63	1.57	1.55	1.73	1.42	1.68	1.66
Alaska	1.81	1.54	1.57	1.51	1.52	1.68	1.37	1.62	0.00
Arizona	1.96	1.72	1.72	1.66	1.63	1.90	1.53	1.74	1.72
Arkansas	1.89	1.68	1.62	1.56	1.54	1.69	1.42	1.65	1.66
California	2.08	1.89	1.86	1.77	1.73	2.05	1.64	1.85	1.84
Colorado	2.04	1.84	1.79	1.72	1.69	1.98	1.62	1.82	1.80
Connecticut	1.96	1.71	1.70	1.64	1.62	1.71	1.49	1.71	1.72
Washington D.C.	1.80	1.53	1.60	1.53	1.53	1.71	1.51	1.58	1.52
Delaware	1.79	1.53	1.54	1.48	1.48	1.63	1.36	1.56	1.56
Florida	1.96	1.78	1.79	1.72	1.69	1.97	1.60	1.81	1.78
Georgia	1.89	1.81	1.77	1.68	1.65	1.89	1.56	1.76	1.75
Hawaii	1.89	1.66	1.65	1.52	1.57	1.77	1.43	1.64	0.00
Idaho	1.89	1.67	1.62	1.55	1.53	1.73	1.41	1.65	1.62
Illinois	2.13	1.89	1.85	1.77	1.73	2.00	1.65	1.85	1.87
Indiana	1.83	1.72	1.66	1.59	1.58	1.74	1.43	1.69	1.72
Iowa	1.88	1.70	1.60	1.56	1.53	1.70	1.41	1.65	1.66
Kansas	1.98	1.74	1.68	1.63	1.60	1.79	1.48	1.72	1.69
Kentucky	1.84	1.71	1.64	1.59	1.56	1.73	1.44	1.67	1.71
Louisiana	1.84	1.69	1.67	1.60	1.59	1.74	1.41	1.68	1.65
Maine	1.87	1.65	1.61	1.56	1.53	1.73	1.40	1.63	1.66
Maryland	1.96	1.74	1.77	1.62	1.65	1.92	1.54	1.72	1.72
Massachusetts	2.01	1.78	1.80	1.69	1.66	1.91	1.56	1.77	1.78
Michigan	1.93	1.72	1.71	1.63	1.61	1.85	1.48	1.74	1.72
Minnesota	2.11	1.89	1.81	1.72	1.69	1.97	1.60	1.82	1.81
Mississippi	1.64	1.59	1.54	1.51	1.49	1.61	1.34	1.57	1.61
Missouri	2.12	1.92	1.83	1.75	1.72	1.96	1.61	1.85	1.85
Montana	1.88	1.60	1.59	1.54	1.53	1.69	1.43	1.63	1.61
Nebraska	1.91	1.75	1.59	1.62	1.59	1.81	1.52	1.72	1.71
Nevada	1.67	1.56	1.55	1.50	1.50	1.68	1.40	1.57	1.56
New Hampshire	1.90	1.62	1.63	1.58	1.56	1.79	1.43	1.67	1.67
New Jersey	1.91	1.77	1.77	1.68	1.65	1.90	1.52	1.73	1.76
New Mexico	1.99	1.73	1.73	1.66	1.64	1.91	1.46	1.77	1.69
New York	2.04	1.79	1.79	1.70	1.67	1.92	1.59	1.76	1.78

Appendix IV-B. Child care multipliers compared to “quality of life” and “traded” sectors: Type II output multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
North Carolina	1.84	1.72	1.67	1.60	1.57	1.78	1.47	1.70	1.71
North Dakota	1.86	1.63	1.57	1.53	1.52	1.67	1.42	1.62	1.56
Ohio	1.92	1.68	1.71	1.61	1.60	1.83	1.49	1.72	1.69
Oklahoma	1.97	1.79	1.73	1.66	1.64	1.87	1.47	1.78	1.73
Oregon	2.01	1.82	1.78	1.70	1.66	1.96	1.54	1.79	1.77
Pennsylvania	2.17	1.91	1.88	1.78	1.74	2.04	1.61	1.88	1.89
Rhode Island	1.81	1.57	1.54	1.50	1.48	1.63	1.43	1.58	1.62
South Carolina	1.71	1.62	1.57	1.52	1.50	1.66	1.38	1.61	1.63
South Dakota	1.80	1.64	1.56	1.52	1.50	1.65	1.38	1.62	1.62
Tennessee	1.96	1.82	1.79	1.69	1.67	1.89	1.52	1.78	1.81
Texas	1.95	1.86	1.84	1.75	1.71	2.00	1.59	1.83	1.80
Utah	2.05	1.86	1.80	1.72	1.68	1.95	1.55	1.82	1.78
Vermont	1.91	1.67	1.66	1.58	1.56	1.80	1.44	1.66	1.66
Virginia	1.87	1.74	1.72	1.64	1.62	1.87	1.53	1.74	1.69
Washington	1.99	1.76	1.71	1.63	1.61	1.83	1.51	1.72	1.68
West Virginia	1.75	1.54	1.52	1.48	1.46	1.60	1.31	1.55	1.56
Wisconsin	1.98	1.78	1.70	1.61	1.59	1.80	1.49	1.72	1.72
Wyoming	1.76	1.51	1.53	1.47	1.47	1.60	1.37	1.58	1.51
Average of 50 states & D.C.	1.91	1.72	1.69	1.62	1.60	1.81	1.48	1.71	1.63

Appendix IV-C. Child care multipliers compared to “quality of life” and “traded” sectors: Type I employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
Alabama	1.24	1.12	1.40	1.25	1.09	1.36	1.47	1.19	1.22
Alaska	1.27	1.11	1.10	1.21	1.09	1.33	1.44	1.19	0.00
Arizona	1.27	1.12	1.11	1.32	1.09	1.42	1.64	1.24	1.23
Arkansas	1.30	1.13	1.12	1.24	1.08	1.36	1.40	1.18	1.24
California	1.25	1.14	1.10	1.33	1.15	1.41	1.69	1.24	1.23
Colorado	1.27	1.14	1.13	1.38	1.10	1.44	1.61	1.24	1.24
Connecticut	1.25	1.11	1.13	1.35	1.11	1.37	1.52	1.21	1.20
Washington D.C.	1.19	1.09	1.07	1.31	1.08	1.34	1.62	1.23	1.14
Delaware	1.25	1.09	1.07	1.22	1.07	1.27	1.59	1.16	1.15
Florida	1.25	1.14	1.16	1.34	1.12	1.45	1.68	1.26	1.24
Georgia	1.20	1.13	1.08	1.35	1.10	1.38	1.57	1.25	1.22
Hawaii	1.29	1.14	1.11	1.21	1.11	1.36	1.52	1.28	0.00
Idaho	1.33	1.13	1.09	1.25	1.09	1.40	1.48	1.21	1.24
Illinois	1.28	1.13	1.11	1.36	1.10	1.42	1.71	1.23	1.24
Indiana	1.23	1.12	1.11	1.25	1.08	1.33	1.40	1.18	1.23
Iowa	1.29	1.12	1.13	1.27	1.09	1.37	1.49	1.18	1.24
Kansas	1.32	1.13	1.09	1.30	1.13	1.37	1.48	1.19	1.22
Kentucky	1.25	1.13	1.08	1.26	1.10	1.36	1.45	1.19	1.24
Louisiana	1.26	1.13	1.19	1.25	1.08	1.34	1.39	1.23	1.20
Maine	1.29	1.13	1.07	1.23	1.09	1.35	1.43	1.17	1.23
Maryland	1.26	1.13	1.09	1.35	1.10	1.43	1.58	1.36	1.22
Massachusetts	1.26	1.12	1.07	1.36	1.13	1.37	1.68	1.22	1.21
Michigan	1.25	1.12	1.11	1.32	1.09	1.38	1.49	1.19	1.23
Minnesota	1.32	1.15	1.11	1.39	1.11	1.45	1.67	1.21	1.26
Mississippi	1.18	1.11	1.13	1.20	1.06	1.29	1.34	1.21	1.20
Missouri	1.31	1.15	1.13	1.33	1.10	1.40	1.60	1.23	1.26
Montana	1.32	1.12	1.09	1.21	1.07	1.36	1.44	1.18	1.23
Nebraska	1.28	1.13	1.09	1.27	1.08	1.40	1.55	1.18	1.25
Nevada	1.17	1.10	1.13	1.23	1.10	1.33	1.51	1.18	1.18
New Hampshire	1.28	1.11	1.08	1.32	1.09	1.35	1.40	1.18	1.21
New Jersey	1.21	1.12	1.08	1.35	1.11	1.37	1.56	1.28	1.21
New Mexico	1.34	1.15	1.11	1.26	1.11	1.48	1.48	1.23	1.25
New York	1.26	1.12	1.08	1.30	1.12	1.37	1.93	1.25	1.21

Appendix IV-C. Child care multipliers compared to “quality of life” and “traded” sectors: Type I employment multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
North Carolina	1.22	1.12	1.08	1.25	1.08	1.34	1.59	1.18	1.22
North Dakota	1.31	1.12	1.09	1.24	1.08	1.36	1.51	1.17	1.19
Ohio	1.28	1.12	1.10	1.30	1.13	1.42	1.58	1.23	1.22
Oklahoma	1.31	1.15	1.11	1.28	1.09	1.43	1.50	1.21	1.25
Oregon	1.31	1.16	1.11	1.37	1.13	1.47	1.61	1.22	1.26
Pennsylvania	1.29	1.14	1.09	1.32	1.11	1.43	1.60	1.23	1.25
Rhode Island	1.24	1.09	1.07	1.19	1.07	1.24	1.43	1.15	1.18
South Carolina	1.20	1.11	1.09	1.22	1.07	1.30	1.40	1.17	1.21
South Dakota	1.27	1.12	1.09	1.21	1.07	1.31	1.39	1.16	1.22
Tennessee	1.24	1.14	1.10	1.28	1.11	1.37	1.55	1.23	1.25
Texas	1.22	1.14	1.10	1.06	1.11	1.44	1.61	1.24	1.22
Utah	1.30	1.15	1.12	1.34	1.13	1.47	1.67	1.25	1.26
Vermont	1.30	1.13	1.07	1.25	1.10	1.40	1.52	1.21	1.24
Virginia	1.22	1.13	1.08	1.35	1.09	1.43	1.54	1.21	1.21
Washington	1.28	1.13	1.09	1.27	1.13	1.34	1.54	1.20	1.19
West Virginia	1.28	1.10	1.07	1.20	1.07	1.31	1.31	1.17	1.19
Wisconsin	1.31	1.14	1.10	1.29	1.09	1.39	1.48	1.19	1.25
Wyoming	1.30	1.11	1.07	1.21	1.10	1.35	1.41	1.18	1.19
Average of 50 states & D.C.	1.27	1.13	1.11	1.28	1.10	1.38	1.53	1.21	1.17

Appendix IV-D. Child care multipliers compared to “quality of life” and “traded” sectors: Type II employment multipliers by state, 2000. Source: IMPLAN 2000

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
Alabama	1.44	1.29	1.19	1.25	1.09	1.82	1.47	1.19	1.22
Alaska	1.46	1.28	1.17	1.21	1.09	1.64	1.44	1.19	0.00
Arizona	1.52	1.31	1.29	1.32	1.09	1.97	1.64	1.24	1.23
Arkansas	1.53	1.30	1.29	1.24	1.08	1.75	1.40	1.18	1.24
California	1.54	1.35	1.27	1.33	1.15	2.03	1.69	1.24	1.23
Colorado	1.54	1.34	1.33	1.38	1.10	2.08	1.61	1.24	1.24
Connecticut	1.46	1.29	1.35	1.35	1.11	2.05	1.52	1.21	1.20
Washington D.C.	1.39	1.23	1.17	1.31	1.08	1.92	1.62	1.23	1.14
Delaware	1.45	1.25	1.20	1.22	1.07	1.79	1.59	1.16	1.15
Florida	1.52	1.37	1.44	1.34	1.12	2.10	1.68	1.26	1.24
Georgia	1.43	1.33	1.22	1.35	1.10	2.00	1.57	1.25	1.22
Hawaii	1.53	1.32	1.26	1.21	1.11	1.74	1.52	1.28	0.00
Idaho	1.56	1.30	1.23	1.25	1.09	1.87	1.48	1.21	1.24
Illinois	1.56	1.35	1.32	1.36	1.10	2.23	1.71	1.23	1.24
Indiana	1.45	1.29	1.32	1.25	1.08	1.77	1.40	1.18	1.23
Iowa	1.51	1.28	1.38	1.27	1.09	1.83	1.49	1.18	1.24
Kansas	1.55	1.32	1.23	1.30	1.13	1.84	1.48	1.19	1.22
Kentucky	1.46	1.32	1.22	1.26	1.10	1.85	1.45	1.19	1.24
Louisiana	1.47	1.31	1.54	1.25	1.08	1.79	1.39	1.23	1.20
Maine	1.56	1.33	1.18	1.23	1.09	1.85	1.43	1.17	1.23
Maryland	1.53	1.32	1.21	1.35	1.10	2.05	1.58	1.36	1.22
Massachusetts	1.54	1.32	1.19	1.36	1.13	2.18	1.68	1.22	1.21
Michigan	1.48	1.29	1.30	1.32	1.09	1.93	1.49	1.19	1.23
Minnesota	1.61	1.35	1.28	1.39	1.11	2.08	1.67	1.21	1.26
Mississippi	1.38	1.25	1.40	1.20	1.06	1.65	1.34	1.21	1.20
Missouri	1.60	1.37	1.37	1.33	1.10	2.05	1.60	1.23	1.26
Montana	1.54	1.28	1.25	1.21	1.07	1.75	1.44	1.18	1.23
Nebraska	1.52	1.31	1.24	1.27	1.08	1.94	1.55	1.18	1.25
Nevada	1.32	1.25	1.33	1.23	1.10	1.73	1.51	1.18	1.18
New Hampshire	1.52	1.30	1.22	1.32	1.09	1.92	1.40	1.18	1.21
New Jersey	1.43	1.30	1.21	1.35	1.11	2.01	1.56	1.28	1.21
New Mexico	1.61	1.34	1.28	1.26	1.11	2.01	1.48	1.23	1.25
New York	1.52	1.32	1.22	1.30	1.12	2.06	1.93	1.25	1.21

Appendix IV-D. Child care multipliers compared to “quality of life” and “traded” sectors: Type II employment multipliers by state, 2000. Source: IMPLAN 2000 (continued)

STATES	Child care (499)	Eating and Drinking (454)	Amusement and Recreation Service, N.E.C. (488)	Wholesale (447)	Apparel and Acc Stores (452)	Management and Consulting Services (508)	Banking (456)	Hotel and Lodging Places (463)	Tool and Die (321)
North Carolina	1.45	1.30	1.21	1.25	1.08	1.88	1.59	1.18	1.22
North Dakota	1.51	1.26	1.24	1.24	1.08	1.73	1.51	1.17	1.19
Ohio	1.53	1.28	1.24	1.30	1.13	1.96	1.58	1.23	1.22
Oklahoma	1.56	1.35	1.28	1.28	1.09	1.89	1.50	1.21	1.25
Oregon	1.62	1.37	1.26	1.37	1.13	2.00	1.61	1.22	1.26
Pennsylvania	1.59	1.35	1.24	1.32	1.11	2.21	1.60	1.23	1.25
Rhode Island	1.47	1.25	1.21	1.19	1.07	1.63	1.43	1.15	1.18
South Carolina	1.39	1.27	1.26	1.22	1.07	1.74	1.40	1.17	1.21
South Dakota	1.50	1.28	1.27	1.21	1.07	1.68	1.39	1.16	1.22
Tennessee	1.48	1.37	1.27	1.28	1.11	1.98	1.55	1.23	1.25
Texas	1.44	1.34	1.24	1.06	1.11	2.11	1.61	1.24	1.22
Utah	1.57	1.36	1.30	1.34	1.13	2.05	1.67	1.25	1.26
Vermont	1.57	1.32	1.17	1.25	1.10	1.91	1.52	1.21	1.24
Virginia	1.45	1.31	1.21	1.35	1.09	2.11	1.54	1.21	1.21
Washington	1.51	1.33	1.24	1.27	1.13	1.80	1.54	1.20	1.19
West Virginia	1.48	1.25	1.18	1.20	1.07	1.72	1.31	1.17	1.19
Wisconsin	1.58	1.30	1.25	1.29	1.09	1.89	1.48	1.19	1.25
Wyoming	1.51	1.24	1.18	1.21	1.10	1.81	1.41	1.18	1.19
Average of 50 states & D.C.	1.50	1.31	1.26	1.28	1.10	1.91	1.53	1.21	1.17

Appendix V. Proportion of child care total purchases and percent of local purchases from industries and three major aggregated sectors by state, 2000. Source: IMPLAN 2000

	Child care purchases from all industries		Child care purchase from Manufacturing		Child care purchase from FIRE		Child care purchase from Service	
	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally
Alabama	64.53%	52.66%	13.48%	20.92%	12.63%	55.21%	28.15%	59.63%
Alaska	59.27%	60.26%	12.38%	9.51%	11.61%	57.05%	25.85%	81.45%
Arizona	61.06%	62.45%	12.76%	15.26%	11.96%	66.59%	26.63%	78.60%
Arkansas	64.61%	59.22%	13.50%	24.91%	12.65%	50.39%	28.17%	74.91%
California	54.62%	68.53%	11.41%	29.46%	10.70%	69.98%	23.82%	81.83%
Colorado	58.58%	66.03%	12.24%	22.95%	11.47%	69.94%	25.55%	77.85%
Connecticut	58.29%	66.65%	12.18%	18.59%	11.41%	59.23%	25.42%	88.65%
Delaware	60.35%	57.48%	12.61%	15.09%	11.82%	58.15%	26.32%	77.49%
District of Columbia	53.37%	62.23%	11.15%	4.68%	10.45%	69.97%	23.27%	89.96%
Florida	60.06%	58.58%	12.55%	13.88%	11.76%	69.48%	26.19%	68.88%
Georgia	61.17%	55.57%	12.78%	21.02%	11.98%	67.05%	26.68%	57.71%
Hawaii	56.96%	63.33%	11.90%	14.51%	11.15%	62.19%	24.84%	84.23%
Idaho	64.37%	61.41%	13.45%	16.17%	12.61%	61.00%	28.07%	80.21%
Illinois	58.80%	71.23%	12.29%	30.49%	11.52%	69.99%	25.64%	87.09%
Indiana	61.90%	53.56%	12.93%	27.95%	12.12%	61.42%	26.99%	55.42%
Iowa	67.50%	59.20%	14.10%	26.37%	13.22%	46.94%	29.43%	76.21%
Kansas	63.54%	63.92%	13.28%	25.81%	12.44%	56.49%	27.71%	80.66%
Kentucky	65.00%	53.24%	13.58%	28.85%	12.73%	50.31%	28.34%	59.50%
Louisiana	65.68%	53.09%	13.72%	19.65%	12.86%	47.16%	28.64%	64.69%
Maine	60.90%	58.82%	12.72%	17.61%	11.93%	50.09%	26.55%	78.39%
Maryland	57.48%	64.31%	12.01%	19.29%	11.26%	63.20%	25.06%	81.82%
Massachusetts	53.04%	69.51%	11.08%	20.10%	10.39%	64.36%	23.13%	90.25%
Michigan	61.85%	61.29%	12.92%	22.99%	12.11%	61.79%	26.97%	75.64%
Minnesota	59.09%	71.75%	12.35%	31.37%	11.57%	68.70%	25.77%	89.46%
Mississippi	62.20%	40.64%	13.00%	21.92%	12.18%	38.37%	27.12%	40.40%
Missouri	62.66%	67.52%	13.09%	27.83%	12.27%	69.58%	27.32%	79.82%
Montana	67.33%	59.34%	14.07%	14.74%	13.19%	57.31%	29.36%	77.55%
Nebraska	64.04%	58.64%	13.38%	22.16%	12.54%	51.77%	27.92%	72.52%
Nevada	61.97%	46.71%	12.95%	11.05%	12.14%	60.03%	27.02%	48.40%
New Hampshire	59.72%	62.29%	12.48%	14.60%	11.70%	57.43%	26.04%	84.06%
New Jersey	57.14%	60.14%	11.94%	25.85%	11.19%	59.26%	24.91%	69.06%
New Mexico	61.75%	63.76%	12.90%	17.07%	12.09%	59.82%	26.93%	84.17%
New York	54.79%	70.30%	11.45%	22.17%	10.73%	69.99%	23.89%	90.78%

Appendix V. Proportion of child care total purchases and percent of local purchases from industries and three major aggregated sectors by state, 2000. Source: IMPLAN 2000 (Continued)

	Child care purchases from all industries		Child care purchase from Manufacturing		Child care purchase from FIRE		Child care purchase from Service	
	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally	Portion of Total Expenditure	Portion Spent Locally
North Carolina	61.45%	53.96%	12.84%	21.78%	12.03%	63.23%	26.80%	56.72%
North Dakota	69.33%	57.66%	14.49%	19.09%	13.58%	44.50%	30.23%	76.90%
Ohio	59.99%	61.80%	12.53%	27.74%	11.75%	63.18%	26.16%	78.52%
Oklahoma	65.88%	59.70%	13.76%	24.23%	12.90%	45.34%	28.73%	76.85%
Oregon	56.43%	66.55%	11.79%	20.82%	11.05%	64.78%	24.61%	83.49%
Pennsylvania	60.85%	70.95%	12.71%	31.31%	11.92%	66.01%	26.53%	89.11%
Rhode Island	57.72%	59.12%	12.06%	16.56%	11.30%	64.85%	25.17%	74.57%
South Carolina	64.06%	47.06%	13.39%	19.26%	12.55%	58.23%	27.93%	46.44%
South Dakota	64.87%	53.94%	13.55%	20.46%	12.70%	42.11%	28.29%	68.45%
Tennessee	63.76%	57.73%	13.32%	26.14%	12.49%	64.85%	27.80%	61.16%
Texas	61.95%	57.38%	12.94%	25.00%	12.13%	64.76%	27.01%	61.04%
Utah	64.68%	64.26%	13.51%	28.68%	12.67%	64.32%	28.21%	74.82%
Vermont	61.82%	61.93%	12.92%	20.52%	12.11%	52.68%	26.96%	83.16%
Virginia	60.51%	56.70%	12.64%	21.47%	11.85%	64.71%	26.39%	64.00%
Washington	60.85%	66.69%	12.71%	23.89%	11.92%	66.24%	26.53%	81.96%
West Virginia	65.48%	52.82%	13.68%	15.94%	12.82%	32.46%	28.55%	74.70%
Wisconsin	60.85%	65.74%	12.71%	29.05%	11.92%	60.73%	26.54%	82.43%
Wyoming	61.02%	55.40%	12.75%	11.01%	11.95%	52.26%	26.61%	72.55%
United States	59.66%	91.06%	12.47%	66.15%	11.68%	99.98%	26.01%	95.89%
Average of 50 State plus DC	61.28%	60.26%	12.80%	21.13%	12.00%	59.13%	26.72%	74.40%
MIN	53.04%	40.64%	11.08%	4.68%	10.39%	32.46%	23.13%	40.40%
MAX	69.33%	71.75%	14.49%	31.37%	13.58%	69.99%	30.23%	90.78%

Appendix VI. Comparison of Type I, Type II, and Type SAM child care multipliers
 Source: IMPLAN 2000

	Output multipliers			Employment multipliers		
	Type I	Typell	TypeSAM*	Type I	Typell	TypeSAM*
Alabama	1.44	1.80	1.75	1.24	1.44	1.41
Alaska	1.47	1.81	1.75	1.27	1.46	1.43
Arizona	1.52	1.96	1.89	1.27	1.52	1.48
Arkansas	1.51	1.89	1.83	1.30	1.53	1.49
California	1.52	2.08	2.00	1.25	1.54	1.50
Colorado	1.54	2.04	1.97	1.27	1.54	1.50
Connecticut	1.51	1.96	1.89	1.25	1.46	1.43
Washington D.C.	1.42	1.80	1.52	1.19	1.39	1.25
Delaware	1.44	1.79	1.72	1.25	1.45	1.41
Florida	1.48	1.96	1.89	1.25	1.52	1.48
Georgia	1.45	1.89	1.82	1.20	1.43	1.40
Hawaii	1.48	1.89	1.83	1.29	1.53	1.49
Idaho	1.53	1.89	1.84	1.33	1.56	1.53
Illinois	1.59	2.13	2.05	1.28	1.56	1.52
Indiana	1.43	1.83	1.77	1.23	1.45	1.42
Iowa	1.52	1.88	1.83	1.29	1.51	1.47
Kansas	1.56	1.98	1.92	1.32	1.55	1.52
Kentucky	1.46	1.84	1.78	1.25	1.46	1.43
Louisiana	1.47	1.84	1.78	1.26	1.47	1.43
Maine	1.46	1.87	1.81	1.29	1.56	1.52
Maryland	1.50	1.96	1.89	1.26	1.53	1.50
Massachusetts	1.49	2.01	1.92	1.26	1.54	1.49
Michigan	1.50	1.93	1.87	1.25	1.48	1.45
Minnesota	1.60	2.11	2.03	1.32	1.61	1.56
Mississippi	1.32	1.64	1.59	1.18	1.38	1.35
Missouri	1.60	2.12	2.03	1.31	1.60	1.55
Montana	1.53	1.88	1.82	1.32	1.54	1.50
Nebraska	1.51	1.91	1.85	1.28	1.52	1.48
Nevada	1.37	1.67	1.62	1.17	1.32	1.30
New Hampshire	1.49	1.90	1.84	1.28	1.52	1.49
New Jersey	1.46	1.91	1.84	1.21	1.43	1.40
New Mexico	1.56	1.99	1.93	1.34	1.61	1.57
New York	1.52	2.04	1.93	1.26	1.52	1.47
North Carolina	1.43	1.84	1.78	1.22	1.45	1.42
North Dakota	1.53	1.86	1.80	1.31	1.51	1.47
Ohio	1.50	1.92	1.86	1.28	1.53	1.49
Oklahoma	1.55	1.97	1.91	1.31	1.56	1.52
Oregon	1.52	2.01	1.92	1.31	1.62	1.57
Pennsylvania	1.60	2.17	2.08	1.29	1.59	1.54
Rhode Island	1.43	1.81	1.75	1.24	1.47	1.44
South Carolina	1.38	1.71	1.66	1.20	1.39	1.36
South Dakota	1.45	1.80	1.75	1.27	1.50	1.46
Tennessee	1.50	1.96	1.88	1.24	1.48	1.44
Texas	1.50	1.95	1.88	1.22	1.44	1.41
Utah	1.59	2.05	1.98	1.30	1.57	1.53
Vermont	1.51	1.91	1.85	1.30	1.57	1.53
Virginia	1.46	1.87	1.81	1.22	1.45	1.42
Washington	1.55	1.99	1.93	1.28	1.51	1.47
West Virginia	1.45	1.75	1.70	1.28	1.48	1.45
Wisconsin	1.54	1.98	1.92	1.31	1.58	1.54
Wyoming	1.45	1.76	1.71	1.30	1.51	1.48
Average of 50 States & DC	1.49	1.91	1.84	1.27	1.50	1.47

* TypeSAM multipliers with households endogenous.