

LINKING ECONOMIC DEVELOPMENT AND CHILD CARE RESEARCH PROJECT
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Child Care Multipliers: Stimulus for the States

By Mildred Warner, 2009

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 have used regional economic analysis to estimate the size of the early care and education sector and the extent of its linkages in the broader regional economy. The recent 2009 Stimulus Bill, passed by Congress, includes child care as one of its infrastructure elements, because economists now widely recognize child care's linkage effects in the regional economy.

With the recession, our formal child care sector has come under serious stress. Not only will stimulus investments help to preserve quality child care, they will also generate wider economic benefits in the short term. The federal government will expect states to report results from these stimulus investments -- in terms of the number of jobs created directly and indirectly due to linkage effects. Multipliers measure the linkage effect of the child care sector and are the primary focus of this report.

The economic importance of early care and education is not limited to linkage effects. Child care has three components as illustrated in the trillium flower above: 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 for a productive future workforce). These broader parent and child effects are *additional* benefits not captured in the multipliers described here.

The economic development arguments for stimulus are based on estimates of multiplier effects in 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. In this brief we map how these multiplier effects differ across states and across sectors in state economies. The full report, on which this research brief is based, also explains how the IMPLAN input-output model is structured and what impact this has on the child care results. It includes detailed tables of multiplier comparisons for every state. Only averages are reported here.

Linkage or multiplier effects help economic developers determine which economic sectors will have the greatest total impact on the regional economy given an increase in final demand for a given sector's output. In this report we show child care is a competitive target for stimulus spending.

We find the child care sector has linkages to the rest of the economy that are equally strong or greater than retail and tourism and other social infrastructure sectors such as hospitals, job training, elementary and secondary schools and colleges and universities. This reflects the labor intensive nature of all of these sectors and similar production relationships in the regional economy. While some of these sectors are targets for economic development policy, child care traditionally has not been. However that is changing.

Recent statewide surveys of economic developers in Wisconsin and New York found over 80% believe child care should be part of economic development policy and 58% recognize their communities face an inadequate supply of quality child care. Congress agrees, and

The child care sector's relatively high economic linkage suggests the sector is a competitive target for economic development stimulus.

*Based on Liu, Z., R. Ribeiro, and M. Warner, 2004. *Comparing Child Care Multipliers in the Regional Economy: Analysis from 50 States*. Ithaca NY: Cornell University <http://economicdevelopment.cce.cornell.edu>. The report includes detailed tables showing modeling results for each of the 50 states with detailed comparisons across sectors.

this is why child care has been included in the Stimulus Bill. Beyond the specific set asides for Head Start and Child Care Development Block Grants in the Stimulus package, there are a host of other economic development strategies that can be applied to the sector with good effect (See Cornell's *Economic Development Strategy Guide* (Warner et al 2004) and Stoney and Mitchell's recent BUILD memo (2009).

INPUT-OUTPUT ANALYSIS

Child care contributes to the regional economy not only through its direct employment and output, but also through its purchases of goods and services that stimulate economic activity in other industries. Multipliers generated from input-output models measure the relative strength of these purchases, or backward linkages, to 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 industry spending. For example, child care businesses purchase food and supplies from other industries, in turn stimulating further input purchases by those industries. *Induced effects* capture the impact of household spending.

Employees spend their wages in the larger economy and these expenditures generate demand in other sectors (housing, groceries, etc.).

Type I multipliers treat households as exogenous to other economic activity in the studied economy, and account only for the direct effects of the child care sector and the indirect, inter-industry effects of industry purchases. Type II multipliers include the direct, indirect, and induced effects (i.e. employee spending that changes in concert with changes in economic activity in the studied economy), and should be used to calculate the impact of a change in external demand for child care (such as increased federal stimulus spending in a state economy).

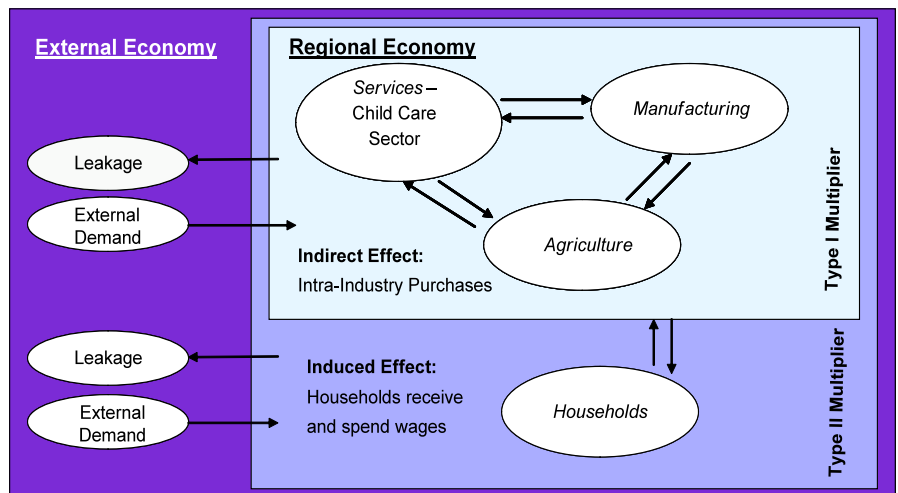
Multipliers are most commonly measured and most easily understood in terms of output and employment. An *output multiplier* for the child care industry estimates the total sales that would be generated in the entire economy by each dollar of increased direct spending for child care services. The *employment multiplier* is an estimate of the number of jobs that would be created throughout the regional economy

On average, for each new dollar spent in the child care sector, the broader statewide economic impact is two dollars. For each new job created in the child care sector, the broader statewide impact is 1 ½ jobs.

from an increase in demand for child care services

large enough to stimulate the addition of one new job in the child care industry.

Methodological Challenges: Input-output models allow us to describe the linkage patterns between different sectors in the regional economy and assess the impact of changes in exogenous demand. Input-output models were originally built to study impacts of export-based extractive and manufacturing sectors. There is a limit to their ability to measure the impact of service sectors, such as child care, where demand is primarily local – from households. With the growth in



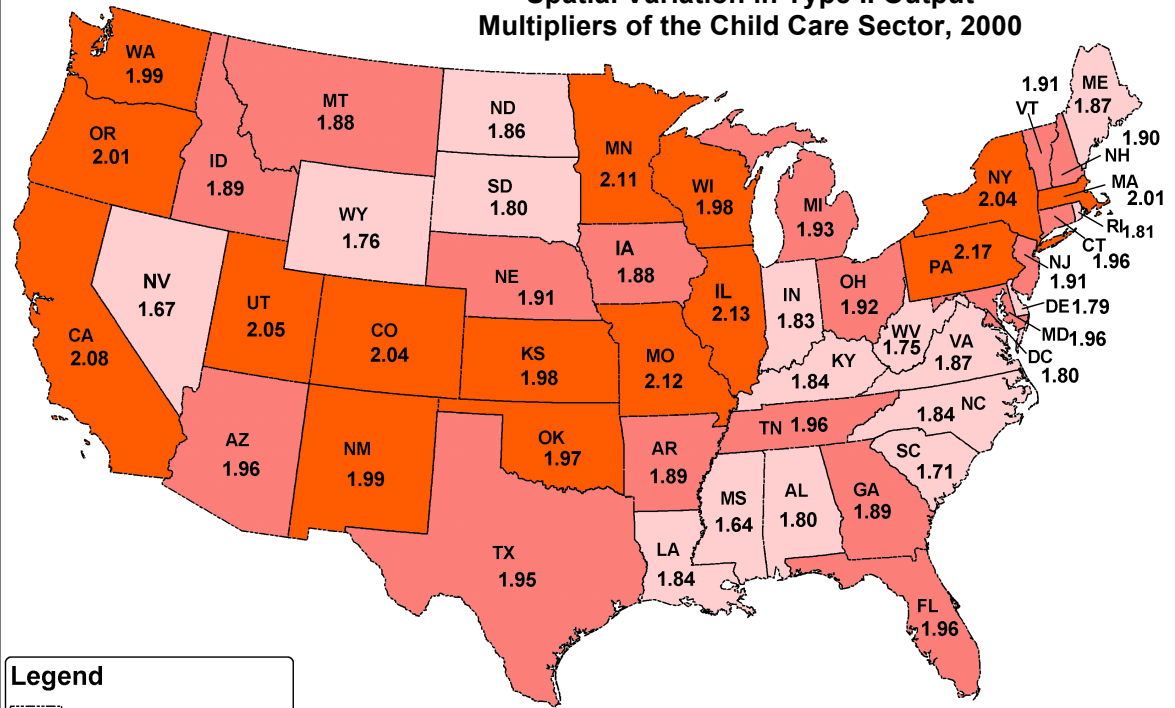
service sector employment, more attention has been focused on the economic impact of services. Services like child care may be more important for their forward linkages (output sales enabling other sectors to produce), than the backward (purchase) linkages measured by multipliers (Kay, Pratt and Warner 2007).

Our Approach: We construct input-output models for each of the 50 states and the District of Columbia based on economic data from 2000. We provide a comparison across states and across sectors with special attention to the child care sector. Brief highlights of those analyses are presented here.

ANALYSIS ACROSS STATES

The map of Type II output multipliers shows those states with larger economies such as California, New York and Pennsylvania, tend to have higher multipliers. In general, we find regional economic linkage from child care business purchases is greater than from household purchases. States with smaller economies are more likely to see household spending leak out of the state economy. Similar spatial variation also exists in the child care employment multipliers, though the distribution is not as wide. States with lower output multipliers also tend to have lower employment multipliers. Data from these maps can be used to estimate the economic stimulus effect of new child care stimulus expenditures in each state.

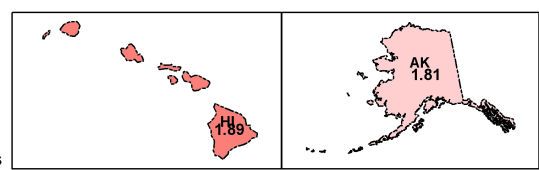
Spatial Variation in Type II Output Multipliers of the Child Care Sector, 2000



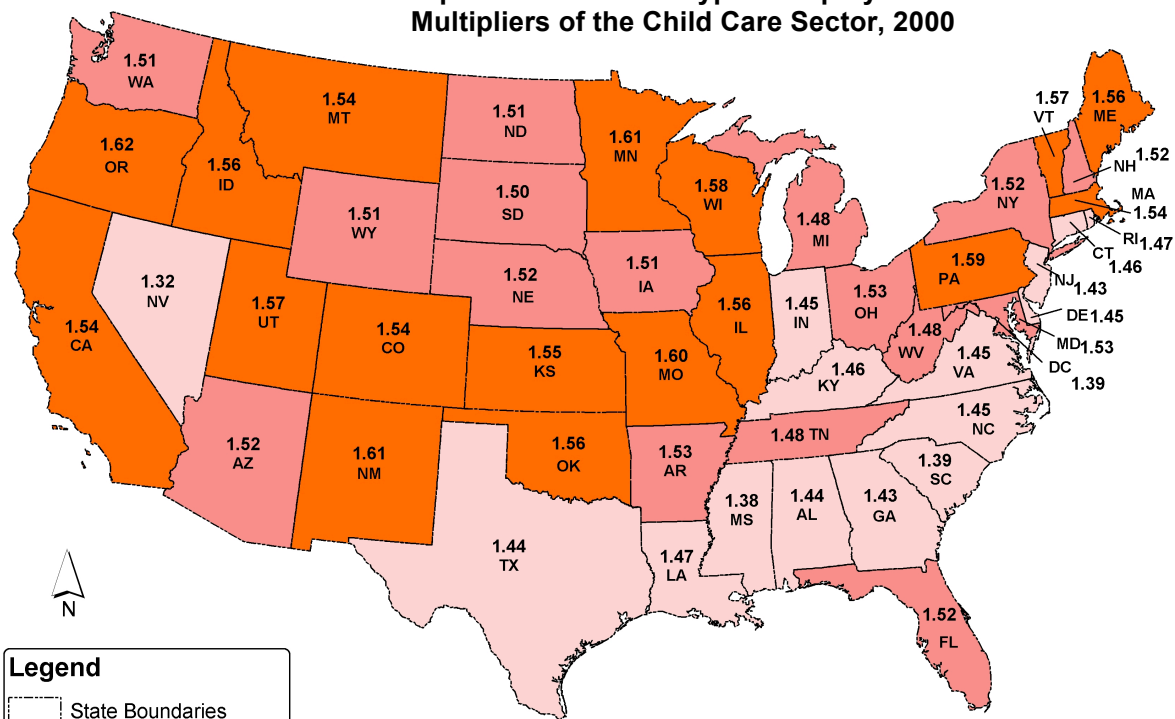
Legend

- State Boundaries
- Multipliers (Mean=1.91)**
- Lower third: 1.64 - 1.87
- Middle third: 1.88 - 1.96
- Upper third: 1.97 - 2.17

Source: IMPLAN, 2000 - 50 States plus DC analysis



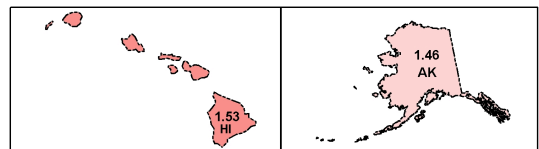
Spatial Variation in Type II Employment Multipliers of the Child Care Sector, 2000



Legend

- State Boundaries
- Multipliers (Mean=1.50)**
- Lower third: 1.32 - 1.47
- Middle third: 1.48 - 1.53
- Upper third: 1.54 - 1.62

Source: IMPLAN 2000 - 50 states plus DC analysis



In states with policies that promote quality child care, we find higher child care multipliers, suggesting that quality is associated with higher levels of regional spending by child care providers and workers. 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 a mutually reinforcing relationship between regional economic linkage and child care quality.

Investments in child care have a positive short term stimulus effect on the broader state economy, and a positive long term effect on the industry by increasing effective demand and promoting quality.

ANALYSIS ACROSS SECTORS

Child care tends to have higher backward linkage than most other sectors in the state economy as measured by its Type II output multiplier which ranks in the 93rd percentile across all economic sectors. This means that compared to other economic sectors, child care purchases more of its inputs locally, and expenditures on child care circulate longer in the state economy. Child care Type II output multipliers tend to be higher than median multipliers of Agriculture, Manufacturing, and Services. The percentile rank for the employment multiplier is much lower (19th percentile), reflecting the

Sectors	Output Multipliers		Employment Multipliers	
	Type I	Type II	Type I	Type II
Child Care	1.49	1.91	1.27	1.50
Private Elem. & Secondary Schools	1.30	1.91	1.10	1.31
Job Training	1.32	1.84	1.23	1.50
Colleges and Universities	1.22	1.84	1.09	1.37
Hospitals	1.25	1.79	1.19	1.67
Local Interurban Passenger Transit	1.26	1.72	1.10	1.35
Wholesale	1.22	1.62	1.28	1.86
Retail: Apparel & Accessory Stores	1.22	1.60	1.10	1.30
Business Services: Mgmt. Consulting	1.34	1.81	1.38	1.91
Tourism: Hotels and Lodging	1.31	1.71	1.21	1.50
Manufacturing: Tool and Die	1.19	1.63	1.17	1.71
Averages from models of 50 states and the District of Columbia (N=51), based on IMPLAN 2000 data.				

labor intensive nature of child care relative to the sectors from which it purchases inputs.

We compare child care output and employment multipliers to those of other social infrastructure sectors (job training, education, hospitals, transit) and find child care is very similar. Child care multipliers also are similar to our benchmark retail and tourism sectors. All of these sectors are important sources of local employment; however, child care tends to purchase more of its inputs locally, and thus typically has multipliers that are somewhat higher. Relative to sectors more typically considered export-oriented (such as wholesale, manufacturing and producer services), child care compares favorably on output multipliers. Child care's employment multipliers are lower because child care tends to purchase more of its inputs from relatively less labor intensive sectors. Warner and Liu (2005) provide a more complete discussion of multiplier comparisons.

CONCLUSION

Regional economic analysis shows child care is a good economic development investment, both for its direct effects on employment and its relatively high linkage effects in the regional economy. The relative rank and size of this economic linkage calls for greater economic development attention to be given to the child care sector. This, in addition to the sector's importance as social infrastructure supporting parent workers and human development of the future workforce, makes it a worthy target for economic stimulus and development policy.

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- The reports above and a full version of the report on which this research brief is based, complete with tables comparing multipliers for every state, are available on the Cornell web site. <http://economicdevelopment.cce.cornell.edu>

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