



EARLY CHILDHOOD CARE AND EDUCATION: ECONOMIC IMPACTS IN DANE COUNTY

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- **Enis Ragland**, Interim Supervisor, City of Madison Office of Community Services
- **George Hagenauer**, Associate Director at Community Coordinated Child Care (4-C)
- **Jolene Ibeling**, City of Madison Child Care Coordinator

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EXECUTIVE SUMMARY

Policy discussions often focus on early childhood care and education (ECE) as a social welfare or human capital tool. While these points hold merit, reframing ECE provides a more informed picture. This service industry contributes to economic vitality in three substantial ways:¹

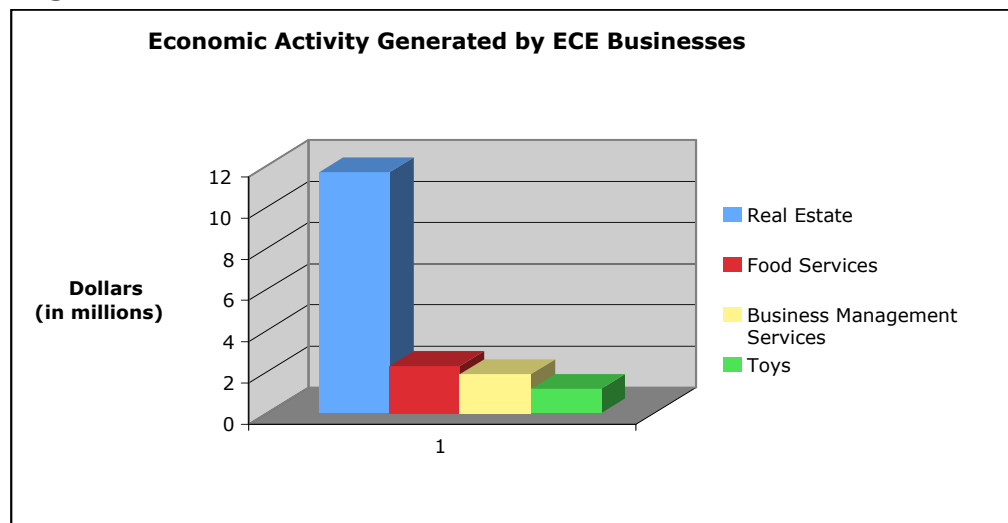
- A business service, enabling parents to participate in the labor force, and adding to business productivity,
- Human capital investment in early childhood development, producing long-term economic benefits through higher productivity in adulthood, and
- A viable economic sector, with paid employees, linkages to other sectors and contributions to the tax base.

This initial study gives primary focus to ECE as an economic sector. The industry holds a viable source of employment opportunities, business expenditures which support other firms, and business profits that contribute to public tax revenues. The workforce support and human capital components provide additional context, and should be the focus of future work, building upon this economic viability foundation.

ECE Impacts on Economic Sectors

In 2006, Dane County ECE providers created \$162 million in revenues, employed 3,474 persons, paid more than \$63 million in wages and salaries and purchased about \$57 million in inputs from other businesses.² This sector creates more economic activity than several traditionally recognized sectors and significant activity in related business sectors (see Figure 1 below). Including the multiplier effect³, the child care industry contributes \$246.6 million annually to industrial sales. The multiplier effect shows how the benefits from ECE affect other parts of the local economy. Specifically, every additional dollar of revenue generated by the child care industry will create an additional 52 cents in industrial sales elsewhere within the Dane County.⁴ The ECE sector also supports a total of 4,244 jobs in other Dane County sectors, along with \$91 million in labor income and \$154 million in total income. The employment multiplier suggests that each additional ECE employee generates 0.22 jobs in other local sectors. These numbers give concrete support to early childhood and education's economic credibility.

Figure 1



¹ Mildred E. Warner. (2006) "Putting Child Care in the Regional Economy: Empirical and Conceptual Challenges and Economic Development Prospects." *Journal of the Community Development Society*, Vol. 37, No. 2, Summer : 7-22.

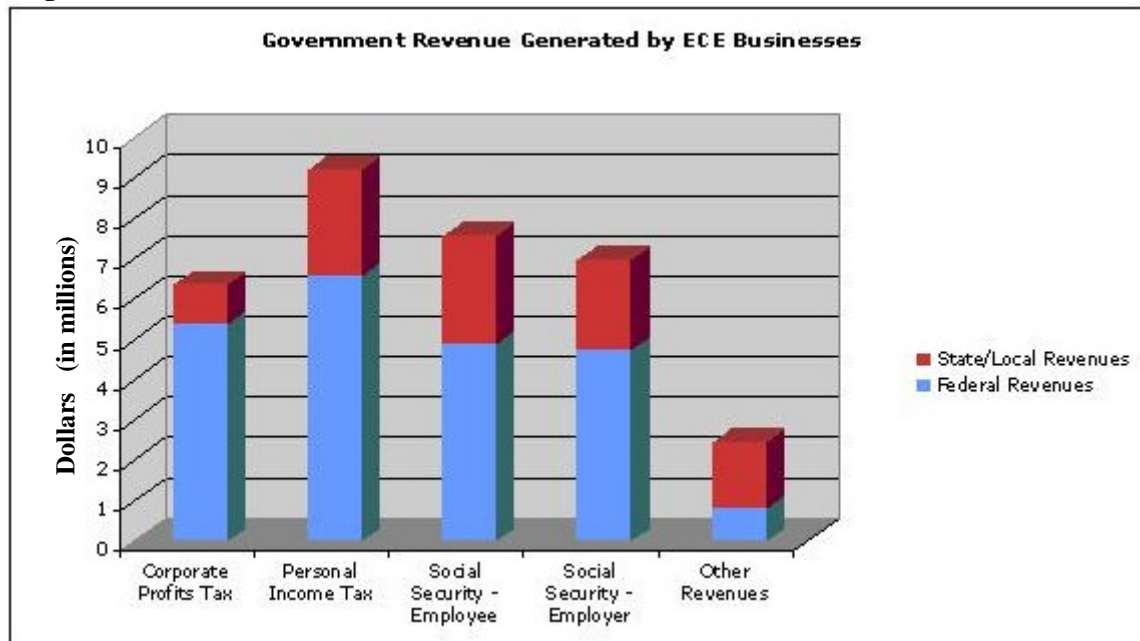
² IMPLAN data for 2006.

³ IMPLAN data for 2006.

⁴ See Table/Figure later in paper.

Activity generated by the child care industry in Dane County also generates revenues for federal, state and local governments. ECE generates just over \$22 million in annual federal government revenue and another \$12.6 million in state and local government returns.⁵ From a local perspective, early childhood care and education providers contribute almost \$2.7 million in annual property taxes, not including those levied by K-12 public education. This reflects a conservative estimate because about 42% of the typical property tax dollar in Dane County goes to K-12 public education.

Figure 2



ECE Impacts on Employers and Households

Beyond revenues and expenditures, the early child care industry holds particularly strong implications for Dane County households and employers. The 2000 Census shows 70.5% of children under age six in Dane County have all available parents and legal guardians participating in the labor force. By comparison, statewide data for Wisconsin shows 68.4% of children under six with all parents employed, Milwaukee County reports 56.3% and national data reports a 58.6% rate.⁶ This relatively high level of early child care demand is projected to rise in the Dane County region. Growing need for service arises from two sources: Dane County's growing net increase of in-commuting for employment purposes, and population growth within the county itself.

Based on survey work by Community Coordinated Child Care, Inc. (4-C), weekly average child care center rates in Dane County, as of March 2007, are as follows:

- \$239 per week (ages 0-1)
- \$207 per week (ages 2-3)
- \$235 per week (ages 1-2)
- \$193 per week (ages 3-5)

The nature of costs and service in quality ECE facilities commands a premium rate. This cost translates to a significant difference in total spending on child care services across household incomes. While households with income \$75,000 or greater make up 27.7% of the Dane County population, these households constitute 53.6% of all Dane County expenditures on child care. This raises questions of access to quality ECE for low-income socioeconomic groups.

⁵ IMPLAN data for 2006.

⁶ 2000 Census Data

Dane County's continuing population growth, in-commuting and premium child care rates indicate strong demand for early child care services. Yet the number of ECE providers has declined in recent years. Between 2003 and 2007, the number of early child care facilities dropped by an average annual rate of 2.6%.⁷ These demand and supply trends create a potential gap in the ECE market. Several factors may explain this gap, including an underestimation of general child care supply, business consolidation or expansions driving out less competitive firms, and disincentives or economic roadblocks that make the industry unprofitable.

Our research shows support for each of these factors in Dane County. Beyond the traceable economic sector, informal and unpaid child care arrangements occur. The United Way of Dane County's Born Learning initiative found 1,700 children living in poverty, under age 5 in Dane County receiving informal care from family, friends or neighbors. This has implications for the local economy in terms of unrealized economic opportunities (i.e. jobs and tax revenue), and a shortage of educational opportunities specifically geared to benefit these children in ECE environments. This also implies an undersupply of providers in the formal ECE industry sector, or a market failure based on pricing or availability that drives parents to informal arrangements.

Our data also finds that while the number of ECE providers continues declining, the number of early childhood care spaces available to families has expanded.⁸ This supports the successful firm expansion argument, suggesting the growth in child care centers drives out less competitive family care providers. Concern rises within this trend though, because ECE businesses regulated at the most stringent standards for safety and quality continue declining faster than average as provider demographics change.⁹ Recent testimony from the City of Madison's ECE providers and national ECE data indicates the third argument regarding lack of profitability for the existing family-based ECE providers. In Dane County, the average annual income for a worker in the child care industry totals \$30,205.¹⁰ Further analysis shows average annual wages for staff, including directors, averages \$24,835, or \$11.94 an hour. Average teacher pay totals \$26,956 annually, or approximately \$12.96 per hour. ECE employees in Dane County seem to be earning below average incomes for their line of work. Perhaps this drives the high turnover in ECE industry, which hit 30% for Dane County in 2006. The re-training costs associated with high turnover can negatively impact an ECE provider's operating costs.

Given the economic conditions for the ECE industry to generate jobs, support other business industries, and create tax revenue, and benefit future outcomes for the County's children, we recommend that local policy officials explore the changing demographics in early childhood care and education supply. As rising population and in-commuting patterns continue to rise, an undersupply of high quality ECE services results in lost economic opportunities and diminished human capital opportunities for children. Some questions to guide proactive actions for this industry might include:

- How can the early childhood care and education sector be professionalized so that its public perception and employment standards match its economic status?
- What role, if any, should the private sector play in providing access to affordable high quality early childhood care and education?
- What is the economic impact of ECE beyond Dane County and across the THRIVE region?
- Are current levels of public subsidies sufficient to ensure access to quality early childhood care and education for low socioeconomic status families?
- Should the early childhood care and education sector be publicly redefined to reflect the large public subsidy influence on what is generally considered a private market industry?
- If the ECE industry raises substantial revenue through child care rates, why do compensation levels for employees remain lower than comparable professions?

⁷ 4-C aggregate data

⁸ 4-C aggregate data

⁹ Ibid.

¹⁰ IMPLAN Data

REFRAMING EARLY CHILDHOOD CARE AND EDUCATION

Early childhood care and education (ECE) contributes substantially to the local economy as a legitimate service industry. Public policy discussions, however, tend to focus upon social elements. These include childhood development initiatives in early educational environments or the welfare perspective of child care subsidies for low-income workers. While the social components remain relevant, society often overlooks that the ECE industry encompasses a more widespread economic position.

With a more comprehensive view, we see that early childhood care and education provides these vital economic functions to the community:¹¹

- A business service, enabling parents to participate in the labor force, and adding to business productivity,
- Human capital investment through childhood development, producing long-term economic benefits through higher productivity in adulthood, and
- A viable economic sector, with paid employees, linkages to other sectors and contributions to the tax base.

In this study we will briefly review the first two contributions of ECE services to the local economy and focus the bulk of our attention on the last contribution. Specifically, this report examines the ECE industry as a viable source of employment opportunities and business expenditures which support other local businesses, create business profits and make tax payments that translate to public sector revenue.

Early Childhood Care and Education as a Business Service

Access to high quality child care services allows parents to participate in the workforce. This observation is particularly important in Dane County, where 70.5% of all children under age six have all available parents and legal guardians employed.¹² This high level of demand for ECE services reflects the large number of single parent and dual-career households.

“Parents, particularly women, refrain from entering the labor force if a lack of high quality ECE exists...parents concerned about the welfare of their children in sub-optimal child care experience compromised productivity in the workplace...”

The economics of child care literature is composed of two lines of inquiry.¹³ The first focuses on choices parents make in terms of the type of child care settings where they wish to enroll their children and the prices that they are willing to pay. The second emphasizes the decision to enter the labor force and the parents’ subsequent productivity levels. The latter line of research offers numerous and extensive insights into how parents make decisions to work. Much of the public policy aimed at providing tax credits, co-payments and vouchers help low-income parents enter the labor force.

¹¹ Mildred E. Warner. (2006) “Putting Child Care in the Regional Economy: Empirical and Conceptual Challenges and Economic Development Prospects.” *Journal of the Community Development Society*, Vol. 37, No. 2, Summer : 7-22.

¹² 2000 Census Data

¹³ Jean Kimmel. (2006) “Child Care, Female Employment, and Economic Growth.” *Journal of the Community Development Society*, Vol. 37, No. 2, Summer : 71-85.

This holds two implications for assessing the impact of ECE on the local economy. First, parents, particularly women, refrain from entering the labor force if a lack of high quality, affordable early childhood care and education exists. Second, parents concerned about the welfare of their child in a sub-optimal child care facilities experience compromised productivity and concentration. In this framework, quality ECE functions as an indirect business service. Indeed, some companies have elected to internalize child care by offering on-site services, indicating that they realize the productivity benefits. Better informed policies may wish to consider these components in addition to socially-based elements regularly attributed to ECE.

High quality ECE environments, where teachers hold 4-year degrees and have specialized understanding of pre-school aged children's needs, create better economic outcomes for children through increased educational and employment outcomes, lower crime and delinquency rates, and other spillover benefits later in life. These outcomes benefit all of society through lower intervention costs associated with programs funded by taxpayer dollars.



Early Childhood Care and Education and Childhood Development

A child's quality of life and economic contributions as an adult can be directly traced to development within the first few years of life.¹⁴ High quality early childhood care and education maximizes child outcomes. Nearly three quarters of all children under age six in Dane County require some form of child care. Therefore, the type and quality of services available has serious implications for future economic success. Human capital investments prior to formal K-12 education are critical. Dane County intervention services and programs cost tax payers approximately \$73 million in 2007.¹⁵ High quality ECE combats these costs in a preventative manner by creating positive outcomes for children in increased cognitive abilities and educational attainment, improved social behavior, increased employment and earnings, and decreases in special education, social services, juvenile delinquency, and health care costs.¹⁶

The Minneapolis Federal Reserve Bank and the RAND Corporation, among others, have conducted extensive research on economic returns from early childhood investment. Their findings indicate that for every one dollar spent on high quality early childhood care and education, the economy experiences a benefit over the course of that child's life, ranging from \$2.50 to as much as \$16.¹⁷ This can be measured as a rate of return to the public, on par with average returns from traditional financial investments. Measured benefits from the Minneapolis

¹⁴ Minneapolis Federal Reserve

¹⁵ Dane County League of Women Voters (2008). "An Ounce of Prevention: Quality Early Child Care for Dane County." 5.

¹⁶ Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005). Lifetime effects: The High/Scope Perry Preschool study through age 40. (Monographs of the High/Scope Educational Research Foundation, 14). Ypsilanti, MI: High/Scope Press.

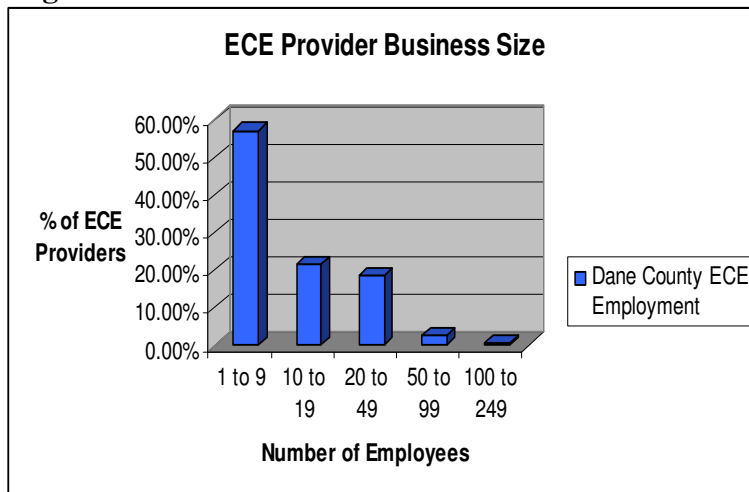
¹⁷ Minneapolis Federal Reserve

research include higher wages from improved education outcomes, less taxpayer money spent on crime, and other positive spillover effects.

Early Childhood Care and Education as an Economic Sector

Early childhood care and education takes a more sophisticated business model than generalized notions of “babysitting.” In Dane County, ECE services had \$162 million in revenues, employed 3,474 persons in 2006, paid over \$63 million in wages and salaries and purchased about \$57 million in inputs from other businesses. Like all other businesses, these providers also contribute to public sector revenues through tax payments. The majority of ECE facilities operate as small businesses. Beyond those that are single-employee sole proprietorships, 57.1% of Dane County ECE service providers hire 1 – 10 paid employees.¹⁸

Figure 1



Our initial study maintains a focus on the economic impact of early childhood care and education as a freestanding industry. While the business service and human capital components should still inform the economic development discussion we defer these dimensions to future research. The remaining sections of this report provide a complete profile of Dane County’s ECE industry as part of the larger regional economy.

MARKET SUPPLY AND DEMAND FOR DANE COUNTY CHILD CARE

Demand for Early Childhood Care and Education in Dane County

The ECE industry holds particularly strong implications in our local economy. As previously mentioned, data from the 2000 Census shows 70.5% of children under age six in Dane County have all available parents and guardians participating in the labor force. By comparison, statewide data for Wisconsin shows 68.4% of children under six with all parents employed, Milwaukee County reports 56.3% and national data reports a 58.6% rate.¹⁹ This relatively high level of ECE demand is projected to continue rising in the Dane County region. From 1970-2006, the growth rate in population from birth to age five increased at a rate of 0.36%. This translates to an increase from 25,190 pre-school children in 1970 to 28,450 pre-school children in 2006 (see Appendix A). If we project these trends out to the year 2030, there will be an estimated 42,810 children in Dane County five years of age and younger. Enrollments in ECE facilities reinforce the population growth trend for this age group. From 1998-2007, enrollment rates in regulated Dane County programs rose 0.33% on average each year.²⁰

These numbers reflect generally conservative estimates in demand growth. Dane County continues to experience a net increase of in-commuting for employment purposes. Data from the

¹⁸ IMPLAN Data.

¹⁹ 2000 Census Data

²⁰ Community Coordinated Child Care (4-C) Data Set

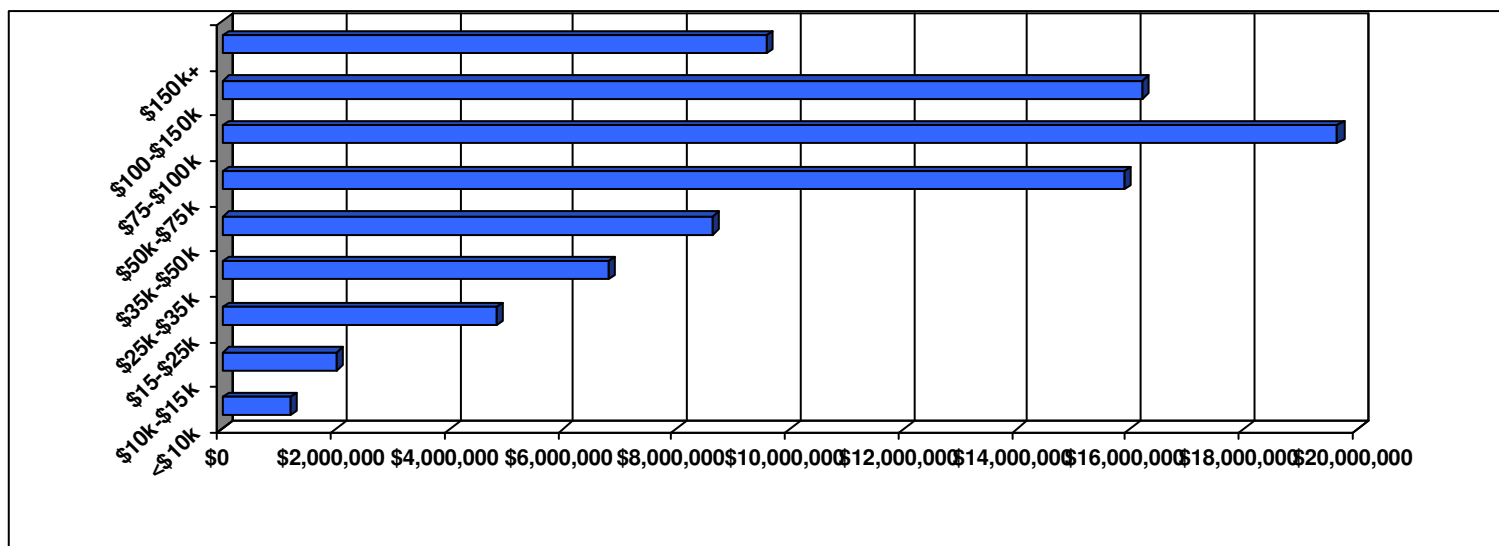
2000 Census shows that while 9,000 workers commute out of Dane County for employment, approximately 30,000 workers commute into the county. Some of these 23,000 net in-commuters choose child care near their place of employment, rather than their place of residence. While the population under age six within Dane County will continue to rise, the number of children receiving services from surrounding areas will stay constant at a minimum. These in-commuting families contribute to early childhood care and education demand, but are not captured in the data set.

We can also gain insights into the demand for child care services by examining expenditure patterns across households. Based on survey work by Community Coordinated Child Care, Inc. (4-C), 2007 weekly average child care center rates in Dane County are as follows:

- \$239 per week (ages 0-1)
- \$207 per week (ages 2-3)
- \$235 per week (ages 1-2)
- \$193 per week (ages 3-5)

There is significant difference in total spending on child care services across household incomes. While households with income \$75,000 or greater make up 27.7% of the Dane County population, they constitute 53.6% of all Dane County expenditures on child care. In aggregate, out-of-pocket expenses in 2006 for Dane County households on child care services total about \$85 million. Total annual revenue for child care services in Dane County, however, is approximately \$162 million. State and federal grants for services, government contracting for services, and in-commuting (out of pocket expenses from households in other counties) account for part of the differential.

Figure 2: Total Childcare Expenditures by Household Income



Supply of Early Childhood Care and Education Services

While demand for ECE services seems strong, the supply of providers offering the service has declined in recent years. In 1996, Dane County had 766 regulated ECE providers. By 2007, the number receded to only 604. Between 2003 and 2007 the number of ECE facilities dropped by

an average annual rate of 2.6%.²¹ Within this attrition trend, regulated family providers continue declining faster than average. This seems incongruous with expected outcomes.

The number of businesses in an industry declines when demand erodes, acquisitions or retirements occur, or if the ECE firm can not maintain revenues to cover operating costs. One reason for the mismatch in early childhood care and education supply and demand could be underestimation of supply itself, similar to the projected underestimate of demand. As previous studies show, the professional, regulated ECE facilities in the formal economy only account for a proportion of care provided.²² Beyond the traceable economic sector, informal, unregulated and unpaid child care arrangements occur. Perhaps more parents simply choose informal arrangements such as other family members or networks of friends. The United Way of Dane County's Born Learning initiative found that 1,700 children living in poverty under the age of 5 in Dane County receive care from family, friends or neighbors. While these informal providers may meet supervisory needs over young children, high quality ECE professionals possess skills and training that support a child's optimal social, emotional and cognitive development.

A third possibility includes disincentives or economic roadblocks making business ownership in this sector unprofitable. In April 2008, the City of Madison conducted listening sessions with local ECE service providers about the state of their industry. Testimony from these providers supports the notion of inadequate business viability. Kate MacCrimmon, a City of Madison accredited family child care provider, noted that:

"I love watching children, and I love engaging in parent education, and having a family child care has helped me grow...I feel like I am doing worthy and important work and that there is a desperate need for my services. Yet, my plans are to close my business within the next two years because it just doesn't pay enough. Last year, when I took 8 children into my care, because I was worried about earning enough money, I earned \$22,303 [net income] for the whole year..."

Other early child care service providers echoed Ms. MacCrimmon. They cited a decrease in federal grant funds and declining business incentives for their lost revenues. Data also substantiates this claim. In Dane County, the average annual income for a worker in the child care industry totals \$30,205.²³ Within this, average annual wages for staff, including directors comes to \$24,835, or \$11.94 an hour. Average teacher pay totals \$26,956 annually, or approximately \$12.96 per hour. Child care professionals in Dane County seem to be earning under average incomes for their businesses. Our data reinforces these findings. In Dane County, working as an ECE provider pays in line with unskilled employment rather than that of an educator.²⁴ Beyond pay, early childhood work generally includes long hours, few breaks and limited advancement opportunities.²⁵

²¹ 4-C Data

²² insert study data to reinforce

²³ IMPLAN Data

²⁴ see page 14, Table 2

²⁵ Ibid.

Because of the changing demographics in Dane County's ECE industry, the regional economy may experience significant impacts. The lack of incorporated child care may lead to growth in the informal child care sector, where tax revenues go unrealized and children may not receive equivalent learning experiences found in high quality ECE environments. If projected population growth holds true and industry consolidation continues, business opportunities may continue declining for the industry, as they have in recent years.

ECONOMIC IMPACTS OF DANE COUNTY EARLY CHILD CARE SERVICES

Assessing the economic impact of the ECE services industry requires adoption of methods that model how the economy of Dane County is structured. A commonly used method is Input-Output analysis, which captures connections among different parts of the local economy. Input-Output analysis is read as a spreadsheet of the economy, where the columns represent demand (buyers) and rows represent supply (sellers). Buyers include business that purchase inputs into the production process, such as dairy farmers buying feed from other farmers, households, government and exports. Sellers include businesses selling to other businesses, households selling labor services as well as imports. By using this modeling system, we can trace how changes in one sector ripple throughout the whole of the economy. This rippling effect is commonly referred to as the multiplier effect. For this study we use the IMPLAN (IMpnact for PLANing) economic modeling system, originally developed by the US Forest Service in the 1980s.²⁶

Impact measurements can be broken down into three parts. The first measurement, the *direct effect*, captures the ECE industry itself. This includes the employees of ECE businesses, the wages, salaries and retained profits earned, as well as industry sales or revenue. The second measurement, *indirect effect*, relates to business-to-business transactions. As we will detail below, for ECE businesses this would include rental payments, office supplies, educational materials, food, insurance and utilities among others. The suppliers of these items themselves then spend some portion of their revenues again in the community, generating the multiplier effect. The third *induced effect* measurement is tied to employees spending wages in the local economy. The sum of the three provides the *total effect*.

For this study we use four measures of economic activity: total sales (industry output), employment, labor income and total income which is akin to gross state product (GSP). The difference between labor income and total income is proprietor income (i.e., retained profits) plus transfer payments. For ECE businesses, transfer payments are predominated by public support payments and public grants. We also examine taxes and other public sector revenues that are generated by the economic activity created by the ECE industry.

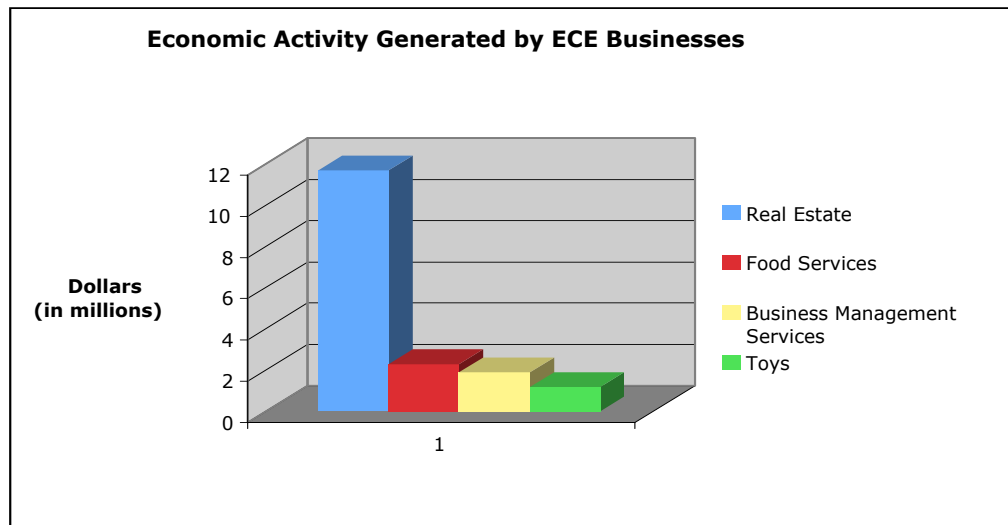
Size and Scope of the Early Childhood Care and Education Service Industry

While a cluster of small businesses providing ECE services may seem insignificant, this business sector creates more economic activity than several traditionally recognized sectors. As noted above, in 2006 child care services in Dane County had \$162 million in revenues, employed 3,474

²⁶ Please see <http://implan.com> for details or see Steven Deller. (2004). "Wisconsin and the Agricultural Economy." Department of Agricultural and Applied Economics Staff Paper Series No. 471, University of Wisconsin-Madison/Extension. (March). <http://www.aae.wisc.edu/pubs/sps/pdf/stpap471.pdf>.

persons, paid over \$63 million in wages and salaries and purchased about \$57 million in inputs from other businesses.

Figure 3



If we examine the distribution of these business-to-business expenditures of ECE businesses the largest single expenditure is in real estate (\$11.7 million) which is predominately rent paid for facilities (see Figure 3). Other large expenditures include food services at \$2.3 million, business management services at \$1.9 million, toys at about \$1.2 million, and just under a million dollars in both milk and fruits and vegetables. These types of expenditures are at the heart of the *indirect effect*. In Table 2 we can also see the importance of government transfers (i.e., subsidies, grants, etc) to the total income generated by ECE businesses. \$38.9 million of total \$104.9 million annual income comes from “other property income,” which consists of government support programs for ECE businesses.

Dane County ECE Quick Statistics:

- ***Job multiplier effect of 1.22***
- ***Labor multiplier effect of 1.44***
- ***Income multiplier effect of 1.47***
- ***Over 4,200 employees***
- ***\$2.2 million in sales taxes***
- ***\$2.7 million in property taxes****
- ***\$104.9 million in government revenues***
- ***\$162 million in industry revenues***
- ***\$246 million in Dane County industrial sales***

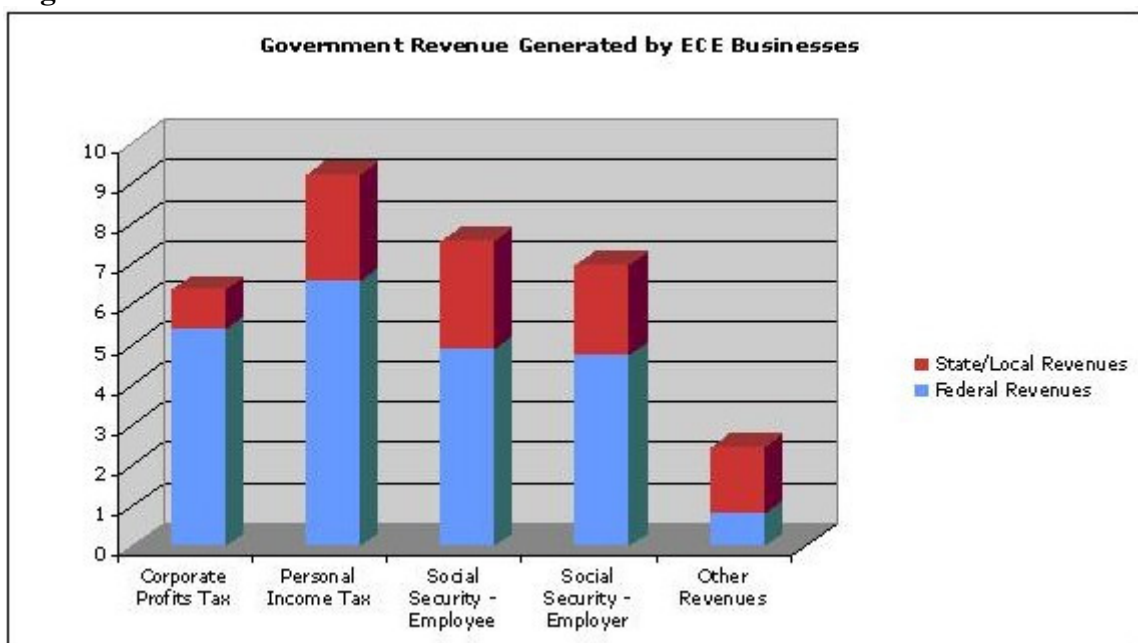
****Not including K-12 tax levy***

Tables 1-4 provide a summarized assessment of the contribution that the ECE industry makes to the Dane County’s economy. Once the multiplier effect has been included, the ECE industry contributes \$246.6 million to annual industrial sales (industry output). Each additional dollar of revenues generated by the ECE industry will generate about an additional 52 cents (i.e., multiplier of 1.518) in industrial sales elsewhere within the Dane County economy. The ECE sector supports a total of 4,244 jobs, \$91 million in labor income and \$154 million in total income. The employment multiplier suggests for each additional ECE employee an additional 0.22 jobs (i.e., multiplier of 1.222) will be generated in the economy. Each additional dollar of labor income (wages and salary) paid in the

ECE industry generates an additional 44 cents (i.e., multiplier of 1.442) of labor income throughout the County and for each additional dollar of total income in child care generates and additional 47 cents (i.e., multiplier of 1.468) of total income.

Multiplier effect distribution across the rest of the County is also reported in our data. Given the ECE industry's business-to-business expenditure pattern (see Figure 3), it is not surprising that the Real Estate and Rental industry is one sector that is impacted the most followed by Accommodation and Food Services, Manufacturing as well as Retail Trade. This latter result on Retail Trade is not so much associated with the business-to-business, or *indirect effect*, as it is with labor spending its wages in the local economy, or the *induced effect*. This analysis documents that through the multiplier effect, early childhood care and education touches nearly all sectors of Dane County's economy.

Figure 4

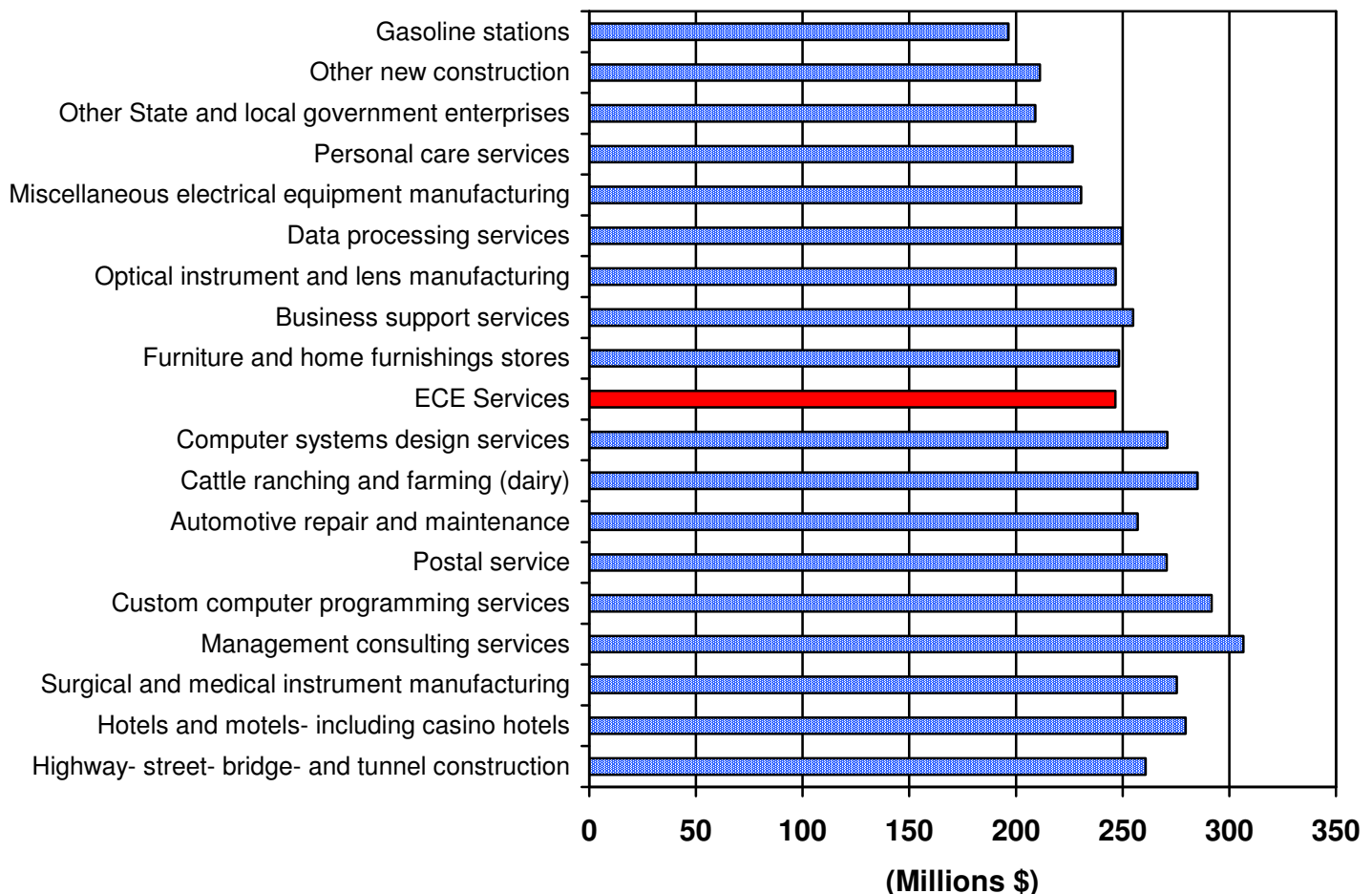


As noted in Figure 4, the economic activity generated by the ECE industry in Dane County also generates revenues for federal, state and local governments. The \$246.6 million in industrial sales that, coupled with the 4,244 jobs and \$154 million in total income generates just over \$22 million in federal government revenue and \$12.6 million in state and local government. From a local perspective almost \$2.7 million in property taxes are generated and this does *not* include property taxes levied by K-12 public education. Because about 42% of the typical property tax dollar in Dane County goes to K-12 public education, the estimated \$2.7 million in property taxes is very conservative. There is about \$2.2 million in sales taxes which the bulk of which, about 90% or \$2 million, goes to state government and the remaining 10%, or just over \$200,000, flows to county government. ECE services supported economic activity generates almost \$2.5 million in state personal income tax all of which flows to state government.

Overall, when considering the absolute size of the Dane County economy, the level of activity supported by ECE services provides a relatively modest contribution. ECE services generate about one-half of one percent of total industrial output and both measures of income and slightly more than one percent of total county employment. To gain a better understanding of how the ECE services industry compares to other industries in Dane County we rank all the industries within the economic model of Dane County on our four measures of economic activity then separate the top nine industries both above and below ECE.

Industries are ranked on their *direct effect* contribution to the county's economy. We then break down the multiplier into its two components, the *indirect* and *induced* effects. By comparing

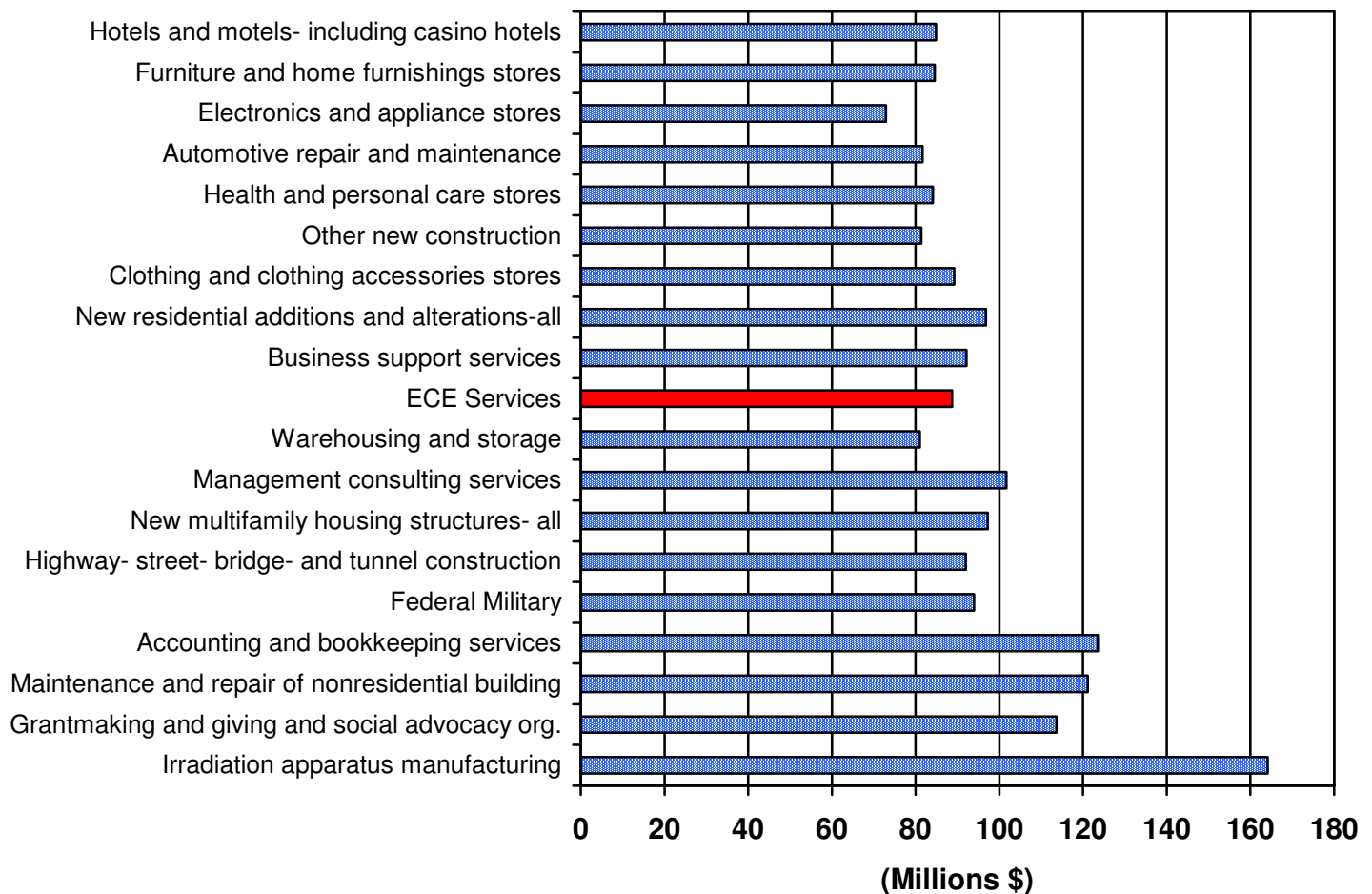
Table 1
Total Economic Impact of Early Child Care Relative to Comparable Sized Industries: Industrial Sales



absolute contributions of each industry to the Dane County economy we can also gain insights into how each industry ties to the larger regional economy. The larger the total multiplier effect is, the more tightly the industry ties to the economy. By reporting the contribution by the different components of the multiplier we can also gain insights into the source of the linkages to the local economy. For example, if the *indirect effect* is stronger than the *induced* we can deduce that business-to-business transactions dominate. If, on the other hand, the *induced* is larger, we

can conclude that the labor component is more important. Generally more labor intensive industries and/or industries that pay higher wages will tend to have larger *induced effects*. The results of this analysis are provided in Table 2.

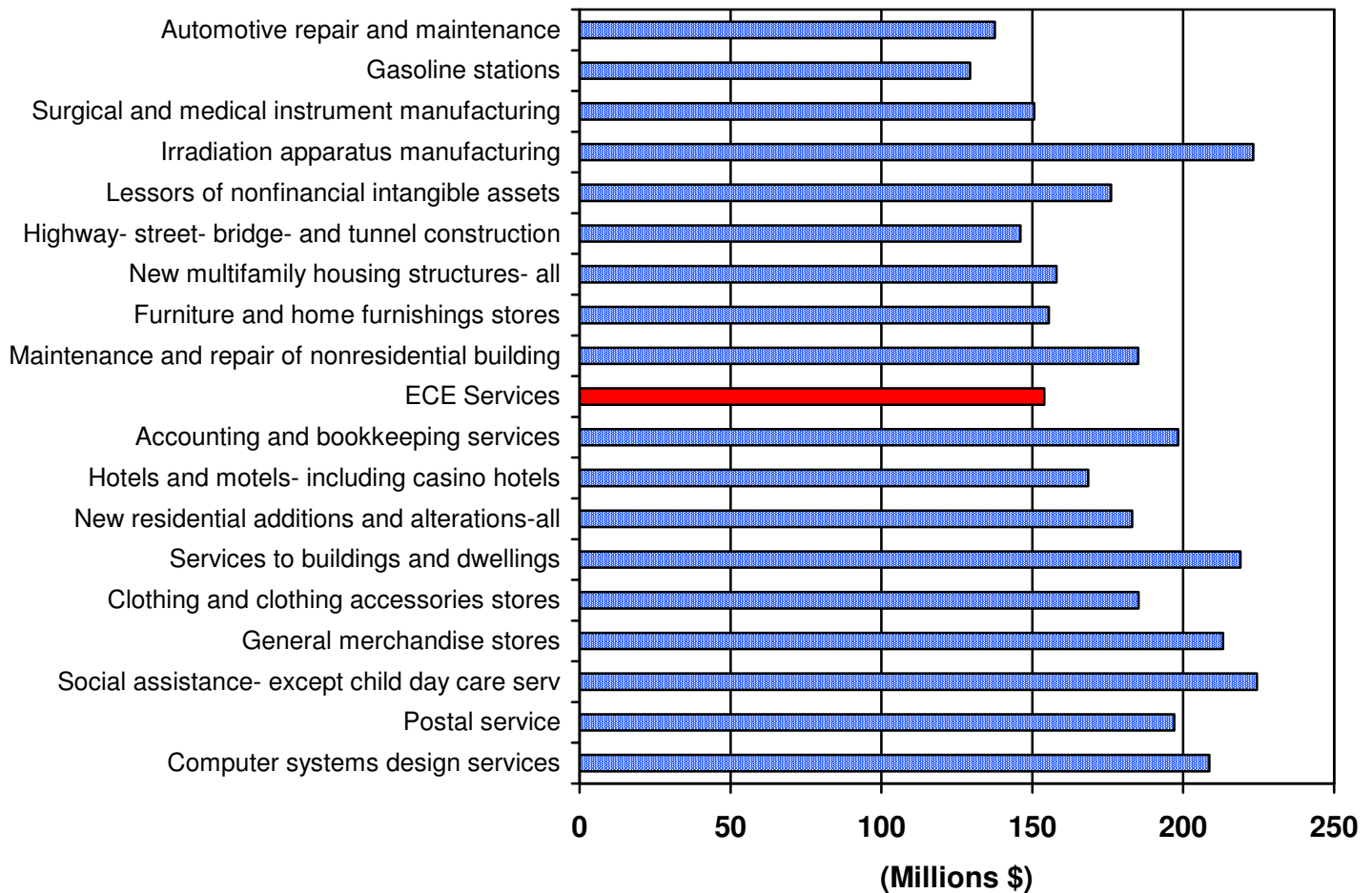
Table 2
Total Economic Impact of Early Child Care Relative to Comparable Sized Industries: Labor Income



Based on the *direct effect*, ECE businesses contribute to industrial sales (or industrial revenue or output) in Dane County about the same size as the computer system design industry, data processing service industry, and dairy farm production (Table 1). If we look across the components of the multiplier we see that the *indirect effect* is slightly lower than the average for the group of industries of similar size as child care services (0.2469 vs. 0.2714). This result is somewhat expected because early child care services tends to be labor intensive particularly compared to some industries such as dairy farming. When we look at the *induced effect* it is slightly smaller than the group average (0.2727 vs. 0.3089) which is somewhat surprising given the labor intensive nature of child care services. If we return to the observation of Kate MacCrimmon noted above, the level of pay within the ECE industry helps explain the relatively lower *induced effect*. The level of pay for ECE employees is sufficiently low to dampen the

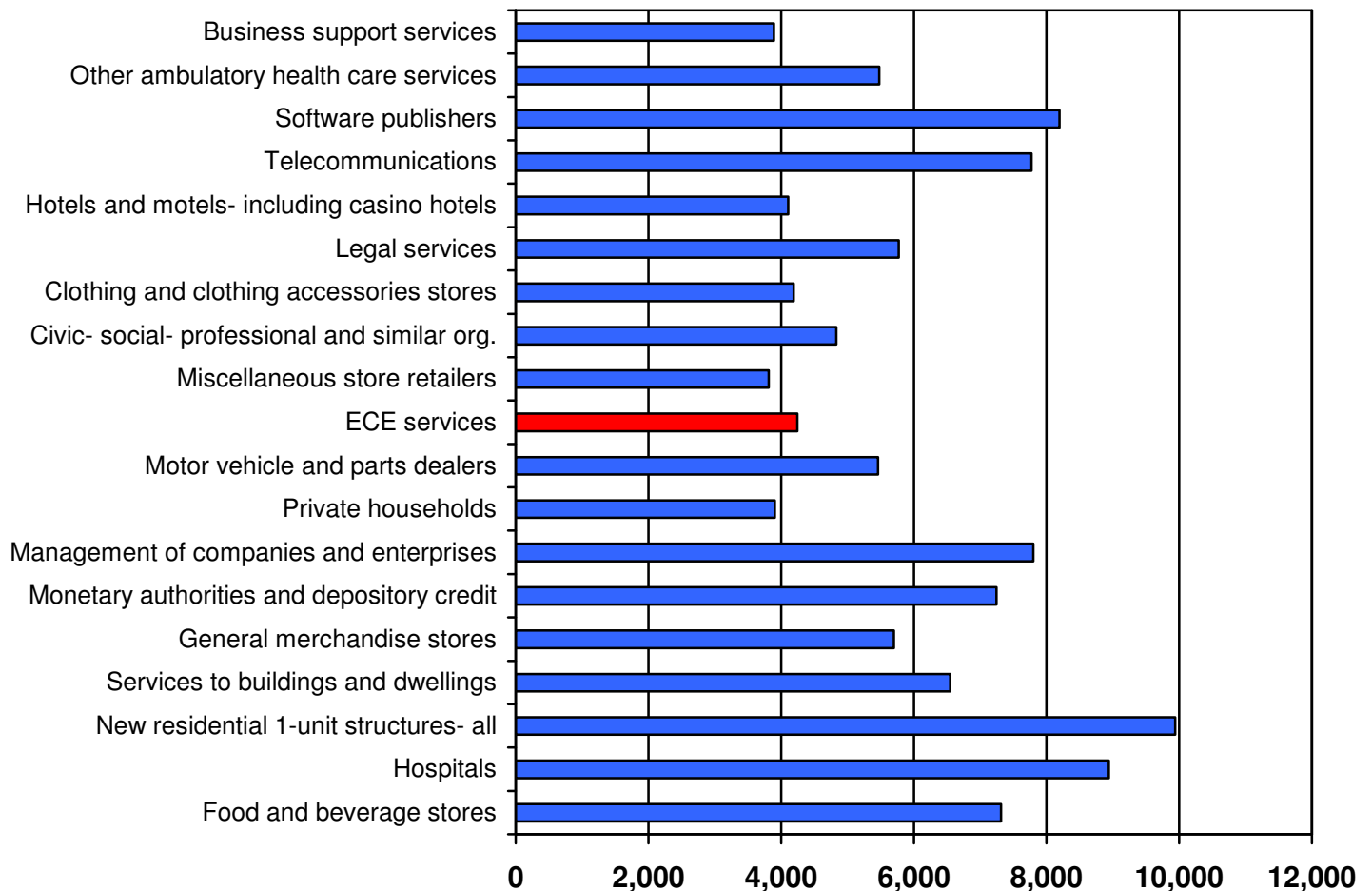
induced effect. In other words, industries with a lower paying workforce will have lower *induced* impacts in the economy.

Table 3
Total Economic Impact of Early Child Care Relative to Comparable Sized Industries: Total Income



When we examine employment levels the ECE services industry employs more people *directly* than hotels and motels, legal services, software publishers and general business support services. When we decompose the employment multiplier we see that the linkages of child care employment to total employment in Dane County are weaker than the comparable sized industries. As with the output multiplier discussed above, this can be attributed to the relatively low pay offered in the ECE industry. In terms of labor income (wages and salary) the ECE industry generates more income than general business support services, hotels and motels, but slightly less than management consulting services. We again see slightly lower multiplier effects for both the *indirect* as well as *induced* effects when compared to the group average. The same general pattern applies to total income.

Table 4
Total Economic Impact of Early Child Care Relative to Comparable
Sized Industries: Employment



CONCLUSIONS AND FUTURE IMPLICATIONS

What we have uncovered in the analysis reported here is that Dane County's ECE services industry provides three vital functions to the local economy. First, access to quality child care can more readily allow parents to enter the labor force and be more productive. Second, quality early child care services can improve the educational outcomes of children. Third, and the focus of this study, the child care services industry is a viable industry in and of itself by employing people, paying wages and generating subsequent economic activity through the multiplier effect.

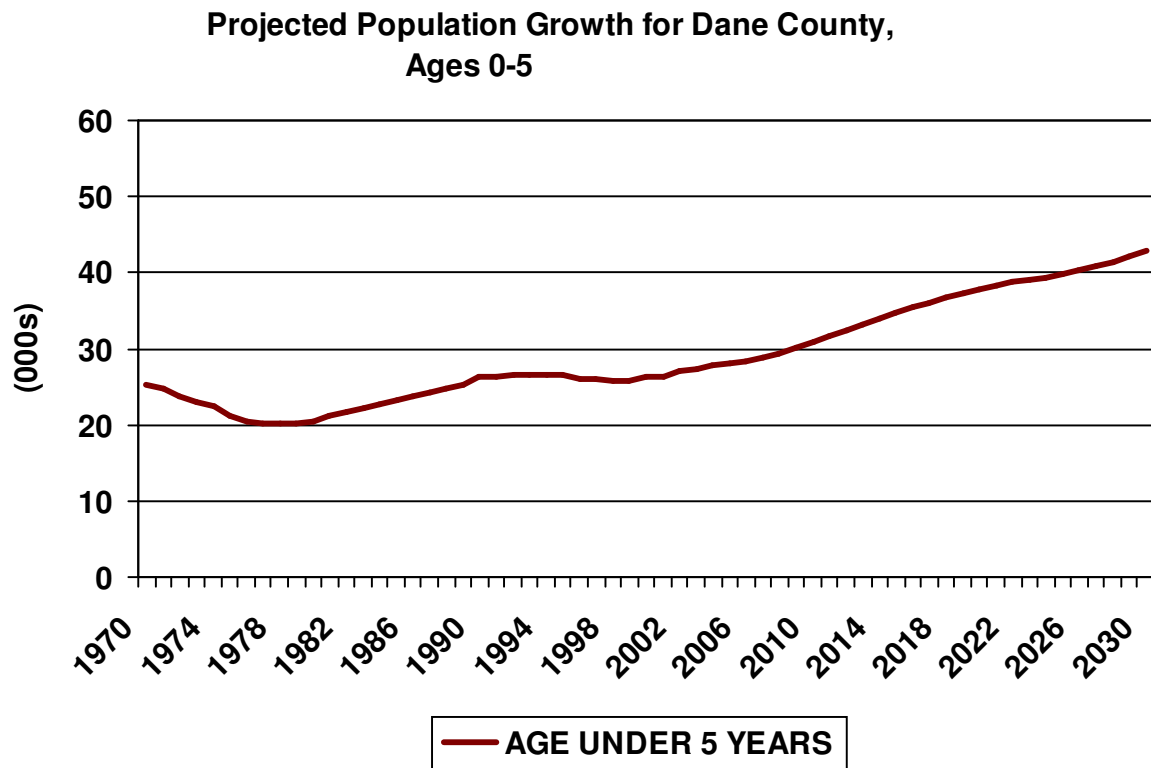
In this analysis we have found that ECE generates \$246.6 million in industrial sales, 4,244 jobs, \$91 million in labor income and \$154 million in total income. In addition, the economic activity generated by the ECE industry produces just over \$22 million in federal government revenue and \$12.6 million in state and local government. We also uncovered that ECE in Dane County is similar in scale to the dairy industry, computer software publishing industry, as well as the hotel and motel industry.

We find that Dane County has relatively high demand for ECE services. 70.5% of children under age six in Dane County require some form of child care, compared to 56.3% in Milwaukee County, 68.4% of children under six statewide and 58.6% nationally.²⁷ This relatively high level of ECE demand is projected to rise in the Dane County region, due to greater in-commuting for employment purposes and general population growth. Despite this demand, the number of regulated ECE providers continues to fall. Data suggests that several factors contribute to this contracting number of providers, including greater use of informal unregulated care arrangements, child care centers driving out family ECE providers and industry circumstances that create economic unprofitability. With the changing demographics of the ECE industry in Dane County, the number of spaces available for child care services has expanded despite the drop in provider numbers.

Future research should expand upon the economic viability of the ECE industry by considering the business service and human capital components of high quality care for children under age 5. Additional areas for consideration include the increased labor force base and business productivity for parents with children in high quality care and education, access to high quality ECE across socioeconomic groups, the impacts of low pay and high turnover that inhibit professionalizing the ECE field, and the positive economic benefits for all of society from increased educational opportunity for children prior to K-12.

APPENDIX A: Dane County Population Growth

²⁷ 2000 Census Data



Source: Department of Agricultural and Applied Economics, UW-Madison/Extension and Woods and Poole, Inc. Washington DC

APPENDIX B: Dane County Employment In-Commuting Patterns

