A Preliminary Look at Employee Turnover

At Child Care Centers in Rhode Island

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Acknowledgments

ABSTRACT

This preliminary assessment of child care employee turnover rates in Rhode Island for the period ranging from Q2 of 1999 to Q4 of 2001 yielded results not unlike those reported for other areas in the U.S. As is true elsewhere, turnover of employees at child care facilities in RI is high. For the larger sub-areas in Rhode Island (Balance of the State, Providence, and Pawtucket), average yearly turnover rates ranged from a low of 27% in Pawtucket in 2001 to a high of 41% in Balance of the State (year 2000) and Providence (year 2001). For the period 1999 to 2001, the statewide average annual turnover rate was 36.8% for single-license centers and 37.7% for multiple-license centers.

During the period of our study, which begins at about the time Starting RIght was implemented, turnover rates appeared to be headed downward, but the period was too short to discern a trend.

Results indicate that child care employee turnover in Rhode Island follows a cyclical pattern. It is significantly higher in the third and fourth quarters of the year than in the first and second quarters. We also found that turnover rates vary considerably not only from area to area of the state but also from provider to provider. This means that understanding turnover rates requires development of a model that incorporates unique attributes of providers and possibly of their employees.

A Preliminary Look at Employee Turnover

At Child Care Facilities in Rhode Island

A number of employees leave the firms for which they work either because they are laid off by the employer or of their own accord because they find more suitable employment or because they are no longer either able to hold the job or interested in keeping the job. The term employee "turnover" is used to refer to the proportion of those employed who separate from a firm during a set period of time, typically a year. In the child care field, in particular, high employee turnover is a concern because staff discontinuity is often accompanied by instability and inconsistency of care, which can negatively influence child development and well being. Thus, staff turnover is often included among structural measures of the quality of child care.

A number of studies have found high positive correlations between various measures of structural quality[1] and process quality.[2] That is to say, when child care and early childhood education programs get high marks in terms of structural measures of quality, they also tend to get high marks in terms of measures of process quality. Much of the available research on quality also has reported positive associations between structural and process measures of quality and measures of child functioning—academic, cognitive, emotional, behavioral, and social. For a recent review and summary of the literature on child care and early childhood education quality and child development, see Vandell and Wolfe (2000).

In consultation with the Rhode Island (RI) Department of Human Services (DHS), this study focuses on the turnover rate of employees at child care centers in

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[1] Measures of structural quality include caregiver-to-child ratios, group sizes, and staff education, training, wages, and turnover rates.

[2] Process quality is typically measured in terms of child-caregiver interactions, interactions among children, and in terms of participation in various age-appropriate activities.

Rhode Island (RI). To the best of our knowledge, it is the first study in the child care field that uses the Department of Labor and Training (DLT) Unemployment Insurance (UI) quarterly earnings reports for child care providers to assess turnover rates.[3] Our original plan had been to assess the impact of Starting RIght on a number of measures of child care quality. However, after working with Options for Working Parents (the Resource & Referral agency in RI) and with the RI Department of Children, Youth and Families (DCYF), the agency that licenses and inspects child care providers, we were unable to obtain longitudinal data on child care quality measures from sources such as R&R, inspection and complaint records.

Estimates of employee turnover in the child care field vary widely. Consistently studies report high turnover rates. The following two examples are representative. According to the Center for the Child Care Work Force (1997), the turnover rate for providers in child care centers in the U.S. is about 31% per year. In 1991 the National Study of Before and After School Programs, sponsored by the U.S. Department of Education (1993-94/1994-95), conducted a survey of 1300 nationally representative school-age child care (SACC) programs. This survey found an overall yearly turnover rate of 35% (Spedding, 1994). In contrast, the average employee turnover rate in many other fields is lower. For example, the turnover rate for public school teachers is estimated to be 6.6% per year (U.S. Dept of Education, 1995). The high staff turnover in the child care industry is in large part due to the low salaries and limited employee benefits that are common in this field. Indeed, one of the purposes of providing health care coverage to those providing subsidized child care in RI was to increase the stability of the RI child care workforce.

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[3] Bong Joo Lee at the Chapin Hall Center for Children at the University of Chicago originally suggested using UI data to measure the turnover of child care workers.

The Data

We worked with the Rhode Island (RI) Department of Human Services (DHS) to obtain longitudinal information from the RI Department of Labor and Training (DLT) Unemployment Insurance (UI) program on facilities and individuals providing child care services in RI. By the middle of April 2002, we had obtained a file from DLT with employment information from the UI records from the first quarter of 1996 through the last quarter of 2001 for employees of firms and individuals with a standard industrial classification (SIC) code of 835150 or who had at any time between May 1996 and April 2002 received payment from DHS for a child care subsidy. (For employees, all records were stripped of all items of personal identification, such as social security numbers, which were replaced by a unique identifier.) The early data from DLT (Quarter 1 of 1996 to Quarter 4 of 1998) was incomplete,[4] but it was complete for the period from the first quarter (Q1) of 1999 through the fourth quarter (Q4) of 2001. Thus, our period of analysis was from Q1 of 1999 to Q4 of 2001.

The DLT file we received contained information on all the providers (center-based, family, and informal) for all the quarters in which the provider had reported earnings to the UI program. However, we were not able to include in the study family child care providers or informal providers because the data did not specify the Standard Industrial Classification (SIC) codes for employees. Such code would have allowed us to

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[4] For quarters prior to 1999, the DLT database contained only approximately 11,000-12,000 observations per quarter, while the data for quarters beginning in Q1 of 1999 contained approximately 28,000-33,000 observations per quarter. In 1998, the Division of Taxation did an outreach to Child Care Providers informing them that they needed to file with DLT. This outreach, plus some expansion in the child care industry from Q4 of 1998 to Q1 of 1999, may largely explain the discrepancy in the number of observations. In addition, it is possible that part of the discrepancy in the number of observations between the earlier and later UI files was due to inaccurate federal employer identification numbers in the child care subsidy files for 1996-1998. To the extent that the dramatic increase in the number of UI records for the employees of child care providers in recent years is due to new filings by providers, this is a positive development for those employees who were formerly uncovered by unemployment insurance and now are covered.

discern the type of employment for which individuals appeared on the UI record. That is, without SIC codes we had no way of telling if a given family provider or informal provider appearing in the UI records at any point in time was there because at that time the individual was providing child care services or because the individual was involved in some other type of employment. Accordingly, we identified and kept only the center facilities that appeared in the database and their employees.

To identify child care centers in the UI database, we matched the UI data with the child care licensing list from DCYF for the summer of 2000. We identified two quite distinct types of centers. One type had a single DCYF license. Centers in this category were small (around 20 employees) and had a single location. The second type had multiple licenses, generally multiple sites, and more than 100 employees. Since these two types of centers are very different, we analyze them separately.

Before proceeding to analyze the data, we needed to identify the single-license and multiple-license child care providers who were mainly engaged in an endeavor other than the provision of child care (e.g., hospitals, institutions of higher learning, the Urban League, etc.). This was necessary because the turnover rate for the total number of employees in these large firms would not necessarily be representative of the turnover rate for employees in their child care facilities. We identified these entities by comparing the number of employees of the firm to their licensed child care capacity. If the number of employees exceeded the licensed capacity, we dropped the entity from the analysis dataset.

We created four databases for the analyses presented below. One quarterly database included firms holding only one child care license (single-license) for whom the provision of child care was a major activity. Another quarterly database included firms

holding more than one child care license (multiple-license) for whom the provision of child care was a major activity. Two additional databases were annualized, one for single-license firms and the other for multiple-license firms. The four databases were at the employee level, with a separate observation for each employee for each quarter or year. Each employee observation included a provider code as well as an employee id.

Tables 1 and 8 indicate that our single-license databases included approximately 130-140 centers and school-age programs for the state as a whole. UI records indicate that these providers employed, on average, about 20 employees per quarter and nearly 30 employees per year. Tables 5 and 12 show that our multiple-license database included slightly less than 30 centers and school-age programs. These providers employed, on average, about 120 employees per quarter and about 200 employees per year.

Method for Descriptive Analysis

To obtain quarterly turnover rates, we begin by determining for each employee in each provider's quarterly UI report whether the person was still in the provider's UI report for the subsequent quarter. If the employee does not appear in the subsequent quarterly report, we create a variable to indicate that the individual left the firm. We next sum up these indicator variables for each provider for each quarter to obtain the total number of employees that left the provider each quarter. Finally, to obtain the turnover rate, we ratio the total number of employees leaving to the total number of employees at the firm during the quarter.

Our procedure for calculating yearly turnover rates is analogous. We aggregate each provider's quarterly reports for each year and determine for each employee who appears in any of the quarterly reports for the year whether the individual is still in the

provider's UI reports for the subsequent year. If the employee does not appear in any of the provider's quarterly reports for the subsequent year, we create a variable to indicate that the individual left the firm. We next sum up these indicator variables for each provider for each year to obtain the number of employees that left the provider each year. Finally, for each year, we ratio the number of employees leaving to the number of employees reported by the provider during the year to obtain the turnover rate.

Descriptive Results for Quarterly Turnover Rates

Tables 1-4 summarize the quarterly turnover rate from 1999 to 2001 for single-license center-based child care providers. As can be seen in Table 1, the employee turnover in single-license child care facilities in RI follows a cyclical pattern. Typically, it increases during the third and fourth quarters of the year (summer and fall) and it decreases during the first and second quarters (winter and spring).

Table 1 also shows that the quarter-to-quarter average employee turnover rate for single-license facilities for the state as a whole appears to be moving in a downward direction, but with some fluctuations along the way. For example, for Q2, the 1999 mean turnover rate was 16.7%, compared to 14.4% in 2000 and 11.5% in 2001. However, for Q4, the 1999 mean turnover rate was 20.3%, compared to 22.1% in 2000 and 21.7% in 2001.

Tables 2 to 4 summarize the quarterly employee turnover rates for sub-areas of the state with 5 or more single-license child care facilities.[5] As can be seen in Tables 2 to 4, mean turnover rates for Balance of the State, Providence, and Pawtucket show the same cyclical pattern and the same downward trend, with fluctuations, as the state as a

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[5] To preserve confidentiality, we do not report turnover rate results for areas of the state with fewer than 5 single-license child care facilities.

whole.   For the period 1999-2001 and for single-license providers, the mean quarterly employee turnover rate is highest in Balance of the State (19.6%) and lowest in Pawtucket (11%), with Providence falling in between (12.9%). Statewide, the quarterly employee turnover rate for single-license providers during our study period was 18%.

Tables 5 to 8 summarize the quarterly turnover rate from 1999 to 2001 for multiple-license center-based child care providers. As can be seen in Table 5, the employee turnover in multiple-license child care facilities in RI also follows a cyclical pattern. Typically, it increases in the third and fourth quarters of the year (summer and fall) and it is much lower in the first and second quarters (winter and spring).

Table 5 also shows that the average quarterly employee turnover rate for multiple-license providers for the state as a whole appears to be moving in a downward direction, with some fluctuations along the way. For example, for Q3, the 1999 mean turnover rate was 21.4%, compared to 22.1% in 2000 and 15.3% in 2001.   However, for Q2, the 1999 mean turnover rate was 11.5%, compared to 15.7% in 2000 and 14% in 2001.

Tables 6 and 7 summarize the quarterly employee turnover rates for sub-areas of the state with 5 or more multiple-license child care facilities. As can be seen in these tables, mean turnover rates for Balance of the State and Providence show the same cyclical pattern and the same downward trend, with fluctuations, as the state as a whole.   For the period 1999-2001 and for multiple-license providers, the mean quarterly employee turnover rate was lower in Balance of the State (18.7%) and higher in Providence (19.5%). Statewide, the quarterly employee turnover rate for multiple-license providers during our study period was 18.9%.

Descriptive Results for Yearly Turnover Rates

Tables 8 to 11 summarize the yearly turnover rates for single-license center-based child care providers in RI for the period of our study. These tables show that from the year 2000 to 2001, the average yearly turnover rate declined statewide as well as in the other sub-areas. For the state as a whole the average yearly turnover rate for single-license facilities declined from 37.5% to 36.2%. For areas with 5 or more single-license facilities, Pawtucket showed the most substantial decline (from 29.4% to 27%) as well as the lowest yearly turnover rate. Balance of the state had the highest turnover rates (37.9%, down from 38.7%).

Tables 12 to 14 summarize the yearly turnover rates for multiple-license child care providers in RI for the period of our study. These tables show that from the year 2000 to 2001, the average yearly turnover rate declined statewide as well as in the other sub-areas. For the state as a whole the average yearly turnover rate declined from 38.9% to 36.5%. Only Balance of the State and Providence had 5 or more multiple-license facilities. Of these, Balance of the State showed a substantial decline in yearly turnover, from 41.1% in 2000 to 35.4% in 2001, while Providence experience an increase, from 39.3% to 41.1%.

A Simple Model for Turnover Rates

We estimate simple models for turnover rates that include the following explanatory variables: (1) binaries for the relevant time periods (i.e., binaries for quarters when using quarterly data and binaries for years when using annual data) and (2) binaries for location (i.e., binaries for Central Fall, Newport, Providence, Woonsocket and the balance of the state, with Pawtucket serving as the reference category).

Estimation

We estimate models for the turnover rate using panel data estimation techniques.[6] In our application, where we observe providers over time, we are concerned about unobservable provider-specific attributes that may affect the turnover rate of employees and thus may affect the consistency of the estimation. The most commonly used estimators to account for unmeasured provider-specific attributes when using longitudinal data are the fixed-effects and the random-effects estimators. The fixed-effects estimator requires that the unobservable provider-specific effect be constant or fixed over time. This estimator requires few other assumptions, but it is not efficient because it does not utilize time-invariant information. Also, as noted by Green (1997), fixed-effects results strictly apply to the estimation sample and cannot be generalized to other samples.

By way of contrast, random-effects estimators use all the information contained in both the time-series and cross-sectional variation in the data and, thus, produce more statistically efficient results than the fixed-effects estimator. Due to the stochastic nature of the provider-specific effect, generalization to samples other than the estimation sample rests on firmer ground (Green, 1997). For consistency, the random-effects estimator requires that explanatory variables be uncorrelated with the provider-specific effect, which is relegated to the error term. Since we are estimating a very simple model that contains only variables for time periods and locations, explanatory variables should be uncorrelated with the provider-specific random effect and the random effects estimator should be consistent.

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[6] See Chamberlain (1984) or Greene (1997) for more detailed discussions of techniques for estimating models using longitudinal data.

To be more specific, consider the General Estimating Equation (GEE):[7]

$$g(E(y_{it})) = x_{it}\beta, \qquad y_{it} \sim F \text{ with parameters } \theta_{it}$$

where y_{it} is the dependent variable (i.e., the turnover rate of employees) that varies both across providers (subscripted i) and time (subscripted t), x_{it} is a vector of explanatory variables (i.e., the explanatory variables listed in the previous section), β and θ_{it} are a vector and a matrix, respectively, of parameters to be estimated, g() is the "link" function, E is the expected value operator, and F is a distribution that is a member of the exponential family (e.g., the normal distribution, the gamma distribution).

To estimate models for provider's employee turnover rate, we use the following specification of GEE:

$$E(turnover_{it}) = x_{it}\beta, \qquad turnover_{it} \sim N(\mu_y, \sigma_{it})$$

where x_{it} represents the explanatory variables listed in the previous section and N indicates the normal distribution with a mean equal to μ_y and a variance/covariance matrix equal to σ_{it}. Note that we have specified the link function as linear in the turnover rate, our dependent variable, and we have assumed that the turnover rates, conditional on the explanatory variables, are normally distributed. The fixed-effects model assumes that σ_{it} is a diagonal matrix. The random-effects model assumes that σ_{it} is a block diagonal matrix with symmetric, provider-specific Ti x Ti matrices on the diagonal. The Ti x Ti matrices have constant covariance parameters off the diagonal and a provider-specific variance on the diagonal.

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[7] For a discussion of GEE, see Liang and Zeger (1986), Zeger and Liang (1986), and Liang, Zeger and Quqish (1992).

Analysis Results

For single-license and multiple-license providers, we estimated fixed-effects and random-effects models. These models account for unobserved provider-specific effects. We used both quarterly and annual data.

Results obtained using quarterly data indicate that, holding year and location constant, provider turnover in Rhode Island is significantly higher in the third and fourth quarters of the year than in the first and second quarters. To be more specific, results obtained using the fixed-effects model indicate that the turnover rate for multiple-license centers was 6.6 percentage points higher in the third quarter of the year than in the first quarter and 13.9 percentage points higher in the fourth quarter of the year than in the first quarter, holding other factors in the model constant. Turnover rates for single-license centers were also significantly higher in the third and fourth quarters than in the first and second quarters. Specifically, holding constant other factors in the model, the turnover rate for centers with a single license was 4.9 percentage points higher in the third quarter than in the first quarter and 6.5 percentage points higher in the fourth quarter than in the first quarter. Results also indicate that multiple-license centers in Newport and Woonsocket had significantly lower turnover rates than multiple-license centers in other areas of the state. Single-license centers in Pawtucket and Woonsocket had significantly lower turnover rates than single license centers in other areas of the state.

Results show that the unobserved provider-specific effects are both large and significant for both single-license and multiple-license centers. This indicates that understanding turnover rates requires development of a model that incorporates unique attributes of providers and possibly of their employees.

Summary and Conclusions

This preliminary assessment of child care employee turnover rates in Rhode Island for the period ranging from Q2 of 1999 to Q4 of 2001 yielded results not unlike those reported for other areas in the U.S. As is true elsewhere, turnover of employees at child care facilities in RI is painfully high. For the larger sub-areas in Rhode Island (Balance of the State, Providence, and Pawtucket), average yearly turnover rates ranged from a low of 27% in Pawtucket in 2001 to a high of 41% in Balance of the State (year 2000) and Providence (year 2001). For the period 1999 to 2001, the overall statewide average annual turnover rate was 36.8% for single-license centers and 37.7% for multiple-license centers.

During the period of our study, which begins at about the time Starting RIght was implemented, turnover rates appeared to be headed downward, but the period was too short for us to be able to discern a trend.

Another finding is that child care employee turnover in Rhode Island is highly cyclical. It is significantly higher in the third and fourth quarters of the year than in the first and second quarters.

Our results indicate that turnover rates vary substantially by provider. This means that understanding turnover rates requires development of a model that incorporates unique attributes of providers and possibly of their employees. Turnover rates also vary considerably from area to area of the state.

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