

What's the Return on Investment? Using Placement Day Analysis to Measure Child Welfare Costs

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A Better Fiscal Measure for Child Welfare

Measuring whether new child welfare interventions work requires at least two yardsticks: one to measure the effect on children's ability to thrive, and another to examine various cost factors, such as resource allocations and savings. With these data in hand, agency leaders and communities can decide which interventions both benefit children and use scarce dollars well.

What's the Return on Investment? Using Placement Day Analysis to Measure Child Welfare Costs focuses on the second half of this equation — cost factors. This paper describes how to calculate a return on investment (ROI) using a savings-to-investment ratio (SIR). Because placement data is the business metric of child welfare, the Annie E. Casey Foundation uses placement days as the unit of analysis — an approach called *placement day analysis*.

Too often, promised intervention savings are illusory. Placement day analysis pinpoints real savings generated by avoiding placements.

Why use a placement day analysis approach? Too often, savings promised by new child welfare interventions are illusory. Placement day analysis pinpoints real savings — those savings made over a time frame minus the dollar value lost due to inflation — generated by avoiding placements. It uses a variety of placement and cost measures to examine the fiscal effects of new interventions or program updates that divert children from child welfare placements or reduce the number of days a child is in placement.

DEFINING PLACEMENT DAYS

Placement days are a measure of the total number of days all children and youth in a jurisdiction live in out-of-home settings. In child welfare, that includes stays in kinship care homes, foster homes and institutional settings such as group homes and residential facilities. If, for example, 10 young people each spent 21 days in care, that would represent 210 placement days.

Traditionally, analysts examine changes in program costs using a head-count approach, which assesses the degree to which a proposed intervention will change caseload costs by reaching more or fewer children. This approach makes the child the unit of analysis and can result in debates about fiscal responsibility becoming entangled with child welfare practice issues. By comparison, placement day analysis provides a more sensitive and accurate estimate of costs savings. Because child welfare agencies pay foster families on a per diem (i.e., placement day) basis, all placement days avoided constitute real savings.

To plan a placement day analysis, read the Delaware example on page 2, review the [accompanying spreadsheet](#) and follow these seven steps.

A Seven-Step Approach

STEP 1: DEFINE YOUR PURPOSE

With FAIR, Delaware used placement day analysis to 1) determine if the initiative materially lowered placement days compared with pre-FAIR trends; 2) compute the savings, if any, that FAIR generated, and over what time period; and 3) compare any savings with FAIR's service costs to calculate the program's ROI.

In the FAIR example, the agency developed an intervention to divert teens from custody whenever safely possible. The agency then contracted with a private provider to supply FAIR services at a flat rate of \$750,000 per year, financed entirely with state funds (see the annual value of the contract in spreadsheet cell R11).¹

STEP 2: COLLECT PLACEMENT DATA

Basic data required were the number of placements per month during FAIR and the number of placement days that were reimbursed for children in the target populations in each of the 72 months immediately preceding the beginning of the initiative. The past placements were used to forecast a placement census for each of the next 33 months. Time-series modeling techniques — forms of economic forecasting — were used to estimate the number of placements without FAIR.

STEP 3: ADJUST

Because no forecast is 100 percent accurate, the analyst who tracked costs for Delaware's FAIR program then calculated the variance between predicted and actual placement usage for the 24 months immediately preceding FAIR implementation. The analyst determined that the forecast model

In Delaware, Meeting Teens' Needs — and Avoiding Unnecessary Removals

Delaware's state child welfare agency discovered through a data review that young people were frequently being removed from home because they couldn't get along with their parents rather than because of abuse and neglect.

The agency wondered: Could removals be avoided altogether by finding other ways to meet teen and family needs?

Believing it was possible, in 2013 the agency worked with consultants from the Annie E. Casey Foundation to develop the Family Assessment and Intervention Response (FAIR). When a family with a teenager was the subject of a hotline call and the situation did not involve abuse or neglect, the agency referred them to FAIR, which provides all families with an initial set of Tier 1 services. Twenty percent of the families were assessed as needing additional services, as follows:

- Tier 1 families receive short-term crisis intervention and referrals to other services.
- Tier 2 families receive Functional Family Therapy, an intensive counseling approach.

FAIR — run by a provider under contract with the agency — initially assessed teens ages 13–18; later, it expanded to youth starting at age 11. Using placement day analysis, the agency saw that the program began to save more money than it cost after 11 months.

overstated how many placement days should have been used compared to how many were used by a monthly average of 1.67 percent for the age 13–18 cohort and 1.68 percent for the age 11–18 cohort. To control for this tracking error, the analyst reduced the forecasted bed days for each cohort by that amount (see spreadsheet columns C and G).

STEP 4: REVIEW ACTUAL VS. FORECASTED PLACEMENT DAYS

The analyst then subtracted the actual placement days per month from the adjusted, forecasted number of placement days. The result arguably represents FAIR’s impact, defining how many fewer placement days were used in a post-FAIR world (compared to how many would have been needed if FAIR did not exist).

STEP 5: CONSIDER THE IMPACT OF CONCURRENT INITIATIVES

New interventions are invariably implemented in the context of ever-changing agency environments. With this in mind, the analyst included placeholders to account for other factors that might have contributed to driving the number of actual placement days up or down. For example, as FAIR was being implemented, the agency also implemented Team Decision Making (TDM),² which might have influenced the duration of placements for children in foster families and for teens represented in the FAIR target population. To control for that, the analyst and the agency agreed to assume that 5 percent of the cumulative placement variance (see cell I7) reflected in column I was due to shorter placements caused by TDM.

The Nitty-Gritty: Definitions and Calculations

ROI is represented as a ratio of the expected financial gains of a project divided by its total cost. As a formula, it appears as:

$$\text{ROI} = \text{net gains} / \text{total cost}$$

Net gains equal total gains minus total cost. The ratio can be multiplied by 100 to provide the ROI percentage. Generally, an ROI percentage above zero is interpreted as favorable (indicating more gain than cost). Below zero indicates more cost than gain.

A specific type of ROI is the savings-to-investment ratio (SIR). Savings may be more meaningful than financial gains, particularly in a nonprofit setting. As a formula, it appears as:

$$\text{SIR} = (\text{typical operations cost} - \text{actual program operations cost}) / \text{total cost}$$

Savings is calculated as a forecast or estimation of typical costs during a given time period minus the actual program costs. We recommend using a risk-adjusted approach to forecasting and allowing for error estimates, which provides a conservative estimate of program savings. As with other ROI, multiplying by 100 gives the savings-to-investment percentage. For example, an ROI of 119 percent can be interpreted as demonstrating that for every \$1.00 spent on investment, \$1.19 is saved on program costs.

Why 5 percent? Because in the 33-month period being analyzed for children ages 11–18, 5 percent of all TDM activity involved children in that age group — and TDM activity was generally successful in reducing length of stay. Because the 5 percent TDM variable represented a cumulative impact assumption, its effect was distributed over each of the 33 months in the study period. That reduction can be seen in column K of the spreadsheet.

STEP 6: DETERMINE COSTS AND SAVINGS

As is the case in most child welfare jurisdictions, Delaware uses a mix of foster homes. The public agency manages some, while private child welfare agencies under contract with the public agency recruit and supervise others. As a result, some of the placement savings noted in column K would have logically accrued to public and private provider placement censuses.

For the purpose of the analysis, the analyst assumed that the days denoted for each month in column K would have distributed between public and private usage in the same ratio as the actual placement census during the study period.

- This distribution is reflected in cells R4 and S4 for April 2013 to January 2014, when the target cohort was teens ages 13–18.
- Cells R7 and S7 reflect the distribution pattern when the FAIR cohort was expanded to ages 11–18 in February 2014.
- The resulting distribution product is reflected in columns M and N of the spreadsheet.

Further, the analyst computed an implied daily cost for each placement during the FAIR analysis.

- For public agency foster home placements, the implied daily value is the daily amount paid to a foster caregiver, which was \$25.63 and \$27.09, respectively, for children ages 13–18 and 11–18.
- For private agency foster home placements, the implied value is the per diem compensation paid to the private agency, which was \$94.78 and \$92.91 per day, respectively, for the same age groups.

These values are reflected in cells R5, R8, S5 and S8 of the spreadsheet and show the actual average daily placement costs Delaware saw for these settings during the analysis period.

To compute the gross valuation of placement days saved by FAIR, the analyst multiplied the values in columns M and N of the spreadsheet and their respective average daily costs in cells R5, R8, S5 or S8, as appropriate. For example, to determine how much in public agency costs were saved by FAIR in April 2013, see cell P18, which displays the product of multiplying cells M18 and R5. This process can be replicated for private agency savings using the appropriate variables. The two resulting products appear in cell R18; this number represents placement savings realized that month.

STEP 7: COMPARE PROGRAM COSTS TO SAVINGS TO COMPUTE ROI

In the FAIR example, to achieve a positive ROI, savings realized from placement days deferred for any given month (listed in column U) must exceed the monthly cost of the FAIR contract, or \$62,500 (see column W). When placement savings exceed \$62,500, FAIR is cash-flow positive with a positive ROI. Conversely, when placement savings are less than the monthly contract cost, FAIR has a negative ROI — it costs more than it saves.

The spreadsheet shows that FAIR:

- first achieved a monthly positive ROI in February 2014 — 11 months into implementation (compare spreadsheet cells U28 and W28); and
- saved slightly less than FAIR cost over the 33-month study period. While FAIR saved \$2,040,588, the contract cost was \$2,062,500 (see spreadsheet cells V50 and X50).

Had the study extended one additional month, through January 2016, total FAIR savings would have exceeded total program costs. Indeed, for the last full year of the study period (contract year 2015), FAIR achieved a total ROI of 11.83 percent with cumulative net savings of \$88,705 (see spreadsheet cells X5 through X8).

Conclusion

A critical benefit of placement day analysis is that it allows agencies, legislators and others to understand actual and prospective child welfare program costs with more precision than simpler head-count approaches.

Placement day analysis provides crucial fiscal information based on a solid, data-driven technical process. Its fiscal forecasts can be effective in budget discussions with state or local budget analysts, providing reliable cost data to accompany information on the ability of new or improved programs to improve outcomes for children and families. Managers can use placement day analysis to track how long it takes a program to establish itself and realize a return on investment. The forecasting function of placement day analysis is useful in the program planning stage, during implementation and as the costs and benefits of programs are compared.

Placement day analysis pinpoints real savings generated by avoiding placements or reducing lengths of stay. The approach can be used to compare or forecast costs and break-even points as new programs are considered, track expected vs. actual costs and savings and see fiscal trends.

¹ Child welfare placement costs are usually financed with a blend of state and federal dollars. Federal funding usually consists of 1) reimbursements received from Title IV-E of the Social Security Act (a federal child welfare reimbursement program) and/or 2) Medicaid (a federal medical insurance program involving nearly all children in placement). For the FAIR program, however, Delaware only received federal reimbursements under Title IV-E, receiving reimbursement that was, on average, slightly more than \$0.04 on the dollar of placement costs for teens in the age cohort FAIR served. That variable is reflected in cell R10 of the spreadsheet. To ascertain how much a given cost reduction accrues to the state vs. the federal treasuries, one must compute the federal share, if any, of the costs saved. The implied value of those monthly federal savings is found in column S and is the product of multiplying the variable in cell R10 and the gross implied savings in column R. The net amount of implied savings that accrued to the state is reflected in column U and is the product of adding the monthly values in column S from column R.

² Team Decision Making, developed by the Annie E. Casey Foundation, consists of an inclusive meeting of parents, family members, community supports and agency personnel to recommend whether or not a child should be removed from home or provided in-home support and services because of safety concerns.