BENEFITS AND COSTS OF INTENSIVE FOSTER CARE SERVICES: THE CASEY FAMILY PROGRAMS COMPARED TO STATE SERVICES

RICHARD O. ZERBE, ROBERT D. PLOTNICK, RONALD C. KESSLER, PETER J. PECORA, EVA HIRIPI, KIRK O'BRIEN, JASON WILLIAMS, DIANA ENGLISH and JAMES WHITE*

The foster care system attempts to prepare children and youth who have suffered child maltreatment for successful adult lives. This study documents the economic advantages of a privately funded foster care program that provided longer term, more intensive, and more expensive services compared to public programs. The study found significant differences in major adult educational, health, and social outcomes between children placed in the private program and those placed in public programs operated by Oregon and Washington. For the outcomes for which we could find financial data, the estimated present value of the enhanced foster care services exceeded their extra costs. Generalizing to the roughly 100,000 adolescents age 12-17 entering foster care each year, if all of them were to receive the private model of services, the savings for a single cohort of these children could be about $6.3 billion in 2007 dollars. (*JEL* D61, H75)

*Special thanks to the staff members and agency collaborators of the NFCAS for their efforts in making this study possible. We especially appreciate the alumni of foster care who helped design the study, shared their stories, and interpreted the findings; the Casey, Oregon, and Washington staff who helped us locate alumni; and the Survey Research Center study leaders (Nat Ehrlich, Nancy Gebler, Tina Mainieri, and Alisa McWilliams) and interviewers at the University of Michigan who assisted us with the study. Thanks also to the referees for many valuable suggestions and to the Center for Benefit-Cost Analysis, supported by the MacArthur Foundation, at the University of Washington for use of some of its data.

Zerbe: Professor, Evans School of Public Affairs, University of Washington, and Adjunct Professor, School of Law, Seattle, WA 98195. Phone 206-616-5470, Fax 206-685-9044, E-mail zerbe@u.washington.edu

Plotnick: Professor, Evans School of Public Affairs, University of Washington, Seattle, WA 98195. Phone 206-685-2055, Fax 206-685-9044, E-mail plotnick@u.washington.edu

Kessler: Professor, Department of Health Care Policy, Harvard Medical School, 180 Longwood Avenue, Room 215, Boston, MA 02115. Phone 617-432-3587, Fax 617-432-3588, E-mail kessler@hcp.med.harvard.edu

Pecora: Professor, School of Social Work, University of Washington, and Senior Director of Research Services, Casey Family Programs, 1300 Dexter Avenue North, Floor 3, Seattle, WA 98109. Phone 206-270-4936, Fax 866-322-7863, E-mail ppecora@casey.org

Hiripi: Doctoral Student, DKFZ-Heidelberg, Heidelberg, Germany. E-mail e_hiripi@yahoo.com

O'Brien: Director of Foster Care Research, Casey Family Programs, 1300 Dexter Avenue North, Floor 3, Seattle, WA 98109. Phone 206-352-4273, Fax 866-321-9665, E-mail kobrien@casey.org

Williams: Research Analyst/Statistician, School of Social Work, University of Alaska Anchorage, 3016 11th Avenue West, Seattle, WA 98119. Phone 206-283-2561, Fax 206-283-2561, E-mail anjrw@uaa.alaska.edu

English: Senior Director, Strategic Consulting, Casey Family Programs, and Research Associate Professor, University of Washington School of Social Work, 2616 Marine Avenue SW, Seattle, WA 98116. E-mail denglish@casey.org

I. INTRODUCTION

Over 3 million reports of child abuse or neglect are recorded annually in the United States. Protective services investigations of these reports conclude that more than 900,000 children are victims of maltreatment.[1] One-fifth of the victims are placed in out-of-home care. Another 110,000 children are placed in such care each year because of child behavior problems or because of reentry of children who were previously in care—"reunification failures." About 800,000 children per year in recent years have received foster care in family and nonfamily

White: Research Associate, Center for Improvement of Child and Family Services, Graduate School of Social Work, Portland State University, 520 SW Harrison 440, Portland, OR 97201. Phone 503-538-1025, Fax 503-725-8030, E-mail whitejm@pdx.edu

1. In 2006, there were 905,000 confirmed victims (U.S. Department of Health and Human Services, Administration on Children, Youth and Families, 2008a, p.1).

ABBREVIATIONS

BCA: Benefit-Cost Analysis
NFCAS: Northwest Foster Care Alumni Study
NPV: Net Present Value
OR/DHS: Oregon Department of Human Services
WA/DCFS: Washington State Department of Social and Health Services, Children's Administration, Division of Children and Family Services
WTP: Willingness to Pay

Contemporary Economic Policy (ISSN 1465-7287)
doi:10.1111/j.1465-7287.2008.00136.x

settings, or about 1% of children in America.[2,3] The average daily census is approximately 510,000 (U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau, 2008b).

The child welfare system that investigates such reports and provides services to children and families is financed by a patchwork of federal, state, and local government budgets that total approximately $25.7 billion per year.[4] In addition, private child welfare agencies provide resources beyond what they receive from government funds (DeVooght, Allen, and Geen, 2008). Even with this level of funding, the U.S. Government Accountability Office (2004), the Pew Commission (2004), and others have documented that the foster care system needs reform, workers have excessive caseloads, and poor salaries and working conditions lead to high staff turnover and uneven job performance.

Foster care services represent a major social investment. This study evaluates whether the social rate of return on expansion or improvement of services would be a good public investment. To our knowledge, this is the first benefit-cost analysis (BCA) of foster care services comparing public foster care to private foster care.

One approach to address this question would be to randomly assign maltreated youth to foster care or to alternative services while they remained with their birth parents. Because of the ethical constraints against allowing children to remain in a home where maltreatment has occurred, studies can rarely use such a research design. The one evaluation that did so, conducted by Wald, Carlsmith, and Leiderman (1988), was severely compromised by sampling problems.

A small number of studies have used an alternative research design that compares the functioning of maltreated youth placed in foster care to a group of youth in the general population matched on certain family and youth characteristics.[5] Such comparisons are likely to be biased because the types of children victimized by maltreatment are unlikely to be a random sample even of a population matched on family or youth characteristics. Other studies have used a pre-post design to compare the functioning of children before and after placement in foster care. Pre-post comparisons do not allow examination of foster care's impact on adult outcomes because "pre" data collected in childhood contain no information on adult outcomes such as college completion or marriage. The problems of inferring the effects of interventions from pre-post comparisons are well known (Rossi, Lipsey, and Freeman, 2004). Additionally, the use of brief follow-up periods (6 mo after foster care) and relatively small sample size (often less than 150 subjects) prevent drawing strong conclusions from these studies.

Evidence from studies that have used the above designs to estimate the effects of foster care has been mixed.[6] The dearth of methodologically convincing control or comparison group studies of the outcomes of foster care has made it difficult to establish consistent standards for care, to consider how successfully particular services have helped foster youth, and to assess the net societal return on the investment in foster care.

The current study takes a different approach. The adult outcomes of youth who received enhanced family foster care services from a long-standing voluntary agency were compared to outcomes of youth who received typical services from large state agencies. A comparison of two groups of young adults, each formerly placed in foster care ("alumni"), is less likely to suffer from selection bias than a comparison

2. About 300,000 children enter foster care each year based on federal data that counted all children in care as of September 30, 2006 (U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau, 2008a, 2008b).

3. About 1% of children are in foster care. This is derived using the following statistics: 800,000 divided by total number of youth aged 18 yr and younger in the U.S. population in 2003 (72,634,422 = 1.1%). For national foster care data, see http://www.acf.hhs.gov/programs/cb/publications/afcars/report8.pdf.

4. See DeVooght, Allen, and Geen (2008). In state fiscal year 2006, the United States spent at least $25.7 billion on child welfare services, with $12.4 billion coming from federal funds, $10.7 billion from state sources, and $2.6 billion from local governments (DeVooght, Allen, and Geen, 2008).

5. See Blome (1997), Buehler et al. (2000), Courtney, Terao, and Bost (2004), Minty (1999), and Runyan and Gould (1985, 1988).

6. For example, Courtney, Terao, and Bost (2004) and Minty (1999) suggest that compared to children from poor and ethnic minority families, children in foster care are more likely to become involved in criminal activities, be unemployed, and suffer from more frequent and debilitating mental disorders. Other studies indicate that children who receive foster care services show improvements in physical health, emotional adjustment, school performance, and behavioral functioning relative to the years before being placed into care. See Biehal and Wade (1996), Berrick et al. (1998), Coulling (2000), and Goerge, Wulczyn, and Fanshel (1994).

of children in foster care to those from similar backgrounds in the general population not receiving care. In addition, to address the possibility of residual selection bias, this study employed propensity score matching to equalize the weighted distributions of the two samples on a wide range of preentry experiences of maltreatment that might be significantly associated with adult outcomes (Rosenbaum and Rubin, 1984). The data come from the recently completed Northwest Foster Care Alumni Study (NFCAS), a groundbreaking study explicitly designed to allow such comparisons.[7]

The analytic approach compared the difference in costs between enhanced services and standard services to the difference in benefits. The analysis does not show whether standard or enhanced foster care services pass a benefit-cost test compared to no services. Such comparisons are not especially relevant for policy purposes. In this social policy domain, providing no services is not an option, for there is broad agreement that the public sector has the responsibility and obligation to intervene on behalf of maltreated children. Rather, discussion focuses on the quantity and quality of services the government could provide relative to the services it currently provides to maltreated youth.

By producing evidence on the costs and benefits of a new approach relative to the current one, our study informs this discussion. Studies of this type are rare. Chamberlain (1994, 1997) has conducted cost-benefit studies in a comparison of specialized treatment foster care to standard foster care and residential treatment services.

II. THE NORTHWEST FOSTER CARE ALUMNI STUDY

The NFCAS assessed the intermediate and long-term adult outcomes of children placed in family foster care and examined whether the outcomes differ among alternative methods of providing care. The study focused on adults who were maltreated as children and were served by one of the following three agencies between 1988 and 1998:

1. Casey Family Programs (Casey), with participating offices in Seattle, Tacoma, and Yakima, Washington, and Portland, Oregon. Casey is a voluntary foster care agency supported by both state contracts and an endowment established by the founder of the United Parcel Service.

2. Oregon Department of Human Services (OR/DHS), with participating offices in Portland.

3. Washington State Department of Social and Health Services, Children's Administration, Division of Children and Family Services (WA/DCFS), with participating offices in Seattle, Tacoma, and Yakima.

Casey's foster care program model, implemented similarly in Washington and Oregon, is long term. Caseloads averaged 16 youth per worker during the time respondents were in care. Staff turnover was low (averaging 8.2% per year). There was good foster parent retention. A variety of mental health, education, and other services were available to youth in foster care. OR/DHS and WA/DCFS, in comparison, had programs typical of those in all U.S. public agencies.[8] Compared to Casey, both state agencies had larger caseloads per worker, less educated staff, higher staff turnover, and fewer services for both foster parents and children. For example, the Oregon public agency staff turnover rate was 24.6% per year in 1999 compared to 6%–10% for Casey staff (table is available from the authors).[9]

Because the resources provided to youth differed across programs, so did expenditures. The 1998 cost per child per day for foster care was $49.16 for OR/DHS, $50.53 for WA/DCFS, and $82.00 for Casey. The additional $32/day of resources provided by Casey helped pay for foster care program enhancements such as more responsive mental health treatment, skills enhancement for independent living, subsidized youth employment programs, and foster parent training and recognition. Casey only hired foster care workers with MSW degrees, which entailed higher salary

7. For detailed discussion of the evaluation methods and findings of the NFCAS, see Pecora et al. (2005, 2006).

8. The definitions and criteria used for child placement vary little between Oregon and Washington since most public child welfare agencies strive to meet federal performance standards and policy requirements that qualify them for federal Title IV-B and IV-E funds.

9. Many agencies similar to Casey seek to provide high-quality foster care services. For example, the nonprofit Professional Association of Treatment Homes was founded in Minneapolis in 1972 by foster parents and social workers committed to a more personalized approach to foster care for children with special emotional, behavioral, and medical needs (see http://www.pathinc.org/about_us.asp). There are hundreds of nonprofit foster care agencies in the United States, often funded by state and county contracts.

costs. Casey also offered financial help with college expenses as long as a matriculated youth maintained acceptable grades. Casey regarded such help as critical for enabling alumni to pursue their education without financial concerns. These service and agency differences are the major reasons why the Casey program's cost per day was higher. The NFCAS hypothesized that the enriched services would produce better long-term outcomes and, consequently, greater social benefits.

A. Methods

To compare long-term outcomes of Casey and state program alumni, the NFCAS used a quasi-experimental design. To be eligible for inclusion in the sample, young adults had to (1) have spent 12 consecutive months or more in family foster care between the ages of 14 and 18 yr; (2) have been placed by the state agencies or by Casey offices in Seattle, Tacoma, Yakima, or Portland between January 1, 1989, and September 30, 1998; (3) have been placed because of child maltreatment or child behavior problems and not as an unaccompanied refugee minor; (4) not have a major physical or developmental disability (e.g., an IQ score less than 70); (5) be 18 yr or older; and (6) have not been in foster care for at least a year when the study took place.

To obtain the sample, available case records for all eligible alumni were abstracted for age, sex, geography, placement periods, and reason for placement. The Casey sample used all eligible case records. The two quasi-control samples from all eligible state alumni were selected randomly. To increase statistical power, two or more state cases were selected for each Casey case with a larger ratio of Washington State cases because that state had a larger number of children placed in foster care.

The initial sample contained 659 case records (WA/DCFS: 333, OR/DHS: 171, Casey Washington: 111, and Casey Oregon: 44). These alumni had been out of care between 1 and 13 yr. Information about their whereabouts was collected from the foster care agencies, Motor Vehicle records, birth family information, the national mortality statistical index, and credit records. Investigators were able to locate 541 alumni with this information (Casey: 81.3%, OR/DHS: 81.9%, and WA/DCFS: 82.6%).[10] Of those located, 4% were unavailable for interviews because they were in a psychiatric hospital or other institution (0.2%), in prison (3.0%), or deceased (0.8%). After removal of these alumni, the response rate was 75.7%.[11] Interviews averaging approximately 2.5 h were conducted with 479 alumni in the final sample (Casey: 111, OR/DHS: 126, and WA/DCFS: 242).

In both the Casey and the combined state samples, women were significantly more likely to be interviewed. There were no other statistically significant differences in background characteristics between persons who were interviewed and those who were not. When the interviewed and noninterviewed state and Casey samples were compared, Casey alumni were older, placed at a younger age, and placed for almost 3 yr more than state alumni. Consequently, propensity score weights based on intake records were used to adjust the data for between-sample differences in characteristics and interview rates.[12] Using propensity score adjustment for nonresponse or for entry differences between the two groups does not "control for" differences—it adjusts for them with a particular linear model. If the model is a reasonable one, it brings results closer to what would have happened if the groups had been randomly constituted—that is, adjustment, not control—and improves the ability to generalize to the population of youth from which the sample was drawn in the absence of random assignment.

To implement the weighting procedure, we estimated a logit regression separately within the Casey and public system target samples that

10. Youth emancipating from family foster can be very mobile. Disproportionate numbers experience homelessness, join the military, and are in fragile economic situations where they may not be working, establishing a credit history, or using a cell phone. These characteristics make them extremely difficult to locate after leaving foster care (Courtney et al., 2004; Goerge et al., 2002; U.S. Department of Health and Human Services, 2006; Williams et al., 2006).

11. This is the "traditional" response rate, which subtracts the deceased and those in prison and psychiatric institutions from the sample size: rate = interviews/(sample − deceased − in prison − in institutions) (American Association for Public Opinion Research, 2002). There is little difference in overall alumni availability or response rates by agency.

12. See Rosenbaum and Rubin (1984) and Braitman and Rosenbaum (2002). Weights were used to estimate data as if there had been no preexisting differences between the Casey and the state samples and as if the entire sample of 659 had been interviewed. Variables that contributed to the statistical weights included age, sex, and race.

distinguished survey respondents from nonrespondents based on information obtained from archival data about preplacement characteristics. The predicted probabilities generated from these equations were used to weight the data without case-level matching, so that survey respondents had distributions on preplacement characteristics comparable to the original target sample. Weighted Casey and public program samples were then compared within each state to generate a second propensity score weight that adjusted for baseline differences between Casey and public program alumni.

More than 95% of the children served by the Casey program were first placed in a public foster care agency home. Only if a child was not likely to return home or be adopted was he considered for Casey care. Many youth could not be served because the number that were eligible exceeded Casey placement capacity. The limited number of openings meant that many such children remained in public agency foster care. That is why there are few demographic and other preplacement differences between children served by Casey and the public agencies.[13]

From one perspective, the criteria for placement in the Casey program would tend to select children with poorer long-run prospects. Moreover, 20% of Casey alumni, but only 7% of state alumni, had more than two reasons for being placed in foster care. This difference also suggests that children receiving Casey care would tend to have poorer long-run prospects. Such selection would likely lead to understatement of any positive benefits of the Casey program.[14] However, the Casey staff, while part of the larger child welfare system, did not operate under the workload pressures of achieving a permanent placement in the same way as public agency staff. Rather, Casey staff aimed to stabilize and preserve the placement because the children referred to Casey were those that the state agency and juvenile court determined were unable or unwilling to be reunified with their parents or adopted by others.

Many study variables were obtained through case records of child and family demographics, risk factors, dates of entry into and exit from foster care, the foster family, and placements and living situations in care. Information on service access, extent of service use, other foster care experiences, and adult outcomes came from interviews conducted in 1998.

Table 1 provides descriptive statistics on the foster care experiences of the children placed in foster care with Casey and the two states. After propensity score adjustment, Casey alumni were found to differ significantly from state alumni on all key indicators of foster care placement abstracted from archival case records. In particular, Casey alumni had an average of 2.7 more years in care than state alumni along with significantly fewer placements as a result of significantly more stable placements. Statistically significant differences were also found in a number of other foster care experience dimensions, generally favoring Casey. Casey alumni had access to a more extensive array of activities (e.g., in arts, music, sports) and services (e.g., tutoring, other supplemental educational services, employment training) than state alumni. Casey youth were significantly less likely than state youth to experience adverse events such as reunification failures, neglect, or physical abuse during their time in care. Casey alumni were more likely to remember their foster parents as having been permissive and helpful. Casey alumni were less likely to remember their foster parents as having been disengaged.

III. BENEFIT-COST ANALYSIS

There were statistically significant differences between the Casey program and the combined state programs on many outcomes. It was assumed that these differences resulted from the greater expenditures and differences in the nature of the services provided by the Casey program compared to the state programs. The research question here is whether the extra costs of the Casey program appear justified by the additional benefits that could be expressed in dollar terms.

A. BCA Methods

BCA compares the value of gains from a project with the value of its costs. BCA

13. It is also why the study is a quasi-experiment rather than a cross-section analysis of Casey alumni versus a more broadly chosen comparison group.

14. Children may be placed because of maltreatment by their caregivers or for behavior problems. Since these are dramatically different selection mechanisms (external vs. internal), disparity between Casey and state alumni in the proportion placed for each reason might lead to outcome differences that would not be attributable to the Casey program per se. However, differences between the agency groups are minor. Slightly more Casey alumni were placed because of child maltreatment (67% vs. 64%); slightly more state alumni were placed because of behavior problems (21% vs. 16%).

TABLE 1
Foster Care Experiences of Casey and State Alumni

	Casey (n = 111) Estimated (SE)	Public (n = 368) Estimated (SE)	$F_{1,474}$	p Value
Placement history				
Number of years in foster care (mean)	9.8* (0.1)	7.1 (0.1)	68.8	<.001
Number of placements (mean)	6.8* (0.1)	7.9 (0.1)	5.7	.017
Duration of placements (mean in months)	28.8* (0.4)	17.8 (0.4)	32.2	<.001
Activities and services				
Number of activities available (range: 0–100)	75.4* (0.7)	64.5 (0.7)	24.0	<.001
Number of services available (range: 0–100)	89.7* (0.5)	77.2 (0.4)	42.2	<.001
Adverse events (per 100 person-years)				
Reunification failures	2.5* (0.3)	13.5 (0.3)	59.2	<.001
Incidents of neglect	42.1* (2.8)	76.4 (4.0)	17.9	<.001
Incidents of physical abuse	61.3* (4.5)	95.6 (5.1)	11.3	<.001
Incidents of sexual abuse	3.9* (0.5)	7.7 (0.4)	5.0	.025
Parenting styles of foster parents				
Authoritative (%)	19.6 (0.4)	16.1 (0.4)	3.2	.073
Permissive (%)	9.7* (0.3)	6.1 (0.3)	5.1	.024
Authoritarian (%)	11.1 (0.5)	10.1 (0.5)	0.1	.700
Disengaged (%)	16.1* (0.6)	25.4 (0.6)	11.5	.001
Perceived helpfulness (range: 0–100)	70.4* (0.6)	62.9 (0.6)	6.8	.009

*Significant difference between Casey and public system alumni at the .05 level, two-sided test.

measures gains by the willingness to pay (WTP) to receive them and losses by the willingness to accept payment to bear the loss (Zerbe and Bellas, 2006). In this study, measured benefits included the value of gains such as greater earnings and the value of costs avoided such as lower medical costs. The benefits represented by the WTP of third parties who might support higher cost services out of altruism or related moral sentiment were ignored, though these benefits may be large and legitimate (Zerbe, Bauman, and Finkle, 2006).

The gains from greater education were assumed to hold throughout the person's work life, as evidenced in Census data and in the forensic economic literature (Gamboa, 2002). The work life accounts for expected periods of unemployment and varies by educational level. The health outcome calculations used two alternative assumptions: that a value was constant for the 10-yr period covered by the sample or lasted only for 1 yr. Future values such as earnings were discounted using the real discount rate on long-term government bonds, which is about 3% (Zerbe, 1993). This rate is thought to reflect the social opportunity cost of capital (Bradford, 1975), which is an appropriate rate as the study is from a national perspective. This rate is thought to reasonably reflect the rate of time preference as well as the long-term growth rate of the economy, which has also been held to be appropriate.[15]

B. Measures of Benefit-Cost Performance

Two common measures of benefit-cost performance are used, the benefit-cost ratio and the net present value (NPV).[16] NPV is the value of benefits minus costs expressed at their present value. A NPV greater than zero indicates a positive social return on investment. The benefit-cost ratio is the ratio of the present value of benefits to the present value of costs. A benefit-cost ratio greater than one also satisfies the benefit-cost test.

Suppose P_{cj} and P_{sj} are the respective probabilities of achieving outcome j for Casey and the states, B_j is the benefit (positive or

15. See Zerbe (1993). Weitzman (2000) has shown that where there is uncertainty about the correct discount rate and where this uncertainty is equally spread across the range of rates, the lower rates should be given more weight.

16. These measures will give the same results where, as here, one program is compared with the status quo. Where two programs are compared with the status quo and have different costs, this may no longer be the case unless adjustments are made (Zerbe and Dively, 1994).

negative) per person associated with that outcome, and C_{cj} and C_{sj} are the costs per person for Casey and the states associated with the jth outcome. The present value of benefits of the Casey program relative to the state programs for outcome j is:

$$\text{NPV} = \sum_{t}^{n}[B_{jt}(P_{cjt} - P_{sjt}) - (C_{cjt} - C_{sjt})]/(1+r)^t, \quad (1)$$

where t counts the number of years and r is the discount rate. For example, if the probability of major depression is .10 for Casey alumni and .20 for state alumni, and the present value of the benefits of avoiding this disorder is \$17,000, then the Casey program reduces expected costs per case by $(.20 - .10) \times 17{,}000 = \$1{,}700$. From this must be subtracted the present value of the cost difference between the Casey and the states' programs. For m outcomes, Equation (1) becomes:

$$\text{NPV} = \sum_{j}^{m}\sum_{t}^{n}[Bjt(Pcjt - Psjt) - (Ccjt - Csjt)]/(1+r)^t. \quad (2)$$

The benefit-cost ratio is simply the first term of Equation (2) divided by the second term. These equations give the result per person.

IV. FINDINGS

A. Benefits

The study examined a comprehensive set of alumni outcomes, including education, employment, financial status, marriage, children, social networks, and physical and mental disorders. The outcomes were chosen based on prior studies and because they are important for informing policy and program planning (e.g., Berrick et al., 1998; McDonald et al., 1996; Wulczyn et al., 2005). We used logit regressions to predict the probability that a Casey or state program alumnus would experience each dichotomous outcome and linear regressions to predict each group's mean outcome of continuous variables. The regressions control for age at interview, state, preplacement demographic characteristics (sex, race, family structure, and age when placed), type of maltreatment, and number of reasons for placement. Outcomes are measured at the time of the interview when alumni were aged 24 yr on average.

Table 2 reports the predictions along with the F and p values for a test of the difference between each Casey and state prediction.[17] Significant differences appeared for most of the educational and employment outcomes, half of the physical disorders, and all the mental disorders.[18]

Table 3 calculates the value of the differences in Table 2 that are significant at the 5% level or better (two-sided test) using the method described in Measures of Benefit-Cost Performance section. Value per outcome was converted to January 2007 dollars (using the all urban consumer price index).

The primary benefit of the Casey program is the higher earnings associated with the greater educational attainment of Casey alumni. The differences in earnings by education are predicted to increase because of life-cycle effects, productivity growth of about 1.5% per year, and differences in work life (Gamboa, 2002).[19] The differences in earnings take into account the additional cost of higher education (lost earnings and tuition). The Casey program's employment benefit is based on a regression model that *holds education constant*.

Except for one health condition, all the outcome differences expressed in monetary terms favor Casey. The net aggregate benefits for the Casey program are large, \$206,305 per alumnus. In addition to greater education and employment, the cost savings from fewer chronic physical and mental disorders contribute to the net benefits. The net benefits are fairly insensitive to our choice among different medical cost estimates. The estimated benefits of fewer chronic disorders are conservative because they consider only direct medical

17. To calculate standard errors of the program-specific probability estimates, we used the jackknife repeated replications pseudoreplication simulation method (Kish and Frankel, 1974).

18. Children placed with Casey received better medical screening and treatment, which likely contributed to their better physical and mental health.

19. The work life and mortality estimates are from Gamboa (2002). The earnings effects of an intervention that leads to greater education are not likely to fade over time. Other outcomes such as fewer chronic physical or mental illnesses may fade over time.

TABLE 2
Adult Outcomes of Casey and State Alumni, 1998[a]

	Casey (n = 111) Estimated (SE)	Public (n = 368) Estimated (SE)	$F_{1,474}$[b]	p Value
Education				
Less than high school (%)	31.0* (1.1)	42.3 (1.2)	9.3	.002
High school graduation with diploma (%)	28.8* (1.1)	27.1 (0.9)	0.3	.614
Post-high school education without BA (%)	37.7* (1.0)	29.2 (0.9)	4.4	.035
College with bachelor degree (%)	3.3* 0.5	0.8 0.2	12.5	<.001
Post-bachelor education (%)	1.8* (0.2)	0.1 (0.0)	14.3	<.001
Employment				
Respondent employed (%)	78.1* (0.8)	69.0 (0.9)	6.7	.010
Spouse/partner employed (%)[c]	83.3 (1.9)	84.9 (2.4)	3.2	.073
Household breadwinner employed (%)	86.9* (0.8)	77.1 (1.0)	9.7	.002
Finances				
Household income per family member, in $1,000s (mean)	10.4 (0.2)	10.3 (0.2)	0.0	.871
Public assistance (%)	49.4 (1.1)	50.8 (1.2)	0.3	.606
Above poverty line (%)	70.6 (0.8)	65.6 (0.9)	1.9	.172
Three or more times above poverty line (%)	18.0 (0.8)	21.8 (0.9)	1.9	.171
Marriage				
Married (%)	44.9* (1.1)	25.6 (0.9)	28.5	<.001
Marital quality (range: 0–100) (mean)[c]	90.4 (0.7)	86.9 (0.8)	1.4	.241
Children				
Placed child in foster care (%)	5.0 (0.3)	5.0 (0.3)	0.0	.866
Number of children (mean)[d]	1.6 (0.0)	1.4 (0.0)	1.1	.301
Parenting quality (mean, range: 0–100)	71.8 (0.6)	69.1 (0.6)	3.3	.070
Social networks				
Frequency of contact with relatives (mean, range: 0–100)	60.3 (0.7)	58.6 (0.6)	0.4	.544
Frequency of contact with friends (mean, range: 0–100)	71.3 (0.6)	73.3 (0.5)	0.6	.448
Positive relations with relatives (mean, range: 0–100)	64.6* (0.7)	57.0 (0.6)	6.6	.011
Positive relations with friends (mean, range: 0–100)	67.8 (0.9)	72.6 (0.8)	3.8	.053
Physical disorders				
Chronic headaches (%)	44.5 (1.0)	50.5 (0.9)	2.6	.109
Chronic back/neck pain (%)	30.0 (0.8)	38.1 (0.8)	3.4	.066
Ulcer (%)	7.4* (0.4)	13.0 (0.6)	6.5	.011
Other chronic pain conditions (%)[e]	24.9 (1.1)	27.5 (1.1)	0.3	.567
Cardiometabolic conditions (%)[f]	14.9* (0.8)	22.6 (1.1)	6.5	.011
Respiratory conditions (%)[g]	28.8* (1.1)	17.9 (0.8)	9.4	.002
Mental disorders				
Major depression (%)	11.3* (0.5)	24.3 (1.0)	18.2	<.001
Anxiety disorder (%)[h]	28.8* (0.9)	43.0 (1.0)	13.3	<.001
Substance disorder (%)[i]	5.1* (0.3)	11.1 (0.5)	6.5	.011

[a]Based on propensity score weighted data that adjust for preplacement differences between Casey and public system alumni abstracted from case record files and for baseline differences between survey respondents and nonrespondents.
[b]Based on weighted multiple regression analysis using a dummy predictor variable for Casey versus public system to predict each outcome in the propensity score weighted data with controls.
[c]Among those with a spouse or partner.
[d]Among parents.
[e]Arthritis or unexplained chronic pain disorder.
[f]Diabetes, hypertension, or heart disease.
[g]Asthma, chronic obstructive pulmonary disease, or other lung conditions.
[h]Panic disorder, generalized anxiety disorder, posttraumatic stress disorder, or social phobia.
[i]Alcohol or drug abuse or dependence.
*Significant difference between Casey and public system alumni at the .05 level, two-sided test.

TABLE 3
Value of Outcome Differences between Casey and States

	Casey	State	Value in January 2007 Dollars (All Urban Consumer Price Index), per Unit	Difference between Casey and State in 2007 Dollars
Less than high school	0.310	0.423	$618,968	−$75,289
Post-high school	0.375	0.292	$1,278,834	$106,143
College degree	0.033	0.008	$2,151,583	$53,790
Post-college education	0.018	0	$2,897,817	$52,161
Sum of educational benefits				$136,805
Employment	0.781	0.690	NA	$64,718
Ulcer	0.074	0.130	−$53,557	$2,999
Cardiometabolic conditions	0.149	0.226	−$51,434	$3,960
Respiratory conditions	0.288	0.179	−$53,483	−$5,830
Major depression	0.113	0.243	−$12,508	$1,626
Anxiety disorder	0.288	0.430	−$12,664	$1,798
Substance disorder	0.051	0.111	−$12,811	$769
Sum of all benefits				$206,305

Notes. Details of the estimates are available in an appendix table available upon request to the first author. NA, not applicable.

costs and ignore loss of earnings due to illness, the value of unpaid time of home caretakers, and the value of the loss of quality of life.[20] Since these omissions significantly understate the health benefits, total net benefits would be materially higher if these broader effects were taken into account.

B. Costs

The Casey intervention costs more per day than the state programs and lasts longer. The higher cost is attributable to several factors: hiring and retaining more educated staff that earned higher salaries over time, Casey monthly foster parent retention payments, and more comprehensive support services for children and foster parents (Edgbert et al., 2004; Kessler et al., 2008). The longer stay stems from the nature of the child referrals and the program's focus on providing stable long-term foster care for children who could not return home or be adopted.

Children stay an average of 9.8 yr in the Casey program and 7.1 yr in the state programs. The Casey program costs about $82 per day per child and the state programs about $50 per day per child. For the first 7.1 yr of intervention, then, the cost difference is $32 per day per child. For the remaining 2.7 yr, the cost difference is less than the full $82 of the Casey program because the costs for room and board remain for the state children. That is, individuals who leave the states' systems also incur room and board costs. Though such costs are not paid by the states' systems, they still represent real resources that support individuals. Table 4 provides an estimate for room and board costs. The cost difference for the first 7.1 yr is $32 per day per child and for the past 2.7 yr is $60 per day per child.[21] Over a 10-yr period, the present value of the difference in cost, discounted at 3% and adjusted to 2007 dollars, is $141,304 in favor of the state programs.

C. Comparison of Benefits and Costs

Table 5 compares the additional financial benefits and costs of the Casey program based on all significant outcomes for which we were able to find financial data. The preferred estimate took into account the work life cycle of

20. Major contributors to work loss were cancer, ulcers, major depression, and panic disorder. These are outcomes that appear to be reduced by the Casey program. Other work suggests that health status is the major contributor to work loss for both men and women (Vistnes, 1997). See also Cockburn et al. (1999).

21. The average costs of room and board for the state programs are about 43%. Forty-three percent of the total per child cost of $50 is about $22. The difference between the Casey cost of $82 and the room and board cost is about $60, which is the figure we use. We are assuming that the cost of room and board is the same for children after they leave the state system as it was under the state system.

TABLE 4
Room and Board as a Percentage of Total Costs[a]

	Casey	Oregon	Washington
Room and board	$1,706,814	$45,140,351	$48,722,052
Total costs	$8,195,965	$66,056,463	$117,817,057
Room and board as a fraction of total costs	0.21	0.45	0.41

[a]Costs are calculated from material in Edgbert et al. (2004).

educational differences and the physical and mental health differences for the 10-yr period covered by the NFCAS. The NPV of the Casey program amounts to $65,000 per child. The benefit-cost ratio is about 1.5. Even if the medical differences are calculated for only 1 yr, the NPV remains positive. The relatively small difference in net benefits between the 10- and 1-yr periods occurs because the overall benefits were dominated by the educational differences. For reasons discussed earlier, the medical cost estimates may significantly understate the advantages of the Casey program. The positive benefit-cost figures mean that the real social rate of return from the higher Casey expenditure is greater than 3%, a rate that may be reasonably taken to represent the opportunity cost of government expenditures for social welfare.

The NFCAS also gathered data on the personal incomes of sample members. Other things equal, Casey alumni had an average of $7,029 more annual income than alumni of the state programs. Discounting this difference over 40 yr at a real net discount rate of 1.3% (the rate of increase in earnings minus the social discount rate) and adjusting to 2007 dollars yields a benefit of about $235,000 dollars. Subtracting costs gives an NPV of about $94,000. Because this benefit would largely be generated by differences in human capital, it would be double counting to add it to the figures in Table 3. One may instead view it as an alternative to the estimated benefits of education and employment in Table 3 as shown in Table 6. Because of the straightforward manner of this calculation, it may be more reliable than the previous one. It seems clear that by conservative standards, the Casey program is cost-beneficial, particularly because we ignore the substantial benefits of labor productivity from fewer medical events.

V. LIMITATIONS

The NFCAS is the most rigorous analysis of the impact of enhanced foster care services to date. However, it does not conclusively establish causality the way a true treatment-control experiment would because selection of subjects served by the three agencies may threaten internal validity. Three factors minimize this threat. First, virtually all Casey youth were originally served by the Oregon or Washington public agencies and were referred to Casey by public agency staff members. Second, both the analysis of case records and interview data found relatively few differences among alumni from the three agencies. Third, existing differences were minimized by the exclusion of noncomparable cases in the

TABLE 5
Casey Program's Additional Benefits Exceed Its Additional Costs Relative to State Programs

	Assumes Period of Sample Effects (10 Yr) for Medical Outcome Differences and Work Life Effects for Earnings Differences	Assumes 1-Yr Effects for Medical Outcome Differences and Work Life Effects for Earnings Differences
Additional benefits/case	$206,305	$191,666
Additional costs/case	$141,304	$141,304
NPV: benefits-costs	$65,001	$50,362
Benefit-cost ratio	1.46	1.36

TABLE 6
NPV of Casey Program Measured by Difference in Earnings

Earnings differences between Casey and states' alumni	$7,029
Present value of earnings differences over 40 yr	$234,921
Cost difference	$141,304
NPV	$93,617
Benefit-cost ratio	1.7

sample design (e.g., excluding a small number of unaccompanied refugee children from the public samples, as the latter were not served by the Casey program) and the use of statistical weighting and control variables in the data analysis.

Another limitation is that the results may be sensitive to changes in the parameters of the model since uncertainty attaches to the values in Table 3. For example, the educational benefits attributed to Casey alumni who attained a bachelor degree or higher are based on small numbers of cases. If a larger sample changed row 3's estimated difference between columns 2 and 3 by .01, the net benefit would change by $21,500 or about 10%. Similarly, the costs of chronic physical illnesses are difficult to determine.

Finally, the study focused on alumni who had spent 1 yr or more in foster care as adolescents. Many of these youth tend to stay in care for longer periods of time and age out from foster care in either public or private systems. Thus, the study did not examine the full spectrum of children served in foster care.

VI. CONCLUSIONS

To test the results' robustness to the choice of discount rate, we calculated the NPV using a 5% real rate. The NPV remains positive. Because evidence suggests that a real rate of return of no more than 2%–5% at most is a realistic estimate of the opportunity cost of capital, these benefit-cost figures suggest rather strongly that the Casey program increases net social welfare. For the NPV to be negative, either the real rate would need to be higher or the true costs of respiratory illness (the outcome favoring the state) would have to be more than 11 times the current estimate.

That the Casey program has a positive net economic or social value rests on (1) our findings; (2) the fact that the physical and mental health outcomes on net favor Casey, but the monetized effects of better health exclude higher earnings due to less illness, savings of unpaid time of home caretakers, and the higher quality of life; and (3) that the nonmonetized variables favor Casey. It is possible that a larger sample could result in some of the nonsignificant outcomes becoming significant. However, since these outcomes also favor Casey, it appears highly likely that the extra expenditures of the Casey program result in a positive return to society and implausible that they do not.

Foster care services are major social investments made to mitigate the effects of child maltreatment. Despite billions of dollars in annual spending, there is widespread concern that the public foster care system in many communities fails to prepare children and youth for successful adult lives. Aware of these perceived shortcomings, Casey Family Programs implemented a model of foster care that provides longer term, more intensive services than state programs. The model also costs substantially more per child.

The NFCAS compared adult outcomes of children placed in the Casey Program to those of children who received services from the typical public programs operated by Oregon and Washington. The NFCAS developed one of the largest samples of older foster care alumni, achieved a high survey response rate, used standardized assessment instruments, and found significant differences in educational, employment, health, and nonmonetized outcomes in favor of Casey alumni. The value of the monetizeable outcomes appears to justify the additional costs of the Casey Program.

This finding is consistent with NFCAS's hypothesis that the Casey Program's enriched services would produce better long-term outcomes. It suggests that additional funds provided to state programs may be a worthwhile social investment. About 100,000 new adolescents age 12-17 enter foster care each year. If all these adolescents were to receive enhanced foster care services including but not limited to lower caseloads for social workers, better trained staff, fewer foster care placement changes, and fewer school changes, the long term saving for a single cohort would be about $6.3 billion in 2007 dollars.

Both public and voluntary child welfare agencies can implement virtually all the Casey

Program's service enhancements. Some states, indeed, are now increasing the educational qualifications of their staff, pursuing accreditation of their programs to lower caseloads, reducing staff and foster parent turnover, and increasing tutoring and other support services. Though public agencies cannot directly assist with college expenses, some are helping foster youth obtain scholarships (National Association of Social Workers, 2006; Pew Commission, 2004; Robison, 2006). Whether enhanced public programs can achieve outcomes comparable to those of a nonprofit organization such as Casey is an open question. It will partly depend on whether public agencies have the capacity to implement the service enhancements as effectively as Casey Family Programs.

Casey Family Programs has reduced per case costs over the past 10 yr and been able to maintain a workforce with lower turnover, lower caseloads, a supplemental foster family payment, tutoring, and enhanced health care to supplement Medicaid. While the cost per child remains greater than in many public agencies, the exact level of investment needed to produce these more positive outcomes has not been determined.

No other study in the United States has compared public and private foster care agency performance using data from alumni of this age, so it is difficult to place this study's findings in a broader context. Future studies need to assess the generalizability of the findings by implementing the Casey Family Programs' model in states with public programs that differ significantly from Oregon and Washington, evaluating it relative to state programs using a true random assignment design, and including a BCA. The results reported here suggest that there will be real net benefits for states that are moving their foster care systems in new directions by having their public agencies accredited by national organizations, lowering caseload sizes, and providing an array of high-quality services. The study showed that investments in quality foster care for adolescents are associated with dramatic reductions in the rates of mental disorders and substance abuse later in life. If child welfare agencies reinvest savings accrued through reduction of child placements, public and private agencies will be able to implement key program components linked with positive adult outcomes.

REFERENCES

American Association for Public Opinion Research. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. Ann Arbor, MI: American Association for Public Opinion Research, 2004. Accessed June 7, 2005. http://www.aoapor.org/ethics/stddef.html

Berrick, J. D., B. Needell, R. B. Barth, and M. Johnson-Reid. *The Tender Years: Toward Developmentally Sensitive Child Welfare Services for Very Young Children*. New York: Oxford University Press, 1998.

Biehal, N., and J. Wade. "Looking Back, Looking Forward: Care Leavers, Families and Change." *Children and Youth Services Review*, 18, 1996, 425–46.

Blome, W. W. "What Happens to Foster Kids: Educational Experiences of a Random Sample of Foster Care Youth and a Matched Group of Non-Foster Care Youth." *Child and Adolescent Social Work Journal*, 14, 1997, 41–53.

Bradford, D. F. "Constraints on Government Investment Opportunities and the Choice of Discount Rate." *American Economic Review*, 66, 1975, 887–99.

Braitman, L. E., and P. R. Rosenbaum. "Comparing Treatments Using Comparable Groups of Patients." *Annals of Internal Medicine*, 137, 2002, 693–95.

Buehler, C., J. G. Orme, J. Post, and D. A. Patterson. "The Long-Term Correlates of Family Foster Care." *Children and Youth Services Review*, 22, 2000, 595–625.

Chamberlain, P. *Family Connections: Treatment Foster Care for Adolescents with Delinquency*. Eugene, OR: Castalia Press, 1994.

———. "The Effectiveness of Group Versus Family Treatment Settings for Adolescent Juvenile Offenders." Paper presented at the biennial meeting of the Society for Research in Child Development, Washington, DC, April 4, 1997.

Cockburn, I., H. Balit, E. Berndt, and S. Finkelstein. "Loss of Work Productivity due to Illness and Medical Treatment. *Journal of Occupational and Environmental Medicine*, 41, 1999, 948–53.

Coulling, N. "Definitions of Successful Education for the 'Looked after' Child: A Multi-Agency Perspective." *Support for Learning*, 12(1), 2000, 30–36.

Courtney, M. E., S. Terao, and N. Bost. *Midwest Evaluation of the Adult Functioning of Former Foster Youth: Conditions of Youth Preparing to Leave State Care*. Chicago: Chapin Hall Center for Children at the University of Chicago, 2004.

DeVooght, K., T. Allen, and R. Geen. *Federal, State, and Local Spending to Address Child Abuse and Neglect*. Washington, DC: Child Trends, 2008.

Edgbert, S., J. Egglin, T. Erickson, J. Fimiani, G. Heim, C. Honse, C. Hunt, P. J. Pecora, and C. Thomas. *Elements Used for Estimating a Per Day Cost for Foster Care in Oregon State, Washington State, and Casey Family Programs for 1998*. Seattle, WA: Casey Family Programs, Research Services, 2004.

Gamboa, D. *The New Worklife Expectancy Tables*. Louisville, KY: Vocational Econometrics Inc., 2002.

Goerge, R., L. Bilaver, B. L. Lee, B. Needell, A. Brookhart, and W. Jackman. *Employment Outcomes for Youth Aging Out of Foster Care- Final Report*. Chicago, IL: Chapin Hall Center for Children at the University of Chicago, 2002.

Goerge, R., F. Wulczyn, and D. Fanshel. "A Foster Care Research Agenda for the 90's." *Child Welfare*, 73, 1994, 525–47.

Kessler, R. C., P. J. Pecora, J. Williams, E. Hiripi, K. O'Brien, D. English, J. White, et al. "The Effects of Enhanced Foster Care on the Long-Term Physical and Mental Health of Foster Care Alumni." *Archives of General Psychiatry*, 65, 2008, 625–33.

Kish, L., and M. R. Frankel. "Inferences from Complex Samples." *Journal of the Royal Statistical Society*, 36(Series B), 1974, 1–37.

McDonald, T. P., R. I. Allen, A. Westerfelt, and I. Piliavin. *Assessing the Long-Term Effects of Foster Care: A Research Synthesis*. Washington, DC: Child Welfare League of America, 1996.

Minty, B. "Annotation: Outcomes in Long-Term Foster Family Care." *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 40, 1999, 991–1001.

National Association of Social Workers. *Assuring the Sufficiency of a Frontline Workforce: A National Study of Licensed Social Workers*. Washington, DC: National Association of Social Workers, 2006. Accessed June 16, 2006. http://workforce.socialworkers.org.

Pecora, P. J., R. C. Kessler, K. O'Brien, C. R. White, J. Williams, E. Hiripi, D. English, J. White, and M. A. Herrick. "Educational and Employment Outcomes of Adults Formerly Placed in Foster Care: Results from the Northwest Foster Care Alumni Study. *Child and Youth Services Review*, 28, 2006, 1459–81.

Pecora, P. J., R. C. Kessler, J. Williams, K. O'Brien, A. C. Downs, D. English, C. R. White, E. Hiripi, T. Wiggins, and K. Holmes. *Improving Family Foster Care: Findings from the Northwest Foster Care Alumni Study*. Seattle, WA: Casey Family Programs, 2005. Accessed August 14, 2006. http://www.casey.org.

Pew Commission. *Fostering the Future: Safety, Permanence and Well-Being for Children in Foster Care*. Pew Charitable Trusts, 2004. Accessed June 8, 2004. http://www.pewtrusts.com/pdf/foster_care_final_051804.pdf.

Robison, S. *Toward a High Quality Child Welfare Workforce: Six Doable Steps*. Houston, TX: Cornerstones4kids, 2006. Accessed November 24, 2007. http://www.cornerstones4kids.org/images/six_doable_steps_406.pdf.

Rosenbaum, P. R., and D. B. Rubin. "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score." *Journal of the American Statistical Association*, 79, 1984, 516–24.

Rossi, P., M. Lipsey, and H. Freeman. *Evaluation: A Systematic Approach*. Thousand Oaks, CA: Sage Publications, 2004.

Runyan, D. K., and C. L. Gould. "Foster Care for Child Maltreatment: Impact on Delinquent Behavior." *Pediatrics*, 75, 1985, 562–68.

———. "Foster Care for Child Maltreatment: Impact on Delinquent Behavior, in *Coping with Family Violence: Research and Policy Perspectives*, edited by G. T. Hotaling, D. Finkelhor, J. T. Kirkpatrick, and M. A. Straus. Thousand Oaks, CA: Sage Publications, 1988, 224–37.

Thomas, M., J. Waxmonsky, P. Gabow, G. Flanders-McGinnis, R. Socherman, and K. Rost. "Prevalence of Psychiatric Disorders and Costs of Care among Adult Enrollees in a Medicaid HMO." *Psychiatric Services*, 56(11), 2005, 1394–401.

U.S. Department of Health and Human Services. *Practical Strategies for Tracking and Locating Youth*. Washington, DC: U.S. Department of Health and Human Services, 2006. Accessed November 24, 2007. http://www.acf.hhs.gov/programs/cb/laws_policies/practical/.

U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau. *Child Maltreatment 2006*. Washington, DC: National Child Abuse and Neglect Data System, 2008a.

U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau. *The AFCARS Report No. 14: Preliminary FY 2006 Estimates as of January* 2008, 2008b. Accessed July 16, 2008. http://www.acf.hhs.gov/programs/cb/stats_research/afcars/tar/report14.htm.

U.S. Government Accountability Office. *Foster Youth: HHS Actions Could Improve Coordination of Services and Monitoring of States' Independent Living Programs*. Report No. GAO-05-25. Washington, DC: U.S. Government Accountability Office, 2004.

Vistnes, J. P. "Gender Differences in Days Lost from Work due to Illness." *Industrial and Labor Relations Review*, 50, 1997, 304–22.

Wald, M. S., J. M. Carlsmith, and P. H. Leiderman. *Protecting Abused and Neglected Children*. Palo Alto, CA: Stanford University Press, 1988.

Weitzman, M. "Gamma Discounting." *American Economic Review*, 91, 2000, 260–71.

Williams, J., A. McWilliams, T. Mainieri, P. J. Pecora, and K. La Belle. "Enhancing the Validity of Foster Care Follow-up Studies through Multiple Alumni Location Strategies." *Child Welfare*, 85, 2006, 499–521.

Wulczyn, F., R. P. Barth, Y. Y. Yuan, B. Jones-Harden, and J. Landsverk. *Beyond Common Sense: Child Welfare, Child Well-Being, and the Evidence for Policy Reform*. Somerset, NJ: Transaction Aldine, 2005.

Zerbe, R. O. *"The Discount Rate for Wrongful Death and Injury Cases."* Working Paper No. 4, University of Washington, The Evans School, 1993.

Zerbe, R. O., Y. Bauman, and A. Finkle. "An Aggregate Measure for Benefit-Cost Analysis." *Ecological Economics*, 58, 2006, 449–61.

Zerbe, R. O., and A. Bellas. *A Primer for Benefit-Cost Analysis*. Northampton, MA: Edward Elgar, 2006.

Zerbe, R. O., and D. Dively. *Benefit-Cost Analysis in Theory and Practice*. New York: Harper & Row, 1994.