January 2010

EXTENDING FOSTER CARE TO AGE 21:
MEASURING COSTS AND BENEFITS IN WASHINGTON STATE

Every year, between 400 and 500 foster youth in Washington State turn 18 and "age out" of the foster care system. Compared with other youth making this transition, foster youth have fewer resources and family supports to guide them on the path to adulthood. In 2006, the Washington State Legislature authorized the Department of Social and Health Services (DSHS) to allow up to 50 youth per year to remain in a foster care placement until age 21, while enrolled in college or vocational training. The Legislature also directed the Washington State Institute for Public Policy (Institute) to . . .

> *"conduct a study measuring the outcomes for foster youth who have received continued support. . . . The study should include measurements of any savings to the state and local government."*[1]

In 2008, the Institute completed a preliminary report which described the characteristics of early enrollees in the Foster Care to 21 program (FC to 21), their persistence in the program, and how they compared with other youth who exited foster care during the same period.[2]

This report describes outcomes for youth who enrolled in FC to 21 between July 2006 and September 2008, and compares outcomes to similar youth exiting licensed foster homes prior to 2006. The cost savings associated with the following outcomes are presented:

- College enrollment,
- Public assistance receipt, and
- Arrests.

In addition to these outcomes, we also compare the birthrates and employment levels of FC to 21 participants to similar youth.

---

[1] 2SHB 2002, § 4 (1), Chapter 266, Laws of 2006: Foster Care Support Services
[2] L. Schrager (2008). *Foster Care to 21: Enrollment trends after two years.* Olympia: Washington State Institute for Public Policy, Document Number 08-12-3901.

SUMMARY

The 2006 Legislature passed 2SHB 2002, establishing a three-year program for up to 50 youth per year to remain in foster care until their 21st birthday while attending a post-high school academic or vocational program. This program, commonly known as Foster Care to 21 (FC to 21), began enrollment in July 2006; this report describes an evaluation of outcomes for the program youth to date. As of October 2009, 239 youth had applied to FC to 21 since the program's inception. Among eligible applicants, 184 foster youth enrolled in the program between 2006 and 2009.

FC to 21 Participants
- *Youth enrolled in FC to 21 were more likely than other youth exiting licensed foster homes to:*
    - *be female,*
    - *be in a dependency guardianship at age 18,*
    - *have a GPA of 3.0 or greater,*
    - *graduate from high school or receive a GED,*
    - *attend college in the year after graduation; and*

- *Less likely to have:*
    - *run away from a placement since age 13,*
    - *spent time in juvenile detention since age 13.*

- *Of youth we could follow for at least one year, nearly half remained in FC to 21 for a full year or more.*

Comparison With Non-Participants
The evaluation examined outcomes for FC to 21 participants compared with outcomes for a matched group of foster youth who graduated from high school before the FC to 21 program was available.

- *Compared to similar foster youth, FC to 21 enrollees:*
    - *attended college for a longer period in the first two years after high school graduation,*
    - *received food stamps for fewer total months; and*
    - *were less likely to be arrested for a misdemeanor or felony crime.*

- *Employment and birth outcomes were not significantly different between groups.*

Benefit-Cost Findings
Based on observed increases in college attendance and reductions in crime and duration of food stamp receipt, we found the program to be cost-beneficial over the long-term, particularly for program participants.

SECTION I: PROGRAM BACKGROUND AND ENROLLMENT

Youth in Washington State may remain in foster care until age 18, or until they receive a high school diploma or General Educational Development (GED) certificate. The Foster Care to 21 program was designed to provide support for up to 50 youth per year who entered the program in 2006, 2007, and 2008. In 2009, the Legislature clarified the authority of DSHS to continue authorizing youth to participate in the program, subject to available funding.[3] FC to 21 allows a specific number of young adults who are over the age of 18 and have completed their secondary school education to remain in a licensed care setting as they pursue postsecondary academic or vocational training.[4] To be eligible, participants must meet the following requirements:

- Be a state dependent and in a *licensed* foster care placement at age 18;[5]

- Have graduated from high school or obtained a GED; and

- Be accepted to, or currently enrolled in, a post-high school academic or vocational program.

Once admitted to the program, participants must remain in a licensed placement and continue to be enrolled in an approved technical or academic program in Washington State. Individuals in FC to 21 must also participate in a Transitional Living Skills program (run by contracted community agencies) to help them prepare for employment and independent living.

Foster parents of FC to 21 participants continue to receive the basic foster payment rate while youth are enrolled in the program. Parents are expected to provide youth with a portion of this payment to help teach money management skills.

Foster youth who enroll in FC to 21 do not have to leave their foster home and do not have housing expenses. They do, however, have to find ways to cover the costs associated with their academic or technical program. In addition to the financial support available to all low-income students, foster youth can receive financial assistance through the following three programs:

- **Education and Training Voucher Program (ETV).**[6] This federally-funded program provides up to $5,000 per year for youth enrolled in a college, university, or postsecondary vocational or technical program. Foster youth who complete high school or receive a GED are eligible for the ETV program; the award may be used anywhere in the United States.

- **Governors' Scholarship for Foster Youth.**[7] The Governors' Scholarship is managed by the College Success Foundation. Annual scholarships in the amount of $2,000 to $4,000 are awarded to approximately 30 foster youth per year who graduate from high school with at least a 2.0 grade point average. This award may be used to attend eligible colleges in Washington State.

- **Passport for Foster Youth Promise Program.**[8] This scholarship program was authorized by the 2007 Legislature, and supports attendance at eligible colleges in Washington. The first awards, covering tuition and living expenses up to $6,793 per year, were made in September 2008.

When applying for Foster Care to 21, foster youth must also indicate if they have applied for scholarship programs available to Washington State foster youth. A copy of the FC to 21 application can be found in Appendix A.

---

[3] E2SHB 1961, Chapter 235, Laws of 2009
[4] 2SHB 2002, Chapter 266, Laws of 2006
[5] Youth who have transitioned out of a licensed foster home placement within six months of applying to the program are also eligible.

[6] See http://www.independence.wa.gov/programs/etv.asp
[7] See http://www.collegesuccessfoundation.org/Governors.aspx
[8] See http://www.hecb.wa.gov/Paying/waaidprgm/Passport.asp

In 2009, the Foster Care to 21 program was reauthorized by the 2009 Legislature. This occurred in anticipation of new federal foster care funding regulations, which will take effect October 2010. The federal Fostering Connections to Success and Increasing Adoptions Act of 2008 will provide federal matching funds for states to continue to support foster youth in an active placement or subsidized guardianship until age 21.[9]

Once these federal regulations take effect, eligible foster youth may be able to remain in an extended foster care placement if they are:

- Completing high school or a GED;

- Enrolled in a post-secondary or vocational program;

- Participating in a program or activity designed to promote, or remove barriers to, employment;

- Employed a minimum of 80 hours per month; or

- Incapable of engaging in these activities due to a medical condition.

Final implementation of these regulations in Washington (including specific eligibility requirements) remains unclear; detailed federal rules should be provided to states in 2010.

ENROLLEE CHARACTERISTICS AND PROGRAM PARTICIPATION

As of October 2009, 239 youth had applied to FC to 21 since the program's inception (see Exhibit 1). Among eligible applicants, **184 foster youth** enrolled in the program between 2006 and 2009.

For evaluation purposes, we consider those enrolled by October 1, 2008 (n=130) in our analysis. For most outcomes, this enrollment period allows for a one-year follow-up. Exhibit 2 (next page) displays the length of time this subset of enrolled youth remained in FC to 21. Of the 130 youth in our analysis sample:

- 22 to 24 percent left care after six months,

- an additional 26 to 30 percent left care after 12 months, and

- another 24 percent left care after 18 months.

Of the 78 youth we could follow for an extended period, 28 percent remained enrolled in Foster Care to 21 for more than 18 months.

Exhibit 1
Enrollment in Foster Care to 21 by Year

Program Year	2006	2007	2008	2009	Total
Applications processed	39	73	82	45	239
Denied	13	18	12	1	44
Accepted	26	55	70	44	195
Did not enroll	0	4	3	4	11
Total enrolled	**26**	**51**	**67**	**40**	**184**

Note: 44 of 239 applications were denied because of unmet eligibility requirements, including incomplete applications, no evidence of intent to attend college, intent to enroll in college out-of-state, or lack of available licensed foster care placement.

---

[9] P.L. 110-351, Sec. 201

Exhibit 2
Time in Program by Year of Entry
(Analysis sample only)

	Of those who could have been enrolled for . . .		
	6 months	12 months	18 months
Left program by 6 months	31 (24%)	31 (24%)	17 (22%)
Left program by 12 months	N/A	39 (30%)	20 (26%)
Left program by 18 months	N/A	N/A	19 (24%)
Remained in program	99 (76%)	60 (46%)	22 (28%)
Total enrolled	**130**	**130**	**78**

An earlier review of Foster Care to 21 records by Institute staff found several reasons why participants left the program.[10] The most common reasons included:

- Youth was ready to live independently (8 percent), or problems occurred with the foster care placement (47 percent);

- Youth was no longer interested in school (28 percent);

- Youth reached age 21, left the state, or no reason was specified (17 percent).

While not every youth who enters FC to 21 will stay enrolled for an extended period, we can still follow outcomes for youth who stayed in extended foster care for even a short time. The goal of this research is to determine the type of youth who may be interested in receiving foster care assistance past age 18. And, given the option of extended foster care, what are the expected outcomes for youth who remain in a placement? As noted earlier, the FC to 21 program serves a select group of foster youth with a desire to attend college; our findings about the characteristics of program participants who remain in care beyond age 18 do not reflect the general foster care population.

PARTICIPANT CHARACTERISTICS

As mentioned previously, between 400 and 500 foster youth in Washington State reach age 18 each year while in a foster care placement. About a third of these youth,[11] however, live in unlicensed relative placements and are not eligible for Foster Care to 21. Among foster youth living in licensed foster home placements, characteristics of FC to 21 participants differed from other youth in similar settings. To analyze these differences, we selected youth who were in a licensed placement and expected to turn 18 between 2006 and 2008. Exhibit 3 (next page) shows the total number of FC to 21 participants and non-participants in the analysis.

In Exhibits 4 and 5, we compared the Foster Care to 21 participants who entered the program prior to October 2008 (n=130) with youth who were in a licensed foster home at the time they turned 18 and did not enroll in Foster Care to 21 (n=895).

[11] J. Tarnai & B. Austin (2009). *2007 - 2009 Braam outcomes survey of foster parents and caregivers in Washington State* (Technical Report 09-045, pp. 18–26). Pullman, WA: Social & Economic Sciences Research Center. Retrieved from http://www.braampanel.org/ ParentSurvey09_Comparison.pdf

[10] Schrager, 2008.

Exhibit 3
Youth in Licensed Foster Care at Age 18
2006–2008

Year Reached Age 18	Non-Participants (Licensed Foster Home Placement)	Foster Care to 21 Participants
2006	302	*27*
2007	318	*55*
2008	275	*48*
Total	**895**	*130*

Exhibits 4 and 5 demonstrate key factors that distinguish FC to 21 youth from other foster youth. By definition, all participants in the Foster Care to 21 program graduated from high school (or completed a GED); only a third of other eligible foster youth during this period completed high school. Furthermore, FC to 21 youth also had higher levels of academic achievement. The percentage of youth in Foster Care to 21 with an average GPA above 3.0 was twice as high as other foster youth (26 percent versus 13 percent).

While there were no differences in racial background or regional distribution, as shown in Exhibit 4, FC to 21 participants were more likely to be female (59 percent versus 47 percent). The background and profile of Foster Care to 21 participants differed in other areas as well.

Participants in Foster Care to 21 had a similar prior placement length (about 4.5 years) and age at first placement compared with other youth. About half (44 percent) of Foster Care to 21 participants, however, had an active dependency guardianship at the time they turned 18 (compared with 32 percent of other youth). Dependency guardianships grant the caregiver the responsibilities of a guardian (i.e. medical, education decisions) while the youth is in foster care.

Youth entering Foster Care to 21 generally have a more consistent and stable placement background. Only 8 percent of these youth ever ran away from a placement (since age 13) and only 5 percent had a stay in juvenile detention. In comparison, 22 percent of other youth in this age cohort ran away from a placement and 19 percent had been in juvenile detention.

Exhibit 4
Youth Characteristics: Foster Care to 21 Participants
Compared With Non-Participants, 2006–2008

	Foster Youth Aging Out of Licensed Care	Foster Care to 21 Participants
Total	895	130
Educational Achievement		
Completed High School or Received GED*	33%	100%
High School Grade Point Average*		
Missing	18%	11%
0.1 to 1.0	7%	1%
1.1 to 2.0	25%	18%
2.1 to 3.0	37%	45%
3.1 to 4.0	13%	26%
Demographic Characteristics		
Sex*		
Male	53%	41%
Female	47%	59%
Race		
Caucasian	64%	64%
African American	16%	18%
Native American	13%	11%
Other Race	7%	7%
DSHS Region		
Region One	11%	7%
Region Two	14%	15%
Region Three	14%	14%
Region Four	21%	23%
Region Five	19%	18%
Region Six	20%	23%

* Statistically significant difference at $p < 0.05$

Exhibit 5
Youth Characteristics: Foster Care to 21 Participants
Compared With Non-Participants, 2006–2008

	Foster Youth Aging Out of Licensed Care	Foster Care to 21 Participants
Total	895	130
Foster Care Background		
Age of First Foster Placement		
Before Age 13	74%	73%
Age 13 or Older	26%	27%
Average Years in Care	4.4	4.7
Dependency Guardianship at Age 18*	32%	44%
Problems While in Foster Care (since age 13)*		
Ran from Placement	22%	8%
Juvenile Detention	19%	5%
Post-Secondary Activity		
College Attendance in First Year After High School Completion*		
Community or Technical College	14%	50%
Four-Year College or University	4%	18%
College Financial Assistance*		
Governors' Scholarship	4%	28%
Education and Training Voucher	9%	36%

* Statistically significant difference at $p < 0.05$

SECTION II: COMPARING PROGRAM OUTCOMES

While the Foster Care to 21 program is intended to help support a specific number of foster youth while they pursue post-secondary education or training, not all enrollees stay in the program and continue with college. As noted previously, more than half of youth who enrolled in Foster Care to 21 stayed in this extended placement for less than a year.

As Exhibit 5 (previous page) indicates, half of all FC to 21 enrollees attended a community college and 18 percent went to a four-year college or university in the year after completing high school. The rate of college attendance was three to four times higher than that of other foster youth who aged out of care during this period.

However, comparing the college attendance rate of Foster Care to 21 participants with other foster youth during this time does not give a good indication of the program's success. As shown previously, FC to 21 participants had higher grades and more stable placements than non-participants. In addition to the observable differences evident between these groups, there are likely other *unobservable* factors, such as motivation and available social networks, which play a role in outcomes for participants.

To assess the impact of the program, we selected a group of youth aging out of foster care *before* the program was implemented (2004–05). The remainder of this report compares outcomes of Foster Care to 21 participants to similar youth who aged out of foster care and graduated from high school (or received a GED) in 2004 or 2005. These comparison youth did not have the opportunity to enroll in Foster Care to 21. While they may have received other state assistance (such as TANF/welfare benefits or food stamps), foster parents could not receive a monthly payment for supporting these youth past age 18.

In the two years prior to the start of the program (2004–05), we found 625 youth who were in a licensed foster home at age 18. Of these 625 youth, we identified 186 who completed high school in 2004 or 2005.[12] These youth would have been eligible for Foster Care to 21, had the program been in effect during this time. However, based on our analysis, we know that not all of these youth would have been likely to participate in an extended foster care placement past age 18.

To create a comparison group that resembled the Foster Care to 21 population, we used a "matched pairs" approach. In this approach, we found youth in the pre-program periods who had a similar distribution of factors related to Foster Care to 21 participation. These factors included the following:

- Gender,
- Dependency guardianship prior to aging out of foster care,
- "On-time" completion of high school, and
- Prior misdemeanor convictions.

After this process was completed, we selected **123 youth** aging out of foster care with characteristics similar to youth enrolling in Foster Care to 21. Exhibit 6 shows the characteristics of both the FC to 21 study group and the comparison group.

---

[12] Under a data share agreement (approved by the Washington State Institutional Review Board—WSIRB), the Office of Superintendent of Public Instruction (OSPI) merged foster care records to statewide education records, and removed all personally identifiable information to create the analytical dataset for this study. The WSIRB also approved research protocols for this study designed to protect subject confidentiality and ensure the security of administrative data.

Exhibit 6
**Foster Care to 21 (2006–2008)
and Selected Comparison Group (2004–05) Participants**

	Foster Care to 21 Participants	Selected Comparison Group
Female	59%	52%
Graduated on Time	66%	59%
In Dependency Guardianship at Age 18	44%	39%
Previous Misdemeanor Conviction	30%	30%
Total Participants	**130**	**123**

While the characteristics of the pre-program comparison group did not exactly mirror the profile of Foster Care to 21 participants, there are no statistically significant differences among the key factors described in Exhibit 6. That is, these 123 youth who aged out of foster care in 2004–05 had very similar rates of on-time graduation, previous misdemeanor convictions, and dependency guardianships as youth who entered Foster Care to 21.

One goal of this study is to determine if the state's investment in providing placement and support services to transitioning foster youth reduces costs otherwise incurred if this assistance was not available. The economic benefits of some outcomes, however, are not easily calculated for this population but are still of interest to policy makers. First, we compare the following outcomes for participants:

- Female birth rates
- Employment and earnings

Next, Section III discusses the outcomes that we can monetize and utilize in the cost-benefit analysis. These outcomes include:

- Food stamp and welfare receipt
- Arrests
- College attendance

PARTICIPANT OUTCOMES: BIRTHRATES

Estimates on the birthrates of former foster youth vary across studies. Using administrative data on youth leaving foster care in California, researchers found that 18- and 19-year-old women who emancipate from the child welfare system do not have higher birth rates than other 18- and 19-year-old women.[13] Another study of youth leaving care in Utah reported that the birthrate of former female foster youth aged 18 to 24 was nearly three times that of similarly aged females in the general population.[14]

In this analysis, we found only slightly higher birthrates for former foster youth compared with the general population. In 2008, the Washington State Department of Health reported that 5.7 percent of females aged 18 to 19 gave birth in Washington State.[15] Among the 77 female participants in the Foster Care to 21 program, six (7.8 percent) gave birth at age 18 or 19.
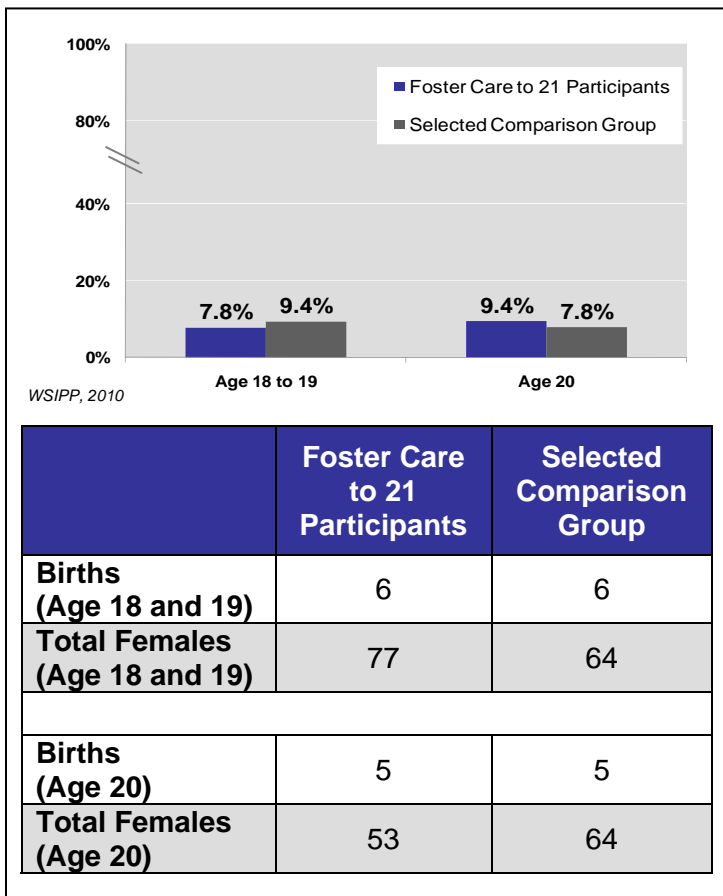
---

[13] B. Needell, S. Cuccaro-Alamin, A. Brookhart, W. Jackman, & A. Shlonsky (2002). *Youth emancipating from foster care in California: Findings using linked administrative data.* Berkeley, CA: Center for Social Services Research. Retrieved from http://cssr.berkeley.edu/pdfs/ffy_ex_summary.pdf

[14] A. Singer (2006). *Assessing outcomes of youth transitioning from foster care.* Utah Department of Human Services. Retrieved from http://www.dhs.utah.gov/pdf/ AssessingOutcomesofYouth_oct%203.pdf

[15] Center for Health Statistics, Washington State Department of Health (2009). Birth Table (Table A10). Retrieved from http://www.doh.wa.gov/ehsphl/CHS/chs-data/birth/htmltables/a10.htm

9

Exhibit 7 displays the birthrates for both the Foster Care to 21 and pre-program comparison groups. For the comparison youth leaving foster care in 2004–05, 9.4 percent of the females gave birth at age 18 or 19. While this rate was slightly higher than the birthrate for female Foster Care to 21 participants, the comparison youth at age 20 had a slightly lower birthrate. Overall, there were no statistically significant differences in births between these two groups.

Exhibit 7
Rates of Birth by Female Participants After Enrollment in FC to 21 or After High School Completion

WSIPP, 2010

	Foster Care to 21 Participants	Selected Comparison Group
Births (Age 18 and 19)	6	6
Total Females (Age 18 and 19)	77	64
Births (Age 20)	5	5
Total Females (Age 20)	53	64

PARTICIPANT OUTCOMES: EMPLOYMENT AND EARNINGS

The Foster Care to 21 program aims to improve the economic security of former foster youth by supporting youth in a stable home while they pursue post-secondary education or training. Economic support during this period may allow FC to 21 participants to postpone employment and focus on educational pursuits. Nevertheless, many youth are employed during college, and employment levels of youth exiting foster care provide one indication of their chances for success as they enter adulthood.[16]

According to the annual Graduate Follow-up Study, 80 percent of high school graduates in Washington State are employed in the year following graduation.[17] For the analysis in this study, we merged statewide employment data with foster care records to determine how many youth in the study sample had work experience. Exhibit 8 (next page) shows that between 54 and 72 percent of former foster youth in this study had some employment at age 18 or 19.

During the year they were age 18, 35 percent of youth enrolled in FC to 21 worked up to six months, and 28 percent worked between 7 and 12 months. Employment for FC to 21 participants at this age was slightly higher than for comparison youth, but the differences were not statistically significant.

When they were age 19, however, the employment levels of FC to 21 participants and youth in the pre-program comparison group were roughly equivalent. At this age, 37 percent of FC to 21 enrollees worked up to half of the year and 35 percent worked more than seven months. Slightly more members of the pre-program group worked for three or four quarters (41 percent), but the overall employment level was nearly the same.[18]

---

[16] L. Radel, et al. (2008). *Coming of age: Employment outcomes for youth who age out of foster care through their middle twenties.* Washington DC: Urban Institute. Retrieved from http://aspe.hhs.gov/hsp/08/fosteremp/report.pdf
[17] *Washington State graduate follow-up study: Reports by class.* Retrieved from http://www.sesrc.wsu.edu/Puget Sound/K12/gfs/ReportsbyClass.htm
[18] In the "Age 19" section of Exhibit 8, only 82 of the 130 Foster Care to 21 participants are represented in the graph. Forty-eight of the participants had not yet completed their 19th year and, therefore, had incomplete employment data for that year.

Exhibit 8
**Employment Rates at Age 18 and 19
for Foster Youth in Study Sample**
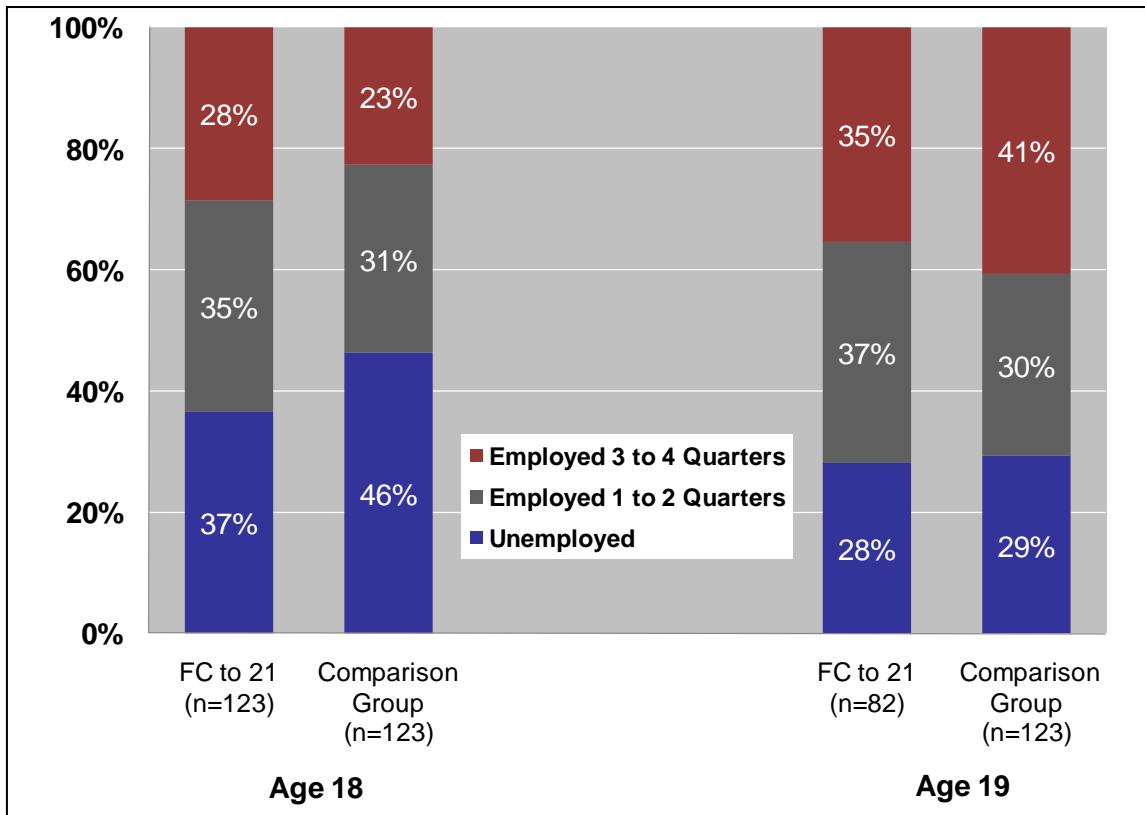
WSIPP, 2010

As displayed in Exhibit 9, among Foster Care to 21 participants who did work at age 19, median quarterly wages were slightly higher than wages of the pre-program group ($1,637 versus $1,488). At this age, however, youth were unlikely to have earned a college degree or other credentials, so comparisons of early earning levels may not reflect future employment prospects.

Although Foster Care to 21 participants did not have a higher overall employment rate at age 19, the short follow-up period was not adequate to project long-term employment levels. In economic terms, there was an "opportunity cost" for these youth in attending college and training after high school. That is, Foster Care to 21 participants may give up short-term economic gains (through work) in favor of improved future employment prospects. While we present employment results here for information purposes, our projections on lifetime earnings are derived from the impact of the program on improving college attendance. The final section of this report discusses the results from this cost-benefit analysis.

Exhibit 9
**Median Quarterly Wages of Employed
Foster Youth in Study Sample**

	Foster Care to 21 Participants	Selected Comparison Group
Employed at 18	78	66
Median Quarterly Wage	$1,565	$1,621
Employed at 19	59	87
Median Quarterly Wage	$1,637	$1,488

Section III: Benefit-Cost Analysis

In determining the best way to calculate the long-term benefits and costs of the Foster Care to 21 program, we reviewed recent research on the economics of providing foster care for all youth until age 21. A detailed description of the research is provided in the box on the next page. We should note that previous research in this area is based on the principle of extending care for *all* foster youth. The legislation to date in Washington State limits services to a select number of foster youth who are willing and able to continue with education or training beyond high school.

The Current Approach: Our approach for this study was based on Institute experience analyzing the costs and benefits of social programs, and on administrative data about outcomes for program participants. Our analysis was based on observations of our program group in the years following their enrollment in FC to 21 compared to a similar group of foster youth who aged out of care before the program was available. We estimated the economic impact of FC to 21 on society using three of the outcomes described later in this section: crime, higher education, and public assistance. For the interested reader, details on parameters and calculations can be found in Appendix B.

We value the economic impact of crime on society by estimating the value of decreased levels of crime to taxpayers (who fund the criminal justice system) and crime victims (who suffer pain and suffering costs and out-of-pocket costs when they are victimized). Our estimates include detailed criminal justice system costs, as well as cost estimates for crime victims, some of whom lose their lives. Other victim costs include direct, out-of-pocket, personal or property losses. Psychological consequences also occur to crime victims, including feeling more vulnerable.

For higher education participation, Institute analysis[19] shows that for each year of higher education, wages, and associated benefits increase by about 10 percent. Using national data on earnings, we calculate the total expected earnings of a high school graduate for each year of college after graduation, then apply a multiplier for additional earnings expected due to the increase in education for program participants. We sum the expected earnings for the program participant, calculate estimates of increased taxes the participant is expected to pay, and estimate the increased non-market benefits that are expected to accrue to society.

The economic impact of public assistance amounts to a redistribution of costs between program recipients and taxpayers; that is, public assistance payments are a cost to the taxpayer, but a benefit to the recipient. In this analysis, we estimated the value of reduced reliance on food stamps by multiplying the average state monthly per-person food stamp benefit[20] by the number of months estimated in our model for reduced use by program participants. Reduced public assistance payments are a benefit to taxpayers, but a loss of income to the recipient.

Correction for unobserved selection bias. Because the Foster Care to 21 program is only available to a select group of foster youth (those who graduate from high school or obtain a GED, and plan to attend college), it is impossible to select a comparison group that is exactly similar to the group of program participants. Of those foster youth who graduated in 2004 and 2005, we cannot know how many intended to further their education. Because of the unobserved differences between the program group and our selected comparison group, we conservatively estimate the program's actual effectiveness to be approximately half of what we observe. In our meta-analytic work, the Institute routinely employs this type of correction for similar evaluations.[21]

---

[19] See Appendix B, p. 23, footnote 39.

[20] Washington State, FY2008, retrieved from: <*http://www.fns.usda.gov/pd/18SNAPavg$PP.htm*>

[21] See S. Lee, S. Aos, & M. Miller (2008). *Evidence-based programs to prevent children from entering and remaining in the child welfare system: Benefits and costs for Washington.* Olympia: Washington State Institute for Public Policy, Document No. 08-07-3901, pp. 21–22.

RELEVANT RESEARCH FROM OTHER STATES

A recent study by researchers at Chapin Hall in Illinois estimated what it would cost states to extend foster care to age 21, and what kind of economic benefits could be expected from this extension.[a] This analysis compared data from Illinois (a state that extends foster care support to age 21) with data from Iowa and Wisconsin (states that do not extend support).

Based on average daily cost figures (from state data), the researchers estimated an average cost per youth of $37,948 to extend foster care to age 21. This cost is based on providing two years of care beyond age 18, as this is the average length of stay observed in Illinois. The final figure subtracts the cost of what the state may have paid in public assistance payments ($1,826 per year).

In terms of benefits, the study monetizes the observed increase in completion of post-secondary education for foster youth who remain in care beyond age 18. Higher levels of education translate into higher lifetime earnings.

The study uses proxy variables (low socio-economic status and several risk factors) to estimate how many foster youth they would expect to complete a bachelor's degree (10.2 percent). The data showed that foster youth in extended care are about twice as likely as those who leave care at 18 to earn a bachelor's degree. So, the expected graduation rate for extending care to 21 is 20.4 percent. The researchers calculated an expected benefit from this increased education of $72,000 per youth, or a cost-benefit of almost $2 for every dollar spent on extending foster care.

While this is useful information, the Illinois study makes several assumptions that are untested. For example, the benefits of the program are based on assumptions about how many foster youth would graduate from college without the option of extending care. Without a comparison group study of similar youth, the calculations of educational benefit are subject to error.

A second recent study by Cutler Consulting used a very different methodology to estimate the economic impacts of providing extra support to foster youth who

age out of the foster care system.[b] Using the same data as the Illinois study, the researchers calculated the rates of high school graduation, parenthood, and criminal activities for foster youth, then compared these with rates in the general population.

The economic analysis in the Cutler study hypothesizes that intervening in the lives of foster youth could potentially "make up" for the differences in outcomes between foster and non-foster youth. The study assumes that if outcomes for foster youth were similar to the general population, the lifetime benefits of extending foster care could amount to an average of $237,400 for each of the 24,000 youth aging out of foster care each year. These benefits would reflect increased lifetime earnings as a result of increased high school graduation, decreased costs of unplanned parenthood, and decreased criminal justice costs as a result of lower rates of crime. This effect remains hypothetical, however, since there has been no research to suggest that extended foster care improves outcomes so dramatically.

Finally, a third recent study used estimates from California to calculate the potential costs and benefits of a proposed Transition Guardian Plan.[c] The authors posit that under this program, participating foster youth would achieve outcomes equivalent to those experienced by everyone in the population. They calculated the costs of the program to be $47,113 per youth, including youth stipends, foster parent payments, and administration and evaluation. Benefits to taxpayers were expected to be $71,391 over the long term, including avoided costs of prison and TANF payments, as well as increased taxes from higher earnings of the participating youth.

As in the case of the Cutler study, this analysis does not include an examination of the effectiveness of the Transition Guardian Plan. Without evidence to show that the Transition Guardian Plan would indeed lower crime rates and TANF receipt, or increase educational attainment to the levels observed in the overall population, it is difficult to accurately weigh potential benefits against program costs.

---

[a] C. Peters, A. Dworsky, M. Courtney, & H. Pollack (2009). *Extending foster care to age 21: Weighing the cost of government against the benefits to youth.* Chicago, IL: Chapin Hall. Retrieved from http://www.chapinhall.org/sites/default/files/BCA%20CH%20 report_final_August_11.doc.pdf

[b] Cutler Consulting (2009). *Cost avoidance: Bolstering the economic case for investing in youth aging out of foster care.* Retrieved from http://www.jimcasey youth.org/docs/cost_ avoidance 040609.pdf
[c] T. Packard, M. Delgado, R. Fellmeth, & K. McCready (2008). A cost-benefit analysis of transitional services for emancipating foster youth. *Children and Youth Services Review, 30,* 11, 1267–1278.

BENEFIT-COST ANALYSIS: FINDINGS

Exhibit 10 displays the estimated total lifetime benefits we would expect for each youth participating in FC to 21, grouped by outcome and by recipient of economic benefits. More detail about the calculation for these estimated benefits and costs can be found in Appendix B.

The first row in Exhibit 10 shows the estimated benefits of reduced reliance on public assistance (food stamps). A reduction in food stamps will result in a gain to the taxpayer in terms of avoided public costs of $329, and a loss of income to the participants of $299.

Next, the economic benefit from the program's reduction in crime, as measured by arrests in the two years after a youth turns 18, is displayed. Lower arrest rates for program participants lead to savings for taxpayers (in lower criminal justice system costs) and non-taxpayers (in reduced crime victim costs).

Finally, the benefits from an increase in higher education accrue to the participant (due to higher wages and fringe benefits earned after age 20), to taxpayers (from increased taxes on those earnings), and to non-taxpayers (from non-market benefits such as reduced medical costs).

The accumulated benefits from the Foster Care to 21 program total **$38,187** per participant. Given program costs of **$7,397** per participant, we calculate an overall net benefit of **$30,790,** or **$5.16** of benefits for each dollar invested.

Most of these benefits accrue directly to the participant in the form of increased earnings as a result of higher education. However, even if these direct benefits are excluded, the program remains a good investment to the taxpayer. If we limit the benefits to those realized for the taxpayer (since it is taxpayer resources that fund the FC to 21 program), we find the benefit-to-cost ratio is **$1.35** of benefits for each dollar invested. The remainder of this report discusses how benefits for the Foster Care to 21 program are derived.

Exhibit 10
Estimated Benefits and Costs of the FC to 21 Program

Foster Care to 21 Summary of Estimated Benefits and Costs				
	Primary Program Recipient			
	Benefits and Costs From Different Perspectives			
	Program Participants	Non Program Participants As:		Total
Benefits By Area		Taxpayers	Non-Taxpayers	
Public Assistance	-$299	$329		$30
Crime		$1,170	$1,556	$2,726
Higher Education	$21,666	$8,509	$5,256	$35,431
Total Benefits	**$21,367**	**$10,008**	**$6,812**	**$38,187**
Program Cost*	$0	$7,397	$0	**$7,397**
Net Benefit (Net Present Value)	$21,367	$2,611	$6,812	**$30,790**
Total Benefit-to-Cost Ratio (Dollars of Benefits per Dollar of Cost) **=**				**$5.16**
Addendum: Non-participant benefits divided by taxpayer costs				**$1.35**

* Source: Institute calculation based on:
- The average length of stay in care for FC to 21 participants (11.7 months), multiplied by
- The 2009 basic foster care maintenance payment ($575.30), plus
- Administrative costs (estimated at 10 percent). Expressed in 2008 dollars, this is $7,397.

Food Stamps and TANF. Improving the employment prospects of former foster youth provides important societal benefits beyond increased wages and earnings. These benefits come from public costs that may be avoided if youth outcomes improve. One source of potential cost avoidance comes from reduced usage of welfare benefits or food stamps. A study of youth leaving foster care in three Midwest states found that by age 21, 20 percent of former female foster youth had received Temporary Assistance for Needy Families (TANF) benefits. In addition, 63 percent of females and 22 percent of males had received food stamps in the three years since they left foster care.[22]

Exhibit 11 shows the percentage of foster youth in this study who received TANF or food stamps in the year since leaving high school. While there were not significant differences in TANF receipt during this period, Foster Care to 21 participants were less likely to receive food stamps after leaving high school. Among females in the pre-program comparison group, 41 percent received food stamps at some point during the year, compared with 26 percent of FC to 21 participants. For males, 29 percent of the pre-program group had food stamps, a rate of more than twice that of males in the Foster Care to 21 group.

Far fewer youth in the Foster Care to 21 group than the pre-program comparison group received food stamps. Quantifying these benefits, however, requires us to determine the extent to which participation in Foster Care to 21 was related to reduced food stamp use. To make this determination, we developed a statistical model that also accounted for other factors that may be related to receiving food stamps.

Based on this model (see Appendix C), and our standard adjustment (see page 12), we estimate that participation in Foster Care to 21 resulted in a **3 month reduction in food stamp use** for each participant (over a two-year period). In 2008, the average per-person monthly food stamp benefit in Washington was $97.65.[23] This translates to approximately $300 in lost non-wage income for the participant, but $330 in avoided public costs (food stamp payments plus the cost of administration) for each former Foster Care to 21 youth.

Exhibit 11
One-Year TANF and Food Stamp Receipt for Foster Youth in Study Sample

	Foster Care to 21 Participants*	**Selected Comparison Group**
Males		
TANF	0 (0%)	4 (7%)
Food Stamps	4 (13%)	17 (29%)
Total	**30**	**59**
Females		
TANF	3 (6%)	3 (5%)
Food Stamps	12 (26%)	26 (41%)
Total	**47**	**64**

*Note: Data for TANF and food stamps were only available through June 2008. Therefore, participants in this table are those who enrolled in FC to 21 before June 2007, which allowed a one-year follow up period.

---

[22] M. Courtney, et al., (2007). *Midwest evaluation of the adult functioning of former foster youth: Outcomes at age 21.* Chicago: Chapin Hall Center for Children at the University of Chicago. Retrieved from http://www.chapinhall.org/sites/default/files/ChapinHallDocument_2.pdf

[23] Washington State supplemental nutrition assistance program: average monthly benefit per person, FY2008, retrieved from http://www.fns.usda.gov/pd/18SNAPavg$PP.htm

Arrests. As noted earlier, the comparison group for this study was selected from youth in foster care, before Foster Care to 21, who had characteristics similar to program participants. These characteristics included the youth's historical conviction record (for misdemeanor offenses). Exhibit 6 (page 9) showed that youth in the program group and the comparison group had identical rates of prior misdemeanor convictions—30 percent.

To measure crime after enrollment in FC to 21 (or after high school graduation for the comparison group), we examined Washington State Patrol arrest records for participants in both groups. Despite having a similar criminal background, following enrollment in Foster Care to 21, youth had fewer subsequent arrests for misdemeanor offenses when compared with pre-program youth (Exhibit 12).
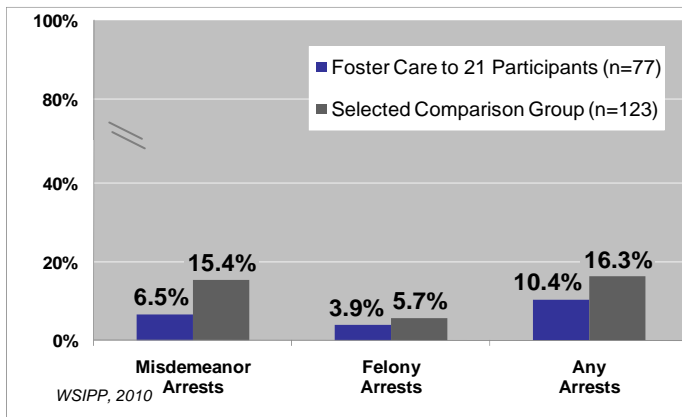
As shown in Exhibit 12, for the 77 youth in Foster Care to 21 who could be followed over two years, only 5 (6.5 percent) had any misdemeanor arrests. This arrest rate was significantly lower than the 15.4 percent of youth in the comparison group who had a misdemeanor arrest.

Most studies of former foster youth have found that between 30 and 40 percent are arrested within a few years of leaving care.[24] Since our study sample only includes high school graduates (not all exiting foster youth), we would expect a lower arrest rate among this population. And, based on the analysis of arrest records for the program and comparison groups, we found that 10 to 16 percent of former foster youth in the study had an arrest in the two years after high school completion.

To estimate the impact of the Foster Care to 21 program on averting criminal behavior (and avoiding criminal justice costs), we calculated the drop in expected arrests that could be attributed to the program. After completing high school, 16.3 percent of the comparison group had been arrested at least once. Based on our multivariate statistical model (Appendix D) and our standard adjustment, participants in Foster Care to 21 had a post-program arrest rate of 13.7 percent, a statistically significant reduction of 2.6 percentage points.

Based on benefit-cost models developed at the Institute, we can project the lifetime benefits that can be derived from reducing crime among this age cohort. We calculate expected savings of $2,726 that result from this lower arrest rate.

Exhibit 12
**Two-Year Arrest Rates
for Foster Youth in Study Sample**

WSIPP, 2010

---

[24] http://www.casey.org/Resources/Publications/pdf/
CaseyYoungAdultSurveyThreeYears.pdf

College Attendance. The lifetime benefits of a college education are well established in the research literature. Using data compiled from the Census Bureau's Current Population Survey, over the course of an adult's working career, high school graduates earn an average of $1.2 million; associate's degree holders earn $1.6 million; and bachelor's degree holders earn about $2.1 million.[25] Even without completing a degree, attending some college provides important economic benefits for students. Based on an analysis of the National Education Longitudinal Survey (NELS), Marcotte (2009) found that women who completed one year of coursework at a community college (without earning a degree) had annual earnings that were 9.6 percent higher than if they had not attended college. For men, the expected annual increase in earnings was 5.1 percent for completing one year of community college.[26]

Former foster youth attend college at a rate significantly below that of their peers. Wolanin (2005) examined the educational pathways of the estimated 300,000 youth nationwide who had been in foster care at some point after their 13th birthday. Among these youth, about 10 percent attended college following age 18.[27] A recent study by the Institute found that among high school-aged foster youth in Washington State, 17 to 18 percent attended college in the first two years after high school. In comparison, about 42 percent of students statewide will attend college in the year after high school completion.[28]

One of the primary purposes of the Foster Care to 21 program is to provide youth with a stable home environment and the opportunity to continue with post-secondary education. In order to receive extended foster care benefits, FC to 21 youth must be enrolled in a post-high school academic or vocational program. While not all youth will remain in FC to 21 for three full years, it is expected that the program will help improve educational outcomes beyond results that would have occurred had the program not been in place.

To analyze college outcomes for youth in Foster Care to 21, we obtained enrollment data from the National Student Clearinghouse—a database that includes information for approximately 90 percent of college enrollments nationwide.[29] Based on available data, we were able to track one-year college enrollment levels for all 130 FC to 21 program youth, and two-year college enrollment levels for 89 of these youth.

---

[25] J. Day, & E. Newburger (2002). *The big payoff: Educational attainment and synthetic estimates of work-life earnings.* (Current Population Reports, Special Studies, P23-210). Washington, DC: Commerce Dept., Economics and Statistics Administration, Census Bureau. Retrieved from http://www.census.gov/prod/2002pubs/p23-210.pdf

[26] D. Marcotte (2009). *The earnings effect of education at community colleges* (p. 13) DOI: 10.1111/j.1465-7287.2009.00173.x. Retrieved from http://papers.ssrn.com/paper.taf?abstract_id=937364

[27] T. Wolanin (2005). *Higher education opportunities for foster youth: A primer for policymakers.* Washington DC: The Institute for Higher Education Policy. http://www.ihep.org/assets/files/publications/m-r/OpportunitiesFosterYouth.pdf

[28] M. Burley (2009). *Foster care to college partnership: Evaluation of education outcomes for foster youth.* Olympia: Washington State Institute for Public Policy, Document No. 09-12-3901.

[29] The National Student Clearinghouse database does not track students who attend private career programs.

For Foster Care to 21 participants, we found:

- 68 percent attended college in the year after entering the program, and

- 71 percent attended some college in the two years after program entry.

While the comparison group of pre-program youth also included high school graduates with similar aptitude and characteristics, rates of college attendance were much lower:

- 33 percent attended college in the year after entering the program, and

- 41 percent attended some college in the two years after program entry.

From the available data, it appears that a significant proportion (32 percent) of FC to 21 participants did not continue with post-secondary education or training, even though that was a requirement of the program.

However, youth in this category (FC to 21 program participants with no record of college attendance) could be missing from the database for one of the following reasons:

- They attended a post-secondary program not included in the records of the National Student Clearinghouse, such as a private vocational or career program;[30]

- They intended to attend a post-secondary program at the time of completing high school, and remained in care through Foster Care to 21 for some time before deciding not to attend the educational program.

Exhibit 13 displays the enrollment levels for both the FC to 21 program and comparison groups for two- and four-year colleges in the year after high school completion.

Exhibit 13
**College Attendance in First Year After High School Completion
Foster Youth in Study Sample**
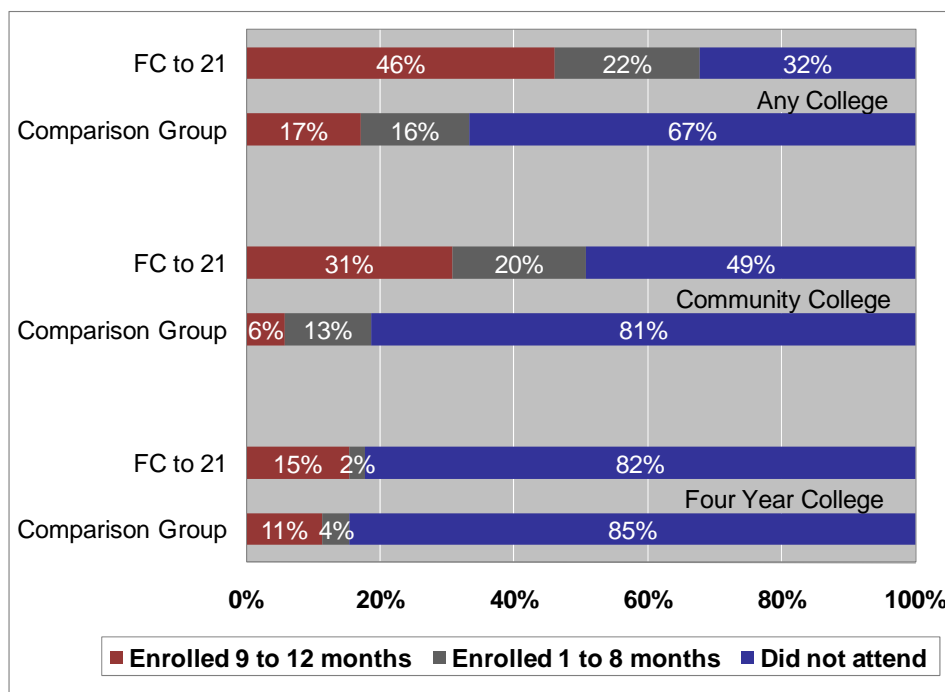
[30] Notes from the Washington State College Enrollment Study state: "*The National Student Clearinghouse database includes approximately 90% of all higher education enrollments. The data does not include information on private career schools. . . . It appears that the National Student Clearinghouse does not capture all enrolled students, especially at technical colleges.*" Retrieved from http://www.sesrc.wsu.edu/PugetSound/K12/nsc/Report Information.htm

As seen in Exhibit 13, youth in the FC to 21 cohort were more likely than youth from the comparison group to attend community college at some point in the first year after they graduated from high school. During this year, 31 percent of program participants attended a community college full-time (9 to 12 months) while 20 percent attended a community college for less than 9 months. Only 19 percent of comparison youth attended a community college either full- or part-time.

Differences in enrollment at four-year colleges and universities were less noticeable, although slightly more FC to 21 youth attended school at these institutions (17 versus 15 percent). Details on these first year enrollment levels are presented in Exhibit 14.

Exhibit 15 (next page) shows college attendance in the two years after high school completion. The program sample is smaller in this table, because we only included youth who had graduated from high school by June 2007, thus allowing a two year follow-up. The pattern in this table mirrors the first year: young people in FC to 21 were more likely than those in the comparison group to attend community college in the two years after graduating from high school. In fact, nearly a third (32 percent) were enrolled in any college for 13 months or more, compared with 19 percent of the comparison group.

Exhibit 14
College Attendance in First Year After High School Completion

Type of School	Length of Attendance	In Foster Care to 21 Program		Comparison Group	
		Number	*Percentage*	*Number*	*Percentage*
Community or Technical College*	**None**	64	49%	100	81%
	1 to 8 months	26	20%	16	13%
	9 to 12 months	40	31%	7	6%
Four-Year College or University	**None**	107	82%	104	85%
	1 to 8 months	3	2%	5	4%
	9 to 12 months	20	15%	14	11%
Any College*	**None**	42	32%	82	67%
	1 to 8 months	28	22%	20	16%
	9 to 12 months	60	46%	21	17%
	Total	**130**	**100%**	**123**	**100%**

 * Statistically significant difference at $p < 0.05$

Exhibit 15
College Attendance in Two Years After High School Completion

Type of School	Length of Attendance	In Foster Care to 21 Program		Comparison Group	
		Number	*Percentage*	*Number*	*Percentage*
Community or Technical College*	**None**	38	43%	88	72%
	1 to 8 months	19	21%	17	14%
	9 to 12 months	13	15%	9	7%
	13 to 19 months	11	12%	5	4%
	20 months or more	8	9%	4	3%
Four-Year College or University	**None**	73	82%	103	84%
	1 to 8 months	3	3%	5	4%
	9 to 12 months	5	6%	3	2%
	13 to 19 months	3	3%	6	5%
	20 months or more	5	6%	6	5%
Any College*	**None**	26	29%	72	59%
	1 to 8 months	17	19%	19	15%
	9 to 12 months	18	20%	9	7%
	13 to 19 months	14	16%	12	10%
	20 months or more	14	16%	11	9%
	Total	**89**	**100%**	**123**	**100%**

* Statistically significant difference at $p < 0.05$

Given the economic benefits resulting from increased college participation, we analyzed the direct impact of the Foster Care to 21 program on improving college enrollment among former foster youth. Based on this analysis (see Appendix E), and our standard adjustment, we estimate that participation in the Foster Care to 21 program resulted in an increase of 3.25 months in college attendance, on average. This boost in college attendance translates into a lifetime benefit of $35,431 for participants and the public.

It is not clear from our analysis that youth attending private career programs would achieve the same level of benefits. It is also important to note that we would not expect our economic findings to hold if we applied the program to the entire population of foster youth. Our analysis is based on a select group of youth (completing high school or a GED), due to the enrollment criteria of the Foster Care to 21 program.

SUMMARY

Among the population of foster youth who graduate from high school or receive a GED, we find that Foster Care to 21 participants had higher college attendance, fewer arrests, and used food stamps for a shorter period of time than did graduates who did not participate. Based on our estimates, this resulted in a taxpayer benefit of $1.35 for every dollar spent on the program. Considering benefits to both the taxpayer and participant, the Foster Care to 21 program provided $5.16 in benefits for every dollar spent.

Appendix A

**Washington State
Foster Care to 21
Application**

2009

Foster Care to 21 enables DSHS to continue foster care to a limited number of youth while they pursue postsecondary education, (academic or vocational). This program will offer placement and support services to youth up to age 21.

Please note that this application does not guarantee acceptance. Youth will be notified by mail once applications are reviewed.

Application Instructions:
1. Fill out all sections. If the information does not apply to you write "N/A"
2. Attach copy of high school transcripts or G.E.D. score report
3. Attach documentation of acceptance into academic/vocational program or copy of application to school applied.
4. Attach signed release of information for DSHS to contact your school of attendance (form attached).
5. Send completed HB 2002 application and documentation noted above to:
   **Foster Care to 21 Program Manager
   Children's Administration
   1115 Washington St SE
   PO Box 45710
   Olympia WA 98504**

   You may email your HB 2002 application to: _____ @DSHS.WA.GOV (mail all other documents)

Section 1 – Applicant Information

First Name:	Middle Name:	Last Name:	Date of Birth:
Mailing Address (including apartment number):			
City:	State:		Zip code:
Home Phone:	Other Phone:		Email:
How else can we reach you?			

Section 2 – Foster Parent Information

Foster Parent Name:	Foster Parent Phone #:
☐Yes ☐No Has your foster parent agreed for you to stay in their home while you pursue your academic/vocational program?	
If you checked "no" - what other housing options have you explored?	

Section 3 – Education Information (Attach copy of transcript and/or GED score)

High School Graduating/Graduated From:			Date of Graduation:
High School Mailing Address:	City:	State:	Zip code:
G.E.D. 4 Digit Score (If obtained G.E.D.):			

Section 4- Social Worker Information

Social Worker Name:	Phone:
Address or Office:	

Section 5 – Academic/Vocational Program Information (school planning on attending in WA state)

School Name:
☐ Accepted ☐ Acceptance Pending – date submitted:
I plan on attending: ☐ Full-time ☐ Part-time

	Degree/Certificate Expected:	Expected Graduation Date:
☐ Semester Hours ☐ Quarter Hours		

Section 6 – Financial Information

☐Yes ☐No	I have applied for "free application for federal student aid" (FAFSA) Date FAFSA submitted -
☐Yes ☐No	I have applied for Education and Training Voucher Program
☐Yes ☐No	I have applied for the Governor Scholarship
☐Yes ☐No	I have applied for other Scholarships/Awards

Section 7 – Additional information

☐Yes ☐No	I am receiving Independent Living or Transitional Living services. Program Agency Name:
☐Yes ☐No	I am interested in having a mentor

Section 8 – Essay questions

Attach an additional sheet of paper with your name and date of birth in the upper right hand corner. In 250-500 words answer the following, making sure to address each of the four questions: • Explain your interest in college and where you think it may take you?   • What have you done to prepare yourself to pursue higher education?   • What are your education and career goals through the next six years?   • How will your personal strengths help you reach your goals?
FC to 21 essay attached: ☐ Yes ☐ No

Section 9 – Optional Information
(This information is collected for research and program development purposes and will not be considered in the selection process)

Gender: ☐ Male ☐ Female
Ethnicity: (how you best describe yourself)   ☐ American Indian/Native American ☐African American/Black ☐Hispanic/Latino   ☐Caucasian/White ☐Asian, Asian American, or Pacific Islander   ☐ Mixed Race (please specify): ☐Other (please specify)

Section 10 – Student Applicant Agreement

I certify by my signature below that I am interested in remaining in foster care up to age 21 while I pursue my academic/vocational program. I understand that information collected in this application (except Section 9) will be used to evaluate my eligibility to participate in the **foster care to 21 program**. I acknowledge that application to or acceptance into the program is not a right and/or does not confer or create an entitlement and does not create a right of action or claim against DSHS.	
Student Signature:	Date:

Appendix B

Methods and Parameters to Model the Benefits and Costs of Foster Care to 21

To estimate the benefits and costs of the Foster Care to 21 program, we employed an economic model we have developed for previous assignments from the legislature. This Appendix describes the technical structure of the model as well as the data used with the model to produce the estimates for this study.

B1. General Model Parameters

The model uses a number of parameters pertinent to the costs and benefits estimated in this study. Exhibit B.1 lists some of these parameters.

The discount rate used in this study is shown on line 1 of Exhibit B.1.[31] The rate is the 3 percent real discount rate used by the Congressional Budget Office in a variety of analyses, including its projections of the long-term financial position of Social Security.[32] Alternative discount rates can be entered into the model to test overall sensitivity of results.

Key parameters in our analysis are the level of earnings and the long-term expected rate of real (inflation-adjusted) growth in earnings. The level of earnings by age is taken from cross-sectional data from the 2009 Annual Social and Economic Supplement to the Current Population Survey (CPS), with data on earnings during 2008. The earnings are those of people with education levels between 9th grade through some college. The number of non-earners is included in the estimates so that the average earning level reflects earnings of all people at each age (earners and non-earners).[33]

Line 2 of Exhibit B.1 shows the long-run expected growth rate in real earnings. The estimate for the medium case is taken from the Congressional Budget Office (CBO) analysis of long-run Social Security.[34]

Line 3 of Exhibit B.1 shows an estimate for the average fringe benefit rate for earnings. This estimate is from the Employment Cost Index as computed by the United States Bureau of Labor Statistics.[35] Line 4 shows the average tax rate applied to earnings.[36] Line 5 displays a rough estimate of any non-market or social benefits that may be causally related to education outcomes.[37] These factors include "knowledge spillovers" that stimulate general economic growth; improved health care and lower health care costs; reduced crime; reduced foster care; and increased civic participation. In our current benefit-cost model, we provide a simple multiplicative parameter that can be applied to the estimated earnings effects so that the non-market benefits can be roughly modeled.

Line 6 of Exhibit B.1 indicates the year chosen for the overall analysis. All costs are converted to this year's dollars with an inflation index. The inflation index is taken from the Washington State Economic and Revenue Forecast Council, the official forecasting agency for Washington State government. The index is the chain-weight implicit price deflator for personal consumption expenditures.[38] Line 8 of Exhibit B.1 displays the percentage increase in annual earnings we can expect for each extra year of education.[39]

[31] For a general discussion of discount rates for applied public benefit-cost analyses, see: C. Bazelon, & K. Smetters (1999). Discounting inside the Washington D.C. Beltway. *Journal of Economic Perspectives, 13*(4): 213-28. See also: H. Kohyama (2006). *Selecting discount rates for budgetary purposes, Briefing Paper No. 29.* Retrieved from http://www.law.harvard.edu/faculty/hjackson/DiscountRates_29.pdf

[32] See Congressional Budget Office report. Retrieved from http://www.cbo.gov/ftpdocs/104xx/doc10457/08-07-SocialSecurity_Update.pdf

[33] US Census Bureau Current Population Survey data. Retrieved from http://www.census.gov/hhes/www/cpstables/032009/perinc/new04_001.htm

[34] See Congressional Budget Office data for the August 2009 report, Table W-3, retrieved from http://www.cbo.gov/doc.cfm?index=10457&type=2

[35] US Bureau of Labor Statistics, Employment Cost Index, October 30, 2009 release. Retrieved from http://www.bls.gov/news.release/eci.nr0.htm

[36] J. Barro (2009, April). *April 13 is tax freedom day.* Tax Foundation Special Report (no. 165) Table 1, page 4. Retrieved from http://www.taxfoundation.org/files/sr165.pdf

[37] B. Wolfe & R. Haveman (2002). Social and nonmarket benefits from education in an advanced economy. Proceedings from the Federal Reserve Bank of Boston's 47th economic conference *Education in the 21st Century: Meeting the Challenges of a Changing World.* Retrieved from http://www.bos.frb.org/economic/conf/conf47/index.htm. See also a collection of articles on the topic published in J. Behrman & N. Stacey (Eds.) (1997). *The social benefits of education.* Ann Arbor: The University of Michigan Press. See also: W. Riddell (2006). *The impact of education on economic and social outcomes: An overview of recent advances in economics.* Univ. of British Columbia: Dept. of Economics.

[38] Washington State Economic and Revenue Forecast Council. Retrieved from http://www.erfc.wa.gov/pubs/sep09pub.pdf, Table A4.1, p. 99

[39] We estimated this figure by taking the median of the estimates in J. D. Angrist & A. B. Krueger (1991). Does compulsory school attendance affect schooling and earnings? *Quarterly Journal of Economics, 106,* 979–1014. K. Conneely & R. Uusitalo (1997). *Estimating heterogeneous treatment effects in the Becker schooling model.* Unpublished discussion paper. Industrial Relations Section, Princeton University. C. Harmon and I. Walker (1995). Estimates of the economic return to schooling for the United Kingdom. *American Economic Review, 85,* 1278–1286. J. A. Hausman & W. E. Taylor (1981). Panel data and unobservable individual effects. *Econometrica, 49,* 1377–1398. T. Kane & C. E. Rouse (1993). *Labor market returns to two- and four-year colleges: Is a credit a credit and do degrees matter?* NBER Working Paper No. 4268. Cambridge, MA: NBER. J. Maluccio (1997). *Endogeneity of schooling in the wage function.* Unpublished manuscript. Department of Economics, Yale University. D. Staiger & J. H. Stock (1997). Instrumental variables regression with weak instruments. *Econometrica, 65,* 557–586. These studies are summarized in D. Card (1999). The causal effect of education on earnings. In E. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics, 3A,* 1801–1863.

The Benefits and Costs of Evidence-Based Programs:
Model Parameters

Parameter	Parameter Value
1. Real Discount Rate	0.030
2. Real annual rate of growth in earnings	0.013
3. Fringe benefit multiple for earnings	1.435
4. Tax rate for earnings	0.282
5. Nonmarket benefits rate for earnings	0.250
6. Year of dollars for the analysis	2008
7. Year of dollars for the Current Population Survey used in the study	2008
8. Percentage change in annual earnings per extra year of education	0.100

B2. Monetary Valuation of Outcomes

To estimate the FC to 21 program's impact on outcomes, we have analyzed administrative data on participation in crime, employment status, use of public assistance, subsequent births, and higher education. We use three of these outcomes in producing estimates of long-term benefits for program participants and taxpayers in the state.

The Institute's model of the costs of crime and the benefits of education has been described in detail elsewhere; the interested reader can find a full description of the formulae used to calculate costs in earlier reports.[40]

Crime. We value the economic impact of crime on society by estimating the value of decreased levels of crime to taxpayers (who fund the criminal justice system) and crime victims (who suffer pain and out-of-pocket costs when they are victimized). Our estimates include detailed criminal justice system costs, as well as cost estimates for crime victims, some of whom lose their lives. Other victim costs include direct, out-of-pocket, personal or property losses. Psychological consequences also occur to crime victims, including feeling more vulnerable. A reader interested in the technical calculations for these values can consult the description in the Technical Appendix to the Institute's 2004 report.[41]

Education. In this report, the model estimates the human capital benefits of additional years of education. The value of changes in years of education attained is calculated by estimating the expected change in lifetime earnings caused by a change in the human capital measure.

Measuring the earnings' implications of these human capital variables is a commonly used approach in economics.[42] Specifically, the CPS money earnings data, by age, are taken as a weighted average of those with a high school diploma and those with some college but no degree. This stream of earnings is multiplied by an estimated rate of return to earnings per extra year of formal education (shown in Line 8 of Exhibit B.1). The differenced series is then present valued to age 20 by applying the general real discount rate used in the overall analysis (Line 1), and any assumed real rate of growth in wages (Line 2). We use age 65 as the cut-off point for earnings.

A fringe benefit rate is applied to the earnings (Line 3). As mentioned, the model can accommodate a rough estimate of any non-market (i.e., non-earnings) outcomes that may be causally related to education outcomes using the parameter from Line 5. For the formulae used in these calculations, a reader can consult Appendix D of the Institute's 2004 report.[43]

Public Assistance. Public assistance costs are treated as transfer payments in the benefit-cost model. If FC to 21 has an effect on public assistance use, then there is a redistribution of costs between program recipients and taxpayers. For example, if a program lowers the use of public assistance, then the reduced public assistance payments are a benefit to taxpayers, but a loss of income to the participant in the program. The only cost that is a net real difference in this transfer is the effect that a change in public assistance caseloads has on costs related to the administration of the public assistance programs.

---

[40] For a full description of the way we model the costs of crime to society, see S. Aos, M. Miller, and E. Drake (2006). *Evidence-based public policy options to reduce future prison construction, criminal justice costs, and crime rates.* Olympia: Washington State Institute for Public Policy.
[41] S. Aos, R. Lieb, J. Mayfield, M. Miller, & A. Pennucci (2004). *Benefits and costs of prevention and early intervention programs for youth,* Document No. 04-07-3901.

[42] See, for example, A. Krueger (2003). Economic considerations and class size. *The Economic Journal, 113*(485): F34–F63. Retrieved from author's website: http://edpro.stanford.edu/eah/eah.htm; and E. Hanushek (2003). *Some simple analytics of school quality*, Retrieved from the author's website: http://edpro.stanford.edu/eah/eah.htm.
[43] Aos et al., 2004.

Appendix C

Change in Months of Food Stamps Received
Negative Binomial Count Model

	Coefficient	Standard Error	p Value	Marginal Effect (Months at Mean Value)
Intercept	-1.962	1.033	0.057	-12.67
Participated in Foster Care to 21	-0.951**	0.404	0.019	***-6.13***
Female	0.862**	0.434	0.047	5.56
Region One	0.905	0.682	0.185	5.84
Region Two	0.997*	0.591	0.092	6.43
Region Three	0.938	0.691	0.175	6.05
Region Five	-0.048	0.573	0.933	-0.31
Region Six	0.247	0.603	0.682	1.59
Any College in First Year After High School	-0.094**	0.046	0.040	-0.60
Total Felony Convictions	0.654*	0.381	0.087	4.22
Number of Placements With Relative	0.125	0.334	0.709	0.80
Number of Years in Foster Placement (since age 13)	-0.083	0.154	0.590	-0.53
In Dependency Guardianship at Age 18	-0.1555	0.437	0.722	-1.00
Alpha (Dispersion Parameter)	5.094	0.808	<.0001	32.86

Notes: *significant at p<0.10 level, **significant at p<0.05 level.
Region estimates relative to Region 4.

Number of observations: 198
Log Likelihood (full model): -367.79
Log Likelihood (null model): -382.44

Likelihood Ratio Chi Sq (12): 29.30
p value: 0.004

Appendix D

Likelihood of Arrest After High School Graduation
Logistic Regression Model

	Odds Ratio	95 Percent Confidence Interval (lower)	95 Percent Confidence Interval (upper)
Participation in Foster Care to 21	0.399**	0.160	0.994
Prior Criminal Conviction	3.207**	1.202	8.561
Female	0.559	0.222	1.406
Entered Foster Care During High School	1.556	0.393	6.167
Number of Detention Episodes While in Foster Care	1.445*	0.991	2.107
Number of Different Providers While in Foster Care	1.094	0.720	1.663
Total Days in Foster Placement (since age 13)	0.999*	0.997	1.000
Foster Care Placement Stability (Number of Days per Placement Event)	1.019	0.986	1.053
	Cases	Rsq	AUC
	249	0.2541	0.831

Notes: *significant at $p<0.10$ level, **significant at $p<0.05$ level.

Appendix E

Change in Months of College Attended
Negative Binomial Count Model

	Coefficient	Standard Error	p Value	Marginal Effect (Months at Mean Value)
Intercept	-2.434***	0.865	0.004	-15.53
Participated in Foster Care to 21	1.021***	0.219	<.0001	*6.52*
Grade Point Average (0–4)	0.435**	0.170	0.011	2.78
Previous Misdemeanor Conviction	-0.169*	0.101	0.093	-1.08
Graduated From High School on Time	0.160	0.238	0.502	1.02
Recorded Disabilities	-0.646**	0.328	0.049	-4.12
Female	0.076	0.218	0.727	0.49
Region One	-0.235	0.383	0.540	-1.50
Region Two	-0.432	0.383	0.259	-2.76
Region Three	-0.283	0.389	0.468	-1.80
Region Five	-0.048	0.345	0.889	-0.31
Region Six	-0.230	0.322	0.474	-1.47
Total Months in Foster Care (since age 13)	-0.008	0.009	0.353	-0.05
Foster Care Placement Stability (Number of Days per Placement Event)	0.001	0.005	0.892	0.00
Alpha (Dispersion Parameter)	2.284***	0.285	<0.001	14.57

Notes: *significant at p<0.10 level, **significant at p<0.05 level, ***significant at p<0.01 level.
Region estimates relative to Region 4.

Number of observations: 232
Log Likelihood (full model): -639.1566
Log Likelihood (null model): -689.9647

Likelihood Ratio Chi Sq (12): 50.81
p value: <0.001

This report was prepared by Mason Burley and Stephanie Lee
For further information, please contact Mason Burley
(360) 528-1645 or mason@wsipp.wa.gov.

Washington State
Institute for
Public Policy
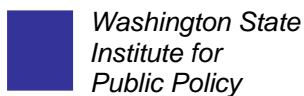
The Washington State Legislature created the Washington State Institute for Public Policy in 1983. A Board of Directors—representing the legislature, the governor, and public universities—governs the Institute and guides the development of all activities. The Institute's mission is to carry out practical research, at legislative direction, on issues of importance to Washington State.