Foster Youth Stability

A study of California foster youths’ school and residential changes in relation to educational outcomes
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Introduction

Each year in California, more than 7,000 youth between the ages of 8 and 13 are removed from their home due to abuse and neglect and placed into foster care.¹ For many of these youth, challenges associated with the family environment and entry into an out-of-home placement may serve as a turning point and alter academic performance trajectories. ²

Though prior investigations indicate that the educational attainment of foster youth is poor,³ negative performance is reported as if all foster youth fail without considering differences among individual foster youth. While collectively foster youth may have increased risk due to maltreatment and removal from home, other correlating factors including educational risks prior to entry, child welfare case characteristics, and residential and school changes may be associated with differences in foster youth academic performance.

Largely absent from prior investigations is the exploration of academic performance and foster care exit type outside of emancipation (when foster youth age out of the system). Additionally, past research has focused primarily on the relationship among school transfers, placement changes, and academic performance with little regard to normative school transitions (school changes that happen for all youth, e.g., moving from elementary school to middle school). School transitions are often sorting points where academic pathways diverge. It may be that in conjunction with education and child welfare case characteristics, residential and school changes lead to decreased adjustment and academic performance for some foster youth.

The purpose of this investigation was to understand how various education and child welfare characteristics influence English and math levels on the California Standards Test (CST) over time. English and math performance levels were followed for a maximum of three years post baseline for each student. We included two primary samples. The first sample included foster youth closely matched to nonfoster students on characteristics from the year prior to entrance into foster care placement. Adjusting for the association with educational risk factors, an investigation as to whether trends in foster youth academic performance vary significantly from nonfoster youth was explored. The second sample included only foster youth, which was used to focus on heterogeneity in English and math outcomes. These investigations examined the relationships among education risk factors, child welfare case characteristics, and residential and school changes in relation to academic performance over time.

Methods

Please see the Technical Appendix for detailed information regarding data and methods.

This study linked two primary data sources: administrative child welfare records from California Child Welfare Services/Case Management System (CWS/CMS), coordinated by the Center for Social Services Research at University of California, Berkeley, and education records from the California Partnership for Student Success (Cal-PASS), managed during the period of this study by the Institute for Evidence-Based Change (IEBC). Additional data from the California Department of Education (CDE) provided information about school quality.
In this study, performance on the CST was used to assess academic performance. The CST, administered every year for students in grades two to 11, is used to determine how well students have learned specific grade-relevant information. At each grade level, topic-specific scaled scores are converted to an aptitude level that includes far below basic, below basic, basic, proficient, and advanced. As it is the goal of the CDE that every student perform at the proficient or above level, the two categories of proficient and advanced are combined for a total of four possible levels.

From the linked data set, foster youth who entered into out-of-home placement in grades three to eight during school years 2003–04 to 2006–07 were sampled. Only youth with Standardized Testing and Reporting (STAR) demographic data were identified for inclusion. In addition, foster youth must have had a minimum of two out of four years of test score data on the CST, with one of those years at baseline (i.e., the year prior to foster care entry). Two separate samples were extracted for English language arts (ELA) and math. In addition to the two primary samples, foster youth were matched to nonfoster youth students closely at the baseline year. The foster youth samples were matched to comparison students by grade level, school year, gender, ethnicity, English Language Learner (ELL) status, National School Lunch Program (NSLP), primary disability, district or school, state rank, and baseline CST level. In the math sample, foster youth and non-foster youth were additionally matched by math course level for older youth.

Analyses included sample means and proportions for all education, demographic, and child welfare case characteristics. Differences in the means and proportions were calculated among groups. In addition, hierarchical longitudinal multinomial regression models were used to examine whether differences in education outcomes among CST levels were maintained after controlling for various characteristics. In these analyses, level one encompassed changes in CST performance levels over time and level two pertained to how these changes varied across individual students.

While there is a clear ordering of the CST levels, in analyses the levels are treated as nominal due to violation of the proportional odds assumption. This assumption assumes that the relationship between each CST level is the same and provides a single estimate of the outcome variable in relation to the independent variables (e.g., special education status). The proportional odds assumption was tested and the p-value was significant in all samples. Therefore, combining the parameters for the explanatory variables was rejected and CST levels were treated as nominal.

A weighting formula was utilized in the regression models to ensure that the samples of students with education data represented the appropriate statewide population. The samples were weighted by gender and ethnicity. In addition, while each youth had baseline and one additional year of CST data, there were instances of missing values for Years 1 to 3. In order to include as many youth as possible, missing values were generated via multiple imputation.

**Summary of Findings**

The purpose of this investigation was to understand the relationship of foster youths’ school changes and placement changes to school performance in English and math as reflected on the CST over time.
**Highlights**

1. A high level of school and residential changes was associated with lower academic performance as measured by the CST.

2. For foster youth, education at-risk factors present prior to entry into foster care placement were more reliable predictors of academic performance over time than the majority of child welfare case characteristics.

3. Foster youth were less likely to have higher levels of proficiency on the CST compared to nonfoster youth and were less likely to increase their CST performance over time.

4. Findings underscored the need to identify subgroups of vulnerable foster youth with the greatest need for additional educational support. Similar to other at-risk students, foster youth who were poor, non-White, and had disabilities (i.e., special education status) struggled on standardized tests more than others.

5. Placement variables: The association among school quality, placement changes, school transfers, and academic performance is complex. While remaining in the same school has potential benefits for some students, it may not support the educational best interest for many foster youth. Remaining in the same school after entry into foster care may mitigate the number of changes a youth experiences. However, having foster students remain in low-performing schools may impede long-term academic achievement.

**Implications for Further Research:**

- Future research that includes a more refined measure of school quality will help to unravel the association of school quality, residential and school movement, and academic outcomes for foster youth.

- While youth were followed for three years post entry into foster care in this study, more time may be needed to understand how group home placement is associated with long-term educational success.

- Future research that explores details of kin placement or group home placement may add to our understanding of the association between placement and academic performance.

**Results**

Approximately 98% of the same foster youth were included in both the English and math samples, and more than 86% of the matched population also included the same youth. Hispanic foster youth made up more than 50%, with Black foster youth encompassing 25% of all samples. More than 75% of youth participated in the NSLP, and more than 50% attended poor quality schools at baseline. (School quality rating is based upon the California state rank, which is calculated from the Annual Performance Index, or API.) Approximately 25% were designated English Language Learner (ELL) students.
There were a few significant differences between the foster youth and matched foster youth samples. The matched samples had a greater proportion of NSLP students (84% vs. 75%) and a smaller proportion of foster youth with a documented disability (9% vs. 15%). In the English sample, a lower proportion of matched youth were in foster care for the first time (69% vs. 77%). In both English and math, fewer foster youth had reunified with family (42% vs. 53%) and a larger proportion were still in-care (48% vs. 38%) by the end of the study years compared to the matched sample.

There were no significant differences in CST levels at baseline between the initial and matched samples, nor were there any significant differences between the initial and matched samples when considering time variant predictors such as school transfers and transitions, and placement changes and exits.

**Foster Youth and Matched Comparison Sample**

**School Movement**

Two types of school movements were included: school transitions and school transfers. A school transition was defined as a normative change between school segments (e.g., elementary school to middle school). A school transfer was defined as an unscheduled school change in the same school type (e.g., elementary school in one locale to elementary school in another). School attended was based on CST data, which is reported only once a year. Therefore, a student could not experience a school transfer and transition in the same year and the two categories were mutually exclusive in this study.

Overall, approximately 95% of foster youth experienced some type of school change in Year 1 compared to 37–38% of the matched students. In Year 2, 72% of foster youth changed schools compared to 47–49% of the nonfoster youth sample.

Most of the variation in school movement stemmed from school transfers (Figure 1). Significantly higher proportions of foster youth transferred schools compared to the matched students. In Year 1, 75% of foster youth in our samples transferred schools compared to 21–22% of the matched comparison students. In Year 2, 49% of foster youth changed schools compared to 21–22% of the
matched students. There were no significant differences in school transitions in the English sample. In the math sample, a higher proportion of foster youth experienced a school transition in Year 1, and a higher proportion of comparison students experienced a school transition in Year 2. The sum of the two years was very close (i.e., 43% for foster youth and 42% for comparison students), and the differences in yearly totals were most likely due to variation in school grade range.

**CST patterns**
Foster youth were matched very closely to comparison students on a number of important demographic and education variables, including CST level the year prior to entry into out-of-home placement (i.e., baseline year). Figure 2 depicts mean English and math CST levels from baseline to Year 3 for foster youth and comparison students.

The mean baseline CST levels corresponded to midway between the below basic and basic for both English and math. In English, the comparison group increased slightly in level from baseline to Year 3. For foster youth, there was a slight decrease between baseline and Year 1 and an increase in mean CST level between Year 1 and Year 2. Unlike the general upward trend of English CST levels, both groups had a downward trend in math scores. After an increase between baseline and Year 1, the mean math CST level decreased from Year 1 to Year 3 for comparison students. For foster youth, the mean math CST level had a downward trajectory from baseline to Year 3.

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**Figure 2: Foster Youth/Comparison Sample, English and Math Mean CST Levels, Baseline to Year 3**

![Figure 2](image-url)
Table 1 provides a more in-depth descriptive investigation of foster youth and comparison student change in English and math CST levels from baseline to Year 3 by baseline CST level. The four levels of change include no change, intermediate change, increase, and decrease. No change signals that the CST level remained the same from baseline to Year 3. An intermediate change indicates that while the CST level was the same at baseline and Year 3, the student changed levels in either Year 1 or 2. The final two categories denote that in relation to the baseline level, a student either increased (e.g., moved from basic to proficient) or decreased (e.g., moved from proficient to basic) in Year 3.

<table>
<thead>
<tr>
<th>CST Baseline Level</th>
<th>Year 3 Level</th>
<th>CST Baseline Level</th>
<th>Year 3 Level</th>
</tr>
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<tbody>
<tr>
<td>Foster youth</td>
<td></td>
<td>Foster youth</td>
<td></td>
</tr>
<tr>
<td>Far below basic</td>
<td>31*</td>
<td>Far below basic</td>
<td>26*</td>
</tr>
<tr>
<td>Below basic</td>
<td>15</td>
<td>Below basic</td>
<td>17</td>
</tr>
<tr>
<td>Basic</td>
<td>19</td>
<td>Basic</td>
<td>9</td>
</tr>
<tr>
<td>Proficient/Advanced</td>
<td>42*</td>
<td>Proficient/Advanced</td>
<td>25*</td>
</tr>
<tr>
<td></td>
<td>*%</td>
<td></td>
<td>26*</td>
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</tbody>
</table>

Comparison

<table>
<thead>
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<th>Foster youth</th>
<th></th>
<th>Foster youth</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Far below basic</td>
<td>22*</td>
<td>Far below basic</td>
<td>18*</td>
</tr>
<tr>
<td>Below basic</td>
<td>12</td>
<td>Below basic</td>
<td>16</td>
</tr>
<tr>
<td>Basic</td>
<td>22</td>
<td>Basic</td>
<td>9</td>
</tr>
<tr>
<td>Proficient/Advanced</td>
<td>58*</td>
<td>Proficient/Advanced</td>
<td>42*</td>
</tr>
</tbody>
</table>

* Significant difference between foster youth and comparison group.

Note: Percentages added across rows may not total 100% due to rounding.

In English, approximately half of all youth who scored at the far below basic level in the baseline year increased in CST level by Year 3. A significantly higher proportion of foster youth did not change levels compared to the comparison group (31% vs. 22%). Fewer foster youth who started at the below basic level increased (31% vs. 43%) performance levels and a greater number decreased (25% vs. 18%) in relation to comparison students. For foster youth who scored at the basic level at the baseline year, a higher percentage decreased (33% vs. 22%) and a lower proportion achieved proficiency by Year 3 (18% vs. 26%). Lastly, the majority of all students who scored at the proficient level at baseline retained this status (either no change or an intermediate change) by Year 3 (60% of foster youth and 74% of comparison students), although a significantly higher proportion of foster youth decreased to a lower level compared to the matched group (40% vs. 27%).

Note that students in the far below basic category at baseline could not decrease over time and those in the proficient/advanced category at baseline could not increase. Interpretations of proficiency movement should focus on comparisons between foster youth and matched nonfoster youth comparison groups.
Overall, similar proportions of foster and comparison students remained at the same CST level (25% vs. 27%) or had an intermediate change (25% vs. 24%) between baseline and Year 3. Approximately half of all students retained the same CST level from baseline to Year 3. Compared to the matched students, a significantly lower percentage of foster youth changed to a higher CST level (24% vs. 31%) and a significantly higher proportion decreased in level (26% vs. 18%) during the study years.

For youth who scored at the far below basic level at baseline in math, a significantly higher proportion of foster youth consistently remained at this level (26% vs. 18%) and a lower percentage moved to a higher level (48% vs. 56%) compared to the matched and/or comparison group. A lower proportion of foster youth at the below basic level at baseline increased (17% vs. 31%) and a higher percentage decreased to the far below basic level in relation to nonfoster youth (34% vs. 24%). Compared to all the baseline levels, significantly fewer students who scored at the basic level remained consistently at this level over time. In relation to the comparison students, a lower percentage of foster youth increased (11% vs. 19%) and a higher percentage deceased (55% vs. 46%) by Year 3. Of the youth who achieved proficiency at baseline, fewer foster youth remained at the same level (25% vs. 42%) and a higher percent decreased in level (63% vs. 48%) in relation to the comparison sample at Year 3.

While similar patterns are seen in the math sample, overall a greater number of students changed in CST level from baseline to Year 3. The percentage of foster youth and comparison students who remained constant (18% vs. 21%) or experienced an intermediate change (24% vs. 23%) in math CST level was similar. Significantly fewer foster youth experienced an increase in level (16% vs. 28%) and a greater number experienced a decrease in CST level (42% vs. 28%) compared to the matched students.

**CST level trends**

In order to further understand how foster youth fared in relation to closely matched nonfoster youth, more complex statistical analyses were performed. The purpose of these analyses was to examine whether differences in foster youth and comparison youth CST level trends were maintained after controlling for various at-risk characteristics (e.g., race, special education status, school quality). For both the English and math samples, the far below basic category was used as the reference category.

In English, foster youth were 21% less likely to be in the basic group and 34% less likely to be proficient compared to the comparison group.\(^2\) In math, foster youth status was a significant predictor in all three categories. Foster youth were 21% less likely to be in the below basic category, 31% less likely to be in the basic category, and 49% less likely to be proficient in math compared to the matched comparison students.

Foster youth who experienced a school transfer during Year 1 were 18% less likely than those who didn’t experience a transfer to be in the basic group and 22% less likely to be in the proficient group rather than in the far below basic group.

\(^2\) To ease interpretation, logit coefficients found in the Tables Appendix were converted to relative risk estimates as follows: 1-exp (coefficient).
Foster Youth Samples: Education and Child Welfare Characteristics

In order to provide preliminary insight about differences in education and child welfare characteristics among foster youth CST levels, the following section outlines differences in proportions among the CST level groups the year prior to entry into out-of-home placement (i.e., baseline).

Figure 3 depicts significant differences in selected education and child welfare proportions between the far below basic and proficient groups at baseline in English and math. The far below basic group had significantly lower proportions of White/Asian (16%) students compared to the proficient group (35–38%).\(^3\) Higher proportions of Black (30–35%) and Hispanic (49–53%) students scored at the far below basic level and significantly lower proportions were proficient on the CST at baseline.

There were significant differences in education at-risk variables between the far below basic and proficient levels. In the far below basic group, 77–79% participated in the NSLP, 29–32% were designated as ELL, and between 33–36% had a documented disability. In the proficient group, 68–71% participated in the NSLP, 16–22% were ELL, and only 8% had a documented disability.

![Figure 3: Significant Differences in Proportions of Selected Education and Child Welfare Variables between the Far Below Basic and Proficient Groups at Baseline in English and Math](image)

There were some differences in the two subject areas in terms of child welfare placement and exit variables. Larger proportions of foster youth in the proficient group spent the majority of their time in foster care placed in a kin home (40–41%) compared to the far below basic group. Significantly larger proportions of youth placed in foster family homes or placed through Foster Family Agencies (FFA) were found in the far below basic group. Lastly, higher proportions of youth who reunified with family by the end of Year 3 were proficient at baseline (40%) compared to the proportion in the far below basic group (35%).

\(^3\)The study combined White/Asian ethnicity categories as these groups were not considered “at risk.”
Education and child welfare characteristics associated with CST level trends

Using far below basic as the reference group, the study investigated which characteristics were associated with trends in foster youth CST levels. The following section primarily highlights common education and child welfare factors in English and math associated with foster youth CST performance over time.4

There were significant differences among foster youth of different ethnicities. Black and Hispanic foster youth were less likely to be in the higher performance categories compared to White/Asian foster youth and were more likely to be in the lowest performance level, far below basic. For example, compared to White/Asian foster youth, Black students were 63–66% less likely to be at the below basic, 79–80% less likely to be in the basic group, and 78% less likely to be proficient in English or math. Likewise in English, Hispanic youth were 18% less likely to be below basic, 19% less likely to be basic, and 33% less likely to be CST proficient compared to White/Asian foster youth.

Several education variables present at baseline were associated with CST level trends, including participation in NSLP, being designated ELL, or having a disability. Overall, higher level CST groups were primarily characterized by the absence of these education at-risk factors. Compared to youth in the far below basic group, those in the below basic group were more than 22% less likely to participate in the NSLP, 27–37% less likely to be an ELL student, and more than 79% less likely to have a documented disability. Students in the basic group were more than 33% less likely to participate in the NSLP, 38–50% less likely to be ELL, and more than 88% less likely to have a documented disability. Foster youth who achieved proficiency were 43–48% less likely to be in the NSLP, more than 45% less likely to be an ELL student, and 88–94% less likely to have a documented disability.

Significant child welfare predictors included major placement type, exit type, and reentry.

Foster youth placed through an FFA or in a county foster home were less likely than those placed with kin to be in the higher performing groups (below basic, basic, and proficient) and more likely to be in the far below basic category on the English and math CSTs. Specifically, foster youth placed through an FFA were 19–23% less likely than those placed with kin to be in the below basic group, 28–29% less likely to be in the basic group, and 34–37% less likely to be a member of the proficient group. Foster youth placed in a county foster home were 24% less likely than those placed with kin to be in the below basic group, 31–33% less likely to be in the basic group, and 33–40% less likely to be in the proficient group. Meanwhile, youth in a group home were more than 28% more likely to be in higher level CST groups compared to those placed with kin.

The way a foster youth exited the system was also related to educational outcomes, but differed by subject. For example, reunified youth were more than 31% more likely to be below basic, basic, or proficient in English than youth who did not exit foster care by Year 3, and therefore, less likely to be in the far below basic category. In math however, students who reunified were approximately 20% less likely to be in the basic or proficient groups than those who had exited care.

Reentry into foster care was related to lower levels of achievement. Foster youth who reentered foster care in Years 1 or 2 were 19% less likely to be in the below basic group and 25% less likely to be in the basic or proficient group and more likely to be far below basic on the English CST (and therefore more likely to be

4 For more information on characteristic definition or timing of variables, please see the Technical Appendix.
in the far below basic category) than foster youth who did not reenter. Further, youth who reentered were 28% less likely to be at the basic level and 35% less likely to be proficient in math than youth who did not reenter.

One variable that was not a consistent significant predictor of CST level trends was school quality. Attempts to collapse the variable into a dichotomous measure (i.e., poor quality versus higher quality) were thwarted due to collinearity. In a separate investigation, school quality with four levels of ranking was used as the outcome variable. Several trends emerged, though not all results achieved significance. In general, youth who had higher CST levels at baseline were more likely to be in higher quality schools. For example, foster youth who were proficient in English at baseline rather than far below basic were 19% more likely to be in an excellent quality school compared to a poor quality school. In addition, students who transferred schools in Year 1 were more likely to be in higher quality schools. In English, youth who transferred schools in Year 1 (compared to those who didn’t) were 24–26% more likely to be in higher quality schools.

Finally, the time variant predictors (e.g., school transfer, placement change) in Years 1 and 2 produced few uniform trends. Analyses were rerun with the variable change (the sum of the five time variables by year) substituted for the actual variables. Results indicated that a one unit increase in the variable change was associated with a more than 10–15% decrease in being in the higher level CST groups compared to the far below basic group. In other words, students in higher CST groups were significantly less likely to experience multiple residential and school changes in the same year.

**Discussion**

Foster youth were matched in the analyses very closely to comparison students by a number of key demographic and education variables, including CST level the year prior to entry into out-of-home placement. Results indicated that compared to their peers, foster youth were less likely to perform at higher CST levels over time. Part of the variance in levels was associated with foster youth school transfers. Three out of four (75%) foster youth experienced a school transfer in the year they entered foster care compared to 21% of the comparison group. For foster youth, changing schools was a significant predictor of CST levels over time. Findings were consistent with past research, which noted the high level of school changes at entry to foster care and the negative association with academic performance.

While there were differences in CST level trends between foster youth and the comparison group, the proportion of students in this study who achieved proficiency on the English or math CST at baseline was significantly lower than that of the general student population. In English, 21% of foster youth achieved proficiency compared to approximately 40% of California students. In math, while 46% of the general population performed at the proficient level, only 25% of the foster students in the study achieved this goal.

While both education and child welfare characteristics were associated with performance, education risks present prior to entry into foster care were more reliable predictors of CST level trends. Past research indicated that foster youth are more likely to be poor, non-White, and have disabilities (i.e., special

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5 The 10 initial ranks were collapsed into four levels for matching purposes and analyses as follows: schools receiving a rank between one and three were defined as poor; schools with a rank of four or five were defined as average; those between six and eight were defined as good; and schools with a rank of nine or 10 were defined as excellent.

6 Based on data from CDE for students in the same grade and years as foster youth at baseline.
education status). Much like other at-risk students, foster youth who are non-White/Asian, participate in the NSLP, are designated as ELL, or have a documented disability are significantly less likely to perform well on standardized tests. Low-performing CST level groups are consistently characterized by an increase in educational risk, which is consistent with past research regarding at-risk populations. Although foster youth represent a small percentage of the student population, educationally they become a concentrated underachieving group. Findings underscore the need to identify subgroups of vulnerable youth with the greatest need for additional educational support.

In particular, foster youth with a documented disability (i.e., special education) are at increased risk for poor performance over time. Similar to other at-risk populations, foster youth are disproportionately classified with a documented disability. In California, approximately 9% of students in grades two through seven receive special education services compared to 15% of foster youth in this study. In general, students with a documented disability tend to fare poorly on both the ELA and math portions of the CST. In 2011, 32–39% achieved proficiency or above on the English and math tests compared to 58–64% of students without a documented disability. Of all the groups identified as at-risk, students with a documented disability appear to struggle the most with standardized academic tests.

While in past research the authors found that a decrease in academic performance was associated with foster youth who attended poor quality schools, the lack of consistent findings in the current research may be due to the categorical division of school rank used. Instead of a dichotomous variable with poor and non-poor quality assessed, four categories—including poor, average, good, and excellent—were included in the models due to extreme collinearity. Much like previous research, the majority of foster youth in this study attended poor quality schools at baseline. In a separate investigation with the four school quality categories as the nominal outcome, findings indicated that school quality was associated with CST level at baseline and school movement. These findings suggested that youth who attend a poor quality school are less likely to perform well on the CST at baseline or transfer schools in the same year they enter foster care.

The association among school quality, placement changes, school transfers, and academic performance is complex. While remaining in the same school appears to have potential benefits for some students, it may not support the educational best interest for many foster youth. Remaining in the same school after entry into foster care may mitigate the number of changes a youth experiences. However, having foster students remain in low performing schools may impede long-term academic achievement. Future research that includes a more refined measure of school quality will help to unravel the association of school quality, residential and school movement, and academic outcomes for foster youth.

This research found improved performance in English and math for youth who spent the majority of time placed in kin homes compared to placement in foster family homes or FFAs. This finding echoes previous research that found that foster youth placed with kin had higher third grade reading scores compared to other placement types. However, these findings may reflect a placement selection bias. Grogan-Kaylor (2000) found that youth placed with kin were more likely to be non-White and removed due to neglect, and less likely to have health problems or come from a low socioeconomic status household (i.e., on welfare), indicating that youth placed with kin have fewer education risks prior to entry into out-of-home placement.
Findings suggested improved performance in English and math for youth who spend the majority of time in a group home compared to kin homes. Yet in previous research focused on foster youth high school and college outcomes, the authors found that youth who spent the majority of time in group home placements had worse outcomes than youth placed with kin. While youth were followed for three years post entry into foster care, more time may be needed to understand how group home placement is associated with long-term educational success. Future research that follows youth over longer periods of time and explores details of kin placement or group home placement may be needed to understand the association between group home placement and academic performance.

Students still in foster care at the end of the study years were more likely than students who had reunified to have higher levels of proficiency on the English CST, but lower levels of proficiency in math. This discrepancy was likely due to a sample bias. While previous research that has investigated academic performance by exit type outside of emancipation is scarce, the few studies that pertained to this age group indicated that youth who are Black, are from low socioeconomic families, or have physical disabilities are less likely to exit via reunification. In this study, the degree of overlap between the English and math samples was very high (98–99%). Therefore, these past findings were most likely due to a sample bias, wherein the youth who reunified were more competent in English, rather than demographic characteristics found in other research.

Lastly, findings indicated that the number of school and residential changes a foster youth experiences in the year they enter foster care is associated with academic performance. Compared to youth in the far below basic level, an increase in the number of changes in Year 1 was associated with a decreased likelihood of being in a higher level CST group. Akin to previous research, findings suggested that the number of residential and school changes a student faces may alter successful adaptation and signal a shift in academic performance trajectories.

In conclusion, findings indicated that foster youth are less likely to have higher levels of proficiency on the CST compared to nonfoster youth, and foster youth are less likely to increase their CST performance over time compared to nonfoster youth. For foster youth, education at-risk factors present prior to entry into foster care placement were more reliable predictors of academic performance over time than the majority of child welfare case characteristics. Findings also indicated that school and residential changes are associated with lower academic performance. These findings can inform current policy and practice and identify avenues for further research, specifically regarding school quality and group home placements and their relationship to student outcomes.


xii. CDE DataQuest website, http://dq.cde.ca.gov/dataquest/


xix. Frerer, K., & Sosenko Davis, L., op. cit.


Technical Appendix

Overview

The Stuart Foundation brought together IEBC, the managing agency of the Cal-PASS data system, and the CSSR at the University of California, Berkeley, to conduct a pilot study of the education outcomes of youth who had been placed in foster care between 1998 and 2008 in four California counties. In 2011, the Stuart Foundation published First Look, a summary report of the pilot effort. The project set a precedent for Federal Education Rights and Privacy Act (FERPA) compliant data sharing between education and social services agencies.

Since the successful pilot, the project partners moved forward to study foster youth across California, focusing on two areas of interest: 1) high school and college outcomes and 2) how various education and child welfare characteristics influence CST levels over time. The purpose of these investigations was to understand how characteristics of students, their experiences, and their academic performance influence education achievement.

This “Technical Appendix” provides detailed notes about how the analyses were completed for the statewide effort. First, this appendix describes the data sources, the data-linking process, and the comparison group selection. Then the foster youth sampling plan is presented, including details about the weighting process used to represent the state foster youth population with the sample data. The variables in the analyses are defined, and the data preparation tasks are outlined. Common acronyms used in the research summaries and data tables presenting findings complete the appendix information.

Data

This study employed two primary data sources to assess education outcomes for foster youth in California: administrative child welfare records from CWS/CMS and education records from Cal-PASS. Additional data about the schools attended are from the CDE. The sources of data, sample and variable creation, and analyses methods are described below.

Data Sources

Child Welfare Services Case Management System

CWS/CMS is a centralized, statewide child welfare data system in California. Through an Interagency Agreement with CDSS, the CSSR/Children Services Archive at the University of California, Berkeley, receives quarterly extracts of CWS/CMS data.
California Partnership for Achieving Student Success

Cal-PASS is a statewide initiative that collects, analyzes, and shares student data in order to track student performance in more than 56 counties. During the study period, the consortium housed up to 13 years of education data, including data from both elementary/secondary school districts and public postsecondary institutions (California Community Colleges, California State Universities, and the University of California system).

Cal-PASS is a voluntary data-sharing initiative. A majority of Cal-PASS members have joined the initiative within the last five years; therefore, data from the last seven years (2004–05 to 2010–11) are the most robust in the Cal-PASS system. When a district joins Cal-PASS, it is asked to transfer the most recent five years of data to Cal-PASS, although institutions may decide not to transfer all five years of retrospective data or may transfer selected files (either a subset of files or years of data) to the system. Therefore, the education data available for this project varied by content, district, and school year.

California Department of Education

Data from the CDE API provides state rank data as a proxy measure for school quality.

Description of Linking Process/Foster Youth Linked

Youth aged 6 and older with a documented foster placement episode between January 1, 1998, and December 31, 2010, in CWS/CMS were identified from data extracted from the first quarter of 2011 for inclusion in the study. The extract was completed before the January 2012 revision of FERPA. At the time the data were extracted, FERPA specifically forbid sharing information between state agencies that could identify individual students. Therefore, the data merge and the final data set maintained the anonymity of the students.

A unique, nonidentifiable project identification number for each foster youth was created. Sensitive CWS/CMS data, which included first and last names, date of birth, gender, and social security numbers, underwent an encryption process that created a variable that appeared as a string of numbers and letters. Data were encrypted prior to any linkage of records from CWS/CMS and Cal-PASS. The record linkage process used the encrypted data elements in a computer algorithm that evaluated the probability of each linkage according to statistical network properties. A probabilistic method was chosen over exact matching because it had the advantage of linking records in situations where a person’s name had changed, a data element was missing, or typographical error had occurred. Upon conclusion of the record linkage process, names and social security numbers were permanently deleted from the data set. Only the unique, nonidentifiable project identification numbers that could not be linked back to either data system remained.

Of the 449,789 unique foster youth identified in CWS/CMS, approximately 242,000 youth were linked to Cal-PASS education data. Table A1 presents general match results. The table includes counts of unique foster youth matched to various Cal-PASS educational files by school level (e.g., K–12, community college).
The Standardized Testing and Reporting (STAR) data file included important educational demographic data such as whether students were designated ELL or participated in the NSLP. Therefore, Table A1 includes the number of unique foster youth with STAR data by educational file. For example, of the 449,789 unique foster youth, 120,815 had course data in grades eight to 12; of those foster youth, 96,821 had STAR educational demographic data.

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
<th>Count with STAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of unique foster youth identified from 1998–2010 in CWS/CMS</td>
<td>449,789</td>
<td>146,645</td>
</tr>
<tr>
<td>K–12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Standards Test (CST): Grades two to 11</td>
<td>142,653</td>
<td>142,653</td>
</tr>
<tr>
<td>Course: Grades eight to 12</td>
<td>120,815</td>
<td>96,821</td>
</tr>
<tr>
<td>High School Exit Exam (CAHSEE): Grades 10 to 12</td>
<td>43,388</td>
<td>43,387</td>
</tr>
<tr>
<td>Award: Grade 12</td>
<td>27,790</td>
<td>20,620</td>
</tr>
<tr>
<td>Community College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>63,336</td>
<td>22,717</td>
</tr>
<tr>
<td>Award</td>
<td>1,985</td>
<td>365</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>3,138</td>
<td>1,244</td>
</tr>
<tr>
<td>Award</td>
<td>520</td>
<td>53</td>
</tr>
</tbody>
</table>

**California Standards Test Levels Over Time**

The purpose of this investigation was to understand how various education and child welfare characteristics influenced CST levels over time. In addition to foster youth, this study included comparisons to similar nonfoster youth.

**Samples**

**Foster youth samples**

This analysis followed cohorts of foster youth in grades two to seven during school years 2003–04 to 2006–07 for three years post-entry (i.e., baseline year). Only youth with STAR demographic data were identified for inclusion in these analyses. In addition, foster youth must have had a minimum of two years of test scores on the CST, with one of those years at baseline. Two separate samples were extracted for ELA and math. In addition to the two primary samples, foster youth were matched to nonfoster youth students closely at the baseline year.

A large proportion of foster youth overlapped the English and math samples (Table A2).
Foster youth entry and baseline years were assigned based on foster care placement end and start dates in relation to grade level and school year. As schools varied in terms of academic calendar (e.g., when the school year begins, traditional vs. year-round) a guideline for the assignment of foster care entry and baseline years was adopted (Table A3). For this study, the academic year began on September 1 and ended on August 31. For example, if a youth entered foster care between September 1, 2003, and August 31, 2004, the school entry year (Year 1) of 2003/04 was assigned with 2002/03 as the baseline year.

Foster youth entry and baseline years were assigned based on foster care placement end and start dates in relation to grade level and school year. As schools varied in terms of academic calendar (e.g., when the school year begins, traditional vs. year-round) a guideline for the assignment of foster care entry and baseline years was adopted (Table A3). For this study, the academic year began on September 1 and ended on August 31. For example, if a youth entered foster care between September 1, 2003, and August 31, 2004, the school entry year (Year 1) of 2003/04 was assigned with 2002/03 as the baseline year.

Comparison group
In addition to foster youth, education data were extracted for a group of comparison students not identified as having a foster placement episode but who were similar on several demographic and key characteristics. The foster youth samples were matched to comparison students by: grade level, school year, gender, ethnicity, ELL status, NSLP status, primary disability, district or school, state rank, and baseline CST level. In the math sample, foster youth and nonfoster youth were additionally matched by math course level for older youth.

Weighting schema
A weighting formula was utilized to ensure that the samples of students with education data represented the appropriate statewide population. The samples were weighted by gender and ethnicity.
Data Element Definitions

The following section provides detail as to how the study variables were defined and operationalized.

**Dependent variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Standards Test (CST) level</td>
<td>The CST, administered every year for students in grades two to 11, is used to determine how well students have learned specific grade-relevant information. Based on the number of questions answered correctly, students are assigned a scaled score that ranges from 150 to 600. While the scaled scores on the CSTs look similar year to year, they are based on composition of total students who complete the test at each grade level for the testing year and are not vertically scaled (i.e., cannot be used to show growth). At each grade level, topic-specific scaled scores are converted to an aptitude level that includes far below basic, below basic, basic, proficient, and advanced. For analyses, proficient and advanced levels were combined for a total of four levels: far below basic, below basic, basic, and proficient/advanced.</td>
</tr>
</tbody>
</table>

**Independent variables**

**Demographic/Achievement Gap Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>Based on baseline year, grade levels ranged from second to seventh. For multivariate analyses, the levels were grouped as follows: second–third, fourth–fifth, and sixth–seventh.</td>
</tr>
<tr>
<td>Academic year</td>
<td>Academic year pertained to the baseline year for a given grade level cohort. Years ranged from 2002–03 to 2006–07.</td>
</tr>
<tr>
<td>Gender</td>
<td>For foster youth, gender (male or female) was based on data from the most recent episode in CWS/CMS. Comparison student gender was from the Cal-PASS STAR data table.</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Ethnicity was based on the student’s most recent ethnic category. Foster youth ethnicity was based on data from the most recent episode in CWS/CMS. Comparison student ethnicity was from the Cal-PASS STAR data table. For all students, multiple ethnicity types were collapsed to form four primary categories: 1) White/Asian; 2) Black; 3) Hispanic; 4) Other. (Note: Due to very small numbers of Native American students, this group was included in “Other&quot;).</td>
</tr>
<tr>
<td>National School Lunch Program (NSLP)</td>
<td>As a proxy for socioeconomic status, participation in the NSLP (i.e., receiving free or reduced-price lunch) was included. Eligibility for the program is based on the official federal poverty guidelines. To qualify, family income must be at or below 185% of the current poverty guideline. Participation is based on baseline year (i.e., for the second grade cohort, NSLP status in second grade was used).</td>
</tr>
<tr>
<td>Variable</td>
<td>Detail</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>English Language Learner (ELL)</td>
<td>ELL status is established by the school. When students are enrolled in school, parents or guardians fill out a Home Language Survey indicating whether English is the primary language. If another language is indicated, students complete the California English Language Development Test (CELDT). The test is administered annually for students classified as ELLs. Based on the above information, students were classified in one of four categories. These categories were condensed as follows: students with English as the primary language included English only and initially fluent English proficient. These students were coded “0.” English learner and reclassified fluent English proficient were coded “1.” Participation was based on baseline year (i.e., for the second grade cohort, ELL status in second grade was used).</td>
</tr>
<tr>
<td>Disability</td>
<td>The designation of a primary disability is based on a professional assessment and a student-specific Individualized Education Plan (IEP). Students are reassessed at least every three years to determine whether special education services continue to be needed. In this study, the various categories of primary disability (e.g., speech language impairment, specific learning disability, emotional disturbance) were collapsed into a “yes.” Participation was based on baseline year (i.e., for the second grade cohort, disability status in second grade was used).</td>
</tr>
<tr>
<td>School quality</td>
<td>This study utilized a condensed scale of the California Statewide Rank (or state rank) as a proxy for school quality. State rank is based on the API, which measures school performance. API is calculated by converting student performance on statewide assessment tests into points on the API scale and then averaged by school. All schools that receive an API are ranked in deciles by school type based on grade level of instruction, with a rank of 10 being the highest and one the lowest (i.e., poor quality school). State rank is school-year specific (<a href="http://www.cde.ca.gov/ta/ac/ap/documents/infoguide09.pdf">http://www.cde.ca.gov/ta/ac/ap/documents/infoguide09.pdf</a>). The 10 initial ranks were collapsed into four levels for matching purposes and analyses as follows: schools receiving a rank between one and three were defined as poor, schools with a rank of four or five were defined as average, those between six and eight were defined as good, and schools with a rank of nine or 10 were defined as excellent.</td>
</tr>
</tbody>
</table>
## Child Welfare Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster youth</td>
<td>In analyses where foster youth were matched closely to nonfoster youth, an indicator variable was created for foster youth status.</td>
</tr>
</tbody>
</table>
| Removal reason        | The primary removal reason was based on the severity of maltreatment. The hierarchy was as follows: sexual abuse, physical abuse, neglect, and other. For example, if reasons of neglect and sexual abuse were indicated, the primary removal reason would be coded as sexual abuse.  
                             | The categories of removal reason were based on the most recent foster care placement episode and were defined as follows: 1) neglect (e.g., severe caretaker incapacity); 2) physical abuse; 3) sexual abuse; 4) other (e.g., emotional abuse). |
| Spells                | Each time a youth entered a specific foster care placement episode, a “spell” count was created. The spell continued until an exit from foster care placement was recorded. We differentiated between first spell and two or more spells. |
| Major placement type  | Major placement type was based on time spent during the study years. Length of stay in days was calculated for each placement type and summed across three years. The type of placement in which a foster youth spent the most number of days was deemed the major placement type.     
                             | Categories included: 1) kin; 2) FFA; 3) foster family home; 4) group or residential placements; 5) other (e.g., medical, detention center).                                                                 |
| Exit type             | Exit type was based on how youth exited care during the study years. Categories included: 1) no exit reason (still in care by end of Year 3); 2) reunification; 3) other (e.g., adoption, legal guardianship).                                                                   |
### Time Variant Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>School normative transition Year 1/Year 2</td>
<td>Normative school transition was based on type of school attended. School type was obtained by linking a unique school identification number present in the data set to CDE data. The Year 1 variable indicated a school transition between the baseline and Year 1 school years. Year 2 included a change from Year 1 to Year 2. For example, if type of school at baseline was elementary and Year 1 type was middle school, then a normative school transition was indicated as “1” for Year 1. If there was no change in school type from baseline to Year 1, a “0” was coded.</td>
</tr>
<tr>
<td>School non-normative transfer Year 1/Year 2</td>
<td>Non-normative school transfer was based on a unique school identifier and school type. School type was obtained by linking a unique school identification number present in the data set to CDE data. As school data are reported primarily once a year, it was not possible to identify the number of school transfers in a given year. The Year 1 variable indicated a school transfer between the baseline and Year 1 school years. Year 2 included a change from Year 1 to Year 2. For example, if a student attended an elementary school at baseline and at Year 1 attended a different elementary school, a non-normative school transfer was indicated as “1” for Year 1. If there was no change in school name or type, a “0” was recorded.</td>
</tr>
<tr>
<td>Placement change Year 1/Year 2</td>
<td>Placement change was based on out-of-home placement start and end dates. Variables included changes in Year 1 and Year 2. As all foster youth entered an out-of-home placement in Year 1, the Year 1 variable only included additional changes in placement. Categories included: 1) no changes; 2) one or more changes.</td>
</tr>
<tr>
<td>Exit from foster care Year 1/Year 2</td>
<td>Foster care exits were based on placement episode end dates. For youth who exited foster care during Year 1 or Year 2, a “1” was recorded.</td>
</tr>
<tr>
<td>Reentry Year 1/Year 2</td>
<td>Based on placement episode end dates and subsequent start dates, reentry encompassed youth who exited and then reentered foster care in Year 1 or Year 2. Reentry into foster care placement, initially conceptualized as a time variant predictor, was collapsed due to low cell size.</td>
</tr>
<tr>
<td>Change Year 1/Year 2</td>
<td>Change was the sum of school transfer, school transition, placement change, exit from foster care, and reentry.</td>
</tr>
</tbody>
</table>
Analyses

Analyses included sample means and proportions for all education, demographic, and child welfare case characteristics. Differences in the means and proportions were calculated among groups. In addition, longitudinal multinomial regression models were employed to examine whether differences in education outcomes among groups were maintained after controlling for various characteristics.

Imputation

While each youth had baseline and one additional year of CST data, there were instances of missing values for Years 1 to 3. In order to include as many youth as possible, missing values were multiply imputed using PROC MI in SAS, version 9.2, as outlined by Yuan.\textsuperscript{A1} As each youth had an initial baseline CST score, a monotone missing data pattern was assumed. Missing values were replaced with a set of possible values in five generated data sets. The same process was used to impute school rank when it was missing.

The five imputed data sets were analyzed in STATA, version 9.1. Two separate methods of analyses were investigated using the English foster youth sample. In the first method, each of the imputed data sets was analyzed separately and the estimates combined to generate a single set of estimates.\textsuperscript{A2} For the second method, a mean was calculated from the imputed data sets and analyzed. As there were no significant differences in the two approaches, multivariate analyses included the second method.

Multivariate analyses

All multivariate analyses were performed with STATA, version 9.1. CST levels, while ordinal in nature, were treated as nominal due to violation of the proportional odds assumption. This stance assumed that the relationship between each group of outcomes was the same and provided a single parameter to predict the probability of the response variable being in a higher compared to lower category as each explanatory variable changed.\textsuperscript{A3} For example, the independent variable coefficients (e.g., special education status) that described the relationship between CST level far below basic and below basic were the same as basic and proficient. The proportional odds assumption was tested and the p-value was significant. Therefore, combining the parameters for the explanatory variables was rejected and CST levels were treated as nominal.

Multivariate analysis of variance (MANOVA) for all samples was utilized to gain preliminary insight as to differences in education and child welfare characteristics among CST levels. These analyses investigated differences in proportions among the CST level groups the year prior to entry into out-of-home placement (i.e., baseline).

GLLAMM, a generalized linear mixed model program designed for multilevel data,\textsuperscript{A4} was utilized to investigate covariates and their relationship to CST levels over time. Level 1 included repeated measures of CST levels with Level 2 reflecting unique students. Analyses paired each response category with an arbitrary baseline category and investigated CST levels over time after controlling for covariates. In our analysis, the response had four levels or states ($j = 4$): Far below basic ($j = 1$), below basic ($j = 2$), basic ($j = 3$), and proficient/advanced ($j = 4$). Far below basic was set as the reference category so that $\theta_1 = 0$. 

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In models, an individual-specific random effect was introduced (also known as random intercept). The regression coefficients were assumed to be constant for all individuals $i$ and different waves $t$ in CST level $j$. However, each individual $i$ was then considered as a cluster of observations over time ($t = B, 1, 2, 3$) and a random intercept was introduced to account for any potential unobserved or false heterogeneity among individuals. In this model, the overall level of the response was allowed to vary over clusters after controlling for covariates.

Lastly, in the foster youth and comparison samples, a random coefficient or slope model was introduced to investigate differences in CST level trends by foster youth status. These analyses assumed that each student had an intercept and slope that characterized a subject-specific trajectory. The intent was to investigate differences in CST level trends by foster care status.

**Limitations**

As with any research endeavor, this study had limitations. Data for youth with a documented foster care placement were extracted from the CWS/CMS data system. While we can say with some certainty that comparison students were not in foster care in California, we do not know if these students were the subject of a child maltreatment investigation.

As the two primary data sets involved in the project were administrative, the type of information included in the analyses was limited. Neither data set held information about mental or physical health or family background characteristics. Additionally, no information about attendance, suspension, or drop-out status was available. Due to stipulations in FERPA, the data set was anonymous. This limited the ability to update information, explore outcomes in a qualitative manner, or link to other data sets.

For the analyses, only students with demographic and education data were included. The education data were limited to districts in the Cal-PASS data system. This limited the foster youth, comparison, and general population samples to students who attended schools with available data. While the foster youth and comparison samples were weighted to mimic the specific state population, the challenge of selection bias remained. Lastly, while we included general population estimates for the purpose of comparison, this population sample was not weighted or used in multivariate analyses; therefore, results should be interpreted with caution.

**Acronyms and Definitions**

**API**: Academic Performance Index—Calculated by CDE, the API is a single number—ranging from a low of 200 to a high of 1,000—that reflects a school’s or a subgroup’s performance level based on the results of statewide testing. The API is calculated by converting a student’s performance on statewide assessments across multiple content areas into points on the API scale. These points are then averaged across all students and all tests. Its purpose is to measure the academic performance and growth of schools. [http://www.cde.ca.gov/ta/ac/ap/](http://www.cde.ca.gov/ta/ac/ap/)
**Cal-PASS:** California Partnership for Achieving Student Success—Cal-PASS is a voluntary consortium consisting of a collaboration of more than 8,000 K–16 institutions throughout California. Educational institutions voluntarily agree to upload data into the Cal-PASS data bank and designate the terms under which the data can be shared. [www.cal-pass.org](http://www.cal-pass.org). Through the period of this study, Cal-PASS was administered and managed by the Institute for Evidence-Based Change (IEBC).

**CDE:** California Department of Education—The CDE oversees the state’s K–12 public school system and is responsible for the education of more than 7 million children and young adults in more than 9,000 schools. The CDE is responsible for enforcing education law and regulations. [www.cde.ca.gov/index.asp](http://www.cde.ca.gov/index.asp)

**CDSS:** California Department of Social Services—The CDSS is responsible for the oversight and administration of programs serving California’s most vulnerable residents, including the Children and Family Services Division (i.e., child welfare services, child abuse prevention, foster care, and adoptions). [www.dss.cahwnet.gov/odssweb/default.htm](http://www.dss.cahwnet.gov/odssweb/default.htm)

**CELDT:** California English Language Development Test—The CELDT is a required state test for English language proficiency that is given to students whose primary language is other than English. Students (in kindergarten through grade 12) whose primary language is not English, based on the Home Language Survey (HLS), take the CELDT within 30 calendar days after they are enrolled in a California public school for the first time to determine if they are English learners. [www.cde.ca.gov/ta/tg/el/](http://www.cde.ca.gov/ta/tg/el/)

**CSSR:** Center for Social Services Research—Located at the University of California, Berkeley, School of Social Welfare, the CSSR conducts research, policy analysis and program planning, and evaluation. [cssr.berkeley.edu](http://cssr.berkeley.edu/)

**CST:** California Standards Test—Developed by the CDE, the CST(s) measure students’ progress toward achieving state age- and grade-specific content standards. Students in grades two through 11 take a variety of subject-specific tests, including English language arts and math. [www.startest.org/cst.html](http://www.startest.org/cst.html)

**CWS/CMS:** Child Welfare Services Case Management System—CWS/CMS is the California State administrative data system for the Child Welfare System of services. [www.hwcws.cahwnet.gov](http://www.hwcws.cahwnet.gov)

**ELL:** English Language Learner—An ELL is a K–12 student who, based on objective assessment, has not developed listening, speaking, reading, and writing proficiencies in English sufficient for participation in the regular school program. See CELDT.

**FERPA:** Federal Educational Rights and Privacy Act—FERPA (20 U.S.C. § 1232g; 34 CFR Part 99) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under the U.S. Department of Education. [www2.ed.gov/policy/gen/guid/ferpa/index.html](http://www2.ed.gov/policy/gen/guid/ferpa/index.html)

**IEBC:** Institute for Evidence-Based Change—IEBC is a national nonprofit organization committed to effective data use and collaboration among education’s stakeholders. Created by the founders of Cal-PASS, IEBC helps education stakeholders use data to make informed decisions, improve practice, and increase student success. [www.iebcnow.org](http://www.iebcnow.org)
**IEP:** Individualized Education Plan—In the United States, the Individuals with Disabilities Education Act (IDEA) requires public schools to develop an IEP for every student with a disability who is found to meet the federal and state requirements for special education. The IEP describes specifics as to how the educational program designed will meet that child’s unique needs.

**NSLP:** National School Lunch Program—The NSLP, established in 1946, is a federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. It provides low-cost or free lunches to children each school day. http://www.fns.usda.gov/cnd/Lunch/

**STAR:** Standardized Testing and Reporting—STAR refers to California standardized tests, which include the current CST and previous tests such as the CAT/6. http://star.cde.ca.gov/

**Technical Appendix Endnotes**


### Table A4: Foster Youth and Comparison Student Demographic, Child Welfare, and Academic Variables by Number, Percent, and Significant Difference

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foster Youth</td>
<td>Comparison</td>
</tr>
<tr>
<td><strong>Sample Size</strong></td>
<td>4,005</td>
<td>3,936</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>627 16</td>
<td>627 16</td>
</tr>
<tr>
<td>3</td>
<td>696 17</td>
<td>683 17</td>
</tr>
<tr>
<td>4</td>
<td>665 17</td>
<td>650 17</td>
</tr>
<tr>
<td>5</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>588 15</td>
<td>574 15</td>
</tr>
<tr>
<td><strong>Academic year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002–03</td>
<td>40 1 1</td>
<td>47 1 1</td>
</tr>
<tr>
<td>2003–04</td>
<td>919 23</td>
<td>908 23</td>
</tr>
<tr>
<td>2004–05</td>
<td>1204 30</td>
<td>1166 30</td>
</tr>
<tr>
<td>2005–06</td>
<td>1317 33</td>
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*Significant difference between foster youth and comparison group.

Note: Percentages may not total 100% due to rounding.
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#### CST Baseline Level

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*Students who changed levels in Years 1 or 2 but were at the same level in Year 3 are represented in this column. If there were no changes in level between baseline and Year 3, students were recorded in the appropriate column. For example, if students were at the basic level at baseline and in Years 1–3, they are represented in the basic column.

**Note:** Percentages may not total 100% due to rounding.
Table A6: Demographic, Child Welfare, and Academic Variables by Number, Percent, and Significant Difference Between Foster Youth Samples

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*Significant difference between foster youth samples.
Note: Percentages may not total 100% due to rounding.
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*Significant difference at .05 or below.
Table A8: Multivariate Analysis of Variance (MANOVA), Math Foster Youth/Comparison Sample—Difference in Independent Variable Proportions among CST Levels at Baseline

| CST Baseline Level | Far Below Basic | Below Basic | Basic | Proficient | n  | %  | n  | %  | n  | %  | n  | %  | F-stat |
|--------------------|-----------------|-------------|-------|------------|----|----|----|----|----|----|----|-------|
| N                  | 1,124           | 2,690       | 2,090 | 1,968      |    |    |    |    |    |    |    |    |       |
| Foster youth       | Yes             | 562         | 50    | 1345       | 50 | 1045 | 50 | 984 | 50 | .00 |       |
| Grade              | 2–3             | 260         | 23    | 852        | 32 | 654  | 31 | 857  | 44 | 51.74* |       |
|                    | 4–5             | 410         | 36    | 840        | 31 | 732  | 35 | 677  | 34 | 4.43* |       |
|                    | 6–7             | 454         | 40    | 988        | 37 | 704  | 34 | 434  | 22 | 52.87* |       |
| Gender             | Female          | 540         | 48    | 1401       | 52 | 1132 | 54 | 1039 | 53 | 3.77* |       |
| Ethnicity          | White/Asian     | 100         | 9     | 378        | 14 | 516  | 25 | 692  | 35 | 149.90* |       |
|                    | Black           | 406         | 36    | 804        | 30 | 460  | 22 | 326  | 17 | 65.13* |       |
|                    | Hispanic        | 614         | 55    | 1476       | 55 | 1094 | 52 | 938  | 48 | 8.86* |       |
| NSLP               | Yes             | 1006        | 90    | 2336       | 87 | 1714 | 82 | 1542 | 78 | 31.44* |       |
| ELL                | Yes             | 382         | 34    | 742        | 28 | 542  | 26 | 414  | 21 | 21.69* |       |
| Disability         | Yes             | 304         | 27    | 277        | 10 | 78   | 4  | 43   | 2  | 232.14* |       |
| School quality     | Poor            | 612         | 54    | 1409       | 52 | 1088 | 52 | 999  | 51 | 1.32 |       |
|                    | Average         | 258         | 23    | 563        | 21 | 418  | 20 | 422  | 21 | 2.46 |       |
|                    | Good            | 198         | 18    | 551        | 20 | 488  | 23 | 444  | 23 | 1.34 |       |
|                    | Excellent       | 54          | 5     | 166        | 6  | 94   | 4  | 102  | 5  | 5.75* |       |
| Spells             | More than one   | 406         | 36    | 866        | 32 | 652  | 31 | 508  | 26 | 13.53* |       |
| Transfer           | Year 1          | 546         | 49    | 1306       | 49 | 1010 | 48 | 941  | 48 | .10 |       |
|                    | Year 2          | 396         | 35    | 967        | 36 | 715  | 34 | 714  | 36 | .77 |       |
| Transition         | Year 1          | 252         | 22    | 462        | 17 | 356  | 17 | 309  | 16 | 7.94* |       |
|                    | Year 2          | 362         | 32    | 758        | 28 | 583  | 28 | 460  | 23 | 10.06* |       |

*Significant difference at .05 or below.
Table A9: Multivariate Analysis of Variance (MANOVA), English Sample—Difference in Independent Variable Proportions among CST Levels at Baseline

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Log likelihood: -38087.68 (95% CI: -38441.84)
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