Washington State Institute for Public Policy
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An Evaluation of Resource and Assessment Centers (RAC): *Outcome Evaluation*

The resource and assessment center (RAC) program delivers short-term emergency and crisis care to youth entering the foster care system in Washington. A RAC is intended to act as a "soft landing place" for initial foster care placement after a youth is removed from the home. RACs are staffed primarily with volunteers and must operate in residential locations. Between July 2015 and March 2020, two locations served just over 1,100 youth.

The 2019 Washington State Legislature directed the Washington State Institute for Public Policy (WSIPP) to evaluate "the outcomes of RAC facilities licensed and contracted with the Department of Children, Youth, and Families (DCYF)."[1] In this report, we describe effects on child welfare and foster parent outcomes including placement type, number of placements, length of stay in foster care, placement with siblings, and caregiver retention.

This report is organized as follows: Section I provides background on resource and assessment centers and foster homes in Washington State. Section II outlines our methodology. Section III presents results from our outcome evaluation, which includes analysis of youth outcomes and caregiver retention. Section IV summarizes the key findings and identifies limitations. An Appendix provides supplemental analysis and technical detail.

Summary

The RAC program provides short-term emergency crisis care to youth entering foster care. Two facilities operated RACs from 2015-2020.

The 2019 Washington State Legislature directed WSIPP to evaluate the RAC program. The evaluation compares outcomes of foster youth placed in RAC facilities to similar youth with traditional foster care entry. We also examine foster parent retention for foster homes who receive youth from a RAC compared to foster homes that did not.

Our results indicate that RAC youth are more likely to spend their first placement with a sibling and subsequent placement with a relative. RAC placement does not have long term effects on the number of placement events youth experience or the length of time they spend in foster care.

Results also suggest that foster homes that received youth from a RAC were more likely than other similar foster parents who only received youth from other settings to retain their license over time.

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[1] Engrossed Substitute House Bill 1109, Chapter 415, Laws of 2019.

I. Background

The resource and assessment center (RAC) program provides short-term emergency and crisis care[2] to youth entering the foster care system in Washington. RAC facilities offer an initial placement option of up to 72 hours for youth ages birth through 12 years old.[3] RAC "houses"—the location where youth stay—must operate in residential areas, can house up to six youth at a time, and are staffed primarily by trained volunteers.[4] Throughout this report, we use the terms: RAC house, RAC facility, and RAC interchangeably.

The 2013 Washington State Legislature found that when children are removed from their homes, it often takes several hours or, in some cases, days for placement plans to be made. During this time, caseworkers have to care for the child while also trying to locate an appropriate placement.[5] Further, the legislature found that no appropriate, cost-effective licensure category existed for organizations to provide short-term care for youth after an initial removal but before a first placement, despite organizations in Washington providing or wanting to provide such care.[6] The same legislation stated that licensed foster homes are often unable to receive a foster child if their care needs have not been thoroughly assessed. In response, the 2013 Legislature created the RAC license. The 2019 Legislature directed WSIPP to evaluate foster youth and foster parent outcomes related to the RAC program (see the legislative assignment on the next page).

The goals of the RAC program are to give children a smooth and safe entry into foster care, remove pressure from caseworkers by allowing them to work on a reasonable timetable, and to make accurate information critical to placement decisions available to foster parents.[7] Aiming to create a more stable subsequent placement, RAC staff document information about youth that is then shared with the subsequent foster home.[8]

[2] Crisis (residential) care is defined as, "a licensed, semi-secure, emergency, temporary residence available for dependent children, runaways, or children absent from their home, pending their return home or placement in an alternative residential placement." RCW 74.13.032.

[3] Children ages 13 through 17 years old can also be placed in a RAC if accompanying a sibling who is 12 or younger. The 72-hour placement window excludes Saturdays, Sundays, and holidays. RCW 74.15.311.

[4] Ibid.

[5] Substitute House Bill 1261, Chapter 105, Laws of 2013.

[6] Ibid.

[7] Skookum Kids. (2016). *Policies & Procedures for Skookum House a Resource and Assessment Center (RAC)*.

[8] RAC staff collect a social summary including but not limited to sleep schedule, dietary preferences, and favorite activities.

Legislative Assignment

…the Washington institute for public policy must evaluate the outcomes of resource and assessment centers licensed under RCW 74.15.311 and contracted with the department of children, youth, and families… For the evaluation, the institute shall collect data regarding:

a) The type of placement children experience following placement at a resource and assessment center;

b) The number of placement changes that children experience following placement in a resource and assessment center compared with other foster children;

c) The length of stay in foster care that children experience following placement in a resource and assessment center compared with other foster children;

d) The likelihood that children placed in a resource and assessment center will be placed with siblings; and

e) The length of time that licensed foster families accepting children placed in resource and assessment centers maintain their licensure compared to licensed foster families receiving children directly from child protective services.

ESHB 1109, Chapter 415, Laws of 2019

The RAC program takes characteristics from both emergency respite care and crisis residential centers providing care for up to 72 hours in a staffed residential setting.[9] However, three qualities make RACs unique:

1) They are intended for youth new to foster care,[10]
2) They primarily serve children ages birth through 12,[11] and
3) They are staffed primarily with trained volunteers.[12]

The RAC license is unique and lower cost because it allows RAC facilitates to be staffed primarily by trained volunteers. The license stipulates that a facility must demonstrate that it is not financially dependent on reimbursement from the state to operate; beyond receiving the contracted rate for youth placed in their care, a RAC must be financially independent. Permitting trained volunteers to replace paid staff allows a RAC facility to operate 24 hours a day without relying on additional funds from the state.[13]

[9] Respite care is defined as, "temporary, time limited relief for substitute parenting or caregiving of a child." It can be arranged in advance or on an emergency basis and can include both hourly and daily (including overnight) care. DCYF. Respite care taxonomy.

[10] While the RAC program is intended for youth entering foster care for the first time, youth who were previously removed from home, had their dependency dismissed, and start a new dependency are eligible for RAC placement. WSIPP found that 33 youth stayed at a RAC more than once.

[11] Emergency respite centers typically provide care to youth ages birth through 17. RCW 74.15.020.

[12] Volunteers receive 16 hours of onboarding before they can serve a full shift. Onboarding includes an interest meeting, an introductory volunteer class, a one-on-one interview with a paid staff member, an orientation at the RAC facility to review policies and procedures, and spending an entire shift shadowing a current volunteer. Additionally, volunteers must receive 24 hours of additional annual training. Skookum Kids. (2016).

[13] Despite volunteers providing primary staffing, at least one paid staff member is always on call at RAC facilities. Additionally, if there are no youth placed in a RAC, the facility can close.

Two organizations have operated RAC facilities—Hand In Hand operates "Safe Place" in Snohomish County and Skookum Kids operates "Skookum House" in Whatcom County. Both facilities began receiving youth under their RAC licenses in June and July 2015, respectively.[14] Skookum Kids still operates their RAC facility while Hand In Hand converted to a staff residential license in January 2020.[15]
From September 2015 through February 2020, 1,128 youth were placed in a RAC.[16] The annual number of youth placed in RAC facilities ranged from 15 to 356 during the same time period. For all complete years in the period (2016-2019), an average of 269 youth stayed at RAC houses per year (see Exhibit 1).

Exhibit 1

Yearly Counts of RAC Placements and New Entries into Out-of-Home Care

Year	New RAC placements	New entries into out-of-home care in WA
2015	15	2,555
2016	356	5,107
2017	268	5,205
2018	256	4,928
2019	222	4,554
2020	11	*

Notes:
RAC data provided by Research Data and Analysis (RDA) at the Department of Social and Health Services (DSHS). New entries into out-of-home care in Washington obtained from the Center for Social Sector Analytics & Technology and Partners For Our Children's Child Well-Being Data Portal (CWBDP). (2020). CWBDP data comes from DCYF.
*Data from the Child Well-Being Data Portal include end-of-year counts of first entries into out-of-home care. Data for 2015 include only July-December to align more closely with the study period, though due to RAC identification problems prior to September 2015, values are not directly comparable. Counts for 2020 include youth with new out-of-home placements through February (only January and February).

[14] RAC contracts did not actually begin until August of 2015. There was no way to identify youth placed in RACs from June through August of 2015. All subsequent counts of RAC youth will not include some youth who did stay in RAC facilities during this time period. D. Allison, Unit Supervisor for Intensive Services, Division of Child Welfare Program, DCYF (personal communication, April 2019).

[15] Hand In Hand cited the 72-hour placement limit as the primary reason for conversion. A. Casson, Executive Director, Hand In Hand (personal communication, November 12, 2019).

[16] WSIPP worked with Department of Social and Health Services (DSHS) Research and Data Analysis (RDA) to identify youth placed at RAC facilities. See Appendix for more detail on identification.

II. Evaluation Methods

The goal of this report is to evaluate the effects of RAC placement on youth and caregiver outcomes. This section describes the data, methods, and outcome measures used in our analysis. To evaluate the impact of the RAC program, we must compare outcomes of youth in RAC placements to outcomes for a similar group of youth who were initially placed in other foster care settings.

Study Groups

In this report, we use historical administrative data obtained from DCYF via the Department of Social and Health Services (DSHS) Research and Data Analysis (RDA) division using their Integrated Client Database (ICDB) to identify study groups and evaluate the RAC program.

We identify treatment and comparison group youth based on whether they are placed in a RAC facility after they are removed from home. A removal "episode" begins when a child is removed from a home and ends when the case is closed. Episodes may last for only a few days or many years. Over the course of an episode, children may have multiple placement "events"—that is, placements in different homes or facilities.

During this time period, RDA identified 1,128 youth who were placed in a RAC but because the two RAC facilities were both located in DCYF region 3, and primarily received youth from regions 3 and 4, the sample was limited to include only youth who were removed from a home in these regions.[17] Some youth had multiple placements in RAC facilities; we selected each youth's first RAC placement and defined that as the "index event."

The full RAC "treatment" pool includes 1,100 youth removed from regions 3 and 4 and placed in RAC facilities from September 11, 2015, through February 29, 2020. This time period maximizes the sample size for the evaluation and encompasses the entirety of identifiable RAC placements up to the date the data were pulled. However, this approach also leads to a wide variation in follow-up time across youth in the sample. Some outcomes evaluated look only at a single placement, while others required follow-up periods of up to 24 months. Thus, for outcomes requiring longer follow-up periods, we limit our study groups to youth with a placement date that allows for a long enough follow-up period for evaluation (see Exhibit A10, Appendix III).

We also limit the comparison group to include only the youth who were removed from a home in regions 3 and 4 from September 11, 2015, through February 29, 2020. For comparison youth, the index event was defined as the first placement event for youth in a removal episode that began after September 11, 2015.[18] Counts for RAC and comparison pool youth are displayed in Exhibit 2.

[17] DCYF region 3 comprises Whatcom, Skagit, and Snohomish counties; region 4 is King County. DCYF regions map.

[18] The earliest identified RAC placement began on September 11, 2015.

Exhibit 2

Yearly Counts of RAC Placements and New Entries into Out-of-Home Care from DCYF Regions 3 & 4

Year	New RAC placements	New non-RAC placements^
2015	14	549
2016	340	1,210
2017	263	1,412
2018	253	1,326
2019	219	1,234
2020*	11	154

Notes:
RAC and region-specific data provided by RDA. Includes only youth who are from regions 3 and 4.
^New non-RAC placements started a new out-of-home placement between September 11, 2015, and February 29, 2020.
*Counts for 2020 include only January and February.

In some analyses, we compare study group outcomes during and following the index placement. For example, we compare the likelihood a youth will be placed with their sibling in a RAC to the likelihood that they will be placed with their sibling in another foster care setting. In other analyses, we compare the first placement following RAC placement for the treatment group to the index placement for the comparison group. For example, to compare the foster care placement type, we look at treatment youths' first placement after RAC and compare it to the index placement for comparison youth.

Finally, we exclude youth who returned home after a very brief stay in foster care from all analyses. For RAC youth, this includes youth who returned home immediately after their RAC placement (17%), and for comparison youth, it includes youth who returned home within five days (11%) of their index placement.[19] Analysis of the characteristics of youth who returned home very quickly indicated those youth may have fundamentally different home environments than youth who do not return home right away. See Appendix I for further sample details. Exhibit 3 displays counts for RAC and comparison pools and study groups used for analysis.

[19] We selected a five-day period for comparison youth because Washington State law requires that children receive a shelter care hearing within 72 hours of removal, excluding weekends. We do not observe the time of day youth are removed or placed into foster care. We select five days as a comparable period to RAC placement that allows us to account for weekends. RCW 12.34.065.

Exhibit 3

Study Group Counts Before and After Limiting

Study group	Placement	RAC N	Comparison N
All youth	All youth with new out-of-home placements	1,128	^
Study pool	Excludes youth removed outside of regions 3 & 4	1,100	5,885
Study group*	Excludes youth without a post-RAC placement and comparison youth who returned home within five days of their index placement	918	5,211

Notes:
^WSIPP worked with DCYF and RDA to limit the comparison pool as much as possible, thus we do not have full counts for all youth with new out-of-home placements.
*Appendix I discusses the analytic sample in more detail.

Matching and Analysis

Ideally, we would test the impact of the RAC program using treatment and comparison groups created in a randomized controlled trial—the "gold standard" experimental approach to estimating treatment effects. Random assignment allows for a direct comparison of outcomes between participants and non-participants because, in theory, the only difference between these groups would be random and not related to participant characteristics.[20]

When participation in the program is not random, program evaluations can exhibit "selection bias" which occurs when individuals choose, or are chosen, to participate in a program based on characteristics that may also impact their outcomes. In the case of RAC placement, although youth do not select foster home placements themselves, placement administrators may—whether intentionally or not—systematically place youth exhibiting certain characteristics into RAC facilities.

For example, some placement desk staff suggest that the flexibility of RAC houses—that they remain open 24 hours per day, have six beds, are designed to accommodate short stays, and are willing to take most youth that fit the license criteria[21]—could make them more likely to place certain youth in a RAC house rather than in a foster home.[22] For example, if a likely relative placement is identified but not immediately available to take a child, that child may be more likely to be placed into a RAC, given that RAC placement is designed to be temporary.

[20] Austin, P.C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research, 46*(3) 399-424.

[21] RAC facilities have discretion on who they accept. Bed availability, characteristics of youth already at the RAC house, and known child behavior all impact the decision to accept youth.

[22] Some of this potential selection bias comes from RAC operating hours. When youth enter out of home care late at night or early in the morning, a RAC facility may be the only option. N. Lochan, R3 Gatekeeper: Safe Place/Skookum/Cocoon/NWYS/Cedar: (RLSP/Hope/EPS/CRC), DCYF (personal communication, August 2020).

Another example is the placement for youth who enter out-of-home placement during the night. Often, a RAC facility is open and able to receive youth when other foster homes are not.

Both examples could lead to selection bias. Certain characteristics of youth or their removal circumstances may influence whether a youth is placed in a RAC. It is possible that these underlying characteristics and circumstances (such as having a family placement available or being removed from a home in the middle of the night), rather than placement in a RAC itself, may be responsible for group differences in outcomes. Due to concerns about selection bias we conduct a variety of sensitivity analyses. These analyses are discussed in detail in Appendix IV, and generally, add confidence to the findings from our main method of analysis.

Because WSIPP's evaluation of the RAC program is retrospective, we are unable to use a randomized controlled trial design. Instead, we address potential selection bias by using an advanced statistical technique called coarsened exact matching (CEM). Coarsened exact matching allows us to approximate the comparability between groups that might have been achieved with random assignment.[23] We matched youth on demographic characteristics (age, race, gender), placement year, prior intakes, location, history of neglect, and foster care history. However, we recognize that CEM may not eliminate all differences between the treatment and comparison groups that may affect outcomes. After our preferred CEM specification, we matched 745 RAC youth with 2,102 comparison youth.[24]

After matching, we perform a regression analysis on the matched samples.[25] We control for the same characteristics used in the CEM model as well as the reasons for removal.[26]

Additionally, because youth entered foster care and foster parents received initial licenses throughout the study period, there is a wide range in individuals' follow-up periods. For example, youth with an index placement in 2015 has a five-year follow-up period while youth with an index placement in 2019 has only a one-year follow-up period.

To address the issue of different follow-up periods, for some outcomes we use survival analysis. Survival analysis allows us to use the entire sample for which we have relevant data. For survival analysis of youth and parent outcomes, we controlled for the same characteristics used in our regression analysis.

For analyses limited by specific follow-up periods, we exclude youth and foster parents who were not in their respective sample long enough to be considered.

[23] Iacus, M.S., King, G., & Porro, G. (2011). *Causal inference without balance checking: Coarsened exact matching*.

[24] As a sensitivity analysis we also conduct propensity score matching (PSM). All results from regression analyses after PSM were consistent with the results from our main analysis. More detail can be found in Appendix II.

[25] Regression analyses after coarsened exact matching use all matched observations and are weighted by the "cem weights" generated from the matching algorithm.

[26] A complete list of covariates used in regression models can be found in the Appendix IV.

Outcome Measures

We examined the type of placement, the number of placements, and the length of stay that foster care youth experience following a RAC stay. We also examined the likelihood that youth will be placed with a sibling when placed in a RAC. Lastly, we examine caregiver retention for foster parents who receive youth from a RAC. We define these outcomes below.

Placement with Siblings

We identified all youth in our analysis sample with a sibling in foster care at any time during the index event. Placement with siblings was defined as having at least one sibling placed in the same foster home during the placement event.

Type of Placement

While various foster care placement settings exist in Washington, we identify three distinct placement types: foster care, placement with a relative, and Behavioral Rehabilitation Services (BRS).[27] These groups account for all placement settings for youth in both the RAC and comparison groups. During study group selection, we also considered "returning home" as a placement type.

Number of Placement Changes

We define a placement change as any time a youth experienced a new placement event in a different setting. Our preferred measure is an annualized number of placement changes during the index removal episode.[28] As an alternative approach, we analyze the number of placement changes for youth who were in care for less than 12 months, 12 to 24 months, and more than 24 months.

Length of Stay in Foster Care

A youth's stay in foster care begins with a new removal episode and ends when the case is closed. We measure the length of stay by the number of days from the initial removal to the closure date.[29]

We analyzed how RAC placement impacted the number of days youth spent in foster care. As a secondary approach, we examined the percentage of youth who had their state dependency end within 12 months, 18 months, and 24 months of the index event. For each analysis (within 12, 18, and 24 months), we limit the sample so that all children included in the analysis would reach those time events by February 29, 2020 (the last day for which we had placement event data).

Foster Caregiver Retention

Foster home license renewals are on a three-year cycle. Retention is high until year three when many foster homes do not renew their license.[30] Our primary analysis examines the number of days a new foster home retained its license controlling for the length of the follow-up period.

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[27] Behavioral Rehabilitation Services are foster care placements and services for youth with high-level complex needs.

[28] We divide the number of placement events during the removal episode by the amount of time (in years) a youth has spent in foster care. If a youth spent less than one year in foster care, and has left foster care, the value of our indicator is the same as the number of placement events the youth had during their time in foster care.

[29] Washington operates a "trial return home" program; a temporary type of in-home placement for a child involved in the child welfare system. During a trial return home, the child physically lives at home but is still under the placement and care authority of DCYF. We considered a youth to remain in care during their trial return home. For youth who appeared to have a successful trial return home—they had no subsequent placement events or removal episodes—we set the end date equal to six months after the trial return home began. We chose six months because state law requires a six-month period for children with an established dependence. RCW 13.34.138.

[30] RCW 74.15.100.

We also analyzed the percent of foster caregivers who were still licensed after one year, two years, three years, and four years from the first record of a license issue date during the study period.

Our analysis of caregiver retention was limited by data availability. Records for foster home licenses issued prior to February 1, 2009, are not reliably available in the DCYF management information system, FamLink.[31] As a result, there is no definitive way to determine whether a license is indeed the first license issued.

In the available data, fewer than 2% of foster homes had their license end, went unlicensed for at least three years, and then re-licensed during the study period.[32] Additionally, various factors that could impact license retention, such as household income and caregiver education level, were not available and could create bias in our results. Therefore, we can not necessarily conclude that a difference in retention for foster homes that receive youth from a RAC and those that do not are caused by youth placement in a RAC.

Exhibit 4

Unadjusted Average Outcomes for Matched RAC, Matched Comparison, and All Youth in Study Sample

Outcome variable	RAC youth		Comparison youth		All foster youth in RAC regions[a]	
	N	Mean/%	N	Mean/%	N	Mean/%
Placed with a sibling during the index event[b]	608	93%	1,422	64%	4,001	70%
Placed with a sibling in post-RAC placement (for RAC youth) and index placement for comparison[b]	608	70%	1,422	64%	4,001	63%
Placed with relative	745	63%	2,102	45%	6,129	60%
Placed in foster care	745	32%	2,102	55%	6,129	39%
Average annualized number of placement events[c]	565	1.72 (1.76)	1,183	1.77 (2.12)	4,435	1.79 (2.30)
Average length of stay in foster care (days)	745	504 (402)	2,102	528 (397)	6,129	512 (412)

Notes:

[a] Figures for all foster youth in RAC regions were derived from the protocol used in phase 2 of the data request. That is, RDA restricted potential comparison youth to those who experienced a new removal episode from DCYF regions 3 and 4. This includes all RAC youth and the entire comparison pool.

[b] For youth with a sibling also in foster care.

[c] Excludes youth still in care if their length of stay in foster care is less than 24 months.

Standard deviations are reported in parentheses.

[31] Foster home license records that WSIPP received from DCYF include few licenses issued prior to February 2009. DCYF (previously the Children's Administration) transitioned in February 2009 from its previous information system, CAMIS, to a new management information system, FamLink, and most licenses with issue dates prior to 2009 were not retained in the new system.

[32] When we did the same analysis using a one-year licensing gap, fewer than 3% of families fit this description.

III. Evaluation Findings

In this section, we present results for analyses assessing the impact of RAC placement on child welfare and foster parent outcomes. To add context to our findings for youth outcomes in the child welfare system, we first present raw outcomes (Exhibit 4) for the full matched treatment and comparison groups as well as all foster youth in DCYF regions 3 and 4.

Placement with Siblings

We compared the likelihood of placement with a sibling for those youth in our sample who had at least one sibling in foster care during the index event and first event post-RAC. Most of the youth in the sample had a sibling in foster care (65%). A higher percentage of youth placed in a RAC facility had a sibling in foster care (81%) when compared with the comparison group (62%). As shown in Exhibit 5, youth placed in a RAC were significantly[33] more likely than comparison youth to be placed with a sibling during their RAC stay.

While we observed that slightly more RAC youth were placed with siblings during their subsequent placement when compared to the index placement for comparison youth, there is no statistical difference between the groups suggesting that RAC placement did not affect the likelihood of placement with siblings beyond the RAC. Additional analysis suggests that selection bias based on unobservable characteristics could account for some of the differences observed in the likelihood of placement with a sibling.

Exhibit 5

Likelihood a Youth is Placed with Sibling(s)

Outcome	RAC	Comparison	p-value
Placed with sibling(s): Index placement	94%	68%	0.000
Placed with sibling(s): Placement following RAC	71%	68%	0.223

Notes:
Percentages have been regression-adjusted to account for individual characteristics of those in the sample.
The sample includes only youth who had at least one sibling in foster care during the same period.
For the comparison group, both analyses use the index placement.

[33] Statisticians often rely on a metric, the p-value, to determine whether an effect is significant. The p-value is a measure of the likelihood that the difference could occur by chance—values range from 0 (highly significant) to 1 (no significant difference). By convention, p-values less than 0.05 (a 5% likelihood that differences could occur by chance) are considered statistically significant.

Type of Placement

We examined the likelihood that youth would be placed with a relative and the likelihood that youth were placed in a foster home.[34] As seen in Exhibit 6 youth who were first placed in a RAC were more likely to be placed with a relative and less likely to be placed into a foster home than comparable youth.[35] Sensitivity analysis (discussed more in Appendix IV) increases our confidence that participation in RAC, and not selection bias, led to this result.

Exhibit 6

Placement Type

Outcome	RAC	Comparison	p-value
Placement type: Foster care	32%	58%	0.000
Placement type: Relative	63%	42%	0.000

Notes:
Percentages have been regression-adjusted to account for individual characteristics of those in the sample.
The sample includes only those youth who experienced an index two placement.
In this analysis, we compare the post-RAC placement for RAC youth to the index placement for comparison youth.

Number of Placement Changes

To account for differences in the amount of time youth spent in foster care, we examined the annualized number of placement events youth experienced during their index removal episode.[36] On average, RAC youth had a slightly higher number of annualized placements, but the difference was not statistically significant (Exhibit 7). Our findings indicate that RAC placement does not impact the number of placement changes.

As a secondary approach, we examined the number of placement changes for youth who remained in care for less than 12 months, 12 to 24 months, and more than 24 months after the start of the index placement. Consistent with our primary analysis, results using this approach indicate that RAC placement does not significantly impact the number of placement events between the RAC youth and the comparison youth. Detailed results for this sensitivity analysis are found in Appendix IV.

Exhibit 7

Average Annualized Placement Events

Outcome	RAC	Comparison	p-value
Annualized placement events	1.77	1.65	0.194

Notes:
Values have been regression-adjusted to account for individual characteristics of those in the sample.
Analysis excludes youth still in care who have spent less than 24 months in care.

[34] Only two RAC youth were placed into BRS facilities, thus we did not conduct regression analysis on the likelihood youth would be placed in a BRS facility. Those youth were dropped from these analyses.

[35] Placement type analysis uses the placement after RAC placement for RAC youth and the index placement for comparison youth.

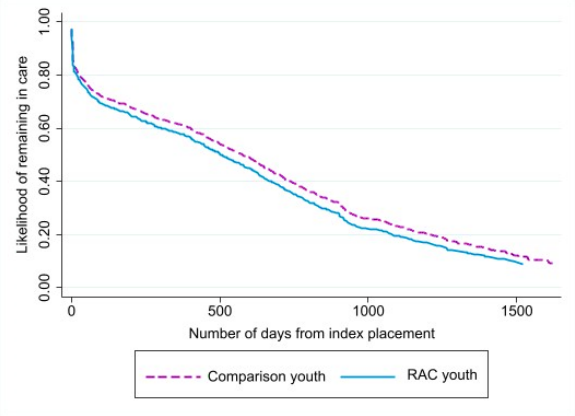
[36] For RAC youth this includes the placement following the RAC placement, and for comparison youth this includes their index placement.

Length of Stay in Foster Care

To analyze the impacts of a RAC placement on length of stay in foster care while accounting for various follow-up periods, our preferred method was survival analysis. Exhibit 8 displays regression-adjusted survival curves for RAC and comparison youth. We find while, on average, RAC youth experience slightly shorter stays in foster care, no significant difference exists between the two groups. Additional analysis (Appendix IV), examining the likelihood that youth would remain in care for a specific time period supports this conclusion.

Exhibit 8

Regression-Adjusted Survival Curve for Length of Stay in Foster Care



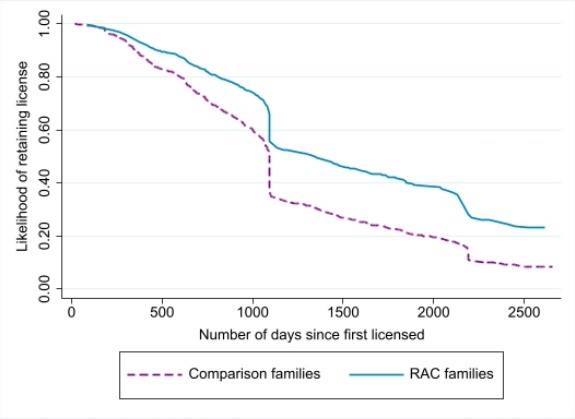
Caregiver Retention

Like our analysis on foster youth outcomes, to account for potential differences in foster care systems across regions, our comparison group was limited to foster homes in DCYF regions 3 and 4. Similar to our matching method for foster youth, we use CEM to identify a group of foster parents who are similar to the foster parents who received youth from a RAC. Matching variables for foster parents can be found in Appendix IV.

We examined the number of days from when a foster home received their initial license to receive youth from RAC facilities to when they retained their license compared to similar foster parents who received youth who did not stay at a RAC. To account for differences in follow-up periods, our preferred method was survival analysis. We find that foster parents with their first license who received youth from a RAC were more likely to retain their license compared to similar parents who received youth only from other settings. Foster care licenses operate on a three-year cycle. The drop at three years represents those who choose not to renew their license, opposed to those who actively choose to end their license before it expires. Exhibit 9 displays regression-adjusted survival curves for RAC and comparison parents.

Exhibit 9

Regression-Adjusted Survival Curve:
Foster Parent License Retention
(Time to License Closure)



We conducted an additional analysis by examining the likelihood that foster parents would retain their license for one year, two years, three years, and four years after initial licensure. Like our primary analysis, we compare parents who receive youth from RAC facilities and compare them to similar foster parents who only received youth from non-RAC settings.

This analysis supports our main findings. Families who received youth from RACs were more likely to retain their license for all follow-up periods. Results for regression analysis are presented in Appendix IV.

Using both approaches, we observe that families who receive youth after they stay at a RAC are more likely to retain their license compared to similar foster families who only received youth from other settings. However, like foster youth outcomes, we can not necessarily rule out that characteristics or circumstances unobserved in this study drive this result.

IV. Summary

Findings

The RAC program provides short-term emergency crisis care to youth entering the foster care system in Washington. The 2015 Legislature directed WSIPP to evaluate the effect of RAC placement on the likelihood a youth would be placed with siblings, placement type, number of subsequent placement changes, length of stay in foster care, and foster parent retention. In general, RAC youth are more likely to spend their first placement with a sibling and be placed with a relative in their subsequent placement. We find no statistically significant difference between RAC youth and comparison youth for the number of placement events or length of stay in foster care.

Our analysis indicates that youth with siblings were more likely to be placed in a RAC. When limiting our sample to only youth with siblings, we found that youth first placed in a RAC were, more likely than youth placed immediately in foster homes to be placed with a sibling during their RAC placement, but there was no difference for the subsequent placement.

Initial placement in a RAC appears to have a significant impact on subsequent placement type. Compared to similar youth, those first placed in a RAC were more likely to have their subsequent placement with a relative and were less likely to be placed into a foster home. Secondary analysis indicates that, in this sample, youth placed with a relative are more likely to be placed with their sibling(s) than youth placed into foster care.

RAC placement did not significantly impact the number of placement events youth experienced or their length of stay in foster care compared to similar youth who did not stay at a RAC.

Our results suggest that receiving youth from RAC facilities may slightly increase license retention compared to foster families who receive youth from other settings.

Limitations

The main limitation of this study is the inability to randomly assign participants to a RAC or standard foster care. This experimental approach would have allowed us to compare outcomes for RAC youth to youth from the same region at the same time. A random assignment would have increased our confidence that group differences observed were due to the RAC stay and not to other unobserved characteristics.

Communication with DCYF placement desk staff, the stipulation that RAC facilities have discretion on whether or not they accept youth, and analysis on the degree to which unobservable variables impacted certain outcomes all suggest that placement in a RAC facility is not completely random, and in some cases may be connected to unobservable characteristics such as time of day youth is placed into care, family situation, and cumulative capacity of other foster parents in the area. This means that there is a possibility that selection into a RAC could be driving outcomes, rather than the placement in a RAC itself. However, for findings where a RAC placement had significant effects, our sensitivity analyses generally support the conclusion that RAC placement, not selection into a RAC drive is the measured effect.

Therefore, while our rigorous analysis suggests that outcomes for youth first placed in RACs are somewhat better than outcomes for those first placed in foster care, we cannot rule out the possibility that the decisions or circumstances leading to a RAC placement are driving the outcomes we observe, rather than RAC placement itself.

Appendices

An Evaluation of Resource and Assessment Centers (RAC): *Outcome Evaluation*

Appendices

I. Data and Identification of the Study Groups

Data

We requested data in two phases. In phase 1, the Department of Social and Health Services (DSHS) Research and Data Analysis (RDA) division provided a file with removals, placement events, and demographic information for all foster youth who attended a RAC facility since the first RAC facility opened in June 2015 through February 2020 when the data were pulled. Department of Children Youth and Families (DCYF) provided a file with license and demographic information on all foster parents with an active foster home license from January 2004 through October 2020 when the data were pulled. Personal information, including unique identification numbers of the foster parent, foster child, case, and removal were removed and replaced with bogus identifiers that allowed us to link children across records. We used both datasets to link foster parents to RAC youth, allowing us to identify the treatment group for our foster parent retention analysis.

In phase 2, we received a file with removals, placement events, and demographic information for all foster youth who started a new removal episode from June 2015 through February 2020, were removed from regions 3 or 4, and were ages 0 to 14. If youth were over the age of 14 and were placed with a sibling, they were included in our sample.[37] For the same sample, RDA provided two additional files. One included child protective services intakes for all youth and the other included case services for all youth. RDA matched these records via their Integrated Client Database (ICDB) and provided bogus identifiers for foster child id, case, and removals. RDA provided WSIPP with consistent bogus identifiers across files.

Identification of the Treatment Group

RDA identified RAC youth using the provider ID from the licensed RAC facilities (Skookum Kids and Hand In Hand) and the service code associated with the RAC license. Although RAC licensure began in June 2015, payments (and hence tracking of the placement service) could not be issued until after the contracts started in August 2015. While the RAC licenses for Skookum Kids and Hand In Hand began on June 17, 2015, and July 2, 2015, respectively, the contracts did not start until August 11, 2015, and August 12, 2015.[38] Thus, there was no way to identify the youth who were placed in RAC facilities prior to September

[37] This sample included 26 youth who attended a RAC but were removed from outside regions 3 and 4; those kids were excluded from the analysis sample.

[38] Skookum Kids' license began August 11, 2015 and Hand In Hand's on August 12, 2015. D. Allison, Unit Supervisor for Intensive Services, Division of Child Welfare Program, DCYF (personal communication, April 2019).

2015.[39] Our treatment sample does not include youth who were placed in RAC facilities before September 2015. We excluded youth from the comparison pool who had initial placement dates before September 11, 2015, the first recorded RAC placement.

We omitted youth from the treatment group who stayed in a RAC and subsequently returned home without another placement event. We found that RAC youth returned home quickly[40] at a higher rate (17%) than similar youth who did not stay at a RAC (11%). While this difference could be attributed to the RAC placement, qualitative and quantitative evidence suggest that differences in this outcome may be driven by characteristics unobserved in our data. That is, youth who were more likely to return home based on variables or characteristics connected to their removal circumstances may have been more likely to be placed in a RAC. Returning home quickly is likely driven by these underlying (unobserved) characteristics, not by the RAC placement. Including these youth in the sample could bias the results, making us less confident in the results of our subsequent analysis.

To test the assumption made above, we conducted sensitivity analysis surrounding how unobservable factors could impact our findings—i.e., we compute Oster bounds on the treatment effect estimated above. [41] To do this, we consider how much of an impact unobservable characteristics would need to have on the outcome (returning home quickly) and the likelihood of treatment (placement in a RAC) to render a finding insignificant. Oster's delta represents a ratio of selection on unobservable factors to observable factors. Delta estimates less than 1 suggest that unobservable factors would need to be less important than observable ones to produce a treatment effect of zero while estimates greater than 1 suggest the opposite. We estimate Oster's delta assuming a treatment effect equal to 0, and the result suggests that the influence of unobservable factors would not have to be as large as the influence of observable factors in order to render the treatment effect zero (see Exhibit A1). In other words, it is likely that factors outside of the ones we observed impacted whether youth returned home quickly.[42]

Exhibit A1

Treatment Effect Bounds Estimate:
Impact of Unobservable Characteristics' Effect on Returning Home Quickly

Outcome	R max upper bound	Delta
Return home quickly	0.5	0.175

Placement desk staff also indicated that circumstances such as the time of day youth are placed into care, a saturation of local foster homes, and the amount of knowledge about the situation from where the youth were removed from influence whether or not a youth is placed in a RAC. Combined with the treatment effect bounds sensitivity analysis, this led us to remove youth who returned home quickly from the analytic sample.

[39] Ibid.
[40] The RAC license limits a RAC placement to 72 hours excluding weekends and holidays. For RAC youth, we define returning home quickly as returning home after the RAC placement. For comparison youth, we use 120 hours to define returning home quickly based on Washington State law requiring a shelter care hearing within the first 72 hours excluding weekends and holidays after an initial removal.
[41] Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics 37(*2), 187-204.
[42] Analysis was completed with the user written Stata command *psacalc*.

Youth excluded from the sample because they returned home quickly differed from analysis sample youth in some characteristics. Those who returned home quickly were typically older—a higher percentage for all age groups older than five years old—and were more likely to be placed later in the study period. Characteristics comparing youth who returned home quickly to those who did not are displayed in Exhibit A2. We also examined removal reason flags between youth who returned home quickly and those who did not. On average, youth who returned home quickly were more likely to experience abuse and less likely to have a parent abuse drugs or alcohol. A summary of removal reason flags is presented in Exhibit A3.

Exhibit A2

Youth Characteristics for Those Who Did and Did Not Return Home Quickly

Variable	Returned home quickly (Excluded from analysis sample) N = 857	Did not return home quickly (Included in analysis sample) N = 6,128	*d*	p
Percent female	52%	50%	6%	
Percent infant (younger than 1)	10%	30%	-45%	***
Percent ages, 1-4	26%	26%	0%	
Percent ages, 5-9	31%	23%	19%	***
Percent ages, 10-12	14%	11%	11%	**
Percent older than 12	18%	10%	28%	***
Percent American Indian/Alaska Native	11%	11%	2%	
Percent Asian/Pacific Islander	6%	5%	7%	*
Percent Black	26%	22%	8%	*
Percent white/Other	42%	49%	-13%	***
Percent identifying Hispanic	14%	13%	3%	
Percent 2015-2016	26%	31%	-20%	***
Percent 2017-2018	49%	47%	-11%	**
Percent 2019-2020	25%	23%	-2%	
Percent under 2 prior reports	45%	42%	7%	*
Percent 2-10 prior reports	53%	55%	-4%	
Percent more than 10 prior reports	2%	3%	-10%	**
Percent with exceptional rate payment	23%	24%	-1%	
Percent with a placement before index	7%	10%	-10%	**
Percent with prior runaways	1%	2%	-10%	**
Percent DCYF region 3	39%	48%	-18%	***

Note:
^ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Exhibit A3

Removal Reason Flags for Youth Who Did and Did Not Return Home Quickly

Reason for removal flag	Returned home quickly (Excluded from analysis sample)			Did not return home quickly (Included in analysis sample)		
	RAC N = 182	Comparison N = 675	Total N = 857	RAC N = 918	Comparison N = 5,210	Total N = 6,128
Abandonment	5%	5%	5%	3%	5%	4%
Caretaker inability to cope	14%	10%	11%	11%	13%	12%
Child behavior problems	1%	4%	3%	1%	2%	2%
Inadequate housing	14%	5%	7%	7%	12%	11%
Neglect	71%	57%	60%	75%	64%	65%
Parent death	2%	1%	1%	0%	1%	1%
Parent drug or alcohol abuse	27%	19%	20%	34%	55%	51%
Parent incarceration	16%	6%	8%	8%	7%	7%
Physical abuse	21%	35%	32%	25%	17%	18%
Sex abuse	10%	10%	10%	5%	5%	5%

Note:
Returning home quickly is defined as returning home after the RAC placement for RAC youth and returning home within 108 hours for comparison youth.

Comparison Pool

To limit the amount of foster youth data needed to conduct a rigorous evaluation, WSIPP made a good faith effort to characterize the RAC youth before requesting phase 2 data. WSIPP worked with RDA to identify ways to limit the request for potential comparison youth. Ultimately, we limited the comparison group pool to youth who were removed from regions 3 and 4 because a large majority (98%) of RAC youth were removed from those regions and because both RAC facilities operated there. We also limited the sample to youth ages 14 and younger unless they were placed with a sibling. Youth who returned home quickly were also omitted from the comparison pool per the procedure described in the previous section.

II. Matching Procedures

In an ideal research design, both caregivers and youth would be randomly assigned to either the RAC or traditional foster care setting. With a successfully implemented random assignment, any observed differences in outcomes could be attributed to the effect of the RAC placement. Unfortunately, as is the case in many real-world settings, random assignment was not possible for this evaluation.

Instead, we used observational data and relied on a quasi-experimental research design. To infer causality from this quasi-experimental study, selection bias must be minimized. To do so, we implemented a variety of research design methods and statistical techniques that provided the ability to test the sensitivity of our findings. In this section, we describe the study groups and statistical methods we used to arrive at our estimates of the effects of the RAC program.

Coarsened Exact Matching

We used coarsened exact matching (CEM) to select a matched comparison group from the youth entering foster care who were not placed in a RAC.[43] We select CEM because it reduces model dependence and has been shown to outperform other matching methods.[44] That is, among matching methods it is often superior at reducing the imbalance between a treatment and comparison group.

Matching allows us to compare RAC youth (treated youth) with similar untreated youth to obtain a balance on observed covariates. This method has many benefits over standard regression analysis, which is often used to control for differences between treated and comparison groups.

First, the match is based on characteristics before the treatment occurs. That is, the outcome plays no part in matching the treated and comparison groups. This emulates an experimental design by separating the research design stage—where we test various matching procedures to obtain a sufficiently matched sample—from the analysis stage—where we estimate the effect of the treatment using our matched sample. Second, matching can limit the importance of functional form in regression analysis.[45] Finally, by conducting a logistic regression on the matched sample using the covariates from the matching model, we further reduce any residual bias that may remain after matching.

Like other matching methods, the goal of CEM is to select (and/or re-weight) sample observations to reduce model dependence—that is, decisions about model specification (e.g., variables to include, functional form) made by the researcher. Coarsened exact matching matches observations on the characteristics included in the model. For dichotomous variables, matched observations share the same characteristic. For continuous variables, exact matching is accomplished by coarsening characteristic values into bins if they are deemed theoretically similar and then matching based on these bins. For example, instead of requiring youth to be the same exact age to match, we create age groups: birth to 364 days old, one- to four-years old, five- to ten-years old, eleven- to twelve-years old, and older than twelve. This process is known as "coarsening." In other words, we group together values that we assume are the same and then exact match based on these groups.

[43] For sensitivity analysis we perform another popular matching method—propensity score matching—and run all subsequent analysis using both matching methods. More information about sensitivity analysis can be found in Appendices III and IV.
[44] King, G., Nielsen, R., Coberley, C., Pope, J.E., & Wells, A. (2011). *Comparative effectiveness of matching methods for causal inference.*
[45] Ho, D.E., Imai, K., King, G., & Stuart, E.A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political analysis, 15(*3), 199-236.

Our youth matching model includes coarsened values for age at index placement, year at index placement, and the number of intakes recorded prior to index placement in addition to other, non-coarsened variables. [46] We match on DCYF region to lessen the effect of geographical differences such as urbanicity and community resources. Our matching model also accounts for index placement year to reduce the effects of historical trends in the child welfare system over time.

After coarsening, we exact matched RAC youth to youth from the comparison pool. Our potential comparison pool included 5,885 youth who entered foster care during the study period.[47] We further limit the comparison by removing comparison youth who returned home quickly after their index placement as described above. Using this as our potential comparison pool, we matched 745 RAC youth with 2,102 comparison youth.[48]

Analysis has found that CEM outperformed the most commonly used matching methods along many important dimensions.[49] Ideally, with CEM, for each RAC youth a comparison youth would be selected with identical characteristics after coarsening. The only difference between the two youth would be that one was placed in a RAC and the other was not. In our analysis, a perfect match did not exist for every RAC youth in every possible model specification.

Conditional on the observed characteristics of foster youth, our empirical strategy assumes that selection into RAC approximates random assignment. This assumption is also referred to as "selection on observables"[50] or "conditional independence."[51] The CEM algorithm is only helpful in estimating the effects of the RAC program on youth outcomes insofar as the youth characteristics that predict treatment and outcomes are (1) observed in our data or (2) correlated with youth characteristics observed in our data. If the selection on observables assumptions holds, CEM allows one to estimate the sample average treatment effect on the treated (SATT) which is a weighted average of differences in outcomes between RAC youth and comparison youth.

Exhibits A1, A2, and A3 provide matching variable information for our different matching specifications including the pre- and post-match balance statistics for the data as a whole and for individual covariates, respectively. For CEM specifications we report an "L1 distance" both before and after matching. The L1 statistic is a comprehensive measure of global imbalance.[52] That is, it is a measure of balance among all covariates. Values closer to 1 indicate more imbalance. The primary function of the L1 is to compare improvement between unmatched and matched samples for the same covariates, not to compare different matching specifications.

We use three CEM specifications, gradually adding in more variables. Specification three is our preferred specification because it includes the most detail about foster youth. It ensures we match youth using the most information we have access to. In each specification, we only keep perfect matches. If more than one perfect match existed for a RAC youth, we retain all perfect matches.

[46] See Appendix Exhibit A2 for full list of matching variables.
[47] The potential comparison pool was limited to youth ages birth through 12 and those older than 12 who were removed with a sibling 12 or younger.
[48] We allowed any exact match to remain regardless of the number of matches.
[49] King et al. (2011).
[50] Goldberger, A. (1972). Structural equation methods in the social sciences. *Econometrics. 40(6),* 979-1001.
[51] Angrist, J.D., & Pischke, J. (2009). *Mostly harmless econometrics: An empiricist's companion.* Princeton University Press.
[52] Blackwell, M., Iacus, K., King, G., & Porro, G. (2010). *Cem: Coarsened exact matching in Stata.*

For sensitivity analysis, we also employ an additional matching strategy—propensity score matching (PSM). Unlike coarsened exact matching, propensity score matching uses logistic regression to estimate the likelihood a youth will be placed in a RAC and then matches youth based on this score.[53] After propensity score matching we conducted all of the same subsequent regression analysis. All results from regression analyses after PSM were consistent with the results from our main analysis. In Exhibit A4 we present balance statistics from our preferred CEM specification and a PSM specification. We conduct the same matching method for foster parents and then analyze with survival analysis and logistic regression. Exhibit A5 presents balance statistics both before and after CEM for foster families.

Exhibit A4

Matching Variables for CEM Specifications: Foster Youth

CEM 1	CEM 2	CEM 3
Gender	Gender	Gender
Age at index placement*	Age at index placement*	Age at index placement*
DCYF race	DCYF race	DCYF race
Index placement year	Index placement year*	Index placement year*
Region (3 or 4)	Region (3 or 4) Extended rate payment Neglect	Region (3 or 4) Extended rate payment Neglect Placements pre-index Runaway pre-index Number of screened-in intakes pre-index*

Notes:
* Indicates variable was coarsened before matching.
CEM 3 is our preferred specification.

[53] Austin, P.C. (2011) and Goodvin, R., & Miller, M. (2017). *Evaluation of the foster care hub home model: Outcome evaluation (Doc. No. 17-12-3902).* Olympia: Washington State Institute for Public Policy.

Exhibit A5

Multivariate L1 Distance and Matched Sample Size for CEM Specifications

	CEM 1	CEM 2	CEM 3
L1 distance pre-match	0.531	0.730	0.935
L1 distance post-match	0.360	0.513	0.820
Imbalance reduction	0.171	0.217	0.115
RAC matched N	910	876	745
Comparison matched N	3,493	3,239	2,102

Note:
The L1 statistic is a comprehensive measure of global imbalance; see Blackwell, M., Iacus, K., King, G., & Porro, G. (2010). *Cem: Coarsened exact matching in Stata.* That is, it is a measure of balance among all covariates. Values closer to 1 indicate more imbalance. The primary function of the L1 is to compare improvement between unmatched and matched samples for the same covariates, not to compare different matching specifications.

Exhibit A6

Matching Variables for CEM Specification: Foster Families

CEM
Primary provider gender
First license year*
Multiple caregivers in household
License cap: number of youth*
Lower age limit for youth accepted during license*
Upper age limit for youth accepted during license*
Primary provider race
Region

Note:
* Indicates variable was coarsened before matching.

Exhibit A7

Youth Study Group Characteristics Before and After Coarsened Exact Matching and Propensity Score Matching

Variable	RAC youth (n=918)	Comparison youth (n=5,210)	*d*	p	RAC youth (n=745)	Comparison youth (n=2,102)	*d*	p	RAC youth (n=915)	Comparison youth (n=915)	*d*	p
Percent female	47%	50%	-0.07		45%	45%	0.00		47%	47%	-0.01	
Percent infant (younger than 1)	7%	34%	-0.59	***	6%	6%	0.00		7%	11%	-0.11	**
Percent ages, 1-4	39%	24%	0.35	***	44%	44%	0.00		39%	33%	0.15	**
Percent ages, 5-9	35%	21%	0.34	***	35%	35%	0.00		35%	30%	0.12	*
Percent ages, 10-12	13%	10%	0.09	***	11%	11%	0.00		13%	16%	-0.08	
Percent older than 12	5%	10%	-0.17	***	4%	4%	0.00		5%	11%	-0.21	***
Percent American Indian/Alaska Native	12%	11%	0.05	*	11%	11%	0.00		12%	12%	0.01	
Percent Asian/Pacific Islander	4%	5%	-0.04		2%	2%	0.00		4%	5%	-0.04	
Percent Black	22%	23%	-0.03		22%	22%	0.00		22%	22%	0.00	
Percent white/Other	48%	49%	-0.01		53%	53%	0.00		48%	48%	-0.01	
Percent identifying Hispanic	14%	13%	0.02		12%	12%	0.00		14%	13%	0.02	
Percent 2015-2016	35%	31%	0.02		31%	33%	-0.04		31%	31%	0.01	
Percent 2017-2018	45%	46%	-0.06	**	45%	47%	-0.04		43%	47%	-0.08	
Percent 2019-2020	21%	23%	-0.07	**	18%	19%	-0.03		20%	22%	-0.06	
Percent under 2 prior reports	24%	45%	-0.43	***	24%	24%	0.00		24%	26%	-0.06	
Percent 2-10 prior reports	73%	52%	0.41	***	75%	75%	0.00		73%	69%	0.10	
Percent more than 10 prior reports	4%	3%	0.05		1%	1%	0.00		4%	5%	-0.10	
Percent with exceptional rate payment	8%	26%	-0.43	***	4%	4%	0.00		8%	6%	0.07	*
Percent with a placement before index	17%	9%	0.29		12%	12%	0.00		17%	14%	0.08	
Percent with prior runaways	3%	2%	0.04		1%	1%	0.00		3%	3%	-0.04	
Percent DCYF region 3	68%	44%	0.48	***	68%	68%	0.00		68%	64%	0.09	

Notes:

* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Propensity Score Match based used 1:1 matching with 0.01 caliper.

Values of *d* larger than 0.10 (negative or positive) indicates moderate imbalance, and values larger than 0.25 indicate severe imbalance.

Exhibit A8

Foster Parent Study Group Characteristics Before and After Coarsened Exact Matching

Variable	Before match				After CEM		
	RAC parents (n=197)	Comparison parents (n=2,372)	p	*d*	RAC parents (n=176)	Comparison parents (n=1,356)	p
Percent primary provider identifies as a woman	91%	88%		0.12	94%	94%	
Average first license year	2,016.41	2,016.32		0.05	2,016.4	2,016.17	
Percent multiple caregivers in household	85%	81%		0.12	86%	86%	
Average number of beds	2.55	1.95	***	0.60	2.55	2.33	*
Average min age	1.29	2.55	***	-0.37	1.22	1.47	
Average max age	12.57	11.81	^	0.15	12.63	11.57	*
Percent American Indian/Alaska Native	1%	2%		-0.09	0%	0%	
Percent Asian	3%	4%		-0.03	2%	2%	
Percent Black	6%	5%		0.01	4%	4%	
Percent Identifying Hispanic	5%	5%		0.01	3%	3%	
Percent Hawaiian/Pacific Islander	3%	1%	*	0.14	1%	1%	
Percent white/Other	83%	84%		-0.13	90%	90%	
Average region	3.28	3.54	***	-0.01	3.28	3.28	

Notes:

^ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Coarsened variables: First license year, number of beds, minimum age accepted, and maximum age accepted.

III. Methods to Estimate RAC Effects

To examine the impacts of RAC placement for different outcomes, we employ multiple types of regression analysis. To test the sensitivity of our preferred models, for some outcomes we use more than one approach.

Dichotomous (Yes/No) Outcomes

For outcomes of interest defined as dichotomous (placement with siblings,[54] placement type [foster care or relative], remaining in care for a specific duration, and license retention for a specific time period) we conduct logistic regression analysis.

Continuous (Length of Time) Outcomes

For outcomes of interest defined as continuous (length of stay in foster care, time to foster care license closure, and the number of placement events), we take multiple approaches. We use survival analysis as our preferred method for length of stay in foster care and time to foster care license closure (both measured in days). Our preferred analysis tool for the annualized number of placement events was ordinary least squares regression with robust standard errors. We also use Poisson regression as a sensitivity analysis for the number of placement changes and length of stay in foster care.

Logistic Regression Analysis on Full (Unmatched) Sample

We began our outcome analysis using traditional multivariate logistic regression analysis on the full (i.e., unmatched) sample. Regression analysis allowed us to control for observed covariates in estimating the treatment effect. However, regression analysis has several limitations. First regression analysis can only control for observed factors. Second, if treated and comparison group covariate distributions do not overlap, then any causal inference for regions with few treated or control group members must be based on extrapolation, leading to less precise estimates. Third, to approximate an experimental design, the research design stage of an evaluation should be separate from the outcome analysis stage. With standard regression analysis, the outcome of interest is necessarily part of the regression model and determining model fit requires repeatedly estimating the treatment effect.[55] This can lead to model selection based on the observed treatment effect and also suffers from the multiple comparisons problem, where the likelihood of finding a statistically significant result increases with the number of statistical tests performed. Finally, regression analysis requires making assumptions about functional form, which can increase bias if the wrong functional form is used—i.e., regression analysis is model dependent.

While regression analysis has several limitations, it can outperform matching methods if important unobserved covariates are omitted from the analysis. In this case, regression analysis will produce a less biased estimate than propensity score matching. For this reason, we first estimated the relationship between RAC participation and the dichotomous youth outcomes using standard logistic regression. Exhibit A6 reports regression-adjusted rates for the unmatched sample and allows comparison with results from the matched sample for each outcome. After regression adjustment, conclusions regarding the comparative effects of RAC were similar in the unmatched and matched samples.

[54] Sibling matches derived from the FamLink data case ID which identifies youth removed from the same household. We consider a youth to be placed with a sibling if two youth with the same case ID are placed in the same foster care setting at the same time.
[55] Rubin, D.B. (2007). The design versus the analysis of observational studies for causal effects: Parallels with the design of randomized trials. *Statistics in medicine, 26(1),* 20-36.

Exhibit A9

Effects of RAC on Select Outcomes for Foster Children and Foster Parents, With and Without Matching

Matching method	Placed with sibling: Index placement				Placement type: Relative				Placement type: Foster care			
	RAC	Comp[#]	Percentage point differences[^]	SE[t]	RAC	Comp[#]	Percentage point differences[^]	SE[t]	RAC	Comp[#]	Percentage point differences[^]	SE[t]
Raw percentages												
(1) Unmatched	93.4%	57.9%	35.5%***	0.01	63.5%	59.9%	3.6%*	0.01	30.7%	40.6%	-9.9%***	0.01
(2) Matched	93.4%	63.9%	29.6%***	0.01	62.6%	45.0%	17.6%***	0.01	31.8%	54.7%	-22.9%***	0.01
Regression-adjusted percentages												
(3) Unmatched	90.9%	59.2%	31.7%***	0.02	71.2%	57.5%	13.7%***	0.02	24.1%	42.5%	-18.4%***	0.01
(4) Matched	93.7%	68.4%	25.3%***	0.01	62.9%	42.2%	20.7%***	0.02	31.6%	57.8%	-26.2%***	0.02

Matching method	Length of stay (days)[^^]				Number of placements (events)[^^]				Likelihood foster parent retains license for three years			
	RAC	Comp[#]	Differences	SE[t]	RAC	Comp[#]	Differences	SE[t]	RAC	Comp[#]	Percentage point differences[^]	SE[t]
Raw percentages												
(1) Unmatched	502.1	513.3	-11.2	5.27	1.81	1.79	0.03	0.03	41.4%	24.2%	17.2%***	0.01
(2) Matched	503.8	528.0	-24.2	7.47	1.78	1.89	-0.11	0.04	42.7%	29.5%	13.25%***	0.01
Regression-adjusted percentages												
(3) Unmatched	507.7	512.3	-4.6	13.04	1.88	1.77	0.12	0.10	63.1%	37.8%	25.3%***	0.07
(4) Matched	511.4	521.4	-10.0	16.35	1.77	1.65	0.12	0.10	59.6%	41.9%	17.7%***	0.05

Notes:

[#] Comparison youth/families.

* p < 0.05, ** p < 0.01, and *** p < 0.001.

[t] Standard errors are expressed as a percent. Standard errors are calculated using the formula: $$SE = \sqrt{\frac{p_{1(1-p_1)}}{N_1} + \frac{p_{2(1-p_2)}}{N_2}}$$

[^] Raw percentages represent the differences in mean percentages for RAC and comparison youth without regression adjustment. Matching on covariates was still used to obtain a matched percentage.

[^^] Poisson regression used to generate estimates.

Because youth entered foster care and were placed in RAC facilities throughout the study period, our follow up periods varied. To ensure we only analyzed outcomes for youth who were able to reach the outcome, we subset analyses for different outcomes. Exhibit A7 presents sub-setting criteria used for both foster youth and foster parent outcomes.

Exhibit A10

Outcomes and Sub-setting Criteria for Entire Matched Sample: Foster Youth and Foster Parents

Outcome	Sample sizes		Sub-setting criteria
	RAC	Comparison	
Youth			
Total Number of Youth			Sample sizes both before and after preferred CEM matching
Unmatched	918	5,209	
Matched	745	2,102	
Placement with a sibling during the index event			Children with a sibling in foster care during the index placement
Unmatched	746	3,255	
Matched	608	1,422	
Placement type			For RAC youth, those with a post-RAC placement. For comparison youth, those with an index placement
Unmatched	916	5,199	
Matched	744	2,098	
Number of Placements: Total			For RAC youth, those with a post-RAC placement. For comparison youth, those with an index placement
Unmatched	918	5,209	
Matched	745	2,102	
Number of Placements: Length of stay < 12 months			Children who stayed in foster care for less than one year
Unmatched	415	2,239	
Matched	329	797	
Number of Placements: Length of stay 12-24 months			Children who stayed in foster care for 12 to 24 months
Unmatched	243	1,469	
Matched	202	689	
Number of Placements: Length of stay > 24 months			Children who stayed in foster care for more than 24 months
Unmatched	260	1,501	
Matched	214	616	
Length of Stay: Total			For RAC youth, those with a post-RAC placement. For comparison youth, those with an index placement
Unmatched	918	5,209	
Matched	745	2,102	
Length of Stay: At least 12 months			Children in care long enough to have a 12-month follow-up period
Unmatched	614	3,793	
Matched	535	1,645	

Exhibit A10 (cont.)

Outcome	Sample sizes		Sub-setting criteria
	RAC	Comparison	
Length of Stay: At least 18 months			Children in care long enough to have an 18-month follow-up period
Unmatched	524	3,205	
Matched	456	1,434	
Length of Stay: At least 24 months			Children in care long enough to have a 24-month follow-up period
Unmatched	439	2,700	
Matched	383	1,177	
Parents			
Retain license: Total			All foster parents in regions three and four
Unmatched	197	2,372	
Matched	176	1,356	
Retain license at least one year			Parents with a license long enough to reach one year
Unmatched	190	2,191	
Matched	172	1,305	
Retain license at least two year			Parents with a license long enough to reach two years
Unmatched	166	1,860	
Matched	146	1,181	
Retain license at least three year			Parents with a license long enough to reach three years
Unmatched	131	1,501	
Matched	120	966	
Retain license at least three year			Parents with a license long enough to reach four years
Unmatched	102	1,161	
Matched	92	755	

Outcome Analysis: Logistic Regression on Matched Sample

Our logistic regression outcome model uses most of the same covariates included in the matching model. Covariates used in the various models were not all the same. In some cases, small cell sizes resulted in multi-collinearity or quasi-complete separation. A group of variables provided various measures of a youth's behaviors and conditions. These included exceptional foster care payments, history of runaway, flags for neglect, and "other" reasons for removal. When variables exhibited perfect or near-perfect multicollinearity they were omitted from the analysis.

Outcome Analysis: Survival Analysis on Matched Sample

Rather than considering a simple "yes/no," survival analysis analyzes time to an event. In medicine, this approach is used to compare the effects of treatments on time to patient death or recurrence of symptoms. Survival analysis allows us to include the entire relevant sample instead of creating a sub-group with sufficient time at risk. We use a variation called Cox regression that allows us to control for the same covariates we include the logistic regression for the same outcomes.

IV. Results of Outcome Analyses Estimating RAC Effects

Additional/Sensitivity Analysis Results

For both foster youth and foster parent outcomes, we conducted additional analysis to test the sensitivity of our results using different methods and models. We took steps toward estimating the degree to which unobservable characteristics could be impacting foster youth outcomes, and, in some cases, take alternative approaches to ensure the results are not just a product of our approach.

As noted throughout the report, we could not definitively rule out the possibility that the decisions or circumstances leading to RAC placement in the first place are driving outcomes we observe, rather than RAC placement itself. Circumstances both outside and inside the foster care system that are not observed in our data could impact placement into the RAC. One example of possible selection bias, discussed in Appendix I, was the youth who returned home quickly being selected into RAC at a disproportionate rate. In that case, we chose to remove those youth from the sample because we believed them to be fundamentally different than other youth in the sample.

Other examples of selection bias identified through conversation with staff involved in placing foster youth and RAC staff were youth with siblings being placed in RAC at higher rates, youth with potential relative placements being placed into RACs at higher rates, and youth that are more difficult to place being disproportionately placed into RACs.

For foster youth outcomes where our primary analysis found a statistically significant difference between RAC youth and comparison youth, we employ the Oster treatment effects bounding method explained in Appendix I to estimate the impact unobservable characteristics would need to have to render the result null.[56] Exhibit A11 presents results for our estimation, "delta" of the impacts of unobservable characteristics and circumstances on foster youth outcomes where we found RAC placement to have a statistically significant effect. Following the Oster approach, we estimate delta assuming no treatment effect. Delta greater than 1 suggests our results are likely robust to unobservable characteristics. The calculated delta values in Exhibit A11, suggests that the treatment effects found in the primary analysis of placement with siblings could be biased by unobservable characteristics, but outcomes for placement type likely are not. Further analysis on placement with siblings indicated that placement type could drive the likelihood of placement with a sibling. Accounting for placement type in our regression analysis did not change the result; RAC youth were still more likely to be placed with siblings.

[56] The treatment effects bounding technique only holds for linear models. When primary outcomes were estimated using logit regression, we substitute a linear probability model to estimate the impact unobservable characteristics would need to have to render the result null.

Exhibit A11

Treatment Effect Bounds Estimate:
Impacts of Unobservable Characteristics' Effect on Placement with Siblings and Placement Type

Outcome	R max upper bound	Delta
Placed with sibling	0.8	0.408
Placed with sibling accounting for placement type	0.8	0.627
Placed with relative	0.8	5.303

Note:
These analyses compared the post-RAC placement for RAC youth with the index placement for comparison youth.

To examine the number of placement changes youth experience, in addition to regression analysis on the annualized number of placements, we also used Poisson regression on the number of placements events youth who remained in foster care for various time periods experienced. Results from this analysis (presented in Exhibit A12) suggest that across placement duration RAC placement does not appear to impact the number of placement changes youth experience.

Exhibit A12

Number of Placement Changes:
Average Number of Placement Events

Time in foster care	RAC	Comparison	p-value
Less than 12 months	2.04	2.05	0.976
12 - 24 months	2.63	2.29	0.294
24+ months	4.19	3.75	0.256

Notes:
Counts have been regression-adjusted to account for individual characteristics of those in the sample.
Count of placement events includes the placement after RAC placement for treatment youth and the index placement for comparison youth.
Analysis excludes youth still in care who have spent less than 24 months in care.
RAC—less than 12 months: N=235, 12-24 months: N=116, and 24+ months: N=214.
Comparison—less than 12 months: N=214, 12-24 months: N=395, and 24+ months: N=616.

For the length of stay in foster care, we also conduct additional regression analysis. We compared the likelihood RAC youth would remain in care for various time periods following their index placement to the likelihood comparison youth would remain in care for the same time periods. These analyses were limited to youth who were in the sample long enough to meet the specified time thresholds. We find that RAC youth were slightly less likely to remain in care for 12 months but slightly more likely to remain in care for 18 and 24 months (Exhibit A13). While we find that staying at a RAC has a statistically significant correlation with a slight decline in the likelihood of remaining in care for at least 12 months, any effects appear to fade as time passes. The lack of consistency across follow-up periods suggests that RAC placement has no long-term effects on youth's length of stay in foster care, consistent with our primary analysis.

Exhibit A13

Length of Stay in Foster Care:
Likelihood Youth Remain in Care

Length of foster care	RAC	Comparison	p-value
At least 12 months	65%	70%	0.036
At least 18 months	58%	57%	0.812
At least 24 months	49%	44%	0.152

Notes:
Percentages have been regression-adjusted to account for individual characteristics of those in the sample.
The sample for each outcome includes only those with a follow-up period long enough for them to reach a given time threshold by February 29, 2020. For example, the sample for youth remaining in care for at least 12 months included only youth with index placements on or before February 28, 2019.
RAC—at least 12 months: N=535, at least18 months: N=456, and at least 24 months: N=383.
Comparison—at least 12 months: N=1,645, at least 18 months: N=1,434, and at least 24 months: N=1,177.

Similar to the secondary analysis for the length of stay in foster care, we examine the likelihood that foster parents will retain their license for various follow-up periods following the start of their first license. Exhibit A14 presents results that confirm our primary analysis. Compared to similar parents who only receive youth from other settings, RAC parents were more likely to retain their license for all follow-up periods. However, as noted in the Evaluation Methods section of the report, data limitations around foster parent licenses and household characteristics mean we cannot necessarily conclude that a difference in retention between homes that received youth from RAC facilities is caused by youth first being placed in a RAC.

Exhibit A14

Likelihood Foster Homes Remain Licensed

License term	RAC	Comparison	p-value
At least 1 year	98%	90%	0.000
At least 2 years	86%	74%	0.000
At least 3 years	63%	38%	0.000
At least 4 years	67%	30%	0.000

Notes:
Percentages have been regression-adjusted to account for individual characteristics of those in the sample.
The sample for each outcome includes only those with a follow-up period long enough for them to reach a given time threshold by October 1, 2020. For example, the sample for foster parents remaining licensed for at least 12 1 year included only families whose first license began on or before October 1, 2019.
Foster parents were matched to RAC youth via consistent bogus provider ID values provided by RDA and DCYF.
RAC—at least 1 year: N=172, at least 2 years: N=146, at least 3 years: N=120, and at least 4 years: N=92.
Comparison—at least 1 year: N=1,305, at least 2 years: N=1,181, at least 3 years: N=966, and at least 4 years: N=755.

Regression Output for Primary Analysis

Exhibit A15

Logistic Regression Estimating Effects of RAC placement on the Likelihood Youth Would be Placed with Siblings During the RAC and Post-RAC Placement (Index Placement for Comparison Youth)

Covariate	Index placement		Post-RAC placement	
	Coefficient	SE	Coefficient	SE
RAC	2.006***	0.178	0.132	0.109
Female	0.0820	0.112	0.0421	0.099
Age (reference group ages 5 to 9 years old)				
under 12 months	-1.299***	0.250	-0.910***	0.221
1 to 4 years old	-0.385**	0.129	-0.270*	0.114
10 to 12 years old	0.158	0.196	0.237	0.176
Older than 12	-0.00275	0.357	-0.193	0.298
Race (reference group is American Indian/Alaska Native)				
Asian/Pacific Islander	2.372**	0.791	1.695***	0.512
Black	-0.0171	0.219	0.0850	0.187
White/other	-0.450*	0.197	-0.237	0.169
Hispanic	-0.340	0.236	-0.0847	0.205
Index placement year (reference year is 2015)				
2016	-0.281	0.210	-0.340	0.198
2017	-0.244	0.206	-0.345	0.196
2018	-0.325	0.215	-0.241	0.203
2019	-0.301	0.225	-0.287	0.211
2020	0.378	0.528	0.336	0.485
Region 3	0.243*	0.123	0.259*	0.109
Exceptional rate payment	-0.745*	0.309	-0.590*	0.276
Any prior runaways	-0.260	0.479	-0.244	0.429
Placement prior to index placement	-0.228	0.181	-0.287	0.211
Index removal reason: neglect	-0.738**	0.236	-0.679**	0.207
Index removal reason: physical abuse	-0.065	0.158	-0.003	0.138
Index removal reason: sexual abuse	0.347	0.318	0.176	0.262
Index removal reason: other	-0.133	0.203	-0.028	0.186
N	2,030		2,030	

Note:

* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Exhibit A16

Logistic Regression Estimating Effects of RAC placement on Placement Type for Post-RAC Placement (Index Placement for Comparison Youth)

Covariate	Placement type: relative		Placement type: foster care	
	Coefficient	SE	Coefficient	SE
RAC	0.886***	0.092	-1.141***	0.094
Female	0.173*	0.080	-0.191*	0.081
Age (reference group ages 5 to 9 years old)				
under 12 months	0.838***	0.177	-0.761***	0.179
1 to 4 years old	0.249**	0.093	-0.234*	0.094
10 to 12 years old	-0.314*	0.139	0.311*	0.140
Older than 12	0.0209	0.244	-0.133	0.250
Race (reference group is American Indian/Alaska Native)				
Asian/Pacific Islander	-0.614*	0.286	0.547	0.288
Black	-0.569***	0.151	0.529***	0.153
White/other	-0.506***	0.136	0.494***	0.137
Hispanic	-0.391*	0.169	0.331	0.170
Index placement year (reference year is 2015)				
2016	-0.189	0.157	0.183	0.158
2017	-0.227	0.157	0.223	0.157
2018	-0.503**	0.160	0.468**	0.161
2019	0.0582	0.164	-0.0261	0.165
2020	-0.936*	0.368	0.346	0.341
Region 3	-0.597***	0.090	0.628***	0.091
Exceptional rate payment	0.932***	0.231	-0.839***	0.237
Any prior runaways	0.007	0.158	-0.163	0.307
Placement prior to index placement	0.0984	0.136	-0.0742	0.137
Index removal reason: neglect	-0.156	0.116	0.0105	0.159
Index removal reason: physical abuse	0.806***	0.194	0.133	0.117
Index removal reason: sexual abuse	-0.0919	0.146	-0.747***	0.196
Index removal reason: other	0.287	0.259	0.0495	0.147
N	2,842		2,842	

Note:
* p < 0.05, ** p < 0.01, and *** p < 0.001.

Exhibit A17

Linear Regression Estimating Effects of RAC placement on the Annualized Number of Placement Events for RAC and Comparison Youth

Covariate	Index placement	
	Coefficient	SE
RAC	0.117	0.090
Female	-0.214*	0.100
Age (reference group age 5 to 9 years old)		
under 12 months	-0.212	0.136
1 to 4 years old	-0.0762	0.107
10 to 12 years old	-0.291	0.192
Older than 12	0.311	0.716
Race (reference group is American Indian/Alaska Native)		
Asian/Pacific Islander	-0.658*	0.288
Black	-0.366	0.308
White/other	-0.265	0.276
Hispanic	-0.283	0.295
Index placement year (reference year is 2015)		
2016	-0.239	0.137
2017	-0.0108	0.168
2018	-0.120	0.151
2019	0.482*	0.230
2020	-0.864	0.552
Region 3	-0.249*	0.112
Exceptional rate payment	1.134**	0.362
Any prior runaways	3.061*	1.519
Ran away during first event	-2.924	1.545
Placement prior to index placement	-0.147	0.189
Index removal reason: neglect	0.199	0.180
Index removal reason: physical abuse	0.136	0.131
Index removal reason: sexual abuse	0.622*	0.295
Index removal reason: other	0.101	0.206
N	2,150	

Note:
* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Exhibit A18

Cox Regression Estimating Effects of RAC placement on the Likelihood Youth Remain in Care

Covariate	Length of stay (days)	
	Coefficient (hazard ratio^)	p
RAC	0.974	0.635
Female	1.000	0.996
Index age	1.009	0.224
Race (reference group is American Indian/Alaska Native)		
Asian/Pacific Islander	2.408	0.000
Black	1.383	0.000
White/other	1.576	0.000
Hispanic	1.596	0.000
Index placement year (reference year is 2015)		
2016	1.106	0.226
2017	1.094	0.299
2018	1.202	0.054
2019	1.551	0.000
2020	0.754	0.665
Region 3	1.278	0.000
Exceptional rate payment	0.860	0.216
Any prior runaways	0.536	0.003
Ran away during first event	1.687	0.065
Placement prior to index placement	1.007	0.926
Index removal reason: neglect	0.849	0.067
Index removal reason: physical abuse	1.339	0.000
Index removal reason: sexual abuse	1.725	0.000
Index removal reason: other	0.919	0.342
N	3,040	

Note:

^ Cox regression output presented as hazard ratios. Values greater than 1 indicate that the treated sample is more likely to experience an event.

Exhibit A19

Cox Regression Estimating Effects of Receiving Youth from RAC Facilities on Foster Parent License Retention

Covariate	Length license retained (days)	
	Coefficient (hazard ratio^)	p
RAC	0.672	0.000
Female	1.086	0.543
Index age	1.083	0.000
Race (reference group is White/Other)		
Asian/Pacific Islander	0.918	0.723
Black	1.411	0.009
Hawaiian/Pacific Islander	0.154	0.063
Hispanic	1.281	0.163
First license year (reference year is 2013)		
2014	1.368	0.014
2015	1.429	0.008
2016	1.533	0.002
2017	2.071	0.000
2018	2.226	0.000
2019	3.839	0.000
2020	7.082	0.000
Region 4	0.868	0.057
Multiple caregivers	1.438	0.000
License capacity	0.89	0.003
Minimum age accepted	1.083	0.000
Maximum age accepted	0.972	0.000
N	1,579	

Note:
^ Cox regression output presented as hazard ratios. Values greater than 1 indicate that the treated sample is more likely to experience an event.

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