

2.0 IMPACT OF THE WAIVER ON OUTCOMES

North Carolina’s Title IV-E waiver demonstration sought to implement practice and policy changes that would:

- reduce the number of children served in out-of-home placement;
- reduce the length of time children spend in out-of-home placement; and
- reduce the rate of re-entry into out-of-home placement following an earlier episode of placement.

The first outcome, reduction in the probability of out-of-home placement, is measured using child abuse and neglect registry data linked to placement data. The database used in the evaluation includes 175,190 children who experienced an initial substantiated incident of abuse and/or neglect in state fiscal year 1994 (SFY94) through SFY01 (i.e., July 1, 1993, through June 30, 2001). Survival analyses are used to calculate the probability of entry to out-of-home placement after the report date for the first substantiated report. Cox proportional hazards models estimate the risk of placement for children in non-waiver counties compared to children in waiver counties.

The second and third outcomes, reduction in the length of time in out-of-home placement and reduction in the rate of re-entry, are tracked using longitudinal placement data that provide information on all placement experiences for 41,585 children who initially entered out-of-home placement from SFY94 through SFY01. Exhibit 2.1 summarizes the outcome indicators for each outcome. Two length of stay indicators are used to assess the likelihood of exit at different time points after initial entry. The cumulative probabilities of exiting placement and of re-entry to placement are calculated using life table analyses. Cox proportional hazards models estimate the overall risk of exit from placement, the likelihood of exit from placement for children who have been in placement for two years, and the rate of re-entry for children in non-waiver comparison counties compared to children in the waiver counties.

Exhibit 2.1. Outcome Indicators

Outcome	Indicator
Reduce the number of children entering out-of-home care	Probability of entering out-of-home care after the 1 st substantiated report
Reduce the length of stay for children who must enter out-of-home care	Probability of exiting care among children who remain 2 years after initial entry Overall likelihood of exit from placement
Reduce the number of children who re-enter out-of-home placement after achieving permanency in a prior spell	Probability of re-entering out-of-home placement

2.1 Analytic Approach

Due to the number and scope of child welfare initiatives being implemented statewide and in individual counties in North Carolina, the outcome evaluation employs a quasi-experimental design that utilizes both descriptive analyses and multivariate modeling that controls for both county and child characteristics. Outcome data files are constructed from child welfare administrative data files and provide information on outcomes for children who received services in pre-waiver comparison state fiscal years (SFY94, SFY95, SFY96, SFY97) and in the waiver implementation years (SFY98, SFY99, SFY00, SFY01). Experiences of children who initially entered placement in these years are tracked from the date of initial entry through March 31, 2002.

To conduct the analysis, the data are configured as initial-substantiation cohorts of abuse and/or neglect referrals or as cohorts of children initially entering out-of-home placement. A common client identification number links the substantiation cohorts to the initial placement cohorts, making it possible to track the experiences of children throughout their entire child welfare experience, and thus to identify changes in outcomes that may be attributable to the waiver. Spells of out-of-home placement/child welfare custody are defined operationally as a sequence of placements without more than one day's interruption.

To ensure that changes in outcomes are appropriately attributed to the waiver, we examine whether children in waiver counties experience more favorable outcomes than children in two other groups of counties: (1) children in a selected group of 19 non-waiver comparison counties that are matched to the waiver counties on key characteristics; and (2) children in the remaining 62 non-waiver counties in North Carolina. The use of all non-waiver counties expands the analytic strategy beyond bivariate tests of differences between demonstration and selected comparison counties to permit multivariate modeling that controls for factors that may explain observed changes in outcomes. Furthermore, the use of data from the process evaluation and the cost analysis made it possible to distinguish between waiver counties that implemented a wide range of new services over a substantial period of time and waiver counties that were more passive in their approach.

2.1.1 Defining Waiver Groups and Process Indices

Data from a survey of waiver counties conducted in January 2002 were used to develop indicators of waiver activity. The survey identified the kinds of services and activities the counties initiated as a result of their participation in the waiver. The purpose of the survey (see the appendix) was to quantify and standardize information on these themes across counties. The director of social services in each waiver county designated a key informant to complete the instrument for the agency.

The questions used in the survey were based on themes that emerged during earlier evaluation team site visits to the counties. They addressed seven areas of waiver-related activities:

1. The use of IV-E funding for flexible spending, contracting, and the development of new services or resources;
2. Agency activities implemented to meet waiver goals (within the agency and with other members of the community) that did not necessarily require funding, such as reorganization of work structures or in-house training.
3. How resources and decision making were shared within the agency and with the community;
4. Barriers to implementation, with a focus on the effects of staff turnover;
5. Barriers to the implementation of assisted guardianship;
6. The development of staff training and publicity materials about new services; and,
7. A summary assessment of agency experience with the waiver, including comparisons between non-FFK, original FFK, and second round FFK counties.

Data from the survey, supplementing a variety of ongoing contacts between the evaluation team and the counties involved in the waiver, made it possible to determine the extent to which counties varied in how they chose to implement new policies and practices made possible by the waiver. The survey data also provided the basis for indicators that summarize policy and practice changes that were implemented under the waiver and that might explain changes in outcomes.

The set of changes in policy and practice that constituted “the waiver” varied considerably across the 19 waiver counties. As shown in Exhibit 2.2, a count of the number of new services implemented in-house or contracted for with an outside agency ranged from 0 in two counties to 19 in one county. Moreover, data from the cost analysis (also shown in Exhibit 2.2) indicate that the date of the first expenditure of trust fund resources, one source of additional funding made available only to waiver counties in North Carolina, ranged from July 1, 1998, in one county to May 1, 2002, in another county. Although it was no surprise that the course of the waiver took different paths in the 19 waiver counties, it did present an additional challenge for the waiver evaluation. To test the impact of the intervention on the outcomes, it became necessary to define an indicator of waiver implementation that delineated policy and practice variations among the waiver counties without overestimating for some counties the changes pursued under the waiver. As shown in the exhibit below, we used two criteria for this purpose. Counties that initiated four or more new services *or* began accessing available resources in the trust fund prior to June 30, 2000, were designated as “*active* waiver counties.” These criteria resulted in 13 active waiver counties and six other waiver counties.

The resultant county status variable included in the multivariate outcome models includes active waiver, other waiver, comparison county, and other non-waiver county.

Exhibit 2.2 Summary of Waiver County Groups

County	Number of Spending Categories for Which IV-E Dollars Were Used	First Month of Trust Fund Expenditures	Criteria		Waiver Group
			Implemented 4 or More New Services	1 st Trust Fund Expenditure Before 6/30//2000	
Pasquotank	2	1-Jul-00	No	No	Other
Brunswick	2	1-Oct-00	No	No	Other
Burke	0	1-Feb-01	No	No	Other
Forsyth	3	1-Feb-01	No	No	Other
Edgecombe	0	1-Apr-02	No	No	Other
Yancey	1	1-May-02	No	No	Other
Durham	11	1-Mar-00	Yes	Yes	Active
Haywood	14	1-Jul-98	Yes	Yes	Active
Cleveland	1	1-Feb-99	No	Yes	Active
Wayne	8	1-Feb-99	Yes	Yes	Active
Scotland	3	1-Aug-99	No	Yes	Active
Rockingham	14	1-Feb-00	Yes	Yes	Active
Buncombe	19	1-Sep-00	Yes	No	Active
Wake	9	1-Feb-01	Yes	No	Active
Union	11	1-Feb-01	Yes	No	Active
Yadkin	13	1-Feb-01	Yes	No	Active
Johnston	6	1-Nov-01	Yes	No	Active
Alamance	7	1-Nov-01	Yes	No	Active
Caldwell	6	1-Feb-02	Yes	No	Active

These data provide the basis for two process indices created in the following five-steps:

1. Frequencies were generated for individual variables and tests were run to determine the strength and direction of each potential independent variable’s relationship to preliminary measures of the waiver outcomes.
2. Survey items with three-item response choices (designed to reveal waiver-like activities supported by other funding streams) were transformed to binomial variables to represent waiver spending alone. For example, items were scored as “1” where respondents indicated that the agency had spent IV-E money on a specific activity and “0” where agencies used other sources of funds, did not spend any money on the activity, or failed to answer the question.

3. Agencies varied in their strategies for implementing services. Some developed them in-house, others contracted with external providers, and some did both. To capture these variations, separate variables were included in the indices for in-house and contract provision of each service.
4. Transformed survey items were then grouped according to their face validity as contributors to each of the three waiver goals and representative of emergent common themes (e.g., legal remedies; agency practice changes; agency-community relationships; information sharing and decision making; and agency staff turnover).
5. Finally, correlations among items with face validity were calculated to determine that they had good inter-item reliability (Chronbach's $\alpha > .70$) and had sufficient variability to differentiate among counties.

Following these procedures, a support services index and a permanency index were created. The **support services index** is composed of six items (Chronbach's $\alpha = .893$), including the development of in-house and/or contracted provision of three types of services: assessment of parents or children, substance abuse services, and mental health services. The **permanency index** is composed of nine items (Chronbach's $\alpha = .824$), including items related to: (1) spending to recruit and retain foster and adoptive parents; and (2) developing in-house or contracted adoption, post-placement and post adoption services; and legal services. These indices are used in multivariate models that provide the basis for the outcome assessment.

2.1.2 Reform-mindedness Among County Agencies

Child welfare reform in North Carolina began in earnest with the Families for Kids (FFK) initiative that was planned in SFY94 and that began formal implementation in eight counties in SFY95. Within two years, the state legislature became convinced of the cost-effectiveness of the efforts being made under FFK and provided funds to support its expansion to other counties. Ultimately, 12 more counties were designated as formal participants in the initiative. When the waiver was granted, half of the original eight FFK counties and eight of the second group of 12 FFK counties volunteered to participate in the demonstration. As a condition of the waiver, four of the original group of eight FFK counties were not permitted to participate in the waiver.

Demonstrable improvements in outcomes by the FFK counties dictated that the evaluation control for FFK participation in the analysis of waiver outcomes. However, since progress toward goals among FFK counties depends on when the county became involved in the initiative, it is necessary to differentiate between FFK and FFK2 status in the outcome analyses. For these reasons, we include an FFK indicator in our multivariate models to control for its impact on the outcomes. The

FFK indicator specifies whether FFK was being implemented in a county during the period of time that a child is “at risk” for specific outcomes. For example, for the probability of placement analyses, the FFK indicator is coded “yes” if the county was implementing FFK at the time a child experienced the first substantiated report of abuse or neglect. In the case of re-entry, the FFK indicator is coded “yes” if the child exited placement during an FFK implementation year. For children in the original FFK counties and in non-FFK counties, the FFK indicator is stable across all the years (i.e., “yes” for original FFK counties and “no” for non-FFK counties). Because the time period used in these analyses spans both non-FFK years and FFK years for the second group of FFK counties, the indicator will change depending on timing of the event of interest for children in these counties. In this way, the FFK indicator captures both the process and timing of implementation of FFK.

Although FFK was the beginning of system reform efforts in North Carolina, it was by no means the only reform initiative implemented in the past ten years. For example, the five largest counties in the state are now participating in the *Family to Family* initiative sponsored by the Annie E. Casey Foundation. Some of these counties and others are testing a “multiple response” system that employs family assessments in situations involving less serious incidents of abuse and neglect, and targets more serious cases for criminal investigation. Given that the inclination to pursue reform may be indicative of a unique quality of innovativeness and perhaps responsiveness to children and their families, it is appropriate to include an indicator of “reformindedness” in analyzing outcomes.

“Reformindedness” is a continuous variable that summarizes the number of reform initiatives in which a county has participated since SFY95. As seen in Exhibit 2.3, waiver counties are clearly more inclined towards reform than other counties in the state; however, the same is true of the 19 counties selected as comparison counties, although to a slightly lower degree (see the appendix for list of reform initiatives by county). This is consistent with the original sample selection procedures in that we attempted to identify “volunteer-like” counties, but given that a number of these initiatives began after those counties were selected, it appears that their inclination toward reform persists. Since waiver counties in North Carolina volunteered to implement the waiver, it is possible that these counties were different in some way than other counties in North Carolina, especially around the desire and ability to implement child welfare reform. Having a group of comparison counties that reflects similarity in this characteristic is helpful in making a more precise assessment of the waiver’s impact.

Exhibit 2.3 Number of Reform Initiatives by Waiver Status

Group of Counties	Mean	N	Std. Deviation	Median	Minimum	Maximum
Active waiver Counties	6.85	13	2.703	7.00	3	12
Other waiver Counties	7.00	6	2.530	8.00	3	10
Comparison Counties	5.42	19	1.865	5.00	3	9
Other Counties	2.90	62	1.617	2.00	0	7
Total	3.14	100	2.486	3.00	0	12

2.1.3 Controlling for Child-Level and County-Level Potential Confounders

At the time the waiver was implemented in North Carolina, system reform efforts were mature in some counties and just beginning in others, resulting in very different “starting places” around outcome status. Since child welfare outcomes are not independent of each other (Usher, Wildfire et al. 1999) the differences in the baseline status or changes of one outcome could influence the direction and magnitude of change seen in another outcome. For example, as counties work to change the likelihood that children are placed in out-of-home placement, thereby reducing the number of children coming into placement, the length of stay for children ultimately entering placement is likely to increase because the children from families with less severe problems can be served in their own homes, leaving children from families with more significant problems to enter placement. As the caseload characteristics of children entering placement shift to this group with more significant problems it would be expected that length of stay would increase. Similarly, decreases in length of stay could result in increases in re-entry or, vice versa, as children stay in placement longer, re-entry is likely to decrease. To control for the variation in outcome status across the counties, we include a county-level variable that estimates a county’s proclivity to place children in out-of-home placement in our length of stay models and we include an estimate of length of stay in the re-entry models. Since our models are based upon child-level data, we assign each child a summary county indicator of length of stay or likelihood of placement based upon the child’s year of initial entry to placement. Finally, we include the age, race, and gender of the child in each outcome

model and stratify our models by size of county, producing an overall weighted estimate for the risk ratio (RR).

2.1.4 Model Specification

Cox proportional hazards models test whether there is a differential change in outcomes for children entering the child welfare system between SFY94 to SFY01. In addition to the variables described above (i.e., county waiver status, child demographic characteristics, county summary indicator of probability of placement or length of stay, number of reforms, and FFK status), the models include the state fiscal year the child became at risk for the outcome of interest (i.e., year of initial entry to placement, year first substantiated report occurred, year of exit from placement, and year the child entered third year of placement) and an interaction term of SFY by county waiver status. The interaction term specifically tests whether the changes across the years are parallel. Using the parameter estimates for the SFY and waiver status main effect and the interaction term, we calculate the RR of the event of interest compared to the baseline year for each group. Additionally, we run a reduced model to determine whether these three terms significantly contribute to the explanatory power of the model and report the resultant chi-square statistic.

In the remainder of this chapter, we present the results of multivariate analyses that assess the degree to which changes in outcomes differed across the years in waiver, comparison, and other counties. In the next chapter, we address the question, “what exactly did the North Carolina waiver do to change outcomes?” by using multivariate modeling to assess the impact of policy and practice changes attributable to the waiver on differential outcome changes among the 19 waiver counties.

2.2 Reducing the Probability of Out-of-Home Placement

Several outcome indicators estimate the impact of the waiver demonstration on incidence of out-of-home placement. In this section, we begin with county aggregate numbers to examine trends in the number of children entering placement for the first time during each of the past six state fiscal years. The following exhibit measures the number of initial entries to out-of-home care in waiver, comparison, and other counties relative to 1996, the year before the waiver in North Carolina was implemented. It shows that entries to care were consistently lower during the waiver demonstration period in waiver counties and that entries in comparison counties only fell below the pre-demonstration level in 2002. Entries in other counties never declined to pre-demonstration levels and appeared to be rising in 2002.

Exhibit 2.4. Entries to Care Relative to 1996 Base Year



This analysis provides a basic overview of the experiences of the three groups of counties and its findings have cost implications that are explored in detail in the cost analysis presented in Chapter 4. However, this overall pattern could be the result of factors other than the waiver. It is necessary, therefore, to examine changes in the probability of out-of-home placement and reductions in waiver counties' reliance on out-of-home care through multivariate models.

Child Abuse and Neglect registry data record all reports of abuse and/or neglect that are accepted for investigation in North Carolina. Using these data we identify cohorts of children who experienced a first *substantiated* incident of abuse and/or neglect during a series of state fiscal years (SFY) beginning with SFY93. The probability of entering out-of-home placement is estimated by linking the substantiation cohorts to cohorts of children initially entering placement from SFY94 through SFY01.

The probability of placement within one year of initial substantiation for children who experienced a first substantiated incident of abuse/neglect in both active and other waiver counties in pre-waiver SFY94 through SFY97 was approximately 0.16, as shown in Exhibits 2.5 and 2.6. During the first year of the waiver demonstration, SFY98, this probability decreased to 0.12 and continued to decrease in subsequent years to less than 0.09 in the active waiver counties and to about 0.13 in other waiver counties in the most recent year for which data are available. In comparison counties the probability of placement was about the same, 0.15, for children with a first substantiated incident in SFY93. However, in subsequent years this probability only decreased slightly, equaling 0.13 for children with an initial substantiated incident in SFY01. In other non-waiver counties the probability of placement in the pre-waiver years is lower than in either waiver or comparison counties, 0.12, with little change in this probability since SFY93.

Exhibit 2.5.

**Entry to Placement by Year of 1st Substantiation
for Children in Active Waiver Counties**

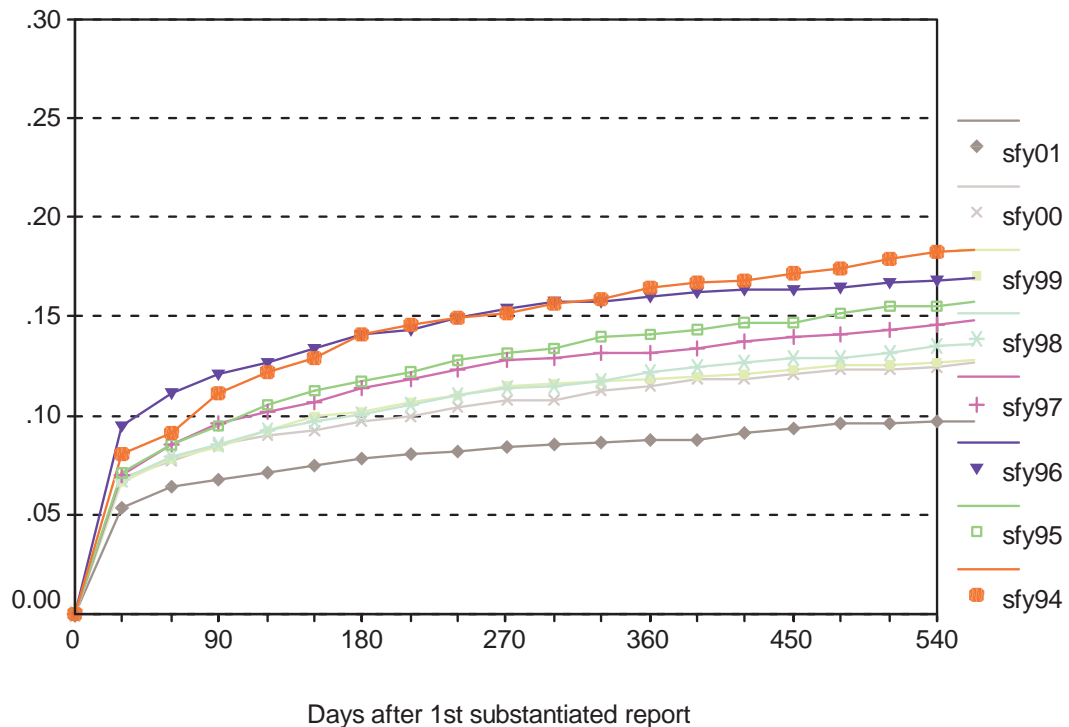


Exhibit 2.6.

Entry to Placement by Year of 1st Substantiation
for Children in Comparison Counties

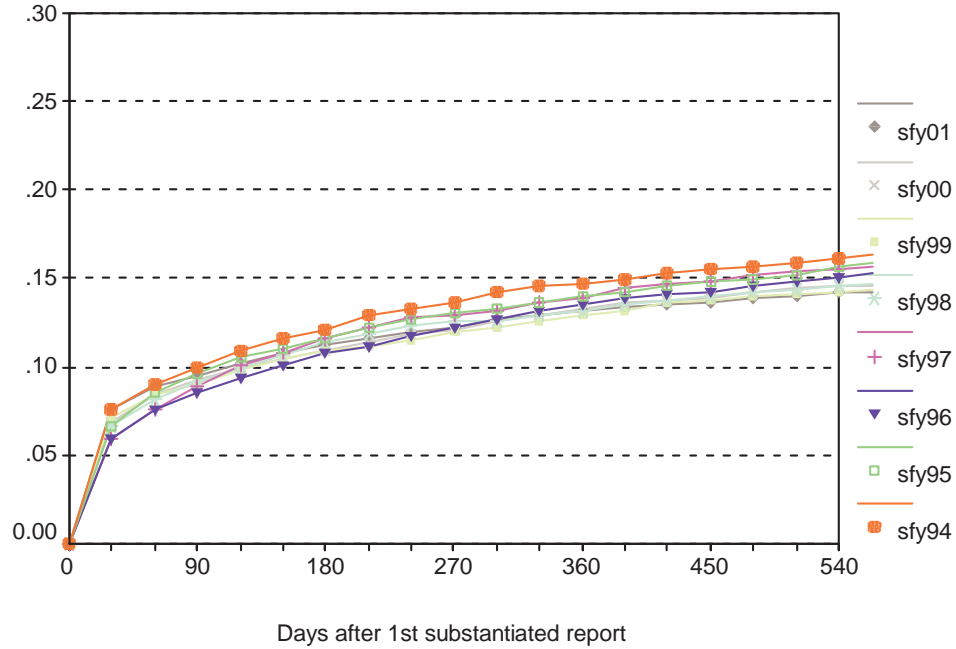


Exhibit 2.7.

Entry to Placement by Year of 1st Substantiation
for Children in Other Waiver Counties

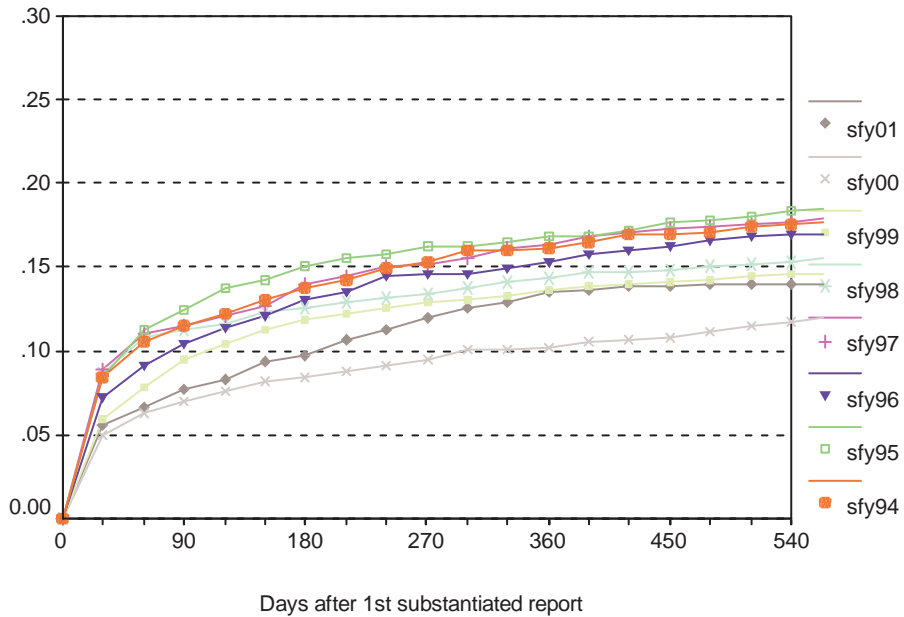
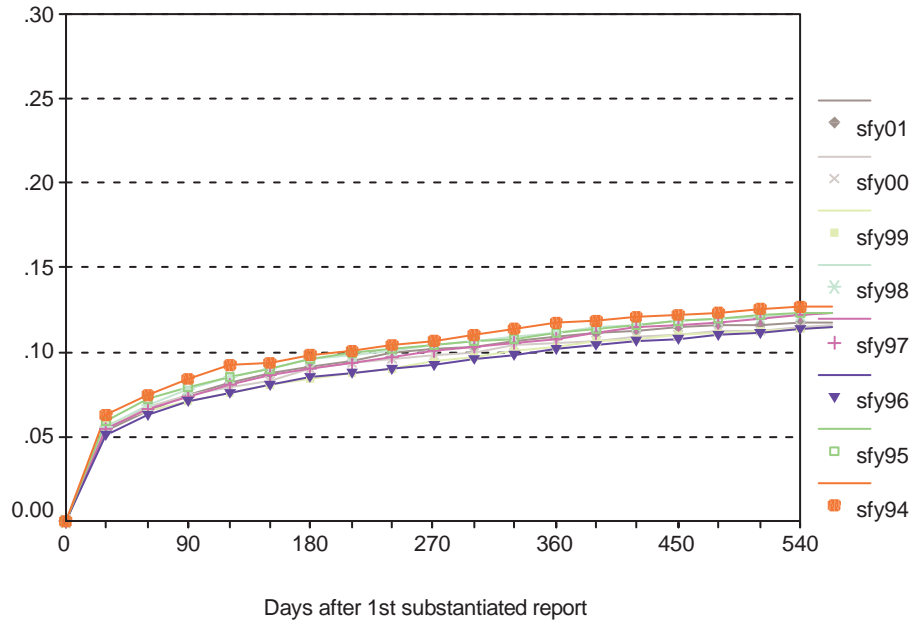


Exhibit 2.8.

Entry to Placement by Year of 1st Substantiation
for Children in Other Non-Waiver Counties



To assess whether these changes in probability of placement are related to the implementation of the waiver, we use Cox proportional hazards models as shown in Exhibit 2.9. The model estimates the risk ratio for children with an initial substantiation by different demographic characteristics and county characteristics. Children who are older than two years at the time of the report are significantly less likely to enter out-of-home placement than younger children; black and other minority children are more likely to enter placement (24% and 17%) than white children; and males are slightly more likely (4%) to enter placement than females.

Exhibit 2.9. Results of Multivariate Model - Probability of Placement

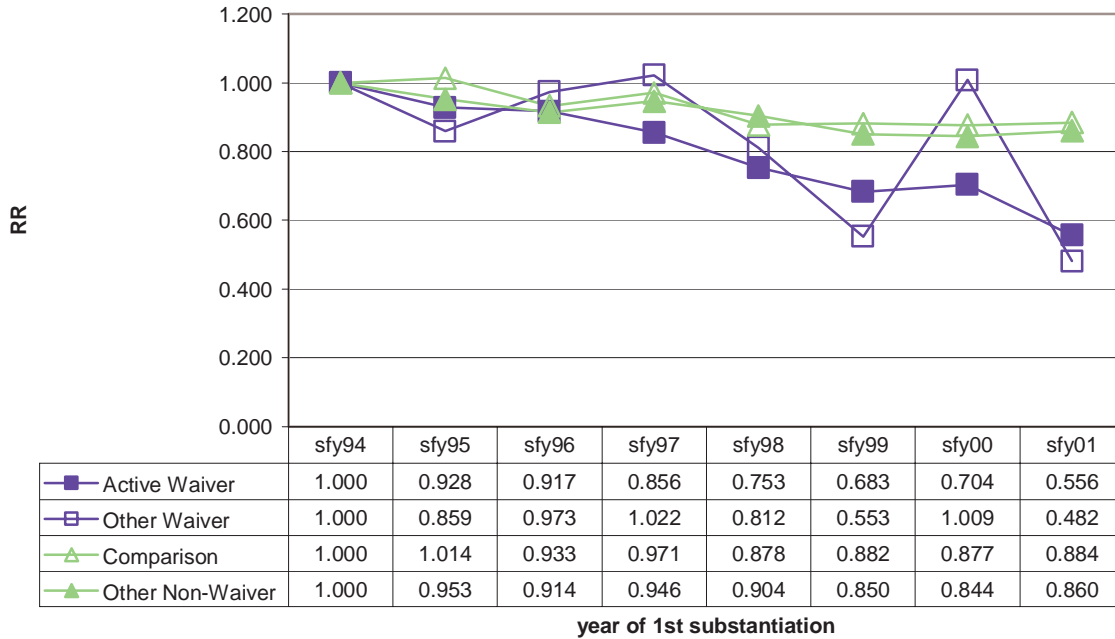
	B	SE	Wald	Df	Sig.	RR
Age at 1st substantiated abuse/neglect report			3065.031	2.000	0.000	
Birth to 1 (reference)						1.000
2 - 5 years	-0.661	0.016	1731.985	1.000	0.000	0.516
6 - 11 years	-0.810	0.016	2569.925	1.000	0.000	0.445
12 - 17 years	-0.539	0.018	900.659	1.000	0.000	0.583
Gender (male reference)	0.037	0.012	9.502	1.000	0.002	1.038
Race			287.099	2.000	0.000	
White (reference)						1.000
Black	0.218	0.013	280.468	1.000	0.000	1.244
Other minority	0.155	0.020	57.328	1.000	0.000	1.168
County status on FFK at time of 1st substantiation (non-FFK reference)	0.061	0.017	12.832	1.000	0.000	1.063
Number of reform initiatives in which county participates	-0.043	0.004	110.201	1.000	0.000	0.958
SFY of 1st substantiation waiver participation¹					0.000	
SFY of 1st substantiation * waiver¹					0.000	

¹ Since the FY * waiver interaction term is significant, combined parameter estimates are calculated and presented in Exhibit 2.10.

Children experiencing their first abuse or neglect incident in counties implementing FFK were slightly more likely to enter placement (6%) during these years than children in other counties. However, after controlling for FFK the likelihood of out-of-home placement decreases as the number of reform initiatives in which the county participates increases.

As shown in Exhibit 2.9, the interaction term of waiver status and SFY was significant. This indicates that, after controlling for differences in child demographics and participation in FFK and other reform initiatives, there was a differential change by waiver status in the probability of entering out-of-home placement across the years.

Exhibit 2.10. Relative Risk of Placement



Using the parameter estimates from the model, we calculate the relative risk (RR) for entry to out-of-home placement for children within each county group in each substantiation cohort compared to the risk for children in the SFY94 cohort. In the pre-waiver years, SFY95 and SFY96, there is the beginning of a trend towards reduced likelihood of out-of-home placement in all county groups. This trend flattens out for the comparison counties and the other non-waiver counties in the years after waiver implementation. However, in both active waiver counties and other waiver counties the downward trend continues and intensifies as the waiver progresses. In the active waiver counties, children with an initial substantiation in SFY98 were 25% less likely to enter out-of-home placement; in SFY99, 32% less likely to enter placement; SFY00, 30% less likely; and in SFY01 44% less likely to enter placement. In other waiver counties, the downward trend is consistent except for children with an initial substantiation in SFY00, who had about the same likelihood of placement as the children in the SFY94 cohort.

This set of findings is important for several reasons. First, it indicates that counties that applied for the waiver were different from other counties in that they were more likely to place children in out-of-home care (fortunately, the randomly-selected comparison counties exhibited a similar tendency, thereby strengthening the evaluative comparisons of the two groups). Second, the consistent and persistent pattern indicating a reduced probability of out-of-home placement in waiver counties contrasts with minimal change for children in comparison or other counties in North

Carolina. Finally, the relationship of the waiver to these changes is confirmed even in the presence of other reform initiatives, such as FFK.

2.3 Changes in Risk Profiles of Children Entering Placement

As the number of children entering out-of-home placement decreases, child welfare agencies suggest that the risk profile of children entering placement reflects a more troubled population of children and families, leading to the hypothesis that summary measures of length of stay will ultimately increase. To begin examining this hypothesis, North Carolina vital statistics data were linked with the Central Registry of Child Abuse and Neglect. The linked data provided information needed to explore the relationship between perinatal factors of mother/child well being, children’s experiences with the child welfare system, and counties’ participation in the waiver. The vital statistics database contains the birth certificate data for all children born in North Carolina from 1990 through 2000. These data files include information on 1,058,872 children, with an estimated 100,000 births a year. Like other databases used in this project, these data are routinely collected by the North Carolina State Center for Health Statistics (NCSCHS).

The North Carolina Child Abuse and Neglect Central Registry data, linked to placement authority data, was matched to the birth certificate data file (hereafter referred to as the birth/placement data file). Using matching algorithms across the two files, 5,655 children born and substantiated for abuse and/or neglect since 1990, and subsequently entering placement authority in SFY97–SYF00, were matched with their birth record. Since annual net growth by county in North Carolina ranges from -2. 2% to 5. 5, (LINC (Log into North Carolina) *Annual Net Migration by County, 1999* (<http://linc.state.nc.us>), it is unlikely that a child with a record in the Central Registry did not have a North Carolina birth certificate due to migration. Exhibit 2.11 describes these matches by state fiscal year.

Exhibit 2.11. Number of Children with Match/Non-Match of Birth Certificate Record

	SFY97	SFY98	SFY99	SFY00	Total
No Match	640	612	617	513	2382 (29.64%)
Match	1425	1428	1366	1436	5655 (70.36%)
Total Entering Age 0-5	2065	2040	1983	1949	8037 (100.00%)

The following sections describe analyses of mother or child characteristics that may influence experiences in out-of-home care, and the variation among counties for these characteristics during the waiver years.

2.3.1 Mother/Child Characteristics Identified on the Birth Certificate

To determine if this file was a reasonable representation of the larger placement data file, children in the birth/placement data file were compared on several child and county characteristics used in the outcome evaluation. Table 2.2 below illustrates the similarity between the matched group and the state as a whole.

Exhibit 2.12. Distribution of Child/County Characteristics – Matched vs. State Groups

Variables	% of Matched	% of Total	Variables	% of Matched	% of Total
Age 0-1	55	50	Never w/relative	52	55
Age 2-5	45	50	Subseq w/relative	26	25
White	43	44	Initially w/relative	22	20
Black	44	43	sfy97	25	26
Other	12	13	sfy98	25	25
Male	53	52	sfy99	24	25
Female	47	48	sfy00	25	24
Foster Home	50	52	Waiver Active	17	17
Relative	21	20	Waiver Inactive	11	11
GH Residential	1	1	Comparison	36	36
GH Treatment	0	0	Other	37	37
Shelter	1	1	Level 1	13	15
Other	27	27	Level 2	44	44
			Level 3	42	41

Several risk factors for child abuse, neglect, and entry to out-of-home care are identifiable from birth certificate records including, birth weight, adequacy of prenatal care, birth abnormalities, race, single parenthood, and presence of siblings (Needell & Barth, 1998). Using data available on the North Carolina birth certificate, the relationship of these characteristics to exit from out-of-home care in one year was evaluated using logistic regression analyses. The results are presented in Exhibit 2.13 below.

Exhibit 2.13. Child/Mother Risks and Exit in One Year

Birth Certificate Characteristics	RR	p-value
Age Mother < 20	1.000	0.000
Age Mother 20-25	0.970	0.651
Age Mother 26+	0.779	0.002
No Sibs	1.000	0.009
1 Sib	0.891	0.079
2+ Sibs	0.812	0.002
Mother College 4 yrs	1.000	0.000
Mother < HS	0.484	0.000
Mother HS	0.579	0.002
Mother College < 4 yrs	0.732	0.105
Married	1.000	0.000
Unmarried/knw	0.994	0.928
Unmarried/unkn	0.805	0.000
White	1.000	0.000
Black	0.844	0.003
Other	1.266	0.003
2500+ grams	1.000	0.088
< 1500 grams	0.749	0.028
1500-2499 grams	0.990	0.879
Preg/Delivery Problems	0.918	0.082
Tobacco Use	0.928	0.135
Alcohol Use	0.932	0.454
PNC Begun > 3 mths	0.950	0.328
PNC Visits < 9	0.992	0.883

Risk factors not significantly associated with a decreased probability of exit in one year included adequacy of prenatal care, low birth weight (1500-1800 grams), and alcohol or tobacco use. Risk factors significantly associated with a decreased probability of exit included older mother (26+years), one or more siblings, mother with a high school diploma or less, unmarried mother with father unknown, African American child, child with very low birth weight (<1500 grams), and problems during pregnancy/delivery. Problems during pregnancy/delivery was coded yes if any one of the following were recorded on the birth certificate: mother had diagnosed medical risk during pregnancy; an abnormal event occurred during labor or delivery; or there was a diagnosed abnormal condition of the newborn.

2.3.2 Variation Among Counties

One of the interests of the evaluation was in determining if there were differential changes in risk profiles of children entering out-of-home placement across the county groups. Anecdotally, counties had described the phenomenon often found in child welfare—when an agency diverts children from out-of-home care by providing services, the children who do enter can be the children

with more significant difficulties. Exhibit 2.14 illustrates variations among the county groups (active waiver, other waiver, comparison, and other non-waiver) for risk factors associated with decreased probability of exit from care.

Exhibit 2.14. Number of Children with Risk in 1997 and Percentage Increase SFY97 to SFY00

	Active Waiver		Other Waiver		Comparison		Other	
	#	%	#	%	#	%	#	%
Mother age 26 +	77	26%	49	18%	153	10%	193	-3%
Two+ Siblings	105	25%	80	-9%	217	0%	281	-17%
Mom < HS	116	31%	91	-5%	274	3%	343	-16%
Mom HS	80	10%	49	2%	158	8%	191	-20%
Unmarried/unkn	116	-6%	68	-12%	215	5%	252	-21%
Black	122	14%	51	10%	217	-2%	253	-22%
VLBW	13	-31%	9	-44%	24	25%	16	-6%
Total Children Age 0-5	218	26%	152	-3%	464	12%	591	-17%

For characteristics associated with increased length of stay, these data indicate that the county groups differ, with active waiver counties experiencing increases compared to other county groups. Active waiver counties experienced increases in mothers older than 26 years at birth (26% increase), two siblings (25%), and mothers with less than a high school education (31%); and a 30% decrease in very low birth weight (small numbers of children with very low birth weight exist across all county groups). Each of these characteristics are associated with a decreased likelihood of leaving care in a year.

Other waiver counties experienced increases in mothers older than 26 (18%), with a decrease in mothers unmarried/father unknown (12%) and children with very low birth weight (44%). Comparison counties experienced increases in very low birth weight (25%), and no substantial decreases. Other non-waiver counties experienced decreases in numbers of children for all risk characteristics. These analyses provide some evidence to suggest that the profiles of families involved with child welfare differentially changed across the county groups over the waiver years and, thus, could, in fact, influence the length of time children remain in placement.

2.4 Reducing Length of Time in Out-of-Home Placement

The figures shown below present the rate of exit from out-of-home placement for children initially entering placement in the waiver county groups. These figures highlight the downward trend in the length of time children in North Carolina spent in out-of-home placement evident in all counties prior to the implementation of the waiver. Due to a mature reform agenda in many counties,

including some waiver and comparison counties, counties began making significant progress in more quickly achieving permanency for children entering placement as early as SFY96. This trend continued in all counties throughout the waiver years, with active waiver counties achieving reductions in the median length of stay from about 540 days in pre-waiver SFY94 to about 360 days for children entering in SFY01. Children entering placement in the other waiver counties and the comparison counties in SFY94 stayed in placement, on average, slightly longer than children in the active waiver counties, as shown by a median of about 450 days. Given that these counties had not been involved in as many earlier reform initiatives, it is perhaps not surprising that they were able to achieve slightly greater improvements in length of stay than the active waiver counties by reducing the median length of stay for children entering placement in SFY01 to approximately the same level as the active waiver counties.

Exhibit 2.15.

Exit from Placement by Year of Initial Entry
for Children in Active Waiver Counties

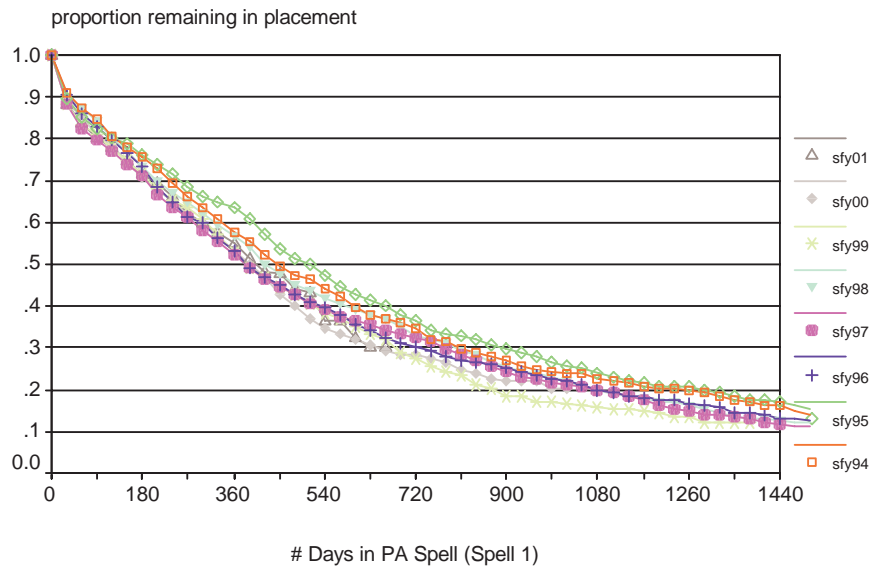


Exhibit 2.16.

Exit from Placement by Year of Initial Entry
for Children in Other Waiver Counties

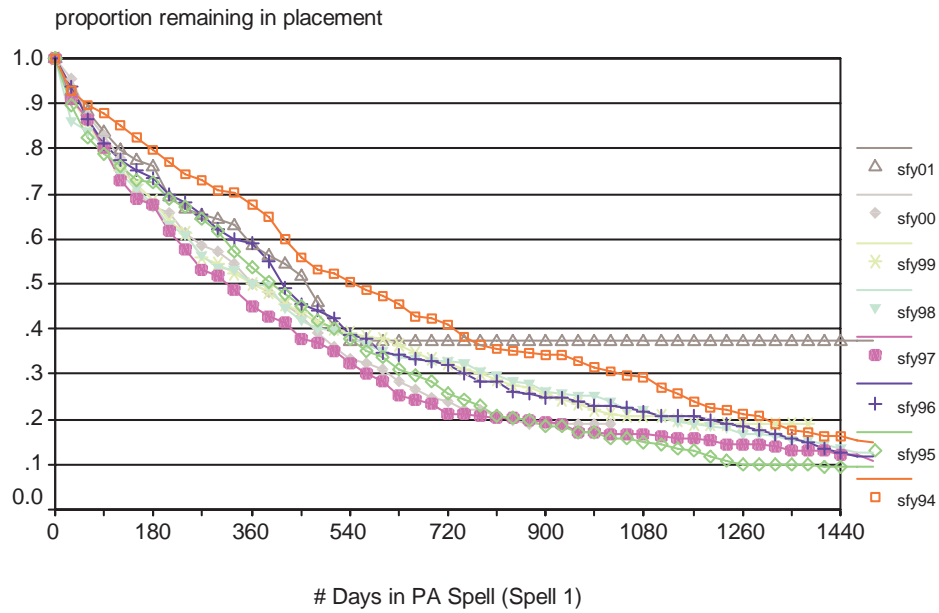


Exhibit 2.17.

Exit from Placement by Year of Initial Entry
for Children in Comparison Counties

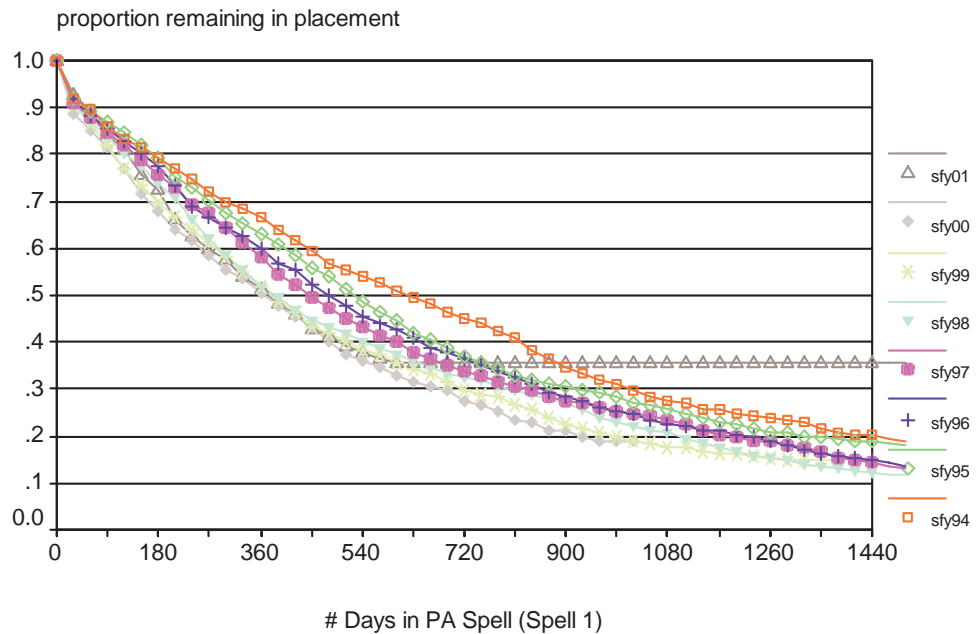
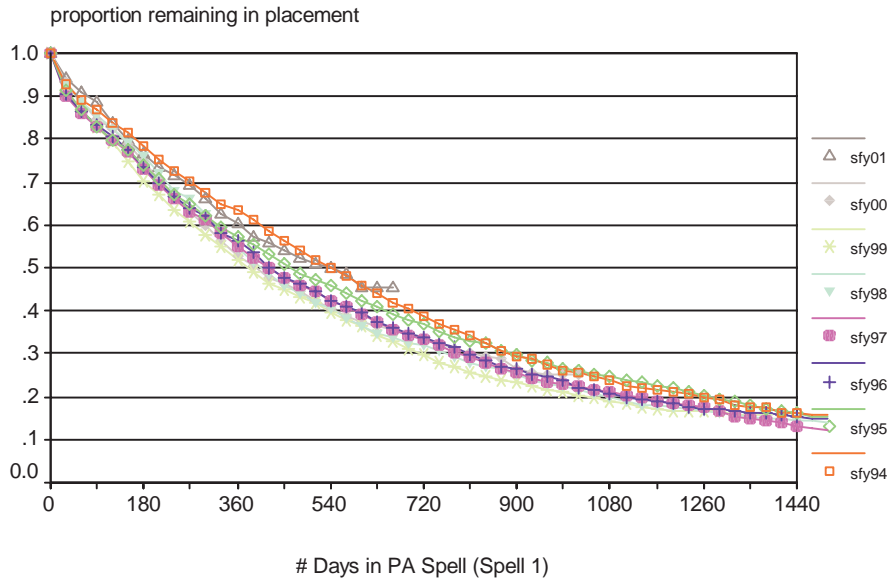


Exhibit 2.18.Exit from Placement by Year of Initial Entry
for Children in Other Non-Waiver Counties

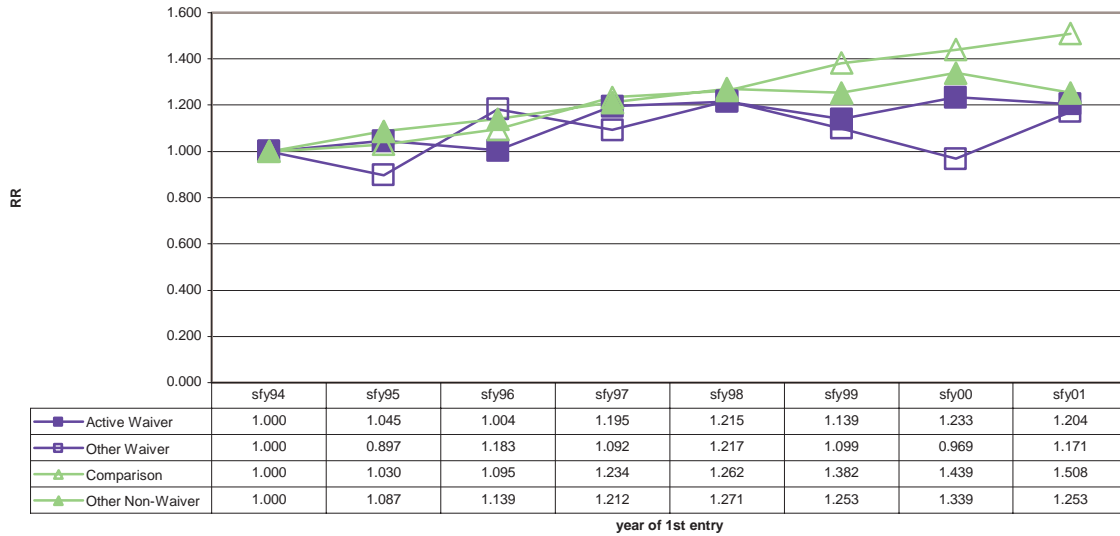
The Cox proportional hazard model that tested the impact of the waiver on length of stay (summarized in Exhibit 2.19) confirms that children entering placement in more recent post-waiver years are more likely to exit placement than children who entered in the pre-waiver years and that this downward trend is present in all county groups. Exhibit 2.18 plots the RR of exit from placement, calculated using the parameter estimates from the model, for children entering placement in each county group across the years compared to children entering in the base year, SFY93. The upward trend of all the lines depicts the increased likelihood of exit for children in all county groups. However, it also shows that children in comparison and other non-waiver counties appear to have a greater rate of improvement than those in active and other waiver counties. The model also confirmed that as the probability of placement increases in a county, the likelihood of exit from placement also increases ($RR = 1.25$, $p = .000$). Since both active and other waiver counties substantially reduced the likelihood of placement for children with reports of abuse and/or neglect (and to a greater degree than comparison and other non-waiver counties) it is likely that the needs of the children entering placement in these counties changed. Once children who can effectively be served in their own homes and neighborhoods are diverted from placement, the children who enter placement are more likely to require more intensive and long-term intervention, resulting in longer lengths of stay. It is perhaps significant, therefore, that even as waiver counties were shifting toward

servicing less troubled children and families in their own homes, the length of stay for those who had to enter placement did not increase, but continued to decrease.

Exhibit 2.19. Results of Multivariate Model of Exit from Placement

	B	SE	Wald	df	Sig.	RR
Age at placement			102.818	2.000	0.000	
Birth to 1 (reference)						1.000
2 - 5 years	0.005	0.015	0.103	1.000	0.748	1.005
6 - 11 years	-0.120	0.014	69.175	1.000	0.000	0.887
12 - 17 years	-0.008	0.015	0.318	1.000	0.573	0.992
Gender (male reference)	0.042	0.010	16.823	1.000	0.000	1.043
Race			227.922	2.000	0.000	
White (reference)						1.000
Black	-0.152	0.011	178.489	1.000	0.000	0.859
Other minority	0.051	0.018	7.550	1.000	0.006	1.052
County status on FFK at time of entry (non-FFK reference)	0.133	0.015	78.593	1.000	0.000	1.142
Rate of placement in county	0.234	0.059	15.712	1.000	0.000	1.264
Number of reform initiatives in which county participates	0.008	0.003	5.223	1.000	0.022	1.008
SFY of entry¹					0.000	
waiver participation¹					0.000	
SFY of entry * waiver¹					0.000	
¹ Since the FY * waiver interaction term is significant combined parameter estimates are calculated and presented on a separate chart.						

Exhibit 2.20. Relative Risk of Overall Exit from Placement



Since children who get “stuck in care” pose one of the greatest challenges for the child welfare system, it is important to consider the impact of the waiver on this subset of children. The rate of exit from placement for children who are still in care two years after their initial entry is illustrated in the following exhibits. In the early pre-waiver years, about one-third of children in the active waiver counties were still in placement at the two-year mark. In the other waiver, comparison, and other non-waiver counties, the likelihood of being in placement two years after initial entry was slightly higher, ranging from about .35 to .45. Although there is a consistently smaller proportion of children remaining in placement at the two year mark as the years progress, the rate of exit after two years appears fairly consistent in the subsequent years, as evidenced by mostly parallel lines in these figures.

Exhibit 2.21.

Exit from Placement by Year of Initial Entry
for Children in Placement over 2 Years in Active Waiver Counties

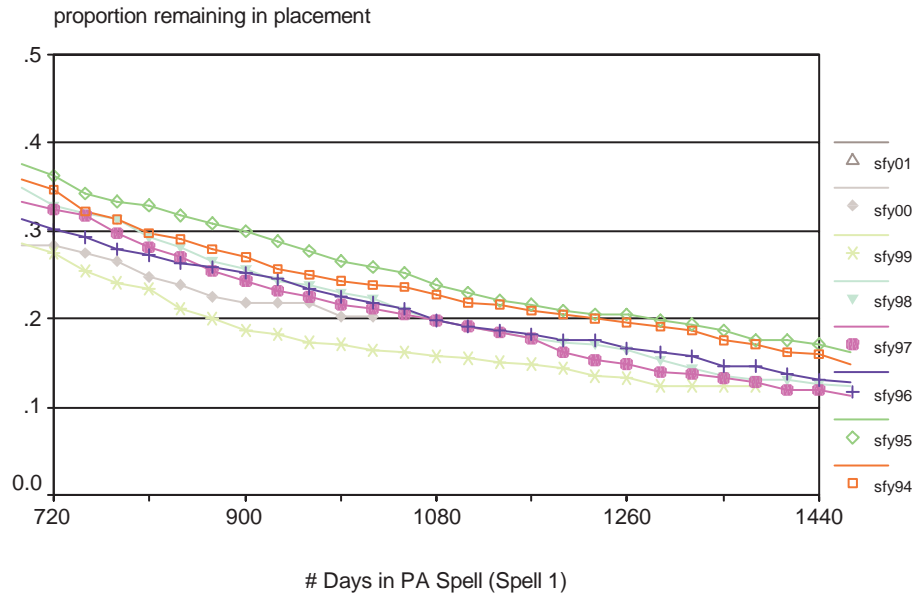


Exhibit 2.22.

Exit from Placement by Year of Initial Entry
for Children in Placement over 2 Years in Other Waiver Counties

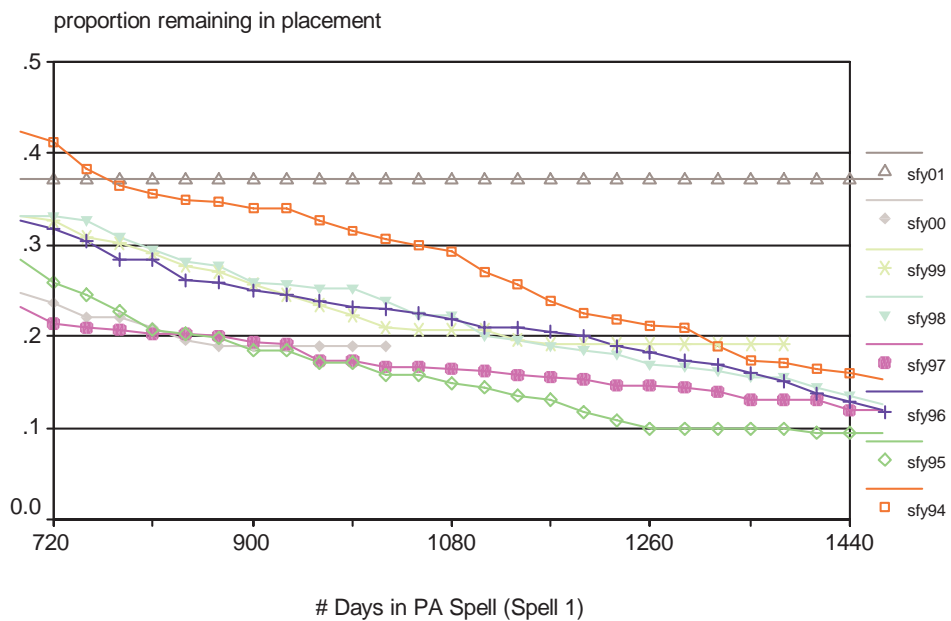


Exhibit 2.23.

Exit from Placement by Year of Initial Entry
for Children in Placement over 2 Years in Comparison Counties

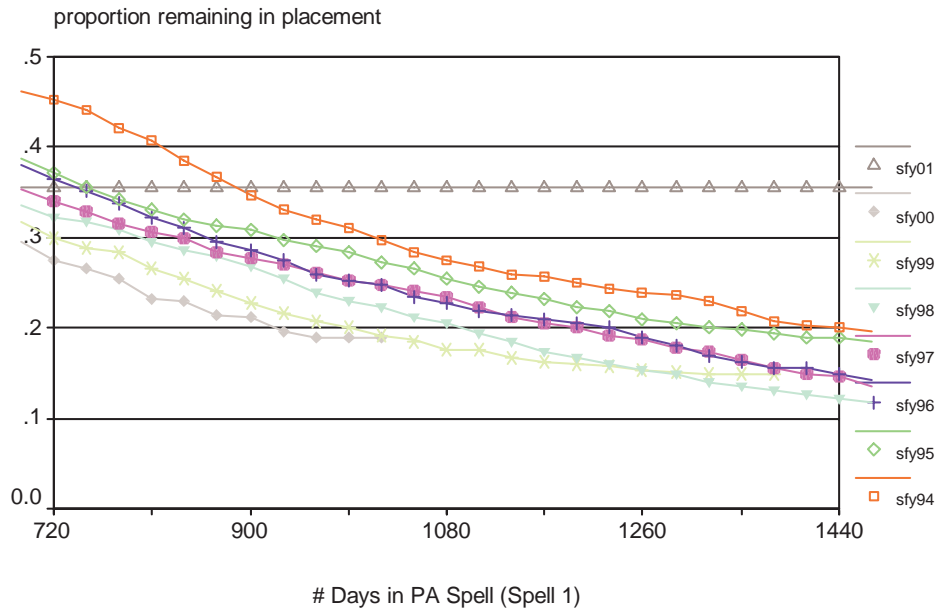


Exhibit 2.24.

Exit from Placement by Year of Initial Entry
for Children in Placement over 2 Years in Other Non-Waiver Counties

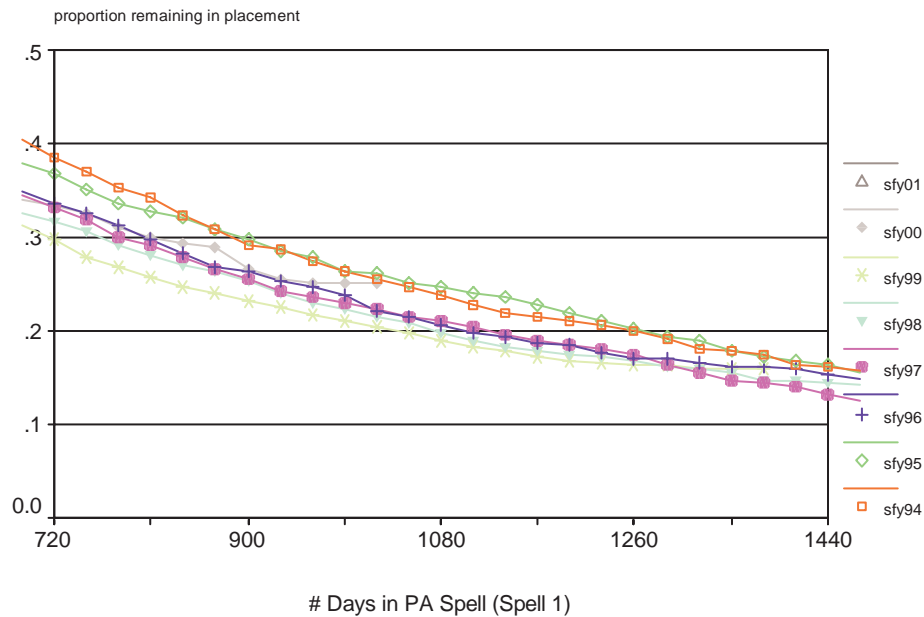


Exhibit 2.25 summarizes the results of the multivariate model that examined the relationship of the waiver to the rate of exit after two years. The child’s age at initial placement, gender, and race were all significantly related to the likelihood of exit after two years. Older children, minority children, and males are less likely to exit than younger, white, and female children respectively, as indicated by a RR of less than 1. Children entering placement in an FFK county are 13% more likely to exit at all time points than children entering placement in a non-FFK county. The significant waiver by SFY interaction term indicates that there are different patterns of change among the county groups in the likelihood of exit for this group of children across the years.

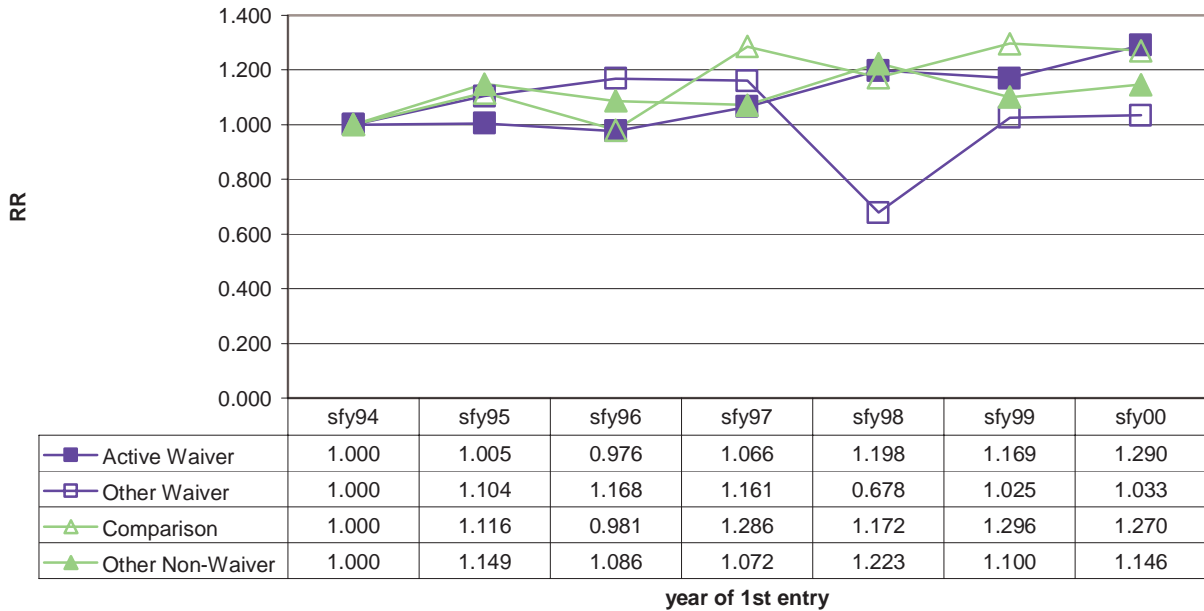
Exhibit 2.25. Results of Multivariate Model of Exit from Placement after 2 Years

	B	SE	Wald	df	Sig.	RR
Age at placement			612.774	2.000	0.000	
Birth to 1 (reference)						1.000
2 – 5 years	-0.239	0.029	70.434	1.000	0.000	0.787
6 - 11 years	-0.599	0.029	422.257	1.000	0.000	0.549
12 - 17 years	-0.693	0.035	387.959	1.000	0.000	0.500
Gender (male reference)	0.063	0.022	8.351	1.000	0.004	1.065
Race			59.271	2.000	0.000	
White (reference)						1.000
Black	-0.176	0.024	52.989	1.000	0.000	0.839
Other minority	-0.007	0.044	0.026	1.000	0.871	0.993
County status on FFK at time of entry (non-FFK reference)	0.123	0.029	17.585	1.000	0.000	1.131
Rate of placement in county	0.062	0.126	0.239	1.000	0.625	1.064
Number of reform initiatives in which county participates	0.008	0.007	1.307	1.000	0.253	1.009
SFY of entry to 3rd year of placement¹					0.049	
waiver participation¹					0.573	
SFY of entry * waiver¹					0.011	

¹ Since the FY * waiver interaction term is significant combined parameter estimates are calculated and presented on a separate chart.

Exhibit 2.26 graphically depicts the RR for exit from placement after two years for children initially entering placement in each county group. This chart displays a trend in all county groups in the likelihood of exit after two years for children entering in recent years compared to children who entered in SFY94, confirming the decreasing lengths of stay for children entering placement in North Carolina.

Exhibit 2.26. Relative Risk of Exit from Placement after Two Years



2.5 Reducing the Likelihood of Re-entry to Placement

The discussion of re-entry to out-of-home placement in North Carolina must first begin with the recognition that re-entry in this state is generally very low. The proportion of children reentering out-of-home placement is less than .10 in all counties for almost all years, as shown in the exhibits below. As length of stay continues to decrease across the state, perhaps the best that can be expected is that re-entry will not increase. In the years immediately preceding the implementation of the waiver there was a downward trend in re-entry rate for children in active waiver counties; in these years re-entry rates in other waiver counties fluctuated up and down. Comparison counties and non-waiver counties had somewhat lower re-entry rates in the pre-waiver years.

Exhibit 2.27.

Reentry to Placement for Children in Active Waiver Counties

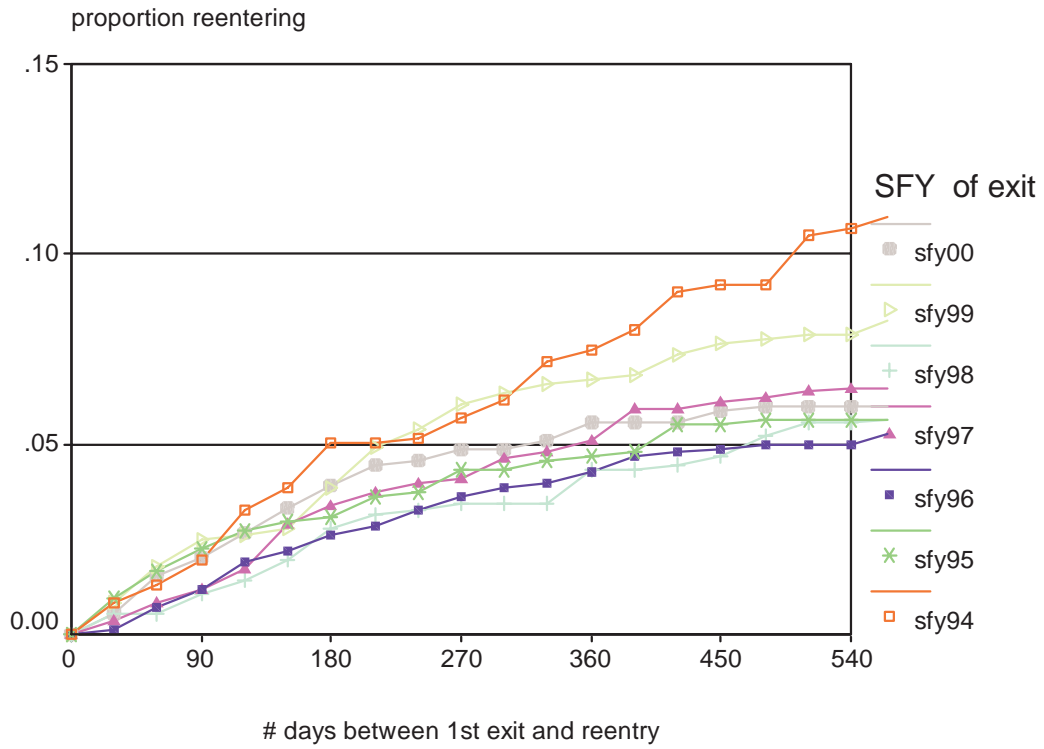


Exhibit 2.28.

Reentry to Placement for Children in Other Waiver Counties

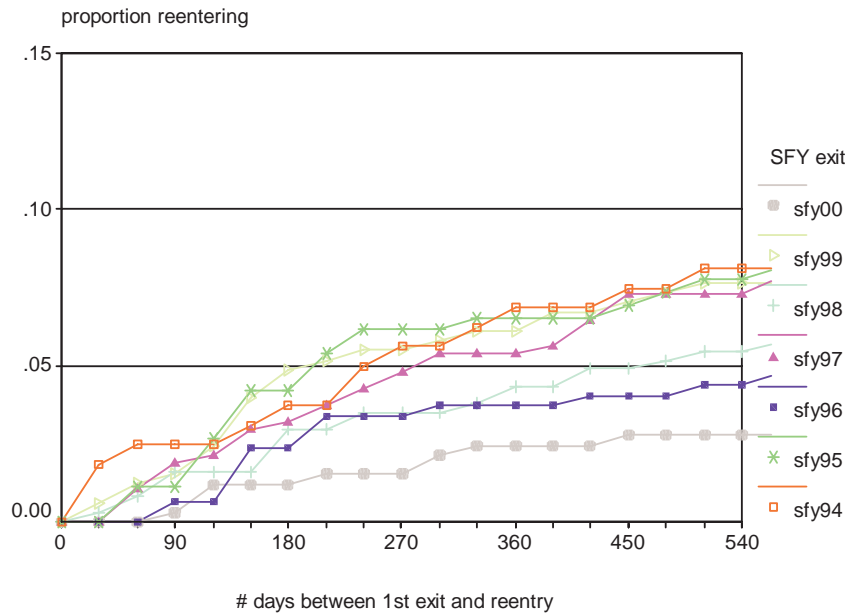


Exhibit 2.29.

Reentry to Placement for Children in Comparison Counties

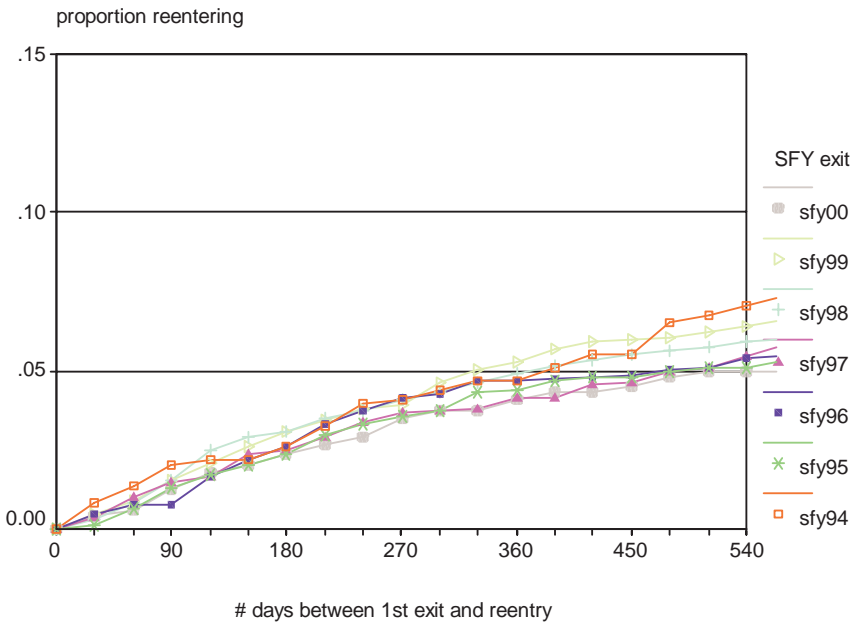
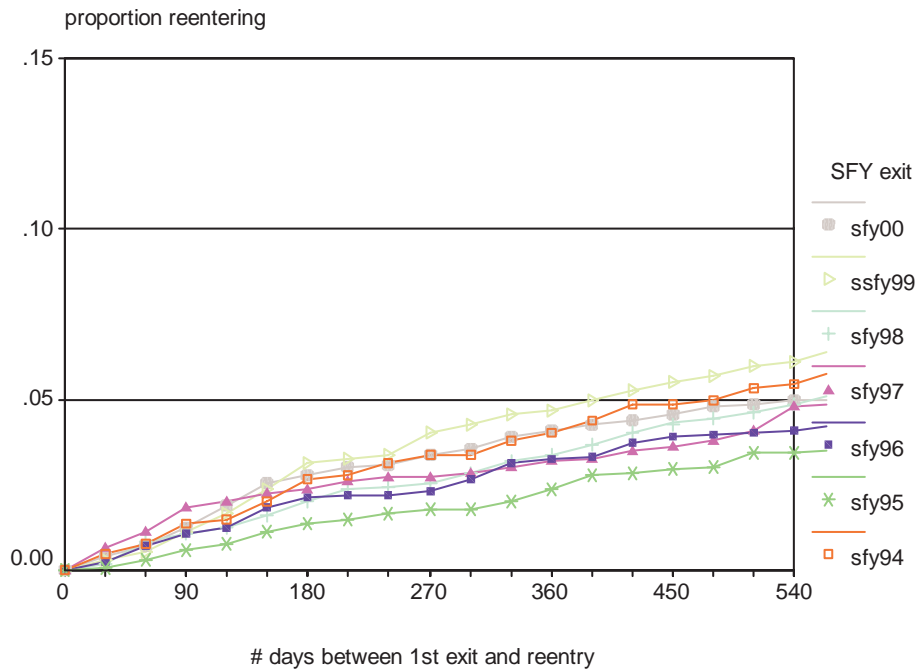


Exhibit 2.30.

Reentry to Placement for Children in Other Non- Waiver Counties



The Cox proportional hazard model presented in Exhibit 2.31 assesses the impact of the waiver on re-entry while controlling for the changing demographics of children in placement in North Carolina counties over the years. Since the interaction term that considers the impact of the waiver on re-entry by SFY of exit is significant, the relative risk of re-entry is calculated and presented in Exhibit 2.32, for each year by waiver group.

Exhibit 2.31. Results of Multivariate Model of Re-entry to Placement

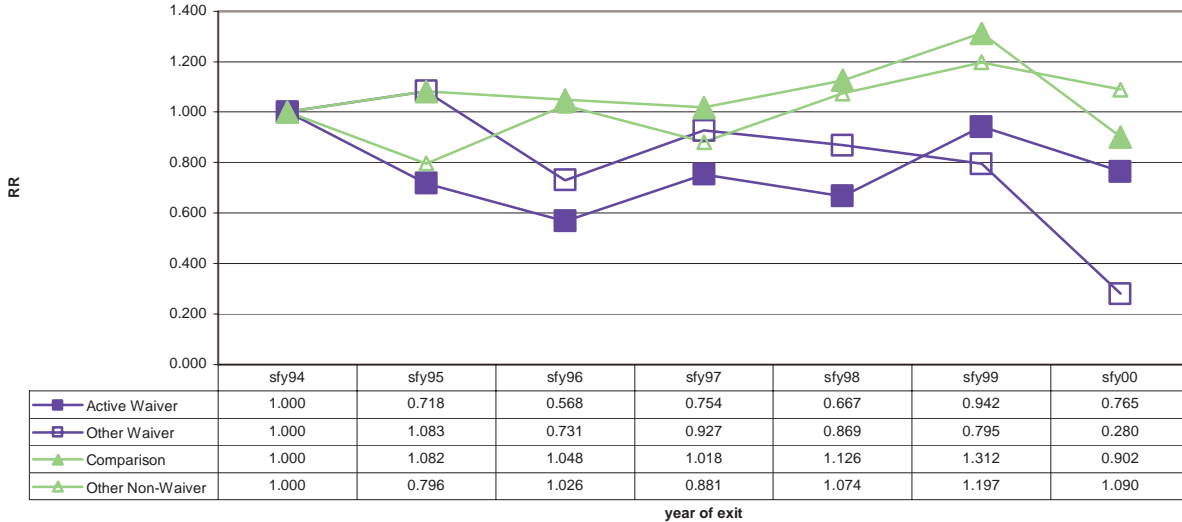
	B	SE	Wald	df	Sig.	Exp(B)
Age at exit			70.554	3	.000	
Birth to 1 (reference)						
2-5 years	-.054	.064	.709	1	.400	.948
6 - 11 years	.117	.062	2.559	1	.059	1.124
12 - 17 years	.346	.064	29.559	1	.000	1.413
Gender (male reference)	.036	.036	.967	1	.325	1.036
Race			9.787	2	.007	
White (reference)						
Black	-.092	.040	5.429	1	.020	.912
Other	.084	.064	1.700	1	.192	1.087
	.313	.049	40.410	1	.000	1.367
County status on FFK at time of exit	-.010	.012	.700	1	.403	.990
Number of reform initiatives in which county participates	-.010	.012	.700	1	.403	.990
waiver group			18.573	3	.000	
SFY exit			47.287	210	.001	
SFY exit * waiver groups¹			22.364	7	.001	

¹Since the SFY * waiver interaction term is significant, combined parameter estimates are calculated and presented in Figure 2.18.

Exhibit 2.32 shows that there has been a decline in re-entry in all waiver groups compared to baseline SFY93. The decrease in re-entry is somewhat larger in the active waiver counties in the early waiver years. Only in the most recent two years for which data are available do other waiver counties surpass active waiver counties in improvements to re-entry rate. Children who exited in the most recent SFY with available re-entry data were about 70% less likely to reenter in other waiver counties, compared to 20% less likely in active waiver counties. Re-entry rates for children exiting placement in comparison counties were stable in the years immediately preceding waiver implementation and

then increased until SFY00, when the likelihood of re-entry was about 10% less that seen in the baseline year.

Exhibit 2.32. Relative Risk of Re-entry



The re-entry analyses must be put into the context of the decreasing lengths of stay seen in all counties in North Carolina. Child welfare agencies across the country struggle with the possible correlation between achieving permanency for children as quickly as possible and potential re-entry because children exited placement too quickly. As length of stay decreases it is particularly important to closely monitor re-entry. These analyses suggest that waiver counties have been more successful than comparison and other non-waiver counties in decreasing re-entry rates even as length of stay declined.

2.6 Conclusions

Using data that include all children initially entering out-of-home placement through December 2001, multivariate analyses show that improvements in the probability of placement and re-entry outcomes occurred in waiver counties beyond the general improvements in these outcomes observed for North Carolina as a whole. Changes are most evident in the probability of placement, with decreases in likelihood of out-of-home placement seen for children in waiver counties. Additionally, there is greater improvement in re-entry rates for some waiver counties. In terms of the third outcome, length of stay, no differential decreases are apparent in length of stay for waiver counties as compared to comparison counties and other non-waiver counties. The lack of a change in

length of stay is notable, however, because it suggests that waiver counties were able to avoid increased lengths of stay in the face of changes in the risk profile of children entering care following reductions in the number of children coming into care.

REFERENCES

Usher, C. L. & Wildfire, J. B. et al. (1999). Measuring performance in child welfare: Secondary effects of success. *Child Welfare* 78(1), 31–51.