

STRUCTURED DECISION MAKING® RISK ASSESSMENT: DOES IT REDUCE RACIAL DISPROPORTIONALITY IN WASHINGTON'S CHILD WELFARE SYSTEM?*

The 2007 Washington State Legislature created the Washington State Racial Disproportionality Advisory Committee (Committee).¹ The Committee was charged with determining if children of racial and ethnic minorities were over-represented in Washington's child welfare system. The Washington State Institute for Public Policy (Institute) provided technical assistance to the committee. Findings published in 2008 indicated that American Indian, Black, and Latino children were more likely than White children in Washington to be the alleged victims in referrals to Child Protective Services (CPS).² Among children with CPS referrals, Indian and Black children were more likely to be placed in foster care and more likely to remain in foster care for over two years than White children with CPS referrals.³

In 2009, based on recommendations in the Committee remediation plan, the Legislature directed the Institute to study the effects of implementation of Family Team Decision Making (FTDM)⁴ and Structured Decision Making® (SDM) on racial disproportionality.⁵ Findings for FTDM were published earlier.⁶ This report focuses on findings for SDM.

* This report replaces the earlier title *Structured Decision Making® Risk Assessment: Does It Reduce Racial Disproportionality In Washington's Child Welfare System?* in order to clarify that this evaluation includes only the SDM risk assessment, and not the entire SDM model.

¹ Laws of 2007, Chapter 465, SHB 1472

² M. Miller. (2008). *Racial disproportionality in Washington State's child welfare system*. Olympia: Washington State Institute for Public Policy, Document No. 08-06-3901.

³ Throughout this report, we use the term foster care to mean removal from home to placement in licensed foster homes, group homes, or the care of unlicensed relatives.

⁴ Under the FTDM model, facilitated meetings are convened whenever child placement decisions are made. Attendees include parents and other family members, the child (when appropriate), friends, foster parents, caseworkers, and other professionals involved with the case.

⁵ Laws of 2009, Ch. 213, ESSB 5882

⁶ M. Miller. (2011). *Family Team Decision Making: Does it reduce racial disproportionality in Washington's child welfare system?* Olympia: Washington State Institute for Public Policy, Document No. 11-03-3901.

Summary

In 2008, the Washington State Institute for Public Policy (Institute), together with the Washington State Racial Disproportionality Advisory Committee, studied racial disproportionality in Washington's child welfare system. We found that following referrals to Child Protective Services (CPS), Indian and Black children (but not Asian or Latino children) were more likely to be placed and remain in foster care significantly longer than White children.

The Structured Decision Making (SDM) model is a system of assessment tools used at various decision points in the child welfare system. DSHS Children's Administration adopted the SDM risk assessment, but not any other SDM tools. The risk assessment is used during CPS investigations to classify families on their risk of further child maltreatment.

The 2009 Legislature directed the Institute to study the effects of SDM on racial disproportionality.

Findings

Between 2004 and 2008, we found marked year-to-year variation in disproportionality following CPS referrals (Disproportionality Index After Referral: DIAR), especially for Black children. This variation can be partly explained by rates of referral that also differed from year to year.

Our analysis took advantage of the fact that SDM was implemented statewide in October 2007. We assumed that if SDM affected outcomes for children, we would see the effect of SDM by comparing outcomes for children with referrals in 2008 with those of children with referrals in earlier years.

When our analysis combined children of all races, we observed no effect of SDM on:

- ✓ Out-of-home placements, or
- ✓ New reports to CPS.

We also analyzed outcomes for each race separately. For White, Indian, Asian, and Latino children we found no effect of SDM on placements or new CPS reports.

Black children with referrals in 2008 were more likely to be removed from home and more likely to have new CPS referrals than Black children with referrals in earlier years. We cannot be certain that the SDM risk assessment was the cause of the differences in 2008; differences may also be the product of the largely unexplained year-to-year fluctuations in disproportionality for Black children.

In this report, we provide a brief description of SDM and its implementation in Washington State. We describe research findings regarding racial disproportionality, effects of SDM on rates of out-of-home placements, and rates of subsequent reports to CPS.

BACKGROUND

Most children enter the child welfare system when a report is made to CPS about alleged child abuse or neglect. These reports are called “referrals.” On the basis of the report, referrals may be accepted for investigation. Based on the findings of investigations, children may be placed in foster care, or families may be provided services while children remain at home.

The Structured Decision Making® (SDM) model is a system of six assessment tools developed by the Children’s Research Center⁷ for use at various decision points in the child welfare system. Children’s Administration adopted the risk assessment tool, but none of the other SDM instruments. Throughout the remainder of this report we use the term “SDM” to refer only to the risk assessment tool. However, the current evaluation should not be used to judge the effectiveness of the **entire** SDM model.

The first SDM risk assessment was developed for use in Alaska in the late 1980s.⁸ SDM is used during the CPS investigation to classify families based on the likelihood of future maltreatment. The SDM risk assessment is actuarially based; that is, it was originally developed using data from Child Protective Services (CPS) investigations to identify those characteristics most associated with future maltreatment, as measured by new reports to CPS. It uses objective measures that may be less sensitive to bias than other approaches to estimating risk. The SDM assessment currently in use in Washington was developed in California, using information about the California CPS caseload.

⁷ The Children’s Research Center (CRC) is a division of the National Center on Crime and Delinquency. The CRC is located in Madison WI.

⁸ K. Johnson & A. Bogle. (2009). *North Carolina Department of Health and Human Services risk assessment validation: A prospective study*. Madison, WI: Children’s Research Center.

STUDY LANGUAGE FROM THE 2009 LEGISLATURE

“...the Washington state institute for public policy shall evaluate the department of social and health services’ use of structured decision-making practices and implementation of the family team decision-making model to determine whether and how those child protection and child welfare efforts result in reducing disproportionate representation of African-American, Native American, and Latino children in the state’s child welfare system.”

*Laws of 2009, Ch.213, ESSB 5882,
(Emphasis added)*

Social workers complete the SDM form as they conduct the CPS investigation. After tallying results, families are classified on the basis of risk of future maltreatment into four categories: low, moderate, moderately high, and high risk. Given limited resources, such classification “allows child welfare workers to ensure that higher risk children not requiring foster care placement receive in-home services before lower-risk children.”⁹

Prior to October 2007, the DSHS Children’s Administration (CA) used a consensus-based¹⁰ risk instrument (Washington Risk Assessment Matrix, WRM), to assess risk of future maltreatment at the time of a CPS investigation. A study later revealed that the WRM was not a good predictor of future abuse or neglect. For example, families classified as high risk were less likely to have new CPS reports than those classified as moderate risk.¹¹ A study published in 2000 compared SDM with the WRM and another consensus based assessment. That study found SDM was better than either of the consensus-based instruments at identifying families most likely to have new reports to CPS and distinguishing them

⁹ W. Johnson. (2011). The validity and utility of the California family risk assessment under practice conditions in the files: A prospective study. *Child Abuse and Neglect*, 35(1), 18-28.

¹⁰ Consensus-based risk assessments are generally created using elements thought by experts and practitioners to be associated with increased risk of future maltreatment. That is, the factors included in the assessment are based on opinion and not necessarily empirical evidence.

¹¹ D. English, D. Marshall, S. Brummel, & M. Orme. (1999). Characteristics of repeated referrals to child protective services in Washington State. *Child Maltreatment*, 4(4), 297-307.

from families who would not.¹² Based in part on these findings, in October 2007, the Children's Administration (CA) replaced the WRM with the SDM risk assessment.

In the Institute's 2008 report to the Committee, we found that, compared with White children, American Indian, Black, and Latino children were over-represented in Washington's child welfare system.¹³ Much of the disproportionality occurred at the point of referral to CPS. After referral to CPS, Indian and Black children were at greater risk of removal from home and long-term foster care than White children. Because SDM is used only in conjunction with CPS investigations, any effect on racial disproportionality should be observed at the point of removal from home.

In addition to studying effects of SDM on rates of out-of-home placements, the Committee also asked us to study whether the use of SDM was related to reductions in the rates of new CPS referrals.

STUDY APPROACH

For this report, we asked three questions.

- 1) Did racial disproportionality vary across the years 2004 through 2008? The Institute's first analysis of racial disproportionality¹⁴ focused on the cohort of children with referrals in 2004. As background for this report, we investigated whether disproportionality was constant between 2004 and 2008.
- 2) Did CA's implementation of the SDM risk assessment affect the rate of out-of-home placements? Did SDM reduce racial disproportionality at placement?
- 3) Did implementation of the SDM risk assessment reduce the rates of subsequent CPS referrals accepted for investigation?

Our approach to the analysis took advantage of the fact that SDM was implemented on a single day

statewide in October 2007. Because SDM is used only with the CPS investigation, if the risk assessment affected disproportionality, we should observe less disproportionality at the point of child removal from home. In our analysis, we compared outcomes for children with referrals in 2008, after implementation of SDM, with those of children referred in 2004 through 2007.

SDM classifies families based on risk of future child abuse or neglect. To determine whether implementing SDM reduced the likelihood of future CPS referrals, we identified children with CPS investigations in the first three months of 2007 (before SDM) and 2008 (after SDM). We then compared rates of new CPS referrals during a six-month follow-up period.

DATA SOURCES

The Children's Administration Management Information System (CAMIS) was the source for referrals, accepted referrals, and placements (children removed from home). We analyzed data for children with CPS referrals in the first six months of each year from 2004 through 2008.¹⁵

State food stamp records were used to determine if a child's family had been receiving food stamps at the time of the CPS referral. Receipt of food stamps was used as a measure of family poverty in the regression analyses.

Population estimates by age and by county were obtained from Washington's Office of Financial Management.

Defining Race. Race is a complex concept that carries many cultural interpretations. Individuals may have more than one racial or ethnic heritage. In the 2000 census, respondents could choose as many races/ethnicities as were necessary to describe themselves.¹⁶ While most Americans described

¹² C. Baird & D. Wagner. (2000). The relative validity of actuarial- and consensus-based risk assessment systems. *Children and Youth Services Review*, 22(11/12), 839-871.

¹³ Miller, 2008

¹⁴ Ibid.

¹⁵ Children's Administration transitioned to a new data system, FamLink, in February 2009. We did not use FamLink data here, because we were unable to link referrals to placements.

¹⁶ U.S. Census Bureau. (2001). *Census brief: Two or more races, population 2000*. Washington, D.C: Department of

themselves as one race, 2.4 percent indicated more than one and some indicated up to six racial categories, in addition to Latino/Hispanic origin.

The Committee specified the following rules for classifying multi-racial/ethnic children, which we used in this analysis.

- American Indian. If any of the six racial codes indicated American Indian background, the child was coded Indian in our analysis.
- Black. If a child had no Indian heritage, but any of the codes indicated Black or African American, the child was coded as Black.
- Asian/Pacific Islander. If a child was coded as Asian or one of the codes for Pacific Islander, with no Black or American Indian heritage, the child's race was coded as Asian.
- Latino. Any child with Latino/Hispanic heritage, but not Indian, Black, or Asian was coded as Latino.
- White. Any child with no indication of Indian, Black, Asian, or Latino race/ethnicity was coded as White.

Measuring Disproportionality. We used the same two measures of disproportionality that we used in our report for the Committee.¹⁷

The first measure is the *Disproportionality Index* (DI). The DI compares rates of occurrence of an event for the state population of children in various racial groups with the rates for White children.

First, we calculated *rates* for each racial group at each decision point, such as referral to CPS. For example, in the first six months of 2008, we observed that 2,624 Indian children were referred to CPS. The estimated state population of Indian children was 63,202.¹⁸ We calculated the rate for Indian children by dividing the number of children

referred by the number of children in the population and multiplying the result by 1,000 to get the rate per 1,000 children:

Rate of referral for Indian children:

$$(2,624 \div 63,202) \times 1,000 = 42$$

This represents a rate of 42 Indian children referred for every 1,000 Indian children in the population.

At each decision point, we calculated the DI for each racial group compared with White children by dividing the rate for a racial group by the rate for White children. Using this same example, the comparable rate of CPS referrals for White children in the first six months of 2008 was 16 per 1,000 children.

DI at referral for Indian children:

$$42 \div 16 = 2.6$$

This means that in 2008, Indian children were 2.6 times as likely to be referred to CPS as White children.

We also created a second metric, the *Disproportionality Index After Referral* (DIAR). In the current analysis, the DIAR compares rates of out-of-home placements for children with CPS referrals to the rate for White children with CPS referrals. This allows us to distinguish disproportionality that may occur *after* children become known to the child welfare system. For example, in 2007, 11.8 percent of Indian children who were the alleged victims in CPS referrals were placed in out-of-home care compared with 8.0 percent of White children.

DIAR for Indian children at the point of placement:

$$11.8 \div 8.0 = 1.5$$

That is, Indian children with CPS referrals were 1.5 times as likely to be placed in foster care as White children with CPS referrals.

Commerce, U.S. Census Bureau. Accessed from <http://www.census.gov/prod/2001pubs/c2kbr01-6.pdf>

¹⁷ Miller, 2008

¹⁸ Based on Washington's Office of Financial Management intercensal populations estimates for 2008 of children 0 to 17 years of age. For a full description of population estimates used in this study, see Appendix A2.

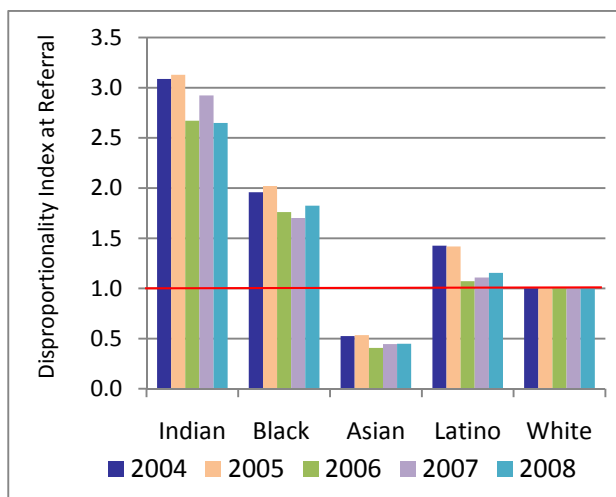
FINDINGS

Did racial disproportionality vary across the years 2004 through 2008?

The Institute's first study on racial disproportionality focused on the cohort of children with CPS referrals in 2004. As background, we analyzed disproportionality over the following four years. Exhibit 1 displays the disproportionality observed at CPS referral. Because the Disproportionality Index (DI) is defined in comparison with rates for White children, the DI for White children is always one.

In the first six months of each year, from 2004 through 2008, we found that Indian and Black children were consistently more likely to be alleged victims of maltreatment than White children.

Exhibit 1
Multi-Year Comparisons of Disproportionality at Referral to CPS*



*Children with CPS referrals January through June of each year.
WSIPP, 2011

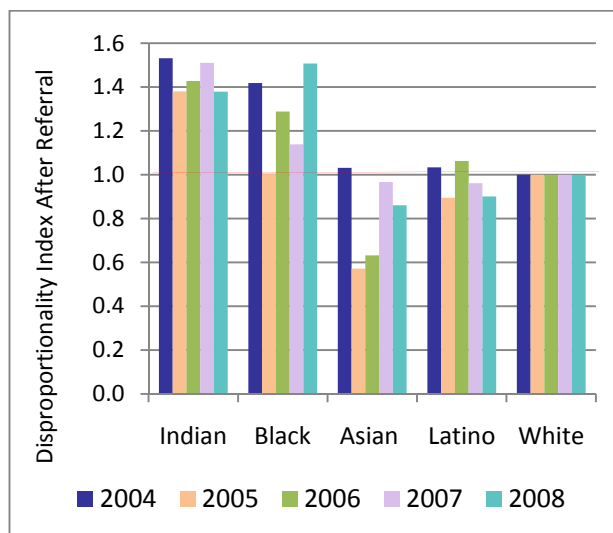
We observed considerable variation in the Disproportionality Index After Referral (DIAR).¹⁹ Exhibit 2 displays the DIAR observed at the decision to remove children from home across a five-year

¹⁹ We also observed wide variation in disproportionality of Asian children. However, in any given year, the number of Asian children removed is relatively small, so small year-to-year differences in the number of Asian children placed can cause large fluctuations in the Disproportionality Index.

period. For example, for Indian children, DIAR was consistently above 1.3. That is, Indian children with CPS referrals were more than 1.3 times more likely to be removed from home than White children with referrals. For Asian and Latino children, DIAR remained at or below 1; they were less likely to be removed from home than White children with CPS referrals. For Black children, DIAR varied more dramatically.

Our first report on disproportionality focused on the cohort of children referred to CPS in 2004. If we had chosen, instead, to study referrals in 2005, our conclusions would have been quite different; among children with CPS referrals in 2005, we found no disproportionality after referral for Black children.

Exhibit 2
Multi-Year Comparisons of Disproportionality After Referral at Decision to Remove Children From Home*



*Children with CPS referrals January through June of each year.
WSIPP, 2011

Year-to-year variation in DIAR for Black children is partially explained by differences in the rates of referral to CPS (see Exhibit 1).²⁰ That is, higher

²⁰ We conducted logistic regression on likelihood of out-of-home placements for Black children, controlling disproportionality at referral. Years with higher DI at referral were associated with lower rates of out-of-home placements. We found no similar relationship for other races. Results of regression analyses are provided in Appendix A.3.3.

rates of referral (and thus, high DI at referral) were associated with slightly lower DIAR at placement for Black children. However, even after controlling for DI at referral, we still observed varying rates of placement across years. We did not find similar effects of DI at referral for other races.

Did CA’s implementation of the SDM risk assessment affect the rate of out-of-home placements? Did SDM reduce racial disproportionality at placement?

Because case characteristics may influence the decision to place children out of home, we used a statistical technique called logistic regression. The analysis estimated the likelihood of placement controlling for known case characteristics.²¹ This allowed us answer the question, “All else being equal, did implementing SDM affect rates of out-of-home placement?” For this analysis, we included referrals in the first six months of each year from 2004 through 2008, assuming any difference in placement rates in 2008 was due to SDM.²²

When we analyzed placement rates for the caseload statewide, we found no effect of SDM on rates of placement.

For Black children—but not for any other race/ethnicity—we observed a significant increase in the rate of out-of-home placements in 2008, after implementation of SDM. That is, over the period 2004 through 2007 before SDM, 13.5 percent of Black children with accepted referrals were removed from home. Controlling for case characteristics, the rate increased to 16.7 percent in 2008, after SDM. However, we cannot be certain whether this increase in placements of Black children was due to SDM or was a product of the largely unexplained year-to-year fluctuations in DIAR for Black children.

²¹ Analyses controlled for race, child age at the time of the referral, type of alleged maltreatment, month in which the referral was received, type of reporter (e.g. medical professional, social service professional, etc.), DSHS region, number of victims on the CPS referral, whether the family was receiving food stamps at the time of the referral, and the disproportionality index at referral for each race and year. Regression results are displayed in Appendix A.3.

²² We conducted similar analyses limiting the year of referral to 2007 and 2008, with similar results.

During the CPS investigation, the social worker completes not only the SDM but also a safety assessment—an appraisal of the immediate safety of children if they remain at home.²³ Given the design of the SDM—to classify families on the basis of their statistical likelihood of future reports to CPS—lack of an overall effect on placement rates may not be surprising. SDM risk levels may be more useful in guiding social worker decisions about services for families where children remain at home, enabling the worker to offer services to those families at greatest risk of future harm.²⁴

Further, although SDM appears better at predicting future child abuse and neglect than consensus-based assessments,²⁵ it still produces a number of false positives. In a study of SDM in California, 35 percent of families with Moderate High or High risk scores had further substantiated referrals; 65 percent of families with similar risk levels had no further substantiations. The authors state, “While better than chance alone, the predictive properties of this [SDM] are not of sufficient quality to warrant its use as the sole predictive measure of whether or not children will be harmed in the future.”²⁶,

Did implementation of the SDM risk assessment reduce the rates of subsequent CPS referrals accepted for investigation?

If SDM improved the assessment of risk, and CA used the risk level to target services to the families at highest risk of further CPS referrals, then the rates of re-referral might be reduced. The Committee requested that we examine whether a relationship exists between CA’s implementation of SDM and the rate of new reports to CPS.

²³ Children’s Administration Practice and Procedures Guide 2331. Investigative Standards. Accessed from http://www.dshs.wa.gov/ca/pubs/mnl_pngg/chapter2.asp#2330

²⁴ Johnson, 2011

²⁵ See: C. Baird & D. Wagner. (2000); also A. D’Andrade, M. Austin, & A. Benton. (2008). Risk and safety assessment in child welfare: instrument comparisons. *Journal of Evidence for Child Welfare Practice*, 5(1 & 2), 31-56.

²⁶ A. Shlonsky & D. Wagner. (2005). The next step: Integrating actuarial risk assessment and clinical judgment into an evidence-based practice framework in CPS case management. *Children and Youth Services Review*, 27(4), 409-427.

We identified children with accepted CPS referrals occurring in the months of January, February, and March in 2007 (before SDM) and 2008 (after SDM). Then we looked for new CPS referrals accepted for investigation within six months of the index report.²⁷ We assumed that any change in re-referral rates from 2007 to 2008 were due to SDM. When we analyzed the statewide caseload, we found no significant effect of implementing SDM on rates of re-referral. When we analyzed the racial groups separately, we again found no significant effect of new CPS referrals in 2008 after implementation of SDM.²⁸

Our findings on re-referrals are consistent with a recent Children's Administration study. The CA study compared re-referral rates observed with SDM and those observed prior to SDM using the WRM. With both assessment tools, families assessed at higher risk levels were more likely to be re-referred than families assessed a lower risk levels.²⁹

CONCLUSIONS

The most striking finding of this analysis is that DIAR varied markedly from year to year for Black children. Some of the variation can be explained by annual differences in rates of referral. However, analyses that controlled for referral rates still revealed year-to-year differences in rates of out-of-home placement for Black children. We are unable to explain these yearly fluctuations.

Our approach to evaluating the effect of the SDM took advantage of the fact that the risk assessment was implemented statewide on October 27, 2007. We assumed that any differences observed in 2008 compared with earlier years would reflect the effect of SDM.

In an analysis that combined all races, we found no statistically significant effect of SDM on out-of-home placement. We also found no effect of SDM for Indian, Asian, Latino, or White children. Compared with Black children with CPS referrals in earlier years, those with referrals in 2008 were significantly more likely to be removed from home. However, we cannot be certain whether this increase in placements is due to SDM or is a product of the largely unexplained year-to-year fluctuations in DIAR for Black children.

SDM classifies families on the basis of their statistical likelihood of future child abuse and neglect. Thus, we might expect to see lower rates of re-referral after implementation of SDM. We found no statistically significant effect of SDM on rates of new referrals accepted for investigation for the caseload statewide or when we analyzed racial groups separately.

As it has been implemented in Washington State, the SDM risk assessment did not reduce racial disproportionality in the child welfare system.

²⁷ We omitted new referrals occurring within seven days of the index referral to avoid the possibility of multiple reports on the same incident. We also omitted children removed from home within two weeks of the referral and remaining in care for over five days.

²⁸ Full results of regression analyses are available in Appendix A.4.

²⁹ David B. Marshall. Personal communication. April 5, 2011.

TECHNICAL APPENDIX

A1. Data Sources.....	A-1
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A1. Data Sources. The Children’s Administration Management Information System (CAMIS) was the source for all referrals, accepted referrals, and placements (children removed from home). CAMIS does not identify out-of-home placements resulting from CPS referrals; therefore, we used the same procedure used by Children’s Administration in its federal reporting to the National Child Abuse and Neglect Data System (NCANDS). NCANDS defines an out-of-home placement as one occurring in the 90 days following a referral to a CPS placement.³⁰

The CAMIS data system was replaced by FamLink in February 2009; thus, we had a limited follow-up period for referrals in 2008. In order to look at placements following referrals, we limited the sample to the first six months of 2008. To avoid issues related to seasonality of reporting and placement, we limited data for all years in the analysis to the months January through June in each year.

When studying new reports to CPS, we limited the sample to children with referrals in January, February, and March of 2007 and 2008. This allowed us to look for new reports in a six-month follow-up period.

Staff at the Research and Data Analysis Division at DSHS matched children with referrals to CPS to records of families receiving food stamps at the time of each referral. We used food stamp receipt as a proxy for poverty.

A2. Population Estimates of Children by Race. Following the 2000 census, the Bureau of the Census released estimates of children in multiple racial categories by county. Similar estimates are not yet available for the 2010 Census. For this analysis, we used intercensal population estimates for 2008 available from Washington’s Office of Financial Management. The 2008 estimates provided only a count of children listed as “multi-racial.” We apportioned children listed as multi-racial in the same proportions as were observed in the 2000 Census. That is, if 20 percent of multi-racial children in 2000 were classified as Indian, we assumed 20 percent of multi-racial children in 2008 were also Indian.

A3. Logistic Regression Analyses of Likelihood of Placement. The exhibits in this section display statistics from logistic regression analyses described in the report. The regression analyses model the likelihood of a decision or outcome that retains a child in the child welfare system, controlling for reporter type and other factors. We included all the children with an accepted CPS referral in modeling the

likelihood that a child would be placed in foster care. Because disproportionality at referral varied year to year, when estimating likelihood of placement, regression models controlled for the disproportionality at referral observed for each race in each year.

How to Read Tables. The next six tables provide the odds ratios of the effects of various case characteristics on the likelihood of removal from home. Exhibit A.3.1 combines children of all races. The other five tables provide analysis for each of the racial groups. Some variables are coded 0 or 1. For example, the variable SDM would be coded 0 for children whose CPS referrals were filed before January 1, 2008, and coded 1 if the referral was filed on or after January 1, 2008. Except when factors were continuous, we omitted the variable for one group to serve as a comparison; then the odds ratios indicated the magnitude and direction of an effect.

The tables display measures of significance with asterisks (*) for each observation where the p-value was less than 0.10; that is, where we might observe this outcome by chance less than 10 percent of the time. While p-values of more than 0.05 are usually considered non-significant, we include them here to indicate trends that might be significant with larger samples. Items without an asterisk are considered non-significant. For example, Exhibit A.3.1 indicates the effect of SDM is statistically non-significant; that is, the p-value is greater than 0.10. In Exhibit A.3.1, when we combined children of all races, the odds of an infant being placed in foster care were 2.89 times greater than the odds for children 6 to 9 years old; this finding was highly significant, as signified by three asterisks (***)

We also list the statistic, Area Under the Receiver Operating Characteristic (AUC). This statistic provides a measure of how well the model predicts an outcome. AUC can vary between 0 and 1. A value of 0.5 indicates the model does not predict the outcome. Values of 0.7 or greater indicate the model does a good job of predicting the outcome.

³⁰ National Data Archive on Child Abuse and Neglect, State Mapping Form for the field “Foster Care Services.” Michael Dineen. Personal communication on March 4, 2011.

Exhibit A.3.1
Placement Given an Accepted Referral
All Children
N=89,928 AUC=0.771

	Odds Ratio	P-Value
SDM	0.99	0.7875
Referral Month (Compared to January)		
February	0.98	0.5575
March	1.00	0.9237
April	0.89***	0.0026
May	0.99	0.7988
June	1.01	0.8343
Child's Age (Compared to Ages 6 to 9)		
Infant	2.89***	<.0001
Ages 1 to 2	1.44***	<.0001
Ages 3 to 5	1.17***	<.0001
Ages 10 to 13	1.1***	0.0089
Ages 14 and older	1.23***	<.0001
Male (Compared to Female)	0.91***	<.0001
Number Prior Referrals	1.14***	<.0001
Risk at Intake	2.12***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.75***	<.0001
Sex abuse	0.54***	<.0001
Abandoned	6.50***	<.0001
Race (Compared to White)		
Indian	1.63**	0.0228
Black	1.37***	0.0019
Asian	0.83**	0.0329
Latino	1.02	0.5849
Disproportionality Index at Referral	0.88	0.2393
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	3.26***	<.0001
Medical Professional	1.50***	<.0001
Mental Health Professional	0.82***	0.0014
Social Service Professional	1.54***	<.0001
Friends/Relatives	0.80***	<.0001
Others	1.03	0.5999
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.61***	<.0001
Region 2	1.27***	<.0001
Region 3	1.02	0.524
Region 5	1.49***	<.0001
Region 6	1.97***	<.0001
Food Stamps	0.80***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.3.2
Placement Given an Accepted Referral
Indian Children Only
N=9,752 AUC=0.749

	Odds Ratio	P-Value
SDM	0.94	0.4934
Referral Month (Compared to January)		
February	0.83*	0.0588
March	1.00	0.9766
April	0.76***	0.0062
May	0.87	0.1833
June	0.98	0.8728
Child's Age (Compared to Ages 6 to 9)		
Infant	2.33***	<.0001
Ages 1 to 2	1.20	0.171
Ages 3 to 5	0.96	0.7041
Ages 10 to 13	0.98	0.8648
Ages 14 and older	0.94	0.5836
Male (Compared to Female)	1.07	0.2306
Number Prior Referrals	1.09***	<.0001
Risk at Intake	2.00***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.77**	0.0129
Sex abuse	0.65*	0.0504
Abandoned	10.40***	<.0001
Disproportionality Index at Referral	1.00	0.9787
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	2.92***	<.0001
Medical Professional	1.23*	0.0649
Mental Health Professional	0.68**	0.0224
Social Service Professional	1.34***	0.0014
Friends/Relatives	0.74***	0.0013
Others	0.92	0.6202
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.34***	0.0042
Region 2	1.29**	0.0163
Region 3	0.79**	0.0134
Region 5	1.10	0.3499
Region 6	1.49***	0.0001
Food Stamps	0.65***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.3.3
Placement Given an Accepted Referral
Black Children Only
N=9,931 AUC=0.782

	Odds Ratio	P-Value
SDM	1.31***	0.0003
Referral Month (Compared to January)		
February	1.43***	0.0013
March	1.36***	0.0044
April	1.17	0.1604
May	1.38***	0.0029
June	1.34***	0.0089
Child's Age (Compared to Ages 6 to 9)		
Infant	2.3***	<.0001
Ages 1 to 2	1.25	0.1132
Ages 3 to 5	1.10	0.3422
Ages 10 to 13	1.04	0.6862
Ages 14 and older	1.07	0.5692
Male (Compared to Female)	0.84***	0.005
Number Prior Referrals	1.16***	<.0001
Risk at Intake	2.47***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.97	0.7574
Sex abuse	0.42**	0.0111
Abandoned	12.07***	<.0001
Disproportionality Index at Referral	0.57**	0.0368
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	3.23***	<.0001
Medical Professional	1.52***	0.0006
Mental Health Professional	0.97	0.8771
Social Service Professional	1.68***	<.0001
Friends/Relatives	1.00	0.9729
Others	1.43**	0.0391
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.63***	<.0001
Region 2	1.01	0.9743
Region 3	1.31**	0.0137
Region 5	1.55***	<.0001
Region 6	2.42***	<.0001
Food Stamps	0.72***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.3.4
Placement Given an Accepted Referral
Asian Children Only
N=3,555 AUC=0.823

	Odds Ratio	P-Value
SDM	1.08	0.6496
Referral Month (Compared to January)		
February	0.66*	0.053
March	0.99	0.9482
April	0.71	0.109
May	0.49***	0.0023
June	1.06	0.7797
Child's Age (Compared to Ages 6 to 9)		
Infant	2.62***	<.0001
Ages 1 to 2	1.51	0.1572
Ages 3 to 5	1.15	0.5172
Ages 10 to 13	1.52**	0.0395
Ages 14 and older	2.02***	0.0015
Male (Compared to Female)	1.10	0.4667
Number Prior Referrals	1.28***	<.0001
Risk at Intake	2.45***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.71**	0.0488
Sex abuse	0.72	0.3459
Abandoned	9.95***	0.0027
Disproportionality Index at Referral	0.34	0.4145
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	3.25***	<.0001
Medical Professional	0.76	0.2953
Mental Health Professional	0.81	0.5651
Social Service Professional	1.22	0.2969
Friends/Relatives	0.46***	0.0011
Others	1.07	0.8449
DSHS Region (Compared to Region 4, King Co.)		
Region 1	2.34***	0.0025
Region 2	1.44	0.2983
Region 3	1.35	0.1332
Region 5	3.12***	<.0001
Region 6	2.48***	0.0001
Food Stamps	0.77*	0.051

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

NA=too few observations to be meaningful.

Exhibit A.3.5
Placement Given an Accepted Referral
Latino Children Only
N=12,195 AUC=0.782

	Odds Ratio	P-Value
SDM	0.88	0.1168
Referral Month (Compared to January)		
February	0.93	0.4693
March	0.88	0.1884
April	0.78**	0.0205
May	0.91	0.332
June	0.77**	0.0154
Child's Age (Compared to Ages 6 to 9)		
Infant	2.52***	<.0001
Ages 1 to 2	1.13	0.3616
Ages 3 to 5	0.93	0.4938
Ages 10 to 13	1.04	0.6845
Ages 14 and older	1.38***	0.0057
Male (Compared to Female)	0.87**	0.0297
Number Prior Referrals	1.15***	<.0001
Risk at Intake	2.15***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.70***	0.0003
Sex abuse	0.50***	0.0018
Abandoned	3.76**	0.0233
Disproportionality Index at Referral	0.79	0.2406
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	3.63***	<.0001
Medical Professional	1.4***	0.0027
Mental Health Professional	0.62**	0.0195
Social Service Professional	1.53***	<.0001
Friends/Relatives	0.87	0.1511
Others	0.99	0.9422
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.8***	<.0001
Region 2	1.29**	0.0111
Region 3	1.12	0.3201
Region 5	2.13***	<.0001
Region 6	2.96***	<.0001
Food Stamps	1.03	0.7059

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.3.6
Placement Given an Accepted Referral
White Children Only
N=54,496 AUC=0.772

	Odds Ratio	P-Value
SDM	0.97	0.4306
Referral Month (Compared to January)		
February	0.98	0.6342
March	0.97	0.5117
April	0.92	0.1074
May	1	0.9595
June	1.01	0.7659
Child's Age (Compare to Ages 6 to 9)		
Infant	3.14***	<.0001
Ages 1 to 2	1.59***	<.0001
Ages 3 to 5	1.29***	<.0001
Ages 10 to 13	1.14***	0.0065
Ages 14 and older	1.27***	<.0001
Male (Compared to Female)	0.89***	<.0001
Number Prior Referrals	1.15***	<.0001
Risk at Intake	2.07***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.68***	<.0001
Sex abuse	0.51***	<.0001
Abandoned	4.93***	<.0001
Disproportionality Index at Referral	NA	NA
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	3.29***	<.0001
Medical Professional	1.62***	<.0001
Mental Health Professional	0.87*	0.0909
Social Service Professional	1.57***	<.0001
Friends/Relatives	0.78***	<.0001
Others	1.02	0.8406
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.51***	<.0001
Region 2	1.2***	0.0032
Region 3	0.98	0.6399
Region 5	1.35***	<.0001
Region 6	1.77***	<.0001
Food Stamps	0.82***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

NA: By definition DI always has a value of 1 for White children; hence, it has no meaning in this analysis.

A4. Logistic Regression Analyses of New Reports to CPS.

For this analysis, we first identified children with accepted CPS referrals in January through March of 2007 and 2008. We then identified new CPS referrals accepted for investigation in the six months following the referral. We omitted new referrals occurring within one week of the index referral to exclude referrals that may have been reporting the same incident. We also excluded from

analysis those children removed from home within 14 days of referral and who remained in care for over five days. Children with referrals in 2008 were considered SDM cases. Odds ratios greater than 1 indicate an increased likelihood of having a new report to CPS within six months after the index referral; odds ratios less than 1 indicate a decreased likelihood.

Exhibit A.4.1
New Accepted Referrals to CPS Within Six Months
All Children
 N=16,354 AUC=0.653

	Odds Ratio	P-Value
SDM	0.99	0.776
Referral Month (Compared to January)		
February	1.10	0.103
March	1.03	0.617
Child's Age (Compared to Ages 3 to 5)		
Infant	1.36***	0.000
Ages 1 to 2	1.32***	0.006
Ages 6 to 9	1.27***	0.001
Ages 10 to 13	0.84**	0.014
Ages 14 and older	0.59***	<.0001
Male (Compared to Female)	0.94	0.231
Number of Prior Referrals	1.13***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	1.04	0.521
Sex abuse	0.82	0.203
Abandoned	2.52	0.255
Race (Compared to White)		
Indian	1.34***	<.0001
Black	0.97	0.750
Asian	0.66***	0.005
Latino	0.90	0.148
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	0.71***	0.000
Medical Professional	0.93	0.464
Mental Health Professional	1.06	0.567
Social Service Professional	0.95	0.464
Friends/Relatives	1.00	0.998
Others	0.69***	0.003
DSHS Region (Compared to Region 4, King Co.)		
Region 1	0.80**	0.004
Region 2	0.74***	0.000
Region 3	0.82***	0.006
Region 5	0.65***	<.0001
Region 6	0.64***	<.0001
Food Stamps	1.66***	<.0001

* p-value < 0.10
 ** p-value < 0.05
 *** p-value < 0.01

Exhibit A.4.2
New Accepted Referrals to CPS Within Six Months
Indian Children Only
 N=1,702 AUC=0.643

	Odds Ratio	P-Value
SDM	1.07	0.611
Referral Month (Compared to January)		
February	1.00	0.982
March	1.31*	0.074
Child's Age (Compared to Ages 3 to 5)		
Infant	1.16	0.474
Ages 1 to 2	1.15	0.601
Ages 6 to 9	0.86	0.437
Ages 10 to 13	0.55***	0.004
Ages 14 and older	0.56**	0.014
Male (Compared to Female)	0.77**	0.040
Number of Prior Referrals	1.1***	0.000
Type of Maltreatment (Compared to Neglect)		
Physical abuse	1.05	0.811
Sex abuse	0.13**	0.049
Abandoned	0.00	0.977
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	0.76	0.326
Medical Professional	0.93	0.787
Mental Health Professional	1.24	0.402
Social Service Professional	1.01	0.943
Friends/Relatives	1.41**	0.048
Others	0.69	0.314
DSHS Region (Compared to Region 4, King Co.)		
Region 1	0.5***	0.003
Region 2	0.72	0.113
Region 3	0.71*	0.060
Region 5	0.56***	0.009
Region 6	0.45***	0.001
Food Stamps	1.17	0.280

* p-value < 0.10
 ** p-value < 0.05
 *** p-value < 0.01

Exhibit A.4.3
New Accepted Referrals to CPS Within Six Months
Black Children Only
N=1,703 AUC=0.637

	Odds Ratio	P-Value
SDM	1.26	0.113
Referral Month (Compared to January)		
February	1.22	0.267
March	1.17	0.367
Child's Age (Compared to Ages 3 to 5)		
Infant	0.89	0.612
Ages 1 to 2	0.56	0.110
Ages 6 to 9	0.88	0.546
Ages 10 to 13	0.89	0.596
Ages 14 and older	0.65*	0.080
Male (Compared to Female)	0.87	0.335
Number of Prior Referrals	1.10***	0.001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.76	0.189
Sex abuse	1.59	0.341
Abandoned	7.63	0.109
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	1.08	0.781
Medical Professional	1.43	0.221
Mental Health Professional	0.77	0.517
Social Service Professional	1.37	0.131
Friends/Relatives	1.12	0.585
Others	0.88	0.743
DSHS Region (Compared to Region 4, King Co.)		
Region 1	0.81	0.423
Region 2	0.82	0.563
Region 3	0.94	0.781
Region 5	0.64**	0.020
Region 6	0.43**	0.019
Food Stamps	1.40**	0.045

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.4.4
New Accepted Referrals to CPS Within Six Months
Asian Children Only
N=668 AUC=0.783

	Odds Ratio	P-Value
SDM	1.14	0.690
Referral Month (Compared to January)		
February	1.08	0.827
March	0.90	0.792
Child's Age (Compared to Ages 3 to 5)		
Infant	3.76**	0.015
Ages 1 to 2	5.89***	0.002
Ages 6 to 9	2.15*	0.082
Ages 10 to 13	0.67	0.389
Ages 14 and older	0.34	0.119
Male (Compared to Female)	0.74	0.336
Number of Prior Referrals	1.34***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	1.67	0.172
Sex abuse	1.34	0.715
Abandoned	NA	NA
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	0.31*	0.088
Medical Professional	0.13*	0.059
Mental Health Professional	0.49	0.372
Social Service Professional	0.65	0.310
Friends/Relatives	0.67	0.363
Others	1.05	0.957
DSHS Region (Compared to Region 4, King Co.)		
Region 1	1.33	0.694
Region 2	1.46	0.651
Region 3	0.36*	0.055
Region 5	0.71	0.445
Region 6	0.42	0.291
Food Stamps	0.92	0.791

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

NA=too few observations to be meaningful.

Exhibit A.4.5
New Accepted Referrals to CPS Within Six Months
Latino Children Only
N=2,327 AUC=0.661

	Odds Ratio	P-Value
SDM	0.95	0.713
Referral Month (Compared to January)		
February	1.09	0.590
March	0.99	0.969
Child's Age (Compared to Ages 3 to 5)		
Infant	1.21	0.376
Ages 1 to 2	0.88	0.669
Ages 6 to 9	1.45**	0.041
Ages 10 to 13	0.94	0.767
Ages 14 and older	0.63*	0.073
Male (Compared to Female)	1.19	0.189
Number of Prior Referrals	1.13***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	0.78	0.178
Sex abuse	0.64	0.317
Abandoned	0.00	0.983
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	0.66	0.111
Medical Professional	0.60*	0.078
Mental Health Professional	1.27	0.400
Social Service Professional	1.27	0.227
Friends/Relatives	0.89	0.516
Others	0.81	0.561
DSHS Region (Compared to Region 4, King Co.)		
Region 1	0.67*	0.075
Region 2	0.67**	0.032
Region 3	0.77	0.208
Region 5	0.83	0.524
Region 6	0.65*	0.093
Food Stamps	1.99***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

Exhibit A.4.6
New Accepted Referrals to CPS Within Six Months
White Children Only
N=9,106 AUC=0.660

	Odds Ratio	P-Value
SDM	0.92	0.216
Referral Month (Compared to January)		
February	1.16*	0.059
March	0.97	0.709
Child's Age (Compared to Ages 3 to 5)		
Infant	1.51***	0.000
Ages 1 to 2	1.49***	0.003
Ages 6 to 9	1.34***	0.002
Ages 10 to 13	0.87	0.148
Ages 14 and older	0.57***	<.0001
Male (Compared to Female)	0.96	0.521
Number of Prior Referrals	1.13***	<.0001
Type of Maltreatment (Compared to Neglect)		
Physical abuse	1.25**	0.012
Sex abuse	0.96	0.833
Abandoned	4.60	0.197
Type of Reporter (Compared to Educators/Childcare)		
Law Enforcement	0.72***	0.010
Medical Professional	1.06	0.656
Mental Health Professional	1.04	0.802
Social Service Professional	0.85	0.121
Friends/Relatives	0.95	0.507
Others	0.62***	0.004
DSHS Region (Compared to Region 4, King Co.)		
Region 1	0.84*	0.095
Region 2	0.75**	0.024
Region 3	0.84*	0.096
Region 5	0.60***	<.0001
Region 6	0.67***	0.000
Food Stamps	1.83***	<.0001

* p-value < 0.10
** p-value < 0.05
*** p-value < 0.01

A5. Child Outcomes by Race. Exhibit A.5 displays by race the average percentages of children removed from home following an accepted CPS referral, and the rates of re-referral to CPS following in the six months following an investigated CPS referral.

Exhibit A.6
Child Outcomes by Race

Child Race	Removed From Home After Accepted CPS Referral ¹		New Accepted Referral During 6-Month Follow-up ²	
	N	Percentage	N	Percentage
All	76,324	12.4%	18,213	12.6%
White	44,721	12.3%	10,132	12.5%
Indian	8,011	16.4%	1,948	14.8%
Black	8,006	13.5%	1,928	11.8%
Asian	2,832	9.6%	725	9.1%
Latino	9,712	12.7%	2,589	11.4%

¹ Children with accepted CPS referrals in the first six months of each year, 2004 – 2008.

² Children with accepted CPS referrals in the first three months of 2007 and 2008.

ACKNOWLEDGEMENTS

I am grateful to staff at the Department of Social and Health Services for their assistance with this project.

Chris Robinson, Colette McCully, and Tammy Cordova provided information on the history of DSHS' decision to adopt SDM and its use in CPS investigations and the current use of SDM in practice. David Marshall shared a draft of a DSHS study comparing the Washington Risk Assessment Matrix with SDM.

Kathryn Beall at DSHS Research and Data Analysis provided information on food stamp receipt for all families referred to CPS.

I would also like to thank Kristen Johnson at the Children's Research Center. Ms. Johnson provided us with research literature on the validity of SDM, including unpublished studies on SDM in Washington State.

Suggested citation: Marna Miller. (2011). *Structured Decision Making® risk assessment: Does it reduce racial disproportionality in Washington's child welfare system?* Olympia: Washington State Institute for Public Policy, Document Number 11-05-3901.

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Document No. 11-05-3901



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