

Minnesota Department of Human Services

Risk Assessment Validation:
A Prospective Study

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EXECUTIVE SUMMARY

Minnesota's Department of Human Services (DHS) contracted with the Children's Research Center (CRC), a division of the National Council on Crime and Delinquency (NCCD), to conduct a validation study of the risk assessment used to assess the likelihood of future child maltreatment among families investigated or assessed by DHS. When DHS implemented the Structured Decision Making[®] (SDM) case management model for child protective services (CPS) in 1999, the department chose to adopt Michigan's CPS family risk assessment. DHS staff planned to validate the risk assessment on a population of Minnesota families assessed by the agency once SDM[®] had been implemented state-wide, which occurred at the end of 2003. The objective of this validation study was to assess how well the current risk assessment estimates future maltreatment and, if necessary, propose revisions to improve its classification abilities.

This research was conducted by sampling families with a completed risk assessment who were assessed¹ for allegations of child abuse or neglect during the second half of 2003 or in 2004. This included families assessed using an alternative response (currently know as family assessment response) as well as the traditional method. The sample population of 13,981 families was divided randomly into two groups—a construction sample of 11,159 families and a validation sample of 2,822 families. The first group was used to examine the performance of the current risk assessment and construct a preliminary revised risk assessment. The second sample was used for validation purposes, to better indicate how the proposed risk assessment would perform when actually implemented.²

This research was conducted using information available from SSIS, including data describing the type of abuse or neglect alleged and confirmed, demographics about children and

¹ Unless specified otherwise, assessments refer to both traditional investigations and alternative response assessments.

² For more information about validation, please refer to Appendix C.

other family members, information describing placements and service contacts with the case, and findings from the safety assessment and risk assessment as recorded by workers at the time of the sample incident. Data describing subsequent CPS outcomes were observed for each family during a standardized follow-up period of 18 months (1.5 years) after their sample assessment. These outcome measures included assigned reports of allegations of abuse or neglect, traditional investigations of abuse or neglect allegations, determinations of maltreatment, and subsequent case openings during the follow-up period.

While data are presented for all outcomes, the report emphasizes maltreatment determination. This outcome is consistent with the child safety standard applied by the Federal Child and Family Service Review³ (CFSR) and serves as an indicator that child abuse or neglect occurred. Workers make a maltreatment determination when they find evidence that the alleged behavior met the definition of child maltreatment imposed by state statutes. In effect, this measure incorporates a standard of evidence met after an investigation of the incident.

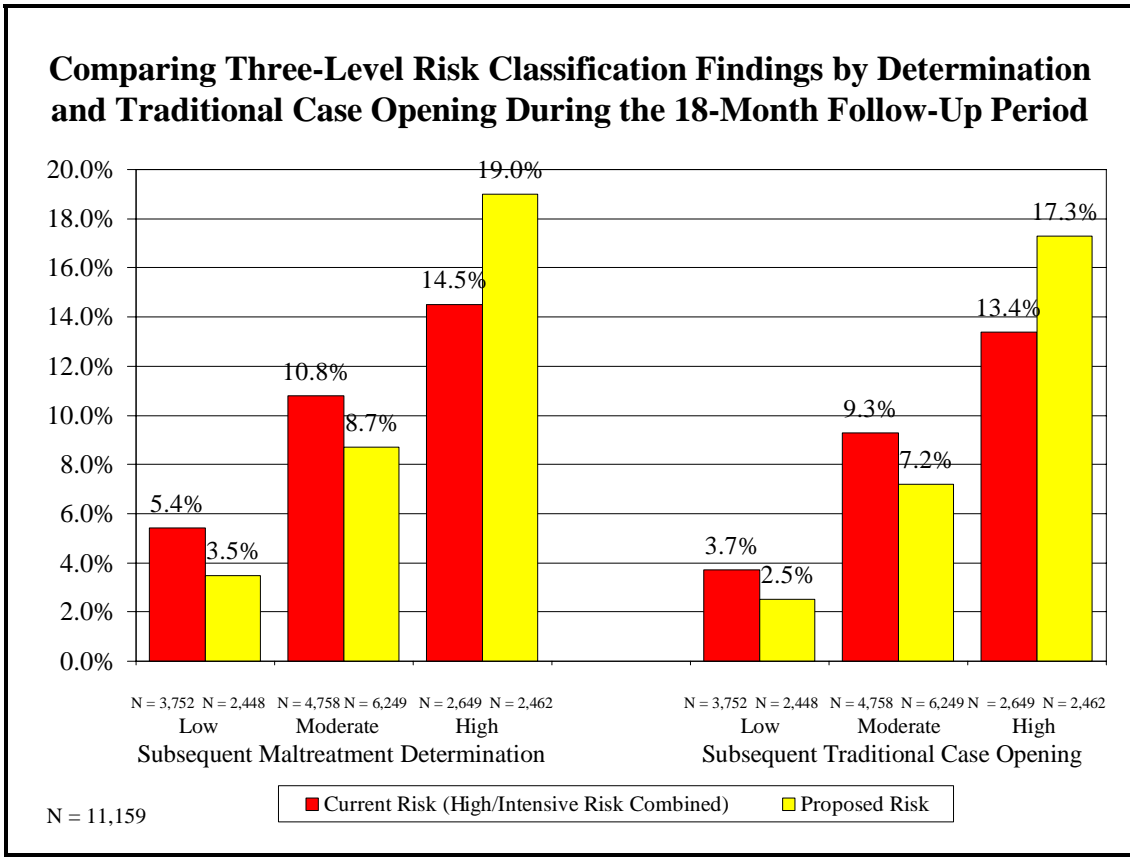
CRC staff examined the relationship between the current risk classification and subsequent CPS outcomes to determine how well the assessment estimated future maltreatment. Only 374 (3.4%) families were classified as intensive risk, which makes it difficult to evaluate the findings for that classification. The risk assessment performed well, however, when distinguishing between families at low, moderate, and high risk of subsequent maltreatment determination or case opening. For example, families classified as low risk had a 5.4% subsequent maltreatment determination rate, moderate risk families had a rate of 10.8%, and high risk families had a rate of 14.4%. The current risk assessment did not perform well, however, when classifying American Indian/Alaskan Native families.

³ The national standard is defined as follows: Of all child victims of a substantiated or indicated maltreatment allegation during a six-month period, 94.4% or higher are not victims of another substantiated/indicated incident during a six-month period. In other words, for a six-month cohort of substantiated child victims, the re-substantiation rate should be 5.6% or lower for a standardized six-month follow-up period.

The second part of the research involved the construction of an actuarial risk assessment. The proposed assessment presented in this report was developed by observing the actuarial relationship between family characteristics observed at the time of the sample investigation and subsequent CPS assessments and their findings. The proposed risk assessment has three classifications rather than four due to policy considerations and empirical issues. DHS policy assigns the same priority for case opening to high and intensive risk families, so there is little practical difference in terms of agency response. As mentioned previously, the number of families classified as intensive risk is also very small (3.4%).

The classification resulting from the proposed family risk assessment provided better distinction between risk levels than the classification obtained with the current risk assessment. Figure E1 shows that this was true even when the high and intensive risk classifications for the current risk assessment were combined. The current risk assessment classified families such that the maltreatment determination rate for high and intensive risk families was approximately three times greater than the rate for low risk families. In contrast, the proposed risk assessment resulted in a determination rate for high risk families that was five times greater than the rate among low risk families, with a significantly higher rate for every increase in risk classification. Findings for assessment and case opening outcomes improved in a similar fashion. The proposed risk assessment also classified subgroups of families more similarly than did the current risk assessment.

Figure E1



Adopting the proposed risk assessment should help improve workers' estimates of a family's risk of future maltreatment. This, in turn, would permit the agency to reduce subsequent maltreatment by more effectively targeting service interventions to high risk families. Strengthening practice related to the risk assessment process, however, may also benefit the agency. DHS may wish to strengthen implementation by employing efforts used by other jurisdictions, such as:

- Emphasize worker use of risk assessment scoring definitions to promote accurate and consistent assessment scoring.
- Include a review of risk and other SDM assessment scoring as part of routine case reviews conducted by supervisors or other staff.
- Use refresher risk assessment trainings and other feedback mechanisms to solicit worker questions and identify areas for follow-up training or additional emphasis.
- Encourage supervisors to routinely review risk scoring and include it in case discussions with workers.
- Ensure that assessment and service delivery data for CPS cases are easily accessible to DHS staff. DHS staff may benefit from systematically monitoring information that helps local managers to identify the service needs of their clients, prioritize service intervention with high risk families, and take action necessary to improve service delivery.

If DHS operations change significantly in the next few years, another validation study is recommended to ensure that the risk assessment is effectively classifying families. Collecting supplemental items, such as caregiver mental health status, at the time the risk assessment is completed would allow DHS staff to examine additional information in future validations.

I. INTRODUCTION

Minnesota's Department of Human Services (DHS) contracted with the Children's Research Center (CRC), a division of the National Council on Crime and Delinquency (NCCD), to conduct a validation study of the risk assessment used to assess the likelihood of future child maltreatment among families assessed or investigated by DHS. When DHS implemented the Structured Decision Making[®] (SDM) case management model for child protective services (CPS) in 1999, the department chose to adopt Michigan's CPS family risk assessment. DHS staff planned to validate the risk assessment on a population of Minnesota families assessed by the agency once SDM[®] had been implemented state-wide, which occurred at the end of 2003. The objective of this validation study was to assess how well the current risk assessment estimates future maltreatment and, if necessary, propose revisions to improve its classification abilities.

II. BACKGROUND

The primary goal of SDM is to reduce the subsequent maltreatment of children in families where an abuse or neglect incident has occurred. The most effective way to accomplish this goal is to accurately identify families at high risk for future maltreatment, prioritize them for agency service intervention, then effectively deliver services appropriate to their needs.

Minnesota's SDM for CPS was developed by DHS staff in conjunction with CRC. During development, the objectives of the SDM model were to increase the consistency and validity of worker case management decisions, target service interventions to families at high risk of subsequent maltreatment, reduce subsequent child maltreatment, and increase the effectiveness of the child protection system. The key features of SDM are:

- A safety assessment to help identify the immediate protective service interventions required during a CPS investigation or assessment, including removal of a child.
- A research-based risk assessment, which provides workers with an objective estimate of the family's risk of future maltreatment at the close of an investigation or assessment.
- A family strengths and needs assessment for identifying case plan goals and appropriate service interventions.
- Agency policies that emphasize service intervention with high risk families.
- A risk reassessment to help workers monitor family progress toward service goals and make case decisions about continued services and the likelihood of subsequent child maltreatment.
- Workload standards that encourage more frequent worker contact with high risk families in an effort to improve management of service interventions.
- Workload accounting to identify staff resources needed to reduce risk and strengthen families.

Minnesota's DHS began implementing their SDM case management model in a number of county CPS agencies in 1999. DHS automated the SDM assessments as part of the Social Services Information System (SSIS) in 2001, and all counties were using the SDM model as a CPS case management system by the end of 2003.

When they designed the case management system, DHS staff chose to adopt Michigan's CPS family risk assessment and planned to validate it on a population of Minnesota families once the SDM model had been implemented state-wide. This report reviews how the adopted risk assessment performed when classifying families assessed or investigated by DHS by the likelihood of subsequent child maltreatment. The research was conducted with assessment information obtained from SSIS. CRC staff first assessed the ability of the current risk assessment to estimate future child maltreatment and then explored revisions that could improve the performance of the risk assessment.

III. RESEARCH METHODOLOGY

The purpose of this research was to determine how well Minnesota's family risk assessment classified families according to their likelihood of future child maltreatment, analyze available assessment data to independently validate a new risk assessment, and compare the performance and content of the current risk assessment to the newly validated one.

A. Method of Analysis

This research was conducted by sampling families with a completed risk assessment who were assessed for allegations of child abuse or neglect during the second half of 2003 or in 2004.⁴ Families were assessed using alternative response methods (currently known as family assessment response) or a traditional CPS investigation. If a family was investigated or assessed⁵ more than once during the sample period, the first assessment was selected. To enable comparisons of subpopulations, families were classified by the race/ethnicity of a parent or guardian.⁶ A parent or guardian could not be identified for 11.3% of families assessed during the sample period, and ethnicity was missing for another 3.0%.

Table 1 compares the population of families assessed during the sample period to the sampled families by race/ethnicity of the parent/guardian. Approximately half (52.6%) of the families assessed during the sample period were White, while 18.9% were Black or African American, 6.2% were Latino, and 5.2% were American Indian/Alaskan Native.

⁴ For counties that implemented the SDM system in 2002 or early 2003, families investigated in the second half of 2003 were sampled to help ensure adequate representation of race/ethnic groups. Families were chosen from the following sample frame: in Hennepin and Ramsey counties, families investigated in July 2003 through December 2004; in Washington, Isanti, and Koochiching counties, families investigated in August 2003 through December 2004; in Mahnomon and Beltrami counties, families investigated in December 2003 through December 2004; and in the rest of the state, families investigated in January 2004 through December 2004.

⁵ Unless specified otherwise, assessments refer to both traditional investigations and alternative response assessments. The family assessment response is referred to as AR because sample investigations occurred prior to the name change to family assessment.

⁶ To maintain consistency with other research conducted using DHS administrative data, sample selection was based on the race/ethnicity of the caregiver. Parent/guardian status was determined first from the identification of an offender as a birth/adoptive parent or guardian in maltreatment tables of SSIS, and if that was not available, by the relationship table in SSIS. Neither source differentiates a primary caregiver. When more than one parent/guardian was identified, a female was selected.

To help ensure adequate representation of other race/ethnic groups, White families were under-sampled. Table 1 shows that among families in the sample, 39.7% were White, 24.1% were Black or African American, 6.7% were American Indian/Alaskan native, 7.9% were Latino, 3.4% were Asian or Pacific Islanders, and 3.8% had multiple race/ethnic groups identified.

Table 1				
Race/Ethnicity of Caregiver for Families Assessed During Sample Period and for Sampled Families				
	Families Assessed During Sample Period		Sampled Families	
	N	%	N	%
Total	17,919	100.0%	13,981	100.0%
White	9,424	52.6%	5,556	39.7%
Black or African American	3,378	18.9%	3,368	24.1%
American Indian/Alaskan Native	939	5.2%	937	6.7%
Asian/Pacific Islander	479	2.7%	476	3.4%
Hispanic/Latino	1,107	6.2%	1,100	7.9%
Multiple Race/Ethnicities Noted	538	3.0%	535	3.8%
Unable to Determine/Missing	2,054	11.5%	2,009	14.4%

The sample population of 13,981 families was divided randomly into two groups—a construction sample of 11,159 families and a validation sample of 2,822 families. The first group was used to examine the performance of the current risk assessment and construct a preliminary revised risk assessment, and the second was used for validation purposes. The use of construction and validation samples allowed an assessment to be developed on one population and tested on another. Validating the instrument on a separate population better indicates how a risk assessment will perform when actually implemented.⁷

This research was conducted using information available from SSIS. The information included data describing the type of abuse or neglect alleged and confirmed, demographics about

⁷ For more information about validation, please refer to Appendix C.

children and other family members, information describing placements and service contacts with the case, and findings from the safety assessment and risk assessment as recorded by workers at the time of the sample incident. Data describing subsequent CPS outcomes were observed for each family during a standardized follow-up period of 18 months (1.5 years) after their sample assessment. These outcome measures included assigned reports of allegations of abuse or neglect, traditional investigations of abuse or neglect allegations, determinations of maltreatment, and subsequent case openings during the follow-up period.

While data are presented for all outcomes, the report emphasizes maltreatment determination. This outcome is consistent with the child safety standard applied by the Federal Child and Family Service Review⁸ (CFSR) and serves as an indicator that child abuse or neglect occurred. Workers make a maltreatment determination when they find evidence that the alleged behavior meets the definition of child maltreatment imposed by state statutes. In effect, this measure incorporates a standard of evidence met after an assessment of the incident.

As a first step, CRC staff examined the relationship between the current risk classification and subsequent CPS outcomes to determine how well the assessment estimated future maltreatment. This analysis was based on cross tabulations of the risk classification with CPS outcomes observed during the follow-up period.

The second part of the research involved the construction of an actuarial risk assessment. The proposed assessment presented in this report was developed by observing the actuarial relationship between family characteristics observed at the time of the sample assessment and subsequent CPS assessments and their findings. This involved an extensive evaluation of how family risk factors could be combined to construct a risk assessment that could improve worker estimates of future maltreatment.

⁸ The national standard is defined as follows: Of all child victims of a substantiated or indicated maltreatment allegation during a six month period, 94.4% or higher are not victims of another substantiated/indicated incident during a six-month period. In other words, among a six-month cohort of substantiated child victims, the re-substantiation rate should be 5.6% or lower for a standardized six-month follow-up period.

B. Sampled Family Characteristics

The following tables describe the construction sample of 11,159 families assessed using alternative response or traditional methods during the sample period. Table 2 shows that 35.0% of the families had one child and 29.4% had two children listed as part of the household. In 26.5% of the sampled families, the youngest child was one year old or younger, and in 31.3%, the youngest child was between two and five years of age.

Table 2			
Characteristics of Sampled Families			
		N	%
Total Sample		11,159	100.0%
Number of Children	One	3,909	35.0%
	Two	3,282	29.4%
	Three	2,200	19.7%
	Four or more	1,768	15.8%
Age of Youngest Child	One or less	2,953	26.5%
	2 – 5	3,493	31.3%
	6 – 10	2,545	22.8%
	11 – 15	1,793	16.1%
	16 – 18	364	3.3%
	Missing	11	0.1%
Race/Ethnicity of Youngest Child	White	4,592	41.2%
	Black or African American	2,762	24.8%
	American Indian/Alaskan Native	650	5.8%
	Asian/Pacific Islander	328	2.9%
	Hispanic/Latino	1,084	9.7%
	Multiple race/ethnicities noted	915	8.2%
	Missing	828	7.4%
Sex of Youngest Child	Male	5,704	51.1%
	Female	5,447	48.8%
	Missing	8	0.1%

A parent or guardian was identified for all but 10.7% of the sampled families (see Table 3). The majority of parents/guardians were birth parents (87.4%) between the ages of 26 and 35 (35.9%). Note that when more than one parent/guardian was identified, a female was selected over a male.

Table 3			
Characteristics of the Parent/Guardian			
		N	%
Total Sample		11,159	100.0%
Type of Relationship	Adoptive parent	161	1.4%
	Birth parent	9,757	87.4%
	Guardian	50	0.4%
	Missing	1,191	10.7%
Age of Parent/Guardian	18 – 20	471	4.2%
	21 – 25	1,746	15.6%
	26 – 30	1,927	17.3%
	31 – 35	2,077	18.6%
	36- 40	1,553	13.9%
	41+	1,689	15.1%
	Missing	1,696	15.2%
Race/Ethnicity of Parent/Guardian	White	4,471	40.1%
	Black or African American	2,673	24.0%
	American Indian/Alaskan Native	737	6.6%
	Asian/Pacific Islander	376	3.4%
	Hispanic/Latino	892	8.0%
	Multiple race/ethnicities noted	425	3.8%
	Missing	1,585	14.2%
Sex of Parent/Guardian	Male	2,529	22.7%
	Female	7,381	66.1%
	Missing	1,249	11.2%

Table 4 reviews the nature of the sampled referrals. The most prevalent complaint was for neglect. Approximately one fifth (21.3%) of families were referred to DHS for general neglect, 11.0% were referred for inadequate supervision of a child, and 6.4% were referred for educational neglect. In addition, 23.2% of families were assessed for child endangerment, 31.6% for physical abuse, and 10.0% for sexual abuse of a child.

DHS responds to reported allegations of child abuse or neglect in one of two ways. Reports of substantial child endangerment, including allegations such as physical or sexual abuse, abandonment, and egregious harm, receive a traditional investigation. Workers respond to reports not involving substantial child endangerment with an alternative response (AR) assessment (currently know as family assessment response). The AR response is an attempt to engage the family using strength-based interventions and involve them in planning and selecting services. If a family does not comply with AR efforts, workers may initiate a traditional investigation. Both types of assessments must be completed within 45 days. A traditional investigation requires an immediate face-to-face contact with the child and caregiver, while an AR assessment requires face-to-face contact within five calendar days. Workers complete the risk and safety assessments for both AR and traditional responses.⁹ When the response is AR, however, workers often complete assessments in conjunction with the family.

Among sampled families, the majority (61.3%) of accepted reports were assigned as traditional investigations and 38.7% of assessments were assigned to AR (see Table 4). The sampled traditional investigations included 2,211 assessments that changed tracks.¹⁰ Among the

⁹ In addition, an AR response (currently know as family assessment response) requires that the family strengths and needs assessment be completed during the 45-day assessment period.

¹⁰ The number of traditional investigations includes 25 investigations that were coded as AR assessments but also had a maltreatment finding noted. DHS technology staff previously researched a small subset of investigations coded as AR with a maltreatment finding and found that the investigations had changed tracks from AR to traditional investigation.

In addition, 2,186 of the traditional investigations were switched from AR at intake to traditional investigation. The high proportion of assessments that switched tracks may be the result of early AR practices in Hennepin County. During 2004, Hennepin County supervisors could change tracks from alternative to traditional investigation based on available staff resources. This is no longer the case.

6,839 traditional investigations, 51.4% (3,517) were confirmed for some type of maltreatment (data not shown).¹¹

Table 4 also shows that 35.9% of assigned reports originated in Hennepin County, which is a slightly larger proportion than might be expected. Hennepin implemented the SDM model earlier than did most counties, which enabled a longer sample period.

Table 4			
Characteristics of Sampled Referrals			
		N	%
Total Sample		11,159	100.0%
County	Hennepin	4,008	35.9%
	Ramsey	1,326	11.9%
	Dakota	681	6.1%
	Anoka	419	3.8%
	Other counties ¹²	4,588	41.1%
	Missing	137	1.2%
Sample Allegations¹³	Neglect (includes infant medical neglect)	2,374	21.3%
	Physical abuse	3,526	31.6%
	Endangerment	2,592	23.2%
	Inadequate supervision	1,228	11.0%
	Sexual abuse	1,114	10.0%
	Educational neglect	714	6.4%
	Threatened physical abuse	288	2.6%
	Prenatal exposure	173	1.6%
	Threatened sexual abuse	138	1.2%
	Mental injury	45	0.4%
Assessment Track	Alternative response	4,320	38.7%
	Traditional	6,839	61.3%

¹¹ This is similar to the determination rate reported in Minnesota's Child Welfare Report for 2004, Figure 1, page 4 (of 10,310 reports, 5,430 were determined [52.7%]).

¹² Counties representing 3.0% or less of the sample are not shown.

¹³ More than one allegation may have been received; thus, the sum of percentages will be greater than zero.

C. Subsequent CPS Involvement of Sampled Families

Outcomes consisted of subsequent CPS involvement observed for each family during the 18 months (1.5 years) following the sampled assessment. This standardized follow-up period ensured that each family in the sample had the same opportunity for subsequent involvement with DHS. Subsequent involvement included any assigned assessment of abuse or neglect (e.g., traditional or AR), a traditional investigation of abuse or neglect allegations, determination of maltreatment, and a subsequent DHS case opening during the follow-up period.

The current risk assessment has two classification instruments. One assesses the likelihood of subsequent neglect and the other assesses the likelihood of subsequent abuse. The ability of these instruments to classify families by the likelihood of each maltreatment type was examined by looking at the specific maltreatment outcomes. Subsequent CPS involvement related to neglect allegations was examined by referencing the classification resulting from the neglect risk assessment. The abuse instrument was examined relative to subsequent abuse assessments. The final risk classification, which is the highest of the neglect and abuse risk classifications, was examined by looking at any subsequent CPS involvement, regardless of allegation type.

Table 5 reviews the neglect and abuse outcome rates for the sampled families. Among the sample families, 16.3% had either an AR assessment or traditional investigation for neglect during the standardized 18-month follow-up period. Of the sampled families, 12.0% had one or more traditional investigations for neglect, and 7.8% had a determination for neglect. Neglect outcome rates were slightly lower among families assessed using AR methods. For example, 6.2% of families with a sampled AR assessment had a subsequent neglect determination, compared to 8.8% of families with a traditional investigation.

Neglect outcome rates also differed by caregiver race/ethnicity. Black/African American and American Indian/Alaskan Native families had higher than average outcome rates, while

White, Latino, and Asian/Pacific Islander families had lower than average rates. For example, 28.8% of American Indian/Alaskan Native families were assessed for neglect during the follow-up period, 23.3% had a traditional investigation for neglect, and 13.8% had a subsequent neglect determination. In comparison, 13.3% of Latino families had a subsequent neglect assessment, 8.1% had a subsequent traditional neglect assessment, and 4.9% had a subsequent neglect determination. Asian/Pacific Islander families had even lower rates; 10.4% had a subsequent assessment for neglect, and 3.5% had a subsequent neglect determination.

Assessment rates for subsequent abuse were more similar among subgroups of the sampled families. Overall, 9.4% of sampled families were assessed for abuse during the follow-up period, while 7.4% had a subsequent traditional investigation and 3.0% had a determination for abuse. Families assessed with AR methods at the time of the sample incident had slightly lower rates of subsequent abuse, while families with a traditional investigation had slightly higher rates.

Subsequent abuse rates were also more similar for families by the race/ethnicity of the caregiver. The highest rates occurred among Black/African American families; 11.4% had a subsequent AR or traditional investigation for abuse, 9.4% had a traditional investigation, and 4.2% had a determination for abuse during the follow-up period.

Table 5

**Subsequent CPS Assessments of Sampled Families
During a Standardized 18-Month Follow-Up Period by Allegation Type**

Sample Characteristics	Sample	Subsequent Neglect Assessment of Any Type	Subsequent Neglect Traditional Investigation	Subsequent Neglect Determination	Subsequent Abuse Assessment of Any Type	Subsequent Abuse Traditional Investigation	Subsequent Abuse Determination
Total Sample	11,159	16.3%	12.0%	7.8%	9.4%	7.4%	3.0%
Type of Assessment Conducted							
Traditional	6,839	16.9%	13.9%	8.8%	9.9%	8.4%	3.4%
Alternative Response	4,320	15.4%	9.1%	6.2%	8.8%	5.8%	2.5%
Caregiver Race/Ethnicity							
White/Caucasian	4,471	15.0%	10.3%	6.8%	9.3%	7.1%	2.8%
Black/African American	2,673	20.2%	16.5%	10.8%	11.4%	9.4%	4.2%
American Indian/Alaskan Native	737	28.8%	23.3%	13.8%	10.0%	8.3%	2.8%
Asian/Pacific Islander	376	10.4%	7.4%	3.5%	8.0%	6.1%	1.6%
Hispanic/Latino	892	13.3%	8.1%	4.9%	8.6%	6.4%	3.3%
Multiple Races Noted	425	24.0%	18.4%	13.4%	12.5%	11.1%	4.2%
Unable to Determine	1,585	8.6%	12.0%	3.7%	6.4%	4.5%	1.9%

Table 6 shows rates of subsequent assessment for the sampled families regardless of maltreatment type. Of the sampled families, 22.2% were assessed using AR or traditional methods at least once during the standardized 18-month follow-up period, while 16.4% had a subsequent traditional investigation. While 22.2% of the sampled families were assessed for maltreatment during the follow-up period, workers determined that maltreatment occurred in only 9.8% of the families.

Consistent with neglect and abuse specific outcomes, families with a sampled AR assessment had lower rates of subsequent assessment than did families with a sampled traditional investigation. White/Caucasian, Latino, and Asian/Pacific Islander families had lower than average subsequent assessment rates, while American Indian/Alaskan Native and African American families had higher than average rates. American Indian/Alaskan Native families had subsequent assessment rates substantially higher than those of the overall sample and a subsequent traditional investigation rate twice that of Latino and Asian/Pacific Islander families.

Table 6				
Subsequent CPS Assessments of Sampled Families During a Standardized 18-Month Follow-Up Period				
Sample Characteristics	Sample	Subsequent Assessment of Any Type	Subsequent Traditional Investigation	Subsequent Maltreatment Determination
Total Sample	11,159	22.2%	16.4%	9.8%
Type of Assessment Conducted				
Traditional	6,839	22.7%	18.6%	11.0%
Alternative Response	4,320	21.3%	13.0%	8.0%
Caregiver Race/Ethnicity				
White/Caucasian	4,471	21.0%	14.8%	8.8%
Black/African American	2,673	26.8%	21.7%	13.5%
American Indian/Alaskan Native	737	33.4%	27.1%	15.2%
Asian/Pacific Islander	376	14.4%	10.9%	4.5%
Hispanic/Latino	892	19.6%	12.1%	7.4%
Multiple Races Noted	425	31.3%	24.2%	15.8%
Unable to Determine	1,585	13.3%	8.9%	5.0%

Other outcomes observed were case actions that resulted from abuse or neglect assessments during the standardized 18-month follow-up period. These included a DHS case opening (i.e., a workgroup case was established) that resulted from either a subsequent AR or traditional investigation (referred to as case opening of any type), a case opening related to a traditional investigation (referred to as a traditional case opening), and out-of-home placement of a child resulting from a subsequent assessment of maltreatment.¹⁴

Of sampled families, 11.2% had a subsequent case opening of any type, 8.4% had a traditional case opening, and 10.0% had a subsequent child placement (see Table 7). As observed with assessment outcomes, families with a sampled AR assessment had lower subsequent case action rates than did families with a sampled traditional investigation. Case open rates for American Indian/Alaskan Native families tended to be higher than the average for the overall sample. Child placement rates for these families were also higher than the average.

In addition to assessment and determination outcomes, subsequent traditional case opening was referenced to examine the performance of the current risk assessment and to develop a revised risk assessment. Subsequent traditional case opening was selected over subsequent case opening of any type or child placement because derivation from SSIS data required fewer assumptions, and traditional case opening suggests a more serious maltreatment event occurred.

¹⁴ Subsequent case opening was defined as a subsequent assessment with a reason_end_cd of 17, case opened for services, or a subsequent case management workgroup. Subsequent traditional case opening was defined as a subsequent traditional investigation with a reason_end_cd of 17, case opened for services, or a subsequent case management workgroup with a traditional track code. Subsequent child placements were placements related to child maltreatment of any child affiliated with the sampled family that occurred during the follow-up period.

Subsequent CPS Involvement of Sampled Families During a Standardized 18-Month Follow-Up Period				
Sample Characteristics	Sample	Subsequent Case Opening of Any Type	Subsequent Traditional Case Opening	Subsequent Child Placement Resulting from Maltreatment
Total Sample	11,159	11.2%	8.4%	10.0%
Type of Assessment Conducted				
Traditional	6,839	11.5%	9.5%	11.5%
Alternative Response	4,320	10.8%	6.6%	7.8%
Caregiver Race/Ethnicity				
White/Caucasian	4,471	10.8%	8.0%	9.7%
Black/African American	2,673	13.3%	10.4%	11.3%
American Indian/Alaskan Native	737	19.3%	15.5%	17.6%
Asian/Pacific Islander	376	6.1%	4.8%	5.6%
Hispanic/Latino	892	9.5%	5.7%	7.5%
Multiple Races Noted	425	15.1%	11.8%	16.2%
Unable to Determine	1,585	6.2%	4.2%	6.2%

D. The Current Family Risk Assessment for Abuse and Neglect

The risk assessment currently employed by DHS helps workers observe specific characteristics of families and children involved in assessments of child abuse or neglect and objectively estimate the risk of future maltreatment of a child. At the close of the assessment, the investigating worker completes the 11-item family neglect index *and* the 12-item abuse index. These scores determine an initial risk classification for abuse and neglect for each referral, i.e., “low,” “moderate,” “high,” or “intensive” risk. The final classification level assigned to the family at the close of the assessment is the highest risk classification reached by either the abuse or neglect risk indices. For example, a family scoring low risk for future abuse and high risk for future neglect would have a final classification of high risk.

The risk classification allows the worker and the agency to prioritize service intervention according to the risk of future maltreatment. Since the agency’s mission is to reduce the

incidence of abuse and neglect, it is important to ensure that high risk families receive a high priority for service provision and case worker time. Actuarial risk assessment provides workers with an estimate of future family behavior based on a limited set of observable factors to help case workers identify higher risk families more accurately and, thereby, perform this service allocation task more effectively. It is important to note that the risk assessment is a classification tool and is not designed to yield infallible predictions for individual families.

Because risk assessment cannot address all aspects of an individual family case, DHS established reasons for overriding the initial risk level. These guidelines are explicitly defined by the agency and reflect agency policy. If any of the case circumstances described by the policy override reasons (see the current risk assessment on the next page) apply to a family under assessment, the family would be assigned to the intensive risk classification, regardless of the scored risk level.

Investigating case workers and supervisors can also exercise a discretionary override (also shown on the form) that increases the scored classification by one level. Discretionary overrides are based on the worker's professional judgment and observation of the family. Whether workers exercise a discretionary override or not, their decisions will be informed by a scored risk classification that is objectively determined and has a strong empirical relationship to the incidence of future maltreatment.

The following analyses observed case outcomes for the scored risk classification that workers completed for each sample family. As mentioned previously, outcomes for each family were observed for an 18-month period following the sample incident, to assess subsequent CPS involvement after the risk assessment was completed. Subsequent neglect assessment and determination rates are reported for the scored neglect classification, subsequent abuse rates are reported for the scored abuse classification, and overall rates of subsequent assessment or maltreatment determination are shown for the overall risk classification (before any overrides).

**MINNESOTA
FAMILY RISK ASSESSMENT OF ABUSE/NEGLECT**

r: 1999

Case Name: _____ Case #: _____ Current Date: ____/____/____
 County Name: _____ County #: _____ Date Report Received ____/____/____
 Worker Name: _____ Worker ID: _____

NEGLECT	<u>SCORE</u>	ABUSE	<u>SCORE</u>
N1. Current Report is for Neglect		A1. Current Report is for Abuse	
a. No	0	a. No	0
b. Yes	1	b. Yes	1
N2. Number of Prior Assigned Reports		A2. Prior Assigned Abuse Reports	
a. None	0	a. None	0
b. One	1	b. Abuse report(s)	1
c. Two or more	2	c. Sexual abuse report(s)	2
		d. Both b and c	3
N3. Number of Children in the Home		A3. Prior CPS Service History	
a. Two or fewer	0	a. No	0
b. Three or more	1	b. Yes	1
N4. Number of Adults in Home at Time of Report		A4. Number of Children in the Home	
a. Two or more	0	a. One	0
b. One or none	1	b. Two or more	1
N5. Age of Primary Caregiver		A5. Caregiver(s) Abused as Child(ren)	
a. 30 or older	0	a. No	0
b. 29 or younger	1	b. Yes	1
N6. Characteristics of Primary Caregiver (check & add for score)		A6. Secondary Caregiver has a Current Substance Abuse Problem	
a. Not applicable	0	a. No, or no secondary caregiver	0
b. ___ Lacks parenting skills	1	b. Yes (check all that apply)	
c. ___ Lacks self-esteem	1	___ Alcohol abuse problem	1
d. ___ Apathetic or hopeless	1	___ Drug abuse problem	1
N7. Primary Caregiver Involved in Harmful Relationships		A7. Primary or Secondary Caregiver Employs Excessive and/or Inappropriate Discipline	
a. No	0	a. No	0
b. Yes, but not a victim of domestic violence	1	b. Yes	2
c. Yes, as a victim of domestic violence	2	A8. Caregiver(s) has a History of Domestic Violence	
N8. Primary Caregiver has a Current Substance Abuse Problem		a. No	0
a. No	0	b. Yes	1
b. Alcohol only	1	A9. Caregiver(s) is a Domineering Parent	
c. Other drug(s) (with or without alcohol)	3	a. No	0
N9. Household is Experiencing Severe Financial Difficulty		b. Yes	1
a. No	0	A10. Child in the Home has a Developmental Disability or History of Delinquency	
b. Yes	1	a. No	0
N10. Primary Caregiver's Motivation to Improve Parenting Skills		b. Yes (check all that apply)	
a. Motivated and realistic	0	___ Developmental disability including emotionally impaired	1
b. Unmotivated	1	___ History of delinquency	1
c. Motivated but unrealistic	2	A11. Secondary Caregiver Motivated to Improve Parenting Skills	
N11. Caregiver(s) Response to Assessment		a. Yes, or no secondary caregiver in home	0
a. Viewed situation as seriously as investigator and cooperated satisfactorily	0	b. No	2
b. Viewed situation less seriously than investigator	1	A12. Primary Caregiver Views Incident Less Seriously than Agency	
c. Failed to cooperate satisfactorily	2	a. No	0
d. Both b and c	3	b. Yes	1
TOTAL NEGLECT RISK SCORE _____		TOTAL ABUSE RISK SCORE _____	

RISK LEVEL Assign the family's risk level based on the highest score on either scale, using the following chart:

<u>Neglect Score</u>	<u>Abuse Score</u>	<u>Risk Level</u>
_____ 0 - 4	_____ 0 - 2	_____ Low
_____ 5 - 7	_____ 3 - 5	_____ Moderate
_____ 8 - 12	_____ 6 - 9	_____ High
_____ 13 - 20	_____ 10 - 16	_____ Intensive

OVERRIDES

- Policy: Override to intensive. Check appropriate reason.
1. Sexual abuse cases where the perpetrator is likely to have access to the child victim.
 2. Cases with non-accidental physical injury to an infant.
 3. Serious non-accidental physical injury requiring hospital or medical treatment.
 4. Death (previous or current) of a sibling as a result of abuse or neglect.
- Discretionary: Override one level.
5. Reason: _____

Override Risk Level: _____ Low _____ Moderate _____ High _____ Intensive

Supervisor's Review/Approval of Override: _____ Date: ____/____/____

IV. FINDINGS

A. Current Family Risk Assessment Classification Findings

An effective and valid risk assessment has progressively higher outcome rates that correspond to each increase in risk classification level across multiple outcomes. Ideally, the rates between consecutive risk levels maximize the separation between the high and low risk groups, as well as between consecutive risk groups. In other words, each increase in risk level should correspond to an increased in subsequent CPS involvement that, across outcomes, is significantly greater.

1. Current Family Risk Assessment Classification Findings for Neglect

Table 8 shows the follow-up neglect assessment rates for families classified by the current neglect instrument. Eighteen months after the initial classification was assigned, 16.3% of the sampled families were involved in either an alternative response or a traditional investigation for an allegation of neglect on at least one occasion. Of the families classified as low risk, 12.2% were subsequently assessed for a neglect allegation. The sampled families classified as moderate, high, or intensive risk had subsequent assessment rates for neglect that were similar, although significantly higher, than the rate for low risk families. Families classified as moderate risk of neglect had a re-assessment rate of 23.5%. The corresponding outcome rate was 21.0% for families classified as high risk and 19.4% for the very small number of families classified as intensive risk of neglect.¹⁵

The current risk assessment of neglect performed similarly when the outcome was subsequent traditional investigation of neglect and when the outcome was determined neglect. While only 8.0% of sampled families assigned to the low risk classification had a traditional investigation for neglect during the follow-up period, between 17.6% and 18.2% of families

¹⁵ Only 2.3% of families were classified as intensive risk.

classified as moderate to intensive risk had a subsequent traditional investigation for neglect. When the outcome was subsequent neglect determination, families classified as low risk had a rate of 4.4%, while the rate for families classified as moderate, high, or intensive risk fell between 12.3% and 13.4%. The current neglect risk assessment distinguished low risk from other families, but did not distinguish well between moderate, high, and intensive risk families.

Neglect Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Subsequent Neglect Assessment	Subsequent Neglect Traditional Investigation	Subsequent Neglect Determination
Low	6,641	59.5%	12.2%	8.0%	4.4%
Moderate	2,639	23.6%	23.5%	18.0%	12.3%
High	1,621	14.5%	21.0%	17.6%	13.4%
Intensive	258	2.3%	19.4%	18.2%	12.4%
Total Sample	11,159	100.0%	16.3%	12.0%	7.8%

2. Current Family Risk Assessment Classification Findings for Abuse

The risk assessment performed better when classifying families by their likelihood of subsequent abuse (see Table 9). For example, among the 5,111 families classified as low risk of subsequent abuse, 5.8% were subsequently assessed for abuse allegations and only 1.5% had an abuse determination. Families classified as moderate risk had a significantly higher follow-up abuse assessment rate of 11.5%, more than four times the rate of families classified as low risk. Families classified as high and intensive risk had very similar re-assessment abuse rates (15.9% and 15.6%, respectively), but only a small number (1.3%) of families were classified as intensive risk.

When the outcome was subsequent traditional investigation for abuse allegations, however, an increase in each risk level corresponded to an increase in the rate of occurrence

among families classified at that risk level. Families classified as low risk of abuse had a follow-up abuse traditional investigation rate of 4.3%. Moderate risk families had a corresponding rate of 8.9%, while families classified as high risk had a rate of 13.6% and intensive risk families had a rate of 15.6%.

An increase in the abuse risk level also corresponded to an increase in the rate when the outcome was subsequent abuse determination. Families classified as low risk had a 1.5% abuse determination rate, while families classified as intensive risk had a corresponding rate of 9.9%. Moderate risk families had an abuse determination rate of 3.7%, while families classified as high risk had a rate of 6.4%.

Abuse Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Subsequent Abuse Assessment	Subsequent Abuse Traditional Investigation	Subsequent Abuse Determination
Low	5,111	45.8%	5.8%	4.3%	1.5%
Moderate	4,679	41.9%	11.5%	8.9%	3.7%
High	1,228	11.0%	15.9%	13.6%	6.4%
Intensive	141	1.3%	15.6%	15.6%	9.9%
Total Sample	11,159	100.0%	9.4%	7.4%	3.0%

3. Current Family Risk Assessment Classification Findings for Any Maltreatment

As mentioned previously, the overall risk classification is the highest risk level assigned by the abuse or neglect instrument. The overall classification establishes a risk level that estimates the likelihood of subsequent maltreatment of any kind (i.e., either abuse or neglect). This is the classification the agency uses to inform case decisions.

Table 10 and Figure 1 report the follow-up assessment rates for abuse and/or neglect by the final classification obtained with the current family risk assessment. During the 18 months

following completion of the sampled assessment, 22.2% of the sampled families had at least one additional alternative response or traditional investigation for a maltreatment report. Among families classified as low risk, 15.3% had a follow-up assessment. Families classified as moderate, high, and intensive risk had higher but essentially equivalent rates of subsequent assessment for abuse or neglect (25.7%, 25.7%, and 24.6%, respectively). Only 374 (3.4%) families were classified as intensive risk, which makes it difficult to evaluate the findings for that classification. Findings were similar when the outcome was subsequent traditional investigation for abuse or neglect. Families classified as low risk had a rate of 10.1%, while the corresponding rate was 18.6% for moderate risk families, 21.6% for high risk, and 21.4% for intensive risk families.

The risk assessment provided much better estimates for the maltreatment determination and traditional case opening outcomes (see Table 10). Families classified as low risk had a 5.4% subsequent maltreatment determination rate, moderate risk families had a rate of 10.8%, and high risk families had a rate of 14.4%. Intensive risk families had a maltreatment determination rate of 15.2% (see also Figure 2).

Table 10 and Figure 2 also show final classification results when the outcome was a traditional case opening resulting from an assessment subsequent to the sample incident. Of families classified as low risk, 3.7% had a subsequent case opening, compared to 9.3% of moderate risk families, 13.1% of high risk families, and 15.2% of intensive risk families.

Table 10**Current Overall Risk Classification by Subsequent Maltreatment Outcomes**

Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Low	3,752	33.6%	15.3%	10.1%	5.4%	3.7%
Moderate	4,758	42.6%	25.7%	18.6%	10.8%	9.3%
High	2,275	20.4%	25.7%	21.6%	14.4%	13.1%
Intensive	374	3.4%	24.6%	21.4%	15.2%	15.2%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%

Figure 1

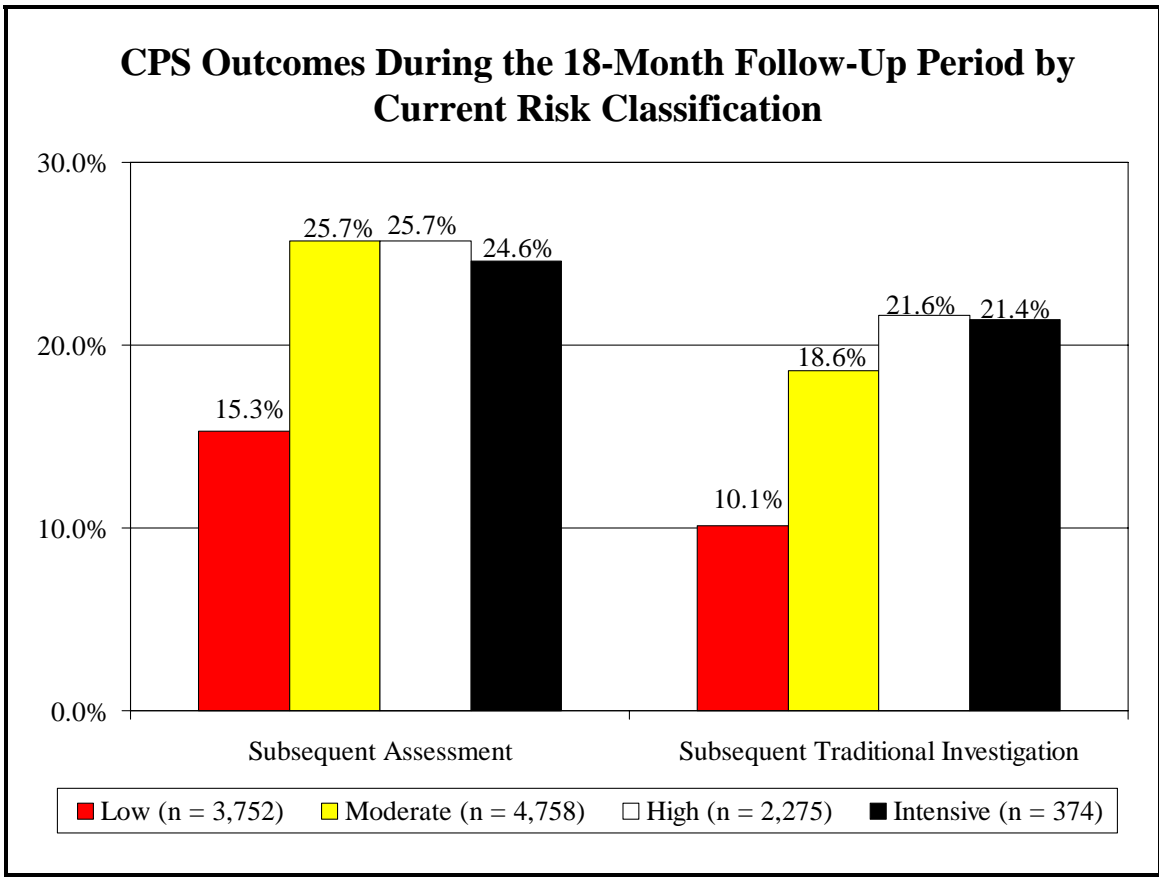
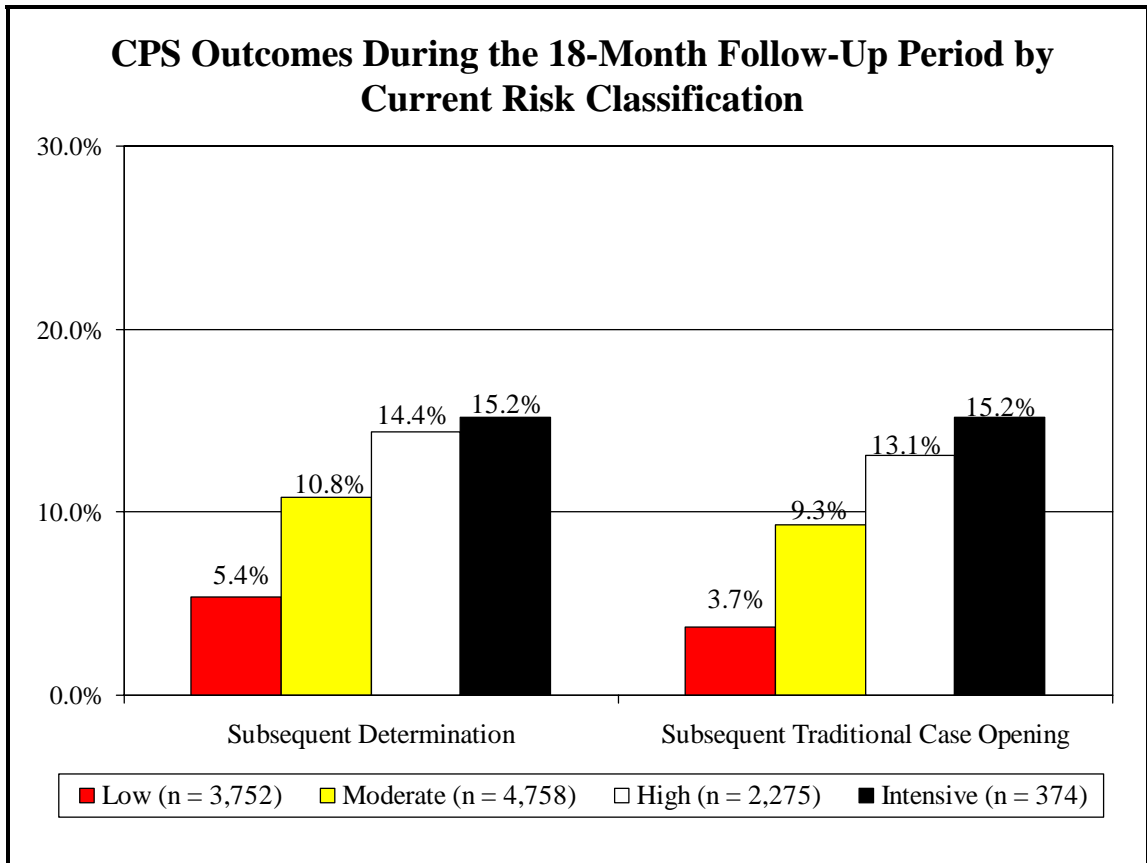


Figure 2



4. Current Risk Assessment Classification Findings by the Type of Sampled Assessment

Table 11 shows separate findings for families with a traditional investigation versus an AR assessment. Families with a sampled AR assessment were more likely to be classified as lower risk than were families with a traditional investigation. For example, 32.5% of families with a traditional investigation were classified as high or intensive risk, compared to 9.8% of families who received a sampled AR assessment.

Among families with a sampled traditional investigation, the risk assessment classified families better by their likelihood of subsequent maltreatment determination and case opening than by their likelihood of subsequent assessment. Only 5.0% of low risk families traditionally investigated had a subsequent maltreatment determination, compared to 11.4% of moderate risk and 15.4% of high risk families. Intensive risk families had a subsequent determination rate equivalent to that of the high risk group, however.

The risk assessment did not classify AR families as well. Moderate, high, and intensive risk families had similar determination rates (9.9%, 9.8%, and 8.7%, respectively). Moderate and high risk AR families also had similar subsequent assessment rates (25.1% and 27.5%, respectively), while intensive risk AR families had a much lower rate (17.4%). Only 23 families in the AR group were classified as intensive risk, however, which makes it difficult to draw conclusions about these families.

Table 11						
Current Overall Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
Traditional Investigation						
Low	1,843	26.9%	14.3%	10.4%	5.0%	3.5%
Moderate	2,770	40.5%	26.2%	20.9%	11.4%	9.8%
High	1,875	27.4%	25.3%	22.8%	15.4%	13.7%
Intensive	351	5.1%	25.1%	21.9%	15.7%	16.0%
Total Traditional	6,839	100.0%	22.7%	18.6%	11.0%	9.5%
Alternative Response Assessment						
Low	1,909	44.2%	16.2%	9.9%	5.7%	3.8%
Moderate	1,988	46.0%	25.1%	15.4%	9.9%	8.6%
High	400	9.3%	27.5%	15.8%	9.8%	10.5%
Intensive	23	0.5%	17.4%	13.0%	8.7%	4.3%
Total AR Assessments	4,320	100.0%	21.3%	13.0%	8.0%	6.6%

5. Current Risk Assessment Classification Findings by the Race/Ethnicity of a Caregiver

Problems with the performance of the current risk assessment were also found when comparing classification findings by the race/ethnicity of a caregiver (see Table 12). Classification findings were compared for race/ethnic groups with a sample of 600 or more families, to help ensure reliable estimates by risk level. As noted previously, a very small percentage of families were classified as intensive risk. This makes it difficult to evaluate findings for this classification (e.g., fewer than 100 cases were classified intensive risk for American Indian/Alaskan Native, Black/African American, and Latino families). Nonetheless, the risk assessment works reasonably well within each group for maltreatment determination and case opening. For most groups, the maltreatment rates for low, moderate, and high risk families

differed in the expected manner. Moderate risk American Indian/Alaskan Native families, however, had a subsequent determination rate higher than that of high risk American Indian/Alaskan Native families (19.2% and 13.2%, respectively).

There were also differences in determination rates within a given risk level between race/ethnic groups. White/Caucasian families classified as moderate risk had a maltreatment determination rate similar to that of high risk Black/African American families. American Indian/Alaskan Native families classified as low risk had a maltreatment determination and a subsequent traditional case opening rate higher than that of moderate risk White/Caucasian and moderate risk Latino families. In addition, moderate risk American Indian/Alaskan Native families had a determination and traditional case opening rate equal to or greater than the rate for high risk families in other race/ethnic groups.

Table 12

Current Overall Risk Classification by Subsequent Maltreatment Outcomes

Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
White/Caucasian						
Low	1,360	30.4%	15.1%	8.5%	4.6%	3.1%
Moderate	1,884	42.1%	23.8%	16.3%	9.3%	8.9%
High	1,048	23.4%	23.8%	19.3%	12.8%	11.7%
Intensive	179	4.0%	20.7%	19.6%	12.8%	13.4%
Subtotal	4,471	100.0%	21.0%	14.8%	8.8%	8.0%
Black/African American						
Low	851	31.8%	19.5%	15.2%	8.2%	5.4%
Moderate	1,229	46.0%	31.2%	24.6%	14.6%	11.6%
High	523	19.6%	28.1%	25.8%	19.9%	15.7%
Intensive	70	2.6%	27.1%	21.4%	12.9%	11.4%
Subtotal	2,673	100.0%	26.8%	21.7%	13.5%	10.4%
Hispanic/Latino						
Low	363	40.7%	12.1%	7.7%	4.7%	2.8%
Moderate	375	42.0%	22.4%	12.5%	7.2%	5.1%
High	126	14.1%	27.0%	19.8%	11.9%	11.9%
Intensive	28	3.1%	46.4%	28.6%	25.0%	25.0%
Subtotal	892	100.0%	19.6%	12.1%	7.4%	5.7%
American Indian/Alaskan Native						
Low	147	19.9%	28.6%	19.0%	10.9%	10.9%
Moderate	307	41.7%	41.0%	34.2%	19.2%	18.6%
High	235	31.9%	29.8%	25.1%	13.2%	14.9%
Intensive	48	6.5%	16.7%	16.7%	12.5%	12.5%
Subtotal	737	100.0%	33.4%	27.1%	15.2%	15.5%

B. The Proposed Family Risk Assessment for Abuse and Neglect

The current risk assessment performed reasonably well when distinguishing between families classified at low versus higher risk levels for subsequent determined maltreatment. For all CPS outcomes (assessment, determination and case opening) and among all sample subgroups, the recidivism rates observed among low risk families was significantly lower than those of families classified at higher risk levels. For example, 3.7% of families classified as low risk had a subsequent determination during the 18-month follow-up period, a rate much lower than the average rate (8.4%) for the entire sample.

The risk assessment did not always distinguish well, however, between high and intensive risk families. Although there were very few intensive risk families, those classified as high and intensive risk had similar rates of subsequent maltreatment determination (see Table 10). When high and intensive risk families were combined into a single classification, the risk assessment produced a significantly higher rate of recidivism for each increase in classification between low and high/intensive risk (see Appendix E).

For subgroups of the sample, the risk assessment also failed to distinguish well between moderate and high risk families. Among families assessed using AR methods, moderate and high risk families had the same rate of subsequent maltreatment determination. In addition, moderate risk American Indian/Alaskan Native families had a subsequent determination and case open rate equal to or greater than rates for high risk American Indian/Alaskan Native families as well as those of other ethnic groups.

The current risk assessment is based on research conducted in Michigan nearly 14 years ago that observed only families in a determined maltreatment incident (i.e., the sample excluded assessments with any other finding). This may be a factor in the classification findings for families assessed with AR. Minnesota DHS implemented their AR program in 2002, and this shift in practice may also have had an impact on the classification abilities of the risk assessment.

For example, diverting a proportion of families from a traditional investigation and case opening would, over time, change the prior CPS history distribution of families assessed by DHS.

A proposed risk assessment was developed by examining the relationship between the family case characteristics workers observed and recorded in SSIS at the time of the sample assessment and subsequent CPS assessments and findings. Each risk item on the current risk assessment was examined in the analysis, along with items from the safety assessment, allegations of abuse and neglect made at the time of the sample incident, and CPS involvement of families prior to the sample incident. Individual items were selected for inclusion in the abuse or neglect assessment based on their statistical association with subsequent maltreatment. Both bivariate and multivariate statistical techniques¹⁶ were used to evaluate potential risk factors for inclusion in the risk assessment, determine appropriate weights for each one, and set cut-off scores for both the abuse and neglect classifications. The abuse and neglect indices were developed separately, and results from both are used to determine the overall risk classification.¹⁷

The first step in the risk assessment construction was to examine correlations and cross tabulations between each potential risk factor available for study and each outcome measure. The primary maltreatment outcome was subsequent determination, because it provides the best evidence that abuse or neglect occurred and is employed as a child safety outcome by the CFSR. Subsequent assessments and traditional case opening were also reviewed. Risk factors that demonstrated a significant statistical association¹⁸ with any outcomes were selected for further analysis. Multiple linear regression analyses were then conducted to identify which combination of risk factors to include in the risk assessment. Item weights were determined by assessing their

¹⁶ A variety of statistical methods could be used to conduct the analyses described. A prior study by Simon (1971) and an exhaustive study by Gottfredson and Gottfredson (1979), later substantiated by other researchers (see Wilbanks, 1985; and Benda, 1987), found that less precise methods of statistical evaluation (including bivariate analyses or least squares regression) often produce better overall results. More recent studies support the earlier findings: see Silver, Smith, & Banks. (2000). Constructing actuarial devices for predicting recidivism. *Criminal Justice and Behavior*, 29(5), 733-764.

¹⁷ Previous research indicates that the family risk characteristics associated with child abuse differ from those related to neglect.

¹⁸ Pearson correlation significant at the .05 level.

bivariate and multivariate relationship to maltreatment outcome measures. Since the instrument must be completed by workers under field conditions, the ease of observing and reliably scoring case characteristics was also considered in the selection of revised instrument items. After a preliminary instrument was developed, it was tested against outcomes to determine optimal cut-off points for classification categories and to evaluate its classification capabilities. The risk assessment was then applied to the validation sample to examine classification findings with a different sample.

The proposed risk assessment has three classifications rather than four. The reasons for this decision have to do with policy considerations as well as empirical issues. In terms of policy, high and intensive risk families are assigned the same priority for case opening so there is little practical difference in terms of agency response. As noted in the preceding findings, the number of intensive risk families in the current sample was very small (3.4%). In addition, base rates, the average rate of occurrence for a given group, varied significantly by the race/ethnicity of the caregiver (see Tables 5-7). Such dramatic differences in base rates make it difficult to achieve a classification in which families in a given risk level have similar outcome rates. When this proved difficult to attain with a four-level assessment, a three-level risk assessment was constructed.

The revalidation effort described previously resulted in a risk assessment that employs similar risk factors to the current one (see page 33). The proposed risk assessment added items for current allegations of inadequate supervision and educational neglect (see item N1), as well as current determination for physical abuse (A1). Prior CPS traditional case opening and prior neglect determination (N3) was added to the neglect assessment. The nature of prior abuse reports on the current risk assessment was replaced with item A2 on the proposed risk assessment, which is composed of prior abuse report, prior abuse determination, and prior

traditional case opening.¹⁹ Prior CPS history item definitions could be limited to a five-year period, given that items were collected from SSIS data available since 1999.

Some items from the current risk assessment were not retained on the proposed assessment. Whether the primary caregiver lacks self-esteem was removed from the neglect assessment, and secondary caregiver substance use was removed from the abuse assessment. Another significant change was fewer points assigned to items requiring substantial worker judgment, such as caregiver motivation to improve parenting skills and caregiver view of the situation.

¹⁹ The item prior traditional case opening will likely require a change to the definition. The current risk assessment item “prior CPS service history” scores any prior case opening. In contrast, “prior traditional case opening” was defined as a subsequent traditional investigation with a reason_end_cd of 17, case opened for services, or a subsequent case management workgroup with a traditional track code. Thus, it should be limited to departmental non-AR case service.

PROPOSED FAMILY RISK ASSESSMENT OF ABUSE/NEGLECT

Case Name: _____ Case #: _____ Current Date: ____/____/____
 County Name: _____ County #: _____ Date Report Received ____/____/____
 Worker Name: _____ Worker ID: _____

<u>NEGLECT</u>	<u>SCORE</u>	<u>ABUSE</u>	<u>SCORE</u>
N1. Allegations of Current Report (check and add for score)		A1. Current Report Is for Abuse (check and add for score)	
a. Not applicable..... 0		a. Not applicable0	
b. ___ Any type of neglect 1		b. ___ Allegation of abuse, any type1	
c. ___ Inadequate supervision..... 1		d. ___ Determination for physical abuse1	
d. ___ Educational neglect 2			
N2. Number of Prior Assigned Reports		A2. Prior CPS History (check and add for score)	
a. None..... 0		a. Not applicable0	
b. One..... 1		b. ___ Prior assigned report for abuse1	
c. Two or more 2		c. ___ Prior determination for abuse2	
		d. ___ Prior traditional case opening1	
N3. Prior CPS History (check and add for score)		A3. Number of Children in the Home	
a. Not applicable..... 0		a. One -1	
b. ___ Prior determination for neglect 1		b. Two to Three0	
c. ___ Prior traditional case opening 1		c. Four or more.....1	
N4. Number of Children in the Home		A4. Caregiver(s) Abused as Child(ren)	
a. One..... -1		a. No.....0	
b. Two or more 0		b. Yes.....1	
N5. Age of Youngest Child		A5. Primary Caregiver Lacks Parenting Skills	
a. Three or older 0		a. No.....0	
b. Two or younger 1		b. Yes.....1	
N6. Child in the Home Has a Developmental Disability/Emotional Impairment		A7. Primary or Secondary Caregiver Employs Excessive and/or Inappropriate Discipline	
a. No 0		a. No.....0	
b. Yes 1		b. Yes.....1	
N7. Number of Adults in Home at Time of Report		A8. Caregiver(s) Has a History of Domestic Violence	
a. Two or more 0		a. No.....0	
b. One or none 1		b. Yes (check all that apply)	
N8. Age of Primary Caregiver		___ During the last 12 months	
a. 30 or older..... 0		___ Prior to the last 12 months1	
b. 29 or younger..... 1		A9. Caregiver(s) Is a Domineering Parent	
N9. Characteristics of Primary Caregiver (check and add for score)		a. No.....0	
a. Not applicable..... 0		b. Yes.....1	
b. ___ Lacks parenting skills..... 1		A10. Child in the Home Has a Developmental Disability or History of Delinquency	
c. ___ Apathetic or hopeless 1		a. No.....0	
N10. Primary Caregiver Involved in Harmful Relationships		b. Yes (check all that apply)	
a. No 0		___ Developmental disability including emotionally impaired	
b. Yes 1		___ History of delinquency2	
N11. Either Caregiver Has a Current Substance Abuse Problem			
a. No 0			
b. Yes 1			
N12. Caregiver(s) Response to Assessment			
a. Not applicable..... 0			
b. Yes (check all that apply)			
___ Viewed situation less seriously than agency			
___ Unmotivated to improve parenting skills..... 1			
TOTAL NEGLECT RISK SCORE	=====	TOTAL ABUSE RISK SCORE	=====

RISK LEVEL Assign the family's risk level based on the highest score on either scale, using the following chart:

<u>Neglect Score</u>	<u>Abuse Score</u>	<u>Risk Level</u>
_____ -1 - 2	_____ -1 - 1	_____ Low
_____ 3 - 5	_____ 2 - 5	_____ Moderate
_____ 6 - 17	_____ 6 - 14	_____ High

OVERRIDES

- Policy: Override to intensive. Check appropriate reason.
1. Sexual abuse cases where the perpetrator is likely to have access to the child victim.
 2. Cases with non-accidental physical injury to an infant.
 3. Serious non-accidental physical injury requiring hospital or medical treatment.
 4. Death (previous or current) of a sibling as a result of abuse or neglect.
- Discretionary: Override one level.
5. Reason: _____

Override Risk Level: _____ Low _____ Moderate _____ High _____ Intensive

Supervisor's Review/Approval of Override: _____ Date: ____/____/____

C. Performance of the Proposed Family Risk Assessment for Abuse and Neglect

The following tables and figures review the proposed risk assessment classification results for the construction sample, using the same maltreatment outcomes reviewed for assessing the performance of the current family risk assessment. Findings are shown for the proposed neglect assessment, the proposed abuse assessment, and then the overall risk classification.

1. Proposed Family Risk Assessment Classification Findings for Neglect

Table 13 shows that when classified by the proposed neglect risk assessment, an increase in the neglect risk level corresponded to an increase in rates for every neglect assessment outcome. Among families classified as low risk of neglect, 8.6% had a subsequent AR or traditional investigation for neglect, compared to 17.6% of families classified as moderate risk and 29.7% of families classified as high risk. When the outcome was subsequent traditional investigation for neglect or subsequent determination for neglect, the rate doubled with each increase in risk level.

Table 13					
Proposed Risk of Neglect Classification by Neglect Outcomes					
Neglect Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Subsequent Neglect Assessment	Subsequent Neglect Traditional Investigation	Subsequent Neglect Determination
Low	4,343	38.9%	8.6%	5.3%	2.8%
Moderate	4,792	42.9%	17.6%	12.9%	8.1%
High	2,024	18.1%	29.7%	24.3%	17.7%
Total Sample	11,159	100.0%	16.3%	12.0%	7.8%

2. Proposed Family Risk Assessment Classification Findings for Abuse

The proposed abuse risk assessment classified families by their likelihood of future abuse (physical, emotional, or sexual abuse) of a child more accurately than did the current assessment. Table 14 shows that families classified as high risk had an abuse assessment and traditional investigation rate four times greater than those classified as low risk. The abuse determination rate for high risk was seven times greater than for low risk families. Across all outcomes, rates nearly doubled with each increase in the risk level.

Proposed Risk of Abuse Classification by Abuse Outcomes					
Abuse Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Subsequent Abuse Assessment	Subsequent Abuse Traditional Investigation	Subsequent Abuse Determination
Low	5,387	48.3%	5.5%	4.0%	1.3%
Moderate	4,968	44.5%	11.9%	9.2%	3.9%
High	804	7.2%	21.0%	19.0%	9.1%
Total Sample	11,159	100.0%	9.4%	7.4%	3.0%

3. Proposed Family Risk Assessment Classification Findings for Any Maltreatment

The proposed neglect and abuse assessments resulted in an improved overall risk classification for maltreatment. Table 15 shows subsequent assessment, determination, and case opening rates for either abuse or neglect by the proposed risk assessment’s final classification. Within 18 months of the sampled assessment, 12.1% of the sampled families classified as low risk had a follow-up AR or traditional investigation, compared to 21.3% of moderate risk families and 34.5% of high risk families (also see Figure 3). High risk families had four times the rate of subsequent traditional investigation compared to low risk families, while moderate risk families had twice the rate of low risk families. When the outcome was subsequent

determination or subsequent case opening, an increase in risk level corresponded to at least a two-fold increase in the outcome rate (see Figure 4).

Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Low	2,448	21.9%	12.1%	7.4%	3.5%	2.5%
Moderate	6,249	56.0%	21.3%	15.2%	8.7%	7.2%
High	2,462	22.1%	34.5%	28.6%	19.0%	17.3%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%

Figure 3

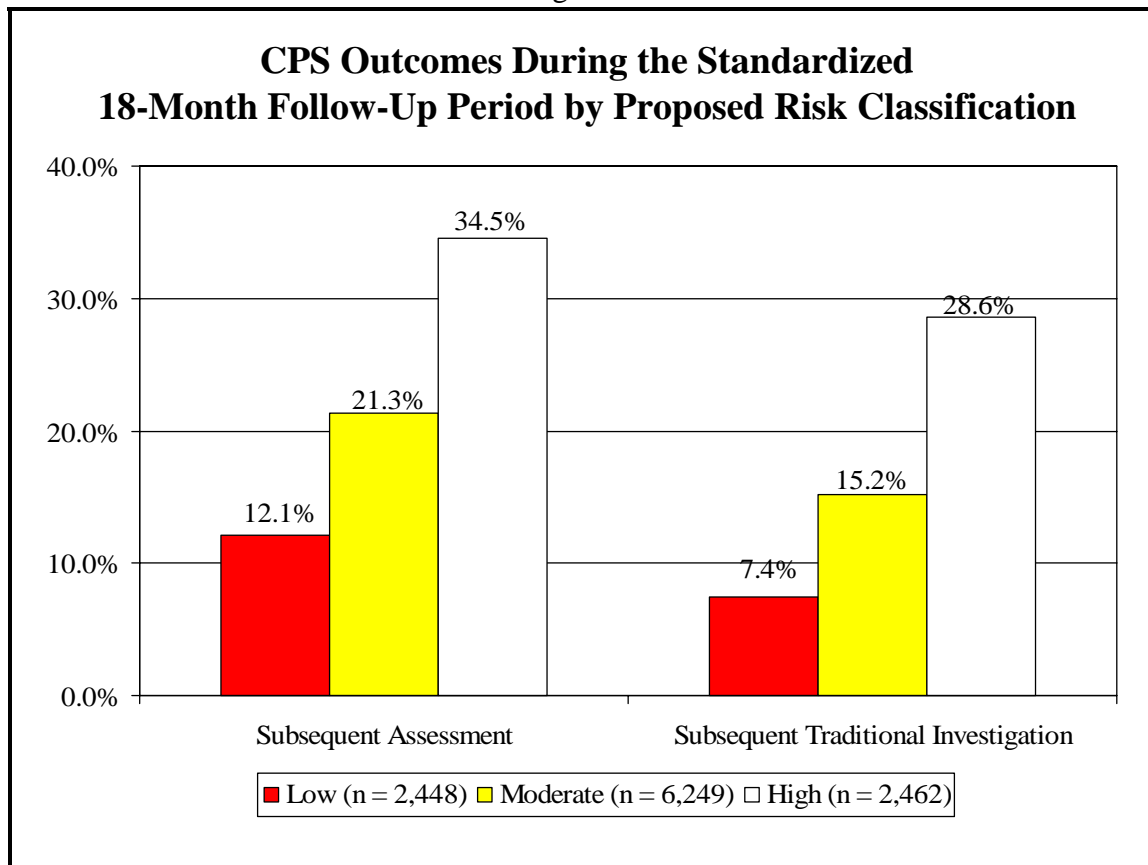
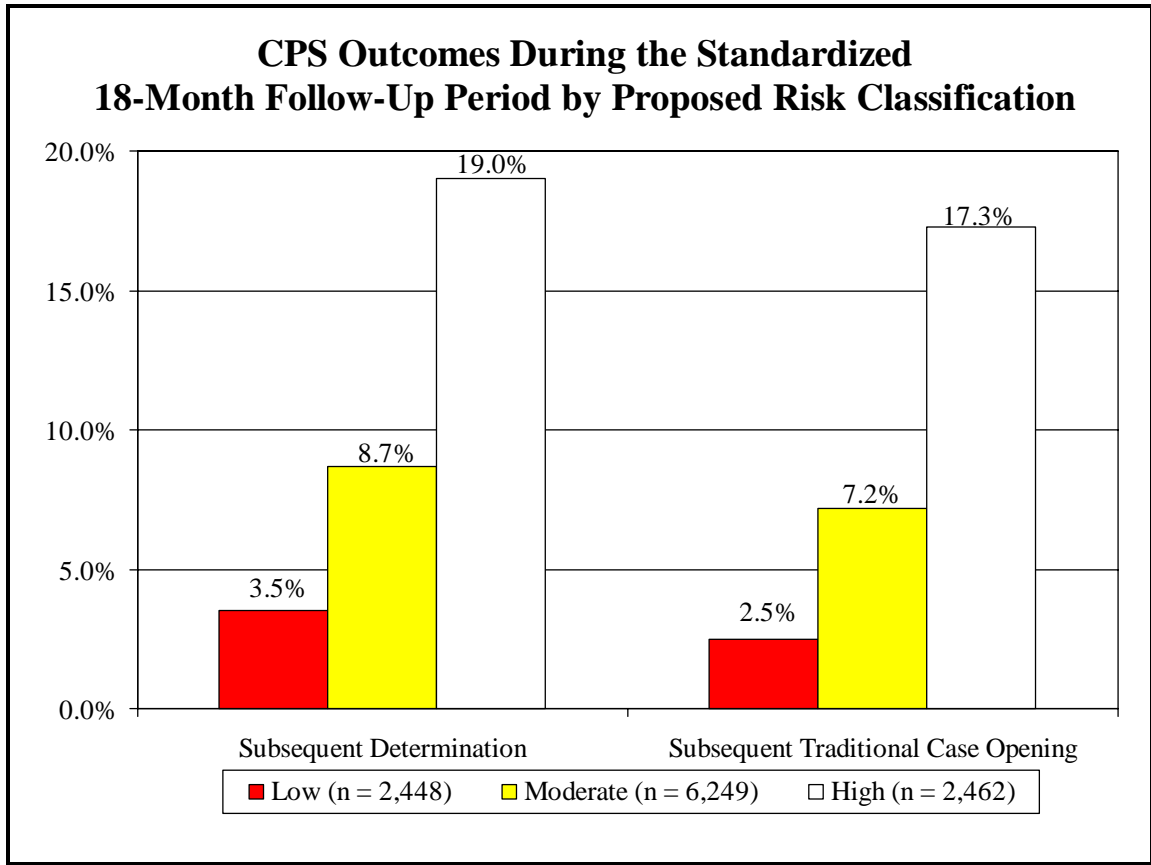


Figure 4



4. Proposed Risk Assessment Classification Findings by the Type of Sampled Assessment

Table 16 reviews the classification results of the proposed risk assessment for families with a sampled AR assessment compared to families with a traditional investigation. The distribution of families by risk level was more similar under the proposed risk assessment than under the current risk assessment. Approximately one fourth (26.8%) of families with a sampled traditional investigation were classified as high risk, compared to 14.5% of families with a sampled AR assessment.

Outcome rates by risk level for these groups indicated that the risk assessment classified families with a sampled AR versus traditional investigation similarly. Of families with a sampled traditional investigation, 7.7% of low risk families had a subsequent traditional investigation, compared to 17.2% of moderate risk and 29.4% of high risk families. Corresponding rates for families with a sampled AR assessment were 7.0% of low risk families, 12.4% of moderate risk, and 26.2% of high risk families.

Findings were similar when the outcome was subsequent maltreatment determination and subsequent case opening. Within each risk classification, families with a sampled AR assessment had an outcome rate similar to that of families with a sampled traditional investigation, and an increase in risk level corresponded to at least a two-fold increase in the outcome rate.

Table 16						
Proposed Overall Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
Traditional Investigation						
Low	1,331	19.5%	11.1%	7.7%	3.5%	2.6%
Moderate	3,673	53.7%	21.5%	17.2%	9.4%	7.9%
High	1,835	26.8%	33.6%	29.4%	19.5%	17.7%
Total Traditional	6,839	100.0%	22.7%	18.6%	11.0%	9.5%
Alternative Response Assessment						
Low	1,117	25.9%	13.2%	7.0%	3.5%	2.3%
Moderate	2,576	59.6%	21.0%	12.4%	7.6%	6.2%
High	627	14.5%	37.3%	26.2%	17.7%	16.1%
Total AR Assessments	4,320	100.0%	21.3%	13.0%	8.0%	6.6%

5. Proposed Risk Assessment Classification Findings by the Race/Ethnicity of a Caregiver

The proposed risk assessment also better classified families within and across racial/ethnic groups. Table 17 shows that for each race/ethnic group, an increase in risk level corresponded to a significant increase in every outcome rate. Across racial or ethnic groups, an increase from low to moderate risk corresponded to a two-fold increase in the subsequent determination and case opening rate. A move from moderate to high risk corresponded to a 50% increase for American Indian/Alaskan Native families and a two-fold increase for all other groups in the same outcomes.

In most cases, outcome rates within a risk classification were similar across racial/ethnic groups. For example, White/Caucasian families classified as high risk had a subsequent determination rate of 16.7%, compared to 22.0% for high risk Black/African American families,

20.6% for American Indian/Alaskan Native families, and 17.3% for high risk Latino families. The subsequent assessment and traditional investigation rates for moderate risk Latino families, however, were lower than the same rates for low risk American Indian/Alaskan Native and Black/African American families. Ideally, moderate risk families would have higher recidivism rates than low risk families in any race/ethnicity group. When the outcome was subsequent determination and subsequent case opening, moderate risk Latino families had outcome rates only slightly higher than those of low risk American Indian/Alaskan Native and Black/African American families. The assessment rates of high risk White families were only slightly higher than those of moderate risk American Indian/Alaskan Native families. This pattern, however, was not evident when outcomes for subsequent determination or traditional case opening were examined.

For the primary outcomes of subsequent determination and case opening, outcome rates for the low risk classification approached but did not exceed the rates of the moderate risk classification. DHS policies, however, indicate high risk cases should be opened while low and moderate risk cases should be closed (unless extenuating circumstances apply). The similarity between low and moderate risk follow-up assessment rates, therefore, has minimal policy implications. Policy implications would be greater if moderate risk outcome rates approached outcome rates of high risk families.

Table 17

Proposed Overall Risk Classification by Subsequent Maltreatment Outcomes

Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
White/Caucasian						
Low	1,034	23.1%	11.4%	6.4%	3.1%	2.4%
Moderate	2,514	56.2%	21.1%	14.3%	8.3%	7.0%
High	923	20.6%	31.6%	25.5%	16.7%	16.8%
Subtotal	4,471	100.0%	21.0%	14.8%	8.8%	8.0%
Black/African American						
Low	414	15.5%	17.9%	12.6%	5.6%	3.9%
Moderate	1,487	55.6%	24.1%	19.2%	11.4%	8.4%
High	772	28.9%	36.8%	31.5%	22.0%	17.7%
Subtotal	2,673	100.0%	26.8%	21.7%	13.5%	10.4%
Hispanic/Latino						
Low	181	20.3%	10.5%	5.5%	3.3%	1.7%
Moderate	561	62.9%	17.1%	10.3%	6.1%	4.5%
High	150	16.8%	40.0%	26.7%	17.3%	15.3%
Subtotal	892	100.0%	19.6%	12.1%	7.4%	5.7%
American Indian/Alaskan Native						
Low	78	10.6%	23.1%	12.8%	5.1%	3.8%
Moderate	372	50.5%	31.2%	24.2%	13.2%	13.4%
High	287	38.9%	39.0%	34.8%	20.6%	21.3%
Subtotal	737	100.0%	33.4%	27.1%	15.2%	15.5%

V. SUMMARY

When evaluated across all measures of subsequent maltreatment, the classification resulting from the proposed family risk assessment provided more distinction between risk levels than the classification obtained with the current risk assessment (see Table 18). The current risk assessment classified families such that those in the intensive risk group had a subsequent determination rate only slightly higher than those of high risk families. The intensive risk group was only 3.4% of the sample, however, which makes it difficult to draw conclusions about this classification. The current risk assessment classified families such that the maltreatment determination rate for high and intensive risk families was approximately three times greater than the rate for low risk families. In contrast, the proposed risk assessment resulted in a determination rate for high risk families that was five times greater than the rate among low risk families, with a significantly higher rate for every increase in risk classification. Findings for assessment and case opening outcomes were improved in a similar fashion.

Table 18						
Proposed Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Current Risk Assessment						
Low	3,752	33.6%	15.3%	10.1%	5.4%	3.7%
Moderate	4,758	42.6%	25.7%	18.6%	10.8%	9.3%
High	2,275	20.4%	25.7%	21.6%	14.4%	13.1%
Intensive	374	3.4%	24.6%	21.4%	15.2%	15.2%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
Proposed Risk Assessment						
Low	2,448	21.9%	12.1%	7.4%	3.5%	2.5%
Moderate	6,249	56.0%	21.3%	15.2%	8.7%	7.2%
High	2,462	22.1%	34.5%	28.6%	19.0%	17.3%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%

The proposed risk assessment also classified subgroups of families more similarly than did the current risk assessment. Families assigned to an AR assessment or a traditional investigation had similar outcome rates within each classification, and each increase in the risk classification corresponded to a significant increase in outcome rates.

Similarity in outcome rates within a given risk level was more difficult to achieve when comparing families by the race or ethnicity of a caregiver, because base outcome rates differed significantly across race/ethnic groups. For example, American Indian/Alaskan Native families had traditional investigation and maltreatment determination rates twice those of Latino families. The proposed risk assessment classified families across racial/ethnic groups such that subsequent determination and traditional case opening rates at each risk level were distinct from those of other risk levels and in the expected direction. The one exception was that subsequent maltreatment determination and traditional case opening rates among moderate risk Latino families were only slightly higher than those of low risk American Indian/Alaskan Native and Black/African American families. The policy implications are minimal given that DHS policies assign high risk cases priority for case opening while low and moderate risk cases are considered for closure.

Lastly, the proposed risk assessment was applied to a validation sample to assess classification abilities with a sample other than the one with which the tool was constructed. Some amount of shrinkage, the amount of classification power lost when moving away from a construction sample, is normal and expected. Analysis indicated that the amount of shrinkage that occurred in the validation sample was between 5.6% and 11.2% (see Appendix C for more information) and within acceptable limits. DHS may wish to monitor shrinkage by regularly examining risk assessment findings on an aggregate basis and examine the classification abilities of the risk assessment with a future sample.

Adopting the proposed risk assessment should help improve workers' estimates of a family's risk of future maltreatment. This, in turn, would permit the agency to reduce subsequent maltreatment by more effectively targeting service interventions to high risk families. Strengthening practice related to the risk assessment process, however, may also benefit the agency.

A report completed by the Institute of Applied Research (IAR) in 2004²⁰ indicated practice issues that may be affecting the classification abilities of the risk assessment:

- The IAR report found that the point in time that the risk assessment was completed varied. In some cases, the risk assessment was completed shortly after the worker's first visit. If the risk assessment is completed prior to the end of the assessment process, then the resulting risk scores may not accurately reflect characteristics of the family and the situation.
- IAR also conducted a content analysis of case files for 41 low risk American Indian/Alaskan Native families that were subsequently re-reported for child maltreatment. Their content analysis indicated that a number of problems (such as domestic violence or substance abuse) were present at the time the risk assessment was completed or appeared later, but were not always scored on the risk assessment.

When a worker completes the risk assessment and how items are scored are likely impacting the classification abilities of the risk assessment. Determining how workers are using the risk assessment in practice and improving the consistency of its use will result in better practice. Agency monitoring and additional worker training may also improve the accuracy of worker risk assessment estimates and the management of service delivery. DHS may wish to strengthen implementation by employing efforts used by other jurisdictions, such as:

- Emphasize worker use of risk assessment scoring definitions to promote accurate and consistent assessment scoring. Ensuring that scoring definitions are easily accessible to workers may increase the accuracy of their risk estimates.

²⁰ Institute of Applied Research. (2004). *An Evaluation of the Minnesota SDM family risk assessment*. St. Louis, Missouri.

- Include a review of risk and other SDM assessment scoring as part of routine case reviews conducted by supervisors or other staff. For example, Michigan's Department of Human Services developed a comparative case reading program, designed to improve supervisors' evaluation of SDM practices as well as workers' SDM-related assessment practices. Supervisors review a sample of case files, and then quality experts review the same file. The supervisors' findings can then be compared to the experts' findings. These findings are reviewed in a summary meeting with supervisors and area managers.
- Use refresher risk assessment trainings and other feedback mechanisms to solicit worker questions and identify areas for follow-up training or additional emphasis. If clarification is needed (for example, how to assess risk when parents are living in separate households), staff may want to respond with a written question and answer list, ask supervisors to review the subject at a future staff meeting, or revise training materials to include a case example that addresses the issue.
- Encourage supervisors to routinely review risk scoring and include it in case discussions with workers.
- Ensure that assessment and service delivery data for CPS cases are easily accessible to DHS staff. DHS staff may benefit from systematically monitoring information such as:
 - ▶ Safety factors indicated at the time of assessment and the interventions used to help ensure child safety.
 - ▶ The risk and needs profiles of the families served using AR or traditional methods.
 - ▶ The frequency and nature of overrides to the risk classification.
 - ▶ The case opening decision by the risk classification after any overrides.
 - ▶ Information about the availability and use of service interventions. Service interventions could be examined relative to priority needs identified on the family strength and needs assessment.

This kind of information makes it possible for local managers to identify the service needs of their clients, prioritize service interventions with high risk families, and take action necessary to improve service delivery.

Periodic validations are required to ensure that risk assessments continue to effectively classify families by their likelihood of future child maltreatment. If DHS operations change significantly in the next few years, another validation study is recommended to ensure that the risk assessment is effectively classifying families.

The current validation was limited to information collected in SSIS. Collecting supplemental items of interest with SSIS would allow DHS staff to examine additional information in future validations. For example, the IAR report noted that the risk assessment lacked an item for caregiver mental health. If workers systematically collect this information at the same time the risk assessment is completed, then future validation efforts may show caregiver mental health to be a significant risk factor.

Appendix A

Current Family Risk Assessment Form and Item Analysis

**MINNESOTA
FAMILY RISK ASSESSMENT OF ABUSE/NEGLECT**

c: 1999

Case Name: _____ Case #: _____ Current Date: ____/____/____
 County Name: _____ County #: _____ Date Report Received ____/____/____
 Worker Name: _____ Worker ID: _____

NEGLECT	<u>SCORE</u>	ABUSE	<u>SCORE</u>
N1. Current Report is for Neglect		A1. Current Report is for Abuse	
a. No	0	a. No	0
b. Yes	1	b. Yes	1
N2. Number of Prior Assigned Reports		A2. Prior Assigned Abuse Reports	
a. None	0	a. None	0
b. One	1	b. Abuse report(s)	1
c. Two or more	2	c. Sexual abuse report(s)	2
		d. Both b and c	3
N3. Number of Children in the Home		A3. Prior CPS History	
a. Two or fewer	0	a. No	0
b. Three or more	1	b. Yes	1
N4. Number of Adults in Home at Time of Report		A4. Number of Children in the Home	
a. Two or more	0	a. One	0
b. One or none	1	b. Two or more	1
N5. Age of Primary Caregiver		A5. Caregiver(s) Abused as Child(ren)	
a. 30 or older	0	a. No	0
b. 29 or younger	1	b. Yes	1
N6. Characteristics of Primary Caregiver (check & add for score)		A6. Secondary Caregiver has a Current Substance Abuse Problem	
a. Not applicable	0	a. No, or no secondary caregiver	0
b. Lacks parenting skills	1	b. Yes (check all that apply)	
c. Lacks self-esteem	1	Alcohol abuse problem	1
d. Apathetic or hopeless	1	Drug abuse problem	1
N7. Primary Caregiver Involved in Harmful Relationships		A7. Primary or Secondary Caregiver Employs Excessive and/or Inappropriate Discipline	
a. No	0	a. No	0
b. Yes, but not a victim of domestic violence	1	b. Yes	2
c. Yes, as a victim of domestic violence	2	A8. Caregiver(s) has a History of Domestic Violence	
N8. Primary Caregiver has a Current Substance Abuse Problem		a. No	0
a. No	0	b. Yes	1
b. Alcohol only	1	A9. Caregiver(s) is a Domineering Parent	
c. Other drug(s) (with or without alcohol)	3	a. No	0
N9. Household is Experiencing Severe Financial Difficulty		b. Yes	1
a. No	0	A10. Child in the Home has a Developmental Disability or History of Delinquency	
b. Yes	1	a. No	0
N10. Primary Caregiver's Motivation to Improve Parenting Skills		b. Yes (check all that apply)	
a. Motivated and realistic	0	Developmental disability including emotionally impaired	1
b. Unmotivated	1	History of delinquency	1
c. Motivated but unrealistic	2	A11. Secondary Caregiver Motivated to Improve Parenting Skills	
N11. Caregiver(s) Response to Assessment		a. Yes, or no secondary caregiver in home	0
a. Viewed situation as seriously as investigator and cooperated satisfactorily	0	b. No	2
b. Viewed situation less seriously than investigator	1	A12. Primary Caregiver Views Incident Less Seriously than Agency	
c. Failed to cooperate satisfactorily	2	a. No	0
d. Both b and c	3	b. Yes	1
TOTAL NEGLECT RISK SCORE _____		TOTAL ABUSE RISK SCORE _____	

RISK LEVEL Assign the family's risk level based on the highest score on either scale, using the following chart:

<u>Neglect Score</u>	<u>Abuse Score</u>	<u>Risk Level</u>
_____ 0 - 4	_____ 0 - 2	_____ Low
_____ 5 - 7	_____ 3 - 5	_____ Moderate
_____ 8 - 12	_____ 6 - 9	_____ High
_____ 13 - 20	_____ 10 - 16	_____ Intensive

OVERRIDES

- Policy: Override to intensive. Check appropriate reason.
- Sexual abuse cases where the perpetrator is likely to have access to the child victim.
 - Cases with non-accidental physical injury to an infant.
 - Serious non-accidental physical injury requiring hospital or medical treatment.
 - Death (previous or current) of a sibling as a result of abuse or neglect.
- Discretionary: Override one level.
- Reason: _____

Override Risk Level: _____ Low _____ Moderate _____ High _____ Intensive

Supervisor's Review/Approval of Override: _____ Date: ____/____/____

Table A1

Neglect Instrument Item Analysis of Current Minnesota Family Risk Assessment: Total Sample

Item	Sample Distribution		Cases With Subsequent Neglect Assessment of Any Type				Cases With Subsequent Neglect Traditional Investigation				Cases with Subsequent Neglect Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,819	16.3%			1,339	12.0%			869	7.8%		
N1. Current Report is for Neglect					.131	.001			.121	.001			.110	.001
No	4,366	39.1%	448	10.3%			309	7.1%			179	4.1%		
Yes	6,793	60.9%	1,371	20.2%			1,030	15.2%			690	10.2%		
N2. Number of Prior Assigned Reports					.147	.001			.151	.001			.125	.001
None	6,873	61.6%	833	12.1%			566	8.2%			360	5.2%		
One	2,071	18.6%	426	20.6%			327	15.8%			213	10.3%		
Two or more	2,215	19.8%	560	25.3%			446	20.1%			296	13.4%		
N3. Number of Children in the Home					.066	.001			.057	.001			.032	.001
Two or fewer	6,782	60.8%	972	14.3%			713	10.5%			482	7.1%		
Three or more	4,377	39.2%	847	19.4%			626	14.3%			387	8.8%		
N4. Number of Adults in Home at Time of Report					.050	.001			.049	.001			.054	.001
Two or more	6,845	61.3%	1,015	14.8%			737	10.7%			455	6.6%		
One or none	4,314	38.7%	804	18.6%			605	14.0%			414	9.6%		
N5. Age of Primary Caregiver					.061	.001			.055	.001			.072	.001
30 or older	6,993	62.7%	1,018	14.6%			743	10.6%			441	6.3%		
29 or younger	4,166	37.3%	801	19.2%			596	14.3%			428	10.3%		
N6. Characteristics of Primary Caregiver					.041	.001			.055	.001			.072	.001
a. Lacks parenting skills					.069	.001			.076	.001			.067	.001
No	8,594	77.0%	1,282	14.9%			915	10.6%			585	6.8%		
Yes	2,565	23.0%	537	20.9%			424	16.5%			284	11.1%		
b. Lacks self-esteem					.005	.302			-.002	.414			.006	.257
No	10,705	95.9%	1,741	16.3%			1,286	12.0%			830	7.8%		
Yes	454	4.1%	78	17.2%			53	11.7%			39	8.6%		
c. Apathetic or hopeless					.025	.004			.024	.005			.027	.002
No	10,970	98.3%	1,775	16.2%			1,305	11.9%			844	7.7%		
Yes	189	1.7%	44	23.3%			34	18.0%			25	13.2%		

Table A1

Neglect Instrument Item Analysis of Current Minnesota Family Risk Assessment: Total Sample

Item	Sample Distribution		Cases With Subsequent Neglect Assessment of Any Type				Cases With Subsequent Neglect Traditional Investigation				Cases with Subsequent Neglect Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,819	16.3%			1,339	12.0%			869	7.8%		
N7. Primary Caregiver Involved in Harmful Relationships					.031	.001			.027	.002			.034	.001
No	8,592	76.9%	1,352	15.8%			986	11.5%			623	7.3%		
Yes, but not a victim of domestic violence	1,012	9.1%	167	16.5%			138	13.6%			97	9.6%		
Yes, as a victim of domestic violence	1,565	14.0%	300	19.2%			215	13.7%			149	9.5%		
N8. Primary Caregiver has a Current Substance Abuse Problem					.031	.001			.056	.001			.058	.001
No	9,452	84.7%	1,486	15.7%			1,060	11.2%			668	7.1%		
Alcohol only	596	5.3%	122	20.5%			91	15.3%			70	11.7%		
Other drug(s) (with or without alcohol)	1,111	10.0%	211	19.0%			188	16.9%			131	11.8%		
N9. Household is Experiencing Severe Financial Difficulty					.045	.001			.038	.001			.054	.001
No	9,296	83.3%	1,446	15.6%			1,064	11.4%			664	7.1%		
Yes	1,863	16.7%	373	20.0%			275	14.8%			205	11.0%		
N10. Primary Caregiver's Motivation to Improve Parenting Skills					.034	.001			.061	.001			.062	.001
Motivated and realistic	8,532	76.5%	1,317	15.4%			914	10.7%			575	6.7%		
Unmotivated	1,537	13.8%	307	20.0%			261	17.0%			178	11.6%		
Motivated but unrealistic	1,090	9.8%	195	17.9%			164	15.0%			166	10.6%		
N11. Caregiver(s) Response to Assessment					.023	.007			.043	.001			.048	.001
Viewed situation as seriously as investigator and cooperated satisfactorily	8,748	78.4%	1,373	15.7%			977	11.2%			615	7.0%		
Viewed situation less seriously than investigator	1,686	15.1%	321	19.0%			256	15.2%			178	10.6%		
Failed to cooperate satisfactorily	385	3.5%	64	16.6%			51	13.2%			37	9.6%		
Both b and c	340	3.0%	61	17.9%			55	16.2%			39	11.5%		

Table A2

Abuse Instrument Item Analysis of Current Minnesota Family Risk Assessment: Total Sample

Item	Sample Distribution		Cases With Subsequent Abuse Assessment Any Type				Cases With Subsequent Abuse Traditional Investigation				Cases with Abuse Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,054	9.4%			828	7.4%			339	3.0%		
A1. Current Report is for Abuse					.087	.001					.069	.001		
No	6,314	56.6%	456	7.2%			369	5.8%			134	2.1%		
Yes	4,845	43.4%	598	12.3%			459	9.5%			205	4.2%		
A2. Prior Assigned Abuse Reports					.093	.001					.100	.001		
None	9,000	80.7%	709	7.9%			537	6.0%			212	2.4%		
Abuse report(s)	1698	15.2%	280	16.5%			232	13.7%			106	6.2%		
Sexual Abuse report(s)	320	2.9%	43	13.4%			39	12.2%			12	3.8%		
Both b and c	141	1.3%	22	15.6%			20	14.2%			9	6.4%		
A3. Prior CPS History					.065	.001					.070	.001		
No	8301	74.4%	692	8.3%			527	6.3%			215	2.6%		
Yes	2858	25.6%	362	12.7%			301	10.5%			124	4.3%		
A4. Number of Children in the Home					.086	.001					.083	.001		
One	3,385	30.3%	190	5.6%			140	4.1%			43	1.3%		
Two or more	7,774	69.7%	864	11.2%			688	8.9%			296	3.8%		
A5. Caregiver(s) Abused as Child(ren)					.031	.001					.035	.001		
No	9,110	81.6%	821	9.0%			636	7.0%			256	2.8%		
Yes	2,049	18.4%	233	11.4%			192	9.4%			83	4.1%		
A6. Secondary Caregiver has a Current Substance Abuse Problem					-.017	.038					-.012	.095		
No, or no secondary caregiver	9,771	87.6%	941	9.6%			737	7.5%			292	3.0%		
Yes	1,388	12.4%	113	8.1%			91	6.6%			47	3.4%		
a. Alcohol abuse problem					.006	.251					.003	.356		
No	10,583	94.8%	995	9.4%			783	7.4%			313	3.0%		
Yes	576	5.2%	59	10.2%			45	7.8%			26	4.5%		
b. Drug abuse problem					-.032	.001					-.022	.010		
No	10,591	94.9%	1,023	9.7%			800	7.6%			325	3.1%		
Yes	568	5.1%	31	5.5%			28	4.9%			14	2.5%		

Table A2

Abuse Instrument Item Analysis of Current Minnesota Family Risk Assessment: Total Sample

Item	Sample Distribution		Cases With Subsequent Abuse Assessment Any Type				Cases With Subsequent Abuse Traditional Investigation				Cases with Abuse Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,054	9.4%			828	7.4%			339	3.0%		
A7. Primary or Secondary Caregiver Employs Excessive and/or Inappropriate Discipline					.055	.001			.062	.001			.090	.001
No	9,898	88.7%	878	8.9%			677	6.8%			246	2.5%		
Yes	1,261	11.3%	176	14.0%			151	12.0%			93	7.4%		
A8. Caregiver(s) has a History of Domestic Violence					.036	.001			.041	.001			.037	.001
No	7,794	69.8%	682	8.8%			523	6.7%			204	2.6%		
Yes	3,365	30.2%	372	11.1%			305	9.1%			135	4.0%		
A9. Caregiver(s) is a Domineering Parent					.029	.001			.043	.001			.026	.003
No	10,472	93.8%	966	9.2%			747	7.1%			306	2.9%		
Yes	687	6.2%	88	12.8%			81	11.8%			33	4.8%		
A10. Child in the Home has a Developmental Disability or History of Delinquency					.088	.001			.081	.001			.057	.001
No	8,500	76.2%	681	8.0%			530	6.2%			212	2.5%		
Yes	2,659	23.8%	373	14.0%			298	11.2%			127	4.8%		
a. Developmental disability including emotionally impaired					.081	.001			.075	.001			.052	.001
No	9,306	83.4%	781	8.4%			609	6.5%			246	2.6%		
Yes	1,853	16.6%	273	14.7%			219	11.8%			93	5.0%		
b. History of delinquency					.015	.055			.007	.244			-.005	.288
No	10,557	94.6%	986	9.3%			779	7.4%			323	3.1%		
Yes	602	5.4%	68	11.3%			49	8.1%			16	2.7%		
A11. Secondary Caregiver Motivated to Improve Parenting Skills					-.005	.293			.004	.330			.007	.238
Yes, or no secondary caregiver in home	10,036	89.9%	953	9.5%			741	7.4%			301	3.0%		
No	1,123	10.1%	101	9.0%			87	7.7%			38	3.4%		
A12. Primary Caregiver Views Incident Less Seriously than Agency					-.002	.423			.007	.237			.006	.276
No	9,027	80.9%	855	9.5%			662	7.3%			270	3.0%		
Yes	2,132	19.1%	199	9.3%			166	7.8%			69	3.2%		

Appendix B

Proposed Family Risk Assessment Form and Item Analysis

MINNESOTA
PROPOSED FAMILY RISK ASSESSMENT OF ABUSE/NEGLECT

c: 09/06

Case Name: _____ Case #: _____ Current Date: ____ / ____ / ____
 County Name: _____ County #: _____ Date Report Received ____ / ____ / ____
 Worker Name: _____ Worker ID: _____

NEGLECT	SCORE	ABUSE	SCORE
N1. Allegations of Current Report (check and add for score)		A1. Current Report Is for Abuse (check and add for score)	
a. Not applicable..... 0		a. Not applicable 0	
b. ___ Any type of neglect 1		b. ___ Allegation of abuse, any type 1	
c. ___ Inadequate supervision 1		d. ___ Determination for physical abuse 1	
d. ___ Educational neglect 2			
N2. Number of Prior Assigned Reports		A2. Prior CPS History (check and add for score)	
a. None..... 0		a. Not applicable 0	
b. One..... 1		b. ___ Prior assigned report for abuse 1	
c. Two or more 2		c. ___ Prior determination for abuse 2	
		d. ___ Prior traditional case opening 1	
N3. Prior CPS History (check and add for score)		A3. Number of Children in the Home	
a. Not applicable..... 0		a. One -1	
b. ___ Prior determination for neglect 1		b. Two to Three 0	
c. ___ Prior traditional case opening 1		c. Four or more 1	
N4. Number of Children in the Home		A4. Caregiver(s) Abused as Child(ren)	
a. One..... -1		a. No 0	
b. Two or more 0		b. Yes..... 1	
N5. Age of Youngest Child		A5. Primary Caregiver Lacks Parenting Skills	
a. Three or older 0		a. No 0	
b. Two or younger 1		b. Yes..... 1	
N6. Child in the Home Has a Developmental Disability/Emotional Impairment		A7. Primary <u>or</u> Secondary Caregiver Employs Excessive and/or Inappropriate Discipline	
a. No 0		a. No 0	
b. Yes 1		b. Yes..... 1	
N7. Number of Adults in Home at Time of Report		A8. Caregiver(s) Has a History of Domestic Violence	
a. Two or more 0		a. No 0	
b. One or none 1		b. Yes..... 1	
N8. Age of Primary Caregiver		A9. Caregiver(s) Is a Domineering Parent	
a. 30 or older..... 0		a. No 0	
b. 29 or younger..... 1		b. Yes..... 1	
N9. Characteristics of Primary Caregiver (check and add for score)		A10. Child in the Home Has a Developmental Disability or History of Delinquency	
a. Not applicable..... 0		a. No 0	
b. ___ Lacks parenting skills 1		b. Yes (check all that apply)	
c. ___ Apathetic or hopeless 1		___ Developmental disability including emotionally impaired	
		___ History of delinquency 2	
N10. Primary Caregiver Involved in Harmful Relationships			
a. No 0			
b. Yes 1			
N11. Either Caregiver Has a Current Substance Abuse Problem			
a. No 0			
b. Yes 1			
N12. Caregiver(s) Response to Assessment			
a. Not applicable..... 0			
b. Yes (check all that apply)			
___ Viewed situation less seriously than agency			
___ Unmotivated to improve parenting skills..... 1			
TOTAL NEGLECT RISK SCORE _____		TOTAL ABUSE RISK SCORE _____	

RISK LEVEL Assign the family's risk level based on the highest score on either scale, using the following chart:

Neglect Score	Abuse Score	Risk Level
_____ -1 - 2	_____ -1 - 1	_____ Low
_____ 3 - 5	_____ 2 - 5	_____ Moderate
_____ 6 - 17	_____ 6 - 14	_____ High

OVERRIDES

- Policy: Override to intensive. Check appropriate reason.
1. Sexual abuse cases where the perpetrator is likely to have access to the child victim.
 2. Cases with non-accidental physical injury to an infant.
 3. Serious non-accidental physical injury requiring hospital or medical treatment.
 4. Death (previous or current) of a sibling as a result of abuse or neglect.
- Discretionary: Override one level.
5. Reason: _____

Override Risk Level: _____ Low _____ Moderate _____ High _____ Intensive
 Supervisor's Review/Approval of Override: _____ Date: ____ / ____ / ____

Table B1

Neglect Instrument Item Analysis of Proposed Minnesota Family Risk Assessment

Item	Sample Distribution		Cases With Subsequent Neglect Assessment of Any Type				Cases With Subsequent Neglect Traditional Investigation				Cases with Subsequent Neglect Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,819	16.3%			1,339	12.0%			869	7.8%		
N1a. Current Report Is for Neglect					.131	.001			.121	.001			.110	.001
No	4,366	39.1%	448	10.3%			309	7.1%			179	4.1%		
Yes	6,793	60.9%	1,371	20.2%			1,030	15.2%			690	10.2%		
N1b. Current Report Is for Inadequate Supervision					.042	.001			.046	.001			.041	.001
No	9,931	89.0%	1,565	15.8%			1,139	11.5%			735	7.4%		
Yes	1,228	11.0%	254	20.7%			200	16.3%			134	10.9%		
N1c. Current Report Is for Educational Neglect					.088	.001			.078	.001			.078	.001
No	10,445	93.6%	1,614	15.5%			1,184	11.3%			756	7.2%		
Yes	714	6.4%	205	28.7%			155	21.7%			113	15.8%		
N2. Number of Prior Assigned Reports					.147	.001			.151	.001			.125	.001
None	6,873	61.6%	833	12.1%			566	8.2%			360	5.2%		
One	2,071	18.6%	426	20.6%			327	15.8%			213	10.3%		
Two or more	2,215	19.8%	560	25.3%			446	20.1%			296	13.4%		
N3a. Prior Determination for Neglect					.130	.001			.144	.001			.129	.001
No	9,906	88.8%	1,445	14.6%			1,024	10.3%			650	6.6%		
Yes	1,253	11.2%	374	29.8%			315	25.1%			219	17.5%		
N3b. Prior Traditional Case Opening					.104	.001			.121	.001			.100	.001
No	10,055	90.1%	1,511	15.0%			1,075	10.7%			694	6.9%		
Yes	1,104	9.9%	308	27.9%			264	23.9%			175	15.9%		
N4. Number of Children in the Home					.077	.001			.063	.001			.056	.001
One child	3,909	35.0%	485	12.4%			360	9.2%			225	5.8%		
Two or more	7,250	65.0%	1,334	18.4%			979	13.5%			644	8.9%		
N5. Age of Youngest Child					.074	.001			.071	.001			.072	.001
Three or older	7,128	63.9%	1,016	14.3%			731	10.3%			452	6.3%		
Two or younger	4,031	36.1%	803	19.9%			608	15.1%			417	10.3%		

Table B1

Neglect Instrument Item Analysis of Proposed Minnesota Family Risk Assessment

Item	Sample Distribution		Cases With Subsequent Neglect Assessment of Any Type				Cases With Subsequent Neglect Traditional Investigation				Cases with Subsequent Neglect Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,819	16.3%			1,339	12.0%			869	7.8%		
N6. Child in Home Has a Developmental Disability/Emotional Impairment					.021	.012			.019	.022			.018	.031
No	9,306	83.4%	1,484	15.9%			1,091	11.7%			705	7.6%		
Yes	1,853	16.6%	335	18.1%			248	13.4%			164	8.9%		
N7. Number of Adults in Home at Time of Report					.050	.001			.049	.001			.054	.001
Two or more	6,845	61.3%	1,015	14.8%			737	10.7%			455	6.6%		
One or none	4,314	38.7%	804	18.6%			605	14.0%			414	9.6%		
N8. Age of Primary Caregiver					.061	.001			.055	.001			.072	.001
30 or older	6,993	62.7%	1,018	14.6%			743	10.6%			441	6.3%		
29 or younger	4,166	37.3%	801	19.2%			596	14.3%			428	10.3%		
N9. Characteristics of Primary Caregiver					.041	.001			.055	.001			.072	.001
a. Lacks parenting skills					.069	.001			.076	.001			.067	.001
No	8,594	77.0%	1,282	14.9%			915	10.6%			585	6.8%		
Yes	2,565	23.0%	537	20.9%			424	16.5%			284	11.1%		
b. Apathetic or hopeless					.025	.004			.024	.005			.027	.002
No	10,970	98.3%	1,775	16.2%			1,305	11.9%			844	7.7%		
Yes	189	1.7%	44	23.3%			34	18.0%			25	13.2%		
N10. Primary Caregiver Involved in Harmful Relationships					.027	.002			.029	.001			.036	.001
No	8,582	76.9%	1,352	15.8%			986	11.5%			623	7.3%		
Yes	2,577	23.1%	467	18.1%			353	13.7%			246	9.5%		
N11. Either Caregiver Has a Current Substance Abuse Problem					.027	.002			.024	.006			.035	.001
No	10,563	94.7%	1,697	16.1%			1,248	11.8%			799	7.6%		
Yes	596	5.3%	122	20.5%			91	15.3%			70	11.7%		
N11. Caregiver(s) Response to Assessment					.043	.001			.065	.001			.064	.001
Not applicable	8,498	76.2%	1,310	15.4%			920	10.8%			580	6.8%		
Viewed situation less seriously than agency OR unmotivated to improve parenting skills	2,661	23.8%	509	19.1%			419	15.7%			289	10.9%		

Table B2

Abuse Instrument Item Analysis of Proposed Minnesota Family Risk Assessment

Item	Sample Distribution		Cases With Subsequent Abuse Assessment Any Type				Cases With Subsequent Abuse Traditional Investigation				Cases with Abuse Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,054	9.4%			828	7.4%			339	3.0%		
A1a. Current Report Is for Abuse					.087	.001			.069	.001			.061	.001
No	6,314	56.6%	456	7.2%			369	5.8%			134	2.1%		
Yes	4,845	43.4%	598	12.3%			459	9.5%			205	4.2%		
A1b. Current Determination for Physical Abuse					.060	.001			.063	.001			.076	.001
No	10,390	93.1%	932	9.0%			724	7.0%			279	2.7%		
Yes	769	6.9%	122	15.9%			104	13.5%			60	7.8%		
A2a. Prior Assigned Abuse Reports					.113	.001			.111	.001			.078	.001
No	9,582	85.9%	777	8.1%			598	6.2%			239	2.5%		
Yes	1,577	14.1%	277	17.6%			230	14.6%			100	6.3%		
A2b. Prior Determination for Abuse					.080	.001			.089	.001			.071	.001
No	10,521	94.3%	933	8.9%			720	6.8%			288	2.7%		
Yes	638	5.7%	121	19.0%			108	16.9%			51	8.0%		
A2c. Prior Traditional CPS Case Opening					.055	.001			.063	.001			.036	.001
No	10,055	90.1%	896	8.9%			691	6.9%			285	2.8%		
Yes	1,104	9.9%	158	14.3%			137	12.4%			54	4.9%		
A3. Number of Children in the Home					.105	.001			.109	.001			.085	.001
One	3,909	35.0%	231	5.9%			162	4.1%			54	1.4%		
Two to Three	5,482	49.1%	559	10.2%			443	8.1%			184	3.4%		
Four or more	1,768	15.8%	264	14.9%			223	12.6%			101	5.7%		
A4. Caregiver(s) Abused as Child(ren)					.031	.001			.035	.001			.028	.002
No	9,110	81.6%	821	9.0%			636	7.0%			256	2.8%		
Yes	2,049	18.4%	233	11.4%			192	9.4%			83	4.1%		
A5. Primary Caregiver Lacks Parenting Skills					.046	.001			.045	.001			.035	.001
No	8,594	77.0%	749	8.7%			582	6.8%			233	2.7%		
Yes	2,565	23.0%	305	11.9%			246	9.6%			106	4.1%		

Table B2

Abuse Instrument Item Analysis of Proposed Minnesota Family Risk Assessment

Item	Sample Distribution		Cases With Subsequent Abuse Assessment Any Type				Cases With Subsequent Abuse Traditional Investigation				Cases with Abuse Determination			
	N	%	N	%	Corr.	P Value	N	%	Corr.	P Value	N	%	Corr.	P Value
Total Sample	11,159	100.0%	1,054	9.4%			828	7.4%			339	3.0%		
A7. Primary or Secondary Caregiver Employs Excessive and/or Inappropriate Discipline					.055	.001					.062	.001		
No	9,898	88.7%	878	8.9%			677	6.8%			246	2.5%		
Yes	1,261	11.3%	176	14.0%			151	12.0%			93	7.4%		
A8. Caregiver(s) Has a History of Domestic Violence					.036	.001					.041	.001		
No	7,794	69.8%	682	8.8%			523	6.7%			204	2.6%		
Yes	3,365	30.2%	372	11.1%			305	9.1%			135	4.0%		
A9. Caregiver(s) Is a Domineering Parent					.029	.001					.043	.001		
No	10,472	93.8%	966	9.2%			747	7.1%			306	2.9%		
Yes	687	6.2%	88	12.8%			81	11.8%			33	4.8%		
A10. Child in the Home Has a Developmental Disability or History of Delinquency					.088	.001					.081	.001		
No	8,500	76.2%	681	8.0%			530	6.2%			212	2.5%		
Yes	2,659	23.8%	373	14.0%			298	11.2%			127	4.8%		
a. Developmental disability including emotionally impaired					.081	.001					.075	.001		
No	9,306	83.4%	781	8.4%			609	6.5%			246	2.6%		
Yes	1,853	16.6%	273	14.7%			219	11.8%			93	5.0%		
b. History of delinquency					.015	.055					.007	.244		
No	10,557	94.6%	986	9.3%			779	7.4%			323	3.1%		
Yes	602	5.4%	68	11.3%			49	8.1%			16	2.7%		

Appendix C

Comparison of Proposed Risk Assessment Classification Findings for Construction and Validation Samples

Comparison of Proposed Risk Assessment Classification Findings for the Construction and Validation Samples

The sample population of 13,981 families was divided randomly into two groups; a construction sample of 11,159 families and a validation sample of 2,822 families. The use of two samples allows a scale to be developed on one population (the construction sample) and tested on another (the validation sample).

Classification results will be the most robust for the sample from which the assessment was constructed. Validating the scale on a separate population better indicates how a risk assessment will perform when actually implemented. The ability of a risk assessment to classify families by maltreatment outcomes is expected to decrease somewhat when the risk assessment is applied to samples other than the construct sample. The amount of classification power lost from construction to validation sample is called shrinkage. Shrinkage is normal and expected.²¹

Table C1 compares findings by the overall risk classification level obtained for families in the construct versus the validation sample. For families in the construct sample, the risk assessment classified families such that an increase in risk level corresponds to a 50.0% or more increase in the outcome rate across all maltreatment outcomes observed.

Findings were similar when the proposed risk assessment was applied to the validation sample. Table C1 shows that for families in the validation sample, an increase in the risk level corresponds to at least a 60.0% increase in the outcome rate. The distribution of the families classified by the proposed risk assessment is also very similar in the validation as compared to the construction sample. Among families in the validation sample, 21.4% were classified as low risk, 56.3% as moderate, and 22.4% as high risk.

²¹ See Silver, E., Smith, W., & Banks, S. (2000). Constructing actuarial devices for predicting recidivism. *Criminal Justice and Behavior*, 29(5), 733-764. See also Altman, D. & Royston, P. (2000). What do we mean by validating a prognostic model? *Statistics in Medicine*, 19: 453-473.

Table C1						
Proposed Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Construction Sample						
Low	2,448	21.9%	12.1%	7.4%	3.5%	2.5%
Moderate	6,249	56.0%	21.3%	15.2%	8.7%	7.2%
High	2,462	22.1%	34.5%	28.6%	19.0%	17.3%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
Validation Sample						
Low	603	21.4%	11.4%	7.0%	4.1%	2.7%
Moderate	1,588	56.3%	22.4%	15.1%	9.3%	6.7%
High	631	22.4%	33.8%	28.7%	17.7%	16.6%
Total Sample	2,822	100.0%	22.6%	16.4%	10.1%	8.0%

One way to assess the degree of shrinkage is to look at changes in scores for the Dispersion Index for Risk (DIFR). The DIFR was introduced in 1998 by Silver and Banks as an alternative method for assessing the classification abilities of a risk assessment. Traditional measures of predictive accuracy such as sensitivity and specificity are based on the assumption of a dichotomous decision, and therefore have limited usefulness for measures with more than two classification categories.

The DIFR measures the potency of a risk assessment by assessing how an entire cohort is partitioned into different groups, and the extent to which group outcomes vary from the base rate for the entire cohort. In essence, it weights the distance between a subgroup's outcome rate from the cohort's base rate by the subgroup size to estimate the "potency" of a classification system. Because this measure considers proportionality and differences in outcome rates among several subgroups, it is a measure of the efficacy of classification systems.

The DIFR formula is:

$$DIFR = \sqrt{\sum_{i=1}^k \left(\ln\left(\frac{P}{1-P}\right) - \ln\left(\frac{p_i}{1-p_i}\right) \right)^2 * \frac{n_i}{N}}$$

where k is the number of subgroups in the risk classification model, P is the total sample base rate of the outcome, N is the total sample size, p_i represents the base rate of each of the k subgroups, and n_i is the size of each k subgroup. In sum, the DIFR considers the degree to which outcomes of each subgroup (classification level) differ from the mean for the study sample and adjusts for the size of the group classified to each level.²²

²² The limitations of the DIFR are:

1. It measures distance from the mean without considering whether it is in the expected or logical direction. Therefore, when outcome rates do not conform to the basic expectations (i.e., that failure rates will increase as risk levels increase), the test is inappropriate.
2. It measures overall dispersion from the base rate and does not assess the degree of separation between any two risk categories. In a similar fashion, the DIFR cannot help assess whether a risk classification model is classifying two subgroups similarly, but rather assesses the dispersion within a subgroup (given that group's base rate).

Table C2 compares the DIFR scores for the construct and validation samples by each maltreatment outcome observed. The DIFR scores for the validation sample were lower for only two of the four outcome measures. Based on changes in the DIFR scores, the amount of shrinkage is approximately 5.6%.²³

Table C2					
Dispersion Index for Risk by Subsequent Maltreatment Outcomes for the Construction and Validation Samples					
Sample Group	Sample Size	Case Outcome Rates During the 18-Month Follow-Up Period			
		Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Construction	11,159	.45	.54	.64	.72
Validation	2,822	.46	.56	.54	.67
Change in DIFR Score		.01	.02	-.10	-.05

It should be noted that validating by splitting the sample may underestimate shrinkage (see Silver and Banks, 2000). The construct and validation samples originate from the same initial sample, and are therefore subject to the same type of measurement bias. In addition, implementation of the risk assessment under field conditions may impact the classification abilities of the risk assessment. The best approach for determining shrinkage is to monitor use of the risk assessment with regular data reporting and case reviews, and examine the classification abilities of the risk assessment in the future.

²³ The percent change (the difference in scores divided by the score for the construct sample) is 15.6% for subsequent determination and 6.9% for subsequent traditional case opening (implied percent change is zero for the assessment outcomes given that DIFR scores increased rather than decreased). The percent change averaged over the four outcomes is 5.6%, while the percent change averaged over only the two measures with a non-zero change is 11.2%.

Appendix D
Review of the Risk Reassessment

Review of the Risk Reassessment

Validated risk factors from the initial risk assessment also appear on the risk reassessment. The purpose of risk reassessment is to measure change in families' risk of future maltreatment based on response to services, as well as other changes in the household. For families receiving traditional case management, workers reassess open cases every three months, when a significant change occurs with a family that may affect risk level, and at case closure. For families receiving AR case services, workers reassess cases every 180 days, when a significant change occurs with a family that may affect risk level, and at case closure.

Minnesota adopted the risk reassessment currently in use from Michigan in 1999. The reassessment combines items from the original risk assessment tool with additional items that evaluate a family's progress toward case plan goals (shown on page D2). Unlike the initial risk assessment, which contains separate assessments for risk of neglect and risk of abuse, the risk reassessment tool is comprised of a single assessment. As indicated in the report, changes to the current risk assessment greatly improved its ability to classify families by the likelihood of future child maltreatment. It is probable that these or similar changes may improve the risk reassessment's performance.

**MINNESOTA
FAMILY RISK REASSESSMENT OF ABUSE/NEGLECT (Existing)**

c: 12/1999

Case Name: _____ Case #: _____ Current Date: _____ / _____ / _____

County Name: _____ County #: _____ Date Report Received: _____ / _____ / _____

Worker Name: _____ Worker ID: _____ Reassessment #: 1 2 3 4 5 _____

	Score
R1. Number of Prior Assigned Maltreatment Reports	
a. None	0
b. One	1
c. Two or More.....	2
R2. Number of Prior Assigned Reports for Abuse/Sexual Abuse	
a. None	0
b. Physical abuse only	1
c. Sexual abuse	2
d. Both	3
R3. Number of Children in the Home	
a. Two or fewer	0
b. Three or More.....	1
R4. Age of Primary Caregiver	
a. 30 or older	0
b. 29 or younger	1
R5. Caregiver(s) has a Current Substance Abuse Problem	
a. No	0
b. Alcohol only.....	1
c. Other drug(s) (with or without alcohol).....	2
d. Yes, and refuses treatment	4
R6. Household is Currently Experiencing Severe Economic Difficulty	
a. No	0
b. Yes.....	1
R7. Primary or Secondary Caregiver Currently Employs Excessive Discipline and/or Inappropriate Discipline	
a. No	0
b. Yes.....	2
R8. Primary Caregiver's Use of Treatment/Training Programs	
a. Successfully completed all programs recommended or actively participating in programs; pursuing objectives detailed in case plan.....	0
b. Minimal participation in pursuing objectives in case plan	1
c. Refuses involvement in programs or failed to comply/participate as required.....	2
R9. Secondary Caregiver's Use of Treatment/Training Programs	
a. ___ Not applicable; only one caregiver in home	0
b. ___ Successfully completed all programs recommended or actively participating in programs; pursuing objectives in case plan	0
c. Minimal participation in pursuing objectives in case plan	1
d. Refuses involvement in programs or failed to comply/participate as required.....	2

Risk Level - Assign the family's risk level based on the following chart:

<u>Score</u>	<u>Risk Level</u>
___ 0 - 3	___ Low
___ 4 - 7	___ Moderate
___ 8 - 11	___ High
___ 12 - 18	___ Intensive

TOTAL SCORE

Overrides

Policy: Override to intensive. Check appropriate reason.

- ___ 1. Sexual Abuse cases where the perpetrator is likely to have access to the child victim.
- ___ 2. Cases with non-accidental physical injury to an infant.
- ___ 3. Serious non-accidental physical injury requiring hospital or medical treatment.
- ___ 4. Death (previous or current) of a sibling as a result of abuse or neglect.

Discretionary: Override one level.

___ 5. Reason: _____

Override Risk Level: ___ Low ___ Moderate ___ High ___ Intensive

Supervisor's Review/Approval of Override: _____ **Date:** _____ / _____ / _____

A formal validation of the risk reassessment is difficult for many reasons. Workers complete this instrument for families served by the department. If services are effective, then these families are less likely to subsequently maltreat a child. While the case is open, however, service providers have more contact with the families and may report allegations that otherwise would not have been reported. If a family does not comply with the case plan and child safety is a concern, the department may remove a child from the home. Each of these factors would affect the likelihood that a caregiver would maltreat a child in the future.

Assessing the performance of the risk reassessment is also difficult because the instrument is applied to different groups of families at multiple times during the life of a case. Families' likelihood of being assessed for child maltreatment allegations may be very different at the time of the first reassessment compared to the likelihood at the time of the second or the last reassessment. The performance of the risk reassessment can still be reviewed, but results of analysis and proposed changes based on the results need to be evaluated within this context.

To review the performance of the risk reassessment factors, we selected the first risk reassessment completed in 2004 for families with a case open for two years or less. This enabled a sample of risk reassessments completed at various points in the case process. Analysis was conducted using available information from SSIS which included demographics about children and other family members, findings from the risk reassessment, and the prior CPS history of the family. Data also included findings from the most recent risk assessment completed for the family prior to the risk reassessment date. CPS outcomes were observed for each family during a standardized follow-up period of 18 months (1.5 years) from the sampled reassessment date. These outcomes included assessments of abuse or neglect allegations (either AR or traditional investigations), traditional investigations of allegations, and determinations of maltreatment.

The resulting sample consisted of 4,712 families with an open case during 2004. At the time of the sampled reassessment, families had been receiving services for an average of 140 days (the standard deviation was 129 days) and a median of 99 days.²⁴ After reassessment, a family may have continued receiving services or the case may have been closed. Approximately two thirds (64.9%) of families had their case closed within the three months following reassessment. Among sampled families, 24.0% were assessed for abuse or neglect allegations during the 18-month follow-up period, 18.1% had a subsequent traditional investigation, and 11.4% had a subsequent determination of child abuse or neglect (see Table D1).

Table D1 shows that only 8.0% of sampled families were classified as high risk and less than 1.0% were classified as intensive risk. With so few intensive risk families, it is difficult to make reliable comparisons between intensive risk and other families. A comparison of families classified as moderate and high risk, however, shows that high risk families had lower assessment rates than did moderate risk families. For example, 23.1% of moderate risk families had a subsequent traditional investigation, compared to 21.0% of high risk families. When the outcome was subsequent determination, moderate and high risk families had similar rates (14.1% and 15.4%, respectively).

Table D1					
Current Risk Reassessment Classification by Subsequent Maltreatment Outcomes					
Risk Reassessment Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Assessment of Any Type	Traditional Investigation	Determination
Low	2,546	54.0%	20.7%	14.3%	9.1%
Moderate	1,756	37.3%	29.2%	23.1%	14.1%
High	377	8.0%	22.8%	21.0%	15.4%
Intensive	33	0.7%	12.1%	12.1%	9.1%
Total Sample	4,712	100.0%	24.0%	18.1%	11.4%

²⁴ The sample was limited to families with a case open for two years or less. The range of days the case had been open was zero to 728 days.

These findings suggest that changes may improve the classification abilities of the risk reassessment. A proposed reassessment was developed using the same methods applied for the proposed initial risk instrument.

The proposed risk reassessment has three classifications rather than four. This change is consistent with the proposed initial risk assessment, and is based on the same policy and empirical reasons. The policy justification for the decision is that high and intensive risk families are assigned the same priority for case opening, so there is little practical difference in terms of agency response. In addition, the number of intensive risk families in the current sample was too small (0.7%) to have practical utility.

Additional changes to the resulting reassessment (shown on the following page) were also similar to changes in the initial risk assessment. Given their weak relationship to subsequent CPS involvement, the items “Household is experiencing severe economic difficulty” (R6) and “Caregiver employs excessive and/or inappropriate discipline” (R7) were removed. Items with a stronger relationship to outcomes were added, such as age of youngest child, whether the caregiver has a history of or current domestic violence, and whether a child in the home has a developmental disability or emotional impairment (items R4, R7, and R8 on the proposed reassessment). Minor changes were also made to the prior reports item (R2), number of children in the home (R3), and caregivers’ substance abuse (R5 on the current reassessment and R6 on the proposed reassessment).

**MINNESOTA
FAMILY RISK REASSESSMENT OF ABUSE/NEGLECT (Proposed)**

c: 09/2006

Case Name: _____ Case #: _____ Current Date: ____/____/____

County Name: _____ County #: _____ Date Report Received: ____/____/____

Worker Name: _____ Worker ID: _____ Reassessment #: 1 2 3 4 5 _____

	Score
R1. Number of Prior Assigned Maltreatment Reports	
a. None	0
b. One	1
c. Two or More.....	2
R2. Type of Prior Maltreatment Reports (check and add for score)	
a. None	0
b. Prior assigned report for abuse.....	1
c. Prior determination for neglect	1
R3. Number of Children in the Home	
a. One	-1
b. Two to three.....	0
c. Four or more	1
R4. Age of Youngest Child	
a. Three or older	0
b. Two or younger.....	1
R5. Age of Primary Caregiver	
a. 30 or older	0
b. 29 or younger	1
R6. Either Caregiver Has a Current Substance Abuse Problem	
a. No	0
b. Yes.....	1
R7. Caregiver(s) Has a History of or Current Domestic Violence	
a. No	0
b. Yes (check all that apply: ___ History of ___ Current domestic violence).....	1
R8. Child in the Home Has a Developmental Disability/Emotional Impairment	
a. No	0
b. Yes.....	1
R9. Primary Caregiver's Use of Treatment/Training Programs	
a. Successfully completed all programs recommended or actively participating in programs; pursuing objectives detailed in case plan.....	0
b. Minimal participation in pursuing objectives in case plan.....	1
c. Refuses involvement in programs or failed to comply/participate as required.....	2
R10. Secondary Caregiver's Use of Treatment/Training Programs	
a. ___ Not applicable; only one caregiver in home	0
b. ___ Successfully completed all programs recommended or actively participating in programs; pursuing objectives in case plan	0
c. Minimal participation in pursuing objectives in case plan.....	1
d. Refuses involvement in programs or failed to comply/participate as required.....	2

Risk Level - Assign the family's risk level based on the following chart:

<u>Score</u>	<u>Risk Level</u>
___ 0 - 2	___ Low
___ 3 - 5	___ Moderate
___ 6 - 14	___ High

TOTAL SCORE _____

Overrides

Policy: Override to intensive. Check appropriate reason.

- ___ 1. Sexual Abuse cases where the perpetrator is likely to have access to the child victim.
- ___ 2. Cases with non-accidental physical injury to an infant.
- ___ 3. Serious non-accidental physical injury requiring hospital or medical treatment.
- ___ 4. Death (previous or current) of a sibling as a result of abuse or neglect.

Discretionary: Override one level.

___ 5. Reason: _____

Override Risk Level: ___ Low ___ Moderate ___ High ___ Intensive

Supervisor's Review/Approval of Override: _____ **Date:** ____/____/____

The proposed risk reassessment resulted in a better classification of families. Sampled families were classified such that an increase in risk level corresponded to an increase in every outcome rate (see Table D2). For example, 5.8% of families classified as low risk had a subsequent determination, compared to 12.1% of moderate risk and 18.1% of high risk families.

Table D2 shows that 22.2% of the sampled families were classified as high risk. It is important to note that while more families were classified as high risk under the proposed risk reassessment, outcome rates were higher than for high risk families classified by the current reassessment. High risk families under the current reassessment had a subsequent traditional investigation rate of 21.0% and a determination rate of 15.4% (see Table D1). Under the proposed reassessment, corresponding rates were 27.7% and 18.1% (see Table D2).

Table D2					
Proposed Risk Reassessment Classification by Subsequent Maltreatment Outcomes					
Risk Reassessment Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period		
	N	%	Assessment of Any Type	Traditional Investigation	Determination
Low	1,471	31.2%	15.6%	10.0%	5.8%
Moderate	2,194	46.6%	25.3%	18.9%	12.1%
High	1,047	22.2%	32.9%	27.7%	18.1%
Total Sample	4,712	100.0%	24.0%	18.1%	11.4%

Adopting the proposed risk reassessment should assist workers' estimates of a family's risk of future maltreatment relative to response to services and other changes in the household.

Appendix E

Findings for the Current Risk Assessment Collapsed into Three Levels

Findings for the Current Risk Assessment Collapsed into Three Levels

The current risk assessment classified families such that those in the intensive risk group had a subsequent determination rate only slightly higher than those of high risk families. The intensive risk group was only 3.4% of the sample, however, which makes it difficult to draw conclusions about this classification. The following tables review findings for the current risk assessment when high and intensive risk families were combined into a single classification. Table E1 shows that for the outcomes of subsequent traditional investigation, determination, and case opening, the three-level risk assessment produced a significantly higher rate of recidivism for each increase in classification between low and high/intensive risk.

Table E1						
Current Overall Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Low	3,752	33.6%	15.3%	10.1%	5.4%	3.7%
Moderate	4,758	42.6%	25.7%	18.6%	10.8%	9.3%
High/Intensive	2,649	23.7%	25.6%	21.6%	14.5%	13.4%
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%

Table E2						
Current Overall Risk Classification by Subsequent Maltreatment Outcomes						
Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
Traditional Investigation						
Low	1,843	26.9%	14.3%	10.4%	5.0%	3.5%
Moderate	2,770	40.5%	26.2%	20.9%	11.4%	9.8%
High/Intensive	2,226	32.5%	25.3%	22.7%	15.4%	14.1%
Total Traditional	6,839	100.0%	22.7%	18.6%	11.0%	9.5%
Alternative Response Assessment						
Low	1,909	44.2%	16.2%	9.9%	5.7%	3.8%
Moderate	1,988	46.0%	25.1%	15.4%	9.9%	8.6%
High/Intensive	423	9.8%	27.0%	15.6%	9.7%	10.2%
Total AR Assessments	4,320	100.0%	21.3%	13.0%	8.0%	6.6%

Table E3

Current Overall Risk Classification by Subsequent Maltreatment Outcomes

Overall Risk Level	Sample Distribution		Case Outcome Rates During the 18-Month Follow-Up Period			
	N	%	Assessment of Any Type	Traditional Investigation	Maltreatment Determination	Traditional Case Opening
Total Sample	11,159	100.0%	22.2%	16.4%	9.8%	8.4%
White/Caucasian						
Low	1,360	30.4%	15.1%	8.5%	4.6%	3.1%
Moderate	1,884	42.1%	23.8%	16.3%	9.3%	8.9%
High/Intensive	1,227	27.4%	23.3%	19.3%	12.8%	12.0%
Subtotal	4,471	100.0%	21.0%	14.8%	8.8%	8.0%
Black/African American						
Low	851	31.8%	19.5%	15.2%	8.2%	5.4%
Moderate	1,229	46.0%	31.2%	24.6%	14.6%	11.6%
High/Intensive	593	22.2%	28.0%	25.3%	19.1%	15.2%
Subtotal	2,673	100.0%	26.8%	21.7%	13.5%	10.4%
Hispanic/Latino						
Low	363	40.7%	12.1%	7.7%	4.7%	2.8%
Moderate	375	42.0%	22.4%	12.5%	7.2%	5.1%
High/Intensive	154	17.3%	30.5%	21.4%	14.3%	14.3%
Subtotal	892	100.0%	19.6%	12.1%	7.4%	5.7%
American Indian/Native Alaskan						
Low	147	19.9%	28.6%	19.0%	10.9%	10.9%
Moderate	307	41.7%	41.0%	34.2%	19.2%	18.6%
High/Intensive	283	38.4%	27.6%	23.7%	13.1%	14.5%
Subtotal	737	100.0%	33.4%	27.1%	15.2%	15.5%