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Child Maltreatment Fatalities: Predicting Rates and the Efficacy of Child Welfare Policy

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Scientists have studied child maltreatment fatalities (CMFs) for several decades, yet little research has examined the social context in which CMFs occur and whether prevention efforts are effective. Using state-level data from 2006–2008, we examine the social context in which CMFs occur and conduct a five-year follow-up to a study that found media attention predicted CMF-related legislation (Douglas, 2009). The results indicate that the social context in which children live are important; poverty and region are the strongest predictors of CMFs and states that passed legislation to prevent future maltreatment fatalities did not experience a decline in the death rate. Implications for policy and practice are discussed.

KEYWORDS child maltreatment, child fatalities, media attention, policy practice

In 2008, about 772,000 children in the United States were the victims of child maltreatment (U.S. Department of Health & Human Services, 2010). One of the most heinous outcomes of child maltreatment is the death of a child, or a child maltreatment fatality (CMF). Over the past 30 years, considerable resources have been dedicated to the prevention of CMFs, but we continue to know little about what causes CMFs and the effectiveness of prevention efforts. The research that we present in this article achieves two goals: (1) we examine societal-level factors related to the rate of CMFs in the United States from 2006–2008; (2) we conduct a four- year follow-up to a previous study that examined the effect of media coverage of CMFs on the

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passage of state-level child welfare policy (Douglas, 2009). In that study we determined that, consistent with rational actor theory (Brennan, 2001), states with higher levels of media attention pass more legislation intended to prevent CMFs. We do not, however, know the effectiveness of such legislation i.e., whether fewer children die as a result of maltreatment.

CHILD MALTREATMENT FATALITIES

Child maltreatment fatalities describe a wide range of causes of death that include actively killing a child such as through beatings, a shaking injury, or suffocation, and passively killing a child such as through medical neglect, leaving a newborn unattended, or not providing necessary supervision for children. According to the National Child Abuse and Neglect Data System (2000), a CMF can result from a child dying from abuse or neglect, or that the maltreatment was a contributing factor to the death. In 2008, 40% of victims died from a combination of abuse and neglect, 32% died from neglect, 23% died from physical abuse; the cause of death for the remaining children was unknown or due to less prevalent types of maltreatment such as medical, psychological, or sexual abuse (U.S. Department of Health & Human Services, 2010). According to a literature review by Douglas (2005), CMFs are underestimated in the United States; researchers estimate that a couple thousand children die from maltreatment each year (Herman-Giddens et al., 1999) and that 30% to 50% of CMF cases were previously known to child welfare services (Anderson, Ambrosino, Valentine, & Lauderdale, 1983; Beveridge, 1994). UNICEF (2003) reports that the rate of CMFs in the United States is three times higher than the average among other leading countries.

FACTORS RELATED TO CHILD MALTREATMENT FATALITIES

Data at the individual-level reveal that age is the most consistent and reliable risk factor for becoming a victim of a CMF. Younger children, especially infants, are at an elevated risk for becoming victims (Anderson et al., 1983; Kunz & Bahr, 1996). In fact, in an analysis of children under the age of 34 months, Smithey (1998) found that as children grow older, perpetrators use increasingly violent methods to kill their victims. Although there are slightly higher rates of males than females who are the victims of CMFs, this difference is not statistically significant (Levine, Freeman, & Compaan, 1994). Racial minorities, especially African Americans, are overrepresented among those who are the victims of CMFs, and thus are more at risk to become victims (Herman-Giddens, Smith, Mittal, Carlson, & Butts, 2003; Levine et al., 1994). CMF victims are usually killed by a caregiver, and most

often their mothers—presumably because mothers generally do more caregiving than fathers (U.S. Department of Health & Human Services, 2009). In fact, as the level of relational intimacy between the victim and perpetrator decreases, the level of violence used against the child usually increases (Smithey, 1998). Individuals who kill children through maltreatment are usually younger (Herman-Giddens et al., 2003; Kunz & Bahr, 1996) and have lower-levels of socio-economic status (Stiffman, Schnitzer, Adam, Kruse, & Ewigman, 2002). Victims of CMFs are more likely to come from families that have experienced a major life stressor, such as the birth of a child, unemployment, or a change in residence (Lucas et al., 2002) and they are more likely to have non-family members living in their households (Stiffman et al., 2002).

Researchers have also examined which factors might be related to CMFs at the societal level. For example, Straus and colleagues have examined this at both the state-level within the United States and at the national level. Using U.S. data from 1960–1980, Straus (1987) found that the unemployment rate, percent of the population living in urban centers, and funding for schools were related to infant homicide rates. With regard to toddlers, he found that a number of other sociodemographic factors were related to the homicide rate: marital-rape laws, percent of population living in urban centers, owner-occupied housing rate, crowded housing rate, divorce rate, assault rate, alcoholism among women, teen birth rate, and the assault rate. In a study about nation-to-nation comparisons, Burns and Straus (1987) found that higher levels of infant homicide were related to higher levels of spending on military and higher levels of approval of corporal punishment against children. Lower levels of infant homicide were related to higher levels of spending on economic development and human services, and lower levels of approval of corporal punishment. These findings speak to the importance of the culture in which a child lives and also point to higher levels of risk in social contexts that are more impoverished. However, this literature has primarily focused on very young children and has not examined the social context in which all minor children die from maltreatment. In addition, no studies have examined the influence of child welfare practice characteristics on the rate of CMFs. We begin to address both of these gaps in the current study.

RESEARCH ON LEGISLATION TO PREVENT MALTREATMENT FATALITIES

CMFs often swing the ideological pendulum within the child welfare system, regarding whether the profession adheres to an ideological model of family preservation or child safety (Gelles, 1996). The child welfare profession is especially subject to crisis-inspired ideological swings in practice (Erickson,

2000; Kadushin, 1976) based on who perpetrates this crime against a child. Since the inception of the child welfare profession, there has been tension concerning how to best serve maltreating parents and their children. Some professionals favor a model where preserving the family is paramount with the provision of services (Barthel, 1992; Hartman, 1993); others favor child safety and the removal of children from maltreating parents (Gelles, 2001; Wald, 1988). When a child dies in a birth home, the pendulum swings toward the practice model of child safety; when a child dies in a foster home, the profession moves toward family preservation (Gelles, 1996, 2001; Murphy, 1997).

It has been commonly accepted that the public outrage that follows a child's death leads to reform within state-level child welfare policy (Gelles, 2001), and in some instances, federal child welfare policy (Johnson, Baker, & Maceira, 2001; Stein, 2003). Previous research has demonstrated a relationship between scandal and legislative change in child welfare policy (Gainsborough, 2007). Before our 2009 publication it was unclear whether child welfare policy that was adopted in the wake of a CMF was symbolic or substantive in nature. Our 2009 publication parceled out legislation that was potentially related to CMFs, such as prevention, public education, comprehensive risk assessments on families, mandatory reporting, and other similar topics that have been the target of CMF prevention efforts (Douglas & Cunningham, 2008). The results of our analysis confirmed that with regard to responding to CMFs, state legislators act in accordance with the rational actor model of policy making, which states that decision makers respond rationally; they weigh all of their options, and select the most "rational" choice given the circumstances (Graham & Zelikow, 1999). States that had more media coverage of agency-related CMFs were more likely to pass legislation that was intended to prevent CMFs in the future. The second purpose of the current article is to examine the effect of that legislation and determine if states that passed more CMF-related legislation experienced a decline in the rate of CMFs.

CURRENT STUDY

A number of studies have reviewed factors that place children at risk for becoming victims of a CMF, but there is little research that examines the social context in which children have been killed. The research that exists has examined only infants and toddlers and is several decades old. The purpose of this article is to investigate state-level factors that are related to CMFs and to assess the potential impact of legislation that was intended to prevent future CMFs on the CMF rate. The following two questions were addressed:

1. What state-level and child welfare practice characteristics are related to the CMF rate?
2. Did states that passed more CMF-prevention legislation experience a reduction in the rate of deaths four years later?

METHODS

Data

The state-level data for this study come from government sources and think tanks. The variables for this study include child welfare and state characteristics. The data come from multiple three-year time spans to measure the pre and post phases of the implementation of new child welfare legislation. As noted, this study is, in part, a follow-up to Douglas (2009), which examined the influence of media attention to CMF in 2001, 2002, and 2003 on legislation that was passed in 2002, 2003, and 2004—allowing for a one-year lag time between media attention and the passage of legislation. In the second half of this article we investigate the difference between the rate of CMFs before and after the legislation was passed. The data of interest for this portion of the study are set five years apart: the CMF rates for 2001, 2002, and 2003 (the "pre" years), are paired with the same data for 2006, 2007, and 2008 (the "post" years). Finally, not all of the states provided CMF data. Thus, for most of the analyses n=138–139 instead of 150.

Dependant Variables

In the first set of analyses we sought to determine factors related to the CMF rate, which is the number of children per 100,000 in the population who die from maltreatment and are reported and known to state child welfare agencies. In this first set of analyses, the dependent variable was the CMF rate for the years 2006, 2007, and 2008 (the "post" years) from the U.S. Department of Health and Human Services, Administration for Children & Families. For the second set of analyses we sought to determine the rate of change before and after the passage of new CMF-related legislation. We used the CMF rate for the years 2001, 2002, and 2003, and 2006, 2007, and 2008, respectively.

Independent Variables

State characteristics

We included a number of state characteristics that, based on the literature, would be potentially related to the rate of CMFs.

Alcohol and drug abuse/dependence. Previous macro-level research found women's abuse of alcohol at the state-level is related to the homicide rate among toddlers (Straus, 1987). We included a measure of alcohol and/or drug abuse and/or dependence that was calculated by the Substance Abuse Mental Health Services Administration for the years 2006–2008. We anticipated a positive relationship between alcohol and drug use and CMFs.

Crime. Maltreatment fatalities among toddlers has been linked to the state crime rate (Straus, 1987). Thus, we included a measure of violent crimes committed per 100,000 members of the population from the Bureau of Justice Statistics for 2006–2008. We anticipated a positive relationship between the rate of crime and CMFs.

Housing. Housing has shown to be related to child homicides and maltreatment deaths at both the micro and macro-levels. Research on macro-level data has shown that the percent of owner-occupied housing is inversely related to homicide rates among toddlers (Straus, 1987). Children who come from homes that provide shelter to non-family members are at a higher-risk for CMFs (see Douglas, 2005 for a review), as has higher levels of density per housing unit (Straus, 1987). Thus, we included measures of home ownership—percent of owner-occupied homes—as well as the mean size of households per state, also from the Census Bureau, Current Population Survey, 2006–2008. We anticipated that higher rates of home ownership would be inversely related to CMFs, but that households with more individuals would be positively related to the CMF rate.

Race. African Americans have been shown to be at an elevated risk for CMFs (Herman-Giddens et al., 2003) and are also overrepresented in the child welfare system (U.S. Department of Health & Human Services, 2009). The percent of African Americans in each state for the years 2006–2008 were also derived from the U.S. Census Bureau Current Population Survey. We anticipated a positive relationship between this variable and the CMF rate.

Region. Rates of crime (McCall, Land, & Cohen, 1992) and maltreatment (Linksy & Straus, 1986) often vary by region, thus three dummy variables were included to indicate the region of the country for each state. The dummy for the northern region was the reference category. Our coding system for region of the nation is consistent with that used by the U.S. Census Bureau. At a very minimum, we anticipated that there would be higher rates of CMFs in the south.

Socioeconomic status. Socioeconomic status has been shown to be related to CMFs, both at the individual and societal levels (Levine et al., 1994). State poverty rates for the years 2006–2008 were taken from the U.S. Census Bureau Current Population Survey. Level of education at the individual level is associated with higher rates of infant homicide (Overpeck, Trumble, Berendes, & Brenner, 1999); thus, we also included the percent of the population with a college education in each state for the years 2006–2008. We anticipated an inverse relationship between socioeconomic status and the CMFs.

Child welfare practice and support variables. Child welfare practice characteristics have not been included in analyses that predict CMFs.

Substantiation rate. The child maltreatment investigation substantiation rate is calculated by comparing the number of substantiated or "founded" cases of maltreatment with the number of investigations for child maltreatment completed in a given year for each state. The 2006–2008 data for this variable come from the U.S. Department of Health and Human Services, Administration of Children and Families. This is the first time that a measure of this child welfare practice characteristic has been included in research and its inclusion is exploratory.

Child welfare spending. Research has documented that states spending fewer dollars on social issues and social welfare systems often have higher rates of social problems (Linksy & Straus, 1986; Straus, 1994). We included a measure of total child welfare spending, which included federal, state, and local. These 2003 figures were calculated by the Urban Institute (Scarcella, Bess, Zielewski, Warner, & Geen, 2004) and are the most easily accessible data close to the 2006–2008 period. We included the 2003 statistics for each of the three-year period in our study. We anticipated a negative relationship between spending and CMFs.

RESULTS

Factors Related to the Rate of CMFs

Table 1 rank orders the CMF rate for the years 2006–2008; the mean=1.88 per 100,000 children. Those states with the highest rates of CMFs were predominantly in the southern and middle regions of the nation. There was less uniformity among states with lower rates of CMFs. About half of these lower-ranking states clustered in the northeast, but not all, such as Idaho, Iowa, Wyoming, and Arizona. We then examined the relationship between the CMF rate and the independent variables using Pearson's correlation analysis. Only those variables that were statistically significant at the bivariate-level were used in a multivariate ordinary least squares regression analysis. Two variables (percent African American and alcohol and drug use) were dropped from the regression analysis because of problems with net suppression (Meyers, Gamst, & Guarino, 2006). We used the backward step method in the regression analysis (Meyers et al., 2006). The parsimonious statistics for the final model are presented in Table 2, which had an R^2=.35. The model shows that the only variables that reliably predict CMFs are the crime rate, poverty level, and region of the country. States that have higher levels of poverty have more CMFs. Specifically, for each additional percent of the population that lives in poverty, the CMF rate increases by .09 per 100,000 children. States in the South and in the Midwest had higher levels of CMFs than states in the North or West. The rate of violent crime

TABLE 1 Ranked Means of CMF Rates by State in Descending Order, 2006–2008

Rank	State	Mean CMF rate
1	Florida	3.96
2	Nebraska	3.59
3	Texas	3.57
4	Kentucky	3.28
5	Oklahoma	3.26
6	Missouri	3.16
7	Louisiana	2.89
8	Ohio	2.88
9	Arkansas	2.86
10	West Virginia	2.75
11	Tennessee	2.74
12	Indiana	2.71
13	New Mexico	2.66
14	Nevada	2.64
15	Georgia	2.54
16	Michigan	2.47
17	Colorado	2.35
18	Illinois	2.10
19	New York	2.08
20	Alabama	1.99
21	South Dakota	1.86
22	South Carolina	1.86
23	California	1.81
24	Mississippi	1.74
25	Oregon	1.66
26	Wisconsin	1.64
27	Virginia	1.61
28	Utah	1.58
29	Washington	1.54
30	New Jersey	1.52
31	Pennsylvania	1.50
32	Alaska	1.47
33	North Dakota	1.40
34	Minnesota	1.25
35	Kansas	1.20
36	Hawaii	1.17
37	Arizona	1.10
38	Wyoming	1.06
39	Iowa	1.03
40	Vermont	1.02
41	New Hampshire	0.78
42	Maine	0.72
43	Connecticut	0.53
44	Delaware	0.49
45	Montana	0.46
46	Idaho	0.33
47	Rhode Island	0.00

Note: Rates are per 100,000 children. Maryland, Massachusetts, and North Carolina did not report data. The Mean rate=1.88.

TABLE 2 Parsimonious OLS Regression Analysis Statistics for State-level Variables Predicting 2006–2008 CMF Rate

Variable	B	SE B	β	t	P
Crime level[a]	0.02	0.01	0.28	3.48	.001
Poverty level[b]	0.09	0.03	0.25	2.95	.004
Region: Midwest[c]	0.76	0.19	0.31	4.04	.000
Region: South[c]	0.51	0.23	0.21	2.22	.028

Note: $R^2 = .35$ ($N = 138$, $p < .001$).
[a]Violent crimes per 100,000 population. Variable was divided by 10 for this regression analysis.
[b]Poverty level is percent of state population that is at or below the poverty line.
[a]Dummy variable, North and West are the reference categories.

predicts CMFs, where each additional one-unit increase in the crime rate increases CMFs by .02 per 100,000 children. There was no statistical relationship between the other independent variables and the CMF rate.

Change in CMF Rate: Pre and Post New Child Welfare Legislation

We first examined the difference between the pre- and post-legislation CMF rate by subtracting the pre-CMF rate (M=1.79) from the post-CMF rate (M=1.88). The mean of the "change" variable = .09 did not provide strong support for a change in the CMF rate. We then conducted a paired *t*-test between the pre- and post-CMF rates and found that there was not a statistically significant difference between the rate of death at these two points, $t = -.90$, $p=.37$. Next we conducted a bivariate analysis between the variable which measured the number of CMF legislation that was passed in 2002–2004, the post-CMF rate, and the rate of change in CMFs to determine if states that had passed more CMF-prevention-related legislation were more likely to experience a reduction in the CMF rate. We found no relationship between these variables: post CMF rate, $r=.05$, $p=.57$ and change in CMF rate, $r=-.09$, $p=.29$. This also indicated that there was no relationship between having passed legislation to prevent CMFs and a reduction in the actual rate of CMFs. In our next set of analyses, we conducted a one-way ANOVA to determine if states passing 0, 1, 2, or 3 or more pieces of legislation varied one from another with regard to the rate of CMFs in the follow-up stage. The analyses did not produce significant results, $F=1.81$, $p=.16$. We also dichotomized the variable that measured the number of pieces of legislation that were passed, so that 0=no legislation, 1=legislation passed. This also did not provide evidence for a relationship between passing legislation and a change in the fatality rate, $r=.40$, $p=.53$. This latter set of analyses, however, likely falsely assumes that all of the states have remained stagnant since our initial point of investigation. For example, states that passed no legislation in 2002–2004 may have passed legislation in 2005 or later;

or, states that passed one piece of legislation in 2004 may have passed ive pieces of legislation in 2005 or later. Thus, we parceled out only the states that had passed legislation in 2002–2004 and conducted a paired *t*-test for the pre- and post- CMF rates. The results did not provide evidence for any change between the pre- (2001–2003) and post- (2006–2008) years, t=.26, p=.80.

DISCUSSION

This study investigated state-level influences on CMFs and examined whether states that passed more CMF-related legislation in 2002–2004 were able to reduce their fatality rates four years later in 2006–2008. The results indicate that with regard to the CMF rate, there was no difference between states that passed legislation and states that did not.

Predictors of Child Maltreatment Fatalities

We found that a number of variables are predictors of CMFs. For each additional 1% of the population that lives in poverty, the CMF rate increases by .09 per 100,000 children; the rates for the Midwest and South are .76 and .51 units higher per 100,000 children than in the North and West. These findings are striking given that the mean CMF rate nationwide is 2.33 per 100,000 children (U.S. Department of Health & Human Services, 2010) and that it increased .43 points between 1990 (U.S. Department of Health & Human Services, 1998) and 2008. The relationship between poverty, social context, and CMF has been established at the individual (Levine et al., 1994) and societal levels in previous research (Straus, 1987).

As noted in the introduction to this article, there is limited research on the macro-level characteristics that are related to CMFs. One study did examine crime as a factor that was potentially related to infant and toddler homicide. Using data from 1960–1980, Straus (1987) found that states with higher levels of crime had higher rates of homicides related to toddlers, but not infants. The findings of our study are consistent with Straus' findings concerning the positive relationship between crime and CMFs.

Straus and colleagues (Burns & Straus, 1987; Straus, 1987) found that states and nations with higher levels of impoverishment and lower levels of spending on social programs had higher rates of fatalities. Our findings with regard to spending on child welfare did not support this previous research. The results of this study are, however, consistent with other research on homicide rates in general, which find that higher rates of poverty are associated with higher rates of homicide (Levitt, Lochner, & Gruber, 2001; Miller, Azrael, & Hemenway, 2002).

We also found higher rates of CMFs in the South and Midwest portions of the United States. We did not find any difference between the North and West. Limited research has addressed regional differences in child maltreatment in the United States, but that research is several decades old (Gelles, 1978). A body of research has examined attitudes about corporal punishment in the United States. This research indicated significantly higher levels of support for physical discipline in the south (Flynn, 1994). Homicide rates in general tend to be higher in the southern region of the nation. This has been attributed to a culture that is more embracing of violent behaviors and practices (McCall et al., 1992; Nisbett, Polly, Lang, Ruback, & Weiner, 1995; Papadopoulos et al., 2009). Some research, however, found comparable levels of homicide between the South and West (O'Carroll & Mercy, 1989). There is limited research concerning higher levels of homicide in the Midwest, but one study did find elevated rates on homicide in the Midwest as compared to the North (Matthews, Maume, & Miller, 2001).

Assessing Efficacy of Legislation to Prevent Child Maltreatment Fatalities

We found that there was no change in the fatality rate between states that implemented prevention-based legislation and those that did not. In our first study (Douglas, 2009) we concluded that state legislators had acted rationally; high levels of media attention to CMFs led to the passage of more CMF-related legislation, even in the face of other controls, such as the CMF rate. Our analyses, however, do not confirm our former conclusions of a rationally based process. Passing new child welfare policy that is related to preventing CMFs did not influence the CMF rate.

Limitations

This study has several limitations. First, this study provides only a partial explanation of the factors associated with CMFs. Our sample contained data for three-year periods. It is possible that the conclusions would have been stronger with a larger sample size, especially as not all states systematically report maltreatment fatalities to the federal government. Second, this study only assessed a four-year follow-up to the original study (Douglas, 2009); the findings may be different if we repeat this study in several years. Third, our original study (Douglas, 2009) examined child welfare policies *related* to CMFs, not all of which closely tied to prevention. For example, legislation might have called for an increase in funding for child fatality review teams, and while such review teams work on prevention, it would likely take longer than four years for such funding to have a direct effect on the CMF rate. Finally, one possible methodological limitation is in regard to our dependant

variable, the rate of CMF per state. The data used for this variable were taken from reports by the U.S. Department of Health and Human Services, Administration for Children and Families. Since the data in these reports are comprised of maltreatment fatalities substantiated by state child protective service agencies, maltreatment fatalities unknown to CPS (child protection services) agencies are not reflected in these reports. Further, some states have different measures for CMFs; nonetheless, this is the only nationwide data on CMFs.

Implications for Policy and Practice

The findings of this study have important implications for policy and practice. The results of our first set of analyses point strongly to the association between measures of social context and children's deaths, which provides support for the importance of poverty-elimination or poverty reduction programs (Eamon, Wu, & Zhang, 2009; Lichter & Eggebeen, 1994; Mahoney, 2006; Owens, 2005; Shobe & Boyd, 2005) and crime prevention programs (McSkimming & Berg, 2008; Organ, 2005; Papadopoulos et al., 2009; Reynolds, Temple, & Ou, 2010; Sampson, Eck, & Dunham, 2010). Our findings indicate that as poverty and crime increase, so do CMFs and as poverty and crime decrease, fewer children die from maltreatment. In fact Table 1, which rank orders the mean CMF rate among the states in the nation supports this conclusion. Those states with the highest levels of CMFs, generally speaking, tend to be states with higher levels of poverty and crime. Thus, if poverty and crime are positively related to children's deaths, and are positively related to one another, lowering these two social problems may go a long way toward reducing the rate of CMFs.

Our results do not find a link between state-level policy action in child welfare and improved outcomes for children, as measured by the rate of CMFs. We found that policy action produced desired results in our initial study (Douglas, 2009) in terms of creating new CMF-related legislation, but that in our follow-up period, no fewer children were dying in states that took legislative action. The vast majority of state policy that is enacted is not evaluated for effectiveness. Child welfare policy is no exception (Gelles, 2001). The child welfare profession is especially susceptible to ideological movements that are implemented without the checks and balances of research and evaluation (Gelles, 2000). There are some exceptions to this practice, which may indicate an increased level of rigor is being brought to child welfare policy practice (Colyer & Plein, 2009; D'Andrade, 2009; D'Andrade & Berrick, 2006). The CMF rate has remained constant, or has increased over the past several decades, even when other forms of maltreatment have declined (Jones & Finkelhor, 2003; Jones, Finkelhor, & Halter, 2006; Jones, Finkelhor, & Kopiec, 2001). This may reflect the increased attention to this phenomenon, or may represent actual increases in CMFs. We recommend

repeating this study in the future when more time has passed since the implementation of new legislation. In closing, we support continued efforts toward better understanding factors related to CMFs and in the evaluation of child welfare policy.

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