

Doing Their Duty: An Empirical Analysis of the Unintended Effect of *Tarasoff v. Regents* on Homicidal Activity

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Abstract

The seminal ruling of *Tarasoff v. Board of Regents of the Universities of California* enacted a duty that required mental health providers to warn potential victims of any real threat to life made by a patient. Many have theorized that this required breach of confidentiality may have adverse effects on effective psychological treatment—but the issue remains unaddressed empirically. Because of the presence of duty-to-warn laws, patients might forgo mental health treatment that would prevent violence. Using a fixed-effects model and exploiting the variation in the timing and style of duty-to-warn laws across states, I find that mandatory duty-to-warn laws cause an increase in the homicide rate of .4, or 5 percent. These results are robust to model specifications and falsification tests and help to clarify the true effect of state duty-to-warn laws.

1. Introduction

In its landmark ruling, the court in *Tarasoff v. Board of Regents of the Universities of California* (551 P.2d 334 [Cal. 1976]) set the standard of duty required of a mental health professional. According to *Tarasoff*, when a patient expresses a credible threat to life, the mental health professional incurs a legal duty to warn the potential victim. Contrary to the typical notion that a legal duty cannot be owed to a third party, *Tarasoff* stands as not only an exception to the rule of duty but also a staple in tort law. Virtually every torts class discusses *Tarasoff* and its implications. And though it is frequently discussed, its effect remains

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untested. Since it is a state-level ruling, most states adopted some sort of law similar to *Tarasoff* in the years following the decision.

At the onset of *Tarasoff* requirements, the duty owed to third parties became the subject of a “cottage industry of commentary” (Perlin 1992, p. 29) in both the legal and mental health services communities. Since *Tarasoff*, both legal scholars and mental health professionals have argued that it “would lead to more danger by discouraging patients from seeking treatment and/or chilling patients’ willingness to discuss issues of violence with their therapists” (Klinka 2009, p. 13) and that patients at most risk of dangerous activity will miss out on necessary counseling because of the costs mental health professionals incur while counseling risky patients (Stone 1976; Fliszar 2002; Ginsberg 2007). Cohen (1976, p. 1) predicted the result of *Tarasoff* to be the end of “effective psychotherapy.” The question of *Tarasoff*’s effectiveness in deterring violence, and specifically homicides, remains unanswered empirically.

This analysis contributes both to our general understanding of the role of confidentiality and the specific effect *Tarasoff* has had by codifying each state’s *Tarasoff* law and employing a fixed-effects model to estimate *Tarasoff*’s effect on homicides in the United States. A comparison of states before and after the law suggests that the presence of duty-to-warn laws causes an increase in state homicide rates by about 5 percent.

2. Background

2.1. Crime and Mental Health

Economists and other researchers have tried to explain why crime rose steadily in the 1980s and abruptly fell in the early 1990s. Based on economic theory, the reasons for the sudden changes in crime are expansive and far reaching (Levitt 2004). Some research suggests that abortion (Donohue and Levitt 2001; Joyce 2009), gun control (Ayres and Donohue 2003; Black and Nagin 1998), and the death penalty (Donohue and Wolfers 2009; Katz, Levitt, and Shustorovich 2003) may have contributed to the rise and fall of crime. A recently explored theory suggests a causal relationship between mental illness and crime. Previous literature suggests a link between sufferers of mental illness and crime, either as the victim (Silver, Felson, and Vaneseltine 2008; Teplin et al. 2005; Choe, Teplin, and Abram 2008) or perpetrator (Link and Stueve 1995; Nestor 2002).

Marcotte and Markowitz (2009) propose that the decline in crime was due in part to the widespread administration of psychopharmaceuticals. In fact, they report that 22 percent of inmates surveyed were found to suffer from some sort of serious mental illness. In an overview study, Choe, Teplin, and Abram (2008) report that some studies have found that almost 50 percent of sampled mental health patients have a higher propensity toward violence. Swanson et al. (1990) find that the mentally ill are four to five times more likely to be violent than the general population. The results of these studies suggest that violent acts in

the United States, including homicide, might be disproportionately committed by the mentally ill. The findings presented in this analysis attempt to further strengthen the argument of a causal link between mental health and crime.

2.1.1. Confidentiality and *Tarasoff*

The standard of confidentiality that exists between doctor and patient can be tracked back thousands of years (Thompson 1979) and has long been considered the cornerstone of trust and a necessary part of successful therapy (Corcoran and Winslade 1994). Confidentiality is the main vehicle by which trust is established between doctor and patient. This trust enables the doctor to engage the patient in conversation during which the information most vital to treatment is disclosed (Corcoran and Winslade 1994).

It has been shown that even small changes to confidentiality severely alter the behavior of the patient (Edwards 2013). In a survey concerning confidentiality, Jones (2003) finds that 84 percent of participants would want to be notified concerning any changes to confidentiality. In a randomized controlled trial, Ford et al. (1997) find that willingness to discuss sensitive topics increased by 20 percent with a simple reassurance of confidentiality. The role of confidentiality is perhaps most salient in the context of mental health treatment. Many argue and show empirically that amid the changing landscape of mental health confidentiality laws, patients are more reluctant to discuss sensitive information, including violent thoughts (Stone 1976; Perlin 1992; Givelber, Bowers, and Blich 1984). Perhaps the largest change to the law surrounding confidentiality and mental health came with the 1976 ruling of *Tarasoff*.

After unsuccessful attempts to court Tatiana Tarasoff, Prosenjit Poddar, a graduate student at the University of California at Berkeley in the late 1960s, sought professional help from a psychologist for depression. While receiving counseling, Poddar admitted desires to kill Tarasoff. Poddar's psychologist had Poddar detained temporarily, but at the discretion of the supervising psychologist Poddar was released. Neither Tarasoff nor her family was ever made aware of Poddar's intentions.¹ Later, Poddar successfully carried out his plan and murdered Tarasoff. The family of Tarasoff sued the hospital, the psychologist, and the superior, stating that a professional duty should exist to protect third parties from imminent harm.

In a landmark decision, the Supreme Court of California ruled that while traditionally no duty is afforded to a third party, in the case of mental health care professionals, a duty to warn a third party exists under certain circumstances, and the failure to warn is cause for suit. In its opinion, the Supreme Court of California stated, "When a therapist determines . . . that his patient presents a serious danger of violence to another, he incurs an obligation to use reasonable care to protect the intended victim against such danger" (*Tarasoff*, 551 P.2d 431). Two years later in *Thompson v. County of Alameda* (614 P.2d 728 [1980]), the

¹ This may have not been possible since Tarasoff was in Brazil at the time the threats were made.

Supreme Court of California determined that as long as the victim or class of victims is clearly defined and the threat is substantial, the therapeutic professional holds a duty to “warn the intended victim or others likely to apprise the victim of the danger, to notify the police, or to take whatever other steps are reasonably necessary under the circumstances” (614 P.2d 760).

In subsequent years, dramatic changes occurred in both the law associated with therapeutic professionals and the way they conducted business (Wise 1978; Givelber, Bowers, and Blitch 1984). Courts across the country used the ruling of *Tarasoff* as a basis for creating a duty by mental health professionals to warn third parties of imminent harm. In addition, a variety of states codified these case law rulings into statutory law defined in the state legal code.

Although almost all states took a stand with respect to third-party duty in response to the *Tarasoff* ruling, not all states hold therapists² to the same standard. There are essentially four elements that play a role in each state’s stance relative to *Tarasoff*: professionals named, standard of threat, standard of victim, and which party is entitled to be informed. Important distinctions exist between the types of professionals named in each state. While some states specifically name each professional potentially liable under *Tarasoff*, others define the types more broadly. The standard of threat also varies by state, but in general, in order for a duty to exist, the threat made by the patient must be “clear and immediate” (Fla. Stat. sec. 491.0147) and a “threat of serious physical harm” (Alaska Stat. sec. 08.86.200), and the victim must be readily identifiable. For example, the Arizona statute states that the health provider will be liable if “[t]he patient has communicated to the mental health provider an explicit threat of imminent serious physical harm or death to a clearly identified or identifiable victim or victims, and the patient has the apparent intent and ability to carry out such threat” (Ariz. Rev. Stat. sec. 36-517.02). Similarly, the duty-to-warn statute for Utah states that a therapist will be held liable for the actions of a patient if the “client or patient communicated to the therapist an actual threat of physical violence against a clearly identified or reasonably identifiable victim” (Utah Code Ann. sec. 78B-3-502).

Under state statutory duty-to-warn laws, the therapeutic professional is still liable only if the patient makes a credible threat and the professional does not take the proper action in providing warning to the appropriate persons. In states that have codified duty-to-warn laws, therapeutic practitioners can avoid liability by notifying proper authorities and the victim or victims named.

Tables 1 and 2 show that from 1981 to 2003, 44 percent of the state-year observations have some sort of mandatory duty-to-warn law, 17 percent have discretionary duty-to-warn laws, and the remaining have no law (Edwards 2010). Five states have no case or statutory law on the duty-to-warn doctrine. Similarly,

² Throughout this paper I use terms including “therapist,” “psychologist,” “mental health professional,” and “therapeutic professional” interchangeably for stylistic purposes, admitting that they are quite different in relation to the law (see Edwards [2010] for further explanation).

Table 1
Summary of State Duty-to-Warn Laws

State	Duty Law	Date Passed	Deciding Body
Alabama	Mandatory likely	1985	Court
Alaska	Discretion	1986	Legislature
Arizona	Mandatory	1977	Court
Arkansas	No law		
California	Mandatory	1976	Court
Colorado	Mandatory	1987	Legislature
Connecticut	Discretion	1989	Legislature
Delaware	Mandatory	1988	Court
District of Columbia	Discretion	1979	Legislature
Florida	Discretion	1987	Legislature
Georgia	Mandatory likely	1982	Court
Hawaii	Mandatory likely	1996	Court
Idaho	Mandatory	1991	Legislature
Illinois	Discretion	1990	Legislature
Indiana	Mandatory	1998	Legislature
Iowa	No law	1981	Court
Kansas	No law		
Kentucky	Mandatory	1986	Legislature
Louisiana	Mandatory	1986	Legislature
Maine	No law		
Maryland	Mandatory	1989	Legislature
Massachusetts	Mandatory	1989	Legislature
Michigan	Mandatory	1989	Legislature
Minnesota	Mandatory	1986	Legislature
Mississippi	Mandatory	1991	Legislature
Missouri	Mandatory	1995	Court
Montana	Mandatory	1987	Legislature
Nebraska	Mandatory	1980	Court
Nevada	No law		
New Hampshire	Mandatory	1987	Legislature
New Jersey	Mandatory	1979	Court
New Mexico	No law	1989	Court
New York	Discretion	1984	Legislature
North Carolina	Mandatory likely	1987	Court
North Dakota	No law		
Ohio	Mandatory	1997	Court
Oklahoma	Mandatory	2009	Legislature
Oregon	Discretion	1977	Legislature
Pennsylvania	Mandatory	1998	Court
Rhode Island	Discretion	1978	Legislature
South Carolina	Mandatory	1998	Court
South Dakota	Mandatory	1978	Court
Tennessee	Mandatory	1989	Legislature
Texas	Discretion	1979	Legislature
Utah	Mandatory	1988	Legislature
Vermont	Mandatory	1985	Court
Virginia	No duty	1995	Court
Washington	Mandatory	1983	Legislature
West Virginia	Discretion	1977	Legislature
Wisconsin	Mandatory	1988	Court
Wyoming	Discretion	1999	Legislature

Note. For a complete database of each law, including references, see Edwards (2010).

Table 2
Summary Statistics

	Full Sample	Mandatory- Duty State	Discretionary- Duty State	State with No Law
Offenses per 100,000 people:				
Homicides (NCHS)	8.92 (12.76)	6.54 (3.90)	10.44 (11.85)	17.74 (28.12)
Nonstranger homicides (UCR's SHR)	4.50 (7.25)	3.43 (2.08)	3.85 (2.36)	10.75 (17.84)
Manslaughter (UCR's SHR)	.57 (.86)	.47 (.36)	.50 (.43)	1.16 (2.04)
Suicides (NCHS)	12.74 (3.34)	12.43 (2.53)	12.15 (4.17)	15.13 (4.17)
Mandatory duty	.44 (.50)	.68 (.47)	.00 (.00)	.00 (.00)
Mandatory duty (case law)	.10 (.30)	.16 (.37)	.00 (.00)	.00 (.00)
Mandatory duty (statutory law)	.27 (.44)	.41 (.49)	.00 (.00)	.00 (.00)
Mandatory duty likely (case law)	.07 (.25)	.11 (.31)	.00 (.00)	.00 (.00)
Discretionary duty	.17 (.38)	.00 (.00)	.81 (.40)	.00 (.00)
Sample size	1,173	759	299	115

Note. Standard deviations are in parentheses. The *p*-value is calculated from an equality of distributions test in which the null hypothesis is stated in the first row. The complete summary statistics are available on request. NCHS = National Center for Health Statistics; UCR = Uniform Crime Reporting Program; SHR = Supplementary Homicide Reports.

four states have suggested an adoption of *Tarasoff* through case law by expressing desire to rule in favor of *Tarasoff* when the correct fact pattern is presented (see *Morton v. Prescott*, 564 So. 2d 1188 [1985], for Alabama; *Bradley Ctr. Inc. v. Wessner*, 296 S.E.2d 693 [1982], for Georgia; *Lee v. Corregedore*, 925 P.2d 324 [1996], for Hawaii; *Currie v. United States*, 836 F.2d 209 [1997], for North Carolina). The only state to reject outright the *Tarasoff* ruling is Virginia (*Nasser v. Parker*, 455 S.E.2d 502 [1995]).³ By 1986, about half of all states had passed some sort of *Tarasoff* ruling.

The remaining states constitute the large minority ruling, which in Table 1 is classified as a discretionary duty to warn. These 11 states have adopted a policy that allows the therapeutic professional to use her best judgment in deciding to report threats of harm. These statutes are formed as part of legal bars to break patient-doctor confidentiality privileges. In general, therapeutic professionals cannot divulge conversations had with a patient. However, each state has written statutes that allow confidentiality breaches and govern the ethical code of each state's mental health professional associations. So while the applicable professional association may allow for a breach in confidentiality, the stronger incentive

³ See also Edwards (2010) for a description of New Mexico's unclear stance on duty-to-warn laws.

will be to comply with the current state law. In these states with discretionary duties to warn, one acceptable reason to break the patient-doctor confidentiality agreement is a serious threat to life. This, in result, is a much looser standard than a mandatory duty to warn. A mandatory-duty law requires the professional to warn while a discretionary-duty law simply protects the professional from breach of confidentiality if she chooses to inform a third party. For example, Connecticut has established that “all communications shall be privileged and a psychologist shall not disclose any such communications unless . . . the psychologist believes in good faith that there is risk of imminent personal injury to the person or to other individuals” (Conn. Gen. Stat. sec. 52-146c).

Similarly, Florida’s statute states: “Any communication between any person licensed or certified under this chapter and her or his patient or client shall be confidential. This secrecy may be waived under the following conditions. . . . When, in the clinical judgment of the person licensed or certified under this chapter, there is a clear and immediate probability of physical harm to the patient or client” (Fla. Stat. sec. 491.0147). In *Thepar v. Zuzuka* (994 S.W.2d 635 [1999]), the Supreme Court of Texas explained that “[t]he statute . . . permits . . . disclosures but does not require them,” which reinforces the notion that a discretionary duty makes warning permissible but not required.

2.1.2. *Tarasoff* and Homicides

Given the importance of confidentiality in the treatment of the mentally ill, the role *Tarasoff* played in altering confidentiality, and the relationship between the mentally ill and crime, the question that remains is the extent to which *Tarasoff* could have affected crime in the United States. However, in order for *Tarasoff* to have any effect on crime, in addition to the fact that crimes, including homicides, are disproportionately committed by the mentally ill (Swanson et al. 1990; Choe, Teplin, and Abram 2008; Taylor and Gunn 1999),⁴ it must be the case that mentally ill potential murderers receive, or at least have the opportunity to receive, mental health treatment, and that given the right environment, mental health professionals have the tools to alter criminal behavior.

2.2. *Mental Health Care Utilization*

Recent estimates for the United States have found that 50 percent of all prison and jail inmates have a mental health problem, and of those with a mental illness half report having received some sort of mental health treatment in the previous 12 months (James and Glaze 2006). That is, 25 percent of all inmates report having received treatment for a mental illness. *Tarasoff*’s reach would probably extend to the 25 percent of criminals who report receiving mental health treatment and may even extend to the reported 50 percent who suffer from mental illness. One of the potential adverse effects of *Tarasoff* is that it discourages

⁴ In the United Kingdom about 10 percent of all homicides are estimated to have been committed by somebody with recent contact with mental health services (Swinson et al. 2007).

individuals from seeking help altogether and/or it discourages professionals from treating at-risk patients. The quarter of the prison population who has mental illness but receives no treatment might represent, at least in part, potential mental health treatment patients discouraged by *Tarasoff*. A total of 25 percent of psychologists report having lost a median of three patients after disclosing duty-to-warn laws (Wise 1978), and 40 percent of psychiatrists report being less willing to treat dangerous patients after *Tarasoff* (Givelber, Bowers, and Blich 1984).⁵ Men are statistically more likely to utilize mental health services (Garland et al. 2005; Hiday and Ray 2010), but the evidence is mixed for any racial disparity in utilization.⁶

These utilization numbers are likely influenced by the presence of mental health courts. Mental health courts are available in 34 states and offer an alternative to criminal court where the focus is rehabilitation. At any given time, nationally, there are 8,000 cases pending in mental health courts. A key element of mental health courts is creating regular contact for the criminal with a mental health professional (Redlich et al. 2006).

2.3. Altering Criminal Behavior

Necessary in the link between *Tarasoff* and homicides is a psychologist's ability to alter criminal behavior. The results of research aimed at measuring a psychologist's ability to predict violent behavior are mixed. Some researchers suggest that psychologists have only a modest ability to even predict future violence (Monahan 2007). Others, however, find stronger evidence that psychologists can predict future violence (Mossman 1994). Mental health courts, however, provide a stage to measure a mental health professional's ability to alter violent behavior. Given the cost of mental health courts and the role psychologists play in them, many studies have looked at their efficacy. The overwhelming consensus across various regions and outcomes is that mental health courts, and by extension psychologists, have had some measure of success in rehabilitation. It has been shown that contact with a mental health professional leads to a statistically lower recidivism rate (Dutton 1986; McNeil and Binder 2007; Moore and Hiday 2006; Steadman et al. 2011; Hiday and Ray 2010), decreases rebooking rates (Trupin and Richards 2003; Dirks-Linhorst and Linhorst 2012; Steadman et al. 2011), and decreases days spent in jail and violence (Christy et al. 2005; Dutton et al. 1997; Steadman et al. 2011).

⁵ Klinka (2009), Harmon (2008), and Borum and Ready (2001) provide a theoretical framework for why this may be a utility-maximizing decision on the part of the professional.

⁶ Garland et al. (2005) find a small difference between whites (79 percent) and blacks (64 percent) among youths in a large publicly funded system of care. Kales et al. (2000) find that in only one of 12 specific measures of mental health utilization do blacks and whites differ. Hiday and Ray (2010) find greater utilization among whites though still provide evidence that blacks utilize mental health care.

2.4. Distorting the Doctor-Patient Relationship

If the conditions hold that criminals utilize mental health care and psychologists are able to alter criminal behavior, through a number of channels, duty-to-warn laws could affect homicides but only if these laws truly distort the relationship between doctor and patient. In order for this condition to hold, the law must be common knowledge between the doctor and patient. From the point of view of the mental health services provider, we would anticipate that therapists have the incentive to learn about the law. Survey evidence provided by both Givelber, Bowers, and Blitch (1984) and Wise (1978) reveals that the vast majority of psychologists are aware of the *Tarasoff* laws.⁷ In addition, psychologists might have an incentive to learn about laws that increase their personal liability. There is also evidence that mental health professionals actually invoke the *Tarasoff* duty to warn.⁸ Psychologists should have an incentive to convey the information about the laws to their patients (Klinka 2009, esp. n. 213). In an attempt to avoid liability, a therapist will likely warn the patient *ex ante*, both verbally and by signed contract, of the law to allow the patient to monitor what is divulged. The evidence from previous research suggests that this happens at least in part (Givelber, Bowers, and Blitch 1984; Rosenhan et al. 1993).

Under this heightened state of awareness, many fear that patients will be more reluctant to divulge their most violent thoughts, which then go untreated. Wise (1978) finds that 80 percent of therapists observe greater patient reluctance to discuss violent thoughts, and more recently Rosenhan et al. (1993) report that 60 percent of therapists feel that patients were at least somewhat more reluctant to discuss sensitive information. In addition, Givelber, Bowers, and Blitch (1984) report that psychologists were 30 percent more likely after *Tarasoff* to commit patients involuntarily to the hospital.⁹ The increased awareness of the law, coupled with the increased threat of involuntary hospitalization, may have discouraged patient discourse.

It is a reasonably well established fact that the mentally ill commit a disproportionate amount of crime. It is also commonly accepted that confidentiality is a key element to effective mental health treatment and that *Tarasoff* stands as the most poignant breach of confidentiality. Under certain conditions, it is pos-

⁷ Givelber, Bowers, and Blitch (1984) report 84 percent, and Wise (1978) reports 96 percent.

⁸ Givelber, Bowers, and Blitch (1984) find that 81 percent of mental health professionals report having invoked a *Tarasoff* duty to warn a third party. Rosenhan et al. (1993) report 90 percent. Binder and McNeil (1996) report 50 percent.

⁹ The role of civil commitments *a priori* is not totally clear. It could be the case that *Tarasoff* reduced the contact patients have with professionals, which thus lowered the opportunity for professionals to commit mentally ill patients. Some research shows, however, that *Tarasoff* increased psychologists' willingness to commit patients (Wise 1978). McNeil and Binder (1986) find, however, that while the number of commitments did not increase, there was a threefold increase in the reasoning for commitment being that the patient was a danger to others. As was the situation in the *Tarasoff* case, hospitals can hold a patient involuntarily for only 72 hours before releasing. Thus, most of the patients committed are quickly released and are probably unenthusiastic about visiting the professional who initiated commitment and may be skeptical of the field as a whole.

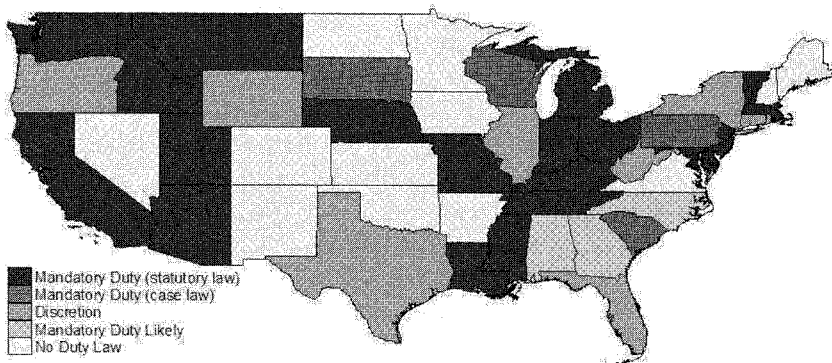


Figure 1. Current state duty-to-warn laws

sible that *Tarasoff* could have an effect on crime. Provided that the mentally ill utilize (or would have utilized were it not for the law) mental health services, psychologists have a capacity to alter criminal behavior given the opportunity, and the relationship between the doctor and patient is hindered by mutual understanding of the law, duty-to-warn laws could contribute to explaining the variation in homicides.

The following empirical analysis reports that the passage of state *Tarasoff* laws is associated with a 5 percent increase in homicides. This result hinges on these conditions holding. Provided that they do hold, this analysis contributes to the related literature by offering some empirical evidence of *Tarasoff's* effect, helping to answer many of the theoretical questions raised by the *Tarasoff* duty over the past 20 years, and explaining the rise and fall in crime over the last 20 years. In addition, it builds on recent work that links mental health conditions to crime in the United States (Marcotte and Markowitz 2009).

3. Model

A fixed effects model is used to estimate the effect of state *Tarasoff* laws on homicides. The panel nature of the data allows for the use of panel techniques that control for a lot of the unobserved time-invariant heterogeneity across states and unobserved national trends. This technique is particularly attractive in this setting as the laws vary by both time of adoption and style of law. Figures 1 and 2 display the variation in style of law and timing, respectively. In addition, the available window of data (1980–2003) captures some sort of law change in about 80 percent of the states. Those states that do not vary within the sample window are included nonetheless in the analysis because while they do not contribute to the estimation of the coefficients of interest, they do still add value in explaining the overall variation in homicides. The most basic identification is

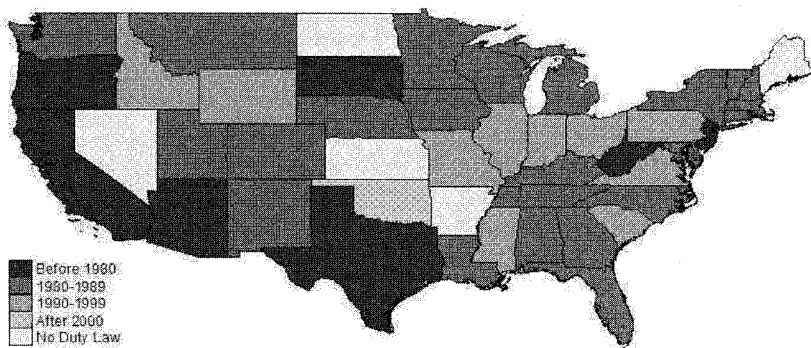


Figure 2. Duty-to-warn laws' first enactment

$$h_{it} = \alpha m_{it} + \beta d_{it} + X_{it} + s_i + y_t + e_{it} \tag{1}$$

where h is the natural log of homicides per 100,000 people that varies by state i and time t , X is a matrix of covariates,¹⁰ s and y are state and year dummies, e is the error term, m is a binary variable that takes a value of one when state i in time t has a mandatory duty to warn and zero otherwise, and d is a binary variable that takes a value of one when state i in time t has a discretionary duty to warn and zero otherwise. Table 2 shows the summary statistics of the state-year cells. States with discretionary duty-to-warn laws encompass 17 percent of the sample, while state-years with mandatory laws account for about 44 percent of the sample.

3.1. Identification Issues

There are several issues that require some thought while modeling the effect of *Tarasoff*. To start, court decisions and legislation do not usually pass right at the end or beginning of a year. This poses a problem because my preferred measure of homicides is reported yearly. This means I have to make a decision whether to count the law that passes in June 1988 as beginning in 1988 (and thus overstate the life of the law) or 1989 (and understate the life of the law).¹¹ To reduce the chance of introducing bias into the model, I estimate equation (1), and all subsequent equations, both as stated and as

$$h_{it} = \alpha_1 m_{it+1} + \beta d_{it+1} + X_{it} + s_i + y_t + e_{it} \tag{2}$$

where $t + 1$ measures the second year since enactment or the first full calendar year of enactment. This should create two types of estimates: equation (1) over-

¹⁰ State controls are explained in Section 3.2.

¹¹ For instance, if Wisconsin passed its law in June 1988, the law is counted as existing for the entire year of 1988. Because this tends to overstate the length of the law, $t + 1$ law variables are included as alternative specifications. So in Wisconsin, the $t + 1$ law variable would count the law as starting in 1989. No significant difference results.

counts the law's lifespan, and equation (2) undercounts it. I can then compare the two estimates and see if they differ greatly. The results suggest that timing in this sense is not an issue.

There is another timing issue however. For a law originating from judges and courts, it might be unclear at what point in the trial or appeal the law begins to be effective. It may be that people begin to react to the law after the highest court rules, but in case they do not, I estimate equations (1)–(4) with the timing of the laws adjusted to account for lower court rulings.

Another major methodological concern is how to correctly exploit the variation in state duty-to-warn laws. There might be some reason to believe that the origin of the law matters. For instance, laws created by legislatures might be perceived as more firm than those created by the court system. Conceivably, therapeutic professionals could be more aware, or respond more intently, to state laws passed by legislatures than decisions made in the state court system. To address this, equations (1) and (2) are expanded to designate the source or type of law:

$$h_{it} = \alpha_1 mc_{it} + \alpha_2 ms_{it} + \alpha_3 ml_{it} + \beta d_{it} + X_{it} + s_i + \gamma_t + e_{it} \quad (3)$$

and

$$h_{it} = \alpha_1 mc_{it+1} + \alpha_2 ms_{it+1} + \alpha_3 ml_{it+1} + \beta d_{it+1} + X_{it} + s_i + \gamma_t + e_{it}. \quad (4)$$

The variable m in equation (1) is expanded to three binary variables that incorporate the governing body deciding the law. The variable mc measures the effect of mandatory-duty laws decided by the state court system. These are states that, when presented with evidence similar to that in *Tarasoff*, have ruled that a common-law duty to warn exists. The variable ms measures the effect of mandatory-duty laws enacted by state statutory law, and ml measures the effect of state judicial ruling that has dictated a duty to warn will be enacted when the fact pattern is presented to the courts.

This situation occurs normally when the question presented before the court is something related to, but not exactly, the issue presented in *Tarasoff*. If, for example, a state court comes to a ruling about a psychologist's duty to report child abuse, the court usually discusses a *Tarasoff* duty to warn (see Alabama and Georgia in Edwards [2010]). An advantage to this model specification is that it allows states to switch from common law to statutory law as a state codifies existing common-law doctrine (compare *Tarasoff*, 551 P.2d 334, with Cal. Civ. Code sec. 43.92 and *Naidu v. Laird*, 539 A.2d 1064 [Del. 1988], with 16 Del. Code sec. 5402).

Perhaps the biggest threat to model validity is the possibility of some form of endogeneity biasing the results. There is little evidence to suggest that there might be an endogenous factor driving both homicide rates and the passing of these laws since they originated either as an exception to the rule of duty or as an issue of mental health. Even if these laws were created in response to trending state levels of crime or the mental health status of the state, I can control for these trends by including a lagged measure of crime. Another source of potential

endogeneity is not just the mental health status of a state but more precisely how legislatures might perceive the mental health status of a state. To address this, I include a set of variables that capture the uptake of state mandates for the availability of mental health insurance and two tort reform variables commonly considered good indicators of a state's friendliness toward health professionals (Klick and Markowitz 2006). I hope to use these variables to capture how legislatures view mental health. In addition, with the analysis of any law, there is some concern that the law is an artifact of the surrounding political environment. The political environment may also be captured by these covariates as well.

Although unlikely, there might be reason to believe that these laws, especially the statutory laws, were passed in response to some underlying trend in crime. Thus, the estimates I obtain are not predicting the effect of *Tarasoff* but rather just capturing some underlying trend in crime driven by the timing of the laws. To identify this possibility, I predict a series of models in which the dependent variable is a common measure of crime that would be indicative of any underlying state trend in crime. If my estimates of the effect of these laws are merely capturing an underlying trend in crime, I should estimate a similar effect across different measures of crime. To test this, I run multiple regressions in which the dependent variable is a unique measure of the level of crime in a state and report that duty-to-warn laws do not appear to have an effect on different measures of crime.

An advantage I have in weeding out endogeneity is that I am able to distinguish the source of the law. The traditional notion of policy endogeneity comes from law created by legislatures in response to something they observe, but there is some evidence to suggest that these laws created by courts are not susceptible to the same type of endogeneity (Shepherd 2009).¹² Although these laws could potentially have adverse consequences to criminal law, they are a matter of civil law. So a judge with a predisposition toward being tough on crime or sympathetic to the victim is going to have better, more direct avenues to affect crime rates through criminal law cases. Given the large quantity of cases presented to judges (Huang 2011), it seems reasonable to think that appeals and state supreme court judges and justices who care a lot about affecting crime will simply substitute away from civil to criminal cases. This is evidenced by the opinions explaining the rationale behind the ruling published in each case. Of all the published opinions, the word "crime" is mentioned only four times—only two of which are original prose from the justice (see *Estates of Morgan v. Fairfield Family Counseling Center*, 77 Ohio St. 3d 284, 321 [1997]).¹³

¹² Shepherd (2009) finds that state-appointed judges tend to side more frequently with litigants from government branches around the time of reappointment. Even this type of bias would not be present in the context of *Tarasoff* because the state is never a litigant in a duty-to-warn case.

¹³ The legal realist might argue that what the published opinion says is not necessarily indicative of the court's motivation for ruling (that is, a judge really wants to control crime through *Tarasoff* but publishes in the opinion the duty-of-care rationale). At least in the case of Ohio, Justice Evelyn Lundberg Stratton does not mask her acknowledgment that these rulings might have an effect on

Given that, it will be useful to compare the estimated effect of *Tarasoff* laws by the court of origination. If laws generated by courts are probably not endogenous, and I estimate similar results between statutory and common law, this might suggest exogenous state statutes. Any remaining unobserved factor that influences homicides and is correlated with the laws will hopefully get picked up by state effects and year effects.¹⁴

With the inclusion of state effects, this makes each estimate a within-state estimation of the impact of *Tarasoff*—meaning the treated state is compared with its pretreated self. There is evidence to suggest that this provides a balanced comparison.¹⁵ A fixed-effects estimation does, however, have serious potential threats to unbiased estimation. To account for this, the errors are clustered at the state level (Bertrand, Duflo, and Mullainathan 2004).

3.2. Data

3.2.1. Dependent Variables

The data on homicide rates come from a variety of places. The preferred measure of homicides comes from the Web-Based Injury Statistics Query and Reporting System database compiled by the Centers for Disease Control and Prevention (2005) from the National Center for Health Statistics (NCHS). It spans 1981–2003 and captures the timing of the majority of court-made changes in law. The NCHS data come from collection of death certificate information and contain information on nearly all deceased persons. Since this seems to be the most complete database of homicides, I use the NCHS measure of homicides as my preferred specification. To provide some robustness to the NCHS data set, I employ yearly homicide data from the Uniform Crime Reporting (UCR) Program. The UCR provides a useful check to ensure the results are not an artifact of just one measure of homicides. In addition, the UCR reports more information about the nature of the relationship between the victim and perpetrator that will be useful in this analysis.

The UCR compiles the Supplementary Homicide Reports (SHR) database that consists of incident-level homicide reports. The SHR data are collected from volunteer participation of over 17,000 law enforcement agencies across the United States but have several shortcomings (Levitt 1998; Marcotte and Markowitz 2009; Katz, Levitt, and Shustorovich 2003). Levitt (1998) outlines when self-reporting will lead to bias in the UCR and the example of how police force size will either encourage or discourage self-reporting. In addition, the UCR accuracy might suffer from heterogeneity across reporting agencies in reporting practices and

crime. This suggests that if more judges considered homicides when making the ruling, they could just say so in the opinion. The fact that they do not suggests that homicides were not a consideration.

¹⁴ It could be the case that state policy makers react with legislation to a high-profile murder when psychological counseling should have played a role. As long as legislators consistently respond, it furthers the exogeneity of the law since high-profile murders are probably random.

¹⁵ Further discussion of balance in the data with a distributional analysis of the covariates is available in an online appendix.

technology. One problem with the UCR database is how to interpret a zero count of homicides. It is unclear in many cases whether a zero means no homicides or simply missing data. Stevenson and Wolfers (2006) point out that in at least a couple of cases, a zero count definitely means no reporting.¹⁶ There is reason to believe though that a zero count on homicides could either mean no homicides or very few homicides, or it could mean that resources are so scarce or homicides are so high that allocation to reporting statistics is undesirable. Nonetheless, Joyce (2009) reports that the SHR accounts for 90 percent of homicides. Given the ambiguity behind the rationale for zero counts of homicides, I omit those state-year observations from the analysis. Despite its shortcomings, the SHR database is particularly attractive to this study because information is reported on the relationship between the victim and perpetrator. Given the *Tarasoff* standard that the potential victim be readily identifiable, whatever effect we observe for the general population of homicides should be larger when homicides committed by strangers are omitted.

The ideal pool of homicides would be only those affected by duty-to-warn laws. This however would be difficult to define because any relationship in which the mental health patient could identify the victim would potentially be affected by *Tarasoff* laws. Because of this, I employ a strategy similar to Stevenson and Wolfers (2006) and narrow the pool of homicides by taking out murders by strangers. This will probably include some murders on which state duty-to-warn laws have no effect because of the imperfect nature of identifying the relationship between the two parties (U.S. Department of Justice 2004). It will be an improvement on the entire sample of homicides and provide a useful comparison to the results found with the more complete NCHS database of homicides.

As discussed earlier, in addition to the NCHS measure of homicides and the SHR measure of nonstranger homicides, I include as dependent variables multiple measures of crime to see if state duty-to-warn laws explain their variation. To test this, I run multiple regressions in which the dependent variable is a unique measure of the level of crime in a state. Those measures are the natural logs of the auto theft rate, larceny rate, robbery rate, and manslaughter rate. All these variables were collected from the UCR database and suffer from the same shortcomings inherent in the UCR database but still provide some interesting evidence about the exogeneity of *Tarasoff* laws.

3.2.2. Independent Variables

One major difficulty in measuring the effect of any law passed in the 1980s and 1990s is the task of correctly controlling for all the observed factors that might have an effect on homicides. The independent variables of interest are the coded law dummy variables explained previously. I compiled and coded the state duty-to-warn laws, and a full description of each state and relevant court cases can be found in Edwards (2010).

¹⁶ They note that for portions of the 1980s Illinois reported no homicides, which is clearly false.

It is unclear whether many demographic controls typically attributed as causing changes in crime actually predict levels of crime (Zimring 2007).¹⁷ There are in this specific context concerns that ought to be considered. Of central concern is the possibility that these laws were passed in response to crime rates. To control for this, I include in each regression the lagged log value of the auto theft rate.¹⁸ Economic conditions have been linked to mortality (Ruhm 2000), so state unemployment rates collected from the Bureau of Labor Statistics are included.

As mentioned previously, in an effort to mitigate any possibly endogeneity, I include in each model a control for the adoption of state-mandated employer-offered mental health insurance coverage outlined in Klick and Markowitz (2006) and two common types of tort reforms (Avraham 2006).¹⁹ This will hopefully capture any unobserved discrepancy between trends in mental health and perceived trends in mental health.

Another variable that might matter in these model specifications is the number of psychologists per state. Potentially, psychologists might migrate to states with more psychologist-friendly laws. Marcotte and Markowitz (2009) find this to not be the case, so it is not of great concern. Nonetheless, I include the rate of psychologists per 100,000 people in the state gathered from the Area Health Resource File in all models.²⁰

4. Results

4.1. Estimation

Table 3 reports the estimation results of the effect of state *Tarasoff* laws on the natural log of NCHS homicide rates. Each model estimate is weighted by the square root of the state population and includes state and year fixed effects, state-specific time trends, demographic and economic controls, and robust standard errors clustered at the state level to allow for correlation of the error term within states across time.²¹ Columns 1 and 3 of Table 3 estimate equations (1) and (2), respectively, while columns 2 and 4 are estimates of equations (3) and (4), respectively. Table 4 replicates Table 3 using the UCR's SHR data on homicides by nonstrangers.

Table 3 shows an effect of mandatory duty-to-warn laws of between 5 percent

¹⁷ As pointed out by an anonymous referee, the magnitude of the effect should not fluctuate much at the inclusion or exclusion of covariates.

¹⁸ The results are insensitive to the inclusion of other typical measures of crime such as assault, larceny, or burglary rates.

¹⁹ These include caps on total damages and whether the state has a patient compensation fund.

²⁰ A vast array of other covariates have been considered including demographic controls (Ruggles et al. 2009), drug and alcohol controls (Levitt 2004; Markowitz 2005), and political controls (Shepherd 2009). The results are insensitive to the inclusion of these controls, so they are left out of the regressions.

²¹ The test developed by Wooldridge (2002) suggests serial correlation in the error. State-level clustering is used to control for this.

Table 3
Effect of State Duty-to-Warn Laws on Homicide Rates

	(1)	(2)	(3)	(4)
Mandatory duty	.069** (.028)		.054 [†] (.026)	
Mandatory duty (case law)		.064* (.036)		.040 (.034)
Mandatory duty (statutory law)		.087** (.035)		.076* (.036)
Mandatory duty likely (case law)		.016 (.043)		.013 (.041)
Discretionary duty	.029 (.108)	.033 (.108)	.017 (.101)	.023 (.101)
P-value of equivalence test		.571		.387
Adjusted R ²	.964	.964	.964	.964
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of homicides per 100,000 people as measured by the National Center for Health Statistics. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. Each model contains state and year fixed effects, state-specific time trends, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,121.

[†] $p < .10$.

* $p < .05$.

** $p < .01$.

and 6 percent. It is also worth noting that these estimates are largely insensitive to how the law is timed (over- or understated).

The expanded specification that accounts for the origin of the law is quite telling. The results are very robust to over- and understating the lifetime of the law. In addition, separating the laws by origin does not seem to make a difference to the sign and significance of each coefficient. Although the magnitudes fluctuate slightly, I fail to reject the null hypothesis that the mandatory-duty laws split by origin are equal. As mentioned earlier, since each test of equality of effect fails to reject the null hypothesis, this suggests that if laws created by courts are exogenous, statutory law is likely exogenous as well.

In comparing Table 3 to Table 4, in every case, the significance and sign of each law does not change. Given the readily identifiable victim standard required to impose a *Tarasoff* duty, I would expect *Tarasoff* laws to have a larger effect in explaining the variation in nonstranger homicides, as these are homicides more directly applicable to *Tarasoff*. Table 4 suggests an increase in the effect of around 9 percentage points (depending on the specification) when homicides are restricted to homicides by nonstrangers. This is consistent with the notion that duty-to-warn laws have a greater effect among victims whose murderer is known.

The coefficient on the discretionary-duty variable is occasionally negative across specifications but insignificant. The negative sign suggests that given the opportunity to decide when to report, therapists successfully distinguish between real threats and idle patient banter, but the large variance prohibits any sort of

Table 4
Effect of State Duty-to-Warn Laws on Nonstranger Homicide Rates

	(1)	(2)	(3)	(4)
Mandatory duty	.168** (.041)		.147** (.040)	
Mandatory duty (case law)		.235** (.067)		.209** (.059)
Mandatory duty (statutory law)		.165** (.046)		.156** (.051)
Mandatory duty likely (case law)		-.048 (.067)		-.060 (.075)
Discretionary duty	.054 (.129)	.043 (.133)	.018 (.129)	.010 (.132)
P-value of equivalence test		.334		.417
Adjusted R ²	.892	.893	.891	.892
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of nonstranger homicides per 100,000 people as measured by the Uniform Crime Reporting Program's Supplemental Homicide Report. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. Each model contains state and year fixed effects, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,088.

** $p < .01$.

meaningful interpretation. In general, however, we see a positive and persistent relationship between duty-to-warn laws and homicides.

4.2. Plausibility of the Magnitude

If *Tarasoff* actually prevents some homicides by issuing warnings to the potential victims, the indirect effect of damaged confidentiality on homicides would actually be larger than 5 percent. Evidence suggests, however, that the vast majority of those warned were already aware of the threat (Binder and McNiel 1996). If this is true, then the decrease in homicides by issuing warnings would be small, and the composition of the net effect would almost entirely be measured by the indirect effect.

Thus, is it plausible that an increase of .445 (5 percent of the average homicide rate of 8.9) in the homicide rate can be attributed to a major change in mental health law such as *Tarasoff*? While keeping in mind the vast body of literature that links mental health issues to crime,²² recall that these estimates depend on three conditions holding—that mentally ill criminals have access to mental health

²² Wilcox (1985) finds that nearly 70 percent of those arrested for homicide in Contra Costa County between 1978 and 1980 had serious mental health issues. Simpson et al. (2004) find that 9 percent of perpetrators of homicides in New Zealand display evidence of mental abnormalities. Shaw et al. (1999) find that 44 percent of all murderers in the United Kingdom had a lifetime history of mental illness and 14 percent were receiving mental health treatment. Similar proportions are true for Iceland, Denmark, Sweden, and Germany (Taylor and Gunn 1999).

professionals, that professionals have some ability to alter criminal behavior, and that *Tarasoff* actually damaged the necessary therapeutic confidentiality.

In addition to these conditions holding, in order for this effect to be plausible, murders would have to be actually committed by the mentally ill. There is strong evidence that this is the case.²³ In terms of plausibility of the magnitude, it is not evidence enough that the mentally ill commit crime, but rather that those who receive mental health treatment commit crime, including murder. Swinson et al. (2007) estimate that 10 percent of all murderers in the United Kingdom had received mental health treatment in the previous year. This proportion is likely still to be an underestimate of the true proportion of murderers affected by *Tarasoff* because it does not count those who would have accepted or received mental health treatment were it not for *Tarasoff*, as has been suggested in the literature (Wise 1978; Rosenhan et al. 1993; Klinka 2009). In addition, James and Glaze (2006) report that half of all convicted felons have mental health issues, and half of them receive some sort of treatment. Essentially, 25 percent of what can be considered a part of the pool of prospective murderers actively receive mental health treatment.

In a recent study, Jordan et al. (2002) find that 24 percent had received mental health treatment prior to incarceration. In one of the only large-scale surveys of mental health in the United States, the Department of Health and Human Services finds that 27 percent of the respondents who report having been arrested also report having received some sort of mental health treatment,²⁴ and 30 percent of convicted felons report having received mental health services (U.S. Department of Health and Human Services 1994).

Thus, crime is committed disproportionately by the mentally ill, and most estimates suggest that about half of mentally ill criminals receive mental health services. The fact that a nontrivial amount (25–30 percent) of criminals receive mental health treatment coupled with the notion presented here that 5 percent of all homicides are affected by state duty-to-warn laws suggests that these laws affect less than one in four criminals receiving mental health treatment. Recall that while a quarter of all criminals receive mental health treatment, up to half have mental health issues. So the pool of criminals affected by these laws²⁵ is at the very least a quarter of all criminals but could be as high as half of all criminals. This suggests that a 5 percent increase in homicides would affect between one in 10 and one in four mentally ill criminals.

In other terms, the average homicide rate per state per year in this sample is 8.9. Most research estimates that half, or 4.45, were committed by a mentally ill individual. The results here suggest that the homicide rate is 5 percent, or

²³ See note 22.

²⁴ Mental health treatment is defined as those who reported having visited public or private psychiatrists or mental health specialists, visited a mental health center, or received services from an outpatient mental health clinic.

²⁵ The pool includes those criminals who receive mental health treatment and those who would benefit from treatment but do not receive it.

Table 5
Effect of State Duty-to-Warn Laws on Homicide Rates with Lower Court Timing

	(1)	(2)	(3)	(4)
Mandatory duty	.075*		.054*	
	(.029)		(.026)	
Mandatory duty (case law)		.129*		.040
		(.072)		(.034)
Mandatory duty (statutory law)		.067*		.076*
		(.030)		(.036)
Mandatory duty likely (case law)		.040		.013
		(.031)		(.041)
Discretionary duty	.033	.030	.017	.023
	(.106)	(.106)	(.101)	(.101)
P-value of equivalence test		.421		.387
Adjusted R ²	.964	.964	.964	.964
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of homicides per 100,000 people as measured by the National Center for Health Statistics. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. In addition, these models account for the possibility that the behavior started to change at the trial or appeals level. Each model contains state and year fixed effects, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,121.

* $p < .10$.

* $p < .05$.

** $p < .01$.

.445, higher because of *Tarasoff*. This means that .445 of the 4.45 could possibly be attributed to *Tarasoff* or consequently that of all the people and situations that may have been altered based on *Tarasoff*, 10 percent were.

4.3. Robustness

There is another model specification that provides additional evidence of the effect of duty-to-warn laws. The timing of the court decisions in Tables 3 and 4 represent the decision of the highest ruling court. It is possible that *Tarasoff* laws began to alter patient and professional incentives at the trial or appellate court level, thus changing the year of uptake for states with court-made law. To test this, I specify a different model in which the variables *mc* and *ml* are timed to reflect the lower court ruling.²⁶ This only applies to states where the *Tarasoff* duty was discussed in the lower courts. In some cases in which a *Tarasoff* duty is implied (coded as “mandatory duty likely” in the data), the lower court opinion does not discuss the *Tarasoff* duty; thus the original coding is unchanged. Tables 5 and 6 replicate Tables 3 and 4 with the *mc* and the *ml* variables recoded to reflect the timing of the lower court opinions. Generally signs and significances do not change, though magnitudes fluctuate slightly.

²⁶ The majority of state rulings were made at the state supreme court level in states with appellate courts; thus, the lower court is the appellate court. Adjusting timing to the lowest court level did not yield substantially different results from those for the appellate court.

Table 6
Effect of State Duty-to-Warn Laws on Nonstranger Homicide Rates
with Lower Court Timing

	(1)	(2)	(3)	(4)
Mandatory duty	.091 ⁺ (.049)		.147** (.040)	
Mandatory duty (case law)		.136 (.095)		.209** (.059)
Mandatory duty (statutory law)		.087 ⁺ (.053)		.156** (.051)
Mandatory duty likely (case law)		.019 (.056)		-.060 (.075)
Discretionary duty	.031 (.130)	.029 (.131)	.018 (.129)	.010 (.132)
P-value of equivalence test		.421		.387
Adjusted R ²	.964	.964	.964	.964
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of nonstranger homicides per 100,000 people as measured by the Uniform Crime Reporting Program’s Supplementary Homicide Report. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. In addition, these models account for the possibility that the behavior started to change at the trial or appeals level. Each model contains state and year fixed effects, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,121.

⁺ $p < .10$.
^{**} $p < .01$.

The results from Tables 3–6 suggest robustness across data sources (NCHS and UCR’s SHR), coding of the independent variables of interest (overcounting and undercounting), and timing of court decisions. Another possible source of bias might be from an overly influential state that biases the results.²⁷ Initially, there is no reason to believe this is the case since the log transformation of the homicide rate makes a near normal distribution. Nonetheless, I excluded the most influential states on each tail of the distribution and found no significant change to the results.²⁸

Although it is unlikely, I can further test for endogeneity by checking for evidence of reverse causality. This is done by including a 2-year lead²⁹ of each law variable (Carvell, Currie, and MacLeod 2009). The lead law variables should not explain any of the variation in current homicides, and I find no significant leads.

To further the claim that these laws are not in response to an underlying trend in crime, as a falsification test I attempt to explain other measures of crime by

²⁷ Bias could also be introduced into the model if these laws were enacted as part of a larger health care bill. This was the case with Nebraska (Neb. Rev. Stat. sec. 38-3132), but dropping Nebraska does not significantly change the results.

²⁸ These results are available on request.

²⁹ In addition to the evidence presented here, 1- and 3-year leads of the duty-to-warn laws were included in each model and were found insignificant in almost every instance, which suggests that the laws do not reflect some underlying trend in crime.

Table 7
Effect of State Duty-to-Warn Laws on Manslaughter Rates

	(1)	(2)	(3)	(4)
Mandatory duty	-.040 (.104)		-.081 (.109)	
Mandatory duty (case law)		-.054 (.178)		-.082 (.171)
Mandatory duty (statutory law)		-.054 (.104)		-.085 (.118)
Mandatory duty likely (case law)		.053 (.080)		-.062 (.133)
Discretionary duty	-.569 (.483)	-.569 (.490)	-.646 (.514)	-.646 (.520)
<i>P</i> -value of equivalence test		.998		.986
Adjusted <i>R</i> ²	.673	.673	.676	.676
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of manslaughters per 100,000 people as measured by the Uniform Crime Reporting Program. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. Each model contains state and year fixed effects, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,025.

these duty-to-warn laws. In general, every state sets a lofty requirement of bodily harm required to induce a therapist's duty, such as "substantial risk of imminent and serious physical injury" (D.C. Code sec. 7-1203.03[a]), "serious physical harm . . . causing death" (Ohio Rev. Code Ann. 2305.51), or "explicit threat to kill or inflict serious bodily injury" (59 Okla. St. sec. 1376).³⁰ In addition, by definition if the potential crime is discussed with a therapist, it would not be considered manslaughter, as homicides require some sort of premeditation. Thus, manslaughter rates offer an interesting counterfactual of a trend in crime that should have nearly no relationship with *Tarasoff* laws.

Tables 7 and 8 replicate the estimation of equations (1)–(4), where the dependent variable is the natural log of the manslaughter rate as reported by the UCR database. As seen in Tables 7 and 8, duty-to-warn laws do not explain any of the variation in manslaughter rates in almost every specification. The lack of a significant effect on manslaughter rates suggests that what is being captured by the duty-to-warn laws is not some spurious trend in crime.

To further this falsification test, I replicate equations (1)–(4) with various measures of crime as the dependent variable.³¹ These dependent variables are the natural log of the auto theft rate, larceny rate, and robbery rate as measured by the UCR. In total, 30 coefficients of interest were estimated in 12 models, and only three of the duty-to-warn coefficients were significant at the 10 percent level. This is approximately what is expected and suggests that state duty-to-

³⁰ See generally Edwards (2010) for each state's specific standard of harm.

³¹ While of course excluding each measure of crime as a control in its own regression.

Table 8
Effect of State Duty-to-Warn Laws on Manslaughter Rates with Lower Court Timing

	(1)	(2)	(3)	(4)
Mandatory duty	-.095 (.082)		-.081 (.109)	
Mandatory duty (case law)		-.404 (.142)		-.082 (.171)
Mandatory duty (statutory law)		-.053 (.092)		-.085 (.118)
Mandatory duty likely (case law)		.102 (.094)		-.062 (.133)
Discretionary duty	-.590 (.485)	-.576 (.489)	-.646 (.514)	-.646 (.520)
P-value of equivalence test		.022		.986
Adjusted R ²	.674	.675	.676	.676
Law lifespan over- or undercounted	O	O	U	U

Note. State-level clustered standard errors are in parentheses, and all models are weighted by the square root of the state population. The dependent variable is the natural log of manslaughters per 100,000 people as measured by the Uniform Crime Reporting Program. The values in models 3 and 4 represent the specification for which each respective law is not counted until its first full year of enactment. Each model contains state and year fixed effects, political controls, and crime trend controls. A detailed outline of mandatory and discretionary duty-to-warn laws can be found in Edwards (2010). The sample size is 1,025.

warn laws do not explain any of the variation in crime except for that of homicides.³²

Another useful falsification test to measure the validity of panel data is to randomly generate placebo laws for neighboring states and monitor the rejection rate of the null hypothesis of the coefficients of interest (akin to Bertrand, Duflo, and Mullainathan [2004]). The main results in Tables 3, 4, and 7 were replicated in the following fashion: a set of placebo laws were randomly generated and regressed with the same specification as in the original table. This procedure was repeated 1,000 times for each table, and the rate at which the null hypothesis was falsely rejected at the 10 percent level was recorded. Those false rejection rates are, respectively, 15 percent, 13 percent, and 16 percent.

As additional evidence, the magnitude of the effect should be larger in areas with more psychologists. To measure this, the indicator variable of interest in Table 3, the measure of a state mandatory duty-to-warn law, is interacted with different levels of psychologists per capita. The results are displayed in Figure 3. Although there is some noise in the results, generally we observe that the magnitude of the effect increases with the presence of psychologists.

³² An additional robustness check was performed that split each law dummy variable into two new variables: the first represented the first 2 years of the new law, and the second represented the subsequent years. This was done to test any sort of heterogeneous time effect of the laws. Those results suggest no significant difference in the initial and subsequent year effects and are available on request.

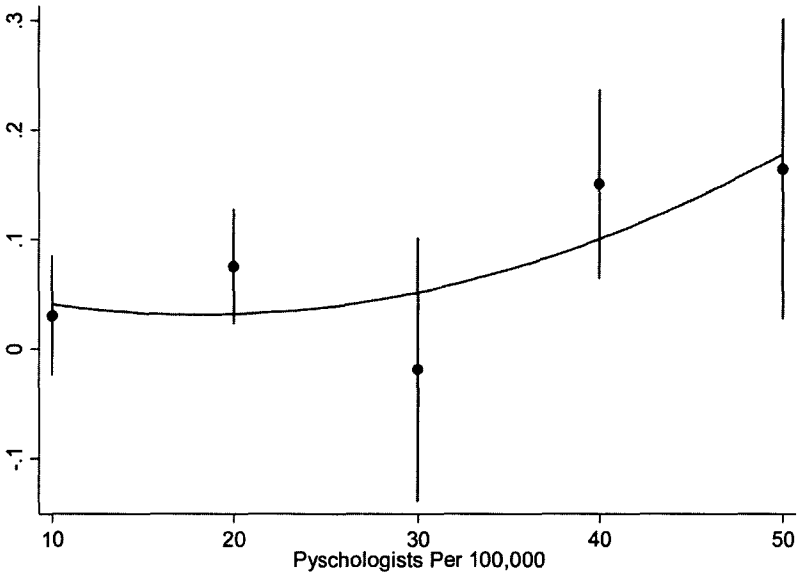


Figure 3. Psychologists per 100,000 people

5. Conclusion

The effect of state duty-to-warn laws on homicidal activity has been debated for decades. This paper shows that all else being equal, mandatory duty-to-warn laws cause an increase in homicides of 5 percent. This is consistent with previous literature suggesting that worsening mental health conditions lead to more crime and is plausible given the large number of mentally ill criminals who receive treatment. Duty-to-warn laws change the incentives of both the patient and the doctor. The original intention of the law was to deter dangerous patients from committing heinous crimes, but what may actually have happened was that the law changed the incentives to the patient and the doctor such that the patient has an incentive to withhold homicidal tendencies, and the doctor has an incentive to not explore homicidal tendencies. In addition, these laws increase the liability to health professionals and incentivize those professionals to not treat the most at-risk patients; at the very least they make the current state of the law abundantly clear to the patient so as to suggest suppression of the most dangerous statements and leave the psychologist in liability-free ignorance of the true mental state of the patient. As a result the mental help needed to treat the patient is forgone, and all too often violence ensues.

I find these results to be robust across a multitude of specifications and falsification tests. The policy implications are simple and fairly easily employed. A change in law to no duty or discretionary duty should decrease homicides.

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