Assessing reporting patterns of child sexual abuse within the Catholic Church using discontinuities in model parameter timeseries ☆

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A R T I C L E   I N F O

A B S T R A C T

Prior to 2002, little was known about sexual abuse within the Catholic Church. After the Boston Globe broke the story about John Geoghan – a priest in the Boston Archdiocese who was accused of abusing numerous children, convicted of one count of indecent assault, and eventually murdered in prison – the Church had many questions to answer. To this end, the United States Conference of Catholic Bishops (USCCB) commissioned John Jay College of Criminal Justice to research the nature and scope, as well as the causes and context of child sexual abuse within the Catholic Church.

This research analyzes the data from the John Jay studies using a new quantitative technique, capable of adjusting for distortions introduced by delays in abuse reporting. By isolating discontinuities in model parameter timeseries, we determine changes in reporting patterns occurred during the period 1982–1988. A posteriori to the analysis, we provide some possible explanations for the changes in abuse reporting associated with the change-point. While the scope of this paper is limited to presenting a new methodological approach within the frame of a particular case study, the techniques are more broadly applicable in settings where reporting lag is manifested.

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1. Introduction

The 1980s brought much attention to the issue of child sexual abuse, in part because of an increase in the number of cases being identified or reported to authorities (SPS Name, SPS Year). According to Jones and Finkelhor (2001), data from child protective services (CPS) indicate that in the 1990s there was a substantial decline in child sexual abuse. In addition, the authors highlight multiple reasons as to how the data indicate such a decline. For instance, they state that the number of substantiated cases has decreased nationally in a gradual fashion and that reports of abuse declined 26% from 1991 to 1998. There are many sources of data that suggest this downward trend in sexual victimization is legitimate: the National Crime Victimization Survey (NCVS), National Child Abuse and Neglect Data System (NCANDS), the Minnesota Student Survey, and data from CPS agencies around the nation. Recent data from NCANDS shows that the national estimate has leveled-off (Child Maltreatment, 2004) and results from the Minnesota Student Survey indicate that sexual abuse rose slightly between 1989 and 1992 followed by a 22% drop through 2001. Finkelhor and Jones (2004) suggest that at least part of the drop in cases of sexual abuse is real and not a reflection of reporting patterns or changes in the definition of sexual abuse. However, changes in reporting patterns and delays present a real obstacle when attempting to estimate the

actual prevalence and incidence of sexual abuse. The purpose of this paper is to provide new quantitative techniques to correct for the distortions introduced by delays in abuse reporting. While we utilize data on child sexual abuse in the Catholic Church as our example, these techniques may prove to be of independent interest in other studies where reporting lags exist. While methods exist to overcome reporting lags, the purpose of our paper is to introduce new quantitative methods to do so. Our objective is to analyze historical abuse data in order to isolate probable turning points at which the policy landscape changed, and the manner in which it influenced abuse occurrence and/or reporting.

1.1. Sexual abuse in the Catholic Church

Until recently, little information was available regarding the sexual abuse of children by Catholic priests. In 2002, the case of John Geoghan came to the forefront of media attention. Geoghan, a priest in the Boston Archdiocese, was accused of abusing numerous children, convicted of one count of indecent assault, and was eventually murdered in prison. Many questions were being asked of the Church, but at the time, nobody understood the magnitude of the sexual abuse crisis. The Church commissioned two studies to address their questions, as well as the questions that were being asked by others (John Jay College, 2004, 2006). A study of the Nature and Scope of the problem was released in 2004 (John Jay College, 2004) and was almost entirely descriptive. A supplementary report, which addressed the estimation of the overall program, patterns and duration of abuse, and reporting patterns, was released in 2006 (John Jay College, 2006).

This is not to say that researchers were not studying abuse in the Church prior to the John Jay studies. Research was being conducted, but there were no national estimates of abuse within the Catholic Church at the time of the John Jay studies (Andrews, 1999; Flynn, 2000; Fones et al., 1999; Goetz, 1992; Irons and Laaser, 1994; Kafka, 2004; Loftus and Camarago, 1993; Mendola, 1998; Sipe, 1990; Catholic League for Religious and Civil Rights, 2004; Ukeritis, 2005, but see Terry, 2008). These studies are varied in scope, sample, and methodology, but do offer some insight into sexually abusive behavior within the Church. For instance, in a sample of 1,322 priests, Loftus and Camarago (1993) estimated that 27.8% reported having engaged in a sexual relationship with an adult woman and 8.4% reported sexual misconduct with a minor. In contrast, Sipe (1990) concluded that 4% of priests had a preoccupation with adolescents, with approximately 2% engaging in pedophilic behavior. Additionally, an estimated 20–40% of priests engaged in sexual misconduct with adults. In a study of 19 clergymen, of which 17 were Catholic priests, Fones et al. (1999) found that 39% of the sample had offended against adolescents. One must be cautious in interpreting these results, as small sample sizes or emphasis on one region or diocese make it unlikely that they are generalizable.

The John Jay studies are notable because they offer the only national level assessment of the nature and scope of child sexual abuse within the Catholic Church over a 52 year period (1950–2002). The aim of the first study was to better understand the number of offenders and victims, situations in which the abuse occurred, types of abuse, and financial impact on the Church. Researchers gathered data from 97% of all Catholic dioceses and 64% of religious communities, representing 99% of the Catholic population and 83% of religious priests, respectively.

In all, 10,667 victims made allegations of sexual abuse against 4392 priests and deacons (4% of all active priests in ministry during the years of the study). The extent of sexual abuse appears to be consistent across region and across size of diocese, with 3–6% of priests per region having allegations against them in both cases. The majority of victims were male (81%), between the ages of 11 and 14, with approximately 6% being under the age of 7. Finally, based on the data available at the time of the study, it was estimated that sexual abuse peaked in the late 1970s. It was noted that, given significant reporting delays, more victims would probably disclose abuse at a later date (John Jay College, 2004; Terry, 2006). A second study on the causes and contexts of sexual abuse was published in 2011 (John Jay College, 2011), and research in the area is still being conducted by John Jay researchers. Placed in a broader context, the causes and contexts research aims to put the Church crisis in a larger societal context by understanding the historical nature of the abuse, the underlying pathologies of priests with allegations, and the overall impact of victimization on the Church, priests, victims, and the entire Catholic Community.

1.2. A broader societal context

Estimates from these studies suggest that there are major differences between abuse in the Church and that which occurs within the general population (John Jay College, 2004, 2006). For example, 81% of victims in the Church were male and though data on the incidence and prevalence of child sexual abuse is varied, it appears that girls are more likely to be victimized than boys in other populations (John Jay College, 2004, 2006). For instance, Bolen and Scannapieco (1999) found that the overall prevalence of abuse was 13% for males and between 30% and 40% for females, respectively. Moore et al. (1989) found that 15.3% of females and 5.9% of the males experienced some form of sexual assault and MacMillan et al. (1997) stated that 12.8% of females and 4.3% of the males reported a history of sexual abuse during childhood. Approximately 51% of all allegations within the Church were for children between 11 and 14 years of age. In contrast, Langan and Harlow (1994) found that children under 12 years of age made up half of the cases of forcible fondling, forcible sodomy, and sexual assault with an object that were reported to police.

Both within the Church, as well as the general public, delays in reporting and non-disclosure of abuse make it difficult to ascertain the extent of the problem. Boney-McCoy and Finkelhor (1995) determined that only 5.7% of incidents were ever reported to the police. Finkelhor et al. (1990) found that 27% of the females and 16% of the males in their study disclosed a history of childhood sexual abuse and 42% of the males and 33% of females never disclosed abuse prior to the study. These

statistics suggest that female victims are more likely to report abuse than male victims. In addition, empirical studies on the disclosure of child sexual abuse indicate that a large percentage of victims delay disclosure or do not disclose at all (Devoe and Coulborn-Faller, 1999; Gries et al., 1996; Lamb and Edgar-Smith, 1994; Walrath et al., 2003). This is significant, given the stark contrast between abuse within the general population and that which occurred within the Catholic Church. Since the majority of victims were male, it is very likely that they will delay disclosure for a longer period of time than their female counterparts. However, there are other reasons why victims elect not to report. Other studies have found similar results. For instance, Paine and Hansen (2002) suggest that victim-perpetrator relationship is a more salient factor in disclosing than is gender.

Studies show that when the perpetrator is known to the victim, the victim is less likely to report the offense or to finally report after a delay (Arata, 1998; Hanson et al., 1999; Smith et al., 2000; Wyatt and Newcomb, 1990). In Arata's study, 73% of the victims did not disclose the abuse when the perpetrator was a relative or stepparent, and 70% did not disclose when the perpetrator was an acquaintance. Individuals who are victims of contact offenses or more serious forms of sexual abuse are less likely to report, but these findings are not consistent across studies (Arata, 1998; DiPietro et al., 1997; Gries et al., 1996; Hanson et al., 1999). While some studies suggest that the more serious or severe cases are more like to be reported (DiPietro et al., 1997; Hanson et al., 1999), others find that it is lower-level sexual abuse, such as fondling, that result in disclosure (Arata, 1998; Gries et al., 1996). It is possible that these inconsistencies are more a function of the definitions utilized in the studies, opposed to actual differences in reporting. Age and developmental variables may also influence reporting, but there is considerable debate in the research. Lamb and Edgar-Smith (1994) hypothesize that children who are capable of anticipating unsupportive reactions may elect not to disclose abuse, though they say that these children may wait until adulthood, when they can choose appropriate people, to disclose to. Roesler and Weissman-Wind (1994) found that 33.3% of their subjects did not disclose their abuse during childhood because they feared for their safety and others have found similar results (Berliner and Conte, 1995; Sorenson and Snow, 1991). Keary and Fitzpatrick (1994) found that children over the age of five, who had previously disclosed sexual abuse, were more likely to disclose this information during formal assessment, but the opposite was true for children under five. This finding is supported in the work of DiPietro et al. (1997), who found that developmental growth promotes disclosure.

The above discussion of the issues related to disclosure illustrates the inherent problems in any study of sexual abuse, especially those dealing with reporting lags or trends. The John Jay research team accounted for many of these factors in the Nature and Scope study (John Jay College, 2004). Given that many of the factors associated with delays in reporting and non-disclosure are present in the Church, it is possible that many victims have yet to come forward. Those that continue to come forward may shift the peak of abuse forward into the 1980s or later. It is also possible that macro-level forces influence individuals to disclose. The data collected in the John Jay study (described below) invites us to develop new analytic techniques to account for these important reporting lags.

The techniques, presented here, are used to determine points in time when reporting patterns changed. Most significantly, any conclusions drawn using these techniques today are robust against information collected through future abuse reports (including reports that concern the past). It is important to note that while the techniques presented can be used to draw robust conclusions concerning changes in reporting patterns, the analysis itself is silent regarding the causes of the change, which might be because of a shift in abuse prevalence, the reporting climate, or both.

2. Data

Given the mandate by the USCCB regarding the original descriptive study, three survey instruments were created. The Diocesan/Order Profile was created to address the number of reported cases in each diocese/eparchy or religious community. The Cleric Survey was completed on all priests against whom an allegation of sexual abuse had been made. This survey contained 17 questions and 18 follow up questions and was designed with multiple aims in mind. First, historical data provided insight into the seminary the individual attended, whether he had been transferred between dioceses and/or parishes, and whether he had any known medical, psychological, or substance abuse issues. Next, the survey sought demographic information about each individual who reported abuse by the specific priest. This included the number of allegations and the age and gender of the victim(s). The final goal of the Cleric Survey was to better understand the actions taken by the Church to address allegations against each priest. The Victim Survey sought to address characteristics of each alleged abuse case, including each incidence of abuse, the age and year at the time of the offense, the age at report, and the time frame of the abuse. The Victim Survey also incorporated the method by which the abuse was reported and the type of enticements the alleged priest offered to coerce the individual into the sexual act. For an in depth review of each survey and the comprehensive results of the Nature and Scope study, see John Jay College (2004) and Terry (2008). As noted, the mandate for the descriptive study was broad and the combination of the three surveys provided a "comprehensive assessment of the nature and scope of the problem of sexual abuse of minors by priests" (Terry, 2008, p. 554).

One of the major findings from this comprehensive study was that sexual abuse increased until the late 1970s, followed by a sharp decline after 1985. This finding is important to note, but it does not account for changes in reporting patterns. The current analysis is more concerned with these changes than with actual peaks or declines. Our purpose is to provide future researchers with a quantitative technique to account for such changes when assessing data on trends in victimization and reporting.
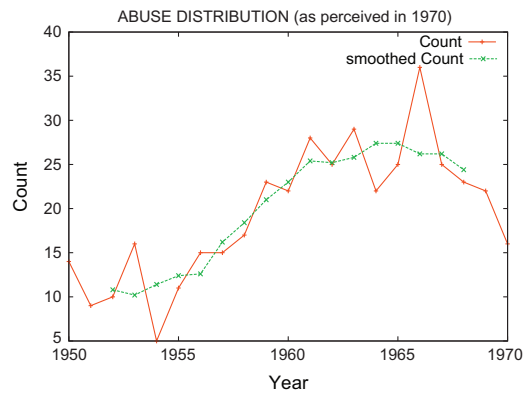
Fig. 1. Abuse over time, as would be measured in a 1970 study.

The raw data on which this research is based, is a four column dataset extracted from the Victim Survey within the 2004 Nature and Scope study. The columns of this 8748 case data set were: victim Identifier (*ID*), the year the abuse reportedly began (*BeginYear*), the year the abuse is reportedly ended (*EndYear*), and the year the abuse was reported (*ReportYear*). In cases where the abuse was intermittent, the beginning of the first abuse interval was taken as the value of *BeginYear*, and the end of the last abuse interval was taken as the value of *EndYear*. Each of the 8748 cases thus represents a victim. The *BeginYear* and *EndYear* values in our data set ranged between 1950 and 2003.

To arrive at our new analytic strategy, we must first construct a parametric family of auxiliary datasets from our raw data. To begin, we introduce a parameter *R*. For each choice of *R*, we will construct a new table, called $\hat{f}_R$. This table has two columns: *AbuseYear*, and *Count*. For example, suppose that we have chosen *R* = 1970. Then $\hat{f}_{1970}$ will quantify *our beliefs in 1970*, concerning the variations in abuse occurrence (over the years prior to 1970). Specifically, $\hat{f}_{1970}$ is constructed accordingly:

1. Discard all rows from the raw data for which *ReportYear* > 1970.
2. For each *AbuseYear* $x \leqslant 1970$:
   - Let *Count(x)* be the number rows (in the remaining raw data table) for which *BeginYear* $\leqslant x \leqslant$ *EndYear*.
   - Add a new row to the $\hat{f}_{1970}$ table, associating *AbuseYear x* with the *Count(x)*.

Fig. 1 is a graph of $\hat{f}_{1970}$, illustrating how *Count(x)* varies as a function of the *AbuseYear x*. Because the construction of $\hat{f}_{1970}$ excludes abuses that were reported after 1970, the graph reflects what our beliefs concerning fluctuations in abuse occurrence *would have been* in 1970. The jaggedness of the curve represents the beginnings and ends of specific abuse cases. In order to lower sensitivity to microscopic effects of individual cases, we make a smoothed version, which we refer to as simply f_{1970}. To achieve this, we use straightforward windowing, taking $f_{1970}(T)$ to be the average value of $\hat{f}$ over the 5 year interval $[T-2, T+2]$. In what follows, we will refer to f_{1970} as the **abuse occurrence function** known in 1970. We constructed 54 of these auxiliary two-column tables:

$$f_{1950}, f_{1951}, f_{1952}, \ldots f_{2002}, f_{2003}.$$

In the remainder of the paper we will analyze this *sequence* of 54 functions, with the objective of detecting discontinuities within the *sequence of functions*.

3. Preliminary observations

From the graph in Fig. 1, we see that to researchers leading a hypothetical study in 1970, it might have appeared that the number of abuse cases had begun to decrease after 1964. However, such a conclusion would likely be erroneous, since the apparent decline in 1964–1970 could be an artifact caused by the inherent lag in abuse reports. By 2002, enough abuse reports had become available to suggest that abuse cases actually increased between 1964 and 1968. This can be verified in Fig. 2, where the table f_{2002} is rendered. For entirely analogous reasons, and in spite of the geometry of f_{2002}, researchers in a hypothetical 2002 study could not justifiably conclude that the number of abuse cases declined after 1979, since once again, the apparent decline in the years 1980–2002 might be due to inherent delays between abuse occurrence and abuse reporting. In summary, understanding trends in abuse is heavily mathematically dependent on the year in which a study is being conducted. True abuse prevalence rates will always be mathematically inaccessible because of delays and non-disclosure. From a social science standpoint, we can estimate abuse prevalence using mathematics and the knowledge we have at the time of the study. However, from a purely mathematical perspective, it is possible to robustly discern from the data alone when abuse reporting patterns changed significantly.
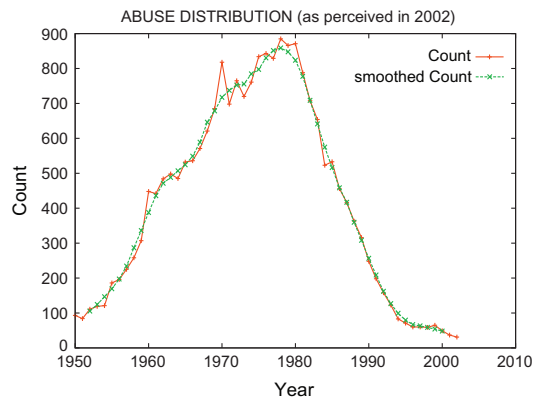
Fig. 2. Abuse frequency over time, as would be measured in 2002 study.

In our analysis, we are not concerned with any particular abuse reporting function. We examine the sequence of 54 functions and seek critical Y values at which the emerging sequence of functions changes course. More precisely, we will isolate a critical year y for which the sequence $\ldots, f_{y-2}, f_{y-1}, f_y$ has a markedly different character, compared to the sequence $f_{y+1}, f_{y+2}, f_{y+3}, \ldots$.

Consider the three graphs in Fig. 3, each of which has 11 curves. The top graph shows the abuse occurrence functions $f_{1970}, f_{1971}, f_{1990}, \ldots, f_{1979}, f_{1980}$. The middle graph shows the abuse occurrence functions $f_{1980}, \ldots, f_{1990}$. Finally, the bottom graph shows the abuse $f_{1990}, \ldots, f_{2000}$.

In the topmost of the three graphs, the peak of the curve for f_{1980} happens in 1975, which is to the right of the peak of the curve for f_{1970} located at 1965. The peak year for curves f_y increases as y increases. In contrast, in the bottom-most of the three graphs, the peak of the curve for f_{2000} happens in 1979, which is to the *left* of the peak of the curve for f_{1990} located at 1982. In this decade, the peak year for curves f_y *decreases* as y increases. The observed differences indicate that the dynamics of abuse reporting in the period 1990–2000 are different than the abuse reporting in the period 1970–1980. The sequence of abuse occurrence functions experiences a regime change at some point in the intervening decade, 1980–1990. A simple visual inspection of the curves in the middle graph in Fig. 3 does not clearly indicate at what value of y the peaks of f_y ceased moving to the right (as they did in 1970–1980) and started moving to the left (as they did in 1990–2000). Therefore, a more sophisticated approach is called for to identify the precise year when the regime change took place. The remainder of the analysis is devoted to isolating the time during which the change in reporting patterns occurred.

3.1. Model parameter timeseries

Our analysis begins by noting that each of the functions f_y in Fig. 3 is unimodal, symmetric, and near normal, as evidenced in the Q–Q plots of each of the abuse functions (see Fig. 4). Given this, we choose to model each of the abuse occurrence functions f_y as a Normal distribution. For each function f_y (suitably normalized) we can find a Gaussian distribution $N(\mu_y, \sigma_y)$ that provides a maximum likelihood model for f_y. The parameters μ_y and σ_y can be determined using the Expectation-Maximization (EM) algorithm (Dempster et al., 1977; Ghahramani and Jordan, 1994). Upon solving the resulting 54 EM problem instances, (i.e. determining the 54 Gaussians that best fit each of the functions $f_{1950}, f_{1951}, f_{1952}, \ldots, f_{2002}, f_{2003}$) we plot μ_y and σ_y as a function of y in Fig. 5. We refer to this graph as a **model parameter timeseries**. Note that the value of μ_y (left axis) represents the peak abuse year (Gaussian mean), while σ_y (right axis) represents spread of abuses years (Gaussian standard deviation), as would have been *measured* by a hypothetical study conducted in year y.

Both model parameters μ_y and σ_y generally increase over time, as would be expected, since the total time interval over which cases may occur grows as time passes. However, as can be seen from the figure, the rate of growth (slope) of the curves is not constant. In particular, the value of μ_y increases with near constant slope until 1982, when a change in the slope occurs. In roughly the same year, the behavior of σ_y changes from having a positive slope to having a slope close to zero (or slightly negative). This new regime persists for about 5 years, until around 1988. In 1988, the slope of μ_y becomes close to zero (or slightly negative), while σ_y reverts to having a positive slope. These discontinuities indicate that 1982 was the beginning of one regime change in abuse reporting, while 1988 was a second. Since μ_y is the mean year of all abuses known by year y (as determined by a Gaussian model), the quantity $y - \mu_y$ measures how far in the past the mean year of abuses is, relative to the year of the study. Fig. 6 illustrates $y - \mu_y$ as a function of the study year y. One notes that a linear regression on pre-1982 data points determines that $y - \mu_y$ increases with slope 0.31, while regression on post-1988 data finds it increasing with a slope of 1.0; in the intervening years, the slope of $y - \mu_y$ is effectively 0. The inflection points of this essentially piecewise linear curve confirm that 1982 was the beginning of one regime change in abuse reporting, while 1988 was a second.

Most significantly, unlike the abuse occurrence functions f_R presented in the previous subsection (which change as R changes), model parameter timeseries (Fig. 5) are *robust* against the arrival of future abuse reports. For example, if this paper had been written in 1980, we would have obtained only half of the graph, but the *structure and shape of the curves would be*
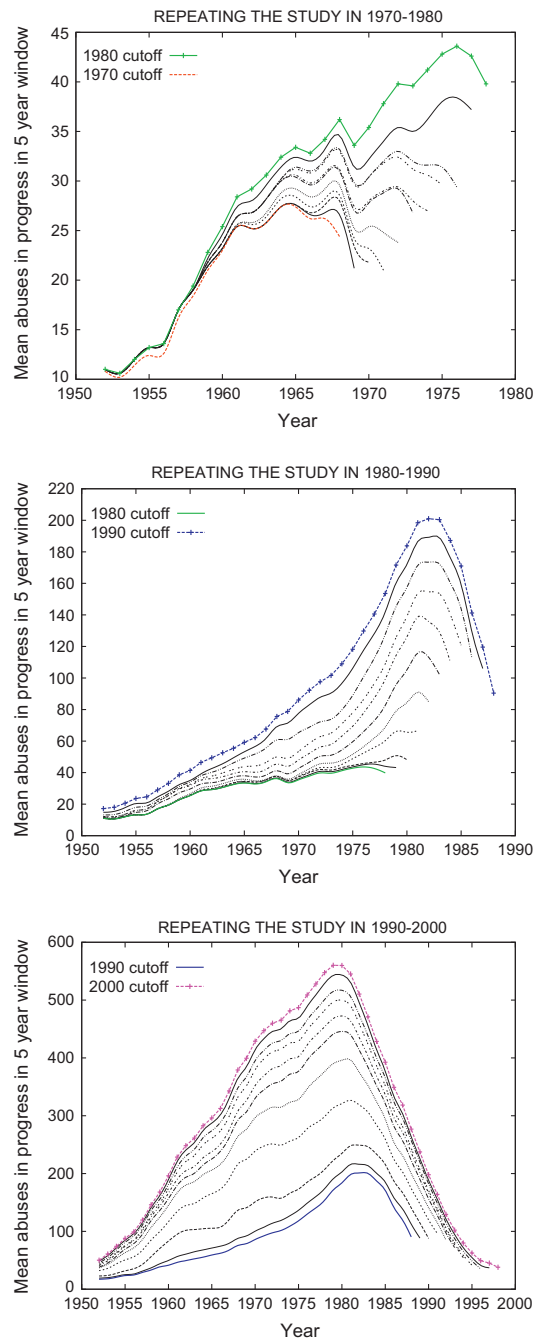
Fig. 3. Abuse over time, as measured in hypothetical studies during 1970–2000.

exactly as seen in the left half of Fig. 5. Alternately, if this paper was rewritten based on data available in 2050, the model parameter timeseries would extend twice as far to the right, but the curves in Fig. 5 would appear as an initial segment of the timeseries. In short, model parameter timeseries (and hence conclusions drawn from their analysis) are robust against the passage of time, and artifacts introduced by lag in abuse reports.

3.2. The general technique

To make the methodology presented more readily transferrable to other settings, we restate it here in a more general form:
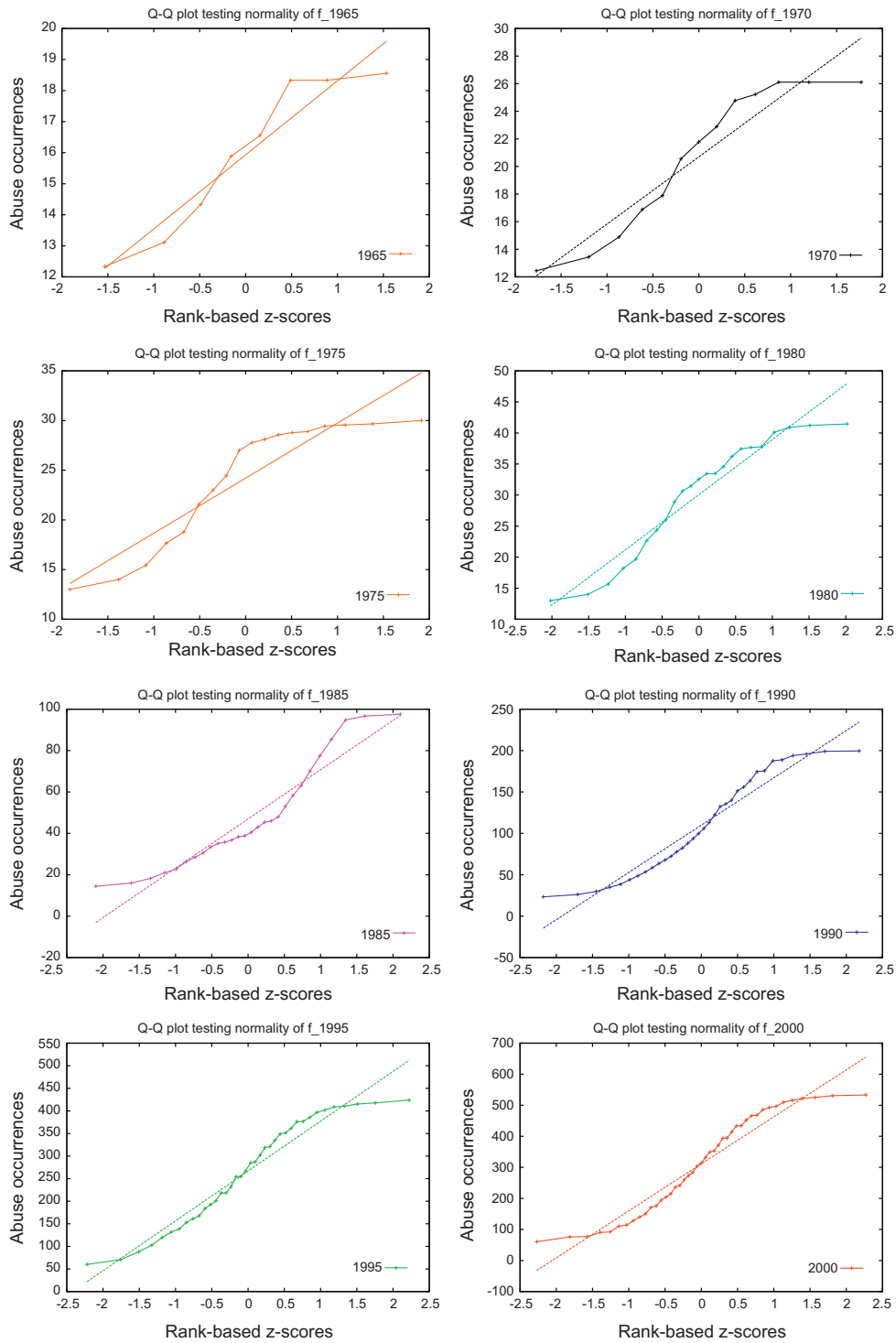
Fig. 4. Q–Q plots evaluating near normality of abuse reporting functions.

1. Over a series of years, we collect data concerning a phenomenon of interest.
2. We tabulate a sequence of functions

$$\ldots, f_{y-1}, f_y, f_{y+1}, \ldots$$

where f_y is determined using only that subset of the data that would have been available by year y.
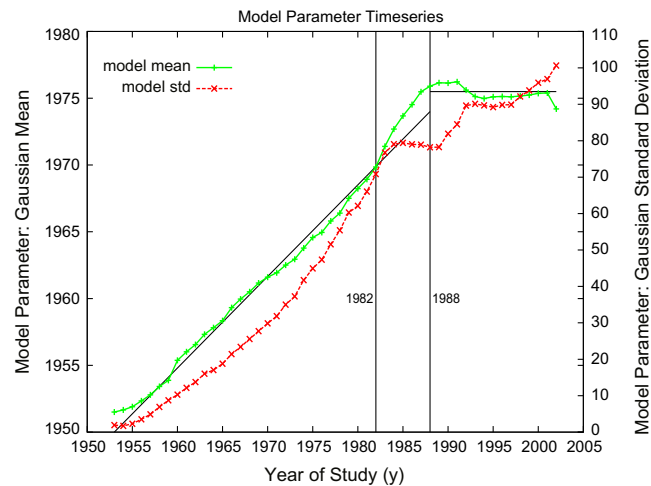
Fig. 5. Model parameter timeseries: Gaussian mean (left *y*-axis) and standard deviation (right *y*-axis) versus year of study.
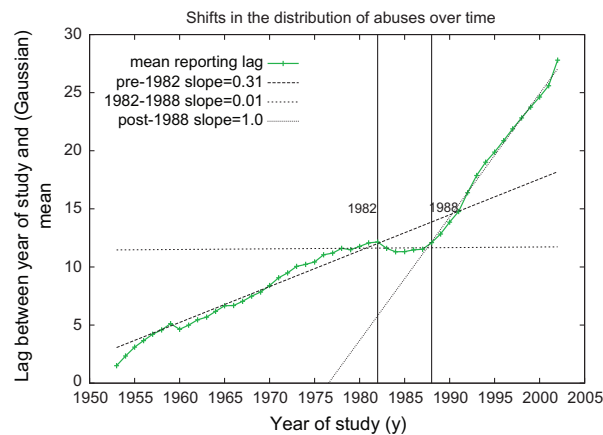

Fig. 6. The lag, $y - \mu_y$ over time.

3. We select a family of parametric models $\mathcal{F}$, which the functions f_y are hypothesized to be drawn from. The family $\mathcal{F}$ might, for example, be taken to be all the normal distributions (as we did in this research), or all the linear functions, or something else. The choice of family requires an understanding of the underlying system being measured by the functions f_y, and validated using distribution fit (e.g. using Q–Q plots). Each candidate family $\mathcal{F}$ has an associated set of free parameters $\bar{\alpha}$. For example, mean and standard deviation are the free parameters corresponding to the family of normal distributions, while slope and y-intercept are the free parameteters of the family of linear functions of one variable, etc. Having chosen a family of models.

4. We select, for each function f_y, the model M_y in $\mathcal{F}$ that best fits the function. This selection process might involve estimation (as it did here via the EM algorithm), or it might be exact (e.g. via regression analysis) when the family of models simple enough to be analytically solvable. Each model M_y embodies the corresponding function f_y.

5. Since each M_y specifies parameter values $\bar{\alpha}_y$ we can view the sequence of models M_y as a timeseries of model parameters

$$\ldots, \bar{\alpha}_{y-1}, \bar{\alpha}_y, \bar{\alpha}_{y+1}, \ldots$$

6. We analyze the above timeseries of model parameters for discontinuities in their first derivative. We then isolate the years in which these discontinuities appear.

4. Discussion

Findings from this new quantitative analysis show that reporting patterns within the Church did not come forward at a constant rate. In 1982, something happened that changed the way or the type of reports coming forward. Then in 1988, the pattern changed again. Prior to 1982, approximately 80% of the allegations of abuse were made within one year of the alleged

event (John Jay College, 2011), but by 1988, the cases being reported were older cases coming forward after significant reporting lags. Several questions stemming from this analysis can be raised. Did the abuse that was reported within one year of the event look different than the abuse that was reported after years of delay? Was it a change in the Church's response to allegations of abuse that stymied or prompted reports? Did larger societal issues influence changes in reporting? The possible answers to these questions cannot be answered using this new analytic technique. Rather, the technique provides mathematical turning points at which a regime change occurred. Social scientists can then use available research on both micro and macro level factors affecting such changes. The remainder of the discussion focuses on answering the many questions posed by the findings of the new technique.

From the 1950s to the late 1970s, only 509 allegations of sexual abuse were made. Of those, 80% had been reported within one year of the abuse. In the 1980s, over 1,000 allegations of abuse were made and this number continued to rise through the 1990s and into the early 2000s. Between 2000 and 2002 over 4500 cases were reported with alleged abuse dates in the 1970s. It does not appear, from the John Jay studies that the type of abuse changed over time. In fact, the Nature and Scope study shows that across region and across type of abuser, stable patterns emerge (John Jay College, 2004, 2006). However, one interesting caveat is that in the 1950s and 1960s a larger percentage of the victims were female. Beginning in the 1970s, the percentage of male victims was consistently larger than 80%. We know from prior research that girls are more likely to report abuse than boys (Finkelhor et al., 1990). However, this is not the only factor related to the clustering of allegations into the 2000s. It would appear then, that the response of the Church, or larger societal factors had greater influence.

Prior to the 1980s, the Diocesan response to an allegation was equally as likely to be a reprimand and return to duty or a referral for evaluation with a professional (John Jay College, 2011). By the 1980s there is a shift in this response. At that time, over 50% of priests with allegations were sent for an evaluation, compared to only 12% receiving a reprimand and return to duty. However, at the time, relatively few cases were reported to Diocesan officials. When allegations were reported, several factors influenced case outcomes. According to John Jay College (2011), few victims wanted to confront the priest and some were even pressured to keep the incident confidential. As we know from former research, those that anticipate unsupportive reactions (Lamb and Edgar-Smith, 1994) or who fear potential negative consequences (Berliner and Conte, 1995; Sorenson and Snow, 1991) are more likely to delay disclosure. In addition, findings from the Nature and Scope study suggest that most victims met their alleged offender at a social event and quite often, the offender was well acquainted with the victim's family. Researchers have found that when a victim knows his/her abuser, he/she is less likely to report the abuse or to finally report after a significant delay (Arata, 1998; Hanson et al., 1999; Smith et al., 2000; Wyatt and Newcomb, 1990). Given the former Church response and the nature of the relationship between offenders and victims, it is no surprise that few came forward with allegations at the time of the abuse.

By the 1980s, sexual abuse was becoming less taboo. Certain heinous cases, including the disappearance of Jacob Wetterling and the rape and murder of two brothers by Wesley Alan Dodd, made national headlines and became household stories. Gerdes (2003) points out that by the 1980s civil courts were hearing more cases related to professional negligence and malpractice in child sexual abuse cases. In short, more people were having conversations about sexual abuse as a social problem. By 1985, almost all Dioceses had experienced an allegation of sexual abuse (John Jay College, 2004, 2011), and as such, changes within the Church, including updates to seminary education and organizational structure were being made. These changes, as well as the broader social changes occurring, may have influenced reporting patterns.

Attitudes about abuse within the Church changed in the mid 1980s when the Church could no longer ignore the most serious of all cases of abuse. In 1985, Father Gilbert Gauthe, a village pastor from Louisiana, pleaded guilty to sexually abusing eleven boys. It has been alleged that Gauthe molested over 100 boys in four parishes over a 20 year span. Though the Church may have been aware of some of his activities, it has been alleged that they simply assigned him to a new parish and he was not removed from ministry until 1983. Even after Gauthe admitted the abuse, the Diocese of Lafayette still hesitated in removing him. While similar failures have occurred, this particular case may have given other families and victims the courage they needed to come forward and report their victimization at the hands of clergy. Since that time, the Church has worked with Diocesan leaders to promote a direct course of intervention when reports of abuse are made USCCB (2002). While allegations of abuse within the Church continue to come forward, they represent those with significant reporting delays.

The findings from the use of this new analytic technique confirm findings from the original John Jay studies (John Jay College, 2004, 2006, 2011), but with a caveat. According to the John Jay research team, abuse peaked in the 1970s, but something changed around 1985 that caused the clustering of reports. We found that there were two changes in reporting: 1982 and 1988. The Church data were ideal for use here because so much attention had already been given to abuse and reporting patterns within this particular institution. Utilizing this new technique allowed for us to test its applicability on a dataset we already knew much about. Our findings suggest that the technique is a viable one when trying to ascertain very specific turning points in reporting patters. As such, the new mathematical techniques are of use within the fields of criminology and criminal justice and have far reaching implications. The fact that our analysis corroborates what is already known regarding reporting patterns within the Church only provides more confidence that one can utilize our technique in future arenas.

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