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12-1-2002

Legalized Abortion and the Homicide of Young Children: An Empirical Investigation

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Postprint version. Published in *Analyses of Social Issues and Public Policy*, Volume 2, Issue 1, December 2002, pages 239-256.
Publisher URL: http://dx.doi.org/10.1111/j.1530-2415.2002.00040.x

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Legalized Abortion and the Homicide of Young Children:

An Empirical Investigation

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Words in abstract: 204

Words in text: 4,389

Number of tables: 2

Number of figures: 6

Analyses of Social Issues and Public Policy, 2002, 2, 239-256.

Please access the journal's website for the published version of the paper.

Abstract

Recent research has drawn a link, sometimes a causal link, between the legalization of abortion in the late 1960s and early 1970s and the precipitous decline in crime in the 1990s. Abortion is posited to have reduced the number of potential victims and potential perpetrators, and the potential effect is examined when these individuals would be reaching their high-crime years. We examined a more proximal potential association between legalized abortion and homicide, specifically, the homicide of young children. Assuming that abortions occurred when the family had insufficient resources for the birth, one could hypothesize that children would have been at higher risk of homicide if born into these circumstances. We examined 1960-1998 U.S. mortality data for children under 5 years of age using an interrupted time series design. The legalization of abortion was not associated with a sudden change in child homicide trends. It was, however, associated with a steady decrease in the homicides of toddlers (i.e., 1- to 4-year olds) in subsequent years. Although in the predicted direction, the decrease in homicides of children under one year of age was not statistically significant. Competing explanations that could be examined in the data (i.e., changes in mortality classification) do not account for the findings.

Legalized Abortion and the Homicide of Young Children:

An Empirical Investigation

Nearly 30 years ago, abortion was legalized in the United States with the Supreme Court decision of Roe v. Wade. Before January 22, 1973, only five states allowed abortion to be performed legally and then only under certain circumstances (e.g., to prevent death, severe impairment, fetal deformity, or in the case of rape or incest) (Merz, Jackson, & Klerman, 1995). In 1973, approximately 615,000 abortions were performed in the United States (see Figure 1). Between 1973 and 1980, the number of abortions performed increased steadily by about 85,000 abortions annually. Throughout the 1980s and 1990s approximately 1.6 million abortions were performed each year. Both the number of pregnancies and the number of abortions have declined throughout the 1990s. In 1997, the most recent year for which U.S. data are reported, about 22% of pregnancies were terminated resulting in 1.2 million abortions (Koonin, Strauss, Chrisman, & Parker, 2000). There have been numerous attempts to alter Roe v. Wade (for a review of U.S. abortion policy since 1973, see Wilcox, Robbennolt, & O'Keeffe, 1998), and abortion remains a controversial topic in the U.S. (e.g., Russo & Denious, 1998).

Insert Figure 1 about here

Homicide, a substantial public health problem in the United States, has dropped precipitously since its peak in the early 1990s (e.g., Fox & Zawitz, 2000). The reasons for the decline are far from clear. Despite broad speculation and numerous claims of credit (e.g., the stabilization of crack cocaine markets, increased incarceration, changes in law enforcement

policies, a healthy economy), we do not know why crimes, including homicide, have decreased so dramatically.

Recent research by Donohue and Levitt (2001) examined a possible connection between legalized abortion and crime, including homicide. Their work, an econometric analysis using mostly law enforcement data, was vilified by persons and groups on both ends of the political spectrum, mostly, it seems for the moral and ethical implications of the question itself as well as for their statistical methods and the implications of some of their findings. The authors of two subsequent working papers used generally similar methods as Donohue and Leavitt but came to different conclusions – one found little evidence for a causal link (Joyce, 2001), whereas the other concluded that legalized abortion increases homicide (Lott & Whitley, 2001). (See Berk, Sorenson, Wiebe, & Upchurch [under review] for a critique of the studies.) Given the importance of the two issues to U.S. society, the question itself deserves further investigation using other methods. While the distal effects of legalized abortion on homicide will continue to be debated, we chose to investigate the potential of a more immediate effect.

The first link, to our knowledge, between legalized abortion and homicide in the published literature was made nearly a generation ago (Robertson, 1981). The researcher, comparing mortality data from 1971-1972 with those from 1974-1975, found with the data available at the time no association between legalized abortion and infant homicide, but did find an association between legalized abortion and non-vehicle accidental deaths. Two earlier studies, which examined overall mortality trends in the very young, found a negligible association between the legalization of abortion and fetal and infant mortality trends (Quick, 1978) and that an observed association between legalized abortion and overall infant mortality could not be distinguished from the ongoing trend of reduced infant mortality (Bauman &

Anderson, 1980). A letter about neonatal homicide following the legalization of abortion was published more than a decade after these three studies (Lester, 1992). To our knowledge, no published study, aside from the 1981 investigation, has empirically examined whether an association exists between legalized abortion and infant homicide and none have investigated whether an association exists with the homicides of 1- to 4-year olds.

We hypothesize that legalized abortion was associated with a subsequent reduction in the homicide of infants and toddlers. Eighty percent of fatal child abuse and neglect occurs among children less than five years old (e.g., McClain, Sacks, Froehlke, & Ewigman, 1993). A young child is more likely to be a homicide victim if the mother is unmarried, a teenager, or has not graduated from high school (Winpisinger, Hopkins, Indian, & Hostetler, 1991). Infants are at particular risk if the mother is young, has little education, and a previous child (Overpeck, Brenner, Trumble, Trifiletti, & Berendes, 1998). Although infants are at substantially higher risk of homicide than toddlers (e.g., Murphy, 2000), the child's caretaker is the most common assailant for both age groups (e.g., Jason, Gilliland, & Tyler, 1983). The caretaker is most likely to be the child's mother, father, or the mother's paramour (Jason et al., 1983), in other words, someone who would have likely participated in the decision as to whether to maintain the pregnancy.

It is not possible from the data we analyze in this paper to make any grounded statements about assailant motivation in the homicides of young children. We make no claim that premeditation figures significantly in the vast majority of homicides of infants and toddlers, particularly those at the hands of caretakers. Indeed, such homicides may not be intentional in the usual sense of the word (e.g., Christoffel, 1984). Parental frustration coupled with a lack of understanding of child development along with the physiological vulnerability of young children,

especially infants, can result in a fatality. For example, a parent can shake an 8-year old child with no long-term physiological consequences, but the same behavior with an 8-week old is likely to result in severe brain injury and possibly death.

Research on abortion seeking and motivations for abortion was typically based on small convenience samples in the 1970s (e.g., Bracken, Hachamovitch, & Grossman, 1974; Ford, Castelnuovo-Tedscim & Long, 1972; Friedman, Greenspan, & Mittleman, 1974; Rosen & Martindale, 1978). The research evolved to focus on the decision-making process of the woman (e.g., Blum & Resnick, 1982; Faria, Barrett, & Goodman, 1985; Friedlander, Kaul, & Stimel, 1984; Ortiz & Vazquez Nuttal, 1987; Smetana, 1981; Stevans, Register, & Sessions, 1992) and who she consulted (e.g., Luscutoff & Elms, 1975; Finken & Jacods, 1996). Recent investigations have examined how health information (e.g., HIV status, fetal anomalies) available through technological advances since Roe v. Wade affects a woman's decision to maintain or terminate a pregnancy (e.g., Johnstone, Brettle, MacCallum, Mok, Peutherer, & Burns, 1990; Schechtman, Gray, Baty, & Rothman, 2002).

The decision to have an abortion is typically based on multiple reasons (Torres & Forrest, 1988). The Alan Guttmacher Institute's (AGI) nationwide surveys of U.S. abortion providers produce the most comprehensive information about U.S. women seeking abortions. Data collected by AGI in 1987 (Torres & Forrest, 1988) indicate that women seeking abortion identified the most important reason for seeking an abortion to be that she can't afford a baby now (21%), is not ready for the responsibility of a child (21%), is concerned about how having a baby could change her life (16%), or has problems in her relationship or does not want to be a single parent (12%). The next two most common single reasons – is too young or not mature enough to have a child (11%) and has all grown-up children or all the children she wants (8%) –

reflect the fact that women seeking abortions are not a monolithic group. Ethnicity and race were not factors in the decision to seek an abortion when age, marital status, employment status, and parental status were taken into consideration. (For a reanalysis of these data with a focus on age, marital status, and child-bearing status, please see Russo, Horn, & Schwartz, 1992.) These findings from the U.S. are documented elsewhere as well, for example, in Sweden where financial concerns, worries about the relationship, and bad timing of the pregnancy were the most common reasons for seeking an abortion (Larsson, Aneblom, Odlind, & Tyden, 2002). Moreover, in a U.S. study of single, young Black women, most of who were on welfare and previously pregnant, the authors conclude that the decision to abort depends largely upon circumstances surrounding specific pregnancies rather than characteristics of the mother (Bracken, Klerman, & Bracken, 1978). Therefore, the real and perceived personal and household resources available to provide care for a child are important considerations in whether a woman has an abortion. Abortion may serve as a marker for parental perception of ability to provide and care for a child at that time.

But, in some sense, motivations affecting abortion decisions are, for this paper, beside the point. Ventura and colleagues (Ventura, Mosher, Curtin, Abma, & Henshaw, 2000) emphasize the obvious when they observe that the availability of means to either prevent or terminate a pregnancy matter. It is clear that with Roe v. Wade an important means of fertility control became far more accessible. And, unless women's motivations to end pregnancy also changed abruptly in that very same year, one can consider the possible short-term effects of Roe v. Wade without worrying a great deal about the underlying motivations of individual women.

Legalized abortion might have an effect on the homicides of both infants and toddlers. One could logically assert that the homicides of infants might be reduced because they would be

more likely to be born into a household in which they are wanted and in which resources are perceived to be adequate for their care. The homicide of toddlers might be reduced, in addition, because they are the beneficiaries of resources (emotional, financial, etc.) that otherwise would have gone to a newborn. Others might posit that the legalization of abortion would be associated with an increase in the homicides of young children because the general disregard for life represented by abortion would extend to children who have already been born. The present investigation assesses the trends in the homicide of infants and toddlers in association with legalized abortion; the data cannot, however, shed much light on associated underlying mechanisms.

Methods

Study Design

We used an interrupted time series design with the annual number of homicides of young children (newborns to 4-year olds) in the U.S to assess whether the homicides of young children decreased after the 1973 Supreme Court decision in *Roe v. Wade*. The *Roe v. Wade* decision constituted the intervention (i.e., the interruption in the time series). Given that the risk of homicide varies for young children (it is higher for those less than one year of age than for 1- to 4-year olds), we examined the effect of the intervention on these two age groups separately. For ease in describing these groups, we refer to those less than one year of age as infants and to the 1- to 4-year olds as toddlers.

Data and Data Sources

The number of children under age five who died of homicide each year from 1960 through 1998 was obtained from the National Center for Health Statistics (NCHS) (National Center for Health Statistics, 1960-1998). The study population consisted of all deaths of children

under age five that were classified as homicide by the edition of the *International Classification of Diseases* (ICD) in use at the time of the death (E964 and E980-985 in the ICD-7, used through 1967; E960-969 in the ICD-8 and ICD-9, used from 1968-1978 and from 1979 on, respectively) (International Classification of Diseases, 1955, 1969, 1977). Two annual time series were constructed for this period, one for infants (less than one year old) and another for toddlers (1- to 4-year olds). Each data value entered in the time series was the number of homicides occurring in the relevant age group each year.

Two changes in the classification system may have affected the number of deaths that were classified as homicides (see Table 1). In 1968, the ICD-8 introduced a cause of death classification labeled "injuries undetermined whether accidentally or purposely inflicted." The "undetermined" classification was continued in subsequent revisions of the ICD. The coding change may have affected how other deaths, in this case, homicides, were classified. If the category of undetermined was available before 1968, some unknown proportion of the deaths that occurred before 1968 that were classified as homicide might have been classified as undetermined.[a] Likewise, the sudden infant death syndrome (SIDS) category was introduced in the 9th revision of the ICD in 1979. To take into account the possibility that, independent of the abortion ruling, a change in the coding schema may have affected the number of deaths classified as homicides, we examined two additional intervention (i.e., interruption) variables – for both age groups, the 1968 introduction of "undetermined" to the classification system and, for the infants, the 1979 introduction of SIDS.

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[a] The category of undetermined is used more often for the deaths of those under age five than other age groups (Sorenson, Shen, & Kraus, 1997a). Moreover, the proportion of infant and toddler deaths in one large state that were considered undetermined range from a high of 4.7% in 1972 to a low of 1.2% in 1981 (Sorenson, Shen, & Kraus, 1997b). Nearly half of these deaths are very similar to homicides.

Insert Table 1 about here

Statistical Analysis

Consistent with the interrupted time series design, we estimated transfer function models to capture the possible role of abortion legalization (Box, Jenkins, & Reinsel, 1994). We explored two kinds of associations, one in which the average *number* of homicides declined and one in which the *rate of change* in the number of homicides declined. Using standard terminology, we refer to these as a change in level and a change in slope, respectively. The transfer functions were initially specified so that any associations with homicide would be found within a year of legalization for infants and within two years for toddlers. We also experimented with delayed effects, as described below. This was done because, although abortion was legal immediately with the U.S. Supreme Court decision, services were not necessarily in place and running immediately. In the end, all of the results we report derive from transfer function models that passed all of the customary diagnostic procedures. In addition to one or more interventions, both time series required a first difference to achieve stationarity and either an autoregressive or moving average parameter at a lag of 1 year to produce white noise residuals. Because we hypothesized that the homicide of young children decreased after the legalization of abortion, one-sided p-values were used in tests of statistical significance.

Results

Infants

Figure 2 shows the number of infants who died of homicide from 1960 through 1998. It is readily apparent that there are dramatic changes in level with the number of homicides ranging from a low of about 150 to a high of nearly 400. Is there any evidence for a drop in 1973?

Insert Figure 2 about here

The top panel of Table 2 shows the parameter estimates to address that question. The largest association between the number of homicides and any intervention is found for the introduction of the "undetermined" classification in 1968. The average number of homicides dropped by a little over 72 (p=.025), a reduction of about one third. Note that the reduction reflects a measurement artifact, not a real drop in the number of homicides. The other measurement artifact, the introduction of the SIDS classification in 1979, had virtually no association with the number of homicides; the counterintuitive positive coefficient of 8.7 is likely a chance outcome (p=.60). Finally, while there is an average reduction of 26 homicides per year after the legalization of abortion, and while that reduction is large enough to be of practical significance, we cannot reject the null hypothesis of no association (p=.38, one-tailed test).

Insert Table 2 about here

Figure 3, a plot of the homicide time series overlaid with the values fitted by the statistical model, shows that the model fit the data well. Alternatively, formulating the association between legalization and the number of homicides as a change in slope fit the data nearly as well, but did not change the overall story. As a descriptive matter, homicides declined noticeably after the legalization of abortion, but the null hypothesis could not be rejected at conventional levels for either a change in level or a change in slope.

Insert Figure 3 about here

Toddlers

Figure 4 shows the annual time series of the number of toddlers who died of homicide from 1960 through 1998. The number of homicides range from a low of about 125 to a high of nearly 500, with a clear upward trend over time. However, the average rate of increase seems to slow starting around 1973, suggesting a reduction in the slope. We estimated a transfer function model to reflect this reduction. Findings are reported in the bottom panel of Table 2.[b]

Insert Figure 4 about here

[b] There was no need to include an intervention for the introduction of the SIDS classification in 1979 because it did not apply to toddlers, but we initially included the possible effects of the 1968 introduction of the "underdetermined" classification. Although, as expected from Figure 4, we found a substantial negative association between legalization and the number of homicides, the coefficient for the 1968 measurement artifact had a counterintuitive positive association coupled with a p-value of .32. It was also somewhat correlated with the variable for abortion legalization, which reduced statistical power. Consequently, we dropped the "undetermined" intervention.

There is a reduction of about 8.5 homicides per year in the rate of growth starting in 1975, two years after the legalization of abortion (p=.04). The change in the rate of growth implies that the reductions accumulate each year so that by 1980, for example, there would be about 40 fewer homicides than would be expected if the rate of growth did not slow. Figure 5 provides a visual representation of the change.

Insert Figure 5 about here

Figure 6 shows that the model fit the data well. Nonetheless, we investigated whether the change in homicides would be represented better by using different time periods (e.g., lags) following the legalization of abortion (e.g., whether an immediate effect could be observed, whether the effect was stronger years later). The overall conclusions did not change when we reformulated the transfer function to allow for different lags. For lags of up to 3 years, the fit of the model was quite good. The associations between the legalization of abortion and the homicides of young children remained negative, although smaller, as one would expect. We also experimented with a transfer function to capture a change in level instead of change in slope. That model did not fit as well and no compelling associations with the legalization of abortion materialized. Thus, the effect for toddlers seemed to be most apparent in 1975 and to be best represented as a change in slope.

Insert Figure 6 about here

Discussion

The U.S. Supreme Court decision in Roe v. Wade is associated with a gradual reduction in the number of homicides of children who are one to four years old. The effect is seen in 1975, two years after the legalization of abortion nationwide, a time generally consistent with when abortion services were likely to have become more widely available. There are three, and perhaps more, mechanisms that might explain the association. First, with fewer unwanted children, there are fewer stresses on parents who might be inclined to take out their frustrations and hostilities on their children. This would be true for children of all ages in the home. In a related vein, familial resources (e.g., child care, finances) would be divided among a fewer number of children rather than stretched to accommodate a newborn. Third, abortion reduces, theoretically at least, unwanted children who themselves might have become targets if not immediately then over time. Over time, for example, the best intentions to make the best of a bad situation might be worn down so that at an age of a year or older more serious abuse begins. In addition, as the child grows older and exhibits more independent and sometimes difficult behavior, a hostile parent may be provided with the rationale for abuse under the guise of discipline.

The story for infants is less clear. We find evidence for a reduction in homicide at the expected time, but Type I error (false positives) can not be ruled out. In other words, although the results are in the predicted direction, the legalization of abortion appears to have had a limited, one-time, and not statistically significant association with the homicide of children under the age of one year. Why might that be? One possibility is that because the infant series we analyzed is more variable, it is harder to separate a genuine effect from “noise.” Another possibility is because of the physiological vulnerability of newborns, some of the homicides do

not reflect sustained abuse (which one might postulate for unwanted children) but a momentary lapse in self control that can happen even with parents of wanted children. Abortion legalization would not have an impact on these types of homicides.

Previous research has documented a decline in abortion-related deaths of women following the legalization of abortion (Council on Scientific Affairs, 1992). And the decrease continued for years afterwards. Deaths from legal abortion dropped from 3.3 deaths to 0.4 death per 100,000 procedures between 1973 and 1985, perhaps reflecting improved physician education and skill, improvements in medical technology, and the earlier termination of pregnancy (Council on Scientific Affairs, 1992). Whereas the mechanism linking the legalization of abortion with fewer abortion-related fatalities among women may be fairly straightforward, the mechanism is less clear for the subsequent reduction in homicide among young children.

Study Strengths and Limitations

We included the deaths of all young children that were classified as homicides in U.S. vital statistics mortality data during the years 1960 through 1998. Working with all of the infant and toddler homicides in that period, we are able to examine the potential association between the federal legalization of abortion and child homicide. The 38 years of data, consisting of 12 years before and 26 years after the legalization of abortion, provides a reasonable time span in which to examine any association between legalized abortion and child homicide.

We relied on a straightforward design that used the federal decision to legalize abortion as the intervention. Some might want to conduct state-level analyses that take into account the fact that five states—Washington, New York, Alaska, Hawaii, and California—legalized abortion prior to the federal decision. As noted previously, circumstances under which abortion

was allowed in those states remained quite limited; it was only with the U.S. Supreme Court decision that legalized abortion became more widely available. In addition, geographic mobility limits the usefulness of state-level comparisons. Some pregnant women travel to other states to obtain an abortion. This might have been the case especially when some states had legalized abortion before the *Roe v. Wade* decision--pregnant women who were particularly desperate but who wanted a legal abortion or those of greater means might have traveled to one of the five states where abortion was legal. Abortion data contain information about state of residence--the estimated proportion of abortions provided to nonresidents in 1994 ranges from about 50% in the District of Columbia to about 2% in New Jersey (Koonin, Smith, Ramick, Strauss, & Hopkins, 1997). However, even recent residency data are limited; for example, in 1994, 10 states did not collect information on residency (Koonin, et al., 1997). Moreover, geographic mobility may be a problem in another way. Although it likely would be a small problem for the infants and a somewhat larger problem for the 1- to 4-year olds, 8.6% of the U.S. population moved to another state from 1970 to 1975 (U.S. Bureau of the Census, 1976). Using national data helped avoid the geographic mobility complication inherent in state-level analyses.

Other events might account for the findings, and we investigated the possibility that two changes in the data classification scheme might have influenced the findings. The 1968 introduction of the category of “undetermined” into the classification scheme was associated, among children under one year of age, with an abrupt drop in the number of deaths that were classified as homicides. No such drop was observed for one- to four-year olds. For both groups, the legalization of abortion was associated with the reduction of homicide above and beyond the change in the classification scheme (although for infants the weight of the evidence against a false positive does not meet conventional levels). The introduction of SIDS into the

classification scheme was not associated with a change in the designation of homicides of infants, the only age group that would be affected by such a change.

The investigation was limited to an empirical investigation of the question. Whether the observed association between legalized abortion and the reduction of homicide among toddlers was due to improved timing of births, a decrease in unwanted births, reduced family size, or some other mechanism is beyond the reach of these data. Moreover, the ethical and moral implications of the association between the legalization of abortion and child homicide are beyond the scope of this paper.

Conclusions

The 1973 legalization of abortion in the U.S. was associated with a statistically significant reduction in the number of 1- to 4-year old homicide victims in subsequent years. The homicides of infants were decreased but the change was not statistically significant. Events coinciding with the *Roe v. Wade* decision might have had an impact on infant and toddler homicide mortality but we are hard-pressed to generate alternative explanations. For example, perhaps the 1972 introduction of WIC (Women, Infants, and Children), the federally-funded nutrition program for low income women and nursing mothers, had an effect on child health but it is difficult to fathom the basis for an association between improved nutrition and a decrease in the homicide of toddlers. We do not, however, claim that we have definitely demonstrated a causal relationship between the legalization of abortion and the subsequent reduction in the homicide of 1- to 4-year olds.

Therapeutic abortion appears to play a unique role in women's reproductive choices. Despite sex education in schools, widespread youth clinics, and free family planning services, more than 30,000 legal abortions are performed each year in Sweden (Larsson, Aneblom,

Odlind, & Tyden, 2002). One can only speculate what would have happened if these women were unable to obtain an abortion. Longitudinal European research concludes that children born in such circumstances are more psychosocially disadvantaged than their peers (Forssman & Thuwe, 1966; David, 1992). Such information is relevant given that multiple barriers to abortion services exist in the U.S. including distance, gestational limits, cost, and harassment (Henshaw, 1991, 1995, 1998).

Given that policies are implemented in a social milieu consisting of many unmeasured and perhaps unmeasurable characteristics, it is difficult to determine the effects of any single policy. Moreover, it is difficult to assess the unintended and unanticipated consequences of national policy decades after the fact. Nonetheless, given the health implications of national policy, such as in *Roe v. Wade*, it is critical that the effects of such policy be examined and estimated. Such difficulty underscores the need for further study of the intended and unintended effects of national health policy.

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Table 1. Number of homicide, unintentional injury, undetermined and SIDS deaths of young children, U.S., 1960-1998

	Homicide		Unintentional injury		Undetermined		SIDS
	< 1 year	1-4 years	<1 year	1-4 years	< 1 year	1-4 years	<1 year
1960	199	116	3831	5119	.	.	.
1961	192	169	3581	5041	.	.	.
1962	205	145	3653	5053	.	.	.
1963	195	184	3514	5174	.	.	.
1964	219	200	3406	5184	.	.	.
1965	213	189	3316	5270	.	.	.
1966	211	189	3096	5411	.	.	.
1967	226	172	2751	5074	.	.	.
1968	163	213	2520	4743	99	155	.
1969	151	238	2425	4548	127	179	.
1970	150	258	2570	4733	126	175	.
1971	187	295	2549	4718	112	177	.
1972	172	246	1784	4358	94	174	.
1973	160	342	1972	4836	90	148	.
1974	166	296	1727	4347	108	169	.
1975	178	317	1609	4073	94	145	.
1976	170	306	1526	3991	103	146	.
1977	177	330	1455	3759	105	132	.
1978	161	313	1507	3932	84	115	.
1979	170	314	1080	3349	81	85	5279
1980	210	319	1166	3313	68	98	5510
1981	189	360	981	2649	77	77	5295
1982	218	379	1024	3084	71	64	5278
1983	193	320	956	3043	55	67	5305
1984	237	341	838	2814	59	55	5874
1985	200	348	890	2856	52	66	5315
1986	278	382	909	2934	50	49	5278
1987	273	334	950	2921	53	71	5230
1988	315	381	936	2858	39	54	5476
1989	335	393	996	2774	51	56	5634
1990	332	377	930	2566	53	31	5417
1991	380	428	961	2665	48	41	5349
1992	326	429	819	2467	41	34	4891
1993	344	464	898	2590	61	39	4669
1994	313	473	889	2517	47	47	4073
1995	311	452	787	2280	57	45	3397
1996	332	420	804	2147	58	54	3050
1997	317	375	765	2005	57	40	2991
1998	322	399	754	1935	75	43	2822

Data source: National Center for Health Statistics. Vital statistics of the United States for 1960-1998, vol II, mortality, part A. Washington: Public Health Service. Published annually.

Table 2. Relationship between legalized abortion and the homicide of young children

Infants (less than 1 year old)[1]	b	p-level
Abortion legalization	-26.73	.383
Introduction of "undetermined"	-72.47	.025
Introduction of SIDS	8.73	.602
AR	-0.59	.001
Constant	5.75	--
SE	20.37	--

Toddlers (1- to 4-years old)[2]	b	p-level
Abortion legalization	-8.56	.036
MA	-0.57	.001
Constant	12.80	--
SE	29.25	--

1 Results of ARIMA (1,1,0) model. AR denotes autoregressive parameter.

2 Results of ARIMA (0,1,1) model. MA denotes moving average parameter.

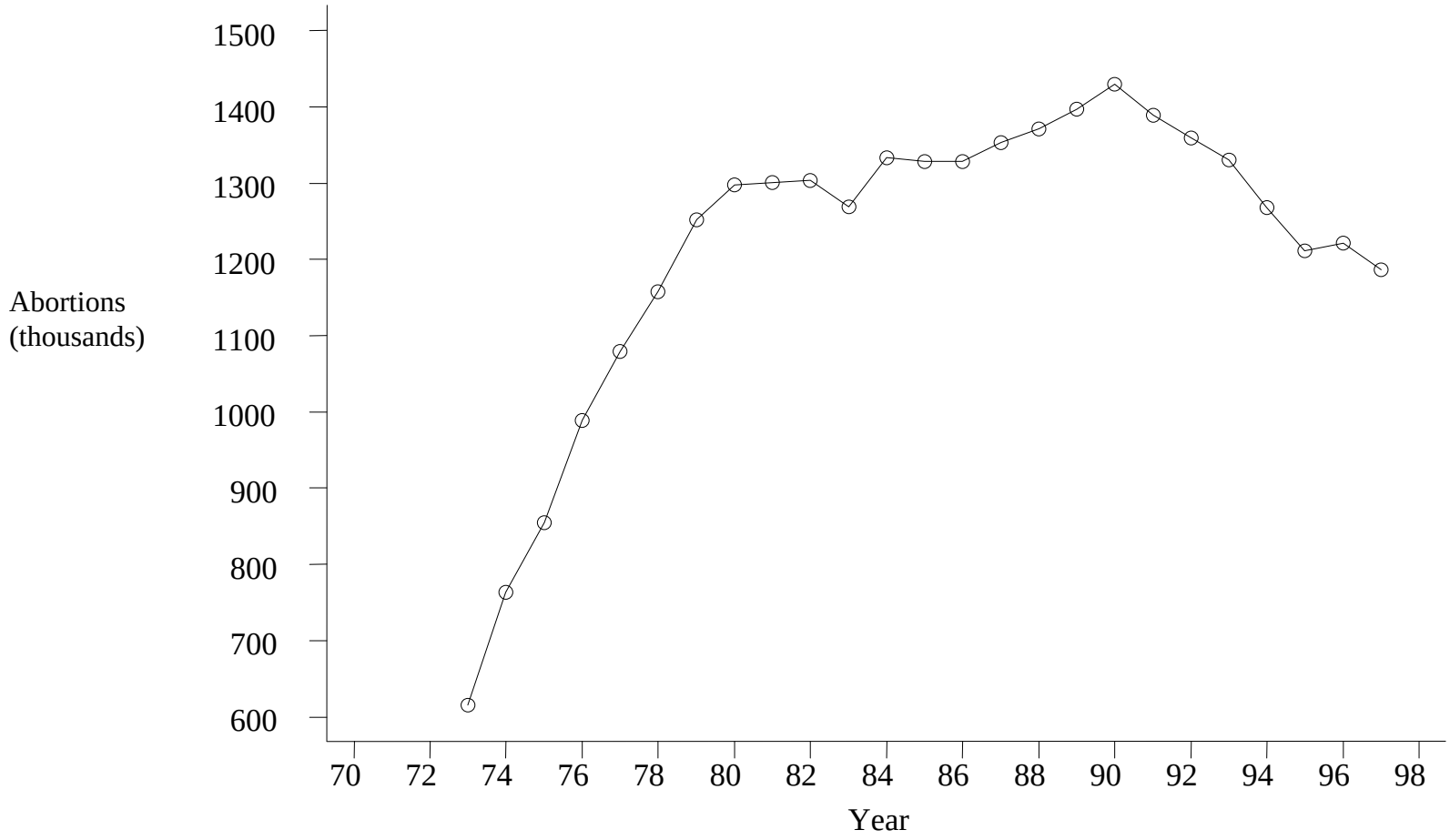

Figure 1. Number of legal abortions, U.S., 1973-1998

Data source: Abortion Surveillance for 1960-1998, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Published annually.

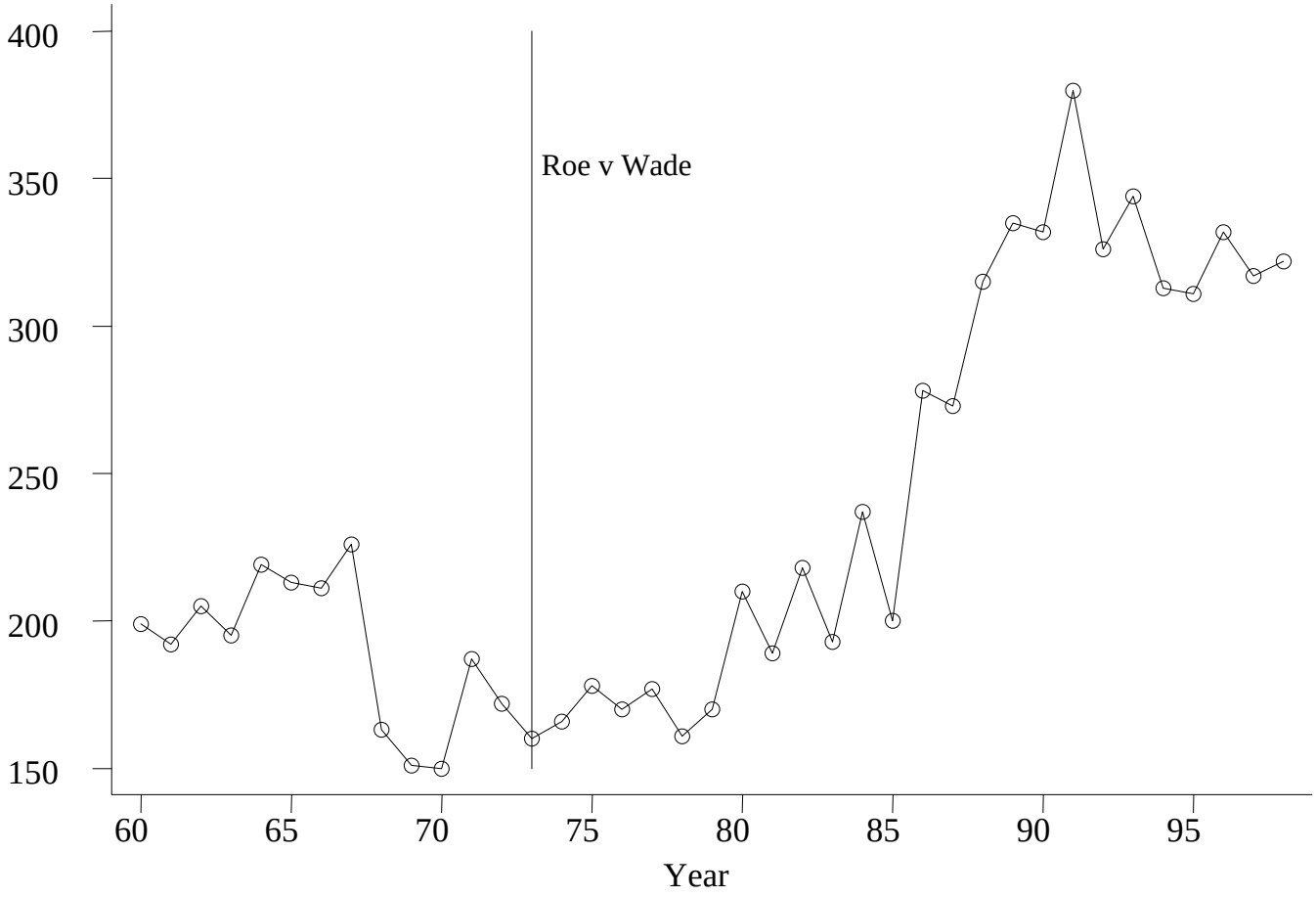

Figure 2. Number of homicides of children under one year of age, U.S., 1960-1998

Data source: National Center for Health Statistics. Vital statistics of the United States for 1960-1998, vol II, mortality, part A. Washington: Public Health Service. Published annually.

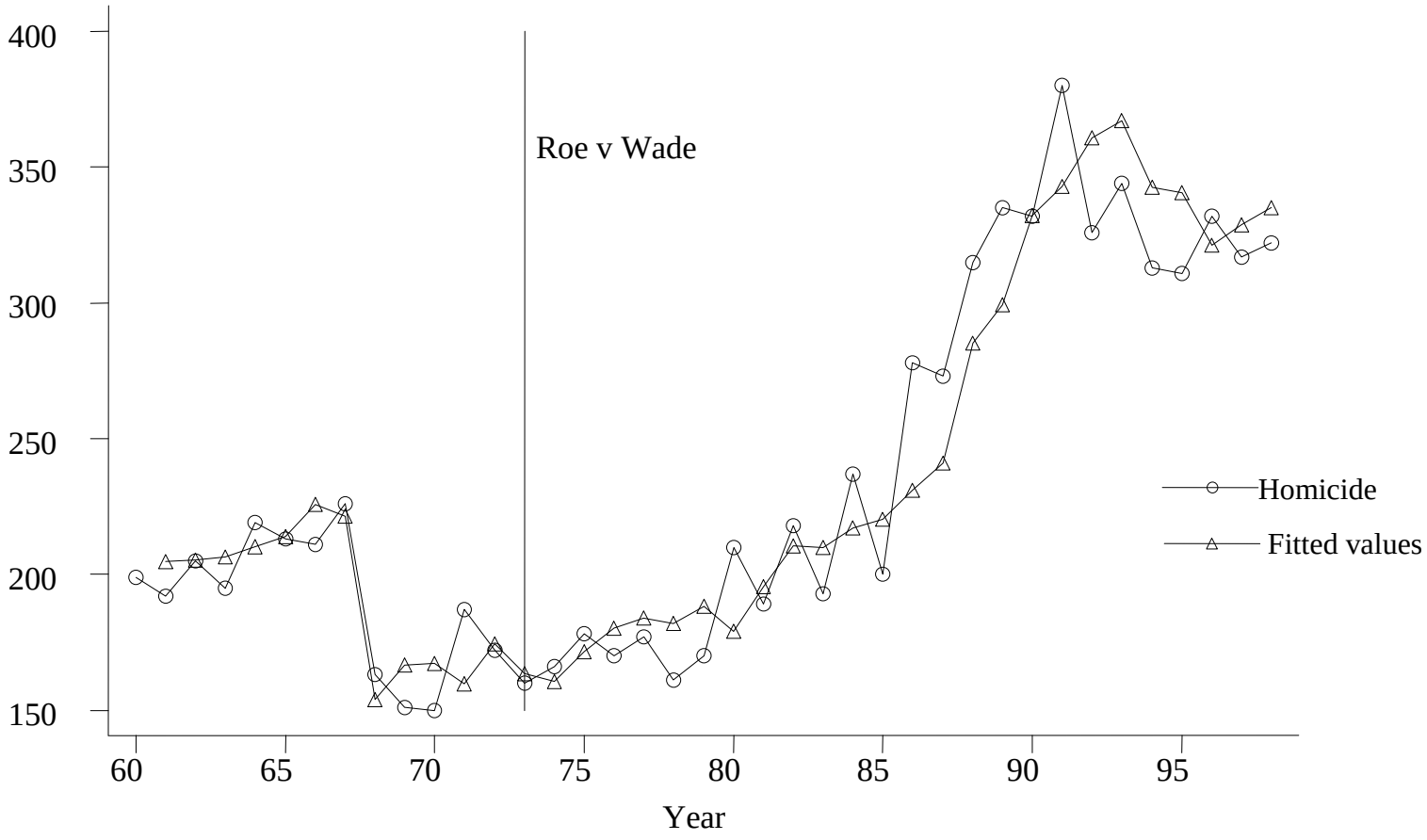

Figure 3. Homicides of children less than one year old and fitted values

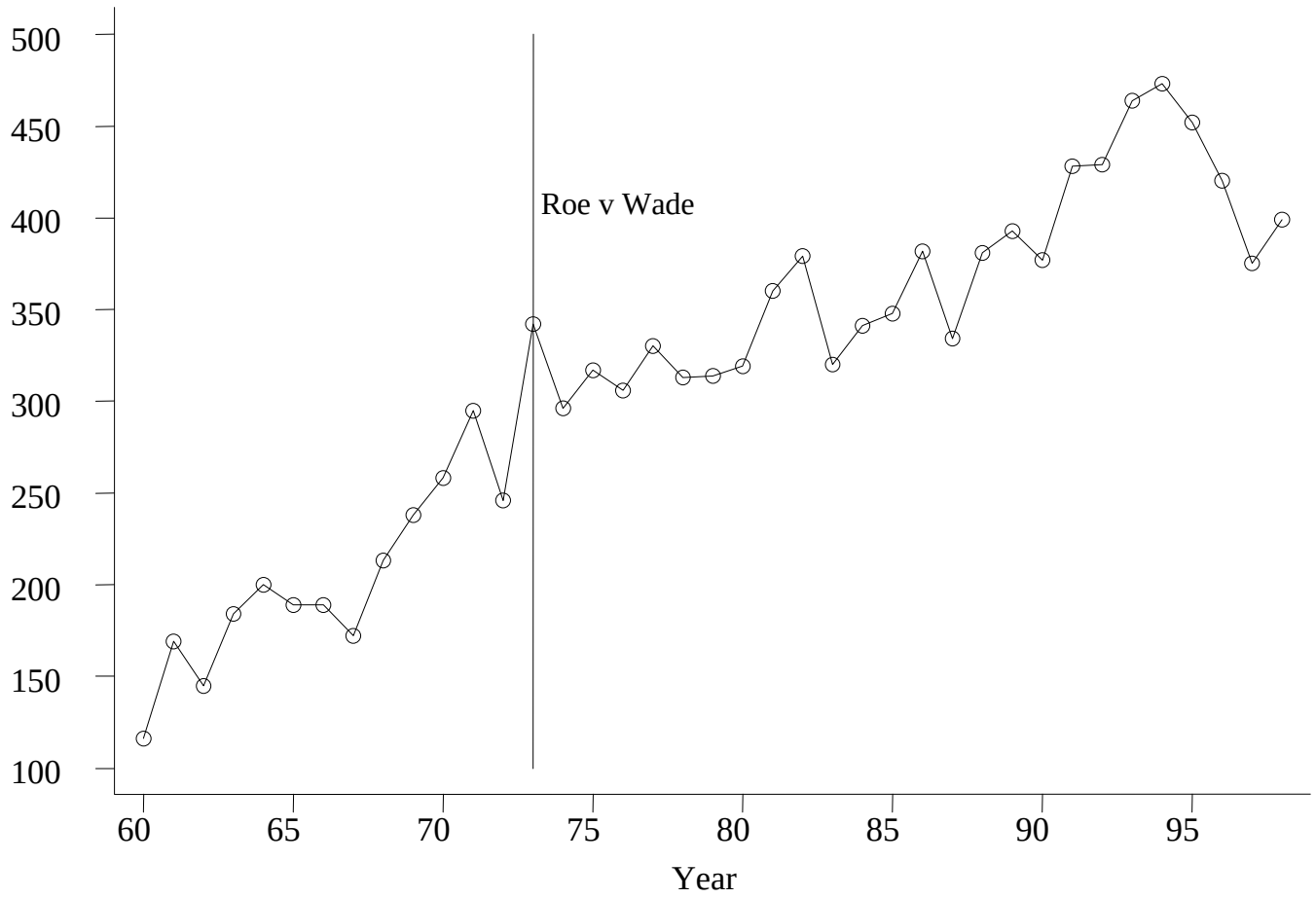

Figure 4. Number of homicides of one- to four-year olds, U.S., 1960-1998

Data source: National Center for Health Statistics. Vital statistics of the United States for 1960-1998, vol II, mortality, part A. Washington: Public Health Service. Published annually.

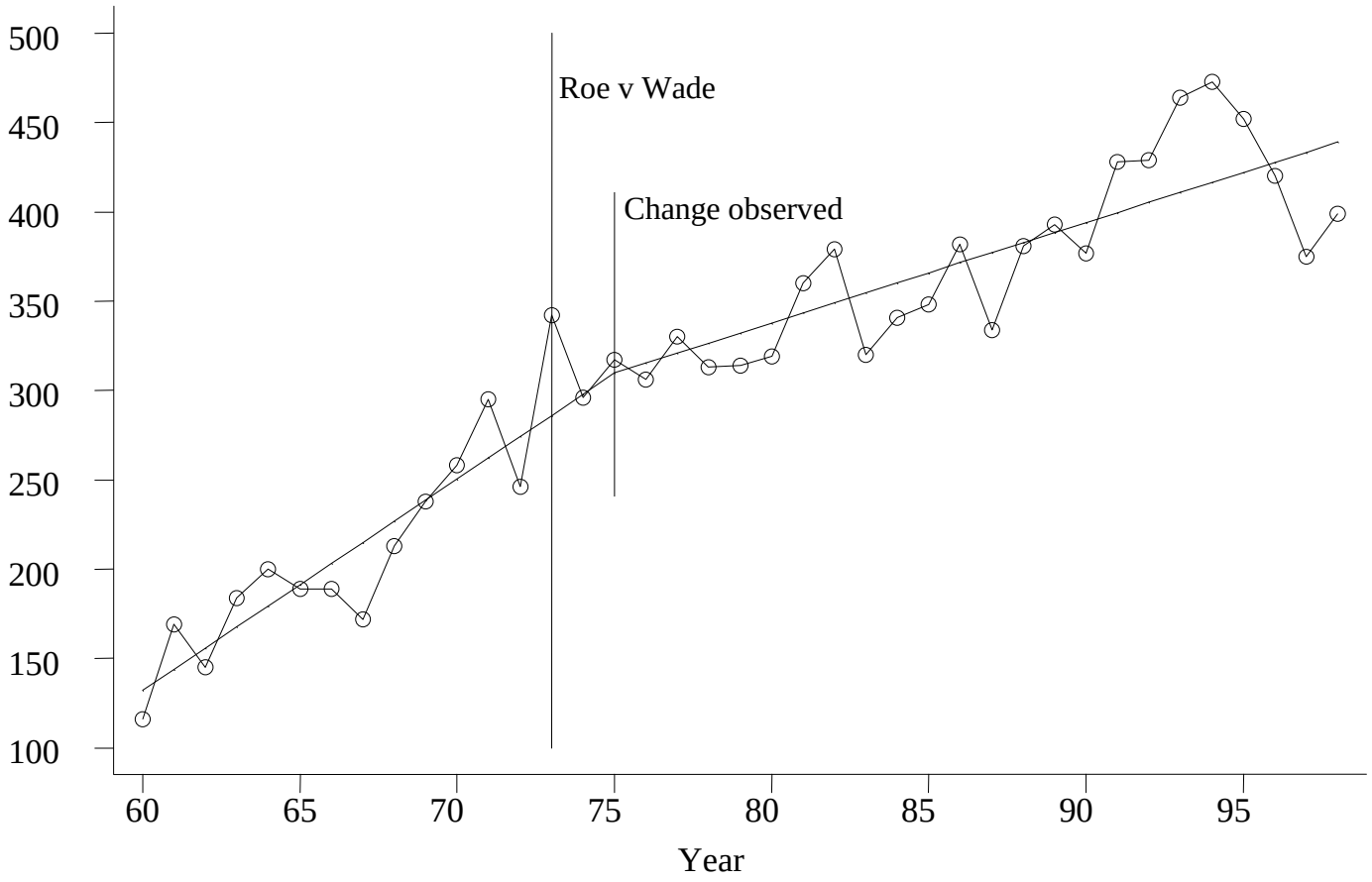

Figure 5. Homicides of one- to four-year olds, with slopes to show the rate of homicide before and after abortion legalization

Data source: National Center for Health Statistics. Vital statistics of the United States for 1960-1998, vol II, mortality, part A. Washington: Public Health Service. Published annually.

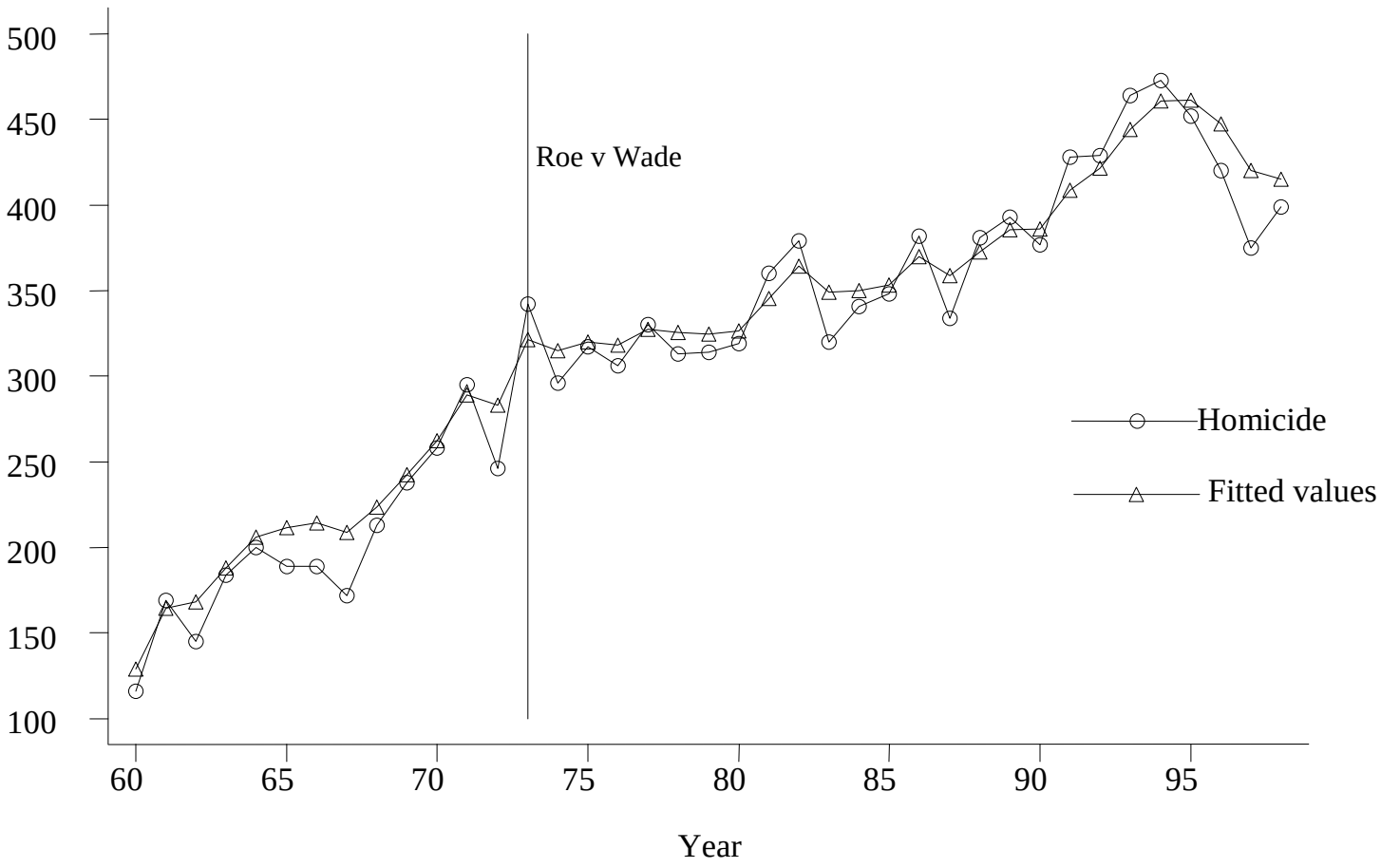

Figure 6. Homicides of children one- to four-years old and fitted values

Acknowledgments

The project is funded, in part, by a grant from The California Wellness Foundation (TCWF). Created in 1992 as an independent, private foundation, TCWF's mission is to improve the health of the people of California by making grants for health promotion, wellness education and disease prevention programs. The project is also funded, in part, by the Public Health Foundation through a grant from the California Endowment.