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GOVERNMENT REGULATION OF "ADULT" BUSINESSES THROUGH ZONING AND ANTI-NUDITY ORDINANCES: DEBUNKING THE LEGAL MYTH OF NEGATIVE SECONDARY EFFECTS
Bryant Paul, Daniel Linz, and Bradley J. Shafer
Municipalities that prohibit “adult” businesses from operating in certain areas have justified these “zoning” regulations by advancing the idea that the presence of the business will have so-called “adverse, or negative secondary effects” on the surrounding community. Most recently, a plurality of the United States Supreme Court has upheld the extension of this doctrine beyond the zoning of adult businesses to the symbolic behavior within them in the form of ordinances banning nudity. This article abstracts and analyzes the methods and major empirical findings of studies conducted by United States municipalities, purporting to detect adverse secondary effects of adult businesses. With few exceptions the methods used in the most frequently cited studies are seriously and often fatally flawed. These studies, relied on by other communities throughout the country, do not adhere to professional standards of scientific inquiry and nearly all fail to meet the basic assumptions necessary to calculate an error rate—a test of the reliability of findings in science. Those studies that are scientifically credible demonstrate either no

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negative secondary effects associated with adult
businesses or a reversal of the presumed negative effect.
The implications of the lack of evidence of adverse
secondary effects for the regulation of performances
within adult businesses are discussed.

Since 1976, the United States Supreme Court has decided a se-
ries of cases focusing on whether the free speech clause of the First
Amendment allows cities and states to enact legislation controlling
the location of “adult” businesses.¹ These “zoning” regulations,
which may prevent a sex-related business from operating, for ex-
ample, within a certain number of feet from residences, schools and
houses of worship or a given distance from one-another, have been
predicated on the notion that cities and other municipalities have a
substantial interest in combating so-called “negative secondary ef-
ficts” on the neighborhoods surrounding adult businesses. These
secondary effects have most often included alleged increases in
crime, decreases in property values, and other indicators of neigh-
borhood deterioration in the area surrounding the adult business.
Typically, communities have either conducted their own investiga-
tions of potential secondary effects or have relied on studies con-
ducted by other cities or localities.

In more recent years, the Court has considered the constitu-
tionality of anti-nudity legislation passed by municipalities or states
that have relied on the negative secondary effects doctrine as justifica-
tion.² The Court in Barnes v. Glen Theatre, Inc. held that the State of
Indiana could regulate nudity; with a plurality of the Court
concluding that the government could undertake such regulation to
protect the public order and morality.³ In a concurring opinion, how-
ever, Justice Souter argued that the State had justified the ban on
the basis of the presumed negative secondary effects on the sur-
rounding community.⁴

Most recently, in City of Erie v. Pap’s A.M., the Court again held
that municipalities have the right under appropriate circumstances
to pass anti-nudity ordinances.⁵ Again, however, the Court was frac-
tured. Three justices agreed with Justice O’Connor’s opinion that

¹See, e.g., City of Renton v. Playtime Theatres, Inc., 475 U.S. 41 (1986); Young v.
³501 U.S. at 567–68.
⁴Id. at 582–84 (Souter, J., concurring).
⁵120 S. Ct. 1382.
combating negative secondary effects supposedly associated with adult businesses was a legitimate basis for the imposition of an anti-nudity regulation. Most notable for the purposes of this article was, however, Justice Souter’s partial concurrence and partial dissent, in which he significantly revised the position he took regarding secondary effects in Barnes. In Pap’s, Justice Souter admitted that the evidence of a relationship between adult businesses and negative secondary effects is at best inconclusive. He called into question the reliability of past studies that purported to demonstrate these effects and suggested that municipalities wishing to ban nudity must show evidence of an actual relationship between adult businesses and negative effects.

The recent expansion of the secondary effects “doctrine” to include not only the zoning of adult businesses but now the regulation of the content of expression within these establishments, raises the question: How reliable and valid are the so called “studies” conducted by individual municipalities and shared nationwide with other municipalities attempting to regulate the location of, and most recently, erotic expression within, adult businesses? Examined in this article is the scientific validity of the research considered by municipalities across the country as a justification for the regulation of adult businesses.

THE SUPREME COURT ON OBSCenity

Early attempts to regulate adult businesses involved enforcement of obscenity laws. The United States Supreme Court rendered its first authoritative decision on obscenity in Roth v. United States. The Court ruled that obscene material was not protected by the First Amendment to the Constitution. It defined obscene materials as those that “appeal to a prurient interest” in sex (defined as a shameful, morbid and unhealthy interest in sex) and are presented in a “patently offensive way.”

Through the 1960s, the Roth test was refined to reflect objections to the suppression of erotica. In Kingsley International Pictures Corp. v. Regents, the Court found that a film based on the erotic novel, Lady Chatterly’s Lover, was not obscene under the Roth test.

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6Id. at 1393 (O’Connor, J., concurring).
7Id. at 1404–05 (Souter, J., concurring in part and dissenting in part).
8Id. at 1402–03 n.3.
954 U.S. 476 (1957).
10Id. at 483.
The Court greatly expanded the scope of permissible sexual portrayals with its decision in Memoirs v. Massachusetts. At issue was the literary work, Memoirs of a Woman of Pleasure, commonly known as Fanny Hill, by John Cleland. The Court ruled that the prosecution must prove to the jury's satisfaction that the work in question is "utterly without socially redeeming value." In the Court's view the First Amendment protection given to "socially redeeming ideas" was sufficient to override the accompanying portrayals of sexual activity. Later, the Court further broadened its notion of permissibility by striking down another obscenity conviction in Stanley v. Georgia. In this case, the defendant had been found guilty of possessing obscene materials in his home. The Supreme Court ruled that the First Amendment provides protection for the individual's right to receive information and ideas about sex.

The body of social science research sponsored by the 1970 Presidential Commission on Obscenity and Pornography in the United States was the first systematic academic foray into the study of exposure to sexually explicit materials. Consistent with the more liberal Supreme Court rulings in the 1960s, the Commission concluded that there were no scientifically demonstrated harmful effects from pornography and recommended legalization of all forms of sexually explicit communication.

A more politically conservative Court ruled, in Miller v. California, that "contemporary community standards" must be used to resolve the underlying questions of fact regarding "prurient interest" and "patent offensiveness." By the late 1980s and early 1990s empirical studies estimating community standards for sexually explicit materials suggested that even in politically conservative communities, the majority of citizens actually found such materials non-obscene.

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12 393 U.S. 413 (1966).
13 Id. at 418.
15 Id. at 567-68.
18 See Daniel Linz et al., Estimating Community Tolerance for Obscenity: The Use of Social Science Evidence, 55 PUB. OPINION Q. 80 (1991); Daniel E. Linz et al., Measuring Community Standards for Sex and Violence: An Empirical Challenge to Assumptions in Obscenity Law, 29 L. & SOC'Y REV. 127 (1995). Social science research suggests that communities may tolerate and/or accept for others, sexually explicit material involving consenting adults. However, sexual violence, the use of children in pornography and extreme forms of nonsexual violence are not tolerated. See id.
Recently, some feminists have argued that the traditional obscenity perspective, with its emphasis on sexual explicitness and its notion of offensiveness, moral corruption and shame, is misguided. In their view, the regulation of pornography should not be a means for the government to preserve public morals. Instead, regulation should prevent harms to women, including sexual harassment, discrimination and sexual assault.

Efforts to change the legal system to allow women to address pornography's supposed harms were undertaken in the 1980s. The purpose of these laws was to permit women to address the harms claimed to have been done to them by pornography, both as individuals and as a class of persons. In the early 1980's, a model ordinance was introduced in Minneapolis, where it was rejected, and in Indianapolis, where it passed and became law for a time. The ordinance defined pornography as the "graphic sexually explicit subordination of women." Immediately after its passage, the Indianapolis ordinance was challenged. A federal district court declared the Indianapolis ordinance unconstitutional in American Booksellers Association v. Hudnut, arguing that an ordinance that makes injuries of pornography actionable is unconstitutional under the First Amendment because the law prohibits expression of a point of view. Social science research testing feminist socio-legal theory has examined pornography's effect on attitudes that justify violence towards women, undermine viewer sensitivity to female victims of rape and violence and increase discriminatory and sexually explicit behavior.

Most recently, governments have shifted away from obscenity prosecutions and are attempting to regulate live performances in adult nightclubs across the United States. These regulations have often been based on the notion that government is permitted to ban behavior, such as nude dancing, if such laws can be shown to be "content neutral" and directed at curbing the so-called adverse secondary effects allegedly associated with adult businesses.

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22 See Daniel Linz et al., Testing Legal Assumptions Regarding the Effects of Dancer Nudity and Proximity to Patron on Erotic Expression, 24 L. & HUM. BEHAV. 507 (2000). This social science investigation demonstrated that contrary to the assumption made by Chief Justice Rehnquist in Barnes, 501 U.S. 560 (1991), laws that prescribe putting pasties and G-string on exotic dancers are, in fact, not seen as content neutral. Results of a field experiment in which dancer nudity (nude vs. partial
makers across the country have referred to a number of secondary effects studies undertaken by municipalities interested in "zoning" adult businesses as justification for regulating nudity in the business. The scientific validity of this research is the subject of this study.

THE ZONING OF ADULT ENTERTAINMENT BUSINESSES AND THE FIRST AMENDMENT

Beginning with the 1976 case, Young v. American Mini Theatres, Inc., several United States Supreme Court decisions have provided guidance as to what constitutes permissible government regulation of the location of adult entertainment establishments, given the protection provided by the Free Speech Clause of the First Amendment. The Court has normally subjected ordinances that restrict the location of adult businesses to an evaluation under the framework for content restrictions on symbolic speech set forth in the four-part test in United States v. O'Brien.

Justice Powell applied the four-part O'Brien test in his plurality opinion in Young. In that case, the Court upheld a Detroit zoning ordinance that regulated the location of adult theaters. The ordinance mandated that adult theaters not locate within 1,000 feet of any two other "regulated uses" or within 500 feet of a residential area. The Detroit ordinance did not attempt to eliminate adult entertainment; rather its aim was to disperse such businesses in an effort to minimize so-called negative secondary effects. In uphold-

clothing) and dancer proximity significantly altered the message of erotic performances. See Linz et al., supra note 22.


24 391 U.S. 367, 376–77 (1968). The landmark decision sets forth a series of criteria courts must consider when determining the constitutionality of government suppression of speech. For a restriction to pass the O'Brien test, the courts must consider (1) whether the regulation is within the constitutional power of government, (2) whether it furthers an important or substantial governmental interest, (3) whether that interest is unrelated to suppression of free expression and (4) whether the restriction on First Amendment freedoms is no greater than is essential to the furtherance of that interest. Id.

25 Young, 427 U.S. at 79–82 (Powell, J., concurring). Most important for present purposes, the Court suggested that the Detroit ordinance passed the second prong of the O'Brien test because it was aimed at preserving the stability of the city's residential and commercial neighborhoods. Id. at 73. The Court noted that a city's interest in protecting the quality of urban life is one that must be accorded high respect. Id.
ing this ordinance, the plurality opinion of the Court reaffirmed the doctrine that a government regulation must have a real and substantial deterrent effect on legitimate expression before it will be invalidated. The Court said the ordinance was not an invalid prior restraint on protected expression because it had neither the intent nor the effect of suppressing speech but was aimed at controlling the secondary effects caused by adult businesses on surrounding uses.

In another landmark decision regarding a municipality’s attempt to control secondary effects allegedly caused by adult businesses, *City of Renton v. Playtime Theatres, Inc.*, the Court upheld a Renton, Washington, zoning ordinance that, although not banning adult businesses altogether, did prohibit them from locating within 1,000 feet of any residential zone, church, park or school. The Court held that the Renton ordinance did not restrict First Amendment rights, as the purposes of the ordinance were unrelated to the suppression of speech and the restrictions were the least intrusive means by which to further the government’s interests. Part of the precedent set by *Renton* is a three-prong test stipulating that an ordinance must: (1) Be content neutral and aimed only at curbing secondary effects, (2) provide alternate avenues of communication and (3) further a substantial governmental interest.

Further, the Court stated for the first time that a city interested in restricting the operation of adult businesses was not required to show adverse impact from the operation of adult theaters in its own community, if no such experience existed, but could instead rely on the experiences of other cities as a rationale for supporting the passage of an ordinance. The court of appeals had found that “because the Renton ordinance was enacted without the benefit of studies specifically relating to the particular problems or needs of Renton,” the city’s justifications for the ordinance were ‘conclusory

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27 *Id.* at 60.
28 *Id.* at 78 n.34 (plurality opinion). The Court remarked that the city of Detroit had offered evidence that a concentration of “adult” movie theaters causes the area to deteriorate and become a focus of crime. Further, no such relationship was found for theaters showing other types of films. *Id.* This marks the first time the Court explicitly mentions the term “secondary effects.” The Court suggests that “[i]t is this secondary effect which these zoning ordinances attempt to avoid, not the dissemination of ‘offensive’ speech” that allows the Court to find the Detroit ordinances constitutionally sound. *Id.*
30 *Id.* at 83.
31 *Id.*
32 *Id.* at 50–53.
Supreme Court maintained that the court of appeals had placed an unnecessary burden of proof on the city, ruling that Renton—which had no adult businesses—could rely primarily on experiences of and studies produced by the nearby city of Seattle as evidence of a relationship between adult uses and negative secondary effects. Thus, the Court ruled that the First Amendment does not require a city to conduct new studies or produce new evidence before enacting an ordinance, so long as the evidence relied upon is reasonably believed to be relevant to the problem the city faces.

Since Renton, a number of cities, counties and states have undertaken investigations intended to establish the presence of such secondary effects and their connection to adult facilities. These studies have, in turn, been shared with other municipalities and generally serve as the basis for claims that adult entertainment establishments are causally related to harmful secondary side effects, such as increased crime and decreases in property values. Many local governments across the United States have relied on this body of shared information as evidence of the secondary effects of adult businesses. Further, in most cases, cities and other governmental agencies have used the findings of a core set of studies from other locales as a rationale for instituting regulation of such businesses in their own communities.

**Recent Applications of the Secondary Effects Doctrine**

In 1991, the U.S. Supreme Court began down the road to expanding the “secondary effects” doctrine as a justification for a total ban on nude dancing. In *Barnes v. Glen Theatre, Inc.*, the

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34City of Renton v. Playtime Theatres, Inc., 748 F. 2d 527, 537 (9th Cir. 1984), rev’d, 475 U.S. 41 (1986).
34Id. at 50–51. See Northend Cinema, Inc. v. Seattle, 586 P.2d 1153 (1978). In *Northend*, the Washington State Supreme Court held that the city of Seattle had provided sufficient evidence of a need for a zoning code amendment aimed at preventing the secondary effects on the neighborhoods surrounding adult theaters. This evidence came in the form of “a long period of study and discussion of the problems of adult movie theaters in residential areas of the City.” *Id.* at 1154–55. The city offered the Washington court a report, among other things, analyzing the City’s zoning scheme and describing land uses around existing adult motion picture theaters. In addition, the trial court heard “expert testimony on the adverse effects of adult motion picture theaters on neighborhood children and community improvement projects.” *Id.* at 1156. In *Renton*, the United States Supreme Court found that the city in question was entitled to rely on the evidence summarized in the Washington court’s opinion. 475 U.S. at 50–53.
36Renton, 475 U.S. at 51–52
enforcement of Indiana's public indecency law, which prevented totally nude dancing by indirectly requiring a dancer to perform in no less than pasties and a G-string, did not violate the First Amendment's guarantee of freedom of expression. Led by Chief Justice Rehnquist, a plurality found the anti-nudity ordinance in question was constitutional because it was aimed at protecting societal order and morality. The Court had held in previous cases that such an objective represented a sufficient government interest. Couching the decision as simply supporting a constitutionally protected time, place and manner restriction of expression, the plurality argued that the Indiana statute did not proscribe erotic dancing. Instead, the Chief Justice argued, it simply ensured that any such performance would include the wearing of scant clothing.

Justice Souter's concurring opinion gave particular attention to the notion of a state's substantial interest in combating the secondary effects of adult entertainment establishments. Justice Souter stated that the type of entertainment the Indiana statute was aimed at regulating was clearly of the same character as that at issue in a number of past decisions by both the Supreme Court as well as lower courts. He went on to suggest that it was therefore no leap to say that live nude dancing of the sort at issue in Barnes was "... likely to produce the same pernicious secondary effects as the adult films displaying 'specified anatomical areas' at issue in Renton." Souter then applied the precedent set forth in Renton, stating:

In light of Renton's recognition that legislation seeking to combat the secondary effects of adult entertainment need not await localized proof of those effects, the State of Indiana could reasonably conclude that forbidding nude entertainment of the type offered at ... the Glen Theatre's "bookstore" furthers its interest in preventing prostitution, sexual assault and associated crimes.

37 Id. at 561.
38 Id. at 569.
40 Barnes, 501 U.S. at 587.
41 Id. at 582 (Souter, J., concurring).
43 See, e.g., United States v. Marren, 890 F.2d 924, 926 (7th Cir. 1989) (arguing that prostitution is associated with nude dancing establishments); United States v. Deerr, 886 F.2d 944, 949 (7th Cir. 1989) (same).
44 Barnes, 501 U.S. at 584.
45 Id.
Thus, Justice Souter wrote that municipalities could assume that negative secondary effects result from nude dancing establishments when justifying regulation of such expression.

The Supreme Court most recently addressed the constitutionality of regulating adult entertainment in City of Erie v. Pap's A.M. A fractured majority upheld an Erie, Pennsylvania, ordinance that, like the statute considered in Barnes, required a dancer to wear at least pasties and a G-string during a performance. A majority of five Justices agreed that the case called for the application of the O'Brien test. Further, a majority held that the Erie ordinance was aimed at the important government interest of combating the harmful secondary effects associated with nude dancing. A plurality of four justices—not a majority of the Court—held that Erie had met this burden by relying on the evidentiary foundation set forth in both Renton and Young.

120 S. Ct. 1382, 1384 (2000). In Barnes, Justice Souter used the secondary effects doctrine as a justification of the anti-nudity ordinance. 501 U.S. at 584 (Souter, J., concurring). In Pap's, the city adopted Justice Souter's reasoning and argued that the same devaluation of the surrounding areas attributed to adult businesses can be attributed to establishments featuring live nude entertainment. See 120 S. Ct. at 1394. The city argued that the government's vital interest in protecting and preserving the desirability of residential neighborhoods and business districts is a sufficient justification for the ordinance's incidental encroachment on protected expression. See id. at 1394.

Id. at 1394. The Court cited the Renton precedent allowing municipalities to rely on secondary effects evidence produced by other, similar municipalities to fulfill the evidentiary burden. Id. None of the justices in the fractured majority explained, however, how the requirement of wearing pasties and a G-string would in fact reduce prostitution, sexual assaults or other problems associated with places where dancers appear nude.

Id. Justice Scalia, joined by Justice Thomas, concurred with the Court's majority opinion, but for different reasons. The justices held that the Erie ordinance prohibits not merely nude dancing but the act of going nude at all—irrespective of whether it is engaged in for expressive purposes. Id. at 1396 (Scalia, J., concurring). He found the statute constitutionally permissible because it was a general law regulating conduct and not specifically directed at expression. Id. at 1401. As such, the ordinance was not subject to First Amendment scrutiny at all. See id. at 1401-02. Justice Scalia suggested that there was no need to consider the presence or absence of "secondary effects" because the government was well within its rights in regulating non-expressive behavior. Id. The opinion of Justice Scalia, when combined with that of Justice O'Connor, with whom Chief Justice Rehnquist, Justice Kennedy and Justice Breyer joined, left the Court with a 6-3 majority that the law was constitutional. Yet, there was no controlling opinion. In other words, the Court agreed that Erie can regulate nudity, but could not agree on why.

Renton, 475 U.S. at 83; Young, 501 U.S. at 564.
Justice Souter’s Partial Dissent in Pap’s

Only a plurality of justices agreed that the city of Erie had demonstrated evidence of a compelling government interest. Justice Souter disagreed.50 In Barnes, he opined that the government could assume that “pernicious secondary effects” would result from the presence of nude dancing establishments.51 In Pap’s, however, Justice Souter demanded that cities such as Erie, interested in regulating nude dancing on the basis of adverse secondary effects, should be required to provide germane evidence of a relationship between nude dancing and these secondary effects.52 Ruefully, Justice Souter stated:

Careful readers ... will of course realize that my partial dissent rests on a demand for an evidentiary basis that I failed to make when I concurred in Barnes. ... I should have demanded the evidence then, too, and my mistake calls to mind Justice Jackson’s foolproof explanation of a lapse of his own, when he quoted Samuel Johnson, “Ignorance, sir, ignorance.” McGrath v. Kristensen, 340 U.S. 162, 178 (1950) (concurring opinion). I may not be less ignorant of nude dancing than I was nine years ago, but after many subsequent occasions to think further about the needs of the First Amendment, I have come to believe that a government must toe the mark more carefully than I first insisted. I hope it is enlightenment on my part, and acceptable even if a little late.53

In his opinion, Justice Souter questions the evidence used by municipalities of a relationship between adult businesses and negative secondary effects, concluding that such a relationship can no longer be presumed from past studies.54 In support of his position, Justice Souter cited an amici brief that contained a condensed summary of the critique of existing secondary effects studies reported below.55

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50Id. at 1402 (Souter, J., concurring in part and dissenting in part).
51Barnes, 501 U.S. at 584 (Souter, J., concurring).
52Id. at 1305–06.
53Id.
54Id.
55Brief for First Amendment Lawyers Association at 16–23, id. (No. 98–1161). Justice Souter stated:

The proposition that the presence of nude dancing establishments increases the incidence of prostitution and violence is amenable to empirical treatment, and the city councils who enacted Erie’s ordinance are in a position to look to the facts of their own community’s experience as well as to experiences elsewhere. Their failure to do so...
Evaluating the Validity of Secondary Effects Studies

Since the secondary effects doctrine appears to be expanding, it is imperative that it be based on solid evidence that the operation of an adult entertainment business has a deleterious effect on the surrounding community. Unfortunately, when municipalities have conducted studies in the past, there has not been a set of methodological criteria or minimum standards, to which the cities were required to adhere. Without such standards, cities may be relying on flawed databases. This problem is further compounded when courts allow previous studies, conducted in other cities, to supplant data collected in the city where the ordinance is being proposed. A flawed study replicates errors across localities. It makes little sense to generalize to the experiences of other cities on the basis of what may be an invalid investigation in the first place.

The basic requirements for the acceptance of scientific evidence, such as secondary effects studies, were prescribed by the Supreme Court in the 1993 case of Daubert v. Merrell Dow Pharmaceuticals, Inc. In Daubert, the Court held that there are limits on the admissibility of scientific evidence offered by "expert witnesses" in federal courts. The Court noted that scientific knowledge must be grounded in the methods and procedures of science and must be based on more than subjective belief or unsupported speculation. Offering observations as to how this connection can be made, the Court provided a list of factors that federal judges could consider in ruling on a proffer of expert scientific testimony, including the notion of falsifiability, peer review and publication, error rate and adherence to professional standards in using the technique in question.

Since a core set of studies has been and continues to be relied upon by hundreds of local municipalities as evidence of negative secondary effects, a central concern must be the methodological rigor, and therefore trustworthiness, of these studies. This is particularly true when the Supreme Court requires that a municipality establish that such regulations are necessary to further the governmental interest...
of ameliorating secondary effects and that such regulations are no
broader than is essential to the furtherance of such interest.56

To evaluate the validity of the secondary effects studies cited by
communities across the country, this article will abstract and analyze
the methods and major empirical findings in the relevant research.
With few exceptions, the methods most frequently used in these stud-
ies are seriously and often fatally flawed. Specifically, these studies do
not adhere to professional standards of scientific inquiry and nearly all
universally fail to meet the basic assumptions necessary to calculate
an error rate—a test of the reliability of findings in science. More im-
portantly, those studies that are scientifically credible demonstrate ei-
ther no negative secondary effects associated with adult businesses or
a reversal of the presumed negative effect.

The Core Set of Frequently Cited Scientific Studies
of Secondary Effects

Amassed for this study were a large body of laws enacted for the
regulation of adult entertainment businesses and as many as possi-
ble of the empirical and non-empirical reports examining potential
secondary effects of such businesses produced or purportedly relied
upon by municipalities considering the issue. Often, the laws—usu-
ally municipal ordinances—contain “preambles” that specifically set
forth which of the various “secondary effects studies” the municipali-
ity is relying on as justification for enacting the particular regula-
tion. Presumably, these studies are listed in order to comply with the
Renton requirement that a municipality rely upon evidence “reason-
ably believed to be relevant to the problem that the city addresses.”570

The interest is in examining the methodological legitimacy of ev-
ery “study” cited by municipalities as containing evidence of the rela-
tionship between adult entertainment businesses and negative
secondary effects. Several steps were taken to obtain as many such
studies as possible. First, several attorneys known for their experi-
ence and expertise in the arena of adult business regulation were
contacted and asked to provide lists and, when possible, printed cop-
ies of studies that they were aware had been cited in municipal and
state zoning ordinances. Second, the citations found in each of the
obtained studies and zoning ordinances were scanned for additional
studies on secondary effects. Finally, several additional individuals

56See Renton v. Playtime Theater, Inc., 475 U.S. 41 (1986); Young v. Am. Mini
570Renton, 475 U.S. at 51-52 n.26.
that have expert knowledge in the area of adult business regulation were asked to supplement the list of “studies.” In all, a total of 107 reports were eventually obtained. To be included in the analysis, each report must have been cited by at least one municipality as evidence of a relationship between adult entertainment businesses and negative secondary effects. Although it is more than likely that not every single “secondary effects study” is included in this review, the extensive literature search nevertheless resulted in a large and, more importantly, a representative number of such reports. This study has located, collected and analyzed the vast majority of “studies” that communities purport to rely upon when enacting regulations of adult businesses.

First considered in detail are the four most frequently cited (and relied upon) studies of secondary effects: Indianapolis, Indiana (1984), Phoenix, Arizona (1979), Los Angeles, California (1977) and St. Paul, Minnesota (1978). As can be seen in Table 1, these studies have been cited as evidence of the relationship between adult entertainment businesses and negative secondary effects by no less than 27 different municipalities. The problems that have been found in these four reports in regard to misunderstandings of their “findings” and methodological failings (discussed in detail below) pertain as well to the next six most frequently relied-upon reports. Discussed next are these six studies, in brief, at the end of the review of the four

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61 All of the reports included in the analysis were obtained by contacting the specific communities and municipalities that originally sponsored or produced them.

62 It should be noted that although the study began with 107 municipal reports addressing the relationship between adult entertainment businesses and negative secondary effects, and although a large percentage of these claim to report “scientific” evidence of such a relationship, this analysis found only 20 of these studies to contain empirical data. A number of the remaining 87 reports simply contained the minutes of city planning committee meetings during which options for the regulation of adult businesses were discussed. Others simply contained samples of arrest reports from inside adult entertainment businesses. Needless to say, such information did not meet even the most basic criteria for empirical evidence. However, such studies have been used (often consistently) as representing empirical evidence of the relationship between adult entertainment businesses and negative secondary effects.


64 City of Phoenix, Arizona, Relation of Criminal Activity and Adult Businesses (1979).

65 City of Los Angeles, California, Study of the Effects of the Concentration of Adult Entertainment Establishments in the City of Los Angeles (1977).

TABLE 1: TEN MOST FREQUENTLY REFERENCED STUDIES AND MUNICIPALITIES THAT REFERENCED THEM IN DRAFTING LEGISLATION REGULATING ADULT BUSINESSES

<table>
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<th>Rank</th>
<th>Location</th>
<th>Reference Dates</th>
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most frequently cited studies. Accordingly, the concerns that are outlined below apply to all of the "top ten" relied upon "secondary effects studies." And, virtually all of the reports that have been analyzed have these same failings, often because they themselves relied upon earlier "studies" that contained the same flaws discussed below.

THE BASIC REQUIREMENTS FOR THE ACCEPTANCE OF SCIENTIFIC EVIDENCE

In an attempt to prevent the proliferation in courtrooms of "junk science," the United States Supreme Court in Daubert held that there are limits on the admissibility of scientific evidence offered by "expert witnesses" in federal courts.67 The Court opined that scientific knowledge must be grounded "in the methods and procedures of science" and must be based on more than "subjective belief or unsupported speculation."68 Thus, the Court said, "the requirement that an expert's testimony pertain to 'scientific knowledge' establishes a standard of evidentiary reliability."69 In a footnote, the Court observes that "[i]n a case involving scientific evidence, evidentiary reliability will be based upon scientific validity."70 Offering "some general observations" as to how this connection can be made, the Court provided a list of factors that federal judges could consider in ruling on a proffer of expert scientific testimony: (1) The "key question" is whether the theory or technique under scrutiny is testable, borrowing Karl Popper's notion of falsifiability.71 (2) Although publication was not an absolute essential, the Court noted that peer review and publication increased "the likelihood that substantive flaws in methodology will be detected."72 (3) Error rate.73 (4) Adherence to professional standards in using the technique in question.74 (5) Finally, though not the sole or even the primary test, general acceptance could "have a bearing on the inquiry."75

While it may not be necessary to hold municipalities to each of these considerations when weighing the validity of evidence substan-

68Id. at 599.
69Id. at 590.
70Id. n.9.
71See id. at 598 (citing KARL POPPER, CONJECTURES AND REFUTATIONS 37 (5th ed. 1989)).
72Id.
73See id. at 594.
74See id.
75Id. at 593–94.
tating the existence of secondary effects research with adult businesses, at least two factors are indispensable. It is at least a testable proposition that secondary effects may result from adult establishments, or else a study would not have been undertaken in the first place. It can be further presumed that a lengthy peer review and publication process may be unlikely due to the sense of urgency when communities tend to address these issues. In addition, the general acceptance requirement is held to have a bearing but is not an absolute consideration. The third and fourth factors, however, the calculation of an error rate and adherence to professional standards in using techniques or procedures, need to be applied to these studies in order to ensure “evidentiary reliability.” Without this reliability, there is no basis to determine whether there is a substantial or important governmental interest involved, whether a specific piece of legislation is “necessary” in order to further that interest, or whether it is “reasonable” for a municipality to rely upon such a study as a basis for enacting legislation.76

In a scientific study, the error rate refers to the probability of accepting a result as true, when in fact it is false.77 The rate is an indication of the reliability of a finding. An error rate is determined by first calculating an estimation of a population characteristic (a statistic) that summarizes the data that have been collected and then asking how likely it is that that statistical value would be obtained by chance alone. The error rate is the degree of chance a scientist will allow. In the social sciences, it is conventional to set the error rate at five percent or less (that is, a researcher will tolerate an error rate of five times out of 100 that the results may be obtained by chance).78

Unless certain assumptions are met, statistical tests cannot be applied to the data, and an error rate cannot be calculated. Most impor-

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76This is perhaps the most important notion underlying this research. Results suggesting no reliable and/or valid evidence of a relationship between negative secondary effects and adult entertainment businesses would mean that the courts would need seriously to reconsider whether municipalities indeed have a substantial interest in regulating such uses. At the very least, it would suggest that most, if not all, municipalities with codified restrictions on adult uses have based their justification of such restrictions (according to the requirements set forth in Young and Renton) on inaccurate data.


78See COHEN & COHEN, supra note 77, at 21.
tant of these assumptions in regard to, for example, survey research, is that the units of analysis (for example, survey respondents) are randomly selected from the population, or in regard to an experiment, that the units of analysis (for example, subjects) are randomly assigned to experimental and control or comparison groups. The results of properly conducted experiments and surveys are always couched in terms of an error rate.

In many cases, especially in field research, it is not possible to randomly assign units of analysis to an experimental group and a control group. This is universally true of "secondary effects" studies. When this is the case, adherence to a set of professional standards that have been devised by scientists in a particular area of inquiry to insure methodological integrity and thus the validity of a study is all the more necessary. These standards vary somewhat depending on the area of inquiry or social science discipline, but they are generally known as professional standards for conducting "quasi-experiments."

**Four Criteria for Insuring a Scientifically Valid Study of Secondary Effects**

The majority of the secondary effects studies reviewed in this article generally assume the following form. Researchers assemble crime statistics and calculate average property values and other general measures of neighborhood quality or deterioration (for example, residential turnover rate, local tax revenue, etc.) in the geographical area surrounding adult entertainment businesses. In a few studies these measures are compared to other areas that do not contain adult businesses. Another popular data gathering method is to perform a survey in which residents or business owners are asked for their opinions of the likely impact of adult entertainment businesses on their neighborhoods.

Four criteria are crucial in insuring that a scientifically valid study of secondary effects has been conducted. First, in order to insure accurate and fair comparisons, a control area must be selected that is truly "equivalent" to the area containing the adult entertainment busi-

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81Obviously, it is not possible randomly to assign adult businesses to some neighborhoods and hold other neighborhoods as controls.
82See Campbell & Stanley, supra note 80, at 34–71.
ness. Since most studies of secondary effects attempt to uncover increases in crime or neighborhood economic deterioration, professional standards dictate that the control (non-adult) site must be comparable (matched) with the study (adult) site on variables related to crime and deterioration. Of particular importance when studying crime is that the study and control areas are matched for variables such as ethnicity and socioeconomic status of individuals in both areas. Additionally, economic factors, such as median home value and total individuals employed and unemployed, should be comparable in both areas. A concerted effort should also be made to include only comparison areas with similar real estate market characteristics including property values, rental rates and proportion of unused commercial and industrial space in either area. The study and control areas in a crime study should be approximately equal in total population. Finally, because of the effect of businesses that serve alcoholic beverages on increases in crime and neighborhood deterioration, the study and control area should be matched on the presence of alcohol-serving establishments.

Second, a sufficient period of elapsed time, ideally both prior to and following the establishment of an adult entertainment business, is necessary when compiling data in order to ensure that the study is not merely detecting an erratic pattern of social activity. Most methodologically sound, quasi-experimental, time-series analyses rely on at least a one-year period prior to and after the introduction of the event under study to test for significant changes. Generally, the longer the time period before and after the event under consideration, the more stable (and more valid) the estimates of the event’s effects tend to be.

Third, the crime rate must be measured according to the same valid source for all areas considered. Studies on secondary effects typically focus on two general types of crime in relation to adult entertainment businesses. These two types of crime are “general criminal activity” (including, but not limited to, robbery, theft, assault, disorderly conduct and breaking and entering) and “crimes of a sexual nature” (including, but not limited to, rape, prostitution, child molestation and indecent public exposure). It is especially important that the measurement of these crimes is based on the same information source for both sites and throughout the entire study period. For

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83 See BABBIE, supra note 79, at 213–14.
84 See, e.g., CITY OF ST. PAUL, MINNESOTA, supra note 66.
85 See SINGLETON ET AL., supra note 79, at 213–41.
86 See CAMPBELL & STANLEY, supra note 80, at 5, 9.
example, if the study area measures crime by the number and type of calls made to the police department, the control area must also rely on such a measure when the two areas are compared.

In addition, the crime information source must be factually valid and reliable, such as a daily log kept by police or a compilation of the number of arrests. Many studies claim to measure area crime by asking survey respondents about their estimates of the likelihood of being a victim of crime. Such data are not preferred because of their subjectivity and as such, cannot be trusted as a valid representation of actual criminal activity in a particular area. Social scientists should hesitate to rely upon such “evidence” to establish a causal link between adult businesses and secondary effects. The Daubert standard suggests such information may not have sufficient “trustworthiness” to be admissible in a federal court. However, if such subjective opinion research on crime is to be undertaken, it should conform to the standards for conducting reliable and valid survey research.

Researchers must also acknowledge any change in police surveillance techniques once an adult entertainment business has been established in a particular community. Obviously, increased surveillance of an area simply because an adult business is located there will have an impact on the amount of crime detected by the police. If increased police surveillance and the opening of an adult business in a particular area are confounded in this way, it is impossible to tell whether crime has increased due to the presence of the adult entertainment business or increased surveillance police discovering more crime.

Finally, survey research, if relevant to the question at all, must be properly conducted. Most survey research in this area involves asking real estate professionals, local property owners, law enforcement officers and/or community residents to estimate the effect of the presence of an adult entertainment business on a particular community. Less frequently, surveys of citizens’ perception of crime and victimization are also undertaken. While subjective surveys may provide a sense of the general opinion of a particular group regarding the impact of adult entertainment businesses on surrounding neighborhood property values or criminal activity, this kind of survey does not provide sound empirical evidence of any true relationship between those businesses and their actual impacts on the surrounding areas. For instance, while the opinions of real estate professionals are legitimate and important in regard to other matters, they have a particularly strong interest in the issue and as such, may produce biased results.

Survey evidence is not comparable to, nor can it replace, the evidence supplied by objective comparisons of, for example, property
values and/or crime statistics compiled by the police within areas containing adult entertainment businesses, with property values or crime statistics within areas containing no such businesses. Such a comparative analysis is the preferable social scientific means by which to establish a relationship between the presence of adult entertainment businesses and either decreases in property values or increases in crime for the surrounding areas.

Even if some survey research may be relevant to the issue at hand—although we doubt whether it truly is—it must be properly conducted in order for the researcher to calculate an error rate. Professional standards do exist for performing methodologically valid social scientific survey research so that it possesses some degree of reliability and trustworthiness. Adherence to these standards is essential if researchers hope to obtain legitimate unbiased survey results. First, it is important to ensure that a random sample of potential respondents is included in the study. Second, a sufficient response rate must be reached, and those who do respond must not be a biased sub-portion of the sample. Finally, there must be a sufficient number of respondents to provide a stable statistical estimate.

The Four Most Frequently Cited Studies

The four most frequently cited studies and the degree to which they are scientifically valid according to the criteria laid out above are summarized in Table 2. The studies are described below, including their findings and conclusions as well as their methodological strengths and weaknesses, in reverse order of how often they have been cited by municipalities.

St. Paul, Minnesota (1978)

This study represents the most methodologically sound of all of the empirical research reviewed. Ironically, the St. Paul study does not claim to have found any support for the existence of a relationship between sexually oriented adult entertainment businesses and negative secondary effects.

The study was methodologically stronger than most others for at least two reasons. First, the researchers examined all 76 census

\[\text{See Babbie, supra note 79, at 176-82.}\]
\[\text{See id. at 240.}\]
\[\text{See id.}\]
\[\text{See City of St. Paul, supra note 66.}\]
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Study and Control Group Method</th>
<th>Valid Measures of Outcome Variables</th>
<th>Sufficient Time Lag</th>
<th>Evidence of Negative Secondary Effect</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indianapolis, Ind.</td>
<td>Study and control group method</td>
<td>Measures appear valid (+)</td>
<td>(NA)</td>
<td>No change in property values or health indicators.</td>
<td>(NA)</td>
</tr>
<tr>
<td>(1979)</td>
<td></td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
</tr>
<tr>
<td>Phoenix, Ariz.</td>
<td>Study and control group method</td>
<td>Measures appear valid (+)</td>
<td>(NA)</td>
<td>No change in property values or health indicators.</td>
<td>(NA)</td>
</tr>
<tr>
<td>(1979)</td>
<td></td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
</tr>
<tr>
<td>Los Angeles, Calif.</td>
<td>Study and control group method</td>
<td>Measures appear valid (+)</td>
<td>(NA)</td>
<td>No change in property values or health indicators.</td>
<td>(NA)</td>
</tr>
<tr>
<td>(1979)</td>
<td></td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
</tr>
<tr>
<td>St. Paul, Minn.</td>
<td>Study and control group method</td>
<td>Measures appear valid (+)</td>
<td>(NA)</td>
<td>No change in property values or health indicators.</td>
<td>(NA)</td>
</tr>
<tr>
<td>(1979)</td>
<td></td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
<td>(NA)</td>
</tr>
</tbody>
</table>
tracts within the St. Paul region. The authors compared all tracts containing adult entertainment establishments with all of those that did not. As such, the study examined the entire geographical "study universe," negating the need for random assignment of control areas or the appropriate matching of selected control areas to the study area. Second, the study, which compared levels of neighborhood deterioration for study and control areas, maintained a substantial time lag between the first measures of deterioration and the second. Deterioration was determined by examining crime counts, housing values and market and legal influences over the study period. Therefore, changes in neighborhood climate between the first and second measures are more likely representative of reliable neighborhood changes rather than erratic fluctuations in social activity.

The most important aspect of this study is that it found absolutely no relationship between sexually oriented businesses and neighborhood deterioration. In fact, the study found that the only factor that was predictive of neighborhood deterioration was whether an alcohol-serving establishment was operating within the area. No relationship was found, however, between neighborhood deterioration and the presence of establishments that both served alcoholic beverages and offered live nude entertainment.

Los Angeles, California (1977)\textsuperscript{91}

This study is perhaps the most often incorrectly referenced of any empirical research investigating the effects of adult-oriented businesses on surrounding areas. In fact, although it is the third most relied-upon piece of research that was found supposedly establishing the relationship between adult-oriented businesses and negative social repercussions, the researchers actually never claim any significant support for such a connection.

The study report consists of four parts. In the first part of the study, the researchers openly admit that they found no evidence of a relationship between the operation of adult entertainment businesses and potential negative effects. These conclusions were based on the results of a comparison of the average property value changes for five study areas and four control areas. Each of the five study areas was chosen because it contained a known cluster of adult entertainment businesses. The four control areas were chosen because of their proximity and supposed similarity to at least one of the study areas and because they did not have an adult entertainment business

\textsuperscript{91}See CITY OF LOS ANGELES, supra note 65.
operating within their borders. All of the study and control areas were in Hollywood, North Hollywood or Studio City.

The researchers reported that it was difficult to find any consistent increase or decrease in property values associated with adult businesses. Results of the comparisons found that for some study and control area comparisons, there was a far larger decrease in the control (non-adult) area. Such a result is contrary to the assumption underlying the secondary effects doctrine (that adult establishments themselves cause a decrease in property values). Similarly, at least one study (adult) area increased in value by more than 400% over their comparable control (non-adult) area. Again, this result is directly opposite to what one would expect to see by assuming a connection between adult businesses and secondary effects. Given these objective findings, the researchers stated that there is "... insufficient evidence to support the contention that concentrations of sex oriented businesses have been the primary cause of these patterns of change in assessed valuations between 1970 and 1976." 82 It seems that those who have incorrectly referenced this study as supporting the relationship between adult entertainment businesses and lower property rates have simply disregarded the preceding statement by the study’s authors.

The second part of the Los Angeles study claimed that survey results suggest that public opinion is strongly opposed to the operation of adult businesses. Such a "study" does nothing more than attempt to gauge subjective opinions and does not then serve to answer the more relevant question of whether adult businesses actually cause secondary effects. In addition, even in this subjective endeavor, the researchers failed to adhere to minimum professional standards by failing to conduct the research in accordance with proper survey techniques—most importantly, they failed to obtain a random sample of respondents. Without adherence to the requirement that a random sample of respondents be obtained, the study authors cannot calculate an error rate, and the reliability of the results cannot be determined. Instead, the Los Angeles study authors are left with a non-random survey of the opinions of potentially biased property owners and real estate professionals who each lived and/or worked within 500 feet of an adult entertainment business. Such a "survey" offers no insight as to whether adult establishments engender secondary effects and is not even representative of the broader public opinion on the issue.

82Id. at 25.
In the third part of the Los Angeles study, the researchers openly acknowledge that they found no significant differences in crime rates between the census tracts encompassing the areas containing adult entertainment businesses and areas containing no such establishments. This part of the study consisted of an examination of the crime and population statistics for each of the census tracts containing clusters of adult entertainment businesses. Only tracts containing the clusters of adult businesses considered within the study areas for the first part of the study (discussed above) were considered. These data were then compared to those obtained from the census tracts containing each of the comparison control (non-adult) areas used in the first part of the study. Both sets of data were analyzed and compared over time in order to determine any significant differences concerning crime rates. The study authors concluded that in general there were no significant differences in crime rates between the census tracts encompassing the study (adult) and control (non-adult) areas and that no firm conclusions relevant to the study could be developed.

The fourth and final part of the Los Angeles study involved a “special” police study of the areas of Hollywood containing clusters of adult entertainment businesses. However, the researchers failed to adhere to even the most basic and rudimentary professional standards by failing to attempt to make a comparison of crime statistics in these areas with those in comparable control (non-adult) areas. The researchers failed to compare the areas surrounding adult businesses with comparable control (non-adult) areas. In addition, the researchers admitted to a substantial change in police surveillance of the area under study, which renders any results at least suspect and most likely meaningless. Although the findings of this study suggested high levels of criminal activity within these clusters, any implication that this is connected to the presence of adult businesses is invalidated by the fact that the researchers admitted to “stepped up” surveillance within these areas. Put simply, the police most likely found greater amounts of crime in the adult establishment areas because they were trying harder to find it. These failings and problems take this portion of the study outside of the reliability criteria of Daubert discussed above.

*Phoenix, Arizona (1979)*\textsuperscript{83}

This report presents the findings of a study performed in Phoenix that attempted to examine the relationship between adult entertain-

\textsuperscript{83}See CITI OF PHOENIX, supra note 64.
ment businesses and local crime rates. This study claimed to find higher overall crime rates in study areas containing adult-oriented businesses compared to control areas containing no such businesses. However, the evidence of negative secondary effects was equivocal at best. In addition, the study fails to adhere to professional standards because the control sites are not sufficiently comparable with the study site and there was not a sufficient period of time for the collection of data, both prior to and following the establishment of an adult entertainment business. The time control is necessary to ensure that the study is not merely detecting an erratic pattern of social activity.

The researchers selected three geographically diverse study areas, each comprised of one census tract in which at least one adult entertainment business was in operation. They further selected three control (non-adult) tracts located directly adjacent to the study tract. An attempt was made to match each of the three control areas with the study areas on several dimensions, including the number of buildings built since 1950, the median family income, median population age, percentage of acreage used residually and percentage of population that was non-white.

It is essential that the selected study and control areas be accurately matched, but the matching of study and control census tracts for this study was unacceptable. The median income for study area 1 was 30% lower than that in the matching control, control area 1 had a substantially greater number of buildings built since 1950 than the corresponding study area, and study areas 2 and 3 each had significantly lower median income levels than did their matching control areas. Since income and crime levels are generally inversely related one might expect to see higher crime rates with lower income irrespective of the presence of adult businesses. These failures to sufficiently match the study and control areas suggest that this study does not adhere to acceptable professional standards for scientific research.

In addition, there was an insufficient period of time, both prior to and following the establishment of an adult entertainment business for reliable measures of crime or economic deterioration to be obtained. The study was limited to crime rates for a one-year period. Because of the extremely short period of time, one cannot be sure that the study was not merely detecting an erratic pattern of social activity.

Finally, although the study findings suggested that overall crime rates were higher in each of the study areas than those for each matching control area, a composite index of "violent crimes," which included murder, robbery, assault and rape, was also constructed.
Each study (adult) area showed a lower rate of violent crime (including rape) than the matched control (non-adult) area. In addition, the rate of child molestation was higher in the control (non-adult) areas than in the matched study (adult) areas. The results of the study offered, at best, equivocal evidence of the relationship between crime rates and the operation of adult entertainment businesses.

**Indianapolis, Indiana (1984)**

This study appeared to be the report most widely cited and relied upon by municipalities as evidence of negative secondary effects. Regardless of the problems with this report as outlined in this summary, the overall study offered equivocal findings regarding the supposed relationship between adult businesses and negative secondary effects. More importantly, in a sub-area analysis most relevant to the question of the relationship between adult businesses and secondary effects, lower rather than higher crime rates were found in all study (adult business) areas when compared to control (no adult business) areas. In addition, the overall study failed to adhere to rudimentary professional standards of scientific evidence, and an error rate could not be calculated due to a failure to meet basic statistical assumptions.

The methodological problems with this study can be summarized as follows: (1) The control sites were not sufficiently comparable (properly matched) with the study sites. (2) No measurements were taken prior to the establishment of an adult entertainment business to ensure that the study was not merely picking up an already established crime pattern that is independent of the adult businesses in the area. (3) There was a potential confounding effect caused by adult entertainment businesses that supplied both sexually oriented entertainment and alcoholic beverages. (4) The researchers did not adhere to minimum professional standards by failing to conduct a survey study of real estate professionals in accordance with proper survey techniques. Beyond being purely subjective, the most striking limitations of this survey study were that it asked a national sample of real estate appraisers who were not from Indianapolis to consider only a hypothetical scenario concerning adult businesses in an unspecified community. Thus, the survey results are not applicable to the question of whether an adult

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*See City of Indianapolis, supra note 63.*
business would have a negative (even subjective) effect upon property values in the Indianapolis area.

The Indianapolis study contained reports of four separate analyses. Each had significant methodological problems that undercut its reliability.

While the first set of analyses purported to show that higher crime rates were associated with adult entertainment businesses, the researchers failed to adhere to minimum professional standards by not properly matching study and control areas and by not including a sufficient period of time prior to the establishment of an adult entertainment business for collection and analysis of data. In this portion of the report, the researchers compared crime rates for six study areas containing at least one adult entertainment business with crime rates for six control areas containing no adult entertainment businesses. The study authors attempted but failed properly to match control and study areas on a number of criteria, including zoning mix, population size and age of housing stock. Significant differences existed in reference to the zoning mix within the majority of study versus control sites. In addition, the control sites were 37% more heavily populated than the study sites. Since population density and zoning mix are often associated with higher crime rates, any differences found between the study and control areas could very well have been due to these factors rather than the presence of adult businesses.

Another problem with the study was that it did not include a sufficient period of time prior to the establishment of an adult entertainment business for the collection and analysis of data. This lack of a measurement some time before the adult business located in the area made it impossible to determine whether findings of higher or lower crime rates in either area were associated with the operation of adult entertainment businesses or whether the study was simply detecting an already established pattern of criminal activity.

Finally, also problematic was the fact that at least one establishment that served alcoholic beverages was included within each of the study areas, while this was not the case for each of the control areas. As least one study has found evidence that the presence of alcohol-serving establishments are associated with higher rates of criminal activity, this must be viewed as a potentially serious flaw (confounded) to the study's validity. One would expect to see higher crime rates in areas that contained establishments that served alco-

City of St. Paul, supra note 66.
holic beverages, regardless of the presence or absence of any sexually oriented businesses.

Particularly interesting was the fact that the Indianapolis report included a sub-area analysis that found lower rather than higher crime rates in all areas where adult businesses were located compared to control (non-adult) areas. This analysis involved a comparison of crime statistics for a smaller sub-area of the larger areas considered in the first analysis described above. The researchers examined crime rates in a 1000-feet radius around the adult businesses in the study areas. They compared these crime rates to those within a 1000-feet radius around a random centroid located within the control areas used in the first analysis. This portion of the study would then appear to be the most relevant of all to the question of whether adult businesses create or cause secondary effects in the areas immediately surrounding them. However, this sub-area analysis found lower crime rates in all study areas compared to control areas.

The Indianapolis report authors also claimed to have found a substantially smaller increase in property values for the study areas than for the control areas. However, the researchers failed to adhere to minimum professional standards by not properly matching study and control areas for this analysis. This portion of the study was therefore unreliable from a scientific standpoint.

The analysis compared the average home mortgage value and average number of homes sold for the control and study areas discussed in the first study, as well as those for the center township area. Since the data came from the same study and control areas discussed in the first analysis, these data are fraught with the same methodological problems associated with that data set (that is, the study and control areas were not properly matched). The average mortgage values in the study areas were initially 49% higher than those in either the control areas or the central township area. As such, the finding that the average mortgage value for the control areas and central township area increased by 77% and 56%, respectively, while the study areas saw only an average increase of 28%, can be explained as the result of what is known as a ceiling effect. The study area values may have initially been far more inflated than the two comparison areas. Thus, it would come as no surprise that the study areas saw a smaller increase in property value than the comparison areas. The vast differences in initial mortgage values associated with the failure to properly match control and study areas rendered the two areas far too dissimilar to consider as suitable comparison groups. Finally, it should also be noted that despite the greater increase in mortgage values for the control and
center township areas in comparison to the study (adult) areas, the study area still maintained a higher average mortgage value when the final measures were taken.

The fourth analysis described in the Indianapolis report included the results of a national survey of members of the American Institute of Real Estate Appraisers. The data collection for this analysis was flawed in three ways. First, survey research on perceived likely deterioration effects is completely subjective and does not answer the question as to whether there are secondary effects associated with adult establishments in terms of actual property values, such as average home prices or other economic indicators. Second, even in this subjective analysis, the researchers failed to adhere to minimum professional standards by failing to conduct the study in accordance with proper survey techniques. Although a random sample of real estate professionals was obtained, the response rate was unacceptably low (only one third of the respondents returned the questionnaire). Further, no error rate was calculated for the percentages reported in the study. Without the calculation of an error rate, the researchers cannot establish a "confidence interval" around the percentages calculated in the study. This is especially troublesome given the fact many of the findings hovered around the 50% mark. Without some indication of the confidence one can place in these estimates, it is unclear if the majority or a minority of respondents projected a negative impact if adult businesses were to locate in a community.

Third, and even more problematic, the sampled appraisers were asked only to consider a brief hypothetical situation concerning a middle class family that lived in an area in which an adult bookstore would soon be opening in a nearby building. The respondents were asked five questions concerning the potential effects on the value of the family's home. A fatal flaw in this study is that it asks a nationally selected group of appraisers—none of whom were from Indianapolis—to consider only a hypothetical scenario. Thus, it has little to say about how an Indianapolis community appraiser might actually view the value of a home in Indianapolis (if such a question was even truly relevant to the secondary effects doctrine).

**Summary of the Six Other Most Frequently Referenced Reports**

Table 3 provides a brief description of the methodological features of each of the remaining studies in the "top ten," and illustrates the de-
### Table 3. How Well the Top Ten Referenced Studies Meet the Necessary Criteria for Good Social Scientific Research

<table>
<thead>
<tr>
<th>Study</th>
<th>Matched Control</th>
<th>Valid Measure of Crime Statistics</th>
<th>Sufficient Time Lag</th>
<th>Change in Police Surveillance</th>
<th>Correct Survey Methods</th>
<th>Evidence of Secondary Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indianapolis (1984)</td>
<td>No (-)</td>
<td>Yes (+)</td>
<td>No (-)</td>
<td>No (+)</td>
<td>Yes (+)</td>
<td>Equivocal</td>
</tr>
<tr>
<td>Phoenix (1979)</td>
<td>No (-)</td>
<td>Yes (+)</td>
<td>No (-)</td>
<td>No (+)</td>
<td>NA</td>
<td>Equivocal</td>
</tr>
<tr>
<td>Los Angeles (1977)</td>
<td>Yes (+)</td>
<td>Yes (+)</td>
<td>Yes (+)</td>
<td>Yes (-)</td>
<td>No (-)</td>
<td>None</td>
</tr>
<tr>
<td>St. Paul (1978)</td>
<td>Yes (+)</td>
<td>NA</td>
<td>Yes (+)</td>
<td>NA</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>Austin (1986)</td>
<td>No (-)</td>
<td>Yes (+)</td>
<td>No (-)</td>
<td>No (+)</td>
<td>Yes (+)</td>
<td>Equivocal</td>
</tr>
<tr>
<td>Amarillo (1977)</td>
<td>No (-)</td>
<td>Yes (+)</td>
<td>No (-)</td>
<td>No (+)</td>
<td>NA</td>
<td>Yes</td>
</tr>
<tr>
<td>Detroit (1972)*</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>Beaumont (1982)*</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>Kent (1982)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>No (-)</td>
<td>Equivocal</td>
</tr>
</tbody>
</table>

*Not an empirical study.
gree to which the studies are scientifically valid. The remaining six most frequently referenced studies in descending order were reports produced by Austin, Texas (1986), St. Paul, Minnesota (1987, 1988), Amarillo, Texas (1977), Detroit, Michigan (1972), Beaumont, Texas (1982), and Kent, Washington (1982). Two of these, the reports by Beaumont and Detroit, are not empirical studies. The Beaumont "study," for example, is merely a report prepared by the planning department of that municipality, suggesting a need for regulation of adult businesses. The remaining four reports did not adhere to minimum professional standards of valid scientific research by failing to meet one or more of the four necessary criteria discussed above.

The studies produced by Austin, St. Paul and Amarillo all failed to compare neighborhood characteristics (crime rates or property values) for areas containing adult entertainment businesses with control areas containing no such businesses. In addition, these three studies failed to include measures of neighborhood characteristics over a sufficient period of time, both prior to and following the establishment of adult entertainment businesses. Further, the Kent study, which contained a report of an attempt to query neighbors of adult business establishments, failed to adhere to even the most minimal professional standards for proper survey research.

CONCLUSIONS

This article has abstracted and analyzed the methodology and major empirical findings of studies purporting to detect secondary effects of adult businesses. It has demonstrated, with few exceptions, that the scientific validity of the most frequently used studies is questionable and the methods are seriously and often fatally flawed. These studies, relied on by communities throughout the country, do not adhere to professional standards of scientific inquiry and nearly all fail to meet the basic assumptions necessary to calculate an error rate. Those studies that are scientifically credible demonstrate either

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96City of Austin, Texas, Report on Adult Oriented Businesses in Austin (1986).
99City of Detroit, Michigan, Detroit’s Approach to Regulating “Adult” Uses (1972).
100City of Beaumont, Texas, Regulation of Adult Uses (1982).
101City of Kent, Washington, City of Kent Adult Use Zoning Study (1982).
no negative secondary effects associated with adult businesses or a reversal of the presumed negative effects.

Specifically, this article applied four criteria for methodological validity and found that the majority of studies failed to meet at least one, and often all, of these criteria. First, a number of studies attempting to compare areas containing adult businesses to areas containing no such businesses failed to include comparison (control) areas that were sufficiently matched regarding important characteristics, such as age of housing stock or racial make-up. This lack of comparability between study and control areas prevents researchers from determining whether neighborhood deterioration is related to the operation of adult businesses in an area or that some other confounding variable is responsible for the outcome. Second, a number of the studies using neighborhood crime measures have collected these statistics improperly. Although many studies gathered legitimate and consistent measures of crime statistics, such as police arrest reports over a sufficient period of time, a number of others used less scientifically acceptable measures, such as cross sectional survey results of residents' opinions of levels of crime. Third, the majority of studies failed to include a sufficient period of elapsed time, both prior to and following the establishment of an adult entertainment business, when measuring the relationship between the presence of adult businesses and a number of negative outcomes, such as higher crime rates and lower property values. Without a sufficient study period, it is difficult to determine whether a relationship exists between adult entertainment businesses and negative secondary effects, or whether the data are simply a reflection of an erratic pattern of local activity. Finally, most of the studies that included survey results utilized non-random and therefore biased samples of residents and/or business owners, rendering them scientifically invalid. Even if methodologically valid, such studies offer only subjective opinions concerning the impact of adult businesses and provide little, if any, evidence of actual negative secondary effects.

The studies reviewed here have been (and continue to be) shared across communities. As such, the methodological flaws found in these studies prevent them from being used to establish a sufficient government interest in the regulation of adult businesses within a particular community. However, these unsound studies have been repeatedly misused as evidence across a large number of other municipalities. For example, the Indianapolis study is cited by no fewer than 22 communities as evidence of a relationship between adult businesses and negative secondary effects. This study contained several substantial methodological flaws and found evidence both sup-
porting as well as rejecting negative secondary effects. Thus, the potential exists that as many as 22 zoning ordinances have been founded on a false premise about the substantial government interest in regulating the location of these businesses.

Although not specifically mandating such, the United States Supreme Court in *Pap's* may be perceived by some municipalities as permitting the extension of use of these flawed studies to the regulation of expressive conduct *within* an adult business as a basis for upholding an ordinance to regulate nudity on the ground that such a restriction would serve to eliminate negative secondary effects of such expression. Such regulation would be based on the same false premise as the zoning regulations addressed in *Young* and *Renton*—that there is valid evidence of a substantial government interest at stake, and that these types of laws further those interests (if they indeed exist).102

102 In his dissent in *Pap's*, joined by Justice Ginsburg, Justice Stevens argued that no rationale existed for an extension of the secondary effects doctrine as a justification for censoring nude dancing. City of Erie v. *Pap's A.M.*, 126 S. Ct. 1382, 1406 (2000) (Stevens, J., dissenting). This doctrine was originally developed in *O'Brien* and extended to the regulation of adult businesses as a justification for zoning in *Young*. Stevens wrote that, although two fractured majorities of the Supreme Court have found such an application of the secondary effects rationale acceptable, the assumption that these secondary effects studies, even if they were not methodologically flawed, could be applied to justify regulation of forms of expression such as nude dancing may be unfounded. *Id.* at 1408–09. He suggested that the secondary effects doctrine, as it had previously been applied to adult businesses, was tailored towards zoning, that there existed no clear rationale for extending this doctrine as a justification for the regulation of expressive content, and that doing so represented a dangerous extension of censorship. *Id.* Stevens wrote:

> Until now the "secondary effects" of commercial enterprises featuring indecent entertainment have justified only the regulation of their location. For the first time, the Court has now held that such effects may justify the total suppression of protected speech. Indeed, the plurality opinion concludes that admittedly trivial advancements of a State's interests may provide the basis for censorship. The Court's commendable attempt to replace the fractured decision in *Barnes* ... with a single coherent rationale is strikingly unsuccessful; it is supported neither by precedent nor by persuasive reasoning.

*Id.* at 1406. Justice Stevens also stated:

> To believe that the mandatory addition of pasties and a G-string will have any kind of noticeable impact on secondary effects requires nothing short of a titanic surrender to the implausible. It would be more accurate to acknowledge, as JUSTICE SCALIA does, that there is no reason to believe that such a requirement "will at all reduce the tendency of establishments ... to attract crime and prostitution, and hence to foster sexually transmitted disease."

*Id.* at 1409 (citing *id.* at 1402 (Scalia, J., concurring)). Justice Stevens, therefore, viewed Erie's anti-nudity ordinance as an unwarranted and ineffective restriction on expression. Justice Souter noted that there had been an adult business zoning ordinance on the books in Erie for 28 years before the anti-nudity ordinance in question
NEGATIVE SECONDARY EFFECTS

Even if the studies undertaken to justify zoning were not scientifically flawed, there are a number of other reasons why it may be inappropriate to extend the secondary effects doctrine to the regulation of nudity. First, and perhaps most obvious, there have been no studies that have been specifically designed to measure the impact of nudity per se on adverse secondary effects. Of most use would be studies wherein rates of adverse secondary effects for areas surrounding nude dancing establishments are compared to those surrounding establishments where pasties and a g-string are required. In the absence of such a direct test, it cannot and should not be assumed that the studies reviewed here, even if methodologically sound, would generalize to the regulation of nudity.

In fact, from a social psychological standpoint there are several factors that may prevent the generalization of the evidence collected to justify the application of zoning regulations to the regulation of nude dancing. For example, there may be substantial differences in the characteristics of the patrons who frequented the adult establishments studied to justify zoning compared to those who now visit establishments offering live nude dancing. Further, the earlier secondary effects studies were conducted to address the problem of adult businesses that purveyed explicit depiction of sexual intercourse and other sexual acts, whereas nude dancing does not involve such explicit performances. In addition, live entertainment may produce substantially different effects than filmed or videotaped acts. Finally, the interpersonal element of live nude dance establishments must be considered. Viewing a live dancer and later perhaps interacting with that dancer may produce significantly different outcomes than viewing erotic movies or the other fare usually purveyed in businesses considered in earlier secondary effects studies. Until these questions are addressed through scientifically valid empirical research, the applicability of the secondary effects doctrine to yet another area of speech regulation is highly questionable.¹⁰³

¹⁰³See Alameda Books, Inc. v. Los Angeles, 222 F.3d 719 (9th Cir. 2000). The Ninth Circuit has addressed the applicability of studies conducted on adverse secondary effects for a particular purpose to another, arguably unrelated concern. Id. at 724–25. The appeals court affirmed a lower court’s decision to strike down a Los Angeles ordinance prohibiting the operation of adult businesses that both sell adult products and contain facilities for the viewing of adult movies or videos. Id. at 726.
The Application of Social Science Evidence
to the Regulation of Nude Dancing

Because the anti-nudity ordinance under scrutiny in Pap's was so similar to that considered in Barnes, it seems likely that with its Pap's decision, the Supreme Court had hoped to replace the fractured decision in Barnes with a clear majority ruling. Such a ruling may have offered the lower courts, lawmakers, adult business owners and First Amendment scholars a coherent precedent towards which to look when considering the constitutionality of anti-nudity regulations based on the secondary effects rationale. Yet, while the Court's decision in Pap's appears to be another fractured decision, there may be more coherence to the ruling than is at first apparent.

Five justices and thus a majority embraced the secondary effects doctrine in Pap's. Justice Souter, who dissented in part, not only agreed with the plurality's application of the O'Brien test to nude dancing as a form of symbolic speech, but, in theory, he also supported the secondary effects doctrine. Justice Souter merely disavowed his assertion in Barnes that secondary effects may be presumed. In Pap's, he questioned whether such a relationship has been empirically demonstrated in previous studies. It appears that Justice Souter is willing to accept application of the secondary effects doctrine to regulation of nudity in a particular community, if empirical evidence of a relationship between nude dancing and negative secondary effects can be obtained and, since his concurrence is necessary to obtain a majority that the O'Brien secondary effects doctrine applies, this opinion may in fact be the Constitutional holding of Pap's.

Nevertheless, in Pap's, the plurality provides room for challenges, based on the collection of empirical evidence, to the assertions made by municipalities regarding a relationship between adverse secondary effects and nude dancing. The plurality noted that the adult business in question in Pap's could have challenged the City of Erie's assertion that nudity led to ill effects but that it did not do so. This leaves room for the introduction of secondary effects evidence col-

The court rejected Los Angeles's attempt to use a study conducted in 1977 (reviewed above), which examined the relationship of adverse secondary effects and the concentration of adult businesses as evidence of a compelling government interest to regulate single business with combined uses. The court reasoned that the 1977 study offered no information on the effects of the combination of product-video booth within a single business. Id. at 724. "For the purposes of the secondary effects identified in the Los Angeles study, a solitary bookstore/arcade combination is hardly of the 'same character' as a grouping of multiple adult business establishments in a given geographical area." Id. at 726 n.7. As such, the court refused to allow a leap in logic similar to that of the plurality in Pap's.
lected by adult businesses both in city council hearings and as a basis for court litigation.

It is likely, based on the plurality's decision in Pap's, (that is, that the secondary effects doctrine pertains to nudity regulations), coupled with Justice Souter's admonition that secondary effects must be demonstrated convincingly (that is, empirically), that future court rulings concerning the constitutionality of regulations of nudity within adult businesses will continue to involve an application of some form of the O'Brien test. In considering the compelling government interest prong of the O'Brien test, lower courts intending to remain consistent with the Supreme Court's holding in Pap's may be forced to consider the methodological legitimacy of any evidence of a relationship between negative secondary effects and adult businesses collected by municipalities and by business owners who attempt to challenge governmental regulations predicated upon the allegation of such a connection.

In evaluating the admissibility of this evidence, the courts may be best served by turning to standards laid out in Daubert for the admissibility of scientific evidence. The application of such standards, bolstered by Justice Souter's opinion in Pap's, may force the courts to reject the studies previously relied upon as evidence of negative secondary effects, and require new, more methodologically sound, studies to demonstrate a compelling government interest in regulating nudity.

The courts should be mindful of the criteria designated above for collecting empirical evidence in a methodologically sound manner. Specifically, only evidence obtained using relatively closely matched control and experimental comparison areas should be acceptable. Further, where possible, a time-series analysis should be undertaken. All indicators of neighborhood quality (for example, crime rate and property values) must also be consistently measured across the study conditions. Courts may then accept any evidence (or lack thereof) that met all of the above criteria as definitive. Only such evidence of a relationship between adult entertainment businesses and negative secondary effects should be acceptable, both socially scientifically as well as legally.

In this article, it has been demonstrated that there is sufficient room for a serious challenge to the assumption made by communities across the United States that past studies of secondary effects show an empirical relationship between adult businesses and negative effects. Further, there is presently no legitimate basis for extending the secondary effects doctrine to the regulation of expression within adult businesses based on these studies. City councils, municipalities and the courts are best served by the collection of new evidence based on sound scientific standards.