to improve on existing device performance while maintaining acceptable economic value. This information could then inform postmarketing surveillance efforts, triggering reviews at prespecified efficacy or complication thresholds and facilitating rapid application of new data as they become available. Manufacturers could use such data to improve device development; researchers could identify target populations for evaluating novel technologies; insurers could identify opportunities for value-based reimbursement; and consumers could be educated about what clinical benefits they are getting for their money. The complex trade-offs between short- and long-term health and economic consequences of technological innovation may not be captured by even the most sophisticated randomized trials. Model-based approaches may provide invaluable insights for evaluating medical device innovation and merit consideration as a standard component of the evaluation process.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.
clinics that do 400 or more abortions per year. In Kansas, where more than 10,000 abortions were performed in 2008, the law may reduce the number of providers from three to one. Many Kansas residents would seek abortion services in other states. But the cost of traveling elsewhere for an abortion can be substantial, and travel distance can make compliance with another state’s mandatory counseling and waiting periods, or its judicial bypass procedure, more difficult.

Texas’s Woman’s Right to Know Act provides a natural experiment that permits comparison of the effects of demand-side and supply-side policies. The law, which went into effect in January 2004, has two components. The demand-side element requires that the patient receive information similar to that mandated in other states at least 24 hours before an abortion is performed. The supply-side component requires that all abortions at or after 16 weeks of gestation be performed in a hospital or an ambulatory surgical center. Ambulatory surgical centers must adhere to more demanding staffing, reporting, and facility-structure requirements than free-standing abortion clinics must meet. When the law went into effect, none of Texas’s non–hospital-based abortion providers qualified as ambulatory surgical centers, so the average distance to the nearest non–hospital-based abortion provider offering terminations at or after 16 weeks of gestation rose from 33 miles in 2003 to 252 miles in 2004. Hospitals were not a viable alternative, since Texas hospitals perform relatively few abortions.

If Texas’s demand-side policies had an impact, there would have been a decrease in abortions at all gestational stages. If only the supply-side policy restricted access, the decrease would be limited to abortions performed at or after 16 weeks. I found that the supply-side policy had dramatic effects, whereas the demand-side policy had none. The number of abortions performed in Texas at or after 16 weeks of gestation dropped by 88%, from 3642 in 2003 to 446 in 2004, while the number of residents who left the state for a late abortion almost quadrupled, from 187 in 2003 to 736 in 2004. Despite this large outflow, there were 2460 fewer abortions at 16 weeks or later in Texas residents 1 year after the law took effect, a 68% decline. By 2006, Austin, Dallas, Houston, and San Antonio had ambulatory surgical centers in which abortions were performed at or after 16 weeks of gestation, but the number of such abortions remained well below the 2003 level. Over the same period there was no meaningful change in the number of abortions before 16 weeks of gestation (see graph). The demand-side policies had no measurable impact.

Even more restrictive supply-side requirements have been enacted in other states. A 2007 Missouri statute mandates that any abortion facility in which five or more first-trimester abortions per month or at least one abortion after 12 weeks of gestation are performed must meet the requirements of an ambulatory surgical center. A state judge issued a temporary restraining order against implementing the statute, largely because of its economic impact. Virginia enacted a similar statute in March 2011. Any abortion facility in which five or more first-trimester abortions per month are performed will be considered a hospital for purposes of the legislation. New regulations from the Virginia Department of Health are scheduled to go into effect on January 1, 2012, after the expected approval of the governor. A new Arizona law requires that only physicians perform medical (as well as surgical) abortions. As a result, Planned Parenthood of Arizona stopped providing abortion services in three clinics, since only nurse practitioners had been available to dispense medication for nonsurgical abortions.
If policies rendering free-standing abortion clinics economically unviable are allowed to stand, a map of U.S. abortion services will probably resemble the blue-state–red-state configuration after the 2004 presidential election. Services will be readily available in coastal blue states, whereas women in the country’s vast middle will have to travel large distances for access. To illustrate the importance of travel distance as a determinant of whether a woman obtains an abortion, consider abortion rates just before Roe v. Wade. In 1971–1972, there were 27,793 abortions performed in New York in residents of Illinois, an annual rate of 5.8 abortions per 1000 female Illinois residents 15 to 44 years of age (see map) — but the rate of abortions performed in New York in Connecticut residents was almost twice as high, 10.3 per 1000, and the rate among New Jersey residents was more than 2.5 times as high, 15.2 per 1000.

There were also important differences according to race. The rate of abortions performed in New York in non-white Illinois residents was lower than that among whites (4.5 vs. 6.0 per 1000). The opposite was true for Connecticut and New Jersey. The abortion rate among nonwhite women was 15.8 per 1000 for Connecticut and 23.0 per 1000 for New Jersey, as compared with 9.6 and 13.6 per 1000, respectively, among white residents of those states.

The pre-Roe data illustrate that the farther women must travel for an abortion, the lower the abortion rate will be, and that travel distance is a greater obstacle for less-advantaged women. Thus, if a “blue state–red state” distribution of abortion services evolves, the pre-Roe racial and socioeconomic patterns will probably reemerge. Women with resources will travel substantial distances for an abortion, whereas less-advantaged women will travel less.

History suggests that there will always be abortions. The goal should be to reduce the abortion rate by reducing unintended pregnancies, while providing safe, legal services for women who need
them. Making access to abortion unnecessarily costly will probably result in clandestine abortions and unintended childbearing among families with the least resources and the fewest options.

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

From Baruch College and Graduate Center, City University of New York, and the National Bureau of Economic Research — both in New York.


Copyright © 2011 Massachusetts Medical Society.