The CPSC's ATV Risk Model

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Abstract
Evaluations of the Consumer Product Safety Commission's impact on safety have been generally unfavorable. The CPSC's questionable effectiveness may be because many of its actions have been based on erroneous assessments of the factors associated with accident risk. This paper analyzes the statistical underpinnings of the CPSC's regulatory approach to all-terrain vehicles (ATVs), one of the most prominent issues faced by the agency. By investigating a wider range of risk models, we find the principal provisions of the CPSC's ATV policy, most notably stopping the sale of new three-wheel ATVs, are not supported by the risk data.

1. Introduction
Evaluations of the effectiveness of the Consumer Product Safety Commission (CPSC) at improving safety have been generally unfavorable. Viscusi, for example, was unable to find any evidence that the agency was having a discernible beneficial influence on accident rates, either overall or for specific products.

One reason for the CPSC's questionable effectiveness may be that its assessments of the factors associated with accident risk are not firmly grounded in the accident data. The CPSC's risk analysis for all-terrain vehicles (ATVs) is a case in point.

ATV safety was the most important and visible issue facing the CPSC during most of the 1980s and probably absorbed more of the Commission's attention and budgetary resources than any other issue in its twenty-year history. The agency committed substantial resources to gathering data on ATV driver behavior and analyzing the factors associated with ATV risk. Yet, despite a major statistical effort, the CPSC's regulatory strategy was based on an identification of ATV risk factors that was, in important respects, incorrect.

ATVs are three- and four-wheeled vehicles designed to be used on unpaved terrains, particularly in less accessible areas. They are driven primarily by recreational riders, but also have significant "utility" uses for farming, ranching, and numerous other commercial activities requiring off-road transportation. ATVs have been on the market since 1970, but

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sales were relatively low until the early 1980s, when their popularity began to grow. The associated increase in ATV-related injuries was highly publicized by press accounts labeling ATVs as unsafe, including stories on both “60 Minutes” and “20/20,” and by congressional hearings in which accident victims and their families were prominently featured.

The CPSC’s investigation of ATVs, which began in 1984, culminated in a decision to file a complaint to have ATVs declared “imminently hazardous” under Section 12 of the Consumer Product Safety Act. The CPSC’s ATV case was finally settled in 1988 when the ATV distributors—Honda, Kawasaki, Suzuki, Yamaha, and, separately, Polaris Industries—signed a consent decree in which they agreed:

1. not to sell new three-wheel ATVs;
2. to recommend that “adult-sized” ATVs—defined as ATVs with engines of 90 cc’s or more—not be sold for the use of children under age 16, and that no ATVs be sold for the use of children under age 12;
3. to undertake major advertising and training programs to convey safety-related information.

The purpose of this article is to evaluate the extent to which these provisions are consistent with the underlying risk data and a properly specified risk model. Two major statistical risk studies were undertaken by the CPSC—the first in 1986, and the second in 1990. The 1986 study, which is summarized in articles by Rodgers and Rubin and by Rubinfeld and Rodgers, was based on survey data gathered in 1985 and 1986. The 1990 study, based on surveys conducted in 1989, corrected many of the earlier study’s data problems. In most respects, however, both studies relied on similar methodologies and reached similar conclusions.

The CPSC risk model, and the conclusion about the relative risks of three and four wheelers, was the key factor associated with regulatory action by CPSC. This conclusion resulted in the consent decree’s major provision—stopping the sale of new three-wheel ATVs.

CPSC never undertook a formal cost-benefit analysis, as it would have been required to do for a standard rulemaking, because ATVs were addressed under the imminent-hazard provision (Section 12) of the Consumer Product Safety Act. However, lower four-wheeler risk was necessary for the provision to stop selling three wheelers to yield positive net social benefits. CPSC considered four wheelers to be virtually a perfect substitute for three wheelers. Therefore, in order for there to be any benefits at all from the regulatory action, four wheelers had to be less risky than three wheelers.

Another way to view the issue is that stopping the sale of new three wheelers had a similar effect as a safety standard requiring ATVs to have four wheels. Such a safety standard obviously could not pass a cost-benefit test if it produced no benefits—i.e., if the requirement for four wheels did not reduce injury risk.

While higher three-wheeler risk was necessary for the stop-sale provision to be cost-bene-

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2 ATVs are actually sold by dealers, which are not signatories to the decree.
3 Because the 1986 study was based on injury data from 1985 and exposure data from 1986, some exposure data characteristics (e.g., experience, age, etc.) had to be backdated to 1985 in order to make the injury and exposure data comparable. This problem did not arise in the 1990 study because both the injury and exposure data were collected in 1989. In addition, the 1986 exposure survey did not determine whether respondents had been injured. The Rubinfeld and Rodgers (1992, 145-158) paper employs an application of Bayes’ rule to adjust for this and obtains results that are very similar to CPSC’s initial results. This problem did not arise in the context of the 1990 study, because the 1989 exposure survey identified injured respondents, which could then be deleted from the regression data base.