How does one evaluate the "success" of a safety regulation? There would seem to be three criteria. The first is that the regulation tackles a genuine market failure. The second is that the written standards are set at appropriate levels to achieve the minimum acceptable benchmark level of safety. The term "minimum" is used here to recognize that in a vertically-differentiated marketplace, some firms will elect to supply a higher quality service to appeal to customers who have a high taste for safety. The regulations will need to be written to be consistent with the tastes of those customers who prefer a lower level of safety. The third criterion is that the monitoring and enforcement strategy achieves compliance at the minimum cost to the government and the firms that are regulated. A regulation will be a "failure" if there are deficiencies in any or all of these three criteria.

Economists argue that a cost-benefit analysis should be used to measure success. The analyst would observe whether the regulation has led to a decline in the accident rate. Reductions in accidents would then be valued by attaching dollar values to the deaths averted, the reduced number of injuries, and the reduction in property damage. These "benefits" are then compared with the "costs" of the regulation. These costs should include any additional money that railroads have to expend on preventive effort to comply with the regulation, the cost of government inspectors, and inspection costs borne by the railroad.

In the event that the costs outweigh the benefits, one would then look to determine why the regulation had failed. In other words, one would try to determine which of the three criteria had not been met. Did the regulation address a genuine problem? Were the standards set right? Was an appropriate monitoring and enforcement strategy adopted? By answering these questions, the analyst would be able to tell whether it is possible to improve the design or implementation of the regulation.

In practice, cost-benefit calculations are fraught with difficulty. Discerning whether the introduction of regulations has any effect on accident rates is quite difficult. While there are consistent time-series accident data for the railroad industry going back to 1975, changes in regulations have occurred at the same time as other changes in the industry that affect accident rates. The "costs" of many of the regulations are typically hard to define and estimate. The costs of most safety precautions are lumped in with other maintenance, capital, and operating
expenditures in railroad accounts. While it may be possible to identify the specific capital costs of certain mandated safety equipment, changes in work practices are near impossible to either identify or value.

The late-Office of Technology Assessment (OTA, 1978) commented that many of the regulations introduced in the 1970s were not subjected to a formal cost-benefit analysis. Twenty years later it is now possible with the benefit of hindsight to form some opinion as to which, if any, of these regulations were beneficial. This book is not able to undertake any original cost-benefit calculations, but will draw inferences based on analyses of accident rates and other pertinent data.

THE MOST "CONTROVERSIAL" REGULATIONS

What are the most controversial regulations? This can be determined by a process of elimination from the full listing in table 18.1. For the purposes of this chapter, one can pass over those regulations supportive of other policy responses because their merits have been discussed earlier in the book. For a similar reason the grade-crossing regulations will not be discussed in this chapter.

Next, one can eliminate the alcohol and drug testing regulations. They appear to be very beneficial. The railroad industry has been perceived as a bastion of men working away from home who might frequent bars, and there has been a growing concern about drug use throughout the economy. The issue of conducting drug tests, and consequently what employees do in their private time, clearly requires government intervention to deal with legal and constitutional issues.

One can also pass over those regulations concerning hazardous materials, glazing, signal installation and repair, and the requirement for operating rules because these regulations are very general, and leave the rulemaking powers to the railroads themselves.

This leaves the subset of the federal regulations which are shown in table 19.1. These regulations fall into four categories: track standards, freight car and locomotive standards, operating practices, and monitoring and enforcement. Each of these categories will now be analyzed in detail. The table includes the relevant citations in the Code of Federal Regulations and the date of first introduction. With the exception of safety appliance and hours-of-service regulations, most of these regulations are quite recent.

TRACK STANDARDS

In retrospect it is easy to see why the first order of business for the FRA under the 1970 Act was to establish track standards. It is now generally accepted that the increase in derailments that started in the 1960s was due to deferred track maintenance by cash-strapped railroads coupled with the introduction of larger and heavier freight cars.