
Deregulation and Air Travel Safety

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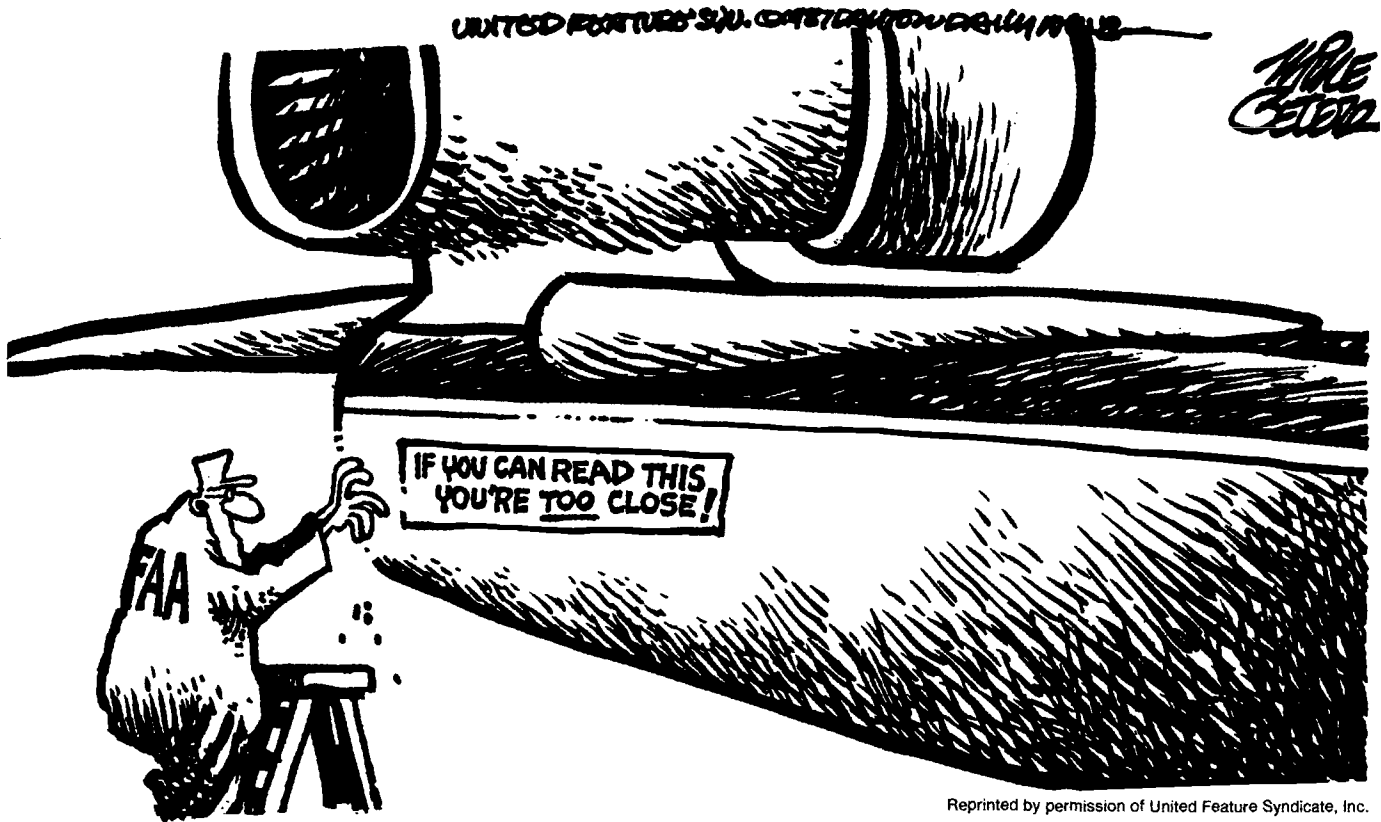
THE RECENT RASH of blown jet engines, near misses, and airliner crashes has raised fears that airline deregulation has caused a deterioration in airline safety. Policy makers and the public are being told that the nation's airline system is not working now, and that it did work under economic regulation. Critics say the airlines need to be reregulated to protect the public from airline moguls who are guided only by the profit motive. Proponents of continued reliance on market forces respond to these charges with definitive statements that safety has not been impaired by deregulation, citing as evidence the steady decline in the airline death rate (deaths per billion passenger-miles).

The facts of airline safety are not as readily apparent as either side might presume. It is a fact that the airline death rate has fallen since 1978, the year of deregulation. This should be heartening news to air travelers who may have thought

that the skies were getting less friendly. However, the death rate has been trending downward since the earliest years of commercial aviation. A crucial question remains: Has deregulation materially affected—either positively or negatively—the downward trend in the airline death rate? This is the question addressed in our research.

Our initial expectation was that the deregulation of airline ticket prices and entry would adversely affect air safety. That is, after adjusting for other factors affecting safety, airline deregulation would increase the number of fatalities. This expectation has not been supported by our empirical work. Based on a study of fatalities on all regularly scheduled domestic passenger flights in the period 1972 through 1986, we find no evidence that deregulation has caused a deterioration in air travel safety, as measured by the number or the rate of fatalities. While we do find some tentative evidence that deregulation has increased the number of reported near misses, it is unclear whether we have merely isolated an increase in reports of near misses. There is no indication that deregulation has increased the rate of near misses.

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Growth in Air Travel

Over the past 10 to 15 years, air travel has grown remarkably in the number and size of planes, the number of passengers carried, and passenger-miles flown. Whereas in 1978 there were just 39 domestic and international air carriers in the United States, by 1986 there were 98. Between 1972 and 1986 the number of (fixed-wing) planes in service increased more than 60 percent, the average number of seats per plane grew by nearly 30 percent, and the total number of seats jumped by approximately 110 percent. Over the same period the number of passenger-miles flown by domestic carriers increased from just over 144 billion passenger-miles to 366 billion. This is illustrated in Figure 1.

Air Fatalities and Near Misses

Throughout this period of rapid expansion in air travel, the number of airline fatalities trended downward. As illustrated in Figure 1, air-travel deaths ranged from a high of 460 in 1974 to a low of 7 in 1986. The peaks in the data reflect the

bunching of deaths that occurs with crashes of large planes (for example, the Chicago crash of 1979 and the New Orleans crash of 1982). The average number of air-travel fatalities per billion passenger-miles fell sharply—from 1.19 in the period 1972 to 1978 to 0.48 in 1979 to 1986. This is illustrated in Figure 2.

While air fatality rates were generally improving, the situation with near misses was mixed. Without adjusting for the volume of air travel, the number of reported near misses climbed from 231 in 1972 to 840 in 1986. As is evident in Figure 3, with the exception of a dramatic dip in 1981 and 1982, the number of near misses increased steadily with the increase in the number of passenger-miles flown. The number of near misses per billion passenger-miles, shown in Figure 4, rose in the period 1972 to 1978 and fell dramatically in the early 1980s, only to rise again in the mid-1980s. The rate of reported near misses averaged about 2 per billion passenger-miles between 1972 and 1986.

It is important to note that the data on near misses are highly sensitive to the reporting system, as Federal Aviation Administration officials have acknowledged. Between 1968 and 1971, for

FATALITIES AND PASSENGER-MILES FLOWN FOR SCHEDULED DOMESTIC FLIGHTS

Figure 1

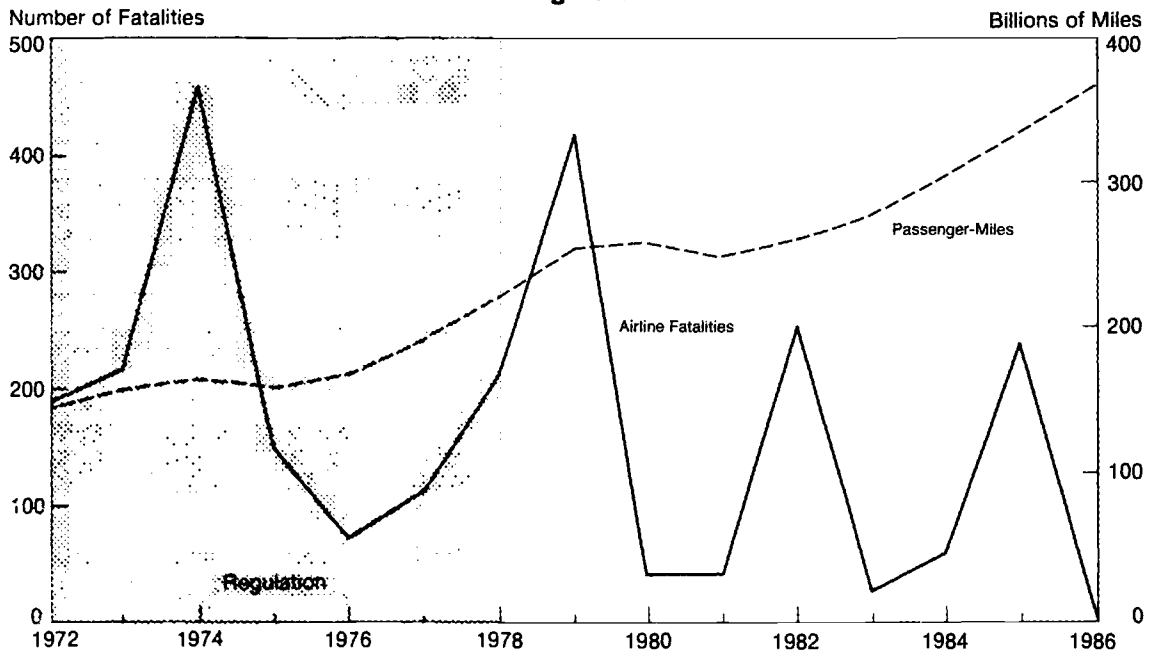
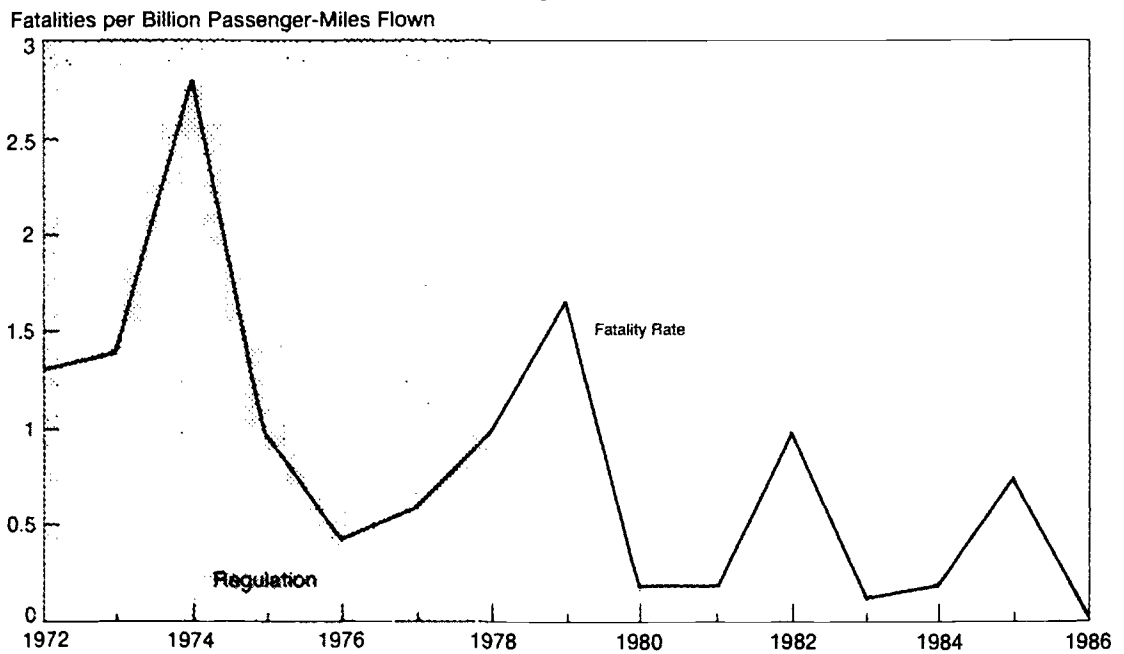


Figure 2



Source: Federal Aviation Administration

REPORTED NEAR MISSES AND PASSENGER-MILES FLOWN FOR SCHEDULED DOMESTIC FLIGHTS

Figure 3

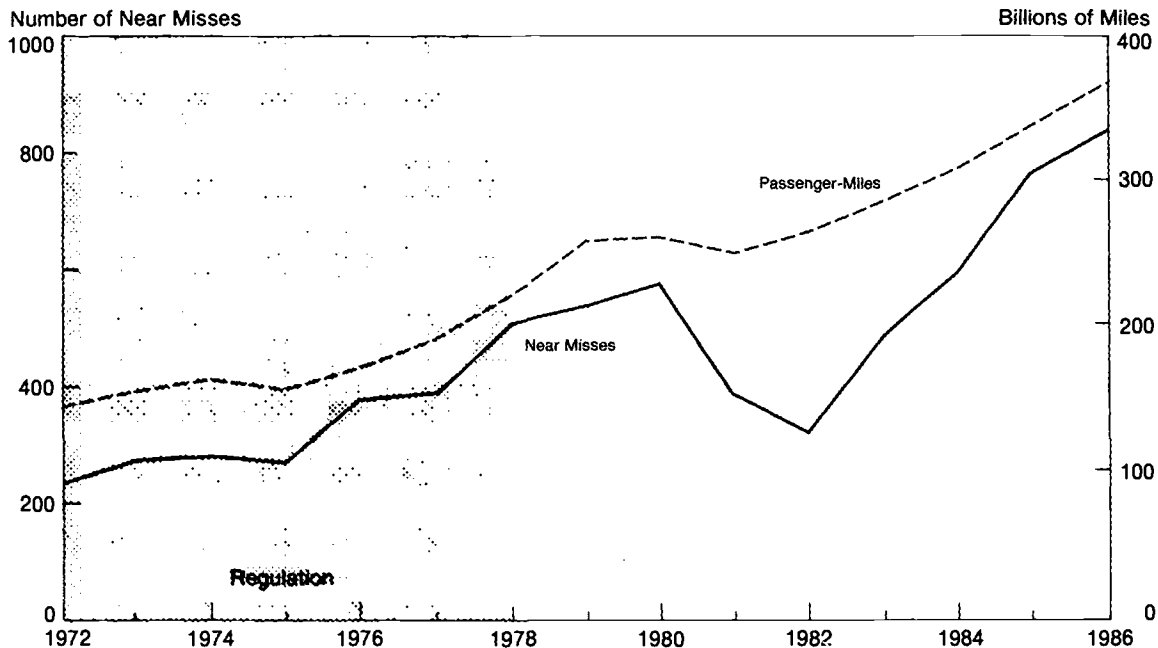
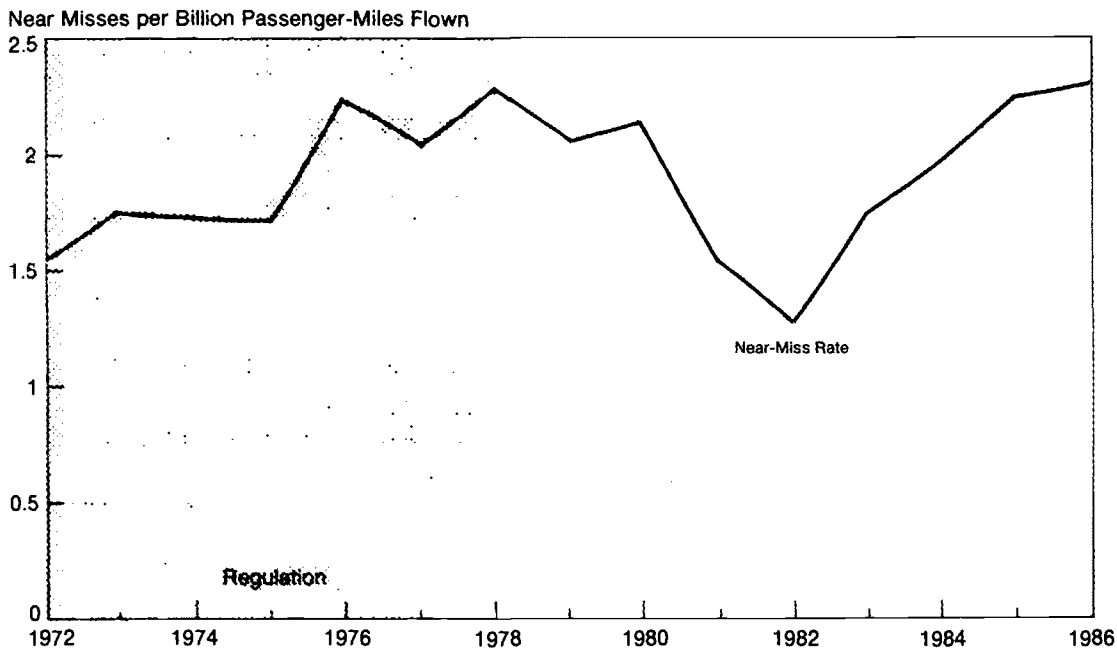


Figure 4



Source: Federal Aviation Administration

example, airlines involved in near misses were granted immunity from punitive action if they reported the events to the FAA. During this period the number of near misses averaged 1,620 per year. In 1972, when the immunity provision expired, the number of near misses fell to 231. The FAA instituted a new near-miss monitoring system in 1985, which may account for the apparent increase in near misses in 1985 and 1986.

Another factor affecting the data is the number of FAA personnel available to handle near-miss reports. The drop in the number of available air-traffic controllers after the firing of strikers may account for the unusual decline in reported near misses in 1981 and 1982. Of course, as our sources inside the FAA readily admit, the number of reported near misses is also highly sensitive to media and congressional attention. With these caveats in mind, we turn to an evaluation of the effects of deregulation on airline safety.

Airline Deregulation and Safety

Clearly the air fatality rate has declined since deregulation. The important question is whether deregulation has slowed the trend toward improved air safety. If it has, the mechanism by which it has done so is necessarily indirect because safety *per se* has not been deregulated. Federal safety standards have not been eased and the FAA's mandate for ensuring the safety of air travel has not been diminished. Deregulation has affected only air fares and entry.

There are two ways that deregulation could have tempered the long-term decline in air fatality rates. First, by leading to more air travel (but not necessarily more capacity in airports and air traffic control), deregulation could have increased congestion and thereby led to more opportunities for accidents. Second, by permitting competition in air fares, deregulation might have reduced the safety efforts of long-established airlines as well as those of the inexperienced newcomers.

When airlines were prevented from competing through price reductions, as they were when under the control of the now-defunct Civil Aeronautics Board, they were likely to compete through other means, including upgraded in-flight meals, more comfortable interiors, friendlier attendants—and better safety records. If fare regulation spurred non-price competition, de-

regulation of air fares could cause a substitution of price competition for non-price competition. That is to say, holding other factors constant, deregulation could have led the airlines to substitute a marginal increase in the probability of accidents for a marginal reduction in ticket prices. There are constraints on this, of course. For one thing, the airlines must continue to meet federal safety standards. Assuming the FAA does its job of monitoring airline safety, any systematic reduction in safety would reflect a judgment on the part of airlines that they had been providing "too much" safety—more than demanded by either regulators or consumers.

Airline Safety Findings

The impact of economic deregulation on air safety must be evaluated empirically. To this end, we examined all air fatalities on regularly scheduled domestic flights in the period 1972 to 1986. Using a two-stage regression analysis, we controlled for a number of key factors likely to affect air fatalities, including the number of FAA air-traffic controllers and safety inspectors, the number of passenger-miles flown, and the general downward trend in air deaths (which indirectly captures the growing reliability of airplanes and safety systems within planes and at airports). We found no direct, statistically significant relationship between airline deregulation and the number of air fatalities. Similarly, we detected no direct, statistically significant relation

Airline deregulation has had no detectable impact on air safety.

between deregulation and the number of reported near misses.

As expected, we found that airline deregulation increased total passenger-miles flown. After adjusting for changes in several factors that may affect total passenger-miles traveled (national production, population, the relative price of air travel, and number of controllers), we estimated that deregulation increased the number of miles flown by an average of 11.4 percent annually during the period 1979 to 1986. However, we found no statistically discernible connection between the number of air deaths and the num-

ber of passenger-miles flown. We conclude that, for the time period and for the major airlines studied, air safety—as measured by air fatalities for scheduled carriers—has not been directly or indirectly affected by deregulation.

If deregulation has had any effect at all on air-fatality rates, it appears to have been favorable. This conclusion is necessarily tentative, however, as it is drawn from indirect evidence: deregulation has increased air travel and has had no (statistically detectable) effect on air deaths; it is logical to conclude that the rate of deaths per billion miles flown has fallen *because of deregulation*. Any such effect is very slight, however.

As for near misses, we found that they are highly correlated with the number of miles flown, so that deregulation could arguably be blamed for indirectly increasing the number of near misses. However, deregulation has not altered the historical relationship between miles flown and near misses. The reporting biases evident in the near-miss data require that these conclusions be interpreted carefully.

Airline vs. Automobile Travel

Even if we had found a positive connection between deregulation and airline fatalities, it would not follow that reregulation is warranted in the name of saving lives. By lowering relative costs, airline deregulation may cause consumers to substitute air travel—one of the safest long-

Air travel safety would have to decline by a factor of 100 or more before it was comparable to automobile travel safety.

distance transportation modes—for automobile travel. Roughly speaking, for every billion miles of travel undertaken by air instead of by car, more than 35 lives could be saved. (Between 1980 and 1984, the death rate for passenger-car travel averaged 35.7 per billion passenger-miles, as compared to just 0.3 per billion passenger-miles for air travel.) Looked at differently, air travel safety would have to decline by a factor of 100 or more before it was comparable to automobile travel safety. According to research conducted by Richard McKenzie and John Warner, airline deregulation has indeed lowered the

growth in automobile travel and, accordingly, has significantly reduced annual highway accidents, injuries, and deaths.

This line of analysis does not imply that policy makers should be complacent about airline safety. But it does suggest that even if deregulation slowed the pace of air safety improvements, reregulation would not necessarily be the way to save more lives. A push for increased airline safety could conceivably increase overall travel deaths by raising airline costs and ticket prices, and thereby cause a substitution of automobile travel for air travel.

Conclusion

Both of us travel a great deal, and we share the often-expressed concern that “airline service has gone to hell.” Travelers have to make their travel plans carefully just to insure that an inflight snack amounts to something more than a bag of peanuts. The planes seem to “no show” as often as passengers do, and baggage that is not lost generally seems to be under foot. Some planes are modern-day equivalents of Trailways buses.

Our research suggests that these obvious compromises in airline service do not carry over to airline safety. Airline deregulation has had no detectable impact on air safety as measured by the number of air fatalities experienced by scheduled airlines. Moreover, the fatality rate for air travel has very likely been improved given that deregulation has greatly expanded the volume of air travel. To date there is no evidence that America’s skies have become less friendly since deregulation. □

Selected Readings

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