



Playing the Rail Transit Forecasting Game

CHARLES A. LAVE

The suspicion that rail transit forecasts tend to exaggerate patronage and understate costs has been around for a long time. Now the Urban Mass Transportation Administration report by Don H. Pickrell has produced a meticulously documented examination of the idea. The data sources, assumptions, and calculations are explicitly laid out; everything is exposed and can be reanalyzed. Its conclusions are straightforward: rail forecasts appear to be consistently wrong.

The serious issue here is not accuracy but bias. All forecasting processes result in some errors. Economists' forecasts of inflation are sometimes too high and sometimes too low (sometimes they are even correct). Forecasts of rail patronage made by consulting firms, however, are always too high. That is evidence of bias. We have a professional duty to examine and improve predictions.

Charles A. Lave is Chair, Department of Economics, University of California at Irvine.

Pickrell is not alone in documenting bias in rail transit forecasts. It is useful to quote some of the other research in which this question has been examined.

John Kain, Chair of the Harvard University Economics Department, described rail forecasting in a peer-reviewed study published in the *Journal of the American Planning Association* (1). He provided a detailed example of the process used to exaggerate and misrepresent the forecasts. He concluded, "While the specific findings presented in this article are limited to Dallas, abuses similar to those described here are commonplace and occur in varying degrees in virtually every metropolitan area, both in the United States and overseas."

A team of environmental studies professors at the University of California, Davis, carefully examined the forecasts used to justify the Sacramento light rail transit (LRT) system. In a peer-reviewed article published in *Transportation Research*, they concluded: "The assumptions and structure of the analysis were slanted decidedly in favor of the LRT alternative by the local analysts" (2). The California Transportation Commission also reviewed the forecasts and reported that "unreasonable assumptions resulted in an underestimation of operating costs for LRT" (2). UMTA, reviewing the same forecasts, criticized the ridership projections as "unrealistically high" (2).

Solving the Mystery

The reason for biased forecasts is becoming clearer but to be sure the explanation is complete, let us approach the problem as though it were a murder mystery. Suppose we were conducting the inquiry in a court of law. How might the trial proceed? We have a crime and a possible culprit. Can we establish motive, opportunity, and means?

Is there a possible motive? Yes, self-interest. We must all earn a living, and few of us have the sinecure of a tenured academic position. Thus there are pressures to produce results that will make the boss and the clients happy and generate business for the firm. It seems plausible that some consultants might give in to these pressures.

Is there a possible opportunity to bias the forecasts? Yes, computer models are used in preparing forecasts and the complex output can only be interpreted by a trained elite. Few others will be able to question the forecasts.

Is there a possible means? Yes, the forecast process is easy to manipulate. Two methods work especially well. First, when faced with a range of possible calibration parameters (fare elasticities, willingness to transfer, etc.), you can use the extreme end of the range, the one that yields the desired result. Do this to several parameters and you achieve what one seasoned forecaster dubbed "compound optimism," because the predicted outcome is extremely unlikely to occur, although the public is not told this.

Second, you can distort the underlying projections of economic and demographic data. To make the "objective" computer model give higher ridership projections, assume big jumps in downtown employment or slow growth of automobile ownership. Given the power of this second method, Pickrell's analysis is too generous. He asks what would have happened if the underlying economic and demographic assumptions had been true instead of criticizing their realism.

It is all very well to construct mystery stories, but do such misdeeds actually occur in real life? Martin Wachs, former Chair of Urban Planning at the University of California at Los Angeles, in a peer-reviewed article in *Business and Professional Ethics Journal*, wrote that transportation consultants and planners have often "'cooked' [forecasts] in order to produce numbers which were dramatic enough to gain federal support for the projects." He also interviewed consultants who admit that "success in the consulting business requires the forecaster to adjust results to conform with the wishes of the client." One consultant defended himself by the rationalization that at least he was less dishonest than some of his rivals (3).

Wachs also noted that honesty can be personally costly: "I am aware of at least five individuals who have been fired and blacklisted from employment in the field of urban planning because they have objected



Above: WMATA's Silver Spring, Maryland, metro station serves as major bus transit point. **Left:** San Diego Trolley's newest extension provides service to downtown's redeveloping Bayside, including new Convention Center.

to instructions to 'revise' their forecast to suit the needs of their clients or supervisors, or because they have given newspapers information showing that forecasts made in support of a proposed public program have been distorted for political reasons" (3).

Unfortunately, idealistic motivations can also produce distorted forecasts. We all know planners who work for the cities, passing up lucrative consulting jobs. They envision a better environment in which increased transit use could solve many of our urban problems. So do I. But they are

so certain about how people ought to commute that they have talked themselves into believing it is possible to make them behave that way. John Kain notes their "unswerving and blind commitment" (1). Give such idealists the task of evaluating a transit project and you may find that they

have consciously slanted the judgment calls in the direction of feasibility. They might reason this way: "The transit ridership forecast seems too low; I probably assumed too much increase in household income; let's try lowering the income projections by 20 percent to see what happens—there, that's a much more reasonable estimate of ridership. I'll use these figures; I must have gotten the income data wrong to begin with." In any event, these altruistic visionaries are easy prey for rail salesmen. We have few critical defenses against people who support something in which we already believe.

Bait-and-Switch Salesmanship

Biased forecasts play a major role in the decision to select the rail transit alternative. Claims of high patronage and low cost attract public attention and produce the political push to get things moving. An editorial in the *New Electric Railway Journal* summarized the process: biased estimates are created by "consultants who believe if they can just make the cost seem low enough and the anticipated ridership high enough the project will at least be started. These consultants bet that the politicians will not have the courage then to stop the project because of cost overruns" (4).

If a department store advertises a low price to lure customers, then tries to sell them on a high-cost item, it is called bait and switch. It is illegal. There are no penalties when a transportation consultant plays the same number-switching game. Only the taxpayers lose.

Why doesn't the public catch on eventually? Because rail construction takes a long time and memories of the original promises are short. Robert T. Dunphy, Director of Transportation Research for the Urban Land Institute, described the process as it occurred in Portland, Oregon. "Originally, 42,400 daily riders were projected in 1990 for Portland's system. Closer to opening date, planners were predicting that the first year's ridership would be 17,000, and when this figure was exceeded by 3,000, the system was proclaimed a success" (5)—and that is the way the local media reported it.

Conclusions and Suggestions for Reform

Everything I know about life, I learned from reading *Dear Abby*. One of the familiar stories concerns an especially cynical kind of marriage between a love-smitten older man and a young woman with her eye on his money. Most rail transit planning in the United States results from the same kind of marriage. An old city, rich with federal matching funds, and smitten with the idea of rail solutions, becomes engaged to a flashy young consulting firm that dangles the prospect of steel-wheeled delights. The fruit of the union is invariably an under-used rail system, soon put on welfare, and abandoned by the consulting firm as it moves on to greener cities.

Not all consulting firms follow these practices. I know honest consultants, and Wachs discussed planners with integrity who resigned or were fired when they did

not alter their conclusions (3). We must change the rules of the game, however, if we are to give the honest practitioners a chance to survive. It is hard to compete against consultants who are allowed to make extravagant claims but who are never held to account for their promises.

To protect the honest practitioners and the cities, we must put some self-correcting discipline into the forecasting business. Consultants should be required to bond their forecasts: if they are wrong by more than x percent, they have to give back their fees. Even better, ask them to build and operate the rail system at the cost they have projected.

References

1. J. Kain. Deception in Dallas. *Journal of the American Planning Association*, Spring 1990, p. 193.
2. R. Johnston, D. Sperling, M. DeLuchi, and S. Tracy. Politics and Technical Uncertainty in Transportation Investment Analysis. *Transportation Research A*, Vol. 21, No. 6, 1988, p. 465.
3. M. Wachs. Ethics and Advocacy in Forecasting for Public Policy, *Business and Professional Ethics Journal*, Vol. 9, Nos. 1 and 2, 1991, pp. 144, 152, 154.
4. P. Weyrich, Editorial, *The New Electric Railway Journal*, Spring 1990, p. 2.
5. R. Dunphy. In Search of the Holy Rail. *Urban Land*, May 1990, p. 36.