

California High Speed Rail - Results for Hire & Mega Project Estimate Failures

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By **Kathy Hamilton**, SF Transportation Policy Examiner

Professor David Brownstone, UC Irvine, Economics professor, stated a number of times he wasn't casting shadows on the ethics of Cambridge Systematics (CS) at the July 8th High Speed Rail (HSR) board meeting. Instead, the analysis of the high speed rail ridership study that he and his colleagues at the Institute of Transportation Studies at the University of California, Berkeley (ITS Berkley), completed at the request of the State Senate, casts a larger shadow on the industry as a whole.

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Why does anyone care about this? The ridership study is the foundation for the entire high-speed rail project. It determines the scope, the routes and the revenue - - and whether the state will make or lose money on high speed rail.



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Here is some key dialogue from that meeting:

Rod Diridon: "You are saying, if I understood you properly, the lack of the margin of error calculations make the Cambridge Systematics (CS) work unreliable?"

"Yet the CS procedure is the same modeling procedure that has been used now to calculate ridership as part of the environmental impact processes for basically dozens of transportation projects across the nation and beyond and in many foreign countries. This same statistical procedure has been used by Cambridge Systematics to obtain environmental clearance from EPA [Environmental Protection Agency], the Core of Engineers and the FRA [Federal Railroad Administration] in our case for many, many different projects. Are you suggesting that all of those projects, ridership projections are unreliable?"

Prof. David Brownstone: Yes, frankly.

Brownstone then points to the bigger picture. "The basic problems of not having error bands are pervasive and it's caused a lot of problems when it turns out later the actual ridership is way off in the forecast. So let's be clear, you're right, this is a problem with all existing work."

Lance Neumann, President of Cambridge Systematics, also appeared at the LA board meeting and passionately defended his firm that has done transportation modeling projects since 1972; and the

approach they took in the development of the ridership model. In his statement, Neumann said,

“I’m here to assure you that I stand behind the ridership forecasting work that we did under contract with the Metropolitan Transportation Commission and that you have used, without reservation. [] In terms of our general approach to developing models, the first thing we think about is the policy issues, the decisions that you are confronted with and you have to make. [] There is science and there is judgment that’s involved in every model development effort and you need to balance those because you can always use more data, you can always use more model refinement. The challenge is to develop a workable tool within budget and schedule constraints that gives you credible information to base decisions on; not overcomplicated, not one that gives you features you don’t need, just for the sake of modeling elegance. That’s how we approach modeling projects and that’s how we approached your project.”

Reasonable as that sounds, in fact, the way projects have been done worldwide has resulted in significant, over-budget realities. Bent Flyvbjerg, professor at Oxford, in his article, “Design by Deception” published in Harvard Design Magazine, states that “lack of traveler use [extraordinarily high ridership number forecasts], which for half of the rail projects is more than 50% lower than forecasted, ... which makes it clear why so many projects have financial problems.” In a study of projects in 20 countries Flyvbjerg finds “costs begin to soar, [in nine of ten project]s, after the projects have been approved, leaving taxpayers or investors to pick up bills of hundreds of millions of dollars. Cost overruns of 50% are common and overruns above 100% are not uncommon. For rail projects, for example, half of all projects have costs overruns of 45% or more, measured in constant dollars.”

Fact is the California High-speed Rail Project is on track to become just one more shining example of major issues that plague mega projects around the world. The hand-writing is on the wall for California unless we heed this proof.

Below are quotes from the July 1, 2010 interview with Professor Samer Madanat from UC Berkeley’s Transportation Institute, also an ex-Cambridge Systematics employee prior to the completion of his PHD, years ago. Madanat was one of the key authors in the review of the California High Speed Rail Ridership model. He said he did not see proof of intent to bias on the part of CS.

Kathy Hamilton: Did Cambridge Systematics change the data to match their professional judgment or was it to match the goal of their client?

Professor Madanat: There is no evidence that they were trying to bias the results one way or another. I also should say that Cambridge Systematics is a very reputable firm and they have a reputation to protect. So no, I have absolutely no evidence that there was an attempt to distort or bias the forecast in a different way. They tried to do the best they knew; unfortunately their best was not good enough.

One has to realize that these firms operate under time and budget constraints and when one deals with real data many things can happen that one cannot expect. You have to use your professional judgment and that’s not wrong but you have to do it in a manner that is defensible and there are certain ways that are defensible and there are ways that are not.”

Intent aside, it is odd the results for many of projects studied show a consistent underestimation of construction cost and overestimation of ridership; and this in turn, causes the overstatement of revenue.

Bent Flyvbjerg, BT Professor and Chair of Major Programme Management and Director of Oxford University's BT Centre for Major Programme Management and author of several articles and books on Mega Project management, has a bit stronger take. During the San Francisco Gate radio, KALWNews.org special done July 21, 2010, [The Planning Problem: A documentary on high-speed rail](#), Flyvbjerg, told the writer Nathanael Johnson these errors were due to three things. "One to technical errors (insufficient data) which is hard to swallow since with simple errors you would expect them to go both ways, in your favor and those not in your favor. Two, optimism bias (rose colored glasses) or a third category called 'strategic misrepresentation.'"

JOHNSON: When you're talking about strategic misrepresentation, or, to use the word lying, why do planners fudge the facts?

FLYVBJERG: "Simply because there's an incentive structure that encourages this. It's not irrational lying. It's actually rational."

He goes on to explain that cities are in competition for the same dollars from DC and to get the most benefit they make their projects look good on paper." And how do you do that? Again, you do it by underestimating the costs and overestimating the benefits. Then you get a nice benefit/cost ratio that makes your project look like the best project," says Flyvbjerg.

JOHNSON: Indeed, you point out that the way we've set things up incentivizes the projects that are least realistic.

FLYVBJERG: Exactly. We actually call this survival of the "unfittest."

JOHNSON: So what can we do here in California to ensure that we plan for high-speed rail that provides the best service to citizens at the lowest costs?

FLYVBJERG: If it hasn't been done already, there needs to be a study of whether the decision is biased. Meaning whether it's optimistic or whether there is strategic misrepresentation.

In a recent article, *Delusion and Deception in Large Infrastructure Projects*, Flyvbjerg examines "why project planners, on average, fail to anticipate the greater costs of complex projects or those based on new technologies." He points to three categories: delusions or honest mistakes, deceptions or strategic manipulation of information or processes; or bad luck." He says that this "bad luck is one of the major project uncertainties is the attribution typically given by management for a poor outcome." (In other words, it's not our fault.) For a complete look at his article see: [Delusion and Deception](#)

He adds, "when analysts and planner as well as contractors "are engaged to gather the information necessary for making the final go/no-go decision, they have an incentive to provide information that is compatible with pleasing the local government, having the project approved, and being re-engaged on the next project. A manager on one large infrastructure project explained to Flyvbjerg and Cowi in their research on transport infrastructure management in the UK. "Most decent consultants will write off obviously bad projects, but there is a gray zone and I think many consultants in reality have an incentive to try to prolong the life of projects, which means to get them through the business case. It is in line with their need to make a profit."

In the case of California High Speed Rail (CHSR), the project is surrounded by layers of contractors who have provided much of the data for the business plan and other key documents.

Flyvbjerg stated that the US Department of Transportation found “for virtually every project, the divergence between forecast and actual ridership was wider than the entire range of the critical decision variables. Actual ridership was 28 to 85% (average 65%) lower than forecast ridership, meaning that forecasts overshot actual development by 30 to 578% (average 257%)” He states rail projects are estimated at 109% of overestimated ridership projections.

Elizabeth Alexis, econometrics expert and the person who first found the first discrepancies in the model, also believes there are shades of gray in the process. She compares the conclusions consulting firms offer to the influence campaign contributions might have on a vote of a politician. “You look at the role of campaign contributions- sometimes it’s hard to say that this contribution influenced this decision or didn’t. But admits, “The whole system kind of stinks and this particular system stinks also.”

Alexis also says “as a society we need to dig into this issue and understand why we are not doing a good job with these kinds of studies and why not getting any better at them.”

This is the first in a series of three articles on this topic.

Here are other links that are important to read:

- Studied the top 10 flaws of the High Speed Rail Authority’s ridership and revenue model- [Letterman Top 10 of Ridership Forecasting No No's](#)
- Institute of Transportation Studies at University of California, Berkeley review-,[Model-Deemed-Unreliable](#)
- Specific decisions made by the model makers that may have inappropriately influenced the choice of the Pacheco Pass over the Altamont Pass for the route of the proposed high speed train from San Francisco to San Jose. [Pacheco vs. Altamont](#)

Slideshow: LA High Speed Rail Meeting July 8, 2010



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