The Passenger Train in the Motor Age: The California Experience, 1910-1941

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In the three decades following Henry Ford's 1910 opening of his Highland Park plant the automobile transformed American intercity travel habits. My dissertation addresses how railroad management adapted its passenger service strategy in response to this challenge. Evaluating management actions in relation to consumer preferences, I sought to determine whether they were an economically rational response to the new auto competition.

I approached this objective by using the historical method and econometrics with primary sources to evaluate explanations scholars have proposed for passenger train decline. The economist George H. Hilton, among others, explained the decline simply as consumer preference for a superior technology [5]. Bradford Snell's well-known allegation that urban electric traction service disappeared because of anti-market manipulations by a GM-controlled holding company has its intercity analogue where the holding company was the Greyhound Corporation [12]. John McKay and Paul Barrett have placed part of the blame for transit decline on the structural relationships between private transit companies and local government in the United States [9, pp. 91-5; 1]. Albro Martin's analysis of relations between the railroad industry and the United States government suggests the possibility of a similar explanation for the railroad industry [10]. Finally, rail industry critics from Louis Brandeis in 1914 to Joseph Eastman in 1935 placed part of the blame for poor financial performance of passenger trains on the backs of railroad managers, who they claim failed to provide the types of services consumers demanded while being unconcerned about the high cost structure of passenger service [14, 17].

To evaluate these explanations I addressed the following hypotheses:

1. At fares existing in the 1920s and 1930s, the rail passenger market was highly elastic. Substantial fare reductions would have multiplied gross rail passenger revenues by several fold.
2. Railroad managers diverted lucrative rail markets, or potentially lucrative rail markets, to bus services.

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3. Railroad infrastructure development was stunted because of political harassment or unfair treatment vis-a-vis that given to other modes of transportation.
4. Rail passenger demand would have supported a higher level of rail infrastructure than what was built.
5. Rail passenger costs could have been much lower than they were because railroad managers were not interested in efficient passenger service.

My sources included case files from the ICC reflecting on major passenger issues between 1914 and 1935 and one case file from the California Railroad Commission [2, 14, 15, 16]. I also used analyses and data produced or collected by the U.S. Office of the Federal Coordinator of Transportation. That office's 1933 survey of rail passenger, bus, and air traffic flows and revenues between all pairs of U.S. cities provided the data for my econometric analysis of rail demand structure [17]. Finally, I used Southern Pacific and Santa Fe annual reports submitted to the ICC, annual reports to stockholders, employees magazines, reports of decisions published by the ICC and the Railroad Commission, a state-published monthly magazine reporting on state highway development, and state and federal engineering evaluations of road development.

I focused on passenger decision making of Southern Pacific, Santa Fe and its bus subsidiaries, and Pacific Greyhound Lines. This focus is largely the result of source availability, but I believe it represents much of the national experience west of the Mississippi and south of the Ohio. Aggregate statistics, of which Table 1 offers one example, show that Southern Pacific's passenger behavior was similar to that of major western roads. Dwight Ladd's national survey of passenger management methods in the mid-1950s reveals that those of Southern Pacific were state-of-the-art, and during my period of study we see the development of those methods [8, pp. 39-40, 74, 93-7, 113-5, 120, 131, 142].

The story can be summarized briefly. In 1910 passenger service was an important component of rail operations, providing 36 percent of Southern Pacific gross rail line revenues. It was also profitable. Southern Pacific oriented more than half its passenger service to travelers in rural districts and small towns and made more than half its profits from such services. While passenger service was profitable, profits were not the only motive for its operation. Common law, common carrier status, and self interest motivated managements to provide comprehensive transportation to their territories. Also, in an age when price competition was becoming extinct, railroads used luxury limited trains to gain competitive advantage along important routes. Finally, management vested its general corporate prestige not only in the great limited trains but also in passenger service in general and the great terminal-palaces that accompanied it.

TABLE 1
RATIO OF PASSENGER EXPENSES TO PASSENGER REVENUES
AS CALCULATED BY THE ICC

railroad	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
major western lines										
Southern Pacific	109	110	107	112	112	118	119	109	117	105
Santa Fe	124	139	143	145	136	138	129	128	123	110
Union Pacific	116	107	115	126	129	128	126	132	128	128
Burlington	127	127	129	134	130	125	126	128	130	121
Northern Pacific	183	196	191	189	155	164	170	172	167	146
Great Northern	159	147	151	147	144	135	144	146	151	151
major eastern lines										
Pennsylvania	100	104	104	106	102	103	98	101	104	99
New York Central	84	85	93	100	95	95	96	98	105	106
New Haven	77	84	85	87	80	82	86	82	85	84
Long Island	68	67	73	81	81	85	81	80	82	83

Source: Hagley Museum & Library, PRR, B-341, f 521.31 "Post-War Passenger Train Problems, 1943," 1943 memo by C.E. Smith. Ratios are from the ICC in a report that appears to have been published by the Association of American Railroads.

Conditions surrounding passenger service changed rapidly after 1910. Mass-produced autos and the evolving concrete road network decimated demand. Also, beginning about 1915 the ICC increasingly criticized cross subsidization, particularly of passenger service, and required railroads to divide expenses between passenger and freight service. The Transportation Act of 1920 facilitated large passenger fare increases and legalized pooling arrangements developed under federal control so as to avoid competitive waste inherent in pre-war passenger operations. Under these changed conditions, Santa Fe cut back severely its local passenger operations in California and arranged with Southern Pacific to haul much of its remaining local traffic. Southern Pacific, however, was reluctant to cut back its network of rural local trains because it feared loss of presence in the state. When rural losses became so high that it was forced to act, it in 1927 established a bus subsidiary to carry the Southern Pacific name

into towns throughout the West. Unfortunately, the buses carried very little else. Consequently, Southern Pacific was amenable to a proposal made in late 1928 by one of California's bus pioneers, Buck Travis, to participate in the formation of a West Coast bus monopoly which became Pacific Greyhound. By 1933 this was owned 61 percent by the Greyhound Corporation and 39 percent by Southern Pacific. Santa Fe was invited to join but refused. Neither the ICC nor the Railroad Commission hindered any of these major actions.

It is well known that the Depression devastated all classes of railroad freight and passenger traffic. The roads retrenched as much as possible and held on for the day when business conditions would improve. It was the failure of passenger revenues to improve as the economy turned around after 1933 that led to desperation in some railroad headquarters and sparked the next round of passenger change.

By now the auto carried more than 90 percent of intercity travel, partly by displacing the train, but mostly by creating new travel through a combination of speed, low cost, flexibility, and pizzazz. Could the rails create new business through such measures, too? Union Pacific and the Burlington almost simultaneously provided the dramatic affirmative answer with their tiny but gloriously visible and successful 1934 streamliner experiments, while the Southern Railway sent a flood of new passenger revenue into empty coffers through radically discounted fares in a much-commented-on 1932 experiment. In 1935 the Federal Coordinator's *Passenger Traffic Report* proclaimed that economically designed and operated streamliners combined with low fares were the combination that would lure a new market to the rails [17].

Desperate about the plight of its passenger operations, Santa Fe filed in late 1935 applications to invade lucrative California passenger markets with buses and streamliners and justified its actions with the *Passenger Traffic Report*. Southern Pacific and Pacific Greyhound responded by bottling up the Santa Fe proposals for over two years in the Railroad Commission while they rushed into existence their own improvements. For Southern Pacific these involved speeding up, air-conditioning, and running more trains, and giving coach passengers greater amenities. The capstone to these improvements was the stunning *Daylight* streamliner, which began operating between Los Angeles and San Francisco in March 1937. Unlike the original Union Pacific streamliner, there was nothing economy-minded about the *Daylight*, which offered luxurious coach and parlor car accommodations, a coffee shop, elegant dining, and a modernistic tavern, spread out over 12 spacious cars. Only the fares were cheap.

Such measures attracted new passenger traffic and altered the popular notion that railroads were outmoded. The streamliners appeared highly profitable in company books. This was true not only for SP, but for other roads as well, including the Santa Fe, which implemented its proposals in 1938 [3]. Unfortunately, as suggested in Table 1 for the western roads and in Table 2 for

Southern Pacific, such measures failed to significantly improve the financial position of western passenger service.

My analyses of these trends and the Federal Coordinator data led me to the following conclusions about the hypotheses expressed above:

1. I rejected the first hypothesis. Between a given pair of cities there was an optimum fare affected by speed and other factors, above which traffic would not move and below which the market was inelastic. Most of the 196 pairs of cities I examined in the demand analysis had fares near that level in 1933. Subsequent fare reductions, particularly when connected with service improvement, cost Southern Pacific net if not gross revenue. The Southern Railway experiment appears to have occurred on a route where the fare was above the traffic-rejecting level.
2. I also rejected the second hypothesis. There was ample collusion between bus and rail interests, but the only trains discontinued in lieu of buses were those for which there were few riders. This strategy did not diminish the importance of railroad passenger service, as suggested in Table 2.
3. I accepted the third hypothesis as it applied to the SP in California. The culmination of low returns resulting from the ICC not allowing rates to rise, the Justice Department unmerger suits, California's rampant highway program which began in 1910, and the general environment of anti-SP sentiment combined to depress railroad investment. Between 1913 and 1935 only about $15 million charged to capital was invested in Southern Pacific's two great trunk routes between Los Angeles and San Francisco. There was little SP infrastructure investment of any sort between 1913 and 1923, the period during which the state highway system took shape.
4. I accepted the fourth hypothesis for the route between San Francisco and Los Angeles, as shown by my demand analyses, although this probably was not true in general.
5. The fifth hypothesis is probably true. SP did not regularly compile costs of its passenger trains until the late 1930s and believed that the marginal cost of carrying additional passengers was very low. It monitored the gross revenue of each train and equated added gross with added net. When a train's gross revenues failed to come close to the low level of what were thought to be marginal costs, the company eventually discontinued it; otherwise it tried to attract additional passengers. Unfortunately, as suggested by Table 2 as well as by econometric cost analyses beginning in the 1950s, additional passengers generally added more to the cost burden than to revenues [11, pp. 7-10]. It seems reasonable to assume that had railroad managers known the cost consequences of their actions, they could have designed attractive services at much lower costs. Alternatively, they might have sought government subsidies. Or, they might have exited the business.

In general I concluded that the rail passenger demand that remained in the automobile era was for higher speed trains connecting very large cities located

TABLE 2
ANALYSIS OF CHANGES TO REVENUES AND COSTS, 1927-1941

Period	Change in passenger miles (millions) (1)	Change in passenger train miles (millions) (2)	Change in passenger and allied service revenue (millions) (3)	Change in fully allocated passenger costs (millions) (4)	Part of cost change due to inflation (millions) (5)	Part of cost change due to change in service (millions) (6)	Implied marginal cost per train mile (dollars) (7)	Comments on service changes
1927-29	-9	-1.310	$1.4	($0.6)	$1.3	($1.9)	$1.46	Lightly patronized rural trains replaced by buses.
1929-33	-660	-8.384	($31.1)	($25.7)	($6.9)	($18.8)	$2.24	Wholesale discontinuances and train consolidations.
1933-35	269	0.804	$2.5	$4.2	$3.8	$0.4	$0.50	Average train length increased by 1 car.
1935-36	218	3.192	$6.7	$5.1	$1.6	$3.5	$1.10	Splitting consolidated trains; new trains added.
1936-37	171	1.082	$3.9	$7.6	$1.8	$5.8	$5.36	Streamlined Daylight added; general expansion.
1937-39	-106	-3.427	($1.4)	($4.0)	$1.1	($5.1)	$1.49	East Bay electric commuter trains eliminated from mainline books. Steam train abandonments; more streamlined cars.
1939-41	325	0.785	$6.4	$6.4	$3.7	$2.7	$3.44	More streamlined trains.

Sources: Columns 1, 2, 3 and 4 are derived from Table 1. Column 5 is the result of a railroad cost deflator developed in Appendix 6 of Thompson, The Passenger Train in the Motor Age, applied to the later year of the interval. This shows what the change in costs would have been had there been no change in railroad prices. This figure is subtracted from the observed costs, the difference being the result of inflation. Column 6 is the difference between columns 4 and 5. Column 7 is Column 6 divided by column 2.

quite close to each other. Unfortunately, this condition did not characterize most of the land area of the United States. There was virtually no demand left for rurally-oriented passenger trains that characterized much of the U.S. passenger system prior to the auto. In the West, with some exceptions (San Francisco-LA, San Francisco-Sacramento, LA-San Diego, Portland-Seattle), the only viable rail passenger strategy left in the 1930s was to string together large cities with long-distance trains. Those that connected with gateway cities, where passengers from large cities in the East were concentrated, could carry a moderate amount of traffic in the pre-airplane era. Thus I concluded that what rail managers did was generally the economically rational thing to have done, with the exception that costs were probably much higher than they needed to be. It is also likely that more favorable government policy might have resulted in a more important passenger service in some areas, such as between LA and San Francisco. Finally, had the automobile not been subsidized, the overall level of rail passenger demand would have been higher, but likely still a phenomenon associated primarily with large, closely-spaced cities.

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