AN ECONOMIC STUDY OF RAILROAD PASSENGER SERVICE: THE SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

By

JOHN BYRON MCCALL

Bachelor of Science
Texas Technological College
Lubbock, Texas
1960

Master of Business Administration
Texas Technological College
Lubbock, Texas
1961

Submitted to the Faculty of the Graduate College of the Oklahoma State University in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY
July, 1968

AN ECONOMIC STUDY OF RAILROAD PASSENGER SERVICE: THE SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

Thesis Approved:

Larkin Warner

Thesis Adviser

Julian H. Bradshaw

Joseph J. Klotz

Robert R. Mahurin

D. D. Durham

Dean of the Graduate College

PREFACE

Most United States railroads state that passenger service is not a profitable business. These carriers claim that continued operation of these losing services impairs the financial health of the industry. A minority group of railroads, however, views passenger service as a desirable business activity. These opposing philosophies within the railroad industry raise the question of whether passenger service is unprofitable or merely unpopular with railroad management.

The purpose of this study is to gain some insight into reasons why passenger service has been considered a desirable activity by a few railroads when the majority of the industry believes otherwise.

This study compares the activities of two similar railroads--the Atchison, Topeka and Santa Fe Railway Company, Inc., and the Southern Pacific Company--between 1950 and 1965. The two carriers, although similar, differ on the question of rail passenger service. The Santa Fe is in favor of such service; the Southern Pacific is not.

It is expected that the conclusions drawn from a study of these two carriers can be used to explain differences in passenger service policy that exist within the industry at large.

Indebtedness is acknowledged to Drs. Larkin B. Warner, Joseph J. Klos, Julian Bradsher, and Norbert Mahnken for their valuable guidance; and to the following for special assistance during the course of this investigation: E.L. DeGolyer, Jr., of the DeGolyer Foundation at Southern Methodist University, Mr. A. Dean Hale, and Dr. George Hilton of The University of California at Los Angeles. Special thanks are due my wife, Kacy, for her patience and willingness to type in the middle of the night.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER I

INTRODUCTION

The purpose of this investigation is to gain some insight into the reasons why a few American railroads choose to continue inter-city passenger service in opposition to the industry trend toward "freight-only" operation. What motivates this minority of passenger-oriented railroads?

METHOD

The focus of this study is an historical-descriptive comparison of two relatively similar railroads, The Atchison, Topeka and Santa Fe Railway Company and The Southern Pacific Company from 1950 through 1965. This comparison evidences why the Santa Fe has appeared optimistic about inter-city passenger service while the Southern Pacific has not.

Because each of these large carriers is a major force in the railroad industry, the reasons for Santa Fe's optimism and for Southern Pacific's pessimism toward the future of inter-city passenger service can be generalized to gain insight into passenger service trends in the railroad industry at large.

PROCEDURE

Santa Fe and Southern Pacific passenger service is compared in four data categories: output, revenues, expenses, and profitability. Terminology necessary to the interpretation of these data categories is developed as needed.

The passenger service operations of each railroad from 1950 through 1965 will be reviewed in order to determine whether the Santa Fe's optimism is supported by passenger service profits and whether the Southern Pacific's pessimism is backed by passenger service losses.

A summary of profits and losses, however, does not provide much insight into the passenger service policies suggested by these data. The profits and losses must be explained; they must be linked where possible to comparative differences between the two railroads' management policies.

The significance of passenger service relative to the total output--freight and passenger--of each carrier is also examined. These explanations of profit and loss are developed as an integral part of the comparison of Santa Fe and Southern Pacific output, revenues, expenses and profitability.

JUSTIFICATION OF METHOD

The method used in this study must satisfy three particulars: (1) use of a case study, rather than an

industry study, approach; (2) choice of the Santa Fe and Southern Pacific railroads for use in the case study; and (3) choice of the 1950-1965 period.

Case studies. This method was adopted because the insights gained into the Santa Fe passenger service policy vis-a-vis that of the Southern Pacific can be applied, railroad by railroad, to the entire industry if care is taken to recognize the environmental differences between other railroads considered and the particular carriers chosen for this case study.

An industry-wide study of rail passenger service would labor under two major weaknesses:

First, the question of what firms to include with the pro-passenger group and what firms to place in the anti-passenger group would arise. Each railroad has made a commitment to passenger service that is, in some sense, unique. This uniqueness is reflected by differences in operating conditions, markets served, and in the composition of passenger service offered.

Second, data based on an industry-wide aggregation represents, with some considerable bias, an "average" railroad, typical of all but representative of none.[1]

Selection of subjects. The Santa Fe and Southern

---

[1] "The more recent statistical costing studies of the passenger deficit average the costs from many railroads whose traffic densities, operating conditions and cost structures are so different that the conclusions are worthless." Michael Conant, Railroad Mergers and Abandonments (Berkeley, 1964), p. 133.

Pacific railroads are similar in many respects that prove useful for purposes of comparison. Both traverse essentially the same geographical areas and both encounter similar operating conditions. Both serve essentially the same market areas, either directly or by co-ordinated service with another railroad (Figures 1 and 2). In 1950, each railroad operated modern passenger trains over all major routes.

The Santa Fe and Southern Pacific differ strongly in one important respect: since 1950 the Southern Pacific has become increasingly pessimistic about the future of passenger service while the Santa Fe has persisted in its optimism.

In 1956, a Southern Pacific official stated, "We cannot pretend that the long-term outlook for passenger travel by rail is good."[2] By 1965, the Southern Pacific was "...running as few passenger trains as the law would permit," and had stated publicly that "in twenty years there will be no transcontinental trains."[3]

By contrast, in 1957 the Santa Fe Passenger Traffic Manager declared that "if some of these other railroads could only see what we've seen, they'd realize that the

---

[2]Statement by Southern Pacific Vice President of Passenger Traffic C.E. Peterson in Railway Age, 150, No. 25 (October 8, 1956), p. 15.

[3]Statement by Southern Pacific Chairman D.J. Russell in Forbes, 96, No. 9 (November 1, 1965), p. 9.

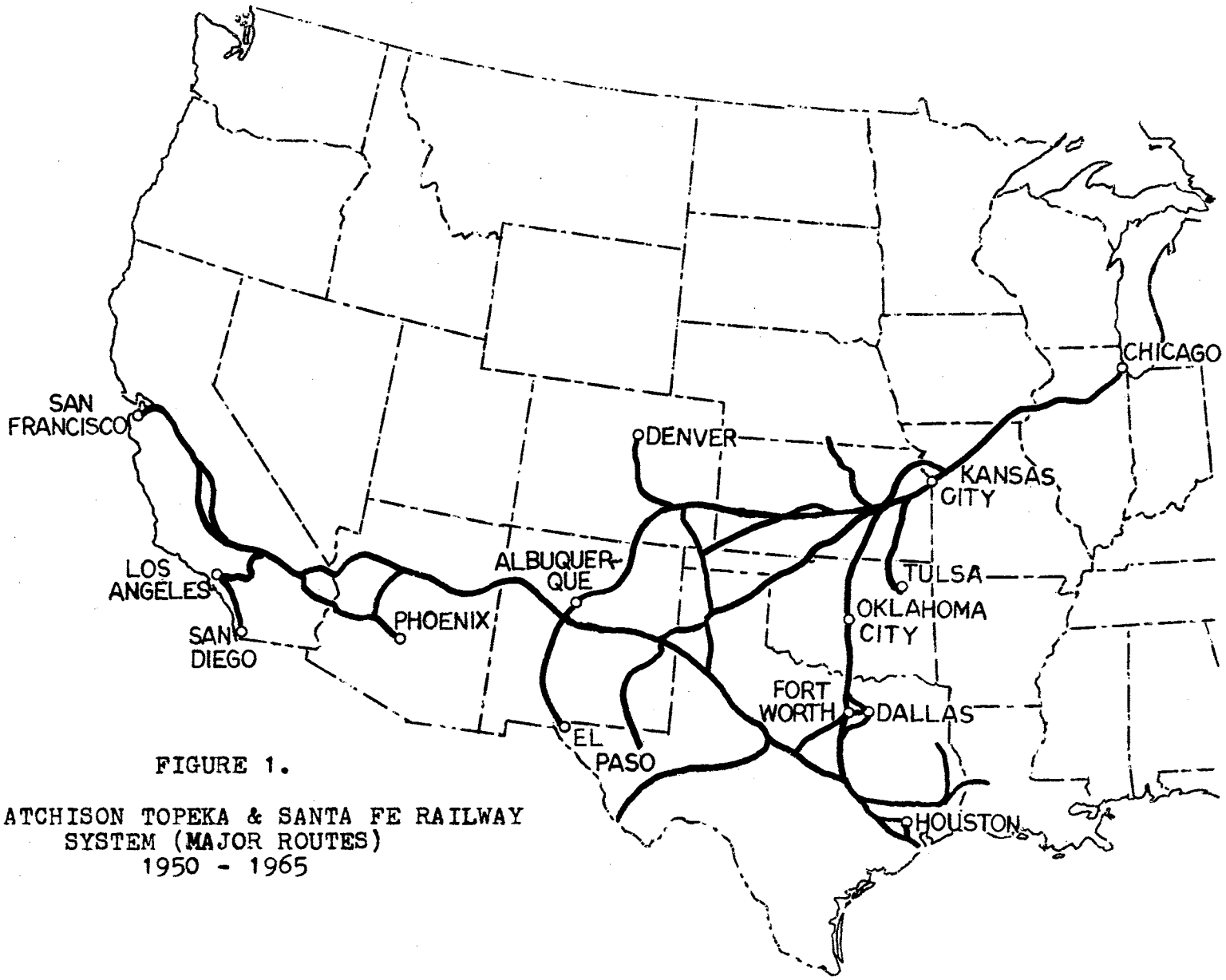

FIGURE 1.

THE ATCHISON TOPEKA & SANTA FE RAILWAY SYSTEM (MAJOR ROUTES) 1950 - 1965

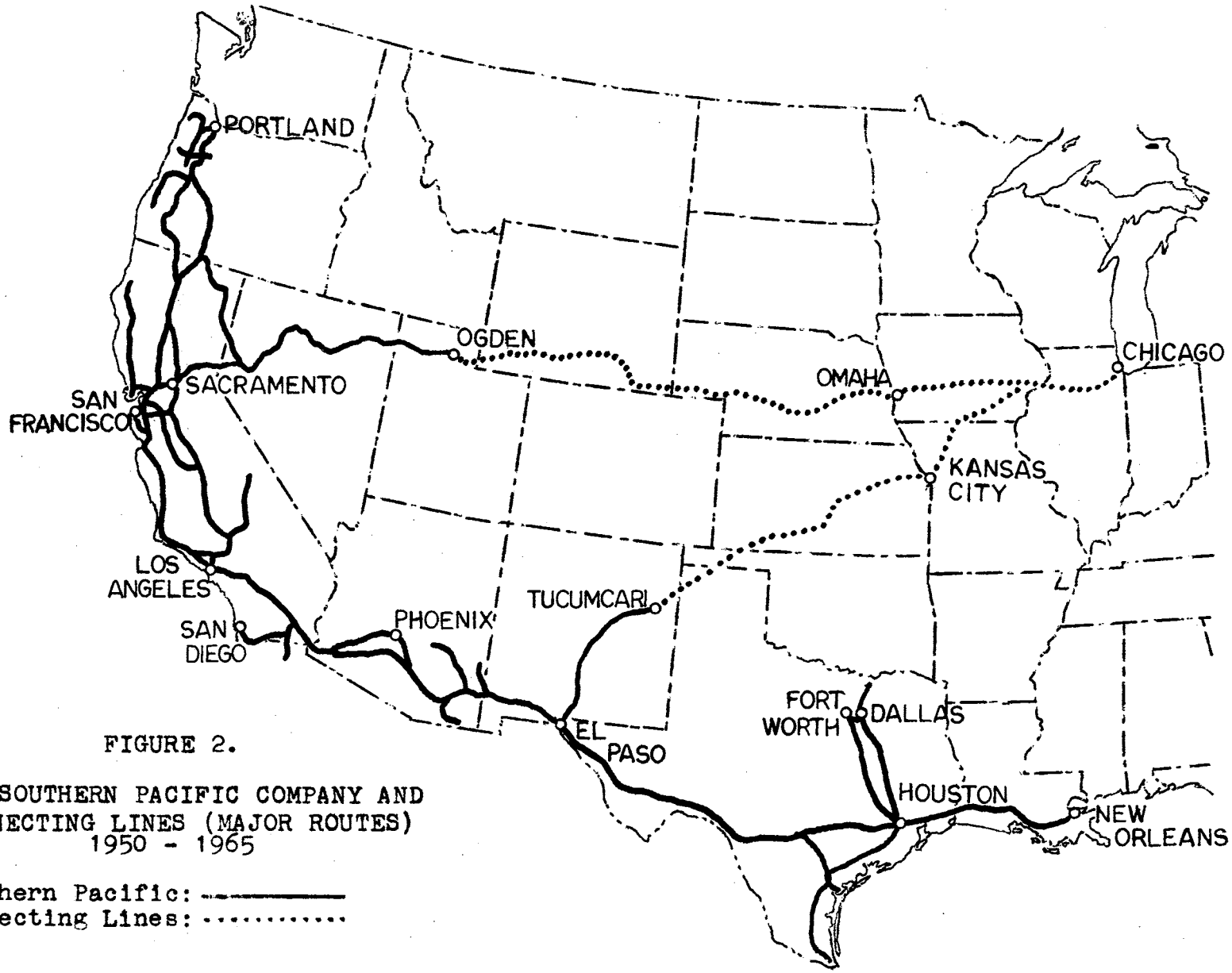

FIGURE 2.

THE SOUTHERN PACIFIC COMPANY AND CONNECTING LINES (MAJOR ROUTES) 1950 - 1965

Southern Pacific: ————
Connecting Lines: .....

business is there if they'd only go after it!"[4] In 1965, this railroad declared "Santa Fe is optimistic about prospects for 1965 passenger sales. The Railway has much to sell."[5]

Selection of time period. The 1950-1965 era is appropriate because it was during this time that a majority of railroad managements concluded that passenger service was an undesirable product line devoid of any future profit potential.

In 1950, rail passenger service offered by all major railroads had evolved to what might be termed "modern" states of technology, equipment and service. Most major service was operated by systems having sophisticated traffic control; was produced with equipment of recent, streamlined manufacture; was maintained and repaired in a systematic fashion; and consisted typically of "full-service" trains that offered Pullman, dining, lounge and coach services.

In short, 1950 marked the year in which most railroads had completed their post-war overhaul of passenger service within the bounds of their profit expectations.

The 1950-1955 period was one of rapid decline in passenger train profitability and marked a consequent re-evaluation by management of the role passenger service

---

[4]Statement by Santa Fe General Passenger Traffic Manager R.T. Anderson in Railway Age, 151, No. 34 (December 2, 1957), p. 9.

[5]Statement by Santa Fe General Passenger Traffic Manager Ross E. Chappell in the Santa Fe Magazine, (April, 1965), pp. 2-3.

might play in the overall economy of the railroad industry (Table 1).

This period was one of progressive disenchantment with passenger service prospects on the part of management--a pessimism deepened by management's seeming inability to take what it considered the necessary remedial steps. Passenger train schedules could be eliminated only by expensive petitions to state regulatory authorities. This means was often unsuccessful. Most small towns wanted "a passenger train" even if unpatronized, and their voices were generally heard and noted by the state commissions involved with "train-off" petitions.

The mid-1950 period was characterized by a final effort on the part of railroads to regain their lost passenger market. Trains were re-equipped with the latest designs. Rail passenger travel was heavily advertised. Numerous other resources were devoted to a last try at this market.[6]

More than one large railroad regained passengers with expensive promotion campaigns and equipment innovations only to find passenger deficits rising--the marginal passenger added more to costs than to revenues.[7] The railroad industry's renewed confidence in the future of passenger

---

[6]For an extensive summary evaluation see: "Are The Passengers Coming Back?", Railway Age, 142, No. 20 (May 20, 1957), pp. 50-68.

[7]Ernest C. Nickerson, "Passenger Losses Must Be Controlled.", Railway Age, 151, No. 23 (September 16, 1957), p. 10.

TABLE 1

PASSENGER AND ALLIED SERVICE REVENUES AND EXPENSES PER PASSENGER TRAIN MILE: CLASS I RAILROADS[a] 1940, 1945, and 1950 - 1965

	Revenues	Expenses[b]
1940	$1.51	$1.86
1945	4.23	3.25
1950	3.90	4.83
1951	4.08	5.48
1952	4.34	5.72
1953	4.25	5.86
1954	4.14	5.72
1955	4.24	5.83
1956	4.42	6.22
1957	4.51	6.51
1958	4.88	6.66
1959	5.35	6.98
1960	5.62	7.11
1961	5.81	7.08
1962	5.95	7.22
1963	5.85	7.21
1964	5.91	7.39
1965	5.59	7.68

[a]Class I railroads is an Interstate Commerce Commission grouping that includes all the major railroads in the United States. Class I railroads, for all practical purposes, produce all the rail passenger service in the United States.

[b]Directly-related plus apportioned common expenses.

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

service was short-lived.

By the late 1950's, commercial airlines and the automobile had made such inroads into the inter-city travel market that the long run decline of rail passenger service was virtually assured. Rail management opinion solidified with finality. Passenger service was viewed as obsolete and no longer desired by the traveling public. The sooner this service could be eliminated, the better for all concerned.[8]

Viewed as a component of total inter-city passenger travel, the decline of rail service is striking. Total inter-city travel--by all modes--increased an average 26.9 billion passenger miles per year between 1950 and 1965. However, the railroads' share of this market declined by an average of 1.3 billion passenger miles annually. The railroads hauled 6.9 percent of the inter-city passenger market in 1950, but only 2.1 percent of the market in 1965 (Table 2).

Rail management's ultimate weapon for the methodical elimination of passenger service was The Transportation Act of 1958.[9] This legislation gave the railroads a new measure of flexibility in the elimination of unprofitable train schedules by permitting the carriers to circumvent

---

[8]David P. Morgan, "Who Shot The Passenger Train?", Trains, 21, No. 6, (April, 1961), p. 22.

[9]Public Law 85-625, 85th Congress.

TABLE 2

INTERCITY PASSENGER TRAVEL BY MODE OF TRANSPORT IN PASSENGER MILES AND AS PERCENT OF TOTAL[a], 1950 - 1965
(in billions of miles)

	Total	Rail		Bus		Air[b]		Automobile	
	miles	miles	percent	miles	percent	miles	percent	miles	percent
1950	473.0	32.5	6.87	26.4	5.58	10.1	2.14	402.8	85.16
1951	534.8	35.3	6.60	27.4	5.12	12.9	2.41	457.8	85.60
1952	575.3	34.7	6.04	28.4	4.94	15.0	2.61	495.5	86.13
1953	608.8	32.3	5.31	28.4	4.66	17.4	2.86	529.2	86.93
1954	625.1	29.5	4.72	25.6	4.10	19.6	3.14	548.8	87.79
1955	664.5	28.7	4.32	25.5	3.84	22.7	3.42	585.8	88.16
1956	698.9	28.6	4.10	25.2	3.61	25.5	3.65	617.7	88.38
1957	719.2	25.8	3.59	25.0	3.48	28.3	3.93	637.8	88.68
1958	759.8	23.6	3.11	20.8	2.74	28.5	3.75	684.9	90.14
1959	764.7	22.4	2.93	20.4	2.67	32.5	4.25	687.4	89.89
1960	784.2	21.6	2.75	19.9	2.54	33.9	4.32	706.1	90.04
1961	790.8	20.5	2.59	19.7	2.49	34.6	4.38	713.6	90.24
1962	817.7	21.2	2.59	21.3	2.60	37.6	4.60	735.9	90.00
1963	852.0	18.6	2.18	21.9	2.57	42.8	5.02	765.9	89.89
1964	895.2	18.4	2.04	22.7	2.54	49.5	5.52	801.8	89.57
1965	940.1	17.6	1.87	23.3	2.48	58.1	6.17	838.1	89.17

[a]Percentages will not total to 100 each year due to rounding and omission of inland waterway travel data.

[b]Includes private aircraft.

Source: Interstate Commerce Commission Statement 580 (Washington, January 1958).

Statistical Abstract of United States, U.S. Government Printing Office (Washington, 1967).

state regulatory authorities when desired.[10]

In retrospect, the sixteen year period of 1950 through 1965 encompasses a marked decline of passenger train service interrupted only briefly by a short-lived and expensive resurgence of unwarranted optimism during 1956-1957 that served only to solidify the final industry consensus. Only a few railroads dared to resist the trend.

SOURCES OF DATA

This study, like any other, is constrained by the nature and availability of its data. Although these limitations are discussed in detail as the data are presented, a general overall view of these constraints is useful to the reader at the beginning. This overview of data sources and nature affords the reader a perspective of the practical boundaries within which this investigation has necessarily had to proceed.

Only incomplete statistical data on passenger service output and revenues is available directly from both the Santa Fe and Southern Pacific railroads. No really useful expense data has been provided--publicly or privately--by these roads. For the sake of consistency, it has been necessary to rely upon Interstate Commerce Commission data as the primary

---

[10]Among other things, this legislation permitted the Interstate Commerce Commission to hear "train-off" petitions in either an original or an appelate capacity. For a summary discussion see: Machael Conant, Railroad Mergers and Abandonments, (Berkeley, 1964), pp. 158-160.

source.

Interstate Commerce Commission data used has been drawn from both published annual statistical summaries and unpublished data on file at the Commission. This latter source is required from the railroads by law but is not published in its original form by the Commission for public distribution.

Information concerning management policies has been collected from industry trade journals; company magazines, correspondence and interviews with railroad officials; railroad time tables; private correspondence and observations of the author.

Data and meaningful cooperation extended the author directly by the Santa Fe and the Southern Pacific have been meagre. Similarily, published policy statements by railroad officials are scarce--at least those with details and particulars in sufficient degree to be useful in this study.

Consequently, the discussion of this study of passenger service management policy is, by necessity, concerned mainly with the observed results of policy action rather than with public policy statements (although such statements are analyzed). It is the action, not the formal verbalizing, that warrants study, attention, and discussion in this treatise.

CHAPTER II

THE MEASUREMENT OF PASSENGER SERVICE OUTPUT

Much of the apparatus of microeconomic theory is based upon observed relationships between revenues and costs of production (as dependent variables), and output (the independent variable). In a general-case theoretical model, the simple concept of "an output unit" is sufficient.

Investigation of the revenues and the costs of a given firm, however, must proceed with the firm's output unit explicitly and carefully defined. Specifically, what is the nature of rail passenger service output? Can this output be usefully quantified with a single (homogeneous) measure, or must several different measures be used? Finally, what output measures are available--and what are the advantages of each?

The purpose of this chapter is to introduce the various passenger service output units used in this study. These units must be practical (in the sense that they conform to available data) as well as theoretically applicable. This dual requirement necessitates both a careful description of the available output units and the presentation of a schema of economic theory that will embrace these available rail passenger service output units.

THE NATURE OF RAILROAD OUTPUT

Early writers. Economists have pondered the nature of railroad output for many years. M.O. Lorenz attempted early in this century to relate railway cost behavior to railway output. He decided that,

> We are obviously handicapped by the lack of a homogeneous unit of service. A net ton of coal cannot be compared with a net ton of excelsior, and a car of coal containing 50 tons cannot be compared with a car containing 10 tons of household goods.[1]

Lorenz believed that railroads produced many different outputs, and that these outputs could not be compared (they were heterogeneous). He suggested, however, that "...the gross ton mile is...the nearest comparable unit of service that we have."[2]

Lorenz also found that, in practice,

> Practically no expenses can be traced to a particular shipment. Some can be traced to large classes of traffic, such as the coal traffic, or to separate trains; and still more can be traced to the freight traffic as a whole and, finally, some cannot be traced at all.[3]

The disagreement between A.C. Pigou and Frank Taussig over the cause of differential pricing by railroads was

---

[1]M.O. Lorenz, "Cost and Value of Service in Railroad Rate Making," Quarterly Journal of Economics, 30 (1919), pp. 215-216.

[2]Ibid.

[3]M.O. Lorenz, "Constant and Variable Railroad Expenditures and the Distance Tariff," ibid., 21 (1907), p. 283

really a disagreement about the nature of railroad output.[4] Pigou asserted that railroads produced a single, homogeneous commodity--ton miles--and the cause of differential railroad rates was an example of discriminatory pricing by railroad monopoly.[5]

Taussig argued that railroad output was a varied collection of different services produced in joint supply. Joint supply requires that the production of one good necessarily result in the production of another good. If railroads produced in joint supply, differential rates would prevail even under conditions of pure competition.[6]

Pigou attacked Taussig's notion that railroads produced output in joint supply. Pigou believed that the mere presence of unallocatable expenses does not imply joint production and joint cost.[7] Pigou could grant Taussig that railroads produced more than one type of output (a departure from his original position) and still retain the heart of his monopoly discrimination argument. Pigou accepted common cost, but not joint cost (except

---

[4]A.C. Pigou, The Economics of Welfare, (4th ed., London, 1950), Chaters XVII and XVIII; F.W. Taussig, "Railway Rates and Joint Cost Once More," Quarterly Journal of Economics, 27 (1913), p. 378.; and F.W. Taussig with A.C. Pigou, "Railway Rates and Joint Cost," ibid., pp. 535 and 687.

[5]Allyn Young, "Pigou's Wealth and Welfare," Quarterly Journal of Economics, 27 (1913), p. 681n.

[6]F.W. Taussig, "Railway Rates and Joint Cost Once More," ibid., p. 381.

[7]A.C. Pigou, "Railway Rates and Joint Cost," ibid., p. 690.

for the minor case of backhaul of empty cars to loading point).

J.M. Clark and Lorenz joined with Pigou in criticizing Taussig's joint-output thesis. Clark asked,

> Does the taking of an extra hundred thousand tons of freight contribute toward facilitating the taking on of extra passengers in the same way that killing an added hundred steers for the sake of the meat contributes toward the production of more hides and other by-products?[8]

Lorenz expresses a similar argument by stating that, if the running of passenger trains interfered with the running of additional freight trains, the passenger service was not a jointly-produced by-product.[9]

These early writers on the subject of railroad output agreed that railroads produced a variety of different outputs. Furthermore, most authors believed the ton-mile to be a useful single output measure, even though these various outputs were not strictly comparable.

Comtemporary writers. Walter Isard defines the output unit as a "transportation input;" that is, the movement of a "...unit weight over a unit distance...the exertions of effort and other factor services required to overcome resistance encountered in movement through space where friction is present."[10] Isard is content to use

---

[8]J.M. Clark, The Economics of Overhead Cost, (Chicago 1923), p. 255.

[9]Lorenz, p. 283.

[10]Walter Isard, Location and Space-Economy, (New York 1956), p. 79.

ton-miles when dealing with aggregates and specific ton-miles when considering a specific line of production.[11]

Ford K. Edwards, a student of J.M. Clark and a pioneer of modern railway cost-finding procedures, believes that railroad output may have "many dimensions" and the use of a single measure, such as ton miles, is inadequate.[12] Edwards expresses these output dimensions in terms of "performance units" such as gross ton miles, locomotive miles, car miles, and train speed and asserts that each of these performance units represents a "reasonably homogeneous measure of work performed."[13]

In 1951, Barger asked, "is the ton mile, the carload, a combination of these, or some different measure to be taken as the fundamental unit of service?"[14] He believed that although railroad output was probably homogeneous in a physical sense, various outputs were not comparable because of differences in the demand of these various outputs. George W. Wilson clarified Barger's statement by arguing that transportation output consists of comparable (homogeneous) ton-miles mixed with various combinations of service

---

[11]Ibid., p. 79n.

[12]Ford K. Edwards, "Cost Analysis in Transportation," American Economic Review. 37 (1947), p. 443.

[13]Ibid., p. 443n.

[14]Harold Barger, The Transportation Industries, 1889-1946, (New York, 1951), p. 176.

"extras" such as speed, flexibility, safety, and dependability. [15]

Milne argues that the unit of supply, the "transport unit", will differ from the unit of demand, "the individual passenger and the individual consignment."[16] Troxel concurs in stating, "Indeed, the organization of transport operations is not much embraced in ton or ton-mile, passenger-mile, or even load units."[17] The output to be "costed" is measured with a different yardstick than the output to be "priced." G. Lloyd Wilson agrees with Milne that the "supply unit" and the "sales unit" will differ.[18]

An additional characteristic of railroad output is its intangible nature. The product is a service; no inventory can be held by the firm. Isard states that, "perhaps the most salient feature of a transport input is its momentary character."[19] This feature of rail output is especially significant when one attempts to determine unit cost with conventional cost accounting procedures. This problem will be discussed in the subsequent chapter that deals with the

---

[15]George W. Wilson, "On the Output Unit in Transport," Land Economics, 35 (1959), p. 271.

[16]A.M. Milne, The Economics of Inland Transport, (London, 1955), p. 125.

[17]Emery Troxel, Economics of Transport, (New York, 1955), pp. 93-94.

[18]G. Lloyd Wilson, Economics of Transport, (New York, 1955), p. 268.

[19]Isard, p. 89.

nature of railroad expenses.

Summary of output characteristics. In a physical sense, the production of transportation requires work: weight is moved over distance through time. The quantity supplied of transportation output is related to the cost of providing the basic ton-mile unit plus the costs of service extras such as speed, careful handling, ease of on-and-off loading, dependability, and other "extra packaging" necessary to haul a given commodity by rail in competition with other modes of transport.

The quantity demanded of transportation output can be similarily construed. Quantity demanded is composed of a basic ton-mile unit plus some combination of service extras as mentioned in the previous paragraph.

Within this context, transportation output units--on both the demand and supply sides of the market--are each a combination of: (a) a homogeneous ton-mile unit and (b) some heterogeneous combination of service extras.[20]

INADEQUACY OF A SINGLE OUTPUT UNIT

If rail output were composed of only weight and time elements, a single unit of measure for this output would be

---

[20]Ton-miles, though a homogeneous unit in a physical sense may not be strictly comparable as an output unit to which costs are to be assigned. " . . . a gross ton mile of a lightly loading commodity probably represents a more costly service than a gross ton mile of a heavy commodity." M.O. Lorenz, "Cost and Value of Service in Railroad Rate Making," ibid., pp. 215-216.

acceptable. When one recognizes output elements such as speed and other service extras (air conditioning for the passenger and a cushion underframe car for fragile freight), the simple ton-mile is not sufficient to quantify the "many dimensions" of this rail output. Indeed, no single measure can usefully aggregate all these dimensions.

This historical-descriptive comparison of the Santa Fe and Southern Pacific passenger operations uses several output measures. The major dimensions of each carrier's passenger service output are traced and compared, one at a time, with the expectation that each different output measure will provide some insight for the reader that would not be afforded by one of the other particular output comparisons.

AVAILABLE OUTPUT MEASURES

Numerous output measures are used by the Interstate Commerce Commission.[21] The major output units deemed useful for this particular study are:

Passenger train miles. This unit quantifies the annual total miles operated by passenger trains. Weight or speed elements are not included in this unit. The type of passenger train (mail, express, local, or luxury passenger) is likewise ignored by this measure.

Passenger train gross ton-miles. This statistic combines the elements of weight and distance. It measures

---

[21] Transport Statistics of the United States, Part I--Railroads, (Washington, D.C., 1950-1965).

the annual number of gross tons (weight of train and contents) carried one mile. Speed elements are not included in this unit measure.

Average passenger train speed. If all passenger trains had operated at an identical schedule speed during a given year, this statistic would express that speed. Since it is a mean average, it reduces to a common denominator both the high speed, limited-stop, through train and the slow, multi-stop, local mail, express, and day-coach train.

The three output measures just introduced (when used as a group) provide some form of comparability of the major dimensions of passenger train output.

Additional insight into the characteristics of each carrier's passenger service is possible by the addition of several supplementary descriptive measures:

Average number of cars per train. This statistic is useful as an indication of the composition of passenger train service. In this study, the average number of cars per train is further divided between passenger-carrying and mail-express cars.

Passengers carried. This measure denotes the annual number of revenue passengers carried. There is no available measure which divides this statistic between first-class and coach passengers.

Average passenger journey. This arithmetic mean is an indicator of the degree to which the railroad concerned is involved with long-haul passenger service, as opposed to

local operations.

Revenue passenger miles. This unit can be viewed as quantifying the annual number of revenue passengers carried one mile.

Freight service measures. If the passenger service of each railroad were studied in isolation from the carrier's freight operation, a distorted comparison would be the result. Passenger service is not produced in a vacuum by the railroad; it is a part of an overall scheme of transportation service, freight, and passenger. As such, passenger service must be viewed as a component of the railroad's total output. Viewing passenger service relative to the carrier's total output enables the reader to assess whether passenger service is a major output of the firm or merely a by-product.

Similarly, freight service output measures similar to those just discussed for passenger service are used as an aid in the development of the relative importance of passenger service.

CHAPTER SUMMARY

Railroad output is in the form of a service. This service is intangible and there can be no inventory of this output on hand. Furthermore, this service has many dimensions: weight, distance, time, and various combinations of service extras (extra "packaging"). Indeed, a railroad produces many different services. Some are produced jointly with others,

but most of these different services are produced with some common (not joint) inputs.

Because this output has many dimensions, a single unit measure of output is insufficient to interpret all but the most general studies of revenues and expenses.

Rail passenger service is a broadly defined output. Some of its elements are essentially homogeneous, that is, some elements of Santa Fe passenger service are comparable with Southern Pacific passenger service. These elements are quantified by the unit measures of passenger train miles, passenger train gross ton-miles, and average passenger train speed.

Some dimensions of rail passenger service are not homogeneous. Santa Fe and Southern Pacific passenger train output, for example, might each contain identical outputs of passenger train miles, gross ton-miles, and passenger train speed, but at the same time, in reality be an altogether different quality of output. One railroad could produce mostly mail train service, while the other might emphasize the hauling of passengers.

Because passenger service output is heterogeneous in some of its dimensions (as noted in the preceding paragraph), several subsidiary output measures must be also used in addition to the physically homogeneous units of passenger train miles, gross ton-miles and passenger train speed. These subsidiary measures include average number of cars per train (divided between passenger-carrying and other types),

average passenger journey, revenue passengers hauled, and revenue passenger miles.

Although not directly a passenger service output unit, the relative importance of passenger service to the carrier's total output (freight and passenger) is yet another dimension of passenger service. Therefore, freight service output measures similar to those used to quantify passenger service are used for the purpose of illustrating the relative importance of each railroad's passenger service.

CHAPTER III

THE EVOLUTION OF PASSENGER TRAIN OUTPUT: A COMPARISON OF THE SANTA FE RAILWAY AND THE SOUTHERN PACIFIC COMPANY FROM 1950 TO 1965

The purpose of this chapter is to trace and describe the passenger train output of both carriers over time. This comparison is necessary for two reasons. First, the increasingly divergent passenger service policies of the two railroads are reflected, in degree, by the evolution of the output of each. Second, a detailed record of both carriers' 1950-1965 passenger train output is a necessary foundation for the study of their costs, revenues and management policies contained in subsequent chapters.

By 1950 both the Santa Fe and the Southern Pacific had equipped their major passenger schedules with light-weight, streamlined equipment. Both railroads served the Chicago-California, New Orleans-California, and the intra-California markets--either directly, or through coordinated service with a connecting carrier. Each was competitive with the other in terms of schedule time, fares, and composition of service offered. Both carriers' streamliners offered (typically) extensive Pullman, lounge, and dining service

in addition to the conventional coach space.

Each carrier also offered numerous non-streamlined and/or local schedules. The Santa Fe's output of this type was in widely dispersed, light patronage, branch line trains in Kansas, Oklahoma, Texas, and New Mexico. Southern Pacific service of this type was more concentrated in its northern California commuter trains. Both railroads also operated non-streamlined "secondary" trains (mostly devoted to hauling mail and express) over their long-haul routes.

In 1950, the Santa Fe and the Southern Pacific passenger operations were dissimilar in only two major respects. First, and apart from the "feeder" services supplied to every carrier from every other carrier, the Santa Fe operation was essentially self-contained and depended upon no other carrier for support in its passenger service. The Southern Pacific, on the other hand, operated Chicago-California service on a coordinated basis with the Rock Island and the Union Pacific railroads. Second, the Southern Pacific company operated commuter service which was, however, a minor component of passenger train miles in 1950.

By 1965, Santa Fe passenger service differed substantially from the Southern Pacific's. The Santa Fe had eliminated most branch-line operations, had streamlined all its remaining passenger service and was promoting its output in an agressive fashion. The Santa Fe had re-equipped its first-line trains twice since 1950 and continued to maintain

the quality of service on all major routes.[1]

The Southern Pacific, in contrast, had all but abandoned its New Orleans-California service (coaches-only east of El Paso), had downgraded its Chicago-California trains (by eliminating most lounge and dining service), and had discontinued major parts of its intra-California service. The only new passenger equipment of consequence purchased by the Southern Pacific after the early fifties was for its commuter service.

In short, by 1965 the Santa Fe had moved toward a long-haul passenger-oriented railroad, while the Southern Pacific had become disinterested in passenger service in general and long-haul service in particular. Furthermore, the Southern Pacific's increasing passenger service bias toward commuters indicates the road's inability to pursue phase-out decisions in this local service to the same extent as in the long-haul operations.[2]

---

[1]Santa Fe President E.S. Marsh stated in 1964 that "we have emphasized our transcontinental service with some new equipment and with the rehabilitation of some older equipment--and we are promoting, in every way we know how, to attract more passenger business for that service." Railway Age, 150, No. 25 (December 28, 1964), p. 26.

[2]Southern Pacific President B.F. Biaggini stated in 1967 that "the long distance passenger train has lost its purpose in the light of every evident public preference for other modes. Gradually, since 1954, by discontinuing as many unused trains as the regulatory bodies would permit, and by tailoring other features of the service to fit the steadily declining demand, we have been able to reduce our passenger deficit. Commuter services still meet a need and must be continued, even though they run at substantial losses. Southern Pacific operates this type of losing service south along the San Francisco Peninsula." Railway Age, 162, No. 21 (May 29, 1967), p. 57.

PASSENGER TRAIN OUTPUT

Both carriers' output in passenger train miles has declined since 1950. Figure 3 traces the evolution of this output measure and shows that the Santa Fe produced more passenger train miles in 1950 than the Southern Pacific and decreased this output at a slower rate than its competitor. Furthermore, this Santa Fe output has nearly stabilized at a high level relative to the Southern Pacific since 1960. The fall in Santa Fe passenger train miles during 1965 was caused by flood damage that disrupted service over major parts of its midwestern lines.

Much the same output trends are apparent in the evolution of each company's passenger train gross ton miles (GTM). The Santa Fe has nearly stabilized its gross ton miles since 1958 by consolidating major Chicago-California trains during seasons of slack demand.[3] Figure 4 shows that Santa Fe GTM trended downward at a slower pace than the Southern Pacific output. Comparison of Figures 3 and 4 shows that by either output measure, the Santa Fe has chosen to substantially

---

[3]Santa Fe President E.S. Marsh comments that, "in the summer we'll run pretty much to capacity. During the fall we consolidate our Super Chief (all-pullman) and El Capitan (all-coach), reduce the consists and run them as one train with one crew and one engine. However, we maintain the integrity of the service. Each part has its own dining and lounge facilities and for all practical purposes the people on one part don't know the others are on the same train. But every day we do that we save 4,454 passenger-train miles because that is the round-trip distance for one train to Los Angeles and back (to Chicago)." Railway Age, 150, No. 25 (December 28, 1964), p. 26.

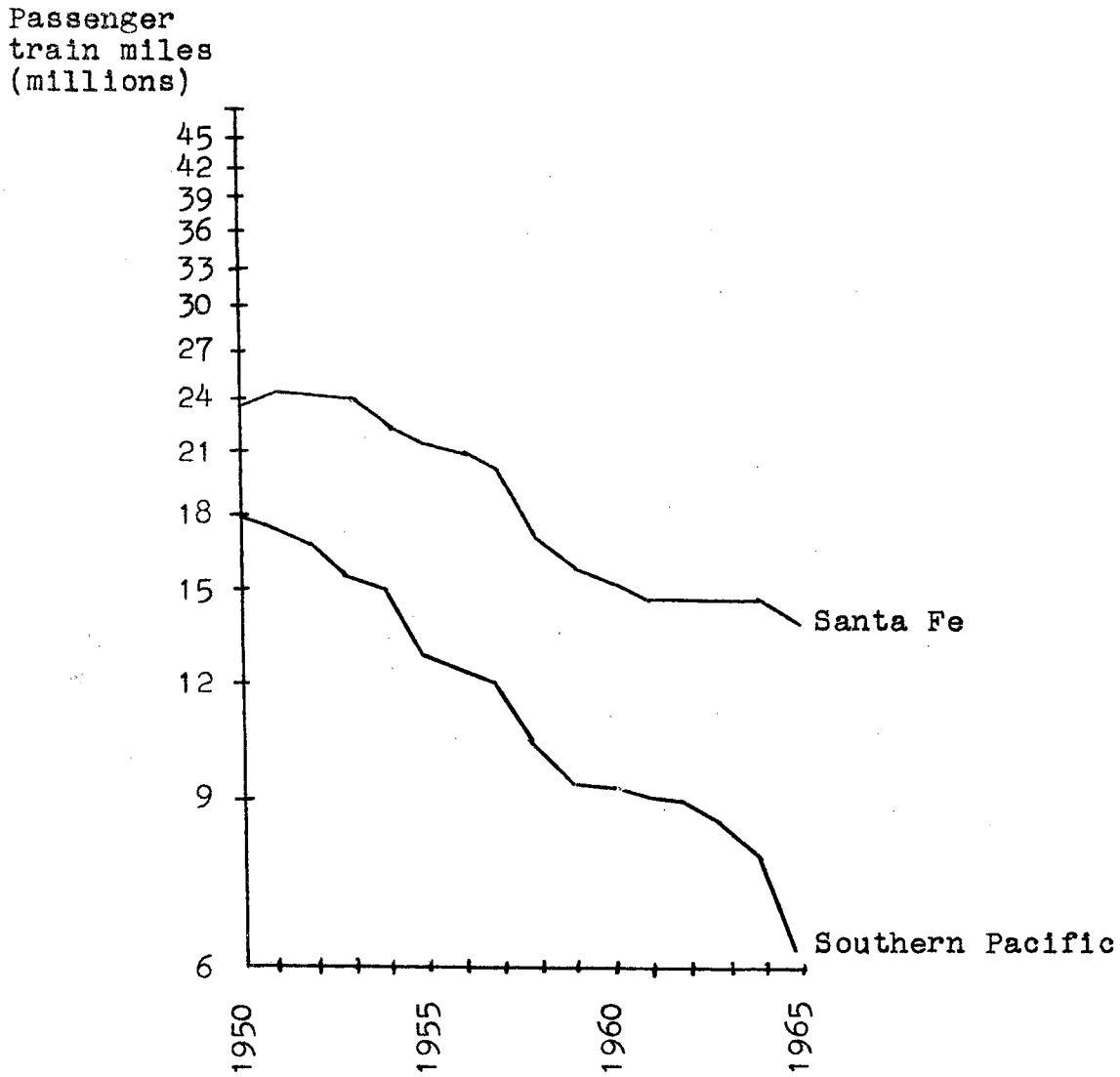

FIGURE 3.

PASSENGER TRAIN MILES: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

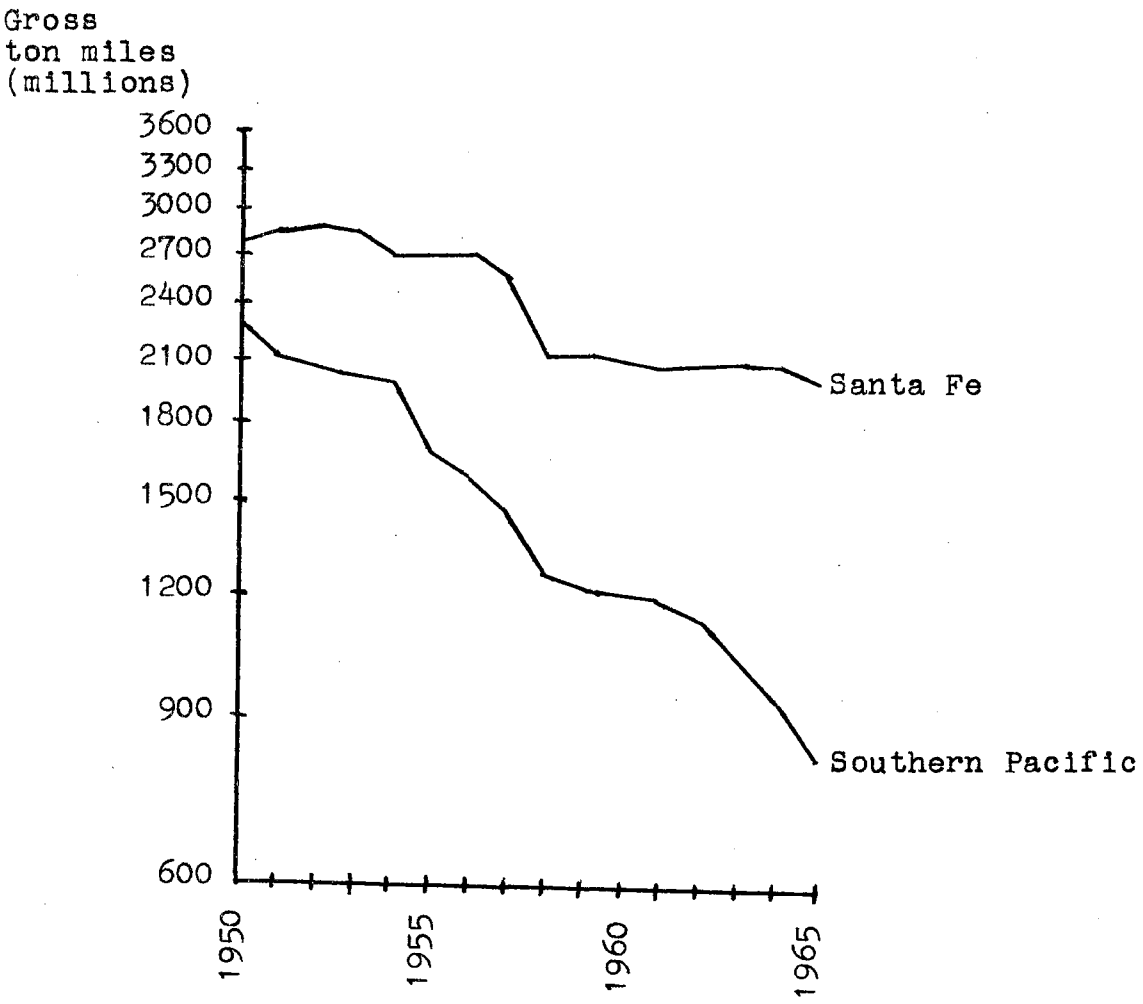

FIGURE 4.

PASSENGER TRAIN GROSS TON MILES: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

maintain output levels in contrast to the rapid decline of Southern Pacific passenger train service.

The output decline of each carrier is generally the result of cut-backs in local and branch line service. The nature of this decline is suggested by the increasing average passenger train speed of each carrier shown in Figure 5. The average Southern Pacific train speed is biased downward to some extent by the company's commuter operations.[4]

COMPOSITION OF PASSENGER TRAIN OUTPUT

Table 3 shows, for each carrier, the composition of the "average passenger train", divided between those cars devoted to carrying passengers and those "head-end" cars used to carry mail, baggage, express and so forth. Note that while the average Santa Fe train has grown in car length since 1950, the average Southern Pacific train is about the same length in 1965 as in 1950. This indicates that while both carriers reduced passenger train miles over time, the Santa Fe accomplished this by consolidating trains during periods of slack demand instead of eliminating the train schedules entirely (as has been Southern Pacific practice).

Also, the Santa Fe has tended to supply a consistent average of six passenger-carrying cars per train between 1950 and 1965 while the Southern Pacific has reduced such

---

[4]See page 37 for a discussion of the significance of Southern Pacific commuter operations.

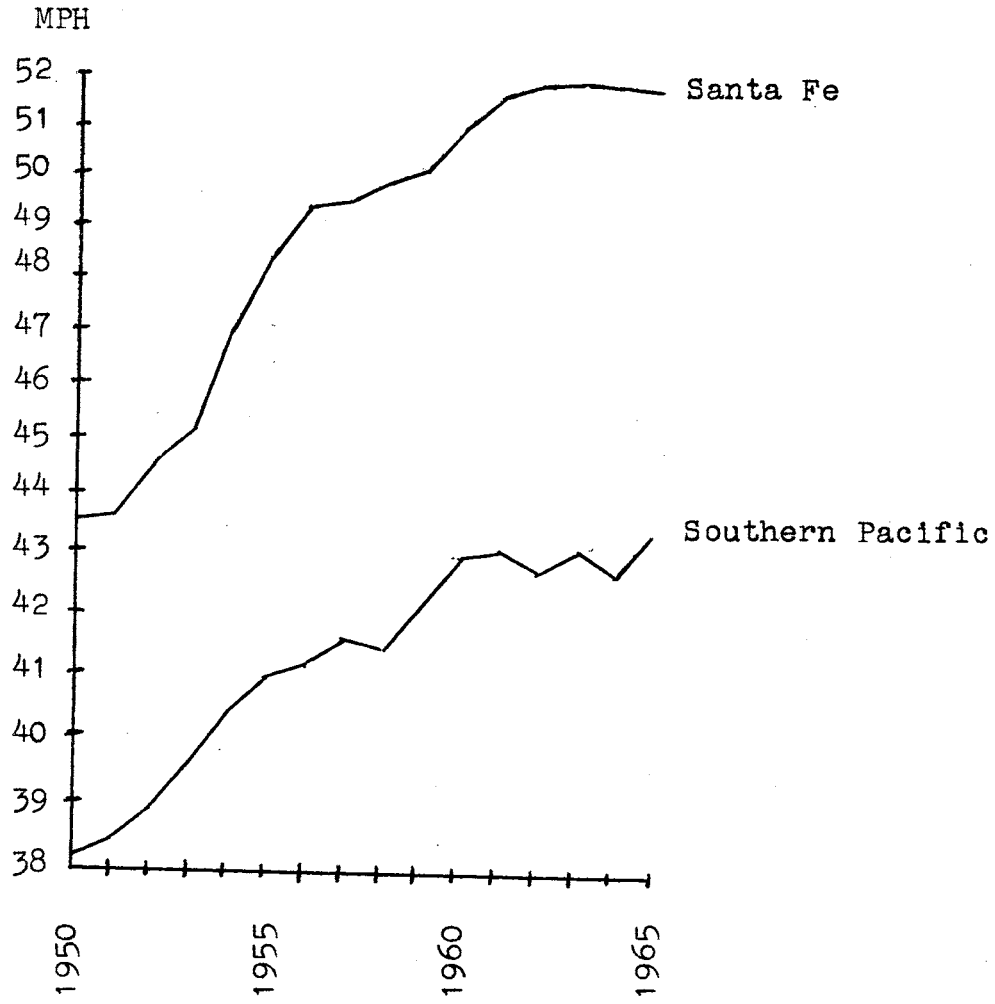

FIGURE 5.

AVERAGE PASSENGER TRAIN SPEED: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

TABLE 3

AVERAGE NUMBER OF CARS PER PASSENGER TRAIN
SANTA FE AND SOUTHERN PACIFIC RAILROADS
1950 - 1965

	Total*		Passenger-carrying		Head-end	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	10.95	13.40	5.85	9.05	5.10	4.35
1951	10.93	13.40	5.90	8.82	5.03	4.58
1952	11.33	13.70	5.98	9.08	5.35	4.62
1953	11.28	13.60	5.83	8.24	5.45	5.26
1954	11.23	13.50	5.75	7.86	5.48	5.64
1955	11.66	14.40	5.80	7.31	5.86	7.09
1956	11.80	14.20	5.87	7.32	5.93	6.88
1957	11.77	13.50	5.67	7.00	6.10	6.50
1958	12.07	13.80	5.56	7.24	6.51	6.56
1959	12.70	14.20	5.88	7.19	6.82	7.01
1960	13.10	13.70	5.91	6.62	7.19	7.08
1961	13.32	14.00	6.10	6.88	7.22	7.12
1962	13.32	14.10	6.11	6.82	7.21	7.28
1963	13.37	13.70	6.12	6.61	7.25	7.09
1964	13.32	13.30	6.07	6.40	7.25	6.90
1965	13.41	13.10	6.00	6.76	7.41	6.34

*Component data may not agree with total due to rounding.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

cars from a high of nine to slightly more than six and one-half (Table 3). Furthermore, the Southern Pacific statistic is biased upward by the increasingly important commuter service of this railroad.

The number of head-end cars per average passenger train has tended to increase over time for both carriers. In the case of Santa Fe, this addition lengthened the average train. For the Southern Pacific, the increase only offset a decline in the number of passenger-carrying cars per train.[5]

Further information about the composition of each carrier's passenger service is available from the distribution of passenger train revenue among the various categories shown in Table 4. Both the Santa Fe and the Southern Pacific have experienced a relative substitution of head-end revenue for passenger revenue.

Conceivably, everything now transported by passenger trains could be moved in freight service with one exception: passengers. How has the passenger component of each carrier's passenger trains changed since 1950? How effectively have these passenger facilities been utilized?

---

[5]Santa Fe and Southern Pacific public timetables (1950-1965) that list the equipment consist of each schedule indicate that Santa Fe has maintained Pullman, dining, and lounge car service on those trains retained while Southern Pacific has increasingly eliminated Pullman service and substituted a single unit lounge-vending machine car for previous two-unit lounge-dining car service on most trains.

TABLE 4

DISTRIBUTION OF PASSENGER AND ALLIED SERVICE REVENUES
SANTA FE AND SOUTHERN PACIFIC RAILROADS
SELECTED YEARS, 1950 - 1965
(percent)

	Passenger	Mail	Express	Dining	Other	Total Revenues
Santa Fe						
1950	48.9	34.1	7.7	6.6	2.7	100.0
1955	49.5	27.7	13.1	7.3	2.4	100.0
1960	46.8	33.8	10.4	6.2	2.8	100.0
1965	45.1	36.1	9.8	6.1	2.9	100.0
Southern Pacific						
1950	56.2	23.3	7.6	8.6	3.3	100.0
1955	55.0	22.4	11.6	7.9	3.1	100.0
1960	51.9	30.2	8.6	6.3	3.0	100.0
1965	47.9	37.1	6.7	5.0	3.3	100.0

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

THE EVOLUTION OF PASSENGER HAULING EQUIPMENT

Since 1950, both carriers have decreased the number of passenger-carrying cars in service. The decline of these units on the Santa Fe has not been as rapid as on the Southern Pacific.[6] In addition, the average number of seats per Santa Fe car decreased from 57.4 in 1950 to 49.3 in 1965. During the same period, average seats per Southern Pacific car increased from 64.1 to 74.6 (Table 5). The Santa Fe trend in seats per car reflects the carrier's move away from high-capacity seating toward the roomier, long-distance equipment. The Southern Pacific's move toward greater car capacity is influenced by a number of bi-level high capacity commuter cars used in short-haul service as well as the elimination of many lounge and dining cars with few seats per car.

PASSENGER SERVICE LOAD FACTORS

While the Santa Fe has consistently hauled fewer passengers per year than the Southern Pacific, it has carried the average passenger farther. Table 6 shows that even the non-commuter Southern Pacific passenger traveled a shorter average journey than his Santa Fe counterpart. With fewer

---

[6]Santa Fe's passenger-carrying cars declined from 582 in 1950 to 436 in 1965, a decrease of 25 percent. Southern Pacific's passenger-carrying car fleet shrunk from 757 in 1950 to 308 in 1965, a decline of 51 percent. Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, D.C., 1950-1965).

TABLE 5

UTILIZATION OF PASSENGER-CARRYING EQUIPMENT
SANTA FE AND SOUTHERN PACIFIC RAILROADS
1950 - 1965

	Average trainload (people)		Average carload (seats)		Capacity of average car		Average utilization percent of capacity	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	79.6	123.0	13.6	13.6	57.4	64.1	23.7	26.8
1951	91.5	134.9	15.5	15.3	55.7	65.1	27.8	29.2
1952	99.9	138.9	16.7	15.3	54.6	63.6	30.6	30.7
1953	88.1	123.6	15.1	15.0	52.6	63.4	28.7	28.2
1954	88.5	115.6	15.4	14.7	50.9	62.7	30.3	27.1
1955	91.0	128.0	15.7	17.5	52.0	63.2	30.2	27.7
1956	93.8	127.4	16.0	17.4	51.8	61.7	30.9	30.5
1957	88.9	117.6	15.7	16.8	49.7	67.0	31.6	29.1
1958	97.8	121.7	17.6	16.8	49.6	66.0	35.5	30.3
1959	104.0	125.8	17.7	17.5	49.4	62.3	35.8	32.9
1960	108.8	122.5	18.4	18.5	50.4	62.3	36.5	33.1
1961	114.7	125.2	18.8	18.2	49.8	60.1	37.8	31.3
1962	114.3	124.9	18.7	18.3	49.6	69.0	37.7	29.9
1963	108.8	115.1	17.8	17.4	49.7	68.5	35.8	29.8
1964	114.0	112.7	18.8	17.6	50.2	69.6	37.4	30.2
1965	116.4	118.4	19.4	17.5	49.3	74.6	39.4	28.2

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

TABLE 6

AVERAGE PASSENGER JOURNEY IN MILES
SANTA FE AND SOUTHERN PACIFIC
RAILROADS, 1950 - 1965

	Santa Fe[a]	Southern Pacific excluding commuters[b]	Southern Pacific including commuters
1950	520.14	464.32	179.52
1951	562.16	491.45	189.71
1952	565.37	470.76	170.54
1953	564.61	442.56	154.93
1954	565.57	468.14	144.81
1955	570.73	476.40	144.31
1956	620.57	502.14	144.89
1957	629.02	521.64	137.04
1958	621.80	514.06	135.13
1959	639.11	569.82	138.32
1960	668.77	570.13	135.77
1961	693.58	606.45	139.57
1962	698.25	743.70	143.79
1963	682.29	662.15	131.46
1964	683.00	642.45	115.63
1965	713.43	611.76	103.08

[a]Santa Fe does not operate commuter service.
[b]This unpublished data furnished by L.G. Crocket, Passenger Traffic Manager, Southern Pacific Company.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

passengers, the Santa Fe, by hauling them farther, was able to stabilize its passenger miles to a great degree after 1960 (Figures 6 and 7).

Not only does the Santa Fe passenger output trend diverge from that of the Southern Pacific, but available load factors are more favorable for the former carrier than for the latter.

Between 1950 and 1965, the Santa Fe's average trainload has risen from 79.6 to 116.4 passengers. Its average carload has increased from 13.6 to 19.4 passengers during this time, pulling up its load factor (seats filled as a percent of total seats available) from 23.7 percent to 39.4 percent.

During this same period, the Southern Pacific's average trainload of passengers declined considerably from 123.0 to 118.4, causing the Southern Pacific's passenger car load factor to increase modestly from 26.8 percent in 1950 to 28.2 percent in 1965 (Table 5).

The Santa Fe has been able to fill its available passenger space more completely (and at the same time evolve more roomy long distance equipment) than has the Southern Pacific (which trended toward more local-service equipment with many more seats per car).

THE SIGNIFICANCE OF COMMUTER SERVICE

Throughout this chapter, there have been occasional references to Southern Pacific's commuter operation. This

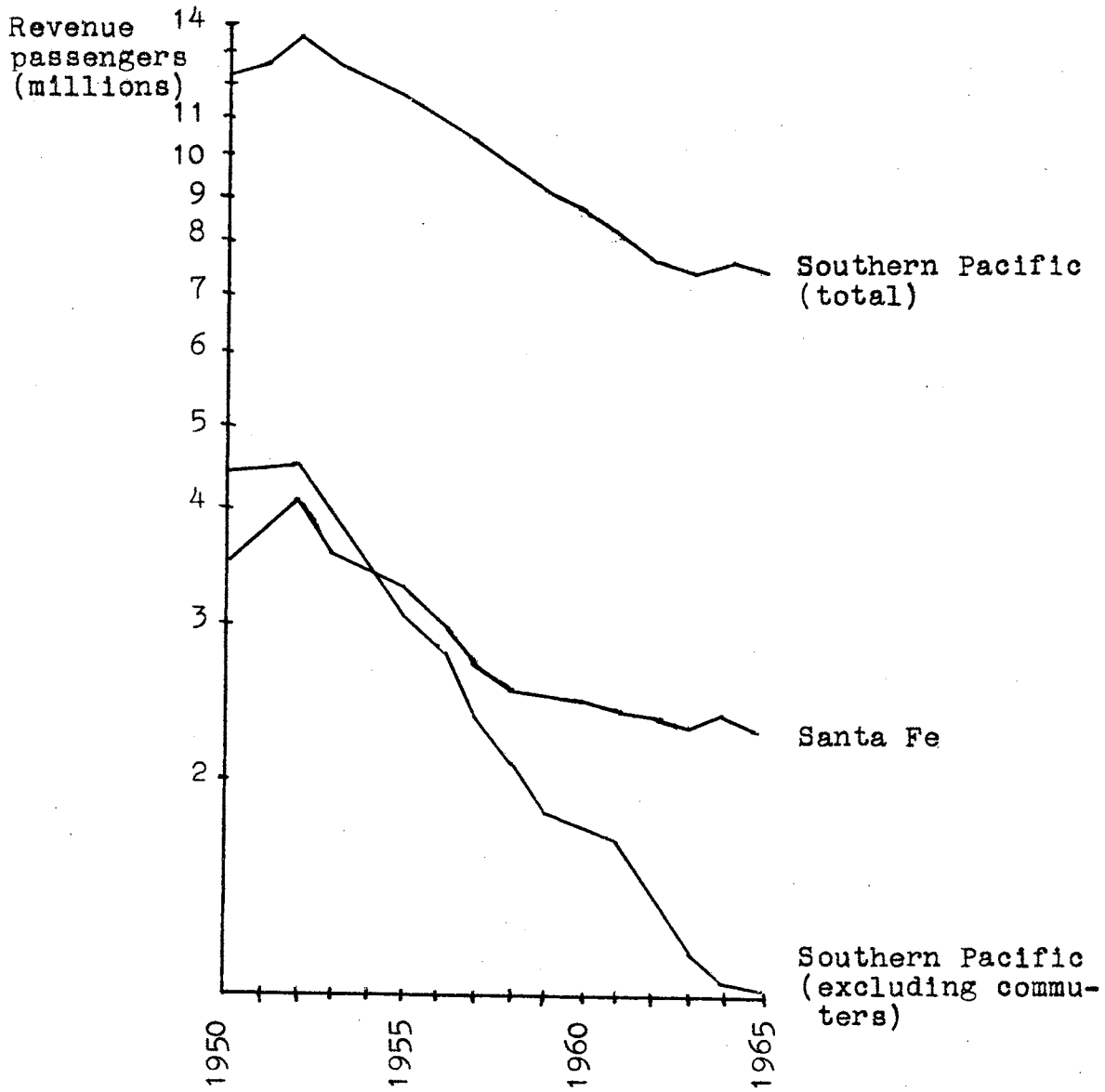

FIGURE 6.

REVENUE PASSENGERS CARRIED: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Annual Report of the Atchison, Topeka and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

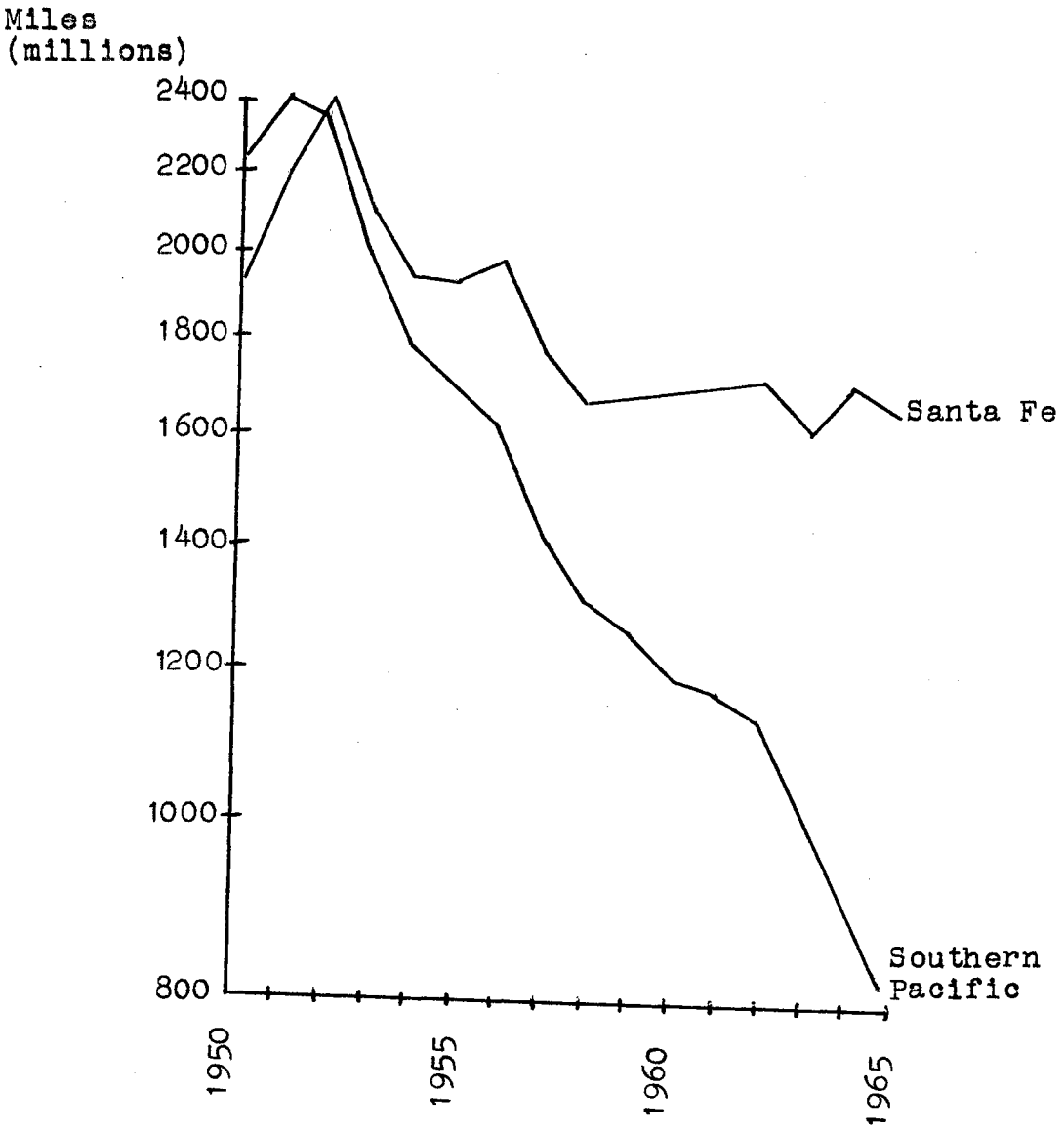

FIGURE 7.

REVENUE PASSENGER MILES: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

passenger-only short-haul output has surely biased the carrier's per-trip load factors upward and its average passenger journey downward. The extent of this bias cannot be accurately determined by recourse to published data, however, available statistics do provide some insight into the magnitude of commuter service relative to Southern Pacific's total passenger operations.

Table 7 shows that while 55.7 percent of the total revenue passengers in 1950 were commuters, commuter trains accounted for only 7.1 percent of Southern Pacific's total passenger train miles. By 1965, when commuters made up 76.5 percent of Southern Pacific's revenue passengers, commuter train miles were only 18.1 percent of total passenger train miles.

The increasing importance of Southern Pacific commuter traffic relative to its long-haul trains does not invalidate comparisons between this carrier and the long-haul Santa Fe passenger service. Because the Southern Pacific has evolved to its present state by concentrating on commuter service (over which it has little power to eliminate) at the expense of previously important long-haul service, comparisons between this carrier and the Santa Fe may prove to be highly meaningful.

PASSENGER SERVICE RELATIVE TO TOTAL OUTPUT

The output measures discussed above are meaningless until they are located as a relative part of each railroad's

TABLE 7

SOUTHERN PACIFIC COMPANY COMMUTER SERVICE AS A PERCENT OF TOTAL PASSENGER SERVICE, 1950 - 1965

	Percent of total passenger train miles	Percent of total revenue passengers
1950	7.1	55.7
1951	6.8	55.7
1952	7.5	56.2
1953	9.1	60.0
1954	10.6	65.8
1955	10.9	64.2
1956	11.0	64.4
1957	11.7	65.9
1958	12.0	67.8
1959	12.0	69.2
1960	12.3	69.7
1961	12.2	70.7
1962	12.2	72.8
1963	13.6	74.0
1964	15.9	75.6
1965	18.1	76.5

Source: Interstate Commerce Commission, Revenue Traffic, Form OS-D (Washington, 1950-1960).

Ibid., Form OS-B (Washington, 1961-1965).

total rail output. Only when passenger service is viewed as a component of total service can it be judged more--or less--a byproduct operation; its economic justification lies in extracting more output from an under-utilized physical plant. If, however, the operation of passenger trains accounts for a significant portion of the railroad's total output (for instance, when passenger trains begin to interfere with the operation of freight trains), their justification becomes more exacting. In this sense, they must generate a return more commensurate with the profitability of freight operations.

Passenger service as a percent of total output. This comparison of Santa Fe and Southern Pacific passenger service shows the following differences (Table 8):

a) Santa Fe passenger service was 40 percent of total train miles in 1950 and 32 percent in 1965--a decrease in this percentage of 22.5 percent.

b) Southern Pacific passenger service was 34 percent of total train miles in 1950, but only 14 percent in 1965--a decrease in this percentage of 59 percent.

c) Santa Fe passenger service was 23 percent of total gross ton miles in 1950 and 14 percent in 1965--a decrease in this percentage of 39.2 percent.

d) Southern Pacific passenger service was 18 percent of total gross ton miles in 1950 and 5 percent in 1965--a decrease in this percentage of 72.3 percent.

3) Santa Fe passenger service was 27 percent of total

TABLE 8

PASSENGER SERVICE OUTPUT AS A PERCENT OF TOTAL RAILROAD OUTPUT
SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

	Passenger train miles		Gross ton miles		Passenger train service hours[a]	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	40	34	23	18	27	19
1951	40	33	22	17	27	19
1952	40	32	23	16	27	18
1953	40	31	22	15	28	17
1954	41	31	23	14	29	18
1955	39	27	21	12	25	16
1956	40	27	21	12	25	15
1957	39	27	19	11	24	16
1958	37	26	17	11	23	15
1959	38	23	16	10	20	14
1960	33	23	16	9	20	14
1961	34	20	16	9	20	14
1962	34	19	16	8	20	13
1963	34	18	16	8	21	13
1964	33	16	15	7	20	12
1965	31	14	14	5	19	9

[a]Train service hours is an output statistic that shows the product of (a) the number of passenger and freight trains put together and operated per year and (b) the number of hours elapsed running time of each of these trains.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

train service hours in 1950 and 19 percent in 1965--a decrease in this percentage of 29.7 percent.

f) Southern Pacific passenger service was 19 percent of total train service hours in 1950 and 9 percent in 1965--a decrease in this percentage of 52.6 percent.

Although both railroads' passenger service decreased in importance relative to total output, Santa Fe's service was consistently more important than Southern Pacific's. In addition, the Santa Fe's passenger service decreased in importance at a slower rate than the Southern Pacific's--in all three categories.

Comparison of freight service. A comparison of Santa Fe and Southern Pacific freight service output is useful in the sense that the performance of each carrier's freight operation may well set standards against which passenger service performance is judged. Three output measures have been developed from published Interstate Commerce Commission data and are tabulated in Table 9.

Two major differences are revealed by Table 9. First, the Santa Fe tends to operate lighter freight trains than the Southern Pacific. This implies that the average freight train speed is somewhat higher on the former road than on the latter. It implies that the Santa Fe is geared, in its operations, to a higher overall train speed (freight and passenger) than the Southern Pacific.[7] To the extent this is true,

---

[7]Santa Fe's average freight train speed increased from

TABLE 9

SELECTED FREIGHT SERVICE OUTPUT DATA: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

	Average freight train tonnage		Average freight car journey (miles)		L.C.L.[a] as percent of total freight tonnage	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	1,011	1,080	517	446	0.7	0.8
1951	1,035	1,138	517	441	0.7	0.7
1952	1,054	1,167	515	445	0.7	0.7
1953	1,048	1,152	540	434	0.6	0.6
1954	1,081	1,181	513	446	0.6	0.5
1955	1,114	1,196	535	453	0.6	0.6
1956	1,147	1,252	523	435	0.5	0.4
1957	1,167	1,289	553	438	0.5	0.4
1958	1,249	1,309	528	451	0.4	0.3
1959	1,142	1,337	547	479	0.4	0.2
1960	1,190	1,368	561	475	0.3	0.2
1961	1,272	1,361	544	474	0.4	0.2
1962	1,272	1,402	551	501	0.3	0.2
1963	1,314	1,424	568	492	0.2	0.1
1964	1,320	1,475	575	498	0.2	0.1
1965	1,335	1,512	573	501	0.2	0.1

[a]L.C.L. denotes less-than-carload freight.

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

fast passenger trains would interfere less with the efficient operation of freight trains. Most railroad men dream of a truly "one-speed" railroad, a railroad where both freight and passenger trains operate at the same scheduled speed in mainline service.[8]

The second comparative difference between Santa Fe and Southern Pacific freight service is that the Santa Fe average freight car journey is consistently greater than that of the Southern Pacific. Not only in passenger service, but in freight service as well, the Santa Fe is the "long haul" of the two railroads studied.

Table 9 also summarizes the less-than-carload (L.C.L.) freight hauled by each carrier from 1950 through 1965. This type of traffic is a negligible fraction of each railroad's total freight tonnage (less than one percent of the total for all years). Both railroads have hauled less and less of this class of freight since 1950, but the Southern Pacific has decreased this service to a greater extent than has the Santa Fe. Although L.C.L. tonnage is handled in freight trains, it is similar in nature to express tonnage carried in passenger service. For this reason, a road's move away from L.C.L. tonnage might also indicate a willingness to eliminate express.

20.5 to 27.1 miles per hour between 1950 and 1965. Southern Pacific's average freight train speed increased from 16.6 to 24.7 miles per hour during this period. Transport Statistics in the U.S., Part I--Railroads, (Washington, D.C., 1950-1965).

[8] _____. Personal interview with Kelly Fogg, Assistant to the President, Santa Fe Railway, Dallas, Texas, October 6, 1967.

CHAPTER SUMMARY

Although the Southern Pacific has been involved with commuter service for many years, it and the Santa Fe were essentially equals in the long-haul passenger business in 1950. Over time, this similarity diminished, and today, no longer exists. By 1965, the Southern Pacific was, for all practical purposes, out of the long-haul passenger train business. Its remaining long-haul service was heavily oriented to head-end business. The averages of Southern Pacific's passenger-carrying statistics were biased upward by the road's highly localized commuter traffic.

The Santa Fe in 1965, while less passenger-oriented than in 1950, was still very much in the long-haul passenger business. Stripped to the essentials of its main-line passenger service, the Santa Fe continued in 1965 to supply passenger train output along its major routes in amounts that had been essentially stabilized since the 1958-1960 period.

In comparing the two carriers' freight service output, the Santa Fe tended towards shorter, faster, and longer-haul trains than its rival the Southern Pacific. This trend indicates that fast passenger service would interfere less with freight train operation on the Santa Fe than on the Southern Pacific. The differential between passenger train and freight train speed would be less in the Santa Fe operations than in those of the Southern Pacific.

Passenger service output on the Santa Fe has been a larger fraction of total output than has been the case on

the Southern Pacific (although this fraction has decreased over time on both railroads). If one assumes that both carriers were equally able to discontinue non-commuter passenger service as they desired to do so, passenger service is a more essential component of management's output plans on the Santa Fe than on the Southern Pacific.

CHAPTER IV

THE EVOLUTION OF PASSENGER AND ALLIED SERVICE REVENUES: A COMPARISON OF THE SANTA FE RAILWAY AND THE SOUTHERN PACIFIC COMPANY FROM 1950 TO 1965

The purpose of this chapter is to present the nature of passenger and allied service revenue for both carriers between 1950 and 1965. This presentation and analysis is grouped into two general categories: (a) total passenger and allied service revenue and the composition of this nonfreight revenue and (b) per-unit revenue breakdowns.

DEFINITION OF TERMS

"Passenger and Allied Service Revenue" measures the gross revenue derived from the operation of passenger train service. P.& A.S. revenue, for the purposes of this study, is divided between "head-end" revenue and "passenger-related" revenue. Head-end revenue is the sum of "baggage", "mail", "express", and "other" categories of P.& A.S. revenue. Passenger-related revenue is the total of "dining and buffet", "parlor and club", and "passenger revenue". This arbitrary, two-part allocation divides P.& A.S. revenue

between operations directly associated with the hauling of passengers and operations not directly related to the hauling of passengers but usually produced in conjunction with passenger business.

REVENUE TOTALS AND COMPOSITION

Between 1950 and 1965, Santa Fe P.& A.S. revenue declined from $92 million to $86 million and decreased from 18 percent to 13 percent of the road's total operating revenue (Table 10). Southern Pacific P.& A.S. revenue decreased from $84 million in 1950 to $44 million in 1965 and shrunk from 14 percent to 6 percent of this carrier's total operating revenue (Table 11).

In other words, between 1950 and 1965, the dollar P.& A.S. Santa Fe revenue decreased 6.5 percent while Southern Pacific P.& A.S. revenue shrunk 48 percent.

In addition, Santa Fe P.& A.S. revenue was nearly stable after 1954 both in dollar terms and as a percent of total operating revenue.[1] In contrast, Southern Pacific P.& A.S.

---

[1] "The reason for this, in a nutshell, is longer trains, double-level cars and some heads-up railroading. Longer trains with a greater number of paying passengers per train, along with a rather substantial decrease in train miles because of the discontinuance of a great many short runs, branch line trains and intermediate runs no longer used by travelers are the basic Santa Fe realities in this area. We handled about $86 million worth of passenger train business in 1963--compared with $83.3 million in 1954--despite a one-third reduction in passenger train miles." Statement by E. S. Marsh, Santa Fe President, Railway Age 150 No. 25 (December 28, 1964), p. 26.

TABLE 10

COMPOSITION OF PASSENGER AND ALLIED SERVICE REVENUE
SANTA FE RAILROAD, 1950 - 1965

	Passenger and Allied Service		Head-end[a]		Passenger-related[b]	
	(x 1000)	percent of all revenue	(x 1000)	percent of P.& A.S.	(x 1000)	percent of P.& A.S.
1950	$ 91,655	17.54	$39,351	42.93	$52,304	57.07
1951	94,603	16.58	33,082	34.97	61,521	65.03
1952	102,687	16.99	35,384	34.46	67,303	65.54
1953	92,386	15.06	33,881	36.67	58,505	63.33
1954	84,795	15.93	33,736	39.79	51,059	60.21
1955	84,328	14.59	34,894	41.39	49,434	58.61
1956	87,606	14.84	34,904	39.84	52,702	60.16
1957	83,533	12.45	33,985	40.68	49,548	59.32
1958	81,502	13.69	34,180	41.74	47,482	58.26
1959	85,615	13.51	38,303	44.74	47,313	55.26
1960	85,544	13.93	38,061	44.49	47,483	55.51
1961	87,332	14.45	39,186	44.85	48,146	55.13
1962	89,893	14.68	40,867	45.46	49,026	54.54
1963	87,442	14.19	40,781	46.64	46,661	53.36
1964	88,350	13.85	40,411	45.74	47,939	54.26
1965	86,352	13.19	40,052	46.38	46,300	53.62

[a]Sum of P.& A.S. revenue categories: mail, express, baggage, milk, and other.

[b]Sum of P.& A.S. revenue categories: Passenger, parlor and club, dining and buffet.

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

TABLE 11

COMPOSITION OF PASSENGER AND ALLIED SERVICE REVENUE
SOUTHERN PACIFIC RAILROAD, 1950 - 1965

	Passenger and Allied Service		Head-end[a]		Passenger-related[b]	
	(x 1000)	percent of all revenue	(x 1000)	percent of P.& A.S.	(x 1000)	percent of P.& A.S.
1950	$83,673	13.99	$27,038	32.31	$56,635	67.69
1951	88,953	13.73	25,543	28.72	63,410	71.28
1952	92,656	13.23	29,161	31.47	63,495	68.53
1953	83,283	12.03	27,756	33.33	55,527	66.67
1954	72,940	11.65	24,463	33.54	48,477	66.46
1955	68,548	10.28	23,711	34.59	44,837	65.41
1956	66,159	9.75	22,333	33.76	43,826	66.24
1957	61,424	9.26	21,498	35.00	39,926	65.00
1958	58,922	9.08	21,503	36.49	37,419	63.51
1959	59,440	8.61	23,689	39.85	35,751	60.15
1960	57,038	8.56	22,381	39.24	34,657	60.76
1961	56,996	8.45	23,054	40.45	33,942	59.55
1962	58,353	8.31	24,255	41.57	34,098	58.43
1963	53,571	7.60	24,536	45.80	29,035	54.20
1964	50,181	6.89	23,698	47.23	26,483	52.77
1965	43,835	5.57	19,337	44.11	24,498	55.89

[a]Sum of P.& A.S. revenue categories: mail, express, baggage, milk, and other.

[b]Sum of P.& A.S. revenue categories: passenger, parlor and club, dining and buffet.

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

revenue, while remaining fairly steady in dollar terms after 1958-1959, became progressively less important as a percent of total operating revenue (Figure 8).

Head-end revenue. Between 1950 and 1965, Santa Fe's head-end revenue increased modestly in dollar terms from $39 million to $40 million. However, this revenue increased in importance as a compenent, from 43 percent to 46 percent, of P.& A.S. revenue (Table 10).

Over the same period, Southern Pacific's head-end gross decreased from $27 million to $19 million, but moved from 32 percent to 44 percent of the road's P.& A.S. revenue (Table 11).

Increases in mail rates and express charges between 1950 and 1965 contributed to Santa Fe's modest increase in head-end revenue but were a retarding influence upon Southern Pacific's decreasing head-end gross. Express rates were increased 15 percent in 1953; mail rates were raised 10 percent in 1954, 7.5 percent in 1955, and 13 percent in 1960.[2]

Passenger-related revenue. Between 1950 and 1965, Santa Fe's passenger-related revenue decreased from $52 million to $45 million, or a decline of 11.5 percent (Table 10). Southern Pacific passenger-related revenue was cut from $57 million to $24 million, a decrease of 66.7 percent (Table 11). Over this time, Santa Fe's passenger-related gross decreased from 57 percent of P.& A.S. revenue to 54 percent while Southern

---

[2]Moody's Transportation Manual, (New York, 1966), pp. a73-a74.

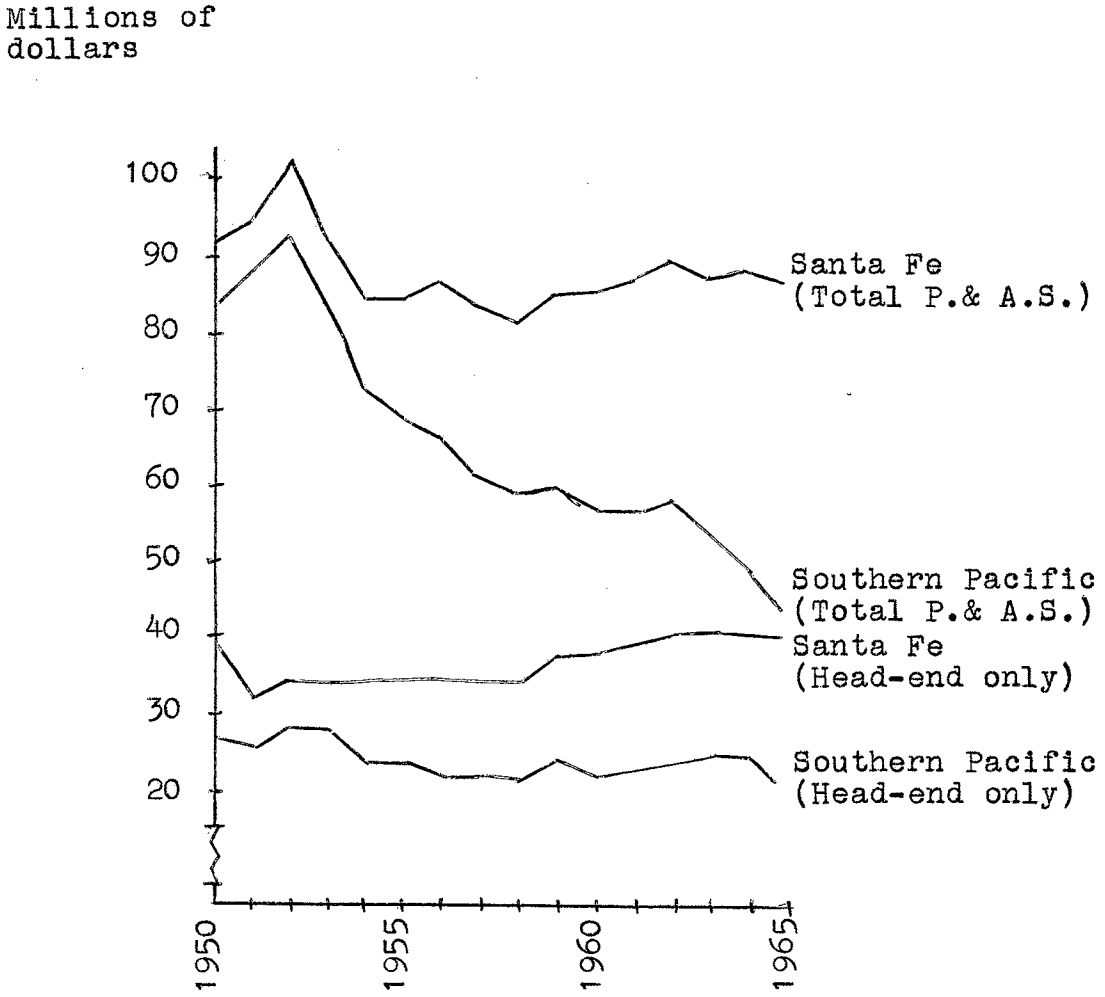

FIGURE 8.

PASSENGER AND ALLIED SERVICE REVENUE TOTAL AND "HEAD-END" COMPONENT: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

Pacific's declined from 68 percent to 56 percent.

Increases in passenger fares during the 1950-1965 period exerted a retarding influence on the declining passenger-related revenues of both carriers. In 1951, a 10 percent increase was posted and 5 percent increases were made in 1956, 1957, 1958 and 1961.[3]

SALES EFFORTS

Extra charges. In the early 1950's, the Santa Fe and the Southern Pacific both imposed an extra charge on the passengers riding "flagship" trains such as Santa Fe's Super Chief, El Capitan, and Chief and Southern Pacific's Sunset Limited and Golden State Limited. In 1954, the Santa Fe eliminated this surcharge on the Chief in an attempt to attract more business. At the same time, the extra charge on the Super Chief and El Capitan was reduced.[4]

The Southern Pacific, however, has retained this extra charge on both its trains mentioned above. In 1965, passengers were required to pay a ten dollar surcharge to ride the coach-only Sunset Limited, a train that had no diner or lounge.[5]

Travel incentive plans. Between 1950 and 1965, the

---

[3]Ibid.

[4]Sixtieth Annual Report to Stockholders, (The Atchison, Topeka and Santa Fe Railway Company, Year ended December 31, 1954), p. 14.

[5]Public Timetable of Passenger Train Schedules. (The Southern Pacific Company, 1965), p. 4.

Santa Fe has offered special reduced rates for families traveling together and has gradually expanded this plan to include departure on any day of the week. Reduced-cost bargain meal plans are also available in the diner. Credit cards are accepted and a "pay-later" plan has been offered since 1960.[6] In addition, scenic "stop-over" tours are offered at points of interest along the line.

Beginning in 1964, the Santa Fe offered special passenger fares to all points on round-trip travel between September 15 and April 15 that amounted to approximately 140 percent of the one-way ticket. This represented a saving of around 20 percent from the regular round-trip fare.[7]

The Southern Pacific, in contrast, ceased to honor credit cards in 1961 and has no family plan. There is no dining service left to promote. The Southern Pacific offers no reduced rates.

Special equipment. In the early 1950's the Santa Fe re-equipped its major passenger trains with modern, streamlined equipment, complete with dome cars, diners, and lounges. The Southern Pacific equipped its trains initially in the same period with modern, streamlined equipment, but not dome

---

[6]"Our surveys indicate that a large proportion of the Pay Later business is generated by passengers who would not otherwise have traveled by rail." Sixty-Sixth Annual Report to Stockholders, (The Atchison, Topeka and Santa Fe Railway Company, Year ended December 31, 1960), p. 9.

[7]Public Timetable of Train Schedules (Ticket Agent Edition), (The Atchison, Topeka and Santa Fe Railway Company, 1964), p. 10.

cars. In 1956, the Santa Fe developed a new concept in long-distance coach travel for use on their El Capitan. These cars, known as "high-level" equipment, were an immediate success in service. The passenger rode some seven feet higher off the rails, providing a better view, less noise, and more comfort. With no increase in car length over the previous designs and only slightly more weight per car, the Santa Fe increased the per-car seating from forty eight to seventy two persons and maintained the roomy seating arrangements.[8]

After a year's operation by these high-level cars, Railway Age reported that

> Santa Fe's high-level El Capitan is held in something approaching awe by many passenger officers, and from what it's doing to the Santa Fe passenger revenue, it should be. The double-deck version of that always popular coach train was responsible for about $1,900,000 of the Santa Fe's $2.8 million increase in passenger revenue last year. The new train has increased revenues to roughly three times what they were with the former equipment--with little or no increase in net operating cost. During the train's first summer, the Santa Fe had a daily waiting list of 119 to 190 persons.[9]

The Southern Pacific continued to operate with its original--and conventional--streamlined equipment and began selling airline tickets in its on-line offices.

Advertising efforts. Both railroads devoted a significant percentage of their 1950 advertising budgets to the

---

[8]The Official Railway Equipment Register, (New York, 1961) pp. 1-2.

[9]"Are the Passengers Coming Back?", Railway Age, 142, No. 20 (May 20, 1957), p. 68.

promotion of passenger service. The Santa Fe spent $1.9 million, or nearly 83 percent of its advertising budget, on selling this service. The Southern Pacific allocated a lesser amount, $1.1 million, but nearly 93 percent of its advertising funds, to this effort (Table 12).

Each carrier's passenger advertising began to decrease during the middle of the 1950 decade, both in dollar terms and as a percent of each road's total advertising budget. Here the similarity ends.

The dollar decline of Santa Fe's passenger advertising was modest in comparison to Southern Pacific's cuts. The declining importance of Santa Fe passenger advertising relative to the total budget was due largely to the fact that this road's total spending of this type was on the increase with the added dollars going to promote freight service.

Not only did Southern Pacific passenger advertising decline in both dollar and percentage amounts, but the total dollar advertising budget of this road was cut.

By 1965, when Santa Fe's passenger advertising was $1.5 million and 57 percent of the road's total advertising budget, the Southern Pacific's passenger advertising had decreased to $51 thousand, and only 10 percent of the carrier's spending of this type (Table 12).

It appears from the data in Table 12 that the Santa Fe believes in advertising its services--both freight and passenger--while the Southern Pacific does little of either. A preliminary conclusion might be that if the public doesn't

TABLE 12

TOTAL ADVERTISING EXPENSE AND AMOUNT ALLOCATED TO PASSENGER AND ALLIED SERVICE OPERATIONS, SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

	Total amount (x 1000)		Allocated to P.& A.S. (x 1000)		Percent of total (x 1000)	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$2,355	$1,221	$1,951	$1,131	82.8	92.6
1951	3,095	1,263	2,663	1,160	86.0	91.8
1952	3,083	1,537	2,629	1,163	85.3	75.7
1953	3,423	1,575	2,158	1,179	63.0	74.9
1954	3,011	1,334	2,507	1,089	83.3	81.6
1955	3,076	1,520	2,290	895	74.4	58.9
1956	2,773	1,548	2,166	781	78.1	50.5
1957	2,651	914	1,934	456	73.0	49.9
1958	2,411	870	1,574	401	65.3	46.1
1959	3,027	804	1,997	470	66.0	58.5
1960	2,981	767	1,950	339	65.4	44.2
1961	2,956	533	1,843	231	62.3	43.3
1962	3,159	540	2,052	188	65.0	34.8
1963	2,891	520	1,978	100	68.4	19.3
1964	3,020	521	2,083	80	69.0	15.4
1965	2,596	504	1,485	51	57.2	10.1

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

know the trains exist, they will not be patronized. For lack of patronage and the resulting deficit, Southern Pacific can claim that the public no longer desires passenger trains.

SUMMARY OF TOTAL REVENUE DATA

Both Santa Fe and Southern Pacific total Passenger and Allied Service Revenue have decreased between 1950 and 1965. The decrease, however, was less rapid on the Santa Fe than on the Southern Pacific (Figure 8). In fact, Santa Fe's P.& A.S. revenue total has remained remarkably steady since 1954. Figure 8 shows that the real divergence between Santa Fe and Southern Pacific revenues began in 1954.

The divergence between the two roads' total P.& A.S. revenues after 1954 can be traced mainly to a decline in Southern Pacific's passenger-related revenue, since head-end revenue for both carriers remained essentially constant in dollar terms between 1950 and 1965.

The stability of Santa Fe's passenger-related revenue between 1954 and 1965 can be traced partly to this railroad's sales efforts. Attractive equipment innovation, travel incentive plans, and advertising represent the major components of this promotion.

The rapid decline in Southern Pacific passenger-related revenue over this time can similarily be associated with an absence of sales promotion. The lack of advertising coupled with a deterioration in both the quantity and quality of Southern Pacific's service brought about this result.

PER UNIT PASSENGER AND ALLIED SERVICE REVENUE

Per passenger train mile. The Southern Pacific has consistently generated more P.& A.S. revenue per passenger train mile than the Santa Fe. In 1950, Southern Pacific grossed $4.64 to the Santa Fe's $3.88 and in 1965, the figures were $6.51 and $6.08 respectively (Figure 9). Figure 9 suggests that the Santa Fe was more flexible in adjusting passenger train miles to the demand for this service than was the Southern Pacific during periods of seasonal, cyclical or secular decreases in demand (when seats and baggage cars would run empty) by reducing passenger train miles quickly. The comparatively smooth upward trend for the Santa Fe, shown in Figure 9, reflects the elimination of passenger train miles that were not patronized by passengers or needed for head-end service. In addition, the Santa Fe has, since 1958, consolidated some main line trains during the slack season which causes a seasonal decrease in train miles and increases the revenue per passenger train mile as the revenue is concentrated over fewer output units.

Per gross ton mile. In 1950, the Southern Pacific grossed 3.61 cents to Santa Fe's 3.29 cents per gross ton mile, while in 1965, the figures were 5.43 and 4.28 cents respectively (Figure 10).

Between 1950 and 1965, the Santa Fe consistently earned less revenue per gross ton mile than the Southern Pacific (Figure 10). At the same time, both carriers have improved

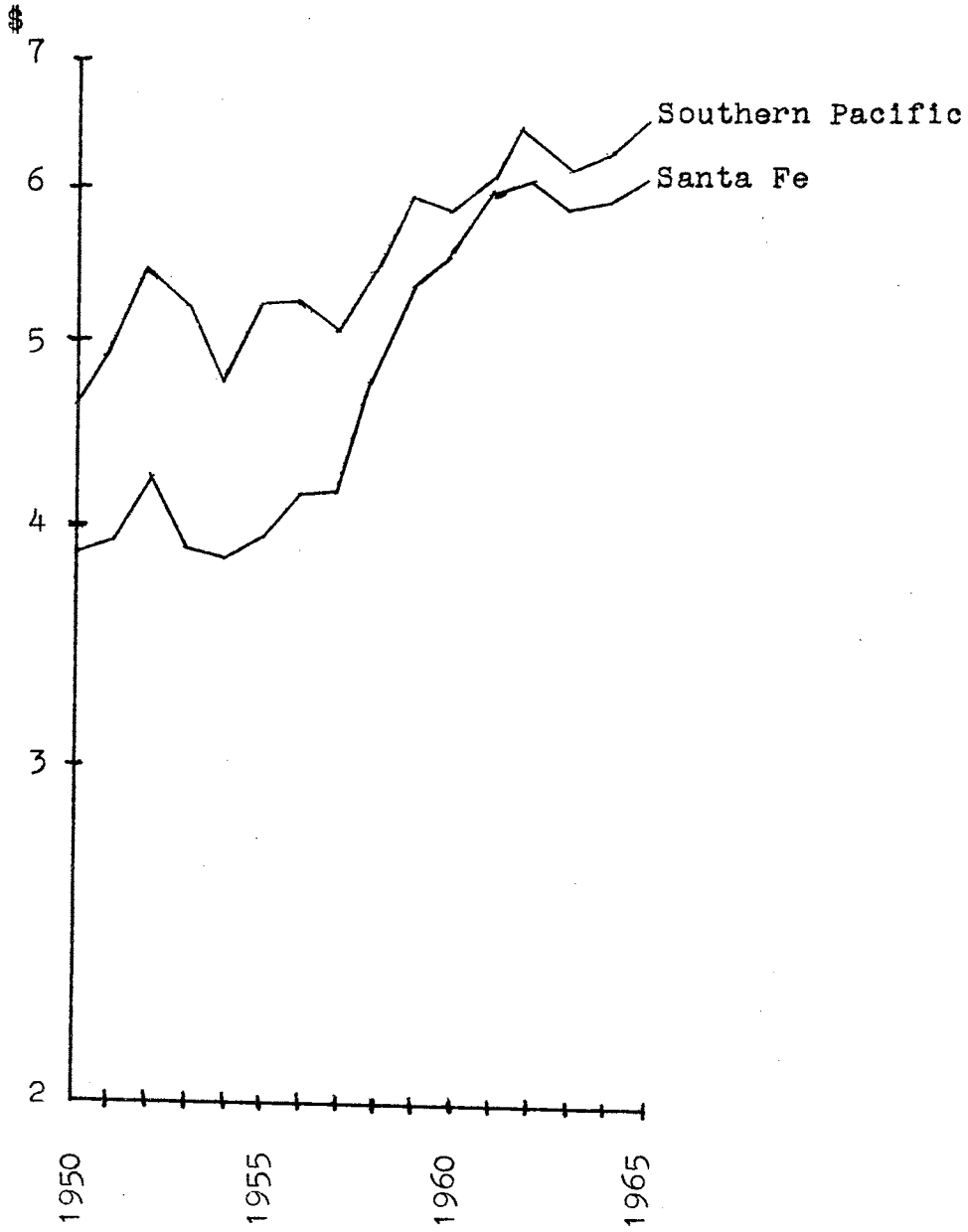

FIGURE 9.

PASSENGER AND ALLIED SERVICE REVENUE PER PASSENGER TRAIN MILE: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

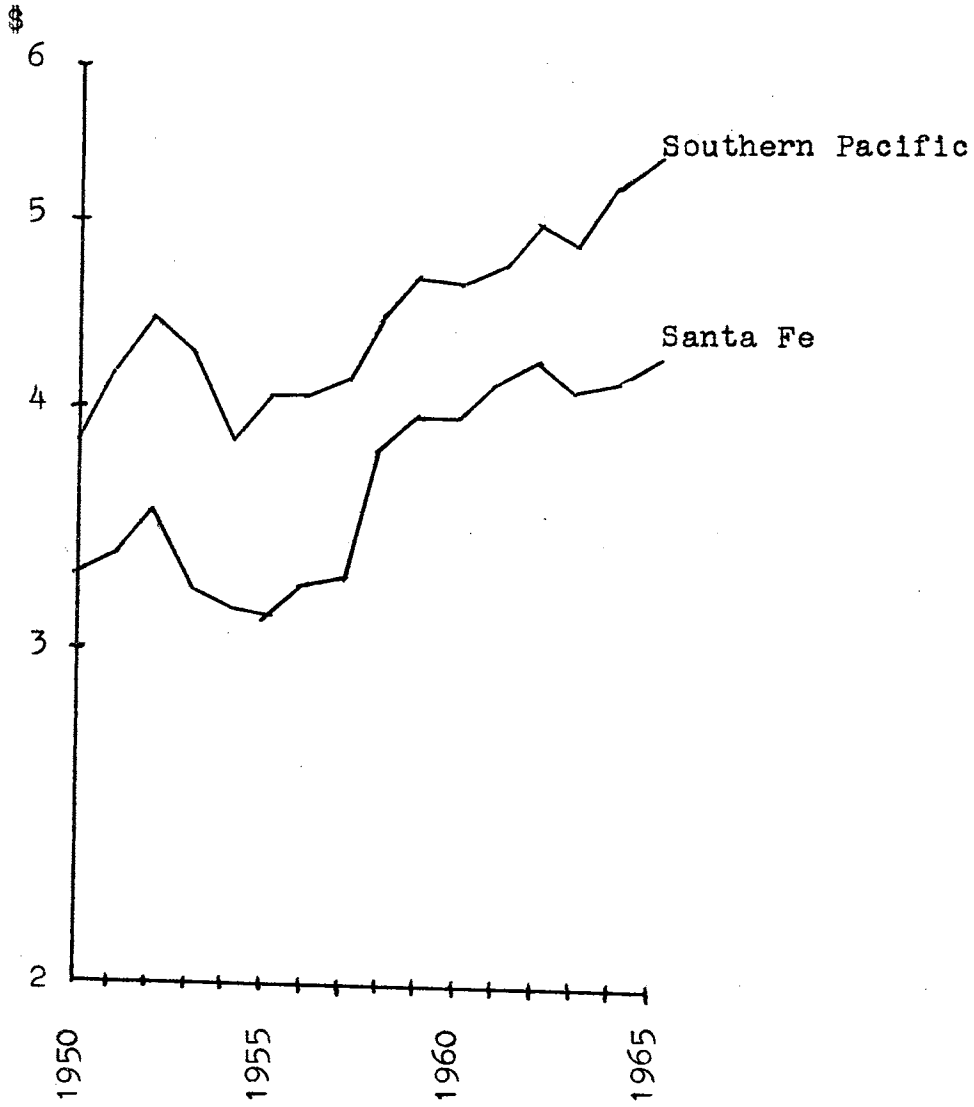

FIGURE 10.

PASSENGER AND ALLIED SERVICE REVENUE PER GROSS TON MILES: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965
(semilog scale)

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

their position steadily since 1955. The Santa Fe's comparatively poor showing is caused by two major factors: first, the Santa Fe runs more "non-revenue" cars, such as lounges and diners, than does the Southern Pacific; second, while the Santa Fe consolidates some trains during the off-season, gross ton miles do not fall at the same rate as passenger train miles since the remaining trains have a few more cars than usual. Because the Southern Pacific tends to eliminate schedules rather than consolidate them with other runs, Southern Pacific GTM and passenger train miles tend to change at similar rates.

Earnings per car trip. Table 13 is the result of an attempt to estimate the per-trip passenger train gross car earnings.[10] An estimate was made both for passenger-carrying cars and for head-end cars, as well as an average of the two general car types. In all three categories, for every year under consideration, the Santa Fe was estimated

---

[10]Per-car-trip revenue was estimated in the following fashion. Total passenger-related revenue was determined. This statistic was multiplied by an estimate of average number of passengers per passenger-carrying car (which is the "load factor" referred to in Table 13). The result was per-car-trip revenue for passenger-carrying cars. The product of this statistic and the average number of passenger-carrying cars per passenger train depicted the passenger-related revenue per passenger train trip. This statistic was then divided into total passenger-related earnings to isolate an estimate for the number of passenger trains operated per year (actual train departures). This statistic was then divided into the total head-end revenue to determine an estimate for head-end revenue per-average-train trip. The result was divided by the average number of head-end cars per passenger train to arrive at average per-trip head-end car revenue.

TABLE 13

ESTIMATE* OF AVERAGE PER-TRIP CAR EARNINGS FOR SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

	Passenger-carrying car		Head-end car		Average car-both types	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$196.66	$78.78	$169.72	$78.25	$184.11	$78.61
1951	242.58	95.00	153.01	73.70	201.36	87.72
1952	264.53	90.09	155.45	81.32	213.02	87.13
1953	239.18	78.04	148.17	61.11	195.21	71.44
1954	228.23	67.32	158.23	47.34	194.07	58.97
1955	227.96	67.20	159.26	36.64	193.43	52.15
1956	264.16	74.45	173.18	40.36	218.44	57.94
1957	275.69	75.08	175.77	43.54	223.90	59.89
1958	312.05	77.40	191.85	49.09	247.22	63.94
1959	319.49	80.77	223.00	54.89	267.67	68.00
1960	345.92	80.96	227.92	48.89	281.15	64.39
1961	370.17	76.14	254.55	49.97	307.50	62.83
1962	376.81	89.20	266.18	59.44	316.93	73.83
1963	350.48	77.72	258.57	61.23	300.64	69.19
1964	361.15	71.40	254.89	59.26	303.31	65.10
1965	387.61	98.27	271.50	82.71	323.45	90.74

*Load factors (average passenger car-load) used in compiling above estimates taken from: Ely M. Brandes and Alan E. Lazar, The Future of Rail Passenger Traffic in the West, (Stanford Research Institute Project 5676), (Stanford Research Institute, Menlo Park, 1967).

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

to gross considerably more revenue per car trip than the Southern Pacific. Certainly the Southern Pacific commuter service, with its short hauls and underutilized equipment, would strongly bias these estimates. This bias, however, would have been minor in 1950 when commuter service was only seven percent of total passenger train miles.

Most Southern Pacific commuter cars in 1965 were bi-level, high-density seating cars. At any rate, commuter service would not bias head-end earnings per car trip as seriously as it would bias passenger-carrying car trip earnings since commuter passenger trains operate only negligible head-end equipment. However, the estimates show no better results in the Southern Pacific's head-end revenues (Table 13). Unfortunately, there was no available revenue data that separated commuter earnings from other passenger train earnings.

Earnings per train trip. When the appropriate estimates in Table 13 are multiplied by the statistic "average number of cars per passenger train" for the relevant year, the result is an estimate of passenger and allied service revenues (gross) per passenger train trip (Figure 11). In other words, if every train (of each carrier that operated during a given year grossed an amount identical to every other train operated, the resulting amount would be that graphed in Figure 11.

Passenger and allied service revenue per passenger train trip increased, on the Santa Fe, from $2,016 in 1950 to

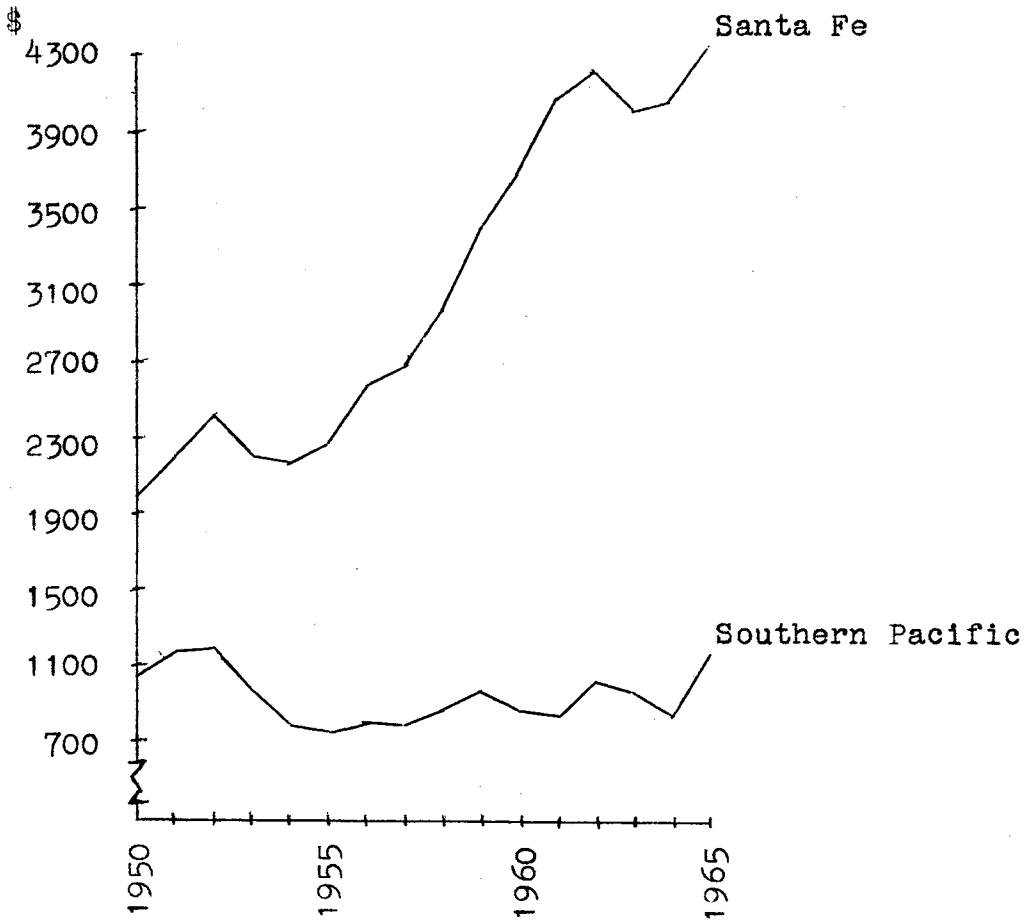

FIGURE 11.

AVERAGE PASSENGER AND ALLIED SERVICE REVENUES PER PASSENGER TRAIN TRIP: SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I - Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

$4,337 in 1965. The comparable Southern Pacific estimates are $1,053 and $1,188 respectively (Figure 11). The increasingly significant bias of commuter service in the Southern Pacific data since 1950 is offset, as mentioned above, by high-capacity cars. Unfortunately, the data necessary to estimate this bias is not available. The Santa Fe performance pictured by Figure 11 is explained by the reason that it operates more cars per train.

Passenger-related revenue per passenger. The data summarized in Figure 12 illustrates each railroad's attitude toward hauling passengers. The Santa Fe has increased its per-passenger revenue in this category nearly every year over the 1950-1965 span. The Southern Pacific passenger-related revenue per passenger has held almost steady over this time at a dollar amount considerably less than that earned by the Santa Fe.

This difference in revenue between the two roads is influenced by two factors. First, the average passenger journey is considerably greater on the Santa Fe than on the Southern Pacific. The average passenger's basic fare would be greater for this reason. Second, being on the train over a greater distance, the average Santa Fe passenger would tend to make additional expenditures for Pullman space, meals in the diner, and drinks in the lounge car. As this luxury-type service has been eliminated by the Southern Pacific, the passenger on that carrier has increasingly been left with little else to do but purchase his coach ticket and remain

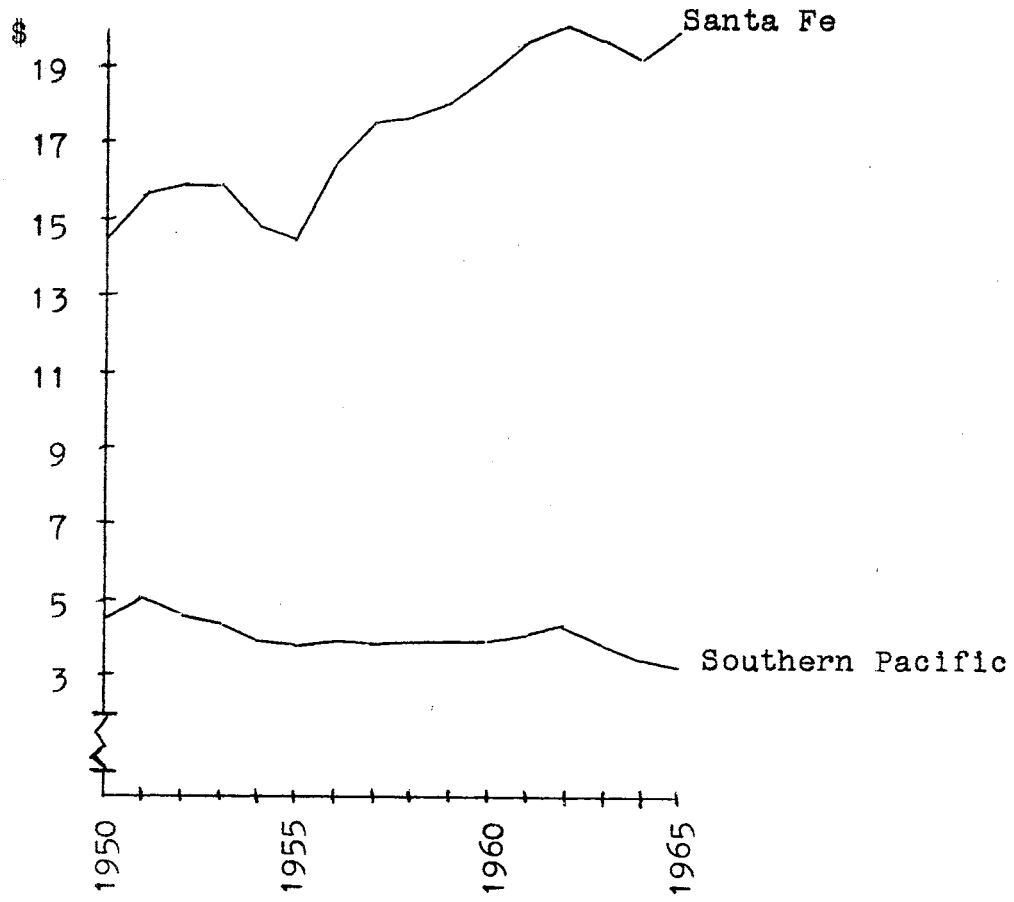

FIGURE 12.

PASSENGER-RELATED* REVENUE PER PASSENGER:
SANTA FE AND SOUTHERN PACIFIC
RAILROADS, 1950 - 1965

*Passenger Related Revenue was obtained by subtracting mail, baggage, express and the category "other" revenue from total Passenger and Allied Service Revenue.

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I - Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

in his seat. The evolving significance of commuter service on the Southern Pacific railroad after 1950 is also basic to comparative differences pictured by Figure 12.

RELATIVE IMPORTANCE OF FREIGHT REVENUES

Total operating revenue. Between 1950 and 1965, Santa Fe total gross operating revenue (freight plus passenger) increased from $523 million to $655 million, a growth of 20.2 percent. Over the same period, the Southern Pacific total rose from $598 million to $786 million, an increase of 23.9 percent (Table 14). Southern Pacific's total gross operating revenue was greater than Santa Fe's every year during this period except 1957.

Freight net operating income. Net income from freight service is calculated by subtracting operating expenses (including apportioned common expenses), net rents, and accrued taxes from operating revenue.

Between 1950 and 1965, Santa Fe's net increased a modest 1.2 percent (from $101 million to nearly $103 million) whereas Southern Pacific's net decreased 12 percent (from $96 million to nearly $85 million). In addition, Santa Fe's net from freight service was greater than Southern Pacific's for all years during this period except 1952 and 1960 (Table 14). In other words, Santa Fe freight service grossed less, but netted more, revenue than the Southern Pacific's freight service for most years spanned by this study.

Revenue per freight train mile. Although the key to an

TABLE 14

TOTAL OPERATING REVENUE AND NET INCOME FROM FREIGHT SERVICE
SANTA FE AND SOUTHERN PACIFIC RAILROADS
1950 - 1965

	Total operating revenue (freight and passenger) (x 1000)		Freight net railway operating income (x 1000)	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$522,676	$598,263	$101,300	$ 96,250
1951	570,582	647,671	108,085	106,300
1952	604,512	700,359	100,287	115,385
1953	613,531	692,085	117,183	110,455
1954	532,292	626,215	110,317	106,186
1955	578,034	666,920	114,631	107,525
1956	590,183	678,325	117,811	104,013
1957	670,714	663,493	109,568	105,113
1958	595,289	648,814	103,432	93,392
1959	633,836	690,316	96,119	91,634
1960	614,017	666,632	81,390	85,345
1961	604,524	674,813	79,389	77,288
1962	612,320	701,879	87,763	76,708
1963	616,080	704,488	92,593	88,370
1964	637,772	728,578	98,364	76,268
1965	654,704	786,296	102,891	84,718

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

Explanation of the comparative differences in total freight net revenue lies with a comparison of freight service expenses (to be discussed in a subsequent chapter), per-unit freight revenue measures give some indication of why Santa Fe's freight service net income was higher than Southern Pacific's for most years.

Table 15 indicates that between 1950 and 1965, gross freight revenue per freight train mile increased 19.6 percent on the Santa Fe (from $14.31 to $17.79). Southern Pacific's gross per freight train mile increased a lesser amount, 13.8 percent, during this period (from $14.65 to $16.99).

Average revenue per ton of freight. Gross freight revenue per ton of freight hauled decreased for both Santa Fe and Southern Pacific between 1950 and 1965. (Table 15). Over this time, Santa Fe revenue declined 6.3 percent (from 1.42 cents to 1.33 cents) while Southern Pacific revenue shrunk 5.2 percent (from 1.36 cents to 1.29 cents per mile). However, Table 15 shows that Santa Fe per-ton revenue was greater than Southern Pacific's for all years studied.

Summary of freight revenue. In terms of total operating revenues the Santa Fe generally lags behind the Southern Pacific for all years studied. Positions of the two roads are reversed, however, with net income from freight service. Here the Santa Fe's net eclipsed the Southern Pacific's for most years over the 1950-1965 period. During a 1950-1965 decline in Southern Pacific's net from freight service, Santa

TABLE 15

SELECTED PER-UNIT FREIGHT SERVICE REVENUE
SANTA FE AND SOUTHERN PACIFIC
RAILROADS, 1950 - 1965

	Freight revenue per freight train mile		Average revenue per ton of freight	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$14.31	$14.65	1.42¢	1.36¢
1951	14.72	15.64	1.42	1.37
1952	15.96	16.88	1.51	1.45
1953	16.55	17.04	1.58	1.48
1954	16.26	16.31	1.50	1.38
1955	16.18	16.46	1.45	1.38
1956	16.63	17.53	1.45	1.40
1957	17.79	18.72	1.52	1.45
1958	18.85	19.02	1.51	1.45
1959	16.95	18.77	1.48	1.40
1960	16.66	18.84	1.40	1.38
1961	17.73	18.91	1.40	1.38
1962	17.82	18.76	1.41	1.34
1963	17.96	16.05	1.38	1.31
1964	17.80	16.21	1.35	1.28
1965	17.79	16.99	1.33	1.29

Source: Preliminary Abstract of Railway Statistics, Interstate Commerce Commission, (Washington, 1950-1953).

Transport Statistics of the United States, Part I--Railroads, Interstate Commerce Commission, (Washington, 1954-1965).

Fe was able to post a modest increase.

Per-unit measures of gross freight revenue tend to support the net income figures. Southern Pacific Gross revenue per freight train mile was larger than the Santa Fe's for all years except for the last three years studied. This is traced to the longer Southern Pacific freight trains discussed in Chapter III. However, Santa Fe's per-ton gross revenue (in freight service) is higher than the Southern Pacific's for all years studied. The shorter, faster trains that gross high per-ton revenue make more money for the Santa Fe than the long, slow trains of lower average rate commodities operated by the Southern Pacific.

CHAPTER SUMMARY

"Passenger and Allied Service Revenue" denotes the gross revenue derived from the operation of passenger train service. For this study, P.& A.S. revenue is divided into two categories.

"Passenger-related" revenue estimates the gross receipts generated from carrying, feeding, and entertaining passengers.

"Head-end" revenue estimates the gross receipts from carrying mail, baggage, express, and other miscellaneous articles. The sum of "head-end" and "passenger-related" revenue equals "Passenger and Allied Service Revenue."

Between 1950 and 1965 P.& A.S. revenue of both the Santa Fe and the Southern Pacific declined (the decrease was greater for the Southern Pacific than for the Santa Fe).

This revenue as a percent of total operating revenue (freight and passenger) also decreased for both carriers. Since 1954, however, Santa Fe P.& A.S. revenue has leveled off, whereas the Southern Pacific posts a decline for all years between 1950 and 1965.

The Santa Fe grossed less per passenger train mile and per gross ton mile than the Southern Pacific between 1950 and 1965. However, the Santa Fe gross revenues per car trip, per train trip, and per passenger were all higher than the Southern Pacific results.

Santa Fe freight service tends to be more profitable than Southern Pacific's for most years studied. This profitability is in spite of the fact that Southern Pacific total gross revenue is larger for all years studied. Perhaps the Santa Fe considers itself fortunate to have a passenger service able to bear a portion of common costs that would otherwise be assigned to freight service.

In general, the Santa Fe has tended to maintain its P.& A.S. total gross while increasing its per-unit gross revenue between 1954 and 1965 by improved operation and agressive salesmanship. The Southern Pacific has tended in the opposite direction. Also, the Santa Fe's passenger service was supplied in conjunction with a freight service that was generally more profitable than that of the rival Southern Pacific.

CHAPTER V

THE NATURE OF RAILROAD PRODUCTION COSTS AND COST MEASURES

It is helpful, prior to the discussion of the actual expense data, to fix in the reader's mind both the nature of railroad production costs and the nature of the available data categories used to account for these costs. This chapter describes the nature of railroad costs, explains the advantages and disadvantages of the available cost data, and finally, outlines those particular cost categories generally used by railroad management as the basis for output decisions.

THE NATURE OF RAILROAD COSTS

The dominant characteristic of the railroad's cost structure is its multiproduct operation. The Santa Fe and Southern Pacific each produce, at the very least, two products--passenger and freight service. Within either of these two outputs, various other component outputs are definable. For example, within passenger service mail, express and baggage, coach and Pullman service could each be identified as an output separate from the others.

Possible cost groupings. Railroad production costs can

be grouped in two ways. First, either a cost can vary with output (variable cost), or its total can be independent of the output level (fixed cost). Second, a cost may be traced to a particular output (directly related cost), or to several different outputs necessarily produced together (joint cost), or to the total output of the firm in general (common cost). Multiproduct output by railroads results in common costs and poses the problem of how costs shall be arbitrarily allocated among the various different outputs of the firm.

These two general cost groupings are not mutually exclusive categories. For a given output such as passenger and allied services the following possible cost groupings can exist:

a) fixed directly related costs
b) fixed joint costs
c) fixed common costs
d) variable directly related costs
e) variable joint costs
f) variable common costs.

These possible cost groupings can be reduced by two when one realizes that joint costs are really a special type of common cost. Expenses that would be avoided if a given output were not produced can be called directly related costs and all other expenses would be, by definition, common costs.

Short run definition of costs. The possible cost groupings mentioned above assume a time period conventionally identified as the short run. The firm operating in the short run can vary output only by the use of more, or less, variable inputs in combination with a fixed plant, the capacity of which is set.[1]

The long run period is defined as ". . . time long enough for the firm to be able to vary the quantities per unit of time of all resources used."[2] As here defined, the long run period is not very useful when one examines an established firm. Joel Dean states that

> in the real world, adjustments to higher output, new materials or a new product design typically take a variety of forms that fall short of the perfect adaptation of the long run cost curves. They progress gradually by widening a succession of bottlenecks, rather than by adding an entire balanced unit.[3]

Problems of cost identification. A railroad has certain physical characteristics that are unique to its production process and that tend to make accurate cost identification difficult. The railroad production process is a continuous one within a physical plant that may be thousands of miles long. Inputs are consumed in a variety of ways at a variety of locations, each with differing physical and cost characteristics. The weather introduces a variation of more importance to railroads than to most productive enterprises. For the most part, each production run is a unique operation.

Maintenance of equipment and the physical plant may be difficult to relate to production levels because such main-

---

[1]Richard H. Leftwich, The Price System and Resource Allocation (New York, 1960), revised ed. p. 140.

[2]Ibid., p. 141.

[3]Joel Dean, Managerial Economics (Englewood Cliffs, 1951), p. 280.

tenance may be postponed until either a period of slack business when the plant is idle or until sufficient funds are available. In other words, cost of production and expense outlay resulting from this cost are not linked tightly together.

Another impediment to cost determination is the simultaneous nature of production and consumption: there are no "inventories" of finished goods maintained on hand. Ladd states that

> . . . this absence of inventories has meant that one of the mainsprings of manufacturing cost accounting--the valuation of inventories--is not a part of the overall accounting mechanisms of the railroads.[4]

In addition, railroad costs include not only the costs of running trains but also a variety of construction, retail, and manufacturing operations.[5]

The organization of railroads as a process of production will influence the methods of cost data collection, processing, and interpretation. The management organization will also exact an influence on these methods as well as on the way in which cost data are used to control and direct the production process.

Most railroads are organized into departments such as transportation, marketing, maintenance, and so forth along

---

[4]Dwight R. Ladd, Cost Data for the Management of Railroad Passenger Service (Boston, 1957), p. 31.

[5]John R. Meyer et al., Avoidable Costs of Passenger Train Service (Cambridge, 1957), p. 34.

the lines of physical characteristics. Each department tends to be an enclave that develops, in considerable isolation, its own data and management responsibilities. Ladd states that there seems to be little lateral movement among the various departments of most railroads.[6] For example, the records kept in the maintenance department are usually suited only for use in solving problems of maintenance.

Furthermore, to the extent that overall data and records are kept by railroads, their purpose tends toward satisfying the requirements of regulatory bodies and the dictates of fiduciary accounting.[7]

Within this physical and organizational framework, the generation of useful cost data is exceedingly difficult and requires, usually, a specially organized study. For this reason, records of individual passenger train schedules are usually accumulated only to substantiate a train-off petition rather than to guide management policy direction of this schedule on a profit-oriented basis. In other words, before cost data are collected for a specific train, management has already decided that the train is a hopeless loser.[8]

Other than the specific train-off cost data mentioned above, the only expense data the railroads have (at least for publication) is a collection of aggregate expenses either

---

[6]Ladd, p. 34.

[7]Ibid., p. 35.

[8]Ibid., p. 39.

directly related to or apportioned to passenger service. These data collection processes are unwieldy due to the railroads' organization and the regulatory demands on the accounting system. In addition, the generation of useful cost data from this collection process is impaired by the multi-product nature of the firm and its unique physical characteristics.

AVAILABLE COST DATA

Internal cost records of the Santa Fe and Southern Pacific railroads were not available for the purposes of this study.[9] Therefore, the data for both carrier's cost have been drawn from the reports made annually by each to the Interstate Commerce Commission. These data are available only in aggregate form; that is, there is no cost data available that is defined in terms of individual train schedules. The only source of individual data has been the piecemeal collection of rather incomplete cost figures collected from the records of train-off hearings before various state commissions. When one recalls the purpose for which these individual cost figures were compiled, as well as the general lack of precise definition of the various cost categories, such isolated data seem of scant utility.

Interstate Commerce Commission data format. The aggre-

---

[9]Both the Santa Fe and Southern Pacific railroads refused to supply useful expense data. While they expressed sympathy with the goals of this project, such data were considered confidential by both carriers.

gate cost data reported by each carrier to the Interstate Commerce Commission are divided into the following categories:

a) Maintenance of Way and Structures
b) Maintenance of Equipment
c) Traffic
d) Transportation--Rail Line
e) Miscellaneous Operations
f) General.

The first two categories above are self-explanatory. Traffic expense is that expense connected with promoting and advertising the railraod's services, as well as commissions to travel agents. Transportation--Rail Line groups the expenses incurred in actually moving the trains over the road: wages of crews, fuel and supplies and so forth. Miscellaneous Operations groups activities not assignable to the other categories. The only expense of importance to passenger service in this category is the costs of dining service. Finally, General expenses account for the costs of central offices and office help, as well as the salaries of the general officers of the railroad.

Each of the six categories mentioned above is further subdivided into numerous sub-accounts. Depending on the category, the number of sub-accounts varies from eleven to nearly fifty. There is also some year to year variation in the number of various sub-accounts, although the six major cost categories are maintained intact.

Within each of the six major cost groups just discussed expenses are separated along the following lines:

a) Total operating expenses for the year

b) Expenses related solely to freight service
c) Common expenses apportioned to freight service
d) Total freight expense
e) Expenses related solely to passenger and allied services
f) Common expenses apportioned to passenger and allied services
g) Total passenger expense.

Limitations of Interstate Commerce Commission format. The emphasis of the above format is to first separate expenses on the basis of their place in the production process (for example, way and structures, equipment repair, crew expense, and so forth). Second, these expenses are divided, for accounting purposes, between freight and passenger service. This division involves an arbitrary allocation of common expenses between freight and passenger operations.[10]

The third, and most limiting feature of this data format, is the failure to attempt a separation of these expenses between variable and fixed. For example, expenses related solely to passenger and allied services (usually called "directly related expenses") contain some variable and some fixed expenses. This category does not accurately reflect the expenses that could be eliminated by the discontinuance of passenger service. Expenses that could be avoided by leaving the passenger business are partly in the "solely related" and partly in the "apportioned common" expenses.

---

[10]See statement no. 577, A Brief History of the Separation of Railroad Operating Expenses Between Freight and Passenger Services, (Washington, 1957); also, Rules Governing the Separation of Operating Expenses, Railway Taxes, Equipment Rents, and Joint Facility Rents Between Freight and Passenger Service on Class I Railroads, (Washington, 1964).

Major data source for this study. Assuming that the profitability of passenger service is best measured by the extent to which revenues exceed the avoidable costs, the category "Expenses related solely to passenger service" provides the best available measure of avoidable costs. For the most part, use of the data in this measure will be restricted to use of the totals of each of the six expense classifications mentioned previously (maintenance of way and structures, equipment, traffic, transportation, miscellaneous, and general). Detailed comparison of the Santa Fe and Southern Pacific sub-accounts within each of these classifications would be of little use because these sub-accounts represent little more than pigeonholes into which operating expenses are stuffed. Ladd states that although ". . . the pigeonholing is done with care and in detail. . .the logic behind the divisions between the pigeonholes is rather obscure at times."[11] For example, the I.C.C. recognizes twenty-seven different types of passenger train cars, yet the cost of repairs to all these cars is placed in one sub-account ("Passenger train cars") in the Maintenance of Equipment category. At the same time, however, there are five different sub-accounts for the cost of paper clips used and eight different places to show the cost of brooms.[12]

"Expense related solely to passenger service" is used

---

[11]Ladd, p. 56.

[12]Ibid.

as the major cost category in this study despite its limitations. In the first place, it is available. In the second, it is generally used by rail management to gauge passenger service profitability.[13]

CHAPTER SUMMARY

Railroads are characterized by multiproduct output. For this reason, some costs of production are common to the production of many different outputs and the decision to allocate these common costs among the various outputs is made arbitrarily.

Railroad expenses can be viewed as either variable with output or independent of output levels (variable costs or fixed costs). Expenses can also be either directly related to the production of a given output type or common to the production of all outputs. Therefore, directly-related costs can contain both fixed and variable elements. The same is true with common costs.

The generation of useful cost data for railroad output is difficult. This difficulty is caused in part by railroads' enclave-like organizational characteristics as well as the almost unique physical dimensions of the plant. The standardized accounting procedure used by railroads to report to the Interstate Commerce Commission likewise results in data groupings and collection processes that are not very useful.

---

[13]ibid., p. 259.

Cost data was not available directly from the railroads studied. Consequently, recourse was made to published and unpublished (but public) expense data reported by these railroads to the Interstate Commerce Commission. These data are divided among six major expense categories: maintenance of way and structures, maintenance of equipment, traffic, transportation--rail line, miscellaneous operations and general expense.

Within each of these six categories, the total expense for each was first divided between freight service and passenger service. Then within each of these two output types, the relevant expense was further divided between directly-related expenses and apportioned common expense.

The major data category used in this study is "Expenses related solely to passenger and allied service." The limitation of this category is that it contains some fixed costs and probably excludes some directly related variable costs for want of a better accounting system.

Other than the fact that it is available, the justification for using this single category as the relevant passenger service expense category rests with the fact that it is commonly used by rail management to gauge passenger service profitability.

CHAPTER VI

THE EVOLUTION OF EXPENSES DIRECTLY RELATED TO PASSENGER AND ALLIED SERVICE OPERATIONS: A COMPARISON OF THE SANTA FE RAILWAY AND THE SOUTHERN PACIFIC COMPANY FROM 1950 THROUGH 1965

The purpose of this chapter is to examine the passenger service expenses of the Santa Fe and Southern Pacific operations between 1950 and 1965. The Santa Fe and the Southern Pacific data will be compared over this time span, and explanations of the observed trends will be offered.

As indicated in the previous chapter, and on the basis of available cost data, "expenses directly related to passenger and allied service" is the category of costs deemed most useful for the purposes of this study. Because the Interstate Commerce Commission specifies an accounting system that focuses on direct versus common costs, rather than upon fixed versus variable costs, this category will contain some fixed costs. Some costs that do vary with passenger service output will be excluded from this category for the same reason. The category "expenses directly related to passenger and allied services" will only approximate the amounts that

could be saved if the passenger operation were eliminated.

ADJUSTMENTS MADE TO THE DATA

An inspection of the data indicated that some statistical adjustments might be in order. The basic problem areas are discussed below.

Consistent allocation of common expenses. Inspection of the data showed that the Southern Pacific was not consistent in the assignment of certain major operating expenses from year to year. "Repairs of Passenger Locomotives", a sub-category in the Maintenance of Equipment expense category, was considered by the Southern Pacific to be a common expense through 1954. There was no directly related expense assigned to passenger service in this sub-category. After 1954, the Southern Pacific treated this expense wholly as a direct expense--there was no common expense assigned. As the amount involved each year was in the vicinity of eight million dollars, the effect of one allocation method, or the other, upon Southern Pacific's direct passenger expense was significant.

Santa Fe treated "Repairs of Passenger Locomotives" as a directly related expense in total for all years, 1950 through 1965. This road allocated no common expense to this category.

In this study, to achieve a higher degree of comparability than would otherwise have been possible, Southern Pacific "Repairs of Passenger Locomotives" expense was treated

for all years as a direct expense in conformity with Santa Fe allocation procedures.

The lag between production and expenses. A time lag exists between the firm's use of a resource in the production process and the appearance of the associated expense on the company records. There is a loose link between production and its related expenses. This lag is especially important when studying firms like railroads that use large amounts of capital goods. The repair of railroad equipment and other fixed facilities may bear little close relation to railroad output. Especially if traffic is heavy, the repair of a railroad's capital goods may be delayed into the next accounting period.

In addition, if a railroad has decided to eliminate passenger service, the capital goods used in the production of this product line will not be repaired and maintained, much less replaced. For a time, at least until the capital stock wears out, accounting expenses for this reason will decline. The firm is "living off its capital." Observation of the Southern Pacific trains from California to New Orleans provide good examples of this method of cost reduction.

Because of these limitations, it might seem advisable to adjust the expense data by some method of moving averages to smooth the rough ties between production and expenses. A statistical cost analysis of each carrier would probably require such an adjustment; this historical-descriptive study, focused upon management's interpretation of unadjusted

expenses, does not.

Dollar inflation. Because this study uses time series data, the various expense trends (in dollar terms) reflect both the changes in costs and the variability in the dollar's purchasing power. The question arises as to whether this inflation effect should be removed from the data. For this study conversion of the expense data was deemed unnecessary. First, as these data are to be compared with revenue data, there would be some question about what deflators to use that would operate similarily upon both revenue and expense data. Second, for any given year, management is interested in whether this year's revenues cover this year's costs by the yardstick of current prices.

Although the data will not be deflated, an awareness of railroads' cost inflation between 1950 and 1965 makes the non-deflated expense data more meaningful.

Figure 13, using 1950 as the base year, is an index of American railroads' materials and wage costs. This price index increased to 176.1 in 1965 after pausing slightly in its rise during 1954-1955.

DIRECT EXPENSE TOTALS

Santa Fe's total P.& A.S. direct expense increased from $73.6 million in 1950 to a high of $96 million in 1956 and declined thereafter to $87 million in 1965 (Table 16). Southern Pacific's total direct P.& A.S. expense was smaller for all these years; $61.7 million in 1950, $82.6 million in

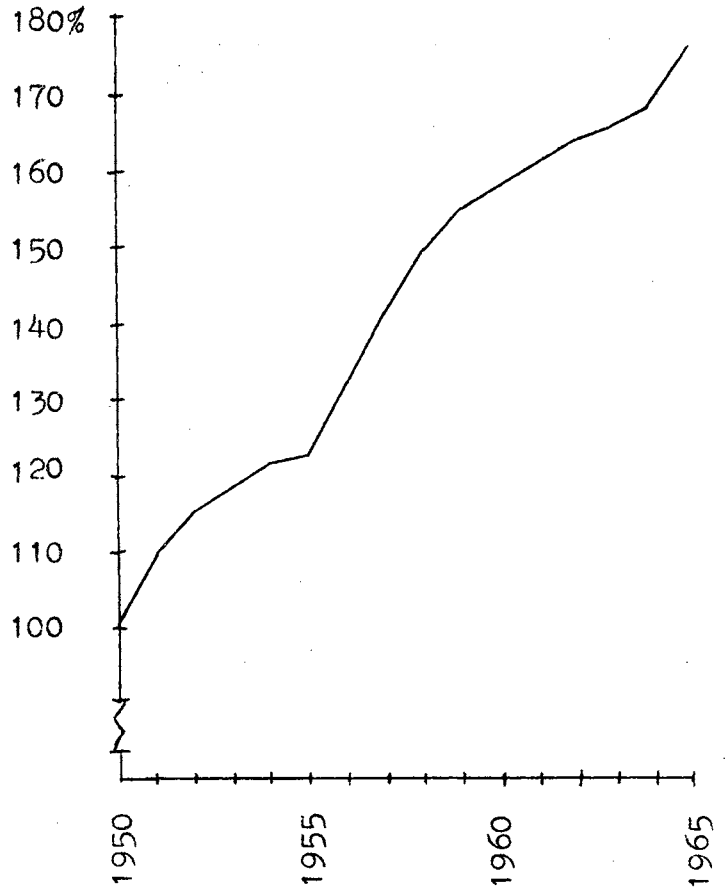

FIGURE 13.

COMPOSITE INDEX OF MATERIAL PRICES AND WAGE RATES PAID BY RAILROADS IN THE UNITED STATES*
1950 - 1965

(1950 = 100)

*Does not include overtime and other supplementary pay.

Source: Yearbook of Railroad Facts 1967 Edition, Bureau of Railway Economics, Association of American Railroads, (Washington, 1967), p. 79.

TABLE 16

TOTAL DIRECTLY RELATED PASSENGER AND ALLIED SERVICE EXPENSE: SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

Year	Santa Fe (x 1000)	Southern Pacific (x 1000)
1950	$ 73,650	$ 61,703
1951	87,324	71,834
1952	90,470	74,470
1953	78,849	76,572
1954	88,834	78,031
1955	85,369	81,867
1956	96,002	82,579
1957	93,312	77,046
1958	83,750	69,670
1959	84,781	67,781
1960	85,137	64,224
1961	80,170	62,575
1962	83,664	52,664
1963	85,197	51,142
1964	87,851	45,397
1965	87,192	40,762

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

1956, and $40.7 million in 1965 (Table 16). Direct P.& A.S. expense was at its high point for both carriers in 1956 and though both roads were able to decrease their expense trends after 1956, the Santa Fe's decline was neither steady, nor particularly large. In contrast, the Southern Pacific was able to decrease its direct P.& A.S. expense significantly and steadily between 1956 and 1965. Santa Fe's direct expense was larger in 1965 than in 1950. The reverse was true for the Southern Pacific.

COMPOSITION OF DIRECT EXPENSES

Tables 17 and 18 break down each carrier's direct P.& A.S. expense total into its component categories. These components are each expressed as a percent of total direct P.& A.S. expense.

Transportation--Rail Line. This category represents approximately 50 percent of each road's direct P.& A.S. expense and is the most important of all expense categories. It is the sum for forty eight sub-accounts, those most significant being the wages of station employees, train and yard crews, train fuel, train supplies, signal operation, crossing protection and employees' health and welfare benefits.

Maintenance of Equipment. For most years studied approximately 30 percent of total P.& A.S. direct expense is traced to this second largest expense category. This account groups twenty five sub-accounts, the more important

TABLE 17

COMPOSITION OF EXPENSE DIRECTLY RELATED TO PASSENGER AND ALLIED SERVICE OPERATIONS BY CATEGORY, AS PERCENT OF TOTAL OPERATING EXPENSE SANTA FE RAILROAD, 1950 - 1965*

	Maintenance of way and structures	Maintenance of equipment	Traffic	Transportation	Miscellaneous	General
1950	0.89	29.20	7.19	48.35	13.49	0.86
1951	1.56	29.73	7.37	46.95	13.59	0.80
1952	1.49	30.15	7.21	46.29	14.04	0.82
1953	1.81	21.00	7.15	53.98	15.14	0.91
1954	1.58	30.26	7.34	47.06	12.97	0.79
1955	1.56	31.76	7.00	46.40	12.44	0.81
1956	1.41	30.87	6.62	48.45	11.83	0.82
1957	1.51	31.21	6.55	48.09	11.81	0.84
1958	1.38	31.58	6.71	47.47	11.91	0.94
1959	1.47	31.66	7.07	47.28	11.60	0.92
1960	1.52	32.28	6.86	47.66	10.73	0.94
1961	1.46	32.87	7.17	47.00	10.57	0.93
1962	1.67	32.03	8.05	47.06	10.17	1.02
1963	1.63	33.59	7.98	45.93	9.89	0.98
1964	1.56	32.38	8.09	46.89	10.08	1.08
1965	1.54	30.77	7.59	48.89	10.20	1.01

*Percentages may not total to 100 each year due to rounding.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

TABLE 18

COMPOSITION OF EXPENSE DIRECTLY RELATED TO PASSENGER AND ALLIED SERVICE OPERATIONS BY CATEGORY, AS PERCENT OF TOTAL OPERATING EXPENSE SOUTHERN PACIFIC RAILROAD, 1950 - 1965

	Maintenance of way and structures	Maintenance of equipment	Traffic	Transportation	Miscellaneous	General
1950	0.78	21.96	7.79	53.45	14.49	1.52
1951	0.81	25.03	7.18	52.48	13.04	1.46
1952	1.09	24.92	7.37	52.74	12.40	1.49
1953	0.84	28.20	7.20	50.71	11.69	1.35
1954	0.84	32.38	6.87	47.67	11.09	1.15
1955	1.06	31.17	7.33	48.71	10.39	1.34
1956	0.98	32.54	6.48	48.40	10.12	1.48
1957	0.84	34.38	6.06	47.46	9.59	1.66
1958	0.85	35.77	5.34	46.65	9.69	1.68
1959	1.00	36.65	4.87	46.77	9.21	1.39
1960	0.87	35.88	4.19	48.49	9.19	1.38
1961	1.41	32.90	3.84	50.06	9.12	2.66
1962	0.95	34.42	4.54	49.46	10.48	0.15
1963	1.00	36.31	3.92	50.44	8.22	0.11
1964	0.89	36.28	3.95	50.63	8.15	0.10
1965	0.78	36.39	3.27	50.62	8.89	0.07

*Percentages may not total to 100 each year due to rounding.

Source: Annual Report of The Southern Pacific Company to The Interstate Commerce Commission, (Washington, 1950-1965).

being locomotive and passenger car repairs, equipment depreciation, and maintenance of miscellaneous equipment.

Miscellaneous Operations. This category is third largest, at approximately ten percent of the total direct expense over most years studied. Dining and buffet services expense is the only significant sub-account in this category.

Traffic. The total P.& A.S. direct expense in this fourth largest account remained at about seven percent over all years studied for the Santa Fe, but declined rapidly between 1950 and 1965 in Southern Pacific's accounts. The two major passenger service sub-accounts in this category are the expense of outside traffic agencies and advertising.[1]

Maintenance of Way and Structures. This expense category is the sum of forty sub-accounts. It is fifth largest of the direct expense categories for both carriers for each year of the 1950-1965 period and amounts to about one percent of total P.& A.S. direct expense.

General expense. This is consistently the least significant category of total P.& A.S. total direct expense for both railroads. It is the sum of eleven sub-accounts and is typically one percent, or less, of total direct expense.

DIRECT EXPENSE TRENDS

Santa Fe. Between 1950 and 1965 the percent division of Santa Fe P.& A.S. total direct expense among the six expense

---

[1]See page 60 and Table 12 for discussion and data relative to each carrier's advertising efforts and expenses.

categories did not fluctuate very much from year to year. The relative change in this composition that did occur was primarily due to cutbacks in buffet and dining service.

One would expect both the Maintenance of Way and the General expense categories to respond in a rather sticky fashion to changes in output. The Santa Fe data seem to support this statement since, as gross ton miles declined, Maintenance of Way and General direct expense assumed slightly greater importance as a percent of total direct expense. In other words, the number of stations and the number of general clerks were more fixed than variable as passenger service output decreased.

Santa Fe Traffic expense increased slightly in a relative sense between 1950 and 1965, but only partly for the reasons of "fixity" suggested in the previous paragraph. The dollar expense of advertising remained nearly constant during this time period while efforts to sell passenger service through non-railroad travel agencies increased.[2]

Transportation--Rail Line expense, as a percent of total direct expense, remained stable over the 1950-1965 span (Table 17). This stability is no surprise because the dollar amount of this expense category should respond more readily to changes in output than should expenses of other types.

---

[2]Outside agency expense increased from $2.6 million in 1950 to $3.7 million in 1965. Annual Report of the Atchison, Topeka, and Santa Fe Railway Co. to the Interstate Commerce Commission, (Washington, 1950 and 1965).

Maintenance of equipment expense fluctuated between 21 and nearly 34 percent of total P.& A.S. direct expense during the 1950-1965 period (Table 17). A variation of this magnitude must be explained. Maintenance of Equipment expense was 21 percent of total direct expense--the smallest value of all years studied--in 1953, a year of heavy passenger travel. During such times of heavy demand every piece of equipment that can turn a wheel is kept in service and out of the shop. For the most part, equipment repairs during such times of high output are confined to only those deemed absolutely necessary.[3] For this reason, such expenses may be at a minimum when output is at a high level.

During more "normal" levels of output, Maintenance of Equipment expense should tend to be only slightly variable with output, as equipment is "shopped" when it can be spared from service, when there is shop space available to make the repairs and (in some cases) when the periodic repair "ritual" falls due. For example, it has been the practice to shop each locomotive on an annual basis--to tear it down and inspect its components for wear and damage. This practice is gradually giving way to more scientific methods of discovering the need for repairs.[4]

Finally, Maintenance of Equipment expense will be biased

---

[3]Letter to the author from J. T. Smith, Santa Fe Superintendent of Shops at Los Angeles, California, May 21, 1966.

[4]Interview with L. O. Townley, Santa Fe Chief Mechanical Engineer at Topeka, Kansas, April 19, 1967.

upward during those years when equipment is replaced. The Santa Fe equipped its major trains with a combination of new equipment and heavily rebuilt older equipment in 1950, 1953, 1956, and 1964. Not all of the resulting expense is capitalized on the books; some is treated as direct operating expense of the year involved.[5]

Southern Pacific. Except for Maintenance of Way and Structures and Transportation--Rail Line categories, which remained a stable percent between 1950 and 1965, the composition of Southern Pacific total direct expense changed considerably over time. In 1965, the Southern Pacific direct expense categories fell in the same order of importance as that listed previously for the Santa Fe (Table 18). Maintenance of Equipment direct P.& A.S. expense varied from 21.96 percent in 1950 to 36.39 percent in 1965 (Table 18). Because the Southern Pacific purchased little new passenger equipment in the last decade, this increase cannot be attributed to assignment of purchase expenses to this account as was true of the Santa Fe. It would seem that this expense category cannot be decreased in line with cuts in output. As output declined rapidly on the Southern Pacific and some expenses were eliminated, this "semi-variable" expense assumed increased relative importance as a component of P.& A.S. total direct expense.

---

[5]"ATSF's March: Making a Great Railroad Greater," Railway Age, 150, No. 26, (December 21, 1964), p. 25.

The three Southern Pacific categories that decreased in relative importance between 1950 and 1965 were Miscellaneous, Traffic and General expenses. The decline in Miscellaneous expense was due to the wholesale elimination of dining service; the decline in Traffic expense could be traced to a cut in advertising expenses. General expenses decreased significantly only since 1962. The rapid decline from 2.66 percent of total direct expense in 1961 to 0.15 percent in 1962 suggests that the Southern Pacific passenger service was, subsequent to that date, "orphaned" from any significant management effort at the top level (Table 18).[6]

Summary of total direct expense trends. Comparison of the two carrier's direct expense composition over a period when Santa Fe maintained output and Southern Pacific cut output rapidly makes clear that the most significant direct expense categories of P.& A.S. operations did not vary smoothly with output changes. Some expenses could be eliminated easily (such as advertising). Some expenses varied only slightly with output. Those expenses that were easily reduced tended to become a decreasing percent of total direct expense, while the less variable expenses became a larger percent of this expense total.

Significantly, the two largest expense categories--Transportation--Rail Line and Maintenance of Equipment--

---

[6]Letter to the author from Southern Pacific historian G.L. Dunscomb, September 4, 1966.

appear to vary either roughly in proportion to output changes and remain a rather constant percent of the total as has Transportation, or like Maintenance of Equipment, vary only slightly in response to output changes and become an increasingly important component of total direct expense.

Perhaps the only way to control "semi-variable" expenses is to get out of the passenger business entirely.

DIRECT EXPENSE PER UNIT OUTPUT

When one compares Santa Fe and Southern Pacific total direct costs on the basis of either passenger train miles or gross ton miles between 1950 and 1965 four things are evident: (1) both railroads' unit dollar expense increased over time in a continual fashion; (2) the Southern Pacific unit expenses were usually greater than comparable Santa Fe figures; (3) the Southern Pacific had rapid increases in unit expenses between 1954-55 and 1960-61 that did not occur within the Santa Fe operation; and (4) since 1961, the Southern Pacific trimmed its unit expenses rather sharply (Figures 14 and 15).

It should be noted that the Southern Pacific compared least favorably with the Santa Fe during a period that coincided almost exactly with a rapid increase in the railroads' price index (Figure 13). Perhaps the Santa Fe was able to better offset the effects of inflation via greater efficiency than the Southern Pacific was able to muster. An equally plausable explanation can be traced to the diverging output levels. The Santa Fe (especially between 1955 and 1961)

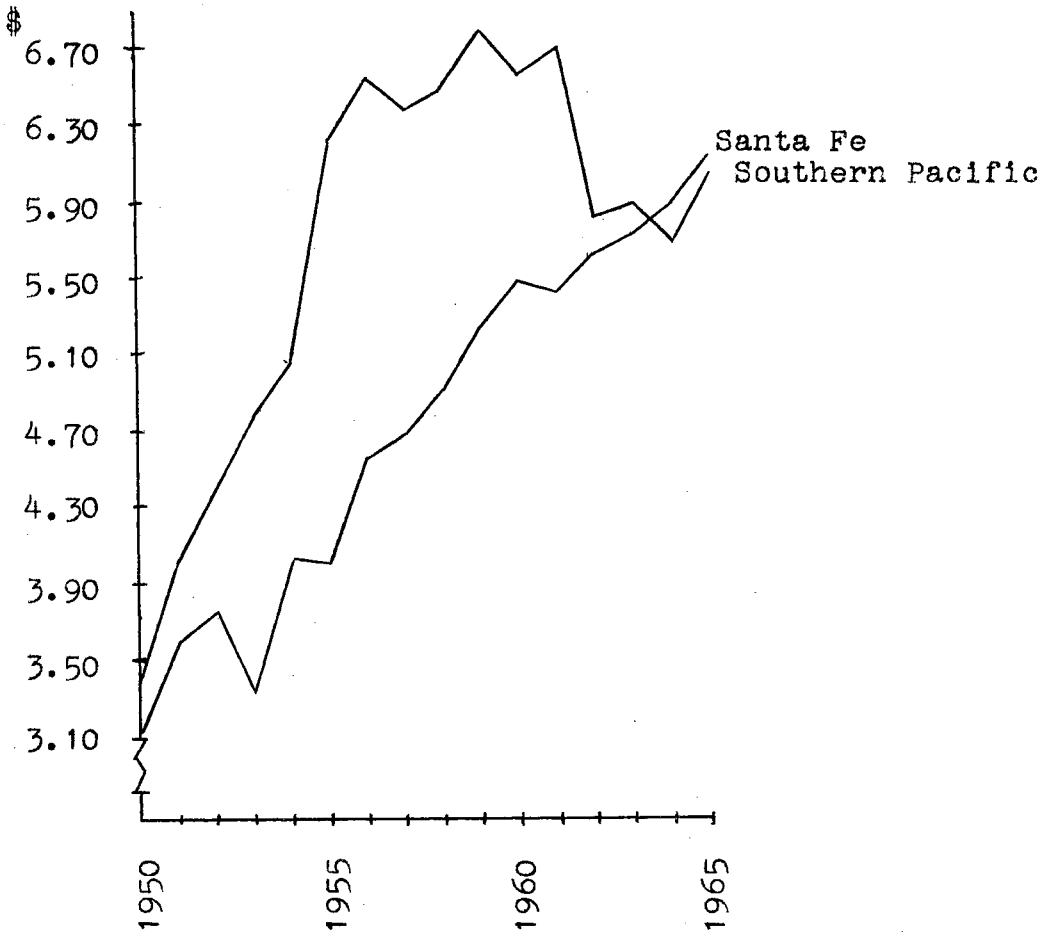

FIGURE 14.

DIRECTLY RELATED PASSENGER AND ALLIED SERVICE EXPENSE PER PASSENGER TRAIN MILE, SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

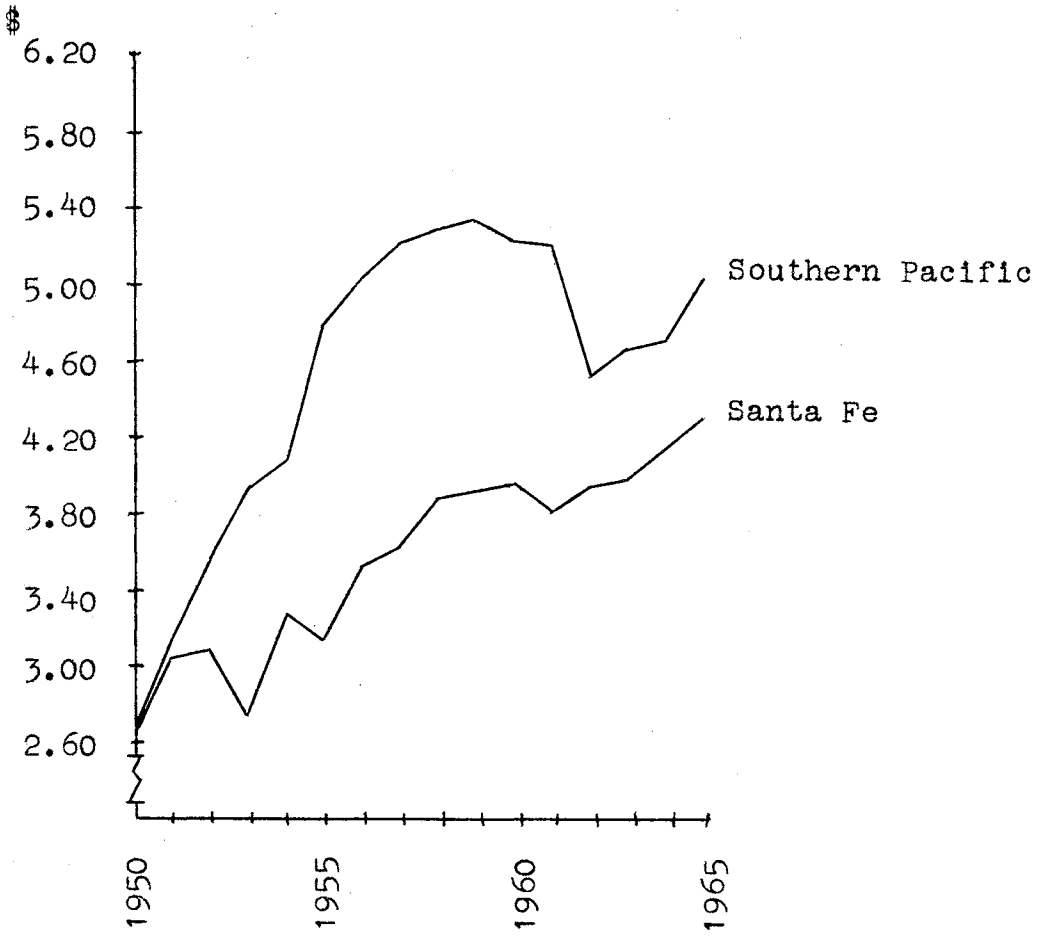

FIGURE 15.

DIRECTLY RELATED PASSENGER AND ALLIED SERVICE EXPENSE PER PASSENGER TRAIN GROSS TON MILE SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

decreased passenger train gross ton miles sharply (Figure 4). This was largely due to the elimination of most branch-line runs--small scale operations with old equipment having total direct expenses that were probably wholly "avoidable" in a fashion linked tightly to this output change. The low capacity, high unit expense runs were eliminated.

The Southern Pacific decreased output during this time with the elimination of some local runs, but primarily with the cutback of service on long-haul routes. The long-haul operation entails expenses that do not vary quickly with changes in output--unless the long-haul service is totally eliminated.

While Santa Fe's total direct expense decreased as output decreased, hence holding the line on unit expenses, Southern Pacific's total direct expense declined at a pace much slower than passenger train output in gross ton miles and resulted in unit expenses that rose rapidly.

DIRECT EXPENSE PER TRAIN TRIP

Figure 17 pictures the trends of Santa Fe and Southern Pacific direct expense per passenger train trip between 1950 and 1965. Between 1950 and 1965 Santa Fe expense per average train trip increased from around $1,600 to nearly $4,400. This increase is striking in comparison to the Southern Pacific's rather modest increase from nearly $800 in 1950 to $1,100 in 1965.

The explanations offered previously to explain compar-

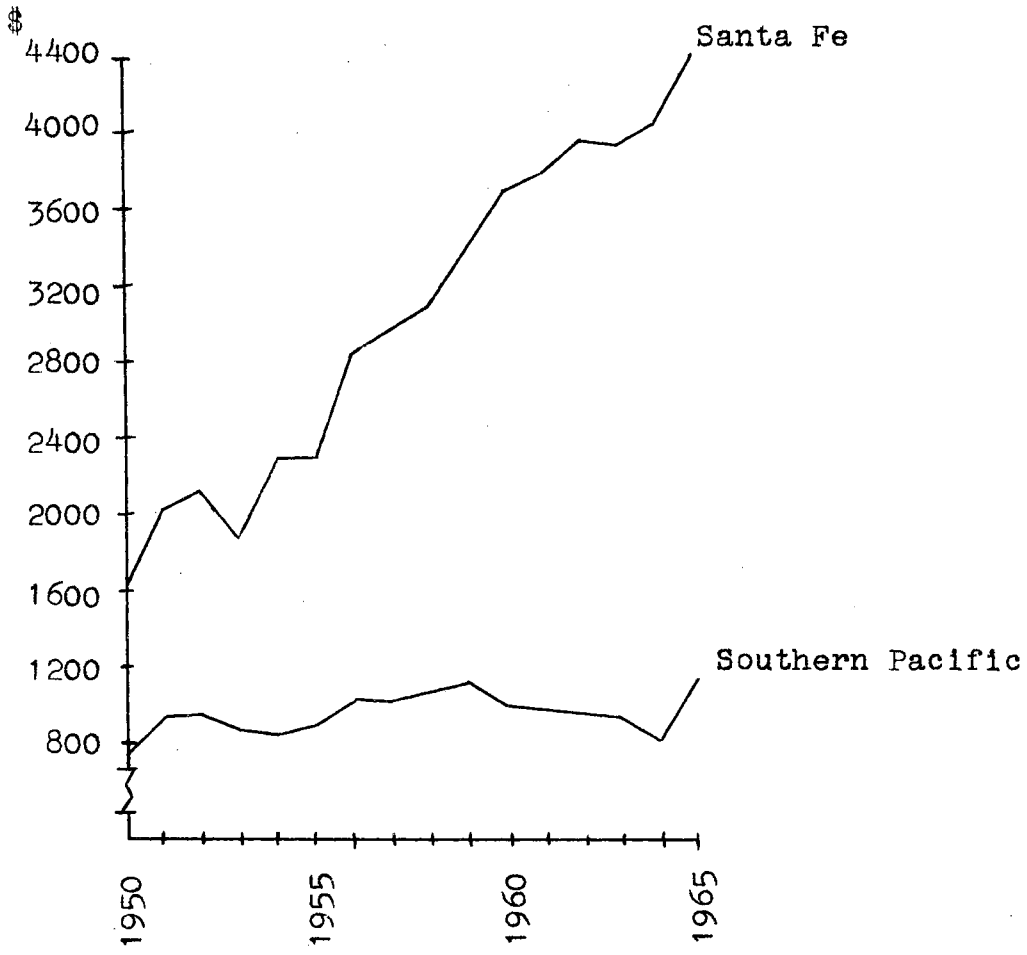

FIGURE 16.

ESTIMATE* OF DIRECTLY RELATED PASSENGER AND ALLIED SERVICE EXPENSE PER AVERAGE TRAIN TRIP, SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

*Estimates based on load factors used in Table 13.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

ative differences in total direct expense apply also in this case. Attention must be focused, however, upon the evolving composition of each carrier's "average" passenger train. The Santa Fe's average train between 1950 and 1965 traveled farther and faster than its Southern Pacific counterpart. The length of Santa Fe's average train increased, while the Southern Pacific decreased its train length somewhat. The average Santa Fe train was increased in length by adding head-end cars while maintaining the number of more costly passenger-carrying cars. The Southern Pacific sharply decreased the number of passenger-carrying cars per average train, maintaining train length (to the extent it was maintained) by using more head-end cars.

Whereas the Santa Fe moved more strongly into the long-haul passenger train business between 1950 and 1965, the Southern Pacific took the opposite tack, apparently with plans for eventual elimination of all long-haul service.

Table 19 further breaks down the direct expense data on a per-car-trip basis. The wide divergence between Santa Fe and Southern Pacific direct expense per passenger car trip can be traced to the same reasons that explain differences in expense per train trip.

FREIGHT SERVICE OPERATING EXPENSES

Total operating expense. Table 20 traces each railroad's total freight operating expense from 1950 to 1965. These expenses include apportioned common costs under the rationale

TABLE 19

ESTIMATE* OF DIRECTLY RELATED PASSENGER AND ALLIED SERVICE EXPENSE PER PASSENGER CAR TRIP SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

	Santa Fe	Southern Pacific
1950	$147.95	$57.99
1951	185.82	70.82
1952	187.64	70.00
1953	166.58	65.22
1954	203.29	63.11
1955	195.80	62.29
1956	239.41	72.32
1957	250.13	75.11
1958	253.52	75.58
1959	265.04	77.54
1960	279.85	72.48
1961	282.28	69.00
1962	294.97	66.67
1963	292.89	66.06
1964	301.58	58.87
1965	326.62	84.35

*Estimates calculated by method described in footnote 10, page 67.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

TABLE 20

FREIGHT SERVICE OPERATING EXPENSES* SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

	Freight service operating expense (x 1000)		Percent of total operating expense	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$249,158	$251,918	69.6	73.3
1951	305,206	290,986	71.6	73.7
1952	299,371	306,817	70.7	74.0
1953	317,035	314,197	71.8	74.5
1954	278,693	296,712	69.8	73.9
1955	300,412	419,334	72.3	79.3
1956	319,640	437,187	71.3	79.7
1957	348,763	429,019	73.6	80.6
1958	332,829	426,842	75.0	82.2
1959	366,620	431,006	76.8	79.8
1960	370,661	442,868	76.9	84.0
1961	360,347	447,832	77.2	85.8
1962	377,860	478,992	77.9	87.2
1963	385,972	487,181	77.8	88.1
1964	400,620	520,926	78.2	89.5
1965	403,206	555,922	78.5	90.0
1950-1965 change	+61.82%	+120.92%		

*Includes apportioned common expense.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

that freight service is the major output of both the Santa Fe and Southern Pacific and hence will ultimately have to bear at least a share of the common expenses.

Santa Fe freight expense has increased nearly 62 percent between 1950 and 1965, from $249 million to $403 million. Southern Pacific's freight expense, however, increased much more rapidly, 121 percent over the same period, from $252 million to $556 million (Table 20). Over this time, while Santa Fe freight expense increased from 70 percent to nearly 79 percent of total operating expenses, Southern Pacific freight expense increased from 73 percent to 91 percent of that road's total operating expenses.

Per unit output freight expense. Santa Fe expense per freight train mile and per gross ton mile have tended to be larger than similar Southern Pacific measures for all years studied (Table 21). Southern Pacific unit expense measures have increased at a more rapid rate, however, than the Santa Fe expenses.

Summary of freight expense. Santa Fe's total freight expenses were less than those of the Southern Pacific and did not increase as rapidly as the latter road's expenses between 1950 and 1965. Although Santa Fe had the greater unit expense per freight train mile and per gross ton mile for each year, the Southern Pacific's unit costs increased at a more rapid rate. The greater Santa Fe unit expense is probably traced to that road's operation of comparatively shorter and faster trains, requiring more engine crews and

TABLE 21

SELECTED FREIGHT SERVICE EXPENSE DATA* SANTA FE AND SOUTHERN PACIFIC RAILROADS 1950 - 1965

	Per freight train mile		Per gross ton mile	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	$ 8.45	$ 5.52	.84¢	.54¢
1951	9.64	6.44	.93	.59
1952	9.72	6.81	.92	.60
1953	10.27	7.08	.98	.63
1954	10.35	7.10	.96	.61
1955	10.06	9.42	.90	.80
1956	10.82	10.18	.94	.82
1957	12.05	10.89	1.03	.85
1958	12.52	11.26	1.00	.86
1959	11.63	10.55	1.02	.79
1960	12.01	11.40	1.01	.83
1961	12.70	12.01	1.00	.88
1962	13.27	12.28	1.05	.88
1963	13.51	12.25	1.04	.86
1964	13.36	12.70	1.01	.86
1965	13.00	12.96	.97	.86
1950-1965 change	+53.85%	+134.78%	+15.48%	+59.26%

*Includes apportioned common expense.

Source: Annual Report of The Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

imposing more speed-oriented wear on the physical plant than takes place on the Southern Pacific.

CHAPTER SUMMARY

Between 1950 and 1965 Santa Fe's direct P.& A.S. expense increased while the Southern Pacific's declined. In addition, while the composition of Santa Fe's total direct expense (as divided among the six expense categories) remained fairly stable, the composition of Southern Pacific's total direct expense shifted, with the more "fixed" expense items assuming increased importance relative to the total.

Direct expense per passenger train mile and per gross ton mile trended upward for both carriers between 1950 and 1965. On a per-trip basis the Santa Fe direct expense was greater than that of the Southern Pacific.

The reasons for observed comparative differences in direct expense for Santa Fe and Southern Pacific passenger service can be summarized in the following statements. The Santa Fe decreased gross ton miles only moderately (compared to the Southern Pacific decision) and increased average train speed. Output levels were maintained during the 1960's in the face of Southern Pacific's continued decreases.

Compared with the Southern Pacific, the Santa Fe: consistently ran longer trains at faster speeds; placed more emphasis on passenger carrying cars (rather than head-end cars); continued to re-equip its major trains with more efficient equipment; and advertised its service extensively.

In addition, each railroad produced its passenger service in conjunction with a freight service whose expense trends differed substantially from that of the other road. Santa Fe's total freight service expense was less than Southern Pacific's in dollar terms and increased less rapidly over time. Although Santa Fe's per unit freight expenses were greater than the Southern Pacific's for all years studied, the rate of increase over time was less for the Santa Fe than for the Southern Pacific.

In summary, the Santa Fe maintained passenger service output--and expenses of this service--within the enviornment of a freight operation whose total and per unit expenses were increasing at only a moderate rate. The Southern Pacific, on the other hand, with rapidly rising freight expenses trimmed passenger service expenses sharply by reducing passenger service output rapidly.

CHAPTER VII

THE SUBJECTIVE ELEMENT OF RAIL PASSENGER MANAGEMENT

The data developed and discussed in previous chapters present a strong case showing why Santa Fe continues the passenger business while the Southern Pacific does not. However, while the data reveal much and explain much, something must also be said about the management of each road and how it feels subjectively about the rail passenger business.

Certainly management's subjective view of passenger service represents an overlay to, rather than a body apart from, the output, revenue, and cost data that is developed in this paper. This chapter is written with this in mind.

Peter F. Drucker has stated that, "the enterprise can decide, act, and behave only as its managers do--by itself, the enterprise has no effective existence."[1] The corporation, that is, has a personality unique from its competitors and reflects the personalities of its managers. This chapter assesses, in the author's view, the Santa Fe and Southern

---

[1]Peter F. Drucker, The Practice of Management (New York, 1954), p. 7.

Pacific corporate personalities and compares the ways these differences have affected each carrier's commitment to passenger service.

CORPORATE PERSONALITY

Everett L. DeGolyer, Jr., rail transportation authority and Chairman of the DeGolyer Foundation at Southern Methodist University, states that, "Railroads, like people, have always seemed to me to have character. Certainly, the Southern Pacific and Santa Fe have more than most."[2] This corporate personality roots in the enviornment and management of the firm.

Santa Fe. The enviornment of each road during its formative years exerted a strong influence upon the roads' managements and their view of "what the business was." The Santa Fe began operations in Kansas in 1869 (and somewhat later than the Southern Pacific) on a highly local scale. It was heavily dependent upon the communities along its route for its survival and, indeed, played a key role in building many of these towns.[3] The Santa Fe was active in colonization during the 1880-1890 decade and maintained offices in Europe for the purpose of bringing settlers to locate along its rails via chartered ship and free rail transportation.[4]

---

[2]Letter to the author from E.L. DeGolyer, Jr., February 19, 1968.

[3]James Marshall, Santa Fe, The Railroad That Built an Empire (New York, 1945), pp. 81-96.

[4]L.L. Waters, Steel Trails to Santa Fe (Lawrence, 1950), p. 233.

Furthermore, the Santa Fe's building and colonizing efforts were conducted in an atmosphere of competition from other roads that was not present during Southern Pacific's early years.

Southern Pacific. The Southern Pacific began as a combination of the Central Pacific portion of the first transcontinental railroad with a group of small California roads. In its early years, the Southern Pacific was a transport monopoly described by Frank Norris in his novel, The Octopus.[5] The Southern Pacific's early years were as follows:

> The railroad maintained its control as it had won it: through suppression of competition and then through the use of economic power, and wide, deep political manipulation. . .This control was kept for three decades.[6]

While the Santa Fe had to build its own markets by locating people to generate freight traffic, the Southern Pacific had a ready market already settled years earlier by the gold rush. From the beginning, and by necessity, the Santa Fe was more concerned with passenger service than was the Southern Pacific. The Santa Fe needed the interest and support of communities along its lines to develop markets and hold them in the face of competition; the Southern Pacific did not.

Although neither railroad today is highly similar to its nineteenth-century image sketched above, the heritage

---

[5]Frank Norris, The Octopus (Garden City, 1947).

[6]Neill C. Wilson and Frank J. Taylor, Southern Pacific (New York, 1952), p. 45.

of each carrier should be expected to exert an influence upon the present corporate philosophies of the two roads.

CORPORATE PHILOSOPHIES ABOUT PASSENGER SERVICE

Statements of passenger service policy are not hard to locate in the trade press. Both the Santa Fe and Southern Pacific have been moderately vocal in this respect. Although such information has been useful to this study--and is quoted in its pages--one senses that managements' thinking is more concealed, than revealed, in these press releases.

The obvious recourse is to use the personal interview technique with key passenger service officials. The results of this tactic were not satisfactory. It makes little difference whether the carrier is for, or against, passenger service--it is a sensitive topic and few officials contacted were willing to discuss it except in general terms. Those few officials who did talk and who were willing to be frank specified, to a man, that such conversations were "off the record." The typical Santa Fe response was "I have gone into this with our Operating, Accounting, and Traffic Departments and I am sorry to report that none of them feel that we can make this confidential, internal information available."[7] The Southern Pacific's tone was similar when they stated, "While I am sympathetic to your needs for your

---

[7]Letter to the author from Bill Burk, manager of public relations, Santa Fe Ry., March 24, 1966.

thesis on economics, regret that I do not have the type of records you desire."[8]

Useful information was found, however, in the record of train-off hearings before the Interstate Commerce Commission and in testimony given before Congressional committees by officials of the Santa Fe and Southern Pacific.

Consequently, the author's view of the subjective elements of rail passenger policy are based more on the testimony mentioned above than on the sparse results of interviews and correspondence with these officials.

Managements' subjective view of each carrier towards passenger service was formed in full view of certain passenger service trends that were, in general, common to both roads.[9] Costs were increasing. Inroads of the automobile on short-haul and the airlines on the long-haul travel caused passenger train revenues to decrease. The optimism of the early 1950 period turned to uncertainty during the middle of the decade. The Santa Fe and the Southern Pacific reacted differently to this uncertainty.

Santa Fe. Santa Fe chairman E.S. Marsh stated, "We have spared no efforts in maintaining the tradition of courteous and efficient service for which the Santa Fe

---

[8]Letter to the author from L.G. Crocket, general passenger traffic manager, Southern Pacific Co., January 9, 1967.

[9]National Association of Railroad and Utilities Commissioners, The Railroad Passenger Deficit Problem (Washington, 1957), p. 1.

has become so well-known."[10] John S. Reed, President of the same company stated that, "Our policy of being a leader with passenger service remains unchanged."[11] The author has underlined the key words of these two statements. Chairman Marsh stated:

> The great airlines in our territory concentrate upon the centers of population at a relatively few places and devote their attention to the traffic potential which constitutes the cream of the crop. On the other hand, we give service as well to the intermediate communities along our line. Every taxpayer is footing the bill for a Government policy designed to make air travel popular by selling the service at pre-inflationary rates and far below its true cost. Is it any wonder that railroad passenger fares are also depressed? Is it any wonder that a reasonable profit cannot be made by anyone in the passenger carrying business?[12]

> I might say that, between Chicago and Los Angeles, where Santa Fe operates, we serve 377 stations where we are providing passenger service, and the population of those 377 is 11,737,000. The 3 major airlines that operate in the same territory serve 16 stations. The aggregate population of those 16 stations is 9,487,000. That is what I mean when I say they are concentrating on the centers of population.[13]

It is evident from these statements that in 1958, the Santa Fe believed that large parts of the passenger travel market were untouched by airline competition. Marsh then

---

[10]Letter to the author from E.S. Marsh, Chairman of the Santa Fe Railway, August 11, 1966.

[11]Letter to the author from J.S. Reed, President of the Santa Fe Railway, October 12, 1967.

[12]United States Senate. Hearings Before the Subcommittee on Surface Transportation of the Committee on Interstate and Foreign Commerce, January 13-17, 1958 (Washington, 1958), p. 401.

[13]Ibid., p. 385.

added:

> We don't want to get out of the passenger business. We don't want to get out of the mail business--we want more mail rather than less. Rather than having fewer trains, we would much prefer to have more people riding our trains, and riding them regularly at rate levels that would support the service. We are trying to give the best passenger service we know how. We are trying to hold on to the business.[14]

The Santa Fe apparently believed that the communities not directly served by airlines constituted a desirable source of business. Furthermore, the strong points of rail travel, as opposed to air travel was viewed as a competitive advantage. For example:

> We are now trying to compete on the basis of comfort and convenience and room to move around, and a scenic route, and trying to talk to people on the basis of going there rather than being there.[15]

A major inconsistency is evident in this testimony. The Santa Fe believes a market for rail travel exists and expresses a strong desire, in word and in deed, to attract this market. At the same time, however, this business is acknowledged to be a low-profit activity.

An explanation of this inconsistency undoubtedly rests partly with the "traditions of the service." David P. Morgan, editor of Trains magazine stated:

> With better intentions than business acumen, no doubt born of a love affair with the streamliner dating from 1937, the system obviously couldn't bring itself to believe that hi-level

---

[14]Ibid., p. 386.

[15]Ibid., p. 397.

> cars and Fred Harvey and TV spots and the magic of the very word "Chief" couldn't keep filling up Dearborn Station and Los Angeles Union Passenger Terminal.[16]

The Santa Fe's desire for the admittedly low-profit passenger business cannot be dismissed with a "traditions of the service" argument. The Santa Fe believed that the major trains alone were profitable and, if local runs could be cut, the expenses avoided would far exceed the revenues lost.[17] At the same time, unit costs were reduced on main line trains by schedule consolidation and the use of some new more efficient equipment.

Chairman Marsh's desire for more mail traffic quoted above from the 1958 senate hearings is yet another explanatory component of Santa Fe's passenger service policy. While mail has long been an important source of passenger train revenue, its relative importance has become more significant.[18] A given passenger train has a chance for survival, even if lightly patronized, so long as mail traffic can be carried also. However, since mail traffic is a scarce good, it must be allocated to those trains which also carry at least moderate passenger traffic.

---

[16]David P. Morgan, Trains, 28 No. 3 (January, 1968), p.4.

[17]E.S. Marsh, Railway Age, 150, No. 25 (December 28, 1964), p. 26.

[18]The State Corporation Commission of Kansas. Application of The Atchison, Topeka, and Santa Fe Railway Company for authority to discontinue the operation of Motor Trains numbered 311 and 312 between Newton, Kansas and Dodge City, Kansas. Docket No. 70,317-R, March 26, 1963, p. 657.

By removing mail-carrying trains on which the passenger travel had largely disappeared--and then allocating the mail to those schedules still used by travelers, these latter trains could be justified and promoted as a profitable undertaking. This was the Santa Fe view in a brief submitted to the Interstate Commerce Commission:

> Notwithstanding the fact that each year since 1957 the carriers have realized an increase in the operating revenues earned by trains 5 and 6, and have substantially reduced the out-of-pocket losses of the trains each year since 1957, there has been a steady decline in the number of passengers transported on the trains and in the passenger revenues which they have earned, and it appears that any increase in total revenues has been due to increased earnings accruing from head-end traffic.[19]
>
> In the event of the discontinuance of the trains, the carriers propose to provide additional car space on their existing trains for the handling of mail and express presently handled on trains 5 and 6.[20]

In summary, the Santa Fe believed in 1958 that there were substantial long-haul travelers along its route who lived in cities not directly served by airlines. Although passenger service profitability had deterioriated during the early 1950 decade, the profit trends could be reversed by increased efficiency and judicious allocation of mail and express traffic to the more heavily patronized trains.

The pivotal importance of mail revenues has been made

---

[19]Interstate Commerce Commission. Atchison, Topeka & Santa Fe Railway Company and Gulf, Colorado & Santa Fe Railway Company Discontinuance of Service Between Kansas City, Mo., and Houston, Texas. 312 Docket No. 20,925, April 27, 1960, p. 88.

[20]Ibid., p. 87.

apparent by recent developments in Post Office mail policy. In September, 1967, the Post Office Department informed the Santa Fe that all railway post office cars would be discontinued within thirty days and that storage mail would henceforth move at substantially lower rates under existing freight traffic tariffs. Reaction was swift. On October 2, nearly one-half of Santa Fe's Pullman and dining service was discontinued. On October 6, the Santa Fe announced its intention to discontinue fourteen passenger train schedules. Three long-haul schedules would be retained, subject to continued patronage. Newly-installed Santa Fe president John Reed stated:

> While the validity of the ICC formula is debatable, nevertheless the upward trend of deficits is significant. When the full impact of the loss of mail revenue becomes effective, passenger train losses under any formula will be staggering. Santa Fe has not abandoned the traveling public--travelers show an increasing preference to drive or fly. Furthermore, we do not see a reversal of this trend despite our best efforts to promote rail passenger travel.[21]

In spite of its best efforts to attract rail passengers, such traffic became increasingly a by-product of mail and express traffic. With its mail traffic lost, Santa Fe at last was compelled to abandon its tradition of providing passenger service over its major routes. The confidence of the early fifties became the hopes of the late fifties. These hopes and expectations that passenger declines could

---

[21]Statement by Santa Fe President J.S. Reed in Trains, 28 No. 3 (January, 1968), p. 4.

be halted evaporated in the sixties.

Southern Pacific. In 1950, the Southern Pacific was strongly committed to passenger service. Over the next several years, as automobiles began to take the short haul traffic and the airlines began to take the long haul passengers, Southern Pacific passenger train profit vanished.

Whereas the Santa Fe believed the decline in revenues could be halted and profit restored by greater efficiency and better allocation of mail traffic, the Southern Pacific decided the game was not worth the candle. In 1958, Southern Pacific Chairman D.J. Russell stated before a Senate committee:

> The people of this country are just not using trains to go from one place to another as they did in years gone by. The private automobile, the airplane and the bus have taken the lion's share of this business. It does not make good sense to run trains at substantial losses when they are lightly patronized. On the Southern Pacific we have appreciated and attempted to meet this problem. Obtaining permission from State regulatory bodies to permit discontinuance of passenger service is often a difficult and long-drawn-out process.
>
> We attempted to attract additional passenger travel by providing new and splendidly equipped trains but found that the patronage did not cover our operating costs, let alone provide a return on capital investment. Where the public does not utilize a train, it is our view that the unprofitable operation should not be continued at the ultimate expense of our other patrons. On the Southern Pacific we are making every effort to meet this serious problem as best we can within the framework of present law and regulation.[22]

---

[22]United States Senate. Hearings Before the Subcommittee on Surface Transportation of the Committee on Interstate and Foreign Commerce, January 13, 17, 1958 (Washington, 1958), p. 592.

In the Southern Pacific view, the passenger train issue had already been decided by 1958. The company's past efforts had failed to make passenger service profitable.

The Southern Pacific, unlike the Santa Fe, saw no passenger potential from the local stations along its route. While Santa Fe's Marsh was speaking of the "377 stations along our route," as a source of passengers, Southern Pacific's Russell was telling the same Senate sub-committee,

> We are proceeding actively with the closing and consolidation of unnecessary stations and agencies. Originally, prior to the motor age, stations were established a few miles apart to serve the needs of shippers. With today's rapid travel and communications, many of these are not needed and, in fact service to the public is improved by consolidations at central points.[23]

Under the guidance of Chairman Russell, the Southern Pacific moved actively toward being a freight-only carrier. These actions were not limited to attempts to discontinue unpatronized trains. Testimony given to the Interstate Commerce Commission indicates that the Southern Pacific actively discouraged patronage on well-traveled trains.

> Practically every witness appearing to object to the proposed discontinuances criticized the petitioner's overall attitude towards passenger service, and charged that during recent years the petitioner had deliberately attempted to destroy the usefulness of its trains and to discourage passenger patronage.[24]

---

[23]Ibid.

[24]Interstate Commerce Commission. Southern Pacific Company Partial Discontinuance of Passenger Trains Between Los Angeles and Sacramento; Oakland and Sacramento; and San Francisco and San Jose, Calif. 320 Docket No. 503, July 21, 1960, p. 75.

In 1962, the Chairman of the Public Service Commission of Nevada found that,

> . . .scheduled arrival and departure times of trains are at inconvenient hours, and the service has declined with respect to such matters as cleanliness of the cars and the lack of drinking water and paper towels.[25]

In 1963, protestants before the Interstate Commerce Commission contended that,

> . . .the carrier has deserted the public and by failure to provide an attractive service, to advertise, and to operate on time it has actively discouraged use of these trains. They operate trains with dirty floors, seats, and windows. Furthermore, train 6 is delayed for freight movements causing it to miss connections at New Orleans.[26]

There is also evidence that the Southern Pacific has attempted to increase expenses of its passenger trains as well as reduce revenues. For example, the California Public Utilities Commission found that Southern Pacific repair expense for both passenger locomotives and passenger cars was approximately twenty-five percent above that of the other western railroads.[27]

The Southern Pacific's aggressive attempts to eliminate all long-haul passenger service have been met with increasing

---

[25]Ibid. Southern Pacific Company Discontinuance of Passenger Trains Nos. 27 and 28 Between Ogden, Utah, and Oakland, Calif. 317 Docket No. 21,946, July 6, 1962, p. 541.

[26]Ibid. Southern Pacific Company Discontinuance of Passenger Trains Nos. 5 and 6 Between New Orleans, La., and Houston, Tex. 320 Docket No. 22,567, Sept. 12, s963, p. 313.

[27]Ibid. Southern Pacific Company Partial Discontinuance of Passenger Service, San Francisco, Oakland, Calif.-Portland, Oregon. 320 Docket No. 22,905, May 14, 1964, p. 753.

opposition as time passes. In 1967, the state regulatory authorities of California, Arizona, New Mexico, Texas and Louisiana asked the Interstate Commerce Commission to force Southern Pacific to restore the quality of service on some of its trains. These states accused the Southern Pacific of deliberately driving passengers away as a prelude to asking Interstate Commerce Commission approval to discontinue trains. These states further contended that Southern Pacific does not accept reservations at some points along its route and that some passenger trains are not even listed in the carrier's public timetables.[28]

In fact, the Southern Pacific has been promoting air travel actively in its advertising. The Wall Street Journal reports that,

> For one thing the road has taken out ads detailing the savings in time and money for the man who takes the airplane. ("The Lark: What future is there for a bird that can't fly?" asked one ad. The answer: None.) For another, the railroad company has made the trip unappealing, critics claim. (The only thing tougher than the steak on the Lark, asserts Mr. Freberg, "was the heart of the Southern Pacific ticket agent who booked me.")[29]

If the Interstate Commerce Commission does order the Southern Pacific to restore the quality of service, and if the order is upheld under appeal, the Southern Pacific will

---

[28]Wayne E. Green, "Can the ICC Say How to Run a Railroad? Issue is Raised by Southern Pacific Case," Wall Street Journal, December 20, 1967 p. 22.

[29]Charles E. Alverson, "Deriding the Rails: Road Praises Airlines in a Bid to Drop Train," Wall Street Journal, June 1,1966, p. 1.

be forced to lower the expenses and increase the revenues of its service. Carriers still in the passenger business will find they are unable to cut back such service any further. The effects of such a turning point in Interstate Commerce Commission policy were summarized by Chairman Ben W. Heineman, of the Chicago and North Western Railroad. He replied that, "We did not think we could get out of the business--politically it was impossible, and it would have caused too much ill will. Since we were going to stay in the business, we concluded we should run it as well as possible."[30]

CHAPTER SUMMARY

The purpose of this chapter is to discuss--apart from the statistical data--the nature of each railroad's passenger service policy. This separate discussion is necessary because the data itself presents an incomplete picture of the nature of this policy.

In 1950, both the Santa Fe and Southern Pacific were strongly committed to passenger service. During the middle of the 1950 decade, while the Santa Fe held fast to its existing policy, the Southern Pacific moved rapidly from a pro-passenger to an anti-passenger railroad. After the middle 1950's, the Santa Fe and Southern Pacific passenger service

---

[30]United States House of Representatives. Hearings Before The Subcommittee on Transportation and Aeronautics of The Committee on Interstate and Foreign Commerce. April 25, 26; May 8, 1967. (Washington, 1967), p. 45.

policies diverged further.

Although the causes of this increasing policy divergence can be tied to factors of tradition, community service and some differences in the markets served by each carrier, the real cause of the policy split was the carriers' reactions to airline competition.

While the Santa Fe believed air competition--at least in 1958--of significance only in the major cities, the Southern Pacific took a broader view. In the view of the latter road, the potential passengers left over from the airlines and other modes of travel were not worth bothering with.

Through 1965, each road aggressively pursued its chosen passenger service policy.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The first task of this chapter is to determine whether Santa Fe's passenger service optimism is backed by passenger service profits and whether Southern Pacific's pessimism is backed by passenger service losses. With the background of output, revenue, and expense data developed in previous chapters, the sources of passenger service profits and losses are explored to provide insight into the reasons why one road is optimistic about this service while the other is not.

Because passenger service is produced by both carriers within the environment of multiproduct operation, a comparison of Santa Fe and Southern Pacific overall profitability (freight plus passenger) provides pivotal conclusions about the two carriers' differing passenger service policies.

Efficiency in overall plant operation develops further insights into the two carriers' divergent passenger service policies. The duPont ratio method of calculating rate of return on investment is broken down into its component ratios for the purpose of developing efficiency comparisons.

Finally, and after Santa Fe and Southern Pacific profitability and efficiency have been summarized, the author's conclusions are offered as to why the Santa Fe was optimistic

about passenger service during the 1950-1965 period while the Southern Pacific became increasingly pessimistic.

PASSENGER SERVICE PROFITABILITY

Santa Fe. On an avoidable cost basis, the Santa Fe's passenger service has been generally profitable over the 1950-1965 span. Revenues exceeded directly related expenses for all years except 1954-1958 and 1965 (Table 22). Furthermore, the data in Table 22 indicate that during the 1950-1965 period, revenues from passenger service have exceeded direct expenses of this service by slightly more than $42 million, or an average annual profit of $2.63 million.

Southern Pacific. Passenger operations of this carrier, by comparison, have been generally unprofitable between 1950 and 1965. The Southern Pacific experienced rather sizable passenger service losses every year between 1954 and 1961 (Table 22). Over the 1950-1965 span, total passenger service revenues failed to cover direct expenses by $2.35 million, an average annual loss of nearly $150 thousand.

Explanation of trends. Santa Fe passenger service revenue has been maintained over the period studied, whereas Southern Pacific's passenger revenues have decreased. It is impossible to determine whether, in each case, the passengers have deserted the railroads or vice versa. A few observations are possible however. The Santa Fe continued to maintain its service both in quantity and quality over the 1950-1965 period and promoted this service heavily at the

TABLE 22

PASSENGER SERVICE PROFITABILITY: SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965*
(x 1000)

	Santa Fe	Southern Pacific
1950	$18,005	$21,970
1951	7,279	17,119
1952	12,217	18,186
1953	13,537	6,711
1954	4,039 Loss	5,091 Loss
1955	1,041 Loss	13,319 Loss
1956	8,396 Loss	16,420 Loss
1957	9,779 Loss	15,622 Loss
1958	2,248 Loss	10,748 Loss
1959	834	8,341 Loss
1960	407	7,186 Loss
1961	7,162	5,579 Loss
1962	6,229	5,689
1963	2,245	2,429
1964	499	4,748
1965	840 Loss	3,073

*Profitability is calculated as the excess of operating revenues over directly related operating expenses.

Source: Annual Report of the Atchison, Topeka and Santa Fe Railway Co. to the Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

same time by advertising, travel plans and tourist side trips.

The Southern Pacific's passenger operations were reduced over this time both in quantity and quality. Little new equipment was installed; dining and Pullman services were curtailed; and this carrier decreased its sales promotion rapidly. Passenger related revenue is a slightly more important component of P.& A.S. revenue for the Southern Pacific than for the Santa Fe. For this reason, a given decrease in passenger related revenue would affect Southern Pacific's P.& A.S. revenue more significantly than it would the Santa Fe's.

Santa Fe's direct expense related to passenger service has increased over the 1950-1965 period. This increase is, aside from the influences of inflation, traced to Santa Fe's continued modernization of its passenger equipment as well as its continued high output levels. In comparison, Southern Pacific's direct expense has decreased substantially over the same period. The Southern Pacific policies of service elimination and capital consumption compared with Santa Fe's periodic equipment modernization and stabilized output levels explain the comparative differences between the two carriers' total direct P.& A.S. expense. In the total direct expense per gross ton mile statistics, the Santa Fe expense is significantly less than the Southern Pacific's suggesting more efficient operation by the former road.

Profit oriented differences in passenger policy. Table

22 illustrates the fact that both Santa Fe and Southern Pacific passenger service experienced losses beginning in 1954. However, the Santa Fe losses were neither as severe nor as persistent as the Southern Pacific's passenger deficit. These data, coupled with the separate revenue and expense data trends discussed in previous chapters support the thesis that Santa Fe attacked its passenger deficit by increasing expenditures and promotion while Southern Pacific eliminated its deficit by reducing expenses and service promotion sharply.

However, passenger service obviously is not produced in a vacuum by either railroad. When compared to the Southern Pacific, the Santa Fe's freight service was found to have faster, shorter, higher unit-revenue trains that at the same time compare favorably with Southern Pacific's freight operation in expense of operations. However, the really meaningful insights into whether either railroad can afford to support a passenger service are not apparent when freight service and passenger service operations are <u>each</u> compared separately. The crucial comparisons must be made in terms of overall efficiency. These comparisons will now be made.

OVERALL PROFITABILITY

<u>Santa Fe</u>. This road's net income after taxes was $82 million in 1950. This net decreased in an erratic fashion to a 1960 low of $51 million and increased almost steadily thereafter to nearly $82 million in 1965 (Table 23).

TABLE 23

NET INCOME AFTER TAXES SANTA FE AND
SOUTHERN PACIFIC RAILROADS
1950 - 1965
(x 1000)

	Santa Fe	Southern Pacific
1950	$82,142	$50,839
1951	73,346	46,019
1952	70,738	61,942
1953	77,186	57,922
1954	66,173	44,355
1955	77,565	51,645
1956	70,213	46,462
1957	61,942	46,645
1958	67,235	47,051
1959	65,786	49,203
1960	51,597	47,445
1961	54,850	54,552
1962	70,692	60,783
1963	67,501	67,053
1964	75,780	63,898
1965	81,619	69,677

Source: Annual Report of the Atchison, Topeka and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

Southern Pacific. The net income of this carrier was less than the Santa Fe's for all years studied. However, Southern Pacific's net has increased in a steady fashion over time. From nearly $51 million in 1950, this road's net decreased to a 1954 low of $44 million and climbed thereafter to nearly $70 million in 1965 (Table 23).

It is significant to note that in 1954 when Southern Pacific experienced a very low net income from overall operations, their passenger service loss was almost $5 million. It is also important to note that Southern Pacific's passenger service output began to decrease sharply during this time.

OPERATING EFFICIENCY

An examination of how efficiently each railroad generated its net income is of equal importance with the comparison of their income data. Table 24 summarizes such comparative efficiency data.

Operating ratio. This statistic expresses operating expenses of each railroad's output (freight plus passenger) as a percent of operating revenue. Santa Fe operating expenses varied between 67 and nearly 78 percent of operating revenues from 1950 through 1960. Over the same period the Southern Pacific operating ratio was greater for all years, fluctuating between 73 and nearly 81 percent (Table 24). After 1960, the Santa Fe experienced higher operating ratios--from nearly 79 to 81 percent--than did the Southern

TABLE 24

SELECTED MEASUREMENTS OF OVERALL EFFICIENCY
SANTA FE AND SOUTHERN PACIFIC RAILROADS
1950 - 1965

	Operating ratio*		Operating revenues ÷ total assets		Net income ÷ operating revenues		Rate of return on investment	
	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific	Santa Fe	Southern Pacific
1950	73.33%	73.10%	38%	37%	16%	8%	6.08%	2.96%
1951	67.48	77.10	41	39	13	7	5.33	2.73
1952	73.49	74.24	41	40	12	9	4.92	3.60
1953	68.48	76.00	41	39	13	8	5.33	3.12
1954	75.15	78.96	36	35	12	7	4.32	2.45
1955	73.27	79.33	38	37	13	8	4.94	2.96
1956	73.88	80.86	38	36	12	7	4.56	2.52
1957	77.06	80.20	39	34	10	7	3.90	2.38
1958	77.70	80.07	38	33	11	7	4.18	2.31
1959	72.62	78.22	40	34	10	7	4.00	2.38
1960	77.20	79.11	38	33	8	7	3.04	2.31
1961	78.55	77.38	37	30	9	8	3.33	2.40
1962	78.29	78.18	37	30	12	9	4.44	2.70
1963	79.22	78.53	37	30	11	10	4.07	3.00
1964	79.93	79.92	37	30	12	9	4.44	2.70
1965	80.90	77.80	37	33	12	9	4.44	2.97

*Operating expenses as a percent of operating revenues.

Source: Annual Report of the Atchison, Topeka, and Santa Fe Railway Co. to The Interstate Commerce Commission, (Washington, 1950-1965).

Ibid., The Southern Pacific Company.

Pacific--77 to nearly 80 percent (Table 24). Santa Fe's sixteen year average operating ratio, however, was lower than the Southern Pacific's--75.41 percent compared to 78.06 percent.

Operating revenues per asset dollar. This statistic measures each road's ability to use its assets to generate gross revenue. Effective use of assets, in this sense, would result in a high ratio. Table 24 shows that Santa Fe used its assets more effectively than did the Southern Pacific for every year studied. In a comparative sense, this effectiveness has increased as the spread between the two roads' ratios has widened over time (Table 24).

Net income per gross revenue dollar. This ratio measures each carrier's ability to convert gross revenue into net income after taxes. A high ratio indicates that the gross revenue was generated with relatively low expenses. This statistic gives a somewhat more useful view of the road's operations than does the operating ratio, for it includes non-operating expenses such as interest on borrowed funds and depreciation.

Santa Fe's net income has been a larger percent of gross revenue than the Southern Pacific's for all years researched (Table 24). In fact, the Santa Fe has been able to generate from 25 to 50 percent more net income per dollar's gross revenue than has the Southern Pacific (Table 24).

The two ratios just discussed support a conclusion that the Santa Fe has been the more efficiently operated road.

A marginal passenger operation would burden the Santa Fe less than the Southern Pacific.

The duPont ratio. The two preceeding ratios, when combined, result in the duPont ratio method of calculating the rate of return on investment. Assuming that total assets as reported in the balance sheet of each road is equivalent to total investment in the business, multiplication of the two previous ratios gives the same results as dividing net income by total investment.

Santa Fe's rate of return on investment decreased from a 1950 high of 6.08 percent to a low of 3.04 percent in 1960. After that year, this road's return on investment increased to 4.44 percent in 1965 (Table 24).

Southern Pacific's rate of return was less than Santa Fe's for all years studied--considerably so. Furthermore, there was little annual fluctuation between this road's 2.96 percent return in 1950 and its 2.97 percent return in 1965 (Table 24). When one considers that the Southern Pacific has more debt--and leverage--than the Santa Fe, the Southern Pacific's lower rate of return is striking.[1]

SUBJECTIVE ELEMENTS OF POLICY DETERMINATION

Non-measurable benefits of passenger service. Although the data strongly support the divergent passenger service

---

[1] "The Southern Pacific Company," Forbes, 96, No. 9 (November 1, 1965), pp. 25-26.

policies of the Santa Fe and Southern Pacific, there are other possible reasons for these divergent policies which--although unmeasurable--are mentioned for the reader to ponder.

Perhaps Santa Fe management likes to run passenger trains. It is well known that the Santa Fe has placed the accumulation of cash and a stabilized position in a higher priority than rapid growth via the leverage of externally generated funds.[2] The Santa Fe can better afford to indulge in the subjective pleasures of operating passenger service than can the Southern Pacific, and the cold eye of the accountant has no place in this subjective "cost" and "benefit" calculation. The costs and benefits are subjectively determined and are a luxury the debt-heavy, low-return Southern Pacific can ill afford. Whether the Santa Fe can afford this luxury is indeterminate; suffice to say that it can better afford this subjectivity than can the Southern Pacific.

Attraction of shippers by good passenger operations. One often hears that a "showcase" passenger operation serves the railroad by creating an image of similar "first-rate" freight service. Evidence is contained in two "train-off" hearings held at the behest of the Santa Fe in an attempt to remove two different local passenger trains. In both cases, major freight shippers along each train's route were heard.

---

[2]Ibid., p. 126.

Both passenger trains were calculated to lose money on an avoidable cost basis.[3]

"Subsidization" of losing passenger service via higher freight rates was a central theme of the testimony in both cases. In one case, the local shippers were unwilling to subsidize, in their opinion, a losing passenger operation. In the other case, the major shippers were entirely willing to help support their passenger service. In the former case, the train was removed; the latter train remained in operation until the Santa Fe went to higher authority. The mere existence of such service implies no necessary image of "showcase" freight service in the shipper's mind.

Deliberate inefficiencies. If a railroad, say the Southern Pacific, decided to remove passenger service entirely --and if this removal depended upon demonstrated massive losses as it must before most regulatory commissions--it is obviously possible for the railroad to "expense" a service into extinction. Borts' conclusion that railways "...do not produce on their envelope curves" is certainly true under such an assumption.[4]

---

[3]The State Corporation Commission of Kansas. Application of the Atchison, Topeka and Santa Fe Ry. Co. for authority to Discontinue Operations of Trains No. 311-312, Docket 71,860-R, June 15, 1964.

The State Corporation Commission of New Mexico. Petition of the Atchison, Topeka and Santa Fe Ry. Co. to Discontinue Trains No. 25-26. Docket No. 34,878, October 17, 1965.

[4]George H. Borts, "Increasing Returns in the Railway Industry," Journal of Political Economy, 62 (1954), pp. 316 and 333.

Also obvious is the ability of any firm to reduce its revenues by eliminating advertising and reducing quality. These assumptions of artificial expenses and discouragement of customers are impossible to analyze in the absence of engineering cost estimates and detailed investigation. The point, however, warrants mention in this study.

Service in the public interest. A final variable in management's passenger decision--in addition to the data-oriented and more subjective variables--is the railroad's view of its status as a public utility.

The Santa Fe operates small depot agencies along most of its lines where the prospect of any business is evident. Most local shippers are able to communicate with a local Santa Fe agent. The Southern Pacific, however, maintains few depot agencies except in major traffic centers. A local shipper must communicate long distance in such instances.

In other words, while the Southern Pacific is in the communities along its lines, the Santa Fe in a comparative sense is both in and of the communities it serves. Southern Pacific historian Guy Dunscomb states that the Southern Pacific serves the big shippers and lets the business from the small shippers and from passengers drift unattended where it may.[5]

When does a railroad's rights of private enterprise end and its public utility responsibility begin? By

---

[5]Letter to the author from G.L. Dunscomb, Southern Pacific historian, October 28, 1967.

comparison, the Santa Fe appears to give more weight to the public utility responsibility than does the Southern Pacific.

CONCLUSIONS

1. The increasingly divergent passenger policies of the Santa Fe and Southern Pacific railroads are supported by passenger service profit and loss data. The Santa Fe's passenger service has been generally more profitable than the Southern Pacific's. Santa Fe's annual losses in the mid-1950's were less than Southern Pacific's and were eliminated sooner than the latter road's deficits.

The Santa Fe, with comparatively small losses between 1954 and 1958, elected to stay in the market and fight the deficits with equipment, sales, and promotional innovation. The Southern Pacific, with the larger passenger service deficits during the same years, decided to phase out passenger service entirely and employed the "deliberate inefficiencies" technique to implement its decision. No other reason is apparent to the author to explain the Southern Pacific's lower efficiency ratios.

2. Santa Fe's longer-haul, higher average revenue passenger versus Southern Pacific's shorter-haul, low revenue average passenger characteristics reinforced each carrier's decision about passenger service. Commuter service impeded the Southern Pacific, but not the Santa Fe. As the Southern Pacific decreased its long-haul passenger business, it became increasingly tied to and concerned with

this suburban local passenger service.

3. The characteristics of each road's freight operations influenced and reinforced their separate passenger service decisions. The Santa Fe, operating with short, fast, high-revenue freights was more adaptable to the operation of fast passenger trains than was the Southern Pacific, which traditionally favored long, slow and infrequent freight trains.

4. Comparison of each road's overall profitability supports the conclusion that the Santa Fe could afford to continue with a positive passenger service policy and wait to see the results of this aggressive promotion on passenger service profits. The Southern Pacific could not afford to wait. Compared to the Santa Fe, the Southern Pacific was less profitable, less efficient, and debt-heavy. Even if Southern Pacific's passenger service profits had matched Santa Fe's increasingly marginal performance, any course of action other than the one chosen by Southern Pacific--in view of its apparent decision to totally eliminate passenger service--would not have made sense. The Southern Pacific was sub-standard--in profits, efficiency and debt structure--when compared with its bitter rival, the Santa Fe.

The Southern Pacific had to grow and improve its position. It could not afford the financial drag of an unwanted submarginal passenger operation.

5. Subjective elements of passenger service policy

are evident in both railroad's policies. The conclusion of the author is that the Santa Fe weighed the "showcase" and "tradition" benefits of passenger service rather heavily while the Southern Pacific did not. The former road could afford to do this while the latter road could not.

In a comparative sense, the Santa Fe incorporated more of the "public service" philosophy and less of the "deliberate inefficiencies" philosophy than did the Southern Pacific. Explanation of this difference once again can be traced to Santa Fe's better financial position and performance.

6. Finally, and in the author's opinion most importantly, the increasingly divergent passenger service policies of the Santa Fe and Southern Pacific can be traced to their separate--and different--reactions to airline competition.

Between 1950 and 1965 both railroads had to make at least one major long-run decision--whether to buy new equipment for the major trains or eliminate the service as fast as possible. This decision was made by each carrier sometime during the 1955-1957 period.

The Santa Fe view that airline competition existed for the most part only in major cities resulted in its decision to re-equip and continue in the passenger business. Southern Pacific's view that airlines would eventually gain all the desirable long-haul business prompted it to phase out passenger service as quickly as possible.

BIBLIOGRAPHY

Public Documents

Interstate Commerce Commission. Annual Reports of the Atchison, Topeka, and Santa Fe Railway Company to the Interstate Commerce Commission. Washington: 1950 - 1965.

_____. Annual Reports of the Southern Pacific Company to the Interstate Commerce Commission. Washington: 1950 - 1965.

_____. Atchison, Topeka, & Santa Fe Railway Company and Gulf, Colorado, & Santa Fe Railway Company Discontinuance of Service Between Kansas City, Mo., and Houston, Texas. 312 Docket No. 20,925, April 27, 1960.

_____. Explanation of Rail Cost Finding Procedures and Principles Relating to the Use of Costs. Washington: 1963.

_____. Preliminary Abstract of Railway Statistics. Washington: 1950 - 1953.

_____. Revenue Traffic, Form OS-B. Washington: 1965.

_____. Revenue Traffic, Form OS-D. Washington: 1950, 1955, 1960.

_____. Southern Pacific Company Discontinuance of Passenger Trains Nos. 5 and 6 Between New Orleans, La., and Houston, Tex. 320 Docket No. 22,567, September 12, 1963.

_____. Southern Pacific Company Discontinuance of Passenger Trains Nos. 27 and 28 Between Ogden, Utah, and Oakland, California. 317 Docket No. 21,946, July 6, 1962.

_____. Southern Pacific Company Partial Discontinuance of Passenger Trains Between Los Angeles and Sacramento; Oakland and Sacramento; and San Francisco and San Jose, California. 320 Docket No. 20,503, July 21, 1960.

_____. Southern Pacific Company Partial Discontinuance of Passenger Service, San Francisco, Oakland, California to Portland, Oregon. 320 Docket No. 22,905, May 14, 1964.

Interstate Commerce Commission. Statement 580. Washington: 1958.

_____. Transport Statistics of the United States -- Part I, Railroads. Washington: 1954 - 1965.

Statistical Abstract of the United States. Washington: 1966.

The State Corporation Commission of Kansas. Application of the Atchison, Topeka, and Santa Fe Railway Company for Authority to Discontinue the Operation of Motor Trains Numbered 311 and 312 Between Newton, Kansas and Dodge City, Kansas. Docket No. 70,317 - R, March 26, 1963.

_____. Application of the Atchison, Topeka and Santa Fe Ry. Co. for Authority to Discontinue Operations of Trains No. 311 - 312. Docket No. 71,860 - R, June 15, 1964.

The State Corporation Commission of New Mexico. Petition of The Atchison, Topeka, and Santa Fe Railway Company to Discontinue Trains No. 25 - 26. Docket No. 34, 878, October 17, 1965.

U.S. Congress. Public Law 85-625. 85th Congress, 1958.

U.S. House of Representatives. Hearings Before the Sub-Committee on Transportation and Aeronautics of the Committee on Interstate and Foreign Commerce. April 25,26; May 8, 1967.

U.S. Senate. Hearings Before the Subcommittee on Surface Transportation of the Committee on Interstate and Foreign Commerce. January 13 - 17, 1958.

Books

Bain, Joe S. Industrial Organization. New York: John Wiley & Sons, Inc., 1959.

Baker, George P., Germane, Gayton E. Case Problems in Transportation Management. New York: McGraw Hill, Inc., 1957.

Barger, Harold. The Transportation Industries, 1889-1946. New York: National Bureau of Economic Research, Inc., 1951.

Baumol, William J. Economic Theory and Operations Analysis. Englewood Cliffs, New Jersey: Prentice Hall, Inc. 1965.

Berge, Stanley. Railroad Passenger Service Costs and Financial Results. Evanston: Northwestern University School of Commerce, 1956.

Burgess, Kenneth F., Vanderblue, Homer B. Railroads: Rates-Service-Management. New York: Macmillan Company, 1923.

Chamberlain, Neil W. The Firm: Micro-economic Planning and Action. New York: McGraw Hill, Inc., 1962.

Clark, J.M. Studies in the Economics of Overhead Costs. Chicago: University of Chicago Press, 1923.

Conant, Michael. Railroad Mergers and Abandonments. Berkeley: University of California Press, 1964.

Daggett, Stuart. Principles of Inland Transportation. New York: Harper & Brothers, 1955.

Dean, Joel. Managerial Economics. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1951.

Drucker, Peter F. The Practice of Management. New York: Harper & Brothers, 1954.

Graham, Benjamin, Dodd, Sidney. Security Analysis. New York: McGraw Hill, Inc., 1962.

Isard, Walter. Location and Space Economy. New York: John Wiley & Sons, Inc., 1956.

Ladd, Dwight R. Cost Data for the Management of Railroad Passenger Service. Boston: Harvard University Graduate School of Business, 1957

Marshall, James. Santa Fe, The Railroad That Built an Empire. New York: Random House, Inc., 1945.

Meyer, John R., Peck, Merton J., Stenason, John, Zwick, Charles. The Economics of Competition in the Transportation Industries. Cambridge: Harvard University Press, 1960.

Meyer, John R., Peck, Merton J., Stenason, John, Kraft, Gerald, Brown, Robert. Avoidable Costs of Passenger Train Service. Cambridge: Aeronautical Research Foundation, 1957.

Milne, A.M. The Economics of Inland Transport. London: Pitman, 1955.

National Bureau of Economic Research. Transportation Economics. New York: Columbia University Press, 1965.

Nelson, James Cecil. Railroad Transportation and Public Policy. Washington: Brookings Institution, 1959.

Norris, Frank. The Octopus. Garden City: Doubleday, Inc., 1947.

Pigou, A.C. The Economics of Welfare. London: Oxford, 1950.

Poole, Ernest C. Costs - A Tool for Railroad Management. New York: Simmons Boardman Publishing Company, 1962.

Siegelman, Louis, Spencer, Milton H. Managerial Economics. Homewood, Illinois: Richard D. Irwin, Inc., 1959.

Troxel, Emery. Economics of Transport. New York: Rinehart and Company, 1955.

Waters, L.L. Steel Trails to Santa Fe. Lawrence, Kansas: University of Kansas Press, 1950.

Wilson, G. Lloyd. Economics of Transport. New York: Rinehart and Company, 1955.

Wilson, Neill C., Taylor, Frank J. Southern Pacific. New York: McGraw Hill, Inc., 1952.

Articles and Periodicals

Alverson, C.E. "Deriding the Rails: Road Praises Airlines in Bid to Drop Train," Wall Street Journal. June 1, 1966.

Anderson, R.T. "Santa Fe 'Thumbs-up' passengers," Railway Age. 151 No. 34 (December 2, 1957).

"Are the Passengers Coming Back?" Railway Age. 142 No. 20 (May 20, 1957).

Asher, John. "Trim Down to Fighting Weight - Then Fight," Railway Age. 160 No. 19 (May 16, 1966).

"ATSF: Keeping Passengers Happy," Railway Age. 151 No. 3 (March 8, 1965).

"ATSF'S Marsh: Making a Great Railroad Greater," Railway Age. 150 No. 25 (December 21, 1964).

Biaggini, B.F. "Passenger Losses Cut Freight Car Purchases," Railway Age. 161 No. 21 (May 29, 1967).

Borts, George H. "Increasing Returns in the Railway Industry," The Journal of Political Economy. 67 (February-December, 1954).

Chappell, Ross E. "Passenger Prospects Good," Santa Fe Magazine. 58 No. 5 (April, 1965).

Coyle, John J. "Cost-of-Service Pricing in Transportation: Some Reflections," Quarterly Review of Economics and Business. (May, 1966).

Edwards, Ford K. "Cost Analysis in Transportation," American Economic Review. 27 (1947).

Faltermayer, Edmund K. "The Rail Route to a More Mobile America," Fortune. 74 No. 1 (July 1, 1966).

Green, Wayne E. "Can the ICC Say How to Run a Railroad? Issue is Raised by Southern Pacific Case," Wall Street Journal. (December 20, 1967).

Kneiling, John G. "The Real Passenger Problem," Trains. 26 No. 10 (August, 1966).

Lorenz, M.O. "Constant and Variable Railroad Expenditures and the Distance Tariff," Quarterly Journal of Economics. 21 (1907).

Lorenz, M.O. "Cost and Value of Service in Railroad Rate Making," Quarterly Journal of Economics. 30 (1916).

Morgan, David P. "Santa Fe Calls it Quits," Trains. 28 No. 3 (January, 1968).

Morgan, David P. "Who Shot the Passenger Train?" Trains. 21 No. 6 (April, 1961).

Nickerson, Ernest C. "Passenger Losses Must Be Controlled," Railway Age. 151 No. 23 (September 16, 1957).

Pigou, A.C., Taussig, F.W. "Railway Rates and Joint Cost," Quarterly Journal of Economics. 27 (1913).

Rose, J.R., Wilson, G.L. "Out-of-Pocket Costs in Railway Rates," Quarterly Journal of Economics. 70 (August 1946).

Russell, D.J. "Southern Pacific Company," Forbes. 96 No. 9 (November 1, 1965).

Taussig, F.W. "Railway Rates and Joint Cost Once More," Quarterly Journal of Economics. 27 (1913).

Wilson, George W. "On the Output Unit in Transportation," Land Economics. 35 (1959).

Young, Allyn. "Pigou's Wealth and Welfare," Quarterly Journal of Economics. 27 (1913).

Reports

Association of American Railroads, Yearbook of Railroad Facts. Washington: 1967.

Atchison, Topeka, and Santa Fe Railway Company. Sixtieth Annual Report to Stockholders. December 31, 1954.

_____. Sixty-Sixth Annual Report to Stockholders. December 31, 1960.

Brandes Ely M., Lazar, Alan E. Rail Passenger Traffic in the West. Menlo Park, California: Stanford Research Institute, 1967.

The National Association of Railroad and Utilities Commissioners. The Railroad Passenger Deficit Problem. Washington: 1957.

Tidewater Oil Company. Determining the Cost of Gasoline. Los Angeles: May, 1965.

Other Sources

Atchison, Topeka, and Santa Fe Railway Company. Letter to the author from Bill Burk, Manager of Public Relations. March 24, 1966.

_____. Letter to the author from E.S. Marsh, Chairman of the Board of Directors. August 11, 1966.

_____. Letter to the author from J.S. Reed, President. October 12, 1967.

_____. Letter to the author from J.T. Smith, Superintendent at Los Angeles, California. May 21, 1966.

_____. Personal interview with Kelley Fogg, Assistant to The President, Dallas, Texas. October 6, 1967.

_____. Personal interview with L.O. Townley, Chief Mechanical Engineer, at Topeka, Kansas. April 19, 1967.

_____. Public Timetables. 1950 - 1965.

The DeGolyer Foundation at Southern Methodist University. Letter to the author from Everett L. DeGolyer, Jr. February 19, 1968.

The Southern Pacific Company. Letter to the author from L. G. Crocket, General Passenger Traffic Manager. January 9, 1967.

The Southern Pacific Company. Letter to the author from Southern Pacific historian G.L. Dunscomb. October 28, 1967.

_____. Letter to the author from Southern Pacific historian G.L. Dunscomb. September 4, 1966.

_____. Public Timetables. 1950 - 1965.

VITA

John Byron McCall

Candidate for the Degree of

Doctor of Philosophy

Thesis: AN ECONOMIC STUDY OF RAILROAD PASSENGER SERVICE: THE SANTA FE AND SOUTHERN PACIFIC RAILROADS, 1950 - 1965

Major Field: Economics

Biographical:

Personal Data: Born at Sweetwater, Texas, August 22, 1937, the son of Lane Ben and Nora Irene McCall.

Education: Attended grade schools at Kansas City, Missouri; Winslow, Arizona; and Cleburne, Texas. Graduated from Cleburne High School in 1955; received the Bachelor of Science degree from Texas Technological College at Lubbock, Texas in August, 1960 with a major in Economics; received the Master of Business Administration degree from the same institution in August, 1961 with a major in Economics; completed requirements for the Doctor of Philosophy degree in July, 1968 at Oklahoma State University.

Professional experience: Assistant Professor of Economics, University of Texas at Arlington since 1964. Consultant to the American Gas Journal (1965). Associate editor, Publications Committee, Southwest Railway Historical Society, Dallas, Texas (1965).