

## ACKNOWLEDGMENT

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## AC-Muni Joint Monthly Pass: A Look at the First Step Toward Fare Integration in the San Francisco Bay Area

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The first joint monthly transit pass in the San Francisco Bay Area was introduced in September 1981. Purchasers of the new pass were surveyed in October 1981, and the trends in joint and separate pass sales were monitored. The pass was targeted at a specific segment of the commuter market, and apparently it was successful in reaching that market. Purchasers of the new pass are extremely satisfied with it; administration is simple; distribution is centralized and inexpensive; and revenue losses from a promotional discount are minimal. Since introduction of the joint pass, however, sales have flattened, which reflects the restricted market and the diminishing value of the promotional incentive because of rising fares. Local efforts are continuing toward developing a more integrated regional fare system on which to base interoperator pass prices, a technological development project to adapt rapid transit station automatic fare gates to accept joint passes, and a promotional effort to increase pass sales through employers.

In January 1982 the final report of the Joint Fare Prepayment Demonstration Design Project was submitted to UMTA in three volumes (1-3). The project was carried out by the Metropolitan Transportation Commission (MTC) of the San Francisco Bay Area under a grant from the Office of Service and Methods (now Management) Demonstrations. The objective of the project was to identify, evaluate, and select alternatives for achieving joint fare prepayment arrangements (such as tickets or passes) among several of the large, independent transit systems operating in the area. The hope was that a joint prepayment scheme would help achieve a higher degree of fare integration in the region. In this paper the final project reports are updated based on the early experience with the first product of the joint fare program—a joint monthly pass.

## BACKGROUND

The program was originally intended to design a joint fare prepayment demonstration that would then be implemented by the operating agencies in a subsequent phase of the demonstration. However, a succession of events, from initial project planning in 1978 to the present, reoriented the approach. State laws affecting transit finance and operator-MTC relations were some of the most significant external influences on the project.

A long history of concern for coordination among the several agencies (some studies date back 25 years) was finally catalyzed in 1980 by a crisis in transit financing that required concerted action by the three largest transit agencies to raise fares the same year. The identification of substantial local funds (from the sales tax) to pursue joint passes among these three operators obviated the need to independently press a follow-up UMTA demonstration. Instead, activities under the project grant were reoriented to support the local effort.

One of these activities was the description of the current market of transit pass users and the estimation of the market for future joint passes. Attention and resources were focused on a survey of purchasers of the two major existing individual system passes. The survey, conducted in October 1980, is described in a paper by Dittmar (4) and in Volume 2 of the project final report (2).

At the outset of the project there was no established date for introducing the first multioperator

pass. Nevertheless, about the time the draft of the project final report was completed (summer 1981), a firm date was set for introducing the first joint monthly pass. Remaining project funds were then reallocated to survey persons purchasing the new pass in October 1981. This survey provided the basis for much of the following analysis.

#### TRANSIT SERVICES IN THE REGION

Transit is supplied by a variety of public and private operators in the nine-county Bay Area. The focus of this project was on the three largest public transit systems that serve the central, urbanized part of the region. The total 1980 population in the three affected counties (Alameda, Contra Costa, and San Francisco) was 2.4 million.

##### Alameda-Contra Costa Transit

Alameda-Contra Costa Transit (AC Transit), the first multicounty transit district established in California, took over the operation of the private Key System in 1960. AC provides most of the bus transit in the heavily urbanized strip between San Francisco Bay and Oakland-Berkeley Hills, from Richmond in the north to Fremont in the south. In addition to local service throughout its East Bay service area, AC runs several routes across the San Francisco-Oakland Bay Bridge to the Transbay Terminal on the edge of downtown San Francisco. AC provides feeder service to all Bay Area Rapid Transit (BART) stations in its jurisdiction and local contract service in several outlying suburban areas. AC provides service with 2,200 employees and 922 buses to 250,000 patrons each weekday. It had a 1981-1982 operating budget of \$96.8 million.

##### Bay Area Rapid Transit District

BART, the first of the new regional rail transit systems to be built in the United States since the early 1900s, was first established by state law in 1957. Planning, design, and financing put off construction until 1964, and service opened on the first segment in 1972 and the last in 1974. The 71-mile, 34-station system employs 2,000 people, and it had a 1981-1982 operating budget of \$120.2 million. More than 185,000 patrons travel on BART each weekday.

##### San Francisco Municipal Railway

The San Francisco Municipal Railway (Muni), the oldest publicly owned transit system in the United States, operates a diverse service within the city and county of San Francisco--cable cars, streetcars (including the new light rail vehicles known as Muni Metro), diesel buses, and electric trolley buses, more than 1,000 vehicles in all. Muni employs 3,600, and the 1981-1982 operating budget was \$142.3 million. Due in part to heavy use of passes, no firm patronage figures are available, but estimates range from 500,000 to 700,000 daily riders.

#### TRANSIT FARES AND PASSES

Each of the major operators provides at least one form of transit fare prepayment, principally monthly passes or books of tickets.

The BART automatic fare collection (AFC) system is based on a magnetically encoded, stored-value ticket that the user may purchase from vending machines in each BART station in any value up to \$20

(in \$0.05 increments). Also, \$10 and \$20 tickets can be purchased at some banks. The ticket is then used until its dollar value has been reduced below that needed to pay for a trip. Then the remaining value may be transferred onto a new ticket. The operations of keeping track of value used and issuance of new tickets are handled by AFC equipment in the stations. Although the BART ticket is not a pass in the usual sense, it offers riders the opportunity to choose their preferred amount of prepayment.

AC Transit has a flat fare for bus service within its East Bay service area for all local routes. Express routes to downtown Oakland and transbay routes to San Francisco are zoned. In November 1979 AC introduced its first local monthly pass, which was good for unlimited rides on routes within East Bay. In March 1980 AC introduced its zoned transbay monthly passes, which were good both for unlimited transbay trips for the designated zones and for trips on all East Bay routes.

Muni has a flat fare for all its services. It introduced its monthly pass (called the Fast Pass) in 1974.

The current fare structures of these three systems, along with the previous fares charged, are summarized in Table 1. For ease of presentation, only the full-fare categories are shown. All three operators raised fares in 1980 and 1982.

#### DESIGNING A JOINT PASS

Based on the desire to minimize disruption to existing fare structures and collection methods, the three transit agencies agreed quickly to narrow the focus for joint fares to monthly passes, for full-fare patrons only, in the largest identifiable markets. The structure for the joint fare was to be based on some combination of the existing arrangements--San Francisco Muni has a flat fare, AC Transit has a fixed zone fare, and BART has a more finely graduated distance-based fare. Whatever structure is eventually chosen for the regional joint fare, it will represent a compromise in which one or more agencies will have to move toward the others' methods, but in which the result will be minimally disruptive to at least one of them.

The first joint pass to be introduced illustrates this approach. In September 1981 AC Transit began selling a joint monthly pass that allowed unlimited rides on AC local and transbay lines and on all Muni services. The joint monthly pass consists of a standard AC transbay pass (for zone 1, 2, or 3, depending on the commuting distance from San Francisco) with a Muni sticker affixed at the time of purchase. The AC bus drivers now are faced with a slight variation on the pass they normally see, and Muni drivers had to learn to look for their agency's symbol on the joint pass. Sales of the joint monthly pass are handled exclusively by AC personnel, who act, in effect, as Muni sales agents for the new stickers.

In the absence of a unified regional fare structure, the price agreed on by the two agencies was the sum of their existing passes minus \$2. The \$2 reduction was established to provide some promotional incentive for purchasers while limiting potential revenue losses. Any temporary revenue loss is to be covered by local funds set aside by MTC for the regional pass project.

The resulting price on introduction was \$50 for zone 1 (principally the Oakland-Berkeley area), \$59 for zone 2 (the Richmond area to the north and the San Leandro-Hayward area to the south), and \$68 for

Table 1. Fara structure comparisons.

Fare Category	AC Transit			BART			Muni		
	1978	1980	1982	1975	1980	1982	1970	1980	1982
Cost of service (\$)									
Base (local)	0.35	0.50	0.60	0.30	0.50	0.60	0.25	0.50	0.60
Express (local)	0.35	0.50	0.60	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	0.30	— <sup>a</sup>	— <sup>a</sup>
Multizone East Bay	0.45-0.60	0.75-1.00	0.85-1.10	0.35-1.30	0.55-1.60	0.70-2.00	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Multizone transbay	0.75-1.25	1.00-1.50	1.25-1.75	0.70-1.45	0.90-1.75	1.10-2.15	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Local pass	15.00 <sup>b</sup>	18.00	24.00	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	11.00	16.00	24.00
Zoned transbay pass	30.00-50.00	36.00-54.00	45.00-63.00	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Cost of 20-ticket books (\$)									
Local	7.00	9.50	—	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Multizone East Bay	— <sup>a</sup>	9.50-19.00	—	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Transbay	15.00-25.00	19.00-28.50	25.00-35.00	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>
Pass multiplier	43 <sup>c</sup>	36	40 <sup>c</sup>	— <sup>a</sup>	— <sup>a</sup>	— <sup>a</sup>	44	32	40
(no. of equivalent cash fares)	40 <sup>d</sup>	—	36 <sup>d</sup>	—	—	—	—	—	—

<sup>a</sup>Fare category not applicable.<sup>b</sup>1979.<sup>c</sup>Local.<sup>d</sup>Transbay.

zone 3 (the southernmost portion of the AC basic service area). The price has since been increased twice from AC and Muni fare changes to a current zone 1 AC-Muni price of \$67.

The joint pass is sold, along with regular AC passes and tickets, only at the AC office in downtown Oakland or at the AC ticket booth in the Transbay Terminal, located on the southern edge of downtown San Francisco.

Almost all joint passes are sold at the terminal because all persons who use AC transbay service pass through there for every trip. In addition to the AC transbay routes that terminate there, the Transbay Terminal also is served by several Muni routes, San Mateo County Transit buses from south of San Francisco, and Golden Gate Transit buses from north of San Francisco. Market Street, which has the Muni light rail system and BART running beneath it, is one long block from the terminal.

#### INITIAL MARKET RESPONSE

The first estimate of potential AC-Muni joint pass buyers was the 3,000 persons who each weekday transfer between AC and Muni for work trips. The questions from the 1980 survey of separate system pass users (2) indicated that 38.7 percent of all AC transbay pass users were interested in an AC-Muni joint pass; if the price were set at the sum of separate passes, the favorable response dropped to 22.1 percent. At the October 1980 pass sales rate, this translated to 1,150 to 2,020 persons. Because the AC-Muni pass would primarily be for regular AC transbay riders who need to transfer to or from Muni to complete their trips, this range (1,000 to 2,000) can be taken as an approximation of the immediate market for the new pass. The 3,000 figure was used as the total market.

Sales in the first few months were 1,200 to 1,300 per month. Although too early to establish a pattern, these figures were encouraging in that they represented more than 40 percent of the maximum total market predicted (3,000), and an even higher proportion (60 to 120 percent) of the predicted immediate market (1,000 to 2,000).

Initial response was also a function of available agency budgets that restricted advertising principally to the Transbay Terminal and to the AC transbay buses. In August 1981 a major publicity event was staged by a related multiagency project concerning public information on regional transit routes and connections. Among other things, the ceremony included the first public announcement of the joint AC-Muni pass. Although the local press featured the new pass in articles, there was relatively little widespread publicity.

#### SURVEY OF JOINT PASS BUYERS

The same survey methodology applied in the 1980 survey of separate system pass buyers was repeated-- a self-completion survey, which had a weekly trip table and \$1 discount coupon incentive. Many of the 1980 questions were repeated, and others were added or improved.

The major purposes of the 1981 survey were to

1. Compare buyers of the new joint pass with those who bought the separate system passes,
2. Further probe buyers' preferences among sales and distribution options, and
3. Gauge consumer acceptance of the new pass.

The restricted-distribution system and the estimated market size meant that a 100 percent sample could be attempted. AC sales personnel agreed to distribute a survey form with every joint pass sold. A total of 675 usable responses were received by the processing cut-off date for about a 56 percent return rate, which was similar to that for the 1980 survey.

#### Sources of Buyers of New Passes

As expected, a majority of new pass buyers had formerly bought one or both of the two separate system passes. A question in the October survey asked if the respondent had bought the joint pass before (i.e., in September, the first month it was offered). The prior payment method appears to be related to both the residence of the buyer and when the buyer bought the pass for the first time. (First time means first bought the joint pass in October 1981; second time means bought the pass in September and October 1981.)

Data in the righthand columns of Table 2 indicate that the first people to respond to the new pass in September were those regular riders who had purchased both passes separately before. They realized both an immediate \$2 monthly savings and the convenience of carrying only one card rather than two. Those who first bought the new pass in October, the second month, may better represent the future market. A higher proportion of these persons either previously paid by cash, only bought one of the two passes, or were new riders to one system or the other.

#### Comparisons with 1980 Survey Respondents

There appear to be some significant demographic differences between the joint pass buyers and the separate system pass buyers surveyed 1 year earlier. The income distribution of the joint pass users is

Table 2. Prior payment methods, by residence and timing.

Item	Total	First-Time Buyers <sup>a</sup>		Second-Time Buyers <sup>b</sup>	
		East Bay	San Francisco	East Bay	San Francisco
No. of users	669	224	53	336	40
Percentage of prior AC or Muni users					
Bought both passes	60.1	47.3	39.6	69.6	72.5
Bought AC pass only	6.7	8.9	3.8	6.5	2.5
Bought Muni pass only	11.7	13.4	26.5	7.5	17.5
Paid cash for ticket	15.3	23.1	20.8	10.7	7.5
Total	93.8	92.7	90.7	94.3	100.0
Percentage of new riders (all methods) to					
AC	2.3	3.1	9.5	1.2	-
Muni	1.7	2.2	-	1.8	-
Both	1.9	1.8	-	2.7	-
Total	5.9	7.1	9.5	5.7	-
Total percentage of prior and new riders	99.7	99.8	100.2	100.0	100.0

<sup>a</sup>October 1981.  
<sup>b</sup>September and October 1981.

closer to that of the Muni pass user than to the AC transbay pass user, but the proportion of females and minorities is higher for joint pass buyers than for either separate system pass. The basic demographics are compared in Table 3.

In the 1980 survey of AC transbay pass buyers, only 4.7 percent were San Francisco residents. The persons buying the joint pass the first month included 10.6 percent San Francisco residents, and in the second month 19.1 percent, for an average of 14.4 percent. This suggests a reverse-commute market that had not been expected.

The immediate attraction of saving \$2 on the new pass may partly account for the high proportion of users from the lowest income category. It is also possible that the \$1 survey incentive biased response toward lower-income persons, but this bias did not occur in the 1980 survey of separate pass buyers. Recall that the minimum price for the joint pass was \$50; the 2 to 4 percent discount would not be expected to change response patterns.

It was expected that joint pass buyers would closely mirror AC transbay pass buyers because the data in Table 3 indicate that two-thirds of the joint pass buyers had bought the AC transbay pass before. It may be true, however, that those AC transbay pass users who do not need to use Muni to get to work have higher incomes than those who find the joint pass attractive. The explanation for this could be in the differentiation of the downtown San Francisco districts. The area closest to the Trans-

bay Terminal is the financial district, home of many corporate headquarters and banks, law offices, and brokerage firms. Because this area is a fairly easy walk from the AC terminal, the workers in this district may not find the joint pass attractive. Farther west (up) along Market Street is the Union Square hotel and shopping area. For persons working in that district, which is beyond easy walking distance from the Transbay Terminal, the joint pass would be useful. Still farther west is the Civic Center area in which state and federal office buildings are located. It is plausible that the incomes of retail clerks, hotel personnel, and civil servants are lower than those for financial district workers. This explanation is purely speculative, because income and occupation data are not available in sufficient detail to allow a quantitative analysis, but it may account for the apparent attractiveness of the joint pass to lower-income persons.

Travel Patterns

More than 600 respondents (89.3 percent) provided usable data in their weekly trip tables. Pass buyers were asked for their one-way trips on AC and Muni in the full week preceding their purchase of the October joint pass. As indicated by the data in Table 2 for first-time pass buyers, that week may have represented a mix of payment methods. For second-time pass buyers, however, the preceding week is assumed to represent actual use of the new September joint pass. In this interpretation, comparison of first- and second-time joint pass buyers can be used as a rough before-and-after comparison. The comparisons between 1980 and 1981 data by residency are given in Table 4.

Use of AC does not appear to be much different for the regular AC transbay pass user or the new AC-Muni joint pass user; it indicates primarily work commuting connections (10 trips per week for a typical 5-day work week).

In each category, those people who bought the joint pass for the first time in October had fewer trips than those who bought it in both September and October. The greatest difference is seen for Muni trips by San Francisco residents. Additional trips by second-time users may reflect two factors: (a) a realization of expected new tripmaking, and (b) more frequent riders (who benefit most from passes) responding first to the new pass.

Considering the joint use of AC and Muni by buyers of the new pass, the previous conclusion that

Table 3. Demographic comparisons.

Category	1980 AC Transbay Pass Users (%)	1980 Muni Pass Users (%)	1980 AC-Muni Joint Pass Users (%)	General Population <sup>a</sup> : 1980 U.S. Census (%)
Female <sup>b</sup>	58.1	50.5	61.4	51.0
Minority <sup>b</sup>	42.3	45.7	49.8	37.1
Household income <sup>c</sup>				
< \$15,000	29.2	46.3	41.4	38.2
\$15,000-\$24,999	33.5	30.6	31.3	23.7
\$25,000-\$34,999	20.5	12.2	14.6	17.4
> \$35,000	16.8	11.0	12.7	20.7
Residence				
East Bay	94.9	1.1	85.3	72.2
San Francisco	4.7	94.8	14.4	27.8

<sup>a</sup>General population data from the three county BART area.  
<sup>b</sup>Sex and race ethnicity data were derived from tabulations from census data for three counties (Alameda, Contra Costa, and San Francisco). In this tabulation minority includes Hispanics, regardless of their race.  
<sup>c</sup>Income data are for the five-county San Francisco-Oakland standard metropolitan statistical areas (S).

Table 4. Weekly and monthly trips.

	1980 AC Transbay Pass Trips	1980 Muni Pass Trips	1981 AC-Muni Joint Pass Trips	
			First-Time Buyers (before)	Second-Time Buyers (after)
Mean weekly trips				
On AC				
East Bay residents	11.00		10.50	11.31
San Francisco residents	10.41		10.33	11.00
On Muni				
East Bay residents		10.40	10.42	10.96
San Francisco residents		13.53	12.96	14.34
Mean monthly trips <sup>a</sup>				
On AC				
East Bay residents	47.47		45.50	48.99
San Francisco residents	44.88		44.77	47.66
On Muni				
East Bay residents		44.87	45.14	47.47
San Francisco residents		58.56	56.15	62.15

<sup>a</sup>Monthly trips estimated as weekly x 4.333.

the standard 10-trip commuting pattern accounts for most weekly trips is again supported. Dividing total weekly trips on each system into five ranges, centered around multiples of five, illustrates the point. The second range (10 = 8 to 12 trips) represents typical commuting. The third range (15 = 13 to 17 trips) includes two or three additional round trips per week. These two ranges account for 86.3 percent of all respondents.

A similar breakdown of the data according to former pass use suggests that joint pass users will make slightly more trips per week than prior separate system pass users and nonpass users, but that 5 day per week commuting plus one to two additional round trips would be typical.

Turning the same question around to the revenue side, there was a concern that the new pass would give away too many trips. Again treating the first- and second-time buyers as proxies for before and after measurements of response to the joint pass, it was noted that only 0 to 2 trips per week were added.

Looking at the weekly trip distributions for the 1980 separate AC transbay and Muni pass buyers and for the 1981 joint pass buyers, the modal number of trips taken for both groups was 10 on each system. Nevertheless, the 10-trip category accounted for two-thirds of AC transbay pass users and only one-third of Muni pass users. The joint pass distributions tend to be a bit more tightly centered around 10 trips than the separate system pass users, but only the Muni distribution is significantly different (a mean of 13.5 trips versus about 11 trips for the others).

#### Expected New Trips

As an indication of the potential for increased trips in the future, respondents were asked if they expected to use Muni or AC local or transbay service more, less, or about the same as they had before purchasing the new joint pass. Overall, 43.6 percent said that they might make some new trips on one or more of the services (AC local East Bay, AC transbay, or Muni) for a variety of trip purposes. The data indicated that newcomers are most likely to make new trips; i.e., those new to an AC pass are most likely to take more AC trips, those new to a Muni pass are most likely to take new Muni trips, and those who used neither pass are about equally likely to take more local trips (AC or Muni).

#### Reasons for Buying Joint Pass

The formats for both the 1980 and 1981 surveys did not permit a true trade-off question ranking the

various reasons for purchasing the passes. One aggregate proxy for this is the proportion of persons ranking a reason as very important.

The importance of saving money with all the passes remains a dominant reason for purchasing a pass. The price basis for each of the three passes was different, so the individual's calculation of savings must be quite gross--probably expected commute trips as a break-even point. The AC transbay pass was priced at 36 trips (or 18 work commuter trips), the Muni pass at 32 trips (or 16 commuter trips), and the joint pass at the sum of the two passes minus \$2.

The data in Table 5 give the relationship between the importance scores and prior pass use (on the left) and income (on the right). The major difference across prior pass user groups is that those who used neither pass scored all four reasons higher (less important) than those who had used passes, although the score for saves money is not significantly different. Across income groups, the major point is what could have been expected--the lower the income, the more important the reason for saving money. Ability to take unlimited rides was consistently the least important of the reasons ranked, but that should be expected from users of a pass that was specifically targeted toward commuters.

Several respondents wrote in an additional reason for buying the joint pass. They said that they preferred the convenience of carrying only one type of pass for two systems. Some mentioned it in terms of less space taken up in their wallets or purses, whereas others wrote about the advantage of not fumbling around for the right pass to show a bus driver.

#### Sales and Distribution

The survey of joint pass users sought more information on preferences for payment methods and distribution points than was obtained in the 1980 survey. Most respondents ranked the current AC-Muni method as their most preferred--payment by cash or check at the Transbay Terminal. There may have been some response bias introduced by the format, which listed these options first, but it is more likely that a majority of people simply prefer the certainty of method and location that the ticket booth offers.

Currently, AC transbay passes are available at some East Bay supermarkets, and Muni passes are sold in a variety of retail stores and banks throughout San Francisco. There appears to be interest in expanding distribution of the joint pass beyond the terminal, indicated both by the preceding data and by write-in comments that the passes should be

Table 5. Reasons for buying joint pass.

Reason	Prior Pass Use				Household Income			
	Used Both Passes	Used AC Pass Only	Used Muni Pass Only	Used Neither Pass	< \$15,000	\$15,000- \$24,999	\$25,000- \$34,999	> \$35,000
More convenient than using cash								
Mean score <sup>a</sup>	1.14	1.13	1.29	1.32	1.20	1.15	1.27	1.21
Very important <sup>b</sup> (%)	86.5	87.2	75.3	71.7	81.6	86.2	73.6	82.3
Can take unlimited rides								
Mean score <sup>a</sup>	1.37	1.36	1.45	1.52	1.38	1.36	1.49	1.54
Very important <sup>b</sup> (%)	68.4	68.9	62.0	58.4	66.9	67.9	62.1	58.3
Saves money								
Mean score <sup>a</sup>	1.15	1.16	1.08	1.17	1.11	1.12	1.23	1.20
Very important <sup>b</sup> (%)	85.9	84.3	92.9	84.6	89.6	87.9	79.6	80.0
More convenient than paying twice								
Mean score <sup>a</sup>	1.31	1.32	1.41	1.43	1.29	1.36	1.42	1.42
Very important <sup>b</sup> (%)	73.9	76.6	69.1	62.5	76.1	71.3	60.2	65.3

<sup>a</sup>Mean score where 1 = very important, 2 = somewhat important, and 3 = not important at all.  
<sup>b</sup>Percentage of respondents who rated the reason as very important in the survey.

available at specific locations, including banks, grocery stores, and college campuses. Interest is also apparent in credit card payment, which no transit agency currently offers.

Payment methods that elicited little interest were automatic bank account or payroll deductions. Few people were interested in purchasing passes through regular ticket agencies (the ones that handle entertainment events) or through BART station vending equipment. There were clear income-group distinctions among payment preferences. The lower the income, the more cash payment is preferred. Only the highest income group found credit card payment appealing, and no income groups ranked automatic deduction methods highly.

Reasons behind these preferences were not probed, so interpretation is speculative. The lack of low-income user interest in credit card payment, for example, may simply be because they are less likely to have credit cards. Nevertheless, respondents appear to prefer personal transactions to more automated or automatic procedures, and they do not appear to trust the mail to ensure that their high-value pass arrives safely and on time.

Patron Comments

More than 68 percent of respondents took the opportunity to write in open-end comments. A total of 459 respondents offered 611 separate types of comments. A total of 59 percent of the responses were positive, expressing general approval (such as "good idea") or saying how the pass is convenient for them or saves them money. Another 38 percent offered specific suggestions for expanding or improving the joint pass, or complained about some of its features (high price, limited availability). The remaining 3 percent were general complaints about transit service that were unrelated to the joint pass.

SALES TRENDS AND PRICE CHANGES

Examination of the sales trends of the Muni, AC, and joint passes indicate three main points:

1. The relative magnitude of Muni pass sales (which had reached 90,000 to 100,000 per month in 1981 and have leveled off at about 70,000 by the end of 1982) compared with the other passes is in part a function of the Muni pass being well established after nearly 10 years in a dense transit market;

2. The AC transbay pass sales have leveled off at 3,000 to 5,000 per month, with joint pass sales closely tracking that trend at 800 to 1,000 by early 1983; and

3. Muni pass sales are highly cyclical and seasonal, but a key consideration appears to be the apparent sensitivity of all pass sales to the pass multiplier (i.e., the number of cash fares the pass is equivalent to).

It may be that there have been so many changes in fares in recent years affecting persons who use both AC and Muni that informed choices have become harder to make. The data in Table 6 give the seven stages of successive changes in relative AC and Muni cash and pass fares since March 1980. For each change, the possible combined AC and Muni fares are computed, assuming 40 commute trips in a typical month. The savings from using a pass (compared with paying the separate cash or pass fares) are shown for buying both passes or buying the new joint pass. The right-most columns give the break-even point for purchasing the separate passes or the joint pass (the number of equivalent cash fare trips).

The greatest savings (lowest break-even point) occurred by accident. AC raised its cash fares effective July 1, 1980, but delayed raising the pass prices until September to allow enough time to make administrative arrangements with the large supermarket chains that distribute its passes in the East Bay. Consequently, for 2 months (July through August 1980), old (low) pass prices were in effect simultaneously with new (high) cash prices, accounting for the bulge in pass sales in the previous figures when it was expected that a seasonal summer fall-off of sales would occur. The 1982 cash and pass fare increases were accomplished at the same time.

The per-trip savings of the joint pass over buying the separate passes is only \$0.05. Although the decision to limit the discount to \$2 was understandable, the result is that successive fare increases make that less and less of an incentive.

FUTURE DIRECTIONS

The AC-Muni joint monthly pass was the first joint pass to be introduced because

1. There were no technological changes needed in fare collection;
2. The main distribution point was well established; and
3. The total market was relatively small, so that revenue-sharing arrangements and subsidies could be straightforward.

It is quite a different matter for the other components of the joint pass development program. The BART automatic fare gates allow unrivaled col-

Table 6. Fare changes affecting AC-Muni riders.

Date and Change	Fare Per Trip (40 Trips) (\$)				Savings From Pass Use (\$)	Break-Even Point for Purchasing	
	AC Cash plus Muni Cash	AC Cash plus Muni Pass	AC Pass plus Muni Pass	AC-Muni Joint Pass		Separate Passes	Joint Pass
March 1980: AC transbay pass introduced	1.00	1.025	1.025	—	0	41	—
April-June 1980: Muni fare increase	1.25	1.15	1.15	—	0.10	36.8	—
July-August 1980: AC cash fare increase	1.50	1.40	1.15	—	0.25-0.35	30.7	—
September 1980-August 1981: AC pass fare increase	1.50	1.40	1.30	—	0.10-0.20	34.7	—
September 1981-March 1982: AC transbay-Muni joint pass introduced	1.50	1.40	1.30	1.25	0.05-0.25	34.7	33.3
April-June 1982: Muni fare increase	1.60	1.60	1.50	1.45	0.05-0.15	37.5	36.3
July 1982: AC fare increase	1.85	1.85	1.725	1.675	0.05-0.175	37.3	36.2

lection of information on travel patterns and differentiation of fares by distance, but they present an obstacle to a simple, visual verification system such as the sticker-on-a-pass approach. The bulk of local funds to date in this project have been spent on investigating alternatives for modifying the BART fare gates to accommodate joint passes (1).

The first effort in this direction will be a joint Muni-BART pass, good for unlimited travel on either system within San Francisco. Because both agencies have a flat fare within the city, it was agreed that the Muni pass would serve as the joint pass. The BART fare gates will be modified to recognize the Muni pass magnetic code as a valid fare, along with the normal BART tickets. The technical work should be accomplished by February 1983. A revenue-sharing agreement was worked out in mid-1982 to allow reimbursement to BART for revenues Muni would be collecting, in effect, as BART's agent.

The eventual goal of the locally funded program is the development of a common distance-based pass to be used by AC, BART, and Muni. The first major step toward that level of fare integration was taken in January 1982 when the general managers of the three agencies endorsed the principle of a value-based monthly pass fare structure for the eventual multioperator regional pass. Under this approach, a distance-based fare, regardless of operator used, would be the basis for the joint pass price. The pass would be read by the BART automatic fare gates to allow any trip up to a predetermined trip value. For example, a pass marked \$1.25 would allow unlimited BART trips of \$1.25 value or less during the specified month. The dollar value would also be translated into the corresponding number of AC Transit transbay zones. Currently, for instance, \$1.25 is the fare for AC transbay trips from zone 1 to downtown San Francisco.

#### CONCLUSIONS

The first attempt at a joint transit pass has been a limited success. A significant proportion of the expected market responded to the new pass, but sales have not increased. This is likely the result of several factors.

1. The pricing basis: The sum of separate system passes, minus a small discount, forces travelers to estimate whether they will use both systems enough to satisfy the break-even point, which will happen only if both systems are a necessity for commuting. The pass was not designed or priced for those who

predominantly use one system and occasionally want to use the other. A limited market was sought, and that was what was achieved.

2. Marketing: Aside from the initial advertising in conjunction with an overall regional transit promotion, there has been little effort devoted to marketing the joint pass. Signs at the Transbay Terminal and on board some AC transbay buses and Muni vehicles are the only continuing advertising. It is likely, then, that only current AC transbay pass users are aware of the joint pass. The limited marketing effort is a direct result of severe budget constraints that keep agency efforts focused on basic public information activities rather than active promotion of a new pass.

3. Fare changes: The frequent changes in cash and pass fares affecting AC and Muni riders in the past few years may have created confusion among patrons, so that they tend to stay with their familiar methods of payment and travel patterns. A regionally integrated fare structure, complemented by simultaneous and consistent fare changes by transit agencies, could overcome this problem. Separate and uncoordinated fare changes can only make it more difficult for potential patrons to figure out what the fare is for multiagency trips.

The encouraging note is that those who did buy the joint pass indicated a high degree of satisfaction with it. The 1980 survey of separate system pass buyers indicated a strong demand for BART-Muni and AC-BART passes, so the future products of the local program should also be well received. A related effort may also help boost pass sales in general. California laws enacted in 1981 and 1982 provide state income tax incentives to employers and employees for purchasing transit passes. MTC and the regional transit operators are seeking federal funds to develop a program for providing employers with transit information that features the new tax incentives and the multioperator passes.

The first step toward fare integration was a difficult one for all agencies concerned. Some have feared that after all the work, no one would buy the new pass. The generally positive response from the public should reassure the cooperating transit agencies that continuing efforts at fare integration will be welcomed by patrons.

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## Regional Transit Pass for San Diego: A Key to Operating Efficiencies and Rider Convenience

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A regional transit pass was developed by the San Diego Metropolitan Transit Development Board (MTDB) in order to present transit services provided by multiple operators as a single unified system to transit riders. In an effort to reduce the total cost of providing transit service in the metropolitan area, the existence of multiple operators has been supported by MTDB during the past several years. The positive competition from multiple operators can lead to lower unit operating costs for the region. Nevertheless, lack of coordination among the various operators can result in rider confusion and a subsequent loss of ridership. The success of a regional transit pass depends on the coordination of many elements. If such coordination is achieved, the pass can present services provided by multiple operators as a single unified system. The regional transit pass program is described, the key steps toward its development and implementation are identified, and a preliminary assessment of the impacts of the program on operating efficiencies and rider convenience is presented.

Fixed-route transit services in the metropolitan San Diego area are currently provided by six different operators: County Transit System-Suburban, National City Transit, San Diego Transit, San Diego Trolley, South Coast Organization Operating Transit (SCOOT), and Strand Streaker. The main characteristics of these operators are given in Tables 1 (1) and 2 (2).

The San Diego Metropolitan Transit Development Board (MTDB) was created by the California State Legislature in 1975 and was made responsible for short-range (5-year) transportation planning. For its region of jurisdiction, MTDB develops the annual transportation improvement program (1) and administers the transit subsidy funds of the California Transportation Development Act (3). The MTDB region of jurisdiction is shown in Figure 1.

### DESCRIPTION OF REGIONAL TRANSIT PASS PROGRAM

The regional transit pass program began on July 1, 1981, with the introduction of the monthly Ready Pass (see Figure 2). A red Ready Pass entitles the bearer to unlimited travel for an entire calendar month on all six of the fixed-route public transit

services in the metropolitan San Diego area for \$31.00. A blue Ready Pass entitles the qualified elderly or disabled bearer to the same services for \$15.50.

Ready Passes are sold at more than 150 locations throughout the metropolitan area. Pass outlets are maintained by both MTDB and San Diego Transit, the largest transit operator in the region. All pass revenues are remitted to a single fund with two accounts (one for red Ready Pass revenues and one for blue Ready Pass revenues). The revenues are then distributed among the participating operators according to distribution instructions from the San Diego Association of Governments (SANDAG), the metropolitan planning organization for San Diego County. The operators in the region agreed that the distribution of revenues should be based on (a) actual pass use counts on fixed-route bus systems and (b) estimated pass use on the San Diego Trolley derived from sample surveys.

The administrative responsibilities and revenue distribution provisions are contained in the Regional Ready Pass Agreement as executed by MTDB, SANDAG, and the fixed-route operators (4).

### KEY STEPS TOWARD DEVELOPMENT

The key steps toward development of a regional transit pass were integrating services, getting a consensus, and keeping everyone involved.

#### Integrating Services

The first step toward the development of a regional pass was to ensure that several basic service elements were integrated among the various transit systems. Coordinated transfer time points and a uniform fare structure had to be established. These and other service elements, including regional tran-