

AC-BART Joint Ticket: Next Step Toward Fare Integration in San Francisco Bay Area

JOEL MARKOWITZ

A project has been underway since 1980 to improve the integration of fares among the three largest public transit operators in the San Francisco Bay Area: the San Francisco Bay Area Rapid Transit District (BART), the Alameda-Contra Costa Transit District (AC), and the San Francisco Municipal Railway (Muni). AC-Muni and BART-Muni joint passes were introduced in 1981 and 1983, respectively. A new joint fare instrument for AC and BART was introduced in February 1987. For the first time, BART riders using a specially marked, high-value stored-fare ticket will be able to use that ticket as a flash pass for boarding local AC buses. They will no longer need to stop at a transfer-issuing machine or carry exact change for the bus transfer payment. The added convenience and discounted fare were designed to be attractive to the regular riders and to induce them to purchase higher-valued BART tickets. It remains to be seen whether the new instrument will either attract new BART riders or cause current BART riders to shift mode of access. Beyond the immediate goal of providing another two-agency fare instrument, the project will examine new ways to expand the use of stored-value tickets, including on-board bus equipment.

The progress of a long-standing project to improve interagency fare coordination among the public transportation providers in the metropolitan area is updated in this paper. The new interagency instrument described could represent a significant step forward toward a universal stored-value card. Although the market response to the new instrument will not be known for some months, the manner in which implementation issues of design, market definition, pricing, and distribution have been addressed by the project may be useful in other complex metropolitan settings.

The San Francisco Bay Area is served by a large number of independent public transit agencies. In the central metropolitan area, the three largest operators in the region serve overlapping areas. The Bay Area Rapid Transit District (BART), the Alameda-Contra Costa Transit District (AC), and the San Francisco Municipal Railway (Muni) serve three counties that had a combined January 1987 population of approximately 3 million.

To facilitate interagency travel for the patrons in the three counties, the Multioperator Pass and Transfer Project was begun in 1980 as a joint effort of the three operators and the Metropolitan Transportation Commission (MTC). The MTC was created by state law in 1970 to be the regional transportation planning agency for the nine-county San Francisco Bay Area. The agency is charged, among other things, with promoting coordination among the region's transit agencies.

The prior stages of this project have been reported before. A three-volume report sponsored by UMTA was completed in 1981 (1-3). Dittmar (4) described the single-system pass users in 1982. The first tangible product of the project was a joint pass enabling transbay AC Transit riders to use connecting Muni services in San Francisco (5), described in 1983. These documents (1-5) presented the institutional background for the project, which has continued to be focused on multiagency institutional coordination as much as on technical issues.

BART operates rail rapid transit service within three counties (Alameda, Contra Costa, and San Francisco), with 71 mi of track, 34 stations, and 440 rail cars. Ticketing and fare collection are accomplished with magnetically encoded stored-value fare cards. BART carries about 200,000 one-way trips each weekday. AC operates local bus service in the urbanized strip along the east side of San Francisco Bay and from that area across the San Francisco-Oakland Bay Bridge to a terminal in downtown San Francisco. AC has 850 vehicles and carries about 250,000 trips each weekday. Muni operates diesel and trolley buses, light-rail vehicles (Muni Metro), and cable cars within the city and county of San Francisco. Muni's fleet of over 1,000 vehicles makes over 800,000 trips each weekday. The map in Figure 1 shows the area served by BART, AC, and Muni.

Since 1974, Muni and AC have had separate but similar arrangements for transfers to and from BART. In the 20 East Bay BART stations served by AC, exiting patrons may obtain a paper transfer at no charge from a transfer-issuing machine, similar to those used in Washington, D.C. The two-part transfer is then good for a discounted cash fare on a connecting AC bus away from and back to the station. As of the July 1986 AC fare change, AC riders presenting the BART transfer pay 50¢ during peak periods and 30¢ otherwise, instead of the normal 75¢ base local bus fare.

In San Francisco, patrons deposit one full Muni fare in a transfer-issuing machine and receive a two-part transfer that is honored as full payment on trips away from and back to the station. In January 1986, the Muni base fare, and thus the price of the two-part transfer, went from 60¢ to 75¢.

Since 1974, Muni has maintained the half-fare round-trip discount, but AC has gradually reduced the level of discount with each fare increase. Table 1 presents the recent history of fare changes for AC, BART, and Muni. Only full fares are shown. AC has a flat fare for local service throughout its East Bay service area and three-zone fares for transbay service to San Francisco. Muni has a flat fare for all service within the city but charges a premium cash fare for the cable cars. BART

TABLE 1 AC, BART, AND MUNI FARE STRUCTURES—HISTORICAL COMPARISON

DATE:	AC TRANSIT				S.F. MUNI		BART		
	Base Fare	Local Pass	Transbay Fares	Transbay Passes	Base Fare	Local Pass	Base Fare	Distance Low	Fares: High
Jul 1978	\$0.35		\$0.75 \$1.00 \$1.25		\$0.25	\$11.00 (x44)	\$0.30	\$0.35	\$1.45
Nov 1979		\$15.00 (x43)							
Mar 1980			(x36) \$30.00 \$40.00 \$50.00						
Apr 1980					\$0.50	\$16.00			
Jul 1980	\$0.50	\$18.00 (x36)	\$1.00 \$1.25 \$1.50			(x32)	\$0.50	\$0.55	\$1.75
Oct 1980			(x36) \$36.00 \$45.00 \$54.00						
Sep 1981				AC-MUNI Joint Pass \$50.00 \$59.00 \$68.00					
Apr 1982				\$58.00 \$67.00 \$76.00	\$0.60	\$24.00 (x40)			
Jul 1982	\$0.60	\$24.00 (x40)	\$1.25 \$1.50 \$1.75	\$45.00 \$54.00 \$63.00	\$67.00 \$76.00 \$85.00				
Sep 1982							\$0.60	\$0.70	\$2.15
Apr 1983						BART-MUNI Joint Pass \$24.00			
Oct 1984				\$63.00 \$72.00 \$81.00		\$20.00 (x33)			
Jan 1986				\$66.00 \$75.00 \$84.00	\$0.75	\$23.00 (x31)	\$23.00	\$0.80	\$0.85 \$3.00
Jul 1986	\$0.75	\$30.00 Peak \$24.00 Off-peak	\$1.50 \$1.85 \$2.25	\$54.00 \$67.00 \$81.00 (x36)	\$75.00 \$88.00 \$102.00				

has a distance-based graduated fare. All three services have a variety of discounts for youth, elderly, and handicapped riders. Although all three services adopted similar base cash fares (50¢ in 1980 and 60¢ in 1982), and AC and Muni had identical local pass prices (\$24) from 1982 to 1984, both cash fares and pass prices have since diverged. The differences in pricing philosophy among the three agencies have had a direct impact on the existing and planned interagency fares, as will be further examined in the next section.

THE AC-MUNI AND BART-MUNI JOINT PASSES

The AC-Muni Joint Pass

The AC-Muni joint pass has a limited market, which has changed little since its introduction in September 1981. The joint pass is simply any of the existing three AC transbay zoned monthly passes with a Muni sticker affixed so that Muni vehicle operators can recognize it as a valid fare during the month. This joint pass is not magnetically encoded and thus cannot be directly used on BART or in the faregates of the four downtown stations of Muni's light rail system.

To protect against revenue loss, the AC-Muni pass is priced at the sum of the AC transbay passes and the Muni monthly pass (the fast pass), minus \$2. The original combined prices of \$50 to \$68 have increased with each separate AC and Muni fare change to \$75 to \$102 in 1986 (Table 1). The \$2 discount has been kept constant and now apparently provides little purchase incentive for such high-priced instruments. The AC-Muni joint sticker sales reached a peak of 1,300 in 1981, and have steadily fallen off to 550 to 600 in 1986, tracking the decline in overall AC transbay pass sales (Figure 2).

The BART-Muni Fast Pass

The AC-Muni joint pass market was further reduced with the introduction of the second product of the project in April 1983, the BART-Muni fast pass. Figure 3 shows the sales of BART-Muni passes, which replaced the Muni-only monthly pass. For only \$2 more than the AC-Muni pass, an AC transbay rider can buy the BART-Muni pass and get unlimited intra-San Francisco BART rides.

The BART-Muni fast pass allows unlimited travel for a month on all Muni vehicles and on BART within San Francisco. The fast pass is used as a flash pass on all Muni surface vehicles, and the magnetic encoding is recognized by both the Muni Metro light-rail faregates in its subway stations and by the BART faregates in the eight San Francisco stations.

With subsequent BART and Muni fare changes, the BART-Muni fast pass has become a great bargain for intra-San Francisco BART riders, whether or not they ever use Muni. As Figure 4 shows, the number of monthly intra-San Francisco BART trips using the joint pass surpassed those using the regular BART ticket in late 1984 and now constitutes 70 percent of those trips.

The switch from regular BART tickets (and the AC-Muni sticker) to the BART-Muni fast pass was encouraged in October 1984, when Muni reduced the fast pass price from \$24 to \$20. The windfall to riders was the result of a political decision to return a temporary city surplus to the voters and taxpayers in the form of reductions in fees. The price reduction remained in effect until January 1986, when a general Muni fare increase brought the BART-Muni fast pass price to \$23, still lower than the price before October 1984. Because BART increased its base fare at the same time to a higher level than Muni's (80¢ versus 75¢), the resulting multiplier (break-even point) made

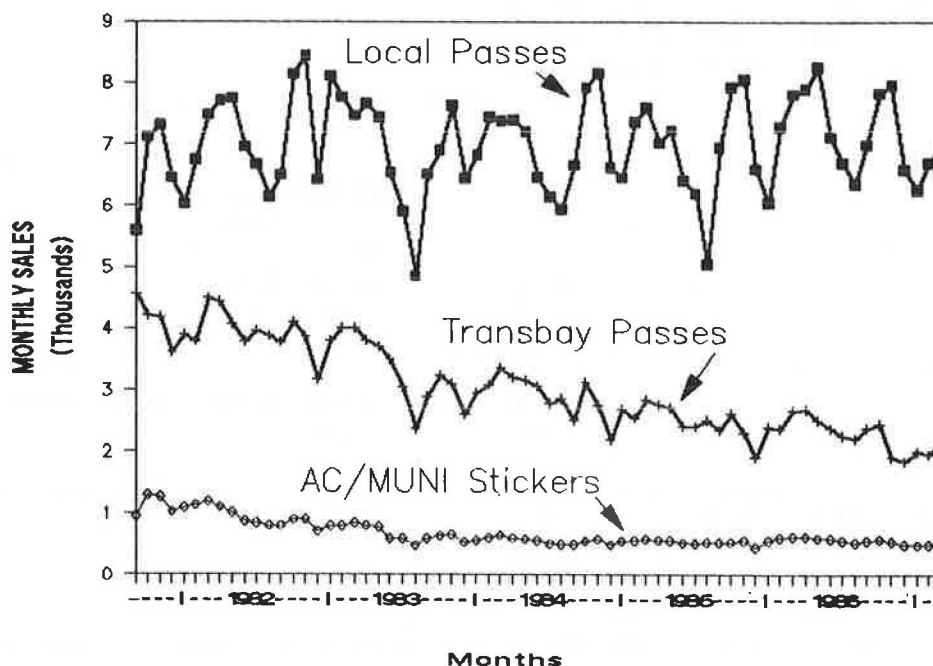


FIGURE 2 AC monthly pass sales—Sept. 1981 to March 1987.

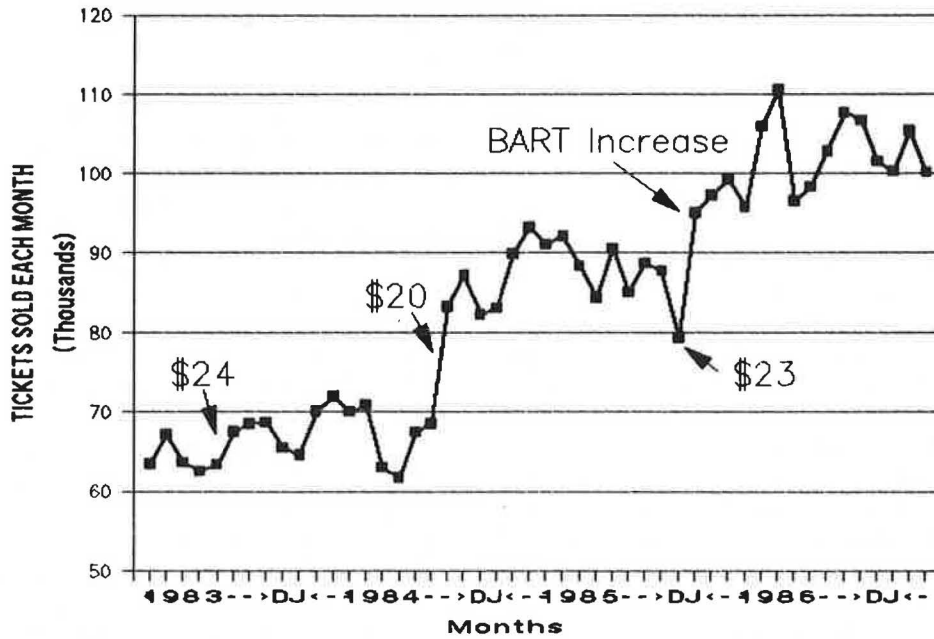


FIGURE 3 BART-Muni fast pass—April 1983 to March 1987.

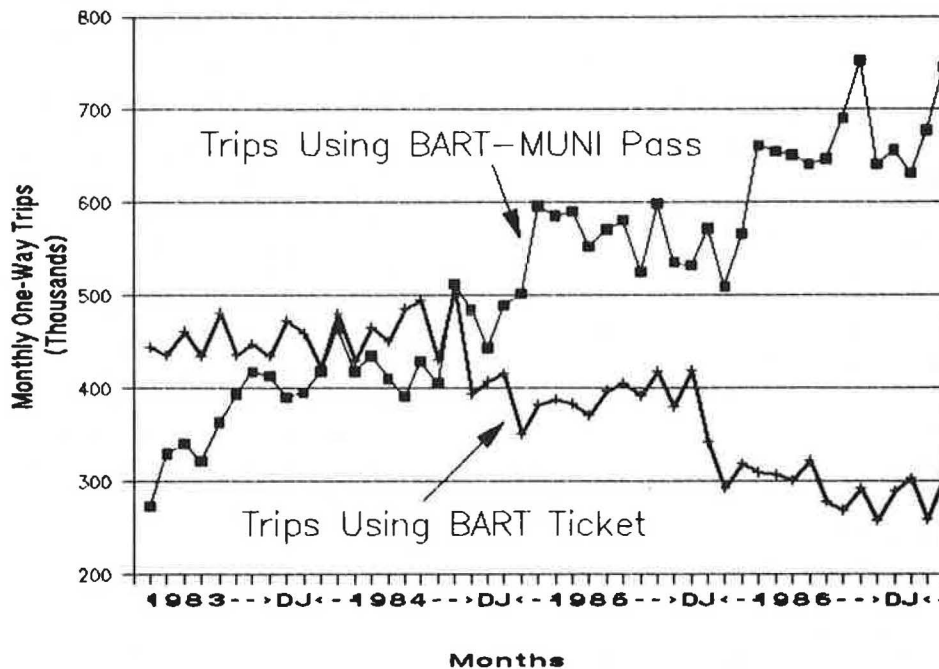


FIGURE 4 Intra-San Francisco BART trips—April 1983 to March 1987.

the fast pass even more attractive to San Francisco BART users.

THE AC-BART JOINT TICKET

Changes in Direction

The AC-BART joint ticket represents a substantial departure from the direction set earlier in the project. In 1982 a tentative decision was made to work toward a joint pass that would be honored by all three agencies. The concept was known as the value-based pass. It would have allowed unlimited rides on any

of the systems during a given time period on the basis of the maximum single-trip value printed on the pass. A rider would have bought a pass based on the typical commute trip value and then would have been able to use the pass for any other trip of equal or lesser value on any of the three systems.

It eventually became clear that none of the operators were particularly enthusiastic about pursuing the value-based pass. There were two principal criticisms. First, it would have required a higher level of cooperation in the setting of fares than the operators had ever achieved. Each agency is governed by independent elected boards and views its mission and

constituency differently. The coordinated action to simultaneously adopt a common fare structure was perceived by operator staff and management as an insurmountable obstacle. Second, agency staff believed that an unlimited-ride fare instrument would necessarily lead to uncontrollable revenue losses. With the value-based pass rejected, the project came to a standstill.

To help break the logjam, the MTC retained J. W. Leas & Associates as its consultant in early 1985 to critically examine the project and develop other fare integration alternatives. Although the earlier proposal had been to take the bus operators' existing method (unlimited ride passes) and adapt BART to accept it, the new approach was the reverse—to take BART's stored-value limited-ride instrument for use on the buses. The first step in that direction would be to use a modified, time-limited BART ticket as a bus flash pass. This hybrid could eventually be superseded or supplemented by a system of bus-borne magnetic card equipment that would, like BART faregates, subtract value for each ride taken.

The following sections describe the planning and implementation for the AC-BART joint ticket and directions for future work.

Design Features and Limitations

The joint ticket (AC/BART Plus) is aimed primarily at the regular BART commuter who uses AC buses on one or both ends of the BART trip. The Washington Metropolitan Area Transit Authority (WMATA), whose Metrorail system uses a similar automatic fare collection system, also offers a bus-rail 2-week combination pass. That instrument, however, is aimed at the frequent bus rider only. The small rail value (\$5 to \$6) is included as a bonus to the bus rider and is only sufficient for a few rail trips.

Initially, the joint ticket was to be issued for a semimonthly period, with a monthly version a possible future option as the market dictates. The choice of semimonthly period was based on several considerations:

1. Only a limited number of lines are available to print remaining value on the ticket as it is used; a shorter time period means fewer printing problems.
2. With little local experience with high-value fare instruments, a shorter time period will keep down the price and may overcome initial hesitancy to purchase.
3. Semimonthly is preferred to biweekly to better coincide with the existing monthly bus pass.
4. Semimonthly tickets may be the preferred choice for those who cannot easily predict their trip-making needs or for periods of holidays or vacations.

During the stated period, the rider will use up the BART value printed on the ticket, much like existing BART tickets. Because of initial distribution limitations (to be described further), only eight preencoded joint ticket values will be available. If patrons use up the BART value before the end of the period, they would have to buy additional regular BART tickets to carry them through to the end of the period. At present, the add-fare machines cannot supplement the value of the new joint tickets. An added feature of the joint ticket is the last-trip bonus—a final BART trip of any value can be taken even if

only 5 cents of BART value remains on the joint ticket. If value remains beyond the end of the period, it would expire, as does the bus pass.

The principal features being tested in this demonstration are therefore as follows: (a) market interest in high-valued interoperator tickets, (b) acceptance of a semimonthly period, and (c) response to a time-limited BART value. Incentives for purchase include (a) convenience of a single ticket in place of transfers and exact bus fare for each access trip; (b) discounts on both the BART and bus fares (see pricing, to be discussed subsequently); (c) unlimited local AC bus rides during the period; and (d) the last-trip bonus.

In addition to the advantages to riders, increased use of high-valued prepaid fare instruments could have the following operational advantages to BART: (a) reduced cost of ticket stock, (b) reduced wear and tear on vending equipment, and (c) improved cash flow. Because these effects are difficult to isolate, they were not identified as key objectives of the joint ticket. In 1984, however, WMATA reported that 30 percent of its riders bought three or more farecards each week and 68 percent bought farecards of \$5 value or less (6).

As with WMATA, BART sells relatively few high-valued tickets, although comparable survey data are not available. Until 1986, BART sold \$10 and \$21 (sold for \$20) tickets through its office, banks, retail outlets, and employers. The \$10 ticket has been phased out and a new \$32 (sold for \$30) ticket was introduced with the last fare increase. Figure 5 shows the pattern of sales of BART's discounted high-valued tickets, which cannot be vended in stations. The dominance in sales of the \$32 over the \$21 ticket indicates that some BART riders are willing to buy the maximum available value. This is a positive indication for potential high-valued joint ticket sales.

The AC-BART joint ticket thus is breaking new ground relative to previous joint fare arrangements in the Bay Area and elsewhere. The first 6 to 12 months of sales will be used as a critical demonstration of the market for high-valued, time-limited interoperator fare instruments. The pricing levels, distribution methods, and other features (to be described) may have to be substantially modified on the basis of the initial market response.

Defining the Market

The market for this instrument is focused on the regular BART rider. BART ridership is predominantly working and work-related commuters, 73 percent according to the latest BART survey (7). Further, 60 to 70 percent ride BART 4 days per week or more. The overall trend in BART ridership was up from 1980 through 1985 but began to fall off sharply in late 1985 (Figure 6). This drop may have been connected with the sharp drop in gasoline prices in early 1986, exacerbated by the 30 percent BART fare increase in January 1986. Still, BART has maintained its market share in the transbay commute corridor at about 38 percent of peak-period, peak-direction person-trips since 1983.

A special survey of BART riders was conducted in June 1984 to explore interest in joint passes and tickets, although the specific fare instruments described to respondents were somewhat different from the one developed for the AC-BART joint

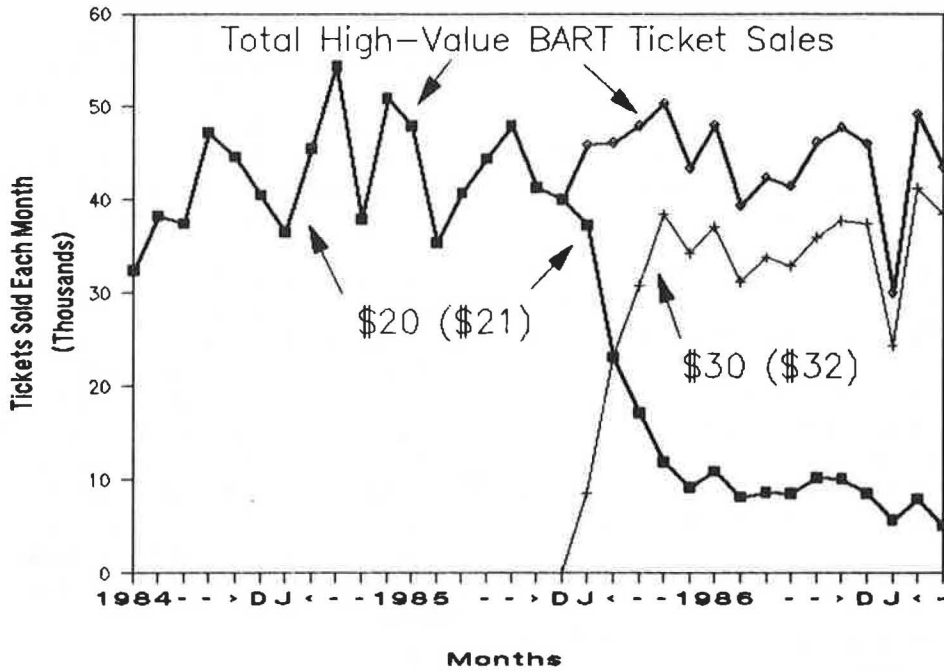


FIGURE 5 BART ticket sales—July 1984 to March 1987.

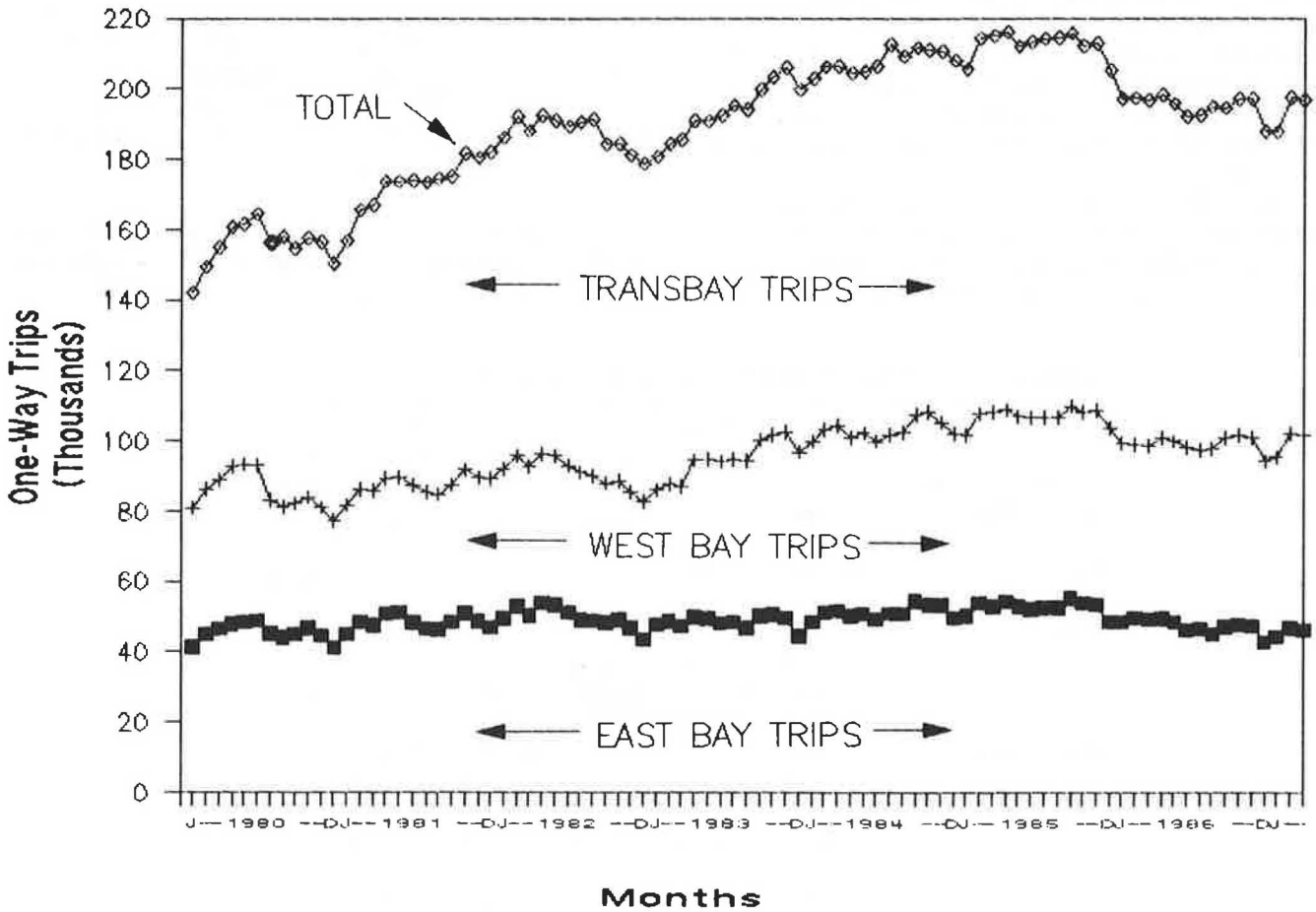


FIGURE 6 Average daily BART patronage—Jan. 1980 to March 1987.

ticket. The study found that 70 percent of all BART riders were interested in such joint tickets. However, only the minority of BART riders who actually used bus access to BART might be truly interested, and only 50 to 80 percent of these might eventually purchase the new instrument (8). This resulted in an initial market estimate of 7,000 to 10,000 persons.

Table 2 shows another way that a market estimate can be derived from approximate aggregate BART markets as of September 1986. BART's market areas are defined as follows:

East Bay CBDs: Central Oakland and Berkeley;
 Rest of AC Area: Remainder of the AC service area outside the East Bay CBDs, from Richmond in the north to Fremont in the south;
 CCCTA Area: Service area of the Central Contra Costa Transit Authority, serving the suburbs east of the Berkeley Hills, including the five BART stations, Orinda to Concord;
 San Francisco CBD: Four downtown BART stations serving the financial, shopping, and theater districts and the civic center;
 Rest of San Francisco: Four BART stations in residential areas southwest of downtown; and
 Daly City: The Daly City BART station, outside of the BART District in San Mateo County.

The submarket interchanges shown in Table 2 can be summarized by whether either trip end is in the AC service area. Nearly 60 percent of BART trips have one or both trip ends in the AC service area (first two columns of Table 2), including 96 percent of all East Bay trips and 73 percent of all transbay trips. Taking these 112,600 trips as the maximum market, some adjustments can be made to derive a coarse estimate of the joint pass market.

First, divide the number of trips by two, assuming that the one-way trips are symmetrical. Second, of the 56,300 individuals, only 60 to 70 percent are regular enough riders to warrant their considering buying a high-value joint ticket. Third, of

these 40,000 persons, only about 20 percent currently use buses on one or both ends of their BART trips. This leaves 8,000 buyers in the primary market. Finally, a smaller number make trips with at least one end in the AC service area and one end at a downtown BART station. The final market is thus 6,000 to 8,000 current BART commuters who use AC Transit, not counting any new BART riders or current riders who switch to bus access. Because this range is about the same as that in the 1984 survey, it will be assumed sufficient for a planning estimate.

Although the immediate market for the demonstration is probably quite narrow, the market potential is much greater. Table 2 shows that 45 percent (86,900 out of 193,800) of all BART riders make trips with at least one trip end in the AC service area and one end in one of the principal downtowns. With BART's parking lots full early in the commute period, the joint ticket may present an opportunity to attract new patrons using transit access. As BART proceeds with its capacity expansion program (more trains, closer headways), the parking access constraints may encourage new patrons to seek transit access, and the joint ticket could become a deciding factor in their choice.

Pricing

BART fares from all East Bay stations to the three downtowns ranged from 80¢ to \$2.80. Distribution limitations required reducing the 28 fare values to a manageable number.

Eight values of \$5 BART increments were found to adequately cover typical commuting. The pricing in Table 3 was based on the following guidelines:

1. The BART value in \$5 increments is given the same discount as the current \$32 value BART ticket sold for \$30, that is, a 6.25 percent discount.

TABLE 2 BART TRAVEL PATTERNS—DAY, ONE-WAY TRIPS¹

	East Bay CBD's	Rest of AC Area	CCCTA Area	S.F. CBD	Rest of S.F.	Total
East Bay CBD's	1,600 0.8%					1,600
Rest of AC Area	17,700 9.1%	16,000 8.3%				33,700
CCCTA Area	4,500 2.3%	4,200 2.2%	2,000 1.0%			10,700
S.F. CBD	14,200 7.3%	45,600 23.5%	22,800 11.8%	6,300 3.3%		88,900
Rest of S.F.	2,200 1.1%	4,000 2.1%	1,200 0.6%	33,300 17.2%	3,500 1.8%	44,200
Daly City	1,100 0.6%	1,500 0.8%	700 0.4%	10,000 5.2%	1,400 0.7%	14,700
Total	41,300	71,300	26,700	49,600	4,900	193,800 100.0%

(1) Approximate number of one-way trips on a typical weekday, Sept. 1986.
 Calculations made by author from raw data provided by BARTD.

TABLE 3 PRICING

BART Stored Value	Discounted BART Price	Ticket Sales Price
\$15	\$14	\$20
20	19	25
25	23	29
30	28	34
35	33	39
40	38	44
45	42	48
50	47	53

2. The AC value is computed at the offpeak BART transfer charge of 30¢.

3. Some 20 commute trips in a semimonthly period are assumed.

4. Total price is rounded to the nearest dollar.

Each joint ticket was thus priced at

(BART value - 6.25 percent) + (20 trips × 30¢ AC transfer)

A table in the marketing literature helps patrons choose the value that best suits their combination of normal one-way fare and expected trip making. Marketing materials also stress the advantages of the discounted AC transfer and the unlimited ride privileges on the local bus service, so that potential buyers would recognize the combined savings on both services.

With a minimum of 9 and maximum of 11 workdays assumed in a semimonthly period, riders would compute their break-even points relative to taking 18 to 22 trips. For example, a person who normally takes a \$1.45 trip would have the choice of buying the \$34 ticket (\$30 in BART value), allowing 10 days of round trips, with one trip left over, or the \$29 ticket (\$25 BART value) that allows only 18 trips, requiring purchasing one to four additional BART tickets at the end of the period to take the remaining one to four trips.

One of the important issues for the demonstration and evaluation phase is to determine the purchase and use patterns. Some riders may buy the more expensive tickets, taking into account the added value provided by the last trip bonus and the discount on the BART and bus fares, whereas others may conservatively buy the lowest value, which they are more sure of using up before it expires.

During the introductory period, the loss in AC revenue from pricing the joint ticket at the offpeak transfer rate of 30¢ instead of 50¢ will be partly guaranteed by BART and MTC. The actual revenue experience will be carefully monitored, and the pricing of the AC portion may be modified in the future to meet revenue targets.

Distribution

Because of the more complex magnetic coding for the new joint tickets, they cannot be sold in BART's regular vending

machines. They must therefore be preencoded. Neither can a large number of additional types of tickets be sold through most existing retail outlets, grocery stores, or banks, because of their reluctance to take on the additional administrative burdens. A combination of several options is therefore being established:

1. Over-the-counter sales in four downtown BART stations;
2. Location of three new retail vendor outlets near the downtown stations;
3. Increased use of employer-based sales;
4. Increased use of mail-order sales;
5. Sales in three existing transit agency facilities.

In three downtown San Francisco stations and one downtown Oakland station, special sales booths are being installed. The sales costs per unit will be closely monitored relative to the other sales options during the demonstration. Although in-station sales are expected to be the most effective and convenient way to reach patrons, a high sales volume may be needed to offset the costs of the booths.

A few key retail outlets have been established, but as expected, they are willing to handle only a few of the available ticket values. Selected ticket values specific to the markets they serve will be provided to these outlets. In addition, a community ride-sharing office in downtown Berkeley and the student union at the University of California, Berkeley, campus will sell the joint tickets. Employer-based sales have greatly expanded among the largest downtown employers, although patrons who work for smaller employers could be left out. Mail-order sales can be effective but are often costly to staff. To supplement existing AC and BART mail-order sales, arrangements have been made with a private firm to offer toll-free telephone service and credit card payment, paid for by a user surcharge. Sales in three transit agency facilities will complete the distribution picture.

Each of these options has limitations or implementation problems, but the combination should prove effective in reaching the primary downtown commuter market.

Early Response

The AC-BART Plus joint ticket was introduced in February 1987. By the end of the first 3 months of sales, 700 to 800 tickets were being sold each semimonthly period. Only about 40 percent of those tickets were at the minimum \$20 price, indicating that there is a market for higher-valued instruments (Figure 7). Although there were increases over the first six sales periods (Figure 8), substantial increases in sales will probably not occur until the in-station sales booths are operational.

CONCLUSIONS AND NEXT STEPS

With the introduction of an AC-BART joint ticket, one more piece of the fare integration puzzle is being put into place. There is still the continuing problem caused by independent jurisdictions taking separate fare actions, but that is the political reality in the Bay Area. As joint fare instruments are introduced, however, these agencies will gain more experience

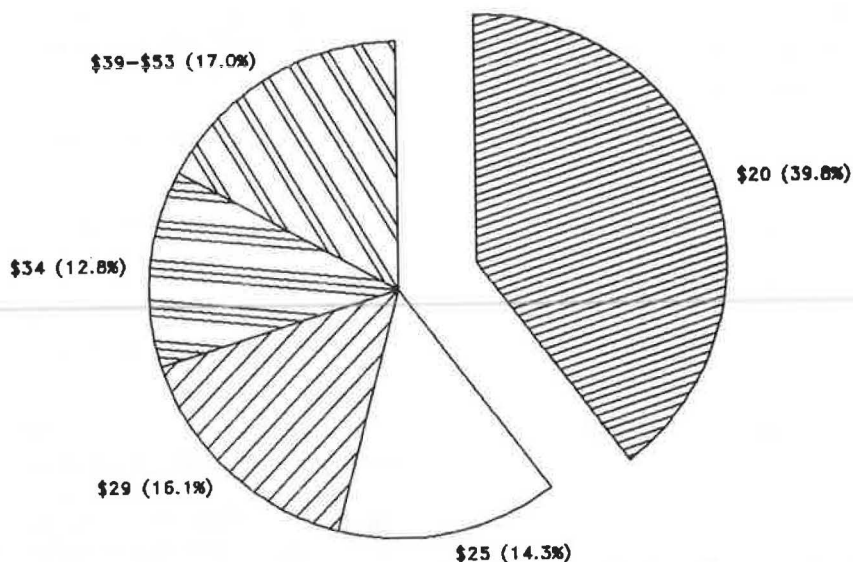


FIGURE 7 AC-BART Plus ticket sales, by value.

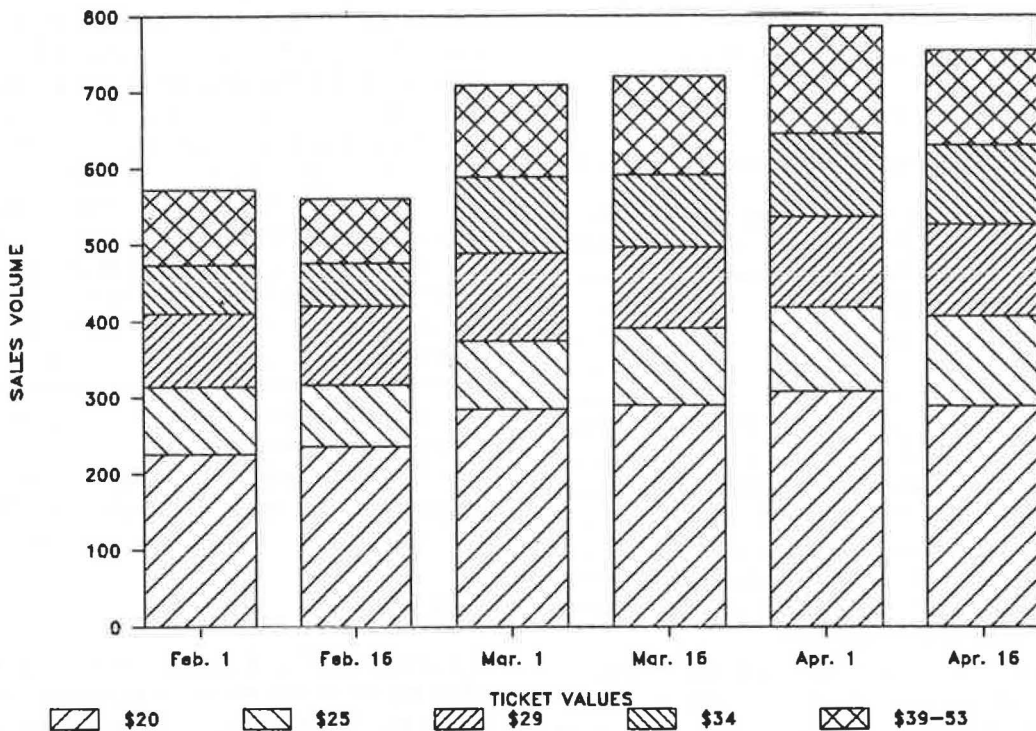


FIGURE 8 AC-BART Plus ticket sales, by sales period.

in working with one another and with the markets for joint fares. The careful evaluation of this demonstration will prove to them whether or not further efforts at fare integration are warranted.

During the introductory period for the new joint ticket, the cost, market, operational procedures, and pricing will be scrutinized, and adjustments will be made as required. By the end of the evaluation, recommendations will be made to the respective policy boards on whether and how to expand or refine the program, including involving other operators in BART's service area and introducing a monthly version.

At the same time, investigations will also continue into two areas of technology development. First, the feasibility of

automatic vending equipment for the new tickets will be explored. Such machines should be capable of accepting credit cards and possibly automatic teller debit cards and then vending a properly encoded and printed ticket. This equipment would essentially solve the ticket distribution problem, as well as allow for a larger number of ticket values. Second, specifications for on-board bus ticket reading and writing equipment will be developed, and experience with such equipment elsewhere will be evaluated. On the basis of these findings, financial and institutional issues for implementing one of the courses of action will be outlined. If both vending equipment and on-board bus equipment are economically sensible and technologically feasible, the stage will be set for a universal

transit debit card that could be vended anywhere and used on any appropriately equipped surface vehicle. Trip-by-trip recording would provide not only detailed travel pattern data for market analysis but also an accurate basis for interagency revenue sharing. If the latter should come to pass, the inter-operator transit user would at last have an integrated fare instrument that would make the color of the vehicle transparent.

ACKNOWLEDGMENTS

Information and views contained in this paper are solely those of the author and do not represent the official views of the MTC or any other agency. The author gratefully acknowledges work by many others on this project, including his MTC colleagues Ann Flemer and Linda Rhine, Wes Leas, and members of the BART and AC staffs. Any errors or inaccuracies in this document, however, are entirely the author's responsibility.

REFERENCES

1. J. Markowitz and H. Dittmar. *Joint Fare Prepayment Demonstration Design Project. Vol 1: Designing and Implementing Multi-Operator Transit Passes in the San Francisco Bay Area*. UMTA, U.S. Department of Transportation, Jan. 1982.
2. J. Markowitz and H. Dittmar. *Joint Fare Prepayment Demonstration Design Project. Vol 2: Describing the Market for Multi-Operator Transit Passes in the San Francisco Bay Area*. UMTA, U.S. Department of Transportation, Jan. 1982.
3. W. Homburger and J. Desveaux. *Joint Fare Prepayment Demonstration Design Project. Vol. 3: Conceptual Plan for Multi-Operator Joint Fare Transit Fares in the San Francisco Bay Area*. UMTA, U.S. Department of Transportation, Sept. 1980/Jan. 1982.
4. H. Dittmar. Profile of Monthly Pass Users in the San Francisco Bay Area. In *Transportation Research Record 877*, TRB, National Research Council, Washington, D.C., 1982, pp. 45-50.
5. J. Markowitz. The AC-Muni Joint Monthly Pass: A Look at the First Step Toward Fare Integration in the San Francisco Bay Area. In *Transportation Research Record 947*, TRB, National Research Council, Washington, D.C., 1983, pp. 34-41.
6. *Attitudes Toward the Automatic Fare Collection System: Patron Study*. Washington Metropolitan Area Transit Authority, Office of Marketing, Washington, D.C., May 1984.
7. Research and Decisions Corp. *BART Passenger Profile Study 1985*. Jan. 1986.
8. Phase III Market Research. *AC/Muni/BART Multioperator Pass and Transfer Project Marketing and Distribution Feasibility Survey*. Jan. 1985.

Publication of this paper sponsored by Committee on Public Transportation Marketing and Fare Policy.