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Golden Gate Vanpool Transportation Project

Final Report
September 1982

UMTA/TSC Project Evaluation Series
Service and Management Demonstrations Program

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16. Abstract

This Summary Report presents the major findings and innovations of the Golden Gate Vanpool Demonstration Project over a three-year period of time. The demonstration was funded by the UMTA Office of Service and Management Demonstrations to test a public transit agency's ability to institutionally create and administer a vanpool program and to test the feasibility of transitioning vanpool groups from project vans into private vanpool arrangements. The demonstration succeeded on both accounts and has been succeeded by the Highway and Transportation District.

The data collected and analysis performed have been condensed into this summary format to facilitate broad dissemination to others involved in or considering promoting ridesharing. The Interim Report (July 1979) covered project operations from July 1977 through June 1978. It provided detailed documentation of early project design issues and an extensive analysis of early marketing activities, costs and vanpool operations.

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PREFACE

This report has been prepared for the Transportation Systems Center (TSC) by Edith Dorosin of Crain & Associates, Inc. Peter FitzGerald provided final editing and analysis of cost effectiveness. Jim Poage, Mark Abkowitz and Jesse Jacobsen have acted as TSC technical monitors on the project. Paul Fish was the contract monitor for the UMTA/SMD sponsoring agency.

The contractor wishes to thank the Golden Gate Vanpool Project staff for their cooperation and many contributions to the data collection process: John Shellenberger as Special Projects Director; Richard Ribner as the Vanpool Project Administrator and then Ridesharing Division Director; Sue Chirani and Dee Lukshin as Pool Coordinators and Fleet Administrators.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
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kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
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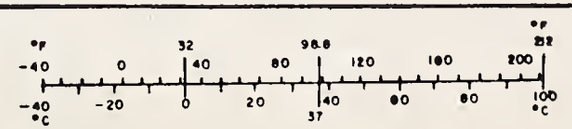

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16. Abstract

The Golden Gate Vanpool Demonstration Project (GGVDP) was an UMTA-sponsored Service & Management demonstration project that began operations in October 1977 and terminated June 30, 1980. The grantee, Golden Gate Bridge Highway & Transportation District, is a toll bridge authority and multimodal public transportation agency in the San Francisco Bay Area, California. It operates buses and ferries, controls a toll bridge, and shares control of a high-occupancy vehicle highway lane that feeds into the bridge and leads to the San Francisco employment area. The project was designed to test the feasibility of a public sector transportation agency promoting the formation of vanpool groups and then transitioning these groups into nonproject vans.

This Summary Report presents the major findings and innovations of the GGVDP over a three-year period of time. The demonstration successfully tested a public transit agency's ability to institutionally create and administer a vanpool program, and to convert the vanpool groups from project vans into private vanpool arrangements. The data collected and analysis performed have been condensed into this summary format to facilitate broad dissemination to others involved in or considering promoting ridesharing. The Interim Report (July 1979, PB 300-685, A14) covered project operations from July 1977 through June 1978. It provides detailed documentation of early project design issues and an extensive analysis of early marketing activities, costs, and vanpool operations.

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1. INTRODUCTION

1.1 PROJECT OVERVIEW

The Golden Gate Vanpool Demonstration Project was an UMTA-funded Service and Management Demonstration project that began operations in October, 1977 and terminated 33 months later, on June 30, 1980. The project grantee, the Golden Gate Bridge Highway and Transportation District (GGBHTD), is a toll bridge authority and multimodal public transportation agency in the San Francisco Bay Area in California. It operates buses and ferries, controls a toll bridge, and shares control of a high-occupancy vehicle (HOV) highway lane that feeds into the bridge and leads to the San Francisco employment area.

The project was designed to test the feasibility of a public-sector transportation agency promoting the formation of vanpool groups and then, after a six-month introductory period, transitioning these groups into nonproject vans. Once these groups were transitioned, new vanpool groups could be formed to use the vacated project vans.

The Golden Gate corridor presented a set of conditions ideal for vanpool formation: a single congested traffic corridor with an exclusive HOV lane leading into a major employment center via a toll bridge. The Bridge District controls the toll booth and actively promotes ridesharing by allowing free bridge passage for three or more person carpools and for vanpools. Disincentives to the private automobile are high; incentives to rideshare exist, and the long distance commute market favorable to vanpooling is strong and growing each year.

1.2 TRANSPORTATION CHARACTERISTICS

Transportation resources in the region include buses, club buses, ferries, carpool matching services, and vanpool services. The Bridge District operates or sponsors all of the foregoing modes with the exception of carpool matching services. RIDES for Bay Area Commuters, Inc. offers carpool matching services and functions as a third-party vanpool operator with a leased van option.

U.S. Highway 101 is the major traffic corridor for intra-county commute trips and for trips south across the bridge into San Francisco. Figure 1-1 provides a map of this corridor.

The southbound, commute-hour capacity of the Golden Gate Bridge, 6,800 vehicles per hour, is exceeded during the 7:15 AM - 8:30 AM period. Approximately 20,500 vehicles travel southbound over the Bridge during the 6:00 AM - 10:00 AM commute period, carrying almost 40,000 commuters.* Table 1-1 presents mode split data based on the GGHTD vehicle count for June 1980.

TABLE 1-1

GOLDEN GATE BRIDGE MODE SPLIT

Commute Mode	Number of Vehicles	Number of Commuters	Percentage of Commuters by Mode
Solo auto	14,903	14,903	38%
2-person carpools	4,009	8,018	20
3 or more person car-pools and vanpools	1,019	5,589	14
Buses	502	11,296	28
Totals	20,433	39,806	100%

*Another 1,700 commuters travel to San Francisco by district-operated ferries across the Bay.

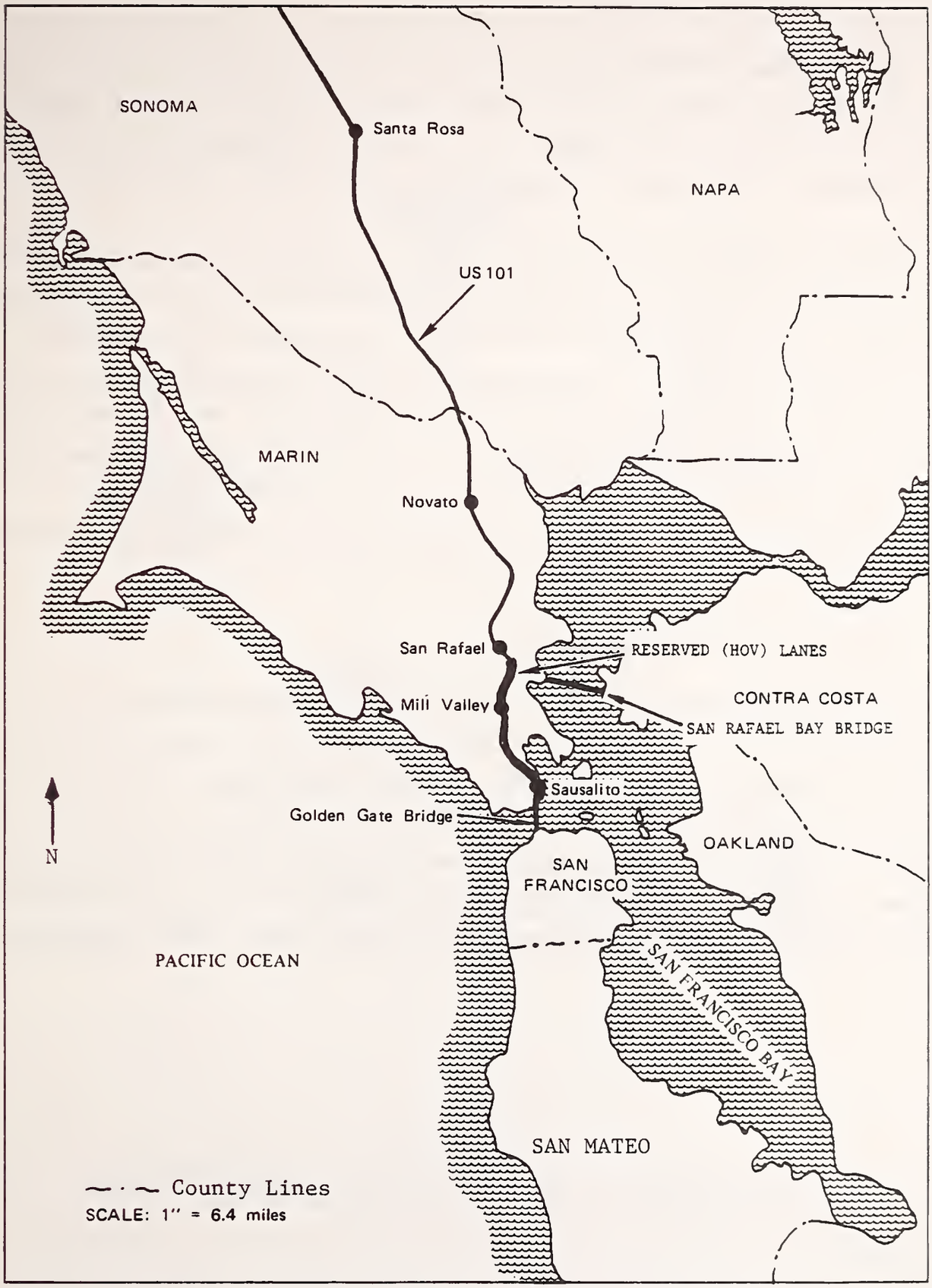

FIGURE 1-1

THE GOLDEN GATE CORRIDOR AND SAN FRANCISCO BAY AREA

1.3 INSTITUTIONAL SETTING

The Bridge District is one of six major public transit operators in the San Francisco Bay Area. It differs from the other operators in that it is also a toll bridge authority and is able to partially subsidize bus and ferry operations with toll revenues.

RIDES, another ridesharing agency, provides matching services and a leased van program option for commuters in the nine Bay Area counties, including those serviced by the Golden Gate Vanpool Demonstration Project. During the project's demonstration period, project staff and RIDES agreed that RIDES would not promote ridesharing in Golden Gate territory. Since acquiring permanent status, the vanpool project and RIDES have negotiated an agreement to jointly market their services to employers in the common counties or service areas.

1.4 ORGANIZATION AND STAFFING

The vanpool project was administered and managed within the Special Projects office of the Bridge District. Prior to the start of vanpool operations, this office was responsible for preparation of district grant applications and for management of the club bus program. The office reported directly to the district's general manager. Figure 1-2 illustrates the organization of the Special Projects Office and the funding source for each staff position.

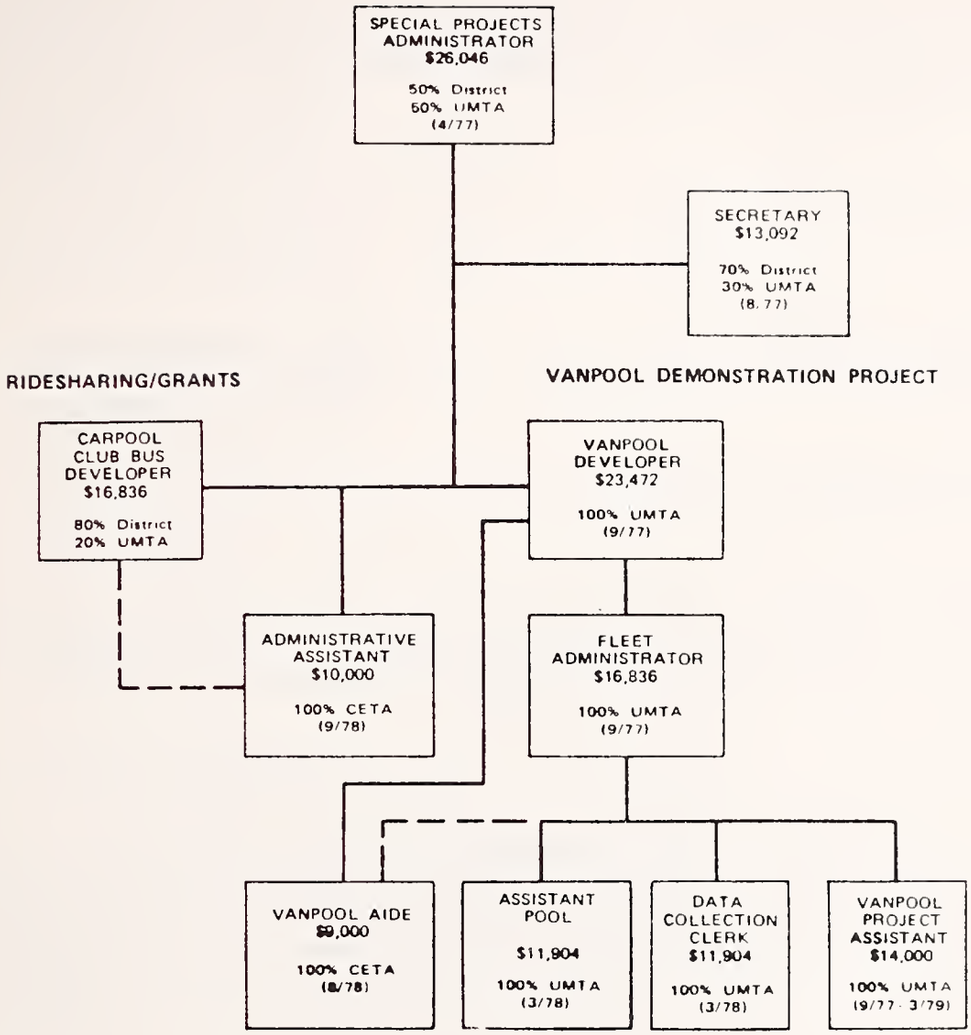

FIGURE 1-2

ORGANIZATION OF THE GOLDEN GATE BRIDGE HIGHWAY AND TRANSPORTATION DISTRICT SPECIAL PROJECTS OFFICE

2. PROJECT PLANNING AND DEVELOPMENT

2.1 PROJECT PLANNING

Project planning took place over a two-year period. The two events most critical to implementation were negotiations of a 13(c) agreement with the local transit union and obtaining affordable insurance coverage.

Project development during the three-year demonstration period can be separated into three stages:

> Developmental period, July 1977-June 1978: 35 vans were delivered in August 1977. The first three vanpools were implemented in October, and by June 1, 1978, 30 vanpools were in operation.
>
> Interim period, July 1978-June 1979: application file computerized; transition program developed and fully implemented.
>
> Mature period, July 1979-June 1980: driver agreement revised, fares raised, application file purge process adopted, permanent program status attained.

2.2 PROJECT POLICIES

As the Golden Gate project matured, program policies were revised to reflect operating experiences. Major policy revisions were in the areas of fares and the driver-coordinator agreement.

2.2.1 Minimum Group and Seat Subsidy

The project maintained a policy of subsidizing two empty seats for a maximum two-month period. During this time the group was obliged to find additional riders to fill the van. If a group were unable to bring ridership to full capacity by the end of the two month period, it was required to either relinquish the van or raise fares to absorb the lost revenue from any vacant seats.

The minimum number of riders, excluding the driver-

coordinator, required to begin a vanpool varied with the size of the van to be used. The minimums as of June 1980 were:

TABLE 2-1
MINIMUM VANPOOL RIDERSHIP

Vehicle Size*	Rider Minimums
11-seat (10 Riders), deluxe Van	8
10-seat (9 Riders), luxury van	7
15-seat (14 Riders), van	12

*Includes driver's seat

2.2.2 Fare Policies

The original vanpool fare schedule was designed to cover both fixed--depreciation, insurance, and van replacement--and variable--gasoline, tires, oil and lubrication, and maintenance--costs. The project was able to maintain the original rates for a two-year period primarily because reserves built into the operation accounts offset the deficits from revenue that began appearing in the eighteenth to twentieth months of operations. In June 1979, the project staff recommended a fare increase sufficient to cover the imbalance between fares and the rising costs of gasoline and other services. This revised schedule became effective September 1, 1979. Given the continuing increases in fuel costs, a second fare increase was implemented on March 1, 1980 to again rectify the imbalance between costs and revenues.

Table 2-2 presents the three separate fare schedules effective during the 33 months of operation.

TABLE 2-2

FARE SCHEDULES

	October 1977		September 1979		March 1980		
Round Trip	Luxury	Deluxe	Luxury	Deluxe	Luxury	Deluxe	15-seat
30 miles	$36	$29	$38	$32	$38	$30	$25
50	41	34	44	38	46	36	30
70	46	39	52	44	55	43	35
100	59	49	65	56	71	56	46

The original fare schedule was based on an 11¢ per mile operating cost. This cost was calculated at 14¢ for the September 1979 fare schedule and at 17.5¢ for the March 1980 fare schedule.

2.2.3 Driver-Related Policies

Vanpool drivers were required to be 25 years of age or older and to have had no more than one at fault accident or citation within the past 3 years--none within the past year.

The driver was responsible for maintaining accurate records, arranging for service, setting routes and pick-up times, and seeing that the van was clean and well maintained. In return, the driver received a free commute, 100 free miles per month for personal use of the van, and up to 400 personal miles at 17.5¢ per mile charge.*

The initial cooperative agreement between the district and driver coordinators and back-up drivers was revised effective September 1, 1979. The revisions were designed to maximize staff resources by simplifying accounting procedures and to rectify policy with actual practices evolved during the first two years of operations. Driver response to these revisions was generally positive. The key original driver responsibilities and changes are summarized below.

*An initial personal mileage charge of 11¢ was increased to 14¢ effective 9/1/79 and to the cuurent 17.5¢ per mile effective 3/1/80.

	Original Policy	Revised Policy
1.	Driver submits cash or personal checks from poolers.	Driver submits a single check or money order.
2.	Driver is reimbursed for expenses and personal mileage.	Driver adjusts for expense and personal mileage prior to submitting payment for monthly van cost.
3.	Driver submits receipts for cleaning van.	Driver receives 100 free miles in return for maintaining a clean van.
4.	No formal policy regarding driver reimbursement for services of back-up drivers.	Drivers required to credit back-up drivers for their services.
5.	Total personal mileage limit 350 miles per month at a per-mile charge.	Total personal mileage limit 500 miles: 100 free (for #3) and 400 at a per-mile charge.
6.	Van is to be operated only by driver and back-up driver, except in emergencies.	Spouse of driver or back-up driver may drive van for personal use.

2.2.4 Driver Training

As a condition of its initial insurance coverage, the vanpool project agreed to a mandatory driver training program based on the National Safety Council's training course. The objective of the course was to educate all drivers to the principles of defensive driving. In March 1980, the insurance company and the project mutually agreed to substitute a road test and individual, at-home review of the defensive driver materials for the formal training requirements. The revised policy was designed to reduce the staff's work load; however, because the policy became effective at the close of the demonstration period, it is not possible to assess it impacts on staff work load or drivers' safety records.

2.2.5 Insurance Coverage

SAFECO Insurance companies provided the project's insurance coverage. The initial coverage and revised coverage for each vanpool were as follows:

TABLE 2-3

INSURANCE COVERAGE

	Initial Coverage 10/77-9/78	Revised Coverage 10/78-
Combined single liability	$1,000,000.00	$1,000,000.00
Medical coverage	2,000.00	5,000.00
Uninsured motorist	15/30,000.00	1,000,000.00*
Deductible comprehensive	50.00	50.00
Deductible collision	250.00	250.00

*Uninsured motorist coverage was increased in recognition of the fact that 25% of all licensed drivers are either uninsured or underinsured.

As of June 30, 1980, after 33 full months of operations, project insurance claims totaled $9,495 for 11 separate claims. The highest single claim was for $1,064. The project's loss ratio as of June 30, 1980 was 11%, an attractive overall statistic from the insurance broker's point of view.

2.3 VANPOOL FLEET

The original project fleet consisted of 18 "deluxe" vans with bench seats for 10 riding passengers and 17 "luxury" vans with reclining seats for 9 riding passengers. All 35 vans were Plymouth Voyagers equipped with air conditioning, automatic transmission, AM radios, power steering and brakes, reading lights, and carpeting.

Later purchases brought the project's total fleet size to 43 vans. Additions included two used 10-passenger vans with reclining seats, four 15-passenger vans with bench seats, and two 8-passenger vans with swivel reclining seats.

2.4 VANPOOL FORMATION

The Golden Gate project started 148 vanpools during the 33 months of operations. Of these, 123 vanpools began in project vans, and 25 were assisted vanpool formations--that is, vanpools that utilized project services but not project vans. Table 2-4 presents the status of the 148 groups at the close of the demonstration:

TABLE 2-4

STATUS OF VANPOOLS STARTED BY PROJECT

Vanpool Status	Number of Vanpools Formed		Percentage of Total Formed	
Operating vanpools	35		24%	
Transitioned vanpools	51	111	34	75%
Assisted vanpools	25		17	
Terminated vanpools	37		25	
	148		100%	

The monthly formation rate for the 33 months was 4.5 vans. The average monthly formation rates for the three stages of project development were 1) developmental-- 3.6, 2) interim--4.25, and 3) mature--5.8 vans per month.

A project vanpool was formed when the minimum number of riders was identified and after the prospective driver-coordinator had been qualified by passing a Department of Motor Vehicles review of the driving record and by meeting requirements established in conjunction with the insurance underwriter. Drivers wishing to operate 15-passenger vans were required to obtain a California Class II operator's licence.

Drivers were responsible for maintaining group size. To facilitate this task, the staff provided each driver with a list of riders along with promotional materials; additional names were forwarded to the driver periodically as potential substitutes for riders who terminated their participation. The direct communication and coordination with riders was the responsibility of the driver-coordinator.

2.5 APPLICANT FILE

The project's applicant file was manually maintained for the first 14 months of operations. The file was computerized and the first printouts were available for applicant placement in February 1979, the seventeenth month of operations. At that time, there were 1,768 names in the file.

By the official close of the Golden Gate Vanpool Demonstration Project on June 30, 1980, the project had received 3,926 applications for vanpool service. Table 2-5 shows the status of this group of applicants. Approximately 35% of project vanpoolers never submitted an application and are not included in this count of applicants.

TABLE 2-5

STATUS OF VANPOOL APPLICANTS

Status	Number of Applicants	Percengate of Applicants
Active applicant[1]	1,237	31.5%
Current project pooler	381	9.7
Transitioned pooler[2]	423	10.8
Dropped out: dropped from pool or purged from file	1,814	46.2
Miscellaneous	71	1.8
	3,926	100.0%

[1] An active applicant is defined as one entering the file in the last six months, but not yet placed.

[2] Transitioned poolers are former project poolers now commuting in a private vanpool arrangement.

As the project matured and the number of applications increased, it became necessary to purge from the file those who were no longer interested in vanpooling. Complaints from driver-coordinators indicated that many applicants whose names were given to them had changed their commute patterns, joined another ridersharing mode, or were no longer interested in vanpooling.

The first trial (phone) purge of 285 applicants commuting in prime O&Ds produced the best results in terms of numbers of applicants still interested (40%). However, this purge required 40 hours of staff time. The second trial (mailback) purge of one third of the applicant file, names that were 16-26 months old, gave the poorest results (only 12% still interested). This purge cost $250-300. The third trial (mailback) purge of 175 applicants--about one half of the names were 1 to 2 months old--resulted in 26% still interested.

In March 1980, following these three trial purge attempts, the project initiated a monthly purge of all applicants submitted in the corresponding month of the previous year as its regular file purge policy. The purge consisted of a tear-off, mail-back flyer mailing to all applicants soliciting updated information on their commute patterns. Any applicant who did not respond to the request for information was removed from the file. Staff found that this "hard" monthly purge procedure facilitated the efficient matching requisite for successful vanpool formations.

2.6 MARKETING

2.6.1 Overview

The project's general approach to marketing vanpool services can be characterized by:

1. Heavy reliance on marketing directly to the commuter via handouts at the bridge toll booths.*
2. An emphasis on personalized phone response to requests for general information and for assistance by driver-coordinators.
3. A conscious shift from informational to more thematic marketing.
4. Discarding failures and building on successful activities.
5. Ongoing attention to using marketing activities to balance the demand stimulated and the number of vans available at any given time.

Fireman's Fund (FF), located in San Rafael in Marin County, represented the major employer-sponsored vanpool program implemented as a result of project activities. By June 1980, FF had purchased company vans, negotiated leased vans from RIDES, and supported owner-operated vanpools. At the close of the demonstration, FF employees commuted in 19 of the 86 operating or transitioned vanpools.

---

*Besides the convenience and low cost of using the toll booths, this method also was important due to problems of contacting Golden Gate commuters at their work place. San Francisco employers were typically reluctant to promote vanpool service only for those employees residing in the Golden Gate corridor, and relatively few major employers are located in Sonoma and Marin counties.

2.6.2 Marketing Strategies

The project implemented numerous and varied marketing strategies during its period of operations. These included newspaper advertising campaigns, inserts and box ads to attract poolers for vanpools forming or needing additional riders; paid radio advertisements; toll booth handouts; and distribution to all vanpoolers of The Vanguard, a vanpool newsletter produced by project staff. The newsletter was an attractive publication that was discontinued for lack of staff time, not vanpooler interest. Marketing activities also included presentations to various civic groups and public agencies as well as to interested employers in San Francisco, Marin and Sonoma counties.

Vanpoolers reported throughout the life of the project that the most influential source of information about the project was a friend or relative. The extent to which these "friends and relatives" were influenced by the various marketing strategies is not known.

The most cost-effective marketing strategy in terms of the number of applications submitted was the toll booth handout. Over a three-day period on six separate occasions brochures were distributed to morning commuters at the toll plazas as they traveled into San Francisco via the Bridge (see Table 2-6).

TABLE 2-6

BROCHURE HANDOUTS AT TOLL BOOTH

Date Distributed	Number Distributed	Applications Returned	
		Number	Percent of Total
January 1977	20,100	228	1.0%
June 1978	21,600	108	0.5
October 1978	17,800	201	1.1
March 1979	15,200	142	0.93
October 1979	20,000	129	0.53
April 1980	16,500	262	1.6

Some of the project's least successful marketing campaigns, early activities that produced minimal results at a relatively high cost, were a free ride promotion, community meetings, and kiosk displays. The free ride cost $600 and produced two applications; the community meetings incurred costs of $7,000 (mostly for staff time) and resulted in 20 applications; and three kiosks built at a cost of $5,000 accounted for one application.

2.6.3 Source of Vanpoolers

Table 2-7 presents summary data on the three most common sources of applicants and vanpoolers.

TABLE 2-7

SOURCE OF APPLICANTS AND VANPOOLERS

	Toll Booth Brochure	Employer Contact	Call-ins
Applicants on File			
2,320 (June 1979)	20%	8.6%	27%
3,866 (June 1980)	24%	10.0%	34%
Vanpoolers			
745 (June 1980)	4%	19.0%	49%

The toll booth handouts effectively generated fresh batches of names key to monthly vanpool formations; yet, the handouts accounted for only 4% of the applications from those who ultimately became vanpoolers.

The table illustrates that almost 50% of all vanpoolers submitted their applications not in response to a specific marketing activity, but after a phone conversation with a staff member. Although the precise motivation for the call-ins was not formally documented, project staff believed the calls resulted from exposure to various project promotional materials or to viewing project vans on the road. These observations on the primary source of applicants

and vanpoolers suggest at least two hypotheses: (1) The phone call is a final test of motivation to join and is a sign that a commuter is fairly well committed; a submitted application form requires a lesser degree of commitment. (2) A combination of promotional activities, rather than any single activity, is necessary for marketing vanpools.

2.6.4 Lessons Learned

The project's ability to utilize marketing strategies to achieve project objectives came to full maturity in the second year of operation. In retrospect, at the outset project management had only a vague concept of what constituted effective vanpool marketing, but learned a great deal during the first year of operations while working with marketing consultants.

The project's increased ability to identify successful marketing concepts and activities can also be attributed to assigning a staff member to monitor marketing on a continuing basis. By attending closely to failures and successes the project was able to plan future activities based on market response and current needs. The lessons learned are:

1. The mature vanpool project tends to market itself by way of vans on the road, word of mouth, active employer programs, and aggressive driver-coordinators.

2. Personal project staff interaction with drivers and vanpoolers is critical for program success. It takes a pleasant, outgoing personality to attend the phones and patience to make the match.

3. An effective marketing strategy is one that is tailored to staff resources and market characteristics. The vanpool project maximized its local resource, a toll access to a major market, by marketing vanpools directly to commuters.

4. In large metropolitan areas, vanpooling was better understood in 1980 than it was in 1977-78 when the

project began. The project's shift to clever themes--while retaining basic vanpool facts and sample fare scheduling--built upon this change in public awareness. The 1980 marketing objective was to attract the interest of commuters rather than to educate them on the economic benefits of vanpooling.

2.7 MAINTENANCE

Service and maintenance procedures for project vans were established in accordance with the manufacturer's instructions and recommendations. The project rigorously followed a preventive maintenance program adapted from the dealer's manual. The project determined that although preventive maintenance increased the overall costs of fleet administration, this added cost was offset by increased safety and reliability.

Several servicing arrangements prevailed during the early period of operations. Initially, a project staff member drove a back-up van between a driver's home or work place and the service facility, but this proved quite time consuming. Under revised policy, back-up vans were garaged at service centers convenient to a driver's home so that drivers could switch their own vans when servicing was required.

By the end of the second year of operations (December 1979) the incidence of servicing and maintenance had become more frequent, reflecting the accumulated mileage on certain vans. In an attempt to minimize servicing delays, the project staff encouraged drivers to have regular servicing on Saturdays or any other time when a back-up van would not be required. By the end of December 1979, the informal policy of promoting servicing vans on the weekends in local communities allowed the project to reduce the number of back-up vans required.

Initially, three vans were reserved as back-up vehicles for the project's 35-van fleet. Effective June 1980 the project's

policy was to reserve two vans as back-up for an expanded operating fleet of 41 vans. In actuality, there were four vans available for back up because the two eight-passenger vans delivered in February 1980 had not been placed.

The demand for back-up vans decreased over the life of the project. The heavy use of back-up vans in the first nine months was attributed to the need to work out bugs in a new fleet and to the installation of reading lights in all et vans. A greatly reduced requirement for back-up vans in the last ten months of operations was attributed to the weekend maintenance policy.*

As the number of transitioned vanpools increased, the use of back-up vans was extended to any vanpool operating within the project service area--privately owned and operated, privately leased, company sponsored, or RIDES vans. There was no charge to groups operating in project vanpools for back-up vans. However, transitioned groups entered into a temporary lease agreement with the district whereby they were charged $7 per day and 6¢ per mile exclusive of gasoline.

2.8 FLEET ACCIDENT RECORD

Between October 1977 and June 1980 the total number of accidents involving project vans was 19. Two of these occurred during personal rather than commute-related use. Twelve, or 63%, of all accidents were no fault. For the 33 months of operation, the project fleet experienced one commute-related accident for every 1,215 vehicle days or for every 82,600 miles of vanpool operation.

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*The average use of back-up vans was 25 vehicle days per month for the first nine months compared to 10 vehicle days per month for the last nine months of project operations.

3. SERVICE CHARACTERISTICS

3.1 MARKET AREAS

The project provided service to commuters in three market areas:

Market 1 - Transbay commute
Marin or Sonoma County origin
San Francisco destination

Market 2 - Intercounty commute
Marin or Sonoma County origin
Marin, Sonoma, or East Bay destinations

Market 3 - Reverse commute
San Francisco origin
Marin or Sonoma County destination

During the first period of project operations, two thirds of the vans operated in Market 1, one third in Market 2, and none in Market 3. As the vanpool project matured, it experienced a shift in demand for service that was reflected in the percentage of the total fleet operating in each market. Demand gradually decreased in Market 1 and increased in Market 2; service in Market 3, the reverse commute, began in June 1979, 18 months into the project's operating life.

	Number of Vanpools Formed	Percentage Operating in Markets 1	2	3
At 9 months	30	66%	33%	---
At 30 months	137	53%	42%	5%

3.2 VANPOOL SERVICE COMPARED TO TRANSIT SERVICE

In Markets 2 and 3, vanpool service extended well beyond service provided by the district bus service. (Bus service is defined as available only if line-haul service is direct and

no transfers are required.) Transit was available for only 18% of the vanpool routes servicing Market 2; there was no transit service available for commuters in Market 3.

Overall, direct transit service was not available for 44% of 106 project vanpool routes operating at the end of the demonstration period.

3.3 LEVEL OF SERVICE PROVIDED BY PROJECT

The project provided a high level of service in terms of the number of applicants placed. Overall, the project placed 20.4% of all vanpool applicants: 9.7% were in operating project vans and 10.7% were in transitioned vanpools at the close of the demonstration period. Approximately 1,232 persons were vanpooling in project vans or private vans (transition and assisted vanpools) as of June 1980. Of these, 35% or 428 vanpoolers were not included in the vanpool application file (1,232 vanpoolers minus 804 vanpoolers included in the applicant file). These 428 vanpoolers included all poolers in assisted vanpools (25 groups) as well as those who were accepted into an operating vanpool without benefit of a formal application.

The various elements affecting vanpool formation rates are typically interdependent. An example of this interdependence was observed during the fuel crisis that occurred in the spring of 1979: in April, the project formed eight new vanpools and transitioned six additional vanpools into private arrangements, a record high for monthly formations. The ability of the project to provide this high level of service was a function of vehicle supply, the quality of the applicant file, driver supply and sufficient staff time, as described below.

1. Vehicle supply was good. A generally low level of commuter interest in December and January resulted in an operating fleet of 28 vans in March. Thus, there were sufficient vans available for immediate placement with a committed group.

2. The quality of the applicant file was positively impacted by a batch of 400 new names submitted in the five-week period from March 4 through April 7.

The file had been purged in November 1978 and February 1979. Some 30% of the names had been in the file 6 months or less; 47% had been in the file 12 months or less.

3. Driver supply was positively impacted by the heightened motivation of driver candidates, again relating to the increasing cost and decreasing availability of gasoline.

4. Staff time was fully devoted to vanpool formation in direct response to the level of interest stimulated by the 1979 fuel crisis. Staff spent most of March working with potential groups, resulting in the April formation surge.

Another index of the level of service provided is the number of vanpools formed from potential vanpool groups. During 30 months of operations, the project worked with 370 potential vanpool groups, each consisting of a minimum of eight interested commuters, to form 112 vanpools. (These groups included but were not limited to commuters who had submitted applications.) Thus, 30% of potential vanpool groups resulted in operating vanpools. This appears to be a reasonable placement rate for a mature vanpool project. The reader is cautioned about the transferability of this placement rate. The Golden Gate project is not only a mature one, but it provides service to a population of 120,000 commuters, in a well-defined commute corridor with considerable natural clusterings of origins and destinations.

3.4 LEVEL OF SERVICE AS VIEWED BY VANPOOLERS

Vanpoolers rated project vanpool service as safe (93%), and comfortable (80%). Vanpoolers liked the nonsmoking rules (91%) and found their coriders compatible (91%).

Forty percent of the vanpoolers reported that vanpooling was faster than their former commute mode; 22% reported vanpooling was slower.

Vanpooling was ranked as faster than bus or club bus and slower than driving alone. A majority of former carpoolers

reported vanpool travel times about the same as carpooling.

The service provided was reliable and on time. About one half of the riders received door-to-door or near-home pick-up service.

During a three-day period, the average total morning travel time reported in on-board surveys was 62 minutes, and the average time spent in pick-up mode was 20 minutes. Thus, on an average, 32% of the vanpool morning trip time was spent picking up riders.

The variations in morning travel times for a given vanpool reported in on-board surveys were minimal. Of the 27 vanpools, 70% showed variations of less than 5 minutes in total travel time over the three-day survey period.

4. DEMAND

4.1 AN OVERVIEW OF DEMAND

Over the life of the demonstration, the demand for vanpools grew steadily; it fluctuated in response to vehicle supply, the level of staff effort and external events. Demand was characterized by growth in three different market areas, by significant clusterings of origins and destinations, and by vanpool driver stability.

Demand for vanpool service in the Golden Gate corridor was characterized by long trips gradually decreasing from an average of 85 miles for a round trip during the early months of operation to one of 60 miles at the close of the project operations. This shift in average trip distance is partially explained by the proportional shift from Market 1 to Market 2 vanpools. Several factors may be contributing to this shift in type of demand: a shift in project marketing emphasis to include Market 2 as well as Market 1; greater public awareness of vanpooling; and a 53% increase in the cost of gasoline which makes vanpooling a cost-effective alternative for shorter trip distances (in both market areas). It may also suggest that additional ridesharing potential is greater in Market 2 than in Market 1 where bus service is more available and 34% of the commuters are already carpooling or vanpooling.

During the project's 33 months of operations, it formed 148 vanpools for an average monthly formation rate of 4.5 vans. The monthly formation rate for the final 12 months of operation is significantly higher--6.33 vans. The higher formation rate during the mature stage is accounted for by increased vehicle supply, staff/management productivity, stimulation of demand by the spring 1979 energy crisis, and the addition of the "Assisted

Vanpool" component of the program. Figure 4-1 illustrates vanpool formations for each month of project operations.

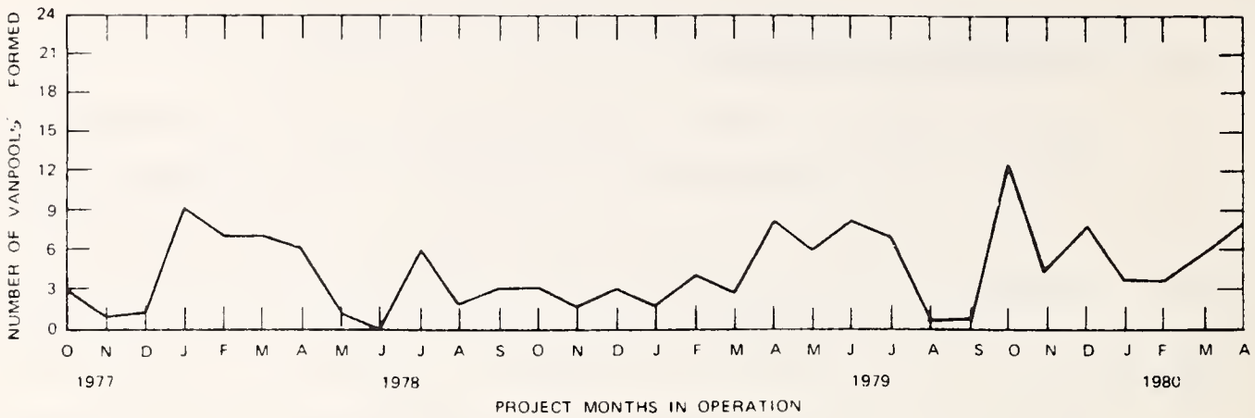

FIGURE 4-1. VANPOOLS FORMED BY MONTH

Figure 4-2 illustrates the number of vanpools operating with project vehicles each month during the 33 months of project operations and provides a visual overview of major fluctuations.

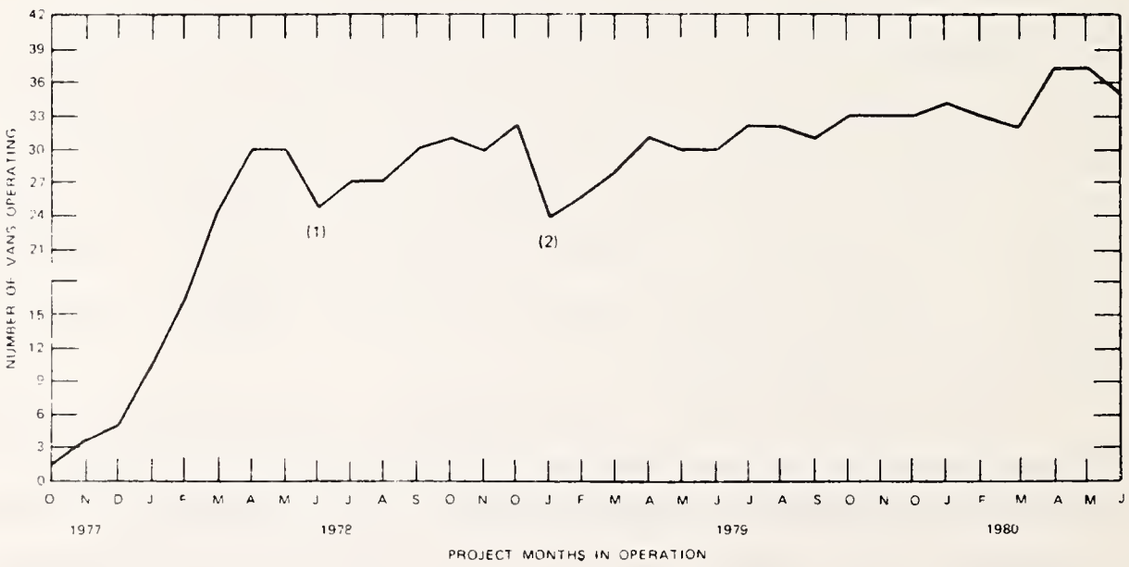

FIGURE 4-2. VANPOOLS OPERATING BY MONTH

Demand was characterized by a steady growth during the first nine months of operations followed by a sharp decline [(1) in Figure 4-2]. This initial decrease in the number of operating vanpools was followed by a gradual increase until the 15th month of operations when a new plateau of 34 operating vans was achieved. A second significant decrease occurred in December 1979 [(2) in Figure 4-2]. It was followed by a second gradual increase to 31 operating vans and then a steady increase to 37 vans in the 31st month of operations.

The factors contributing to declines (1) and (2) were as follows:

1. Five vanpools, 17% of the operating fleet, terminated in June, 1978. Three of the five cancelled when they failed to carry a full load after the allocated two-month grace period. A fourth vanpool serving college teachers disbanded with the close of the school year. There was little marketing during June.

2. Seven vanpools terminated in December 1978-January 1979. Staff attributed this to:

   Holiday season and lower level of interest,

   Out of date applicant file,

   New computer file not yet operating,

   A number of driver-related issues, including two drivers who did not wish to transition, and

   Two groups that unexpectedly switched back to club bus, a prior mode.

4.2 DEMAND DURING THE 1979 ENERGY CRISIS

The energy crisis in the spring of 1979 presented an example of how external events, such as a gas shortage, can have an impact on the level of demand for ridesharing services. To test the hypothesis that a general public concern over fuel availability would stimulate interest in ridesharing options, coverage of the fuel crisis in the largest local newspaper, the San Francisco Chronicle, was documented for a 9-week period, February 4 through April 7. The level of coverage--front page article received greater weight (2 marks) than an inside article (1 mark)--and quantity of articles appearing during a one-week

period were noted and compared to the number of vanpool applications submitted during the same 9-week period.

Figure 4-3 shows a direct correlation between newspaper coverage of the fuel crisis and the number of applications submitted. Each of the two weeks during which there was heavy media coverage of the crisis (February 25 and March 25) was followed by a week in which there was a significant increase in vanpool applications submitted (March 4 and April 1).

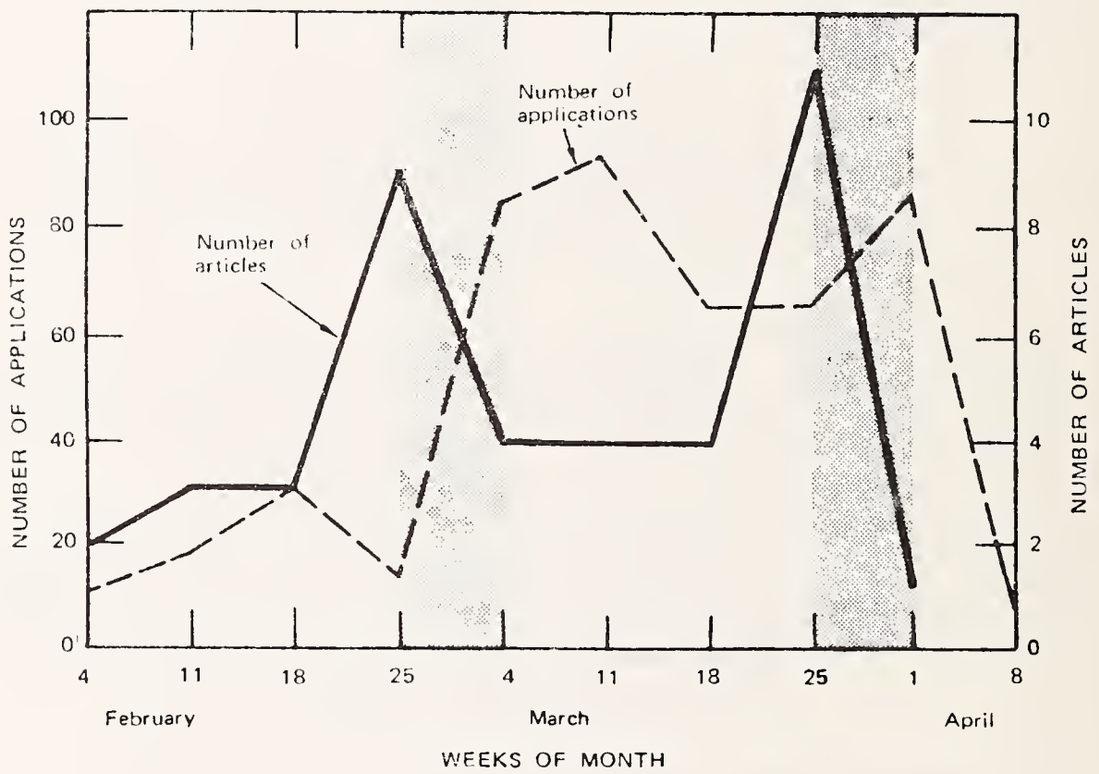

FIGURE 4-3. VANPOOL APPLICATIONS SUBMITTED IN RESPONSE TO THE PRESS COVERAGE OF THE FUEL CRISIS.

During the 3-month period of April through June 1979, the project implemented 22 new vanpools in response to a heightened demand for service related directly to public concern about fuel prices. The project was able to meet this demand because of:

a. 18 months of operating experience.

b. Vehicle availability

c. An active list of applicants resulted from the February file purge and the 400 names submitted in response to a March bridge handout.

4.3 DEMAND BY MARKET AREA

Table 4-1 presents the split in vanpools using project vehicles by market marea at the close of the demonstration and two years earlier; and for all vanpools formed during the demonstration period.

TABLE 4-1. DEMAND BY MARKET AREA

MARKET AREA	VANPOOLS USING PROJECT VEHICLES					
	May 1978		June 1980		FOR ALL VANPOOLS FORMED	
	No. of Vans	% of Fleet	No. of Vans	% of Fleet		
Market 1, Transbay	20	67%	15	43%	78	53%
Market 2, Intercounty	10	33%	16	46%	59	40%
Market 3, Reverse	--	--	4	11%	11	7%
TOTAL	30		35		148	100%

Initially the formation of project vanpools occurred in Markets 1 and 2, on a two to one basis. Vanpool formation, as measured by market area, changed between the early and mature stages of project operations. Initially, it had been expected that Market 1 would account for most vanpools. However, vanpools in Market 1 as a percentage of the operating fleet decreased significantly from 67% to 43%. Demand in Market 3 did not surface until June 1979 and represented a unique condition.

Ten of the eleven vanpools in this market served one employment center, Fireman's Fund in San Rafael.

4.4 DEMAND BY ORIGINS AND DESTINATIONS

The 148 vanpools formed by the Golden Gate Project served varied pairs of origins and destinations. The most common destination, the San Francisco Financial District, accounted for 32% (48 vans) of all project vanpools. The second most common destination was San Rafael, a community of 40,000 in Marin County. One employer, Fireman's Fund, accounted for 40% of the 29 vans in this commute.

For all other San Francisco locales, applicant demand was greater than vanpool service availability. This suggests that persons working in these locales were less well served by project services than those in the Financial District.

4.5 DEMAND BY TRIP DISTANCE

Over the life of the project, the average round-trip distance for the operating fleet of vans steadily decreased. Table 4-2 presents round-trip mileage data for project vanpools for five separate periods.

As the project matured and the operating fleet increased in size, the percentage of the fleet operating in Market 1 decreased but increased in Markets 2 and 3. Corresponding with this shift in demand by market area was a decreasing average round-trip mileage. Market 2 vanpools exhibited a greater range in round-trip mileage, but the average distances for all vans in this market were significantly shorter than those in Market 1.

TABLE 4-2

ROUND TRIP MILEAGE FOR OPERATING VANS

	June 1978	Oct 1978	June 1979	Oct 1979	June 1980
Number of vans	25	31	30	33	35
Vans by market area (percent of fleet)					
Market 1	72%	71%	47%	45%	43%
Market 2	28	29	53	48	46
Market 3	0	0	0	6	11
Average round trip fleet mileage	84	85	63	62	60
Average round trip mileage by market area					
Market 1	87	92	80	75	72
Market 2	65	67	48	51	59
Market 3	--	--	65	59	59
Number of vans traveling 100 miles or more	7	11	2	2	3

4.6 DEMAND FOR VEHICLE TYPE

At the close of the demonstration, the project's fleet was composed of 4 van models:

11-passenger, deluxe/bench seats	(18 vehicles)
10-passenger, luxury/reclining seats	(17 vehicles)
15-passenger, bench seats	(4 vehicles)
8-passenger, reclining seats	(2 vehicles)

In the early months of operations there was a somewhat greater demand for the reclining seat, higher fare luxury over the bench seat deluxe van. As the project matured and average fleet trip distances decreased, preference for the luxury van was found to relate closely to long trip distances. As more vans became operational, potential vanpool groups were likely to take whatever model van was available, rather than wait for a particular model.

The project easily placed the four 15-passenger vans delivered in January 1980. However, the higher priced 8-passenger super-luxury model was still not placed as of June 1980.

4.7 REQUESTS FOR SERVICE: THE APPLICANT FILE

At the official close of the Golden Gate Vanpool Demonstration project, June 30, 1980, 3,926 applications for vanpool service were in the applicant file. (See page 12 for the status of applicants.) Almost one-half of the applicants were either purged from the file, no longer interested, or dropped out from vanpooling. Current and transitioned poolers accounted for 804 applicants, or about 65% of all vanpoolers commuting in project or transitioned vanpools as of June 30, 1980. The 35% gap between applicants on file and active vanpoolers was due to the fact that not all vanpoolers submitted applications and that assisted vanpoolers were not entered in the file. Many names of commuters placed in project vans came not from formal applications but through employer coordinators, drivers, or happenstance wherein the potential pooler surfaced or heard about the right vanpool at the right time. Assisted vanpoolers, those in vanpools not originally formed in project vans, constituted 20.5% of all active vanpoolers.

4.8 DEMOGRAPHICS

The majority of vanpoolers were male (53%), married (69%) and between 25 and 45 years of age (68%). One half were from households with two or more wage earners.

Vanpoolers represented all income brackets, although almost one third earned $30,000 or more, the highest income bracket listed on the survey form. The median income for vanpoolers was approximately $24,500. [The median income for Marin County to San Francisco commuters is $22,000 (1975); however, the median income for <u>all</u> Sonoma County residents is $10,500 (1978).]

Comparing the demographics of early vanpoolers (1977-1978) to more recent vanpoolers (1979-1980), the evaluation found the recent vanpoolers to be: more often single (32% vs. 22%); more frequently female (47% vs. 37%); younger median age (36 years); and more often new hires, "at present job for 2 years or less" (47% vs. 25%).

Vanpoolers cited a number of reasons for joining a pool. The more recent poolers elected to vanpool for three key reasons: to save costs (30%); to decrease fuel use (21%); and to reduce the need to drive (20%).

The key difference between early and recent vanpoolers was the increasing importance recent vanpoolers attached to the "decrease fuel use" category. This was predictable given the 53% increase in the cost of gasoline from 85¢ per gallon in 1977-78 to $1.30 per gallon in the spring of 1979.

Vanpool drivers were predominately male (87%), married (77%), and professionals or managers (77%). The demographic characteristics of vanpool drivers and riders are compared in Table 4-3.

TABLE 4-3.
COMPARISON OF VANPOOL AND RIDER DEMOGRAPHICS

Demographics	Drivers	Riders*
Male	87%	53%
Married	77%	69%
Age: 30-39	61.5%	41%
Professional/managerial	77%	47%
Median income	$27,000	$24,500
Prior mode		
Auto (solo and pooler)	60%	53%
Bus	29%	53%

*Preceding demographic data included drivers as part of all vanpoolers.

As the project developed, it attracted an increasing number of auto drivers and a decreasing number of bus riders. Table 4-4 illustrates this shift in prior mode split by comparing early and recent vanpoolers.

TABLE 4-4.

VANPOOLERS PRIOR MODE

Prior Mode	Early Vanpoolers (first 10 months)	Recent Vanpoolers (last 10 months)
Solo auto	15%	33%
Carpool	35%	33%
Bus	49%	34%
Ferry	1%	---

This shift in prior mode split of vanpoolers is particularly significant in light of the district's objective to reduce the number of vehicles during the peak commute hours. The shift also reflects the change in demand for vanpools by market areas served.

5. PROJECT COSTS

This chapter presents information on project administrative costs and vanpool operating expenses (and revenues) separately; an additional section discusses some costs that were not sufficiently accounted for as administrative costs nor as expenses to be paid for by fares. The total subsidy (made up of administrative costs and operating losses) is then compared to project outputs over time; Golden Gate Transit figures for fixed-route commuter subsidies are also provided as a further comparison of the project cost effectiveness.

5.1 ADMINISTRATIVE COSTS

A project of this type will typically have significant start-up costs. As the project progresses, the nature and rate of expenditures for the project change. This is shown for the Golden Gate Vanpool demonstration in Table 5-1, where expenditures by type are listed separately for:

1. Pre-operations period of 12 months during which project planning, labor negotiation, van purchases and some initial marketing and vanpool organization took place

2. Initial nine month demonstration period with operating vanpools

3. Mature two year period of operations.

Average monthly administrative expenditures decreased from $19,300 per month in the first nine months of vanpool operation to $16,250 during the last two years. This is a nominal decrease of 15% and a much greater decrease in constant dollars for the high inflation years during which the demonstration took place. On an

TABLE 5-1. PROJECT COSTS BY FUNCTIONAL CATEGORY

	PERIOD 1 10/76-10/77 (12 mos.)		PERIOD 2 10/77-6/79 (9 mos.)		PERIOD 3 7/78-6/80 (24 mos.)		TOTAL	
	Amount	%	Amount	%	Amount	%	Amount	%
Project administration and data collection	$ 25,000	50%	$ 37,692	22%	$116,814	30%	$179,506	29%
Marketing	11,500	23	62,433	36	106,612	27	180,545	29
Pool organization	400	1	14,185	8	34,966	9	49,551	8
Driver and transition services	0	0	1,004	<1	10,165	3	11,169	2
Fleet administration[1]	3,400	6	21,937	13	47,435	12	72,772	12
Other administration expenses[2]	10,000	20	36,557	21	74,143	19	120,700	20
TOTAL ADMINISTRATION	$ 50,300	100%	$173,808	100%	$390,135	100%	$614,243	100%
Equipment	319,800		658		67,832[3]		388,290	
TOTAL[4]	$370,100		$174,466		$457,967		$1,002,533	
ADMINISTRATIVE COSTS PER MONTH	($4,200)		($19,300)		($16,250)			

[1]Includes cost of van travel for marketing.

[2]Clerical, labor, overhead, and other direct costs.

[3]Includes cost of five vans purchased in March 1980.

[4]Total includes cost of CETA employees.

average monthly basis, a greater amount of the marketing budget was spent for front-end costs during the initial operating period; this accounts for much of the difference between the two periods. Project administration increased its share over time as a larger number of operating vanpools required more attention and monitoring.

5.2 VANPOOL OPERATIONS: REVENUES AND EXPENSES

Vanpool expenses for the project fleet for the 33-month period of operations are summarized in Table 5-2.

TABLE 5-2.

VANPOOL EXPENSES OCTOBER 1977 THROUGH JUNE 1980

	Expense	Percent of Total Expenses
Gasoline	$127,406	34%
Maintenance	55,029	15
Insurance	83,522	22
Van replacement	107,447	28
Parking	3,906	1
Total	$377,310	100%

Fares were based on projections of what the costs would be for each expense item which had its own expense and revenue accounting. At times, expenses exceed revenues due to inadequate cost projections for gasoline and maintenance. The inadequate projections for gasoline costs were due primarily to insufficient adjustment of fares for gasoline price increases, and secondarily to decreased efficiency of the vans as the fleet grew older. The initial 7¢ per mile charge for gasoline appeared to be too high at first; a net surplus accrued through February 1979. The large rise in gasoline price in the spring of 1979 caused substantial deficits in the gasoline operating account. The increase in the mileage charges for gasoline to 9.5¢ per mile in September was too little and too

late; monthly deficits were reduced, but not eliminated. A further rise in March 1980 to 13¢ per mile barely made up for further gasoline price increases. Fares have been raised again since the end of the demonstration. Figure 5-1 shows these fluctuations.

Projections for maintenance expenses exceeded eventual costs for most of the period between the beginning of the demonstration and September 1979 (see Figure 5-2). Thereafter, expenses exceeded projections despite a rise in maintenance charges in September 1979 from 4¢ to 4.5¢ per mile. Costs continued to increase; soon after the time period covered in Figure 5-2, the project had a net deficit in the maintenance account. The steep rise in maintenance expenses was due to increased labor costs and to the increasing age of the van fleet. The original depreciation formula set a six-year lifetime over which the vans were depreciated, and fares were set to cover average maintenance costs over this time period. However, the project found that maintenance costs increased noticeably once a van reached two years of age. This led the project staff to plan for a more rapid turnover (four years) of the fleet when considering future van purchases.

At the end of the demonstration period, operating expenses had exceeded revenues by $7,687.82 for all categories other than for van replacement. This is less than 3% of total operating expenses for the 33 month period of time. The original charge to vanpool fares to cover van replacement was based on van purchase costs of $8,060 for deluxe and $9,700 for luxury vans depreciated on a straight-line basis over a six-year period. This cost recovery formula proved inadequate for two reasons: 1) the rising cost of goods due to inflation and 2) the need to replace vans after four years.

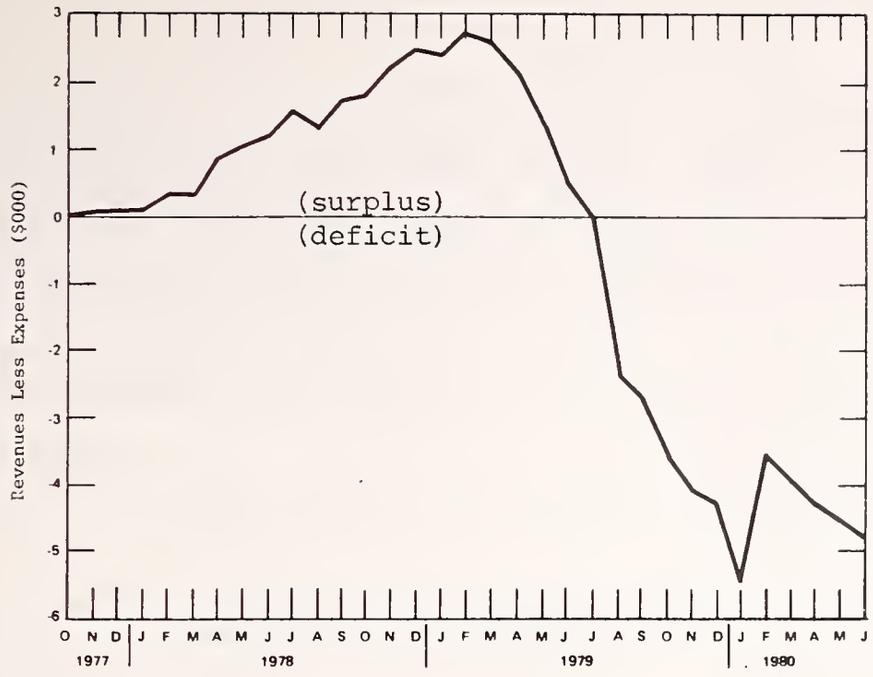

FIGURE 5-1. GASOLINE ACCOUNT--
CUMULATIVE OPERATING REVENUES LESS EXPENSES

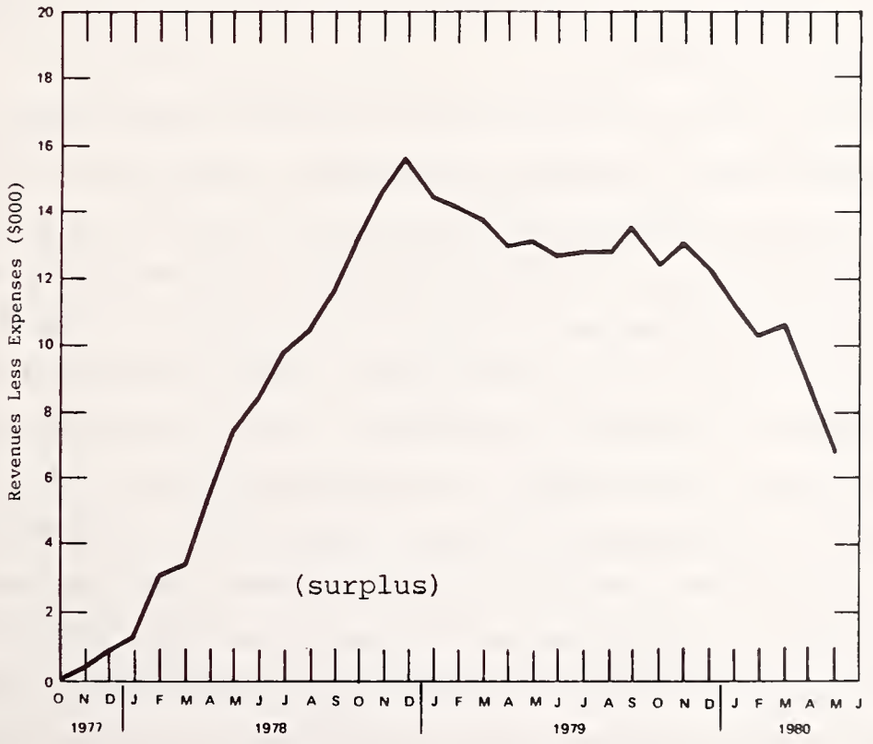

FIGURE 5-2. MAINTENANCE ACCOUNT--
CUMULATIVE OPERATING REVENUES LESS EXPENSES

5.3 OTHER COSTS

There are three types of costs that were not accounted for as an administrative expense and which were also not covered by fares; the result was that these costs were covered by the "depreciation reserve" (or capital grant). These costs are:

1.	Seat subsidies (for the first two months of a vanpool):	$31,151
2.	Depreciation in excess of what was accounted for in the fare structure:	53,750
3.	Vanpool operating expenses in excess of what was accounted for in the fare structure:	7,688
	TOTAL	$92,589

The first category of cost was not accounted for as an "administrative" expense which it could have been considered, e.g., under marketing. During the demonstration period of 33 months, there were $31,151 of such expenses.

The second item is a straight capital cost which was not properly accounted for in fares as already indicated. The project collected $107,500 as the van replacement cost based on a six-year depreciation schedule. A more realistic four-year schedule would result in a cost figure of $161,250, or an additional $53,750.

The third item is the relatively small one of some $7,688 of operating costs not covered by fares. The total of $92,589 additional cost, then, increases the previous total public demonstration subsidy from $614,243 to $706,832. This does include some data collection costs for the evaluation effort that go beyond those which the District would normally incur for their own management information; this is not considered to be a significant amount that would affect the following analysis of cost effectiveness.

One further qualifying note about subsidy costs should be kept in mind by the reader. The demonstration period represents a time

when the program was being created and when alternative forms of marketing and matching were being tested. The project costs have particularly been influenced by the degree to which marketing was conducted on an experimental basis. (Marketing made up 29% of administrative costs and 25% of total subsidy costs.) The evaluation contractor cannot specify the degree to which another program might be able to be more cost effective based on the lessons learned; however, there could be some gain beyond that which can be analyzed at present.

5.4 VANPOOL PROGRAM COST EFFECTIVENESS

5.4.1 Vanpool Subsidy Per Unit of Output

Table 5-3 indicates the ratio of total project subsidy costs to project output in terms of vanpools formed, those vanpools still in operation, vanpool months of operation and passenger trips. Progress through the first nine months of vanpool operations is compared to progress by the end of the 33-month demonstration period; the ratios for the last 24 months are also cited.

By the end of nine months of vanpool operations, the project had cumulatively spent over $8,500 for each project vanpool formed; this figure decreased to less than $6,000 by the end of the demonstration period. During the mature stage, monthly project subsidy cost was averaging $18,500 per month and vanpool formation (utilizing project vehicles) was averaging four per month for a ratio of approximately $4,500 per vanpool formed. Since about 30% of the vanpools formed by the end of the demonstration period had terminated at some point, the costs per vanpool still in operation were that much higher--being in excess of $8,000. Project staff had no expectations that these figures would dramatically change in the near future. While these figures may appear to be very high, the cost effectiveness of the project proves itself when the costs per vanpool month and per vanpooler trip are examined.

TABLE 5-3. SUBSIDY COSTS PER VANPOOL UNIT OF OUTPUT OVER TIME

	Thru 6/78		Thru 6/80		During last 24 mos.	
	#	$	#	$	#	$
TOTAL SUBSIDY COSTS[1]		$258,177[2]		$706,832		$448,655
"PROJECT" VANPOOLS: PROJECT VEHICLES & TRANSITIONED						
Project Vanpools Formed	30 @	$8,606	123 @	$5,746	93 @	$4,824
Project Vanpools Still in Operation	25 @	$10,327	86 @	$8,219	--	---
Project Vanpool Months	150 @	$1,721	1,400 @	$504	1,250 @	$359
Project Vanpool Passenger Trips[3]	50,000 @	$5.16	470,000 @	$1.50	420,000 @	$1.07
* * *						
PROJECT VANPOOLS & ASSISTED VANPOOLS						
Project & Assisted Vanpools Formed	35 @	$7,376	148 @	$4,775	113 @	$3,970
Project & Assisted Vanpool Months	NA		1,750 @	$404	1,600 @	$280
Project & Assisted Vanpool Passengers[3]	NA		588,000 @	$1.20	537,600 @	$.90

[1] Includes all expenses for demonstration, including seat subsidy, unaccounted for depreciation, etc.

[2] Includes expenses from start-up period before vanpools were actually in operation.

[3] Calculated on the basis of an average of 21 work days per month, 2 vehicle trips per workday and 8 passengers per vehicle trip (see Interim Report, p. 120). This is calculated to provide a conservative estimate of the number of commute trips served.

The cumulative subsidy costs per project vanpool month of operation decreased from slightly over $1,700 at the nine-month mark to slightly over $500 (or $50 per vanpooler per month) by the end of the project. During the last two years, the subsidy cost per project vanpool month of operation was approximately $360. During the last month, this figure was down to $215 per vanpool per month. The cumulative subsidy cost per "project" passenger trip by the end of the demonstration period was down to $1.50. During the last two years, it was close to $1.00. (See the next section for comparison of these figures to subsidy costs for fixed-route bus passengers in the Golden Gate Corridor.)

These last figures could dramatically improve over time with the number of vanpool months of operation accumulating at a much greater rate than the subsidy expenses--over the full time period of the program as well as during each succeeding month. Again, we are looking at full subsidy costs during the demonstration period of time--including some depreciation costs which were expected to be covered by fares.

Table 5-3 goes on to indicate the relative figures if one were to credit the "assisted" vanpools operating in the corridor. The subsidy cost ratios drop to approximately $5,000 per vanpool formed overall and $4,000 per vanpool formed during the last two years; and to $400 per vanpool month of operation overall and $300 per vanpool month of operation (or $30 per vanpooler) during the last two years. Again, the average monthly subsidy expense per project and assisted vanpool during the last month of the demonstration was below $170. The cumulative demonstration program subsidy cost for all vanpool passenger trips in the corridor was $1.20 and was down to less than $1 during the last two years. During the last month of the demonstration, there were 111 known vanpools operating in the corridor and providing approximately 37,000 commute

trips per month; an average monthly subsidy cost of $18,500 at that point in time results in a $.50 subsidy cost per trip.[1]

5.4.2 Comparison of Vanpool and Fixed-Route Transit Subsidies in the Golden Gate Corridor

One key figure from the last section is the cumulative total subsidy of $1.50 per passenger trip taken in a project vehicle or a transition vanpool during the 33-month demonstration. This is approximately the same as the subsidy for operating expenses, only, for the average Golden Gate corridor bus commuter according to the Transit District's cost allocation formulas.[2] Any accounting of capital costs for the bus equipment would significantly favor the case for vanpool subsidies. Thus, in less than three years of vanpool operations, the public subsidy of project trips compared favorably to that for an established fixed-route bus service in a high volume corridor during the peak period.

It should be noted that the high volumes of the peak commute period actually increase the average fixed-route transit cost per passenger (systemwide), and this factor is reflected in the District's route by route cost allocation which takes into account distance and peak versus non-peak periods. The system-wide subsidy for fixed-route operating expenses (again, not including capital costs) was approximately $.80 per passenger at that time.

Given the previous discussion of outputs over time and including assisted vanpools, (i.e., the total vanpool ridership being served by the program), it becomes apparent that monthly expenditures for the vanpool program as of the end of the demonstration period could be justified in comparison to the public subsidy costs for the fixed-route services in the corridor.

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[1] As will be indicated in a later section, the regional RIDES program has made a contribution to formation of some of the assisted vanpools; this represents some additional public subsidy cost. However, allowance for this factor would add a maximum of 10% to the figures cited here.

[2] As of June 1980, these subsidy figures were $1.21 and $2.15 per trip respectively for 50 and 100 mile round-trip distances during the peak period.

6. PROJECT MANAGEMENT

The Golden Gate Vanpool Demonstration project was judiciously managed, met its stated objectives, and brought national recognition to the district for its ridesharing efforts. Good project management most likely contributed to the program's success in meeting user needs and achieving permanent status within the district.

The overall approach to project management was one of flexibility and personalization. Additionally, the one-year extension of the original two-year grant allowed management to comfortably adhere to the staged development of program components.

Personalization--giving phone inquiries priority attention and working closely and at length with potential driver-coordinators--was inherent in the interactions between project staff and potential vanpoolers and accounts in large measure for the success of the project. Almost 50% of some 745 project vanpoolers submitting vanpooling applications did so as a direct result of a phone contact with project personnel.

Flexibility--the willingness to adjust policy to accommodate real life conditions--was inherent in the modification of the policy that allowed vanpools a maximum of 6 months prior to transitioning out of project vehicles. The revised policy called for a one year maximum; the six month trial period was reinstated when the project was prepared to offer full assistance to transitioning vanpools.

7. PROJECT INNOVATIONS—THE TRANSITION

The major project innovation was the successful development of a transition vanpool program. At the close of the demonstration the project had developed, tested and refined a package of transition program materials and procedures and effectively transitioned 51 vanpools.

7.1 TRANSITION PROGRAM DESIGN AND DEVELOPMENT

The transition component of the project called for vanpoolers to transition out of project-owned vans and into owner-operated or leased van arrangements after six months of operating in the project van. The freed-up project van was then "seeded" or placed with a new group of vanpoolers.

The transition program did not become fully operational until December 1978, at which time all one-year-old vanpools were notified of the necessity to either transition into a private arrangement or to terminate their vanpool. At the same time, the project distributed to all vanpool drivers "A Guide to Owner-Operated Vanpools," a booklet containing information relevant to owner-operated vanpools. At the close of the demonstration, the project had successfully transitioned a total of 51 project vanpools, 42% of all vanpools formed, into private van arrangements and had assisted in the formation of another 25 vanpool groups that had not utilized a project van. All 76 vanpools were in operation as of June 1980. (An additional 35 vanpools were using project vehicles and had as yet to be successfully transitioned or terminated.)

The formation of transition vanpools was a function of a combination of circumstances, such as van availability, external events, and staff time.

The availability of vans for transitioning groups was positively impacted by development of the Fireman's Fund program. Van availability was also affected by availability of RIDES vans, delivery schedules for new vans, locating van equipment conversion facilities, and time of year. The project found that the worst months for ordering were May, when factories shut down for two months, and October, when there were no vans available prior to arrival of new models.

The 1979 energy crisis was an example of an external event that greatly stimulated interest in transitioning to private vanpool arrangements.

Staff time required to assist a transition group varied greatly. A minimum of three hours and a maximum of eight hours was required for basic consultation for a given vanpool transition. The average monthly formation rate for transition vanpools from July 1978, the first month during which a project vanpool transitioned, through June 1980 was 2.13 vans.

Three transition options were available to project vanpoolers:

1. Purchase--This option allows the driver to build equity in a new vehicle, gain tax benefits not associated with leasing, and obtain clear title to the vehicle when it is paid off.

2. Lease--Vans can be leased either directly or as a third-party lease:

   Direct: Drivers lease vans directly from leasing agents. This option does not offer significant advantages over purchase because financing requires the same credit qualifications and, frequently, the equivalent of a down payment. In addition, direct leasing is generally more expensive than purchase and often does not result in outright ownership at lease termination.

Third-party lease--This option combines features of the direct lease and the company-sponsored program. The sponsor assumes the long-term responsibility for the lease, and the driver subleases on a month-to-month basis. A third-party lease typically generates high user costs and imposes some restrictions on van use. RIDES for Bay Area Commuters, Inc., the third-party sponsor option for transitioning project vanpools, offers vans in several configurations at somewhat higher fares than the Golden Gate project fares.

The lease option is often preferred by drivers who do not wish to make a long-term commitment to or investment in a vehicle.

3. Company Sponsored--With this option the driver has no long-term commitment to or financial investment in the van. The employer purchases or leases the van on a long-term basis, thus qualifying for a special investment tax credit.

Table 7-1 presents a breakdown of vanpools by the transition option selected.

TABLE 7-1

TRANSITION OPTIONS CHOSEN

Option	Number of Vanpools	Percent of Total
Owner operated (O/O)	19	38%
RIDES lease	18	36
Company owned	13	26
Lease	1	2
TOTAL	51	100%

7.2 SERVICES PROVIDED TO TRANSITIONED VANPOOLS

The Golden Gate project offered a range of services to transitioning vanpoolers, whether operating in a private vanpool arrangement or within a company-sponsored program. Services included:

1. Providing match lists.
2. Making district-owned back-up vehicles available at a per-mile lease rate covering operating costs, insurance, and depreciation.
3. Assisting drivers to obtain discounted parking spaces in San Francisco at lots run by either CALTRANS or the S.F. Parking Authority.
4. Recommending servicing locations where repair work could be performed at preestablished prices.
5. Directing drivers, if necessary, to insurance carriers with reasonable rates.
6. Providing access to fleet prices at selected auto dealerships. (Typically the fleet price is $100-$150 over wholesale.)
7. Assisting drivers to secure 100% financing from a local bank.

7.3 GENERAL PROGRAM FINDINGS

Data on transition vanpools were collected during a four-month period--November 1979 through February 1980. Surveys were completed by drivers who had at least four months of experience in their transition arrangement.

Insurance: Nine insurance companies provided insurance for 31 vanpool drivers. Ten (32.3%) project vanpool drivers used the same insurance companies that insured other vehicles in their household. The annual costs for transition vanpool insurance ranged from $190 to $924. The variations in the cost of insurance do not appear to correlate with insurance company, months in

operation, year of vehicle, or one-way commute mileage. Our assumption is that policy limits and individual driving records are the key factors affecting van insurance rates.

Fares: The fares charged in the transition vanpools varied greatly, depending on distance, year of vehicle, number of riders, the transition option, and idiosyncratic factors. Purchased vans exhibited the widest range in monthly fares per mile: from a high of $30 a month for a 28-mile round trip ($0.05 per seat mile) to a low of $65 a month for a 100-mile round trip ($0.03 per seat mile). Company-owned van drivers tended to charge at the lower end of the range, although some, within the same company program, were charging 31% higher for comparable trip distances. Fares in RIDES vans had a small range around the average of $0.04 per seat mile.

Seventy percent of the drivers increased fares at least once since beginning their own vanpool operations. In almost all cases, the reason cited was the rising cost of gasoline.

Source of New Vanpoolers: The two major sources of new vanpoolers were the work place (33%) or a combination of the work place and word of mouth (36%).

Ridership: The average number of persons vanpooling in each of 45 transition vanpools was 10. Ridership among the individual vanpools ranged from a low of 7 to a high of 15.

Servicing arrangements: About one third of the drivers indicated that they did all or part of their own van servicing. This suggests that the transition option has appeal for commuters adept at servicing vehicles.

7.4 ASSISTED VANPOOLS

The project counted assisted vanpools as part of its product. Assisted vanpools, 25 of the 148 vanpools started, were defined as vanpools operating within the Golden Gate service area that had not operated in a project vanpool. Once identified,

either by a call to project offices to say "hello" or request services, the assisted vanpools were offered the same project services as transitioned vanpools. The assisted vanpools fell into two categories: 1) those that were operating at the time of contact with the project and 2) those where the driver called in to request project assistance to start his or her own vanpool. Of the 25 assisted vanpools, 14 were owner operated, 10 were leased RIDES vans, and one was a company van.

7.5 SUMMARY FINDINGS

The transition vanpool program conceived and implemented by the Golden Gate Vanpool Demonstration Project was a success. The success of the transition program was primarily and directly related to vehicle supply and the range of transition options resulting from the availability of both RIDES and Fireman's Fund vans. Success also related to the project's policy of advising drivers of the transition expectation during initial contacts between potential driver and project staff. Through this program component, the project was able to effectively double the size of its operating fleet.

The six-month period of operations in a project van before transitioning was in most cases a critical trial period for both drivers and vanpoolers. It allowed time for the drivers to work out operational bugs, attract a stable vanpool group, acquire experience as drivers-coordinators, and negotiate a transition vanpool arrangement. It also gave vanpoolers the opportunity to evaluate the service and competency of the driver.

Twenty percent of the drivers responding reported that they had reduced the number of automobiles in their household since

becoming vanpool drivers. In response to a question, 'What percentage of your van miles are for commute or personal use?', all transition drivers reported that 90-100% of their van miles were commute related. Clearly, an increase in personal use of a van was not the primary incentive for these drivers to transition into their own vanpool vehicle.

Finally, it is interesting to note that, once transitioned, a large number of drivers maintain informal contact with project staff, but few rely on continued project servicing.

The project clearly demonstrated that a significant number of vanpool drivers find the owner/operator vanpool option attractive and feasible. The quality of the assistance offered to these drivers by the project staff is high and may account for much of the success for that option.

8. PROJECT IMPACTS

The Golden Gate Vanpool Demonstration project has furthered the state of the art and practice of ridesharing, contributed to the Bridge District's objective of controlling peak-hour congestion, and demonstrated the potential complementarity of bus transit and vanpooling.

Through the active dissemination of project findings and the lessons learned during three years of operations, the project had a significant impact on the state of the art and practice of ridesharing. Other agencies have shown specific interest in the basics of the transition program and the district's experience with fleet management.

The project had a positive impact on vanpoolers and local employers and government bodies. For vanpoolers, it provided safe, reliable commute service that was more economical than driving alone or carpooling with one other person and it enabled 20% of the users to defer either replacement or purchase of a personal auto.

For local employers and governmental bodies, it provided ridesharing consultation services to help in their efforts to initiate ridesharing programs.

The project also had a positive impact on the environment. It helped reduce congestion on Highway 101 and the amount of pollutants emitted in this corridor, and it conserved the energy that would have been consumed by the automobiles it replaced with 148 vans.

The project demonstrated that vanpooling can be complementary to bus transit. During the 33 month demonstration period, bus ridership remained at capacity levels, vanpool ridership grew, and the percentage of vanpoolers who formerly commuted to work by bus or club bus decreased from 49% to 34%. Thus, in a service area where the commute population is growing but where

the transit district is attempting to control capital and operating costs, vanpooling offers a reliable and convenient service and is a viable option to the single occupant automobile.

9. SUMMARY STATEMENTS

9.1 PROJECT OBJECTIVES

The Golden Gate Vanpool Demonstration Project successfully met both of its original objectives. It demonstrated that a public transit authority is eminently capable of promoting ride-sharing as a viable commute mode. By offering its constituency a vanpool alternative, the transit authority reduced peak-hour pressure for new buses and enhanced its public image, in this case locally and nationally. The project also demonstrated that vanpool drivers will participate in a transition vanpool program. When the demonstration closed, 41.5% of vanpools formed by the project had transitioned into private operations.

9.2 PROJECT DESIGN, MANAGEMENT, AND SCALE

The project was well planned and managed and adequately funded to achieve its objectives. The management approach of personalization proved extremely effective in attracting potential drivers and in implementing the transition program.

The three-year period of operations allowed the project to reach maturity and to fully develop the transition element of the program. During the third year of operations, the major employer program matured, key changes to project data collection and accounting procedures were implemented, the marketing approach stabilized, and the project developed policies for assisting nonproject vanpool drivers with matching and other services. Also during the third year, the district received a great deal of positive national press about the vanpool program.

9.3 RIDESHARING PROGRAM SCOPE

The project quickly perceived the benefits of being able to market bus and carpools as well as vanpools. At the close

of the demonstration, the project had moved beyond "vanpooling only" and was promoting or considering offering a range of ride-sharing services--bus pools, carpools, sedan pools, assistance to established vanpoolers, joint ridesharing promotion with RIDES, and consulting to county and city governments.

9.4 INSTITUTIONAL ROLE

The positive institutional support the project received from the district board and general manager was one of the keys to project success. This support eventually resulted in the creation of a permanent Ridesharing Division within the Bridge District. The District is one of only a few transit authorities that provides not only bus transit but a range of transportation options and services to its constituency. It thus is a viable model for other transportation agencies concerned with controlling bus subsidies while providing transportation services. In short, the operations of the vanpool demonstration project within the Golden Gate District have served to institutionalize vanpooling as a legitimate role of a public transportation agency.

APPENDIX A
REPORT OF NEW TECHNOLOGY

A thorough review of the work performed under this contract has revealed no significant innovations, discoveries, or inventions at this time. In addition all methodologies employed are available in the open literature. However, the findings in this document will be useful throughout the United States in designing and evaluating transit ridesharing alternatives.

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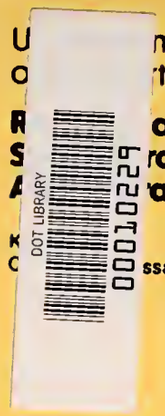

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