

A 1-Year Review of Performance Measures for the Chicago Transit Authority's Special Services Contracted Service for the Elderly and Handicapped

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Examined in this paper are certain performance measures for the Chicago Transit Authority's (CTA's) Contracted Service for the Elderly and Handicapped during the first full year of service. The new contracted service is compared to the in-house service, examined for trends during the first year of service, and compared for the same performance measures among the four private carriers that have contracted with the CTA to service these riders. A random sample of switching among riders is examined to determine if the basic premise is upheld that competition among carriers promotes quality of service.

The Chicago Transit Authority (CTA) began an in-house, door-to-door Special Services program in 1981 in response to federal requirements for transportation services for persons whose disabilities prevent them from using the standard bus and rail service. In the fall of 1985, after a review of the existing CTA Special Services operations and an extensive survey of successful privatization efforts in other cities, the CTA began a hybrid "user-side subsidy" program. The main feature of this program is that CTA contracts with four private carriers to allow rider choice and to foster competition among the carriers. The CTA maintains all records of certified users, takes complaints from users, monitors service, and updates and maintains all relevant statistical data for the service.

Certain performance measures of the new service are examined in this paper. The contracted service is compared with the former in-house service and the performance trends accumulated during 1 full year of contracted service are examined. The 1-year period covers February 1986 through January 1987. Using this period takes advantage of software changes that occurred at the CTA in February 1986; therefore, all the data are consistent and can be compared directly. The full contracted service began in November 1985. This paper is not intended to describe the origins of the privatization service. The start-up and decisions for the new contracted service are described elsewhere (1).

Performance measures for paratransit have not been exhaustively compiled as they have for standard transit services. Also, each paratransit operation is different and direct comparisons mean little. A qualitative examination and a

comparison of the first year of contracted service with the CTA's own performance may have more relevance than comparison with any other paratransit service. Therefore, in the first section of this paper, the new privatization service is compared with the previous CTA in-house operation. A time-trend comparison of the contracted service during the 1-year study period is presented in the second section. In the third and last sections, respectively, the performance measures of the four carriers are compared and carrier switching among users of the service is described.

LITERATURE REVIEW

A review of the current literature was done to ascertain what similarities could be found among the diverse privatization efforts in other cities in terms of performance measures. Some studies have been done to determine what the user of the specialized service considers important in terms of quality of service. Mittendorf et al. surveyed eligible nonusers of specialized services and found that level-of-service factors such as scheduling, lengthy travel times, and unreliable service were not a concern (2). Falcocchio studied users of a paratransit service in New York to determine what service factors were important to the user (3). Kikuchi and Rosenbloom have both done separate studies comparing quality of service factors with cost (4, 5). In general, there appears to be a trade-off between better service and lower costs, which can be important if there is a lack of funds to support a service for all who would like to use it. Many cities restrict the purposes of trips because of financial constraints. One way to become more cost-efficient is to separate trips by ambulatory and nonambulatory riders because nonambulatory riders generally require specialized vehicles. Many studies have shown a substantial difference in cost when trips are separated in this manner (6-9).

CONTRACTED VERSUS CTA IN-HOUSE SERVICE

Hours of Service

The CTA in-house service operated Monday through Friday from 6:00 a.m. to 9:30 p.m., and on Saturdays, Sundays, and holidays from 9:00 a.m. to 5:00 p.m. The private carrier service operates daily from 5:00 a.m. to 1:00 a.m., with all four carriers

operating between 5:00 a.m. and 9:00 p.m. and one carrier also operating between 9:00 p.m. and 1:00 a.m. The new hours represent a 33 percent increase in available hours of service.

Cost

The in-house service is estimated to have cost \$28.00 per trip, not including capital costs. The private service has averaged \$12.47 per trip, including capital costs, for the study period. The cost of administration is estimated to be not more than 8 percent of the trip cost. The average cost of the new service is approximately 55 percent less than the cost of the old service, not considering capital costs.

Trips Serviced

A consultant's report done in 1984 (10) shows that for 3 days in January and February of that year—January 19, January 27, and February 23—there were 643 trips, 551 trips, and 530 trips, respectively. This represents a rough daily weekday average of 575 trips. In comparison, 1,623 average daily trips were provided by the private carriers during the 1-year study period. This is approximately 180 percent more average daily trips provided by the new contracted service.

The in-house service was frequently booked by 9:00 a.m. the previous day. According to a July 1985 rider survey, only 27 percent of the riders said that they always received a ride when they called to request service. The new service had not refused a trip to any eligible rider as of February 1987.

On-Time Performance Reliability

According to the consultant's 1984 report, an examination of 1 day of the CTA's in-house service showed an on-time performance of 73 percent, "on-time" being considered as 10 min early to 10 min late. The report also indicates that this figure is probably overstated because of trip sheet entry inconsistencies. The July 1985 survey of riders of the in-house service showed that 41.5 percent believed that they were always picked up on time, and 47.6 percent of the riders believed that they were usually picked up on time.

The private carrier service overall averaged an on-time performance for the 1-year study period of 66 percent on-time pickups. This on-time "envelope" is defined by the CTA as any time early to 10 min late.

Trip Time

According to the 1985 rider survey, 5.9 percent of the users believed that their ride time always exceeded 90 min in the vehicle. An additional 12.4 percent of the users believed that their in-vehicle time usually exceeded 90 min.

For the private carriers, there is a penalty for trips exceeding 90 min of in-vehicle time. The carriers are allowed to have 4 percent of their trips exceed 90 min without penalty. For the study period, an overall average of 2.9 percent of the trips exceeded 90 min. Although there are no definite numbers to compare with the in-house service, it appears as though there has been some improvement from the in-house service in that respect.

TIME TREND COMPARISON OF CONTRACTED SERVICE DURING 1-YEAR STUDY PERIOD

Cost

The cost of a trip without attendants decreased from February 1986 to January 1987 by \$0.29. The highest monthly average cost per trip was \$12.68 in February. The lowest monthly average cost was \$12.33 in September (Table 1).

TABLE 1 AVERAGE TRIP COST

Month	Average Trip Cost (\$)	
	Without Attendants	With Attendants
February	12.68	11.34
March	12.56	11.14
April	12.53	11.10
May	12.48	11.01
June	12.47	11.04
July	12.42	11.00
August	12.51	11.07
September	12.33	11.12
October	12.45	11.29
November	12.44	11.24
December	12.42	11.21
January	12.39	11.31
Average	12.47	11.16

The cost of a trip with attendants was the highest also in February at \$11.34. The lowest cost of a trip including attendants was \$11.00 in July. For the last month of the study, the cost of a trip averaged \$11.31, which is \$0.03 less than in the first month of the study.

The private carriers are paid more for nonambulatory trips than for ambulatory trips. Therefore, the average cost of a trip is tied to the percentage of ambulatory and nonambulatory trips made that month. The trip cost decrease throughout the study period reflects the greater increase in percentage of ambulatory trips made each month.

Trips Serviced

The total number of trips provided increased from February to January by 94 percent overall. The average daily trips (monthly trips divided by the number of days in the month) increased by 76 percent over the study period.

At the beginning of the study period, ambulatory trips accounted for 48.3 percent of total monthly trips. By January 1987, ambulatory trips constituted 62.8 percent of the total trips, whereas nonambulatory trips accounted for 37.2 percent of the trips (Figure 1).

Average daily ambulatory trips increased from 461 trips in February to 1,051 trips in January the following year. This is a 128 percent increase (Figure 2). Average daily nonambulatory trips increased from 493 average daily trips in February to 623 average daily trips in January, a 26 percent increase (Figure 3).

The average number of daily weekday trips overall increased from 1,130 trips in February 1986 to 2,037 trips in January 1987. This is an 80 percent increase. The largest monthly increase occurred in March with an 11.7 percent increase in average daily weekday trips. August was the only month that

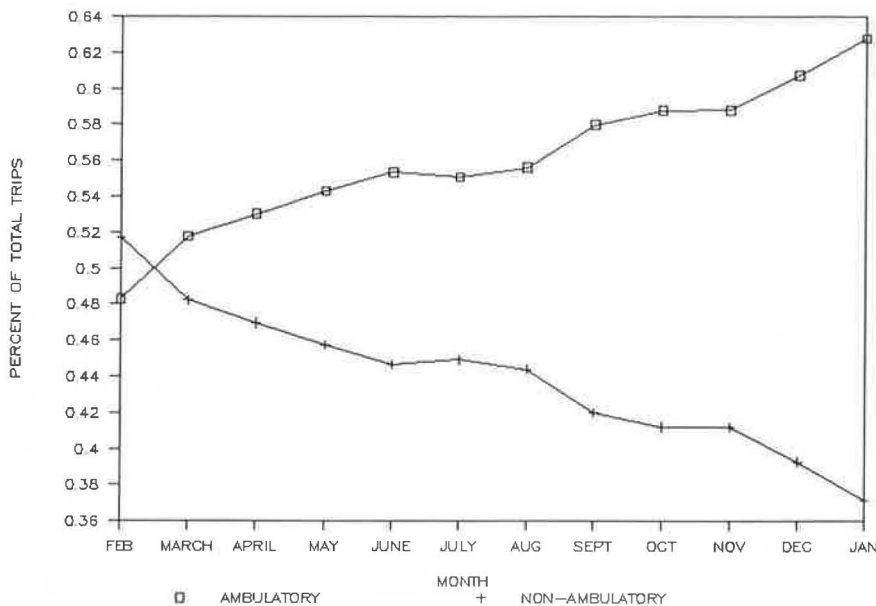


FIGURE 1 Total ambulatory and nonambulatory trips.

had a decline in the average daily weekday trips. December and January both showed smaller increases probably as a result of fewer discretionary trips being made because of inclement weather.

The average number of daily trips made on weekends and holidays increased from 514 in February to 914 in January. This is an increase of 78 percent. The highest average daily weekend trips occurred in November with 984. The largest monthly percent increase occurred in March with 18 percent. December and January showed a decline of -6.4 percent and -1.3 percent, respectively. The ratio of weekday to weekend trips is fairly consistent throughout the study period at 2.0:1.0.

On-Time Performance

The average percent of trips considered picked up on time (any time early to 10 min late) in February was 64.0 percent. In January at the end of the study period, the percent of on-time trips averaged 64.4 percent. The highest value of percent of on-time pickups occurred in both August and October with 68.3 percent of the trips being picked up on time. The lowest value occurred in December with 63.9 percent being picked up on time. The lowest values all occurred during winter months between March and November, when weather could have been a major factor in delayed pick-up times.

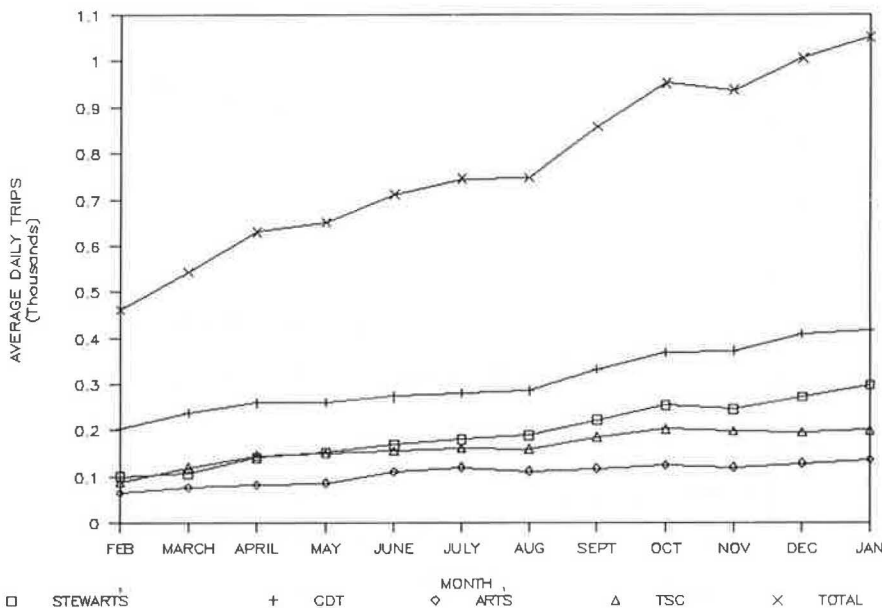


FIGURE 2 Average daily ambulatory trips.

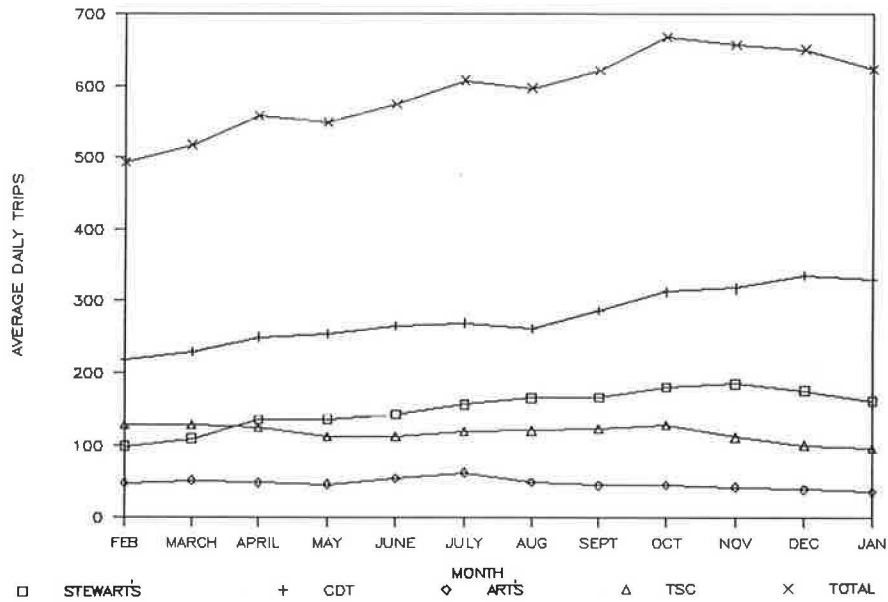


FIGURE 3 Average daily nonambulatory trips.

Length of Trip

The overall percentage of trips exceeding 90 min for the 1-year study period was 2.9 percent, which is within the contract penalty figure of 4.0 percent. There was no month in which the overall average for the month exceeded 4.0 percent. The highest monthly figure was 3.3 percent of the total trips exceeding 90 min, which occurred in October and again in December. The lowest figure occurred in March, April, and July with 2.6 percent of the trips exceeding 90 min. Although the values are all very close, the trend for the overall average has been increasing since August.

COMPARISON OF CONTRACTED SERVICE AMONG CARRIERS

Trips Serviced

At the beginning of the new service in October 1985, all the carriers were assigned riders equally. Looking at the number of monthly trips provided during the study period, one carrier consistently provided over 40 percent of the trips, another carrier approximately 10 percent, and the other two split the remainder (Figure 4).

Ambulatory trips can be compared among the carriers based on average daily trips (Figure 5). The largest carrier, CDT,

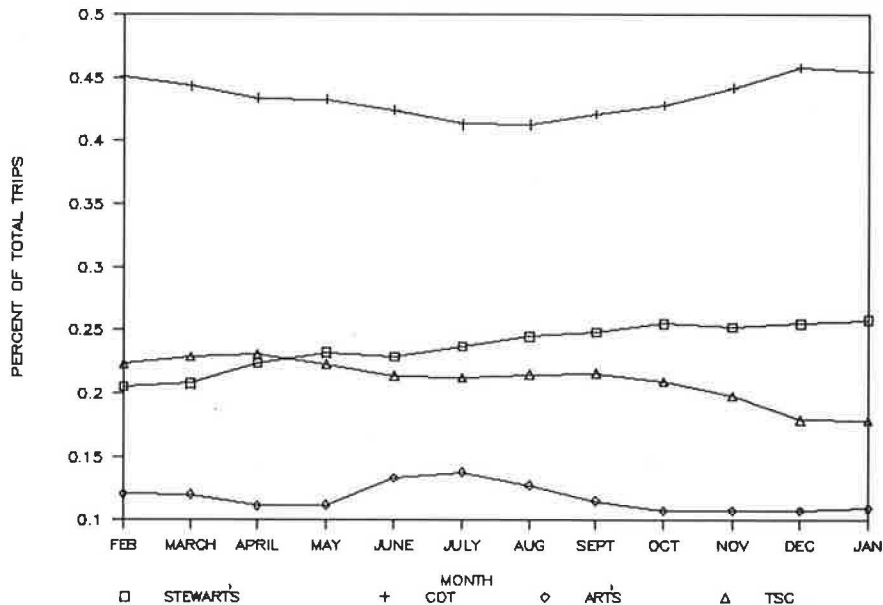


FIGURE 4 Percentage of average monthly trips, by carrier.

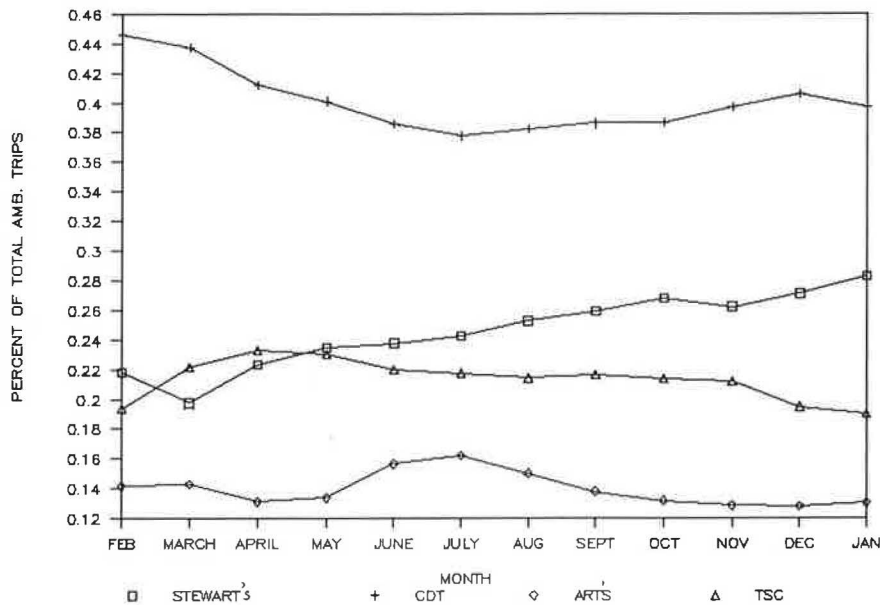


FIGURE 5 Percentage of average daily ambulatory trips, by carrier.

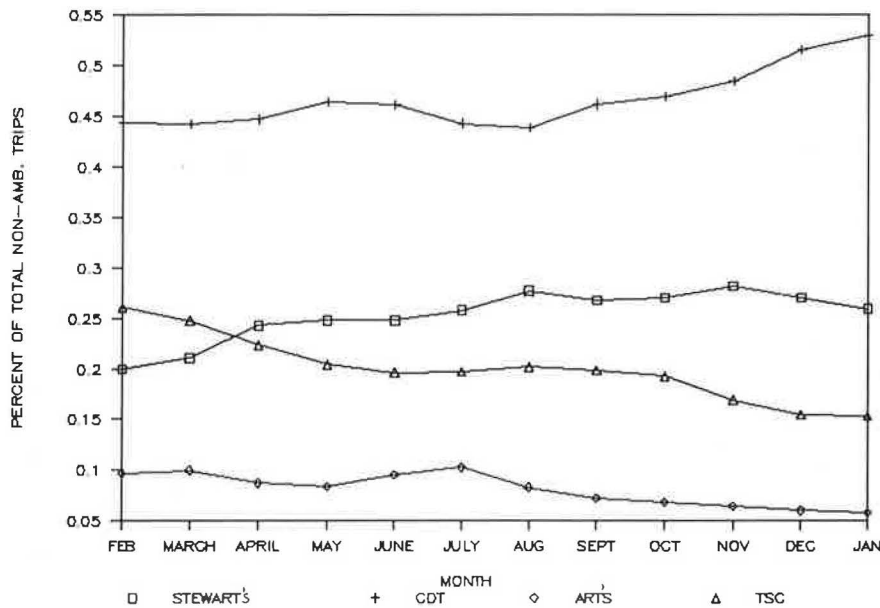


FIGURE 6 Percentage of average daily nonambulatory trips, by carrier.

began the year-long study period with 44 percent of this group. CDT has lost ambulatory ridership percentage through the year and now claims approximately 40 percent of the ambulatory trips. TSC and Art's have remained fairly constant in percentage of ambulatory ridership with approximately 20 percent and 14 percent of the trips, respectively. Stewart's has increased its percentage from 22 percent in February to 28 percent in January. These figures are also consistent with the overall average daily ridership.

The average daily nonambulatory ridership is split differently than the overall daily ridership (Figure 6). CDT has increased its percentage of nonambulatory ridership from 44 percent in February to 53 percent in January. Stewart's also increased its percentage from 20 to 26 percent. TSC lost over 10 percentage points throughout the year, from 26 to 15 percent, while Art's decreased from 10 to 6 percent.

Average daily weekday trips are spread among the carriers in a fashion similar to the overall average daily trips (Figure 7). However, average daily weekend trips are slightly different (Figure 8). CDT carries approximately 40 percent of the weekend trips, whereas Stewart's has increased its percentage from 23 percent in February to 35 percent by January. Art's has decreased its share of the weekend trips from 11 percent to 8 percent; TSC's share has decreased from 26 to 17 percent.

The carriers' percentage of subscription trips was split similarly to other overall daily trips: CDT varied between 42 to 51 percent, Stewart's increased from 17 to 26 percent, Art's decreased from 16 to 7 percent, and TSC averaged approximately 22 percent throughout (Figure 9).

The overall average percent of subscription trips to total trips is 17 percent. The carriers' percentage of subscription trips to their own total trips was as follows: Stewart's averaged 12

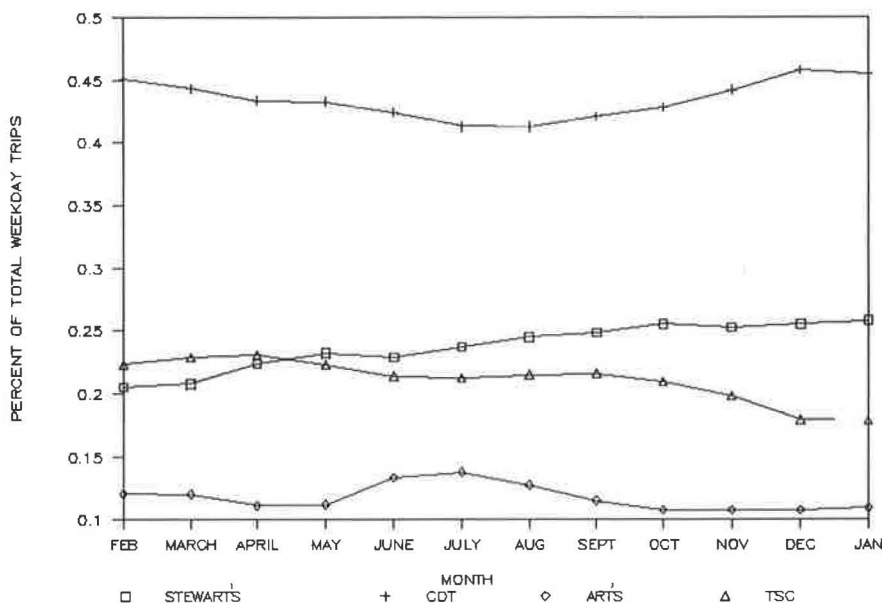


FIGURE 7 Average daily weekday trips.

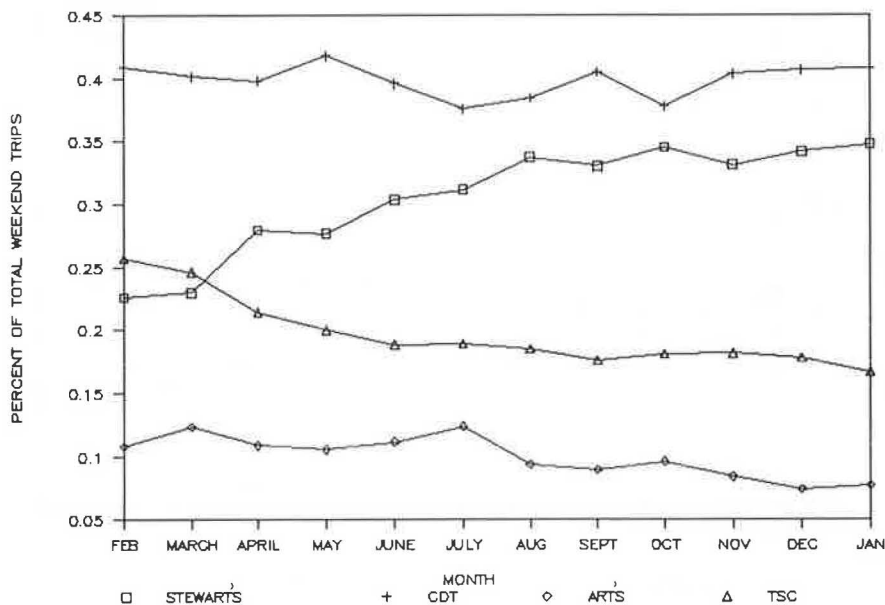


FIGURE 8 Average daily weekend trips.

percent, CDT remained fairly constant with 19 percent, Art's averaged 18 percent but varied from a high of 24 percent in April to a low of 13 percent in December, and TSC increased its percentage of subscription trips from 16 percent in February to 24 percent in January (Figure 10).

On-Time Performance Reliability

The best on-time performance among the carriers has been by TSC with an average of 77 percent of its pickups on time (Figure 11). The values ranged from a low of 71 percent in March to a high of 84 percent in July. CDT had the next best record with an average of 65 percent on-time pickups, ranging from 60 to 71 percent. Stewart's averaged 62 percent of its pickups on time, whereas Art's averaged 59 percent of its pickups on time.

Trip Time

CDT had the best record of percent of trips under 90 min with an average of 1.2 percent of its trips exceeding 90 min of in-vehicle time (Figure 12). TSC had the next best record with 3.3 percent of its trips over 90 min, whereas Art's had 5.1 percent of its trips exceed 90 min. Because CDT carries a majority of the trips with the lowest percentage of long trips, the overall average is lowered and the other carriers benefit.

SWITCHING OF CARRIERS

A primary reason for contracting with four different private carriers is to allow the users to choose their carrier. The user contacts the carrier directly to arrange a trip. The presumption is that the user's option to switch will promote quality of service through competition.

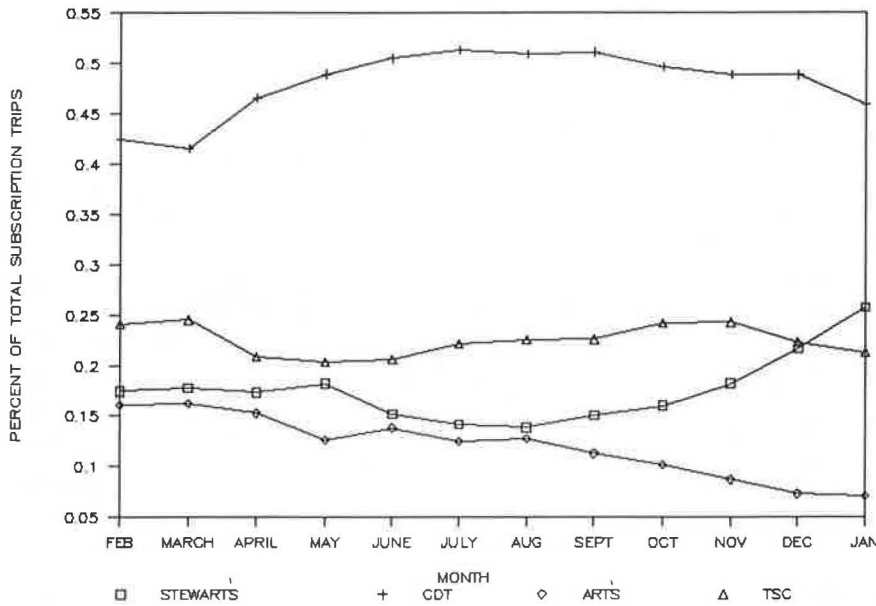


FIGURE 9 Subscription trips.

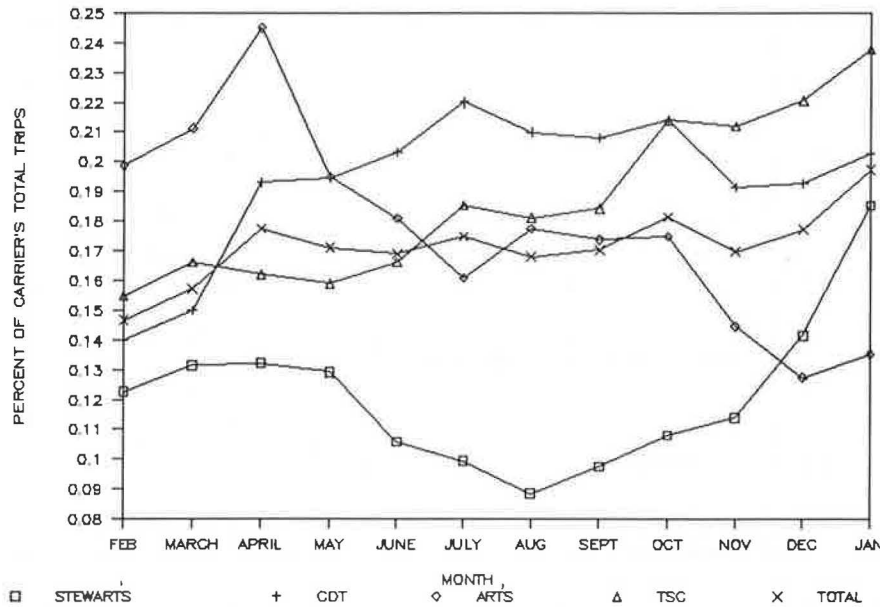


FIGURE 10 Subscription trips, by carrier.

A random sample of users was examined to determine the amount of switching being done by the riders. Nine two-digit numbers were chosen at random to represent the last two digits of the seven-digit user identification number. These user ID numbers were then pulled from the computer with a list of the number of trips made for the month of October on each carrier for each of the chosen ID numbers.

There were 428 users in the sample, who took 6,566 trips during the month of October. Out of the total of 428 users, 78 users rode on at least two carriers and took 1,846 trips during the sample time period. A total of 18 percent of the sampled users switched carriers, and these 18 percent took 28 percent of the trips sampled. In other words, the users who switched tend to make more trips than the users who stuck with one carrier. Another way to analyze this is to look at the trips taken per user. The overall number of trips per user for this sample is

15.3 trips. The number of trips per user taken by users who switch carriers is 23.7 trips. The number of trips per user taken by users who stay with one carrier is 13.5 trips. According to this sample, users who switch carriers tend to take 10 more trips per month than users who do not switch carriers.

Only 1 user out of the 428 sampled (0.2 percent) had ridden on all four carriers during the sample time period. A total of 12 riders (2.8 percent) had tried three of the carriers, and 65 users (15.2 percent) had tried two of the carriers.

Of the 78 users who did switch carriers, 57 (73 percent) switched between the nighttime carrier—Stewart's—and at least one other carrier. Unfortunately, the time of day that the trips took place is not available, so the switching being done between Stewart's and the other carriers could be a result of the nighttime carrier's monopoly on the service between 9:00 p.m. and 1:00 a.m.

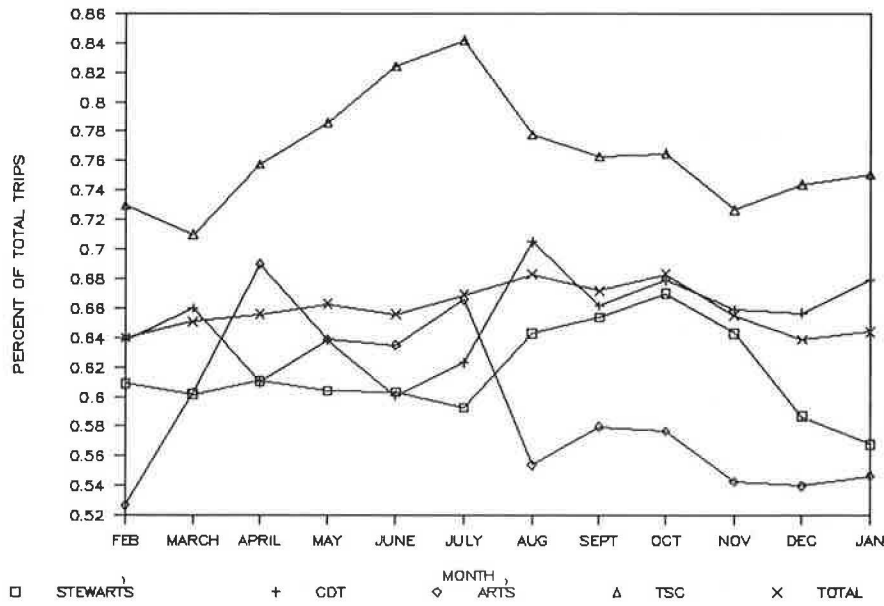


FIGURE 11 Trips picked up on time.

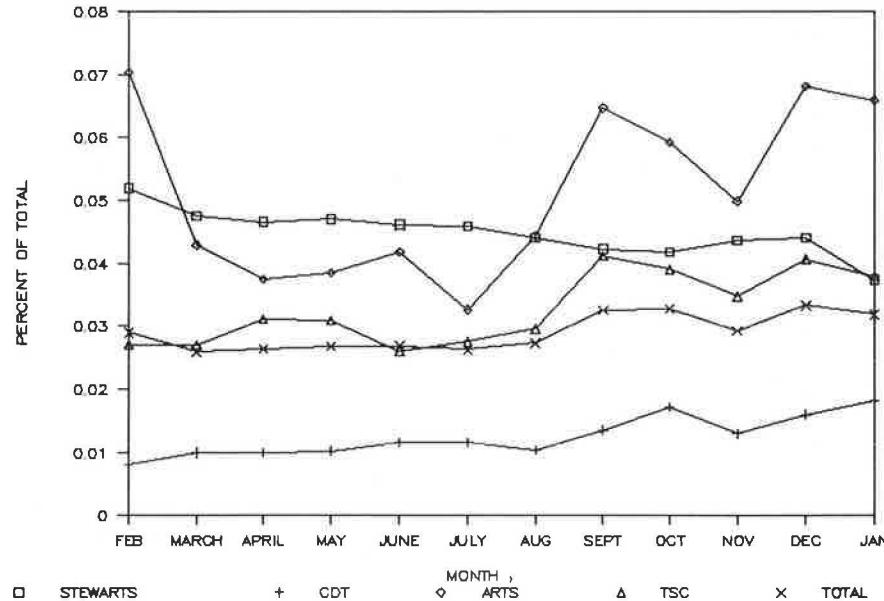


FIGURE 12 Trips exceeding 90 min in length.

The nighttime carrier's trips accounted for 36.5 percent of the sample survey of users who switch trips (673/1,846). Overall, for the month of October, this carrier's market share of the total trips was 27 percent. If overall nighttime trips are subtracted, the market share for Stewart's is 25 percent. The sample survey has a higher proportion of the nighttime carrier's trips, implying that the amount of switching reflected is a result of the forced switching of night trips. Therefore, even the 18 percent of users who do switch may be an overstated figure for users who switch for reasons other than night trips.

CONCLUSIONS

The contracted service has provided an increase in service hours and number of trips, while decreasing the cost of the trips by at least 55 percent. Among the carriers there is a consistent

trend for each individual carrier in terms of type of trips carried, overall share of trips, on-time performance reliability, and trip time. The review of data to determine the amount of carrier switching that occurs showed that only 18 percent of the riders sampled had tried more than one carrier. In terms of these performance measures, the contracted service has been successful in reducing the cost of trips over the in-house operation. The rationale for contracting with four different carriers to promote competition among the carriers does not seem to be borne out by the number of riders who actually switch carriers.

Although the cost decrease has made more trips available for the limited budget for CTA Special Services, it cannot be concluded that the private carriers are being more efficient. In fact, the cost decrease could be a result of the private carriers' being able to use nonunion operating labor.

To increase efficiency, which will promote more trip availability for the limited funding, the CTA should consider separating the trips by ambulatory and nonambulatory, when rebidding its contract for Special Services. The new contract would allow two carriers to transport all the nonambulatory trips and two carriers to transport all the ambulatory riders. The CTA will be in a unique position at that time because the users have chosen their favorite carrier of the four. In fact, one carrier already transports over half of the nonambulatory trips and would be an obvious choice for a nonambulatory carrier.

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