

REVIEW OF SUN METRO LIFT SERVICES

Prepared for



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DISCLAIMER

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TABLE OF CONTENTS

	Page
Background	1
Purpose of this Report	2
Analysis of Actual Dispatch Records	3
Analysis Methodology	3
Travel Time and Distance	9
Passengers	12
Trip Origins and Destinations	14
Trip Requests and Vehicles in Service	16
Dialysis Trips	18
Peer Comparison and Benchmarking.....	20
Peer Selection.....	21
Data Collection	23
Analysis.....	25
Analysis Summary	30
Impacts of Policies, Practices, and Operating Conditions on Performance.....	30
Service Standards.....	31
No-Show Policy Enforcement	31
Technology/Software	33
Dispatch Staffing	33
Summary of Peer Comparison and Benchmarking.....	36
Sun Metro LIFT Compared Peers.....	36
Performance Measures.....	36
Sun Metro LIFT Contractor	36
Appendix. Final Presentation to Mass Transit Board, September 9, 2014	38

LIST OF TABLES

	Page
Table 1 Summary of ADA Trips in March 2014.....	4
Table 2 Number of ADA Trips in March 2014 by Provider.....	4
Table 3 On Time Performance by Provider.....	5
Table 4 Early Departure by Provider.....	6
Table 5 Sun Metro LIFT Average One-Way Trip Duration.....	9
Table 6 Sun Metro LIFT Average One-Way Trip Length.....	9
Table 7 Number of Trips by Equipment.....	11
Table 8 Sun Metro LIFT Average Dwell Time by Equipment.....	11
Table 9 Non-ADA Customers in March 2014.....	12
Table 10 Passenger Type of Completed Trips in March 2014.....	12
Table 11 No Show/Late Cancellation Trips in March 2014.....	13
Table 12 Passengers Categorized by No-show/Late Cancellation Percentage.....	13
Table 13 Cancellation by Riding Frequency.....	14
Table 14 OD Analysis for Completed Trips in March 2014.....	15
Table 15 On-Time Performance for Non-Dialysis Trips and Dialysis Trips by Provider.....	19
Table 16 Sun Metro LIFT Average One-Way Trip Duration for Dialysis Trips.....	20
Table 17 Sun Metro LIFT Average One-Way Trip Length for Dialysis Trip.....	20
Table 18 Final Peer List – Demographics and Performance Metrics.....	22
Table 19 Demographic Data by Agency/Principal City.....	24
Table 20 Peer Paratransit Statistics and Performance Metrics.....	26
Table 21 On-Time Performance Versus Standard for Time On Board.....	31
Table 22 No-Show Policy Enforcement Versus Percent No Shows.....	32
Table 23 Vehicles per Dispatcher Compared to Performance.....	34

LIST OF FIGURES

	Page
Figure 1 Pick-up Time Distribution of Launched Trips in March 2014.....	7
Figure 2 Pick-up Time Distribution of All Early Trips in March 2014.....	8
Figure 3 Trip Length Distribution of Completed Trips in March 2014.....	10
Figure 4 Relationship Between Trip Time and Trip Length.....	10
Figure 5 Cancellation Type and Frequency for Passengers Who Did Not Complete Any Trip.....	14
Figure 6 Averaged Trip Request vs Averaged Vehicle in Service on Wednesdays.....	17
Figure 7 ADA and Total Passengers per Revenue Hour by Agency March 2014	27
Figure 8 On-time Performance Compared to Goal by Agency – March 2014.....	28
Figure 9 Sun Metro – OTP Versus Productivity.....	29
Figure 10 CMTA – OTP Versus Productivity	29
Figure 11 Tucson – OTP Versus Productivity	29
Figure 12 Vehicles in Service by Half Hour – Average Day, March 2014.....	35
Figure 13 Trip Requests by Half Hour – Average Day, March 2014.....	35

REVIEW OF SUN METRO LIFT SERVICES

BACKGROUND

The City of El Paso (City) contracts with a private contractor, MV Transportation, Inc. (MV), to operate Sun Metro LIFT (Living Independently Facilitated by Transportation). LIFT is the paratransit service that complements Sun Metro fixed-routes as required by the Americans with Disabilities Act (ADA) of 1990 and the Federal Transit Administration (FTA).

FTA regulations require that a transit agency complement fixed-route transit by providing ADA paratransit services that meet the following standards:

- Operate within 3/4-mile of a local fixed route.
- Operate same days and hours as fixed route.
- Accept reservations at least a day in advance.
- Charge a fare no more than twice the base fare for a non-discounted adult fare for local fixed route.
- Serve requests for all trip purposes without priority.
- Operate without capacity constraints—without a substantial number of untimely pick-ups, missed trips, excessive trip lengths, and long telephone hold times.

The FTA requires complementary ADA paratransit within 3/4-mile of every local bus route. The LIFT service area extends 1.5 miles beyond Sun Metro's existing fixed-route service area but within the El Paso city limits. The LIFT days and hours of operation are consistent with Sun Metro's local fixed route-transit services. An eligible passenger may call the day before or up to seven days ahead to schedule a trip. The paratransit fare is \$2.50 per one-way trip as compared to the local base fare of \$1.50. The LIFT complies with the FTA requirement to serve requests for all trip purposes without priority. This report addresses topics relevant to available LIFT capacity.

The City contracts to MV to provide ADA paratransit services as Sun Metro LIFT. MV directly subcontracts to Sun City Cab (MVSCC) to assist in serving ADA paratransit trips. The City also contracts with transportation providers Sun City Cab (SC Cab) and Project Amistad. SC Cab and Project Amistad assist with ADA paratransit trips and operate FTA-funded Job Access Reverse Commute (JARC) transit service. MV is responsible for reservations, scheduling trips and dispatch for all ADA paratransit, JARC, and New Freedom transit services.

The City contract with MV for Sun Metro LIFT transit services sets the following performance goals:

Performance Category	Acceptable	Goal
On-time performance	93%	95%
Productivity (ADA trips per revenue hour)	1.8	2.0
Revenue miles between road calls	30,000	35,000
Incidents per 100,000 miles	2.0	1.6

PURPOSE OF THIS REPORT

The City contracted with Texas A&M Transportation Institute (TTI) to perform an analysis of Sun Metro LIFT service data to evaluate the performance of the transit providers. The City requested TTI to perform an independent, objective assessment of the performance standards and reported metrics for the LIFT paratransit service. TTI conducted the study in two parts: 1) an analysis of LIFT dispatch records documenting the service performed, and 2) a comparison of LIFT performance metrics to data from peer transit agencies.

TTI analyzed trip-by-trip performance for every passenger trip delivered on LIFT for a one-month period (March 2014). TTI conducted a comprehensive analysis of the driver manifests to evaluate service quality, efficiency, and effectiveness. TTI also evaluated trip patterns and passenger trip characteristics. Based on these data, TTI evaluated the impact of operating policies and practices on on-time performance and productivity.

TTI also collected information about peer transit agency performance standards, operating procedures, and actual performance statistics for ADA paratransit. TTI selected five peers based upon relevant criteria. TTI gathered data on peer performance from available databases, published reports, and data provided by the peer agencies. TTI compared and contrasted peer performance to Sun Metro LIFT experience. TTI also researched peer policies and practices for service above ADA paratransit regulations, specifically inquiring about practices to provide premium service for riders returning from medical procedures, such as dialysis. Based on the peer comparisons, TTI researched more comprehensively the operations policy and practices of peer agencies with higher on-time performance and productivity.

The purpose of this report is to document the analysis of dispatch data and peer comparisons and to present findings. For an electronic copy of this report and a spreadsheet database of the peer review findings, please visit TTI's website: <http://tti.tamu.edu/group/transit-mobility/projects/>

ANALYSIS OF ACTUAL DISPATCH RECORDS

TTI researchers conducted the dispatch analysis using the following five data sources provided by Sun Metro LIFT:

- Sun Metro LIFT and JARC final trip data for March 2014 (includes data for subcontractors).
- Final trip cancellation data for March 2014.
- Common location (origins and destinations) report for each provider for March 2014.
- LIFT March 2014 odometer readings.
- Passenger statistics report for March 2014.

TTI researchers analyzed the full month of March 2014 scheduled and performed trip data. TTI researchers chose March because that month represented a typical service month with good ridership, no extraordinary weather days, and no unusual service events that could skew the service data. Sun Metro LIFT scheduled a total 28,464 trips in the month of March—representing an ample study sample that reflects typical weekday and weekend service. TTI researchers requested data elements from the automated routing and scheduling system (Trapeze) to analyze and calculate performance metrics. The Sun Metro LIFT Service Compliance Officer worked with Trapeze programmers to provide a customized data query to gather data needed to calculate the following metrics:

- On-time performance.
- No-show and late cancellation rates.
- Specific destination (dialysis centers) performance.
- Passenger trips by type (passenger, attendant, companion).
- Mobility aide trips (wheelchair, extra-large wheelchair, etc.).
- Number of trips outside of the ADA required 3/4 mile of the local fixed-route and out-of-county trips.

The Trapeze data included: prior day customer scheduled times for pick-up and drop-off, service day actual arrival and departure times as captured through the mobile data terminal (MDT) on each vehicle, location origin and destination addresses, mapping coordinates as captured by the MDT, schedule status codes (no-show, no-show excused, late cancel, advanced cancel, missed trip).

Analysis Methodology

This section provides the methodology to analyze the actual dispatch records for March 2014.

Data Compilation

Final trip data and cancel data were first processed in Microsoft Excel 2010. A matching macro was developed to merge the pick-up and drop-off information for each trip. Each requested trip was stored in a single row in Excel with a unique identifier, a BookingID. Cancel data and odometer data were processed and compiled into the database based on the BookingID. Duplicated information was removed so that each column of the compiled database represents unique information. TTI researchers ended up with a database including 30,110 requested trips and each trip is associated with unique dispatch records.

Researchers retrieved BookingIDs of trips associated with the dialysis centers from the common location report, and then identified the actual street address recorded in the Trapeze software for each dialysis center. The street addresses were used in the dialysis analysis.

ADA Paratransit Trips Separation

Six service providers, Sun Metro LIFT, MVSCCAB, SC Taxi, Project Amistad, JARC, and TAXI, were recorded in the compiled database; JARC and TAXI, however, are not ADA paratransit trips. Researchers excluded 9,662 trips noted as JARC or TAXI and retained the remaining 25,279 ADA trips for the following analysis. Table 1 presents the summary of all ADA trips in March 2014.

Table 1 Summary of ADA Trips in March 2014

Sun Metro ADA Service in March 2014	Total Trip	
	Number	Percent of Total
Total Trips Scheduled	25,279	100%
Cancelled in Advance	4,095	16.2%
Launched Trips*	21,184	83.8%
<i>Completed Trips</i>	20,060	79.4%
<i>Late Cancellations/No Shows</i>	1,124	4.4%

*Vehicle dispatched for the trip

Vehicles were dispatched and passengers were successfully picked up and dropped off for 79.4 percent of total trips. Vehicles were dispatched but no passenger was picked up at the scheduled location due to late cancel, cancel at door, or no show for 4.4 percent of total trips. The remainder, 16.2 percent of total trips, was never dispatched because the passenger cancelled the trip in advance.

ADA Paratransit Trips by Providers

Setting aside trips cancelled in advance, researchers separated the total launched ADA trips (a vehicle was dispatched) by service provider. The results are displayed in Table 2. Sun Metro LIFT is the primary ADA paratransit provider in El Paso, serving 94.9 percent of all ADA trips in March 2014. SC Taxi and MVSCCAB each provide about 2.5 percent of total launched trips. Project Amistad provides the remaining trips (0.2 percent).

Table 2 Number of ADA Trips in March 2014 by Provider

Trip Provider	Launched Trips		Completed Trips	Late Cancel
	number	percent	number	number
Sun Metro LIFT	20,097	94.9%	19,034	1,063
SC Taxi	570	2.7%	545	25
MVSCCAB	477	2.3%	445	32
Project Amistad	40	0.2%	36	4
Total Launched			94.7%	5.3%

On-Time Performance

Sun Metro LIFT has a 30-minute (30-min) pick up window. A vehicle that arrives to pick up a passenger between 15 minutes before and 15 minutes after the scheduled time is considered as on time. In practice, drivers may arrive at the schedule location earlier than the 30-minute window. For example, a driver arrives at the pick-up location at 10:10 am for a trip scheduled at 10:30 am. Sun Metro LIFT and the City Service Compliance Officer consider an early trip to be on time. To distinguish these trips with trips within the 30-minute window, TTI researchers refer to these trips as early trips.

Table 3 presents the on-time performance results by provider. All providers' on-time performance averaged 90.9 percent. MVSCCAB recorded 98.4 percent of trips as on time, followed by SC Taxi with 97.5 percent. Sun Metro LIFT had an on-time performance of 90.6 percent for 20,091 trips served in March 2014. Project Amistad served 35 trips with an on-time performance of 82.9 percent. Figure 1 illustrates the pick-up time distribution of all launched trips in March 2014.

Table 3 On Time Performance by Provider

Launched Trips* in March 2014	Trips number	Before 30-min Window (Early)		Within 30-min Window		Total On-Time		After 30-min Window (Late)	
		number	percent	Number	percent	number	percent	number	percent
Sun Metro LIFT	20,091	3,480	17.3%	14,719	73.3%	18,199	90.6%	1,892	9.4%
SC Taxi	554	10	1.8%	530	95.7%	540	97.5%	14	2.5%
MVSCCAB	437	35	8.0%	395	90.4%	430	98.4%	7	1.6%
Project Amistad	35	7	20.0%	22	62.9%	29	82.9%	6	17.1%
Total*	21,117	3,532	16.7%	15,666	74.2%	19,198	90.9%	1,919	9.1%

*67 (0.3%) Launched Trips are excluded because of missing time information

Early Trips

Researchers conducted further analysis specifically for early trips to understand the distribution of early trips and drivers' habits when arriving early.

Table 4 shows the total number of early trips, and Figure 2 illustrates the pick-up time distribution of all early trips. The majority of early trips occurred within 5-10 minutes before the 30-minute window. Sun Metro LIFT shows 8.9 percent of the 17.3 percent trips that are early arrived within 5 minutes before the 30-minute window, 3.8 percent within 6-10 minutes before the 30-minutes window, and 2.1 percent within 11-15 minutes before the 30-minute window.

Sun Metro LIFT policies require drivers to wait out of sight of the scheduled passenger until the time is within the 30-minute window before actually pulling up to meet the passenger. However, Table 4 shows that Sun Metro LIFT drivers departed earlier when they arrived earlier, and drivers for 47.9 percent of early trips actually depart from the pick-up window (with the passenger) earlier than the 30-minute window (early departure).

Table 4 Early Departure by Provider

Launched Trip* in March 2014	Trips number	Arrive Before 30-min Window		Depart Before 30-min Window**	
		number	percent	number	percent
Sun Metro LIFT	20,091	3,480	17.3%	1,668	47.9%
SC Taxi	554	10	1.8%	10	100.0%
MVSCCAB	437	35	8.0%	35	100.0%
Project Amistad	35	7	20.0%	7	100.0%
Total*	21,117	3,532	16.7%	1,720	48.7%

*67 (0.3%) Launched Trips are excluded because of missing time information

**Early Departure: the driver departs from a stop earlier than the 30-minute window (= scheduled arrival time – 15 minutes).

Early departure extends the on-time window for picking up passengers. Passengers may need to be ready earlier because of the possibility they might be picked up before the scheduled on-time window. The no-show rate and late cancellation rate may increase due to early departures, which would add extra expense to the agency's operational cost.

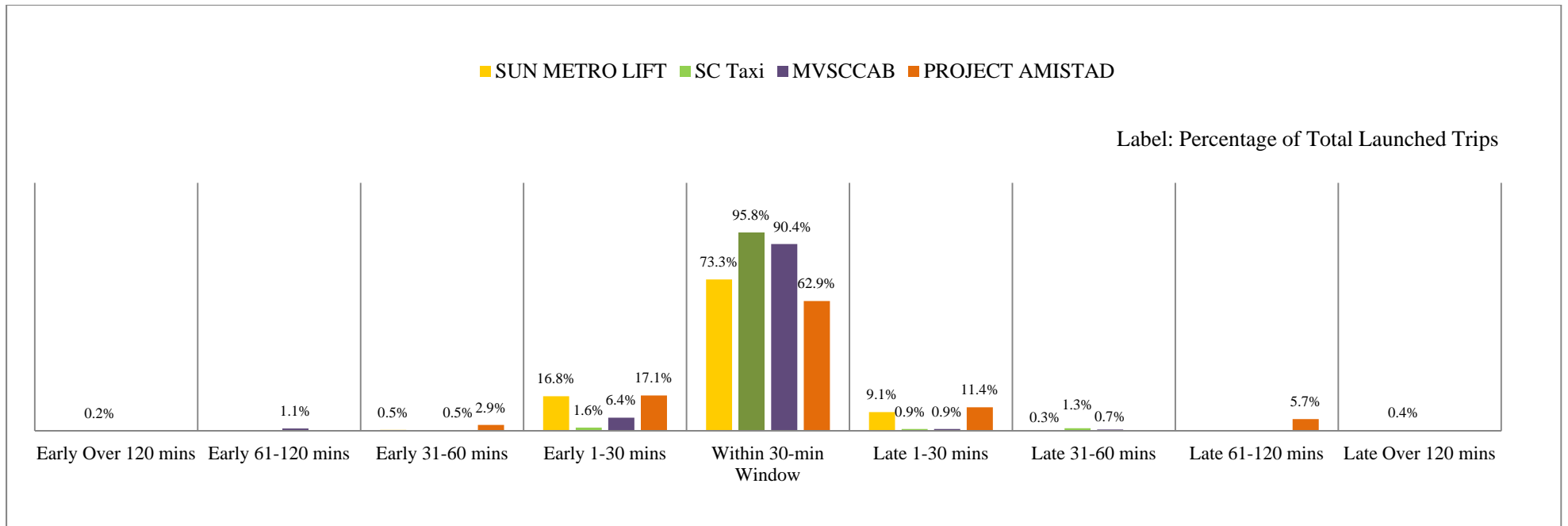


Figure 1 Pick-up Time Distribution of Launched Trips in March 2014

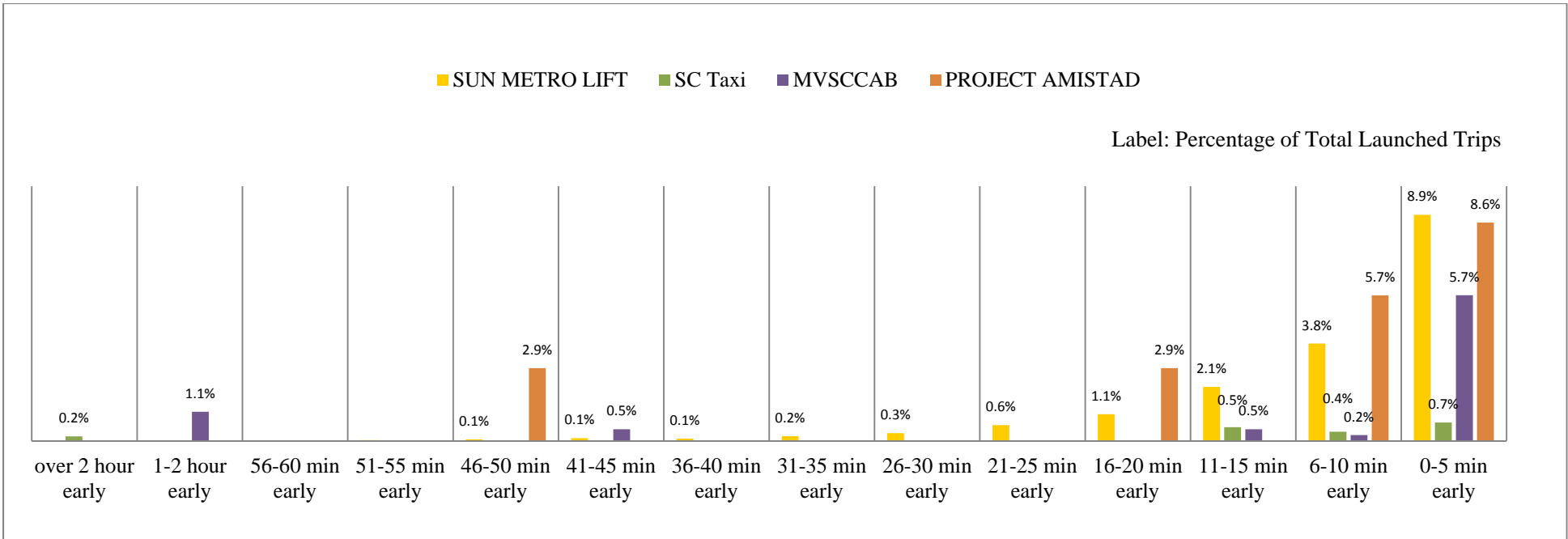


Figure 2 Pick-up Time Distribution of All Early Trips in March 2014

Travel Time and Distance

TTI researchers limited the analysis of this section to one service provider, Sun Metro LIFT, because time and odometer data of other providers were not enough to support a reliable analysis. Sun Metro LIFT scheduled 94.9 percent of all ADA trips (20,097) and completed 19,034 of those trips.

Trip Duration

Researchers calculated Sun Metro LIFT's one-way trip duration based on the actual departure time for pick-up and the actual arrival time for drop-off. Table 5 displays the results of the analysis of trip duration. Thirty-nine out of 19,034 completed trips were excluded due to data limitations. For the 18,995 completed trips in the analysis, Sun Metro LIFT provided 597,845 minutes (9,964 hours) of service to safely transport passengers between origins and destinations in March 2014. Minutes of service divided by the number of completed trips, Sun Metro LIFT's average one-way trip duration was 31.47 minutes.

Table 5 Sun Metro LIFT Average One-Way Trip Duration

Total Minutes	597,845
Total Completed Trips*	18,995
Avg. One-Way Duration (minutes)	31.47

*39 Completed Trips are excluded because of lack of necessary time information or the information cannot be confirmed.

Trip Length

TTI researchers calculated the average Sun Metro LIFT one-way trip length according to the pick-up and drop-off odometer readings. Nineteen out of 19,034 completed trips were excluded due to data limitations. Table 6 displays the results of the analysis of trip length. Sun Metro LIFT travelled 105,257 miles with passengers on board in March 2014. Divided by the amount of total completed trips, Sun Metro LIFT's average one-way trip length is 11.17 miles. Combined with the average one-way duration, researchers calculated Sun Metro LIFT's average speed, which 21.29 miles per hour (mph).

Table 6 Sun Metro LIFT Average One-Way Trip Length

Total Length	105,257
Total Completed Trips*	9,426
Average One-Way Length (mile)	11.17
Average Speed (mph)	21.29

*19 Completed Trips are excluded because of lack of necessary time information or the information cannot be confirmed.

Figure 3 illustrates the distribution of ADA trips by length (miles). Trip lengths ranged from 0.1 mile to 70.1 miles, but 51.2 percent of trips were less than 10 miles.

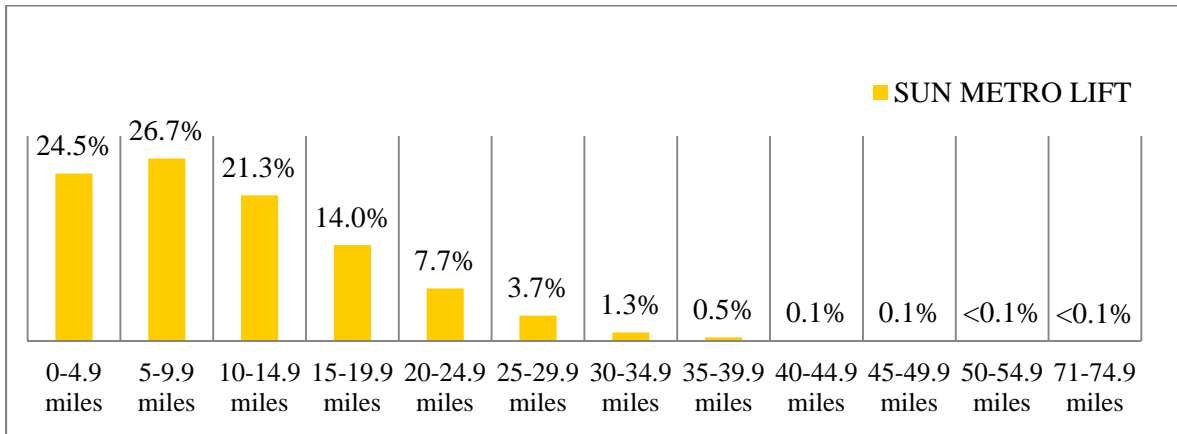


Figure 3 Trip Length Distribution of Completed Trips in March 2014

Researchers also examined the relationship between trip length and trip duration (trip time in minutes). As shown in Figure 4, this is a typical linear relationship—a longer one-way trip length correlates to a longer one-way trip duration. There are exceptions where trip time is disproportionate to trip length. These exceptions require individual analysis to determine cause and resolution.

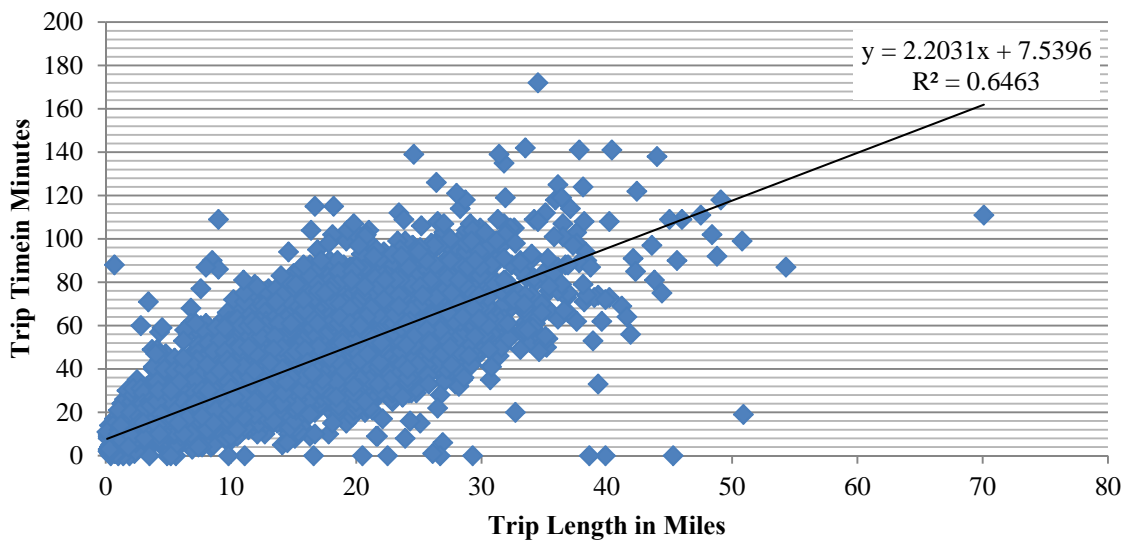


Figure 4 Relationship Between Trip Time and Trip Length

Dwell Time

Researchers categorized 20,060 completed trips (all providers) by type of wheelchair to track the impact on dwell time. In the categorization process, researchers recognized the trip as an extra-large wheelchair trip if at least one boarding passenger used an extra-large wheelchair. Similarly, the trip was counted as a wheelchair trip if no passenger boarded with an extra-large wheelchair but at least one passenger boarded with a wheelchair. The remaining trips were recognized as non-wheelchair trips.

Table 7 shows that 3 percent of ADA trips in March 2014 included at least one passenger who used an extra-large wheelchair; 33 percent of trips included at least one passenger who used a wheelchair; and 64 percent were non-wheelchair trips. Table 8 compares the average pick-up dwell time to the average drop-off dwell time for wheelchair and non-wheelchair trips. Generally, pick-up dwell times are longer than drop-off dwell times, and riders who use wheelchairs take longer than non-wheelchair riders to board the vehicle. In March 2014, Sun Metro LIFT’s average pick-up dwell times were between 4.58 minutes and 7.42 minutes, while the average drop-off times ranged from 2.41 minutes to 5.34 minutes.

Table 7 Number of Trips by Equipment

Equipment of Completed Trips in March 2014	Completed Trip	
	number	Percent
Non-Wheelchair	12,768	64%
Wheelchair	6,613	33%
Extra-large Wheelchair	679	3%
Total	20,060	100%

Table 8 Sun Metro LIFT Average Dwell Time by Equipment

Sun Metro LIFT Dwell Time of Completed Trips* in March 2014	Pick-up avg. minutes	Drop-off avg. minutes
Non-Wheelchair	4.58	2.41
Wheelchair	6.89	4.20
Extra-large Wheelchair	7.42	5.34

*22 Completed Trips are ruled out because of lack of necessary time information or the information is wrong

Passengers

Sun Metro policies allow ADA passengers to travel with a personal care attendant (PCA) for free, and with an additional companion on a space-available basis. Researchers calculated the percentage of passengers who travel with an attendant and/or a companion, and the results are shown in Table 9. In March 2014, 70.2 percent of Sun Metro paratransit riders travelled alone, 29.5 percent travelled with one non-ADA customer, and 0.3 percent travelled with two non-ADA customers or more.

Table 9 Non-ADA Customers in March 2014

Passengers (Completed Trips in March 2014)	Trips	
	number	percent
Travelled alone	14,073	70.2%
Travelled with 1 non-ADA customer	5,927	29.5%
Travelled with 2 non-ADA customers	60	0.3%
Total	20,060	100.0%

To understand the composition of non-ADA customers, TTI researchers categorized all on-board customers in March 2014 by passenger type summarized in Table 10. Attendants were 22.8 percent of the on-board riders, and companions were 0.3 percent. The average riders per ADA passenger trip were 1.3.

Table 10 Passenger Type of Completed Trips in March 2014

Passenger Type of Completed Trips in March 2014	Ridership	
	number	percent
Passenger	20,062	76.8%
Attendant	5,965	22.8%
Companion	79	0.3%
Child Safety Seat	3	0.01%
Total Ridership	26,109	100%
Total Number of Trips	20,060	
Average Riders per Trip	1.30	

No-Show and Late Cancellation

Of the 25,279 scheduled ADA trips in March 2014, 2.6 percent of trips no passenger showed up at the scheduled pick-up location, 3.3 percent of trips the passenger late cancelled, and 1.9 percent of trips passengers cancelled at door is (see Table 11). The latter two categories (late cancel and cancel at the door) are called late cancellation by TTI researchers.

Table 11 No Show/Late Cancellation Trips in March 2014

No Show/Cancellation (Trips in March 2014)	Trips	
	number	percent
Total Trips in March	25,279	100.0%
<i>No Show</i>	647	2.6%
<i>Late Cancel</i>	831	3.3%
<i>Cancel at door</i>	472	1.9%

Researchers conducted a further no-show and late cancellation analysis to understand paratransit passengers' scheduling behaviors. Sun Metro LIFT has a no-show/late cancellation policy for passengers who have been a no-show or cancelled late for 10 percent or more of his/her rides within 30 consecutive days. Researchers analyzed the March records using the 10 percent standard (see Table 12). Sixty-three percent of passengers did not no-show or cancel late at all, and 28 percent of passengers violated the policy.

Table 12 Passengers Categorized by No-show/Late Cancellation Percentage

No Show/Late Cancellation Percent of Passengers in March 2014	Passengers	
	number	percent
<10%	1,958	72%
0%	1,718	63%
0.1% – 9.9%	240	9%
≥10%	756	28%
10% – 50%	568	21%
50.1% – 99.9%	60	2%
100%	128	5%
Total	2,714	100%

Although Sun Metro LIFT does have a penalty associated with the no-show/late cancellation policy, no passenger’s service has actually been suspended as a result. A total of 128 scheduled passengers did not show up or late cancelled for *all* trips scheduled. Researchers found that 89 percent of cancellations were made by passengers who did not complete any trip (see Table 13). Less frequent riders tend to cancel more trips. Figure 5 displays the cancellation type for passengers who did not complete any trip by cancellation frequency.

Table 13 Cancellation by Riding Frequency

	Passenger	Cancellation		Avg. Cancellation per Person
	Count	Count	Percent	Number
Total	2,714	4,564		1.68
Passengers completed at least one trip	1,592	490	11%	0.31
Passengers did not complete any trip	1,122	4,074	89%	3.63

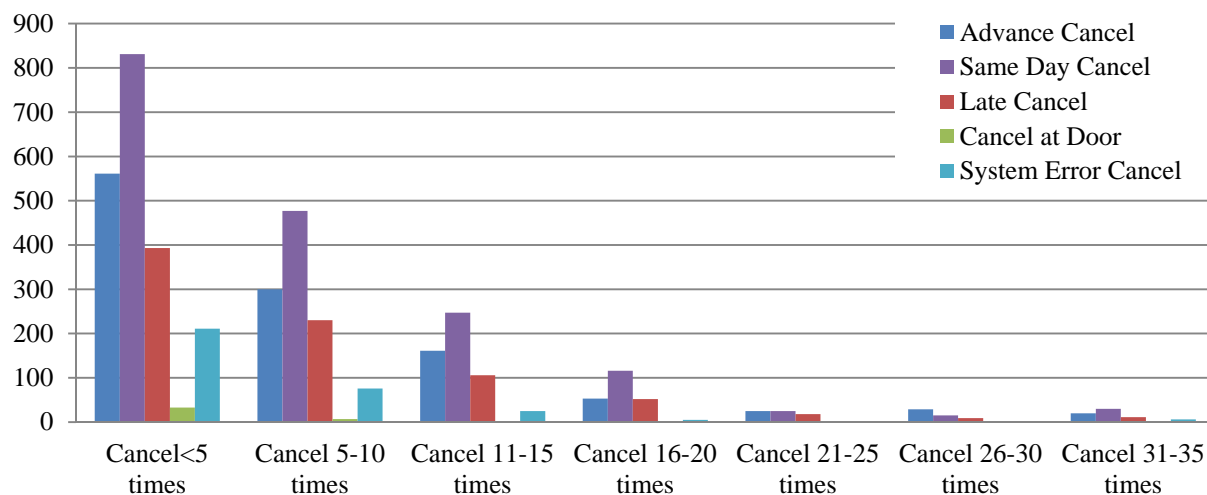


Figure 5 Cancellation Type and Frequency for Passengers Who Did Not Complete Any Trip

Trip Origins and Destinations

The Americans with Disabilities Act of 1990 (ADA) requires transit agencies to provide paratransit service to eligible people with disabilities within 3/4 mile on either side of fixed-route services. Researchers added Sun Metro fixed routes and the Sun Metro service area boundaries into ArcGIS software, and then identified the location of trip origins and destinations for OD analysis.

Sun Metro LIFT serves the ADA mandated areas as well as areas outside the mandated area. According to Table 14, 12,656 out of 20,060 (63 percent) completed trips were taken within the ADA mandated area. Of the completed trips, 95 percent had at least one end in the mandated ADA service area.

Table 14 OD Analysis for Completed Trips in March 2014

OD Analysis (Completed Trips in March 2014)		Destinations						Total
		Within ¾-mile Sun Metro local fixed routes		Within Sun Metro SA but outside ¾-mile		Outside Sun Metro service area		
		<i>number</i>	<i>% total</i>	<i>number</i>	<i>% total</i>	<i>number</i>	<i>% total</i>	
Origins	Within 3/4 mile Sun Metro local fixed route	12,656	63.1%	3,254	16.2%	42	0.2%	15,952
	Within Sun Metro service area but outside 3/4-mile	3,029	15.1%	1,027	5.1%	22	0.1%	4,078
	Outside Sun Metro service area	26	0.1%	4	0.0%			30
	Total	15,711	78.3%	4,285	21.4%	64	0.3%	20,060

Trip Requests and Vehicles in Service

Researchers analyzed the trip request distribution categorized by 30-min time interval, and compared the distribution for weekdays and weekend days. Generally, total trip requests went down from Monday to Sunday. Trip request peaks appeared at 8:00-8:30 am, 14:00-14:30pm, and 17:00-17:30pm. This pattern kept appearing Monday through Thursday. On Fridays, the 17:00-17:30 peak disappeared. During the weekends, trip requests are distributed more evenly, and the appearance of peaks was delayed.

Researchers averaged the demand of Wednesdays for the month of March 2014 and then compared the average with the average number of vehicles in service for that day. Wednesday was selected because that day of the week has the highest demand for ADA passenger trips. Figure 6 illustrates the relationship between trip demand and the number of vehicles in service. The number of vehicles tended to go up as the trip requests increased, however, the number of vehicles did not follow the increase rate of trip requests during the peak hours because the number of vehicles reached the upper available limit.

Researchers also compared the vehicle/demand ratio with the percentage of on-time trips in each time interval. No significant relationship was found. In some cases, drivers pick up multiple passengers at the same location, which may explain this.

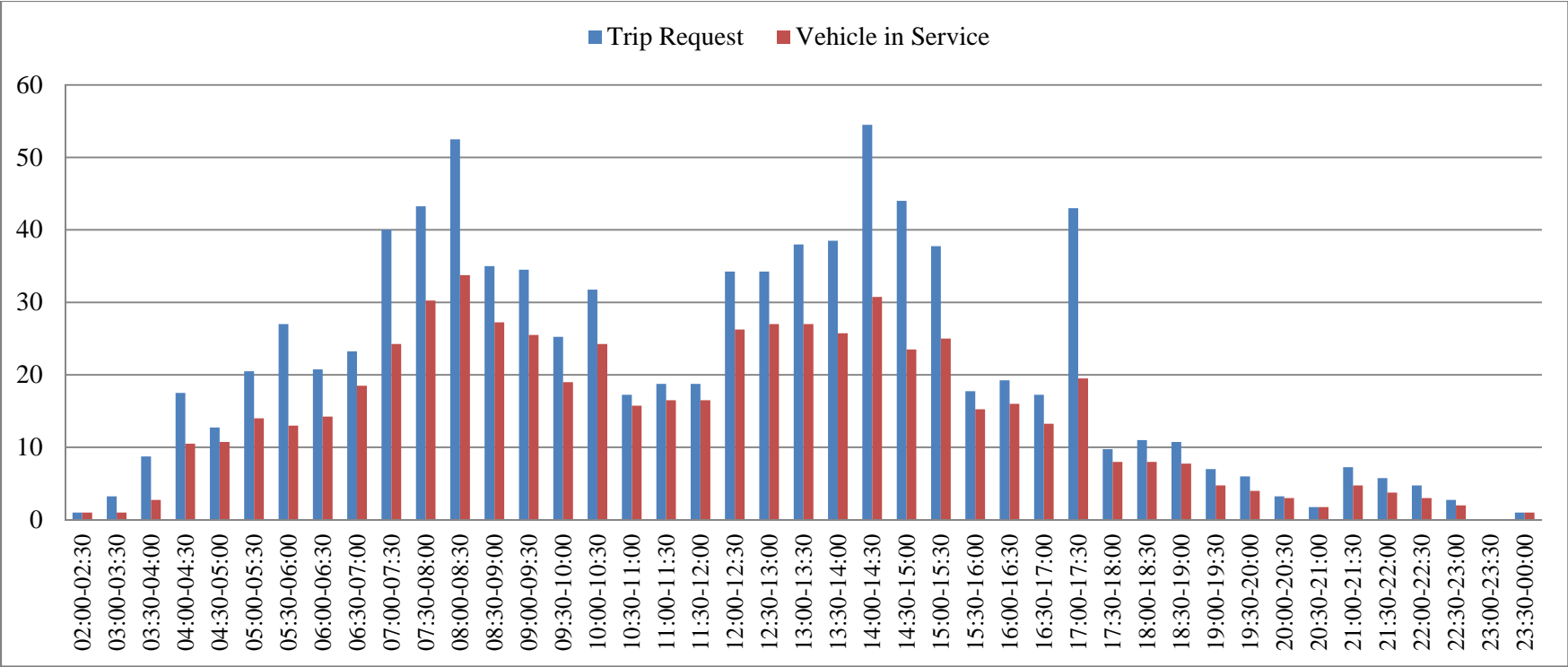


Figure 6 Averaged Trip Request vs Averaged Vehicle in Service on Wednesdays

Dialysis Trips

On-Time Performance for Dialysis Trips

Sun Metro provides service to 23 dialysis facilities in El Paso (based on the common name of trips destinations). Among them, 21 facilities were destinations for the March 2014 ADA paratransit trips. Researchers named trips with at least one end located at a dialysis facility as a dialysis trip. In total, there were 5,013 dialysis trips—24 percent of launched trips in March 2014. Table 15 documents the data to analyze dialysis trips. Researchers compared dialysis trips to non-dialysis trips and then compared the average on-time performance by provider. No significant differences were found. Dialysis trips by Sun Metro LIFT have a slightly lower on time performance (0.2 percent) than non-dialysis trips. Researchers also analyzed the on-time performance for dialysis trips by dialysis facility, the ratios vary from 79.5 percent (at BMA-10767 Gateway) to 100 percent (at Eastside Transit Mall). The number of trips to each facility is relatively small; therefore, researchers cannot make any definitive judgment on the on-time performance associated with each facility.

Table 15 On-Time Performance for Non-Dialysis Trips and Dialysis Trips by Provider

Launched Trip* in March 2014	Trip number	Before 30-min Window (Early)		Within 30-min Window		On-Time		After 30-min Window (Late)	
		number	percent	number	Percent	number	percent	number	percent
Non-Dialysis Trip	16,104	2,790	17.3%	11,797	73.3%	14,587	90.6%	1,517	9.4%
Sun Metro LIFT	15,482	2,726	17.6%	11,261	72.7%	13,987	90.3%	1,495	9.7%
SC Taxi	239	8	3.3%	221	92.5%	229	95.8%	10	4.2%
MVSCCAB	356	52	14.6%	298	83.7%	350	98.3%	6	1.7%
Project Amistad	27	4	14.8%	17	63.0%	21	77.8%	6	22.2%
Dialysis Trip**	5,013	917	18.3%	3,634	72.5%	4,551	90.8%	462	9.2%
Sun Metro LIFT	4,609	905	19.6%	3,247	70.4%	4,152	90.1%	457	9.9%
SC Taxi	315	3	1.0%	308	97.8%	311	98.7%	4	1.3%
MVSCCAB	81	5	6.2%	75	92.6%	80	98.8%	1	1.2%
Project Amistad	8	4	50.0%	4	50.0%	8	100.0%		0.0%
Total*	21,117	3,707	17.6%	5,431	73.1%	19,138	90.6%	1,979	9.4%

*67 (0.3%) Launched Trips are excluded because of missing time information

** Trips with at least end located at a dialysis facility are counted as Dialysis Trip.

Travel Time and Distance for Dialysis Trips

TTI researchers selected the 4,419 (23 percent) dialysis trips from Sun Metro LIFT’s 19,034 completed trips, and compared the trip duration, trip length, and dwell time with all trips. Again, no significant difference was found. In terms of trip duration and trip length, Table 16 and Table 17 show that dialysis trips were slightly shorter than all trips with an average one-way duration at 28.94 minutes (as compared to 31.47 minutes for all trips) and an average one-way length of 9.91 miles (as compared to 11.17 miles for all trips). The average travel speed 20.54 miles per hour associated with dialysis trips was also slightly faster than all trips, 21.29 miles per hour. In terms of dwell time, dialysis trips had a slightly higher average dwell time due to more trips involved passengers using wheelchairs.

Table 16 Sun Metro LIFT Average One-Way Trip Duration for Dialysis Trips

Total Minutes	127,779
Total Dialysis Trips*	4,415
Avg. One-Way Duration (min)	28.94

*4 Completed Trips are excluded because of lack of necessary time information or the information is wrong.

Table 17 Sun Metro LIFT Average One-Way Trip Length for Dialysis Trip

Total Length	22,767
Total Dialysis Trips*	4,418
Avg. One-Way Length (mile)	9.91
Stand Deviation (min)	7.77
Avg. Speed (mph)	20.54

*1 Completed Trip was excluded because of lack of necessary time information. 2,120 dialysis trips with a 0-mile trip length, were also excluded in the calculation of average.

PEER COMPARISON AND BENCHMARKING

The purpose of TTI’s peer comparison and benchmarking effort is to document industry best practices related to performance and productivity. The peer comparison and benchmarking work focused on two key measures of performance—on-time performance (the percent of trips with on-time pickups) and productivity (number of passenger trips per revenue hour). Researchers recorded and assessed other variables as relevant, including operating environment, operating policies and procedures, efficiency and effectiveness of service delivery, and passenger trip characteristics.

Beyond on-time performance (OTP) and productivity data, TTI researchers collected information about peer transit agency performance standards, standard operating procedures, and other

performance statistics for ADA paratransit to determine the practices and policies that lead to high performance among peers¹. TTI selected peers based on criteria including size of service area, geographic location (Texas), level of paratransit service, population demographics, and/or service model (directly operated versus purchased transportation).

The following section outlines the methods for selecting peers, the analysis of peer data, and a summary of relevant findings. A spreadsheet database (available as Appendix A) documents all data and allows for comparison of data between peer agencies and rapid retrieval of specific agency information.

Peer Selection

Researchers selected peer agencies using a two-phase process. During the first phase, researchers used the peer comparison methodology developed by the Transit Cooperative Research Program's (TCRP) Report 141². The second phase of peer selection targeted specific demographics and characteristics for paratransit operations.

Criteria

The TCRP methodology references data from both the National Transit Database (NTD) and the US Census Bureau to develop a likeness score for all potential peer agencies, using El Paso as the baseline agency. Secondly, researchers gathered data for a series of demand response (DR) performance metrics, such as trips per revenue mile and operational costs as well as mean household income, percent of the population with a disability, percent of the population that holds veteran status, and service delivery methodology (directly operated or purchased transportation). The second round of data collection determined the agencies that are peers for Sun Metro using factors not assessed as part of the TCRP method. Researchers ranked each agency according to the agency's performance for each metric. Agency scores for each metric were averaged together to create an overall score—the agency's final rank. Those with the best match were included in the final list of peers to review.

Selected Peers

The final list of peer agencies is as follows:

- 1) Capital Metro Transportation Authority, Austin, TX (CMTA).
- 2) Corpus Christi Regional Transportation Authority, Corpus Christi, TX (CCRTA).
- 3) Fort Worth Transportation Authority, Fort Worth, TX (The T).
- 4) Transportation Authority of River City, Louisville, KY (TARC).
- 5) Paratransit of Tucson, Inc., Tucson, AZ (Tucson).

Table 18 shows each peer's demographic and performance statistics for 2012 (the most recent publicly available data at the time of the research).

¹ The Sun Metro LIFT goal is 95 percent OTP and a minimum of two passenger trips per hour. Passenger is defined as an ADA-eligible passenger and does not include personal care attendants or companions.

² TCRP Report 141 -A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry – Available here: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_141.pdf

Table 18 Final Peer List – Demographics and Performance Metrics

Agency	Sun Metro	CMTA	CCRTA	The T	TARC	Tucson
City	El Paso	Austin	Corpus Christi	Fort Worth	Louisville	Tucson
Paratransit Name	LIFT	MetroAccess	B-Line	MITs	TARC3	Sun Van
DO-Directly Operated PT-Purchased Transportation (Vendor)	PT (MV)	PT (MV)	PT (MV)	DO	PT (First Transit)	DO (Management Contract – Veolia)

Demographics (2012 American Community Survey 1-yr Estimates)						
2012 Population	672,534	842,595	312,192	782,027	1,302,457	524,278
Median Household Income	\$40,974	\$52,453	\$49,336	\$50,750	\$48,895	\$35,354
Mean Household Income	\$56,620	\$76,287	\$63,423	\$65,836	\$64,165	\$48,688
Percent with Disabilities	8.3%	7.3%	8.1%	6.1%	7.6%	7.8%
Veterans	45,674	39,848	27,772	42,326	96,926	41,708
Veterans with Disabilities	13,222	9,823	7,246	10,603	26,417	12,253
Annual Population Growth Rate Since 2010	1.6%	3.0%	1.1%	2.5%	0.6%	0.3%
Density (population per square mile)	2,635	2,828	1,944	2,301	317	2,313

Demand Responsive Transit (Paratransit) Performance (2012 NTD Data)						
Passenger Trips per Revenue Mile	0.13	0.13	0.17	0.12	0.10	0.15
Passenger Trips per Revenue Hour	2.25	1.88	2.89	2.03	1.74	1.93
Cost per Passenger Trip	\$31.22	\$51.83	\$26.42	\$33.50	\$27.68	\$27.05
Cost per Revenue Mile	\$3.94	\$6.67	\$4.51	\$4.06	\$2.88	\$4.04
Cost per Revenue Hour	\$70.11	\$97.22	\$76.31	\$67.97	\$48.24	\$52.14
Vehicles Operating in Maximum Service	49	214	26	72	78	115

Data Collection

Based on the goals of this research effort, TTI researchers developed a list of necessary data elements including agency performance metrics, paratransit policies and procedures, agency operational details and the agency's specific definitions for paratransit terminology. Researchers collected data directly from peer agency websites as well as through the cooperation of agency representatives.

Methodology

Data collection began with detailed review of each agency's paratransit website and rider's guide documents. After collecting as much data as possible using publicly available resources researchers initiated further data collection efforts by contacting agency representatives directly. Researchers explained the project to each representative and distributed a questionnaire to each person, requesting the individual either fill in responses or schedule a time to discuss the questions over the phone. All peers, except Tucson, opted to fill out the questionnaire and return via email. Tucson's representative met with a TTI researcher in person to discuss the agency's paratransit operation.

Data Retrieved

Researchers collected information detailing each agency's service area demographics, operational details (such as fleet size), staffing and scheduling information, policies, services offered to ADA-eligible riders, agency specific definitions of paratransit terminology and each agency's performance goals as well as the agency's actual performance for March 2014. The following two sections present demographic and ADA paratransit data for Sun Metro and the peer agencies.

Demographics

Demographic data for peers were documented using US Census Bureau data from the 2012 American Communities Survey. In 2012 there were nearly 700,000 people living in the city of El Paso. Peer agencies serve principal cities with populations between approximately 300,000 and nearly 850,000 people. The mean household income of the El Paso population in 2012 was \$56,620. Mean household incomes for peers ranged from nearly \$49,000 to over \$76,000. In 2012, people with disabilities in El Paso represented 8.3 percent of the total population. The percent of the peer populations represented by people with disabilities in 2012 ranged from 6.1 percent to 8.1 percent. Table 19 compares all of the selected demographic variables for Sun Metro and the peer agencies.

Table 19 Demographic Data by Agency/Principal City

Agency	Sun Metro	CMTA	CCRTA	The T	TARC	Tucson
Principal City	El Paso	Austin	Corpus Christi	Fort Worth	Louisville/ Jefferson County	Tucson
Population – 2012	672,534	842,595	312,192	782,027	605,108	524,278
<i>Population – 2010</i>	<i>652,113</i>	<i>795,518</i>	<i>305,442</i>	<i>744,114</i>	<i>598,230</i>	<i>521,132</i>
Annual Population Growth Rate 2010-2012	1.5%	2.8%	1.1%	2.4%	0.6%	0.3%
Median Household Income	\$40,974	\$52,453	\$49,336	\$50,750	\$43,035	\$35,354
Mean Household Income	\$56,620	\$76,287	\$63,423	\$65,836	\$59,087	\$48,688
People with Disabilities	55,835	61,630	25,185	47,778	49,151	40,864
Percent with Disabilities	8.3%	7.3%	8.1%	6.1%	8.1%	7.8%
Veterans	45,674	39,848	27,772	42,326	44,087	41,708
Veterans with Disabilities	13,222	9,823	7,246	10,603	11,766	12,253
Land Area (in square miles ²)	255	298	161	340	397	227
Density (population per square mile ²)	2,637	2,828	1,939	2,300	1,524	2,310

ADA Service Data

Paratransit providers strive to provide service to as many passengers per revenue hour (productivity) as possible to be cost-effective while also operating on time for scheduled trips. Maintaining high OTP and also good productivity can be a challenge. For example, to ensure on-time performance, a transit agency may schedule fewer trips per revenue hour per vehicle, which reduces productivity and requires more vehicles and drivers to handle the same passenger demand. Each transit agency strives to balance OTP and productivity. Agencies that operate paratransit services establish performance goals for OTP and productivity. Generally, these goals are based on local conditions and historical agency performance.

TTI researchers collected performance data for Sun Metro LIFT and the selected peers. Beyond OTP and productivity, researchers collected data for the growth of the paratransit service, the number of passengers served (both ADA-eligible passengers and total passengers including companions and PCAs), speed of service, the ratio of ADA-eligible passengers to PCAs and companions and average trip distance. Table 20 presents these various metrics for Sun Metro and each peer agency.

Analysis

Productivity

Productivity measures the number of riders served within a given revenue hour. Maximizing ridership is necessary to reduce operating costs; however, this goal can directly contradict OTP because each stop requires dwell time and may cause a transit vehicle to run behind schedule. Sun Metro's productivity goal requires that paratransit vehicles serve two or more ADA-eligible riders every revenue hour. In March 2014, Sun Metro served 1.84 ADA-eligible riders per revenue hour. The only peer agency to operate at a higher level is CCRTA—providing service to 2.7 ADA-eligible riders per revenue hour (CCRTA's goal is 2.5 riders). TARC reported productivity of 1.53 ADA-eligible riders per revenue hour (TARC's goal is 1.55 riders). Other peer agencies measure productivity based on *total* passengers per revenue hour rather than *ADA-eligible* passengers per revenue hours.

Table 20 Peer Paratransit Statistics and Performance Metrics

Agency	Sun Metro		CMTA		CCRTA		The T		TARC		Tucson	
Growth per year (passengers increased)	10%		None currently		0.04%		~ 1%		5%		2,000 more passengers Apr-13 to Apr-14	
Total Passengers	26,107		51,291		15,294		31,200		43,290		45,765	
ADA-Eligible Passengers	20,062		44,246		14,225		28,244		37,900		39,551	
Percent of Total Passengers that are ADA-Eligible	77%		86%		93%		91%		88%		86%	
Number of riders that travel with a PCA	20%		~ 7%		5%		7%		~ 8%		6%	
Average speed (miles per revenue hour)	17		14		17		22		16 (15 incl taxis)		13.18	
Average One-Way Trip Distance (miles)	5.5		9		8.33		8		10.1		7.9	
Paratransit Performance Metrics	March 2014	Goal	March 2014	Goal	March 2014	Goal	March 2014	Goal	March 2014	Goal	March 2014	Goal
On-time rate	90.9%	95%	93.4%	95%	95.4%	96%	85.4%	90%	92.0%	93%	95.1%	96.5%
ADA Passenger Trips per Revenue Hour	1.84	2	1.61	<i>n/a</i>	2.7	2.5	1.44	<i>n/a</i>	1.53	1.55	1.74	<i>n/a</i>
Total Passenger Trips per Revenue Hour	2.42	<i>n/a</i>	1.84	2	2.9	<i>n/a</i>	2	2	1.75	<i>n/a</i>	1.91	2

In March 2014 Sun Metro served 1.84 ADA-eligible passengers per revenue hour. When all passengers are counted, the agency served 2.42 total passengers per revenue hour—the second highest productivity rate behind CCRTA. Figure 7 shows each agency’s productivity performance for March 2014 and presents both the ADA-eligible passengers per revenue hour and total passengers per revenue hour statistics.

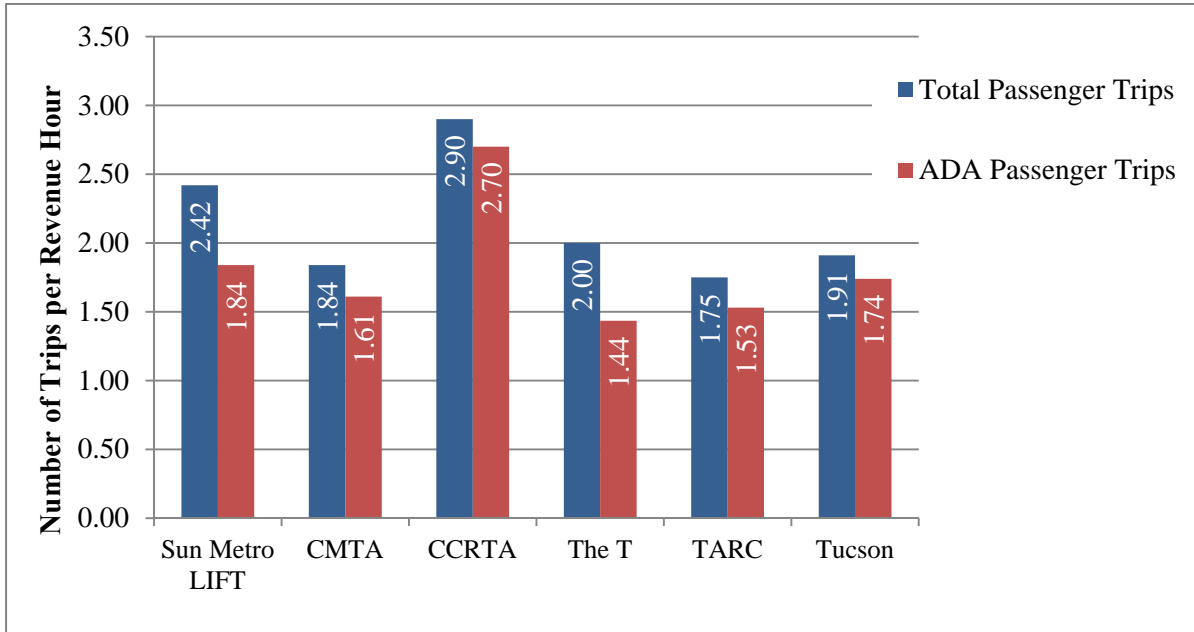


Figure 7 ADA and Total Passengers per Revenue Hour by Agency March 2014

On-time Performance

OTP measures the percent of paratransit trips picked up within the on-time window (30 minutes for all peers). Transit agencies track OTP to verify compliance with ADA regulations. Sun Metro’s goal is to be on time for 95 percent of pickups. In March 2014, Sun Metro achieved 90.9 percent OTP. Figure 8 provides similar data for peer transit agencies. Compared to Sun Metro, four of the five peer agencies operated a higher percent of on-time trips in March 2014. Peer on-time rates in March 2014 ranged between 85.4 percent (The T) to 95.4 percent (CCRTA).

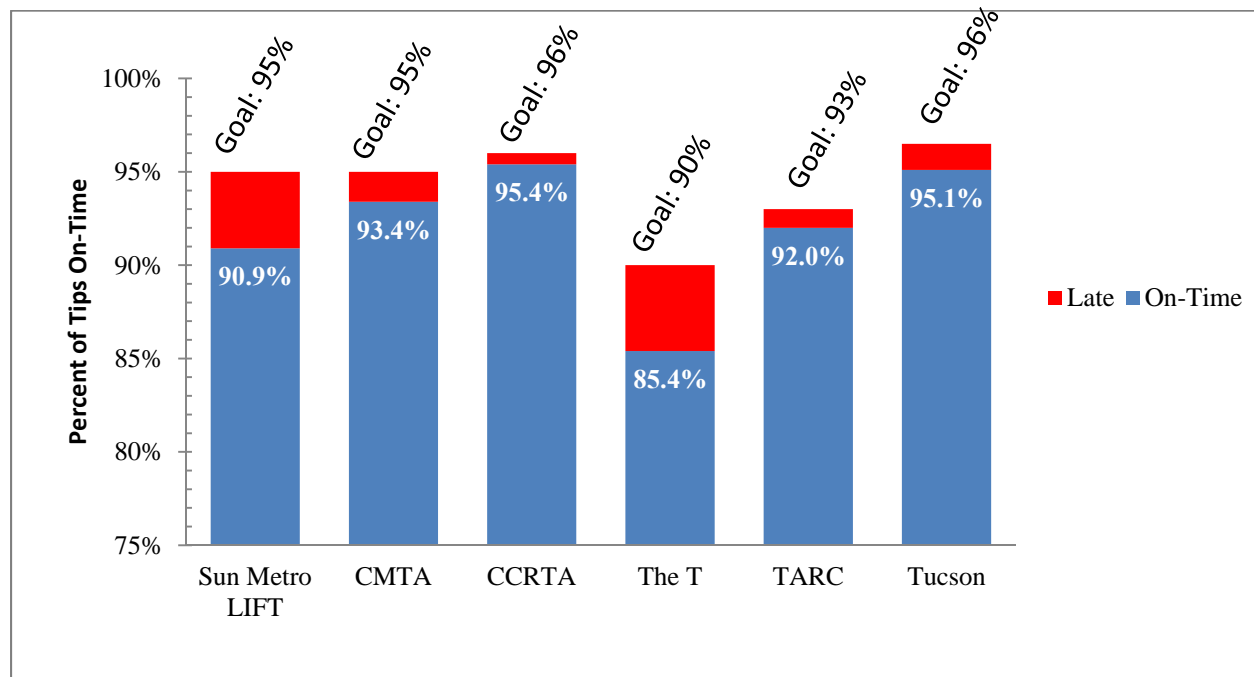


Figure 8 On-time Performance Compared to Goal by Agency – March 2014

On-time Performance Compared to Productivity

Three agencies provided TTI researchers with OTP and productivity data for months other than March 2014 to inform a longitudinal comparison of the two metrics. Researchers found that, for each agency that provided data (Sun Metro, CMTA and Tucson) there is an inverse relationship between high levels of OTP and productivity—when one metric is higher, the other is lower. Figure 9, Figure 10, and Figure 11 present the OTP and productivity trends for Sun Metro, CMTA and Tucson respectively.

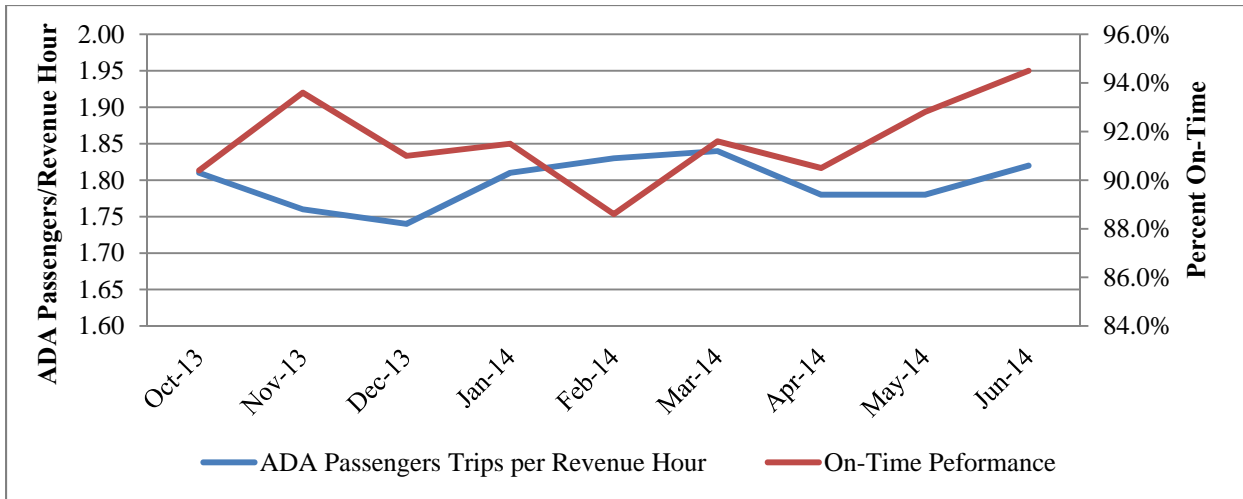


Figure 9 Sun Metro – OTP Versus Productivity

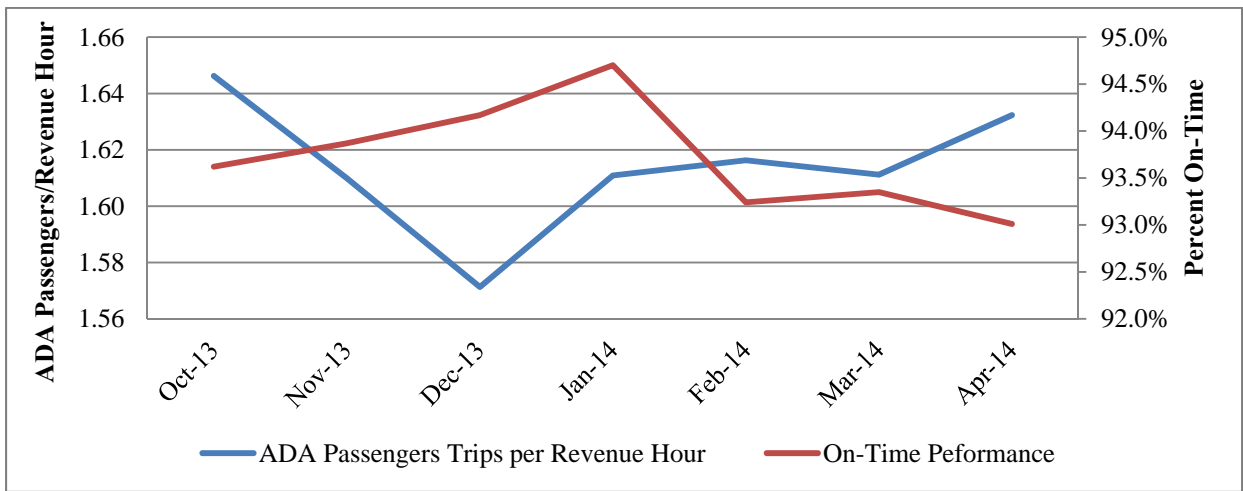


Figure 10 CMTA – OTP Versus Productivity

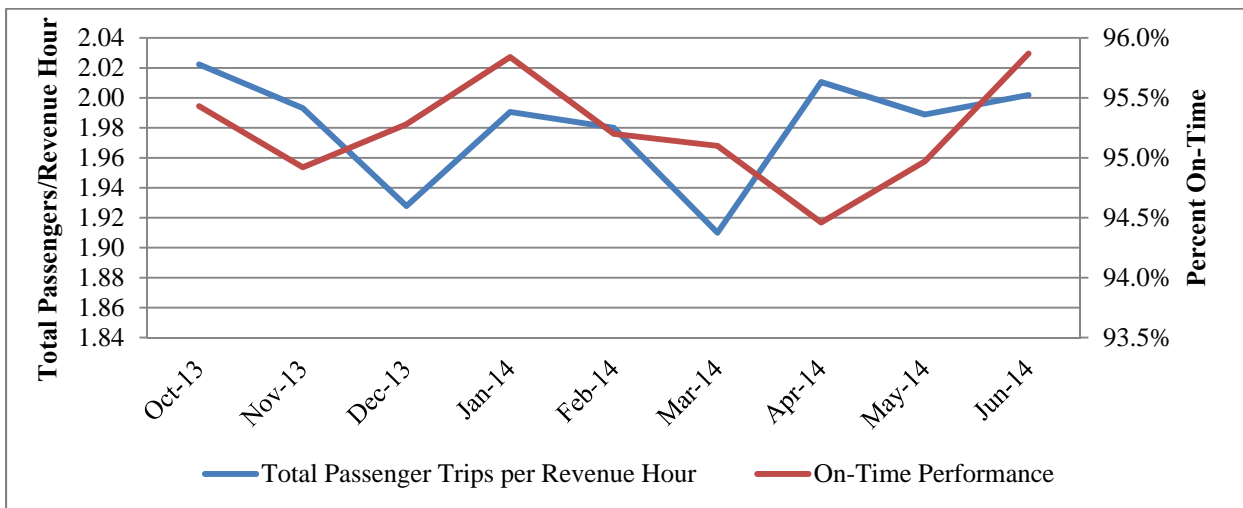


Figure 11 Tucson – OTP Versus Productivity

Analysis Summary

When comparing the on time and productivity performance of the peers, TTTI researchers discovered two significant findings. First, OTP and productivity metrics have significant effects on each other—when one metric improves, the effort involved with that success has the tendency to diminish the performance of the other metric. Second, the Corpus Christi Regional Transportation Authority excels in both on-time performance and productivity measures. The agency achieved both the highest on time and the highest productivity levels during March 2014.

The following section investigates the policies, practices, and operating conditions that may contribute to ADA paratransit performance.

IMPACTS OF POLICIES, PRACTICES, AND OPERATING CONDITIONS ON PERFORMANCE

The following section compares productivity and OTP (as discussed above) with agency policies, practices, and operating conditions to determine what factors have the greatest impact on OTP and productivity. Sun Metro targets a minimum of 95 percent OTP and a minimum of two ADA-eligible passenger trips per hour. When compared to Sun Metro, as well as the other peers, CCRTA stands out as the top productivity performer. The agency operated at a productivity rate of 2.7 ADA-eligible passengers per revenue hour in March 2014—nearly one ADA passenger per revenue hour more than Sun Metro and the only agency to exceed its goal for ADA passengers per revenue hour. CCRTA and Tucson were on time nearly 4 percent more often when compared to Sun Metro and were the closest of all the peers to the agencies' respective on-time goals—both achieving on-time pickup rates 0.4 percent less than goal in March 2014. The T achieved the highest speed of the peers—five miles per revenue hour faster than the second fastest agencies (Sun Metro and CCRTA operate at 17 miles per revenue hour each).

Based on the data collected and agency representative responses, researchers identified standards for managing service provision, no-show policies, technology/software use, and the agency's dispatch staffing as the variables that have the greatest potential to impact service. The following section discusses each of these subjects as they relate to the performance of Sun Metro and the peer agencies.

Service Standards

Every peer agency, except The T, has an established service standard designed to limit the time that ADA-paratransit riders are on-board paratransit vehicles. Limiting on-board time should increase rider satisfaction while contributing to efficient schedules. Each of the peers with an on-board time standard uses the agency’s scheduling software to ensure reasonable trip times. Capital Metro, TARC, and Tucson all use factors that compare the forecasted ADA-paratransit trip time to the time the same trip would take on the agency’s fixed-route system. CCRTA uses a distance versus time metric, which limits riders’ on-board time based on the distance the rider is travelling. If a trip is less than 10 miles a rider cannot be scheduled to be on the vehicle for more than 60 minutes, 11-20 mile trips can be no longer than 90 minutes and 21 plus mile trips can be no longer than 120 minutes.

Each of the peer agencies with a standard that limits a rider’s on-board time also achieved OTP within 2 percent of the agency’s goal. The T, the agency without a standard, missed the agency’s OTP goal by 4.6 percent in March.

Table 21 displays the difference between each peer agency’s goal and actual on-time performance as well as a description of the agency’s standard for on-board time. According to these findings, the existence of such a standard may positively influence OTP by encouraging streamlined and efficient schedules.

Table 21 On-Time Performance Versus Standard for Time On Board

	Sun Metro		Capital Metro		CCRTA		The T		TARC		Tucson	
Metric	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal
On-time Rate	91.6%	95%	93.4%	95%	95.4%	96%	85.4%	90%	92%	93%	95.1%	96.5%
Difference Actual vs Goal	(3.4%)		(1.7%)		(0.6%)		(4.6%)		(1.0%)		(1.4%)	
On-Board Time Standard	Yes		Yes		Yes		No		Yes		Yes	
Description of On-Board Time Standard	Riders shall be on board no more than 60 minutes.		On-board time not to exceed time of comparable fixed route trip.		Trips < 10 miles no more than 60 min.; 11-20 miles no more than 90 min.; 21+ miles no more than 120 min.		n/a		On-board time should not exceed 80 minutes.		No trip can be scheduled that will have rider on board longer than fixed route trip +10% + 5 min. dwell.	

No-Show Policy Enforcement

An agency’s no-show and cancellation policy has the potential to impact OTP and productivity significantly. No-shows (generally defined as a scheduled trip that the rider is not available to take and does not cancel ahead of time) create significant delays because of the time spent travelling to the pickup location and the time necessary to confirm the rider will not be

travelling. Limiting a rider’s access to service because of the rider’s excessive no-shows has the potential to reduce scheduling issues and improve service. If riders know they will lose their privileges because of excessive no-shows, they are more likely to cancel trips in a timely fashion, allowing the agency to re-assign vehicles and update the schedule to avoid inefficiencies. For example, Sun Metro has a policy to penalize riders with excessive no-shows and logged no-shows for fewer than 3 percent of the trips scheduled in March 2014. In fact, Sun Metro had the lowest percent of trips that resulted in a no-show of all the agencies investigated.

All peer agencies, except TARC³, have a policy that states service will be suspended as a penalty for excessive no-shows, however, only two (Capital Metro and CCRTA) enforce the policy and suspend service for riders that have caused excessive no-shows.

Enforcement of an agency’s no-show policy, according to the data collected, contributes to improved performance Capital Metro, a peer that enforces the no-show penalty policy, had 3.7 percent of all scheduled trips in March 2014 result in no-shows. Tucson, a peer that does not enforce its penalty policy, had over 8 percent of all trips result in no-shows in March. Tucson’s representative stated that his agency believes the cost is greater to enforce a no-show penalty policy than to operate with the no-shows that do occur.

CCRTA enforces the agency’s no-show policy and logged 4.7 percent of trips as no shows in March 2014. TARC logged 4.3 percent of trips as no-shows without a policy of suspending service for excessive no-shows. CCRTA enforces a policy of suspending trips yet had the second highest no-show rate in March 2014 for all agencies investigated while TARC does not enforce such a policy and had fewer no-shows.

Although there is a correlation between no-show penalties and increased OTP, the data documented in Table 22 do not show a definite correlation between no-show penalties and reduced no shows.

Table 22 No-Show Policy Enforcement Versus Percent No Shows

Agency	Enforced No-Show Policy	% Total Trips Result in No Shows
Sun Metro	Yes	2.6%
Capital Metro	Yes	3.7%
CCRTA	Yes	4.7%
The T	No	<i>Data not available</i>
TARC	No	4.3%
Tucson	No	8.3%

³ TARC’s policy states that riders with three or more no-shows will receive a letter informing them of this fact and explaining how no-shows hurt the service.

Technology/Software

All peer agencies use similar software packages to schedule, dispatch, and otherwise manage the paratransit service; however, each agency uses a different mix of optional software modules. Despite the module variations, researchers were unable to determine any correlation between the software/modules used and an agency's performance. Instead, the skill of the software users was determined to be a deciding factor in an agency's ability to achieve OTP and productivity goals. Staff from Capital Metro, CCRTA, TARC, and Tucson all stated that the agency's ability to achieve its OTP and productivity goals correlates to the skills of the schedulers and dispatchers on staff and the staff's ability to utilize the technology at their disposal fully. CCRTA's representative stated that:

“Good schedulers help with good productivity and performance and lay a foundation for dispatch and drivers. Dispatch then makes adjustments to the ‘machine’ to make sure it runs properly.”

Dispatch Staffing

According to Tucson's representative, establishing a balance between the number of scheduled dispatchers and the vehicles in service is critical. Tucson's representative stated that, as demand increases and the agency deploys more vehicles to serve the need they also hire and train more dispatchers to maintain the ratio of vehicles to dispatchers in order to avoid diminished performance.

However, the data shows there is no obvious correlation between the number of vehicles per scheduled dispatcher and on-time performance or productivity. Sun Metro assigns the fewest vehicles per dispatcher of all agencies; yet, the agency's performance is second slowest, indicating that the performance of Sun Metro does not benefit from having fewer vehicles per dispatcher. Furthermore, CCRTA and Tucson each achieve OTP that is within 0.4 percent of each agency's goal, yet Tucson has five more vehicles per dispatcher than CCRTA.

Table 23 compares the number of vehicles per scheduled dispatcher to on-time performance and the number of passenger trips per hour for each agency.

Table 23 Vehicles per Dispatcher Compared to Performance

	Sun Metro		Capital Metro		CCRTA		The T		TARC		Tucson	
	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual	Goal
Vehicles per Scheduled Dispatcher	16		**		25		25		20		30	
On-time Rate	91.6%	95%	93.4%	95%	95.4%	96%	85.4%	90%	92%	93%	95.1%	96.5%
ADA Passenger Trips per Revenue Hour	1.84	2	1.61	n/a	2.7	2.5	1.44	n/a	1.53	1.55	1.74	n/a
Total Passenger Trips per Revenue Hour	2.42	n/a	1.84	2	2.9	n/a	2	2	1.75	n/a	1.91	2

Notation definitions: n/a = not applicable

** Capital Metro's Control Center does not have dedicated dispatchers/schedulers assigned to one function forever. They job-share. Usually 1-2 schedulers per day, 1 same day scheduler, and 3 radio dispatchers max at a time. MV has 2-3 run dispatchers at a time.

Sun Metro Dispatch Performance

The graphs in Figure 12 and Figure 13 display the number of vehicles in service and the trips requested, respectively, during an average day for Sun Metro in March 2014. The graphs follow a similar trend and show that the ratio of vehicles in service to trip requests scales consistently throughout the day. One anomaly of note is the spike in trip requests during the half hour from 17:00 to 17:30. The increase in requests is disproportionate when compared to the number of vehicles in service. However, this high number of trip requests is related to group trips that depart from the same location at the same time and therefore may require fewer vehicles.

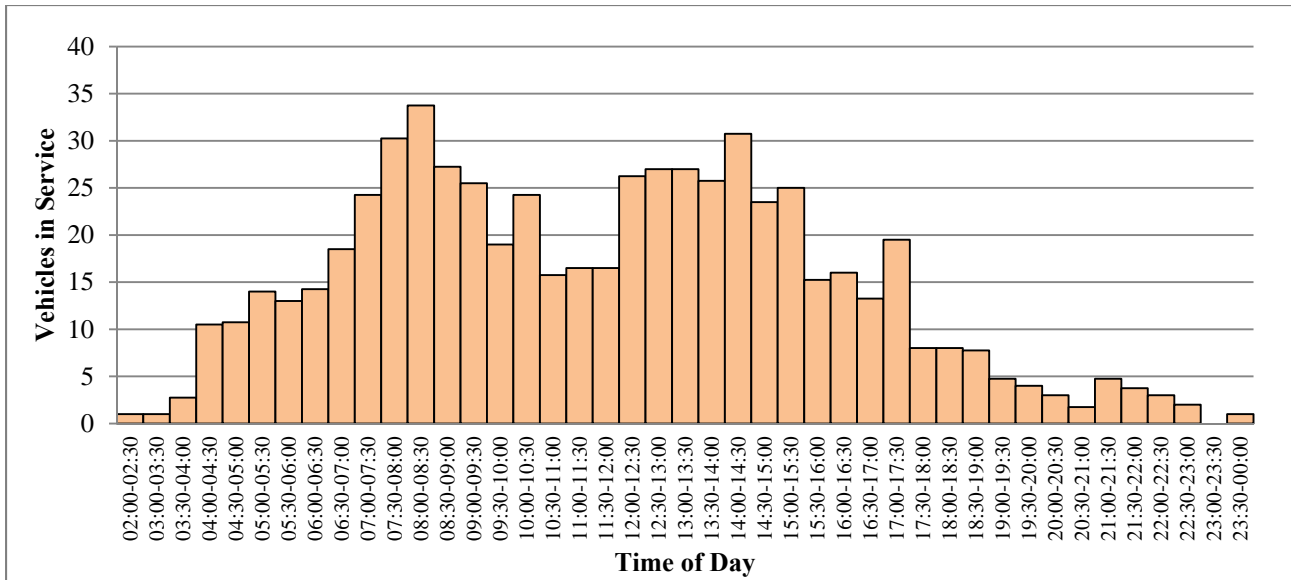


Figure 12 Vehicles in Service by Half Hour – Average Day, March 2014

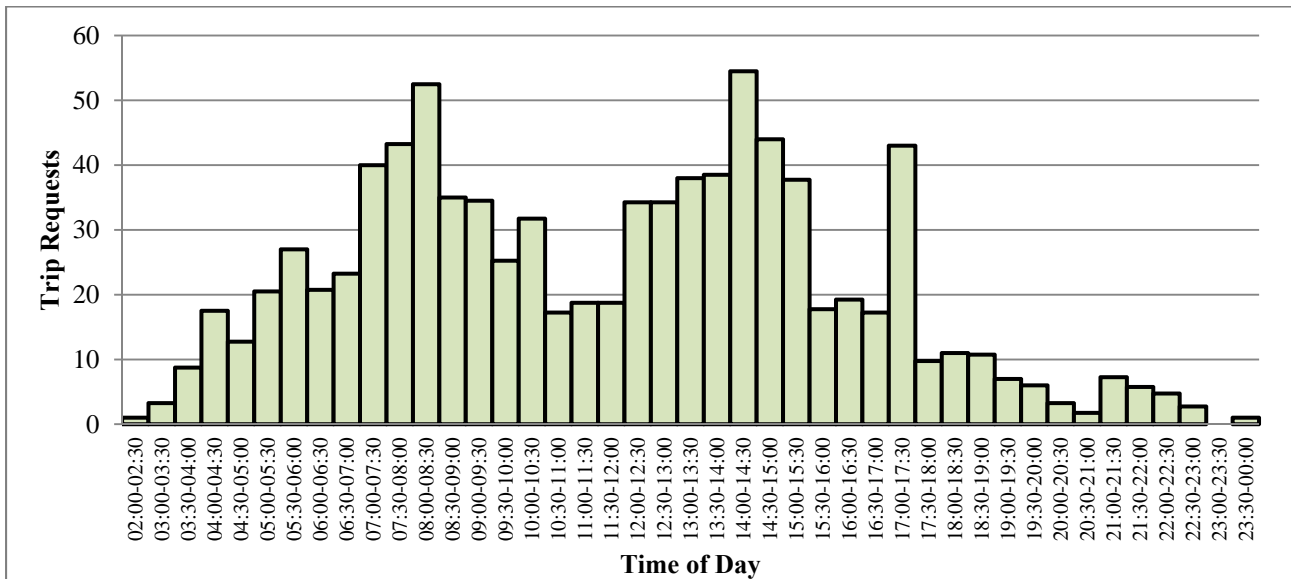


Figure 13 Trip Requests by Half Hour – Average Day, March 2014

SUMMARY OF PEER COMPARISON AND BENCHMARKING

Sun Metro LIFT Compared Peers

Sun Metro LIFT achieved an on-time performance rate of 90.9 percent in March 2014. The peer group averaged 92.3 percent on-time, with a range between 85.4 and 95.4 percent in the same month. With regard to productivity, Sun Metro LIFT provided service to 1.84 ADA-eligible passengers per revenue hour in March 2014. The peers ranged from 1.44 (The T) to 2.7 (CCRTA) ADA-eligible passengers per revenue hour. Sun Metro LIFT served 2.42 total passengers per revenue hour in March 2014. The peers ranged from 1.75 (TARC) to 2.9 (CCRTA) total passengers per revenue hour in the same month. CCRTA benefits from a high number of group trips and limited traffic congestion, which helps the agency achieve high levels of on-time performance and productivity.

Performance Measures

According to TTI's review of peers, the goal for 95 percent on-time performance is a challenge but achievable and reasonable when comparing Sun Metro LIFT to its peers. Sun Metro LIFT's goal to provide service for two ADA-eligible passengers per revenue hour is a goal higher than any peer's and difficult to achieve, especially if the agency is also striving for 95 percent on-time performance. TTI's findings indicate that productivity and on-time performance typically have an inverse relationship— as one improves the other declines. Sun Metro LIFT should consider setting the goal for ADA-eligible passengers per revenue hour at 1.8 with a goal of 95 percent on-time performance.

Sun Metro LIFT Contractor

The contractor for Sun Metro LIFT achieves many of the goals set forth in the contract. As compared to peers, Sun Metro LIFT productivity (passengers per revenue hour) is above average. The scheduling practices reflect efficient assignment of vehicles to passenger trip requests which results in increased productivity (although, this may sacrifice OTP performance). Vehicles are in good condition and well maintained according to the high number of miles between road calls logged by Sun Metro LIFT. Sun Metro LIFT's data reflects the contractor's continuous effort to improve performance metrics.

Despite the positive performance achieved by THE CONTRACTOR, there are areas of the service that would benefit from review and improved practices/policies. Sun Metro LIFT should investigate the number of drivers/vehicles that are early for a trip. Early vehicles may place pressure on passengers to hurry and create an unpleasant experience. Additionally, early vehicles contribute to slack time within the system and result in diminished productivity. Additionally, Sun Metro LIFT should investigate the agency's high percent of scheduled trips that are cancelled before the vehicle is dispatched. A high number of cancellations of this nature may indicate a problem with the reservation/scheduling system and/or the need for passenger training.

The contractor could further improve performance by continuing to analyze the reasons some trips do not operate on time in an effort to further improve service quality. Additionally, the contractor could contribute to improved service and customer satisfaction by analyzing the reasons, other than trip length, that some riders experience high travel times while working to identify solutions. With regard to scheduling and dispatch, the contractor and Sun Metro should investigate scheduling software (trip analyzer) to ensure every trip is no longer than 110 percent of fixed route (+5 minutes dwell time) and continue to enhance dispatcher skills.

**APPENDIX. FINAL PRESENTATION TO MASS TRANSIT BOARD,
SEPTEMBER 9, 2014**

Review of Sun Metro LIFT Services



Texas A&M Transportation Institute

TTI Purpose and Scope

■ Purpose

Independent, objective assessment of Sun Metro LIFT Americans with Disability Act (ADA) paratransit services

■ Scope

- Analyze LIFT dispatch records documenting service performed for one month of data (March 2014)
- Compare LIFT performance metrics to data from peer transit agencies
- Research best practices for public transportation services for riders to dialysis medical services

Agenda for Today

- Findings
 - Independent review dispatch data March 2014
 - Peer comparison and benchmarking
 - Best practices for dialysis transportation
- Discuss
 - Strengths and opportunities for improvement
 - Sustainability of performance goals
- Questions and comments

Sun Metro LIFT

- Required ADA paratransit services to complement fixed route transit
 - Operate within $\frac{3}{4}$ mile of a local fixed route
 - Operate same days and hours as fixed route
 - Accept reservations at least a day in advance
 - Charge a fare no more than twice the base fare for a non-discounted adult fare for local fixed route
 - Serve requests for all trip purposes without priority
 - Operate without capacity constraints – without a substantial number of untimely pick-ups, missed trips, excessive trip lengths and long telephone hold times

Service Providers

- City of El Paso contracts to MV Transportation
 - Sun Metro LIFT
 - Responsible for reservations, scheduling trips, dispatch, service delivery, customer service and vehicle maintenance
 - Subcontractor MV Sun City Cab (MVSCC)
- Other transportation providers
 - Sun City Cab
 - Project Amistad

Sun Metro LIFT Performance Goals

Performance Category	Acceptable	Goal
On-time performance	93%	95%
Productivity (ADA-trips per revenue hour)	1.8	2.0
Revenue miles between road calls	30,000	35,000
Incidents per 100,000 miles	2.0	1.6

Methodology – Dispatch Analysis

- Data downloaded by City of El Paso for March 2014
- Independent analysis of data
- Calculations
 - Total scheduled trips, trips launched, trips completed
 - Trips by provider
 - On-time performance, analysis late trips and early trips
 - Productivity
 - No-show and late cancellation rates
 - Passenger trips by rider category (ADA, attendant, companion)
 - Passengers using mobility aides, analysis dwell times
 - Trip characteristics (distance in miles and minutes)
 - Trips within ADA-required $\frac{3}{4}$ mile of the local fixed-route and trips outside required service area
 - Comparison performance for trips to/from dialysis centers

Scheduled Trips, Completed Trips


March 2014

Sun Metro ADA Service in March 2014	Total Trips	
	Number	% of Total
Total Trips Scheduled	25,279	100%
Cancelled in Advance	4,095	16.2%
→ Trips Launched*	21,184	83.8%
<i>Completed Trip</i>	<i>20,060</i>	<i>79.4%</i>
<i>Late Cancellations/No Shows</i>	<i>1,124</i>	<i>4.4%</i>

* Vehicle Dispatched for Trip

Trips Launched by Provider

March 2014

Trip Provider	Launched Trips	Completed Trips	Late Cancel
 Trips Launched	21,184	100%	20,060
Sun Metro LIFT	20,097	94.9%	19,034
Sun City Cab	570	2.7%	545
MVSCC	477	2.3%	445
Project Amistad	40	0.2%	36
Trips Launched		94.7%	5.3%

On-Time by Provider

March 2014

The Sun Metro LIFT pick up window is within 15-minutes plus/minus of the scheduled pick-up time (30-minute window). Service is on-time if the vehicle arrives not later than the pick-up window.

Trip Provider	Launched Trips	On-Time	Late Trips
Total *	21,184	19,198	90.9%
Sun Metro LIFT	20,097	18,199	90.6%
Sun City Cab	570	540	97.5%
MVSCC	477	430	98.4%
Project Amistad	40	29	82.9%

* 67 (0.3%) Launched Trips excluded because missing time information

Quality of Service for On-time Performance

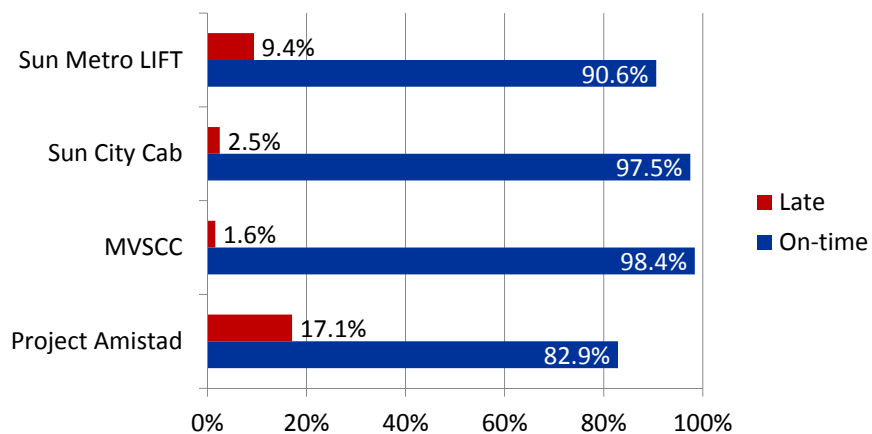
On-time Performance Quality of Service with a 30-minute Time Window

Source: *Transit Capacity and Quality of Service Manual, Third Edition.*
Transportation Cooperative Research Program

Level of Service (LOS)	On-Time Percent	Service Quality
1	95% or more trips are on time	Reliable, high-quality service
2	90-94.9% trips are on time	Relatively high-quality service
3	80-89.9% trips on time	Usually reliable service
4	70-79.9% trips on time	Somewhat reliable service
5	Less than 70% trips on time	Unreliable service

On-Time by Provider

March 2014



Sun Metro LIFT Trips On Time/Late

March 2014

- Sun Metro LIFT trips
 - 90.6% On time within +/-15 minutes of scheduled pick-up
 - 9.4% Late more than 15 minutes after scheduled pick-up
- Of the 9.4% trips that are Late beyond 15 mins
 - 4.4% arrive 0-5 minutes beyond pick-up window
 - 2.4% arrive 6-10 minutes beyond pick-up window
 - 1.3% arrive 11-15 minutes beyond pick-up window
 - 0.9% arrive 16-30 minutes beyond pick-up window
 - 0.3% arrive 31-60 minutes beyond pick-up window
 - 0.1% arrive >60 minutes beyond pick-up window

Sun Metro LIFT Trips On Time but Early

March 2014

Service is on time if vehicle arrives not later than the pick-up window. Early is on time, but before the pick-up window.

- Sun Metro LIFT on-time trips (90.6%)
 - 73.3% Within the 30-minute pick-up window
 - 17.3% Early, before pick-up window
- Of the 17.3% trips that are Early
 - 8.9% arrive 0-5 minutes before pick-up window
 - 3.8% arrive 6-10 minutes before pick-up window
 - 2.1% arrive 11-15 minutes before pick-up window
 - 2.5% arrive more than 15 minutes before pick-up window

Use of Mobility Devices

March 2014

Trips Completed (20,060 Completed of 21,184 Trips Launched)

Equipment	Trips Completed with/without Mobility Devices		Dwell Times	
			Pick-up Average Minutes	Drop-off Average Minutes
No-Wheelchair	12,768	64%	4.58	2.41
Wheelchair	6,613	33%	6.89	4.20
Extra-large Wheelchair	679	3%	7.42	5.34
Total	20,060	100%		

Riders with ADA-Eligible Passengers

March 2014

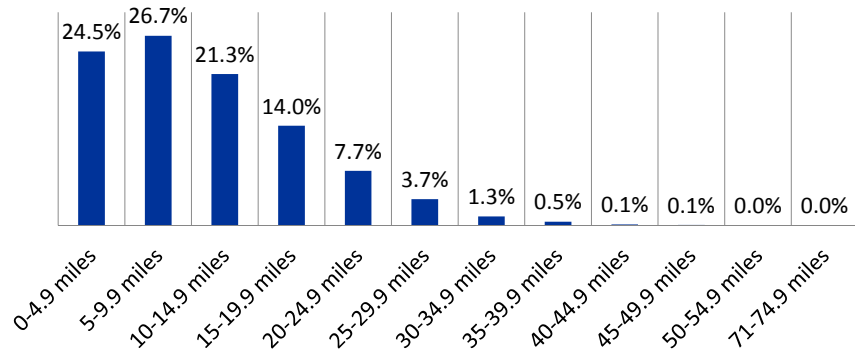
ADA-Eligible Passenger	Trips Completed	
Travelling Alone	14,073	70.2%
Travelling with 1 Non-ADA Rider	5,927	29.5%
Travelling with 2 Non-ADA Riders	60	0.3%
Total	20,060	100.0%

Total Passengers Carried March 2014 = 26,107

Average Trip Length

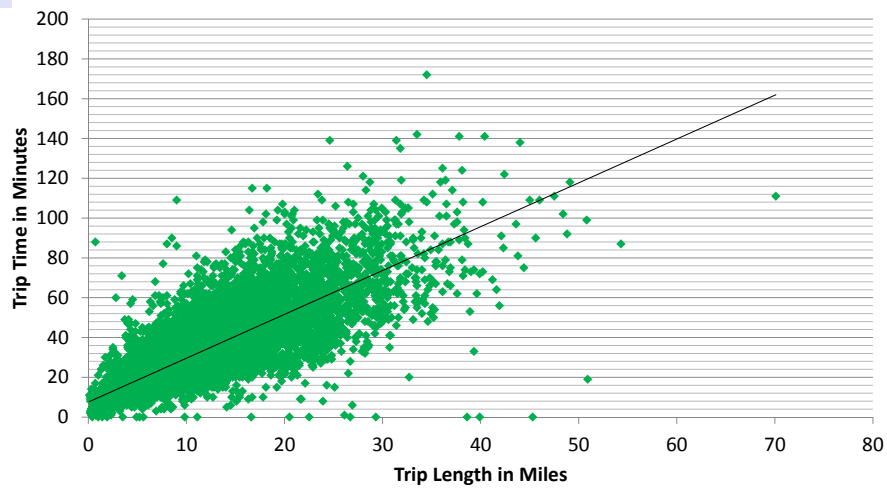
March 2014

Average One-Way Trip Time	31.5 minutes
Average One-Way Trip Length	11.2 miles
Average Trip Speed	21.3 miles per hour



Trip Time versus Trip Length

March 2014



Trip Origin-Destination (OD) Analysis

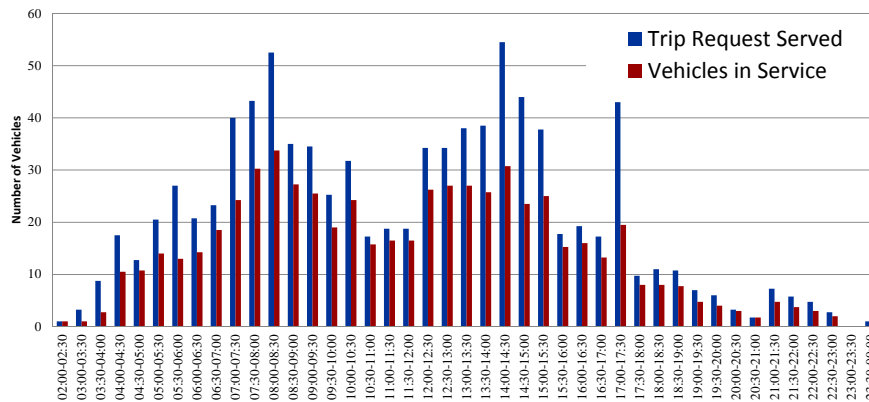
March 2014

OD Analysis	Destinations			Total
	Within 3/4-mile Sun Metro fixed routes	Within Sun Metro service area but outside 3/4-mile	Outside Sun Metro service area	
Origins				
Within 3/4-mile Sun Metro local fixed routes	12,656	3,254	42	15,952
Within Sun Metro service area but outside 3/4-mile	3,029	1,027	22	4,078
Outside Sun Metro service area	26	4	0	30
Total	15,711	4,285	64	20,060

63% of all trip O&D within 3/4-mile Sun Metro fixed routes
 95% of all trip O&D within Sun Metro service area (City of El Paso)

Comparison Trip Requests Served and Vehicles in Service by Time of Day

March 2014 (Wednesdays)



Dialysis Trips

March 2014

- In March - 23.7% Dialysis Trips (trip origin or trip destination)
- No statistical difference in performance metrics
 - On-time performance
 - Trip time
 - Trip distance

Peer Best Practices for Dialysis Transportation

- Public transit systems responsible to comply with ADA paratransit guidelines do not prioritize trips for any purpose
- Best practices for dialysis trips
 - Coordination with dialysis centers for passenger
 - Schedule return trips from dialysis as subscription
 - Attention to which shared trips are scheduled
 - Taxi options based on established criteria (shorter distance) and often with specific source of funds

Methodology – Peer Comparisons

- Peer selection process
 - Transit Cooperative Research Program Report 141
 - Demand response transit (ADA paratransit)
- Peers selected
 - Capital Metro Transportation Authority, Austin (CMTA)
 - Corpus Christi Regional Transportation Authority (CCRTA)
 - Fort Worth Transportation Authority (The T)
 - Transportation Authority of River City, Louisville, KY (TARC)
 - Sun Van, Tucson, AZ (Tucson)

Peers Compared

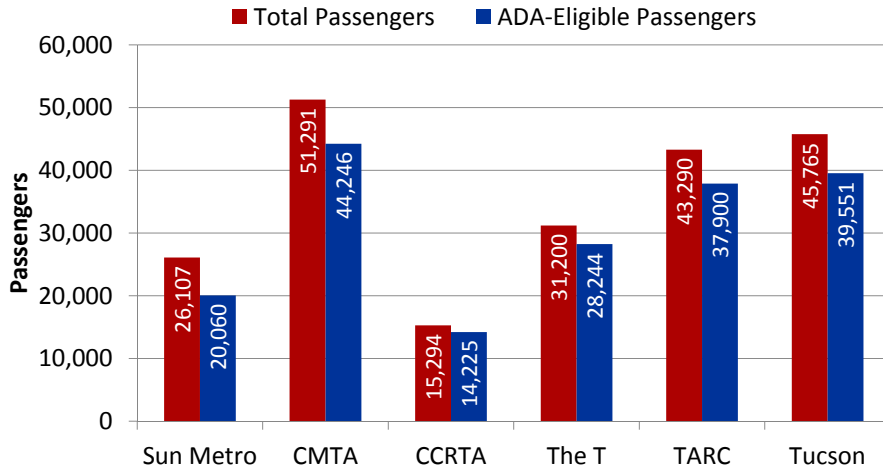
March 2014

	Sun Metro	CMTA	CCRTA	The T	TARC	Tucson
Contractor	MV	MV*	MV	Directly Operated**	First Transit	Directly Operated**
Total Passengers	26,107	51,291	15,294	31,200	43,290	45,765
ADA-Eligible Passengers	20,060	44,246	14,225	28,244	37,900	39,551
% Passengers ADA-Eligible	77%	86%	93%	91%	88%	86%
On-time Performance	90.9%	93.4%	95.4%	85.4%	92.0%	95.1%

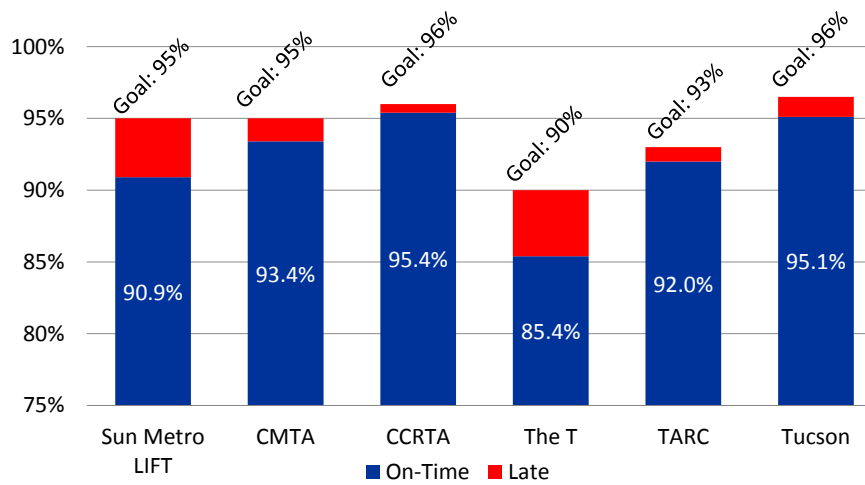
* MV operates services; CMTA reservations/scheduling/dispatch

** Managed through contract (McDonald Transit for The T, Veolia for Tucson)

Peers Compared - Passengers March 2014

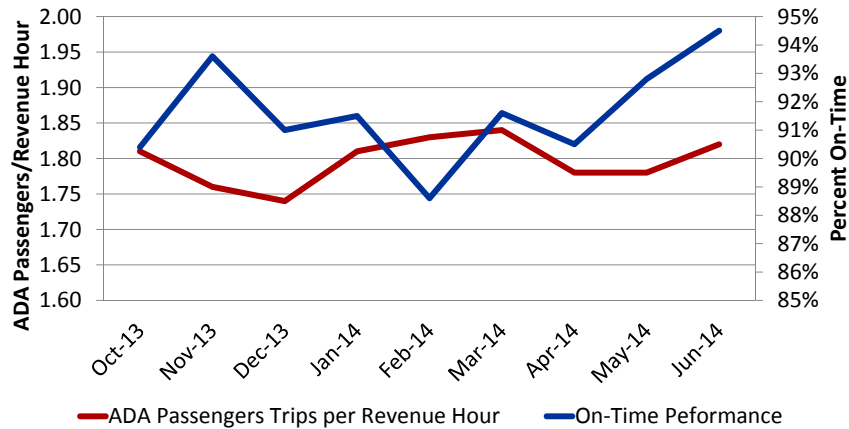


Peers Compared – On-Time March 2014



Sun Metro LIFT

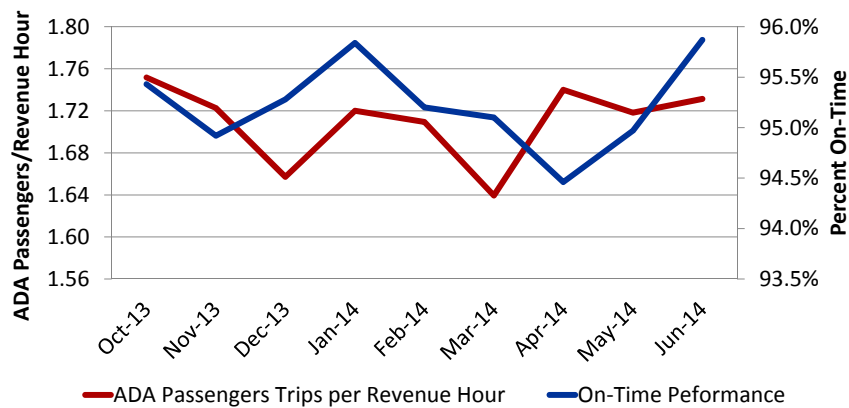
Productivity vs On-Time Performance



Inverse relationship – as one metric improves the other declines

Tucson Sun Van

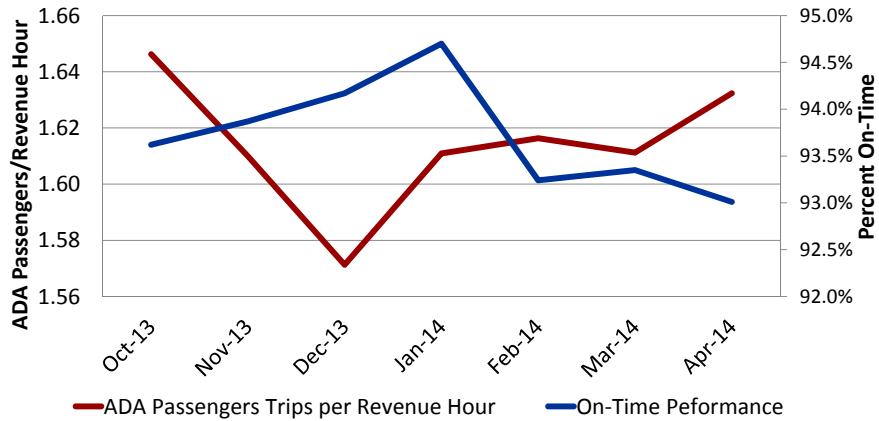
Productivity vs On-Time Performance



Inverse relationship – as one metric improves the other declines

Capital Metro Access

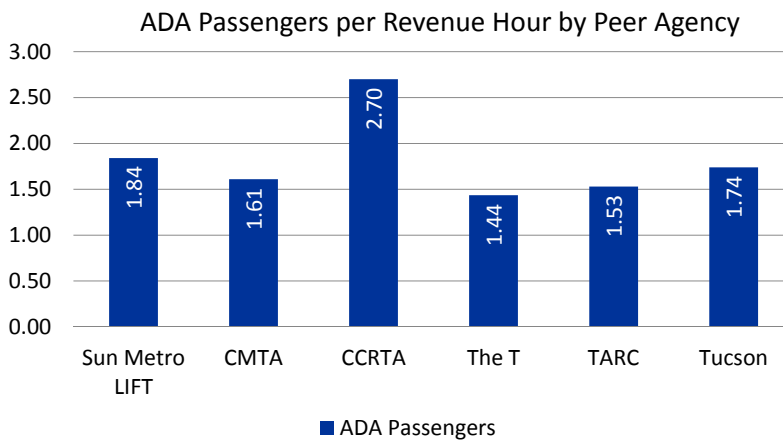
Productivity vs On-Time Performance



Inverse relationship – as one metric improves the other declines

Peers Compared - Productivity

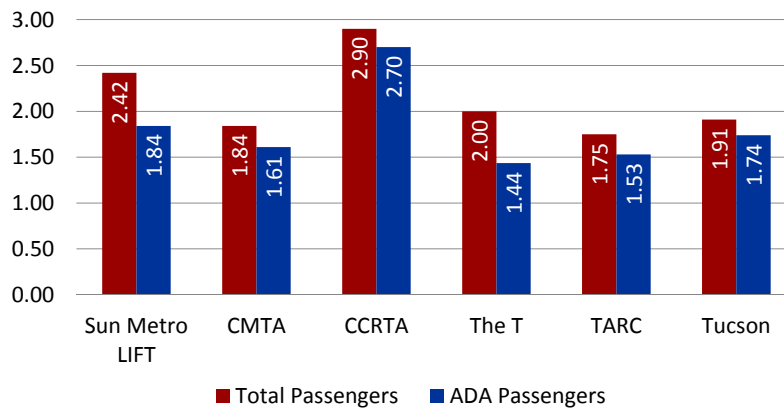
March 2014



Peers Compared - Productivity

March 2014

ADA Passengers and Total Passengers per Revenue Hour
by Peer Agency



How is Sun Metro LIFT doing as compared to peers?

- On-time performance in March 2014 was 90.9% as compared to peer group average 92.3% and peer range 85.4% to 95.4%*
- Sun Metro LIFT productivity in March 2014 measured by ADA Passengers per Revenue Hour was 1.84 as compared to peer range 1.44 to 2.7*
- Sun Metro LIFT productivity in March 2014 measured by Total Passengers per Revenue Hour was 2.42 as compared to peer range 1.75 to 2.9*

*CCRTA benefits from group trips and little traffic congestion

Are the performance measures reasonable/sustainable?

- The goal for 95% on-time performance is a challenge but achievable and reasonable
- The goal for 2.0 ADA passengers per revenue is a goal higher than any peer and difficult to achieve, especially if also striving for 95% on-time
- Productivity and on-time performance typically have an inverse relationship – as one improves the other declines
- Consider setting ADA passengers per revenue hour goal at 1.8 with 95% on-time performance

What does the Sun Metro LIFT contractor do well?

- As compared to peers, Sun Metro LIFT productivity (passengers per revenue hour) is above average
- Scheduling reflects efficient assignment of vehicles to passenger trip requests (productive but risks on-time performance)
- Miles between road calls is high – indication vehicles are in good condition and well-maintained
- Data reflects continuous effort to improve performance metrics

What should the Sun Metro LIFT contractor address?

- Investigate the number of drivers/vehicles that are early for a trip
 - May place pressure on passenger to hurry
 - Slack time is unproductive
- Investigate high percent of scheduled trips that are cancelled before the vehicle is dispatched
 - May indicate problem with scheduling system
 - Subscription trips regularly cancelled
 - Need for passenger training

How can the Sun Metro LIFT contractor improve?

- Continue to analyze the reasons trips are do not operate on-time to improve service quality
- Travel time appears to be directly related to the length of the trip; continue to analyze the exceptions to identify cause and solution
- Eliminate trips later than 60-minutes (missed trip)
- Investigate scheduling software (trip analyzer) to ensure every trip is no longer than 110% of fixed route (+5 minutes dwell time)
- Continue to enhance dispatcher skills