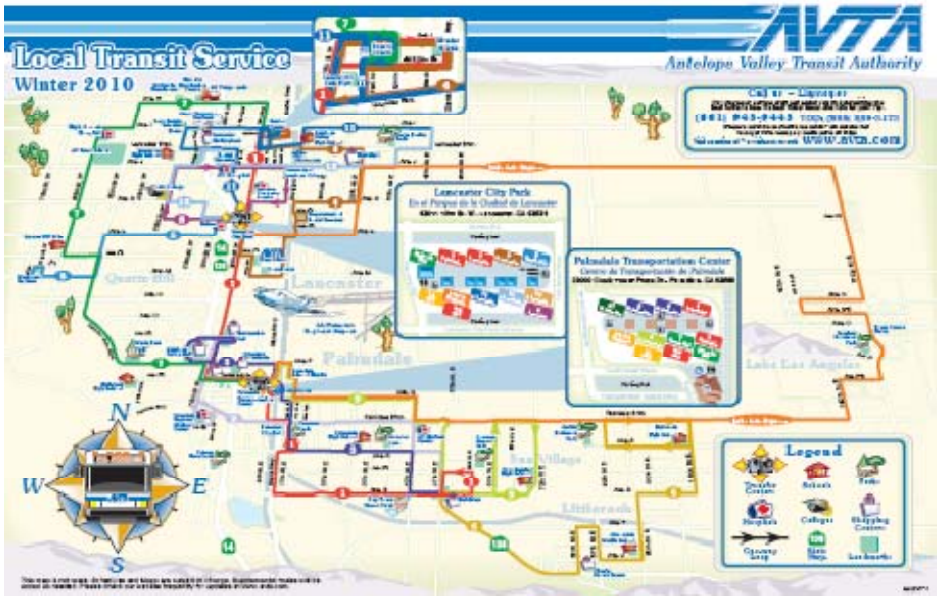
Antelope Valley Transit Authority
Line-by-Line Analysis



Prepared for Antelope Valley Transit Authority by

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Revised August 2010

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Final Report
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1.0 Background and Purpose of This Study

The Antelope Valley Transit Authority is the public transportation provider in the Antelope Valley, which includes the Cities of Lancaster and Palmdale and unincorporated areas of Los Angeles County. AVTA operates 11 local fixed-route bus routes (the newest, Route 8, was added during this study), one express route within the Antelope Valley, and three commuter routes connecting the Antelope Valley with downtown Los Angeles, Century City and Westwood, and the San Fernando Valley.

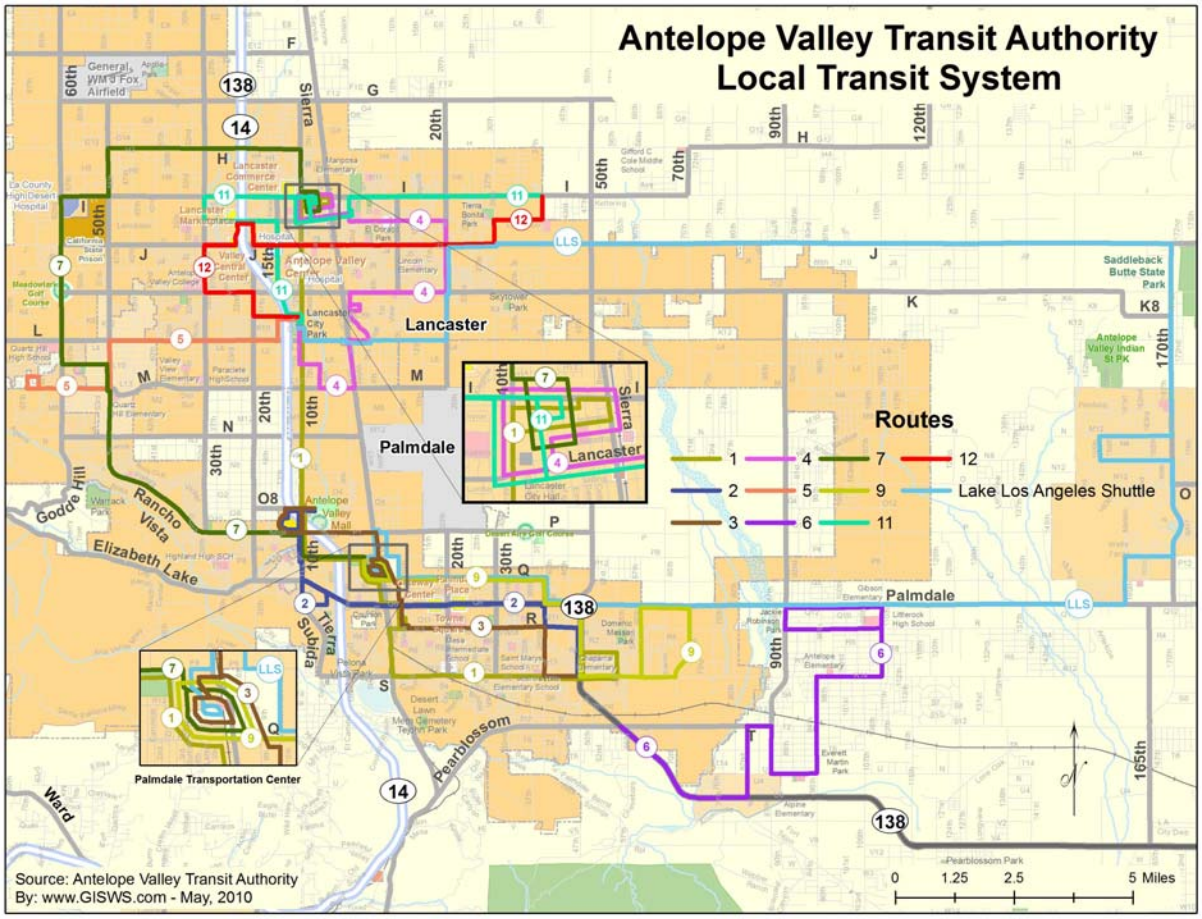
AVTA carries approximately 11,400 riders on a typical weekday, 4,600 riders on Saturday, and 3,200 riders on Sunday. Figure 1.1 displays a map of the route network. AVTA service is operated by its service contractor, Veolia Transportation.

This Line-by-Line Analysis of AVTA fixed-route transit services has the following objectives:

- Gather current service and patronage data to assist in evaluating current performance and planning future service;
- Assess systemwide operating ridership and performance of AVTA fixed routes;
- Conduct a detailed analysis of current ridership and performance measures at the route, route segment, time of day, and day of week levels to understand the strengths and weaknesses of the current system;
- Develop a series of recommendations for AVTA's transit services.

A line-by-line analysis provides a snapshot of a transit system at a given point in time. It involves a substantial data collection effort, analysis that converts the raw data into useful information, and an assessment of potential improvements to the transit network to enhance mobility and efficiency. The recommendations presented in this report will guide transit-related decisions in the Antelope Valley over the next several years.

Figure 1.1
Antelope Valley Transit Authority Route Network



Tables 1.1 and 1.2 provide summaries of service characteristics, including information on span of service and headways by day of the week. Span of service is measured for local service from the start time of the first trip in the morning to the start time of the last trip in the evening. Overall AVTA span of service is 6:00 a.m. to 7:38 p.m. weekdays and 9:00 a.m. to 5:13 p.m. Saturday and Sunday. Table 1.1 reflects current service; service in operation during the ridecheck in November 2009 was different on some routes. The biggest difference is that Route 8 was introduced after the ridecheck was completed, and so there are no counts for Route 8.

Table 1.1
AVTA Span of Service by Route and Day

Route	Span of Service	
	Weekday	Saturday/Sunday
1	5:40 a.m. – 10:25 p.m.	6:45 a.m. – 6:45 p.m.
2	6:00 a.m. – 11:00 p.m.	7:20 a.m. – 6:45 p.m.
3	5:45 a.m. – 10:15 p.m.	6:45 a.m. – 7:25 p.m.
4	6:00 a.m. – 7:35 p.m.	7:00 a.m. – 5:10 p.m.
5	6:03 a.m. – 7:38 p.m.	7:13 a.m. – 6:48 p.m.
6	5:30 a.m. – 7:45 p.m.	7:00 a.m. – 6:15 p.m.
7	5:55 a.m. – 7:53 p.m.	7:05 a.m. – 6:50 p.m.
8	8:00 a.m. – 10:35 p.m.	No service
9	6:30 a.m. – 9:50 p.m.	7:20 a.m. – 7:00 p.m.
11	5:15 a.m. – 12:05 a.m.	6:45 a.m. – 7:45 p.m.
12	5:15 a.m. – 12:05 a.m.	6:45 a.m. – 7:45 p.m.
LLA Express	5:45 a.m. – 7:45 p.m.	6:39 a.m. – 7:45 p.m.

Source: AVTA on-line schedules, July 2010

Table 1.2 presents headways by time of day and day of week. Trips were assigned to a time period based on the scheduled start time. Time periods are defined as:

AM Peak	Start of service to 8:59 a.m.
Midday	9:00 a.m. to 2:59 p.m.
PM Peak	3:00 to 6:59 p.m.
Evening	7:00 p.m. to end of service

Table 1.2
AVTA Service Headways by Route, Day, and Time Period

Route	Span of Service				
	Weekday				Saturday/ Sunday
	AM Peak	Midday	PM Peak	Evening	
1	30-50	30-50	30-50	60	60
2	30	30	30-60	60	60
3	30	30	30-60	60	60
4	70	70	70	70	70
5	60	60	60	60	60
6	90	90	90	90	90
7	63-70	63-70	63-70	63-70	65-68
8	60	60	60	60	--
9	50	50-70	50	50	100
11	30-40	30-40	30-70	30-70	60-70
12	30-40	30-40	30-70	30-70	60-70
LLA Express	52-60	60	60	60	120

Source: AVTA on-line schedules, July 2010

1.1 Ridership Counts

On-board personnel gathered ridership data via ride checks during November 2009. Weekday counts were undertaken on Tuesday, Wednesday, and Thursday only (November 12 through 19); no checks were conducted on Monday or Friday. Saturday counts were conducted on November 14 and 21, and Sunday counts on November 15 and 22. Checkers counted boardings, alightings, and passenger loads and noted times at timepoints.

1.2 Organization of This Report

Following this introductory chapter, Chapter 2 presents detailed route profiles of each AVTA route, including an overview, route description, schedule, boardings, alightings, peak load point by time of day, capacity issues (if any), performance measures (broken down by line segment and time of day), schedule adherence, running time, and summary findings. Detailed charts and graphs are included for each route in this chapter and Appendix A. Chapter 3 includes passenger mile data calculated from ridecheck data for each route.

Chapter 4 identifies route options and presents the recommended service plan for the Antelope Valley Transit Authority. The chapter also provides a series of service options that could result in maximized service efficiency and decreased operating costs.

Antelope Valley Transit Authority
2009 Line-by-Line Analysis
Chapter 2: Route Profiles

2.0 Introduction

Chapter 2 presents the ridership and productivity analysis of the November 2009 ridecheck. This evaluation includes an analysis of ridership by route, direction, time of day, and route segment. Route effectiveness or productivity, measured by boardings per revenue hour, is also considered by direction, route segment, and time of day. Route efficiency is analyzed in terms of subsidy per boarding and farebox recovery ratio (the ratio of operating revenue to operating cost) at the route level. Schedule adherence is also analyzed, along with actual versus scheduled running times by route, direction, time of day, and segment.

Section 2.1 summarizes findings related to ridership, productivity, levels of service, and cost efficiency at the route level. Section 2.2 contains route profiles. These profiles report frequency, span of service, operating and performance data, financial data, and detailed route segment ridership and productivity for each AVTA route, including:

- Route description, including major corridors and destinations and trip patterns;
- Schedule, including days of operation, service spans, and frequency;
- Operating and productivity data, including ridership, revenue hours, passengers per revenue hour, and average trip length;
- Financial data, including revenue, operating cost, cost per passenger, subsidy per passenger, and farebox recovery ratio;
- Identification of major stops along the route;
- Capacity issues, measured by trip segments with loads exceeding 125 percent of seated capacity;
- Passenger boardings and productivity (passengers per revenue hour) by route segment;
- Peak and maximum load points along the route;
- Schedule adherence;
- Average versus scheduled running time overall and by route segment;
- Assessment of route performance and trends.

Appendix A *Ridecheck Results* (under separate cover) provides all the data collected during the ridecheck in voluminous detail, including ons and offs by stop for each trip and times at each timepoint for each trip. As with any data collection effort, the data can be used in answering all types of questions that will arise regarding AVTA service. Appendix B *Stops with Loads over 125 Percent of Capacity* provides a list of all stops/trips experiencing a load in excess of 125 percent of capacity (effectively, 49 or more people on the bus at any one time). This is a convenient summary of overcrowded trips.

2.1 Overall Findings

Table 2.1 presents ridership by route for weekdays, Saturday, and Sunday. Route 1 Lancaster-Palmdale has the highest ridership on all days, with over 2,500 boardings per weekday. Route 12 Avenue J is second in terms of weekday ridership (over 2,100 boardings per weekday). Route 2 Palmdale Boulevard ranks second in ridership on Saturday and Sunday. Other all-day

routes have weekday ridership in the range of 243 to 1,518 boardings per day. Routes 97 and 99 are school trippers. On an annualized basis, AVTA ridership is 3.3 million.[1]

Note that Route 8 was implemented subsequent to the ridecheck and is not included in this report.

Table 2.1
AVTA Average Daily Ridership by Route and Day of Week

Route	Weekday		Saturday		Sunday	
	Riders	Rank	Riders	Rank	Riders	Rank
1	2,520	1	1,070	1	780	1
2	1,518	3	849	2	495	2
3	849	6	440	5	282	5
4	1,006	5	289	6	161	7
5	319	9	200	7	157	8
6	243	11	149	9	195	6
7	557	7	170	8	95	10
9	372	8	123	10	97	9
11	1,482	4	631	3	424	4
12	2,133	2	592	4	457	3
Lake LA	300	10	118	11	93	11
97	52	12	--	--	--	--
99	9	13	--	--	--	--
Total	**11,360**	--	**4,631**	--	**3,236**	--

Source: Ridecheck Data, November 2009

Table 2.2 shows service effectiveness in terms of passenger boardings per revenue hour, a common measure of productivity in the transit industry. Route 97 Highland High School is the most productive route, with over 107 boardings per revenue hour on weekdays on its two trips. Among regular routes, Route 2 is the most productive on weekdays with almost 38 boardings per revenue hour, over 40 on Saturday, and 24 on Sunday. On weekdays, Route 12 Avenue J, Route 4 Eastside Lancaster, and Route 1 Lancaster/Palmdale trail Route 2 in productivity. Not surprisingly, productivity is highest on weekdays and lowest on Sunday. Routes with the lowest weekday productivity are the Lake Los Angeles Express (10.8) and Route 9 Eastside Palmdale (12.0). On an annualized basis, overall productivity is 24.7 passenger boardings per revenue hour.

As a general rule of thumb in assessing service effectiveness by means of passenger boardings per revenue hour, 40 indicates a very good route, 20 is acceptable for a community route, and anything below 15 is a red flag to examine the route more closely and restructure, reduce span of service or cancel service.

[1] Route totals were annualized by multiplying weekday ridership by 255 weekdays per year, Saturday ridership by 52 Saturdays per year, and Sunday ridership by 52 Sundays per year. AVTA service does not operate on six holidays.

Table 2.2
AVTA 2009 Boardings per Revenue Hour by Route and Day of Week

Route	Weekday		Saturday		Sunday	
	B/RH	Rank	B/RH	Rank	B/RH	Rank
1	33.0	5	30.0	2	22.0	2
2	37.9	2	40.5	1	23.8	1
3	16.3	10	15.2	6	9.6	7
4	34.7	4	14.0	8	7.8	9
5	22.9	7	16.6	5	13.2	6
6	16.5	9	12.7	9	16.6	5
7	19.1	8	14.7	7	8.2	8
9	12.0	12	4.8	11	3.8	11
11	26.0	6	26.5	3	17.8	4
12	36.5	3	24.6	4	18.9	3
Lake LA	10.8	13	8.4	10	6.6	10
97	107.6	1	--	--	--	--
99	13.5	11	--	--	--	--
Total	**26.4**	--	**20.2**	--	**14.1**	--

Source: Ridecheck Data, November 2009

Table 2.3 shows overall schedule adherence for each route, as measured at each timepoint on each trip. Schedule adherence is defined as no more than one minute early (to allow for minor variations among watches) and no more than five minutes late at a given timepoint along the route. This detailed measure at each timepoint, a more accurate reflection of how riders view on-time performance, produces results in the 60 to 70 percent range for most transit agencies.

Weekday schedule adherence ranges from a low of 56.7 percent on Route 2 Palmdale Boulevard to a high of 84.9 percent on Route 9 Eastside Palmdale. More crowded and longer routes usually have more difficulty keeping to schedule, partially explaining the low schedule adherence for Routes 1 and 2. Weekday schedule adherence is 71.0 percent on all routes.

Schedule adherence is better on weekends, particularly on Sunday. Route 9 Eastside Palmdale has the best schedule adherence on Saturday at 90.4 percent, and Route 5 Avenue L leads all Sunday routes with 93.4 percent. Overall schedule adherence is 76 percent on Saturday and 80 percent on Sunday.

Table 2.3
AVTA Schedule Adherence

Route	Weekday	Saturday	Sunday
1	70.0%	74.1%	72.2%
2	56.7%	71.3%	92.6%
3	63.4%	86.3%	89.7%
4	71.5%	69.8%	64.7%
5	70.5%	80.2%	93.8%
6	57.0%	66.3%	71.3%
7	76.9%	73.9%	84.1%
9	84.9%	90.4%	75.9%
11	76.2%	60.0%	79.2%
12	83.5%	76.1%	85.9%
LLA	75.2%	83.6%	80.6%
97	75.0%	--	--
99	44.4%	--	--
Total	**71.0%**	**76.5%**	**80.2%**

Source: Ridecheck Data, November 2009

2.2 Route Profiles

The following pages contain much greater detail for the individual routes. Each route profile includes a description of the route, headway and span of service, passenger boardings, revenue hours of service, overcrowded segments, stops with major passenger activity, financial data, segment and time of day analysis, schedule adherence, and running time analysis. Overcrowded segments are defined as segments on a given trip with passenger loads over 125 percent of seated capacity. AVTA operates buses with either 39 or 40 seats in local service, so a load of 49 passengers or more defines an overcrowded bus.

All operating data are taken from the ridecheck results. Cost calculations are based on a cost per revenue hour of $76.74. Revenue calculations are based on the most recent revenue per passenger boarding figures for each route, ranging from $0.64 to $1.09.[2]

The route profiles provide information regarding passengers per revenue hour, a key performance variable used in evaluating transit routes. Passenger miles per seat mile is a measure of the percentage of seats occupied throughout the course of the day on each route. Financial performance indicators include subsidy per passenger boarding and farebox recovery ratio (operating revenue divided by operating cost). The final section of each route profile summarizes findings and issues for the route, but does not include route recommendations. Recommendations are developed and presented later in this report.

[2] Revenue per passenger boarding is below the base fare of $1.50 because the elderly, passengers with disabilities, active military, and veterans ride free all the time.

Route 1 Lancaster/Palmdale

Overview

Route 1 Lancaster/Palmdale (Figure 2.1) serves downtown Lancaster and downtown Palmdale, the 10th Street West corridor in both cities, and the Avenue S corridor in Palmdale. The route travels between the Senior Center at Jackman & Fern in Lancaster and 47th Street East & Avenue S in Palmdale. Major destinations include the Senior Center, downtown Lancaster, Lancaster Community Hospital, Lancaster City Park, Antelope Valley Mall, Palmdale Transportation Center, downtown Palmdale, Wal-Mart, and the retail area at 47th Street East & Avenue S.

Route 1 connects the major trip generators in Lancaster and Palmdale and serves the three major transfer locations within the AVTA route network (Lancaster City Park, Palmdale Transportation Center, and 47th Street East & Avenue S). Route 1 ranks near the top among AVTA routes in terms of ridership and productivity.

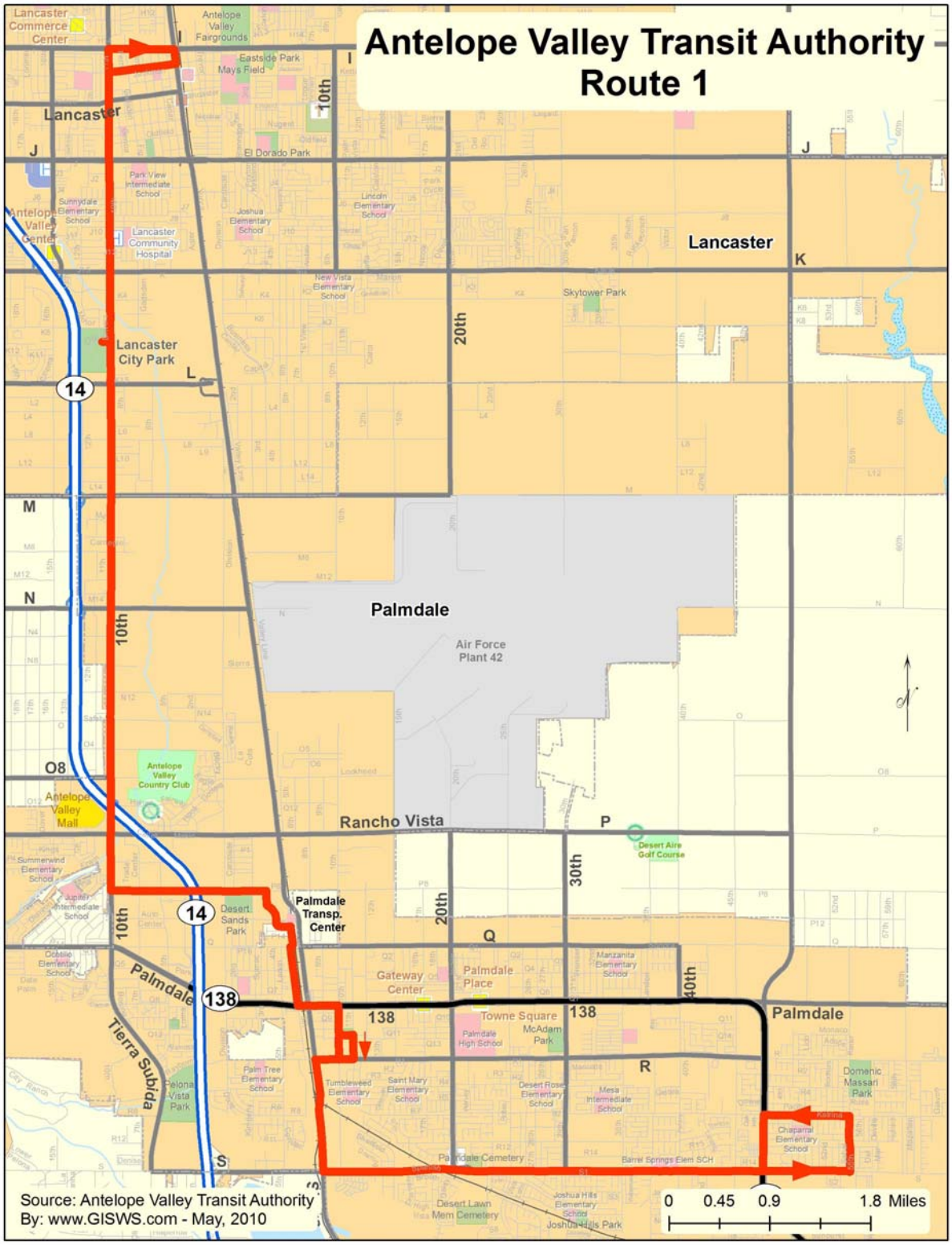
Headway and Span of Service

Table 2.4 shows headways for Route 1 by day of the week. Table 2.4 also indicates the span of service on the routes. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.4
Route 1 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	30-50 day 60 evening	5:40 a.m. – 10:25 p.m.
Saturday/Sunday	60	6:45 a.m. – 6:45 p.m.

Figure 2.1
Route 1



Operating Data

Table 2.5 presents operating data for Route 1. Among the 11 all-day weekday routes, Route 1 ranks 1st in boardings and 5th in boardings per revenue hour. Among the 11 weekend routes, Route 1 ranks 1st in boardings and 2nd in boardings per revenue hour on both Saturday and Sunday. Note that revenue hours in Table 2.5 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled

Route 1 ranks 5th on weekdays and 4th on both Saturday and Sunday in average trip length. Average trip lengths fall in the range of 6.79 to 7.08 miles on all days for Route 1. Average trip lengths are slightly longer on weekends. Route 1 ranks 2nd on weekdays and 1st on both Saturday and Sunday in seat utilization.

Table 2.5
Route 1 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	2,520	76.4	33.0	42.6%	6.79
Saturday	1,070	35.6	30.0	41.8%	6.98
Sunday	780	35.0	22.0	30.9%	7.08

Source: Ridecheck Data, November 2009

Table 2.6 presents financial data for Route 1. Route 1 ranks 4th in subsidy per boarding and 4th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 AVTA weekday routes, 2nd in both measures among 11 Saturday routes, and 2nd in both measures among 11 Sunday routes.

Table 2.6
Route 1 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	2,520	$2,092	$5,865	$2.33	$1.50	35.7%
Saturday	1,070	$888	$2,733	$2.55	$1.72	32.5%
Sunday	780	$647	$2,720	$3.49	$2.66	23.8%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour and average revenue per passenger by route for first half of FY 2010

Figures 2.2 through 2.4 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. The busiest stops (at least 100 boardings per weekday in one direction), in decreasing order of usage, include:

- Lancaster City Park SB (transfer point for Routes 4, 5, 11, 12, and Lake Los Angeles Express)
- Palmdale Transportation Center NB (Metrolink station and transfer point for Routes 2, 3, 7, 9, and Lake Los Angeles Express)
- Jackman & Fern SB (Senior Center, transfer point for Routes 4, 7, and 11)
- Avenue S & 47th Street East NB (Wal-Mart and other retail activity, transfer point for Routes 2, 3, 6, and 9)
- Palmdale Boulevard & 9th Street East NB (downtown Palmdale)
- Lancaster City Park NB (transfer point for Routes 4, 5, 11, 12, and Lake Los Angeles Express)
- 10th Street West & Avenue J (transfer point for Route 12)

Figure 2.2
Route 1 Weekday Boardings and Alightings by Stop

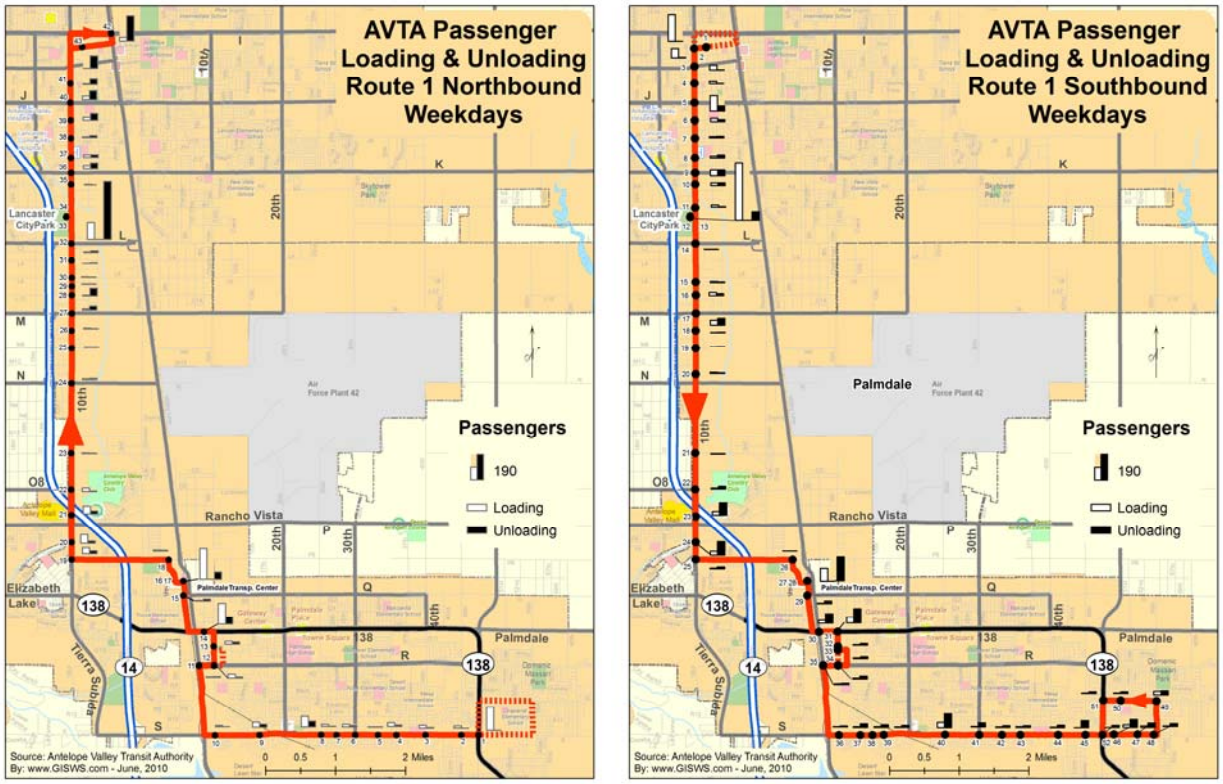
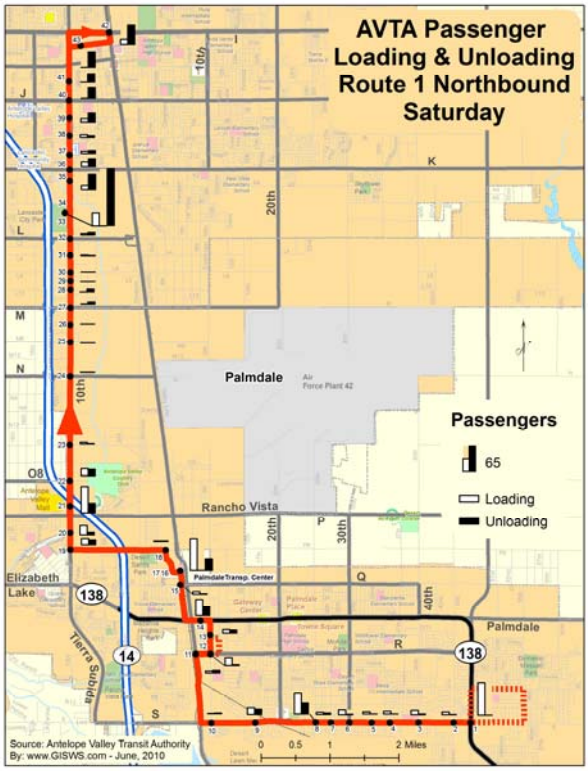


Figure 2.3
Route 1 Saturday Boardings and Alightings by Stop



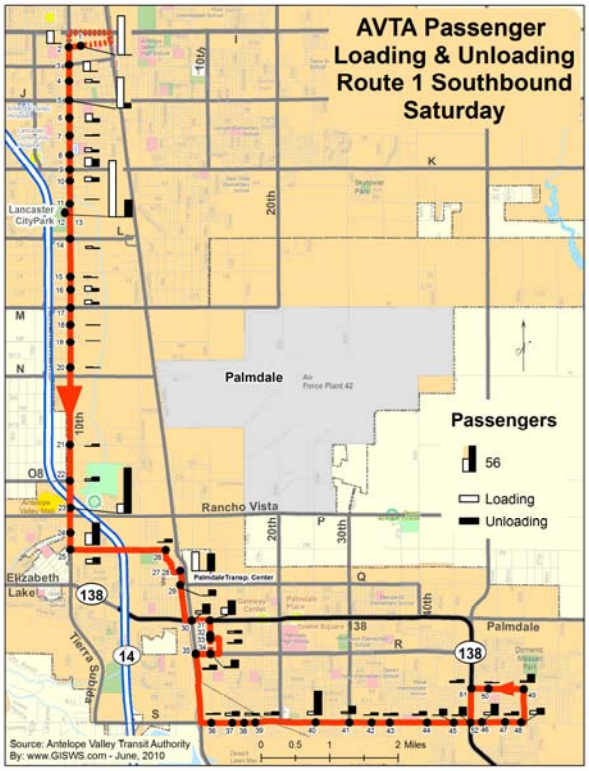
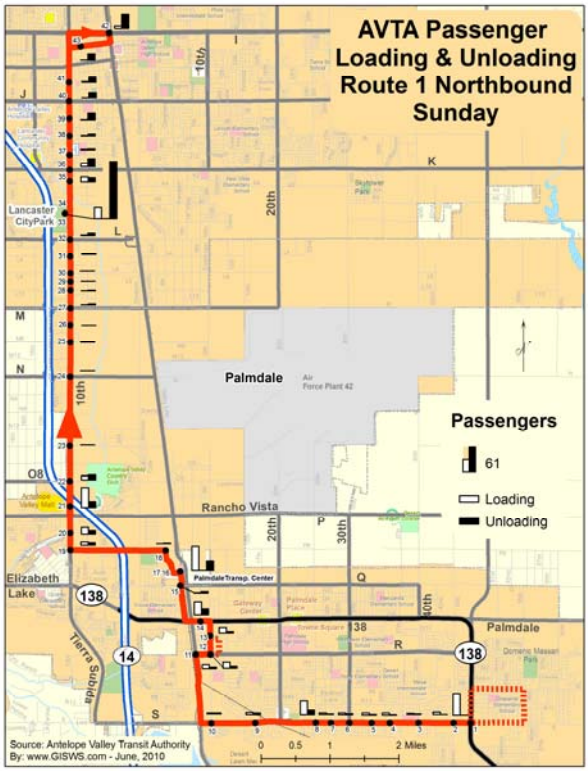


Figure 2.4
Route 1 Sunday Boardings and Alightings by Stop



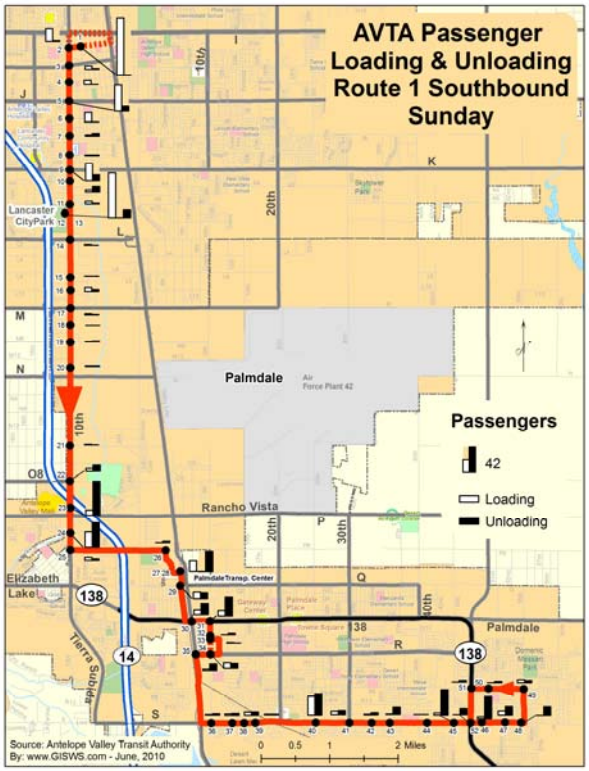


Table 2.7 shows that there are seven trips with segments whose loads exceed 125 percent of capacity on Route 1. These trip segments are sorted by direction, time, and day. Four of these occur northbound during the weekday morning and midday time periods, two occur southbound during the weekday midday and afternoon time periods, and one occurs southbound on Saturday. Two overloaded trips occur after a driver break, i.e., when it has been 50 minutes instead of 30 minutes since the last bus.

Table 2.7
Route 1 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
10th Street West & Marketplace Drive – 10th Street West & Avenue L-12	Weekday	NB	7:10	8	53	
10th Street West & Marketplace Drive – 10th Street West & Avenue M	Weekday	NB	7:40	7	52	
10th Street West & Marketplace Drive – 10th Street West & Applebee's	Weekday	NB	10:30	1	50	
10th Street West & Marketplace Drive – 10th Street West & Avenue L	Weekday	NB	11:20	12	53	After driver break
Lancaster City Park – 10th Street West and AV Mall	Weekday	SB	1:15	8	58	
Lancaster City Park –10th Street West & Amargosa Commons; PTC – Avenue S & Sheffield	Weekday	SB	3:35	18	61	After driver break
Lancaster City Park – 10th Street West and AV Mall	Saturday	SB	1:15	8	59	

Source: Ridecheck Data, November 2009

Weekday Segment and Time of Day Analysis

Tables 2.8 and 2.9 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to 6:59 PM. Evening is 7:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at the Palmdale Transportation Center (PTC) are counted in the PTC-LCP segment northbound and in the Palmdale & 10th St. E-PTC segment southbound. The ridership patterns in Table 2.8 indicate a northbound ridership flow during the morning peak period and a southbound ridership flow during the rest of the day. The mid-route segment between PTC and LCP has the greatest passenger activity all day, while the segment between Avenue S & 47th Street East and Palmdale Boulevard & 9th/10th Streets has the greatest morning activity, especially in the northbound direction. Ridership is greater in the midday and afternoon peak periods.

Table 2.8
Route 1 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Avenue S & 47th St. E – Palmdale Bl. & 9th/10th St. E	405	189	140	45	185	107	57	29	23	8
Palmdale Bl. & 9th/10th St. E – PTC	146	102	60	9	65	33	14	53	7	7
PTC – LCP	407	521	99	54	200	261	82	169	26	37
LCP – 10th St. W & Av J	175	232	24	26	93	114	56	73	2	19
10th St. W & Avenue J – Sierra Hwy & Avenue I	30	--	0	--	29	--	1	--	0	--
Sierra Hwy & Avenue I (NB)/ 10th St. W & Avenue J (SB) – Jackman & Fern	24	288	5	33	14	178	5	29	1	8
Weekday Total	**1,188**	**1,332**	**328**	**167**	**586**	**693**	**215**	**390**	**59**	**82**

Source: Ridecheck data, November 2009

Table 2.9 presents productivity, in terms of boardings per revenue hour, for Route 1 by direction, time of day and route segment. Overall productivity is greater in the segments at the beginning of the route (at the top of the table northbound and at the bottom of the table southbound) and in the segments between LCP and 10th Street West & Avenue J and between PTC and LCP. Southbound productivity is higher in all time periods except morning. The most productive time of day segment is southbound between Jackman & Fern and 10th Street West and Avenue J in the midday (150.4 boardings per revenue hour), although the relatively short length of this segment contributes to its high productivity. The least productive time of day segment is northbound between 10th Street West & Avenue J and Sierra Highway & Avenue I in the morning and evening (0.0 boardings per revenue hour). Overall productivity is highest southbound in the afternoon (44.6) and lowest northbound in the evening (10.7).

Table 2.9
Route 1 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Avenue S & 47th St. E – Palmdale Bl. & 9th/10th St. E	44.3	14.8	52.2	17.6	51.6	20.5	34.2	9.9	19.2	3.9
Palmdale Bl. & 9th/10th St. E – PTC	29.8	30.1	52.2	9.6	30.5	28.7	22.1	64.9	7.2	15.6
PTC – LCP	31.5	41.9	33.8	20.4	35.7	48.2	28.8	65.0	17.1	21.1
LCP – 10th St. W & Av J	40.1	33.7	28.8	18.6	45.0	42.0	62.2	48.1	3.8	15.4
10th St. W & Avenue J – Sierra Hwy & Avenue I	7.4	--	0.0	--	17.6	--	1.2	--	0.0	--
Sierra Hwy & Avenue I (NB)/ 10th St. W & Avenue J (SB) – Jackman & Fern	10.4	92.4	9.1	46.0	20.5	150.4	10.7	77.6	1.5	33.0
Weekday Total	**31.4**	**34.5**	**36.0**	**20.1**	**37.2**	**44.1**	**28.9**	**44.6**	**10.7**	**14.0**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Saturday and Sunday productivity is highest during the midday. The most productive segment on Saturday is on the short southbound segment between Jackman & Fern and 10th Street West and Avenue J in the midday, with 140.6 boardings per revenue hour. This segment is also the most productive segment on Sunday in the midday, with 134.1 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.10 shows the peak load points on Route 1 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.10 indicates that the peak load point for weekday travel is at Lancaster City Park, with 755 passengers traveling southbound at this location throughout the day. The maximum load point is southbound on the weekday 3:35 p.m. trip at Lancaster City Park, with 61 passengers on board.

Table 2.10
Route 1 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	10th St W & Av O	All Day	713	LCP	All Day	755
	Saturday	10th St W & Av O	All Day	310	10th St W & Av M-14	All Day	329
	Sunday	10 St W & Applebees	All Day	212	10th St W & Av O	All Day	250
Maximum Load Point	Weekday	10th St W & Av N	11:20 a.m.	53	LCP	3:35 p.m.	61
	Saturday	10 St W & Applebees	2:45 p.m.	48	LCP	1:15 p.m.	59
	Sunday	10th St W & Av O-8	3:45 p.m.	32	LCP	11:15 a.m.	32

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.11 through 2.13 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 1 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 70 percent at all time points, 9th among the 13 weekday routes. Southbound schedule adherence is best in the morning and declines throughout the day. Northbound schedule adherence is best in the afternoon and evening. Late departures occur more than twice as often as early departures. Schedule adherence is better in the southbound direction.

Table 2.11
Route 1 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	NB	SB	Total	NB	SB	NB	SB	NB	SB	NB	SB
On Time	158	161	319	32	40	57	61	41	35	28	25
Early	25	17	42	5	2	7	3	6	5	7	7
Late	60	35	95	17	6	35	21	7	8	1	0
On Time %	65%	76%	70%	59%	83%	58%	72%	76%	73%	78%	78%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.12) is 74 percent at all time points on Route 1, 6th among the 11 Saturday routes. As opposed to weekdays, when schedule adherence was better on southbound trips than on northbound, Saturday schedule adherence is better in the northbound direction overall and at all time periods except midday. Northbound schedule adherence is best in the morning and worst in the midday, while southbound schedule adherence is best in the midday and worst in the morning. Early departures are a more significant problem than late departures, particularly in the southbound direction.

Table 2.12
Route 1 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	92	68	160	17	7	44	37	31	24
Early	17	27	44	1	8	7	11	9	8
Late	11	1	12	2	1	9	0	0	0
On Time %	77%	71%	74%	85%	44%	73%	77%	78%	75%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.13) is 72 percent at all time points, 9th among the 11 Sunday routes. Schedule adherence is slightly better in the southbound direction. In both directions, schedule adherence is best in the midday and worst in the morning. Early departures are five times more likely than late departures on Sunday; no late departures were recorded in the southbound direction.

Table 2.13
Route 1 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	85	71	156	11	10	46	37	28	24
Early	25	25	50	9	6	11	11	5	8
Late	10	0	10	0	0	3	0	7	0
On Time %	71%	74%	72%	55%	63%	77%	77%	70%	75%

Source: Ridecheck Data, November 2009

Route 1 schedule adherence is better on weekends, when there is usually lighter traffic and fewer riders, than on weekdays. The number of early departures on weekends suggests that changes in operating procedures may be in order.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.14 and 2.15 show average running times and scheduled running times by segment and time of day on weekdays for Route 1. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Scheduled running time is adequate in the northbound direction at all times except morning, although there were unusual delays on one morning trip (7:40). Running time could be reallocated among route segments. Actual average running time is three minutes greater than scheduled running

time in the midday and afternoon time periods for southbound trips. Mechanical problems with one bus accounted for most of the midday differential.

Table 2.14
Route 1 Average versus Scheduled Northbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Avenue S & 47th St. E – Palmdale Bl. & 9th St. E	25	20	19	20	16	20	17	20
Palmdale Bl. & 9th St. E – PTC	11	10	11	10	6	10	13	10
PTC – LCP	27	21	29	21	26	21	21	21
LCP – 10th St. W & Av J	8	9	11	9	9	9	8	9
10th St. W & Avenue J – Sierra Hwy & Avenue I	9	15	8	15	8	15	9	15
Sierra Hwy & Avenue I – Jackman & Fern	5	5	3	5	5	5	9	5
Average Running Time	85	80	81	80	80	80	77	80

Source: Ridecheck data, November 2009

Table 2.15
Route 1 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Jackman & Fern – 10th Street W & Avenue J	7	8	7	8	8	8	5	8
10th Street W & Avenue J - LCP	13	14	13	14	14	14	17	14
LCP – PTC	25	24	28	24	25	24	24	24
PTC – Palmdale Boulevard & 10th Street E	9	8	6	8	8	8	6	8
Palmdale Blvd & 10th St E – Avenue S & 47th St E	24	26	29	26	28	26	28	26
Total	78	80	83	80	83	80	80	80

Source: Ridecheck data, November 2009

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 1 ranks 1st in ridership among the 13 weekday routes. Ridership is higher in the southbound direction than in the northbound direction except in the morning. Route 1 ranks 1st in ridership among the 11 Saturday routes and 1st among 11 Sunday routes.

Route 1 ranks highly among AVTA routes in productivity, subsidy per passenger, and farebox recovery ratio, but is not the best in any category because of the high service levels on these routes.

There are seven instances of overcrowding on Route 1. Six of these were on weekdays and one was on Saturday.

Schedule adherence is generally better in the southbound direction. Route 1 has better on-time performance on weekends than on weekdays. On weekends and especially on Sunday, early departures are a bigger problem than late departures. Scheduled running time appears adequate, although running time could be reallocated among route segments.

Route 2 Palmdale Boulevard

Overview

Route 2 Palmdale Boulevard (Figure 2.5) serves the Palmdale Boulevard corridor between 10th Street West and 40th Street East. The route travels between the Antelope Valley Mall and 47th Street East & Avenue S via Avenue O-8, the AV Mall ring road, 10th Street West, Palmdale Boulevard, 40th Street East, Avenue R, and 47th Street East. Major destinations include the Antelope Valley Mall, Palmdale Regional Medical Center, the AV Medical Center, downtown Palmdale, Wal-Mart, and the retail area at 47th Street East & Avenue S. At the time of the ridecheck, Route 2 did not yet serve the Palmdale Regional Medical Center.

Route 2 provides important connections to major retail and medical destinations in Palmdale while also serving residential areas along Palmdale Boulevard, 40th Street East, and Avenue R. Route 2 ranks among the top three AVTA routes in terms of ridership and productivity.

Route 2 is interlined with Route 3 at both ends of the route. Interlining at 47th Street East and Avenue S frees both routes from the need to turn around via side streets; instead a bus arrives on Route 2 and leaves on Route 3 (and vice versa).

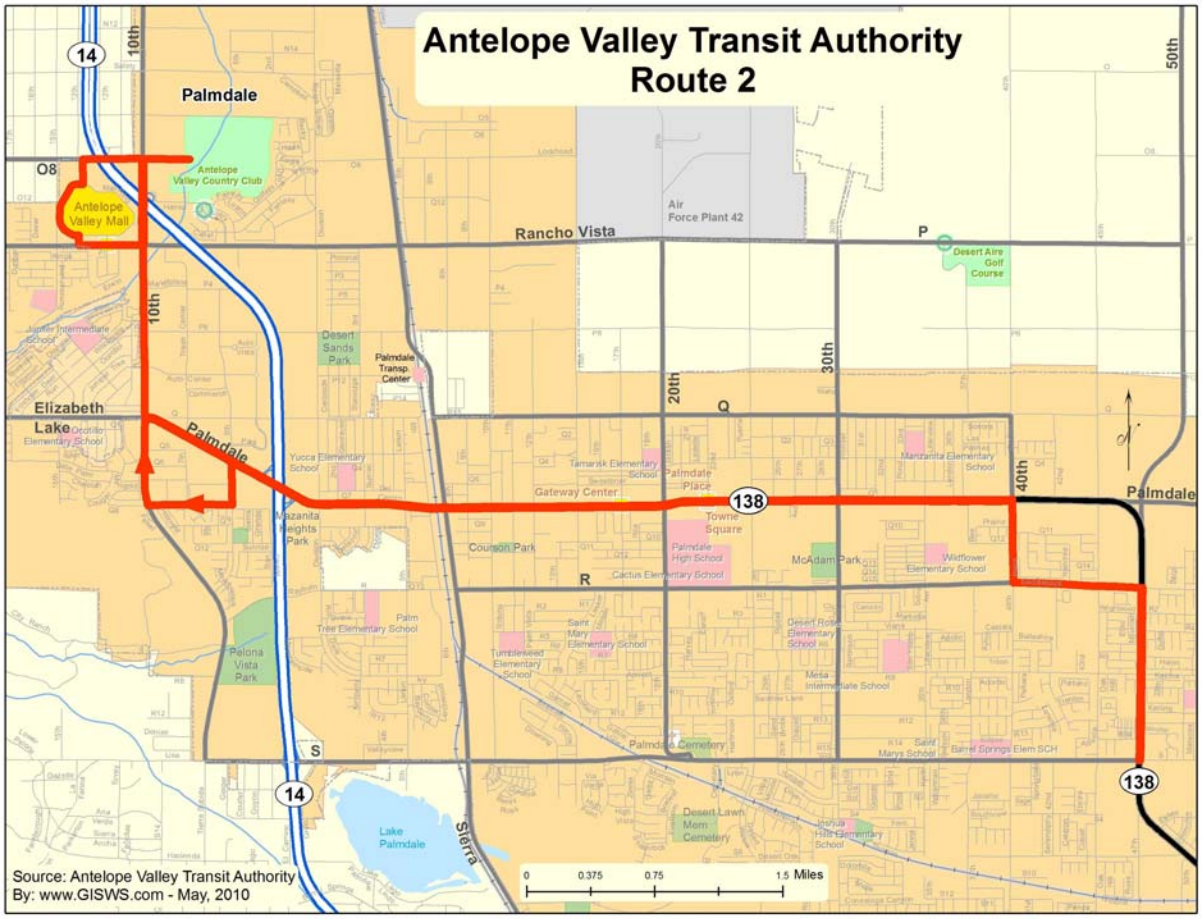
Headway and Span of Service

Table 2.16 shows headway and span of service for Route 2 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.16
Route 2 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	30 day 60 evening	6:00 a.m. – 11:00 p.m.
Saturday/Sunday	60	7:20 a.m. – 6:45 p.m.

Figure 2.5
Route 2



Operating Data

Table 2.17 presents operating data for Route 2. Among the 13 weekday routes, Route 2 ranks 3rd in boardings and 2nd in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 2 ranks 1st in boardings and 2nd in boardings per revenue hour on both days. Note that revenue hours in Table 2.17 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled

Route 2 ranks last in average trip length on weekdays and Sunday and 10th on Saturday. Average trip lengths fall in the range of 3.22 to 4.05 miles on all days. Average trip lengths are longest on Saturday. Route 2 ranks 7th in seat utilization on weekdays, 2nd on Saturday, and 3rd on Sunday.

Table 2.17
Route 2 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	1,518	40.1	34.9	21.7%	3.22
Saturday	849	21.0	40.5	37.6%	4.05
Sunday	495	20.8	23.8	20.4%	3.76

Source: Ridecheck Data, November 2009

Table 2.18 presents financial data for Route 2. Route 2 ranks 2nd in both subsidy per boarding and in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes and 1st in both measures among 11 Saturday and Sunday routes.

Table 2.18
Route 2 Financial Data

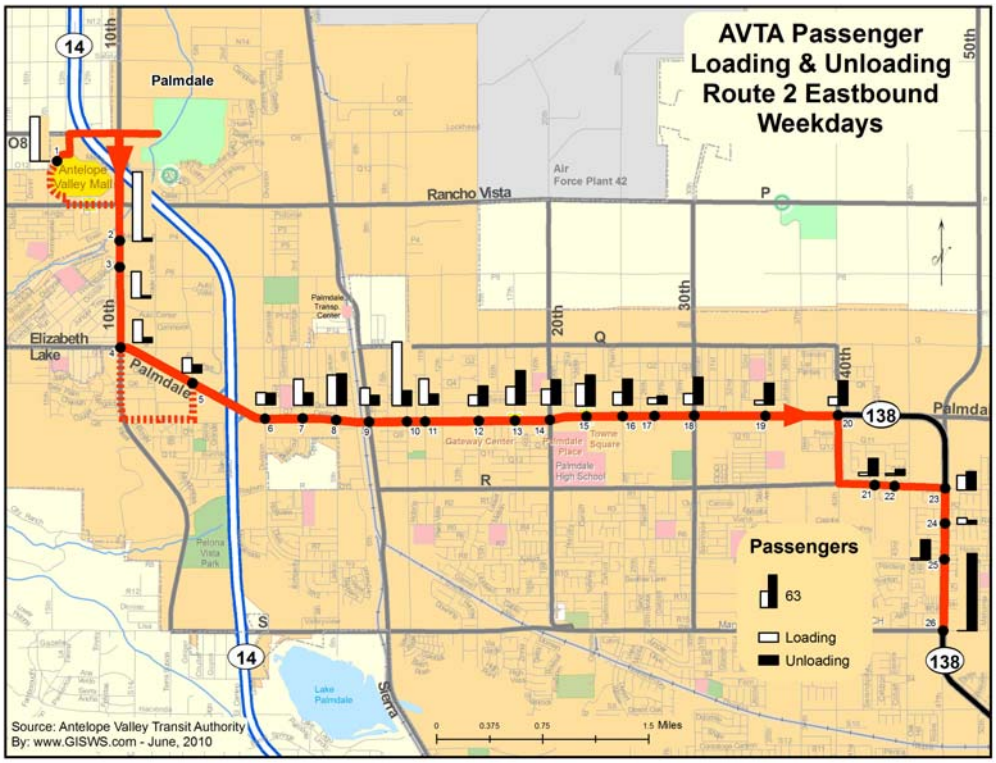
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,518	$1,548	$3,077	$2.03	$1.01	50.3%
Saturday	849	$866	$1,609	$1.90	$0.88	53.8%
Sunday	495	$505	$1,594	$3.22	$2.20	31.7%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.6 through 2.8 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. The busiest stops (at least 100 boardings per weekday in one direction), in decreasing order of usage, include:

- 10th Street West & Amargosa Commons EB (near Antelope Valley Mall)
- 47th Street East & Avenue S WB (Wal-Mart and other retail; transfer point for Routes 1, 3 6, and 9)
- Palmdale Boulevard & 10th Street East EB (downtown Palmdale).

Figure 2.6
Route 2 Weekday Boardings and Alightings by Stop



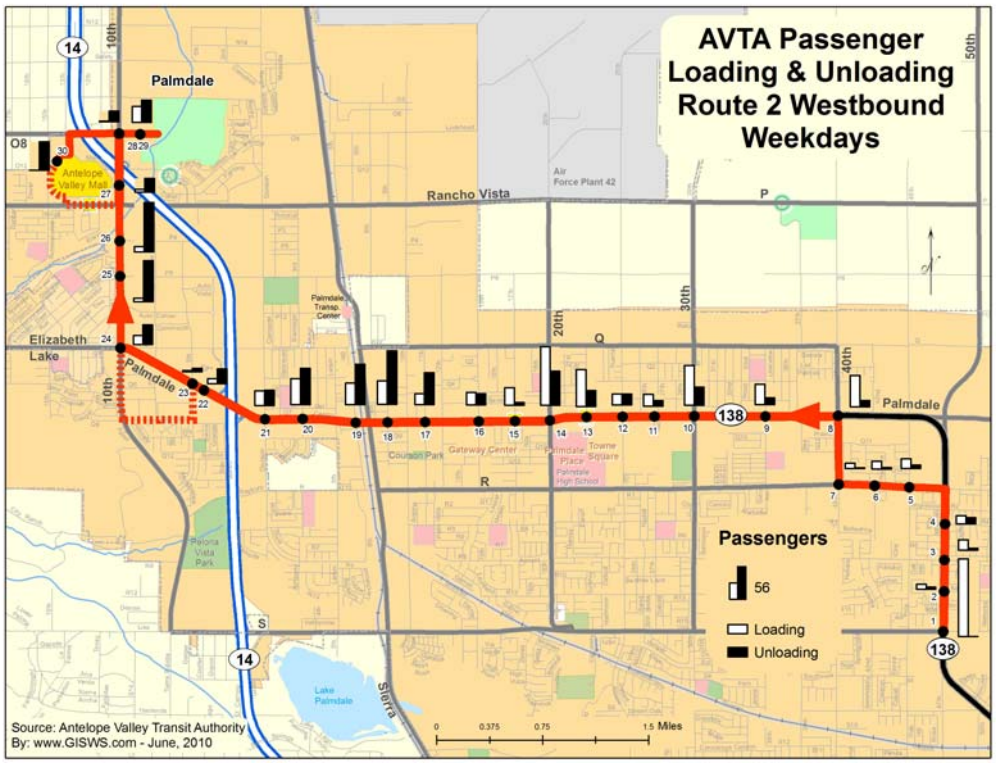
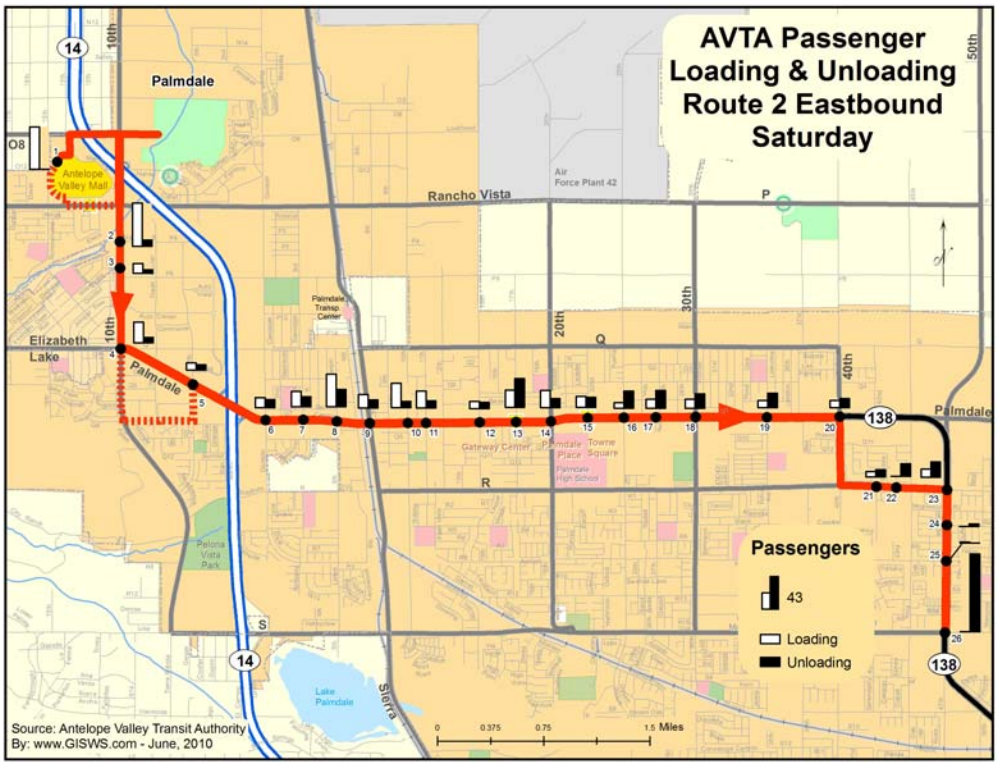


Figure 2.7
Route 2 Saturday Boardings and Alightings by Stop



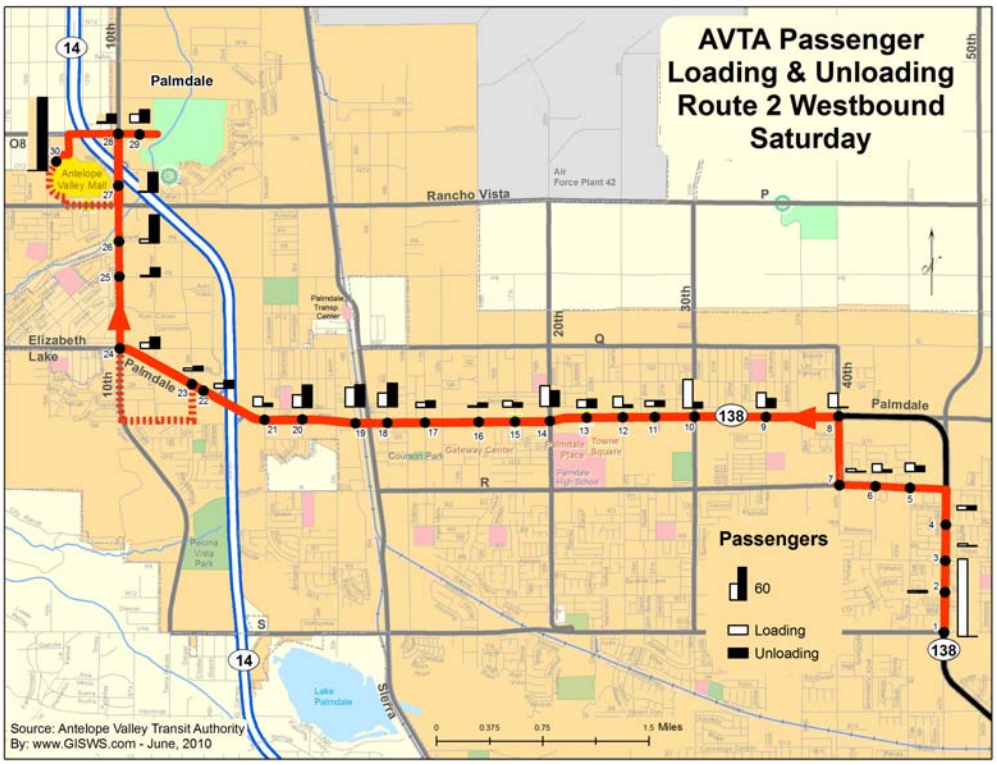
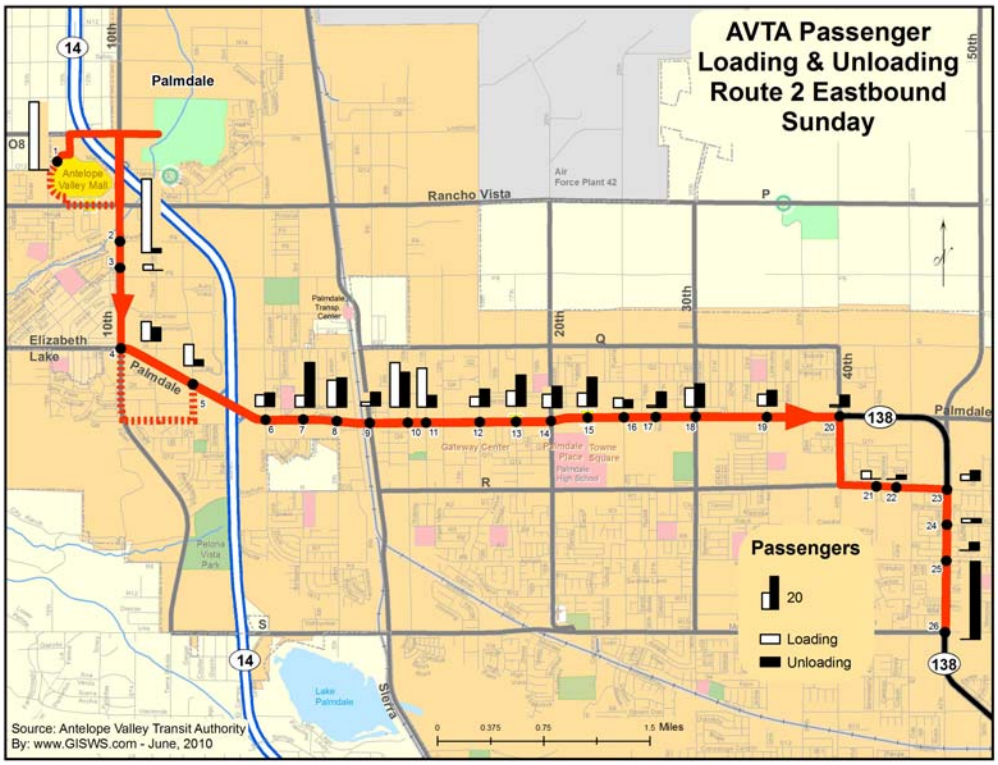


Figure 2.8
Route 2 Sunday Boardings and Alightings by Stop



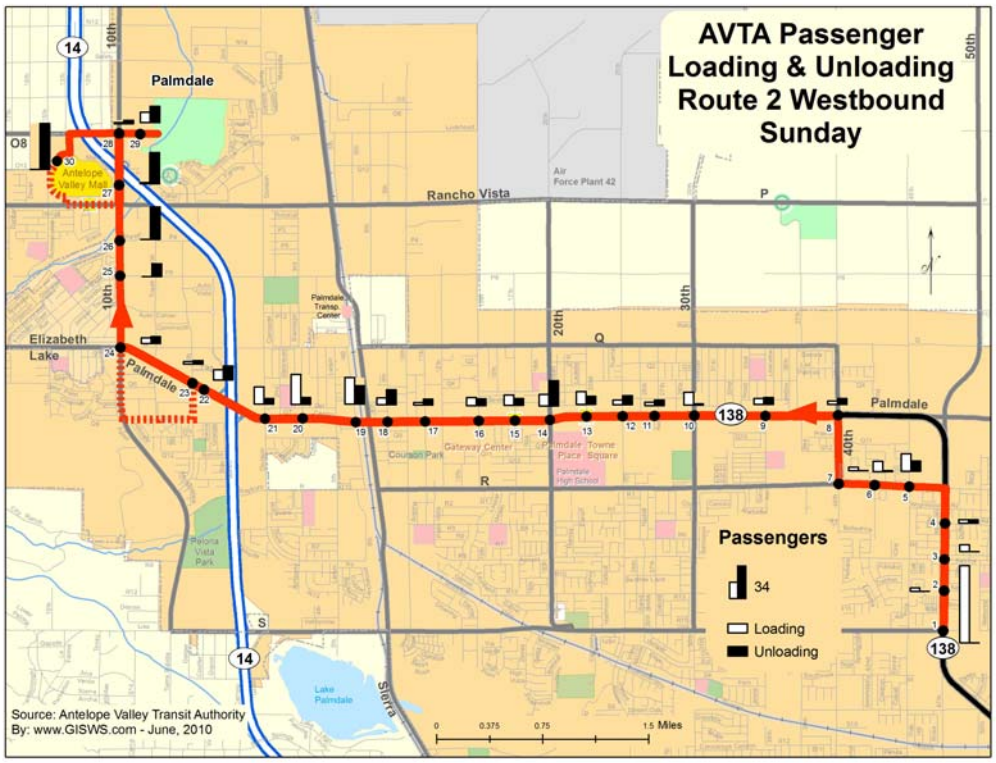


Table 2.19 shows that there is only one trip (Saturday afternoon at 3:30 p.m. westbound) with segments whose loads exceed 125 percent of capacity on Route 2.

Table 2.19
Route 2 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Palmdale Blvd & 20th Street East – Palmdale Blvd & 3rd Street East	Saturday	WB	3:30	6	54	

Source: Ridecheck Data, November 2009

Weekday Segment and Time of Day Analysis

Tables 2.20 and 2.21 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at Palmdale & 5th are counted in the third segment. The ridership patterns in Table 2.20 suggest reasonably balanced demand by direction at all times except afternoon, when there are more riders traveling eastbound. The longest segment between Palmdale & 10th/9th Street East and 47th St East & Avenue S has the greatest passenger activity. There is also significant ridership eastbound between the Antelope Valley Mall and Palmdale & 5th Street West, especially in the midday and afternoon. Ridership is highest during the midday and afternoon periods.

Table 2.20
Route 2 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av O-8 & Sam's Club – AV Mall	--	23	--	1	--	13	--	8	--	1
AV Mall/Av O-8 & Sam's Club – Palmdale & 5th St W	264	33	20	7	134	21	93	4	17	1
Palmdale & 5th St W – Palmdale & 10th/9th St E	163	130	44	37	68	62	45	24	6	7
Palmdale & 10th/9th St E – 47th St E & Av S	367	538	51	73	221	339	86	109	9	17
Weekday Total	**794**	**724**	**115**	**118**	**423**	**435**	**224**	**145**	**32**	**26**

Source: Ridecheck data, November 2009

Table 2.21 presents productivity, in terms of boardings per revenue hour, for Route 2 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greatest on the long segment between Palmdale & 10th/9th Street East and 47th Street East & Avenue S. Eastbound service is more productive in all time periods, and midday is the most productive time period. The most productive route/time of day segment is eastbound between the AV Mall and Palmdale & 5th Street West in the midday (77.3 boardings per revenue hour), and the least productive is westbound between Avenue O-8 & Sam's Club and Palmdale & 5th Street West in the evening (1.1 boardings per revenue hour).

Table 2.21
Route 2 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av O-8 & Sam's Club – AV Mall	--	12.3	--	2.6	--	17.7	--	18.5	--	3.5
AV Mall/Av O-8 & Sam's Club – Palmdale & 5th St W	55.4	6.7	18.2	8.6	77.3	10.2	67.2	3.6	31.9	1.1
Palmdale & 5th St W – Palmdale & 10th/9th St E	34.6	31.6	56.2	42.7	51.6	36.1	20.9	24.4	13.8	13.5
Palmdale & 10th/9th St E – 47th St E & Av S	39.0	52.5	28.6	36.8	54.6	75.6	46.9	46.7	5.2	12.0
Weekday Total	**42.0**	**34.2**	**31.2**	**28.9**	**59.3**	**48.2**	**41.6**	**29.7**	**11.8**	**8.2**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday, although the afternoon period also does well. The most productive segment on Saturday is westbound between Palmdale & 9th Street East and 47th Street East & Avenue S in the midday, with 81.3 boardings per revenue hour. The most productive segment on Sunday is eastbound between the Antelope Valley Mall and Palmdale & 5th Street West in the afternoon, with 57.4 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.22 shows the peak load points on Route 2 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.22 indicates that the peak load point for weekday travel is eastbound at Palmdale & 11th Street East, with 425 passengers traveling eastbound at this location throughout the day. The maximum load point is on Route 2 westbound on the Saturday 3:30 p.m. trip at Palmdale & 17th Street East, with 54 passengers on board.

Table 2.22
Route 2 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Palmdale & 11 St E	All Day	425	Palmdale & 15 St E	All Day	393
	Saturday	Palmdale & 15 St E	All Day	207	Palmdale & 17 St E	All Day	264
	Sunday	Palmdale & 5 St W	All Day	116	Palmdale & Division	All Day	136
Maximum Load Point	Weekday	Palmdale & Division	1:45 p.m.	35	Palmdale & 22 St E	12:30 p.m.	30
	Saturday	Palmdale & 17 St E; 40 St E & Palmdale	12:55 p.m.	35	Palmdale & 17 St E	3:30 p.m.	54
	Sunday	Palmdale & 20 St E	3:55 p.m.	22	Av R & 42 St E	1:30 p.m.	29

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.23 through 2.25 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 2 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 57 percent at all time points on Route 2, 12th among the 13 weekday routes. Schedule adherence is best in the morning and evening. Schedule adherence is well below 50 percent eastbound in the afternoon and westbound in the midday and afternoon. Because the route is interlined with Route 3, issues on Route 3 may be contributing to poor westbound performance. The running time analysis later in this section indicates that actual running times are higher than scheduled running times for Route 2 in the midday and afternoon periods.

Table 2.23
Route 2 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	71	77	148	22	25	32	23	8	6	9	23
Early	2	1	3	0	0	0	0	0	0	2	1
Late	38	72	110	2	5	11	37	24	29	1	1
On Time %	64%	51%	57%	92%	83%	74%	38%	24%	17%	75%	92%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.24) is 71 percent at all time points, 8th among the 11 Saturday routes. Schedule adherence is much better eastbound (85 percent). Westbound trips have difficulty staying on time in the midday and afternoon periods.

Table 2.24
Route 2 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	41	36	77	6	10	22	15	13	11
Early	5	2	7	2	0	0	0	3	2
Late	2	22	24	0	0	2	15	0	7
On Time %	85%	60%	71%	75%	100%	92%	50%	81%	55%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.25) is much better at 93 percent at all time points, 2nd among the 11 Sunday routes. Schedule adherence is better eastbound except in the afternoon. Only one late departure was observed on Sunday.

Table 2.25
Route 2 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	44	56	100	8	8	24	28	12	20
Early	4	3	7	0	2	0	1	4	0
Late	0	1	1	0	0	0	1	0	0
On Time %	92%	93%	93%	100%	80%	100%	93%	75%	100%

Source: Ridecheck Data, November 2009

Route 2 schedule adherence is better on weekends, especially on Sunday, than on weekdays.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.26 and 2.27 show average running times and scheduled running times by segment and time of day on weekdays for Route 2. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running

time is greater than scheduled running time on Route 2 during the midday and afternoon time periods in both directions. The opposite is true throughout the day on Route 3, indicating that a wholesale revision of the schedules on both routes may be necessary.

Table 2.26
Route 2 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
AV Mall – Palmdale & 5th St W	10	8	10	8	10	8	7	8
Palmdale & 5th St W – Palmdale & 10th St E	7	7	8	7	8	7	6	7
Palmdale & 10th St E – 47th St E & Av S	17	20	22	20	21	20	23	20
Average Running Time	34	35	40	35	39	35	35	35

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.27
Route 2 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
47th St E & Av S – Palmdale & 9th St E	18	13	22	13	20	13	16	13
Palmdale & 9th St E - Palmdale & 5th St W	8	9	8	9	8	9	6	9
Palmdale & 5th St W – Av O-8 & Sam's Club –	8	10	10	10	9	10	11	10
Av O-8 & Sam's Club – AV Mall	4	3	4	3	4	3	3	3
Total	37	35	43	35	41	35	36	35

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 2 ranks 3rd in ridership among the 13 weekday routes. Ridership is evenly distributed by direction except in the afternoon period, when there are more eastbound than westbound riders. Route 2 ranks 2nd in ridership among the 11 Saturday routes and 2nd among the 11 Sunday routes.

Route 2 ranks second among the 13 AVTA weekday routes and 1st among the 11 Saturday and Sunday routes in productivity, subsidy per passenger, and farebox recovery ratio.

There is only one instance of overcrowding on Route 2, occurring on a Saturday afternoon trip.

Schedule adherence is low on Route 2 on weekdays and Saturday. Actual running times are greater than scheduled running times during the midday and afternoon weekday periods in both directions. Route 2 ranks 12th among the 13 weekday routes in terms of schedule adherence. The interlined Route 2 and Route 3 schedules should be examined to identify possible changes.

Route 3 Avenue R

Overview

Route 3 Avenue R (Figure 2.9) serves the Avenue R corridor between 10th Street West and 40th Street East. The route travels between the Antelope Valley Mall and 47th Street East & Avenue S via Avenue O-8, the AV Mall ring road, Rancho Vista Boulevard, Sierra Highway, the Palmdale Transportation Center, Avenue Q, 10th Street East, Avenue R, 40th Street East, and Avenue S. Major destinations include the Antelope Valley Mall, Palmdale Promenade, the Palmdale Transportation Center, downtown Palmdale, Palmdale High School, Wal-Mart, and the retail area at 47th Street East & Avenue S.

Route 3 provides important connections to major retail destinations in Palmdale while also serving residential areas along Avenue R. Route 3 ranks in the middle among AVTA routes in terms of ridership.

Route 3 is interlined with Route 2 at both ends of the route. Interlining at 47th Street East and Avenue S frees both routes from the need to turn around via side streets; instead a bus arrives on Route 3 and leaves on Route 2 (and vice versa).

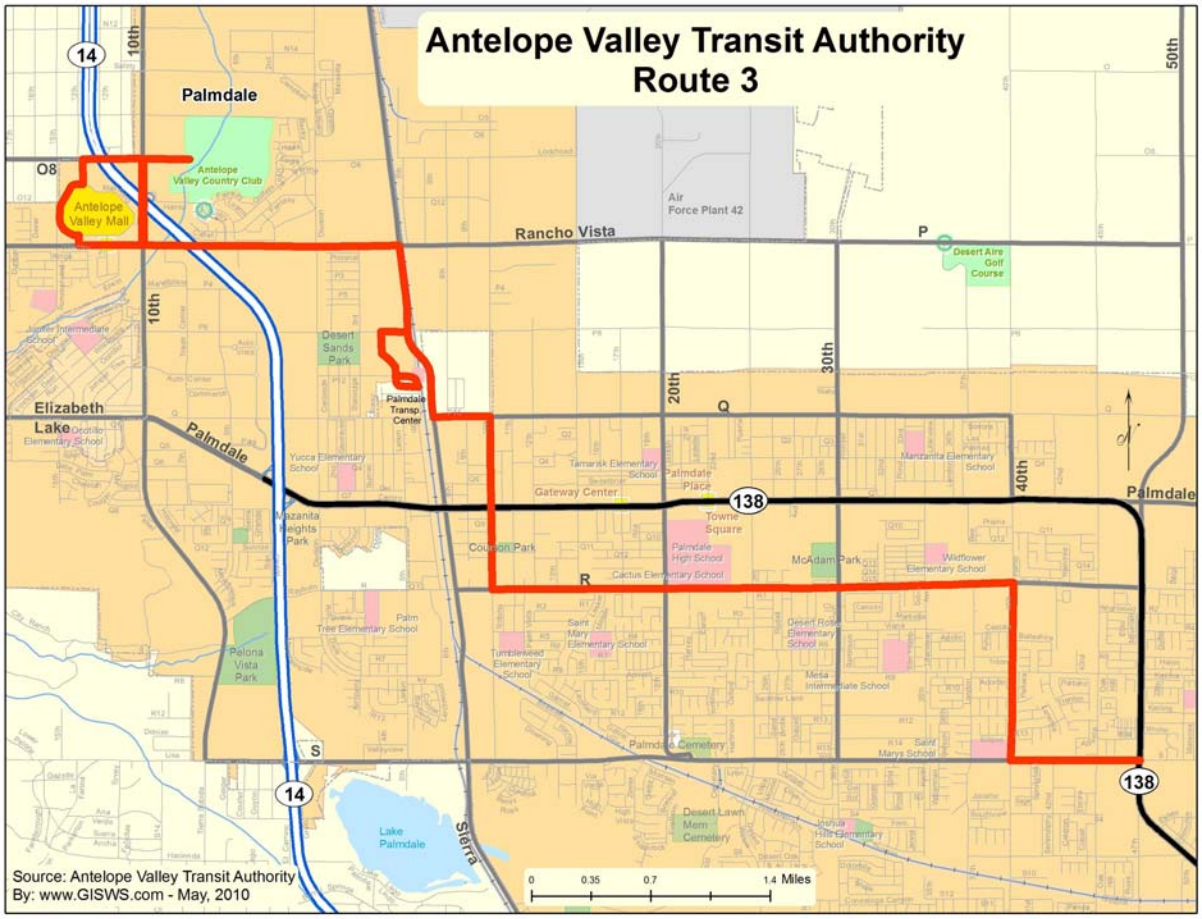
Headway and Span of Service

Table 2.28 shows headway and span of service for Route 3 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Span of service in this table is the span in effect at the time that the ridecheck was conducted.

Table 2.28
Route 3 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	30 day 60 evening	5:50 a.m. – 10:40 p.m.
Saturday/Sunday	60	6:25 a.m. – 7:25 p.m.

Figure 2.9
Route 3



Operating Data

Table 2.29 presents operating data for Route 3. Among the 13 weekday routes, Route 3 ranks 6th in boardings and 10th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 3 ranks 5th in boardings on both days and is 6th in boardings per revenue hour on Saturday and 7th on Sunday. Note that revenue hours in Table 2.29 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 3 ranks 12th among 13 routes in average trip length on weekdays, 7th on Saturday, and 8th on Sunday. Average trip lengths fall in the range of 4.00 to 4.99 miles on all days. Average trip lengths are longer on Saturday and Sunday. Route 3 ranks 11th in seat utilization on weekdays and 7th on both Saturday and Sunday.

Table 2.29
Route 3 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	849	52.1	16.3	13.3%	4.00
Saturday	440	28.9	15.2	18.0%	4.68
Sunday	285	29.2	9.6	12.3%	4.99

Source: Ridecheck Data, November 2009

Table 2.30 presents financial data for Route 3. Route 3 ranks 10th in subsidy per boarding and 11th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday, Route 3 ranks 6th in subsidy per boarding and 5th in farebox recovery ratio among 11 routes. This route ranks 7th in both measures among 11 Sunday routes.

Table 2.30
Route 3 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	849	$849	$3,997	$4.71	$3.71	21.2%
Saturday	440	$440	$2,219	$5.04	$4.04	19.8%
Sunday	282	$282	$2,243	$7.96	$6.96	12.6%

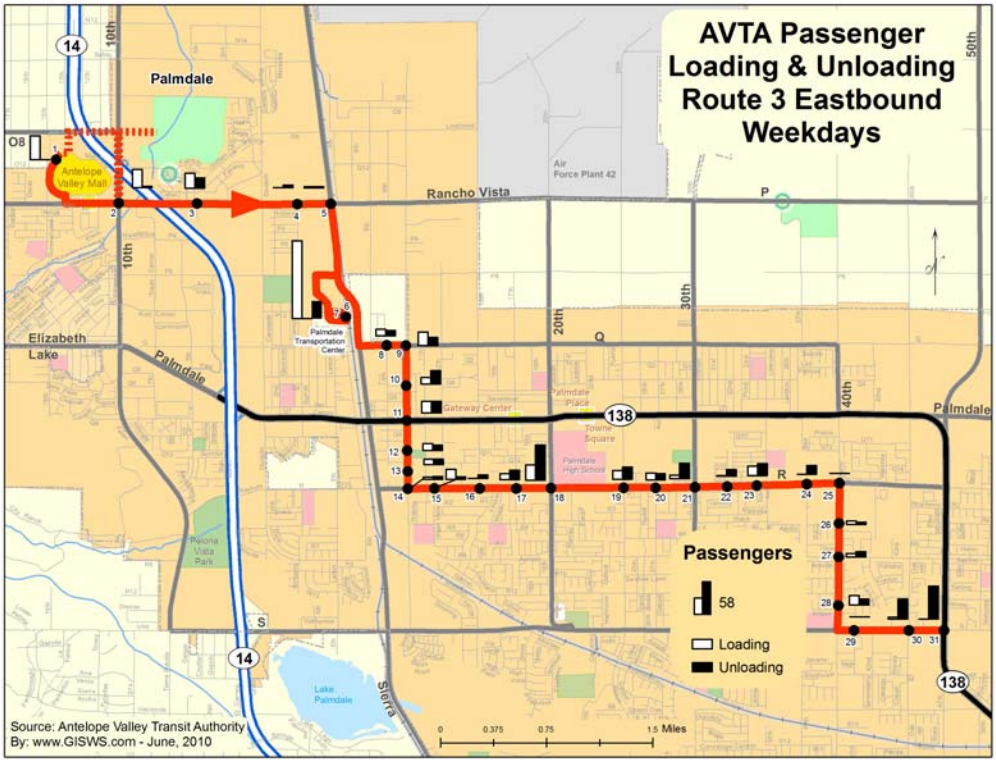
Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.10 through 2.12 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. The busiest stop (the only one with at least 100 boardings per weekday in one direction), is:

- Palmdale Transportation Center (transfer point for Routes 1, 7, and 9 and the Lake Los Angeles Express).

There are no Route 3 trips with segments whose loads exceed 125 percent of capacity.

Figure 2.10
Route 3 Weekday Boardings and Alightings by Stop



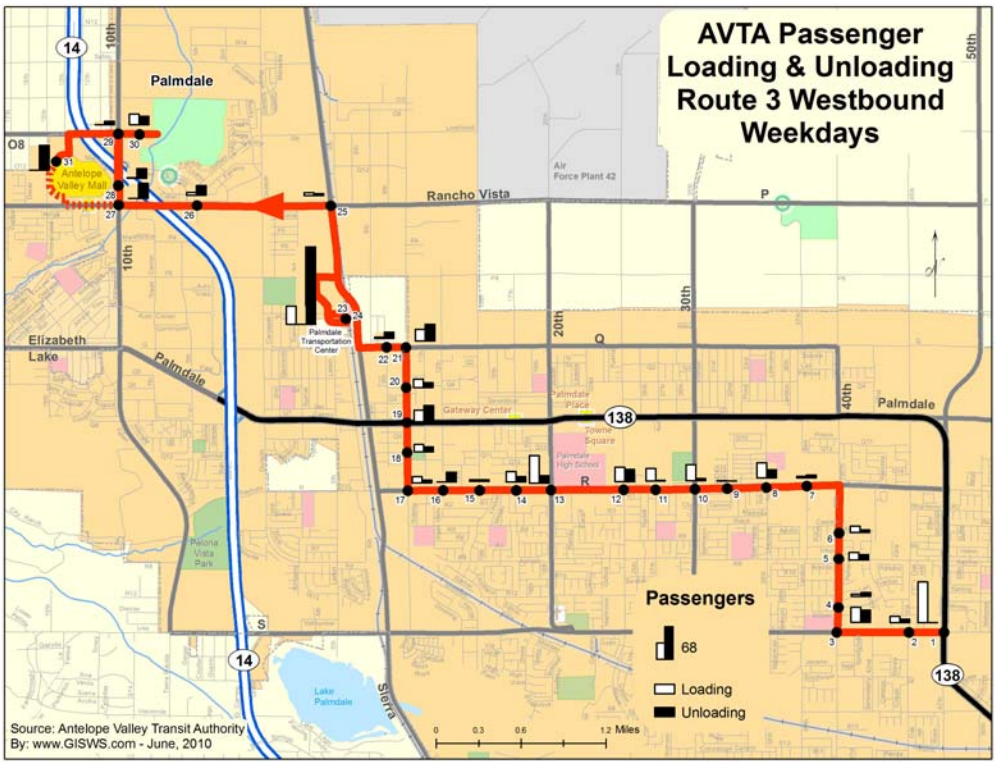
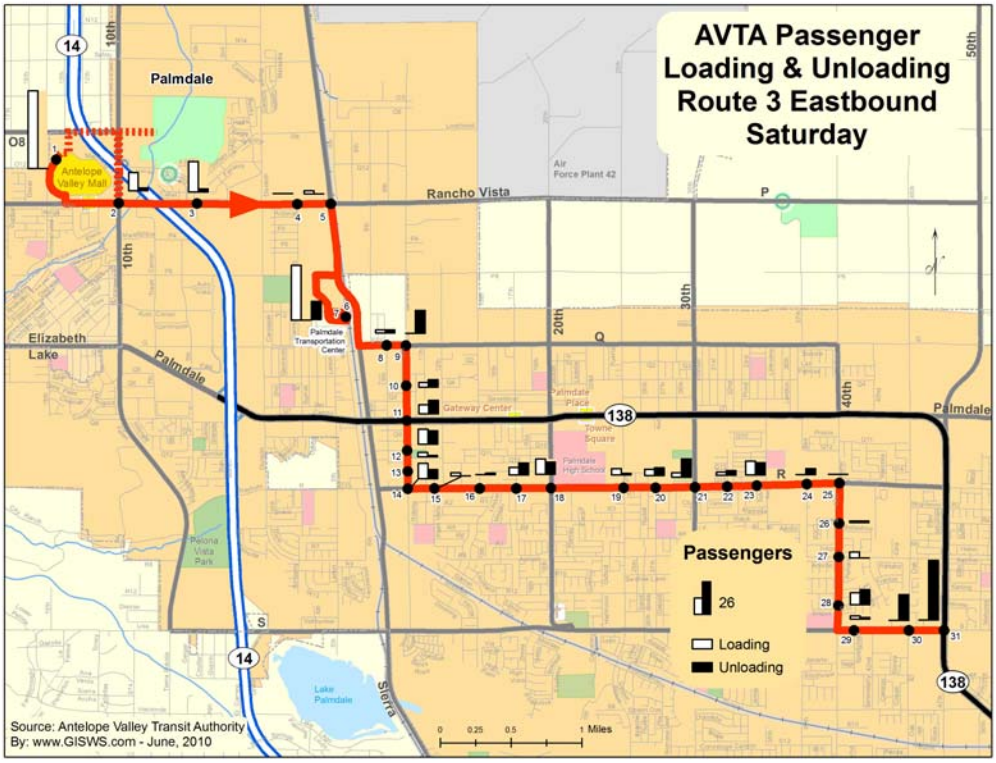


Figure 2.11
Route 3 Saturday Boardings and Alightings by Stop



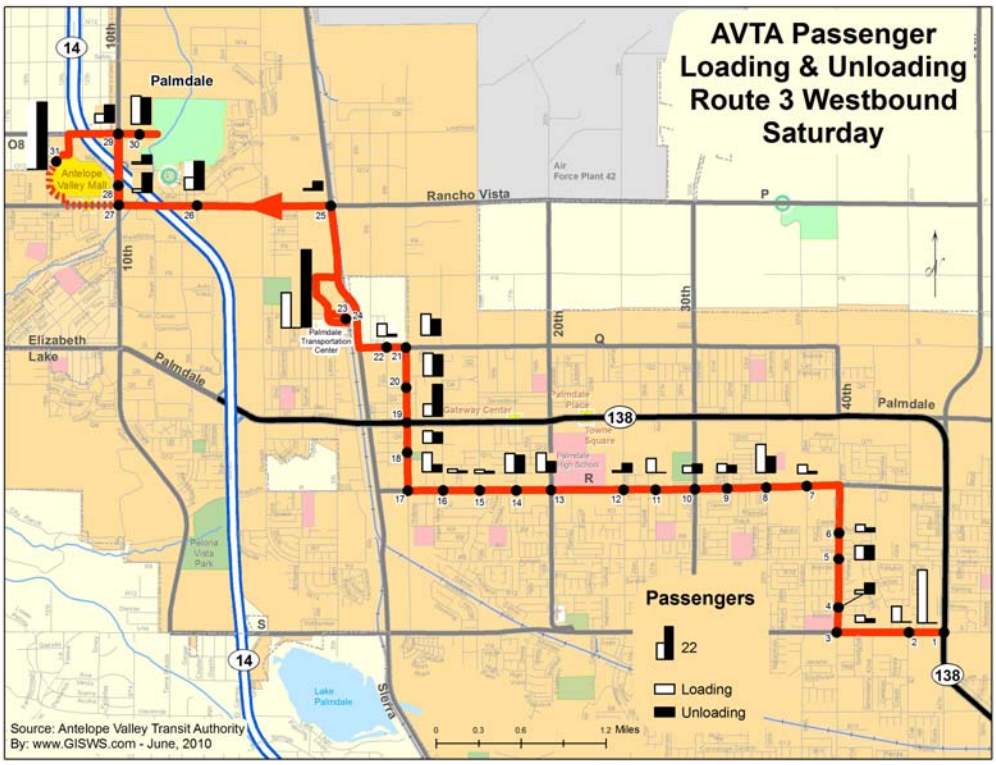
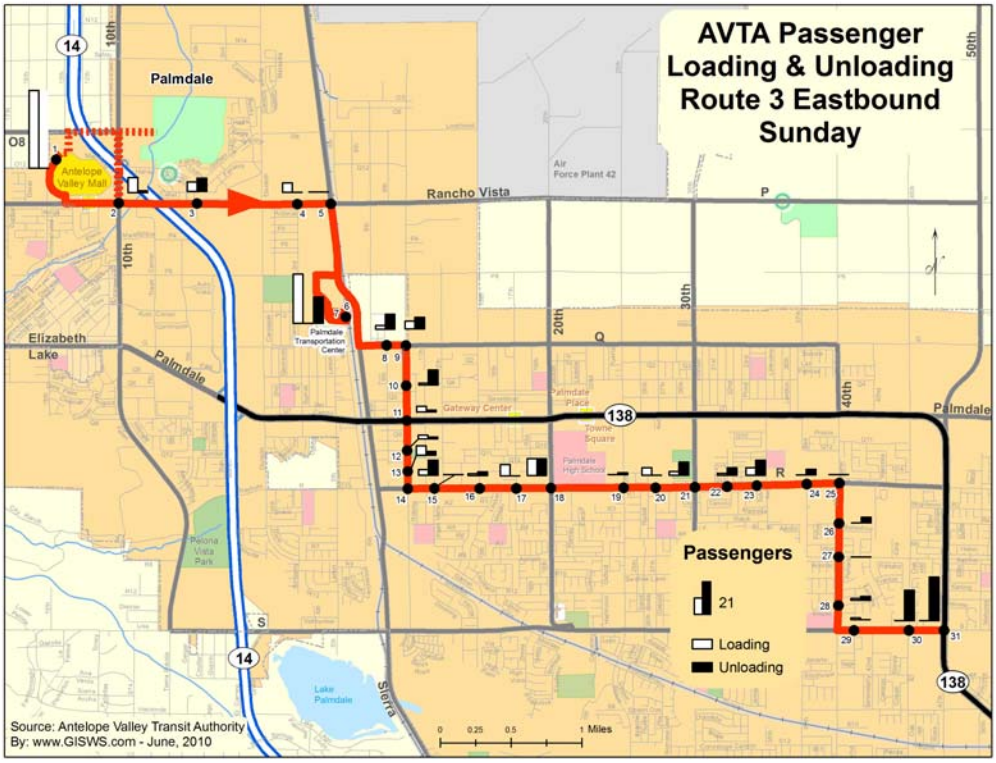
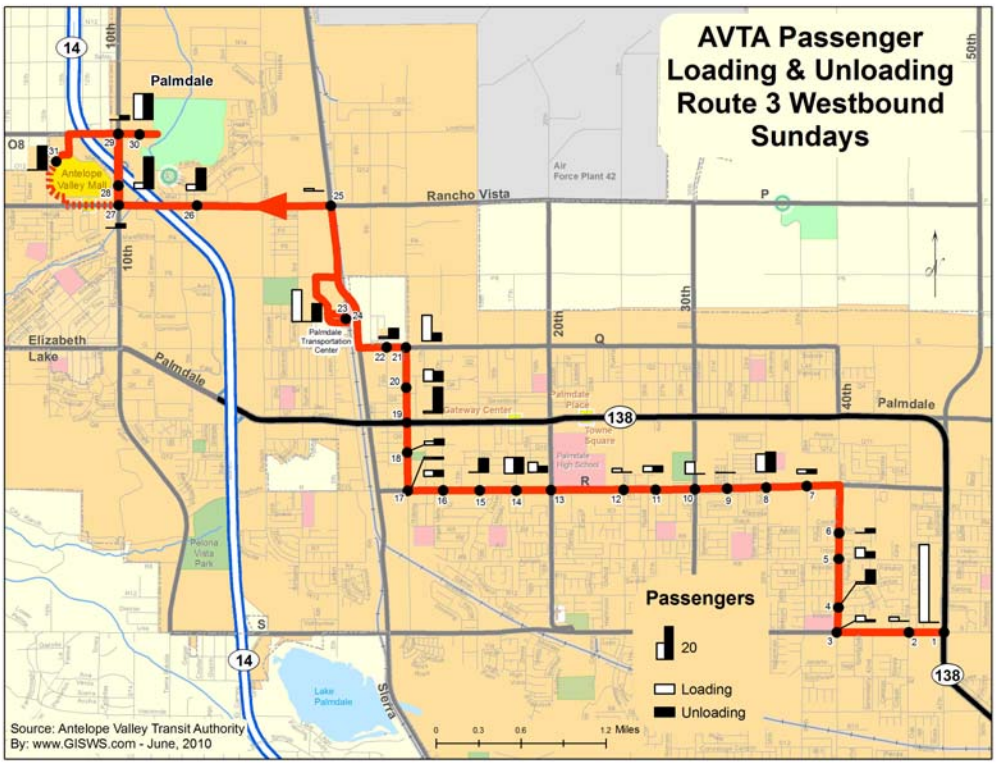


Figure 2.12
Route 3 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.31 and 2.32 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at PTC are counted in the third segment eastbound and in the second segment westbound. The ridership patterns in Table 2.31 suggest a predominant westbound passenger flow in the morning and midday and an eastbound flow in the afternoon and evening. The longest segment between Palmdale & 20th Street East and Avenue S & 47th St East has the greatest passenger activity. There is also significant ridership eastbound between PTC and Palmdale & 10th Street East, especially in the midday and afternoon. Ridership is highest during the midday.

Table 2.31
Route 3 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av O-8 & Sam's Club – AV Mall	--	19	--	0	--	9	--	9	--	1
AV Mall/Av O-8 & Sam's Club – PTC	86	43	6	10	44	14	26	17	10	2
PTC – 10th St E & Palmdale	155	57	32	20	53	28	55	8	15	1
10th St E & Palmdale – 20th St E & Av R	62	93	20	48	24	29	16	15	2	1
20th St E & Av R – Av S & 47th St E	93	241	31	68	48	130	14	38	0	5
Weekday Total	**396**	**453**	**89**	**126**	**169**	**230**	**111**	**87**	**27**	**10**

Source: Ridecheck data, November 2009

Table 2.32 presents productivity, in terms of boardings per revenue hour, for Route 3 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greatest on the segment between Palmdale & 20th Street East and Avenue S & 47th Street East. Westbound service is more productive in the morning and midday and eastbound service is more productive in the afternoon and evening, but the differences by direction are generally not large. Midday is the most productive time period. The most productive route/time of day segment is eastbound between PTC and Palmdale & 10th Street East in the afternoon (42.9 boardings per revenue hour), and the least productive segments are westbound between Avenue O-8 & Sam's Club and the AV Mall in the morning and eastbound between 20th Street East & Avenue R and Avenue S & 47th Street East (0.0 boardings per revenue hour).

Table 2.32
Route 3 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av O-8 & Sam's Club – AV Mall	--	9.3	--	0.0	--	12.0	--	13.2	--	8.6
AV Mall/Av O-8 & Sam's Club – PTC	10.1	6.8	3.8	6.2	14.2	5.2	11.7	14.0	6.2	2.7
PTC – 10th St E & Palmdale	32.0	7.8	32.0	14.1	32.9	11.4	42.9	6.2	18.4	0.5
10th St E & Palmdale – 20th St E & Av R	14.5	25.8	26.7	29.0	15.2	32.3	14.1	22.0	2.6	2.5
20th St E & Av R – Av S & 47th St E	12.3	32.3	19.8	38.1	16.8	39.6	7.7	23.3	0.0	6.8
Weekday Total	**15.7**	**16.9**	**18.0**	**20.1**	**18.2**	**21.4**	**17.1**	**15.7**	**5.9**	**2.4**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday, although the afternoon period also does well. The most productive segment on Saturday is westbound between 20th Street East & Avenue R and 10th Street East & Palmdale in the morning, with 34.8 boardings per revenue hour. The most productive segment on Sunday is westbound between 47th Street East & Avenue S and 20th Street East & Avenue R in the midday, with 27.5 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.33 shows the peak load points on Route 3 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.33 indicates that the peak load point for weekday travel is westbound at Avenue R & 17th Street East, with 257 passengers traveling westbound at this location throughout the day. The maximum load point on Route 3 is westbound on the weekday 1:20 p.m. trip at 20th Street East & Avenue R, with 30 passengers on board.

Table 2.33
Route 3 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av R & Palm Vista	All Day	214	Av R & 17 St E	All Day	257
	Saturday	PTC	All Day	114	10 St E & Av Q-11	All Day	123
	Sunday	PTC	All Day	82	20 St E & Av R	All Day	74
Maximum Load Point	Weekday	PTC	3:10 p.m.	22	20 St E & Av R	1:20 p.m.	30
	Saturday	20 St E & Av R PTC	12:25 p.m. 4:25 p.m.	19	Av Q & 9 St E	10:45 a.m.	25
	Sunday	Av Q & 9 St E	1:25 p.m.	24	Av S & 46 St E	4:45 p.m.	16

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.34 through 2.36 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 3 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 63 percent at all time points on Route 3, 10th among the 13 weekday routes. Schedule adherence is best in the morning. Schedule adherence is below 50 percent in the afternoon in both directions. Because the route is interlined with Route 2, issues on Route 2 may be contributing to poor westbound performance. The running time analysis later in this section confirms this, since actual running times are lower than scheduled running times for Route 3 throughout the day.

Table 2.34
Route 3 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	121	122	237	32	42	48	54	18	10	23	16
Early	8	28	36	4	4	2	8	1	7	1	8
Late	51	53	104	0	3	22	15	29	32	0	3
On Time %	67%	60%	63%	89%	86%	67%	70%	38%	20%	96%	59%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.35) is much better at 86 percent at all time points, 2nd among the 11 Saturday routes. Schedule adherence is better eastbound (92 percent). Early trips are a slightly greater problem than late trips on Saturday.

Table 2.35
Route 3 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	77	74	151	16	21	36	28	19	25	6	--
Early	2	11	13	1	0	0	8	1	3	0	--
Late	5	6	11	1	0	0	6	4	0	0	--
On Time %	92%	81%	86%	89%	100%	100%	67%	79%	89%	100%	--

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.36) is even better at 90 percent at all time points, 3rd among the 11 Sunday routes. Schedule adherence is better westbound except in the afternoon. Only one late departure was observed on Sunday.

Table 2.36
Route 3 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	74	83	157	16	21	31	37	22	25	5	--
Early	9	8	17	2	0	4	5	2	3	1	--
Late	1	0	1	0	0	2	0	0	0	0	--
On Time %	88%	81%	90%	89%	100%	86%	88%	92%	89%	83%	--

Source: Ridecheck Data, November 2009

Route 3 schedule adherence is much better on weekends than on weekdays.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.37 and 2.38 show average running times and scheduled running times by segment and time of day on weekdays for Route 3. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running

time is less than scheduled running time on Route 3 during all time periods in both directions, with the exception of westbound during the evening. A bus breakdown in the westbound direction during the evening period affected the running time average for that period.

Table 2.37
Route 3 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
AV Mall – PTC	14	14	14	14	15	14	14	14
PTC – 10th St E & Palmdale	9	8	8	8	7	8	8	8
10th St E & Palmdale – 20th St E & Av R	7	10	7	10	8	10	7	10
20th St E & Av R – Av S & 47th St E	14	18	13	18	12	18	12	18
Average Running Time	43	50	42	50	43	50	42	50

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.38
Route 3 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
47th St E & Av S – 20th St E & Av R	14	15	13	15	12	15	10	15
20th St E & Av R – 10th St E & Palmdale	8	8	7	8	5	8	5	8
10th St E & Palmdale – PTC	11	11	11	11	10	11	29	11
PTC – Av O-8 & Sam's Club	13	13	12	13	9	13	10	13
Av O-8 & Sam's Club – AV Mall	4	3	3	3	5	3	2	3
Total	49	50	47	50	42	50	57	50

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 3 ranks 6th in ridership among the 13 weekday routes. Ridership is heavier in the westbound direction in the morning and midday and in the eastbound direction in the afternoon and evening. Route 3 ranks 5th in ridership among the 11 Saturday routes and 5th among the 11 Sunday routes.

Route 2 ranks 10th among the 13 AVTA weekday routes, 6th among the 11 Saturday routes, and 7th among the 11 Sunday routes in productivity, subsidy per passenger, and farebox recovery ratio (5th in farebox recovery on Saturday).

There are no instances of overcrowding on Route 3.

Schedule adherence is low on Route 3 on weekdays. Actual running times are less than scheduled running times throughout the day in both directions on weekdays. Route 3 ranks 10th among the 13 weekday routes in terms of schedule adherence. The interlined Route 2 and Route 3 schedules should be examined to identify possible changes.

Route 4 Eastside Lancaster

Overview

Route 4 Eastside Lancaster (Figure 2.13) serves Lancaster between 10th Street West and 20th Street East. The route travels between Lancaster City Park and Jackman Street & Fern Avenue via 10th Street West, Avenue L-8, 6th Street West, Avenue M, Sierra Highway, Avenue L, Business Center Parkway, Avenue K-6, Gingham Avenue, Avenue K-4, Division Street, Avenue K, 20th Street East, Lancaster Boulevard, 10th Street West, Avenue I, Sierra Highway, and Jackman Street. Major destinations include Lancaster Park, AVTA offices, the Los Angeles County Courthouse, the Department of Social Services, Wal-Mart, Antelope Valley High School, and the Lancaster Senior Center.

Route 4 serves transit dependent neighborhoods and provides connections to important social service locations in Lancaster. Route 4 ranks in the top five among AVTA routes in terms of ridership, despite relatively infrequent weekday service.

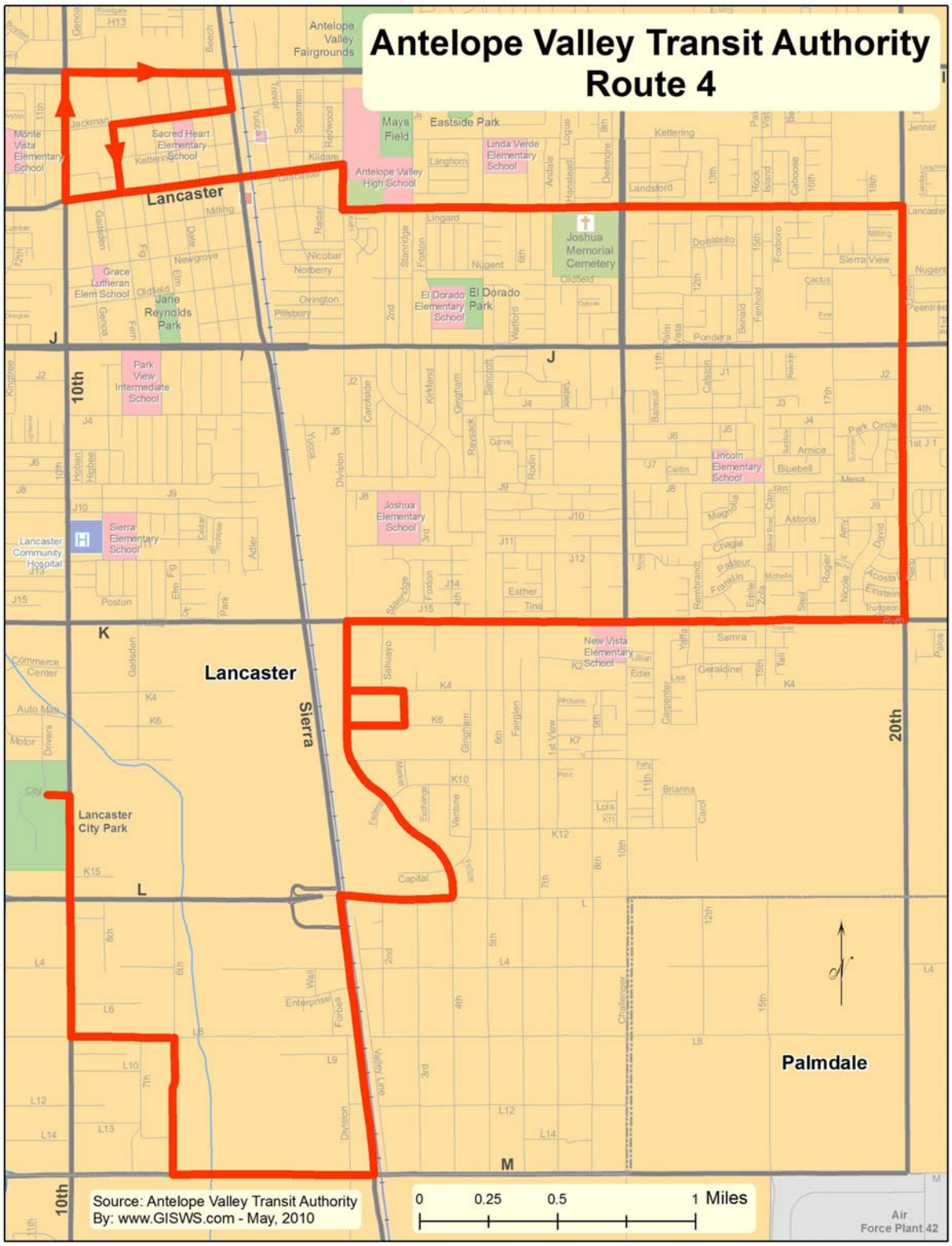
Headway and Span of Service

Table 2.39 shows headway and span of service for Route 4 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Span of service in this table is the span in effect at the time that the ridecheck was conducted.

Table 2.39
Route 4 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	70	6:26 a.m. – 7:45 p.m.
Saturday/Sunday	70	7:00 a.m. – 4:50 p.m.

Figure 2.13
Route 4



Operating Data

Table 2.40 presents operating data for Route 4. Among the 13 weekday routes, Route 4 ranks 5th in boardings and 4th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 4 ranks 6th in boardings and 8th in boardings per revenue hour on Saturday and 7th in boardings and 9th in boardings per revenue hour on Sunday. Note that revenue hours in Table 2.40 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 4 ranks 6th among 13 routes in average trip length on weekdays, 11th on Saturday, and 5th on Sunday. Average trip lengths fall in the range of 5.33 to 5.73 miles on all days. Average trip lengths are longer on weekdays and Sunday. Route 4 ranks 3rd in seat utilization on weekdays, 9th on Saturday, and 10th on Sunday.

Table 2.40
Route 4 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	1,006	29.0	34.7	37.1%	5.68
Saturday	289	20.7	14.0	13.9%	5.33
Sunday	161	20.7	7.8	8.0%	5.73

Source: Ridecheck Data, November 2009

Table 2.41 presents financial data for Route 4. Route 4 ranks 5th in subsidy per boarding and 6th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday, Route 4 ranks 8th in subsidy per boarding and 9th in farebox recovery ratio among 11 routes. Route 4 is 9th in subsidy per boarding and 10th in farebox recovery ratio among 11 Sunday routes.

Table 2.41
Route 4 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,006	$644	$2,223	$2.21	$1.57	29.0%
Saturday	289	$185	$1,585	$5.48	$4.84	11.7%
Sunday	161	$103	$1,591	$9.88	$9.24	6.5%

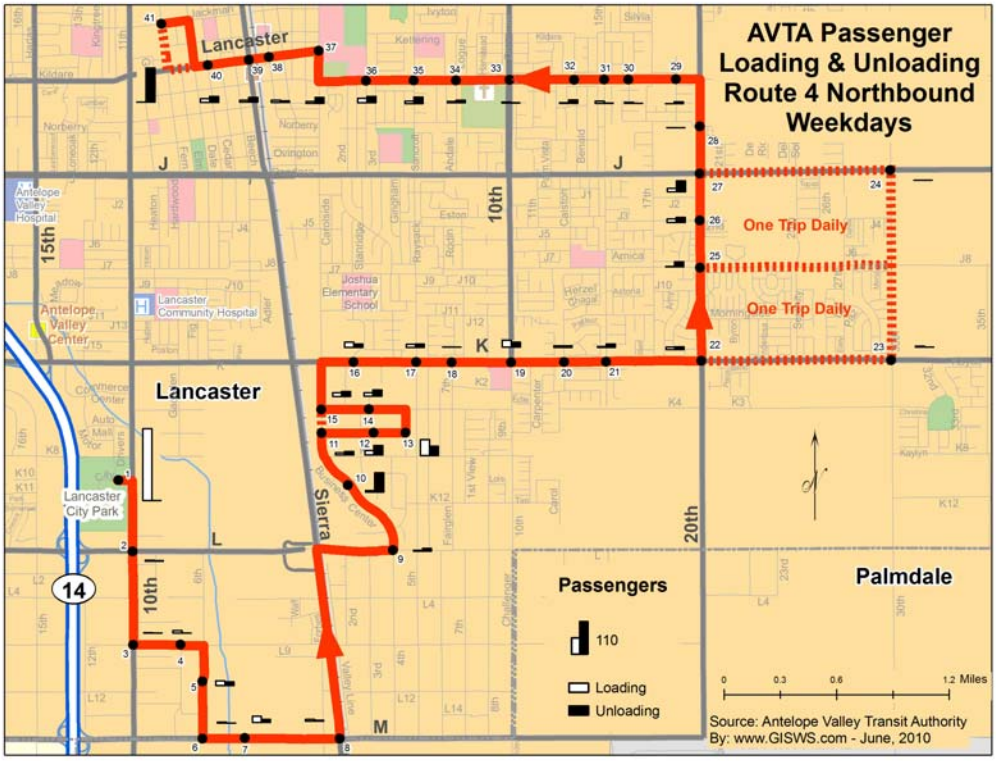
Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.14 through 2.16 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There is only one stop with at least 100 boardings per weekday in one direction:

- Lancaster City Park NB (transfer point for Routes 1, 5, 11, 12, and Lake Los Angeles Express).

There are no Route 4 trips with segments whose loads exceed 125 percent of capacity.

Figure 2.14
Route 4 Weekday Boardings and Alightings by Stop



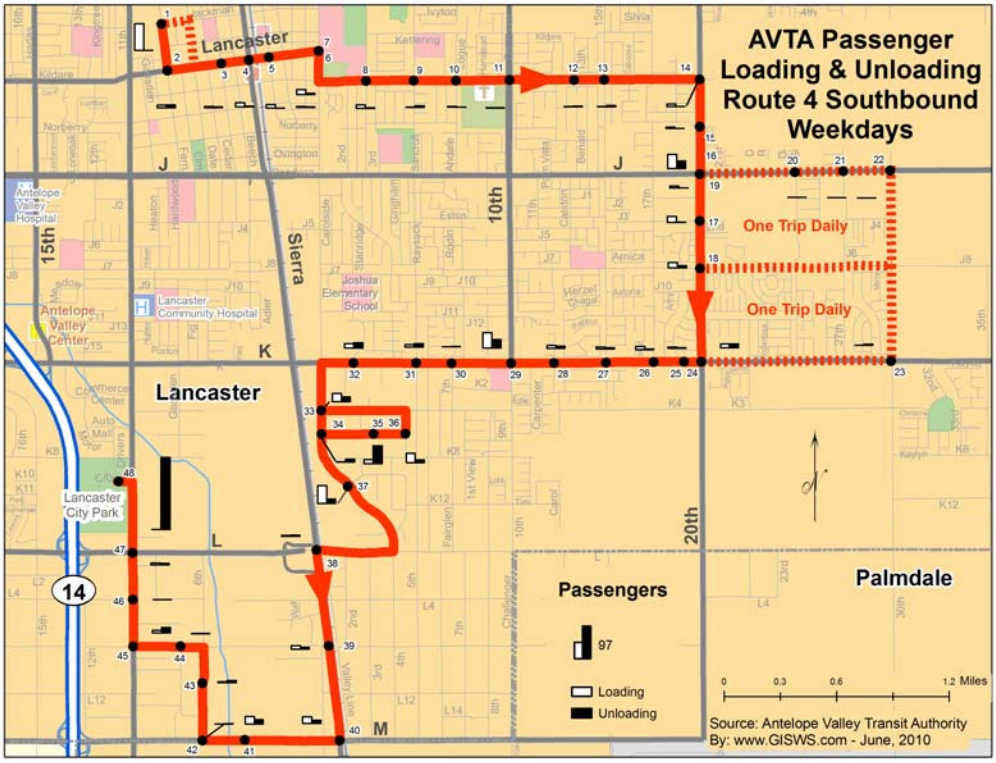
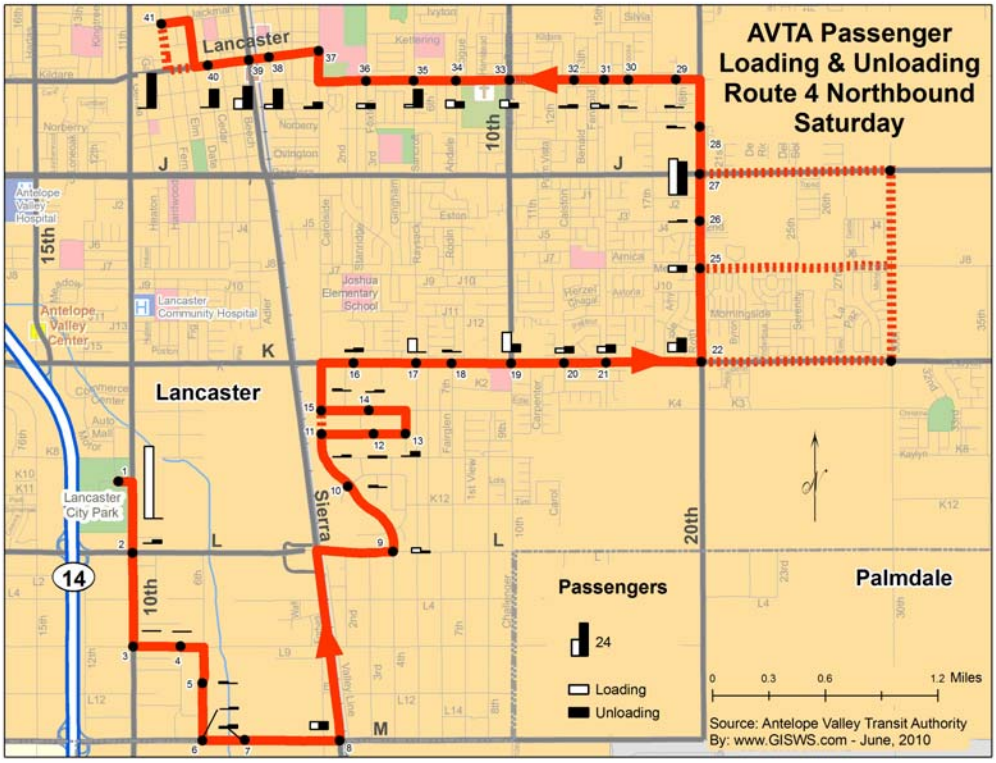


Figure 2.15
Route 4 Saturday Boardings and Alightings by Stop



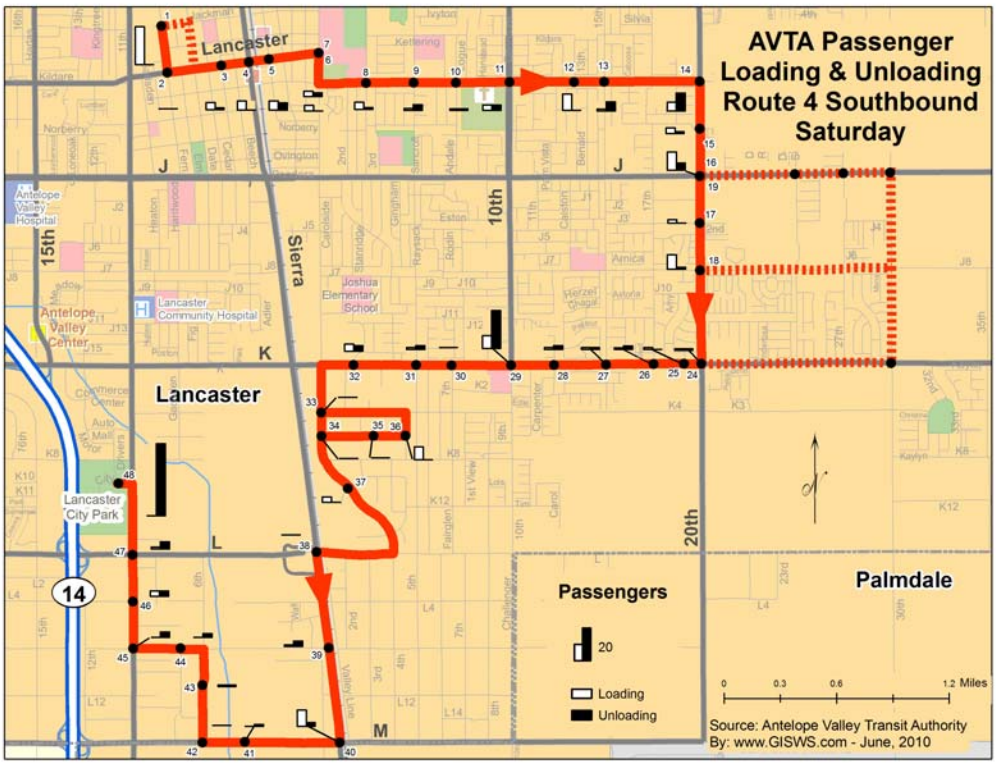
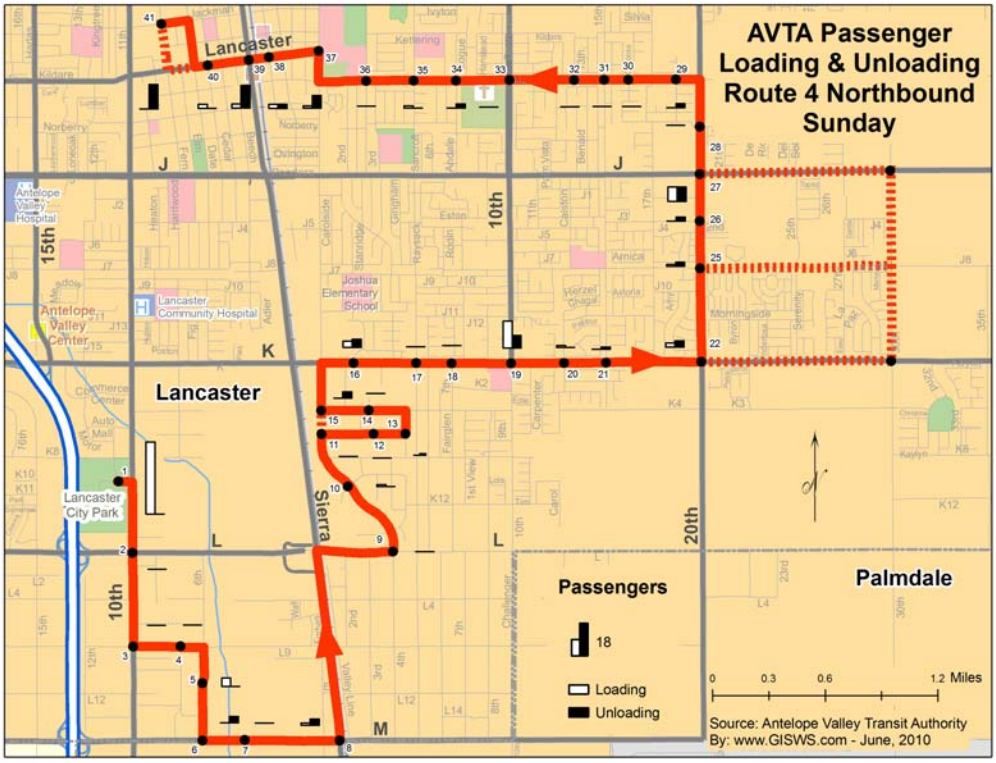
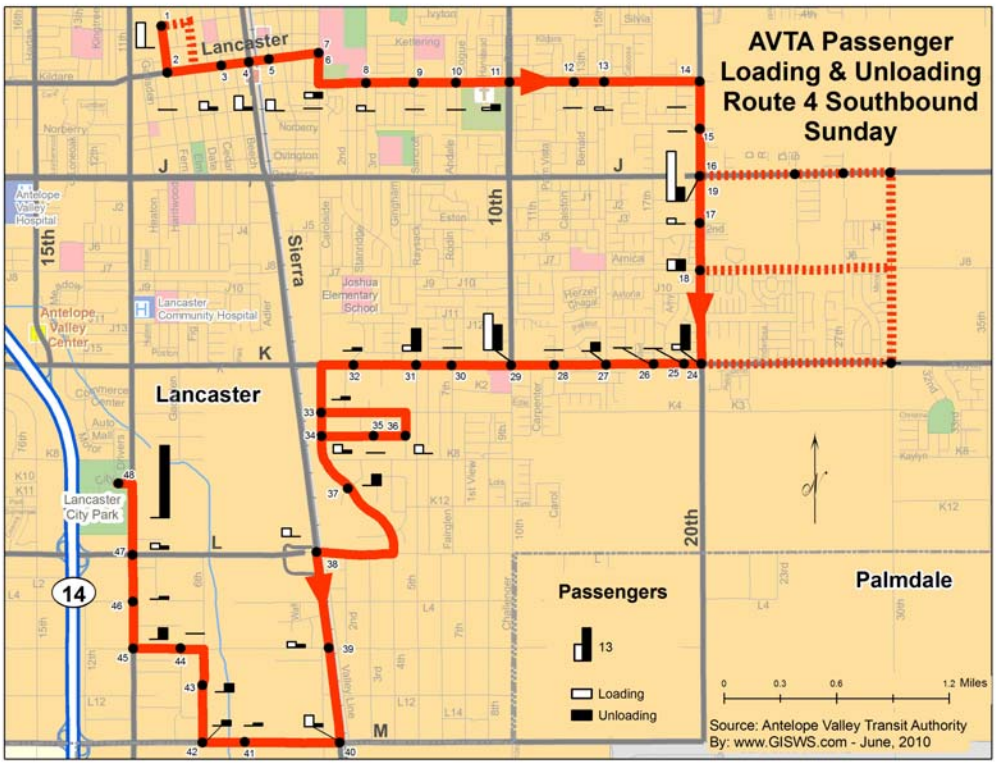


Figure 2.16
Route 4 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.42 and 2.43 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at Division & Lancaster are counted in the last segment northbound and in the next to last segment southbound. The ridership patterns in Table 2.42 suggest a balanced flow by direction throughout the day, with slightly higher northbound ridership during most time periods. The greatest passenger activity occurs between Lancaster City Park and Avenue K-4 & Gingham (comprising two northbound segments and one southbound segment). There is also significant ridership between Avenue K-4 & Gingham and Lancaster & 18th/20th Street East, especially in the midday. Ridership is highest during the midday.

Table 2.42
Route 4 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
LCP – AVTA Offices	231	--	71	--	117	--	41	--	2	--
AVTA Offices – Av K-4 & Gingham	72	--	18	--	43	--	11	--	0	--
LCP – Av K-4 & Gingham	--	139	--	30	--	87	--	22	--	0
LCP – 30 St E & Av J	--	*26*	--	--	--	--	--	*26*	--	--
Av K-4 & Gingham – Lancaster & 18/20 St E	150	185	13	62	101	103	33	19	3	1
30 St E & Av J – Division & Lancaster	*1*	--	*1*	--	--	--	--	--	--	--
Lancaster & 18/20 St E – Division & Lancaster	38	31	15	7	22	17	1	7	0	0
Division & Lancaster – Jackman & Fern	29	104	11	25	14	57	4	21	0	1
Weekday Total	**521**	**485**	**129**	**124**	**297**	**264**	**90**	**95**	**5**	**2**

Source: Ridecheck data, November 2009

Table 2.43 presents productivity, in terms of boardings per revenue hour, for Route 4 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greatest on the short segment between Lancaster City Park and the AVTA offices. Northbound service is more productive throughout the day than southbound service. Midday is the most productive time period. The most productive route/time of day segment is northbound between LCP and the AVTA offices in the midday (135.0 boardings per revenue hour), and the least productive segments include several evening segments with no ridership.

Table 2.43
Route 4 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
LCP – AVTA Offices	113.6	--	121.7	--	135.0	--	87.9	--	20.0	--
AVTA Offices – Av K-4 & Gingham	21.4	--	26.3	--	28.4	--	11.8	--	0.0	--
LCP – Av K-4 & Gingham	--	28.3	--	21.4	--	40.5	--	20.0	--	0.0
LCP – 30 St E & Av J	*--*	*32.5*	*--*	*--*	*--*	*--*	*--*	*32.5*	*--*	*--*
Av K-4 & Gingham – Lancaster & 18/20 St E	39.6	36.0	22.3	42.8	56.1	45.8	28.3	17.3	13.8	3.2
30 St E & Av J – Division & Lancaster	*3.5*	*--*	*3.5*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
Lancaster & 18/20 St E – Division & Lancaster	22.6	16.0	33.3	18.3	33.0	19.6	2.5	12.0	0.0	0.0
Division & Lancaster – Jackman & Fern	12.6	39.7	17.4	35.7	15.8	52.6	7.1	35.0	0.0	4.6
Weekday Total	**38.5**	**31.4**	**39.3**	**31.3**	**51.4**	**41.4**	**25.2**	**22.4**	**5.7**	**2.4**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday, although the afternoon period also does well. The most productive segment on Saturday is the short segment northbound between LCP and the AVTA offices in the afternoon, with 40.0 boardings per revenue hour. The most productive segment on Sunday is also northbound between LCP and the AVTA offices in the afternoon, with 54.0 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.44 shows the peak load points on Route 4 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.44 indicates that the peak load point for travel is at Avenue M & Sierra Highway, with 292 passengers traveling northbound at this location throughout the day. The maximum load point on Route 4 is northbound on the weekday 7:50 a.m. trip at Avenue M & Sierra Highway, with 45 passengers on board.

Table 2.44
Route 4 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av M & Sierra Hwy	All Day	292	Av M & 4 St W	All Day	253
	Saturday	Lancaster & Andale	All Day	76	Av K & Stancliff	All Day	63
	Sunday	AVTA Offices	All Day	42	20 St E & Av J-4	All Day	45
Maximum Load Point	Weekday	Av M & Sierra Hwy	7:50 a.m.	45	Bus Ctr Pk & Country Wide Dr	2:45 p.m. 3:45 p.m.	36
	Saturday	Lancaster & 3 St E	9:50 a.m.	18	Lancaster & 15 St E	8:45 a.m.	16
	Sunday	AVTA offices	1:25 p.m.	10	20 St E & Av J	2:45 p.m.	10

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.45 through 2.47 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 4 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 72 percent at all time points on Route 4, 7th among the 13 weekday routes. Schedule adherence is much better in the southbound direction throughout the day except in the evening. Schedule adherence generally declines throughout the day in both directions. Schedule adherence is below 50 percent northbound in the afternoon.

Table 2.45
Route 4 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	NB	SB	Total	NB	SB	NB	SB	NB	SB	NB	SB
On Time	55	58	113	14	16	25	25	11	14	5	3
Early	6	10	16	2	2	2	4	1	2	1	2
Late	24	4	28	3	0	9	1	12	3	0	0
On Time %	65%	81%	72%	74%	89%	69%	83%	46%	74%	83%	60%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.46) is slightly worse at 70 percent at all time points, 9th among the 11 Saturday routes. Schedule adherence is much better northbound (86 percent) but is only 51 percent southbound.

Table 2.46
Route 4 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	54	27	81	12	8	31	10	11	9
Early	2	10	12	1	2	1	8	0	0
Late	7	16	23	2	3	4	12	1	1
On Time %	86%	51%	70%	80%	62%	86%	33%	92%	90%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.47) is even better at 90 percent at all time points, 11th among the 11 Sunday routes. Schedule adherence is better northbound. Early departures are the biggest problem on Sunday.

Table 2.47
Route 4 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	45	30	75	10	8	26	18	9	4
Early	10	19	29	4	5	3	11	3	3
Late	8	4	12	1	0	7	1	0	3
On Time %	71%	57%	65%	67%	62%	72%	60%	75%	40%

Source: Ridecheck Data, November 2009

Route 4 schedule adherence is better on weekdays than on weekends.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.48 and 2.49 show average running times and scheduled running times by segment and time of day on weekdays for Route 4. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running time appears adequate in both directions throughout the day on Route 4.

Table 2.48
Route 4 Average versus Scheduled Northbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
LCP – AVTA Offices	11	8	9	8	7	8	6	8
AVTA Offices – Av K-4 & Gingham	12	12	15	12	13	12	13	12
Av K-4 & Gingham – Lancaster & 18 St E	11	14	17	16	17	16	13	16
30 St E & Av J – Division & Lancaster	*16*	*17*	--	--	--	--	--	--
Lancaster & 18 St E – Division & Lancaster	8	6	6	6	6	6	9	6
Division & Lancaster – Jackman & Fern	8	12	9	12	8	12	9	12
Average Running Time	59	58	56	54	51	54	53	54

Source: Ridecheck data, November 2009; totals may not add due to rounding
Italicized segment is one school trip only

Table 2.49
Route 4 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Jackman & Fern – Division & Lancaster	11	12	9	12	8	12	13	12
Division & Lancaster – 20th Street E & Lancaster	6	7	8	7	5	7	5	7
20th Street E & Lancaster – Av K-4 & Gingham	18	17	19	17	18	17	19	17
30th Street E & Av J - LCP	--	--	--	--	*41*	*34*	--	--
Av K-4 & Gingham – LCP	17	19	19	19	19	19	14	19
Total	52	55	55	55	50	55	51	55

Source: Ridecheck data, November 2009; totals may not add due to rounding
Italicized segment is one school trip only

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 4 ranks 5th in ridership among the 13 weekday routes. Ridership is slightly greater in the northbound direction. Route 4 ranks 6th in ridership among the 11 Saturday routes and 7th among the 11 Sunday routes.

Route 4 ranks 4th among the 13 AVTA weekday routes in productivity, 5th in subsidy per passenger, and 6th in farebox recovery ratio. Route 4 ranks 8th among the 11 Saturday routes in productivity and subsidy per passenger and 9th in farebox recovery ration. Route 4 ranks 9th among the 11 Sunday routes in productivity and subsidy per passenger, and 10th in farebox recovery ratio. Route 4's performance is clearly much better on weekdays.

There are no instances of overcrowding on Route 4.

Schedule adherence is 72 percent on Route 4 on weekdays. Route 4 ranks 7th among the 13 weekday routes in terms of schedule adherence. Scheduled running time appears adequate overall. Weekend schedule adherence is poorer, due mostly to problems in the southbound direction.

Route 5 Avenue L

Overview

Route 5 Avenue L (Figure 2.17) serves Avenue L in Lancaster between 15th Street West and 50th Street West. The route travels between Lancaster City Park and Mayflower Gardens via Avenue K-8, 15th Street West, Avenue L, 50th Street West, and Avenue M, with a turnaround at its western end via 67th Street West, Avenue L-12, and 65th Street West. Major destinations include Lancaster Park, Merril Gardens, and Kaiser.

Route 5 primarily serves residential neighborhoods. Route 5 ranks in the middle or below among AVTA routes in terms of ridership and productivity.

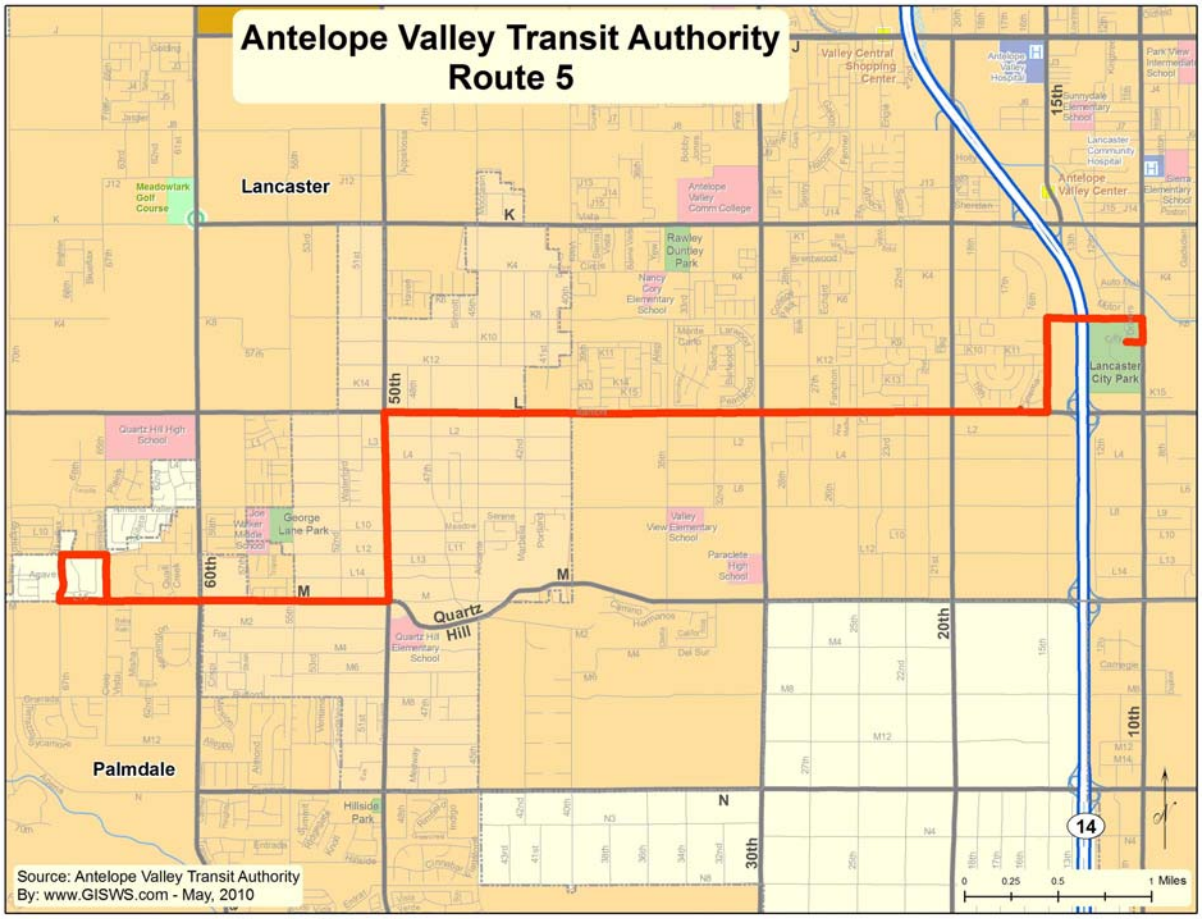
Headway and Span of Service

Table 2.50 shows headway and span of service for Route 5 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.50
Route 5 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	60	6:03 a.m. – 7:38 p.m.
Saturday/Sunday	60	7:13 a.m. – 6:48 p.m.

Figure 2.17
Route 5



Operating Data

Table 2.51 presents operating data for Route 5. Among the 13 weekday routes, Route 5 ranks 9th in boardings and 7th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 5 ranks 7th in boardings and 5th in boardings per revenue hour on Saturday and 8th in boardings and 6th in boardings per revenue hour on Sunday. Note that revenue hours in Table 2.51 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 5 ranks 8th among 13 routes in average trip length on weekdays, 9th on Saturday, and 10th on Sunday. Average trip lengths fall in the range of 4.43 to 4.58 miles on all days. Average trip lengths are longer on weekdays and Sunday. Route 5 ranks 10th in seat utilization on weekdays and Saturday, and 8th on Sunday.

Table 2.51
Route 5 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	319	13.9	22.9	17.4%	4.46
Saturday	200	12.0	16.6	13.1%	4.58
Sunday	157	11.9	13.2	9.9%	4.43

Source: Ridecheck Data, November 2009

Table 2.52 presents financial data for Route 5. Route 5 ranks 7th in subsidy per boarding and 8th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday, Route 5 ranks 5th in subsidy per boarding and 6th in farebox recovery ratio among 11 routes. Route 5 is 6th in both subsidy per boarding and farebox recovery ratio among 11 Sunday routes.

Table 2.52
Route 5 Financial Data

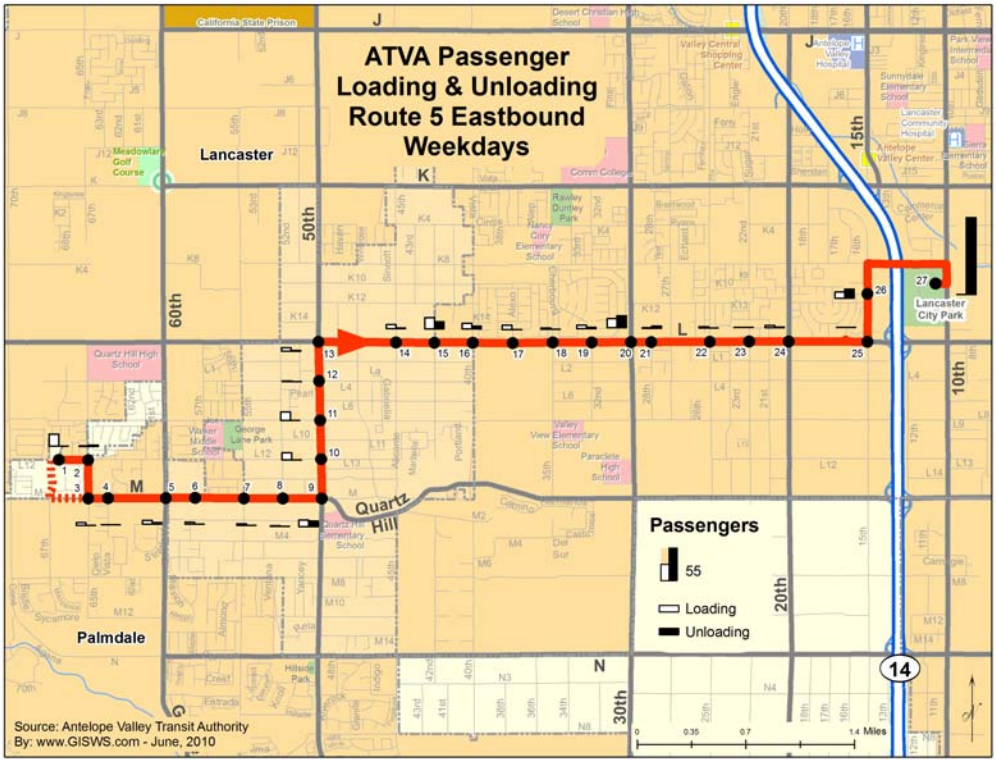
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	319	$274	$1,069	$3.35	$2.49	25.7%
Saturday	200	$172	$922	$4.61	$3.75	18.7%
Sunday	157	$135	$914	$5.82	$4.96	14.8%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.18 through 2.20 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There are no stops with at least 100 boardings per weekday in one direction.

There are no Route 5 trips with segments whose loads exceed 125 percent of capacity.

Figure 2.18
Route 5 Weekday Boardings and Alightings by Stop



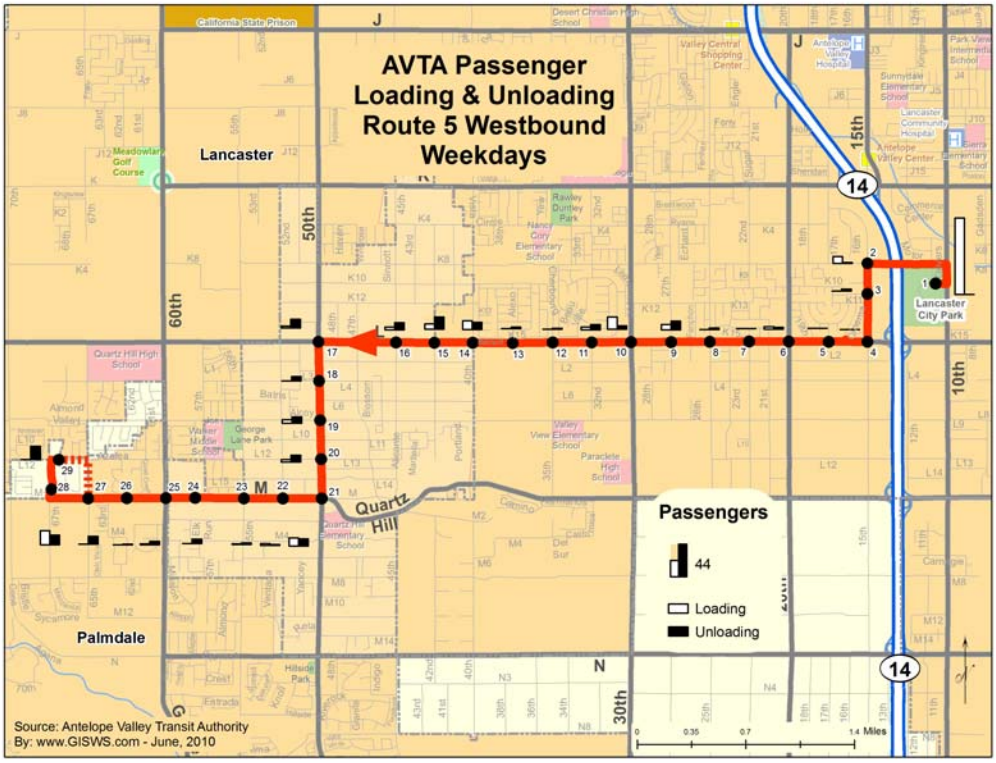
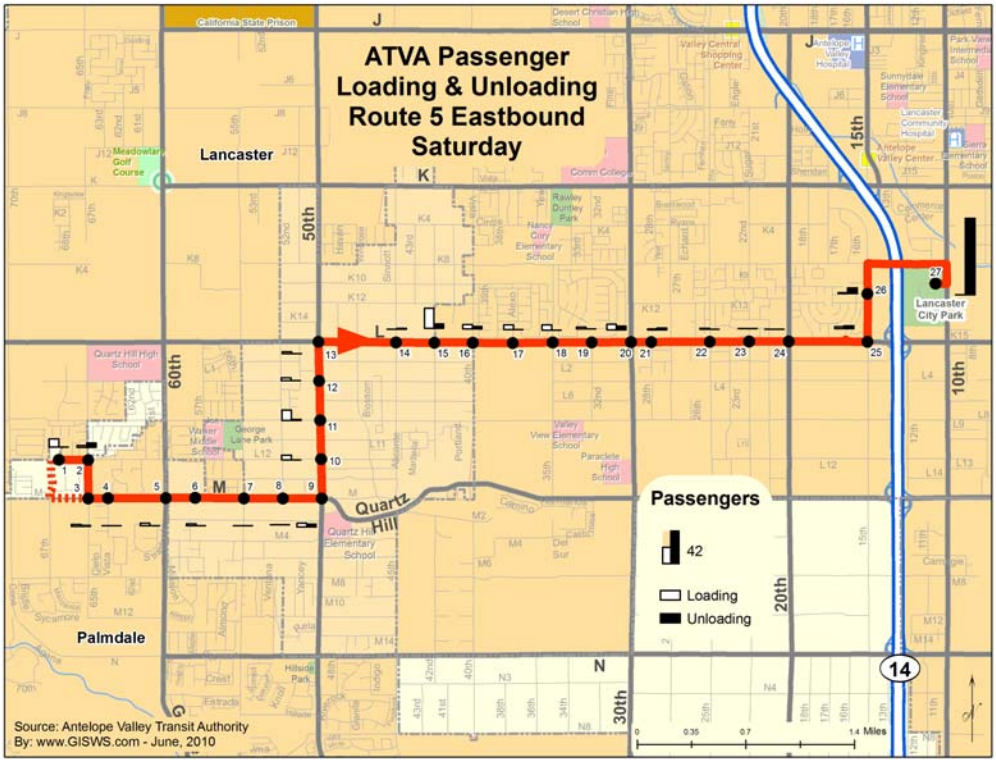


Figure 2.19
Route 5 Saturday Boardings and Alightings by Stop



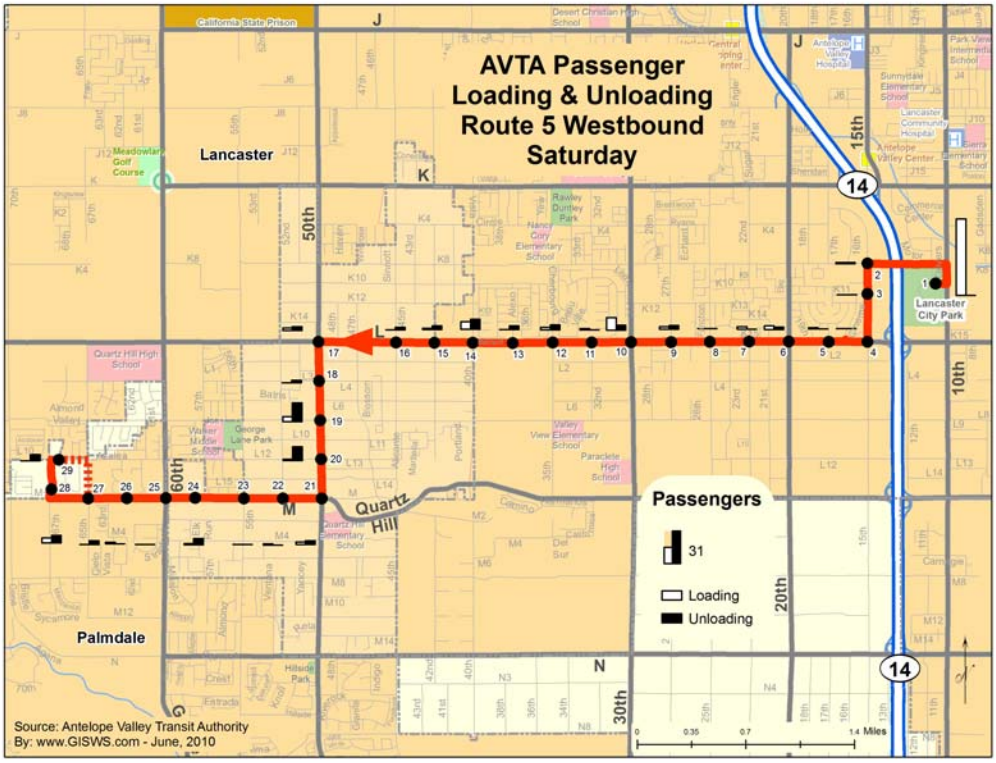
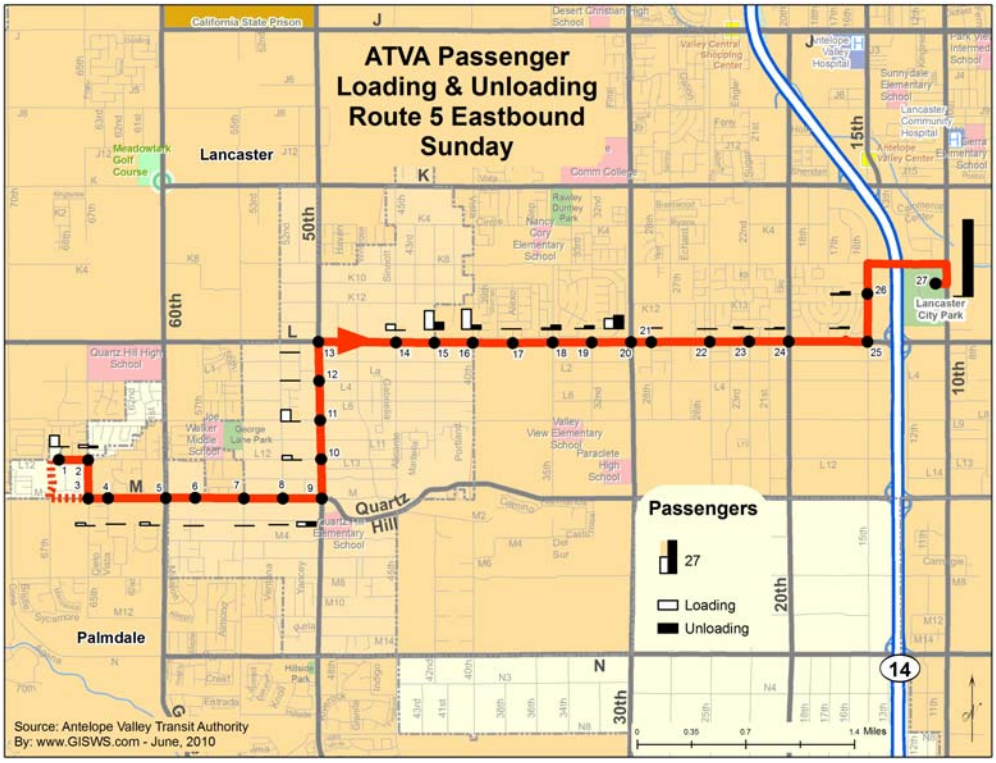
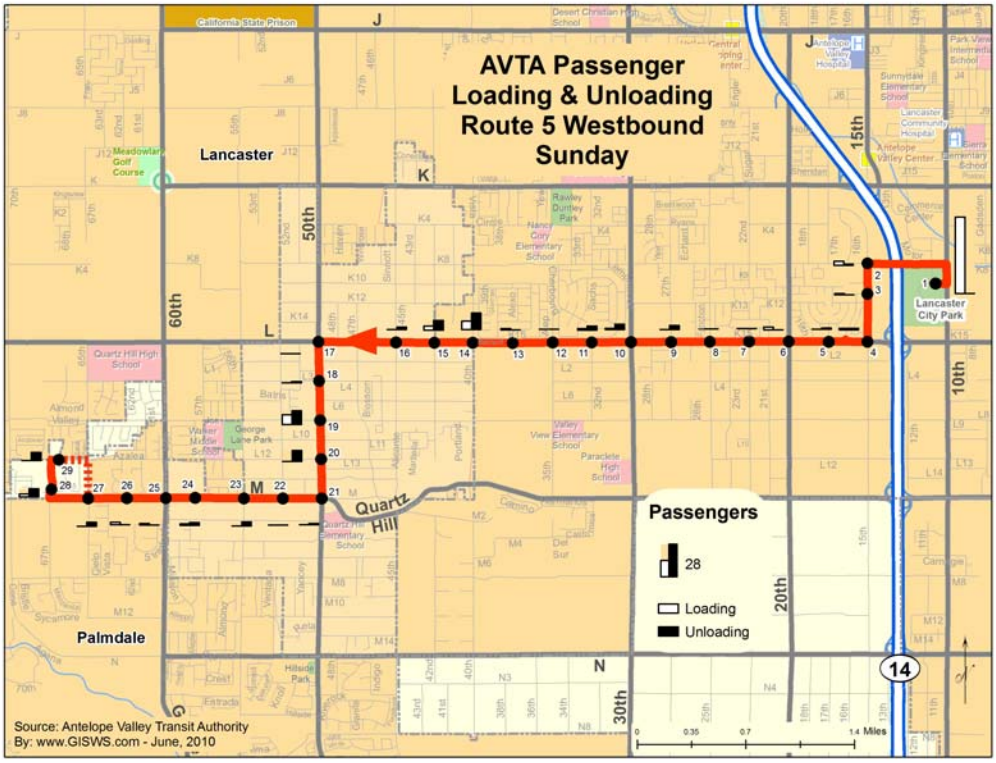


Figure 2.20
Route 5 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.53 and 2.54 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at 50th Street West & Avenue M are counted in the second segment eastbound and in the first segment westbound. The ridership patterns in Table 2.53 suggest a predominant westbound flow all day except for the morning period. The greatest passenger activity occurs between Avenue L & 30th Street West and Lancaster City Park. There is also ridership on the middle segment between 50th Street West and Avenue M and Avenue L & 30th Street West. Ridership is highest during the midday.

Table 2.53
Route 5 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av L-12 & Ringstem – 50 St W & Av M	33	29	9	8	20	18	2	3	1	0
50 St W & Av M – Av L & 30 St W	80	45	28	8	42	29	10	8	0	0
Av L & 30 St W – LCP	28	104	4	13	22	46	2	36	0	9
Weekday Total	**141**	**178**	**41**	**29**	**84**	**93**	**14**	**47**	**2**	**9**

Source: Ridecheck data, November 2009

Table 2.54 presents productivity, in terms of boardings per revenue hour, for Route 5 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greatest on the short segment between Lancaster City Park and the AVTA offices. Westbound service is more productive at most times of the day than eastbound service. Midday is the most productive time period, although productivity in the westbound direction is fairly consistent throughout the day. The most productive route/time of day segment is westbound between Avenue L and 30th Street West and LCP in the evening (67.5 boardings per revenue hour), and the least productive segments include several evening segments with no ridership.

Table 2.54
Route 5 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Av L-12 & Ringstem – 50 St W & Av M	15.5	16.9	17.4	22.9	21.4	20.8	3.6	7.8	20.0	0.0
50 St W & Av M – Av L & 30 St W	23.9	16.8	36.5	15.0	33.6	23.5	10.0	10.2	0.0	0.0
Av L & 30 St W – LCP	13.3	53.8	10.4	33.9	24.0	57.5	3.3	61.7	0.0	67.5
Weekday Total	**18.6**	**28.1**	**24.1**	**22.6**	**27.0**	**31.9**	**6.4**	**26.4**	**3.3**	**25.7**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday, although the afternoon period also does well. The most productive segment on Saturday is the segment westbound between LCP and Avenue L & 30th Street West in the midday, with 42.9 boardings per revenue hour. The most productive segment on Sunday is westbound between LCP and Avenue L & 30th Street West in the afternoon, with 54.4 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.55 shows the peak load points on Route 5 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.55 indicates that the peak load point for travel is at Avenue L & 20th Street West, with 125 passengers traveling eastbound at this location throughout the day. The maximum load point on Route 5 is eastbound on the weekday 7:13 a.m. trip at Avenue L & 20th Street West, with 21 passengers on board.

Table 2.55
Route 5 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av L & 20 St W	All Day	125	Av L & 30 St W	All Day	109
	Saturday	Av L & 30 St W	All Day	92	Av L & 32 St W	All Day	74
	Sunday	Av L & 40 St W	All Day	64	Av L & 20 St W	All Day	63
Maximum Load Point	Weekday	Av L & 20 St W	7:13 a.m.	21	Av L & 32 St W	2:48 p.m.	17
	Saturday	Av L & 35 St W 15 St W & Av L	10:13 a.m. 1:13 p.m.	15	Av L & 30 St W	2:48 p.m.	13
	Sunday	Av L & 40 St W	12:13 p.m.	15	Av L & 30 St W	3:48 p.m. 5:48 p.m.	12

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.56 through 2.58 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 5 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 70 percent at all time points on Route 5, 8th among the 13 weekday routes. Schedule adherence is much better in the westbound direction throughout the day. Schedule adherence is best in the morning and poorest in the midday. Schedule adherence is below 50 percent eastbound in the midday.

Table 2.56
Route 5 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	35	44	79	10	11	11	16	12	13	2	4
Early	4	0	4	0	0	0	0	2	0	2	0
Late	17	12	29	2	1	13	8	2	3	0	0
On Time %	63%	79%	71%	83%	92%	46%	67%	75%	81%	50%	100%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.57) is better at 80 percent at all time points, 9th among the 11 Saturday routes. Schedule adherence is slightly better westbound (82 percent) and is best in the afternoon.

Table 2.57
Route 5 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	37	40	77	6	6	17	19	14	15
Early	7	3	10	2	2	3	1	2	0
Late	4	5	9	0	0	4	4	0	1
On Time %	77%	83%	80%	75%	75%	71%	79%	88%	94%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.58) is even better at 94 percent at all time points, 1st among the 11 Sunday routes. There are no late departures on Sunday.

Table 2.58
Route 5 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	44	46	90	7	7	23	23	14	16
Early	4	2	6	1	1	1	1	2	0
Late	0	0	0	0	0	0	0	0	0
On Time %	92%	96%	94%	88%	88%	96%	96%	88%	100%

Source: Ridecheck Data, November 2009

Route 5 schedule adherence is much better on weekends than on weekdays, especially on Sunday.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.59 and 2.60 show average running times and scheduled running times by segment and time of day on weekdays for Route 5. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running time appears adequate in both directions throughout the day on Route 5.

Table 2.59
Route 5 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Av L-12 & Ringstem – 50 St W & Av M	8	9	7	9	6	9	4	9
50 St W & Av M – Av L & 30 St W	11	9	9	9	10	9	9	9
Av L & 30 St W – LCP	6	7	7	7	6	7	7	7
Average Running Time	25	25	23	25	22	25	22	25

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.60
Route 5 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
LCP – Av L & 30 St W	7	7	8	7	8	7	8	7
Av L & 30 St W – 50 St W & Av M	10	9	11	9	11	9	7	9
50 St W & Av M – Av L-12 & Ringstem	6	9	8	9	6	9	6	9
Total	23	25	27	25	25	25	21	25

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 5 ranks 9th in ridership among the 13 weekday routes. Ridership is slightly greater in the westbound direction. Route 5 ranks 7th in ridership among the 11 Saturday routes and 8th among the 11 Sunday routes.

Route 5 ranks 7th among the 13 AVTA weekday routes in productivity, 7th in subsidy per passenger, and 8th in farebox recovery ratio. Route 5 ranks 5th among the 11 Saturday routes in productivity and subsidy per passenger and 6th in farebox recovery ration. Route 5 ranks 6th among the 11 Sunday routes in productivity, subsidy per passenger, and farebox recovery ratio.

There are no instances of overcrowding on Route 5.

Schedule adherence is 71 percent on Route 5 on weekdays. Route 5 ranks 8th among the 13 weekday routes in terms of schedule adherence. Scheduled running time appears adequate overall. Weekend schedule adherence is much better, especially on Sunday when Route 5 leads all routes with 93 percent schedule adherence.

Route 6 Littlerock

Overview

Route 6 Littlerock (Figure 2.21) connects 47th Street East & Avenue S in Palmdale with Littlerock and Sun Village. The route travels via Pearblossom Highway, 82nd Street East, Avenue T, 87th Street East, Avenue U, 96th Street East, Avenue S, and 110th Street East, with a turnaround at its eastern end via Avenue R, 90th Street East, and Palmdale Boulevard. Major destinations include Wal-Mart and other retail stores at 47th Street East & Avenue S, Charlie Brown Farms, Almondale Middle School, Jackie Robinson Park, and Littlerock High School.

Route 6 serves a suburban to rural area. Route 6 ranks in the lower half of AVTA routes in terms of ridership and productivity.

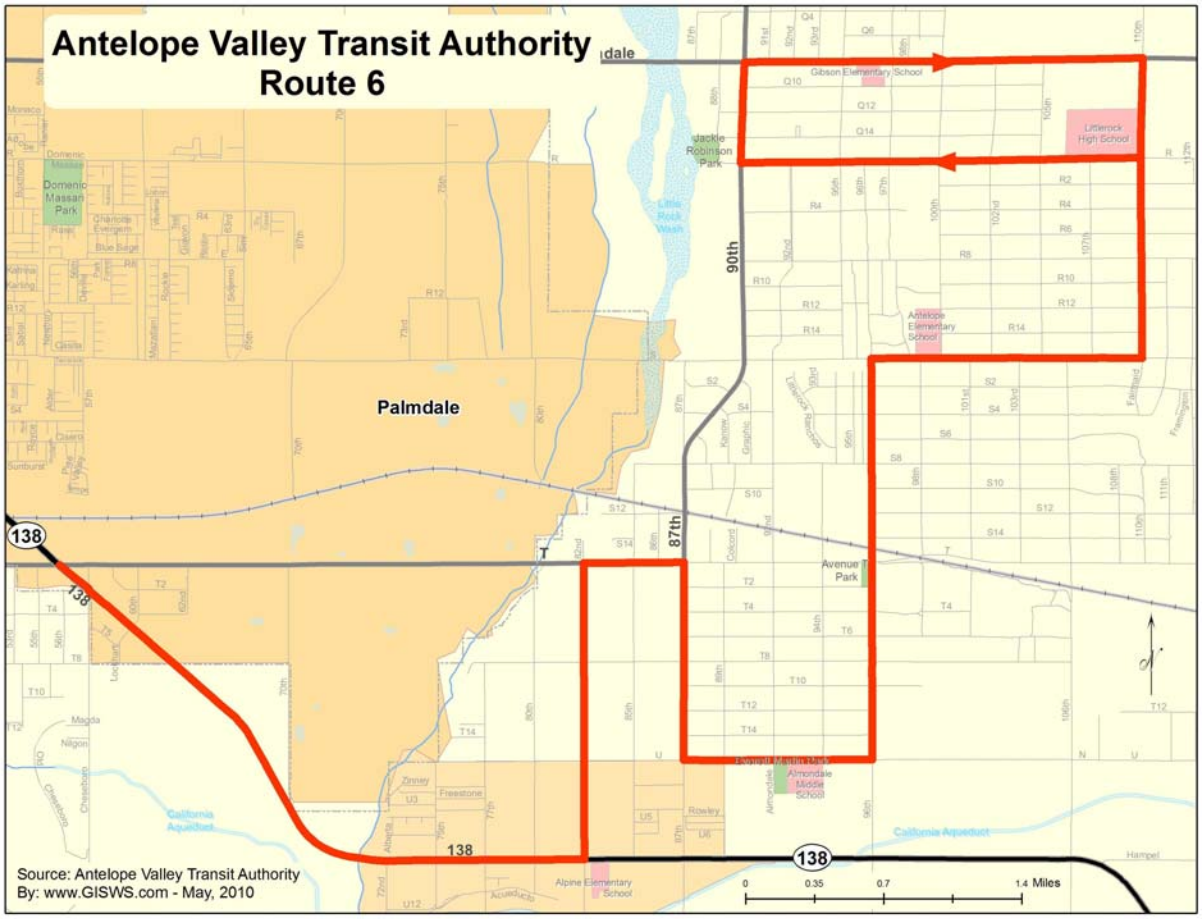
Headway and Span of Service

Table 2.61 shows headway and span of service for Route 6 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.61
Route 6 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	90	5:30 a.m. – 7:45 p.m.
Saturday/Sunday	90	7:00 a.m. – 6:15 p.m.

Figure 2.17
Route 6



Operating Data

Table 2.62 presents operating data for Route 6. Among the 13 weekday routes, Route 6 ranks 11th in boardings (last among the all-day routes) and 9th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 6 ranks 9th in boardings and in boardings per revenue hour on Saturday and 6th in boardings and 5th in boardings per revenue hour on Sunday. Note that revenue hours in Table 2.62 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 6 ranks 3rd among 13 routes in average trip length on weekdays and 2nd on Saturday and Sunday. Average trip lengths fall in the range of 8.92 to 11.27 miles on all days. Average trip lengths are longer on weekends. Route 6 ranks 9th in seat utilization on weekdays, 8th on Saturday, and 2nd on Sunday.

Table 2.62
Route 6 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	243	14.7	16.5	17.6%	8.92
Saturday	149	11.8	12.7	14.6%	9.63
Sunday	195	11.7	16.6	22.3%	11.27

Source: Ridecheck Data, November 2009

Table 2.63 presents financial data for Route 6. Route 6 ranks 9th in both subsidy per boarding and farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday, Route 6 ranks 9th in subsidy per boarding and 7th in farebox recovery ratio among 11 routes. Route 6 is 5th in subsidy per boarding and 3rd in farebox recovery ratio among 11 Sunday routes.

Table 2.63
Route 6 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	243	$265	$1,129	$4.65	$3.56	23.5%
Saturday	149	$162	$903	$6.06	$4.97	18.0%
Sunday	195	$213	$899	$4.61	$3.52	23.6%

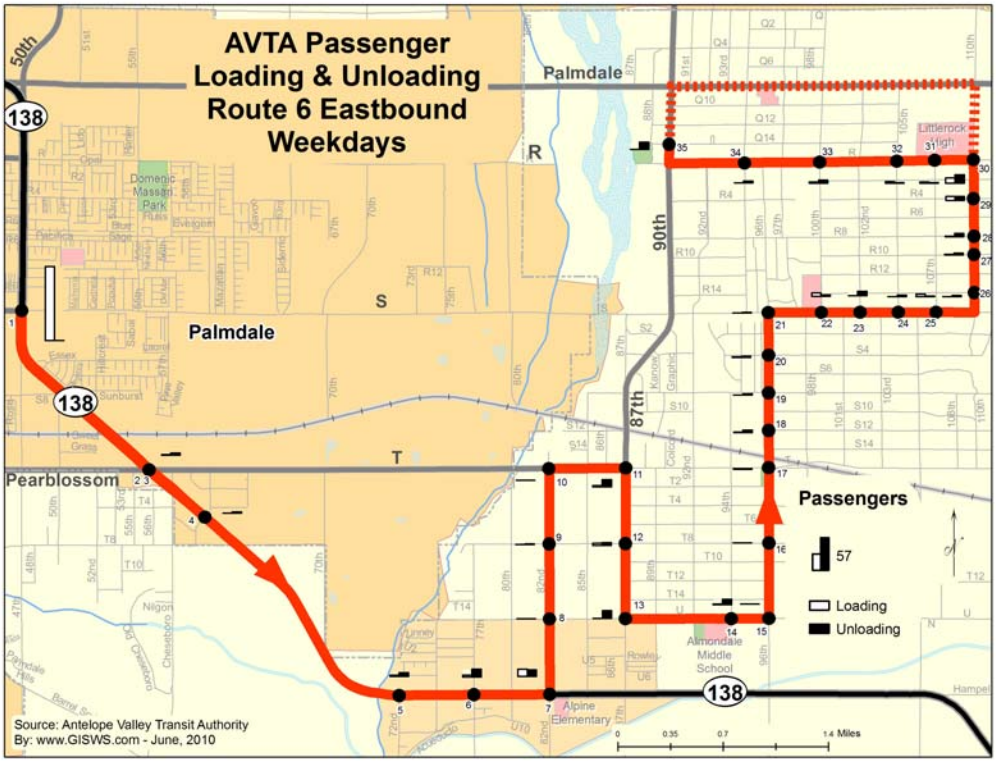
Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.22 through 2.24 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There is only one stop with at least 100 boardings per weekday in one direction:

- 47th Street East & Avenue S EB (Wal-Mart and other retail; transfer point for Routes 1, 2, 3, and 9)

There are no Route 6 trips with segments whose loads exceed 125 percent of capacity.

Figure 2.22
Route 6 Weekday Boardings and Alightings by Stop



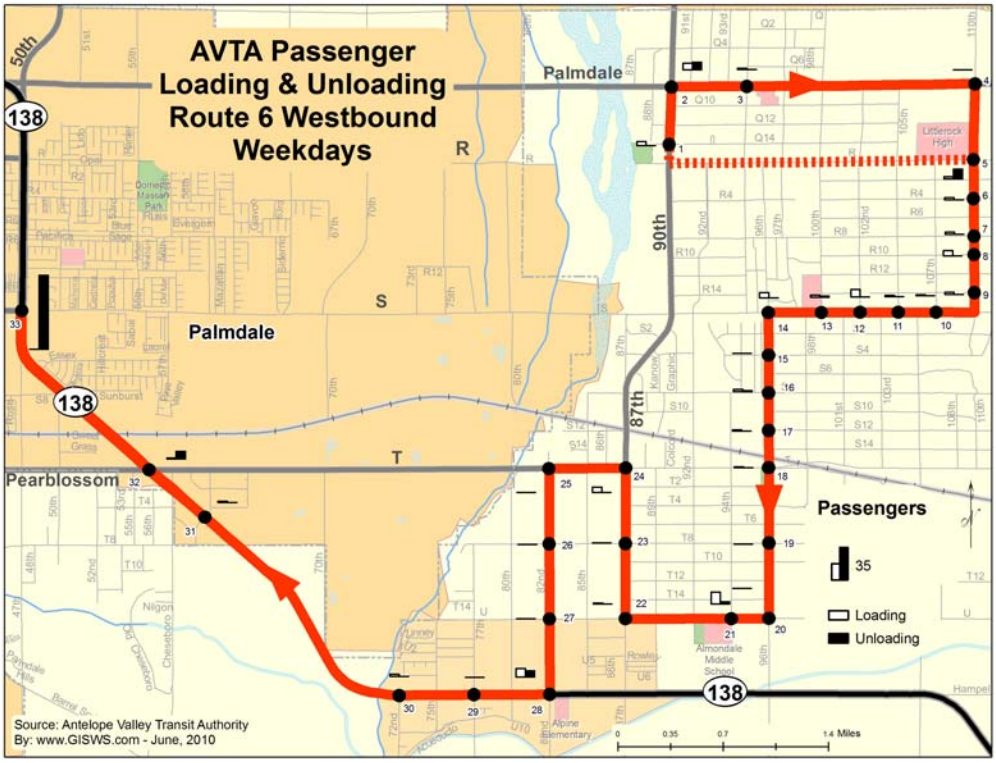
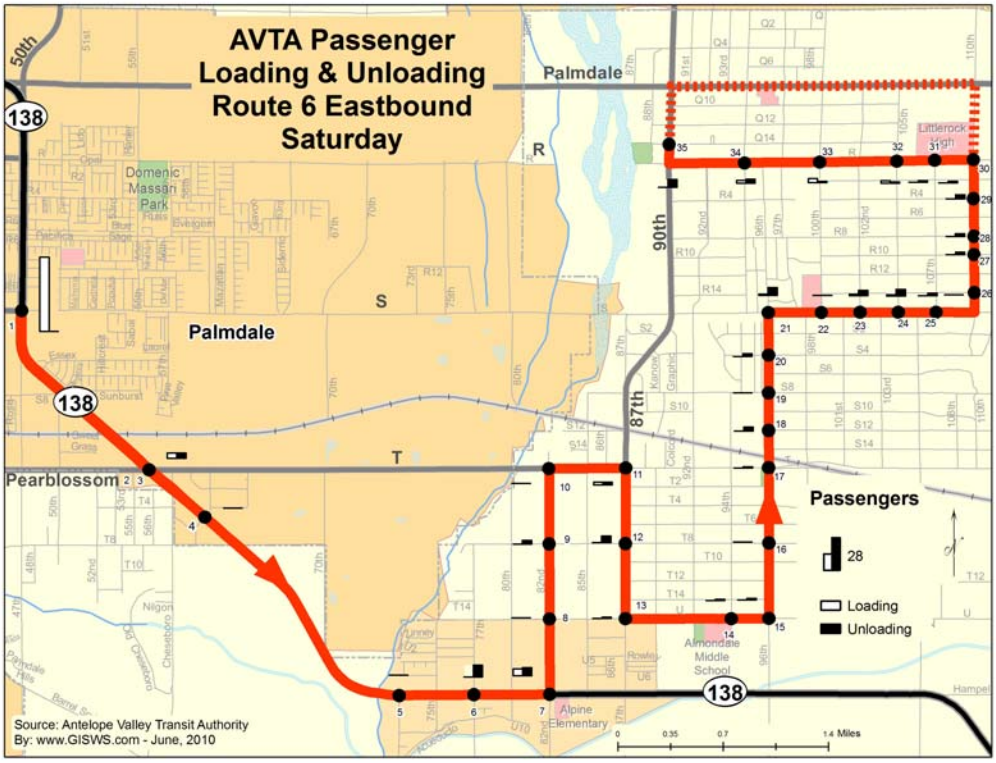


Figure 2.23
Route 6 Saturday Boardings and Alightings by Stop



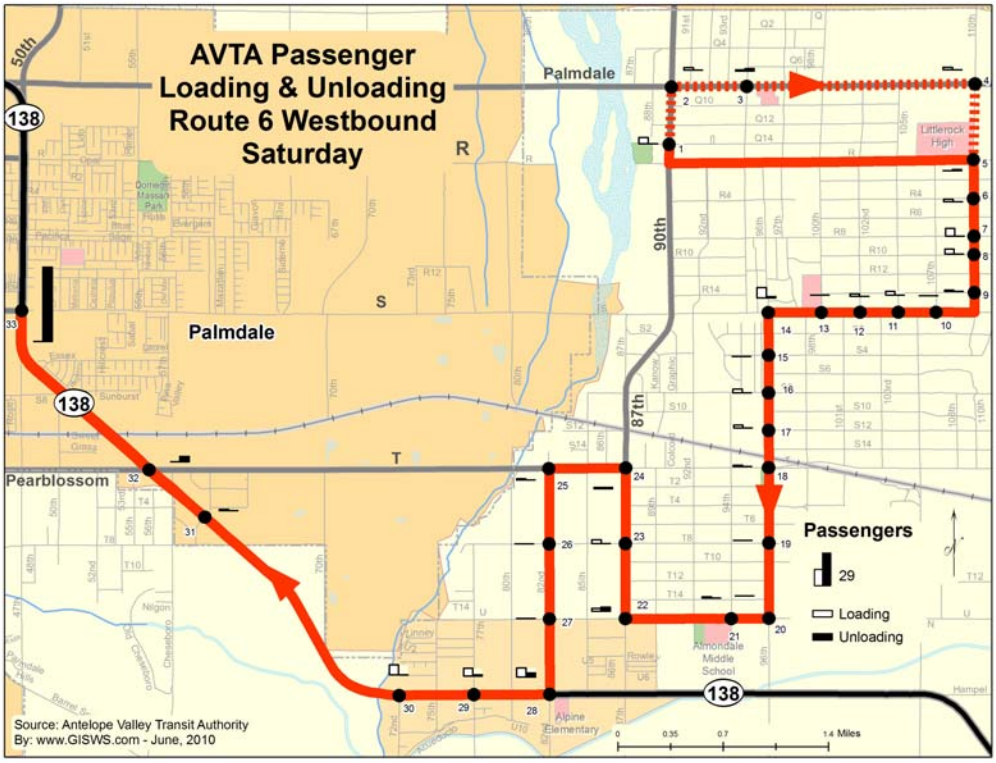
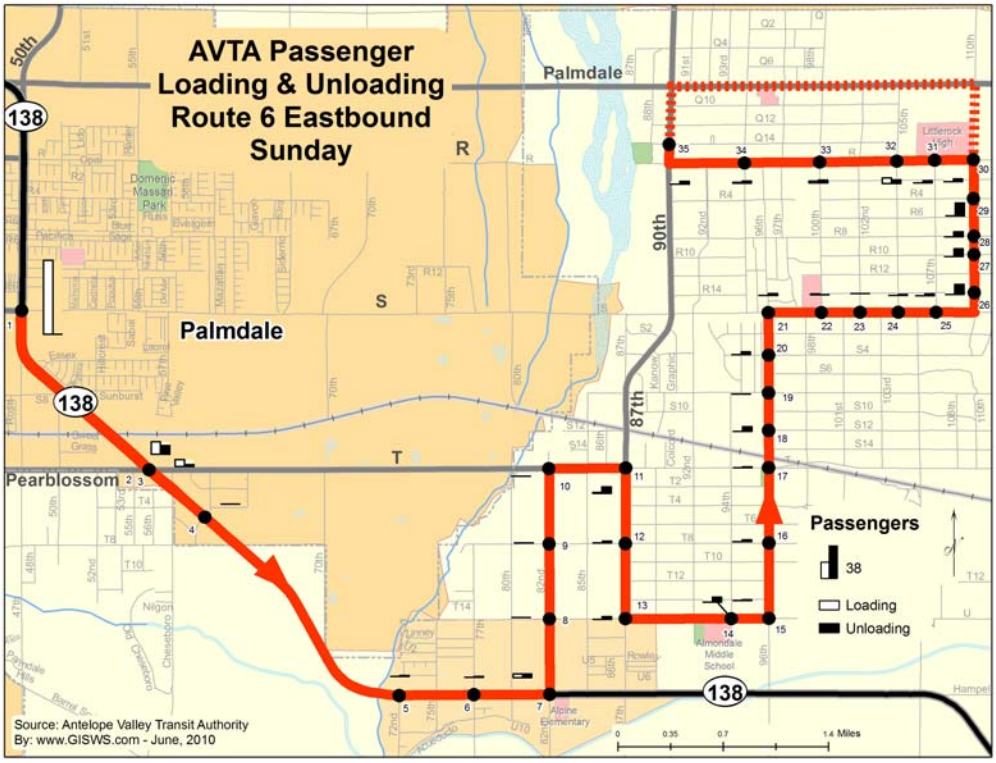
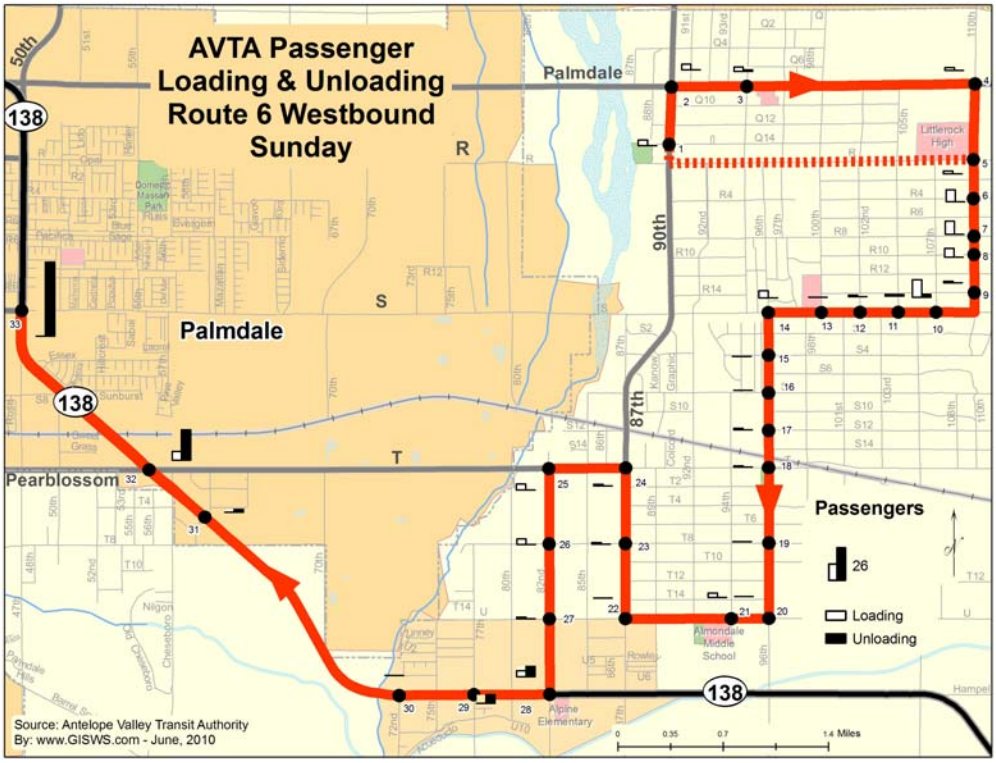


Figure 2.24
Route 6 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.64 and 2.65 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at 82nd Street East & Pearblossom Highway are counted in the second segment eastbound and in the first segment westbound. The ridership patterns in Table 2.64 suggest a predominant eastbound flow all day. The greatest passenger activity occurs between 47th Street East & Avenue S and 82nd Street East & Pearblossom Highway. Ridership is highest during the midday.

Table 2.64
Route 6 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
47 St E & Av S – 82 St E & Pearblossom	119	12	15	4	53	6	46	2	5	0
82 St E & Pearblossom – 96 St E & Av U	17	17	6	7	7	8	4	2	0	0
96 St E & Av U – Av R & 110 St E	20	33	13	12	7	20	0	1	0	0
Av R & 110 St E – 90 St E & Av Q-14	14	11	0	3	11	6	3	0	0	2
Weekday Total	**170**	**73**	**34**	**26**	**78**	**40**	**53**	**5**	**5**	**2**

Source: Ridecheck data, November 2009

Table 2.65 presents productivity, in terms of boardings per revenue hour, for Route 6 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greatest on the segment between 47th Street East & Avenue S and 82nd Street East & Pearblossom Highway. Eastbound service is more productive at all times of the day than westbound service. Midday is the most productive time period. The most productive route/time of day segment is eastbound between 47th Street East & Avenue S and 82nd Street East & Pearblossom Highway in the afternoon (69.0 boardings per revenue hour), and the least productive segments include several segments with no ridership.

Table 2.65
Route 6 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
47 St E & Av S – 82 St E & Pearblossom	57.1	5.7	31.0	8.6	67.7	6.8	69.0	4.0	37.5	0.0
82 St E & Pearblossom – 96 St E & Av U	11.2	9.0	20.0	13.1	13.5	9.1	8.0	7.1	0.0	0.0
96 St E & Av U – Av R & 110 St E	9.7	13.5	32.5	13.1	7.8	20.3	0.0	2.7	0.0	0.0
Av R & 110 St E – 90 St E & Av Q-14	13.8	7.3	0.0	6.0	26.4	9.5	9.0	0.0	0.0	24.0
Weekday Total	**25.3**	**9.1**	**24.6**	**10.7**	**29.6**	**11.7**	**24.8**	**3.4**	**8.8**	**2.9**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday. The most productive segment on Saturday is eastbound between 47th Street East & Avenue S and 82nd Street East & Pearblossom Highway in the afternoon, with 43.3 boardings per revenue hour. The most productive segment on Sunday is eastbound between 47th Street East & Avenue S and 82nd Street East & Pearblossom Highway in the afternoon, with 63.3 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.66 shows the peak load points on Route 6 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.66 indicates that the peak load point for travel is at 47th Street East & Avenue S, with 114 passengers traveling eastbound at this location throughout the day. The maximum load point on Route 6 is westbound on the Sunday 10:00 a.m. trip at Pearblossom Highway & 82nd Street East, with 43 passengers on board. It is highly unusual for the maximum load to occur on a Sunday.

Table 2.66
Route 6 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	47 St E & Av S	All Day	114	P'blossom & 60 St E	All Day	76
	Saturday	47 St E & Av S	All Day	65	P'blossom & 60 St E	All Day	71
	Sunday	P'blossom & Ft Tejon	All Day	97	82 St E & Av U	All Day	89
Maximum Load Point	Weekday	110 St E & Av R-8 47 St E & Av S	6:15 a.m. 12:15 p.m.	20	P'blossom & 82 St E	10:00 a.m.	17
	Saturday	P'blossom & Ft Tejon	12:15 p.m.	17	P'blossom & 72 St E	10:00 a.m.	18
	Sunday	P'blossom & Ft Tejon	1:45 p.m.	31	P'blossom & 82 St E	10:00 a.m.	43

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.67 through 2.69 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 6 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 57 percent at all time points on Route 6, 11th among the 13 weekday routes. Schedule adherence is much better in the westbound direction throughout the day. Schedule adherence is best in the evening and poorest in the morning. Schedule adherence is below 50 percent eastbound in the morning, midday, and afternoon periods and westbound in the morning.

Table 2.67
Route 6 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	23	34	57	4	7	9	16	6	6	4	5
Early	4	3	7	1	1	1	2	1	0	1	0
Late	23	13	36	5	7	10	2	8	4	0	0
On Time %	46%	68%	57%	40%	47%	45%	80%	40%	60%	80%	100%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.68) is slightly better at 66 percent at all time points, 10th among the 11 Saturday routes. Overall schedule adherence is slightly better westbound except in the morning and is best in the afternoon.

Table 2.68
Route 6 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	26	27	53	4	4	8	14	14	9
Early	1	1	2	0	0	0	0	1	1
Late	13	12	25	1	6	12	6	0	0
On Time %	65%	68%	66%	80%	40%	40%	70%	93%	90%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.69) is better at 71 percent at all time points, 10th among the 11 Sunday routes. The one morning eastbound trip was early at every timepoint. Early trips are a problem on Sunday. Schedule adherence is better in the westbound direction.

Table 2.69
Route 6 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	25	32	57	0	7	14	15	11	10
Early	4	2	6	0	0	3	2	1	0
Late	11	6	17	5	3	3	3	3	0
On Time %	63%	80%	71%	0%	70%	70%	75%	73%	100%

Source: Ridecheck Data, November 2009

Route 6 schedule adherence is better on weekends than on weekdays, but ranks 10th among 11 Saturday routes and among 11 Sunday routes.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.70 and 2.71 show average running times and scheduled running times by segment and time of day on weekdays for Route 6. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but

this level of detail highlights where running time adjustments might be needed. Running time appears adequate overall, but more running time is needed eastbound while scheduled time is greater than actual time westbound.

Table 2.70
Route 6 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
47 St E & Av S – 82 St E & Pearblossom	14	13	11	13	12	13	8	13
82 St E & Pearblossom – 96 St E & Av U	8	7	7	7	9	7	12	7
96 St E & Av U – Av R & 110 St E	12	9	12	9	11	9	9	9
Av R & 110 St E – 90 St E & Av Q-14	5	6	6	6	6	6	5	6
Average Running Time	39	35	36	35	39	35	34	35

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.71
Route 6 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
90 St E & Av Q-14 – Av R & 110 St E	8	5	7	5	6	5	5	5
Av R & 110 St E – 96 St E & Av U	14	10	10	10	9	10	9	10
96 St E & Av U – 82 St E & Pearblossom	8	7	9	7	7	7	9	7
82 St E & Pearblossom – 47 St E & Av S	8	18	9	18	12	18	14	18
Total	38	40	35	40	34	40	37	40

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 6 ranks 11th in ridership among the 13 weekday routes. Ridership is greater in the eastbound direction. Route 6 ranks 9th in ridership among the 11 Saturday routes and 6th among the 11 Sunday routes.

Route 6 ranks 9th among the 13 AVTA weekday routes in productivity, subsidy per passenger, and farebox recovery ratio. Route 6 ranks 9th among the 11 Saturday routes in productivity and subsidy per passenger and 7th in farebox recovery ration. Route 6 ranks 6th among the 11 Sunday routes in productivity, 5th in subsidy per passenger, and 3rd in farebox recovery ratio.

There are no instances of overcrowding on Route 6.

Schedule adherence is 57 percent on Route 6 on weekdays. Route 6 ranks 11th among the 13 weekday routes in terms of schedule adherence. Scheduled running time appears adequate overall, although reallocation by segment and direction could be helpful. Weekend schedule adherence is better, but the route ranks 10th of 11 weekend routes on both days.

Route 7 Quartz Hill

Overview

Route 7 Quartz Hill (Figure 2.25) serves the western areas of Lancaster and Palmdale, including Quartz Hill. The route travels between Jackman Street & Fern Avenue and Palmdale Transportation Center via Fern Avenue, Avenue I, 10th Street West, Avenue H, 50th Street West, Avenue I, 60th Street West, Avenue L-8, 50th Street West, Rancho Vista Boulevard, 10th Street West, and Technology Drive. Major destinations include the Lancaster Senior Center, High Desert Hospital, Quartz Hill High School, Highland High School, the Antelope Valley Mall, and the Palmdale Transportation Center.

Route 7 serves Quartz Hill and adjacent neighborhoods. Route 7 ranks in the middle among AVTA routes in terms of weekday ridership and productivity.

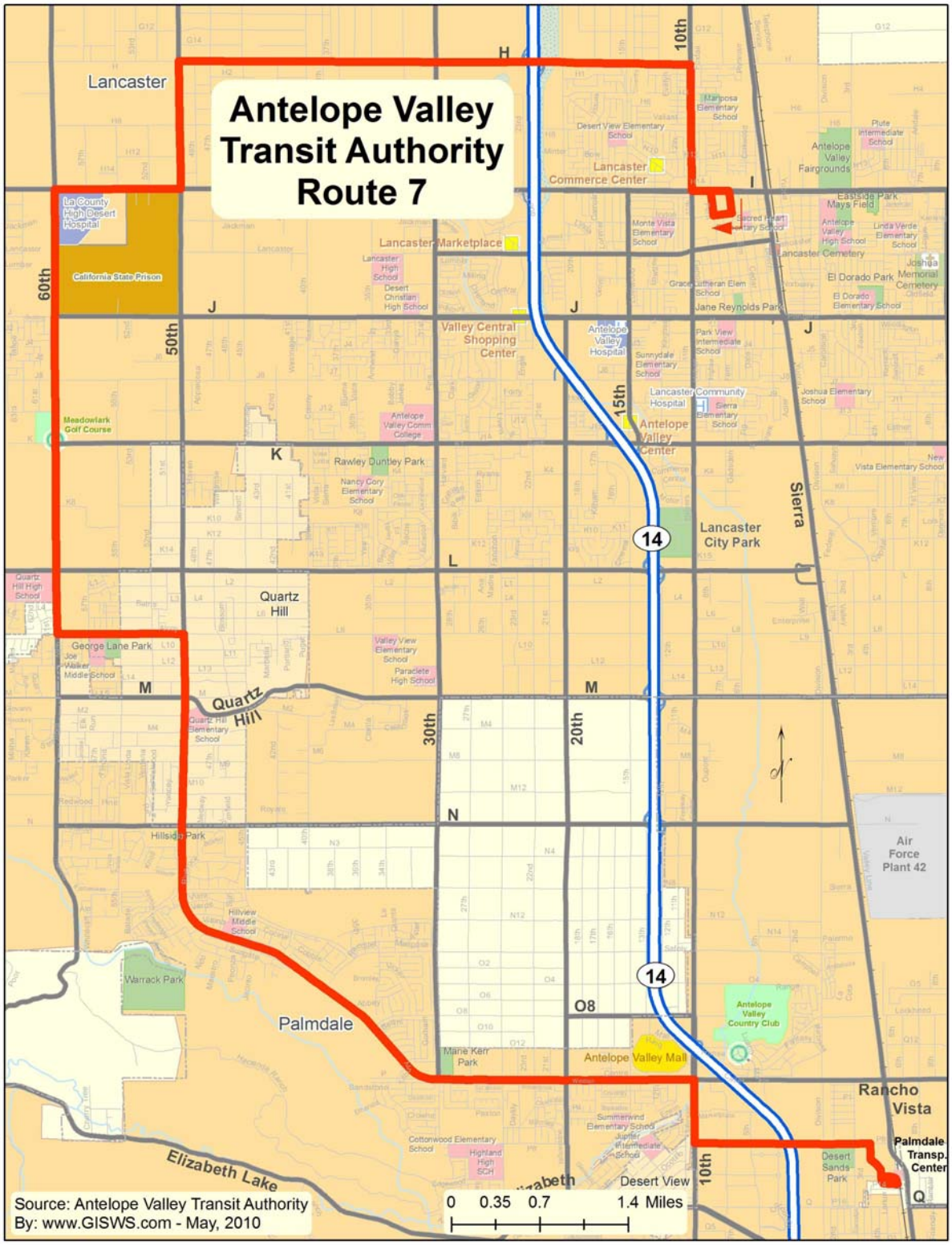
Headway and Span of Service

Table 2.72 shows headway and span of service for Route 7 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Span of service in this table is the span in effect at the time that the ridecheck was conducted. At the time of the ridecheck, weekend service was less frequent.

Table 2.72
Route 7 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	63 to 70	5:55 a.m. – 6:50 p.m.
Saturday/Sunday	65 to 68	7:05 a.m. – 6:50 p.m.

Figure 2.25
Route 7



Operating Data

Table 2.73 presents operating data for Route 7. Among the 13 weekday routes, Route 7 ranks 7th in boardings and 8th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 7 ranks 8th in boardings and 7th in boardings per revenue hour on Saturday and 10th in boardings and 8th in boardings per revenue hour on Sunday. Note that revenue hours in Table 2.73 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 7 ranks 4th among 13 routes in average trip length on weekdays and 3rd on both Saturday and Sunday. Average trip lengths fall in the range of 7.25 to 9.38 miles on all days. Average trip lengths are longer on weekends, especially on Saturday. Route 7 ranks 8th in seat utilization on weekdays, 6th on Saturday, and 9th on Sunday.

Table 2.73
Route 7 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	557	29.2	19.1	18.2%	7.25
Saturday	170	11.6	14.7	18.2%	9.38
Sunday	95	11.5	8.2	8.9%	8.21

Source: Ridecheck Data, November 2009

Table 2.74 presents financial data for Route 7. Route 7 ranks 8th in subsidy per boarding and 10th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday, Route 7 ranks 7th in subsidy per boarding and 8th in farebox recovery ratio among 11 routes. Route 7 is 8th in subsidy per boarding and farebox recovery ratio among 11 Sunday routes.

Table 2.74
Route 7 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	557	$501	$2,242	$4.03	$3.13	22.4%
Saturday	170	$153	$889	$5.23	$4.33	17.2%
Sunday	95	$86	$884	$9.30	$8.40	9.7%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.26 through 2.28 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There are no stops with at least 100 boardings per weekday in one direction.

There are no Route 7 trips with segments whose loads exceed 125 percent of capacity.

Figure 2.26
Route 7 Weekday Boardings and Alightings by Stop

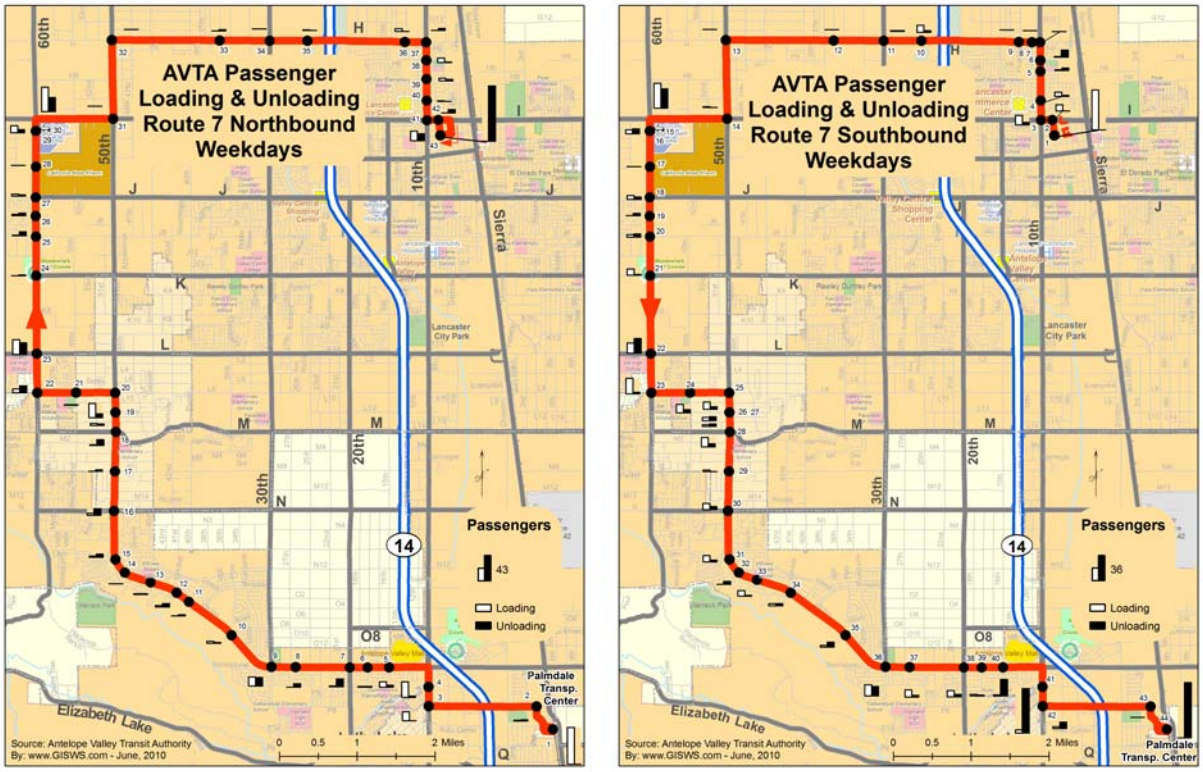


Figure 2.27
Route 7 Saturday Boardings and Alightings by Stop

Figure 2.28
Route 7 Sunday Boardings and Alightings by Stop

Weekday Segment and Time of Day Analysis

Tables 2.75 and 2.76 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at 50TH Street West & Avenue M are counted in the third segment northbound and in the second segment southbound. The ridership patterns in Table 2.75 suggest a balanced flow by direction throughout the day. The greatest passenger activity occurs between 60th Street West & Avenue L-8 and Avenue H & 30th Street West (comprising one northbound and two southbound segments) and between PTC and Rancho Vista & Marie Kerr Park (NB)/Mesa Lane (SB). Ridership is highest during the midday.

Table 2.75
Route 7 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
PTC – Rancho Vista & Marie Kerr Park/Mesa Lane	106	26	18	5	49	17	35	4	4	0
Rancho Vista & Marie Kerr/ Mesa Lane – 50 St W & Av M	25	56	11	15	6	34	8	5	0	4
50 St W & Av M – 60 St W & Av L-8	27	46	14	11	8	26	5	7	0	2
60 St W & Av L-8 – High Desert Hospital	84	66	11	13	46	34	26	19	1	0
High Desert Hospital – Av H & 30 St W		2		0		0		2		0
Av H & 30 St W – Jackman & Fern	32	87	5	19	26	28	1	36	0	4
Weekday Total	**274**	**283**	**59**	**61**	**135**	**139**	**75**	**73**	**5**	**10**

Source: Ridecheck data, November 2009

Table 2.76 presents productivity, in terms of boardings per revenue hour, for Route 7 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Northbound service is slightly more productive than southbound service throughout the day except in the evening. Midday is the most productive time period. The most productive route/time of day segment is southbound between 50th Street West & Avenue M and 60th Street West & Avenue L-8 in the midday (45.9 boardings per revenue hour), and the least productive segments include several segments with no ridership.

Table 2.76
Route 7 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
PTC – Rancho Vista & Marie Kerr Park/Mesa Lane	33.1	8.5	26.3	6.0	42.6	14.8	32.3	4.6	16.0	0.0
Rancho Vista & Marie Kerr/ Mesa Lane – 50 St W & Av M	10.9	18.4	19.4	14.2	6.9	34.0	10.4	5.7	0.0	18.5
50 St W & Av M – 60 St W & Av L-8	19.3	28.5	32.3	25.4	16.0	45.9	13.0	13.5	0.0	24.0
60 St W & Av L-8 – High Desert Hospital	19.9	25.9	11.2	19.0	26.3	30.4	21.4	34.5	4.0	0.0
High Desert Hospital – Av H & 30 St W		0.8		0.0		0.0		2.1		0.0
Av H & 30 St W – Jackman & Fern	12.7	33.7	9.1	28.5	27.9	30.5	1.3	44.1	0.0	24.0
Weekday Total	20.0	18.2	18.1	14.4	25.8	24.3	17.6	15.8	5.5	10.3

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is highest during the midday. The most productive segment on Saturday is the segment northbound between PTC and Rancho Vista Boulevard & Marie Kerr Park in the morning, with 43.6 boardings per revenue hour. The most productive segment on Sunday is also northbound between PTC and Rancho Vista Boulevard & Marie Kerr Park in the morning, with 24.0 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.77 shows the peak load points on Route 7 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.77 indicates that the peak load point for travel is at Rancho Vista Boulevard & Dunbar Street, with 154 passengers traveling southbound at this location throughout the day. The maximum load point on Route 7 is southbound on the weekday 9:51 a.m. trip at Rancho Vista Boulevard & Dunbar Street, with 31 passengers on board.

Table 2.77
Route 7 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av I & 10 St W	All Day	108	Rancho Vista & Dunbar	All Day	154
	Saturday	Rancho Vista & 15 St W	All Day	46	Rancho Vista & Av Vista Verde	All Day	55
	Sunday	Rancho Vista & 15 St W	All Day	21	Rancho Vista & Mesa	All Day	34
Maximum Load Point	Weekday	Av I & 10 St W	9:58 a.m.	22	Rancho Vista & Dunbar	9:51 a.m.	31
	Saturday	10 St W & Av H-12	10:58 a.m.	16	Rancho Vista & Av Vista Verde Rancho Vista & 30 St W	12:01 p.m. 2:14 p.m.	15
	Sunday	50 St W & Av L-8	3:24 p.m.	9	Rancho Vista & Av Vista Verde	9:48 a.m.	9

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.78 through 2.80 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 7 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 77 percent at all time points on Route 7, 3rd among the 13 weekday routes. Schedule adherence is better in the southbound direction throughout the day except in the midday. Schedule adherence generally declines throughout the day in the northbound direction but is best during the afternoon and evening periods in the southbound direction.

Table 2.78
Route 7 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	NB	SB	Total	NB	SB	NB	SB	NB	SB	NB	SB
On Time	59	74	133	15	21	25	22	16	24	3	7
Early	9	8	17	1	4	1	1	4	3	3	0
Late	10	13	23	2	0	4	12	4	1	0	0
On Time %	76%	78%	77%	83%	84%	83%	63%	67%	86%	50%	100%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.79) is slightly worse at 74 percent at all time points, 7th among the 11 Saturday routes. Seventeen (17) of the 18 observations that were not on time were early.

Table 2.79
Route 7 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	23	28	51	4	3	9	16	10	9
Early	7	10	17	2	1	3	4	2	5
Late	0	1	1	0	0	0	1	0	0
On Time %	77%	72%	74%	67%	75%	75%	76%	83%	74%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.80) is best of all days at 84 percent at all time points, 5th among the 11 Sunday routes. Schedule adherence is much better southbound. Early departures are the biggest problem on Sunday; no late observations were reported.

Table 2.80
Route 7 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	22	36	58	4	4	10	20	8	12
Early	8	3	11	2	0	2	1	4	2
Late	0	0	0	0	0	0	0	0	0
On Time %	73%	92%	84%	67%	100%	83%	95%	67%	86%

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.81 and 2.82 show average running times and scheduled running times by segment and time of day on weekdays for Route 7. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running time is adequate in both directions throughout the day on Route 7.

Table 2.81
Route 7 Average versus Scheduled Northbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
PTC – Rancho Vista & Marie Kerr Park/Mesa Lane	13	12	13	12	15	12	15	12
Rancho Vista & Marie Kerr Park – 50 St W & Av M	10	13	10	13	11	13	5	13
50 St W & Av M – 60 St W & Av L-8	8	5	6	5	6	5	5	5
60 St W & Av L-8 – Av H & 30 St W	18	20	20	20	17	20	15	20
Av H & 30 St W – Jackman & Fern	11	10	11	10	11	10	15	10
Average Running Time	60	60	60	60	60	60	55	60

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.82
Route 7 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Jackman & Fern – Av H & 30 St W	11	10	10	10	10	10	10	10
Av H & 30 St W – High Desert Hospital	10	10	9	10	11	10	10	10
High Desert Hospital – Av L-8 & 60 St W	11	10	12	10	7	10	10	10
Av L-8 & 60 St – 50 St W & Av M	5	5	6	5	6	5	5	5
50 St W & Av M - Rancho Vista & Mesa Lane	11	12	11	12	11	12	13	12
Rancho Vista & Mesa Lane – PCT	10	13	12	13	10	13	10	13
Total	58	60	60	60	55	60	58	60

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 7 ranks 7th in ridership among the 13 weekday routes. Ridership is balanced in both directions. Route 7 ranks 8th in ridership among the 11 Saturday routes and 10th among the 11 Sunday routes.

Route 7 ranks 8th among the 13 AVTA weekday routes in productivity, 8th in subsidy per passenger, and 10th in farebox recovery ratio. Route 7 ranks 7th among the 11 Saturday routes in productivity, 7th in subsidy per passenger and 8th in farebox recovery ration. Route 7 ranks 8th among the 11 Sunday routes in productivity, subsidy per passenger, and farebox recovery ratio.

There are no instances of overcrowding on Route 7.

Schedule adherence is 77 percent on Route 7 on weekdays. Route 7 ranks 3rd among the 13 weekday routes in terms of schedule adherence. Scheduled running time is adequate overall. Schedule adherence is slightly worse on Saturday and better (84 percent) on Sunday.

Route 9 Eastside Palmdale

Overview

Route 9 Eastside Palmdale (Figure 2.29) serves the eastern portion of Palmdale. The route travels between Palmdale Transportation Center and Pete Knight High School via Avenue Q, 40th Street East, Palmdale Boulevard, 47th Street East, Avenue S, 60th Street East, Palmdale Boulevard, and 70th Street East. Major destinations include the Palmdale Transportation Center, AV Medical Center, Wal-Mart and other retail outlets at 47th Street East & Avenue S, and Pete Knight High School.

Route 9 serves mostly residential neighborhoods on the east side of Palmdale. Route 9 ranks in the lower half of AVTA routes in terms of weekday ridership and productivity.

Headway and Span of Service

Table 2.83 shows headway and span of service for Route 9 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Weekend service included two more trips at the time of the ridecheck.

Table 2.83
Route 9 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	50-70	6:30 a.m. – 9:50 p.m.
Saturday/Sunday	100	7:20 a.m. – 7:00 p.m.

Operating Data

Table 2.84 presents operating data for Route 9. Among the 13 weekday routes, Route 9 ranks 8th in boardings and 12th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 9 ranks 10th in boardings and 11th in boardings per revenue hour on Saturday and 9th in boardings and 11th in boardings per revenue hour on Sunday. Note that revenue hours in Table 2.84 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Route 9 ranks 9th among 13 routes in average trip length on weekdays and 6th on both Saturday and Sunday. Average trip lengths fall in the range of 4.36 to 5.68 miles on all days. Average trip lengths are longer on weekends, especially on Sunday. Route 9 ranks 12th in seat utilization on weekdays and 11th on Saturday and Sunday.

Table 2.84
Route 9 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	372	31.0	12.0	9.7%	4.36
Saturday	123	25.8	4.8	4.2%	4.82
Sunday	97	25.6	3.8	3.9%	5.68

Source: Ridecheck Data, November 2009

Figure 2.29
Route 9

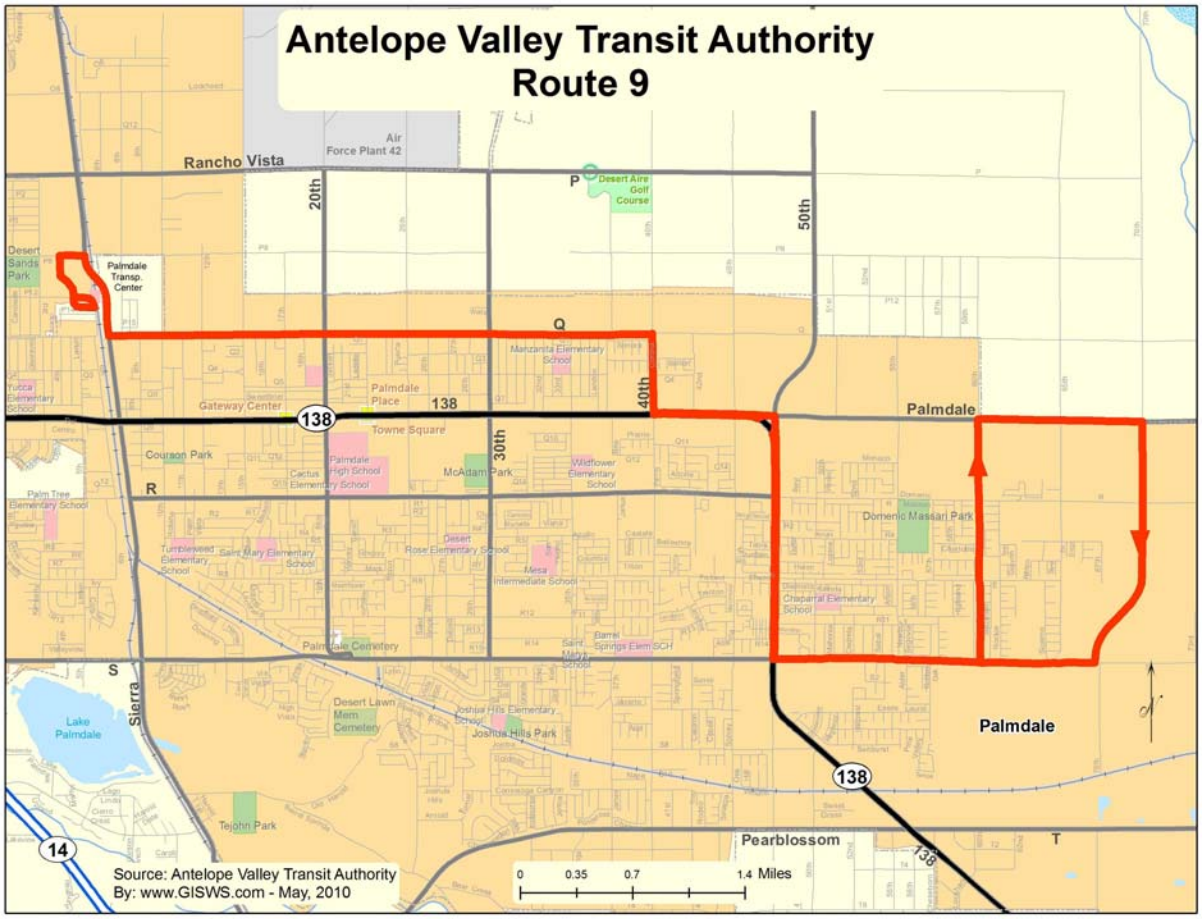


Table 2.85 presents financial data for Route 9. Route 9 ranks 12th in both subsidy per boarding and farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On both Saturday and Sunday, Route 9 ranks 11th in subsidy per boarding and farebox recovery ratio among 11 routes.

Table 2.85
Route 9 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	372	$353	$2,376	$6.39	$5.44	14.9%
Saturday	123	$117	$1,980	$16.10	$15.15	5.9%
Sunday	97	$92	$1,967	$20.28	$19.33	4.7%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.30 through 2.32 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There are no stops with at least 100 boardings per weekday in one direction.

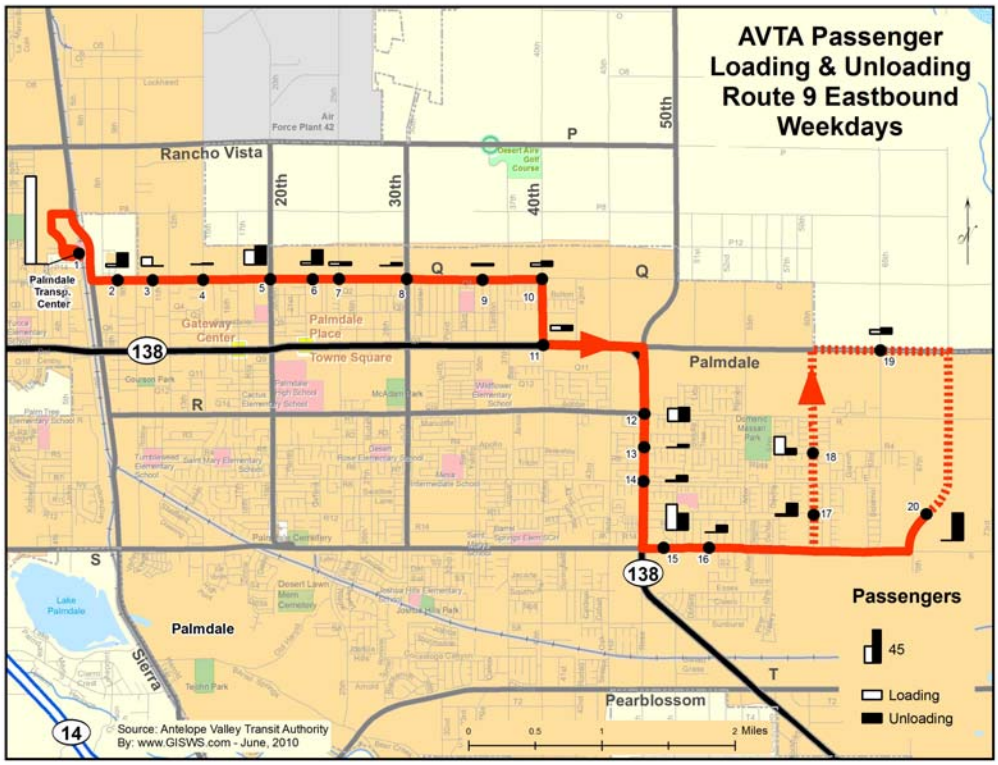
Table 2.86 shows that there is only one trip (weekday at 3:05 p.m. westbound) with segments whose loads exceed 125 percent of capacity on Route 9.

Table 2.86
Route 9 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Pete Knight High School – 47th St E & Av S	Weekday	WB	3:05	2	53	School-related

Source: Ridecheck Data, November 2009

Figure 2.30
Route 9 Weekday Boardings and Alightings by Stop



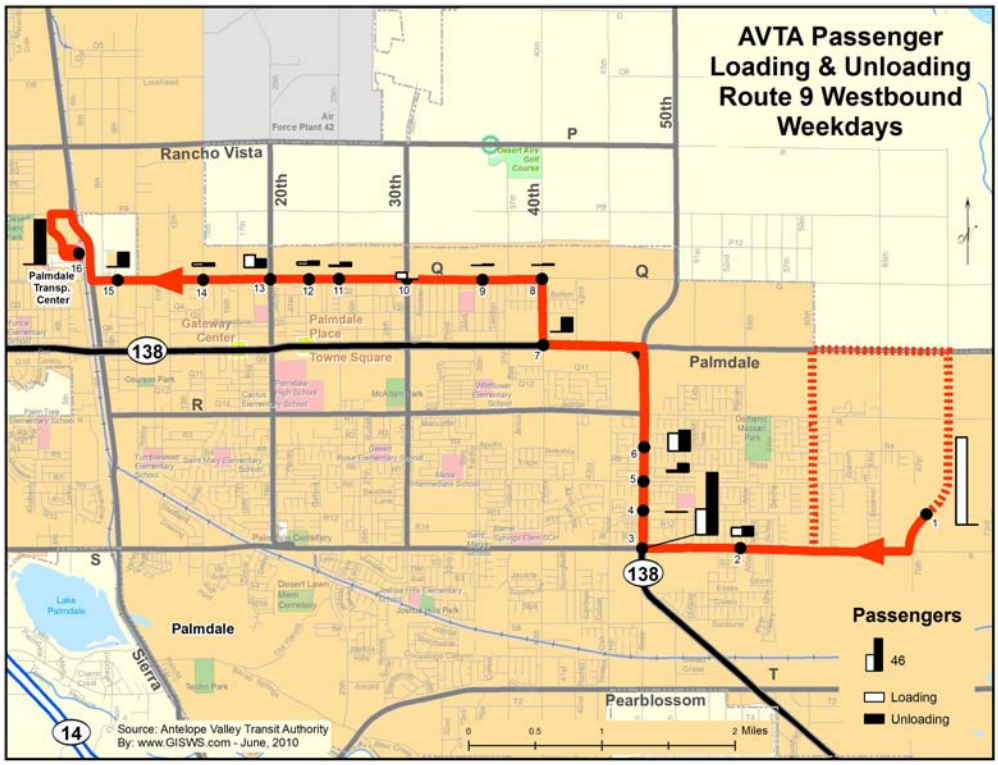
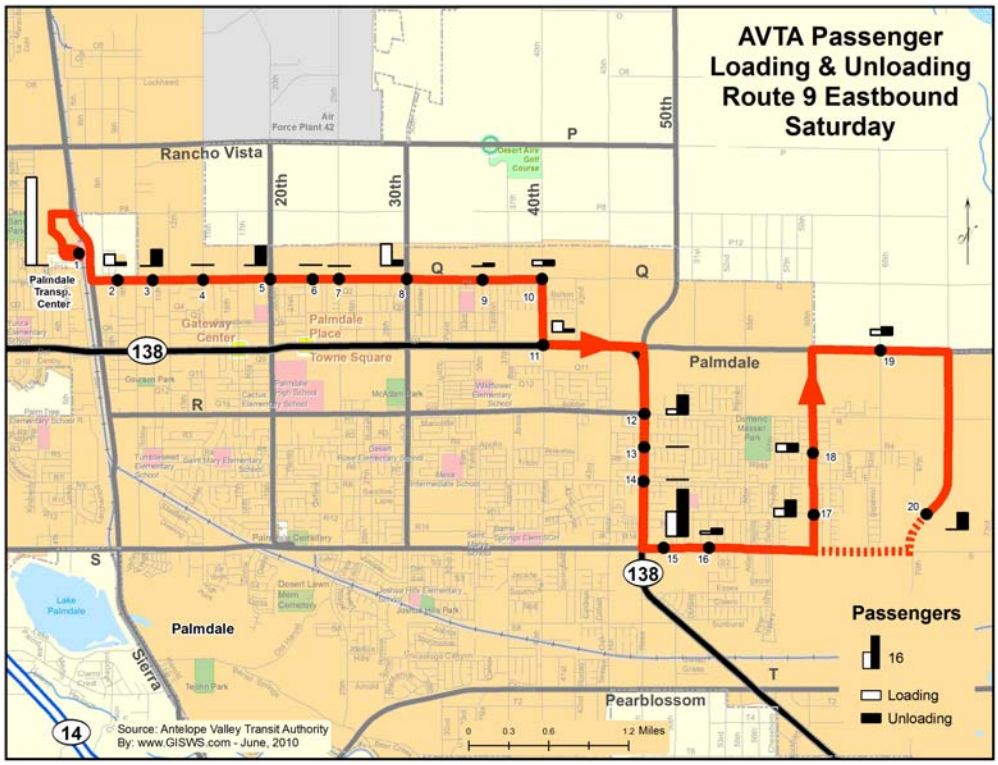


Figure 2.31
Route 9 Saturday Boardings and Alightings by Stop



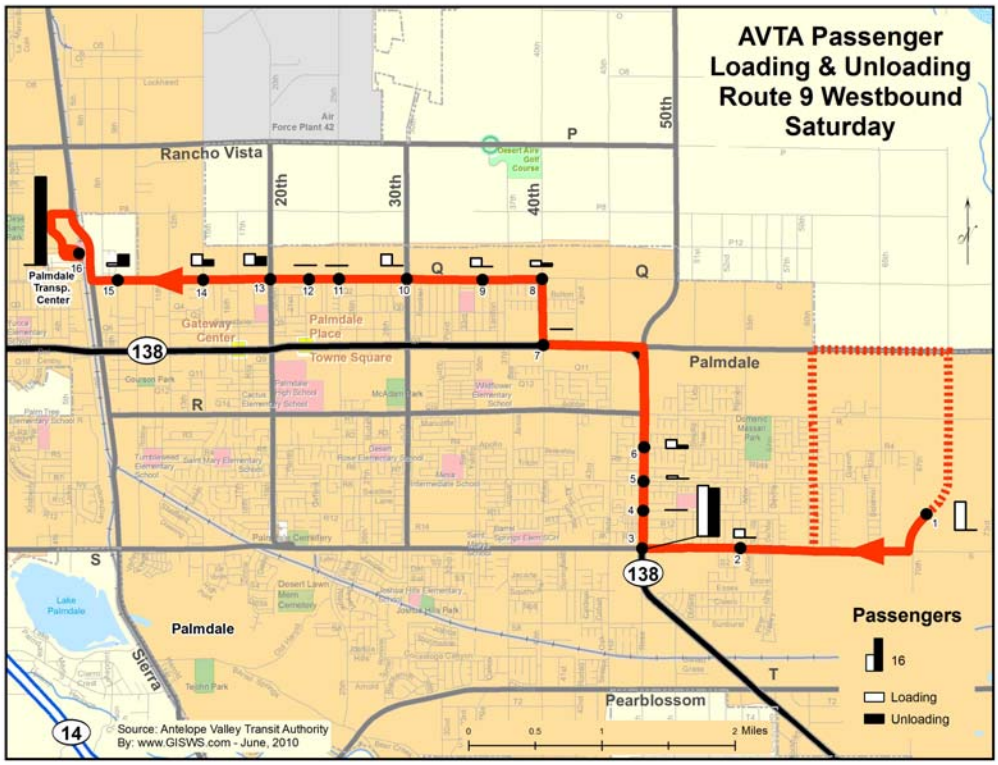
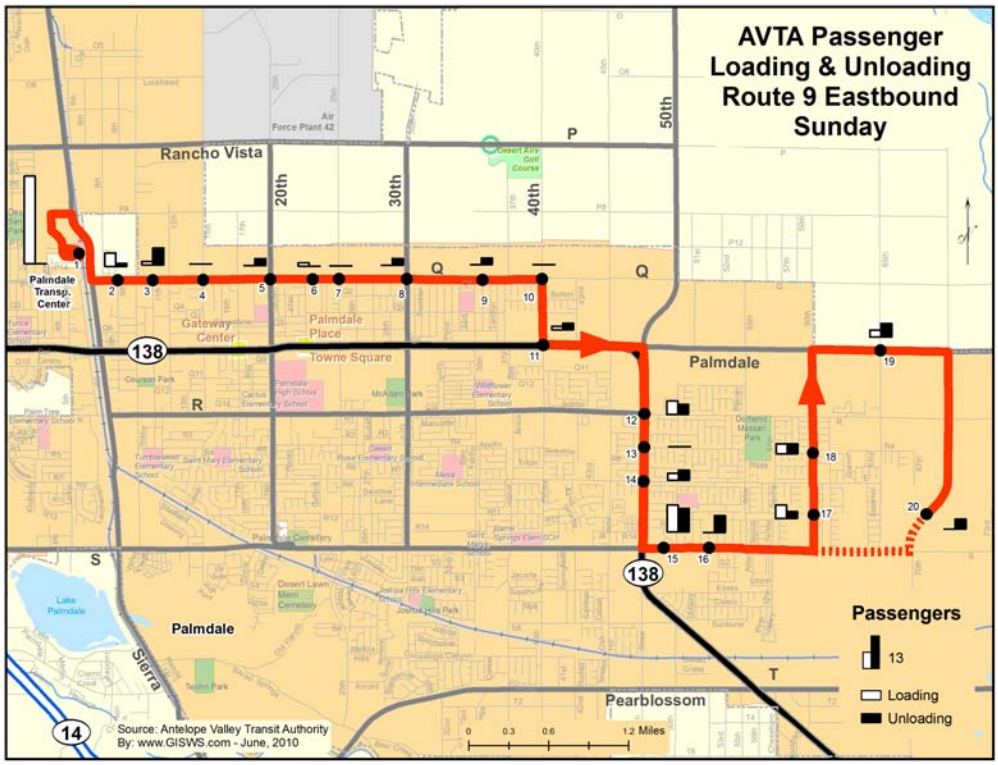
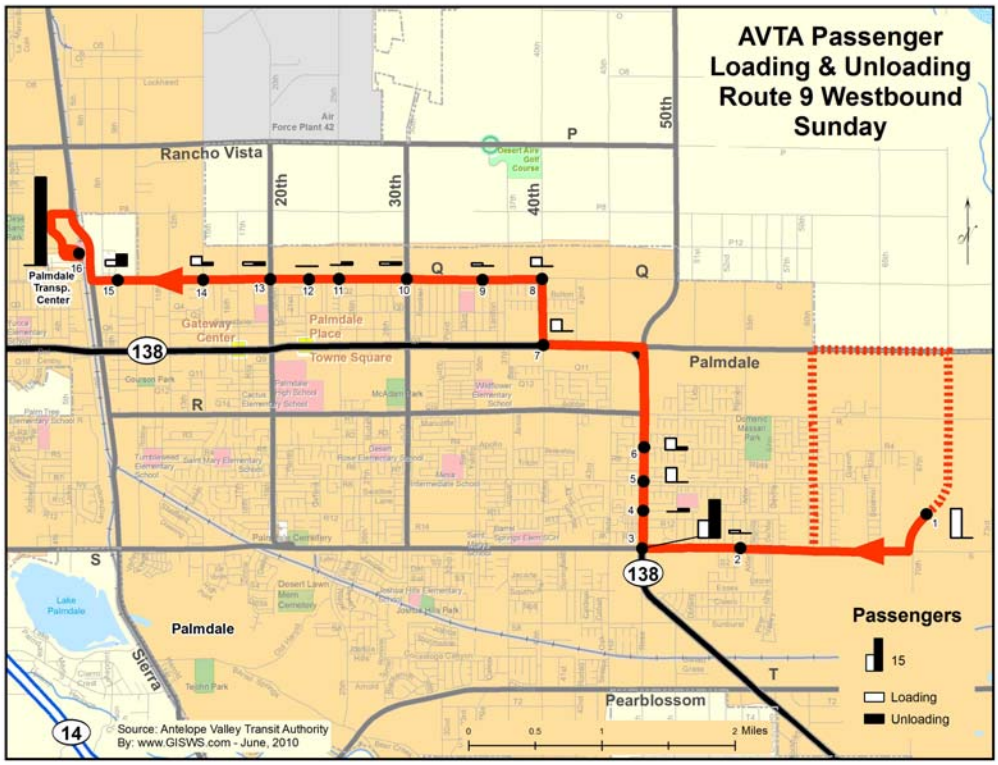


Figure 2.32
Route 9 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.87 and 2.88 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment. Due to construction, only one westbound trip served the timepoint at Avenue Q & 40th Street East. The ridership patterns in Table 2.87 suggest an eastbound flow at all times of the day except afternoon, when the high school students board in the westbound direction. The greatest passenger activity occurs at either end of the route. Ridership is highest during the afternoon.

Table 2.87
Route 9 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
PTC – Av Q & 20 St E	98	17	18	3	23	8	43	5	14	1
Av Q & 20 St E – Av Q & 40 St E	23	2	0	2	12	0	10	0	1	0
Av Q & 40 St E/20 St E – Av S & Halequin/47 St E	23	56	10	20	3	22	7	12	3	2
Av S & Halequin/47 St E – 60 St E & Av R-11	27	101	13	3	6	18	7	80	1	0
60 St E & Av R-11 – Pete Knight High School	25		3		16		5		1	
Weekday Total	**196**	**176**	**44**	**28**	**60**	**48**	**72**	**97**	**20**	**3**

Source: Ridecheck data, November 2009

Table 2.88 presents productivity, in terms of boardings per revenue hour, for Route 9 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Eastbound service is more productive than westbound service throughout the day except in the afternoon. Afternoon is the most productive time period. The most productive route/time of day segment is westbound between 60th Street East & Avenue R-11 and Pete Knight High School in the afternoon (78.7 boardings per revenue hour), and the least productive segments include several segments with no ridership.

Table 2.88
Route 9 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
PTC – Av Q & 20 St E	23.4	3.8	22.5	5.8	16.6	3.9	34.4	4.0	19.5	1.6
Av Q & 20 St E – Av Q & 40 St E	8.8	6.0	0.0	6.0	12.6	--	16.2	--	1.5	--
Av Q & 40 St E/20 St E – Av S & Halequin/47 St E	7.0	7.4	20.7	16.2	2.4	8.4	8.2	5.4	4.2	1.3
Av S & Halequin/47 St E – 60 St E & Av R-11	14.7	25.3	55.7	4.7	6.4	15.4	23.3	78.7	3.0	0.0
60 St E & Av R-11 – Pete Knight High School	9.6		6.4		16.0		6.4		2.9	
Weekday Total	**13.5**	**10.7**	**18.7**	**10.2**	**10.8**	**8.2**	**18.8**	**21.5**	**7.1**	**0.9**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is highest during the midday. The most productive segment on Saturday is the segment eastbound between PTC and Avenue Q & 20th Street East in the afternoon, with 26.4 boardings per revenue hour. The most productive segment on Sunday is eastbound between Avenue S & Halequin and 60th Street East & Avenue R in the afternoon, with 15.7 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.89 shows the peak load points on Route 9 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.89 indicates that the peak load point for travel is at Pete Knight High School, with 121 passengers traveling westbound at this location throughout the day. The maximum load point on Route 9 is westbound on the weekday 3:05 p.m. trip at Pete Knight High School, with 63 passengers on board.

Table 2.89
Route 9 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	PTC	All Day	89	Pete Knight High School	All Day	121
	Saturday	Av Q & 9 St E	All Day	37	Av Q & 15 St E	All Day	36
	Sunday	Av Q & 9 St E	All Day	30	3 Av Q & 15 St E	All Day	33
Maximum Load Point	Weekday	Av S & Halequin	6:30 a.m.	16	Pete Knight High School	3:05 p.m.	63
	Saturday	Av Q & 9 St E	6:30 p.m.	14	Av Q & 15 St E	12:15 p.m.	6
	Sunday	Av Q & 9 St E	2:20 p.m.	11	Av Q & 20 St E	1:55 p.m.	11

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.90 through 2.92 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 9 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 85 percent at all time points on Route 9, 1st among the 13 weekday routes. Schedule adherence is very similar in both directions. Schedule adherence is best during the afternoon and evening periods. There were very few late observations.

Table 2.90
Route 9 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	97	61	158	16	10	32	19	27	18	22	14
Early	16	8	24	2	1	9	5	3	2	2	0
Late	1	3	4	0	1	1	0	0	0	0	2
On Time %	85%	85%	85%	89%	83%	76%	79%	90%	90%	92%	88%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.91) is slightly better at 90 percent at all time points, 1st among the 11 Saturday routes. Eastbound schedule adherence is 98 percent.

Table 2.91
Route 9 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	94	60	154	17	11	42	21	29	24	6	4
Early	1	3	4	0	1	0	1	1	0	0	1
Late	1	12	13	1	3	0	8	0	1	0	0
On Time %	98%	80%	90%	94%	73%	100%	70%	97%	96%	100%	80%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.92) falls to 77 percent at all time points, 8th among the 11 Sunday routes. Schedule adherence is better eastbound. Morning trips are least likely to be on time.

Table 2.92
Route 9 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	80	51	131	10	7	38	18	26	21	6	5
Early	12	9	21	4	3	4	2	4	4	0	0
Late	4	15	19	4	5	0	10	0	0	0	0
On Time %	83%	68%	77%	56%	47%	90%	60%	87%	84%	100%	100%

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.93 and 2.94 show average running times and scheduled running times by segment and time of day on weekdays for Route 9. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running time is adequate in both directions throughout the day on Route 9.

Table 2.93
Route 9 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
PTC – Av Q & 20 St E	15	15	10	15	14	15	10	15
Av Q & 20 St E – Av Q & 40 St E	7	7	7	7	7	7	10	7
Av Q & 40 St E – Av S & Halequin	9	9	9	9	10	9	10	9
Av S & Halequin – 60 St E & Av R-11	5	5	7	5	4	5	5	5
60 St E & Av R-11 – Pete Knight High School	9	9	7	9	9	9	5	9
Average Running Time	45	45	40	45	44	45	40	45

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.94
Route 9 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Pete Knight High School – 47 St E & Av S	8	9	6	9	7	9	11	9
47 St E & Av S – Av Q & 20 St E	16	16	17	16	16	16	15	16
47 St E & Av S – Av Q & 40 St E	*11*	*9*	-	-	-	-	-	-
Av Q & 40 St E – PTC	*13*	*22*	-	-	-	-	-	-
Av Q & 20 St E – PTC	10	15	10	15	9	15	7	15
Total	34	40	33	40	32	40	33	40

Source: Ridecheck data, November 2009; totals may not add due to rounding
Due to construction, only one trip served Av Q & 40 St E

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 9 ranks 8th in ridership among the 13 weekday routes. Ridership is heavier in the eastbound direction except in the afternoon, dismissal time at Pete Knight High School. Almost 40 percent of westbound ridership on weekdays is on one trip at dismissal time. Route 9 ranks 10th in ridership among the 11 Saturday routes and 9th among the 11 Sunday routes.

Route 9 ranks 12th among the 13 AVTA weekday routes in productivity subsidy per passenger, and farebox recovery ratio. Route 9 ranks 11th among the 11 Saturday routes in productivity, subsidy per passenger, and farebox recovery ratio. Route 9 ranks 11th among the 11 Sunday routes in productivity, subsidy per passenger, and farebox recovery ratio. The poor productivity suggests that there is more service than needed on this route, particularly on weekends when schools are closed.

There is one instance of overcrowding on Route 9, associated with afternoon bell times at Pete Knight High School.

Schedule adherence is 85 percent on Route 9 on weekdays. Route 9 ranks 1st among the 13 weekday routes in terms of schedule adherence. Scheduled running time is adequate. Schedule adherence is better on Saturday (90 percent) and worse (76 percent) on Sunday.

Route 11 Avenue I – 15th Street West

Overview

Route 11 Avenue I – 15th Street West (Figure 2.33) serves central and north Lancaster. The route travels between Lancaster City Park and Avenue I & 40th Street East via Commerce Center Drive, 15th Street West, Lancaster Boulevard, Valley Central Way, and Avenue I. Major destinations include Lancaster City Park, Antelope Valley Hospital, Lancaster Marketplace, Clear Channel Stadium, Lancaster Senior Center, the Lancaster Metrolink Station, and Antelope Valley High School.

Route 11 serves a mix of land uses, including transit-oriented residential neighborhoods. Route 11 is a strong route, ranking among the top five AVTA all-day routes in terms of ridership and productivity.

Route 11 is interlined with Route 12 at both ends of the route. Interlining at Avenue I and 40th Street East frees both routes from the need to turn around via side streets; instead a bus arrives on Route 11 and leaves on Route 12 (and vice versa).

Headway and Span of Service

Table 2.95 shows headway and span of service for Route 11 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. A few later trips have been added since the ridecheck.

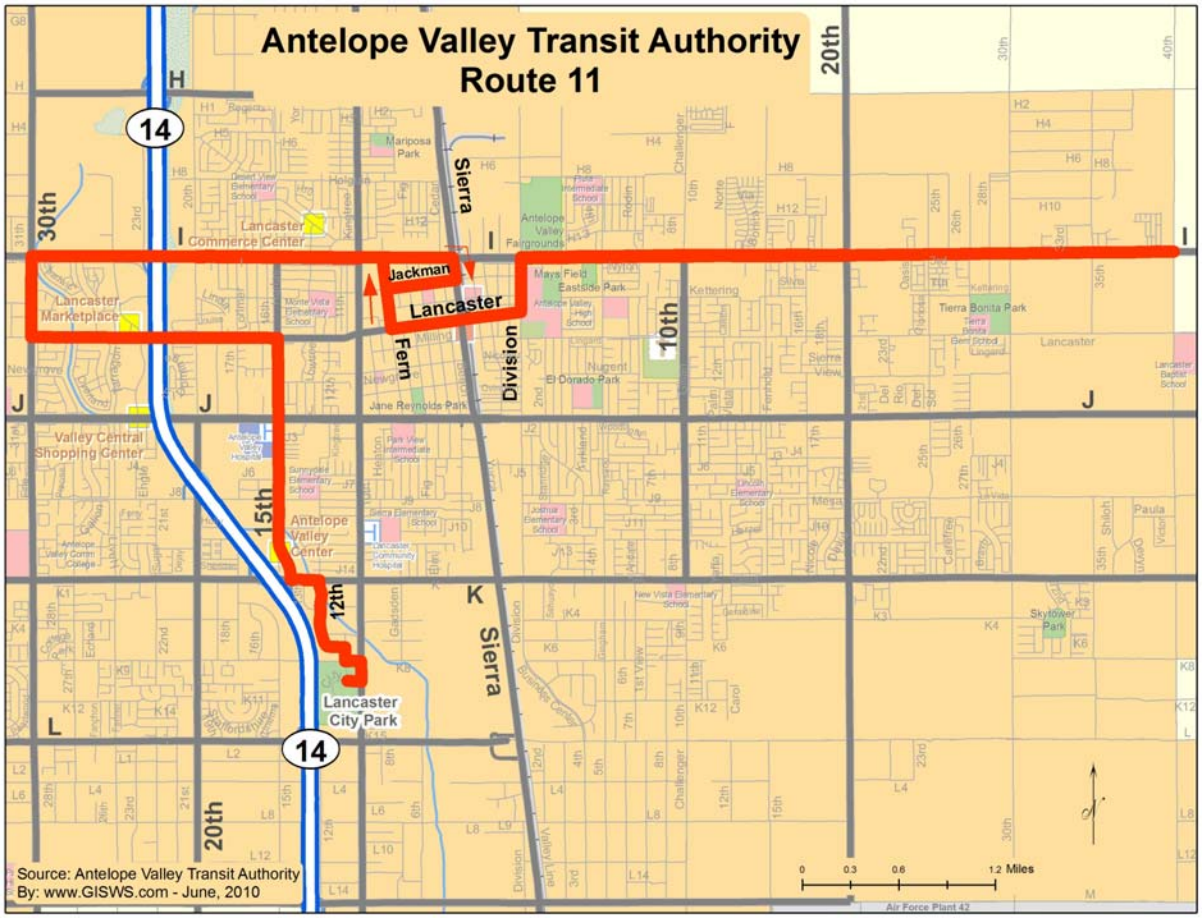
Table 2.95
Route 11 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	30-40 day 30-70 evening	5:15 a.m. – 12:05 a.m.
Saturday/Sunday	60 to 70	6:45 a.m. – 7:45 p.m.

Operating Data

Table 2.96 presents operating data for Route 11. Among the 13 weekday routes, Route 11 ranks 4th in boardings and 6th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 11 ranks 3rd in boardings and boardings per revenue hour on Saturday and 4th in boardings and boardings per revenue hour on Sunday. Note that revenue hours in Table 2.96 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Figure 2.33
Route 11



Route 11 ranks 7th among 13 routes in average trip length on weekdays and Sunday and 5th on Saturday. Average trip lengths fall in the range of 4.87 to 5.18 miles on all days. Average trip lengths are longer on Sunday. Route 11 ranks 5th in seat utilization on weekdays and Sunday and 3rd on Saturday.

Table 2.96
Route 11 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	1,482	57.1	26.0	24.3%	4.95
Saturday	631	23.9	26.5	24.6%	4.87
Sunday	424	23.9	17.8	17.6%	5.18

Source: Ridecheck Data, November 2009

Table 2.97 presents financial data for Route 11. Route 11 ranks 6th in subsidy per boarding and 7th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday Route 11 ranks 3rd in both measures among 11 routes and on Sunday Route 11 ranks 4th in subsidy per boarding and 5th in farebox recovery ratio among 11 routes.

Table 2.97
Route 11 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,482	$1,230	$4,378	$2.95	$2.12	28.1%
Saturday	631	$524	$1,830	$2.90	$2.07	28.6%
Sunday	424	$352	$1,830	$4.32	$3.49	19.2%

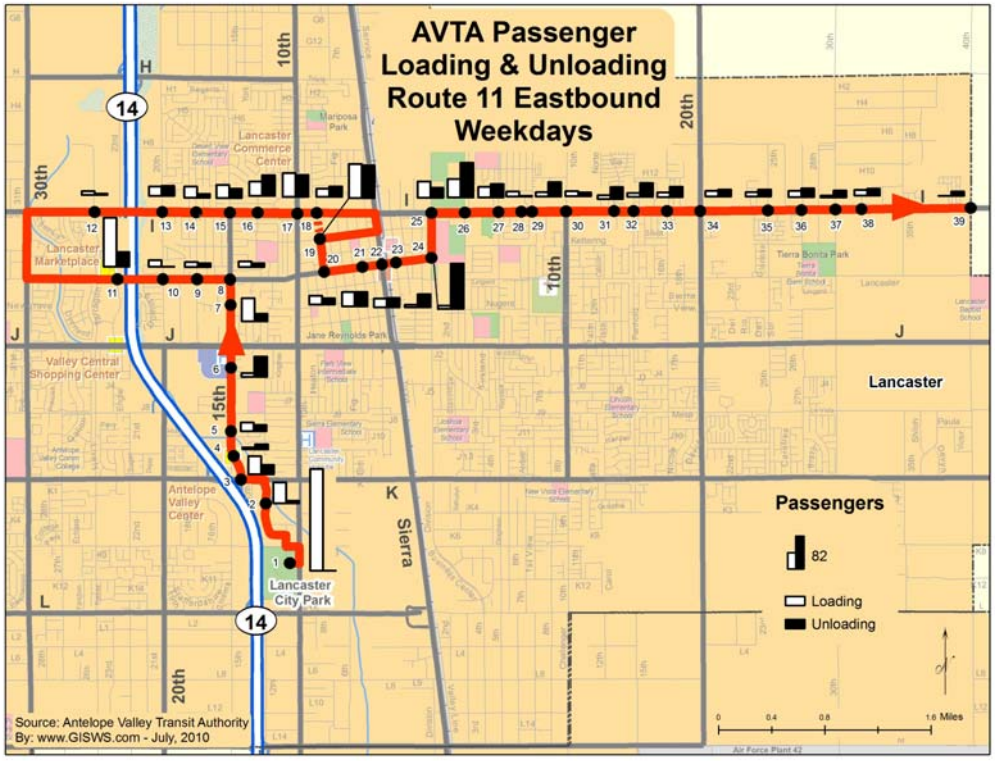
Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.34 through 2.36 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There is one stop with at least 100 boardings per weekday in one direction:

- Lancaster City Park EB (transfer point for Routes 1, 4, 5, and 12).

There are no trips with segments whose loads exceed 125 percent of capacity on Route 11.

Figure 2.30
Route 11 Weekday Boardings and Alightings by Stop



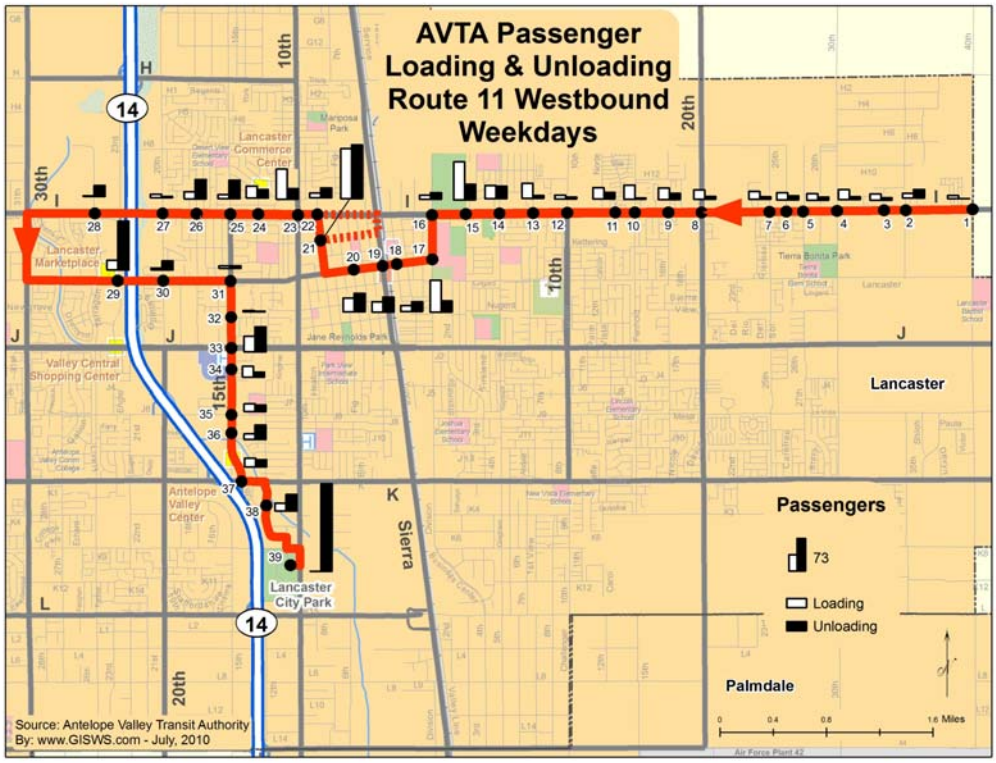
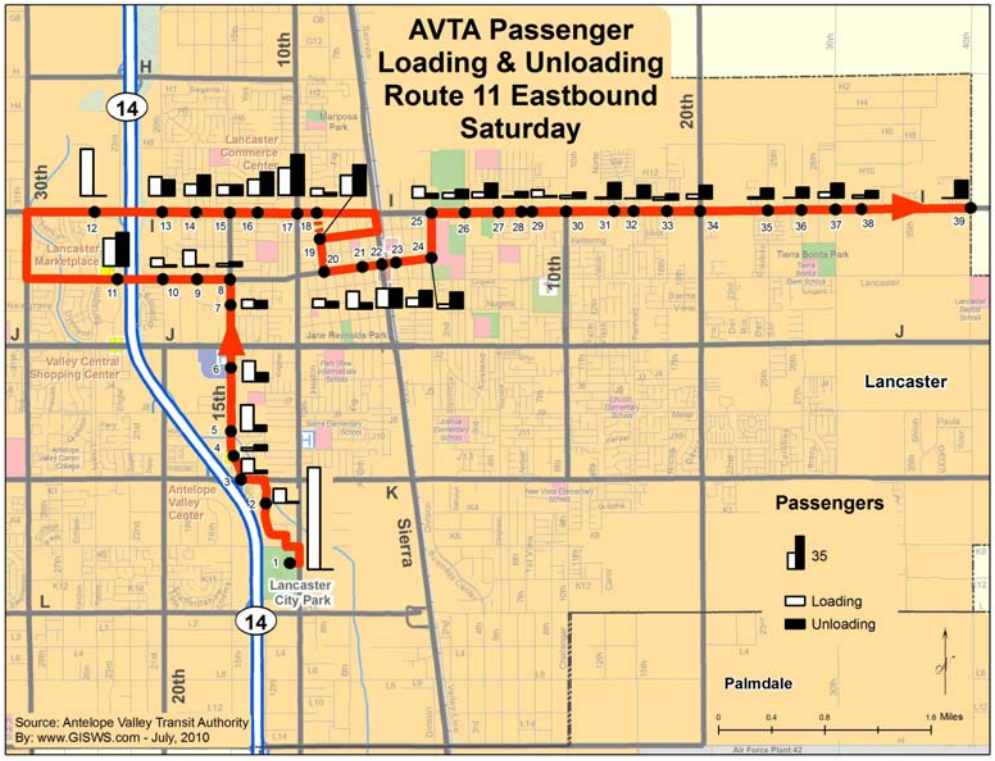


Figure 2.31
Route 11 Saturday Boardings and Alightings by Stop



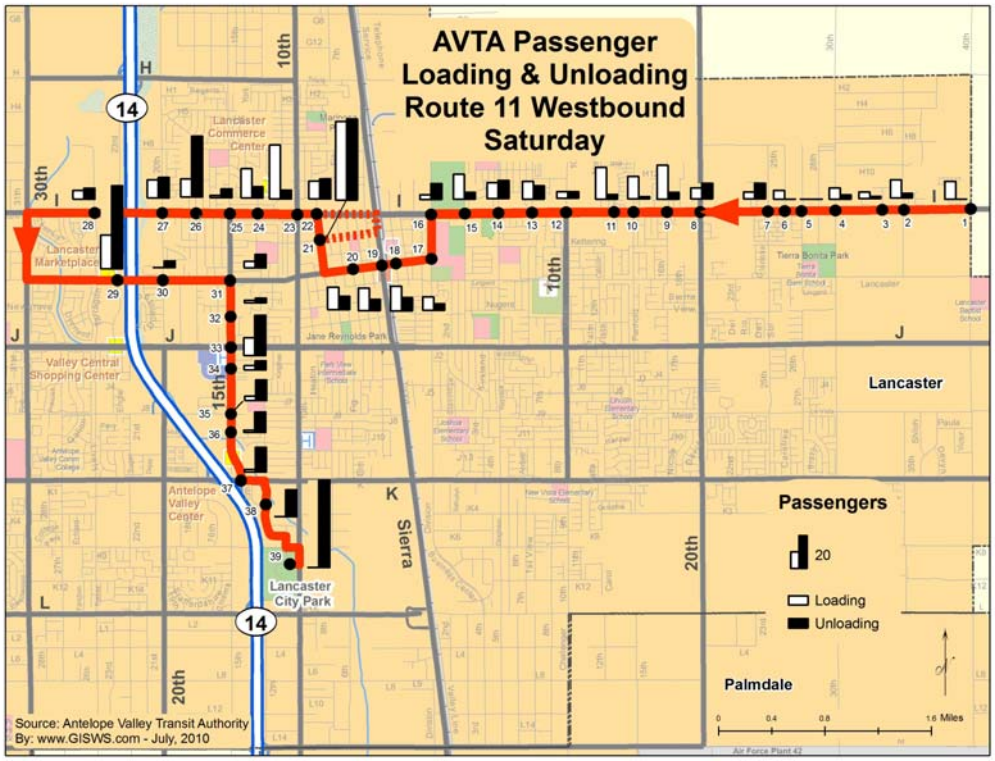
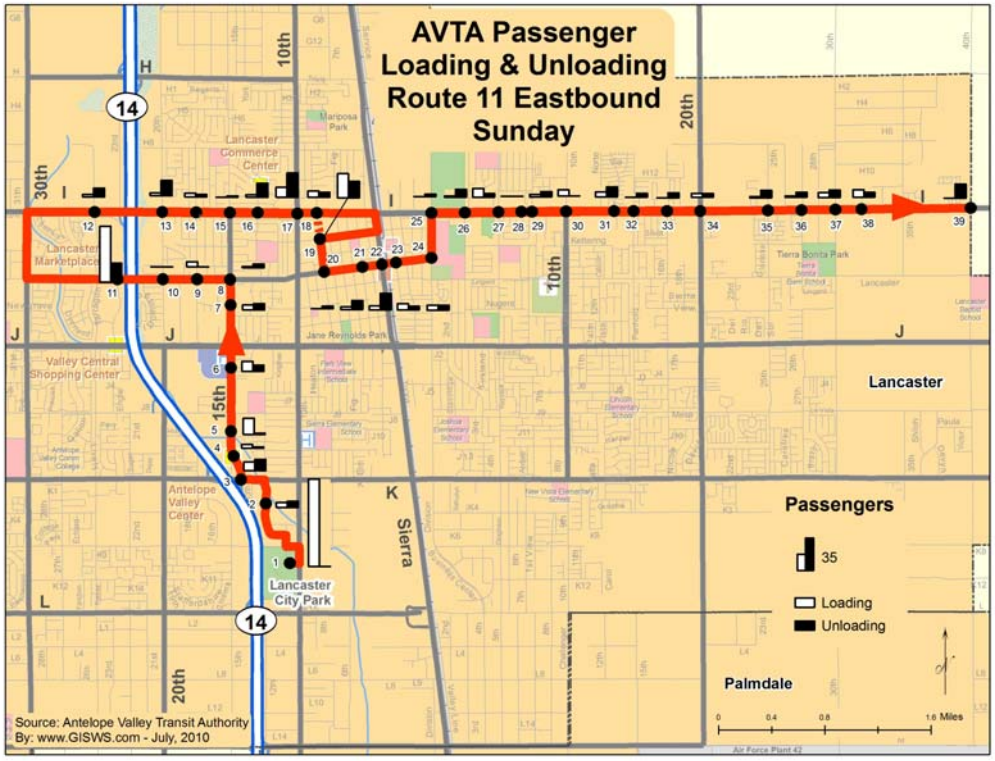
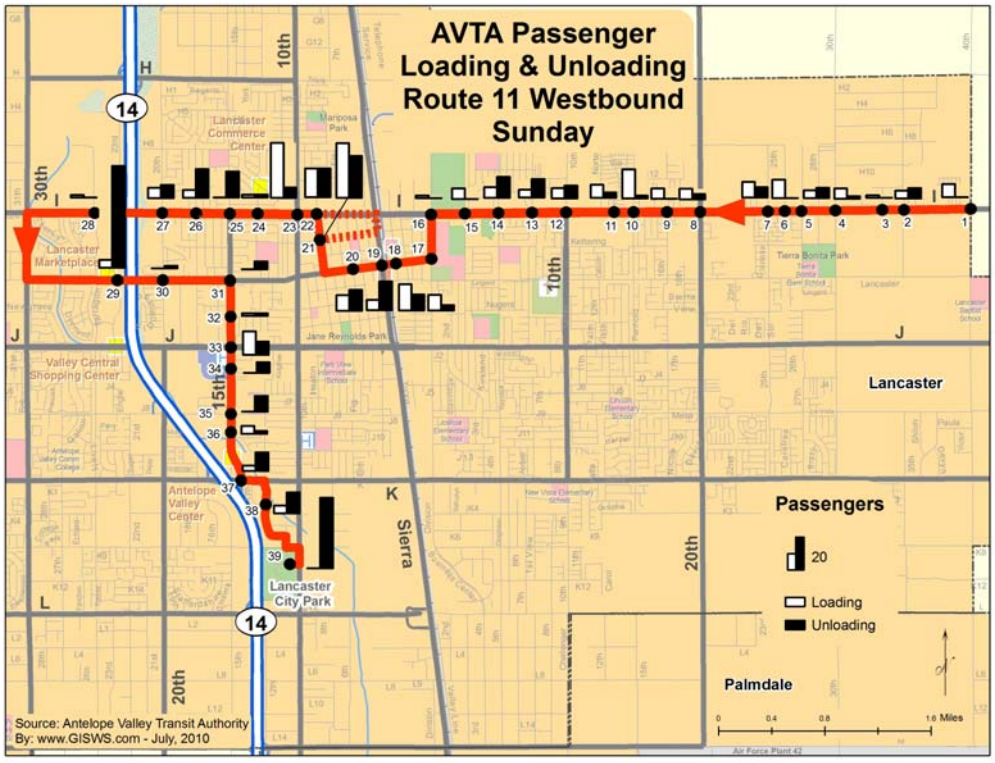


Figure 2.32
Route 11 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.98 and 2.99 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment. For example, boardings at Avenue I & 10th Street West would be counted in the third segment eastbound and in the second segment westbound. The ridership patterns in Table 2.98 suggest an eastbound flow at all times of the day except morning. The greatest passenger activity occurs on the segment between Jackman Street & Fern Avenue and Avenue I & 40th Street East. Ridership is highest during the midday.

Table 2.98
Route 11 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
LCP – 15 St W & Av J-3/Av J	244	94	36	12	140	62	58	20	10	0
15 St W & Av J-3/Av J – Av I & 10 St W	233	121	48	37	135	58	45	26	5	0
Av I & 10 St W – Jackman St & Fern Av	51	91	4	6	35	61	7	21	5	3
Jackman St & Fern Av – Av I & 40 St E	269	307	57	107	141	198	68	62	3	12
Weekday Total	**797**	**685**	**145**	**162**	**451**	**379**	**178**	**129**	**23**	**15**

Source: Ridecheck data, November 2009

Table 2.99 presents productivity, in terms of boardings per revenue hour, for Route 11 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Eastbound service is more productive than westbound service throughout the day. Midday is the most productive time period. The most productive route/time of day segment is westbound between Avenue I & 10th Street West and Jackman Street & Fern Avenue in the midday (61.0 boardings per revenue hour), and the least productive segments include evening segments with no ridership.

Table 2.99
Route 11 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
LCP – 15 St W & Av J-3/Av J	40.0	15.8	24.5	7.6	55.3	25.0	50.4	15.2	10.9	0.0
15 St W & Av J-3/Av J – Av I & 10 St W	29.9	15.1	31.6	17.2	37.7	17.1	24.1	17.0	6.3	0.0
Av I & 10 St W – Jackman St & Fern Av	25.5	36.4	10.0	8.2	56.8	61.0	15.0	36.0	10.0	18.0
Jackman St & Fern Av – Av I & 40 St E	28.2	25.0	28.5	25.0	34.0	31.8	28.1	21.6	3.2	6.9
Weekday Total	**31.3**	**21.7**	**26.8**	**18.4**	**41.3**	**28.9**	**30.0**	**20.4**	**7.2**	**4.5**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is highest during the midday. The most productive segment on Saturday is the segment eastbound between LCP and 15th Street West & Avenue J-3 in the afternoon, with 100.0 boardings per revenue hour. The most productive segment on Sunday is eastbound between LCP and 15th Street West & Avenue J-3 in the midday, with 51.1 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.100 shows the peak load points on Route 11 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.100 indicates that the peak load point for travel is at Avenue I & 13th Street West, with 381 passengers traveling westbound at this location throughout the day. The maximum load point on Route 11 is eastbound on the weekday 10:50 a.m. trip at Avenue I & Fern Avenue, with 47 passengers on board.

Table 2.100
Route 11 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av I & 15 St W	All Day	362	Av I & 13 St W	All Day	381
	Saturday	Av I & 20 St W	All Day	161	Av I & 13 St W	All Day	167
	Sunday	Valley Central & Lancaster	All Day	124	Av I & 10 St W	All Day	117
Maximum Load Point	Weekday	Av I & Fern	10:50 a.m.	47	Av I & 10 St W	1:15 p.m.	42
	Saturday	Av I & 20 St W	3:50 p.m.	30	Av I & 17 St W	9:45 a.m.	22
	Sunday	Valley Central & Lancaster	1:50 p.m.	25	Lancaster & Date	9:45 a.m.	18

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.101 through 2.103 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 11 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 76 percent at all time points on Route 11, 4th among the 13 weekday routes. Schedule adherence is better in the eastbound direction except in the midday period. Schedule adherence is best during the morning and evening periods. This route is interlined with Route 12, and issues on Route 12 also affect schedule adherence on Route 11.

Table 2.101
Route 11 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	117	104	221	28	31	43	45	27	16	19	12
Early	11	9	20	2	7	6	2	2	0	1	0
Late	17	32	49	0	2	11	13	6	14	0	3
On Time %	81%	72%	76%	93%	78%	72%	75%	77%	53%	95%	80%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.102) is poor at 60 percent at all time points, 11th among the 11 Saturday routes. Westbound schedule adherence is better than eastbound throughout the day.

Table 2.102
Route 11 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	29	43	72	5	10	16	20	8	13
Early	19	1	20	5	1	9	0	5	0
Late	12	16	28	0	4	5	10	7	2
On Time %	48%	72%	60%	50%	67%	53%	67%	40%	87%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.103) is 80 percent at all time points, 7th among the 11 Sunday routes. Schedule adherence is better westbound at all times except morning. Early trips are much more of a problem than late trips.

Table 2.103
Route 11 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	45	51	96	7	10	22	28	16	13
Early	14	8	22	3	5	8	1	3	2
Late	1	1	2	0	0	0	1	1	0
On Time %	75%	85%	80%	70%	67%	73%	93%	80%	87%

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.104 and 2.105 show average running times and scheduled running times by segment and time of day on weekdays for Route 11. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running time is less than scheduled running time in both directions throughout the day on Route 11.

Table 2.104
Route 11 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
LCP – 15 St W & Av J-3	13	15	12	15	10	15	12	15
15 St W & Av J-3 – Av I & 10 St W	14	12	17	12	15	12	11	12
Av I & 10 St W – Jackman St & Fern Av	3	4	3	4	4	4	7	4
Jackman St & Fern Av – Av I & 40 St E	18	23	20	23	20	23	12	23
Average Running Time	48	54	52	54	49	54	42	54

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.105
Route 11 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Av I & 40 St E – Jackman St & Fern Av	23	23	25	23	22	23	23	23
Jackman St & Fern Av – Av I & 10 St W	4	4	4	4	5	4	3	4
Av I & 10 St W – 15 St W & Av J	11	12	13	12	12	12	12	12
15 St W & Av J – LCP	9	15	10	15	10	15	8	15
Total	47	54	52	54	49	54	46	54

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 11 ranks 4th in ridership among the 13 weekday routes. Ridership is heavier in the eastbound direction except in the morning. Route 11 ranks 3rd in ridership among the 11 Saturday routes and 4th among the 11 Sunday routes.

Route 11 ranks 6th among the 13 AVTA weekday routes in productivity and subsidy per passenger, and 7th in farebox recovery ratio. Route 11 ranks 3rd among the 11 Saturday routes in productivity, subsidy per passenger and in farebox recovery ratio. Route 11 ranks 4th among

the 11 Sunday routes in productivity and subsidy per passenger, and 4th in farebox recovery ratio.

There are no instances of overcrowding on Route 11.

Schedule adherence is 76 percent on Route 11 on weekdays. Route 11 ranks 4th among the 13 weekday routes in terms of schedule adherence. Scheduled running time is adequate. Schedule adherence is worse on Saturday (60 percent, the worst of any Saturday route) and better (80 percent) on Sunday.

Route 12 Avenue J

Overview

Route 12 Avenue J (Figure 2.37) serves central and north Lancaster. The route travels between Lancaster City Park and Avenue I & 40th Street East via Avenue K-8, 20th Street West, Avenue K, 30th Street West, Avenue J, Valley Central Way, Lancaster Boulevard, 20th Street West, Avenue J, 30th Street East, Lancaster Boulevard, and 40th Street East. Major destinations include Lancaster City Park, Antelope Valley College, Lancaster High School, Lancaster Marketplace, Social Security Office, Antelope Valley Hospital, and Wal-Mart.

Route 12 serves a mix of land uses, including transit-oriented residential neighborhoods. Route 12 is a strong route, ranking among the top five AVTA routes in terms of ridership and productivity.

Route 12 is interlined with Route 11 at both ends of the route. Interlining at Avenue I and 40th Street East frees both routes from the need to turn around via side streets; instead a bus arrives on Route 12 and leaves on Route 11 (and vice versa).

Headway and Span of Service

Table 2.106 shows headway and span of service for Route 12 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. A few later trips have been added since the ridecheck.

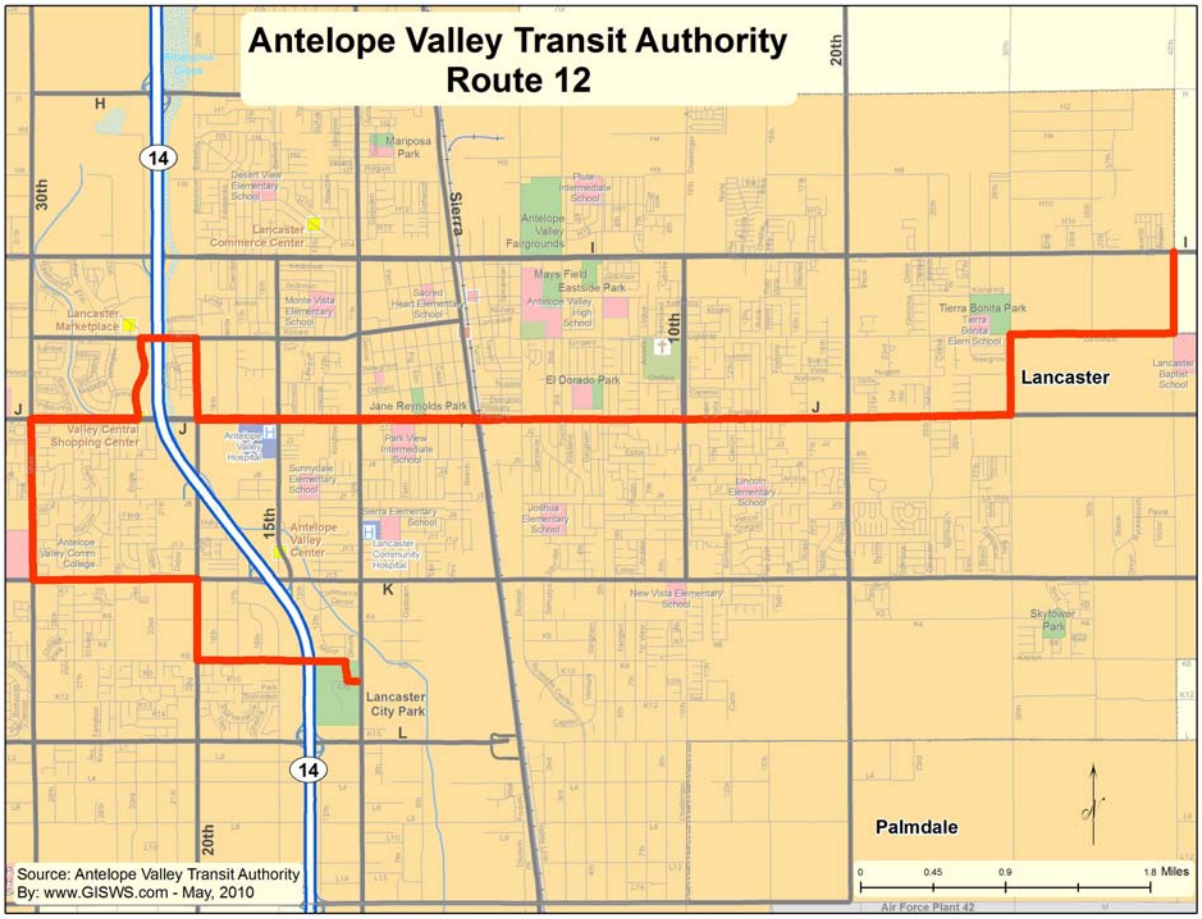
Table 2.106
Route 12 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	30-40 day 30-70 evening	5:15 a.m. – 12:05 a.m.
Saturday/Sunday	60 to 70	6:45 a.m. – 7:45 p.m.

Operating Data

Table 2.107 presents operating data for Route 12. Among the 13 weekday routes, Route 12 ranks 2nd in boardings and 3rd in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Route 12 ranks 4th in boardings and boardings per revenue hour on Saturday and 3rd in boardings and boardings per revenue hour on Sunday. Note that revenue hours in Table 2.107 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Figure 2.37
Route 12



Route 12 ranks 11th among 13 routes in average trip length on weekdays, 8th on Saturday, and 9th on Sunday. Average trip lengths fall in the range of 4.01 to 4.93 miles on all days. Average trip lengths are longer on Sunday. Route 12 ranks 4th in seat utilization on weekdays, Saturday, and Sunday.

Table 2.107
Route 12 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	2,133	58.5	36.5	30.2%	4.01
Saturday	592	24.1	24.6	23.6%	4.68
Sunday	457	24.2	18.9	19.2%	4.93

Source: Ridecheck Data, November 2009

Table 2.108 presents financial data for Route 12. Route 12 ranks 3rd in subsidy per boarding and farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday Route 12 ranks 3rd in both measures among 11 routes and on Sunday Route 12 ranks 3rd in subsidy per boarding and 4th in farebox recovery ratio among 11 routes.

Table 2.108
Route 12 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	2,133	$1,856	$4,491	$2.11	$1.24	41.3%
Saturday	592	$515	$1,847	$3.12	$2.25	27.9%
Sunday	457	$398	$1,856	$4.06	$3.19	21.4%

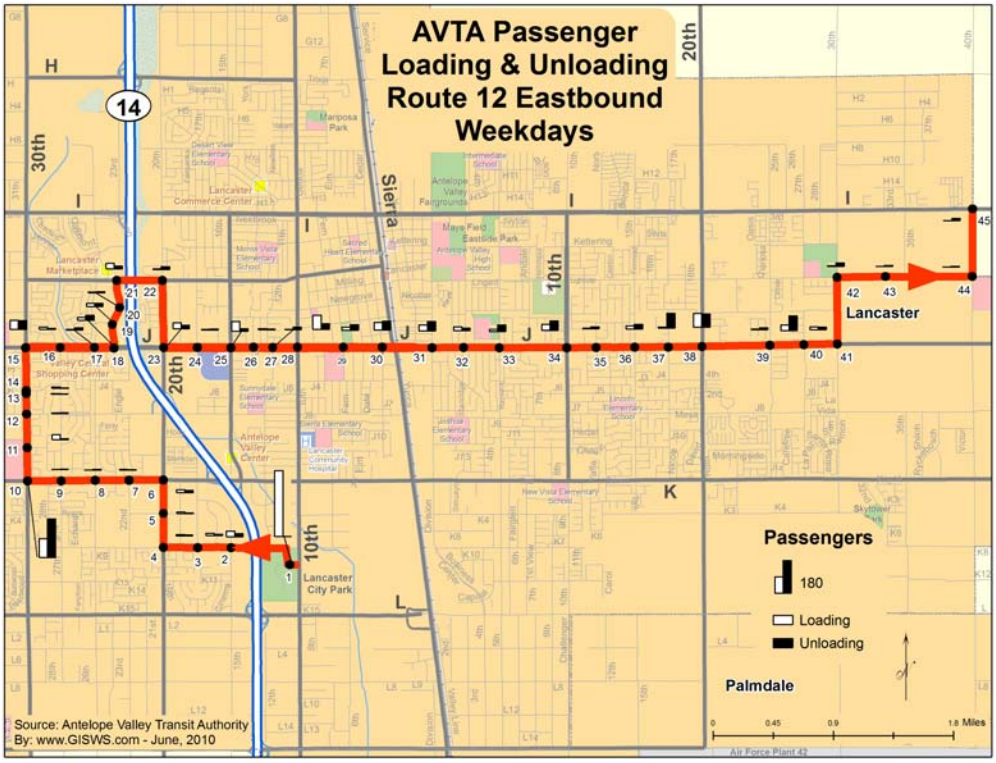
Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.38 through 2.40 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There are three stops with at least 100 boardings per weekday in one direction, shown in descending order of boardings:

- Lancaster City Park EB (transfer point for Routes 1, 4, 5, and 12);
- Avenue K & 30th Street West WB (Antelope Valley College);
- 30th Street West & Avenue K EB (Antelope Valley College).

There are no trips with segments whose loads exceed 125 percent of capacity on Route 12.

Figure 2.38
Route 12 Weekday Boardings and Alightings by Stop



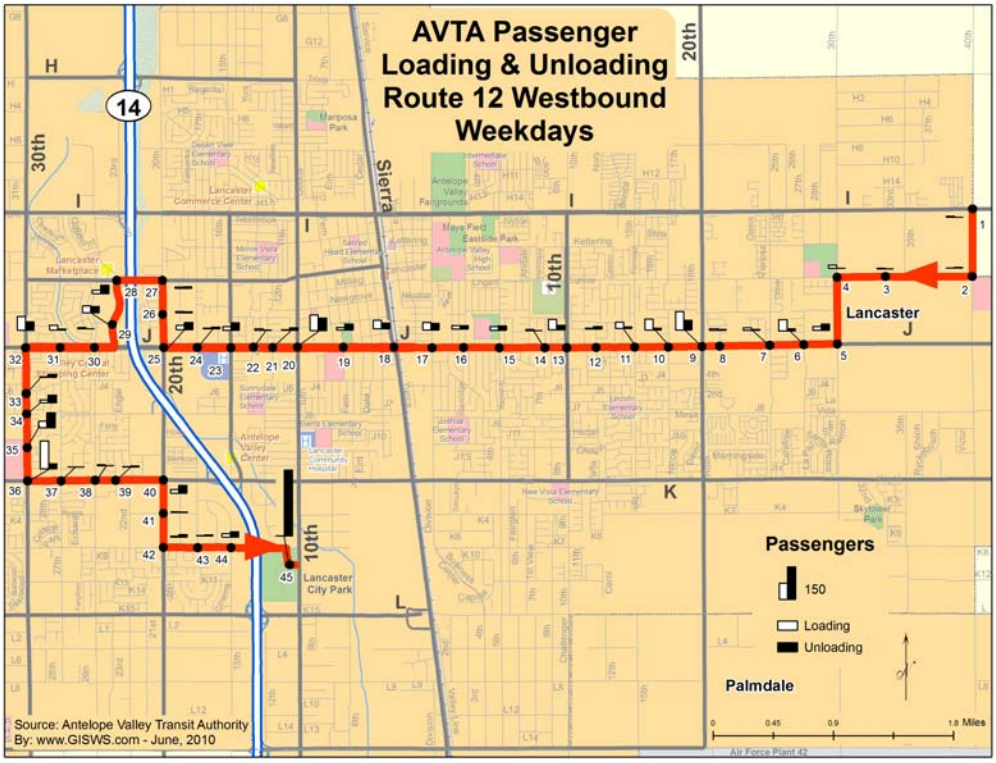
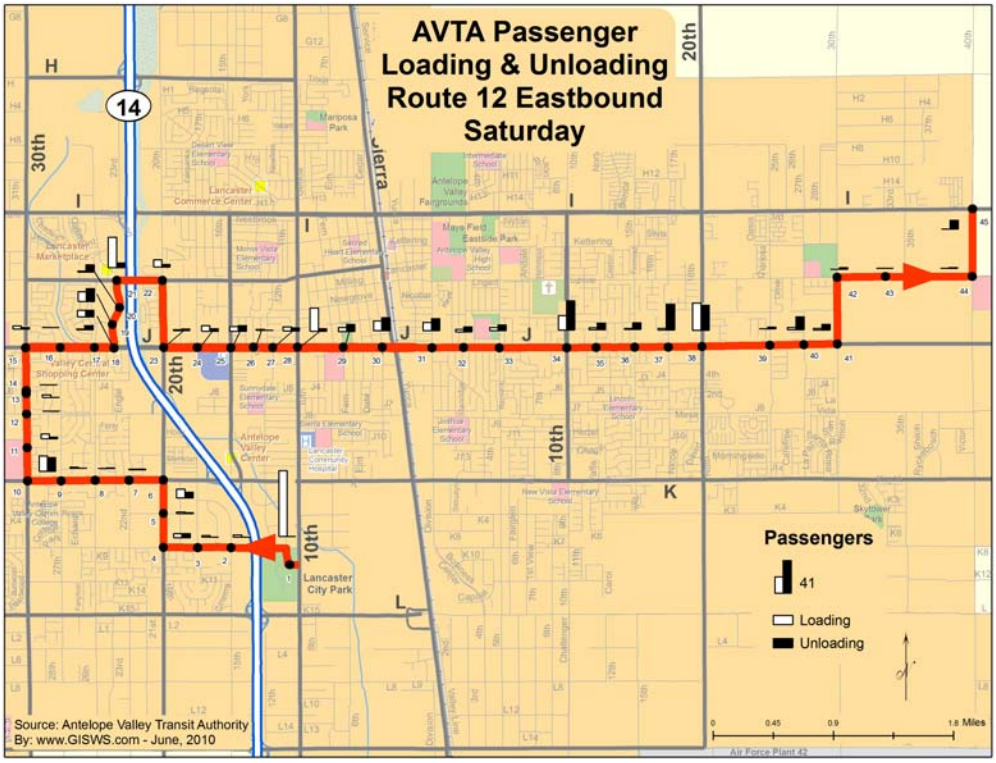


Figure 2.39
Route 12 Saturday Boardings and Alightings by Stop



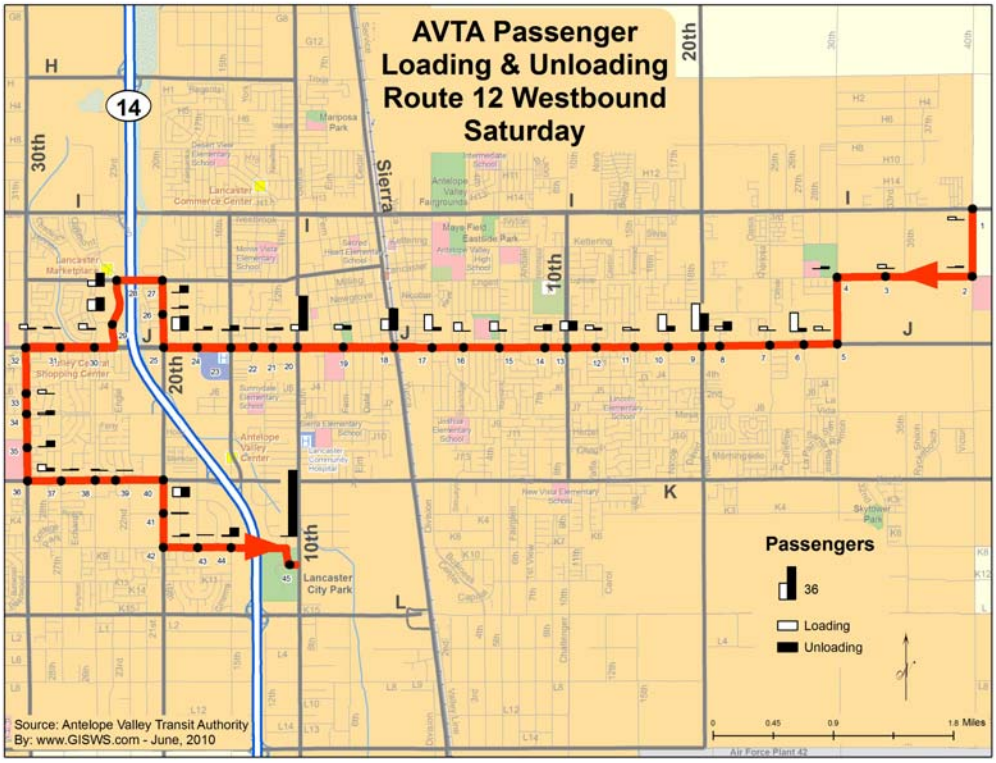
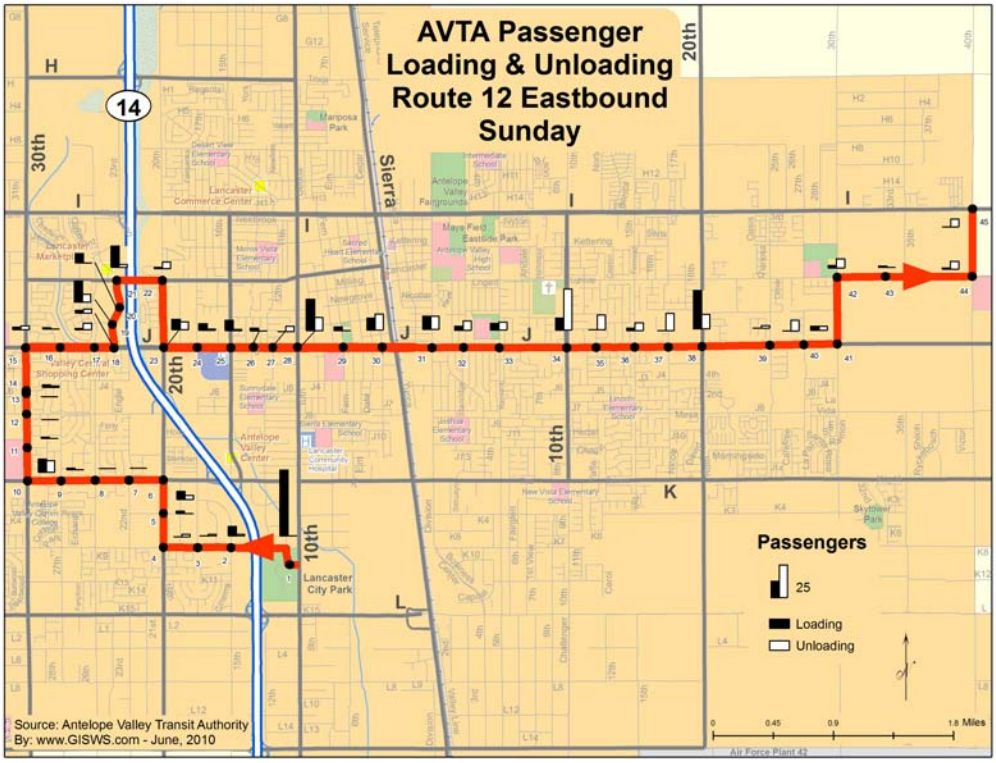
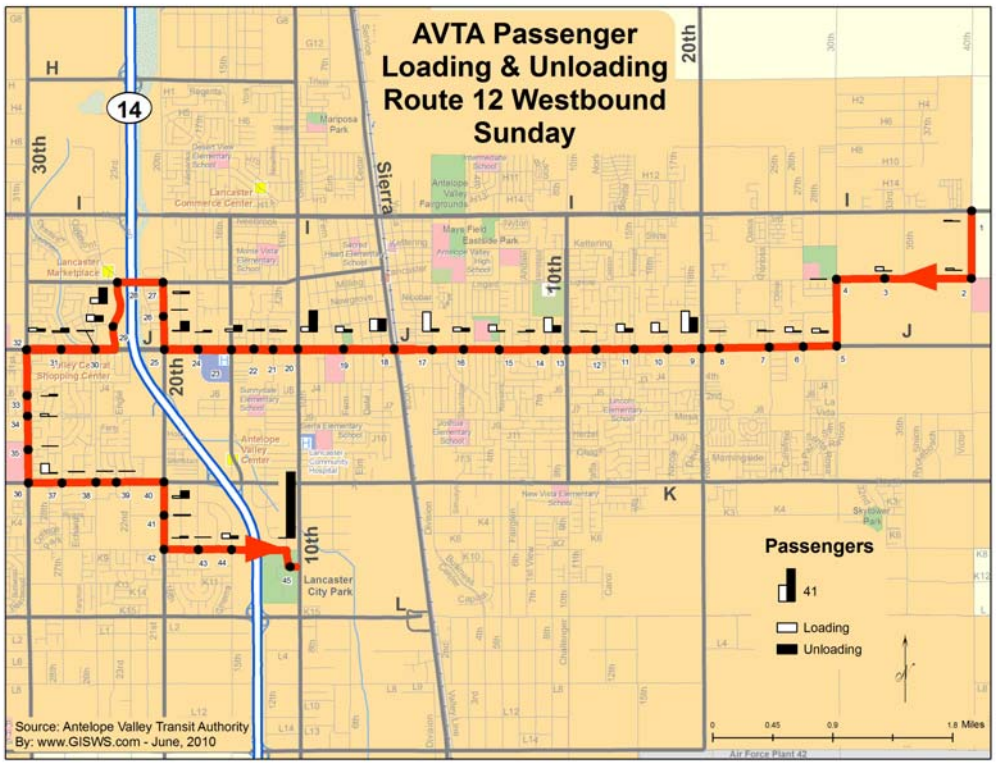


Figure 2.40
Route 12 Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.109 and 2.110 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment. For example, boardings at Avenue I & 10th Street West would be counted in the third segment eastbound and in the second segment westbound. The ridership patterns in Table 2.109 suggest an eastbound flow at all times of the day except afternoon. The greatest passenger activity occurs on the segment between Avenue J & 10th Street West and Avenue I & 40th Street East. Ridership is highest during the midday.

Table 2.109
Route 12 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
LCP – 30 St W & Av K	428	177	127	22	214	103	77	44	10	8
30 St W & Av K – Av J & 10 St W	369	325	18	62	230	166	95	94	26	3
Av J & 10 St W – Av I & 40 St E	375	459	91	122	189	201	82	124	13	12
Weekday Total	**1,172**	**961**	**236**	**206**	**633**	**470**	**254**	**262**	**49**	**23**

Source: Ridecheck data, November 2009

Table 2.110 presents productivity, in terms of boardings per revenue hour, for Route 12 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Eastbound service is more productive than westbound service throughout the day. Midday is the most productive time period. The most productive route/time of day segment is eastbound between LCP & 30th Street West & Avenue K in the morning (100.3 boardings per revenue hour), and the least productive segment is westbound between 30th Street West & Avenue K and Avenue J & 10th Street West in the evening (2.0).

Table 2.110
Route 12 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
LCP – 30 St W & Av K	70.0	31.7	100.3	15.5	80.8	43.2	57.0	38.3	11.8	13.0
30 St W & Av K – Av J & 10 St W	37.5	25.4	8.9	17.8	56.3	31.8	41.0	36.4	18.8	2.0
Av J & 10 St W – Av I & 40 St E	36.1	33.3	42.0	32.2	43.6	35.5	29.8	41.3	11.8	9.2
Weekday Total	**44.5**	**29.9**	**43.0**	**23.7**	**57.0**	**35.3**	**39.6**	**38.8**	**14.6**	**6.7**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is highest during the midday. The most productive segment on Saturday is eastbound between LCP & 30th Street West & Avenue K in the midday, with 45.9 boardings per revenue hour. The

most productive segment on Sunday is westbound between Avenue I & 40th Street East and Avenue J & 10th Street West in the midday, with 31.5 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.111 shows the peak load points on Route 12 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.111 indicates that the peak load point for travel is at Avenue K & 21st Street West, with 452 passengers traveling eastbound at this location throughout the day. The maximum load point on Route 12 is eastbound on the weekday 10:50 a.m. trip at Avenue K & 20th Street West, with 45 passengers on board.

Table 2.111
Route 12 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Av K & 21 St W	All Day	452	Av K & 25 St W	All Day	415
	Saturday	Av J & 10 St W	All Day	181	Av J & Division	All Day	149
	Sunday	Av J & Fig	All Day	130	Av J & Fig	All Day	135
Maximum Load Point	Weekday	Av K & 20 St W	10:50 a.m.	45	30 St W & Av K	2:15 p.m.	41
	Saturday	Lancaster & 20 St W	4:50 p.m.	26	Av J & 25 St W	4:45 p.m.	23
	Sunday	Av J & 10 St W	5:50 p.m.	22	Av J & Sierra	2:45 p.m.	21

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.112 through 2.114 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 12 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 83 percent at all time points on Route 12, 2nd among the 13 weekday routes. Schedule adherence is better in the eastbound direction except in the morning period. Schedule adherence is best during the midday and evening periods. This route is interlined with Route 11, and issues on Route 11 also affect schedule adherence on Route 12.

Table 2.112
Route 12 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	EB	WB	Total	EB	WB	EB	WB	EB	WB	EB	WB
On Time	100	92	192	20	31	43	33	21	17	16	11
Early	10	9	19	4	1	2	5	4	2	0	1
Late	6	13	19	0	0	3	8	3	5	0	0
On Time %	86%	81%	83%	83%	97%	90%	72%	75%	71%	100%	92%

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.113) is slightly worse at 76 percent at all time points, 5th among the 11 Saturday routes. Eastbound schedule adherence is much better than westbound throughout the day. Problems on Route 11, which is interlined with Route 12, could contribute to poor westbound schedule adherence.

Table 2.113
Route 12 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	45	25	70	6	8	23	11	16	6
Early	2	15	17	2	4	0	9	0	2
Late	1	4	5	0	0	1	0	0	4
On Time %	94%	57%	76%	75%	67%	96%	55%	100%	50%

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.114) is 86 percent at all time points, 4th among the 11 Sunday routes. Schedule adherence is better eastbound at all times except morning. Early trips are much more of a problem than late trips.

Table 2.114
Route 12 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	45	34	79	5	10	24	15	16	9
Early	3	8	11	3	2	0	4	0	2
Late	0	2	2	0	0	0	1	0	1
On Time %	94%	77%	86%	63%	83%	100%	75%	100%	75%

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.115 and 2.116 display average running times and scheduled running times by segment and time of day on weekdays for Route 12. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running time is equal to or less than scheduled running time in both directions throughout the day on Route 12.

Table 2.115
Route 12 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
LCP – 30 St W & Av K	12	15	13	15	11	15	12	15
30 St W & Av K – Av J & 10 St W	20	20	20	20	20	20	20	20
Av J & 10 St W – Av I & 40 St E	21	20	22	20	24	20	16	20
Average Running Time	53	55	55	55	55	55	48	55

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.116
Route 12 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
Av I & 40 St E – Av J & 10 St W	23	23	25	23	22	23	23	23
Av J & 10 St W – Av K & 30 St W	4	4	4	4	5	4	3	4
Av K & 30 St W – LCP	9	15	10	15	10	15	8	15
Total	47	54	52	54	49	54	46	54

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 12 ranks 2nd in ridership among the 13 weekday routes. Ridership is heavier in the eastbound direction except in the morning. Route 12 ranks 4th in ridership among the 11 Saturday routes and 3rd among the 11 Sunday routes.

Route 12 ranks 3rd among the 13 AVTA weekday routes in productivity, subsidy per passenger, and farebox recovery ratio. Route 12 ranks 4th among the 11 Saturday routes in productivity, subsidy per passenger and farebox recovery ratio. Route 12 ranks 3rd among the 11 Sunday routes in productivity and subsidy per passenger, and 4th in farebox recovery ratio.

There are no instances of overcrowding on Route 12.

Schedule adherence is 83 percent on Route 12 on weekdays. Route 12 ranks 2nd among the 13 weekday routes in terms of schedule adherence. Actual running time is less than or equal to scheduled running time throughout the day in both directions. Schedule adherence is slightly worse on Saturday (76 percent) and better (83 percent) on Sunday.

Lake Los Angeles Express

Overview

The Lake Los Angeles Express (Figure 2.41) connects Lake Los Angeles with Lancaster and Palmdale. The route travels between Lancaster City Park and Palmdale Transportation Center by way of Lake Los Angeles via Avenue L, 20th Street East, Avenue J, 170th Street East, Avenue N, 155th Street East, Avenue N-8, 170th Street East, Avenue P-8, 160th Street East, Palmdale Boulevard, 40th Street East, and Avenue P. Major destinations include Lancaster City Park, Town Center Plaza in Lake Los Angeles, Littlerock High School, AV Medical Center, and Palmdale Transportation Center.

Most of the stops on the route are in Lake Los Angeles, with express or limited-stop operation along Avenue J and Palmdale Boulevard. The Lake Los Angeles Express ranks among the bottom five AVTA routes in terms of ridership and productivity, due to its length and ex-urban service area.

Headway and Span of Service

Table 2.117 shows headway and span of service for the Lake Los Angeles Express by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

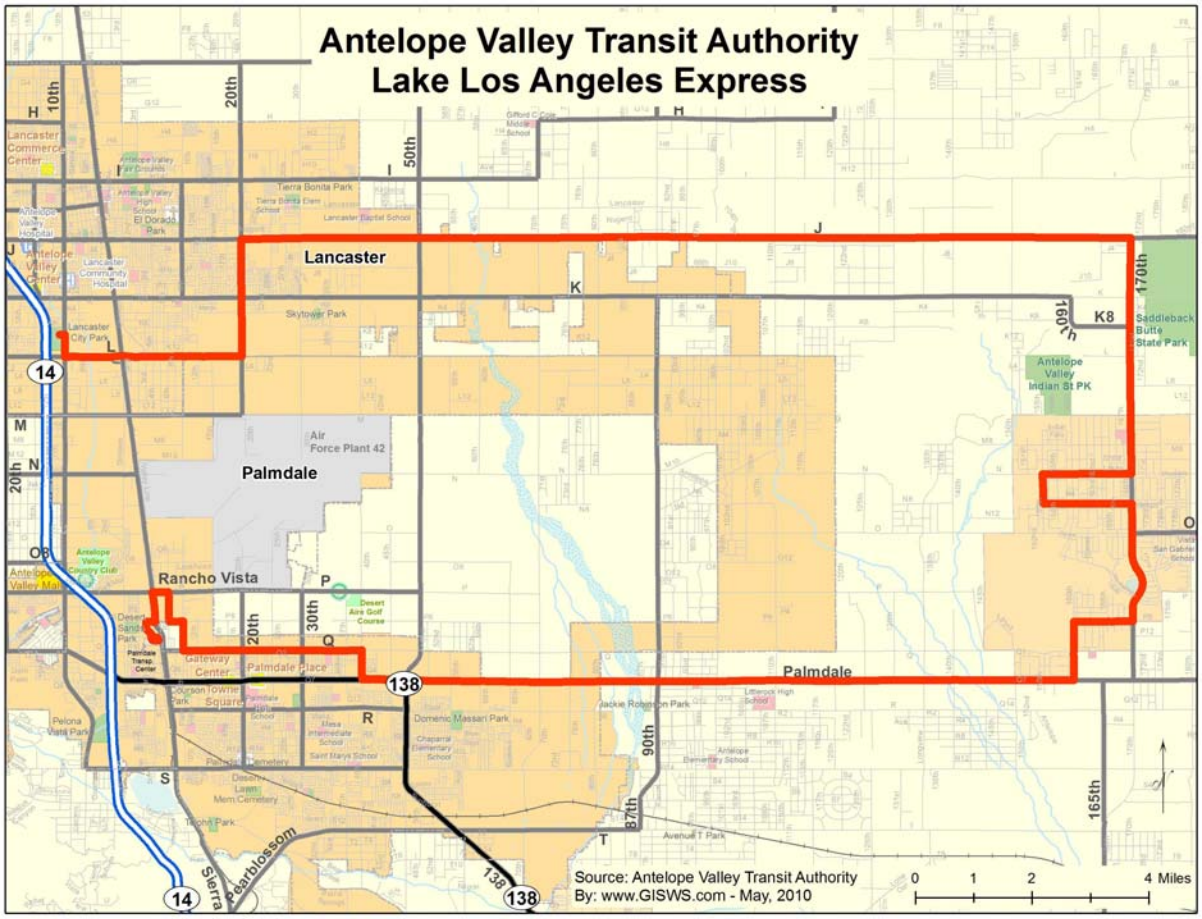
Table 2.117
Lake Los Angeles Express Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	52-60	5:45 a.m. – 7:45 p.m.
Saturday/Sunday	120	6:39 a.m. – 7:45 p.m.

Operating Data

Table 2.118 presents operating data for Lake Los Angeles Express. Among the 13 weekday routes, Lake Los Angeles Express ranks 10th in boardings and 13th in boardings per revenue hour. Among the 11 Saturday and Sunday routes, Lake Los Angeles Express ranks 11th in boardings and 10th in boardings per revenue hour on both days. Note that revenue hours in Table 2.118 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips may have been missed due to a bus breakdown, and some buses were in service longer than scheduled.

Figure 2.41
Lake Los Angeles Express



The Lake Los Angeles Express ranks 1st among 13 routes in average trip length on weekdays, and 1st among 11 weekend routes on both Saturday and Sunday. Average trip lengths fall in the range of 19.24 to 21.98 miles on all days. Average trip lengths are longer on Saturday. The Lake Los Angeles Express ranks 6th in seat utilization on weekdays and Sunday and 5th on Saturday.

Table 2.118
Lake Los Angeles Express Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	300	27.8	10.8	22.3%	20.72
Saturday	118	14.1	8.4	18.3%	21.98
Sunday	93	14.0	6.6	12.7%	19.24

Source: Ridecheck Data, November 2009

Table 2.119 presents financial data for the Lake Los Angeles Express. The Lake Los Angeles Express ranks 13th in subsidy per boarding and farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. On Saturday the Lake Los Angeles

Express ranks 10th in both measures among 11 routes and on Sunday the Lake Los Angeles Express ranks 10th in subsidy per boarding and 9th in farebox recovery ratio among 11 routes.

Table 2.119
Lake Los Angeles Express Financial Data

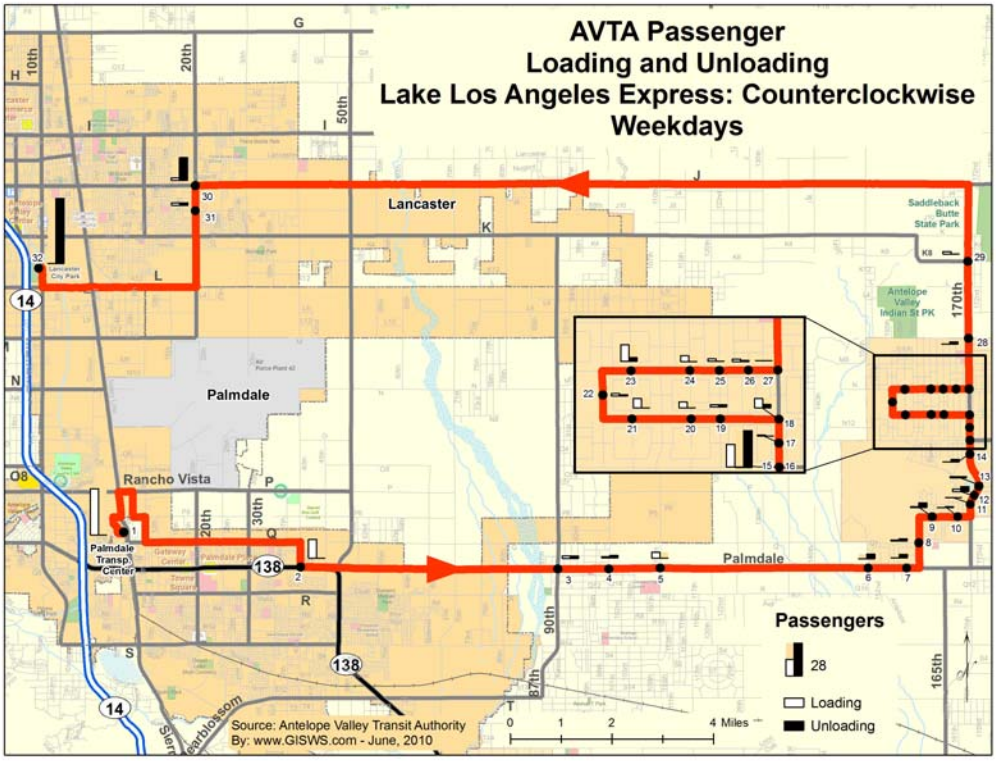
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	300	$270	$2,136	$7.12	$6.22	12.6%
Saturday	118	$106	$1,078	$9.14	$8.24	9.8%
Sunday	93	$84	$1,076	$11.57	$10.67	7.8%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Figures 2.42 through 2.44 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. There are no stops with at least 100 boardings per weekday in one direction.

There are no trips with segments whose loads exceed 125 percent of capacity on the Lake Los Angeles Express.

Figure 2.42
Lake Los Angeles Express Weekday Boardings and Alightings by Stop



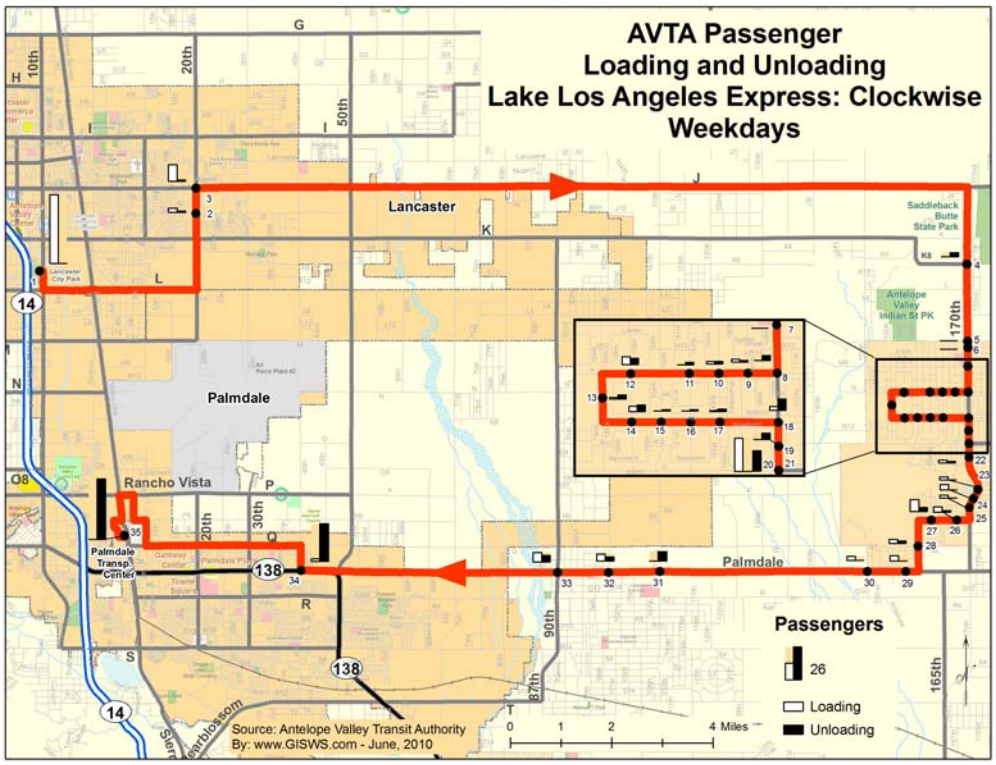
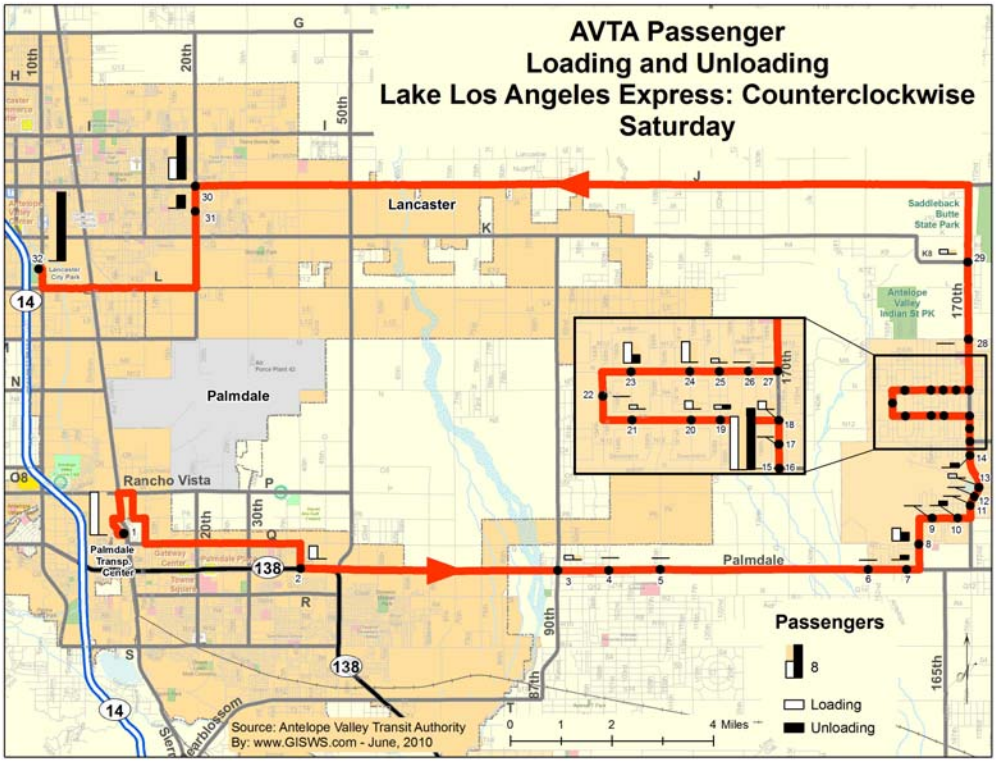


Figure 2.43
Lake Los Angeles Express Saturday Boardings and Alightings by Stop



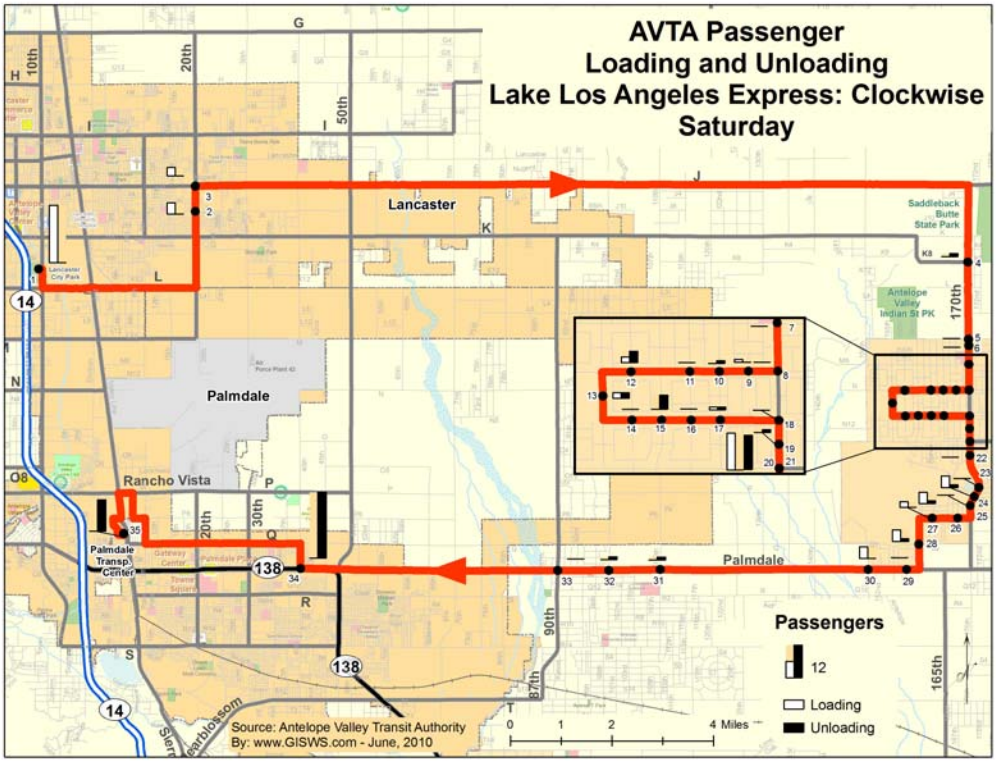
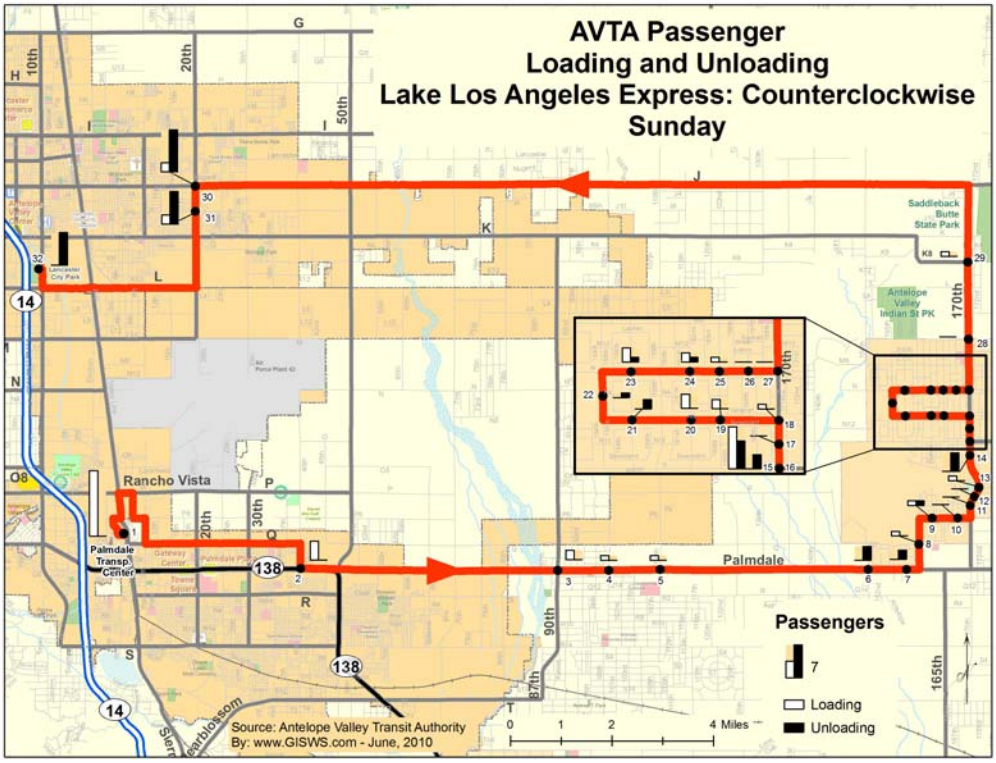
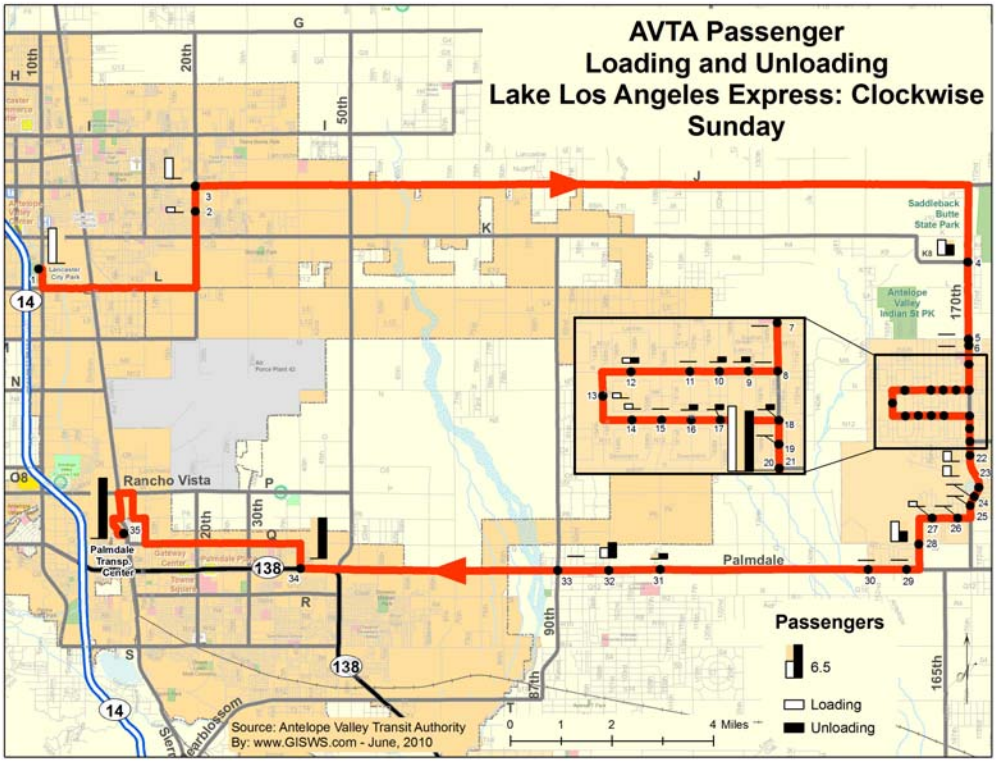


Figure 2.44
Lake Los Angeles Express Sunday Boardings and Alightings by Stop





Weekday Segment and Time of Day Analysis

Tables 2.120 and 2.121 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. The directions in the tables are clockwise (CW) from Lancaster to Palmdale and counter-clockwise (CCW) from Palmdale to Lancaster. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment. For example, boardings at 20th Street East & Avenue J-8 would be counted in the second segment clockwise and in the first segment counter-clockwise. The ridership patterns in Table 2.120 suggest a slightly greater clockwise flow at all times of the day except midday. The greatest passenger activity occurs on the segments serving Town Center Plaza, LCP, and PTC. Ridership is highest during the midday and morning periods.

Table 2.120
Lake Los Angeles Express Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	CW	CCW	CW	CCW	CW	CCW	CW	CCW	CW	CCW
LCP – 20 St E & Av J-8	51	2	0	0	21	2	28	0	2	--
20 St E & Av J-8 – 170 St E & Av K-8	15	4	2	1	3	2	7	1	3	--
170 St E & Av K-8 – 155 St E & Av N-4	10	25	6	15	4	7	0	3	0	--
155 St E & Av N-4 – Town Center Plaza	9	43	6	18	3	23	0	2	0	--
Town Center Plaza – 160 St E & Av Q	49	5	34	2	4	2	11	1	--	--
160 St E & Av Q – Palmdale & 100 St E	10	6	6	0	3	1	1	2	--	--
Palmdale & 100 St E – 40 St E & Palmdale	12	18	10	1	2	9	0	8	--	--
40 St E & Palmdale –PTC	2	39	2	5	0	21	0	13	--	--
Weekday Total	**158**	**142**	**66**	**42**	**40**	**70**	**47**	**30**	**5**	**--**

Source: Ridecheck data, November 2009

Table 2.121 presents productivity, in terms of boardings per revenue hour, for the Lake Los Angeles Express by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Productivity is very similar in both directions throughout the day. Morning is the most productive time period. The most productive route/time of day segment is clockwise between Town Center Plaza & 160th Street East & Avenue Q in the morning (60.0 boardings per revenue hour), and the least productive segments are those with no ridership.

Table 2.121
Lake Los Angeles Express Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon		Evening	
	CW	CCW	CW	CCW	CW	CCW	CW	CCW	CW	CCW
LCP – 20 St E & Av J-8	25.9	1.4	0.0	0.0	34.1	2.2	35.7	0.0	13.3	--
20 St E & Av J-8 – 170 St E & Av K-8	5.0	1.5	2.4	1.2	3.5	1.4	7.8	2.6	7.2	--
170 St E & Av K-8 – 155 St E & Av N-4	9.5	22.1	16.4	42.9	17.1	11.7	0.0	20.0	0.0	--
155 St E & Av N-4 – Town Center Plaza	4.0	43.0	7.3	51.4	3.8	46.0	0.0	15.0	0.0	--
Town Center Plaza – 160 St E & Av Q	40.8	2.0	60.0	4.8	16.0	1.3	30.0	1.9	--	--
160 St E & Av Q – Palmdale & 100 St E	7.4	4.3	10.6	0.0	7.5	5.0	2.7	5.2	--	--
Palmdale & 100 St E – 40 St E & Palmdale	9.5	11.1	18.8	4.3	6.0	9.3	0.0	20.0	--	--
40 St E & Palmdale –PTC	1.1	20.0	2.6	13.6	0.0	19.4	0.0	26.9	--	--
Weekday Total	**11.3**	**10.3**	**13.5**	**13.0**	**9.8**	**8.9**	**11.3**	**11.1**	**5.9**	**--**

Source: Ridecheck data, November 2009

Appendix A contains detailed information on weekend productivity. Weekend productivity is highest during the midday. The most productive segment on Saturday is clockwise toward Palmdale between Town Center Plaza and 160th Street East & Avenue Q in the morning, with 85.7 boardings per revenue hour. The most productive segment on Sunday is counter-clockwise toward Lancaster between Town Center Plaza and 155th Street East & Avenue N-4 in the morning, with 60.0 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.122 shows the peak load points on the Lake Los Angeles Express for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.122 indicates that the peak load point for travel is at Palmdale Boulevard & 150th Street East, with 77 passengers traveling clockwise toward Palmdale at this location throughout the day. The maximum load point on the Lake Los Angeles Express is counter-clockwise on the weekday 6:39 a.m. trip at 170th Street East & Avenue K-8, with 24 passengers on board.

Table 2.122
Lake Los Angeles Express Peak and Maximum Load Points

Measure	Day	Clockwise			Counter-clockwise		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Palmdale & 150 St E	All Day	77	Av N & 167 St E	All Day	73
	Saturday	Palmdale & 150 St E	All Day	39	170 St E & Av K-8	All Day	29
	Sunday	160 St E & Av Q	All Day	22	170 St E & Av K-8	All Day	23
Maximum Load Point	Weekday	Av P-8 & 163 St E	5:45 a.m.	21	170 St E & Av K-8	6:39 a.m.	24
	Saturday	Palmdale & 150 St E	8:25 a.m.	21	Av N & 162 St E	1:45 p.m.	12
	Sunday	160 St E & Av Q Palmdale & 100 St E	8:25 a.m. 11:45 a.m.	11	Palmdale & 100 St E	5:45 p.m.	9

Source: Ridecheck data, November 2009

Schedule Adherence

Tables 2.123 through 2.125 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Lake Los Angeles Express on weekdays, Saturday, and Sunday.

Weekday on-time performance is 75 percent at all time points on Lake Los Angeles Express, 5th among the 13 weekday routes. This is higher than expected for such a long route. Schedule adherence is better in the counterclockwise direction. Schedule adherence is worst during the afternoon.

Table 2.123
Lake Los Angeles Express Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	CW	CCW	Total	CW	CCW	CW	CCW	CW	CCW	CW	CCW
On Time	51	58	109	20	15	16	32	11	11	4	--
Early	8	8	16	3	0	4	5	1	3	0	--
Late	14	6	20	5	2	0	3	8	1	1	--
On Time %	70%	81%	75%	71%	88%	80%	80%	55%	73%	80%	--

Source: Ridecheck Data, November 2009

Saturday on-time performance (Table 2.124) is better at 84 percent at all time points, 3rd among the 11 Saturday routes. Schedule adherence is comparable in both directions and is best in the morning and evening periods.

Table 2.124
Lake Los Angeles Express Saturday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	CW	CCW	Total	CW	CCW	CW	CCW	CW	CCW	CW	CCW
On Time	26	30	56	10	7	8	14	8	9	5	--
Early	4	5	9	0	0	2	5	2	0	0	--
Late	0	2	2	0	0	0	1	0	1	0	--
On Time %	87%	81%	84%	100%	100%	80%	70%	80%	90%	100%	--

Source: Ridecheck Data, November 2009

Sunday on-time performance (Table 2.125) is 81 percent at all time points, 6th among the 11 Sunday routes. Schedule adherence is better in the clockwise direction at all times except afternoon. No late trips were recorded on Sunday.

Table 2.125
Lake Los Angeles Express Sunday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon		Evening	
	CW	CCW	Total	CW	CCW	CW	CCW	CW	CCW	CW	CCW
On Time	30	28	58	10	6	9	13	7	9	4	--
Early	5	9	14	0	1	1	7	3	1	1	--
Late	0	0	0	0	0	0	0	0	0	0	--
On Time %	86%	76%	81%	100%	86%	90%	65%	70%	90%	80%	--

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.126 and 2.127 display average running times and scheduled running times by segment and time of day on weekdays for Lake Los Angeles Express. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running time is equal to or less than scheduled running time in both directions throughout the day on Lake Los Angeles Express.

Table 2.126
Lake Los Angeles Express Average versus Scheduled Clockwise Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon		Evening	
	Act	Schd	Act	Schd	Act	Schd	Act	Schd
LCP – 20 St E & Av J-8	11	15	17	15	21	15	9	15
20 St E & Av J-8 – 170 St E & Av K-8	22	25	23	25	24	25	25	25
170 St E & Av K-8 – 155 St E & Av N-4	6	6	7	6	8	6	7	6
155 St E & Av N-4 – Town Center Plaza	15	15	22	19	13	19	10	7
Town Center Plaza – 160 St E & Av Q	10	11	7	11	10	11	--	--
160 St E & Av Q – Palmdale & 100 St E	11	8	11	8	10	8	--	--
Palmdale & 100 St E – 40 St E & Palmdale	9	13	9	13	10	13	--	--
40 St E & Palmdale –PTC	14	21	14	21	15	21	--	--
Average Running Time	98	114	110	118	111	118	51	53

Source: Ridecheck data, November 2009; totals may not add due to rounding

Table 2.127
Lake Los Angeles Express Average versus Scheduled Counter-clockwise Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
PTC – Palmdale & 40 St E	20	21	16	21	13	21
Palmdale & 40 St E – Palmdale & 100 St E	13	13	14	13	12	13
Palmdale & 100 St E – 160 St E & Av Q	11	8	12	8	11	8
160 St E & Av Q – Town Center Plaza	11	13	22	23	14	17
Town Center Plaza – 155 St E & Av N-4	10	7	8	7	8	7
155 St E & Av N-4 – 170 St E & Av K-8	9	6	9	6	9	6
170 St E & Av K-8 – 20 St E & Av J-8	23	25	21	25	22	25
20 St E & Av J-8 – LCP	11	15	13	15	10	15
Total	108	108	115	118	99	112

Source: Ridecheck data, November 2009; totals may not add due to rounding

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Lake Los Angeles Express ranks 10th in ridership among the 13 weekday routes. Ridership is heavier in the eastbound direction except in the morning. Lake Los Angeles Express ranks 11th in ridership on Saturday and Sunday among the 11 weekend routes.

Lake Los Angeles Express ranks 13th among the 13 AVTA weekday routes in productivity, subsidy per passenger, and farebox recovery ratio. Lake Los Angeles Express ranks 10th among the 11 Saturday routes in productivity, subsidy per passenger and farebox recovery ratio. Lake Los Angeles Express ranks 10th among the 11 Sunday routes in productivity and subsidy per passenger, and 9th in farebox recovery ratio.

There are no instances of overcrowding on Lake Los Angeles Express.

Schedule adherence is 75 percent on Lake Los Angeles Express on weekdays. Lake Los Angeles Express ranks 5th among the 13 weekday routes in terms of schedule adherence, better than expected for a long route. Actual running time is less than or equal to scheduled running time throughout the day in both directions. Schedule adherence is better on Saturday (84 percent) and on Sunday (81 percent).

Route 97 Special Route – Highland High School

Overview

Route 97 Highland High School provides one morning and one afternoon trip between Palmdale Transportation Center and Highland High School. The route travels via Technology Drive, Avenue P, and 25th Street West. Highland High School is the major destination.

Headway and Span of Service

Table 2.128 shows headway and span of service for Route 97 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.128
Route 97 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	1 trip am and pm	7:00 a.m. westbound 2:45 p.m. eastbound
Saturday/Sunday	No service	No service

Operating Data

Table 2.129 presents operating data for Route 97. Among the 13 weekday routes, Route 97 ranks 12th in boardings and 1st in boardings per revenue hour. Note that revenue hours in Table 2.129 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. The productivity ranking is a result of minimal revenue hours and good ridership.

Route 97 ranks 10th among 13 routes in average trip length on weekdays at 4.02 miles. Route 97 ranks 1st in seat utilization on weekdays.

Table 2.129
Route 97 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	52	0.5	107.6	64.1%	4.02

Source: Ridecheck Data, November 2009

Table 2.130 presents financial data for Route 97. Route 97 ranks 1st in subsidy per boarding and farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes.

Table 2.130
Route 97 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	52	$47	$37	$0.71	-$0.20	127.6%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Since there is only one trip in each direction on Route 97, no boarding and alighting maps are shown. There are no stops with at least 100 boardings per weekday in one direction, and there are no trips with segments whose loads exceed 125 percent of capacity.

There is only one segment on this route, so no segment or time of day analysis is presented.

Peak Load and Maximum Load

Table 2.131 shows the peak load points on Route 97. Since there is only one trip in each direction, the peak and maximum load points are the same. Table 2.131 indicates that the maximum load point on Route 97 is westbound on the weekday 2:45 p.m. trip at Highland High School, with 29 passengers on board.

Table 2.131
Route 97 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak/ Maximum Load Point	Weekday	Highland HS	2:45 p.m.	29	10 St W & Marketplace	7:00 a.m.	23

Source: Ridecheck data, November 2009

Schedule Adherence

Table 2.132 presents schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 97 on weekdays.

Weekday on-time performance is 75 percent at all time points on Route 97, 6th among the 13 weekday routes. Schedule adherence is perfect in the westbound direction.

Table 2.132
Route 97 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday	
	EB	WB	Total	EB	WB	EB	WB
On Time	1	2	3	--	2	1	--
Early	0	0	0	--	0	0	--
Late	1	0	1	--	0	1	--
On Time %	50%	100%	75%	--	100%	50%	

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Table 2.133 displays average running times and scheduled running times by direction and time of day on weekdays for Route 97. Actual running time is equal to or less than scheduled running time in both directions on Route 97.

Table 2.133
Route 97 Average versus Scheduled Running Times
(in Minutes) by Direction and Time of Day on Weekdays

Segment	Morning		Midday	
	Act	Schd	Act	Schd
Eastbound	--	--	12	20
Westbound	17	20	--	--

Source: Ridecheck data, November 2009; totals may not add due to rounding

Overall Assessment

Route 97 ranks 12th in ridership among the 13 weekday routes. Ridership is heavier from the high school on the 2:45 p.m. trip.

Route 97 ranks 1st among the 13 AVTA weekday routes in productivity, subsidy per passenger, and farebox recovery ratio, due to minimal revenue hours of service and good ridership to and from Highland High School. There are no instances of overcrowding on Route 97.

Schedule adherence is 75 percent on Route 97 on weekdays, 6th among the 13 weekday routes. Actual running time is less than or equal to scheduled running time in both directions.

Route 99 Special Route – Littlerock High School

Overview

Route 99 Littlerock High School provides one morning and one afternoon trip between Lake Los Angeles and Littlerock High School. The route travels via 170th Street East, Avenue N, 155th Street East, Avenue N-8, 170th Street East, Avenue P-8, 160th Street East, Palmdale Boulevard, and 110th Street East. Littlerock High School is the major destination.

Headway and Span of Service

Table 2.134 shows headway and span of service for Route 99 by day of the week. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.134
Route 99 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	1 trip am and pm	6:30 a.m. westbound 1:55 p.m. eastbound
Saturday/Sunday	No service	No service

Operating Data

Table 2.135 presents operating data for Route 99. Among the 13 weekday routes, Route 99 ranks 13th in boardings and 11th in boardings per revenue hour. Note that revenue hours in Table 2.135 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. The productivity ranking is a result of minimal revenue hours and good ridership.

Route 99 ranks 2nd among 13 routes in average trip length on weekdays at 12.64 miles. Route 99 ranks 13th in seat utilization on weekdays.

Table 2.135
Route 99 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Seat Utilization	Average Trip Length
Weekday	9	0.7	13.5	8.9%	12.64

Source: Ridecheck Data, November 2009

Table 2.136 presents financial data for Route 99. Route 99 ranks 11th in subsidy per boarding and 5th in farebox recovery ratio (passenger revenue divided by operating cost) among 13 weekday routes. Revenue per rider is unusually high on this route.

Table 2.136
Route 99 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	9	$15	$51	$5.68	$4.00	29.6%

Source: Ridecheck data, November 2009; AVTA cost per revenue hour for FY 2009; AVTA average revenue per passenger for FY 2008

Since there is only one trip in each direction on Route 99, no boarding and alighting maps are shown. There are no stops with at least 100 boardings per weekday in one direction, and there are no trips with segments whose loads exceed 125 percent of capacity. No segment or time of day analysis is presented.

Peak Load and Maximum Load

Table 2.137 shows the peak load points on Route 99. Since there is only one trip in each direction, the peak and maximum load points are the same. Table 2.137 indicates that the maximum load point on Route 99 is eastbound on the weekday 6:30 a.m. trip at 170th Street East & Avenue M, with 5 passengers on board.

Table 2.137
Route 99 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak/ Maximum Load Point	Weekday	Littlerock HS	1:55 p.m.	5	170 St E & Av M	6:30 a.m.	5

Source: Ridecheck data, November 2009

Schedule Adherence

Table 2.138 presents schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 99 on weekdays.

Weekday on-time performance is 44 percent at all time points on Route 99, 13th among the 13 weekday routes. Schedule adherence is perfect in the eastbound direction, but the morning westbound trip is late at every timepoint.

Table 2.138
Route 99 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday	
	EB	WB	Total	EB	WB	EB	WB
On Time	4	0	4	--	0	4	--
Early	0	0	0	--	0	0	--
Late	0	5	5	--	5	0	--
On Time %	100%	0%	44%	--	0%	100%	

Source: Ridecheck Data, November 2009

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.139 and 2.140 display average running times and scheduled running times by direction and time of day on weekdays for Route 99. Actual running time is equal to or less than scheduled running time in both directions on Route 99.

Table 2.139
Route 99 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Midday	
	Act	Schd
Littlerock HS – 160 St E & Av Q	9	10
160 St E & Av Q – 170 St E & Av P	5	6
170 ST E & Av P – Town Center Plaza	5	4
Town Center Plaza – 170 St E & Av K-8	--	15
Total	19	35

Source: Ridecheck data, November 2009; totals may not add due to rounding
The trip did not go beyond Town Center Plaza because all passengers were off the bus.

Table 2.140
Route 99 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning	
	Act	Schd
170 St E & Av K-8 – Town Center Plaza	9	15
Town Center Plaza – 170 St E & Av P	2	4
170 St E & Av P – 160 St E & Av Q	6	10
160 St E & Av Q – Littlerock HS	4	6
Total	21	35

Source: Ridecheck data, November 2009; totals may not add due to rounding

Overall Assessment

Route 99 ranks 13th in ridership among the 13 weekday routes. Ridership is slightly higher to the high school on the 6:30 a.m. trip.

Route 99 ranks 11th among the 13 AVTA weekday routes in productivity and subsidy per passenger and 5th in farebox recovery ratio. There are no instances of overcrowding on Route 99.

Schedule adherence is 44 percent on Route 99 on weekdays, 13th among the 13 weekday routes. Schedule adherence is perfect in the eastbound direction, but the morning westbound trip is late at every timepoint. Actual running time is less than or equal to scheduled running time in both directions.

Antelope Valley Transit Authority
2009 Line-by-Line Analysis
Chapter 3: Passenger Miles by Line

3.0 Introduction

The Antelope Valley Transit Authority is required to report passenger miles traveled on its bus system as part of the annual National Transit Database report for the Federal Transit Administration. Generally, the collection of the required data involves counting passenger boardings and alightings on a sample of trips. However, the 100 percent ridership count conducted as part of this Line-by-Line Analysis provides complete data regarding passenger miles and average trip lengths by route and day type.

This chapter reports passenger miles traveled on AVTA, based on the findings of the 100 percent ridecheck conducted in November 2009. Passenger miles are reported by line and day type. An annual number is calculated based on 255 weekdays (180 weekdays for supplemental service), 52 Saturdays, and 52 Sundays and holidays in a typical year. Average trip length for each route and day type is also presented.

3.1 Passenger Miles by Line and Day

Table 3-1 summarizes passenger miles by line. Route 1 has by far the most passenger miles of any local route in the AVTA system, due to its length and ridership. Routes 12 and 11 are second and third in terms of passenger miles. Due to its extreme length, the Lake Los Angeles Express is fourth.

Table 3.1
AVTA Passenger Miles by Line and Day, 2009

Route	Weekday	Saturday	Sunday	Annual 2009
1	17,120	7,535	5,564	5,046,619
2	4,880	3,437	1,859	1,519,894
3	3,397	2,061	1,409	1,046,550
4	5,717	1,540	923	1,585,975
5	1,422	916	695	446,263
6	2,167	1,435	2,198	741,481
7	4,040	1,594	780	1,153,536
9	1,623	593	551	473,282
11	7,331	3,072	2,196	2,143,341
12	8,557	2,769	2,253	2,443,244
LLA Express	6,215	2,594	1,789	1,812,810
97	209	--		37,672
99	114	--		20,473
Total	**62,792**	**27,544**	**20,215**	**18,471,139**

3.2 Average Trip Length by Line and Day

Table 3-2 shows average trip lengths by route and day type for all Antelope Valley Transit Authority routes. Trip lengths are longer on weekdays than on Saturday and (for all routes except Route 4) on Sunday.

Route 6 has the shortest average trip length and is the second-shortest route. The Lake Los Angeles Express has the longest average trip length among all routes, followed by Route 99, Route 6, Route 7, and Route 1. Routes 2 and 97 have the shortest average trip lengths.

Table 3.2
AVTA Average Trip Length (in Miles) by Line and Day, 2009

Route	Weekday	Saturday	Sunday	Annual 2009
1	6.79	7.04	7.13	6.83
2	3.22	4.05	3.76	3.33
3	4.00	4.68	4.99	4.12
4	5.68	5.33	5.73	5.67
5	4.46	4.58	4.43	4.47
6	8.92	9.63	11.27	9.29
7	7.25	9.38	8.21	7.40
9	4.36	4.82	5.68	4.45
11	4.95	4.87	5.18	4.95
12	4.01	4.68	4.93	4.08
LLA Express	20.72	21.98	19.24	20.72
97	4.02			4.02
99	12.64			12.64
Total	**5.53**	**5.95**	**6.25**	**5.60**

Antelope Valley Transit Authority
2009 Line-by-Line Analysis
Chapter 4: Recommendations

4.0 Introduction

This chapter brings together the findings of the ridecheck, fieldwork by project team members, and discussions with AVTA transit staff to identify and analyze alternatives and make recommendations for transit improvements to AVTA transit network.

As noted in previous chapters, many AVTA routes perform very well in terms of ridership and productivity. This chapter identifies options that are intended to enhance productivity, provide more service where it is needed, improve service reliability, and achieve cost savings in light of reduced operating funding. AVTA's success in providing mobility to AVTA residents is reflected in requests for route extensions and/or new routes in neighborhoods not currently served.

The following section includes several major issues that are addressed in this line-by-line analysis of AVTA service. The discussion of each issue below provides a framework in which specific proposals are developed and assessed.

Section 4.1 summarizes issues and responses. Section 4.2 addresses alternatives and recommendations by route. Section 4.3 presents a package of recommended improvements, along with ridership and cost or savings estimates for each.

4.1 Strategic Alternatives in Response to Major Issues

This section discusses alternatives and proposes recommendations related to major issues identified by Antelope Valley Transit Authority at the outset of the line-by-line analysis.

More Frequent Service versus New Routes

Are there routes in AVTA system whose ridership warrants more frequent service? How important is service frequency on existing routes versus the establishment of new routes?

Given limited resources, a decision to establish a new route must be weighed against opportunities to provide more frequent service in areas where there is proven demand. This dilemma is common to all transit systems: do we provide greater coverage (operate service in all parts of the service area) or do we provide greater frequency (operate more service along high-demand routes)?

There is no single "right" answer to the coverage versus frequency question. The recommendations included in this report lean toward frequency rather than coverage, because (1) AVTA transit network operates in a large and generally low-density service area, making it cost-prohibitive to serve every neighborhood, (2) the ridecheck revealed several instances of overcrowding, and (3) several productive routes or route segments would benefit from additional service.

Schedules

Aside from changes to frequency of service, can the schedules be adapted to make it easier for customers to remember departure times? Are there opportunities for enhanced efficiency through scheduling techniques such as interlining?

The recommendations in this report address schedules for AVTA routes. Schedule adherence is an issue on several routes, and the ridecheck provides detailed data that can be used to prepare more appropriate schedules. Recommendations regarding schedules primarily address running time issues and may be thought of as "tweaks" to enhance service reliability rather than wholesale scheduling revisions.

Some routes operate at times that are difficult for the average transit rider to remember without consulting a schedule. Headways of every 15, 20, or 30 minutes are known as "clockface" headways (because a route serves any given stop at the same time each hour) and are usually easier for riders to remember. Only a few routes operate consistently on clockface headways.

Even with clockface headways, times change at certain points during the day due to break requirements for operators. To the extent possible, consistent schedules are proposed that minimize time changes due to operator breaks. A test of alternate ways of addressing operator breaks such as "operator drop backs" on one or two routes is suggested to determine whether this would be feasible on the AVTA network.

Overcrowding

Most instances of overcrowding are on Route 1. Table 4.1 lists the number of overcrowded trips (defined by a load of at least 125 percent of seated capacity) by route and time of day. The ridecheck found nine overcrowded trips on three AVTA routes. Route 1 had four northbound trips (two in the morning peak and two in the midday) and three southbound trips (two in the afternoon peak and one on Saturday) that were overcrowded. Two of these seven instances of overcrowding occurred after a "long headway" (i.e., when it has been 50 minutes instead of 30 minutes since the last bus). The Route 2 overcrowded Saturday trip was almost certainly shopping-related, while the Route 9 overcrowded trip occurred at the afternoon bell time for Pete Knight High School.

Table 4.1
Overcrowded Trips by Route and Time of Day

Route	# of Overcrowded Trips				
	Total	Weekday AM	Weekday Midday	Weekday PM	Saturday
1	7	2	2	2	1
2	1	0	0	0	1
9	1	0	0	1	0
Total	9	2	2	3	2

Source: Ridecheck Data, November 2009

The definition of an overcrowded trip deserves emphasis. On a 39-seat bus, 125 percent of seated capacity is 48.8, so a load of 49 or greater is overcrowded. This definition differentiates between standing loads, which reflect productive service on heavily-used routes, and "crush" loads.

Poor Performance

What actions can be taken to improve the productivity of poorly performing routes? Are there restructuring opportunities? Can headways be adjusted to reflect demand? Are there opportunities to trim routes by discontinuing unproductive early or late trips? At what point is route discontinuation a reasonable option?

Most AVTA routes are reasonably productive in terms of boardings per revenue hour of service. Previous AVTA studies proposed minimum weekday productivity levels varying by type of route:

- 25 boardings per revenue hour for core routes (Routes 1, 2, 3, 4, 11, 12, and school routes);
- 15 boardings per revenue hour for feeder routes (Routes 5, 6, 7, and 9);
- 12 boardings per revenue hour for rural routes (Lake Los Angeles Express).

Any route not meeting these minimum levels is a candidate for discontinuation, although there may be other options available to improve performance. As a point of comparison, the system average calculated from the ridecheck results is 26.4 boardings per revenue hour.

Route segments are also examined in this report. Productivity is generally lower at the residential ends of most transit routes, but in some cases the decrease is noticeably greater. One potential strategy to address this issue is to short-turn selected trips at a point where demand drops off on a given route.

Discontinuing unproductive early or late trips is frequently done by transit systems facing a budget deficit. The concept is a good one, but careful consideration is required before implementation. Late trips in particular often function as “safety valves” for passengers who occasionally must work late. Knowing that a late bus is available can be important factor in the decision to begin or continue transit use.

4.2 Alternatives and Recommendations for Existing AVTA Service

This section addresses existing Antelope Valley Transit Authority routes. Each route is considered in turn, with an evaluation of potential alternatives and a list of recommended actions.

Route 1

Route 1 tops all routes in ridership on weekdays, Saturday, and Sunday. The peak direction of ridership demand is northbound in the morning peak and southbound at other times of the day. Route 1 ranks highly in productivity, subsidy per passenger, and farebox recovery ratio, but is not the best in any category because of the high service levels on these routes.

Route 1 connects the major trip generators in Lancaster and Palmdale and serves the three major transfer locations within the AVTA route network (Lancaster City Park, Palmdale Transportation Center, and 47th Street East & Avenue S). With over 2,500 weekday boardings, Route 1 serves as the spine of the AVTA transit network.

Issues related to Route 1 include:

- Overcrowding. Seven of the nine instances of overcrowding occurred on this route.

- Long travel times. Route 1 has the longest one-way running time of any local route in the system. Portions of the route are congested and have multiple traffic signals (e.g., 10th Street West in the vicinity of the Antelope Valley Mall).

- Uneven headways. The prevailing headway during weekdays is 30 minutes, but there are several trips which operate 50 minutes apart. As noted earlier, a wider time gap between buses is one cause of overcrowding.

Three options are identified for Route 1:

1. ***No change – adjust running times only***. The route serves all major transfer points and the major north-south corridor in the Antelope Valley, with high ridership and good productivity. Under this and subsequent options, minor changes would be made to running times in the schedule. .

2. ***Provide consistent 30-minute service all day on weekdays***. This would require one additional bus.

3. ***Provide limited-stop service on this route in the morning and afternoon peak hours***. This option would not only reduce travel times on select trips, but would also improve frequencies in the peak morning hour to one bus every 15 minutes for passengers traveling between major stops. This would require three additional buses in the morning peak. One bus would operate limited-stop in both peak periods and provide local service in the midday, and a second would also operate limited stop service in the afternoon peak.

Table 4.2 summarizes the options identified for Route 1. Running time changes are included in all options.

Table 4.2
Options and Impacts for Route 1

Option	Change in Weekday Revenue Hours	Change in Sat/Sun Revenue Hours	Change in Annual Revenue Hours	Change in Annual Cost	Change in Peak Vehicles
1. Running time changes only	minimal	minimal	minimal	minimal	0
2. 30-minute service	12.5	minimal	3,183	$244,283	+1
3. Limited stop peak service/30 minute all day	20.7	minimal	5,287	$405,724	+3
4. Limited stop peak service/30 minute all day	22.2	Minimal	5,648	$443,447	+3

The recommended option for Route 1 is Option 4: limited-stop peak service (one bus every 15 minutes in the peak of the morning peak) and consistent 30-minute service for the remainder of

the day. Three additional peak buses are required. The cost of this change is slightly over $400,000.

Routes 2 and 3

Routes 2 and 3 operate as an interlined pair between the Antelope Valley Mall and 47th Street East and Avenue S. Route 2 has many more riders on weekdays (1,518 versus 849 on Route 3) and has more than double Route 3's ridership on weekends. Route 2 operates via Palmdale Boulevard, which is a stronger transit corridor than Avenue R which is served by Route 3. Route 2 ranks third in ridership and second in productivity on weekdays, while Route 3 ranks 6th in ridership and 10th in productivity. On weekends, Route 2 ranks second in ridership and leads all routes in productivity while Route 3 is 5th in ridership and 6th or 7th in productivity

The major issue on these routes is that the same level of service is offered because the routes are interlined, but the demand is very different for these two routes. Interlining is often a creative means to avoid lengthy turnaround loops at the ends of routes. However, by changing the routing in the vicinity of 47th Street East and Avenue S, the interline can be broken and the two routes can operate independently of each other.

A second issue is Palmdale High School, a major trip generator on Route 3. On the ridecheck, the 6:40 a.m. eastbound trip and the 1:30 p.m. westbound trip are the trips with significant ridership activity at the high school. Trip times have been changed slightly since the ridecheck, but any change should ensure that the high school is served by Route 3 at bell times.

Three options are identified for Routes 2 and 3:

1. ***No change – adjust running times only***. Under this and subsequent options, minor changes would be made to running times in the schedule. .

2. ***Operate each route separately without interlining and maintain current headways***. This would allow for future changes to each route based on different levels of demand. Figure 4.1 shows the proposed routing changes to enable the routes to be split. Eastbound Route 2 would continue south on 40th Street East and turn east on Avenue S to 47th Street East. Eastbound Route 3 would continue east on Avenue R and south on 47th Street East to Avenue S. Westbound routing is unchanged on both routes.

3. ***Operate each route separately without interlining and reduce service on Route 3 to one bus every hour***. This option would adjust service levels in line with current demand for service on the two routes. This would reduce the number of buses required on the two routes by two buses.

4. ***Operate each route separately without interlining, increase service on Route 2 to one bus every 15 minutes, and reduce service on Route 3 to one bus every hour***. This option would further adjust service levels in line with current demand for service on the two routes. This would require an additional two buses.

Table 4.3 summarizes the options identified for Routes 2 and 3. Running time changes are included in all options.

Figure 4.1
Proposed Changes for Routes 2 and 3

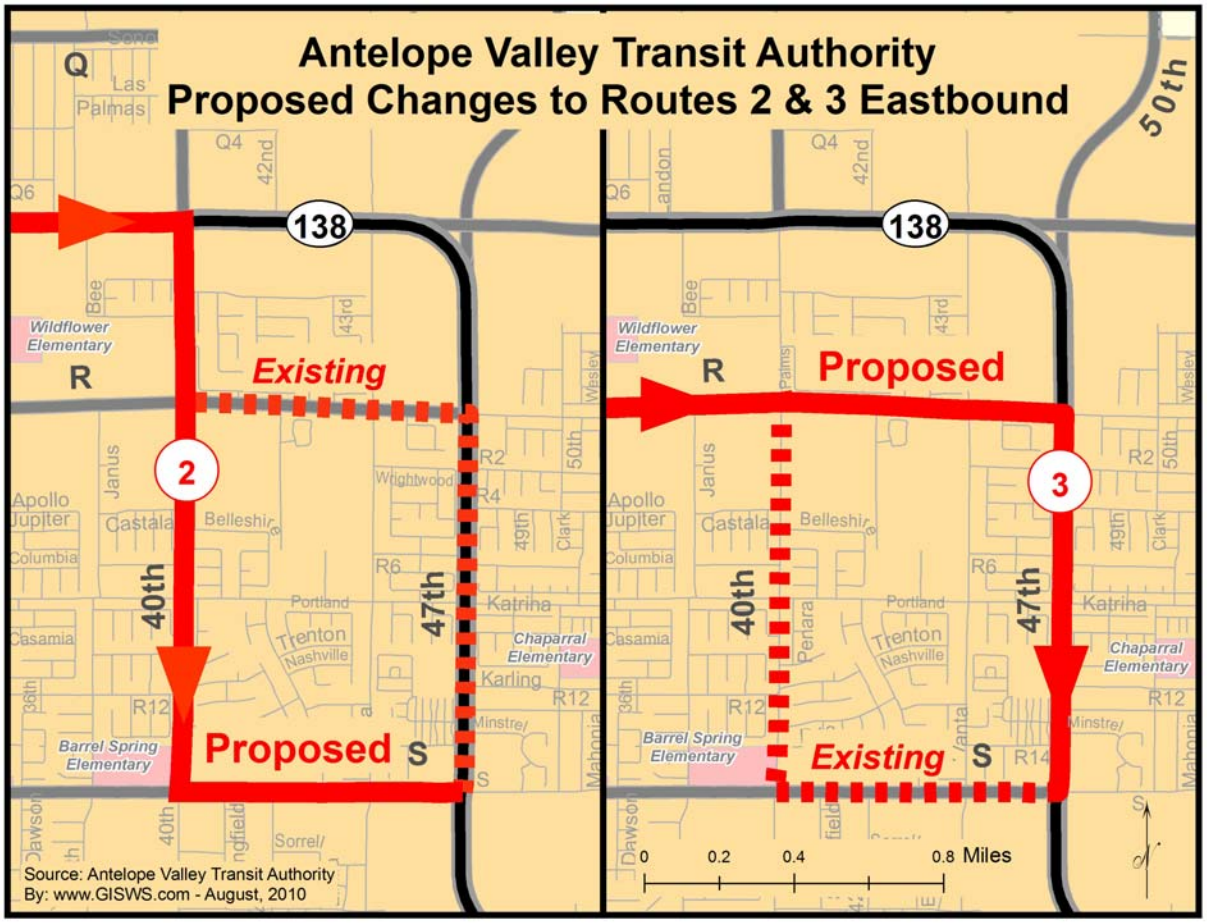


Table 4.3
Options and Impacts for Routes 2 and 3

Option	Change in Weekday Revenue Hours	Change in Sat/Sun Revenue Hours	Change in Annual Revenue Hours	Change in Annual Cost	Change in Peak Vehicles
1. Running time changes only	minimal	minimal	minimal	minimal	0
2. Separate routes, same headway	minimal	minimal	minimal	minimal	0
3. Route 3 operates hourly	-21.5	minimal	-5,478	-$420,401	-2
4. Route 2 15 minutes; Route 3 hourly	15.3	minimal	3,910	$300,053	+2

The recommended option for Routes 2 and 3 is Option 4: break the interline, change the weekday headway on Route 2 to 15 minutes, and change the weekday headway on Route 3 from 30 minutes to 60 minutes. Two additional peak buses are required on these routes. The cost of this change is slightly over $300,000.

Route 4

Route 4 serves eastside Lancaster with a bus every 70 minutes. Route 4 carries over one thousand riders on weekdays, ranking 5th in ridership and 4th in productivity.

Ridership on Route 4 is somewhat surprising, given its relatively infrequent service. The route operates through neighborhoods with high orientation toward transit, and serves the County Courthouse and Department of Social Services. Weekday productivity is higher on Route 4 (34.7 boardings per revenue hour) than on Route 1 (33.0). A strong case can be made for additional service on this route

Two options are identified for Route 4:

1. ***No change – adjust running times only***. Under this and subsequent options, minor changes would be made to running times in the schedule. .

2. ***Improve headways to 30 minutes before 3:00 p.m. and 60 minutes after 3:00 p.m. on weekdays***. Ridership and productivity are much higher in the morning peak and midday time periods on Route 4. This change would require two additional peak-hour buses.

Table 4.4 summarizes the options identified for Route 4. Running time changes are included in all options.

Table 4.4
Options and Impacts for Route 4

Option	Change in Weekday Revenue Hours	Change in Sat/Sun Revenue Hours	Change in Annual Revenue Hours	Change in Annual Cost	Change in Peak Vehicles
1. Running time changes only	minimal	minimal	minimal	minimal	0
2. Increased frequency	16.5	minimal	4,212	$323,210	+2

The recommended option for Route 4 is Option 2: improve headways to 30 minutes before 3 p.m. and 60 minutes after 3 p.m. on weekdays. Two additional peak buses are required. The cost of this change is slightly over $320,000.

Route 5

Route 5 primarily serves residential neighborhoods in the western part of AVTA's service area. It ranks relatively low in ridership and in the middle of the pack in productivity. It operates at a consistent 60-minute headway throughout the day. This route serves its purpose and performs as expected.

Two options are identified for Route 5:

1. ***No change – adjust running times only***. Under this and subsequent options, minor changes would be made to running times in the schedule. .

2. ***Reroute the bus via Avenue L and 60th Street West to serve Quartz Hill High School***. The proposed routing would replace the current routing via 50th Street West and Avenue M. There is significant passenger activity at current stops along 50th Street West, particularly at Avenue L-8 and Avenue L-12.

The recommended option for Route 5 is Option 1: adjust running times. The passenger activity along 50th Street West suggests that more might be lost than gained by rerouting the bus to Quartz Hill High School, which is already served by Route 7. The passenger activity on both routes along 50th Street suggests independent demand for each route rather than transferring between routes.

Route 6

Route 6 serves a suburban to rural area, connecting 47th Street East and Avenue S with Littlerock and Sun Village. Route 6 ranks in the lower half of AVTA routes in terms of ridership and productivity.

Transit orientation is low all along this route, with low residential densities and few trip generators aside from the retail concentration at 47th Street East and Avenue S. Littlerock High School and Almondale Middle School do not generate sufficient ridership to justify a 40-foot bus in service

Two options have been identified for Route 6:

1. ***No change – adjust running times only***. Under this and subsequent options, minor changes would be made to running times in the schedule. .

2. ***Replace Route 6 with enhanced demand-response service***. With the implementation of AVTA's ITS program, it becomes possible to schedule demand-response trips in close to real time (i.e., within one to two hours). The Littlerock area is an excellent place to operate a demonstration demand-response service. This service is more appropriate to the level of ridership demand and transit orientation than a big-bus fixed route.

Table 4.5 summarizes the options identified for Route 6. Running time changes are included in Option 1 only. Option 2 changes are estimated with the assumption that existing demand-response services can accommodate about half of the current demand for service in this area.

Table 4.5
Options and Impacts for Route 6

Option	Change in Weekday Revenue Hours	Change in Sat/Sun Revenue Hours	Change in Annual Revenue Hours	Change in Annual Cost	Change in Peak Vehicles
1. Running time changes only	minimal	minimal	minimal	minimal	0
2. Replace with demand-response service	-14.8 bus +7.4 DR	-11.8 bus +5.9 DR	-1,789	-$137,280	-1

The recommended option for Route 6 is Option 2: replace the route with enhanced demand-response service. This change would reduce the peak bus requirement by one bus. The estimated savings as a result of this change is slightly over $135,000.

Route 7

Route 7 serves Quartz Hill and adjacent neighborhoods. Route 7 ranks in the middle among AVTA routes in terms of weekday ridership and productivity. It is one of the longer routes in AVTA network. Route 7 serves the industrial area along Avenue H in Lancaster, High Desert Hospital, Quartz Hill High School, the Antelope Valley Mall, and Palmdale Transportation Center. The headway for Route 7 varies between 63 and 70 minutes on weekdays and between 65 and 68 minutes on weekends.

Only one option is identified for Route 7.

1. ***No change – adjust running times only***. Under this option, minor changes would be made to running times in the schedule.

Route 7 has improved in ridership and performance over the years, and no changes are proposed.

Route 9

Route 9 serves mostly residential neighborhoods on the east side of Palmdale. Its primary purpose is to serve Pete Knight High School on 70th Street East. Twenty-five (25) percent of all

boardings take place at the high school. Route 9 ranks in the middle among AVTA routes in terms of weekday ridership and in the lower half in terms of productivity. Its weekend performance is poor: Route 9 ranks last among all Saturday and all Sunday routes in productivity.

~~Three~~ Four options have been identified for Route 9:

1. ***No change – adjust running times only***. Under this option, minor changes would be made to running times in the schedule. .

2. ***Discontinue Route 9 on weekends***. The low productivity of weekend service (4.8 boardings per revenue hour on Saturday, 3.8 on Sunday) supports this option.

3. ***Discontinue Route 9 and replace with a new school-only route***. Pete Knight High School is the primary reason for the existence of Route 9. A supplemental route operating at bell times only would be instituted in place of Route 9 under this option.

~~3.~~4. ***Reduce Route 9 weekday service to one bus every two hours***. This option keeps Route 9 in service all day at a reduced level of service. The school trips will occur at the same times as in the current schedule.

Table 4.6 summarizes the options identified for Route 9. Running time changes are included in Options 1, ~~and~~ 2, and 4.

Table 4.6
Options and Impacts for Route 9

Option	Change in Weekday Revenue Hours	Change in Sat/Sun Revenue Hours	Change in Annual Revenue Hours	Change in Annual Cost	Change in Peak Vehicles
1. Running time changes only	minimal	minimal	minimal	minimal	0
2. Discontinue weekend service	Minimal	-25.8	-2,683	-$205,909	0
3. Discontinue Route 9; replace with supplemental service	-29.0	~~-253~~12.4	~~-10,078~~8,686	-$~~773,401~~666,589	-1
4. Reduce weekday service	-14.9	minimal	-3,804	-$291,900	-1

The recommended option for Route 9 is Option ~~3~~4: ~~discontinue this route due to low productivity and replace with supplemental service to Pete Knight High School~~reduce Route 9 weekday service to one bus every two hours. This change would reduce the peak bus requirement by one bus. The estimated savings as a result of this change is almost $~~775~~292,000.

Routes 11 and 12

Routes 11 and 12 operate as an interlined pair between Lancaster City Park and 40th Street East and Avenue I. Both routes rank in the top five of all AVTA routes in ridership and productivity. Route 12 has more riders on weekdays (2,133 versus 1,482 on Route 11) but weekend ridership is very similar on both routes. Route 12 is the only route of the two to serve Antelope Valley College, Lancaster High School, and Wal-Mart, while Route 11 is the only route of the two to serve the Senior Center and Antelope Valley High School.

The major issue on these routes is that they are both circuitous: passengers bound for east Lancaster from Lancaster City Park must first travel west before going east. However, much of the travel on these routes is east-west along Avenue I and Avenue J, or north-south from Lancaster City Park to Avenue I or Avenue J. The interline does not present the issues noted earlier for Routes 2 and 3 because demand is not dramatically different, through-riding occurs (i.e., a rider boards Route 11 in east Lancaster and rides through to Route 12 and vice versa), and there is no alternate turnaround that could minimize running time.

Four options are identified for Route 11. Running time changes are included in all options.

1. ***No change – adjust running times only***. Under this option, minor changes would be made to running times in the schedule. .

2. ***Reroute Route 11 via 10th Street West between Lancaster City Park and the Senior Center, continue Route 12 south via 30th Street West to Rancho Vista Boulevard, and extend Route 4 west from LCP to Antelope Valley College***. This would rationalize service on these routes: Route 11 would be more direct between LCP and east Lancaster; Route 12 would be an L-shaped route along Avenue J and 30th Street West, and Route 4 would replace Route 12 as the connection between LCP and Antelope Valley College. The disadvantages include no service on Avenue I west of 10th Street West, no service on 15th Street West, little demand along 30th Street West south of Antelope Valley College, and added cost for the Route 4 extension and possibly for the Route 12 extension.

3. ***Reroute Route 11 via 15th Street West and Avenue I or Lancaster Boulevard to the Senior Center***. This ameliorates some of the disadvantages of option 2, but still leaves Avenue I west of 15th Street West unserved.

4. ***Create a 30th Street West – Avenue I route and a Lancaster City Park – 15th Street West – Avenue J route to replace the current Routes 11 and 12.*** This option maintains service to all key destinations on Routes 11 and 12 in a simplified fashion. The only intersecting point on these two new routes would be at Avenue I and 40th Street East. The connection between LCP and Antelope Valley College is lost under this option, unless Route 4 is extended west as in Option 2.

The recommendation for Routes 11 and 12 is Option 1. The other options either add unnecessary cost or leave important segments unserved.

Lake Los Angeles Express

The Lake Los Angeles Express connects Lake Los Angeles with Lancaster and Palmdale. Most of the stops on the route are in Lake Los Angeles, with express or limited-stop operation along Avenue J and Palmdale Boulevard. The Lake Los Angeles Express ranks among the bottom

five AVTA routes in terms of ridership and productivity, due to its length and ex-urban service area.

The current schedule is somewhat confusing. All trips operating through Lake Los Angeles, with the result that service does not alternate evenly between Lancaster and Palmdale. As a result, instead of a consistent two-hour headway, the headways alternates between one and three hours. If the buses could turn around at Town Center Plaza, this could be corrected; however, this change would have a negative effect on riders traveling within Lake Los Angeles.

Only one option is identified for the Lake Los Angeles shuttle.

1. ***No change – adjust running times only***. Under this option, minor changes would be made to running times in the schedule.

4.3 Impacts of Recommendations

Table 4.7 presents daily and annual impacts of proposed short-term changes. The proposed short-term changes result in an annual operating increase of $~~91~~573,000 and require five additional peak vehicles.

Table 4.7
Impacts of Recommendations

Route	Change in Revenue Hours			Change in Cost			Change in peak vehicles
	Weekday	Weekend	Annual	Weekday	Weekend	Annual	
Route 1	22.2	0.0	5,648	$1,700	$0	$433,447	3
Route 2/3	15.3	0.0	3,910	$1,177	0	$300,053	2
Route 4	16.5	0.0	4,212	$1,267	0	$323,210	2
Route 5	0.0	0.0	0	0	0	0	0
~~Route 6~~	~~-7.4~~	~~-5.9~~	~~-2,501~~	~~-$568~~	~~-$453~~	~~-$191,896~~	~~-1~~
Route 7	0.0	0.0	0	0	0	$0	0
Route 9	-29.0	-25.8	-10,078	-$2,225	-$1,980	-$773,401	-1
Route 11	0.0	0.0	0	0	0	0	0
Route 12	0.0	0.0	0	0	0	0	0
LLA Express	0.0	0.0	0	0	0	0	0
Total	17.6	-31.7	1,191	$1,351	-$2,433	$91,413	5

Route	Change in Revenue Hours			Change in Cost			Change in peak vehicles
	Weekday	Weekend	Annual	Weekday	Weekend	Annual	
Route 1	22.2	0.0	5,648	$1,700	$0	$433,447	3
Route 2/3	15.3	0.0	3,910	$1,177	0	$300,053	2
Route 4	16.5	0.0	4,212	$1,267	0	$323,210	2
Route 5	0.0	0.0	0	0	0	0	0
Route 6	-7.4	-5.9	-2,501	-$568	-$453	-$191,896	-1
Route 7	0.0	0.0	0	0	0	$0	0
Route 9	-14.9	0.0	-3,804	-$1,145	$0	-$291,900	-1
Route 11	0.0	0.0	0	0	0	0	0
Route 12	0.0	0.0	0	0	0	0	0
LLA Express	0.0	0.0	0	0	0	0	0
Total	31.7	-5.9	7,466	$2,431	-$453	$572,914	5