

**Route 15: Brier Creek**

Route 15 connects downtown Durham with the Brier Creek Shopping Center in Wake County via the Durham Freeway. The route is operated Monday through Saturday, primarily during the AM and PM peaks, with some evening service provided. Operators have noted that many passengers make requests for this route to be operated all day to allow for better connections with CAT services.

*Ridership*

Route 15 had an annual ridership of 28,330 in FY 2011 and carried an average of 10.83 passengers per revenue hour on weekdays and 7.51 passengers per revenue hour on Saturdays. The route ranked 17<sup>th</sup> in annual weekday ridership, weekday passengers per revenue hour, and weekday passengers per revenue mile. It is the second worst performing route within the DATA system.

Table 93 shows average daily ridership by time of day for route 15. AM and PM peak period ridership is nearly constant for both weekday and Saturday trips.

**Table 93: Route 15 Average Daily Ridership**

	Weekday	Saturday	Sunday	Holiday
<b>Early AM</b>	-	-	-	-
<b>AM Peak</b>	36	24	-	-
<b>Midday</b>	3	1	-	-
<b>PM Peak</b>	37	24	-	-
<b>Evening</b>	21	19	-	-
<b>Total</b>	<b>97</b>	<b>68</b>	-	-

The limited number of sample trips for route 15 did not provide sufficient APC data to determine average daily boardings and alightings or maximum passenger loads. The available data indicate that the major boarding and alighting locations are the termini of the route, Durham Station and Alexander Promenade-Walmart, and there is very little boarding/alighting activity at other stops along the route.

*On-time Performance*

Weekday on-time performance by time period is shown in Table 94 below. Overall weekday on-time performance for route 15 is 21.1%, which is the lowest in the DATA system. The route experiences problems running late in the AM peak and midday periods, though it should be noted that the sample size for the midday period is small due to the limited number of trips operated during this period. Trips operated during the PM peak have a very high percentage of early timepoints (67.1%), indicating that operators may be departing early in an attempt to make up time later in the route.

**Table 94: Route 15 Weekday On-time Performance**

	EARLY AM	AM PEAK	MIDDAY	PM PEAK	EVENING	TOTAL
<b>EARLY</b>	-	22.8%	11.8%	67.1%	-	39.0%
<b>ON-TIME</b>	-	24.6%	11.8%	18.3%	-	21.1%
<b>LATE</b>	-	52.6%	76.5%	14.6%	-	39.9%

**Route 16: Highway 98/The Village**

Route 16 serves east Durham between downtown and Southern High School via Liberty Street and Holloway Street. The route forms a large one-way loop at its eastern end.

*Ridership*

Route 16 had an annual ridership of 234,859 in FY 2011 and carried an average of 39.44 passengers per revenue hour on weekdays. Saturday and Sunday productivity measures were 27.48 and 22.33 passengers per revenue hour, respectively. The route ranked 13<sup>th</sup> in weekday annual ridership, 4<sup>th</sup> in weekday passengers per revenue hour, and 7<sup>th</sup> in weekday passengers per revenue mile. Overall, the route is very productive. In comparison, the next highest ridership route is #11, which carries on average 160 more passengers per weekday, but requires 13 more revenue hours to do so.

Table 95 shows average daily ridership by time of day for route 16. Ridership is fairly constant across all weekday time periods, with the highest ridership occurring during the midday period. The weekday evening time period is well utilized, as is the Saturday evening period. Saturday ridership is 30% lower than on weekdays, and 61% lower on Sundays than on weekdays. The route is not well utilized during the AM peak period on weekends or holidays.

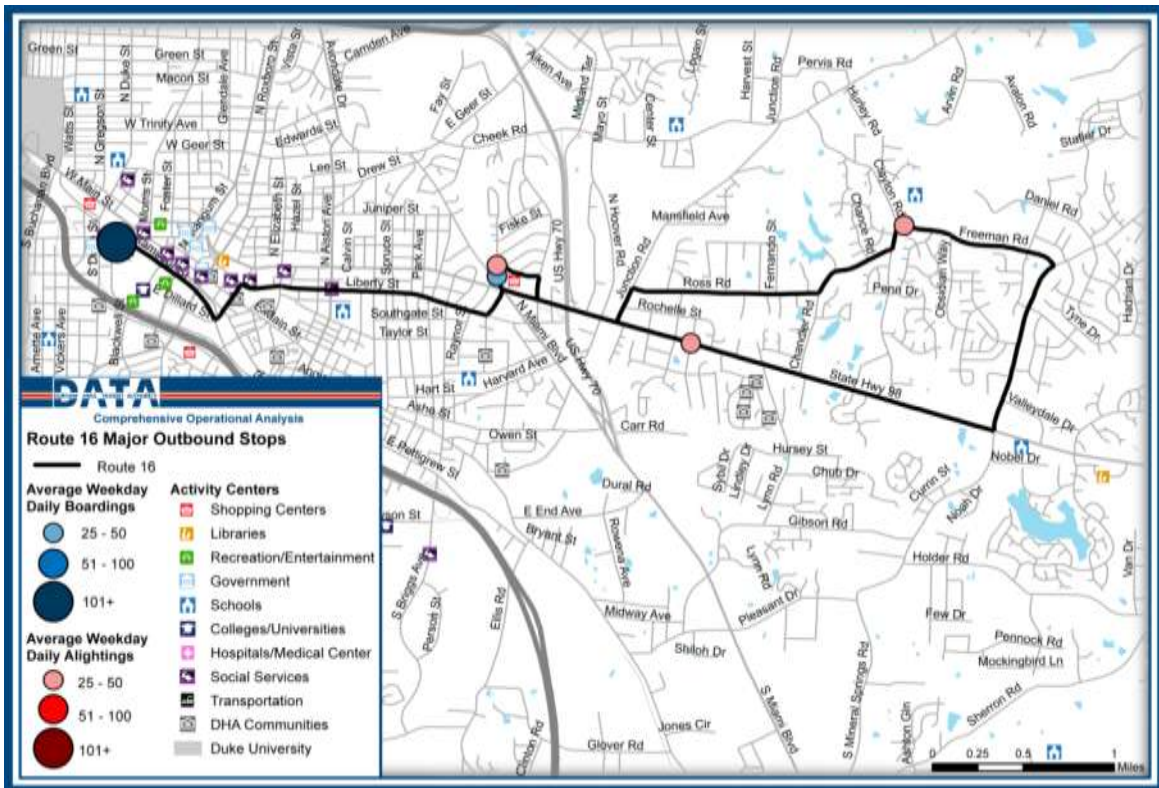
**Table 95: Route 16 Average Daily Ridership**

	<b>Weekday</b>	<b>Saturday</b>	<b>Sunday</b>	<b>Holiday</b>
<b>Early AM</b>	16	7	-	-
<b>AM Peak</b>	115	45	34	36
<b>Midday</b>	261	190	141	151
<b>PM Peak</b>	187	117	85	85
<b>Evening</b>	170	164	30	34
<b>Total</b>	<b>749</b>	<b>522</b>	<b>290</b>	<b>306</b>

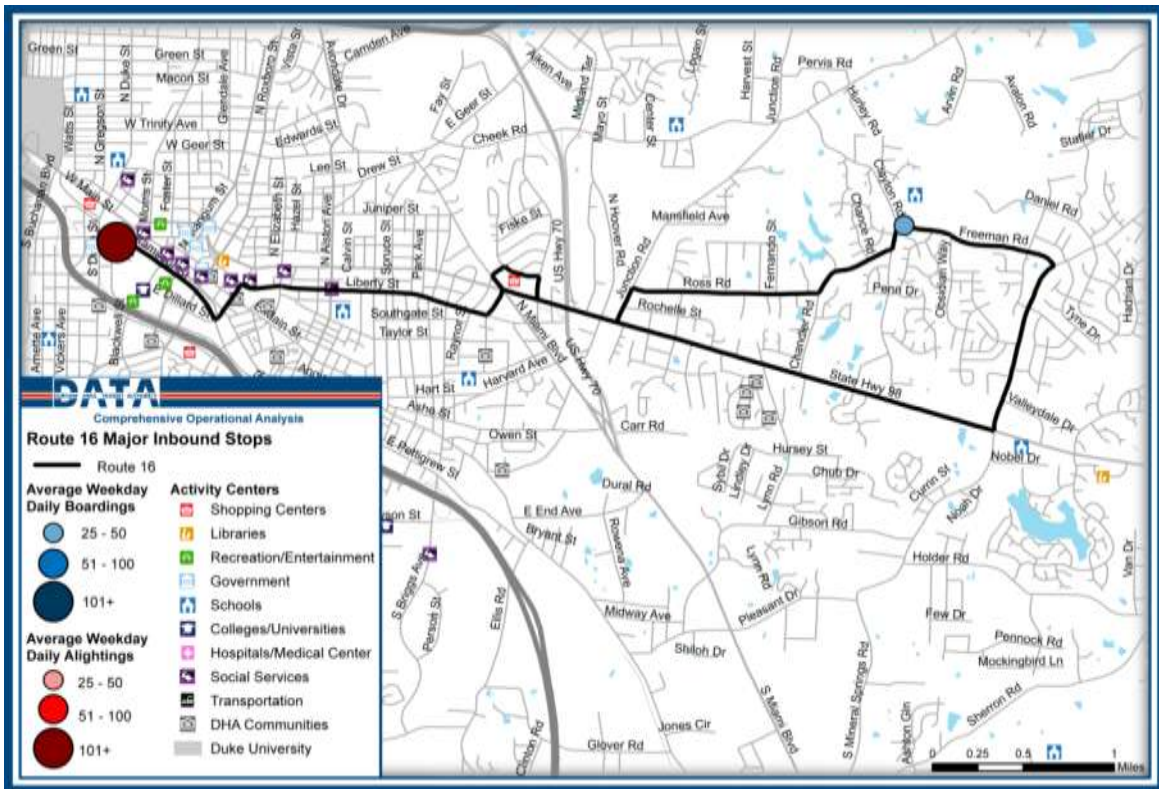
*Trip Generators*

Figures 97 and 98 show stops with 25 or more average daily boardings or alightings for outbound and inbound trips. The major trip generators for route 16 are The Village Shopping Center and Southern High School. The outbound alightings shown at Holloway Street and South Woodcrest may be generated by the nearby daycare or Rochelle Manor Apartments to the north of Holloway Street.

**Figure 97: Route 16 – Top Boarding and Alighting Stops – Outbound**



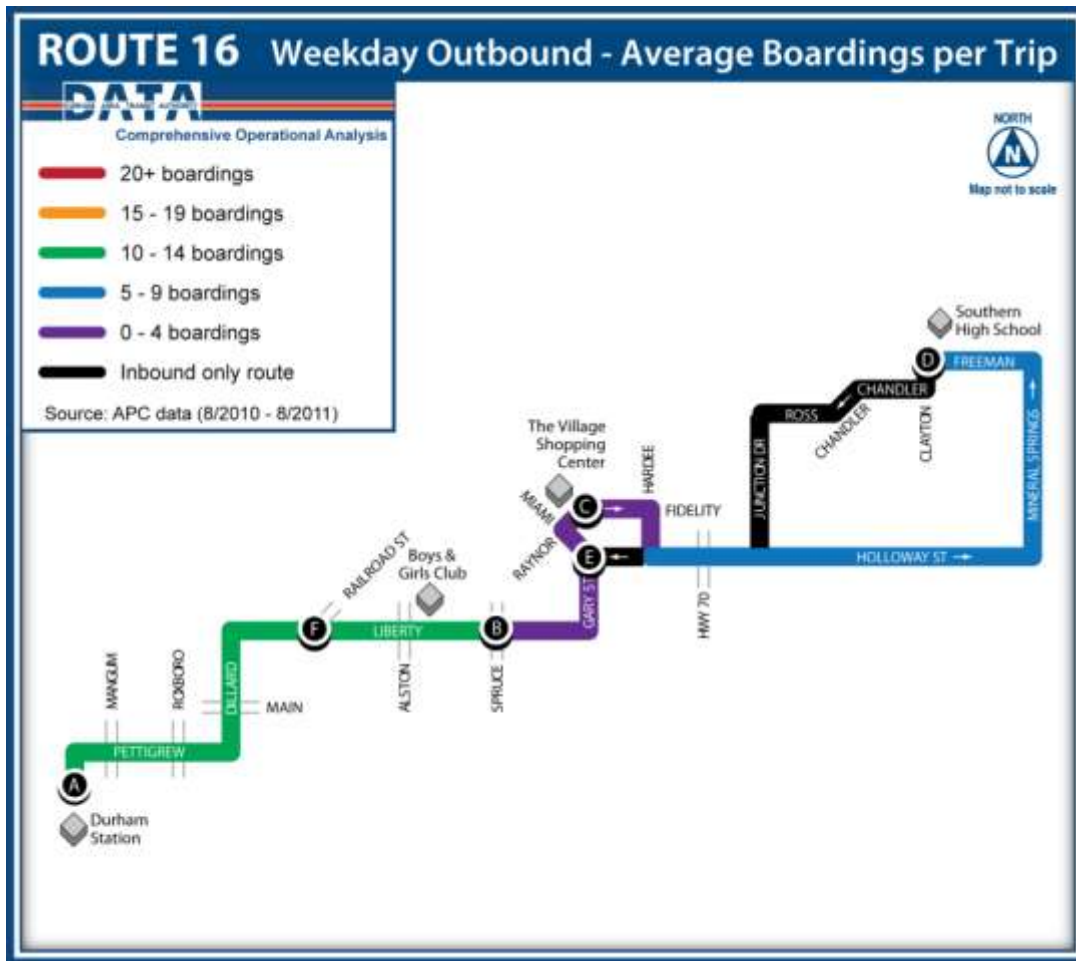
**Figure 98: Route 16 – Top Boarding and Alighting Stops – Inbound**



*Segment Analysis*

Figure 99 shows weekday average boardings per outbound trip by segment. Table 96 shows weekday average boardings per outbound trip by segment and time of day. The data indicate that the first segment of the trip, between Durham Station and Spruce Street, has the most boarding activity. After this first timepoint, boarding activity tapers off significantly. The PM peak period has the greatest number of boardings per trip, with an average of 21 boardings occurring on the first segment of the trip. This is the only segment and time period of the trip where overcrowding is likely to occur.

**Figure 99: Route 16 Weekday Average Boardings per Trip – Outbound**

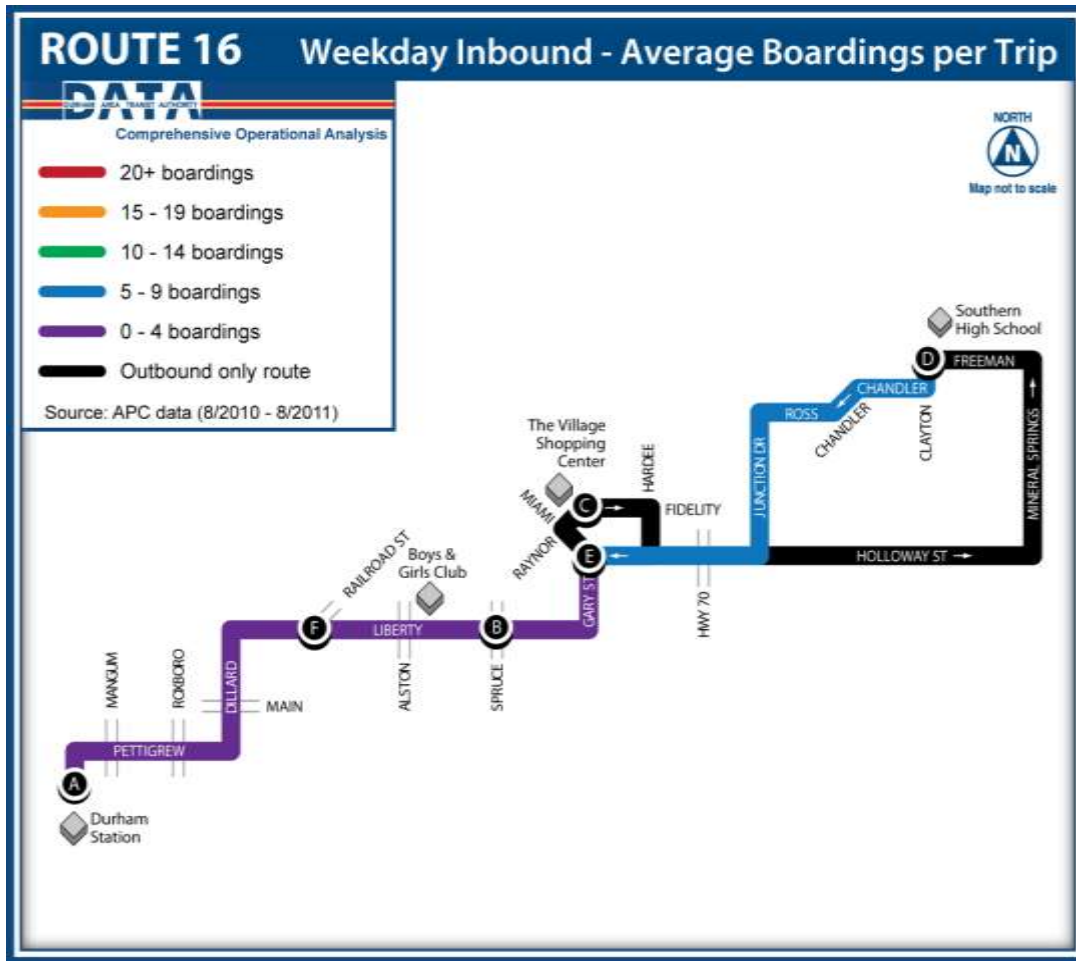


**Table 96: Route 16 Weekday Average Boardings per Trip – Outbound**

	Early AM	AM Peak	Midday	PM Peak	Evening
Durham Station to Liberty St. & Spruce St.	-	10	14	21	14
Liberty St. & Spruce St. to Hardee & Holloway St.	-	2	3	3	2
Hardee & Holloway St. to Freeman Rd. & Clayton Rd.	-	5	7	5	3

Figure 100 shows weekday average boardings per inbound trip by segment. Table 97 shows weekday average boardings per inbound trip by segment and time of day. The data indicate that the inbound boarding activity is more balanced than the outbound trip, with a low average number of boardings per trip for all segments of the inbound trip. Interestingly, the heavy boarding activity that occurs during the PM peak period for the outbound trip is not mirrored by the AM peak period activity on the inbound trip. As shown in Table 97, there is very little variation in inbound boardings throughout the day.

**Figure 100: Route 16 Weekday Average Boardings per Trip – Inbound**



**Table 97: Route 16 Weekday Average Boardings per Trip – Inbound**

	Early AM	AM Peak	Midday	PM Peak	Evening
Freeman & Clayton Rd. to Gary St. & Miami Blvd.	4	6	6	6	2
Gary St. & Miami Blvd. to Liberty St. & Railroad St.	3	4	5	4	3
Liberty St. & Railroad St. to Durham Station	1	2	2	2	1

Figures 101 and 102 show the average maximum passenger load for outbound and inbound trips. While the average maximum passenger load is higher for outbound trips than inbound trips, it is unlikely that overcrowding occurs on this route other than during the PM peak period or on select trips at the end of the school day.



Figure 101: Route 16 Weekday Average Max Passenger Load – Outbound

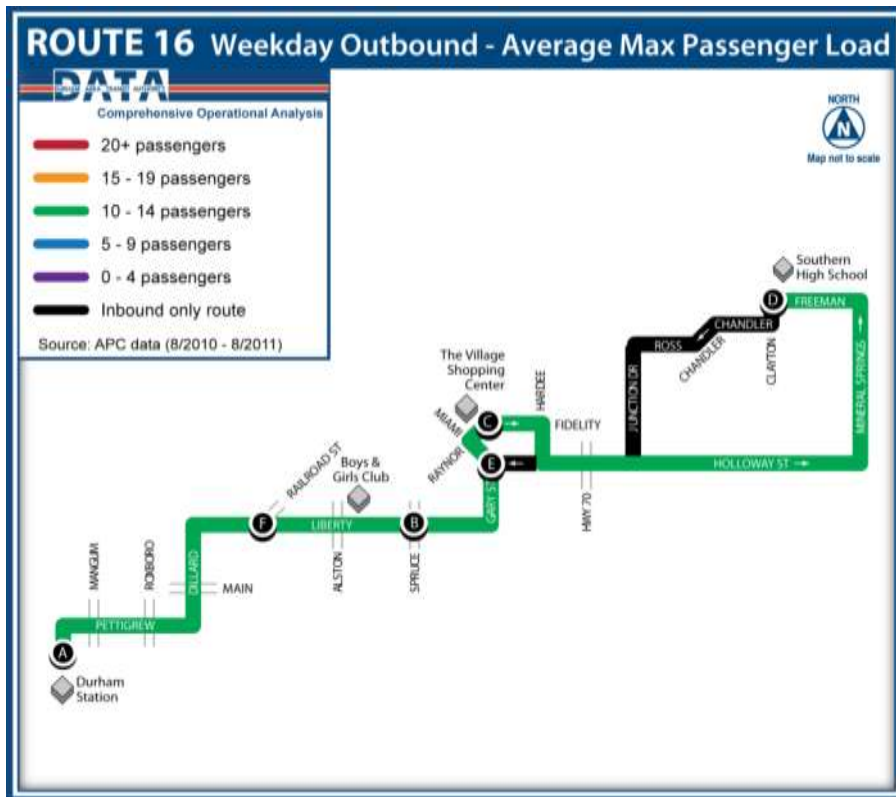
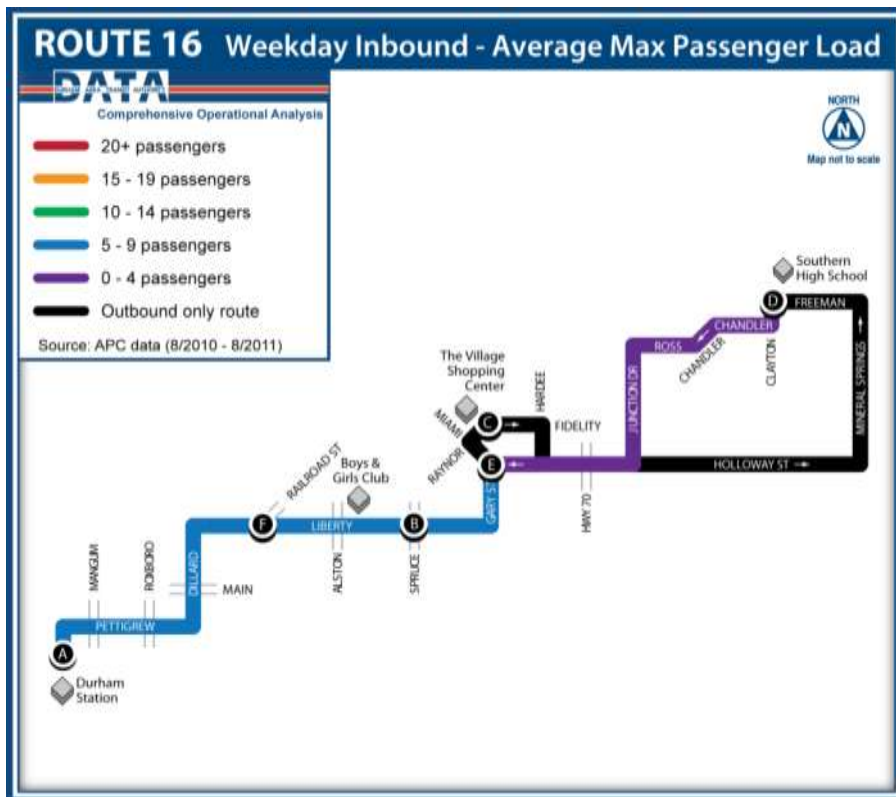


Figure 102: Route 16 Weekday Average Max Passenger Load – Inbound



*Run Time and On-time Performance*

Weekday on-time performance by time period is shown in Table 98 below. Overall weekday on-time performance for Route 16 is 78.1%, the highest in the DATA system. The route’s on-time performance declines slightly as the day progresses, with the greatest percentage of late timepoints occurring during the PM peak period, which may be the result of heavy boarding activity.

**Table 98: Route 16 Weekday On-time Performance**

	EARLY AM	AM PEAK	BASE	PM PEAK	EVENING	TOTAL
<b>EARLY</b>	11.0%	13.3%	7.9%	5.3%	22.9%	<b>12.8%</b>
<b>ON-TIME</b>	82.2%	79.8%	71.3%	67.6%	69.1%	<b>71.8%</b>
<b>LATE</b>	6.8%	6.9%	20.8%	27.1%	8.0%	<b>15.4%</b>

Average weekday run times for outbound and inbound trips are shown by time of day and segment in Tables 99 and 100. Average run times are fairly consistent across all time periods, indicating that route 16 does not experience significant delays due to congestion. For the outbound trip, the PM peak period has the longest average run time. For the inbound trip, average run times are longest during the early AM and AM peak periods, with the first segment from Southern High School to Gary and Miami Blvd. experiencing the greatest run time differential from the rest of the day.

**Table 99: Route 16 Weekday Average Run Time – Outbound**

	Early AM	AM Peak	Midday	PM Peak	Evening
Durham Station to Liberty St. & Spruce St.	-	8.5	8.9	9.2	8.6
Liberty St. & Spruce St. to Hardee & Holloway St.	-	6.3	6.1	6.5	6.3
Hardee & Holloway St. to Freeman & Clayton Rd.	-	13.2	13.7	13.7	12.8
<b>Total</b>	-	<b>28</b>	<b>28.7</b>	<b>29.4</b>	<b>27.7</b>

**Table 100: Route 16 Weekday Average Run Time – Inbound**

	Early AM	AM Peak	Midday	PM Peak	Evening
Freeman & Clayton Rd. to Gary & Miami Blvd.	10.9	11.4	10.1	10	9.9
Gary & Miami Blvd. to Liberty & Railroad St.	6.3	6.4	5.9	5.5	6.4
Liberty St. & Railroad St. to Durham Station	7.1	7	7.8	7	6.8
<b>Total</b>	<b>24.3</b>	<b>24.8</b>	<b>23.8</b>	<b>22.5</b>	<b>23.1</b>

**Route 16B: Neal Middle School/Southern High School**

Route 16B provides limited service between downtown and Neal Middle School during the AM and PM peak periods. The route supplements route 16’s outbound route on Liberty Street and Holloway Street, and provides an additional inbound trip from Southern High School in the afternoon. The route is not operated on the weekends.

*Ridership*

Route 16B had an annual ridership of 5,904 in FY 2011 and carried an average of 4.01 passengers per revenue hour and 0.27 passengers per revenue mile on weekdays. It is the worst performing route in the system for all performance measures.

Table 101 shows average daily ridership by time period for Route 16B. On average, there are more passengers utilizing the route in the afternoon than in the morning, which may be driven by the trip serving Southern High School. Given the high ridership levels for Route 16 during the AM and PM peak time periods, it is possible that passengers are simply unaware of the shared alignments of the two routes.

**Table 101: Route 16B Average Daily Ridership**

	Weekday	Saturday	Sunday	Holiday
<b>Early AM</b>	-	-	-	-
<b>AM Peak</b>	7	-	-	-
<b>Midday</b>	3	-	-	-
<b>PM Peak</b>	13	-	-	-
<b>Evening</b>	1	-	-	-
<b>Total</b>	<b>23</b>	-	-	-

APC, on-time performance and run time data were not available for Route 16B.

**Route 17: Snow Hill Rd./Norton Rd.**

Route 17 provides service on the far north side of Durham between North Duke Mall and Durham Technical Community College’s Northern Durham Center. It is one of two routes within the DATA system that do not originate at Durham Station. A timed transfer to route 4 is facilitated at North Duke Mall.

Operators identified several problems with route 17, including overcrowding on trips to and from Northern High School and traffic congestion at the intersection of Roxboro Street and Horton Street. Snow Hill Road was identified as being a very low productivity segment of the route.

*Ridership*

Route 17 had an annual ridership of 94,104 in FY 2011 and carried an average of 16.38 passengers per revenue hour on weekdays. Saturday and Sunday productivity measures were 11.36 and 7.39 passengers per revenue hour, respectively. Route 17 ranked 16<sup>th</sup> in the system for annual weekday ridership, 15<sup>th</sup> for weekday passengers per revenue hour, and 16<sup>th</sup> for weekday passengers per revenue hour.

Table 102 shows average daily ridership by time of day. Ridership is fairly constant across all weekday time periods, with the greatest demand during the midday period. It carries 69% fewer riders on Saturdays and 32% fewer riders on Sundays than on weekdays. With only 7.39 passengers per revenue hour and 0.37 passengers per revenue mile on Sundays, route 17 is the worst performing Sunday route.

**Table 102: Route 17 Average Daily Ridership**

	Weekday	Saturday	Sunday	Holiday
<b>Early AM</b>	-	-	-	-
<b>AM Peak</b>	59	24	15	16
<b>Midday</b>	120	89	46	53
<b>PM Peak</b>	65	44	25	27
<b>Evening</b>	60	53	9	9
<b>Total</b>	<b>304</b>	<b>211</b>	<b>96</b>	<b>105</b>

APC, on-time performance and run time data were not available for Route 17.

**Route 18: Bull City Connector**

The Bull City Connector is a free fare route operated between Duke University and downtown Durham. The route originates at Duke South Hospital and travels on Erwin Road and W. Main Street to downtown, where it connects with Durham Station before continuing to its eastern terminus at Durham Hosiery Mills Apartments. The Bull City Connector is operated on a 15-minute headway during the day and a 20-minute headway during the evening. As such, it is the only route within the DATA system that is not operated on the pulse.

Operators identified missed trips and layovers and insufficient scheduled running time as the primary problems with the Bull City Connector route. When the Bull City Connector is running late, operators are often instructed to run express “skip stop” service to make up time.

*Ridership*

The Bull City Connector had an annual ridership of 279,350 in FY 2011 and carried an average of 24.67 passengers per revenue hour on weekdays and 18.02 passengers per revenue hours on Saturdays. The route is not operated on Sundays.

The Bull City Connector ranked 11<sup>th</sup> in the system for weekday ridership, 14<sup>th</sup> for weekday passengers per revenue hours, and 8<sup>th</sup> for weekday passengers per revenue hour. The divergence between the route’s passengers per revenue hour and revenue mile performance statistics is indicative of operating in a heavily traveled, and possibly congested, corridor where vehicle operating speeds are low.

Table 103 provides average daily ridership figures by time of day. The ridership numbers indicate that the greatest demand for the route is during the midday period, which accounts for nearly 50% of the average weekday ridership. Ridership is 47% lower on Saturdays than on weekdays. The route is not well utilized during the AM Peak period on Saturdays, but the Saturday evening ridership is nearly equivalent to the weekday evening ridership. This sustained demand for Saturday evening service may be caused by students or shift workers at the VA and Duke hospitals using the service.

**Table 103: Route 18 Average Daily Ridership**

	<b>Weekday</b>	<b>Saturday</b>	<b>Sunday</b>	<b>Holiday</b>
<b>Early AM</b>	-	-	-	-
<b>AM Peak</b>	117	35	-	30
<b>Midday</b>	480	236	-	170
<b>PM Peak</b>	241	125	-	92
<b>Evening</b>	141	135	-	75
<b>Total</b>	<b>979</b>	<b>531</b>	-	<b>367</b>

APC, on-time performance and run time data were not available for the Bull City Connector.

### Tripper Services

In addition to its regular fixed route service, DATA operates several tripper services to area schools and employment centers.

**LC Industries:** This tripper service provides one outbound connection from Durham Station to LC Industries in the morning and one return trip in the afternoon. A recent passenger count conducted in August 2011 indicated that the service transports an average of 6.6 passengers in the morning and 12.8 passengers in the afternoon.

**Hillside High School:** This tripper service provides a single afternoon trip from Hillside High School to Durham Station on school days. A recent passenger count indicates that an average of 21.6 passengers per day use this service in the afternoon.

**Riverside High School Shuttle:** This shuttle service is operated on school days between Horton and Guess Rd. (where passengers can transfer to/from route 1) and Riverside High School. Four trips are operated in the morning (6:30–7:15 AM) and nine trips are operated in the afternoon (2:30– 4:30 PM). Recent passenger counts indicate that that use of the shuttle is very low, averaging 7 passengers per day or 2 passengers per revenue hour.