ASSOCIATION OF GREATER MANCHESTER AUTHORITIES

GREATER MANCHESTER TRANSPORTATION UNIT

Analysis of Journey Times on Congestion Routes For 2007-2008

GMTU Report 1520 May 2009

SUMMARY

The LTP7 (NI 167) indicator is a measure of journey time per person mile, in the period 0730 to 0930, on the 15 target routes in Greater Manchester.

This report uses Trafficmaster GPS data in order to examine vehicle journey time for each of these routes in detail.

This report includes a summary for all 15 congestion routes comprising:

- A table of person journey times for all vehicles combined. It is from these all vehicle figures that the Department for Transport calculates the Greater Manchester indicator value of journey time per person mile.
- A second table of journey times for non-stopping vehicles only (i.e. excluding buses). These figures are from Trafficmaster data.

The summary is followed by a more detailed analysis of the Trafficmaster journey time data for each route including:

- Maps for each of the 15 congestion routes showing average speeds along the route
- Charts showing the monthly average journey time for each of the 15 congestion routes
- Charts showing the journey time distribution from 7am to 7pm for each of the 15 congestion routes for both 2006-2007 and 2007-2008.

The information in the report demonstrates the types of analysis for which Trafficmaster data can be used and should provide useful baseline information for future monitoring and scheme evaluation.

This report and .pdf versions of the speed maps for each route are available on the gmtu website www.gmtu.gov.uk.

GMTU Report 1520 May 2009

David Atkin

GMTU, 1st Floor, Salisbury House, Granby Row, Manchester M1 7AH Tel: 0161 455 2128

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Version No.	Purpose/ Changes	Author	Date Changed	Date Issued	To Whom
1	First Version	D Atkin		22/05/2009	D&NM Group

1. Introduction

1.1 The LTP7 indicator (NI 167) is a measure of journey time in minutes per person mile during the morning peak period 0730 to 0930.

1.2 The Greater Manchester indicator value is a measure of the average journey time per person mile across the 15 congestion routes combined.

1.3 The journey time for non-bus traffic is calculated using data collected from in-vehicle GPS tracking devices from which journey times can be derived. This data is averaged over an academic year and is combined with journey time information for stopping buses and with vehicle flow and occupancy data which are all collected manually. The average journey time for each route is weighted according to flow, modal split and vehicle occupancy, in order to give a person-based indicator.

1.4 Initially the indicator was calculated using non-bus data provided by ITIS. However in mid-2007 the Department for Transport changed suppliers with Trafficmaster now providing the data collected from in-vehicle GPS devices.

1.5 The summary in this report contains two tables of information. The first relates to all vehicles combined (i.e. including buses). The second contains figures for non-stopping vehicles (i.e. excluding buses).

1.6 This report also makes use of the Trafficmaster data to produce a more detailed analysis of non-bus vehicle journey times for each of the congestion routes.

2. Summary for All Routes

2.1 The table below contains figures calculated by combining bus and non-stopping vehicle information (i.e. all vehicles). The values shown are from a spreadsheet provided by DfT that incorporates both local survey and Trafficmaster data. The figures demonstrate the variation in route length, traffic flow and speed between the 15 routes making up the congestion network.

Figure 1. Table containing average speed, journey time, occupation and flow information for all vehicles for the 15 congestion routes in the morning peak (0730-0930) during school term time for the 2007-2008 academic year.

	Route Number & Description	Length (miles)	All Vehicle Average Speed (MPH)	All Vehicle Journey Time Per Mile (mm:ss)	Average All Vehicle Flow per mile	All Vehicle Average Occupancy	Person Journey Time per mile (mm:ss)
1	A6 Salford Eastbound	1.07	9.3	06:28	4104	1.73	06:02
2	A62 Oldham Northbound	1.61	14.6	04:07	2660	1.38	04:24
3	A62 Manchester Southbound	4.24	15.0	04:00	3020	1.74	04:08
4	A579 Bolton Northbound	3.90	19.0	03:10	1715	1.44	03:21
5	A56 Bury Northbound	3.73	16.2	03:42	2104	1.52	04:04
6	A5103 Manchester Northbound	1.73	15.7	03:49	4196	1.21	04:14
7	A6 Stockport North-Westbound	2.68	10.0	06:01	2527	1.38	06:16
8	A6 Manchester North-Westbound	2.52	9.9	06:04	2152	1.72	06:28
9	A635 Tameside Westbound	2.15	13.9	04:19	3392	1.21	04:14
10	A5145 Manchester North-Westbound	3.86	12.6	04:45	1427	1.29	05:11
11	A49 Wigan Southbound	3.05	19.5	03:04	1722	1.25	03:02
12	A56 Trafford South-Westbound	2.92	10.4	05:45	2435	1.52	06:08
13	B5117/A6010 Manchester Northbound	2.11	12.0	05:01	1423	5.77	06:30
14	A665 Manchester North-Westbound	0.93	10.8	05:35	2367	1.64	05:50
15	A58 Rochdale South-Westbound	3.08	13.3	04:31	2065	1.41	04:10
	All Routes	39.6	13.4	04:30	2329	1.63	04:56

2.2 As described earlier the DfT measure of minutes per person mile not only takes into account the average vehicle journey time on the route, it also takes account of the flow, modal split and vehicle occupancy in order to give a person-based indicator. The GM indicator is the person journey time per mile – the time it takes an average person to travel one mile on the whole 15 route congestion network. This was 4:56 for the academic year 2007-2008.

2.3 It should be noted that the all vehicle indicator values for each route are calculated by combining bus and non-stopping vehicle flows,occupancies and journey times for several segments along the route, and for the two separate hours 0730 to 0830 and 0830 to 0930. Therefore the indicator values cannot be calculated directly from the whole route, all vehicle averages shown in the table.

2.4 The table below contains figures calculated for non-stopping vehicles only (i.e. excludes buses). End to end journey times are from Trafficmaster and are the sum of average journey times on each link along the route.

Figure 2. Table of Information for non-stopping vehicles for the 15 congestion routes in the morning peak during school term time for the 2007-2008 academic year.

	Route Number & Description	End to End Journey Time for non-stopping vehicles (mm:ss)	Non-Stopping Vehicle Average Speed (MPH)	Non-Stopping Vehicle Journey Time Per Mile (mm:ss)	Journey Time Coefficient Of Variation (%)	Average Non-Stopping Vehicle Flow per mile	Non-Stopping Vehicle Average Occupancy	Non-Stopping Vehicle journey time per person mile (mm:ss)
1	A6 Salford	06:56	9.3	06:29	33	4033	1.20	06:10
2	A62 Oldham	06:39	14.6	04:06	19	2624	1.11	04:06
3	A62 Manchester	16:58	15.0	03:59	21	2959	1.16	03:49
4	A579 Bolton	12:20	19.1	03:09	19	1688	1.22	03:09
5	A56 Bury	13:51	16.2	03:42	18	2079	1.19	03:45
6	A5103 Manchester	06:35	15.8	03:48	20	4178	1.09	03:49
7	A6 Stockport North-	16:09	10.0	05:59	17	2484	1.19	05:58
8	A6 Manchester	15:19	10.0	06:02	17	2095	1.16	05:53
9	A635 Tameside	09:15	13.9	04:19	20	3380	1.15	04:09
10	A5145 Manchester	18:19	12.7	04:44	19	1401	1.15	04:56
11	A49 Wigan	09:22	19.6	03:04	25	1713	1.16	03:01
12	A56 Trafford	16:46	10.5	05:43	62	2413	1.31	05:36
13	B5117/A6010 Manchester	10:34	12.9	04:40	19	1239	1.29	04:44
14	A665 Manchester	05:11	10.7	05:36	33	2326	1.15	05:34
15	A58 Rochdale	13:54	13.4	04:29	26	2045	1.26	03:54
	All Routes	58:08	13.4	04:28	25	2289	1.18	04:26

2.5 The times per person mile in this table are similar to those in Table 1 because non-stopping vehicles generally make up the greatest proportion of traffic and carry most of the people on the congestion routes. The greatest differences between the two tables are for those routes with the highest proportion of buses and bus passengers e.g. Route 13 B5117/ A6010 where the journey time per person mile is 6:30 for all vehicles but only 4:44 for non-stopping vehicles.

2.6 The coefficient of variation is the ratio of the mean journey time over the standard deviation expressed as a percentage. Values have been calculated using mean Trafficmaster journey times for every day for which there is a sample of journeys on every link of a route. It is a useful statistic for comparing the degree of variation in journey times between congestion routes.

2.7 For example route 7 (A6 Stockport North-Westbound) has a relatively low coefficient of variation of 17%, indicating that most of the daily journey times for this route are likely to be close to the average journey time. In contrast route 12 (A56 Trafford South-Westbound) has a higher coefficient of variation of 62%, indicating that there will be greater variation in daily journey times on this route.

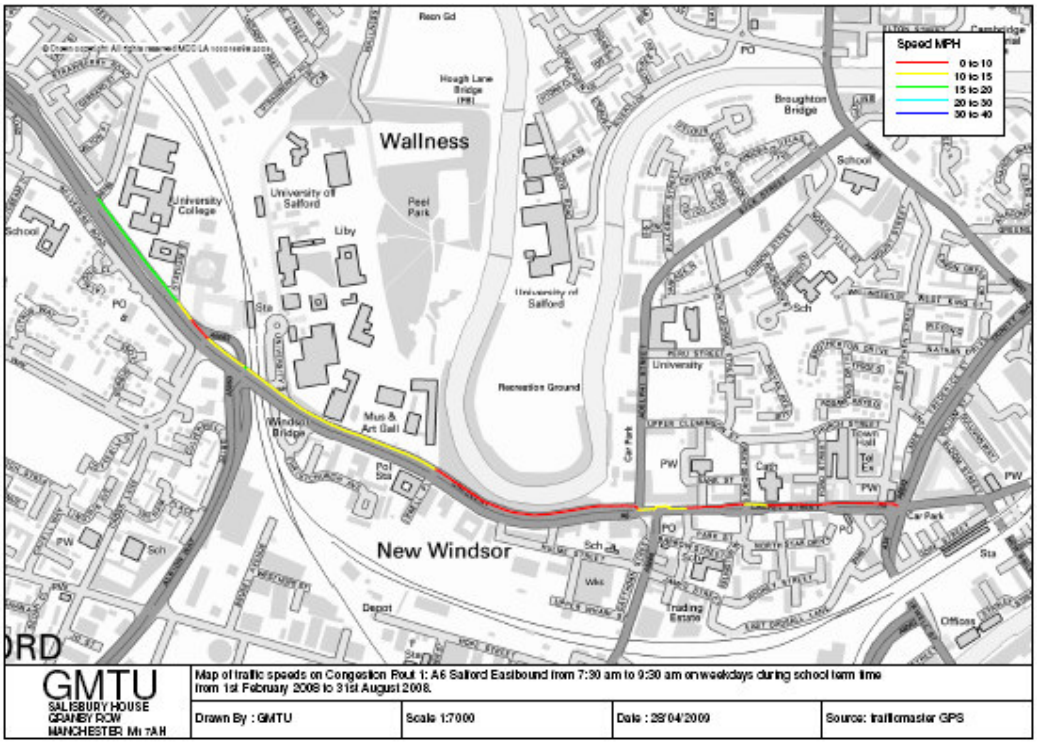
2.8 The Trafficmaster data can be used to produce a more detailed analysis of non-stopping vehicle speeds for each of the congestion routes as given in the following sections of the report.

3 Route 1: A6 Salford Eastbound

3.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 1 in more detail.

3.2 For example the data has been used to produce a thematic map of average traffic speeds for the route.

Figure 3. Thematic map of average traffic speeds along Congestion Route 1: A6 Salford Eastbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



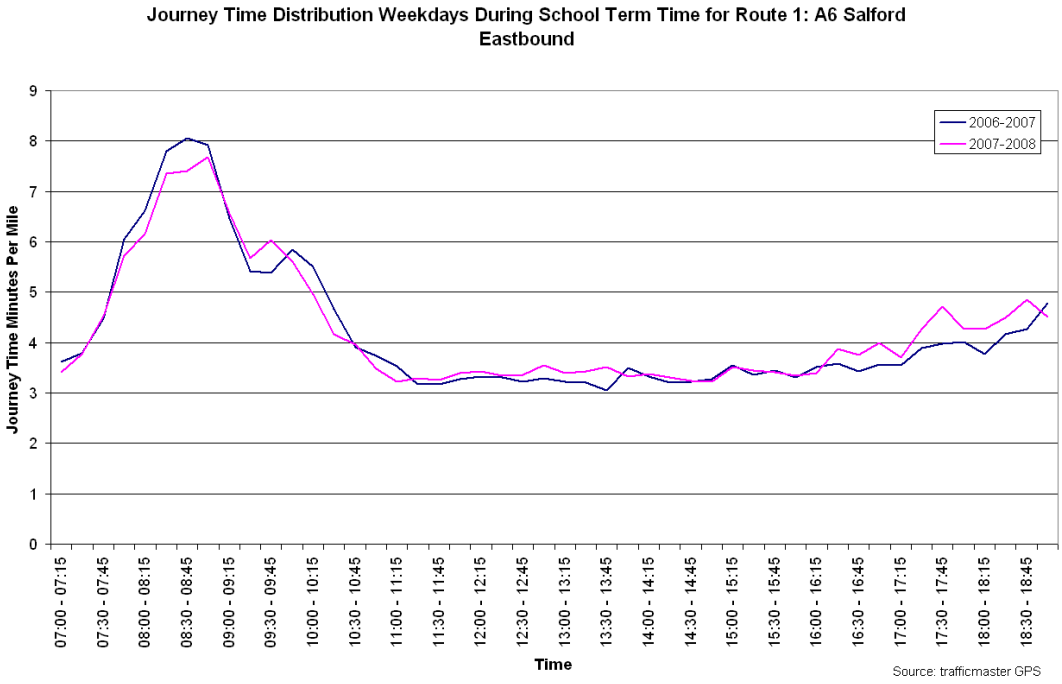
3.3 A pdf version of this map is available on the GMTU website.

3.4 The lowest average speed recorded during the morning peak on week days during school term time from 1st February 2008 to 31st August 2008 was 4.4 mph on the section of the route between St Stephens Street and the intersection with the A34 and the A6042 Trinity Way.

3.5 The highest average speed recorded on the route during this period was 20.2 mph between the B6186 Frederic Road and Statham Street.

3.6 In order to identify the impact travelling during the morning peak has on journey times on the route, Trafficmaster data can also be used to plot a journey time profile.

Figure 4. Journey time profiles for Congestion Route 1: A6 Salford Eastbound on weekdays during school term time for 2006-2007 and 2007-2008.



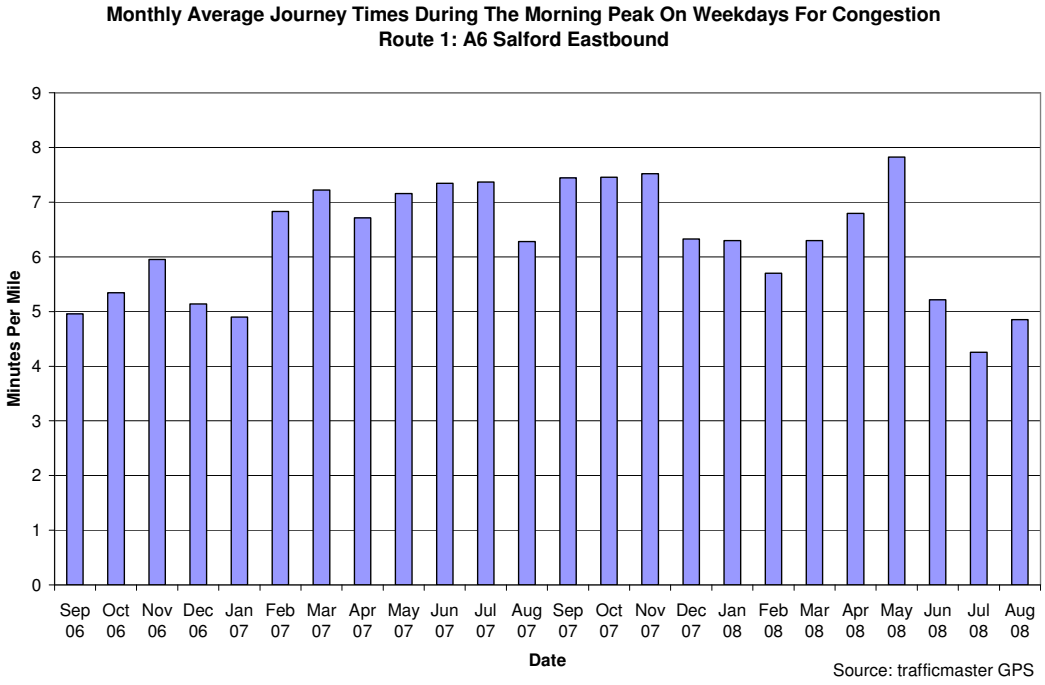
3.7 The highest average journey time during academic year 2006-2007 was 8.1 minutes per mile recorded between 08:30 and 08:45. The highest average journey time during academic year 2007-2008 was 7.7 minutes per mile recorded between 08:45 and 09:00.

3.8 This improvement in journey time may be associated with the slight reduction in average flow, as measured by the local surveys on the route, from 4125 in 2006-2007 to 4033 in 2007-2008. This is equivalent to a 2.2% reduction in traffic flow.

3.9 By examining the journey time profile we can compare these figures to those calculated for the interpeak period. From 11:00 to 16:00 the aveage journey time was between 3.0 and 3.6 minutes per mile. This section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

3.10 Additionally the data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The figure below charts the average monthly journey time during the morning peak.

Figure 5. Monthly average journey times during the morning peak on weekdays for Congestion Route 1 A6 Salford Eastbound.



2.1 By examining this chart we can see how average journey time changes troughout the year.

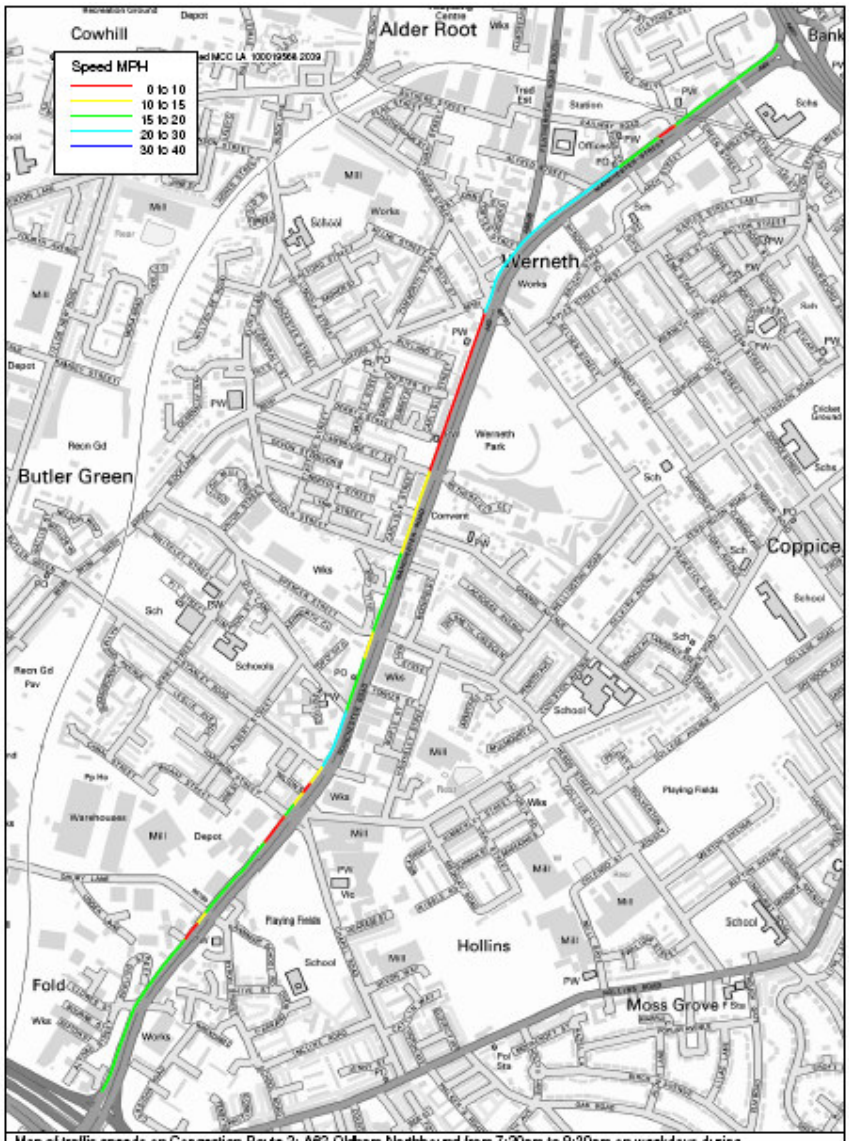
2.2 This type of chart could be used to help assess the impact of events on the route. For example the introduction of a bus lane, the impact of major road works or a reduction in traffic flow due to changes in economic conditions.

4 Route 2: A62 Oldham Northbound

4.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 2 in more detail.

4.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 6. Thematic map of average traffic speeds along Congestion Route 2: A62 Oldham Northbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



Map of traffic speeds on Congestion Route 2: A62 Oldham Northbound from 7:30am to 9:30am on weekdays during school term time from 1st February 2008 to 31st August 2008

GMTU SALISBURY HOUSE GRANBY ROW MANCHESTER M17AH	Drawn By : GMTU	Date : 11/05/2009
	Scale 1:9000	Source: trafficmaster GPS

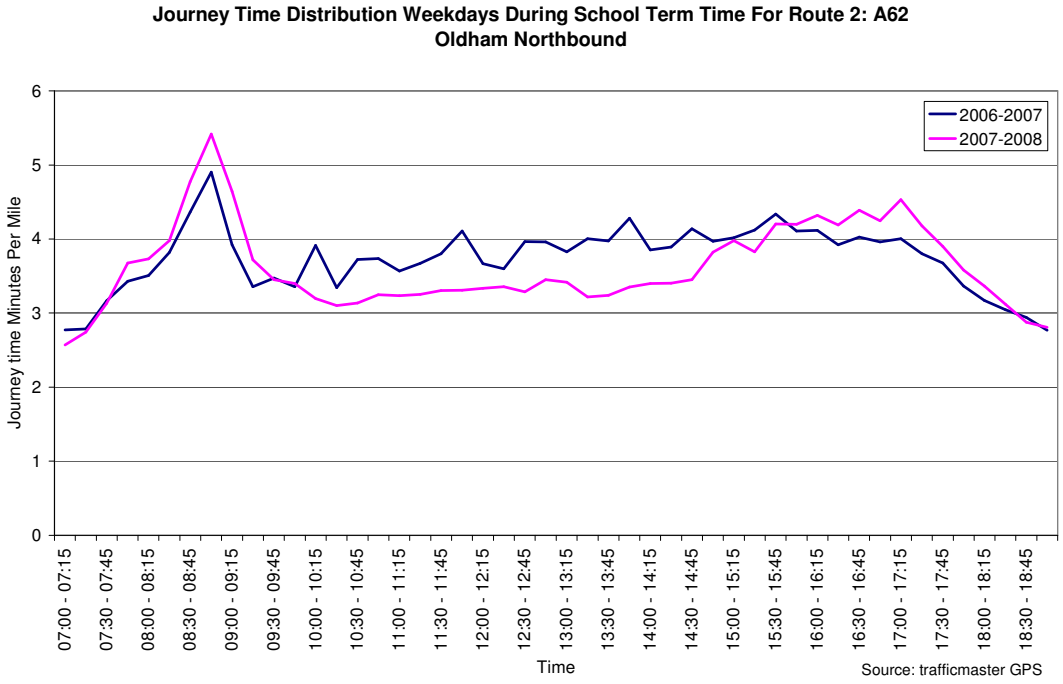
4.3 A pdf version of this map is available on the GMTU website.

4.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4.6 mph on the section of the route approaching the intersection with the B6191 Oxford Street and the B6192 Frederick Street.

4.5 The highest average speed recorded on the route during this period was 27.8 mph between the A6048 Featherstall Road South and Alfred Street.

4.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot a journey time profile.

Figure 7. Journey time profiles for Congestion Route 2: A62 Oldham Northbound on weekdays during school term time for 2006-2007 and 2007-2008

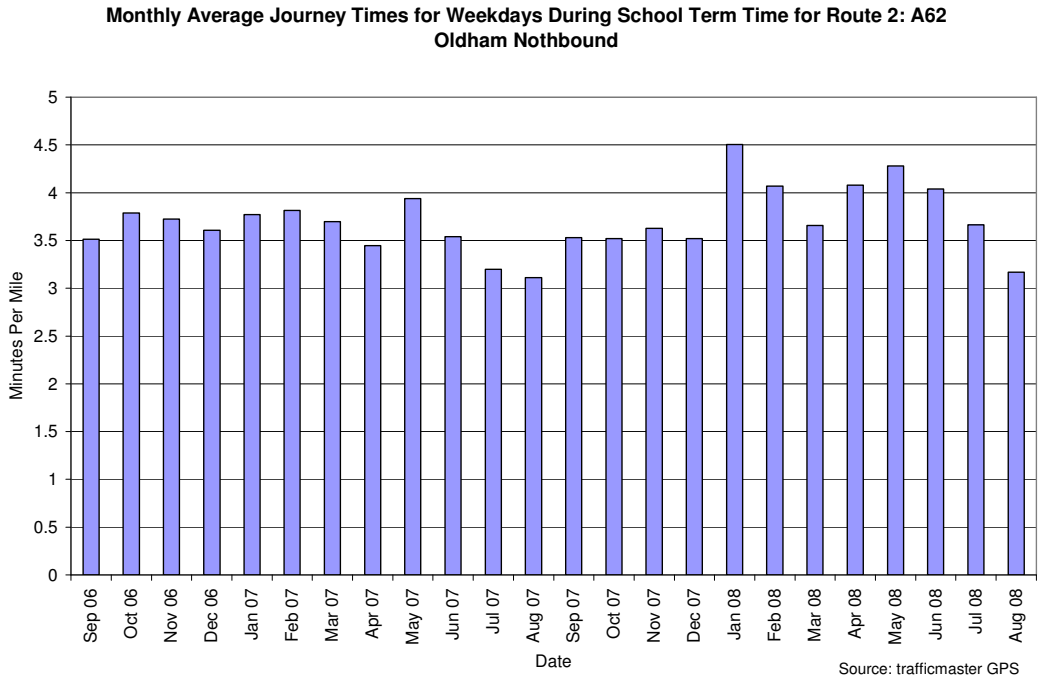


4.7 The highest average journey time during academic year 2006-2007 was 4.9 minutes per mile and highest average journey time during academic year 2007-2008 was 5.4 minutes per mile both these peak times were recorded between 08:45 and 09:00.

4.8 By comparing the 2006-2007 profile to the 2007-2008 profile we can see that while the journey time during the morning peak is higher in 2007-2008, the journey time in the interpeak is lower.

4.9 The data provided by the Trafficmaster GPS in-vehicle devices can also be used to track how the average journey time changes over time. The figure below charts the average monthly journey time during the morning peak.

Figure 8. Monthly average journey times during the morning peak on weekdays for Congestion Route 2: A62 Oldham Northbound.



4.10 By examining this chart we can see how average journey time changes over time. Not only can we see the reduction in average journey time during the summer months. We can also see a trend towards slightly increased journey times on this route from 2007 to 2008.

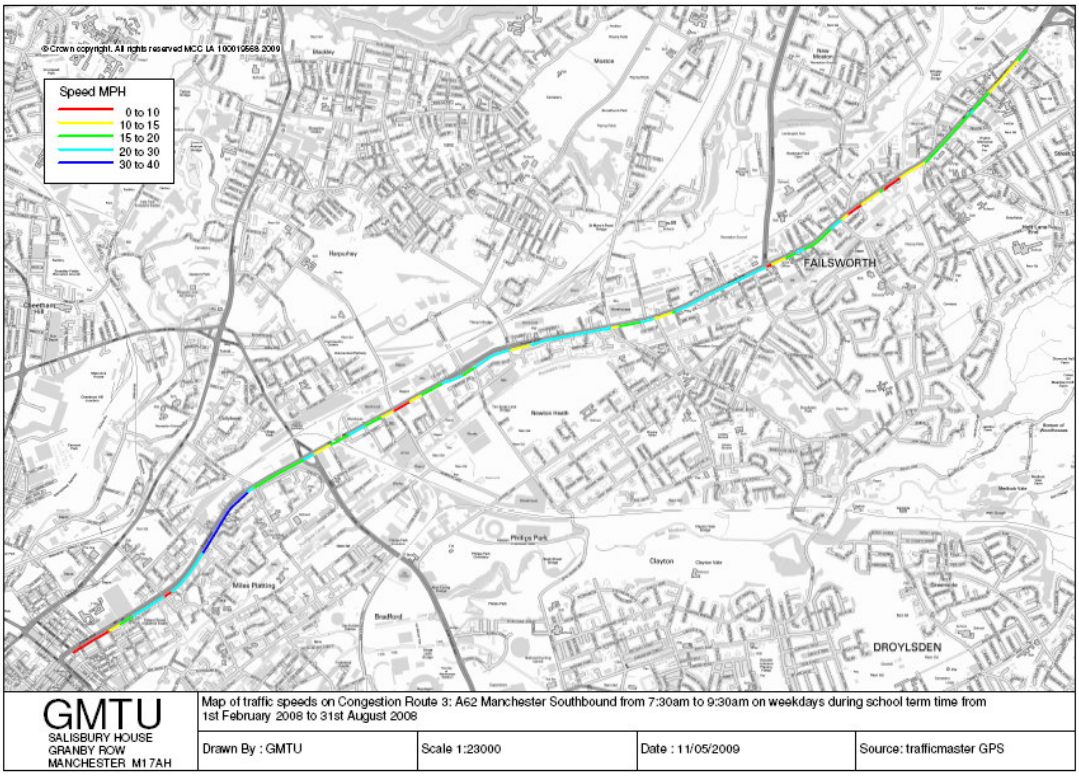
4.11 For example if we compare the first 8 months of 2008 to the corresponding months is 2007 we can see that in all but 1 (March) the average journey time has increased.

5 Route 3: A62 Manchester Southbound

5.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 3 in more detail.

5.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 9. Thematic map of average traffic speeds along Congestion Route 3: A62 Manchester Southbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



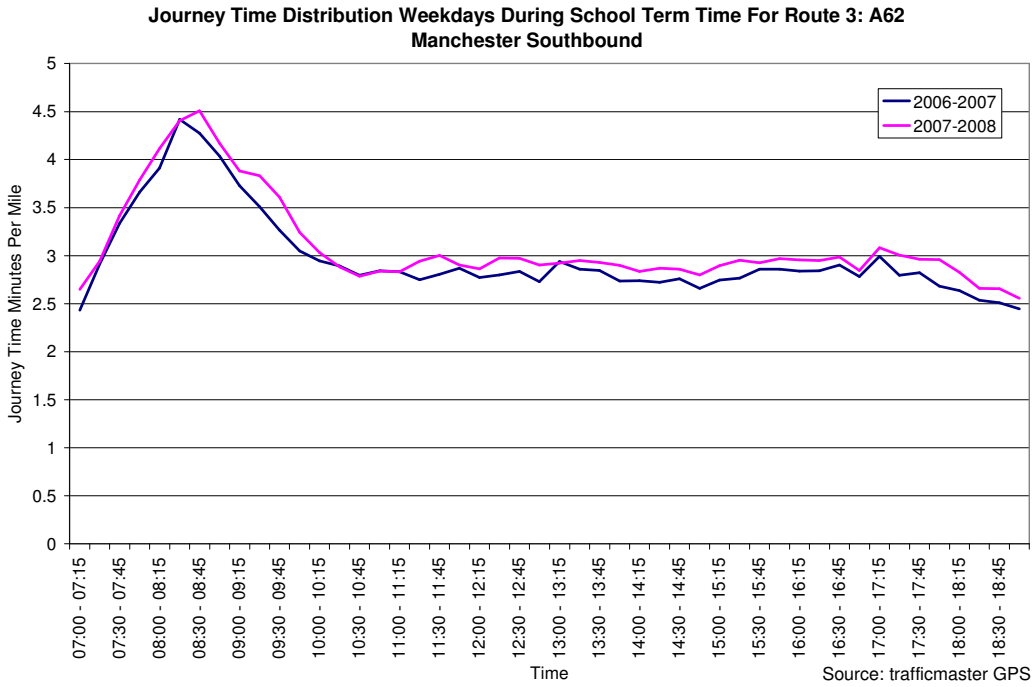
5.3 A pdf version of this map is available on the GMTU website

5.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4.8 mph on the section of the route between Nixon Street and Old Road.

5.5 A section of this route between Johnson's Square and Naylor Street has an average speed in excess of 30 mph. The highest average speed on this section of the route during this period was 34.1 mph.

5.6 In order to identify the impact travelling during the morning peak has on journey times on this route, the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 10. Journey time profiles for Congestion Route 3: A62 Manchester Southbound on weekdays during school term time for 2006-2007 and 2007-2008

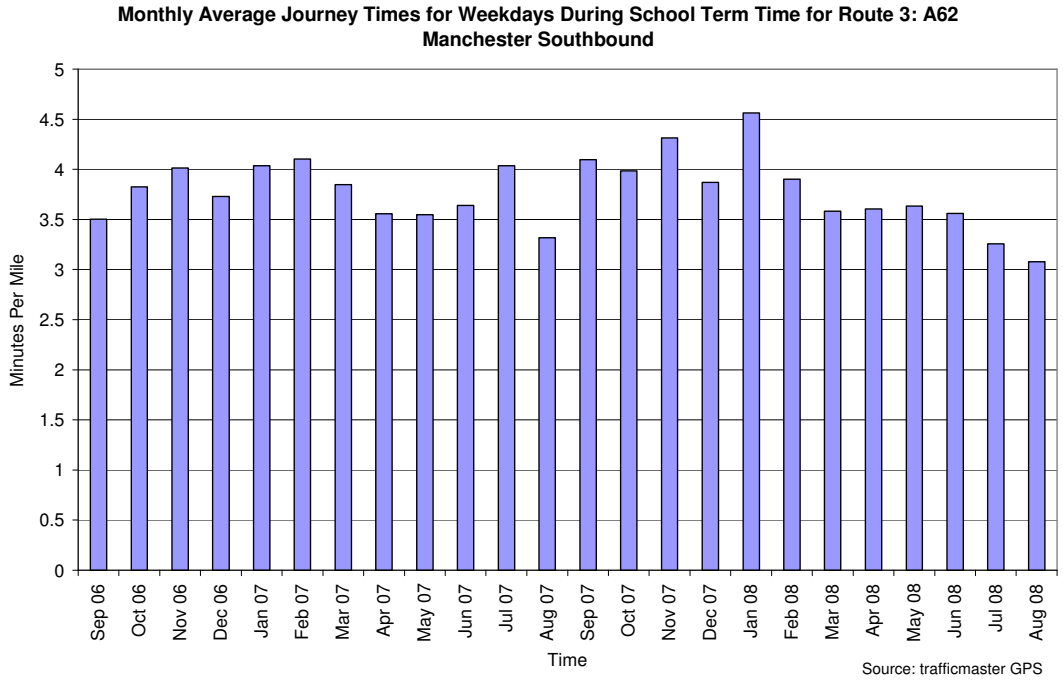


5.7 The highest average journey time during academic year 2006-2007 was 4.4 minutes per mile between 08:15 and 08:30. The highest average journey time during academic year 2007-2008 was 4.5 minutes per mile between 08:30 and 08:45.

5.8 By examining the journey time profile we can compare the journey time for the morning peak to those calculated for the interpeak period which were typically between 2.7 and 3 minutes per mile. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

5.6 Additionally the data can be used to track how the average journey time changes over time. The Figure below charts the average monthly journey time during the morning peak.

Figure 11. Monthly average journey times during the morning peak on weekdays for Congestion Route 3: A62 Manchester Southbound.



5.7 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for August 2007 and August 2008 we can see that there is a reduction in journey time during August attributable to the reduced network demand associated with school holidays.

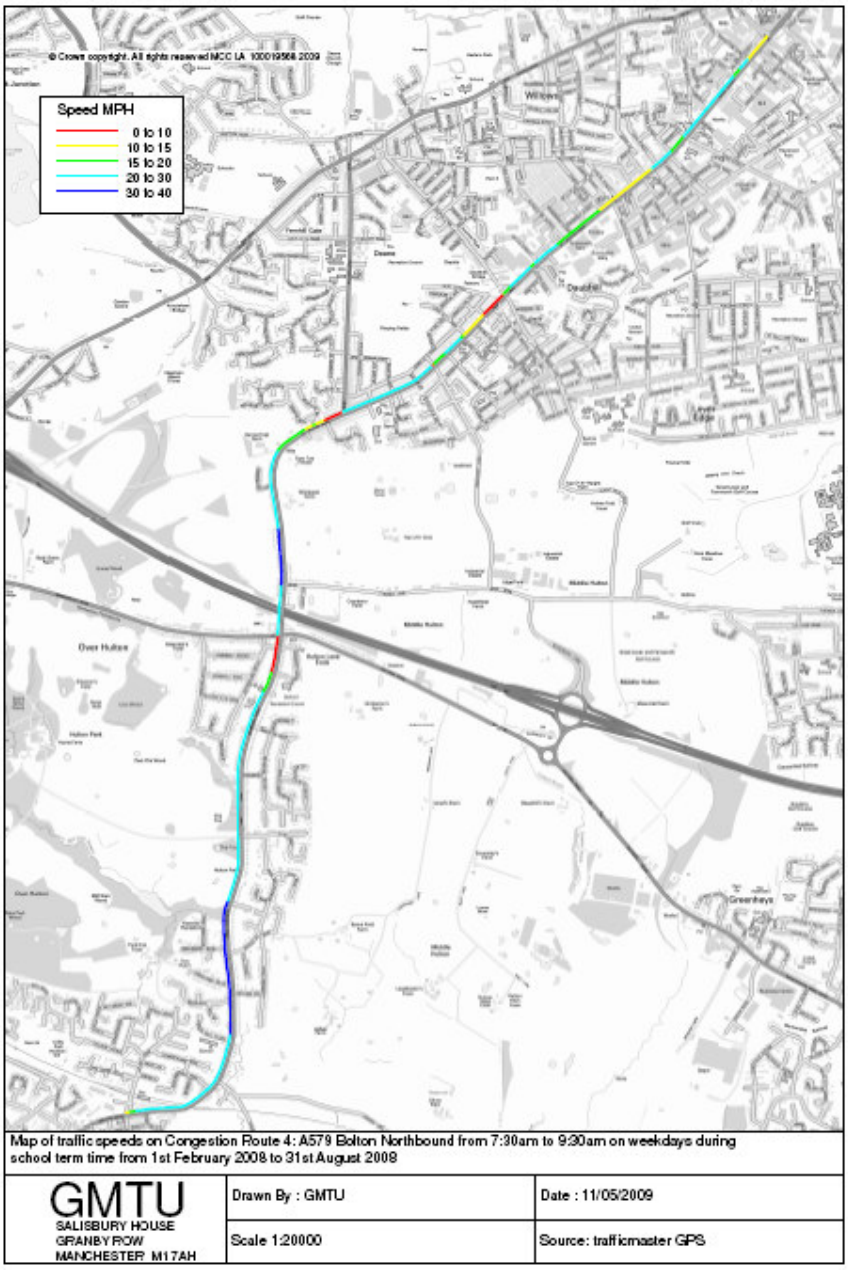
5.8 This chart can also be used to help assess the impact of events on journey times on the route. For example highest average monthly journey time for this route was January 2008. This peak journey time may be partly attributable to weather conditions is this month. January 2008 has the highest level of rainfall for the period covered by the chart.

6 Route 4: A579 Bolton Northbound

6.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 4 in more detail.

6.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 12. Thematic map of average traffic speeds along Congestion Route 4: A579 Bolton Northbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



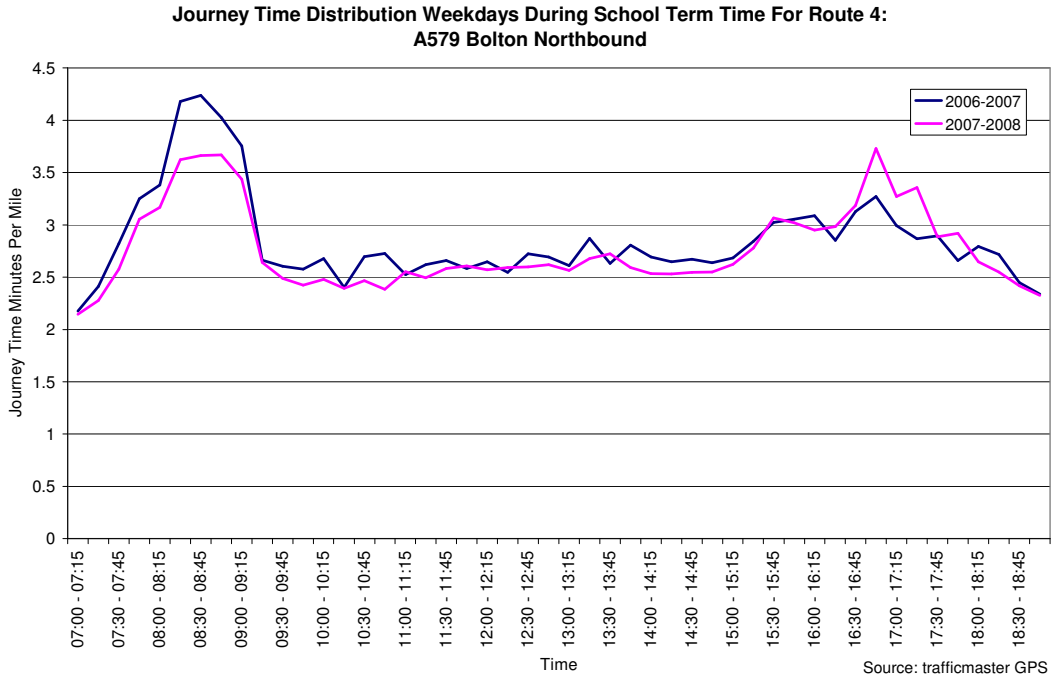
6.3 A pdf version of this map is available on the GMTU website.

6.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 6.2 mph on the section of the route between Crescent Avenue and the A6 Manchester Road.

6.5 Two sections on this route have an average speed in excess of 30 mph. The first section is between Green Hall Close and Mornington Road and the second section is between Plodder Lane and Whitegate Farm. The highest average speed on these sections of the route during this period was 32.6 mph.

6.6 By using the information provided by Trafficmaster GPS it is possible to plot a profile of average journey times for the route throughout the day. These profiles can help identify the impact travelling during the morning peak has on journey times and make comparisons between average journey times in academic years 2006-2007 and 2007-2008.

Figure 13. Journey time profiles for Congestion Route 4: A579 Bolton Northbound on weekdays during school term time for 2006-2007 and 2007-2008



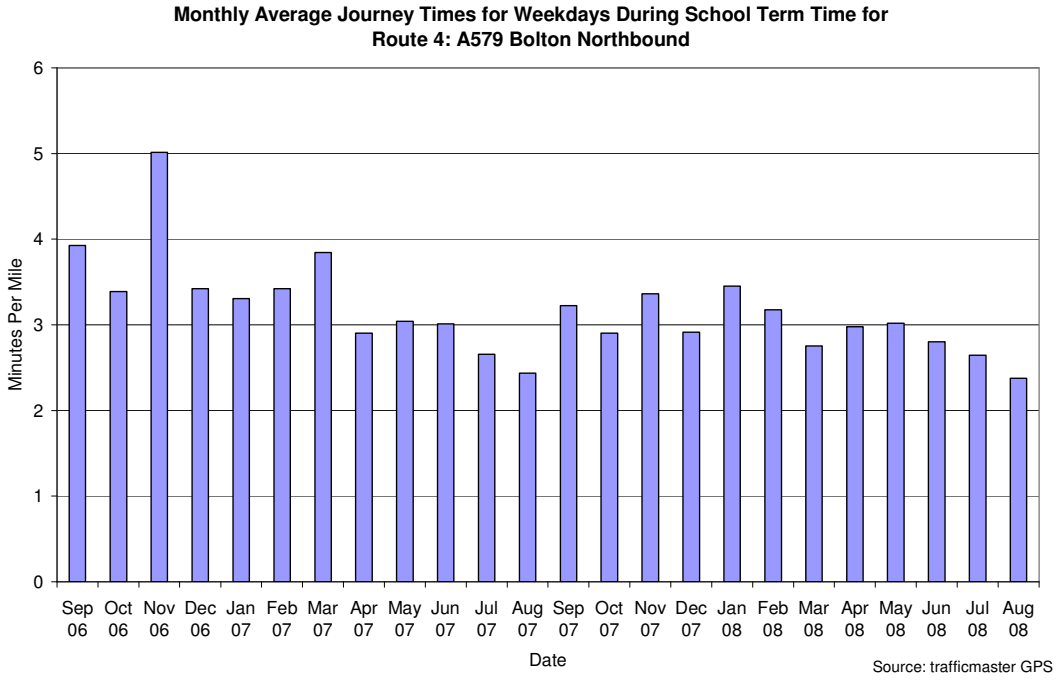
6.7 The above figure shows that while average journey times remain consistent for the interpeak period in both years there was a reduction in average journey time during the morning peak.

6.8 The average journey time in the morning peak during academic year 2006-2007 was 4.2 minutes per mile while the highest average journey time during academic year 2007-2008 was 3.7 minutes per mile.

6.9 These journey time profiles also show us that there is change in journey times during the evening peak. The highest journey time during the evening peak in 2006-2007 was 3.3 minues per mile. This figured increased to 3.7 minutes per mile for 2007-2008.

6.10 The Trafficmaster data can also be used to track how the average journey time changes over time. The Figure below charts the average monthly journey time during the morning peak.

Figure 14. Monthly average journey times during the morning peak on weekdays for Congestion Route 4: A579 Bolton Northbound.



6.11 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for June, July and August in both 2007 and 2008 we can see that there is a reduction in journey time during the summer months. This may be attributable to the reduced traffic flow associated with the summer months.

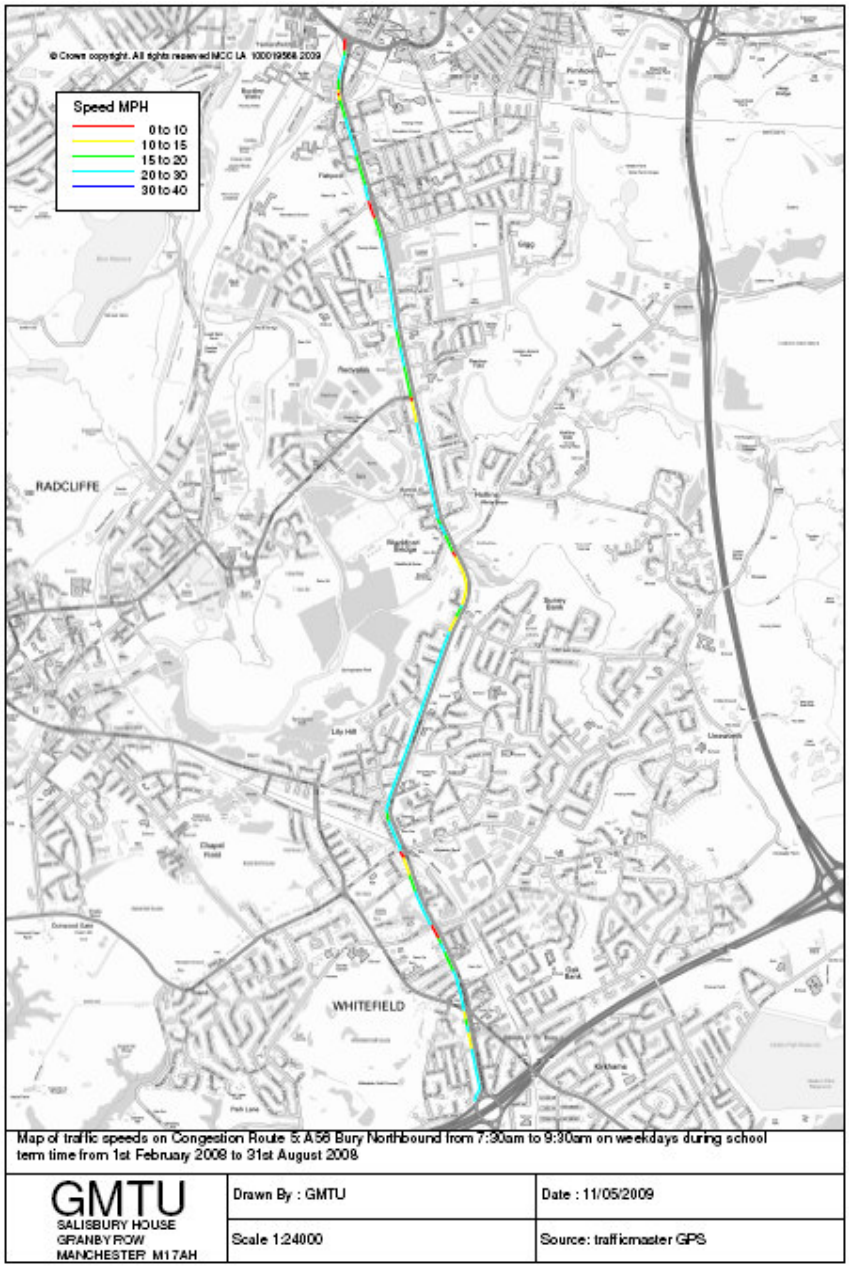
6.10 This type of chart can also be used to help assess the impact of events on journey times on the route. For example, the average journey time for November 2006 is higher than the journey time for the other months in this chart. This increase in average journey time may have been caused by road works or an incident on the route.

7 Route 5: A56 Bury Northbound

7.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 5 in more detail.

7.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 15. Thematic map of average traffic speeds along Congestion Route 5: A56 Bury Northbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



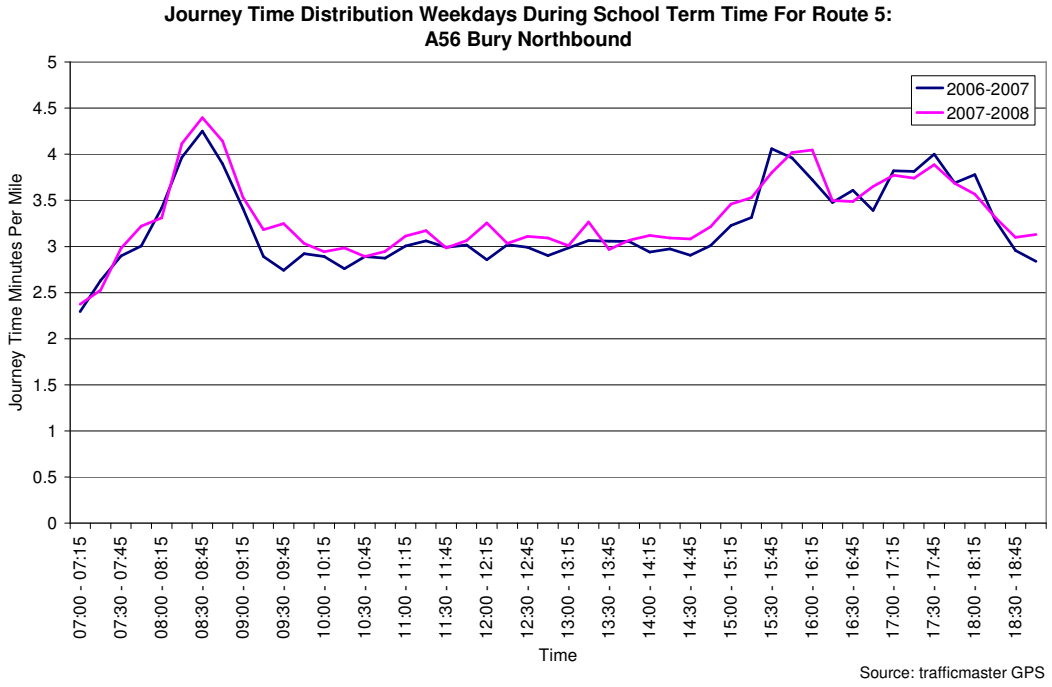
7.3 This map is available in pdf format on the GMTU website.

7.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 2.2 mph. This average speed was observed at the northern end of the route at the intersection with Jubilee Way and Angouleme Way.

7.5 The highest average speed on the route during this period was 29 mph. This speed was recorded on a section of the route at the intersection with Well Lane.

7.6 In order to identify the impact travelling during the morning peak has on journey times on this route, the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 16. Journey time profiles for Congestion Route 5: A56 Bury Northbound on weekdays during school term time for 2006-2007 and 2007-2008

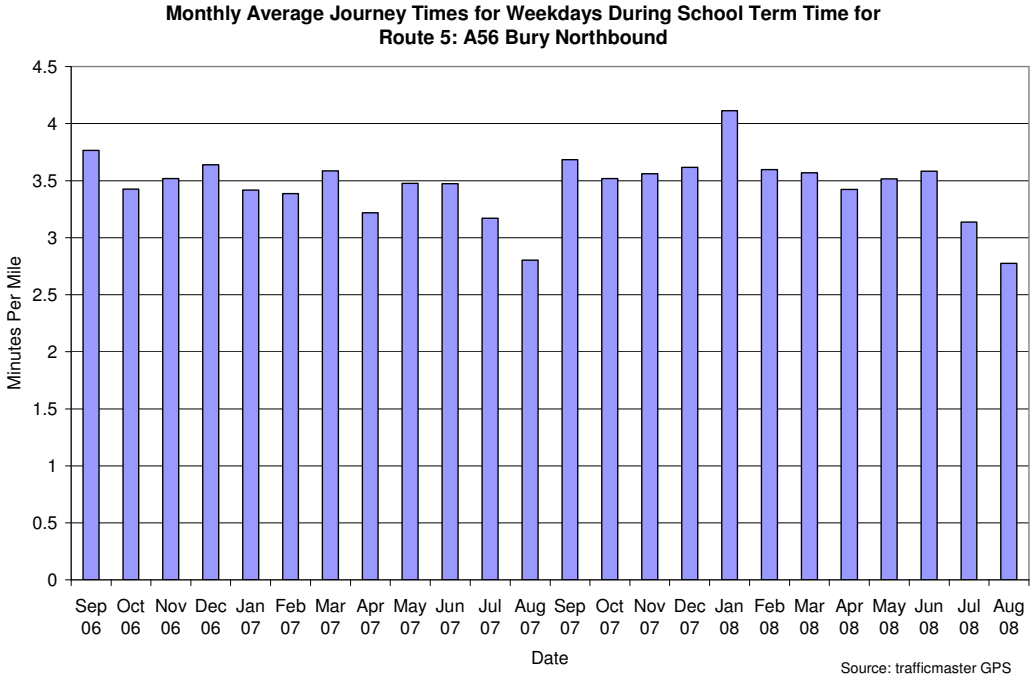


7.7 The highest average journey time during academic year 2006-2007 was 4.2 minutes per mile while highest average journey time during academic year 2007-2008 was slightly higher at 4.4 minutes per mile between. In both years the peak journey time was recorded between 08:30 and 08:45.

7.8 By examining the journey time profile we can compare the figures for the morning peak to those calculated for the interpeak period which are typically between 2.8 and 3.3 minutes per mile. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

7.6 Additionally the data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The Figure below charts average monthly journey times during the morning peak.

Figure 17. Monthly average journey times during the morning peak on weekdays for Congestion Route 5: A56 Bury Northbound.



7.7 By examining this chart we can see how average journey time changes over time. For example if we look at the bars for July and August in both 2007 and 2008 we can see that there is a reduction in journey time during the summer months which is attributable to the reduced traffic flow associated with school holidays.

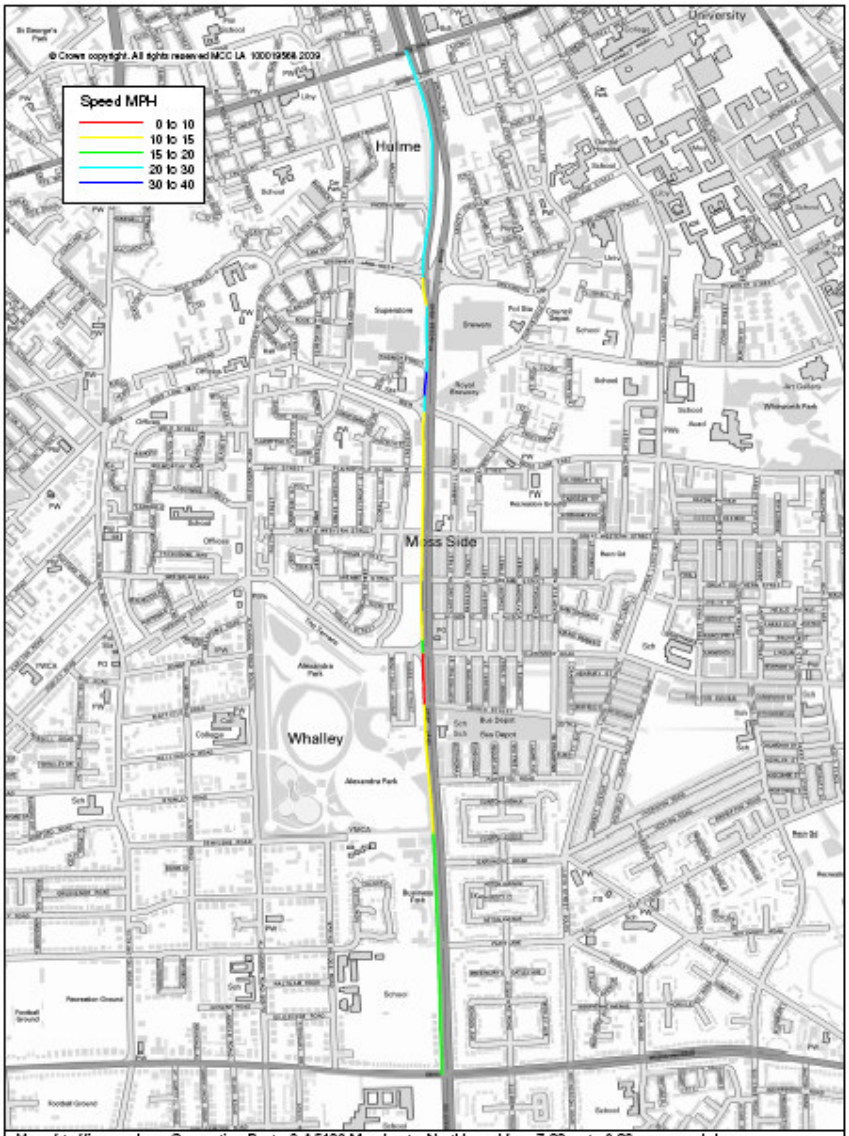
7.8 This chart can also be used to help assess the impact of events on journey times on the route. For example highest average monthly journey time for this route was January 2008. This peak journey time may be partly attributable to weather conditions is this month. January 2008 has the highest level of rainfall for the period covered by the chart.

8 Route 6: A5103 Manchester Northbound

8.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 6 in more detail.

8.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 18. Thematic map of average traffic speeds along Congestion Route 6: A5103 Manchester Northbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.

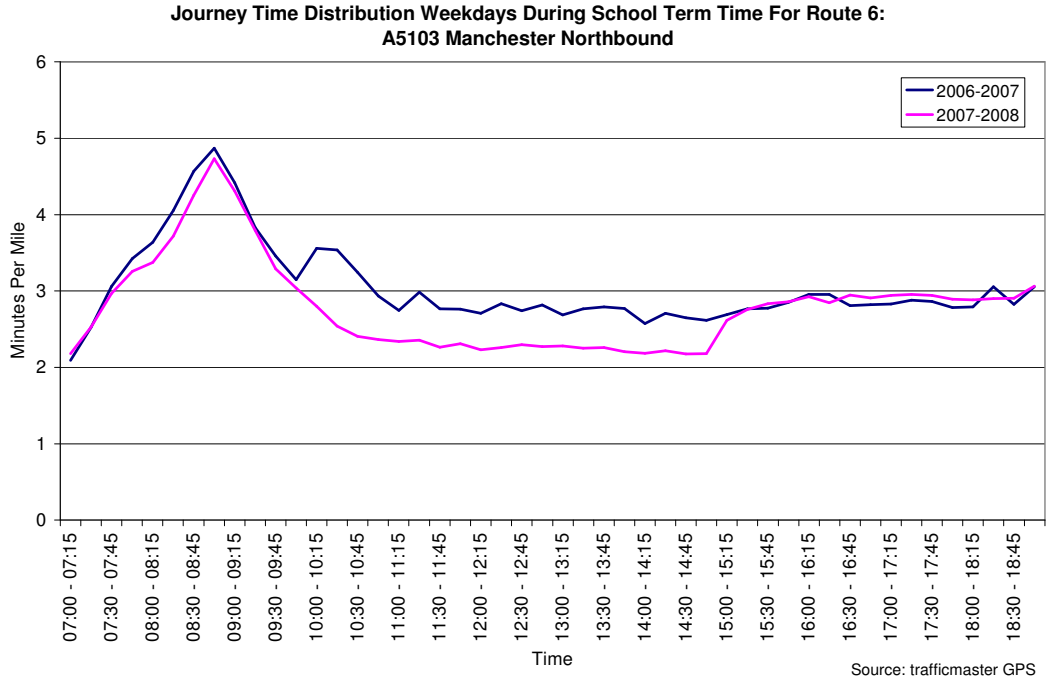


8.3 This map is also available in pdf format on the GMTU website.

8.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 9.3 mph between Bowes Street and Claremont Road. The highest average speed on the route during this period was 31 mph between the B5219 Moss Lane and Radnor Street.

8.5 In order to identify the impact travelling during the morning peak has on journey times on this route, the data provided by Trafficmaster has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 19. Journey time profiles for Congestion Route 6: A5103 Manchester Northbound on weekdays during school term time for 2006-2007 and 2007-2008



8.6 The highest average journey time during academic year 2006-2007 was 4.9 minutes per mile while highest average journey time during academic year 2007-2008 was slightly better at 4.7 minutes per mile between. In both years the peak journey time was recorded between 08:45 and 09:00.

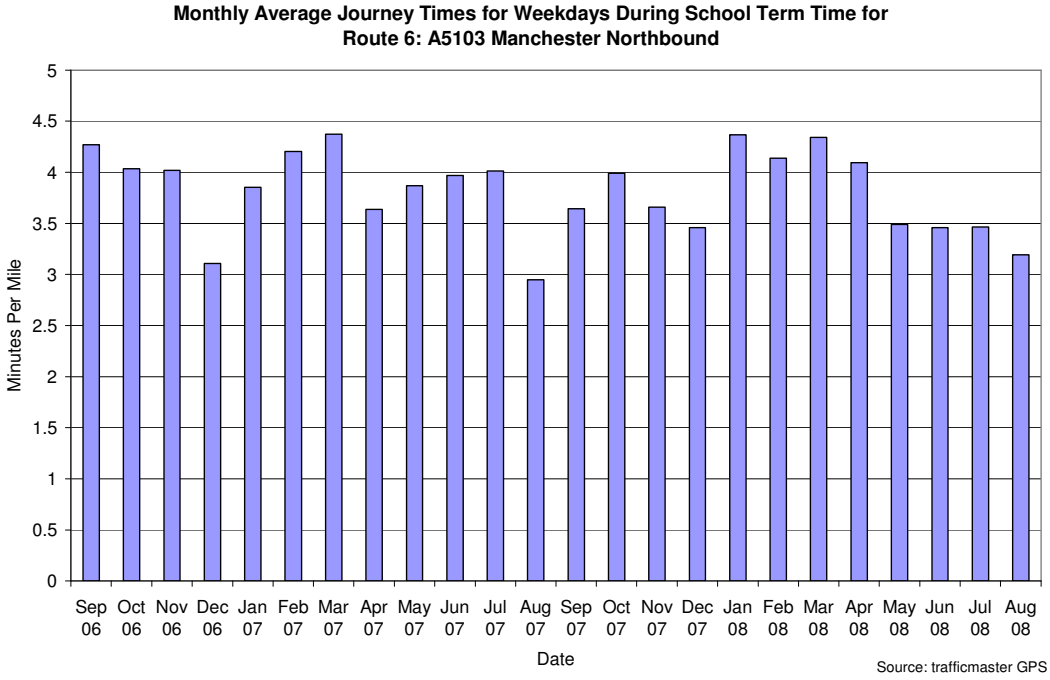
8.7 This slight improvement in journey time may be associated with the reduction in morning peak flow on the route as measured by the local surveys, from 4313 in 2006 to 4178 in 2007 (a 3.1% reduction).

8.8 By comparing the profiles for 2006-2007 and 2007-2008 we can see that while the average journey times in the morning and evening peak periods is similar in 2006-2007 and 2007-2008 the average journey time during the interpeak period is lower in 2007-2008. This is a similar change to that observed for route 2.

8.9 The Trafficmaster data can be used to track how the average journey time

changes over time. The Figure below charts the average monthly journey times during the morning peak.

Figure 20. Monthly average journey times during the morning peak on weekdays for Congestion Route 6: A5103 Manchester Northbound.



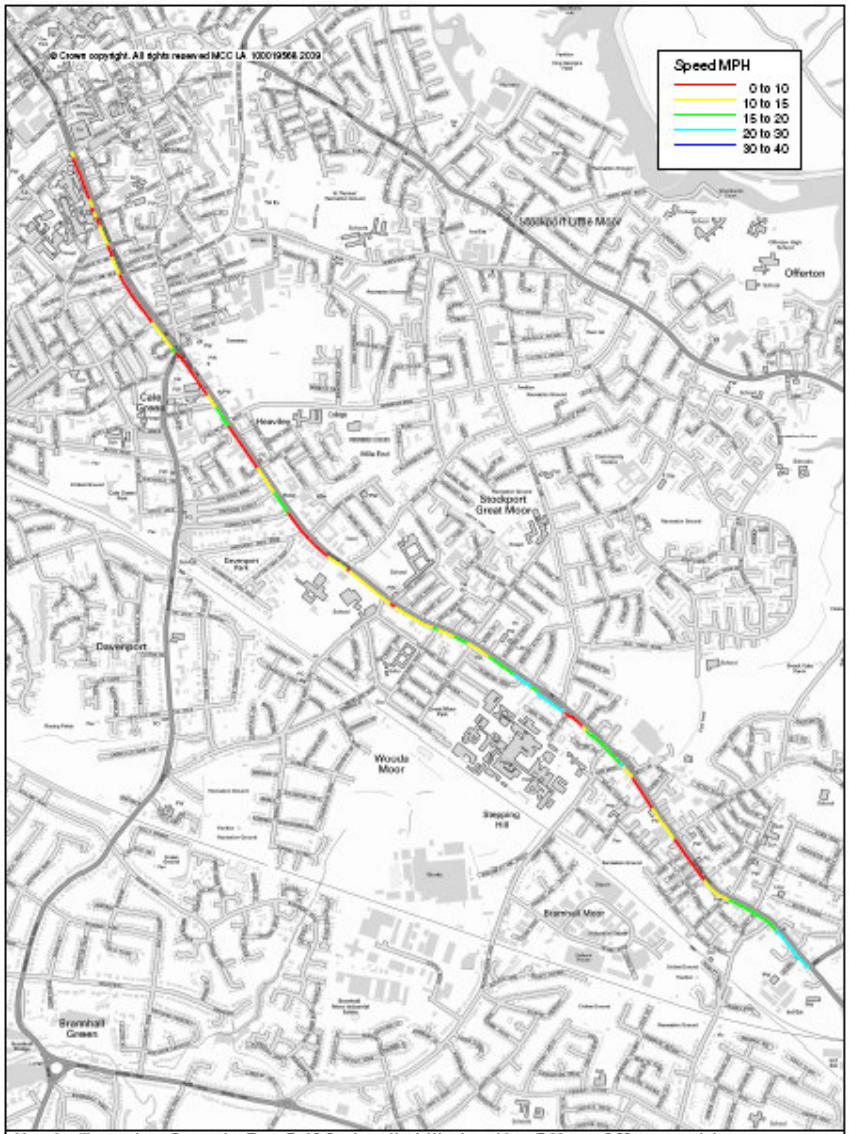
8.10 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for August in both 2007 and 2008 we can see that there is a reduction in journey time during this month attributable to the reduced network demand associated with school holidays.

9 Route 7: A6 Stockport North-Westbound

9.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 7 in more detail.

9.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 21. Thematic map of average traffic speeds along Congestion Route 7: A6 Stockport North-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



Map of traffic speeds on Congestion Route 7: A6 Stockport North-Westbound from 7:30am to 9:30am on weekdays during school term time from 1st February 2008 to 31st August 2008

GMTU SALISBURY HOUSE GRANBY ROW MANCHESTER M17AH	Drawn By : GMTU	Date : 11/05/2009
	Scale 1:17000	Source: trafficmaster GPS

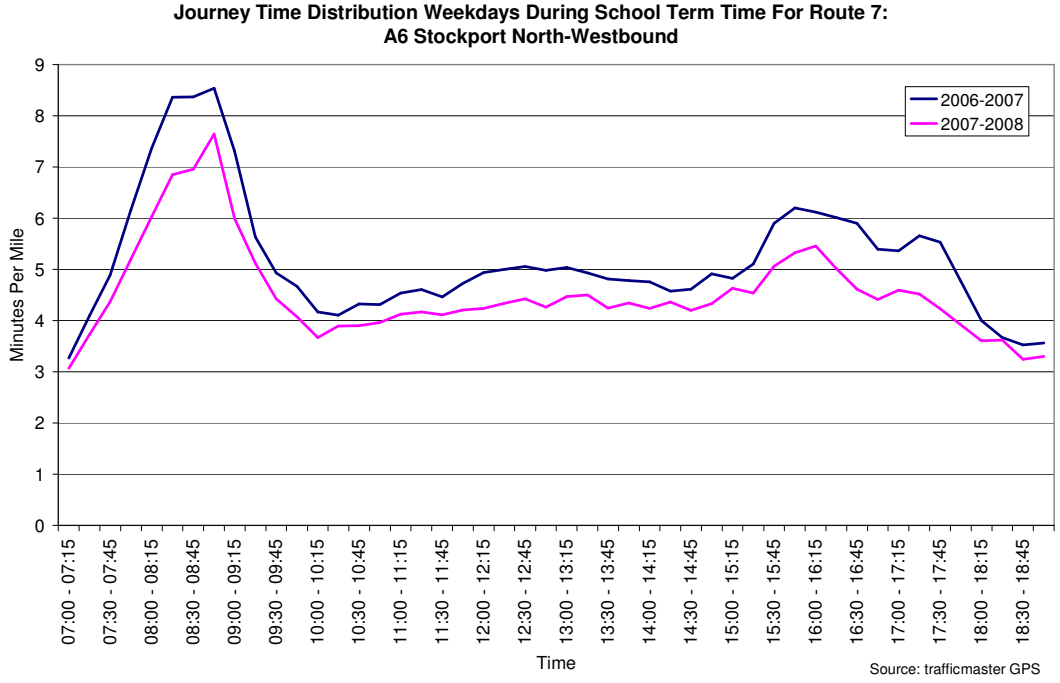
9.3 This map is available in pdf format on the GMTU website.

9.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4.8 mph between Longshut Lane West and Lyme Grove.

9.5 The highest average speed on the route during this period was 26 mph on a section of the route between Brook Street and Spring Vale.

9.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 22. Journey time profiles for Congestion Route 7: A6 Stockport North-Westbound on weekdays during school term time for 2006-2007 and 2007-2008

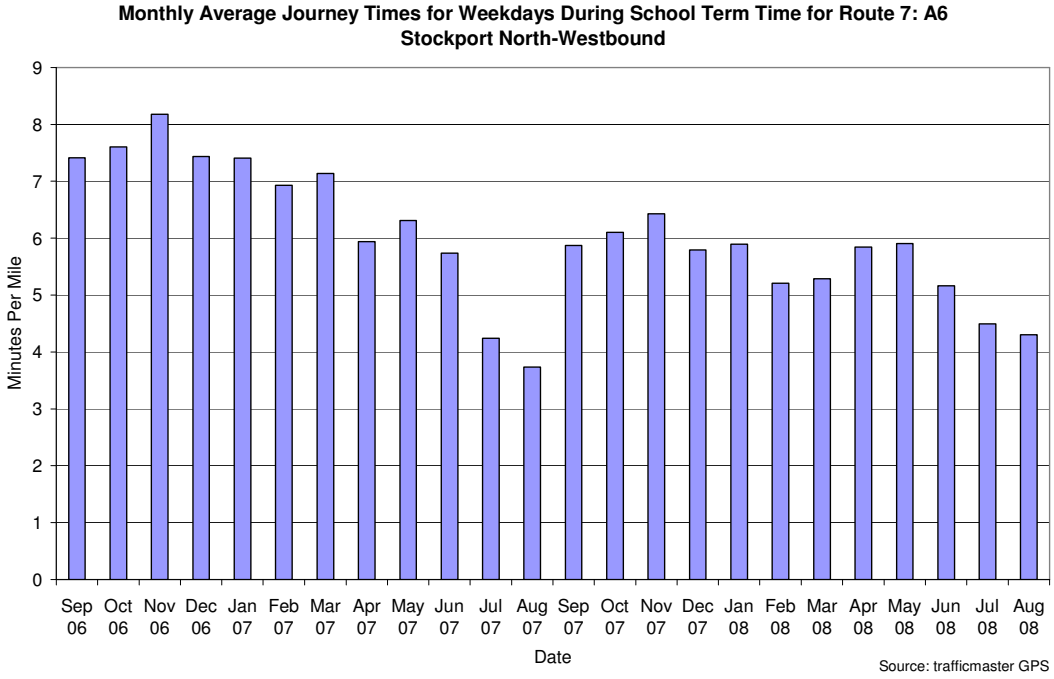


9.7 The highest average journey time during academic year 2006-2007 was 8.5 minutes per mile while highest average journey time during academic year 2007-2008 was 7.6 minutes per mile. In both years the peak journey time was recorded between 08:45 and 09:00.

9.8 By comparing the profiles for 2006-2007 and 2007-2008 we can see that the average journey times for 2007-2008 are consistantly lower than in 2006-2007 in the period 7am to 7pm.

9.9 The data provided by the Trafficmaster GPS in-vehicle devices can also be used to track how the average journey time changes over time. The Figure below charts the average monthly journey times during the morning peak.

Figure 23. Monthly average journey times during the morning peak on weekdays for Congestion Route 7: A6 Stockport North-Westbound.



9.10 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for July and August in both 2007 and 2008 we can see that there is a reduction in journey time during these months. This is attributable to the reduced traffic flow associated with school holidays.

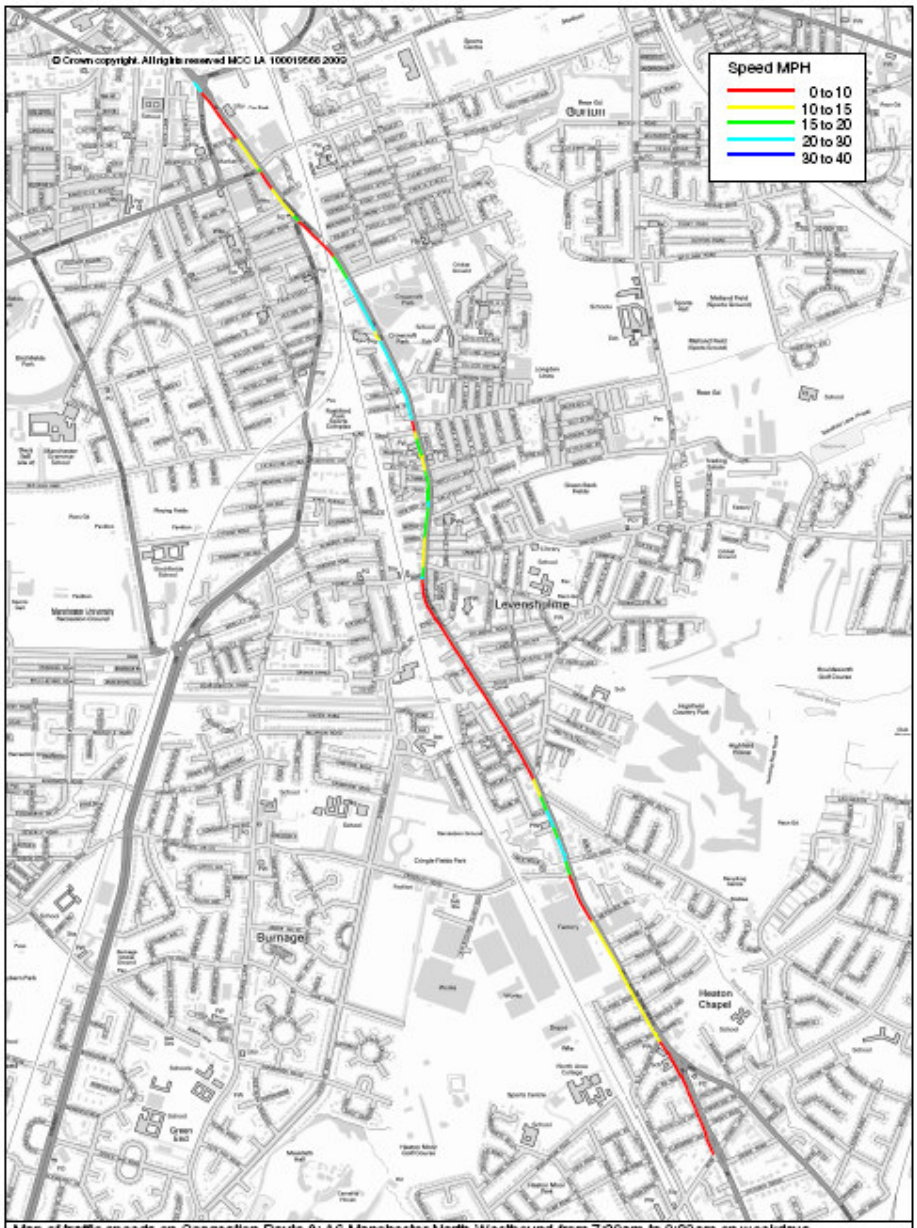
9.11 Additionally this chart also shows the same reduction in journey times from 2006-2007 to 2007-2008 that can be seen in the journy time profiles (figure 22). If we compare the 10 months from September 2006 to June 2007 to the same period in 2007-2008 we can see that the average journey time in each month is higher in 2006-2007 than in 2007-2008.

10 Route 8: A6 Manchester North-Westbound

10.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 8 in more detail.

10.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 24. Thematic map of average traffic speeds along Congestion Route 8: A6 Manchester North-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



Map of traffic speeds on Congestion Route 8: A6 Manchester North-Westbound from 7:30am to 9:30am on weekdays during school term time from 1st February 2008 to 31st August 2008

GMTU SALISBURY HOUSE GRANBY ROW MANCHESTER M1 7AH	Drawn By : GMTU	Date : 11/05/2009
	Scale 1:16000	Source: trafficmaster GPS

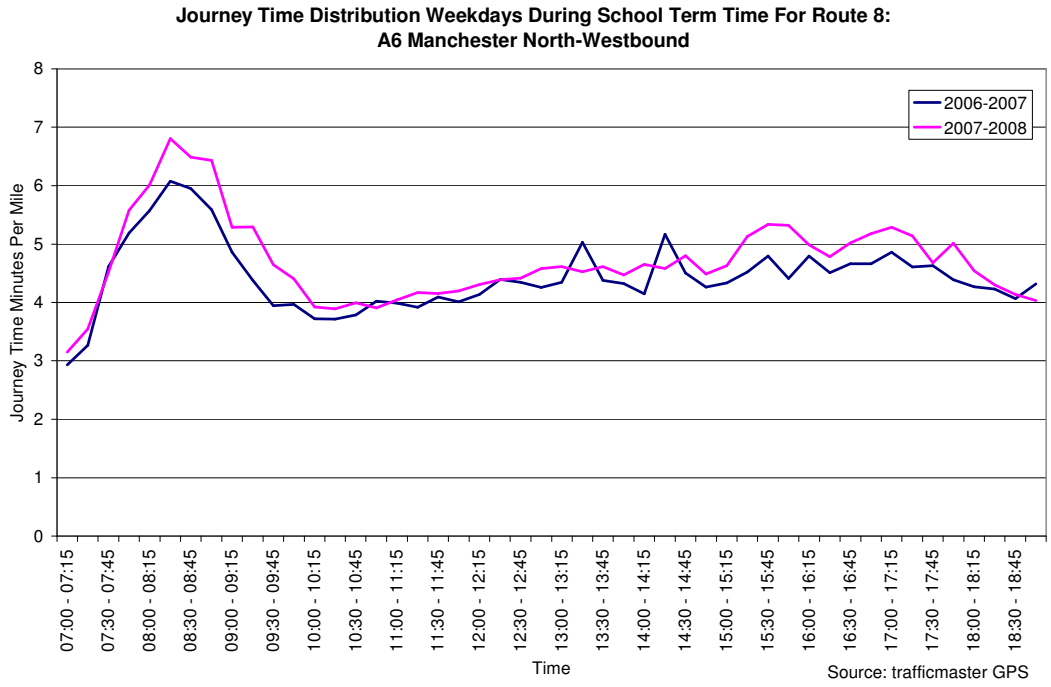
10.3 This map is available as a pdf document on the GMTU website.

10.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4 mph between Holly Road and Ellesmere Road North.

10.5 The highest average speed on the route during this period was 24.8 mph between Pennington Street and Swallow Street.

10.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

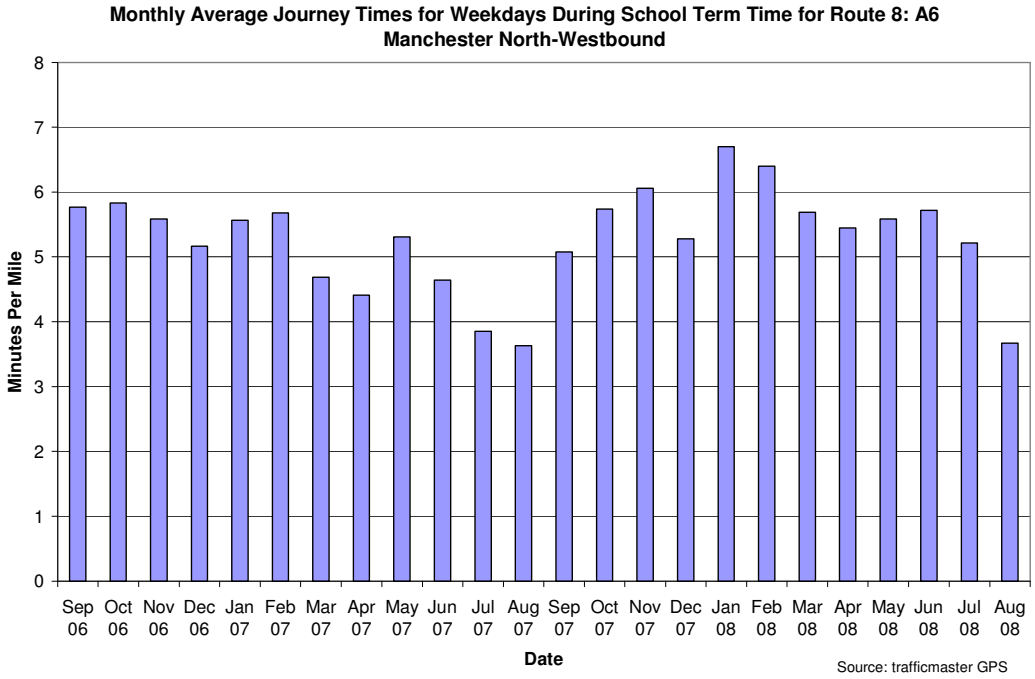
Figure 25. Journey time profiles for Route 8: A5103 Manchester Northbound on weekdays during school term time for 2006-2007 and 2007-2008



10.7 The highest average journey time during academic year 2006-2007 was 6.1 minutes per mile while the highest average journey time during academic year 2007-2008 was higher at 6.8 minutes per mile. In both years the peak journey time was recorded between 08:15 and 08:30.

10.8 The data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The Figure below charts the average monthly journey time figures during the morning peak.

Figure 26. Monthly average journey times during the morning peak on weekdays for Route 8: A6 Manchester North-Westbound.



10.9 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for August in both 2007 and 2008 we can see that there is a reduction in journey time during this month which may be attributable to the reduced network demand associated with school holidays.

10.10 This chart can also be used to compare average monthly journey time between academic years. If we compare the average journey time for each month in academic year 2006-2007 to the same month in 2007-2008 we can see that in all but 2 months the average monthly journey time was higer in 2007-2008. This supports the evidence from figure 25 (journey time profiles) which shows a higher journey time during the morning peak in 2007-2008.

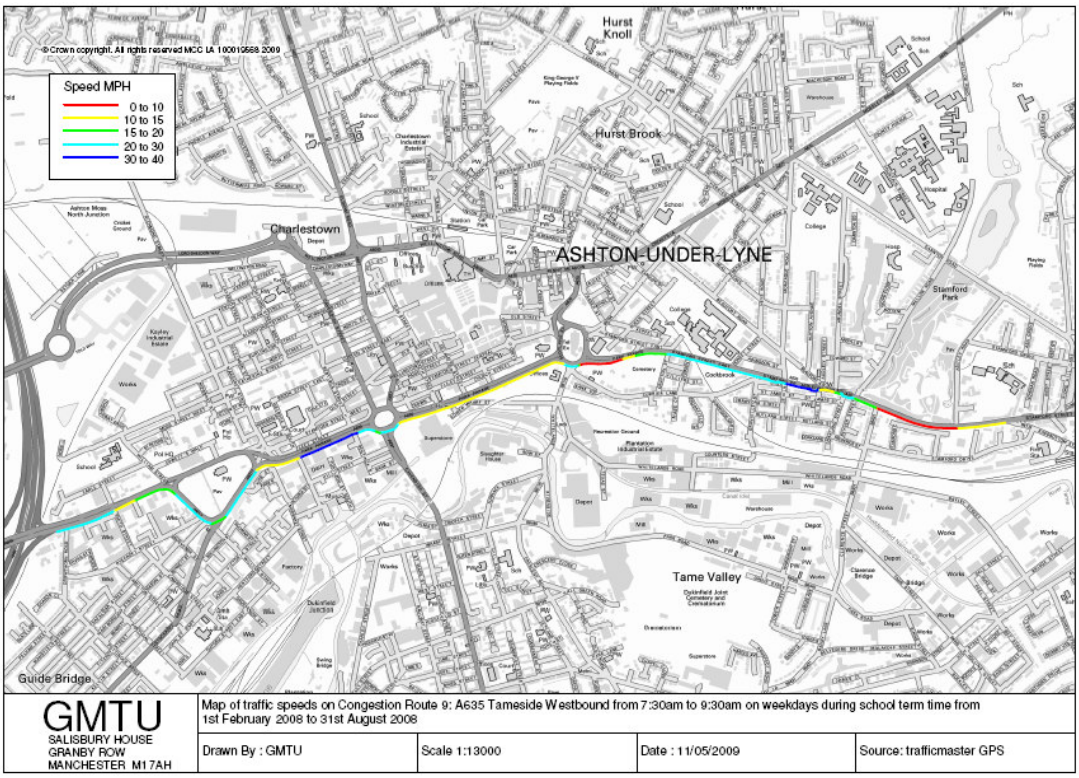
10.11 This chart can used to help assess the impact of events on journey times on the route. As with a number of other routes, the highest average monthly journey time for this route was January 2008. This peak journey time may be partly attributable to weather conditions in this month. January 2008 saw the highest level of rainfall for the period covered by the chart.

11 Route 9: A635 Tameside Westbound

11.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 9 in more detail.

11.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 27. Thematic map of average traffic speeds along Congestion Route 9: A635 Tameside Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



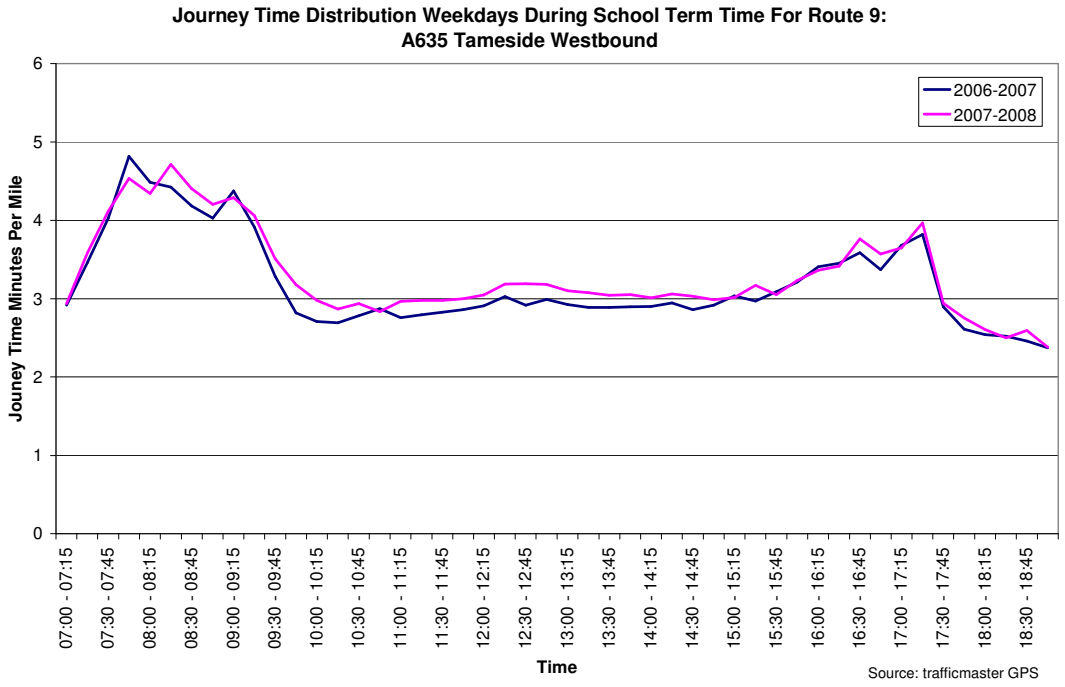
11.3 A pdf version of this map is available on the GMTU website.

11.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 5.8 mph on the section of the route approaching the roundabout at the intersection with the B6170 Whitelands.

11.5 The highest average speed on the route during this period was 33.9 mph on a short section of the route at the intersection with Beaufort Road.

11.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 28. Journey time profiles for Route 9: A635 Tameside Westbound on weekdays during school term time for 2006-2007 and 2007-2008

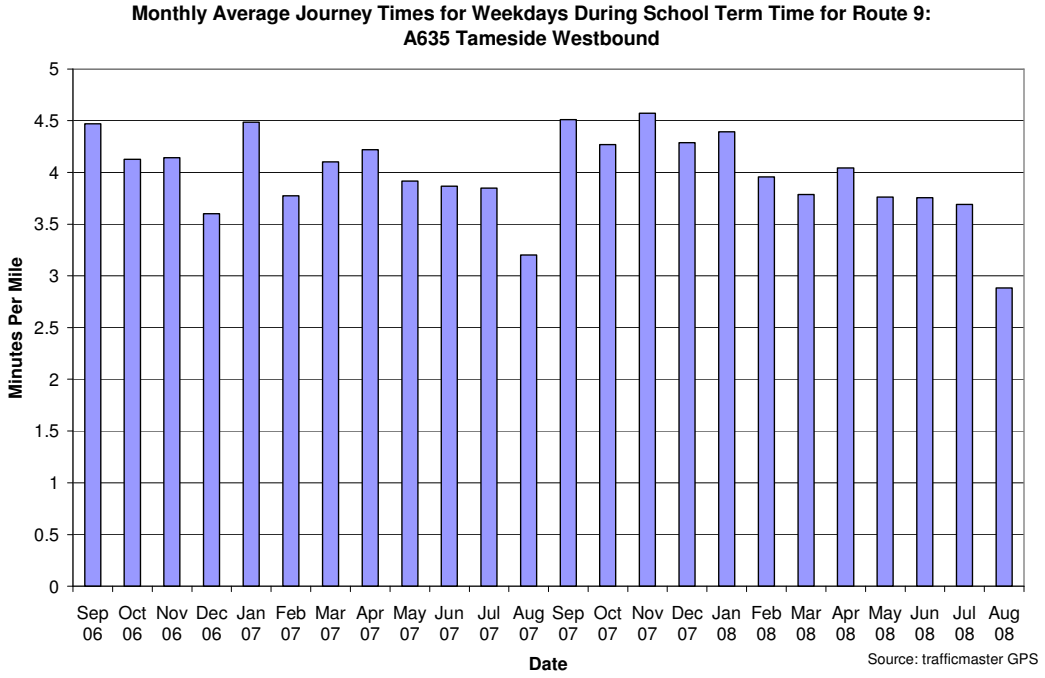


11.7 The highest average journey time during academic year 2006-2007 was 4.8 minutes per mile, this peak journey time was recorded between 07:45 and 08:00. The highest average journey time during academic year 2007-2008 was slightly later between 08:15 and 08:30 where an average journy time of 4.7 minutes per mile was recorded.

11.8 By examining the journey time profile we can compare the figures for the morning peak to those calculated for the interpeak period. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

11.9 Additionally the data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The Figure below charts the average monthly journey time figures during the morning peak.

Figure 29. Monthly average journey times during the morning peak on weekdays for Congestion Route 9: A635 Tameside Westbound.



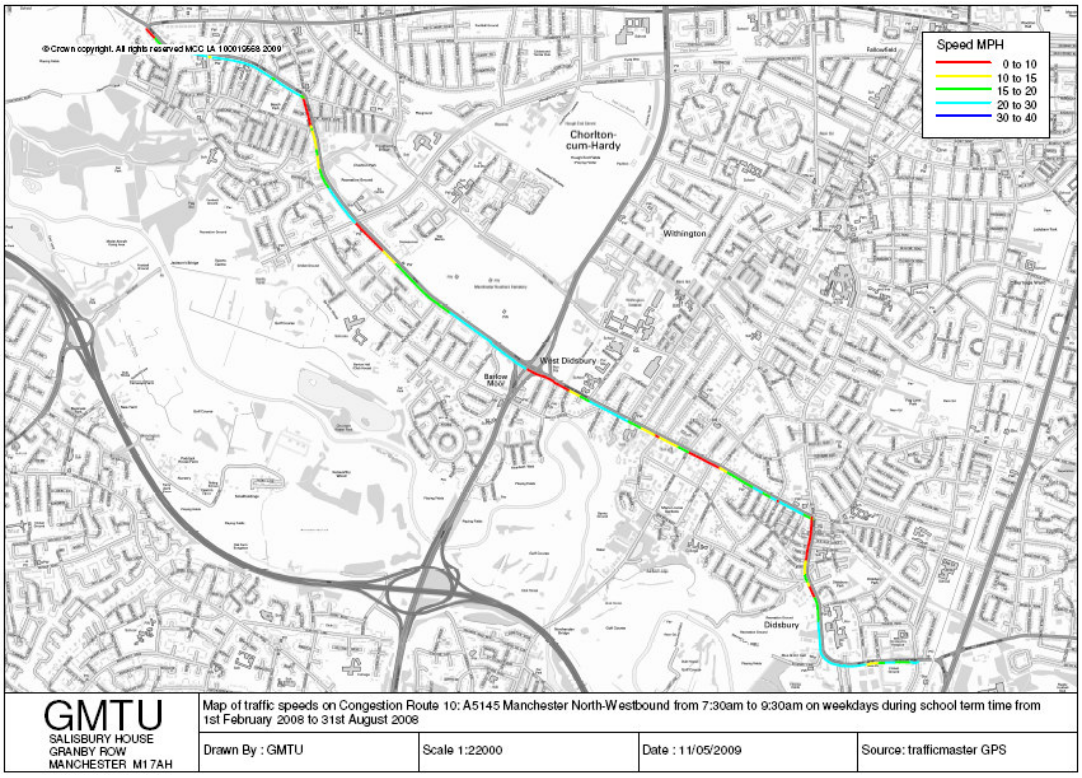
11.10 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for August in both 2007 and 2008 we can see that there is a reduction in journey time during this month which is attributable to the reduced network demand associated with school holidays.

12 Route 10: A5145 Manchester North-Westbound

12.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 10 in more detail.

12.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 30. Thematic map of average traffic speeds along Congestion Route 10: A5145 Manchester North-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



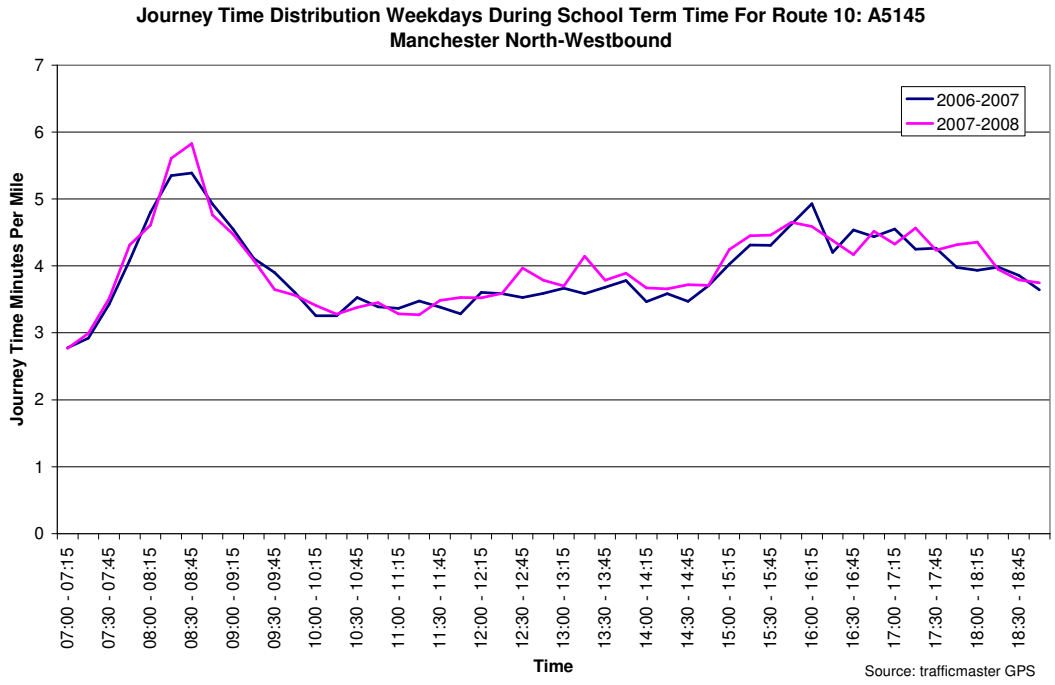
12.3 A pdf version of this map is available on the GMTU website.

12.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 2.2 mph at the intersection with the A5103 Princess Parkway/Princess Road.

12.5 The highest average speed recorded during this period was 28 mph. This speed was recorded between Derwent Avenue and Aldermary Road.

12.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 31. Journey time profiles for Congestion Route 10: A5145 Manchester North-Westbound on weekdays during school term time for 2006-2007 and 2007-2008

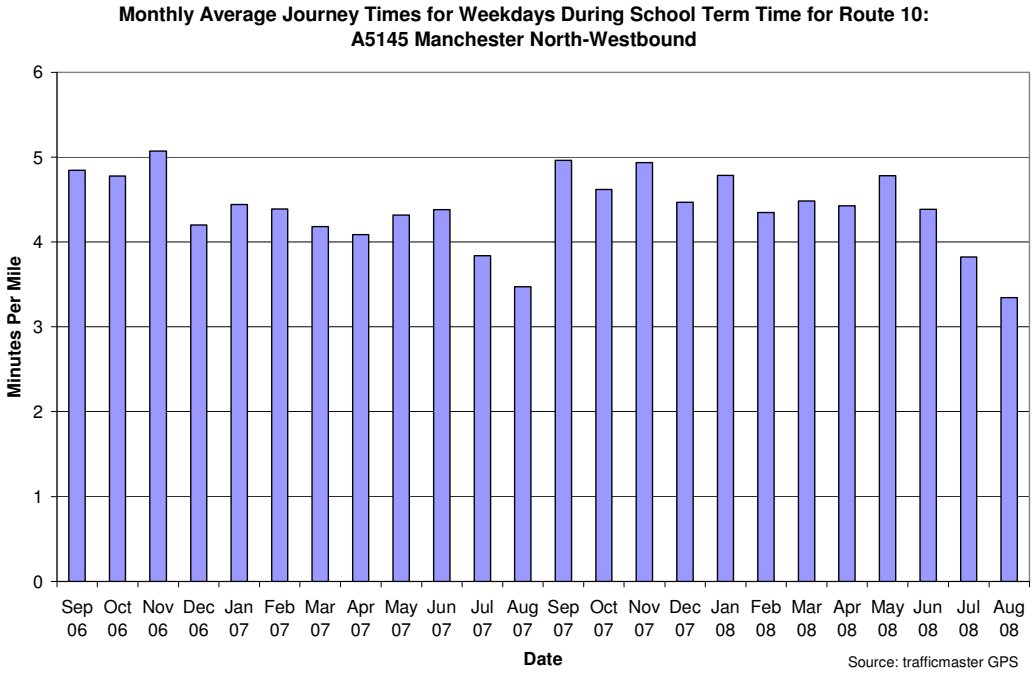


12.7 The highest average journey time during academic year 2006-2007 was 5.4 minutes per mile between 08:30 and 08:45 and highest average journey time during academic year 2007-2008 was 5.8 minutes per mile again between 08:30 and 08:45.

12.8 By examining the journey time profile we can compare the figures for the morning peak to those calculated for the interpeak period which are typically between 3.2 and 4.2 minutes per mile. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

12.9 Additionally the data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The Figure below charts average monthly journey time figures during the morning peak.

Figure 32. Monthly average journey times during the morning peak on Weekdays for Congestion Route 10: A5145 Manchester Northbound.



12.10 By examining this chart we can see how average journey time changes over time. For example if we look at the columns for July and August in both 2007 and 2008 we can see that there is a reduction in journey time during the summer months whichis attributable to the reduced network demand associated with school holidays.

13 Route 11: A49 Wigan Southbound

13.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 11 in more detail.

13.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 33. Thematic map of average traffic speeds along Congestion Route 11: A49 Wigan Southbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.

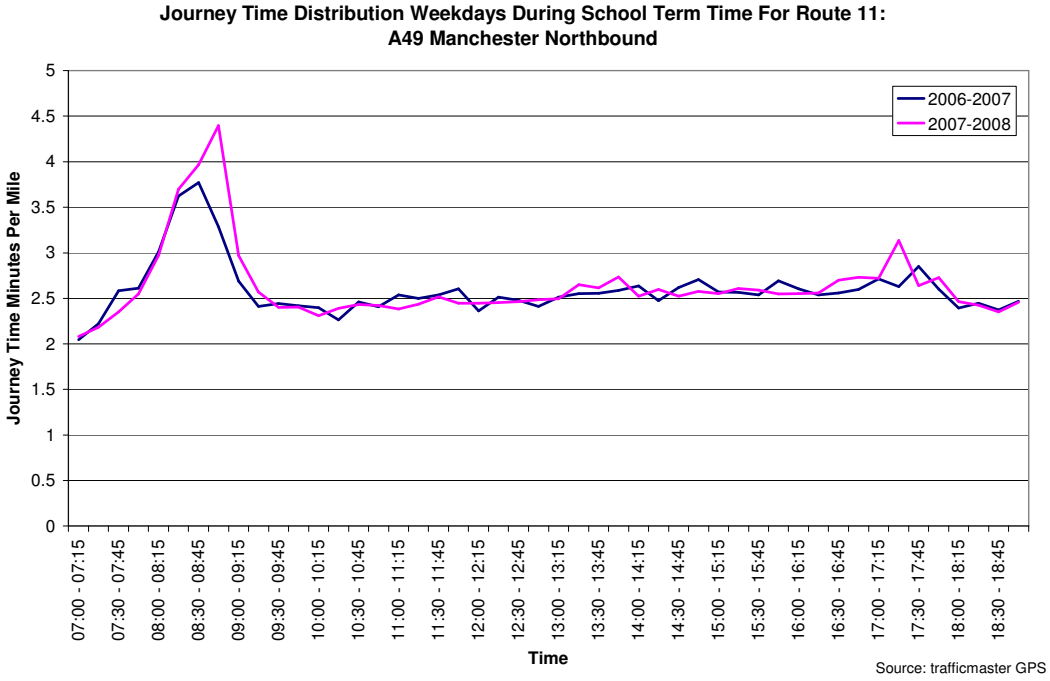
13.3 A pdf version of this map is available on the GMTU website.

13.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 2.7 mph. This speed was recorded at the intersection with Greenough Street.

13.5 The highest average speed recorded on the route during this period was 29.9 mph at the intersection with Saint Aubyn's Road.

13.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 34. Journey time profiles for Congestion Route 11: A49 Wigan Southbound on weekdays during school term time for 2006-2007 and 2007-2008

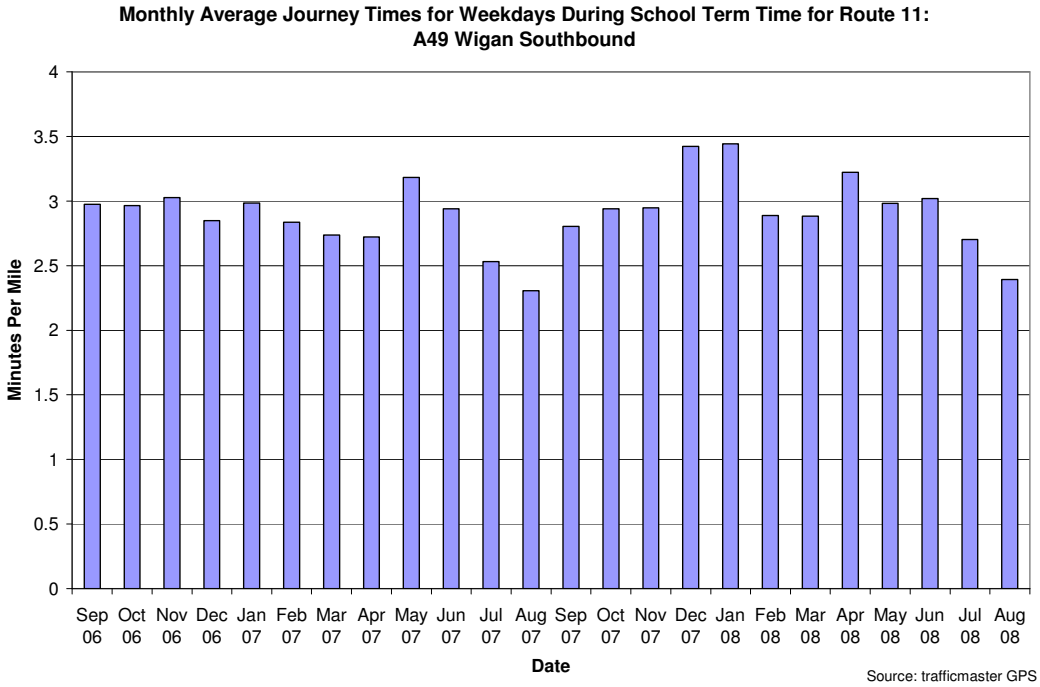


13.7 The highest average journey time during academic year 2006-2007 was 3.8 minutes per mile between 08:30 and 08:45 while the highest average journey time during academic year 2007-2008 was higher at 4.4 minutes per mile between 08:45 and 09:00.

13.8 By examining the journey time profile we can compare the figures for the morning peak to those calculated for the interpeak period which are typically between 2.3 and 2.7 minutes per mile. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

13.9 Additionally the data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The figure below charts average monthly journey time figures during the morning peak.

Figure 35. Monthly average journey times during the morning peak on weekdays for Congestion Route 11: A49 Wigan Southbound.



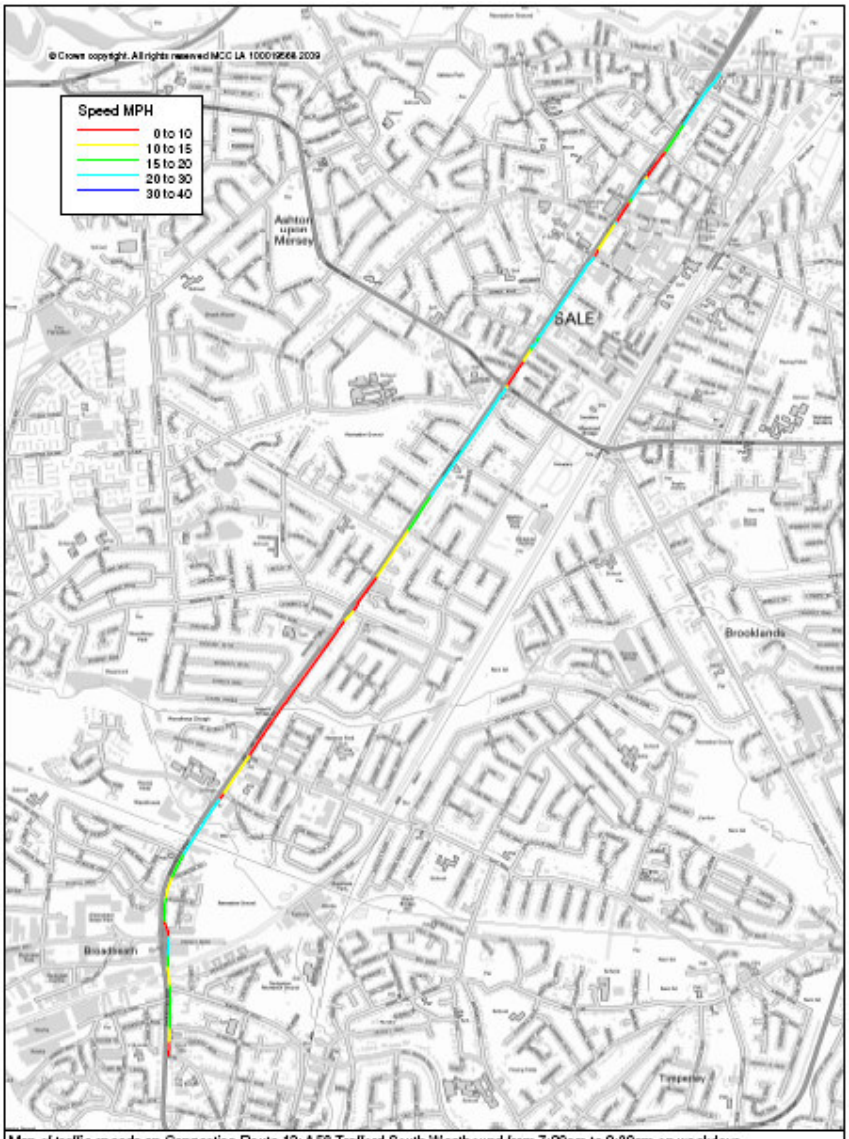
13.10 By examining this chart we can see how average journey time changes over time. For example if we look at the bars for July and August in both 2007 and 2008 we can see that there is a reduction in journey time during the summer months which is attributable to the reduced network demand associated with school holidays.

14 Route 12: A56 Trafford South-Westbound

14.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 12 in more detail.

14.2 The data has been used to produce a thematic map of average traffic speeds for the route

Figure 36. Thematic map of average traffic speeds along Congestion Route 12: A56 Trafford South-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



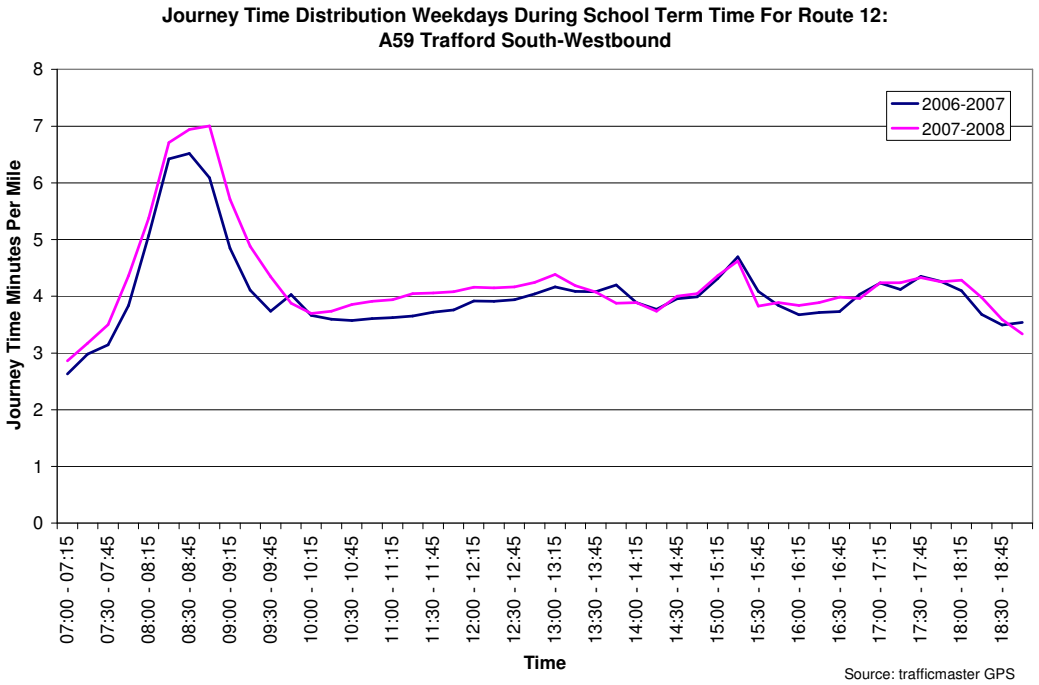
14.3 A pdf version of this map is available on the GMTU website.

14.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 3.8 mph on the section of the route between the A6144 Harboro Way and Grosvenor Square.

14.5 The highest average speed on this section of the route during this period was 28.7 mph. This speed was recorded at the intersection with Broadoaks Road.

14.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 37. Journey time profiles for Route 12: A56 Trafford South-Westbound on weekdays during school term time for 2006-2007 and 2007-2008

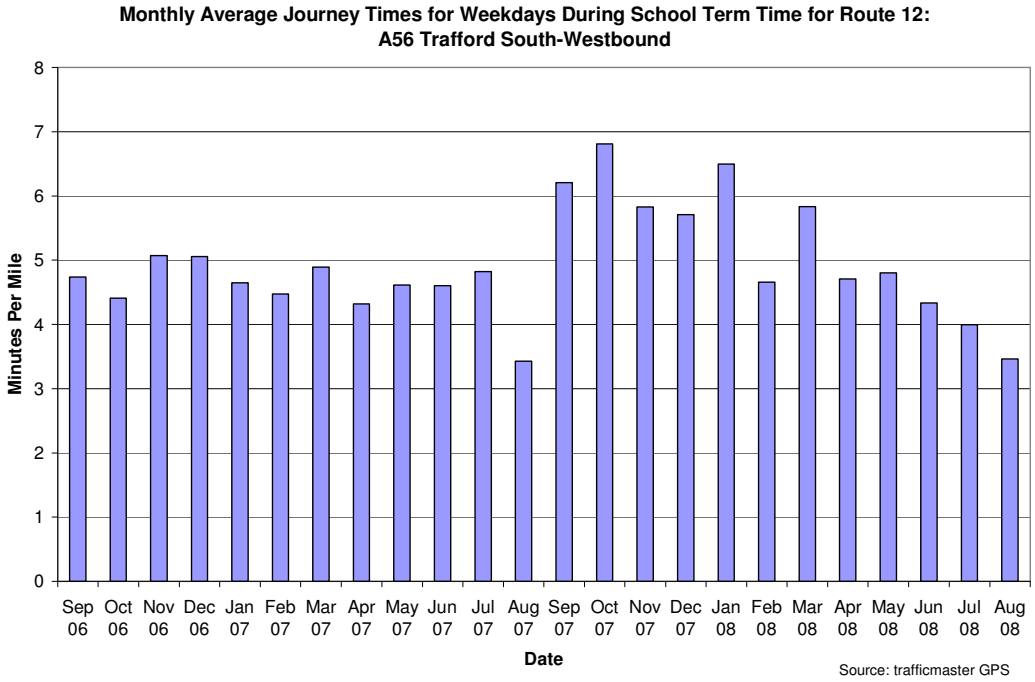


14.7 The highest average journey time during academic year 2006-2007 was 6.5 minutes per mile between 08:30 and 08:45 and highest average journey time during academic year 2007-2008 was 7 minutes per mile between 08:45 and 09:00.

14.8 By examining the journey time profile we can compare the figures for the morning peak to those calculated for the interpeak period which are typically between 3.5 and 4.3 minutes per mile. The interpeak section of the profile shows the journey times that can be achieved along the route under more free flowing conditions.

14.9 The data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The figure below charts average monthly journey times during the morning peak.

Figure 38. Monthly average journey times during the morning peak on weekdays for Congestion Route 12: A56 Trafford South-Westbound.



14.10 This chart shows how the average journey time changes over time. For example if we look at the columns for August 2007 and August 2008 we can see that there is a reduction in journey time during this month which may be attributable to the reduced traffic flow associated with school holidays.

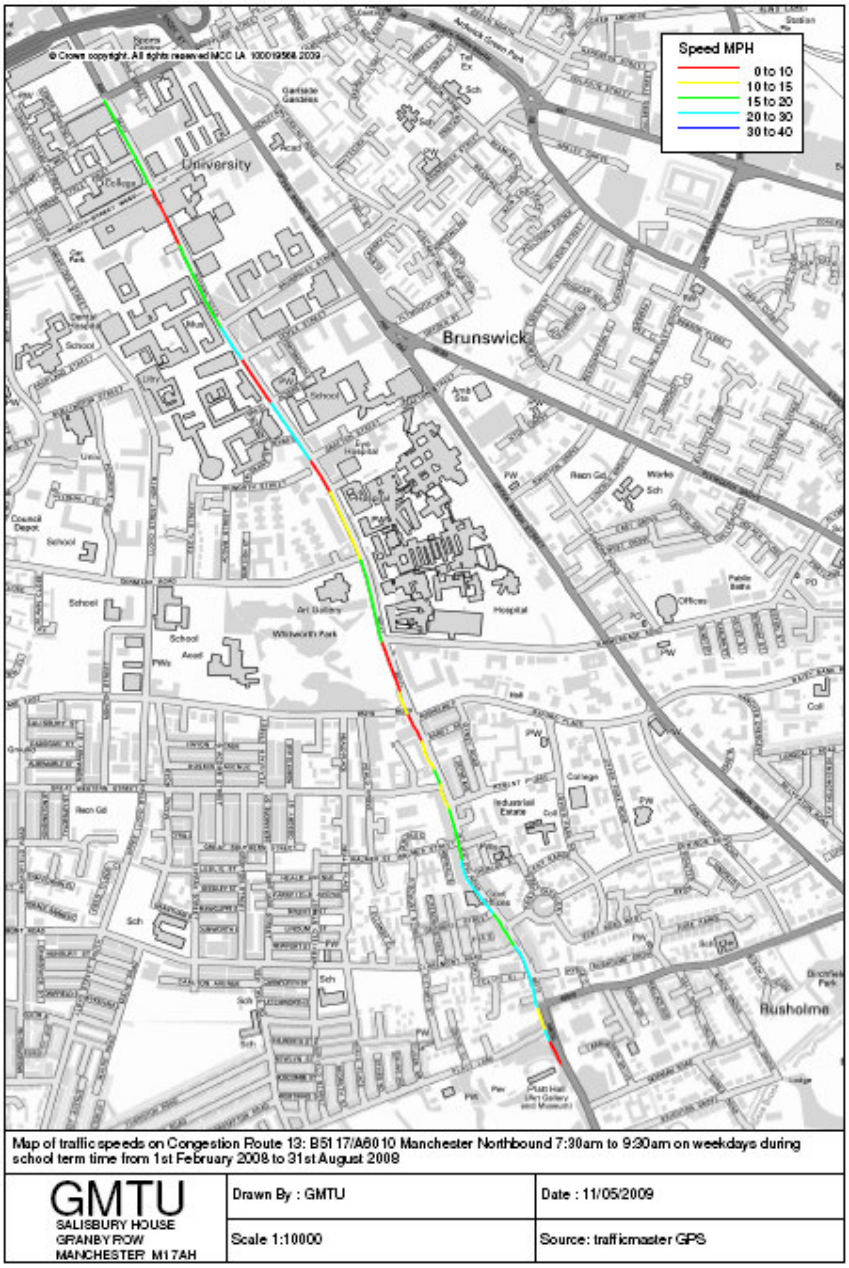
14.11 This chart also shows that there was an increase in the average monthly journey time between September 2007 and May 2008 compared with the same period in 2006-2007. This supports the increase in journey time during the morning peak that can be identified from the journey time profiles in figure 37.

15 Route 13: B5117/A6010 Manchester Northbound

15.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 13 in more detail.

15.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 39. Thematic map of average traffic speeds along Congestion Route 13: B5117/A6010 Manchester Northbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



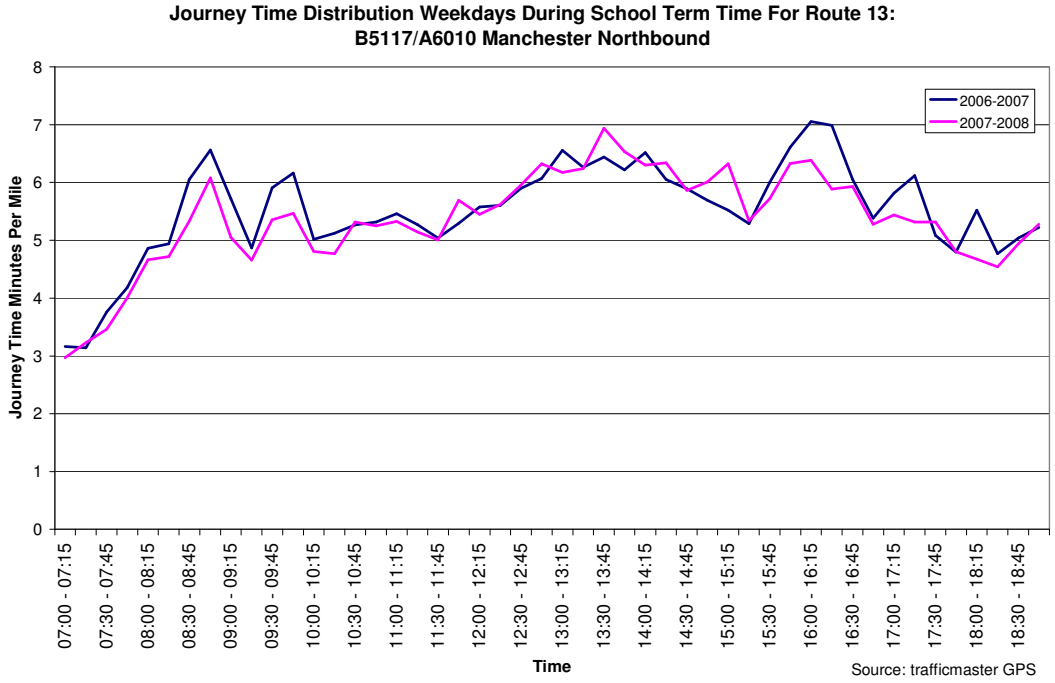
15.3 A pdf version of this map is available on the GMTU website.

15.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4.2 mph at the southern end of the route between Platt Hall and Platt Lane.

15.5 The highest average speed on this section of the route during this period was 25.2 mph at the intersection with Grangethorpe Road.

15.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 40. Journey time profiles for Route 13: B5117/A6010 Manchester Northbound on weekdays during school term time for 2006-2007 and 2007-2008



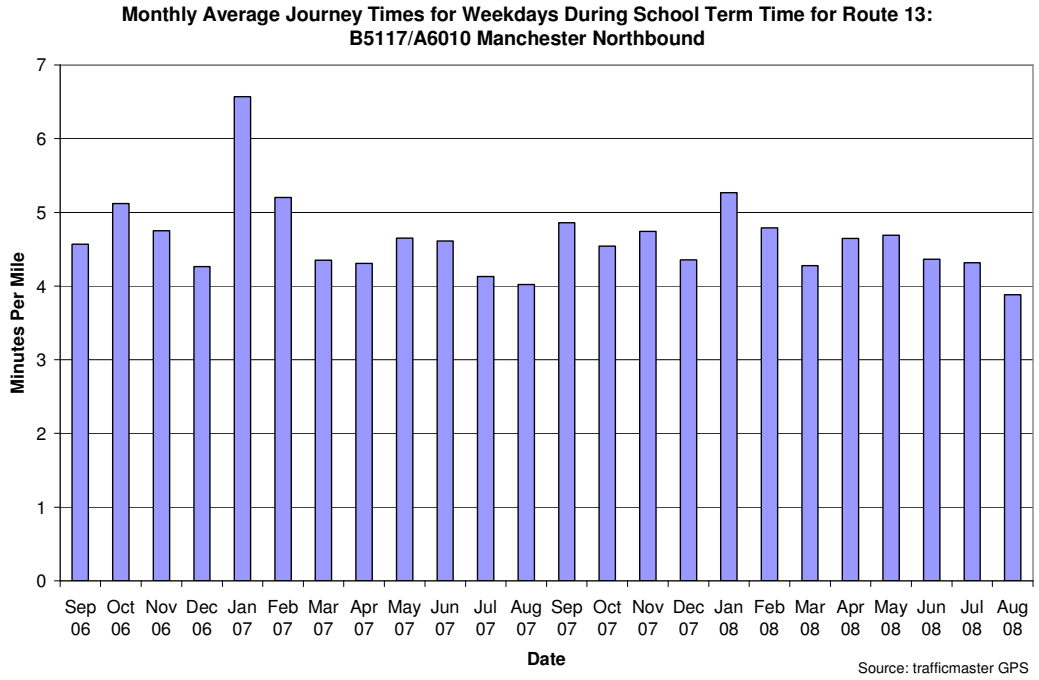
15.7 The highest average journey time in academic year 2006-2007 was 7.1 minutes per mile between 16:00 and 16:10 and highest average journey time during the in academic year 2007-2008 was 6.9 minutes per mile between 13:30 and 13:45.

15.8 The journey time profile for this route differs from most other congestion routes as peak congestion (i.e. the highest journey time) occurs outside the morning peak. This is attributable to the nature and destination of journeys on the route. For example this route passes both university and hospital zones.

15.9 The highest average journey time during the morning peak in academic year 2006-2007 was 6.6 minutes per mile between 08:45 and 09:00 and highest average journey time during the morning peak in academic year 2007-2008 was 6.1 minutes per mile again between 08:45 and 09:00.

15.10 The Trafficmaster data can be used to track how the average journey time changes over time. The figure below charts average monthly journey time figures during the morning peak.

Figure 41. Monthly average journey times during the morning peak on weekdays for Congestion Route 13: B5117/A6010 Manchester Northbound.



15.11 By examining this chart we can see how average journey time changes over time. For example if we look at the columns that best coincide with school holidays we can see there is a slight improvement in journey time. This may be attributable to the reduced traffic flow associated with school holidays and the reduced number of vehicles traveling to the university.

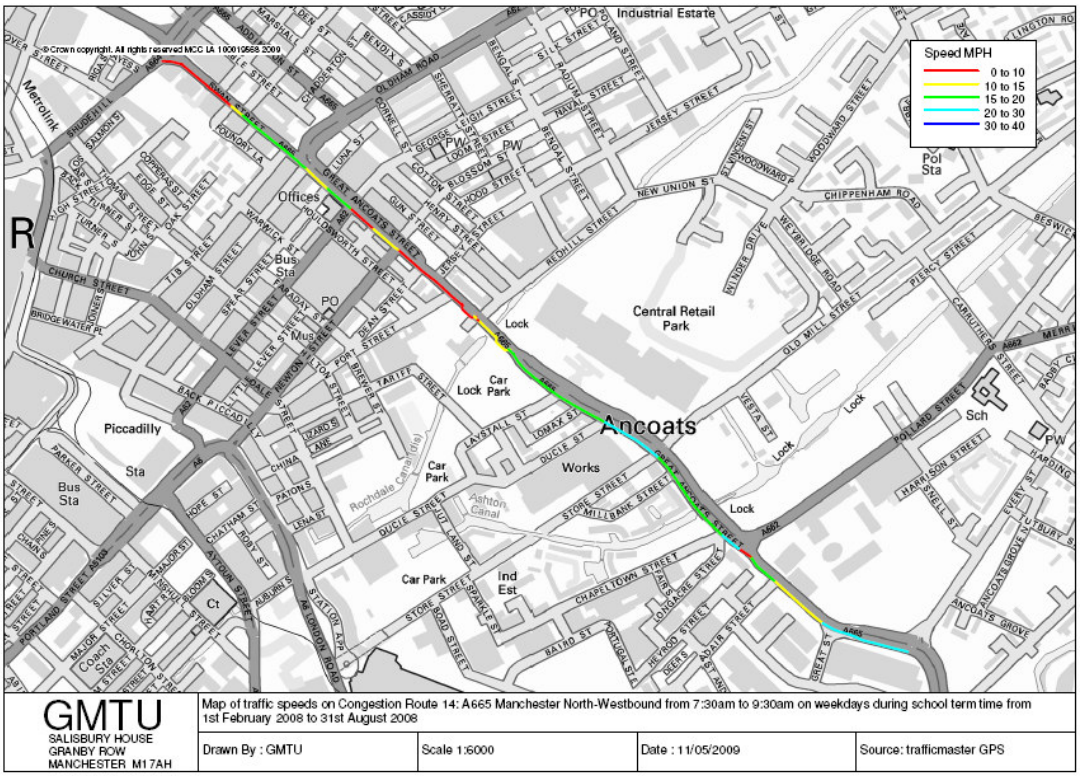
15.12 This chart can also be used to help identify the impact of events on journey times on the route. For example January 2007 has a noticably higher average journey time. This peak in the monthly average journey time will have contributed to the higher journey time in the morning peak in 2006-2007 than in 2007-2008.

16 Route 14: A665 Manchester North-Westbound

16.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 14 in more detail.

16.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 42. Thematic map of average traffic speeds along Congestion Route 14: A665 Manchester North-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



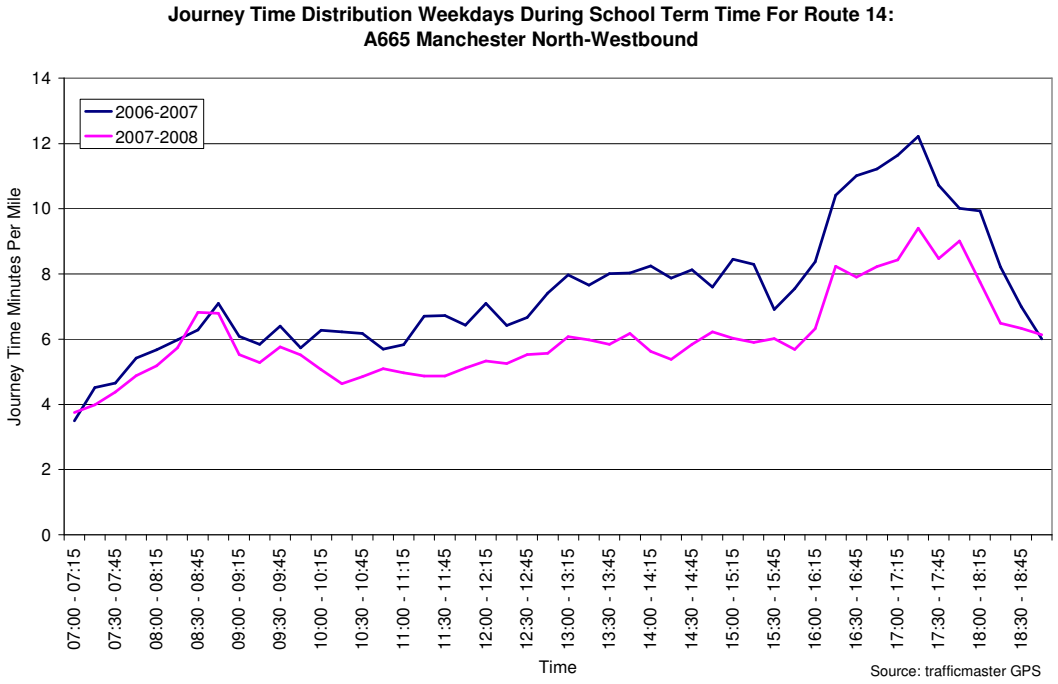
16.3 A pdf version of this map is available on the GMTU website.

16.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 3.1 mph at the northern end of the route at the intersection with the A664 Shudehill.

16.5 The highest average speed on the route during this period was 27 mph recorded towards the southern end of the route at the intersection with Great Street.

16.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 43. Journey time profiles for Congestion Route 14: A665 Manchester North-Westbound on weekdays during school term time for 2006-2007 and 2007-2008



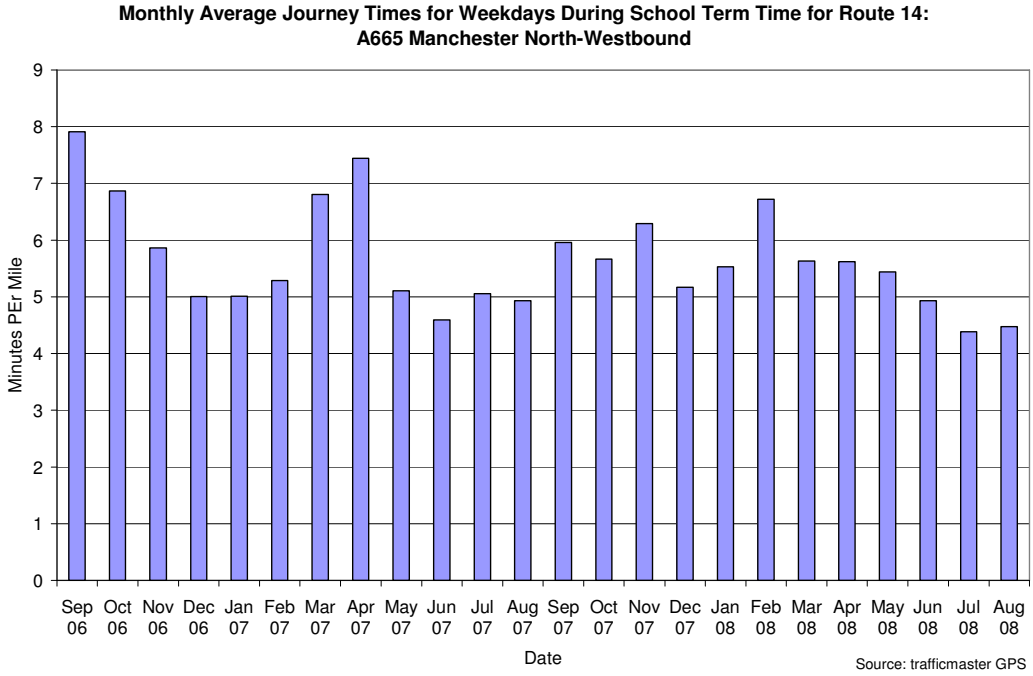
16.7 The highest average journey time in academic year 2006-2007 was 12.2 minutes per mile between 17:15 and 17:30 and highest average journey time during the in academic year 2007-2008 was 9.4 minutes per mile again between 17:15 and 17:30.

16.8 The journey time profile for this route differs from the other congestion routes routes as peak congestion (i.e. the highest journey time) occurs in the evening peak rather than the morning peak. However this will not have an impact on the department for transport's assesment of the route as LTP7 only measures congestion in the morning peak.

16.9 The highest average journey time during the morning peak in academic year 2006-2007 was 7.1 minutes per mile between 08:45 and 09:00 while highest average journey time during the morning peak in academic year 2007-2008. was 6.8 minutes per mile between 08:30 and 09:00

16.10 The data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The figure below charts average monthly journey time figures during the morning peak.

Figure 44. Monthly average journey times during the morning peak on weekdays for Congestion Route 14: A665 Manchester North-Westbound.



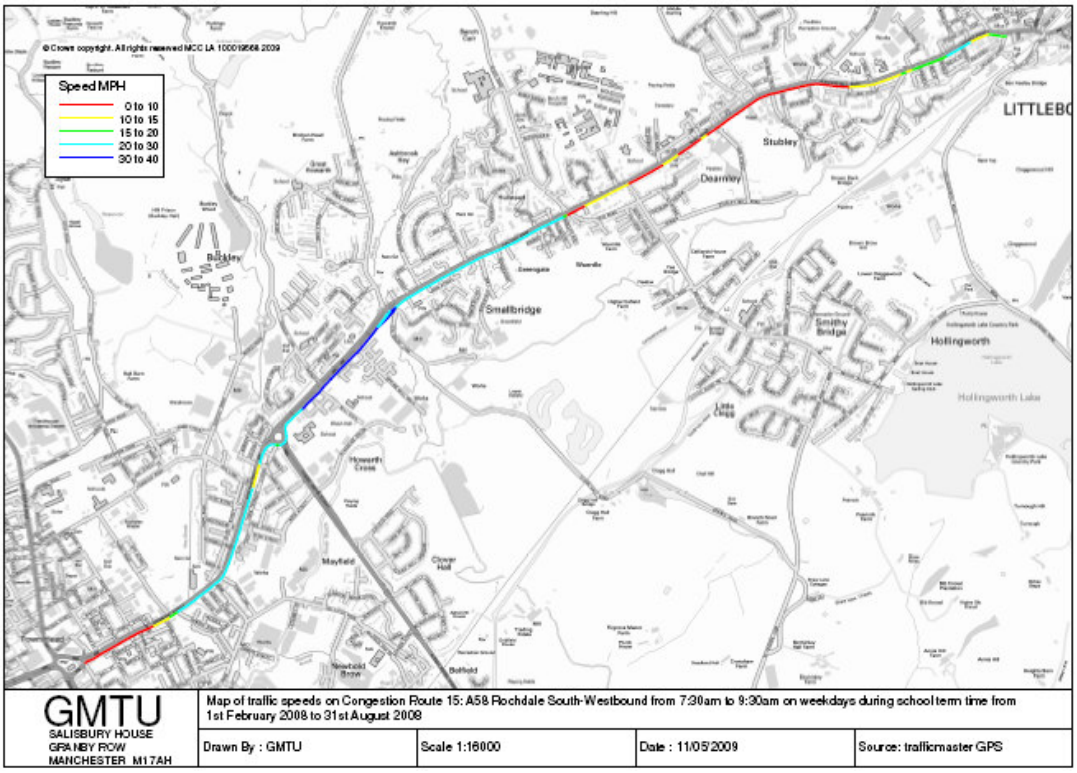
16.11 By examining this chart we can see how average journey time changes over time. For example if we look at the bars that best coinside with Christmas and the summer holidays we can see there is an improvement in journey time. This is attributable to the reduced network demand associated with school holidays.

17 Route 15: A58 Rochdale South-Westbound

17.1 By using the data provided by the Trafficmaster GPS in-vehicle devices it is possible to examine congestion route 15 in more detail.

17.2 The data has been used to produce a thematic map of average traffic speeds for the route.

Figure 45. Thematic map of average traffic speeds along Congestion Route 15: A58 Rochdale South-Westbound during the morning peak in school term time from 1st February 2008 to 31st August 2008.



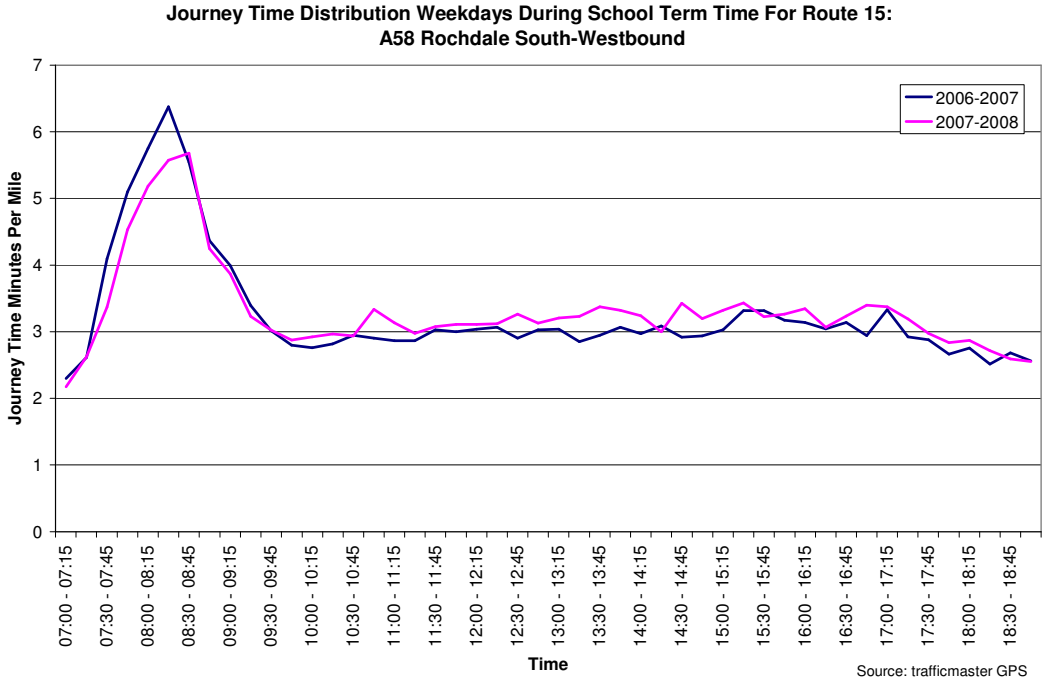
17.3 A pdf version of this map is available on the GMTU website.

17.4 The lowest average speed recorded during the morning peak on weekdays during school term time from 1st February 2008 to 31st August 2008 was 4.5 mph between East Street and Elliott Street.

17.5 The average speed from Dye House Lane to Merryman Hall during this period was in excess of 30 mph. The peak speed on this section was 37.7 mph at the intersection with Spring Mill Walk.

17.6 In order to identify the impact travelling during the morning peak has on journey times on this route the data provided by the Trafficmaster GPS in-vehicle devices has been used to plot journey time profiles for academic years 2006-2007 and 2007-2008.

Figure 46. Journey time profiles for Congestion Route 15: A58 Rochdale South-Westbound on weekdays during school term time for 2006-2007 and 2007-2008

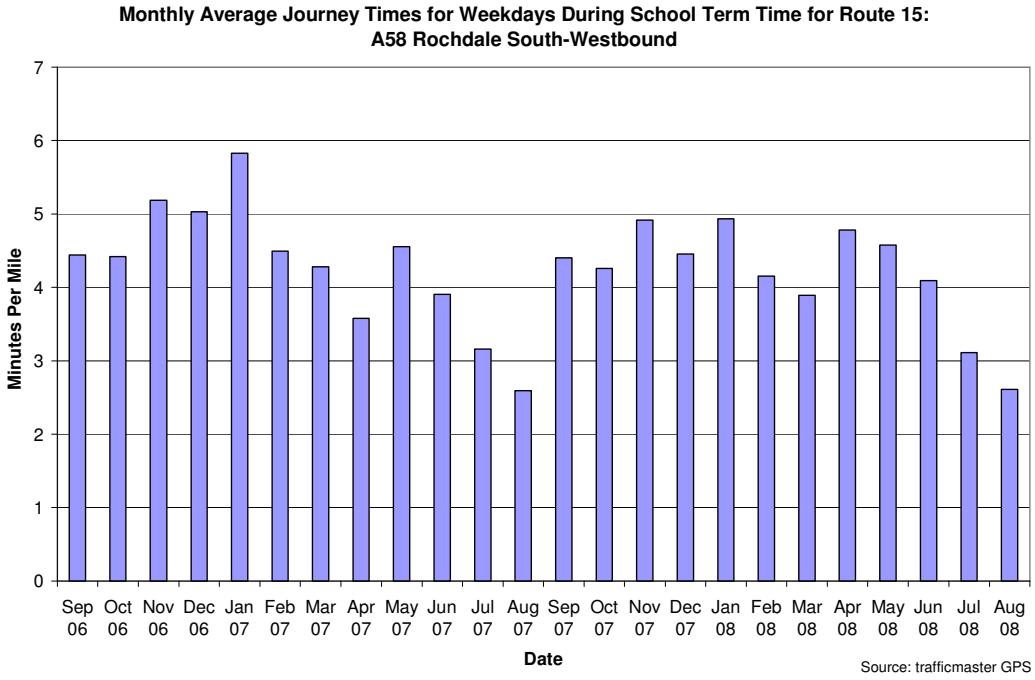


17.7 The highest average journey time in academic year 2006-2007 was 6.4 minutes per mile between 08:15 and 08:30 and highest average journey time during the in academic year 2007-2008 was 5.7 minutes per mile again between 08:30 and 08:45.

17.8 This improvement in journey time may be associated to the reduction in average flow ,as measured by the local congestion surveys, from 2133 in 2006-2007 to 2045 in 2007-2008 (a 4.1% reduction).

17.9 The data provided by the Trafficmaster GPS in-vehicle devices can be used to track how the average journey time changes over time. The figure below charts average monthly journey time during the morning peak.

Figure 47. Monthly average journey times during the morning peak on weekdays for Congestion Route 15: A58 Rochdale South-Westbound.



17.10 By examining this chart we can see how average journey time changes over the year. For example if we look at the columns for July and August in both 2007 and 2008 we can see there is an improvement in journey time. This is attributable to the reduced network demand associated with school holidays.