

THE SCOPE FOR SUSTAINABLE DISTRIBUTION AND SERVICING IN THE REGENT STREET AREA OF CENTRAL LONDON

Marzena Piotrowska¹, Michael Browne¹, Darren Briggs², Julian Richardson³, Ian Wainwright⁴

¹University of Westminster

²ARUP

³Clipper Logistics

⁴Transport for London

Introduction

Situated in the centre of London as a prime shopping and tourist destination and occupied by a range of premier retailer outlets, commercial and other non retail tenants, Regent Street is an important and challenging area for freight and service related activities. In order to fully develop the potential for retail sales and improve the working environment within the area, pavements along Regent Street are to be widened. To make this change possible, reduction in traffic volumes will be required and one element of achieving this will be the creation of an off site consolidation centre serving local businesses. A survey has been carried out in order to understand the current flows of goods and service vehicles as a base to consider how this could be changed to make the pattern more sustainable.

The central aim of this study of Regent Street has been to gain a better understanding of freight transport and servicing activities taking place in area. The study determines the current volumes of freight and service vehicles operating in the Regent Street area and identifies operational practices developed by local business to organise their deliveries, collections and services. Furthermore it also makes it possible to identify viable ways in which the existing distribution and servicing operations taking place in the area can be made more sustainable.

This paper presents findings based primarily on one element of the survey work, namely, the observation and vehicle count survey. In the paper we have chosen to focus attention on light goods vehicles (LGVs) and service trips made to the Regent Street area. Throughout the paper we have also made comparisons between LGVs and HGVs wherever appropriate and when sufficient data were available.

Research Methodology

A combination of three survey techniques has been used to collect data and information about freight transport operations in the studied area:

- Retail and office tenants have been asked to complete a questionnaire, which was designed to capture information about their current practices in terms of freight and service related activities.
- An observation and vehicle count survey was undertaken over a 48-hour period to find out about deliveries, collections and services provided to commercial tenants in the Regent Street area.
- Drivers were interviewed as part of the observation survey.

As part of the tenant survey, a total of 486 questionnaires were distributed to businesses of which 124 were given to retailers trading at the time of survey and the remaining 362 questionnaires were left with commercial and non retail businesses. The overall response rate reached 21% as 103 questionnaires were returned completed. The survey was designed to gather factual information about usual delivery, collection and service operations taking place at tenants' premises. The technique has also allowed for a better understanding of these processes from the businesses' point of view as some of the questions focused for example on issues related to typical profile of deliveries and servicing activities, available storage facility and stock levels.

Driver interviews were combined with the observations and vehicle counts that were conducted at 14 sites in the Regent Street area. These took place over a 48 hour period commencing at 07:00 hours on the 20th January 2009 and finishing at 07:00 hours on the 22nd January 2009. Drivers were asked questions to determine key facts about their journey, for example trip's start and end locations, its purpose and number of stops involved. Obtained was also information on planning and scheduling of the service, responsibilities for consignment's quality control and drivers' knowledge of parking/loading

restrictions being in force in the Regent Street area. A total of 314 drivers participated in the survey which accounts for almost 15 % of the total vehicle count. A range of data and information was collected during the observation and vehicle count and was used for example to assess the overall number of trips to retail and commercial premises, vehicle type, dwell times, consignment description and size as well as parking location and type of business with which a particular trip was associated. The observation and vehicle count survey was conducted over two 24 hour periods and detailed analysis of collected data and information revealed that the overall characteristics of each survey day were very similar. Therefore, for the purpose of this paper, decision has been made to combine data obtained on both days and present results which relate to the total data set. This allows for a clearer presentation of findings without compromising data quality and accuracy.

The rest of the paper builds mainly on the results from the observation and vehicle count survey. However, the conclusions about the opportunity for changes are also informed by the other two surveys.

Overview of freight transport and service activities and role of Light Goods Vehicles (LGVs)

Over the 48 hour survey, a total of 2134 vehicle counts were recorded in the surveyed area and information about vehicle type was captured by 2043 counts. Table 1 shows the profile of the recorded vehicles that were surveyed. Commercial vehicles up to 3.5 tonnes gross weight are classified as “LGVs” (light goods vehicles) while all goods vehicles with gross weights over 3.5 tonnes have been referred to as “HGVs” (heavy goods vehicles). Together they account for 92% of all recorded vehicles while the remaining 8% relates to trips made by cars, two-wheelers and pedestrians. All further analysis will include only the two biggest groups of vehicles: LGVs and HGVs.

Vehicle Type	Count	%
LGVs	1291	63
HGVs	584	29
Other	168	8
Total	2043	100

Table 1: Vehicle types involved in distribution and servicing activities in Regent Street area (Source: based on Regent Street Site Survey, 2009)

The above figures show that LGVs were by far the biggest group of vehicles visiting the Regent Street area during the 48-hour survey, accounting for more than twice as many counts as those recorded for HGVs. This figure highlights the importance of light goods vehicles which in recent years have become increasingly involved in all types of freight and service related activities.

There are a number of factors that are likely to be partly responsible for popularity of LGVs. The following are some of the most likely factors encouraging their use in freight related operations. (Allen et al., 2002):

- Reduction in stockholding levels/move to JIT distribution systems – as companies have moved towards logistics systems which aim for stock reduction there have been reductions in delivery quantity which encourages the use of smaller vehicles;
- Increase in same day and time-critical parcel deliveries – in the parcels sector the demand for faster services has resulted in greater use of LGVs;
- Shortage of heavy goods vehicles (HGV) drivers/Changes in driving licence legislation requiring drivers to pass additional driving tests for HGVs – companies are finding it increasingly difficult to recruit HGV drivers and some are therefore opting instead for LGVs which can be driven on standard car driving licences, thereby significantly expanding the potential driver base to select from;
- Increase in operating restrictions on HGVs in urban areas – restrictions imposed by local authorities on the routes available to HGVs may be having an effect on companies’ vehicle selection policies;
- Increase in value density, especially of consumer goods encourages the use of small vehicles at the ends of the supply chain.

In terms of service activities the following are expected to encourage the use of LGVs (Allen et al., 2002):

- Outsourcing of service functions to specialist companies which tends to result in a wide range of services provided to buildings and to homes that require vehicle trips;
- Increase in rapid response servicing (e.g. computer repairs etc.);
- Development and use of more technological and communications equipment that requires installation, planned servicing and emergency repairs – these sectors primarily use LGVs for their engineers and servicing staff;
- The installation and maintenance of new telecommunication networks (e.g. cable networks).

The vehicle count data discussed above supports the need for a greater understanding of the LGV trips. The next section discusses trip purpose and consignment size.

Consignment size and trip purpose

One element of the observation survey enables the consideration of consignment size separated into small, medium and large. Small consignments were defined as envelopes and small packages; large consignments were defined large boxes and crates, roll cages and pallets; medium sized consignments were all those in between.

There seems to be a correlation between vehicle size and its consignment particularly when LGVs are considered. Figure 1 shows, that majority of them (54%) carried small consignments, medium-sized loads were moved by 40% of these vehicles and only the remaining 6% of LGVs were reported to carry large loads.

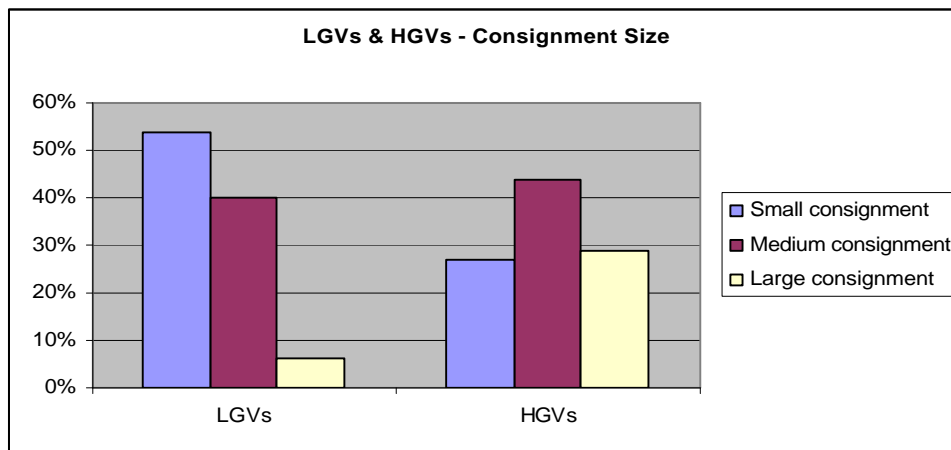


Figure 1: LGVs and HGVs and their consignments
(Source: based on Regent Street Site Survey, 2009)

At the same time bigger variation in terms of consignment size was recorded for HGVs. The most common loads carried by these vehicles belonged to medium-sized group of goods (44%) but proportion of large and small consignments was similar at 29% and 27% respectively. It is impossible to establish load factor of the recorded vehicles mainly because no information on their capacity utilisation was collected during the survey. Moreover it can be also expected that for many of them, the Regent Street area was only one of the visited destinations and some of the initial load had been unloaded at previous stop(s).

A total of 1798 recorded observations (84% of the total sample) indicated trip purpose of the vehicles. Both, LGVs and HGVs, were involved in a wide range of operations including deliveries, collections, servicing, waste collections and other activities which were not specified. Figure 2 presents findings for each of the two groups of vehicles.

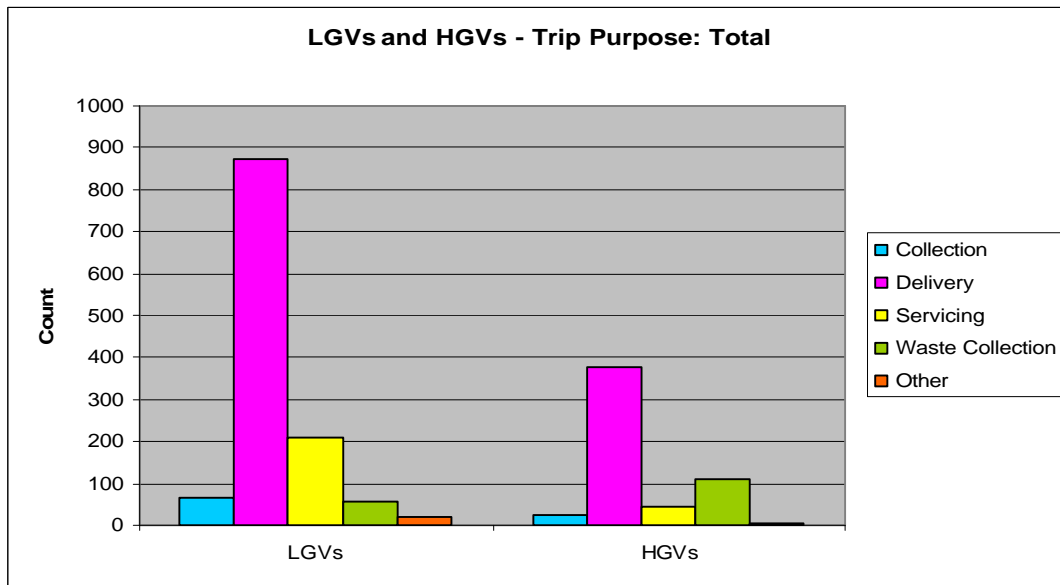


Figure 2: Trip types performed by LGVs and HGVs
(Source: based on Regent Street Site Survey, 2009)

A wide range of observed activities carried out by both LGVs and HGVs reflects the diversity and complexity of the surveyed area.

Considering characteristics of the commercial tenants, it is unsurprising to find out that deliveries were by far the most frequently recorded operations during the 48-hour survey, accounting for 70% of all counts. Collection operations (waste and non-waste related) reached 15%, servicing activities accounted for 14% of the total while the remaining 1% of counts was recorded with no specified vehicles' trip purpose. Almost 70% of all recorded deliveries, 72% of non-waste collections and nearly 82% of servicing related counts involved LGVs and these vehicles were outnumbered by HGVs only in case of waste collections. This confirms versatility and significance of LGVs in freight and service related activities undertaken in the Regent Street area. Following delivery operations, servicing was the second most important trip purpose for LGVs reaching 17% of all their recorded activities. Overall, only 18% of service related operations were carried out by HGVs indicating importance of LGVs for servicing activities in the surveyed area.

Arrival time and dwell time

As shown by Figure 3, majority (84%) of all vehicles for which arrival times were recorded, reached their destination in the Regent Street area between 05:00 hrs and 17:00 hrs. The Figure presents results for 'midnight to midnight' period of time taking account of arrivals recorded on both days of the survey.

The findings on vehicles' arrival time pattern presented below are not surprising as the majority of vehicles arrive during business hours when requirements of commercial tenants for freight and service related activities result in higher number of vehicles than at any other time of a day. The peak time, representing over 10% of all recorded arrivals, was identified at 09:00 hrs when many retailers and offices start working. After reaching the peak, the number of vehicles arriving at the Regent Street area steadily decreased until 14:00 hrs when it slightly increased before falling again. Only 16% of all vehicles with recorded arrival time, turned up at the surveyed area between 18:00 hrs and 04:00 hrs. This reflects the fact that very limited commercial activity takes place in the Regent Street area at that time which in turn reduces the need for freight and service related operations.

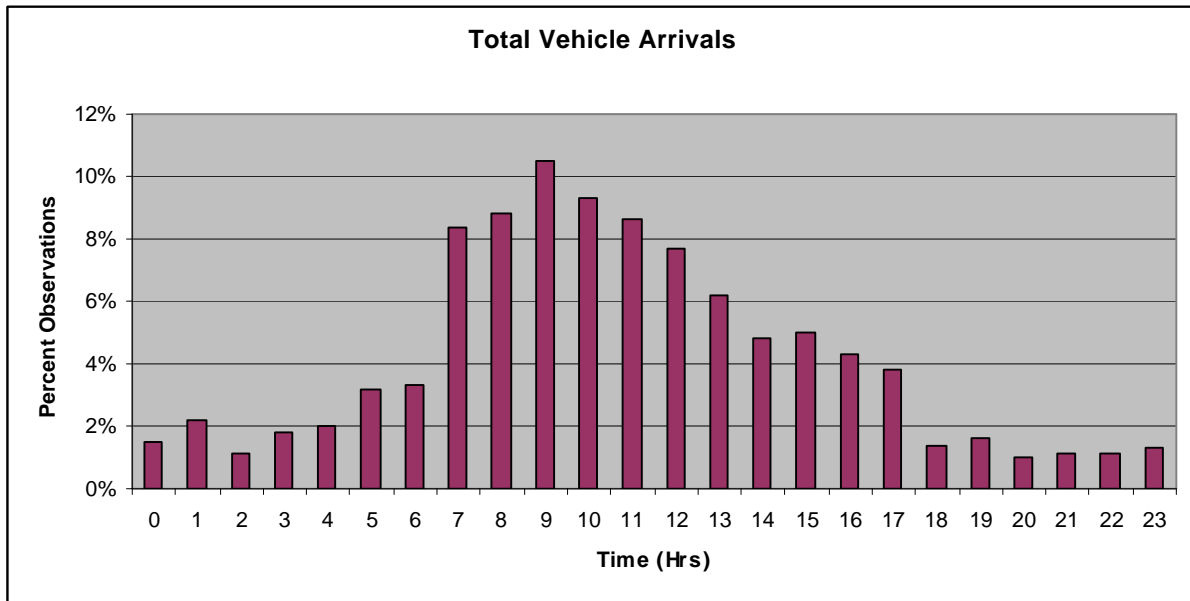


Figure 3: Arrival times of all recorded vehicles
(Source: based on Regent Street Site Survey, 2009)

Figure 4 considers the situation when arrival times are considered separately in relation to LGVs and HGVs. It becomes clear, that for both groups of vehicles the busiest time of day falls between 07:00 hrs and midday with peak time at around 09:00 hrs for LGVs and 10:00 hrs for HGVs.

It has been possible to consider arrival times in relation to trip purpose. The following paragraphs discuss this in more detail. The arrivals of vehicles making deliveries to the survey area, started to build up from the early hours in the morning. At 09:00 hrs they reached the peak at 12% of all delivery-related counts reflecting typical opening times for many retailers and offices. Between 07:00 hrs and 12:00, 60% of all recorded deliveries took place but after midday, number of delivery vehicles steadily decreased reaching just 1% at 18:00 hrs when many businesses close for the day. Limited opportunities which currently exist in relation to out of hours deliveries mean that majority of all required deliveries must arrive within conventional business hours.

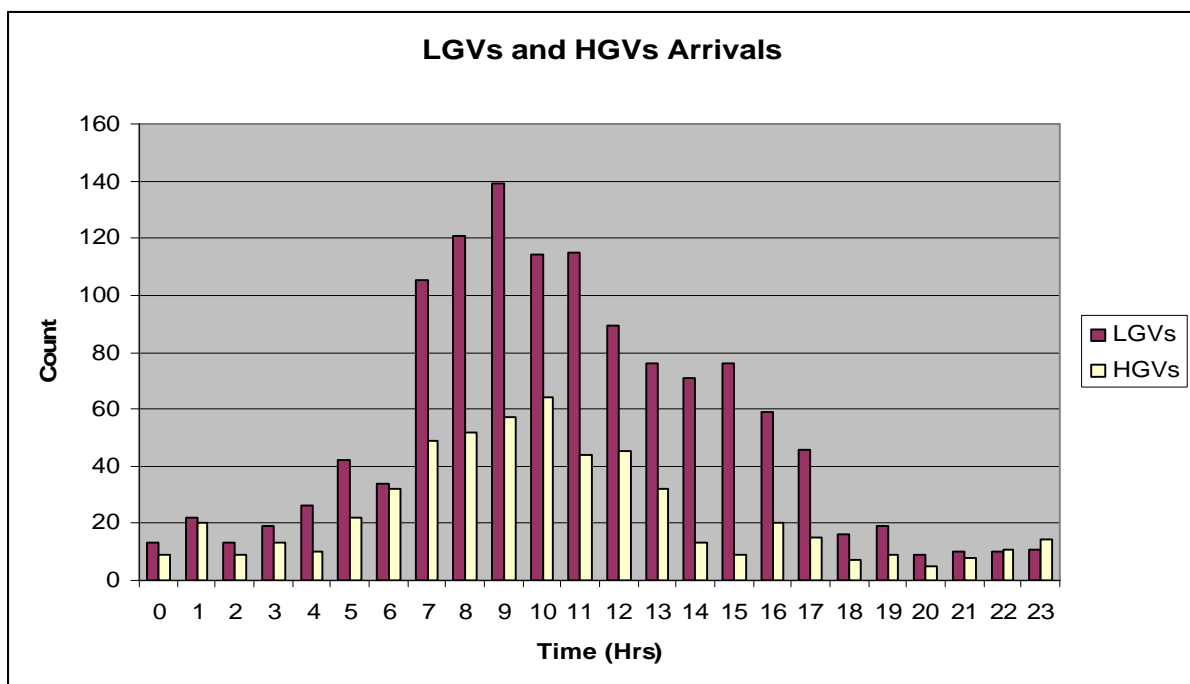


Figure 4: Arrival times of LGVs and HGVs
(Source: based on Regent Street Site Survey, 2009)

Similar issues exist with non-waste related collections as 78% of them take place between 08:00 hrs and 17:00 hrs. After noon number of vehicles performing this type of operation declined but started growing from 14:00 and reached the peak at 17:00 hrs when 14% of all collections were carried out. This is expected to be associated to some extent with activities performed by courier type of operators as they collect last consignments from customers before close of business day.

A quite different arrival time pattern has been identified for vehicles performing collection of waste. There seem to be a steady level of waste related activities taking place in the Regent Street area throughout a day although increased number of waste collecting vehicles was recorded at the following times: 01:00 hrs, 07:00 hrs and 23:00 hrs. Interestingly, waste collections are the only operation dominated by HGVs as only 34% of these activities were carried out by LGVs. Furthermore, as significant proportion of waste-related collections are undertaken at night or early in the morning, this provides an explanation to the fact that there were more HGVs than LGVs recorded at these times of the survey.

Distribution of arrival times of servicing vehicles shows several peaks throughout the day which indicates diverse and complex character of service activities taking place in the area. There is also existing demand for servicing operations to be carried out overnight in the attempt to minimise any potential disruption and inconvenience to the commercial tenants.

A general perception of freight and servicing vehicles obstructing roads and pavements may lead to unjustified belief that this is really happening. Limited parking space available to these vehicles as well as a range of parking related restrictions affect loading and unloading activities in the Regent Street area and add to complexity of the problem.

Data on arrival and departure times of vehicles recorded during the survey made it possible to calculate dwell times for activities observed during that time. As shown in Table 2, a very high proportion of 85% of all considered vehicles stopped for 20 minutes or less and of these 45% stopped for a very short time of up to 5 minutes. Overall, only 4% of vehicles made stops of more than 40 minutes.

Interestingly, according to the results there is little variation in dwell times between LGVs and HGVs. Majority of vehicles from both groups stopped for 20 minutes or less while the longest stops were recorded for only 4% of smaller vehicles and 6% of the bigger ones.

Dwell Time (mins)	LGVs		HGVs	
	Number of Vehicles	Percentage (%)	Number of Vehicles	Percentage (%)
0-5	376	39	158	36
6-20	476	49	184	41
21-40	78	8	76	17
41+	38	4	25	6
Total	968	100	443	100

Table 2: Dwell time of LGVs and HGVs
(Source: based on Regent Street Site Survey, 2009)

When LGVs' dwell times are considered in relation to their different trip purposes, it is found that proportion of short stops of up to 20minutes is dominant across all types of activities carried out by these vehicles. Table 3 shows that over 90% of deliveries and both types of collections were completed within this time.

Dwell Time (mins)	Delivery	Servicing	Collection	Waste Collection
0-5	279	22	20	32
6-20	360	57	27	12
21-40	47	19	4	3
41+	15	17	0	1

Table 3: Dwell time by trip purpose – number of LGVs
Source: based on Regent Street Site Survey, 2009

Furthermore, 39% of collections, 40% of deliveries and 67% of waste collections undertaken by LGVs involved stops of up to 5 minutes. Service related trips usually need longer times for the required activity to be completed, however even though more LGVs undertaking these operations stopped for longer than 20 minutes, 69% of their stops were still shorter than this. It is also important to note that 15% of vehicles involved in servicing operations had dwell times of more than 40 minutes while only 4% of vehicles involved in delivery and waste collection operations stopped for a similar length of time.

Conclusions

The prime location of the Regent Street area as well as variety of its commercial tenants result in a high number of freight and servicing vehicles arriving daily in the area. Although there may be problems of large lorries in city centres, there are also other important issues about number of LGVs involved. Findings reported in this paper confirm that the majority of all observed vehicles were LGVs accounting for 63% of all recorded counts. The popularity of these vehicles results partly from their flexibility which enables them to be used for a range of commercial purposes. Most activities carried out by LGVs were deliveries followed by servicing and collections.

As noted above, deliveries were by far the most frequently recorded type of vehicles' trip purpose and most of them involved small and medium consignments. These findings suggest that there is potential scope for the use of a proposed consolidation centre serving retailers and offices located in the Regent Street area.

Service trips are undertaken mainly by LGVs and although the majority of them have short dwell time of up to 20 minutes, some need a lot longer. This is an important issue as normal parking/loading regulations are not really suitable for this pattern.

Relatively little activity takes place outside traditional business hours between 9am and 5pm. There will be strong reasons for this but it highlights the need to think about opportunities for out of hours deliveries. This in turn needs more work on how to achieve very low noise in the vehicle and loading/unloading operations.

References

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