



CITY OF LONDON FREIGHT DATA

Strategic Transportation
Department of the Built Environment

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Introduction

1. Introduction

Introduction

This report collates information and data provided from several sources, to provide the context for the movement, type and timing of freight vehicles and activity in the City of London.

Data Sources

City of London Traffic Composition Surveys

The City of London collects data bi-annually on traffic composition at 15 points across City Roads and Streets. They provide a record of traffic flow volumes and traffic composition between 07:00 and 19:00 on a weekday since 1999, and across 24hours for 2016. Whilst the surveys cannot give total volumes of traffic within the City, the data has been collected at the same locations for every survey and therefore can provide patterns and trends across the years.

GPS Data

Data has also been obtained for goods and van traffic that travels through the City using GPS data from Inrix UK Ltd. The data is for the month of September 2016, and provides information on;

- The day and time of a journey
- The origin and destination of a journey

Whilst the data only provides a sample of goods traffic journeys, it allows trends to be identified for dally and weekly profiles and the distribution of destinations within the City.

On-street Activity Surveys

During March 2017, on-street surveys were undertaken in several areas of the City (around Cheapside Retail Area, the Eastern City Cluster and the Barbican) for 24hours on a weekday, Saturday and Sunday. The surveys provide details on the type of activity, the duration, the vehicle type and the timing.

Uses and Limitation

All data surveys provide a different sample of freight movements and activity,

and as such, none of the absolute numbers or volumes throughout this report should be interpreted as total numbers for the City. Instead, the data should be used for relative comparisons, identifying trends and as proportions.

Report Structure

The report is structured as follows;

- Chapter 2 outlines the mode share and hourly profiles of goods traffic travelling on City streets;
- Chapter 3 sets out the origin and destination of goods vehicle trips that end in the City;
- Chapter 4 identifies the characteristics of goods vehicle activity that occurs on-street within the City; and
- Chapter 5 summarises the data provided.

Terminology

Light Goods Vehicle (HGV) Classification

Includes all goods vehicles up to 3.5 tonnes gross vehicle weight, and all car delivery vans.

Other Goods Vehicle 1 (OGV1) Classification

Includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles.

Other Goods Vehicle 2 (OGV2) Classification

Vehicles under this category are rigid vehicles with four or more axles and all articulated vehicles.

For the purposes of this freight data report, it is not necessary to distinguish between OGV1 and OGV2 vehicles, and instead they can be combined and classified as Heavy Goods Vehicles (HGVs). However, some of the data from the three surveys provides the distinction and as such is presented under this classification.

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Goods Vehicles on City Streets

2. Goods Vehicles on City Streets

This section looks at the volumes and modeshare of goods vehicles on City streets in 2016, and the trends observed since 1999.

City Streets in 2016

Traffic Composition

In 2016, LGVs made up 18% of road traffic on streets in the City, whilst HGVs made up 3%. Together, they make up more than a fifth of traffic on City streets. Figure 2.1 shows the daytime traffic composition of traffic within the City of London. If pedal cycles are omitted, goods vehicles make up nearly 30% of motorised road traffic.

Variation in Goods Traffic across the Day

The volume of goods traffic on streets within the City varies over the day. Figure 2.2 shows the volumes of HGVs and LGVs across 24 hours on a weekday.

Across the day, the number of LGVs steadily rises between 03:00 and 05:00, and remains high between 06:00 and 10:00, peaking at 10:00. The volumes then gradually decrease throughout the rest of the day. HGVs follow a similar pattern at a lower volume, however the peak is earlier at 07:00 and has a steadier drop throughout the rest of the day.

Figure 2.1 City of London Streets Daytime Composition

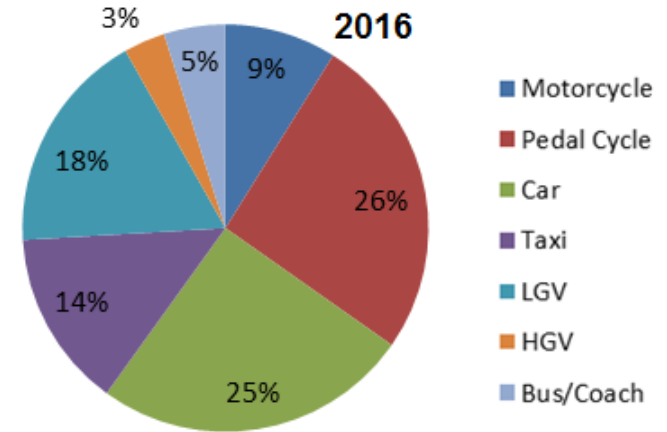
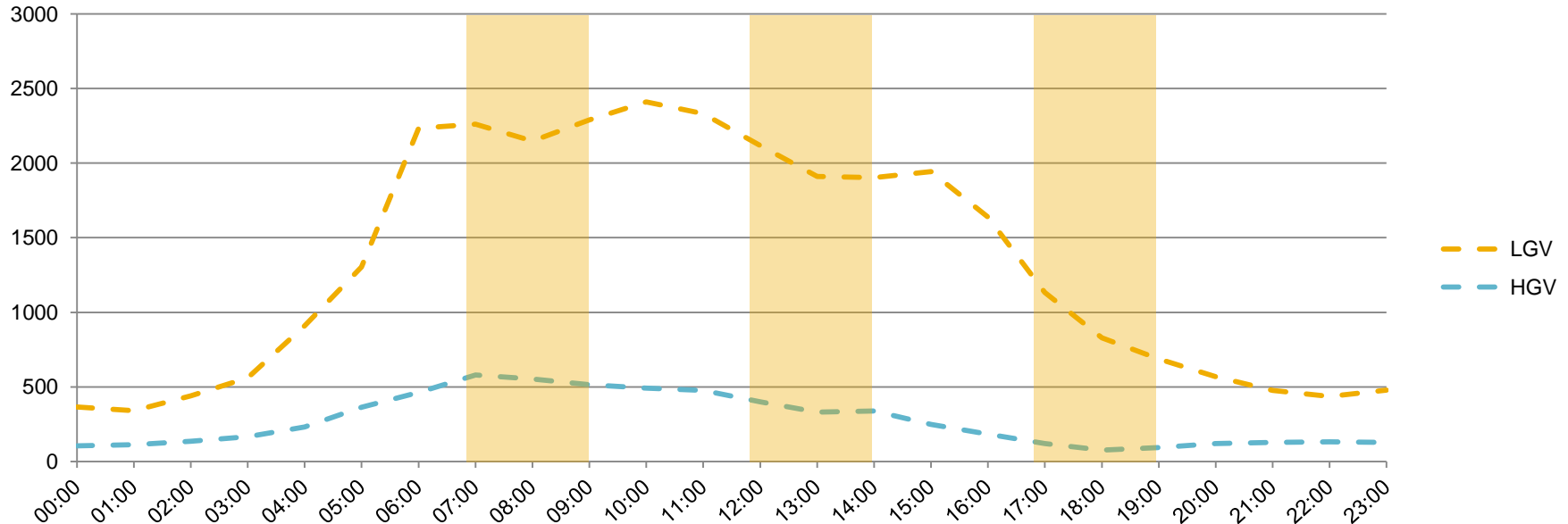


Figure 2.2 Hourly Variation of Goods Traffic on City of London Streets



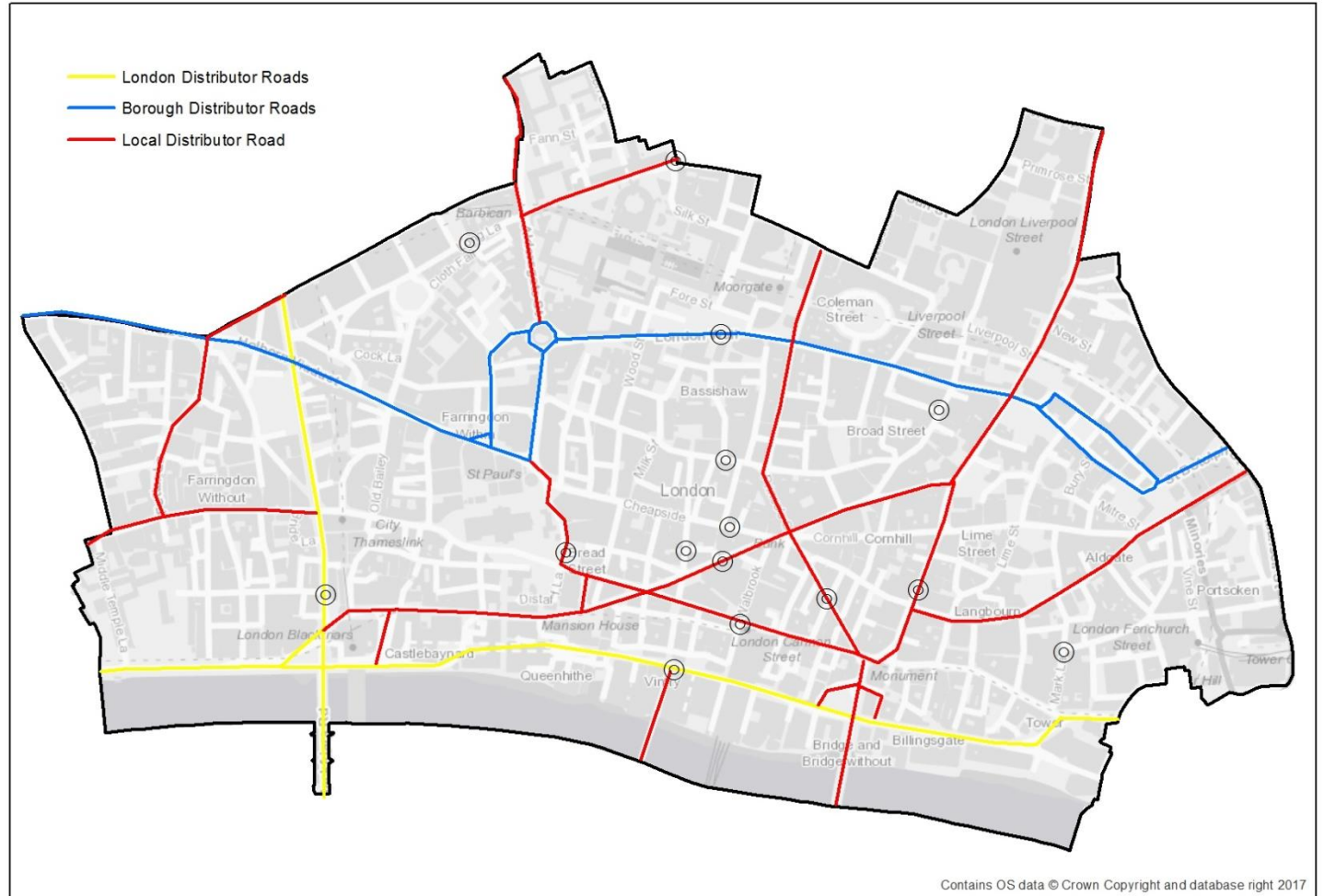
Variation by Road Classification

The hourly variation of LGVs and OGVs are also analysed by road classification.

Figure 2.3 shows the road hierarchy within the City of London. All other roads not labelled are classed as Local Access roads. The locations of the surveys are also presented.

The charts on the following pages show the hourly variation by road type, for each type of goods vehicle. To note, it is not accurate to look at the volume of traffic as the surveys were taken at only 15 locations across the City, and is not an equal distribution on each road type. However, the variation of traffic throughout the day provides insight to the patterns of goods traffic volumes at different times of the day.

Figure 2.3 City of London Road Hierarchy

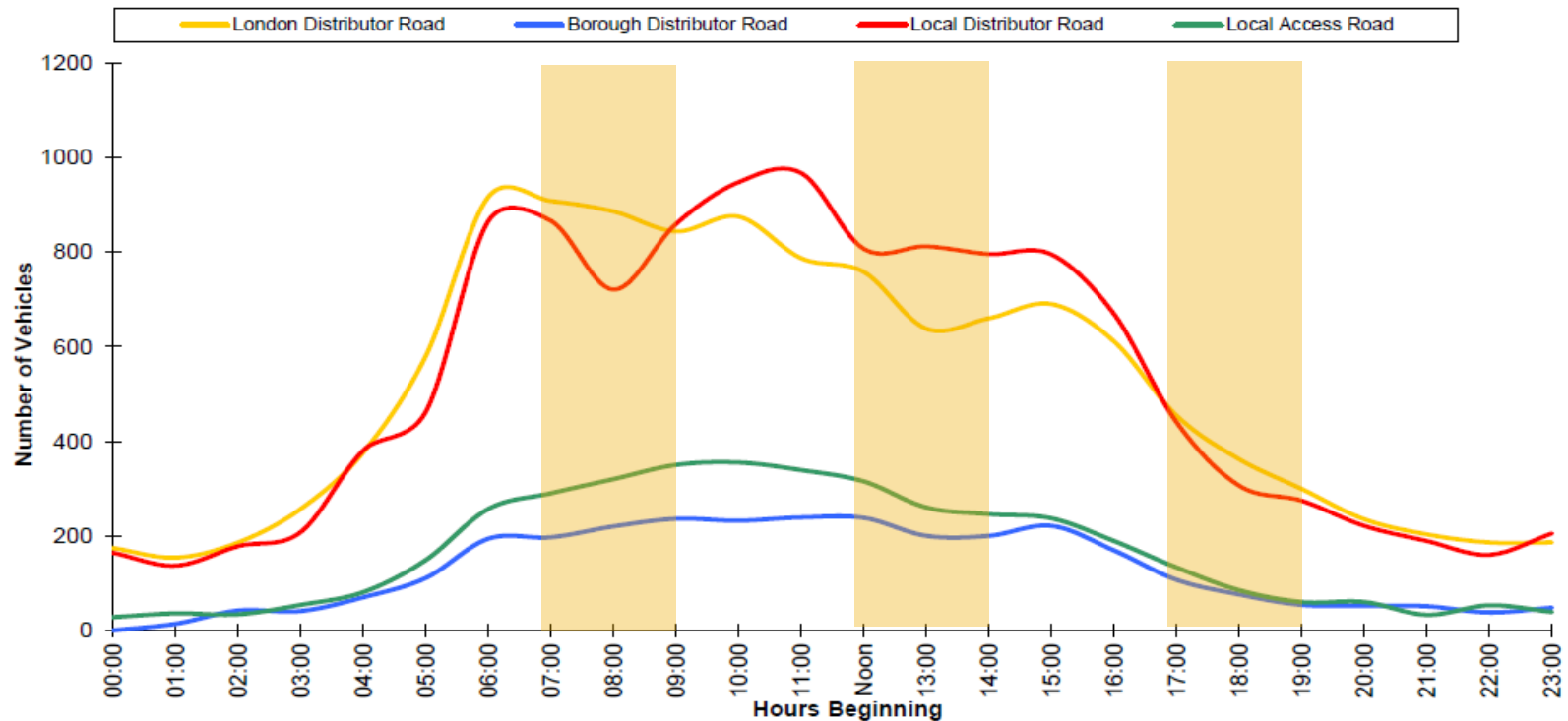


LGV

Figure 2.4 shows the daily variation of LGVs by road classification. The profile for Local and London Distribution Roads indicates that there is a fall in traffic levels after 12:00. Local Access Roads and the Borough Distributor Road show an almost identical trend, but at a lower scale. During the early hours LGV traffic rises for all road types however London Distributor Roads and Borough Distributor Roads experience more rapid growth in traffic than the other road types. The peak LGV movements were observed between: 11:00 and 12:00 on Local Distributor Roads and the Borough Distributor Road; between 06:00 and 07:00 on London Distributor Roads; and between 10:00 and 11:00 on Local Access Roads.

The lowest LGV movement across all road classifications in the evening peak period is actually observed between 18:00 and 19:00. In the late evening LGV traffic dissipates across road types until the end of the day.

Figure 2.4 LGV Numbers by Road Classification

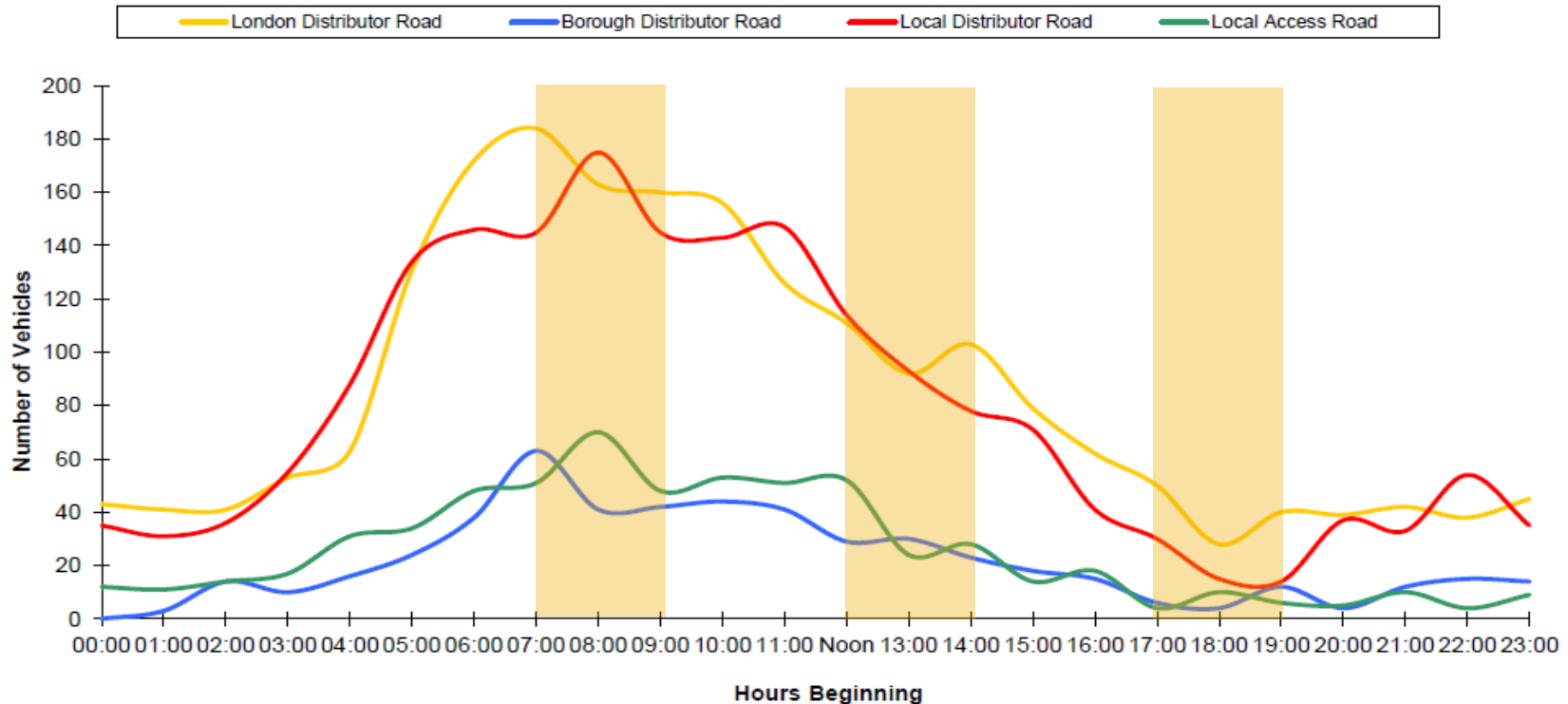


OGV1

Figure 2.5 illustrates the daily variation of OGV1 by road classification. OGV2 vehicles are not shown as traffic volumes for this vehicle type is so low that no meaningful patterns can be observed. The peak OGV1 movements were observed between 08:00 and 09:00 on Local Distributor Roads and Local Access Roads and between 07:00 and 08:00 on London Distributor Roads and the Borough Distributor Road. OGV1 levels on the Borough Distributor Road and on Local Access Roads show less hourly variation than on London and Local Distributor Roads. During the early

hours of the day, OGV1 traffic rises for all road types however London Distributor Roads and Local Distributor Roads experience more rapid growth in traffic than the other road types. After 12:00 OGV1 traffic declines steadily for all road types. For London and Local Distributor Roads this trend levels out at 18:00 and then increases slightly from 19:00 until midnight. For the other two road types, traffic flow exhibits an oscillating pattern after 12:00 but in an overall decreasing trend.

Figure 2.5 OGV1 Numbers by Road Classification



Comparison with Previous Survey Data

Traffic Volumes

In absolute terms, observed goods vehicle flows in the City of London have fluctuated between 1999 and 2016, as shown in Figure 2.6. However, 2016 were the lowest observed flows for all three types of goods vehicles, and follows the general decline since 1999.

LGVs

Generally, LGV volumes have decreased through the City of London. Between 1999 and 2016, this equates to a drop of 22%. However, there have been increases between 1999 and 2002 (19%) and 2010 and 2014 (15%). Such a fluctuation in trend is likely due to the changing movements of freight through the City and may also be reflective of LGV trips being undertaken before 07:00 due to loading restrictions and/or a change in delivery times.

OGVs

OGV1 volumes have proportionately experienced significant decreases since 1999: 3,722 vehicles in 2016 compared to 9,137 vehicles in 1999, equating to a 64% drop. Similarly, OGV2 volumes have fluctuated since 1999 but ultimately are decreasing. A peak in total volume was recorded in 2012 (2,239 vehicles), but since then there has been a 54% reduction, to 1,022 vehicles.

For both classes of OGVs, there was a marked decrease in volumes after 2007. This could be due to the introduction of the London Low Emission Zone (LEZ) in February 2008.

Figure 2.6 Goods Vehicle Daytime Volumes 1999 - 2016

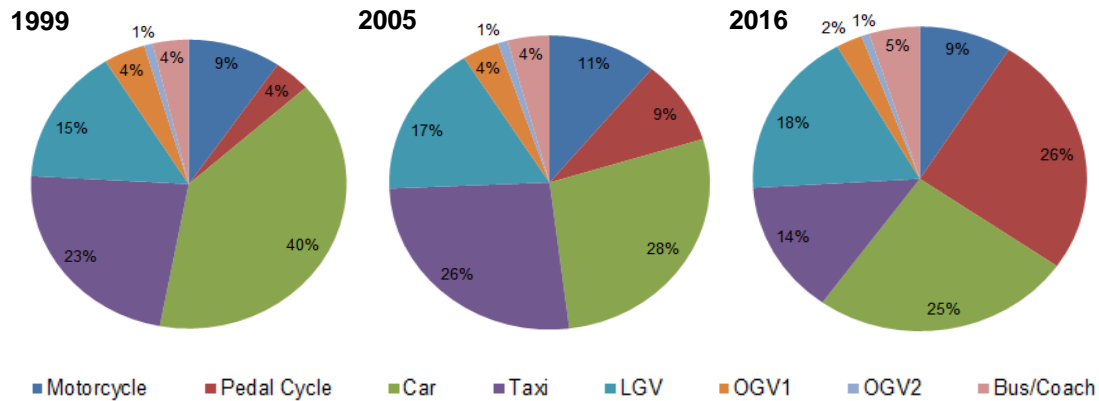


Data Source: City of London Traffic Composition Survey

Mode share

Whilst all three vehicle types are at their lowest in 2016 since 1999, their proportion of modeshare of all vehicle types has remained stable. LGV modeshare has risen by 3% between 1999 and 2016 whilst in absolute numbers LGVs have reduced by over 20% during this period. OGVs have seen a reduction of 4% of modeshare in 1999 to 2% in 2016, but a reduction of 50% in absolute numbers. Figure 2.7 shows the modeshare of all road traffic in 1999, 2015 and 2016.

Figure 2.7 City of London Daytime Modeshare 1999, 2005 and 2016



Data Source: City of London Traffic Composition Survey

It is taxis, car and pedal cycle modeshares that have significantly changed over the period 1999 to 2016. Pedal cycle mode share has risen from being one of the lowest in 1999 to the largest in 2016. If the modeshare of goods vehicles is looked at without pedal cycles (i.e. motor vehicles only), it shows an increase in modeshare as shown in Table 2.1 for LGVs, and a static modeshare for OGVs.

Table 2.1 Goods Vehicles Daytime Modeshare of Motorised Traffic

	1999	2005	2016
LGV	16%	18%	24%
OGV1	4%	4%	3%
OGV2	1%	1%	1%

Data Source: City of London Traffic Composition Survey

3

Origin and Destination of Goods Vehicles

3. Origin and Destination of Goods Traffic on City Streets

This chapter sets out the origin, destination and timing of freight vehicles that travel to and within the City.

Through Traffic vs City Destination Traffic

Of the goods traffic that travels through the City (both lights and heavy's), half is through traffic, whilst the other half either originate their journey in the City, end it in the City or are completely within the City. It is possible that the through traffic and City destination traffic are therefore following different trends. This is particularly apparent when looking at the daily profile of weekdays for goods through traffic and goods traffic that have their origin or destination in the City.

Figure 3.1 shows the daily profiles (as a proportion of the total day) of goods traffic that do not originate or end their journey in the City of London (through traffic) and those that do (City Destination traffic) on a weekday.

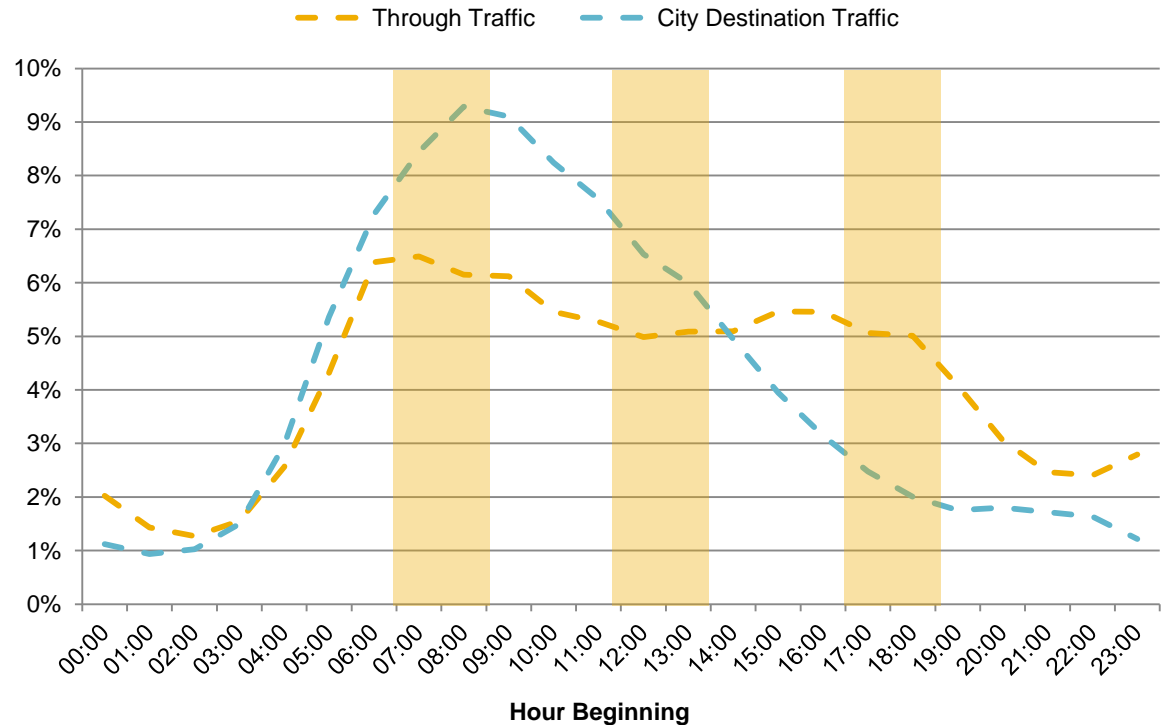
The City destination traffic shows a peak profile, that gradually rises through the early morning and peaks at 08:00, then gradually decreases through the rest of the day.

The profile of the vehicles that are through traffic however is much flatter during the day. Traffic gradually rises up to 05:00, then remains relatively stable until 19:00, where it then gradually decreases again.

Possible explanations for these variations could be;

- The majority of freight and servicing vehicles arrive in the morning peak and complete their works during the morning and/or remain in the City most of the day
- The through traffic profile represents a mixture of drivers driving to jobs/job locations, the drive back home and driving in between jobs during these two times.

Figure 3.1 Destination of Goods Traffic on City of London Streets

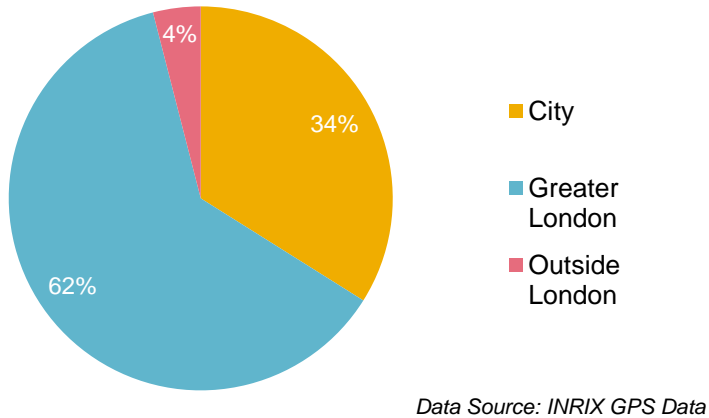


Data Source: INRIX GPS Data

Origin of City Destination Traffic

Of the goods traffic that ends its trip within the City, 34% originates in the City, 62% originates from within Greater London area and just beyond the extents of the M25, and the remaining 4% comes from the rest of the UK. This is shown in Figure 3.2.

Figure 3.2 Origin of Goods Traffic City Destination



This includes goods vehicles that begin their trip from their 'home' address/depot and those completing a trip as part of a wider journey/trip.

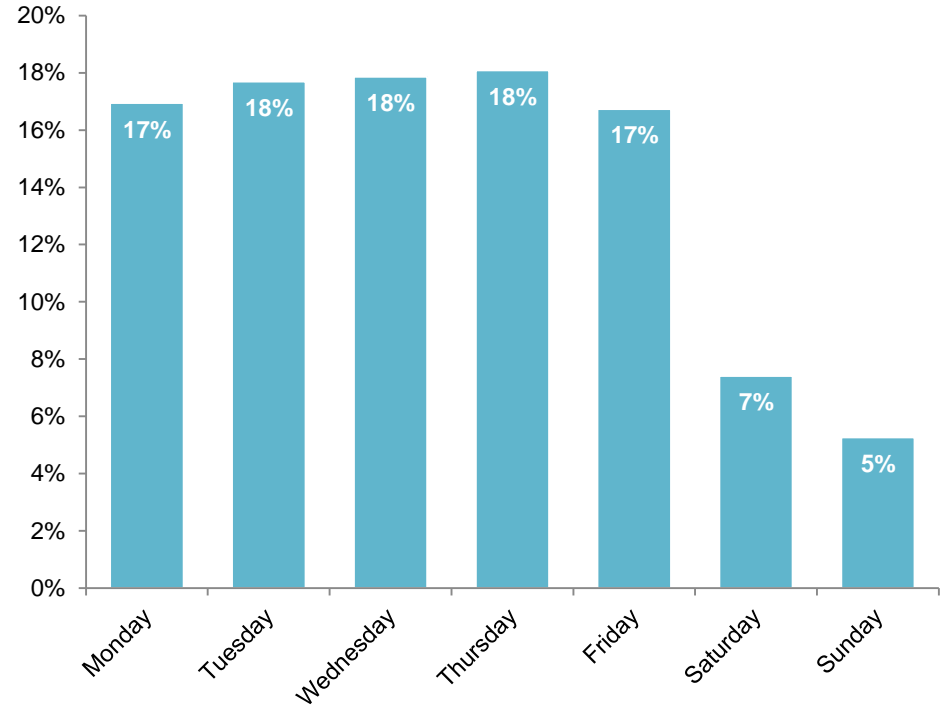
City Destination Traffic

Weekly Profile

Figure 3.3 shows the weekly profile of goods traffic that have their destination within the City (as a proportion of the total week).

As expected, the weekly profile of goods traffic that end their journeys within the City shows that most freight journeys (88%) are made Monday to Friday, with 7% made on a Saturday and 5% on a Sunday.

Figure 3.3 Goods Traffic City Destination; Weekly Profile



Daily Profile

Figure 3.4 shows the daily profiles of City destination traffic for a weekday, Saturday and Sunday.

The weekday profile of freight vehicle City destination traffic shows a clear peak period during 07:00 to 09:00. Freight traffic begins to increase from 03:00, peaks between 07:00 – 09:00 and gradually decreases through the rest of the day.

The Saturday profile also sees a peak in the morning, although a little earlier between 05:00 and 07:00. The proportion of journeys then decreases until 15:00, then increases again between 15:00 and 19:00 before significantly decreasing again.

The Sunday profile is a lot flatter, there is no identified peak hour or

period, and the proportion of freight journeys to the City remains relatively stable between 06:00 and 22:00.

Figure 3.4 City Destination Freight Traffic - Daily Profile

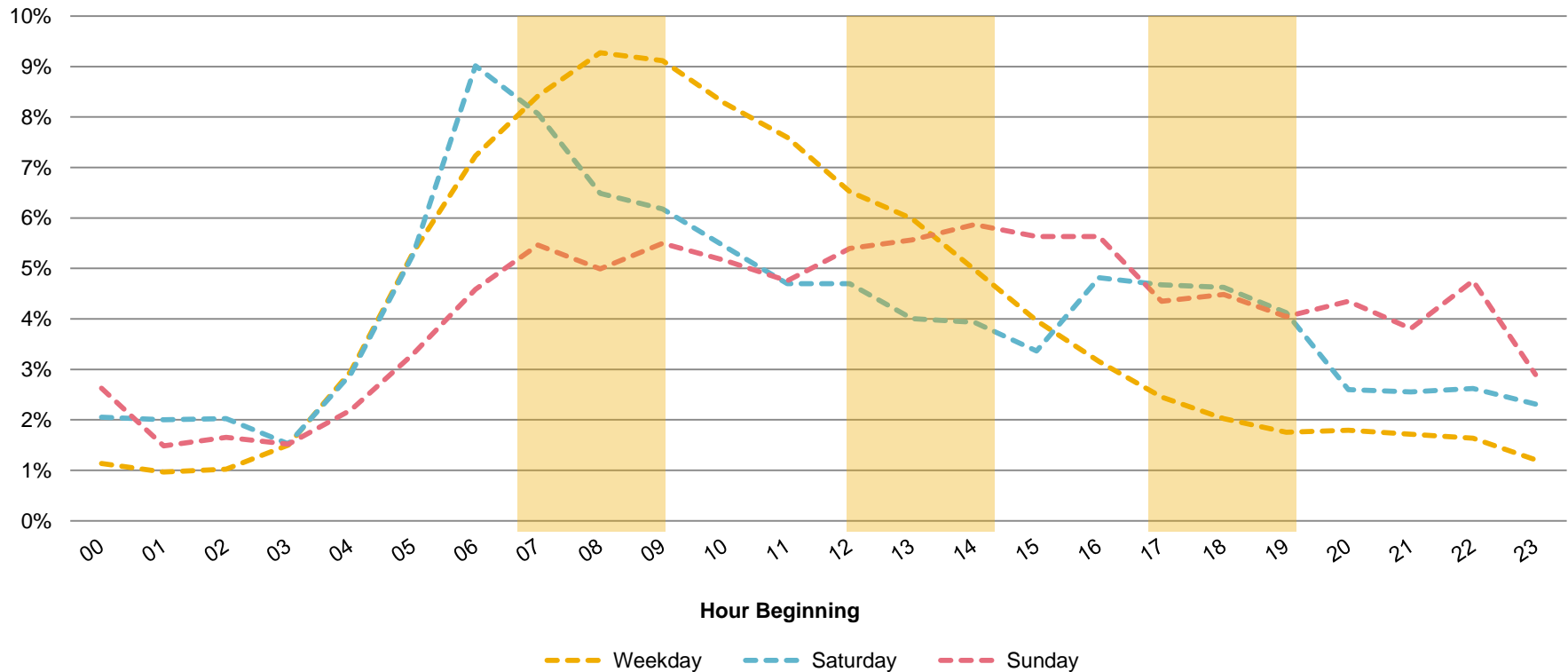
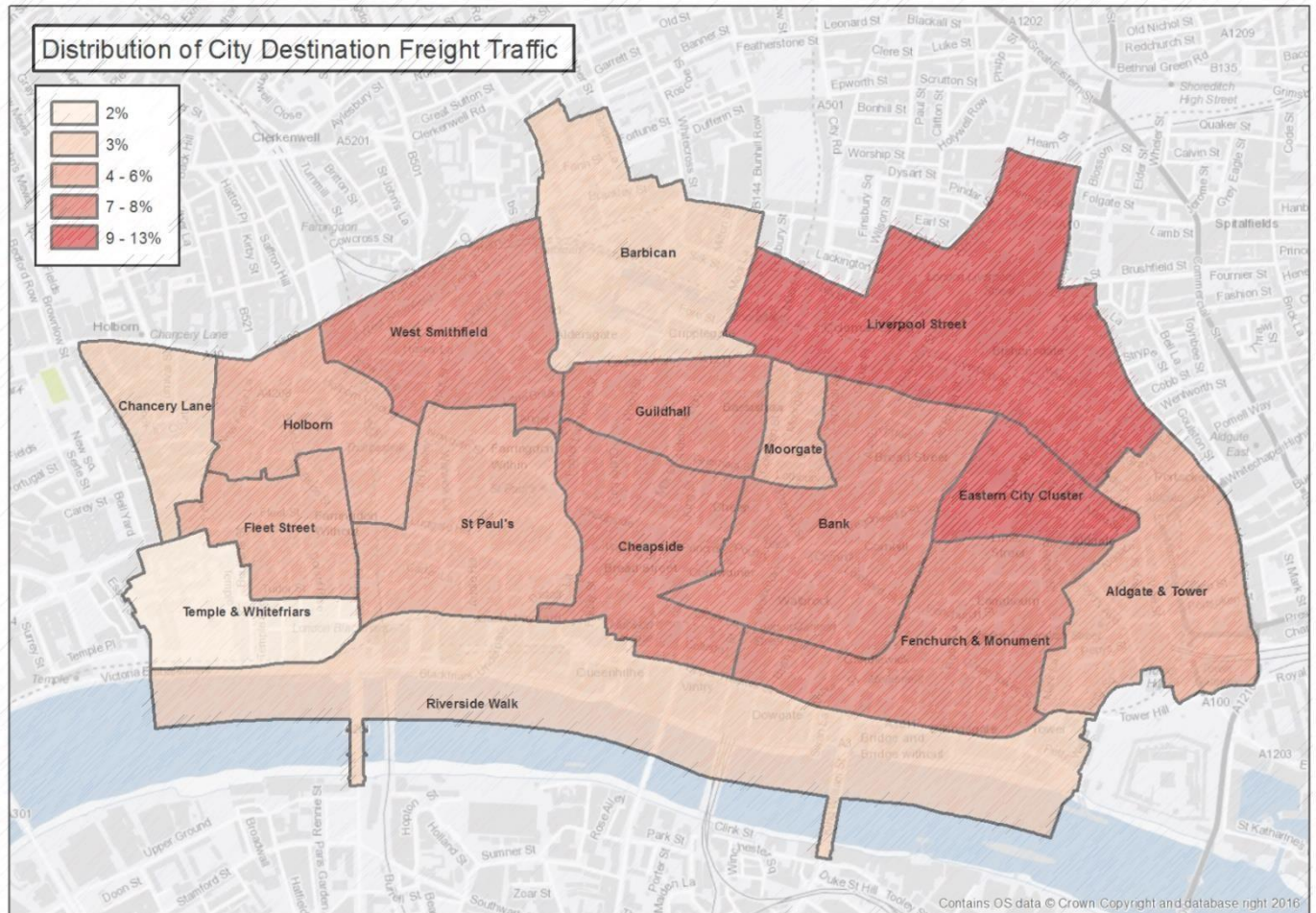


Figure 3.5

Traffic Distribution

The distribution of freight traffic ending their destination in the City is shown in the figure opposite. Whilst the areas are varying sizes, the proportions are adjusted by area density to give a clearer comparison of the different areas. Liverpool Street receives the highest proportion of freight activities across the City per area density; with 13%. The Eastern City Cluster area is the second highest. Both of these areas have high density office space and a large amount of construction activity that generate freight trips. Temple & Whitefriars generates the lowest amount of freight activity, at just 2% of the City as whole.



Data Source: INRIX GPS Data

4

Goods Vehicle On-Street Activities

4. Goods Vehicle On-Street Activities

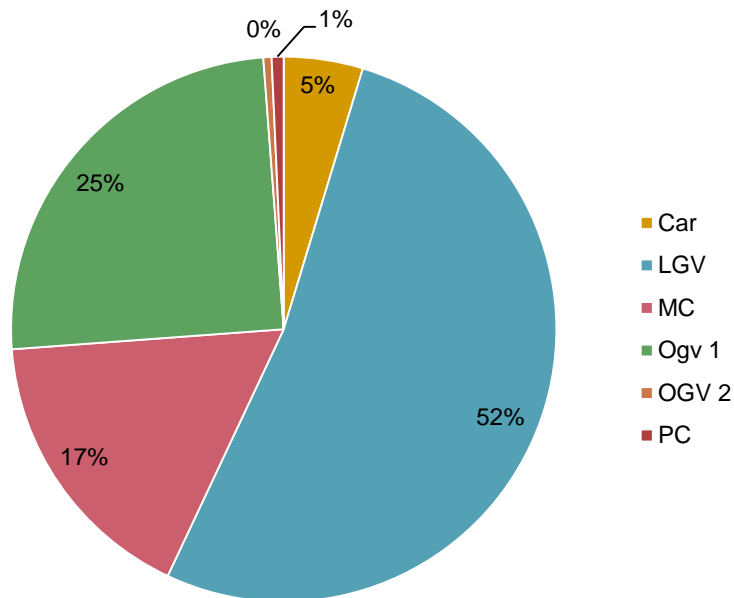
This chapter sets out the characteristics of on-street activity.

On-street activity surveys indicate that 50% of goods vehicle activity is associated with loading or unloading, and 50% is parking (and therefore most probably used for servicing).

Loading and Unloading

As expected, the majority of on-street loading and unloading activities are undertaken by LGVs; they make up 52% of all vehicle types. OGV1 vehicles are second highest, with a quarter of all vehicle types. Motorcycles make up the majority of the remainder of vehicle types at 17% , followed by cars at 5%. This is shown in Figure 4.1.

Figure 4.1 Loading and Unloading Activity by Vehicle Type



Data Source: CoL On-Street Survey

The majority of on-street loading and unloading activities occur for between 5 and 30mins (50%), with the majority of the rest taking between 1 and 5 minutes (34%).

Hourly Profiles

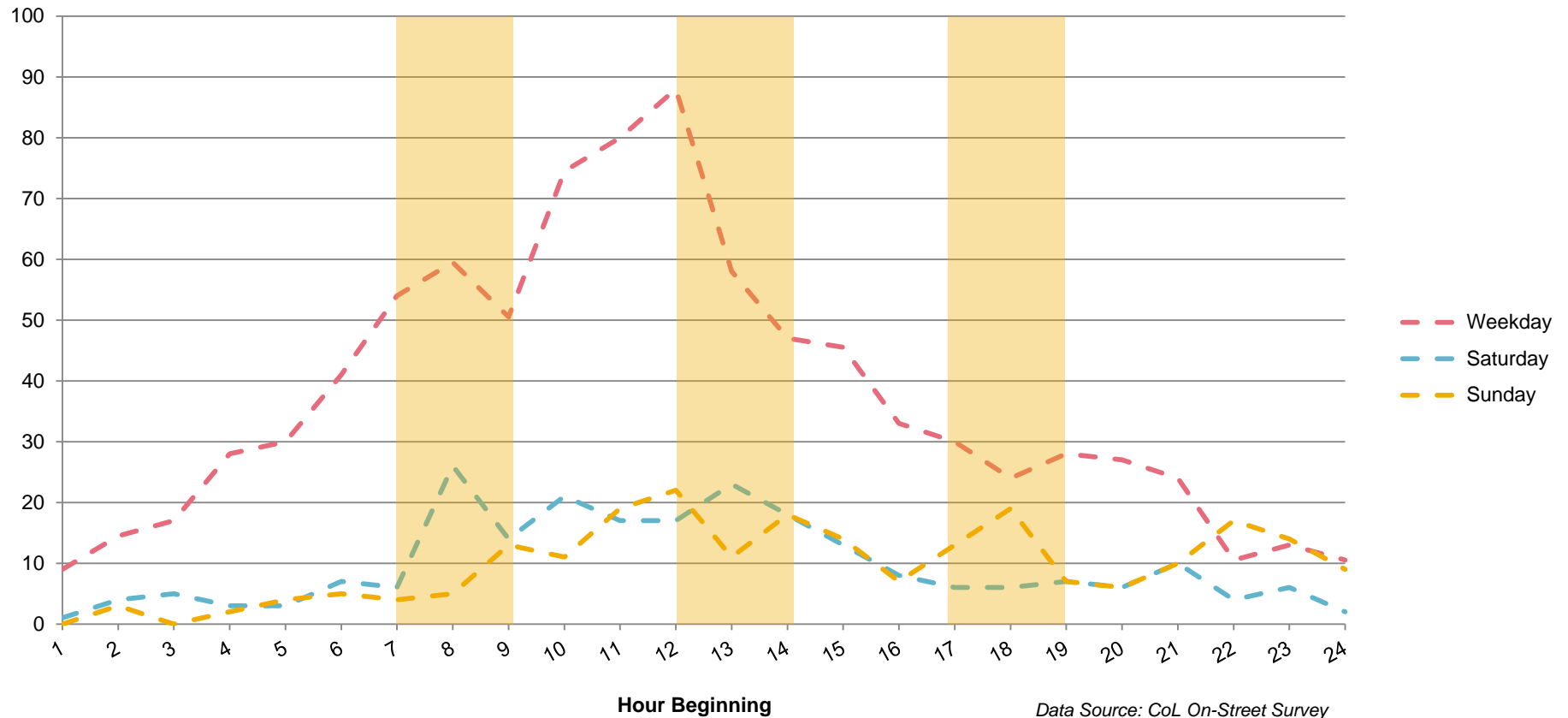
Figure 4.2 shows the hourly profiles across a weekday and weekend for the arrival of vehicles that are undergoing loading and unloading activity. On a weekday there is a peak at 8am, followed by a higher peak period at midday. The higher peak during lunchtime appears to be a specific trend to on-street activity and not to freight traffic driving within and through the City (as shown in Figure 2.2 and 3.1). It could therefore mean there is higher turnover of vehicles at on-street parking and loading bays at this time.

With regards to Saturdays and Sundays, as expected the quantity of loading and unloading activities is significantly lower than on weekdays.

There is also no clear peak period, however as the numbers are so low they may not provide a real representation.

70% of the loading and unloading activity occurs during the day (between 07:00 and 19:00).

Figure 4.2 Loading and Unloading Hourly Profile by Day of the Week

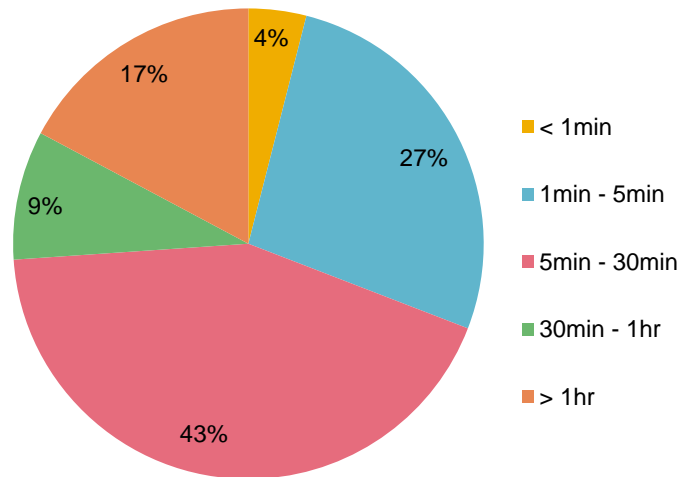


On-Street Van Parking

To understand vans that are undertaking servicing activities, all vehicles that were light good vehicles or heavy goods vehicles, where the driver left the vehicle were considered possible servicing vehicles.

Nearly half of all parked vans were parked on-street more than five minutes but less than 30 minutes. A quarter of vans were parked for less than 5 minutes, whilst nearly a fifth were for over an hour. This is shown in Figure 4.3.

Figure 4.3 Van Parking Duration



Data Source: CoL On-Street Survey

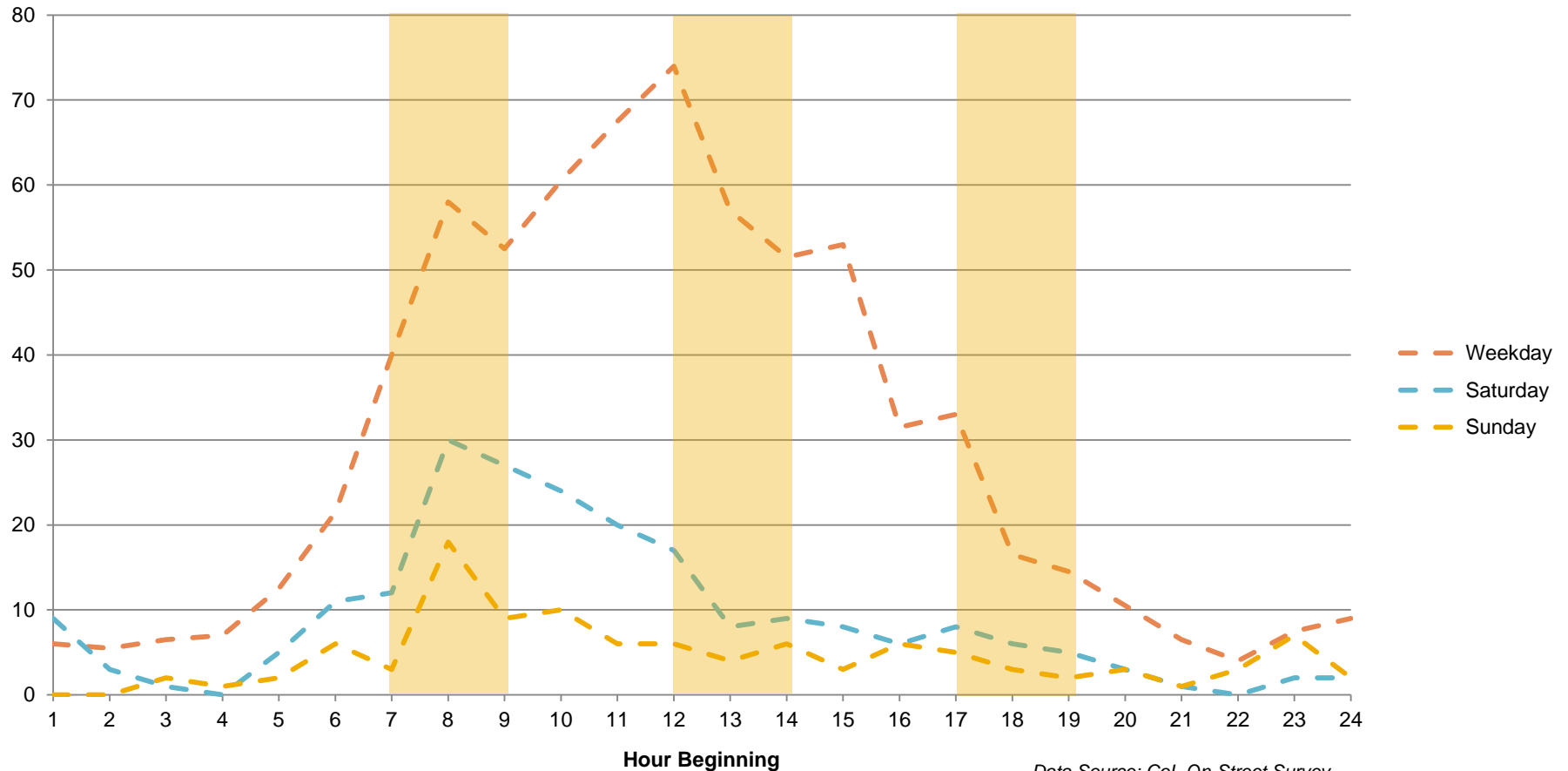
Hourly Profiles

Figure 4.4 shows the hourly profiles across a weekday and weekend for the arrival of vehicles that are likely to be servicing vehicles. On a weekday there is a peak at 08:00, followed by a larger peak at midday, with the number of activities gradually rising in the morning, then decreasing afterwards. Similar to the loading and unloading hourly profile (Figure 4.2), the higher peak during lunchtime appears to be a specific trend to on-street activity and not to freight traffic driving within and through the City (Figure 2.2 and 3.1). It could therefore mean there is higher turnover of vehicles at on-street parking and loading bays at this time.

With regards to Saturdays and Sundays, as expected the quantity of loading and unloading activities is significantly lower than weekdays. There appears to be a peak at 08:00, however the quantity of data is relatively low and as such may not provide a real representation.

80% of van parking activity occurs during the daytime (between 07:00 and 19:00).

Figure 4.4 Van Parking Hourly Profile by Day of the Week



Data Source: CoL On-Street Survey

5

Summary

5. Summary & Analysis

City Streets in 2016

Goods traffic makes up a fifth of all traffic on the City of London streets, and nearly 30% of motorised road traffic.

Across a weekday on City streets, the number of LGVs steadily rises between 03:00 and 05:00, and remains high between 06:00 and 10:00, peaking at 10:00. The volumes then gradually decrease throughout the rest of the day. HGVs follow a similar pattern at a lower volume, however the peak is earlier at 07:00 and has a steadier drop throughout the rest of the day. All types of roads within the City experience a similar profile.

Current Conditions compared to Previous Years

Goods vehicle flows in the City of London have fluctuated between 1999 and 2016. However, 2016 were the lowest observed flows for all three types of goods vehicles, and follows the overall general decline since 1999.

Whilst all three vehicle types are lowest in 2016 since 1999, their proportion of modeshare of all vehicle types has remained stable. This however is due to the significant rise in pedal cycles. The modeshare of only motorised vehicles shows that there has been an increased modeshare of Light Goods Vehicles.

Origin and Destination of Goods Traffic

Of the goods traffic that travels through the City, half is through traffic, whilst the other half either originate their journey in the City, end it in the City or are completely within the City.

Traffic that originates and/or its destination is within the City has a clear peak profile, with the peak being observed at 09:00. The through traffic profile however is flatter, with a rise in the morning, remaining high throughout the day and then a decline in the evening.

The majority of freight traffic that's destination is within the City originates in Greater London or just beyond the M25 (62%). 34% originates within the City and just 4% is from the rest of the UK.

The weekly profile of goods traffic that end their journey within the City shows that trips are evenly spread on a Monday- Friday. Saturday receives less than

half of weekday freight vehicles and Sunday is even less.

Across the City, the specific destination of goods traffic is not evenly distributed. The area around Liverpool Street and the Eastern Cluster receive the highest number of goods vehicles, which could be a reflection of the high density of office floorspace and level of construction activity.

Goods Vehicle Activities

Half of goods vehicle activity in the City is associated with loading or unloading, and half is parking (and therefore most probably used for servicing).

Half of all loading and unloading activity is undertaken by a LGV, and a quarter by OGVs. The majority of the remaining activity is undertaken by motorcycles.

The majority of on-street loading and unloading activities occur for between 5 and 30mins (50%), with the majority of the rest taking between 1 and 5 minutes (34%). 70% of the activity occurs between 07:00 and 19:00.

Nearly half of all parked vans park for more than five minutes but less than 30 minutes. A quarter of vans park for less than 5minutes, whilst nearly a fifth do so for over an hour. 80% of the activity occurs between 07:00 and 19:00.

Analysis

The results show that the majority of freight activity occurs on a weekday, and in between the hours of 07:00 and 19:00. As such, there is a clear opportunity for these activities to be retimed out of peak times when the City is at it's busiest, most importantly out of the morning and lunchtime peak periods.