

Minibus Market Analysis

Prepared by Transport and Travel Research (TTR)

For the Low Carbon Vehicle Partnership (LowCVP)



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Minibus Market Analysis Study – Executive Summary

Most minibuses sold today are OEM versions based on existing panel vans, the Ford Transit minibus is the most popular with about half of new registrations in 2012. Non OEM van conversions are becoming less common, but still make up about 10% of sales. Vehicles adapted for special use, both body builds and purpose builds each make up less than 2% of the fleet, they are mostly used by the community transport sector. Approximately 6,000 minibuses have been sold each year since 2008, this is likely to continue for the foreseeable future. There are just over 93,000 minibuses registered in the UK (2012). Our calculations suggests that the UK minibus fleet makes up less than a percent of the UK transport associated CO2 emissions.

There are two existing low emission options for minibuses, the Smith Transit pure electric minibus and the Ashwoods hybrid system, which can be retrofitted to a Ford Transit (as well as other models). There are also various other low carbon panel vans, which could be converted to minibuses. This includes the Mercedes Sprinter CNG panel van, the Mercedes Sprinter minibus is the second most popular minibus in the UK.

There are four main operator types in the UK. Education establishments make up over 20% of the minibus fleet and local authorities between 10% and 20%. Community transport and taxi and private hire make up just over 10% each. Approximately 40% of vehicles have not been captured by this study, they are likely to be operated by individuals, small businesses or large businesses with very few minibuses. Leasing companies are responsible for just over 10% of minibuses in the UK and mainly lease (about 70%) to educational establishments.

Table 1 shows that although bus and coach operators have small minibus fleets (about 2% each), they do make up a large proportion of the emissions, this is due to high mileage and relatively old vehicles. Taxi and private hire vehicles account for the largest proportion of CO2 emissions, this is primarily due to high mileage.

Table 1: Summary of emission estimations

Operator	Approximate CO2 g/km per vehicle	CO2 (Tonnes p.a.)	PM10 (tonnes p.a.)	NOx (tonnes p.a.)
<i>Whole fleet</i>	212	433,160	63,1	892.5
Local Authorities	219.6	39,522 to 70,349	5.8 to 10.2	81.4 to 145.0
Community Transport	219.6	26,513	3.9	64.6
Local bus operators	222.9	25,408	6.4	77.4
Coach operators	224.7	28,470 to 42,704	8.1 to 12.2	95.7 to 143.6
Taxi and Private Hire	219.6	138,326	20.1	285.0
Leasing companies	200.9	29,043 to 48,803	1.7 to 2.1	47.5 to 59.3
Education establishments	218.8	74875	6.2	116.5

More research is necessary to better understand these sectors and their suitability for a targeting with a low CO2 funding mechanism (particularly education establishments). That being said taxi and private hire, community transport and local authority vehicles present good

options due to the relatively high numbers of minibuses and the fact that the industry have a level of control which can assist with the implementation of any funding mechanism.

Minibus Market Analysis Study

1 Introduction

The purpose of this study is to better understand the minibus market in the UK to assist LowCVP in deciding whether targeting these vehicles makes sense from a policy perspective, and understand the overall value in terms of decarbonising road transport in the UK. Furthermore, to appreciate how relevant it would be to modify the existing incentive mechanisms such as the 'green bus fund' and 'bus technology fund' to also include minibus.

This study used various sources of publicly available data, and where possible supplemented this with information gathered directly from minibus manufactures and operators. The aim was to produce as far as possible a complete data set, with gaps filled where possible. Given the disparate sources and gaps in public data we consider there still to be instances of incomplete data. Therefore in some cases assumptions and proxy data has been used, and explained where relevant.

2 Market context

A minibus is a vehicle with 8 to 17 seats and no room for standing, they make up over 50% of the vehicles in the Public Service Vehicle class of vehicles (bus, coach and minibus) in the UK fleet. It is therefore important that the option of extending policy tools (such as the green bus fund) is explored. The starting point is a better understanding of the market, vehicles and users, which once collated can lead to more informed decisions.

Minibuses are used by a diverse group of people and organisations, this report has focused on the groups which have the biggest footprint in the minibus market, and these are:

- Organisations where transport is not their business, but a necessary component of their work, such as schools or hospitals.
- A 'transport' business such as taxi firms or small tour companies.
- Third sector organisations where the minibuses are the core of the operation, such as community transport organisation.
- Leasing companies which own vehicles in order to lease to all of the above groups, and other smaller sectors.

Findings on the number and type of minibus vehicles in use by each of these groups can be found in section 3.1.

Minibuses also come in a variety of model types and options, including van conversions (OEM or aftermarket), body builds (by second stage manufacturers) and purpose built (from chassis up). This report has explored the market share of each of these types of vehicles, details of which can be found in section 3.1.

There are relatively few low carbon minibus options available, this report has explored these options in section 3.3 and also investigated the low carbon van market which is slightly better developed as vans are the major source of base vehicles then those converted to minibuses.

3 Study findings

3.1 Number of minibus in the current and future UK vehicle parc by type, and age

As of 2012, the last year for which complete data exists, 92,853 vehicles are registered with the DVLA as minibuses (and in comparison the SMMT parc data gives the figure of 93,100, so in close agreement).

There are three main body types of minibus in the UK, which are outlined in table 2. Van conversions make up almost all of the minibuses in the UK fleet. Of these, more than half are sold by the OEM as a minibus (based on their own van engine, chassis and keeping the majority of the van bodywork) and the remaining are converted aftermarket from vans. Body builds, where a second stage manufacturer builds a specific body for fitting to a semi-completed van or light truck chassis, make up less than 2% of the UK fleet. Finally, purpose built minibuses, where the whole vehicle is purposely designed and built for use as a minibus also make up less than 2% of the UK fleet.

Table 2: Minibuses by how they are produced

Body Type	Converted	Percentage of fleet (estimate)	Percentage sold in 2012 (estimate)
Van conversion	By OEM	60%	85%
Van conversion	Aftermarket	37%	13%
Body builds	Aftermarket	<2%	<2%
Purpose built	Aftermarket	<2%	<2%

This data is based on UK parc data supplied by the Society of Motor Manufacturers and Traders (SMMT). This data covered all vehicles which are currently registered as minibuses in the UK fleet for each year between 1998 and 2012, all vehicles pre 1998 are grouped together. This was compared with information on the body type of the vehicle as sold. By comparing this it was possible to ascertain if the vehicle was an aftermarket conversion. Of all the vehicles currently in the parc data 42% were sold as minibuses and are currently minibuses and 36.9% were sold as other vehicle types such as a 'panel van' or 'window van' and are currently shown as minibuses, which means that they are an aftermarket conversion. It is unclear from the data what the remaining 21.1% were sold as, however it is likely that almost all of these vehicles have been sold as minibuses (OEM conversions)¹.

Figure 1 (next page) outlines this change, and assumes that all vehicles with N/A or unknown are OEM conversions sold as minibuses. Sales of aftermarket conversions have reduced in recent years and in 2012 85% of vehicles registered were OEM conversions sold as minibuses. This is likely to be due to legislative changes which make the process of buying an aftermarket conversion more complicated².

¹ This is because of human error on completing the registration form, One question asks 'DVLA vehicle type' which will be answered Minibus, another question asks 'VM body type' which is often then left blank or answered with N/A.

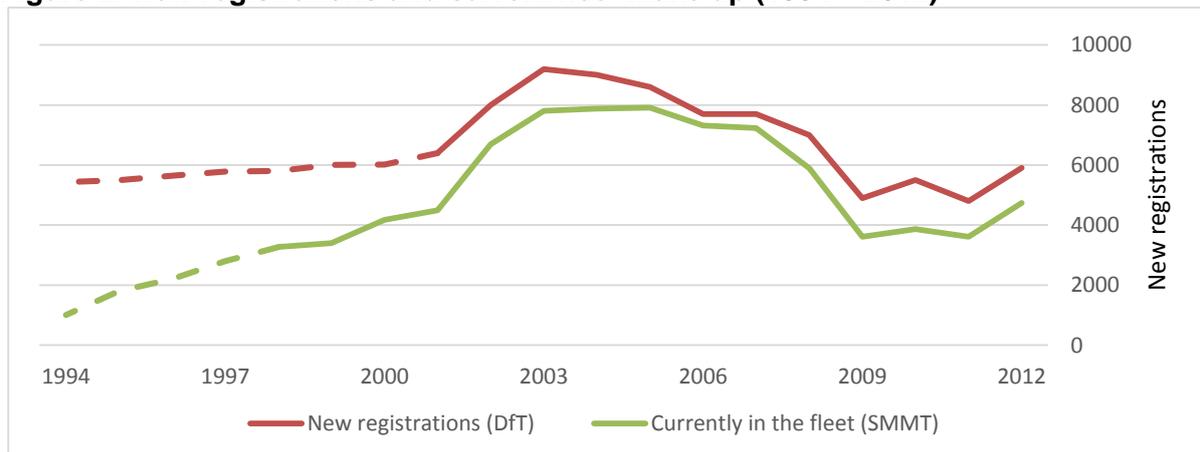
² A vehicle can no longer be purchased by a conversion company and sold to the consumer, now the consumer needs to purchase the van and have the conversion company undertake the conversion.

Figure 1: OEM Conversions and aftermarket conversions (1998 – 2012)



Figure 2 demonstrates that vehicles remain in the UK fleet for at least 10 years, however there are over 10,000 pre 1998 vehicles currently in the fleet (i.e. over 10% of registered minibus are over 15 years old). The SMMT data shows vehicles registered by year, which are still in the fleet and the DfT data shows all vehicle registered in each year. Therefore by comparing the two we can see where vehicles have left the fleet. They are broadly similar and show, as you would expect, a slightly lower figure for vehicles currently in the fleet against vehicles registered when purchased. The data for new registrations is projected back from 2001³ by assuming that the total fleet for each year is made up of 6% new vehicles, this is based on an average between 2001 and 2012, and allows for the fact that vehicle turnover rates have increased since 2001. The data for the vehicles currently in the fleet is projected from 1998⁴, this is based on vehicles leaving the fleet at the same rate between 1998 and 2002 as between 1994 and 1998, so this is likely to be underreporting the real figure. Just over a third of minibuses are Euro 3 and a similar amount are Euro 4.

Figure 2: New registrations and current fleet make up (1994 – 2012)



Interviews with aftermarket conversion companies did not reveal how many conversions they were completing per year as this was considered commercially sensitive information. However approximately 30% of the community transport vehicles used by the local authorities were body builds or purpose built vehicles, which equates to between 1,000 and 2,000 vehicles, or

³ DfT began keeping records of new minibuses registered in 2001

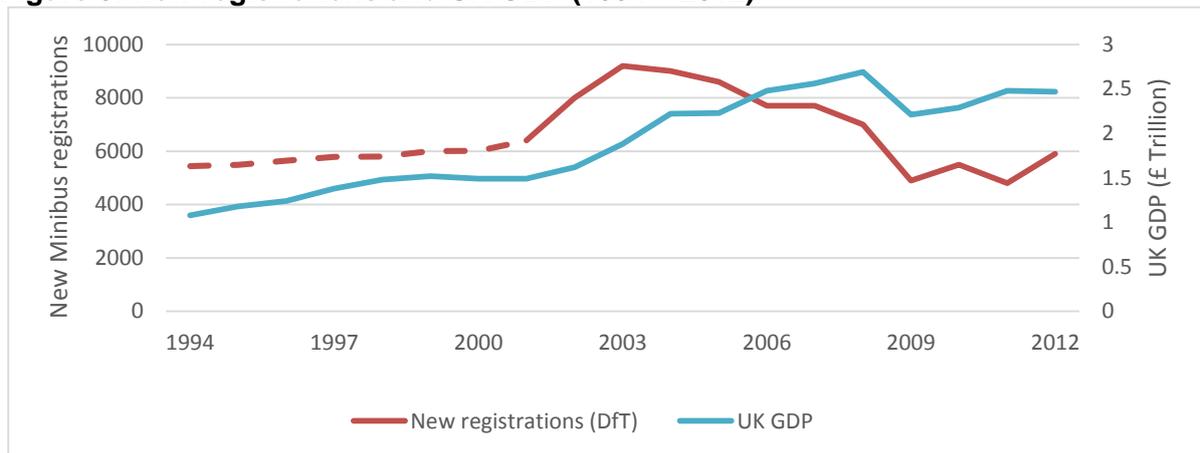
⁴ SMMT parc data has annual data until 1998

between 1% and 2% of the total fleet. Given the small sample size, this figure should be treated with caution. Also In 2012 1.2% of vehicles registered as minibuses were sold as chassis cabs, these vehicles are likely to be body builds, it is therefore estimated that they make up less than 2% of the market.

Interviewing various stakeholders, including operators and suppliers, revealed a wide range of minibus ages, with the fastest replacement cycle being on a 1 year basis (these minibuses are used elsewhere after this). The oldest vehicles in operation among those interviewed were 13 years old (registered in 2000). This appeared to be attributable to an ad hoc replacement policy, rather than a deliberate decision to keep vehicles for this length of time. The average age for minibuses across all of the interviewed subjects was between 6 and 7 years.

Figure 3 shows that the UK minibus market has a weak correlation to the UK economy. The minibus market had already slowed down before the 2008 financial crises, but then was affected by this, with the largest drop in new registrations in any one year (between 1994 and 2012). Since 2008 there have been between 5,000 and 6,000 vehicles sold each year and this pattern is likely to continue. From speaking with public sector operators and aftermarket conversion companies the market appears to be flat and it is unlikely that the market will grow in the near term (this is at least partly due to considerable pressure to cut costs).

Figure 3: New registrations and UK GDP (1994 – 2012)



3.2 Outline of the key operators, number and type of vehicles and ownership basis

The key operators of minibuses are described in table 3 which provides ranges and best case assumptions for the relevant number of vehicles by operator. In terms of ownership vs. leasing patterns the majority of leased vehicles (70%) are used by education establishments. More details on each operator are below.

Table 3: Estimations of the UK minibus fleet by operator type

Operator	Total vehicles	Average year of registration	Type	Percent of fleet
Local authorities	10,000 – 17,800	2007	90% Van conversion	11% - 19%
Community transport	10,000 ⁵	2007	70% van conversion	11%
Local bus operators	1,900	2004	98% van conversion	2%
Coach operators	2000 – 3000	2003	99% van conversion	2% - 3%
Taxi and private hire	10,500	2007	99% Van conversion	11%
Leasing companies	10,000 – 12,500	2011	100% van conversion	11% - 13%
Education establishments	19,200 ^{6,7}	2009	99% van conversion	21%
Other	34,305 – 42,855			37% - 46%

Local Authorities

Five local authority fleets were sampled to understand the makeup of the minibuses in their fleets. These local authority represented 3% of the UK population, which was scaled up to represent the full UK local authority fleet. This produced an estimation of between 10,000 and 15,000 minibuses.

Of the vehicles sampled, the average registration date of vehicles was 2007, however some local authority were operating much older vehicles. It was found 4% of the sample was Euro 2, 24% was Euro 3, 38% was Euro 4 and 15% was Euro 5.

According to the Office for Government Commerce (2006)⁸, there were approximately 300,000 passenger and commercial vehicles in operation in the public sector in the United Kingdom. In a Freedom of Information Request to the Office for Government Commerce in 2009⁹, the OGC indicated that approximately 112,000 public sector vehicles were controlled by Central Government departments rather than local authority so that would mean an estimated 182,000 vehicles in local authority fleets.

This figure has been used as a sense check against the figures given above, the local authority which were sampled generally operated less vehicles per head of population than the

⁵ 56% of CT services are operated by Local Authorities, so 56% of these vehicles are also counted in the Local Authority figure above.

⁶ Local Authorities sometimes own these vehicles, so some of these vehicles are also counted in the Local Authority figure above.

⁷ Leasing companies lease many minibuses to schools, so some of these vehicles are also counted in the leasing company figures above.

⁸ Office for Government Commerce, 2006, Getting Better Value from your Fleet

⁹ Office for Government Commerce, 2009, Freedom of Information Request 413458

UK average. This means using them as a bases for the UK will give a lower than actual figure. For the five local authority sampled the average percent of their fleet which were minibuses was 9.8% (allowing for one local authority with a very high percentage of minibuses), which equates to 17,800 vehicles.

The local authority we spoke to tended to own their own vehicles, and this trend was somewhat corroborated by a leasing company who stated that less than 3% of the vehicles leased were to local authority.

Community transport

There is some cross over between the community transport operators and the local authority operators. Approximately 40% of the local authority minibuses described above were used for community transport services. Therefore this, and all other figures throughout this document will double count these vehicles.

Unfortunately, although three community transport operators were contacted as part of the study, it was not possible to gather sufficient data to be able to accurately determine the number in the overall fleet. However, local authorities tender 56% of services to community transport organisations, we estimated that local authorities operate between 4,000 and 6,000 vehicles for community transport operations which mean it is likely there is approximately 10,000 community transport vehicles operating in the UK. The data we did gather from community transport organisations has allowed us to estimate an average age of 2007 and that approximately 30% are either body builds or purpose built vehicles.

Local bus operators

DfT statistics for 2012 show that there are 1,900 minibuses in the UK local bus operator fleets. There has been a slow decline since 2006, when there was 2,400 minibuses. The DfT statistics should be treated with caution as they classify minibuses as being vehicles with eight to 22 seats, with standing room. The definition of a minibus for this piece of work is a vehicle with eight to 17 seats with no standing room. The age profile of the entire UK minibus fleet has been used to determine the age of these vehicles because no robust data on the expected age of this fleet could be found.

Coach operators

Although many minibuses are in use by coach operators, these are not included in the available DfT data. Estimation of the total number of minibuses used in this way is difficult as the use of minibuses is very inconsistent between coach operators – for instance one operator keeps a small fleet of minibuses, which on further enquiry are only used for shuttling drivers from place to place, and are never offered to the general public; whereas other operators transport customers in minibuses as well as full size coaches.

Given the constraints of source data, we have estimated the number of minibuses which are part of coach operator's fleets are between 2000 and 3000, as none of the operators we interviewed indicated more than a small minibus fleet, though the large variability in minibus use observed may confound this estimate.

The varied use of coach operator minibus fleets also affects the range of ages of the vehicles. For instance, the operator using minibuses for driver ferrying only reported that their vehicles were registered in 2000 – the earliest registration date reported during the interviews whereas operators who used minibuses to transport customers reported various ages, or that all their vehicles were kept under 4 years old.

Private hire and Taxi

Various local authorities were contacted and stated that they do not licence vehicles with more than 8 seats. Registration of larger passenger vehicles used as taxis in the contacted regions was carried out by VOSA, we were unable to gather any data from them. Transport for London do however licence minibuses to operate as private hire vehicles and have 3,678 minibuses in their fleet, or 7% of the total private hire fleet. The UK taxi and private hire fleet is made up of approximately 300,000 vehicles and the national private hire association estimated that London has approximately double the minibuses in its fleet than the UK average. We can therefore assume that 3.5% of the UK taxi and private hire fleet is made up of minibuses, this equated to 10,500 minibuses. London's taxi and private hire fleet is newer than the UK average, taking this into account we estimate that the average age of registration for a minibus in the UK taxi and private hire fleet is 2007.

Rental Companies

One vehicle leasing company provided details of their fleet, from this we could see that minibuses make up 6% of their total fleet. Published figures from the 50 largest contract hire fleets (The 'FN50') show that there are approximately 250,000 vehicles in their fleets as a whole. From speaking to contacts in the industry it was estimated that the contract hire company who provided details of their fleet had a higher than average share of minibuses. Therefore we have assumed that between 4% and 5% of the UK hire fleet is made up of minibuses, this equates to between 10,000 and 12,500 vehicles. From the data we obtained, over 70% of these vehicles are likely to be leased to education establishments, approximately 10% to commercial organisations for staff transport, less than 3% to Local Authorities, and approximately 2% to care homes. None are purpose built or body builds.

The average length of a contract at the leasing company that provided data is 52 months, with a contract mileage of 48,000 miles. This is a lower mileage and a longer contract than the average across the whole of the leasing company's fleet (46 months and 80,000 miles). At the end of this contract the vehicles are generally sold at auction or to a network of retailers who specialise in this market. Second life purchasers can include clubs and societies, care homes and community transport organisations.

Education establishments

There are 24,000 primary and secondary schools in the UK, and from speaking with a small sample of schools it is estimated that approximately 40% of schools have a minibus. This equates to approximate 9,600 minibuses for UK schools. Schools make up about half of the leased UK minibus fleet which are used for education establishments (the other half being used by Universities, colleges etc). Therefore we have estimated that the total figure in education establishments is 19,200. It should be noted that local authority sometimes own these vehicles and based on the information obtained from the leasing companies many of these vehicles are likely to be leased.

Other

The SMMT Parc data was unable to clearly determine if a vehicle was part of a fleet or owned by an individual. Therefore it is difficult to determine the ownership arrangement for the UK minibus fleet which is not accounted for in our investigation. From speaking to industry experts the majority of these vehicles are likely to be owned by individuals, small businesses or large businesses who have very few minibuses.

There was some indication in our interviews that the majority of leasing was done to schools and colleges. Most of the organisations interviewed said that they operated significant fleets tended to purchase vehicles rather than lease

3.3 Identification of minibus manufacturers and suitable low carbon technologies

Table 4 describes the minibus models on sale in the UK in 2012. This shows that the OEM sold Ford Transit minibus made up almost half of the UK minibus registrations in 2012.

Table 4: New registrations of Minibus in UK by model (with more than 5 sales)

OEM conversion	Model	Registrations in 2012
Fiat	Ducato	72
Ford	Transit	2570
Iveco	Daily	12
Mercedes	Sprinter	331
Peugeot	Boxer	79
Renault	Master	185
Vauxhall	Movano	37
VW	Crafter	70
Purpose built		
Iris Bus	Daily	27
Aftermarket conversion		
Citroen	Relay	164
Fiat	Ducato	22
Ford	Transit	23
Mercedes	Sprinter	100
Peugeot	Boxer	123
Renault	Master	67
Renault	Traffic	8
Vauxhall	Vivaro	8

Table 5 shows the split of the main types of vehicle which were used for aftermarket conversions in 2012. The chassis Cab or Day Cab vehicles are likely to have been converted by body build companies, whereas the Panel and Window vans are likely to have been converted by the van conversion companies.

Table 5: Base vehicle's used for aftermarket conversions (with more than 5 sales)

Aftermarket conversions as sold	Registrations 2012
Chassis Cab or Day Cab	75
Panel Van	350
Window Van	112

Table 6 lists the body build or purpose build companies which were contacted as part of the study and gives an indication of their size, based on assets and liabilities.

Table 6: Body build and custom build minibus manufacturers

Name	Website	Phone number	Company size
Advanced Minibus Ltd	www.minibusuk.com	01246 250022	Small
Minibus Options	www.minibusoptions.co.uk	01663 735355	Medium
Optare	www.optare.com	08434 873 200	Large
Excel Conversions Ltd	www.excelconversions.co.uk	01302 835388	Small

Table 7 below shows the low CO2 options currently on the market which are either available as a minibus, or are available as panel vans which could be converted to minibuses.

Table 7: Low carbon minibus options

Organisation	Model	Technology	Website
Smiths Transit	Minibus	Pure electric	http://www.smithelectric.com
Ashwoods (various)	Minibus	Hybrid assist	http://www.ashwoods.org
Allied eBoxer	Panel Van	Pure electric	http://www.alliedelectric.co.uk/
Bdot (various)	Panel Van	Pure electric	http://www.bdoto.com
Mercedes Vito	Panel Van	Pure electric	http://www2.mercedes-benz.co.uk/
Iveco Daily	Panel Van	CNG/Biomethane	
VW Caddy	Panel Van	CNG/Biomethane	
Mercedes Sprinter	Panel Van	CNG/Biomethane	

Pure electric vehicles have no tailpipe emissions, which mean there are no local emissions of air quality associated pollutants. Pure electric vehicle CO2 emissions are determined by the power source, it is estimated that charging an electric van using the average UK grid will reduce these by approximately 60% compared to a conventional diesel van.

The Ashwoods hybrid assist system achieved a 20.1% reduction in fuel use and CO2 emissions over the standard diesel equivalent on the NEDC drive cycle. Emissions of air quality associated pollutants are also likely to be less.

CNG vehicles have similar levels of CO2 emissions to a conventional diesel, however if biomethane is used direct CO2 emissions will be reduced by over 50%. CNG vehicles have virtually no emissions of air quality associated pollutants.

3.4 Calculation of CO₂, NO_x and PM₁₀ emissions associated with minibus operating in the UK and their contribution to road transport emissions

The available DfT statistics for estimations of public transport vehicles (pollutants and CO₂) are described as bus/coach vehicles, and do not separate out minibuses. Therefore a bottom up estimation has been conducted. When conducting this research TTR collected where available, mileage, fuel consumption and information to estimate the age of the fleet (by operator).

Results of emission estimates

Table 8 summarises the estimations of CO₂, NO_x and PM₁₀ for each user type, these are based on the inputs from operators and manufactures along with data on the age of the whole of the UK minibus fleet. The DfT emissions factor toolkit has been used to make the NO_x and PM₁₀ estimations.

Table 8: Estimations of emissions from the UK minibus fleet

Operator	Average year of registration	km/yr/ vehicle	PM ₁₀ (tonnes p.a.)	NO _x (tonnes p.a.)	CO ₂ (tonnes p.a.)
<i>Whole fleet</i>		22,000	63,1	892.5	433,160
Local authorities	2007	18,000	5.8 to 10.2	81.4 to 145.0	39,522 to 70,349
Community transport	2007	12,075	3.9	64.6	26,513
Local bus operators		60,000	6.4	77.4	25,408
Coach operators	2003	63,360	8.1 to 12.2	95.7 to 143.6	28,470 to 42,704
Taxi and private hire	2007	60,000	20.1	285.0	138,326
Leasing companies	2011	17822	1.7 to 2.1	47.5 to 59.3	35,803 to 48,803
Education establishments	2009	17822	6.2	116.5	74875

Assumptions

The average km per year for the whole UK minibus fleet of 22,000km is based on the data supplied by the various operators and assumes that the majority of users not included in the study run similar mileage to education establishments and local authorities. These emissions calculations are based on the SMMT Parc data which provides a breakdown by year of vehicle sold which are still in the fleet. The operator specific data is based on estimations and data gathered which is outlined in Section 3.2

Local authority minibuses run approximately 18,000km p.a., this is based on data from the local authorities we contacted.

Community transport organisation's run approximately 15 million trips annually. In London there is approximately 1 mile per trip. Assuming that London will run less trips per passenger (given it is urban and has a large user base) we have assumed an average over the UK of 5 miles per trip. The estimated 10,000 minibuses operated for community transport services equates to 12075 km per vehicle.

Local bus operator vehicles run continually on a daily basis, we have therefore estimated a high average of 60,000 kilometres per year.

Data obtained by coach operator's show that on average they operate 63,360 kilometres per vehicle per year.

The National Private Hire Association estimate that the average mileage of a UK taxi is 35,000km for a single shift vehicle and 70,000km for a double shift vehicle. For this report an average of 60,000km has been used. This takes into account the fact that minibuses are likely to do a higher proportion of airport runs (therefore do more miles) and are more likely to be double shift vehicles given the higher capital costs associated with the vehicle.

Data obtained from the leasing company show that on average they operate 17,822km per vehicle per year, this figure has also been used for the education establishments as 70% of minibuses leased are leased to education establishments.

Comparison with other transport modes

These calculations suggests that the UK minibus fleet makes up less than a percent of the UK transport associated CO2 emissions and that the average minibus emits 212 g/km.

DfT emissions data show that 4.2 million tonnes of CO2 were produced by public bus and coach operations in 2012, there are twice as many minibuses in operation in the UK than buses and coaches (although very few of these are for public operation) and our calculations suggest that they are responsible for ten times less CO2 emissions.

There are 3,280,000 light goods vehicles in the UK, these are vans which weigh less than 3.5 tonnes, so includes some vans which would be too small to be converted into minibuses. These vehicles produce 15.1 Tonnes of CO2 annually which equates to a very similar level of CO2 emissions per vehicle.