Appendix A – Data and Calculations for Industry Profile

Table of Contents

List of Exhibits

blank
page

APPENDIX A
DATA AND CALCULATIONS FOR INDUSTRY PROFILE

This appendix presents additional information on the data sources and the calculations used in the industry profile chapter (Chapter 2).

Note on data sources. Because of the recession, which started in 2008, there was a question about whether we should use post-2008 data because of the possible distorting effects of the recession. The purpose of the profile is to describe the industry as it has been and is likely to be in the future. For this reason, the most recent data we used in most cases is from 2007 or 2008. We believe this gives the most accurate picture of the industry and its operations.

1. Trends in Vehicle Miles Traveled, Ton-miles, and Revenue

Data on activity in 2002 and 2007 were taken from the following sources:

- American Trucking Associations (ATA) Trucking Activity Report Historic Data Base—index of truckload vehicle miles traveled (VMT) (we used the seasonally adjusted indices for June).
- Federal Highway Administration (FHWA), Highway Statistics, 2008 and 2002, Table VM-1—VMT of combination trucks (tractor-trailers) on rural roads.
- Commodity Flow Survey (CFS) 2007 and 2002, Table 1a—ton-miles of truck freight.
- Economic Census (EC) 2007 and 2002, Transportation and Warehousing—long-distance trucking revenue (not including household goods (HHG) or packages), adjusted for price increases using Bureau of Economic Analysis (BEA) price indices for sector output.

Exhibit A-1 presents values for 2002 and 2007 and annual growth rates from 2002 to 2007.

Exhibit A-1. Annual Growth Rates – 2002 to 2007

	ATA VMT Index	FHWA VMT	CFS For-hire ton-miles	EC Revenue
2002	99.9	106,025 million	959.6 billion	$117.3 billion
2007	91.8	103,208 million	1,055.6 billion	$135.2 billion
Growth rate	-1.7 percent	-0.5 percent	1.9 percent	2.9 percent

Nominal revenue was $160.7 billion in 2007. To obtain the growth rate, it was necessary to adjust for inflation. The revenue figure was adjusted back to 2002 prices with the BEA price indices for truck transportation found in Industry Economic Accounts, gross domestic product (GDP) by Industry Accounts. The calculation is as follows:

2002 index: 104.2
2007 index: 123.8
$160.7 billion x 104.2 / 123.8 = $135.2 billion

2. Revenue

The for-hire revenue estimate of $160.7 billion in 2007 is based on two different data sources published by the U.S. Census Bureau. The Census Bureau gathers data from firms with employees through its surveys, and these data—reasonably reliable sources for revenue of carriers with payrolls—are published every five years in the EC. The EC reports separately on:

- General freight, long-distance, truckload (NAICS 484121)
- General freight, long-distance, LTL (NAICS 484122)
- Specialized freight, long-distance (except HHG) (NAICS 48423)

The EC defines specialized freight as freight requiring special equipment—primarily refrigerated vans, tank trailers, and flatbed trailers. The overall definition also includes carriage of HHG.

The EC surveys, however, do not provide any information on the revenues of owner-operators. In a separate effort, the Census uses a sampling of individual income-tax returns to collect data on non-employer firms and publishes the results annually. Data based on tax returns of individuals may well be more prone to error than data obtained from survey forms filled out by firms with staffs. A filer preparing Schedule C of Form 1040 is given three choices for type of trucking business:

- General freight, local (NAICS 48411)
- General freight, long distance (NAICS 48412)
- Specialized freight (NAICS 4842)

The choice between local and long distance is a problem. The instructions for Schedule C provide no guidance on the definition of local and long distance.[1] There is every reason to believe that a large number of filers who identified themselves as long-distance are, in fact, local (i.e., have average lengths of haul under 100 miles). Intuitively, it is clear that many drivers would think of a run to a different city 75 to 100 miles away, for example, as a long-distance move. It is also clear that a large number of owner-operators own only straight trucks. ICF's analysis of the 2002 Vehicle Inventory Use Survey (VIUS) shows that 95 percent of for-hire straight trucks are in short-haul service, and 38 percent of for-hire tractors are in short-haul service.[2] Thus, virtually all owner-operators that have no tractors are short-haul, and a significant fraction of those that do have tractors are also short-haul. And an analysis of VIUS data done by OOIDA indicates that over half of owner-operators own no tractors.[3] For general freight, the Census non-employer data show approximately 33.0 percent of revenue from short-haul service and 67.0 percent from long-haul. In light of the distribution of trucks and tractors between long and short-haul, it is difficult to accept this pattern.

ICF determined that 33.5 percent is a reasonable estimate of the percentage of owner-operators that are in long-haul service. (Details of this estimate are in a subsequent section on estimate

[1] Internal Revenue Service, Instructions for Schedule C, Retrieved August 4, 2010 from: http://www.irs.gov/pub/irs-pdf/i1040sc.pdf
[2] VIUS was not conducted in 2007, so the 2002 data are the most recent source of information on ownership and truck characteristics.
[3] John Siebert, "OOIDA Analysis of the 2002 VIUS to Determine the Owner-Operator Role in the American Trucking Industry," OOIDA Foundation, April 2005

of number of owner-operators.) We may use this percentage to estimate revenue for non-employer, long-distance firms carrying general freight.

Specialized freight is a different problem, for it includes local and long-distance service and HHG. We address this problem by first removing HHG from non-employer specialized freight and then applying 33.5 percent to the remainder to obtain non-employer revenue for long-distance, non-HHG, specialized freight.

We remove HHG, because we do not include either HHG or carriage of packages in the revenue estimate. In both of these sectors, a very high proportion of cost is incurred in local pick-up and delivery, such that these revenues are not comparable with revenue from OTR service in other sectors.

Specialized freight for employer firms:

All specialized freight (NAICS 4842): $75.617 billion
HHG (NAICS 48421): $14.384 billion

14.384 ÷ 75.617 = 0.190
1 – 0.190 = 0.810, non-HHG specialized freight

All specialized freight for non-employer firms: $4.111 billion.

0.810 x 4.111 = $3.329 billion, non-HHG, non-employer, specialized firms

0.335 x 3.329 = $1.115 billion, long-distance, non-HHG, non-employer specialized firms

We need to address one more issue with revenue of non-employer firms. We have no way of knowing whether these firms are leased owner-operators or owner-operators working as independents under their own authority. If they are leased owner-operators, their revenue is payments from the larger firms to which they are leased. This revenue is already counted in the revenue reported by employer firms. We should add only the revenue of independent owner-operators. There are data from OOIDA that indicate approximately 30.0 percent of their members are independents.[4]

0.30 x 1.115 = $0.335 billion.

This is the revenue generated by independent, non-employer, specialized trucking firms.

The non-employer data indicate revenue for long-distance, general freight of $29.553 billion. We must also multiply this figure by 0.30 to obtain the revenue generated by independent firms.

0.30 x 29.553 = $8.866 billion.

This is the revenue generated by independent, non-employer, general-freight trucking firms.

Exhibit A-2 summarizes the revenue estimate for long-distance, for-hire carriers (excluding package carriers and HHG carriers).

[4] http://www.ooida.com/OOIDA%20Foundation/Recent_Research/OOIDP-08.html, retrieved 6/23/11.

Exhibit A-2. Long-distance, For-hire Revenue (excluding package and HHG carriers)

Type of carrier	Revenue (billions)
Employer firms	
Truckload	$83.471
Less-than-truckload	$37.659
Specialized freight	$30.322
Non-employer firms	
General freight	$8.866
Specialized freight	$0.335
Total	**$160.652**

3. Number of Drivers

To estimate the number of drivers, we use our revenue estimates for long-distance truckload service and LTL service to obtain numbers of tractors in those sectors. From that point, we develop number of tractors in other sectors and use driver-per-power-unit ratios to obtain number of drivers. Truckload revenue per tractor per year—$160,000—was obtained in off-the-record discussions with ICF's industry contacts. We heard estimates in the range of $160,000 to $175,000 per year. We chose the low end of the range to avoid understating the impact of the rule. A higher revenue number would lead to fewer tractors and drivers and a lower estimate of the impact.

Estimate of LTL revenue per tractor per year is based on data from the 2008 National Motor Carrier Directory (NMCD) (largely 2007 data). Driver-per-power-unit ratios were derived from FMCSA's 2007 SAFER data.

For LTL revenue per tractor, we used NMCD data for the following firms (before Yellow/Roadway merger). (These are the LTL firms found in the 2009 Transport Topics Top 100 For-hire Carriers.)

- Con-way Freight
- ABF
- Yellow
- Roadway
- Old Dominion
- NEMF
- Southeastern
- Roadrunner
- AAA Cooper
- Estes
- SAIA
- Averitt
- Pitt Ohio
- Central Freight

- A. Duey Pyle

Total reported revenue for these companies was $19,259 billion; tractors owned or leased: 58,750.

$19.26 billion ÷ 58,750 = $327,818

We round this to $328,000 for the purpose of the estimate.

Key numbers:

Truckload revenue per tractor per year:	$160,000
LTL revenue per tractor per year	$328,000
Truckload drivers per power unit:	1.13
LTL drivers per power unit:	1.36

From our estimate of for-hire revenue, we have truckload revenue of $122.933 billion.

122.933 billion ÷ 160,000 = 768,709 tractors
768,709 x 1.13 =867,268 truckload drivers

From our estimate of for-hire revenue, we have LTL revenue of $37.659 billion.

37.659 billion ÷ 328,000 = 114,814 tractors
114,814 x 1.36 = 155,876 LTL drivers

867,268 + 155,876 = 1,023,144 for-hire drivers

To estimate the number of private drivers, we used data on number of for-hire and private tractors from the 2002 VIUS.[5] These data show private tractors as 61.7 percent of for-hire tractors (including owner-operators), including tractors in both local and OTR service. Further calculations based on these data show that OTR private tractors are 37.0 percent of OTR for-hire tractors.[6] We have 768,709 truckload tractors and 114, 814 LTL tractors.

768,709 + 114,814 = 883,523 for-hire tractors
0.37 x 883,523 = 331,036 private tractors

For driver per power unit, we use 1.25—midway between truckload and LTL.

1.25 x 331,036 = 413,795 private drivers

We also need to estimate drivers for HHG carriers and package carriers. The HHG trade association—American Moving and Storage Association (AMSA) reports in its fact sheet that its members operate 18,000 straight trucks and 32,000 tractors.[7] The 2007 Economic Census reports that long-distance moving (NAICS 4842102) accounts for 69.7 percent of revenue from

[5] Census Bureau, 2002, Economic Census, Vehicle Inventory and Use Survey, Table 5, p. 44

[6] Analysis by ICF in 2008, based on unpublished VIUS outputs, provided distribution of both private and for-hire tractors across ranges of operation.

[7] American Moving and Storage Association, "Industry Fact Sheet," May 2010

all HHG carriage (NAICS 48421). We assume, then, 70.0 percent of the reported 50,000 trucks are in long-distance service, most of them tractors. Many HHG trucks will have two people in the cab, and they often share driving duties. So we assume a driver/power unit ratio of 1.75.

0.70 x 50,000 = 35,000 HHG long-distance trucks
35,000 x 1.75 = 61,250 HHG long-distance drivers

For package carriers, we base the estimate on revenue per tractor of UPS and FedEx and on total revenue from ground package carriage. Main data sources are:

- 2009 Transport Topics Top 100 For-hire Carriers—for UPS and FedEx tractors
- SEC Form 10-Ks for UPS and FedEx—revenue from ground operations
- 2007 Economic Census—total revenue from non-air package carriage (NAICS 4921101)

The 2009 Transport Topics Top 100 reports, for 2008, 18,740 company tractors for UPS. For FedEx, it reports 15,000 company tractors; it also reports 22,000 owner-operator tractors, straight trucks, and vans. Ground revenue of UPS in 2008 was roughly double that of FedEx. For that reason, it is not plausible that FedEx would have as many tractors as UPS. Accordingly, we disregard the owner-operator number and accept only the number for company tractors. The result is 33,740 tractors for the two large package carriers.

In their Forms 10-K, UPS and FedEx report revenue by type of service. Both operate ground-package services and both operate freight-trucking services. We took the 2008 revenues from these sources as their ground revenue—$23.585 billion for UPS, $11.685 billion for FedEx, total of $35.270 billion.

We divide combined UPS and FedEx ground revenue by number of tractors.

35.270 billion ÷ 33,470 = $1,053,700, revenue per tractor

2007 Economic Census reports revenue from non-air package service as $44.042 billion.

44.042 billion ÷ 1,053,780 = 41,794 tractors in non-air package service

We use the LTL driver/power-unit ratio of 1.36.

1.36 x 41,794 = 56,742 OTR drivers for package companies.

Exhibit A-3 summarizes the estimate of number of drivers.

Exhibit A-3. Number of OTR Drivers

Sector	Drivers
Truckload	867,268
LTL	155,876
Private	413,795
Household goods	61,250
Ground packages	56,742
Total	**1,554,930**

We estimate 1.554 million OTR drivers.

4. Vehicle Miles Traveled

The estimate of vehicle miles traveled (VMT) is based on our estimate of 768,609 tractors in truckload service. Using an industry standard of approximately 100,000 miles per tractor per year in OTR service, we obtain truckload VMT of 76.871 billion. We obtain LTL VMT on the basis of our estimate that LTL VMT is approximately 17.0 percent of truckload VMT.

The estimate of less-than-truckload (LTL) percentage of VMT is based on the 1992 Truck Inventory and Use Survey (TIUS), 1997 and 2002 Vehicle Inventory and Use Survey (VIUS), and revenue data from the EC for 1997, 2002, and 2007.

The TIUS/VIUS data show LTL and truckload long-distance for-hire VMT. The EC data show revenue for long-distance for-hire service for both LTL and truckload (1992 EC data were not used, because truckload and LTL data were not reported separately). The relevant percentages are shown in Exhibit A-4.

Exhibit A-4. Less-than-Truckload and Truckload Vehicle Miles Traveled and Revenue Percentages

	VMT		Revenue	
	Truckload	**LTL**	**Truckload**	**LTL**
1992	81.8%	18.2%		
1997	75.7%	24.3%	67.2%	32.8%
2002	84.2%	15.8%	70.0%	30.0%
2007			68.9%	31.1%

The VMT data show percentages in 1992 and 2002 in roughly the 16-18 percent range with a spike in LTL share in 1997. The revenue data, however, show a consistent LTL percentage in a narrow range. Based on the revenue data, therefore, we treated the spike in LTL percentage in 1997 as an anomaly, and we estimated the LTL share of VMT at 17.0 percent.

On this basis, LTL VMT is 15.7 billion.

0.17 x 76.871 = 15.7 billion

76.871 billion + 15.7 billion = 92.6 billion for-hire VMT

The next step is to estimate private OTR VMT. As noted above, we estimated 331,036 private tractors in OTR service. Calculations based on the 2002 VIUS show annual miles per private tractor of approximately 40,000. This includes both local and OTR service. Average miles per tractor per year will necessarily be higher when considering only OTR service, but it will not be as high as the 100,000 annual miles for a for-hire tractor in OTR service. We assume 60,000 miles per year for the average OTR private tractor.

331,036 x 60,000 = 19.9 billion

92.6 billion + 19.9 billion = 112.5 billion VMT

5. Number of Truckload Firms

Estimating the number of truckload firms was a somewhat complex process. We developed an estimate of approximately 65,000 long-haul for-hire firms in 2007 using the following data sources:

- EC 2007
- Owner Operator Independent Drivers Association (OOIDA) analysis of 2002 VIUS data and other data from OOIDA.

The greatest challenge to estimating the population of long-haul, for-hire firms is the problem of estimating the number of firms with one-to-five tractors. (If a firm has no tractors, we assume it is in short-haul operation.) These are the owner-operators; some of them have employees, the great preponderance of them do not. While the EC data on firms with employees seem reliable, there are question about how to interpret the EC data on non-employee firms.

The starting point for the estimate is the 2007 EC data on long-haul carriers with employees.[8] The relevant data are those for the types of carriers shown in Exhibit A-5. General freight and household goods are self-explanatory. Specialized freight is cargo moving on flatbeds, in tank trailers, or in refrigerated trailers.[9]

Exhibit A-5. Long-haul Truckload Firms in 2007 Economic Census

Type of Carrier	NAICS Code	Firms
General Freight	484121	24,648
Specialized Freight	48423	8,025
Total		**32,672**

NOTE: Number of firms is adjusted for firms in operation less than one year.
NAICS 48423 is all long-haul specialized freight except HHG.

6. Question of Firms in Operation less than 1 Year

The data above had to be adjusted to allow for firms in operation for less than a full year in 2007. Of the firms reported in these categories, 7,754 were in operation for less than 1 year, 21 percent of all the firms reported for 2007. The comparable percentage for the 2002 EC is 26 percent, which suggests some stability in the relative size of this group.

If we included all of the short-term firms in our base number, the result would be an over-estimate of the number of firms in operation at any given time. It is clear that a downward

[8] U.S. Census Bureau, 2002 Economic Census, Transportation and Warehousing—Subject Series, Table 4.
[9] This terminology is not directly equivalent to commonly used terms in the industry. In the business, specialized freight usually refers only to flatbed movements and traffic in tank trailers is referred to as bulk.

adjustment had to be made. For this analysis, we assumed that the average short-term firm is in operation for 6 months in the year in question; therefore, we reduced the total by one-half of 7,754 to obtain the numbers in the table above. These are the long-distance, truckload firms with employees in 2007. To complete the estimate, we need to add carriers without employees.

7. Owner-operators

The next step was to add an estimate of firms without employees, i.e., owner-operators. We note that some, not many, owner-operators have employees, so the estimate for firms with employees already includes some owner-operators. We must also note that the great majority of owner-operators in long-haul carriage are not truly independent firms. They work under lease contracts with larger firms. Typically, the owner-operator provides his tractor and trailer and his labor in return for an agreed mileage rate. In effect, such leased drivers are part of the larger firm's labor force.

The principal data on owner-operators and non-employee firms come from two different sources: the OOIDA analysis of the 2002 VIUS and the EC data on non-employer firms.[10]

The EC data on non-employer firms presented in Exhibit A-6 show 296,060 firms for long-distance general freight in 2007 and 193,146 firms in local general freight. Also, these data show 53,303 such firms in specialized trucking but do not break specialized service between long-haul and short-haul. This is all specialized freight and includes HHG.

Exhibit A-6. Non-employer Firms 2007 Economic Census

General freight long-distance	296,060
General freight local	193,146
Specialized freight	53,303
Total	**542,509**

The OOIDA VIUS data show about 543,000 power units owned by owner-operators in 2002. Since the OOIDA VIUS data include some owner-operators with more than one vehicle, they include some employer firms and total number of firms must be somewhat less than 546,000, Nonetheless, these data sources are roughly consistent with each other. Earlier data also show a large number of owner-operators of all types. In a 1998 study, University of Michigan Professor Francine Lafontaine estimated that there were 320,000 owner-operators.

ICF's further analysis of VIUS data reveal, however, that the 500,000 power units shown in the OOIDA VIUS analysis include a large number of vehicles of less than 10,000 pounds. When we exclude these vehicles from the count, the power units owned by owner-operators drop to about 325,000 vehicles. In light of this, it is reasonable to make a similar downward adjustment for the non-employer firms to 325,000.

[10] U.S. Census Bureau, "2002 Economic Statistics: Non-Employer Statistics Transportation and Warehousing United States." http://www.census.gov/epcd/nonemployer/2002/us/US000_48.HTM
U.S. Census Bureau, Non-Employer Statistics 2007: Transportation and Warehousing United States. http://www.census.gov/epcd/nonemployer/latest/us/US000_48.HTM

But we have to make a further adjustment to reach a number for long-haul firms. The EC data on non-employer firms are drawn from Federal income-tax returns in which the absence of employees is clear. A trucking firm without employees must be an owner-operator (although some owner-operators have employees). In the EC data, however, self-designation becomes a problem in the distinction between short and long-haul. In the instructions for Schedule C of IRS Form 1040, filers are asked to select type of business from a long list of types of business. General-freight local and long-distance are two of the choices listed, but there is no guidance as to definition. Specialized freight is the only other choice for a trucking firm, but there is no distinction between short and long haul.[11]

As noted earlier, there is every reason to believe that a large number of filers who identified themselves as long-distance are, in fact, short-haul, i.e., have average lengths of haul under 100 miles. Intuitively, it is clear that many drivers would think of a run to a different city 75 to 100 miles away, for example, as a long-distance move. It is also clear that a large number of owner-operators own only straight trucks. ICF's analysis of VIUS shows that five percent of for-hire straight trucks are in long-distance service, and 62 percent of for-hire tractors are in long-distance service. Thus, virtually all owner-operators that have no tractors are short-haul, and a significant fraction of those that do have tractors are also short-haul. And the OOIDA VIUS data indicate that over half of owner-operators own no tractors. Setting aside specialized freight, the EC non-employer data show approximately 40.0 percent of firms short-haul and 60.0 percent long-haul. In light of the distribution of trucks and tractors between long and short-haul, it is difficult to accept this pattern.

We may use the percentages of for-hire tractors and straight trucks that are in long-haul service to estimate the percentage of non-employer firms that are in long-haul service. From the OOIDA VIUS data, we can extract an estimate of the number of straight trucks and tractors owned by owner-operators: 119,000 straight trucks and 117,000 tractors, respectively 50.4 and 49.6 percent of owner-operators' power units. By applying these percentages to the percentages of straight trucks and tractors in long-haul service we obtain 33.5 percent, or approximately one-third ([0.052 x 0.504] + [0.622 x 0.496] = 0.335).

We previously adjusted the non-employer estimate down to 325,000 firms with power units of 10,000 pounds or more. With our estimate of 30 percent of owner-operators as independent firms, this yields 97,500 independent, non-employer owner-operators, 32,500 of who (one-third) are in long-haul operation. Adding this to our estimate of 38,000 firms with employees takes us to an estimate of 70,500 long-haul firms in 2007.

Exhibit A-7 shows the chain of calculations that leads to the estimate of non-employer firms.

[11] Internal Revenue Service, Instructions for Schedule C, Retrieved August 4, 2010 from: http://www.irs.gov/pub/irs-pdf/i1040sc.pdf

Exhibit A-7. Non-employer Firms

Total from 2007 non-employer data	540,000
Exclusion of vehicles <10,000 lbs.	325,000
Independent owner-operators	97,500 (0.3 x 325,000)
Independent O-Os in long-haul service	32,500 (⅓ x 97,500)

Note: The final figure of 32,500 does not include owner-operators with employees; these are in the Census data for firms with employees.

We add our estimate of independent owner-operators in long-haul service to employer firms in long-distance, truckload service.

32,672 + 32,500 = 65,172 long-distance, truckload firms.

8. Size Distribution

Principal data sources are:

- EC 2007
- FleetSeek National Motor Carrier Directory (NMCD) 2008 edition (2007 or later data).
- American Trucking Associations (ATA) For-Hire Fleet Directory 2008 edition (2005-2007 data).

As shown in Exhibit A-8, both the NMCD and ATA's directory capture significant fractions of the employee firms reported in the 2007 EC—about 25 percent for the ATA directory and 43 percent for the NMCD. This is enough data for their size distributions to be reliable, especially for firms with more than five tractors, those that are larger than the owner-operators. Further, the distributions reported in the two directories are sufficiently close to each other as to be mutually corroborating. We see this in the following table showing distribution for firms with more than five tractors.

Exhibit A-8. Size distribution of For-hire Firms

	NMCD		ATA	
Tractors	**Firms**	**Percentage**	**Firms**	**Percentage**
6–10	8,223	40.1%	6,073	35.6%
11–20	5,286	25.7%	4,859	28.5%
21–40	3,378	16.5%	2,867	16.8%
41–75	1,799	8.8%	1,518	8.9%
76–150	1,003	4.9%	929	5.4%
151–500	644	3.1%	600	3.5%
>500	197	1.0%	221	1.3%
Total	**20,530**		**17,067**	

Since the NMCD data base is the larger, 44,000 firms (including those with 1–5 tractors) against 25,000 in ATA's directory, we use it as the basis for estimating size distribution. The 44,000

firms in the NMCD data are 43 percent of the just over 100,000 firms reported in the 2007 EC, long-haul and short-haul—without adjustment for short-time firms. With a sample this large, and with the support of the ATA data, we can accept the NMCD percentages as reliable for firms with six or more tractors. The distribution for all firms in the NMCD data, including the one-to-five class is shown in Exhibit A-9.

Exhibit A-9. Size Distribution for all Firms from NMCD Data

Tractors	Companies	Percent
1–5	23,710	53.6%
6–10	8,223	18.6%
11–20	5,286	11.9%
21–40	3,378	7.6%
41–75	1,799	4.1%
76–150	1,003	2.3%
151–500	644	1.5%
>500	197	0.4%
Total	**44,240**	

The FleetSeek staff make an effort to exclude owner-operators from their directory, so we can take the NMCD-reported firms with one-to-five tractors as employer firms and, thus, firms accounted for in the EC. Our key assumption is that FleetSeek captures something close to the universe of firms with six or more tractors. Therefore, we need to estimate the number of long-haul firms with employees in the one-to-five class and add the non-employee firms to get a total for this class.

We do this by first reducing the NMCD number of 23,710 for the one-to-five class to its long-haul component by applying the percentage of EC firms in long-haul service, or 38 percent (including short-time firms). This brings us to 9,018 firms in this size class. We then use, as an expansion factor, 0.47, the ratio of the NMCD population to the EC population of employer firms (adjusted for short-time firms) and obtain 19,384 employer firms in this size class. To this we add our estimate of 32,500 non-employer long-haul firms for a total of 51,884 long-haul firms in the one-to-five class. Exhibit A-10 shows the chain of calculations.

Exhibit A-10. Calculations for the Number of Firms with Employees having One to Five Tractors

NMCD firms in 1–5	23,710
NMCD long-haul firms in 1–5	9,018 *(0.38 x 23,710*)
EcCen employer firms in 1–5	19,384 *(9,018 ÷ 0.47)*
All firms in 1–5	51,884 *(19,384 + 32,500)*

All firms with more than five tractors are taken to be employer firms. Therefore, we subtract the 19,384 employer firms in the one-to-five class from our estimate of 32,672 long-haul employer firms and obtain 13,288 firms with more than five tractors. We distribute these firms over the higher size classes using the NMCD percentages shown above. The result is shown in Exhibit A-11.

Exhibit A-11. Distribution of Firms by Class Size

Tractors	Companies	*Percentage*
1–5	51,884	79.6%
6–10	5,322	8.2%
11–20	3,421	5.2%
21–40	2,186	3.4%
41–75	1,164	1.8%
76–150	649	1.0%
151–-500	417	0.6%
>500	128	0.2%
Total	65,172	***100.0%***