APPENDIX (I) INDUSTRY DATA

(I).1 REGULARITY IN TL SERVICE

The percentage of TL service that is regular in character was estimated from three sources: conversations with Schneider staff; interviews conducted by George Edwards with eight TL carriers[59]; and the field survey conducted.

Schneider conversations: These suggest that something better than 50 percent of that firm's operations are regular.

Edwards interviews: The data from interviews with eight TL companies, weighted by company size (number of tractors), show 33 percent of truck-miles in regular operations.

Field survey: We considered a driver to be in regular operation if he had three or more weekends at home in a month. On that basis, 41 percent of apparently compliant 60 drivers were in regular operations. We further tested this by looking at times for starting and ending daily work for this group. This test showed a very strong tendency for drivers from the regular set to start and finish at the same time each day—further confirmation of regular operation. Start and finish times for the random drivers showed no consistent patterns at all—a clear sign of non-regular operation.

The following table shows our three data points for percentage of regular operations in TL service.

Exhibit (I)-1
Regularity in Truckload Service

	Regular Percentage
Schneider	>50
Eight TL Firms	33
Field Survey	41

On the basis of these findings, we have used 40 percent for our estimate of regular TL service. There is some reason to think this estimate is low. Our criterion for regular drivers in the field survey may be too narrow. It is undoubtedly the case that some drivers have regular runs that keep them out for one to three weeks. Further, the field survey and the Edwards interviews reflect relatively small TL concerns (by design in the case of the interviews). Most TL companies try to get as much regular business as they can, and there is every reason to believe that the largest companies are the most successful in this regard. Their size and reach enable them to accommodate the demands of very large manufacturers and distributors.

[59] George Edwards is one of our team of industry experts.

[60] We considered drivers as non-compliant if they recorded more than 11 hours of driving or 14 hours on duty in a tour. These anomalies could reflect errors in log keeping or other record keeping.

(I).2 INDUSTRY EXPERTS

The following individuals comprise the informal team of industry experts with whom we frequently consulted on many aspects of trucking-industry operations. With some of these people, we met face to face on two occasions for discussion of industry practice. We consulted them frequently by telephone and e-mail.

Michael Belzer, Wayne State University
Stephen Burks, University of Minnesota
George Edwards, trucking consultant
John Nienow, Schneider National
Donald Osterberg, Schneider National
Daniel Pierce, Schneider National
John Siebert, Owner Operator Independent Driver Association

Professors Belzer and Burks, and Mr. Edwards were paid consultants to ICF. We contracted for the services of Professors Belzer and Burks through Sound Science, Inc.

(I).3 ESTIMATION OF VEHICLE MILES OF TRUCKS FROM 10,000 TO 26,000 POUNDS WITHIN 150 AIR MILES OF THEIR HOME BASES.

In order to estimate the effects of a rule change for trucks in this size class, it is necessary to estimate truck-miles of operations of these vehicles within 150 air-miles of their home bases. Base is defined as the place where the truck is parked when not in service and from which the driver starts at the beginning of his work day and to which he returns at the end of it. It could be, for example, a factory, warehouse, office, trucking terminal, or residence. This estimate is based on the Vehicle Inventory and Use Survey (VIUS) in the 2002 Economic Census. Exhibit (I)-2 below shows the distribution of VMT of medium and light-heavy trucks across the operating-range intervals specified in the VIUS.[61] Operating range is a distance from home base beyond which the driver does not usually go in his normal operating pattern.

Exhibit (I)-2
VMT (millions) in Primary Range of Operation

Range (miles)	VMT	Percent
0-50	19,581	62%
51-100	6,416	20%
101-200	2,199	7%
201-500	1,837	6%
> 500	1,298	4%
Total	31,331	100%

Source: 2002 VIUS, Table 6, p. 47.

In order to go from these numbers to our VMT estimate, two further steps are required. Since the VIUS data do not directly give us mileage for an operating range of less than 150 miles, we must

[61] Census definitions: Medium trucks are from 10,001 to 19,500 pounds, and light-heavy trucks are from 19,500 to 26,000 pounds.

assign a fraction to the mileage in the 101-200 range to the 101-150 range. Also, the data in Exhibit (I)-2 understate total mileage because not all respondents answered the range-of-operation question.

Seventy-five percent of the VMT in the 101-200 range are in the 101-150 range. This is because the operations of these vehicles are heavily concentrated in the shorter ranges. As the operating range is extended past 100 miles, a smaller share of VMT is added with each increment in operating range. As the table shows, 62 percent of VMT are inside 50 miles; going out to 100 miles adds another 20 percent; and the 100-mile extension to 200 miles adds only another 7 percent. Therefore, it is reasonable to assume that the preponderance of the VMT in the 101-200 band are inside 150 miles from home base. In this context, we believe that 75 percent of these VMT can be prudently assigned to the 101-150 range. On this basis, the data in Exhibit (I)-2 yield an estimate of 27,646 million VMT within 150 air miles from home base for trucks in this size range.

This estimate must be adjusted upward to allow for the respondents who did not answer the range-of-operation question. For this purpose, we assume that the distribution of mileage over the operating range is the same for those who did not report it as those who did. Total mileage attributed to those who did not report range of operation is 6,085 million.[62] Total mileage for those who did report is 31,331 million. Since 6,085/31,331 = 0.194, we adjust upwards by this factor; 1.194 x 27,646 = 33,015. We may round this to 33.0 billion VMT.

One more difficulty with these data must be addressed. The entries in Table 6 are under the heading, Primary Range of Operation. "Primary" refers to the range in which a respondent's vehicle runs most of its miles. On the survey form, the respondent enters estimated VMT for each operating range; if the form shows 60 percent of a vehicle's VMT in the 101-200 range, *all* of its VMT is assigned to that range in Table 6. Therefore, some of the VMT shown in Table 6 in the 101-200 range actually was in some other operating range, whether shorter or longer. To the extent that some of the actual VMT was in shorter ranges (<101), we are not concerned; our goal is to estimate all VMT in ranges of less than 150 miles. To the extent that VMT in the 101-200 range in Table 6 was actually in ranges greater than 200 miles, we do have a concern.

The question is really whether the VMT distribution over the ranges by the "primary" method is significantly different from the distribution that results from assigning a respondent's VMT according to what is actually shown on the form. Table 8 of VIUS shows mileage in operating ranges as actually reported but only for all trucks and all trucks except light trucks. We can, however, compare the mileage distribution according to the "primary" method from Table 6 with the reported distribution in Table 8 for all trucks except light trucks. These distributions are quite different from that for the 10,000-26,000 pound trucks we are studying, because it includes the heaviest trucks whose use entails far more long-range operation than does any other class of truck. Nonetheless, if the distributions for all-except-light trucks are similar, we have reason to

[62] The unreported mileage is in two categories. not reported and not applicable. In the former case, respondents simply did not fill out the range-of-operation part of the survey form but reported total mileage. In the latter case, respondents owned vehicles for less than a full year; their total mileage was adjusted upward to allow for this but was not distributed over the operating ranges. VMT not reported was 6,013 million and not applicable was 72 million.

accept the estimates obtained from the data on primary ranges. This comparison is shown below in Exhibit (I)-3.

Exhibit (I)-3
Distribution of VMT (millions) over Operating Ranges for All-except-light Trucks

Range (miles)	Primary VMT	Percent	Actual VMT	Percent
0-50	41018	35%	38231	33%
51-100	19499	17%	22238	19%
101-200	12133	10%	14286	12%
201-500	17842	15%	17539	15%
> 500	27075	23%	25016	21%
Total	117567	100%	117310	100%

We see that the percentages across the operating ranges are very close to the same. Assignment of VMT to the ranges on the basis of the "primary" method gives us no reason to set aside our estimate of 33 billion VMT inside 150 air miles from home base for 10,000-26,000 pound trucks.

(I).4 INTENSITY OF EFFORT—REGULAR VS. RANDOM OPERATION

In the following table, based on field survey data, we compare intensity of effort as between regular and random operation. ICF has defined an intense-effort driver as one who uses the 11th hour at least twice in a month and who works 65 hours in seven days at least once in a month. We present data for both compliant and non-compliant drivers and for all drivers in the survey.(We label as non-compliant those drivers in the field survey who logged more than 11 driving or 14 work hours in a tour of duty. Of course, these might reflect some errors in log entries.)

Exhibit (I)-4
Relative Intensity of Effort—Regular vs. Random
Percentage of Intense-effort Drivers

	Regular	Random	Combined
Compliant	**19%**	**39%**	**31%**
Non-compliant	**68%**	**88%**	**84%**
Combined	**31%**	**65%**	**55%**

NOTE: These data represent for-hire OTR truckload drivers.

We see that intensity of effort is greatest among random drivers and among non-compliant drivers. Of random drivers, 65 percent show intense effort; among all non-compliant drivers, 84.0 percent show intense effort. We note that the relatively high intensity of effort shown in Exhibit (I)-4 for random drivers is heavily influenced by the definitions of regular operation and intense effort that we used with the field survey data. We defined regular drivers as those who had three or more instances in a month of two consecutive days off, i.e., drivers who do not work on weekends. Relatively few of such drivers will work 65 hours in a seven-day period. Recall that, when we measured intensity of effort by hours worked in a tour of duty, there was little difference between random and regular drivers (Exhibit 2-3 in section 2.1.4)

(I).5 SPLIT SLEEPER PERIODS—REGULAR VS. RANDOM

The following table, based on data from the field survey, compares incidence of splitting for regular and random drivers.

Exhibit (I)-5
Percentage of Drivers Splitting

	Regular	Random
Drivers Logging at Least One Break as Split	**36%**	**51%**
Drivers Actually Splitting at Least Once	**29%**	**35%**
Tours of duty with actual splitting	**3.5%**	**5.9%**

NOTE: These data represent for-hire OTR truckload drivers.

Periods "logged as split" means hours were entered for split sleeper periods. In many cases, however, ten or more hours were entered in "split" periods. "Actual" splitting means two sleeper periods added to at least ten hours and neither was less than two hours or more than ten.

Once we focus on actual splitting, we see that neither group splits very often, and the regular drivers are substantially less likely to split than random drivers.