MAASTO Truck Parking Survey Analysis February 2020

Prepared by the

American Transportation Research Institute
Arlington, VA

SUMMARY OF FINDINGS

When and How to Find Parking.
Over three-quarters of drivers begin planning where to park 90 minutes or more before their hours-of-service ends. When drivers are planning where to park, a smartphone application is the preferred tool to use, followed by a parking directory, and lastly, roadside changeable message signs. These top three tools utilized by drivers concur with the results of a similar question from the Phase 2 survey.

MAASTO Truck Parking Information Management System.
The Regional Truck Parking Information Management System (TPIMS) implemented by the Mid America Association of State Transportation Officials (MAASTO) uses a combination of various technologies, electronic communication and digital message signs to monitor and report on the number of open truck parking slots in selected sites along key freight corridors in Indiana, Iowa (no signs deployed), Kansas, Kentucky, Michigan, Minnesota, Ohio and Wisconsin.

With implementation of TPIMS in eight of the ten MAASTO states, over 76 percent of drivers were *aware* that the TPIMS system exists. Almost all (94.2%) drivers had indicated they had *seen* the signs while in the MAASTO region, and a majority (62.3%) of respondents indicated they had utilized the information to help them find parking. Although the MAASTO TPIMS information is available via multiple types of media, more than 83 percent of drivers had utilized the electronic roadside signs to help inform them where to park. Drivers feel the accuracy of the truck parking information could be improved with 38.2 percent finding the information reasonably accurate, and 32.6 percent noting the information was unpredictable in reporting open spaces at upcoming parking areas.

Search Times.
Since the Phase 1 and Phase 2 surveys have been conducted, search times have increased. Over 62 percent of drivers spend 30 minutes to over an hour looking for available parking. With the implementation of the MAASTO truck parking information system, nearly a third (29.3%) of drivers felt finding truck parking took less time, while over 63 percent indicated their search times had not changed. As previously noted, this is likely a function of a strong economy and increased truck volumes combined with a severe lack of parking capacity.

Parking Difficulty.
Within the MAASTO region, the drivers indicated the easiest states to find parking are Iowa, Wisconsin and Missouri. Alternatively, Illinois, Michigan and Ohio were rated as the hardest states to find parking. These states, in which parking is most difficult to find, match the Phase 2 results of the same question. When drivers consider where they take their ten-hour rest break, it is very common (87.4%) for a parking facility to be 75 percent full, completely full or over capacity upon entering the lot. Since the implementation of the MAASTO TPIMS system, over a third (34.1%) of drivers felt they have parked in unauthorized locations (such as ramps or shoulders) less frequently. However, more than half (58.2%) of the drivers felt there had been no change in their frequency of needing to park in unauthorized locations since the TPIMS deployment.

Background

The American Transportation Research Institute (ATRI) conducted a survey to analyze truck parking in the ten-state region represented by the Mid America Association for State Transportation Officials (MAASTO). The region consists of Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio and Wisconsin. The Phase 3 MAASTO Truck Parking Survey sought to understand truck driver reactions to the 2019 implementation of the Truck Parking Information Management System (TPIMS), which distributes real-time truck parking availability information in eight of the ten MAASTO states.

ATRI annually surveys drivers and motor carrier executives about the issues they feel are facing trucking. Truck parking has consistently ranked among the top ten issues for commercial drivers almost every year since the report has been published. In the past three years, truck parking has made the top three issues facing commercial drivers; on the motor carrier list, truck parking has either been towards the bottom ten or not on the list (**Table 1**). This discrepancy in rankings between drivers and motor carriers is likely due to drivers facing truck parking challenges every day, affecting their ability to operate safely and efficiently.

Table 1: 2019 Top Industry Issues[1]

Rank	Commercial Drivers	Motor Carriers
1	Driver Compensation	Driver Shortage
2	Hours-of-Service (HOS)	Driver Retention
3	**Truck Parking**	Hours-of-Service (HOS)
4	ELD Mandate	Compliance, Safety, Accountability (CSA)
5	Detention / Delay at Customer Facilities	Infrastructure / Congestion / Funding
6	Speed Limiters	Detention / Delay at Customer Facilities
7	Driver Training Standards	Economy
8	Driver Distraction	ELD Mandate
9	Infrastructure / Congestion / Funding	Insurance Cost Availability
10	Autonomous Truck Technology	Tort Reform

[1] American Transportation Research Institute. "Critical Issues in the Trucking Industry – 2019." Arlington, VA. October 2019.

METHODOLOGY

In the latter half of 2019, ATRI developed a 25-question truck driver survey - the third in a series designed to track and assess the chronological changes in perception and use of the real-time truck parking information systems in the MAASTO states. The survey gathered information on demographics, demand for truck parking in the MAASTO region, methods drivers use to find truck parking and the severity and frequency of parking-related issues. ATRI conducted the survey online and received 226 responses during the two months the survey was available.

DEMOGRAPHICS

Drivers were asked several demographic questions related to their trucking industry sectors and employment categories. **Table 2** displays the segment and sector survey in which respondents operate. A majority of respondents indicated they were in the for-hire segment of the trucking industry (81.9%). The truckload sector accounted for more than half (58.9%) of drivers in the for-hire segment. As they relate to "over-the-road" truck parking needs and issues, these statistics are highly representative.

Table 2: Trucking Industry Segment and Sector

Segment		Percent	
Private		15.0%	
For-Hire		81.9%	
	Sector	Truckload	58.9%
		Less-than-Truckload	2.9%
		Specialized, Flatbed	10.6%
		Specialized, Tanker	9.7%
		Express / Parcel Service	0.5%
		Intermodal Drayage	1.0%
		Private Fleet	8.2%
		Other	8.2%
		Don't Know	0.0%
Don't Know		3.1%	

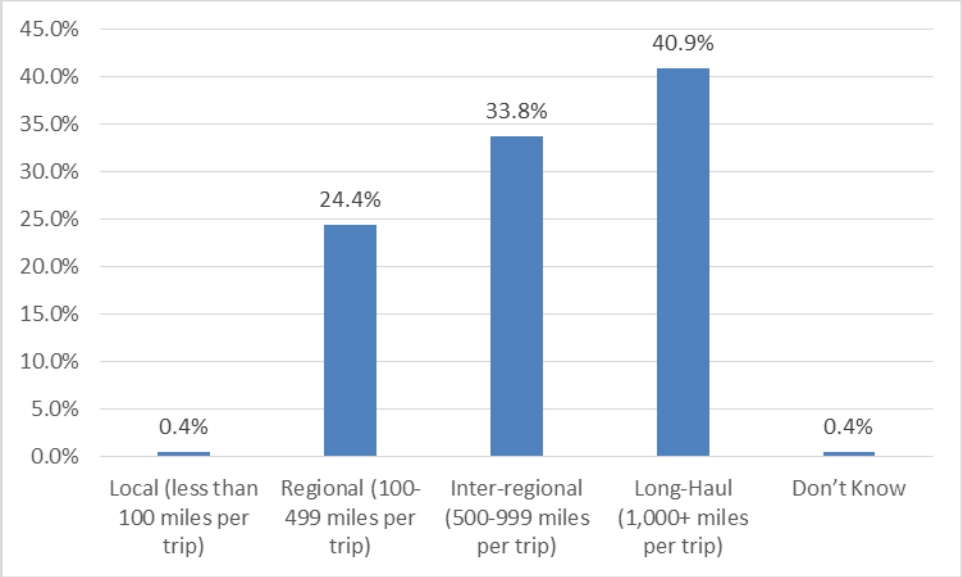
Survey respondents were asked about their type of employment. Employee Drivers accounted for almost half of the respondents (48.7%), followed by Independent Contractors with 34.4 percent. **Table 3** shows the breakdown of Employment Type of survey respondents.

Table 3: Type of Employment

Employment Type	Percent
Employee driver	48.7%
Owner-operator (O-O) with own authority	12.9%
O-O / Independent Contractor leased to a motor carrier	34.4%
Other (please specify):_____	4.0%

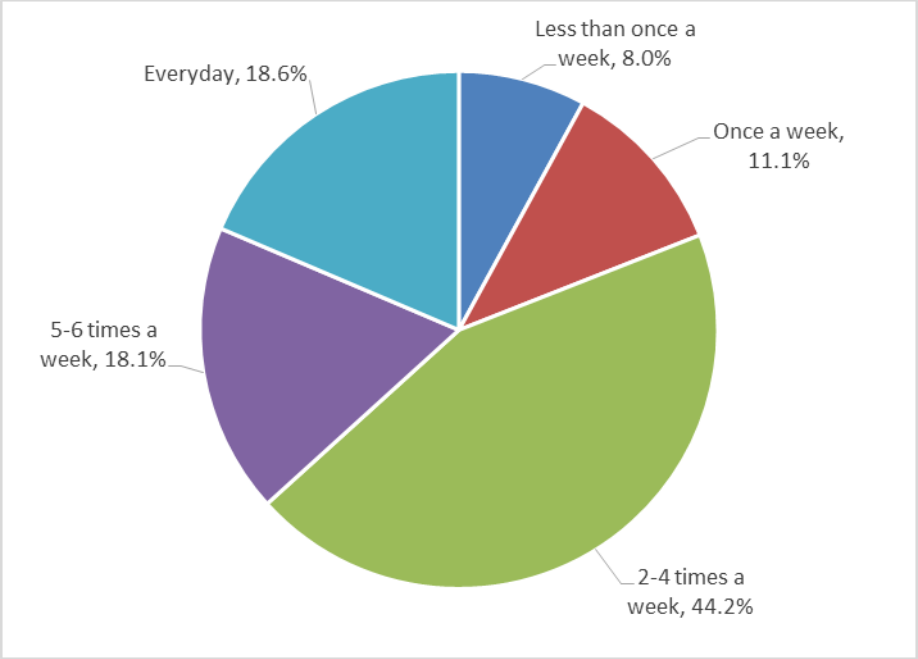
Drivers were next asked about their average length of haul. Approximately 41 percent of drivers indicated they were long-haul drivers. When considering truck parking in relation to hours of service breaks, long-haul and inter-regional drivers are the two most likely groups to be significantly affected by challenges with truck parking. These two types of hauls represent about 75 percent of our survey respondents as seen in **Figure 1**.

Figure 1: Average Length of Haul



Drivers were asked how frequently they needed truck parking in the MAASTO region. More than one third of drivers (36.7%) answered that they needed truck parking in the MAASTO region five or more times a week.

Figure 2: Frequency of Weekly Truck Parking in MAASTO Region



Next, ATRI requested survey participants to indicate how early they started planning where to park before the end of their hours of service. As seen in **Table 4**, more than 75 percent of respondents said they started planning for where to park 90 minutes or more before their hours of service ended. (This overwhelming majority of respondents may indicate that drivers plan where to park before the trip starts.)

Table 4: When Drivers Begin to Plan Where to Park

Planning Where to Park Start Time	Percent
90 minutes or more before my hours of service end	75.7%
60 minutes or more before my hours of service end	18.1%
30 minutes or more before my hours of service end	3.5%
Less than 30 minutes before my hours of service end	2.7%

The next question gathered information on each driver's preferred method for planning where to park. The top preferred tools for planning where to park are only usable while not operating a truck. This would indicate that many drivers either have a parking location in mind or anticipate their parking location during a rest break or before the trip start.

Table 5 shows how respondents ranked the top three tools they use when considering where to park. About 5 percent answered "other." **Table 6** is a summary of the "other" free responses in order by frequency of mention.

Table 5: Preferred Tools for Planning Where to Park

Rank	Preferred Tool
1	Smartphone Applications
2	Truck Parking Directory
3	Roadside Changeable Message Signs

Table 6: "Other" Tools Utilized by Drivers

"Other" Preferred Tool
Knowledge of Area / Experience
GPS
Trucker Path
Google Maps
CB Radio
Pulling into a parking location and looking for a spot
Walmart Stores
Word of Mouth

TRUCK PARKING INFORMATION MANAGEMENT SYSTEM (TPIMS)

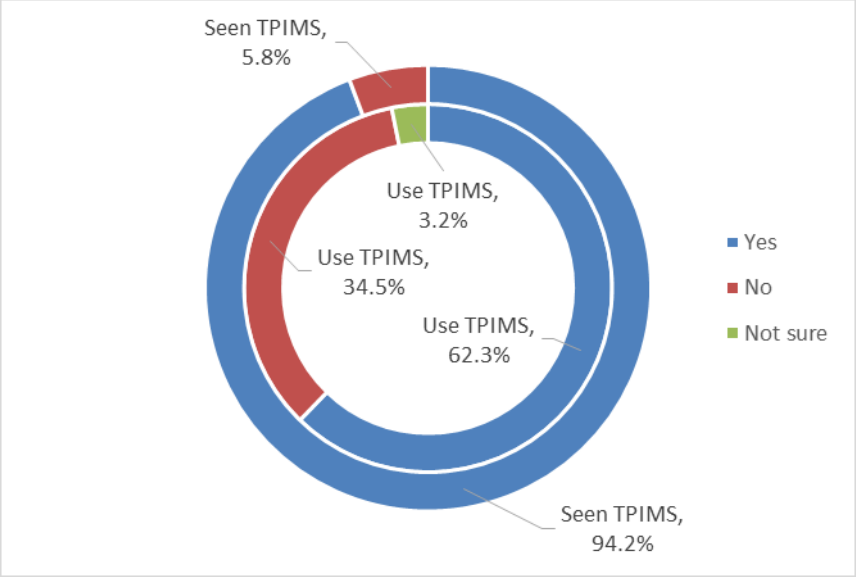
Eight MAASTO states implemented TPIMS on Jan. 4, 2019 to help drivers receive information on available parking. This survey was intended to gather truck drivers' reactions to the new system and its accuracy and efficiency. Survey participants were asked to indicate whether or not they:

- Were aware that MAASTO states had launched a TPIMS system - slightly more than 76 percent of respondents indicated they were aware of it; 23.7 percent were not;
- Had seen the TPIMS signage and whether they use the signs to help find truck parking - 94.2 percent had seen them and, of those, 62.3 percent had used the signs to find parking (**Table 7** and **Figure 3**).

Table 7: Drivers Who Have Seen and Used the Truck Parking Signs

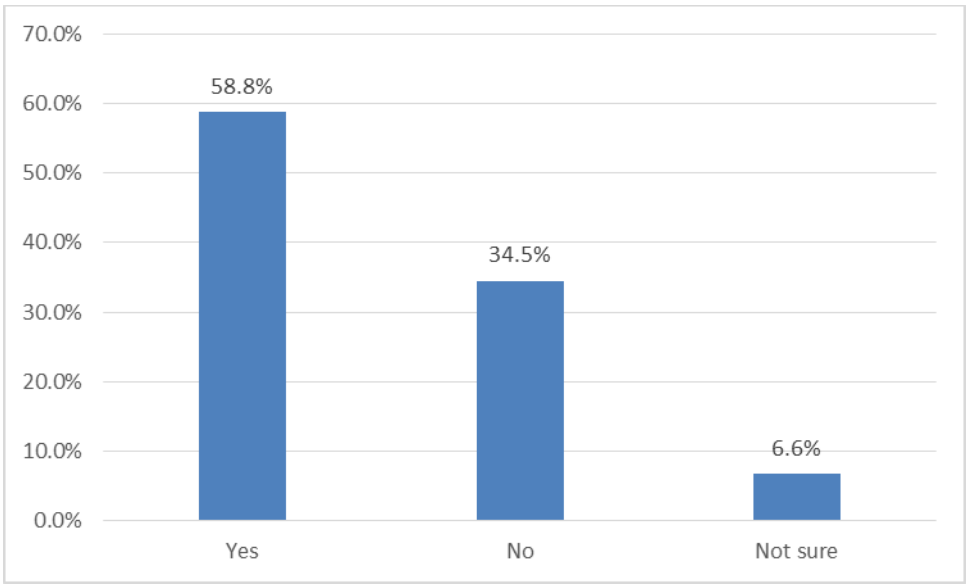
	Percent Seen TPIMS	Percent Use TPIMS	
Yes	94.2 %	**Yes**	62.3%
		No	34.5%
		Not Sure	3.2%
No	5.8%		

Figure 3: Drivers Having Seen TPIMS and Drivers Having Used the TPIMS



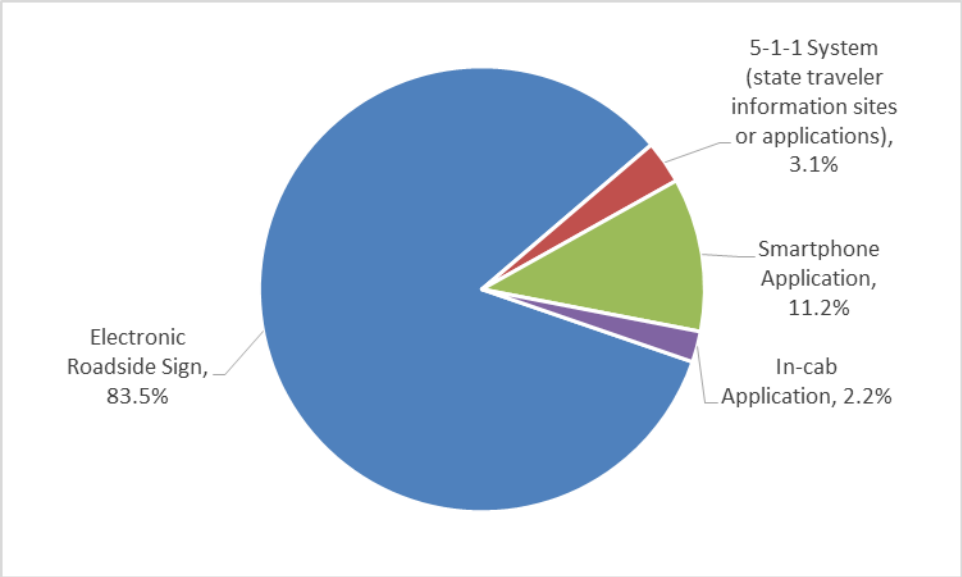
Respondents were next asked if they were aware that the new TPIMS system only identified available stripped or designated parking spots. **Figure 4** shows that more than half of respondents said they were. Drivers are often forced to park in locations not designated parking areas (road shoulders, entrance/exit ramps), and therefore the communication of available stripped/designated parking spots is important to allow drivers to safely and legally park.

Figure 4: Awareness of TPIMS Communicating Only the Availability of Stripped/Designated Spots



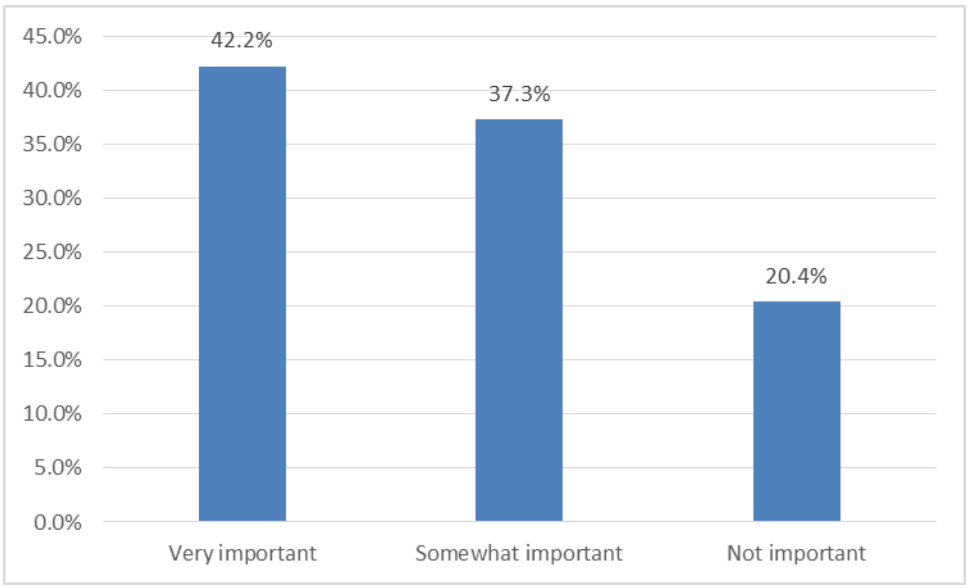
Drivers were asked a series of questions related to their experience with the new truck parking information system. More than 83 percent of respondents indicated they utilized the truck parking information via electronic roadside signs as shown in **Figure 5**. This was followed by 11.2 percent of respondents using a smartphone application.

Figure 5: Tool to Access TPIMS



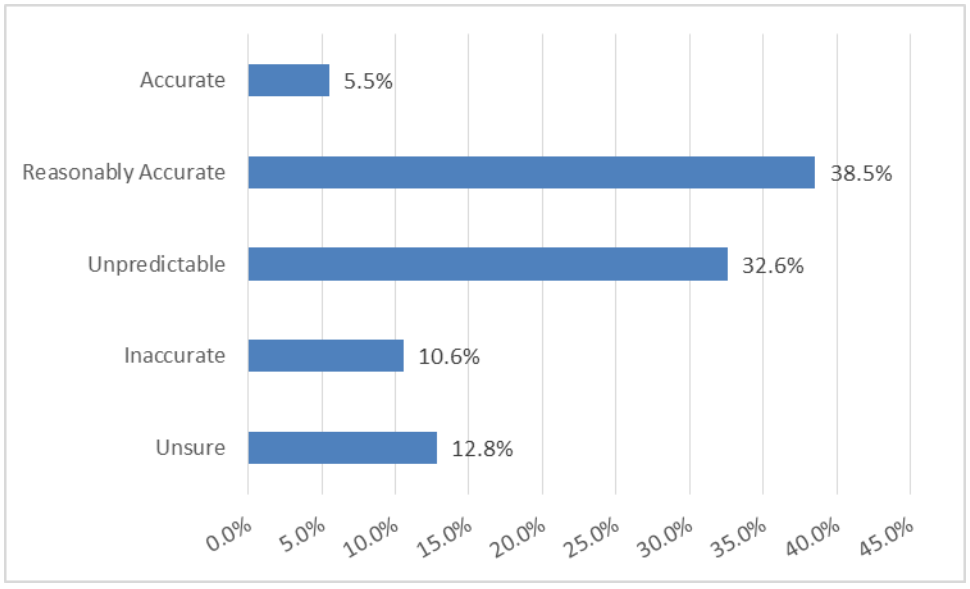
The next question asked participants how important electronic roadside signs are for obtaining parking information. **Figure 6** shows that more than 42 percent of respondents felt that electronic roadside signs were very important for obtaining information about truck parking, while 20.4 percent of participants felt electronic roadside signs were not important. This variation about the preference of electronic roadside signs suggests that drivers find the information helpful, but still consider smartphone applications as their main source for planning.

Figure 6: Electronic Roadside Sign Importance



Respondents were asked to rate the accuracy of the TPIMS system for identifying available parking spots. **Figure 7** shows more than one third of participants felt it was reasonably accurate (38.5%). However, another third indicated TPIMS was unpredictable (32.6%).

Figure 7: TPIMS Accuracy Rating



Respondents indicated how long it takes them to find parking in the MAASTO region as shown in **Table 8**. Nearly half, 44.4 percent, of survey participants specified that it takes them 30 minutes to one hour to find truck parking.

Table 8: Average Search Time

Search Time	Percent
Less than 15 minutes	13.3%
15 minutes - 30 minutes	24.4%
30 minutes - 1 hour	44.4%
More than 1 hour	17.8%

Search times have varied across all three survey phases as indicated in **Figure 8**. In Phase 3, drivers were more likely to report 30 minutes to one-hour search times (44.4%) compared to the Phase 1 and Phase 2 surveys.

Figure 8: Average Search Times (Survey Phases 1-3)

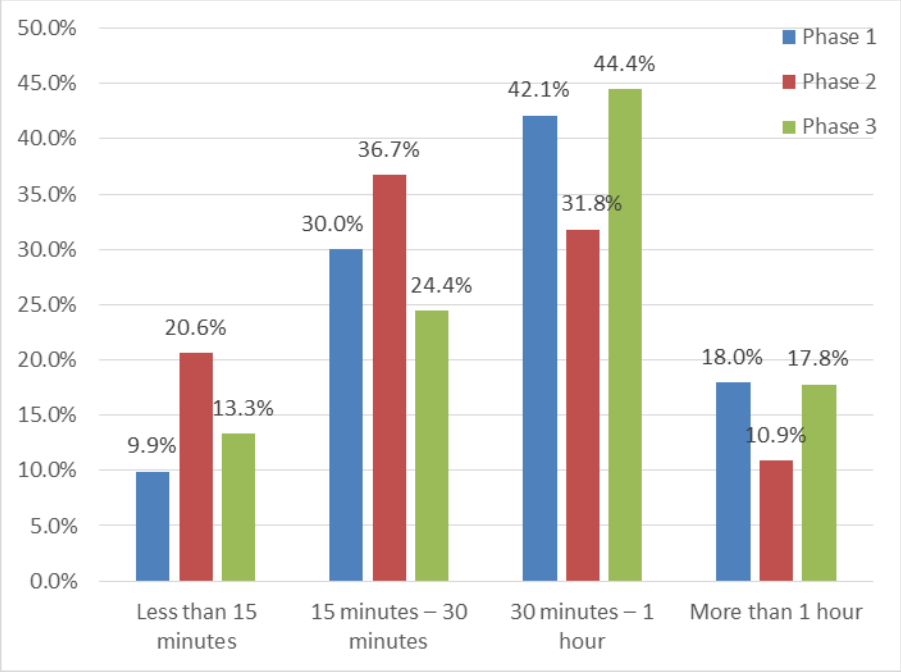
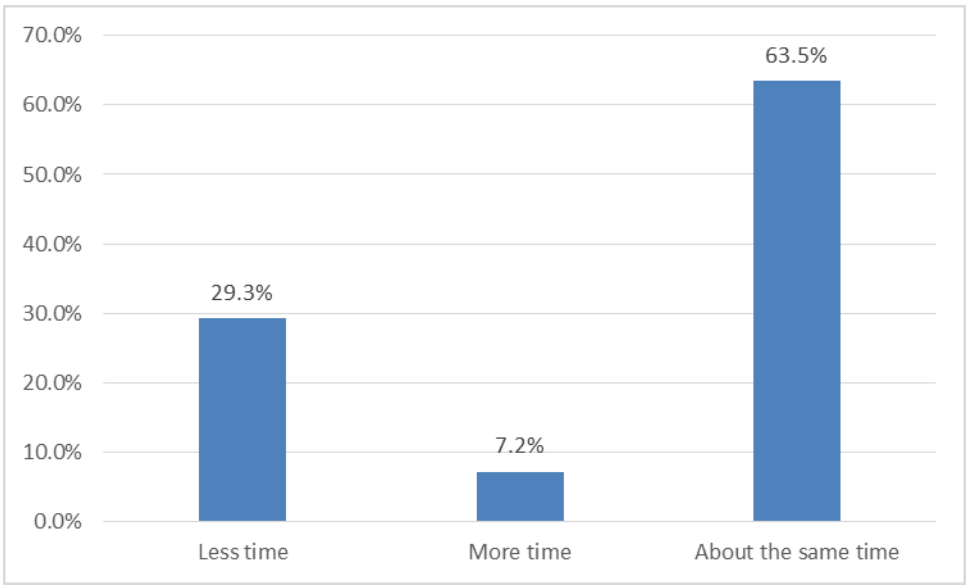


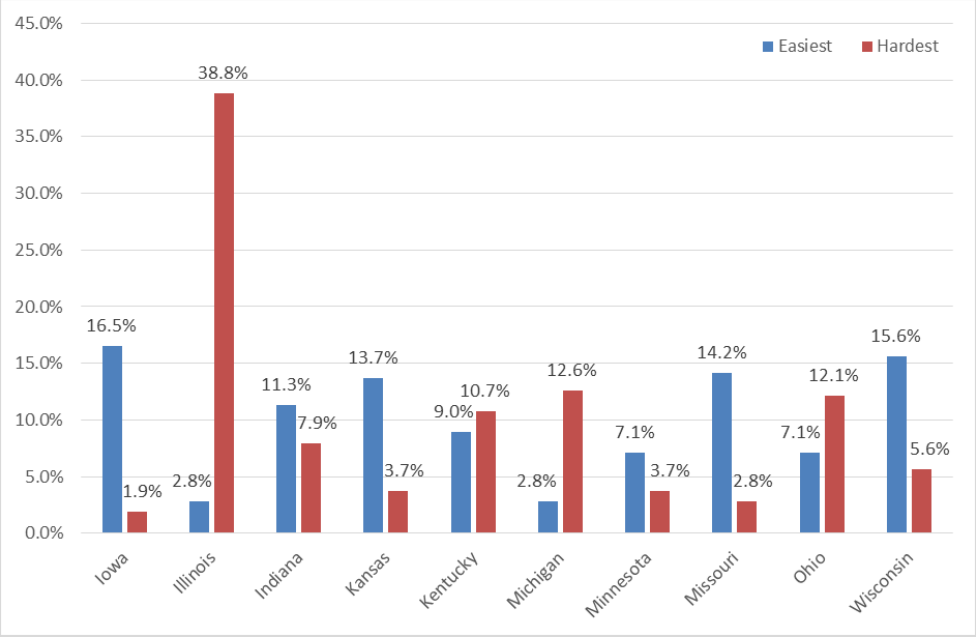
Figure 9 shows how perceptions regarding parking search times have changed since TPIMS implementation. Most (63.5%) said finding parking took about the same time as before TPIMS implementation. Nearly a third (29.3%) indicated that it took less time. (Prior ATRI research findings suggest that those not experiencing search time improvements likely were operating in locations where overall capacity was inadequate independent of information systems.)

Figure 9: Finding Truck Parking Since the Implementation of TPIMS



Drivers were asked in which MAASTO state did they feel it easiest and hardest to find truck parking (**Figure 10**). They selected Illinois (38.8%), Michigan (12.6%) and Ohio (12.1%) as the three states in which it was hardest to find parking. Respondents selected Iowa (16.5%), Wisconsin (15.6%) and Missouri (14.2%) as the states in which parking was easiest to find.

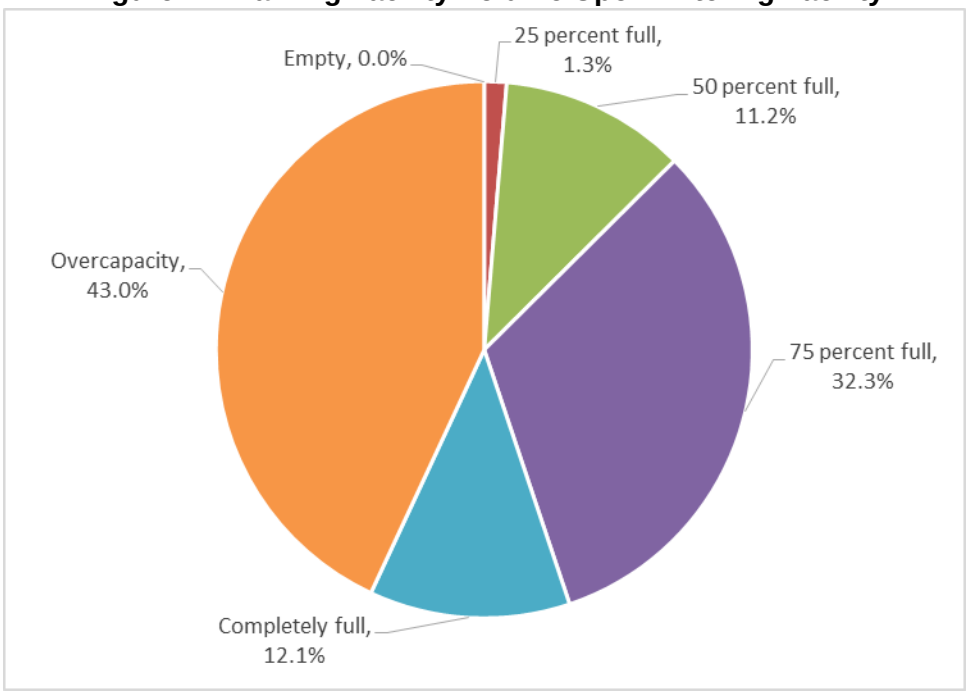
Figure 10: Easiest and Hardest MAASTO States to Find Truck Parking



Survey respondents were asked to consider parking facilities regularly utilized for the 10-hour rest break while they are in the MAASTO region. More specifically, drivers were asked to indicate how full parking lots, with designated parking areas, were upon entering the facility.

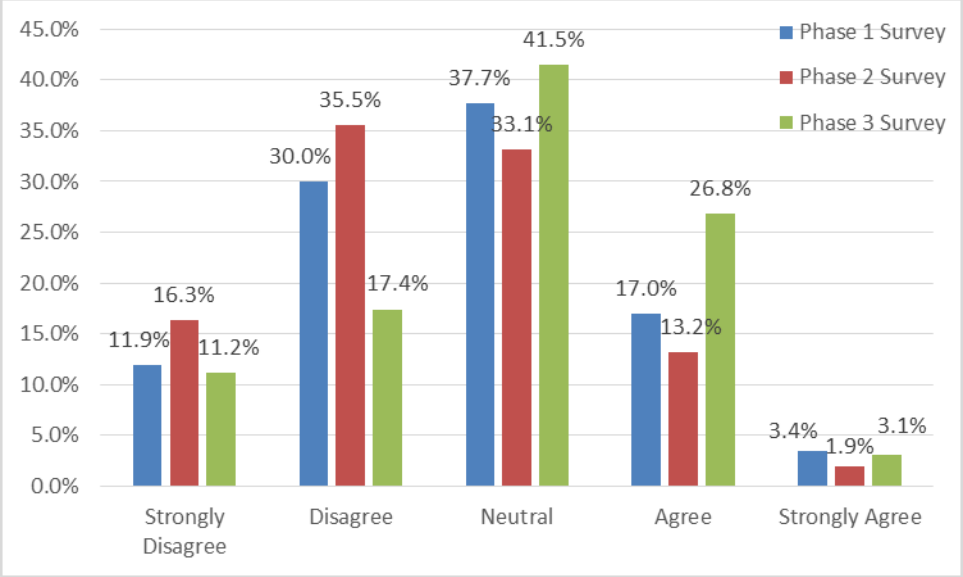
Figure 11 shows that on average, 43.0 percent of respondents indicated that the parking lots were generally at overcapacity upon entering the facility. Drivers also indicated that these parking facilities were never empty (0.0%).

Figure 11: Parking Facility Volume Upon Entering Facility



Respondents were asked to indicate whether they agreed to the following statement: "It is easier to find truck parking in the MAASTO region in comparison to truck parking in the rest of the U.S." Relative to the Phase 1 and 2 surveys, respondents had a neutral opinion (41.5%) or agreed (26.8%) with the statement. In the Phase 1 and Phase 2 surveys, respondents were less likely to disagree (17.4%) or strongly disagree (11.2%). **Figure 12** shows respondent selections from all three surveys.

Figure 12: Relative Ease of Truck Parking in the MAASTO Region



The next survey question asked drivers to indicate how frequently in the past year they have parked in an unauthorized location (examples include road shoulder or ramp), since the installation of the MAASTO truck parking information system.

The majority of survey participants indicated that their frequency of parking in an unauthorized location now compared to before the implementation of the MAASTO TPIMS was generally unchanged (58.2%). Results are in **Table 9**. Again, this most likely is a result of the lack of capacity at the locations where parking is most needed.

Table 9: Frequency of Parking in an Unauthorized Location

Parking Frequency in Unauthorized Location	Percent
More Often	7.7%
Less Often	34.1%
About the Same	58.2%

The next question asked participants to indicate whether they felt their safety and/or compliance with hours-of-service requirements had improved, relative to the availability of the MAASTO truck parking system. As seen in **Figure 13**, 21.5 percent of respondents indicated it had helped them to be safer or comply with hours-of-service (HOS), the remaining participants answered no (35.4%) or about the same (43.0%).

It is important to note however, that although many respondents indicated that there was no perceived safety benefit or they felt their safety was about the same, it does not indicate these drivers are less safe. It is possible that the baseline for these driver respondents is that they are already safe drivers and generally do not see the MAASTO truck parking system as causing them to operate at a higher level of safety.

Figure 13: Improved Safety or HOS Compliance

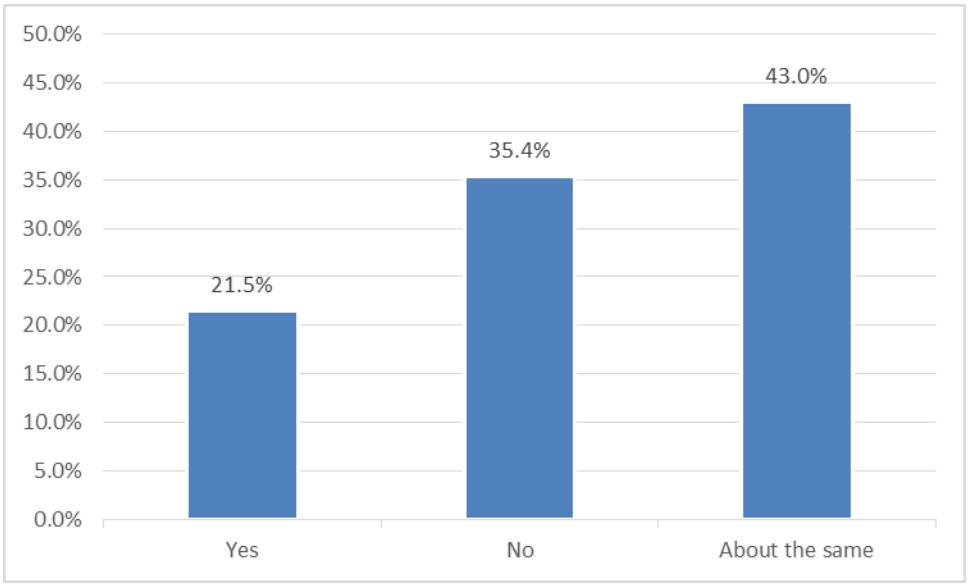
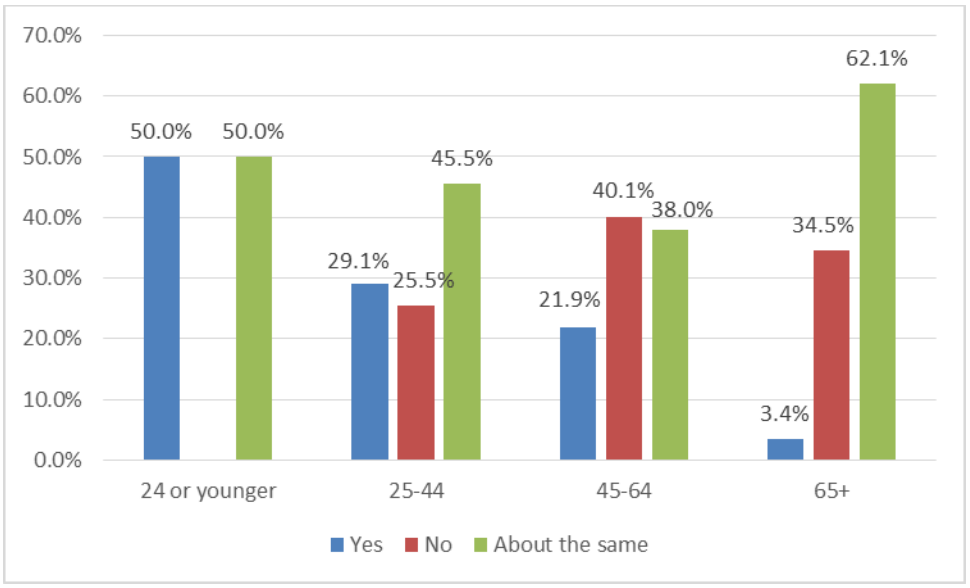


Figure 14 demonstrates how respondents' age impacted whether they felt their safety and/or compliance with hours-of-service requirements had improved. The response of 24 or younger drivers is low and statistically insignificant. However, the remaining age groups demonstrate that the older a driver is, the less likely they are to indicate their safety has improved. An overwhelming majority of 65-and-over drivers felt their safety had not improved; this may be indicative of having many years of experience operating a truck at an already safe standard.

Figure 14: Safety and HOS Compliance by Age Group



Finally, drivers were asked how frequently they experience a series of general issues while in the MAASTO region. **Table 10** shows drivers had mixed views on each issue, with respondents generally experiencing each one at some point. "Truck damaged while parked" is an issue that drivers seemed to indicate was least likely to happen, followed by "rest area time limit restrictions." "Parking only available on ramps or shoulders" due to authorized parking areas being full was a common trend, as well as "parking is only available in unsafe locations." Again, both issues most closely relate to net capacity, rather than TPIMS-related.

Table 10: MAASTO Region Truck Parking Issues

Condition	Never	Rarely	Sometimes	Often	Always
Rest area time limit restrictions	23.9%	24.3%	37.6%	11.0%	3.2%
Parking is only available on ramps or shoulders because parking areas are full	6.3%	8.5%	35.9%	38.6%	10.8%
Parking is only available in unsafe locations	8.6%	16.3%	43.0%	27.1%	5.0%
Truck damaged while parked	38.6%	36.4%	18.6%	5.5%	0.9%
No parking available for oversize vehicle configurations	22.4%	10.7%	20.9%	32.1%	13.8%

Last, two more basic demographic questions were asked to ensure our sample of survey respondents accurately reflects the overall trucking industry. **Table 11** and **Table 12** show respondents' gender and age, respectively. Females are over-represented in this survey relative to the industry as a whole (8%-10%) and respondents ages 45 – 64 and 65 and over are slightly over represented in this survey population.

Table 11: Gender

Gender	Percent
Female	23.8%
Male	76.2%

Table 12: Driver Age

Age	Percent
24 or Younger	0.9%
25 - 44	25.4%
45 – 64	60.7%
65 +	12.9%