Tracking the Use of OnBoard Safety Technologies

TruckTalk
5/5/10

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OnBoard Technologies

- Lane Departure Warning Systems (LDWS)
- Stability Control Systems (SCS)
- Forward Collision Warning Systems (FCWS)
- Side Collision Warning Systems (SCWS)
- Vehicle Tracking Systems (VTS)
- Adaptive Cruise Control (ACC)
# Basic Truck Census Data

For all companies with 1 or more trucks

<table>
<thead>
<tr>
<th>Companies</th>
<th>% of Companies</th>
<th>% of Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 Trucks</td>
<td>621169</td>
<td>79.59%</td>
</tr>
<tr>
<td>4-20 Trucks</td>
<td>137357</td>
<td>17.60%</td>
</tr>
<tr>
<td>21-55 Trucks</td>
<td>14820</td>
<td>1.90%</td>
</tr>
<tr>
<td>56-100 Trucks</td>
<td>3487</td>
<td>0.45%</td>
</tr>
<tr>
<td>101-999 Trucks</td>
<td>3341</td>
<td>0.43%</td>
</tr>
<tr>
<td>1000+ Trucks</td>
<td>333</td>
<td>0.04%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>780507</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>
Survey Counts By Strata

- 1-3 Trucks: 148
- 4-20 Trucks: 133
- 21-55 Trucks: 209
- 56-100 Trucks: 202
- 101-999 Trucks: 227
- 1000+ Trucks: 85

Total respondents (n): 1004
# The Survey Statistics

<table>
<thead>
<tr>
<th>STRATA</th>
<th>NUMBER OF COMPANIES IN SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strata 1: 1-3 Trucks</td>
<td>1500</td>
</tr>
<tr>
<td>Strata 2: 4-20 Trucks</td>
<td>1500</td>
</tr>
<tr>
<td>Strata 3: 21-55 Trucks</td>
<td>1500</td>
</tr>
<tr>
<td>Strata 4: 56-100 Trucks</td>
<td>1334</td>
</tr>
<tr>
<td>Strata 5: 101-999 Trucks</td>
<td>1333</td>
</tr>
<tr>
<td>Strata 6: 1000+ Trucks</td>
<td>333</td>
</tr>
<tr>
<td>Total</td>
<td>7500</td>
</tr>
</tbody>
</table>
The Interview Statistics

- **6 Interviews with Technology Users**
  - Interviews of companies identified as users of the technology focused on current and future usage

- **4 Interviews with System Suppliers**
  - Interviews with system suppliers used to understand marketing and technological challenges and future directions
Weighting Process

- Designed to match survey sample responses back to the original population for questions in: 1) both the short and long surveys and 2) the long survey only.

- Designed to account for the non-response rate for each strata
Findings

- Familiarity with onboard safety technologies
  - Companies are much less familiar with onboard safety technologies than expected.
Familiarity with Safety and Security Technologies

- LDWS: 2.1
- ESC: 2.4
- FCWS: 2.3
- SCWS: 2.2
- TRACKING: 3.2
- ACC: 2.2

n=1004
Findings

- Penetration of onboard safety technologies
  - Penetration of onboard safety technologies is low compared to the number of companies that could be using them.
  - Larger companies are more likely to use onboard safety technologies
  - Many more companies in the overall fleet are using tracking systems.
% of Companies Currently Using OnBoard Technology

LDWS: 4
ESC: 8
FCWS: 3
SCWS: 2
TRACKING: 9

n=995

The Science of Driving
% of Companies Currently Using Multiple Onboard Safety Technologies

n=993
% of Companies Currently Using Lane Departure Warning Systems

- 1-3 Trucks: 4
- 4-30 Trucks: 5
- 21-55 Trucks: 2
- 56-100 Trucks: 3
- 101-999 Trucks: 3
- 1000+ Trucks: 21

Total responses: 992

UMTRI 40 Years...
% of Companies Currently Using Stability Control Systems

- 1-3 Trucks: 8
- 4-20 Trucks: 5
- 21-55 Trucks: 6
- 56-100 Trucks: 9
- 101-999 Trucks: 10
- 1000+ Trucks: 19

n=993
% of Companies Currently Using Forward Collision Warning Systems

- 1-3 Trucks: 3
- 4-20 Trucks: 4
- 21-55 Trucks: 3
- 56-100 Trucks: 3
- 101-999 Trucks: 6
- 1000+ Trucks: 17

n=993
% of Companies Currently Using Side Collision Warning Systems

n=993

- 1-3 Trucks: 1
- 4-20 Trucks: 4
- 21-55 Trucks: 3
- 56-100 Trucks: 3
- 101-999 Trucks: 5
- 1000+ Trucks: 16
% of Companies Currently Using Vehicle Tracking Systems

- 1-3 Trucks: 7
- 4-20 Trucks: 15
- 21-55 Trucks: 38
- 56-100 Trucks: 49
- 101-999 Trucks: 60
- 1000+ Trucks: 61

n=995
% of Companies Using Safety and Security Systems in 5 Years

- LDWS: 4% (Current) vs. 11% (5 Years)
- ESC: 8% (Current) vs. 8% (5 Years)
- FCWS: 3% (Current) vs. 8% (5 Years)
- SCWS: 2% (Current) vs. 8% (5 Years)
- TRACKING: 9% (Current) vs. 25% (5 Years)

n=Current/5 years

UMTRI 40 Years... The Science of Driving
Findings

- Reasons for use onboard safety technologies
  - The main reasons reported include:
    - Improved safety culture
    - Reduced cost of accidents
    - Proven safety benefits
    - Insurance benefits
    - Driver improvement/positive feedback from drivers
  - Less important reasons include:
    - Required by the shipper
    - To improve safety ratings
    - Financial incentives from shippers or carriers
Major Reasons for Deploying Tracking Systems

- Driver support and accountability: 19%
- Customer demand or customer service: 15%
- Safety improvements and tracking: 13%
- Logistic analysis and routing: 13%
- Ease of travel and delivery: 10%
- Reduced communication cost: 10%
- Others including:
  - Fuel savings
  - Insurance support for litigation
  - Fuel tax reporting
  - Reduced labor cost
Estimated % Crash Reductions and % Crash Cost Reductions

- LDWS: n=11, Crash Reductions = 10, Crash Cost Reductions = 12
- ESC: n=24, Crash Reductions = 20, Crash Cost Reductions = 20
- FCWS: n=16, Crash Reductions = 16, Crash Cost Reductions = 15
- SCWS: n=16, Crash Reductions = 22, Crash Cost Reductions = 17
Maximum Acceptable Payback Time for Investing in Safety Technologies

- < 12 Months: 1%
- 13-24 Months: 68%
- 25-36 Months: 1%
- >36 Months: 30%

“Some say that if it takes 4 years to get my money back, it’s not worth it to them, but others say they can get their money back in 1 year. Others say that one accident prevented is worth it.”

n=46
Analysis of the Potential Benefits of Larger Trucks for U.S. Businesses Operating Private Fleets

TruckTalk
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% Of Companies That Weigh Out or Cube Out

- Weigh Out: 86%
- Cube Out: 76%
- Weigh and Cube Out: 66%

UMTRI 40 Years... The Science of Driving
% of a Company’s Fleet That Weighs Out or Cubes Out

- Weigh Out: 56%
- Cube Out: 34%

UMTRI 40 Years... The Science of Driving
% of Shipping Activity: Local vs. Long Distance

- Local (Same Day): 70%
- Long Distance (More Than 1 Day): 30%
## Estimated Change Associated with 14,000 lb. Weight Increase Option

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Median</th>
<th>Total (or Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional weight/load</td>
<td>7,000 lbs. – 14,000 lbs.</td>
<td>10,000 lbs.</td>
<td>10,600 lbs</td>
</tr>
<tr>
<td>Total miles reduction</td>
<td>652,000 – 28.9 million</td>
<td>8.5 million</td>
<td>63.9 million</td>
</tr>
<tr>
<td>Miles per gallon reduction</td>
<td>0.20 mpg – 0.40 mpg</td>
<td>0.25 mpg</td>
<td>0.26 mpg</td>
</tr>
<tr>
<td>Fuel quantity reduction:</td>
<td>136,000 gals. – 5.03 million gals.</td>
<td>1.6 million gals.</td>
<td>10.8 million</td>
</tr>
<tr>
<td>Percentage fuel reduction.</td>
<td>1.4% – 32.9%</td>
<td>23%</td>
<td>19.0% / 3.6%</td>
</tr>
<tr>
<td>Fuel cost savings</td>
<td>$393,000 – $19.1 million</td>
<td>$6.1 million</td>
<td>$40.3 million</td>
</tr>
</tbody>
</table>
### Estimated Change Associated with 8,000 lb. Weight Increase Option

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Median</th>
<th>Total (or Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional weight/load</td>
<td>4,000 lbs. – 8,000 lbs.</td>
<td>8,000 lbs.</td>
<td>7,000 lbs.</td>
</tr>
<tr>
<td>Total miles reduction</td>
<td>353,000 – 22.9 million</td>
<td>4.9 million</td>
<td>50.3 million</td>
</tr>
<tr>
<td>Miles per gallon reduction</td>
<td>0.11 mpg – 0.30 mpg</td>
<td>0.19 mpg</td>
<td>0.19 mpg</td>
</tr>
<tr>
<td>Fuel quantity reduction:</td>
<td>79,000 gals. – 3.04 million gals.</td>
<td>917,000 gals.</td>
<td>7.5 million</td>
</tr>
</tbody>
</table>

**Percentage fuel redn.**

<table>
<thead>
<tr>
<th>Range</th>
<th>Median</th>
<th>Total (or Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4% – 18.8%</td>
<td>13%</td>
<td>11.0% / 2.5%</td>
</tr>
</tbody>
</table>

**Fuel cost savings**

<table>
<thead>
<tr>
<th>Range</th>
<th>Median</th>
<th>Total (or Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$229,000 – $11.6 million</td>
<td>$3.5 million</td>
<td>$27.8 million</td>
</tr>
</tbody>
</table>
## Estimated Change Associated with LCV Option

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
<th>Median</th>
<th>Total (or Avg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional volume</td>
<td>2,000 cu. ft. – 4,212 cu. ft.</td>
<td>3,800 cu. ft.</td>
<td>3,337 cu. ft.</td>
</tr>
<tr>
<td>Total miles reduction</td>
<td>25.0 million – 75.2 million</td>
<td>47.8 million</td>
<td>148 million</td>
</tr>
<tr>
<td>Miles per gallon reduction</td>
<td>0.70 mpg – 1.00 mpg</td>
<td>0.83 mpg</td>
<td>0.84 mpg</td>
</tr>
<tr>
<td>Fuel quantity reduction:</td>
<td>3.6-14.5 million gals.</td>
<td>5.7 million gals.</td>
<td>23.8 million</td>
</tr>
<tr>
<td>Percentage fuel reduction</td>
<td>19.4% – 43.5%</td>
<td>41.6%</td>
<td>34.9% / 8.0%</td>
</tr>
<tr>
<td>Fuel cost savings</td>
<td>$11.3 million – $55.2 million</td>
<td>$21.6 million</td>
<td>$88.2 million</td>
</tr>
</tbody>
</table>
High Efficiency Trucks: New Revenues, New Jobs, and Improved Fuel Economy in the Medium and Heavy Truck Fleet

Trends in U.S. Government and Industry R&D Efforts for Military-Related Ground Vehicle Technologies