Appendix C-2
U.S. Data Quality Control Tables

Sample Definitions

In order to assess quality of the data arising from the U.S. component of this Study Phase, the same three hierarchical sample definitions used in the Canadian component were used to construct summary tables. These were required to manage the analysis of the very large volume of data recorded by the *AP+* system.

- No records excluded sample (2,265,248 total records among 12 drivers)
- At least 30 mph sample (2,013,942 total records among 12 drivers)
- Cleaned analysis sample (1,935,577 total records among 9 drivers)

No records excluded

The first sample included all raw data and was constructed for comparison purposes only. A limited number of appendix C-2 tables are based on the all records sample.

All records recorded at speeds of at least 30 mph

The second sample definition eliminates records in which speed was recorded at less than 30 mph. There were two reasons for this exclusion. The primary reason was that the study was designed to examine the effects of the fatigue management intervention in highway driving and 30 mph was the definition adopted by the study team. The second reason was that experience from the Canadian Study Phase indicated that most records with artifact data were eliminated by restricting attention to records recorded when vehicle speed was at least 30 mph. Data Quality Table 1 provides the numbers (%) of records recorded with speeds of at least 30 mph, less than 30 mph but greater than 1 mph, and equal to 1 mph. The value of 1 mph is velocity record by the AP+ system when the truck was standing still.

Clean analysis sample

The "cleaned analysis" sample is constructed by:

Excluding records with mph<30

See explanation above for rationale.

Excluding records with durations >30 sec

In the Canadian Study Phase it was observed that almost all problematic records remaining after excluding records with speeds less than 30 miles were associated with very long record duration. A careful evaluation indicated that by excluding all records with durations greater than 30 seconds, nearly no valid records would be excluded while filtering out long duration records indicative of problematic data. This same filter was applied to the current U.S. dataset.

Hard code variable value deletions (within records)

Careful examination of driver specific distributions of outcome variables recorded by the AP+ system was used to identify additional artifacts and problematic data among the remaining records with speeds at least 30 mph and with record durations no greater than 30 seconds. Hard code variable value deletions within records were made on a case by case basis after careful evaluation. Reasons for exclusions of these records were documented. The following hard code variable value deletions were made.

- X and Y acceleration values were set to missing for the first 4 drivers as specified by Pierre Pommarel of AP+ (see discussion below).

- X and Y acceleration for driver 42 during the FEEDBACK condition were all equal to 1.27. Therefore, X and Y acceleration values were set to missing under both the NO FEEDBACK and FEEDBACK conditions for this driver in the AP+ cleaned analysis dataset.
- The lane tracking variable was set to missing if lane tracking coincidence was less than 50% (see discussion below – this was the rule used in FMT Canada).
- Steering wheel and front wheel movements measurements were hard coded to missing for some drivers: steering wheel movement values were set to missing for drivers 36 and 42. Front wheel movement values were set to missing under the FEEDBACK condition for the FEEDBACK legs of drivers 35 and 42. Then, for symmetry, the front wheel movement values under the NO FEEDBACK condition for these drivers were also set to missing.

Hard code driver deletions

In addition to hard code variable value deletions, all data from specific drivers were excluded from the cleaned analysis sample. This occurred when AP+ recorded data was only available under one of the two conditions or because there was insufficient data under one of the two conditions to permit meaningful comparisons. Thus, the cleaned analysis sample was defined on the basis of the subset of drivers with sufficient data under both conditions (FEEDBACK and NO FEEDBACK), restricting attention to records recorded at speeds of at least 30 mph, with record durations no more than 30 seconds and after excluding additional data found to be invalid following careful examination of driver specific distributions.

On this basis drivers **33, 34, and 39 were excluded from the cleaned analysis sample for AP+ outcomes**. Additional detail regarding reasons for excluding these drivers is provided in Section 2.2 below. Also, as discussed below, drivers 35 and 36 were considered candidates for deletion. After data cleaning, driver 35 only had 8.4 hours under the FEEDBACK condition while driver 36 had only 8.6 hours. Nonetheless, a decision was made to retain these drivers since there was at least 8 hours of recording and light of the small sample size.

Details of Quality Assessment Analysis

More record durations ≥ 3 seconds (Data Quality Tables 2 and 3)

Before excluding any records, we previously found in the Canada Study Phase that the average percentages of records with >3 second durations were 6.2% and 10.5% in the NO FEEDBACK and FEEDBACK conditions, respectively (Data Quality Table 2). In the cleaned analysis sample (Data Quality Table 3) these average percentages became 7.3% and 7.6%, respectively.

In contrast, with no records excluded, in the U.S. Study Phase, the average percentages of records with >3 second durations were 13.9% and 15.3%, respectively, in the NO FEEDBACK and FEEDBACK conditions (Data Quality Table 2). In the cleaned analysis sample (Data Quality Table 3) these average percentages became 16.5% and 18.0%, respectively.

There were no apparent reasons to explain why the numbers of longer duration records increased by a factor of 2.5 in the U.S. Study Phase compared to the Canadian Study Phase. Long duration records are due to time intervals when there are no changes in any recorded parameters. An increase in the percentages of longer duration records could occur if fewer parameters are being recorded or if sensors and less sensitive to change or for some other unknown reason. *No additional action was taken on the basis of this observation.*

Sum of Record Durations (Data Quality Table 4 and summary table below)

Data Quality Table 4 excludes records with velocities less than 30 mph. In the Canadian Study Phase, restricting attention to records with durations of at least equal to 30 mph resulted in the exclusion of almost all long duration records. However, this is not the case for the U.S. Study Phase. The following comments were received from Pierre Pommarel of AP+ on Thursday 6/12/2003 2:19 PM.

Here are some notes concerning the data from the first two weeks of the experiment (no feedback):

* For ALL drivers, ignore the X and Y accelerometer values
* driver 031 (truck # 432-1312) and driver 032 (truck #432-1200) seems to have coherent data
* driver 033 (truck # 432-1263) and driver 034 (truck #432-1261) have an incomplete set of data, coming from the fact that both AP+ units were in "frozen" state. I think that driver 033 got data that can be processed. However, driver 034 has almost no data.

We did find extremely long duration records for driver 33 at speeds >30 mph (see Appendix 2) that artificially inflated the follow-up duration reported for drivers in Data Quality Table 4. The following table also excludes records with durations **≥30 seconds** in addition to excluding records with **< 30 mph**. After this exclusion, Pierre's observation is confirmed and we see that there is very little data for driver 33.

The following table can be compared to Pierre's overall summary of ATA-FMT data collected distributed by way of e-mail on Wed 7/16/2003 1:07 PM. Selected sections are paraphrased below.

Description of Raw AP+ Data
Sum of Record Durations (hours) (>=30 MPH)

	No Feedback	**Feedback**
	All Records	**All Records**
Driver	**Sum**	**Sum**
31	81.5	83.6
32	79.6	41.7
33†	**2.4**	**5.3**
34†	**.**	**22.9**
35	81.6	8.4
36	19.1	8.6
37	43.2	45.2
38	82.5	73.8
39†	**4.0**	**0.9**
40	28.9	74.8
41	44.7	50.7
42	68.8	26.1
Mean	**48.8**	**36.8**

Note: † Drivers deleted from analysis due to insufficient valid AP+ data either during the NO FEEDBACK or FEEDBACK conditions.

(The following grids contain text which is paraphrased from Pierre Pommarel's (of AP+) e-mail of Wednesday, July 16, 2003, 1:07 PM.)

Drivers 31 to 34: NO FEEDBACK condition

Driver #	Data
31	Complete (accelerometer data wrong)
32	Complete (accelerometer data wrong)
33	Not U.S.ble (No or very few data recorded)
34	Not U.S.ble (No or very few data recorded)

Drivers 31 to 34: With feedback
Before Hermitage intervention (First week)

Driver #	Data
31	Complete (accelerometer data wrong)
32	Complete (accelerometer data wrong)
33	Not U.S.ble (No or very few data recorded)
34	Not U.S.ble (No or very few data recorded)

After Hermitage intervention (Second week)

Driver #	Data
31	Complete
32	Incomplete (Memo card not inserted)
33	Complete
34	Incomplete (Memo card not inserted)

Drivers 35 to 38: NO FEEDBACK condition

Driver #	Data
35	Complete
36	Incomplete (Memo card not inserted)
37	Complete
38	Complete

Drivers 35 to 38: With FEEDBACK condition

Driver #	Data
35	Incomplete (only 2 days - Memo card not inserted)
36	Incomplete (Memo card not inserted)
37	Complete
38	Complete

Based on the sum of record durations for records when speed was at least 30 miles per hour and the record duration was no greater than 30 seconds, the following summary conclusions were made about each driver:

- **Driver 31** had more than 80 hours under both NO FEEDBACK and FEEDBACK conditions, confirming Pierre's report that this driver has a complete set of data. **There was sufficient data for inclusion of driver 31 into the analysis final cleaned analysis dataset.**
- **Driver 32** had approximately 80 NO FEEDBACK hours but only approximately 40 FEEDBACK hours, consistent with the *incorrect memo card insertion* during the second week. **There was sufficient data for inclusion of driver 32 into the analysis final cleaned analysis dataset.**
- **Driver 33** had very few hours during both conditions. Pierre indicated that there was complete data collected during the second week of FEEDBACK but we were unable to confirm this since total follow-up duration at mph ≥ 30 was estimated to be only 5.3 hours. **Driver 33 did not appear to have sufficient cumulative record durations for inclusion into the final cleaned analysis dataset. Therefore, data from driver 33 was excluded.**
- **Driver 34** had no NO FEEDBACK hours. There are 22.9 FEEDBACK hours. **Driver 34 did not have sufficient record durations under both experimental conditions for inclusion into the final cleaned analysis dataset.**
- **Driver 35** had more than 80 NO FEEDBACK hours. However, this driver had 8.4 FEEDBACK hours after excluding records with speeds <30 mph or record durations ≥3 seconds. This finding is consistent with Pierre's report indicating only 2 days of recorded data due to memo card insertion error. **Although there was only 8.4 hours of valid recorded data under the FEEDBACK condition, driver 35 was not excluded from analyses because doing so would have reduced the sample size from 9 to 8.**
- **Driver 36** was found to have a relatively small amount of valid follow-up data under both conditions (19.1 NO FEEDBACK hours and 8.6 FEEDBACK hours)

consistent with Pierre's report that the memo card was not inserted. However, it is unclear how there can be any data at all if the memo card was not inserted? Nonetheless, since **there was at least 8 hours of recorded data under both conditions, this driver was retained in the analysis sample.**

- **Driver 37** had approximately 40 hours under both conditions. Therefore, we were unable to confirm that Pierre report that this driver had a complete set of data under both conditions. However**, there did appear to be sufficient data for inclusion of driver 37 into the analysis final cleaned analysis dataset.**
- **Driver 38** had approximately 80 hours under both NO FEEDBACK and FEEDBACK conditions, confirming Pierre's report that this driver has a complete set of data. **There was sufficient data for inclusion of driver 38 into the final analysis dataset.**
- **Driver 39** was found to have very few hours during either condition, with only four hours under the NO FEEDBACK condition and less than one hour under the FEEDBACK condition. **Driver 39 did not have sufficient record duration for inclusion into the final cleaned analysis dataset.**
- **Driver 40** had approximately 29 and 75 hours under NO FEEDBACK and FEEDBACK conditions respectively. **There was sufficient data for inclusion of driver 40 into the final cleaned analysis dataset.**
- **Driver 41** had approximately 45 and 51 hours under NO FEEDBACK and FEEDBACK conditions respectively. **There was sufficient data for inclusion of driver 41 into the final cleaned analysis dataset.**
- **Driver 42** had approximately 69 and 26 hours under NO FEEDBACK and FEEDBACK conditions respectively. **There was sufficient data for inclusion of driver 42 into the final cleaned analysis dataset.**

Filtering of zero duration and zero velocity records

During quality assessment procedures, we observed that the total numbers of records prior to any exclusions differed between that indicated in Data Quality Table 1 and Data Quality Table 2. The difference is that Data Quality Table 1 includes records with 0 second durations. Although the title of Table 2 indicates that there were no exclusions, in fact, 0 second duration records were excluded from the outset in analyses dealing with record durations as was done in the Canadian Study Phase. There were 22,155 0 second duration records (2,265,248 minU.S. 22,155 = 2,243,093). Upon closer inspection, we find that there are actually 2,243,095 records counted in Data Quality Table 2. The two record discrepancy relates to two records with mph=0 (driver 36 and 41, each in the NO FEEDBACK condition). These records were also excluded since the speed standing still is recorded at 1 mph. Thus, 0 mph records were defined as invalid and excluded during an initial data cleaning filter and so these two records do not appear in Data Quality Table 1

The following exhibit provides the frequency distributions of record durations without excluding 0 second records at the outset.

---------- FEEDBACK=0 (No) ----------

Record Duration

RECORD_ DURATION	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	15424	1.23	15424	1.23
1	809516	64.38	824940	65.61
2	241109	19.18	1066049	84.79
>3	191265	15.21	1257314	100.00

---------- FEEDBACK=1 (Yes) ----------

Record Duration

RECORD_ DURATION	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	6731	0.67	6731	0.67
1	652384	64.72	659115	65.39
2	191521	19.00	850636	84.39
>3	157300	15.61	1007936	100.00

Poor lane tracking confidence (Data Quality Tables 9 and 10)

As with Canada Study Phase, if lane tracking confidence <50%, lane tracking offset (and, consequently, lateral distance as well) was set to missing (Data Quality Tables 11 - 14). For consistency with rules agreed upon for the Canadian Study Phase, the SafeTRAC Driver Alertness Summery values were not set to missing (Data Quality Tables 15 – 18). Since this outcome measure is computed using a proprietary scoring algorithm it was not clear whether poor lane tracking confidence (i.e., <50%) implied that the SafeTRAC Driver Alertness Summery should also set to missing.

Inconsistencies in steering wheel movements metric (Data Quality Tables 18-20)

In the Canada Study Phase, average mean and median steering wheel values during both the NO FEEDBACK and FEEDBACK conditions were around 11. In contrast, for the current U.S. Study Phase, these values are both around 54. Clearly there was either a change in metric or some other problem resulting in qualitatively different distributions for steering wheel movements between the two studies. As a consequence, steering wheel movement data are not poolable between studies. There is no apparent reason for this difference in distributions.

In addition, inspection of the steering wheel data for drivers 36 and 42 indicated that these distributions were qualitatively different compared to steering wheel data from the other drivers. Driver 36 had mean and median values on the order of more than 180 under both conditions. Driver 42 had a mean value of less than six and a median of zero in the NO FEEDBACK condition, and mean and median values of zero in the

FEEDBACK condition. Therefore, steering wheel movements were hard coded to missing for drivers 36 and 42. Driver 39 also had distributions of steering wheel movements similar to driver 42, but driver 42 was already excluded from all analyses due to insufficient total follow-up. The following special 'AD' versions of Data Quality Tables 19 and 20 are presented without excluding any drivers. These tables provide the distributions of steering wheel movements for all drivers based on the cleaned analysis sample and document the reason why steering wheel movement data were excluded for drivers 36 and 39, even though these drivers are included in the analysis dataset.

Data Quality Table 19AD: Cleaned Analysis Sample (All Drivers)
NO FEEDBACK Steering Wheel Movements Distribution

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	142315	50.0	56.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	64.0
32	169520	39.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	50.0	50.0	56.0
33	5969	32.0	35.0	35.0	35.0	35.0	39.0	39.0	39.0	42.0	53.0	71.0
34	.	.	.	.	.	.	.	.	.	.	.	.
35	161237	43.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	55.0
36	**53808**	**22.0**	**183.0**	**183.0**	**186.0**	**186.0**	**186.0**	**186.0**	**186.0**	**186.0**	**186.0**	**190.0**
37	86001	51.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	58.0	58.0	114.0
38	170367	50.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0	58.0	64.0
39	**9898**	**0.0**	**0.0**	**0.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**32.0**
40	66182	51.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	58.0	58.0	64.0
41	98979	51.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	64.0
42	**150712**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**41.0**	**53.0**
Total/Mean	1114988	35.4	54.3	54.4	54.9	55.0	55.6	55.6	55.7	56.2	61.0	75.2

Data Quality Table 20AD: Cleaned Analysis Sample (All Drivers)
FEEDBACK Steering Wheel Movements Distribution

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	136567	50.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
32	88424	42.0	48.0	49.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	56.0
33	14788	15.0	35.0	35.0	35.0	39.0	39.0	39.0	42.0	42.0	50.0	253.0
34	45067	51.0	55.0	55.0	56.0	56.0	56.0	56.0	57.0	57.0	58.0	117.0
35	15188	44.0	49.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	50.0	52.0
36	**18685**	**86.0**	**179.0**	**179.0**	**179.0**	**179.0**	**179.0**	**183.0**	**183.0**	**183.0**	**186.0**	**190.0**
37	83230	50.0	55.0	56.0	56.0	56.0	56.0	57.0	57.0	58.0	58.0	115.0
38	141065	51.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	58.0	58.0	64.0
39	**1882**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**3.0**	**3.0**	**3.0**	**7.0**	**7.0**	**14.0**
40	180942	50.0	55.0	55.0	56.0	56.0	56.0	56.0	57.0	57.0	58.0	115.0
41	115119	50.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
42	**57236**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total/Mean	898193	40.8	53.7	53.9	54.1	54.7	54.7	55.3	55.8	56.3	57.4	91.8

Inconsistencies in wheel movements metric (Data Quality Tables 21–23)

In the Canada Study Phase, average mean and median wheel movement values during both the NO FEEDBACK and FEEDBACK conditions were around 180. Now they are around 53. As with steering wheel movements, there was clearly either a change in metric or some other problem. Consequently, wheel movement data are not poolable between studies. Interestingly, the distribution of steering wheel movement data for driver 36 noted above looks like the typical distributions of wheel movement data obtained from the Canada Study Phase.

Upon inspection of the driver specific distributions, the distributions observed for drivers 35 and 42 were outliers in the FEEDBACK condition. Both had all values equal to zero. The following table is a special version of Data Quality Table 23 that includes all drivers. Wheel movement data under both conditions for these drivers were excluded from the cleaned analysis sample.

Data Quality Table 23AD: Cleaned Analysis Sample (All Drivers)
FEEDBACK Wheel Movements Distribution

	Feedback											
Driver	N	Min	10.0%	20%	30%	40%	50%	60%	70%	80%	90%	Max
31	136567	50.0	55.0	55.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	62.0
32	88424	45.0	49.0	50.0	50.0	50.0	50.0	51.0	51.0	51.0	51.0	56.0
33	14788	48.0	50.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	55.0
34	45067	47.0	51.0	51.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	105.0
35	**15188**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
36	18685	41.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	52.0	52.0	56.0
37	83230	46.0	51.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	53.0	107.0
38	141065	51.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
39	1882	50.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	53.0
40	180942	47.0	51.0	51.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	106.0
41	115119	51.0	55.0	56.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	62.0
42	**57236**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total/Mean	898193	41.6	45.8	45.9	46.0	46.3	46.3	46.4	46.5	47.0	47.0	69.0

Ambient light (Data Quality Table 24)

The median ambient light values for all drivers under both conditions is 0, confirming that most driving was at night. In comparison, in the Canada Study Phase, the median values were typically around 150.

Drivers 32, 35, 41, and 42 appeared to have appreciable amounts of non-night driving in the NO FEEDBACK condition. In the FEEDBACK condition this was true for only drivers 32 and 35.

The validity of this observation was validated by comparison with Data Quality Table 29. Drivers 32, 35, and 42 have AP+ On/off sensor “Day Light” values equal to 1 in

relatively high numbers confirming the results from the ambient light meter. In contrast, the AP+ On/off sensor for "Day Light" in the NO FEEDBACK condition for driver 42 has no values equal to 1, even though driver 42 appeared to have appreciable amounts of non-night driving in the NO FEEDBACK condition on the basis of the ambient light values. There is no apparent reason for this discrepancy.

During the FEEDBACK condition, driver 32 had many more records with the AP+ On/off sensor for "Day Light" equal to 1 compared to any other driver and driver 35 had the second most number of records.

Of the 227 total PVT trials during the NO FEEDBACK condition, 49 (21.6%) were performed during the day or evening. Most of these were from drivers 39, 40, 41, and 42. Of the 209 total PVT trials during the FEEDBACK condition, 35 (16.7%) were performed during the day or evening and 31 of these were from these same four drivers.

Raw data metric for speed (Data Quality Table 30)

AP+ velocity data obtained during the Canadian Study Phase was provided in km/hr. There was no information provided to U.S. that the nature of the AP+ recording would change. However, inspection of preliminary versions of Data Quality Table 30 clearly indicated that that velocity was now being provided in mph rather than km\hr. Our programming initially applied a translation to the velocity data to convert km/hr to mph. The initial version of Data Quality Table 30 indicated that the average mean and median speeds under both conditions were about 38 mph with maximum values of roughly 44 mph.

We found these values to be obviously incorrect. Since 1 kilometer/hour = 0.6213712 mile/hour (mph) and 1 mile/hour (mph) = 1.609344 kilometer/hour these values can be 'untransformed' by multiplying by 1.61 (38 by 1.61 is 62, and 44 by 1.61 is 70.8). These values are very similar to average and maximum values for velocity observed in the Canada Study Phase. Therefore, the translation subroutine was removed for the U.S. data.

Engine Rotation (Data Quality Table 31)

The engine rotation values for driver 42 were all equal to 0 during the FEEDBACK condition. Therefore, all engine rotation data during both the NO FEEDBACK and FEEDBACK conditions were set to missing in the AP+ cleaned analysis dataset. After this exclusion, the distributions of engine rotation values looked very similar between studies.

X and Y acceleration (Data Quality Tables 32 and 33)

The following comments were from Pierre Pommarel of AP+ on Thursday, June 12, 2003, 2:19 PM.

Here are some notes concerning the data from the first two weeks of the experiment (no feedback):

* For ALL drivers, ignore the X and Y accelerometer values
* driver 031 (truck # 432-1312) and driver 032 (truck #432-1200) seems to have coherent data

* driver 033 (truck # 432-1263) and driver 034 (truck #432-1261) have an incomplete set of data, coming from the fact that both AP+ units were in "frozen" state. I think that driver 033 got data that can be processed. However, driver 034 has almost no data.

We interpreted the reference to 'ALL drivers' to mean drivers 31, 32, 33, and 34 only. We hard coded X and Y acceleration data for these 4 drivers to missing as reflected in Tables 32 and 33. Our data analysis confirmed that driver 34 had no U.S.ble AP+ data under the NO FEEDBACK condition. In contrast, driver 33 appeared to have substantial amount of NO FEEDBACK data and a full complement of FEEDBACK data (see Data Quality Table 4).

In further data quality procedures it was discovered that the values of X and Y acceleration for driver 42 during the FEEDBACK condition were all equal to 1.27. Therefore, X and Y acceleration values were set to missing under both the NO FEEDBACK and FEEDBACK conditions for this driver in the AP+ cleaned analysis dataset.

U.S. study phase Data Quality Control

DQ Table 1: No Records Excluded
Speed Categories (mph)

	No Feedback						Feedback					
	=1		1-<30		>=30		=1		1-<30		>=30	
Driver	N	%	N	%	N	%	N	%	N	%	N	%
31	492	0.3%	16818	10.5%	142397	89.2%	491	0.3%	16482	10.7%	136663	89.0%
32	600	0.3%	17327	9.2%	169558	90.4%	483	0.5%	9561	9.7%	88435	89.8%
33	36	0.5%	1381	18.7%	5970	80.8%	142	0.7%	4971	25.0%	14790	74.3%
34	1	16.7%	5	83.3%	.	.	349	0.7%	6368	12.3%	45078	87.0%
35	1081	0.6%	19273	10.6%	161381	88.8%	98	0.6%	1835	10.7%	15190	88.7%
36	206	0.3%	7912	12.8%	53823	86.9%	161	0.7%	5100	21.3%	18709	78.1%
37	876	0.9%	11035	11.3%	86040	87.8%	802	0.8%	11079	11.6%	83264	87.5%
38	531	0.3%	16577	8.8%	170414	90.9%	427	0.3%	14067	9.0%	141120	90.7%
39	67	0.5%	2789	21.9%	9898	77.6%	29	1.2%	476	19.9%	1884	78.9%
40	265	0.4%	6348	8.7%	66184	90.9%	670	0.3%	15401	7.8%	180946	91.8%
41	447	0.4%	12678	11.3%	99008	88.3%	484	0.4%	11630	9.1%	115221	90.5%
42	922	0.5%	24254	13.8%	150718	85.7%	424	0.6%	7855	12.0%	57251	87.4%
Total/Mean	5524	1.8%	136397	18.4%	1115391	87.0%	4560	0.6%	104825	13.3%	898551	86.1%

U.S. study phase Data Quality Control

DQ Table 3: Cleaned Analysis Sample
Record Duration Category (seconds)

	No Feedback						Feedback					
	1 sec		2 sec		>=3 sec		1 sec		2 sec		>=3 sec	
Driver	N	%	N	%	N	%	N	%	N	%	N	%
31	75389	53.0%	32433	22.8%	34412	24.2%	69743	51.1%	30154	22.1%	36627	26.8%
32	108389	63.9%	35098	20.7%	26023	15.4%	55936	63.3%	18155	20.5%	14303	16.2%
35	93795	58.2%	37077	23.0%	30346	18.8%	8025	52.8%	3523	23.2%	3640	24.0%
36	26708	64.7%	8258	20.0%	6302	15.3%	10312	62.0%	3280	19.7%	3027	18.2%
37	49604	58.6%	19552	23.1%	15550	18.4%	45951	55.2%	19871	23.9%	17403	20.9%
38	103410	60.7%	37547	22.1%	29279	17.2%	80054	56.8%	32042	22.7%	28900	20.5%
40	44979	68.0%	12993	19.6%	8205	12.4%	123854	69.6%	34395	19.3%	19586	11.0%
41	67274	68.0%	18916	19.1%	12755	12.9%	82745	71.9%	20722	18.0%	11557	10.0%
42	99569	66.1%	29777	19.8%	21359	14.2%	37088	64.8%	11830	20.7%	8314	14.5%
Total/Mean	669117	62.4%	231651	21.1%	184231	16.5%	513708	60.8%	173972	21.1%	143357	18.0%

U.S. study phase Data Quality Control

DQ Table 2: No Records Excluded
Record Duration Category (seconds)

	No Feedback						Feedback					
	1 sec		2 sec		>=3 sec		1 sec		2 sec		>=3 sec	
Driver	N	%	N	%	N	%	N	%	N	%	N	%
31	91354	57.2%	33191	20.8%	35058	22.0%	85115	55.5%	30937	20.2%	37232	24.3%
32	125018	66.7%	35821	19.1%	26633	14.2%	65220	66.2%	18587	18.9%	14640	14.9%
33	5753	77.9%	988	13.4%	645	8.7%	16808	84.5%	2094	10.5%	989	5.0%
34	5	100.0%	.	.	.	.	33657	65.0%	9921	19.2%	8213	15.9%
35	112383	61.8%	38160	21.0%	31162	17.1%	9812	57.3%	3609	21.1%	3701	21.6%
36	33142	68.5%	8568	17.7%	6655	13.8%	14638	68.3%	3511	16.4%	3291	15.3%
37	60153	62.3%	20283	21.0%	16106	16.7%	56579	59.5%	20585	21.6%	17968	18.9%
38	118946	63.5%	38481	20.5%	29932	16.0%	93259	60.0%	32826	21.1%	29439	18.9%
39	9735	76.3%	1925	15.1%	1091	8.6%	1536	64.3%	491	20.6%	361	15.1%
40	50964	70.1%	13304	18.3%	8474	11.6%	138137	71.4%	35123	18.2%	20172	10.4%
41	79372	70.8%	19498	17.4%	13209	11.8%	93992	73.9%	21174	16.6%	12063	9.5%
42	122691	69.8%	30890	17.6%	22300	12.7%	43631	66.6%	12663	19.3%	9231	14.1%
Total/Mean	809516	70.4%	241109		191265	13.9%	652384		191521		157300	15.3%

U.S. study phase Data Quality Control

DQ Table 5: Cleaned Analysis Sample
NF Record Duration Distributions (seconds)

	No Feedback (Number of records at each duration)											
Driver	**N**	**1 sec**	**2 sec**	**3 sec**	**4 sec**	**5 sec**	**6-10 sec**	**11-15 sec**	**16-20 sec**	**21-25 sec**	**26-30 sec**	**>30 sec**
31	142027	75389	32433	15803	8242	4273	5111	446	216	85	29	.
32	169396	108389	35098	13778	5895	2911	2932	223	87	47	36	.
35	161124	93795	37077	16065	7067	3425	3196	235	136	77	51	.
36	41253	26708	8258	3362	1423	742	704	35	15	5	1	.
37	84598	49604	19552	8099	3606	1573	1778	189	125	43	29	.
38	170157	103410	37547	15580	6972	3212	3111	184	87	32	22	.
40	66144	44979	12993	4497	1894	825	855	61	26	9	5	.
41	98860	67274	18916	6543	2831	1347	1621	183	81	41	23	.
42	150603	99569	29777	11162	4828	2411	2574	203	62	10	7	.
Total/Mean	1084162	74346	25739	10543	4751	2302	2431	195	93	39	23	

U.S. study phase Data Quality Control

Data Quality Table 4: No Exclusions and >=30 mph
Sum of Record Durations (hours)

	No Feedback		Feedback	
	All Records	>=30 mph	All Records	>=30 mph
Driver	Sum	Sum	Sum	Sum
31	347.8	82.5	221.6	84.8
32	348.0	80.1	109.8	41.8
33	55.2	53.5	148.0	74.9
34	0.0	.	193.0	23.0
35	278.0	83.7	10.9	8.4
36	278.9	44.8	275.3	33.0
37	275.2	43.7	272.8	45.5
38	278.5	83.1	275.6	74.5
39	79.5	4.0	26.1	8.1
40	83.8	29.0	278.7	74.9
41	267.0	45.0	278.9	51.9
42	380.4	68.9	81.5	26.4
Mean	222.7	56.2	181.0	45.6

U.S. study phase Data Quality Control

DQ Table 6: Cleaned Analysis Sample
FB Record Duration Distributions (seconds)

	Feedback (Number of records at each duration)											
Driver	**N**	**1 sec**	**2 sec**	**3 sec**	**4 sec**	**5 sec**	**6-10 sec**	**11-15 sec**	**16-20 sec**	**21-25 sec**	**26-30 sec**	**>30 sec**
31	136216	69743	30154	15463	8498	4792	6542	645	228	99	52	.
32	88343	55936	18155	7389	3453	1696	1619	60	27	5	3	.
35	15175	8025	3523	1796	848	443	506	21	8	2	3	.
36	16600	10312	3280	1384	677	381	452	63	33	15	3	.
37	83096	45951	19871	8433	3971	2010	2429	257	107	46	21	.
38	140863	80054	32042	14225	7127	3392	3602	266	85	49	21	.
40	177773	123854	34395	11320	4351	1873	1802	122	44	9	3	.
41	114872	82745	20722	5733	2021	1075	1851	354	215	107	49	.
42	57199	37088	11830	4523	1922	920	828	57	20	5	6	.
Total/Mean	830137	57079	19330	7807	3652	1842	2181	205	85	37	18	

U.S. study phase Data Quality Control

DQ Table 7: No Records Excluded
SafeTRAC Lane Tracking (Offset) Confidence Category

	No Feedback						Feedback					
	0%		>0% to <100%		100%		0%		>0% to <100%		100%	
Driver	N	%	N	%	N	%	N	%	N	%	N	%
31	189	1.0%	18525	94.5%	886	4.5%	323	1.5%	20339	94.5%	867	4.0%
32	1070	2.5%	40624	93.5%	1756	4.0%	420	1.8%	22142	93.4%	1133	4.8%
33	2	0.2%	945	91.8%	82	8.0%	11	0.4%	2789	95.7%	115	3.9%
34	.	.	3	50.0%	3	50.0%	250	3.0%	7737	93.1%	321	3.9%
35	3500	15.4%	18096	79.4%	1196	5.2%	11	0.6%	1687	93.4%	108	6.0%
36	311	2.4%	11676	89.1%	1114	8.5%	45	1.0%	4389	94.1%	232	5.0%
37	394	2.9%	12349	91.9%	699	5.2%	623	3.3%	17639	94.4%	424	2.3%
38	775	2.0%	36343	94.0%	1546	4.0%	171	0.5%	30554	93.5%	1960	6.0%
39	77	3.1%	2289	91.9%	125	5.0%	60	16.8%	284	79.3%	14	3.9%
40	80	0.8%	9116	93.5%	550	5.6%	338	1.1%	28201	94.5%	1307	4.4%
41	444	2.4%	17727	94.7%	551	2.9%	84	0.5%	17733	96.7%	521	2.8%
42	390	0.8%	49574	97.1%	1066	2.1%	145	1.2%	11012	93.1%	673	5.7%
Total/Mean	7232	3.0%	217267	88.5%	9574	8.8%	2481	2.6%	164506	93.0%	7675	4.4%

DQ Table 8: Cleaned Analysis Sample
SafeTRAC Lane Tracking (Offset) Confidence Category

	No Feedback						Feedback					
	0%		>0% to <100%		100%		0%		>0% to <100%		100%	
Driver	N	%	N	%	N	%	N	%	N	%	N	%
31	9	0.1%	10179	93.1%	750	6.9%	18	0.2%	10408	93.6%	697	6.3%
32	69	0.2%	29470	94.6%	1612	5.2%	18	0.1%	16649	93.9%	1061	6.0%
35	5	0.0%	10207	91.3%	963	8.6%	.	.	809	88.5%	105	11.5%
36	2	0.0%	7311	88.1%	988	11.9%	1	0.1%	1355	88.8%	170	11.1%
37	4	0.1%	5557	90.6%	572	9.3%	240	2.4%	9566	95.2%	243	2.4%
38	44	0.2%	26756	94.7%	1461	5.2%	9	0.0%	22870	92.6%	1806	7.3%
40	2	0.0%	5935	92.8%	460	7.2%	61	0.3%	18730	94.3%	1065	5.4%
41	122	1.2%	9891	94.4%	460	4.4%	15	0.1%	10041	96.1%	397	3.8%
42	84	0.2%	40039	97.5%	928	2.3%	10	0.1%	7313	92.3%	600	7.6%
Total/Mean	341	0.2%	145345	93.0%	8194	6.8%	372	0.4%	97741	92.8%	6144	6.8%

U.S. study phase Data Quality Control

DQ Table 10: Cleaned Analysis Sample
FB SafeTRAC Lane Tracking (Offset) Confidence Category

	Feedback (Percentages in Each Category)											
Driver	N	0%	>0-10%	>10-20%	>20-30%	>30-40%	>40-50%	>50-60%	>60-70%	>70-80%	>80-90%	>90-100%
31	136567	4.46%	2.07%	0.66%	0.48%	0.43%	0.39%	0.34%	0.34%	0.31%	0.35%	90.19%
32	88424	2.61%	1.13%	0.51%	0.37%	0.28%	0.23%	0.22%	0.19%	0.21%	0.23%	94.02%
35	15188	1.96%	0.95%	0.45%	0.29%	0.18%	0.22%	0.18%	0.18%	0.13%	0.20%	95.27%
36	18685	11.89%	1.69%	0.59%	0.43%	0.40%	0.39%	0.40%	0.21%	0.27%	0.26%	83.47%
37	83230	8.91%	2.05%	0.65%	0.45%	0.40%	0.36%	0.42%	0.35%	0.37%	0.38%	85.67%
38	141065	2.71%	1.17%	0.42%	0.30%	0.26%	0.20%	0.22%	0.19%	0.17%	0.20%	94.17%
40	180942	4.17%	0.89%	0.32%	0.24%	0.21%	0.16%	0.19%	0.13%	0.12%	0.11%	93.47%
41	115119	13.45%	1.32%	0.38%	0.29%	0.23%	0.22%	4.74%	0.18%	0.18%	0.19%	78.81%
42	57236	2.85%	1.40%	0.59%	0.36%	0.28%	0.32%	0.29%	0.24%	0.27%	0.30%	93.10%
Total/Mean	836456	5.89%	1.41%	0.51%	0.36%	0.30%	0.28%	0.78%	0.22%	0.23%	0.25%	89.79%

U.S. study phase Data Quality Control

DQ Table 9: Cleaned Analysis Sample
NF SafeTRAC Lane Tracking (Offset) Confidence Category

	No Feedback (Percentages in Each Category)											
Driver	**N**	**0%**	**>0-10%**	**>10-20%**	**>20-30%**	**>30-40%**	**>40-50%**	**>50-60%**	**>60-70%**	**>70-80%**	**>80-90%**	**>90-100%**
31	142315	4.15%	1.45%	0.49%	0.33%	0.29%	0.29%	0.28%	0.28%	0.27%	0.32%	91.86%
32	169520	3.57%	1.35%	0.47%	0.39%	0.30%	0.29%	0.57%	0.23%	0.26%	0.28%	92.28%
35	161237	3.27%	0.95%	0.37%	0.24%	0.18%	0.15%	0.20%	0.14%	0.14%	0.15%	94.20%
36	53808	3.43%	0.78%	0.30%	0.18%	0.14%	0.14%	0.14%	0.15%	0.12%	0.15%	94.47%
37	86001	8.77%	1.67%	0.52%	0.36%	0.26%	0.28%	0.25%	0.21%	0.23%	0.22%	87.22%
38	170367	2.64%	1.40%	0.54%	0.41%	0.30%	0.27%	0.28%	0.23%	0.22%	0.22%	93.50%
40	66182	4.99%	0.89%	0.33%	0.24%	0.18%	0.14%	0.14%	0.10%	0.11%	0.11%	92.77%
41	98979	7.65%	2.42%	0.88%	0.61%	0.53%	0.43%	1.76%	0.26%	0.25%	0.26%	84.94%
42	150712	2.36%	1.31%	0.55%	0.37%	0.31%	0.31%	0.35%	0.25%	0.27%	0.28%	93.63%
Total/Mean	1099121	4.54%	1.36%	0.49%	0.35%	0.28%	0.26%	0.44%	0.21%	0.21%	0.22%	91.65%

U.S. study phase Data Quality Control

Data Quality Table 11: Cleaned Analysis Sample
SafeTRAC Vehicle Offset (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	132399	123.8	21.2	124.0	0.0	250.0	125062	121.0	22.0	122.0	0.0	250.0
32	158749	117.4	28.3	119.0	0.0	250.0	83907	114.1	22.4	115.0	0.0	250.0
35	152928	123.9	18.8	124.0	0.0	250.0	14575	119.4	14.8	119.0	4.0	246.0
36	51143	112.1	17.5	112.0	0.0	248.0	15811	114.5	16.1	115.0	0.0	243.0
37	75828	121.9	18.4	122.0	0.0	250.0	72603	120.4	26.1	122.0	0.0	250.0
38	160961	117.7	26.0	120.0	0.0	250.0	133958	114.0	21.3	115.0	0.0	250.0
40	61707	126.0	22.7	127.0	0.0	250.0	170137	125.7	25.4	127.0	0.0	250.0
41	86621	128.1	33.3	130.0	0.0	250.0	96844	126.6	24.9	129.0	0.0	250.0
42	142894	119.3	34.6	121.0	0.0	250.0	53928	118.9	22.5	119.0	0.0	250.0
Total/Mean	890831	120.8	25.0	121.9	0.0	249.8	641763	119.2	21.7	120.1	0.5	248.6

U.S. study phase Data Quality Control

Data Quality Table 12: Cleaned Analysis Sample
Lateral Distance (2*Vehicle Offset-250) (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	132399	-2.4	42.4	-2.0	-250.0	250.0	125062	-8.1	43.9	-6.0	-250.0	250.0
32	158749	-15.2	56.5	-12.0	-250.0	250.0	83907	-21.7	44.8	-20.0	-250.0	250.0
35	152928	-2.1	37.6	-2.0	-250.0	250.0	14575	-11.3	29.7	-12.0	-242.0	242.0
36	51143	-25.8	35.0	-26.0	-250.0	246.0	15811	-20.9	32.2	-20.0	-250.0	236.0
37	75828	-6.2	36.8	-6.0	-250.0	250.0	72603	-9.3	52.3	-6.0	-250.0	250.0
38	160961	-14.6	52.1	-10.0	-250.0	250.0	133958	-22.0	42.7	-20.0	-250.0	250.0
40	61707	2.0	45.4	4.0	-250.0	250.0	170137	1.4	50.8	4.0	-250.0	250.0
41	86621	6.2	66.7	10.0	-250.0	250.0	96844	3.2	49.8	8.0	-250.0	250.0
42	142894	-11.4	69.2	-8.0	-250.0	250.0	53928	-12.3	45.1	-12.0	-250.0	250.0
Total/Mean	890831	-8.4	49.9	-6.3	-250.0	249.5	641763	-11.6	43.4	-9.8	-249.0	247.3

U.S. study phase Data Quality Control

Data Quality Table 13: Clean Analysis Sample
NF Percentiles of Lateral Distance (2*Vehicle Offset-250)

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	132399	-250.0	-44.0	-26.0	-16.0	-8.0	-2.0	4.0	12.0	20.0	36.0	250.0
32	158749	-250.0	-74.0	-48.0	-32.0	-22.0	-12.0	-4.0	4.0	14.0	34.0	250.0
35	152928	-250.0	-42.0	-26.0	-16.0	-8.0	-2.0	6.0	12.0	22.0	36.0	250.0
36	51143	-250.0	-58.0	-46.0	-38.0	-32.0	-26.0	-22.0	-16.0	-8.0	4.0	246.0
37	75828	-250.0	-44.0	-28.0	-20.0	-12.0	-6.0	0.0	8.0	16.0	28.0	250.0
38	160961	-250.0	-70.0	-44.0	-30.0	-20.0	-10.0	-2.0	6.0	18.0	34.0	250.0
40	61707	-250.0	-50.0	-30.0	-16.0	-6.0	4.0	12.0	22.0	32.0	50.0	250.0
41	86621	-250.0	-58.0	-28.0	-12.0	0.0	10.0	20.0	30.0	44.0	68.0	250.0
42	142894	-250.0	-106.0	-80.0	-46.0	-24.0	-8.0	4.0	22.0	54.0	80.0	250.0
Total/Mean	1023230	-250.0	-60.7	-39.6	-25.1	-14.7	-5.8	2.0	11.1	23.6	41.1	249.6

U.S. study phase Data Quality Control

Data Quality Table 14: Clean Analysis Sample
FB Percentiles of Lateral Distance (2*Vehicle Offset-250)

	Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	125062	-250.0	-46.0	-28.0	-20.0	-12.0	-6.0	-2.0	4.0	12.0	26.0	250.0
32	83907	-250.0	-72.0	-50.0	-38.0	-28.0	-20.0	-12.0	-4.0	4.0	20.0	250.0
35	14575	-242.0	-42.0	-30.0	-22.0	-16.0	-12.0	-6.0	0.0	6.0	18.0	242.0
36	15811	-250.0	-48.0	-38.0	-30.0	-26.0	-20.0	-16.0	-12.0	-4.0	4.0	236.0
37	72603	-250.0	-82.0	-32.0	-20.0	-12.0	-6.0	0.0	6.0	16.0	36.0	250.0
38	133958	-250.0	-64.0	-46.0	-36.0	-26.0	-20.0	-12.0	-6.0	4.0	16.0	250.0
40	170137	-250.0	-54.0	-30.0	-16.0	-6.0	4.0	14.0	24.0	36.0	54.0	250.0
41	96844	-250.0	-52.0	-24.0	-8.0	0.0	8.0	18.0	28.0	38.0	54.0	250.0
42	53928	-250.0	-58.0	-40.0	-28.0	-20.0	-12.0	-4.0	4.0	14.0	30.0	250.0
Total/Mean	766825	-249.1	-57.6	-35.3	-24.2	-16.2	-9.3	-2.2	4.9	14.0	28.7	247.6

Data Quality Table 15: Cleaned Analysis Sample
SafeTRAC Driver Alertness Summary (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	142315	74.9	10.8	76.0	0.0	100.0	136567	84.8	8.4	86.0	13.0	100.0
32	169520	77.9	11.2	79.0	0.0	100.0	88424	78.8	10.1	80.0	0.0	100.0
35	161237	73.6	11.9	75.0	0.0	100.0	15188	83.6	6.4	84.0	57.0	100.0
36	53808	86.6	8.2	88.0	0.0	100.0	18685	91.4	6.6	92.0	52.0	100.0
37	86001	72.9	9.3	72.0	32.0	100.0	83230	79.3	12.0	82.0	8.0	100.0
38	170367	63.0	15.5	65.0	0.0	100.0	141065	77.4	10.2	79.0	33.0	100.0
40	66182	51.8	19.1	55.0	0.0	100.0	180942	43.3	21.6	46.0	0.0	100.0
41	98979	62.6	22.1	60.0	0.0	100.0	115119	64.3	19.0	61.0	17.0	100.0
42	150712	67.7	16.3	71.0	0.0	100.0	57236	75.0	9.8	76.0	16.0	100.0
Total/Mean	956806	69.5	14.2	70.6	4.0	100.0	699889	74.1	12.0	75.0	22.9	100.0

U.S. study phase Data Quality Control

Data Quality Table 16: Cleaned Analysis Sample

NO FEEDBACK SafeTRAC Driver Alertness Distribution (unweighted by record duration)

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	142315	0.0	60.0	66.0	71.0	74.0	76.0	79.0	81.0	83.0	86.0	100.0
32	169520	0.0	65.0	70.0	74.0	76.0	79.0	81.0	84.0	86.0	89.0	100.0
35	161237	0.0	63.0	67.0	70.0	72.0	75.0	76.0	78.0	81.0	84.0	100.0
36	53808	0.0	78.0	82.0	84.0	86.0	88.0	89.0	91.0	92.0	94.0	100.0
37	86001	32.0	63.0	67.0	69.0	71.0	72.0	74.0	76.0	78.0	81.0	100.0
38	170367	0.0	44.0	52.0	57.0	61.0	65.0	68.0	71.0	74.0	79.0	100.0
40	66182	0.0	26.0	34.0	41.0	48.0	55.0	60.0	65.0	69.0	74.0	100.0
41	98979	0.0	36.0	43.0	50.0	55.0	60.0	65.0	71.0	81.0	100.0	100.0
42	150712	0.0	46.0	55.0	62.0	67.0	71.0	74.0	77.0	80.0	85.0	100.0
Total/Mean	1099121	3.6	53.4	59.6	64.2	67.8	71.2	74.0	77.1	80.4	85.8	100.0

U.S. study phase Data Quality Control

Data Quality Table 17: Cleaned Analysis Sample
FEEDBACK SafeTRAC Driver Alertness Distribution (unweighted by record duration)

	Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	136567	13.0	75.0	79.0	82.0	84.0	86.0	88.0	89.0	92.0	94.0	100.0
32	88424	0.0	65.0	71.0	75.0	78.0	80.0	82.0	85.0	87.0	89.0	100.0
35	15188	57.0	75.0	79.0	81.0	82.0	84.0	86.0	87.0	88.0	91.0	100.0
36	18685	52.0	82.0	88.0	89.0	91.0	92.0	93.0	95.0	96.0	100.0	100.0
37	83230	8.0	68.0	75.0	78.0	80.0	82.0	83.0	84.0	86.0	89.0	100.0
38	141065	33.0	65.0	70.0	73.0	76.0	79.0	81.0	82.0	85.0	88.0	100.0
40	180942	0.0	11.0	22.0	32.0	40.0	46.0	52.0	57.0	62.0	68.0	100.0
41	115119	17.0	43.0	49.0	54.0	58.0	61.0	65.0	69.0	76.0	100.0	100.0
42	57236	16.0	63.0	69.0	72.0	74.0	76.0	78.0	80.0	82.0	85.0	100.0
Total/Mean	836456	21.8	60.8	66.9	70.7	73.7	76.2	78.7	80.9	83.8	89.3	100.0

U.S. study phase Data Quality Control

Data Quality Table 18: Cleaned Analysis Sample
Steering Wheel Movements Summary (unweighted by record duration)

	No Feedback						Feedback					
Driver	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**
31	142315	56.3	0.62	56.0	50.0	64.0	136567	56.5	0.76	56.0	50.0	63.0
32	169520	49.5	0.61	50.0	39.0	56.0	88424	49.1	0.76	49.0	42.0	56.0
35	161237	50.0	0.49	50.0	43.0	55.0	15188	49.4	0.64	49.0	44.0	52.0
37	86001	56.7	0.98	57.0	51.0	114.0	83230	56.4	1.15	56.0	50.0	115.0
38	170367	57.0	0.56	57.0	50.0	64.0	141065	57.1	0.81	57.0	51.0	64.0
40	66182	56.7	0.90	57.0	51.0	64.0	180942	56.2	1.10	56.0	50.0	115.0
41	98979	56.8	0.73	57.0	51.0	64.0	115119	56.4	0.74	56.0	50.0	63.0
Total/Mean	752286	54.45	0.71	54.67	47.50	69.50	623968	54.11	0.87	53.83	47.83	77.50

U.S. study phase Data Quality Control

Data Quality Table 19: Cleaned Analysis Sample
NO FEEDBACK Steering Wheel Movements Distribution

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	142315	50.0	56.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	64.0
32	169520	39.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	50.0	50.0	56.0
35	161237	43.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	55.0
37	86001	51.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	58.0	58.0	114.0
38	170367	50.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0	58.0	64.0
40	66182	51.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	58.0	58.0	64.0
41	98979	51.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	64.0
Total/Mean	894601	47.9	54.1	54.3	54.3	54.4	54.9	54.9	55.0	55.3	55.4	68.7

U.S. study phase Data Quality Control

Data Quality Table 20: Cleaned Analysis Sample
FB Steering Wheel Movements Distribution

	Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	136567	50.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
32	88424	42.0	48.0	49.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	56.0
35	15188	44.0	49.0	49.0	49.0	49.0	49.0	50.0	50.0	50.0	50.0	52.0
37	83230	50.0	55.0	56.0	56.0	56.0	56.0	57.0	57.0	58.0	58.0	115.0
38	141065	51.0	56.0	57.0	57.0	57.0	57.0	57.0	57.0	58.0	58.0	64.0
40	180942	50.0	55.0	55.0	56.0	56.0	56.0	56.0	57.0	57.0	58.0	115.0
41	115119	50.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
Total/Mean	760535	48.1	53.6	54.0	54.1	54.1	54.1	54.7	55.0	55.3	55.4	75.4

U.S. study phase Data Quality Control

Data Quality Table 21: Cleaned Analysis Sample
Wheel Movements Summary (unweighted by record duration)

	No Feedback						Feedback					
Driver	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**
31	142315	55.9	0.43	56.0	51.0	62.0	136567	55.8	0.58	56.0	50.0	62.0
32	169520	50.5	0.69	51.0	45.0	55.0	88424	50.3	0.79	50.0	45.0	56.0
36	53808	51.7	0.54	52.0	40.0	56.0	18685	51.2	0.59	51.0	41.0	56.0
37	86001	52.6	0.73	53.0	47.0	107.0	83230	52.2	0.84	52.0	46.0	107.0
38	170367	56.6	0.61	57.0	51.0	62.0	141065	56.5	0.68	56.0	51.0	63.0
40	66182	52.4	0.73	52.0	48.0	59.0	180942	51.9	0.85	52.0	47.0	106.0
41	98979	56.4	0.73	56.0	52.0	62.0	115119	56.2	0.69	56.0	51.0	62.0
Total/Mean	644857	53.4	0.67	53.50	47.17	66.83	627465	53.04	0.74	52.83	46.83	75.00

U.S. study phase Data Quality Control

Data Quality Table 22: Cleaned Analysis Sample
NF Wheel Movements Distribution

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	142315	51.0	55.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	62.0
32	169520	45.0	50.0	50.0	50.0	50.0	51.0	51.0	51.0	51.0	51.0	55.0
36	53808	40.0	51.0	51.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	56.0
37	86001	47.0	52.0	52.0	52.0	53.0	53.0	53.0	53.0	53.0	53.0	107.0
38	170367	51.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	57.0	62.0
40	66182	48.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	53.0	53.0	59.0
41	98979	52.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	62.0
Total/Mean	787172	47.7	53.0	53.3	53.4	53.6	53.9	54.1	54.1	54.1	54.1	66.1

U.S. study phase Data Quality Control

Data Quality Table 23: Cleaned Analysis Sample
FB Wheel Movements Distribution

	Feedback											
Driver	N	Min	10.0%	20%	30%	40%	50%	60%	70%	80%	90%	Max
31	136567	50.0	55.0	55.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	62.0
32	88424	45.0	49.0	50.0	50.0	50.0	50.0	51.0	51.0	51.0	51.0	56.0
36	18685	41.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	52.0	52.0	56.0
37	83230	46.0	51.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	53.0	107.0
38	141065	51.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	57.0	57.0	63.0
40	180942	47.0	51.0	51.0	51.0	52.0	52.0	52.0	52.0	53.0	53.0	106.0
41	115119	51.0	55.0	56.0	56.0	56.0	56.0	56.0	56.0	57.0	57.0	62.0
Total/Mean	764032	47.3	52.6	52.9	53.1	53.3	53.3	53.6	53.7	54.1	54.1	73.1

U.S. study phase Data Quality Control

Data Quality Table 24: Clean Analysis Sample
Ambient Light (unweighted by record duration)

	No Feedback						Feedback					
Driver	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**	**N**	**Mean**	**Std**	**Med**	**Min**	**Max**
31	142315	0.2	4.6	0.0	0.0	141.0	136567	0.2	4.6	0.0	0.0	142.0
32	169520	29.1	57.7	0.0	0.0	191.0	88424	45.7	66.6	0.0	0.0	165.0
35	161237	42.9	65.0	0.0	0.0	184.0	15188	47.4	66.2	0.0	0.0	160.0
36	53808	1.0	10.6	0.0	0.0	160.0	18685	0.1	0.7	0.0	0.0	11.0
37	86001	0.0	0.3	0.0	0.0	20.0	83230	0.0	0.1	0.0	0.0	7.0
38	170367	0.3	6.1	0.0	0.0	143.0	141065	0.2	4.5	0.0	0.0	143.0
40	66182	0.2	1.4	0.0	0.0	23.0	180942	1.9	14.5	0.0	0.0	159.0
41	98979	27.7	55.4	0.0	0.0	163.0	115119	3.3	16.0	0.0	0.0	169.0
42	150712	26.9	56.3	0.0	0.0	161.0	57236	1.5	13.1	0.0	0.0	154.0
Total/Mean	956806	16.0	31.6	0.0	0.0	130.6	699889	12.5	22.7	0.0	0.0	121.0

U.S. study phase Data Quality Control

Data Quality Table 25: Cleaned Analysis Sample
PERCLOS Camera Summary (where daylight=0) (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	142315	4.50	9.09	2.00	0.0	88.0	136567	4.32	9.86	0.00	0.0	100.0
32	134687	7.44	8.28	5.00	0.0	93.0	59804	8.95	10.82	5.00	0.0	97.0
35	110047	3.04	3.77	2.00	0.0	54.0	9956	2.49	2.72	2.00	0.0	29.0
36	53808	17.86	17.78	12.00	0.0	95.0	18685	13.86	14.55	9.00	0.0	95.0
37	86001	1.80	2.94	0.00	0.0	78.0	83205	1.77	6.75	0.00	0.0	100.0
38	170367	3.41	8.93	1.00	0.0	97.0	141065	2.88	6.92	0.00	0.0	176.0
40	66171	7.95	8.46	5.00	0.0	84.0	178863	6.63	7.34	4.00	0.0	79.0
41	98979	14.51	19.75	7.00	0.0	100.0	115119	10.06	15.62	4.00	0.0	100.0
42	122786	7.75	12.07	3.00	0.0	97.0	56696	7.72	11.69	3.00	0.0	78.0
Total/Mean	842846	7.97	10.25	4.38	0.00	87.25	663393	6.80	9.55	3.38	0.00	94.25

U.S. study phase Data Quality Control

Data Quality Table 26: Cleaned Analysis Sample
NF PERCLOS Camera (where daylight=0) Distribution (unweighted by duration)

	No Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	142315	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	5.0	11.0	88.0
32	134687	0.0	0.0	2.0	3.0	4.0	5.0	6.0	8.0	11.0	17.0	93.0
35	110047	0.0	0.0	0.0	0.0	2.0	2.0	3.0	4.0	5.0	7.0	54.0
36	53808	0.0	2.0	5.0	7.0	10.0	12.0	16.0	20.0	26.0	44.0	95.0
37	86001	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	5.0	78.0
38	170367	0.0	0.0	0.0	0.0	0.0	1.0	2.0	3.0	4.0	7.0	97.0
40	66171	0.0	0.0	2.0	3.0	4.0	5.0	7.0	9.0	12.0	18.0	84.0
41	98979	0.0	0.0	0.0	2.0	4.0	7.0	10.0	16.0	23.0	40.0	100.0
42	122786	0.0	0.0	0.0	0.0	2.0	3.0	5.0	8.0	12.0	21.0	97.0
Total/Mean	985161	0.00	0.22	1.00	1.67	2.89	4.11	5.89	8.11	11.22	18.89	87.33

Data Quality Table 27: Cleaned Analysis Sample
FB PERCLOS Camera (where daylight=0) Distribution (unweighted by duration)

	Feedback											
Driver	**N**	**Min**	**10.0%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**Max**
31	136567	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	4.0	16.0	100.0
32	59804	0.0	0.0	2.0	2.0	4.0	5.0	7.0	10.0	15.0	23.0	97.0
35	9956	0.0	0.0	0.0	0.0	2.0	2.0	2.0	3.0	4.0	5.0	29.0
36	18685	0.0	1.0	3.0	5.0	7.0	9.0	12.0	16.0	22.0	31.0	95.0
37	83205	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0	4.0	100.0
38	141065	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	4.0	8.0	176.0
40	178863	0.0	0.0	2.0	2.0	3.0	4.0	6.0	8.0	11.0	16.0	79.0
41	115119	0.0	0.0	0.0	2.0	3.0	4.0	6.0	9.0	15.0	29.0	100.0
42	56696	0.0	0.0	0.0	0.0	2.0	3.0	5.0	8.0	13.0	24.0	78.0
Total/Mean	799960	0.00	0.11	0.78	1.22	2.33	3.00	4.67	6.67	10.00	17.33	94.89

U.S. study phase Data Quality Control

Data Quality Table 28: No Records Excluded
APP On/Off Sensor Status (Numbers of Records)

	No Feedback						Feedback					
	HPCS		S/T Not Calib.		Day Light		HPCS		S/T Not Calib.		Day Light	
Driver	0	1	0	1	0	1	0	1	0	1	0	1
31	159096	611	159573	134	159707	.	16198	137438	153528	108	153636	.
32	187052	433	186030	1455	146729	40756	3909	94570	98109	370	64851	33628
33	7387	.	7387	.	7387	.	4947	14956	19461	442	19903	.
34	6	.	6	.	6	.	1394	50401	50043	1752	50936	859
35	181414	321	178326	3409	120466	61269	.	17123	17123	.	10998	6125
36	61331	611	61693	249	61942	.	4560	19410	23859	111	23970	.
37	97387	564	97637	314	96374	1577	1488	93657	94858	287	93650	1495
38	187446	76	187024	498	187522	.	13013	142601	155520	94	155614	.
39	12728	26	12546	208	12754	.	1688	701	2331	58	2389	.
40	72797	.	72705	92	71959	838	21898	175119	196803	214	191575	5442
41	112134	.	111668	466	112134	.	114180	13155	107262	20073	127335	.
42	173970	1924	175652	242	138901	36993	65530	.	65530	.	63613	1917
Total	1252748	4566	1250247	7067	1115881	141433	248805	759131	984427	23509	958470	49466

U.S. study phase Data Quality Control

Data Quality Table 28: No Records Excluded (Continued)
APP On/Off Sensor Status (Numbers of Records)

	No Feedback						Feedback					
	Memo Error		Foot Brake				Memo Error		Foot Brake			
Driver	0	1	0	1			0	1	0	1		
31	159707	.	151873	7834			153636	.	146391	7245		
32	187485	.	181439	6046			98479	.	95192	3287		
33	7387	.	6895	492			19903	.	18716	1187		
34	6	.	6	.			51795	.	48749	3046		
35	181735	.	176277	5458			17123	.	16608	515		
36	61940	2	59792	2150			23970	.	22673	1297		
37	97951	.	93386	4565			95145	.	89847	5298		
38	187522	.	182316	5206			155614	.	151083	4531		
39	12743	11	11701	1053			2384	5	2286	103		
40	72797	.	69733	3064			197008	9	188715	8302		
41	112134	.	106063	6071			127335	.	121323	6012		
42	175894	.	164036	11858			65530	.	61727	3803		
Total	1257301	13	1203517	53797			1007922	14	963310	44626		

Data Quality Table 29: Cleaned Analysis Sample
APP On/Off Sensor Status (Numbers of Records)

	No Feedback						Feedback					
	HPCS		S/T Not Calib.		Day Light		HPCS		S/T Not Calib.		Day Light	
Driver	0	1	0	1	0	1	0	1	0	1	0	1
31	142025	290	142233	82	142315	.	5956	130611	136533	34	136567	.
32	169365	155	168794	726	134687	34833	652	87772	88340	84	59804	28620
35	161157	80	159315	1922	110047	51190	.	15188	15188	.	9956	5232
36	53644	164	53771	37	53808	.	1580	17105	18593	92	18685	.
37	85720	281	85705	296	86001	.	34	83196	82974	256	83205	25
38	170367	.	170147	220	170367	.	3805	137260	141018	47	141065	.
40	66182	.	66100	82	66171	11	10731	170211	180769	173	178863	2079
41	98979	.	98633	346	98979	.	103223	11896	98751	16368	115119	.
42	149568	1144	150564	148	122786	27926	57236	.	57236	.	56696	540
Total	1097007	2114	1095262	3859	985161	113960	183217	653239	819402	17054	799960	36496

Data Quality Table 29: Cleaned Analysis Sample (Continued)
APP On/Off Sensor Status (Numbers of Records)

	No Feedback						Feedback					
	Memo Error		Foot Brake				Memo Error		Foot Brake			
Driver	0	1	0	1			0	1	0	1		
31	142315	.	137858	4457			136567	.	132581	3986		
32	169520	.	166453	3067			88424	.	86884	1540		
35	161237	.	159081	2156			15188	.	15007	181		
36	53806	2	53045	763			18685	.	18274	411		
37	86001	.	82810	3191			83230	.	79263	3967		
38	170367	.	168092	2275			141065	.	139044	2021		
40	66182	.	64287	1895			180942	.	175491	5451		
41	98979	.	95441	3538			115119	.	111374	3745		
42	150712	.	143958	6754			57236	.	55157	2079		
Total	1099119	2	1071025	28096			836456	0	813075	23381		

U.S. study phase Data Quality Control

Data Quality Table 30: Cleaned Analysis Sample
Vehicle Speed (converted to mph) (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	142315	59.0	5.5	60.0	30.0	73.0	136567	59.5	5.6	60.0	30.0	71.0
32	169520	59.7	5.6	61.0	30.0	71.0	88424	59.3	5.6	61.0	30.0	68.0
35	161237	58.4	5.3	59.0	30.0	74.0	15188	58.0	5.0	59.0	30.0	68.0
36	53808	60.0	5.5	61.0	30.0	71.0	18685	59.3	6.1	61.0	30.0	69.0
37	86001	61.8	6.4	64.0	30.0	72.0	83230	61.3	6.6	64.0	30.0	73.0
38	170367	60.8	5.4	62.0	30.0	72.0	141065	61.0	5.4	62.0	30.0	71.0
40	66182	62.2	6.5	64.0	30.0	79.0	180942	61.9	6.2	64.0	30.0	81.0
41	98979	60.5	6.9	63.0	30.0	77.0	115119	61.5	6.6	64.0	30.0	82.0
42	150712	58.6	7.1	62.0	30.0	71.0	57236	58.8	6.9	62.0	30.0	126.0
Total/Mean	956806	60.2	6.1	62.0	30.0	73.4	699889	60.1	6.1	62.1	30.0	79.8

U.S. study phase Data Quality Control

Data Quality Table 31: Cleaned Analysis Sample
Engine Rotation (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
31	142315	1458.1	99.6	1460.0	560.0	2020.0	136567	1473.7	106.4	1460.0	560.0	2000.0
32	169520	1499.5	99.3	1520.0	580.0	2080.0	88424	1488.4	105.1	1500.0	580.0	1940.0
35	161237	1470.6	87.9	1480.0	580.0	1920.0	15188	1455.7	86.5	1460.0	720.0	1860.0
36	53808	1511.5	81.1	1520.0	580.0	1980.0	18685	1503.3	92.7	1520.0	580.0	1840.0
37	86001	1539.9	100.2	1560.0	720.0	2060.0	83230	1526.0	111.3	1560.0	700.0	1940.0
38	170367	1506.5	82.6	1520.0	600.0	2120.0	141065	1510.7	78.7	1520.0	600.0	1940.0
40	66182	1531.7	115.3	1560.0	600.0	1940.0	180942	1526.1	110.3	1560.0	560.0	1940.0
41	98979	1507.1	122.4	1540.0	560.0	2020.0	115119	1531.1	118.4	1560.0	560.0	2160.0
Total/Mean	806094	1509.6	98.4	1528.6	602.9	2017.1	642653	1505.9	100.4	1525.7	614.3	1945.7

U.S. study phase Data Quality Control

Data Quality Table 32: Cleaned Analysis Sample
"X" Longitudinal Acceleration (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
35	161237	0.028	0.047	0.030	-0.460	0.440	15188	0.029	0.043	0.030	-0.280	0.330
36	53808	-0.018	0.078	-0.030	-0.380	0.500	18685	-0.016	0.099	-0.040	-0.320	0.490
37	86001	0.093	0.046	0.090	-1.140	0.370	83230	0.088	0.046	0.090	-1.130	0.380
38	170367	-0.053	0.065	-0.050	-0.500	0.430	141065	-0.053	0.063	-0.050	-0.540	0.340
40	66182	0.076	0.045	0.080	-0.260	0.410	180942	0.072	0.046	0.070	-1.180	0.630
41	98979	-0.052	0.076	-0.050	-0.500	0.390	115119	0.010	0.086	0.020	-0.480	0.480
Total/Mean	475337	0.009	0.062	0.008	-0.556	0.420	539041	0.020	0.068	0.018	-0.730	0.464

U.S. study phase Data Quality Control

Data Quality Table 33: Cleaned Analysis Sample
"Y" Lateral Acceleration (unweighted by record duration)

	No Feedback						Feedback					
Driver	N	Mean	Std	Med	Min	Max	N	Mean	Std	Med	Min	Max
35	161237	-0.033	0.041	-0.030	-0.350	0.350	15188	-0.051	0.036	-0.050	-0.330	0.190
36	53808	0.068	0.068	0.060	-0.350	0.490	18685	0.080	0.099	0.060	-0.190	0.590
37	86001	0.045	0.047	0.040	-1.140	0.370	83230	0.045	0.046	0.040	-0.280	0.340
38	170367	0.062	0.047	0.060	-0.300	0.400	141065	0.063	0.049	0.060	-0.260	0.420
40	66182	0.041	0.052	0.040	-1.130	0.430	180942	0.036	0.052	0.030	-1.170	0.510
41	98979	0.061	0.055	0.060	-0.310	0.470	115119	0.062	0.048	0.060	-0.250	0.460
Total/Mean	475337	0.055	0.054	0.052	-0.646	0.432	539041	0.057	0.059	0.050	-0.430	0.464

U.S. study phase Data Quality Control

Data Quality Table 34: Safe Track Events by Driver and Condition

			Safe Track Event Types																		
Driver	Equipment	F/B	0	1	2	3	4	5	6	7	8	9	11	13	14	16	17	19	20	21	23	Sum of Record Durations
31		0	140058			5	277	204	523	315	1	.	.	142	284		193	18	1	294	.	81:28:00
31		1	133264			.	420	238	1195	551	.	1	.	142	287		141	7	1	320	.	11:36
32		0	164115			7	650	434	189	15	1	.	24	103	284		471	2860	18	349	.	79:35:00
32		1	85965			.	280	178	109	9	.	.	.	84	132		86	1476	.	105	.	41:41:00
33		0	5836			.	11	12	.	2	.	.	.	4	9		3	88	.	4	.	2:25:01
33		1	14423			.	22	22	5	1	.	.	.	9	17		17	259	1	12	.	5:17:33
34		1	43311			3	65	37	135	55	3	.	.	22	70		134	1167	.	65	.	22:54:00
35		0	157616			.	313	301	59	17	1	.	.	156	248		139	2218	.	169	.	9:36:00
35		1	14880			.	20	22	3	1	.	.	.	20	27		14	186	.	15	.	8:25
36		0	52427			.	125	109	68	9	.	.	.	40	78		65	836	.	51	.	19:04
36		1	18146			4	37	34	17	4	.	.	.	10	34		101	253	1	44	.	8:35:23
37		0	82416			10	188	111	358	106	1	.	.	70	144		364	2083	.	149	1	43:13:00
37		1	78485			8	136	79	149	78	.	2	6	57	180		262	3671	.	117	.	45:10:00
38		0	163975			.	632	279	2952	1536	22	.	.	139	281		118	66	.	367	.	82:32:00
38		1	135094			2	648	298	1960	401	.	.	3	130	265		146	2052	1	63	2	73:50:00
39		0	9517			1	26	13	69	31	.	.	.	5	12		41	161	.	22	.	4:02:56
39		1	1813			.	6	1	27	9	1	.	.	2	4		1	17	.	1	.	0:54:00
40		0	63375			3	187	94	764	825	37	.	.	38	91		134	573	.	61	.	28:55:00
40		1	173165			7	530	263	1843	2365	123	.	.	109	245		285	1757	.	250	.	2:49:00
41		0	95853			5	221	153	553	829	39	.	10	41	137		373	626	1	136	.	20:40
41		1	52272			1	125	76	378	144	.	.	2	10	80		257	6846	5	63	.	50:44:00
42		0	145106			1	418	227	406	86	9	8	44	105	218		209	3584	.	286	.	68:48:00
42		1	55234			.	163	117	113	19	1	.	.	40	90		48	1307	.	104	.	26:08:00
	Total		1886346	0	0	57	5500	3302	11875	7408	239	11	89	1478	3217	0	3602	32111	29	3047	3	