Pooled Data (Canada Study Phase 1 and U.S. Study Phase 2)

Comparisons of NO FEEDBACK and FEEDBACK conditions

Table 36: AP+ and SafeTRAC Outcomes
Mixed Model ANOVA Comparisons Based on Doubly-Weighted Means or SD's

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Pooled (USA and Canada)							
PERCLOS during night hours mean	25	6.42	5.49	-0.93	0.44	-2.08	0.048
SafeTRAC Driver's Alertness mean	27	78.01	80.09	2.07	1.02	2.04	0.052
Lateral distance standard deviation	27	36.15	34.18	-1.97	1.50	-1.32	0.200
Steering wheel movements SD	26	2.07	1.62	-0.46	0.62	-0.73	0.472
Front wheel movements SD	21	2.25	2.21	-0.04	0.18	-0.21	0.836

**Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases**

Table 37: AP+ and SafeTRAC Outcomes
Descriptive Comparisons of Changes in Unweighted Medians or Interquartile Ranges

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
USA								
PERCLOS during night hours median	9	4.11	3.00	-1.11	1.27	-3.00	0.00	0.030
SafeTRAC Driver's Alertness median	9	71.22	76.22	5.00	6.86	-9.00	14.00	0.060
Lateral distance IQR	9	48.67	38.44	-10.22	17.62	-56.00	2.00	0.120
Steering wheel movements IQR	7	0.86	0.86	0.00	0.58	-1.00	1.00	1.000
Front wheel movements IQR	7	0.86	0.71	-0.14	0.38	-1.00	0.00	0.356
Canada								
PERCLOS during night hours median	16	3.88	3.00	-0.88	2.31	-7.00	3.00	0.150
SafeTRAC Driver's Alertness median	18	83.78	82.39	-1.39	2.12	-6.00	1.00	0.013
Lateral distance standard IQR	18	31.56	31.22	-0.33	3.16	-6.00	6.00	0.660
Steering wheel movements IQR	19	3.89	2.89	-1.00	6.53	-22.00	10.00	0.513
Front wheel movements IQR	14	4.21	3.71	-0.50	2.10	-6.00	2.00	0.390
USA vs. Canada p-values								
PERCLOS during night hours median	25	0.847	1.000	0.780				
SafeTRAC Driver's Alertness median	27	0.001	0.137	0.001				
Lateral distance IQR	27	0.003	0.027	0.027				
Steering wheel movements IQR	26	0.180	0.065	0.693				
Front wheel movements IQR	21	0.000	<.0001	0.665				

Table 38: AP+ and SafeTRAC Outcomes
Descriptive Comparisons of Changes in Unweighted Medians or Interquartile Ranges

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
Pooled (USA and Canada)								
PERCLOS during night hours median	25	3.96	3.00	-0.96	1.97	-7.00	3.00	0.023
SafeTRAC Driver's Alertness median	27	79.59	80.33	0.74	5.18	-9.00	14.00	0.464
Lateral distance IQR	27	37.26	33.63	-3.63	11.16	-56.00	6.00	0.103
Steering wheel movements IQR	26	3.08	2.35	-0.73	5.57	-22.00	10.00	0.510
Front wheel movements IQR	21	3.10	2.71	-0.38	1.72	-6.00	2.00	0.321

Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases

Table 39: AP+ and SafeTRAC Outcomes
Mixed Model ANOVA Comparisons Based on Doubly-Weighted Medians or IQR's

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
USA							
PERCLOS during night hours median	9	3.47	2.64	-0.83	0.31	-2.70	0.027
SafeTRAC Driver's Alertness median	9	71.07	76.85	5.78	2.22	2.60	0.032
Lateral distance IQR	9	47.99	38.40	-9.59	6.25	-1.53	0.164
Steering wheel movements IQR	7	0.70	0.76	0.05	0.08	0.63	0.553
Front wheel movements IQR	7	0.83	0.70	-0.13	0.13	-1.01	0.352
Canada							
PERCLOS during night hours median	16	3.73	3.16	-0.57	0.41	-1.38	0.187
SafeTRAC Driver's Alertness median	18	83.86	82.53	-1.33	0.41	-3.24	0.005
Lateral distance IQR	18	30.26	30.49	0.23	0.83	0.27	0.788
Steering wheel movements IQR	19	3.53	2.17	-1.36	1.25	-1.09	0.290
Front wheel movements IQR	14	3.66	3.67	0.01	0.38	0.02	0.985
USA vs. Canada p-values							
PERCLOS during night hours median	25	0.826	0.528	0.725			
SafeTRAC Driver's Alertness median	27	0.001	0.196	0.008			
Lateral distance IQR	27	0.010	0.029	0.010			
Steering wheel movements IQR	26	0.139	0.035	0.046			
Front wheel movements IQR	21	0.001	<.0001	<.0001			

Table 40: AP+ and SafeTRAC Outcomes
Mixed Model ANOVA Comparisons Based on Doubly-Weighted Medians or IQR's

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Pooled (USA and Canada)							
PERCLOS during night hours median	25	3.66	2.91	-0.75	0.23	-3.24	0.004
SafeTRAC Driver's Alertness median	27	79.39	80.65	1.26	1.04	1.22	0.234
Lateral distance IQR	27	36.62	33.35	-3.27	2.24	-1.46	0.155
Steering wheel movements IQR	26	2.59	1.74	-0.85	0.92	-0.93	0.359
Front wheel movements IQR	21	2.71	2.64	-0.07	0.26	-0.27	0.791

Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
Table 41: AP+ and SafeTRAC Outcomes at Night **Descriptive Comparisons of Changes in Unweighted Means or Standard Deviations**								
USA								
PERCLOS during night hours mean	9	7.58	6.52	-1.06	1.95	-4.45	1.51	0.140
SafeTRAC Driver's Alertness mean	9	70.67	75.62	4.95	6.52	-8.70	14.36	0.052
Lateral distance standard deviation	9	48.53	43.55	-4.98	11.05	-18.46	15.43	0.213
Steering wheel movements SD	7	0.66	0.84	0.18	0.10	0.01	0.35	0.004
Front wheel movements SD	7	0.63	0.72	0.08	0.06	-0.04	0.15	0.013
Canada								
PERCLOS during night hours mean	16	6.65	5.03	-1.63	3.85	-10.52	2.80	0.112
SafeTRAC Driver's Alertness mean	15	78.82	78.94	0.13	3.68	-6.52	7.12	0.894
Lateral distance standard deviation	15	33.71	32.13	-1.58	4.62	-12.14	4.49	0.207
Steering wheel movements SD	15	1.86	1.78	-0.09	1.36	-4.55	1.35	0.811
Front wheel movements SD	11	3.06	2.73	-0.33	1.20	-3.47	1.11	0.381
USA vs. Canada p-values								
PERCLOS during night hours mean	25	0.612	0.280	0.687				
SafeTRAC Driver's Alertness mean	24	0.064	0.482	0.029				
Lateral distance standard deviation	24	0.001	0.000	0.301				
Steering wheel movements SD	22	0.016	<.0001	0.616				
Front wheel movements SD	18	0.000	<.0001	0.379				

Pooled Data (Canada Study Phase 1 and U.S. Study Phase 2)

Comparisons of NO FEEDBACK and FEEDBACK conditions

Table 42: AP+ and SafeTRAC Outcomes at Night Descriptive Comparisons of Changes in Unweighted Means or Standard Deviations								
	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
Pooled (USA and Canada)								
PERCLOS during night hours mean	25	6.99	5.56	-1.42	3.26	-10.52	2.80	0.039
SafeTRAC Driver's Alertness mean	24	75.76	77.70	1.94	5.36	-8.70	14.36	0.090
Lateral distance standard deviation	24	39.27	36.41	-2.85	7.64	-18.46	15.43	0.080
Steering wheel movements SD	22	1.48	1.48	0.00	1.12	-4.55	1.35	0.997
Front wheel movements SD	18	2.11	1.94	-0.17	0.94	-3.47	1.11	0.456

Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Table 43: AP+ and SafeTRAC Outcomes at Night Mixed Model ANOVA Comparisons Based on Doubly-Weighted Means or SD's							
USA							
PERCLOS during night hours mean	9	6.65	5.98	-0.66	0.38	-1.72	0.123
SafeTRAC Driver's Alertness mean	9	70.48	76.47	5.99	2.29	2.61	0.031
Lateral distance standard deviation	9	46.70	42.76	-3.94	3.96	-0.99	0.349
Steering wheel movements SD	7	0.64	0.81	0.17	0.03	5.73	0.001
Front wheel movements SD	7	0.62	0.71	0.09	0.02	3.86	0.008
Canada							
PERCLOS during night hours mean	16	6.58	4.99	-1.60	0.89	-1.79	0.094
SafeTRAC Driver's Alertness mean	15	79.27	79.33	0.06	0.96	0.07	0.948
Lateral distance standard deviation	15	31.95	30.17	-1.78	1.25	-1.42	0.178
Steering wheel movements SD	15	1.69	1.81	0.13	0.21	0.63	0.542
Front wheel movements SD	11	2.96	2.83	-0.13	0.29	-0.44	0.671
USA vs. Canada p-values							
PERCLOS during night hours mean	25	0.853	0.440	0.767			
SafeTRAC Driver's Alertness mean	24	0.076	0.606	0.184			
Lateral distance standard deviation	24	0.003	0.003	0.001			
Steering wheel movements SD	22	<.0001	<.0001	<.0001			
Front wheel movements SD	18	<.0001	<.0001	<.0001			

Pooled Data (Canada Study Phase 1 and U.S. Study Phase 2)

Comparisons of NO FEEDBACK and FEEDBACK conditions

Table 44: AP+ and SafeTRAC Outcomes at Night
Mixed Model ANOVA Comparisons Based on Doubly-Weighted Means or SD's

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Pooled (USA and Canada)							
PERCLOS during night hours mean	25	6.419	5.493	-0.926	0.445	-2.080	0.048
SafeTRAC Driver's Alertness mean	24	74.699	79.150	4.451	1.307	3.410	0.002
Lateral distance standard deviation	24	39.089	35.342	-3.746	1.905	-1.970	0.061
Steering wheel movements SD	22	1.303	1.468	0.165	0.099	1.660	0.111
Front wheel movements SD	18	1.967	1.995	0.028	0.117	0.240	0.815

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

**Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases**

Table 45: AP+ and SafeTRAC Outcomes at Night
Descriptive Comparisons of Changes in Unweighted Medians or Interquartile Ranges

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
USA								
PERCLOS during night hours median	9	4.11	3.00	-1.11	1.27	-3.00	0.00	0.030
SafeTRAC Driver's Alertness median	9	71.44	76.56	5.11	6.88	-9.00	14.00	0.056
Lateral distance IQR	9	45.78	38.22	-7.56	9.37	-30.00	2.00	0.042
Steering wheel movements IQR	7	0.86	0.86	0.00	0.58	-1.00	1.00	1.000
Front wheel movements IQR	7	0.86	0.71	-0.14	0.38	-1.00	0.00	0.356
Canada								
PERCLOS during night hours median	16	3.88	3.00	-0.88	2.31	-7.00	3.00	0.150
SafeTRAC Driver's Alertness median	15	79.13	79.60	0.47	4.70	-8.00	8.00	0.707
Lateral distance IQR	15	33.33	32.53	-0.80	5.54	-14.00	6.00	0.585
Steering wheel movements IQR	15	2.20	1.93	-0.27	1.67	-5.00	2.00	0.546
Front wheel movements IQR	11	3.64	3.00	-0.64	2.38	-7.00	2.00	0.396
USA vs. Canada p-values								
PERCLOS during night hours median	25	0.847	1.000	0.780				
SafeTRAC Driver's Alertness median	24	0.085	0.518	0.062				
Lateral distance IQR	24	0.006	0.085	0.036				
Steering wheel movements IQR	22	0.017	0.001	0.688				
Front wheel movements IQR	18	0.007	0.001	0.597				

Table 46: AP+ and SafeTRAC Outcomes at Night
Descriptive Comparisons of Changes in Unweighted Medians or Interquartile Ranges

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SD	Difference Min	Difference Max	Difference p-value
Pooled (USA and Canada)								
PERCLOS during night hours median	25	3.96	3.00	-0.96	1.97	-7.00	3.00	0.023
SafeTRAC Driver's Alertness median	24	76.25	78.46	2.21	5.93	-9.00	14.00	0.081
Lateral distance IQR	24	38.00	34.67	-3.33	7.77	-30.00	6.00	0.047
Steering wheel movements IQR	22	1.77	1.59	-0.18	1.40	-5.00	2.00	0.550
Front wheel movements IQR	18	2.56	2.11	-0.44	1.85	-7.00	2.00	0.323

Comparison of FEEDBACK condition versus NO FEEDBACK condition
p values between U.S. and Canada Comparison Study Phases

Table 47: AP+ and SafeTRAC Outcomes at Night Mixed Model ANOVA Comparisons Based on Doubly-Weighted Medians or IQR's							
	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
USA							
PERCLOS during night hours median	9	3.47	2.64	-0.83	0.31	-2.70	0.027
SafeTRAC Driver's Alertness median	9	71.36	77.27	5.91	2.21	2.67	0.028
Lateral distance IQR	9	44.38	37.41	-6.97	3.52	-1.98	0.083
Steering wheel movements IQR	7	0.71	0.75	0.04	0.07	0.54	0.611
Front wheel movements IQR	7	0.83	0.69	-0.14	0.13	-1.04	0.339
Canada							
PERCLOS during night hours median	16	3.73	3.16	-0.57	0.41	-1.38	0.187
SafeTRAC Driver's Alertness median	15	79.68	80.20	0.52	1.20	0.43	0.672
Lateral distance IQR	15	32.55	31.30	-1.25	1.48	-0.84	0.413
Steering wheel movements IQR	15	2.05	2.27	0.22	0.28	0.77	0.455
Front wheel movements IQR	11	3.54	3.36	-0.18	0.53	-0.34	0.739
USA vs. Canada p-values							
PERCLOS during night hours median	25	0.826	0.528	0.725			
SafeTRAC Driver's Alertness median	24	0.081	0.616	0.193			
Lateral distance IQR	24	0.021	0.121	0.039			
Steering wheel movements IQR	22	0.000	0.000	<.0001			
Front wheel movements IQR	18	0.001	0.000	0.000			

Pooled Data (Canada Study Phase 1 and U.S. Study Phase 2)

Comparisons of NO FEEDBACK and FEEDBACK conditions

	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Table 48: AP+ and SafeTRAC Outcomes at Night **Mixed Model ANOVA Comparisons Based on Doubly-Weighted Medians or IQR's**							
Pooled (USA and Canada)							
PERCLOS during night hours median	25	3.660	2.907	-0.754	0.232	-3.240	0.004
SafeTRAC Driver's Alertness median	24	75.409	79.912	4.503	1.290	3.490	0.002
Lateral distance IQR	24	38.662	33.273	-5.389	1.819	-2.960	0.007
Steering wheel movements IQR	22	1.518	1.607	0.088	0.165	0.540	0.598
Front wheel movements IQR	18	2.388	2.227	-0.161	0.222	-0.730	0.477

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

Canada Study Phase 1 results

Table 49—CANADA: Actigraphy Variables
Paired T-tests for Changes in Standard Deviations

Outcome variables	N	No Feedback Mean SD	Feedback Mean SD	Mean Difference in SD	t-statistic	Difference p-value
Prior Sleep	20	100.46	98.93	1.53	0.180	0.859
Sleep Episodes	20	0.470	0.450	0.020	0.410	0.688
AMS (Actigraph Movement Score)	20	348.93	332.62	16.31	0.230	0.818
Sleep Efficiency	20	8.605	8.116	0.490	0.490	0.631
Sleep Performance Model (Max)	20	6.42	6.20	0.23	0.330	0.742
Sleep Performance Model (Min)	20	7.05	6.56	0.49	0.730	0.473
Notes: SD values were computed over days within condition.						

U.S. Study Phase 2 results

Table 50—U.S.: Actigraphy Variables
Paired T-tests for Changes in Standard Deviations

Outcome variables	N	No Feedback Mean SD	Feedback Mean SD	Mean Difference in SD	t-statistic	Difference p-value
Prior Sleep	10	106.84	146.30	-39.46	-2.280	0.048
Sleep Episodes	10	0.716	0.759	-0.043	-1.020	0.333
AMS (Actigraph Movement Score)	10	957.97	824.29	133.68	0.400	0.698
Sleep Efficiency	10	11.597	10.564	1.033	0.450	0.667
Sleep Performance Model (Max)	10	6.32	8.45	-2.13	-1.700	0.124
Sleep Performance Model (Min)	10	6.61	8.61	-1.99	-1.540	0.157
Notes: SD values were computed over days within condition.						

Canada Study Phase 1 results

Table 51—CANADA: Actigraphy Variables in <u>No Feedback Condition</u>
<u>Comparing Work Days to Non Work Days</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	Workday Mean	Non-Workday Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	15	374.87	437.67	-62.80	24.65	-2.550	0.023
Sleep Episodes	15	1.388	1.310	0.078	0.099	0.790	0.445
AMS (Actigraph Movement Score)	15	736.81	729.98	6.84	74.97	0.090	0.929
Sleep Efficiency	15	86.902	84.828	2.074	2.256	0.920	0.374
Sleep Performance Model (Max)	15	82.132	82.195	-0.064	1.084	-0.060	0.954
Sleep Performance Model (Min)	15	61.957	61.413	0.544	1.494	0.360	0.721

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

U.S. Study Phase 2 results

Table 52—U.S.: Actigraphy Variables in the <u>No Feedback Condition</u>
<u>Comparing Work Days to Non Work Days</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	Workday Mean	Non-Workday Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	10	313.65	391.72	-78.08	27.15	-2.880	0.018
Sleep Episodes	10	1.944	1.507	0.438	0.177	2.470	0.036
AMS (Actigraph Movement Score)	10	2097.61	1404.36	693.26	395.62	1.750	0.114
Sleep Efficiency	10	68.467	71.653	-3.186	2.863	-1.110	0.295
Sleep Performance Model (Max)	10	87.345	82.971	4.374	1.605	2.730	0.023
Sleep Performance Model (Min)	10	62.638	63.626	-0.988	2.403	-0.410	0.691

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

Canada Study Phase 1 results

Table 53—CANADA: Actigraphy Variables in the <u>Feedback Condition</u>
<u>Comparing Work Days to Non-Work Days</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	Workday Mean	Non-Workday Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	15	373.77	450.76	-76.99	17.09	-4.510	0.0005
Sleep Episodes	15	1.421	1.373	0.047	0.155	0.310	0.764
AMS (Actigraph Movement Score)	15	750.30	774.40	-24.11	95.55	-0.250	0.805
Sleep Efficiency	15	86.430	85.290	1.139	1.567	0.730	0.479
Sleep Performance Model (Max)	15	84.444	82.939	1.504	1.514	0.990	0.337
Sleep Performance Model (Min)	15	65.860	64.352	1.508	1.610	0.940	0.365

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

U.S. Study Phase 2 results

Table 54—U.S.: Actigraphy Variables in the <u>Feedback Condition</u>
<u>Comparing Work Days to Non Work Days</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	Workday Mean	Non-Workday Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	10	301.00	451.65	-150.65	27.47	-5.490	0.0004
Sleep Episodes	10	2.242	1.915	0.327	0.162	2.020	0.075
AMS (Actigraph Movement Score)	10	2162.99	2033.47	129.51	414.82	0.310	0.762
Sleep Efficiency	10	63.998	63.014	0.984	2.737	0.360	0.727
Sleep Performance Model (Max)	10	86.367	85.184	1.182	2.660	0.440	0.667
Sleep Performance Model (Min)	10	61.372	67.363	-5.991	3.322	-1.800	0.105

Notes: Mean values and difference in mean values are model-predicted least squares estimates.

Canada Study Phase 1 results

Table 55—CANADA: Actigraphy Variables During <u>Work Days</u>
<u>Comparing the No Feedback to Feedback Conditions</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	15	371.78	375.78	-4.00	9.32	-0.430	0.675
Sleep Episodes	15	1.392	1.406	-0.014	0.036	-0.390	0.706
AMS (Actigraph Movement Score)	15	749.91	735.41	14.49	76.17	0.190	0.852
Sleep Efficiency	15	86.618	86.536	0.083	1.550	0.050	0.958
Sleep Performance Model (Max)	15	82.032	84.834	-2.802	2.295	-1.220	0.242
Sleep Performance Model (Min)	15	62.043	66.198	-4.155	2.414	-1.720	0.107
Notes: Mean values and difference in mean values are model-predicted least squares estimates.							

U.S. Study Phase 2 results

Table 56—U.S.: Actigraphy Variables During <u>Work Days</u>
<u>Comparing the No Feedback to Feedback Conditions</u>
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	10	313.65	301.00	12.65	18.06	0.700	0.501
Sleep Episodes	10	1.944	2.242	-0.298	0.176	1.690	0.125
AMS (Actigraph Movement Score)	10	2097.61	2162.99	-65.37	105.35	0.620	0.550
Sleep Efficiency	10	68.467	63.998	4.469	4.573	0.980	0.354
Sleep Performance Model (Max)	10	87.345	86.367	0.979	2.021	0.480	0.640
Sleep Performance Model (Min)	10	62.638	61.372	1.266	2.138	0.590	0.568
Notes: Mean values and difference in mean values are model-predicted least squares estimates.							

Canada Study Phase 1 results

Table 57—CANADA: Actigraphy Variables in Non-Work Days
Comparing the No Feedback to Feedback Conditions
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	14	438.34	452.56	-14.22	28.41	-0.500	0.625
Sleep Episodes	14	1.310	1.359	-0.049	0.148	-0.330	0.747
AMS (Actigraph Movement Score)	14	724.89	748.30	-23.41	121.58	-0.190	0.850
Sleep Efficiency	14	84.830	85.758	-0.929	2.894	-0.320	0.753
Sleep Performance Model (Max)	14	82.145	83.085	-0.940	2.434	-0.390	0.706
Sleep Performance Model (Min)	14	61.383	64.272	-2.889	3.244	-0.890	0.389
Notes: Mean values and difference in mean values are model-predicted least squares estimates.							

U.S. Study Phase 2 results

Table 58—U.S.: Actigraphy Variables During Non-Work Days
Comparing the No Feedback to Feedback Conditions
Mixed Model ANOVA Fixed Effects (Predicted Means and Differences in Means)

Outcome variables	N	No Feedback Mean	Feedback Mean	Difference Mean	Difference SE	t-statistic	Difference p-value
Prior Sleep	10	391.72	451.65	-59.93	28.44	-2.110	0.064
Sleep Episodes	10	1.507	1.915	-0.408	0.158	-2.580	0.030
AMS (Actigraph Movement Score)	10	1404.36	2033.48	-629.12	261.98	-2.400	0.040
Sleep Efficiency	10	71.653	63.014	8.639	5.366	1.610	0.142
Sleep Performance Model (Max)	10	82.971	85.184	-2.213	1.925	-1.150	0.280
Sleep Performance Model (Min)	10	63.626	67.363	-3.737	2.424	-1.540	0.158
Notes: Mean values and difference in mean values are model-predicted least squares estimates.							

Canada Study Phase 1 results

Table 59. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 1 through 7 concerning the <u>Alertness and Fatigue Management Training Course</u> given before the NO FEEDBACK and FEEDBACK conditions. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the both conditions (see Appendix F-1 for detailed responses).

No.	For Questions 1-4; Rating scale was 5 = very helpful; 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (number of respondents)	NO FEEDBACK	FEEDBACK
1	Overall material/content in the course. (n=26; mean response)	4.38	4.23
2	Knowledge gained from course. (n=26; mean response)	4.31	4.23
3	Applicability of course to my lifestyle. (n=26; mean response)	3.88	3.81
4	The lessons learned will help me in my job. (n=26; mean response)	4.46	4.15
5	I used some of the lessons learned during these past 2 weeks. (n=26)	92% yes	88% yes
6	The lessons learned will be put into practice by me in the future. (n=26)	96% yes	96% yes
7	Please write your general comments about the Alertness and Fatigue Management course? The material? It's usefulness to you? Things you might want changed or improved, etc.?	na*	na

*Not applicable (na) because question did not offer a rating or yes/no response format (see Appendix F-1 for qualitative comments to this question by drivers).

U.S. Study Phase 2 results

Table 60. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 1 through 7 concerning the <u>Alertness and Fatigue Management Training Course</u> given before the NO FEEDBACK and FEEDBACK conditions. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the both conditions (see Appendix F-2 for detailed responses).

No.	For Questions 1-4; Rating scale was 5 = very helpful; 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (number of respondents)	NO FEEDBACK	FEEDBACK
1	Overall material/content in the course. (n=12; mean response)	4.50	4.33
2	Knowledge gained from course. (n=12; mean response)	4.67	4.50
3	Applicability of course to my lifestyle. (n=12; mean response)	4.25	3.75
4	The lessons learned will help me in my job. (n=12; mean response)	4.33	4.17
5	I used some of the lessons learned during these past 2 weeks. (n=12)	83% yes	83% yes
6	The lessons learned will be put into practice by me in the future. (n=12)	83% yes	83% yes
7	Please write your general comments about the Alertness and Fatigue Management course? The material? It's usefulness to you? Things you might want changed or improved, etc.?	na*	na

*Not applicable (na) because question did not offer a rating or yes/no response format (see Appendix F-2 for qualitative comments to this question by drivers).

Canada Study Phase 1 results

Table 61. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 8 through 18 concerning the _SleepWatch®_ wrist monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
8	Approximately what percentage of the time (24/7) during <u>these past 2 weeks</u> while you participated in the study, did you wear the SleepWatch? (n=26)	≥ 90%	0%	0%	na*
9	If you did not wear the SleepWatch continuously, (i.e. almost 100% of the time) what were some of the circumstances surrounding <u>when you did not wear</u> the SleepWatch? (n=26)	na	na	na	27%
10	Was it bothersome to have the SleepWatch continuously on your wrist? (n=26)	65%	35%	0%	77%
11	The SleepWatch numerical rating mirrored the way I felt. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=26)	3.50	na	0%	na
12	SleepWatch provides useful information for managing a person's sleep schedule. (n=26)	46%	54%	0%	na
13	Did you like the SleepWatch scale of alertness (e.g. 1 to 99)? (n=26)	73%	27%	0%	na
14	Can you suggest a better way to display the SleepWatch information?	na	na	na	31%
15	SleepWatch information provided was helpful supporting <u>my sleep planning</u>/managing alertness during the past two weeks. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=22)	3.27	na	na	na
16	I would like a SleepWatch for myself. (n=25)	38%	58%	4%	62%
17	I would recommend SleepWatch to fellow drivers. (n=26)	50%	50%	0%	31%
18	What suggestions do you have on how to improve the SleepWatch to make it more useful for truck drivers? (n=26)	na	na	na	50%

*Not applicable (na).

U.S. Study Phase 2 results

Table 62. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 8 through 18 concerning the _SleepWatch®_ wrist monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
8	Approximately what percentage of the time (24/7) during <u>these past 2 weeks</u> while you participated in the study, did you wear the SleepWatch? (n=12)	$\geq$ 90%	0%	0%	na*
9	If you did not wear the SleepWatch continuously, (i.e. almost 100% of the time) what were some of the circumstances surrounding <u>when you did not wear</u> the SleepWatch? (n=12)	na	na	na	17%
10	Was it bothersome to have the SleepWatch continuously on your wrist? (n=12)	92%	8%	0%	100%
11	The SleepWatch numerical rating mirrored the way I felt. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.50	na	0%	na
12	SleepWatch provides useful information for managing a person's sleep schedule. (n=12)	42%	50%	8%	na
13	Did you like the SleepWatch scale of alertness (e.g. 1 to 99)? (n=12)	83%	17%	0%	na
14	Can you suggest a better way to display the SleepWatch information?	na	na	na	33%
15	SleepWatch information provided was helpful supporting <u>my sleep planning</u>/managing alertness during the past two weeks. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.08	na	na	na
16	I would like a SleepWatch for myself. (n=12)	50%	50%	0%	58%
17	I would recommend SleepWatch to fellow drivers. (n=12)	58%	33%	8%	0%
18	What suggestions do you have on how to improve the SleepWatch to make it more useful for truck drivers? (n=12)	na	na	na	50%

*Not applicable (na).

Canada Study Phase 1 results

Table 63. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 19 through 32 concerning the _<u>SafeTRAC</u>®_ (lane tracking) monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
19	The SafeTRAC camera position in the windshield distracted me. (n=26)	88%	12%	0%	8%
20	The SafeTRAC system was easy to adjust. (n=26)	58%	27%	15%	46%
21	Use and location of SafeTRAC controls were good. (n=26)	65%	35%	0%	46%
22	Operation of SafeTRAC was consistent and understandable. (n=26)	77%	23%	0%	31%
23	The SafeTRAC numeric display could be read easily. (n=26)	96%	4%	0%	12%
24	SafeTRAC's numeric indicator (1-99) frequently got my attention while driving. (n=26)	73%	27%	0%	42%
25	SafeTRAC's _crossing the lane_ alert feature could be trusted. 5=very helpful, 4=good; 3=neutral; 2=low value; 1=disappointing. (n=25)	3.36	na	na	4%
26	Displayed information provided was reliable; the display usually accurately depicted my driving with regard to tracking the lanes on the road. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=26)	3.50	na	na	4%
27	SafeTRAC warned me of poor lane tracking only when I thought it was appropriate. 5=very helpful, 4=good; 3=neutral; 2=low value; 1=disappointing. (n=26)	2.96	na	na	8%
28	SafeTRAC helped me drive more safely. (n=26)	69%	31%	0%	73%
29	SafeTRAC helped me avoid a potential accident. (n=26)	85%	12%	4%	15%
30	SafeTRAC's alertness index helped me decide when to take rest breaks. (n=26)	46%	54%	0%	42%
31	I would like SafeTRAC installed in my truck. (n=25)	50%	42%	4%	52%
32	I would recommend SafeTRAC to fellow truck drivers. (n=26)	65%	23%	12%	46%

*Not applicable (na).

U.S. Study Phase 2 results

Table 64. U.S. Study Phase: Summary of drivers' responses to questions 19 through 32 concerning the _SafeTRAC_® (lane tracking) monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
19	The SafeTRAC camera position in the windshield distracted me. (n=12)	0%	100%	0%	25%
20	The SafeTRAC system was easy to adjust. (n=12)	58%	21%	21%	0%
21	Use and location of SafeTRAC controls were good. (n=12)	75%	25%	0%	25%
22	Operation of SafeTRAC was consistent and understandable. (n=12)	58%	42%	0%	50%
23	The SafeTRAC numeric display could be read easily. (n=12)	83%	17%	0%	17%
24	SafeTRAC's numeric indicator (1-99) frequently got my attention while driving. (n=12)	100%	0%	0%	67%
25	SafeTRAC's _crossing the lane_ alert feature could be trusted. 5=very helpful, 4=good; 3=neutral; 2=low value; 1=disappointing. (n=12)	3.25	na	na	0%
12	Displayed information provided was reliable; the display usually accurately depicted my driving with regard to tracking the lanes on the road. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.25	na	na	0%
27	SafeTRAC warned me of poor lane tracking only when I thought it was appropriate. 5=very helpful, 4=good; 3=neutral; 2=low value; 1=disappointing. (n=12)	3.25	na	na	0%
28	SafeTRAC helped me drive more safely. (n=12)	42%	58%	0%	67%
29	SafeTRAC helped me avoid a potential accident. (n=12)	0%	100%	0%	0%
30	SafeTRAC's alertness index helped me decide when to take rest breaks. (n=12)	16%	84%	0%	17%
31	I would like SafeTRAC installed in my truck. (n=12)	42%	42%	16%	17%
32	I would recommend SafeTRAC to fellow truck drivers. (n=12)	50%	50%	0%	25%

*Not applicable (na).

Canada Study Phase 1 results

Table 65. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 33 through 43 concerning the *Copilot®* (PERCLOS) monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
33	The PERCLOS Eye Camera position on the truck dashboard distracted me. (n=26)	31%	65%	4%	42%
34	The PERCLOS numeric display could be read easily. (n=26)	92%	4%	4%	12%
35	PERCLOS Operation was consistent and understandable. (n=26)	81%	15%	4%	4%
36	The PERCLOS alertness index display was usually a pretty good match to the way I felt: alert or fatigued. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=25)	2.92	na	4%	4%
37	PERCLOS alertness index digital display information was usually accurate/reliable. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=23)	2.91	na	12%	0%
38	Sometimes the display indicated my eyes were drooping, while I felt fully awake/alert. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=24)	3.21	na	8%	0%
39	The PERCLOS alertness index information was helpful to me in monitoring my own level of alertness and/or drowsy periods. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=23)	3.00	na	12%	0%
40	As PERCLOS monitored me for alertness and/or drowsy driving, it made me feel safer. (n=26)	19%	73%	8%	65%
41	I would like to have a PERCLOS Driver Alertness monitor in my truck. (n=26)	27%	69%	4%	50%
42	I would recommend the PERCLOS Driver Alertness monitor to fellow drivers? (n=26)	35%	62%	4%	8%
43	Driver's overall comments and recommendations on the PERCLOS Driver Alertness Monitoring system.	na	na	na	85%

*Not applicable (na).

U.S. Study Phase 2 results

Table 66. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 33 through 43 concerning the _Copilot®_ (PERCLOS) monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
33	The PERCLOS Eye Camera position on the truck dashboard distracted me. (n=12)	50%	50%	0%	67%
34	The PERCLOS numeric display could be read easily. (n=12)	100%	0%	0%	0%
35	PERCLOS Operation was consistent and understandable. (n=12)	83%	17%	0%	25%
36	The PERCLOS alertness index display was usually a pretty good match to the way I felt: alert or fatigued. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.33	na	0%	0%
37	PERCLOS alertness index digital display information was usually accurate/reliable. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.42	na	0%	0%
38	Sometimes the display indicated my eyes were drooping, while I felt fully awake/alert. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	3.00	na	8%	0%
39	The PERCLOS alertness index information was helpful to me in monitoring my own level of alertness and/or drowsy periods. 5 = very helpful, 4 = good; 3 = neutral; 2 = low value; 1 = disappointing. (n=12)	2.75	na	0%	0%
40	As PERCLOS monitored me for alertness and/or drowsy driving, it made me feel safer. (n=12)	8%	92%	0%	75%
41	I would like to have a PERCLOS Driver Alertness monitor in my truck. (n=12)	0%	100%	0%	50%
42	I would recommend the PERCLOS Driver Alertness monitor to fellow drivers? (n=12)	25%	75%	0%	17%
43	Driver's overall comments and recommendations on the PERCLOS Driver Alertness Monitoring system.	na	na	na	100%

*Not applicable (na).

Canada Study Phase 2 results

Table 67. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 44 through 57 concerning the *Howard Power Center Steering® (HPCS)* monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
44	Operation of the HPCS was consistent and understandable. (n=26)	88%	8%	4%	42%
45	The use and location of HPCS controls/displays were good. (n=26)	50%	46%	4%	62%
46	The HPCS steering assistance was helpful in my driving. (n=26)	77%	15%	8%	58%
47	HPCS made my driving workload easier. (n=26)	73%	27%	0%	0%
48	I felt comforTable using the HPCS. (n=26)	77%	19%	4%	10%
49	HPCS improved my truck steering or ability to maintain direction. (n=26)	69%	19%	12%	46%
50	HPCS was helpful driving in crosswinds. (n=26)	81%	15%	4%	38%
51	HPCS always worked in a helpful manner. (n=26)	69%	31%	0%	0%
52	How did HPCS affect my driving on curves? Yes = helped; No = hindered. (n=26)	38%	31%	31%	4%
53	Was HPCS helpful driving in straight-aways? Yes = helped; No = hindered. (n=26)	77%	12%	12%	0%
54	HPCS reduces driver fatigue. Yes = helped; No = hindered. (n=26)	54%	31%	15%	54%
55	I would like HPCS in my truck. (n=26)	77%	19%	4%	46%
56	I would recommend HPCS to other drivers. (n=26)	85%	12%	4%	4%
57	Driver's overall comments or recommendations on the HPCS.	na	na	na	85%

*Not applicable (na).

U.S. Study Phase 2 results

Table 68. U.S. Study Phase: Summary of drivers' responses to questions 44 through 57 concerning the _Howard Power Center Steering® (HPCS)_ monitor. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
44	Operation of the HPCS was consistent and understandable. (n=12)	100%	0%	0%	25%
45	The use and location of HPCS controls/displays were good. (n=12)	83%	17%	0%	50%
46	The HPCS steering assistance was helpful in my driving. (n=12)	83%	17%	0%	75%
47	HPCS made my driving workload easier. (n=12)	75%	25%	0%	0%
48	I felt comforTable using the HPCS. (n=12)	75%	25%	0%	58%
49	HPCS improved my truck steering or ability to maintain direction. (n=12)	83%	17%	0%	58%
50	HPCS was helpful driving in crosswinds. (n=12)	67%	33%	0%	58%
51	HPCS always worked in a helpful manner. (n=12)	75%	17%	8%	0%
52	How did HPCS affect my driving on curves? Yes = helped; No = hindered. (n=12)	17%	58%	25%	8%
53	Was HPCS helpful driving in straight-aways? Yes = helped; No = hindered. (n=12)	100%	0%	0%	0%
54	HPCS reduces driver fatigue. Yes = helped; No = hindered. (n=12)	75%	25%	0%	58%
55	I would like HPCS in my truck. (n=12)	83%	17%	0%	67%
56	I would recommend HPCS to other drivers. (n=12)	83%	17%	0%	0%
57	Driver's overall comments or recommendations on the HPCS.	na	na	na	100%

*Not applicable (na).

Canada Study Phase 1 results

Table 69. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 58 through 63 concerning the <u>Psychomotor Vigilance Task</u> (PVT-192) performance device. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
58	I learned how to master the PVT pretty well, that is, I learned to consistently obtain pretty good reaction time scores? (n=26)	69%	31%	0%	42%
59	Was the PVT testing intrusive to my duty day? (n=26)	58%	27%	15%	50%
60	Did the results of the PVT usually match my perception of my own reaction time? (n=26)	73%	27%	0%	42%
61	When I got slower reaction times on the PVT, it reflected my own overall assessment of my condition (e.g. tired/fatigued)? (n=26)	73%	23%	4%	38%
62	In my opinion the PVT could be used as a personal checking system on driver *fitness for duty* system (e.g. to check for a driver's readiness to drive as he/she reports for duty, or at rest stops half way through a long trip)? (n=26)	54%	31%	15%	50%
63	Driver's overall comments or recommendations about the PVT reaction time monitoring system? (n=26)	na*	na	na	62%

*Not applicable (na) because question did not offer a yes/no response format.

U.S. Study Phase 2 results

Table 70. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 58 through 63 concerning the <u>Psychomotor Vigilance Task</u> (PVT-192) performance device. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
58	I learned how to master the PVT pretty well, that is, I learned to consistently obtain pretty good reaction time scores? (n=12)	58%	42%	0%	42%
59	Was the PVT testing intrusive to my duty day? (n=12)	58%	42%	0%	58%
60	Did the results of the PVT usually match my perception of my own reaction time? (n=12)	83%	17%	0%	25%
61	When I got slower reaction times on the PVT, it reflected my own overall assessment of my condition (e.g. tired/fatigued)? (n=12)	92%	8%	0%	75%
62	In my opinion the PVT could be used as a personal checking system on driver *fitness for duty* system (e.g. to check for a driver's readiness to drive as he/she reports for duty, or at rest stops half way through a long trip)? (n=12)	58%	33%	8%	50%
63	Driver's overall comments or recommendations about the PVT reaction time monitoring system? (n=12)	na*	na	na	83%

*Not applicable (na) because question did not offer a yes/no response format.

Canada Study Phase 1 results

Table 71. CANADA Study Phase: Summary of drivers' responses to questions 64 to 69 and 72 to 84 concerning the combined set of Fatigue Management Technologies. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition (see Appendix F-1 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
64	Driver's overall comments/recommendations about the testing, the alertness and fatigue management devices, driver fatigue, etc. (n= 26)	na*	na	na	69%
65	Overall, how useful/effective do you believe the idea of having Driver Alertness and Fatigue Management aids in the truck cab is for assisting you in managing your driving alertness and contributing to safe driving? (1-5 scale; 1=dislike; 2=not helpful; 3=neutral; 4=helpful; 5=very helpful) (n= 23)	3.76	na	12%	52%
66	Do you think other commercial drivers would benefit from fatigue management aids? (n=26)	88%	8%	4%	54%
67	At any time did your fatigue management and alertness monitoring systems shut down while driving during the on-the-road testing? (n=26)	35%	65%	0%	35%
68	Was there enough warning from the alertness monitoring devices' numeric displays to alert you to the fact you were driving while very drowsy and/or that you might be becoming too sleepy to continue driving safely? (n=26)	38%	46%	15%	54%
69	When you received low alertness, or drowsy driving indicators on the digital displays, did they generally seem to accurately match what you were experiencing in terms of drowsiness at the time? (n=26)	54%	35%	12%	42%
72	During the on-the-road testing, was there anything in the fatigue management instrumentation that distracted you from performing your driving duties or interrupted your concentration on your driving tasks?	42%	58%	0%	38%
73	Did you notice anything unsafe about the fatigue management equipment and systems installed in the cab of your truck? (n=26)	27%	73%	0%	27%
74	In design and use of fatigue management systems what needs to be changed?	na	na	na	100%
75	What changes, if any, would you make to the testing procedures we employed with you during this project? (n = 26)	na	na	na	46%
76	What are your opinions regarding ideas of placing driver drowsiness or fatigue monitoring systems into commercial trucks? (n=26)	na	na	na	100%
77	Did the idea of having your performance recorded for several weeks have any effects on your driving behavior, and performance? (n=26)	23%	31%	46%	58%
78	If use of fatigue management aids (like PERCLOS, SafeTRAC, or SleepWatch) or black box monitoring technologies (like our AP+ recorder) were made mandatory, by either government regulations or by trucking industry management, what is your opinion about how they should be used, or might work best? (n=26)	na	na	na	100%
79	Did you have any law enforcement citations for moving violations during the last 2-week period while driving your truck? (n=26)	15%	85%	0%	15%
80	Did you have any law enforcement citations for logbook violations during the last 2-week period while driving your truck? (n=26)	0%	100%	0%	0%
81	Where you involved in an accident or crash during the past 2-week period while driving your truck? (n=26)	7%	93%	0%	7%
82	Did you have any law enforcement citations for an action that occurred in the context of an accident during the last 2-week period while driving your truck? (n=26)	0%	100%	0%	0%
83	Are you willing to participate in a focus group session with other drivers, which would be held when all drivers have completed their participation in this study? (n=26)	92%	8%	0%	0%

*Not applicable (na).

U.S. Study Phase 2 results

Table 72. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 64 to 69 and 72 to 84 concerning the <u>combined set of Fatigue Management Technologies</u>. Responses were derived from the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition (see Appendix F-2 for detailed responses).

No.	Question (n = number of respondents)	Yes	No	Y+N or no resp.	comment
64	Driver's overall comments/recommendations about the testing, the alertness and fatigue management devices, driver fatigue, etc. (n= 12)	na*	na	na	100%
65	Overall, how useful/effective do you believe the idea of having Driver Alertness and Fatigue Management aids in the truck cab is for <u>assisting you</u> in managing your driving alertness and contributing to safe driving? (1-5 scale; 1=dislike; 2=not helpful; 3=neutral; 4=helpful; 5=very helpful) (n= 12)	3.75	na	0%	17%
66	Do you think other commercial drivers would benefit from fatigue management aids? (n=12)	100%	0%	0%	33%
67	At any time did your fatigue management and alertness monitoring systems shut down while driving during the on-the-road testing? (n=12)	50%	50%	0%	42%
68	Was there enough warning from the alertness monitoring devices' numeric displays to alert you to the fact you were driving while very drowsy and/or that you might be becoming too sleepy to continue driving safely? (n=12)	58%	42%	0%	50%
69	When you received low alertness, or drowsy driving indicators on the digital displays, did they generally seem to accurately match what you were experiencing in terms of drowsiness at the time? (n=12)	67%	25%	8%	33%
72	During the on-the-road testing, was there anything in the fatigue management instrumentation that distracted you from performing your driving duties or interrupted your concentration on your driving tasks?	58%	42%	0%	58%
73	Did you notice anything unsafe about the fatigue management equipment and systems installed in the cab of your truck? (n=12)	8%	92%	0%	0%
74	In design and use of fatigue management systems what needs to be changed?	na	na	na	67%
75	What changes, if any, would you make to the testing procedures we employed with you during this project? (n = 12)	na	na	na	33%
76	What are your opinions regarding ideas of placing driver drowsiness or fatigue monitoring systems into commercial trucks? (n=12)	na	na	na	75%
77	Did the idea of having your performance recorded for several weeks have any effects on your driving behavior, and performance? (n=12)	42%	58%	0%	67%
78	If use of fatigue management aids (like PERCLOS, SafeTRAC, or SleepWatch) or black box monitoring technologies (like our AP+ recorder) were made mandatory, by either government regulations or by trucking industry management, what is your opinion about how they should be used, or might work best? (n=12)	na	na	na	100%
79	Did you have any law enforcement citations for moving violations during the last 2-week period while driving your truck? (n=12)	8%	92%	0%	8%
80	Did you have any law enforcement citations for logbook violations during the last 2-week period while driving your truck? (n=12)	0%	100%	0%	0%
81	Where you involved in an accident or crash during the past 2-week period while driving your truck? (n=12)	0%	100%	0%	0%
82	Did you have any law enforcement citations for an action that occurred in the context of an accident during the last 2-week period while driving your truck? (n=12)	0%	100%	0%	0%
83	Are you willing to participate in a focus group session with other drivers, which would be held when all drivers have completed their participation in this study? (n=12)	92%	8%	0%	0%

*Not applicable (na).

Canada Study Phase 1 results

Table 73. <u>CANADA Study Phase</u>: Number of drivers' responding to questions 72 and 73 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of the 4 weeks (see Appendix F-1 for detailed responses).

No.	Question	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS
72	During the on-the-road testing, was there anything in the fatigue management instrumentation that distracted you from performing your driving duties or interrupted your concentration on your driving tasks? (n=26)	**n = 3** drivers reported PERCLOS problems	n = 0 (no reports of problems)	**n = 1** driver reported PVT problems	**n = 5** drivers reported SafeTRAC problems	n = 0 (no reports of problems)
73	Did you notice anything unsafe about the fatigue management equipment and systems installed in the cab of your truck? (n=26)	n = 0 (no reports of problems)	n = 0 (no reports of problems)	n = 0 (no reports of problems)	**n = 3** drivers reported SafeTRAC problems	**n = 2** drivers reported HPCS problems

U.S. Study Phase 2 results

Table 74. <u>U.S. Study Phase</u>: Number of drivers' responding to questions 72 and 73 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of 4 weeks (see Appendix F-2 for detailed responses).

No.	Question	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS
72	During the on-the-road testing, was there anything in the fatigue management instrumentation that distracted you from performing your driving duties or interrupted your concentration on your driving tasks? (n=12)	**n = 3** drivers reported PERCLOS problems	n = 0 (no reports of problems)	**n = 0** (no reports of problems)	**n = 3** drivers reported SafeTRAC problems	n = 0 (no reports of problems)
73	Did you notice anything unsafe about the fatigue management equipment and systems installed in the cab of your truck? (n=12)	n = 0 (no reports of problems)	n = 0 (no reports of problems)	n = 0 (no reports of problems)	**n = 1** driver reported SafeTRAC problems	n = 0 (no reports of problems)

Canada Study Phase 1 results

Table 75. <u>CANADA Study Phase</u>: Summary of drivers' responses to questions 70 and 71 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks (see Appendix F-1 for detailed responses).

No.	Question	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS*
70	Which system(s) matched your **alertness level** best? Rank them with a number 1 as best and 4 as the least helpful in matching your alertness level). And then tell U.S. how you think the most effective ones did this? (n=26)	**Mean = 3.05** rank frequency 1 = 0 2 = 6 3 = 4 4 = 7 total = 17	**Mean = 2.38** rank frequency 1 = 8 2 = 3 3 = 4 4 = 6 total = 21	**Mean = 2.04** rank frequency 1 = 10 2 = 4 3 = 3 4 = 4 total = 21	**Mean = 1.90** rank frequency 1 = 10 2 = 6 3 = 2 4 = 3 total = 21	▬
71	Which system(s) matched your **drowsiness level** best? Rank them with a number 1 as best and 4 as the least helpful in matching your drowsiness level). And then tell U.S. how you think the most effective ones did this? (n=25)	**Mean = 2.84** rank frequency 1 = 1 2 = 4 3 = 4 4 = 4 total = 13	**Mean = 2.23** rank frequency 1 = 8 2 = 2 3 = 2 4 = 5 total = 17	**Mean = 2.22** rank frequency 1 = 8 2 = 3 3 = 2 4 = 5 total = 18	**Mean = 2.00** rank frequency 1 = 8 2 = 6 3 = 2 4 = 3 total = 19	▬
	Grand average ranking for Q. 70 & 71	**2.94**	**2.30**	**2.13**	**1.95**	—

*HPCS system was not rated because it did not purport to measure alertness or drowsiness

U.S. Study Phase 2 results

Table 76. <u>U.S. Study Phase</u>: Summary of drivers' responses to questions 70 and 71 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks (see Appendix F-2 for detailed responses).

No.	Question	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS*
70	Which system(s) matched your **alertness level** best? Rank them with a number 1 as best and 4 as the least helpful in matching your drowsiness level). And then tell U.S. how you think the most effective ones did this? (n=12)	**Mean = 3.00** rank frequency 1 = 1 2 = 3 3 = 1 4 = 5 total = 10	**Mean = 2.10** rank frequency 1 = 4 2 = 3 3 = 1 4 = 2 total = 10	**Mean = 2.70** rank frequency 1 = 4 2 = 0 3 = 1 4 = 5 total = 10	**Mean = 2.10** rank frequency 1 = 3 2 = 3 3 = 4 4 = 0 total = 10	▬
71	Which system(s) matched your **drowsiness level** best? Rank them with a number 1 as best and 4 as the least helpful in matching your drowsiness level). And then tell U.S. how you think the most effective ones did this? (n=12)	**Mean = 3.18** rank frequency 1 = 1 2 = 2 3 = 2 4 = 6 total = 11	**Mean = 2.54** rank frequency 1 = 1 2 = 6 3 = 1 4 = 3 total = 11	**Mean = 2.36** rank frequency 1 = 5 2 = 0 3 = 3 4 = 3 total = 11	**Mean = 1.91** rank frequency 1 = 6 2 = 1 3 = 3 4 = 1 total = 11	▬
	Grand average ranking for Q. 70 & 71	**3.09**	**2.32**	**2.53**	**2.00**	—

Canada Study Phase 1 results

Table 77. <u>CANADA Study Phase</u>: Frequency of drivers' responses to question 84 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-1 for detailed responses). Question 84 asked "if first we fixed all the complaints you commented on, how would you rank the items on a scale from 1 to 10 in terms of how well you would like them for yourself and other truck drivers?" Rank of 10 = "terrific idea, and you would like to have one in your truck and/or think other drivers should want it too." Rank of 1 = "not good, don't like or want it."

Rating	Rating anchors	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS
9.5 – 10	Terrific idea; Would like to have in truck	1	3	—*	8	8
8.5 – 9.0		1	2	—	4	2
7.5 – 8.0		5	5	—	4	7
6.5 – 7.0		3	3	—	4	1
5.5 – 6.0		2	4	—	0	3
4.5 – 5.0		7	2	—	4	1
3.5 – 4.0		2	3	—	0	1
2.5 – 3.0		1	2	—	0	1
1.5 – 2.0		1	1	—	1	0
0.5 – 1.0	Not good Don't like it; don't want it	1	0	—	1	1
		n = 24	**n = 25**	—	**n = 26**	**n = 25**
Average ranking		**5.79**	**6.42**	—	**7.60**	**7.60**
Percent ≥ 5.5		**50%**	**68%**	—	**77%**	**84%**

*Question 84 did not ask drivers to rate the PVT.

U.S. Study Phase 2 results

Table 78. <u>U.S. Study Phase</u>: Frequency of drivers' responses to question 84 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendix F-2 for detailed responses). Question 84 asked "if first we fixed all the complaints you commented on, how would you rank the items on a scale from 1 to 10 in terms of how well you would like them for yourself and other truck drivers?" Rank of 10 = "terrific idea, and you would like to have one in your truck and/or think other drivers should want it too." Rank of 1 = "not good, don't like or want it."

Rating	Rating anchors	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS
9.5 – 10	Terrific idea; Would like to have in truck	0	1	—*	2	6
8.5 – 9.0		0	3	—	2	2
7.5 – 8.0		1	1	—	4	0
6.5 – 7.0		1	0	—	1	1
5.5 – 6.0		0	0	—	0	1
4.5 – 5.0		1	4	—	2	1
3.5 – 4.0		0	1	—	0	1
2.5 – 3.0		2	1	—	1	0
1.5 – 2.0		3	0	—	0	0
0.5 – 1.0	Not good Don't like it; don't want it	4	1	—	0	0
		n = 12	n = 12	—	n = 12	n = 12
Average ranking		2.96	6.08	—	7.46	8.33
Percent ≥ 5.5		17%	42%	—	75%	83%

*Question 84 did not ask drivers to rate the PVT.

Table 79. <u>Combined CANADA and U.S. Study Phases</u>: Frequency of drivers' responses to question 84 of the Human Factors Structured Interview Questionnaire administered during debriefing following the FMT FEEDBACK Condition at the end of their 4 weeks of participation (see Appendices F-1 and F-2 for detailed responses). Question 84 asked "if first we fixed all the complaints you commented on, how would you rank the items on a scale from 1 to 10 in terms of how well you would like them for yourself and other truck drivers?" Rank of 10 = "terrific idea, and you would like to have one in your truck and/or think other drivers should want it too." Rank of 1 = "not good, don't like or want it."

Rating	Rating anchors	Copilot (PERCLOS)	SleepWatch	PVT	SafeTRAC	HPCS
9.5 – 10	Terrific idea; Would like to have in truck	1	4	—*	10	14
8.5 – 9.0		1	5	—	6	4
7.5 – 8.0		6	6	—	8	7
6.5 – 7.0		4	3	—	5	2
5.5 – 6.0		2	4	—	0	4
4.5 – 5.0		8	6	—	6	2
3.5 – 4.0		2	4	—	0	2
2.5 – 3.0		3	3	—	1	1
1.5 – 2.0		4	1	—	1	0
0.5 – 1.0	Not good Don't like it; don't want it	5	1	—	1	1
		n = 36	n = 37	—	n = 38	n = 37
Average ranking		4.85	6.31	—	7.55	7.84
Percent ≥ 5.5		39%	59%	—	76%	84%

*Question 84 did not ask drivers to rate the PVT.