

Attachment 1. Sample size comparison between original and revised experimental design

A. Within-Subject Design (Original study design, described in 60-day Federal Register Notice)

Table 1 Original Study Design

	Part-time users (n=16)				Non-seat belt users (n=16)			
	Young driver (n=8)		Middle-aged driver (n=8)		Young driver (n=8)		Middle-aged driver (n=8)	
	Male(n=4)	Female (n=4)	Male(n=4)	Female (n=4)	Male(n=4)	Female (n=4)	Male(n=4)	Female (n=4)
Baseline (A/B)	4	4	4	4	4	4	4	4
Treatment A	4	4	4	4	4	4	4	4
Treatment B	4	4	4	4	4	4	4	4

Research questions	Sample size for comparison
Comparison between Baseline A and Treatment A	n=16
Comparison between Baseline B and Treatment B	n=16
Comparison between part-time user and non-seatbelt user	n=16
Comparison between A and B	n=32
Comparison between young and middle-aged	n=16
The interaction effect of System (A/B) * age	n=16
The interaction effect of System (A/B) * belt user group	n=16
The interaction effect of System (A/B) * gender	n=16
The interaction effect of System (A/B) * age * belt user group	n=8
The interaction effect of System (A/B) * age * gender	n=8

B. Between-Subject Design (Revised study design, subject to funding availability)

Table 2 Revised Study Design

Test Condition	Part-time users (n=24)				Non-seat belt users (n=24)			
	Young driver (n=12)		Middle-aged driver (n=12)		Young driver (n=12)		Middle-aged driver (n=12)	
	Male(n=6)	Female (n=6)	Male(n=6)	Female (n=6)	Male(n=6)	Female (n=6)	Male(n=6)	Female (n=6)
Baseline A	3	3	3	3	3	3	3	3
Treatment A	3	3	3	3	3	3	3	3
Baseline B	3	3	3	3	3	3	3	3
Treatment B	3	3	3	3	3	3	3	3

Research questions	Sample size for comparison
Comparison between Baseline A and Treatment A	n=24
Comparison between Baseline B and Treatment B	n=24
Comparison between part-time user and non-seatbelt user	n=24
Comparison between A and B	n=24
Comparison between young and middle-aged	n=24
The interaction effect of System (A/B) *age	n=12
The interaction effect of System (A/B) *belt user group	n=12
The interaction effect of System (A/B) *gender	n=12
The interaction effect of System (A/B) *age *belt user group	n=6
The interaction effect of System (A/B) *age *gender	n=6

Table 3 Additional Cost to Implement Revised Study Design

ID	Description	Cost Estimate
1	Cost increase in labor charges due to increased subject sample size and engineering support (i.e., increased labor in vehicle installation, data maintenance & download, server maintenance, subject recruitment and data analysis)	\$84,330.24
2	Cost increase in research supplies (i.e.; vehicle insurance cost, gas and instrumentation)	\$21,934.00
3	Subject fees (\$90/subject * (16 more subjects+8more drop outs)	\$2,680.00
4	OEM Costs (i.e., extended vehicle rental period	\$12,886.80
5	Indirect costs on research supplies and subject fees	\$13,594.34
TOTAL		\$135,425.38