

Contents

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE.....	IV
TRANSPORT IN UNECE	V
1. INTRODUCTION.....	1
1.1 Background.....	1
1.2 SafeFITS Objectives.....	1
1.3 Overview of the report	2
PART ONE.....	3
2. METHODOLOGY	4
2.1 Conceptual framework.....	4
2.2 Methodological steps	6
3. LITERATURE REVIEW OF ACCIDENT CAUSALITIES.....	6
3.1 Introduction.....	6
3.2 Road safety management	7
3.3 Road infrastructure	7
3.4 Vehicle	8
3.5 User.....	9
3.6 Post-crash services	9
3.7 Literature review synthesis	10
4. FOCUSED REVIEW OF DETAILED CAUSALITIES.....	15
4.1 Review of detailed causalities for the priority indicators	15
4.1.1 GDP per capita	16
4.1.2 Country has a national road safety strategic plan.....	16
4.1.3 Country has time-based, quantified national road safety targets	16
4.1.4 Country has a clearly empowered agency leading road safety	17
4.1.5 Country has a defined allocation of expenditure for dedicated road safety programmes.....	17
4.1.6 Share of trips/traffic per mode.....	17
4.1.7 Country has a target to eliminate high-risk roads.....	17
4.1.8 Number of passenger cars per 1,000 inhabitants	17
4.1.9 Share of powered two-wheelers in the vehicle fleet	18
4.1.10 Country has a comprehensive helmet use law	18
4.1.11 Country has systematic policies and practices in place for road safety audits of new road projects.....	18

4.1.12	Number of enforcement controls (e.g. speed, alcohol, seat belt, helmet) per 1,000 population	19
4.1.13	Roadside police alcohol tests per 1,000 population	19
4.1.14	Roadside police speed checks per 1,000 population	20
4.1.15	Share of high-risk sites treated.....	20
4.1.16	Percentage of rural road network not satisfying design standards.....	20
4.1.17	Helmet wearing rates for powered two-wheelers	20
4.1.18	Seat belt wearing rates on front seats of cars.....	21
4.1.19	Mean emergency medical service (EMS) response time	22
4.2	Synthesis of identified relations – detailed causalities	22
PART TWO		29
5. OVERVIEW OF THE SafeFITS MODEL		30
5.1	Introduction.....	30
5.2	Methodology	31
5.2.1	Estimation of composite variables	31
5.2.2	Linking road safety outcomes with indicators through composite variables	32
5.2.3	The time dimension	33
6. ARCHITECTURE OF THE DATABASE		34
6.1	Introduction.....	34
6.2	Economy and management layer.....	34
6.2.1	Basic characteristics of countries	34
6.2.2	Economy.....	34
6.2.3	Road safety management indicators	35
6.3	Transport demand and exposure layer.....	35
6.3.1	Roads	35
6.3.2	Vehicles	36
6.3.3	Traffic	36
6.4	Road safety measures layer.....	37
6.4.1	Roads	37
6.4.2	Vehicles	37
6.4.3	Road User	38
6.4.4	Post-crash care	39
6.5	Road safety performance indicators layer	39

6.5.1. Traffic law enforcement	39
6.5.2. Road user	40
6.5.3. Post-crash care	40
6.6 Fatalities and Injuries layer	40
6.7 Data handling on missing values.....	41
7. DATA ANALYSIS AND MODEL DEVELOPMENT.....	42
7.1 Introduction.....	42
7.2 Calculation of composite variables	42
7.2.1. Factor analysis for the estimation of composite variable on economy and management.....	43
7.2.2. Factor analysis for the estimation of composite variable on transport demand and exposure.....	44
7.2.3 Factor analysis for the estimation of composite variables on measures.....	45
7.2.4 Factor analysis for the estimation of composite variables on RSPI.....	46
7.2.5. Summary	47
7.3 Identification of groups of countries.....	47
7.3.1. Geopolitical grouping	48
7.3.2. Road safety and economic performance grouping.....	48
7.4 Development of statistical models	50
7.4.1. Final model.....	50
7.4.2. Model assessment	51
7.5 Model validation	54
7.6 Customization for groups of countries.....	55
7.7 Customization for countries with particular characteristics	56
7.8 Model application	56
7.9 Identification of policy scenarios	59
8. MODEL DEMONSTRATION	59
8.1 Things to know when using the SafeFITS model.....	60
8.2 SafeFITS tool – Introduction	61
8.3 SafeFITS tool – Benchmark.....	61
8.4 SafeFITS tool – Forecast.....	62
8.5 SafeFITS tool – Testing interventions	64
8.6 Report generation.....	66

- 9. CONCLUSIONS AND NEXT STEPS66**
 - 9.1 Summary66
 - 9.2 Model limitations and future improvements68
 - 9.3. Next steps.....69

- 10. REFERENCES70**

- 11. APPENDICES78**

- APPENDICES79**
 - Appendix A. Identified detailed causalities per priority indicator80
 - Appendix B. Overview of the SafeFITS database90
 - Appendix C. Groups of countries.....91