

Table of Contents

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1.0	INTRODUCTION	1
1.1	Background	1
1.2	Organization of this Thesis	3
CHAPTER 2.0	PROBLEM STATEMENT AND RESEARCH OBJECTIVES	4
2.1	Problem Statement	4
2.2	Research Objectives	5
2.3	Research Tasks	6
2.4	Scope	7
CHAPTER 3.0	REVIEW OF RELEVANT LITERATURE	9
3.1	Introduction	9
3.2	Review of O-D Trip Tables Estimation Models Using Link Volumes	9
3.2.1	The Highway Emulator (THE)	10
	3.2.1.1 Trip Table Estimation Procedure	11
	3.2.1.2 Data Requirements	11

3.2.1.3	Model Restrictions	12
3.3	Linear Programming (LP) Model	13
3.3.1	Data Requirements	16
3.3.2	Models Restrictions	17
3.4	Use of Census Data in Transportation Planning	17
3.4.1	The Census Transportation Planning Package (CTPP) and its Use in Establishing Target Trip Tables	18
3.4.2	CTPP Use in UTPP	19
3.5	Examination of CTPP for Use in the Pulaski Case Study	20
CHAPTER 4.0	THE APPROACH	21
4.1	Introduction	21
4.2	The Overall Approach	21
4.3	Methodology	22
CHAPTER 5.0	ESTABLISHING TARGET/SEED TABLES	25
5.1	The Need	25
5.2	Adopted Approach	25
5.3	Data for Trip Production Estimates	27
5.4	Data for Trip Attraction Estimates	27
5.5	Use of MINUTP Software for Trip Generation and Trip Distribution Applications	31
5.5.1	Network Building (NETBLD)	33
5.5.1.1	Data for NETBLD	33
5.5.1.2	MINUTP Coding for NETBLD	33
5.5.2	Path Building (PTHBLD)	34
5.5.2.1	MINUTP Coding for PTHBLD	35
5.5.3	Trip Generation (TRPGEN)	35

5.5.3.1	Use of ITE trip Generation Equations/Rates for Pulaski	36
5.5.3.2	MINUTP Coding for TRPGEN	47
5.5.4	Trip Distribution (TRPDST)	49
5.5.4.1	Data for TRPDST	50
5.5.4.2	MINUTP Coding for TRPDST	50
CHAPTER 6.0	EVALUATION OF THE AND LP MODELS FOR PULASKI NETWORK	53
6.1	Introduction	53
6.2	Pulaski Network	53
6.2.1	Network Volume Data Collection	55
6.2.2	Trip Table Data	55
6.3	Evaluation Criteria	56
6.3.1	Replication of Observed Link Volumes	57
6.3.2	Closeness of Estimated Trip Tables to the “True” or “Correct”/“Reasonably Good”/ “Surveyed” Tables	58
6.4	Test Cases	59
6.5	Discussion of Model Results	60
6.5.1	Daily/24 hour Trip Table	60
6.5.2	Peak-Hour Trip Table	69
6.6	Sensitivity of the LP Model to the Sigma (σ) Value Variations	76

6.6.1	Introduction	76
6.6.2	Significance of Sigma (σ) Value in LP Model Runs	77
CHAPTER 7.0	CONCLUSIONS AND RECOMMENDATIONS	81
7.1	Summary Findings	81
7.2	Conclusions	83
7.3	Recommendations for Further Research	85
CHAPTER 8.0	REFERENCES	86