

1. Record Nr.	UNINA9910583472203321
Autore	Profillidis V. A.
Titolo	Modeling of transport demand : analyzing, calculating, and forecasting transport demand / / V. A. Profillidis, G. N. Botzoris
Pubbl/distr/stampa	Amsterdam, Netherlands ; ; Oxford, England ; ; Cambridge, Massachusetts : , : Elsevier, , 2019
ISBN	0-12-811514-9
Descrizione fisica	1 online resource (622 pages) : illustrations
Disciplina	388.3140723
Soggetti	Traffic estimation - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Front Cover -- Modeling of Transport Demand -- Modeling of Transport Demand -- Copyright -- Dedication -- Contents -- Preface -- 1 - Transport Demand and Factors Affecting It -- 1.1 THE BASIC DEFINITIONS RELATED TO TRANSPORT DEMAND -- 1.1.1 Transport and Human Life -- 1.1.2 Definition of Transport -- 1.1.3 The Various Transport Modes and Sectors -- 1.1.4 Definition and Characteristics of Transport Demand -- 1.1.4.1 Definition of Transport Demand -- 1.1.4.2 Principal Drivers of Transport Demand -- 1.1.4.3 Transport Demand for an Infrastructure Facility or Operation Company -- 1.1.4.4 Normal, Diverted, and Generated Demand -- 1.1.5 Definition of a Transport Model -- 1.1.6 Metrics and Units for the Description of Transport Demand -- 1.2 HISTORICAL EVOLUTION OF TRANSPORT MODES AND DEMAND -- 1.3 HOW TRANSPORT DEMAND AFFECTS THE TRANSPORT SYSTEM -- 1.3.1 Transport Demand and Transport Infrastructure -- 1.3.1.1 Planning -- 1.3.1.2 Design and Construction -- 1.3.1.3 Degree of Deterioration and Maintenance -- 1.3.1.4 Operation of Infrastructure -- 1.3.1.5 Level of Saturation and Measures Required -- 1.3.2 Transport Demand and Operation -- 1.3.2.1 Number of Cars, Aircrafts, Railway Vehicles, Ships -- 1.3.2.2 Number of Personnel -- 1.3.2.3 Commercial and Tariff Policies, Revenues -- 1.3.3 Transport Demand and CO2 Emissions -- 1.4 THE OVERWHELMING AND REVOLUTIONARY EFFECTS OF NEW TECHNOLOGIES -- 1.5 EVOLUTION OVER TIME OF THE PRINCIPAL DRIVERS OF TRANSPORT

DEMAND -- 1.5.1 Passenger Transport -- 1.5.2 Freight Transport --  
1.6 HOW TRANSPORT DEMAND AFFECTS THE PLANNING OF THE  
TRANSPORT SYSTEM -- 1.6.1 Demand and Transportation Planning --  
1.6.2 Demand and Business and Master Plans -- 1.7 TRANSPORT  
DEMAND AND ECONOMIC ACTIVITY: COUPLING AND DECOUPLING --  
1.7.1 Correlation of Transport Demand With Economic Activity.  
1.7.2 Coupling and Decoupling Between Transport Demand and Gross  
Domestic Product-Variations and Degrees of Decoupling -- 1.7.3  
Factors Affecting the Degree of Decoupling Between Gross Domestic  
Product and Transport Demand-Passenger Transport -- 1.7.3.1 Limits  
of Available Time and Money -- 1.7.3.2 Effects of the Internet --  
1.7.3.3 Changes in Urban Development Patterns -- 1.7.3.4 Extensive  
Use of Global Positioning System, Car Sharing, and Carpooling -- 1.7.4  
Factors Affecting the Degree of Decoupling Between Gross Domestic  
Product and Transport Demand-Freight Transport -- 1.7.4.1 Changes  
in the Composition of the Economy -- 1.7.4.2 Relocation of  
Manufacturing Activities -- 1.7.4.3 Economies of Scale and  
Concentration -- 1.7.4.4 Trade Liberalization -- 1.7.4.5 Environmental  
Tax -- 1.7.5 The Situation of Coupling and Decoupling for Some  
Countries -- 1.7.6 Transport Demand and Regional Development --  
1.8 FACTORS OF THE INTERNAL AND EXTERNAL ENVIRONMENT OF  
TRANSPORT AND EFFECTS ON DEMAND -- 1.8.1 Transport as a System  
-- 1.8.2 The Internal and External Environment of Transport -- 1.8.3  
Factors of the Internal Environment That Affect Demand -- 1.8.4  
Factors of the External Environment That Affect Demand -- 1.8.4.1  
Economic Growth, Purchasing Power, and Available Income for  
Transport -- 1.8.4.2 Energy Consumption -- 1.8.4.3 Culture, Lifestyle,  
and the Expectations of Society -- 1.8.4.4 Population -- 1.8.4.5 The  
Environment and Transport Demand -- 1.8.4.6 Institutional Framework  
and Transport Demand -- 1.8.4.7 Globalization, Liberalization,  
Competition, and Transport Demand -- 1.9 TRANSPORT DEMAND AND  
ELASTICITIES -- 1.9.1 A Definition and a Variety of Types of Elasticities  
-- 1.9.2 Price Elasticity -- 1.9.3 Income Elasticity -- 1.9.4 Cross-  
Elasticities -- 1.9.5 Evolution of Elasticities Over Time -- 2 - Evolution  
and Trends of Transport Demand.  
2.1 DESCRIPTION OF TRANSPORT DEMAND: DATA, SURVEYS, AND  
DEGREE OF ACCURACY -- 2.1.1 Collection of Transport Data of the Past  
-- 2.1.2 Characteristics of Transport Data -- 2.1.3 Sources of Data --  
2.1.4 Information Related to Sources of Transport Data -- 2.1.5 The  
Internet Revolution-Big Data as a New Source of Transport Data --  
2.1.6 Sources of Transport Data Used in This Book -- 2.2 EVOLUTION  
AND TRENDS OF THE MODAL SPLIT OF EACH TRANSPORT MODE IN THE  
TRANSPORT MARKET -- 2.2.1 Passenger Transport -- 2.2.2 Freight  
Transport -- 2.3 EVOLUTION AND TRENDS OF AIR TRANSPORT  
DEMAND -- 2.3.1 Rates of Growth of Air Transport, Low Margins of  
Profit, and Cyclic Fluctuations -- 2.3.2 Factors Affecting Air Transport  
Demand -- 2.3.3 Scheduled, Charter, and Low-Cost Flights -- 2.3.4  
Evolution and Trends of Air Passenger Demand -- 2.3.5 Evolution and  
Trends of Air Freight Demand -- 2.3.6 The Rise of Demand for Low-  
Cost Airlines -- 2.3.7 Evolution and Trends of Flight Departures --  
2.3.8 Evolution and Trends of Demand in Airports -- 2.4 EVOLUTION  
AND TRENDS OF RAIL TRANSPORT DEMAND -- 2.4.1 Rise and Decline  
of Railways -- 2.4.2 Evolution and Trends of Rail Passenger Demand --  
2.4.3 Evolution and Trends of Demand for High-Speed Trains -- 2.4.4  
Evolution and Trends of Rail Freight Demand -- 2.4.5 Trends in the  
Global Railway Technologies Market -- 2.5 EVOLUTION AND TRENDS  
OF ROAD TRANSPORT DEMAND -- 2.5.1 The Private Car Ownership  
Index -- 2.5.2 Evolution and Trends of Production of Road Vehicles --

2.5.3 Evolution and Trends of Road Traffic -- 2.5.4 Road Safety -- 2.6  
 EVOLUTION AND TRENDS RELATED TO ELECTRIC CAR TECHNOLOGY --  
 2.6.1 Definition and Types of Electric Cars -- 2.6.2 Cost of Electric Cars  
 -- 2.6.3 Evolution and Trends of the Electric Car Market -- 2.6.4  
 Principal Driving Factors for the Electric Car Market.  
 2.7 EVOLUTION AND TRENDS OF DEMAND OF METRO AND TRAM -- 2.8  
 EVOLUTION AND TRENDS OF SEA TRANSPORT DEMAND -- 2.8.1 Sea  
 Transport and Economic Activity -- 2.8.2 Products Transported by Sea  
 -- 2.8.3 Evolution and Trends of Traffic of the Various Categories of  
 Sea Transport -- 2.8.4 Evolution and Trends of Container Sea Traffic --  
 2.8.5 Evolution of the World Fleet -- 3 - Methods of Modeling  
 Transport Demand -- 3.1 STRUCTURE AND VARIABLES OF A  
 TRANSPORT DEMAND MODEL -- 3.1.1 Structure of a Transport Demand  
 Model -- 3.1.2 Definition of a Variable -- 3.1.3 Numerical and  
 Categorical Variables -- 3.1.4 Dependent and Independent Variables --  
 3.1.5 Independent Variables of a Transport Demand Model -- 3.1.6  
 Proxy Variables -- 3.1.7 Dummy Variables -- 3.1.8 Linguistic Variables  
 -- 3.1.9 Variables Used in a Logarithmic Form -- 3.1.10 Variables  
 Within a Frame of Epistemological Approach -- 3.1.11 Endogenous and  
 Exogenous Variables -- 3.2 TRANSPORT DEMAND IN A DETERMINISTIC  
 OR PROBABILISTIC APPROACH -- 3.3 THE CHOICE BY A TRAVELER OF A  
 TRANSPORT MODE-UTILITY THEORIES AND GENERALIZED COST OF  
 TRANSPORT -- 3.3.1 Choice Among Many Alternative Transport Modes  
 -- 3.3.2 Utility Theories -- 3.3.3 The Generalized Cost as a  
 Specialization of the Utility Function for Transport -- 3.4  
 QUANTITATIVE AND QUALITATIVE METHODS FOR TRANSPORT DEMAND  
 -- 3.4.1 Definition and Characteristics of Quantitative and Qualitative  
 Methods -- 3.4.2 Advantages and Disadvantages -- 3.5 AGGREGATE  
 AND DISAGGREGATE MODELS -- 3.6 MODELS BASED ON STATISTICS  
 AND COMPUTATIONAL INTELLIGENCE -- 3.7 MODEL SELECTION,  
 CALIBRATION, ESTIMATION, AND VALIDATION -- 3.8 QUALITATIVE  
 METHODS OF FORECAST OF TRANSPORT DEMAND -- 3.9  
 QUANTITATIVE METHODS OF FORECAST OF TRANSPORT DEMAND --  
 3.9.1 Causal and Noncausal Methods -- 3.9.2 The Two Families of  
 Quantitative Methods: Time Series and Econometric.  
 3.9.3 Econometric Methods, Econometrics, and Economic Theory --  
 3.9.4 Econometric and Economic Models -- 3.9.5 Balance Between  
 Simplicity and Complexity -- 3.9.6 Essential Qualities for a Good  
 Causal Forecasting -- 3.9.7 Another Category of Quantitative Method:  
 Gravity Models -- 3.10 A PANORAMA OF THE VARIOUS QUALITATIVE  
 AND QUANTITATIVE METHODS -- 3.11 STATISTICAL AND OTHER  
 METHODS USED IN QUANTITATIVE METHODS -- 3.12 SELECTION OF  
 THE APPROPRIATE MODEL OF FORECAST OF TRANSPORT DEMAND --  
 3.13 BIG DATA AND TRANSPORT DEMAND -- 3.13.1 Definition,  
 Sources, and Characteristics of Big Data -- 3.13.1.1 Definition of Big  
 Data -- 3.13.1.2 Sources of Big Data -- 3.13.1.3 Characteristics of Big  
 Data -- 3.13.2 Technological Aspects of Big Data -- 3.13.3 Big Data  
 and Privacy Rights -- 3.13.4 Applications of Big Data to Solve Some  
 Transport Problems -- 3.13.5 Big Data, Social Networks, and Transport  
 Demand -- 3.13.6 Some Applications of Big Data for the Forecast of  
 Transport Demand -- 3.13.6.1 Is the Sample Representative of the  
 Whole Population? -- 3.13.6.2 Use of Big Data for the Short-Term  
 Forecast of Passenger Demand of an Airport -- 3.13.6.3 Use of Big  
 Data for the Short-Term Forecast of Passenger Demand in Short-  
 Shipping Routes -- 3.13.6.4 Use of Big Data for the Short-Term  
 Forecast of Demand for Taxis of an Airport -- 3.13.7 Differences and  
 Similarities Between Big Data and Traditional Methods for Transport  
 Problems -- 4 - Executive Judgment, Delphi, Scenario Writing, and

Survey Methods -- 4.1 THE EXECUTIVE JUDGMENT METHOD -- 4.1.1  
Definition -- 4.1.2 Assumptions and Characteristics -- 4.1.3 The  
Scientific Background of the Method -- 4.1.4 Applications -- 4.2 THE  
DELPHI METHOD -- 4.2.1 Definition and Fundamentals -- 4.2.2 Cases  
of Use -- 4.2.3 Objectives -- 4.2.4 Procedure and Successive Stages --  
4.2.5 Characteristics and Features.  
4.2.6 Areas and Sectors of Application.

---