Airline Operations And Scheduling

NICOLE HAILEY

Airline Operations and Delay Management Airline Operations and Scheduling 260 2 Crew Legalities and Crew Pairing Repair 264 3 Model and Mathematical Formulation 266 4 Solution Methodology 271 5 Computational Experiences 277 6 Conclusion 285 REFERENCES 286 10 THE USE OF OPTIMIZATION TO PERFORM AIR TRAFFIC FLOW MANAGEMENT Kenneth Lindsay, E. Andrew Boyd, George Booth, and Charles Harvey 287 1 Introduction 288 2 The Traffic Flow Management (TFM) Problem 289 3 Recent TFM Optimization Models 292 4 The Time Assignment Model (TAM) 302 5 Summary and Conclusions 307 REFERENCES 309 11 THE PROCESSES OF AIRLINE SYSTEM OPERATIONS CONTROL Seth C. Grandeau, Michael D. Clarke, and Dennis F.X. Mathaisel 312 1 Introduction 313 2 The Four Phases of Airline Schedule Development 315 The Airline Operations Control Center (OCC) 3 320 4 Analysis of Operational Problems 331 5 Areas For Improvement 352 6 Case Study: PT Garuda Indonesia Airlines 357 REFERENCES 368 12 THE COMPLEX CONFIGURATION MODEL Bruce W. Patty and Jim Diamond 370 1 Introduction 370 Problem Description 2 371 Problem Formulation 3 375 4 Model Implementation 379 ix Contents 383 5 Summary REFERENCES 383 13 INTEGRATED AIRLINE SCHEDULE PLANNING Cynthia Barnhart, Fang Lu, and Rajesh Shenoi 384 1 Introduction 385 2 Fleet Assignment and Crew Pairing Problems: Existing M- els and Algorithms 388 3 An Integrated Approximate Fleet Assignment and Crew Pa- ing Model 393 4 An Advanced Integrated Solution Approach 395 5 Case Study 396 6 Conclusions and Future Research Directions 399 REFERENCES 401 14 AIRLINE SCHEDULE PERTURBATION PROBLEM: LANDING AND TAKEOFF WITH

5th International Conference, CPAIOR 2008 Paris, France, May 20-23, 2008 Proceedings John Wiley & Sons Extensively revised and updated edition of the bestselling textbook, provides an overview of recent global airline industry evolution and future challenges Examines the perspectives of the many stakeholders in the global airline industry, including airlines, airports, air traffic services, governments, labor unions, in addition to passengers Describes how these different players have contributed to the evolution of competition in the global airline industry, and the implications for its future

evolution Includes many facets of the airline industry not covered elsewhere in any single book, for example, safety and security, labor relations and environmental impacts of aviation Highlights recent developments such as changing airline business models, growth of emerging airlines, plans for modernizing air traffic management, and opportunities offered by new information technologies for ticket distribution Provides detailed data on airline performance and economics updated through 2013

Aviation Planning and Operations Springer Science & Business Media

This text is among the first to reveal the intricacies of an airline's Operations Control Centre; especially the thought processes, information flows, and strategies taken to mitigate disruptions. Airline Operations Control provides a deep level of description, explanation and detail into the activities of a range of highly professional and expert staff managing the 'sharp' end of the airline. It aims to fill a void as little is understood about this area, and very little is written for practitioners in the airline business. The book offers a comprehensive look at the make-up of the Operations Centre, its component sections, and the processes that occur both in preparing for and executing the current day's schedules. Several chapters provide real-life scenarios and demonstrate how Operations Centres manage evolving situations – what they need to take into account, and how they need to have Plan B and Plan C ready when things don't go right. This book is designed to deliver knowledge gains to both new and experienced aviation industry practitioners with regards to vital operational aspects. Additionally, it also offers students of air transport management a readily accessible and real-world-perspective guide to a crucial function present within every airline.

Dynamic scheduling in airline operations Taylor & Francis

Airline Operations and Delay Management fills a gap within the area of airline schedule planning by addressing the close relationships between network development, economic driving forces, schedule demands and operational complexity. The pursuit of robust airline scheduling and reliable airline operations is discussed in light of the future trends of airline scheduling and technology applications in airline operations. The book extensively explores the subject from the perspectives of airline economics, airline network development and airline scheduling practices. Many operational issues and problems are the inevitable consequences of airline network development and scheduling philosophy, so a wide perspective is essential to address airline operations in their proper context. The influence of airline network development on schedule planning and operations driven by economic forces and relaxed regulations is thoroughly examined for different types of operations in aviation such as network carriers and low-cost carriers. The advantages and disadvantages of running different networks and schedules are discussed and illustrated with real airline examples. In addition, this book provides readers with various mathematical models for solving different issues in airline operations and delay management. Airline Operations and Delay Management is ideal for senior undergraduate students as an introductory book on airline operations. The more advanced materials included in this book regarding modeling airline operations are suitable for postgraduate students, advanced readers and professionals interested in modeling and solving airline operational problems.

Right Away & All at Once Routledge

We present a methodology for deriving robust airline schedules that are not vulnerable to disruptions caused by bad weather. In this methodology, the existing schedule is partitioned into independent sub-schedules or layers - prioritized on the basis of revenue - that provide airlines with a clear delay/cancellation policy and may enable them to market and sell tickets for flight legs based oil passenger preference for reliability. We present three different ways to incorporate degradability into the scheduling process: (1) between flight scheduling and fleet assignment (degradable schedule partitioning model), (2) with fleet assignment (degradable fleet assignment model), and (3) with aircraft routing (degradable aircraft routing model). Each problem is modeled as an integer program. Search algorithms are applied to the degradable aircraft routing model, which has a large number of decision variables. Results indicate that we can successfully assign flight legs with high revenue itineraries in the higher priority layer without adding aircraft or changing the schedule, and differentiate the service quality for passengers in different priority layers. Passengers in the high priority layers have much less delay and fewer cancellations than passengers in low priority layers even during the bad weather. In terms of recovery cost, which includes revenue lost, operational cost saving and crew delay cost, degradable airline schedules can save up to $30,000 per day. Degradable airline schedules have cost saving effect, especially when an airport with a high capacity reduction in bad weather is affected by bad weather.

A Management Textbook Routledge

Liner Ship Fleet Planning: Models and Algorithms systematically introduces the latest research on modeling and optimization for liner ship fleet planning with demand uncertainty. Container shipping companies have struggled since the financial crisis of 2007-2008, making it critical for them to make informed decisions about their fleet planning and development. Current and future shipping professionals require systematic approaches for investigating and solving their fleet planning problems, as well as methodologies for addressing their other shipping responsibilities. Liner Ship Fleet Planning addresses these needs, providing the most recent quantitative research of liner shipping in maritime transportation. The research and methods provided assist those tasked with optimizing shipping efficiency and fleet deployment in the face of uncertain demand. Suitable for those with any level of quantitative background, the book serves as a valuable resource for both maritime academics, and shipping professionals involved in planning and scheduling departments. Introduces the latest research on maritime transportation problems Analyzes problems of liner ship fleet planning, taking uncertainty into account Promotes the use of mathematics to manage uncertainty, using stochastic programming models, and proposing solution algorithms to solve proposed models Includes case studies that provide detailed examples of real-world examples of fleet optimization Explains how stochastic programming modeling methods and solution algorithms can be applied to other research fields featuring uncertainty, such as container yard planning, berth allocation and vehicle deployment problems

Operations Research in the Airline Industry Routledge

The increase in practical problems generated by the intensive growth in air transport has necessitated the development of specialised operations research methods and modern computer technology. By combining operational research data from both scientific publications and airline companies, this book, first published in 1988, provides a unique source of information for those working on the development and application of operations research analysis in air transportation. Topics include air transport analysis, flight frequency determination, the scheduling of flights

and personnel, and the problems of airline overbooking.

An Introduction to the Mathematics of Planning and Scheduling Springer

A myriad of uncontrollable factors in airline operations make delays and disruptions unavoidable. Most conventional scheduling models, however, ignore the presence of uncertainties in actual operations in order to limit the complexity of the problem. This leads to schedules that are prone to delays and disruptions. As a result, there has been wide interest recently in building robustness into airline schedules. In this work, we investigate slack allocation approaches for robust airline schedule planning. In particular, we propose three models: aircraft re-routing model, flight schedule re-timing model, and block time adjustment model, together with their variants. Using data from an international carrier, we evaluate the impacts of the resulting schedules on various performance metrics, including passenger delays. The results show that minor modifications to an original schedule can significantly improve the overall performance of the schedule. Through empirical results, we provide a comprehensive discussion of model behaviors and how an airline's characteristics can affect the strategy for robust scheduling.

Disruption Management: Framework, Models, And Applications Routledge

This book chronicles airline revenue management from its early origins to the last frontier. Since its inception revenue management has now become an integral part of the airline business process for competitive advantage. The field has progressed from inventory control of the base fare, to managing bundles of base fare and air ancillaries, to the precise inventory control at the individual seat level. The author provides an end-to-end view of pricing and revenue management in the airline industry covering airline pricing, advances in revenue management, availability, and air shopping, offer management and product distribution, agency revenue management, impact of revenue management across airline planning and operations, and emerging technologies is travel. The target audience of this book is practitioners who want to understand the basics and have an end-to-end view of revenue management.

Aviation Project Management Routledge

Airline Operations and Management: A Management Textbook is a survey of the airline industry, mostly from a managerial perspective. It integrates and applies the fundamentals of several management disciplines, particularly economics, operations, marketing and finance, in developing the overview of the industry. The focus is on tactical, rather than strategic, management that is specialized or unique to the airline industry. The primary audiences for this textbook are both senior and graduate students of airline management, but it should also be useful to entry and junior level airline managers and professionals seeking to expand their knowledge of the industry beyond their own functional area.

Airlines' On-time Performance : Report to Congressional Requesters Routledge

This book introduces readers to the many variables and constraints involved in planning and scheduling complex systems, such as airline flights and university courses. Students will become acquainted with the necessity for scheduling activities under conditions of limited resources in industrial and service environments, and become familiar with methods of problem solving. Written by an expert author with decades of teaching and industry experience, the book provides a comprehensive explanation of the mathematical foundations to solving complex requirements, helping students to understand underlying models, to navigate software applications more easily, and to apply sophisticated solutions to project management. This is emphasized by real-world examples, which follow the components of the manufacturing process from inventory to production to delivery. Undergraduate and graduate students of industrial engineering, systems engineering, and operations management will find this book useful in understanding optimization with respect to planning and scheduling.

Operations Research Proceedings 2015 World Scientific

The Routledge Companion to Air Transport Management provides a comprehensive, up-to-date review of air transport management research and literature. This exciting new handbook provides a unique repository of current knowledge and critical debate with an international focus, considering both developed and emerging markets, and covering key sectors of the air transport industry. The companion consists of 25 chapters that are written by 39 leading researchers, scholars and industry experts based at universities, research institutes, and air transport companies and organisations in 12 different countries in Africa, Asia-Pacific, Europe and North America to provide a definitive, trustworthy resource. The international team of contributors have proven experience of research and publication in their specialist areas, and contribute to this companion by drawing upon research published mainly in academic, industry and government sources. This seminal companion is a vital resource for researchers, scholars and students of air transport management. It is organised into three parts: current state of the air transport sectors (Part I); application of management disciplines to airlines and airports (Part II); and key selected themes (Part III).

Airline Operations Routledge

An expert in business turnaround shares his inspiring approach to problem-solving: “A fascinating read” (Mitt Romney). Visionary leader Greg Brenneman believes that true business success and personal fulfillment are two sides of the same coin. The techniques that will grow your business will also help you achieve a rich, purposeful, and integrated life. Here, Brenneman takes what he’s learned from turning around or tuning up many businesses—including Continental Airlines and Burger King—and distills it into a simple, clear, five-step roadmap that anyone can follow. He teaches you how to: *prepare a succinct Go Forward plan *build a fortress balance sheet *grow your sales and profits *choose all-star servant leaders *empower your team For more than thirty years, Brenneman has seen these steps foster dramatic results in a variety of business environments. But he also came to realize that he could apply these same principles to improve his life and build a lasting moral legacy. He found he could make better decisions by carefully taking the most important facets of his life—faith, family, friendship, fitness, and finance—into consideration. Brenneman’s inspiring examples, from both his business and his life, demonstrate the astounding effects these steps can have when you apply them—right away and all at once.

Mathematical Models for Flight Scheduling in Airline Operations Routledge

Introduction: Although air transportation has been characterized by rapid development in vehicle design and performance, methods of airline management in the area of vehicle scheduling and control have advanced at a much slower pace. Because of high costs of operation and the pressures of current competition and government controls, effective and efficient use of aircraft is becoming an increasingly essential objective. The goal is to achieve an optimal balance between net revenue to the airline and improved level of service to

the customer. Improved return implies higher load factors and air - craft utilization whereas improved passenger service necessitates reduced waits and increased frequencies. These are often conflicting aims. New techniques must be mobilized to give management more useful and adaptive methods of operating and controlling an air transportation system. Perhaps the particular requirements -1- of a very short-haul high density transportation system will lead to more demand responsive approaches. It is with this motivation that this study of dynamic dispatching strategy is undertaken.

Competition in a Transnational Industry Routledge

A concise resource to the best practices and problem-solving ideas for understanding the airline network planning and scheduling process Airline Network Planning and Scheduling offers a comprehensive resource that is filled with the industry's best practices that can help to inform decision-modeling and the problem-solving process. Written by two industry experts, the book is designed to be an accessible guide that contains information for addressing complex challenges, problems, and approaches that arise on the job. The chapters begin by addressing the complex topics at a broad, conceptual level before moving on to more detailed modeling in later chapters. This approach follows the standard airline planning process and reflects the duties of the day-to-day job of network/schedule planners. To help gain a practical understanding of the information presented, each chapter includes exercises and data based on real-world case studies. In addition, throughout the book there are graphs and illustrations as well as, information on the most recent advances in airline network and planning research. This important resource: • Takes a practical approach when detailing airline network planning and scheduling practices as opposed to a theoretical perspective • Puts the focus on the complexity and main challenges as well as current practices and approaches to problem-solving and decision-making • Presents the information in a logical sequence that begins with broad, conceptual topics and gradually delves into more advanced topics that address modeling • Contains international standard airline planning processes, the day-to-day responsibilities of the job, and outlines the steps taken when building an airline network and schedule • Includes numerous case studies, exercises, graphs, and illustrations throughout Written for professionals and academics, Airline Network Planning and Scheduling offers a resource for understanding best practices and models as well as the challenges involved with network planning and scheduling.

Insights from Airline Economics, Networks and Strategic Schedule Planning Routledge

Modeling Applications in the Airline Industry explains the different functions and tactics performed by airlines during their planning and operation phases. Each function receives a full explanation of the challenges it brings and a solution methodology is presented, supported by numerical illustrative examples wherever possible. The book also highlights the main limitations of current practice and provides a brief description of future work related to each function. The authors have filtered the rich literature of airline management to include only the research that has actually been adopted by the airlines, giving a genuinely accurate representation of real airline management and its continuing development of solution methodologies. The book consists of 20 chapters divided into 4 sections: - Demand Modeling and Forecasting - Scheduling of Resources - Revenue Management - Irregular Operations Management. The book will be a valuable source or a handbook for individuals seeking a career in airline management. Written by experts with significant working experience within the industry, it offers readers insights to the real practice of operations modelling. In particular the book makes accessible the complexities of the key airline functions and explains the interrelation between them.

Transportation Research Board

" TRB's Airport Cooperative Research Program (ACRP) Report 82: Preparing Peak Period and Operational Profiles - Guidebook describes a process and includes software for converting annual airport activity forecasts into forecasts of daily or hourly peak period activity. The two Excel-based software modules are designed to help estimate current and future design day aircraft and passenger operation levels based on user-defined design day parameters. " -- publisher's description

Airline Operations and Scheduling Routledge

Airline Operations and SchedulingRoutledge

Airline Operations Research Elsevier

This book gathers a selection of refereed papers presented at the “International Conference on Operations Research OR2015,” which was held at the University of Vienna, Austria, September 1-4, 2015. Over 900 scientists and students from 50 countries attended this conference and presented more than 600 papers in parallel topic streams as well as special award sessions. Though the guiding theme of the conference was “Optimal Decision and Big Data,” this volume also includes papers addressing practically all aspects of modern Operations Research.

An Approach to Improve Operational Robustness and Differentiate Service Quality Springer Nature

The delivery of reliable and efficient aviation services is predicated on effective decisions being made concerning the planning and provision of airport and aircraft infrastructure. Decisions that are made about investment and capacity provision have long term implications for airports, airlines and consumers. This Volume addresses issues of forecasting, infrastructure planning and provision, capacity, scheduling, safety and security, disruption management and resilience. Accurately forecasting consumer demand for air travel is a vitally important but notoriously challenging aspect of aviation policy formation and management. Forecasts of airline and airport activity may differ considerably from original predictions and there have been many examples of operational difficulties resulting from the over or underestimation of demand. Such issues are apparent not only in terminal buildings but also on the airfield and are of critical interest to planners and operational decision makers. Another activity which is of paramount importance is scheduling. Scheduling forms a vital part of airline operations as it is concerned with making the optimum use of scare resources and meeting consumer demand profitably. In terms of aviation planning and operations the importance of safety and security cannot be overstated and a number of essays in this Volume address this area. Together with safety and security concerns, a number of other factors have the potential to disrupt planned schedules and any disruption has the potential to cause delays, inconvenience and lost productivity and so ensuring a quick and orderly return to normal routine operations is vital.

Related with Airline Operations And Scheduling:
© Airline Operations And Scheduling Beginners Guide To Woodworking