



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

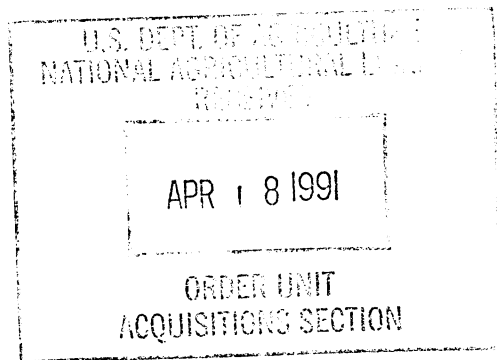
*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

FOOD DEMAND ANALYSIS
Implications for Future Consumption

Edited by
Oral Capps, Jr. and Benjamin Senauer

Sponsored by
The S-165 Southern Regional Research Committee
and
The Farm Foundation



Department of Agricultural Economics
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

August 1986

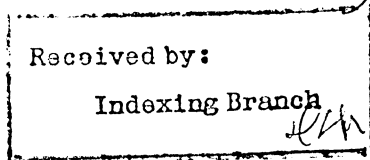


Table of Contents

Preface	vii
Acknowledgments	xii
MARKET DEMAND FUNCTIONS	
S.R. Johnson, Richard D. Green, Zuhair A. Hassan, and A.N. Safyurtlu	1
Individual Consumer Demand	2
Market Demand	5
Empirical Results for Market Demand Systems	13
Structural Dynamics	18
Scaling and Translating	22
Conclusions	25
GLOBAL BEHAVIOR OF DEMAND ELASTICITIES FOR FOOD: IMPLICATIONS FOR DEMAND PROJECTIONS	
Michael K. Wohlgenant	35
Methodology	36
Data and Estimation Procedure	39
Econometric Results	41
Implications for Demand Projections	44
FOOD EXPENDITURE PATTERNS: EVIDENCE FROM U.S. HOUSEHOLD DATA	
Chung L. Huang and Robert Raunika	49
The Linear Expenditure Model	51
The Data and Estimation Procedure	53
The Statistical Results	54
Implication and Application	61
Conclusion	63
PROJECTING AGGREGATE FOOD EXPENDITURES TO THE YEAR 2000	
Kuo S. Huang and Richard C. Haidacher	67
Abstract	67
Model Specifications	69
Empirical Estimation Results	71
Applications of the Estimated Model	75
Summary	83
DISCUSSION	
Joseph Havlicek, Jr.	87

IMPLICATIONS OF FACTORS AFFECTING FOOD CONSUMPTION	
Robert Raunikar and Chung L. Huang	91
Historical Perspective	92
Changing Explanatory Factors	93
Spatial and Temporal Effects	98
Implications and Conclusions	102
IS THE STRUCTURE OF THE DEMAND FOR FOOD CHANGING?	
IMPLICATIONS FOR PROJECTIONS	
Reuben C. Buse	105
The Model	107
The Analytical Model	110
The Results	113
Summary and Conclusions	124
THE EFFECTS OF HOUSEHOLD SIZE AND COMPOSITION	
ON THE DEMAND FOR FOOD	
David W. Price	131
Procedures	132
Changes in the Age-Sex Equivalent Food Population	
Over Time and Projections to the Year 2000	142
ROLE OF INTEGRATED DECISION THEORY IN CONSIDERING	
FUTURE FOOD CONSUMPTION PATTERNS OF THE ELDERLY	
Dorothy Z. Price	149
Decision Making Theories	149
Nutrition and the Elderly	151
Discussion of Empirical Study	153
Implications for the Future	157
EFFECTS OF INCREASING ELDERLY POPULATION	
ON FUTURE FOOD DEMAND AND CONSUMPTION	
Ronald A. Schrimper	163
Changes in Economic Well Being of the Elderly	164
Saving and Aggregate Expenditure Behavior	164
Expenditure Survey Evidence	165
Effects of Household Characteristics on Expenditure Patterns	167
Away-From-Home Food Expenditures	168
At-Home Food Expenditures	170
Evaluation of Elderly Diets	172
Implications on Future Demand for Food	173
COMMENTS: FOOD DEMAND ANALYSIS:	
IMPLICATIONS FOR FUTURE CONSUMPTION	
Lester H. Myers	177
General Factors Affecting Demand	178
Structure Change	179
Age Distribution and Family Size Changes	180
Impacts of an Increasing Proportion of Elderly People	181
Summary	183

POPULATION SCALE, COMPOSITION, AND INCOME EFFECTS ON PER CAPITA AND AGGREGATE BEEF CONSUMPTION: A TEMPORAL AND SPATIAL ASSESSMENT	
Patricia K. Guseman and Stephen G. Sapp	185
Procedures	186
Projections of U. S. Beef Consumption	196
Projections of Beef Consumption by Demographic Market Area	199
Summary and Conclusions	208
ORANGE AND GRAPEFRUIT JUICE DEMAND FORECASTS	
Mark G. Brown and Jong-Ying Lee	215
Demand Factors	216
Demand Specifications	220
Data and Variables	222
Results	223
Summary	227
ANALYSIS OF CONVENIENCE AND NONCONVENIENCE FOOD EXPENDITURES BY U. S. HOUSEHOLDS WITH PROJECTIONS TO THE YEAR 2000	
Oral Capps, Jr. and Joanne M. Pearson	233
Definitions of Convenience and Nonconvenience Foods	234
Model Development	234
Data and Procedures	239
Empirical Results	241
Projections	246
A SYSTEMATIC ANALYSIS OF HOUSEHOLD FOOD CONSUMPTION BEHAVIOR WITH SPECIFIC EMPHASIS ON PREDICTING AGGREGATE FOOD EXPENDITURES	
James C. O. Nyankori	251
Theoretical Basis: Household Resource Allocation Behavior	251
Data	253
Empirical Model	257
Empirical Results	261
IMPLICATIONS FOR FOOD DEMAND OF CHANGES IN COMPETITIVE STATE WITHIN MARKETING CHANNELS	
Barry W. Bobst	269
Disequilibrium Market Theory	269
Implications for Demand Analysis	271
Realism of Market Disequilibrium	272
Application of PAMEQ to Beef Markets	274
Implications for Demand Analysis in 2000	278
FOOD DEMAND ANALYSIS (DISCUSSION)	
Joseph C. Purcell	281
Comments on Papers	281
Concluding Comment	283
INDEX	285

PREFACE

This collection of papers deals with food demand analysis but emphasis is placed on implications for future consumption. We hope to provide the reader with informative and stimulating papers as well as comments from various distinguished discussants. This book is sponsored by Southern Regional Research Project S-165. The title of this regional project is "U.S. Food Demand and Consumption Behavior." The current project was preceded by previous Southern Regional Projects, which also focused on food demand analysis. Over the years, this regional research effort has acquired a nationwide participation. Currently Agricultural Experiment Stations from every region of the country are participating in S-165, although most of the participants are from the South.

We can say with considerable pride that the S-165 Regional Project now includes many, if not most, of the agricultural economists at land-grant universities in the United States. The participants in this Regional Project are predominantly agricultural economists, although the disciplines of rural sociology and human nutrition are also represented; this diversification is of great benefit to the Regional Project. Over the years, the members of this Regional Project have been united by their common research focus and by their shared interest in major national food-consumption and consumer-expenditure surveys. These shared-data interests have, in particular, included the Department of

Agriculture's Nationwide Food Consumption Survey and the Bureau of Labor Statistics Consumer Expenditure Survey.

The seed for this book was sown approximately 6 years ago at our annual meeting in San Antonio, Texas. At that meeting, we developed the current Regional Research Project proposal that was subsequently approved for funding. In our current project, we specifically wished to demonstrate the practical usefulness of our research and to share the results of our work with as large an audience as possible. Therefore, we made a commitment in our project proposal to hold a symposium on the implications of our demand analysis for future food consumption and to publish the symposium proceedings as a monograph.

In addition to the effect of income and prices traditionally studied in demand analysis, the pattern of food consumption in the United States is affected by a broad range of socio-demographic factors. Moreover, the characteristics of the U.S. population have been changing at an accelerating rate over the last few decades. Among the most apparent socio-demographic changes are the decrease in average household size, particularly the increase in one- and two-person households; the increase in the average age of the population, especially the rapidly rising number of senior citizens; the growing number of women in the work force, especially married women, thus creating multi-income families; and regional population shifts, particularly toward certain Sunbelt and Rocky Mountain states. All these changes, and a considerable number of other socio-economic factors not mentioned, affect food consumption patterns. For this reason, considerable

practical interest exists in the work of food demand analysts who are trying to assess the impact of these myriad changes.

We approach the task of drawing inferences concerning future food consumption with considerable professional humility. As social scientists, we have no crystal ball which reveals the future. In fact, it has been said that those who use the crystal ball learn to eat ground glass. We are required to study current and past relationships in order to make predictions about the future. Our Regional Research Committee had lengthy discussions at our last two annual meetings concerning the role of social scientists in formulating projections. Some of the papers develop specific numerical forecasts, whereas others simply discuss the implications of their analysis in a more general vein. Both approaches can provide useful insights regarding future food consumption patterns.

The major contribution of our research lies in the analysis of key behavioral relationships, the results of which must be combined with additional assumptions to create forecasts. Typically in making projections, certain of the underlying assumptions are explicitly stated, but others may be only implicit and not directly stated. For example, demand forecasts require assumptions about income growth and distribution and changes in baseline population characteristics. Further assumptions, either explicitly or implicitly, are required concerning the general price level and commodity-specific prices. The latter can be affected by both supply shocks and technical changes. In addition, the stability of the estimated behavioral relationships over long periods of time must be assumed. One possibility is to develop

various scenarios based on different underlying assumptions. However, even then there will almost certainly still be a set of assumptions that are invariant across the various scenarios. To the extent possible, though, the underlying assumptions should be made explicit to avoid misinterpretation of the results.

This book, based on the symposium proceedings, consists of 14 chapters. Comments from discussants are presented after certain chapters. Chapter 1 constitutes a review of the state of the art of demand analysis methodology by the three authors of a recent book on the subject. Chapter 2 focuses on a specific methodological issue of considerable current interest involving functional forms in demand analysis. The next two chapters concern the development of empirical estimates of particular demand models to draw inferences about future food consumption. These latter two chapters give an indication of the different approaches that can be used to address this issue, each providing rewarding insights. Joe Havlicek of Ohio State University serves as the discussant of these initial four chapters.

Chapter 5 addresses the relation between economic, social, and demographic changes and food consumption. Chapter 6 deals with the issue of structural change and its implications in demand analysis. The next three chapters concern the impacts of specific demographic factors, in particular the impacts of household size and composition and the elderly on food consumption patterns. Lester Meyers of the Economic Research Service, U.S. Department of Agriculture, provides a discussion of Chapters 5 through 9 inclusive.

Chapters 10, 11, and 12 concentrate on the demand for particular food groups or commodities, specifically beef, citrus juices, as well as convenience and non-convenience foods, in that order. The final two chapters concern specific demand analysis issues, important from either a methodological or empirical perspective. The discussant of the last five chapters is Joe Purcell from the Georgia Experiment Station.

Oral Capps, Jr.

Benjamin Senauer

ACKNOWLEDGMENTS

We wish to acknowledge the contributions of key individuals and institutions. The first is to the Farm Foundation, which has very generously provided financial support. The Farm Foundation paid the travel costs of our discussants to the Symposium held in Biloxi, Mississippi and is also underwriting the major cost of publishing the resulting monograph. We would particularly like to express our appreciation to Dr. Walter Armbruster of the Farm Foundation. We next need to acknowledge the members of the Regional Research Project's Symposium Organizing Committee, which was composed of Oral Capps, Jr. from Virginia, Robert Raunikaar from Georgia, Ron Schrimper from North Carolina, and Ben Senauer from Minnesota, as the chairperson. Organizing a program such as this one always seems to involve more work than one would expect a priori. A special thanks is due to our three discussants for their willingness to participate in this Symposium and to provide us with their insights. We would also like to express our appreciation to Preston LaFerney from Arkansas, our Administrative Advisor, and Roland Robinson, our CSRS representative. Also, we wish to acknowledge Mary Rhoades at Virginia Tech for the effort in constructing the index for this manuscript. Further, we wish to acknowledge the efforts of Jill Albert at Virginia Tech, in assisting us with the correspondence among all members of the Regional Project. Finally, and very importantly, we would like to especially acknowledge the very diligent efforts of Mary Holliman, Research Editor at Virginia Tech, for the definitive editorial job on this manuscript. The effort put forward by Mary Holliman was unequivocally above and beyond the call of duty.