AMERICAN STATISTICAL ASSOCIATION

PROCEEDINGS

of the

SOCIAL STATISTICS SECTION

1972

Papers presented at the Annual Meeting of the American Statistical Association, Montreal, Canada, August 14-17, 1972, under the Sponsorship of the Social Statistics Section.



AMERICAN STATISTICAL ASSOCIATION

806 15th Street, N.W. Washington, D.C. 20005

Copyright 1972 by the American Statistical Association

1972 OFFICERS, AMERICAN STATISTICAL ASSOCIATION

BOARD OF DIRECTORS

President William H. Shaw

President-Elect Clifford G. Hildreth

Past President Churchill Eisenhart

Lester R. Frankel (1970-72)

Vice Presidents T. W. Anderson (1971-73)

William H. Kruskal (1972-74)

Directors

John D. Durand (SS 1970-72) Fred C. Leone (SPES 1972-74)

Milton Moss (BE 1970-72) Gottfried E. Noether (T 1971-73)

Marvin A. Schneiderman (Bio 1972-74)

Executive Director and Secretary-Treasurer John W. Lehman

MEMBERS OF THE COUNCIL

(District Representatives, by District number; Section Representatives by Section code; Editors; Representatives-at-Large; Representatives from Biometric Society, ENAR)

Sidney Addelman - 2 (1971-72) Leonall C. Andersen - BE (1972-73)
Rolf E. Bargmann - 6 (1971-72)
Noel S. Bartlett - 7 (1971-72)
C. Allen Bickford - 2 (1972-73) Wallace R. Blischke - 10 (1972-73) Edward C. Bryant - 5 (1971-72) Foster B. Cady - ENAR (1971-72) Natalie Calabro - 3 (1971-72) Herbert T. David - 8 (1972-73) Olive J. Dunn - Bio (1972-73) Robert Ferber, Editor, Journal of ASA Donald A. Gardiner, Editor, Technometrics Edmund A. Gehan - 9 (1971-72) Jean D. Gibbons - RAL (1972-73) James E. Grizzle - ENAR (1972-73) William C. Guenther - 9 (1972-73) H. Leon Marter - SPES (1972-73)

David C. Hurst - 6 (1972-73) David L. Kaplan - 5 (1972-73) Leo Katz - T (1972-73) Leslie Koska - 7 (1972-73) Richard F. Link - 4 (1971-72) Eli S. Marks - SS (1972-73) Kenneth W. Masters - 4 (1972-73) Richard B. McHugh - 8 (1971-72) Donald F. Morrison, Editor, The American Statistician Jean Namias - 3 (1972-73) Kenneth M. Ross, Jr. - 10 (1971-72) H. Fairfield Smith - 1 (1971-72) Alan B. Sunter - 11 (1971-72) Michael E. Tarter - RAL (1971-72) Otto Tomasek - 11 (1972-73) Jane Worcester - 1 (1972-73)

1972 SECTION CHAIRMEN

Edmund A. Gehan, Biometrics Section Joseph L. Ciminera, Biopharmaceutical Subsection William C. Freund, Business & Economic Statistics Section Morris Gottlieb, Subsection on Statistics in Marketing Donald A. Gardiner, Section on Physical & Engineering Sciences Eva Mueller, Social Statistics Section Wilfrid J. Dixon, Statistical Computing Section Franklin A. Graybill, Section on Training Paul E. Leaverton, Subsection on Teaching of Statistics in the Health Sciences

RAL - Representative-at-Large

ENAR- Eastern North American Region. **Biometric Society**

Bio - Biometrics Section

BE - Business & Economic Statistics Section

SPES - Section on Physical and Engineering

Sciences

- Social Statistics Section

- Section on Training

(Edgar M. Bisgyer, Manager; Jean H. Smith, Administrative Assistant)

Foreword

This is the fifteenth annual edition of the Proceedings of the Social Statistics Section of the American Statistical Association.

This 1972 issue includes nearly all of the papers and discussions that were presented in the sessions sponsored by the Social Statistics Section at the Annual Meeting of the American Statistical Association in Montreal, Canada, August 14-17, 1972. The pages in this volume are mainly photographic reproductions of standard-format typescripts provided by the authors. Their specific contents have been edited only by the authors, and may be in a form preliminary to formal publication elsewhere. Included also are the minutes of the annual business meeting of the Social Statistics Section.

Acknowledgment is due to the participants in the sessions for their cooperation in providing the materials and to the ASA office staff for its work in compiling and arranging for the printing of the volume.

Edwin D. Goldfield Proceedings Editor

INDEX OF PARTICIPANTS

Adlakha, Arjun	137	Fuertes-de la Haba, Abelardo	198
Alm, R. M	190	Fuller, Wayne A	245
Anderson, Barbara A	146	Fullerton, Howard N	250
Anderson, Peter 0	194	Gale, Stephen	255
Arafat, Ibtihaj S	195	Goldstein, Sidney	260
Bangdiwala, Ishver S	198	Gonzalez, Maria Elena	283
Beck, E. M	14	Grasso, John T	265
Benus, Jacob	102	Gray, G. B	271
Beresford, John C	203	Greene, Stanley	277
Birdsall, William C	99	Gurney, Margaret	283
Bosworth, Bruce	206	Haase, Kenneth W	289
Bryant, E. Earl	370	Hamel, Harvey R	294
Burmeister, Leon F	245	Hartley, H. O	413
Bush, J. W	71	Hauser, Philip M	95
Cain, Robert W	175	Hauser, Robert M	7
Carroll, W. F	190	Herriot, Roger A	300
Chen, Martin K9	3,212	Hill, Robert B	117
Chen, Milton M	71	Israel, Robert A	20
Chromy, J. R	48	Jenkins, 0. C	413
Clemmer, Anne	48	Johnson, Charles E	306
Coder, John F	218	Kaitz, Hyman B	312
Cullen, Ruth M	127	Kantrowitz, Nathan	317
Duncan, Otis Dudley	151	Kennedy, Jacqueline	370
Eckler. A. Ross	172	Keyfitz, Nathan	25
Elashoff, Janet Dixon	223	Kincannon, C. L	181
Elashoff, Robert M	223	Knott, Joseph J	323
El Attar, M. E	227	Koch, Gary G	352
Erhardt, Carl L	42	Kohen, Andrew I	329
Evans, Marshall C	20	Koop, J. C	335
Featherman, David L	7	Kossack, Carl F	341
Ferriss, Abbott L	60	Kripalani, G. K	344
Flaim, Paul O	233	Kuzik, Richard A	403
Frankel, Martin	53	Lane, Angela	1
Freedman, Deborah S	240	Larson, Robert C	55

	Lazerwitz, Bernard	46	Roderick, Roger D	329
	Lee, Everett S	168	Rogers, W. Todd	55
	Lehnen, Robert G	352	Romaniuk, A	376
	Leone, Richard D	432	Rothman, David	417
	Lerner, Monroe	81	Saveland, Walter	382
	Levy, Paul S	356	Scolnick, Adolph	420
	Lunde, Anders S	25	Searls, Donald T	55
	Mandell, Lewis	360	Seltzer, Norman	178
· ·	Marans, Robert W	360	Shea, John R	265
	Martin, John M	127	Singh, B. Krishna	426
	McNeil, John M	364	Singh, M. P	397
	Miller, Henry W	370	Sirken, Monroe G	356
	Mitra, S	376	Siskin, Bernard	432
	Moore, Eric G	255	Stotereau, Thomas	438
	Moore, R. P	48	Sukhatme, B. V	442
	Morgan, James	102	Suter, Larry E	306
	Murphy, E. M	158	Taeuber, Karl E	154
	Nargundkar, M. <u>S</u>	382	Taeuber, Richard C	168
	Nathan, Gad	386	Tang, Victor K. T	442
	Nelson, Frieda G	31	Tarver, J. D	227
	Newman, Dorothy K	117	Templeton, Marvin C	20
	O'Hare, Donna	31	Thomassen, Henry	446
	Ono, Mitsuo	390	Tunstall, Daniel B	89
	Pakter, Jean	31	Waksberg, Joseph	162
	Parke, Robert	135	Wanner, Richard A	14
	Patrick, Donald L	71	Weitzman, Murray S	107
	Peron, Yves	44	Weller, Robert H	448
	Platek, R	397	Welty, G. A	190
	Powers, Mary G	127	Williams, J. Sherwood	426
	Priebe, John	277	Wilson, Ronald W	289
	Rao, J. N. K	403	Winsborough, Hal H	154
	Rao, N. Baskara	407	Yin, Robert K	121
	Ringer, L. J	413	Yordy, Karl D	66

TABLE OF CONTENTS

1

DEVELOPMENTS IN THE ANALYSIS OF SOCIAL MOBILITY

Chairman: ROBERT M. HAUSER, University of Wisconsin	
A Synthetic Cohort Analysis of Occupational Achievement and Migration - ANGELA LANE, Indiana University	1
Trends in Occupational Mobility, 1962-1970 - ROBERT M. HAUSER and DAVID L. FEATHERMAN, University of Wisconsin-Madison	7
Least-Squares Estimation of Effects on Inter- and Intragenerational Occupational Transition Probabilities - RICHARD A. WANNER and E. M. BECK, University of Wisconsin	14
H	
DEVELOPMENTS IN VITAL STATISTICS	
Chairman: ANDERS S. LUNDE, National Center for Health Statistics	
New Approaches to Coding and Analyzing Mortality Data - ROBERT A. ISRAEL, MARVIN C. TEMPLETON and MARSHALL C. EVANS, National Center for Health Statistics	20
Interpretation of Vital Statistics - ANDERS S. LUNDE, National Center for Health Statistics, and NATHAN KEYFITZ, Harvard University	25
Experience with Abortion Reporting in New York City Following Liberalization of the Law - FRIEDA G. NELSON, JEAN PAKTER and DONNA O'HARE, New York City Health Department	31
Discussion - CARL L. ERHARDT, Consultant, New York City	42
Discussion - YVES PERON, University of Montreal	44
111	
SAMPLING ERROR AND DESIGN EFFECTS IN SURVEY RESEARCH - SESSION DEDICATED TO THE MEMORY OF P. C. MAHALANOBIS	
Chairman: C. MICHAEL LANPHIER, York University	
An Examination of Optimization in the Missouri Master Sample - BERNARD LAZERWITZ, University of Missouri	46
Design Effects in the National Assessment of Educational Progress Surveys - J. R. CHROMY, R. P. MOORE and ANNE CLEMMER, Research Triangle Institute	48
SEPP (Sampling Error Program Package) - MARTIN R. FRANKEL, Baruch College, CUNY and University of Michigan	53
IV	
DEVELOPMENT OF SOCIAL INDICATORS: I. EDUCATION	
Chairman: JOHN K. FOLGER. Tennessee Commission on Higher Education	
National Assessment of Educational Progress: An Educational Indicator - ROBERT C. LARSON, W. TODD ROGERS and DONALD T. SEARLS, National Assessment of Educational Progress	55
Monitoring and Interpreting Turning Points in Educational Indicators - ABBOTT L. FERRISS, Emory University	60

DEVELOPMENT OF SOCIAL INDICATORS: II. HEALTH

Chairman: MONROE G. SIRKEN, National Center for Health Statistics	
Why Health Indicators - KARL D. YORDY, Institute of Medicine	66
Social Indicators for Health Based on Function Status and Prognosis - J. W. BUSH, MILTON M. CHEN and DONALD L. PATRICK, University of California, San Diego	71
An Approach to Conceptualizing the Level of Community Health - MONROE LERNER, The Johns Hopkins University	81
Discussion - DANIEL B. TUNSTALL, Office of Management and Budget	89
Discussion - MARTIN K. CHEN, National Center for Health Services Research and Development	93
VI	
LUNCHEON ADDRESS	
Chairman; EVA MUELLER, University of Michigan	
Statistics and Politics - PHILIP M. HAUSER, University of Chicago	95
VII	
DEVELOPMENT OF SOCIAL INDICATORS: III. INCOME AND WELFARE	
Chairman: MOLLIE ORSHANSKY, Social Security Administration	
Income as a Measure of Welfare: The Issues and a Dissent - WILLIAM C. BIRDSALL, Social Security Administration	99
Income Instability as a Dimension of Welfare - JACOB BENUS and JAMES MORGAN, Institute for Social Research, University of Michigan	102
Preparing Economic and Social Perspectives for Families and Unrelated Individuals from the Current Population Survey - MURRAY S. WEITZMAN, U. S. Bureau of the Census	107
VIII	
SOCIAL STATISTICS FOR PLANNING AND POLICY NEEDS	
Chairman: MARY G. POWERS, Fordham University	
Using Social Statistics for Policy and Program Development - ROBERT B. HILL, National Urban League, and DOROTHY K. NEWMAN, Washington Center for Metropolitan Studies	117
Policy Uses of Urban Indicators - ROBERT K. YIN, The New York City-Rand Institute	121
Policy Implications of Current Drug Abuse Estimates for Local Areas in New York City - MARY G. POWERS, RUTH M. CULLEN and JOHN M. MARTIN, Fordham University	127
Discussion - ROBERT PARKS, Social Science Research Council	135

INTERNATIONAL DEMOGRAPHIC STATISTICS: ISSUES OF COMPARABILITY

Chairman: WILLIAM SELTZER, The Population Counc	Chairman:	WILLIAM	SELTZER,	The	Population	Council
---	-----------	---------	----------	-----	------------	---------

On Problems of Accuracy and Comparability of International Fertility Data - ARJUN ADLAKHA, Food Research Institute, Stanford University	137
Problems of International Comparability in Internal Migration Research - BARBARA A. ANDERSON, Princeton University	146
X	
STATISTICS AND THE PUBLIC INTEREST: SOCIAL SCIENCE ASPECTS	
Chairman: I. RICHARD SAVAGE, Florida State University	
Federal Statistics, Non-Federal Statisticians - OTIS DUDLEY DUNCAN, University of Michigan	151
Federal Statistics for What? - HAL H. WINSBOROUGH and KARL E. TAEUBER, University of Wisconsin	154
XI	
RECENT CENSUS EXPERIENCE	
Chairman: CONRAD TAEUBER, U. S. Bureau of the Census	
Data Bases for Data Users - EDMUND M. MURPHY, Statistics Canada	158
Evaluating the Quality of the 1970 Census - JOSEPH WAKSBERG, U. S. Bureau of the Census	162
Organizing Census Results for Use by Social Scientists - EVERETT S. LEE, University of Georgia, and RICHARD C. TAEUBER, Oak Ridge National Laboratory	168
Discussion - A. ROSS ECKLER, Consultant	172
XII	
NEW DIRECTIONS IN SCIENTIFIC AND TECHNICAL MANPOWER PROGRAMS	
Chairman: MURRAY S. WEITZMAN, U. S. Bureau of the Census	
Manpower Characteristics System - ROBERT W. CAIN, National Science Foundation	175
The 1972 Postcensal Survey of Professional Scientific and Technical Manpower - NORMAN SELTZER, National Science Foundation	178
The Census Role in Scientific and Technical Manpower Programs for the 70's - C. L. KINCANNON, U. S. Bureau of the Census	181

CONTRIBUTED PAPERS

The Internal Validity of the Kuhn-McPartland TST - R. M. ALM, W. F. CARROLL and G. A. WELTY, American University	190
Large Sample and Jackknife Procedures for Small Sample Orthogonal Least Squares Inference - PETER O. ANDERSON, Ohio State University	194
Variance Component Analysis of Census Data and the Use of the Harmonic Mean - IBTIHAJ S. ARAFAT, City College of City University of New York	195
Seasonal Patterns of Births in Puerto Rico - ISHVER S. BANGDIWALA and ABELARDO FUERTES-de la HABA, University of Puerto Rico	198
The Clearinghouse and Laboratory for Census Data and Statistics on Federal Statistics Users - JOHN C. BERESFORD, National Data Use and Access Laboratories	203
Racial Discrimination and Income Differentials as Related to Education and Age, 1939 to 1967 - BRUCE BOSWORTH, St. John's University	206
A New Approach for the Management of Health - MARTIN K. CHEN, National Center for Health Services Research and Development	212
Selected Sources of Public Transfer Money Income from the Current Population Survey - JOHN F. CODER, U. S. Bureau of the Census	218
Two Sample Problems for a Dichotomous Variable with Missing Data - JANET DIXON ELASHOFF, Stanford University, and ROBERT M. ELASHOFF, University of California, San Francisco	223
A Theoretical Model for Predicting Internal Migration in the United States - M. E. AL ATTAR, Mississippi State University, and J. D. TARVER, University of Georgia	227
The Discouraged Workers' Effect as Measured through the Current Population Survey - PAUL O. FLAIM, U. S. Bureau of Labor Statistics	233
Family Size and Economic Welfare in a Developing Economy - DEBORAH S. FREEDMAN, The University of Michigan	240
Estimators for Samples Selected from Two Overlapping Frames - WAYNE A. FULLER, lowa State University, and LEON F. BURMEISTER, University of lowa	245
Sensitivity of Generation Tables of Working Life for Men to Different Projections of Labor Force Participation Rates and Mortality Rates - HOWARD N. FULLERTON, U. S. Bureau of Labor Statistics	250
Some Dynamic Indicators of Neighborhood Change - STEPHEN GALE and ERIC G. MOORE, Northwestern University	255
The Influence of Labor Force Participation on Fertility in Thailand - SIDNEY GOLDSTEIN, Brown University	260
The Effects of High School Curriculum on Age-Earnings Profiles - JOHN T. GRASSO and JOHN R. SHEA, Center for Human Resource Research, The Ohio State University	265
Joint Probabilities of Selection of Units in Systematic Samples - G. B. GRAY, Statistics Canada	27 1
Changes in the Occupation and Industry Classification Systems between the 1960 and 1970 Census of Population - STANLEY GREENE and JOHN PRIEBE, U. S. Bureau of the Census	277
Estimates for Samples from Frames Where Some Units Have Multiple Listings - MARGARET GURNEY and MARIA ELENA GONZALEZ, U. S. Bureau of the Census	283
The Study Design of an Experiment to Measure the Effects of Using Proxy Responses in the National Health Interview Survey - KENNETH W. HAASE and RONALD W. WILSON, National Center	
for Health Statistics	289
Employment Profiles of Selected Low-Income Areas, 1970 - HARVEY R. HAMEL, U. S. Bureau of Labor Statistics	294

Estimating the Distribution of the Federal Income and Social Security Taxes - An Interim Report on a Simulation Approach - ROGER A. HERRIOT, U. S. Bureau of the Census	300
Measuring School and College Enrollment: A Comparison of Census Bureau and Office of Education Data - CHARLES E. JOHNSON, Jr. and LARRY E. SUTER, U. S. Bureau of the Census	306
The Duration of Unemployment - HYMAN B. KAITZ, U. S. Bureau of Labor Statistics	312
Application of Life Table Techniques to Criminal Statistics: Parole Violation - NATHAN KANTROWITZ, Kent State University	317
An Analysis of the Effect of Income Rounding in the Current Population Survey - JOSEPH J. KNOTT, U. S. Bureau of the Census	323
Causes of Differentials in Early Labor Market Success Among Young Women - ANDREW I. KOHEN and ROGER D. RODERICK, Center for Human Resource Research, The Ohio State University	329
On the Estimation of Functional Relationships for a Finite Universe - J. C. KOOP, Research Triangle Institute, N. C	335
A Generalized Approach to Sampling on Several Occasions - CARL F. KOSSACK, University of Georgia	341
Race-Sex Discrimination Indices for Non-Metropolitan State Economic Areas - G. K. KRIPALANI, Western Michigan University	344
The Stability of Voter Preferences in Two Southern States: An Analysis of Panel Data with Attrition - ROBERT G. LEHNEN and GARY G. KOCH, University of North Carolina	352
Quality Control of Statistical Reports - PAUL S. LEVY and MONROE G. SIRKEN, National Center for Health Statistics	356
The Relative Effectiveness of Density-Related Measures for Predicting Attitudes and Behavioral Variables - ROBERT W. MARANS and LEWIS MANDELL, The University of Michigan	360
Survey Measures of Changes in Household Wealth and Buying Expectations: A Note on Methodology - JOHN McNEIL, U. S. Bureau of the Census	364
A Study of the Effect of Remuneration upon Response in a Health and Nutrition Examination Survey - HENRY W. MILLER, JACQUELINE KENNEDY and E. EARL BRYANT, National Center for Health Statistics	370
Pearsonian Type I Curve and Its Fertility Projection Potentials - S. MITRA, Emory University and A. ROMANIUK, Statistics Canada and University of Montreal	376
Random-Rounding to Prevent Statistical Disclosures - M. S. NARGUNDKAR, Statistics Canada, and WALT SAVELAND, Indian and Northern Affairs	382
An Extension of the Response Error Model for Application to Complex Estimators Based on Different Samples - GAD NATHAN, Hebrew University, Jerusalem and Central Bureau of Statistics, Israel	386
Preliminary Evaluation of 1969 Money Income Data Collected in the 1970 Census of Population and Housing - MITSUO ONO, U. S. Bureau of the Census	390
Some Aspects of Redesign of the Canadian Labour Force Survey - R. PLATEK and M. P. SINGH, Statistics Canada	397
Sampling Errors in Ratio Estimation - J. N. K. RAO and RICHARD A. KUZIK, University of Manitoba and Department of Indian Affairs and Northern Development, Canada	403
Fertility and Income in Canada - N. BASKARA RAO, University of Alberta	407
Root Estimators for the Mean of Skewed Distributions - L. R. RINGER, O. C. JENKINS and H. O. HARTLEY, Texas A&M University	413
Proposal for Continuous Alphabetically Staggered Census - DAVID ROTHMAN New York City	417

Demographic and Socio-Economic Characteristics of Medical Laboratory Manpower - ADOLPH SCOLNICK, U. S. Bureau of Health Manpower Education	420
Feedback in Path Analysis: Some Sociological Examples - B. KRISHNA SINGH and J. SHERWOOD WILLIAMS, Virginia Commonwealth University	426
A Sample Design for Interviewing a Hard-to-Locate Population - BERNARD R. SISKIN and RICHARD D. LEONE, Temple University	432
Consumer Anticipations and Household Characteristics - THOMAS STOTEREAU, U. S. Bureau of the Census	438
Allocation in Stratified Sampling Based on Preliminary Test of Significance II - VICTOR K. T. TANG, California State University, Humboldt, and B. V. SUKHATME, Iowa State University	442
Some Compliance Tests for a University Segment - HENRY THOMASSEN, University of Nebraska-Lincoln	446
Expected, Desired and Cumulative Family Size - ROBERT H. WELLER, Florida State University	448
* * * * *	
Minutes of the Annual Meeting of the Social Statistics Section, Montreal, Canada, August 15, 1972	454

	•			
	•			
•				
			*	
		AMMARIA V		