

AMERICAN STATISTICAL ASSOCIATION

P R O C E E D I N G S

of the

SOCIAL STATISTICS SECTION

1961

Papers and discussions presented at the 121st Annual Meeting of the American Statistical Association, New York City, December 27-30, 1961, under the sponsorship of the Social Statistics Section.

Price \$4.00

AMERICAN STATISTICAL ASSOCIATION
1757 K Street, N.W. Washington, D.C.

1961 OFFICERS, AMERICAN STATISTICAL ASSOCIATION

BOARD OF DIRECTORS

| | | |
|---|-------------------------------|------------------------------|
| <i>President</i> | <i>President-Elect</i> | <i>Past President</i> |
| Martin R. Gainsbrugh | Philip M. Hauser | Morris H. Hansen |
| <i>Vice-Presidents</i> | | |
| Guy H. Orcutt (1959-61) | George E. P. Box (1960-62) | Geoffrey H. Moore (1961-63) |
| <i>Directors</i> | | |
| A. H. Bowker (1959-61) | Harold F. Dorn (1960-62) | Douglas G. Chapman (1961-63) |
| Raymond T. Bowman (1959-61) | Frederick Mosteller (1960-62) | Dorothy M. Gilford (1961-63) |
| <i>Secretary-Treasurer and Executive Director</i> | | |
| Donald C. Riley | | |

MEMBERS OF THE COUNCIL

| | | |
|-----------------------|----------------------|----------------------|
| Geoffrey Beall | James E. Grizzle | Paul D. Minton |
| Robert J. Buehler | Morris Hamburg | Nathan Morrison |
| J. Parker Bursk | Clifford G. Hildreth | Gottfried E. Noether |
| Herbert A. David | Robert G. Hooke | Louis J. Paradiso |
| Arthur M. Dutton | J. Stuart Hunter | Samuel B. Richmond |
| Churchill Eisenhart | D. V. Huntsberger | Ernest Rubin |
| E. J. Engquist, Jr. | R. E. Johnson | Harry Sharp |
| W. T. Federer | Nathan Keyfitz | William H. Shaw |
| S. M. Free, Jr. | Clyde Y. Kramer | Robert B. Spears |
| John E. Freund | Gerald J. Lieberman | Conrad Taeuber |
| Richard A. Freund | Arthur S. Littell | Max S. Weinstein |
| Maurice I. Gershenson | Hyman Menduke | Albert T. Sommers |
| John I. Griffin | | |

1961 SECTION CHAIRMEN

| | |
|-----------------------------|---|
| Arthur M. Dutton | <i>Biometrics Section</i> |
| Louis J. Paradiso | <i>Business & Economic Statistics Section</i> |
| G. J. Lieberman | <i>Section on Physical & Engineering Sciences</i> |
| Nathan Keyfitz | <i>Social Statistics Section</i> |
| J. Parker Bursk | <i>Section on Training</i> |

TABLE OF CONTENTS – 1961

I

COMPUTER USES IN SOCIAL STATISTICS

Chairman, Joseph F. Daly, Bureau of the Census

| | |
|--|----|
| Developments in Processing Statistics from Tax Returns-E. J. Engquist, Jr., Internal Revenue Service | 2 |
| Some Implications of Computer Processing of Economic Censuses and Surveys-Jack A. Scharff, Nathaniel Swersky, and Eugene L. Wendt, Bureau of the Census..... | 9 |
| Selected Computer Applications in Processing Data from a Continuing Health Household Interview Survey-Walt R. Simmons, Robert T. Little, and Eleanor L. Madigan, National Center for Health Statistics | 15 |

II

PANEL DISCUSSION-REPORT OF THE TECHNICAL COMMITTEE ON BROADCAST RATINGS

Chairman, Andrew Stevenson, Committee on Interstate and
Foreign Commerce, U.S. House of Representatives

Panel:

| | |
|--|----|
| William G. Madow, Stanford Research Institute..... | 24 |
| Raymond J. Jessen, C-E-I-R, Inc. | 29 |
| Bud Sherak, Kenyon & Eckhardt, Inc. | 32 |
| Hyman H. Goldin, Federal Communications Commission | 36 |
| Jay Eliasberg, CBS Television Network Research..... | 38 |

III

INTERNATIONAL STATISTICS

Chairman, William R. Leonard, United Nations Statistical Office

| | |
|---|----|
| Change of Manufacturing Output-H. S. Booker, London School of Economics | 42 |
| Techniques of Sampling and Statistical Evaluation for Census Work-Eli S. Marks, Case Institute of Technology | 49 |
| Uses of Electronic Computers in Processing Censuses-James L. McPherson, Bureau of the Census | 52 |
| Discussion-A. J. Jaffe, Columbia University..... | 56 |

IV

EDUCATIONAL STATISTICS

Chairman, Francis G. Cornell, Educational Research Services, Inc.

| | |
|---|----|
| Some Statistical Findings from Nationwide Teacher Polling-Glen Robinson, National Education Association and Chester H. McCall, Jr., Booz-Allen Applied Research, Inc..... | 58 |
| On Estimation of School Population-Philip M. Hauser and Evelyn M. Kitagawa, University of Chicago | 64 |
| Discussion-John Folger, Florida State University..... | 71 |
| Discussion-Louis H. Conger, Jr., U.S. Office of Education..... | 72 |

TABLE OF CONTENTS — 1961

V

THE METHODS OF THE 1961 CENSUS OF CANADA

Chairman, Walter E. Duffett, Dominion Bureau of Statistics

| | |
|--|----|
| Some Problems Encountered in the Planning and Taking of the 1961 Census of Canada-O. A. Lemieux, Dominion Bureau of Statistics | 74 |
| A Comparison of Some of the Census Concepts used in Canada and the United States-J. T. Marshall, Dominion Bureau of Statistics | 81 |
| The Tabulation Programme for the 1961 Census of Canada-Donald A. MacIntosh, Dominion Bureau of Statistics | 92 |
| Discussion-A. Ross Eckler, Bureau of the Census | 96 |

VI

TRENDS AS REVEALED BY THE 1960 POPULATION CENSUS OF THE UNITED STATES

Chairman, Dorothy S. Thomas, University of Pennsylvania

Working Paper:

| | |
|--|-----|
| Conrad Taeuber, Howard G. Brunsman and Henry S. Shryock, Jr., Bureau of the Census | 100 |
| Discussion-Talcott Parsons, Harvard University | 127 |

VII

DEVELOPMENTS IN SCIENTIFIC AND TECHNICAL PERSONNEL STATISTICS

Chairman, Philip M. Hauser, University of Chicago

| | |
|---|-----|
| Three Years after the Hauser Committee Report on Scientific and Technical Personnel Data-Thomas J. Mills, National Science Foundation | 132 |
| Periodic Establishment Surveys of Employment in Science and Engineering-Robert W. Cain, National Science Foundation | 135 |
| Studies of Demand for Scientific and Technical Personnel-Harold Goldstein, Bureau of Labor Statistics | 139 |
| A Program of Census-Related Studies of Scientific and Technical Personnel-Seymour Warkov, National Opinion Research Center | 143 |

VIII

RECENT FINDINGS IN HEALTH STATISTICS

Chairman, Paul M. Densen, New York City Department of Health

| | |
|---|-----|
| The Increasing Mortality from Chronic Respiratory Diseases-Harold F. Dorn, National Institutes of Health | 148 |
| Some Statistical Problems Involved in a One-Day Census of Hospital Patients-J. D. Colman and Nathan Morrison, Associated Hospital Service of New York | 153 |
| A Method for Analyzing Longitudinal Observations on Individuals in the Framingham Heart Study-Harold A. Kahn, National Institutes of Health | 156 |

IX

PANEL DISCUSSION: STATISTICS AND SURVEYS AS LEGAL EVIDENCE

Chairman, Eli S. Marks, Case Institute of Technology

Panel:

| | |
|--|-----|
| W. Edwards Deming, Consultant in Statistical Surveys | 163 |
| Arnold J. King, National Analysts, Inc. | 164 |
| James A. Bayton, National Analysts, Inc. | 169 |

TABLE OF CONTENTS – 1961

X

THE PRESENT STATUS AND FUTURE PROSPECTS OF SOCIAL STATISTICS

Memorial Session in Honor of Professor Samuel A. Stouffer

Chairman, Conrad Taeuber, Bureau of the Census

| | |
|--|-----|
| Samuel A. Stouffer and the Progress of Social Statistics-Frederick F. Stephan, Princeton University | 176 |
| Social Statistics, Social Science and Social Engineering-Philip M. Hauser, University of Chicago | 180 |
| Institution and Imagination in Statistical Progress-Nathan Keyfitz, University of Toronto | 186 |

XI

CONTRIBUTED PAPERS IN SOCIAL STATISTICS

Chairman, Joseph Steinberg, Bureau of the Census

| | |
|---|-----|
| Factors Affecting Family Income: Results of a Conditional Probability Analysis-James Morgan, University of Michigan, Martin David, U. S. Department of Treasury and Harvey Brazer, U. S. Department of Treasury | 192 |
| Measurement of Nonsampling Errors in a Survey of Homeowners' Expenditures for Alterations and Repairs-John Neter, University of Minnesota and Joseph Waksberg, Bureau of the Census | 201 |
| Some Effects of Interviewer-Respondent Interaction on Response in a Survey Situation-Daniel O. Price and Ruth Searles, University of North Carolina | 211 |
| Reconciliation Problems Among The Social Accounts-Richard Kosobud, Survey Research Center, The University of Michigan | 222 |
| *A Multi-Stage Probability Sample for Traffic Surveys-Leslie Kish, Survey Research Center, University of Michigan, Warren Lovejoy and Paul Rackow, The Port of New York Authority | 227 |
| Asymptotic Equivalence of Efficiency for Three Procedures of Unequal Probability Sampling without Replacement-J. N. K. Rao, Iowa State University | 231 |
| Empirical Sequential Tests-Lester S. Adelman, Martin Miller and Peter Nemenyi, State University of New York, Downstate Medical College | 235 |
| On the Derivation of Optimum Allocation Formulas in Stratified Multi-Stage Sampling by the Use of the Cauchy Inequality-J. C. Koop, North Carolina State College | 242 |

* Presented at the 1960 Annual Meeting of the American Statistical Association,
but not included in the Proceedings of that year.

INDEX OF PARTICIPANTS

| | <u>Page</u> | | <u>Page</u> |
|---------------------------|-------------|-----------------------------|-------------|
| Lester S. Adelman | 235 | Donald A. MacIntosh..... | 92 |
| James A. Bayton..... | 169 | Eleanor L. Madigan..... | 15 |
| H. S. Booker | 42 | William G. Madow..... | 24 |
| Harvey Brazier..... | 196 | Eli S. Marks..... | 49 |
| Howard G. Brunsman..... | 100 | J. T. Marshall..... | 81 |
| Robert W. Cain | 135 | Chester H. McCall, Jr. | 58 |
| J. D. Colman | 153 | James L. McPherson | 52 |
| Louis H. Conger, Jr. | 72 | Martin Miller | 235 |
| Martin David..... | 192 | Thomas J. Mills | 132 |
| W. Edwards Deming..... | 163 | James Morgan | 196 |
| Harold F. Dorn | 148 | Nathan Morrison | 153 |
| A. Ross Eckler | 96 | Peter Nemenyi | 235 |
| Jay Eliasberg..... | 38 | John Neter | 206 |
| E. J. Engquist, Jr. | 2 | Talcott Parsons | 127 |
| John Folger | 71 | Daniel O. Price | 211 |
| Hyman H. Goldin..... | 36 | Paul Rackow | 227 |
| Harold Goldstein | 139 | J. N. K. Rao | 231 |
| Philip M. Hauser.....64, | 180 | Glen Robinson..... | 58 |
| A. J. Jaffe | 56 | Jack A. Scharff | 9 |
| Raymond J. Jessen..... | 29 | Ruth Searles | 211 |
| Harold A. Kahn | 156 | Bud Sherak | 32 |
| Nathan Keyfitz | 186 | Henry S. Shryock, Jr. | 100 |
| Arnold J. King..... | 164 | Walt R. Simmons..... | 15 |
| Leslie Kish..... | 227 | Frederick F. Stephan | 172 |
| Evelyn M. Kitagawa | 64 | Nathaniel Swersky | 9 |
| J. C. Koop | 242 | Conrad Taeuber | 100 |
| Richard Kosobud | 222 | Joseph Waksberg | 201 |
| O. A. Lemieux | 74 | Seymour Warkov | 143 |
| Robert T. Little | 15 | Eugene L. Wendt | 9 |
| Warren Lovejoy..... | 235 | | |

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

This 1961 issue includes nearly all of the papers and discussions (a few of them in summary form) that were presented in the 11 sessions sponsored by the Social Statistics Section at the Annual Meeting of the American Statistical Association in New York City, December 26-30, 1961. The pages in this volume are mainly photographic reproductions of manuscripts provided by the authors. Their specific contents have been edited only by the authors.

On behalf of the Social Statistics Section we express gratitude to the authors of the papers, the discussants, and the chairmen of the sessions. President Martin R. Gainsbrugh and Secretary-Treasurer Donald C. Riley have given active support to the project, and Office Manager Edgar M. Bisgyer and his competent staff have been responsible for the major share of the labor in producing the publication.

Nathan Keyfitz
Chairman

Edwin D. Goldfield
Proceedings Editor

