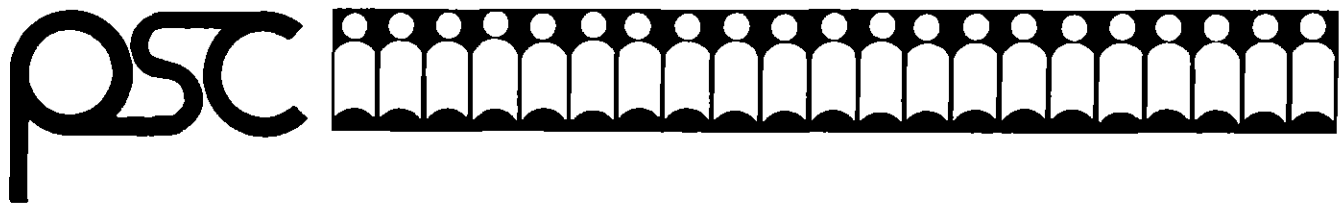


THE UNIVERSITY OF MICHIGAN

**POPULATION
STUDIES
CENTER
1977-1979**



1977-1979
Annual Report
of the
Population Studies Center
Howard Rontal, *Editor*



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DIRECTOR'S STATEMENT

It would be rash to proclaim that the Age of Demography has dawned but there is unmistakable evidence that population studies has moved from the shadow to the penumbra of the public spotlight. Perhaps the most telling item is the new noun "demographics," which increasingly finds its way into news columns and the more sophisticated cartoons, exemplifying the accretion of language that accompanies fads and fashions. The *Wall Street Journal* has reported in a front-page story of the growing interest in demographers by business firms as well as state and federal agencies; and a new magazine, *American Demographics*, attempts to translate our findings to planners and the larger public.

This modestly burgeoning interest is not without its ironies. Support for the training of doctoral students, both American and foreign, appears precarious despite a sustained high level of applicants and successful placement of graduates, as concern for the oversupply of Ph. D.'s in the social sciences rubs off on population studies. In addition, the constraints facing universities have inhibited the growth of population centers although exciting research opportunities are rapidly expanding. New data bases, such as the World Fertility Survey and public use census tapes, the advances in indirect methods of estimation, and the more sophisticated utilization of adjunct techniques in statistics and mathematics have combined to produce significant advances in the discipline and to provide the potential for even more rapid development in the years ahead.

It is gratifying to report that these problems have been substantially mitigated by the continued strong support provided to the Center by the University, and by governmental and private funding agencies. The University has provided added space for the Center and support to the Center's general operation. In addition to an ongoing Center grant for support of core activities, the National Institute for Child Health and Human Development awarded a training grant, starting in July 1978, which will contribute significantly to predoctoral and post-doctoral support of American students. In December 1978 the Hewlett Foundation provided a three-year grant which will support foreign students and the Center's other international activities. An award from the Mellon Foundation in June 1979 will allow the Center to add a few recent Ph. D.'s to the staff for a limited time period, thus providing new viewpoints and added capability to the Center as

well as a rich research environment to these new demographers. A mix of support from private sources, governmental agencies, and the universities themselves will be essential in the years ahead if the recent momentum of the field is to be sustained.

This report presents in some detail the research currently being conducted by staff and students, various facets of our training program, the nature of the support facilities for both training and research, and the extensive service activities engaged in by our staff.

As of June 1979, 14 research grants totalling \$1,343,420 were in force at the Center, testifying to the productivity of the staff and the diversity of research problems undertaken. During 1978-79, 37 students were in residence at the Center: 30 from the Sociology Department and seven from Economics; 25 of these students were American and 12 were foreign, representing Asia, Africa, and Latin America. We are gratified that over the period of this report our capability for future work has been strengthened by the addition of space, the start of an expanded library, and the modernization and enlargement of our computing facilities. The latter has been made possible in part by an equipment grant from the National Science Foundation.

As we start our 18th year, we are pleased to acknowledge the vision of the Ford and Rockefeller foundations in providing general support to the Center during its formative years. The terminal grant from the Ford Foundation to the Center in 1977 has allowed for a much needed source of flexibility in Center operations. The Population Studies Center is proud of the contributions to the field generated by its staff and graduates. We are confident that our talented and dedicated group of staff and students, interacting harmoniously and effectively in the pursuit of scholarship, will maintain the Center's fine record in the years ahead.

This report is intended for a wide audience: the university community; other population organizations; funding agencies; current and prospective students; and to meet inquiries from the press and general public. We recognize that it is difficult for a single report to meet the needs of this diverse an audience and we would be pleased to provide additional information about any aspect of our work.

Albert I. Hermalin
Director

CENTER HISTORY

The objectives of the University of Michigan's Population Studies Center are threefold: to foster sound research by staff and students so as to increase the body of reliable knowledge in the population field; to increase the number of American and foreign students trained in population studies; and to assist domestic and foreign organizations and governments in the development of demographic programs, especially in developing countries.

The Population Studies Center grew out of a long tradition of interest in population and human ecology within the Sociology Department, dating from the early 1930s. That interest found notable expression during the post-war baby-boom of the mid 1950s when Professor Ronald Freedman, a member of the Department of Sociology, and Pascal Whelpton, director of the Scripps Foundation for Research in Population Problems, conducted a national survey of women to find out how many children married couples planned to have. The survey provided researchers with important information. Equally important, the survey proved the validity of the methodology: it was the first national survey in which women were *directly interviewed* about their knowledge, attitudes, and practices regarding contraception. Much subsequent work in fertility is based on the success of this first experiment.

The Population Studies Center was established in 1961 with a \$500,000 grant from the Ford Foundation. In 1965 the Center became one of the three components of the University of Michigan Population Program, which consisted also of the Center for Reproductive Biology, a part of the Medical School, and the Center for Population Planning, a part of the School of Public Health. The latter two components have a bio-medical and public health orientation while the Population Studies Center has a socioeconomic focus.

Through 1977 the Center received continued operational support from the Ford Foundation. This has been supplemented by grants from the Rockefeller Foundation and the National Institute of Child Health and Human Development (NICHD). Individual research projects are supported by a variety of governmental and private sources, notably the NICHD, the National Science Foundation, and the Agency for International Development. Recently the Hewlett Foundation has provided a grant to the Center for the support of foreign students, and a grant from the Mellon Foundation provides extended post-doctoral research experience for those with newly awarded Ph.D.'s. Additional funds for the support of American students are provided through a NICHD training grant.

RESEARCH

Research Facilities

The Center has no centrally directed research program. Research at the Center reflects the interests of the professional staff and doctoral candidates. The purpose of the Center is to provide facilities and services which enable individuals to work effectively on problems of their own choosing. To this end, the Center has expanded its Data Processing section and Reference Collection, particularly during the past two years.

The data processing facilities are headed by J. Michael Coble and Albert Anderson, with full-time programming assistance by Fran Cartford, Karlin Richardson, and, on a part-time basis, Ken Stewart and Tom Thomas. All computing work is channelled through the Michigan Computing Center. The Center's library of data files has grown to over 630 reels of magnetic tape.

The Center has recently augmented its three computer terminals with the purchase of four "intelligent" CRT terminals for interactive processing and analysis of data. The addition of a data station with line printer allows for the printing of larger quantities of output at the Center than is possible with a hard copy terminal. The purchase of a portable terminal allows for the preparation of data files and programs outside the physical confines of the Center. The Center has also purchased a high-speed hard copy terminal and a word processor, the latter to be used for the preparation of tests and the editing of manuscripts and correspondence. The Center now has the capacity to work with data sets containing hundreds of thousands of case records. Plans are being made to buy a remote data concentrator which will allow the Center to connect its terminals to the Michigan Computing Center over a single high-speed line, thus avoiding the delays that can occur through telephone connections. Much of this expansion has been made possible by a grant from the National Science Foundation.

The reference collection at the Center has developed in response to the data and research needs of individual staff members rather than to cover the entire area of population studies. At present it consists of over 5,000 volumes plus journals, United Nations publications, and foreign materials. Over half of the collection consists of volumes from the U.S. decennial censuses of 1900 to 1970. Lois Groesbeck functions as the librarian on a half-time basis and the Center recently decided to fund an additional part-time position to assist her.

The remaining part of this section is a collection of abstracts describing basic research underway at the Center during 1977-79, and a list, by author, of staff publications for the same time period. The abstracts begin with a summary of the Center's 18-year work in measuring the efficacy of Taiwan's family planning program, included in this annual report because much of the study was recently brought to conclusion.

Taiwan Fertility Research

By 1979 the Population Studies Center had been studying fertility and family planning programs in Taiwan for 18 years. Out of this study has come one book and over 90 published articles and working papers, as well as close collegial relationships with the Taiwan Institute for Family Planning and other organizations in their work to retard that country's population growth and improve the quality of life for its citizens. The study also provides demographers with new methodologies for future research and an enormous body of data with which to make further studies on the relationship between fertility rates and the socioeconomic levels of third world countries. The association between the Center and Chinese scholars also helped launch the annual *Taiwan Demographic Fact Book*, probably the most accurate collection of statistical data assembled on any third world country. While those who worked on the study cannot conclude with absolute certainty that the family planning program initiated by the Taiwan government did in fact hasten the decline in fertility rates, the evidence strongly indicates that this is the case.

Initial funding for the Taiwan research came from the Population Council for the years 1962 to 1965. The remaining 14 years of research was funded by a series of grants from the National Institute for Child Health and Human Development. During this time the Center also received grants from the Ford and Rockefeller foundations, which, in addition to underwriting general operations, also supported graduate students assigned to the project. The field research and the family planning program in Taiwan were conducted by Chinese personnel. The field work, which initially had grants from international agencies, has been completely financed by the Taiwanese government for some years.

The problem of population growth is critical in most currently developing countries because modern science

and technology have made possible very rapid declines in the death rate, and thus sharply increased population growth beyond that experienced by western countries in their period of demographic transition. In Taiwan, for example, the death rate fell from 14 to five per thousand between 1948 and 1962. The annual rate of population growth from 1951 to 1956 remained high at over three percent per year. At a rate of only two percent growth per year the population of a country will double in 35 years.

By 1958 fertility in Taiwan had begun to fall, but there was still a high rate of population growth and many couples found that with a lower mortality rate they had alive before the end of the childbearing period the three or four children and one to two sons that most couples desired. After a preliminary study, done cooperatively with the staff from the Population Studies Center, disclosed these facts, a major and experimental family planning project was begun in the city of Taichung in 1963. The program included both publicizing birth control information and the dispensing of contraceptive devices in a controlled pattern throughout the city. The study of the Taichung experiment showed the following important results:

1. A significant proportion of couples adopted effective family planning.
2. Acceptance rates were high in all major strata of the population, rich and poor, well educated and poorly educated.
3. A large number of couples adopted contraception after learning about it through diffusion from other program acceptors.
4. More intensive efforts produced greater acceptance rates.
5. Visits to wives alone were as effective as visits to both husband and wives together.
6. The most important determinants of acceptance were demographic factors: having at least several children, having one or two sons, and being married for 10 years. Couples with these characteristics adopted contraception across the range of social and economic strata.
7. Perhaps most important was the fact that such a massive program could be carried out with public acceptance and with no popular or political opposition.

As a result of this successful experiment, the family planning program was quickly extended throughout the island. This occurred while Taiwan was undergoing profound social and economic changes. In the succeeding years the Center has cooperated with Chinese scholars and officials in studying the demographic changes resulting from social and economic development and the family planning program. The specific results are too numerous to describe here, but some of the important and noteworthy findings were:

1. Multivariate studies based on Taiwan's 361 local areas found that while social and economic development was correlated negatively to fertility as expected, that family planning programs also had an independent effect. As time went on the independent program effects were found strongest in high fertility areas. In more advanced, low fertility areas, the program had little independent effect, presumably because it substituted for

other sources of decline.

2. Long-term follow-up studies of the I.U.D. (intrauterine device) acceptors found:
 - a. That acceptors had very low fertility after acceptance even if they switched to non-program methods of contraception.
 - b. The reduced fertility of acceptors accounted for a substantial part of Taiwan's fertility decline.
 - c. After about two years, the number of women who had terminated I.U.D. use were balanced by those who had it reinserted.
3. A significant part of Taiwan's fertility decline was due to later age at marriage, although the drop in marital fertility accounted for most of the decline.
4. Unexpectedly the use of birth control increased rapidly while there was little decline in desired family size. The significant drop in desired family size followed rather than preceded large-scale adoption of contraception. Early adoption of contraception apparently resulted from a desire to avoid the additional unwanted children who would survive because of the lower mortality.
5. A strong preference for sons persisted throughout the fertility decline. Couples with no sons among their first children began contraception later and had more children than those who initially had one or two sons.
6. The Coombs scales provided a powerful tool for measuring preferences for number and sex of children. Studies using these scales demonstrated that couples whose ordinary single-valued preference was for two or three children had an underlying preference for larger numbers of children greater than couples expressing similar first preferences in the United States. The Coombs scales helped to predict prospectively the reproductive behavior of individual couples. These scales have now been used in many other countries.
7. While traditional familial values and behaviors have changed, their level of persistence was unexpected. In the most recent studies most young married couples still live with the husband's parents if they are alive; most older parents live with at least one married son; most young couples expect when they are old to live with a married son. Such traditional values were not expected to be at this level when contraception was almost universal.
8. In prospective studies subsequent fertility was more accurately predicted by how many children couples said they wanted than by a large battery of other social, economic, and demographic variables.
9. In the last few years the fertility decline has leveled off. This may be due to an upsurge in marriages and may mean that there are many recently married couples whose fertility is high. It may also be that the persistence of traditional values places at least a temporary floor under further fertility decline.

These results are illustrative of all the work that has been done. Many other studies have dealt with the trends and levels in marriage, migration, and mortality and other aspects of fertility.

During the 1960's and 1970's Taiwan did experience a marked drop in the total fertility rate: from 5,603 in 1961 to

3.080 in 1976. Taiwan's overall population growth rate fell from 3.2 percent per year in 1961 to 2.1 percent in 1976.

Measured against the strictest standards of scholarship it is not possible to determine with certainty what part the Taiwan family planning program played in this trend. But the evidence does strongly suggest that such programs were an important factor in a decline that was also affected by the broad social and economic development of the country. As evidence of this view researchers point to the fact that among the studied population's most disadvantaged lower strata the percentage of women practicing contraception rose from 18 percent in 1965 to a remarkable 71 percent in 1973. Such a large increase in usage in a short time period strongly suggests that only an organized program could have produced such striking results.

The results of this cooperative research influenced Taiwan's population policy. Many of the findings over the course of the 18 years were incorporated into the family planning program or led to modifications of the program. For example, the knowledge that others found it easier to accept the program once they saw their neighbors accept it led program officials to concentrate their efforts in particular geographic areas and to hold group and village meetings in which to discuss contraception.

The 18 years of study also made contributions to fertility research outside Taiwan and to demography in general. There is now a wealth of data that will be used by scholars for many years to come, both to further explore the Taiwan experience and to use for comparative purposes with other countries. Several generally held theories concerning the success of family planning and the ability to successfully measure effectiveness were strongly challenged. The study showed, for instance, that it was possible to obtain meaningful answers to survey questions from a poorly educated population. A number of scholars had thought this was impossible because the respondent would only be stating what he or she thought the interviewer wanted to hear.

The Taiwan research also helped to make it clear that considering only the effect of the first contraceptive adopted in a program did not adequately measure the program's effect. Many women who discontinued the use of the originally accepted contraceptive then used another form. The Taiwan studies emphasized following the history of the woman rather than of the contraceptive.

New methodologies for measuring human attitudes, perceptions and desires were developed: better ways in which to measure sex preferences and family size, ways to test the validity of responses to survey questions, improved techniques for measuring the continuation and effectiveness of contraceptives as well as the overall effect of a program emerged from the study.

The Population Studies Center will be continuing to study specific aspects of Taiwan's population development. A study now underway will explore the effect of lower fertility on household dynamics and includes the use of anthropological field work and semi-structured interviews as well as the traditional techniques.

In the course of this study 16 students wrote dissertations using Taiwan data and a much larger number have obtained part of their demographic training through work

on the project. Many of these students have continued to work on population problems of developing countries, thus extending their interest in this area.

Abstracts of Current Research

The research at the Center reflects, in the main, the current interests of the staff and as such is difficult to subsume under a few headings. Nevertheless, much of the research may be seen to fall under two broad categories: Fertility and Family Planning; Population Mobility and Clustering.

The first category includes studies of the social and economic consequences and causes of fertility levels and changes, and incorporates studies of attitudes and values that are related to fertility. Increasing attention has also been paid to changing nuptiality patterns which influence fertility levels. Research on fertility and family planning has been carried out for a number of developing countries as well as for the United States. In addition, historical demographic research, with a strong focus on fertility, is underway in various countries of Europe. All these areas of research are shown below by country under the fertility heading.

The second broad area of research, Population Mobility and Clustering, relates to studies of school and residential location on a wide range of behavioral and attitudinal variables. A variety of studies with this focus are described below.

A portion of the research at the Center is of necessity methodological as the staff seeks to refine existing techniques or develop new tools in pursuing a given substantive problem. Current methodological research that does not fit clearly into either of the two broad substantive areas is shown as a third category in the reviews presented.

FERTILITY

Bangladesh: Preferences for Number and Sex of Children

Lolagene Coombs and Nilufer Ahmed, a Center student, are studying the social patterns of preferences for number and sex of children among married women in Bangladesh. The work is based on interviews with women in Matlab and Companiganj, rural areas of Bangladesh. The focus is on the relation of social and demographic factors to IN and IS scale values (Coombs I-scales for number and sex of children). The relation of costs and benefits of children to reproductive goals is being assessed using multivariate analysis. A publication on the topic is being prepared.

Botswana: A Study of Time Use in Rural Botswana

Eva Mueller collaborated in the design of a survey of rural income distribution, time use and fertility in Botswana under the auspices of the World Bank, which has provided funds for this project. Descriptive information is now available on the demographic and economic characteristics of rural households as well as on the allocation of household time. The next step is an investigation of the link between household characteristics on the one hand

and income on the other. Time use is a valuable intervening variable for such an analysis. Particular attention is being given to the economic contribution of women and children and to the economic situation of female-headed households.

England: Economic-Demographic Interactions in Preindustrial Europe

Using econometric techniques, Ronald Lee has analyzed economic-demographic interactions in pre-industrial Europe, with applications to England. The study involved an analysis of aggregate time series from a sample of 404 English parishes covering a period from 1538 to 1838. He collaborated with E.A. Wrigley and Roger Schonfield, of the Cambridge Group for the History of Population and Social Structure. Tom Fraker and Toni Richards have been the student assistants in this work, which was funded by a grant from the National Institute of Child Health and Human Development.

Germany: Village Fertility Patterns in Germany – 17th-20th Century

John Knodel is analyzing extensive family reconstitution data which he developed from village genealogies for 15 German villages covering a period from the 17th century to the early 20th century. The principal analyses revolve around the following topics: natural fertility and family limitation; re-marriage and fertility; patterns of birth spacing during the demographic transition; changes in fecundity; and child mortality and its interrelationship with fertility. The data are particularly valuable because they are on the micro-level, cover a long span of time including the period prior to the demographic transition as well as the initial period of the secular fertility decline, and represent areas with a substantial range of various demographic characteristics. The results of the analyses are potentially useful not only for increasing our understanding of demographic behavior in the past, but also for shedding light on demographic processes in pre-industrial settings in general. These data will be used for making comparisons with results emerging for contemporary less-developed countries. This work has been supported by a grant from the National Institute of Child Health and Human Development.

Indonesia: Use of Modern Contraceptives in Indonesia

A multivariate analysis of the factors affecting modern use of contraception in Indonesia, based on the 1976 Indonesian version of the World Fertility Survey, was begun in 1979. This is a collaborative project of the East-West Population Institute (Siew-Ean Khoo), the Demographic Institute of the University of Indonesia (Dr. Kartomo and Bondan Suprptilah), and the Population Studies Center, University of Michigan (Ronald Freedman). Preliminary findings are that modern contraception takes place in all strata of the population and is only weakly related to education, standard of living, occupation, and even such demographic variables as parity. Region of country predicts contraception as well as all of the demographic and social indicators together. Region may be a proxy for

cultural variations or for variations in the regional strength of the family planning program as of 1976. However, traditional contraceptive methods are reported more frequently by those in higher education and standard of living categories than in less modernized sectors.

Malaysia: Impact of Female Employment on Fertility

Karen Mason is analyzing the impact of female employment on fertility in Peninsular Malaysia, using Malaysia's World Fertility Survey. The research is supported by a grant from the Agency for International Development.

Malaysia: Relevance of Knowledge, Attitudes, and Practices Regarding Fertility Related Phenomena

William Mason is completing his analysis of the 1974 Malaysian Fertility and Family Survey to determine and interpret the relevance of community-level factors for knowledge, attitudes, and practices regarding fertility related phenomena. The final report will present procedures and findings with the intention of providing a guide for subsequent analyses of the link between community- and individual-level factors in other World Fertility Survey countries which have the requisite data. The work is being done for the World Fertility Survey in collaboration with V.T. Palan of the Malaysian Bureau of Statistics. Sue Purcell, formerly of the Australian Bureau of Statistics, assisted with this work. Roger Brown, Vasantha Kandiah, and James Phillips are the graduate student research assistants on this project, which has been supported by a grant from the Agency for International Development.

Taiwan: Studies of Taiwan Population Trends

Note: Unless otherwise noted, all the research on fertility in Taiwan reported here has been supported by a grant from the National Institute of Child Health and Human Development.

Analysis of trends in reproductive behavior in Taiwan was continued by using five successive surveys and registration data for the period 1961-76. This study was conducted by Ronald Freedman, T.H. Sun and Hui-sheng Lin. The major observations from this latest update are as follows:

1. The rapid decline in the preferred number of children first observed in 1970-73 continued at a somewhat slower pace during 1973-76.
2. The proportion of young and low parity wives wanting no more children continued to increase rapidly.
3. While the preference for sons remained strong, the preferred number of sons continued to decrease.
4. Among both couples who did and did not want additional children, the proportion using contraception continued to increase.
5. The proportion of couples who began contraception in order to space their children increased especially rapidly in this period.
6. More generally and almost without exception, the period from 1973-76 saw a continuation of trends seen in 1970-73: smaller preferred and actual numbers of

children, more and earlier use of contraception, and the convergence of patterns of contraceptive use among social strata.

The fertility decline in Taiwan appeared to have leveled off during 1977-79. One possible explanation is the persistence of traditional values. Family structure and traditional familial values in Taiwan were investigated by Ronald Freedman, Baron Moots, T.H. Sun and Mary Beth Weinberger in 1978. The findings were that as of 1973, the traditional Chinese stem family was still an important form of household if the parents of the husband were available. Many respondents living in nuclear units had parents living with a married brother, so the filial obligations were being met. Many of the couples living in nuclear units were involved in visiting and financial exchanges with parents and brothers. Thus, the network of family ties is not adequately represented by household structure alone.

Analysis of nuptiality trends in Taiwan by Ronald Freedman and John Casterline indicates that an increase in age at marriage was largely a function of increasing educational levels. Later age at marriage was found to lead to higher fertility and shorter birth intervals in early years of marriage, followed after five years by lower fertility as a result of fertility control. The cumulative result was a strong negative correlation of age at marriage and completed fertility for women 35-49 years of age in 1972-74.

The same body of registration data was used to analyze differential fertility as of 1972-74. Fertility declined from the oldest (45-49) to the youngest (35-39) age groups, in all subcategories of measures of education, urbanization, household economic activity, and age at marriage. The declines were greatest in the less modern categories, so that social and economic differentials were reduced, although they still persisted, with a negative relation of modernization or status to fertility at the end of the period. The pace of childbearing has increased from the oldest to the youngest cohorts across all social and economic strata considered. The influence of the social variables occurred at earlier ages as one moved from older to younger cohorts.

The recent leveling-off of the Taiwan fertility decline may be due to a marriage boom and earlier childbearing in marriage. However, it is also possible that persistence of some aspects of traditional familial values and institutions are involved. This is being investigated in a multidisciplinary study now being conducted by Ronald Freedman, Deborah Freedman, Lolagene Coombs, and William Lavelly, all of the Center. This current project is funded jointly by the Ford Foundation and the Population Council. The work also involves the collaboration of Taiwanese social anthropologists, economists, and social survey specialists of the Taiwan Provincial Institute of Family Planning.

Taiwan: Intentions as a Predictor of Fertility

Are responses to survey questions about desire for additional children useful in predicting future fertility? An earlier study in Taiwan showed that statements of wives in 1967 about whether they wanted more children was a good predictor of their actual fertility over the next three years.

Albert Hermalin and Ronald Freedman, working with T.H. Sun and M.C. Chang in Taiwan, extended this analysis to cover a seven-year period, and studied the relative importance of intentions against other factors in a multivariate framework. The results indicated that whether a woman had a birth in the 1967-74 period was strongly related to whether she wanted more children and whether she was practicing contraception. The multivariate model also indicated that whether more children were wanted was the most important determinant of contraceptive use. The study also examined the level of consistency between attitudes and behavior and the factors related to consistency. Comparison of the results with a similar study in the United States covering 1970-75 indicated that Taiwanese women were more consistent than American women in carrying out their fertility intentions. The results of this study appeared as *Taiwan Population Studies, Working Paper 38* and were published as "Do Intentions Predict Fertility? The Experience in Taiwan, 1967-74." *Studies in Family Planning* 10(3): 75-95, March 1979.

Taiwan: Agricultural Development and Fertility Change

Albert Hermalin, working with Center student William Lavelly, studied the relationship between agricultural development and fertility in Taiwan. The objective was to determine which developmental factors are associated with differences in fertility among farmers, how these factors impinge on fertility, and their relative importance. In addition to appraising the effect on farmers of the many agricultural changes, the study also sought to assess the impact of industrialization on the farm economy, and to weigh the effect of agricultural change vis-a-vis industrial development on farmers' fertility. Utilizing a cross-sectional analysis of Taiwan's rural townships, they found size of cultivation to be positively related to fertility after controlling for a range of ecological and demographic variables. Two measures of off-farm labor force participation further suggested that farm size and industrial opportunities are significant factors affecting rural fertility. Small sizes of cultivation are strongly associated with off-farm labor force participation. A variable measuring the average number of agricultural workers per farm engaged in sidelines — indicating a labor surplus on the family farm — was found to be negatively associated with fertility. Another measure of off-farm employment opportunities was positively associated with fertility. The authors hypothesized that rural labor markets may have a significant influence on fertility, with new industrial opportunities opening an "economic frontier" which relieves the constraints imposed on fertility by the limited resources of the family farm. The results of this analysis were presented at the 1979 annual meeting of the Population Association of America and the study is being extended and refined prior to publication.

Taiwan: The Effect of Breastfeeding on Birth Intervals

Earlier work in Taiwan and elsewhere has shown that breastfeeding has a significant effect on fertility, through the mechanism of prolonging the period of postpartum amenorrhea. A new analysis by Hermalin in collaboration

with Anrudh Jain and T.H. Sun showed that continued breastfeeding may reduce the probability of conception even after the resumption of menstruation. It was estimated that each additional month of breastfeeding extends the next birth interval by 0.6 months. Given the importance of this result, research to further test this effect and trace its implications was initiated. Data from the longitudinal KAP surveys were arranged to study the effect of breastfeeding on the probability of conception in two successive birth intervals, and the degree of correlation among women in breastfeeding and amenorrhea over two intervals. The results from analyzing a second birth interval generally confirmed the nature and magnitude of the breastfeeding effect previously observed. In addition, results show a high intra-woman correlation on amenorrhea in the two intervals but only a moderate correlation on breastfeeding. Jain, of the Population Council, is collaborating with Hermalin in this ongoing study.

Taiwan: Family Size and Education in Taiwan

In order to better understand the relation of fertility to socioeconomic development, Albert Hermalin is studying the relation of education to family size over two generations in Taiwan. Earlier analyses failed to show that educational attainment among a cross-section of Taiwanese husbands was negatively related to the number of siblings, a finding strikingly different from the United States, where coming from a large family adversely affects educational attainment. Hermalin and Judith Seltzer, a Center student, then focused on the determinants of the wife's education. The results revealed that, overall, family size was not a significant factor in the educational attainment of the women observed. At the same time, they found certain subgroups among whom the expected negative relationships between the number of siblings and education held. These included recently educated women and women in the more advantaged strata of the population. They interpreted these results as suggesting that the models of intra-familial resource allocation often employed in studying developed countries may not hold in the developing context, and that there are changes in patterns of familial investment in children's schooling which parallel certain social structural changes. The results of this study were presented at the 1978 annual meeting of the Population Association of America and appear as *Taiwan Population Studies, Working Paper 37*.

Taiwan: Underlying Preferences and Later Fertility in Taiwan

The 1973 fertility study in Taiwan included questions for development of preference I-scales which tap underlying preferences for family composition and which may differ considerably from stated first choices. Lolagene Coombs investigated how these underlying preferences relate to fertility in the follow-up period of 1973-77. Analysis indicates that there are systematic relationships between scale values and the probability of having additional children during the prospective period. This relationship characterizes women who in 1973 did not want more children as well as those who did, although fewer of the former had additional births. Study results appeared as *Taiwan Popu-*

lation Studies, Working Paper 39 and were accepted for publication in *Population Studies*, March 1980.

Taiwan: Consistency of Fertility Attitudes Between Marital Partners

Lolagene Coombs has been investigating the degree of agreement between husbands and wives about fertility goals and familial values and assessing the impact of agreement or disagreement on later fertility. Interviews with 2,024 Taiwanese husbands and wives in 1969-70 and follow-up birth information in the subsequent four-year period provide the data for analysis. While in general the views of men and women in Taiwan are very similar in regard to important familial values, the agreement between marital partners is less complete and it would be hazardous to assume that one partner is a surrogate respondent for the other. The longitudinal birth data show that if attitudes are mutually supportive of traditional values, subsequent fertility is higher than if such views are less traditional. If there is disagreement, the wife's views tend to be more important for continued childbearing. The results of this research will be forthcoming in a *Taiwan Population Studies, Working Paper 43*, co-authored by Dr. M.C. Chang of the Taiwan Provincial Institute for Family Planning.

Taiwan: Fertility Behavior Implications of Perceived Cost-Benefit of Children and of Household Consumption Patterns

There are two main aspects to an investigation by Lolagene Coombs of selected economic behaviors in Taiwan as they relate to fertility goals and behavior. The first is concerned with the economic utility of children viewed primarily in a cost-benefit framework. The second is the relation of fertility to expenditure patterns, in particular the purchase and ownership of consumer goods and of expected expenditures for the education of the children. Both indexes and scales on perceived cost and utility have been constructed and are supplemented by data on a number of variables: transfer payments between respondents and other family members, the relative economic situation compared to the past insofar as it appears to be affected by the number of children, aspirations for education of children, expectations for future economic position, and present ownership of modern consumer durables. The results indicate that the economic costs and benefits of children contribute more heavily to preferences of Taiwanese women than do the more objective economic circumstances of their lives. Of all the economic circumstances examined, wife's work in the market sector has the largest impact on preferences, and that impact is negative. James Rogers and Lauralee Mastropalo, a student assistant, contributed to this research. The results are being prepared for publication.

Taiwan: Migration and Family Structure

Baron Moots is engaged in two studies of Taiwan fertility. In the first he is examining the effects of ecological and organizational contexts on the fertility of local agricultural populations in Taiwan. The analysis examines fertility at both the areal and individual levels in an effort to deter-

mine the mechanisms through which changes in contextual variables influence the fertility of these sub-populations. The second study is a continuation from previous years of the work done on extended family households. Demographic and social factors which influence the prevalence of household extension are being examined. To date, findings suggest that migration is the principal immediate factor in decreasing the frequency of household extensions, education and occupational mobility. The findings also suggest that the degree of influence of the independent variables on household extension depends on the types of extensions being examined: stem (vertical) or stem-joint households (vertical and horizontal).

Taiwan: Some Roots of Preference: Roles, Activities, and Familial Values

In an attempt to explore with Taiwanese data the roots of underlying preference structure, Lolagene Coombs and Ronald Freedman investigated the relation of husband and wife roles, family decision-making dominance, wife's work and work setting, outside activities, marriage arrangements, family living patterns, and religiosity to the Coombs sex and number preference scales. A number of Guttman scales combining several indicators were developed for the roles and values variables. The analysis indicated that less traditional role relationships, familial values and living patterns are negatively related to underlying preferences for sons and large families, beyond the effects that would be expected on the basis of variations in modernism as reflected in increased education, income, and urbanization. Exposure to outside influences via the media, participation in non-familial activities and desire to work outside the home are found to be more important for family size preferences than are role relationships in the family. Critical as the role of education is in influencing preference patterns, the relationship appears to be mediated through modern attitudes and behavior in the domains examined. James Rogers assisted in this work. The results of the study were represented in *Taiwan Population Studies, Working Paper 35* and appeared in somewhat modified form as "Some Roots of Preferences: Roles, Activities, and Familial Values." *Demography* 16(3): 359-76, August 1979.

Taiwan: Familial Values in a Rapidly Developing Culture

Lolagene Coombs investigated the changes in attitudes and values about family building and family relationships over a decade of rapid economic development in Taiwan. Using data from a series of cross-section studies between 1965 and 1976, specific attention was directed to attitudes and values in four domains: 1) family formation and building; 2) personal control of the family building process; 3) familial relations; and 4) personal financial situation. The focus of the research was the examination of the relation of these attitudes and values to background characteristics over time, in order to observe the degree of relationship and its possible change during a period of rapid economic development. To what extent are modern attitudes clearly tied to modern statuses, and to what extent do they bridge

status lines? Are changes in the general climate of opinion regarding familial values a reflection of changes in social strata and structure or are attitudinal changes occurring independent of status changes? Findings indicate that while many value changes have been responsive to modernization, major changes have bridged social strata; and in addition, aggregate changes are not merely a reflection of the altered proportion of the population in the various social strata. James Rogers assisted in this research. A paper summarizing these findings, co-authored by T. H. Sun, director of the Taiwan Provincial Institute of Family Planning, is entitled, "Changes in Familial Values in a Developing Society: Taiwan." *Taiwan Population Studies, Working Paper 42*, November 1979.

Thailand: Analysis of Trends Related to the Thai Family Planning Program

John Knodel is continuing his collaborative research with Thai colleagues to analyze fertility and related population topics for that country. Current projects involve a study of trends and differentials in breastfeeding patterns and an analysis of trends in family planning practice, marital fertility, and their relation to the national family planning program.

United States: Preferences and Achieved Fertility - A Fifteen Year Perspective

Lolagene Coombs has recently completed analysis of a 15-year longitudinal study of family growth patterns in Detroit to determine whether underlying preference for family size, as measured by the I-scale method, was predictive of fertility. The I-scale method utilizes preferences beyond the respondent's first stated answer. The original data and the scale measures were obtained in 1962 and the follow-up continued at intervals through 1977. Earlier analysis of data from the first prospective years found scale values to be related to the timing of initial use of contraceptives, to use of effective methods, and to unwanted pregnancies. It was also found to be highly predictive of subsequent fertility. The second phase of the prospective period (1966-1977) shows a similar relationship of scale position to births during that period. These effects are net of first preferences and the usual structural variables related to fertility. A special examination of the women in the sample who were just married at the time of the initial interview proved particularly interesting: underlying preference is found to be a better predictor of completed fertility than either preferred or expected number of children. James Rogers assisted in this research, which was supported by a grant from the National Institute of Child Health and Human Development. A completed paper appears as, "Reproductive Goals and Achieved Fertility: a Fifteen Year Perspective." *Demography* 16(4), November 1979.

United States: The Consequences of Having Births at an Early Age

Three researchers have begun an analysis of the consequences associated with having a first birth at an early age, using data from the Detroit Longitudinal Survey. As expected, women with an early first birth have more children

than those beginning childbearing at a later age. One part of this analysis will concern the extent to which early childbearers are more socialized for home related activities, since this data set included a number of family orientation variables which can be used for such an analysis. The researchers on this project are Deborah Freedman, Arland Thornton of the Institute for Social Research, and Lolagene Coombs. Lynn Wallisch is a graduate student assistant. The work is supported by a grant from the National Institute of Child Health and Human Development.

United States: Economic Consequences of Pre-Marital Conception

Deborah Freedman and Arland Thornton analyzed the long-run economic consequences to couples associated with a pre-marital conception. The data came from the Detroit Longitudinal Survey. The first study looked at a wide spectrum of economic consequences for both stably married and divorced women, including measures of consumption, asset holdings, income and educational achievement of children. A second study, using a human capital model, looked more narrowly at the economic achievement of the husbands. The results of these analyses show that couples in which the wives were pregnant at marriage were economically disadvantaged, with the economic shortfall attributable to the lesser income achievement of the husband. Although the lower earnings of these husbands could reflect their lesser educational attainment, the causal relationship between education and pre-marital conceptions was shown to be indeterminate. Deborah Freedman and Arland Thornton were the authors of these studies which appeared as, "The Long-Term Impact of Pregnancy at Marriage on the Family's Economic Circumstances," *Family Planning Perspectives* 11(1), January/February 1979. This project was supported by the National Institute of Child Health and Human Development.

United States: Changes in Sex Role Attitudes on the Individual and Aggregate Level

Deborah Freedman and Arland Thornton cooperated on a study of changes in sex role attitudes, 1962-77, using data from their Detroit Longitudinal Study. The study included analysis of changes in sex role attitudes, both on the individual and on the aggregate level, and of changes in the consistency of sex role attitudes over time. The study of aggregate changes has appeared as, "Changes in Sex Role Attitudes of Women, 1962-77: Evidence From a Panel Study," *American Sociological Review* 44(5), October 1979. The other two analyses, concerning changes on the individual level and changes in the consistency of sex role attitudes over time are in working paper stage. Work on these projects was supported by a grant from the National Institute of Child Health and Human Development.

United States: The Effect of Income Change on Family Size Measures

Deborah Freedman and Arland Thornton are working on an analysis of the effect income change has on family

size measures: expected, wanted, and actual. This study is a micro-level investigation of the pertinence of the Easterlin hypothesis to the respondents in the Detroit Longitudinal Study. First results show that changes in expected and wanted numbers of children are not systematically related to the extent to which income expectations expressed in 1962 have been achieved during the succeeding 15 years. This work is supported by the National Institute of Child Health and Human Development.

Cross-Cultural: Theories of Fertility Decline: A Reappraisal

The paper titled "Theories of Fertility Decline: A Reappraisal" by Ronald Freedman, published in *Social Forces*, September 1979, was the 1978 Amos Hawley Lecture given at the University of North Carolina, Chapel Hill. A central thesis is that improvement in a small subset of development indicators (rather than the classical demographic transition complex), transportation and communication for reaching the village masses, together with a strongly implemented family planning program, may legitimize family limitation and lead to a fertility decline in less developed countries.

Cross-Cultural: Comparative Analysis of World Fertility Survey

The World Fertility Survey is an international research program whose purpose is to assess the current state of human fertility by supporting representative sample surveys of fertility behavior in a large number of countries. At the request of the United Nations, Albert Hermalin and William Mason undertook to develop a strategy for comparative analysis of World Fertility Survey data and to provide illustrative examples, utilizing the 10 *First Country Reports* then available. The strategy developed is that of analysis of covariance, conceived of as a two-stage process. At the first stage, one develops a multivariate model of individual level factors affecting the dependent variable of interest. Assuming that the effects of the independent variables vary across countries, these regression coefficients then become the dependent variables at the second stage, with country-level variables introduced as explanatory variables. The aim here is to understand which country-level characteristics shape the relationships observed at the individual level. The examples analyzed the effects of marital duration and education on children ever born, and the reasons why the relation between education and fertility varied across countries. Another example analyzed the importance of age and parity on the proportions of women who said they wanted no children but were not using contraception. The material developed was discussed at a meeting of the United Nations Working Group on Comparative Analysis of World Fertility Survey Data in October 1978 and will be published by the United Nations Fund for Population Activities. Lauralee Mastropalo, Vasantha Kandiah, and Sue Purcell assisted on this study.

Cross-Cultural: The Underlying Meaning of Stated Family Size Desires

Lolagene Coombs examined the hypothesis that similar statements about desired number of children have differ-

ent meanings for persons with different cultural, social, or economic backgrounds. The investigation used preference scale data from Detroit, Morocco, Ankara, Mexico City and the United States. Examination of the underlying preferences of women who give identical statements about family size desires shows that there are not only cultural differences in the meaning attached to such statements but also strata differences within a culture. This analysis should throw further light on differential use of contraception and the frequently observed discrepancy between family size desires and achieved fertility, and has implications for family planning programs. A paper based on this research was published as "How Many Children Do Couples Really Want?" *Family Planning Perspectives* 10(5), September/October 1978.

Cross-Cultural: The Role of Family Structure in Shaping Fertility Behavior and Family Planning

David Goldberg is examining the role of family structure in shaping fertility behavior and family planning. Previous studies of family structure and fertility indicate the strong connection between the two in less developed countries. This research combines previously collected data sets with two new data sets, thus permitting replication of analysis to achieve cross-cultural comparisons of alternate fertility models. The previously collected data sets are from a cross section of Ankara couples, 1966; a sample of four Turkish villages, 1966; a cross section sample of Mexico City couples, 1971; and samples of three Mexican villages, 1971. The new data sets are a cross section of married women in the Detroit metropolitan area (1978) and a sample of married Mexican-American women in the Detroit area (1979). The combination of these data sets will provide a more general test of the fertility model, published earlier. Preliminary results from Detroit indicate that family structure variables attempting to measure the breadth of female roles are inversely correlated with fertility. Like almost any data collected in more and less developed settings, relationships are more pronounced in the lesser developed countries. This research is partially funded by a grant from the Agency for International Development.

POPULATION CLUSTERING

Recent Trends in School Segregation and Enrollment by Race: An Analysis of New Data From the Office of Civil Rights

Reynolds Farley is analyzing segregation data obtained by the Office of Civil Rights in the fall of 1976 and released in the summer of 1978. The research has three aims: 1) to describe trends over time in enrollment by race and racial segregation in the nation's large cities and metropolitan areas; 2) to assess whether white enrollment responded to changes in the level of school segregation; that is, to test the white flight hypothesis using data from the most recent period; 3) to prepare an informative and easily used statistical summary of 1967-1976 changes in enrollment and segregation in the school districts of the nation's large cities. This work has been funded by the National Science Foundation and the National Institute of Education.

Projections of Population and Employment in Michigan

David Goldberg, J. Michael Coble, Albert Anderson, and Fran Cartford completed projections of population and employment for the state, covering the period 1970-2000. The projections are specific to age-sex groups for each county and provide the projected number of births, deaths, and net migrants for each quinquennium. The turnaround in migration patterns (a net flow from metropolitan to nonmetropolitan areas) noted nationally is particularly marked in Michigan with the northern half of the lower peninsula expected to double in population by the year 2000. Surveys conducted in the Detroit metropolitan area in 1978 and 1979 are consistent in showing a substantial intended outmigration to nonmetropolitan areas of the state. This study was funded by the Upper Great Lakes Regional Commission, presented to the Governors' Commission and was published in Fall 1978 as *Projections of Population and Employment in Michigan, 1970-2000*.

Mobility and Mass Transportation

Other aspects of migration-mobility-travel patterns are being studied by David Goldberg together with Population Studies Center students Nancy Grassmick, Kathy London, Herb Smith and Linda Swanson, using materials collected by the Detroit Area Study in 1978 and 1979. Data on the location of present residence, intended residence, place of work, shopping site and transportation use are being collated in an attempt to model demand for transportation and project the utility of alternative mass transit routings. The thrust of residential mobility, shopping sites and work place continues outward from the central city, resulting in longer trips, a greater proportion of lateral trips and a set of transportation demands increasingly more difficult to meet with a limited radial mass transit system.

Environmental Signals

Work on the magnitude and implications of population clustering is usually confined to studies of the segregation of selected populations. David Goldberg is attempting to examine the implications of residential location, net of personal characteristics, for a wide range of behavioral and attitudinal variables. This research updates some of the findings previously reported in *Population and Development* (Ronald Ridker, ed.) by utilizing survey results from three diverse metropolitan areas: Ankara, Mexico City, and Detroit. By using gravity models, the signals or cues being received at any residential location for any behavior or attitude measured by the survey can be approximated. The signals, together with any other personal characteristic, can be used to predict the behaviors and attitudes of individuals in the survey. In predicting such diverse behavior as family planning, breastfeeding, family structure or voting, environmental signals contribute heavily to the explanation. In most instances the signals explain more than personal characteristics such as income or education. Perhaps because of the greater population clustering in Ankara and Mexico City, the absolute contribution of the signals to the explanation of behavior is greater in the cities in lesser developed countries than in

Detroit. The relative contribution of signals for explained behavior is greater in Detroit because the personal characteristics are less important. The research strongly suggests that the Parke-Wirth speculations about residential imprinting of behavior may have been frighteningly correct.

METHODOLOGY

Methods of Evaluating Family Planning Programs.

Albert Hermalin conducted a number of studies centering on the methods of evaluating family planning programs. Drawing on the experience in Taiwan with the areal multivariate approach to studying program effects, he prepared a chapter describing this methodology for a United Nations manual illustrating the various techniques in use. The chapter spells out the structure of multivariate areal analysis, discusses its advantages and limitations, describes sources of data and carries out a detailed application with illustrative data. He then explored further some of the problems involved in utilizing and interpreting the results of this approach and presented these findings at a U.N. Expert Group Meeting. For this meeting Hermalin also undertook an analysis of the different techniques employed for evaluating the effect of family planning programs. The purpose was to identify those factors which contribute most to the differences in effects, obtained by using different methods. He found that the estimates of potential fertility utilized explicitly or implicitly by each method were the major source of variation. This analysis was used as a background paper for the meeting. Some of the results of these analyses were then employed in a further analysis of the Taiwan family planning program. The CONVERSE computer program was employed in conjunction with a model developed at the meeting to test the plausibility of other estimates of the Taiwan program's effects. These results will be incorporated in a major review of the Taiwan program being prepared at the Center. Osman Nur, James Chui, and Khalid Siddiqui assisted with various phases of the research.

Reproductive Goals, Contraceptive Failure and Aggregate Rates

This project will develop a systematic mathematical linking of aggregate fertility rates to individual intentions and contraceptive failures rates as measured in surveys. Ronald Lee will generalize and extend his earlier results by including the younger age groups and by encompassing data for other developing countries and less developed countries. The project is supported by a grant from the National Institute of Child Health and Human Development.

Correcting Age Census Distributions

Ronald Lee is developing new methods for correcting census age distributions and formalizing some old ones, based on a simultaneous consideration of all age groups. As a by-product a new method for estimating mortality simultaneously with the age adjustment factors will be developed. This work is supported by a grant from the National Institute of Child Health and Human Development.

Cohort Analysis as Applied to Mortality and Questions of Identification and Estimation

William Mason is continuing his work on cohort analysis: first in a research paper on the decline of tuberculosis mortality in the developed countries, and second in an analytical paper with Professor Stephan Fienberg of the University of Minnesota, concerned with further questions of identification and estimation. This research extends the results obtained in another Mason-Fienberg collaboration, "Identification and Estimation of Age-Period-Cohort Models in the Analysis of Discrete Archival Data." *Sociological Methodology* 1979, 1978. Herbert Smith was the student assistant on this project.

The Feasibility of Archiving Survey Tapes from the 1960s

William Mason is conducting exploratory work to determine the feasibility of archiving March Current Population Survey tapes from the early 1960s. The project involves determining exactly what older data files are still extant, their condition, and the amount and quality of their documentation. The availability of older March Current Population Surveys in archival form would allow analyses of the time series of cross-sections of the Current Population Surveys in the study of socioeconomic phenomena. The work is being supported by the National Science Foundation. Toni Richards is the graduate student research assistant on this project.

A Social Indicator Model of Political Alienation

Together with Professor James House of the Department of Sociology and Survey Research Center, William Mason is continuing his research on national trends in political alienation, with the ultimate goal of constructing a social indicator model of alienation. This research extends and expands conclusions reported (with House) in "Political Alienation in America, 1952-1968." *American Sociological Review* 40(2), April 1975. The work is supported by the National Science Foundation.

The Design of Employment Surveys for Developing Countries

Eva Mueller is preparing a monograph on the measurement of employment and underemployment in developing countries. Newly developed survey instruments were tested in Botswana by Mueller and in Guatemala by Sherrie Kossoudji in summer 1979. Funded by the Agency for International Development, the purpose of this project is to facilitate the collection of data useful for micro-economic analysis of the allocation of household time, including utilization of women's and children's labor.

Maintaining Response Rates in Longitudinal Studies

Deborah Freedman cooperated with Arland Thornton and Donald Camburn, both of the Institute for Social Research, on two methodological articles which detail the procedures utilized to obtain a high response rate on the fifth wave of their longitudinal survey of Detroit area women. An 11-year period intervened between this and the last interviews. Surveyed women were originally

interviewed four times between 1962 and 1966. Researchers obtained interviews from 89 percent of the original respondents in the fifth survey. This work appeared in two journals: "Maintaining Response Rates in Longitudinal Studies: The Care and Nurture of Respondents," *Asian and Pacific Census Forum*, East-West Population Institute, 5(40), May 1979; and "Maintaining Response Rates in Longitudinal Surveys," forthcoming in *Sociological Methods and Research*. This work was supported by the National Institute of Child Health and Human Development.

Sex Roles and Family Formation

Preparatory to investigating the relationship of sex roles to the congruence of desired and achieved family size, Lolagene Coombs has been developing a number of stochastic cumulative scales for the Detroit Family Growth longitudinal data. These include husband-wife role perceptions, household work roles, husband-wife decision-making, and ownership of modern objects as an alternative consumption pattern. Scales for two time periods, 1962 and 1977, have been developed. Lauralee Mastropalo was a student assistant in this work.

Women's Commitment to Work

Lolagene Coombs has been investigating the question of women's preferred choices for work and/or children, in order to explore the possibility of developing a measure of commitment to work. Using a methodological sample of university students and staff, conjoint measurement analysis of techniques for examination of trade-off situations has been employed. This is a relatively new technique in demographic work. Results in testing a variety of measurement models indicate that there are two dimensions of commitment: one a total involvement level (with children and job) and the other a job-child orientation continuum. Using this model, two preference scales have been developed. These scales have been used by other researchers in studies of career planning and family formation intentions. James Rogers and Margie Melendez assisted in the methodological work. The results were published as "The Measurement of Commitment to Work," *Journal of Population: Behavioral, Social, and Environmental Issues* 2(3), Fall 1979.

Publications

This listing includes papers written by members of the Center staff or student apprentices (as authors or co-authors) which have been published or accepted for publication since the Center's last annual report, fall 1977.

Listings of the Center reprint series and other available publications by the staff were circulated in 1977-79 to over 1,400 individuals, libraries, and agencies working in the population field or indicating an interest in demographic research and requesting inclusion on the Center's mailing list. The Center mailed out approximately 6,500 publications in the last two academic years in response to about 560 requests from people in the United States and in 72 foreign countries. In addition to requests for reprints, the Center staff received many inquiries about research mate-

rials that may be useful to researchers in other countries.

John B. Casterline

"Demographic Correlates of Attitudes Toward Busing and School Integration: Detroit, 1976." *1977 Proceedings*, Social Statistics Section, American Statistical Association; pp: 448-453.

(Ronald Freedman and John B. Casterline) "Nuptiality and Fertility in Taiwan." *Conference Proceedings*, Seminar on Nuptiality and Fertility: Bruges, Belgium; January 1979. Liege, International Union for the Scientific Study of Population.

Joseph Chamie

"Religious Differentials in Fertility: Lebanon, 1971." *Population Studies* 31(2): 365-382, July 1977.

Lolagene Coombs

"How Many Children Do Couples Really Want?" *Family Planning Perspectives* 10(5): 303-308, September/October 1978.

(with C.H. Coombs and J.C. Lingo) "Stochastic Cumulative Scales: I. Rationale and Some Applications; II. The Algorithm." *Theory Construction and Data Analysis in the Behavioral Sciences*. Edited by Samuel Shye. San Francisco: Jossey-Bass Publishers, 1978, pp: 280-298.

"Underlying Family Preferences and Reproductive Behavior in the United States." *Studies in Family Planning* 10(1): 25-36, January 1979.

"Levels of Reliability in Fertility Survey Data: Taiwan." *Studies in Family Planning* 8(9): 218-232, September 1977.

"Preferences for Sex of Children Among U.S. Couples." *Family Planning Perspectives* 9(6): 259-265, December 1977.

(with Dorothy Fernandez) "Husband-Wife Agreement About Reproductive Goals." *Demography* 15(1): 57-73, February 1978.

(with T.H. Sun) "Family Composition Preferences in a Developing Culture: The Case of Taiwan, 1973." *Population Studies* 32(1): 43-64, March 1978.

Reynolds Farley

(with Howard Schuman, Suzanne Bianchi, Diane Colasanto, and Shirley Hatchett) "Chocolate City, Vanilla Suburbs: Will the Trend Toward Racially Separate Communities Continue?" *Social Science Research* 7(4): 319-344, December 1978.

"School Integration in the United States." *The Demography of Racial and Ethnic Groups*. Edited by F.D. Bean and W.P. Frisbe. New York, Academic Press, 1978, pp: 15-50.

(with Suzanne Bianchi, Diane Colasanto, and Howard Schuman) "Barriers to the Racial Integration of Neighborhoods: The Detroit Case." *The Annals of the American Academy of Political and Social Science* 441: 97-113, January 1979.

"Integrating Residential Neighborhoods." *Society* 14(4): 38-41, May/June 1977.

"Residential Segregation in Urbanized Areas of the United States in 1970: An Analysis of Social Class and Racial Differences." *Demography* 14(4): 497-518, November 1977.

Deborah Freedman

(with Arland Thornton and Donald Camburn) "Maintaining Response Rates in Longitudinal Studies: The Care and Nurture of Respondents." *Asia and Pacific Census Forum*, East-West Population Institute 5(4): 1-8, May 1979.

(with Arland Thornton) "The Long-Term Impact of Pregnancy at Marriage on the Family's Economic Circumstances." *Family Planning Perspectives* 11(1): 6-21, January-February 1979.

Ronald Freedman

"Summary of Testimony to Select Committee on Population, U.S. House of Representatives." *Population Reports*, Series J, No. 20, September 1978.

Review of "West Bengal Family Structures: 1946-1966" by Ramkrishna Mukherjee. *Sociology and Social Research*, 62(4), July 1978.

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(with John Casterline) "Nuptiality and Fertility in Taiwan." *Conference Proceedings*. Seminar on Nuptiality and Fertility: Bruges, Belgium; January 1979. Liege, International Union for the Scientific Study of Population.

(with Albert Hermalin, T.H. Sun, and M.C. Chang) "Do Intentions Predict Fertility? The Experience in Taiwan, 1967-74." *Studies in Family Planning* 10(3): 75-95, March 1979.

(with Baron Moots, Mary Beth Weinberger and T.H. Sun) "Household Composition and Extended Kinship in Taiwan." *Population Studies* 32(1): 65-80, March 1978.

Katharine Gaskin

"Age at First Marriage in Europe Before 1850: A Summary of Family Reconstitution Data." *Journal of Family History* 3(1): 23-36, Spring 1978.

Albert Hermalin

"Spatial Analysis of Family Planning Program Effects in Taiwan, 1966-72." *East-West Population Institute Paper Series* 48, April 78.

(with Judith A. Seltzer and C.H. Lin) "The Effect of Family Size on Female Educational Attainment in Taiwan." *Taiwan Population Studies, Working Paper* 37, March 1979.

'Avoiding an Embarrassment of Riches' in the United Nations, "Methods of Measuring the Impact of Family Planning Programmes on Fertility: Problems and Issues." *Population Studies* 61: 174-177, July 1978.

"Multivariate Areal Analysis." *Population Studies: Manual IX*, "The Methodology of Measuring the Impact of Family Planning Programmes on Fertility." New York: United Nations, 66: 97-111, 1979.

(with Ronald Freedman, T.H. Sun, and M.C. Chang) "Do Intentions Predict Fertility? The Experience in Taiwan, 1964-74." *Studies in Family Planning* 10(3): 75-95, March 1979. (Also appeared as *Taiwan Population Studies, Working Paper* 38.)

Hallie Kintner

(John Knodel and Hallie Kintner) "The Impact of Breastfeeding Patterns on the Biometric Analysis of Infant Mortality." *Population Studies* 31(2): 219-249, July 1977.

John Knodel

"Family Limitation and the Fertility Transition: Evidence from the Age Patterns of Fertility in Europe and Asia." *Population Studies* 31(2): 219-249, July 1977.

(with Hallie Kintner) "The Impact of Breastfeeding Patterns on the Biometric Analysis of Infant Mortality." *Demography* 14(4): 391-409, November 1977.

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"Natural Fertility in Preindustrial Germany." *Population Studies*, November 1978.

(with Apichat Chamratrithirong and Nibhon Debavalya) "Age Reporting in Thailand: Age at Last Birthday and Age at Next Birthday." *Research Paper Series of the Institute of Population Studies* 25, Chulalongkorn University, September 1978.

(with Nibhon Debavalya) "Fertility Transition in Thailand: A Comparative Analysis of Survey Data." Report No. 3, World Fertility Survey, "A Survey of Fertility in Thailand." 1978. Published in a shorter form as "Thailand's Reproductive Revolution" in *International Family Planning Perspectives and Digest* 4(2), Summer 1978.

(with Apichat Chamratrithirong) "Infant and Child Mortality in Thailand: Levels, Trends, and Differentials from Indirect Estimation Techniques." *Papers of the East-West Population Institute* 57, November 1978.

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Raymond L. Langsten

(Robert G. Potter, Frances Kobrin, and Raymond L. Langsten) "Evaluating Acceptance Strategies for Timing of Postpartum Contraception." *Studies in Family Planning* 10(5): 151-160, May 1979.

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Ronald Lee

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"Forecasting Fertility and Female Labor Force Participation: An Evaluation of Prospects." *Bureau of Labor Statistics Working Paper*, October 1977.

Karen Mason

(with M. A. Vinovskis and T.K. Hareven) "Women's Work and the Life Course in Essex County, Massachusetts, 1880." In *Transitions: The Family and the Life Course in Historical Perspective.* Edited by T.K. Hareven. New York: Academic Press, 1978. pp: 187-216.

William Mason

(with Stephan Fienberg) "Identification and Estimation of Age-Period-Cohort Models in the Analysis of Discrete Archival Data." *Sociological Methodology* 1979. San Francisco: Jossey-Bass, Inc., 1978, pp:1-67.

Baron Moots

(with Ronald Freedman, Mary Beth Weinberger, and T.H. Sun) "Household Composition and Extended Kinship in Taiwan." *Population Studies* 32(1): 65-80, March 1978.

James Phillips

"Continued Use of Contraception Among Philippine Family Planning Acceptors: A Multivariate Analysis." *Studies in Family Planning* 9(7): 182-192, July 1978.

Toni Richards

"Fertility Decline in Germany: An Econometric Appraisal." *Population Studies* 31(3): 537-553, November 1977.

Judith Seltzer

(Albert Hermalin, Judith Seltzer, and C.H. Lin) "The Effect of Family Size on Female Educational Attainment in Taiwan." *Taiwan Population Studies, Working Paper* 37, March 1979.

Paul Siegel

(with R.E. Cole) "Patterns of Job Mobility: A Comparative Study of Detroit and Yokohama." In *Work, Mobility, and Participation: A Comparative Study of Japanese and American Industry.* University of California Press, Fall 1979.

TRAINING PROGRAM

Description

The Population Studies Center provided the opportunity for on-the-job training to 32 graduate students and one post-doctoral student during the 1977-78 academic year and 37 graduate and three post-doctoral students during 1978-79. The past two years have seen 14 students complete their doctoral requirements and go on to professional work.

The Center emphasizes that it is a training and not a teaching institute. Graduate students are first admitted to either the Sociology or the Economics Department before admission to the Center. Courses, both those designed primarily for demography students and those of a more general interest, are taken under the auspices of the departments, although many of the demography courses are taught by Center staff members.

Highlighting the training program during the past two years is the introduction of the post-doctoral program in both sociology and economics. The post-doctoral program is designed for professionals in demography, history, or other social sciences who want an opportunity to take courses or conduct research. The sociology training grant supports two post-doctoral fellows per year and the economics training grant supports one fellow per year.

The major support for pre-doctoral students comes from a training grant from the National Institute for Child Health and Human Development. In addition, some students receive support from other sources, including the Ford Foundation; the Rockefeller Foundation; the Hewlett Foundation; The Compton Foundation; The Horace H. Rackham School of Graduate Studies, University of Michigan; the National Science Foundation; the United Nations; Canada Council; Agency for International Development; the Barbour Fellowships and the Department of Sociology, University of Michigan.

The goal of the training is to produce a student whose substantive and methodological skills will permit independent work across a broad range of changing topics in the field of population studies, and who can function effectively in both academic and non-academic settings. The basic training program focuses on mastery of the techniques and substantive research literature necessary for an understanding of the social and economic causes and consequences of population size, composition, distribution and change. Particular emphasis is given to the basic de-

mographic processes of mortality, fertility, nuptiality and migration which determine population structure and change.

At the core of the graduate education is an apprenticeship program in which students spend 12 hours per week working at the Center under the close supervision of a member of the professional staff. The apprenticeship lasts about two and a half years and frequently involves the student in the ongoing research of his or her advisor. Class work typically requires two and a half years and includes at least five of the following courses: (sociology) Population Problems, Regional Population Problems, The Urban Community, Human Ecology, Research Methods in Population and Human Ecology, Advanced Population Methods, Proseminar in Historical Demography and Seminar in Population and Human Ecology; (economics) Economics of Population, The Economics of Population Growth and Seminar in the Economics of Population. (For a short description of each course see "Courses in Demography" on page 18 of this section.) Other courses are taken in accord with the student's particular interests. By the third and fourth years the student is usually ready to devote full time to the development and execution of a doctoral dissertation. During this period the student may also gain some experience as a teacher prior to going on the job market.

In addition, the Center offers the student a number of other formal and informal educational experiences.

In a series of one-hour noncredit training sessions organized by J. Michael Coble and Albert Anderson, first year students learn basic computer techniques and are given the opportunity to familiarize themselves with the Center's library of tapes and programs and their application to problems of population analysis. Such training is required of all Center student trainees.

A part of the program in Economic Demography, supported by a National Institute of Health training grant, is carried out at the Center in cooperation with the Department of Economics. Students in Economics who are interested in population issues receive demographic training through participating in the Center's apprenticeship program and through taking appropriate courses in population. Some students also participate in the Survey Research Center summer program, which provides training in various facets of survey research.

Students and members of the professional staff attend

weekly "brown-bag" seminars at which a staff member, an advanced student or a visitor reports on his or her current research activity. Baron Moots coordinated the seminar from 1977 through 1979. Seminar titles included: "Contemporary Problems in Inter-European Labor Migration;" "Longer Term Economic Status Associated with Pre-Marital Pregnancy;" and "Rainfall, Fertility and Frogs: An Analysis of Short Run Fluctuations in Vital Events from France: 1740-1909."

Both staff and student offices are housed on the same floor of one building. The physical proximity allows for close and informal professional relationships between staff and students and makes for an atmosphere conducive to good work in general. Students occasionally publish with their advisors. Students are also encouraged to publish their own research. In order to highlight their contributions, student publications are listed separately at the end of this section, although they also appear with those of the professional staff in the Research section.

Dissertations Completed

The following dissertations were approved during the last two academic years:

1977-78

- Roberta Barnes, "Household Composition Effects on Household Expenditure Patterns," Ronald Lee, Chairperson
- Diane Colasanto, "The Prospects for Racial Integration in Neighborhoods: An Analysis of Residential Preferences in the Detroit Metropolitan Area," Reynolds Farley and Howard Schuman, Co-chairpersons
- Barbara Devaney, "The Labor Supply of Married Women: An Analysis of the Allocation of Time to Market and Nonmarket Activities," Ronald Lee, Chairperson
- Jennifer Madans, "Occupational Segregation by Sex: An Analysis of the Determinants of Occupational Sex Composition Among Female Workers," William Mason, Chairperson
- Robert Mare, "Growth and Distribution of Schooling in White Male American Cohorts, 1907-1952," William Mason, Chairperson
- Margaret Nielsen, "Racial Segregation in Urban School Districts, 1967-1972," Reynolds Farley, Chairperson
- Nelson Silva, "Black-White Income Differentials: Brazil, 1960," William Mason, Chairperson

1978-1979

- Suzanne Bianchi, "Racial Inequality in Family Welfare, 1960-76," Reynolds Farley, Chairperson
- Carol Clark, "Relation of Economic and Demographic Factors to Household Decisions Regarding Education of Children in Guatemala," Eva Mueller, Chairperson
- John Czajka, "Husband-Wife Agreement on Desired Family Size in the United States," Karen Mason, Chairperson
- Robert Johnson, "Religious Assortative Marriage in the United States," William Mason, Chairperson

Robert Klein, "Household Type and Extended Kinship in Taiwan," Martin Whyte, Chairperson; Ronald Freedman, Albert Hermalin, Eva Mueller, Committee members

Mohammad Khalid Siddiqui, "The Initiation of Contraception in Taiwan," Ronald Freedman and Albert Hermalin, Co-chairpersons

Eugene Won, "Political Disaffection in America: Issues and Demographic Divisions from 1964 to 1974," William Mason, Chairperson

Prospectuses Approved

The following is a list of prospectuses approved during the 1977-79 academic years:

Mark Browning, "The Influences of Population Growth on Economic Development: A Cross-Nation Study," Ronald Lee, Chairperson

Helge Brunborg, "An Economic Model of Fertility Incorporating Sex and Contraception," Ronald Lee, Chairperson

John Casterline, "The Determinants of Rising Female Age at Marriage: Taiwan, 1905-1976," Albert Hermalin, Chairperson

Melissa Clark, "A Dynamic Model of Female Labor Force Participation during the Child-bearing and Child-rearing Years," David Goldberg, Chairperson

Katharine Gaskin, "Comparative Analysis of Occupational Sex Segregation," Karen Mason, Chairperson

Hallie Kintner, "The Determinants of Several Features of 19th and 20th Century German Infant Mortality," John Knodel, Chairperson

Ray Langsten, "Causes of Change in Vital Rates: The Case of Bangladesh," Albert Hermalin and Ronald Freedman, Co-chairpersons

James Phillips, "A Logit Regression Analysis of Attrition Among Philippine Contraceptive Adopters," William Mason, Chairperson

Toni Richards, "Fertility in 18th and 19th Century France, the Analysis of a Demographic System: Fluctuations, Trends, and Differentials," Ronald Lee, Chairperson

Judith Seltzer, "Familial Sources of Children's Achievement and Psychological Well-being," Albert Hermalin and William Mason, Co-chairpersons

David Thompson, "Individual and Departmental Level Influences on Graduate Student Attitudes Towards Non-academic Employment," Albert Hermalin and David Goldberg, Co-chairpersons

Student Publications

The following lists the individual publications of Center students as well as their collaborative publications with the professional staff. The names of students are singled out above their publication(s); the names of co-authors, if any, are listed parenthetically in order of their contribution.

John B. Casterline

"Demographic Correlates of Attitudes Towards Busing and School Integration: Detroit, 1976." *1977 Proceedings*.

Social Statistics Section, American Statistical Association, pp: 448-453

(Ronald Freedman and John B. Casterline) "Nuptiality and Fertility in Taiwan." *Conference Proceedings. Seminar on Nuptiality and Fertility: Bruges, Belgium; January 1979. Liege, International Union for the Scientific Study of Population.*

Joseph Chamie

"Religious Differentials in Fertility: Lebanon, 1971." *Population Studies* 31(2): 365-382, 1977

Katharine Gaskin

"Age at First Marriage in Europe Before 1850: A Summary of Family Reconstitution Data." *Journal of Family History* 3(1): 23-36, Spring 1978

Hállie Kintner

(John Knodel and Hallie Kintner) "The Impact of Breast-feeding Patterns on the Biometric Analysis of Infant Mortality." *Population Studies* 31(2): 219-249, July 1977

Raymond L. Langsten

(Robert G. Potter, Frances Kobrin, and Raymond L. Langsten) "Evaluating Acceptance Strategies for Timing of Postpartum Contraception." *Studies in Family Planning* 10(5): 151-160, May 1979

(Robert G. Potter, Frances Kobrin, and Raymond L. Langsten) "Three Contraceptive Acceptance Strategies." *Mathematical Biosciences* 43: 1-22, March 1979

(Robert G. Potter, Frances Kobrin, and Raymond L. Langsten) "Comparison of Three Acceptance Strategies: A Progress Report." *Papers of the East-West Population Institute* 59, February 1979

James Phillips

"Continued Use of Contraception Among Philippine Family Planning Acceptors: A Multivariate Analysis." *Studies in Family Planning* 9(7): 182-192, July 1978

Toni Richards

"Fertility Decline in Germany: An Econometric Appraisal." *Population Studies* 31(3): 537-553, November 1977

Judith Seltzer

(Albert Hermalin, Judith Seltzer, and C.H. Lin) "The Effect of Family Size on Female Educational Attainment in Taiwan." *Taiwan Population Studies, Working Paper* 37, March 1979

Courses in Demography

Many members of the Center's professional staff also serve on the faculty of either the Department of Sociology or the Department of Economics. Their instructional responsibilities include teaching the following graduate courses, which Center students are either required or en-

couraged to take. Center fellows (students in the Sociology Department) are required to take one of the following courses every semester they are enrolled until they achieve candidacy.

Sociology 530 — Population Problems. An intensive analysis of the basic demographic processes and their causes. How variations in mortality, fertility, nuptiality and migration arise and how they affect society. Illustrations are drawn from the United States and a variety of developed and underdeveloped countries.

Sociology 531 — Regional Population Problems. This course focuses on the population aspects of social problems — food, energy, pollution, etc. — the role of population variables in the problems of social development, and social policies that are concerned with the population aspects of these problems. It considers these issues in the context of specific countries representing a range of demographic situations.

Sociology 535 — The Urban Community. A descriptive study of the form and development of the urban community with respect to demographic structure, spatial and temporal patterns and functional organization, with attention to the sources of data and techniques of analysis appropriate to the study of population distribution.

Sociology 536 — Human Ecology. Deals with the forms and modes of change of social structure as affected by interactions with the environment and population.

Sociology 630 — Research Methods in Population and Human Ecology. An examination of the nature and structure of a large number of demographic techniques useful for studying population composition or analyzing population dynamics. Involves both review of literature and computations using the techniques.

Sociology 631, 632 — Advanced Population Methods. These courses focus on the formal development of models to study the growth, distribution, change and movement of human population with emphasis on mathematical models which lead to empirically verifiable theory. Topics include models for studying stable populations, the reproduction processes and the translation of period to cohort rates. Attention is also given to data sources and statistical techniques used in studying the interrelationships of population distribution, division of labor and community structure.

Sociology 633 — Proseminar in Historical Demography. A survey of the data sources and the methods of data organization and analysis peculiar to historical demographic research along with selected substantive topics.

Sociology 830, 831 — Seminar in Population and Human Ecology. A variety of substantive and methodological topics are taken up in a seminar format.

Economics 466 — Economics of Population. Analysis of the causes and effects of population changes from the standpoint of economic theory. (For upper-class undergraduates and as an introduction for graduates.)

Economics 667 — The Economics of Population Growth. Examines the economic determinants of demographic behavior, with a focus on the economics of fertility, as well as

the consequences of demographic change in both developed and less developed countries and the economic aspects of population policy and family planning programs.

Economics 867, 868 — Seminar in the Economics of Population. A seminar covering a variety of topics in the form of (1) a detailed discussion of an important recent article or series of articles; (2) presentation of research plans or findings by trainees or faculty members; (3) presentation of research by a visitor.

Former Students

Typically, upon completion of their training at the Center, students obtain employment in academic institutions. In recent years, however, both business and government have recognized the importance of demographic research to policy making; consequently, more recent graduates are accepting non-academic positions both in the United States and abroad. Of the 14 trainees who graduated during 1977-79, nine took positions in non-academic institutions and five went to universities. A list of the 76 Center trainees who received Ph. D.'s in Sociology or Economics since the Center's inception in 1962 is given below. The variety of institutions with which they are now affiliated gives an overview of the scope of preparation provided at the Center.

In addition to the Ph. D. degree recipients listed, many students from the U.S. and abroad have received shorter-term Center training. In all, over 65 former trainees currently hold academic positions at about 34 universities in the United States and eight universities abroad. More than 57 are involved in research in about 23 national, 14 foreign, and five international organizations concerned with population issues. (Modern mobility complicates any attempt to account for all the students who have had training at the Center and thus we acknowledge that this list may not be complete.)

FORMER POPULATION STUDIES CENTER TRAINEES WITH A Ph.D. FROM THE UNIVERSITY OF MICHIGAN

(Chronologically listed — 1962 to 1979)

Krishnan Namboodiri
Professor and Chairman (Sociology)
University of North Carolina

Tattamangalam R. Balakrishnan
Professor (Sociology)
University of Western Ontario

Allan G. Feldt
Professor (Urban and Regional Planning, Natural Resources)
University of Michigan

William Smit
Professor (Sociology)
Calvin College

William F. Pratt
Chief, Family Growth Survey Branch
National Center for Health Statistics

Partha S. Mohapatra
Deceased 1976

Kodaganallur Srikantan
Institute for Social and Economic Change
Bangalore, India

Roy C. Treadway
Associate Professor (Sociology)
Department of Sociology, Anthropology and Social Work
Illinois State University

Fred Campbell
Associate Professor (Sociology)
University of Washington

Larry L. Bumpass
Professor (Sociology) and Associate Director for Training
(Center for Demography and Ecology)
University of Wisconsin

Patricia R. Ferman
Associate Professor (Sociology)
Eastern Michigan University

Robert M. Hauser
Professor (Sociology) and Director (Training Program in
Social Methods)
University of Wisconsin

Anrudh K. Jain
Associate (International Programs)
The Population Council

Albert M. Marckwardt
Demographer
United Nations Fund for Population Activities
Santiago, Chile

William S. Pooler
Associate Professor (Sociology)
Syracuse University

Allan Schnaiberg
Associate Professor (Sociology)
Northwestern University

Te-Hsiung Sun
Executive Director
Taiwan Family Institute of Family Planning

James A. Sweet
Associate Professor (Sociology) and Director (Center for
Demography and Ecology)
University of Wisconsin

Solomon S. P. Chu
University College of Podiatric Medicine
1001 North Dearborn
Chicago, Illinois

David L. Featherman
Professor and Chairman (Rural Sociology) and Research
Associate (Center for Demography and Ecology)
University of Wisconsin

Charles R. Kindermann
Acting Director (Statistics Division)
U.S. Department of Justice
Law Enforcement Assistance Agency

Alden Speare
Associate Professor (Sociology)
Brown University

Jay I. Stark
Lincorp Research, Inc.
Ann Arbor, Michigan

Arjun L. Adlakha
Assistant Professor (Biostatistics) and Research Associate
(POP LAB)
University of North Carolina

Greer L. Fox
Professor (Sociology) and Director
Merrill-Palmer Institute
Detroit, Michigan

Judith L. Friedman
Associate Professor (Human Ecology)
Cook College, Rutgers University

Samuel R. Friedman
Assistant Professor (Sociology)
Montclair State College

Robert Lapham
Staff Director, Committee on Population and Demography
National Research Council
National Academy of Science
Washington, D.C.

Baron L. Moots
Assistant Research Scientist
(Population Studies Center)
University of Michigan

Bruce L. Warren
Associate Professor (Sociology)
Eastern Michigan University

Gordon S. Bonham
Survey Statistician
Family Growth Survey Branch
National Center for Health Statistics

Eugene P. Ericksen
Head of Sampling Division
Institute for Survey Research
Temple University

David D. McFarland
Associate Professor (Sociology)
University of California

Shea O. Rutstein
Overseas Staff Associate
Demographic Division
The Population Council
Lima, Peru

Fred Arnold
East-West Population Institute
East-West Center
Honolulu

George K. Jarvis
Associate Professor (Sociology)
University of Alberta

Allan Griswold Johnson
Assistant Professor (Sociology)
Wesleyan University

Richard B. Anker
Economist
International Labor Organization
Geneva, Switzerland

Paul M. Hirsch
Assistant Professor (Sociology)
University of Chicago

Howard M. Iams
Statistician (Social Science)
Office of Special Initiatives
U.S. Department of Health, Education and Welfare

Paul K. C. Liu
Economist
Institute of Economics
Academia Sinica
Taipei, Taiwan

Maurice M. MacDonald
Research Economist
Institute for Research on Poverty
University of Wisconsin

Lois B. Shaw
Center for Human Resource Research
Columbus, Ohio

Ross Stolzenberg
Assistant Professor (Sociology)
University of Illinois-Urbana

Boone A. Turehi
Assistant Professor (Economics)
University of North Carolina

John Ellis Anderson
Research Associate
Center for Disease Control
Atlanta, Georgia

Hsiao-Chang Chen
International Institute for Rural Reconstruction
Philippines

Hsan Zafer Dogan
Research Associate (The Population Council, Yozgat Project)
Ankara, Turkey

Barry James Edmonston
Assistant Professor (Sociology)
Cornell University

Mark Evers
Assistant Professor (Sociology)
University of Oregon

Elizabeth M. Fischer
Assistant Professor (Sociology) and Associate Director
(Social Science Data Library)
Institute for Research in Social Science
University of North Carolina

John Leroy Goodman
Research Associate
The Urban Institute
Washington, D.C.

Lois Verbrugge
Assistant Professor (Biostatistics)
University of Michigan

James Cramer
Assistant Professor (Sociology)
University of California-Davis

Arland Thornton
Assistant Research Scientist
Survey Research Center
University of Michigan

Andrew Mason

Research Associate, Population Institute
East-West Center, Honolulu, and Assistant Professor
(Economics)
University of Hawaii

Paul Ronald Voss

Project Associate (Applied Population Laboratory)
Department of Rural Sociology
University of Wisconsin

Joseph Chamie

Population Division
UN Economic Commission for West Asia
Beirut, Lebanon

Linda Waite Stolzenberg

Assistant Professor (Sociology)
University of Illinois-Urbana

Stanley Smith

Assistant Professor (Economics)
University of Florida

Martha Hill

Institute for Social Research
University of Michigan

Rex Y. Leghorn

Assistant Professor (Sociology)
Emory University

Roberta Barnes

Institute of Labor Statistics
Washington, D.C.

Diane Colasanto

Assistant Professor (Sociology)
University of Wisconsin (Madison)

Barbara Devaney

Mathematica Policy Research, Inc. &
Assistant Professor (Economics)
Johns Hopkins

Jennifer Madans

National Center for Health Statistics
Hyattsville, Maryland

Robert Mare

Assistant Professor (Sociology)
University of Wisconsin

Margaret O. Nielsen

Assistant Professor (Sociology)
Michigan State University

Nelson Silva

Brazilian Census Bureau
Rio de Janeiro, Brazil

Eugene Won

Assistant Professor (Sociology)
University of Southern California-L.A.

Robert Klein

Survey Analyst/Statistician
Survey Development Branch, DHEW
Washington, D.C.

Suzanne Bianchi

Education and Social Stratification Branch
Bureau of the Census

Mohammad K. Siddiqui

Commission on Professional & Hospital Activities
Ann Arbor, Michigan

Carol Clark

Rockefeller Foundation
Guatemala City, Guatemala

Robert Johnson

Lecturer (Sociology)
University of Arizona

John Czajka

Mathematica Policy Research, Inc.
Washington, D.C.

SERVICE ACTIVITIES

An important function of those population centers which contain a critical mass of professionals is the ability to devote some portion of staff time to domestic and international service. Such activities aid in the development of the field and influence public policy decisions related to population issues. The staff of the Population Studies Center has a long history of this kind of service, including appointments on task forces and commissions, and as consultants to the federal government, private organizations, and international organizations. Staff members are also called upon to present papers and serve as discussants at various conferences and colloquia. Some of the major current professional and public service activities, both domestic and international, are listed below.

Lolagene Coombs

- Consultant, Population and Human Resources Division, World Bank
- Consulted with the Institute for Social Studies in Medical Care, London, March 1978
- Consulted with the Centre for Population Studies, London School of Hygiene and Tropical Medicine, March 1978
- Consulted with the Office of Population Censuses and Surveys, London, January-March 1978
- Consulted with the Population Studies and Research Institute of Nairobi and the Rural Services Coordination and Training Unit of the Ministry of Finance and Planning, February 1978
- Consulted with the Institut für Psychologie, Aachen, Germany, May 1978
- Advisor, Fertility Study of Sri Lanka, University of Leiden, April 1978
- Chairperson, Session on Measurement, Reliability, and Validity of Fertility Attitudes, International Population Conference, International Union for the Scientific Study of Population, August 1977
- Chairperson, Session on Predicting Fertility, Population Association of America Annual Meeting, Philadelphia, April 1979
- Member, Proposal Review Committee, Research Program on Population and Development Policy, Ford Foundation and Rockefeller Foundation, 1977-78
- Reviewer, research proposals, National Science Foundation

Review Editor: *Journal of Population: Sociology and Social Biology; American Sociological Review; Human Ecology; Studies in Family Planning*

Lectured, Demography Department, London School of Economics and the Centre for Population Studies, London School of Hygiene and Tropical Medicine, January-February 1978

Lectured, Département de Démographie, Université Catholique de Louvain, May 1978

Reynolds Farley

- Chair-Elect, Population Section, American Sociological Association
- Publications Liaison Officer, Social Statistics Section, American Statistical Association
- Member, Technical Advisory Committee on Chicago School Desegregation Plan, appointed by Illinois State Board of Education
- Member, Panel of Experts for Los Angeles School Desegregation, appointed by Judge Paul Egly of the Superior Court
- Member, Board of Directors, Population Association of America
- Member, Census Advisory Committee on Population Statistics
- Member, Editorial Board, *Urban Affairs Quarterly*
- Presented paper, "Racial Progress in the Last Two Decades: What Can We Determine About Who Benefits and Why?" American Sociological Association Annual Meeting, Boston, August 1979
- Presented paper, "Can Blacks Afford to Live in White Neighborhoods? A New Look at the Role of Economic Factors in Racial Residential Segregation." Population Association Annual Meeting, Philadelphia, April 1979
- Presented paper, "Death By Murder. An Examination of Several Aspects of Homicide Trends in the United States." Population Association Annual Meeting, Atlanta, April 1978
- Presented paper. (with Howard Schuman, Suzanne Bianchi, Diane Colasanto, and Shirley Hatchett) "Chocolate City, Vanilla Suburbs: Will the Trends Toward Racially Separate Communities Continue?" American Sociological Association Annual Meeting, Chicago, September 1977

- Presented Paper, (with Clarence Wurdock) "School Integration in the Nation's Largest Cities: An Analysis of Recent Trends." American Statistical Association Annual Meeting, Washington D.C., August 1979
- Presented paper. "Racial Integration in Public Schools: A Look at Recent Trends in Segregation and the Use of Social Science Evidence by the Courts." American Psychological Association Annual Meeting, Toronto, August 1978

Deborah Freedman

- Presented paper, "The Long Term Economic Impact of a Pre-marital Pregnancy." East-West Population Institute, Honolulu, March 1979
- Presented paper. "Problems in Collecting Multi-purpose Surveys in Low Income Countries: An Alternative Strategy." Organization of Economic and Cultural Development, Paris, December 1977

Ronald Freedman

- Consultant, Family Planning Association of Hong Kong, March 1979
- Consultant, The Ford Foundation
- Consultant, World Bank
- Consultant, The Population Council
- Consultant, World Fertility Survey, London
- Consultant, Taiwan: Taiwan Provincial Institute of Family Planning; Academia Sinica; Joint Commission on Rural Reconstruction; Bureau of Accounting, Finance and Statistics; Ministry of the Interior, February-March 1978 and March 1979
- Member, Committee on Comparative Analysis of Fertility, International Union for the Scientific Study of Population
- Member, Panel on Determinants of Fertility Change, Committee on Population and Demography, National Academy of Sciences
- Member, External Advisory Panel on Population, World Bank
- Member, Interdisciplinary Science Advisory Board, Alan Guttmacher Institute
- Senior Fellow, East-West Population Institute, Honolulu, January-April 1979
- Participant, Taiwan Interdisciplinary Studies of the Effects of the Changing Taiwanese Family on Fertility, Taiwan Provincial Institute of Family Planning, Academia Sinica, National Taiwan University, Taipei, October 1979
- Participant, Conference on World Fertility Survey Analysis, East-West Center, Honolulu, January 1979
- Participant, "Seminar on Findings of the Indonesia World Fertility Survey 1976," Jakarta, Indonesia, March 1979
- Participant, Committee on Comparative Analysis of Fertility, International Union for the Scientific Study of Population, Mexico City, August 1977
- Participant, meetings on Comparative Analysis of Fertility, Union for the Scientific Study of Population, Paris, June 1978

- Participant, conference on Comparative Fertility Transition in Asia, Tokyo, March 1978
- Discussant, two papers on World Fertility Survey, Population Association of America Annual Meeting, Philadelphia, April 1979
- Discussant, papers presented at the Conference on the European Demographic Transition, Princeton, New Jersey, July 1979
- Participant, conference on Determinants of Fertility, National Academy of Science Panel, Berkeley, October 1979
- Participant, three meetings for Committee on Population and Demography, National Academy of Sciences
- Presented paper, (with John Casterline) "Nuptiality and Fertility in Taiwan." Seminar on Nuptiality and Fertility, International Union for the Scientific Study of Population, Bruges, Belgium, January 1979
- Presented paper, "Issues in the Comparative Analysis of World Fertility Survey Data." World Fertility Survey Workshop, East-West Center, Honolulu, January 1979; World Fertility Survey Conference on Fertility, London 1979
- Presented papers, "Implications for Policy of the Indonesian Fertility Survey Findings," and "Summary of a Conference on the Indonesian Fertility Survey." Seminar on Findings of the Indonesia World Fertility Survey, 1976, Jakarta, Indonesia, March 1979
- Lecturer, "Theories of Fertility Decline." Second Annual Hawley Lecture, University of North Carolina, Chapel Hill, April 1978
- Testified, Select Committee on Population, U.S. House of Representatives, Washington, D.C., April 1978

David Goldberg

- Consultant, Population Growth in Michigan, Wisconsin and Minnesota, Governors' Conference
- Consultant, Future College Enrollment, President's Commission
- Consultant, "Population Turnaround," Upper Great Lakes Regional Commission
- Member, Fertility Panel, National Academy of Science

Albert Hermalin

- Consultant, United Nations project on Comparative Analysis of the World Fertility Survey
- Chairperson, Committee for the Demographic Analysis of Family Planning Programs, International Union for the Scientific Study of Population
- Chairperson, Ad Hoc Committee Monitoring Federal Activities Affecting Population, Population Association of America. Also serves on the Public Affairs Committee created in response to the report of the Ad Hoc Committee
- Member, Editorial Review Panel, *Studies in Family Planning*
- Member, Working Group on Determinants of Fertility Change, National Academy of Sciences, 1978
- Reviewer of Proposals, National Science Foundation

Prepared paper, "Some Cautions in the Use and Interpretation of Regression Analysis for the Evaluation of Family Planning Programmes." for the U.N. Second Expert Group Meeting on Methods of Measuring the Impact of Family Planning Programmes on Fertility, Geneva, March 1979

Presented paper. (with William Lavelly) "Agricultural Development and Fertility Change in Taiwan." Population Association of America Annual Meeting, Philadelphia, April 1979

Presented background paper. "Issues in the Comparative Analysis of Techniques for Evaluating Family Planning Programmes." U.N. Second Expert Group Meeting on Methods of Measuring the Impact of Family Planning Programmes on Fertility, Geneva, March 1979

Presented paper. "Multivariate Areal Analysis of Family Planning Program Effects." at the ESCAP Consultative Meeting of Statistical Experts and Study Directors for the Study of the Impact of Family Planning Programmes, Bombay, January 15-17, 1979

Presented paper, (with J. A. Seltzer and C. H. Lin) "The Effect of Family Size on Female Educational Attainment in Taiwan," at the Population Association of America Annual Meeting, Atlanta, April 1978

Presented paper. (with W. M. Mason) "Comparative Analysis of the World Fertility Survey," at The World Fertility Analysis Working Group, East-West Center, Honolulu, January 30, 1979

John Knodel

Consultant, the International Review of Social Science Research on Population and Development

Consulted with the Survey of Fertility in Thailand, Institute of Population Studies, Chulalongkorn University, Bangkok, Thailand, June-July 1977 and July 1978

Member, Joint Thai-American Committee to Evaluate the Thai National Family Planning Program, American Public Health Association, June-July 1979

Panel Member, Committee on Population and Demography, National Academy of Sciences

Discussant, session on "The Demographic Transition," American Statistical Association, San Francisco, September 1978

Participant, seminars and colloquia on research: The Center for Population and Family Health, Columbia University; The Population Studies Center, University of Texas

Referee: *Population Development Review; Demography; Science; Studies in Family Planning; Journal of Family History; Social Biology; and The Journal of Developing Areas*; as well as a report for the World Fertility Survey

Reviewer, research proposals, National Science Foundation

Presented paper. "Fertility Transition in Rural Germany: An Analysis of Family History Data." Social Science History Association Annual Meeting, Columbus, Ohio, November 1978

Presented paper. "Preferences for the Sex of Offspring

and Demographic Behavior in 18th and 19th Century Germany." Population Association of America Annual Meeting, Philadelphia, April 1979

Ronald Lee

Consultant, Council of Advisors to the Social Security Administration

Chairperson, Mindel C. Sheps Award Committee

Organizer, International Economic Demography Meeting, International Union for the Scientific Study of Population, Helsinki, August 1978

Member, Panel on Determinants of Fertility Change, National Research Council

Member, Review Panel for Societal Consequences of Adolescent Childbearing, National Institute for Child Health and Human Development

Member, Ad Hoc Group of Experts on Demographic Forecasting, United Nations Population Division, November 1977

Member, National Institute of Child Health and Human Development Site Visit Team to Princeton's Office of Population Research, February 1978

Ad Hoc Member, National Institute of Child Health and Human Development Population Study Section to Evaluate Research Proposals, March 1978

Referee: *Journal of Political Economy; Demography; Resources for the Future; National Institute of Child Health and Human Development; National Science Foundation; Princeton University Press*

Presented paper. "Mortality Fluctuations in England, 1539-1840: Climatic Causes, Demographic Consequences." The Social Science History Association Annual Meeting, October 1977

Presented paper. "A Stock Adjustment of U.S. Marital Fertility, 1947-1974." American Economic Association Meeting, New York City, December 1977

Prepared report. *Fluctuations in U.S. Fertility, Age Structure, and Income*. National Institute of Child Health and Human Development

Karen Mason

Advisory Board, Women and Culture Series, University of Michigan Press

Board of Directors, Population Association of America
Committeeperson, Occupational Analysis and Evaluation, National Research Council

Discussant. "Extrafamilial Roles of Women in LDCs." Population Association of America Annual Meeting, Philadelphia, April 1979

Outside Reviewer: Behavioral Sciences Branch, National Institute of Mental Health; National Science Foundation

Referee: *American Sociology Review; Demography; American Journal of Sociology; Social Forces*

Presented paper. "Female Employment and Fertility in Peninsular Malaysia: Preliminary Results From the 1974 World Fertility Survey." American Sociological Association meetings, San Francisco, September 1978

Presented paper, "Life Cycle Changes in Attitudes and the Family." Workshop on Stability and Change in the Family. National Research Council Committee on Aging, Annapolis, March 1979

Lecturer, book reviewer for University of Michigan Center for the Continuing Education for Women, November 1978

William Mason

Consulted with the World Fertility Survey Central Staff on Community Level Analysis. Comparative Analysis and Reporting Error in Birth Histories. London, October 1978

Chairperson, Session on Measurement of Error, American Sociological Association Annual Meeting, San Francisco, 1978

Member, Advisory and Planning Committee, Social Science Research Council Center for Coordination of Research on Social Indicators

Associate Editor, Applications, *Journal of the American Statistical Association*

Associate Editor, *Sociological Methods and Research*

Presented paper, (with V.T. Palan) "Community Level Variables and Their Effect on Reproductive Behavior in Malaysia." American Sociological Association Annual Meeting, San Francisco, September 1978

Presented paper, "Comparative Analysis Using the World Fertility Survey." Harvard University Sociology Department Seminar, April 1979

Presented paper, (with Herbert Smith) "Age-Period-Cohort Analysis and the Study of Deaths from Pulmonary Tuberculosis." Social Science Research Council Conference on Analyzing Longitudinal Data for Age, Period and Cohort Effects: Snowmass, Colorado; June 1979

Baron Moots

Reader, *Demography*

Eva Mueller

Consultant, Measurement of the Employment Status of Rural Women in Developing Countries. United Nations Food and Agriculture Organization, Rome

Consultant, National Institutes of Health, Washington, D.C.

Advisor, International Center for Research on Women, Washington, D.C.

Pretested employment and time use questionnaire in Nepal in cooperation with New Era, Kathmandu, August 1979

Participant, workshop on "Methodology of Collecting Time Use Data," Asia Society, New York City

Presented paper, "Household Structure, Time Use, and Income Distribution: The Case of Botswana." Population Association of America Annual Meeting, Philadelphia, April 1979

Presented papers, "Time Use in Rural Botswana" and "The Economic and Demographic Status of Female-Headed Households in Botswana," World Bank, Gabarone, Botswana, May 1979

Presented paper, "Determinants of the Intra-Household Allocation of Time: Theory and Conceptualization." Workshop on Women's Role and Demographic Change, International Labor Organization, Geneva, November 1978

Paul Siegel

Member, Citizens Committee on Racial Balance, Ann Arbor Public Schools

Editorial reader: *Demography*; *Social Forces*; *American Journal of Sociology*; *American Sociological Review*

Presented paper, "Human Ecology: An Assessment and Prospects." National Science Foundation, Fall 1979

STAFF ROSTER

Below is a list of staff members currently serving at the Population Studies Center for the academic year 1979-80.

Director

Albert I. Hermalin, Professor of Sociology

Associate Directors*

Lolagene Coombs, Assistant Research Scientist

Ronald Freedman, Professor of Sociology

Paul M. Siegel, Associate Professor of Sociology

Research Associates

Albert Anderson, Assistant Research Scientist

J. Michael Coble, Assistant Research Scientist

Reynolds Farley, Professor of Sociology

Deborah Freedman, Assistant Professor of Economics

John Knodel, Associate Professor of Sociology

Ronald D. Lee, Professor of Economics

Karen O. Mason, Associate Professor of Sociology

William M. Mason, Associate Professor of Sociology

Baron Moots, Assistant Research Scientist

Eva L. Mueller, Professor of Economics

**Associate Directors serve for a fixed term. During 1977-79 those who served as Associate Directors were: Reynolds Farley, David Goldberg, and Ronald Lee.*

Supporting Staff

Susan Etter, Administrative Associate

Mary Scott, Administrative Assistant

Howard Rontal, Editor

Fran Cartford, Programmer Analyst

Amy Hsu, Programmer

Ken Stewart, Programmer

James Rogers, Research Assistant

Lois Groesbeck, Secretary - Librarian

Carol Crawford, Secretary

Mary Sheredy, Secretary

Dorothy Strand, Secretary

Ruth Crankshaw, Receptionist - Clerk

Additional Center Staff: 1977-79

Charles Connerly, Research Assistant

Kathleen Malley, Secretary

Karlin Richardson, Programmer

Charlotte Smart, Receptionist - Clerk