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THE ORIGINS, GROWTH AND FUTURE OF APPLIED DEMOGRAPHY IN THE UNITED STATES

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"You know, this applied science is just as interesting as pure science, and what's more it's a damned sight more difficult."

Sir William Bate Hardy
Haldane Memorial Lecture
Birkbeck College
University of London
1955

An interesting development occurred in the field of demography over the past twenty-five years or so. In a discipline that many argue is, in its *totality*, an applied science,[i] a small but growing subgroup within the field began to appropriate the term "applied" to describe their particular work and employment settings. In this paper I identify this group of demographic practitioners and describe a framework suggested by some to identify those kinds of demography that are "applied" and those that are not. In particular, I comment at some length on several developments in the demographic science that were necessary precursors for the rise of today's applied demographer, and I inventory some of the events and forces that created the context and stimulus for this particular development in U.S. demography.

Defining "Applied Demography"

I will attempt to dispense with the most difficult aspect of this issue right up front. In so doing, I wish to leave no ambiguity regarding my own staunch conviction that in demographic science, as in virtually *any* science, separating all research and related activities into two groups -- one presumably labeled "basic" and the other "applied" -- is an impossible, if not a pointless and divisive, undertaking. My goal in this section of the paper is

not to separate and alienate. Rather, it simply is to acknowledge the emergence and growth of demographers who, for some time now, have self-identified their principal activities as *applied* and to whom the professional demographic discipline, without rancor or even much debate, appears to have lent legitimacy to the appropriation of the term *applied demographers*. I will not take a position as to whether this development is good or bad for the discipline, but I do acknowledge the awkward dilemma it creates for those demographers whose work, consistently or occasionally, clearly is applied (in the general sense of that word) but lies outside the definitional boundaries that are beginning, with near consensus, to form around the term "applied demography" and to describe those individuals who toil in this particular corner of our discipline.

The first formal effort to define the emerging field of applied demography appeared in a 1984 Sage University Paper, *Introduction to Applied Demography*, authored by Rives and Serow:

> In our view, applied demography is that branch of the discipline that is directed toward the production, dissemination, and analysis of demographic and closely related socioeconomic information for quite specific purposes of planning and reporting. To distinguish "applied" pursuits from other lines of demographic inquiry, we would further suggest that applied demography is more concerned with the measurement and interpretation of current and prospective population change than with the behavioral determinants of this change. While many lines of demographic inquiry involve the analysis of statistical information pertaining to individuals, families, and households, applied demography almost always deals with information on population size, growth, and composition for *specific geographic areas*. Thus there is an identifiable difference in the unit of analysis: Applied demographers tend to focus on *geographic units* and their population characteristics, while others are more concerned with individuals and their demographic behavior. (Rives and Serow, 1984:9-10; emphasis added)

Murdock and Ellis, in their textbook on applied demography (1991), expand in helpful ways on this basic definition by arguing, for example, that demography, as a basic science, and applied demography can be further differentiated in terms of the scientific goal of the activity, the temporal context of the research, and the intended use of the analytical results. Table 1 summarizes the perspective of Murdock and Ellis in their expansion on the earlier definition articulated by Rives and Serow.

One additional criterion occasionally is used to explain the difference between applied demography and mainstream demography

that is not reflected in either the Rives and Serow definition or the expanded Murdock and Ellis definition. This relates to the demographic work often subsumed under the broad term "population studies." It was Hauser and Duncan (1959) who first drew the distinction between "demographic analysis" and "population studies":

> The apparent confusion arising from the fact that both demographers and non-demographers study human populations in relation to other systems of variables is dissipated if one distinguishes between 'demographic analysis' and 'population studies.' Demographic analysis is confined to the study of components of population variation and change. Population studies are concerned not only with population variables but also with relationships between population changes and other variables -- social, economic, political, biological, genetic, geographical, and the like. (Hauser and Duncan, 1959:2)

Kammeyer (1971) further dissects this basic understanding of demography by pointing out that there are two ways of handling the "other variables" in the Hauser and Duncan description of population studies. One approach uses non-demographic factors as the independent variables used to explain some demographic fact. The other uses demographic factors as independent variables to explain variation in other, non-demographic variables. Building on this distiction within the field of population studies, then, yet another difference between applied demography and mainstream demography can be drawn. Mainstream demographers are more likely to use variables from outside the discipline to expand our understanding of demographic phenomena (the first type of population study as described by Kammeyer). Applied demographers, more typically, use the tools of demography to bear on questions that arise outside the discipline (the second type of population study). To my knowledge, this insight was first offered by Merrick:

> It's not that the applied demographer is not research oriented. Rather the applied demographer is concerned primarily with bringing the methods and materials of demography to bear on questions that typically arise outside of demography, in business or public affairs, whereas the 'mainstream' (if one can use that label to identify those whose concerns lie there) directs most of its energy to building and extending the knowledge base through research and teaching. (Merrick, 1987:ix)

And having drawn this distinction, Merrick quickly added a comment regarding geography, that aspect of the definition so strongly stressed by Rives and Serow:

> Applied demographers spend most of their time working at levels of disaggregation by geography and other characteristics into which their mainstream colleagues rarely

delve. (Merrick, 1987:ix)

My personal preference is to adopt the composite definition that emerges from Table 1 and the related comments by Merrick and by Rives and Serow. I believe strongly, however, that if one were forced to distill this definition down to but one feature that most clearly and consistently distinguishes applied demography from other, mainstream demographic pursuits, it is the attention to *place;* that is, the linking of demographic attributes to *specific geographic locations* and then the investigating and explaining of variation in those attributes among the geographic areas. This activity lies at the heart of much applied demography, and in some respects, formalizes what several years ago was rumored to be a rule of thumb for separating applied demographers from other demographers. Applied demographers, it was argued, use the census summary tape files in their analyses; other demographers use the public use microdata samples. The contrast is drawn too sharply, perhaps, but the implicit recognition of the role played by geography is unambiguous.[ii]

The Origins of Applied Demography

Having adopted a working definition of this disciplinary sub-area, I now want to comment on how this field emerged and has evolved over the years. I will approach the task from a historical perspective, marking four periods of time that appear to have been important in the growth of applied demography. Using this point of view to examine the origins and development of applied demography in the United States, I believe a case can be made that the opening chapter would focus on activities and events that occurred roughly over the four decades prior to 1970. The second and third chapters span roughly the decades of the 1970s and 1980s, respectively, and the fourth chapter takes a future-oriented look at the 1990s.[iii]

Prior to 1970: The Quiet Emergence of the State-Level Demographic Practitioner

The years roughly between 1930 to 1970 represent a 40-year period during which, I argue, the technical foundations of applied demography were set in place. The early developmental work was principally based in the academic arena and in federal agencies, but by the 1950s, a substantial amount of the demographic production effort (e.g., of population estimates and projections) was to be found in rural departments of land-grant institutions, in the network of bureaus of business and economic research on campuses around the country, and in state and local agencies. I refer to this early, 40-year foundational period of applied demography as the period that witnessed "the quiet emergence of the state-level demographic practitioner" because the period ushered in an acceleration of formal attention to state and sub-

state demographic change. By the end of this period, demographers who specialized in state-level demographics had begun to find professional employment in state agencies, as well as the more traditional settings of state universities, and the demographic disclipine had begun to accord legitimacy and recognition to what today is called, within the Population Association of America and elsewhere, "state and local demography."

My interpretation of the development of applied demography prior to 1970 draws particular attention to two threads of research crucial to the growth of this sub-area. These are (1) internal migration research and, closely related, the analysis of population distribution and redistribution, and (2) the development of formal models of population estimation and projection. I would add, parenthetically, that it matters little whether the actual researchers I mention consciously thought about whether their work was applied or not. Labels are not particularly important here.

Migration and Population Distribution Research

It likely is impossible to account completely for why the 1930s witnessed such a profusion of first-rate migration research, but certainly one important cause was the social upheaval resulting from the Great Depression and the enormous disruption of the national economy, of jobs and of family life that gave definition to this tragic episode in 20th century American history. In any event, research into the determinants and consequences of human migration carried out by social scientists at the University of Pennsylvania and elsewhere (see, for example, Thornthwaite, 1934; Creamer, 1935; Goodrich and Associates, 1936), and by teams of research analysts assembled by the Division of Social Research of the Federal Works Progress Administration (see, for example, Webb, 1935; Webb and Brown, 1938; Lively and Taeuber, 1939), generated interest in migration that sparked the intellectual imaginations of scholars for the next several decades.

This research into the dynamics of internal migration, its causes and consequences, was carried out largely in the context of massive metropolitanization in the U.S. It focussed on the shifts of population into the Western region of the country, on the interregional flows of blacks from rural communities in the South to the expanding metropolitan centers of the Northeast and North Central regions, and on the exodus of population from farms and rural communities everywhere. Hardly any of these studies failed to comment on population decline of rural areas that had characterized demographic patterns in the 20th century and the plight of communities and rural people resulting from these massive population shifts.[iv]

Selecting just some of these studies emphasizes the point. One set surely would be the incredibly detailed and meticulous studies of migrant families and the transient unemployed that were carried

out in the 1930s by the Division of Social Research in the Works Progress Administration (cited above). Another contribution from the 1930s, providing a comprehensive overview of the implications of rural-urban migration early in this century, is the expanded 1932 presidential address to the Association of American Geographers (Baker, 1933). This sweeping review of the scholarly literature and intellectual thought of the day, provided keen insights on the national implications of massive shifts of population from farms and the rural countryside to America's expanding urban centers.

Important studies of migration continued into the 1940s, and additional names of demographers who made important contributions emerge. Henry Shryock joined a distinguished line-up of new hires at the Census Bureau as the Bureau prepared for the 1940 enumeration and commenced a life-long interest in migration. Hope Tisdale Eldridge joined him at the Bureau late in 1942 as a population analyst. See, from this period, for example, Shryock, 1943; Shryock and Eldridge, 1947; Shryock, 1951. Other applied research from this period that must be acknowledged in this context, even if in passing, was the important work carried on by a counterpart agency to the Census Bureau in a different part of the federal statistical system, the Bureau of Agricultural Economics (BAE) at the U.S. Department of Agriculture. Gladys Bowles, who began work as a clerk at the Census Bureau in 1940, moved in 1941 to the BAE's Farm Population and Rural Life Division. Margaret Jarman Hagood, joined the same division in 1942, an appointment she retained for the next twenty years, virtually until her death in 1963. Conrad Taeuber, after several federal assignments, including the Works Progress Administration, spent the period 1942 to 1946 with the Farm Population and Rural Life Division.[v]

The 1940s, and especially the 1950s and early 1960s, witnessed a convergence of migration research that was to be very important to the development of applied demography in this country. During this period, a great deal of migration research began to focus on the migration *event, per se;* i.e., on how to conceptualize migration, how to compute migration rates, and how to manipulate other variables to derive estimates of net migration for an area. This work was hardly unrelated to the substantive reports cited previously, and some early seminal studies paved the way for the larger body of later work (for example, Hamilton, 1934; Hutchinson, 1938; Hamilton and Henderson, 1944). But in the 1950s, and on into the 1960s, several important methodological studies by Jacob Siegel, C. Horace Hamilton, Everett Lee, Dan Price, James Tarver, Margaret Jarman Hagood, Gladys Bowles and others brought conceptual clarity to these issues and set in motion the routine production of methodologically sound estimates of net migration. Some pertinent studies from this period include Hamilton, 1951; 1959; 1961; 1965; 1966; 1967; Hagood and Sharp, 1951; Siegel and Hamilton, 1952; Price, 1953; 1955; Bowles, 1957; Thomlinson, 1962; Tarver, 1962; 1965; Zachariah, 1962; Shryock, 1964; Eldridge, 1965; and Bowles and Tarver, 1965.

This period also saw a revitalization of migration research at the University of Pennsylvania -- work which in the 1950s and 1960s that built strongly on the Penn tradition established in the 1930s. It is difficult to overstate the importance to our understanding of migration that arrived with the three volume set published in Philadelphia by the American Philosophical society -- a massive research effort led by Dorothy Swaine Thomas, Simon Kuznets and others and published under the title *Population Redistribution and Economic Growth in the United States* (see Lee, *et al.*, 1957; Miller, Easterlin, and Kuznets, 1960; Eldridge and Thomas, 1964).

To conclude this section, I argue that this work on migration, spanning the '30s to the mid-60s (but especially the research in the '50s) served as an important foundation for some of the latter applications of this work that followed. It was important, first, because migration, not being a reported, registered event, in the United States had to be *estimated*. The development of component models for making population estimates and projections, a topic I will take up shortly, required that reasonable estimates of net migration and net migration rates be available. Second, this work was important because migration is the most variable aspect of population change among small areas. If small-area population dynamics were to be understood, migration as a component of population change had to be understood.[vi]

Population Estimation Research

If the 1950s and 1960s represented a period that advanced our understanding of migration, this period also was a time for major advances in the development of population estimation models for application at the sub-state level (i.e., for counties, cities and even smaller geographic areas). And, again, I would argue that the roughly concurrent timing in the development of these two foundational efforts was not coincidental. The 1950s and 1960s witnessed three types of important activities with respect to population estimation.

First was the model development work that occurred primarily at the Census Bureau and in selected university settings. Indeed, it was the early 1950s that spawned population estimation models that even today have been improved upon only in modest ways. Examples include the Census Bureau's component methodologies, which to my knowledge were first suggested for substate population estimates in 1947 -- in a Census Bureau study authored by Hope Eldridge (U.S. Bureau of the Census, 1947; see also U.S. Bureau of the Census, 1949); Donald Bogue's early version of a censal ratio methodology which came to be known as the "vital rates method" (Bogue, 1950); the early introduction of the "composite method" by Bogue and Beverly Duncan (Bogue and Duncan, 1959); and the innovative and influential "ratio correlation method" first put forward by Schmitt and Crosetti in 1954 (Schmitt and Crosetti,

1954). Between 1952 and 1954, Robert Schmitt published at least six professional articles relating to small-area population estimation methodologies, most of them addressing the utility of the ratio correlation estimation methodology for various levels of small-area geography.[vii]

Second was the production work (i.e., the production of small-area population estimates) that found its way into state and local agencies during the 1940s and 1950s. At this time the Census Bureau did not produce population estimates for sub-state areas on a regular basis (Shryock and Lawrence, 1949).[viii] As a consequence, such tasks fell to state and local agencies and other university-based or private organizations. Beginning in the early 1950s, however, the Census Bureau did assume a clearinghouse role with respect to these decentralized activities, and a Census Bureau survey in 1955 identified 39 state agencies (mostly in departments of health -- agencies that needed denominators for crude birth, death and other rates) that were producing population estimates. Nine universities also were found to be producing population estimates in the mid-1950s, with this number heavily dominated by bureaus of business research (U.S. Bureau of the Census, 1955).

Third, were the few early tests of various estimation methods against the census counts of 1950 (see, for example, Schmitt, 1952; and Siegel, Shryock and Greenberg, 1954;). These activities from the 1950s were followed by very significant advances in the 1960s as various estimation models, introduced in the 1950s, were tested against 1960 Census numbers. The number of studies is far too large to exhaustively list them here, but it includes, for example, extensive model testing at the Bureau of the Census (e.g., Zitter and Shryock, 1964; Starsinic and Zitter, 1968), the work of David Goldberg at the University of Michigan (e.g., Goldberg and Balakrishnan, 1961; Goldberg, Rao and Namboodiri, 1964), that of several rural sociologists at land grant universities (e.g., Hillery, 1962; Poole, *et al.*, 1966) and many others.[ix]

Follow-up surveys to the Census Bureau's 1955 survey revealed a steady expansion of state and local demographic activities. By the mid-1960s 45 states had official agencies producing population estimates or projections, with the largest growth between 1955 and 1965 represented by the increasing assignment of such activities to state planning and development agencies. University units other than bureaus of business research also expanded into this sphere of activity between 1955 and 1965, as did hundreds of local planning agencies. (see U.S. Bureau of the Census 1958; 1962; 1966).[x]

Academic researchers who undertook in the 1960s to modify or improve on the existing methodologies and to push forward significant demograpnic production programs tend to have been affiliated with bureaus of business and economic research in many southern and western states, and, to a lesser extent, in rural

sociology departments. On the basis of a review of Experiment Station bulletins from this period, it would appear that it was in the mid-1960s that the involvement of faculty from rural sociology departments at land-grant universities reached its peak with respect to work in this particular area of applied demography. Indeed, one of the unfortunate reasons why some of the early literature relating to tests of county population estimates is sometimes difficult to locate is that it was published in Agricultural Experiment Station bulletins which had only limited distribution.

There was one additional unfortunate aspect of the demographic production scene in the 1960s. Being an, obviously, very decentralized process, it is not too far-fetched to assert that in all likelihood there were far *too many* agencies producing estimates than were needed. By the late 1960s, things had gotten very badly out of hand. Excessive, expensive duplication of effort existed in many parts of the country. And to make matters even worse, confusion reigned for users of small-area estimates when conflicting estimates for a given area were published by different agencies -- a common occurrence.[xi]

In a formal sense, I would mark the end of this earliest period in the development of applied demography with the founding in 1967 of the Federal-State Cooperative Program for Local Population Estimates (FSCPE). The FSCPE originally was designed as a cooperative agreement between a designated state agency and the Bureau of the Census to jointly develop annual population estimates for counties.[xii] The principal goal of the FSCPE program was to bring a more coordinated approach to the making of county population estimates by having a single agency in each state (designated by the governor) work cooperatively with the Census Bureau to produce the estimates. This goal was supported by the following objectives (see U.S. Bureau of the Census 1973[xiii]):

1. Reduce the duplication and fragmentation of population activities at the state and local levels and, thereby, to reduce the number of conflicting estimates;

2. Prepare a set of county-level population estimates with complete and consistent coverage across a state;[xiv]

3. Assure uniform quality across all counties by using established methods, establishing comprehensive standards of data review, and undertaking periodic testing;

4. Provide a forum for discussing and exploring methodologies, test procedures, and new data developments.

So, as the decade of the 1960s came to a close, marking the end of this initial period in the development of applied demography, a structure was largely in place to support the state-level demographic practitioners working in state government agencies and

elsewhere. The FSCPE program reduced the duplication and confusion caused by the fragmentation of state and substate agencies making population estimates. And the program brought a level of standardization to the process fo making county-level estimates by promoting the production of consistent and comparable estimtes across all counties.

In addition, and importantly, with the FSCPE came a new level of recognition and legitimacy for the state-level demographic practitioner. The FSCPE formally linked state-level demographers (most of whom at this point were not formally trained demographers) with professionals in the Census Bureau, and this link served over the next few years as a means of upgrading the background and credentials of the individuals in these positions. After this period, increasingly state agencies began to hire formally trained demographers, at least at the masters level and not infrequently even those with the Ph.D.[xv]

1970 to 1980: The Expansion and Further Legitimation of Applied Demography

I would mark the beginning of the second period in the development of applied demography at 1970. This period lasted for a decade or less, ending perhaps around 1977 or 1978. This was an exhilarating period for this subfield of the demographic discipline, and it is possible to point to several events from these years that led to the explosive growth of demographic practitioners and the professional acceptance and legitimation accorded them.

Founding of the Southern Regional Demographic Group

My choice of 1970 is supported on several fronts to mark the beginning of a major acceleration in the growth of applied demography. For one thing, 1970 marks the birth date of the Southern Regional Demographic Group (SRDG, now the Southern Demographic Association, SDA). Originally a loose confederation of several southern colleges and universities, the SRDG had, with its founding, civil defense connection, as did the Census Bureau's effort to estimate county populations in the late 1960s.[xvi] From the very beginning, meetings of the SRDG became forums for reporting and discussing applied demographic studies.[xvii] The SRDG has long had a Committee on Applied Demography, and this small group has had a significant impact on the literature in this area.[xviii]

Federal Water Pollution Control Act

Another 1970 event that had implications for applied demography was the passage of the Federal Water Pollution Control Act (FWPCA), which later came to be called the Clean Water Act. One provision of this legislation provided for a federal match of funds for the construction of waste water treatment facilities. How is it that this seemingly inocuous federal act had had

implications that redound to applied demography? The answer, perhaps not surprisingly, relates to the issue of facility size. Sewer plants come in many sizes to meet the needs of populations of different size.

Ammendments to the 1970 FWPCA passed in 1972 stipulated (in Section 204), "...the size of any sewage treatment faciligy built under the terms of this Act should related directly to the needs to be served by such works, including sufficient reserve capacity." (cite xxx)

To begin with, this period opens with an event that in some sense marked the true birthdate of applied demography in the U.S.: the 1970 Census of Population and Housing. This census, sometimes referred to as the "first electronic census," provided for the first time ever public access to computerized census data for hundreds of thousands of small geographic areas across the country. Almost immediately, the event spawned a new set of actors in the
burgeoning information industry, data firms that repackage and update census data for commercial use. In addition, existing organizational networks of applied demographers grew stronger and new networks were initiated during this period which gave practitioners in the field a sense of common identity and shared purpose. Applied demographers began to identify one another in the 1970s and to gather together for specific purposes and activities, both informally and, importantly, under formal auspices. The broader professional discipline, represented by the Population Association of America and, regionally, by the Southern Regional Demographic Group, began to recognize and grant legitimacy (and support) to those demographers working outside academe and outside the traditional non-academic spheres of work (the Census Bureau, and to a lesser extent, but significantly, other federal agencies such as the Economic Research Service at USDA). I refer to this period in the '70s as "a time of expansion and legitimation of applied demography."

A third phase in this development probably dates from the late 1970s to roughly the current period during which we are witnessing the release of products from the 1990 Census. This period is more difficult to characterize. In a sense, the 1980s marked a time during which the field gave up some of its youthful exuberance. It was a period that witnessed some expansion of courses dealing with applied demography at several university campuses. This was also a period that saw the continued expansion of activities in

that part of the private sector sometimes called the information service industry, or the realm of "value-added demography." (The loss to the Applied Population Laboratory of Stephen Tordella, who in late 1984 left the Lab to join one of these firms, is the example of private sector expansion that hits closest to home.) As the information industry matured, consolidation and mergers of firms into new and powerful alliances took form. But to a large extent public sector demography during the decade of the '80s simply consolidated the gains made earlier in the 1970s. There was not much growth or expansion of state and local demographic units during this time. Rather, practitioners of demographic science in state and local agencies settled into the routine associated with the task of generating periodic population estimates and projections, taking advantage of the earlier growth in databases, demographic methodologies and other, now rather standard, tools of the trade.

Nevertheless, looking back on the terrain of the 1980s, some important markers do stand out highlighting what it is that applied demographers do and the tools that they use. In particular, this period saw the quiet beginnings of a project at the Census Bureau that will indelibly alter the way in which much of applied demography will be carried out in the future. In fact, I use that watershed event to partly label this period; I refer to the '80s as a time of "settling in but keeping one eye out for the TIGER."

Finally, I would argue, we currently are on the threshold of a new period in the development of applied demography. This chapter in the development of the discipline is opening at a time of genuine exhilaration and excitement over the potential for new approaches in the analysis of spatially-arrayed data. For better or worse, the excitement is being driven less by theory and methodology than it is by technology -- unless we are willing to accept technology as part of our methodology, as Michael Batutis (formerly the State Demographer in New York and now the Chief of the Population Estimates Branch in the Population Division at the Census Bureau) suggested to me recently.

In any event, the coming together in the early 1990s of five remarkable products, stands, I believe, to radically change the world of applied demography -- that is, our part of the larger demographic tradition most concerned with spatial variation. These products are (1) the Census Bureau's TIGER files, a digital, seamless, block-level geographic database for the U.S., (2) the summary tape files from the 1990 Census of Population and Housing, (3) extensive natural resource databases, (4) incredibly powerful geographic information system (GIS) software for analyzing spatially-arrayed data that can enter the analysis from diverse and disparate geo-referenced systems, and, finally, (5) awesome but affordable Unix-based hardware platforms on which to bring together these various elements. I am firmly convinced that these various elements, now that they have converged so forcefully in the early 1990s, likely will alter the way in which much of

applied demography is carried out in the future, will prompt the formation of new and broadly interdisciplinary collegial relationships, and will invite the development of hypotheses and researchable questions in areas that only a few demographers and ecologists have heretofore ventured.

With these tools and databases, applied demographers are beginning to take seriously the logical links between traditional applied demography and the theoretical orientation of neoclassical human ecology to examine social and natural resource problems and policies surrounding such issues as expansion on the urban periphery, transportation planning, biodiversity, climate change, maintenance of forests, parks and land preserves, endangered species, land use patterns, habitat alteration, and the like.[3]

the intellectual contributions by rural sociologists to understanding the population alterations occurring in small areas across the national landscape during this important period of time in our history. It was into this rich and impressive intellectual tradition that Glenn Fuguitt began to fit his own scholarly contributions some 35 years ago. His research and publications over these many years continue to offer new substantive and methodological insights to our understanding of contemporary demographic trends. I count it a distinct privilege and honor to have worked alongside Glenn during these past 15 years and to have collaborated with him on some of this work. I, and applied demographers in general, have benefitted enormously from Glenn's wisdom and wit, from his scholarly contributions, and from his adherence and uncompromising dedication to patient, careful, meticulously cautious demographic research.[7]

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3. As an illustration of this, the Applied Population Laboratory this year became formally linked to a new entity on the Madison campus called the Spatial Information and Analysis Consortium. This consortium brings together a wide-ranging interdisciplinary faculty from the departments of Civil and Environmental Engineering, Urban and Regional Planning, Environmental Studies, Geography, Plant Pathology, Statistics, Mathematics, Forestry, Landscape Architecture, Soil Science, Wildlife Ecology, Meteorology and Remote Sensing, Computer Science and others. This is but one indication of how those among us who examine demographic data with a focus on geography -- especially small-area geography -- will increasingly find ourselves linked to other scientists in disciplines often far afield from the traditional social sciences.

7.I am painfully aware of many omissions in this paper that fail to be mentioned or highlighted either because they seem to lie somewhat outside the main issue I have attempted to discuss or because there simply wasn't time or space to do them justice. Examples that come immediately to mind, for example, might include the need to mention at greater the length the important contributions of federal agencies to this story. I include here, of course, the Census Bureau, but no less important the early and crucially important applied demography carried out by scholars (e.g., Margaret Hagood, Gladys Bowles, Con Taeuber, C.E. Lively, and others) at the USDA's Bureau of Agricultural Economics, the Farm Population and Rural Life Division, and successor organizational units. Also unfortunately omitted is any extensive mention of and credit to the various regional demographic research projects that, over the years, served as the context for many state and local demographic research reports in which rural demographers actively participated. These are omitted points of which I am aware. I also am embarrassed for those omitted parts of the story of which I simply am unaware or have yet to better understand.

i. Paul -- find some citations to back this up

ii. This definition also is related to that part of the demographic research enterprise which Donald Bogue, 35 years ago, argued should be called "micro-demography" (Bogue, 1957). Bogue's preference for this term to describe small-area demographic studies apparently was not shared by his colleagues, as little use of the term is found in other writings dating from that period.

iii. As a matter of convenience, largely related to the fact that the decennial census in the United States is conducted in years ending in zero, demographers, whose research is based primarily on census data, tend to mark progress in even decades -- from one census to another. In this paper, I am using these dates only approximately, for many of the events I mark as critical to the development of applied demography occurred only near the beginning or end of decades, and may or may not be related to the census itself.

iv. I have written elsewhere about the very close links in the U.S. of the development of applied demography and the work of rural sociologists dating from the 1930s to the present (Voss, 1993).

v. In later years, Calvin Beale continued the tradition of rural scholarship and migration research begun by these pioneers at USDA. After working as a statistician in the Population Division at the Census Bureau during the late 1940s and early 1950s, Beale moved to the Farm Population Section of the USDA Economic Research Service in 1953.

vi. Again, note here the emphasis here on understanding areal patterns of variation in migration rather than on teasing out the behavioral determinants of migration. This latter type of research, of course, was also being pursued by demographers.

vii. In April, 1993, Robert Schmitt was formally presented a Certificate of Appreciation by the Applied Demography Committee of the Population Association of America for his of consistently high standards and productivity in applied demographic research.

viii. The first effort on the part of the Census Bureau to produce a uniform set of county population estimates for the country was carried out in 1968, for estimates dated July 1, 1966 (See U.S. Bureau of the Census 1968a, 1968b, 1968c, 1968d). It is of passing interest, as the spirit of the "cold war" of this period is recalled, that these estimates were produced under a contractual arrangement with several federal agencies responsible for the national civil defense and preparedness: the Office of Civil Defense, the Economic Development Administration (Department of Commerce), the Office of Transportation Information Planning (Department of Transportation), and the Defense Communications

Agency (Department of Defense). This issue will be mentioned again later in this paper when the founding of the Southern Regional Demographic Association is discussed.

ix. A summary and compilation of many of these studies is contained in a paper by Zitter, Starsinic and Word (1968). Regrettably, this paper was never published and now is part of the "fugitive liturature" in applied demography.

x. It is interesting to note that these numbers continued to rise through the Census Bureau's 1975-76 Survey (U.S. Bureau of the Census, 1978) but have declined since then (U.S. Bureau of the Census, 1990). There may be three reasons behind this apparent decline in state agency and university population estimation work. First may be that response rates to the Census Bureau's various surveys of agencies and universities -- rates that are not very tightly controlled -- may speciously imply a decline that is not really there. Second, the 1975-76 survey included agencies believed to produce estimates and/or projections. The most recent (1989) survey questionnaire was sent only to agencies believed to prepare population estimates. This difference could imply a false decline. Third, however, is a reason for believing that the decline is real. As state budgets have been increasingly squeezed since the early 1980s, it is not unlikely some states have discontinued their independent population estimation efforts at the county and/or sub-county level of geography, preferring to rely instead on the Census Bureau estimates prepared as part of the Federal-State Cooperative Program for Local Population Estimates (discussed in a later section in this paper).

xi. In Wisconsin in the mid-1960s, for example, both the University's Applied Population Laboratory and the State's Statistical Services Division in the State Board of Health (today the Center for Health Statistics in the Wisconsin Department of Health and Social Services) annually issued sets of population estimates for counties. In Milwaukee County, two additional agencies issued estimates: the Milwaukee Department of City Development and the Southeastern Wisconsin Regional Planning Commission. For 1966 yet a fifth estimate became available when the Census Bureau released its national set of county population estimates in 1968.

xii. FSCPE members now also work with the Bureau of the Census to gather input data and to review Bureau estimates for states and subcounty and other sub-state areas. All states, the District of Columbia, Puerto Rico, and Guam participate in this program.

xiii. This issue of the *Current Population Reports* contains, in Appendix C, two articles by Meyer Zitter which earlier had appeared in *The Registrar and Statistician*, a monthly newsletter produced at the time by the U.S. Department of Health, Education, and Welfare. These two articles document the early, formative

years of the Federal-State Cooperative Program for Local Population Estimates.

xiv. The publication of these county-level population estimates marked the beginning of the Census Bureau's P-26 Series of the *Current Population Reports*.

xv. One of the things that facilitated this upgrading was the sheer numerical expansion of state and local government taking place during this period. Between 1950 and 1970, state and local government employment increased from 4.3 million employees to 10.1 million -- an increase of 135 percent. By contrast, federal civilian employment during this period increased by 38 percent. (U.S. Bureau of the Census, xxx)

xvi. In October, 1969, a meeting of a number of physical scientists from the South and University of Georgia demographer, Everett Lee, was held to discuss how it might be possible to gain a greater understanding of the growth and distribution of the region's population. Concerns such as population evacuation and related civil preparedness were raised.

xvii. These meetings were not exclusively devoted to applied interests and concerns, of course, but applied work generally held prominent visibility at each meeting. Perhaps because the association itself had a geographic orientation, many of the papers presented at SRDG annual meetings were reports on the demographic characteristics and dynamics of areas in the South.

xviii. In 1975, for example, the SRDG published a set of papers dealing with xxx (cite). Some years later, demographers active in the SRDG edited a book on small-area population estimation and analysis (cite). This book contains the papers presented at a 1978 conference sponsored by the National Institute of Mental Health, a conference dedicated to the memory and work of C. Horace Hamilton. Hamilton, a prolific North Carolina demographer, arguably might be considered the father of applied demography in the U.S. Yet an additional set of papers on population estimation methods were presented at a workshop on population estimation held in conjunction with the SRDG meetings in 1984. These papers are currently being edited into a second book on population estimation (cite).