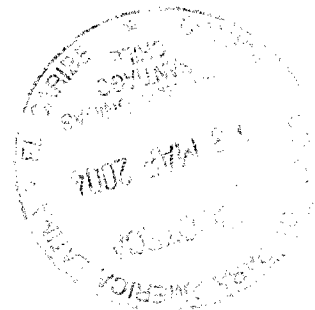


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ECLAC/CELADE DEMOGRAPHY UNIT



CARIBBEAN POPULATION AND DEVELOPMENT
TRENDS AND INTERRELATIONS:
A 1990-1991 ASSESSMENT

VOLUME 1

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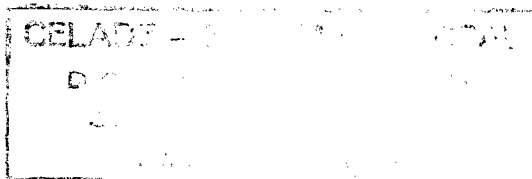


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PREFACE

The present report has been prepared under special service agreement between analysts representing the Indiana University Population Institute for Research and Training and the United Nations Economic Commission for Latin America and the Caribbean. The project was carried out under the direction of George J. Stolnitz, Institute Director and Professor of Economics, with the collaboration of Dennis Conway, Associate Professor in the Indiana University Department of Geography and with assistance from Adrian Bailey, now Assistant Professor in the Dartmouth University Department of Geography.

Dr. Barbara Boland, Population Affairs Officer of the ECLAC/CELADE Demography Unit of the United Nations Economic Commission for Latin America and the Caribbean provided valuable contributions by developing the study's main terms of reference, by offering advice when needed at important research junctures and, not least, by serving to provide prerequisite source materials or information on how such materials could be made available.

Much thanks go to the Population Institute's Martha Zuppann for continual dedication and patience in managing all the report's presentational phases from initial to final manuscript.

B. Summary of Findings, Comments, Recommendations

Summary I-1: Political, Geographic and Economic Aspects of Population Size

Main Findings

The 28 areas covered by this study, defined below as the "Extended Caribbean" region, represent a unique assembly of populations: more nation states (11) are included with small (under one million) numbers of inhabitants than in any other recognized regional grouping of areas; more ruling central governments (20) -- regional and extra-regional -- than anywhere else; the smallest average populations per governing body; 12 non-national areas, all with small population which, administered by no less than four distant extra-regional governing bodies, contribute to pronounced cultural,

linguistic and historically distinct subregional area groupings; close proximity to a continental-size developed country with which it has widespread ethnic connections and no linguistic barriers to contacts with a considerable fraction of the region's populations.

Worth stressing is that the "Extended Caribbean" grouping adopted here is only one of numerous alternatives encountered in other region-wide description, such as the United Nations' "Caribbean" denotation and the "Caribbean Basin" defined by other sources.

Comments

Two corollaries of the

Extended Caribbean's geopolitical structure which are of special importance in what follows should be indicated from the start.

First, data collections for individual small areas, their international availability and needed research capacities are severely handicapped by diseconomies of small demographic scale. Further, international agencies such as the UN Statistical Office, the World Bank and ECLAC itself provide only partial coverage of demographic and socioeconomic trends, often of only the largest areas among the 28 examined here. Second, prospects for region-wide research, policy and developmental program collaborations are much inhibited by linguistic and cultural differences. A

partial offset to these research-inhibiting aspects are such subregional aggregations as OECS and Caricom.

Parts of the above description would require modification if announced efforts to effect a "total political and economic union" of four Windward Island nations (Grenada, Dominica, St. Lucia and St. Vincent and the Grenadines) in the eastern Caribbean were to come to fruition [The New York Times, March 17, 1991, Sunday news section, page 7].

Recommendations

Main factual demographic and socioeconomic series need to be made on a timely, regularized basis for each area, regardless of size or

Summary I-1 (continued)

nationhood status. Integrated data collection, tabulation and presentational systems should be organized in ways which profit from economies of scale. Possible use of demographic data series collected but not published by the UN should be explored.

Periodic seminars to plan and prepare national, subregional and regional updated series of estimates (by definition measures which are retrospective in temporal coverage) and projections (future date expectations) should be a way of achieving large gains in the costs and quality of the region's data collections as well as a much improved data base for individual and grouped area forward planning applications. International funding of

multi-area seminars would be more likely than it would be for individual small populations.

Summary I-1 (continued)

Summary I-2: Population Size and Growth

Main Findings

Whether the "Extended Caribbean" 28 areas or the UN's "Caribbean" 23 areas are used, their combined populations will be above only the UN's four Oceania regional groupings and far below its remaining 16 for as far ahead as it is useful to forecast. The annual growth rate in either Caribbean region, somewhat above 1.5 per cent recently according to latest UN estimates [1991a] is distinctively toward the middle of those between the rest of the third world (outside of East Asia) and the world's industrial economies.

"Medium variant" UN projections suggest a nearly 50 per cent population rise in both Caribbean aggregates between 1990 and 2025,

compared to a near doubling since 1950. By far the highest growth rates today and in prospect among both regions' over one million populations are for Haiti and the Dominican Republic, easily the poorest and developmentally the most backward large populations. Because of these two cases, the overall growth rate in the over one million areas is considerably higher than the under one per cent average growth rate encountered among smaller areas, a comparison probably also much affected by differences in their net rates of emigration.

Comments

Almost surely the main component by far of the mortality, fertility and net

Summary I-2 (continued)

migration movements determining the study region's oncoming growth rate orders of magnitude will be birth rates, which the UN projections suggest will have dropped by another one-third before the first quarter of the next century comes to an end, following a one-fourth 1950-1990 decline. Crude death rates, already low, cannot be expected to fall comparably or possibly at all, since anticipated rapid increases of the elderly will largely offset future age-specific mortality gains proper in determining all-age mortality measures. International rates of net out-migration, though easily the largest regional such phenomenon in the world, may match birth rate decline fluctuations in importance for

population growth rates during parts of the next 30 to 40 years, but will probably become decreasingly comparable over time, since governments which regard their current emigration rates as too high out-number those regarding rates as satisfactory by a 2-to-1 margin.

Recommendations

The need for a further slowdown of regional population growth, especially in areas belonging to the lower half of the region's economic rankings, is strongly suggested by four major indicators: high rates of emigration, largely for economic reasons; chronically high unemployment rates and

Summary I-2 (continued)

underemployment, in addition to the high cyclical vulnerability of both of these patterns; the exceptionally and unacceptably large contributions to birth and growth rates by teenage fertility, and the elevated importance of reducing growth of numbers in Haiti and the Dominican Republic.

Addressing these specific structural aspects is probably more urgent than reducing the region's overall growth rate to, for example, below one per cent; some growth could be useful to moderate the elderly support burdens implied by the region's expected marked population aging uptrends in the next 3-to-4 decades.

Both the causes and consequences of excessive overall growth rates and their

undesirable area- and age sector-specific aspects should be major targets of research clarification and policy attention in the 1990s and the start of the next century.

Summary I-2 (continued)

Summary I-3: Fertility

Main Findings

The nearly 50% drop in the UN Caribbean region's total fertility rate levels, from about 5.5 to 3.0 per woman in the past 25 years, represents one of the outstanding modern era fertility transitions on record. Most areas are within the 2-to-3 range of measures and several (Barbados, Cuba and Guadeloupe) have reached close to or below replacement levels. Lagging areas are Haiti and the Dominican Republic among the large populations and Belize and St. Vincent among the smaller ones. A major structural issue concerns the region's frequently elevated teenage (under 20 years) age-specific fertility rates, some of which (Belize, Montserrat, St.

Lucia, St. Vincent and the Grenadines) rank with the highest such measures documented anywhere.

Available studies repeatedly bring out that rising contraceptive usage patterns have been by far the most important "proximate" (immediate) cause of the past quarter-century or so declines, e.g. as compared to such other causes as marital or union status changes or altered fecundity/sterility patterns. However, there still remain unresolved linkage issues of consequence surrounding contraceptive use/fertility effect interrelations.

An apparent linkage of high reliability is that typical contraceptive use levels in the region are still

Summary I-3 (continued)

far below those customary in MDAs. A second is that unmet household needs for limiting their completed fertility and spacing goals remain at elevated orders of magnitude, despite large overall (and sometimes uneven) advances in contraceptive practice levels during the post-1950 decades.

Comments

Whether one defines a complete modern-era childbearing transition as one starting from a total fertility rate of about eight (close to the highest national levels on record for third world nation-size areas) or about 6.5 plus (the African average not long after 1950), the Caribbean populations had clearly experienced an appreciable amount of long-run

change by the end of the Second World War some 45 years ago, when their overall rate was not far above five per woman. The quarter-century fertility transition referred to above therefore represents a distinctly second transition phase, one fully under way beginning with the 1960s (following decadal increases in some individual areas).

Important explanatory factors affecting whether post-1970 lifetime childbearing levels were comparatively high or low among Caribbean populations included: whether women worked or didn't work before their first birth; whether at most primary education levels or some secondary schooling at least had been reached; rural compared to urban residence;

Summary I-3 (continued)

children ever born comparisons between older and younger reproductive-age cohorts at same ages of childbearing. Of the 16 areas responding to the most recent (sixth) UN inquiry on population policy, not one reported adherence to policies for raising fertility, despite large variations in actual and expected childbearing levels.

Recommendations

Caribbean patterns illustrate with special clarity and emphasis the social need for policies to advance female teenage educational levels and broaden female occupational opportunities at the ages of labor force entry. Longitudinal tracing of later-year educational and early

post-education labor force experiences should become a foremost research priority, one intended to guide policy and derivative program implications.

As also noted below with respect to population policies, foremost research attention should be devoted to analyzing both individual area and inter-area comparative degrees and determinants of family planning program effectiveness. It is fair to regard this as a recommendation of elevated applied importance, given the region's still high average fertility levels and the concentration of above-average levels in populations least prepared to accommodate rapid growth of numbers and high young age dependency costs.

Summary I-3 (continued)

Increasing research attention should be devoted to assessing what birth effects might be registered if, as expected because of population aging in the region, its distribution of women within the reproductive ages became decreasingly concentrated in the younger, more prolific stages of their childbearing life cycle -- say to about 30 or 35 years -- and increasingly concentrated in the later such stages.

Contrasting fertility behavior patterns between younger reproductive-age cohorts and older such cohorts (after controlling for reproductive-age exposure durations) add emphasis to the probable importance of investigating differences between real cohort-defined

fertility time series and those suggested by "synthetic" or period such measures, e.g. with respect to total fertility, age-specific and birth order-specific rates.

Much more widespread indigenous research probing of family size preferences and expectations should be undertaken than has been evident to now (at least until the recent appearance of a few Demographic and Health Survey reports), with clear distinctions made between "ideal" size "own self" judgments among surveyed respondents and those they express for society-wide groupings.

A major need, particularly for assessing the fertility effects of successive consensual unions,

Summary I-3 (continued)

is for sample surveys to
elicit longitudinal
marital/union and fertility
histories for both
reproductive-age women and one
or two age cohorts beyond this
age span.

Summary I-4: Mortality

Main Findings

Aggregatively, the populations of both the Extended and UN Caribbean regions have reached an average life expectancy of almost 70 years according to the most recent UN estimates [World Population Prospects 1990] a level almost exactly equivalent to the average reached by the more developed areas (MDAs) as of the early 1960s. The 15-year increase registered during the post-Second World War decades has been very nearly the same as for Latin America as a whole, approximately double that of the MDA's and more than double that of the U.S. during the same period.

While the nearly 70 year average is clearly intermediate between the MDA

(74 year) and LDA (61 year) contemporary averages, numerous individual Caribbean areas have reached well into the 70 to 75 range of magnitudes and others appear sure to reach these levels soon. Within and beyond this range, upper-age survival rate percentage changes tend to exceed those at the first years of life, leading to accelerated increases in elderly age proportions, hence to enhanced aging of the entire population.

Another major consequence of reaching this range is that rising elderly age composition effects on crude death rates are increasingly likely to offset or dominate the effects of falling age-specific death rates, as noted earlier. Increasingly, therefore, crude

Summary I-4 (continued)

death rate downtrends should tend to slacken or become reversed, even when age-specific mortality rates continue to fall and longevity to rise.

Infant mortality rates, a more sensitive barometer than life expectancy of health conditions and changes, have in many if not most or all Extended Caribbean areas declined since the 1950s by such large amounts that similar decreases from current levels can never again be duplicated. In several areas (Barbados, Guadeloupe, Martinique), the rates observed already overlap with the range of such rates among MDA populations.

region's longevity gap with MDA's and the U.S. continues a process which dates back to the early part of this century in at least several parts of the Extended Caribbean, notably Jamaica and Trinidad and Tobago. By the same token, a slowdown in longevity uptrends is to be expected in future in the large parts of the Extended Caribbean where life expectancy approaches or exceeds 70 years. It is doubtful that many of the region's population, if any, will overtake average MDA or U.S. life expectancy, infant rates or adult mortality levels during any foreseeable time horizon of practical interest.

Comments

The rapid closing of the

Recommendations

At least four subject

Summary I-4 (continued)

areas stand out as requiring special attention for policy-guiding research and other health analytic purposes. First, even if infant mortality rates are again halved by 2025, as the UN projects could happen following the 50 per cent decline already experienced since the 1950s, the end result would still be well above today's MDA average, much less the one to be expected 35 years into the future. Continuous monitoring is needed to see whether such gaps could be further reduced.

Second, for today's low mortality parts of the region, i.e. those with 70-year or higher life expectancies and for the many expected to reach this range, future longevity

gains will largely depend upon survival rate uptrends in the post-midlife ages, in sharp contrast with the dominance of pre-midlife uptrends in the past. As a result and also for the first time ever, future longevity gains will join with further fertility declines in raising average age of the region's population. Until now, the tendency was for longevity gains to reduce average age, not raise it, hence to offset the aging impacts of fertility downtrends.

Third, since the two large populations most in need of large next mortality downtrends, Haiti and the Dominican Republic, have both experienced especially major transitions in recent years, it will be important to see

Summary I-4 (continued)

whether and how the large gaps still remaining with the rest of the UN and Extended Caribbean areas can be expected to diminish further.

Fourth, statistical information on social or economic class differential levels and trends -- in both mortality and morbidity respects -- is notably scarce for the region, hence rule out valuable clues for identifying next most needful areas for focused health policy initiatives and program interventions.

Summary I-5: International Migration

Main Findings

Net migration movements are uniquely large negative components of population growth rates in both the UN and Extended Caribbean

regions. Only the "Australia-New Zealand" grouping of areas reports comparably large components and these are of a positive or growth-enhancing nature. No other UN regional

grouping comes close to recording an analogously large component, whether negative or positive. As a result and in round terms, both the UN and Extended Caribbean population sizes would be at least 10 to 20 per cent larger than they are actually, had there been no population out-movements.

Given the chronic problems of high unemployment and other patterns of pronounced labor force underutilization in both regions, it is clear that their traditionally substantial exodus of native-born has been serving as a major economic "safety valve" throughout the post-Second World War period. A second economic effect of importance has involved substantial receipts of remittances, a practical equivalent of

costlessly and greatly enhanced export capacities; such capacities are universally recognized to be a central determinant of Caribbean macro-economic and development prospects.

Despite frequently expressed expectations that net out-migration from the region would become greatly inhibited as a result of expected growing restrictions by main areas of destination, there is as yet little sign from available estimates that this has occurred. Nevertheless, this often announced generalization should call for close monitoring in the light of the 1990 and 1991 censuses. Available indications, though at best fragmentary and incomplete, suggest socioeconomic costs of cross-

Summary I-5 (continued)

border movements which are also impressively large though largely unknown.

Comments

Illegal migration, brain drain effects and concerns about return migration adaptations have been major policy issues of Extended Caribbean governments in recent decades. The increasing diversity of cross-border movements and the enhancement of their potentials for volatility are giving rise to growing felt administrative needs for more reliable documentation of an array of migration phenomena: not only of aggregative gross and net flows, but also of such selected categories as return migrants, other classes of in-movements, tourists and

other short-term travelers. Areas with small populations, for which cross-border movements may have especially large relative importance, should be clearly distinguished from the larger populations of the region. Combining the two obscures or distorts small area patterns, especially since these frequently diverge from larger area patterns in structural aspects (quite apart from obviously different orders of magnitude).

Recommendations

Matrices showing two-way movements from origin to destination areas can be a major tool for providing simultaneous perspectives on flows among paired Extended Caribbean areas as well as

Summary I-5 (continued)

between every such area and at least major extra-regional areas of destination or origin, in particular the U.S., Canada and a few other non-Caribbean areas.

With respect to categories of cross-border movements, distinguishing tourists and other short-term travelers from migrants would be a first main disaggregation of special importance. Documenting circular and return movements would be another.

Benefit/cost studies in depth to guide migration, tourism and other travel policies in individual areas could serve numerous central population policy needs for substantial parts of the region, particularly its smaller areas.

Census sources abroad on UN or Extended Caribbean native-born populations are available only in net terms decennially and are also inherently incomplete, since only limited destination areas can be reliably explored. Such sources should give way increasingly to reliance on indigenous registration approaches to lifetime emigration measurements, similar to those associated with fertility and mortality registration systems.

Summary I-6: Age Distribution

Main Findings

Despite the special importance of international migration as a component of population growth rates for the Extended Caribbean, its effects on the region's broad age population proportions have been relatively secondary.

As could be expected from the region's pronounced fertility declines since the Second World War, its percentage under age 15 has fallen from the high 30s about 1950, at the time not far from the Latin American and all-NDA averages, to the low 30s or perceptibly below the latter two contemporary averages. It is expected to continue falling and reach 25 per cent by 2025 and once again be close to UN projections of

Latin American and NDA averages.

The region's population proportion 60 and over rose from about 7 to 9 per cent during 1950-1990 and is expected to reach no less than 15 per cent by 2025, a level representing nearly one-sixth of the Caribbean's total population as a result of anticipated further declines in childbearing rates and significantly increased upper-age survival chances.

Among individual areas the major current and anticipated age-compositional differences are those to be expected from their current patterns of fertility and mortality differentials. In effect, the UN projections are equivalent to assuming the continuation of existing

Summary I-6 (continued)

differentials in the face of further major downtrending transitions. Thus, areas with comparatively high birth and death rates, such as Haiti and Dominican Republic, have and would continue to have highest fractions under 15 and lowest proportions over 60; those with lowest childbearing and survival rates have and would have relatively low young-age fractions and advanced upper-age proportions.

Changing age effects on the region's population dependency ratios since 1950 have been very substantial. The average young age ratio (of numbers under 15 per 100 of those 15 to 60) has plummeted from about 70 per cent to almost 50 currently. This has been only somewhat offset by the rise from 12 to

15 per cent of the corresponding 60 plus ratio. Combined, the two ratios defining total dependency demographic relations suggest that the region has profited from a considerable "silent economic windfall" during recent decades from reduced aggregate dependency burdens per worker. Such windfalls are due to disappear by 2025, when the UN's projected combined ratio, of about 67 per cent -- or two dependent-age inhabitants per three in the main labor force ages -- is expected to remain almost exactly the same as the current, 1990 combined ratio. Although the young age ratio will continue to fall substantially, by some 10 percentage points, it is expected to be fully offset by

Summary I-6 (continued)

a similar increase in the elderly ratio. If anything, this expected offset is likely to prove conservative rather than exaggerated, should upper-age survival rates increase more rapidly than the UN assumes (a typical tendency in recent decades).

Further revealing indications of the age structural shifts to be expected is provided by the UN's estimated recent (1985-1990) growth rates by age groups: some 5 to 10 per cent for the region's total population, 10 per cent for those 60 plus, 15 to 20 per cent for those 80 plus and less than two per cent for its under 15 population.

vital rate statistical linkages are to be expected among the region's smaller size populations. Montserrat, for example, shows for 1980 a wholly atypical population fraction of some 15 per cent for persons 60 and over, a result of its unusual international migration effects. This example underscores the importance of reliable small area estimates of total population change and its components for both administrative and planning purposes. This point is further emphasized in the summaries below on especially needed data infrastructures to cope with major demographic research needs.

Comments

Aberrant age-migration-

Recommendations

Rapid population aging in

Summary I-6 (continued)

large parts of the Extended Caribbean region -- a double outcome of falling fertility and rising upper-age survival chances -- has reached a level and expected momentum which merit greatly enhanced policy attention by governments and policy makers; such attention has been largely overlooked or at least inadequately emphasized to now. Barring wholly unexpected demographic trend reversals, large parts of the Extended Caribbean will in a quarter-century, or not much longer, be facing aging patterns not far different from those currently confronted by the world's industrialized societies. How further aging patterns may evolve, and which social and economic adaptations might be most appropriate for

accommodating the region's aging transitions, are questions which will increasingly call for persistent monitoring in the decades just ahead. Linkages of aging phenomena with retirement patterns, actual and targeted urban/rural living arrangements, domestic labor force supply capacities, net international migration flows and changing remittance levels can all be expected to become major issues affecting output goals, productive structures, social security, health care programs and social welfare policies, hence call for enhanced research in all of these connections.

Summary I-6 (continued)

Summary I-7: Urban/Rural Distributions

Main Findings

Urban and rural areas as identified by the Extended Caribbean region's statistical authorities indicate clearly that the region's population became more urban than rural during the 1970s. Its current 60 per cent urbanization level, while below the Latin American and MDA 70-75 per cent values, is significantly closer to these regions than to the Asian and African parts of the third world. UN projections in this respect suggest that the Extended Caribbean about 2025 will be not far in its urban-rural composition from the three-fourths order of magnitude found in the MDAs today. If so, the expected steady rise in urban numbers

from the current 20 million level to below 40 million by 2025, less than a doubling over the next 35 years, would represent a decided drop in rate of change compared to the tripling experienced over the previous such period.

Rural population, which has recently peaked at close to 14 million may well be on a path of slow but steady declines from now on, despite relatively high rates of natural increase. Such a trajectory would resemble in broad outline the declines underway in MDAs since the end of World War II. An outstanding aspect of the region's urbanization processes has been the dominance of primate (typically capital) cities

Summary I-7 (continued)

almost everywhere, a development which does much to explain the widespread dissatisfaction of many of the region's governments with their internal migration and spatial distribution patterns. A significant determinant and consequence of intra-regional socioeconomic heterogeneity is the spread between urban proportions among the region's populations, with the higher three-fourths or so fractions in Cuba and Puerto Rico, for example, in pronounced contrast with the approximately one-third proportions in Haiti and Guyana. Among the smaller populations, the range is far larger still, from below 15 per cent in Montserrat to 100 in Bermuda.

To an unknown extent, the

urban data reflect variable definitions and probable underestimates for areas which should be defined as urban or metropolitan. In addition, small area Caribbean urban measures are likely to have limited analytic or functional value by making insufficient allowance for the effects of small distances between urban and rural areas. Such distances make for ready rural access to urban norms and life styles.

Haiti, a special case in many ways, stands out from other large areas in that it was projected to have a 2025 urban number three to four times its 1990 number according to the UN's most recent urban population assessment and four to five times its 1990 level according

Summary I-7 (continued)

to the UN's world prospects
assessment [UN, 1991a, 1991b].

Despite statistical uncertainties, the region's urban and rural growth rates stand out in two respects. Its current urban growth rate is the lowest found for any of the UN's other third world regions, while its rural population change rate has just now reached an historic watershed by crossing the zero mark and turning to declines. All future population growth for the region as a whole can be expected to take place in urban areas.

Available sources on urban/rural linkages to basic demographic trends and levels are especially limited for many smaller parts of the Extended Caribbean region.

Comments

The demographic and administrative criteria typically applied in deciding upon the Caribbean region's urban (and thereby non-urban) statistical categories need to be distinguished to an unusual degree from criteria focused on what might be termed "functional" urban characteristics. Because of the limited distances often found between urban and other areas in the Extended Caribbean region, rural life styles and socio-demographic behavior are not infrequently closer to neighboring urban entities than is typically the case with the much larger national territories of other regions. Social proximity has been further enhanced by revolutionary transformations

Summary I-7 (continued)

in communications and transportation, not only within the region but between it and other regions, particularly North America, parts of South America, and such former European colonial powers as France and Great Britain. The major influences exerted by these extra-regional areas through trade, migration and historical relations probably have coordinate importance with intra-regional metropolitanization in explaining how and why social modernization trends and tendencies in the Caribbean have developed as they did during the last half century.

The region's urban changes as recorded in available data sources do not indicate the extent of growth

attributable to area reclassifications rather than fixed area growth proper. Primate city and large metropolitan changes can be traced readily enough (reclassification questions apart), but important distinctions between sociologically urbanized and areas which are still essentially or largely rural could not be made. Such distinctions can have important demographic implications for fertility, mortality and migration behavior patterns, as well as significant consequences for development planning and policy, e.g. with respect to international migration controls, educational investments, industrial location and related sectoral

Summary I-7 (continued)

decisions, aging, or societal initiatives to modify statuses of women.

Recommendations

City size and population changes owing to area reclassifications can at times account for substantial fractions of total such changes. Explorations of this possibility in areas where important fractional effects are to be expected could be usefully implemented on a one-time or infrequent basis.

A major start toward clarifying currently unresolved urban/rural behavioral questions would be to explore possible differences between present statistically determined classifications and those called for by a functional

approach which would emphasize geographically proximate similarities in demographic behavior, social norms, attitudinal values, and degrees of socioeconomic contacts between the two sets of areas. Information on the comparative extent to which urban growth as measured can be traced to area reclassifications rather than fixed area increases could be a revealing and relatively accessible further contribution to urban-rural clarifications. Degrees of urbanism and ruralism, as compared with simple urban-rural dichotomies, could be expected to emerge from such investigations; so could needed light on the analytic and policy relevance of current as compared to

Summary I-7 (continued)

potentially revised
urban/rural aggregates.

Research should be undertaken to assess the importance of distinguishing among primate (largest or capital) cities, other city, suburban, metropolitan, and rural areas. "Importance" could be gauged in multiple ways, e.g. by measuring rural contact levels with urban, metropolitan or central city areas as a result of travel, work, communications and access to urban media. Attitudes and behavior with respect to roles or status of women, fertility aspirations, uses of health facilities, migration propensities and labor force interchanges should be among the leading criteria for judging analytic or policy relevance in

arriving at main urban-rural distinctions. Such studies could, simultaneously, serve to provide information on spatial demographic differentials in much greater depth than appears to have been customary according to the available studies consulted.

Whether rural-to-urban and smaller urban-to-larger urban migration movements have tended to be adaptive or selective with respect to fertility, education, labor force or other major socioeconomic spheres of behavior has often been much debated and has potential significance for spatial distribution policies. The urban-rural dichotomy customarily seen in the studies reviewed for this

Summary I-7 (continued)

report could well be too crude for reaching definitive adaptive/selective conclusions or other determinations of potential or probable importance from research and development planning viewpoints.

Whether from recent census sources (if available) or from future surveys, a needed further question to address should center about the extent to which international migration inflows and outflows have tended to affect urban and rural growth rates and age distributions.

Summary I-8: Population Policies

Main Findings

Clear major consensus, and at times even near unanimity, was found to hold with respect to nearly all mainstream population policy objectives among the 16 areas documented by the UN's most recent biennial monitoring report for 1989 [1990a]. No area regarded its population growth rate to be too low in the late 1980s, most thought their fertility was too high and policy interventions to reduce childbearing rates were typically regarded as appropriate. At the same time, several areas with comparatively high and above replacement fertility levels regarding these as satisfactory, hence as not requiring policy initiatives.

Most areas preferred to maintain what were perceived to be satisfactory immigration patterns. Nearly all preferred to see changes in their patterns of spatial distribution, hence by implication in their rural-to-urban (mainly to primate city) internal migration flows, more often by seeking to obtain such changes through explicit policies than by relying on self-correcting mechanisms.

Only with respect to emigration policy was there a marked dispersion with respect to how empirical patterns were evaluated and which policy orientations were appropriate to adopt. An interesting relation between empirical perceptions and policy responses was found to hold at times, in that emigration

Summary I-8 (continued)

patterns judged to be satisfactory were not seldom associated with active interventions to maintain such patterns. In a few instances, moreover, governments which viewed emigration to be too high reported no policy interventions to reduce such movements.

Comments

The World Population Monitoring 1991 report [UN, 1991c], still in preparation, will apparently have no updated information by regions on policy perceptions and responses, according to a preliminary copy just received. Previous compilations indicate changing policy orientations which have been especially noticeable with respect to immigration,

emigration and spatial distribution.

Recommendations

A number of prominent needs in population policy can be reasonably claimed to have priority status for the 28 Extended Caribbean areas under study. One is the need for the development of more timely, more systematic, substantively more detailed and geographically much more comprehensive information on demographically centered policies than is presently provided by either UN compilations or occasional individual area descriptions. This is particularly the case for the region's smaller populations.

A second need is for the development of regionally

Summary I-8 (continued)

tested methodologies for periodic single-area and comparative evaluations of ongoing or contemplated population policy (e.g. family planning) implementations in the region.

A third need, no longer horizontal, is to consider appropriate next policy responses to the tidal waves of elderly (both 60 plus and 80 plus) population increases already in being and those fully to be expected.

A fourth is to achieve much closer integration of population-centered with non-demographic policies under the broader umbrella of overall socioeconomic planning and programming. Such needs are more pressing today than in the earlier postwar decades, in view of the region's

enhanced economic and longer-run developmental uncertainties in the last 20 years (see the following Summary I-11). Integrations of special relevance should be focused on education; food and nutrition import needs; health care; housing; aged income supports; investment needs to accommodate rising labor productivity needs; population-consumption interrelations and associated balance-of-payments effects; emerging problems of preserving foreign trade competitiveness in an era of dynamically shifting regional comparative advantages. More chronic but no less important is the need to develop approaches acceptably reliable for guiding international migration policies by making

Summary I-8 (continued)

informed allowances for major benefits and costs of cross-border movements, among these brain drain aspects, gains from remittances, special problems involving returning natives, uncertainties associated with changing immigration policies by major areas of destination and social-psychological costs of family separations.

Closely connected with recommended research priorities listed in the summaries on fertility and mortality, research on appropriate targets for family planning program and health progress initiatives should have high priority everywhere in the region. So should needed measures for enhancing the cost efficiency and outcome effectiveness of

attempts to lower teenage pregnancy, for meeting unmet birth control needs, and for lowering leading morbidity and cause-of-death rates.

Establishing the comparative main socioeconomic effects of lowered growth rates resulting from high emigration compared to those from reduced fertility would have many research and policy applications. A similarly fruitful set of applications could be expected from research-clarified identifications of how to improve integrations of domestic population and development policies with those concerned with intra-Caribbean and extra-Caribbean migration movements.

Another group of applications, focused on

Summary I-8 (continued)

population/development interrelations and their consequences, would start with the fact that, despite incomparably high ratios of net emigration to natural increase, expected numbers in the Extended and UN Caribbean regions would be nearly 100 per cent higher by 2025 than they are currently and fully triple the 1950s numbers. Further, given the region's oncoming rapid aging and the large declines to be expected in its rural populations and agricultural work force numbers, what policies, if any, should be adopted with respect to altering labor force retirement incentives?

Increasing statistical reliance on surveys would provide more efficiently obtained, more timely, more

reliable and less costly guides to country- or territory-wide policy research needs than would censuses. The latter, of course, would have to continue to serve small area documentation purposes.

Summary I-9: Demographic Data Shortcomings and Needs

Main Findings

Single sources which would document main demographic facts for the 23 areas in the UN "Caribbean" region, hence also the 28 areas in the "Extended Caribbean," apparently do not exist. The United Nations biennial global reviews of population estimates and projections provide complete information on the 28 areas only for total numbers and their annual rates of change. All other demographic indicators exclude individual areas with relatively small populations. ECLAC's Statistical Yearbook is variably but not much more inclusive, omitting for example all non-nation areas. With respect to socioeconomic indicators, the World Bank's

annual authoritative World Development Report covers only 4 countries (Haiti, Dominican Republic, Jamaica, and Trinidad and Tobago) in all of the 30-odd main tables of its statistical appendix, with only a single highly abridged supplementary list of indicators for 18 smaller Caribbean populations.

To round out relevant informational materials so far as possible for purposes of this report, recourse was necessary to available special reports (e.g. by UNECLAC), occasional conference (e.g. CARICOM and CDCC) documents, or fugitive -- and always only partially complete -- data sources. With respect to the region's centrally significant topic of international migration patterns, no

integrating source at all seems to be at hand which would provide time series of recognized importance for guiding analytic interpretations and possible policy responses. Comparative backwardness of migration source materials compared to those for fertility and mortality is more or less universal, but a major difference here compared to other regions is that migration issues have so much greater practical, research and policy relevance.

As brought out especially in the section on fertility in Part III below, special training by the region's demographers and other population statisticians in econometric and sociometric model-building could usefully enhance their analyses of the

region's vital rate trend and behavioral patterns. Much more reliance on regression-type interpretations, as well as on multiple equation models in addition to single equation formulations, appears to be called for in future.

So far as could be ascertained, insufficient use is being made of indirect estimation methods as a means of overcoming gaps in available vital statistical and census series or of providing verification checks on the accuracy of such series.

Comments

It is obvious from the data directly observed and those discussed or referred to in available studies that there exist far greater bodies of area-specific demographic

Summary I-9 (continued)

and socioeconomic raw materials of use to demographic analysis than are readily available to the regional and international research communities. Made available for individual area and comparative studies in depth, they could do much to advance needed knowledge for guiding descriptions of population main facts, interpretations of trends and projections, and identification of their linkages to socioeconomic and policy cause or consequence considerations.

Indications at hand suggest further that there are actually two main classes of data infrastructural deficiencies in the UN and Extended Caribbean regions: one involving the fact that

required types of data may not have been collected -- so that requisite information is simply unavailable -- and the second involving truncated processing and/or provision of previously collected data -- so that accessibility rather than availability in principle is the true shortcoming.

Presumably, the former deficiency would be less easy to overcome immediately than the latter. Nevertheless, it is reasonable to expect that active efforts to enhance the accessibility and timeliness of data bases already existing in the region could contribute appreciably to raising statistical quality standards in many ways, not least by providing comparative models of how the quality of raw data could be raised feasibly to

Summary I-9 (continued)

more acceptable levels. Such models could be of special importance for upgrading the quality of birth and death statistics in Belize, the Dominican Republic and Haiti, the only areas shown by the UN Demographic Yearbook series as not measuring up to its "C" or relatively complete registration standards.

Since visits to census, survey or vital statistical offices in the region were not a part of the present report's terms of reference, it is worth stressing that no attempts will be made here to make administrative, funding or other operational recommendations similar to those presented with respect to the 1980 and 1990 censuses by Harewood [1987] and the Pan American/ECLAC report on vital

registration systems in English-speaking Caribbean countries [1987]. Rather, the previous summary subject areas recommendations and the ones added next are intended only to focus on main substantive possibilities which can reasonably be claimed to merit consideration "in principle."

Recommendations

1. One or more region-wide or subregional conferences should be held in the early 1990s to consider the following:
 - a. a minimum list of census-type questions to aim for in next censuses and surveys, with definitions clarified to enhance their inter-area comparability and with attention to international (e.g. UN,

Summary I-9 (continued)

- ILO, UNESCO)
- recommendations;
- b. a corresponding master list of "next important" such questions, with special attention to possible or strongly indicated area-specific modifications;
- c. similar minimum and "next most important" lists, again with attention if needed to area-specific modifications, to guide the contents of the region's future fertility and mortality registration forms;
- d. similar minimum plus optional-with-modification master lists to apply to the region's international migration data-collection systems;
- e. how next intercensal surveys (preferably probabilistic if at all possible) can most usefully serve to update or expand upon the 1990/1991 census findings, vital registration counts and migration statistical series (after allowance for country surveys already being planned by regional and non-regional sponsors);
- f. how major defects of existing demographic statistical systems, for example incomplete vital registration and census age reporting errors, can be directly removed by data collection improvements or helpfully circumvented by recourse to indirect estimation

Summary I-9 (continued)

- methods;
- g. how existing diseconomies of scale in demographic statistical operations can be overcome or substantially reduced, e.g. by merging small area activities, with attention to all phases of such operations from planning and initial data collection through publications and research applications;
- h. main feasible advances to be made in morbidity definitions and data reporting procedures.
2. Serious consideration should be given to the establishment of an ECLAC sponsored or operated region-wide data base facility, one which would combine:
- demographic data storing, archival data searches, periodic publishing and selected derivative study -- e.g. comparative research -- operations; a main initial goal should be to prepare for early first publication a series on main demographic indicators for all "Caribbean" or "Extended Caribbean" populations (to be defined), regardless of size.
3. To enhance the quality and timeliness of the region's demographic data to be collected, regional and/or subregional conference considerations should be given to the post-collection phases of data use procedures, specifically data processing, analyses, publications and timeliness plus accessibility

Summary I-9 (continued)

aspects affecting their value to such main users as government departments, domestic and international researchers and regional agencies such as ECLAC, CARICOM and OECS.

4. Greatly expanded efforts should be made to promote and implement academic and policy oriented research on population-macroeconomic and policy-development interrelations in individual or subregionally combined areas; main examples of such possibilities are given in the previous Summary I-8 and subsequent Summary I-11.

5. Advanced or "master" classes of current main statistical modelling approaches to indirect

estimation and interrelational analyses should be organized for mid-career demographers and other population-related personnel, with the timing and operations of such classes designed to minimize disruptions of work schedules by participants; these could be of approximately one-month durations and gauged to cover the equivalent of one to two intermediate-level higher education courses on the subject.

6. Greater or more renewed emphasis than appears to have been prevalent to now should be placed on such topics as:

a. extents and causes of socioeconomic class differentials in fertility and mortality;

Summary I-9 (continued)

- b. proximate determinants of individual area fertility; situations;
- c. oncoming new patterns of mortality change linkages with changing age compositions in male or female populations with nearly 70 year or higher levels of life expectancy;
- d. differences between period time series and real cohort series on fertility and mortality;
- e. regularized series of sex-age estimates and projections, with special attention to the region's smaller populations not covered by ECLAC or other UN publications, and with further such attention to the differential area-specific projections assumptions found to be most appropriate for
- f. changes in main cause-of-death and morbidity patterns associated with changing public health (including sanitary) conditions, with rising longevity levels, and with population aging trends;
- g. population redistribution possibilities which could be preferred alternatives to excessive primate city and metropolitan area rates of growth;
- h. how areas currently defined as "urban" differ in demographic respects from functionally defined "urbanized" areas;
- i. size-of-place mortality and fertility differentials;

Summary I-9 (continued)

- j. causes of excessively high teenage pregnancy rates and policy options possibilities for lowering the social costs of this problem wherever it is significant;
 - k. actual and potential linkages of population growth to natural resource depletions and environmental degradations, as well as possible policy counteractions to enhance sustainable resource and environmental quality targets.
 - l. possible needs for and uses of continuous registration systems for better documenting area-specific internal and international migration processes.
7. Special regional and area efforts need to be devoted to ways and means of raising the reliability of birth and death registration reporting for all Caribbean populations -- those of Belize, Haiti and the Dominican Republic especially -- to the UN's "C" (for 90 per cent completeness) standard, perhaps by enlisting the help of international agencies and by making use of sample registration systems (such as the one in India); such efforts are the more needed wherever population growth trends and their components in relation to development levels and prospects are likely to be of heightened importance from economic growth, welfare and policy viewpoints.

Summary I-10: Demographic Research Shortcomings and Needs

Main Findings

Frequent unavailabilities and insufficiently systematic or updated preparations of total and sex-age population estimates for intercensal and even more for post-censal periods are major obstacles to demographic research possibilities in general and to their potential contributions in guiding human resource development policies specifically, in many parts of the UN and Extended Caribbean regions. Not only are such estimates of central importance for their own sake, but their limited prevalence precludes estimation of vital and other demographic rates, the essential working tools for interpreting population trends and structural patterns.

The UN biennial "World Population Prospects" publications of total population, vital rate and related main indicators provide area details (other than the total population estimates shown for all 28 of the areas studied here) for only 11 relatively populated parts of the region (Barbados, Cuba, Dominican Republic, Guadeloupe, Guyana, Haiti, Jamaica, Martinique, Puerto Rico, Suriname, Trinidad and Tobago), doing so for successive quinquennia or at 5-year intervals in the case of all measures except estimates of total population [UN, 1989, 1991a and 1991b]. (The 1986 such publication, based on 1984 assessments, also showed a set of aggregate indicators for the Windward

Summary I-10 (continued)

Islands plus a second such set for a 10-area collection of small populations labelled "Other Caribbean" [UN, 1986]. Neither of these aggregates has been documented in the UN's two most published "Prospects" [1989, 1991a].) In effect, therefore, the main estimation needs not currently satisfied relate to the UN and Extended Caribbean small population areas.

Essentially the same findings and information on coverage aspects hold with respect to projections, a major tool for applied population research relevant for intermediate-term and longer run socioeconomic, demographic, administrative and forward planning formulations, both within public and private sectors.

An additional source worth special mention is a recent UNECLAC publication [1990a] on sex-age projections to 2015 for eight of the smaller populations not covered by the UN Prospects series (Belize, British Virgin Islands, Dominica, Grenada, Montserrat, St. Christopher and Nevis, St. Lucia and St. Vincent and the Grenadines). Carried out in 1985, this appears so far to have been a one-time such exercise. Comparisons of the 2015 population sizes indicated by this source and those by the UN's 1986 exercise [1989] indicated minor differences for the first two and last of the above populations, but substantial differences ranging from nearly 15 to over 50 per cent for the other

Summary I-10 (continued)

five. Such differences are further demonstration of the needs for reducing projective uncertainties for the Extended Caribbean region's smaller populations.

Social class differentials in fertility and especially mortality do not appear to receive the emphasis they have commanded for over a century by MDA demographic researchers, judging this mainly from the Demographic Analyses of Census and Survey Data in the Commonwealth Caribbean Project sponsored by CARICOM and UNFPA. A partial exception to this general judgment among the studies reviewed here was a fertility study of three countries by Abdulah and Singh [1984].

In part surely because of inhibiting data base

deficiencies, cause-of-death analysis tends to be infrequent or at best shallow. Morbidity analysis appears to be effectively non-existent, at least in demographic literature sources.

Indirect estimation techniques do not appear to be considered a needed or useful approach to coping with deficiencies of fertility and mortality statistics or those of net international or internal migration. Yet actual or at least apparent "errors of closure" may be major obstacles to using components of population change methods for assessing relative completeness of enumeration between censuses; nor can the completeness of available statistics on net migration be assessed unless

Summary I-10 (continued)

the population change shown by successive censuses and natural increase statistics can both be assumed to be essentially correct [Harewood, 1987, page 8.3a].

Apparently, established propensities in the Caribbean demographic literature for using multiple classification approaches to interpreting demographic change or cross-sectional differences appear to be unduly exclusive, given the availability of such other -- often more revealing -- approaches as econometric and sociometric regression models and analyses of variance formulations.

Comments

Obviously, suggested remedial recommendations for overcoming research

shortcomings must be intimately interdependent with states of data availabilities, personnel training levels and experience, and -- not least -- calculational capacities (this last in particular when dealing with micro-level population materials). It is realized that pronounced data or research shortcomings and especially limited resources available for coping with these tend to be co-existing situations, mainly to be expected in low population areas. Nevertheless, it is also the case that large segments of the shortcomings being cited in this summary also prevail at significant levels in the larger Caribbean areas. Thus, a 1980s exercise to derive annual intercensal sex-age estimates for 1970-

Summary I-10 (continued)

1980 in six Extended Caribbean populations could not be implemented for Jamaica and Guyana, two of the larger countries aimed for, owing to a lack of needed data [UNECLAC, 1990b, page v].

It is not expected that the above recommendations can or should be fully implemented for all 28 populations being considered in this report, whether on an individual area basis or even for subregional groupings of areas. Rather, the recommendations are intended to serve as a "master list" of possibilities from which to choose. Sex-age estimates and projections, perhaps most especially, would appear to be top-ranking priorities when taking account of research input constraints.

Recommendations

Whether with respect to already ongoing statistical research programs or those suggested here as ranking possible additions, population research planning for the 1990s in the UN and Extended Caribbean regions should be adaptively coordinated to make best and maximum use of already existing pre-1990 data sources, anticipated new census materials and decisions or expectations to be reached concerning the statistical infrastructural recommendations cited in Summary I-9.

Starting with the 1990/1991 census findings, post-censal sex-age estimates and projections programs should be established according to regularized

Summary I-10 (continued)

schedules for as many Extended Caribbean populations as possible and preferably for all such areas.

The proposals by a joint PAHO/ECLAC workshop report [1987] for improving the quality of fertility and mortality registration and reporting procedures in English-speaking Caribbean areas should be evaluated at an early date, since it appears to be a highly promising starting point for planning needed improvements on a region-wide, Extended Caribbean basis. But also, since the report was apparently focused on complete registration goals and implementing possibilities, a sorely much needed supplementary proposal is emphasized next below, one

intended to enhance the early onset, timeliness and reliability of natural increase documentations throughout the region.

More frequent and substantively ramified uses should be made of sample registration approaches, to begin with in areas where vital registration is incomplete. Such uses should also be considered where existing registration levels are rated as complete (the UN "C" code) but the scope of causally or consequentially associated characteristics also reported is found to be unduly restricted from statistical or policy-guiding viewpoints.

Despite the statistical handicaps confronting reliable interpretations of cause-of-

Summary I-10 (continued)

death and morbidity patterns or trends, such information is sure to gain rapidly growing importance on a broad or universal regional basis as oncoming population aging mounts in prevalence and momentum. Sample population and clinical statistical approaches should therefore be emphasized in seeking feasible, cost-conserving methods for guiding public health, sanitary and associated educational program interventions, whether these are initiated domestically or are largely executed by foreign technical assistance and funding agencies. Program interventions to enhance disease- and death-control potentials on the basis of sample-derived informational guidance would probably be of

particular value in areas with relatively high mortality, limited fiscal resources and lagging development of statistical reporting systems, in particular the Dominican Republic and Haiti. A cognate question meriting investigation in depth, one of central importance to the many low income and limited fiscal capacity areas in the Extended Caribbean, concerns the likely real resource (labor and capital) inputs needed to attain newly targeted mortality and morbidity levels. A derivative question would be: To what extent can new or modified health-related interventions be expected to offset developmental shortcomings (e.g. in income, educational or low status of women respects) when seeking

Summary I-10 (continued)

to achieve next health, mortality and associated longevity targets?

Continuing major inadequacies in quantitative coverages of international migration (both its totals and most significant component categories) may well be as damaging for interpreting population change or guiding policies as are defects in mortality and fertility registration, especially among the region's smaller populations. Qualitative shortcomings with respect to especially needed distinctions among major categories of cross-border movements add a further problematic dimension to the obstacles confronting analysis of such UN and Extended Caribbean movements. Attention by these regions to

achieving requisite remedial recording, interpretive and policy-implementing advances in international migration analysis should therefore be comparable with analogous efforts with regard to mortality and fertility, especially in view of its multi-area and thereby special political implications. Fortunately, the PAHO/ECLAC proposals referred to above can be recommended as lending themselves readily on a topic-by-topic basis to analogous border-crossing considerations (with the understanding that the component categories of international movements which have prime practical and policy importance are likely to be much more complex than is the case with most natural increase phenomenon).

Summary I-10 (continued)

Considerable importance should also attach to future attempts to identify the main traditional (and if relevant, changing) incentives which underlie the region's cross-border movements, with distinctions between those relevant to inside and outside destination areas.

Programs of systematically monitored studies of internal migration, preferably prepared on a regularized basis by public sector agencies, should be addressed not only with respect to rural-to-urban movements, but also to urban-to-rural, inter-city size and inter-administrative categories of origin-destination combinations of areas.

The above "research

infrastructural" recommendations, if well implemented, would facilitate and help enrich the region's research attempts -- standard in all demographic research -- to assess the nature and relative importance of the determinants of all three of the region's components underlying its population change.

Family size and compositional correlates and causes of overall, child and female poverty and health differentials, status of women patterns, family or family member mobility propensities, or income or selected wealth (e.g. homeownership) characteristics, among others, should become increasingly common features of the region's concerns with human

Summary I-10 (continued)

resource development tendencies, for their own sake and for their critical importance to overall development.

A rich store by now of Extended Caribbean census, vital statistics, survey and interpretive materials is available in principle, yet often gathers archival dust or first becomes partially explained through fugitive reports and specialized studies. Resources permitting, it is not too soon to consider the demographic research gains expected if a series of book length, historically oriented studies of demographic transitions were to be undertaken for the Extended Caribbean region, with emphasis on causes, consequences and inter-area

comparative transitions. The studies could cover individual areas with large populations and either individual or grouped areas with smaller populations (e.g. the Leeward and Windward Islands). Should such a series be launched, care should be taken to assure that it be additive to, not a substitute for, implementations of the previously recommended subject areas meriting special emphasis.

Summary I-10 (continued)

Summary I-11: Population-Development Interrelations

Main Findings

Pronounced economic growth rates characteristic of the Extended Caribbean region during the first quarter-century since the Second World War have not been maintained. During the 1970s and increasingly during much of the 1980s, modest or near zero growth and even sustained declines have become prominent features of the region's economic landscape. Decadal reviews of the 1980s indicated that national income in four larger areas (Trinidad and Tobago, Haiti, Suriname and Guyana) declined between the early and latter 1980s and that *per capita* income also fell in another two (Dominican Republic and Jamaica) [1987a,

Tables 2,3; Harker, 1990].

Since Cuba also clearly belongs in the region's slow growth category [The New York Times, January 16, 1989, Section A], only Puerto Rico among the larger populations has experienced substantial growth in recent years. Areas with appreciable recent growth in the 1980s have been concentrated in the Organizations of Eastern Caribbean (OECS) and occasional other small areas of the region, largely owing to tourism. Only this sector among the region's main export categories continues to prosper, while the other such categories -- sugar, bananas, minerals and manufacturers (except from Puerto Rico) have

all become non-advancing or more uncertain sources of foreign earnings. Rapidly changing comparative advantages affecting the region's international competitiveness, high foreign debt and elevated debt service obligations, plus adverse terms of trade for the region's primary products -- all of these point to continued damaging balance-of-payments pressures and thereby added overall economic handicaps for extended periods to come.

To these unfavorable latecomer developments should be added the region's traditional array of economic disadvantages: increasing pressures on its agrarian land base, chronically high unemployment rates and much higher rates of labor force

underutilization when underemployment is taken into account, diseconomies of scale, excessive specializations in agricultural and raw material products especially vulnerable to destabilizing price fluctuations.

All of these considerations, in addition to the patently widespread economic pressures one can infer with confidence from the region's continued history of heavy out-migration, are reasons for judging that economic development in large parts of the regions is being chronically retarded and in some instances, potentially endangered by excessive population growth. Such growth stems mainly from still high fertility and until now notably successful death- and

Summary I-11 (continued)

disease-control advances. Other such inferences equally persuasive, stem from the surely oncoming unprecedented fiscal commitments and added dependency burdens on labor force which will derive from the region's accelerated future pace of population aging. Despite the marked fertility declines in the region since the 1960s, a process which reduces dependency burdens involving the young, total (young plus elderly) dependency relations may well continue to compare closely with elevated average NDA levels. Such burdens will be enhanced in future by the likelihood that elderly *per capita* costs for health care and income maintenance reasons will significantly outweigh the *per capita* costs of pre-

adult childrearing (even with educational costs taken into account).

Added fiscal and resource commitments which are bound to be closely associated with rising population and changing age structure will be highly competitive with the region's no less urgent needs for heavy investment in productive structure if it is to achieve the new dimensions of international competitiveness it will require to expand export capacities. Local leading economic observers regard this as a critical precondition for overcoming recent setbacks to the region's economic development prospects.

The above average-type findings should be understood to have widespread but also

Summary I-11 (continued)

variable area-specific applications. Given that there are areas and populations for which overpopulation judgments have lesser or only moderate relevance, there are also very major parts of the region to which such judgments apply with special force, most obviously in the case of Haiti, the Dominican Republic and Guyana.

Major demographic-socioeconomic interdependencies also operate in the opposite direction. Prolonged income setbacks in recent decades and their associated pressures for increasing fiscal austerity have begun to pose increasing risks to the region's health-maintaining, educational and other human resource

development capabilities. Should such adverse tendencies become established trends, the resulting social costs -- to the region's poorest sectors in particular -- could undo quality-of-life gains which have been hard earned over the better part of the last half century. In at least one prevailing view among development economists, such reversals could arguably have significant negative feedback effects on the region's output capacities and competitive export potentials.

Although there are available relatively abundant data base source materials and reports on regional cause-effect interactions between population and socioeconomic change, the literature encountered on these subject

Summary I-11 (continued)

areas was found to be surprisingly limited in scope and depth. Economists, development planners and socioeconomic policy-makers everywhere tend to treat demographic change or prospects as if exogenous to their own particular main variables, hence as unlikely to be affected by socioeconomic feedbacks. Caribbean analysts are no exception. The result is an apparently prevailing unawareness of the mechanisms by which demographic interdependencies with socioeconomic movements may refashion or reorient each other.

Comments

Non-demographic sources consulted on the region's

economic prospects revealed effectively zero attention to actual or potential population pressures on the UN or Extended Caribbean region's natural resource and environmental quality prospects. Demographers, meanwhile, though sometimes addressing economic development themes and often well aware of selected major (though rarely all of the most important) consequences of population change, attempt to do so without pretensions to depth of economic analysis.

Analysts trained in both economics and demography, or teams combining such backgrounds and skills, would be optimal for implementing many of the major interrelational issues raised here. Thus, to deal with the

Summary I-11 (continued)

socioeconomic benefit and cost correlates of the region's international migration movements, as well as with appropriate policies for affecting such movements, it is probable that combinations of demographic, economic and also sociological skills would be requisite for reaching conclusions based on comprehensive assessments of main determining factors.

Recommendations

High on the list of subject areas needing interrelational research clarifications are surely questions focusing on the impacts of rural population change on land tenure patterns, agrarian labor productivity and trends or tendencies to leave the rural

sector, whether to abroad or to often already crowded domestic urban areas, i.e. especially to capital and other primate city destinations.

A second inquiry of corresponding major significance, given the importance of the region's public sector to its overall economic performance, would focus on how the pressures of fiscal austerity pressures likely to be associated with slowed economic growth may affect a) needed or available social outlays (e.g. for pension, health care and educational purposes) which are aimed at age-specific population-sectors (preferably if these are cross-classified by social characteristics), and b) directly productive

Summary I-11 (continued)

investment in plant, equipment and infrastructure. Given the extensive social service commitments by governments of the region when compared to other NDAs, this topic also has special importance for clarifying how demographic patterns interact with probable major fractions of public sector deficits and their macro-economic implications.

Intensified investigations of housing, infrastructural and municipal service linkages to population distribution patterns and redistributive tendencies, in particular those involving urban/rural proportions and movements from rural to urban (preferably classified by size of place) areas, would provide needed clarifications of

further major economic and policy concerns from macro-economic, fiscal and developmental viewpoints.

As noted earlier, it will become increasingly important to begin integrating analyses of expected population aging patterns with their implications for housing availabilities in relation to preferred elderly living arrangements and elderly income maintenance needs, for health care plus other social program commitments to elderly recipients, and for elderly labor market supply-demand equilibria considerations after due account of changing retirement patterns.

With respect to population-labor interactions at more specific levels, expanded research attention

Summary I-11 (continued)

should be directed to separate or joint fertility, mortality and migration (internal and international) effects to be expected on: labor supply; employment and unemployment prospects; investment targets for productively absorbing added work force; needed schooling and non-school training or remedial programs required for the same purpose; sex-age productivity differentials; main labor supply-demand mismatches among areas, industries (especially agriculture) and occupations; migration and other mobility possibilities for overcoming major mismatch disequilibria. Conditions favoring or impeding employment of teenage and young adult women before the birth of a first child (a factor which previous research

suggests has had significant impacts on early and cumulative fertility rates) [Abdulah and Singh, 1984, page 147], appear to merit sustained monitoring.

Information provided by "age-cost profiles" (concerning fiscal linkages to age-specific educational, childrearing, family support, health care, private pension and social security or other elderly welfare support programs) should help quantify the effects of changing age structures on the size of public sector budgets and deficits, both in absolute terms and in relation to GDP (or GNP) aggregates. Either of the latter measures can potentially serve as a prime indicator for weighing social benefits and costs of ongoing

Summary I-11 (continued)

or prospective population trends.

With respect to population-food supply interrelations, research -- probably by teams of agricultural and demographic specialists -- should be focused on: "man/land" ratios and their actual or prospective effects on the productivity of arable land as well as labor inputs; effects of population size and other characteristics (e.g. urban/rural composition) on food consumption needs, targets and actual levels); domestic production/total consumption food ratios; population-related and non-demographic needs for imports and their comparative balance-of-payments implications. In all of these connections,

emphasis should be placed on age-structural in comparison with total population size implications as well as on distinctions between cross-sectional single period (level-type) interactions and cross-period (change-type) interdependencies.

Among the benefit and cost possibilities to consider with respect to international migration issues, the following appear to merit special attention: "brain and skill drains" or opposite enhancement possibilities; remittance magnitudes and their domestic uses; effects on marital or non-marital union stability patterns; relative ease or difficulty of integrating returnee natives into local economies and social networks.

Summary I-11 (continued)

With respect to interrelational issues which are more of a social welfare than economic nature, special emphasis should be addressed to: the causes and consequences of especially high teenage fertility rates in much of the Extended Caribbean region when compared to other NDA population groupings; household interrelations between their fertility levels and histories, on the one hand, and maternal health, child care, completed educational levels and labor force career attainments of members in relevant ages; disabilities as causes of household poverty. In each of these connections, cross-population comparisons should allow for needed statistical controls such as

age, family background influences (e.g. parental or grandparental educational or occupational statuses when dealing with younger generation school-age members), or urban-rural residence.

PART I: INTRODUCTION AND SUMMARY

A. Study Purposes and Contents

This report has three interrelated purposes. The first is to provide an updated "main facts" account of leading population trends and prospects in the 28 areas of the "Extended Caribbean" region to be investigated here. Quantitatively oriented, the account often focuses on differences from, and similarities with, corresponding regional trends elsewhere, in order to provide comparative perspectives, identify realistic empirical possibilities and suggest policy options.

A second main purpose is to survey the demographic and socioeconomic literatures on the determinants and consequences of Caribbean population change, doing so to the extent possible in terms of quantitatively identified indicators for individual areas and for the region as a whole. Important unresolved issues involving demographic-development interrelations are highlighted, as are their implications for population and/or development policy.

Third, the study emphasizes main gaps in data and needed knowledge on the region's population trends and their development interrelations, identifies main population policy options to consider, and recommends implementation of especially needed research agendas.

In all of the foregoing, the temporal focus of attention will be on the post-World War II decades through either the end of the century or to 2025, depending on the availability of relevant source materials.

Mainly, the report draws on United Nations and Caribbean population estimates for 1950 to 1990 and on subsequent projections extending to 2025.

The following section provides executive-type summaries of main findings and research recommendations, with explanatory comments as needed. To an extent the judgments expressed in the 11 summaries shown go beyond what has been or can be documented, in particular when relevant data and studies were found to be lacking with respect to population-economic interrelations.

Part II summarizes 10 sets of demographic highlights; these introduce and help clarify the rest of the report, in particular its population aspects. Part III considers the Caribbean region's past patterns and determinants of fertility and mortality transitions in much greater detail, along with their current status and likely successor stages in the next 3-to-4 decades ahead. Part IV takes up international migration and urbanization topics in terms of trends, tendencies and issues of both research and policy importance.

Part V focuses on population-economic and population-development interrelations. A concluding set of Annex tables present data on past, current and prospective population patterns or characteristics for as many of the 28 individual areas studied as could be documented.

Bibliographic references will be found at the end of Parts III, IV and V.

PART II: 10 SETS OF DEMOGRAPHIC HIGHLIGHTS

A. Comparative Political, Geographic, and Economic Aspects of Population Size

The 28 areas covered by this report (hereafter referred to as "Extended Caribbean") involve as many ruling regimes as the rest of Latin America or even of the remaining entire collection of Western Hemisphere regimes combined: 16 nations within the present study's region itself at latest (1991) count plus four national entities outside the region.¹ No geographic grouping of roughly comparable or larger total population size comes close to approximating the region in terms of its diminutive average ratio of some 1.75 million inhabitants per national governing unit.

This initial statistic alone points tellingly to the problems likely to arise in seeking to reach regional agreements on demographic and development issues or their interrelations. To this should be added the historical, linguistic and cultural separatisms which can only complicate further such problems, despite the often special needs for societal agreements among small-size populations.

¹The 16 within-region nations are Antigua and Barbuda, Belize, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts (Christopher) and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago. The remaining 12 areas are under the national jurisdictions of Great Britain (Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Montserrat, Turks and Caicos Islands,), France (French Guiana, Guadeloupe, Martinique), the Netherlands (Netherlands Antilles) and the United States (U.S. Virgin Islands, Puerto Rico).

These characteristics have a significant bearing for this report's analytic aspects. In principle, it would be best to treat each of the 28 areas on its own terms after due regard for actual and potential inter-area connections.² In practice, however, multi-area aggregations are bound to be unavoidable, as has already been often illustrated in the above summary discussions.

In terms of total population size, the 23 areas defined most recently as "Caribbean" by the United Nations are estimated to have had close to 34 million inhabitants in 1990, the fifth smallest regional population aggregate among the 21 singled out most recently by the UN as the world's main such distinguishable collections of national and other territorial areas. The three smallest regional groupings, Melanesia plus Micronesia and Polynesia, with fewer than seven million inhabitants estimated for all three combined in 1990, cannot be expected to reach Caribbean size levels at any future time period of interest, despite their considerably earlier stage of demographic transition and more rapid rates of increase. Almost surely, this

²At the time of this report's final preparations in 1991, Cuba -- by far the largest of the 28 areas under study -- stands out in two further respects. The only communist regime in the Extended Caribbean region, it is also apparently the only such world-wide which has not announced an intention to abandon command economic planning in favor of a private sector, market-run economic system. Suriname, a Dutch colony to 1975, has recently considered whether to form a commonwealth-type relationship with the Netherlands in which important economic policy decisions would revert to a semi-colonial system of determinations [The New York Times, May 24, 1991, Section A, page 5].

must also be true of Australia-New Zealand, the most proximate smaller aggregate with 20 million, given its much later stage of demographic transition and consequent much lower rates of increase. And on the larger population size side it is most unlikely that the Caribbean can ever overtake the next larger regional grouping, Southern Africa with its 41 million current inhabitants, given the latter's much higher growth rates and earlier stage of demographic transition.

"Temperate South America," an earlier UN grouping which it no longer employs (containing Argentina, Chile and Uruguay), is the only regional aggregate of generally identified interest which the UN's Caribbean set of areas might overtake in population size at any foreseeable time. However, since this grouping is considerably larger today (with about 48 million) than the Caribbean total, while the growth rate differentials between the two aggregates are small, the Caribbean's relative position among widely used world regional groupings can be safely predicted to be fixed well into the indefinite future [UN, 1989c, Table 1; Annex Tables A-1 and A-2 below; UN, 1991d, Chapter IIIA].

The same conclusions would hold if the UN's latest (1989) definition of "Caribbean" is extended, as is done here, to include Belize, Bermuda, French Guinea, Guyana and Suriname with the UN's 23 areas, on grounds of their geographic adjacency. Together, these added five areas contain some two million persons currently and have an estimated 1985-1990 growth rate only

somewhat higher, 1.8 compared to 1.7, than the UN's Caribbean population rate. The term "Added Caribbean" will be used here throughout to refer to parts or all of the above five areas. "Caribbean" as used below should be understood to be synonymous with the UN or 23-area definition.

B. Three Distinctive Further Perspectives

Highly characteristic of the Extended Caribbean is the great spread of population sizes among its component areas, ranging in 1990 from over 10 million for Cuba to under 10 thousand in Anguilla, a more than 1,000-to-1 ratio. Among its 16 nation states only, the spread is from 10 million to 50 thousand in St. Kitts and Nevis, still a 200-to-1 ratio. Necessarily, the relatively small numbers involved for all 28 areas, as well as their immense high-low spreads, can be expected to have manifold demographic, socioeconomic and developmental implications, involving among these atypical intra- and extra-regional migration flows, special individual area and region-wide economies of scale aspects, particularly strong foreign trade interdependencies, unusual reliance on capital flows from external sources, and inherent dependencies on external sources of state-of-the-art technologies.

A perspective of added special consequence for assessing the Extended Caribbean's demographic prospects is that its individual areas are on average so sharply separated in degrees of achieved demographic transition from the higher fertility and mortality rates typical among other newly developed areas (henceforth

"NDAs"), on the one hand, and the lower rates characteristic of more developed areas ("MDAs"), on the other. Such intermediacy is well illustrated by the UN's most recent projected rates of population increase (medium variant) during 1990-2000 and 2000-2025. These rates were very nearly 15, 22 and 5 per cent for the Caribbean population region, NDAs and MDAs, respectively, for the decade just ahead and 26, 42, and 7 for the following quarter-century. The components of demographic change underlying these differences are summarized briefly in this section and at greater length in Part III of this report.

A third broad perspective worth emphasis centers about the study areas' pronounced demographic, economic, social and institutional variations. Few of the UN regional population groupings exceed the gaps in demographic transition which have separated recent and contemporary mortality and fertility levels in Barbados from those of Haiti, for example, or the gulf separating Cuba's command economy and that of free market Puerto Rico. Such distances should serve as added caution that the all-region averages cited in this report may be associated with large to very large deviations from average.

C. Population Size Dynamics

Rates of population change in the study region are still positive in all of its 28 areas. Moreover, despite net out-migration influences, nearly all such rates are well above to appreciably above zero. For 1985-1990 according to the UN's late 1980s estimates, the all-region rate was somewhat over 1.5 per

cent, with individual area rates ranging from a low of .23 per cent in Martinique to above 2.2 per cent in the Dominican Republic and French Guiana. Because of substantial population "momentum" (in which, because of rising numbers of reproductive-age women, births continue to be well in excess of deaths although total fertility rates have reached near- or below-replacement levels), patterns of positive growth rates will continue for many decades ahead. Thus Cuba, despite a total fertility rate at least 20 per cent below replacement, still experiences a reported annual population growth rate of nearly one per cent and is expected to experience increases until at least 2025 [UN, 1989c, Tables 12 and 2].

Occasionally, however, a converse relationship between growth and fertility could arise, as a rule because of high emigration rates. Guadeloupe, with a 2.24 value of TFR in the late 1980s and growth at only .34 per cent was one such illustration [UN, 1989c, Tables 12 and 2]. Montserrat, with an estimated TFR of 2.33 or well above replacement during the early 1980s, had a concurrent growth rate much reduced by emigration to .33 per cent [United Nations, Economic Commission for Latin America, ECLAC, Demography Unit, page 74, 1991 (henceforth UNECLAC/Demography Unit, 1991); UN, 1989c, Table 2].

The UN's latest projections provide a useful approximation of what might be regarded as a reasonable range of high, low and medium variant possibilities with respect to the region's total numbers in both the near future and after the next century's

first quarter will be reached. By the year 2000, the low-medium-high range would be limited at 39, 40 and 41 million, respectively; by 2025, the range would be considerably larger, or 48, 52, and 57 million [UN, 1991, pages 24, 196 and 338]. Such figures suggest that the increases over the current nearly 35 million "Extended Caribbean" total would come to about 10 per cent by the end of this decade at a minimum; at a maximum, they would reach 17 per cent. These compare with a "most likely" or "medium" rise of nearly 15 per cent. For 2025, the corresponding percentage increases would be about 35, nearly 65 and close to 50 per cent.

(In connection in with the above section and the two following on mortality and fertility, attention should be addressed to the Part II Appendix on estimating uncertainties revealed by succeeding UN statistical assessments in recent years.)

D. Mortality Transition Dynamics

Despite the great variations among the Extended Caribbean areas in their demographic transition time sequences and latest stages reached, one central commonality has prevailed. Without exception, major-scale transitions in both mortality and fertility have been registered during the postwar decades among all of the 23 UN Caribbean populations in addition to the five belonging to the "Added Caribbean" grouping.

In the case of mortality, current Caribbean expectation of life at birth is estimated by the UN to approximate 65 years

(combined sexes), a rise of some 15 years since the early 1950s.³ If the UN's estimated time series are reasonably correct, overall life chances have improved consistently in each of the successive quinquennia between 1950-1955 and 1985-1990, have closely tracked the corresponding average trend for Latin America as a whole, and are currently at an average order of magnitude which both the MDAs on average -- and the U.S. specifically -- first reached within the first decade following World War II. This would represent a remarkably rapid closing of the traditional gaps separating Caribbean survival levels from those of the world's low mortality leaders. In the early 1950s life expectancy for the Extended Caribbean population as a whole was some 17 years below the U.S. and average MDA levels. Today, the gap has been reduced to 10 years.

Since two of the larger Caribbean populations, the Dominican Republic and Haiti, have continued to lag well behind mortality transitions elsewhere in the region despite their own substantial advances during the post-World War II decades, the above 65 year life expectancy average conceals the striking fact that many Extended Caribbean areas have reached close to, or have already entered, a 70 to 75 span of longevities. MDA populations first

³A publication recently received [UNECLAC/Demography Unit, 1990b] provides life expectancy and infant mortality short-period projections for eight areas: Belize, British Virgin Islands, Dominica, Grenada, Montserrat, St. Christopher and Nevis, St. Lucia and At. Vincent and the Grenadines. The data in Annex Table A-7 below suggest that life expectancy in these areas ranged between 65 and 70 in round terms in 1980-1985, or somewhat above the average level for the larger Caribbean populations shown by the UN [1989c, Table 15].

began to reach this span in substantial numbers as recently as the 1960s. Formerly, Puerto Rico was a special case in that it had reached a 65 year longevity level by the early 1950s, close to the MDA average and far above any found elsewhere in the Extended Caribbean region. Currently, it remains close to the MDA average of about 75 years, but so are Cuba, Barbados, Martinique and Jamaica among the larger countries in the region [UN, 1989c, Table 15].

Infant mortality rates register more sensitively than do measures of life expectancy the effects of socioeconomic, other environmental and death- and disease-control influences on death rates. They are, therefore, more relevant for demonstrating the dramatic health transitions that have taken place in the Extended Caribbean region over the past 40-45 years. As of the early 1950s, such rates ranged from about 60 deaths under age one per 1,000 births in Puerto Rico, on the low side, to more than triple this level, or well over 200, in Haiti. Today the rates are below 30 almost everywhere. Only the Dominican Republic, with a rate of approximately 65, and Haiti with one of nearly 120, have clearly much higher orders of magnitude. Declines to less than one-third the early postwar levels have occurred among the majority of larger populations in the region. For the Extended Caribbean population as a whole, the infant mortality rate has been halved during the past 40 years, a rate of change close to the UN's nearly 55 per cent declines estimated both for Latin America as a whole and for all NDA populations combined [UN,

1989, Table 16; Annex Table A-1].

As with expectation of life at birth, the Extended Caribbean's current average infant mortality rate of perhaps 50 to 55 per 1,000 births compares closely with the MDA average as of 3-to-4 decades ago. Here again, the rates now prevalent in the majority of individual Caribbean populations are at levels first reached by numerous MDAs during the past 20-25 years, despite the fact that the regional average is raised appreciably by the relatively elevated rates still prevailing in the Dominican Republic and Haiti.⁴

These patterns point to several major conclusions of interpretive and policy importance. First, since the Dominican Republic and Haiti will almost surely continue to lag well behind the rest of the Caribbean region in health transitions, and since they also represent so large a fraction of the region's total numbers (40 per cent very nearly even with the five "Added Caribbean" areas included), all-region mortality averages can be expected to remain considerably distorted indicators of many or most individual Extended Caribbean situations. Such distortions will be in upward directions when death rate measures are used, downward when life expectancy or survival rates are the indicators in question.

⁴Infant mortality rates projected for the cited eight areas in footnote 3 as of 1980-1985 suggest a range of variation between about 20 per 1,000 (Grenada and the British Virgin Islands) to 45 per 1,000 (St. Vincent and the Grenadines), with most of the remaining areas close to 40 per 1,000 [Annex Table A-8 below]. Here again, the indications point to a more favorable average than in the larger Caribbean areas.

Second, since life expectancy levels in many individual Caribbean areas have reached a near to or over 70 year or so range of variations, hence are not far from lowest mortality levels encountered internationally, it can be expected that future longevity gains may well be slower and smaller than in the past. Also, because of shifting main causes of death, such gains will be increasingly dependent on overall socioeconomic development when compared to the previous easier-to-implement gains achieved largely or wholly from public health interventions. Many of the region's infant mortality rates, for example, can never again fall (hence its infant survival rates cannot rise) by amounts as large as those registered since the 1950s; this follows by arithmetic necessity.

Third, where early-age mortality has fallen most (as in Barbados, Guadeloupe, Martinique and Puerto Rico), future substantial gains in life expectancy at birth will have to stem - - again by arithmetic necessity -- from survival uptrends which are concentrated in the post-midlife years. Equivalently stated, such gains can no longer come mainly from infant and early-age survival gains, as in the past; rather, they will have to derive from survival gains beyond about age 40 or even 50, hence will have to be the result of very different cause-of-death and socioeconomic or health program circumstances.

Fourth, it follows that substantial future longevity gains would, for the first time in the region's modern-era demographic history, imply accelerated tendencies toward population aging,

thereby reinforcing, also for the first time, the effects of declining fertility. Both anticipations have been clearly demonstrated by the experience of MDA populations since these reached 70 plus longevity levels some decades earlier.

Finally, and much in contrast with MDA health transition prospects, a source of potentially rising concern in the Extended the Caribbean region is whether its recent economic setbacks (to be discussed in Part V) would, if continued, become a significant or even dominant obstacle preventing further sustained gains in mortality and morbidity conditions.

This last is, of course, an actively looming question mark for all of Latin America. The latest (as well as previous) UN projections would appear to answer the concern firmly in the negative, but only because they are so typically calculated on the presumption that mortality trends everywhere will be unidirectionally downward. It is well to keep in mind that substantial fluctuations, much less prolonged reversals of downtrends, are being excluded by statistical fiat. True, these exclusionary assumptions are very much in the light of pronounced and enduring downtrends in the past. Even so, other possibilities are conceivable.

E. Fertility Transition Dynamics

Unlike the apparently continual downtrending transitions characteristic of the Extended Caribbean region's mortality throughout the post-World War II era, sustained major transitions in the region's fertility first started in the late 1960s. Until

then annual childbearing levels, best represented by available total fertility rate measures,⁵ appear to have been relatively stable at about a five child average order of magnitude through the 1950s and to have risen to a short-run peak of close to 5.5 children in the early 1960s [UN, 1989c, Table 12].

Since the late 1960s, however, the region as a whole, all of its larger demographic parts and at least most of its small populations⁶ have registered persistent downtrends. As a result, the region's overall TFR has fallen by some 40-45 per cent to below three children per woman according to recent series of estimates [UN, 1989c, Table 12; USBC, 1987].⁷

On the face of it according to these sources, the region's TFR was one child below the NDA average as of the start of the postwar era (five children compared to six in round terms), and

⁵Applied to calendar periods, as here, such measures indicate the lifetime number of live births a birth cohort of women would have if they all survived to the end of their reproductive span of ages and had the same age-specific rates of childbearing as were observed during a given period.

⁶These are documented in the UN's 1984 assessment of estimates and projections for the "Windward Islands," defined to include Dominica, Grenada, St. Lucia and St. Vincent and The Grenadines, and "Other Caribbean" areas, defined as Anguilla, Antigua, Bahamas, British Virgin Islands, Cayman Islands, Montserrat, Netherlands Antilles, St. Christopher and Nevis, Turks and Caicos Islands and United States Virgin Islands [UN, 1986, Table 12, pages 102-103 and 106].

⁷The eight country TFR projections for 1980-1985 according to the UNECLAC/Demography Unit [1990b] range from lows of nearly 2.5 (British Virgin Islands and Montserrat) to a high of over five. Only Belize (5.3) and St. Lucia (4.1) are substantially above the UN's average Caribbean value for the same period. Each of the eight areas experienced remarkably steep rates of decline during the previous one or two decades, averaging in every case well over 10 per cent drops per decade.

has remained analogously lower to this day (three compared to four). Relative to the rest of Latin America, the corresponding differences have been somewhat smaller, more like three-fourths of a child throughout the postwar decades.

If, adopting a suggestion by the American demographer Don Bogue [personal communication], we think of a "full" fertility transition as varying from about seven to eight children ever born per woman at a high pre-transition stage down to about a two child level at a final low stage, it would follow that the Extended Caribbean populations in aggregate have experienced almost as much transition during the past 20 years as they had during all the centuries dating back to their pre-history. The sustained and pervasive nature of the recent downtrends strongly suggest that further reductions will continue to be the norm rather than the exception, although the maximum possible future declines must, obviously, be well below the 2-to-3 child reductions of the postwar decades.

As with mortality the region's overall total fertility rate of somewhat below three children is significantly elevated by the almost 4-to-5 child levels still encountered in the Dominican Republic and Haiti. In contrast, numerous other areas have arrived at 2-to-2.5 child levels and several (Barbados, Cuba and Martinique in particular) appear to have penetrated beneath their replacement benchmarks (of about 2.1 or 2.2 children), a range of reproductive behavior hitherto reserved almost exclusively to

MDAs [Annex Tables A-1 and A-5].⁸

F. International Migration Dynamics

Sustained large out-movements of population and labor force have been predictably outstanding features of the Caribbean's demographic and developmental postwar scenes, to a degree without close counterpart anywhere. Since nearly all Extended Caribbean populations, whether under own or outside national rule, are so small, migrants moving out of the region tend simultaneously to be large fractions of their origin areas and minor proportions of receiving areas. The opposite is true of migrants moving into the region.

Net out-movements from the Caribbean areas in the early 1980s, estimated by the UN to approximate between three to four per 1,000 (.3 to .4 per cent), was exceeded only by the in-movement of four to five per 1,000 to Australia-New Zealand, the next smaller population aggregate singled out by the UN as a regional entity. Among the individual parts of the Caribbean region documented in the UN's recent published data series (see footnote 8), only Puerto Rico showed a negligible rate; the

⁸Discussion of projected fertility patterns in the Extended Caribbean region according to the UN's biennial estimates and projections series is handicapped by the fact that the data available for individual Caribbean areas are limited to Barbados, Cuba, Dominican Republic, Guadeloupe, Haiti, Jamaica, Martinique, Puerto Rico, and Trinidad and Tobago, plus Guyana and Suriname of the "Added Caribbean" grouping. For unknown reasons, the UN's 1988 assessment no longer presents separate information for the areas it defines as its "Windward Islands" and "Other Caribbean" groupings. Other summary sources, such as the Economic Commission for Latin America (ECLA) in its Statistical Yearbook for Latin America and the Caribbean [UN,ECLA, 1987], are similarly restrictive in coverage.

others showed net rates ranging from close to 2 per 1,000 (Dominican Republic and Haiti) to over 10 per 1,000 (Suriname) [UN, 1989c, country tables].

Annual net rates of such magnitudes can mount up over time to imposing fractions of home populations. A survey by CELADE of the numbers of native Latin American emigrants abroad who could be identified through destination area censuses in 1980 included seven countries of interest here. The countries of birth, their emigrant numbers and the percentages of these to 1980 home population sizes were Cuba (627,500, 6.3 per cent), Jamaica (277,900, 12.8), Dominican Republic (187,600, 3.4), Haiti (120,800, 2.1), Trinidad and Tobago (111,500, 10.2), Guyana (89,000, 10.3) and Barbados (28,000, 11.2). Since only a limited number of destination countries were consulted in each instance (all were in the Americas only), these data are clearly lower bounds of the true 1980 numbers, the most recent such measures available for this report [UN, ECLAC, 1986].⁹

⁹In 1974, according to an earlier UN study, Caribbean areas for which fractions of home population were identified as residing in several main destination areas were Cuba (6 per cent), Dominican Republic (2), Haiti (1), Jamaica (16), Puerto Rico (25), Suriname (16) and Trinidad and Tobago (8) [UN, 1979, Table 29].

In addition, a Population Reference Bureau (PRB) series of studies has provided analogous information concerning the permanent native-born emigrants from a number of small population Caribbean areas who were admitted to the U.S. for varying periods through the end of the 1970s [Bouvier, 1983 and 1984]:

| <u>Area of Origin</u> | <u>U.S. Admission Period</u> | <u>Percent of 1980 Home Population</u> |
|-----------------------|------------------------------|--|
| Antigua and Barbuda | 1960-1979 | 10.4 |

The main country of destination by far among the emigrants so surveyed was the United States, which accounted for 50 to 60 per cent of the emigrants from Trinidad and Tobago and Guyana, 70 to 80 per cent of those from Jamaica and Haiti, and over 90 per cent of those from Cuba, Dominican Republic and Barbados. In Canada, the second most important destination, available census data for 1981 on residents by country of Caribbean origin showed fractions ranging from about 20 to 40 per cent of the emigrants identified as from Jamaica, Haiti, Trinidad and Tobago and Guyana. The only other country cited as a significant receiver of emigrants from documented sending areas was Venezuela, with somewhat under 10 per cent for a single sending country (Dominican Republic) [UN, 1990, Table 66].

A second and in some ways more revealing set of cumulative effect indicators is provided by Guengant, who estimates that cumulative net emigration from the Caribbean during 1950-1980 came to very nearly one-fourth of natural increase as a determinant of total population change during this 30 year period. Such emigration also came to one-fourth of the 1950 population in such areas and one-seventh of their 1980 populations. For the CARICOM areas specifically, the corresponding ratios were 40 to 45 per cent, 45 per cent very

| | | | |
|------------------------------|-----------|------|------|
| Barbados | 1955-1980 | 12.6 | |
| Belize | 1955-1979 | | 7.8 |
| Dominica | 1960-1979 | 7.2 | |
| Grenada | 1960-1980 | 11.3 | |
| St. Kitts and Nevis | 1960-1979 | | 21.1 |
| St. Lucia | 1960-1979 | 4.4 | |
| St. Vincent & the Grenadines | 1960-1979 | | 6.1 |

nearly and 25 to 30 per cent [Guengant, 1985, Appendix I].

G. Age Distributions and Dependency Patterns

Distributions of a population by age, whether described in terms of absolute or relative size (numbers or age proportions) can be as important from numerous socioeconomic, planning and policy viewpoints as are its total size and rate of total population growth. The consequences of demographic change to a society are bound to differ greatly according to the way such change is distributed among childhood, teenage, young-adult, mid-life, elderly and oldest population sectors. As several obvious examples among many, young-age and upper-age numbers and dependency relations differ greatly with respect to their implications for consumer needs, household expenditure patterns, savings and investment consequences, housing needs, demands on private sector and public sector sources of income maintenance, or health care supports.

A question of special importance for the Caribbean region is whether its atypically heavy emigration has distorted the linkages ordinarily expected to hold between vital (fertility and mortality) rates and age proportions. The answer, surprisingly, is that this has not been the case here, at least in broad terms. Thus, as would be conventionally expected, the two populations (Dominican Republic and Haiti) with highest fertility among the larger Extended Caribbean areas also had the largest fraction under age 15, over 40 per cent, as of 1985. In part because of their highest mortality, these areas had the lowest proportions,

less than 4 per cent, over age 65. Since the former size effect far outweighed the latter effect, the fractions in the main labor force ages of over 15 up to 65 years were relatively low. Conversely, the areas with lowest fertility and mortality had relatively low proportions under 15, highest proportions over 65 and high proportions aged 15 to 65. Finally, areas with intermediate vital rates were associated with age proportions between the region's extremes [Annex Table A-9].

Emigration, at least from the more populous parts of the region, has obviously operated as a considerable safety valve of release from Caribbean demographic pressures and limited economic opportunities. But it has also to now apparently had limited tendencies to alter average economic dependency patterns, at least as suggested by broad age groupings. Age composition among the combined Extended Caribbean populations falls squarely between those for MDAs and LDAs, with intermediate fractions under 15 and over 60 or 65, hence also intermediate magnitudes in the main labor force ages of 15 to 60 or 65. Among the region's small populations, however, limited population size and at times elevated rates of net international migration -- as in Montserrat -- have occasionally led to age distributions which are atypical when compared with what might be expected from their mortality and fertility patterns alone.

Declining fertility has led to a considerable post-World War II reduction of young age support burdens per member of the labor force. The region's overall ratio of persons under 15 to those

15 to 60 has fallen from 70 per cent in 1950 to about 50 per cent currently. Rising upper age dependency burdens suggested by the increased ratio of those 60 plus to those 15 to 60, from about 12 per cent to 15 per cent, have been only fractional offsets to the declines in young age dependency, even if allowance is made for the higher support costs per upper age than per young age dependents (whether or not education is included). The result has been a silent but considerable contribution to the region's output *per capita* and level of living indicators.

Such "silent windfalls" will not continue in future, according to just issued sex-age population projections [UN, 1991a, page 24]. While the region's young age dependency ratio is expected to continue to decline between 1990 and 2025 by some 10 percentage points, the upper age ratio will rise by at least as much, leaving the overall dependency ratio little changed in terms of population counts. However, after allowing for the higher support cost per elderly person compared to that per youngster, these figures actually point to a substantial rise in real output (goods and services) burdens of support that will be required per worker even if support levels per young age and elderly dependents were each to remain unchanged. More probably, support levels will grow for beneficiaries in both age sectors, as health care real costs expand with the rise of average ages to be expected among the elderly and as needs for educational outlays also increase with rising years of schooling, particularly at secondary and post-secondary levels.

H. Urban-Rural Distributions

The data available on this subject are largely products of statistical convention rather than clear relevance for socioeconomic behavior, since many Caribbean areas are so limited in area. As a result, urban-rural contacts tend to be unusually pervasive, as are urban values, life styles and relatively easy rural access to modern communications channels.

Nevertheless, spatial factors making for urban-rural separations in demographic and socioeconomic terms are by no means trivial or infrequent. In individual area situations, such factors can lead to heterogeneous behavior patterns of considerable importance. In the two Caribbean instances for which urban-rural fertility differentials could be documented from UN Demographic Yearbook sources, for example, both showed much lower urban than rural general fertility rates (births per 1,000 reproductive age women): 60 urban compared to nearly 80 rural per 1,000 for Cuba in 1985 and 65 urban compared to nearly 140 rural for Puerto Rico in 1980 [UN, 1986a, Table 24]. With respect to corresponding mortality comparisons provided by the UN, infant death rates in urban and rural areas were essentially similar in Puerto Rico during the 1980s but were clearly much higher in the rural areas of Cuba a decade ago [UN, 1985, Table 20]. A study of contraceptive behavior in Trinidad and Tobago indicates that "The levels of both ever-use and current use of contraceptive methods are higher among urban women than among rural women" [Abdulah, 1990, page 25]. Considerable information

on urban-rural differentials, although of an aggregative nature only, can be found for this country in Harewood [1974] as well as Heath, Costa-Martinez and Sheon [1988], and for Guyana and Jamaica in Abdulah and Singh [1984].

It is not of small interest from demographic or developmental viewpoints, therefore, that the Caribbean urban population percentages reported by the UN currently as of 1990 are found to range widely, from about 30 per cent in Haiti and Guyana, to the 75 per cent orders of magnitude in Cuba, Martinique and Puerto Rico [Annex Table A-10; UN, 1991c, pages 111-112]. The UN's "Other Caribbean" areas (see footnote 8) also vary greatly, from the 100 per cent urban in Bermuda to the 35 per cent in Guyana [UN, 1990, pages 111-112].

If the UN's most recent rural population estimates and projections for the areas it defines as Caribbean are approximately correct, it would also appear that their non-urban numbers reached a peak of close to 14 million in the mid-1970s and have been declining slowly but consistently ever since, heading to about 13.5 or so million by 2000 and to 12.75 million by 2025 [UN, 1991c, page 133]. Corresponding urban populations, now at about 20 million in aggregate terms, are expected to continue rising rapidly to between 35 and 40 million by 2025, representing approximately three-fourths of that year's total population. In the five "Added Caribbean" areas, the urban population size is expected to more than double between 1990 and 2025, from about 700 thousand to over 1.6 million, while rural

population would decline steadily, from about 850 to 750 thousand. The urban ratio would rise from below one-half to over two-thirds during this 35 year period [Id., pages 133-134].

I. Population Policies

Inklings and forerunners of today's population policy situations in the Extended Caribbean region can be observed as far back as the 1930s at least. However, their effective emergence in current operational form traces back to not much more than the early or middle 1960s, roughly a quarter-century ago [Torres, 1969; Williams, 1969; Frejka, 1981]. Since then, recognized needs for policies and programs to affect population patterns or trends have developed with phenomenal speed, to the point where sustained population policy affirmations and associated program commitments by governments have become prominent fixed features of the region's socio-political landscape.

Of the 16 Extended Caribbean areas listed individually by the UN as part of ECLA's "area of responsibility" in its 1989 monitoring report [UN, 1990, Table 35], not one government responding to the UN's "Sixth Population Inquiry Among Governments" indicated that its population growth rate was perceived to be "too low." Five (Bahamas, Belize, Cuba, Guyana and Suriname) responded that their rates were "satisfactory," and that "no direct intervention" was being attempted to affect these. The remaining 11 (Antigua and Barbuda, Barbados, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines and Trinidad and Tobago) all stated that their growth rates were too rapid and that they were aiming for lower rates.

Interestingly, this widespread propensity to active population policy initiatives in the Extended Caribbean was considerably more pronounced than was reported for Central and South America, Asia and Africa, hence for all other developing regions. On the face of it at least, the political inhibitions or sensitivities often associated with active population growth policies in the third world (and even more so in the industrialized regions) have had lesser weight in the Caribbean than anywhere else.

(Addendum: A preliminary draft of the UN's World Population Monitoring, 1991, received late in the summer of 1991, shows almost exactly the same patterns as described in the above paragraph.)

Interpreting "slower growth" policies to mean "family size regulation" programs in practical terms leads to essentially the same conclusion everywhere. All 16 of the responding governments reported that they were providing "Indirect" or "Direct" supports for effective use of "modern methods of fertility regulation;" of these only Bahamas and Belize were relying on "indirect" policies [UN, 1990, Table 35].

Nevertheless, political and cultural delicacies surrounding explicit family planning program supports are apparently not lacking in the region. No fewer than five of six areas which perceived their fertility rates to be satisfactory also reported that active intervention to maintain such rates would not be appropriate (Bahamas, Belize, Cuba, Guyana, and Suriname) [UN, 1990, Table 34]; only Barbados regarded intervention to maintain

its satisfactory fertility level as appropriate. A plausible explanation for this last response may have been the fact that the total fertility rate in Barbados had already descended below replacement, with much trend evidence to expect further declines. But the same trends were also true for Cuba, where total fertility was already 10 per cent below replacement. In Belize, Guyana and Suriname, especially the first of these, total fertility was far higher. In most areas which regarded their childbearing rates to be too high, intervention to lower them was regarded as appropriate [UN, 1990, Table 34; UN, 1989c, Table 12]. However, St. Lucia did not regard it appropriate to lower its fertility though this was regarded as too high.

With respect to international movements between home and abroad, Barbados reported that it was attempting to lower what were perceived to be both excessive immigration and emigration rates. The large majority, 12 of the 16 reporting areas, preferred to maintain what they perceived to be satisfactory immigration rates. Of the two areas which regarded immigration to be excessive, one (Bahamas) was pursuing a policy intended to reduce it and the second (Dominican Republic) reported no such policy [UN, 1990, Table 72].

Perceptions and policies concerning emigration covered nearly the entire spectrum of UN response categories. One country (Bahamas) thought its rate too low; six (Antigua and Barbuda, Cuba, Grenada, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines) were intervening to maintain

satisfactory rates; one (Barbados) regarded its rate as satisfactory but was trying to lower its rate; six (Belize, Dominican Republic, Haiti, Jamaica, Suriname and Trinidad and Tobago) had policies aimed at lowering rates perceived to be too high, and two (Dominica and Guyana) reported no direct intervention to lower their rates though these were perceived to be too high [UN, 1990, Table 73].

Government motivations and responses with respect to departures of inhabitants were therefore far more complex and diverse than they were with fertility, an unusual such pattern in comparison with other regions.

Similar contrasts were especially marked with respect to spatial distribution. Although all except one (Barbados) of the 16 responding nations reported themselves as desiring changes, only nine of the remaining 15 reported "explicit" policies for this purpose and six reported no such policies. Presumably the active policies so reported involved attempts to stem rural-to-urban migration, particularly to largest city areas and their hinterlands [UN, 1990, Table 57].

As might be expected, attitudes toward mortality levels and needs for change were closely associated with achieved longevity levels. Among the 11 areas with life expectancy under 70 at the time of the sixth UN inquiry, only two (Bahamas and Trinidad and Tobago) reported their situations as acceptable; nine viewed their situations as unacceptable. Among the five with over 70 year life expectancies, only one (Antigua and Barbuda) reported

this as not acceptable; the other four (Barbados, Belize, Cuba and Jamaica) were satisfied with their longevity positions [UN, 1990, Table 50].

It is safe to infer that, far more than with respect to any other sphere of perceived needs for policy, Extended Caribbean responses concerning life expectancy have been especially influenced by comparisons with situations abroad, perhaps particularly within the region but not improbably with an eye to lower mortality areas among the MDAs. The region's official attitudes may also have become especially focused on higher longevity goals since 1980, when the Pan American/WHO Directing Council called for health strategies leading to the attainment everywhere of 70 year life expectancies by 2000.

Worth noting in this connection is that the UN population inquiries do not seek to establish whether mortality policy or program "interventions" are "appropriate," a question asked with respect to both fertility and international migration. Presumably, affirmative answers to such a question for mortality should call for a universally self-evident answer, not so much for demographic as for social welfare and humanitarian reasons. In effect, official mortality-related policies are better regarded as non-demographic than demographic in origin, with possible effects upon population size, change and structures -- whatever their nature -- regarded as relatively minor consequences when compared to the welfare issues at stake.

J. Sex Ratios

As a rule, such measures (usually expressed as males per 100 females) can be expected to follow a conventional pattern of variations with age. Values at the early years should be in the 103 to 106 range in reflection of generally similar national sex ratios of live births, should decline gradually because of higher male mortality toward 100 before descending below this value through the early post-midlife years and then should begin sharp and progressively steep descents beyond about 60 or 70 years. Entire populations ratios, being weighted averages of their age-specific counterparts, are typically not far from 100.

Parts of these expected modal patterns are borne out, and parts are not, in the Extended Caribbean. For the combined Caribbean population as defined by the UN in its most recent published source on sex-age distributions, those for 1990 decline much as expected up to the early part of the elderly years, say to about 60 or 70; also, the all-age measure is very nearly 100, again as expected. However, the ratios beyond about 70 or 75 are at times markedly at variance with anticipations, as in the case of Jamaica's high ratio, Trinidad and Tobago's unexpectedly low ratio and the UN Caribbean's extremely high ratio for their 75-79 age groups [UN, 1991a, area tables]. Only two of the eight small areas (Belize and Dominica) covered by the UNECLAC/Demography Unit's population projections exercise [1990b] had entire population measures not far from 100 according to their 1980 censuses. The other six such measures were either well above 100 by a surprising margin (British Virgin Islands) or far below this

level, presumably in reflection of large-scale, male selective emigration (Grenada, Montserrat, St. Christopher and Nevis, St. Lucia and St. Vincent and the Grenadines). Suggestions that emigration from other parts of the Caribbean may have been strongly female selective [UN, 1979, Table 44] could explain unanticipated high all-age and oldest-age ratios; however, direct evidence on this score could not be established from available sources. Taken at face value, the data at hand appear to suggest startlingly different sex selective patterns among migrants from small, compared to large, Caribbean areas of origin.

Reliable facts concerning elderly (beyond age 60) sex ratios are likely to have ever-growing importance in the decades ahead if, as expected, population aging advances rapidly, urban proportions and ways of life continue to expand at past rates, upper age survival rates rise apace for both sexes and -- with high probability -- do so more for females than males. Since all of these influences imply that single-person as well as unmarried female-headed numbers of elderly households would accelerate, it follows that government supports needed for elderly households are likely to become considerably enhanced. This is because public sector elderly supports should tend to be lower for married or stably cohabitating elderly couples, whether such supports are for housing of adequate quality, for income maintenance or for health care purposes.

PART III: UN AND EXTENDED CARIBBEAN DEMOGRAPHIC TRANSITIONS:

A CLOSER LOOK

A. Introduction

The present report was neither designed nor intended to develop primary source materials. Accordingly, the following discussion of fertility and mortality trends and their determinants in the two study regions is limited to summary reviews of main findings and studies by others. Since many of the sources examined reflect interpretations based on demographic theories and analytic approaches developed for other regions, a number of cautions should be emphasized from the start.

One is that the limited sizes of the UN and Extended Caribbean populations are such that the numbers underlying vital rates may be unusually erratic or unreliable, even for entire-area populations and particularly so for sub-populations of sectoral importance. This might well be so even if the numbers as such were to be completely correct for the area and time period in question, clearly an unrealistic anticipation in many instances. Annual births in Montserrat, for example, totalled about 200 or even less during 1975-1985 and the numbers for age-specific, socioeconomic or locational categories were necessarily far lower. For infant mortality and other age-specific death rates, the numbers may well have been below several dozen at most [Ebanks, n.d., numerous tables on vital rate patterns].

A second caution stems from the prevalence of consensual and visiting unions. Sequences of younger-age such unions followed

by later-age marriages can greatly complicate or even nullify conventional analysis of nuptiality-fertility relationships [UN, 1984]: for example, economic and social characteristics of current husbands, among the main fertility determinants conventionally emphasized in examining such relationships, may differ significantly from those of biological fathers.

A third caution is that the unusual importance of international migration in the UN and Extended Caribbean areas can have atypical sex-age impacts not only on age-sensitive measures, such as crude birth and death rates, but also on indicators which are normally regarded as "independent" of age, such as total fertility rates. As various studies suggest, the elevated and often highly sex-selective rates of Caribbean emigration involving persons in the main years of childbearing can have substantial impact upon the region's levels and trends of age-specific rates as well as on such overall measures as birth and general fertility rates [see for example McElroy and de Albuquerque, 1990].

Fourth, the increasing likelihood of sustained economic setbacks in significant parts of the region (see Part V below) may be at variance with the presumption, common in the literature on third world vital rate transitions that these will be associated with irreversible and sustained uptrends of economic development.

A fifth caution, involving the paucity of reliable cause-of-death and morbidity statistics for the region, gravely limits the

extent to which the finer structure of the region's mortality trend and pattern transitions can be identified.

All this is in addition to the fact that the UN and Extended Caribbean regions consist of a uniquely diverse array of societal backgrounds and political decision-making structures, as emphasized above from the start. Finally and not least, vital statistics reporting in the region, though well in advance of what is found in other third world regions, often falls far short of the levels needed for timely, finely disaggregated and cumulatively revealing interpretations.

Despite these limitations, a considerable array of main descriptions and explanations nevertheless does emerge from the area-specific studies at hand. With respect to factors affecting fertility, such explanations include, in addition to direct and indirect migration-traced effects on childbearing and nuptial patterns, such causal categories as: birth control and family planning patterns of behavior; industrializing and associated modernizing influences; mass education generally and increased education of females in particular; labor force participation tendencies and associated socioeconomic status changes, again of women in particular; health gains; enormously enhanced inter-island and interregional communications, and the apparent emergence of changed size-of-family preferences [McElroy and de Albuquerque, 1990].

In good part, surely, the abundance of these explanatory factors reflects the play of varied causal mechanisms when time

and spatial circumstances are in considerable flux. But in significant part also, the abundance of explanations very probably also reflects a considerable array of methodological variations with respect to: research designs, definitions adopted, statistical indicators available, hypotheses selected for testing, and analytic approaches regarded as preferable for eliciting cause-effect constructions. To advance comparative analysis in the UN Extended Caribbean or its main subregional parts would require frequent organizations of integrated projects with much emphasized substantive commonalities. Allowances for individual area circumstances would have to be complements to, rather than substitutes for, such commonalities.

Unfortunately, much less of an informing interpretive nature is available with respect to the region's mortality transitions, despite its coordinate importance with fertility and migration movements as determinants of both population growth and socioeconomic change. Few leads have been found to guide statistical interpretation of the relative causal weights to be attached to disease- and death-control program causes of the observed trends, on the one hand, and causes of an overall developmental nature, e.g. income *per capita*, rising educational levels and urban-rural population redistributions, on the other. The importance of this relative weights question for social policy and welfare goals is obvious, given the very different time dimensions and resource input scales which the two sets of causes imply. The former or health related program approach

could be expected to become effective relatively quickly and in ways requiring little or only moderate inputs of capital and labor resources; the latter or development-related causes operate much more slowly and are more greedily demanding of resource commitments and prerequisite overall social advances.

B. Mortality

Long-run mortality downtrends, a hallmark of demographic transition regardless of region during the past two centuries, were by no means unknown to the Extended Caribbean region decades before 1950. Apparently rapid and sustained declines in mortality long antedated the end of World War II in areas which can be documented from life table measures of reliable quality. Trinidad and Tobago and Jamaica, in each case with combined-gender life expectancies of about 40 years in the first decade of this century, had both experienced increases of some 10 to 15 years by 1945-1947, a longevity transition which populations of the West needed almost twice as long to register between the middle of the nineteenth century and World War I. Guyana had reached a 50 year life expectancy level by 1945-1947 compared to little more than 30 about 1920, a change easily twice as rapid as the one marking the West's corresponding gain between these longevity levels. Barbados as of 1945-1947 and the Dominican Republic according to estimates by Palloni had moved from little more than 30 years in the early 1930s to 48 by 1950-1955 (the last not far from a UN estimate of 46 years). Puerto Rico, starting from a 30 year level at the turn of this century, was at

the 46 year mark by about 1940 [UN, 1967, Table 29; Stolnitz, 1955; Palloni, 1990].

Analogous indications can be inferred from the first postwar life tables published by the UN for other areas as of periods close to or shortly beyond 1950. Two such, for Grenada in 1945-1947 and another for the Leeward Islands in 1946, also point to the attainment of 50 year levels of life expectancy in these areas [UN, 1967; Stolnitz, 1955]. While the life tables published for Barbados, Cuba, Guadeloupe, Martinique and Suriname as of 1950-1955 are largely based on indirect estimates and extrapolations, the UN's calculated longevity measures -- unless astonishingly wide of the mark -- imply 55 to 60 year orders of magnitude [UN, 1989c, Table 15]. In each of these instances, expectation of life at birth had attained a level which today's lowest mortality nations did not reach before transitions extending over some three-quarters of a century.

Mortality changes during the decades since 1950 have been no less transforming. At a minimum, the rise in the UN region's overall life expectancy from a 50 plus to a 65 year level between the early 1950s and early 1980s matched changes between corresponding levels which first occurred over a half-century period in many or most of today's industrialized, lowest mortality areas. In the specific instances of Jamaica and Trinidad and Tobago, their early postwar annual amounts of life expectancy increases exceeded the maximum such gain ever recorded among Western populations during this same early stage of their

mortality transition [Stolnitz, 1955].

Similarly for infant mortality rates and their relatively sensitive reflection of changing health and disease environments: as of the early 1950s in all of the above areas except Barbados and the Dominican Republic, such rates had already reached levels under 100 per 1,000 live births, measures which populations of the West first experienced shortly before or just following World War I. Only Haiti, with life expectancy under 40 and an infant mortality rate well over 200 per 1,000, gave few signs of significant change before the early post-World War II years [UN, 1989c, Tables 15 and 16].

By about 1960 or shortly thereafter, first life tables documented by the UN appear for Dominica, St. Lucia and St. Vincent. These point to life expectancies in the high 50s, or not many years below the contemporary longevities registered in Trinidad and Tobago, Jamaica, Guadeloupe and Montserrat. Suriname, with a life expectancy of about 65 years as of 1963, was second only to Puerto Rico, the Caribbean region's "ceiling" case with an outlier level of 69 years [UN, 1967].

Both the pre-1950 and early post-1950 transitions in the Extended Caribbean resemble each other in the remarkable extent to which they have involved major trends under often highly diverse political, economic, socio-cultural, geographic and developmental situations. As a result, both bodies of experience convincingly suggest that significant causal commonalities must have overcome potentially dominant causal dissimilarities. This

is clearly borne out by the "bottom line" fact that societies as diverse as those of Barbados, Cuba, Dominican Republic, Guadeloupe, Haiti, Jamaica, Martinique, Guyana and Suriname have all experienced longevity gains of 15 to 20 years between the early 1950s and approximately 1990, while Puerto Rico and Trinidad and Tobago have gained between 10 to 15 years [UN, 1989c, Table 15]. A similar interpretation attaches to the fact that the eight smaller areas cited by the UNECLAC/Demography Unit study [1990] had all reached life expectancies of 65 to 70 years in round term as of the early 1980s. Or still again and no less dramatic a trend development is that all 11 of the populations in the former of these sources [Table 16] show 50 to 90 per cent declines in infant mortality rates over the last 35 years, while seven of the eight documented in the latter study had pierced the 40 to 1,000 level almost a decade ago; the eighth rate (for St. Vincent and the Grenadines) was close to 45 per 1,000. These have been historic achievements by any standard.

Unfortunately, the literature encountered to now on the determinants of these trends is both scarce and fragmentary, apparently failing even to recognize that the comparative importance of the main causal factors involved is an issue to be addressed. Certainly, nothing in the mortality literature has commanded the conceptual and empirical attention which has been focused on the region's proximate fertility determinants. This may be because cause-of-death and morbidity data continue to be so largely unusable. Nevertheless, it is fair to say from both

direct and indirect indications that health-focused initiatives by governments -- public health programs, advances in sanitation generally and those of urban water supply in particular, together with a modicum of added public hospital facilities and medical personnel -- must have been primary determinants of the observed trends. Widespread assistance from abroad, made feasible and sustained by its relative cheapness and very high benefit/cost payoffs, has also been a clearly central strategic factor. Probably no area of foreign aid or technical assistance in the Extended Caribbean has been more productive of positive results than those on record in health-related areas. Time- and area-specific linkages between the onset of health programs and dramatic death- and/or disease-control outcomes can be directly established from numerous individual sources; although these have been little explored and collated to now, they continue to be available to researchers in all parts of the Extended region. And conversely, neither rising education, particularly of females, nor developmental progress and associated *per capita* income enhancements, could have advanced so rapidly or on so massive a scale as to explain the speed with which mortality and longevity changes have taken place repeatedly in this region during the last four decades.

It is true that slower-moving socioeconomic factors, perhaps particularly those involving contrasting female educational advances, can go far to explain the persistence of large mortality differentials favoring advantaged socioeconomic groups;

such associated differentials go back deeply into history and remain in force today [UN, 1985]. But such cause-effect relations can often be found to prevail even as distinct other main forces have led to declining mortality averages for populations as a whole, indeed have done so nearly throughout the Extended Caribbean and the third world more generally.

It is true and surely not accidental that the region's population with by far the lowest life expectancy and highest infant mortality, Haiti, is also the one with by far the lowest *per capita* income [World Bank, 1985; Annex Table 1; UN, 1986a; UN, 1989c, Tables 15, 16]. But even here, reported changes in major mortality indicators between the early 1950s and 1990 compare favorably with those of much of the region, despite chronic political instability and a failure to introduce many manageably feasible public health program initiatives. Such initiatives should have been implementable without undue fiscal strain even in the face of the country's impoverished circumstances.

In sum, comparative income statuses domestically and relative developmental statuses internationally, while useful predictors of *differential* mortality or survival rates within and between national areas in the Extended Caribbean, have not been close predictors of the onset, size and tempo of next changes in the region's *average* longevity levels. Certainly, this has been the case since major mortality downtrend transitions started and achieved region-wide strength in the late 1940s and early 1950s.

Indirect further support for emphasizing the strategic importance of health-related initiatives by governments -- and to this extent for downsizing the relative causal significance attached to overall developmental (e.g. income) and associated modernizing (e.g. educational) influences -- comes from a further source. This involves the fact that a number of Caribbean areas have experienced economic setbacks during significant parts of the 1970s and 1980s. Although income *per capita* declines in Trinidad and Tobago, Jamaica and Guyana were all substantial during 1980-1985, none of these threats to previous health and mortality gains has prevented the appearance of very substantial further gains between 1975-1980 and 1980-1985, at least as judged by latest UN estimates of life expectancy (received after nearly all of this report had been prepared) [UN, 1991b, Table 44]. In particular, infant mortality rates continued to show pronounced percentage gains during this decade in all three areas, according to the same source [Table 45]¹⁰.

If these time series indications are essentially or even

¹⁰The reliability of these UN comparisons is compromised to an extent by their origin in estimates rather than accurate vital statistics of demonstrated accuracy. Successive UN sources sometimes show widely varying values. For example, the UN Demographic Yearbook 1986 showed a 1980-1985 infant rate of 28 for Trinidad and Tobago, with indications that this represented a UN five-year estimate for a population with infant mortality statistics of undetermined accuracy. The 1988 Yearbook shows a 1984 value of 14, apparently based on registration data coded as "complete." Similar discrepancies from these same sources are shown for Jamaica. For both countries, the measures in the two yearbooks also differ from the data shown in the UN's World Population Prospects 1988 [1989c, Table 16], a publication based on 1986 estimates.

approximately accurate and representative, they could have telling implications for future Caribbean health policies and their impacts on population growth. In effect, linkages among mortality, overall levels of living and development trends would appear to have become so loosened in the region that even durable economic setbacks need no longer preclude (though they might slow down) sustained mortality and longevity gains of significant size. Effective offsets to unfavorable income and level-of-living movements could be expected to come from adaptive or new health programs which are technologically available and economically feasible, which involve only moderate fiscal and real resource commitments, yet which can provide high mortality-reducing benefits relative to costs. An essential pre-condition for such offsets would surely be political will, reinforced by firm public acceptance of better health as a foremost social priority. With respect to this last requisite, it is worth noting, public support of topmost death- and disease-control priorities could be expected with considerable probability to remain relatively unyielding, much unlike policies affecting fertility decline and family planning priorities.

Given the limited research so far available concerning Extended Caribbean epidemiological patterns and their determinants [Le Franc, 1989], these interpretations should perhaps be best regarded as partially confirmed hypotheses rather than as established generalizations. Adequate testing of these interpretations will require much more probing assessment than

has been possible to now with the data at hand.¹¹

Unfortunately, no literature of a geographically widespread nature could be assembled on socioeconomic differentials in mortality, often a fruitful source of epidemiological interpretations. Studies of systematically explored differentials over time within nations or over space cross-nationally were not encountered in any of the published source materials examined [UN, 1986b]. The few individual indications located on this subject appear to be essentially similar to what would be expected from Western experience. In the Dominican Republic, for example, the probability of dying between birth and age two was higher in rural than urban areas as of the late 1960s

¹¹Le Franc [1989, page 295], for example, cites estimates by Boyd to the effect that *per capita* expenditures on the public health delivery system fell by a third in Jamaica during 1981-85, reaching levels "below those of the late 1970s." Since neither mass economic advances nor broad social change could have occurred (e.g. in education or life styles) in the few years in question, the effective cause of Jamaica's continued mortality downtrends calls for explanation. Possibly accelerated immunization programs or other low-cost innovations of a similar nature (ORT for example) were involved. Le Franc refers illustratively to some apparent adverse and offsetting consequences affecting health conditions in a number of Caribbean areas and emerges with the hypothesis -- contrary to the one presented here -- that these conditions may have no necessary causal relationship with public health outlays. Of similar pessimistic implication is her finding of loose linkages between health education (i.e. spreading knowledge of disease control) and actual health status, e.g. in Trinidad and Tobago and St. Vincent. She also cites studies which cast doubt on expected relations between health status and education, *per capita* spending on food or prevalence of undernourishment. In the opinion of this report's authors, the bibliography presented at the end of this source may well be its main contribution to possibly acceptable interpretations of the case histories cited. In fairness to Le Franc (also shown as Le France in her published paper), it has not been possible to consult the sources she cites and relied on.

and the same measure was found to vary inversely with maternal education in both the Dominican Republic and Cuba during this period [Behm, 1979, Tables 5,7]. In Jamaica, ratios of actual to reference population rates of child mortality were found to fall steadily with rising education of mother during the latter 1960s [UN, 1985, Table II.3]. Trinidad and Tobago in 1987 had lower infant and child mortality in rural than urban areas as well as clear height-for-age and weight-for-age advantages among children of better educated mothers compared to those with less educated mothers [Heath et al., 1987, Chapter 6].

Finally, almost nothing could be found in the literature on region-wide cause-of-death trends or tendencies. The closest to an exception, by Le Franc [1989], is a brief and shallow review confirming what one could infer from universal experience: substantial mortality transitions, accompanied by appreciable aging as a result of fertility declines, are bound to imply greatly reduced fractions of deaths from communicable diseases and much enhanced relative importance of death from chronic, upper age causes. The author's claim that "diseases usually linked to conditions of poverty...have reversed their previously downward movement," such conditions being the economic setbacks noted above, tends to be selective of quantitatively documented indications, fails to take account of the UN findings reported above, and at best is too cursory and baldly stated to be persuasive. What it more usefully points to is the remarkably widespread inattention one encounters to the cause-specific

mortality (and morbidity) aspects of the region's considerable vital rate transitions, whether during recent decades or those just ahead.

C. Fertility

Whether regarded on its own terms or compared to previous transitions by today's industrialized societies in the West, the nearly 50 per cent drop of the Caribbean's average total fertility rate during the last quarter-century -- from nearly 5.5 to under 3.0 children -- stands out as outstandingly dramatic. By 1990, so far as one can judge by interpolating between UN five-year partly estimated and partly projected measures for 1985-1990 and 1990-1995, all but one of the nine Extended Caribbean countries documented had experienced a decline of at least 40 per cent below their peak postwar quinquennial levels. The exception, Haiti, was the last to begin what appears to have become a sustained downtrend, one whose indicated percentage decline over the past two decades has been close to 25 per cent [UN, 1989c, Table 12]. Six of the eight small areas for which estimated total fertility rates are provided by a special UNECLAC/Demography Unit study (see footnote 8) show at least 40 per cent declines between 1960 and 1980 [1990b, especially Table 1.2]. Of the two exceptions, British Virgin Islands was found to have had a 1970-1980 decline of about one-third and Belize one of about one-sixth. Judging from the peak postwar rates according to these two sources, it appears safe to infer from Annex Table A-1 below that nearly all of the remaining Extended Caribbean areas shown there with estimated 1985-1990 total fertility rates below about 3.5, and surely those with rates below 3.0 (for example Bahamas, Grenada and French Guiana), have had peak-to-

1990 declines of between 30 and 40 per cent during parts of the past four decades.

A review of the explanatory literature on this remarkable transformation, though brief, can inform this report in a number of ways: Apparent main causes or at least correlates can be identified which interpret the past in ways which help forecast the future. Persuasively suggested explanatory variables, whether quantitative or qualitative in nature, are working tools for guiding the formulation, monitoring and evaluation of policies and programs aimed at affecting future childbearing patterns, not only among entire area populations but also among their major socioeconomic groupings. Average fertility in most areas of the Extended Caribbean region is still demonstrably high relative to their capacities for absorbing large numbers of added populations without adverse economic development and social welfare effects (as will be discussed in Part V). Worse still, the structures of social class variations about high area-wide fertility averages are almost sure to be highly perverse, whether with respect to family size accommodation capacities at household levels or to societal welfare burdens at macro-population levels. And not least, identifying such explanatory literature as could be consulted can help highlight main needs for future research by both academic and policy analysts.

1. Two Guengant reviews

A helpful introduction to explanations of the Caribbean region's fertility transitions is provided by two relatively

recent reviews by Guengant [1985, 1990].¹² In the CARICOM countries,¹³ the subject of the earlier review, substantial transitions began everywhere in either the late 1950s or more often in the early 1960s following a short period of increases. A clear suggestion from this pattern would seem to be that causal commonalities were surely key or predominant factors, given the manifold demographic, socioeconomic, political, resource and developmental dissimilarities among the areas under study. One important commonality among others has been that childbearing in the CARICOM region has widely tended both to start at an early age and to be comparatively high at the later reproductive years.

However, Guengant found explanatory generalizations hard to identify as of 1985. Height-slope relations during the declines observed were diverse and erratic. Low compared to high total fertility rates in the early 1960s, though associated with comparatively high and low initial development statuses, respectively, were not sufficient to assure that the subsequent declines to about 1980 would be predictably small or large. Moreover, the comparative declines themselves did not, when

¹²That a 1985 publication on Caribbean fertility can be described as "relatively recent" might seem strange. Yet no article on the subject was found in at least 10 years in Social and Economic Studies, the main periodical on socioeconomic behavioral research in the region.

¹³These are Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, Trinidad and Tobago, St. Christopher and Nevis, St. Lucia and St. Vincent and the Grenadines.

observed, afford reliable indications of whether they would continue toward replacement levels or plateau at well above replacement. The shape of age-specific birth rate declines varied in such diverse fashion with age as to further complicate interpretation of key causal forces.

In areas such as Trinidad and Tobago, Barbados and the less developed Montserrat, fertility increases from the 1950s to 1960s were relatively moderate and subsequent declines substantially below the pre-increase or early 1950s levels. In other areas, again involving mixtures of more and less developed societies such as Jamaica and the Windward Islands, the 1960s peaks were reached later and found to be considerably more marked than in the previous group. Here the declines achieved by the late 1970s did not extend beyond the levels of the earlier 1950s; in essence, therefore, a 15-20 year period of enormous fertility change and counter-change represented no long run transition at all. Assuming the Guengant data, which often consisted of his own estimates, are reasonably indicative, it follows that there were no consistent linkages among development, associated socioeconomic modernizations and childbearing behavior in the CARICOM region as a whole.

Outside of Trinidad and Tobago, Barbados and in lesser degree Antigua and Barbuda, teenage fertility in the CARICOM countries is reported to have "barely declined" during the decades examined. Seen in connection with the rapidly rising educational levels and opportunities characteristic of this

period, these teenage fertility patterns raise further unsettling -- or in any event unsettled -- questions about the causal mechanisms that brought about the first major fertility transitions in the Caribbean region. Also unclear or at least not clarified to now is why, despite the marked fertility declines which have taken place since the 1960s, upper-age childbearing rates -- beyond 30 or 35 -- tend to be so much higher than in the West, even in areas where total fertility rates, an all-age measure, have reached near or sub-replacement levels (Barbados for example) [Guengant, 1985, pages 60-75].

The 1990 Guengant paper is much more suggestive about possible main underlying explanations for the Extended Caribbean fertility transitions. Sharp declines of infant mortality rates and diminishing degrees of "peasantness" as agriculture gave way rapidly to tertiary (service) industries, are both given special stress among the sociodemographic and economic explanations offered. Rising education and the growth of tertiary industries also had significant weight in steering societies to urban attitudes favoring smaller families. Rural population contractions, often more the result of out-migration to the industrialized metropolises of North America and Europe than of internal rural-to-urban movements, added their influences in ways different from those experienced by MDA populations.

The prime "proximate" mechanisms for reducing fertility as a result of economic, social and attitudinal transformations were rapid diffusions of contraceptive behavior patterns. While this

was the main immediate or direct way in which changing childbearing desires were implemented, it was appreciably complemented by relatively unstable out-of-wedlock unions and by abortion.

Whatever the actual specific cause-effect complexes that began to operate in the 1960s, they have led to downtrends which, whether only fractional or clearly larger when compared to preceding short-run upsurges, have been sustained and unreversed through at least the mid-1980s [Guengant, 1990, Table 3; UN, 1989c, Tables 6, 12, and page 220].

Contraceptive user percentages among females in union have risen from initial levels below 10 in the 1960s to between 50 and 70 by the end of the 1980s, much enhanced by the almost simultaneous development of family planning institutional supports (except in Haiti and perhaps Belize). Rising levels of living, according to the cross-area correlations and a multi-regression probe Guengant cites, appear to have weak explanatory power.

Unfortunately, the quantitative findings he presents do not permit assessment of his statistical procedures. Such as they are, they suggest that trend-affecting roles of frequent abortions, together with widely prevalent non-marital unions rather than more stable marital unions, have had more than secondary importance in at least a number of areas [Guengant, 1990]. However, such evidence is highly fragmentary and Guengant fails to distinguish between possible effects on fertility

levels, on the one hand, and trends between such levels, on the other.¹⁴

2. Fertility survey indications

The predominant importance of contraceptive practice as the proximate factor most affecting total fertility trends is clearly borne out by a study of World Fertility Survey (WFS) findings for Jamaica, Trinidad and Tobago, and Guyana, plus five Contraceptive Prevalence Survey (CPS) indications for Barbados, St. Vincent, St. Lucia, Dominica and Antigua [Abdulah and Harewood, 1984, Tables 12, 22, 32]. Interesting in this connection is that all of these areas had governments which have considered their population growth to be too high; among the eight areas Jamaica and Trinidad and Tobago have also had official quantitative demographic targets [Guengant, 1985, pages 75-76].

Contrary to typical expectations by analysts, however, contraceptive use patterns may themselves have surprisingly subtle and perhaps tenuous causal linkages with actual childbearing outcomes, much as is often found to hold for postulated socioeconomic causal factors. Thus, similar usage

¹⁴Another question raised by this paper and still unexplained concerns Haiti, for which Guengant shows a total fertility rate of 6.18 as of 1985-1987 and indicates this as possibly pointing to an uptrend. In contrast, United Nations analysts use a 1985-1989 value, part estimate and part projection, of 4.74, following steady declines of quinquennial measures since the last half of the 1960s [UN, 1989c, Table 12]. The UN's World Population Chart 1990 shows a total fertility rate of 4.8 for 1985-1990, while the Population Reference Bureau's 1990 World Population Data Sheet shows 5.1 for 1990. A somewhat revised UN series recently received shows a figure of 4.99 for 1985-1990 [UN, 1991, Table 41].

rates in different areas, whether measured for combined reproductive age cohorts or for age-specific cohorts, have often been found to be associated with highly varied fertility rate levels according to the above surveys. Usage rates were reported to be almost the same but fertility rates were significantly different in Trinidad and Tobago when compared with St. Lucia with respect to all-age fertility measures, as well as in Barbados compared to Dominica when only teenagers were observed. It is well to recognize in these connections that numerous factors may intervene between contraceptive use and fertility rates, such as differences in reliability of reporting, variations in ratios of actually "exposed" numbers to all-women numbers when the latter are used in making comparisons, variable frequencies of intercourse (e.g. among teenagers), varying lactation patterns and unequal abortion rates, among others. Although "modern methods" (pill, IUD, injection and sterilization prevalences) were the ones most frequently adopted by users in all of the above surveyed areas, their sizable variations among areas were also apparent [Guengant, 1985, pages 85-88].

3. Fertility preference aspects

The above surveys point to two further substantive perspectives of potentially considerable importance. As of the mid-1970s or early 1980s, contraceptive usage rates in much of the Caribbean were still far below, by about 50 per cent on average, developed country levels [Guengant, page 84]. One infers, given the apparent role of changing contraceptive

behavior as the prime proximate cause of the region's fertility declines to the early 1980s, that the declines registered in the late 1980s reflect broadened and quite likely deepened reliance on relatively effective approaches to planned parenthood implementations. If so, it should also follow that such reliance reflects reduced size-of-family motivations.

Unfortunately, this latter presumption must remain hypothetical; the above survey findings, which appear to provide the bulk of the latest evidence on birth intentions from WFS and DHS sources until now [see UN, 1989c, data sources on pages 105-112], did not probe preference changes deeply. While an earlier cross-national study of selected factors affecting fertility and fertility preferences considered 15 NDAs according to WFS data sources [UN, 1981], it included only the Dominican Republic from the Caribbean region. This study found that, among currently married, fecund, non-pregnant women, the Dominican Republic's national proportion wanting no more children was between 40 and 45 per cent and that the average number of additional children wanted was 1.2. Also, the additional children wanted variable showed a highly significant downward gradient as parity size and numbers of sons within parity increased. Among those wanting another child, the per cent preferring a boy was 40 per cent and downward gradients within each parity with rising number of sons were especially marked. The Dominican Republic generally belonged on the high side with respect to fertility desires when ranked among the 15 populations examined, although the son

preference fraction among its women wanting another child was close to a median value [UN, 1981, Tables 24, 25, 26].

Related perspectives in Guengant's earlier [1985] paper suggest the considerable likelihood that at least half of the contraceptive users identified in the surveys he cited did not wish to cease childbearing. Conversely, between one-fourth to one-half of non-users wanted no more children. Apparently, substantial met needs for spacing and unmet needs for implementing completed childbearing goals were still concurrent major aspects of the region's fertility landscape well into the 1980s, despite its start toward a pronounced transition no less than two decades earlier [Guengant, 1990, pages 88-89].

Apart from strong indications -- indirectly provided by contraceptive use increases -- that desired lifetime fertility levels have been increasingly associated with the region's actual childbearing levels, remarkably little evidence on fertility preference has been made available in the Extended Caribbean during the last decade. A long-time close student of Caribbean fertility [Abdulah, n.d. pages 132-133], writing about Trinidad and Tobago in the second half of the 1980s, found it necessary to rely on plausible hypothesized causes -- rise of education, increasing industrialization, expanding consumer horizons and enhanced communications and travel contacts with the U. S. and Europe -- as best available bases for inferring probable rising preferences for reduced completed fertility levels during the previous decade. The same author, in a 1980s parallel study for

the Bahamas, apparently found nothing of importance to report about explicitly expressed preferences [Abdulah, n.d., Chapter 6]. The same is true of a Montserrat study, another parallel part of the same series of studies; whether completed family size was above desired family size could only be suspected, not documented [Ebanks, n.d., Chapter 3].¹⁵ Guengant in the two papers cited earlier similarly provides no information about probable trends of completed fertility preferences, though his earlier study contains several tables with survey information on additional children wanted [1985, Tables 8 to 10]. If appropriately combined with actual cumulative fertility changes, such trends might have yielded useful indications of what might be termed "altered current desired sizes of family" over time. However, partial or speculative sources of this type would have limited geographic relevance at best, would be a decade or more old in any event and, judging from the studies available for this report, would not have been linked to causal or attitudinal correlates in any event.

4. Contraceptive use patterns

The latest available information on contraceptive practice in the Caribbean, covering 18 countries and over two-thirds of the region's population, highlights three main points. By the 1980s, the fraction of married and other women in union -- hence

¹⁵All three of these studies were part of a multi-area "Demographic Analysis of Census and Survey Data in The Commonwealth Caribbean UNFPA Project," conducted by the CARICOM Secretariat.

of those presumably most "exposed" to pregnancy -- who were currently contraceptive users was rarely much below 40 or above 50 per cent in most of the Caribbean area (see Table III-1). As noted earlier, such orders of magnitude are well below those encountered in the MDA regions, where the percentages are rarely below 60 [UN, 1989b, table 3]. A second point was that four of the five Caribbean areas for which contraceptive user percentages were available as of at least two time points, showed a clearly discernable upward trend or tendency. The four were the Dominican Republic, Jamaica, Puerto Rico and Trinidad and Tobago. The one exception was Haiti, whose data may well have been affected by definitional and reporting uncertainties [UN, 1989b, Table A-11-1].¹⁶ Third, and again excluding Haiti, the percentages of users relying on "newer" or relatively "scientific" methods as opposed to "folk" methods are shown in Table III-1 to be remarkably high, ranging from about three-fourths in a few cases to well over 90 per cent in many more¹⁷ .

¹⁶The reported amounts of change in the contraceptive use percentages shown for these five cases varied widely [UN, 1989b, table 4]. The Dominican Republic showed an average annual increase of 1.6 percentage points between 1975 and 1986 and Jamaica one of 1.8 points between 1975 and 1983; in Puerto Rico the rise between 1968 and 1982 was 0.3 points and in Trinidad and Tobago between 1977 and 1987 only 0.1 points. For Haiti between 1977 and 1983 the reported change was -1.4 points. Further data by Ross *et al.* [1988, Table 26] imply a Dominican Republic average annual rise of 1.0 points between 1983 and 1986; for Cuba a 1972-1980 such rise of close to .9 points; for Haiti, 1977-1983, an average decline of 2.0 points, and for Puerto Rico a 1968-1982 rise of 0.7 points.

¹⁷Of the five areas for which changes in the per cent utilizing clinic and supply methods have been documented by the UN [1989b, table 10], three (Dominican Republic, Haiti, and

Table III-1
LATEST CONTRACEPTIVE USE DATA

| Country | UN Year of Survey | UN Per Cent Currently Married and In Union Who: | | UN User Per Cent Utilizing Clinic and Supply | Guengant Per Cent Currently Using ception |
|--------------------|----------------------|--|--------------------------|--|---|
| | | Ever Used Contracep. | Currently Use Contra. | | |
| Antigua | 1981 | - | 39 | 95 | 60 (1988) |
| Bahamas | - | - | - | - | 65 (1988) |
| Barbados | 1980/81 | 74 | 46 | 96 | 59 (1988) |
| Cuba | - | - | - | - | 68 (1980)** |
| Dominica | 1981 | - | 49 | 96 | 54 (1987) |
| Dominican Republic | 1986 | 73 | 50 | 93 | - |
| Grenada | 1985 | - | 31 | 88 | - |
| Guadeloupe | 1976 | 62 ⁺ | 44 ⁺ | 71 | - |
| Guyana | - | - | - | - | 31 (1975)** |
| Haiti | 1983 | 19 ⁺ | 7 ^o | 57 | 7 (1987)** |
| Jamaica | 1983 | - | 52 | 94 | - |
| Martinique | 1976 | 66 ⁺ | 51 | 75 | - |
| Montserrat | 1984 | - | 53 | 99 | - |
| Puerto Rico | 1982 | - | 70 | 90 | - |
| St. Kitts-Nevis | 1984 | - | 41 | 91 | - |
| St. Lucia | 1981 | - | 43 | 94 | 52 (1988) |
| St. Vincent | 1981 | - | 42 | 95 | 61 (1988) |
| Trinidad & Tobago* | 1987 | 83 | 53 | 84 | - |

Notes: "*" denotes provisional or preliminary; "+" denotes a value for ever-married women; "o" denotes that several folk methods have been excluded; "**" denotes that a rate applies to all women 15-44 or 15-49.

Sources: UN data are from UN, 1989b, Tables 1 and 10; Guengant's data are from 1990 paper, Table 2, based on the same UN, 1989b source and on a Caribbean Family Planning Affiliation 1989 publication.

Puerto Rico) showed increases and one (Jamaica with a figure close to 95) was unchanged. The fifth area (Trinidad and Tobago) showed a decline from the high to middle 80s; reasons for this "outlier" change are not known.

A conclusion clearly suggested by these patterns is that further fertility transitions in the region, as these occur, will typically involve substantial additions of new acceptors whose behavior is based on altered childbearing aspirations and "modern method" family planning practices. Gaining access to relatively effective methods for reaching lower size-of-family goals will apparently not be an obstacle in much or most of the UN Caribbean region.

A point of central significance concerns how actual contraceptive use patterns in the region (to be distinguished from family planning program effects) compare with and relate to other proximate causes of differences between actually observed total fertility rates, on the one hand, and two conceptually extreme theoretical rates: (a) "total fecundity rate" levels (in which all reproductive age women are assumed to be in sexual union, non-contracepting and not affected by post-partum infecundability, lactation, post-partum abstinence or such "other" factors as stillbirths or spontaneous abortion) and (b) "natural fertility rates" (under which non-celibacy and non-contraception prevail).

The data in Table III-2, based on the WFS data for Guyana, Trinidad and Tobago, and Jamaica, show that contraceptive use accounted for the largest fractions of the differences between observed and natural fertility rates as well as between observed and total fecundity rates in all three countries. Such fractions ranged from nearly 40 to almost 75 per cent of these differences.

If the data are essentially accurate, they indicate that the margin by which contraception exceeded the next largest fraction with respect to total fecundity, post-partum infecundability in every instance, has varied greatly in the past, from nearly zero in Jamaica to over 30 percentage points for the non-Indian population of Trinidad and Tobago. Compared to the influence of celibacy with respect to natural fertility, presumably a main attitudinal proximate determinant (as opposed to biological causes), contraceptive use again stood out consistently as predominant, with up to nearly 50 percentage point differentials according to the population documented.

Table III-2
 RELATIONSHIPS BETWEEN THE FERTILITY-INHIBITING EFFECTS OF
 INTERMEDIATE FERTILITY VARIABLES AND VARIOUS MEASURES
 OF FERTILITY IN GUYANA, TRINIDAD AND TOBAGO, JAMAICA

| | <u>Guyana</u> | | <u>Trinidad & Tobago</u> | | <u>Jamaica</u> |
|--------------------------------|---------------|------------|------------------------------|------------|----------------|
| | Indian | Non-Indian | Indian | Non-Indian | |
| Total Fertility Rate (TFR) | 4.922 | 3.986 | 3.255 | 3.079 | 4.217 |
| Total Fecundity Rate (TF) | 11.682 | 11.998 | 10.949 | 12.073 | |
| 13.082 | | | | | |
| Natural Fertility Rate (TN) | 9.390 | 9.348 | 9.025 | 8.888 | 9.471 |
| TN-TFR | 4.468 | 5.362 | 5.770 | 5.809 | 5.254 |
| Per Cent Due to: Celibacy | 41.580 | 39.850 | 25.700 | 33.740 | |
| 32.950 | | | | | |
| Contraceptive Use | 58.420 | 60.150 | 74.300 | 66.260 | 67.050 |
| TF-TFR | 6.670 | 8.012 | 7.694 | 8.994 | 8.865 |
| Per Cent Due to: Celibacy | 27.490 | 26.680 | 19.270 | 21.800 | |
| 19.530 | | | | | |
| Contraceptive | | | | | |

| | | | | | |
|-----------------|--------|--------|--------|--------|--------|
| Use | 38.610 | 40.260 | 55.720 | 42.800 | 39.740 |
| Post-partum | | | | | |
| Infecundability | 30.910 | 30.070 | 22.000 | 32.410 | |
| 37.730 | | | | | |
| Other Factors | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |

Note: "Other Factors" include frequency of intercourse, incidence of spontaneous abortion or stillbirth and duration of the fertile period.

Source: Abdulah and Harewood, 1984, Tables 12, 22, 32.

The importance of simultaneously controlling for multiple explanatory variables in contraceptive use analysis, whether for considering temporal or cross-sectional patterns, is made evident by the variable comparisons often found in the Commonwealth Caribbean studies when standardization-type controls have been introduced [Abdulah, ed., n.d. pages 134-138, citing Harewood, 1984; Abdulah and Harewood, 1984]. An interesting exception to this last for Trinidad and Tobago was education, whose strong association with contraceptive use levels remained essentially unaltered under numerous alternative standardizing controls. In the Bahamas, on the other hand, education differentials were found to be substantially affected in size (though not in sign) by the variable age and union status distributions encountered at different educational levels [Abdulah, n.d., pages 134-135].

5. Methodological aspects

Two methodological points worth stressing in the above connections could be of use from questionnaire design viewpoints when planning future surveys. One is that both cross-sectional and temporal comparisons of contraceptive prevalence can be

significantly affected by the female populations used as denominators of usage rates. In principle, these could refer to: all reproductive age women; the number in a specified age interval; the number of these in unions (married, cohabiting or "common law" and "visiting"); the number of any of these who are, together with their partners, fecund; the number of fecund such women not pregnant and "exposed" to risks of pregnancy (including those sterilized for contraceptive purposes), and the preceding number less its already sterilized component.

A second point concerns the need to distinguish between "desired" total family size and "expected" such size (defined as the sum of future children wanted plus those already born). The fact that children already born often exceed the number reported as "desired" among older reproductive age women, say among those above 30, implies that the "expected" size as just defined may include considerable numbers of births which are undesired but would not be counted as such unless "desired" and "expected" numbers were both documented. With respect to differences between actual and "expected" total fertility, Guengant suggests that such discrepancies for women below 25 could arise because of mistaken anticipations concerning future union or fecundity statuses; he estimates that this could account for a half-child lower actual than desired number of children ever born on average [Guengant, pages 93-94]. Young women, he believes, tend to underestimate the obstacles that may arise in seeking to have an additional child.

A related perspective, one fully consistent with theory when rapid transitions are under way during a survey period, is that "expected family size" (as above defined) should tend to decline along an especially steep gradient among successively younger reproductive age cohorts. The Caribbean survey data available point to a downward progression from five or six such numbers of children among the 35 year and older cohorts to the two or three levels reported for the under 25 cohorts -- a 50 per cent inter-cohort drop at a minimum [Guengant, 1985, Table 10].

Studies such as those emerging from the Commonwealth Caribbean UNFPA Project have tended to be rich in descriptive detail but limited in analytic flexibility and depth. Descriptively, so far as could be judged from the project publications available while preparing this report, causal explanations have been essentially classificatory in approach. Primarily devoted to the region's distinctive mating patterns and the childbearing correlates of such patterns, these studies have tended to range broadly but shallowly over factors which are standard in the literature on hypothesized main determinants of fertility change and differentials, mainly education, urban-rural and geographic residence, religious and ethnic affiliations, occupational and labor force participation statuses, sometimes with and often without age controls for one or more of these determinants. The period covered by the Project should have been especially timely for attempting interpretations in depth, since it coincided so closely with the region's first widespread, rapid

and sustained area-specific fertility transitions. Yet one finds that attempts to establish the comparative explanatory importance of simultaneously operating causal factors are absent. Single dimensional classifications or at most low order cross-classifications of behavior by sub-population groupings are essentially the only quantitative indicators provided. Regression or equivalent models which could provide indicators of the relative importance of multiple causes, based on microlevel data sources (census or survey), are not found. Such data could also have allowed for the incorporation of external (extra-household, e.g. community-wide) explanatory variables in addition to intra-household factors. Further still, such data and techniques could have provided for two-way and higher order multiple interactions among both explained and explanatory variables. Two-way interactions have been found to be especially relevant for considering interrelations between fertility and some of its leading determinants, for example female labor force participation rates. These could have been directly addressed, had two-way relational techniques been utilized in the Project's studies.

With respect to mating as another example, age and type of first unions, education, social class, frequency of partners and birth cohort affiliation were examined for significance as suggested explanations of sub-population fertility levels in the Project's Trinidad and Tobago study [Abdulah, ed., n.d., pages 142-143]. However, the comparative, joint and interacting

quantitative influences of these factors on fertility could not be clarified by the data-collecting and analytic procedures utilized.

In this connection, a UN study on nuptiality-fertility relationships in the West Indies has pointed out that "effects of the [West Indies] type of marital union are exerted through a complex set of interrelations and interactions that are not readily disentangled" [UN, 1984, page 52]. Based on WFS data tapes and other sources for seven areas (Guyana, Trinidad and Tobago, Jamaica, Haiti, Barbados, Guadeloupe and Martinique, all compiled between 1971 and 1977), the study emphasizes that cross-sectional time-of-survey comparisons of cumulative fertility, whether aggregative or age-specific in nature, may well distort the comparisons which a longitudinal tracing of reproductive events would make manifest. As one such possibility, relatively high fertility among currently married older women as of a given survey period might fail to reveal that such childbearing became elevated as a result of undocumented previous unions, for which the main explanatory social and economic factors affecting fertility were no longer the same for women observed in later legalized unions. Analogously, elevated childbearing among women who married in a first union need not imply higher family-size preferences than those prevailing among women not married in a first union; rather, it could reflect longer periods of exposure to childbearing, as suggested by correlations between children ever born and time spent in unions. Or still again, the

study's negative associations found to hold internationally between number of partners and cumulative fertility was in contrast to the positive associations found when the same paired variables were considered for given marital unions within countries; numbers of within-union partners in the latter case could serve as proxy indicators of duration periods in union.

Numerous other interrelational questions can complicate the problem of arriving at definitive explanations of mating-fertility interaction patterns. How should union categories be uniformly defined for cross-national analysis and how should individuals be consistently classified by union categories within countries? Further, however these statistical problems are resolved, how are actual patterns of unions and observed fertility-mating relations influenced by demographic and socioeconomic policies or social programs, among others? Given the very substantial cross-sectional differences often found between younger and older cohort mating or fertility distributions, shouldn't conversion of such distributions to longitudinal constructs -- as has been statistically possible for multiple Caribbean areas -- provide important new interpretive leads not available from period-specific time series?

To be fair, none of this is to deny that the Commonwealth Caribbean Project reports contain important findings of their own. In the case of Trinidad and Tobago, for example, the indicated ethnic (Indian/non-Indian) differentials in mating levels, patterns and trends clearly bring out the need for

separate ethnic examinations, both for explaining past transitions and for guiding policy initiatives to influence future transitions [Abdulah, ed., n.d., pages 140-143, citing Harewood, 1984].

6. Fertility differentials and their correlates

The socioeconomic differentials in fertility revealed by the Commonwealth Caribbean Project reports, as documented by "cumulative fertility" (in effect, children ever born) measures for areas as diverse as Trinidad and Tobago, Bahamas and Montserrat, were found to be remarkably similar in broad terms to those encountered among advanced fertility transition populations of the West. Higher educational attainment and occupational status distinctions tended to be strongly associated with lower cumulative childbearing, while lower social class/higher fertility combinations were typical of unskilled and agricultural occupations [Abdulah, ed., n.d., pages 134-137, 139, 140; Ebanks, n.d., pages 75-76].

The Project's pronounced tendency to rely on single classification or low order cross-classifications of grouped data is again evident in an earlier Institute of Social and Economic Research study of labor force-fertility interrelations [Abdulah and Singh, 1984]. Moreover, as was true of the Project on the whole as well as of the Caribbean literature more generally, the data explored did not contain attitudinal information, in this case with respect to fertility-related views on employment among employed women themselves or views held by other interested

parties in fertility decision making.

Using WFS questionnaires adapted to Caribbean-specific circumstances, the Abdulah and Singh study for Guyana finds, as would be expected, both existing and potential conflicts between high fertility and female labor force participation patterns. Women with current or past work histories who did not work before their first birth had "very much higher" cumulative fertility than did those who either worked only after their first birth or had never worked (Table 7F). Women with working backgrounds generally had lower "initial" fertility (children ever born during their first five years after initial union) and recent cumulative fertility than did non-working women, although currently working women wanted more additional children on average than did non-working women (page 64). Overall, labor force involvements and fertility relations tended to be inversely related. A pattern of special importance from economic and population policy viewpoints was that labor force participation rates tended to have a U-shaped relation to parity, with a minimum at the 5-child level (page 63). Presumably the right-hand upturn reflected added economic incentives to work owing to large family size. If so, it could be inferred that, while work commitments tend to inhibit childbearing for large parts of the reproductive age female population, the causal process may well become reversed once childbearing reaches a high level and generates incentives favoring female economic activity.

The ambivalence here with respect to cause-effect relations

is consistent with ongoing and still unresolved debates characteristic of the international literature on female economic activity interactions with household fertility behavior. It is quite possible that among upper social status classes, e.g. those involving relatively well educated women, desires for female labor force participation could be a main cause of postponed or lower childbearing effects. However, for women of lower social class or economic status, a reverse cause-effect directionality could hold, with high fertility being a primary cause of raised economic activity rates [Abdulah and Singh, 1984, pages 18-21]. Also to be expected according to this study was its finding that female labor force participation rates tended to fall with education and rising occupational status among women who ever worked (being highest for agriculture and unskilled statuses, lowest for professional and clerical statuses).

Unlike the U-shaped labor force participation/parity relationship found by Abdulah and Singh for Guyana, that for Trinidad and Tobago was essentially downward sloping throughout the range of family sizes, not only for all reproductive age women combined but also for those belonging to age-specific most educated, urban, non-Indian and married population groupings, an indication of pronounced negative associations between working status as cause and fertility level as effect. Current employment was also generally associated with more widespread use of efficient contraceptive methods, a pattern pointing to the same conclusion.

Considerably higher fertility among women with work experience who did not work before their first birth was again manifest in Trinidad and Tobago when they were compared with women who had only worked after first birth or never worked. Associations between education and cumulative fertility were inverse (Table 7F).

In Jamaica, female work participation/fertility associations as of the mid-1970s were again pronounced and inverse, as in Trinidad and Tobago but unlike Guyana. Women working before their first birth once more had significantly lower fertility than those who either first worked after birth or never worked. Total amount of years worked varied erratically with cumulative fertility among sub-groups, more or less as they did in Guyana but unlike the positive association found for Trinidad and Tobago. As in both of the latter two areas, fertility levels by occupation consistently trended downward from the agricultural through the professional categories. Participation rates in Jamaica showed no clear relationship to cumulative fertility, a situation unlike those in the two other areas. However, Jamaica's positive association between level of education and labor force participation, on the one hand, and its negative education-fertility association, on the other, were both consistent with the other area patterns.

The previously stressed importance of adequate controls when comparing economic activity/childbearing relations in the Caribbean is well illustrated by these three case studies.

Overall or all-age fertility measures were found to rise from current to past workers and from the latter to the never worked category in Trinidad and Tobago, to fall along this same succession in Guyana, and to show equal magnitudes in Jamaica for the past and never worked groupings, both of which had higher cumulative childbearing levels than did current workers. Within age groups, however, it was the first of these patterns, as the literature generally suggests, which was the one encountered in all three areas.

The inverse relations consistently encountered between education (especially at or above secondary levels) and childbearing in all three areas, combined with their consistently documented lower fertility levels for women who had worked before first birth compared to those who had not worked, point to a conclusion of special importance for social policy. Added impetus to future fertility transitions in the Caribbean region may well depend in good part on the extent to which general schooling, vocational training and work opportunities become expanded for females through their teenage years and the early phases of their adult life cycle. Apparently, how young Caribbean females sequentialize schooling, marriage or other unions, early working career and timing of their first births can go far to determine whether their subsequent cumulative and "initial" fertility experiences will be relatively low or high by historical trend standards. [See especially Abdulah and Singh, Chapter 7, Table 7F.]

In a strikingly concrete way and with the use of relatively unique statistical indicators, these conclusions for the Caribbean throw light on a broad theme in the literature, to the effect that sustained fertility transitions to developed area levels must depend centrally on the rising social status of women, i.e. in the form of enhanced exposures to influences deriving from expanded educational and extra-household labor force opportunities.

It may also be worth noting that the case for this particular study's emphasis on labor force involvements or non-involvements before first birth would have been more persuasive if possible prior socioeconomic or cultural selectivities separating these categories had been taken more adequately into account.

The most sophisticated statistical modelling contribution to Caribbean fertility analysis encountered in preparing this report has been a paper dealing with interrelations among childbearing behavior, numbers of union partners and female labor supply in Jamaica [Wright, 1988]. Based upon microdata taken from the 1975-1976 World Fertility Survey, a three-equation system of regression relationships was used to examine why increasing numbers of partners were consistently found to be in marked positive association at all reproductive ages with cumulative fertility, despite appreciable periods of time "not in union." The equations specified essentially reflect a "new home economics" approach, in which fertility and its major associated

variables such as female work activities are assumed to be in need of simultaneous explanations in view of possible two-way or feedback interactions. The estimation procedure utilized was such as to reduce or eliminate the possibility of "simultaneity bias" (a statistical situation which enhances estimation errors when variable x affects y and y affects x simultaneously as a result of separate causal processes). Interestingly, nothing in this model allows for whether women with childbearing, work and union backgrounds did or did not work before their first birth, the factor found to have had such considerable weight in the Abdulah and Singh study just summarized.

One of the Wright model's chief findings is that Jamaican fertility appeared to rise with increasing numbers of partners only when ordinary least square methods were applied to a single equation specification, hence would conform with what would be found if the two variables were considered with only age controlled -- the basis for the above-cited apparent positive association between fertility and number of partners. However, use of a two-stage least squares estimation procedure in order to avoid simultaneity bias pointed to an opposite conclusion. In this case and as expected, fertility was found to decline with rising number of partners after fuller allowance for relevant control variables, the relational presumptions suggested by theory.

Since the negative relations indicated by the two-stage estimated regression coefficients were not statistically

significant, further testing would be needed to arrive at definitive conclusions. Even so, the model valuably alerts us to the possibility that adequate allowance for control variables, combined with appropriately selected statistical techniques for deriving relational estimates, can lead to results at variance with previously accepted such findings or expectations.

In sum, it is doubtful that the available descriptive literature on fertility transition determinants in the Caribbean region has overlooked at least mention of the main causal or correlated factors at play. On the other hand, the literature can fairly be judged to come up short in a variety of ways: insufficient use of microlevel data analysis; inadequate exploration of fertility preferences and their determinants, based upon clear distinctions among "desired," "expected" and "ideal" indicators; lack of timeliness of findings and of their considered implications for near-term prospects (much of the literature is still largely focused on events and explanations dating back to the region's considerably different transition stages of the 1970s); overlooked possible needs for integrating microlevel and extra-household (community-wide) factors affecting childbearing decisions; absence of a developed analytical tradition of supplementing period time series with real cohort series, and much too limited use of state-of-the-art statistical modelling possibilities.

D. Addendum III-A: Four recent fertility (DHS) studies

Several publications not covered in the previous review have either just been received or became available after the review had been written. Following are some highlights.

1. Westoff, et al. [August, 1990] on the Dominican Republic.

This 1986 study, based on a national sample of about 12,000 respondents, was intended to compare the results to be expected if obtained from alternative ("core" and experimental") questionnaires. Both sources yielded findings close to the indicated averages next below:

| | | | | |
|----|--|-------------|-------------|-----|
| a. | Total fertility rate | <u>1980</u> | <u>1986</u> | |
| | Note: The maternity histories from which these measures were obtained were judged by the authors to be of high quality. | | 4.4 | 3.3 |
| b. | Per cent of ever married women who ever used contraception | | <u>1986</u> | |
| | Note: The large majority of such uses involved "modern" or "scientific" methods of contraception; a small minority involved "folk" -- rhythm and withdrawal -- methods. | | - | 71 |
| c. | Current use of contraception among currently married women | | <u>1986</u> | |
| | | | - | 51 |
| d. | "Ideal" number of children | | <u>1986</u> | |
| | | | - | 3.4 |
| e. | % of non-users planning to use contraception | | <u>1986</u> | |
| | 1) in future | | - | 51 |
| | 2) next year | | - | 20 |
| f. | Main reasons for non-use of contraceptive methods among currently married, sexually active women who either did not want, or were indifferent about, a coming pregnancy were: post-partum or breastfeeding circumstances, menopause or subfecund situations, fear of contraceptive-use side effects and "other" (not | | | |

explained) categories of answers.

2. Tactuk et al. arrived at the following findings based upon 1990 DHS "Further Analysis Series" data for the Dominican Republic as of 1986:
 - a. Using the Bongaarts' model to analyze total fertility rates and the effects of their most important proximate determinants (contraception, marriage, and post-partum infecundability) for each of a series of possibly explanatory variables. Geographic zone, marital status, woman's education, occupation of partner and female economic activity status, marriage and contraceptive use decisions were estimated to reduce fertility below its theoretically possible level by 44 per cent and 46 per cent, respectively, for the total population. Post-partum infecundability attributable to breastfeeding patterns had a less significant effect of 16 per cent.

Postponement and interruption of unions were found to lower fertility by 51 per cent in urban areas or not far from double the 28 per cent deduced for rural areas. Contraceptive use reduced fertility among all of the groups analyzed, the most striking differences being between illiterate women, with a 33 per cent such effect, and women with nine or more years of education, with a 53 per cent effect. The largest fertility inhibiting effects of post-partum infecundability involved illiterate women, 24 per cent, and women whose husbands worked in agriculture, 22 per

cent; smallest inhibiting such effects were found among women with nine or more years of schooling, 12 per cent, and among wives of professionals, managers, and office workers, 13 per cent.

b. The country's TFR fell from about 7.0 in the 1960s to 4.3 in 1977-1978 to 2.9 in 1985-1986. (Note: the UN World Population Chart 1990 shows 3.4 for 1990; its World Population Prospects 1988 publication shows 3.45 for 1985-1990 and 3.34 for 1990-1995; its World Population Prospects 1990 shows 3.97 for 1985-1990 and 3.73 for 1990-1995.)

c. A major factor behind the study's indicated TFR decline has been an increase in the fraction of women in union who had been sterilized, from 12 per cent in 1975 to 33 per cent in 1986.

d. Divorce shot up from nine per cent of married women in 1965 to 48 in 1975, averaging 40 per cent in 1973-1986.

e. Pre-1975 fertility declines were concentrated among upper status social and educational classes. Since 1975 the main declines have been in the corresponding lower status categories.

f. Family planning has played a major informational and alerting role in contributing to the these changes.

g. Occupational fertility differentials tended to be similar across the residential zones considered. Residence in this sense has been a secondary factor.

3. Heath, et al. [1988], using 1987 DHS data for Trinidad and Tobago, reached the following main conclusions:
- a. The TFR fell from 3.4 in 1972-1976 (WFS estimate) to 3.3 in 1981-1983 to 3.1 in 1984-87 (DHS estimates). (UN, World Population Prospects 1990 shows 3.10 for 1980-1985 and 2.95 for 1985-1990.)
 - b. The national average number of children ever born (CEB) for women aged 40-49 was 4.3, with a small African/Indian ethnic differential, higher rural than urban values and a consistent downward gradient from lower to higher schooling.
 - c. Mean CEB tended to decline with rising age of first union when years since first union were controlled.
 - d. Age of first birth rose, with the rural such measure remaining below the urban age. Such ages rose steadily with amount of schooling.

(Note: These educational influences would apparently reinforce the hypothesized conclusion reached previously about the importance of rising status of women influences.)
 - e. Only a minor fraction of women who had heard of a contraceptive method did not know where to have access to its supply. Five of six women in union had used some method of contraception; eight of ten among these had used a "modern" method. Among all women, the corresponding fractions were five of eight and six of 10, respectively,

the lower fractions being largely attributable to those found among the youngest and oldest reproductive age groups.

f. Age-specific fractions of women making current use of contraception resembled a flattened reversed U (or "face down saucer") pattern.

g. The per cent of non-pregnant women not currently using contraception who did not want to become pregnant rose consistently with parity; for combined ages, the fraction was 52 per cent. Two of five women in union not currently using contraception planned to use it in future and one in four planned to use it in the next 12 months, with pill, IUD and female sterilization the preferred methods.

h. The per cent of all women in union who wanted no more children was much higher among the less educated women than among those more educated. This comparison was attributable to differences in parity distributions; with parity held constant, the comparisons became alike starting with parity two.

i. Stated "ideal" numbers of children fell steadily with declining age, from 4.0 among those 45-49 to 2.5 for those 15-19. (Presumably, much of this pattern reflected already experienced parities rather than "ideals" applied to women in society generally.) The "ideal" average stated by women under 30 was 2.9.

j. About two in five births during the year before the survey were either not wanted or not planned; one in five

were not wanted.

4. Abdullah [1990] using 1987 DHS data for Trinidad and Tobago, reported the following:

a. No change was found in the overall (all-age) per cent of women in union who were using contraception between the 1977 and 1987 surveys; in both years the fractions came to a bit over 50 per cent. By age, usage among those 25-34 also changed little. Among women who were lower educated and in union, the usage fraction declined. For the 20-24, 35-44, and 45-49 groups, conversely, the per cent rose. For the more educated, it was little changed.

b. The fraction of all women ever in union who ever used contraception in 1987 was four of five; for urban women it was five of six and for rural women four of five; for women with primary education it was four of five and for those with secondary education five of six; for Indian women it was three of four and for non-Indian women five of six; for Roman Catholic women it was five of six and for other religious affiliations about four of five.

**E. Addendum III-B: Demographic estimation uncertainties;
Haiti's effects on Caribbean averages**

Changing estimates and projections by the UN in its biennial assessments of main population size, growth, characteristics and vital rates can only be traced for the Extended Caribbean's larger populations, since these alone are singled out for individual documentation. Similar re-assessments of the region's less populated areas would probably tend to reveal larger percentage adjustments on average, given the greater relative importance and volatility of cross-border migration movements and vital rate fluctuations in these areas. Of the successive UN re-assessments which can be traced, the most prominent recent example involves Haiti and resulting change effects on regional measures.

The 1986 UN re-assessment of UN Caribbean estimates and projections [UN, 1989c] differed from its 1984 predecessor [UN, 1986c] by no less than one million with respect to the region's 1990 total population size (33.6 compared to the earlier 34.7 million). For 1985-1990 the birth rate indicated by the later source was perceptibly lower (24.7 and 26.8 per 1,000), as was the total fertility rate (2.92 and 3.16 lifetime children born per woman); the crude death rate was almost the same (7.8 and 8.0 per 1,000) as was life expectancy at birth (66.4 and 66.5 years for combined sexes), but the infant mortality rate was distinctly lower (57 and 60 per 1,000 births). Equally or more important, the cumulative effect of these re-assessments turned out to be

far larger for subsequent years, indeed surprisingly so. Mainly because of the lower fertility starting point used in deriving the later, 1986 medium variant projections, total population for the Caribbean was calculated to be 2.5 million or six per cent smaller for 2000 than was the preceding projected size (38.6 compared to 41.0 million) and 9 million or over 15 per cent lower for 2025 (48.8 and 57.8 million). An accidental or curious outcome was that the new "high variant" projection to 2025 turned out to be consistently lower, indeed by increasing margins over time, than was the previous "medium variant" series. A further result was that the region's population proportion under 15 in the year 2000 according to the 1986 assessment became considerably lower than the figure assessed in 1984, 29.3 against 31.6 per cent, and much lower still for 2025, when the projected corresponding fractions were 23.0 compared to 27.0 per cent. For those 65 and over, the indicated proportions were raised from 6.1 to 6.6 per cent for 2000 and from 8.6 to 10.3 per cent for 2025.

On the face of it, the 1986 re-assessment suggests a perceptibly more rapid region-wide demographic transition to lower fertility, hence to slower growth and an older population, than had been implied by data presented only two years earlier. It further implies that young age population dependency pressures on societal resources, for example in the schooling sector, would be lower than expected, but also that this reduction would be increasingly offset by larger elderly population dependency pressures.

The importance of Haiti for explaining the above region-wide changes and their implications can be seen from the fact that this single country's total population size as assessed in 1986 was fully two million lower than the 1984 assessment for the year 2000 and nearly seven million lower for 2025, compared to the above 2.5 and 9.0 all-region differences. While the 1986 adjustments for both Haiti and the Caribbean were based on more recent, hence presumably more correct, factual indications than were available in 1984, it is well to note that the above resulting effects on the projections for later periods were almost surely based on mechanistically formulated trend assumptions. If so, no projected allowances were made for possible turning points or fluctuations in the components of Haitian population change.

A rather ironic postscript is that the UN's latest projection as of 1988, just issued when this report was being completed, has re-reassessed Haiti's population size to be 200,000 higher for 2000 and nearly two million higher for 2025 than were the calculations arrived at in 1986 [UN, 1989c and 1991b).

With unimportant modifications in details, the current and projected implications just described for the UN Caribbean would hold for the Extended Caribbean as well.

A best source for comparing the most recent (1986 and 1988) pair of UN demographic assessments for Caribbean areas is provided by the convenient summaries in the later source on

variations in population size, total fertility rate and life expectancy measures [UN, 1991b, Tables 23 and 24]. Population size for 1990 was reduced by 23 per cent for Guyana; for 2025 it was raised by 15 per cent for Haiti and lowered by 14 per cent for Barbados, 26 per cent for Guyana and 12 per cent for Puerto Rico. Total fertility rates for 1985-1990 were raised by more than .2 (but less than .3) births per woman for Guadeloupe, Haiti and Trinidad and Tobago, as well as lowered by this amount for Barbados and Jamaica. Life expectancy estimates for this period were raised by more than .5 years for Barbados, Cuba, Martinique and Trinidad and Tobago, as well as lowered by this amount for Guyana, Jamaica and Suriname. All but one of these differences were below 2 years, while that for Guyana was lowered by no less than 6.5 years.

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