INTRODUCTION

Although the concept of urban as distinct from rural places has existed since ancient times, urban and rural classifications were introduced into the compilations of European population statistics only during the nineteenth century. ¹ Most of the statistics then available on an international basis, including many countries of the world, were compiled and discussed at the end of the nineteenth century by Adna Ferrin Weber. ² Although some very famous cities had arisen even in ancient times, ³ most cities were relatively small at the opening of the nineteenth century, and the bulk of the world’s population was for the most part rural. In 1800 it is estimated that there were only about 750 places with 5,000 or more inhabitants in the world, and that these places contained only 3 per cent of the world’s population. ⁴ The number of cities with 100,000 or more inhabitants in 1800 may have been only 45. By contrast, a recent compilation lists 1,777 places with 100,000 or more inhabitants in the world in 1970. ⁵ The percentage of the world’s population which is now urban is approximately 37, ⁶ and by the end of this century the world is expected to be at least half urban. ⁷ Moreover, the absolute quantities of both urban and rural populations have been swelled by the rapid rate of total population increase since 1800. It has become evident that rising levels of urbanization pose increasing problems in the fields of economic, social, administrative and physical development, and in the maintenance of environmental quality, which have to be investigated with reference to current and future estimates of urban and rural population.

USES AND APPLICATIONS OF URBAN AND RURAL POPULATION PROJECTIONS

Many detailed planning problems have arisen in connexion with the huge increases in both urban and rural population and the large transfers of population from rural to urban areas. As a minimum, it has become necessary to be able to estimate and to project, in each country, the total urban and rural populations. For many purposes there is the further need to anticipate what the sex and age compositions of urban and rural populations will be, as these factors affect greatly such things as the need for schools and services for children, jobs, housing, medical facilities and so on for the working-age population; the need for special services and facilities for the elderly; and many other important necessities of various age groups. In this context, Shryock and Siegel have suggested that in many instances it would often be sufficient to project urban and rural population at least in the following age categories: under 15, 15-44, 45-64, and 65 and over, ⁸ identifying approximately the school population, the child-bearing population, the potential labour force population and the elderly population. They took note that projections have often been prepared in considerable age detail (usually in five-year intervals), when the quality of the data available does not permit an accurate projection in great detail, and the intended users of the projections may not require it.

However, where suitable data are available, it may often be useful to calculate the projection in greater detail than is intended for the purposes of an efficient presentation of results. In some instances, results of a projection by five-year age groups may have to be further interpolated with respect to single years relevant for instance to school enrolment, voting rights or old-age pensions. Likewise, there may be a need for projections to be presented for individual calendar-year intervals, though the projection was originally calculated by time intervals of five years. Again, the required results may be obtained by interpolation with respect to time.

Educational, occupational, residential and public-service requirements are usually quite different in urban as contrasted with rural areas, on the one hand because of the differences in physical, as well as economic and social, environment; and on the other hand because of different sex and age compositions and different population distri-

⁶ Monthly Bulletin of Statistics, November 1971 (United Nations publication), p. xxxvi. ⁷ The following can be found in this publication for all countries of the world for dates beginning with 1960 and projected to 1985: (a) estimates of urban and rural population; (b) percentage of urban population; (c) annual rates of growth of urban and rural population. “National definitions” were used in these estimates and projections, i.e., the definition accepted by official statisticians within each country.
butions in space. These factors give cause to different types of investment with different amounts of expenditure. For example, only minimum fire and police protection are offered in rural areas, and the per capita quantity and organization of medical facilities often has to be quite different between rural and urban areas. The occupational or industrial composition of the labour force, of course, differs immensely between the two areas of residence.

Urban population projections are one variety of sub-national population projections. The general importance of a number of types of subnational projections was recognized at a conference devoted to that subject held at Bangkok in 1969, but provisions for implementing such projections by means of a demographically trained staff still appear to be scant. Several of the methods here discussed may also be applicable in the population projections for regions, provinces or districts within a country. Furthermore, in some of the most urbanized countries with highly developed transportation facilities, the traditional distinction between urban and rural localities has lost much of its relevance in describing salient economic and social features and needs. In some of these countries, statistics are now being collected, distinguishing city-dominated regions such as metropolitan areas within which there can be a further differentiation between the core city and the suburbs and satellite cities within the heavily urbanized periphery. Such areas will often include some rural population devoted to agriculture primarily for local metropolitan consumption. The projection techniques described herein for urban and rural populations may often be equally useful in the projection of metropolitan and non-metropolitan populations.

Within an individual country, innumerable combinations of subnational projections are possible. For instance, there might be lower-level projections of urban and rural population within major administrative territorial units or within territorial units defined by other criteria such as communications linkages or population density. There might also be interest in some countries in the further classification of urban and rural populations by ethnic composition. In highly urbanized countries, there may be good reason to project rural population or small-town population into two categories: (a) urban and rural population within the large metropolitan regions, and (b) urban and rural population outside those metropolitan regions. Because of the great diversity of area


10 For example, in 1960 nearly two-thirds of the population of the coterminous United States lived within metropolitan areas, and 93 per cent of the total population lived within 100 miles of a metropolitan area. The latter included 96 per cent of the urban, 88 per cent of the rural-non-farm, and 82 per cent of the rural-farm population. See Dale E. Hathaway, J. Allan Beegle and W. Keith Bryant, People of Rural America, a 1960 Census monograph (Washington, D.C. United States Bureau of the Census, 1968), p. 35.

11 Such a classification scheme was employed in a study of small towns in the United States (in this case, incorporated places with less than 10,000 inhabitants) during the period 1940-1960. Within each region, small towns were classified by size of place and by location with respect to major cities. It was found that within each region, small towns in each size of place group grew most rapidly if located within "urbanized areas" (as defined in the census), followed by small towns in other parts of metropolitan areas, and finally by towns in other non-metropolitan parts of the country. See Glen V. Fugitt and Donald W. Thomas, "Small-town growth in the United States: An analysis by size class and by place", Demography (Chicago), 1966, vol. 3, No. 2, especially p. 525.

Elements of projection: structure and trend components

There has been much hesitation in the calculation of urban and rural population projections by simple methods, especially because they do not usually yield directly the corresponding sex-age structures, for which there is also much interest. It will be demonstrated in this manual that simple methods are quite adequate to the estimation of sex and age composition in projected urban and rural population totals. For good reasons, the use of simple methods deserves encouragement, at least for simple forecasting purposes.

In this manual it will be assumed that methods of projecting national populations by groups of sex and age are already known, and that such projections have in fact been carried out. The task, then, is that of projecting the urban and rural segments of a population with reference to the national projections already calculated. Only in the last chapter will urban and rural population projections be considered, from which a national projection is subsequently derived as the sum of the two. Elsewhere it is a matter of projecting only the urban (or rural) population and obtaining the corresponding rural (or urban) population as a result of subtraction from projected national totals.

As distinct from most national projections, migratory transfers are a major factor affecting both urban and rural population structures and growth. Additional complications result from the fact that net migration is a balance of in-migration and out-migration, in each of which the trend and composition can vary. Other rural-to-urban population transfers result without migration where previously rural territory is reclassified as urban, whether for administrative or other reasons. Births and deaths occur among migrants, and in reclassified areas, and the latter areas are also affected by migration. Methods taking all these involved demographic factors into account can become unduly complex, hence the need for more summary methods.

As has just been mentioned, urban and rural population changes are heavily affected by migration between these areas of residence, and such migration can fluctuate widely and rather unpredictably in both volume and structure. In the resulting projections the element of uncertainty can be so great that the numerical results are of a low order of reliability. "High" and "low" alternatives, accordingly, should also be calculated and should be set rather far apart. Since the margins of error will hardly be reduced by the employment of
elaborate methods, forecasts by simple methods are often quite sufficient. The frank use of simple methods has the further advantage that no illusion is generated as though the forecast could be precise. In fact, in many countries the use of elaborate methods is unwarranted because of the almost complete lack of detailed statistics bearing on the migration between urban and rural areas.

The matter is different, of course, when the projection is theoretical. Because of the nature of the arguments involved, precise (but not necessarily realistic) assumptions are then needed concerning each factor of urban and rural population change: fertility, mortality, migration and perhaps also the reclassification of previously rural areas as urban. The absolute numbers resulting in such a projection are of less significance, since attention is focused on the comparative results of alternatives. Uncertain or missing statistics may be substituted by reasoned assumptions, but the method of calculation must reflect the comparative dynamics of the particular factors under consideration.

PROJECTIONS SERVING AS FORECASTS AND PROJECTIONS OF MODELS

Population projections can be made for two kinds of purposes which are logically distinct. The purpose of most population projections is to provide, however roughly, a forecast. Such projections are calculated on the assumption of some reasonable continuation or modification of observed population trends, to indicate the approximate future population magnitudes to be taken into account so that human needs may be met in the various fields of economic and social policy where they have relevance. Implied in such projections is the assumption that population trends may change gradually but, barring catastrophic developments, not abruptly. Catastrophic future events are of course possible, but cannot be reasonably foreseen in ongoing policies and plans. Reasonable forecasts can orient the targets to be included in rational economic and social programmes and can sometimes also indicate priorities among those programmes.

Some projections, on the other hand, are of a more theoretical nature, and these are often referred to as “models”. These provide material for the discussion of the possible demographic consequences which might result from particular economic and social policies among which there is a choice. They may assist in arguing that the demographic consequences of one line of policy might be preferable to those of another, providing a scenario from which policy strategy can be debated, possibly leading to the selection, among alternatives, of the policy to be adopted.

Sometimes one set of projections is used for both purposes, as forecasts and as theoretical models, but care must then be taken to avoid fallacious reasoning because the nature of the argument differs in the two instances. In the forecast, the population trend is the independent variable from which certain economic and social implications may follow. In the theoretical projection, the population trends are assumed to be modifiable through economic and social action, hence a variety of economic and social policies may be contemplated in terms of their possible demographic consequences.

All projections which assume some continuation of past demographic trends, irrespective of any influence which other factors might exert on these trends, are also called “autonomous” projections. In contrast with these, there is one variety of theoretical population projections, namely the so-called “normative” projections, in which it is assumed that an already approved programme of national economic and social plans will be carried out with precision. The demographic consequences of the programme are then incorporated in the population projection. As the programme progresses, of course, targets may have to be modified on the basis of practical experience, and new demographic projections may then have to be computed in which the change of targets is also reflected. This manual is mostly concerned with “autonomous” projections.

Ideally, demographic, economic and social projections can be merged into one combined system where by means of computerized multiple feedbacks all possible interactions, causal as well as consequential, between modifiable demographic, economic and social conditions are dealt with simultaneously. For practical purposes, however, such a system will usually be too cumbersome and too unreliable, although it can constitute a precious conceptual exercise. In practice the nature of most of the interactions cannot be measured in isolation, and many missing statistical data will have to be substituted by guess-work whose combined errors can have cumulative effect. Because of those practical limitations of a more complete system, most population projections will remain of the forecasting variety, while some may be specialized for the illustration of possible demographic consequences of selected lines of economic and social action.

Whether serving as forecasts or for purposes of theoretical debate, the projections should be prepared in more than one alternative. The “medium” or, with momentary available knowledge, “best” forecast will probably err, and for purposes of safe planning the likely magnitude of the error will also have to be appreciated. This can be done by supplementing additional “high” and “low” forecasts whose possible future realization should not be cause for surprise. The theoretical projections will necessarily be calculated in several alternatives specified according to the nature of the argument for which illustration is being sought.

STRICTLY DEMOGRAPHIC PROJECTION TECHNIQUES

In the projection of urban and rural population, four types of methods can be distinguished, depending on the detail which enters the calculation, namely:

(a) Global methods; in these neither the sex-age composition of the population nor the component trends of urban and rural growth (fertility, mortality, migration and area reclassification) form part of the basic calculation;

(b) Composite methods: here, the calculation considers the sex-age composition of the urban and rural population, but not the separate effects of component trends (fertility, mortality, migration and area reclassification);
(c) Crude component methods: urban and rural trend components (fertility, mortality, migration and area reclassification) are considered separately, but not the sex-age composition of the population; and

(d) Cohort-survival methods, where use is made of the sex-age detail of the urban and rural population and the incidence of fertility, mortality and migration (and possibly area reclassification) by groups of sex and age.

The methods most often used are either of type (a) or type (d), sometimes described as "mathematical" and "demographic" methods, respectively. If so described, the methods of types (b) and (c) can be regarded as "mixed". To serve as forecasts, methods of types (a), (b) and (c) may be adequate, being comparatively simple. But if a theoretical model is required, the method will have to be of type (d), for only then can the precise effects of alternatives in fertility, mortality and migration trends upon the size and structure of the resulting populations be followed through. 12

The use of a logistic transformation is an important feature of this manual. In some of the methods of type (a) and (b), a logistic progression in the percentage of urban population is used in the projections. In direct calculations of percentage growth over time, it is expected that relative growth will be uneven for equal time periods: slow at first, then more rapid and finally slower. In other words, the rise in the percentage over time follows an S-shaped curve. However, it is difficult to determine systematically what rise in percentage should be expected in any given time period. With the logistic transformation of percentage figures, a reasonable pattern of percentage growth can be projected by assuming equal amounts of change in the transformed logistic values.

It will be noted that only methods (b) and (d) result directly in projections of population detailed by groups of sex and age. However, auxiliary methods can be employed, with fairly adequate results, permitting the estimation of the sex-age detail in projections calculated by methods (a) and (c). 13 As illustrated in chapter VIII of this manual, there are also some useful methods in which age groups of urban and rural population are used but the detailed growth components are disregarded. For instance, there is what one might call the "migration-survival method", most suitable if at least two censuses have been taken at an interval of five or ten years. In the rural population, identical cohorts change from one date to the other under the combined influence of mortality and net migration (including area reclassification), and one may project on the assumption that the combined effect of these two components (though they are not distinguished) may remain the same; as for children, one may assume that child-woman ratios remain the same (combined effect of fertility, mortality and migration). The urban population can be obtained by subtraction of the projected rural from the projected total population.

OTHER TECHNIQUES RELEVANT TO THE PROJECTION OF URBAN AND RURAL POPULATION

Except for the last chapter, where the comparison of theoretical projections is envisaged, this manual is confined to "autonomous" demographic techniques. In these it is assumed that urban and rural populations will continue to grow and change on the basis of an inherent demographic momentum as measured in actual observations. Unless a large amount of geographic detail is sought, the corresponding calculations are not very complex and can be calculated with simple mechanical equipment. As the manual is intended largely (though not entirely) for application in less developed countries, where electronic computer facilities are not always available, it has not been carried to an advanced level of complexity. True, the methods here shown, if they are to be applied to numerous subcategories (e.g. urban population in each of numerous provinces and so on) may be advantageously adapted to computer programmes.

It is fully recognized, however, that methods of projecting urban and rural population are not thereby exhausted. Depending on special conditions, other methods such as those listed below may sometimes be more advantageous. It is certainly true that urbanization is interrelated with social and economic factors, though these can be numerous and also interrelated with each other.

In special instances, population growth can be closely dependent on one predominant function and should therefore be projected in relation to that function. This may be especially the case with residential suburbs where a given amount of housing capacity can be foreseen and where it is most reasonable to link future numbers of the population to the foreseen dwelling space. Similarly the population of a new mining town or town dominated by one major industry may develop in proportion to foreseen employment in that basic industry; it is then reasonable to multiply the foreseen basic employment with additional employments in complementary services and numbers of dependents in relation to the combined numbers of workers who presumably will be employed. At the national level or in large and industrially diversified cities, urban populations will also be influenced by economic and social changes. But the large city or the combined urban population of the entire country exercise more numerous functions than can easily be taken into account in a simple calculation. A simplification is then needed to establish a possible relationship between

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anticipated national development and the corresponding urbanization trends.

**Paired projections**

In instances where a projection exists of a variable known to be correlated with urbanization, projections can be made of future urban and rural population by assuming some constant multiplier or difference relationship between the level of urbanization and the correlated variable.\(^{14}\) Similar results could be obtained by using regression equations.\(^{15}\) The accuracy of such population projections depends on two factors:

(a) **The accuracy of the projection of the correlated variable.** Here it must be noted that although accurate population projections are difficult to make, the future behaviour of correlated economic variables may be even more uncertain. Population growth and distribution tend to be more constrained by biological and traditional factors which change rather slowly by comparison with the more volatile economic conditions.

(b) **The degree of correlation between urbanization and the paired variable.** Correlations with urbanization ranging between .70 and .87 have been observed in various studies for the following variables: males in non-agricultural activities, males in transport and communications, life expectancy, fertility, school enrollment, per capita consumption of energy from commercial sources, motor vehicles registered per capita, daily newspaper circulation per 1,000 inhabitants.\(^{16}\)

\(^{14}\) Probably the variable most often paired with the level of urbanization is the proportion of the labour force in agriculture. In this approach, the rural population is implicitly estimated from the agricultural labour force and the urban population is obtained as a residual. For instance, in certain projections of urban and rural population in several Latin America countries a constant absolute difference was assumed between the proportion of the total labour force in agriculture and the proportion of total population in rural areas. This assumption was based on an examination of a time series of United States census data which showed that, although the proportion of rural had fallen from 92.8 per cent in 1820 to 43.8 per cent in 1930 and the proportion of labour force in agriculture had fallen from 71.8 per cent to 21.4 per cent, still the difference between the two variables at each decade had remained almost constant at about 21 or 22 percentage points. See Human Resources of Central America, Panama and Mexico, 1930-1980, in Relation to Some Aspects of Economic Development (United Nations publication, Sales No. 60.XIII.1), p. 37. Again in a projection of urban and rural population in the Philippines, it was assumed that the proportion of the population living in rural areas would decrease by the same ratio (from 65 per cent in 1957 to 56.5 per cent in 1977) as the decrease in labour force engaged in agriculture and related activities (from 59 per cent in 1957 to 51 per cent in 1977). See Population Growth and Manpower in the Philippines (United Nations publication, Sales No. 61.XIII.2), p. 12.

\(^{15}\) See, for example, regression techniques for projecting economically active population used in various studies described in *Manual V: Methods of Projecting the Economically Active Population* (United Nations publication, Sales No. E.70.XIII.2), pp. 22-34. But the regression approach has seldom been used so far to project urban and rural population.


It must be noted, however, that even the highest of these correlations, .87, explains only about three-fourths of the variance, and .70 would explain only about half of the variance. Moreover, the variables correlated with urbanization are often more highly correlated with one another than with urbanization.\(^{17}\) So that rather little additional explained variance should be expected from a multiple regression approach.

Even though paired projections alone should be used with caution, they can still serve a useful function by providing a check on autonomous demographic projections for what can happen at least demographically may be constrained by environmental limitations, both economic and spatial. It would be desirable from the point of view of economic and social as well as demographic projections to assemble and analyse the entire correlation matrix of the many interdependent variables so that the reactions of the individual variables and combinations of variables upon each other could be evaluated.

**Computerized projections**

Economy-based population projections can be calculated without explicit consideration of probable changes in demographic trend components, provided that the assumption can safely be made that the population required for urban economic growth will be drawn to urban areas without exhausting its source of supply in the rural areas. However, changes in fertility and mortality are likely to modify the ratio of dependants in each household. Also female labour force participation may be affected.\(^{18}\)

In projections of urban and rural population for numerous regions in the Soviet Union, explicit account was taken of fertility and mortality which were considered separately for urban and rural areas. The models were based on a projection technique which has been in use in the Soviet Union since the first five-year economic development plan. The volume of migration was determined by the planning agencies on the basis of plans for the distribution of productive forces and manpower.\(^{19}\) In its present detail, the method is very labour-consuming. For example, to estimate the population of a particular territorial unit twenty years ahead under such headings as urban and rural population, male and female population and so on, taking migration into account, it is necessary, with 2,000 items of basic data, to perform over 100,000 calculations.\(^{20}\) However, with the use of computers such methods can now be used with considerable detail, which was not possible previously.

\(^{17}\) Population Bulletin of the United Nations, No. 7 (United Nations publication, Sales No. 64.XIII.2), pp. 145-147.


\(^{20}\) A. F. Pobedina, *op. cit.*
Léon Tabah has described a computer model based on survival ratios which produces simultaneously projections with cross-classifications of population by sex, age, economically active and inactive, and urban and rural areas. 21

Geographic projections

Anticipated area reclassifications can become difficult to introduce into the calculations of certain urban population projections. At least one detailed attempt has been made by Jerome P. Pickard, using his own definition of “urban regions” which are subject to geographic expansion. The definitions include the rural population expected to fall within the transportation, communications and market networks of the expanding city-dominated areas. Pickard projects not only future population of urban regions, but also the number of square miles that will be contained within these areas at future dates. A map area computer was used in this work as well as census map records and enumeration books for the United States going back to 1920. 22

Even without detailed geographic information, it is possible to arrive at approximations of the amount of land which will come under urban settlement in the future. The simplest approach would be to project the future density of total urban population or of a particular city and to calculate the amount of land that would be necessary to accommodate the projected urban population at the projected density. 23 In places where improvements in transportation are expected, it is often reasonable to assume a future decrease in density. 24 However, in cases where heavy in-migration is expected the density may increase. There is also the possibility that spatial merging of two or more formerly separate urban areas will alter the average density. There could even be an agricultural limitation if the urban agglomeration spreads so far that it becomes difficult for the inner city population to be supplied with perishable foodstuffs and consequently the expected returns to agricultural uses of the land exceed the expected returns to urban uses. On the other hand, where cities grow by merger with other cities, there may remain pockets of agricultural land area within the legal city limits. For this reason, the United States Bureau of the Census has designated certain cities as “extended cities”, and in the 1970 census figures both an urban and a rural population are shown for such cities. 25 Since conditions in different places may vary greatly, no generalized methods can as yet be proposed. 26

Organization of this Manual

This manual, being developed by the United Nations Secretariat, naturally favours those methods of projection of urban and rural population which it has found most useful in some of its own work. For its own purposes, the United Nations requires methods having widest international applicability, including those countries for which statistical documentation is only scant. These methods may be too crude for some countries and too refined for others since available statistics and actual conditions vary widely from one country to another. The user of this manual is encouraged to make his own adaptations, which, according to judgment, may seem indicated in the case of his particular country. While, in these methods, extensive use is made of a logistic-scale curve (tabulated in annex I), the use can be flexible, permitting accelerations and slow-downs which might sometimes be reasonably expected. Reasons for the use of such a curve are discussed in chapter III. No less important than the particular schemes of calculation are problems of definition and formulation of suitable assumptions. The first three chapters accordingly deal with the clarification of some basic concepts.

Simple methods for projections of urban and rural populations (relative to national population totals) are discussed in chapter IV; the United Nations method is introduced in chapter V; and its extension to mutually consistent projections for individual cities is illustrated in chapter VI. The simple application of the United Nations method is facilitated by the logistic model tabulated in annex I.

All these are global methods of type (a), but they need not be limited to population totals. The consistent estimation of sex-age composition is always possible, whether by conventional methods (chapter VII, section A) or by an extension of the United Nations method (chapter VII, section B); methods of types (b) and (c) may

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23 Such an approach was taken in Department of the Environment, Long-Term Population Distribution in Great Britain—A Study: Report by an Interdepartmental Study Group (London, Her Majesty’s Stationary Office, 1971).

24 Kingsley Davis, “Conceptual aspects of urban projections in developing countries”, in United Nations, Proceedings of the World Population Conference 1965 (United Nations publication, Sales No. 66.XIII.11), pp. 61-65. Davis found, in a long-run study of the San Francisco Bay Area, that the population rose from 364,000 in 1890 to 3,217,000 in 1960, but the over-all density declined from 5,643 to 2,501 per square mile, because the territory expanded at a faster pace than the population. Reference is made in the article to a book which he published with Eleanor Langlois, entitled Future Demographic Growth of the San Francisco Bay Area (Berkeleys University of California, 1963).


26 Kingsley Davis lists several types of criteria which could be used in evaluating which area units should be included within the boundaries of metropolitan areas. See his “Conceptual aspects of urban projections in developing countries” in Proceedings of the World Population Conference 1965 (United Nations publication, Sales No. 66.XIII.7), vol. III, pp. 61-65. Even more numerous criteria have been used on occasion in the efforts of the United States Bureau of the Census to delineate the contours of metropolitan areas. See United States Bureau of the Census, United States Census of Population: 1960 (Washington, D.C.: United States Government Printing Office, 1961), vol. I, part A, p. xxiv.
nevertheless often be preferable, and these are reviewed briefly in chapter VIII.

Chapter IX, finally, introduces the more detailed model of urban and rural population change by demographic components corresponding to the method of type (d), which may not be necessary for population forecasts, but is indispensable for comparative theoretical projections. A table of survival ratios ($P_x$) of model life tables for five-year age groups and five-year intervals of time is provided in annex II for use in this model.

The manual is designed for a variety of needs. As the discussions in chapters I through IV are largely preliminary, those readers who need only a simple method for projecting urban and rural totals which yields at least reasonably useful results under a wide variety of circumstances may wish to move directly to chapter V. Chapter VII explains simple methods for adding sex and age detail to these projections. Chapter VI tells how individual cities may be projected. Both chapters IV and VI are relevant also in the case of a small country most or all of whose urban population is that of one city. Finally, those readers who require component methods of varying complexity may move directly to the last two chapters of the manual.