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SOUTH PACIFIC COMMISSION

SECOND REGIONAL MEETING OF POPULATION CENSUS PLANNERS

Noumea, New Caledonia, 17 - 21 September 1979

Noumea, New Caledonia  
September 1979.

LIST OF PAPERS PRESENTED AT THE MEETING

- SPC/2 Census Plan./WP.1 Birth Notification Scheme in the Solomon Islands - Dr. Sheila Macrae, Demographer, P.O. Box 55, Bairiki, Kiribati.
- WP.2 Measuring Economic Activity, with Special Attention to Problems of Transition from Non-monetary to Monetary Economic Activities - H. Max Barton, Statistician, United Nations Development Advisory Team for the Pacific, P.O. Box 694, Suva, Fiji.
- WP.3 Census Questions on Internal Migration: Some Issues arising from Analysis of Data Collected in the 1973 Census of the Gilbert and Ellice Islands Colony - John Wilson & Dr. Richard Bedford, Geography Department, University of Canterbury, Christchurch, New Zealand.
- WP.4 One-Visit versus Two-Visit Enumeration - Drs. Ko Groenewegen, Demographer, South Pacific Commission.
- WP.5 Socio-Economic Statistics Unit - SPC Paper.
- WP.6 Reprints of Selected Census Forms, 1974-79 Censuses in the South Pacific.
- WP.7\* SPC Statistical Bulletin, Population 1978.
- WP.8 Activities of the Economic and Social Commission for Asia and the Pacific in the Field of Population Censuses - ESCAP, Sala Santitham, Rajadamnern Avenue, Bangkok 2, Thailand.
- WP.9 Census Questions for Fertility and Mortality Estimations - Drs. Ko Groenewegen, Demographer, South Pacific Commission.
- WP.10 Measuring Economic Activity, with Special Attention to Problems of Transition from Non-Monetary to Monetary Economic Activities - Dr. Peter Pirie, East-West Population Institute, East-West Center, Honolulu, Hawaii. 96848.
- WP.11 Urban-Rural Classification for Census Purposes - Peter Hodgkinson, 3 East Terrace, Hawthorndene, South Australia, 5051, Australia.
- WP.12 De Facto versus De Jure Approach - the Situation in New Zealand - Ron Nelson, New Zealand Department of Statistics, Wellington, New Zealand.
- WP.13 Portraying Household Relationships - the Situation in New Zealand - Ron Nelson, New Zealand Department of Statistics, Wellington, New Zealand.

Report to the Demographer,  
South Pacific Commission,  
Noumea, New Caledonia.

CENSUS QUESTIONS ON INTERNAL MIGRATION:  
 SOME ISSUES ARISING FROM ANALYSIS OF  
 DATA COLLECTED IN THE 1973 CENSUS OF  
 THE GILBERT AND ELLICE ISLANDS COLONY.

John Wilson  
 and  
 Richard Bedford

August 1979

In June 1979 a draft of an agenda for the Second Regional Meeting of Population Planners, scheduled to be held in Noumea between 17 and 21 September, was circulated for comment. One item concerned questionnaire design, and I suggested that a useful topic for discussion under this heading would be the content of questions asked to elicit information on internal migration. During the 1970s there has been some experimentation in the Pacific with different combinations of questions dealing with population movement. Published census data remain unsatisfactory, however, both from the point of view of analysing the patterns and composition of migrant flows, as well as for gaining a better understanding of the implications of internal migration for socio-economic change in rural and urban areas.

In response to this suggestion the Demographer at the South Pacific Commission, Drs K. Groenewegen, requested a short working paper for circulation at the September meeting. John Wilson, a graduate student in geography at the University of Canterbury, was in the process of completing a very detailed examination of census data generated by a series of questions on migration asked for the first time in a Pacific enumeration, and it was decided to submit his conclusions to the meeting. The following report is drawn, therefore, from Wilson's M.Sc. dissertation entitled Internal migration in the Gilbert and Ellice Islands Colony. An analysis of the 1973 census data. For those interested in a very comprehensive treatment of various conceptual issues associated with definition of internal migration, and an exhaustive analysis of the migration data generated by the 1973 census, copies of the dissertation have been sent to the following:

Government of Kiribati, Tarawa.  
 Government of Tuvalu, Funafuti.  
 South Pacific Commission (SPC), Noumea.  
 Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM), Noumea.  
 Institute of Applied Social and Economic Research (IASER), Port Moresby.  
 East-West Population Institute, Honolulu.  
 University of Hawaii at Manoa, Honolulu.  
 University of the South Pacific, Fiji.  
 University of Papua New Guinea, Port Moresby.  
 Australian National University, Canberra.  
 University of Auckland, New Zealand.  
 Massey University, Palmerston North.  
 Victoria University, Wellington.  
 University of Canterbury, Christchurch.

Department of Geography,  
 University of Canterbury.

Richard Bedford  
 31 August 1979.

(The Authors: John Wilson, a geography student at the University of Canterbury when he completed an M.Sc. thesis on internal migration in the former Gilbert and Ellice Islands Colony, is now undertaking post-graduate studies at the University of Toronto. Richard Bedford is a Senior Lecturer in Geography at the University of Canterbury.)

In the United Nations Manual on Methods of Measuring Internal Migration it is stated that 'census data have been and still are the major source of information on internal migration in most countries of the world', and that 'until the time when more countries are able to set up efficient systems of population registration, it is likely that censuses will remain the best source of such information' (United Nations 1970, 3). Over the past 15 years there has been a fuller realisation of the potential of censuses for the collection of data on internal migration. Direct questions on this process have been asked in census enumerations in more than 100 countries around the world. Unfortunately, there has not been the expected increase in our knowledge and understanding of migration arising from inclusion of these questions.

This report examines a number of issues associated with the collection of information on population movement in national censuses. A case study of the 1973 enumeration in the former Gilbert and Ellice Islands Colony reviews recent innovations in data collection on internal migration in Pacific censuses. A final section contains some suggestions concerning the content and utility of census questions on migration.

#### BASIC ISSUES

The most fundamental question is whether it is relevant to collect data specifically related to the migration process in a census enumeration in the first place. Resolving this issue is essentially the job of the planner rather than the academic, although it is obvious that population movement is a very important process affecting socio-economic development in most Third World countries. The following comment by Goldstein and Goldstein (1978, 19), in the specific context of Thailand, has much wider relevance:

To the extent that migration is both a major force in the redistribution of population in less developed countries and particularly in urban growth, and to the extent that migrants can potentially contribute both to the exacerbation of urban problems and the alleviation or compounding of rural problems (depending on the particular local situation, and the characteristics of the migrants), more attention must be given to the character of migration itself, and to its impact on places of origin and destination. The ability to categorise migrants in terms of recency of movement and to ascertain whether migrants have a history of repeated movement, which may include return movement, can add significantly to an assessment of the migration process and to the ways in which migration can affect urban and rural development.

The basic premise adopted here is that if questions are to be asked about a particular process, then the census should be organised to acquire information which meets certain minimum standards of acceptability. The United Nations (1970, 23) outlines two basic considerations which are relevant here: adequacy of the data for migration analysis and accuracy of the responses. The question of accuracy is referred to later in the report.

It is very difficult to test for the adequacy of data on population movement due to the complexity of the migration process itself. Most reviews of census data, including that by the United Nations (1970), carefully avoid making any definitive statements about adequacy. For example, it has been argued that:

The adequacy of data must be evaluated on the basis of a set of standards acceptable from the point of view of migration analysis. A desirable minimum requirement is that the data be available for reasonably small areal units and that they provide statistics of total in-migration, total out-migration, and net migration for each unit. In addition, it should be possible to show for each areal unit how much of the in-migration came from each of the other areal units in the country and how much of the out-migration went to each of the other areal units. (United Nations 1970, 23).

This statement raises more questions to do with adequacy than it answers. How are acceptable standards determined? What are reasonably small areal units? Why are certain data on total and net flows to and from regions necessarily important in all cases?

The basic weakness with this sort of approach is that no reference is made to the concept of migration for which an 'acceptable set of standards' is being established. Data derived from a census cannot be assessed in terms of its adequacy unless the user has some understanding of the process that is being measured. In this regard the following observation by Goldstein (1978, 13) is a timely one:

... even the most comprehensive data will yield only limited results without extensive rethinking of our basic concepts of migration and population movement. Although it is tempting to do so, we must be particularly careful not to generalize too freely to the less developed countries the migration and urbanisation experience of the more developed regions.

An extensive review of the concept of migration by Wilson (1979) revealed that critical definitional issues tend to be ignored by most planners and researchers. In order to give some meaning to the term 'migration', the process must be identified in terms of certain maximum and minimum limits along a continuum which incorporates all forms of spatial mobility. Unlike the other demographic processes, it is very difficult to define migration in a manner which has applicability in a wide range of spatial, temporal and cultural contexts. There is neither a biological referent for nor any inherent uniformity in population movement.

Resolving problems associated with delimiting the migration concept and identifying migration types are a basic introduction to any analysis of this process. Plunging into the study of population movement without systematic clarification of such fundamental issues is hazardous analytically and unacceptable from a methodological point of view. In the final analysis, it is this conceptual notion of what constitutes migration that underlies the elusive 'acceptable set of standards' referred to by the United Nations in their Manual on Methods of Measuring Internal Migration.

#### THE GEIC CENSUS, 1973: A REVIEW

Planners of the 1973 enumeration in the Gilbert and Ellice Islands Colony were among the first in the Pacific to heed the suggestion by various United Nations agencies that more questions on migration be included in censuses (ECAFE 1968, United Nations 1967 and 1970). In previous Colony censuses information on two localities, home island and island of enumeration, had been cross-tabulated to generate data on population movement. The 1973 census included questions on two additional localities - islands of usual residence in 1968 and 1973.

With respect to the provision of data for analysis of migration, the 1973 census compares very favourably with earlier enumerations (McArthur and McCaig 1964, Zwart and Groenewegen 1970) as well as recent censuses undertaken in other parts of the Pacific (Groenewegen 1979). The extra questions on islands of usual residence in 1968 and 1973 made it possible to assess, for the first time, something of the importance of return and repeat movements which have emerged as significant dimensions of internal migration in detailed village case studies throughout the Pacific. Roughly one in three migrants in the Gilbert and Ellice Islands were identified as multiple movers, with approximately even numbers constituting return and repeat migrants.

In a number of ways, however, these data proved inadequate for meaningful analysis of internal migration in the Colony. A detailed examination of definitional issues, spatial patterns of movement, and differentials between migrants and non-migrants (Wilson 1979) revealed five major weaknesses of the census questions:

- (1) a failure to distinguish between 'rural' north and 'urban' south Tarawa in all the migration questions;
- (2) failure to adopt the most appropriate spatial scales;
- (3) failure to include foreigners resident in the Colony in a meaningful manner;
- (4) use of the home island reference point to identify migrant's geographic origins; and
- (5) the failure to derive questions which avoided omission of moves within specified time periods.

Implications of these weaknesses and some possible improvements to the census questions are discussed in turn. Initially it is assumed that similar sorts of questions as those contained in the 1973 enumeration are to be asked in a subsequent census.<sup>1</sup> This assumption is relaxed in the final section of the report.

As far as the first limitation is concerned, a sharp distinction can be drawn in terms of socio-economic circumstances between the urban area of south Tarawa and the remainder of the Gilbert and Ellice groups. This distinction, in itself, constitutes a major explanation for internal migration. Unfortunately the urban south is only differentiated from rural north Tarawa in the coding scheme for island of enumeration. Failure to code these two areas separately for the other three reference points (home island and islands of usual residence 1968 and 1973) prevented a thorough examination of rural-urban migration streams and differentials in the Colony. This problem could be overcome easily without creating new questions or any substantial increase in the census enumerator's workload. The instruction with regard to places of usual residence in earlier years needs only to be altered to distinguish between the two parts of the island.

1 It is realised that this has not occurred. In the 1978 enumerations undertaken separately by Kiribati and Tuvalu very different questions were asked. These are not reviewed here, although it can be noted that as far as generating data on internal migration is concerned, the new questions are less satisfactory from conceptual and analytical standpoints than their 1973 predecessors.

Choice of an appropriate spatial scale is crucial to the collection of adequate data on migration, irrespective of the questions asked or the accuracy of replies (Goldstein 1978). In the case of the 1973 census, the minimum spatial unit for which data on population movement are available is the island. Information contained in detailed socio-economic surveys of selected islands in the Gilbert and Ellice groups in the early 1970s suggests that the village would constitute a more appropriate spatial unit for the study of migration on the larger islands (Chambers 1975, Geddes 1975, Sewell 1975, Lawrence 1977, Watters 1977). If the basic conceptual distinction between movement that constitutes 'migration' and that which does not is taken to be relocation of a person's activity system<sup>2</sup> then it is obvious from analysis of the distribution of employment opportunities and basic social services such as schools and hospitals on larger islands that inter-village migration is quite feasible.

In the area under discussion, the scale problem can be overcome simply by substituting villages for islands in the questions asking about former residence places or reference points. On some islands moves which did not involve the relocation of individuals' activity systems could be included in the resultant data on population movement. However villages can be aggregated into larger spatial units where required at the tabulation and processing stage. Adoption of the village spatial unit would render superfluous the need to distinguish between north and south Tarawa at the enumeration stage and make for more consistent questions and responses.

As far as the third weakness is concerned, it should be noted that the 1973 census generated no information on the internal migratory behaviour of foreigners enumerated in the Colony. Such individuals tend to have an influence on political and economic changes which far outweigh their numerical strength. Rather than just obtaining information on their countries of origin (the approach adopted in 1973), a preferable strategy would be to collect the same sort of data that are requested for the indigenous population.

There are no clear-cut solutions to the fourth and fifth weaknesses outlined above, although a variety of options can be proposed. The Gilbert and Ellice Islands Colony was one of the few countries in the Pacific to retain the 'home' island reference point in the 1970s to record a persons' geographic origin. Zwart and Groenewegen (1970, 58-9) discuss the relative merits of the home island reference point and the most commonly used alternative, place of birth. They correctly note that an individual's place of birth is, in theory anyway, fixed for life, whereas a person may change his home island at any time. A large part of the remarkable history of population movement to and from Kuria in the Central Gilberts, for example, can be attributed to changes in conception of home islands (Zwart and Groenewegen 1970, 60-61). However their statement that home island 'is often identical with island of birth' is not applicable for a significant proportion of the contemporary population. Wilson (1979) has demonstrated clearly that use of this reference point in a migration analysis results in 'hypothetical' moves for many children, since they are assigned to the home islands of their parents, even if they have never visited such islands themselves. A home island question may be justified for other reasons, since it has a bearing on a large number of social and economic circumstances,

2 See Wilson (1979, 14-30) for a critical review of the concept of migration.

3 See Groenewegen (1979) for a review of questions asked in censuses undertaken throughout the region during the 1970s.

but serious conceptual problems arise when it is used as a basic frame of reference for analysis of population movement.

As already noted, most Pacific countries have adopted a birthplace question. Inclusion of this reference point in census schedules was highly recommended by the United Nations (1967 and 1970). It was assumed that a birthplace question would be answered accurately, because normally the place where a person is born is well-known to those close to him and becomes fixed in his mind. There is still scope for inadequate data, however, due to:

- (1) non-response, because birthplace is not known,
- (2) the incidence of 'delivery' migration, when mothers return to their parental home or travel to a distant hospital for childbirth,
- (3) deliberate mis-specification, for political or prestige reasons, and
- (4) boundary perception, for example where a birthplace is absorbed by urban growth.

Of these only 'delivery' migration has been identified as being important in the Pacific region.<sup>4</sup> Where this occurs, birthplace per se cannot give an accurate indication of young children's geographic origins. Such movement behaviour does not appear to have been very prevalent in the Gilbert and Ellice Islands Colony in recent years, at least at an inter-island scale, although Zwart and Groenewegen (1970) did refer to avoidance of this conceptual problem in their discussion of the home island alternative. At the island spatial scale, then, place of birth is probably a more accurate indication of an individual's geographic origin in the Gilbert and Ellice Islands today than home island.

If a village spatial unit were adopted, however, the situation could be rather different. 'Delivery' migration appears to be widespread on an inter-village basis, reflecting the spatial concentration of medical services in one particular village on most islands. In this case, place of usual residence of the mother would provide the most satisfactory reference point even though it may be difficult to define if neither parent is available to answer the question. Overall it would probably give the most accurate indication of individuals' geographic origins at the village spatial scale.

Perhaps the most significant weakness of the 1973 census data was the inevitable failure to identify a considerable amount of repeat and return migration. A comparison between the migration behaviour of Tuvaluans enumerated on Nanumea in the census with work experiences of adults interviewed there in 1973 by Chambers (1975) revealed that the census questions failed to identify many two-way moves. In the case of movements during the intercensal period, 1968-1973, this was a serious omission. The census cannot provide adequate data on contemporary migration behaviour unless it captures a significant share of the relevant movement. Various alternatives can be suggested to reduce the volume of movement omitted. The first involves replacing the two place of usual residence questions with a pair to elicit information on duration of residence and place of last residence. The existing 'usual residence' questions are more likely to be answered inaccurately, since it is reasonable to assume that people will have greater difficulty recalling where they were living at some arbitrary date in the past

than where they were living previously and/or duration of their present stay. However, any advantages duration of residence and place of last residence have in terms of accuracy are outweighed by their analytical implications. These two questions do not provide a uniform temporal reference and it is difficult, therefore, to compute meaningful intercensal migration rates and to compare results in successive censuses. Most significantly, their substitution for the usual residence questions will not generate more information on migration.

Another alternative involves supplementing the two place of usual residence questions spanning the intercensal period with a question which refers to moves during the interval. Another place of usual residence question referring, say, to the mid-period year is not very desirable. Although such a question would identify some of the intra-period moves, it merely divides the interval without giving any indication of how many moves are still missed, or identifying migrants who have not made any intermediate moves. A similar, but much better, option would be to ask the two questions on place of last residence and duration of present residence in addition to the two usual residence questions. This would ensure that a distinction could be drawn between all the migrants who had moved once during the interval and those who had moved more than once. It would also give some indication of the temporal scale relevant to third and subsequent moves if any. Where a person had lived at their current residence longer than the five years spanned by the place of usual residence questions, additional information would also be forthcoming where place of last residence and home island did not coincide: some indication of intermediate moves in the period before the previous enumeration may also be obtained.

The most preferable option of all involves supplementing the two usual residence questions with an open-ended question asking people to write down all their places of residence (with relevant dates) for the intercensal period. This option would necessitate the collection of recent migration histories. Although there would be few ways to check the accuracy of responses, and the analytical and tabulation requirements would be greatly extended, recent exploratory work with life history data by Perlman (1976) and Lauro (1977) suggest the numerous methodological problems are not insurmountable.

#### SOME WIDER IMPLICATIONS

In the discussion so far the aim has been to develop a census strategy which would generate data to realise a situation whereby all moves which involve relocation of an individual's activity system are incorporated in the concept of internal migration, and all others are excluded. Various combinations of questions have been suggested to achieve this objective: adoption of the village as the basic reference point, inclusion of foreign-born in all migration questions, substitution of mother's place of usual residence for home island, and the addition of an open-ended question asking people to state when and where they have lived during the intercensal period.

These suggestions were not assessed in the context of the entire census exercise however, and some wider implications of the questions are considered here. Many of the suggestions involve adding new questions to the census schedule, and almost all of them would require elaborate data processing to realise the more useful information on population movement. Censuses are very costly exercises to undertake. Enumeration and processing costs make it desirable to keep the number of questions on a census schedule down to

4 See, for example, McArthur and Yaxley (1968) and Lodhia (1978).

a minimum. Nevertheless, if it is considered desirable to collect information on a particular process in the first place, then sufficient questions should be included to ensure that this information is adequate, accurate, and above all, relevant to the needs of planners who constitute the most important users of census data. Otherwise it can be argued that collection of the information involves a waste of valuable financial resources and schedule space. The wider implications of these considerations for census enumerations in the Gilbert and Ellice Islands can be explored by examining the time span over which questions on migration should be asked.

#### Every five years

Since 1963, censuses have been held every five years in this area, and up until 1973 questions on migration were asked in every census. The alternatives suggested earlier argue for inclusion of one or two additional migration questions if useful data on population movement are to be generated. Consistent with comments on length of schedule and costs of enumeration and processing, a decision would have to be made either to lengthen the schedule or to drop questions on other subjects. Repeating the questions asked in 1973 with the modifications outlined above every five years will realise a considerable volume of cross-sectional data on migration during five year periods, but the scope for ongoing analysis is very limited. A real danger here is that differences found in the cross-sectional information may reflect data differences as well as changes in movement behaviour. The possibility will be enhanced where return migration is significant if the return migrants spend longer than five years away from their home islands at just one place, because their original moves and subsequent return moves will be recorded in successive censuses.<sup>5</sup>

There seems to be little justification for repeating questions of the kind asked in 1973 every five years unless up-to-date information on migration is required, and the census information can be processed and analysed at least before the next enumeration. Regrettably there are usually long delays between enumeration and publication of results. However, if individuals could be identified in the census data from one census to the next, then a strong case for repeating the same questions every five years could be made. In this situation every individual would have a code number which would be used at each census. Successive censuses would add to the collection of complete migration histories for persons who had not attained the age of five when the first such enumeration was undertaken. For older members of the population, the histories would only refer to the latter part of their lives.

Such a strategy is unlikely to be adopted in the foreseeable future, because of the strict confidentiality requirements embodied in legislation covering census enumerations. It is worthwhile noting however that it would eradicate any need for population registers, which the United Nations (1970, 3) for example, regard as the most preferred source of data on migration. Indeed in some cases, such as dispersed archipelagos, the census strategy outlined above may generate more adequate and accurate data much more cheaply than a continuous population register programme.

5 For example, if return migration suddenly diminished in importance then successive censuses may record increasing net flows in favour of these migrants' home islands. These flows could reflect the return of migrants who left during earlier census periods, as opposed to a change in the perceived attractiveness of these islands as migrant destinations during the current period being examined.

#### Every 10 years

Because censuses are very expensive to run, the situation whereby enumerations are undertaken every five years may well change now that Kiribati and Tuvalu have obtained independence. The governments may decide to follow a number of other Pacific countries and hold enumerations every 10 years. A decennial census would involve asking selected questions on migration for the preceding ten year period. This could be organised in two five yearly blocks which were delimited by place of usual residence questions which ask for peoples' residences 10, 5, and 0 years ago.

A number of factors which should be taken account of in setting the length of the interval are outlined by the United Nations (1970):

- (1) the need for the interval to be long enough to permit accumulation of enough relatively permanent period moves so that the analyst can detect prevailing patterns of migration and can depend on finding numerical frequencies that are reasonably free from chance variations, and
- (2) the need to consider effective recall (including the likely accuracy of responses), as well as the census data age distribution and attrition due to mortality.

Serious doubts can be raised about the accuracy of answers to census questions on previous residence over a decade. A significant proportion of a population which is very mobile may have difficulty in recalling place of usual residence 10 years ago. Also, if an open ended question was used to record residence places and dates of residence in the intercensal period problems with effective recall (i.e. omission and/or incorrect information about residences) could be expected especially for the first five years. Having regard to all these factors, the United Nations (1970, 19) conclude that an interval of five years is probably the most useful.

#### A compromise

Both of the options outlined so far have a number of disadvantages. Adequate migration questions, administered every five years, would cost a great deal of money, and would necessitate a much greater commitment to data processing and analysis. Balancing problems with the latter against the advantages of more useful data probably tips the scale against this strategy. Questions spanning a 10 year cycle can be dismissed because of the serious conceptual and analytical limitations. However a compromise is possible. A strong case can be made for asking for information on migration in every second five year census enumeration, or alternatively for the latter five years in every ten year enumeration, so long as the best possible combinations of questions are chosen. In the case of the Gilbert and Ellice Islands this could be equivalent to deriving migration history data for five yearly periods every decade.

Such a strategy would provide census data on migration which could be supplemented by information gained in the intervening years from other sources such as detailed mobility studies using localised prospective mobility register and migration history approaches. These methods for collecting data offer greater flexibility than the national census enumeration, and can be tailored to provide answers for specific queries through adjustment of the temporal and spatial domains over which they are undertaken. Census data on population movement, however, provides an

invaluable source of bench-mark data for these small-scale intensive studies.

One of the most frequent drawbacks of recent censuses is a lack of consistency in questions. This must be avoided if meaningful analysis of the migration process is to be undertaken over time. Those responsible for devising census schedules should endeavour to select questions which meet rigorous conceptual criteria. In this regard, the following comment from the United Nations Manual on the Measurement of Internal Migration provides an appropriate conclusion:

In assessing the potential value of these different approaches, it should be kept in mind that the desire to confine the inquiry on migration status to a single question should not be allowed to outweigh considerations of quality and usefulness of the results. (United Nations, 1970, 23).

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