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**DISAGGREGATION OF URBAN POPULATIONS
INTO MODERN AND TRADITIONAL CATEGORIES:
A METHODOLOGICAL NOTE AND APPLICATION
TO VENEZUELA**

V.S. Badari

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- Population Growth and Economic Development: Background and Guide*, James P. Bennett, Stephen Enke, Revised Edition, June 1971 (71TMP- Revised).

PREFACE

This paper considers methods for using available census and other economic and demographic data to disaggregate urban populations of developing countries into two parts: "modern" urban and "traditional" urban. Since these modern urban and traditional urban populations generally differ significantly in economic and demographic characteristics, their disaggregation is important to the analysis of the implications of different economic and demographic policies of developing countries. As such, the present work is a useful supplement to other economic-demographic analyses being done at TEMPO.

The paper was written by Mr. V.S. Badari. Dr. William E. McFarland provided many helpful suggestions. Professor Donald J. O'Hara of the University of Rochester and Professor Bruce H. Herrick of the University of California at Los Angeles reviewed an earlier draft of the paper and made useful comments. Other assistance was provided by Dr. David N. Holmes.

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SECTION 1

INTRODUCTION

The economic-demographic models developed at TEMPO are simple and convenient tools for analyzing the implications of different demographic assumptions for the economic development of a less-developed country (LDC).^{*} The models, however, have highly aggregated population sectors; the least aggregated model has but two sectors, rural and urban.[†]

The rural and urban sectors are a reasonable first step in population disaggregation, since data are usually available for rural and urban areas separately and the two populations generally differ significantly in demographic and economic characteristics. However, the urban population in most LDCs is not homogeneous; the existence of a "modern" sector (characterized by "low" fertility and "high" productivity) and a "traditional" sector (characterized by "high" fertility and "low" productivity) side by side in urban areas is well recognized. Thus in examining economic, demographic, and policy factors it is relevant to further disaggregate the urban population into "modern" and "traditional" sectors, using generally available data. In this paper a methodology is developed for this purpose and is applied to Venezuela as an illustration.

Section 2 briefly describes the methodology and contains a chart indicating the main steps followed. Section 3 explains the methodology in detail, taking Venezuela as an illustrative example. Section 4 discusses some alternative methods of disaggregation of the urban population and presents a critical evaluation of these methods. Section 5 summarizes the study results.

^{*}See, for example, James P. Bennett, Richard A. Brown, and William E. McFarland, *Description of the Economic-Demographic Model*, General Electric-TEMPO, 68TMP-120, Revised Edition, June 1971; and also William E. McFarland, James P. Bennett, and Richard A. Brown, *Description of the TEMPO II Budget Allocation and Human Resources Model*, General Electric-TEMPO, GE73TMP-13, April 1973.

[†]Other TEMPO-type models are being developed in Venezuela and Colombia, with urban populations further disaggregated.

SECTION 2

BRIEF DESCRIPTION OF THE METHODOLOGY

Data, particularly demographic data, are not generally available to divide urban populations into two segments with distinct demographic and economic characteristics. Also, demographic characteristics and economic characteristics may not produce identical divisions of the population, although they overlap to a large extent. For instance, population segments with higher education and income usually have lower fertility than those with less education and income. Therefore, suitable criteria must be developed to best differentiate the two segments of urban population with respect to both economic and demographic characteristics.

Usually censuses classify the labor force by occupation and occupation subgroups. These subgroups of occupations can be used for classification purposes by assuming that the labor force within each subgroup is homogeneous with respect to demographic and economic characteristics.* Usually the labor force data are also classified by education level. Using proportion educated (ie, those who have completed primary education) within an occupation subgroup as the criterion of classification for the subgroup, the urban male labor force in different occupation subgroups can be classified into "modern," "traditional," and "intermediate" categories as follows:

If the proportion educated for a subgroup is significantly higher than that for all occupation groups, the subgroup is classified as "modern." If, on the other hand, the proportion is much less than that for all occupation groups, the subgroup is classified as "traditional."† The remaining subgroups are considered to be "intermediate." However, because only two categories—modern and traditional—are considered in the urban labor force disaggregation, the labor force in the intermediate category is distributed in equal proportions to the modern and traditional categories.

*The assumption is reasonable because persons with the same type of work and consequently, about the same productivity, are included under the same occupation group. Secondly, available studies indicate significant differentials in fertility by occupation.

†Since education and fertility are, in general, inversely associated, those subgroups having a higher proportion of "educated" are likely to have lower fertility than other subgroups. Thus the classification seems to satisfy the definition of modern and traditional sectors proposed earlier. The occupations with a greater proportion educated are, of course, assumed to be more productive.

After classifying the urban male labor force into modern and traditional categories, the corresponding male population in the working ages for the two categories can be estimated by applying the urban male age-specific activity rates. The corresponding female population is then estimated by applying the sex ratio in different working age groups for the modern urban and traditional urban sectors.* The population of the nonworking age groups is then obtained by the use of appropriate stable populations.

The stable populations corresponding to the modern urban and traditional urban populations can be identified by comparison of proportionate age distributions of similar populations. An alternative method is to estimate the GRR (gross reproduction rate) of the modern urban and traditional urban populations and then obtain the corresponding stable populations, using an assumed value of e^0 (life expectancy at birth). The GRR of the two populations can be estimated using the available data on fertility (eg, data on children ever born, GRR for urban and rural areas, and occupational differentials in fertility) and assuming that the fertility of the traditional urban population is the same as that of the rural population.

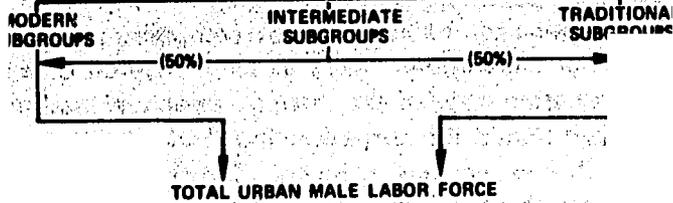
Figure 1 indicates the main steps in the methodology.

*Here the activity rates and sex ratios in different age groups are assumed to be the same for the modern and traditional sectors. The validity of the assumption is discussed later.

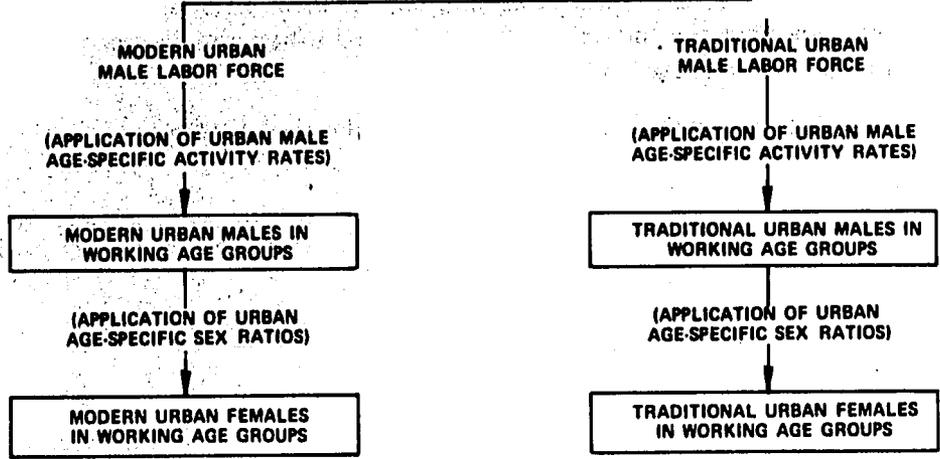
MALE OCCUPATION SUBGROUPS

STEP I

(APPLICATION OF EDUCATION CRITERION)



STEP II



STEP III

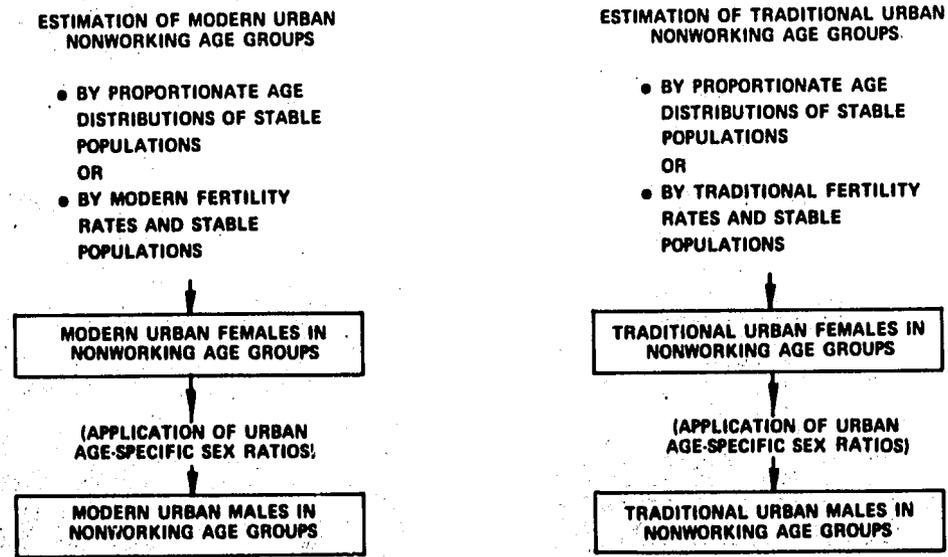


Figure 1. Main steps in the methodology.

SECTION 3

DETAILED METHODOLOGY AND APPLICATION TO VENEZUELA

DISAGGREGATION OF THE URBAN MALE LABOR FORCE

Separate data on the male labor force classified by subgroups of occupation and according to education level are not available for urban areas of Venezuela. However, data for the country as a whole are available from the 1961 census and have been used to classify the occupation subgroups into modern, traditional, and intermediate categories. The classification of the occupation subgroups is based on the percentage educated in those subgroups. Those who completed primary education, ie, 6 or more years of schooling, are considered as "educated." By this criterion, 19 percent of the total male labor force is educated. A subgroup is classified as "modern" if the percentage of males educated in the subgroup is 29 or more, "traditional" if the percentage is 14 or less, or "intermediate" if the percentage lies between 14 and 29.* The classification thus obtained of the occupation subgroups is presented in Appendix A, Table 1, which is extracted from Appendix A for illustration, shows the subgroups of Occupation Group IV (Sales Workers) classified into the three categories.

Applying the classification of occupation subgroups arrived at in Appendix A, the urban male labor force (classified by subgroups of occupation) is divided into modern, traditional, and intermediate categories. Since only two labor force categories—modern and traditional—are considered, the intermediate category is distributed in equal proportions to the other two categories. The urban male labor force thus classified by modern/traditional categories and by occupation is presented in Table 2.

ESTIMATING WORKING AGE MODERN AND TRADITIONAL URBAN POPULATIONS

The next step is to estimate the male population in the working ages corresponding to the male labor force obtained for the modern and traditional urban categories. This requires the age distribution of the male labor force and the activity rates by age. If available, the age distribution for the male labor force in different occupations could be obtained by assuming that it is the same

*The cutoff points determining the traditional and modern categories are obtained by leaving a margin (arbitrarily chosen) of 5 percentage points below and 10 percentage points above 19 percent (percentage educated for all occupation groups) respectively. In determining the cutoff points, care is taken not to classify those occupations requiring nonmanual skills as traditional and those which are essentially manual in nature as modern.

Table 1. Subgroups of Occupation Group IV (sales workers) classified into "modern," "traditional," and "intermediate" categories, Venezuela, 1961.

Occupation Group	Modern Subgroup	Intermediate Subgroup	Traditional Subgroup
IV. Sales workers	IV(3) Traveling agents, representatives and commission agents (59.3) ^a	IV(1) Sales workers and shop assistants in commercial establishments (24.7) ^a	IV(2) Street vendors (14.0) ^a
	IV(4) Agents and brokers of goods and services (67.8) ^a	IV(5) Other sales workers (28.0) ^a (n.s.c.) ^b	

Notes:
^aPercentage of educated males (i.e., those who completed at least primary education) in the subgroup.
^b(n.s.c.) - Not elsewhere classified.

Source: Appendix A

Table 2. Economically active males 10 years and over in urban areas classified by occupation and modern/traditional categories, Venezuela, 1961.

Occupation Group	Total ^a (Urban ^b & Rural)	Total Urban ^b		Modern Urban ^c		Traditional Urban	
		Number ^d	Percent of Total	Number ^d	Percent of Total Urban	Number ^d	Percent of Total Urban
I. Professional, technical, and related workers	63,745	59,695	94	59,695	100	-	-
II. Managerial, administrative, and executive workers	29,798	28,436	95	28,436	100	-	-
III. Clerical workers	102,262	98,734	97	98,734	100	-	-
IV. Sales workers	208,740	184,398	88	91,457	49	92,941	51
V. Farmers, herdsmen, fishermen, hunters, loggers, and related workers	736,127	189,781	23	-	-	189,781	100
VI. Miners, quarrymen, and related workers	17,987	15,225	85	12,499	82	2,726	18
VII. Transport and communication workers	149,240	136,209	91	64,208	47	72,003	53
VIII. Craftsmen and operatives in manufacturing	341,707	315,123	92	132,790	42	182,333	58
IX. Other craftsmen and operatives	47,860	43,428	91	7,576	17	35,852	83
X. Service, sport, and recreation workers	96,925	90,601	93	37,036	41	53,565	59
XI. Workers not classified by occupation	118,363	105,425	89	32,497	31	72,928	69
XII. Persons seeking work for the first time	18,667	13,655	82	6,827	50	6,828	50
Total economically active males	1,929,421	1,260,690	65	571,753	45	688,937	55

Notes:
^aFrom República de Venezuela, Dirección General de Estadística y Censos Nacionales, *Noveno censo general de población, 1961, resumen general de la república, partes B y C, cuadro 9-población económicamente activa de 10 años y más, clasificado por sub-grupos de ocupación, según áreas (Caracas, 1967)*, pp 481-484.

^b"Urban" includes "Área Urbana" and "Área Intermedia."

^cBased on classification of occupation subgroups given in Appendix A and the data (on economically active males in urban areas classified by subgroups of occupation) cited in Note a.

^dIncludes 50 percent of the labor force classified as "intermediats."

for both categories as for the total urban sector. However, since the age distribution is not available for Venezuelan urban areas, the distribution of the male labor force in different occupations for the country as a whole was used to obtain the age breakdown for the modern and traditional urban categories given in Table 2.* The age distribution of the urban male labor force given in Table 3 was then obtained by adding the modern and traditional components for each age group. The age-specific activity rates for urban males were worked out using this distribution and the age distribution of urban males as obtained from the census.† The activity rates thus obtained were applied to the modern and traditional urban sectors to estimate the male population in the working ages for the two sectors. Using the urban sex ratios in different age groups (obtained from the census), the corresponding female population in the working ages was estimated for the two sectors (see Table 4). It may be noted that the estimates obtained for the age range 20-64 only are taken into account because the assumption that the activity rates are the same for the two sectors can be expected to be more valid for this age range (where the rates are above 90 percent, in general, for any population).‡ The modern urban and traditional urban populations thus estimated by sex and age group for the age range 20-64 are presented in rows 6, 7, 9, and 10 of Table 4.

ESTIMATING YOUNGER AND OLDER MODERN AND TRADITIONAL URBAN POPULATIONS

The population in the younger and older age groups (0-19 and 65 and over) for the modern and traditional sectors is estimated by the use of appropriate stable populations.§ This requires identification of the stable populations corresponding to the modern and traditional urban populations. The following alternative methods of identification can be used:

Comparison of proportionate age distributions of populations with similar characteristics

Estimating the GRR of modern and traditional urban populations and using an assumed value of life expectancy at birth.

Comparison of Similar Populations

This method consists in first choosing a few stable populations considered plausible on the basis of the available information on the expectation of life at birth, growth rate, birth rate, etc, for the country, and then identifying the stable population having the proportionate age distribution (in the age range

*See Appendix B for percentage distribution (by age group) of economically active males in different occupations for Venezuela in 1961.

†The activity rates could be obtained directly if the age distribution of the urban male labor force were available from the census. But since the latter is not available, the rates had to be estimated indirectly.

‡See United Nations, *Demographic Aspects of Manpower* (New York, 1962), p. 12.

§The stable populations can be obtained from Ansley J. Coale and Paul Demeny, *Regional Model Life Tables and Stable Populations* (Princeton, N.J.: Princeton University Press, 1966).

Table 3. Economically active males in urban areas^a classified by age and modern/traditional categories, Venezuela, 1961.

Category	Age Groups								Total Age 10+
	10-14	15-19	20-24	25-29	30-34	35-44	45-64	65 and Over	
Modern urban^b									
Number	6,639	48,335	91,007	94,096	92,350	124,220	103,905	11,201	571,753
% of total	(1.2)	(8.5)	(15.9)	(16.4)	(16.1)	(21.7)	(18.2)	(2.0)	(100.0)
Traditional urban^b									
Number	21,858	76,930	109,009	102,337	95,759	134,827	130,337	18,080	688,937
% of total	(3.1)	(11.2)	(15.8)	(14.9)	(13.9)	(19.6)	(18.9)	(2.6)	(100.0)
Total urban	28,297	125,265	200,016	196,433	188,109	259,047	234,242	29,281	1,260,690
Notes:									
^a "Urban" includes "Area Urbana" and "Area Intermedia."									
^b Obtained by applying the percentage age distribution of economically active urban and rural males in different occupation groups given in Appendix B to the totals of economically active males in different occupation groups given in Table 2 for the modern urban and traditional urban categories, and computing the total for each age group.									

Table 4. Estimates of modern and traditional urban populations^a in the age range 20-64, Venezuela, 1961.

	Age Group				
	20-24	25-29	30-34	35-44	45-64
Economically active males					
Modern urban ^b (1)	91,007	94,096	92,350	124,220	103,905
Traditional urban ^b (2)	109,009	102,337	95,759	134,827	130,337
Total urban (3) [= (1)+(2)]	200,016	196,433	188,109	259,047	234,242
Males urban ^c (4)	222,860	204,272	194,165	267,676	256,334
Activity rate (percent) for urban males ^d (5) [= (3)÷(4)]	89.7	96.2	96.9	96.8	91.4
Males					
Modern urban (6) [= (1)÷(5)]	101,401	97,851	95,323	128,358	113,705
Traditional urban (7) [= (2)÷(5)]	121,459	106,421	98,842	139,318	142,629
Sex ratio (urban) ^{c,d} (8)	100.646	105.418	112.699	108.808	93.727
Females urban^c					
Modern urban (9) [= (6)÷(8) x 100]	100,750	92,822	84,582	117,967	121,315
Traditional urban (10) [= (7)÷(8) x 100]	120,678	100,951	87,703	128,040	152,174
Notes:					
^a "Urban" includes "Área Urbana" and "Área Intermedia"					
^b Taken from Table 3.					
^c Obtained from República de Venezuela, Dirección General de Estadística y Censos Nacionales, <u>Noveno censo general de población, 1961, resumen general de la república, partes B y C, Características Generales, cuadro 4-población total clasificada por edad según áreas y sexo (Caracas, 1967), pp 292-295.</u>					
^d Activity rates and sex ratios for different age groups are assumed to be the same for "modern urban" and "traditional urban" populations.					

20-64) closest to that of the population under study (modern urban females, for example). A major limitation of this method is that the age distribution of the study population may have been affected by rural-urban migration and the appropriate stable population may not be identified.

Estimating the GRR of the Modern and Traditional Urban Populations

An alternative method is to estimate the GRR (gross reproduction rate) of the modern urban and traditional urban populations and then obtain the corresponding stable populations, using an assumed value of e_0^o (life expectancy at birth). The GRR can be estimated, using the available data on fertility, by either of two approaches, one based on urban-rural differentials and the other on occupational differentials.

Using Urban-Rural Differentials. For Venezuela, data on children ever born per 1000 women are available for the rural areas and for the country as a whole for 1961.* The GRR of Venezuela is also known.† Assuming that the GRR of the rural population and the GRR of Venezuela are in the same ratio as the number of children ever born (per 1000 women aged 50 and over) of the respective populations, the GRR of the rural population is estimated as

$$GRR_r \approx \left(\frac{CEB_r}{CEB_c} \right) \cdot GRR_c \quad (1)$$

where the subscripts r and c stand for rural and country (Venezuela) respectively, and CEB = children ever born per 1000 women aged 50 and over. Thus

$$GRR_r \approx \left(\frac{5057}{4625} \right) \cdot 3.1 = 3.4$$

Assuming that the rural population and the traditional urban population have the same GRR, an estimate of GRR of the modern urban population can be obtained using the formula‡

$$\left[\frac{A}{(A+B)} \right] \cdot GRR_{mu} + \left[\frac{B}{(A+B)} \right] \cdot GRR_{tu=r} \approx GRR_c \quad (2)$$

where A = number of modern urban females in the age range 20-44, and B = number of traditional urban and rural females in the age range 20-44; and mu , tu , r , and c stand for modern urban, traditional urban, rural, and country respectively. The values of A and B can be obtained from Table 4 and the census. These are 396,121 and 768,120 respectively, while $GRR_{tu} (=GRR_r)$ has already been estimated as 3.4. Thus,

$$\left(\frac{396,121}{1,164,241} \right) GRR_{mu} + \left(\frac{768,120}{1,164,241} \right) \cdot 3.4 \approx 3.1$$

therefore,

$$GRR_{mu} \approx 2.5$$

*See Maria Davidson, "Some Demographic and Social Correlates of Fertility in Venezuela," *Estadística*, Vol XXVII, No. 105, December 1969, pp 590-592.

†GRR for Venezuela in 1960 was 3.1; see United Nations, *Population Bulletin No. 7*, New York, 1963, p 75.

‡Expressed in words, the formula states that the GRR of the country is approximately given by the weighted average of the GRR's of the modern urban, traditional urban and rural populations, the weights being proportionate to the number of females in the reproductive ages of the respective populations.

Using Occupational Differentials. The GRR of the modern and traditional urban populations can also be estimated using data from a study of Caracas on occupational differentials in fertility. The data are on children ever born to women classified according to the occupational status of husband (see Appendix C). The occupations are also classified as manual and nonmanual, which may be taken to roughly correspond to the traditional and modern categories respectively. The average number of children ever born for the four nonmanual occupations is 3.0, and the average for the two manual occupations is 4.0. Assuming that the ratio between the two averages (ie, 3:4) is indicative of the fertility differential between the modern urban and traditional urban populations, the GRR's required can be estimated. In other words, assuming that the GRR of the modern urban population is $3x$ and the GRR of the traditional urban population is $4x$, x can be determined from equation (2). As before, it is assumed that the rural population and the traditional urban population have the same GRR. Thus $x = 0.847$, and therefore $3x = 2.5$ and $4x = 3.4$. That is, the estimated values of GRR for the modern urban and traditional urban populations are 2.5 and 3.4 respectively. Interestingly, these estimates are the same as the ones arrived at by the urban-rural differential approach.

Having obtained the GRR for the two populations, the size of the younger and older (nonworking) age groups can be estimated. The life expectancy at birth is taken as 67.5 years for the two populations (modern urban and traditional urban).^{*} Applying the stable age distribution (Model West-Females) corresponding to $e_0^o = 67.5$ and $GRR = 2.5$, and using the 20-64 age group obtained earlier, the modern urban female population in the younger and older age groups (0-19 and 65 and over) is obtained. Similarly the younger and older age groups of the traditional urban female population are obtained using the stable age distribution corresponding to $e_0^o = 67.5$ and $GRR = 3.4$. These age groups are then prorated so that the sum of the modern and traditional categories equals the census total of urban females for each age group (see Table 5). The corresponding male population in the age groups 0-19 and 65 and over for the modern and traditional urban sectors is then obtained by applying the urban sex ratios in different age groups (see Table 6). The results are presented in Table 7, giving the 1961 urban population of Venezuela by age and sex and classified by modern and traditional categories. The table shows that about 43 percent of the urban population belongs to the modern sector and the rest to the traditional sector.

^{*}Since e_0^o for Venezuela in 1961 was 66.41 years (see United Nations *Demographic Yearbook, 1970*), a slightly higher value (67.5 years) is assumed for urban areas. The assumption appears reasonable because, generally speaking, in urban areas the standard of living is higher and medical facilities are better than in rural areas.

Table 5. Estimation of the modern and traditional urban female population in age groups 0-19 and 65 and over, Venezuela, 1961.

Age Group	Percent in Stable Population ^a	Percent in Stable Population ^b	Females (before proration)		Females Total Urban ^d	Females (after proration)	
			Modern Urban ^c	Traditional Urban ^c		Modern Urban ^e	Traditional Urban ^e
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4	16.04	19.99	187,479	311,856	434,011	162,953	271,058
5-9	13.70	16.13	160,128	251,637	369,834	143,822	226,012
10-14	11.78	13.11	137,687	204,524	299,809	120,627	179,182
15-19	10.12	10.65	118,284	166,146	242,755	100,953	141,802
20-64	44.27	37.79	517,436	589,546	1,106,982	517,436	589,546
65+	4.09	2.33	47,805	36,349	82,143	46,663	35,480
Total	100.00	100.00	1,168,819	1,560,058	2,535,534	1,092,454	1,443,080

Notes:

^aCorresponds to $e_0^0 = 67.5$, $GRR(29) = 2.5$, Model West-Females, from Ansley J. Coale and Paul Demeny, Regional Model Life Tables and Stable Populations, Princeton University Press, 1966, p 112.

^bCorresponds to $e_0^0 = 67.5$, $GRR(29) = 3.4$, Model West-Females, op cit.

^cAge group 20-64 obtained from Table 4. Totals for columns (3) and (4) based on corresponding estimates for 20-64 age group and percentages in columns (1) and (2) respectively for the same age group. Age groups 0-19 and 65+ in columns (3) and (4) computed using the totals for columns (3) and (4) and the corresponding percentages in columns (1) and (2) respectively.

^dCensus figures (see Table 4).

^eObtained by prorating the figures in columns (3) and (4) of each age group, so that their sum equals the census total for the age group given in column (5).

Table 6. Estimation of the modern and traditional urban male population in age groups 0-19 and 65 and over, Venezuela, 1961.

Age Group	Females ^a		Sex Ratio ^b (urban)	Males	
	Modern Urban	Traditional Urban		Modern Urban ^c	Traditional Urban ^d
	(1)	(2)	(3)	(4)	(5)
0-4	162,953	271,058	103.288	168,312	279,972
5-9	143,822	226,012	101.652	146,198	229,747
10-14	120,627	179,182	97.351	117,431	174,435
15-19	100,953	141,802	93.591	94,483	132,715
65+	46,663	35,480	60.518	28,239	21,472

Notes:

^aFrom Table 5.

^bComputed from República de Venezuela, Dirección General de Estadística y Censos Nacionales, Noveno censo general de población, 1961, resumen general de la república, partes B y C, Características Generales cuadro 4 (Caracas, 1967), pp 292-295.

^cColumn (1) x Column (3) ÷ 100.

^dColumn (2) x Column (3) ÷ 100.

Table 7. Urban population^a by age and sex classified according to modern and traditional categories, Venezuela, 1961.

Age Group	Males (urban)			Females (urban)		
	Total ^b	Modern ^c	Traditional ^c	Total ^b	Modern ^c	Traditional ^c
	(1)	(2)	(3)	(4)	(5)	(6)
0-4	448,284	168,312	279,972	434,011	162,953	271,058
5-9	375,945	146,198	229,747	369,834	143,822	226,012
10-14	291,866	117,431	174,435	299,809	120,627	179,182
15-19	227,198	94,483	132,715	242,755	100,953	141,802
20-24	222,860	101,401	121,459	221,428	100,750	120,678
25-29	204,272	97,851	106,421	193,773	92,822	100,951
30-34	194,165	95,323	98,842	172,285	84,582	87,703
35-44	267,676	128,358	139,318	246,007	117,967	128,040
45-64	256,334	113,705	142,629	273,489	121,315	152,174
65+	49,711	28,239	21,472	82,143	46,663	35,480
Total	2,538,311	1,091,301	1,447,010	2,535,534	1,092,454	1,443,080

Notes:

^a"Urban" includes "Area Urbana" and "Area Intermedia."

^bCensus figures.

^cObtained from Tables 4, 5, and 6.

SECTION 4

ALTERNATIVE METHODS

A methodology has been proposed for disaggregation of the urban population into modern and traditional categories, using data on labor force classified by subgroups of occupation. This approach may be called the "occupation approach." In this section two alternative approaches, the "industry approach" and the "education approach," are considered.

INDUSTRY APPROACH

One might use the industrial classification of workers for a modern and traditional division of the urban population. Those industry categories with high capital-labor ratio (and hence, high productivity in general) may be assumed to belong to the modern sector and the remaining to the traditional sector. According to this approach, certain categories like "government services" (which are not capital-intensive) will be classified as traditional although their productivity may not be low. Secondly, workers in a particular industry are not homogeneous. For example, the construction industry includes workers at the managerial level as well as laborers; the two categories usually differ significantly in educational attainment, productivity and demographic characteristics, and it may not be appropriate to classify them together under one sector or the other. Thus the approach does not appear to satisfy the classification requirements of this study.

EDUCATION APPROACH

As an alternative, one might consider education as a criterion of classification. Generally speaking, the productivity of the educated is higher and their fertility lower, when compared to the uneducated, and therefore the classification based on education appears reasonable. The population in the working ages may be divided into educated and uneducated categories, to correspond to the modern and traditional sectors respectively. The population in the non-working ages for the two sectors can be obtained by the use of stable populations as in the case of the occupation approach.

In order to provide a rough comparison, the urban male labor force (classified by occupation) of Venezuela is divided into modern and traditional categories using the occupation and education approaches; the results are presented in Table 8. The urban male labor force classified as modern is only 26 percent according to the education approach, while it is 45 percent according to the occupation approach. The disparity between the two is evident in respect of

Table 8. Economically active urban males 10 years and over classified by occupation and modern/traditional categories using "occupation" and "education" approaches, Venezuela, 1961.^a

Occupation Group	Total Urban ^c	Occupation Approach ^c		Education Approach	
		Modern Urban	Traditional Urban	Modern Urban ^d	Traditional Urban
	(1)	(2)	(3)	(4)	(5) = (1) - (4)
I Professional, technical, and related workers	59,695	59,695	-	44,808	14,887
II Managerial, administrative, and executive workers	28,436	28,436	-	15,914	12,522
III Clerical workers	98,734	98,734	-	62,700	36,034
IV Sales workers	184,398	91,457	92,941	49,655	134,743
V Farmers, herdsmen, fishermen, hunters, loggers, and related workers	169,761	-	169,761	3,451	166,310
VI Miners, quarrymen, and related workers	15,225	12,499	2,726	4,091	11,134
VII Transport and communication workers	136,209	64,206	72,003	27,380	108,829
VIII Craftsmen and operatives in manufacturing	315,123	132,790	182,333	68,450	246,673
IX Other craftsmen and operatives	43,428	7,576	35,852	6,648	36,780
X Service, sport, and recreation workers	90,601	37,036	53,565	20,493	70,108
XI Workers not classified by occupation	106,425	32,497	72,928	22,384	83,041
XII Persons seeking work for the first time	13,655	6,827	6,828	3,591	10,064
Total economically active males	1,260,690	571,753	688,937	329,565	931,125
Percent ()	(100)	(45)	(55)	(26)	(74)

Notes:
^a"Urban" includes "Area Urbana" and "Area Intermedia."
^bThose who completed at least primary education are considered as "educated."
^cObtained from Table 2.
^dThe number of educated males (urban) in different occupation categories is estimated on the basis of the proportion educated among the economically active males (rural and urban) in the various occupation subgroups. The latter are computed from República de Venezuela, Dirección General de Estadística y Censos Nacionales, *Noveno censo general de población, 1961, resumen general de la república, partes B y C* (Caracas, 1967), cuadro 30. The urban male labor force (i.e., economically active males) in different occupation subgroups is obtained from República de Venezuela, Dirección General de Estadística y Censos Nacionales, *op cit*, cuadro 9.

individual occupation categories too; in most of the cases, the education approach classifies fewer persons as modern. This is because the education approach classifies only the educated within an occupation subgroup as modern, whereas the occupation approach classifies the entire subgroup as modern, traditional, or intermediate (using proportion educated in the subgroup as the criterion). In other words, the former approach uses education to identify the *person* who is modern; the latter approach uses education to identify the *occupation* that is modern. According to the occupation approach, all those belonging to a "modern" occupation are modern, although some of them may be uneducated. Thus, for instance, the occupation approach classifies all those belonging to the occupation groups I (Professional, etc) and II (Managerial, etc) as modern, whereas with the education approach, only 75 percent of group I and 56 percent of group II are classified as modern.

It may be noted that the education approach has a weakness: the level of education considered necessary to regard a person as "educated" affects the classification. The lower the level, the larger will be the modern sector. The occupation approach, however, does not suffer from this weakness, as it considers relative (instead of absolute) educational attainment of various occupation subgroups for the classification.

The foregoing discussion clearly brings out that the occupation approach is preferable to the industry approach and the education approach. Further, the results obtained by the occupation approach are consistent with those of the CEVEPOF/TEMPO Study* carried out in Venezuela, which classifies total workers (in 1967) into four categories, viz, Professional, Technical, Skilled, and Unskilled.† According to the latter study, 59 percent of the total workers (excluding agriculture) are unskilled.‡ In other words, to the extent that "total workers excluding agriculture" can be considered as a proxy for "urban workers and "unskilled" as a proxy for "traditional," this result compares favorably with the present estimate that 55 percent of the urban male labor force is traditional

*Centro Venezolano de Población y Familia y General Electric TEMPO, *Informe del estudio económico demográfico sobre Venezuela mediante el uso de modelos matemáticos* (Plan del estudio y ciertos resultados preliminares), Caracas, 1972 (Unpublished).

† See Appendix D for the definition of categories.

‡ Obtained from data given in Appendix E (Workers classified by Sectors and Levels of Skill).

SECTION 5

SUMMARY AND CONCLUSIONS

In this paper a methodology for disaggregation of the urban population has been developed using the occupation approach. The methodology has been applied to Venezuela for illustration. The paper demonstrates that the modern and traditional sectors of the urban population can be identified using data that are usually available in the censuses of LDCs.

Some alternative approaches for disaggregation of the urban population have also been discussed. A comparison of the education and occupation approaches shows that the modern sector accounts for about 26 percent of the urban male labor force of Venezuela according to the education approach and 45 percent according to the occupation approach. Although these figures differ they provide a possible range for the proportion that is modern.

The occupation approach seems preferable to the industry approach and the education approach in view of the limitations of the latter brought out in Section 4. However, to reach definitive conclusions about the approaches may require conducting sample surveys to collect data on occupation, education, fertility, income, etc. The data may then be cross-tabulated to determine which of the approaches yields two segments of the urban population differing significantly with respect to income and fertility.

The fertility of the modern and traditional urban populations has also been estimated using two different methods which yielded identical GRR estimates of 2.5 for modern urban and 3.4 for traditional urban.

Stable age distributions have been employed to estimate the younger and older age groups of the modern and traditional urban populations. It should be recognized, however, that the age distribution of the urban population may deviate from that of a stable population due to migration and errors in age reporting, and use of stable populations may not be wholly satisfactory. Attempts should therefore be made to develop alternative methods (eg, using data on household composition, if available) to estimate the nonworking age groups.

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APPENDIX A
OCCUPATION SUBGROUPS CLASSIFIED INTO "MODERN," "TRADITIONAL,"
AND "INTERMEDIATE" CATEGORIES, VENEZUELA, 1961

Occupation Group	Classification Categories ^a		
	Modern	Intermediate	Traditional
I. Professional, technical, and related workers	All subgroups	-	-
II. Managerial, administrative, and executive workers	All subgroups	-	-
III. Clerical workers	All subgroups	-	-
IV. Sales workers	IV(3) Traveling agents, representatives, and commission agents IV(4) Agents and brokers of goods and services	IV(1) Sales workers and shop assistants in commercial establishments IV(5) Other sales workers (n.e.c.)	IV(2) Street vendors
V. Farmers, herdsmen, fishermen, hunters, loggers, and related workers	-	-	All subgroups
VI. Miners, quarrymen, and related workers	VI(4) Workers in oil fields	VI(6) Other miners (n.e.c.)	VI(1) Coal miners VI(2) Metal miners VI(3) Quarrymen VI(5) Nonmetal miners
VII. Transport and communication workers	VII(5) Air transport workers VII(6) Communication workers	VII(1) Drivers of motor vehicles on land VII(2) Railroad workers VII(4) Marine transport workers VII(8) Other transport workers (n.e.c.)	VII(3) Horse cart, pack mule, and hand-cart drivers VII(7) Other workers in transportation and storage
VIII. Craftsmen and operatives in manufacturing	VIII(2) Tailors, dressmakers, furriers, and related workers VIII(6) Electricians, cable installers, radio and TV repairmen, and related workers VIII(7) Mechanics, machine tool operators, and related workers VIII(8) Makers of precision equipment, watchmakers, jewelers, and related workers	VIII(1) Spinners, weavers, dyers and related workers VIII(3) Shoemakers and leather workers VIII(4) Carpenters, cabinet makers, coopers and related workers VIII(9) Operators of movable and stationary machines, shovel and crane operators, and related workers	VIII(5) Construction and metallurgical workers

Appendix A—continued

Occupation Group	Classification Categories ^a		
	Modern	Intermediate	Traditional
VIII. Craftsmen and operatives in manufacturing (continued)	VIII(10) Compositors, pressmen (in printing), lithographers, engravers, bookbinders, and related workers		
IX. Other craftsmen and operatives	IX(8) Operatives in the manufacture of machinery, electrical equipment and transport equipment	IX(1) Foundrymen, laminators, smiths, goldbeaters, and related workers IX(3) Chemical workers IX(7) Operatives in the manufacture of articles of paper IX(9) Filers, packers, labelers, and related workers IX(10) Other ops in the process of industrial production and other workers (n.e.c.)	IX(2) Potters, glass blowers, and related workers IX(4) Butchers, bakers, millers, brewers, and related workers IX(5) Cigar makers and other operatives in the tobacco elaboration ^b IX(6) Tanners, polishers, leather dressers, and related workers
X. Service, sport, and recreation workers	X(7) Sportmen and related workers X(8) Photographers and related workers	X(1) Workers of the protection services X(3) Laundry workers and dry cleaners X(4) Waiters, cooks, and related workers not employed in private households X(5) Barbers, hairdressers, and related workers X(9) Other service workers (n.e.c.)	X(2) Domestic servants ^b X(6) Porters, watchmen, elevator operators, and related workers
XI. Workers not classified by occupation	XI(1) Members of the Armed Forces (excluding civilians who work for the Armed Forces) XI(2) Diplomatic and foreign consular personnel, technical personnel, and personnel of foreign missions		XI(3) Occupations not declared and not well specified
XII. Persons seeking work for the first time		All groups	

Notes:

^aThe classification is based on the educational attainment of the urban and rural male labor force in various subgroups of occupations. If x denotes the percentage of those with completed primary education in the subgroup, then the subgroup is classified as "Modern" if $x \geq 29\%$; "Traditional" if $x \leq 14\%$; and "Intermediate" if $14\% < x < 29\%$. The average value of x for all occupation groups was found to be 19 percent. The data source for educational attainment is Republica de Venezuela, *Dirección General de Estadística y Censos Nacionales, Noveno censo general de población, 1961, resumen general de la república, partes B y C, cuadro 30 and cuadro 9 (Caracas, 1967), pp 481-486, 662-673.*

^bTwo exceptions, based on common observation, have been made to the classification criteria. The occupation subgroups IX(5) (ie, cigar makers and other operatives in the tobacco elaboration) and X(2) (ie, Domestic Servants) are included under the "Traditional" category although the value of x is slightly more than 14 percent.

APPENDIX B
PERCENT DISTRIBUTION BY AGE GROUP OF URBAN AND RURAL
ECONOMICALLY ACTIVE MALES IN DIFFERENT OCCUPATIONS,
VENEZUELA, 1961

Occupation Group	Age Group							
	10-14	15-19	20-24	25-29	30-34	35-44	45-64	65 and Over
I. Professional, technical, and related workers	0.5	3.7	14.2	18.6	19.6	24.6	16.8	2.0
II. Managerial, administrative, and executive workers	—	0.7	5.1	11.6	17.5	32.3	30.6	2.2
III. Clerical workers	0.4	9.3	21.3	18.4	15.7	18.4	14.8	1.7
IV. Sales workers	1.8	9.0	11.9	12.8	13.6	22.0	24.9	4.0
V. Farmers, herdsmen, fishermen, hunters, loggers, and related workers	7.8	13.2	12.5	11.1	10.0	17.2	23.4	4.8
VI. Miners, quarrymen, and related workers	0.2	2.2	9.3	16.1	20.2	30.5	20.8	0.7
VII. Transport and communication workers	0.3	4.4	13.1	19.4	21.2	26.1	14.8	0.7
VIII. Craftsmen and operatives in manufacturing	0.7	7.9	15.9	17.3	16.3	22.1	18.3	1.5
IX. Other craftsmen and operatives	1.4	13.1	19.8	17.5	14.5	18.1	14.2	1.4
X. Service, sport, and recreation workers	2.7	8.5	18.0	17.3	14.7	18.3	18.1	2.4
XI. Workers not classified by occupation	3.1	21.0	27.2	13.5	10.2	12.3	11.1	1.6
XII. Persons seeking work for the first time	15.2	58.0	21.6	3.8	1.4	—	—	—

Source: Computed from República de Venezuela, Dirección General de Estadística y Censos Nacionales, Noveno censo general de población, 1961, resumen general de la república, partes B y C, Table 11—Economically Active Population 10 years and over classified by occupation and age group (Caracas, 1967), pp 499-503.

APPENDIX C

**NUMBER OF WOMEN INTERVIEWED AND AVERAGE
NUMBER OF CHILDREN EVER BORN BY OCCUPATIONAL
STATUS OF THE HUSBAND, CARACAS, VENEZUELA, 1963**

Occupational Status of Husband	Number of Women Interviewed	Average Number of Children Ever Born
Executive and managerial positions	96	2.72
Liberal professions and high ad- ministrative positions	114	2.97
Higher occupations of super- vision and inspection	144	3.10
Lower occupations of supervision and inspection	168	3.14
Specialized manual occupations and routine nonmanual positions	673	3.71
Semispecialized or not spe- cialized manual occupations	176	4.32
Unknown	10	4.80
Total	1,381	3.52^a
<p>Notes: ^aWeighted average. Source: Universidad Central de Venezuela, <u>Estudio de Caracas, Volumen III, Ediciones de la Biblioteca, Caracas, 1969, p. 147.</u> (Original in Spanish.)</p>		

APPENDIX D
DEFINITION OF THE FOUR CATEGORIES
OF WORKERS USED IN THE
CEVEPOF/TEMPO STUDY

The four categories of workers used in the CEVEPOF/TEMPO study were derived from the same occupation groups I to XI used by Dirección General de Estadística y Censos Nacionales, namely:

- I Professional, technical, and related workers
- II Managerial, administrative, and executive workers
- III Clerical workers
- IV Sales workers
- V Farmers, herdsmen, fishermen, hunters, loggers, and related workers
- VI Miners, quarrymen, and related workers
- VII Transport and communication workers
- VIII Craftsmen and operatives in manufacturing
- IX Other craftsmen and operatives
- X Service, sport, and recreation workers
- XI Workers not classified by occupation.

The categories are Professional, Technical, Skilled, and Unskilled.

PROFESSIONAL

The category "professional" applies to persons in occupation groups I, II, and V who have completed university education. The persons classified as having university education in other occupation groups were excluded from the "professional" category since independent information indicated that they had not completed their studies.

TECHNICAL

This group consists of those with incomplete university education, plus persons in occupation groups I, II, and V classified under "other branches of education," plus all those with normal or technical education, plus those in occupation groups I and II with secondary education.

*From Centro Venezolano de Población y Familia y General Electric TEMPO, Informe del estudio económico demográfico sobre Venezuela mediante el uso de modelos matemáticos (Plan del estudio y cierto resultados preliminares), Caracas, 1972, pp. 195-203 (unpublished version in Spanish.)

SKILLED

This group includes persons from the remaining occupation groups classified under "other branches of education" and secondary education who were disqualified from the "technical" classification, plus those from occupation groups I, II, III, VIII, and IX who had 4 to 6 years of primary education.

UNSKILLED

This is the residual group. It consists of all those with primary education who did not qualify for the "skilled" classification, plus all illiterates.

APPENDIX E
WORKERS CLASSIFIED BY SECTORS AND LEVELS
OF SKILL, VENEZUELA, 1967^a

Skill Level^b	Agriculture	Petroleum and Mining	Industry	Construction	Electrical	Commerce	Transportation and Communication	Services
Professional	2,091	2,721	3,642	2,328	895	869	11,105	49,398
Technical	4,853	5,445	18,211	7,555	2,827	3,940	25,692	103,991
Skilled	74,670	19,179	160,253	46,553	21,095	32,821	113,166	114,801
Unskilled	<u>665,086</u>	<u>16,561</u>	<u>182,106</u>	<u>76,574</u>	<u>13,593</u>	<u>117,480</u>	<u>292,487</u>	<u>395,950</u>
Total	746,700	43,906	364,212	133,010	38,410	155,110	442,450	664,140

Notes:

^aFrom Centro Venezolano de Población y Familia y General Electric TEMPO, Informe del estudio económico demográfico sobre Venezuela mediante el uso de modelos matemáticos (Plan del estudio y ciertos resultados preliminares), Caracas, 1972, cuadro IV - 12, p 208 (unpublished version in Spanish).

^bSee Appendix D for definitions of "professional," "technical," "skilled," and "unskilled."

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