

MIGRATION STATUS, EDUCATION AND FERTILITY IN PUERTO RICO, 1960

JOHN J. MACISCO, JR.

LEON F. BOUVIER

AND

MARTHA JANE RENZI

The relation between migration and fertility has been the subject of numerous studies dating back to the early decades of the twentieth century.¹ Indeed, in 1938, Thomas commented:²

The relative fertility of migrants and nonmigrants, and the extent to which contraceptive practices are spread through the process of migration and return migration, is one of the focal points in the population field. Yet there have been no satisfactory published studies of the married fertility of migrants in comparison with nonmigrants, and such analyses as have been made fail to meet the minimum requirements of holding constant age of husband and wife, time of migration, length of residence, or type of community of origin and destination.

In addition to the points raised by Thomas, it is important to realize that the relation between migration and fertility cannot be analyzed independently of other socioeconomic variables that have traditionally been important factors in determining fertility behavior. Such characteristics as education of wife and husband, labor force activity, occupational status, family income—all these must be considered in developing a comprehensive statement on the relation between these two demographic variables.

In a number of populations the relation between education and fertility has been established. Data from the United States Census of 1940 and 1950 led Grabill to conclude that "The inverse relation of education to general cumulative fertility rates as well as to marital cumulative fertility rates still existed in 1951."³ The United States Census for 1960 indicates a similar relation. Commenting on this, Dinkel has written that "the more years of schooling that the woman has completed the lower her fertility."⁴ This phenomenon has been noted elsewhere. Stycos, for example, has remarked in reference to Puerto Rico that "Women with no education have had 3.3 times as many births as those with one or more years of college."⁵ In a recent article, Bouvier and Macisco concluded that, in Puerto Rico, increased education of both husband and wife leads to declining fertility.⁶

This report has shown that the education of both husband and wife is involved in determining fertility rates. Admittedly the woman's education is the more important factor, but within all categories fertility declines with the increased education of the husband.

Because an inverse relation has been noted between education and fertility the possibility of educationally selective migration must be explored. The question must be asked as to whether a given migration stream consists of lower class, poorly educated groups being "pushed" into an urban area in search of work, or of relatively educated groups aware of the limitations of their place of origin and being "pulled" by the advantages of the place of destination. Both types of selectivity have been noted in various parts of the world. Findings emerging largely from studies undertaken in the United States have shown that rural-urban migration is usually selective of the better-educated segments of the population.⁷ One study of educational selectivity in "less-developed" countries is Duccoff's study of migrant population in El Salvador. His conclusions differ from those drawn from data on the United States as he finds selection at both ends of the educational scale, "namely, a higher concentration among migrants of persons with very little schooling as well as of persons with high educational attainment."⁸

This study is limited to an analysis of migration and fertility in Puerto Rico. Although the Commonwealth has been the subject of numerous demographic projects over the past 20 years, little has been done in the particular field of migration and fertility. Myers and Morris have shown that migration is associated with fertility throughout the childbearing period for Puerto Rican women. They conclude, however, that although their "analysis provides convincing evidence . . . other confounding elements may be present." One such element questioned is, "Would the findings be substantiated if adequate controls for socio-economic levels and educational status were introduced?"⁹ The present report is an attempt to contribute an answer to this question. More precisely, does education modify the relation between migration and fertility?

THE DATA

This study is based on special tabulations of the 25 per cent sample of ever-married, spouse-present women derived from the 1960 Census of the Commonwealth of Puerto Rico. Through the cooperation of both the United States Bureau of the Census and the Puerto Rico Planning Board it was possible to generate cross-tabulations that allowed analyses of migrants and nonmigrants with reference to their fertility behavior. These tabulations included data on education that could serve as a control variable in determining the relation between migration and fertility. Two groups were considered in this study: the nonmigrants residing in the San Juan Standard Metropolitan Statistical Area in both 1955 and 1960, and the migrants to San Juan who indicated a nonmetropolitan place of residence in 1955. (This excluded migrants to San Juan from the two remaining SMSA's of Ponce and Mayaguez.) Within the limitations of the census data, this study compares nonmetropolitan migrants to the San Juan area with their nonmigrant counterparts at place of destination.¹⁰ The migration is that of the husband rather than the wife, whereas the age-specific fertility rates are those of the female.¹¹ The fertility measure utilized is total number of children ever born to females in four age groups (cumulative fertility

rates). The females are those legally married with spouse present at the time of the 1960 Census.¹²

The various measures employed have limitations. A number of total moves will be missed because of return or repeated moves, and some migrants may die during the five year interval; in addition, no information on length of residence is given.¹³ The migration status is that of the male household head and therefore is only an approximate indicator of the migration status of the wife.

The fertility measure gives no information on the spacing of births nor can it be related to the time of the move. It is, therefore, not possible to speak of births occurring before or after the migration, although one can make some inferences regarding this point. Also lacking are data on marriage duration.¹⁴

FINDINGS

The analysis proceeded in the following order: the general relation between migration and fertility and education and fertility were studied. Also, the age and education distributions of migrants and nonmigrants were examined to determine whether selective migration existed. In the final analysis, age and education controls were used to better assess the impact of migration on fertility.

Migration and Fertility

For all legally married, spouse-present women aged 14 and over, the total children ever born amounted to 3,355 per 1,000 migrants from the nonmetropolitan areas to San Juan, as compared to 3,471 for those classified as nonmigrants—that is, those whose husbands lived in the San Juan area in both 1955 and 1960 (see Table 1). The difference is slight, though it is in the same direction as that found by Myers and Morris.

The above finding should be interpreted in the light of differential age structures within the two subgroups. Table 2 indicates the age distribution of wives of migrants and nonmigrants and it can be seen that migration is selective of the younger segment of the population. The median age for wives of migrants is 33.7 compared

TABLE 1. CHILDREN EVER BORN PER 1,000 LEGALLY MARRIED SPOUSE-PRESENT WOMEN BY AGE OF WOMEN AND MIGRATION STATUS OF HUSBAND

<i>Age of Women</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>
14-24	2,299	1,805	279	1,430
25-34	5,402	3,013	425	2,734
35-44	4,899	3,792	275	3,978
45 and over	5,048	4,407	320	5,322
Total	17,648	3,471	1,299	3,355

Source: Unpublished special tabulations prepared for this project by the United States Bureau of the Census from data made available by the Puerto Rico Planning Board.

TABLE 2. DISTRIBUTION OF MIGRANTS AND NONMIGRANTS BY AGE OF WIFE

<i>Age of Women</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Number</i>	<i>Per Cent</i>	<i>Number</i>	<i>Per Cent</i>
14-24	2,299	13.0	279	21.5
25-34	5,402	30.6	425	32.7
35-44	4,899	27.8	275	21.6
45 and over	5,048	28.6	320	24.6
Total	17,648	100.0	1,299	100.0
Median age		37.3		33.7

Source: See Table 1.

to 37.3 among those married to nonmigrants. These different age structures suggest analysis of fertility differentials between the two groups by age of female.

The age-specific fertility rates found in Table 1 indicate that young migrants have relatively lower fertility than their nonmigrating urban counterparts of the same age. It is in the older age groups that migrants exhibit higher fertility rates. This "crossover" can be interpreted as reflecting the fact that women in the older age groups may have spent much of their childbearing period in a nonmetropolitan area. Such a "crossover" in total fertility at an age when one can presume that most childbearing is complete has been noted elsewhere in the analysis of United States Census material for 1960.¹⁵ From these findings regarding age-specific rates, one could

possibly conclude that migrants to metropolitan areas exhibit lower fertility because they are selective of the younger age groups, and these groups consistently show lower total fertility rates than do their urban neighbors who are not migrants. However, further controls must be included prior to any such conclusion.

Education and Fertility

The inverse relationship between education and fertility was substantiated by the findings of this study for both migrants and nonmigrants in every age group, as can be seen in Table 4. For example, among migrants with wives 35 to 44 years of age having no education, 4,783 children were born per 1,000 women as compared to 2,457 to wives having at least some college education. The same pattern was noted for nonmigrants: 5,543 for those having no education compared to 2,367 among women having at least some college training. Results thus showed that as the education of the wife increased, her fertility declined. The education of the husband in conjunction with that of the wife was also influential in determining the fertility of the couple, although the women's education appeared to be the more important factor (see Appendix Table 1).

Migration and Education

The median education of wives of migrants into San Juan from nonmetropolitan areas was somewhat higher than that of the nonmigrants living in the capital city (see Table 3). For all married women aged 14 and over, wives of migrants had completed 7.2 years of school as compared to 6.3 years among the nonmigrants. These differences are larger in the younger ages. For the age groups through 34, migrants' wives had completed more years of schooling than their urban nonmigrant counterparts. In the 35 to 44 age group, the difference is minimal and in the 45 and over group the pattern is reversed. It was also noted that median education declined beginning with the age group 35 to 44. These findings suggest that higher completed education may be an important intervening variable associated with the fertility differential between migrants and nonmigrants.

TABLE 3. COMPLETED YEARS OF SCHOOL OF LEGALLY MARRIED SPOUSE-PRESENT WOMEN BY AGE OF WOMEN AND MIGRATION STATUS OF HUSBAND

<i>Age and Education of Women</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Number</i>	<i>Per Cent</i>	<i>Number</i>	<i>Per Cent</i>
14-24				
No education	88	3.8	6	2.2
Elementary	1,106	48.2	112	40.1
High school	863	37.5	116	41.6
College	242	10.5	45	16.1
Total	2,299	100.0	279	100.0
Median education		7.7		8.7
25-34				
No education	292	5.4	20	4.7
Elementary	2,355	43.6	157	36.9
High school	1,720	31.8	117	27.6
College	1,035	19.2	131	30.8
Total	5,402	100.0	425	100.0
Median education		8.1		9.2
35-44				
No education	348	7.1	87	8.3
Elementary	2,742	56.0	147	53.5
High school	1,101	22.5	59	21.5
College	708	14.5	46	16.7
Total	4,899	100.0	275	100.0
Median education		6.2		6.4
45 and over				
No education	1,045	20.7	87	27.2
Elementary	2,697	53.4	154	48.1
High school	823	16.3	43	13.4
College	483	9.6	36	11.3
Total	5,048	100.0	320	100.0
Median education		4.4		3.8
14 and over				
No education	1,773	10.1	136	10.5
Elementary	8,900	50.4	570	43.9
High school	4,507	25.5	335	25.8
College	2,468	14.0	258	19.8
Total	17,648	100.0	1,299	100.0
Median education		6.3		7.2

Source: See Table 1.

Migration, Education and Fertility

It has been seen that lower fertility is associated separately with migration from nonmetropolitan areas to San Juan and with educational level, both of husband and wife. The relationship varies with

age of wife, but holds consistently at least through the younger ages. The question remains, however: Does the migrant-nonmigrant differential persist when educational level is controlled for? More concretely, do migrants have lower fertility precisely because they are migrant, or because they are better educated than nonmigrants.

It was observed in Table 2 that migrants tended to be relatively younger than nonmigrants. Knowing that these same persons have had more education than their nonmigrant counterparts in San Juan, it is reasonable to assume that this should be reflected in fertility differentials somewhat larger than those noted for the overall group. In Table 4 the women are divided into four age groups 14–24, 25–34, 35–44 and 45 and over.

Among women aged 14 to 24, wives of migrants had lower fertility. Migration was selective of the better educated. However, controlling for education did not modify fertility differentials between the two migration categories to any extent. Migrants' wives exhibited lower fertility at all levels of education than their nonmigrating urban neighbors.

In the age group 25 to 34, wives of migrants again showed lower fertility. Migration was also selective of the better educated. However, the differential between migrants and nonmigrants was not totally eliminated by educational control. At all educational levels except elementary, where the difference was slight, migrants' wives had lower fertility than the San Juan nonmovers.

In the 35 to 44 age group, a change in pattern was noted. Migrants had higher fertility before education was controlled. The median education of migrants was about the same (6.4) as nonmigrants (6.2), indicating little educational selectivity. Thus, it would be expected that migrants would not demonstrate the same lower fertility patterns as in the earlier age groups where education was considerably higher for migrants. Holding education constant, thereby eliminating this factor, migrants failed to show the relatively consistent lower fertility differential that existed in the younger age groups. In both the elementary education and college education categories, migrants have higher fertility than nonmigrants.

TABLE 4. CHILDREN EVER BORN PER 1,000 LEGALLY MARRIED SPOUSE-PRESENT WOMEN, BY AGE AND EDUCATION OF WIFE AND MIGRATION STATUS OF HUSBAND

Education of Wife	Nonmigrants					Migrants				
	Children Ever Born (Total Ever Married)					Children Ever Born (Total Ever Married)				
	Total	14-24	25-34	35-44	45+	Total	14-24	25-34	35-44	45+
All education levels	3,471 (17,648)	1,805 (2,299)	3,013 (5,402)	3,792 (4,899)	4,407 (5,048)	3,355 (1,299)	1,430 (279)	2,734 (425)	3,978 (275)	5,322 (320)
No education	5,634 (1,773)	3,364 (88)	4,894 (292)	5,543 (348)	6,062 (1,045)	6,324 (136)	*	4,050 (20)	4,783 (23)	7,529 (87)
Elementary	4,052 (8,900)	2,162 (1,106)	3,707 (2,355)	4,418 (2,742)	4,756 (2,697)	4,156 (570)	1,964 (112)	3,739 (157)	4,939 (147)	5,429 (154)
High school	2,270 (4,507)	1,441 (863)	2,313 (1,720)	2,597 (1,101)	2,614 (823)	2,009 (335)	1,129 (116)	2,205 (117)	2,458 (59)	3,233 (43)
College	2,011 (2,468)	901 (242)	2,064 (1,035)	2,367 (708)	1,932 (483)	1,767 (258)	756 (45)	1,802 (131)	2,457 (46)	2,028 (36)

* Rates not shown where base is fewer than 20 women.
Source: See Table 1.

The migrants in the 45 and over age groups had higher fertility than nonmigrants. However, an analysis of the fertility of women in this age group must be qualified inasmuch as most of the fertility was probably completed prior to the move. Migration was not selective of the better educated segment. In fact the opposite was the case. Fifty per cent of the migrants had completed no more than 3.8 years of school as compared to 4.4 years among the nonmigrants. It must also be added that, as an open-ended age category, it necessarily includes many older couples who perhaps moved to the metropolitan area to live with their children or merely to retire.¹⁶ At all educational levels, wives of migrants had higher fertility rates.

SUMMARY AND CONCLUSIONS

The basic purpose of this research has been to investigate the relation between migration and fertility. Limiting the analysis to Puerto Rico, the cumulative fertility of the wives of migrants to San Juan from nonmetropolitan areas was compared to the cumulative fertility of the wives of nonmigrant residents of the San Juan metropolitan area. Although indications were that migrants tended to have somewhat lower fertility than nonmigrants, when controls were introduced this was not entirely without exception. When age was considered, among the older groups (35 and over) it was observed that migrants generally exhibited higher fertility.

Patterns of educational selectivity were found to exist when migrants were compared to nonmigrants. This indicated a need to introduce education as well as age controls. The inverse relation between education and fertility observed in many previous studies was consistent at all age groups for both migrants and nonmigrants.

More relevant to the present analysis were the findings regarding the possible effect of education as an intervening variable between migration and fertility. To better assess this possibility, age-specific and education-specific rates were calculated. The basic migration-fertility differential noted for the four age groups remained after controlling for education. That is, the "crossover" that generally appeared at age 35 and resulted in higher fertility among migrants

beyond that age was noted in the older age groups when education was held constant.

Thus, although education does explain away a small portion of the differences in the fertility of migrants and nonmigrants, the basic finding remains valid that migrants have lower fertility than nonmigrants in the ages when the female is still in the most fertile part of the reproductive period. The result among older women—that is, higher fertility among the wives of migrants—is not affected by education, and the interpretation that much of the differential is caused by spending the reproductive years in nonmetropolitan surroundings remains a tentative explanation.

Consequently, the conclusions from this report are that migration from nonmetropolitan areas appears to be related to lower fertility if that migration takes place at a relatively early age thereby allowing the reproductive period to be spent mostly in urban surroundings. In these groups controlling for education does not greatly modify the differential. The evidence indicates that migration is selective of the young. The young, in turn, are better educated and may be adopting norms favoring lower family size. However, among the older migrants no selectivity of the better educated occurs and these people tend to exhibit higher fertility rates. This suggests the possibility of two types of migration streams into the city. The young migrants are better educated than their nonmigrant urban counterparts and may be more innovative. The older migrants are poorly educated in comparison to the urban residents and have had larger families and may reflect more traditional values toward family size.

DISCUSSION

Methodologically, it is not desirable to generalize beyond the universe under analysis. Nevertheless, the problem of migration into the large urban centers is an ever-increasing concern, especially in developing nations, and an answer to the question, “What is the fertility experience of rural-urban migrants?” is crucial. The future growth of developing urban areas is partially dependent on the answer to such questions. Depending on the areas and the level of

industrialization, two types of selective processes are evident with regard to rural-urban migration. One is the well-known situation of rural-urban migration of poorly educated, untrained peasants who merely increase the already dense population residing in the urban slums. The other is the demand for relatively skilled (or at least educated and trainable) workers for the burgeoning new industries that appear in the city.

As noted earlier, the findings that young migrants have low fertility and older migrants have higher fertility even when education is held constant seem to indicate two types of migration into the San Juan area, representing these two hypothetical models. The mechanism by which the younger groups have achieved lower numbers of children cannot be determined with the available data. The possibility that migrants marry later perhaps accounts for a portion of their lower fertility. One can speculate further that this group is more receptive to modern contraceptive technology.¹⁷ This suggests that younger, better-educated migrants may represent an innovative group that could possibly contribute to the diffusion of lower fertility norms among the urban population.

APPENDIX TABLE I. CHILDREN EVER BORN PER 1,000 LEGALLY MARRIED SPOUSE-PRESENT WOMEN, BY AGE OF WOMEN, EDUCATION OF WIFE, EDUCATION OF HUSBAND AND MIGRATION STATUS OF HUSBAND

<i>Education of Husband and Wife</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>
14-24 years				
All wives, all education levels	2,299	1,805	279	1,430
Husband				
No education: total	77	2,818	*	*
Elementary: total	870	2,248	996	1,865
High school: total	979	1,544	108	1,250
College: total	368	1,247	71	1,070
Not reported: total	*	*	*	*
Wife				
No education: total	88	3,364	*	*
Husband				
No education	*	*	*	*
Elementary	60	3,617	*	*
High school	*	*	*	*
College	*	*	*	*
Not reported	*	*	*	*
Wife				
Elementary: total	1,106	2,162	112	1,964
Husband				
No education	55	2,636	*	*
Elementary	627	2,281	61	2,115
High school	385	1,904	39	1,769
College	37	2,162	*	*
Not reported	*	*	*	*
Wife				
High school: total	863	1,441	116	1,129
Husband				
No education	*	*	*	*
Elementary	179	1,715	30	1,333
High school	501	1,357	55	982
College	176	1,398	31	1,194
Not reported	*	*	*	*
Wife				
College: total	242	901	45	756
Husband				
No education	*	*	*	*
Elementary	*	*	*	*
High school	83	928	*	*
College	154	864	32	813
Not reported	*	*	*	*

APPENDIX TABLE I. (Continued)

<i>Education of Husband and Wife</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>
25-34 years				
All wives, all education levels	5,402	3,013	425	2,734
Husband				
No education: total	167	4,982	*	*
Elementary: total	2,160	3,738	130	3,792
High school: total	1,807	2,525	151	2,258
College: total	1,261	2,209	133	1,977
Not reported: total	*	*	*	*
Wife				
No education: total	292	4,894	20	4,050
Husband				
No education	42	5,810	*	*
Elementary	214	4,785	*	*
High school	35	4,514	*	*
College	*	*	*	*
Not reported	*	*	*	*
Wife				
Elementary: total	2,355	3,707	157	3,739
Husband				
No education	113	4,788	*	*
Elementary	1,521	3,899	94	4,085
High school	622	3,174	44	2,795
College	96	2,875	*	*
Not reported	*	*	*	*
Wife				
High school: total	1,720	2,313	117	2,205
Husband				
No education	*	*	*	*
Elementary	376	2,697	*	*
High school	877	2,177	63	2,286
College	452	2,219	38	2,000
Not shown	*	*	*	*
Wife				
College: total	1,035	2,064	131	1,802
Husband				
No education	*	*	*	*
Elementary	49	2,184	*	*
High school	273	1,912	40	1,450
College	712	2,112	83	1,855
Not reported	*	*	*	*

APPENDIX TABLE I. (Continued)

<i>Education of Husband and Wife</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>
35-44 years				
All wives, all education levels	4,899	3,792	275	3,978
Husband				
No education: total	293	5,594	*	*
Elementary: total	2,427	4,563	131	5,008
High school: total	1,261	2,817	86	2,884
College: total	913	2,522	46	2,391
Not reported: total	*	*	*	*
Wife				
No education: total	348	5,543	23	4,783
Husband				
No education	75	5,947	*	*
Elementary	258	5,527	*	*
High school	*	*	*	*
College	*	*	*	*
Not reported	*	*	*	*
Wife				
Elementary: total	2,742	4,418	147	4,939
Husband				
No education	210	5,548	*	*
Elementary	1,888	4,696	97	5,423
High school	536	3,291	35	3,600
College	107	2,953	*	*
Not reported	*	*	*	*
Wife				
High school: total	1,101	2,597	59	2,458
Husband				
No education	*	*	*	*
Elementary	236	2,919	*	*
High school	514	2,516	29	2,276
College	339	2,484	*	*
Not reported	*	*	*	*
Wife				
College: total	708	2,367	46	2,457
Husband				
No education	*	*	*	*
Elementary	45	2,067	*	*
High school	198	2,232	20	2,300
College	465	2,454	20	2,500
Not reported	*	*	*	*

APPENDIX TABLE I. (Continued)

<i>Education of Husband and Wife</i>	<i>Nonmigrants</i>		<i>Migrants</i>	
	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>	<i>Total Ever Married</i>	<i>Children Ever Born per 1,000 Women</i>
45 years and over				
All wives, all education levels	5,048	4,407	320	5,322
Husband				
No education: total	842	6,110	66	7,667
Elementary: total	2,752	4,836	168	5,494
High school: total	809	2,685	63	3,429
College: total	636	2,476	23	2,522
Not reported: total	*	*	*	*
Wife				
No education: total	1,045	6,062	87	7,529
Husband				
No education	447	6,517	42	8,024
Elementary	567	5,772	41	7,293
High school	26	5,038	*	*
College	*	*	*	*
Not reported	*	*	*	*
Wife				
Elementary: total	2,697	4,756	154	5,429
Husband				
No education	380	5,705	24	7,042
Elementary	1,856	4,913	100	5,410
High school	334	3,344	24	4,458
College	123	3,276	*	*
Not reported	*	*	*	*
Wife				
High school: total	823	2,614	43	3,233
Husband				
No education	*	*	*	*
Elementary	230	3,222	*	*
High school	338	2,169	20	2,700
College	241	2,552	*	*
Not reported	*	*	*	*
Wife				
College: total	483	1,932	36	2,028
Husband				
No education	*	*	*	*
Elementary	99	1,768	*	*
High school	111	1,721	*	*
College	268	2,049	*	*
Not reported	*	*	*	*

* Rates not shown where base is fewer than 20 women.

Source: See Table 1.

APPENDIX TABLE 2. MEDIAN AGE OF HUSBAND BY AGE OF WIFE AND MIGRATION STATUS OF HUSBAND

Age of Wife	<i>Nonmigrants</i>	<i>Migrants</i>
	Median Age of Husband	Median Age of Husband
14-19	24.4	23.7
20-24	27.7	27.3
25-29	31.9	30.6
30-34	37.2	35.0
35-44	43.4	43.5
Total	37.1	33.3

Source: See Table 1.

REFERENCES

¹ The following is a chronologic listing of many of the studies that have attempted to deal with the relation between migration and fertility. No attempt has been made to review these materials in the body of the paper as this is a subject for a review article. One such article is in process. Dorn, H. F. and Lorimer, F., Migration, Reproduction, and Population Adjustment, *The Annals of the American Academy of Political and Social Science*, 188, 280-289, November, 1936; Leybourne, G. G., Urban Adjustments of Migrants from the Southern Appalachian Plateaus, *Social Forces*, 16, 238-246, December, 1937; Kiser, V., Birth Rates Among Rural Migrants in Cities, *Milbank Memorial Fund Quarterly*, 16, 369-381, October, 1938; Thomas, D., *Research Memorandum on Migration Differentials*, New York, Social Science Research Council Bulletin 43, 1938; Hitt, H., and Bradford, R., The Relation of Residential Instability to Fertility, *Rural Sociology*, 5, 88-92, Spring, 1940; Rose, A. M., A Research Note on the Influence of Immigration on the Birth Rate, *The American Journal of Sociology*, 47, 614-621, October, 1941; Oyler, M. D., *Fertility Rates and Migration of Kentucky Population, 1920-1940*, Kentucky Agricultural Experiment Station Bulletin No. 469, 1944; Downes, J., et al., Characteristics of Stable and Non-Stable Families in the Morbidity Study in the Eastern Health District of Baltimore, *Milbank Memorial Fund Quarterly*, 27, 260-282, July, 1949; Kantner, J. L. and Whelpton, P. K., Fertility Rates and Fertility Planning by Character of Migration, *Milbank Memorial Fund Quarterly*, 30, 152-187, April, 1952; Hatt, P. K., *BACKGROUNDS OF HUMAN FERTILITY IN PUERTO RICO: A SOCIOLOGICAL SURVEY*, Princeton, Princeton University Press, 1952; Moore, W. E., Attitudes of Mexican Factory Workers Toward Fertility Control, in *APPROACHES TO PROBLEMS OF HIGH FERTILITY IN AGRARIAN SOCIETIES*, New York, Milbank Memorial Fund, 1952; Goldberg, D., The Fertility of Two-Generation Urbanites, *Population Studies*, 12, 214-222, March, 1959; Kiser, C. V., Fertility Rates by Residence and Migration, in *Proceedings of the International Population Conference, Vienna, 1959*; Goldberg, D., Another Look at the Indianapolis Fertility Data, *Milbank Memorial Fund Quarterly*, 38, 23-36, January, 1960; Hutchinson, B., Fertility, Social Mobility, and Urban Migration in Brazil, *Population Studies*, 14, 182-189, March, 1961; Badenhorst, L. T. and Unterhalter, B., A Study of Fertility in an Urban African Community, *Population Studies*, 15, 80-82, July, 1961; Freedman, R. and Slesinger, D. P., Fertility Differentials

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⁵ Stycos, J. M., Education and Fertility in Puerto Rico, WORLD POPULATION CONFERENCE, BELGRADE, 1965, II, New York, United Nations, 1967, p. 178.

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⁷ Folger, J. K. and Nam, C. B., EDUCATION OF THE AMERICAN POPULATION, Washington, United States Government Printing Office, 1967, pp. 178-184. It should be noted that response bias in reporting previous residence may affect the findings somewhat.

⁸ Ducoff, L., Poblacion Migratoria en un Area Metropolitana de un Pais en Proceso de Desarrollo; Informe Preliminar Sobre un Estudio Experimental Efectuado en El Salvador, *Estadistica*, 20, 131-139, Marzo, 1962.

⁹ Myers and Morris, *op. cit.* Although both the Myers-Morris study and the present report are based on the 1960 Census for Puerto Rico, the research strategies employed in these two works differ in four ways: 1. The data reported here relate to women married to migrant men. The women could be migrants but this is not assured. In the Myers-Morris report, the migration status is that of women. 2. The fertility reported on pertains to legally married women who were living with their spouses at the time of the census. The 1966 study does not introduce this limitation on the legally married women. 3. The migrants to San Juan in this study were not living in Ponce or Mayaguez in 1955. This then is a stream type analysis of migrants from nonmetropolitan areas to the San Juan area. 4. The nonmigrant population of San Juan is exclusive of migrants as defined above as these migrants were subtracted from the total population. The earlier article does not introduce this distinction.

¹⁰ It is realized that a more comprehensive design might include a comparison of metropolitan migrants with their nonmigrant counterparts at their place of origin, i.e., nonmetropolitan area.

¹¹ One should remember that no direct data are available in this study on migration status of the wife. However, it is reasonable to assume, especially for those older age groups, that this would be a family type migration. Contrary arguments would have to assume that the marriage also took place since 1955—an unlikely situation. Furthermore, the assumption that marriages among the older age groups took place in nonmetropolitan areas is given added credence

by the fact that an inspection of Appendix Table 2, where a cross classification of husbands' age by wives' age is presented, shows that in the main, wives tended to marry men who were from one to five years older.

¹² The decision to limit the research to legally married spouse-present women was predicated upon a number of factors. Because the number of children ever born has been shown to vary by type of marital union it was felt that by limiting another source of variation one could perhaps better measure the relation between migration and fertility. In addition, the category "consensual union" does not seem to deal adequately with the variety of common-law relations found in Puerto Rico. Last, the legally married spouse-present women constituted 77.4 per cent of all ever-married women in the San Juan area.

¹³ Goldstein, S., Repeated Migration as a Factor in High Mobility Rates, *American Sociological Review*, 19, 536-541, October, 1954; Heberle, R., Note on Sidney Goldstein, "Repeated Migration as a Factor in High Mobility Rates," *American Sociological Review*, 20, 226-227, April 1955; Goldstein, S., The Extent of Repeated Migration: An Analysis Based on the Danish Population Register, *Journal of the American Statistical Association*, 57, 1121-1140, December, 1964. Shyrock has also pointed out that the longer the migration interval, the larger the proportion of total moves that will be missed by questions on residence at a fixed date in the past. Shyrock, H., POPULATION MOBILITY WITHIN THE UNITED STATES, Chicago, Community and Family Study Center, University of Chicago, 1964, p. 25; Taeuber, K. E., Duration of Residence Analysis of Internal Migration in the United States, *Milbank Memorial Fund Quarterly*, 39, 116-131, January, 1961.

¹⁴ Because no direct data are available on duration of marriage, one cannot tell whether migrants have been married for shorter periods of time. Therefore, the possibility exists that any observed differential in cumulative fertility may be a function of shorter exposure to the risk of childbearing. In addition, not having direct data on age at first marriage may also mask some of the differentials in fertility.

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¹⁶ A similar possibility has been noted by Jose Hernandez. See his RETURN MIGRATION TO PUERTO RICO, Population Monograph Series, No. 1 Berkeley, California: Institute of International Studies, 1967, especially pp. 13-41 and 107-121.

¹⁷ A study that would focus on recent rural-urban migrants' attitudes and practices with regard to contraception, as well as their age of first marriage, would be most useful in assessing the factors that explain the reported findings.

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