Maternal Age at Last Birth and Reproductive Span: The 1980 Egyptian Fertility Survey

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1. Introduction

As persons progress through their life course, they are expected to move through various stages or roles. The usual progression is through periods of early parental nurturing, years devoted to education, entrance into the labor force, marriage and reproduction, and retirement. These stages are age-related and prescribed by social norms.

Important among the events of the life cycle are the beginning and ending of childbearing. While age at marriage and the onset of childbearing have been the subjects of numerous studies in Egypt and elsewhere, the completion of the reproductive period, and consequently the length of the reproductive span, have received much less attention.

Yet there are important reasons why these topics should be studied in order to gain some understanding of the differences in completion of childbearing among various population subgroups. First, the completion of reproduction is of significance to the majority of

women who are mothers. For them, the exit from this stage of the life cycle brings them close to the end of intensive child care and related matters and allows them to devote more of their time to other pursuits.

Secondly, significant changes in the timing of completing childbearing and in the length of the reproductive span may have important consequences regarding peer and family relationships. For example, a shift to older (or to younger) ages at last birth may result in a larger number of women/couples being out of step with their peers who are in another stage of the life cycle. Also, if old age at last childbirth means a long reproductive span, a consequence would be considerable differences in age among the siblings, thus affecting sibling relationships.

Thirdly, there are reasons to expect that age at last birth has and will continue to undergo changes in Egypt because of recent demographic and social trends. For instance, age at marriage is expected to continue to rise, as well as education and increased enrollment of women in secondary schools and in universities (El-Guindy, 1971; Khalifa, 1974; Ibrahim, 1981). Both these factors tend to delay age at first birth and to relate to age at last birth. In addition, the divorce rate in Egypt is relatively high (Hanna, 1971; Khalifa, 1974), and most divorced women remarry (Hanna, 1971). If women tend to produce offsping from their latest marriage, marital disruption that leads to remarriage is expected to increase age at conclusion of childbearing.

Additionally, there appear to be evolving health norms regarding the maternal age for ending childbearing. Nortman (1974) summarizes the increased risks to

maternal and fetal/perinatal health of bearing children at older ages. There is evidence that in Egypt maternal mortality increases sharply at maternal ages over 35 (Younis, N. et al., 1979). Fortney et al. (1982) found that in Egypt, where infant mortality is relatively high, babies born to women over age 35 had significantly lower suevival rates than did infants born to younger mothers. Moreover, a conference organized in 1978 by Al Azhar University in Cairo urged that because of high perinatal and infant mortality rates in the Middle East, women should avoid childbirths at high risk age groups (People, 1979).

Finally, the ages at which women stop having children and the length of the reproductive span can be important factors affecting population growth. High growth rates and overpopulation have long been of concern to planners and policymakers in Egypt. Especially since in this country birth control is used mostly to limit rather than to space births (CAPMAS, 1983 ; Khalifa et al., 1982), old ages at last birth and long reproductive spans are expected to accompany high parity and thereby contribute to rapid population growth.

All the above reasons point to the need to lifll the near void of research on the end of the childbearing period. Suchindran and Horne (1984) have already developed analytic expressions for age at last birth and the span of childbearing when only age-specific birth and death rates are known, Horne (1985) contains the details of the derivations of the mathematical expressions, as well as proportional hazards covariate modeling of age at last birth in Egypt.

A look at some descriptive statistics from the Egyptian Fertility Survey dataset can provide further insights for the case of Egypt. Rasults on age at first birth, age at last birth, and reproductive span are given below. Women with no births at the time of the suvey were excluded from computations.

2. Age at First Birth

The percentage distribution of age at first birth by current age and residence is given in table 1. Since only women who had had at least one child were included for analysis, younger cohorts of women necessarily had their first births at young ages. No information, therefore, is available about women in the younger cohorts who had not had their first child by the time of the interview. Thus, data for the oldest cohorts provide more complete information about the distribution of age at first birth.

For the total group of women, of current age 45 to 49, the largest percentage (about 53%) experienced their first births some time between 15 and 19 years of age. The next most popular age-at-first-birth interval was 20 to 24 years of age, with percentages experiencing their first births dropping sharply thereafter and then declining steadily. Similar trends hold for younger cohorts as well, and for urban and rural women.

Differences between urban and rural women are small for the older cohorths, but tend to diverge among the younger groups of women. For example, among those currently aged 45 to 52% of the urban and 53% of the rural had their first child between 15 and 19 years of age. For those currently aged 25 to 29, however, the respective percentages were 38 and 53. This divergence in

TABLE 1

PERCEVTAGE DISTRIBUTION OF AGE AT FIRST BIRTH
BY CURRENT AGE EGYPT, 1980

Current Age	Age at First Birth								
	15	15-19	20-24	25-29	30-34	35-39	40-44	45+	N
				A. Urban					
15-19	5.7	94.3	-	-	-	-	-	-	106
20-24	3.0	57.5	39.4	-	-	-	-	-	464
25-29	3.8	37.6	44.3	14.3	-	-	-	-	718
30-39	4.2	45.1	30.3	17.7	2.8	-	-	-	630
35-39	5.8	46.1	32.8	11.6	3.1	0.5	-	-	551
40-44	8.1	49.8	28.2	10.5	3.3	0.2	-	-	458
45-49	8.8	51.8	26.0	8.8	2.8	1.5	0.3	0.0	396
Total	5.3	48.4	32.6	10.9	1.8	0.3	0.03	0.0	3343
				B. Rural					
15-19	13.9	86.1	-	-	-	-	-	-	216
20-24	6.4	69.9	23.7	-	-	-	-	-	845
25-29	8.2	52.5	34.2	5.2	-	-	-	-	833
30-34	7.9	56.1	27.0	7.6	1.4	-	-	-	811
35-39	9.0	57.8	25.0	6.3	1.5	0.4	-	-	735
40-44	8.8	52.1	29.1	6.6	2.5	0.9	0.0	-	560
45-49	7.2	53.4	28.5	7.8	1.5	0.8	0.6	0.6	474
Total	8.2	59.0	26.5	5.0	1.0	0.3	0.1	0.02	4474
				C. Total					
15-19	11.2	88.8	-	-	-	-	-	-	322
20-24	5.2	65.5	29.3	-	-	-	-	-	1309
25-29	6.1	45.6	38.9	9.4	-	-	-	-	1551
30-34	6.2	51.2	28.5	12.1	2.0	-	-	-	1461
35-39	7.6	52.8	28.4	8.6	2.2	0.5	-	-	1286
40-44	8.4	51.1	28.7	8.3	2.8	0.6	0.0	-	1018
45-49	7.9	52.6	27.4	8.3	2.1	1.1	0.5	0.1	870
Total	6.9	54.4	29.1	7.5	1.3	0.3	0.05	0.05	7817

Source: 1980 Egyptian Fertility Survey, Standard recode, Version 3.

proportions having first births at an early age suggests that conditions in the urban areas in recent years have tended to delay the onset of childbearing. Could this trend be due to higher education of women in urban areas, their changing roles in the cities, or the recent urdan housing shortage?

Under the assumption that all of the 35-39, 40-44, and 45-49 cohrts had had their first births, a test for differences among the distributions of these cohorts for the total group of women can be made. With the use of frequencies, and with the last three categories combined, a chi-square with ten degrees of freedom of 13.59 is obtained, indicating no significant cohort differences in age at first birth for these three oldest groups of women, at the .05 or even.10 level of s significance.

A test for urban/rural differences in the oldest cohort also can be dene. The chi-square with five degrees of freedom is 3.38, indicating no significant residential difference among women aged 45 to 49. Comparing urban and rural women in the 25-29 age group, however, yields a chi-square with three degrees of freedom of 75.49, indicating a significant difference in the distribution of age at first birth by residence for this younger cohort of women.

3. Age at Last Birth

Data on age at last birth for women in the younger cohorts may be considered incomplete, since most of these women had not had their actual last births by the time of the interview. For this reason data for the younger groups of women are omitted in the following tables.

Table 2 shows the percentage distribution of age at last birth by current age current residence for women aged 35 and over. It may be assumed that almost all the women in the age group 45 to 49 had finished their childbearing, and thus had relatively complete information. A majority of thesr women experienced their last births between ages 30 and 39. Another 2.6% completed childbearing between ages 45 and 49. (Women aged 50 and older were not interviewed in the survey, so no information is available about births occurring beyind age 49.).

Under the assumption that women aged 40 and older had completed their childbearing, a test for differences between the last two cohorts for the total group of women can be done. With the first two and the last two categories combined, a chi-square with five degrees of freedom (based on forquencies) of 40.12 is obtained, indicating a significant difference in the distribution of age at last birth between the two age groups. This result, if the above assumption is true, could indicate an actual cohort difference, or it could mean that the assumption is false-that women in the 40-44 age group had not completed their childbaering.

Urban and rural figures for the oldest cohort show that urban women tended to have their last children earlier than rural women: about 55% of the urban women had their last child by age 34, compared to 40% of the rural women. Again, with frequencies for the first two and the last two categories combined, a test for residential differences in the oldest cohort can be done. The chi-square with five degrees of freedom is 24.23, indicating a significant difference between the distributions for urban and rural women aged 45 to 49.

TABLE 2

PERCENTAGE DISTRIBUTION OF AGE AT LAST BIRTH BY CURRENT AGE FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

Current Age	Age at Last Birth								
	15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	N
A. Urban									
35-39	0.2	0.9	8.5	19.8	45.2	25.4	-	-	551
40-44	0.2	1.7	5.7	21.6	34.1	29.9	6.8	-	458
45-49	0.3	1.0	3.8	16.2	33.6	28.5	14.6	2.0	396
Total	0.2	1.2	6.3	19.4	38.3	27.7	6.3	0.6	1405
B. Rural									
35-39	0.0	1.0	5.0	16.6	48.4	29.0	-	-	735
40-44	0.2	1.1	4.1	11.3	26.1	42.9	14.5	-	560
45-49	0.0	1.9	3.1	9.5	24.9	35.2	21.9	3.2	474
Total	0.1	1.3	4.3	13.0	35.0	35.1	10.5	0.9	1769
C. Total									
35-39	0.1	0.9	6.3	18.0	47.0	27.4	-	-	1286
40-44	0.2	1.4	4.8	15.9	29.7	37.0	11.0	-	1018
45-49	0.1	1.5	3.6	12.5	28.9	32.2	18.6	2.6	870
Total	0.1	1.3	5.2	15.8	36.5	31.8	8.6	0.8	3174

Soure: 1980 Egyptian Fertility Survey.

Table 3 shows mean age at last birth by current and childhood residence and final parity for women aged 45 to 49. For all women and for both urban and both rural subgroups, mean age at last birth is positively related to final parity. Figure 1 displays this relationship graphically for the total group of women in this oldest cohort. This result indicates that women in Egypt who end childbearing at older ages tend to have large numbers of children.

For women with one or two children, the difference between urban and rural childhood residence appears to be negligible. However, women with current urban residence ended childbearing an average of about two years later than current rural women (age 29.58 vs. 27.66). This result raises the question as to whether current rural women in this low parity group tended to end childbearing because of some type of marital dissolution (divorce, separation, or widowhood). In all other groups, rural women had their last children later than urban women.

TABLE 3

MEAN AGE AT LAST BIRTH BY CURRENT AND CHILDHOOD RESIDENCE AND FINAL PARITY FOR WOMEN AGED 45 TO 49

EGYPT, 1980

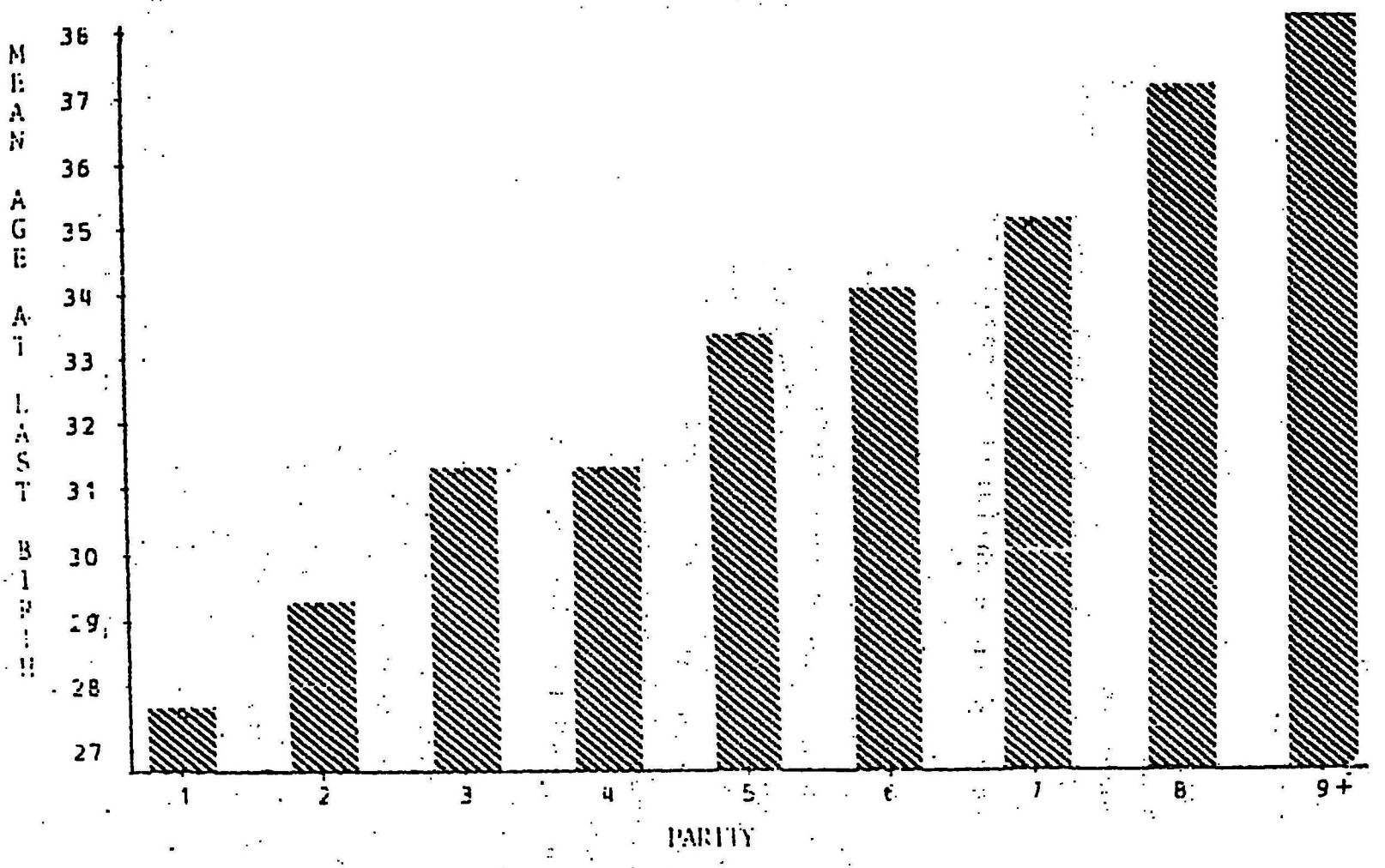
Residence	Final Parity		
	1-2	3-5	6+
Current			
Urban	29.58 (7.961)[a] N=31	31.78 (5.299) N=91	35.62 (4.737) N=274
Rural	27.66 (7.906) N=44	32.86 (5.689) N=92	37.55 (4.382) N=338
Childhood			
Urban	28.26 (7.773) N=45	31.34 (5.057) N=92	35.73 (4.615) N=262
Rural	28.74 (8.293) N=30	33.31 (5.793) N=91	37.40 (4.536) N=350
Total	28.45 (7.933) N=75	32.32 (5.510) N=183	36.69 (4.641) N=612

[a]Figures in parentheses are standard deviations.

Source: 1980 Egyptian Fertility Survey.

FIGURE 1

MEAN AGE AT LAST BIRTH BY PARITY, FOR WOMEN 45-49 YEARS OF AGE
EGYPT, 1980



Source: 1980 Egyptian Fertility Survey.

Figure 2 shows mean age at last birth by age at first marriage, for women aged 45 to 49. For women married at ages less than 25 years there was little variation in mean age at last birth, the mean being around 35 years of age. Women who were married at later ages, however, ended childbearing, on average, at increasing older ages.

In table 4 mean age at last birth by number of times married and status of the first marriage is given for women in the oldest cohort. For these women the average age at the end of childbearing increased with number of unions. This finding suggests that the women tended to produce children by their new husbands.

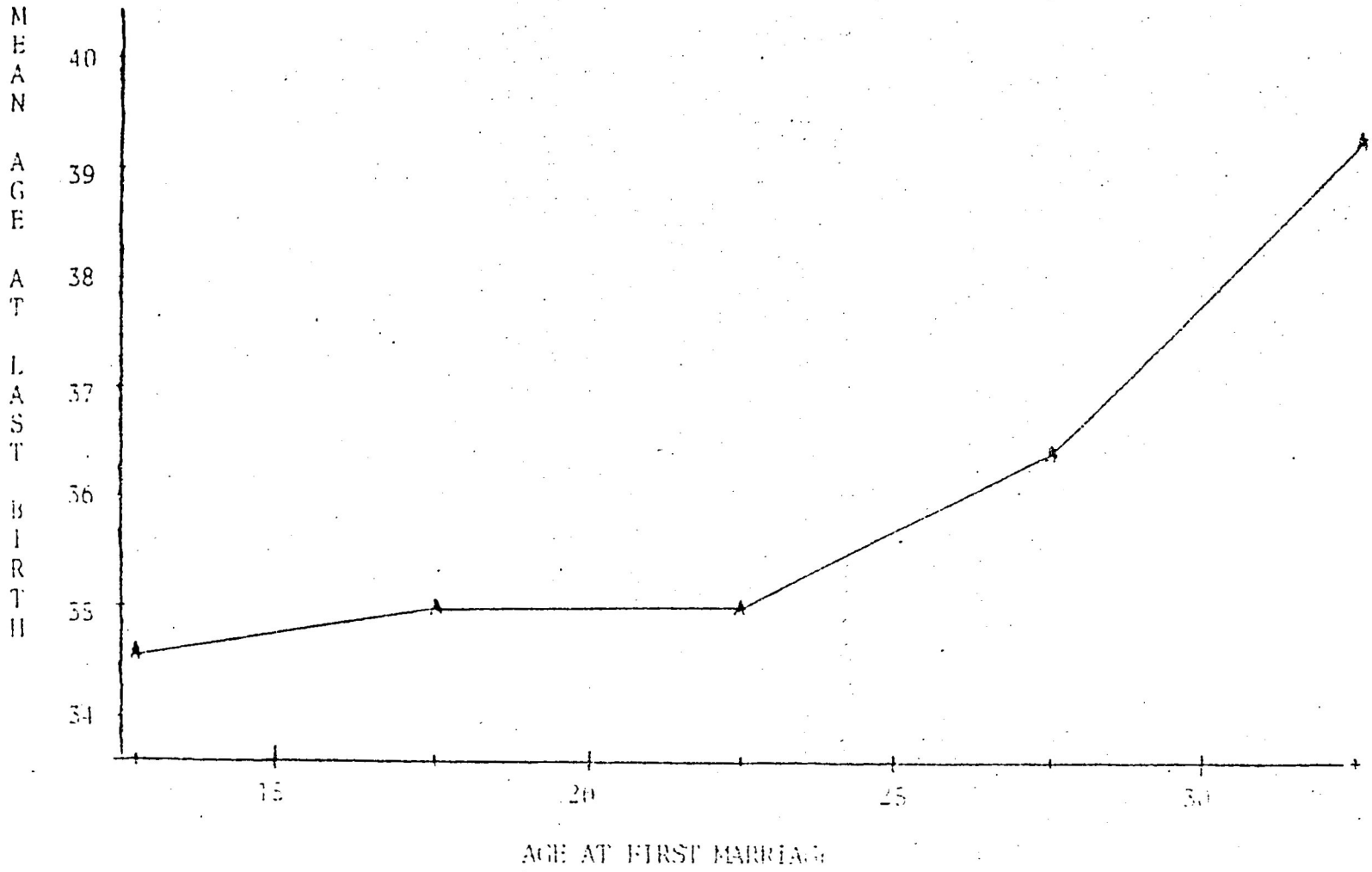
There appears to be little difference in age at last birth between women with intact first marriages and those whose dissolved first unions were followed by remarriage. This apparent disparity with the above result is because women who were married once include women with intact first unions and also those with dissolved first marriages who had not remarried. Women with dissolved first marriages who had not remarried ended childbearing, on average, earlier than the other women.

Table 5 gives mean age at last birth by current and childhood residence and education, for women aged 45 to 49. For the total group of women, mean age at the end of childbearing is inversely related to level of education, although the difference between women with primary and those with secondary or higher education appears to be small. This trend is visible for women currently living in both urban and rural areas. Within the individual categories of education, however, differences between current urban and current rural residence are negligible.

FIGURE 2

MEAN AGE AT LAST BIRTH BY AGE AT MARRIAGE, FOR WOMEN AGED 45-49

Egypt, 1980



Source: 1980 Egyptian Fertility Survey.

TABLE 4

MEAN AGE AT LAST BIRTH BY NUMBER OF TIMES MARRIED AND STATUS OF FIRST MARRIAGE FOR WOMEN AGED 45 TO 49 EGYPT, 1980

Characteristics	N	Mean Age at Last Birth	STD. DEV.
Number Times Married			
1	741	34.98	5.791
2	122	35.41	6.149
3-4	7	37.82	4.859
Status of First Marriage			
Intact	596	35.77	5.564
Dissolved & Remarried	129	35.54	6.095
Dissolved, No Remarriage	145	31.71	5.377

Source: 1980 Egyptian Fertility Survey.

When the data are examined by childhood place of residence, the inverse relationship between age at last birth and education for urban women still exists, except that women with primary and those with secondary or higher education show little difference. Education tended to make the least difference in age at last birth for women with childhcod residence in rural areas. When education is controlled, women with rural childhood residence tended to end childbearing later then those with urban residence, and the differences are greater than the current urban/rural figures. Obviously, there was some migration.

TABLE 5

MEAN AGE AT LAST BIRTH BY CURRENT AND CHILDHOOD RESIDENCE AND WOMEN'S EDUCATION FOR WOMEN AGED 45 TO 49

EGYPT, 1980

Residence	Education Level			
	Illiterate	Literate	Primary	Secondary
Current				
Urban	35.26 (5.602)[a] N=251	33.44 (4.906) N=82	31.58 (5.087) N=28	31.25 (5.361) N=35
Rural	35.87 (5.968) N=445	33.78 (5.058) N=22	32.49 (7.485) N=7	-
Childhood				
Urban	34.84 (5.956) N=255	33.07 (4.883) N=81	30.89 (5.221) N=29	31.10 (5.389) N=34
Rural	36.12 (5.729) N=441	35.50 (4.817) N=23	35.97 (5.436) N=6	35.50 (-) N=1
Total	35.65 (5.842) N=696	33.51 (4.916) N=104	31.76 (5.530) N=35	31.23 (5.361) N=35

[a]Figures in parentheses are standard deviations.

Source: 1980 Egyptian Fertility Survey.

These findings suggest that while educational level can account for current residential differences in age at last birth, it does not account for all the childhood residential differences. One might then speculate from these data about whether attitudes and values acquired during childhood tend to override the effect of education.

TABLE 6

PERCENT DISTRIBUTION OF REPRODUCTIVE SPAN BY CURRENT AGE FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

Current Age	Reproductive Span							
	5	5-9	10-14	15-19	20-24	25-29	30+	N
			A. Urban					
35-39	15.3	22.0	30.6	27.5	4.2	0.4	-	323
40-44	8.6	20.9	31.1	26.1	11.9	1.1	0.2	444
45-49	5.5	15.8	28.2	26.1	20.6	3.7	0.0	379
Total	10.3	19.9	30.1	26.6	11.4	1.6	0.1	1346
			B. Rural					
35-39	6.0	14.5	34.6	38.5	6.5	0.0	-	712
40-44	4.9	13.0	24.3	32.8	23.5	1.5	0.0	548
45-49	4.0	9.8	22.0	32.4	25.1	6.2	0.7	451
Total	5.1	12.8	28.0	35.1	16.8	2.1	0.2	1711
			C. Total					
35-39	10.0	17.7	32.9	33.8	5.5	0.2	-	1235
40-44	6.6	16.5	27.3	29.8	18.3	1.3	0.1	992
44-49	4.7	12.5	24.8	29.5	23.0	5.1	0.4	830
Total	7.4	15.9	28.9	31.4	14.4	1.9	0.2	3057

Source: 1980 Egyptian Fertility Survey.

TABLE 7

MEAN REPRODUCTIVE SPAN BY CURRENT AGE AND PARITY FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

Current Age	Parity (No. Children)		
	2	3-5	6+
35-39	3.598 (3.077)[a] N=79	9.600 (4.087) N=410	15.588 (3.342) N=746
40-44	3.646 (2.705) N=52	10.012 (4.214) N=260	17.028 (4.320) N=680
45-49	6.929 (5.989) N=35	10.418 (4.791) N=183	18.091 (4.800) N=612

[a]Figures in parentheses are standard deviations.

Source: 1980 Egyptian Fertility Survey.

span of childbearing showed a positive relationship with parity. This result is as expected.

Table 8 gives mean reproductive span by current age and age at marriage for women aged 35 and over. The average span shows an inverse relationship with age at marriage for the three cohorts of women.

In figure 3 mean reproductive span is plotted by age at first birth for women 45 to 49 indicating also a negative relationship. Since length of reproductive span is positively related to parity, these results corroborate the contention that early age at marriage tends to produce large family sizes.

TABLE 8

MEAN REPRODUCTIVE SPAN BY CURRENT AGE AND AT MARRIAGE FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

current Age	Age at Marriage				
	<15	15-19	20-24	25-29	30+
35-39	15.526 (4.743)[a] N=348	13.059 (4.605) N=034	9.459 (3.930) N=197	5.708 (2.696) N=50	2.861 (2.211) N=6
40-44	17.264 (5.363) N=271	14.624 (5.374) N=517	12.023 (4.728) N=147	7.011 (3.446) N=46	3.871 (2.732) N=11
45-49	18.541 (5.495) N=257	16.160 (5.566) N 414	11.996 (5.489) N 123	8.552 (4.232) N=27	6.555 (3.957) N=9

[a]Figures in parentheses are standard deviations.

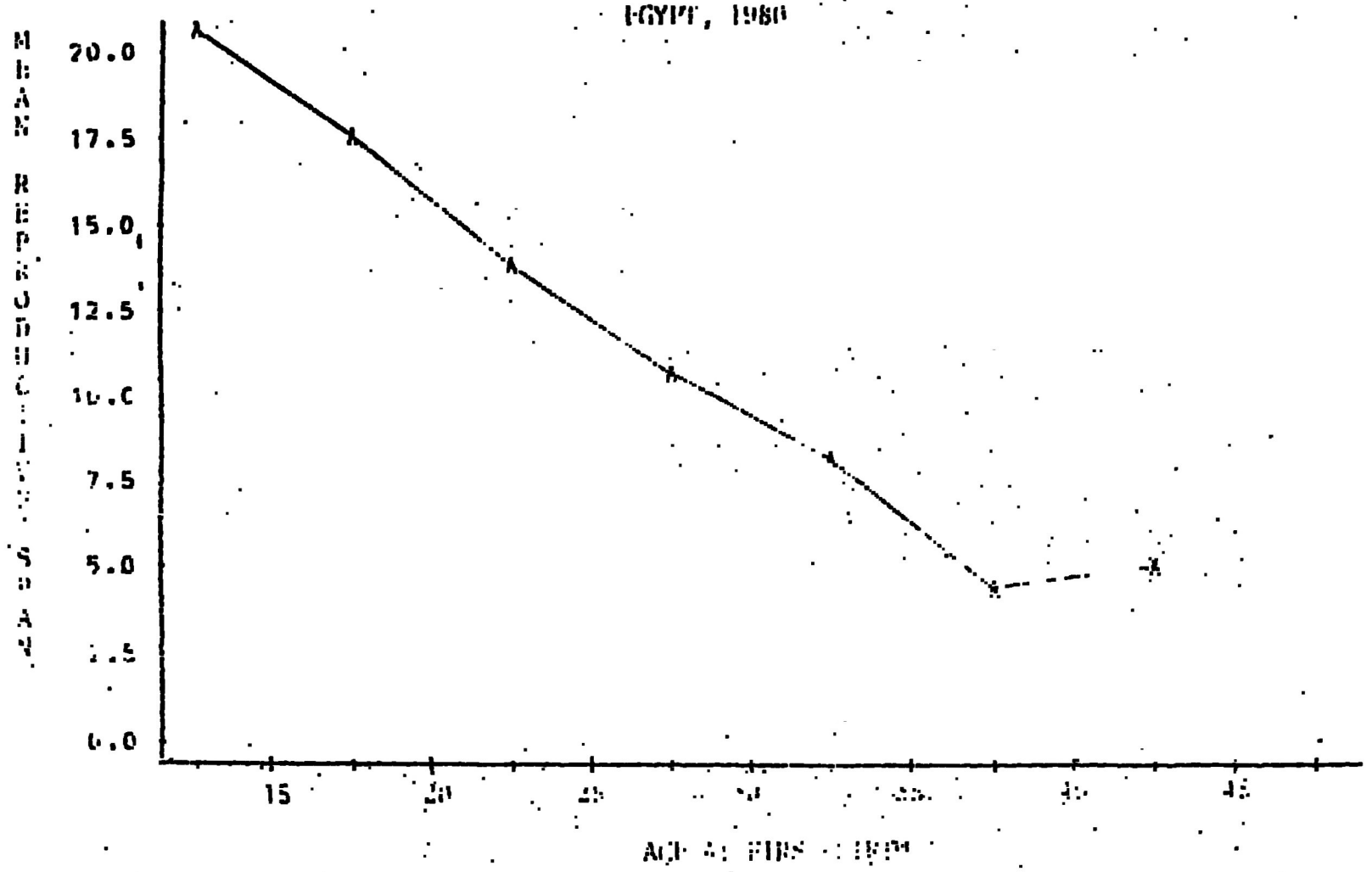
Source: 1980 Egyptian Fertility Survey.

Table 9 gives the same data by current marital status for women aged 35 and over. Women currently married at the time of the interview experienced longer reporductive spans, on average, than did those in the other status groups. Those widowed showed the next longest spans, while those who were divorced tended to have the shortest reproductive spans.

FIGURE 3

MEAN REPRODUCTIVE SPAN BY MATERNAL AGE AT FIRST BIRTH, FOR WOMEN 45-49

EGYPT, 1980



Source: 1980 Egyptian Fertility Survey.

TABLE 9

MEAN REPRODUCTIVE SPAN IN YEARS BY CURRENT AGE AND CURRENT MARITAL STATUS FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

Current Age	Current Marital Status			
	Married	Widowed	Separated	Divorced
35-39	13.121 (5.038)[a] N=1110	10.407 (5.241) N=96	11.129 (5.336) N=18	9.009 (5.889) N=11
40-44	14.943 (5.706) N=850	12.116 (5.506) N=107	9.861 (6.888) N=20	9.775 (5.132) N=9
45-49	16.509 (5.946) N=663	14.072 (5.599) N=141	12.208 (9.760) N=16	10.547 (7.606) N=10

[a] Figures in parentheses are standard deviations.

Source: 1980 Egyptian Fertility Survey.

TABLE 10

MEAN REPRODUCTIVE SPAN BY CURRENT AGE AND STATUS OF FIRST MARRIAGE FOR WOMEN AGED 35 AND OVER

EGYPT, 1980

Current Age	Status of First Marriage		
	Intact	Dissolved/ Remarried	Dissolved/ No Marriage
35-39	13.10 [a] (4.964) N=997	13.03 (5.471) N=138	9.90 (5.493) N=100
40-44	15.01 (5.709) N=770	14.00 (5.767) N=106	11.48 (5.523) N=116
45-49	16.41 (6.021) N=575	16.73 (5.668) N=122	13.13 (6.021) N=133

[a] Figures in parentheses are standard deviations.

Source: 1980 Egyptian Fertility Survey.

Table 10 contains data on mean span of childbearing by the status of the first marriage, for women aged 35 and over. For the three groups of women, those whose first marriages were dissolved and who had not remarried had spent fewer years in childbearing, on average. than the other women. There appears to be very little difference between women with intact first unions and those who remarried. This result could mean that women who remarried tended to do so quickly, so that they lost little time of exposure to pregnancy. Or, this finding could be typical of countries such as Egypt which have high birth rates.

Table 11 gives mean reproductuve span by current and childhood residence, for women aged 35 and older. Current urban women experienced an average childbearing span of 13.091 years, compared to 15.091 years for current rural women. This difference of two years is statistically significant (the normal variate z is approximately 9.6). Childhood residential differences were slightly smaller, 13.225 versus 14.977, but also statistically significant (z equal to 8.4).

Mean reproductive span is shown in figure 4 by level of education for women aged 45 to 49 Advancement to each higher educational level tended to occur with shorter times spent in childbearing, with the briefest period occurring for those with secondary or higher education.

TABLE 11 .

MEAN REPRODUCTIVE SPAN IN YEARS BY CURRENT AND CHILDHOOD RESIDENCE, FOR WOMEN AGED 35 AND VOER EGYPT, 1980

Residence	N	Mean	STD. DEV.
Current			
Urban	1346	13.091	5.8808
Rural	1711	15.091	5.5141
Childhood			
Urban	1338	13.225	5.9064
Rural	1719	14.977	5.5316

Source: 1980 Egyptian Fertility Survey.

FIGURE 4

MEAN REPRODUCTIVE SPAN BY EDUCATION, EVER WOMEN 45-49

EGYPT, 1980

Source: Egyptian Fertility Survey

5. Conclusion

The above statistics provide some insight into the variations in age at last birth and length of reproductive span across subgroups of the Egyptian population. In cases where no statistical testing was done, inferences should be deferred until formal statistical determination of relationshpis among variables and testing of hypotheses are made. Various types of covariate modeling of age at last birth and reproductive span are availoble in Horne (1985) and forthcoming publications.

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