Birth Spacing and Some of its Determinants in México (1957-1997)

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Abstract

This paper describes the tendencies of birth spacing in Mexico from 1957 to 1997 and analyzes the influence of contraceptive use in the length of the first three birth intervals, differentiating among sterilization, intrauterine device (IUD), hormonal contraceptive methods and other contraceptive methods such as condom, rhythm, withdrawal and vaginal methods, and controlling for censoring and a set of covariates. The data came from the 1997 National Survey of Demographic Dynamics (INEGI, 1997). The medians of the first three birth intervals were considerably larger in recent years for the total of women in the sample, as well as for those without sterilization. The risk of having a subsequent child diminished significantly by contraceptive use, in particular, female or male sterilization and IUD. These results help to understand the impact of contraception on birth spacing, and the effectiveness of contraceptive methods during a specific birth interval for Mexican women.

Birth spacing and some of its determinants in México (1957-1997)

Introduction

The number of children per woman has decreased in México since the 1970's. The total fertility rate fell, on average, from 7 to 3 children per woman (Zavala, 1992; Welti, 1999). This fact was related not only to how many children were wanted in a family but also to the preferred time to have them, and therefore, to the intervals between them. Although the fall of fertility rates were studied widely because of its utility for the execution of public policies, the changes of the birth-interval length during the fertility transition in México and their link with proximate determinants and socio-economic characteristics of mothers were scarcely approached, despite the implications of the lengthening of birth intervals in the reduction of the fertility rates, and also in the wellbeing of mothers and their children.

The first fertility studies in México, as well as in other less developed countries, emerged parallel to the international reflection about the velocity of its population growth and the necessity of reducing the elevated rates of fertility. Academic centers focused their attention on this phenomenon since the late 1960's and the explanation of birth intervals and some factors that were affecting their extension was developed in pioneering studies of the 1980's. These studies stated that birth spacing was occurring and contributing to the reduction of fertility. Among the determinants of birth spacing considered were the age of the mother, her education, contraception, the infant mortality of the previous child and miscarriages (Juárez, 1980; Moreno, 1984).

In this paper, the trends of birth spacing in México between 1957 and 1997 are described and the influence of contraceptive use in the duration of the first three birth

intervals is analyzed, controlling for some proximate determinants and socioeconomic characteristics of mothers such as mother's age, the length of the previous birth interval, the duration of exclusive breastfeeding, intrauterine mortality during the interval, infant mortality of the previous child, and mother's marital status, education and rural-urban condition. The theoretical framework is based on the classical conceptual framework of the intermediate fertility variables (Davis and Blake, 1967; Potter, 1963; Bongaarts and Potter, 1983). The information source is the *Encuesta Nacional de la Dinámica Demográfica de 1997 (Enadid 97)*. Event history analysis is used as methodology, particularly an application of the life table and Cox regression.

Given the reduction of the fertility in México, the lengthening of birth intervals during the fertility transition is expected. The first section of this paper focuses on the changes in birth spacing during the fertility transition in this country. The next section explains the positive or negative statistical associations between some factors of fertility and the length of birth intervals. Next, a description of the methodology and the main findings of the statistical analysis are included. Although the most interesting results are mentioned here, only the outcomes of Cox regression regarding to the first birth interval in the periods 1957-1997 and 1994-1997 are explained in detail.

The fertility transition in México and the changes in birth spacing

During the twentieth Century, the Mexican population experienced the demographic transition that is characterized by the change from high to low rates of mortality and fertility. The fall of mortality was registered since the 1930's, due mainly to the improvement in the sanitary and health conditions of the Mexican population. This affected fertility in several ways: more children survived until the age of marriage and the end of their reproductive

periods, and there was a smaller incidence of natural abortions and stillbirths. Thus, the total fertility rate increased from an average of 6 to 7 children per woman during the period 1930-1965 (Zavala, 1992:32-34).

Two facts related to the high rates of fertility were the occurrence of more pregnancies in older ages and the reduction of birth intervals, especially between the years 1955 and 1970 (Mier and Terán, 1989:49.) Women aged 35 and over increased significantly their contribution in children to the total fertility rate; although they experienced maternity early, they continued having children at short intervals until the end of their reproductive period. This situation resulted in high levels of fertility.

The fall of fertility began in the middle of the 1960's, and this marked the second stage of the demographic transition in México. The total fertility rate diminished from an average of 7 to less than 3 children per woman between 1965 and 1996. This fact was mostly related, not to the reduction of mortality, but to the effect of some socioeconomic transformations. These can be classified in three moments, depending on the intensity of the fall of fertility. The decrease of fertility was slow in the period 1963-1972 because of the influence of urbanization, the improvement of women's education, and the increase of the women's employment. Then, in the period 1973-1984, the fall of fertility was accelerated because of some modifications in the marriage patterns and the increase in the use of contraception, which was associated to the success of the governmental program of family planning. Finally, the decrease of fertility in the period 1984-1996 was moderate due to the growing use of contraception beside a small increase of breastfeeding and abortions (Mendoza, 1998:8-9).

Whereas having children throughout the reproductive period characterized the increase of fertility, having children at younger ages defined its reduction. That is, the participation of the 20-29 year-old women in the total fertility rate became more and more

important, as well as those of the group 15-19. This occurred because most of the women started to finish having children once they were 30 years old.

Related to the decrease of fertility was also the lengthening of birth intervals. Some studies affirmed that the birth intervals corresponding to the first three children of the Mexican women still presented small reductions in the late 1960's, but birth intervals began to increase after the fourth child (Juárez, 1980; Moreno, 1984). For the 90's, the probabilities of having a subsequent child had diminished in the former three birth intervals because of the effect of breastfeeding and contraception (CONAPO, 2001).

The determinants of birth intervals

Parting from the theoretical scheme of the proximate determinants of fertility (Davis and Blake, 1963; Bongaarts and Potter, 1983), the length of birth intervals can be related directly with a variety of determinants that affect the biological aspects of reproduction and are influenced by the socioeconomic and cultural context, such as the older mother's age, the reduction of infant mortality, the rise of intrauterine mortality, the increase in the period of breastfeeding, the use of contraception, and the length of the previous birth interval. In the next paragraphs, the proximate determinants that were taken in consideration for the statistical analysis are approached and its links with birth intervals are summarized.

First, the older the mother's age at the birth of the child, the longer are the birth intervals. This can be explained because an older woman has less probability of having a child due to the reduction of fecundability, especially during the last third of her reproductive life. Also, since the rate of miscarriages is greater when the mother is older, the differences in time between her children can be greater (Potter, 1963).

In addition, the diminishing of infant mortality can affect reproductive behavior and therefore, birth spacing. In societies with a high infant mortality, women have numerous children, since they fear losing some of them. At the individual level, when a child dies, his parents tend to have another child as a strategy to replace the lost child, shortening the period between children. Also when the mother interrupts breastfeeding at the death of the child, the postpartum amenorrhea can be shortened and another conception can occur (Preston, 1978).

Intrauterine mortality also has an impact on birth spacing. Having miscarriages or abortions can be a cause of having children at longer intervals. Although abortion is illegal in most of the countries of Latin America, it is estimated that abortion rates have risen because of the major motivation of limiting the number of children (Singh et al., 1997).

Besides, breastfeeding provides an inhibitor effect in having a new conception, and can affect birth spacing. The period of postpartum infecundability, generally estimated with the date of the end of amenorrhea, is directly associated with a prolonged breastfeeding (Potter, 1963). Furthermore, exclusive breastfeeding increases the duration of amenorrhea, because the anovulatory effect of breastfeeding is related with the intensity of this practice (Anderson, 1986:154-56).

Moreover, there is a statistically direct association between the effective use of contraception and the waiting time to a new conception. Mexico, beside Korea, Colombia and Indonesia, was one of the countries with the fastest fall of fertility, and at the same time, one of those that increased more the prevalence of contraception (Bongaarts and Potter, 1983:62). In México, the pills were the contraceptive method more common in the 1970's, while sterilizations were more important during the 1980's, especially in women older than 30 years. For 1997, 69% of the Mexican women in reproductive ages used contraception (CONAPO, 1999).

Other characteristics of reproduction taken as control variables are the length of the previous birth interval and the marital status. Evidently, women's marital status is an indicator of their exposure to the risk of having a child. On other hand, the length of the previous birth interval show information about the cultural or socioeconomic norms linked to reproductive behavior; thus, women, who had a short birth interval before, tend to have a subsequent short birth interval (Wood, 1994).

Next to the called proximate determinants of fertility, some socioeconomic factors were considered for the analysis: the mother's education and rural-urban condition. A greater level of education and living in an urban area can increase birth spacing. Mother's education influences fertility by increasing the economic cost of children, being a vehicle to obtain information of contraception, postponing marriage, and modifying the values related to an elevated fertility; and in general, the mother's urban condition is related to the access to education and health services, both crucial for birth control policies (Rubin, 1989:255-58, 271-272).

Although there are other determinants of birth spacing, those mentioned above are the most important in the Mexican case. The role of each variable in birth spacing can change depending on the cultural and social norms related with reproduction, the economic situation of families, the order of the child and the number of children that are preferred.

Methodology

The data

The data come from the *Encuesta Nacional de la Dinámica Demográfica de 1997 (Enadid 97, INEGI).* 56, 025 women in reproductive ages (15-54), ever-married (including consensual marriage) and who declared the birth of their children were selected for this study, 95% of the

sample of women with at least one child. The sections included in the statistical analysis were those corresponding to the general and educational characteristics, the fertility and pregnancy history, the contraceptive history and the maternal and infant health.

The statistical analysis

An application of the life table including censored cases was used to estimate the survival functions of the first three birth intervals and their medians (Lee, 1980). The logic of this technique for birth interval studies is analogue to that used in mortality studies. The scenario is the following: there is an initial event, the birth *i*, and a final event, the birth *i+1*, and a time metric, the time span since the birth *i*, generally in months. Then it is possible to measure the length in months *t* between the births *i* and *i+1* or, if there are censored cases, between the birth *i* and the survey's date. In this way, the first birth interval was that between the first and the second child or the survey's date, the second birth interval was that between the second and the third birth or the survey's date, and so on. The random variable *t* has a survival function *S(t)*, a density function *f(t)* and a hazard function *h(t)*, and it is possible to estimate the median point of time in *S(t)*.

In order to analyze the change of birth intervals through the time, these were classified according to the birth date of the child that opened the interval, in the following periods: 1957-1972, 1972-1977, 1977-1982, 1982-1987, 1987-1992 and 1992-97. The period 1957-1997 corresponds to the reproductive life of the women in the survey. The period 1957-1972 coincides with the epoch previous to the Mexican governmental program of family planning. In total, 36 life tables were constructed, one for each birth interval per period of analysis for all women and for those without sterilization.

Next, Cox regression modeling was used to analyze the impact of contraception and a set of variables on the risk of having a subsequent child, because of its utility to study temporal dependent variables taking censoring into account. This model consists of obtaining a linear function of the independent variables to estimate the risk for the occurrence of a particular event as a function of time. One of the assumptions of the model is that the hazards for any two individuals with different covariate values are proportional (Leliéve and Bringé, 1998:100-111). For this research, it implied the necessity of validation of the proportionality of the independent variables before introducing them to the analysis. Proportional hazard and Wilcoxon tests for the categories of each independent variable were done (not shown here).

A Cox regression was applied to each of the first three birth intervals (dependent variable) for 1957-1997, including as independent variables the period of occurrence, mother's age, the length of the previous birth interval (for the second and third birth intervals), intrauterine mortality during the interval, the infant mortality of the previous child and female or male sterilization during the interval (**Table 1**).

Other Cox regressions were done for each of the first three birth intervals for the period 1994-1997. In these regressions, the independent variables were almost the same as those for the first group of regressions with the exception of the period of occurrence, and other variables were annexed: the contraceptive method used more frequently during the birth interval, exclusive breastfeeding and mother's marital status, education and rural-urban condition. The fundamental reason to perform this group of regressions was to introduce contraceptive history and breastfeeding duration, together available in the survey only for this period and for the last two pregnancies. In order to choose the contraceptive method of longer use, the duration of the use of each contraceptive method was accounted and compared. When in atypical cases, two or more contraceptive methods presented the same

duration, the first of them was selected for the analysis (**Table 1**). The contraceptive methods were classified as sterilization, intrauterine device, hormonal methods, including the pill, injectables or Norplant, and others, considering here the rest of the contraceptive methods asked in the survey, condom, rhythm, withdrawal, vaginal methods and others.

Since a limitation of the data was the lack of a temporal link between the socioeconomic characteristics of women at the day of the survey and the pregnancy history, these characteristics were only introduced to the second model (period 1994-1997).

Results

Trends of birth spacing in México

According to the changes in the medians of the former three birth-interval lengths during the fertility transition in México, even excluding the birth intervals of women with sterilization, the birth-interval lengths were increased since the 1970's, era in which explicit policies for birth control began. In addition, birth spacing was more and more relevant after the second child in recent years, what shows the actions and preferences of Mexican couples to postpone or limit pregnancies after a child of this order.

For the total of Mexican women in the period 1957-1972, the medians of the first, second and third birth-intervals were 23, 25 and 25 months, in comparison to those in the period 1987-1992, which were 36, 50 and 71 months respectively (**Figure 1**). The medians for the second and third birth-intervals during the period 1992-1997 were estimated by logistic extrapolation, since they exceeded the time of observation; the accumulated survival function *S(t)* was .51 for the second birth interval and .61 for the third at the date of the interview.

Once women with sterilization were not in the analysis, the differences between the median of birth intervals through the time were smaller (**Figure 2**). However, there were

increases. While the medians of the three former birth-interval lengths were 23, 25 and 25 months in 1957-1972, those in 1987-1992 were 36, 44 and 44 months correspondingly. In addition, the gap in the medians between the second and the third birth intervals disappeared, illustrating that when a woman or her husband didn't opt for sterilization, the lengths of these birth intervals tended to be alike and larger than the first birth interval. Percentages of women that didn't have sterilization after the third child decreased considerably, in comparison to those who didn't have it after the second child (**Figure 3**). Definitively, the differences in the medians between the total of birth intervals and those corresponding to the women without sterilization corroborated the relevant role of sterilizations in México, especially in women with three children.

The medians for the fist birth interval seemed to have had a lineal growth since 1972-1977, but those for the second and third birth intervals augmented more rapidly throughout the years (**Figures 1 and 2**). The first big increase in birth spacing occurred between 1972-1977 and 1977-1982, period that correspond to the first governmental campaign to increment the availability of contraception in Mexico. The major relative increases in the medians for the second birth interval (all women) were presented between the periods 1972-1977 and 1977-1982, and for the third between 1982-1987 and 1987-1992.

The determinants of birth intervals (period 1957-1997, model 1)

The results about the impact of each independent variable on the risk of having another child were similar for the former three birth intervals (**Table 2**). The mentioned risk decreased continually since 1972-1977, compared with the period 1957-72. The fact of having a first child during 1972-1977, for example, diminished the risk of having a second child 10%, while the same event but in 1992-97 had a relative impact of 52% in the same direction.

Also, the survival of the previous child (birth *i*) diminished the risk of having another child (*i+1*) as well as the existence of miscarriages or still births during the interval, the older mother's age and the existence of sterilization. For example, the risk of having a second child decreased 22% when the first child survived at least before the conception of the second child. Besides, the occurrence of intrauterine mortality, compared with its no occurrence, contributed to diminish that risk in 46%, and sterilization, with respect to no sterilization, 95%.

The set of regressions for the period 1957-1997 show the importance of the effect of the historic time in birth spacing, even taking censoring and other important variables into account. This effect could be related with the continuous increase in the use of contraception as well as with the changes in the attitudes and norms favorable to a controlled fertility.

The determinants of birth intervals (period 1994-1997, model 2)

The analysis of the determinants of birth spacing during the period 1994-1997 confirmed that a paramount aspect in reducing the risk of having other child is contraceptive use (**Table 3)**. A male or female sterilization reduced the risk of having a second child 93%. Besides, the IUD (Intrauterine Device) and the hormonal contraceptive methods decreased the risk of having a second child 87% and 77% respectively. Also the rest of the methods that include condom, rhythm, withdrawal and others were relevant, diminishing the referred risk 65%. These findings coincide with the tendencies of contraceptive use published by CONAPO (1999) during this period, but give an idea of the effectiveness of the contraceptive methods used by Mexican women.

The mortality variables included in the regression for 1994-1997 were also valuable to explain birth spacing. The risk of having other child was smaller when a child survives. For the

first birth interval, this risk was reduced 37% when the child survives. This fact reveals the persistent inclination of Mexican couples to replace the lost child. Also the presence of spontaneous intrauterine mortality affected this risk 53% in the same direction. It is interesting that the impact of the mortality variables was greater in 1994-97 than in 1957-1997, despite the progress in the reduction of mortality in México. These differences could be related with the misreporting of intrauterine and infant mortality in the farther years.

In addition, the older the mother and the longer the previous birth-interval length (for the second and third birth intervals), the less was the risk of having another child. In contrast, being married, compared with being divorced, separated or widowed, duplicated the risk of having another child. For the first birth interval, this variable had a positive impact of 245%.

The exclusive breastfeeding was less relevant than the factors mentioned above, despite the public campaigns to promote its benefits to the children's health. For example, if a woman breastfed her first child for 6 months, the risk of having a second child would diminish by 6%. The impact found for the second and third birth intervals was similar.

The results of socioeconomic effects were striking. Living in an urban area did not have an effect on birth spacing. However, the hypothesis "the greater the level of mother's education, the longer birth spacing is" was confirmed for the first birth interval, and having little or no education compared to finish at least secondary school increased the risk of having a third child 21%.

Discussion

The most important hypothesis in the research was confirmed. Comparing the length of birth intervals before and during the fertility transition, the evidence shows that after the reduction of fertility began Mexican women no longer had their second and subsequent children as fast as before this transition. In addition, when the differences between the medians of birth intervals with and without women with sterilization were observed, it was evident the relevance of sterilization to limit the number of children since the 1970's, especially after the third child.

About the proximate determinants of birth spacing, the use of contraceptive methods during the birth interval was essential to reduce the risk of having another child, besides the mortality variables: the survival of the previous child and the occurrence of intrauterine mortality. The effect of the other variables like the mother's age, the length of the previous birth interval and the exclusive breastfeeding were less important, but significant.

The impact of contraceptive use on birth spacing by type of contraceptive method (period 1994-1997) corresponded to the trends of contraceptive use in México during the 90's. The order of relevance of these contraceptive methods was sterilization, IUD, hormonal methods and others. Taking censoring and a set of covariates into account, the effect of each contraceptive method on the risk of having a subsequent child, compared with no use of contraception, helped to quantify their success to control fertility.

The effect of the socioeconomic variables on birth spacing was small and insignificant in most of the regressions. It was expected since most of the proximate determinants were controlled in the analysis. This supports the theory of the intermediate variables of fertility, which states that biological reproduction is influenced by the socioeconomic and cultural context via these variables (Davis and Blake, 1967). However, the less mother's education was

relevant to increase the risk of having another child in some regressions. These outcomes might be related to unmeasured differences in fecundity or coital frequency, in efficiency and use of contraception, or in the incidence of abortion (Trussel et al., 1985).

While the tendency of birth spacing was presented since the 1970's, the trend of the waiting time between marriage or cohabitation and the first child was not. In further analysis it would be important to study if significant modifications in the timing of the first child took place in México and therefore if having children just after marriage, which is a characteristic of the traditional pattern of family formation (Zavala, 1990), has changed. In addition, despite *Enadid97* does not provide a temporal link between birth spacing and the mother's socioeconomic characteristics, it would be interesting to examine how the socioeconomic context affects the strong relation between contraception and birth spacing.

This study shows the utility of birth-interval analysis not only to understand the tendencies of birth spacing, but also to identify its relation with the proximate determinants and the mother's socioeconomic characteristics, and, therefore, to widen the knowledge of reproductive behavior in the context of the Mexican fertility transition.

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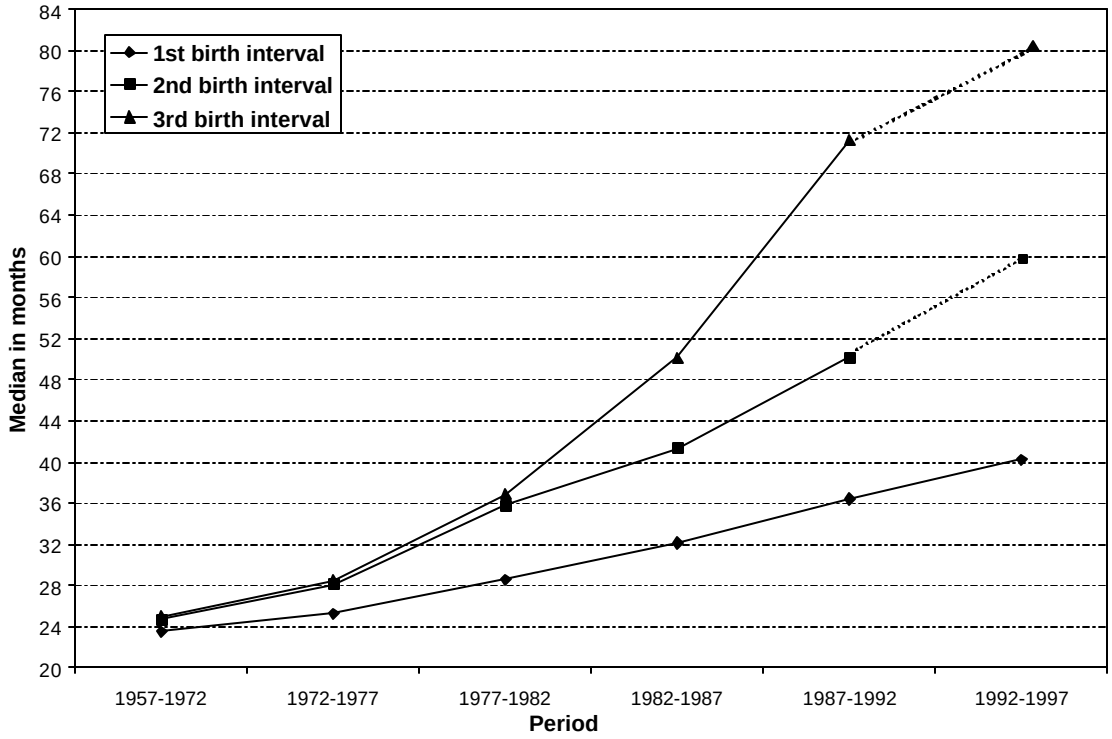
Table 1 Definition of variables used in birth interval analysis

Variables	Description	Categories	Models*	
			1	**2**
Dependent				
i-th birth interval	Difference in months between birth of order i and i+1	- - -	X	X
Independent				
Period	Occurrence period of the birth that opens the interval (i)	1957-1972 1972-1977 1977-1982 1982-1987 1987-1992 1992-1997	X	
Age	Mother's age at birth of i-th child (in years)	- - -	X	X
Survival of previous child	Survival of child of order i at least before conception of child i+1	Yes No	X	X
Intrauterine mortality	At least one miscarriage or stillborn during the i-th birth interval	Yes No	X	X
Previous birth interval**	Duration of the previous birth interval in months	- - -	X	X
Sterilization	Female or male sterilization during the i-th birth interval	Yes No	X	
Type of contraceptive method used	Contraceptive method most used during the i-th birth interval	None Sterilization IUD Hormonal methods Others		X
Education	Mother's level of instruction	<Elementary incomplete Elementary complete or secondary incomplete >Secondary complete		X
Marital status	Mother is married (or cohabiting)	Married Not married		X
Rural-urban condition	Size of the place of residence: less or more than 2500 inhabitants	Rural Urban		X
Breastfeeding	Duration of exclusive breastfeeding for the child of order i in months	- - -		X

*The first model corresponds to the period 1957-1997 and the second to 1994-1997. The period of the last model was defined for the availability of information about contraception and breastfeeding.

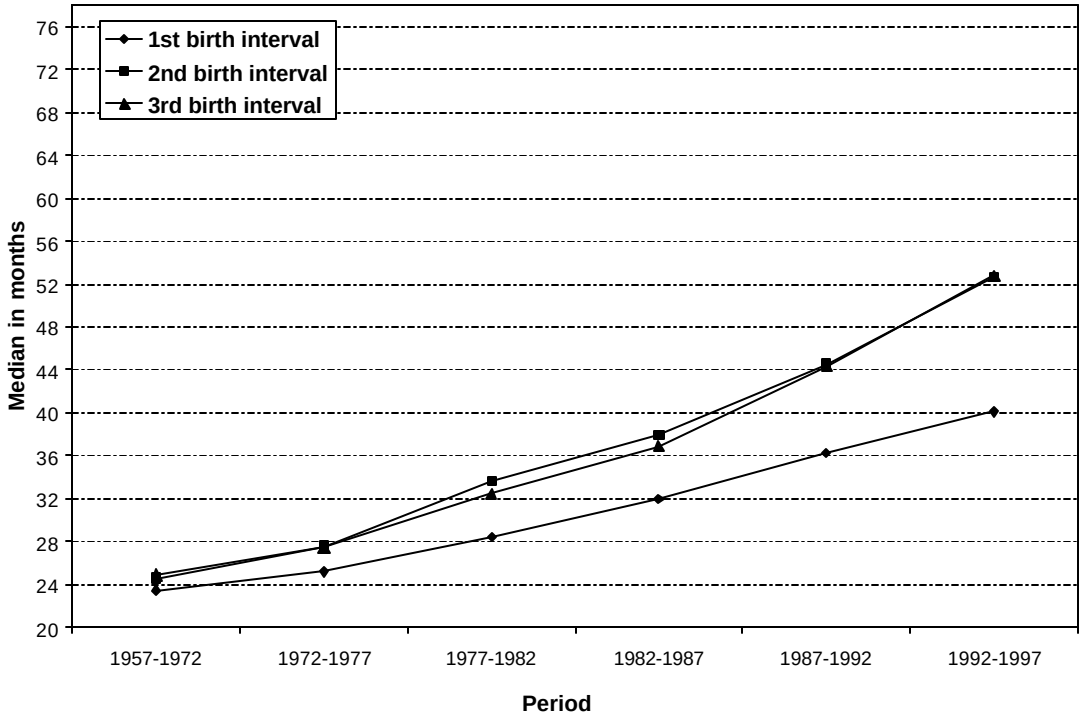
** This variable is excluded from the analysis of the first birth interval.

Figure 1 Birth intervals in México by order and period



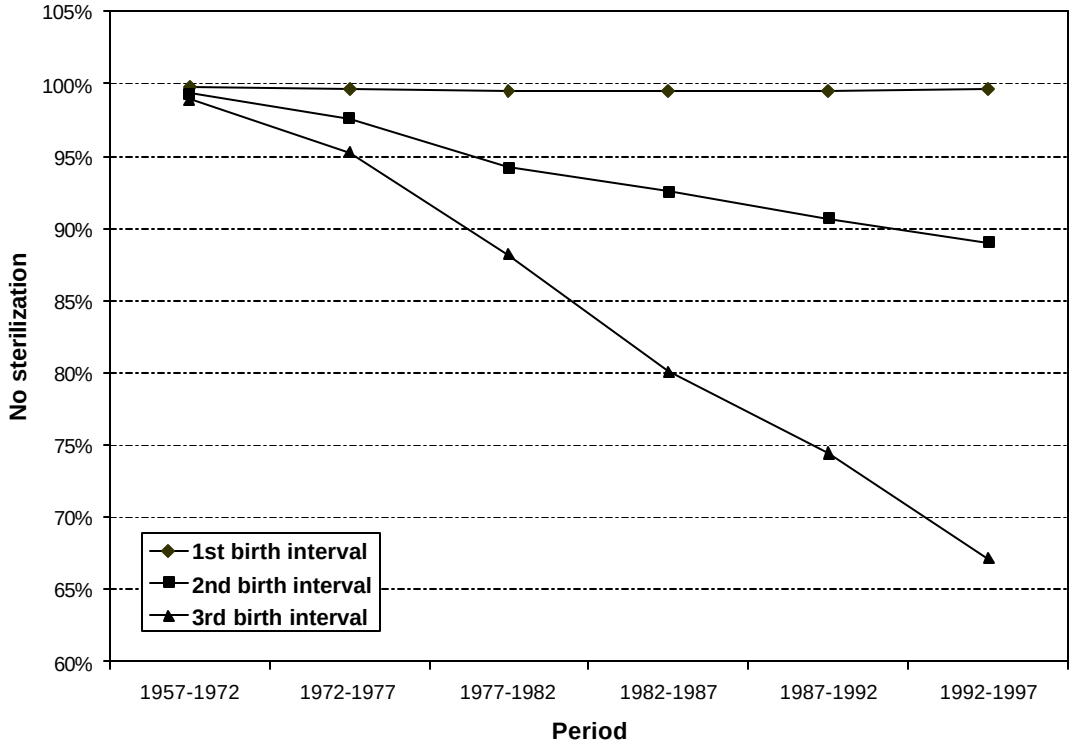
Source: Estimates based on Enadid 97.

Figure 2 Birth intervals in México by order and period, excluding those truncated by sterilization



Source: Estimates based on Enadid 97.

Figure 3 Percentage of Mexican women without sterilization by birth interval and period



Source: Estimates based on Enadid 97.

Table 2 Cox regressions for the first three birth intervals (1957-1997)

Independent variables	Categories	*First birth interval*			*Second birth interval*			*Third birth interval*		
		B	SE	Exp(B)	B	SE	Exp(B)	B	SE	Exp(B)
Period	(57-72)									
	72-77	-0.106 *	0.016	0.900	-0.204 *	0.019	0.815	-0.184 *	0.023	0.832
	77-82	-0.241 *	0.016	0.786	-0.359 *	0.018	0.699	-0.295 *	0.023	0.744
	82-87	-0.357 *	0.015	0.700	-0.476 *	0.018	0.621	-0.422 *	0.023	0.656
	87-92	-0.497 *	0.015	0.608	-0.625 *	0.019	0.535	-0.565 *	0.024	0.569
	92-97	-0.732 *	0.020	0.481	-0.877 *	0.025	0.416	-0.778 *	0.034	0.459
Survival of previous child	Yes (No)	-0.248 *	0.022	0.780	-0.212 *	0.026	0.809	-0.084 **	0.033	0.920
Intrauterine mortality	Yes (No)	-0.615 *	0.021	0.541	-0.513 *	0.025	0.599	-0.555 *	0.032	0.574
Age	- - -	-0.027 *	0.001	0.973	-0.045 *	0.002	0.956	-0.052 *	0.002	0.949
Previous birth interval	- - -	- - -	- - -	- - -	-0.007 *	0.000	0.993	-0.008 *	0.000	0.992
Sterilization	Yes (No)	-2.936 *	0.204	0.053	-4.036 *	0.123	0.018	-5.283 *	0.174	0.005

Category of reference in parenthesis. * $p < 0.01$ ** $p < 0.05$

First birth interval : 55899 cases, 15.78% censored . -2 Log L=920764.16 Sig. 0.000

Second birth interval: 45955 cases, 26.25% censored. -2 Log L=642921.40 Sig. 0.000

Third birth interval: 32822 cases, 33.68% censored. -2 Log L=394962.29 Sig. 0.000

Source: Estimates based on Enadid 97

Table 3 Cox regressions for the first three birth intervals (1994-1997)

Independent variables	Categories	*First birth interval*			*Second birth interval*			*Third birth interval*		
		B	SE	Exp(B)	B	SE	Exp(B)	B	SE	Exp(B)
Survival of previous child	Yes (No)	-0.459 *	0.112	0.632	-0.365 **	0.156	0.694	-0.402 **	0.208	0.669
Intrauterine mortality	Yes (No)	-0.752 *	0.169	0.471	-0.663 *	0.196	0.515	-0.781 **	0.337	0.458
Age	- - -	-0.034 *	0.005	0.966	-0.043 *	0.009	0.958	-0.054 *	0.012	0.948
Previous birth interval	- - -	- - -	- - -	- - -	-0.004 *	0.002	0.996	-0.005 **	0.002	0.995
Type of contraceptive method used	(None) Sterilization IUD Hormonal methods Others	 -2.009 * -2.013 * -1.473 * -1.063 *	 0.708 0.076 0.070 0.067	 0.134 0.134 0.229 0.346	 -4.410 * -1.986 * -1.625 * -1.149 *	 0.503 0.103 0.095 0.089	 0.012 0.137 0.197 0.317	 -6.498 * -2.159 * -1.487 * -1.256 *	 1.003 0.171 0.130 0.141	 0.002 0.115 0.226 0.285
Marital status	Married (Not married)	0.896 *	0.113	2.450	0.745 *	0.156	2.106	0.754 *	0.237	2.125
Rural-urban condition	Rural (Urban)	0.050	0.054	1.051	-0.002	0.071	0.998	-0.216	0.095	0.806
Education	<Elementary incomplete Elementary complete or secondary incomplete (>Secondary complete)	0.189 * 0.113 **	0.070 0.056	1.208 1.120	0.156 *** 0.100	0.091 0.075	1.168 1.105	0.062 0.062	0.125 0.115	1.063 1.064
Breastfeeding duration	- - -	-0.010 *	0.002	0.990	-0.009 *	0.002	0.991	-0.014 *	0.003	0.986

Category of reference in parenthesis. * $p < 0.01$ ** $p < 0.05$ *** $p < 0.1$

First birth interval: 7781 cases, 64.16% censored . -2 Log Likelihood=283231.41 Sig. 0.000

Second birth interval: 6820 cases, 71.23% censored. -2 Log Likelihood=15555.89 Sig. 0.000

Third birth interval: 4415 cases, 73.23%censored.-2 Log Likelihood=7111.94 Sig. 0.000

Source: Estimates based on Enadid 97