



The Impacts of  
**Healthy Birth  
Spacing** in **Jordan**





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Higher Population Council

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# Table of Contents

Healthy Birth Spacing in Jordan .....	1
Birth Spacing and the Qur'an .....	4
The World Health Organization's Recommendations for Birth Spacing .....	5
Why Birth Spacing Matters .....	7
<i>Benefits for Newborns, Infants, and Children Under Five Years Old</i> .....	10
<i>Benefits for Mothers</i> .....	11
<i>Benefits for Fathers</i> .....	12
<i>Benefits for Communities</i> .....	13
Impact of Birth Spacing on Children's Survival .....	16
<i>Neonatal Mortality</i> .....	17
<i>Postneonatal Mortality</i> .....	19
<i>Early Childhood Mortality</i> .....	21
Impact of Birth Intervals on Children's Health Outcomes in Jordan .....	23
<i>Neonatal Mortality</i> .....	25



<i>Infant Mortality</i> .....	27
<i>Early Childhood Mortality</i> .....	29
Birth Spacing Trends in Jordan.....	32
<i>Slow Steps in the Right Direction</i> .....	34
<i>Another View of Birth Spacing's History</i> .....	35
<i>Birth Spacing Today</i> .....	37
<i>Determinants of Birth Intervals</i> .....	39
<i>Three Scenarios for Infant Mortality</i> .....	41
<i>Cumulative Results of Three Infant Mortality Scenarios</i> .....	43
Taking Action.....	46
<i>Policy</i> .....	47
<i>Education</i> .....	48
<i>Service Delivery</i> .....	50
The Prospects for Healthy Birth Spacing in Jordan.....	51

# Healthy Birth Spacing in Jordan

## A challenge and an opportunity

Extensive research shows that the optimum period between births is at least three years. When couples wait at least two years after a birth before they attempt another pregnancy, they can significantly reduce the risk of serious adverse maternal and child health outcomes.

In Jordan, the practice of healthy birth spacing is increasing—but not fast enough. Currently, nearly one third of all births here are spaced less than two years apart; well more than half are spaced less than three years apart. The rates of child and maternal illness and death associated with these patterns compromise the well-being not only of families but also of communities.

Wide adoption of healthy birth spacing in Jordan will reduce neonatal, infant, child, and maternal mortality; improve the health of mothers and their offspring; enhance the ability of fathers to care for their families; and make communities healthier and therefore stronger.

This booklet presents the research evidence for healthy birth spacing and suggests what Jordan can do in the spheres of policy, education, and health services to promote the practice.





# Birth Spacing and the Qur'an

(( وَحَمْلُهُ وَفِصَالُهُ ثَلَاثُونَ شَهْرًا ))

سورة الأحقاف الآية (15)

"The period of pregnancy and weaning is thirty months"

(( وَفِصَالُهُ فِي عَامَيْنِ ))

سورة لقمان الآية (14)

"Weaning at two years of age"

# The World Health Organization's Recommendations for Birth Spacing

After reviewing the opinions of 30 technical experts, the World Health Organization in 2006 made the following recommendations for birth spacing:

- After a live birth, the recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, perinatal, and infant outcomes.

In simple terms, couples are encouraged to wait to attempt a new pregnancy until after the second birthday of their last child. By waiting at least two years from the date of the previous birth, the next birth is likely to occur around the three-year mark, when the most beneficial effects of birth spacing are realized.

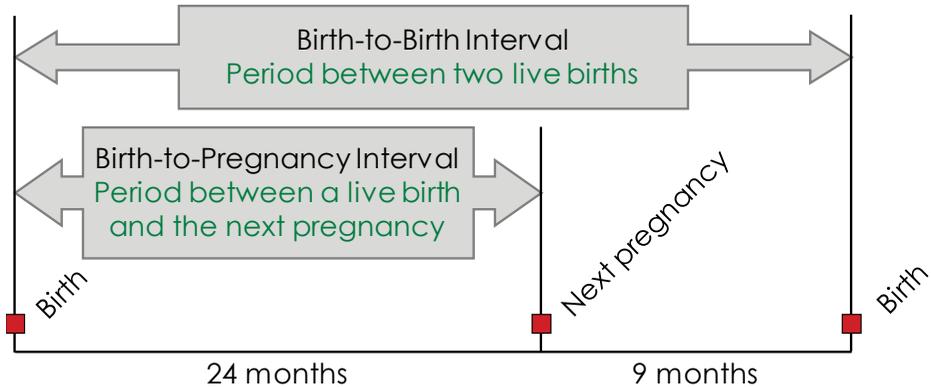
- After a miscarriage, the recommended minimum interval to the next pregnancy should be at least six months in order to reduce risks of adverse maternal and perinatal outcomes.

## Definitions

The “inter-pregnancy interval” is the amount of time that passes between a live birth and the next pregnancy.

The “birth interval” is the amount of time that passes between two live births. The birth interval equals the inter-pregnancy interval plus the length of a pregnancy—usually nine months from conception to delivery.

## Recommended Birth-to-Birth and Birth-to-Pregnancy Intervals



A 24-month birth-to-pregnancy interval is the approximate equivalent of a 33-month birth-to-birth interval.

Source: World Health Organization (WHO). 2006. Report of a Technical Consultation on Birth Spacing, Geneva June 13–15, 2005. Geneva, Switzerland: WHO, Department of Making Pregnancy Safer and Department of Reproductive Health and Research.

# Why Birth Spacing Matters

Statistics show that an interval between births (the “birth interval”) shorter than 33 months lowers the chances of survival for the mother and child. Newborns are more likely to be born too soon, to be too small for their gestational age, and to have low birth weight; their growth is more likely to be stunted. Mothers are more likely to suffer from pregnancy-induced high blood pressure and other serious complications.

The higher rates of maternal and child mortality and morbidity associated with short birth intervals create burdens not only for families but also for society as a whole.

Conversely, when couples practice healthy birth spacing, everyone is better off.

Source: Extending Service Delivery (ESD) Project. 2006. Healthy Timing and Spacing of Pregnancies: A Pocket Guide for Health Practitioners, Program Managers, and Community Leaders. Watertown, MA: Pathfinder International, USAID ESD Project.





## A Nutritional Advantage of Healthy Birth Spacing

Children whose mothers practice healthy birth spacing may be able to breastfeed longer than they would otherwise. According to WHO, children who breastfeed exclusively up to six months of age and who continue to breastfeed, supplemented by other food, until they are two or older experience substantial health benefits. For example, breast milk contains antibodies that protect children from illnesses such as diarrhea and pneumonia, which are the two most common causes of child mortality worldwide.

Source: World Health Organization. Fact file: 10 facts on breastfeeding. Geneva, Switzerland: World Health Organization. Available from: <http://www.who.int/features/factfiles/breastfeeding/facts/en/index.html>.



## Benefits for Newborns, Infants, and Children Under Five Years Old

Healthy birth spacing is associated with reduced risks for pre-term births, low birth weight, small size for gestational age, and—in some populations—stunting or underweight conditions. It is also associated with reduced risk of death.

Source: Extending Service Delivery (ESD) Project. 2006. *Healthy Timing and Spacing of Pregnancies: A Pocket Guide for Health Practitioners, Program Managers, and Community Leaders*. Watertown, MA: Pathfinder International, USAID ESD Project.



## Benefits for Mothers

Healthy birth spacing allows mothers to breastfeed longer. That is an advantage for mothers, because two years of breastfeeding has been linked to reduced risk for breast and ovarian cancer.

Healthy birth spacing is associated with a reduced risk for pregnancy-induced high blood pressure and complications of pregnancy such as preeclampsia, obstructed and prolonged labor, iron-deficiency anemia, and maternal death.

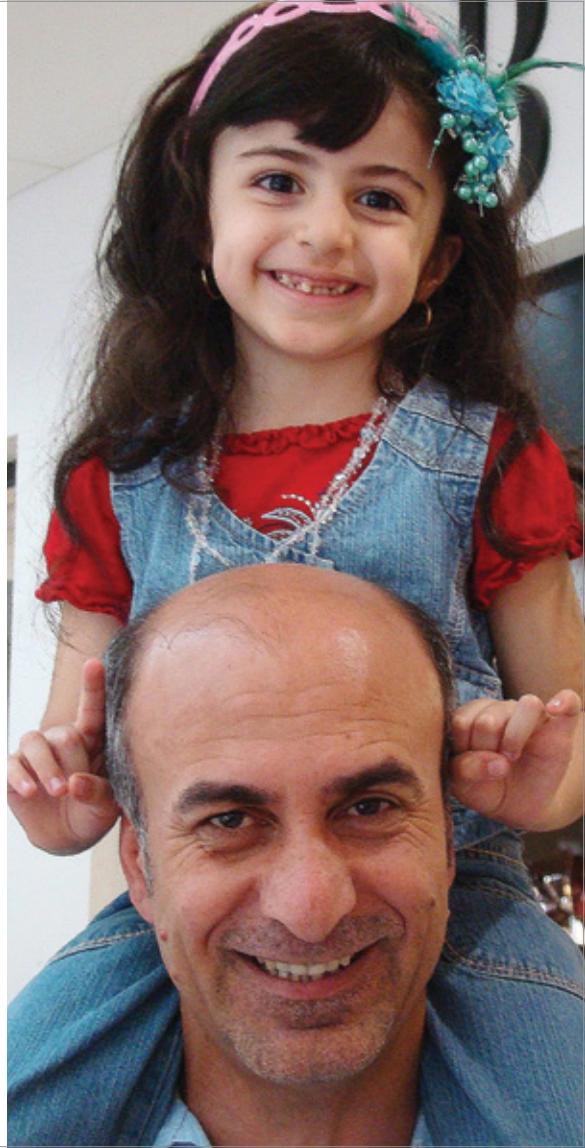
Healthy birth spacing gives a mother more time to prepare physically, emotionally, and financially for her next pregnancy (if she chooses to become pregnant again). It gives her time to focus on her family: her newborn, husband, and other children.

Source: Extending Service Delivery (ESD) Project. 2006. *Healthy Timing and Spacing of Pregnancies: A Pocket Guide for Health Practitioners, Program Managers, and Community Leaders*. Watertown, MA: Pathfinder International, USAID ESD Project.

# Benefits for Fathers

Healthy birth spacing helps fathers to safeguard the health and well-being of their wives and children. It gives fathers time to plan financially and emotionally for another child, if the couple chooses to have one, and the satisfaction of supporting their wives in making decisions that are in the family's best interests.

Source: Extending Service Delivery (ESD) Project. 2006. *Healthy Timing and Spacing of Pregnancies: A Pocket Guide for Health Practitioners, Program Managers, and Community Leaders*. Watertown, MA: Pathfinder International, USAID ESD Project.



# Benefits for Communities

Healthy birth spacing is good for communities, because it reduces the incidence of death and illness among mothers, newborns, infants, and children.

In so doing, it can contribute to poverty reduction and improve a community's quality of life.

Source: Extending Service Delivery (ESD) Project. 2006. *Healthy Timing and Spacing of Pregnancies: A Pocket Guide for Health Practitioners, Program Managers, and Community Leaders*. Watertown, MA: Pathfinder International, USAID ESD Project.









# Impact of Birth Spacing on Children's Survival

Unhealthy birth spacing has equally far-reaching consequences for families and communities. The impact of birth spacing on the mortality of newborns, infants, and children under five years old is evident worldwide.

# Unhealthy Birth Spacing Increases Neonatal Mortality

## Waiting three years between births instead of just two reduces the number of deaths by 25 percent

A study of the impact of birth spacing on neonatal, postneonatal, and early childhood mortality in 17 countries found that the probability that an infant would die in the second through fourth week of life increased dramatically as the birth interval decreased. The accompanying graph shows the relationship between the birth interval and the probability of death (the “odds ratio,” which the researcher adjusted to account for other factors that could also affect mortality).

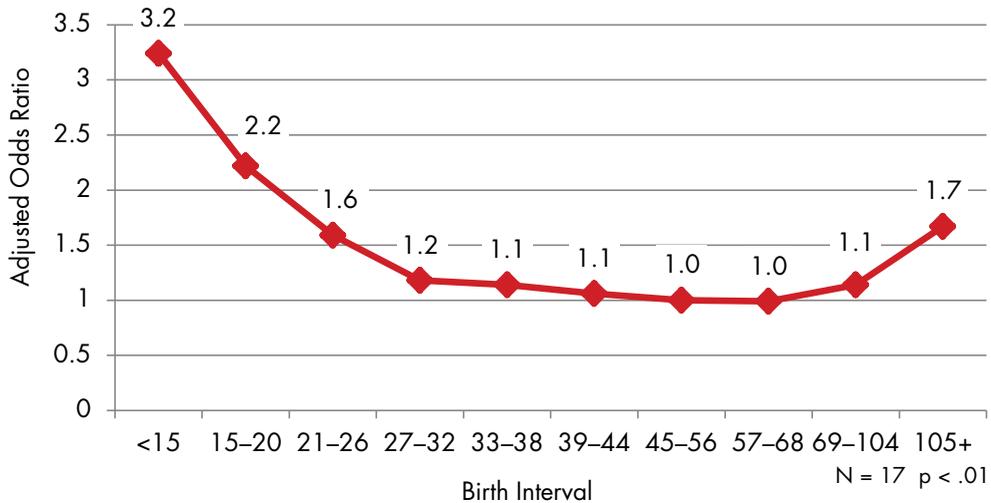
According to the study, an infant born less than 15 months after the most recent previous birth was three times more likely to die during the first month of life than an infant born at 33 to 38 months (the interval recommended by WHO).

Even though the sharpest drop in mortality occurred between a birth interval of less than 15 months and an interval of 21 to 26 months, the improvement in mortality between a birth interval of two years and three years was significant. An infant born three years after the mother’s most recent previous birth had a 25-percent better chance of survival than an infant born after a birth interval of only two years.

For all three age groups in the 17-country study, increases in infant mortality at birth intervals of five years or longer are explained by the advancing age of the mothers.

# Impact of Birth Intervals on Neonatal Mortality

Neonatal Mortality (Weeks 2-4)



Source: Rutstein, S. 2005. "Effects of Preceding Birth Intervals on Neonatal, Infant, and Under-five Years Mortality and Nutritional Status in Developing Countries: Evidence from the Demographic Health Surveys." *International Journal of Gynecology and Obstetrics* 89: S7-S24.

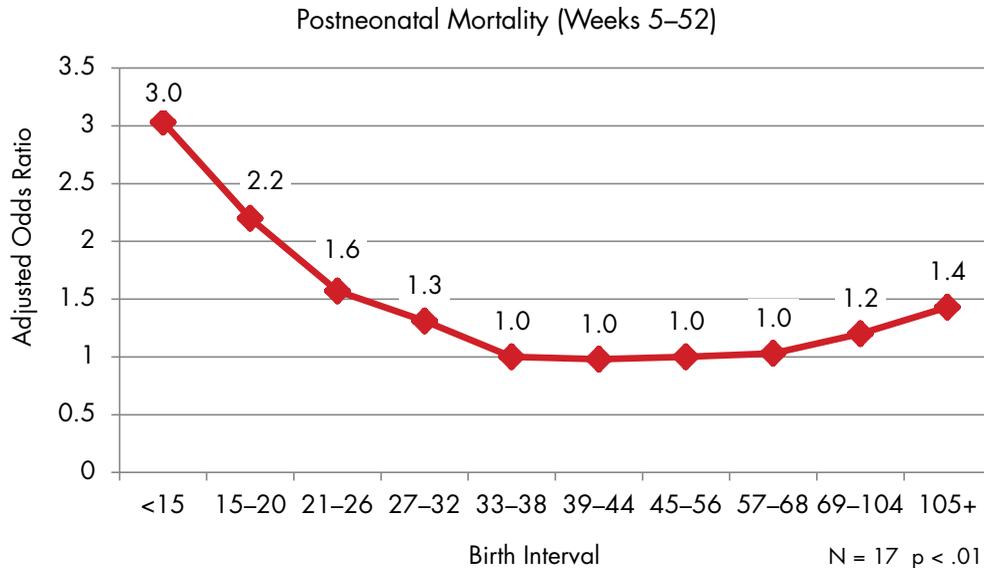
# Unhealthy Birth Spacing Increases Postneonatal Mortality

**For this cohort, increasing the birth interval from two to three years reduces the number of deaths by 38 percent**

The same study of neonatal, postneonatal, and early childhood mortality in 17 countries also found that among infants between the ages of five weeks and one year, the shorter the interval was between births, the lower were the chances of survival.

The graph for this cohort shows a sharp decline in mortality as birth intervals increased from less than 15 months to between 33 and 38 months. The adjusted odds ratios show that an infant born three years after the mother's most recent delivery had a 38-percent better chance of survival than an infant born after a birth interval of only two years.

## Impact of Birth Intervals on Postneonatal Mortality



Source: Rutstein, S. 2005. "Effects of Preceding Birth Intervals on Neonatal, Infant, and Under-five Years Mortality and Nutritional Status in Developing Countries: Evidence from the Demographic Health Surveys." *International Journal of Gynecology and Obstetrics* 89: S7–S24.

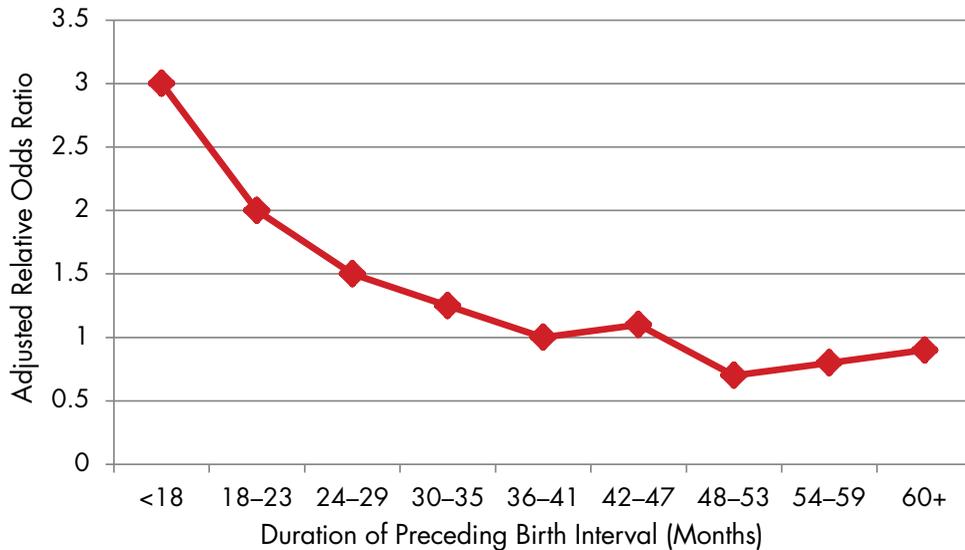
# Unhealthy Birth Spacing Increases Early Childhood Mortality

## Increasing the birth interval from less than 18 months to three years or more improves survival threefold for children under five

The 17-country study showed that birth spacing also affects the odds of survival among children under the age of five. The probability of death in this age group declined dramatically as the birth interval increased from less than 18 months to between 36 and 41 months.

The adjusted odds ratios for this cohort show that a child's chances of survival are three times better with a birth interval of 36 to 41 months than with a birth interval of less than 18 months.

## Impact of Birth Intervals on Mortality among Children Under Five Years Old



Source: Rutstein, S. 2005. "Effects of Preceding Birth Intervals on Neonatal, Infant, and Under-five Years Mortality and Nutritional Status in Developing Countries: Evidence from the Demographic Health Surveys." *International Journal of Gynecology and Obstetrics* 89: S7-S24.



# Impact of Birth Intervals on Children's Health Outcomes in Jordan

The close relationship between birth intervals and neonatal, infant, and early childhood survival is also evident when examining Jordan's mortality rates for these age groups.

## Maternal and Child Health

The following health and mortality statistics for women and children in Jordan can be a useful framework for considerations of the potential impact of healthy birth spacing.

Annual number of births (2012)*	183,000
Annual number of neonatal deaths*	2,600
Neonatal mortality rate (2012)**	14
Annual number of infant deaths (Includes neonatal)*	3,100
Infant mortality rate (2012)**	17
Annual number of <5 deaths (includes both infants and neonatal deaths)*	3,800
Child mortality rate (2012)**	4
Maternal mortality ratio (2007/2008)***	19

\* Calculated using the DemProj Module of the Spectrum System of Policy Models, Futures Group.

\*\* Department of Statistics (DOS). 2013. Jordan Population and Family Health Survey 2012. Amman, Jordan.

\*\*\* The Higher Population Council (HPC). 2010. The National Maternal Mortality Study Jordan (2007-2008). Amman, Jordan.

Healthy timing and spacing of pregnancy may help reduce the consequences of these health risks for mothers and children.

# Birth Spacing's Influence on Neonatal Mortality in Jordan

## The neonatal mortality rate is sharply better at four-year intervals than at two-year intervals

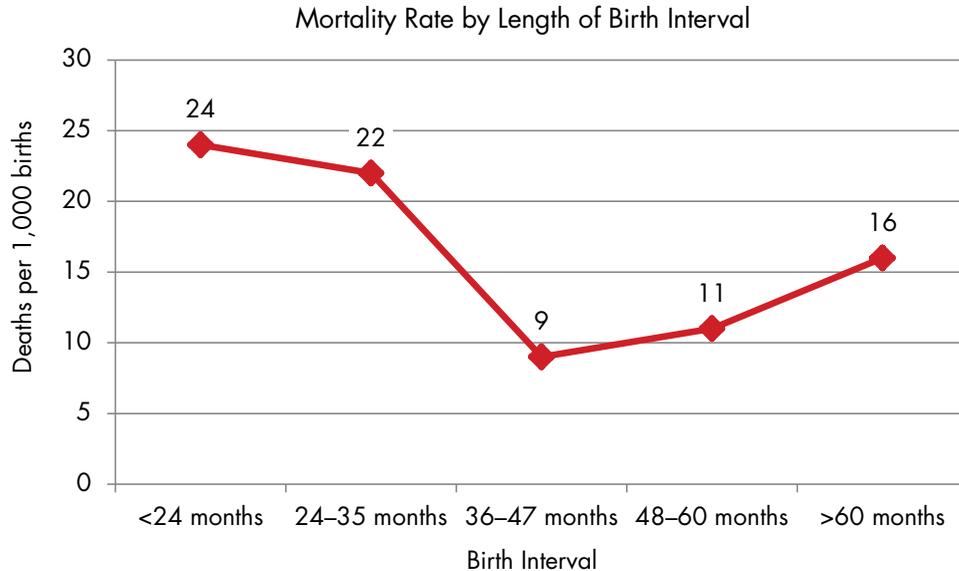
Data from the 2009 Demographic and Health Survey conducted in Jordan show linkages between birth intervals and neonatal mortality rates that reflect the patterns found in international research findings.

Births at intervals less than two years apart have a mortality rate of 24 deaths per 1,000 live births. The mortality rate for births that are three to four years apart is only nine deaths per 1,000 live births—for a 2.75 to 1 probability of survival.

It is interesting to note that even births that occur two to three years apart have a high mortality rate: 22 per 1,000—nearly the same level as the rate for births occurring less than two years apart.

The mortality rate increases slightly at an interval of four to five years and more sharply at intervals greater than five years owing to health risks associated with the advancing age of the mother. These upward shifts in mortality at intervals of four years or more are also evident among infants in the first year of life and children up to the age of five.

## The Relationship between Birth Spacing and Neonatal Mortality in Jordan



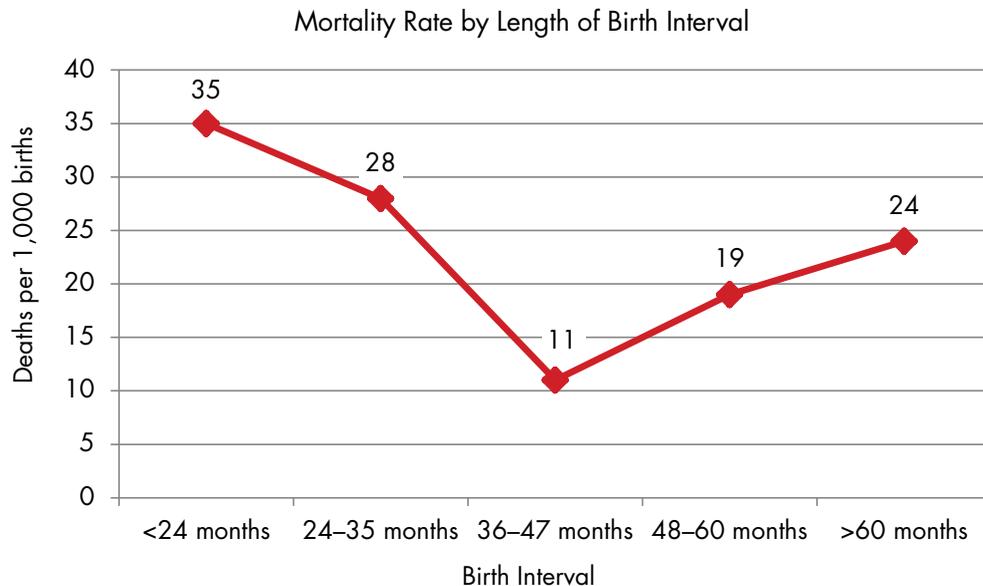
Source: Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro. Additional analysis provided by Dr. Ali Arbaji, USAID/Amman.

# Birth Spacing's Influence on Infant Mortality in Jordan

Mortality among infants in the first year of life associated with three-to-four-year birth intervals is less than half the rate associated with two-to-three-year intervals

Birth intervals have much the same effect on postneonatal mortality rates (that is, the rates for infants from five weeks of age to one year) that they do on neonatal mortality rates. The infant mortality rate that is associated with births less than two years apart is 35 deaths per 1,000 live births. The mortality rate of births that occur two to three years apart is not much better: 28 deaths per 1,000 live births. Significant improvement appears only at birth intervals of three to four years, where it takes a sharp drop to 11 deaths per 1,000 births—for a 3.5 to 1 probability of survival.

## The Relationship between Birth Spacing and Infant Mortality



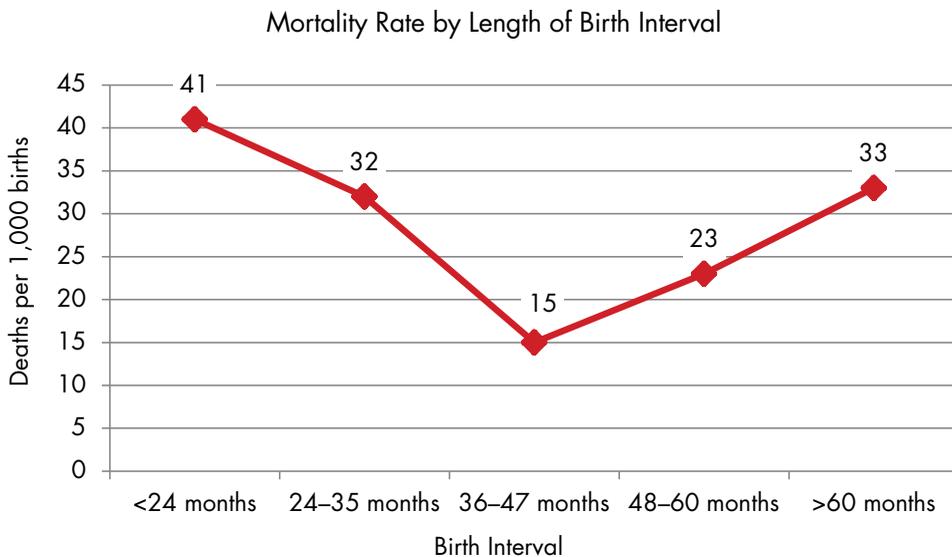
Source: Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro. Additional analysis provided by Dr. Ali Arbaji, USAID/Amman.

# Birth Spacing's Influence on Early Childhood Mortality in Jordan

Young children born at intervals of three to four years survive at more than twice the rate as those born at intervals of two to three years

The pattern in neonatal and infant mortality rates persists among children younger than five. The mortality rate for births less than two years apart is nearly 41 deaths per 1,000 live births. Intervals of two to three years only bring the rates down to 32 deaths per 1,000 live births. At intervals of three to four years, the rate drops sharply to 15 deaths per 1,000.

## The Relationship between Birth Spacing and the Mortality of Children Under Five Years Old



Source: Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro. Additional analysis provided by Dr. Ali Arbaji, USAID/Amman.

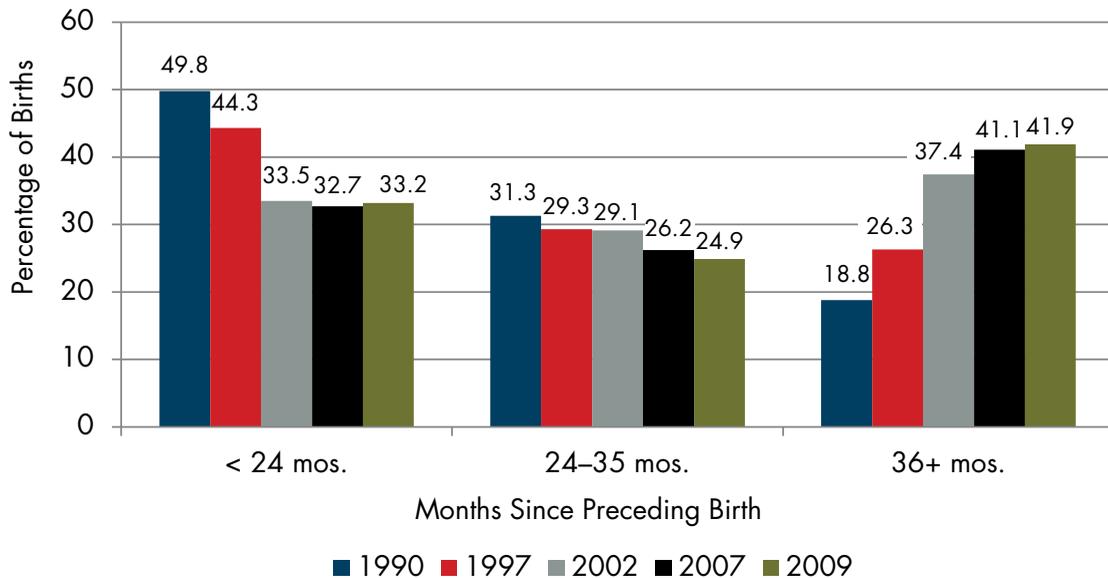




# Birth Spacing Trends in Jordan

Jordan made significant progress toward healthy birth spacing between 1990 and 2002, but gains since then have been relatively small. A close look at the trends in birth spacing from several different perspectives shows where we have been, where we are now, and where we need to go.

## Trends in the Length of Birth Interval in Jordan



Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro.

# Slow Steps in the Right Direction

As the graph shows, in 1990, nearly half of all births in Jordan were less than 24 months apart. By 2002, such short intervals accounted for only about a third of the births here.

Over the same period, the share of births occurring at intervals greater than 36 months increased from 19 percent to 37 percent. By 2009, the share increased to 42 percent.

The share of births that were between 24 and 35 months apart was relatively constant over the entire period, falling slightly from 31 percent in 1990 to 25 percent in 2009.

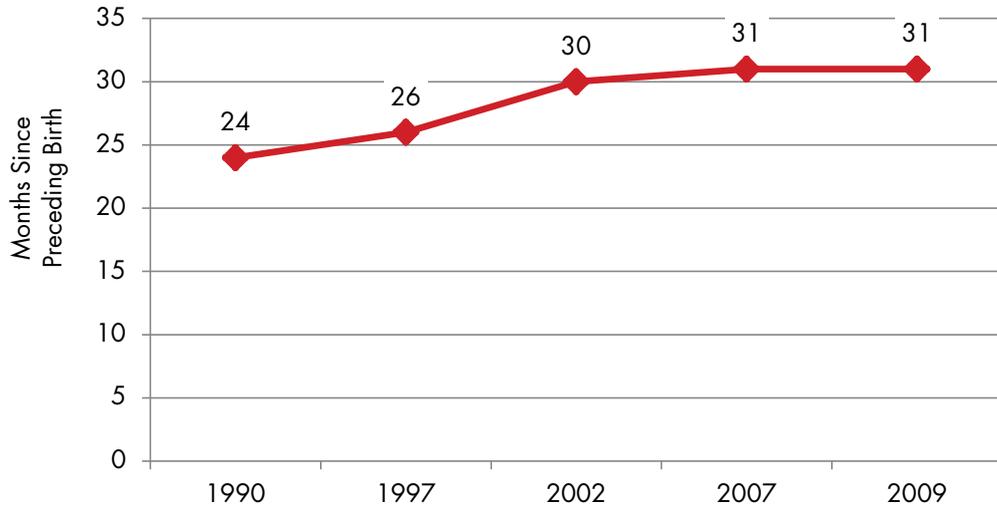
Essentially, this graph reveals significant movement toward longer birth intervals between 1990 and 2002 but stagnant progress since then. Perhaps not surprisingly, Jordan's contraceptive prevalence rate and total fertility rate follow this pattern.

# Another View of Birth Spacing's History

The trajectory of the median birth interval from 1990 to 2009 shows the history of birth spacing in Jordan at a glance. Although the median birth interval increased steadily between 1990 and 2002, it changed little over the past decade. It has remained relatively constant at about 30 months.



## Trends in Median Birth Interval in Jordan



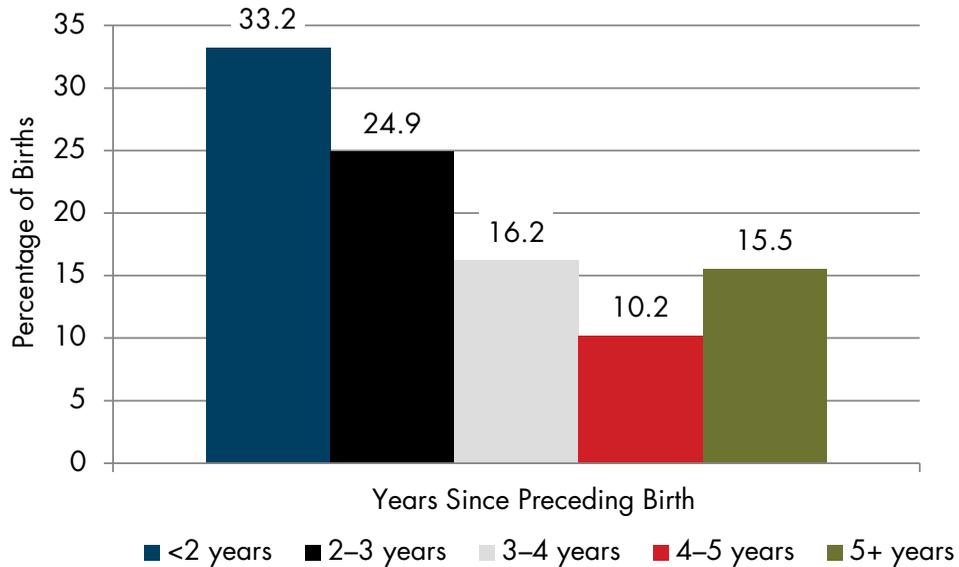
Source: 1990, 1997, 2002, 2007, and 2009 Jordan Demographic and Health Surveys

# Birth Spacing Today

The majority of births here are still at intervals shorter than the three years that WHO recommends. Nearly one-third of all births are less than two years apart; one-fourth of all births are between two and three years apart. Overall, 58 percent of all births in Jordan are less than three years apart.



## Current Birth Intervals in Jordan



Source: Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro.

# Determinants of Birth Intervals

## What influences birth intervals?

Efforts to pick up the pace of progress toward healthy birth spacing in Jordan are more likely to succeed if factors influencing birth intervals are taken into account.

As the table shows, characteristics such as age, birth order, wealth, and whether the preceding child lived are all related to the length of birth intervals. The older the mother, the more children she has; and the higher the family's income level, the longer the interval is likely to be. The survival of the child born most recently is also associated with a longer interval between that birth and the next.

Other background characteristics seem to have no effect on birth intervals. Two examples are where a woman lives (based on region, badia, or urban versus rural setting) and how much education she has. Perhaps counterintuitively, the sex of the child born most recently does not seem to influence the interval between that birth and the next one either.

## Median Birth Intervals in Jordan by Background Characteristic

### Characteristic Related to Median Birth Interval

Characteristic	MBI	Characteristic	MBI
<b>Age</b>		<b>Wealth Quintile</b>	
15–19	18.7	Lowest	28.0
20–29	24.0	Second	29.4
30–39	35.8	Middle	31.7
40–49	48.7	Fourth	34.2
<b>Birth Order</b>		Highest	38.0
2–3	26.4	<b>Survival of Preceding Child</b>	
4–6	37.8	Living	31.6
7+	38.0	Dead	21.7

### Characteristic Not Related to Median Birth Interval

Characteristic	MBI	Characteristic	MBI
<b>Region</b>		<b>Education</b>	
Central	31.5	None	31.6
North	31.0	Elementary	28.4
South	30.4	Preparatory	33.8
<b>Badia Area</b>		Secondary	30.7
Badia	27.9	Higher	32.0
Other	31.7	<b>Sex of Preceding Child</b>	
<b>Residence</b>		Male	31.7
Urban	31.7	Female	30.7
Rural	29.6		

Source: Department of Statistics (Jordan) and ICF Macro. 2010. *Jordan Population and Family Health Survey 2009*. Calverton, MD: Department of Statistics and ICF Macro.

# Three Scenarios for Infant Mortality

If Jordan achieves the WHO's recommended birth interval, by 2040, 4,300 infant lives a year can be saved

To measure the impact of birth intervals on future infant mortality in Jordan, three scenarios were developed. (For each one, it was assumed that current infant mortality patterns by birth interval continue and that all other variables remain constant.)

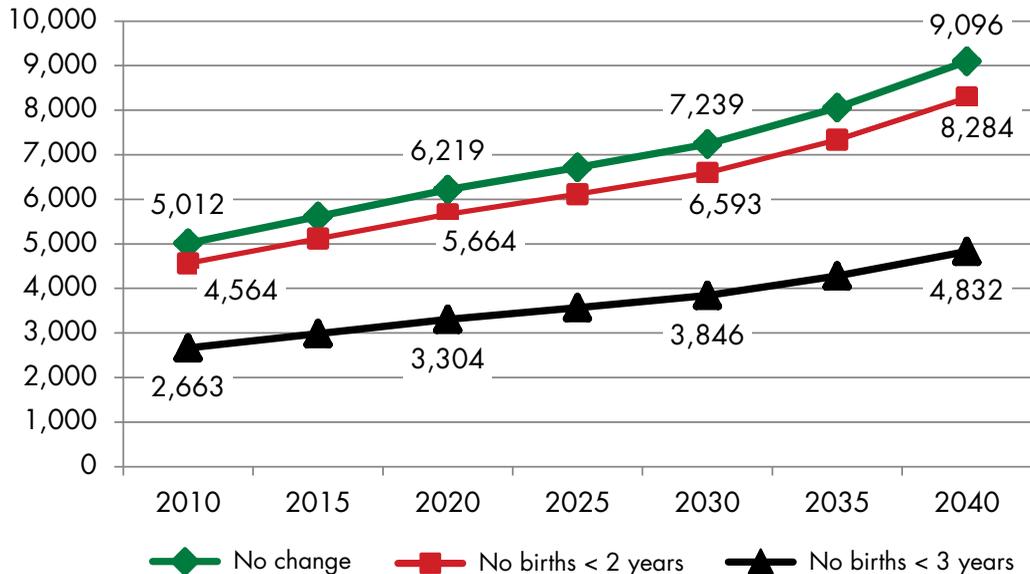
In the first scenario, birth intervals stay the same. As a result, the annual number of infant deaths would rise from approximately 5,000 in 2010 to 7,200 in 2030 to about 9,100 in 2040. (The main reason the number of infant deaths is projected to grow over this period is the increasing number of births that will occur, given Jordan's projected birth rate.)

The second scenario assumes that no births are less than two years apart. Under this scenario, there would be somewhat fewer infant deaths: 4,500 in 2010; 6,600 in 2030; and about 8,300 in 2040.

Following WHO's recommendation, the third scenario assumes that no births are less than three years apart. The number of infant deaths would be significantly lower under this scenario than the others: 2,700 in 2010; 3,800 in 2030; and 4,800 in 2040. Thus, by 2040, 4,300 infant lives a year would be saved.

# Impacts of Healthy Birth Spacing

## Anticipated Infant Deaths



Source: Projections computed using the DemProj Module of the Spectrum System of Policy Models, Futures Group.

# Cumulative Results of Three Infant Mortality Scenarios

If birth intervals in Jordan do not change, by 2040, 211,000 infant lives would be lost

The cumulative impacts of each of the three birth spacing scenarios make the differences among them even more striking.

With no change in birth intervals, the total number of infant deaths between 2010 and 2040 would be 211,000.

With no births less than two years apart, the total number of infant deaths from 2010 to 2040 would be about 192,000—saving about 19,000 infant lives.

With no births less than three years apart, the total number of infant deaths over the period would be 112,000. That is, nearly 100,000 infant lives would be saved by shifting from the current pattern of birth intervals to the three-year interval that WHO recommends.

Source: Projections computed using the DemProj Module of the Spectrum System of Policy Models, Futures Group.

## Infant Lives Saved through Healthy Birth Spacing in Jordan

Scenario	Total Number of Infant Deaths (2010–2040)	Lives Saved (Difference from No Change Scenario)
No change	211,329	0
No Births <2 Years	192,460	18,869
No Births <3 Years	112,266	99,064





# Taking Action

Interventions in policy, education, and service delivery can close the gap between current birth intervals in Jordan and the intervals of three years or more that are clearly optimal for the health of women and children and the well-being of families and communities.

# Policy

## Conduct advocacy with decisionmakers to gain their support of related policies and programs

Healthy birth spacing initiatives need the backing of decisionmakers. The first step is to build awareness among decisionmakers that healthy birth spacing has multiple and far-reaching benefits. Decisionmakers who understand healthy birth spacing are more likely to support programs and allocate resources to promote it.

# Education

## Education about healthy birth spacing should reach everyone

Married women need to be educated about the benefits of waiting at least two years before becoming pregnant again after a birth, as well as the health consequences of short birth intervals.

In addition, engaged and newly married couples have a special need to be educated about the benefits of healthy birth spacing and the use of modern family planning methods.

Moreover, all family members—fathers, mothers, mothers-in-law, children—need to be educated about the benefits of healthy birth spacing.

Advocates should engage the media and civil society to help raise the awareness of the benefits of birth spacing.







## Service Delivery

Jordan's healthcare services should incorporate counseling, family planning, and other measures to support healthy birth spacing

Healthcare providers need to be trained to understand the benefits of healthy birth spacing and encouraged to counsel women of reproductive age about those benefits.

Women and men need counseling to adopt effective modern family planning methods so they can avoid closely spaced births.

Health services need to integrate family planning so that helping mothers and fathers attain healthy birth spacing is standard procedure.

Sufficient resources, including human and financial resources, need to be allocated to ensure that women and men's contraceptives of choice are available when needed.

# The Prospects for Healthy Birth Spacing in Jordan

- More than half of all births in Jordan are less than three years apart.
- Neonatal, infant, and child mortality rates in Jordan are closely associated with birth intervals. Extending birth intervals will save the lives of many infants and children.
- Encouraging women to space births at least three years apart will improve maternal and child health and support healthy childhood development in Jordan.







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