



*National Obstetric  
Information System  
(NOIS)*

*Annual Report - 2013*



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## Comments

The accuracy of information contained in this document may be limited by factors beyond the author's control. Some data in this document may be subject to interpretation.

Data presented in this report is based on data which has been made available to the Department of Health Information and Research from the collaborating hospitals. Accuracy and completeness of data is the responsibility of the hospital providing data.

Users should always acknowledge the source in all works based on information supplied in this document.

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## TABLE OF CONTENTS

|   |    |
|---|----|
| <b>COMMENTARY</b> .....   | 5  |
| <b>Data collection and Sources of Information</b> .....               | 8  |
| <b>Report</b> .....   | 8  |
| <br>  |    |
| <b>ANALYSIS OF REPORTED DATA</b> .....                                | 9  |
| <br>  |    |
| <b>DELIVERIES</b> .....   | 10 |
| <b>DEMOGRAPHY</b> .....   | 10 |
| <i>Maternal Age</i> .....   | 10 |
| <i>Marital Status</i> .....   | 10 |
| <i>Nationality</i> .....  | 10 |
| <i>Parity</i> .....   | 11 |
| <i>Educational Level reached</i> .....                                | 11 |
| <b>MATERNAL LIFESTYLES</b> .....                                      | 12 |
| <b>MATERNAL PATHOLOGY DURING PREGNANCY</b> .....                      | 13 |
| <b>SINGLETON AND MULTIPLE DELIVERIES</b> .....                        | 13 |
| <b>SITE OF DELIVERY</b> .....   | 14 |
| <b>ONSET OF DELIVERY</b> .....  | 14 |
| <b>DAMAGE TO THE PERINEUM</b> .....                                   | 14 |
| <br>  |    |
| <b>INFANT / FETAL BIRTHS</b> .....                                    | 15 |
| <b>METHOD OF BIRTH</b> .....  | 15 |
| <b>GENDER DISTRIBUTION OF BIRTHS</b> .....                            | 16 |
| <b>BIRTHWEIGHT OF INFANTS/FETUSES</b> .....                           | 16 |
| <b>GESTATIONAL AGE AT DELIVERY</b> .....                              | 17 |
| <b>OUTCOME OF BIRTH</b> .....   | 17 |
| <b>INFANT FEEDING METHODS AT DISCHARGE</b> .....                      | 18 |
| <br>  |    |
| <b>MATERNAL, FETAL, PERINATAL, NEONATAL MORTALITY INDICATORS</b> .... | 19 |
| <br>  |    |
| <b>ANNEX I</b> .....  | 23 |
| <br>  |    |
| <b>DEFINITIONS</b> .....  | 26 |



## LIST OF TABLES

|   |    |
|---|----|
| <i>Table 1 - Total births and deliveries 2000-2013</i>  | 9  |
| <i>Table 2 – Deliveries according to maternal age group</i>   | 10 |
| <i>Table 3 – Deliveries by reported Nationality of Mother for all deliveries on the Maltese Islands</i> | 11 |
| <i>Table 4 – Parity of Mothers by age group for 2013</i>  | 11 |
| <i>Table 5 –Maternal Education distribution</i>   | 12 |
| <i>Table 6 – Reported smoking, alcohol and drug habits of mothers</i>                                   | 12 |
| <i>Table 7- Pathology during pregnancy</i>  | 13 |
| <i>Table 8 – Deliveries by multiplicity</i>   | 13 |
| <i>Table 9 – Damage to perineum in vaginal deliveries</i>   | 14 |
| <i>Table 10 – Mode of delivery</i>  | 15 |
| <i>Table 11 – Caesarean Section rates 2000-2013</i>   | 15 |
| <i>Table 12 – Gender distribution of infants delivered</i>  | 16 |
| <i>Table 13 – Birth weight distribution of infants/fetuses</i>  | 16 |
| <i>Table 14 – Gestational age at delivery</i>   | 17 |
| <i>Table 15 – Birth outcomes – livebirths, fetal, early and late neonatal deaths (22+wks gestation)</i> | 17 |
| <i>Table 16 – Infant feeding methods at time of discharge</i>   | 18 |
| <i>Table 17 – Maternal Deaths 2000-2013</i>   | 19 |
| <i>Table 18 – Fetal Death Rates 2000-2013</i>   | 19 |
| <i>Table 19 – Neonatal Mortality rates 2000-2013</i>  | 20 |
| <i>Table 20 – Early Neonatal Mortality rates 2000-2013</i>  | 20 |
| <i>Table 21 – Late Neonatal Mortality Rates 2000-2013</i>   | 21 |
| <i>Table 22 – Perinatal Mortality Rates 2000-2013</i>   | 21 |
| <i>Table 23 – Live births per 1000 population</i>   | 23 |
| <i>Table 24 – Total Fertility Rate</i>  | 23 |
| <i>Table 25 – Maternal Deaths per 100 000 live births</i>   | 24 |
| <i>Table 26 – Fetal Deaths (500g and over) per 1000 births</i>  | 24 |
| <i>Table 27 – Neonatal Deaths per 1000 live births</i>  | 25 |





## COMMENTARY

The National Obstetric Information System (NOIS) has now been in place for 15 years, and has employed meticulous data collection and analysis by the Department for Health Information and Research and its collaborators in all Maltese hospitals. It serves as a valuable resource for healthcare providers in the fields of obstetrics and paediatrics, as well as for policymakers, by providing a scientifically valid source of data that can be drawn upon to highlight areas of excellence or concern and to suggest further improvements to maternal healthcare in Malta. This commentary attempts to distil the most salient findings from the data for 2013.

### Key Facts

There were 4073 deliveries reported in the Maltese islands in 2013. Due to the occurrence of multiple deliveries, these led to a total of 4149 births, 109 births less than the previous year. 99.5% of registered births in 2013 were live births. There were 22 stillbirths, 15 early neonatal deaths and 3 late neonatal deaths.

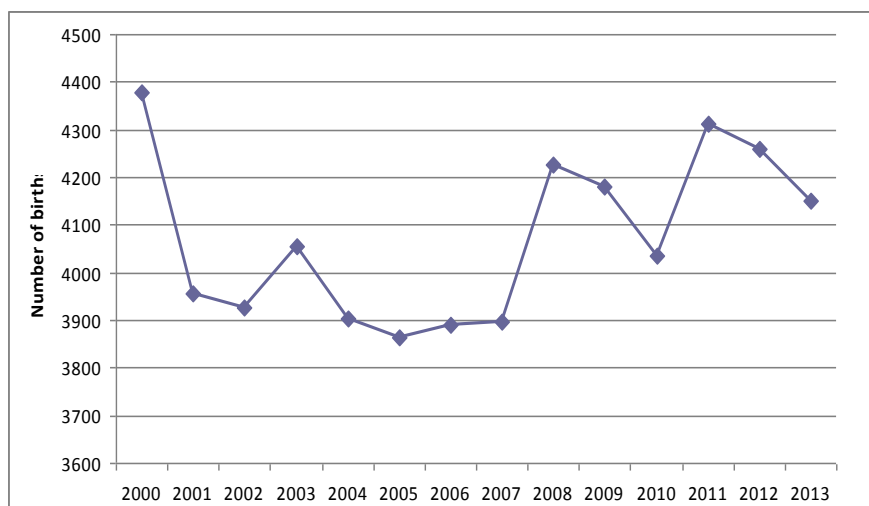


Figure 1: Total Births in the Maltese Islands (2000-2013)

As can be noted from Figure 1, the number of births experienced a relative dip from 2004 to 2007 but has since remained consistently above 4000 births per year.

98.2% of deliveries in 2013 were singleton deliveries, with the rest being twin deliveries. There were no triplet or quadruplet deliveries registered last year. In 2013, 98 mothers reported making use of assisted reproductive technology in its various forms.

### Maternal Characteristics

The highest number of deliveries was seen in the 30-34 year age group, responsible for 35.6% of the deliveries in 2013, followed by the 25-29 year age group, which accounted for 30.2% of deliveries.

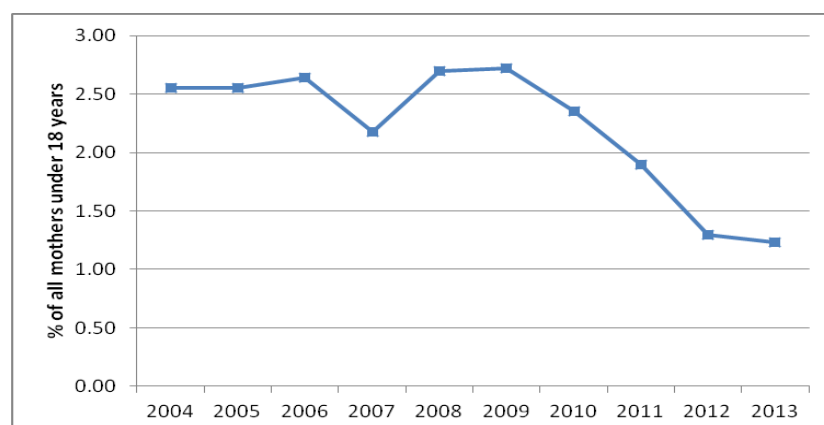
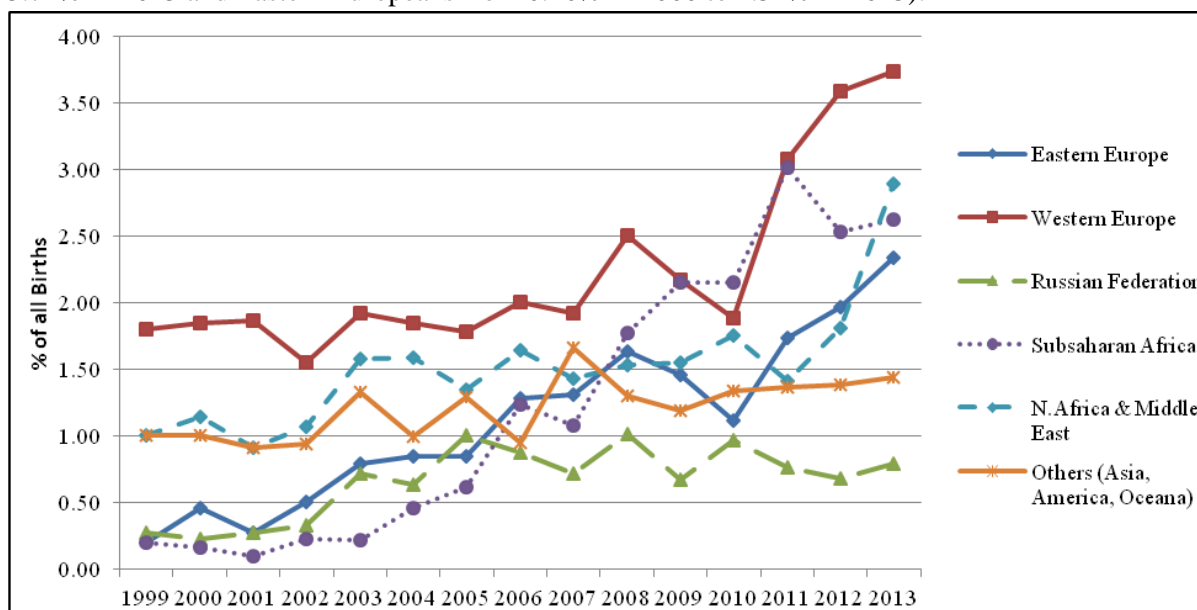


Figure 2 – Proportion of mothers delivering <18 years 2004-2013

In the past 10 years (2004-2013), a significant decrease has been noted in the proportion of mothers delivering at less than 18 years of age, as can be seen in Figure 2. 51.2% of mothers delivering in 2013 were primiparas.

The Annual Report shows that Malta has continued to experience a continuing steady increase in the number of mothers of foreign nationality, increasing from 4.9% of all deliveries in 2000 to 13.8% of deliveries in 2013. The steepest increase of births to mothers of non-Maltese nationality over this time period occurred for mothers of Sub-Saharan nationality (from 0.16% in 2000 to 2.63% in 2013) followed by births to mothers of European nationality (Western Europeans from 1.85% in 2000 to 3.74% in 2013 and Eastern Europeans from 0.46% in 2000 to 2.34% in 2013).



**Figure 3 – Percentage of births to mothers of non-Maltese Nationality**

The largest proportion of mothers delivering last year had reached secondary educational level (38%), while 32.9% had reached a tertiary level of education. No mothers reported an alcohol intake of more than a unit a day in 2013 and only 5 mothers reported consuming up to 1 unit of alcohol per day. In 2013, 7.8% of mothers reported smoking during pregnancy.

The most common obstetric pathology reported during pregnancy in 2013 was gestational hypertension, which affected 5.4% of mothers. This was followed by suspected intrauterine growth retardation which was recorded in 3.9% of pregnancies. 3.2% of expectant mothers were diagnosed with impaired glucose tolerance/gestational diabetes during their pregnancy.

There were no maternal deaths in 2013. Over the ten years from 2004 to 2013 only two maternal deaths have been registered. The average estimated Maternal Mortality Ratio (MMR) for Malta in 2013 was reported in a recent report released by the WHO as 9 maternal deaths per 100,000 live births, while the average MMR for WHO European Region was 17 maternal deaths per 100,000 live births<sup>1</sup>. According to this report, the estimated MMR for Malta is exhibiting a slowly decreasing trend, having declined from 12 in 1990 to 9/100,000 live births in 2013<sup>1</sup>. The estimated lifetime risk of maternal death in Malta is reported at currently being 1 in 8300, while the average for WHO European region is 1 in 3300<sup>1</sup>.

62.8% of births in 2013 were by normal vaginal delivery, while assisted vaginal deliveries accounted for 4.9% of infant births. The remaining 32.3% of babies were delivered by caesarean section, however caesarean sections accounted for 31.2% of all deliveries due to the high proportion carried out in multiple deliveries. This gives a rate of 307.7 caesarean sections per 1000 live births, while in comparison the EU average for 2011 was reported as 267.5 caesarean sections per 1000 live births<sup>2</sup>.

<sup>1</sup> Trends in Maternal Mortality, Estimates by WHO, UNICEF, UNFPA, The World Bank and United Nations Population Division, 2014 [http://apps.who.int/iris/bitstream/10665/112682/2/9789241507226\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/112682/2/9789241507226_eng.pdf?ua=1)

<sup>2</sup> WHO Health for All Database: <http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db>

A slight gradual decrease in the caesarean section rate can be noted since 2011, when it stood at 34% of all deliveries.

Of the 2803 women who had a normal or assisted vaginal delivery in 2013, 69.5% had an episiotomy, a perineal laceration or both. Damage to the perineum occurred more frequently in assisted vaginal deliveries than normal vaginal deliveries (91.5% of assisted vaginal deliveries vs. 67.8% of normal vaginal deliveries).

As regards onset of delivery, spontaneous onset occurred in over half of all deliveries (53.5%) while 28.9% of deliveries were induced by drugs or artificial rupture of membranes. 99.6% of deliveries occurred within the hospital setting.

### Infant Births

As is usually the case, there was a slight preponderance of male births, with 52.4% of delivered infants/fetuses being male.

The average birth weight for 2013 was 3220g. In the vast majority of births (92.4%), infant birth weight fell within the range of 2500g to 4499g. 5.9% of infants delivered had a low birth weight of 1500g to 2499g while 1% had a very low birth weight of <1500g. 93.1% of infants delivered last year were born at term (37-41 weeks gestation) while 6.8% were born premature at less than 37 weeks gestation. Of the latter, 48 (1.2%) of the babies delivered were very or extremely premature (gestational age of 31 weeks or less).

At discharge from hospital, 58.2% of babies were being exclusively breast fed and 28.0% were being exclusively bottle fed, the remaining infants were receiving a mix of both breast and formula milk. These figures only reflect infant feeding on discharge and it is not possible to ascertain whether these feeding patterns were continued in the community from the data gathered to compile this report.

### Fetal, Perinatal and Neonatal outcomes

The great majority of infants born (99.0%) survived birth and the neonatal period. In 2013, the perinatal mortality rate for infants/fetuses born at 500g or over was 8.2/1000 total births. Weight specific mortality rates since 2000 are shown in Figure 3.

Further information and comparisons with EU data can be found in the Annex of the Annual Report.

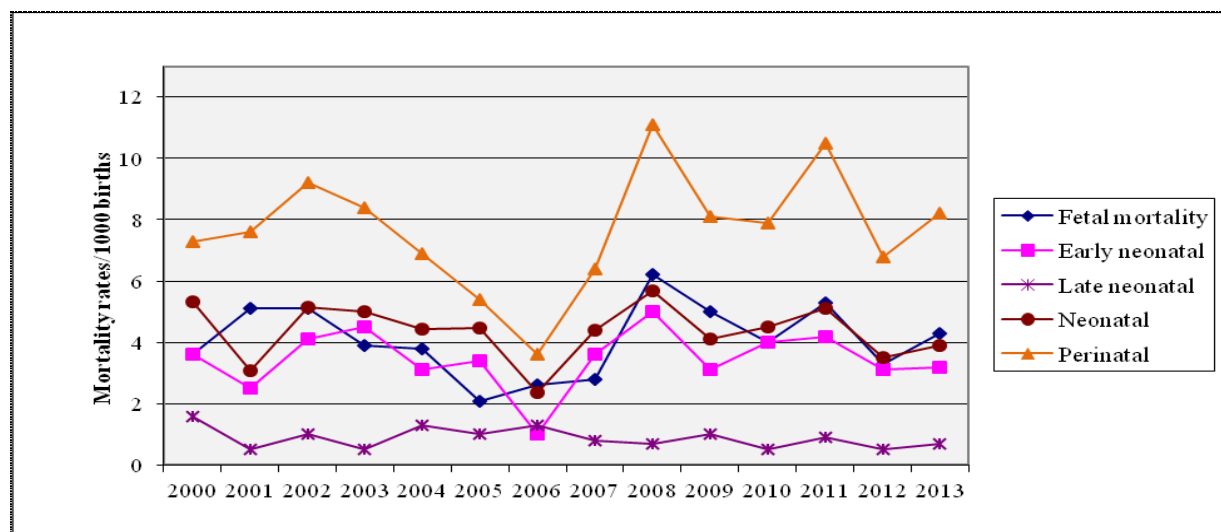


Figure 3 – Fetal, Neonatal and Perinatal Mortality rates for all livebirths and still births weighing 500g and over 2000-2013

# NATIONAL OBSTETRIC INFORMATION SYSTEM - NOIS ANNUAL REPORT - 2013

A National Obstetric Information System (NOIS) was launched in the beginning of 1999 and now covers all deliveries, to residents and non-residents, taking place on the islands of Malta and Gozo.

## Data collection and Sources of Information

Systematic data collection for NOIS commences once the mother delivers her baby. Information regarding the course and outcome of each pregnancy is recorded by the relevant staff at each centre on a standard NOIS sheet. Once the data are recorded, the sheets are forwarded to the Directorate for Health Information and Research (DHIR). At the DHIR the relevant sheets are processed and entered into the NOIS database. The system registers all infants/fetuses of 22 completed weeks gestation and more.

The maternity centres actively participating in this information system in 2013 were: Mater Dei Hospital, Gozo General Hospital, St James Hospital Sliema and Zabbar. Home deliveries which are not subsequently referred to a hospital may not be captured by this system.

The Antenatal Booking Sheet and NOIS Data Collection Sheet implemented in 2008 are used to collect extensive and comprehensive information for all deliveries and births.

Data at the DHIR is kept in accordance with the Data Protection Act (2001) and confidentiality is protected at all times.

## Report

This report analyses the national deliveries and infant/fetal births reported to the Registry that occurred in 2013 and compares it to the figures reported for previous years where appropriate. The data in this report describes statistics for all deliveries and births reported to and registered into the system.

Data is sent to the Registry from all hospitals on the Maltese Islands. Accuracy and completeness of data provided to DHIR is the responsibility of the hospital providing data. This report includes the latest updated data as at time of release of report.

## **ANALYSIS OF REPORTED DATA**

There were a total of 4073 deliveries reported and registered for the Maltese Islands in 2013. These resulted in a total of 4149 infant/fetal births; this is a decrease of 109 births when compared to 2012.

The table below gives the number of deliveries and births in Malta and Gozo and registered in NOIS since 2000.

| <i>Year</i> | <i>Deliveries*</i> | <i>Total Births**</i> | <i>Livebirths</i> |
|-------------|--------------------|-----------------------|-------------------|
| 2000        | 4311               | 4377                  | 4361              |
| 2001        | 3918               | 3955                  | 3935              |
| 2002        | 3873               | 3927                  | 3906              |
| 2003        | 3995               | 4054                  | 4036              |
| 2004        | 3838               | 3902                  | 3887              |
| 2005        | 3804               | 3865                  | 3857              |
| 2006        | 3822               | 3891                  | 3880              |
| 2007        | 3853               | 3898                  | 3886              |
| 2008        | 4154               | 4228                  | 4199              |
| 2009        | 4112               | 4180                  | 4152              |
| 2010        | 3952               | 4036                  | 4018              |
| 2011        | 4226               | 4311                  | 4283              |
| 2012        | 4175               | 4258                  | 4239              |
| 2013        | 4073               | 4149                  | 4127              |

\* Deliveries refer to maternal confinements irrespective of number of infants delivered.

\*\* Total births include all reported live and still births

***Table 1 - Total births and deliveries 2000-2013***

Of the registered 4073 deliveries (4149 births) in 2013, 3810 deliveries (3882 births) occurred in Malta and 263 deliveries (267 births) occurred in Gozo.

# DELIVERIES

## DEMOGRAPHY

### Maternal Age

The maternities have been grouped into 5-year age groups and the frequency distribution of deliveries according to maternal age group is given. In 2013, the greatest number of deliveries 1449 (35.6%), occurred in the age group 30 to 34 years whilst the least number of deliveries 3 (0.1%) occurred in the youngest, less than 15 years and oldest age group 45+ years. The minimum age at delivery of the mothers was 13 years while the maximum age was 48 years. The most frequent maternal age at delivery was 30 years and average maternal age was also 30 years. The average age of first time mothers was 28 years.

The frequency distribution of deliveries in 2013 according to maternal age group is given in the following table.

| <i>Age group (years)</i> | <i>2013</i>      |          | <i>2012</i>      |          |
|--------------------------|------------------|----------|------------------|----------|
|                          | <i>Frequency</i> | <i>%</i> | <i>Frequency</i> | <i>%</i> |
| <b>&lt;15</b>            | 3                | 0.1      | 3                | 0.1      |
| <b>15-19</b>             | 161              | 4.0      | 209              | 5.0      |
| <b>20-24</b>             | 529              | 13.0     | 579              | 13.9     |
| <b>25-29</b>             | 1229             | 30.2     | 1260             | 30.2     |
| <b>30-34</b>             | 1449             | 35.6     | 1397             | 33.5     |
| <b>35-39</b>             | 614              | 15.1     | 619              | 14.8     |
| <b>40-44</b>             | 85               | 2.1      | 105              | 2.5      |
| <b>45+</b>               | 3                | 0.1      | 3                | 0.1      |
| <b>Unspecified</b>       | 0                | 0        | 0                | 0        |

***Table 2 – Deliveries according to maternal age group***

### Marital Status

This year, 1047 (25.7%) of all deliveries occurred to mothers who were reported as never married (single); while 2857 (70.1%) of all deliveries occurred to mothers reported as married, and 169 (4.1%) were reported as being widowed, separated or divorced. All mothers had their marital status specified.

In 2013, according to the data registered in NOIS, all mothers were reported as “having support at home to raise the infant”.

### Nationality

86.0% (3501) of all deliveries this year occurred to women of Maltese nationality while 13.8% (564) were Non-Maltese. In the remaining 0.2% (8) did not have a nationality specified. The table below gives the number of mothers of Maltese and non-Maltese Nationality delivering on the Maltese Islands since 2000.

| <i>Nationality</i> | <i>Maltese</i> |          | <i>Non-Maltese</i> |          | <i>Unknown</i> |          |
|--------------------|----------------|----------|--------------------|----------|----------------|----------|
|                    | <i>Number</i>  | <i>%</i> | <i>Number</i>      | <i>%</i> | <i>Number</i>  | <i>%</i> |
| <b>2000</b>        | 4096           | 95.0     | 211                | 4.9      | 4              | 0.1      |
| <b>2001</b>        | 3737           | 95.4     | 178                | 4.5      | 3              | 0.1      |
| <b>2002</b>        | 3662           | 94.6     | 170                | 4.4      | 41             | 1.1      |
| <b>2003</b>        | 3687           | 92.3     | 220                | 5.5      | 88             | 2.2      |
| <b>2004</b>        | 3558           | 92.7     | 168                | 4.4      | 112            | 2.9      |
| <b>2005</b>        | 3512           | 92.3     | 237                | 6.2      | 55             | 1.4      |
| <b>2006</b>        | 3491           | 91.3     | 288                | 7.5      | 43             | 1.1      |
| <b>2007</b>        | 3511           | 91.1     | 308                | 8.0      | 34             | 0.9      |
| <b>2008</b>        | 3729           | 89.8     | 402                | 9.7      | 23             | 0.6      |
| <b>2009</b>        | 3711           | 90.2     | 376                | 9.1      | 25             | 0.6      |
| <b>2010</b>        | 3581           | 90.6     | 365                | 9.2      | 6              | 0.2      |
| <b>2011</b>        | 3740           | 88.5     | 479                | 11.3     | 7              | 0.2      |
| <b>2012</b>        | 3668           | 87.9     | 501                | 12.0     | 6              | 0.1      |
| <b>2013</b>        | 3501           | 86.0     | 564                | 13.8     | 8              | 0.2      |

***Table 3 – Deliveries by reported Nationality of Mother for all deliveries on the Maltese Islands***

### Parity

There were 51.2% (2086) of mothers who were primiparas in 2013. The following table gives a breakdown of mothers by age and previous parity (includes all previous live and still births). Parity and maternal age were specified for all mothers.

| <i>Mother's Age Group</i> | <i>Maternal Parity (previous livebirths and still births are included)</i> |             |            |            |           |                           |                | <i>Total</i> |
|---------------------------|--|-------------|------------|------------|-----------|---------------------------|----------------|--------------|
|                           | <i>Primipara</i>   | <i>1</i>    | <i>2</i>   | <i>3</i>   | <i>4</i>  | <i>&gt;4<sup>th</sup></i> | <i>Unknown</i> |              |
| <b>Under 20</b>           | 138  | 24          | 2          | 0          | 0         | 0                         | 0              | <b>164</b>   |
| <b>20-24</b>              | 363  | 121         | 34         | 8          | 3         | 0                         | 0              | <b>529</b>   |
| <b>25-29</b>              | 736  | 383         | 87         | 17         | 3         | 3                         | 0              | <b>1229</b>  |
| <b>30-34</b>              | 649  | 578         | 154        | 49         | 13        | 6                         | 0              | <b>1449</b>  |
| <b>35-39</b>              | 176  | 253         | 136        | 32         | 12        | 5                         | 0              | <b>614</b>   |
| <b>40-44</b>              | 24   | 24          | 21         | 11         | 4         | 1                         | 0              | <b>85</b>    |
| <b>45+</b>                | 0  | 1           | 1          | 0          | 0         | 1                         | 0              | <b>3</b>     |
| <b>Unknown</b>            | 0  | 0           | 0          | 0          | 0         | 0                         | 0              | <b>0</b>     |
| <b>Total</b>              | <b>2086</b>  | <b>1384</b> | <b>435</b> | <b>117</b> | <b>35</b> | <b>16</b>                 | <b>0</b>       | <b>4073</b>  |

***Table 4 – Parity of Mothers by age group for 2013***

### Educational Level reached

It is documented that maternal educational level has a bearing on outcomes of pregnancy. In recent years, efforts have been made to improve the collection of maternal educational level data. In fact in 2007 only 10.6% of mothers had their educational level reported, in 2008 this collection increased to 65 % of mothers, and in 2013 it now stands at 95.9% of mothers having their educational level reported. Distribution of maternal educational level is presented in Table 5. 32.9% of mothers were reported as having a tertiary education.

| <i>Level of Education reached</i>             | <i>2013</i>   |          |
|---|---------------|----------|
|   | <i>Number</i> | <i>%</i> |
| <b>Primary or no education</b>                | 112           | 2.7      |
| <b>Secondary</b>                              | 1547          | 38.0     |
| <b>Post Secondary/Vocational non-tertiary</b> | 909           | 22.3     |
| <b>Tertiary</b>                               | 1339          | 32.9     |
| <b>Unspecified</b>                            | 166           | 4.1      |

***Table 5 –Maternal Education distribution***

## **MATERNAL LIFESTYLES**

There were 318 (7.8%) of the mothers who were reported to smoke one or more cigarettes during their pregnancy this year. 5 mothers were reported to drink some alcohol during their pregnancy, while 19 mothers were reported as being illicit drug abusers.

Details are given in Table 6 below.

| <i>Maternal Lifestyles</i>                          | <i>2013</i> | <i>2012</i> |
|---|-------------|-------------|
| <b><i>Cigarette smoking during pregnancy:</i></b>   |             |             |
| <b>1 to 3/day</b>                                   | 61          | 82          |
| <b>&gt;than 3/day</b>                               | 257         | 239         |
| <b>Do not smoke</b>                                 | 3755        | 3853        |
| <b>Unspecified</b>                                  | 0           | 1           |
| <b><i>Alcohol consumption during pregnancy:</i></b> |             |             |
| <b>Up to 1 unit/day</b>                             | 5           | 5           |
| <b>&gt;than 1 unit/day</b>                          | 0           | 0           |
| <b>None</b>   | 4068        | 4170        |
| <b>Unspecified</b>                                  | 0           | 0           |
| <b><i>Drug Abuse during pregnancy</i></b>           |             |             |
| <b>Yes</b>  | 19          | 23          |
| <b>No</b>   | 4054        | 4152        |
| <b>Unspecified</b>                                  | 0           | 0           |

***Table 6 – Reported smoking, alcohol and drug habits of mothers***

Maternal smoking is a well-established risk factor for adverse perinatal outcomes including low birth weight (EuroPeristat, 2008). In 2013, the average birthweight of all infants born was 3220g, with 7.0% (290) of these babies being less than 2500g.

The average birth weight of babies born to mothers reported to have smoked at sometime during their pregnancy (321 babies) was 3120g, with 10.3% (33) of these babies being less than 2500g.



## MATERNAL PATHOLOGY DURING PREGNANCY

In 2013 there were 98 mothers registered as having made use of assisted reproduction (ART), this includes all forms of ART namely ovulation stimulation, IVF and ICSI.

The table below gives the number of mothers reported with specific obstetric pathology during pregnancy. 5.4% of mothers were registered as having gestational hypertension.

| <i>Pathology during pregnancy</i> | <i>2013</i>   |          | <i>2012</i>   |          |
|-----------------------------------|---------------|----------|---------------|----------|
|                                   | <i>Number</i> | <i>%</i> | <i>Number</i> | <i>%</i> |
| <b>Antepartum Haemorrhage</b>     | 61            | 1.5      | 63            | 1.5      |
| <b>Gestational hypertension</b>   | 219           | 5.4      | 199           | 4.8      |
| <b>Pre-eclampsia</b>              | 40            | 1.0      | 42            | 1.0      |
| <b>Eclampsia</b>                  | 1             | 0.02     | 0             | 0.0      |
| <b>Placenta praevia</b>           | 27            | 0.7      | 34            | 0.8      |
| <b>Abruption of placenta</b>      | 19            | 0.5      | 13            | 0.3      |
| <b>Suspected IUGR*</b>            | 159           | 3.9      | 135           | 3.2      |
| <b>Cardiovascular disease</b>     | 12            | 0.3      | 12            | 0.3      |

\*IUGR – intrauterine growth retardation

**Table 7- Pathology during pregnancy**

### Diabetes in Pregnancy

In 2013 there were 19 mothers who were reported as being Insulin Dependent Diabetic before this pregnancy while there were 3 mothers reported with Non-Insulin Dependent diabetes prior to pregnancy. In addition, there were a total of 129 mothers registered with impaired glucose tolerance or gestational diabetes who were controlled without the use of insulin, and no mothers registered as having gestational diabetes treated with insulin.

## SINGLETON AND MULTIPLE DELIVERIES

For this year, there were a total of 3998 (98.2%) singleton and 75 (1.8%) twin deliveries, no triplet or quadruplet deliveries.

| <i>Multiplicity</i> | <i>2013</i> | <i>2012</i> |
|---------------------|-------------|-------------|
| <b>Singleton</b>    | 3998        | 4099        |
| <b>Twin</b>         | 75          | 69          |
| <b>Triplet</b>      | 0           | 7           |
| <b>Quadruplet</b>   | 0           | 0           |

**Table 8 – Deliveries by multiplicity**

## SITE OF DELIVERY

In 2013 of the total 4073 deliveries registered by NOIS, 4058 (99.6%) occurred in a hospital, 8 deliveries occurred at home and 7 deliveries occurring at other sites but later transferred to hospital.

## ONSET OF DELIVERY

Of the total 4073 deliveries, 53.5% (2181) were reported as spontaneous onset of contractions, 28.9% (1179) were induced by drugs or artificial rupture of membranes and 15.7% (640) were carried out as elective caesarean sections, while 73 (1.8%) were carried out as emergency caesarian sections for pathological conditions including antepartum haemorrhage, pre-eclampsia, fetal distress etc.

## DAMAGE TO THE PERINEUM

A total of 2803 women were delivered by normal or assisted vaginal delivery. 2604 (92.9%) of these women were reported to have a normal vertex vaginal delivery, while 199 (7.1%) had assisted vaginal delivery (including ventouse, forceps and breech). A total of 855 (30.5%) of these normal or assisted vaginal deliveries were reported to have sustained no damage to the perineum, while the remaining 1948 (69.5%) had an episiotomy, tear/laceration, or both.

| <i>Damage to perineum</i>  | <i>Normal Vaginal Delivery<br/>(n= 2604)</i> |          | <i>Assisted Vaginal Delivery**<br/>(n= 199)</i> |          |
|----------------------------|--|----------|---|----------|
|                            | <i>Number</i>                                | <i>%</i> | <i>Number</i>                                   | <i>%</i> |
| <b>No Damage</b>           | 838  | 32.2     | 17  | 8.5      |
| <b>Episiotomy* only</b>    | 477  | 18.3     | 96  | 48.2     |
| <b>Tear only</b>           | 1167   | 44.8     | 47  | 23.6     |
| <b>Episiotomy and tear</b> | 122  | 4.7      | 39  | 19.6     |

***Table 9 – Damage to perineum in vaginal deliveries***

\* Episiotomy is defined as a surgical incision through the perineum to enlarge the vagina to assist delivery

\*\*These include ventouse, forceps and breech extraction

# INFANT / FETAL BIRTHS

## METHOD OF BIRTH

In 2013 there were a total of 4149 infant/fetal births. Of these 2607 (62.8%) were delivered as a normal vertex delivery, 1340 (32.3%) by emergency or elective Caesarean Section and 202 (4.9%) by assisted vaginal delivery (includes forceps, ventouse and breech).

| <i>Mode of Delivery*</i>                    | <i>2013</i> | <i>2012</i> |
|---|-------------|-------------|
| <b>Vertex delivery</b>                      | 2607        | 2555        |
| <b>Elective/emergency Caesarean Section</b> | 1340        | 1491        |
| <b>Forceps</b>                              | 19          | 11          |
| <b>Ventouse</b>                             | 175         | 196         |
| <b>Breech deliveries</b>                    | 8           | 5           |

\*Data analysed according to total infant/ fetal births

***Table 10 – Mode of delivery***

For 2013 there were 1340 infants/fetuses delivered by caesarean section but 1270 caesarean operations performed, this due to the fact that a number of caesareans are done in multiple birth deliveries. The Caesarean section operation rate in 2013 was 31.2% of the total 4073 maternal deliveries.

The Caesarean section operation rate has shown an overall increase in developed countries over the past years, however in 2013 Malta has registered a slight drop in caesarian rates when compared to the previous 2 years. The table below gives the reported caesarean section rates for Malta and Gozo since 2000.

| <i>Year</i> | <i>Deliveries by Caesarean section</i> | <i>Caesarean section operation rate<br/>(% of all deliveries)</i> |
|-------------|--|---|
| <b>2000</b> | 994                                    | 23.1  |
| <b>2001</b> | 926                                    | 23.6  |
| <b>2002</b> | 914                                    | 23.6  |
| <b>2003</b> | 1039                                   | 26.0  |
| <b>2004</b> | 1048                                   | 27.3  |
| <b>2005</b> | 1165                                   | 30.6  |
| <b>2006</b> | 1329                                   | 34.8  |
| <b>2007</b> | 1243                                   | 32.3  |
| <b>2008</b> | 1263                                   | 30.4  |
| <b>2009</b> | 1194                                   | 29.0  |
| <b>2010</b> | 1252                                   | 31.7  |
| <b>2011</b> | 1435                                   | 34.0  |
| <b>2012</b> | 1409                                   | 33.7  |
| <b>2013</b> | 1270                                   | 31.2  |

***Table 11 – Caesarean Section rates 2000-2013***

## GENDER DISTRIBUTION OF BIRTHS

The gender distribution of births is given in the table below. As usually seen, there were more male infants/fetuses delivered than female.

| <i>Gender</i>  | <i>2013</i>   |          | <i>2012</i>   |          |
|----------------|---------------|----------|---------------|----------|
|                | <i>Number</i> | <i>%</i> | <i>Number</i> | <i>%</i> |
| <b>Male</b>    | 2174          | 52.4     | 2211          | 51.9     |
| <b>Female</b>  | 1975          | 47.6     | 2046          | 48.1     |
| <b>Unknown</b> | 0             | 0        | 1             | <0.1     |

***Table 12 – Gender distribution of infants delivered***

## BIRTHWEIGHT OF INFANTS/FETUSES

In 2013, there were 3834 (92.4%) of the total births that occurred in the birth weight range of 2500g to 4499g. 244 (5.9%) of the total births were in the low birth weight range of 1500g to 2499g, while 40 (1.0%) of births were of very low birth weight 500g to 1499g. This year there were 6 babies of birth weight less than 500g but 22 completed weeks gestation, while another 19 babies were of birth weight 4500g and over. Birth weight was not recorded for 6 births.

The lowest birth weight recorded this year was 390g in a 23 week gestation, intrapartum stillbirth. The highest birth weight recorded was 5600g in an infant of a mother with gestational diabetes. The average birth weight was 3220g. All infants / fetuses of 22 weeks gestation and over are registered into the system.

| <i>Birth weight</i> | <i>2013</i>   |          | <i>2012</i>   |          |
|---------------------|---------------|----------|---------------|----------|
|                     | <i>Number</i> | <i>%</i> | <i>Number</i> | <i>%</i> |
| <b>&lt;500g</b>     | 6             | 0.1      | 10            | 0.2      |
| <b>500-999g</b>     | 19            | 0.5      | 15            | 0.4      |
| <b>1000-1499g</b>   | 21            | 0.5      | 27            | 0.6      |
| <b>1500-1999g</b>   | 43            | 1.0      | 58            | 1.4      |
| <b>2000-2499g</b>   | 201           | 4.8      | 205           | 4.8      |
| <b>2500-2999g</b>   | 855           | 20.6     | 865           | 20.3     |
| <b>3000-3499g</b>   | 1791          | 43.2     | 1886          | 44.3     |
| <b>3500-3999g</b>   | 1016          | 24.5     | 986           | 23.2     |
| <b>4000-4499g</b>   | 172           | 4.1      | 196           | 4.6      |
| <b>4500-4999g</b>   | 16            | 0.4      | 9             | 0.2      |
| <b>5000+</b>        | 3             | 0.1      | 1             | 0.02     |
| <b>Unspecified</b>  | 6             | 0.1      | 0             | 0.0      |

***Table 13 – Birth weight distribution of infants/fetuses***

## GESTATIONAL AGE AT DELIVERY

Prematurity is associated with adverse obstetric outcomes and long term health problems. In 2013, 282 (6.8%) of babies born were premature, having a gestational age of <37 weeks. 48 (1.2%) were born very or extremely preterm (<32 weeks).

| <i>Gestational age</i>                   | <i>2013</i>   |          | <i>2012</i>   |          |
|--|---------------|----------|---------------|----------|
|  | <i>Number</i> | <i>%</i> | <i>Number</i> | <i>%</i> |
| <b>Extremely preterm</b><br>22-27 weeks  | 22            | 0.5      | 20            | 0.5      |
| <b>Very preterm</b><br>28-31 weeks       | 26            | 0.6      | 34            | 0.8      |
| <b>Moderately preterm</b><br>32-36 weeks | 234           | 5.6      | 279           | 6.6      |
| <b>Term</b><br>37 – 41 weeks             | 3864          | 93.1     | 3923          | 92.1     |
| <b>Post term</b><br>42+ weeks            | 3             | 0.1      | 2             | 0.1      |
| <b>Unspecified</b>                       | 0             | 0        | 0             | 0        |

*Table 14 – Gestational age at delivery*

## OUTCOME OF BIRTH

The number of live births registered in 2013 was 4127, which accounted for 99.5% of the total births at a national level. The remaining 22 births were reported as stillbirths of which 4 weighed 500g or less at birth. Of the livebirths, there were 15 cases of early neonatal deaths and 3 cases of late neonatal deaths (see table below). All births of 22 weeks and over irrespective of birth weight are registered into the system.

| <i>Outcome of Birth</i> | <i>2013</i> | <i>2012</i> |
|-------------------------|-------------|-------------|
| <b>Livebirths</b>       | 4127        | 4239        |
| <b>Stillbirths</b>      | 22          | 19          |

| <i>Neonatal deaths</i>       | <i>2013</i> | <i>2012</i> |
|------------------------------|-------------|-------------|
| <b>Early Neonatal deaths</b> | 15          | 17          |
| <b>Late Neonatal deaths</b>  | 3           | 2           |

*Table 15 – Birth outcomes – livebirths, fetal, early and late neonatal deaths (22+ wks gestation)*

## INFANT FEEDING METHODS AT DISCHARGE

Infant feeding habits are recorded by hospital staff at the time of discharge from hospital, which is usually 2-5 days after delivery. Little can be said on the actual infant feeding habits as these may change soon after discharge from the birthing facilities.

| <i>Infant feeding methods at time of discharge</i> | <i>2013</i> | <i>2012</i> |
|--|-------------|-------------|
| <b>Breast only</b>                                 | 2415        | 2413        |
| <b>Bottle only</b>                                 | 1162        | 1217        |
| <b>Mixed (Breast &amp; Bottle)</b>                 | 532         | 590         |
| <b>Other*</b>                                      | 40          | 38          |
| <b>Unspecified</b>                                 | 0           | 0           |

\* 'Other' - include babies who are still at hospital after 28 days and those who die before discharge

***Table 16 – Infant feeding methods at time of discharge***

## **MATERNAL AND PERINATAL MORTALITY INDICATORS**

(Compiled in conjunction with the National Mortality Register, DHIR)

Maternal, fetal, perinatal and neonatal mortality statistics are indicators of the quality of health care and these statistics are presented as of 2000. Definitions of the various rates presented are given below and follow the definitions given by WHO ICD-10 (International Statistical Classification of Diseases and Related Health Problems – Tenth Revision). Indicators given in the tables below refer to fetuses having a birth weight 500g and over to allow for comparison with the WHO – European Health for All Database (HFA-DB): <http://data.euro.who.int/hfad/>.

| <b>Year</b> | <b>Maternal Deaths</b> |
|-------------|------------------------|
| 2000        | 0                      |
| 2001        | 2                      |
| 2002        | 0                      |
| 2003        | 0                      |
| 2004        | 0                      |
| 2005        | 0                      |
| 2006        | 0                      |
| 2007        | 0                      |
| 2008        | 1                      |
| 2009        | 0                      |
| 2010        | 1                      |
| 2011        | 0                      |
| 2012        | 0                      |
| 2013        | 0                      |

***Table 17 – Maternal Deaths 2000-2013***

| <b>Year</b> | <b>Fetal death rate 500g and over</b> |                               |
|-------------|---------------------------------------|-------------------------------|
|             | <b>Number</b>                         | <b>Rate/1000 total births</b> |
| 2000        | 16                                    | 3.6                           |
| 2001        | 20                                    | 5.1                           |
| 2002        | 20                                    | 5.1                           |
| 2003        | 16                                    | 3.9                           |
| 2004        | 15                                    | 3.8                           |
| 2005        | 8                                     | 2.1                           |
| 2006        | 10                                    | 2.6                           |
| 2007        | 11                                    | 2.8                           |
| 2008        | 26                                    | 6.2                           |
| 2009        | 21                                    | 5.0                           |
| 2010        | 16                                    | 4.0                           |
| 2011        | 23                                    | 5.3                           |
| 2012        | 14                                    | 3.3                           |
| 2013        | 18                                    | 4.3                           |

***Table 18 – Fetal Death Rates 2000-2013***

| Year | Neonatal mortality rate (500g and over) |                       |
|------|---|-----------------------|
|      | Number                                  | Rate/1000 live births |
| 2000 | 23                                      | 5.3                   |
| 2001 | 12                                      | 3.0                   |
| 2002 | 20                                      | 5.1                   |
| 2003 | 20                                      | 5.0                   |
| 2004 | 17                                      | 4.4                   |
| 2005 | 17                                      | 4.4                   |
| 2006 | 9                                       | 2.3                   |
| 2007 | 17                                      | 4.4                   |
| 2008 | 24                                      | 5.7                   |
| 2009 | 17                                      | 4.1                   |
| 2010 | 18                                      | 4.5                   |
| 2011 | 22                                      | 5.1                   |
| 2012 | 14                                      | 3.3                   |
| 2013 | 16                                      | 3.9                   |

***Table 19 – Neonatal Mortality rates 2000-2013***

| Year | Early neonatal mortality rate (500g and over) |                       |
|------|---|-----------------------|
|      | Number  | Rate/1000 live births |
| 2000 | 16  | 3.6                   |
| 2001 | 10  | 2.5                   |
| 2002 | 16  | 4.1                   |
| 2003 | 18  | 4.5                   |
| 2004 | 12  | 3.1                   |
| 2005 | 13  | 3.4                   |
| 2006 | 4   | 1.0                   |
| 2007 | 14  | 3.6                   |
| 2008 | 21  | 5.0                   |
| 2009 | 13  | 3.1                   |
| 2010 | 16  | 4.0                   |
| 2011 | 18  | 4.2                   |
| 2012 | 12  | 2.8                   |
| 2013 | 13  | 3.2                   |

***Table 20 – Early Neonatal Mortality rates 2000-2013***

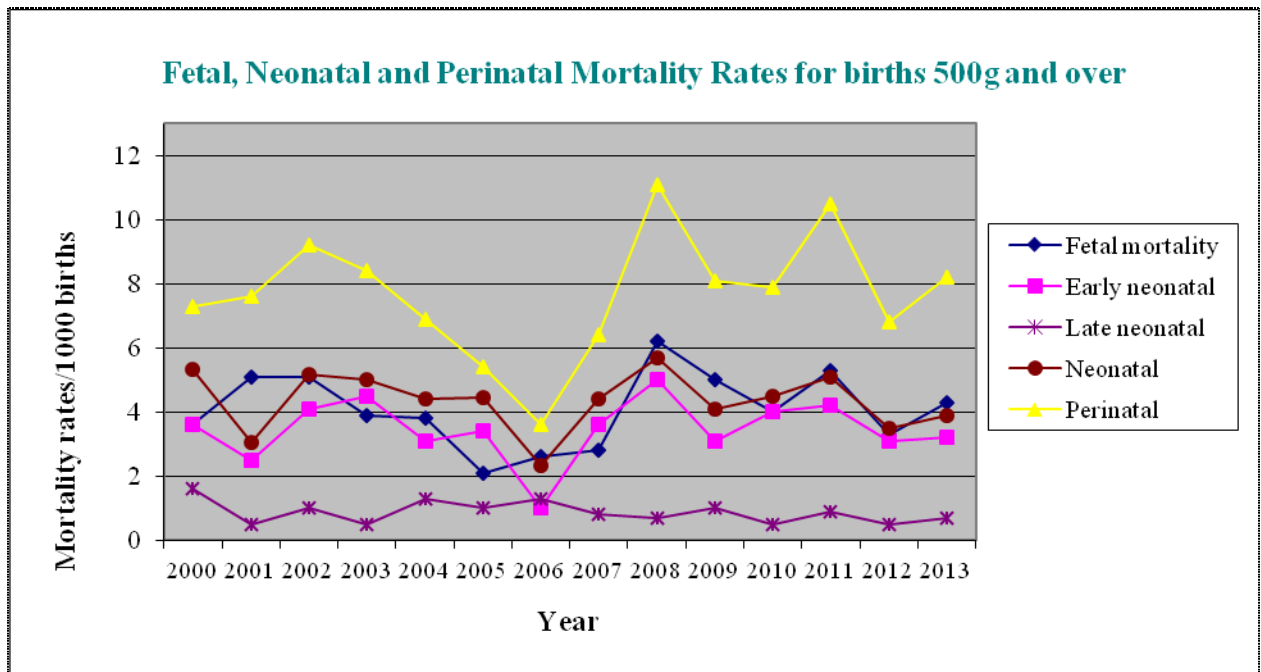


| Year | Late neonatal mortality rate (500g and over) |                       |
|------|--|-----------------------|
|      | Number                                       | Rate/1000 live births |
| 2000 | 7  | 1.6                   |
| 2001 | 2  | 0.5                   |
| 2002 | 4  | 1.0                   |
| 2003 | 2  | 0.5                   |
| 2004 | 5  | 1.3                   |
| 2005 | 4  | 1.0                   |
| 2006 | 5  | 1.3                   |
| 2007 | 3  | 0.8                   |
| 2008 | 3  | 0.7                   |
| 2009 | 4  | 1.0                   |
| 2010 | 2  | 0.5                   |
| 2011 | 4  | 0.9                   |
| 2012 | 2  | 0.5                   |
| 2013 | 3  | 0.7                   |

*Table 21 – Late Neonatal Mortality Rates 2000-2013*

| Year | Perinatal mortality rate (500g and over) |                        |
|------|--|------------------------|
|      | Number                                   | Rate/1000 total births |
| 2000 | 32                                       | 7.3                    |
| 2001 | 30                                       | 7.6                    |
| 2002 | 36                                       | 9.2                    |
| 2003 | 34                                       | 8.4                    |
| 2004 | 27                                       | 6.9                    |
| 2005 | 21                                       | 5.4                    |
| 2006 | 14                                       | 3.6                    |
| 2007 | 25                                       | 6.4                    |
| 2008 | 47                                       | 11.1                   |
| 2009 | 34                                       | 8.1                    |
| 2010 | 32                                       | 7.9                    |
| 2011 | 45                                       | 10.5                   |
| 2012 | 28                                       | 6.6                    |
| 2013 | 34                                       | 8.2                    |

*Table 22 – Perinatal Mortality Rates 2000-2013*



**Figure 2 – Fetal, neonatal and perinatal mortality rates 2000-2013**  
*(fetal deaths include only fetuses of birth weight 500g and over)*

Improved data collection systems and reporting of smaller babies (namely 22-24 weeks gestation) may account for some of the changes in mortality rates.

Annex I gives some selected comparative birth and mortality statistics for Malta and the EU.

## ANNEX I

Selected comparative statistics for Malta and EU – taken from the WHO – European Health for All Database (HFA-DB): <http://data.euro.who.int/hfad/> as available at May 2013. Only data until 2011 is completed as of May 2013, data in the HFA database is continually updated as necessary.

| Year | Malta | EU members before May 2004 | EU members since 2004 or 2007 |
|------|-------|----------------------------|-------------------------------|
| 2001 | 10.01 | 10.59                      | 9.45                          |
| 2002 | 9.86  | 10.52                      | 9.27                          |
| 2003 | 10.12 | 10.57                      | 9.32                          |
| 2004 | 9.69  | 10.66                      | 9.50                          |
| 2005 | 9.56  | 10.58                      | 9.74                          |
| 2006 | 9.55  | 10.69                      | 9.94                          |
| 2007 | 9.50  | 10.74                      | 10.15                         |
| 2008 | 10.19 | 10.90                      | 10.62                         |
| 2009 | 10.03 | 10.71                      | 10.68                         |
| 2010 | 9.66  | 10.75                      | 10.36                         |
| 2011 | 10.30 | 10.54                      | 9.82                          |
| 2012 | 10.09 | 10.39                      | 9.84                          |

*Table 23 – Live births per 1000 population*

| Year | Malta | EU members before May 2004 | EU members since 2004 or 2007 |
|------|-------|----------------------------|-------------------------------|
| 2001 | 1.50  | 1.50                       | 1.25                          |
| 2002 | 1.40  | 1.50                       | 1.25                          |
| 2003 | 1.50  | 1.53                       | 1.24                          |
| 2004 | 1.37  | 1.56                       | 1.26                          |
| 2005 | 1.37  | 1.56                       | 1.28                          |
| 2006 | 1.41  | 1.57                       | 1.31                          |
| 2007 | 1.37  | 1.60                       | 1.34                          |
| 2008 | 1.40  | 1.62                       | 1.40                          |
| 2009 | 1.40  | 1.61                       | 1.43                          |
| 2010 | 1.40  | 1.62                       | 1.39                          |
| 2011 | 1.50  | 1.60                       | 1.35                          |
| 2012 | 1.40  | 1.59                       | 1.36                          |

*Table 24 – Total Fertility Rate*

| Year | Malta  | EU members before May 2004 | EU members since 2004 or 2007 |
|------|--------|----------------------------|-------------------------------|
| 2001 | 50.83* | 5.23                       | 17.79                         |
| 2002 | 0      | 5.38                       | 14.29                         |
| 2003 | 0      | 5.39                       | 15.56                         |
| 2004 | 0      | 5.62                       | 13.85                         |
| 2005 | 0      | 4.90                       | 10.23                         |
| 2006 | 0      | 5.49                       | 9.15                          |
| 2007 | 0      | 5.05                       | 8.30                          |
| 2008 | 23.82* | 5.11                       | 10.14                         |
| 2009 | 0      | 6.20                       | 9.73                          |
| 2010 | 24.89  | 5.16                       | 9.30                          |
| 2011 | 0      | 4.68                       | 9.30                          |
| 2012 | 0      | 4.78                       | 6.16                          |

\*There were 2 maternal deaths in 2001, and 1 maternal death in each of 2008 and 2010.

***Table 25 – Maternal Deaths per 100 000 live births***

| Year | Malta | EU members before May 2004 | EU members since 2004 or 2007 |
|------|-------|----------------------------|-------------------------------|
| 2001 | 5.06  | 4.38                       | 5.40                          |
| 2002 | 5.09  | 4.32                       | 5.36                          |
| 2003 | 3.95  | 4.23                       | 5.23                          |
| 2004 | 3.84  | 4.14                       | 5.13                          |
| 2005 | 2.07  | 4.03                       | 4.99                          |
| 2006 | 2.57  | 4.03                       | 4.78                          |
| 2007 | 3.08  | 4.82                       | 4.64                          |
| 2008 | 6.86  | 5.03                       | 4.49                          |
| 2009 | 6.70  | 5.44                       | 4.43                          |
| 2010 | 3.97  | 5.07                       | 4.19                          |
| 2011 | 5.34  | 4.98                       | 4.31                          |
| 2012 | 3.30  | 5.0                        | 4.18                          |

***Table 26 – Fetal Deaths (500g and over) per 1000 births***

| Year | Malta | EU members before May 2004 | EU members since 2004 or 2007 |
|------|-------|----------------------------|-------------------------------|
| 2001 | 3.05  | 3.11                       | 6.13                          |
| 2002 | 5.38  | 3.01                       | 5.83                          |
| 2003 | 5.20  | 2.93                       | 5.64                          |
| 2004 | 4.37  | 2.86                       | 5.74                          |
| 2005 | 4.41  | 2.74                       | 5.20                          |
| 2006 | 2.32  | 2.69                       | 4.83                          |
| 2007 | 5.15  | 2.64                       | 4.53                          |
| 2008 | 5.72  | 2.55                       | 4.13                          |
| 2009 | 4.34  | 2.52                       | 4.07                          |
| 2010 | 4.48  | 2.49                       | 3.72                          |
| 2011 | 5.10  | n/a                        | 3.68                          |
| 2012 | 3.50  | n/a                        | 3.57                          |

***Table 27 – Neonatal Deaths per 1000 live births***

n/a = not available as at May 2014

## DEFINITIONS

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(Following the International Statistical Classification of Diseases and Related Health Problems – Tenth Revision, Volume II ICD-10, WHO, Geneva)

### Maternal Death

A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

### Birth Weight

The first weight of the fetus or newborn obtained after birth.

Low birth weight is less than 2500g (up to and including 2499g).

Very low birth weight is less than 1500g (up to and including 1499g).

Extremely low birth weight is less than 1000g (up to and including 999g)

### Gestational Age

The duration of gestation is measured from the first day of the last menstrual period. Gestational age is expressed in complete days or completed weeks.

For the purposes of calculation of gestational age from the date of the first day of the last normal menstrual period to the date of delivery, it should be borne in mind that the first day is day zero and not day one; days 0-6 therefore correspond to completed week zero;

### Fetal Death

Fetal death is the death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

### Fetal Death Rate

The number of fetal deaths in a year expressed as a proportion of the total number of births (live births plus fetal deaths) in the same year. Rates are usually expressed per 1000 total births.

$$\text{Fetal death rate} = \frac{\text{no. of fetal deaths in a year}}{\text{no. of live births plus fetal deaths in that year}} * 1000$$

### Live Birth

Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after separation, breathes or shows any evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of the voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born.

### Neonatal Period

The neonatal period commences at birth and ends 28 completed days after birth. Neonatal deaths (deaths among live births during the first 28 completed days of life) may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day but before 28 completed days of life.

Age at death during the first day of life (day 0) should be recorded in units of completed minutes or hours of life. For the second (day 1), third (day 2) and through 27 completed days of life, age at death should be recorded in days.

### Neonatal Mortality Rate

The number of deaths during the neonatal period in that year expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Neonatal mortality rate} = \frac{\text{no. of neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

### Early Neonatal Mortality Rate

The number of deaths during the early neonatal period (during first 7 days of life) in that year expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Early Neonatal mortality rate} = \frac{\text{no. of early neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

### Late Neonatal Mortality Rate

The number of deaths during the late neonatal period (ie occurring after the seventh day but before 28 completed days of life) in that year, expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Late Neonatal mortality rate} = \frac{\text{no. of early neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

### Perinatal Period

The perinatal period commences at 22 completed weeks (154 days) of gestation (the time when birth weight is normally 500g) and ends at seven completed days after birth.

### Perinatal Mortality Rate

The number of deaths during the perinatal period in a year expressed as a proportion of the total number of births (live births plus fetal deaths) in the same year.

$$\text{Perinatal mortality rate} = \frac{\text{no. of perinatal deaths in a year}}{\text{no. of live births plus fetal deaths in that year}} * 1000$$

## **BIBLIOGRAPHY**

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