

Documentation for
**Age at first marriage
of women**
for countries and territories

ROUGH DRAFT FOR COMMENTS

No quotes please

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by increased use and understanding of statistics.
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1. Introduction

This is the documentation for the Gapminder compilation of Age at first marriage of women. The data is used in the interactive graph *Gapminder World* available at:

www.gapminder.org/world

References in this document are referred to by a number preceded by the letter “a” (e.g. a002). These references are listed, together with the reference numbers, in an excel-file. The excel file also includes both the detailed meta-data, as well as the actual figures. The excel file, as well as this documentation, are available at:

www.gapminder.org/downloads/documentation/#gd009

The main purpose of the data is to produce graphical presentations that display the broad patterns of marriage in the world over time. Therefore, we have also included very rough estimates for countries and territories for which reliable data was not available. These estimates can only be taken as an indication of the order of magnitude for the indicator. Furthermore, we have not been able to make sure that every single observation is based on the best estimates available. Hence we discourage the use of this data set for statistical analysis and advise those who require more exact data to investigate the available data more carefully and look for additional sources, when appropriate.

1.1 The countries included in the dataset

For a discussion on what countries and territories we try to cover, and how we try to handle border changes and the like, see the document “Countries and Territories in Gapminder World”. The basic principle, however, is to get estimates for the geographical areas corresponding to the present borders.

To be succinct, we will hereafter jointly refer to all countries and other types of geographical entities and territories as “countries”, irrespectively of their statehood status. The inclusion of any area in this data set does, in no way, imply a stated opinion of Gapminder on the legal status of the area.

2. What to measure

A “marriage” carries very different meanings in different cultures and at different times (see, for example, Stone (a064) for an overview). A marriage might be connected to all or several of the points below:

- A ceremony
- A formal registration
- Inflexibility in choosing future partners
- A change in social status, obligations and rights
- A change in legal status, obligations and rights
- Having sex becomes socially (or legally) sanctioned
- Having children becomes socially (or legally) sanctioned
- The couple starts to live together
- A new household is formed

In some cultures, however, most of these transitions occur at a different time than at marriage. There are probably examples of almost all possible combinations of the timing of these transitions. However, our impression is that the most marriages across the world sets at least some limitation on the choice of partners in the future, and impose at least some legal or social obligations and rights on the marrying couple.

Furthermore, we believe that the concept of marriage is clear enough to make it meaningful to compare, at least in the majority of cultures that today are affected by the main world religions.

There can often be more than one ceremony that could be considered marriage. There might be one informal or traditional ceremony that changes the social status of the couple in the eyes of the local community, and there might also be a formal ceremony that changes their legal status.

In some cultures the “marriage” is a series of commitments and ceremonies where each step decrease the flexibility in changing partners in the future and where a new family is formed step by step.

What we are trying to measure is the transition that effectively is changing the legal or social rights and obligations. The information that normally is available concern the official registration of marriage. This registration is often, but far from always, connected to the most relevant transitions. However, sometimes we also have additional information on the timing of the “informal marriage”, if any.

3. How to measure it

There are several ways to measure age at marriage. They can differ by whether they are based on “cohorts” or periods. The former is calculated from the actual age at marriage of women born in a certain year (or period). The latter (such as the “singulate age” at marriage) are based on the share women ever married at different ages in a given year.

The measurements also differ between whether they are based on averages or medians. Medians typically display lower figures than averages, probably because a long tail of late marriages. Some measures are based on all women, others excludes those that never got married (e.g. they exclude those that remained never-married at the age of 50).

The different measurements normally differ by 2-3 years or less. Since the range of ages goes from above 30 to below 15 these errors should not affect the big picture. Hence, we used several of the measurements together unadjusted. However, in a few cases we thought that an adjustment was necessary. Some of the most common way to measure the age at marriage are described below.¹

3.1 Singulate mean age at first marriage (SMAM)

This is one of the most common measurements used. Hence, we try to use this measurement to the extent possible.

The SMAM measures the average number of years a woman would live as “never married”, if she has the same age specific “risks” of marriage as the population at large. Women that never married before their 50 year birthday are typically excluded. The measurement is typically calculated from a census or survey for a given year. The calculation use the proportion women that are “never married” in each age group.

It is typically assumed that no one marries (for the first time) after their 50-year birthday. This should not cause any major bias. It is also quite common to assume that no-one marries before the age of 15. In populations where child marriages are common this introduces a serious bias in the data. We tried to take that into account when we thought that such a bias were significant.

The properties of the measurement include:

- It is age-standardized so it is not affected by the age structure of the population.
- It is not affected by remarriages
- If the marriage pattern is changing over time, then it can differ significantly from cohort measures

¹ For some background see, for example, a011, a013, a054, a053.

- It is affected by marriage- or age-specific migration. For example, an influx of unmarried 30 year-olds will increase the SMAM.
- It is affected by marriage- or age-specific mortality. For example, if unmarried have a much higher mortality than married this will decrease the SMAM.

3.2 Singulate median age at first marriage

US census bureau use for this to report age of marriage in the US. I have not found any detailed description on how this measurement is calculated, but it should be equivalent to the SMAM. It is, in all likelihood, a different measurement than the “median age of marriage” used by the DHS, since the latter seem to be a cohort measure. We used this measurement without any adjustments for the US, even though it probably gives somewhat higher values than averages.

3.3 Mean age at marriages in a given cohort

This measurement is based on the average age of women born in a certain period. To avoid biases we should use cohorts that are old enough so that all are either married or dead. Using a cohort older than 50 would be equivalent to using the normal assumptions of the SMAM.

This measurement is in principle not affected by specific migration or mortality, as long as we follow the cohort to death or to marriage. However, what we typically have is data based on a survey in a given year. In such a survey respondents have been asked about when they first got married. In such cases the specific mortality and migration is a source of biases. On top of that the recall errors could be significant.

On the other hand, we could probably expect a bit more honesty about under-age marriages. The parents of girls that were married below the legal ages were reluctant to report those marriages to the censuses, according to some evidence. For example, this was the case in Egypt in the 30s (see below). When the question is asked directly to the women in question, long after the illegal marriage was taking place, it might be the case that the motives are lower to hide the low ages. This could perhaps explain the fact that reported cohort ages in Algeria was lower than averages based on a census from a specific year. Furthermore, in some cases, such as when calculating the SMAM of Egypt, the marriages before the legal age were simply included in the older age range. In such cases cohort means could give a less biased picture.

We use this measurement occasionally to extrapolate backward, when other data sources were non-existing or very weak. We attribute the cohort mean to the year in which the mean wedding would have taken place. Hence, in a cohort born in 1935, for which the mean age at marriage was 21 year we would assign 21 to the year 1956.

3.4 Median age at first marriage in a given cohort

The DHS use a measure called the “median age at first marriage”. As far as we have understood it describe the age by which 50% of the women have experienced marriage. It is based on the age at first marriage reported by the women interviewed in one survey, and it is accordingly a cohort measure. The DHS typically report the median for different cohorts of women.

It appears as if they include all women in the population, i.e. the 50% that got married after the median age includes those that had never married so far. This measurement has the advantage that we can use cohorts that still have not stopped “getting married”. We only need to have a cohort in which more than 50% of the women have married.

However, it seems that median ages typically are lower than mean ages quite significantly. This seems to be due to a long upper tail of marriages by older women, even in countries where girls typically marries young. Hence, medians were normally adjusted, as described below, particularly in countries where very low ages at marriage were common.

3.5 Crude general mean age at marriage (CGM)

This is the mean of the ages of marriages actually occurring in a given year. All marriages are included, including the widowed and the divorced. It is heavily affected by age structure of population in that year. It is also affected by remarriages.

We have used this measurement in a few exceptional cases. In those cases we also had information about the share first marriages, although not their age distribution. Hence, we could do a sensitivity analysis, to see the effects of the distribution of widows and divorced (the effects showed up to be quite small). Furthermore, we looked at the age distribution to get a sense of the bias caused by this.

4. The “median age model”

The median age at first marriage (for cohorts) are significantly lower than the SMAM for the same period. Hence, we decided that the median values had to be adjusted to be consistent with the SMAM and corresponding measurements.

UN data (a077) displayed SMAM data based on the DHSs. We sampled a few of the DHSs UN data used. The DHSs displayed the median age (cohorts) for the age group 25-49. A comparison of them are made in table 1 below.

Country	Year	Median age at marriage (cohorts), women aged 25-49 (DHS)	SMAM women (a077)
Egypt	2000	19,5	22,71
Morocco	2003	21,4	26,44
Yemen	1997	16,0	20,67
Mali	2001	16,5	18,49
Niger	1998	15,2	17,60
Jordan	2002	21,8	25,86
Rwanda	2000	20,7	22,58
Namibia	2000	26,2	27,53

Table 1. A sample of observations for which we have both DHS data and data in a077. The data for Namibia is for the age group 30-49. There was no data for the age group 25-49. Hence, Namibia was excluded from the “regression”.

The differences are often large, as can be seen in the table - sometimes the difference is larger than 5 years. The differences can also be seen in figure 1 below.

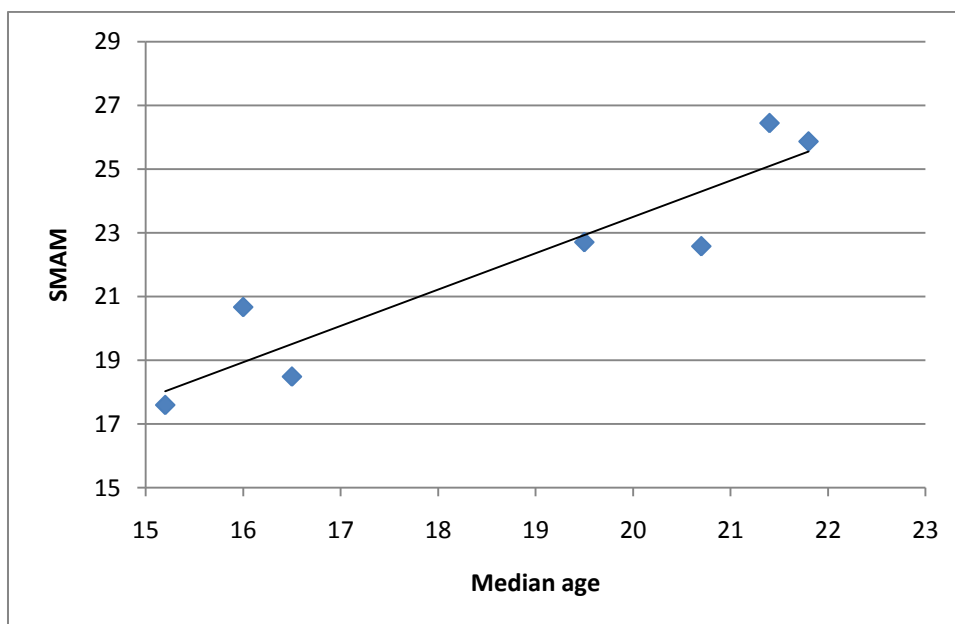


Figure 1.

To have some rule of thumb we did a simple regression on these observations. The result was:

$$\text{SMAM} = 0,6781 + 1,1411 * \text{Median age}$$

$$R^2 = 86.75\%$$

Namibia was excluded since there was no data for the 25-49 year age group, although the observations for the age groups available was in line with the result above. These results have no claim to be a proper model in any sense, and we only use it as a rule of thumb, and only in a few exceptional cases.²

5. Extrapolations using qualitative information

Sometimes we had no representative quantitative data as such, but a variety of historical accounts and data of a more local character. Occasionally we thought that such accounts seemed to be robust enough to use them for a backward extrapolation. What we normally had was qualitative evidence saying that the situation at the time of our earliest observation had been the same for a long time. In such cases we assumed that the age had been unchanged.

Sometimes we had more information, e.g. that the age had been increasing in a certain period. The data then reflect this pattern, to the extent possible. Obviously, such an observation is very rough and is only included to display the general global pattern.

Qualitative evidence could probably be best described as *median* values since the sources reports what they perceive as the “typical age” of marriage. Hence, there is a risk that the source fail to reflect any significant minority that deviate from the general practice. We suspect that the typical omission might be the minority marrying later than the norm. Hence, we had the “median age model” in mind when considering the qualitative evidence.

6. Qualitative information for the Arab world

The Arab world was the region for which we had the most qualitative evidence. Most of it clearly indicates that the average age was low. But how low? There are modern censuses going back to at least the early 20th century. The SMAMs calculated from these typically indicates averages in the range of 18 to 20 before the 70s (when the age started to increase significantly).

However, there is evidence that marriages under the legal age of 16 went unreported in the censuses (see a019, for example). The lower average age in cohort data, as compared to SMAM, might also reflect this (for reasons discussed above). Furthermore, some of the SMAM are based on data that deliberately excludes underage marriages.

Here follows a list of some of the qualitative evidence:

Egypt, 1954 (a019, p. 183): An anthropological description of one rural village in upper Egypt (in the village of birth of the author). “It is not unusual for girls to get married at the age of twelve or thirteen, in spite of the law which stipulates that this may not be effected

² The reason for us to use such a rough model is time constraint. We hope to upgrade the data in the future.

before the age of sixteen. This happens without official registration ...”. “Nowadays, boys usually marry after eighteen”.

Egypt, 1938 (a014, p. 118): An anthropological account of rural Egypt. The data collection method is not transparent. About rural marriage: The girl will marry at 14 or 15 ... the law of 1923 fixed 16 as the age of marriage, but both families concerned often connive to break it.

Egypt, early 19th century (a071, p. 120): An account by an Englishman living in Egypt (Cairo) for several years. Many girls are married at 12 or 13, a few already at 10. Few are unmarried at 16.

Egypt, pre 20th century (a015): Based on studies of marriage contracts, court protocols and legal arguments about minimum ages. Underage marriage (early teens or even earlier) seem to have been common, but the frequency is of course impossible to say anything about. The “consummation” of marriage were not supposed to occur before the first signs of puberty. The fact that this has been reiterated could be taken as a sign of early marriages. However, there are also examples of adult women marrying, although it is not clear to what extent these contracts included *first* marriages.

Arab world, Ottoman era (a076): Based on studies of marriage contracts, court protocols and legal arguments about family law. Girls in legal minority (variously defined as pre-puberty or less than 9), could be married off. Consummation only allowed at when reaching legal majority (puberty or some physical signs of readiness).

It appears that it was not uncommon to marry off girls in legal minority in Ottoman times. There are many examples of marriage contracts for girls in this category. There were also some examples of consummation of marriage before puberty, although that was against the law.

Palestine, early 20th century and earlier (a112): Based on court records, particular from Haifa. Haifa in 1880: 28% of all marriage contracts involved minor girls. 1919 display similar figures. Fatwas indicate that the consummation of marriage of prepubescent girls was exceptional and criticized by society.

Nablus, 1720-1856 (a123): Based on court documents and marriage contracts. 107 marriage contracts were available. These clearly only represents a small fraction of all marriages in the district. The upper classes are clearly overrepresented. Still, the lowest class are also represented. The figures are presented in table 2 below.

	Total number of contracts (the distribution across classes are only approximated)	Contracts involving minor girls	Percent minor girls
Upper class	36	8	22%
Middle class	36	7	20%
Lower class	36	4	11%
Total	107	19	18%

Table 2, Number of contracts in Nablus, 1720-1856.

Some tentative conclusions from all of these accounts could be:

- Marriage of girls in the early teens were quite common
- Marriage at an even earlier age (say before 12) occurred, but was perhaps not that common
- We cannot exclude that a significant minority married later than the early teens. Some women might even have married at a much later age.

This would mean that the mean age at marriage in the early 20th century (and earlier) were somewhat lower than the figures from the earliest SMAMs available. On the other hand, the mean age was probably not as low as the extremely low ages that are reported for part of southern Asia, where marriages before 12 might have been common. Hence, our guesstimates for a few Arab countries in the 19th century are somewhat lower than the earliest available averages, but higher than the estimates for India and Bangladesh.

7. References

See the excel-document