Title
Fertility and Female Spirituality Among Gloucestershire Baptists, 1800-1837: a Quantitative, Local Study

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This paper examines the comparative importance of female Age-at-First marriage and Age-at-Conversion (adult baptism) among a sample of married female members of the Shortwood Baptist Church, located in Horsley parish in Gloucestershire’s Nailsworth valley c. 1800-1837. English historical demographic studies usually decline to treat Protestant nonconformity separately from the Anglican laity; nor do they treat cultural phenomenon like religious affect as a variable in analyzing reproductive behavior, but rather emphasize socio-economic effects. This paper is based on recent findings from my forthcoming family reconstitution monograph and based on a sample of 100 Baptist families, the profiles of which I have pieced together from an array of fragmentary sources (in the forthcoming monograph these will be compared to those for a sample of 500 Anglican families living in the same locale).

The data include the standard demographic indices but additionally contain information on the timing of religious conversion, the effects of which may be measured quantitatively through multiple regression. The quantitative findings will be elaborated further by a qualitative reading of individual observations in order to offer a narrative complement. The
conclusions tend to affirm that cultural factors were important in reproductive decisions, especially those associated with religion, as well as the broad perception found in the literature on popular religion that in this, as in other respects, female spirituality was especially decisive.

*  

I have already touched on the issue of nonconformity and procreation in a study using the quantitative technique called “event history analysis,”¹ in which I found that the probability of having another birth rose following the conversion date of Baptist women. I explore this question further, in this paper, through a series of multiple regression models, as I have just indicated, and which are set forth in the tables in the handout. The explanatory variables seek to explain variation in the pattern of the dependent variable’s observations, and in this manner establish the degree of causality between them by generating a set of coefficients with their probability estimates.

I divided the sample into two categories: a Pre-Marital/Marital sub-group, in which conversions either preceded marriage or occurred in the same year; and a Post-marital/Marital sub-group, in which conversions took place following marriage or in the same year. I further refined this division

by making each category either wholly Pre-Marital or wholly Post-Marital, and applied the analysis to Post-Marital conversions where further probing seemed needed.

For each sub-sample, I ran regression analyses first using the number of children born to the marriage, or “Kidcount,” and later Woman’s Age-at-Last-Birth as dependent variables, each to be explained by Woman’s Age-at-Marriage (Wagemar) and Woman’s Age-at-Conversion (Wagecon).

[Insert Table 1]

Table 1 and Fig. 1 treat Pre-Marital/Marital Conversions for the dependent variable “Kidcount”. In table 1 Woman’s Age-at-Marriage emerges as the primary explanatory variable, with a moderately strong coefficient (-0.403) and a negative direction, indicating reassuringly that the younger the woman at marriage, the greater the number of children born to her. The relationship is significant at a 98% probability, that is, at the 0.02 level of statistical significance under the normal curve. Woman’s Age-at-Conversion has a coefficient half as strong and indicates change in a positive direction, namely, that the older the woman at Pre-Marital/Marital conversion, the larger her family size over the long term; the relationship is significant at a 90% probability.
The frisson of religious enthusiasm, normally accompanying conversion, seems in this instance, therefore, to have informed the rest of female reproductive history, if not quite as strongly as Woman’s Age-at-Marriage, though the path analysis in Fig. 1 will show the causal relationships to have been more complex.

Fig 1 explores this relationship further by rendering the regression analysis, depicted in Table 1, in the form of a Path Model. Here I probe what effect, if any, female Pre-Marital/Marital conversion ages may have had on Woman’s Age-at-Marriage. And indeed Woman’s Age-at-Marriage and Woman’s Age-at-Conversion, though nominally independent variables, were themselves causally related, a condition that Path analysis addresses by disaggregating direct and indirect causal flows.

[Insert Fig. 1]

Fig 1 sets forth the path coefficients and the direction of their respective flows. Age-at-Conversion preceded age-at-marriage in this sub-sample by an average of only 3.7 years (and included some observations where the two were equal); the strength of the path coefficient from Wagecon1 to Wagemar1, and its relative weakness from Wagecon1 to Kidcount, suggests that its primary effect on the dependent variable was in fact mediated through Age-at-First-Marriage, indicating that the
frisson of religious enthusiasm normally accompanying conversion was
initially associated with the celebration of or proximity to marriage, indeed
seems clearly to have promoted it, while the path coefficient of Wagecon1
to Kidcount suggests a longer term, if more attenuated direct and positive
effect.

* 

Next I compare this analysis to the Post-Marital/Marital sub-group,
the results of which appear in table 2, to be followed by examination of
Post-Marital conversions alone; those results are presented in table 3 and
Fig.2. Again the dependent variable is “Kidcount”.

In table 2, Woman’s Age-at-Marriage remains the primary variable,
with a coefficient half as strong as previously (-0.214), but with the same
reassuringly negative direction, and a probability of statistical significance
exceeding 98%. Woman’s Age-at-Conversion, on the other hand, has a
virtually negligible coefficient, than previously (0.06) and a statistical
probability of only 87%, suggesting a weak causal effect.

This last finding may possibly be explained by the fact that women
in this sub-sample were largely older at conversion (at an average of 11
years from the mean age at marriage, as shown in table 4) and would
already have had some children, whose births could not therefore have been affected directly by the mother’s immediate experience of conversion.

On the other hand, it may be that the presence in the sub-sample of a few observations, in which marriage ages overlapped with conversion ages, may have adversely affected the result. The findings in table 3 suggest this last explanation was the more likely one. It implies too that the older the Woman’s Age-at-Conversion, the more intense her experience of conversion.

When the sample is further refined, so that it contains only those women whose Ages-at-Conversion followed marriage, that is, were entirely Post-Marital, these conclusions become even more striking. The results appear in table 3

[Insert Table 3]

The strength and direction of the woman’s Age-at-Marriage remains unchanged from previous analyses, but the effect of her Age-at-Conversion has a much stronger probability of significance at 95%, even as the coefficient remains about as small as previously, if marginally larger (0.08).

The reason for the statistically significant yet much weaker coefficient in this case may be that the Woman’s Age-at-Marriage had an
effect on the Woman’s Age-at-Conversion, since Age-at-Marriage in this sub-sample preceded the woman’s. Although 11 years on average transpired between marriage and conversion, the difference in means may have been more apparent than real, despite their statistically significant difference, as indicated in table 4. \((X = 35, \ SD = 10.58; \text{ coef of var } = 30.2\%)\),

Indeed, a path analysis of the relevant coefficients, set forth in Fig 2, reveals that Age-at-Marriage had a strong, statistically significant effect on Age-at-Conversion, the independent effect of which on “Kidcount” seems, as in the previous model, to have been attenuated. Although causation in Fig 2 flows partially in a different direction than previously, the result is similar in so far as marriage and conversion each retain a strong causal effect: Here the celebration of marriage seems to have anticipated or affected the frisson of conversion, particularly as the interval of the woman’s status as “hearer” interposed itself between marriage and adult baptism, while Age-at-Conversion, acting independently on Kidcount, would thereby have had a more attenuated yet longer term, sustaining effect.

*
Another way to approach this issue is to examine the effects of wagemar1 and wagecon1 on the Woman’s Age-at-Last-Birth [aglstbr1], in addition to their effects on “kidcount”. Here, it is useful to employ further regression analyses. Following the above models, the primary distinction will be between Pre-Martial/Marital and Post-Marital/Marital conversions.

A regression of Woman’s Age-at-Last-Birth on Woman’s Age-at-Marriage and Woman’s Age-at-Conversion, depicted in Table 5, reveals the singular importance of conversion age as a determinant of the age at the woman’s last birth. Here wagecon1 strongly outweighs wagemar1, where the conversions were Pre-Marital/Marital in timing; indeed wagemar1 is only moderately significant at 89% probability, while wagecon1 remains strongly significant at a probability of 98%. When refining categories further by distinguishing those converting fully before marriage from those whose conversions following marriage entirely, the findings are even more distinct, with wagemar1 falling in probability of significance and wagecon1 remaining about the same.2 When Wagecon1 comes largely after her marriage age, however, Wagemar1 resumes its

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2where wagecon1 < wagemar1, for wagemar1, N=25, “b” = -0.57, t= -1.50 and prob|t| <0.1465 at df=1; for wagecon1, “b”= 0.732, t=2.28, prob|t| 0.032 at df=1.
higher statistical significance, while Wagecon1 nevertheless retains its statistical significance, *albeit* with a weaker coefficient.

[Insert Table 5]

The mean age at last birth for both categories, however, remained the same at 38 years, as shown in table 4. The tapering off of reproduction at what seems a comparatively early age was due most likely to declining fecundity than to any effort at fertility control, despite the formal limit used in this analysis of age 52.99;\(^3\) the results of this regression analysis therefore suggest that Pre-Marital conversion had a sustaining effect on reproduction over the long term, as suggested by earlier regression analyses, but so too did post-marital conversion, if to a lesser extent. Family limitation by the stopping of births was not yet practiced systematically or on any significant scale, though fertility control, in the form of the spacing of births, may have occurred to some degree. The spacing of births in some of the sample’s observations implies that this indirect method of restricting

\(^3\) During the era of natural fertility, and therefore prior to the on-set of the fertility transition, in which couples engaged in family limitation, John Knodel writes, “the average age at which [European] women terminated childbearing was generally around 40.” See John Knodel, *Demographic Behavior in the Past: A Study of fourteen German village populations in the eighteenth and nineteenth centuries* CUP: Cambridge, 1988), 292. The limit of 52 was used here because of a few outliers, which included four observations in which the age at last birth was over 50.
fertility may have taken place; yet, the observations in question, which are few in number, often contain large numbers of births. More likely these larger intervals occurred because of declining fecundity rather than any special effort at fertility control. On the contrary, the appearance of the marginal birth at an age of declining fecundity is evidence that special reproductive efforts were indeed made.

I will offer Three sample observations as examples, depicted in Table 6, and suggest, based on a qualitative reading of the data, the possible motivations which likely affected the procreation of the last birth. This reading may appear speculative, but it is grounded in a close reading of the data and is further supported by the quantitative evidence of the foregoing regression analyses.

Observation 69 is that of the family of Joseph King, tailor, and his wife, Elisabeth (nee Farmilo). She had been baptized at age 19 into the Shortwood church on 13 April 1821, a year and seven months prior to marriage, while he followed suit at age 29, six months before marrying. The timing of their respective conversions and the age-differential between spouses, suggest a wife with a firm religious commitment, who may have made her husband’s conversion a condition of their union. This was an
unusually fecund marriage with ten births spaced at regular short intervals up until the eighth birth. Between the eighth and ninth births, the interval stretches to seven years, and between the ninth and 10th, a bit further to 12.4 years. The interval between the seventh and eight births took place between Elisabeth’s ages of 37 and 44, years which clearly marked the onset of the loss of fecundity. The last infant, born to Elisabeth at age 51, was stillborn, as might have been expected. Clearly the couple continued to engage in procreative activity well after the onset of fecundity decline, and so persisted in producing a final birth at an almost unimaginable age. One can hardly doubt that such persistence owed itself to the depth of Elisabeth’s religious conviction.

The marriage of Richard Manning, weaver, to Ruth Barnfield, spinner (observation 46), followed a different pattern, except that a hint of fertility control appears two births prior to the last birth, and therefore seems fleeting and probably the result of the 8th birth having followed the birth of twins. The other interesting feature of this marriage is that Ruth enjoyed an independent occupation as a cloth spinner, a status more commensurate with that of her husband’s (outwork was in decline and both more likely would have been factory workers), so that they seem more than other couples in the sample to have been equal partners. This was a
completed marriage as well, it coming to an end with Richard’s death at age 63. Ruth was 52 at the time, and 42 at last birth, which, after ten births, clearly marked the end of her period of fecundity. She died in 1853, at age 56, in poverty, as the 1851 census recorded.

The marriage started with a prenuptial pregnancy, and the next four birth intervals were short, which meant a quick succession of births, no doubt the result of a series of child and infant mortalities. Eliza, the second child, died two months short of a year-and-a-half, to be replaced by an unnamed infant who died nine months after its birth; and who was replaced in turn by yet another unnamed infant who died stillborn. This last infant death was followed by the premature birth, five months later, of a second Eliza, who luckily survived long enough at least to have been christened (no death date is given). Following the successful births of twins, William and Edwin, we have the long interval of six years already mentioned. But then efforts to procreate resume, however futilely, with one stillborn birth followed by another birth, after which the child lived only a year (not long enough to have been baptized because by this time both spouses had become Baptists).

Richard converted four months following the death of the first Eliza, and five months preceding her first replacement, the timing of which
appears highly suggestive. Ruth, on the other hand, converted much later, at age 39, displaying an independence of mind and spirit, in the interval between the ninth and 10\textsuperscript{th} stillborn births, the timing of which remains equally suggestive. Clearly, in most respects a united couple, their respective conversions appear to have spurred, at different stages, their mutual procreative life as a family.

One final consideration must focus on a nominal contrast to the other marriages we have discussed, namely on the marriage of William Pegler and Sara Nicholls (observation 49). They too appear to have been a united couple who also married late but who converted, in contrast to the others discussed here, following the end of their procreative life as a couple. Apart from the prenuptial pregnancy with which the marriage started, the only other notable feature of their family history is the eight year interval between the penultimate and last births. Although large enough to hint at the possibility of fertility control, Sara’s age at the start and end of the interval suggests otherwise. Sara, at 42.9 years, had already embarked on the path of fecundity decline, and gave birth at the unimaginable age of 51. She was baptized into Shortwood at age 55; William, who was Sarah’s age, was baptized into Shortwood two years earlier at 53. Both therefore experienced formal conversion well after the birth of their last child.
Interestingly, however, the child lived three years but remained unnamed in the record, suggesting that it had not been given an Anglican christening at its birth. This omission implies that William and Sarah, as mere “hearers” at Shortwood, had nevertheless been sufficiently affected by Baptist mores, prior to their respective conversions, to have persisted in procreative activity well past the age of normal fecundity. In other words, their procreative behavior, even as mere “hearers,” was similar to the behavior of late converts who persistently strove to give birth, even as they approached the end of fecundity.

**Conclusion**

The findings of this study affirm that cultural factors, such as female religious experience, were central to reproductive decisions within marriage. Indeed, the multiple regression coefficients, combined with path analyses, have shown that the conversion experiences of women, either before or after marriage, though mediated largely through female Age-at-Marriage, when considering the total number of children born to families, broadly sustained procreative activity over the long term. When applied to the wife’s Age-at-Last-Birth, furthermore, female Age-at-Conversion proved more powerful a predictor than did Age-at-First-Marriage among pre-nuptial converts; it proved equally strong among post-nuptial converts,
while enjoying parity of influence with female Age-at-First-Marriage. A qualitative reading of the data associated with a selection of sample families lent nuance to these findings.

One may conclude that the frisson of conversion experience sustained reproduction by extending procreative efforts that stretched the limits of fecundity. These findings affirm the broad perception found in the literature on popular religion that female spirituality, in this respect, was especially decisive to population growth in the phase of the demographic revolution which overlapped with the evangelical revival, even as they affirm the centrality to that process of female age-at-first marriage, so beloved of historical demographers.
### Table 1

**Pre-Marital/Marital Conversion [I].**

Where “wagecon1” < = wagemar1” for Depndt Var “Kidcount”

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>t value</th>
<th>Pr &gt;</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>y-intercept</td>
<td>1</td>
<td>10.77199</td>
<td>2.95492</td>
<td>3.65</td>
<td>0.0012</td>
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<td>wagemar1</td>
<td>1</td>
<td>-0.40341</td>
<td>0.16680</td>
<td>-2.42</td>
<td>0.0232</td>
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<tr>
<td>wagecon1</td>
<td>1</td>
<td>0.24935</td>
<td>0.15024</td>
<td>1.66</td>
<td>0.1095</td>
<td></td>
</tr>
</tbody>
</table>

N = 25, R-square = 0.1899 or 19.01% variance explained; F=2.93, Pr > F = 0.0719

### Fig. 1

**Pre-Marital/Marital Conversion [I].**

Causal Flows Explaining “Kidcount” where “wagecon1 <= wagemar1”

Wagecon1 .

\[ 0.24935 \rightarrow Kidcount \]

\[ 0.64535^* \]

\[ -0.4034 \rightarrow \]

Wagemar1

* t = 5.24, Pr |t| < 0.0001, N = 28
Table 2

**Post-Marital/Post-Marital Conversion [ I ]**

Where “wagecon1” > “wagemar1” for Depndt Var “Kidcount”

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>t value</th>
<th>Pr &gt;</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>1.92245</td>
<td>4.39</td>
<td>0.0001</td>
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<tr>
<td>wagemar1</td>
<td>1</td>
<td>-0.21414</td>
<td>0.09889</td>
<td>-2.17</td>
<td>0.0160</td>
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<tr>
<td>wagecon1</td>
<td>1</td>
<td>0.06276</td>
<td>0.04097</td>
<td>1.53</td>
<td>0.1329</td>
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</tr>
</tbody>
</table>

N = 46, R-square = 0.1007, or 10.0% variance explained; F=2.41, Pr > F = 0.1021

Table 3

**Post-Marital/Post-Marital Conversion [ I ]**

Where “wagecon1” > “wagemar1” for Depndt Var “Kidcount”

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>t value</th>
<th>Pr &gt;</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>7.48096</td>
<td>1.96342</td>
<td>3.81</td>
<td>0.0005</td>
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<tr>
<td>wagemar1</td>
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<td>0.19162</td>
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<td>0.0411</td>
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<tr>
<td>wagecon1</td>
<td>1</td>
<td>0.08069</td>
<td>0.16023</td>
<td>1.95</td>
<td>0.0584</td>
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</tbody>
</table>

N = 44, R-square = 0.1154, or 11.54% variance explained; F = 2.67, Pr > F = 0.0810

Fig. 2

**Post-Marital Conversion [ I ]**

Causal Flows Explaining “Kidcount” where “wagecon1 > wagemar1”

Wagecon1 .

\[
0.08069 \rightarrow 1.2881^* \rightarrow -0.20608
\]

Wagemar1

\[ t = 4.23, \text{ Pr } |t| = 0.0001, N = 44 \]
Table 4
Means of Select Vars: Pre-Martial/Marital AND Post-Martial/Marital Conversions
(Where Wagecon1 <= Wagemar1 AND Wagecon1 => Wagemar1)

| Var       | N  | X   | SD  | [N | Xs | SDs | Mdn] | N  | X   | SD  |
|-----------|----|-----|-----|-----|--|-----|-----|-----|----|-----|-----|
| Kidcount  | 53 | 5.32| 2.87| [97 | 5.4 | 2.7 | 5.0] | 46 | 5.6 | 2.52|
| Wagemar1  | 53 | 24.9| 4.95| [97 | 24.3 | 4.8 | 23.0] | 46 | 23.26| 4.50|
| Wagecon1  | 28 | 21.25*| 4.86| [72 | 29.7 | 11.1 | 26.5] | 46 | 34.37*| 10.87|
| Waglstbr1 | 53 | 38.33| 6.66| [97 | 38.1 | 6.6 | 39.0] | 46 | 38.0 | 6.53|

* difference of means, t=5.948, df=67 prob|t| <0.0005; sample as a whole in brackets [ ]

Table 5
Par Est. by Pre-Martial/Marital AND Post-Martial/Marital Conversions
(Where Wagecon1 <= Wagemar1 AND Wagecon1 => Wagemar1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Par Est</th>
<th>t</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
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<th>t</th>
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<td>6.37</td>
<td>&lt;0.0001</td>
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<td>20.7</td>
<td>4.77</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wagemar1</td>
<td>1</td>
<td>-0.556</td>
<td>-1.66</td>
<td>0.1099</td>
<td></td>
<td>1</td>
<td>0.47</td>
<td>2.11</td>
<td>0.04</td>
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<tr>
<td>wagecon1</td>
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<td>0.711</td>
<td>2.35</td>
<td>0.0267</td>
<td></td>
<td>1</td>
<td>0.18</td>
<td>1.98</td>
<td>0.05</td>
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</tr>
</tbody>
</table>

N = 28, adj-R-square = 0.116
N = 46, adj-R-square = .280

NB where wagecon1 < wagemar1, for wagemar1, N=25, “b” = -0.57, t= -1.50 and prob|t| <0.1465 at df=1; for wagecon1, “b”= 0.732, t=2.28, prob|t| 0.032 at df=1. The findings are sharper.

Table 6
Birth Intervals of Three sample Observations

<table>
<thead>
<tr>
<th>Obs.</th>
<th>Int1</th>
<th>Int2</th>
<th>Int3</th>
<th>Int4</th>
<th>Int5</th>
<th>Int6</th>
<th>Int7</th>
<th>Int8</th>
<th>Int9</th>
<th>Int10</th>
<th>C</th>
<th>M</th>
<th>Lb</th>
<th>Mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>0.97</td>
<td>1.17</td>
<td>1.0</td>
<td>2.0</td>
<td>2.0</td>
<td>3.0</td>
<td>1.0</td>
<td>2.0</td>
<td>7.0</td>
<td>12.4</td>
<td>19</td>
<td>20</td>
<td>51</td>
<td>31</td>
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<tr>
<td>46</td>
<td>0.3</td>
<td>2.2</td>
<td>2.0</td>
<td>1.2</td>
<td>0.33</td>
<td>2.0</td>
<td>0.0</td>
<td>6.0</td>
<td>3.5</td>
<td>3.8</td>
<td>39</td>
<td>21</td>
<td>42</td>
<td>21</td>
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<td>49</td>
<td>0.16</td>
<td>2.8</td>
<td>2.4</td>
<td>4.2</td>
<td>2.9</td>
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<td></td>
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<td></td>
<td></td>
<td>55</td>
<td>30</td>
<td>51</td>
<td>21</td>
</tr>
</tbody>
</table>

C = age @ conversion; M = age @ marriage; Lb = age @ last birth; Mi = length of marriage in years.