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Nuptiality Tables of Romania's Population

Using the data of the 1956 census and of the current reports on marriages in the same year, the authors infer the probability of concluding their first marriage for women aged 15 up to 54 and for men aged 18 up to 54.

A thorough study of nuptiality is imperative, owing to the substantial influence that marriage and family bear on other demographic phenomena and particularly on the birth rate.

By making up nuptiality tables according to a statistical method similar to the one used when drawing up tables for the expectation of life, conclusions may be drawn for the purpose of knowing the intensity of nuptiality for various group ages of the population. Concomitantly the nuptiality tables provide important information regarding the mean age of husband and wife when contracting their first marriage and they constitute an instrument in view of comparing the intensity of nuptiality in time and space. These tables provide a unique basis of comparison.

The nuptiality tables can be elaborated with an aim to show the ratio of married and unmarried individuals within a generation — in the tables by generations — as well as with an aim to follow the evolution of married and unmarried individuals between the ages of 15 and 54 in the course of a certain length of time — in the case of moment tables.

Moment nuptiality tables have been drawn up in the present study for unmarried women and men, 15—54 years old in 1956, in Romania. The year taken for this calculus is justified by the fact that the number of feminine and masculine population according to their civil status by age groups — these data being necessary to draw up the tables — are only obtained on the occasion of a population census. In addition to the above data the drawing up of the tables also requires the series of data regarding women and

men, married for the first time, by age groups (15—54 years old) in the respective year (1956). These data are obtained from the current records of marriages recorded in statistical bulletins by town and communal people's councils registry offices.

Since, when drawing up the nuptiality tables, the two series of data — number of unmarried women and men aged 15—54 and of those married for the first time at that age — should be distributed in part for every year of age, it has been necessary to obtain these data by mathematical computation, as they only were to be found by 5-year groups of age *

That is the manner in which the above distributions of the number of unmarried women and of those married for the first time, have been obtained (*Table 1*).

Obviously, other methods may also be applied, other distributions being then obtained, We consider that the data presented in *Table 1* are close to reality, since the sums of 5 elementary values coincide with the grouped values existing initially, and the elementary values are to be found on the curve obtained through the quinquennial values.

The processing of the data obtained in the next population census by years of age, as well as the processing of the data regarding married people by years of age, will show the extent to which the data obtained by the above methods are close to reality.

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* A) The distribution of the number of unmarried women and men was found by using:
a) a second degree parabola with discrete variations for the ages 15—29:

$$Y = A_0 + A_1 x + A_2 x^2,$$

the quinquennial values being inserted on this curve;
b) a linear distribution of the form:

$$Y = A_0 + A_1 x,$$

for the ages of 30—54, since the frequency magnitude change in this interval occurs in the form of an arithmetic progression.

The parameters A_0, A_1 and A_2 in the equation for the distribution of the ages 15—29 have been computed according to the method and with the help of the table of coefficients in view of establishing the second order parameters, elaborated by A. I. Yezhov. (Adjustment and Computation of Distribution Series, Gosstatizdat, Moscow, 1961, p. 131 and following).

The values thus obtained were slightly adjusted, mechanically, thus eliminating the discontinuities in the 15—19 year group, while the sums of 5 elementary values should coincide with the values initially grouped.

B) The distribution of the number of women and men married for the first time was obtained by using:

a) a second degree parabola for the ages 15—24. In contrast with the curve for the distribution of unmarried women and men, the graphic representation of the number of people married for the first time represents a second degree convex parabola with a right-hand asymmetry, tending towards O.

b) a hyperbola of the form:

$$Y = A_0 + A_1 \frac{1}{x}$$

for ages 25—54, since to the change in characteristic (age) from its lower limit (age 25) to its upper limit (age 54), there corresponds an inversely proportional change of the frequencies (number of women and men at their first marriage).

The distribution thus obtained has, in its turn, been slightly mechanically adjusted.

Table 1 — Number of unmarried women and number of women married for the first time, in 1956

Age	Unmaried Women	Women Married First Time	Age	Unmarried Women	Women Married First Time
1	2	3	1	2	3
Total	1,173,632	171,802			
15	145,700	4,859	35	8,495	602
16	147,985	12,635	36	7,932	525
17	142,129	13,971	37	7,690	464
18	115,250	15,280	38	7,477	406
19	102,729	17,964	39	6,900	353
15—19	653,793	64,709	35—39	38,494	2,355
20	85,813	18,635	40	6,128	317
21	67,975	19,488	41	5,900	302
22	49,347	18,620	42	5,674	275
23	33,323	8,952	43	5,432	243
24	28,508	7,443	44	5,205	225
20—24	264,966	73,138	40—44	28,339	1,362
25	26,685	6,830	45	4,978	185
26	25,741	5,806	46	4,735	161
27	21,476	3,925	47	4,508	141
28	16,568	2,993	48	4,281	120
29	13,001	2,322	49	4,039	107
25—29	103,471	21,876	45—49	22,541	714
30	10,332	1,830	50	4,016	105
31	9,097	1,586	51	3,774	93
32	8,455	1,409	52	3,546	79
33	8,327	1,270	53	3,304	65
34	8,100	1,158	54	3,077	53
30—34	44,311	7,253	50—54	17,717	395

MAIN COMPUTATIONS CARRIED OUT IN VIEW OF OBTAINING THE INDICATORS IN THE NUPTIALITY TABLE

The intensity of nuptiality at a certain age is expressed by the nuptiality coefficient, which is obtained by referring the number of marriages concluded for the first time between two successive ages, x and $x + 1$, to the number of unmarried women having reached x years. This nuptiality coefficient is therefore:

$$n_x = \frac{m_{x,\ x+1}}{C_x}$$

where:

n_x — nuptiality at age x;

$m_{x,\ x+1}$ — number of women married for the first time, aged x, before accomplishing the age $x + 1$;

C_x — number of unmarried women at the age x.

Table 2. — Nuptiality coefficients for unmarried women aged 15—64 in 1956

Age (x)	Unmarried Women (C_x)	Women Married First Time (m_x)	Nuptiality Coefficient (n_x)
1	2	3	4
15	145,700	4,859	0.0333
16	147,985	12,635	0.0854
17	142,129	13 971	0.0983
18	115,250	15,280	0.1326
19	102,729	17,964	0.1749
20	85,813	18,635	0.2171
21	67,975	19,488	0.2867
22	49,347	18,620	0.3773
23	33,323	8,952	0.2686
24	28,508	7,443	0.2611
25	26,685	6,830	0.2559
26	25,741	5,806	0.2256
27	21,476	3,925	0.1828
28	16,568	2,993	0.1806
29	13,001	2,322	0.1786
30	10,332	1,830	0.1771
31	9,097	1,586	0.1743
32	8,455	1,409	0.1666
33	8,327	1,270	0.1525
34	8,100	1,158	0.1430
35	8,495	602	0.0709
36	7,932	525	0.0662
37	7,690	464	0.0603
38	7,477	406	0.0543
39	6,900	358	0.0519
40	6,128	317	0.0517
41	5,900	302	0.0512
42	5,674	275	0.0485
43	5,432	243	0.0447
44	5,205	225	0.0432
45	4,978	185	0.0372
46	4,735	161	0.0340
47	4,508	141	0.0313
48	4,281	120	0.0280
49	4,039	107	0.0265
50	4,016	105	0.0261
51	3,774	93	0.0246
52	3,546	79	0.0223
53	3,304	65	0.0197
54	3,077	53	0.0172

Obviously, the distribution of the number of unmarried women is influenced by their mortality, which may, to a certain extent, bear influen e on nuptiality (n). However, according to some authors [*1*], this influence is negligible, a fact which has determined us not to take it into consideration.

For 1956, in the whole country, the nuptiality coefficients are the ones shown in *(Table 2.)*

Further, taking into account a hypothetical collectivity of 10,000 unmarried women of age 15, the nuptiality coefficients established in *Table 2*

Table 3 — Nuptiality table of women aged 15—54, in 1956

Age (x)	Unmarried Women (C_x)	Nuptiality Coefficient (n_x)	Women Married First Time (m_x)
1	2	3	4
15	10,000	0.0333	333
16	9,667	0.0854	825
17	8,842	0.0983	869
18	7,973	0.1326	1,057
19	6,916	0.1749	1,210
20	5,706	0.2171	1,239
21	4,467	0.2867	1,281
22	3,186	0.3773	1,202
23	1,984	0.2686	533
24	1,451	0.2611	379
25	1,072	0.2559	274
26	798	0.2256	180
27	618	0.1828	113
28	505	0.1806	91
29	414	0.1786	74
30	340	0.1771	60
31	280	0.1743	49
32	231	0.1666	38
33	193	0.1525	29
34	164	0.1430	23
35	141	0.0709	10
36	131	0.0662	9
37	122	0.0603	7
38	115	0.0543	6
39	109	0.0519	6
40	103	0.0517	5
41	98	0.0512	5
42	93	0.0485	4
43	89	0.0447	4
44	85	0.0432	4
45	81	0.0372	3
46	78	0.0340	3
47	75	0.0313	2
48	73	0.0280	2
49	71	0.0265	2
50	69	0.0261	2
51	67	0.0246	2
52	65	0.0223	1
53	64	0.0197	1
54	63	0.0172	1
	62		9,938

will be instrumental in obtaining the probable number of those who will get married until the age of 54, as well as the probable number of those who will remain unmarried (*Table 3*).

Some important conclusions stand out from the table thus drawn up.

1. In the first place, the probable proportion of women who will get married since the accomplishment of the minimum marrying age (15) up to the age of 54.

Table 4. — Age distribution of women married for the first time, according to nuptiality table, in 1956.

Age (L_x)	Women Married First Time (m_x)	Age (x)	Women Married First Time (m_x)
1	2	1	2
15	335	35	10
16	830	36	9
17	874	37	7
18	1,064	38	6
19	1,218	39	6
20	1,247	40	5
21	1,289	41	5
22	1,209	42	4
23	536	43	4
24	381	44	4
25	276	45	3
26	181	46	3
27	114	47	2
28	92	48	2
29	75	49	2
30	61	50	2
31	49	51	2
32	38	52	1
33	29	53	1
34	23	54	10,000

In the case of our table we notice that out of 10,000 women aged 15, a total number of 9,938, i.e. 99.4 per cent will get married until they reach the age of 54.

2. In the second place, the probable proportion of women who will remain unmarried at the age of 54 is known.

According to our nuptiality table, out of 10,000 women, a reduced number, 62 women (0.6 per cent) are likely to remain unmarried.

In view of having as complete a picture as possible on nuptiality, it is necessary, besides the two indicators extracted from the nuptiality table, to also thoroughly examine other particularly important problems, such as:

1. Mean age of women at first marriage.

2. Median age, i.e. age at which half of the number of marriages occur (in the case of our table the mean age at which a number of 5,000 out of the 10,000 marriages forming the initial number have been concluded).

3. Modal age, i.e. the mean age at which most marriages are concluded.

In view of solving the three problems stated above, it is necessary to obtain the age distribution of 10,000 married women at their first marriage *(Table 4)**.

* In view of distributing proportionally the 62 women unmarried at the age of 54, the number of married women for every year of age is multiplied by the ratio $\frac{10,000}{9,938}$. The total number of married women obtained will be 10,000.

The indicators stated can be extracted from the above table.

1. Mean age of women at first marriage, obtained according to the formula:

$$A_m = \frac{\Sigma x m_x}{10{,}000}$$

where:

A_m — mean age;
x — age in years (varying from 15 to 54);
m_x — number of married women at age x

In our case we obtain:

$$A_m = \frac{204{,}513}{10{,}000} = 20.45$$

To this should be added half a year since the marriages have not all been concluded at the accomplished age x of the women, but between the ages x and $(x + 1)$, hence, these marriages have, on the average, been concluded at the age $x + 0.5$. In our case $20.45 + 0.5 = 20.95 \approx 21$.

2. Median age.— There results from table 4 that at the ages comprised between 15 and 20, a number of 4,321 marriages have been concluded, and at the ages comprised between 15 and 21, a number of 5,568 marriages have been concluded. Hence, the median age at which a number of 5,000 out of the total of 10,000 marriages is concluded, is comprised between the ages 20 and 21. The median age can be found with greater accuracy thus: 5,568— — 4,321 = 1 247 marriages concluded at the age of 20; assuming these marriages to have been concluded uniformly during the respective year of age, then, the 679 marriages (5,000 — 4,321) were concluded at the age:

$$20 + \frac{679}{1\,247} = 20.54$$

Hence, 20.54 represents the median marriage age.

3. Modal age.— According to our nuptiality table, most marriages (1,289) were concluded at the age of 21; this figure represents the modal age.

*

The nuptiality table for unmarried men in 1956 was drawn up by using the same method of computation.

On basis of the nuptiality coefficients * (n) computed for every year of age between 18—54, the phenomenon of nuptiality in an empirical collectivity of 10,000 male unmarried persons presents itself as may be seen in *Table 5.*

Comparing the men's and the women's nuptiality tables one notices that up to the age of 24 the nuptiality coefficients (n_x) point to a greater intensity of the phenomenon of nuptiality for unmarried women than for unmarried men. After the age of 24, the coefficients (n_x) in the men's table exceed in magnitude the coefficients in the women's table, maintaining their

*) Number of marriages referred to the number of unmarried persons of age x.

Tabele 5. — Nuptiality table of men 18—54, in 1956.

Age (x)	Unmarried Men (C_x)	Nuptiality coefficient (n_x)	Men Married First time (m_x)
1	2	3	4
18	10,000	0.0390	390
19	9,610	0.0600	577
20	9,033	0.0753	680
21	8,353	0.0867	724
22	7,629	0.1190	908
23	6,721	0.1631	1,096
24	5,625	0.3107	1,748
25	3,877	0.4139	1,605
26	2,272	0.3652	830
27	1,442	0.3418	493
28	949	0.3159	300
29	649	0.3189	207
30	442	0.3110	137
31	305	0.3056	93
32	212	0.3039	64
33	148	0.3029	45
34	103	0.2569	26
35	77	0.2075	16
36	61	0.1801	11
37	50	0.1155	6
38	44	0.1140	5
39	39	0.1078	4
40	35	0.0892	3
41	32	0.0880	3
42	29	0.0822	2
43	27	0.0767	2
44	25	0.0743	2
45	23	0.0731	2
46	21	0.0725	1
47	20	0.0695	1
48	19	0.0668	1
49	18	0.0568	1
50	17	0.0470	1
51	16	0.0437	1
52	15	0.0414	1
53	14	0.0413	1
54	13	0.0408	1
		Total	9,988

superiority for every age, this being explainable by the fact that, generally, from the total number of married persons, the proportion of women aged 18—24 is greater that the proportion of men of the same age. After this age, the number of married women decreases noticeably while for men rather a high frequency in the number of marriages still continues.

In view of computing the indicators which characterize the mean age at marriage, the median age and the modal age—like for the women's nuptiality table — we shall find the age distribution of the hypothetical collectivity of 10,000 married men by multiplying the number of marriages for every age,

Table 6. — Aage distribution of men married for the first time, according to nuptiality table, in 1966

Age (x)	Married (m_x)	Age (x)	Married (m_x)
1	2	1	2
		35	16
18	391	36	11
19	578	37	6
20	681	38	5
21	725	39	4
22	909	40	3
23	1,098	41	3
24	1,750	42	2
25	1,607	43	2
26	831	44	2
27	494	45	1
28	300	46	1
29	207	47	1
30	137	48	1
31	93	49	1
32	64	50	1
33	45	51	1
34	26	52	1
		53	1
		54	1
		Total	10,000

in the following table, by the coefficient $\frac{10.000}{9,988} = 1.001201$, thus obtaining the data in *Table 6.*

The following three indicators are determined from *Table 6*:

a) mean age of unmarried men at marriage is:

$\frac{\Sigma x m_x}{\Sigma m_x} = \frac{237,591}{10,000} = 23.8$, to which 0.5 years, is added, hence 24.3 years;

b) median age: it is assumed that the 1,750 marriages concluded between the ages 24 and 25 occur uniformly during the whole year, and the 619 marriages concluded between the ages 24 and 25 which, together with those concluded between the ages 18 and 24 — summing up exactly to 5,000, — occur at the age of $24 + \frac{619}{1,750} = 24 + 0.35 = 24.35$. Hence, the age at which half of the 10,000 marriages are concluded is 24.35;

c) the modal age is 24: age at which 1,750 marriages (maximum number of marriages) occur.

The differences in age at the date when marriages are contracted for the first time, and which show up with a character of regularity both for men and women, as well as the differences in the intensity with which those marriages are contracted, are well illustrated in *Fig. 1.*

Although the frequency of marriages concluded in the first few years is greater for women, up to the age of 29 for both men and women the number of

marriages becomes equal, owing to the greater frequency of the marriages concluded by men after the age of 24.

In the future, using the data of the 1966 population census, new nuptiality tables will be drawn up, allowing a comparison with the past to be made, and also making the study of the present phenomenon of marriages in our country easier.

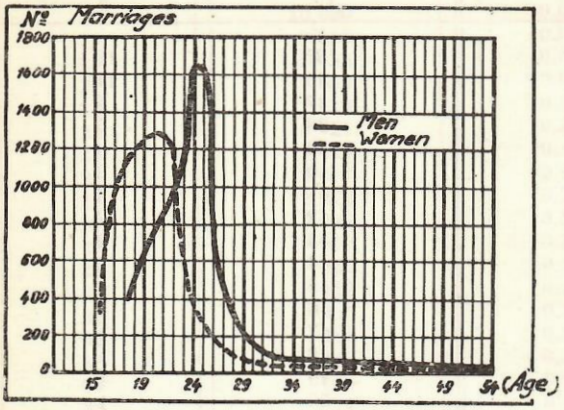

Fig. 1 — Distribution of 10,000 marriages according to age in 1956

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TABLEAUX DE NUPTIALITÉ DE LA POPULATION DE ROUMANIE

Moyennant les résultats du recensement de la population effectué chez nous en 1956, ainsi que les comptes courants sur les mariages contractés au cours de la même année, les auteurs calculent le coefficient de nuptialité de chaque année d'âge de la population du contingent fécond. Il en résulte la possibilité de conclure le premier mariage à l'âge x tant pour les femmes âgées de 15 à 54 ans, que pour les hommés âgés de 18 à 54 ans.

ТАБЛИЦЫ БРАЧНОСТИ НАСЕЛЕНИЯ В РУМЫНИИ

Используя данные переписи населения 1956 г. и текущего учета браков, заключенных в том же году, авторы исчисляют коэффициенты брачности по году возраста фертильного контигента и отсюда делают вывод о возможности заключить первый брак в возрасте x как для женщин в возрасте 15—54 лет, так и для мужчин в возрасте 18—54 лет.