

LIFE CYCLE EVENTS IN 15TH CENTURY FLORENCE: RECORDS OF THE MONTE DELLE DOTI¹

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Records of a dowry investment fund operated by the city of Florence, Italy, from 1425-1545 contain information on life cycle events of about 32,000 girls. This information includes date of birth, date and amount of investment, and date of dowry payment or death. In the present study, the first of 19 volumes of these records were used to compute death rates and payment rates (an approximation of marriage rates) and to analyze these rates according to age, time, and socioeconomic status. Usable records were obtained for 1631 girls. There were 315 deaths; death rates per 1000 person-years were 38, 17, 11, 16, and 19 for ages <5, 5-9, 10-14, 15-19, and 20+, respectively. Compared to previous and succeeding years, death rates increased 5-10 times in 1437-1438 and 1449-1450, years in which epidemics have been recorded. During these periods of epidemics, death rates were relatively low in the winter months. Death rate was inversely related to amount of dowry investment. Dowry payments were made for 1274 girls. About three-fourths of these payments were made by age 20. Rate of payment increased with amount of investment. Proportionally, births were least frequent during December and January, indicating a deficit of conceptions around the time of Lent.

demography; epidemiology; history; mortality

The extensive demographic resources of late medieval and early modern Florence are beginning to be explored. The *Catasti*—census surveys for tax purposes—have provided distributions of age and sex, marital status, urban-rural residence, and wealth, and data on family structure. Records of the *Monte delle doti*, a government-sponsored dowry fund created in Florence in 1425, are another resource of interest to

epidemiologists for two reasons. First, these records provide a 500-year-old example of the material for a follow-up study. Second, it is possible to document trends such as epidemics and the relationship of death rate to socioeconomic status. Our purpose, then, is to describe the *Monte* records and to present an analysis of a portion of them. Death rates are presented by age, by year, by season for epidemic periods, and by the amount of investment in the fund, one measure of socioeconomic status. Rates of dowry payment, an approximation of marriage rates, are presented by age and amount of investment. Finally, data are presented on the distribution of births by month.

MATERIALS AND METHODS

On February 23, 1425, the Florentine Signoria, sitting together with its two ad-

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visory colleges, approved and sent to the Council of the People a proposal to establish a *Monte delle doti*. On the same day, the proposal was overwhelmingly approved by the Council: 257 voted for it, 10 against (1).

For each of their daughters, Florentine fathers were invited to deposit with the officials of the fund a cash investment for a fixed term. After the predetermined period, and if the girl in whose name the deposit was made had consummated her marriage, the officials were instructed to pay the dowry to her husband, or to a representative designated by him. The dowry consisted of the principal plus accumulated interest.

If the girl died before the term of deposit expired (even if in the meantime she had married and consummated the marriage), or if she never married, the deposit reverted to the public treasury. In 1433, the law was modified to provide for the return of the deposit to the father in the event of the girl's death before payment of the dowry. A further change, in 1437, provided for refund of the deposit to the convent, if the girl chose a religious life (1).

The law establishing the *Monte delle doti* stipulated that the fund's officials were to prepare "books and registers" in which all deposits would be recorded. The names of the depositor and of the girl, as well as "other characteristics," were to be entered, so that, in settling accounts in the future, "mistakes might be avoided." Originally, these records probably occupied 19 volumes, for the years 1425-1545. Of these volumes, 18 have been found; the only one still missing covers the deposits made from April 1477, to March 1483 or 1484. A preliminary count indicates that the extant books contain information on more than 32,000 deposits during those 120 years.

The officials responsible for these records maintained a nearly unchanged format throughout this period. For each investment, the data are arranged in two

paragraphs. The available information typically includes: in the first paragraph, the girl's two Christian names, the name of her father, her mother and her two grandfathers; the date of birth of the girl and the date when the deposit was made; the sum deposited, the length of time for which it was deposited (5, 7½, 11, or 15 years) and the yield at the time of maturity. In the second paragraph is given the name of her husband, if the girl married, as well as the date on which he received payment from the *Monte*. If, instead, the girl died before the term of the deposit had expired, the date of her death is given. Finally, in those cases when a young girl entered a nunnery, the date of her entering a religious house is given, as well as the name and location of the nunnery and the date of the deposit's refund to the nunnery.

The data presented here are the results of a preliminary investigation of a small portion of the 32,000 records available. We have concentrated on records in the first of the 19 registers, covering primarily investments from 1425 until 1442 (a few investments recorded in this volume were made later) (2). There were 1871 dowry investments made for 1814 girls; more than one deposit was made for a few girls.

We have based our analysis on the 1631 records which remained after excluding records for which date of birth, date of investment, or date of or reason for leaving the fund was unknown. The bulk of the investments were made in 1433 (816 investments), 1437 (134), 1439 (443), and 1441 (89). The modal age at the time of investment was one year (205 investments), the median age was five years, and 91 per cent of the investments were made at age 10 or less.

Of the 1631 girls, 315 died before payment of the dowry, 42 entered convents, and the remainder, 1274, had dowry payments made subsequent to marriage. Ninety-seven per cent of deaths, 76 per cent of the entries into convents, and 76

per cent of the payments occurred before age 20. Therefore, most of the available information pertains to children and teenagers.

In the present analysis, the basic measure of the frequency of events is the rate, computed by dividing the number of occurrences by the person-years of observation. For each girl, person-years were accumulated beginning at the time of investment and ending at the time of payment, death, or entry into a religious order. All rates are stated as the number of events per 1000 person-years. This figure may be interpreted as the number of events that

would occur in a year's time in a constant population of 1000 girls subject to the rate at hand. Rates for a specific age or time interval were computed by considering only the events and person-years accumulated during the interval. Age-specific cumulative probabilities of death given in the text were computed as $1 - e^{-Rt}$ where R is the mortality rate and t is the length, in years, of the age interval to which the rate applies.

RESULTS

Table 1 presents mortality rates by age. As expected, the youngest girls had the highest mortality rate. The lowest observed rate is for those 10-14 years old and there is a moderate increase in rate apparent for the 15-19 and the 20+ categories.

Age-specific mortality rates are plotted by individual calendar year from 1433 to 1453 in figure 1. Rates based on less than 50 person-years of observation are not shown. Marked elevations in mortality rates are evident for 1437-1438 and 1449-1450. Each peak represents a 5-10-fold

TABLE 1
Deaths, person-years of observation, and death rate, by age

Age (years)	Deaths	Person-years	Deaths per 1000 person-years
<5	69	1844	37*
5-9	87	5008	17
10-14	74	6777	11
15-19	75	4646	16
20+	10	538	19

* Includes 4 deaths and 44 person-years for girls <1 year old.

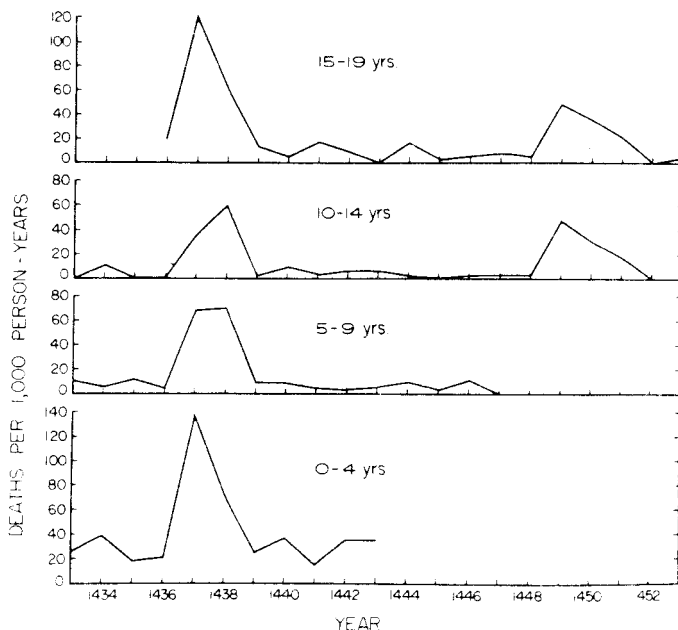


FIGURE 1. Age-specific death rates by year, 1433-1453.

increase compared to the rates in earlier and later years.

A graph of crude death rate by season is presented in figure 2 for 1436-1439 and 1448-1451, four-year periods encompassing the 1437-1438 and 1449-1450 epidemics. There was marked seasonal variation in each of the latter periods. The patterns differ for the two epidemics, but in each the death rate decreased during the winter months. In the winter of 1449-1450, the death rate decreased approximately to its pre-epidemic level.

Death rate is related to amount of investment in table 2. Fifteen girls for whom the amount was unknown were excluded. For each age group, the rate was lowest

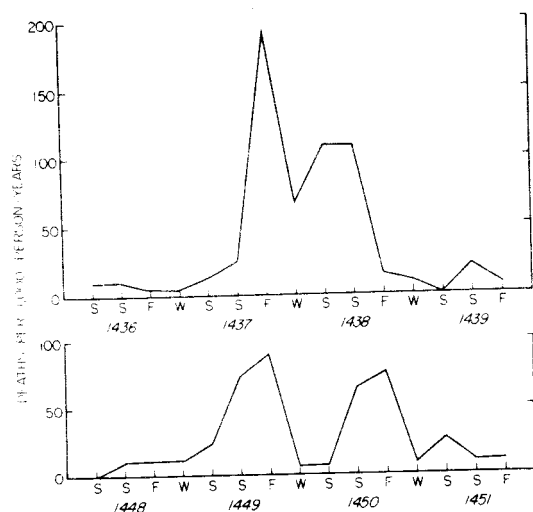


FIGURE 2. Crude death rate by season, 1436-1439 and 1448-1451.

among girls for whom an investment of at least 100 Florins had been made. With the exception of the 15-19 age category, a regular decreasing trend in death rate with increasing amount of investment is apparent. In most age groups the death rates for the 1-49 Florins category are one and one-half to two times as high as those for the 100+ category.

The rate of dowry payment, an approximation of marriage rate, is related to age and amount of investment in table 3. In the case of multiple investments, only the amount of the first recorded investment was considered. Most of the payments were made during the late teens. For ages other than 16 and 20+, the rate of payment increased regularly with amount of investment. Cross-tabulation of amount of investment by age at which investment was made and investment term indicated that larger investments tended to be made for younger girls and for shorter terms.

For the 1626 girls for whom month of birth was known, the percentage born by month is presented in figure 3. There is little variation except for the decrease in births during December and January, representing a deficit of March and April conceptions.

DISCUSSION

The *Catasto* of 1427 has provided a remarkable amount of demographic information for Renaissance Italy. The recorded data, assembled on over 200,000

TABLE 2
Deaths and death rate*, by age and amount of investment

Age (years)	Amount of investment					
	1-49 Florins		50-99 Florins		100+ Florins	
	Deaths	Death rate	Deaths	Death rate	Deaths	Death rate
<5	38	45	23	37	8	22
5-9	40	19	33	19	14	13
10-14	39	15	22	10	13	7
15-19	31	16	32	21	12	11
20+	7	23	3	22	0	0+

* Deaths per 1000 person-years.

† Rate based on 88 person-years.

TABLE 3

Dowry payments and payment rate, by age and amount of investment*

Age (years)	Amount of investment							
	1-49 Florins		50-99 Florins		100+ Florins		Total*	
	Payments	Payment rate	Payments	Payment rate	Payments	Payment rate	Payments	Payment rate
8-14	5	1	6	2	6	3	18	2
15	8	15	11	25	21	58	40	30
16	51	105	42	105	63	200	157	129
17	82	199	72	216	90	384	246	248
18	104	338	103	438	85	642	295	431
19	86	412	81	617	46	689	218	529
20+	156	502	92	669	49	557	300	558

* Payments per 1000 person-years.

† Includes 15 subjects for whom amount was unknown.

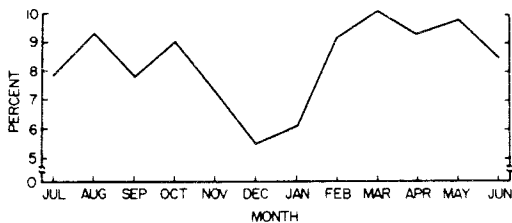


FIGURE 3. Per cent of births by month.

people, included residence, "... ages for all household members, the marital status of women, occupations ..." and financial assets and liabilities (3). In the context of this information, the particular value of the *Monte delle doti* resource is, first, that rates of vital events can be computed directly from longitudinal records and compared with estimates inferred from cross-sectional age distributions from the *Catasto* and, second, that time trends can be documented.

The information in the dowry fund records appears to be valid. We have compared data from private documents regarding birth date, date of deposit in the *Monte delle doti*, amount deposited, etc., with the *Monte* records, and have found no discrepancies. The *Monte* records seem more complete than *Catasto* records. We checked the names of 80 girls for whom deposits were made in the *Monte* against the returns of the 1433 *Catasto*. Of these 80, we were able to locate *Catasto* returns for only 56, for each of whom *Monte* regis-

ters offered a complete name and birth-date. Of these 56, 15 did not have their ages recorded in the *Catasto*; three were not reported in their fathers' declarations; in the case of 23, the age given in the *Catasto* was within six months of the age given in the registers of the *Monte*.

Death rates computed from the dowry fund records are likely to be underestimates of over-all death rates prevailing at the time. The enrolled girls came from relatively favorable economic circumstances and it is likely that investments were made for relatively healthy girls. Nonetheless, the data provide a useful indication of the risk of death to which Renaissance girls were subject. The death rates are high, comparable to those of present day 55-74-year-old women, and 20-60 times those of mid-20th century girls and young women (4). The investment data show clearly the expected age trend.

Cumulative probabilities of death for specific age intervals have been computed from *Catasto* data (5). The values are lower for the *Monte* than for girls registered in the *Catasto*. Respectively, the probabilities (as percentages) are 8 and 9 for ages 5-9, 5 and 9 for ages 10-14 and 8 and 10 for ages 15-19. The extent to which these differences reflect the nature and quality of the data on which the estimates were based is uncertain. A comparison is not presented for ages 0-4 because the

Monte rate is based primarily on the experience of girls age 2-4, and there probably was under-registration of very young children in the *Catasto*. However, the general trend—lower death rates for the dowry fund—is consistent with the idea that girls in the dowry fund were relatively well-off. Death rates for the *Catasto* are similar to those for girls with *Monte* investments of less than 100 Florins. The apparent reduction in mortality rates with increasing amount of investment in the *Monte* is a more direct indication that the rich were less affected by serious illness than their poorer compatriots. Similar trends are apparent in present-day statistics (6).

The sharp elevations of mortality rate for 1437-1438 and 1449-1450 indicate that epidemics occurred during these periods. The rates increased by about 30-100 deaths per 1000 person-years, which is equivalent to the death of about 3-10 per cent of the population each year. Epidemics of plague in these years have been reported (5, 7), although estimates of the extent of the increase in mortality have not been available previously. Unfortunately, we have no clinical details. The drop in mortality during the winter months seems to be characteristic of plagues of the period (5).

The *Monte* records do not give date of marriage. However, the date of dowry payment does provide a rough indication of the actual date of marriage. The probability of payment before age 20 computed from these data is similar to the proportion married before 20 as computed from the *Catasto* by Klapisch (8). Both sources indicate that 70-75 per cent of women were married by this age. The greater rates of payment for women for whom larger investments had been made support Herlihy's suggestion that well-dowered girls married younger (3, 9). The *Monte* data do not support the idea of a "European marriage pattern"—a high age at

marriage for both spouses and a high proportion of people who never marry (10). In 15th century Florence it appears that men tended to marry late, women early, and few remained unmarried (9).

The available information on births suggests a decrease in conceptions during the 40-day period of Lent. This decrease probably reflects an ecclesiastical admonition against sexual intercourse on holy days (11, 12).

The *Monte* records also provide some information on rate of entry into religious life. The probability of entering a convent before age 20 was estimated to be about 2.5 per cent.

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