

feeding. The mean value for the third segment (O), also estimated at eight months, may be too high.

TABLE 1.—ILLUSTRATIVE ANNUAL RATES OF PREGNANCIES AND OF DEATHS ASSOCIATED WITH CONTRACEPTION, PREGNANCY, AND INDUCED ABORTION PER 100,000 WOMEN OF REPRODUCTIVE AGE IN FERTILE UNIONS

	Pregnancies	Deaths
1. No contraception, no induced abortion.....	40,000-60,000	8.0-12.0
2. No contraception, all pregnancies aborted out of hospital.....	100,000	100.0
3. No contraception, all pregnancies aborted in hospital.....	100,000	3.0
4. Highly effective contraception.....	100	3.0
5. Moderately effective contraception, no induced abortion.....	11,800-13,000	2.5
6. Moderately effective contraception, all pregnancies aborted out of hospital.....	14,300	14.3
7. Moderately effective contraception aborted, in hospital.....	14,300	.4

The relationship between the number of pregnancies (P and P'), the number of women (W), the time factor (T), and the duration of the three segments of the interval between conceptions (G, A, and O) is defined by the following formula:

$$P = \frac{W \times T}{G + A + O}$$

In our model, T equals 12 months and G, A, and O are also expressed in months. The application of the formula to the estimate described in the preceding paragraph yields the following results:

$$P = \frac{100,000 \times 12}{8 + 4 + 8} = \frac{1,200,000}{20} = 60,000$$

$$P' = \frac{100,000 \times 12}{8 + 14 + 8} = \frac{1,200,000}{30} = 40,000$$

Thus, without contraception or induced abortion, 100,000 women experience in the course of one year between 40,000 and 60,000 pregnancies, corresponding to average intervals between conceptions ranging from 30 months to 20 months. Given the level of maternal mortality, excluding abortion, assumed for this model, of 20 per 100,000 pregnancies, the 100,000 women would experience between 8 and 12 deaths associated with the reproductive process.

Line 2 assumes no contraception, but all pregnancies are aborted out of hospital. Because gestation and the post-gestational anovulatory period are both substantially shorter than under the assumptions of the preceding line (G = 3 months, A = 1 month), the number of pregnancies rises to 100,000 with 100 deaths:

$$P = \frac{100,000 \times 12}{3 + 1 + 8} = \frac{1,200,000}{12} = 100,000$$

In line 3, the same number of abortions is performed legally in hospitals, resulting in 3 deaths instead of 100.

Line 4 assumes a highly effective method of contraception, such as the consistent use of oral anti-ovulants under the combined regimen. The expected number of pregnancies is on the order of 100.⁴ Excess deaths from thromboembolic disease equal those resulting from legal abortions in hospitals, shown on the preceding line. Because of the small number of pregnancies, mortality associated with either pregnancy and childbirth or with abortion is insignificant.

A comparison of lines 3 and 4 shows that women regulating their fertility exclusively by means of abortions performed in hospitals are exposed to a risk to life of the same order of magnitude as an equal number of women using oral contraception consistently over the same period of time.

Lines 5, 6, and 7 each assumes a less effective but completely safe type of contraception which extends the average duration of ovulatory exposure required for conception from 8 to 80 months. This level of contraceptive effectiveness was approximately achieved by urban American couples in the 1950's, using the diaphragm or condoms, mainly for child spacing, and not for family limitation.⁵

⁴ C. Tietze, "Oral and Intrauterine Contraception: Effectiveness and Safety," *International Journal of Fertility*, 13 (4): 377-384, October-December 1968.

⁵ P. C. Sagi, R. G. Potter, C. F. Westoff, "Contraceptive Effectiveness as a Function of Desired Family Size," *Population Studies*, 15: 291-296, March 1962.