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MEMORANDUM

TO : Distribution

FROM : ST/POP/R, John E. Lawson, Jr. *JL*

191-3

SUBJECT : POPLAB Demographic Report - East Java (Indonesia), Second Round

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The attached report, prepared by the International Program of Laboratories for Population Statistics (POPLAB) of the University of North Carolina, is the seventh in a series presenting the major findings of surveys conducted in countries participating in the POPLAB program. This report summarizes the findings of the second round (1981) of the East Java Population Survey, a longitudinal survey designed to estimate demographic parameters of the East Java population. The survey, when completed, will consist of three rounds of fieldwork, each round separated by a period of approximately one year. Essentially the same households are involved in each round of the survey.

Highlights.

1. Sample Size: 19,679 households interviewed.

2. Population Characteristics: The population of East Java is relatively young, with about 37% under age 15 and less than four percent 65 or older. Marriage is virtually universal for both males and females; less than one percent remain single until age 50. Males marry at older ages than females, urban males and females marry at older ages than rural males and females.

3. Fertility: The estimated crude birth rate for East Java was 24.6, down from 25.9 reported in Round 1 of the survey. The crude birth rate for urban areas (23.1) was slightly lower than that for rural areas (25.0). All of these rates are slightly lower than those reported for the Round 1 reference period. The total fertility rate estimated for Round 2 (3.0) was also slightly lower than that reported for Round 1 (3.2). Similarly, the age-specific fertility rates were lower for Round 2 than for Round 1. In summary, these data tend to support the finding of Round 1 that fertility levels in East Java declined about 40% in the 1970s.

4. Contraceptive Knowledge and Use: More than 92% of currently married women in the childbearing ages reported having knowledge of some birth control method (up from 89% in Round 1). This percentage varied only slightly by age group and between urban and rural areas. However, only 39% of the women reported that they were current users (down from 42% in Round 1). The percent using varied by age with use rates lowest in the youngest and oldest age groups. Usage was highest in the 30-34 age group. The most frequently used

methods were the pill (22%) and the IUD (13%). All other methods combined comprised about four percent. Contraceptive use was lower in urban (36%) than rural areas (40%). Also, the method mix differed. In rural areas, there was greater reliance on the pill and IUD. In urban areas, there was greater reliance on other methods. The decline in use rates from 42% in 1980 to 39% in 1981 reflects primarily a decline in pill usage, which fell two to three percentage points in both urban and rural areas. This decline occurred in all age groups. Use of the IUD remained stable over the two time periods.

5. Mortality: The crude death rate for East Java was estimated to be 9.6 (8.2 for urban areas; 9.9 for rural areas). Mortality was generally higher for males than for females.

Attachment: as stated

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Summary Series No. 7
September 1983



The Second Round (1981) of the East Java (Indonesia) Population
Survey: A Summary of Results


by POPLAB Staff

International Program of Laboratories for Population Statistics
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The International Program of Laboratories for Population Statistics (POPLAB) of the University of North Carolina at Chapel Hill is involved in a project entitled "Birth and Death Data Collection" sponsored by the United States Agency for International Development. The basic objective of this project is to assist developing countries in collecting and analyzing data on levels and trends in fertility and mortality through the use of sample surveys. These surveys are of three types: (1) add-on, adding fertility/mortality questions to existing household surveys, (2) new, initiating new fertility/mortality surveys, and (3) broad surveys, new or add-on, which include collection and analysis of data on variables such as socio-economic status, labor force participation, migration, use of family planning, as well as basic fertility/mortality questions. POPLAB provides technical and financial assistance in the design, organization, implementation, and analysis of all three types of surveys.

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THE SECOND ROUND (1981) OF THE EAST JAVA (INDONESIA) POPULATION SURVEY: A SUMMARY OF RESULTS*

POPLAB Staff

BACKGROUND

Indonesia is situated along the equator in Southeast Asia between the Malay Peninsula and Australia. The population of Indonesia was approximately 147.5 million persons in 1980 (Central Bureau of Statistics, 1981) with its principal island, Java, among the most densely populated areas of the world.

The decade of the 1970's witnessed an increase in the pace of economic development and in the importance of population and development policy in Indonesia. Information collected in recent censuses and surveys has provided estimates of levels and trends of fertility, mortality, and population growth in the country. Most notable among the sources of demographic data were the 1961, 1971 and 1980 Population Censuses, the 1976 Intercensal Survey and the Indonesian Fertility Survey of 1976. The 1980-82 East Java Population Survey (EJPS) was designed to continue the flow of demographic information for a major area of the country. The results of the 1980 baseline round of that survey have been reported elsewhere (Sullivan and Wilson, 1982; International Program of Laboratories for Population Statistics, 1981). The results of the second round of the EJPS are the basis of this summary.

THE SURVEY

The East Java Population Survey (EJPS) was a longitudinal survey designed to estimate demographic parameters of the East Java population with special emphasis on estimation of fertility and mortality rates. The survey consisted of three rounds of fieldwork, each round separated by a period of approximately one year. In each round, persons living in a sample of some 20,000 households were interviewed. Basically, the same households were involved in each round of the survey.

The sample of households was selected in such a way as to be representative of the population of East Java, excluding the population who were homeless, living on boats, or residing in institutions. The sample design was a three-stage area sample with stratification in the first selection stage. The first

*This is a summary of the report prepared by J.M. Sullivan and S.E. Wilson, The Second Round (1981) of the East Java Population Survey: A Final Report, Central Bureau of Statistics, Jakarta, Indonesia, 1983.

two stages of the sample were the first two stages of the 1980 National Socioeconomic Survey (SUSENAS) sample developed by the Central Bureau of Statistics (CBS). In the first stage of the design, CBS selected 1,238 villages from a stratified listing of all villages in East Java. In the second stage, one census block was selected from each village. In the third stage, households were selected within each census block.

The sample design was not self-weighting. All substantive results shown in this report are, therefore, based on weighted data.

Round I of the EJPS collected data on characteristics of the survey population, including age, sex, and marital status. In addition, for women, data were collected on marital history, selected aspects of childbearing history, and on their knowledge and use of contraceptives. Data were also collected on mortality of children ever born and survivorship status of mothers of respondents.

Round II of the EJPS was conducted in June-July, 1981, approximately 13 months after Round I. Its primary objective was to collect information on vital events occurring in the inter-round interval, and on characteristics of the population present at Round II. All households interviewed in Round I and still residing in the sample census blocks were interviewed in Round II and, in addition, a sample of households which moved into the census blocks between rounds was also interviewed. The sample generated 738 new households. However, due to outmigration and dissolution of households, 693 Round I households were not interviewed in Round II. A total of 19,679 households was interviewed in Round II.

The Central Bureau of Statistics (CBS) was responsible for the planning and execution of the survey, analysis and publication of results. Within CBS, responsibility for conducting the survey was shared between the Central Bureau of Statistics in Jakarta and the East Java Provincial Statistics Office in Surabaya. Technical and financial assistance was provided at all stages of the survey by the international Program of Laboratories for Population Statistics (POPLAB) of the University of North Carolina at Chapel Hill.

FINDINGS

Age and Sex Distribution

Since only 13 months had elapsed between Round I and Round II and, since basically the same population was enumerated in both rounds, only slight changes would be expected in either the age or sex distribution of the population over and above those shown in the Round I report (Sullivan and Wilson, 1982; International Program of Laboratories for Population Statistics, 1981). However, for the sake of completeness, Round II data on age and sex are shown in Table 1.

A total of 91,161 persons was enumerated in the 19,679 households interviewed in Round II. As shown in Table 1, East Java has a relatively young population, with about 36 percent under age 15 and less than 4 percent 65 years old and over. The urban-rural distributions are very similar with regard to age and sex.

TABLE 1. Percent Distribution of the Population Present at Round II EJPS by Age Group, Sex, and Area of Residence, East Java, 1981

Age Group	East Java		Urban		Rural	
	Males	Females	Males	Females	Males	Females
0-4	5.7	5.4	5.6	5.5	5.7	5.4
5-9	6.4	6.3	6.2	5.9	6.4	6.4
10-14	6.1	5.8	5.9	5.7	6.1	5.8
15-19	5.2	5.3	5.8	6.2	5.1	5.1
20-24	4.0	4.8	4.8	5.2	3.9	4.7
25-29	3.8	4.2	3.8	4.5	3.8	4.1
30-34	3.1	3.1	3.0	3.1	3.1	3.2
35-39	3.0	3.3	2.9	3.1	3.0	3.3
40-44	2.7	3.1	2.6	2.7	2.7	3.2
45-49	2.6	2.6	2.1	2.6	2.7	2.6
50-54	2.1	2.1	2.0	2.1	2.2	2.2
55-59	1.5	1.4	1.5	1.5	1.4	1.4
60-64	1.2	1.4	1.2	1.4	1.2	1.4
65-69	0.6	0.8	0.5	0.7	0.6	0.8
70-74	0.5	0.7	0.4	0.5	0.5	0.8
75+	0.5	0.7	0.4	0.6	0.5	0.7
Total	49.0	51.0	48.7	51.3	48.9	51.1
Persons in Sample	44,589	46,572	8,849	9,295	35,740	37,277

Sex ratios (i.e. the ratio of males to females) are shown in Table 2 by age group for East Java and for urban and rural areas. In general, the ratios indicate that there are approximately 95 or 96 males for every 100 females. The sex ratios vary by age, with males predominant under 15 years of age, while females are predominant at most of the other ages with a few exceptions.

TABLE 2. Sex Ratios of the Population Present at Round II, EJPS by Age and Area of Residence, East Java, 1981

Age Group	East Java	Urban	Rural
0-4	106	102	107
5-9	101	105	100
10-14	105	102	106
15-19	98	94	99
20-24	84	93	82
25-29	91	86	92
30-34	97	98	97
35-39	92	92	92
40-44	87	95	85
45-49	99	84	103
50-54	99	96	100
55-59	100	103	99
60-64	82	83	82
65+	75	76	75
Total	96	95	96

Marital Status

Information was obtained on the marital status of the enumerated population in Round II and is shown in Table 3 by age and sex. Percent distributions of the population by marital status indicate that marriage is virtually universal for both males and females in East Java. For the province as a whole, less than one percent of males and females remain single until age 50.

TABLE 3. Percent Distributions of the Male and Female Population Present at Round II EJPS by Marital Status, Age and Area of Residence, East Java, 1981

Age Group	Percent of Male Population				Percent of Female Population			
	Single	Married	Divorced	Widowed	Single	Married	Divorced	Widowed
<u>East Java</u>								
10-14	99.4	.2	.4	.0	98.7	.8	.8	.0
15-19	96.8	2.4	.8	.0	67.9	28.9	2.8	.2
20-24	62.1	35.6	1.9	.4	22.1	70.3	6.5	1.1
25-29	20.7	75.6	3.1	.5	6.4	85.5	6.4	1.7
30-34	6.1	90.7	2.3	.9	2.3	87.2	6.5	3.9
35-39	2.1	95.2	1.4	1.1	1.7	86.3	5.5	6.5
40-44	1.1	95.8	1.7	1.4	1.0	80.6	6.1	12.3
45-49	.7	96.4	1.0	1.9	.8	73.8	6.5	19.0
<u>Urban</u>								
10-14	99.2	.4	.4	.0	99.3	.2	.3	.2
15-19	98.2	1.3	.5	.0	82.9	15.2	1.5	.3
20-24	76.0	23.7	.3	.0	40.1	55.2	3.7	.8
25-29	31.1	66.9	1.7	.2	14.6	79.4	4.7	1.2
30-34	10.1	87.8	1.3	.9	5.3	85.6	5.9	3.2
35-39	3.2	94.9	1.2	.7	3.4	83.8	5.9	6.9
40-44	1.7	96.0	1.0	1.1	2.8	80.9	5.3	11.0
45-49	1.2	94.9	1.7	2.0	1.7	76.2	4.9	17.2
<u>Rural</u>								
10-14	99.4	.2	.4	.0	98.6	1.0	.4	.0
15-19	96.4	2.6	.9	.1	63.6	33.0	3.2	.2
20-24	57.7	39.3	2.4	.5	17.1	74.5	7.2	1.2
25-29	18.1	77.8	3.4	.6	4.2	87.2	6.8	1.8
30-34	5.1	91.4	2.6	.9	1.6	87.6	6.7	4.1
35-39	1.9	95.3	1.5	1.2	1.3	86.9	5.4	6.4
40-44	1.0	95.7	1.8	1.4	.6	80.6	6.3	12.5
45-49	.5	96.7	.9	1.9	.5	73.2	6.8	19.4

Of course, as in all populations, there are important differences in the marital status distributions by sex. In the age interval 10-14, about 1% of males and females are married. In the age interval 15-19, 2% of males but 29% of females are married while, for the age interval 20-24, the percentages reach 36% and 70%, respectively. However, even though lower percentages of males than females are married at the younger ages, higher percentages of males are married at the older ages. Thus, in the age interval 45-49, 96% of males, but only 70% of females are married (while 3% of males but 26% of females are divorced or widowed).

Significant differences in marital status also occur between urban and rural areas. In urban areas marriage occurs later than in rural areas, so that in the urban areas a smaller proportion of the population in the younger age intervals is married. For example, in the age intervals 15-19 and 20-24 in urban areas 15% and 55% of women are married, while in rural areas, the comparable statistics are 33% and 75%. These differences no doubt affect urban-rural fertility differentials - a topic considered later.

It is worth noting that the above findings are virtually identical with those presented in the EJPS Round I report. In that report, estimates of the singulate mean age at marriage (SMAM) for females (the mean number of years that a woman remains single before marriage for the first time) were 19.9 years for all East Java, 22.2 years for urban areas, and 19.3 years for rural areas. Comparable SMAM data for males were 24.4 years for East Java, 25.4 years for urban areas, and 24.1 years for rural areas (Sullivan and Wilson, 1982; International Program of Laboratories for Population Statistics, 1981).

Fertility

In each household visited in Round II, data were collected on vital events occurring during the interval between Rounds I and II of the EJPS, a period of approximately 13 months. Reported births, appropriately weighted, served as the numerator of the fertility rates which were subsequently tabulated. Determination of the denominator for the fertility rates was somewhat complicated. In a multiround survey where the population is enumerated several times, several alternative procedures can be used to calculate the population at risk of having events during an inter-round interval. Two alternative procedures were used in the analysis of Round II data to estimate the population at risk which was then used as the denominator for rate calculations. These procedures were 1) the person-years approach, and 2) the mid-interval population approach. The fertility rates calculated by these procedures were virtually identical and, therefore, only the rates calculated through the use of the person-years approach are shown in this report. The full report to be published by the Central Bureau of Statistics contains an explanation of the methodology utilized in both numerator and denominator calculations.

In Round I of the EJPS, fertility data were collected for the reference period between September 5, 1978 and May 8, 1980 - a period of 20 months with the center being around July 1, 1979. The respondent was asked several questions pertaining to her last live birth, pregnancies after the last reported live birth (if any), and the pregnancy (if any) before the last reported live

birth. For each birth reported, respondents were queried regarding the date of birth and whether the event occurred before or after Lebaran, 1978 (an Islamic religious holiday which occurred on September 4, 1978). Information from the latter question was used to locate births inside or outside of a reference period (5 September 1978-7 May 1980) when respondents did not provide the date of birth.

Crude birth rates, age-specific fertility rates, and total fertility rates for both Round I and Round II are shown in Table 4 for East Java and for urban and rural areas. The midpoints of the two reference periods represent points in time approximately 17-18 months apart: July 1979 (Round I) and December 1980 (Round II).

TABLE 4. Estimated Crude Birth Rates (CBR), Age-Specific Fertility Rates (ASFR), and Total Fertility Rates (TFR) by Area of Residence, Round I and Round II Reference Periods, EJPS

Rate*	East Java		Urban		Rural	
	Round I	Round II	Round I	Round II	Round I	Round II
CBR	25.9	24.6	24.8	23.1	26.2	25.0
ASFR						
15-19	81	75	64	50	86	81
20-24	185	171	162	152	191	175
25-29	161	153	159	154	162	153
30-34	118	100	114	99	119	101
35-39	64	55	69	51	63	55
40-44	27	20	14	16	30	21
45-49	8	9	9	7	8	9
TFR	3.22	2.91	2.96	2.65	3.29	2.98

*Crude birth rates are per 1,000 population; age-specific fertility rates are per 1,000 women; total fertility rates are per woman.

Crude birth rates for the Round II reference period (December 1980) are estimated to be 24.6 per 1,000 population for East Java, 23.1 for urban areas, and 25.0 for rural areas. These rates are slightly lower than those estimated for the Round I reference period (July 1979). Similarly, estimates of age-specific fertility rates show a consistent decline at essentially all ages in both urban and rural areas of East Java. The rates are low for women in the 15-19 age group, increase to a peak at age 20-24, and decline steadily thereafter. The age-specific fertility rates are lower

for urban than rural women for almost all age groups, the greatest difference being in the young age groups (15-24). Total fertility rates, a function of age-specific fertility rates, are also lower in the later time period and lower for urban than rural women.

These data on fertility from Round II tend to support the conclusion tentatively reached from earlier Round I analyses that fertility levels in East Java have declined about 40 percent in the decade of the 1970s (Sullivan and Wilson, 1982).

Knowledge and Use of Contraception

In both rounds of the EJPS, currently married women aged 15-49 were asked about their knowledge and use of contraception. Women were first asked: "Have you ever heard of any birth control method?" In answering the question, the respondent was not aided by a list of methods. If she had not heard of a method, no further questions were asked. If she reported that she had heard of a method, she was asked if she was currently using a method. If the answer was affirmative, she was asked to specify the method(s) she was currently using. Data on knowledge and use of contraception from Round II are summarized in Table 5.

With regard to knowledge, 92.5 percent of currently married women 15-49 years of age reported having knowledge of a birth control method. This percentage varied only slightly by age group and between urban and rural areas. In Round I of the EJPS, a slightly lower percentage (88.9) of currently married women reported having knowledge of a birth control method.

A wide gap was found between knowledge of a method and actual use of a method. For East Java, 39.3 percent of women reported that they were current users. The percent of users varied by age with use rates lowest in the youngest and oldest age groups. Usage was greatest in the 30-34 age group. Among the available methods, currently married women relied primarily on the pill (22%) and the IUD (13%). All other methods combined were used by about 4 percent of the women.

Data by area of residence indicate lower use of contraception in urban than in rural areas (36% vs. 40%). Moreover, the method mix differed between areas. In rural areas, use of the pill and IUD were higher than in urban areas. On the other hand, use of other methods was considerably higher in urban than in rural areas.

Between Round I and Round II, the estimated current use rates of the EJPS differed sufficiently to warrant comment. For East Java, use rates for currently married women aged 15-49 declined from 42 percent in 1980 to 39 percent in 1981. The greater part of this decline occurred in pill usage, which fell 2 or 3 percentage points in both urban and rural areas. Moreover, the decline in pill usage occurred in all age groups of women. Use of the IUD remained fairly stable over the two time periods.

TABLE 5. Knowledge and Use of Contraception Among Currently Married Women in the Population Present at Round II EJPS by Age, Method and Area of Residence, East Java, 1981

Age Group of Women	PERCENT OF CURRENTLY MARRIED WOMEN									
	With Knowledge of Control Method	Currently Practicing Contraception by Method								
		Total	Pill	IUD	Condom	Sterilization	Rhythm	Injection	Withdrawal	Traditional
<u>EAST JAVA</u>										
15-19	89.2	15.7	10.3	4.0	.1	.0	.0	.0	.3	1.1
20-24	93.9	36.8	23.9	10.1	.5	.0	.3	.7	.3	1.1
25-29	95.3	48.8	29.7	14.6	.8	.2	.4	1.2	.4	1.5
30-34	95.5	50.7	26.8	18.6	1.0	.7	.3	1.1	.3	2.0
35-39	92.8	47.8	24.3	17.3	.7	1.5	.6	.7	.4	2.2
40-44	88.6	34.9	17.8	12.2	.8	.8	.4	.5	.7	1.6
45-49	87.7	21.8	10.4	7.6	.7	.7	.5	.1	.8	1.1
Total	92.5	39.3	22.1	12.9	.7	.5	.4	.1	.5	1.6
<u>URBAN</u>										
15-19	90.1	9.9	7.8	1.6	.0	.0	.0	.0	.6	.0
20-24	96.1	29.6	20.6	5.1	1.2	.0	.5	1.1	.2	.9
25-29	97.8	41.4	25.0	8.7	2.6	.7	1.0	1.9	.8	.7
30-34	97.6	46.4	22.9	11.7	3.1	2.7	1.4	2.5	.8	1.2
35-39	95.7	46.3	21.1	11.4	2.6	5.8	2.2	.8	.5	2.0
40-44	92.9	32.6	15.6	5.1	2.8	3.9	1.8	.7	.7	2.1
45-49	91.1	20.1	7.5	4.9	1.3	2.4	1.8	.0	1.2	.9
Total	95.3	35.6	19.1	7.7	2.2	2.3	1.3	1.2	.7	1.2
<u>RURAL</u>										
15-19	89.1	16.5	10.6	4.4	.1	.0	.0	.0	.3	1.2
20-24	93.5	38.3	24.5	11.1	.3	.0	.2	.6	.3	1.2
25-29	94.6	50.6	30.8	16.0	.4	.1	.3	1.1	.4	1.7
30-34	95.0	51.8	27.7	20.1	.5	.2	.1	.7	.2	2.2
35-39	92.1	48.1	25.0	18.7	.3	.5	.3	.7	.4	2.3
40-44	87.8	35.4	18.3	13.7	.4	.2	.1	.5	.7	1.5
45-49	86.9	22.3	11.1	8.3	.6	.1	.2	.1	.7	1.2
Total	91.9	40.2	22.8	14.0	.4	.2	.2	.6	.4	1.6

Mortality

In each household visited in Round II, data were collected on the number of deaths occurring to members of the household during the interval between Rounds I and II of the EJPS. As was the case with births, the person-years approach was used to calculate denominators for the death rates of interest. Details of this procedure are available in the full report of Round II to be published by the Central Bureau of Statistics.

Crude death rates for East Java and for urban and rural areas are shown in Table 6.

TABLE 6. Crude Death Rates by Area of Residence, East Java, 1980-81

Area	Number of Deaths Between Rounds I and II	Person-Years Lived Between Rounds I and II	Estimated CDR (per 1,000 person-years)
East Java	940	97,949	9.6
Urban Areas	158	19,239	8.2
Rural Areas	782	78,711	9.9

The estimated crude death rate is 9.6 per 1,000 person-years for East Java, 8.2 for urban and 9.9 for rural areas. These estimates are reasonable and in line with some other recent estimates of the crude death rate. For example, the crude death rate for East Java was estimated from data collected in Round I using indirect estimation procedures. The Round I report stated that the estimated crude death rate based on infant mortality rates derived from child survivorship data varied from 8.9 to 11.7 per 1,000 population and, when based on infant mortality estimates from reference period data, varied from 7.9 to 11.4 per 1,000 population depending on the mortality pattern of the selected life table (Sullivan and Wilson, 1982).

Age-specific mortality rates are presented in Table 7 for East Java by sex. These estimates appear to be reasonable. Mortality is higher for males than females at every age except the 25-34 age group.

Age-specific mortality rates for urban and rural areas of East Java are shown in Table 8. Due to the small number of deaths in certain age groups, particularly in the urban area, it was necessary to widen the age groups in an attempt to stabilize the rates.

In each area, age-specific mortality rates by sex generally follow the same pattern as for East Java as a whole: i.e., 1) after the decline in rates between infancy and early childhood, the rates increase with age and

2) the rates are higher for males than females at most ages. It will be noted that, for males, rural mortality rates are higher than urban rates at ages under 65 and lower for ages 65 and over. For females rural rates are higher than urban rates at ages under 45 (except for the age group 5-19) and lower for ages 45 and over.

TABLE 7. Age-Specific Mortality Rates by Sex,
East Java, 1980-81

Age Group	Number of Deaths		Person Years Lived Between Rounds I & II		Estimated Rates*	
	Males	Females	Males	Females	Males	Females
0	92	72	1,222*	1,138*	75.3	63.3
1-4	44	39	4,646	4,356	9.5	9.0
5-14	29	27	12,229	11,891	2.4	2.3
15-24	22	23	9,241	10,241	2.4	2.2
25-34	20	24	6,674	7,126	3.0	3.4
35-44	31	28	5,674	6,268	5.5	4.5
45-64	143	91	6,938	7,212	20.6	12.6
65+	124	130	1,513	1,994	82.0	65.2
Total	504	436	47,907	50,042	10.5	8.7

All entries may not sum to total due to rounding.

*Infant mortality rates are per 1,000 births; all others are per 1,000 person-years.

TABLE 8. Age-Specific Mortality Rates by Sex, Urban and Rural Areas of East Java, 1980-81

Age Group	Number of Deaths		Person Years Lived Between Rounds I & II		Estimated Rates*	
	Males	Females	Males	Females	Males	Females
<u>URBAN</u>						
0	11	8	215	210	51.2	38.1
1-4	8	5	916	861	8.7	5.8
5-19	8	10	3,439	3,476	2.3	2.9
20-44	10	10	3,284	3,577	3.0	2.8
45-64	26	18	1,294	1,402	20.1	12.8
65+	23	25	249	331	92.4	75.5
Total	84	74	9,380	9,859	9.0	7.5
<u>RURAL</u>						
0	81	64	1,007	928	80.4	69.0
1-4	36	35	3,731	3,496	9.6	10.0
5-19	33	33	13,952	13,913	2.4	2.4
20-44	51	50	13,139	14,559	3.9	3.4
45-64	117	74	5,640	5,810	20.7	12.7
65+	101	104	1,259	1,653	80.2	62.9
Total	420	362	38,527	40,183	10.9	9.0

All entries may not sum to total due to rounding.

*Infant mortality rates are per 1,000 live births; all others are per 1,000 person-years.

COMMENTARY ON THE METHODOLOGY OF VITAL RATE ESTIMATION IN ROUNDS I AND II

A crucial issue in any demographic survey is the accuracy of data collection and vital rate estimation. One objective of the EJPS was to test various approaches to these tasks in the Indonesian setting. Accordingly, in several instances, the survey employed and evaluated alternative procedures for the estimation of a single demographic rate. Elsewhere, we have reported an evaluation of the reliability of infant mortality estimates from two EJPS data sets, the last live birth data set and the children ever-born/children surviving data set (International Program of Laboratories for Population Statistics, 1981; Sullivan and Wilson, 1982).⁽¹⁾ Here we report the results of an evaluation of fertility and infant mortality estimates from the last live birth (LLB) data and the multiround survey (MRS) data for the interval between Rounds I and II.

At the outset, it is appropriate to indicate the degree to which the EJPS followed standard survey procedure for collecting multiround and last live birth data. The MRS data of the EJPS was obtained using procedures which conformed to standard multiround methodology (e.g., the use of the household change technique to detect events). There is considerable evidence in the literature that these procedures, when implemented with reasonable care, will yield relatively complete and accurate birth and death rates.

As opposed to the methodology used to collect the multiround data, the EJPS employed a radically new approach to collect last live birth data. Typically, LLB data are collected by asking respondents a few simple questions (i.e., whether or not a woman has ever had a live birth, the date of the last live birth and its survivorship status). This approach is considered superior to asking respondents to report all births and deaths during a recent reference period because it requires that respondents report the date of their last live birth. Nevertheless, evidence from several surveys indicate that this simple series of questions results in underreporting of events. Accordingly, an expanded LLB questionnaire was developed for the EJPS. It consisted of a total of 30 questions which asked respondents about their last live birth, their penultimate birth and about pregnancy terminations after the last live birth (Sullivan, et al, 1981).

When comparing results from the LLB and MRS data sets, it should be kept in mind that they apply to different but consecutive time periods (September 1978-May 1980 for the LLB data and May 1980-June 1981 for the MRS DATA). The mid-points of the two periods are about 18 months apart.

Fertility estimates from the two data sets can be compared in terms of a wide range of rates. Table 4 of this report contains CBR's, TFR's, age-

(1) This evaluation concluded the estimates from the last birth data set were more reliable than the estimates from the children ever born data set. The conclusion was based on strong evidence of positive bias in the estimates derived from the children ever born data set.

specific rates for women over age 40, the estimates from the LLB data (earlier time period) are marginally, but consistently, greater than the estimates from the MRS data. For example, for all East Java, the CBR's are 25.9 (LLB) and 24.6 (MRS) per 1000 population and TFR's are 3.22 (LLB) and 2.91 (MRS) per woman. Overall, the level and age-pattern of the estimates from both data sets are plausible. Moreover, the decline in fertility which they document is consistent with the decade-long trend of declining fertility in East Java. These findings tend to substantiate the accuracy of each set of fertility estimates.

In the case of mortality, the comparison between data sets must be restricted to infant mortality estimates.⁽²⁾ Those estimates for all East Java for both sexes are 84 (LLB) and 67 (MRS) per 1000 births. Although infant mortality has been declining in East Java in recent years, the differences between 84 and 67, in an 18-month period, is too large to represent a sustainable secular trend. The observed rates could be due to sampling variance, erratic variations in mortality or deficiencies in one or both data sets. In the latter case, the relatively low IMR estimate from the MRS data suggests that problems, in the form of underreporting of events, may have been more prevalent there than in the LLB data. Nevertheless, about all that can be said is that the IMR estimates are not consistent and that the observed difference casts greater suspicion on the MRS than the LLB data.

The most significant finding of this section, the level of accuracy ascribed to the estimates based on the LLB data, has important implications for future demographic surveys in Indonesia. Results from the EJPS indicate that the expanded LLB questionnaire is suitable for fertility and infant mortality estimation and may, in certain circumstances, have advantages over the techniques of vital rate estimation previously relied upon in Indonesia (pregnancy history, own-children and indirect mortality estimation procedures). This is not the place for a detailed discussion of the relative merits of each of these techniques. However, it can be said here that, when the primary objective of a survey is to estimate levels of fertility and infant mortality which are as current as possible, the expanded LLB questionnaire is a particularly attractive alternative.

(2) The nature of LLB data is such that mortality estimates for ages above infancy can not be made.

REFERENCES

- Central Bureau of Statistics. (1981). *Population of Indonesia by Province, Results of the Complete 1980 Population Census*. Series L, no. 3. Jakarta, Indonesia: Government of Indonesia.
- _____. (1978). *Indonesia Fertility Survey 1976, Principal Report*, Volume I and II. Jakarta, Indonesia: Government of Indonesia.
- International Program of Laboratories for Population Statistics. (1981). *The 1980 Baseline Round of the East Java (Indonesia) Population Survey: A Summary of Results*. Summary Series no. 5. Department of Biostatistics, University of North Carolina at Chapel Hill.
- Sullivan, J.M., Adlakha, A.L., Bilsborrow, R.E. and Cross, A.R. (1981). *The Collection of Birth and Death Data: POPLAB Approaches*. Scientific Report Series no. 34, Laboratories of Population Statistics, Department of Biostatistics, University of North Carolina at Chapel Hill.
- Sullivan, J.M. and Wilson, S.E. (1982). *The 1980 Baseline Round of the East Java Population Survey: A Final Report*. Technical Report no. 1. Biro Pusat Statistik. Jakarta, Indonesia: Government of Indonesia.

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