

EASWESPOP

Microcomputer Software
developed by

The East-West Population Institute

Consistent Correction



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THE EAST-WEST CENTER is a public, nonprofit educational institution established in Hawaii in 1960 by the United States Congress with a mandate "to promote better relations and understanding among the nations of Asia, the Pacific, and the United States through cooperative study, training, and research."

Some 2,000 research fellows, graduate students and professionals in business and government each year work with the Center's international staff on major Asia-Pacific issues relating to population, economic and trade policies, resources and development, the environment, and culture and communication. Since 1960, more than 25,000 men and women from the region have participated in the Center's cooperative programs.

Principal funding for the Center comes from the United States Congress. Support also comes from more than 20 Asian and Pacific governments, as well as private agencies and corporations. The Center has an international board of governors. President Victor Hao Li came to the Center in 1981 after serving as Shelton Professor of International Legal Studies at Stanford University.

THE EAST-WEST POPULATION INSTITUTE, established as a unit of the East-West Center in 1969, carries out multidisciplinary research, training, and related activities in the field of population, placing emphasis on economic, social, psychological, and environmental aspects of population problems in Asia, the Pacific, and the United States.

CONSISTENT CORRECTION

Version 1.1

User's Manual

July 1989

Simultaneous and Consistent Correction of Two
or Three Decennial Censuses and Intercensal
Vital Registration and Migration Data



East-West Population Institute
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Honolulu, Hawaii

DESCRIPTION: This program was developed for the simultaneous and consistent correction of two or three decennial censuses and intercensal births, deaths, and migration, classified by 5-year age groups and 5-year time periods, for any group (examples: a single sex or the sexes combined). It begins with a set of preliminary correction factors for the demographic quantities. These factors are typically inconsistent because they are derived from a variety of sources. The program then uses the mathematics of finite-dimensional vector spaces to derive a "best" or optimal set of final consistent correction factors that is "closest" to the set of preliminary correction factors. The optimization procedure is based on the principle that there exists in a hyperplane a unique point of minimum distance from a fixed point not in the hyperplane.

The distance that is minimized is a weighted Euclidean distance. The "proportional weights" that are constructed internally in this program tend to spread the correction evenly over all of the preliminary correction factors. The optional input positive weights, one for each preliminary correction factor (i.e. one for each demographic quantity), are multiplicatively superimposed upon (multiplied by) the "proportional weights". The larger a weight is relative to the other weights, the less the correction (change between preliminary and final correction factors) for the corresponding demographic quantity. Thus the input positive weights should be chosen according to the reliability of the preliminarily-corrected demographic quantities, with the most reliable quantities given the largest weights and the least reliable quantities given the smallest weights. Exercising the option of no input weights results in the use of "proportional weights" which spread the correction evenly over all of the preliminary correction factors.

SYSTEM

- REQUIREMENTS:
1. IBM PC/XT/AT compatible microcomputer with DOS 3.0 and above
 2. A floppy disk drive
 3. 256 K bytes of memory
 4. Printer, if printed output is desired

METHOD: See Description above and below.

INPUT: Input data may be entered in one of two ways:

ASCII Text File on Disk
or
Keyboard

Input data on disk may be in free format (See Appendix for example) Input entered from the keyboard may be saved on disk for future use.

The input requirements are as follows:

1. Title of data (in 70 characters or less and enclosed within single quotes)
2. t , the number of intercensal periods:
1 or 2 (if 2 censuses are used, $t = 1$;
if 3 censuses are used, $t = 2$)
3. The years of the censuses (in chronological order) (Earliest: 1910
Latest: 1999)
4. g , the number of 5-year age groups
Maximum: 16 (last age group 75+)
The last age group is open-ended
5. Migration Data Indicator
0 = No migration data
1 = Migration data are used
6. Input Weight Indicator
0 = No weights are input
1 = Input weights are used
7. The vector of births by 5-year time periods (breaking 10-year intercensal periods into halves) arranged in the

chronological order of the 5-year time periods.

8. The census matrix in which each column vector is a census population vector by 5-year age groups, and the column vectors are arranged in the chronological order of the censuses.
9. The deaths matrix in which each pair of adjacent column vectors gives the deaths by 5-year age groups by northwest and southeast triangles of the Lexis diagram (where the time axis points east and the age axis points north) for a 5-year time period (breaking 10-year intercensal periods into halves), and the pairs of column vectors are arranged in the chronological order of the 5-year time periods.
10. (Optional; applicable only if migration data are used) The net migration matrix in which each pair of adjacent column vectors gives the net emigration by 5-year age groups by northwest and southeast triangles of the Lexis diagram (where the time axis points east and the age axis points north) for a 5-year time period (breaking 10-year intercensal periods into halves), and the pairs of column vectors are arranged in the chronological order of the 5-year time periods.
11. The vector of preliminary correction factors (i.e., preliminary estimates of the correction factors), in the following order:
 - (a) Births: $2xt$ factors
(One for each 5-year time period, listed in the chronological order of the 5-year time periods)
 - (b) Population: $(t+1) \times g$ factors
(For each census, there are g factors, one for each 5-year

age group; and the t+1 sets of g factors corresponding to the t+1 censuses are listed in the chronological order of the censuses)

(c) Deaths: (2xt) xg factors
(For each 5-year time period, there are g factors, one for each 5-year age group; and the 2xt sets of g factors corresponding to the 2xt 5-year time periods are listed in the chronological order of the 5-year time periods)

(d) (Only if migration data are used)
Migration: (2xt) xg factors
(For each 5-year time period, there are g factors, one for each 5-year age group; and the 2xt sets of g factors corresponding to the 2xt 5-year time periods are listed in the chronological order of the 5-year time periods)

For derivation of the preliminary correction factors, refer to:

Appendix A of Luther, Norman Y., Neramit Dhanasakdi, and Fred Arnold. "Consistent Correction of Census and Vital Registration Data for Thailand, 1960-1980". Papers of the East-West Population Institute, No. 103, December 1986.

Appendix A of Luther, Norman Y., K.H.W. Gaminiratne, Soma de Silva, and Robert D. Retherford. "Consistent Correction of International Migration Data for Sri Lanka, 1971-80", Reprints of the East-West Population Institute, No. 232, 1988. Reprinted from International Migration Review:

Measuring International Migration:
Theory and Practice. Vol. 21, Winter
1987, pp. 1335-1369.

12. (Optional) The vector of positive weights, one for each preliminary correction factor (i.e., one for each demographic quantity), in the same order as the preliminary correction factors. These weights are multiplicatively superimposed upon (multiplied by) the "proportional weights" which tend to spread the correction evenly over all of the preliminary correction factors. Thus the input positive weights should be chosen to be proportional to the estimated reliability of the corresponding preliminarily-corrected demographic quantities. That is, the most reliable quantities should be given the largest weights and the least reliable quantities should be given the smallest weights. (Note: If no weights are input, the correction is spread evenly over all of the preliminary correction factors.)

Output may be directed to a printer or saved on a disk file and later printed with DOS commands.

Output includes:

Initial Correction Factors (Those Yielding the Minimum Weighted Distance from the Preliminary Correction Factors)

Reported and Initially Corrected Intercensal Births, Census Age Distributions, Intercensal Deaths and Intercensal Net Emigration

Completeness of Births, Deaths and Net Emigration (Based on Initial Correction Factors)

Final Correction Factors Obtained by Multiplying All Initial Correction Factors by a Common Multiple Chosen So That the Total Number of Births Based On the Preliminary

Correction Factors Equals the Total Number of Births Based on the Final Correction Factors

Reported and Final Corrected Intercensal Births, Census Age Distributions, Intercensal Deaths and Intercensal Net Emigration

Estimated Age Distributions Midway Between Censuses Compared with Final Corrected Census Age Distributions

Apportionment of Reported and Final Corrected Intercensal Deaths and Net Emigration into the Triangles of the Lexis Diagram

Completeness of Births, Deaths and Net Emigration (Under the Assumption on Births That is Used to Find the Common Multiple Mentioned Above for Finding the Final Correction Factors)

Life Tables and Life Expectancies, Assuming Net Emigrants, if any, are Evenly Spread Over Each Triangle of the Lexis Diagram and that $5q_x$ is Constant Over the Entire Square Formed by the Two Triangles

EXECUTION:

1. If A is not the default drive, type,
a: [ENTER key]
to make it the default drive
(A> will appear on the screen)
2. Insert the program disk into the A-drive
3. To run the program, type:
correc [ENTER key]

REFERENCES:

Luther, Norman Y., and Robert D. Retherford. "Consistent Correction of Census and Vital Registration Data", Working Papers: A Publication Series Reporting on Research in Progress, No. 35, March 1986 (revised).

Luther, Norman Y., Neramit Dhanasakdi, and Fred Arnold. "Consistent Correction of Census and Vital Registration Data for Thailand, 1960-80", Papers of the East-West Population Institute, No. 103, December 1986.

Luther, Norman Y., K.H.W. Gaminiratne, Soma de Silva, and Robert D. Retherford, "Consistent Correction of International Migration Data for Sri Lanka, 1971-80", Reprints of the East-West Population Institute, No. 232, 1988. Reprinted from International Migration Review: Measuring International Migration: Theory and Practice. Vol. 21, Winter 1987, pp. 1335-1369.

Luther, Norman Y., and Robert D. Retherford. "Consistent Correction of Census and Vital Registration Data", Reprints of the East-West Population Institute, No. 221, 1988. Reprinted from Mathematical Population Studies, Vol. 1, No. 1, 1988, pp. 1-20.

INPUT

Title:

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

t, the no. of intercensal periods, is 1

The census years are 1971 1981

g, the no. of 5-year age groups, is 16

Migration data are used

Input weights are used

Births by 5-year intercensal periods:

1971-76	1976-81
955366.	1030804.

5-year age distributions by census:

Age	1971	1981
0	835966.	944523.
5	837319.	855737.
10	811729.	862326.
15	680979.	812845.
20	632390.	766018.
25	473590.	638686.
30	373502.	570187.
35	362763.	422144.
40	310812.	360428.
45	286385.	309085.
50	224484.	284890.
55	190024.	222599.
60	148908.	183536.
65	120030.	133221.
70	88732.	97476.
75+	80383.	108633.

Intercensal deaths by triangles of the Lexis diagram:
 1971-76 1976-81

Age	NW	SE	NW	SE
0	11018.	56054.	9122.	47603.
5	3990.	3990.	3320.	3320.
10	2551.	2551.	2341.	2341.
15	2932.	2932.	3040.	3040.
20	3988.	3988.	4330.	4330.
25	3297.	3297.	3684.	3684.
30	2860.	2860.	3127.	3127.
35	3932.	3932.	3705.	3705.
40	4415.	4415.	4020.	4020.
45	6382.	6382.	5851.	5851.
50	6656.	6656.	6807.	6807.
55	8454.	8454.	7958.	7958.
60	9366.	9366.	8759.	8759.
65	11794.	11794.	10584.	10584.
70	14187.	14187.	11901.	11901.
75+	35379.	35379.	31174.	31174.

Intercensal net migration by triangles of the Lexis diagram:
 1971-76 1976-81

Age	NW	SE	NW	SE
0	2532.	2635.	2675.	1921.
5	4531.	4724.	4808.	3432.
10	5006.	5222.	5316.	3792.
15	4661.	4855.	4988.	3727.
20	5477.	5575.	7491.	8570.
25	7285.	7496.	9818.	12874.
30	7842.	8247.	8141.	10425.
35	6359.	6703.	6096.	7670.
40	4748.	4884.	3995.	4912.
45	3383.	3442.	2379.	2411.
50	2696.	2675.	2091.	2010.
55	2232.	2192.	1777.	1599.
60	1809.	1780.	1594.	1375.
65	1162.	1125.	971.	885.
70	409.	382.	329.	326.
75+	59.	59.	43.	43.

Preliminary correction factors:

Births: 2xt factors

(1 for each 5-year time period)

1971-76	1976-81
1.02400	1.01700

Population: (t+1) xg factors

(1 for each 5-year age group & census)

Age	1971	1981
0	1.08000	1.06000
5	1.04350	1.04350
10	1.04350	1.04350
15	1.04350	1.04350
20	1.04350	1.04350
25	1.04350	1.04350
30	1.04350	1.04350
35	1.04350	1.04350
40	1.04350	1.04350
45	1.04350	1.04350
50	1.04350	1.04350
55	1.04350	1.04350
60	1.04350	1.04350
65	1.04350	1.04350
70	1.04350	1.04350
75+	1.04350	1.04350

Deaths: (2xt) xg factors

(1 for each 5-year age group & 5-year time period)

Age	1971-76	1976-81
0	1.10500	1.08700
5	1.01000	1.00500
10	1.01000	1.00500
15	1.01000	1.00500
20	1.01000	1.00500
25	1.01000	1.00500
30	1.01000	1.00500
35	1.01000	1.00500
40	1.01000	1.00500
45	1.01000	1.00500
50	1.01000	1.00500
55	1.01000	1.00500
60	1.01600	1.01100
65	1.02900	1.02200
70	1.04100	1.03400
75+	1.05300	1.04500

Migration: (2xt)xg factors
 (1 for each 5-year age group & 5-year time period)

Age	1971-76	1976-81
0	1.00000	1.00000
5	1.00000	1.00000
10	1.00000	1.00000
15	1.00000	1.00000
20	1.00000	1.00000
25	1.00000	1.00000
30	1.00000	1.00000
35	1.00000	1.00000
40	1.00000	1.00000
45	1.00000	1.00000
50	1.00000	1.00000
55	1.00000	1.00000
60	1.00000	1.00000
65	1.00000	1.00000
70	1.00000	1.00000
75+	1.00000	1.00000

Weights:

Births: 2xt weights
(1 for each 5-year time period)

1971-76	1976-81
4.00	4.00

Population: (t+1) xg weights
(1 for each 5-year age group & census)

Age	1971	1981
0	4.00	4.00
5	4.00	4.00
10	4.00	4.00
15	4.00	4.00
20	4.00	4.00
25	4.00	4.00
30	4.00	4.00
35	4.00	4.00
40	4.00	4.00
45	4.00	4.00
50	4.00	4.00
55	4.00	4.00
60	4.00	4.00
65	4.00	4.00
70	4.00	4.00
75+	4.00	4.00

Deaths: (2xt) xg weights
(1 for each 5-year age group & 5-year time period)

Age	1971-76	1976-81
0	4.00	4.00
5	4.00	4.00
10	4.00	4.00
15	4.00	4.00
20	4.00	4.00
25	4.00	4.00
30	4.00	4.00
35	4.00	4.00
40	4.00	4.00
45	4.00	4.00
50	4.00	4.00
55	4.00	4.00
60	4.00	4.00
65	4.00	4.00
70	4.00	4.00
75+	4.00	4.00

Migration: (2xt)xg weights
(1 for each 5-year age group & 5-year time period)

Age	1971-76	1976-81
0	1.00	1.00
5	1.00	1.00
10	1.00	1.00
15	1.00	1.00
20	1.00	1.00
25	1.00	1.00
30	1.00	1.00
35	1.00	1.00
40	1.00	1.00
45	1.00	1.00
50	1.00	1.00
55	1.00	1.00
60	1.00	1.00
65	1.00	1.00
70	1.00	1.00
75+	1.00	1.00

OUTPUT

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 1A: INITIAL CORRECTION FACTORS FOR INTERCENSAL BIRTHS BY 5-YEAR INTERCENSAL PERIODS, STARTING WITH THE 5-YEAR PERIOD FOLLOWING THE FIRST CENSUS & ENDING WITH THE 5-YEAR PERIOD PRECEDING THE LAST CENSUS

1971-76	1976-81
1.023	1.020

TABLE 1B: INITIAL CORRECTION FACTORS FOR CENSUS AGE DISTRIBUTIONS, INTERCENSAL DEATHS & INTERCENSAL NET EMIGRATION

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	CENSUSES		DEATHS		NET EMIGRATION	
	1971	1981	1971-76	1976-81	1971-76	1976-81
0	1.100	1.057	1.103	1.084	.963	.997
5	1.046	1.045	.999	.996	.953	.955
10	1.036	1.024	1.012	.994	1.008	.960
15	1.045	1.041	1.013	1.007	1.011	1.011
20	1.030	1.051	1.016	1.008	1.023	1.012
25	1.033	1.042	1.022	1.011	1.048	1.020
30	1.078	1.057	.998	1.017	.953	1.048
35	1.014	1.054	1.007	.993	.986	.961
40	1.060	1.009	1.016	1.002	1.027	.976
45	.990	1.073	1.028	1.011	1.072	1.026
50	1.041	1.027	1.038	1.023	1.112	1.076
55	1.002	1.097	1.032	1.033	1.089	1.107
60	1.028	1.046	1.044	1.033	1.113	1.094
65	1.057	1.085	1.030	1.050	1.002	1.111
70	1.057	1.059	1.027	1.035	.945	1.003
75+	1.057	1.030	1.039	1.031	.945	.945

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 2A: REPORTED & INITIALLY CORRECTED INTERCENSAL BIRTHS

TOTAL REP REPORTED BIRTHS BY 5-YR INTERCENSAL PERIODS

1971-81	1971-76	1976-81
1986170.	955366.	1030804.

TOT INI CORR INITIALLY CORRECTED BIRTHS BY 5-YR INTERCENSAL PERIODS

1971-81	1971-76	1976-81
2028989.	977319.	1051670.

TABLE 2B: REPORTED & INITIALLY CORRECTED CENSUS AGE DISTRIBUTIONS

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP CEN AGE DIST		INI CORR CEN AGE DIST	
	1971	1981	1971	1981
0	835966.	944523.	919545.	998132.
5	837319.	855737.	876212.	893836.
10	811729.	862326.	841352.	882608.
15	680979.	812845.	711687.	845806.
20	632390.	766018.	651387.	804707.
25	473590.	638686.	489323.	665451.
30	373502.	570187.	402786.	602665.
35	362763.	422144.	367768.	444846.
40	310812.	360428.	329579.	363526.
45	286385.	309085.	283492.	331711.
50	224484.	284890.	233714.	292474.
55	190024.	222599.	190377.	244213.
60	148908.	183536.	153111.	191958.
65	120030.	133221.	126910.	144564.
70	88732.	97476.	93818.	103205.
75+	80383.	108633.	84990.	111857.
TOT	6457996.	7572334.	6756052.	7921559.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 2C: REPORTED & INITIALLY CORRECTED INTERCENSAL DEATHS

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTER DEATHS		INI CORR INTER DEATHS	
	1971-76	1976-81	1971-76	1976-81
0	67072.	56725.	73952.	61515.
5	7980.	6640.	7968.	6610.
10	5102.	4682.	5163.	4652.
15	5864.	6080.	5939.	6123.
20	7976.	8660.	8103.	8727.
25	6594.	7368.	6738.	7449.
30	5720.	6254.	5707.	6360.
35	7864.	7410.	7922.	7356.
40	8830.	8040.	8975.	8059.
45	12764.	11702.	13126.	11836.
50	13312.	13614.	13818.	13932.
55	16908.	15916.	17449.	16441.
60	18732.	17518.	19565.	18096.
65	23588.	21168.	24289.	22236.
70	28374.	23802.	29145.	24629.
75+	70758.	62348.	73530.	64292.
TOT	307438.	277927.	321390.	288311.

TABLE 2D: REPORTED & INITIALLY CORRECTED INTERCENSAL NET EMIGRATION

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTER NET EMIG		INI CORR INTER NET EMIG	
	1971-76	1976-81	1971-76	1976-81
0	5167.	4596.	4975.	4582.
5	9255.	8240.	8824.	7870.
10	10228.	9108.	10307.	8742.
15	9516.	8715.	9622.	8811.
20	11052.	16061.	11311.	16253.
25	14781.	22692.	15484.	23139.
30	16089.	18566.	15333.	19462.
35	13062.	13766.	12882.	13230.
40	9632.	8907.	9892.	8696.
45	6825.	4790.	7318.	4916.
50	5371.	4101.	5970.	4414.
55	4424.	3376.	4817.	3736.
60	3589.	2969.	3996.	3248.
65	2287.	1856.	2291.	2063.
70	791.	655.	747.	657.
75+	118.	86.	111.	81.
TOT	122187.	128484.	123882.	129898.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 3A: COMPLETENESS OF BIRTHS (BASED ON INITIAL CORRECTION FACTORS)

OVERALL	INTERCEN BIRTHS COMPLETENESS BY 5-YR INTER PERIOD	
	1971-76	1976-81
1971-81	97.754	98.016
97.890		

INTERCENSAL PERIOD NO. 1: 1971-81

TABLE 3B: COMPLETENESS OF DEATHS (BASED ON INITIAL CORRECTION FACTORS)

OVERALL	INTERCEN DEATHS COMPLETENESS DURING 1ST & 2ND 5-YR INTERCEN PERS	
	1971-76	1976-81
1971-81	95.659	96.398
96.008		

TABLE 3C: COMPLETENESS OF NET EMIGRATION (BASED ON INITIAL CORRECTION FACTORS)

OVERALL	INTERCEN NET EMIGRATION COMPLETENESS DURING 1ST & 2ND 5-YR INTERCEN PERS	
	1971-76	1976-81
1971-81	98.632	98.911
98.775		

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 4A: FINAL CORRECTION FACTORS FOR INTERCENSAL BIRTHS BY 5-YEAR INTERCENSAL PERIODS, STARTING WITH THE 5-YEAR PERIOD FOLLOWING THE 1ST CENSUS & ENDING WITH THE 5-YEAR PERIOD PRECEDING THE LAST CENSUS

1971-76	1976-81
1.022	1.019

TABLE 4B: FINAL CORRECTION FACTORS FOR CENSUS AGE DISTRIBUTIONS, INTERCENSAL DEATHS & INTERCENSAL NET EMIGRATION

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	CENSUSES		DEATHS		NET EMIGRATION	
	1971	1981	1971-76	1976-81	1971-76	1976-81
0	1.099	1.056	1.101	1.083	.962	.996
5	1.045	1.043	.997	.994	.952	.954
10	1.035	1.022	1.011	.992	1.007	.959
15	1.044	1.039	1.012	1.006	1.010	1.010
20	1.029	1.049	1.015	1.007	1.022	1.011
25	1.032	1.041	1.021	1.010	1.046	1.018
30	1.077	1.056	.997	1.016	.952	1.047
35	1.013	1.053	1.006	.992	.985	.960
40	1.059	1.007	1.015	1.001	1.026	.975
45	.989	1.072	1.027	1.010	1.071	1.025
50	1.040	1.025	1.037	1.022	1.110	1.075
55	1.001	1.096	1.031	1.032	1.088	1.105
60	1.027	1.045	1.043	1.032	1.112	1.093
65	1.056	1.084	1.029	1.049	1.001	1.110
70	1.056	1.058	1.026	1.034	.944	1.001
75+	1.056	1.028	1.038	1.030	.944	.944

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 5A: REPORTED & FINAL CORRECTED INTERCENSAL BIRTHS

TOTAL REP	REPORTED BIRTHS BY 5-YR INTERCENSAL PERIODS	
	1971-81	1971-76 1976-81
1986170.	955366.	1030804.

TOT FIN CORR	FINAL CORRECTED BIRTHS BY 5-YR INTERCENSAL PERIODS	
	1971-81	1971-76 1976-81
2026622.	976179.	1050443.

TABLE 5B: REPORTED & FINAL CORRECTED CENSUS AGE DISTRIBUTIONS

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP CEN AGE DIST		FIN CORR CEN AGE DIST	
	1971	1981	1971	1981
0	835966.	944523.	918473.	996968.
5	837319.	855737.	875190.	892793.
10	811729.	862326.	840371.	881579.
15	680979.	812845.	710857.	844820.
20	632390.	766018.	650627.	803768.
25	473590.	638686.	488752.	664675.
30	373502.	570187.	402317.	601962.
35	362763.	422144.	367339.	444328.
40	310812.	360428.	329195.	363102.
45	286385.	309085.	283162.	331324.
50	224484.	284890.	233441.	292132.
55	190024.	222599.	190155.	243929.
60	148908.	183536.	152933.	191734.
65	120030.	133221.	126762.	144395.
70	88732.	97476.	93709.	103084.
75+	80383.	108633.	84891.	111727.
TOT	6457996.	7572334.	6748173.	7912321.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 5C: REPORTED & FINAL CORRECTED INTERCENSAL DEATHS

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTER DEATHS		FIN CORR INTER DEATHS	
	1971-76	1976-81	1971-76	1976-81
0	67072.	56725.	73865.	61443.
5	7980.	6640.	7959.	6603.
10	5102.	4682.	5157.	4646.
15	5864.	6080.	5932.	6116.
20	7976.	8660.	8094.	8717.
25	6594.	7368.	6730.	7440.
30	5720.	6254.	5700.	6352.
35	7864.	7410.	7913.	7347.
40	8830.	8040.	8964.	8050.
45	12764.	11702.	13111.	11822.
50	13312.	13614.	13802.	13916.
55	16908.	15916.	17429.	16422.
60	18732.	17518.	19542.	18075.
65	23588.	21168.	24261.	22210.
70	28374.	23802.	29111.	24600.
75+	70758.	62348.	73445.	64217.
TOT	307438.	277927.	321015.	287975.

TABLE 5D: REPORTED & FINAL CORRECTED INTERCENSAL NET EMIGRATION

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTER NET EMIG		FIN CORR INTER NET EMIG	
	1971-76	1976-81	1971-76	1976-81
0	5167.	4596.	4970.	4577.
5	9255.	8240.	8814.	7861.
10	10228.	9108.	10295.	8732.
15	9516.	8715.	9611.	8801.
20	11052.	16061.	11298.	16234.
25	14781.	22692.	15466.	23112.
30	16089.	18566.	15315.	19439.
35	13062.	13766.	12867.	13215.
40	9632.	8907.	9880.	8686.
45	6825.	4790.	7309.	4910.
50	5371.	4101.	5963.	4408.
55	4424.	3376.	4811.	3731.
60	3589.	2969.	3991.	3244.
65	2287.	1856.	2289.	2060.
70	791.	655.	746.	656.
75+	118.	86.	111.	81.
TOT	122187.	128484.	123737.	129747.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 6: ESTIMATED AGE DISTRIBUTION MIDWAY BETWEEN CENSUSES
 COMPARED WITH FINAL CORRECTED CENSUS AGE DISTRIBUTIONS

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	1971	MID-CENSUS	1981
0	918473.	911913.	996968.
5	875190.	895426.	892793.
10	840371.	859061.	881579.
15	710857.	824884.	844820.
20	650627.	693437.	803768.
25	488752.	629773.	664675.
30	402317.	467064.	601962.
35	367339.	381442.	444328.
40	329195.	347627.	363102.
45	283162.	309601.	331324.
50	233441.	263113.	292132.
55	190155.	212449.	243929.
60	152933.	167262.	191734.
65	126762.	127894.	144395.
70	93709.	98552.	103084.
75+	84891.	90102.	111727.
TOT	6748173.	7279600.	7912321.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 7A: APPORTIONMENT OF REPORTED & FINAL CORRECTED INTERCENSAL DEATHS WITHIN EACH AGE GROUP INTO THE TRIANGLES OF THE LEXIS DIAGRAM

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTERCEN DEATHS				TOTAL
	NW TRI	2ND TRI	3RD TRI	SE TRI	
0	11018.	56054.	9122.	47603.	123797.
5	3990.	3990.	3320.	3320.	14620.
10	2551.	2551.	2341.	2341.	9784.
15	2932.	2932.	3040.	3040.	11944.
20	3988.	3988.	4330.	4330.	16636.
25	3297.	3297.	3684.	3684.	13962.
30	2860.	2860.	3127.	3127.	11974.
35	3932.	3932.	3705.	3705.	15274.
40	4415.	4415.	4020.	4020.	16870.
45	6382.	6382.	5851.	5851.	24466.
50	6656.	6656.	6807.	6807.	26926.
55	8454.	8454.	7958.	7958.	32824.
60	9366.	9366.	8759.	8759.	36250.
65	11794.	11794.	10584.	10584.	44756.
70	14187.	14187.	11901.	11901.	52176.
75+	35379.	35379.	31174.	31174.	133106.

AGE	FIN CORR INTERCEN DEATHS				TOTAL
	NW TRI	2ND TRI	3RD TRI	SE TRI	
0	12134.	61731.	9881.	51563.	135309.
5	3980.	3980.	3301.	3301.	14562.
10	2579.	2579.	2323.	2323.	9804.
15	2966.	2966.	3058.	3058.	12047.
20	4047.	4047.	4358.	4358.	16810.
25	3365.	3365.	3720.	3720.	14170.
30	2850.	2850.	3176.	3176.	12052.
35	3956.	3956.	3674.	3674.	15260.
40	4482.	4482.	4025.	4025.	17014.
45	6555.	6555.	5911.	5911.	24932.
50	6901.	6901.	6958.	6958.	27717.
55	8714.	8714.	8211.	8211.	33851.
60	9771.	9771.	9038.	9038.	37617.
65	12130.	12130.	11105.	11105.	46471.
70	14556.	14556.	12300.	12300.	53711.
75+	36722.	36722.	32109.	32109.	137662.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 7B: APPORTIONMENT OF REPORTED & FINAL CORRECTED NET EMIGRATION WITHIN EACH AGE GROUP INTO THE TRIANGLES OF THE LEXIS DIAGRAM

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	REP INTERCEN NET EMIG				TOTAL
	NW TRI	2ND TRI	3RD TRI	SE TRI	
0	2532.	2635.	2675.	1921.	9763.
5	4531.	4724.	4808.	3432.	17495.
10	5006.	5222.	5316.	3792.	19336.
15	4661.	4855.	4988.	3727.	18231.
20	5477.	5575.	7491.	8570.	27113.
25	7285.	7496.	9818.	12874.	37473.
30	7842.	8247.	8141.	10425.	34655.
35	6359.	6703.	6096.	7670.	26828.
40	4748.	4884.	3995.	4912.	18539.
45	3383.	3442.	2379.	2411.	11615.
50	2696.	2675.	2091.	2010.	9472.
55	2232.	2192.	1777.	1599.	7800.
60	1809.	1780.	1594.	1375.	6558.
65	1162.	1125.	971.	885.	4143.
70	409.	382.	329.	326.	1446.
75+	59.	59.	43.	43.	204.

AGE	FINAL CORR INTERCENSAL NET EMIG				TOTAL
	NW TRI	2ND TRI	3RD TRI	SE TRI	
0	2435.	2534.	2664.	1913.	9546.
5	4315.	4499.	4587.	3274.	16674.
10	5039.	5256.	5097.	3635.	19027.
15	4708.	4904.	5037.	3764.	18412.
20	5599.	5699.	7572.	8663.	27533.
25	7623.	7843.	10000.	13112.	38578.
30	7465.	7850.	8524.	10915.	34755.
35	6264.	6603.	5852.	7363.	26081.
40	4870.	5010.	3896.	4790.	18566.
45	3623.	3686.	2439.	2471.	12219.
50	2993.	2970.	2248.	2161.	10372.
55	2427.	2384.	1964.	1767.	8543.
60	2012.	1980.	1742.	1502.	7235.
65	1163.	1126.	1078.	982.	4349.
70	386.	360.	329.	326.	1402.
75+	56.	56.	41.	41.	192.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 8A: COMPLETENESS OF BIRTHS (ASSUMING TOTAL PRELIMINARILY CORRECTED BIRTHS EQUAL TOTAL FINALLY CORRECTED BIRTHS)

OVERALL	INTERCENSAL BIRTHS COMPLETENESS BY 5-YR INTERCEN PERS	
	1971-76	1976-81
1971-81	97.868	98.130
98.004		

INTERCENSAL PERIOD NO. 1: 1971-81

TABLE 8B: COMPLETENESS OF DEATHS (ASSUMING TOTAL PRELIMINARILY CORRECTED BIRTHS EQUAL TOTAL FINALLY CORRECTED BIRTHS)

OVERALL	INTERCENSAL DEATHS COMPLETENESS DURING 1ST & 2ND 5-YR INTERCENSAL PERS	
	1971-76	1976-81
1971-81	95.771	96.511
96.121		

TABLE 8C: COMPLETENESS OF NET EMIGRATION (ASSUMING TOTAL PRELIMINARILY CORRECTED BIRTHS EQUAL TOTAL FINALLY CORRECTED BIRTHS)

OVERALL	INTERCENSAL NET EMIGRATION COMPLETENESS DURING 1ST & 2ND 5-YR INTERCEN PERS	
	1971-76	1976-81
1971-81	98.747	99.027
98.890		

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

LIFE TABLES & LIFE EXPECTANCIES, ASSUMING NET MIGRANTS, IF ANY, ARE EVENLY SPREAD OVER EACH TRIANGLE OF THE LEXIS DIAGRAM & THAT $5q_x$ IS CONSTANT OVER THE ENTIRE SQUARE FORMED BY THE TWO TRIANGLES

TABLE 9A: LIFE TABLE $5L_x$ VALUES FOR YEARS BETWEEN CENSUSES, & AVERAGE INTERCENSAL PERIOD NO. 1: 1971-81

AGE	AVERAGE	$5L_x$ VALUES FOR 1ST & 2ND 5YR PERS BETWEEN CENSUSES	
0	471897.	468352.	475441.
5	464284.	460059.	468510.
10	461071.	456601.	465541.
15	458052.	453501.	462602.
20	453656.	449014.	458298.
25	448330.	443695.	452964.
30	442903.	438032.	447773.
35	435823.	430539.	441107.
40	426315.	420441.	432190.
45	412789.	405967.	419612.
50	394063.	386267.	401858.
55	369058.	359906.	378210.
60	335684.	324374.	346994.
65	291091.	277700.	304483.
70	233518.	218349.	248687.
75+	294108.	224298.	363918.

SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS

TABLE 9B: LIFE TABLE 1x & 5qx VALUES FOR YEARS BETWEEN CENSUSES,
& AVERAGE

INTERCENSAL PERIOD NO. 1: 1971-81

AGE	AVERAGE	1x VALUES FOR 1ST & 2ND 5-YR PERS BETWN CENSUSES	
0	100000.	100000.	100000.
5	93236.	92423.	94048.
10	92476.	91596.	93355.
15	91950.	91041.	92858.
20	91258.	90337.	92179.
25	90180.	89253.	91106.
30	89116.	88165.	90066.
35	87996.	87008.	88984.
40	86297.	85188.	87406.
45	84204.	82958.	85449.
50	80851.	79355.	82348.
55	76669.	75036.	78302.
60	70793.	68770.	72817.
65	63293.	60816.	65769.
70	52994.	50229.	55759.
75+	40280.	36964.	43596.

AGE	AVERAGE	5qx VALUES FOR 1ST & 2ND 5-YR PERS BETWN CENSUSES	
0	.06764	.07577	.05952
5	.00816	.00895	.00736
10	.00569	.00605	.00533
15	.00753	.00774	.00731
20	.01182	.01199	.01165
25	.01180	.01219	.01141
30	.01257	.01312	.01201
35	.01933	.02092	.01774
40	.02428	.02618	.02238
45	.03986	.04343	.03630
50	.05178	.05442	.04913
55	.07678	.08351	.07005
60	.10622	.11566	.09678
65	.16314	.17408	.15221
70	.24111	.26410	.21813
75+	1.00000	1.00000	1.00000

TABLE 10: LIFE EXPECTANCIES FOR YEARS BETWEEN CENSUSES, & AVERAGE

INTERCENSAL PERIOD NO. 1: 1971-81

AVERAGE	LIFE EXPECTANCY FOR 1ST & 2ND 5-YR PERS BETWN CENSUSES	
63.926	62.171	65.682

APPENDIX

Listing of input file: srilm.dat

```
'SRI LANKA MALES - 1971, 1981 CENSUSES: WITH MIGRATION & WEIGHTS' <-- Title
1 <----- t, the no. of intercensal periods
1971 1981 <--- The census years
16 <-- g, the no. of 5-year age groups
1 <--- The migration data indicator
1 <--- The input weight indicator
955366 1030804 <--- The birth vector
835966 944523
837319 855737
811729 862326
680979 812845
632390 766018
473590 638686
373502 570187 <-- The matrix of 5-year age distributions
362763 422144
310812 360428
286385 309085
224484 284890
190024 222599
148908 183536
120030 133221
 88732  97476
 80383 108633
11018 56054 9122 47603
 3990  3990  3320  3320
 2551  2551  2341  2341
 2932  2932  3040  3040
 3988  3988  4330  4330
 3297  3297  3684  3684
 2860  2860  3127  3127
 3932  3932  3705  3705 <-- The deaths matrix
 4415  4415  4020  4020
 6382  6382  5851  5851
 6656  6656  6807  6807
 8454  8454  7958  7958
 9366  9366  8759  8759
11794 11794 10584 10584
14187 14187 11901 11901
35379 35379 31174 31174
```

(continued on next page)

Listing of input file: srilm.dat (continued)

```

2532 2635 2675 1921
4531 4724 4808 3432
5006 5222 5316 3792
4661 4855 4988 3727
5477 5575 7491 8570
7285 7496 9818 12874
7842 8247 8141 10425
6359 6703 6096 7670
4748 4884 3995 4912
3383 3442 2379 2411
2696 2675 2091 2010
2232 2192 1777 1599
1809 1780 1594 1375
1162 1125 971 885
 409 382 329 326
  59 59 43 43

```

<-- The net migration matrix

```

1.024 1.017 1.08 1.0435 1.0435 1.0435
1.0435 1.0435 1.0435 1.0435 1.0435 1.0435
1.0435 1.0435 1.0435 1.0435 1.0435 1.0435
1.0600 1.0435 1.0435 1.0435 1.0435 1.0435
1.0435 1.0435 1.0435 1.0435 1.0435 1.0435
1.0435 1.0435 1.0435 1.0435
1.105 1.01 1.01 1.01 1.01 1.01 1.01 1.01
1.01 1.01 1.01 1.01 1.016 1.029 1.041
1.053 1.087 1.005 1.005 1.005 1.005 1.005
1.005 1.005 1.005 1.005 1.005 1.005 1.011
1.022 1.034 1.045
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1

```

<-- The vector of preliminary correction factors

<-- The vector of positive input weights