

Research—data
B. No. 13

An Observation on the Correlation between
Standardized Birth—, Death—and Natural Increase
Rate and Some Indices concerning Social Mode of
Life by Prefectures, 1920, 1925, 1930 and 1935.

By

Minoru Tachi

Masao Ueda

Yoshiaki Kubota

Institute of Population Problems,
Welfare Ministry, Tokyo, Japan.

I. Aim

It goes without saying that the most important thing is to realize the cause which decides the regional difference of natural increase of population, and the demographic factor, which decides the regional difference of natural increase, is due to the difference of fertility these have been pointed out in the other article.*)

However, the cause of declining birth has been chiefly explained by social mode of life or civilization in a broad sense. These are seen in the three principal theories of the declining birth—the Lombert's welfare theory, the Wolf's psychological theory and the Oldenberg's social-milieu-theory. Therefore, in order to observe the regional difference of natural increase, it is necessary to research the statistical relation between some factors of social mode and the natural increase population.

II. Method

(1) The birth—, death—and natural increase rate are based on the standardized rates which have been shown in the other article above.

(2) The indices of social mode of life are according to (a) city-population rate which shows urbanization, (b) both percentage of agricultural-population and number of industrial employees which show difference of occupational composition, (c) the out put per head, sum of postal savings per head and the rate of payers of income-tax which show an average income, and (d) the rate of number of household, listening radio which shows propagations of radio as the narrow sense of social mode.

*1) Cf. "Standardized Birth—, Death—and Natural Increase Rate by Prefectures, 1920, 1925, 1930 and 1935.—Research data, A. No.7.

(3) The statistical relation is calculated by the correlation coefficient according to the following formula,

$$r = \frac{Z_{xy}}{r_x r_y}$$

(4) Okinawa Prefecture is omitted for its special relations.

III. Result

The correlation coefficient "r", according to the above method, as follows:

(1) Fertility shown by the standardized birth rates has a distinguished correlation with the former indices, and that has been clear in recent years. The similar facts which the welfare theory recognizes could be seen in our country.

(2) In the standardized death rates there have little correlation.

(3) The factor, deciding the difference between the regional natural increase of population and fertility, depends on fertility rather than death as I have pointed out. Therefore here also the middle or weak correlation between fertility and vital index can be seen.

IV. Conclusion

These are only explaining the statistical correlation between social mode of life and natural increase of population according to prefectures, and it goes without saying that many studies concerning these relations will have been accomplished after this. The cities have hitherto grown up and they have many dwellers and industry has

grown

grown there; so in those districts, being highly civilized and where dwellers have more income, while the fertility being less, the fact of that natural increase of population is that the more rapidly industrialization progresses and inhabitants concentrate into cities, the less increase rate of whole population will become.

X = Standardized Birth Rate

	r			
(1) Sum of P-Y	1935	1930	1925	1920
(1) Rate of Urban Population				
(a) General	-0.686	-0.671	-0.647	-0.495
(b) City-population more than 50,000	-0.650	-0.640	-0.637	-0.503
(c) City-population more than 100,000	-0.643	-0.746	-0.705	-0.625
(2) Rate of Agricultural Population				
(a) Agricultural Population	—	±0.719	—	±0.476
(b) Number of Farm-house	±0.689	±0.654	±0.646	±0.531
(3) Rate of Industrial Population				
(a) General	—	-0.618	—	0.346
(b) Number of Industrial Employees	-0.566	-0.376	-0.333	-0.258
(4) Out put per head	-0.641	-0.616	-0.373	-0.403
(5) Sum of Postal savings per head	-0.598	-0.579	-0.446	-0.396
(6) Rate of Payers of Income Tax	-0.828	-0.766	-0.652	-0.177
(7) Rate of Number of Household listening Radio	-0.620	—	—	—

X - Standardized Death Rate

Y	r			
	1935	1930	1925	1920
(1) Rate of Urban Population				
(a) General	-0.224	-0.147	±0.170	±0.413
(b) City-population more than 50,000	-0.186	-0.182	±0.131	±0.349
(c) City-population more than 100,000	-0.215	-0.054	±0.312	±0.650
(2) Rate of Agricultural Population				
(a) Agricultural Population	—	±0.101	—	-0.394
(b) Number of Farm-house	±0.112	±0.139	-0.096	-0.388
(3) Rate of Industrial Population				
(a) General	—	-0.127	—	±0.408
(b) Number of Industrial Employees	±0.156	-0.095	±0.058	±0.343
(4) Out put per head	-0.081	-0.062	±0.058	±0.447
(5) Sum of Postal savings per head	±0.022	-0.083	±0.099	±0.407
(6) Rate of Payers of Income Tax	-0.006	-0.130	-0.000	±0.334
(7) Rate of Number of Household listening Radio	±0.128	—	—	—

X = Standardized Vital Index

Y	1935	1930	r 1925	1920
(1) Rate of Urban Population				
(a) General	-0.450	-0.443	-0.545	-0.643
(b) City-population more than 50,000	-0.440	-0.434	-0.536	-0.597
(c) City-population more than 100,000	-0.441	-0.593	-0.705	-0.725
(2) Rate of Agricultural Population				
(a) Agricultural Population	—	±0.501	—	±0.650
(b) Number of Farm-house	±0.517	±0.440	±0.505	±0.652
(3) Rate of Industrial Population				
(a) General	—	-0.408	—	-0.516
(b) Number of Industrial Employees	-0.519	-0.221	-0.288	-0.391
(4) Out put per head	-0.570	-0.451	-0.311	-0.601
(5) Sum of Postal savings per head	-0.523	-0.422	-0.406	-0.599
(6) Rate of Payers of Income Tax	-0.680	-0.549	-0.460	-0.421
(7) Rate of Number of Household listening Radio	-0.448	—	—	—