

Research-Data
B. No. 14

An Observation on the Correlation between
Standardized Birth-, Death- and Natural
Increase Rate and Some Indices concerning
Characteristics of Cities, 1935.

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I. Purpose:

Chief characteristics of natural increase of population in cities is researched in a separate paper (No. 1), and our next problem is to clarify the causes of this natural increase. The first step is to find out the statistical relations between the indices concerning characteristics of cities and fertility.

II. Method:

The following points are considered as chief indices concerning characteristics of cities.

- (1) Population (Scales of cities considered from population.)
- (2) Density (Degree of city population density)
- (3) Industrial population rate (Degree of city industrialization)
- (4) Agricultural character)
- (5) Rate of the population born in other prefectures (Degree of city "colonization")

Those indices are shown in the supplement table.

Concerning indices (1)-(5) respectively, the correlation coefficients between Standardized Birth Rate and them, has been calculated.

But cities whose population is over 50,000 are picked up here, excepting cities in Hokkaido that have special characteristics as cities possessing a colonial character, and cities in Okinawa prefecture whose special nature is great.

III. Results:

The results are as following table

X-Standardized Birth-rate

V	r
Population	-0.156
Density	-0.247
Industrial Population rate	+0.021
Agricultural Population rate	+0.427
Rate of the population born in other prefectures.	-0.433

Seeing the table, the correlation, though of a low degree, can be found concerning the agricultural population rate and the rate of the population born in other prefectures.

IV. Conclusions:

Generally the fertility which decides the natural increase of city population shows the low tendency comparatively in cities of large population and high density. But, concerning individual towns, (1) population and (2) density, respectively, have no correlation between the fertility. Accordingly it is surmised that the causes which determine the fertility of cities are no so much formal, quantitative characteristics of cities, as qualitative differences of cities. As to (3), the correlation can not be found. But, as to (4) and (5), the correlation can be found. It is considered to suggest that this fact is due to the sociological nature of cities, or to the "gemeinschaftlich" character of cities.

W 1) See "Standardized Birth-, Death- and Natural Increase Rate of 127 cities in 1935.

Supplement Table Indices concerning Characteristics
of Population Phenomena of Cities

Cities By Districts	Popula- tion (in thou- sand)	Den- sity (per sq.km)	Indust- rial Popula- tion	Agricul- tural Popula- tion rate	Rate of Popula- tion born in other prefectures
Total	6,925	181	178	477	17
Urban District	2,266	4,449	354	40	36
Rural District	4,659	124	154	602	11
Hokkaidō District					
Muroran	7	858	354	50	42
Kushiro	6	1,308	182	31	41
Asahigawa	9	4,143	251	52	37
Sapporo	20	8,132	302	29	36
Obihiro	4	704	-	-	-
Otaru	15	2,763	255	23	37
Hakodate	21	11,036	222	17	40
Tōkoku District					
Hechinohe	6	1,064	191	194	11
Yonezawa	3	2,730	426	98	9
Koriyama	5	2,756	401	130	17
Sanjo	3	2,754	-	-	-
Tsuruoka	4	2,194	328	96	6
Sendai	22	3,143	250	69	24
Ishinomaki	3	1,404	-	-	-
Yamagata	7	3,356	306	90	9
Hirosaki	5	3,609	279	64	13
Takada	3	3,955	262	57	9
Aomori	9	2,710	250	58	13
Wakamatsu	5	8,035	363	25	13
Niigata	13	6,670	328	17	8
Sakata	3	2,514	-	-	-
Nagaoka	6	3,909	322	66	6
Morioka	7	1,390	275	105	15
Fukushima	5	5,344	226	50	22
Akita	6	694	234	53	12

Cities By Districts	Popula- tion (in thou- sand)	Den- sity (per sq.km)	Indust- rial Popula- tion	Agricul- tural Popula- tion rate	Rate of Popula- tion born in other prefectures
Kanto District					
Hachioji	6	8,150	493	28	28
Kumagaya	4	1,868	-	-	-
Hiratsuka	4	3,528	-	-	-
Kawagoe	4	2,640	376	98	16
Maebashi	9	7,338	523	39	28
Takasaki	6	2,294	303	117	23
Ashikaga	5	5,353	544	41	24
Choshi	5	1,892	-	-	-
Kawaguchi	5	2,765	-	-	-
Kiryu	8	4,832	604	23	34
Kofu	8	9,996	410	32	13
Utsunomiya	9	5,211	235	60	18
Utsunomiya	4	2,379	-	-	-
Chiba	6	3,597	177	93	26
Kawasaki	15	3,501	508	74	56
Ichikawa	5	2,035	-	-	-
Yokosuka	18	5,338	198	7	55
Mito	6	4,990	260	31	19
Yokohama	70	5,193	326	50	45
Tokyo	588	10,667	321	5	54
Hokuriku District					
Takaoka	6	2,482	421	107	9
Toyama	8	4,363	272	48	10
Kanazawa	16	7,925	350	36	18
Fukui	8	15,456	388	12	13
Tokai District					
Shizuoka	20	1,359	382	110	12
Shimizu	6	2,465	275	19	11

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Nagano	8	2,490	258	193	15
Vokaichi	6	3,388	416	97	18
Matsuzaka	4	2,039	-	-	-
Numazu	5	3,983	304	91	19
Ueda	4	1,707	334	196	18
Toyohashi	14	1,214	517	64	25
Ichinomiya	5	6,431	511	63	29
Nagoya	108	7,221	426	50	30
Okazaki	8	1,630	428	158	12
Ogaki	5	3,119	479	52	26
Gifu	13	2,892	416	14	19
Hamamatsu	13	9,102	458	33	17
Ujiyamada	5	860	367	42	13
Tsu	7	4,794	382	58	13
Seto	5	1,961	584	47	18
Matsumoto	7	3,902	430	85	16
Kinki District					
Otsu	7	1,139	236	43	28
Kainan	3	2,173	-	-	-
Shingu	3	1,382	-	-	-
Nara	6	1,878	268	58	28
Akashi	14	5,474	341	30	20
Kyoto	108	3,744	399	13	42
Kishiwada	4	9,630	456	40	28
Himeji	9	2,550	353	39	19
Wakayama	18	5,512	404	37	16
Nichinomiya	9	3,316	284	22	42
Sakai	14	8,971	465	25	32
Amagasaki	7	9,885	453	27	50
Osaka	299	16,151	404	14	54
Kobe	91	11,119	342	12	44

Cities By Districts	Popula- tion (in thou- sand)	Den- sity (per sq.km)	Indust- rial Popula- tion	Agricul- tural Popula- tion rate	Rate of Popula- tion born in other prefectures
Chūgoku District					
Hagi	3	411	-	-	-
Tottori	5	1,127	278	90	15
Matsue	5	4,642	288	22	15
Tsuyama	4	906	334	226	8
Yonago	4	5,153	358	70	32
Yamaguchi	3	712	219	180	20
Kure	25	4,755	352	39	32
Fukuyama	6	1,860	367	54	17
Kurashiki	3	1,907	383	244	18
Ube	3	1,974	184	105	31
Hiroshima	31	4,438	310	69	22
Onomichi	3	8,207	223	48	13
Shimonoseki	13	4,834	192	30	39
Okayama	17	3,499	337	45	24
Shikoku District					
Yahatanama	3	788	-	-	-
Uwajima	5	947	386	118	11
Imabari	5	3,930	493	48	13
Matsuyama	6	4,648	323	79	11
Takamatsu	9	7,916	315	48	13
Tokushima	10	5,024	347	32	9
Marugame	3	2,675	271	141	12
Kochi	10	2,177	294	70	12
Kyūshū District					
Nogata	4	778	-	-	-
Nobeoka	6	1,268	-	-	-
Miyakonojo	4	1,933	355	190	27
Kagoshima	18	2,389	278	36	12

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Karatsu	3	1,033	-	-	-
Saga	5	5,517	303	39	18
Nakatsu	3	1,964	313	202	22
Nagasaki	21	5,151	330	72	23
Kurume	9	3,753	343	36	23
Saseho	17	3,411	222	55	51
Miyazaki	6	1,049	327	199	29
Omuda	10	5,734	305	38	36
Fukuoka	29	3,233	305	63	28
Shuri	2	7,880	408	5	2
Kumamoto	19	4,116	251	58	19
Oita	6	3,061	317	149	19
Yawata	21	5,467	590	25	46
Iizuka	4	2,452	-	-	-
Kokura	11	3,118	392	65	38
Wakamatsu	7	1,308	211	39	48
Beppu	6	617	237	78	34
Tobata	7	7,019	455	34	32
Koiji	12	2,914	242	46	52
Naha	7	13,761	310	79	6