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Urbanization in the United States and Japan

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Monographic Series

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INDUSTRIALIZATION and urbanization are among the principal revolutionary forces remaking and reshaping societies around the world. Traditional social orders must everywhere adapt or be submerged in the relentless march of the interrelated scientific, industrial, and urban revolutions now in full swing.[2] Although three-fourths of the world's population still live in pre-industrial, mainly rural states, industrialization and urbanization are proceeding at such rates that it is likely that city living will, within less than a century, become the dominant pattern for most people in most parts of the world.[3]

The identification and measurement of urbanization, and the analysis of its social impact, have long been a central concern of sociologists. Yet, as Sjoberg has noted, the achievements of sociologists in their analyses of the city as a crucial social fact have been disappointingly provincial and culture-bound.[4] "The world is rapidly urbanizing, and knowledge of this process and of the probable end result is vital to science and to society".

A question posed for scientists and statesmen is this: In what degree and in what respects is the social impact of urbanization modified by distinctive cultural and historical traditions in the subject society? Clearly no two urbanizing societies experience identical transformations. But it is equally clear that there are similarities in the process through which any two such societies pass. Park[5], Wirth[6], and Redfield[7] are among those social scientists who have emphasized similarities in the urbanization process. Their critics, in contrast, have emphasized the crucial nature of technology, cultural and historical tradition, and other unique situational variables making cross-cultural generalizations about the urbanization process difficult.[8]

The writer, continuing research along lines generally outlined in earlier publications, proposes a modest empirical exploration of some of the social correlates of urbanization utilizing selected comparative data on the United States and Japan.[9]

The United States and Japan are selected as appropriate cases in probing the relative universalism or particularism of urbanization in its societal impact for several reasons. First, each of these two was the earliest major industrialized and urbanized nation in its continent. Second, each in comparison with the other represents a completely distinct and contrasting cultural and historical tradition prior to industrialization and urbanization. Third, the resource and population density circumstances of the two countries are and have been sharply different. Fourth, each country has comparatively complete statistical and census records covering a wide range of social and economic characteristics reported not only for the nation as a whole, but also for its major administrative subdivisions. Fifth, each country, although highly industrialized and urbanized as a whole, nevertheless displays considerable variation in the degree of urbanization of its several states or prefectures.

Specifically, it is proposed to utilize correlation analysis to explore the degree and pattern of relationship between urbanization and a series of sociologically relevant measures *circa* 1950 for the 49 states of the United States (including the District of Columbia) and the 46 prefectures of Japan. Such measures will be utilized as are available both in U.S. and Japanese statistical reports.

Measure of Urbanization

Traditionally the Japanese have defined as urban that population reported as living in *shi*, officially recognized cities of 30,000 or more population. Recent research conducted by International Urban Research at the University of California has indicated that in international studies: "If a cutting point is desired, it seems better to take 10,000 as the floor of the urban class than anything smaller".[10] In measuring urbanization comparatively in the U.S. and Japan, the decision was reached in the present study to conform to Japanese standards, and to measure urbanization in states and prefectures by use

of the percentage of population living in cities of 30,000 or more population.[11]

In 1950, 49.7 percent of the population of the United States was reported to be living in cities of 30,000 or more; while 37.5 percent of Japan's population was reported to be resident in cities of 30,000 or more. Table I indicates not only greater degree of urbanization in the 1950 United States but also greater extremes and greater variability among political subdivisions than in 1950 Japan.[12]

TABLE I

Percentage of Population Living in Cities of 30,000 or more, 49 States of the United States and 46 Prefectures of Japan, 1950

State in the United States	*Percentage*	*Prefecture in Japan*	*Percentage*
District of Columbia	100.0	Tokyo	89.1
Rhode Island	80.8	Osaka	78.4
New York	78.9	Kanagawa	75.0
New Jersey	78.4	Kyoto	69.4
Massachusetts	76.3	Hyogo	51.2
California	70.5	Yamaguchi	49.6
Michigan	69.9	Aichi	49.0
Illinois	66.0	Fukuoka	45.1
Connecticut	64.1	Ishikawa	37.1
Maryland	63.7	Nagasaki	36.4
Ohio	58.2	Hokkaido	35.5
Pennsylvania	55.8	Shizuoka	34.1
Delaware	54.2	Mie	32.4
Missouri	49.4	Miyazaki	32.1
Washington	46.7	Hiroshima	31.6
Colorado	46.5	Wakayama	30.3
Florida	45.2	Toyama	29.4
Indiana	43.2	Oita	28.5
Texas	41.3	Ehime	27.9
Utah	41.3	Miyagi	26.5
Louisiana	40.9	Chiba	26.2
Wisconsin	40.5	Kumamoto	25.6
Georgia	37.6	Saitama	24.3
Minnesota	36.6	Gumma	24.0
Oregon	36.1	Gifu	23.8
Arizona	34.9	Fukui	22.9
Virginia	34.4	Kagoshima	22.3
Tennessee	31.4	Aomori	21.5
Alabama	29.1	Kagawa	21.5
Nebraska	27.8	Yamagata	21.3
Iowa	27.5	Shiga	21.0
Oklahoma	26.4	Okayama	20.8
Kansas	26.0	Tottori	20.0
Kentucky	24.9	Tochigi	18.7
New Hampshire	22.5	Tokushima	18.7
Maine	20.3	Kochi	18.5
Nevada	20.3	Niigata	18.0
New Mexico	18.0	Shimane	17.5
Montana	17.6	Iwate	16.9
West Virginia	16.2	Nagano	16.2
South Carolina	16.0	Yamanashi	15.0
North Carolina	15.7	Fukushima	14.5
Arkansas	12.8	Nara	14.3
Wyoming	11.0	Akita	13.4
Vermont	8.8	Saga	12.6
South Dakota	8.2	Ibaraki	10.6
Mississippi	8.2		
North Dakota	6.2		
Idaho	5.9		
ALL UNITED STATES	49.7	ALL JAPAN	37.5

Source: Calculated from 1950 United States and Japan census reports.

Relationship between Urbanization and Farm Residence

In 1950, of the 150.7 million population of the United States, 24.3 million (or 16.1 percent) were reported to be farm residents. Of the 83.2 million population of 1950 Japan, 37.8 million (or 45.5 percent) were reported to be members of farm households.[13] In both the United States and Japan the farm population has continued to decline in absolute numbers since 1950, while the steady population increase in both countries has not only been nonrural, but it has been *overwhelmingly* in metropolitan areas of 50,000 or more population.

Attention is called to several interesting aspects of urban-rural relationships. First, the high correlations for both countries provide a validation of the cross-cultural appropriateness of the urbanization measure employed. Second, there is no constant relationship between percentage of population in cities of 30,000 or more and percentage of population on farms in the two countries. For example, low urbanization prefectures in Japan average 60 percent farm population; low urbanization states in the U.S. average less than 30 percent farm population. Third, there is a high U.S.-Japan contrast with regard to farm population in low urbanization areas; less contrast in high urbanization areas. The data emphasize the distinctively high proportion of farm population which has characterized the course of industrialization and urbanization in Japan, with its problems of heavy population pressure on resources.[14]

Relation to Urbanization of Home Tenure and Household Size

The urban household has commonly been characterized as residentially mobile and small in size; the folk or peasant or rural household as rooted in a stable community and large in size. Consistent with such generalizations would be strong negative correlations between urbanization on the one hand and home ownership and household size on the other.

Although correlations between urbanization and home ownership in both countries confirm expectations, there are noteworthy contrasts between the amount and pattern of the relationships. These U.S.-Japan differences may in part be a function of the vigorous land-reform program carried on in Japan during the Allied Occupation, while no such land-reform program aimed at reducing rural tenancy was carried on in the United States.

Also confirmed in both countries is the expected negative relationship between size of household and urbanization. However, we should note the great difference between the United States and Japan in mean household size in every urbanization category. Clearly degree of urbanization is less predictive of household size than is national identity. We should also note the much greater variability in household size by degree of urbanization in Japan. One might speculate that 1950 U.S.-Japan contrasts in household size may be in part a legacy of World War II's destructive onslaught against Japanese cities and the doubling up forced on many rural households as urban refugees sought shelter in the undamaged homes of their relatives.[15] Delays in urban reconstruction and food shortages in the immediate post-war period may have prolonged rural residence of former urban dwellers. Alternatively, the low U.S. urban-rural variability in household size may be associated with increasing spread to rural states of urban family patterns.

Relation to Urbanization of Sex and Age

Cities have traditionally been viewed as the beneficiaries of the selective migration of population in the active, producing years of life; while rural areas, it has been commonly affirmed, have been disproportionately burdened with the very young and the very old. Cities in the United States, moreover, are characterized in most instances by a disproportionately large female population; rural areas by more males than females.

There is a remarkable contrast between the United States and Japan in the relationship between urbanization and the sex ratio. Low urbanization prefectures in Japan are dominantly female, with 94 males per 100 females; low urbanization states in the U.S. are dominantly male, with 103 males per 100 females. Contrariwise, high urbanization prefectures in Japan are balanced at a sex ratio of 100; high urbanization states in the U.S. are dominantly female, with 95 males per 100 females. Explanations of this opposite relationship between urbanization and sex ratio in the two countries have been made both in terms of the more recent industrialization and urbanization of Japan and in terms of contrasts in the role and status of women traditional in the two countries.

Evidence strongly confirms the positive relationship both in the United States and Japan between

urbanization and higher proportions of the population in the economically most active years of life. The consistently higher proportions of employable age population in the U.S. appear to be directly related to lower proportions of children.

We can also confirm the expected negative relationship both in the United States and Japan between urbanization and presence of children under 15. The more marked urban-rural contrast in the United States with regard to proportion of children in the population seems to result from persistence in Japanese urban areas of family patterns brought from rural areas.

In contrast to other urbanization-age relationships, the relationships between urbanization and proportion age 65 and over in the population display divergent patterns in the U.S. and Japan. Japanese data support weakly the hypothesis of negative relationship of cities to the presence of aged in the population; U.S. data on the other hand indicate a low positive relationship.[16] This contrast between Japan and the United States may be related to the maturity of industrialization and urbanization in the two countries. Earlier in the industrialization-urbanization process, urbanized areas are characterized by large proportions of young adult immigrants from rural areas. Later in the process, cities must draw increasing proportions of their population from natural increase, as rural populations continue to decrease both numerically and proportionally as a source for rural-to-urban migration.

Relation to Urbanization of Fertility and Mortality

The relationship of urbanization as a depressant of fertility has been one of the most universal of cross-culturally observed phenomena. The data confirms the expected relationship with remarkably similar crude birth rates in the United States and Japan for all levels of urbanization. It is of interest that urbanization is more predictive of birth rate than is nationality in the case of these 49 states and 46 prefectures.

In contrast, mortality shows diametrically opposite relationships to urbanization in the United States and Japan. The reversal of pattern seems to be primarily a function of the similar reversal between urbanization and proportion of the population age 65 and over. In the United States urbanization is associated both with larger proportions of aged population and higher death rates. In Japan urbanization is associated with smaller proportions of aged population and lower crude death rates.

The U.S.-Japan contrast in mortality-urbanization relationship is primarily due to contrast in the aged-urbanization relationship. Consistent and expected negative correlations between urbanization and infant mortality are shown for both the United States and Japan. This negative relationship of urbanization to infant mortality is consistent with the traditional role of the city as the focal point in the diffusion of such components of modernization as: (1) sanitary knowledge and practice; (2) knowledge of diet and hygiene; (3) modern medical information; and (4) modern medical care facilities.

Urbanization and Health Facilities

Among crucial health personnel and facilities usually associated with urbanization have been (1) physicians, (2) dentists, and (3) hospitals.

There is a high negative correlation both in the United States and Japan between urbanization and population per physician. Overall, although the U.S. is in somewhat more favorable circumstances than Japan in physician availability, it is remarkable evidence of the crucial significance of urbanization that in both countries high urbanization areas have nearly twice the physicians in relation to population that low urbanization areas have. Low urbanization states in the United States are much more similar to low urbanization prefectures in Japan than to high urbanization states in the United States with regard to physician availability. Equally, high urbanization prefectures in Japan are much more similar to high urbanization states in the United States than to low urbanization prefectures in Japan with regard to physician availability. Again, as in a previous instance, urbanization is more predictive of physician availability than is nationality in the case of these 49 states and 46 prefectures.

A similar pattern to that reported above exists with reference to population per dentist. High urbanization states and prefectures average 1,500 to 2,000 population per dentist, low urbanization states and prefectures average 3,250 to 3,750 population per dentist. Again urban-rural contrasts are much more important than contrasts between the United States and Japan in the availability of dentists. Again urbanization is more predictive of dentist availability than is nationality in the case of these 49 states and 46 prefectures.

Practically identical correlations exist between urbanization and population per hospital bed in the United States and Japan. In this case, however, contrasts in hospital bed availability between the United States and Japan are much greater than in the case of physician and dentist availability. Although rural-urban contrasts are very great in Japan, contrasts in the United States between urban and rural states are much less marked with reference to population per hospital bed. Apparently U.S. programs have been more successful in reducing disparities between states in terms of hospital bed capacities than they have been in reducing the great disparities in physician and dentist availability.

Urbanization and High School Graduates

Consistent with the view of the city as the focal point in innovation would be a strong positive relationship between urbanization and rate of high school graduation. Japanese data weakly confirm the expected relationship between urbanization and the ratio of high school graduates in 1952 of high school age population. United States data evidence no relationship of a consistent kind between urbanization and high school graduation rates in 1952. Apparently the universality of the public high school in the United States has been coupled with universality of high percentage aspiration to high school graduation in states of all degrees of urbanization. It is of interest that in the highest urbanization areas a higher high school graduation rate is reported in Japan than in the United States: United States 89.4 graduates in 1952 per 1,000 population age 15 to 19; Japan 107.1 graduates in 1952 per 1,000 population age 15 to 19.

Urbanization and Resident Aliens

Students of urban life have typically emphasized social and cultural heterogeneity as characteristic city features in contrast to the social and cultural homogeneity of rural regions. Consistent with such formulations is the expectation of a strong positive correlation between urbanization and the presence of aliens in a population. Both Japanese and United States data do strongly confirm this expectation. Mexican nationals, in the case of U.S. data, and Korean nationals, in the case of Japanese data, account for minor reversals in the direction of the two curves.

Relation to Urbanization of Divorce and Suicide

Urbanization, it has been often argued, is directly associated with social and personal disorganization. City life, according to frequent analyses, is characterized by heterogeneity and conflict of values, instrumental manipulation and exploitation of other persons, anonymity and impersonality of large scale organization, high rate of socio-cultural change, intensified secularity, heightened inter-group conflict, and heavy incidence of personal breakdown. Consistent with this body of generalizations would seem to be a strong positive correlation between urbanization on the one hand and divorce and suicide on the other.

In terms of rank correlation runs between urbanization and divorces granted per 1,000 marriages performed in the United States and Japan, while the Japanese data confirm the expected positive relationship between urbanization and divorce, the U.S. data provide no evidence of a consistent pattern of relationship of any kind.

Interestingly, analysis of trend data for the United States and Japan over a period of years leads to opposite conclusions. Paul H. Jacobson reports that between 1890 and 1948, a period of massive urbanization in the United States, annual marital dissolutions by divorce or annulment increased from 3 to 12 per 1,000 married couples, a fourfold increase.[17] Takeyoshi Kawashima and Kurt Steiner report that in Japan between 1883 and 1943 the divorce rate per 1,000 population decreased from 3.39 to 0.66 per annum; and between 1947 and 1957 decreased from 1.02 to 0.79—a general pattern of divorce rate decline during a period of large-scale industrialization and urbanization in Japan. These writers interpret their surprising findings as follows:

> It may be expected that a weakening of tradition occurs first in urban areas. If divorce rates were simply a function of industrialization and urbanization, we could expect that these areas first show a declining divorce rate. Then as the effects of industrialization spread to the countryside, the divorce rates there begin to decrease while, under the continued impact of the factors which lead to a high divorce rate in industrialized countries in general, divorce rates in the urban areas begin to rise. This expectation would of course be contrary to the . . . hypothesis that industrialization boosts divorce rates first in urban areas, but on the basis of our evidence we believe it to be the more useful hypothesis for the investigation of divorce rate trends in urban and rural Japan.[18]

The results of rank correlation runs between urbanization and suicide rates in the United States

and Japan show that in both countries the correlations are so low as to lack statistical significance. There is no evidence for either United States or Japanese data of any consistent pattern of relationship between suicide and urbanization.

Neither divorce nor suicide appears to conform in these analyses to widely held urbanization-disorganization paradigms. Perhaps, however, we err in assuming that divorce and suicide are necessarily symptomatic of social disorganization. Rather, both divorce and suicide may be under specified cultural contexts conforming, conventional behavior expected in a social system.

As a matter of fact, both suicide and divorce appear to be integral features of traditional Japanese culture. The kind of suicide of the 47 *ronin*, lauded in Japanese schoolbooks, is the behavior of brave men conforming to the highest traditions of their society. And divorce, as already noted, was not only commonly permitted in nineteenth century Japan, but was expected of conventional, conforming Japanese under given traditional circumstances.

There is evidence that traditional forms both of suicide and of divorce declined during most of the period of rapid urbanization and industrialization in Japan. Apparently the city served as a spearhead of innovation in disrupting traditional patterns of suicide and divorce. Subsequently new forms of divorce and suicide have developed under the impact of urbanization. One might hypothesize that our statistics confuse two different kinds of phenomena: forms of traditional divorce and traditional suicide which appear to be more frequent in Japan's rural areas, and forms of divorce and suicide symptomatic of personal and social disorganization which appear to be more frequent in fast-developing urban areas.

The lack of relationship to urbanization of both divorce and suicide in the U.S. of 1950 may in part result from the fact that the Roman Catholic Church, with explicit norms and strong sanctions against divorce and suicide, is most strongly represented in the highly urbanized states.[19]

Summary and Conclusions

This paper began with a crucial question posed both to scientists and statesmen by rapid worldwide urbanization: In what degree and in what respects is the social impact of urbanization modified by distinctive cultural and historical traditions in the subject society? The writer proposed to use the United States and Japan as critical cases in probing the relative universalism or particularism of urbanization in its societal impact.

Specifically it was proposed to utilize correlation analysis in exploring the degree and pattern of relationship between urbanization and a series of sociologically relevant measures *circa* 1950 for the 49 states of the United States (including the District of Columbia) and the 46 prefectures of Japan. In measuring urbanization comparatively in the U.S. and Japan, the decision was reached to conform to Japanese standards, and to measure urbanization in states and prefectures by use of the percentage of population living in cities of 30,000 or more population.

Table II summarizes Spearman rank correlation

TABLE II

Relationship between Urbanization and 17 Specified Variables, States of the United States and Prefectures of Japan, circa 1950

Variable Correlated With Urbanization	*Spearman Rank Correlation*	
	United States	*Japan*
Percent of population age 15 to 64	*Plus .791	*Plus .478
Percent of alien population	*Plus .497	*Plus .533
Deaths per annum per 1,000 population	*Plus .450	*Minus .453
Percent of population age 65 and over	Plus .204	*Minus .265
Suicide rate per 100,000 population per annum	Plus .064	Plus .153
Divorces granted per 1,000 marriages performed	Plus .023	*Plus .355
High school graduate rate per 1,000 population age 15-19 per annum	Minus .058	Plus .219
Percent of dwelling units owner occupied	Minus .231	*Minus .529
Infant deaths per 1,000 live births per annum	*Minus .296	*Minus .351
Mean size of household	*Minus .380	*Minus .495
Males per 100 females	*Minus .463	*Plus .314
Births per annum per 1,000 population	*Minus .556	*Minus .320
Population per hospital bed	*Minus .584	*Minus .566
Population per dentist	*Minus .590	*Minus .484
Percent of population age 14 and less	*Minus .726	*Minus .361
Population per physician	*Minus .774	*Minus .546
Percent of population living on farms	*Minus .805	*Minus .751

*Statistically significant Spearman rank correlation. Probability of the null hypothesis is 0.05 or less (that is, the probability that the apparent relationship may be fortuitous is 1 out of 20 or less).

coefficients for relationships between urbanization and 17 specified variables, separately calculated for the United States and Japan, using states and prefectures, respectively, as reporting units.

In ten cases out of 17 the correlations of this study proved statistically significant and displayed similar directions of relationship for both the United States and Japan. The universalistic character of urbanization in its social impact is supported by the fact that in both Japan and the United States urbanization proved to be consistently and significantly associated with: much greater availability of physicians, dentists, and hospital beds; lower infant mortality rates; larger proportions of the population in the economically active 15 to 64 age brackets; fewer children under age 15; lower birth rates; smaller household size; and, of course, fewer farm households.

In two cases out of 17 the correlations of this study proved to be statistically significant, but displayed diametrically opposed patterns of relationship for the United States and Japan: death rate and sex ratio. These apparent exceptions to the universalistic character of urbanization may be related to the possibility that the United States represents a more mature stage than Japan in the industrialization-urbanization process. It appears that an earlier phase in the rapid growth of industrializing cities is typically associated with heavy net immigration from rural areas of a young adult, dominantly male, population; that in a later phase, as rural population declines both relatively and absolutely, city growth becomes increasingly a function of the urban natural increase permitted by increasing life span—but with the concurrently rising death rates and increasing femaleness of an older population.

In five cases out of the 17 the correlations for one country or both countries fell below the level of statistical significance already specified. The case for the uniform impact of urbanization is not consistently supported by data from Japan and the United States relating to: (1) suicide; (2) divorce; (3) home ownership; (4) high school graduates; and (5) population age 65 and over. The peculiar national factors affecting suicide and divorce both in Japan and the United States have already been noted. An explanation of inconsistencies between U.S. and Japanese data with reference to the relationship of aged population to urbanization was suggested in the previous paragraph. Home ownership appears to be rooted in institutional arrangements not necessarily correlated with urbanization. And rural youth in the United States no longer appear to be at as serious a disadvantage as formerly when compared to city youth with regard to availability of some sort of high school education.

Although these analyses have confirmed familiar hypotheses concerning the continuing social impact of urbanization in the United States and Japan, they have also indicated significant variations in the pattern of impact and adaptation. I would echo the view of Joseph A. Kahl expressed in his conclusion to a review of comparative researches on social concomitants of industrialization and urbanization in diverse regions of the world:

> I think the major research task in the years ahead is the design of comparative studies which will help us determine in a systematic way how the universal aspects of industrial civilization combine with local cultural traditions to create living societies. In other words, to what degree will all nations of the future be alike under the dictates of industrial life, and to what degree can they retain features of uniqueness? It is perfectly obvious that pre-industrial cultures must undergo drastic reorganization under the impact of industrialization and urbanization; it is impossible to adopt a new economy and retain an old society. But perhaps intellectual understanding of the minimum social prerequisites of an efficient industrial order will permit a planned readjustment which can keep strong those aspects of the various traditional orders which are compatible with the realities of the new one. To state a personal value of my own: I hope the intellectuals will join in leading such a readjustment, for I would not enjoy a world without diversity. Unfortunately, too many intellectuals, especially in the humanities, fight the new order blindly and without understanding, and thus lose the power to influence constructively the evolution of the emerging society.[20]

TABLE III

Relationship between Urbanization and 17 Specified Variables, United States and Japan, circa 1950
(with 49 states and 46 prefectures as the reporting units)

Variable and Country	*Means for Political Units Classified by Percent of Population in Cities of 30,000 and over*				*Rank Correlation with Urbanization*
	Under 25.0	25.0-49.9	50.0-74.9	75.0 *and over*	
Number of states or prefectures					
United States	16	20	8	5	
Japan	24	17	2	3	
Percent of population living on farms					
United States	27.4	20.9	8.2	2.0	Minus .805
Japan	59.3	50.0	29.9	13.8	Minus .751
Percent of dwelling units owner occupied					
United States	57.0	29.2	57.4	43.3	Minus .231
Japan	72.4	66.0	48.1	45.9	Minus .529
Mean size of household					
United States	3.55	3.38	3.34	3.32	Minus .380
Japan	5.24	5.02	4.47	4.44	Minus .495
Males per 100 *females*					
United States	103.2	100.0	98.6	94.6	Minus .463
Japan	94.8	95.6	95.5	99.9	Plus .314
Percent of population age 15 *to* 64					
United States	61.9	63.3	66.4	68.9	Plus .791
Japan	58.5	58.7	62.1	63.8	Plus .478
Percent of population age 14 and less					
United States	30.4	28.5	25.4	22.6	Minus .726
Japan	36.1	35.9	32.9	32.7	Minus .361
Percent of population age 65 *and over*					
United States	7.7	8.2	8.2	8.5	Plus .204
Japan	5.4	5.4	5.0	3.6	Minus .265
Births per annum per 1,000 *population*					
United States	27.0	25.7	22.9	21.4	Minus .556
Japan	26.0	25.9	21.2	21.7	Minus .320
Deaths per annum per 1,000 *population*					
United States	9.2	9.3	10.0	10.5	Plus .450
Japan	10.8	10.4	9.0	7.8	Minus .453
Infant deaths per 1,000 *live births per annum*					
United States	32.6	30.6	26.4	26.3	Minus .296
Japan	63.1	59.6	51.4	44.7	Minus .351
Population per physician					
United States	1,157	940	718	588	Minus .774
Japan	1,264	1,072	787	708	Minus .546
Population per dentist					
United States	3,255	2,560	1,999	1,583	Minus .590
Japan	3,745	3,356	2,545	1,996	Minus .484
Population per hospital bed					
United States	122	121	95	75	Minus .584
Japan	298	254	204	165	Minus .566
High school graduate rate per 1,000 *population age* 15-19 *per annum*					
United States	98.8	104.7	104.6	89.4	Minus .058
Japan	62.2	63.1	76.6	107.1	Plus .219
Percent of population alien					
United States	1.2	1.0	2.3	3.0	Plus .497
Japan	.4	.6	2.0	1.6	Plus .533
Divorces granted per 1,000 *marriages performed*					
United States	191.9	308.9	239.5	128.8	Plus .023
Japan	116.8	126.9	131.5	131.1	Plus .355
Suicide rate per 100,000 *population per annum*					
United States	12.6	11.4	12.3	10.7	Plus .064
Japan	18.5	16.9	23.0	22.3	Plus .153

Sources of data: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, various years; Office of the Prime Minister, Bureau of Statistics, *Japan Statistical Yearbook*, various years.

At this point I should like to examine further the relation of industrialization to social change in Japan and focus more closely rather than use data comparatively. In the first section of this paper comparisons were made between the United States and Japan with regard to the social impact of urbanization as measured by a series of sociologically relevant measures *circa* 1950 for the forty-eight States of the Union (and the District of Columbia) and for the forty-six prefectures of Japan. In ten cases out of seventeen the correlations proved to be statistically significant and displayed similar directions of relationship for both the United States and Japan. In two cases out of seventeen the correlations of the study proved to be statistically significant but displayed diametrically opposed patterns of relationship for the United States and Japan: death rate and sex ratio. In five cases out of seventeen the correlations for one country or both countries lacked statistical significance.

Japanese history since 1600 provides a notable laboratory in planned social change. Urbanization emerges as a confounding factor in the remarkable national planning efforts of the Tokugawa, Meiji, and MacArthur regimes. Although confirmation is provided for the view of the city as the focal point in innovation, secularization and individuation, it is also clear that in Japan, urbanization and industrialization have acquired distinctive qualities in their social impact.[21]

A serious limitation of the Japanese situation in 1950 for comparative analysis, however, was the fact that the Allied occupation had not yet been ended, and the massive destruction and dislocation of World War II still distorted industrial and urban development. It is therefore of special interest for demographers and students of comparative urbanization to give careful attention to the recently reported findings of the 1960 Population Census of Japan.

At the outset one is dismayed to find that the official Japanese definition of "urban" has been so subject to administrative changes between 1950, 1955 and 1960, that comparisons between periods are likely to be misleading. The Bureau of Statistics notes: "Owing to the merger of towns and villages as well as the birth of new cities under the Town and Village Merger Acceleration Law, the figures for 1955 are considerably different from the previous ones".[22] The private land area of urban Japan, as reported by the Bureau, increased from 1,224,787 hectares in 1952 to 4,078,851 hectares in 1960.[23] Apparently smaller communities have by political consolidations managed to reach the 30,000 population ordinarily required for official urban *shi* status, despite the lack of any single, large, densely populated settlement.

Fortunately the 1960 Census does provide a new urban measure: "The *densely inhabited districts* consist of the contiguous enumeration districts with high population density (4,000 inhabitants or more per square-kilometer) delineated within the boundary of city, town or village, constituting an agglomeration of 5,000 or more inhabitants as of October 1, 1959".[24] Of the 93,410,501 population of 1960 Japan, 59,333,171, or 63.5 percent, were reported to be urban, and 40,829,991, or 43.7 percent, were reported to be residents of densely inhabited districts.

In Table IV, data from the 1960 Census are summarized by prefectures to permit a comparison of five measures of urbanization and industrialization. Careful inspection of this table indicates to the writer that: (1) "percentage of population resident in densely inhabited districts" is the single most dependable measure of urbanization available; (2) industrialization is in practice so completely intertwined with urbanization in Japan that separate analysis for the purposes of this paper seems impracticable.

It is therefore proposed to utilize correlation analysis in explaining the degree and pattern of relationship between dense urban settlement and a series of twenty-eight sociologically relevant measures *circa* 1960 for the 46 prefectures of Japan. Correlations will be run with: other urbanization measures; measures of industrialization and employment; vital rates of birth, death, and infant mortality; voting patterns; Christianity; physician and dentist availability; suicide and divorce; household size; population increase or decrease; age distribution of population; per capita newspaper circulation and percentage of housing in good repair.

Two questions are particularly to be explored in this analysis. First, is the influence of urbanization as a significant variable disappearing under the homogenizing influence of mass society, mass media, and mass economy in such an urban-industrial complex as Japan? Second, is the social impact of urbanization in Japan in any remaining degree distinctively Japanese?

I should like to anticipate a frequent complaint against the ecological analysis of human behavior. Most prefectures in Japan represent social contin-

TABLE IV

Selected Measures of Urbanization and Industrialization, 46 Prefectures of Japan, 1960

Name of Prefecture	*Percent of Population*			*Percent of Employed Persons*	
	In Densely Inhabited Districts	*In "Cities" of 30,000 or more*	*Who are Members of Farm Households*	*In Agriculture*	*In Manufacturing*
Tokyo	89.7	94.2	3.3	1.9	35.8
Osaka	79.7	93.7	8.4	4.2	42.0
Kanagawa	68.7	90.9	13.4	9.4	33.9
Kyoto	65.2	81.4	21.7	17.2	30.1
Hyogo	56.4	76.5	27.1	19.0	30.4
Aichi	51.2	76.2	26.8	17.8	38.3
Fukuoka	45.9	64.7	24.4	20.6	17.3
Hiroshima	38.8	55.6	41.3	30.5	22.5
Hokkaido	37.5	51.4	28.5	28.0	10.4
Shizuoka	33.4	63.1	39.7	27.7	26.7
Saitama	32.6	61.9	42.6	35.3	26.3
Yamaguchi	32.0	67.3	39.5	31.3	15.7
Ishikawa	30.7	61.3	47.0	34.6	22.8
Wakayama	29.7	51.6	39.4	30.2	20.1
Miyagi	28.8	45.1	48.9	41.0	9.3
Fukui	28.5	57.4	48.8	38.2	22.3
Toyama	28.3	58.4	44.8	38.6	20.6
Nagasaki	28.2	51.1	39.1	33.0	9.4
Ehime	27.5	54.4	49.6	38.0	16.2
Chiba	26.7	55.6	46.4	43.7	15.1
Aomori	26.4	51.7	55.6	51.2	5.9
Niigata	26.3	53.7	53.3	47.4	14.8
Mie	26.2	59.4	47.4	35.3	19.6
Gumma	25.4	54.4	49.6	41.8	21.7
Gifu	25.0	50.5	47.9	32.1	26.6
Kumamoto	23.8	46.5	52.7	46.2	7.8
Oita	22.8	49.6	57.4	44.1	9.1
Miyazaki	22.4	52.7	54.7	49.1	9.5
Tochigi	22.3	52.3	51.6	44.8	18.5
Kagawa	22.2	47.3	52.1	39.3	16.5
Nara	22.1	54.3	45.2	28.3	21.7
Yamagata	22.1	58.4	56.1	49.7	10.7
Tottori	21.9	47.4	58.4	44.3	9.8
Kochi	21.6	54.1	49.7	42.4	9.3
Yamanashi	20.5	46.4	57.3	40.8	18.6
Okayama	20.1	55.0	53.9	41.5	19.1
Fukushima	20.0	41.4	54.5	48.8	10.2
Nagano	19.4	47.2	60.1	46.6	15.9
Iwate	19.2	48.1	58.2	50.9	7.3
Shiga	18.1	39.3	58.5	42.6	19.5
Kagoshima	17.8	44.1	65.9	57.3	6.6
Akita	17.7	40.3	57.4	51.4	7.7
Ibaraki	17.7	43.1	60.2	54.4	11.6
Tokushima	17.6	39.1	53.3	41.9	14.5
Saga	16.3	47.9	49.9	40.2	10.3
Shimane	14.3	47.8	62.8	48.2	9.7
ALL JAPAN	41.4	63.5	37.0	30.2	21.7

Source: Calculated from figures presented in *Japan Statistical Yearbook* 1961.

uities extending centuries back into Tokugawa Japan, and even earlier, when *they* were the significant units of government and social structure. We are dealing here with sociological realities, not cartographic artifacts.

Table V summarizes the principal findings and

TABLE V

Relationship between Dense Urban Population and 28 Specified Variables, 46 Prefectures of Japan, circa 1960

Prefectural Means by Dense Urban Population Classes

Variable Analyzed	*Under* 25.0 *Percent Dense Urban*	25.0-49.9 *Percent Dense Urban*	50.0-74.9 *Percent Dense Urban*	75.0 *and over Percent Dense Urban*	*Correlation With Percent of Population Dense Urban*
Number of prefectures in each dense urban population class:	21	19	4	2	—
Percent of 1960 prefectural population in densely inhabited districts:	20.0	30.4	60.4	84.7	—
Percent of 1960 prefectural population in "cities" of 30,000 or more:	47.7	56.2	81.3	94.0	*Plus .932
Percent of 1960 employed persons in finance, insurance, and real estate:	1.1	1.5	2.2	3.6	*Plus .919
Percent of population increase between 1955 and 1960:	—2.0	1.6	10.1	19.9	*Plus .900
Percent of 1960 employed persons in wholesale and retail trade:	12.9	14.1	17.4	23.2	*Plus .878
Percent of 1960 population age 15 to 44:	43.4	45.2	50.6	55.7	*Plus .873
Percent of 1960 employed persons in manufacturing:	12.6	18.1	33.2	38.9	*Plus .780
Number of dentists in 1959 per 10,000 population:	2.9	3.0	3.8	5.4	*Plus .739
Percent of 1960 Communist vote cast for House of Representatives:	1.8	2.0	4.6	7.9	*Plus .701
Number of physicians in 1959 per 10,000 population:	9.3	10.1	12.4	14.9	*Plus .672
1961 daily newspaper circulation per 100 population:	22.4	23.7	40.1	41.1	*Plus .658
Percent of 1958 occupied dwelling units not needing repairs:	45.1	49.0	56.0	64.7	*Plus .609
Percent of population increase between 1940 and 1960:	25.0	30.1	31.7	23.3	*Plus .445
Percent of 1960 Democratic-Socialist vote cast for House of Representatives:	7.9	7.3	13.3	14.1	*Plus .404
Suicide rate per 10,000 population in 1960:	2.0	2.1	2.4	2.4	*Plus .376
Percent of 1960 prefectural population professing Christianity:	0.4	0.6	0.9	1.1	*Plus .295
Percent of 1960 Socialist vote cast for House of Representatives:	25.3	25.7	27.3	31.3	Plus .255
Number of divorces granted per 100 marriages performed in 1960:	8.2	8.7	7.3	6.9	Minus .142
Percent for independent candidates of 1960 vote cast for House of Representatives:	4.6	3.8	1.4	1.1	Minus .215
Percent of 1960 population age 45 to 64:	17.8	17.2	16.9	15.4	*Minus .382
Mean number of persons per household in 1960:	4.77	4.69	4.36	4.10	*Minus .528
Percent of 1960 population age 65 and over:	6.9	6.3	5.9	4.0	*Minus .543
Birth rate per 1,000 population age 15 to 44 in 1960:	39.6	38.5	31.9	30.0	*Minus .593
Percent of 1960 Liberal-Democratic vote cast for House of Representatives:	61.6	61.2	53.3	45.6	*Minus .601
Infant mortality rate per 1,000 live births in 1960:	35.0	33.6	26.0	22.2	*Minus .634
Death rate per 1,000 population in 1960:	8.7	8.0	7.1	5.9	*Minus .641
Percent of 1960 population age 14 and less:	32.3	31.2	27.0	24.5	*Minus .680
Percent of 1960 employed persons in agriculture:	45.4	35.7	15.9	3.1	*Minus .906
Percent of 1960 population who are members of farm households:	55.7	43.9	22.3	5.9	*Minus .948

*Statistically significant correlation. Probability of the null hypothesis is 0.05 or less (that is, the probability that the apparent relationship occurred fortuitously is 1 out of 20 or less).

Source: Calculated from data in the *Japan Statistical Yearbook* 1961.

correlations are shown for the twenty-eight measures analyzed in relation to dense urban settlement. Imposition of calculated regression lines on the twenty-eight scatter diagrams has in each case indicated the appropriateness of straight-line correlation analysis.

The forty-six prefectures have also been grouped into four classes with reference to percent of population in dense urban settlements. Two prefectures report 75.0 percent or more of their population in dense urban settlements; four prefectures, 50.0 to 74.9 percent dense urban; nineteen prefectures, 25.0 to 49.9 percent dense urban; and twenty-one prefectures, less than 25.0 percent dense urban. Means for the twenty-nine statistical series of this study have been calculated for each of these four classes of prefectures and have been included in Table V. The highly interrelated character of urbanization and industrialization in Japan is underscored by the fact that correlations between dense urban settlement and four other measures of urbanization and industrialization are greater than .900: (1) percent of population members of farm households, minus .948; (2) percent of population in "cities" of 30,000 or more, plus .932; (3) percent of employed persons in finance, insurance, and real estate, plus .919; (4) percent of employed persons in agriculture, minus .906. It is of interest that employment in finance, insurance, and real estate is more closely associated with urbanization than employment in trade or manufacturing.

The phenomonal recent growth of metropolitan prefectures is underscored by the plus .900 correlation between dense urban settlement and percent of population growth between 1955 and 1960. The massive population redistribution now taking place in Japan is suggested by the average loss in five years of 2.0 percent in population in the twenty-one least urbanized prefectures; the average gain of 1.6 percent in the nineteen moderately urbanized prefectures; and the average gain of 10.1 percent and 19.9 percent in the two most highly urbanized classes of prefectures. In contrast, the wartime urban-industrial destruction and dislocation is reflected in the much lower correlation between dense urban settlement and population increase between 1940 and 1960.

Highly selective internal migration is reflected in the plus .873 correlation between dense urban settlement and percent of population age 15 to 44; and in the negative correlations between dense urban settlement and population younger than 15 or older than 44. Metropolitan Japan is heavily skewed toward a young and middle aged population, large proportions of them immigrants from rural prefectures. Rural Japan is over-represented in age categories under 15 and over 44.

Birth rates, death rates, and infant mortality rates are inversely related to dense urban settlement, with correlations of minus .593, minus .634, and minus .641, respectively. Dentist and physician availability are closely related to dense urban settlement, with correlations of plus .739 and plus .672, respectively. Highly urbanized prefectures in Japan are much healthier and much more adequately provided with medical facilities than less urbanized prefectures, although rural-urban contrasts in crude death rates are partially inflated by the presence in rural prefectures of disproportionately many of the very young and the very old—age categories most subject to death.

Voting in the 1960 elections for the national House of Representatives was significantly related to urbanization. Communist vote was most closely linked to dense urban settlement, with a correlation of plus .701. In contrast, the pro-America, ruling Democratic-Liberal Party had most strength in rural prefectures and least strength in rapidly growing urban prefectures, with a dense urban settlement correlation of minus .601. Both socialist parties had stronger urban than rural support; independent candidates were more strongly supported in rural prefectures.

The economic advantages which are attracting young adults to highly urbanized prefectures in such great numbers are reflected in the higher per capita newspaper circulation and better housing in such areas. The push from rural prefectures is reflected in the higher rural birth rates and larger average size of rural households, coupled with declining rural populations.

The human price of burgeoning Japanese cities is suggested by the significant positive correlation between dense urban settlement and suicide rate. Divorce rates, in contrast, show no relationship to urbanization, a fact which may be rooted in the high divorce patterns of traditional rural society in Japan.

Japan is not yet, if ever it will be, the homogenized mass society in which degrees of urbanization and industrialization have lost their significance in the course of internal differentiation and social change. In the increasingly complex division of labor of the modern world it may be that regional specialization may lead to greater rather than less differentiation in many important particulars.

NOTES

[1] Grateful acknowledgement is made for facilities for this study provided by Washington University's Social Science Institute and Department of Sociology and Anthropology.

[2] See, for example *Scientific American*, 203, 3 (September, 1960). Especially pertinent in this issue devoted to "The Human Species" are: Robert M. Adams, "The Origin of Cities", and Herbert Butterfield, "The Scientific Revolution".

[3] Jack P. Gibbs and Kingsley Davis, "Conventional Versus Metropolitan Data in the International Study of Urbanization" *American Sociological Review*, 23, 5 (October, 1958). Jack P. Gibbs and Leo F. Schnore, "Metropolitan Growth: An International Study", *The American Journal of Sociology*, LXVI, 2 (September, 1960).

[4] Gideon Sjoberg, "Comparative Urban Sociology", in Robert K. Merton, Leonard Broom, and Leonard S. Cottrell, Jr., (ed.), *Sociology Today* (New York: Basic Books, 1959), pp. 334-359.

[5] Robert E. Park, *Human Communities* (Glencoe, Ill.: Free Press, 1952). Robert E. Park and Ernest W. Burgess, *The City* (Chicago: University of Chicago Press, 1925).

[6] Louis Wirth, "Urbanism as a Way of Life", *The American Journal of Sociology*, 44, 1 (July, 1938), pp. 1-24.

[7] Robert Redfield, *The Folk Culture of Yucatan* (Chicago: University of Chicago Press, 1941); and "The Folk Society", *The American Journal of Sociology*, 52, 4 (January, 1947), pp. 293-308.

[8] For a helpful discussion see Gideon Sjoberg, *op. cit.*

[9] Stuart Alfred Queen and David Bailey Carpenter, *The American City* (New York: McGraw-Hill Book Company, Inc., 1953). David B. Carpenter, "Urbanization and Social Change in Japan", *The Sociological Quarterly*, 1, 3 (July, 1960), pp. 155-166.

[10] Jack P. Gibbs and Kingsley Davis, *op. cit.*, p. 514.

[11] In Japan officially designated *shi* were used in identifying cities of 30,000 or more population; in the U.S. urban areas as defined by the Bureau of the Census were used when the 1950 population was 30,000 or more. U.S. urban places were "urbanized areas" when available; otherwise incorporated or unincorporated cities, towns, boroughs, and villages as designated by the Bureau of the Census.

[12] Gibbs and Davis report that 55.9 percent of the 1950 population of the United States and 36.3 percent of the 1950 population of Japan were living in metropolitan areas of 100,000 or more population. For the bases of their calculations see Jack P. Gibbs and Kingsley Davis, *op. cit.*, pp. 504-514.

[13] For a brief historical summary of urbanization in Japan, see David B. Carpenter, *op. cit.* For the authoritative work on the population of Japan in historical perspective, see Irene B. Taeuber, *The Population of Japan* (Princeton: Princeton University Press, 1958). See also Irene B. Taeuber, "Urbanization and Population Change" *Economic Development and Cultural Change*, IX, 1 (Part II, October, 1960), pp. 1-28. Especially noteworthy has been the remarkable recovery of Japan's cities from the devastation of World War II. "Tokyo had the largest population (in 1960) of all the prefectures. With a population of 9,675,601 it accounted for 10.4 percent of the national total. Osaka was next with 5.9 percent followed by Hokkaido, Aichi, Fukuoka, Hyogo and Kanagawa, in the order listed. These seven prefectures, each with a population of more than three million, accounted for 87 percent of the increases which took place over the five year period (1955-1960) . . ." Information Office, Consulate General of Japan, New York, *Japan Report*, VII, 4 (Feb. 28, 1961), p. 2.

[14] The coexistence of a massive system of intensive land agriculture and of a high degree of industrialization and urbanization has interested many observers of the distinctive course of modernization in Japan. For further exploration of the role of agriculture in Japanese industrialization and urbanization see: Thomas C. Smith (editor), "City and Village in Japan", *Economic Development and Cultural Change*, IX, 1 (Part II, October, 1960).

[15] Japanese cities of a million population or more lost more than two-thirds of their population in casualties, refugees, and other emigrants in 1944-1945. Cities between 100 thousand and a million lost 30 percent. Yet the tenacious march of urbanization in Japan is vividly underlined in the speed with which great cities were rebuilt. Cities of 100,000 or more had a total population of 21 millions in 1940, declined to 11 millions in 1945, and returned to 21 millions in 1950. See Irene B. Taeuber, *The Population of Japan*, p. 72.

[16] Spearman rank correlation coefficients of less than 0.25 plus or minus cannot be viewed as statistically significant when there are 46 or 49 reporting units, as in this study. See Sidney Siegel, *Nonparametric Statistics for the Behavioral Sciences* (New York: McGraw-Hill Book Company, Inc., 1956), pp. 202-213.

[17] Paul H. Jacobson, "Differentials in Divorce by Duration of Marriage and Size of Family", *American Sociological Review*, 15, 2 (April, 1950), pp. 235-244.

[18] Takeyoshi Kawashima and Kurt Steiner, "Modernization and Divorce Rate Trends in Japan," *Economic Development and Cultural Change*, IX, 1 (Part II, October, 1960), p. 228.

[19] According to a national sample of 35,000 households interviewed in March, 1957, by the Bureau of the Census in its *Current Population Survey*, membership in the Roman Catholic Church is, except in the Southwest, closely related to urbanization. Of the sampled population age 14 years and over, Roman Catholic Church preferences were indicated by 37.8 percent of the population of urbanized areas of 250,000 or more; by 23.4 percent of the population of urban places smaller than 250,000; and 15.1 percent of the rural population. See 1960 *Statistical Abstract of the United States*, p. 46.

[20] Joseph A. Kahl, "Some Social Concomitants of Industrialization and Urbanization", *Human Organization*, 18, 2 (Summer, 1959), p. 71.

[21] See David B. Carpenter, "Urbanization and Social Change", *The Sociological Quarterly*, vol. 1, no. 3 (July, 1960), p. 155.

[22] Bureau of Statistics, Office of the Prime Minister, *Japan Statistical Yearbook* 1961 (Tokyo, December, 1961), p. 17.

[23] *Ibid.*, p. 2.

[24] *Ibid.*, p. 19.

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