TOPIC – INCREASE IN POPULATION AND ITS GEOGRAPHICAL DISTRIBUTION: A CASE STUDY OF JAPAN

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ABSTRACT

Japan island country lying off the east coast of Asia. It consists of a great string of islands in a northeast – southwest are that stretches for approxirnately 2400 km through the western north Pacific Ocean. Nearly the entire land area is taken up by the country's four main islands, from north to south these are Hokkaido, Honshu, shikoku, and Kyushu. Honshu, is the Largest of the four, followed in size by Hokkaido, Kyushu, and shikoku. The national capital Tokyo in east central Honshu is on of the world's most populous cities. It is the fourth largest island country in the world and the largest country island country in East Asia. The country has the 6th longest coastline at 29,751 km and the 8th largest exclusive economic zone of 4,470,000 km^2 in the world. The terrain is mostly rugged and mountainous with 66%. Forest. The population is clustered in urban area along the coast, plain and valleys.

Fig.1

The area including 14,125 island, is approximately 337,975 km^2 and population is approximately 124.61 (2021) million. It is world's 11th (2021) most populous country. The population density is very high with approximately 343 (2021) per km^2. This makes Japan one of the most density population countries in the world, with approximately 92%

of the population living in urban areas. Which reflects a higher standard of living. Which China and Singapur it is still the solitary Asian country qualifying for inclusion in the economically more developed realm. It is also the sole representative of that realm whose people are non-Caucasoid. It has left an indelible imprint on human civilization of the world by developing astonishing manmade features with meagre natural resources. Similarly, the crowding of many men on little land is a dominant feature. Yet, inspite of more than threefold multiplication of population numbers over the preceding century, with a commensurate increase in density, a greatly increased economic prosperity has enabled the Japanese to enjoy much improved living standards, for greater longevity and to be healthier, taller, more robust and better educated than were their forebears.

GROWTH RATE OF POPULATION

Demographic history of Japan begins with the late 12th centuries. But informative history starts with 1880. The period between 1788 and 1940 is considered to be the perfect example of the classic assumption concerning the interaction of economic and demographic factors. As modernisation, industrialization and urbanisation proceeded, birth and death rates both declined. Rural Japan became an “Urban Japan" within the short span of 100 years. This is a clear reflection of the country's economic evolution and during the last quarter of 20th centuries, biological increase has begun to lag well behind the roaring economic expansion, a momentous facts having remarkable consequences. Not the least of these are the rise in the standard of living and the greater mobility of the population. (Table-1)

Total Population Growth Rate (1880-2020)
Table -1

S.N.	Year	Population 000's	Annual average increase rate (%)	Population density per km^2
1.	1880	30,30,00,00	0.08	101
2.	1990	40,40,00,00	0.6	106
3.	1900	40,40,00.00	0.8	115
4.	1910	40,90,00,00	1.1	1292
5.	1920	5,59,63,053	1.2	146
6.	1930	6,44,50,005	1.5	168
7.	1940	7,307,50,71	0.8	188
8.	1950	831,99,637	1.12	226
9.	1960	96,399,754	0.95	264
10.	1970	106,712,368	1.26	277
11.	1980	118,358,765	0.74	293
12.	1990	123,399,765	2.24	311
13.	2000	127,027,789	0.20	325
14.	2005	127,913,330	0.17	331

15.	**2010**	**128,185,275**	**-0.04**	**338**
16.	**2015**	**127,275,872**	**0.12**	**349**
17.	**2020**	**126,304,543**	**-0.43**	**346**
18.	**Asia (2020)**	**4,688,113,371**	**0.64**	**345**
19.	**World(2020)**	**7,887,001,292**	**1.1**	**348**

Source: 1. Data by united nation, Department of Economic and social Affairs
2.Population Census of Japan, Projected.

There is a close relationship between growth of population and both birth and death rates. From Table -2 it is clear that the demographic transition in Japan had its beginnings as of about 1920. Both these attributes of population began to fall nearly simultaneously. The usual lag in fertility decline was absent. From perusal of Table-2 it is clear that between 1920-1940, the synchronized declines in both vital rates were moderate. Average pentad death rates in that period fell from 25.0 to 16.4 But then came an abrupt change in the downward mortality trend, for disregarding the abnormalities of the war years. It declined to 6.80 in 2020 from 16.4 in 1940 and 10.1 in 1947-1950. Kaiuchi, a noted demographer of Japan has said "death-rate trends in Japan qualify as being among the earth's lowest nation of mortality rates. Doubtless the fall in death rates since 1920, especially after 1950 is related to an increase both in the general well-being and cultural attainments of Japan's population and, more specifically, to a betterment of the public health services and containing of many deadly diseases.

Likewise, death rate birth rates also gradually declined between 1920 and 2020. In 1920 crude birth rate was 36.2 per thousand populations which went to 6.8 in 2020. But trend was not identical with that of death rate. It witnessed chequered trend dotted with uptrends and down trends. However, after 1970 it showed steady but continued downtrend. The pre-war gradual decline in births was predatory for the post-war precipitous one.

Synchronised declines in birth and death rates after about 1920 resulted in moderate annual rates of natural increase (12 per 1000), the trend of which, inspite of irregularities over short periods in between and for individual years did not change drastically over the past half century (Table 2 Fig. 2)

Vital Rates (per 1000 population)
Table 2

S.N.	Year	Crude birth rate	Crude death rate	Natural Change	Annual Average Increase	Total Population in million
1.	**1800**	**29.61**	**__**	**__**	**__**	**30.30**
2.	**1810**	**31.07**	**__**	**__**	**__**	**30.60**
3.	**1820**	**31.98**	**__**	**__**	**__**	**31.00**
4.	**1830**	**32.26**	**__**	**__**	**__**	**31.30**
5.	**1840**	**32.55**	**__**	**__**	**__**	**31.70**
6.	**1850**	**33.29**	**__**	**__**	**__**	**32.20**

7.	**1860**	**34.05**	**—**	**—**	**—**	**33.20**
8.	**1870**	**29.90**	**14.8**	**15.1**	**0.8**	**34.70**
9.	**1880**	**24.50**	**16.8**	**7.7**	**0.7**	**36.90**
10.	**1890**	**28.80**	**20.5**	**18.3**	**0.6**	**40.10**
11.	**1900**	**32.4**	**20.8**	**11.6**	**0.8**	**44.30**
12.	**1910**	**39.9**	**21.9**	**14.5**	**1.1**	**49.60**
13.	**1920**	**36.2**	**25.4**	**12.0**	**1.2**	**56.10**
14.	**1930**	**32.4**	**18.2**	**14.2**	**1.5**	**64.30**
15.	**1940**	**29.4**	**16.4**	**12.9**	**0.8**	**73.20**
16.	**1950**	**28.2**	**10.9**	**17.3**	**1.12**	**82.80**
17.	**1960**	**17.3**	**7.6**	**9.7**	**0.95**	**93.67**
18.	**1970**	**18.7**	**6.9**	**11.6**	**1.26**	**104.93**
19.	**1980**	**13.6**	**6.2**	**7.3**	**0.74**	**117.82**
20.	**1990**	**10.0**	**6.7**	**3.3**	**0.24**	**124.51**
21.	**2000**	**9.5**	**7.7**	**1.8**	**0.20**	**127.52**
22.	**2010**	**8.5**	**9.5**	**-1.0**	**-0.04**	**128.54**
23.	**2020**	**6.8**	**11.1**	**-4.03**	**-0.43**	**126.48**
24.	**2021**	**7.2**	**11.7**	**-59**	**-0.46**	**124.61**

Source: 1. Data by united nation, Department of Economic and social Affairs
2. Institute of Population Problems, Tokyo

No doubt, Japan has succeeded in containing growth rate of population to the minimal level, even then, the problem of absorbing 7 lakhs to a 1 million additional inhabitants in a country of limited indigenous resources is becoming more serious with each passing year. Current worldwide recession has adversely impacted Japanese economy because of the fact that Japan is mainly an exporting economy. Further reduction in birth rate may be another demographic problem. Because Japanese population is ageing causing concern for poor supply of energetic work power. Thus, present population scenarios producing dilemma before the nation. Expectedly, the recent vital revolutionary actions taken by the government has started to manifest itself in alterations of important population characteristics such as age structure, proportion of dependents, size of the labour force and also in the geographical and occupational distributions of the country's people. Some segments of Japanese economy are now confronted with an actual shortage of labour, especially of young males and if this situation lingers it might even lead to propaganda favouring to higher fertility and in turn, it would cause retrogate in population management. Really Japan is at threshold of population dilemma.

SPATIAL DISTRIBUTION OF GROWTH OF POPLATION

In recent years, 1970 is considered to be an important year from the point of view of population characteristics. In 1970 the average national crude birth rate of Japan was 18.7 per 1000 inhabitants. Regionally Japan has 47 prefectures. Among them the rates ranged from a high of 23.7 in Saitama to a low of 13.6 in Shimane or a spread of 13.6 (See Fig. 2 for names and locations of regions and prefectures of Japan). Nine prefectures, together representing 46-47% of the nation's total population, yet less than 11% of its area, had birth rates above the country average. In 2020, the spread reduced to 6.8 and they together represent almost the same level. Out of 35 prefectures. Naro and Shizuoka represented slightly above. Significantly, the remaining seven, all with crude birth rates well above the national average, are strongly urbanised and contain all or parts of five great metropolises (Tokyo, Kanagawa. Chiba and Saitama prefectures include Tokyo-Yokohama Conurbation, Aichi contains Nagoya city, Osaka prefecture includes Osaka city, and Hyogo prefectures has the metropolis of Kobe).

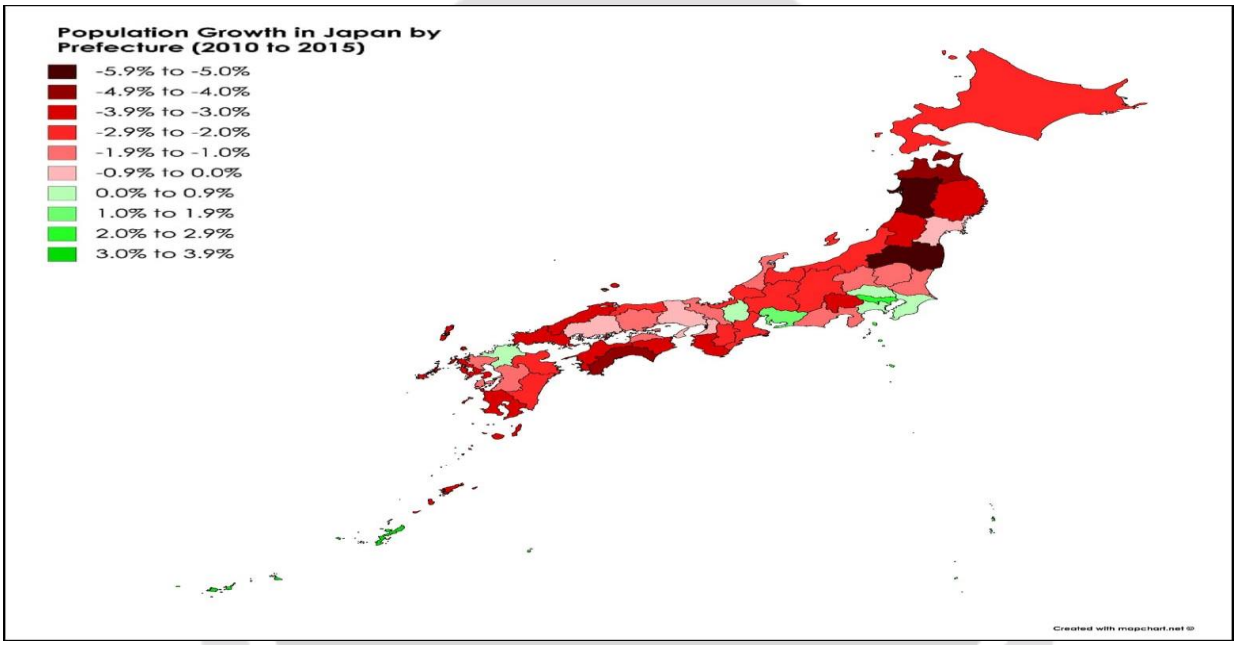

Fig.2

In present day Japan high birth rates appear to correlate with metropolitization, a situation that derives from the large scale not in-migration in the 1960 of yearned adults attracted by the employment opportunities in the giant industrial commercial centres.

Birth rates below the national average of 7.013(2022) were characteristics of 37 of the 47 prefectures in 2020 while as in 1970, 37 prefectures had birth rate below the national average of 18.8. Comparing both the numbering it is clear that over the past 50 years (1970-2020) distribution of 1970-2020 birth rate is almost identical with reducing birth rate. These 37 prefectures are less populous, less urban and less industrial prefectures. Their combined populations amount to only 53% of the nation's total in 1970 and slightly more than 55% in 2020. But having 90% of its area. While these prefectures are widely scattered geographically, in general they are a mountainous backward and meagrely urbanised group in which the current low fertility relates both to the large scale not out-migration of young adults and to the recent more widespread practice of contraception.

Index map of prefectures and main regional sub-divisions of Japan

Table-3

S.NO.	CITY NAME	POPULATION	S.NO.	CITY NAME	POPULATION

1.	**Tokyo**	**8,336,599**	**36.**	**Amagasaki**	**442,173**
2.	**Yokohama**	**3,761,630**	**37.**	**Fujisawa**	**439,728**
3.	**Osaka**	**2,753,862**	**38.**	**Kashiwa**	**433,436**
4.	**Nagoya**	**2,191,279**	**39.**	**Toyota**	**426,162**
5.	**Sapporo**	**1,973,832**	**40.**	**Takamatsu**	**418,994**
6.	**Fukuoka**	**1,603,543**	**41.**	**Toyama**	**415,844**
7.	**Kawasaki**	**1,531,646**	**42.**	**Yokosuka**	**409,478**
8,	**Kobe**	**1,522,188**	**43.**	**Nagasaki**	**407,624**
9.	**Kyoto**	**1,463,723**	**44.**	**Hirakata**	**406,331**
10.	**Saitama**	**1,324,854**	**45.**	**Gifu-Shi**	**400,118**
11.	**Hiroshima**	**1,199,391**	**46.**	**Machida**	**399,969**
12.	**Sendai**	**1,096,704**	**47**	**Miyazaki**	**398,215**
13.	**Chiba**	**979,768**	**48.**	**Toyonaka**	**384,459**
14.	**Kitakyushu**	**940,978**	**49.**	**Ichinomiya**	**379,654**
15.	**Niigata**	**797,591**	**50.**	**Toyohashi**	**377,453**
16.	**Hamamatsu**	**791,707**	**51.**	**Minato**	**375,339**
17.	**Sakai**	**782,339**	**52.**	**Takasaki**	**372,369**
18.	**Kumamoto**	**738,907**	**53.**	**Nara-Shi**	**367,353**
19.	**Okayama**	**720,841**	**54.**	**Nagano**	**360,176**
20.	**Sagamihara**	**720,780**	**55.**	**Iwaki**	**357,309**
21.	**Shizuoka**	**690,881**	**56.**	**Takatsuki**	**354,468**
22.	**Honcho**	**644,668**	**57.**	**Okazaki**	**352,361**
23.	**Kawaguchi**	**607,373**	**58.**	**Suita**	**351,630**

24	**Kagoshima**	**595,049**	**59.**	**Wakayama**	**351,000**
25	**Hachioji**	**561,344**	**60.**	**Koshigaya**	**345,353**
26.	**Himeji**	**525,682**	**61..**	**Nakano**	**344,880**
27.	**Matsuyama**	**509,835**	**62.**	**Tokorozawa**	**344,194**
28.	**Matsudo**	**498,575**	**63.**	**Otsu**	**343,991**
29.	**Higashi-Osaka**	**489,077**	**64.**	**Kawagoe**	**337,931**
30.	**Kurashiki**	**483,576**	**65.**	**Asahikawa**	**333,530**
31.	**Oita**	**477,715**	**66.**	**Kochi**	**332,059**
32.	**Nishinomiya-Hama**	**468,925**	**67.**	**Koriyama**	**322,996**
33.	**Fukuyama**	**468,812**	**68.**	**Naha**	**317,405**
34.	**Kanazawa**	**466,029**	**69.**	**Akita**	**305,625**
35.	**Utsunomiya**	**449,865**	**70.**	**Kurume**	**303,579**

Peripherally located with respect to the nation's core region of major industry and metropolitan population, the 13 low birth rate prefectures are mainly in northern and western Honshu, Kyushu and southern and eastern Shikoku.

REGIONAL DISTRIBUTION OF DEATH RATES

Regional distribution of death rate is very anomalous. The national average death rate in 1970 was 6.9 per 1000, one of the lowest in the world and almost the same rate has been recorded in 2020 (11.1). Among the 46 prefectures the mortality rates range from a high of 10.8 in isolated, rural and mountainous Kochi, to a low of 4.8 in 1970 and 11.1 in 2020 in highly urbanised Kanagawa prefectures containing the metropolis of Yokohama, of a spread of 6.0 points (1970) and 5.72 points (2020). In only eleven prefectures was the death rate below the national average of 6.9 per 1000 in 1970 and 11.1 in 2020 and significantly in seven of these the proportions of the total population that are urban were above the national average of 53.5% the three of they were in excess of 70% urban (Fig. 3). The five prefectures with the lowest death rates (under 5.8 per 100) are all located within the three great metropolitan regions. All have above average proportions of urban population of the six other prefectures with below average death rates (5.8-6.8), but not the lowest, three of these also are highly urbanised. Life expectancy of birth, which in some respects is a better index of mortality than crude death rate, is also highest in the metropolitan prefectures. Apparently there is a strong correlation between low death rates and a high degree of urbanisation and this situation prevails in spite of a recent serious deterioration of several elements of the urban environment, more especially air pollution that are extremely injurious to health.

A number of factors have contributed to this reduction of mortality in the metropolitan prefectures, including the favourable cultural and economic environment the sharp decline in fertility and the large influx of young adults, ages 15-34, among whom the death rate is expectedly low. Also as the not reproduction rate declined and family size

shrank, more care could be given to the fewer children, resulting in a reduced overall mortality. Among Japan's urban population it is the mortality rates of infants, small children and adolescents that are especially low. but while prefectural differentials in both birth and death rates continue to be significant, noteworthy they have been gradually shrinking, so that Japan is becoming geographically more homogenous in the vital rates.

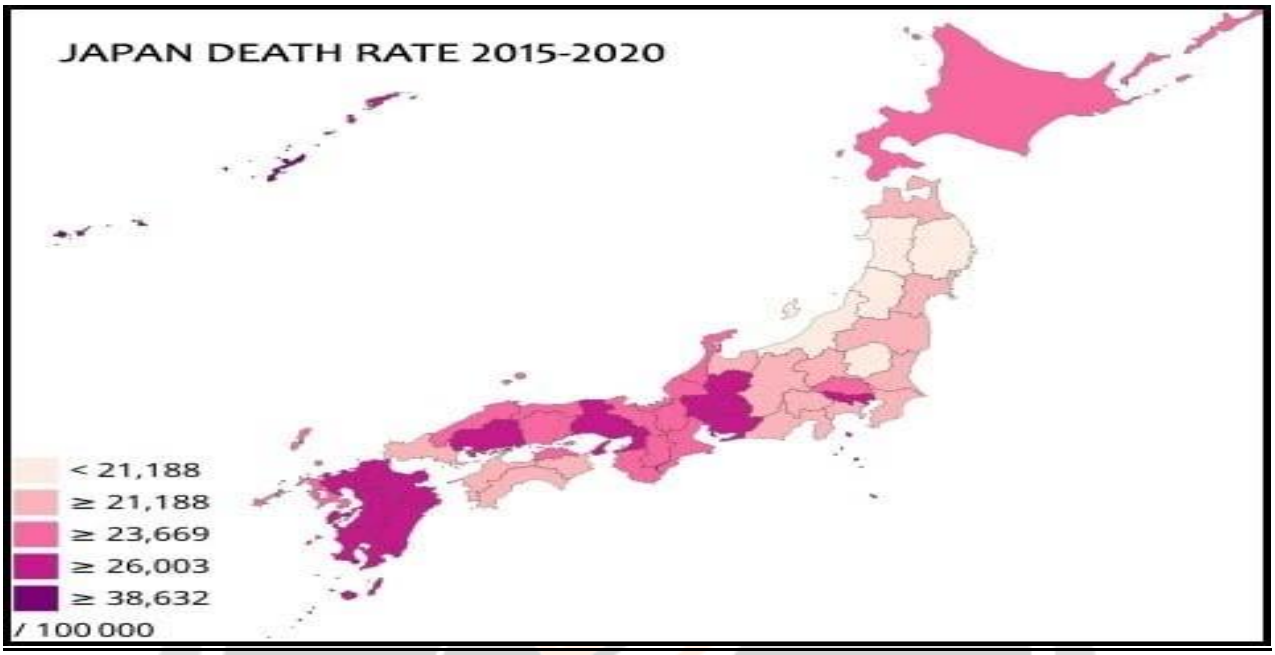

Fig.3

REGIONAL DISTRIBUATION OF NATURAL INCREASE RATES

The fate and future of population growth in any country is assessed by natural increase rates of population number. It represents the balance between births and deaths and shows much stronger regional contrasts than does either births or deaths. The highly urbanised metropolitan prefectures, where birth rates are well above the national average and death rates below, usually have natural growth rates that are three to four times those of some of the most rural and backward prefectures (Fig. 6). For the whole country the natural increase rate in 1970 was 11.6 per 1000 persons or 0.19% which even went down to about 4.3% in 2020. Only 8.05 the 47 prefectures had annual natural increase rates equalling or exceeding the natural average and all but one of these lie within the three great metropolitan regions of Japan. Thirty-eight prefectures had natural increase rates below the national average of 11.9, and 9 of them the rates were below 6.2. A majority of the 38 are distinctly rural in character, a feature that is especially marked in the nine with rates under 7. The latter are peripherally situated in both the southern western and north eastern extremities of the country. In them birth rates have recently declined for reasons noted earlier, while at the same time death rates have continued to remain distinctly higher than in the metropolitan prefectures.

It is noteworthy that in Japan the geographical of demographic reproductivity, or natural increase, more shown important changes since about 1960. In 1930, for example, high natural increase was characteristic of Hokaido, north-western Honshu, northern Kanto, southern Kyushu, northern and eastern Shikoko, and a few other scattered regions. But since 1960 onward, the situation has reversed to a considerable extent. It is believed that this reversal is partly a consequence of geographical changes in sex-age composition caused by the age selective large scale rural urban population migration of the late 1950 and the 1960. Another notable fact is that up to 1970, no prefectures had experienced negative value of natural increase, although in several of them the rate presently (2020) is low. However, in 2000 minor civil divisions, locally known as 'Mura' and 'Machi' have started experiencing more deaths than births. This is an indication that slow but steady change to negative value growth will usher in the future.

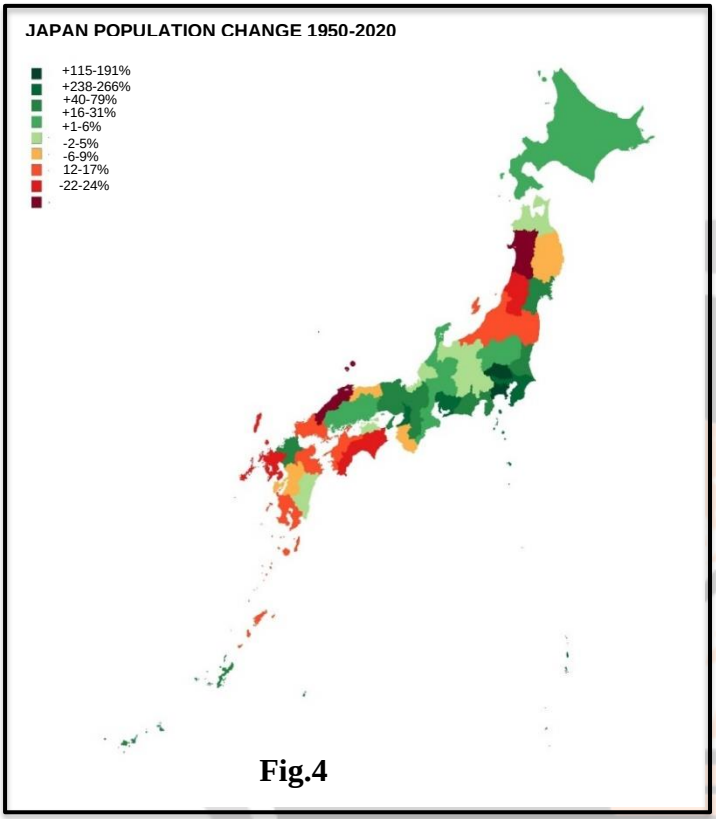

Fig.4

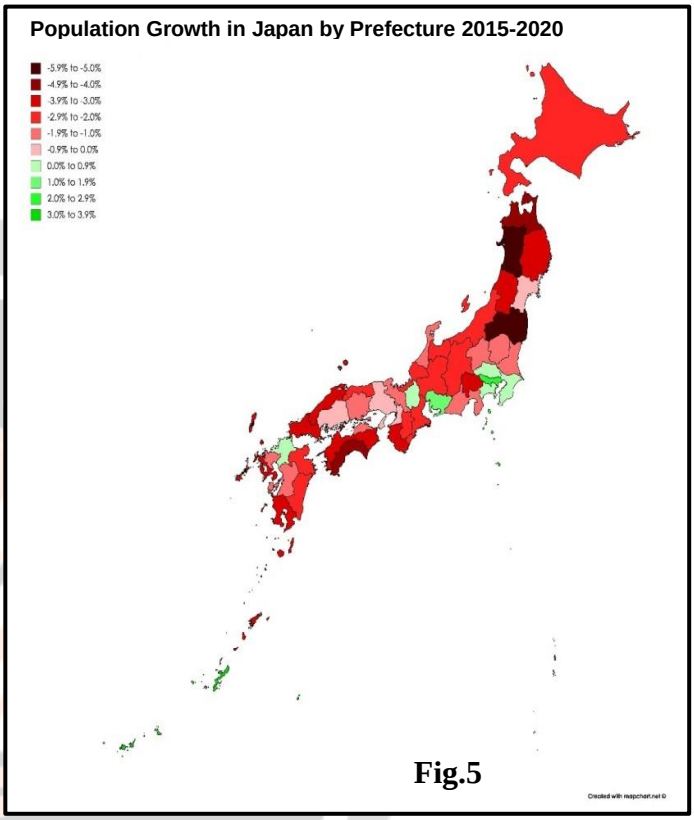

Fig.5

NATURAL INCREAASE & MIGRATION IMPACT

Differential regional rates of population change of absolute increase / decrease in number of inhabitants, involves not only natural increase but also not migration. In the last census (2000-2020) nearly half of Japan's prefectures experienced absolute decreases in population (Fig.6).

Mainly these were peripherally located, mountainous units, where the degree of urbanization was below the co-average. From micro level study it is clear that only about 16-17% of the country's total area experienced a gain in population, while ever 83% lost in number of inhabitants. This increased concentration of people on about 17% of the area, mainly the densely inhabited districts of the great metropolitan regions, reflects the operation of two factors-natural increase and no immigration acting in conjunction and at a maximum in the highly urbanised regions.

As per government population perfections made earlier in nineties by prefectures, indicate that positive proportions growth in anticipated for only three of the country's large regional sub- divisions. There are (I) Tokyo Metropolitan Area (II)Kinki Metropolitan Area and (III) Tokai the pacific coastal strip between Tokyo and Kinki including the metropolis of Nagoya. The other six regions are expected to decline in their proportions of the total population (Table 5). There is these are also forecast to decline in absolute numbers. There metropolitan regions where relative population growth is anticipated together comprise what is called the Hokkaido Megapolis, a contiguous region representing only about 15% of the nation's land area, but containing some 56% of the total. the same trend has been observed in case of other two metropolises.

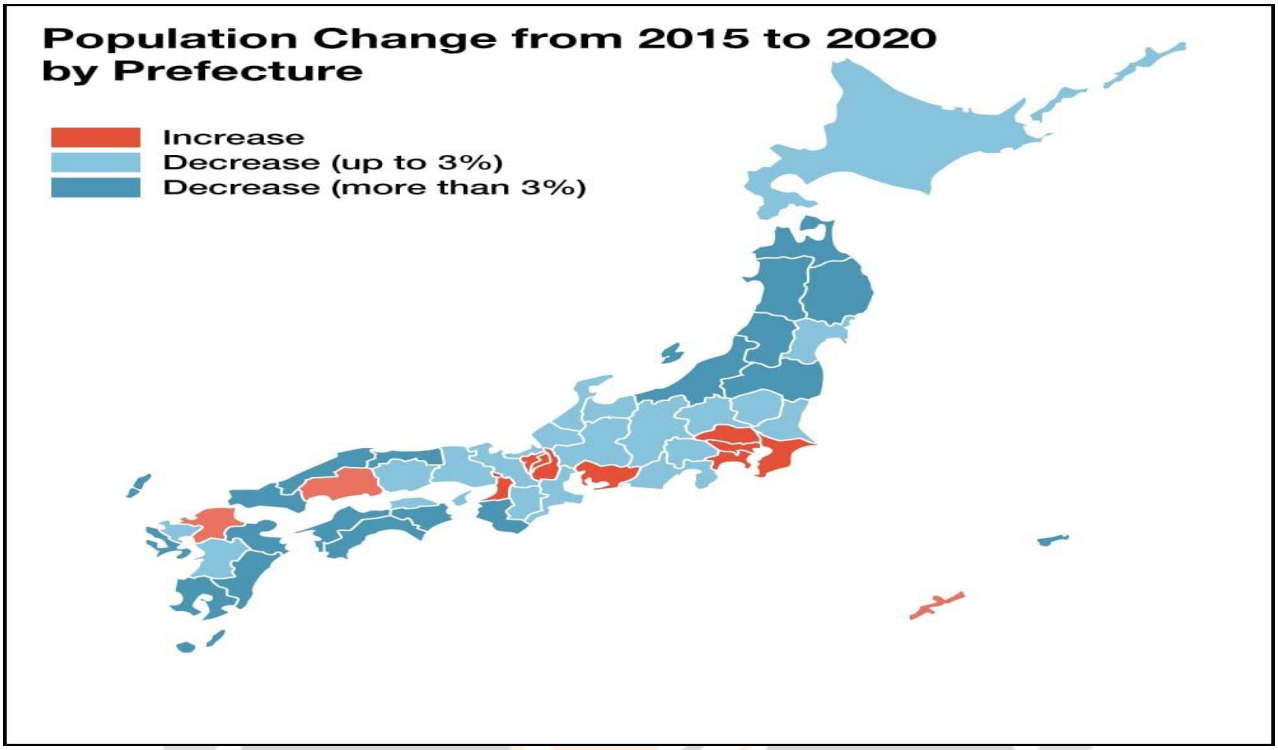

Fig.6
Population of Japan (2022 and Historical)

Table-4

Year	Population	Yearly %Change	Yearly Change	Migrants (net)	Median Age	Fertility Rate	Density (P/Km²)	Urban Pop %	Urban Population
2022	124,997,578	-0.54 %	-681,760	175,003	48.5	1.26	343	92.5 %	115,583,843
2020	126,304,543	-0.31 %	-394,881	42,001	47.7	1.30	346	91.9 %	116,099,672
2015	127,275,872	-0.14 %	-181,881	168,896	45.8	1.42	349	91.9 %	116,944,428
2010	128,185,275	0.04 %	54,389	131,860	44.2	1.36	352	91.1 %	116,741,034
2005	127,913,330	0.14 %	177,108	113,017	42.6	1.25	351	86.3 %	110,340,709
2000	127,027,789	0.21 %	271,025	23,468	40.8	1.35	348	79.0 %	100,303,716
1995	125,672,665	0.37 %	454,580	87,714	39.0	1.41	345	78.5 %	98,593,178
1990	123,399,765	0.42 %	513,520	124,582	36.9	1.51	338	78.0 %	96,298,507
1985	120,832,163	0.41 %	494,681	-141,323	34.5	1.74	331	77.4 %	93,507,944
1980	118,358,756	0.87 %	1,007,512	-92,314	31.7	1.74	325	75.8 %	89,755,553
1975	113,321,196	1.21 %	1,321,766	107	29.7	1.92	311	75.1 %	85,121,987
1970	106,712,368	1.12 %	1,159,270	33,731	28.3	2.04	293	70.7 %	75,417,163

1965	100,916,019	0.92 %	903,253	-50,667	26.6	2.09	277	66.2 %	66,812,422
1960	96,399,754	0.85 %	794,855	-150,371	24.7	1.98	264	61.5 %	59,269,408
1955	92,425,478	1.35 %	1,196,440	-95,975	22.7	2.35	254	56.3 %	52,005,319

Source: data by United Nations, Department of Economic and Social Affairs, Population Division. World Population

Japan Population Forecast

Table.5

Year	**Population**	**Yearly %Change**	**Yearly Change**	**Migrants (net)**	**Median Age**	**Fertility Rate**	**Density (P/Km²)**	**Urban Pop %**	**Urban Population**
2025	**123,103,479**	**-0.51 %**	**-640,213**	**140,579**	**49.8**	**1.23**	**338**	**93.1 %**	**114,645,589**
2030	**119,584,121**	**-0.58 %**	**-703,872**	**123,993**	**51.5**	**1.26**	**328**	**94.3 %**	**112,710,068**
2035	**115,876,149**	**-0.63 %**	**-741,594**	**116,871**	**52.5**	**1.29**	**318**	**95.3 %**	**110,450,118**
2040	**112,158,303**	**-0.65 %**	**-743,569**	**118,186**	**53.1**	**1.31**	**308**	**96.3 %**	**107,981,843**
2045	**108,551,995**	**-0.65 %**	**-721,262**	**113,424**	**53.0**	**1.33**	**298**	**97.2 %**	**105,471,938**
2050	**105,123,167**	**-0.64 %**	**-685,766**	**-----**	**52.8**	**1.35**	**288**	**98.0 %**	**103,038,909**

Source: Data by United Nations, Department of Economic and Social Affairs, Population Division

Thus it may be concluded that Japan today stands at a piquant crossroad so far population scenario is concerned. Continual ageing population, low birth rate, need of youth labour force and arrangement for employment all these are some challenges before the Japanese government. However, it is hoped that a country that had bravely withstood the wreckages of devastating war, will be able to refashion its population for brilliant futures. Redistribution of population and generation of young offspring are urgent necessity so that balance between economic growth and population growth may be maintained without disturbing eco-system.

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