

# Analysis of labor migration using population census data

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- 1. Concepts and Features of Migration**
- 2. Uses and Measurements of Migration and Labor Force Migration**

# Concepts of Migration

**Geographic mobility & Social mobility:** Mobility as used in demography usually refers to spatial, physical, or geographic movement, whereas in sociology it usually refers to a change in status, e.g. of occupation.

**Migration:** Change in usual place of residence, **excluding commuting between home and workplace or school.**

Physical movement of population from one area (origin, departure) to another area (destination, arrival) between geographic units such as village, district, province and so on (administrative area).

**Migrant:** a mover between two administrative areas.

# Major Sources of Data for Measuring Migration

## 1. Population census

A population census constitutes a major source of statistical observation on internal migration. The observation of migration is one of the most primary objectives of taking a census.

## 2. Population registers

Each person is under an obligation to register not only births and deaths but also each change of place of residence by the civil registers. e.g. This is used for **population estimate** based on registers (natural and social changes).

Ex. Statistics Bureau , *Annual Report on the Internal Migration in Japan*  
*Derived from the Basic Resident Registers*

## 3. Surveys

Periodic sample surveys to get the characteristics of migrants, and migration structure, in detail.

# Census Data on Migration

There are many different methods of collecting migration data from a population census.

## 1. Place of birth

Persons who are resident in a place different from the place of their birth are assumed to be **migrants**, persons who are resident in the same place are **non-migrants**.

## 2. Duration of residence at present residence: Place of residence on specified past date (1 year ago, 5 years ago)

Persons who are resident in a place different from the previous place of residence are assumed to be **migrants**, are resident in the same place are **non-migrants**.

# Definition and Measures of Migration

**1. Internal Migration:** Movement within the boundaries of a nation.

(1) **Lifetime migration:** migration between the place of birth and the place of current residence at the time of the census.

(2) **Period migration:** migration between the place of previous residence and the place of current residence. Questions on previous residence: specifying a length of interval (1 or 5 years)

**2. International Migration:** Movement across national boundaries.

# Matrix Presentation of Cross-tabulation by Place of Origin (Birth) and Place of Destination (Present Residence)

Place of Origin (Birth Place)	Place of Destination (Present Residence)				Total (Excluding non-migrants)
	A	B	C	D	
A	Non-mig	A→B	A→C	A→D	Out-migrants from A
B	B→A	Non-mig	B→C	B→D	Out-migrants from B
C	C→A	C→B	Non-mig	C→D	Out-migrants from C
D	D→A	D→B	D→C	Non-mig	Out-migrants from D
Total (Excluding non-migrants)	In-migrants to A	In-migrants to B	In-migrants to C	In-migrants to D	Total out-migrants = Total in-migrants

Note: Total in-migrant is equal to total out-migrant if there are no migrants from abroad.

# Migration from Origin to Destination

Assuming that a country consists of 3 provinces and no international migration, the number of total of in-migrants is same as that of out-migrants.

Population at Previous Residence (Origin)	Population at Present Residence (Destination)			Out-migrants (3)
	A	B	C	
A	1,000	50	30	80
B	40	800	30	70
C	20	40	500	60
In-migrants (1)	60	90	60	<b>210</b>
Population at Present Residence (2)	1,060	890	560	<b>2,510</b>
In-migration rate, % (1)/(2)*100	5.66	10.11	10.71	<b>8.37</b>
Out-migration rate, % (3)/(2)*100	7.55	7.87	10.71	<b>8.37</b>
Net-migration rate, % {(1)-(3)}/(2)*100	-1.89	2.25	0.00	<b>0.00</b>
Gross-migration rate, % {(1)+(3)}/(2)*100	13.21	17.98	21.43	<b>16.73</b>

# Population 5 Years of Age and Over, based on Prefecture of Present Residence, by Place of Usual Residence 5 years Ago, and Sex (In-migration), Japan, 2005–10

**Question: Where did you live 5 years ago?**

**Excluding persons aged 0–4 who was unborn 5 years ago.**

**Mobility is in proportion to size of population at origin and in inverse proportion to distance: Migration Law by Ravenstein (1885):**

Population by Migration Status in the Present Residence	Population (1000)			Percent			Sex Ratio(%)
	Total	Male	Female	Total	Male	Female	
<b>Population 5 Years of Age and Over</b>	122,761	59,617	63,143	100.0	100.0	100.0	<b>94.4</b>
<b>Non-migrant</b>	88,504	42,178	46,327	<b>72.1</b>	<b>70.7</b>	<b>73.4</b>	91.0
<b>Migrant</b>	26,184	12,954	13,230	<b>21.3</b>	<b>21.7</b>	<b>21.0</b>	97.9
<b>a) Migrants within Japan,</b>	<b>25,618</b>	<b>12,693</b>	<b>12,925</b>	<b>20.9</b>	<b>21.3</b>	<b>20.5</b>	<b>98.2</b>
From the same shi, ku, machi or mura	11,398	5,354	6,044	9.3	9.0	9.6	88.6
From Other ku of the same shi	1,691	811	881	1.4	1.4	1.4	92.0
From Other shi, ku, machi or mura of the same prefecture	5,859	2,865	2,994	4.8	4.8	4.7	95.7
<b>From Other prefecture</b>	6,670	3,663	3,006	<b>5.4</b>	<b>6.1</b>	<b>4.8</b>	<b>121.8</b>
<b>b) In migrants from abroad</b>	<b>566</b>	<b>261</b>	<b>305</b>	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>	<b>85.7</b>

Note: Persons whose place of previous residence are unknown are included in total.

Source: Population Census of Japan, 2010

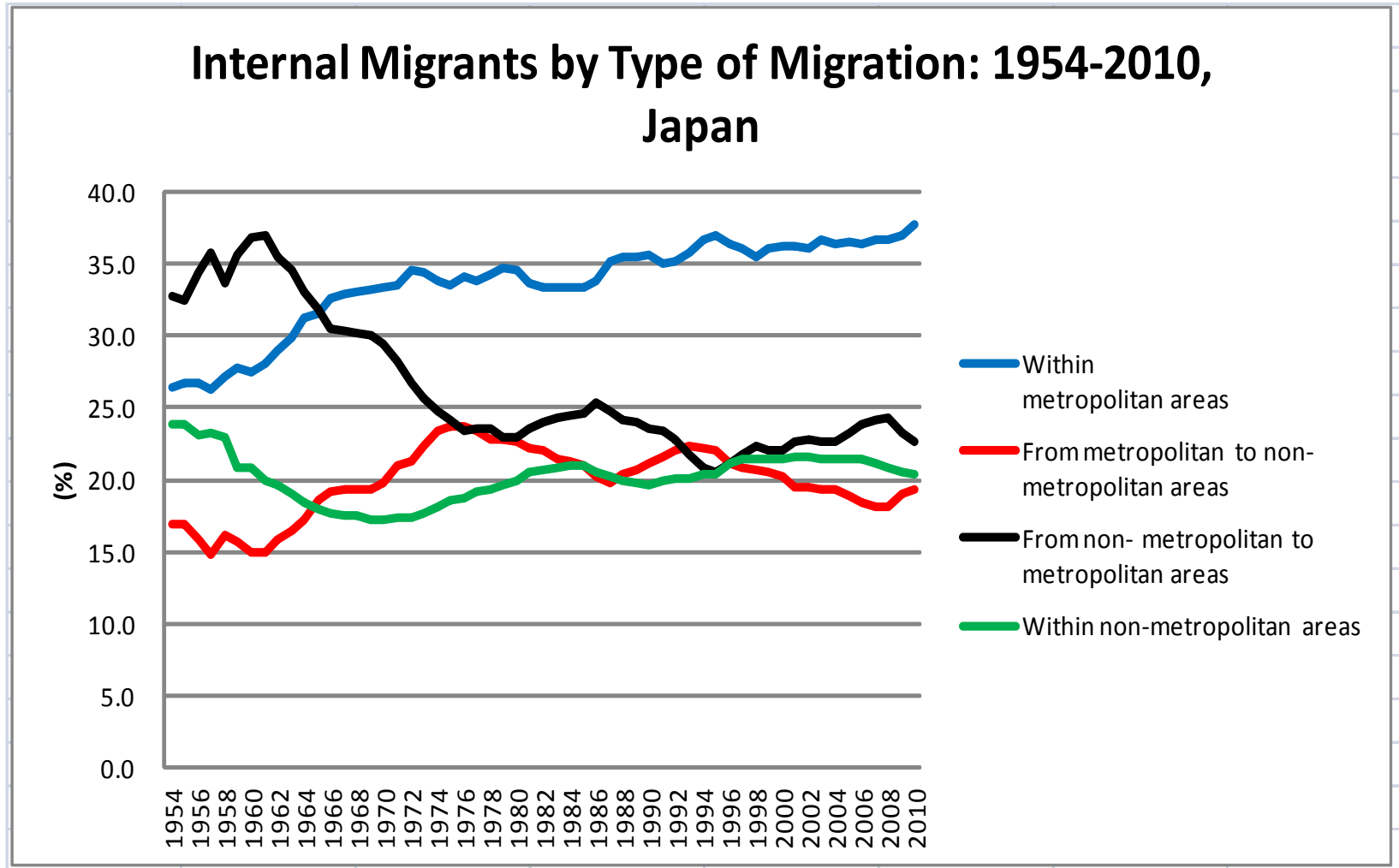


# Migration Stream and Return Migration

**Migration Stream** :A regular migratory movement of the population may be clearly identified among a certain group of different areas. Such a rather regular movement of a people distinctly established between places of origin and destination is called migration stream. (eg. Migration from non-metropolitan to metropolitan area.)

**Return Migration**: Many migrants may have a tendency to move back to some areas of their origin rather regularly, for example, migrants working away home in a city may go back to their villages after sometime getting older. Such movements are termed return migration.

# Migration Stream from Non-metropolitan to Metropolitan is falling.



# Population by Duration of Residency at the Current Domicile, Japan 2000

**Question: Period of living at the present residence.**

**Migration rate differs from duration of residency.**

**The most recent migration is migration under 1 year.**

Duration of residency	Population (1000)			Percent		
	Both Sexes	Males	Females	Both Sexes	Males	Females
Total Population	126,697	61,963	64,735	100.0	100.0	100.0
Since birth (Non migrants)	20,267	12,272	7,995	16.0	19.8	12.4
Total Migrants	105,076	48,815	56,261	82.9	78.8	86.9
Under 1 year	10,034	5,120	4,915	7.9	8.3	7.6
1 - 4	25,013	12,554	12,459	19.7	20.3	19.2
5 - 9	16,205	7,838	8,367	12.8	12.6	12.9
10 - 19	20,833	9,627	11,206	16.4	15.5	17.3
20 Years and over	32,991	13,676	19,314	26.0	22.1	29.8

Duration of residency at the current domicile since the movement.

# Annual Report on the Internal Migration in Japan

## Derived from the Basic Resident Registers

**Migration rate for short distance is higher than long distance. Sex ratio of migrants for long distance is higher than that for short distance.**

Year	Number of migrants (thousands)			Sex ratio of migrants			Migration rates (%)			Growth rate of total migrants (%)
	Total	Intra-prefectural	Inter-prefectural	Total	Intra-prefectural	Inter-prefectural	Total	Intra-prefectural	Inter-prefectural	
1960	5,653	2,973	2,680	112.2	101.3	125.8	6.09	3.20	2.89	5.5
1962	6,580	3,277	3,303	116.7	103.0	132.3	6.95	3.46	3.49	9.4
1970	8,273	4,038	4,235	114.2	102.7	126.6	8.02	3.92	4.11	1.8
1980	7,067	3,711	3,356	112.1	101.2	125.7	6.07	3.19	2.88	-3.1
2000	6,147	3,333	2,813	113.9	101.7	130.5	4.89	2.65	2.24	-0.6
2005	5,602	3,000	2,602	115.6	104.4	130.0	4.44	2.38	2.06	-3.0
2006	5,564	2,970	2,594	116.4	105.7	130.0	4.41	2.35	2.06	-0.7
2007	5,499	2,919	2,580	116.4	106.0	129.6	4.36	2.32	2.05	-1.2
2008	5,357	2,848	2,509	116.2	105.8	129.3	4.25	2.26	1.99	-2.6
2009	5,300	2,830	2,470	117.5	107.2	130.5	4.21	2.25	1.96	-1.1
2010	5,085	2,752	2,332	114.2	105.2	125.9	4.04	2.19	1.85	-4.1

# Migration Propensity Varies by Socio-economic Status: Educational Attainment

The higher the level of educational attainment, the higher propensity of migration. Highly educated persons have propensity to move for seeking better opportunities.

Population 6 Years of Age and over by Migration Status, Level of Education, China 2010					
Educational Level	Aged 6 years & over (10,000)		Percent		Migration Rates
	Population	Migrants	Population	Migrants	(%)
Total	124,255	25,004	100.0	100.0	20.1
Never Attending	6,214	479	5.0	1.9	7.7
Elementary	35,721	4,093	28.7	16.4	11.5
Junior Secondary	51,818	10,245	41.7	41.0	19.8
Secondary	18,665	5,667	15.0	22.7	30.4
University	11,837	4,365	9.5	17.5	36.9
National Statistical Office, 2010 Population Census of China					

# Migration by Marital Status

**Single, Divorced and Separated persons are more likely to move than Widowed and Married.**

Population 15 Years of Age and over by Migration Status and Marital Status						
Thailand, 2006						
Marital Status	Population		Migrants		Migration Rate(%)	
	Male	Female	Male	Female	Male	Female
Total	24,583,140	28,097,670	1,017,830	893,996	4.14	3.18
Single	7,273,747	5,647,174	370,318	240,549	5.09	4.26
Married	16,070,777	16,602,841	610,466	571,105	3.80	3.44
Widowed	664,936	2,803,908	8,816	37,781	1.33	1.35
Divorced	267,523	479,560	13,617	17,379	5.09	3.62
Separated	303,553	558,852	14,612	25,620	4.81	4.58

# Migration by Labor Force Status

**Un-employed persons are likely to move due to seeking for job, and etc.**

Population 15 Years of Age and over by Migration Status, Labor Force Status, Thailand, 2006			
Labor Force Status	Total	Migrants	Migration Rate
Total	50,680,811	1,911,826	3.77
Total Labor Force	36,830,190	1,504,354	4.08
Employed	36,257,305	1,415,675	3.90
Unemployed	484,261	85,535	17.66
Wait for Farm	88,624	3,143	3.55
Not in Labor Force	13,850,620	407,472	2.94
National Statistical Office, <i>The 2006 Migration Survey</i> , Thailand			

# Migration by Occupation

**Workers engaging production job are likely to move due to high demand for the job.**

Occupation	Aged 16 years & over (10,000)		Percent		Migration Rates (%)
	Population	Migrants	Population	Migrants	
Total	71,548	6,023	100.0	100.0	8.4
Administrative work and managers	1,269	147	1.8	2.4	11.6
Professional and technical work	4,891	352	6.8	5.8	7.2
Clerical work	3,093	303	4.3	5.0	9.8
Sales and service	11,572	1,665	16.2	27.6	14.4
Agriculture, forestry and fisheries	34,565	210	48.3	3.5	0.6
Production, transport	16,088	3,339	22.5	55.4	20.8
Other	70	6	0.1	0.1	9.3

National Statistical Office, 2010 Population Census of China



# The main purposes for migration are economic reasons.

Reason for Intra-province Migration in China, 2010			
Reasons	Both sexes	Males	Females
Total	100.0	100.0	100.0
Business, Seeking for Job	49.0	55.2	42.1
Education, Training	11.4	10.9	12.0
Family matters	14.2	11.8	16.8
Relatives and friends	4.2	3.7	4.7
Moving, change of address	9.3	9.4	9.2
Marriage	4.8	1.6	8.4
Others	7.1	7.4	6.8
Source: Population Census of China, 2010			

# Feature and Definition of Terms in Migration

**Migration** is the basic factor affecting change of the size and composition of the population in an area, but migration doesn't imply any ultimate change in the total number of human beings, different from fertility and mortality.

**In-migration and Out-migration:** Every move is an out-migration with respect to the area of origin and an in-migration with respect to the area of destination.

**Net Migration = In-migration – Out-migration**

Net Migration in the area is plus (minus) means growth (decline) of population in the area, as far as social increase.

# Terms in Internal and International migration

**In-migrant or out-migrant** : An in-migrant of a certain area (of destination, arrival) is simultaneously an out-migrant of another area (of origin, departure). In-migrant or out-migrant is the term usually referring to internal migration.

**Immigrant or emigrant**: An immigrant or an emigrant used in a similar status as an in-migrant or out-migrant but referring to international migration across national boundaries.

# Measures of Mobility (Migration Rates)

Migration rates in a given period:

Out-migration rate =  $O_a / P_a * 100$  (or 1000)

In-migration rate =  $I_a / P_a * 100$  (or 1000)

Net-migration rate =  $(I_a - O_a) / P_a * 100$  (or 1000)

Gross-migration rate =  $(I_a + O_a) / P_a * 100$  (or 1000)

where  $O_a$ : the number of out-migrants from area **a**

$I_a$ : the number of in-migrants to area **a**

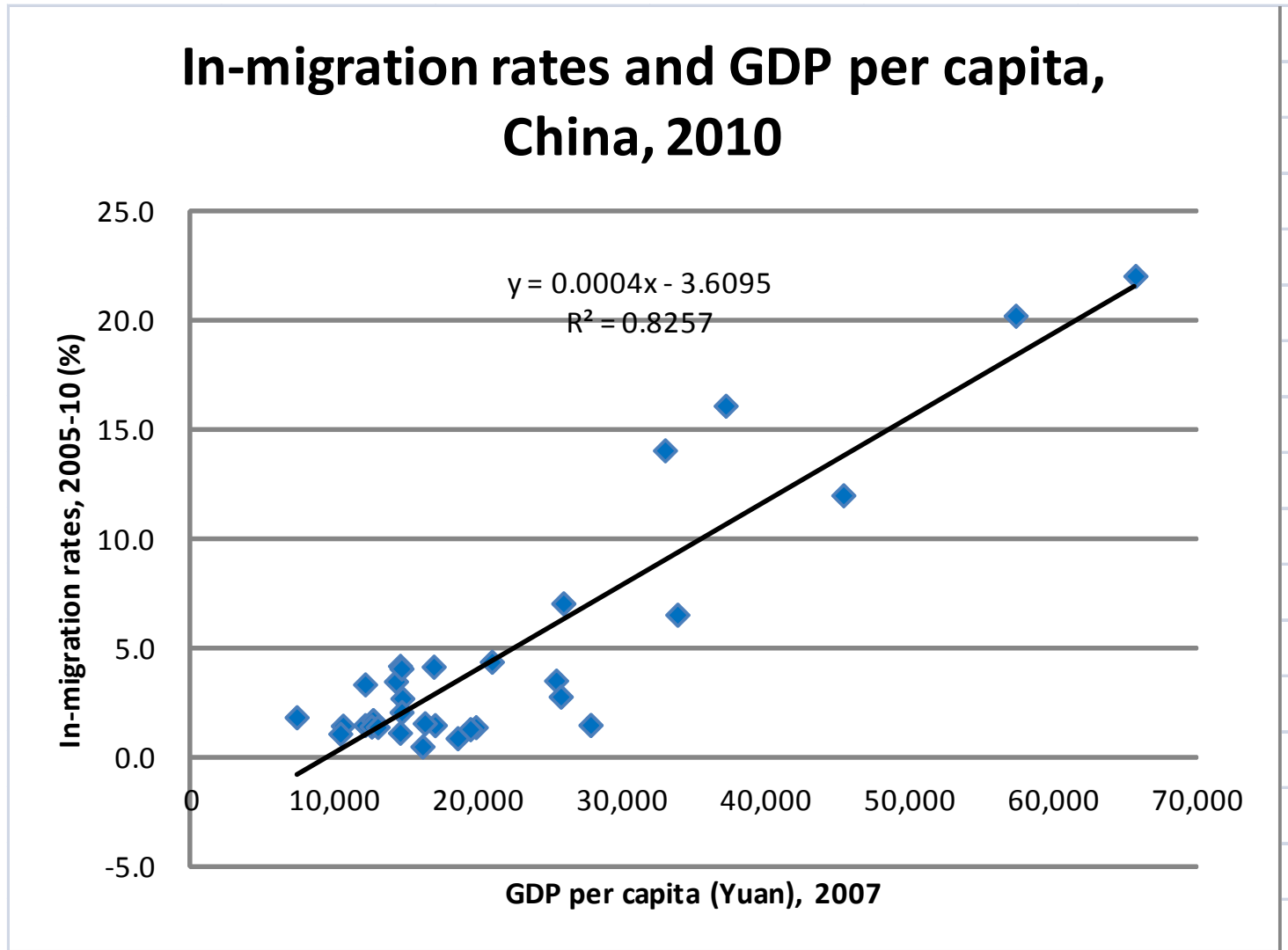
$P_a$ : the population of area **a**

# Inter-region Migration from Place of Usual Residence 5 years Ago to Place of Present Residence, 2005–10, China

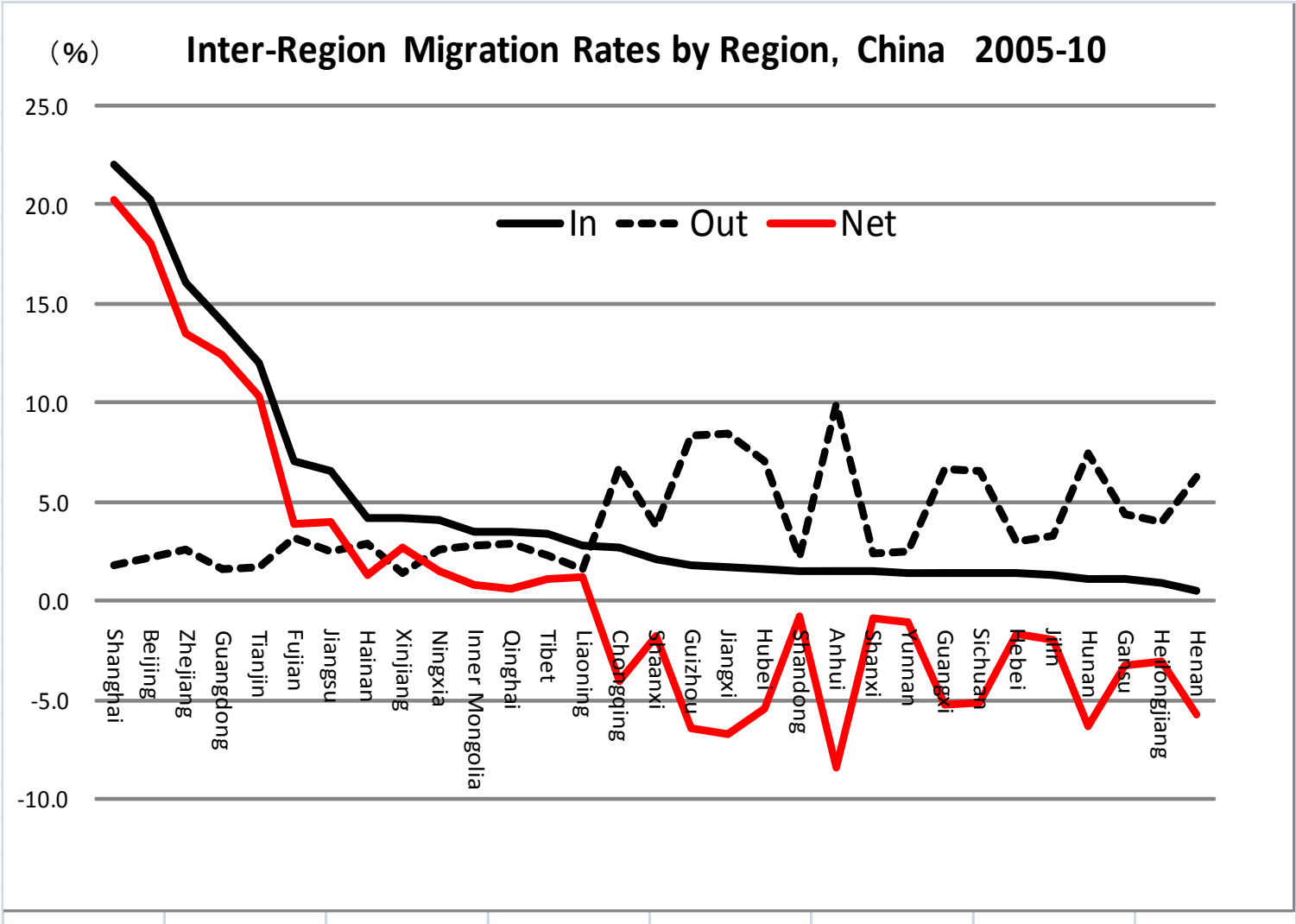
**In-migration rate is higher in Beijing and Shanghai due to high income in these regions..**

Region at Place of Present Residence	Pop aged 5 &+ 2010 (10,000) (1)	Inter-region Migrants (10,000)			Inter-region Migration Rate (%)			Per Capita GDP (Yuan),2007
		In (2)	Out (3)	Net (4)	In (2)/(1)*100	Out (3)/(1)*10	Net (4)/(1)*10	
National Total	125,728	5,499	5,499	0	4.4	4.4	0.0	20,860
Beijing	1,893	383	41	342	20.2	2.1	18.1	57,277
Tianjin	1,248	150	21	128	12.0	1.7	10.3	45,295
Hebei	6,708	92	202	-109	1.4	3.0	-1.6	19,746
Shanxi	3,389	50	79	-30	1.5	2.3	-0.9	16,898
Inner Mongolia	2,359	83	65	18	3.5	2.7	0.8	25,327
Liaoning	4,221	117	69	49	2.8	1.6	1.2	25,648
Jilin	2,637	34	85	-52	1.3	3.2	-2.0	19,358
Heilongjiang	3,693	32	146	-114	0.9	4.0	-3.1	18,475
Shanghai	2,223	490	40	450	22.0	1.8	20.2	65,602

Persons tend to migrate to high-income area for seeking better working condition.



# Sort out In-migration Rate by Descending Order to find the Highest Migration Rate



# Age Structure and Sex Ratio for Migrants & Non-migrants, Migration Rates, Thailand 2000

**Sex ratio of migrants is higher than that of non-migrants**  
**Migration rate for males is higher than females except those aged 15–19. Mobility of males is higher than females.**

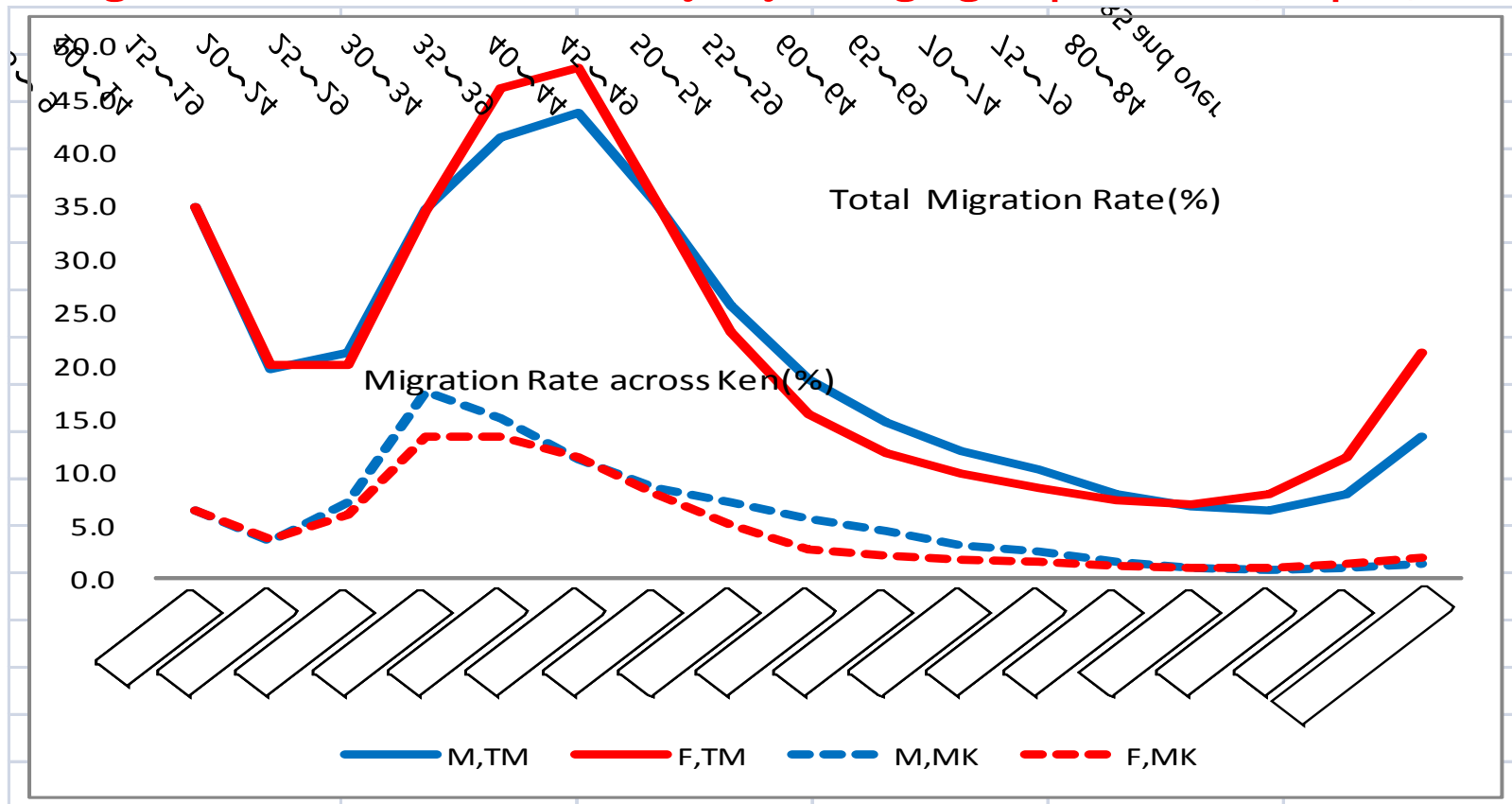
Age Group	Age Structure		Sex Ratio		Migration Rates (%)	
	Migrants	Non-Migrants	Migrants	Non-Migrants	Males	Females
Total	100.0	100.0	109	96	6.6	5.9
0~4	7.6	7.7	109	106	4.7	4.6
5~9	8.4	8.6	107	106	4.2	4.2
10~14	8.3	8.6	110	105	3.8	3.6
15~19	8.7	8.7	86	104	6.0	7.2
20~24	8.6	8.0	110	100	14.1	13.1
25~29	8.9	8.4	108	93	12.4	11.0
30~39	17.7	17.4	115	93	8.7	7.1
40~49	13.8	14.0	120	94	5.1	4.1
50~59	8.4	8.7	118	93	3.4	2.7
60~69	5.7	6.0	105	86	2.5	2.0
70 and over	3.8	3.9	78	75	1.8	1.8



# Age-Specific Migration Rates(ASMR)

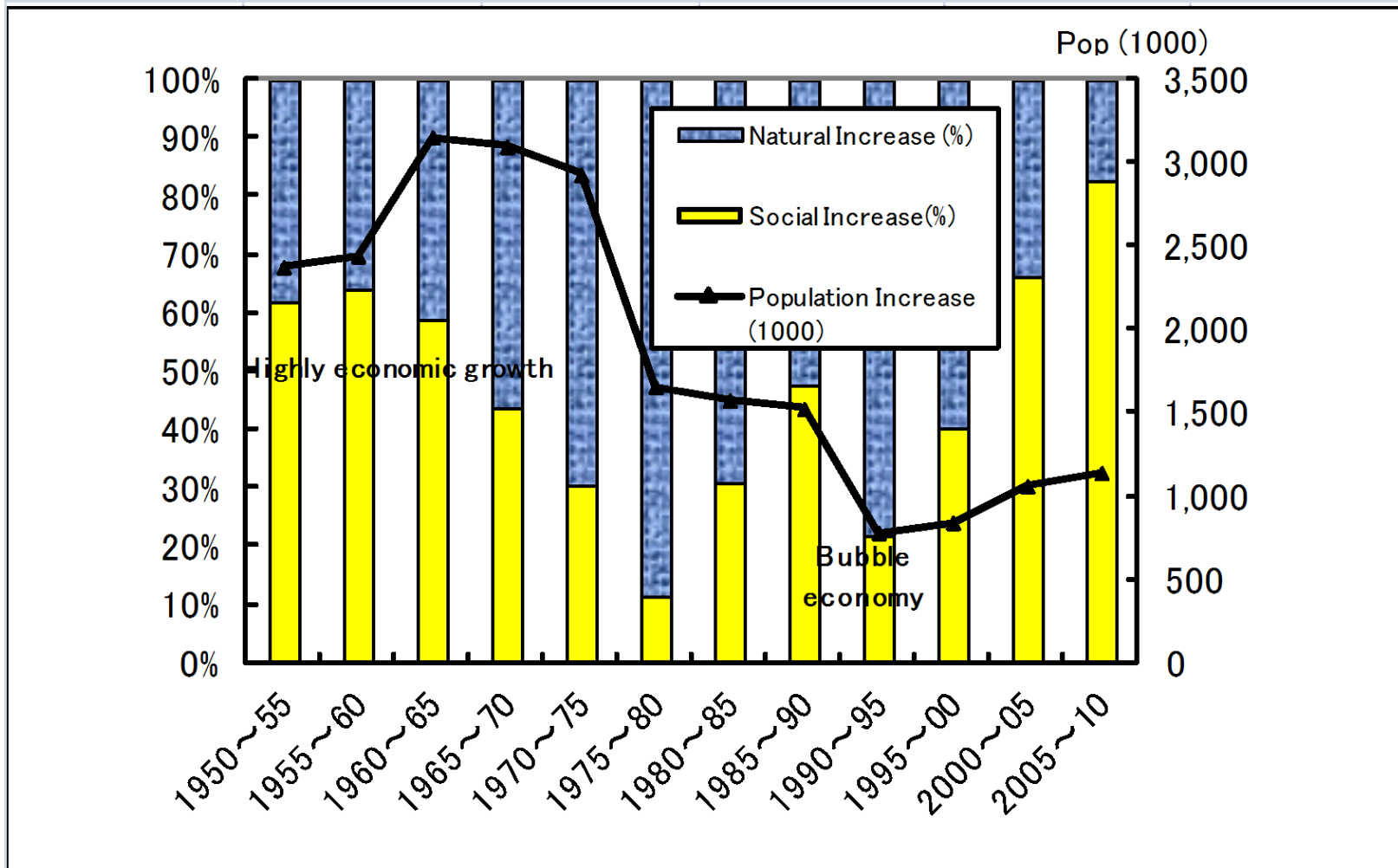
It is well known that a person's propensity to migrate varies greatly with age. It rises rapidly to reach a peak at around ages 20–34 years, and then falls away quite rapidly and rises again at older ages. Migration rate for short distance is higher than that for long distance, and rate of females is higher than males' at short distance, however vice versa at long distance.

Migration rates for 2005–10 by 5 year age group and sex, Japan, 2010



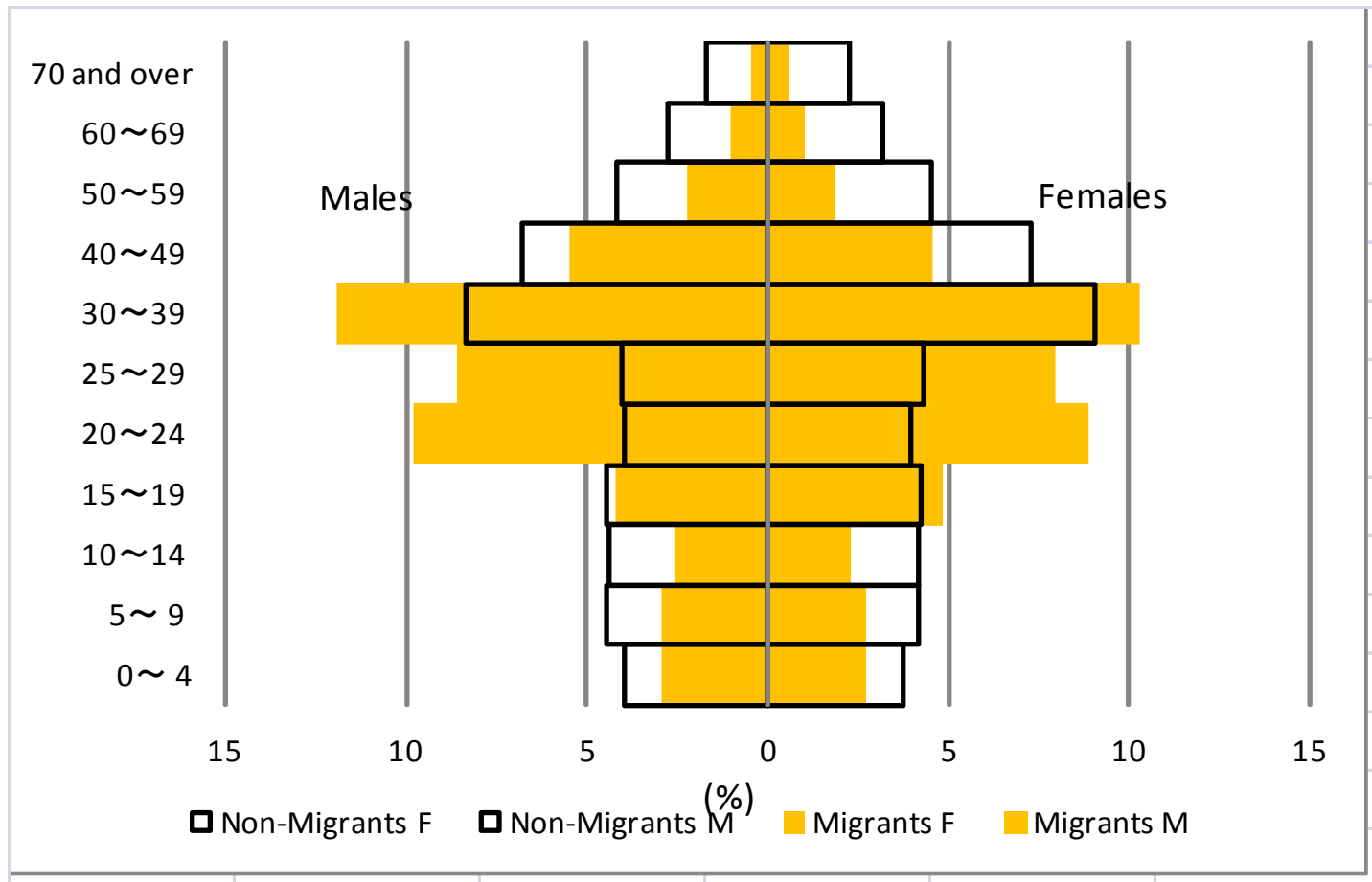
# Population Increase of Tokyo Metropolitan Area by Shares of Social and Natural Increases.

Persons tend to move at highly economic growth period  
seeking for job.



Source: Statistics Bureau, Population Census of Japan, each 5 year.

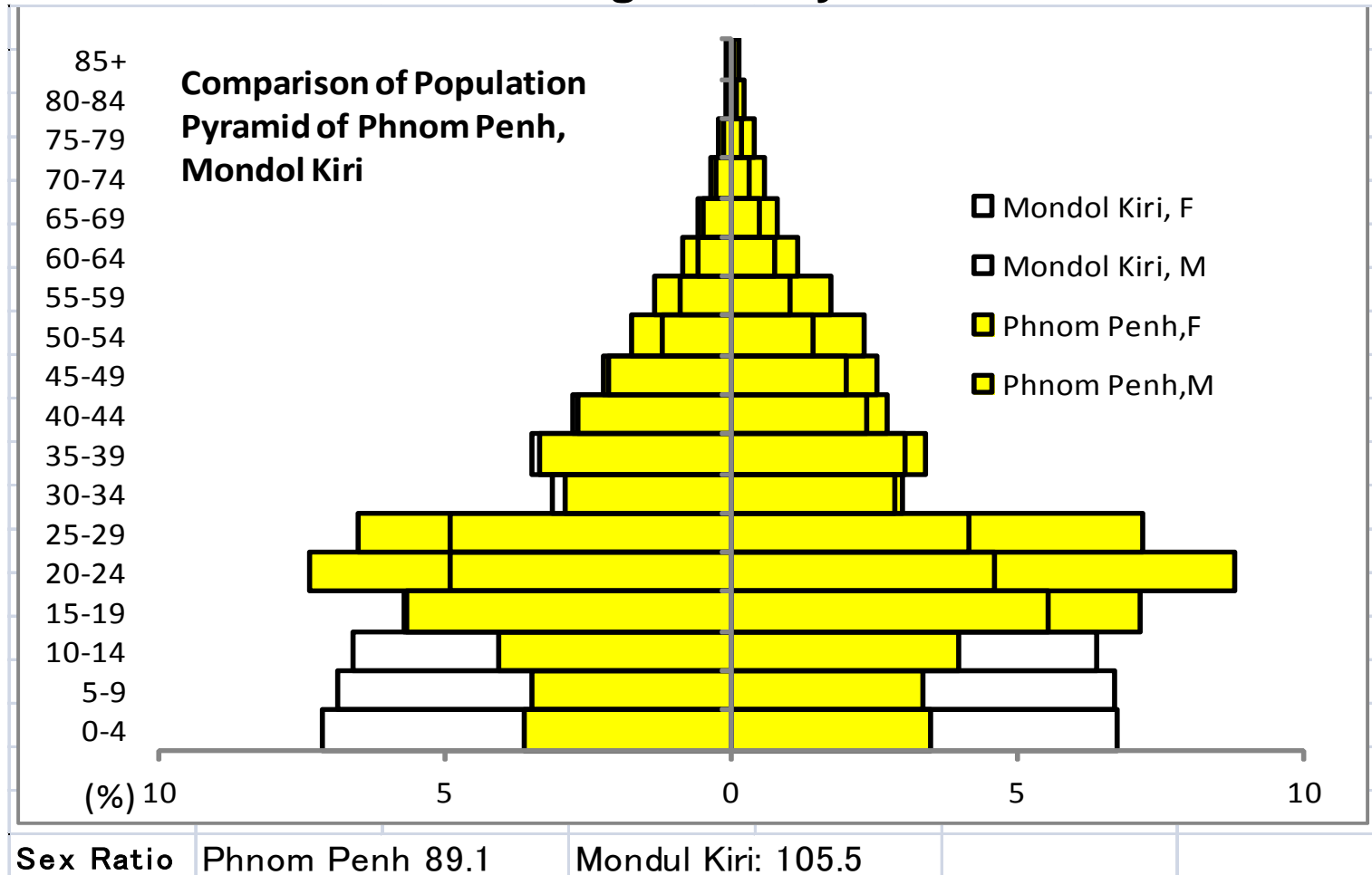
# Comparison of Population Pyramids between Migrants and Non-migrants, Case for Thailand, 2000



# Population Pyramid of 2 areas

Population of Phnom Penh: Due to in-migration, large proportion of younger population aged 15~29 is shown.

Large proportion of child population of Mondol Kiri is affected by high fertility.



# Population Pyramid of Tokyo and Hokkaido, 2010

Due to migration, younger age population resides more in Tokyo than in Hokkaido.

