

Part C

Analysis of the Viet Nam Population Database

September 2022

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Part C

Analysis of the Viet Nam Population Database

1. Introduction

Collecting accurate data on population is the first step to achieving Sustainable Development Goals (SDGs). In most countries of the world, population census, covering everybody living in the national boundary, is organised at least once in 10 years. The universal coverage of birth registration is one of the targets of the SDGs (16.9), and in many countries, the coverage has increased. However, death registration coverage remains low in many countries.

Various attempts are being made to improve population data in Asia. In Viet Nam, birth registration coverage is as high as 95%, but there is no official publication on death registration coverage (UN, 2021). So, there is ample space for the improvement of the death registration.

To obtain population information, the General Office for Population and Family Planning (GOPFP), Ministry of Health, Viet Nam, developed a system of population and family planning (PFP) database. It is based on Decision No.18/QĐ-TCĐS dated 17/3/2016 of the General Department of Population, Ministry of Health. The PFP database covers the total population of Viet Nam through the activities of the GOPFP. The 150,000 PFP collaborators throughout the country collect population information while conducting Information Education Communication (IEC) activities for family planning and providing contraceptives (GOPFP, 2019). The information is reported from 11,159 communes to 713 districts in 63 provinces and integrated at the national level. The information collected is contraceptive use, birth, death, migration, along with basic demographic information.

This database is one of many databases existing in the country's ministries. Ministry of Health owns other databases on other health topics while the General Statistics Office (GSO) conducts censuses and sample surveys to obtain similar population information. Also, the Ministry of Justice and Ministry of Public Security are in charge of civil registration based population databases (Linh, 2017). At present, a coordination mechanism is deemed important.

As the PFP database covers the total population in Viet Nam with periodical updates by PFP collaborators, it can be a good data source and could improve the national population data infrastructure. This research aims to describe the PFP database system, its data quality, and its characteristics.

2. System of Information Collection and Database Structure

The PFP database is created with the information collected from each family in Viet Nam by PFP collaborators (Cộng tác viên, sometimes referred to as “CTV”), coordinated by one population officer at each commune. Then the information is gathered by districts in 713 *CƠ SỞ DỮ LIỆU* (CSDL), or database; by provinces in 63 CSDL; and, at the national level in one CSDL. The stored data in clouds are used through VPN-PFP by users (Figure C-1). The data is composed of following items (Figure C-2);

1. Nine basic items of information: address, name, relationship to the household head, sex, date of birth, ethnic, education, marital status, and resident status,
2. Contraceptive use for women 15-49,
3. Vital events (birth and death),
4. Moving in and out, and
5. Change of basic information.

The form, coded as A0, used by the PFP collaborators and the population officers, is shown in Figure C-3.

Figure C-1. System of Data Collection

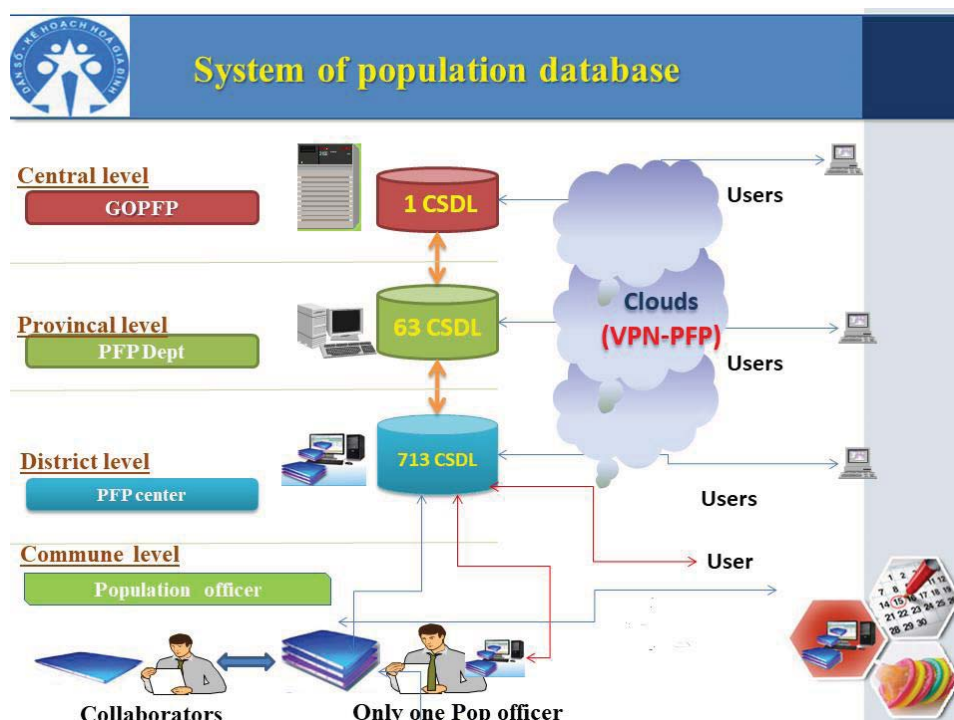


Figure C-2. Information Collected

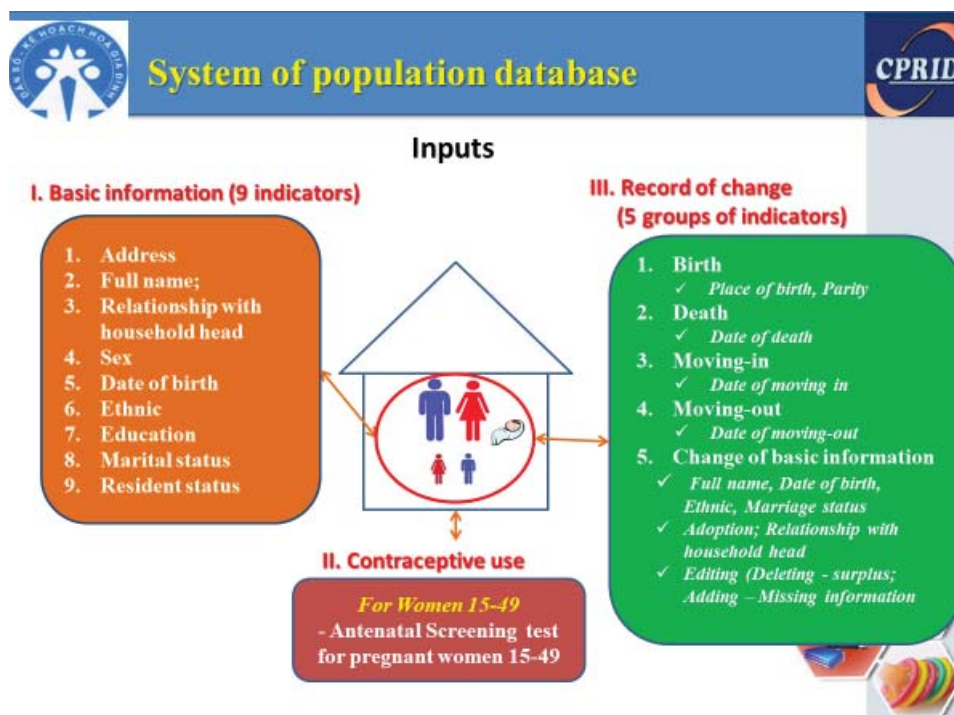


Figure C-3. Form A0 for Information Collection

Vietnamese

I - THÔNG TIN CƠ BẢN HỘ SỐ: 00003

Địa chỉ hộ: Trần Thị Điền, Kỵ Kim Châu, Phường Bình Định

Số TT	Họ và tên	Quan hệ với chủ hộ	Giới tính	Ngày sinh	Dân tộc	Trình độ học vấn	Tình trạng hôn nhân	Tình trạng cư trú
1	TRẦN THỊ ĐIỀN	Chủ hộ	Nữ	15/11/1959	Kinh	TH/0	Có chồng	
2	NGUYỄN NGỌC LỤC	Con	Nam	10/10/1966	Kinh	CS/0	Có vợ	
3	NGUYỄN TIẾN NGHĨA	Con	Nam	06/06/1979	Kinh	CS/0	Có vợ	
4	PHẠM THỊ KIM HÀ	Con dâu/con nuôi	Nữ	19/10/1978	Kinh	CS/0	Có chồng	
5	VÕ THỊ ĐỒNG	Mẹ	Nữ	01/01/1940	Kinh		Góa	
6	NGUYỄN THÁI BÌNH	Cháu	Nam	06/02/2003	Kinh	CS/0		
7	NGUYỄN THU THẢO	Cháu	Nữ	18/07/2007	Kinh	TH/0		

II. THEO DÕI SỬ DỤNG BPTT
Họ và tên: PHẠM THỊ KIM HÀ
Năm sinh: 1978 BPTT: 5
Tháng năm bắt đầu SDBPTT: 00/09/2009

Tháng	2016	2017	2018	2019	2020
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

III. THEO DÕI CÁC THAY ĐỔI

1. Trẻ mới sinh
(1) Họ và tên:
- Ngày sinh:
Đẻ tại TYT [] nhà [] nơi khác []
là con thứ..... của bà mẹ
(2) Họ và tên:
- Ngày sinh:
Đẻ tại TYT [] nhà [] nơi khác []
là con thứ..... của bà mẹ

2. Người chết
(1) Họ và tên:
Ngày chết:
(2) Họ và tên:
Ngày chết:

3. Chuyển đến từ xã khác
(1) Họ và tên:
Ngày đến:
(2) Họ và tên:
Ngày đến:
(3) Họ và tên:
Ngày đến:

4. Chuyển đi khỏi xã
(1) Họ và tên:
Ngày đi:
(2) Họ và tên:
Ngày đi:
(3) Họ và tên:
Ngày đi:

5. Thay đổi thông tin cơ bản
- Họ, tên; ngày sinh; dân tộc; hôn nhân.
- Nhân con nuôi; quan hệ với chủ hộ.
- Sửa sai; xóa do ghi nhầm; thêm do ghi thiếu.

Ngày tháng năm	Chi thay đổi	Tên

I. Basic information on household

Địa chỉ hộ: Trần Thị Diễm Kv Kim Châu, Phường Bình Định

Số TT	Full name	Relationship to household head	Sex	Date of birth	Ethnic	Education	Marital status	Resident status
1	TRẦN THỊ DIỄM	Chủ hộ	Nữ	15/11/1999	Kinh	TH/0	Có chồng	
2	NGUYỄN NGỌC LỤC	Chồng	Nam	10/10/1996	Kinh	CS/0	Có vợ	
3	NGUYỄN TIẾN NGHĨA	Con	Nam	06/06/1979	Kinh	CS/0	Có vợ	
4	PHẠM THỊ KIM HÀ	Con dâu/con rể	Nữ	19/10/1978	Kinh	CS/0	Có chồng	
5	VÕ THỊ ĐỒNG	Mẹ	Nữ	01/01/1940	Kinh		Góa	
6	NGUYỄN THÁI BÌNH	Cháu	Nam	06/02/2003	Kinh	CS/0		
7	NGUYỄN THU THẢO	Cháu	Nữ	18/07/2007	Kinh	TH/0		

II. Contraceptive use

Full name: KIMHA
 Year of birth: T: 5
 Beginning month: BPIT: 00/09/2009

Month	Year				
	2016	2017	2018	2019	2020
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

III. Record of change

1. New birth

(1) Họ và tên: Full name
 Ngày sinh: Date of birth

đẻ tại TYT [] nhà [] nơi khác []
 là con thứ của bà mẹ

(2) Họ và tên:
 Ngày sinh:/...../.....

đẻ tại TYT [] nhà [] nơi khác []
 là con thứ của bà mẹ

2. Death

(1) Họ và tên: Full name
 Ngày chết: Date of death

(2) Họ và tên:
 Ngày chết:/...../.....

3. In from another commune

(1) Họ và tên: Full name
 Ngày đến: Date of moving in

(2) Họ và tên:
 Ngày đến:/...../.....

(3) Họ và tên:
 Ngày đến:/...../.....

4. Out to another commune

(1) Họ và tên: Full name
 Ngày đi: Date of moving out

(2) Họ và tên:
 Ngày đi:/...../.....

(3) Họ và tên:
 Ngày đi:/...../.....

5. Change of basic information

Full name; date of birth; Ethnic; marital status
 Adoption, Relation to household head
 Change; delete; add information

Date month year	Content of change	Name

Place of birth: health center of commune [] Home [] Other []
 The number order of child: []th of mother

3. National Population

The PFP database was established in 1994, but the data is usable only since 2014. Out of the PFP database, the population and the number of deaths each year were tabulated for the period of 2014 to 2018. The tabulation summary is shown in Table C-1.

Table C-1. All Age Summary of Population and Deaths

Year	Population (p)	Pop. change	Survived births (b)	Deaths (d)	Cohort change (c)	Crude birth rate b/p	Crude death rate d/p	Cohort change rate c/p
2014	99,204,873		1,618,899	370,562		1.63%	0.38%	
2015	99,122,336	-82,537	1,581,897	374,279	1,664,424	1.60%	0.38%	1.68%
2016	98,140,948	-981,388	1,346,361	388,310	2,327,739	1.37%	0.40%	2.37%
2017	97,610,666	-530,282	1,326,236	377,942	1,856,508	1.36%	0.39%	1.90%
2018	97,453,401	-157,265	1,204,799	369,002	1,362,054	1.24%	0.38%	1.40%

Notes:

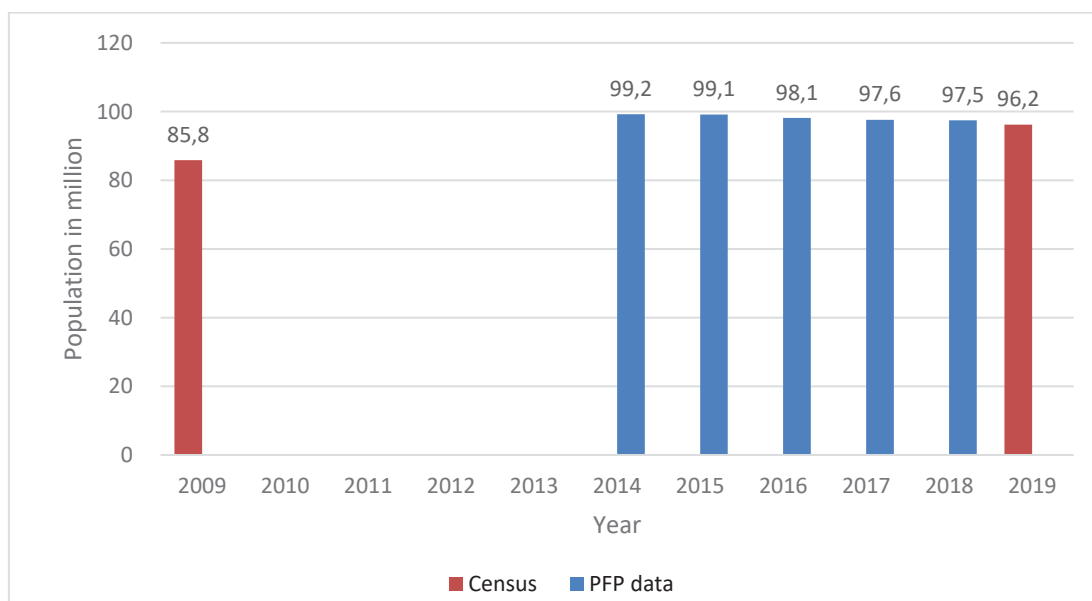
1. Survived birth is defined here as the number of persons whose birth year is the same as the tabulation year.
2. Cohort change of year x is the sum of (population of year x – population of year x-1 – deaths) of each birth year.

Source: Population and Family Planning database tabulation.

Since the PFP database is counted at the end of each year and the population census of 2019 was conducted on April 1, there is only a three-month difference between them. The total population of 2018 in the PFP database is 97,453,401 and population census 2019 is 96,208,984 (GSO, 2020). The PFP data is only 1.2 million, or 1.3%, more than the population census.

The trends of the two data are opposite, but they converged. The population of PFP data declined from 2014 (99,204,873) to 2018, with an annual decrease rate of 0.44%. As for the population census, it increased from 85,846,997 in 2009 to 2019, an annual increase rate of 1.15% (Figure C-4).

Figure C-4. Population by PFP Database and Population Census



Source: Population and Family Planning database tabulation and population census by General Statistics Office.

In this study, the PFP database was tabulated to produce population and deaths by birth year. Birth data was not tabulated, but could be approximated by the number of births and deaths of the first birth year population. Thus approximated crude birth rate is 1.63% in 2014 and 1.24% in 2018, monotonously declining throughout the period. The rate is lower compared to the GSO survey rate of 1.60% in 2016 (GSO, 2017). However, as it did not include births that ended in death within the same year, the real birth rate can be higher and possibly the same level as the GSO survey indicator.

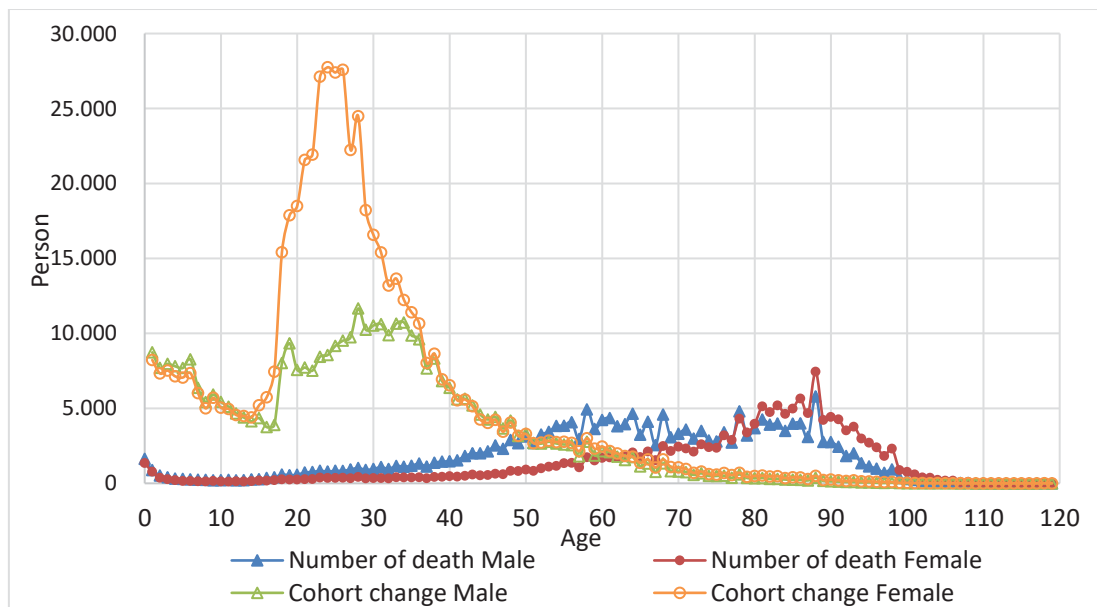
The crude death rate calculated from the PFP database (the sum of all deaths for all ages divided by total population) is within the range of 0.38 to 0.40%, substantially lower than the rate of 0.68%, reported by the GSO survey in 2016. This difference could be due to the under-registration of deaths.

On the other hand, as the PFP database tabulation includes population by birth year, we can calculate annual cohort change, the difference of population of birth year x in consecutive years. The cohort change is composed of deaths and international migration if the population is correctly registered. Figure C-5 shows the number of deaths and cohort change by age. The level of cohort change is high for young adults around their 20s, especially for women. For example, 27,751 women aged 24 (born in 1994) decreased in 2018 from 2017, not including those registered dead (362 persons). This high rate of 'disappearance' of young women in the database might be due to de-registration, considering the PFP database is for family planning. It would be improbable that so many young women move out of the country, more than the young men of the same age. Suppose we assume the cohort change is due to international migration, the number of international migrants becomes 993,062 or 1.02% of

the total population in 2018. It is around 12 times higher than the existing estimate of the United Nations, of 80,000 persons per year (UN, 2019).

The large cohort change decreases by age. For older age, the number of deaths is more than the cohort change.

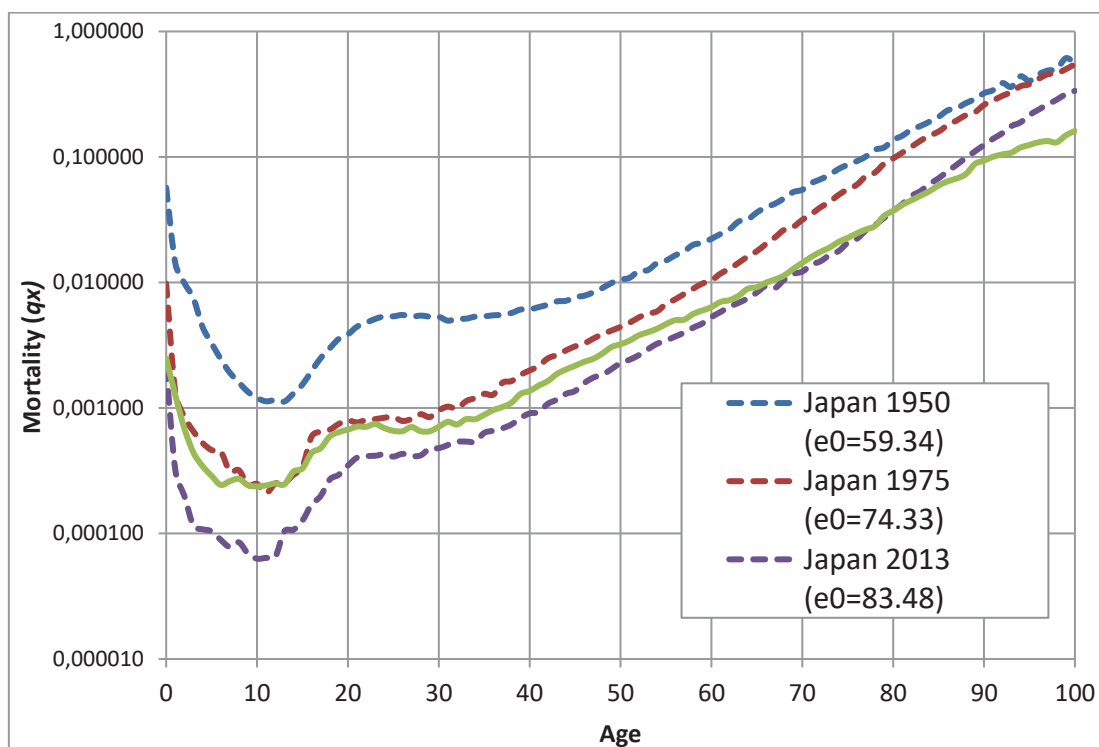
Figure C-5. Number of Deaths and Cohort Change by Age, 2018



Source: Population and Family Planning database tabulation.

Figure C-6 shows the age-specific mortality derived from PFP database compared with Japan for 1950, 1975, and 2013. Considering the life expectancy of Viet Nam in 2016 was 73.4 years (GSO, 2017), the mortality curve should be close to that of 1975 Japan, when the life expectancy was 74.33. Interestingly, the younger age up to 20s, the Vietnamese curve based on registered deaths is close to that of 1975 Japan. After that, the Vietnamese curve of registered deaths is substantially lower than that of Japan. From age 84, the Vietnamese mortality rate becomes lower than the 2013 Japanese mortality, which means that Vietnamese over 85 die less than Japanese, or death registration of old age is not complete in PFP database. Probably the latter might be true as the life expectancy in 2013 Japan is longer than Viet Nam in 2018.

Figure C-6. Age-specific Mortality, Viet Nam and Japan

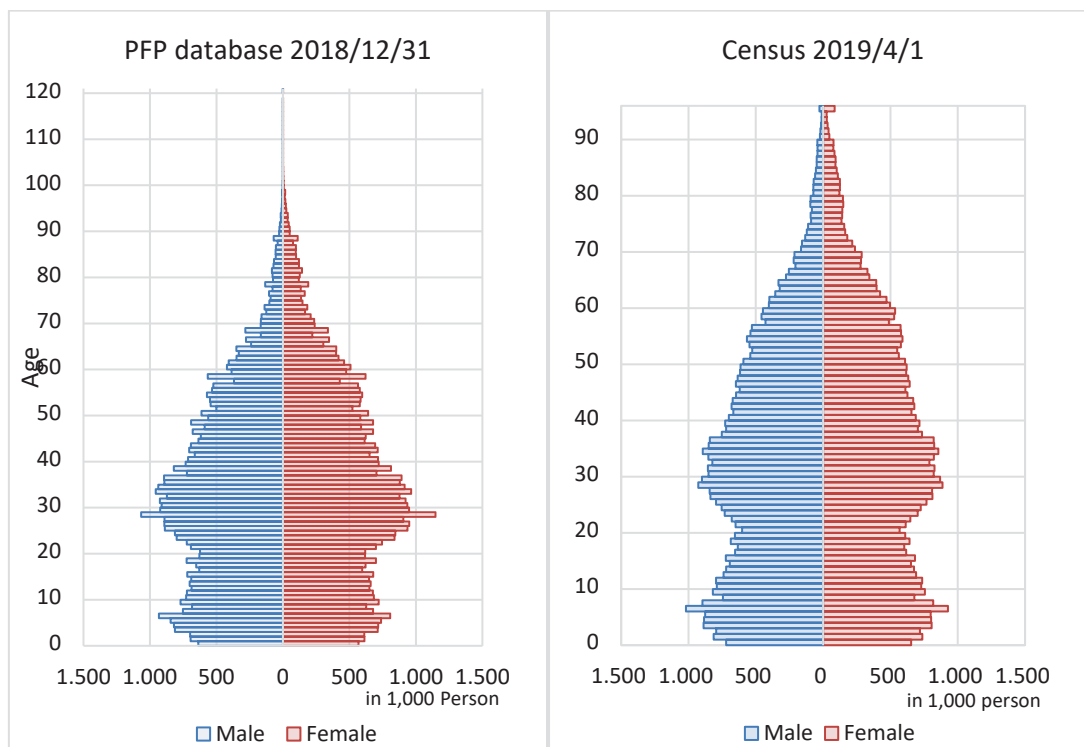


Sources: Population and Family Planning database for Viet Nam; Ministry of Health, Labour and Welfare, Japan (2021) Life Table.

The national population pyramid based on the PFP database, compared with that of the 2019 population census, is shown in Figure C-7. In the two pyramids, the overall age structure is similar. However, by age group, there are differences between the PFP database and population census. The percentage of children aged 0–14 is smaller, while persons aged 20–39 and elderly aged 75+ are larger in PFP data (Figure C-8). Although a significant decrease of young women cohort was found in the PFP 2018 data, the resulting population of that generation in the 2018 PFP data is larger than the census. It might suggest that PFP data overcounted young women of reproductive age, but the over-count is being corrected each year.

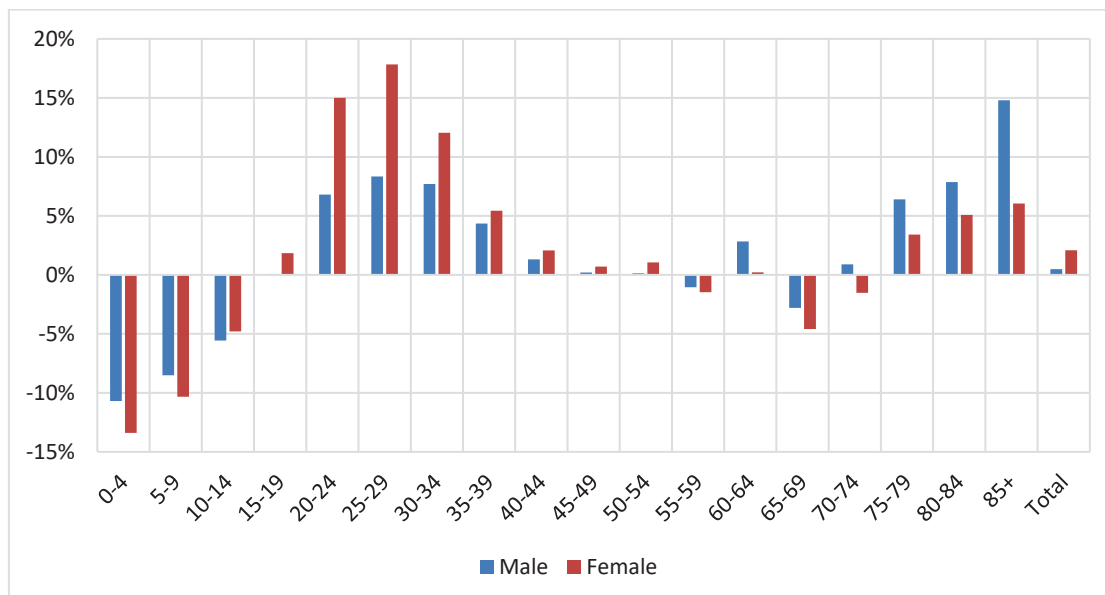
In the PFP data population pyramid, there is a striking increase of those born in 1990 for both men and women. The year 1990 corresponds to the silver horse year in the traditional calendar. Like the birth deficit of the fire horse year in Japan in 1966, or excess birth sex ratio in the Republic of Korea in 1990, the particular cultural aspect linked to the traditional calendar might have affected the number of babies in 1990. The absence of a sharp increase in the census population pyramid could be due to the difference in the survey date: census as of April 1 and PFP database as of the last day of the year.

Figure C-7. Population Pyramid, Viet Nam



Source: Population and Family Planning database tabulation and General Statistics Office of Viet Nam (2020), *Completed Results of the 2019 Viet Nam Population and Housing Census*.

Figure C-8. Difference of PFP Database (2018) and Population Census (2019) By Age Group

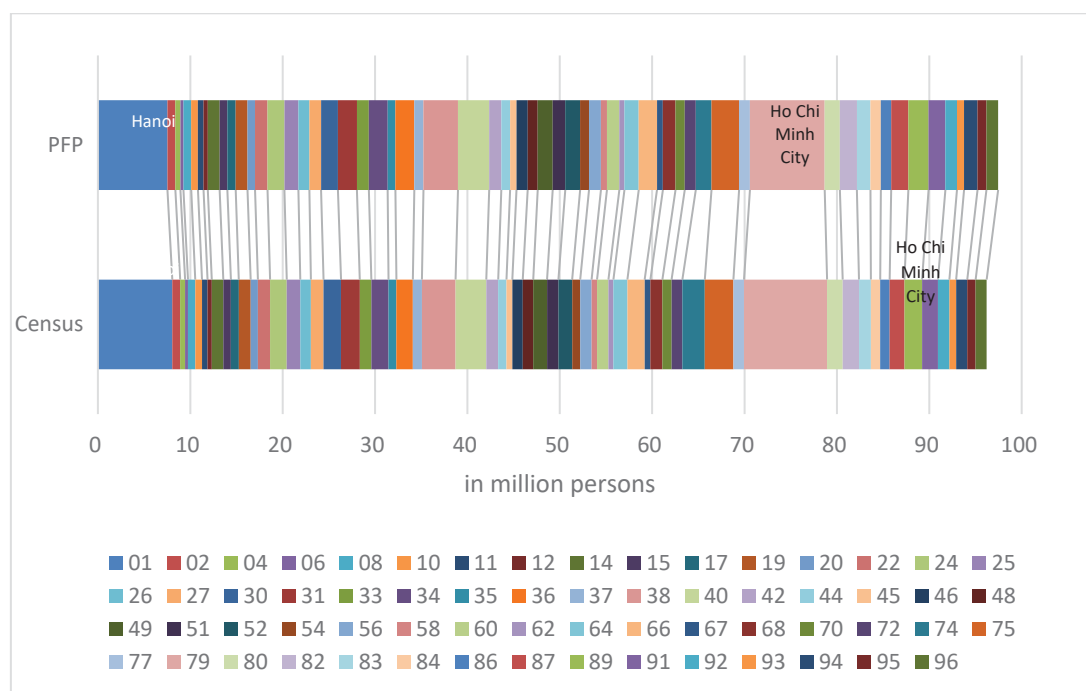


Source: Population and Family Planning database tabulation; General Statistics Office of Viet Nam (2020), *Completed Results of the 2019 Viet Nam Population and Housing Census*.

4. Provincial Population

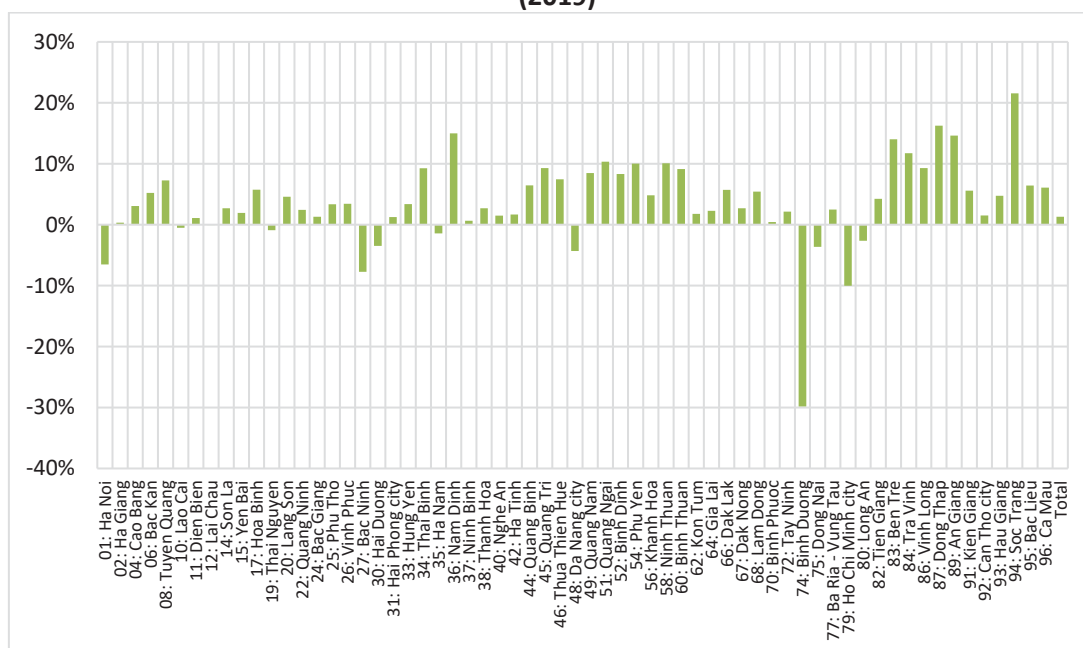
In this study, the PFP database was tabulated by 63 provinces. Compared to the 2019 population census, the composition of the provincial population of PFP data is similar (Figure C-9). The PFP data is larger for many provinces but smaller in some provinces (Figure C-10). In particular, Dinh Duong province population in PFP data is 30% smaller than census data (Figure C-11a). Dinh Duong province, situated at the north-east side of Ho Chi Minh City, the census figure grew substantially from 1.5 million in 2009 to 2.4 million in 2019. During the time, PFP data was stable around 1.7 million from 2014 to 2018. Possibly, the PFP database was not updated, or the counting method was different. In other provinces, population change in the PFP database from 2014 to 2018 is much smaller than census population change from 2009 to 2019.

Figure C-9. Population by Province, PFP Data (2018) and Population Census (2019)



Source: Population and Family Planning database tabulation; General Statistics Office of Viet Nam (2020), *Completed Results of the 2019 Viet Nam Population and Housing Census*.

Figure C-10. Difference of Population by Province, PFP Data (2018) / Population Census (2019)



Source: Population and Family Planning database tabulation; General Statistics Office of Viet Nam (2020), *Completed Results of the 2019 Viet Nam Population and Housing Census*.

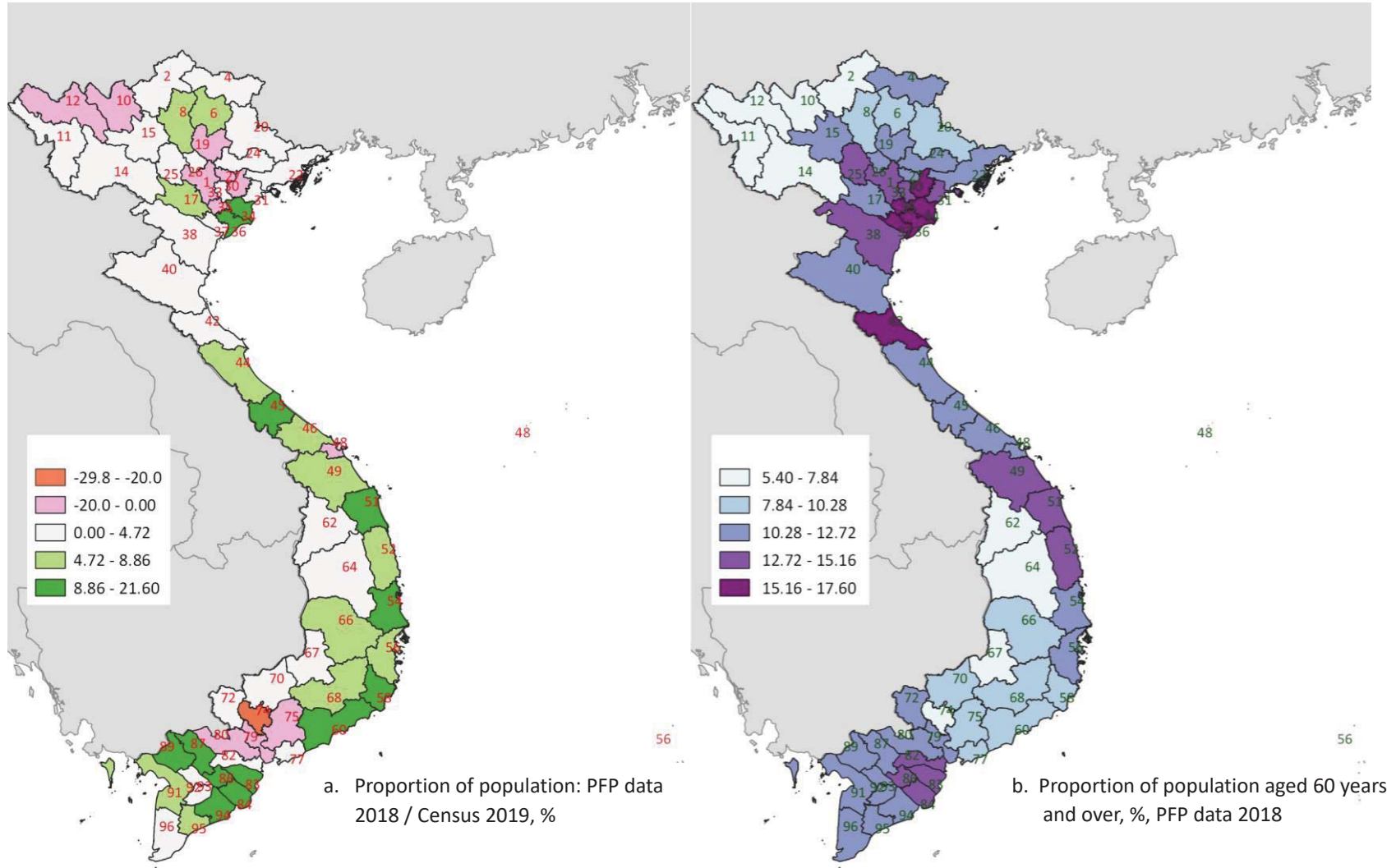
Provincial population pyramids share common traits (Annex Figure C-1). Two peaks of those born in 1990 (age 28) and 2012 (age 6) are observed. It can be the generational effect of the baby boom, with the first peak as the parents of the second. However, the relative size of the second baby boom is different for each province. There are even provinces where the second baby boom is hardly visible in the south, such as Ho Chi Minh City or Tien Giang. For the older generation, the decrease of people in their 50s in comparison to those in their 60s are visible in many provinces, notably in Hanoi.

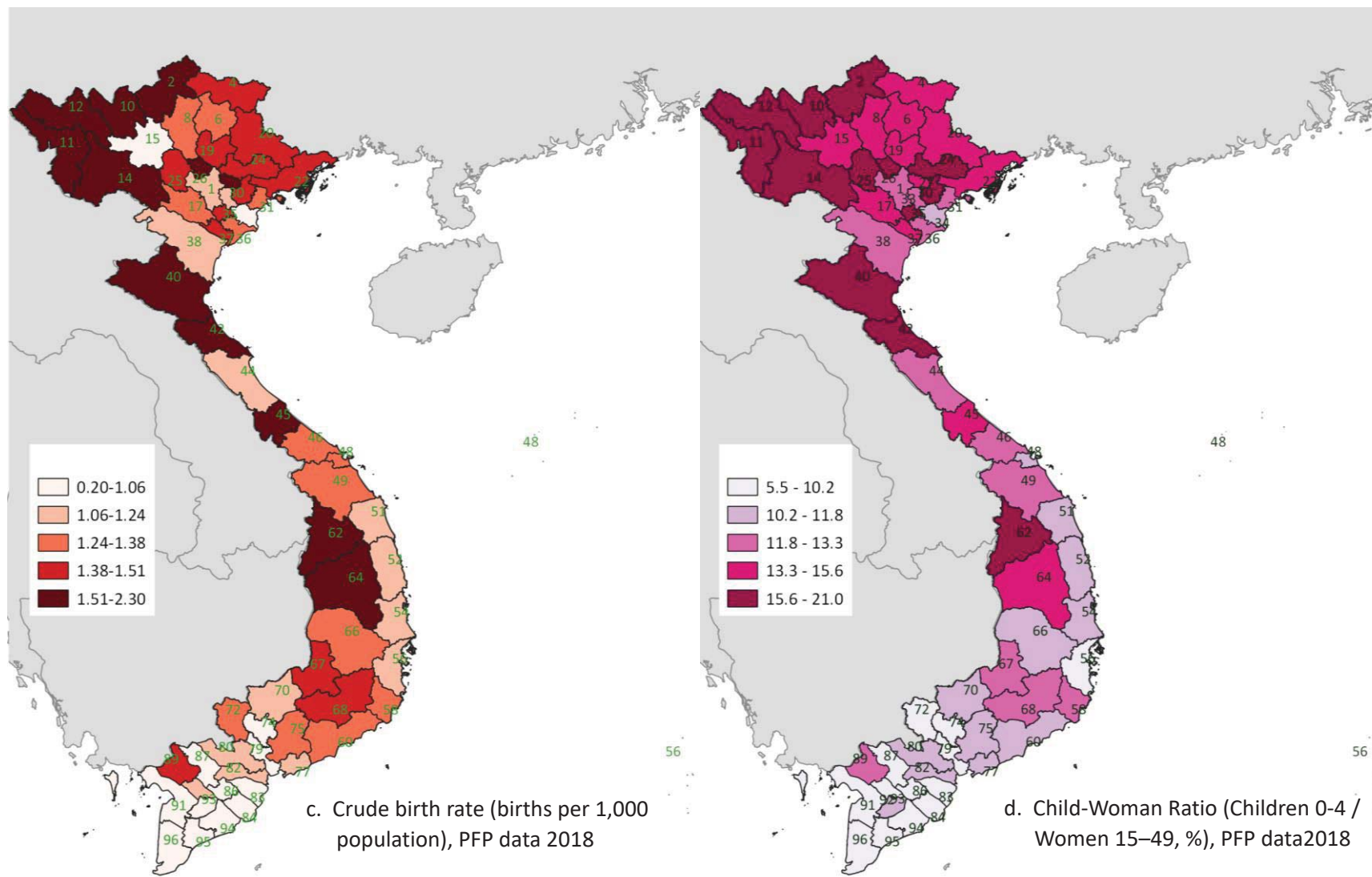
Both crude birth rate and child-woman ratio show a low fertility trend in the southern provinces in the Mekong Delta region (Figure C-11c and 11d). On the contrary, both crude birth rate and child-woman ratio are high in the provinces in the Northeast region sharing the borders with China and the Lao People's Democratic Republic, and in the Central Highlands Region, especially Kon Tum Province.

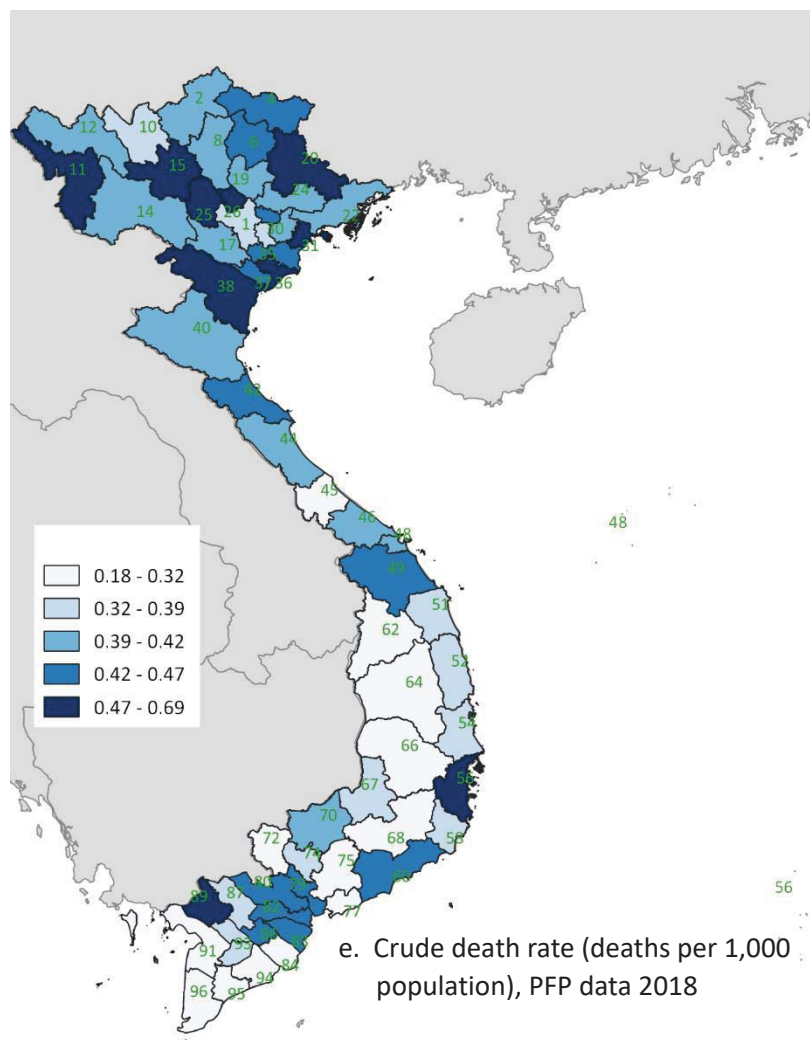
The mortality, measured as crude death rate and age-adjusted death rate, is high in the Northeast or Central Highlands regions and low in Hanoi or Ho Chi Minh City (Figures C-11e and 11f). This geographical distribution is the same as that of fertility. A clear correlation between fertility and mortality is found across provinces (Figure C-12).

The proportion of older persons aged 60 years and over is rather low in Hanoi and Ho Chi Minh City, but high in near-by provinces in the Mekong Delta and the Red River Delta Region (Figure C-11b). The high proportion of elderly in Ha Tinh Province is mysterious, as fertility and mortality are also high (Figure C-12).

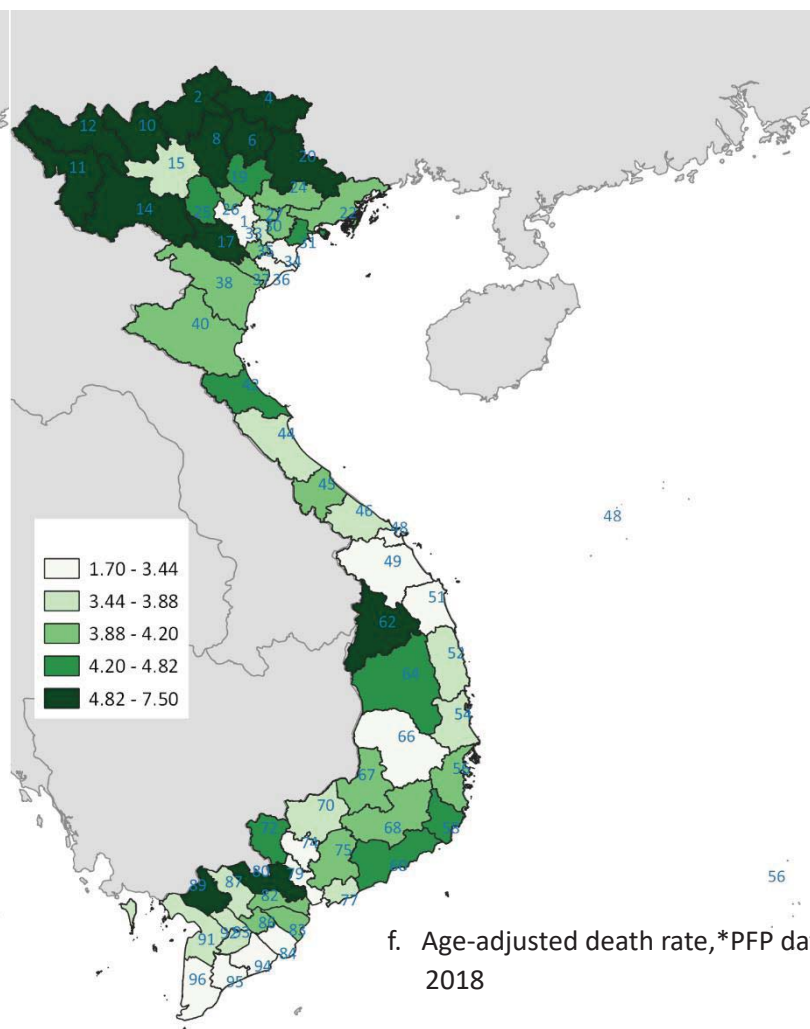
Figure C-11. PFP Data Indicators by Province, 2018







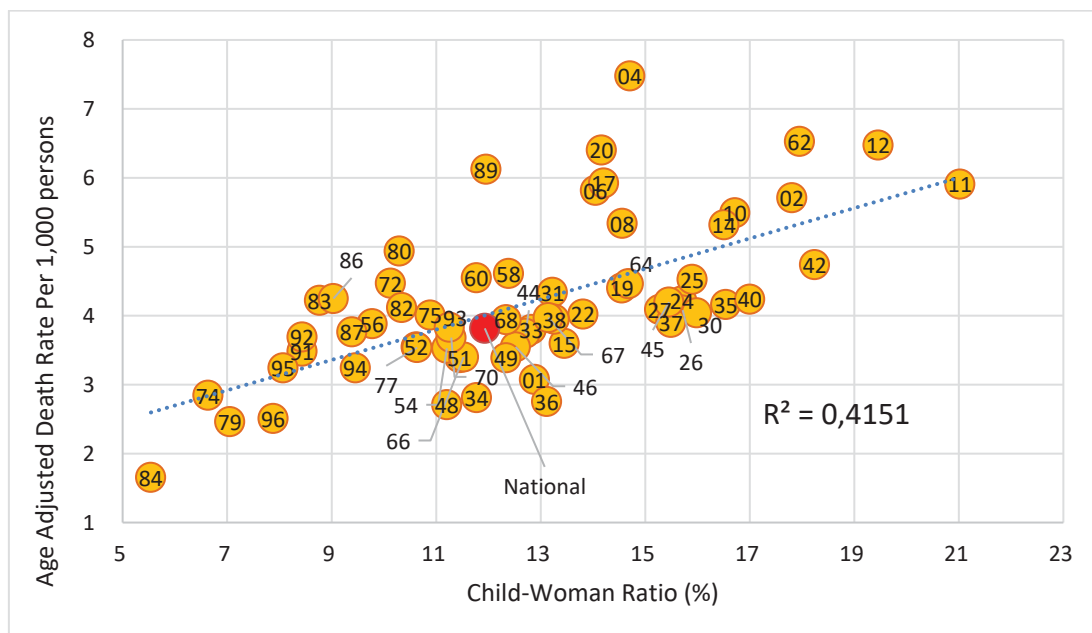
e. Crude death rate (deaths per 1,000 population), PFP data 2018



f. Age-adjusted death rate,*PFP data 2018

Note: Numbers on map are the province serial numbers listed in Table C-2.
Source: Population and Family Planning database tabulation

Figure C-12. Correlation of Fertility and Mortality, 2018



Note: Numbers are the province serial numbers listed in Table C-2.

Source: Population and Family Planning database tabulation.

Table C-2. Population of 63 Provinces, 2018

No	Province	Pop. 2018	No	Province	Pop. 2018
1	Ha Noi	7,527,455	49	Quang Nam	1,622,628
2	Ha Giang	857,459	51	Quang Ngai	1,359,091
4	Cao Bang	546,562	52	Binh Dinh	1,610,577
6	Bac Kan	330,265	54	Phu Yen	960,454
8	Tuyen Quang	841,826	56	Khanh Hoa	1,290,480
10	Lao Cai	726,706	58	Ninh Thuan	649,941
11	Dien Bien	605,418	60	Binh Thuan	1,343,181
12	Lai Chau	459,959	62	Kon Tum	550,059
14	Son La	1,281,986	64	Gia Lai	1,548,411
15	Yen Bai	836,881	66	Dak Lak	1,976,082
17	Hoa Binh	903,121	67	Dak Nong	638,933
19	Thai Nguyen	1,275,036	68	Lam Dong	1,367,311
20	Lang Son	817,514	70	Binh Phuoc	999,129
22	Quang Ninh	1,352,595	72	Tay Ninh	1,194,301
24	Bac Giang	1,827,489	74	Binh Duong	1,702,856
25	Phu Tho	1,512,937	75	Dong Nai	2,984,284
26	Vinh Phuc	1,190,592	77	Ba Ria - Vung Tau	1,176,818
27	Bac Ninh	1,263,026	79	Ho Chi Minh City	8,092,089
30	Hai Duong	1,826,500	80	Long An	1,644,097

31	Hai Phong city	2,054,170	82	Tien Giang	1,839,151
33	Hung Yen	1,294,958	83	Ben Tre	1,469,004
34	Thai Binh	2,032,704	84	Tra Vinh	1,127,467
35	Ha Nam	840,603	86	Vinh Long	1,117,830
36	Nam Dinh	2,047,159	87	Dong Thap	1,859,464
37	Ninh Binh	988,974	89	An Giang	2,187,237
38	Thanh Hoa	3,738,418	91	Kien Giang	1,819,240
40	Nghe An	3,377,609	92	Can Tho city	1,253,996
42	Ha Tinh	1,310,291	93	Hau Giang	767,821
44	Quang Binh	953,171	94	Soc Trang	1,458,350
45	Quang Tri	691,105	95	Bac Lieu	965,437
46	Thua Thien Hue	1,212,684	96	Ca Mau	1,267,228
48	Da Nang city	1,085,281		Total	97,453,401

Source: Population and Family Planning database tabulation.

5. Conclusion

In this study, the registered population database developed by the General Office for Population and Family Planning (GOPFP), Ministry of Health, Viet Nam, was examined in comparison to the population census and its characteristics were analyzed. From 2014 to 2018, the total population by the PFP database is slightly declining despite the increasing census population from 2009 to 2019. However, the latest PFP population in 2018 is close to the 2019 census population, with only a 1.3% difference. A significant cohort change is observed for the young women in PFP data, which might be due to the continuous update of the database to clear the over-registration in the prior period. The under registration of deaths is suspected especially in older ages.

The fertility and mortality trend is correlational and both rates are high in the Northeast and Central Highlands regions and low in Hanoi and Ho Chi Minh City. However, the proportion of elderly is high in the provinces near the two megacities, probably due to youth migration.

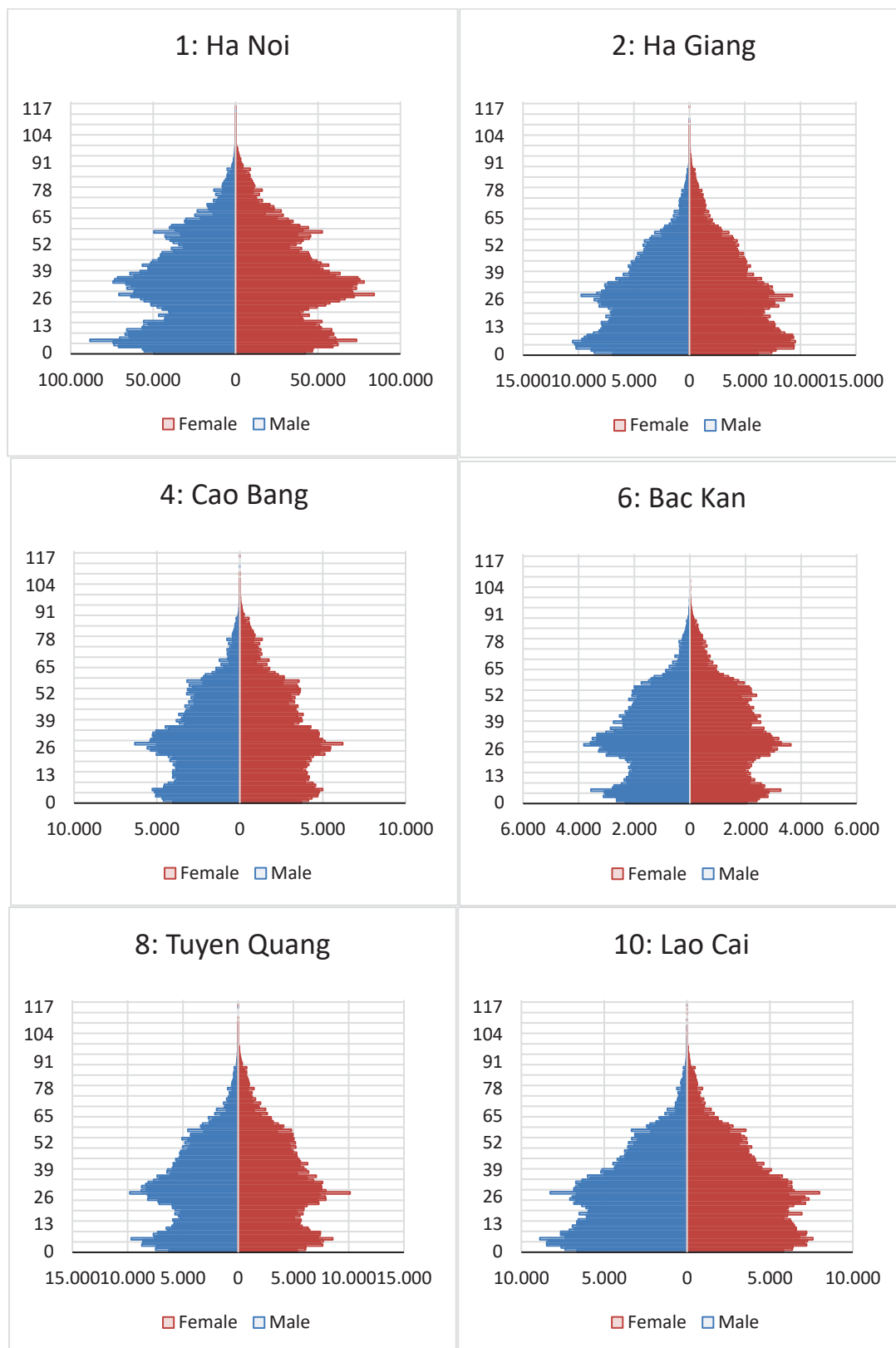
It is a common challenge to harmonise several population data based on census or registration in many countries. In Viet Nam, it is said that population registration is not universal, but many efforts are made by different authorities to measure population dynamics. The PFP database is one of those endeavours. While referring to the census, conducted every 10 years, the PFP database can monitor population trends annually or on the spot upon online registration. It provides vital statistics, the data on births, deaths, and migration by district, province and national level, which are the basic information on the population dynamics. It is a national framework of population base which are closely monitored by local authorities and PFP collaborators in the community. There would be great usefulness of the PFP database, which is an important information infrastructure for Viet Nam.

References

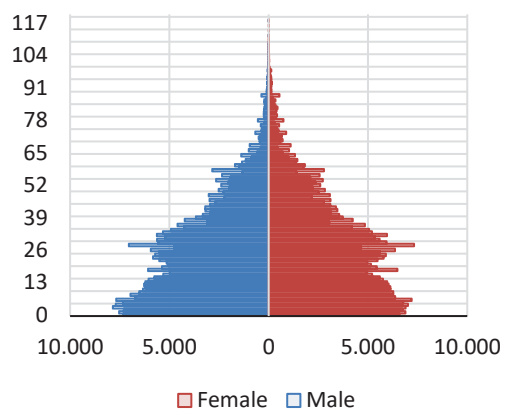
- GOPFP: General Office for Population and Family Planning, Ministry of Health (2019), '*BÁO CÁO, KHẢO SÁT, ĐÁNH GIÁ THỰC TRẠNG, HỆ THỐNG TỔ CHỨC BỘ MÁY QUẢN LÝ NHÀ NƯỚC VỀ DÂN SỐ CÁC CẤP (Survey Report on Organization System of State Management on the Population)*'.
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- UN: United Nations, Department of Economic and Social Affairs, Population Division (2019), *World Population Prospects: The 2019 Online Edition*. <https://population.un.org/wpp/>.

*All internet web addresses (URL) were accessed on 30 July 2021.

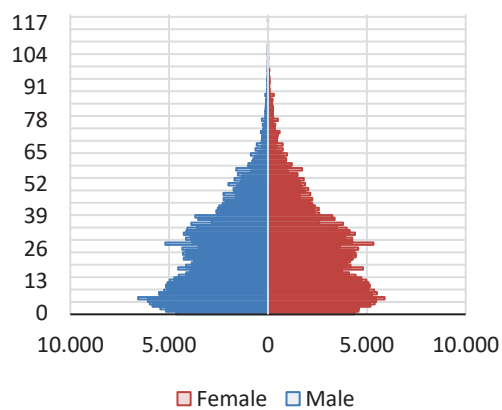
Annex Figure C-1. Population Pyramid by Province, 2018



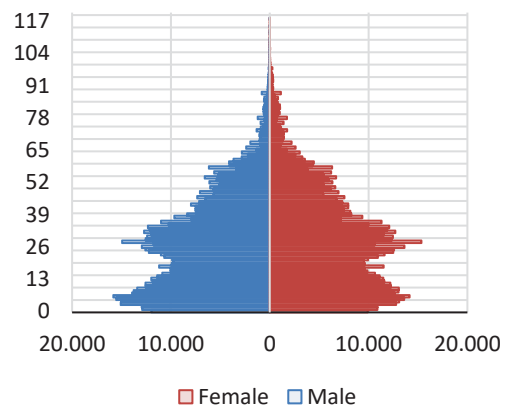
11: Dien Bien



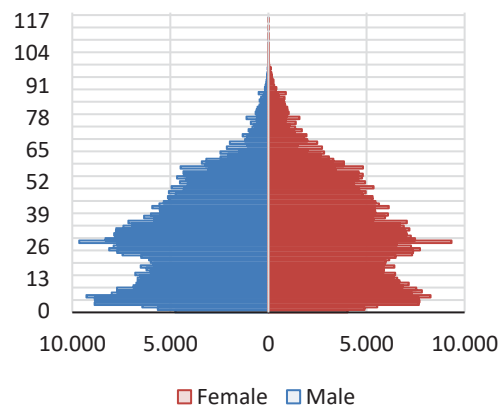
12: Lai Chau



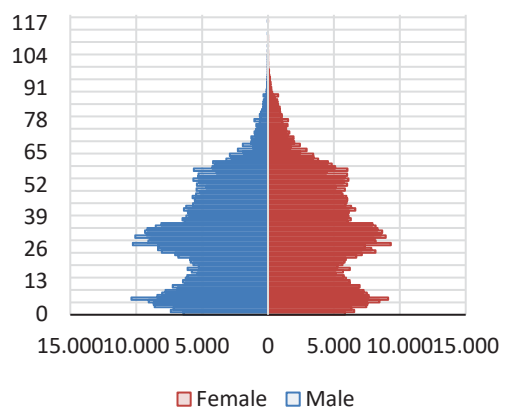
14: Son La



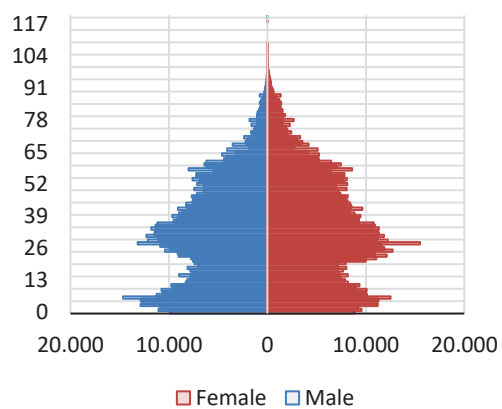
15: Yen Bai

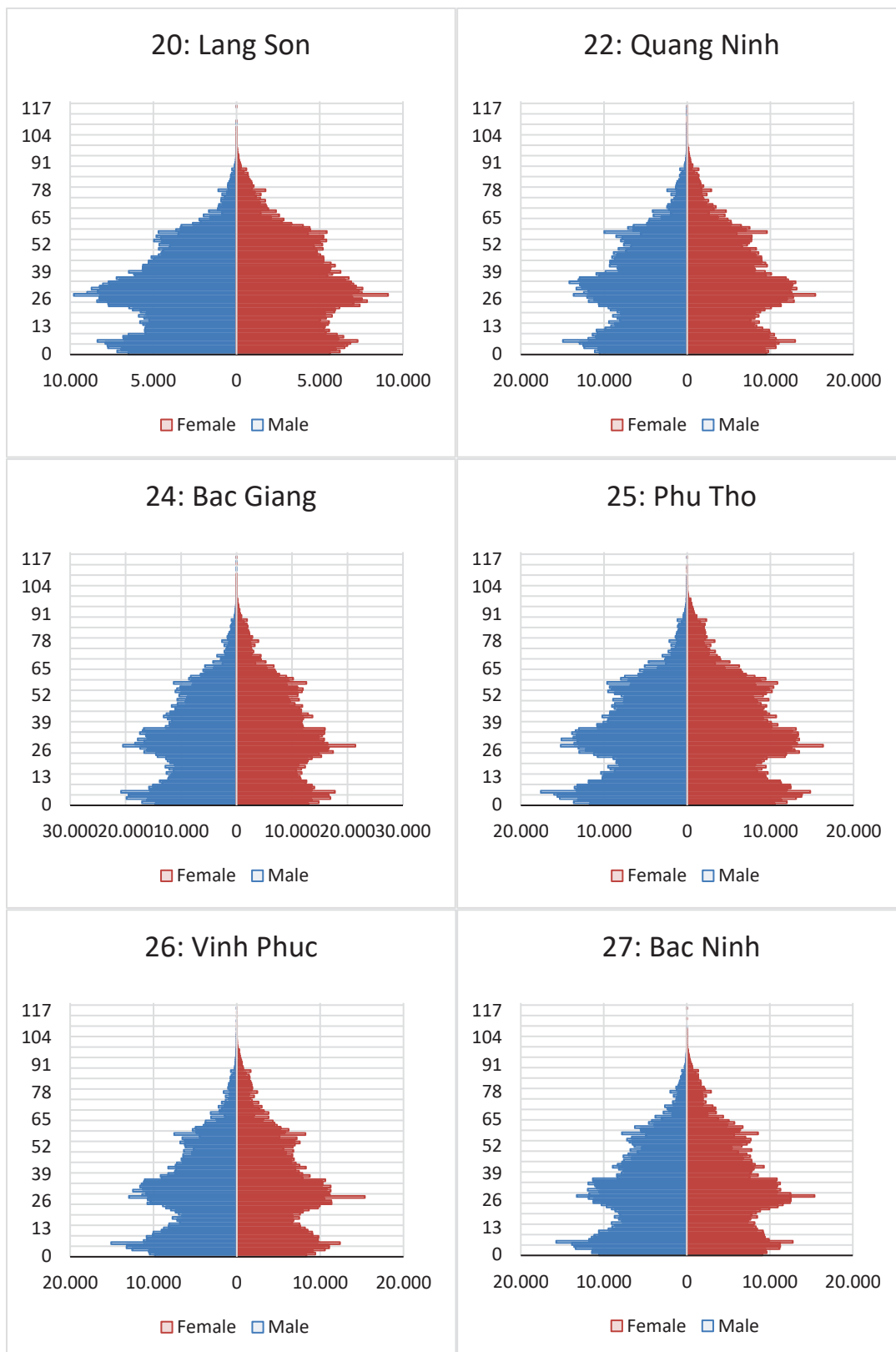


17: Hoa Binh

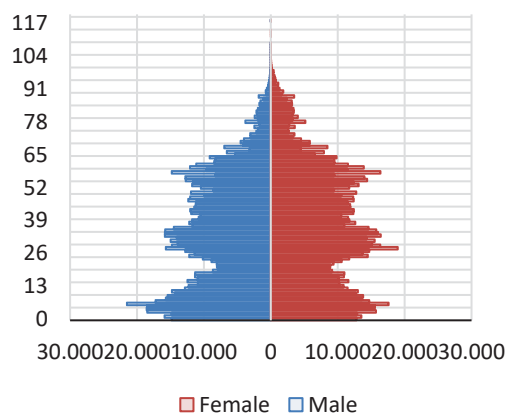


19: Thai Nguyen

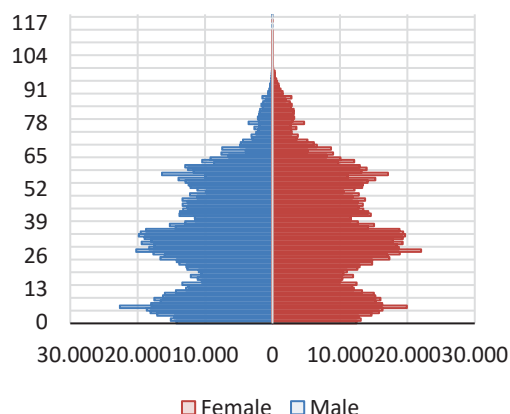




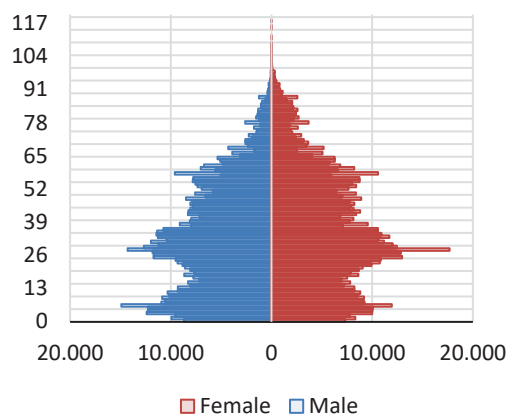
30: Hai Duong



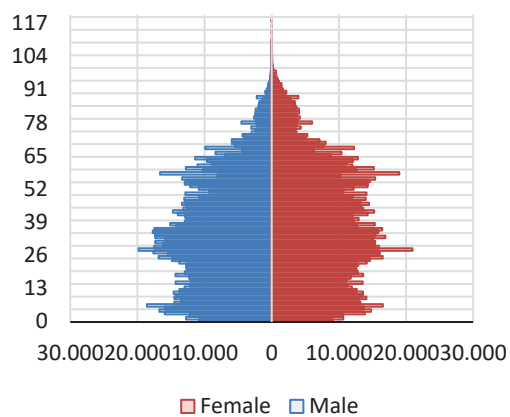
31: Hai Phong city



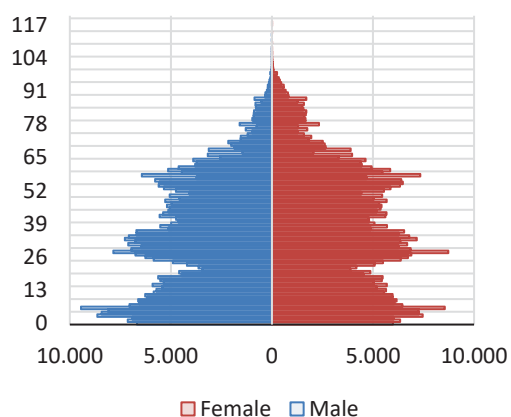
33: Hung Yen



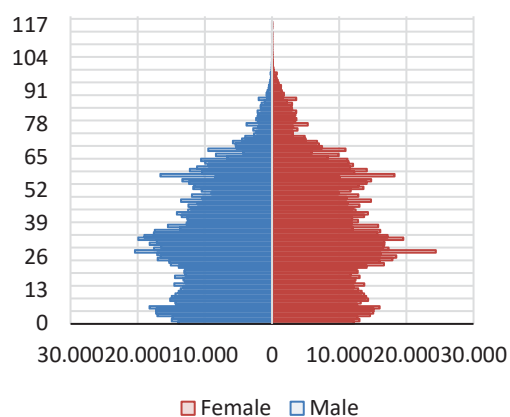
34: Thai Binh



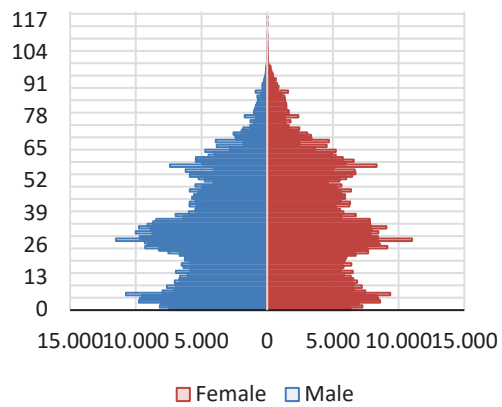
35: Ha Nam



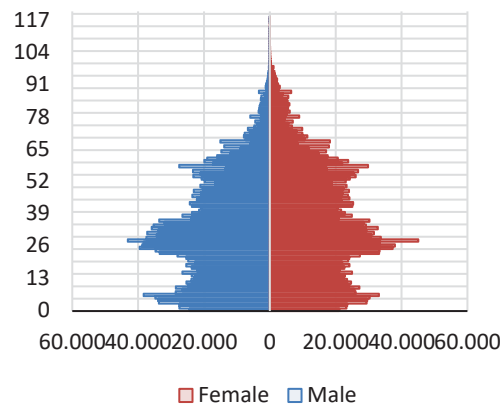
36: Nam Dinh



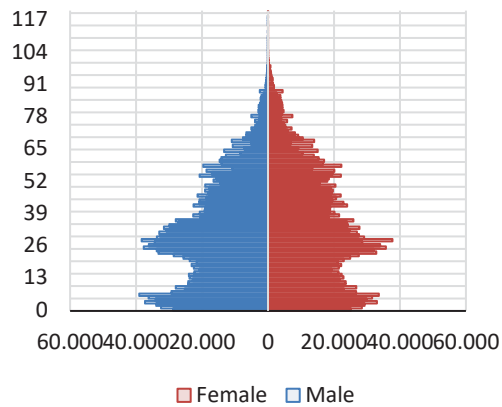
37: Ninh Binh



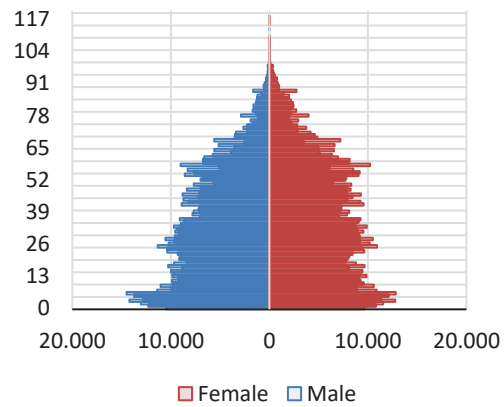
38: Thanh Hoa



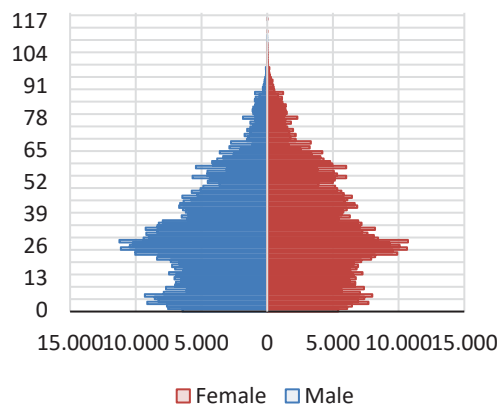
40: Nghe An



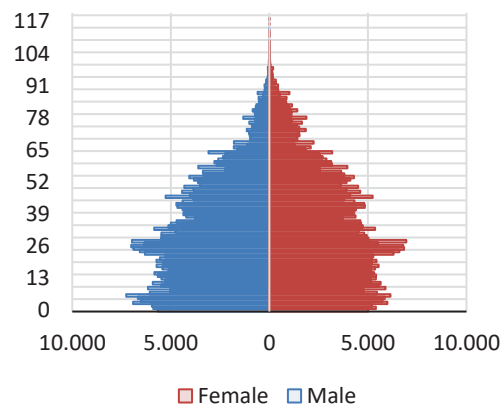
42: Ha Tinh



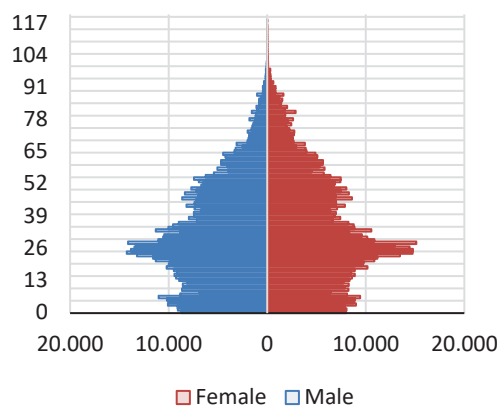
44: Quang Binh



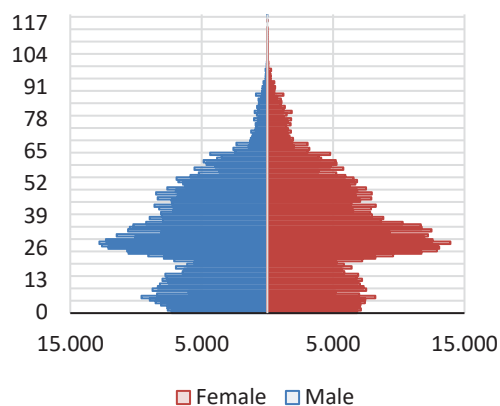
45: Quang Tri



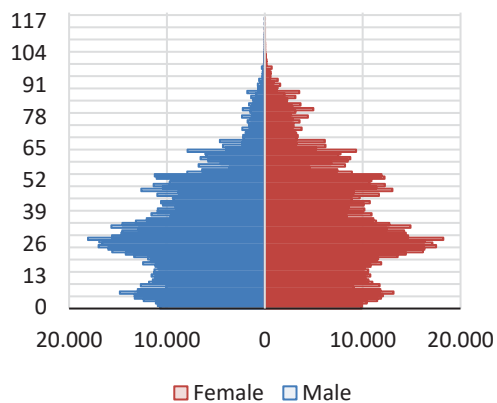
46: Thua Thien Hue



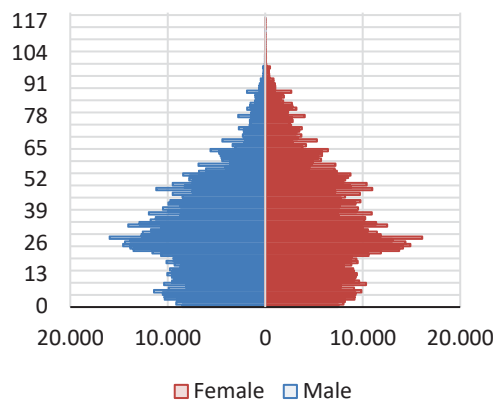
48: Da Nang city



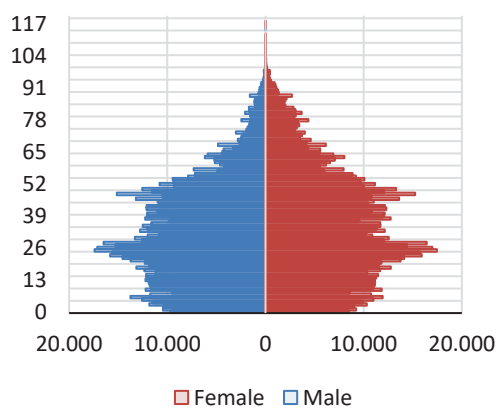
49: Quang Nam



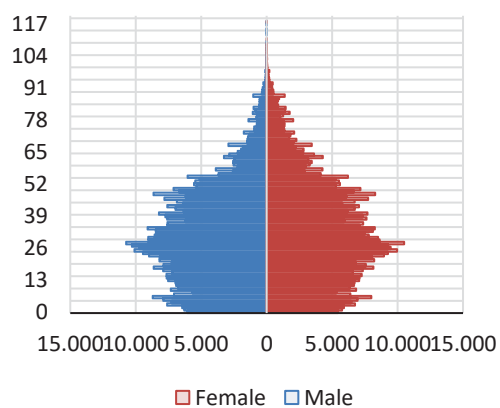
51: Quang Ngai

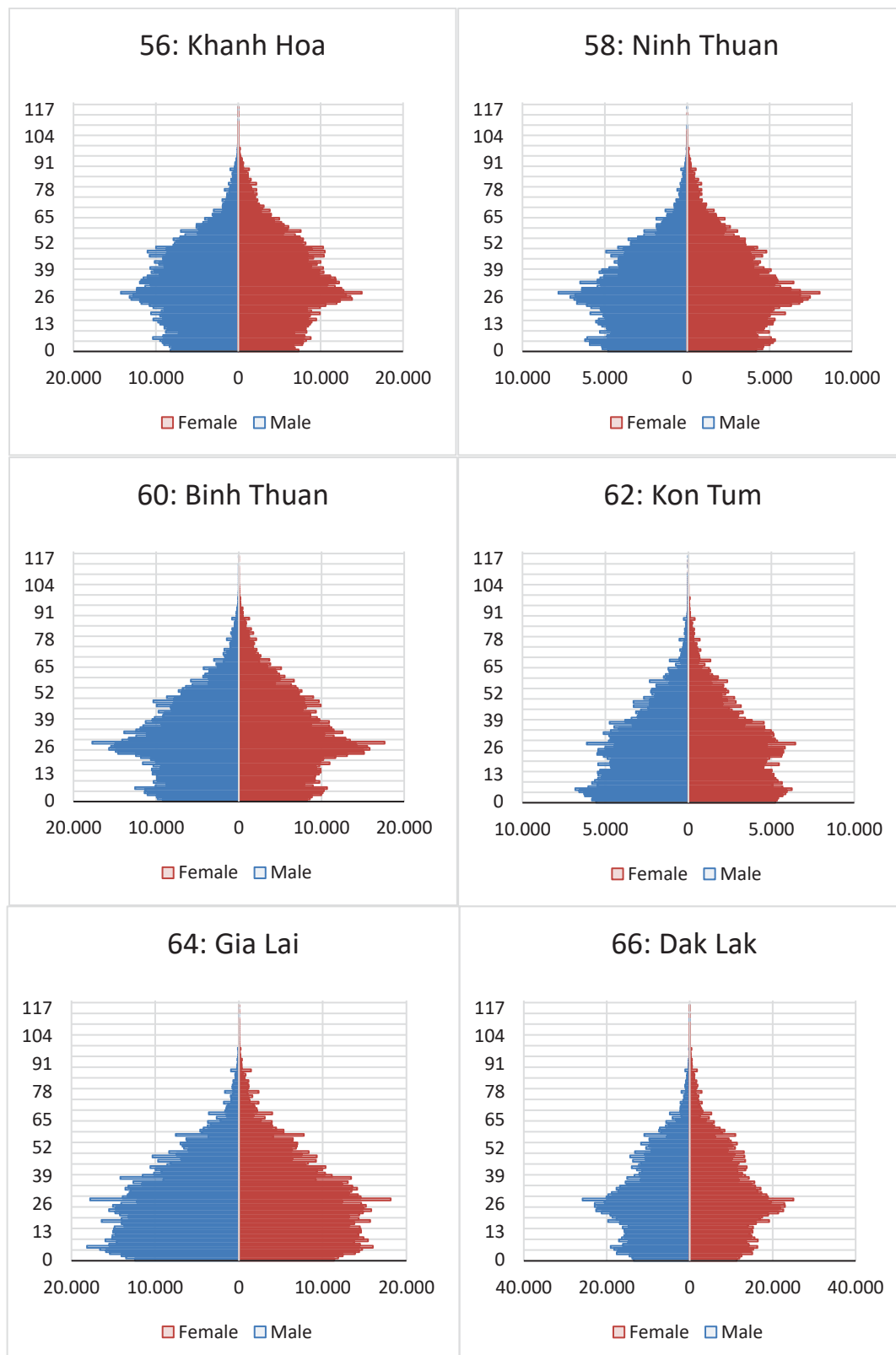


52: Binh Dinh

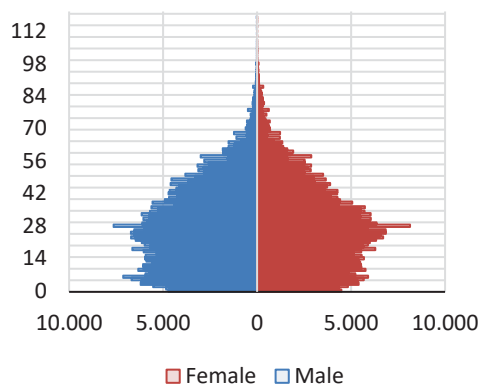


54: Phu Yen

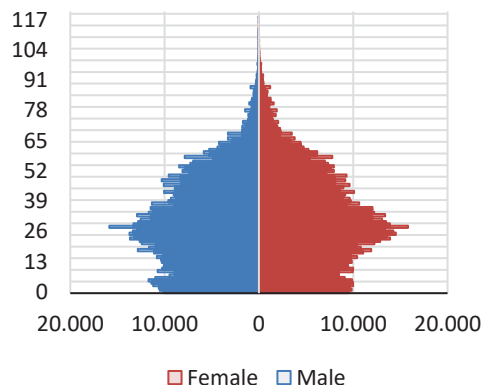




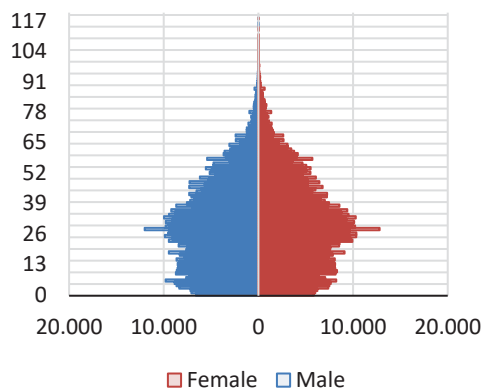
67: Dak Nong



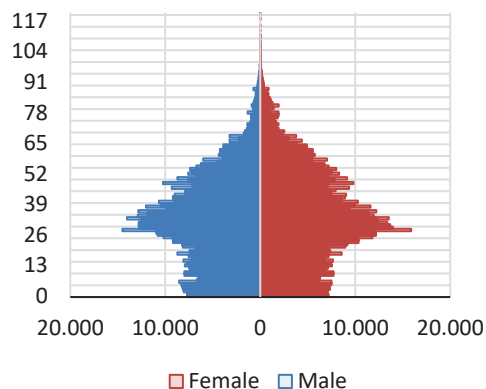
68: Lam Dong



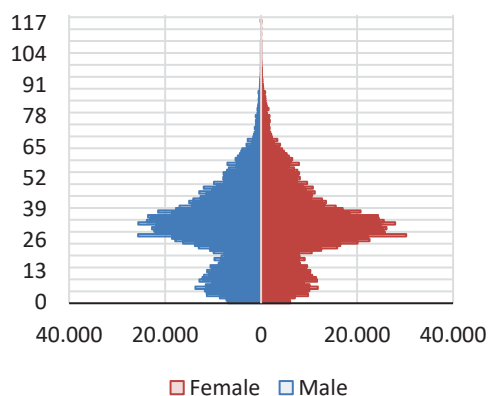
70: Binh Phuoc



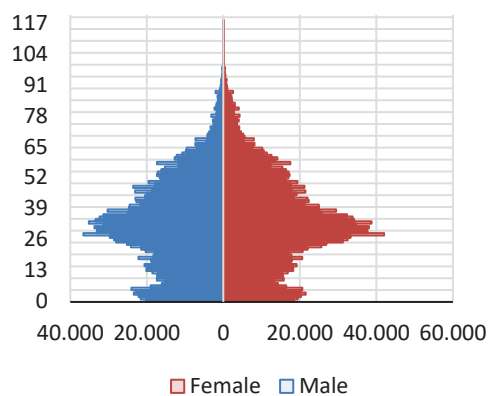
72: Tay Ninh

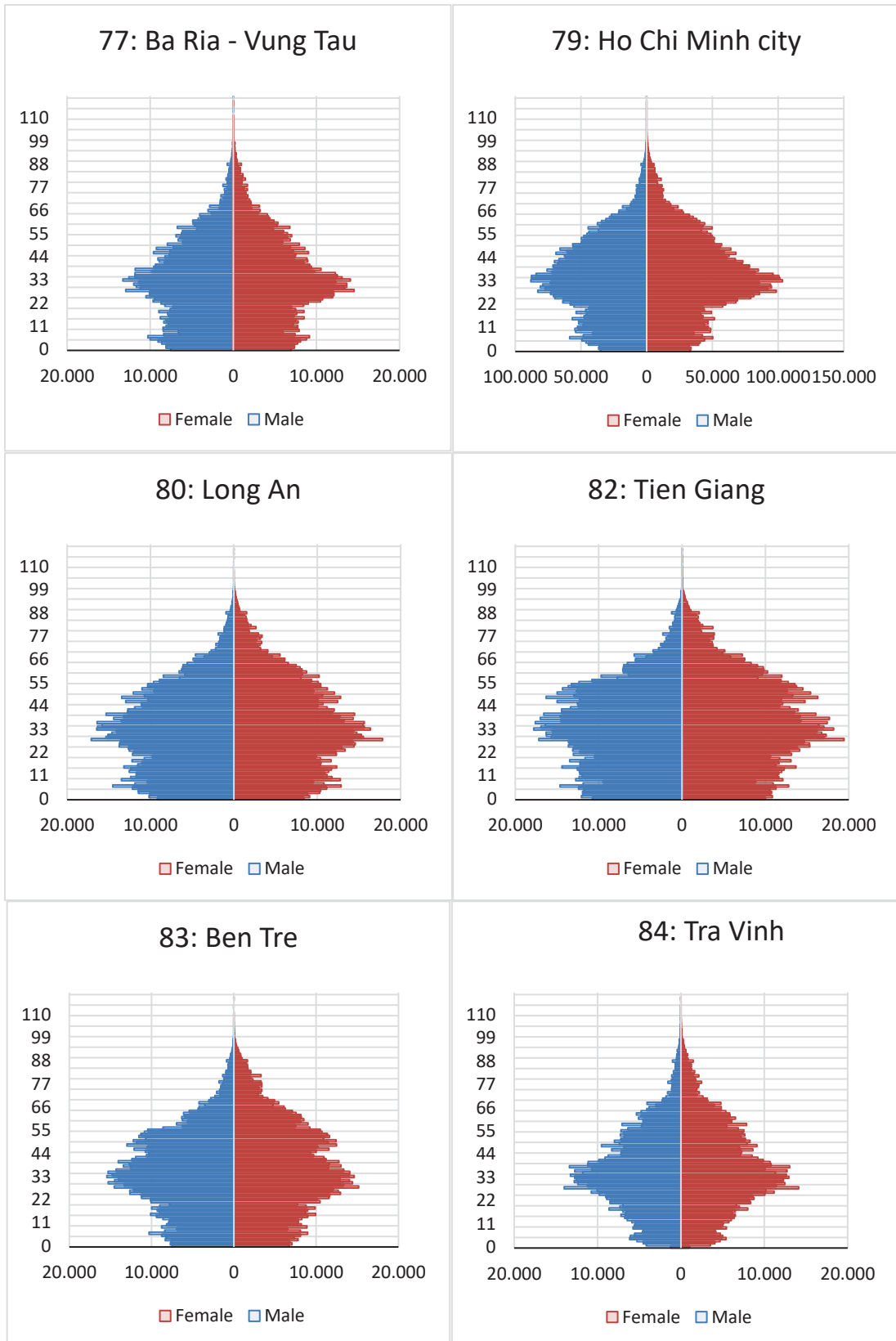


74: Binh Duong

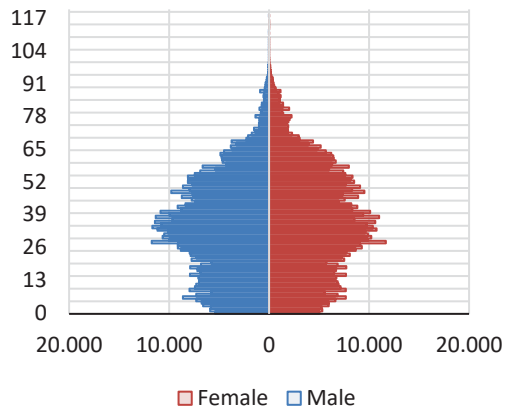


75: Dong Nai

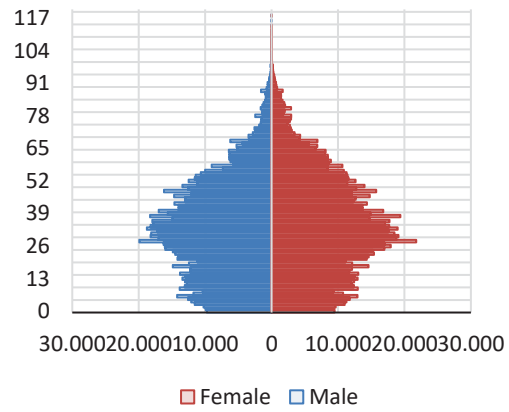




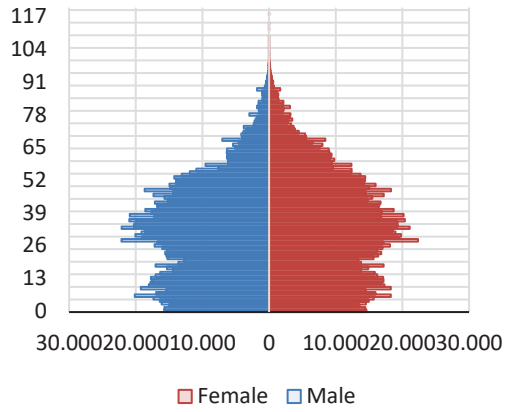
86: Vinh Long



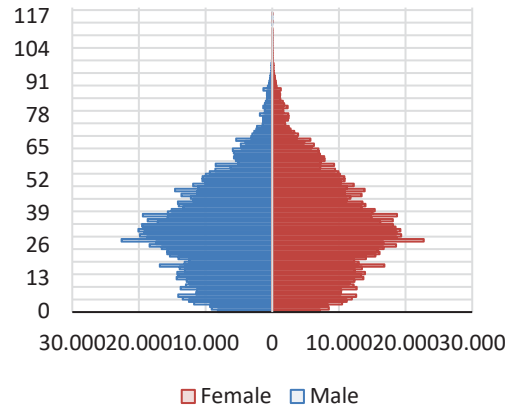
87: Dong Thap



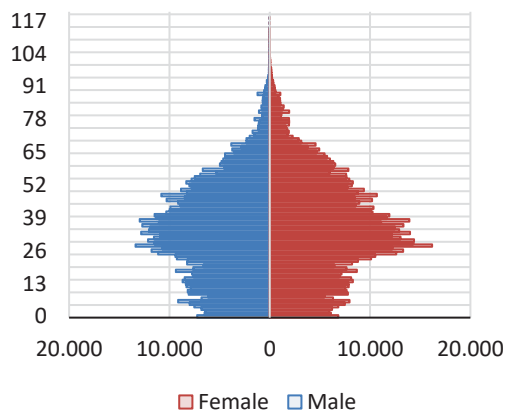
89: An Giang



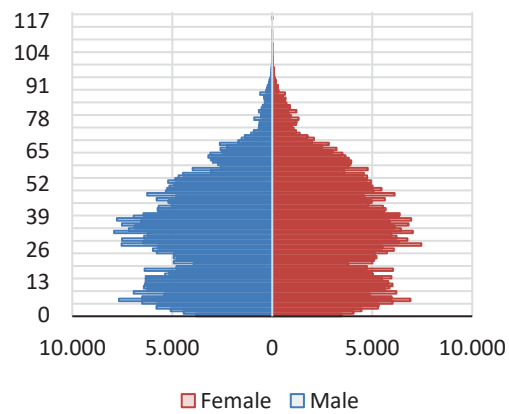
91: Kien Giang

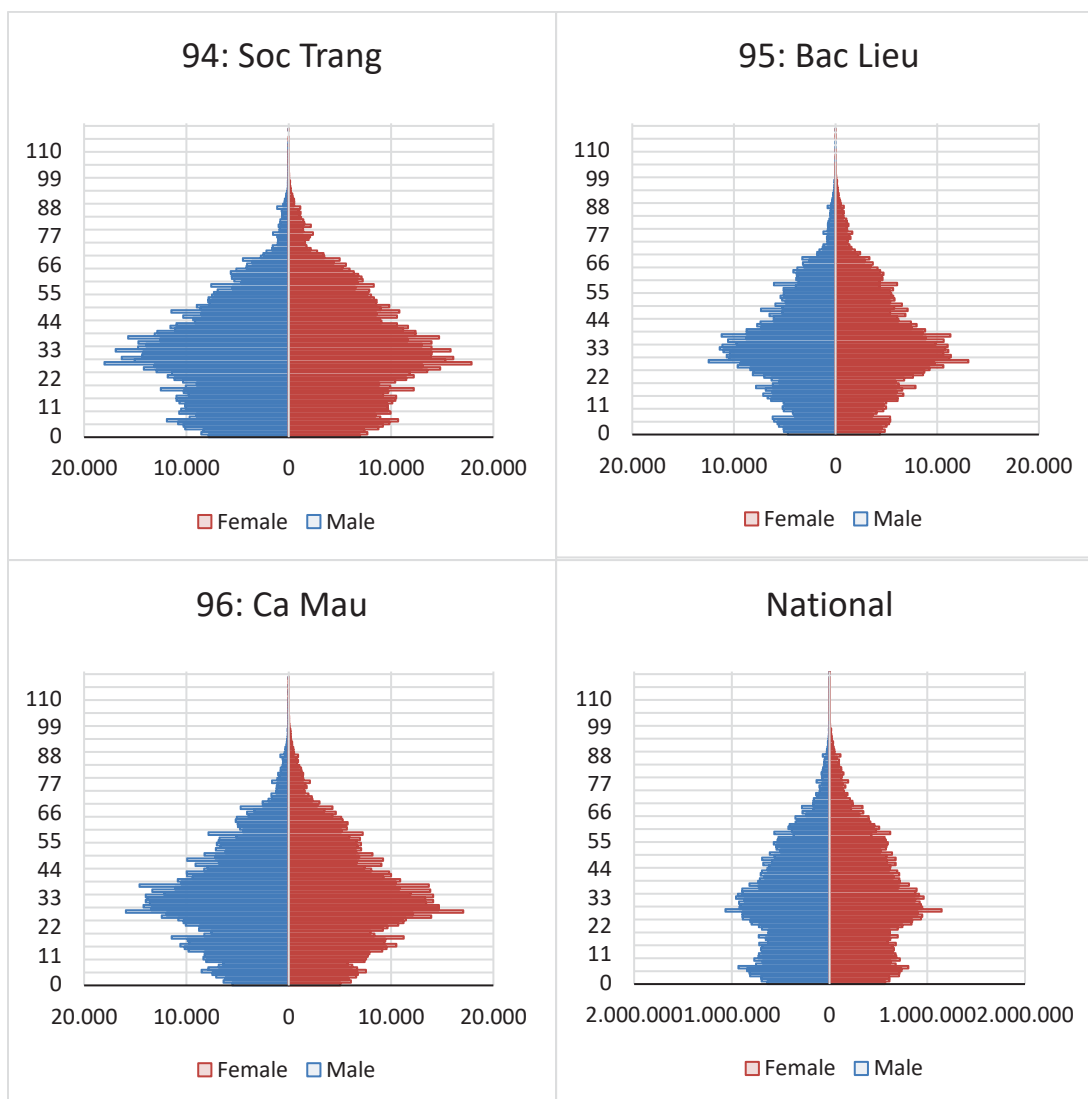


92: Can Tho city



93: Hau Giang





Source: PFP database tabulation.