Employment Conditions in Small and Medium-Sized Cities

1. Regional Population Projections

According to Statistics Korea's *Population Projections for Korea, 2015–2065 (medium variant)*, the total population of Korea is expected to peak at **52.96 million in 2031** and decline thereafter to **43.02 million by 2065**. The working-age population (aged 15–64) is projected to reach its maximum at **37.63 million in 2016** and decrease to **20.62 million by 2065**. Meanwhile, the number of dependents per 100 working-age persons is projected to increase from **36.2 in 2015** to **66.8 in 2035** and further to **108.7 in 2065**.

Table 1: Regional Population Projections, 2018–2045 (Unit: 10,000 persons)

Region	2018	2020	2025	2030	2035	2040	2045	**Turning Point**
Total (Korea)	51,635	51,974	52,610	52,941	52,834	52,198	51,051	2032
Seoul	9,721	9,635	9,545	9,429	9,264	9,063	8,813	*2010
Busan	3,418	3,396	3,342	3,281	3,206	3,104	2,978	*1996
Daegu	2,459	2,446	2,409	2,367	2,315	2,244	2,154	*2012
Incheon	2,942	2,979	3,080	3,152	3,187	3,180	3,136	2038
Gwangju	1,500	1,496	1,491	1,479	1,458	1,423	1,377	*2016
Daejeon	1,527	1,522	1,541	1,556	1,560	1,549	1,524	2035
Ulsan	1,168	1,172	1,185	1,188	1,177	1,151	1,113	2030
Sejong	321	377	428	473	512	542	563	–
Gyeonggi	12,955	13,221	13,645	13,901	13,970	13,846	13,556	2035
Gangwon	1,524	1,532	1,550	1,569	1,583	1,584	1,568	2039
Chungbuk	1,613	1,630	1,673	1,710	1,733	1,737	1,721	2040
Chungnam	2,166	2,204	2,291	2,363	2,411	2,430	2,421	2042
Jeonbuk	1,828	1,824	1,815	1,810	1,800	1,778	1,739	*2016
Jeonnam	1,795	1,794	1,787	1,787	1,785	1,770	1,741	*2017
Gyeongbuk	2,682	2,685	2,691	2,694	2,683	2,649	2,588	2030
Gyeongnam	3,366	3,386	3,414	3,425	3,405	3,347	3,254	2031
Jeju	649	676	723	759	786	800	804	2045

Note: Turning points indicate the year in which each region's population growth rate turns permanently negative based on the medium-variant projection. Regions marked with an asterisk (*) had already begun to decline as of 2018. Population in Sejong is expected to continue increasing through 2045.
Source: Statistics Korea, *Regional Population Projections, 2015–2045* (June 2017); calculations by the National Assembly Budget Office.

This indicates not only a loss of economic growth potential due to the declining labor force but also growing fiscal pressure from higher dependency ratios, which may threaten long-term fiscal sustainability. According to the provisional *Birth and Death Statistics, 2017*, the number of live births fell to **357,700**, down **11.9%** year-on-year, and the total fertility rate reached a record low of **1.05**. Hence, population decline could proceed even faster than the medium projection.

Based on the *Regional Population Projections, 2015–2045*, the timing of population decline varies significantly across provinces. As of 2018, six regions, namely Seoul, Busan, Daegu, Gwangju, Jeonbuk, and Jeonnam, had already begun to experience population declines. In the case of Seoul, this reflects migration toward nearby Gyeonggi Province and other metropolitan areas. Regions where population decline is expected to begin later than the national turning point in 2032 include Incheon, Daejeon, Gyeonggi, Gangwon, Chungbuk, Chungnam, and Jeju.

Beyond the metropolitan areas (Seoul, Incheon, Gyeonggi, and major cities), population decline is most pronounced in small and medium-sized regional cities with fewer than 200,000 residents. Among 123 municipalities excluding the Seoul Capital Area and metropolitan cities (including Sejong), 78 recorded population decreases between 2012 and 2017, of which 69 (88.5%) were smaller cities with populations under 200,000. This trend likely reflects labor outflows driven by local economic stagnation and industrial contraction.

2. Population Decline in Small and Medium-Sized Regional Cities

Among 100 small and medium-sized regional cities in Korea with populations under 200,000, **69 cities experienced population decline** during the past five years (2012–2017), hereafter referred to as *population-declining cities*, while the remaining **31 cities recorded population increases** (*population-growing cities*).

For this analysis, 100 municipalities were selected from all *si, gun, gu* areas, excluding the Seoul Capital Area, metropolitan cities, and Sejong Special Self-Governing City. Although there is no unified standard for classifying small and medium-sized cities, the National Center for Territorial Environment defines medium cities as those with populations between 100,000 and 500,000, and small cities as those with fewer than 100,000 inhabitants (*National Center for Territorial Environment, 2018*). Restricting the sample to cities under 100,000 would reduce statistical representativeness, and many local governments set population targets around 200,000 as a self-sufficiency benchmark. Hence, this report defines small and medium-sized regional cities as those with fewer than 200,000 residents.

Population figures are based on 2017 data. Cities were classified according to population change over the five-year period (2012–2017). Average annual population declines were most pronounced in **Gangjin County, Jeollanam-do (–1.74%)**, followed by **Uiryeong County, Gyeongsangnam-do (–1.69%)** and **Gongju City, Chungcheongnam-do (–1.56%)**.

Table 2: List of Population-Growing and Population-Declining Small and Medium-Sized Cities (Population under 200,000)

Province	**Population-Growing Cities**	**Population-Declining Cities**
Gangwon	Hongcheon, Hoengseong, Hwacheon, Yanggu, Inje	Donghae, Taebaek, Sokcho, Samcheok, Yeongwol, Pyeongchang, Jeongseon, Cheorwon, Goseong, Yangyang
Chungbuk	Jeungpyeong, Jincheon, Goesan, Eumseong	Jecheon, Boeun, Okcheon, Yeongdong, Danyang
Chungnam	Dangjin, Seosan, Gyeryong, Cheongyang, Hongseong, Taean	Gongju, Boryeong, Nonsan, Geumsan, Buyeo, Seocheon, Yesan
Gyeongbuk	Gimcheon, Gunwi, Seongju, Chilgok, Yecheon	Andong, Yeongju, Yeongcheon, Sangju, Mungyeong, Uiseong, Cheongsong, Yeongyang, Yeongdeok, Cheongdo, Goryeong, Bonghwa, Uljin, Ulleung
Gyeongnam	Haman, Changnyeong, Sancheong	Tongyeong, Sacheon, Miryang, Uiryeong, Goseong, Namhae, Hadong, Hamyang, Geochang, Hapcheon
Jeonbuk	Wanju, Imsil, Gochang	Jeongeup, Namwon, Gimje, Jinan, Muju, Jangsu, Sunchang, Buan
Jeonnam	Naju, Gwangyang, Gurye, Muan	Damyang, Gokseong, Goheung, Boseong, Hwasun, Jangheung, Gangjin, Haenam, Yeongam, Hampyeong, Yeonggwang, Jangseong, Wando, Jindo, Sinan
Jeju	Seogwipo	–

Source: Ministry of the Interior and Safety, *Resident Registration Population Statistics* (2017); National Assembly Budget Office calculations.

Of the 15 municipalities identified by the Korea Institute for Industrial Economics and Trade (KIET, 2018) as having the highest risk of depopulation in 2016 based on the ratio of the elderly population (aged 65+) to young women aged 20–29, **13 were population-declining cities**. Only Gunwi (Gyeongbuk) and Sancheong (Gyeongnam) were exceptions.

According to the Ministry of the Interior and Safety's 2017 statistics, the proportion of residents aged 65 or older in population-declining cities was **26.3%**, and the **total dependency ratio**[1] was **57.4%**. By contrast, in population-growing cities, the elderly share was **20.4%** and the dependency ratio **49.5%**, which are **5.9 and 7.9 percentage points lower**, respectively. Under Statistics Korea's medium-variant projection (2015–2065), the national elderly share is expected to reach 26.1% in 2032 and the dependency ratio 58.2% in 2031, implying that population-declining regional cities are aging **14–15 years faster than the national average**.

Population changes in small and medium-sized cities are closely linked to changes in employment. Between 2013 and 2017, only one population-growing city, namely Gurye

[1]The ratio of children (under 15) and elderly (65+) to the working-age population (15–64).

County in Jeollanam-do, recorded a decline in employment. Across all cities, a strong positive correlation was found between population growth and employment growth rates (April 2013 to April 2017). A similar positive relationship was also observed between the growth rate of the working-age population (15+) and employment growth, which suggests that population growth in these cities is driven by **improved labor market conditions and net in-migration of working-age residents**.

Examining the industrial composition of total employment reveals that **population-growing cities have a higher share of workers in manufacturing, mining, and construction** than population-declining cities. In the first half of 2017, these sectors accounted for **21.2%** of total employment in population-growing cities, which is **5.9 percentage points higher** than in declining cities, while the share of employment in agriculture, forestry, and fisheries was **30.9%**, which is **5.4 points lower** than in declining cities.

Moreover, the number of employees in manufacturing, mining, and construction in population-growing cities reached **264,000** in the first half of 2017, an increase of **21,000 persons (8.6%)** from the same period in 2013. In contrast, employment in the same sectors in population-declining cities rose by only **0.3%** during the same period.

3. Employment Conditions in Small and Medium-Sized Regional Cities

This section analyzes employment conditions across regions by comparing wage levels, employment rates, and job types. The analysis focuses on small and medium-sized regional cities, and examines how employment outcomes and hourly wages differ according to population growth trends.

Korea's regions were classified into three categories: (1) the **Seoul Capital Area and metropolitan cities**, (2) **large regional cities** with populations over 200,000, and (3) **small and medium-sized regional cities** with populations under 200,000. Within category (3), municipalities whose populations increased between 2012 and 2017 are referred to as **population-growing cities**, and those whose populations declined as **population-declining cities**.

3.1 Regional Wage and Employment Disparities

In the first half of 2017, the average monthly wage of employees in population-declining cities was **₩492,000 lower** than that of workers in metropolitan areas. The average wage level ranked as follows: *Seoul Capital Area and metropolitan cities > large regional cities (200,000+) > population-growing cities > population-declining cities*. The monthly wage in population-growing cities exceeded that of declining cities by **₩122,000** on average.

Comparing employment rates and the proportion of wage workers[2] by region and age group in 2017, among youth aged 15–34, the employment rate was **43.7%** in population-declining cities, which is **4.1 percentage points lower** than in population-growing cities and **5.7 points lower** than in metropolitan areas. For other age groups, employment rates in small regional cities were generally higher than those in metropolitan regions. Across all

[2]Wage workers include regular, temporary, and daily employees.

age groups, however, the share of wage employment was lower in both population-growing and population-declining cities, which reflects a higher prevalence of self-employment in smaller cities.

Table 3: Employment Rate and Wage-Work Ratio by Region and Age Group, 2017 (H1)

	Capital/Metro	Large Cities	Pop. Growing (A)	Pop. Declining (B)	A–B
Employment Rate (%)					
15–34 years	49.4	45.7	47.8	43.7	4.1 p.p.
35–64 years	70.7	74.6	80.6	80.4	0.2 p.p.
65+ years	22.0	33.5	52.2	50.7	1.5 p.p.
Share of Wage Workers (%)					
15–34 years	92.5	91.5	86.7	82.6	4.1 p.p.
35–64 years	74.2	69.8	54.3	49.8	4.5 p.p.
65+ years	60.4	39.8	18.4	18.6	–0.2 p.p.

Source: Statistics Korea, *Regional Employment Survey* (2017, H1), microdata; NABO calculations.

The quality of youth employment, measured by the share of short-time workers (working less than 36 hours per week), was highest in population-growing cities. For youth aged 15–34, the short-time employment rate was **10.9%** in population-growing cities, which is lower than in both population-declining cities and metropolitan areas. Among workers aged 35–64, the rate was **16.4%** in population-growing cities, which is **3.7 percentage points lower** than in population-declining cities.

Table 4: Share of Short-Time Workers by Region and Age Group, 2017 (H1)

	Capital/Metro	Large Cities	Pop. Growing (A)	Pop. Declining (B)	A–B
15–34 years	12.7	12.3	10.9	13.4	–2.5 p.p.
35–64 years	11.5	12.4	16.4	20.1	–3.7 p.p.
65+ years	39.6	51.4	51.1	58.1	–7.0 p.p.

Source: Statistics Korea, *Regional Employment Survey* (2017, H1), microdata; NABO calculations.

By industry, average wages in manufacturing, mining, and construction were **₩0.352 million higher** in population-growing cities (₩2.597 million) than in population-declining cities (₩2.245 million). Wages were highest in large regional cities (₩2.822 million). In contrast, average wages in agriculture, forestry, and fisheries were slightly higher in population-declining cities (+₩0.032 million).

Table 5: Average Monthly Wages by Industry and Region, 2017 (H1)

	Metro	Large Cities	Pop. Growing (A)	Pop. Declining (B)	A–B
Agriculture, Forestry & Fisheries	1.734	1.460	1.278	1.310	–0.032
Manufacturing, Mining & Construction	2.755	2.822	2.597	2.245	+0.352
Services and Others[1]	2.510	2.242	2.036	2.069	–0.033

[1] Includes all industries other than agriculture, forestry, fisheries, manufacturing, mining, and construction.
Source: Statistics Korea, *Regional Employment Survey* (2017, H1), microdata; NABO calculations.

3.2 Econometric Analysis of Wage Gaps and Employment Quality

To examine regional wage disparities, a Mincer-type wage equation was estimated using microdata for wage employees. Control variables include gender, age, age squared,

education level, industry, employment status, and months worked. An additional dummy variable for **population-declining small and medium-sized cities**[3] was incorporated to estimate the impact of residing in areas at risk of population decline on hourly wage levels.

To address potential sample-selection bias, the model was re-estimated on the full sample including both wage and non-wage workers. This corrects for the bias that may occur if individuals with low expected wages self-select out of wage employment. Following Heckman (1979), a sample-selection model was estimated under the assumption that the error terms of the wage and selection equations follow a joint normal distribution, thereby providing consistent estimates corrected for selection bias.

Specification. Individual hourly wages are estimated using a Mincer-type semi-log function:

$$\ln w_i = \alpha + \beta_1 DecCity_i + \gamma X_i + \epsilon_i,$$

where w_i denotes the individual's hourly wage, $DecCity_i$ is a dummy variable for residents of population-declining cities, and X_i is a vector of demographic and job-related characteristics (gender, age, age^2, education, industry, employment type, and months worked).

Sample-selection correction. Because wage data are observed only for employed individuals, a *Heckman two-step* selection model (*Heckman, 1979*) is applied to correct for potential bias arising from non-random labor-force participation:

$$\begin{aligned} y_i^* &= Z_i\delta + u_i, \quad y_i = 1 \text{ if } y_i^* > 0 \quad \text{(wage worker)}, \\ \ln w_i &= \alpha + \beta_1 DecCity_i + \gamma X_i + \rho\sigma_\epsilon \lambda_i + \epsilon_i, \end{aligned}$$

where λ_i is the *inverse Mills ratio* derived from the first-stage selection equation, and ρ captures the correlation between unobserved determinants of wage participation and earnings.

Microdata from the *Regional Employment Survey* were further used to examine whether residents in population-growing cities earn higher hourly wages or experience better job quality than those in declining cities. Individual characteristics, such as gender, age, education, industry, employment status, and months worked, were included as control variables.

Results from a sample-selection model show that residents of population-declining cities earn, on average, **2.1% lower hourly wages** than those in population-growing cities (Model 1). Among workers in manufacturing, mining, and construction, hourly wages in population-growing cities were **6.2% higher** (significant at the 1% level, Model 2). In contrast, workers in agriculture, forestry, and fisheries in population-declining cities earned **4.6% higher hourly wages** (significant at the 10% level). The results remain robust even when excluding residents of innovation cities.

[3]Defined as regional cities with populations below 200,000 that experienced a population decline over the past five years (2012–2017).

Linear probability models of short-time work and youth employment show that workers in population-growing cities have a **3.2% lower probability of short-time employment** and youth aged 15–34 have a **1.7% higher probability of being employed**, after controlling for demographic and job characteristics.

Table 6: Hourly Wage Gaps and Employment Quality in Small and Medium-Sized Cities

	Model 1	Model 2	Model 3	Model 4
Dependent Variable	log(hourly wage)		Youth Employment (Employed=1)	Short-Time Work (=1)
Pop. Growing City (=1)	0.021***	0.006	0.017**	–0.032***
	(0.004)	(0.005)	(0.007)	(0.003)
Pop. Growing × Mfg./Mining/Construction		0.056***		
		(0.009)		
Pop. Growing × Agriculture/Forestry/Fisheries		–0.052**		
		(0.026)		
Sample Size	158,563	158,563	13,834 (Youth aged 15-34)	102,960 (Employed)

Notes: (1) ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively. (2) Hourly wages are calculated as average monthly earnings over the preceding three months divided by usual monthly working hours. (3) Regressions control for gender, age, age squared, education, industry, employment status, and months worked. (4) In Models 1–2, the selection equation includes marital status and an interaction term for married women for identification. (5) Estimates based on Statistics Korea's *Regional Employment Survey* (H1 2017); NABO calculations.

4. Policy Implications

In summary, **population-growing cities exhibit stronger youth employment performance, better job quality, and 2.1% higher hourly wages** than population-declining cities. These patterns suggest that population inflows driven by the establishment of innovation cities, local economic growth, and industrial shifts from agriculture and fisheries toward manufacturing have jointly contributed to regional wage differentials. Even when innovation cities are excluded, the hourly wage in population-growing cities remains significantly higher than that in declining regions.

Since the wage equations were estimated after controlling for individual human-capital characteristics, remaining wage gaps across regions likely reflect **non-market or contextual regional factors**, such as differences in industrial infrastructure, labor-market institutions, or local public investment.

To address these structural disparities, differentiated strategies could be considered to improve employment opportunities and strengthen population retention in regional labor markets.

- **For population-declining cities:** Policies should prioritize increasing youth employment and fostering high-quality jobs through targeted support for local industries and workforce training. These cities face persistent challenges of aging and industrial stagnation.
- **For population-growing cities:** Strategies should focus on sustaining long-term economic growth through continued industrial diversification and stronger linkages among innovation cities, administrative capitals, and industrial complexes.
- The Ministry of Land, Infrastructure and Transport (MOLIT) has launched **Innovation City Season II** to establish innovation and administrative cities as regional growth hubs and promote a decentralized, self-reliant model of balanced national development.[4]

[4]MOLIT, "Full-Scale Implementation of Decentralized and Self-Reliant Balanced Development,"

- The Ministry of Trade, Industry and Energy (MOTIE) emphasizes **region-led innovation ecosystems**, designating new National Innovation Clusters as local growth centers and providing a five-part support package that covers subsidies, tax incentives, finance, regulatory exemptions, and innovation projects.[5]

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[5]MOTIE, "Amendment to the Special Act on Balanced National Development," March 13, 2018.