

POLICY NOTE



HOW KOREA'S NATIONAL HEALTH INSURANCE (NHI) RESPONDED TO THE COVID-19 PANDEMIC



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Republic of Korea – World Bank Group Partnership
On COVID-19 Preparedness and Response

How Korea's National Health Insurance (NHI) Responded to the COVID-19 Pandemic

September 2023

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ABSTRACT

Past experience of emerging infectious diseases enabled the Republic of Korea to respond promptly to COVID-19.¹ The government's zero out-of-pocket strategy, dedicated funding to infectious diseases, previously reformed legal and policy frameworks, and proactive risk communication minimized the impact of COVID-19 on the population's health and economy. Pre-existing universal health coverage (UHC) and the role of national health insurance (NHI) contributed to lessening this burden. The National Health Insurance Service (NHIS) reduced premiums for vulnerable populations, facilitated early financing to health care providers, provided free COVID-19-related services, and increased benefit packages covering all populations in the country. The integrated health data system managed by the NHIS was used for customized treatments and enabled policy decisions during the pandemic. Data analysis for this note shows that there were no significant socioeconomic disparities in the COVID-19 prevalence, mortality, and vaccination rates.

1 H1N1 (commonly known as swine flu), SARS (Severe Acute Respiratory Syndrome), and MERS (Middle East Respiratory Syndrome)

1. INTRODUCTION

The Republic of Korea's National Health Insurance Service (NHIS) played a significant role in limiting the impact of COVID-19 on its population and economy. Because of the secured national health insurance finance funded by the contributions of enrollees and government subsidies, the Korean government was able to introduce a zero out-of-pocket strategy in the very early stage of the pandemic. The country had achieved universal health coverage (UHC) in just 12 years after the introduction of the social insurance system covering the entire population irrespective of income level and ability to pay. The introduction of the national health insurance (NHI) integrated all cooperatives of health insurance into a single insurer, which improved the operational efficiency and pooled financing of all populations. This single-payer system allowed management of all the health care usage data and information in the country. The NHIS, with its integrated health information and pooled financing for the total population, enabled the country to swiftly respond to external shocks such as COVID-19. No one was left behind in the provision of appropriate health care services during the pandemic.

2. HISTORICAL CONTEXT AND EVOLUTION OF THE NHIS

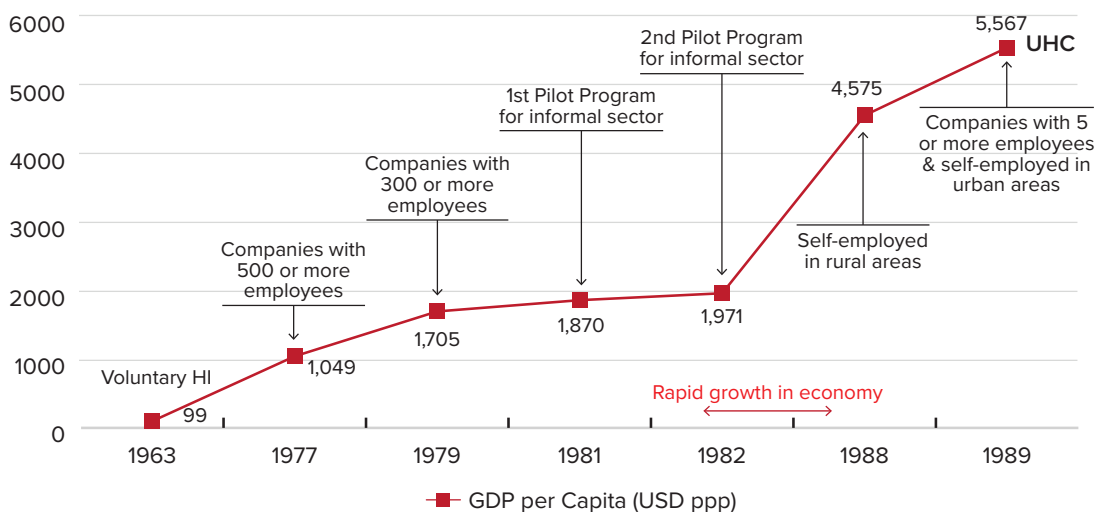
In Korea, the government initiated an inclusive health insurance system in 1977 to mitigate the increasing income equality and social conflicts caused by the rapid industrialization and urbanization of the country. The NHI is mandatory and is financed by contributions from enrollees and government subsidies, based on income levels. Using the Resident Registration System (RRS) implemented in 1962, the government was able to access information for the entire population, which allowed an understanding of socioeconomic factors such as age, income, and job status of the people.

Population coverage

When the population coverage started, the fund level was very low. In the early stages of the implementation of NHI, from 1977 to 1989, mandatory health insurance was introduced through an incremental approach, due to insufficient funding and resource availability (Figure 1). NHI was extended to the following groups, by year:

- 1977: companies with more than 500 employees
- 1979: companies with more than 300 employees
- 1981: companies with more than 100 employees
- 1983: companies with more than 5 employees
- 1989: the self-employed in the cities
- For workers in the rural areas where there is no cash economy, the insurance system was introduced through a pilot project in 1981

Figure 1: Population Coverage Expansion Trend



Source: National Health Insurance Service (NHIS)

The eligibility was determined by local governments based on the standards enshrined in the second Medical Insurance Act and the Medical Protection Act enacted in 1977. In the same year, the government also created a medical aid program for low-income populations and vulnerable groups. Over 17 years, the number of beneficiaries gradually decreased from more than 10 percent of the total population in 1986 to around 3 percent by 1994, due to the rise in income level.

To address the shortage of medical personnel and medical institutions, the Public Health Doctor program was started in 1979. Community health practitioners (CHP) were trained in pilot areas between 1976 and 1980. The structure of the Health Insurance Review and Assessment Service (HIRA) and the NHIS under the Ministry of Health and Welfare (MOHW) was implemented in 2000 to improve the objectiveness and transparency of the claims-review functionalities. Later on, the government began making an effort to expand the coverage in terms of finance and services (Table 1).

Table 1: Population Coverage² Expansion Trend in Korea (10,000 Persons)

		1977	1990	1995	2000	2005	2010	2015	2020
UHC		5,296	44,110	45,429	47,466	49,154	50,581	52,034	52,871
NHI		3,200	40,180	44,016	45,896	47,392	48,907	50,492	51,345
Employee Insured	Population	3,140	20,759	21,559	22,404	27,223	32,384	36,225	37,150
	Ratio (%)	1.65	2.19	2.01	2.08	1.79	1.54	1.30	1.00
Self-employed insured	Population	-	19,421	22,457	23,492	20,159	15,523	14,265	14,195
	Ratio (%)	-	2.46	2.11	1.86	1.40	1.19	1.01	0.82
Medical Aid	Population	2,095	3,930	1,413	1,570	1,762	1,674	1,544	1,526
	Ratio (%)	5.75	8.91	3.11	3.31	3.58	3.31	2.97	2.89
Workplace		7,523	122,923	169,825	222,859	617,234	1,004,557	1,465,354	1,915,756

Sources: NHIS and HIRA, various years

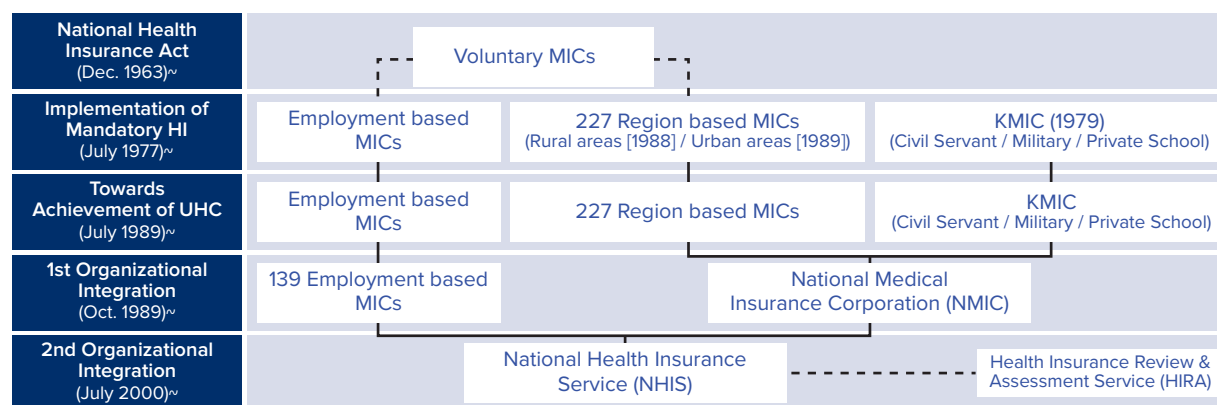
Note: UHC means the total population eligible for coverage.

2 Population coverage means the persons covered by national health insurance.

Integration of multiple health insurance cooperatives

Before the introduction of the single health insurance system, there were several voluntary health insurance cooperatives, created across regions and workplaces, after the enactment of the National Health Insurance Act in 1963. Due to different income levels and health conditions, the financial status of each cooperative was different. Following an intense debate among academia and government officials on whether to support “integration” or “cooperatives,” the integration of the insurance companies and cooperatives commenced, with organizational integration in 1989 and 2000, and financial integration in 2002 (Figure 2).

Figure 2: Integration Process for the Multi-cooperatives



MIC : Medical Insurance Cooperative KMIC : Korea Medical Insurance Corporation

Source: National Health Insurance Service (NHIS)

3. PREVIOUS EMERGING INFECTIOUS DISEASES IN KOREA AND THEIR IMPACT ON THE EARLY RESPONSE TO COVID-19

Like other Asian and Middle East countries, Korea was affected by the Severe Acute Respiratory Syndrome (SARS) in 2003 and Middle East Respiratory Syndrome (MERS) in 2015 (Table 2). Emerging infectious diseases such as SARS and MERS reduced the use of health care services due to the fear of being infected. Such newly emerging infections even impacted other health outcomes in other countries.³ Legislative reforms and governance strengthening prepared the country to rapidly mount strategies and response to future emerging infectious diseases.⁴

Table 2: Previous Infectious Diseases and Affected Countries

	SARS	MERS	COVID-19
Number of cases	7,777	2,517	56,862,228
Number of deaths	729	876	808,259
Time period	2002–2003	2012–	2019–
Affected countries	China, Hong Kong, Macao, Taiwan, Kuwait, Malaysia, Mongolia, Philippines, Republic of Korea, Russia, Singapore, Thailand, Viet Nam	Bahrain, China, Iran, Jordan, Kuwait, Lebanon, Malaysia, Oman, Philippines, Qatar, Saudi Arabia, Republic of Korea, Thailand, Tunisia, Turkey, United Arab Emirates, Yemen	All Asian countries

Source: Tanaka (2022)

3 During the 2014–16 outbreak of Ebola in Africa, many more people died from malaria than from Ebola because of inaccessible health services (Lal et al. 2021).

4 During the MERS epidemic in Korea in 2015, out of 136 persons who tested positive for MERS, 38 people died. According to the Infectious Disease Control and Prevention Act, all costs related to MERS were covered by the NHIS and the governmental budget.

Korea’s responses since onset of the pandemic

The evolution of the government’s response, both from the legislative and governance/organizational perspectives, is summarized in Table 3 below.

Table 3: Korean Government’s Response to SARS, MERS, and COVID-19

	Korea’s responses to/since SARS and MERS outbreaks	Korea’s responses during COVID-19
Government efforts	Legislative efforts	<ul style="list-style-type: none"> The Act was revised as the “Infectious Disease Control and Prevention Act” to protect two conflicting interests—privacy and public health. Data sharing was limited to specific agencies for privacy concerns. Mitigated health care providers’ financial distress caused by the government mandates on social distance and infectious diseases. Through Article 70, the government compensates losses of health-care institutions due to the occurrence of infectious disease, or visitation of a patient or other person with infectious diseases, or due to the disclosure thereof by the government by the Article of Infectious Disease Control and Prevention Law. Reduced the health insurance contribution amount of low-income groups and people in the affected areas, thereby reducing their financial burden. The NHIS categorized infected people based on their underlying conditions and severity of symptoms, based on accumulated data from health screening and health care usage.⁵ Analyzed the individual patient’s risk of getting COVID-19 after linking the data from KCDC and the epidemiological history. Provided the customized integrated health data integrated with COVID-19 data extracted from the KCDC (infection and vaccination history) for the research. Based on people’s monthly health insurance premiums,⁶ the criteria for the recipients of disaster relief funds were developed.
Government efforts	Governance strengthening	<ul style="list-style-type: none"> The government distributed the “disaster relief funds” to all people to mitigate the negative impact of economic contraction caused by new infectious diseases. The Korea Disease Control and Prevention Center (KCDC) was once again promoted to become the Korea Disease Control and Prevention Agency (KDCA) in 2020, after the COVID-19 outbreak, so it would be an independent organization making evidence-based policy. Established the Disaster Response Committee under the Health Insurance Policy Deliberation Committee (HIPDC) as a new decision-making body that handles emergency situations. The new committee was set up to expedite the decision-making process on national health insurance during emergency situations; decisions are to be reported to the HIPDC.

5 Patients are placed in different places (life care centers or medical facilities with a negative pressure room) based on their symptoms and underlying conditions.

6 Monthly health insurance premiums are calculated according to the insured’s ability to pay, based on factors such as their income and assets.

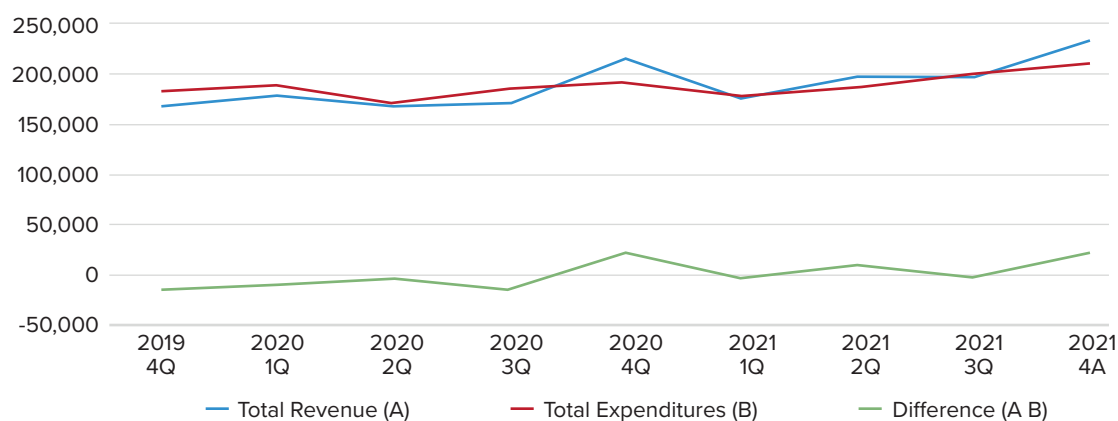
	Korea's responses to/since SARS and MERS outbreaks	Korea's responses during COVID-19
NHIS and Health Insurance Policy Deliberation Committee	<ul style="list-style-type: none"> Decision to expedite payment was made by the Health Insurance Policy Deliberation Committee (HIPDC) and executed by the NHIS to address the financial burden on health care providers managing MERS patients. Advance payment: Based on the average amount of payment made in the previous year, the NHIS makes an advance payment of 90 to 100 percent of the average bill during the previous year and adjusts the exact amount of the bill afterwards. Expediting payment: Before HIRA finalizes reviewing claims, the NHIS pays in advance 90 percent of the requested bills of health care providers. 	<ul style="list-style-type: none"> The main function of the NHIS in Korea during the pandemic has been to alleviate the financial burden caused by the unexpected health event. For health care providers: (i) The NHIS covers the relevant costs incurred in managing COVID-19 patients; and (ii) Since the MERS outbreak in 2015, the NHIS can shorten the cycle of payment to the health care providers to mitigate any financial deficit caused by reduced patient usage. The Ministry of Health and Welfare can provide available and relevant information to the heads of central administrative agencies and local governments, the chairperson of the NHIS, the president of the Health Insurance Review and Assessment Service, medical personnel, medical institutions, and other organizations engaged in tasks related to infectious diseases. (Revised in 2020 in "Infectious Diseases Control and Prevention Act") The NHIS can provide individual/patient information including underlying health conditions, vaccine history, adverse effects of vaccination by age groups, family background, previous health screening results, and consequential health expenses, only for disease prevention and control purposes.

Source: authors' compilation

Cash Flow Trend of National Health Insurance of Korea during the Pandemic

Figure 3 shows the trend of revenue and expenditure of National Health Insurance of Korea from the fourth quarter of 2019 to till the fourth quarter of 2021. The red line represents the total expenditure, and the blue line is the revenue from health insurance contributions and government subsidies. The green line shows the net amount of cash. The trend of revenue and expenditure of National Health Insurance fluctuates, but so far, it has been within the planned range. However, future financial sustainability needs to be monitored by the NHIS to prepare for future health emergencies, such as the pandemic, and the expected healthcare expenditure as a result of the rapidly aging population.

Figure 3: Financing Arrangements of National Health Insurance during COVID-19



Source: National Health Insurance Service (NHIS)

NHIS has published the cash flow of the finance of National Health Insurance in terms of revenue and expenditure quarterly until the fourth quarter of 2021 (see Appendix 2).

4. RESOURCE MOBILIZATION AND FINANCIAL SUSTAINABILITY OF NHI

The funding sources of the NHIS are mainly revenue collected from enrollees' contributions (around 80 percent) and government subsidy (around 20 percent). The amount of government subsidy is decided based on the total amount of contribution collected annually (Table 4). To relieve the financial loss caused by the pandemic, health insurance contributions of vulnerable groups such as low-income populations and small businesses were reduced temporarily with the help of government subsidy. Additionally, a "zero out-of-pocket strategy" for COVID-19 testing, treatment, and vaccination, implemented throughout the pandemic period, has ensured that these services are available to all without any financial barrier. However, there is some concern that the financial burden of health insurance on the government may increase, as the enrollees' income decreased during the pandemic.

Income and expenditure of the NHIS fund decreased more than expected in 2021, due to the contribution alleviation policy and lower contribution rate, according to the National Assembly Budget Office (NABO 2021). In addition, there was lower usage of health care institutions during the pandemic; however, this factor improved after the accelerated vaccine coverage in the country (Yoo et al. 2022). At the height of the pandemic, temporary contribution reduction was determined at the Emergency Economic Meeting chaired by President Moon on March 30, 2020. Major health insurance policies such as the contribution rates are routinely decided by the Health Insurance Policy Deliberation Committee (HIPDC). However, to respond to COVID-19, a new protocol was established for addressing emergency situations which allowed important decisions to be made more quickly (March 31, 2022).

Table 4: Contribution Alleviation Amount and Governmental Subsidy in 2021 (100 Million Korean Won)

Contribution reduction	Target		Reduction rate	Contribution alleviation (A)	Government subsidy (B)	NHIS Fund allocated (A-B)	
	Region	Standard					%
1 st	Disaster region	50th percentile	710,000	50%	729	381	348
	All	80th percentile	5,330,000	50%	4,377	2,275	2,102
2 nd	All	60th to 80th percentile	5,560,000	30%	4,009	0	4,009
					9,115	2,656	6,459

Note: Health insurance contribution is considered to calculate the target population. Disaster regions are where the initial outbreak of COVID-19 was very high.

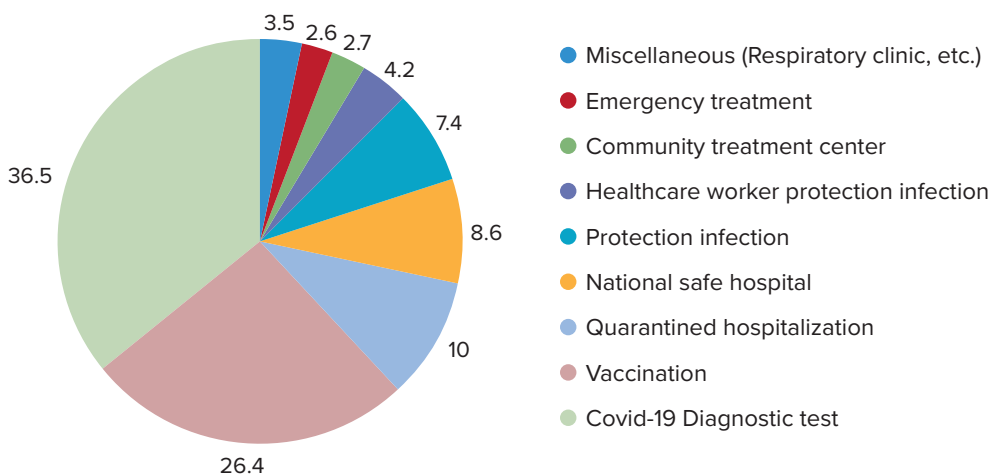
Source: National Assembly Budget Office (2021)

5. EXPANDED BENEFIT PACKAGES UNDER THE NHIS FOR CONTROL OF COVID-19

As of 2021, public health care institutions constituted only 6 percent of all health care institutions in the country (KOSIS [Korean Statistical Information Service] 2021).⁷ However, in 1999, the government implemented the “obligatory designation system,” which mandates that all health care providers (public and private) be enrolled in the NHIS. Participation of the private health institutions was critical for the COVID-19 response. To engage the private facilities, the government defined the essential health services related to COVID-19 that would be covered by the NHIS. These included services such as dedicated health care facilities’ management of patients with severe infection, tests for hospitalized patients without any COVID-19 symptoms, treatment for respiratory disease patients in specially dedicated facilities, prevention and treatment for high-risk groups, teleservice for patients with mild symptoms in local health care facilities, treatment for patients with mild symptoms in the community treatment centers, testing, and vaccination.

From February 2020 to March 2022, 71 new health benefit packages (including services) were included in the NHI to control COVID-19 in the areas of prevention, testing, hospitalization, mildly symptomatic cases, emergencies, and health services other than COVID-19.

Figure 4: Health Care Use of the New Benefit Packages (%)⁸



Source: National Assembly Budget Office (2021)

1. Long-term care insurance and COVID-19

The NHIS also manages long-term care insurance (LTI) in Korea, which was introduced in 2008 for adults 65 years old and older and for those younger than 65 with geriatric diseases specified by presidential decree, such as Alzheimer’s disease or cerebrovascular disease, or disabilities. For the treatment of high-risk patients in long-term care institutions, new benefit packages were included during the pandemic, with financing from NHI instead of LTI.

⁷ More precisely, they accounted for 5.9 percent of the total number of and contained 9.6 percent of the number of beds.

⁸ The percentages of this pie graph were calculated using claims data, which is submitted by health care service providers to HIRA for review for their reimbursement. This comparison is not based on the reimbursed amount because there is a delay due to claims processing and reimbursement.

2. Role of the Health Insurance Review and Assessment Service (HIRA) during the COVID-19 pandemic

Routinely, the Drug Utilization Review (DUR) system is used to track the use of drugs and prevent drug overuse for patients in the country. During the early stage of the pandemic, when there was a shortage of supplies (for example, masks), the DUR system also tracked the public distribution of masks and stockouts of other supplies. Local pharmacies distributed masks to the public using the integrated health data system by checking the last digit of the birth year when the supply of masks was not sufficient.⁹ International travel information for every individual was also integrated into the NHI data, which helped to trace any person coming from the hot spots of COVID-19 and monitor those placed in isolation. NHI covered all health care providers as well as the entire population, and the hospital information system of the HIRA managed health care resources on a real-time basis. Information on the availability and usage of essential equipment (negative pressure isolation rooms, extracorporeal membrane oxygenation [ECMO], beds) and human resources were managed by the HIRA.

3. Minimizing the financial risk for health care providers during COVID-19

The government shortened the payment cycle time to solve the financial difficulties of health care providers during the pandemic, based on a policy that was developed during the MERS crisis.¹⁰ Based on the average amount of payment in the previous year, the NHIS paid 90 to 100 percent of the average amount of a bill in advance and adjusted the exact amount afterward.¹¹ Before the HIRA finalized its review of claims, the NHIS paid, in advance, 90 percent of the requested bills of the health care providers.

6. COVID-19 AND INEQUALITY: ANALYSIS USING THE INTEGRATED NHI DATA

Korea has been successful in achieving universal health coverage (UHC), which helped in reducing health inequality during the COVID-19 pandemic (Lee et al. 2021, Dongarwar and Salihu 2021). This is in contrast to global literature that reports higher rates of COVID-19-related infection, hospitalization, and mortality for those in unskilled occupations (possibly due to their lack of health insurance coverage), with low incomes, and living in deprived areas, which led to widening socio-economic disparities (Niedzwiedz et al. 2020, Patel et al. 2020, Drefahl et al. 2020, Jannot et al. 2021). Using the NHIS data from October 2020 to December 2021, a 2 percent random sample of the population (approximately 1 million people) was analyzed. Study parameters included assessing the COVID-related risk across sociodemographic characteristics such as quartile of contribution rate (proxy variable of income) and region of residence.

The data showed no significant difference among different income groups, regions, and immigration status (Figure 4). Free vaccination was provided at the local community health centers and hospitals, and the majority of the eligible population received their first dose within the first six months, regardless of their income level, region of residence, or immigration status. This finding is remarkable as many Organisation for Economic Co-operation and Development (OECD) countries found disparities depending on socioeconomic status. For

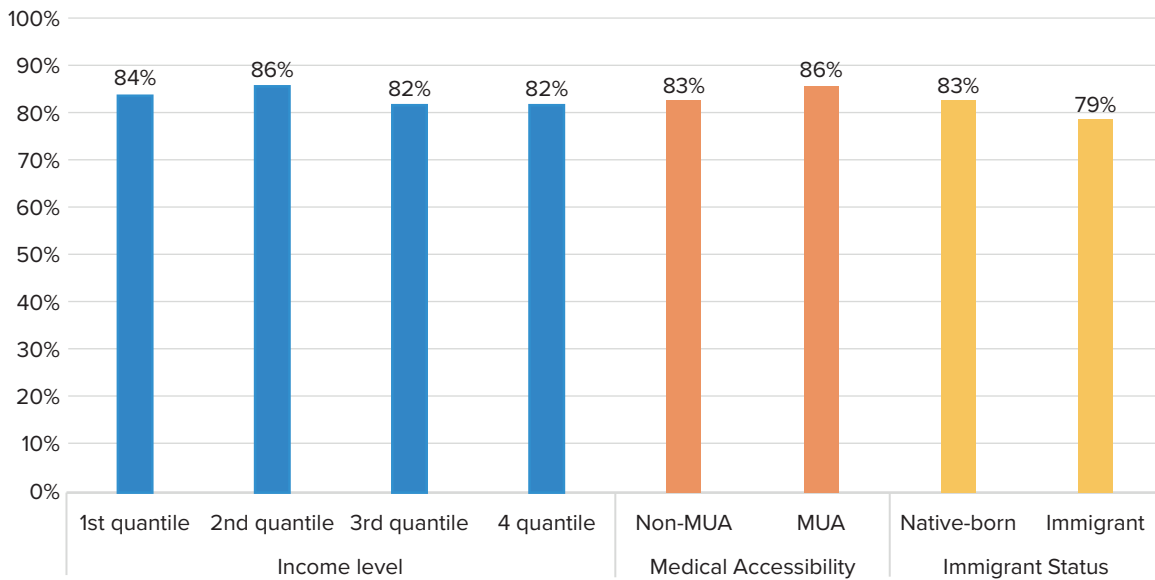
9 This allowed only a group of people whose last digit of their year of birth matched the designated days for purchasing a limited number of masks at a time, thereby controlling the supply of masks.

10 The decision regarding expediting payment time was made by the HIPDC (Health Insurance Policy Deliberation Committee) and executed by the NHIS. The HIPDC is composed of 25 people representing the enrollees' interest, providers' interest, and public interest; it deliberates on important issues of health insurance such as the contribution rate and benefit package.

11 To alleviate the financial difficulties of health care providers during the crisis caused by infectious diseases, the NHIS shortened the payment cycle using two tailored policies in payment. Fewer people were visiting health care facilities either because of lockdowns or fear of getting infected, resulting in significantly less earnings for health care providers. To mitigate the financial problem of health care providers, the NHIS modified the payment criteria for some hospitals during the MERS outbreak.

instance, in a study from the United States (US), the COVID-19 vaccination rate was higher for neighborhoods with higher income levels and education (Sacarny and Daw 2021).

Figure 5: Vaccination Rate by Income, Region, and Immigration Status (2020–2021)

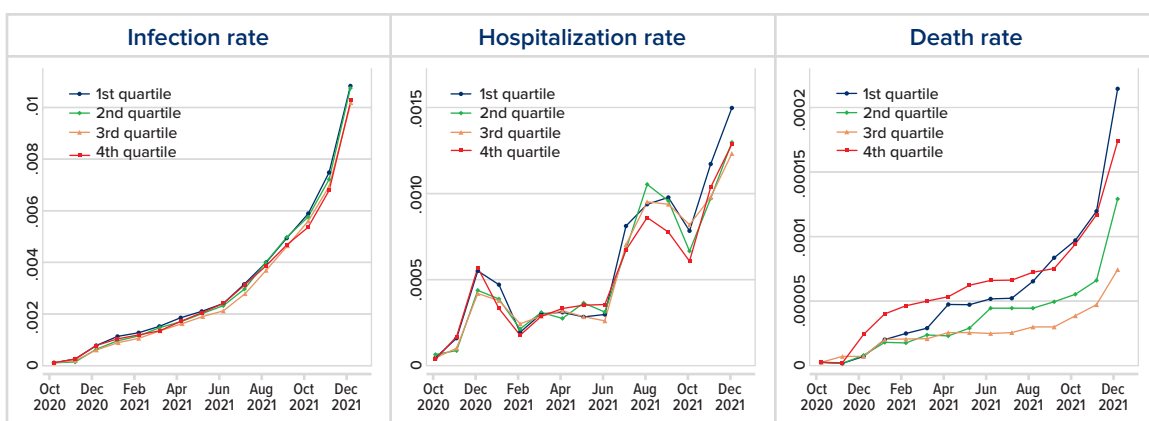


Note: The medically underserved areas (MUA) are defined as areas with limited access to general hospitals and lower Time Relevance Index (TRI).

Source: Authors' compilation based on data from the NHIS and KDCA

There was no systematic difference in infection, hospitalization, and death rates across income levels (Figure 5). This result can potentially be ascribed to the implementation of comprehensive health service policies that encompass cost-free COVID-19 diagnosis and treatment for all individuals, irrespective of income level. This, in conjunction with the presence of UHC, further supported equitable healthcare access (Lee et al. 2021). The relationship between income level and severity is not monotonic, with the poorest and richest groups exhibiting a higher mortality rate than the median income group.

Figure 6: Infection, Hospitalization, and Death Rates by Income (2020–2021)

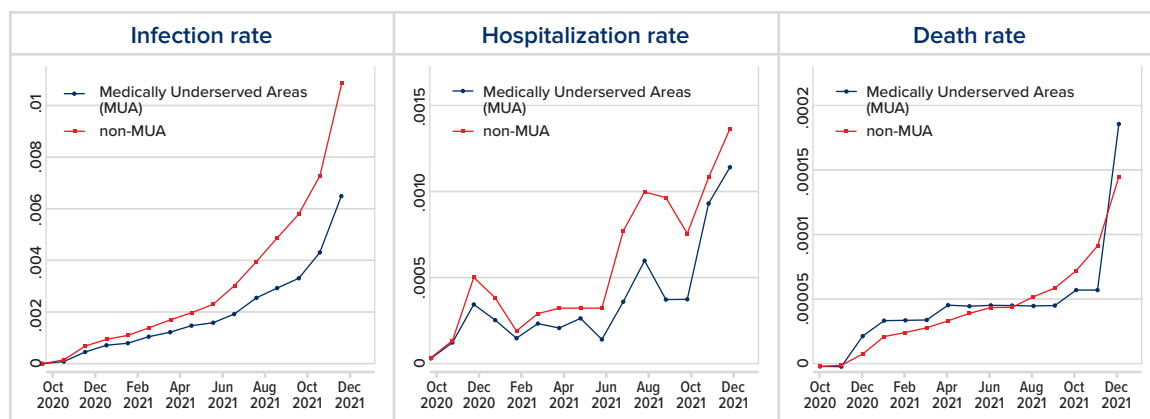


Source: Authors' compilation based on data from the NHIS and KDCA

Note: The infection, hospitalization, and death rates are computed by dividing the number of cases by the total population.

Infection rates, however, did differ by region, with those living in the areas with higher accessibility to medical services having a higher rate of infection as compared to the areas with lower accessibility (Figure 6).¹² This reported difference was likely due to the high density of the capital area, with greater risk of exposure to infection. The severity of COVID-19, measured by hospitalization rate, was also higher in the highly accessible area, but the gap across the regions is much smaller than that of the infection rate. Death rates exhibited no significant differences, which can be ascribed to the effective preparedness systems established by local governments. These systems facilitated the swift allocation of hospital beds, the management of reducing community transmission. Nevertheless, death rates experienced an upsurge in both medically underserved areas (MUA) and non-MUA since late 2021, concomitant with the skyrocketing infection rate.

Figure 7: Infection, Hospitalization, and Death Rates by Region (2020–2021)

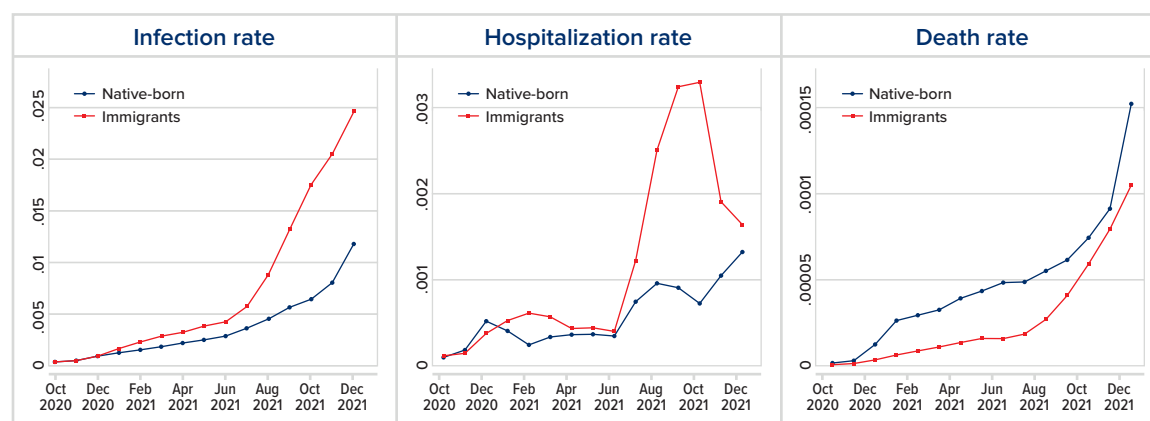


Source: Authors' compilation based on data from the NHIS and KDCA

Note: The infection, hospitalization, and death rates are computed by dividing the number of cases by the total population.

Although immigrants had higher infection and hospitalization rates, this group's death rate was lower compared to that of nonimmigrants (Figure 7). The higher infection and hospitalization rates among immigrants may be due to more exposure to more hazardous working conditions and higher density living conditions, whereas the lower death rate may be due to a lower proportion of vulnerable populations; as of 2020, the proportion of the population older than 65 is 16.69 percent for nonimmigrants and 7.16 percent for immigrants. Furthermore, the implementation of a zero out-of-pocket cost strategy has proven to be an efficacious intervention for achieving improved health outcomes.

Figure 8: Infection, Hospitalization, and Death Rates by Immigration Status (2020–2021)



Source: Authors' compilation based on data from the NHIS and KDCA

Note: The infection, hospitalization, and death rates are computed by dividing the number of cases by the total population.

12 The medically underserved areas (MUA) are defined as areas with limited access to general hospitals and lower Time Relevance Index (TRI), which is the value obtained by dividing the total number of medical visits within a 60-minute driving distance from home in the district, by the total number of medical visits in the district. Areas with less than 30 percent TRI were considered underserved areas.

7. CONCLUSION

Korea's national health insurance was introduced to mitigate the negative impact of income inequality and social conflicts caused by rapid industrialization and urbanization in the 1970s. From the early stage of NHI implementation, NHI had a strong emphasis on improving health care access for vulnerable groups, including informal sector workers and lower income populations. Despite its achievement of UHC through NHI, emerging infectious diseases such as SARS and MERS increased and exposed the people to new and existing vulnerabilities. Since the SARS and MERS outbreaks, Korea's government brought about significant reforms in legislation and organizational and governance structures, and it strengthened the health care system to ensure a rapid and effective response to emerging infectious diseases. Korea's NHI played a significant role during the pandemic by expanding the benefit packages, relieving the financial burden of contributions, and managing supplies of masks and equipment, among many other measures, all of which inevitably ensured the delivery of equitable and quality health care services without financial burden.

8. POLICY RECOMMENDATIONS

- 1. Identify vulnerable groups whose health care costs are not covered by their insurance:** As the negative effects of a pandemic or disease outbreak are more likely to be experienced by the vulnerable groups, it is important to know who they are and where they are located. Informal sector workers, often with no insurance coverage, may be difficult to enumerate, thus requiring special focus. The health insurance system is implemented, similar to many other countries, for occupations with high-income level and high job security (military, civil servants, faculty members, and others), but it is difficult to find a health insurance system that covers the informal sector, such as low-income people or rural workers.
- 2. Secure the public health fund dedicated to vulnerable groups:** The COVID-19 crisis has confirmed the need for sustainable domestic financing, including flexibility for purposes of use. In Korea, contribution-based revenue with government subsidy enabled the Korean government to provide zero-cost COVID-19 health intervention for the entire population. This inclusiveness in terms of population coverage was the cornerstone for tackling COVID-19.
- 3. Design a sustainable health fund structure for health care:** It is necessary to design a financial structure that can publicly and sustainably support health services from the perspective of human rights. Whether it would be operated with taxes or insurance premiums, or a mix, depends on the cultural history of the country. Korea introduced a new revenue source from the surcharges on the tobacco tax in 1997, and has used for health promotion and prevention.

REFERENCES

- Dongarwar, D., and H. M. Salihu.** 2021. "Implementation of Universal Health Coverage by South Korea during the COVID-19 Pandemic." *Lancet Regional Health—Western Pacific* 7: 100093.
- Drefahl, S., M. Wallace, E. Mussino, S. Aradhya, M. Kolk, et al.** 2020. "A Population-based Cohort Study of Socio-Demographic Risk Factor for COVID-19 Deaths in Sweden." *Nature Communications* 11(1): 5097.
- Jannot, A.-S., H. Countouris, A. Van Straaten, A. Burgun, S. Katsahian, and B. Rance.** 2021. "Low-Income Neighbourhood Was a Key Determinant of Severe COVID-19 Incidence during the First Wave of the Epidemic in Paris." *Journal of Epidemiology and Community Health* 75: 1143–1146.
- KOSIS (Korean Statistical Information Service).** 2021. "Proportion of Public Medical Institutions by City." Status of Public Medical Institutions (webpage). Original source from the National Medical Center. Retrieved from https://kosis.kr/statHtml/statHtml.do?orgId=411&tblId=DT_411002_03&conn_path=I2
- Lal, A., N. A. Erondy, D. L. Heymann, G. Gitahi, and R. Yates.** 2021. "Fragmented Health Systems in COVID-19: Rectifying the Misalignment between Global Health Security and Universal Health Coverage." *Lancet* 397(10268): 61–67.
- Lee, H., J.-R. Lee, H. Jung, and J. Y. Lee.** 2021. "Power of Universal Health Coverage in the Era of COVID-19: A Nationwide Observational Study." *Lancet Regional Health—Western Pacific* 7: 100088.
- NABO (National Assembly Budget Office).** 2021. NABO Cost Estimates & Tax Issues (webpage), 3(16).
- Niedzwiedz, C. L., C. A. O'Donnell, B. D. Jani, E. Demou, F. K. Ho, C. Celis-Morales, B. I. Nicholl, et al.** 2020. "Ethnic and Socioeconomic Differences in SARS-CoV-2 Infection: Prospective Cohort Study Using UK Biobank." *BMC Medicine* 18(160).
- NHIS (National Health Insurance Service) and HIRA (Health Insurance Review and Assessment Service).** 2020. National Health Insurance Statistical Yearbook. Seoul: NHIS and Wonju, Gangwon Province, Rep. of Korea: HIRA.
- Tanaka, S.** 2022. "Economic Impacts of SARS/MERS/COVID-19 in Asian Countries." *Asian Economic Policy Review* 17(1): 41–61.
- Sacarny, A., & J. R. Daw.** 2021. "Inequities in COVID-19 Vaccination Rates in the 9 Largest US Cities." *JAMA Health Forum* 2(9): e212415.
- Patel, A. P., M. D. Paranjpe, N. P. Kathiresan, M. A. Rivas, and A. V. Khera.** 2020 "Race, Socioeconomic Deprivation, and Hospitalization for COVID-19 English Participants of a National Biobank." *International Journal for Equity in Health* 19(114).
- Yoo, K. J., et al.** 2022. "Impact of COVID-19 on Healthcare Utilization in South Korea Using an Interrupted Time-Series Analysis." Working paper.

APPENDIX

Appendix 1: National Health Insurance Act

Article 2-2 (Formulation of Comprehensive National Health Insurance Plans)

1. Where the Minister of Health and Welfare formulates a comprehensive national health insurance plan under the former part of Article 3-2 (1) of the Act (hereinafter referred to as “comprehensive plan”) and an annual implementation plan under paragraph (3) of the same Article (hereinafter referred to as “implementation plan”), he/she shall do so by the time classified as follows:
 1. Comprehensive plan: By September 30 of the year immediately preceding the enforcement year.
 2. Implementation plan: By December 31 of the year immediately preceding the enforcement year.
2. Where the Minister of Health and Welfare formulates or modifies a comprehensive plan or implementation plan, he/she shall publish it by either of the following methods, whichever is relevant:
 1. Comprehensive plan: Providing public notice in the Official Gazette.
 2. Implementation plan: Posting it on the official website of the Ministry of Health and Welfare.
3. Where the Minister of Health and Welfare formulates or modifies a comprehensive plan or implementation plan, he/she shall communicate the details thereof to the heads of related central administrative agencies, the president of the NHIS, and the president of the Health Insurance Review and Assessment Service referred to in Article 62 of the Act (hereinafter referred to as the “Review and Assessment Service”).
4. Where the Minister of Health and Welfare evaluates performance results according to an implementation plan, pursuant to Article 3-2 (4) of the Act, he/she shall incorporate results of the evaluation in both the comprehensive plan and implementation plan to be formulated thereafter.
5. Except as provided in paragraphs (1) through (4), detailed matters necessary for the formulation, implementation, evaluation, etc. of comprehensive plans or implementation plans shall be determined and publicly communicated by the Minister of Health and Welfare.

[This Article Newly Inserted by Presidential Decree No. 27433, August 2, 2016]

Appendix 2: Cash Flow of the National Health Insurance System (2019 quarter four– 2021 quarter four)

- **2019 fourth quarter:** the fiscal balance decreased due to an increase in health benefits due to population aging, an increase in benefits such as MRI/ultrasound, and a decrease in the upper limit for co-payments, and other.
- **2020 first quarter:** due to the difficult economic situation, the health insurance contribution collection rate decreased. To alleviate the financial difficulties of health institutions dedicated to responding to COVID-19, an advance payment, 100 percent of health insurance benefits as was paid the same month of the previous year; and a payment of health expenses was implemented.
- **2020 second quarter:** due to the spread of COVID-19, a decrease in income and a decrease in expenditure occurred simultaneously, but the level of fiscal fluctuation was within the planned range. Reduced health insurance contribution (30-50%) from March to May 2020 for special disaster areas and vulnerable groups, and expanded year-end settlement installment payments (five times to ten times), resulted in a decrease in income due to a decrease in the settlement amount, and support for COVID-19 testing and treatment expenses. Despite additional expenditures due to the implementation of advance payments the decrease in healthcare use due to the increase in COVID-19 confirmed cases resulted in a decrease in expenditure, resulting in a decrease in the account balance compared to the same period of the previous year.

- **2020 third quarter:** the increase in total income and total expenditure slowed significantly compared to the previous year due to the impact of COVID-19. Ex-post refund of the co-payment ceiling system was concentrated in September, leading to an increase in expenditure and a decrease in the financial balance.

Co-payment ceiling system: A system in which the corporation pays the excess amount if the total amount of annual medical expenses (excluding medical expenses not covered by health insurance) exceeds a certain upper limit according to individual income level)

- **2020 fourth quarter:** the total revenue increased significantly compared to the same period last year as government subsidies were distributed to NHIS in accordance with the change in the monthly government subsidy plan for 2020, while the total expenditure increased only slightly compared to the same period last year. This is because the use of healthcare use decreased. As a result, the balance of payments (total income-total expenditure) achieved a surplus and increased significantly compared to the same period last year.
- **2021 first quarter:** The total income decreased slightly compared to the same period of the previous year due to some adjustments in the monthly grants of government subsidy by the financial authorities, although health insurance contribution income increased. The balance of payments (total income-total expenditure) decreased slightly compared to the same period last year.
- **2021 second quarter:** the total revenue increased more than total expenditure, recording a surplus of ₩1 trillion (Korean won).
- **2021 third quarter:** although the fiscal balance decreased by ₩177.4 billion, the balance improved significantly (₩1.2 trillion) compared to the same period last year (₩1,348 billion). (total income) Total income increased by ₩2.6 trillion compared to the same period of the previous year due to an increase in health insurance contribution income by ₩1.4 trillion (8.8%) compared to the previous year and an increase in government subsidies in the second half of the year. (total expenditure) Insurance benefit costs increased by ₩1.6 trillion (8.7%) compared to the previous year due to the fact that 'refunds after the maximum amount of compensation' paid were concentrated in August and September compared to the previous year.

Refunds after the maximum amount of compensation: If the total amount of the annual health expenses of any individual (excluding health treatment not covered by national health insurance) exceeds the upper limit according to the individual income level, the excess amount is borne by the NHIS and returned

- **2021 fourth quarter:** the total revenue and total expenditure increased by the same amount ₩ (₩1.8 trillion) compared to the same period last year, recording a surplus (₩2.2 trillion) similar to the fiscal balance of the previous year (₩2.3 trillion surplus). Total revenue increased by ₩1.8 trillion compared to the same period of the previous year due to the increase in insurance premiums and the intensive grant of government subsidy. Total expenditure increased by ₩1.8 trillion from the same period last year due to a partial decrease in expenditure due to repayment of advance payments by medical institutions, despite an increase of ₩2.8 trillion in insurance benefit costs.



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