



# High-Cost Users Still Came to Hospitals During the COVID-19 Pandemic in Thailand

## Highlight

- Over the past 6 years, high-cost users (HCUs) or the top 5% of the population utilised ~50% of the annual health expenditure, confirming that even during the pandemic year of 2020 and 2021, HCUs phenomenon still existed
- The characteristics of HCUs patients remained relatively the same from 2016 to 2021, in terms of proportion of male to female patients (~55% versus ~45%), age (55 to 57 years old), length of stay (~7 days), number of admissions (~7 visits), and the average healthcare cost per patient (>THB 100,000)
- In addition, the top 5 diagnoses for HCUs did not change over time
- Understanding the trends of healthcare utilisation and expenditure, policies can be introduced to ensure appropriate allocation of health resources to the right person in need with the right care during future pandemics

## Result



**A secondary data analysis of 20,345,011 patients**  
(total of 29,990,676 hospitalization records)

OVER THE PAST  
6 YEARS SHOWED THAT

**THE TOP  
↑ 5%**

**OF THE THAI  
POPULATION  
ADMITTED TO  
HOSPITALS**

(HCUs or inpatients  
within and above  
the 95<sup>th</sup> percentile)



UTILISED  
CLOSE TO

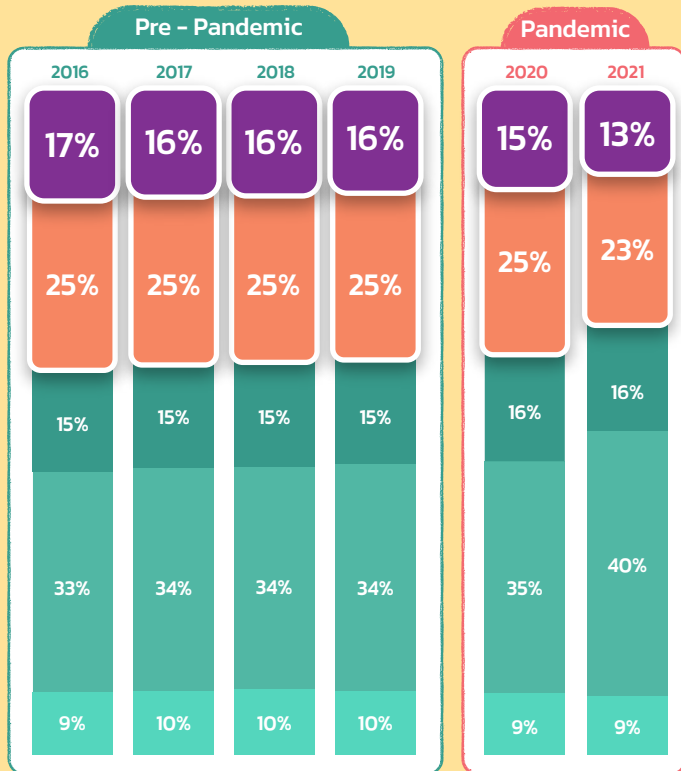
**50%**

of the annual  
**inpatient  
health  
expenditure**

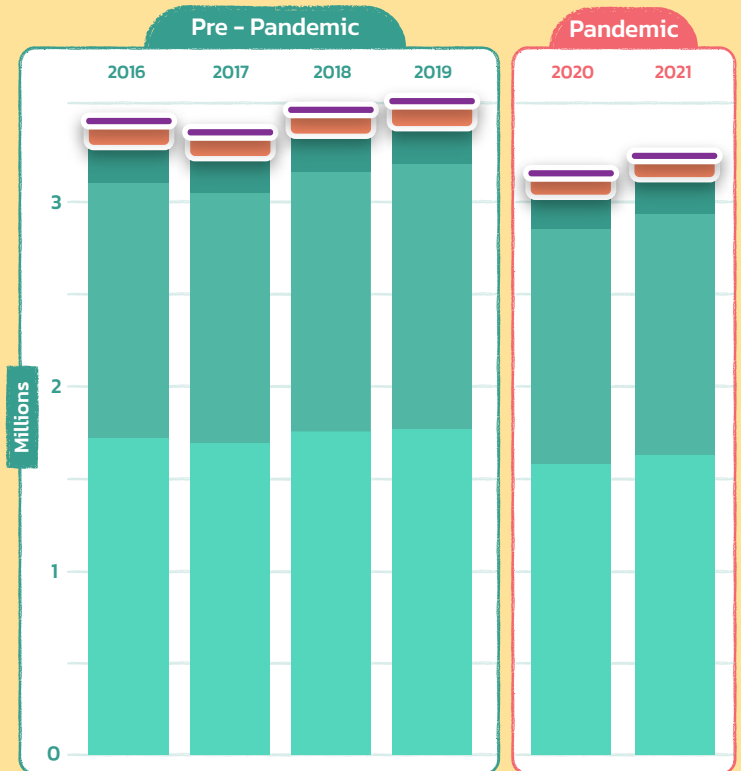
Even during the pandemic year (2020 and 2021), the HCUs phenomenon still existed (Exhibit 1). On the other hand, individuals within the 50<sup>th</sup> percentile or low-cost users (LCUs) consumed around 10% of the annual health expenditure.

## Exhibit 1

**A** : Total health expenditure (THB) of inpatients by percentile from 2016 to 2021



**B** : Total number of inpatients by percentile from 2016 to 2021



Percentile 1-50 51-90 91-95 96-99 100

## Characteristics

Patient's characteristics of both HCUs and LCUs were compared in two time periods:

### High-Cost Users (HCUs)

	Pre - Pandemic				Pandemic	
	2016	2017	2018	2019	2020	2021
55%	55%	55%	55%	55%	55%	52%
45%	45%	45%	45%	45%	45%	48%
AGE (YEARS)						
	55 ± 21	56 ± 21	56 ± 21	57 ± 21	57 ± 20	55 ± 21
AVERAGE LENGTH OF STAY (DAYS) PER VISIT						
	8 ± 14	8 ± 14	8 ± 14	8 ± 14	8 ± 13	9 ± 13
AVERAGE NO. OF VISITS PER PATIENT						
	6 ± 6	6 ± 6	7 ± 6	7 ± 6	7 ± 6	6 ± 7
AVERAGE COST IN THB PER PATIENT						
	106,988 ± 73,711	108,858 ± 72,736	111,448 ± 74,763	114,102 ± 73,741	128,039 ± 78,563	174,077 ± 100,394

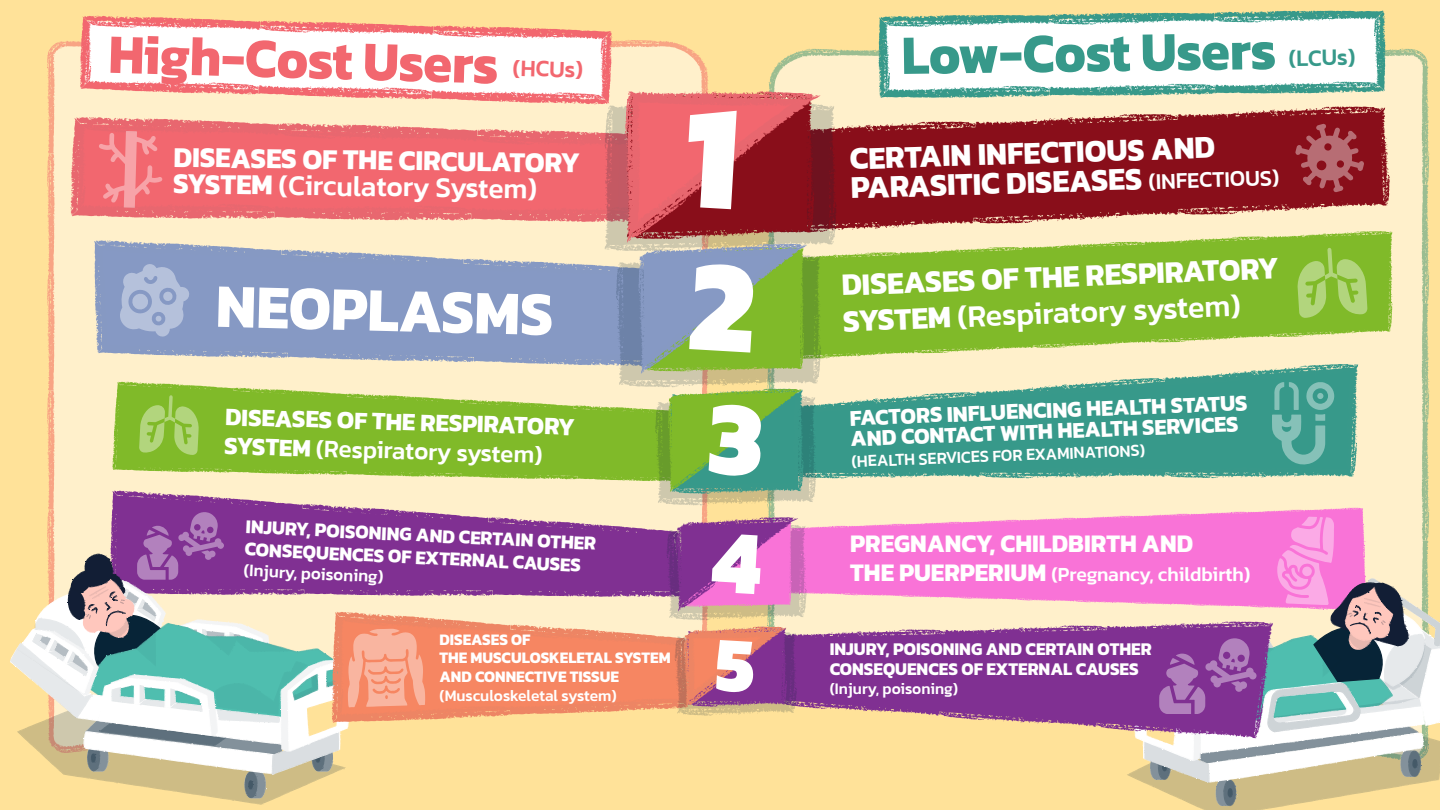
### Low-Cost Users (LCUs)

	Pre - Pandemic				Pandemic	
	2016	2017	2018	2019	2020	2021
45%	45%	45%	46%	46%	45%	46%
55%	55%	55%	54%	54%	55%	54%
AGE (YEARS)						
	23 ± 26	25 ± 26	25 ± 26	25 ± 26	27 ± 27	34 ± 28
AVERAGE LENGTH OF STAY (DAYS) PER VISIT						
	3 ± 2	3 ± 2	3 ± 2	3 ± 2	3 ± 2	3 ± 3
AVERAGE NO. OF VISITS PER PATIENT						
	1 ± 0	1 ± 0	1 ± 0	1 ± 0	1 ± 0	1 ± 0
AVERAGE COST IN THB PER PATIENT						
	2,584 ± 977	2,749 ± 1,050	2,864 ± 1,081	2,932 ± 1,101	3,215 ± 1,300	4,650 ± 2,514



## Top 5 Diagnoses

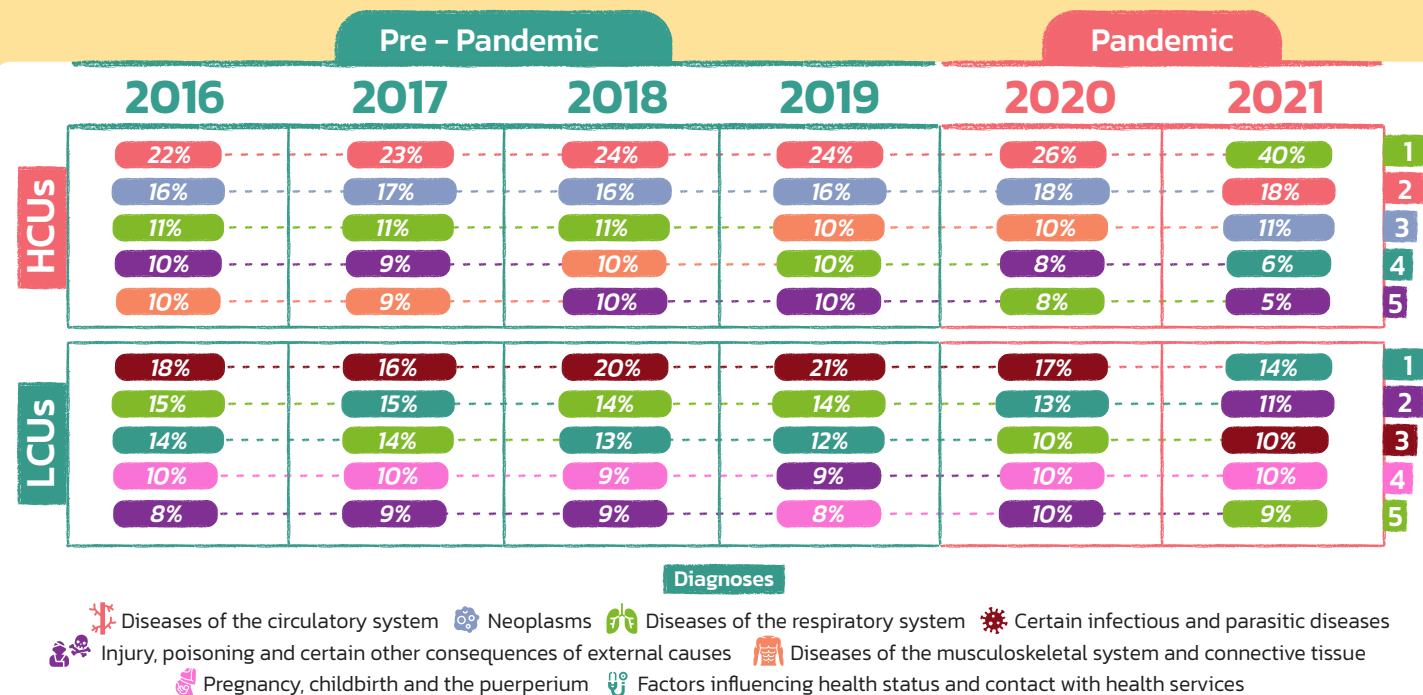
The most common primary diagnosis for HCUs was diseases of circulatory system, followed by neoplasms during 2016 to 2020. Likewise, in LCUs, certain infectious and parasitic diseases were the most common primary diagnostic during 2016 to 2020.



Meanwhile, during the pandemic period of 2021, there has been a change in the most common primary diagnoses in both in HCUs and LCUs. The respiratory related diseases was the most report cases in HCUs and other conditions that influencing health status in LCUs.

## Exhibit 2

### Top 5 Diagnosis Over 6 Years



## Policy Recommendations



Understanding the trends of healthcare utilisation and expenditure, policies can be introduced to ensure appropriate allocation of health resources to the right person in need with the right care during future pandemics.



Another case study of how real-world existing administrative database can be used to help explore potentially important topic to support our healthcare system, in this case identifying those who are high-cost users.

## Methodology

This study aims to determine: (1) whether the HCUs phenomenon existed during the pandemic in Thailand by exploring the inpatient health expenditure pattern over time from 2016 to 2021; (2) the patient characteristics of HCUs; and (3) the top 5 primary diagnoses of HCUs. Secondary data analysis was conducted using the Inpatient Department (IPD) e-Claim data from the National Health Security Office for the Universal Coverage Scheme which provides healthcare to ~80% of the Thai population. Descriptive analysis was used to calculate the health expenditure over time and to examine the population characteristics.



### Scan QR code to follow our research.

This policy brief is part of the project "Understanding the impact of COVID-19 to improve our health care system response : Turning crisis into opportunities"

by Dr.Wanrudee Isaranuwattha, Dr.Yot Teerawattananon, Dr.Rukmanee Butchon, Dr.Jarawee Sukmanee, Picharee Karunayawong, Thanayut Saeraneesophon, Chulathip Boonma, Myka Harun, Sarajan Chatkamol, Pheerapanyawaranun, Bongkoch Goeke, Dr. Chaiyos Kunanusont, Prof. Dr.Supon Limwattananon, Dr.kanitta Bundhamcharoen, Dr.Thitiporn Sukaew, Dr.Vuthiphan Vongmongkol, Chutimon Sindhuprama, Khanitta Kusreesakul, Nuttapat Makka, Parinda Seneerattanaprayul, Waraporn Pongkantha, Netnapi Suchonwanich and Chakvida Amornvisaisoradej

This project is funded by Health System Research Institute (HSRI)

### Author



Dr.Wanrudee  
Isaranuwattha



Myka Harun  
Sarajan



Picharee  
Karunayawong



Piyada  
Gaewkhiew



Chulathip  
Boonma



View other policy briefs at  
[www.hitap.net/en](http://www.hitap.net/en)

**HITAP** is a semi-autonomous research unit under Thailand's Ministry of Public Health. Including pharmaceuticals, medical devices, interventions, individual and community health promotion, and disease prevention as social health policy to inform policy decisions in Thailand. HITAP also works at the global level with overseas development aids, international organisations, non-profit organisations, and overseas governments to build capacity of health technology assessment, e.g., international Decision Support Initiative (iDSI).

### Contact Information

**Health Intervention and Technology Assessment Program (HITAP)**  
6th Floor, 6th Building, Department of Health, Ministry of Public Health,  
Tiwanon Rd., Muang, Nonthaburi 11000, Thailand

Tel: +662-590-4549, +662-590-4374-5

Fax: +662-590-4369

E-mail: [comm@hitap.net](mailto:comm@hitap.net)

Website: [www.hitap.net](http://www.hitap.net)



This work is licensed under  
a Creative Commons  
Attribution-NonCommercial



HITAPTHAILAND



HITAP\_THAI



HITAP THAI



HITAP.NET

