

# MORAL HAZARD IN GOVERNMENT HEALTH PROGRAMS - NEW EVIDENCE FROM GEORGIA<sup>4</sup>

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## ABSTRACT

In this paper, we studied the moral hazard in healthcare. As part of the analysis, we looked at 126.3 thousand hospitalization cases in the Georgian healthcare system in 2018-2019. According to the group of diagnoses, we compared the length of stay of inpatients funded under government programs with the cases covered by a pocket of patients or private insurance companies. As a result of the study, we found that the length of stay under the universal health care program is, on average, 0.26 days (CI 95%; [0.22-0.30]) longer than in other circumstances. The difference is statistically significant ( $t = -12.58$ ;  $P < .05$ ). Thus, our result is the empirical evidence of theoretical reasoning that predicts an increase in the moral hazard under the government healthcare program.

*Keywords: Healthcare Moral hazard, Cost sharing, Copayment hospitalization*

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## *Introduction*

Medicine is an outstanding example of a market with high information asymmetry (Arrow, 1963; Rochaix, 1989; Blomqvist, 1991). In particular, the patient needs to be more informed about what kind of treatment, intensity, and extent they need. The patient can hide information about past illnesses and health history. Consequently, there may be opportunistic conduct by medics or patients. Arrow's (1963; 1968) and Pauly's (1968) debate made this problem prominent among scholars and others in the 1960s. Despite the different stances, the theoretical consequence of this debate is the recognition that the complete elimination of moral hazards in healthcare is impossible. Thus, the following discussion revolves around how moral hazard will manifest under different motivations and what methods can reduce its adverse effects (Dave & Kaestner, 2009; Grignon et al., 2018).

Naturally, this issue came under the attention of politicians and bureaucrats because they directly faced such problems in decision-making. After many years of experimentation, two main ways of mitigating moral hazards in healthcare have been identified - cost-sharing and the DRG. In the 1980s, the US introduced the DRG, which gradually became the primary hospital payment approach in developed countries (Schreyögg et al., 2006; Street et al., 2011; Quentin et al., 2013). In the DRG system, prices are fixed. Not on a separate treatment element but the whole medical service, according to a specific disease. Despite its prevalence, this approach does not solve all problems. Even in this system, there is space for moral hazards. For example, these include lowering the quality of medical services (Jegers et al., 2002; Paddock et al., 2007), discrimination (Aas, 1995; Ellis, 1998), manipulation of diagnoses (Eichenwald, 2003; Dafny, 2005), focusing on relatively profitable illnesses (Ellis & McGuire, 1996; Gilman, 2000; Liang, 2015; Parkinson et al., 2019) and manipulating short-term hospitalizations (Norton et al., 2002).

The second widespread method is cost-sharing (Hosseini & Gerard, 2013). This approach implies that an insured copays a specific part of the medical service costs. However, this may be less effective because consumers may need to cut their use of needed medical care (Haviland et al., 2012; Baicker et al., 2015). Also, the insured may need help understanding the price incentives embedded in the contract (Atanasov & Baker, 2014; Handel & Kolstad, 2015). It should also be taken into account that the effect of the copayment mechanism varies according to the socio-economic characteristics of the consumers and the type of medical service (Lundberg et al., 1998; Cockx et al., 2003; Kim et al., 2005). Based on the review of 47 empirical studies, Kiil and Houlberg (2013) found no significant effects of copayment on

the prevalence of hospitalizations. The authors concluded that copayment mainly shifts the burden of financing from the public coffers to the consumers rather than lowering inpatient service demand. Finally, the copayment method can control healthcare costs. However, it may be a blunt instrument to control health spending: higher cost-sharing reduces medical spending but does so across the spectrum of medical procedures, some of which are likely valuable and others not (Brot-Goldberg et al., 2017).

The copayment mechanism increases efficiency if there is excessive consumption of medical services, which can be caused by patients' opportunistic conduct (Einav & Finkelstein, 2018) or the doctor (Cutler et al., 2019; Chandra & Staiger, 2020). In addition, this approach does not prevent the increase in total costs. As a result of the opportunistic manners of the clinic managers, total costs can become a significant problem. Such a situation has appeared in China, where the government funds the treatment (Zhang et al., 2019). Also, in the US private, the insurance companies hold a significant share of healthcare expenditures (OECD, 2021).

In this regard, Georgia is a suitable object of study. The healthcare system is often in the process of reformation. 2013, the newly elected government introduced Universal Health Care (UHC). Since the second year, the program costs have soared. In 2014, the program allocation was 338.5 million GEL (USD 191.7 million); in 2017, it reached 709.7 million (USD 282.9 million). Therefore, the UHC has become targeted to reduce the growth of expenses and established a copayment mechanism.

Nevertheless, in the following years, the expenditures of the budgetary program were not reduced, more than 50% of which were costs for inpatient services. 2020, the UHC assignment reached 964.3 million GEL (USD 310.1 million). In this circumstance, the government plans to solve the problem by switching to the diagnosis-related group (DRG) system. Therefore, there is a need to study the extent of moral hazards in the UHC and identify problematic directions to avoid adverse consequences during the implementation of the DRG system. With the Implementation of DRGs, all the problems already identified in other countries may arise. For example, in the distribution of total healthcare expenditures in Georgia, the costs of inpatient services are, on average, 37.0%, but the share of this in the part of budgetary programs is, on average, 75.4%. In private costs, it is 21.2% on average. Thus, it is highly likely that such a disproportion is the consequence of moral hazard. Hospitalization itself gives ample space for opportunistic conduct. The government reimburses the costs of the "extra" services provided to the clinics, so increasing the length of stay is the easiest way to grow profits. Such opportunistic conduct of healthcare institutions was identified as early as the 1970s (Joseph, 1972; Freiberg & Scutchfield, 1976; Davidson, 1977) and remains one of the current

issues (Cheng, 2012; Englum et al., 2016; Holzmacher et al., 2017; Meng et al., 2020; Boes & Napierala, 2021; Aragón, 2022).

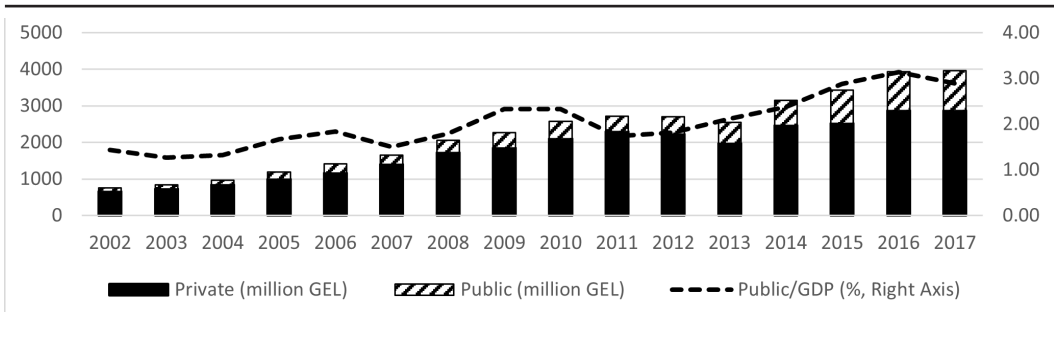
Thus, our study focuses on inpatient services. It aims to determine the general extent of moral hazard and identify areas where such conduct is widespread. We first describe the Georgian healthcare system to identify the extent of moral hazard in the UHC accurately. Then, we consider hospitalization data and methodology, and sections IV and V of the paper include the interpretation of the obtained results and concluding remarks.

### *Healthcare in Georgia*

The Semashko system set the original context for the health system in Georgia from 1921 to 1991, a constituent part of the Soviet health care system. After the collapse of the Soviet Union, the first healthcare reform related to the decentralization of the centralized system. Within this reform's framework, healthcare institutions' administration and expense assurance were delegated to the subnational governments. At the same time, created the State Health Fund with payroll contributions from employers (at 3.0%) and employees (at 1.0%). Later, it was replaced by social contributions. Also, municipal funds received funding from municipal budgets at a flat per capita rate (Chanturidze et al., 2009). The rest of the population (unemployed, children, and pensioners) enjoyed minimal healthcare funded by budgetary transfers (Gamkrelidze et al., 2002). Shortly after the reform, this fund was reorganized as the State Medical Insurance Company (SMIC). Healthcare costs were provided directly by the SMIC and the municipal funds (Shengelia et al., 2016).

In 2004, a new healthcare reform began when the social insurance system was replaced by targeted social assistance. These changes meant the re-centralization of the healthcare system. In particular, the central government re-took the authority to ensure healthcare. As a result, the government had full decision-making power in service delivery and procurement (Shengelia et al., 2016). In 2007-2010, the privatization of healthcare facilities began. Many state-owned clinics and hospitals were transferred to private ownership, and the system was deregulated (Chanturidze et al., 2009). The central government paid the insurance premium for people under the poverty line within the latter. At first, the beneficiaries could choose the insurance company themselves, which was later changed, and the government abolished the principle of free selection<sup>a</sup>. Also, eligible criteria were expanded many times. As a result, in 2012, the total number of people insured by the budget amounted to 1,635.2 thousand (44.0% of the population)<sup>b</sup>.

Figure 1  
*Expenditure on the Healthcare in Georgia*



Source: National Health Report of Georgia; National Statistical office of Georgia; Author's calculations.

Another sharp change in the healthcare system was in 2013. The government established the UHC. As a result, the system changed from targeted to universal. Accordingly, not only the low-income population but also high-income persons became the beneficiaries of the budget program. Only those persons who previously owned private insurance policies remained outside the system<sup>c</sup>. Therefore, it radically increased access to medical services and, at the same time, significantly reduced out-of-pocket costs<sup>d</sup>. However, all this was achieved at the expense of an extreme increase in budgetary expenditures (see Figure 1). In addition, a drastic rise in public spending created fiscal concerns (see Figure 2). Thus, the increased costs doubted the system's sustainability in the second year.

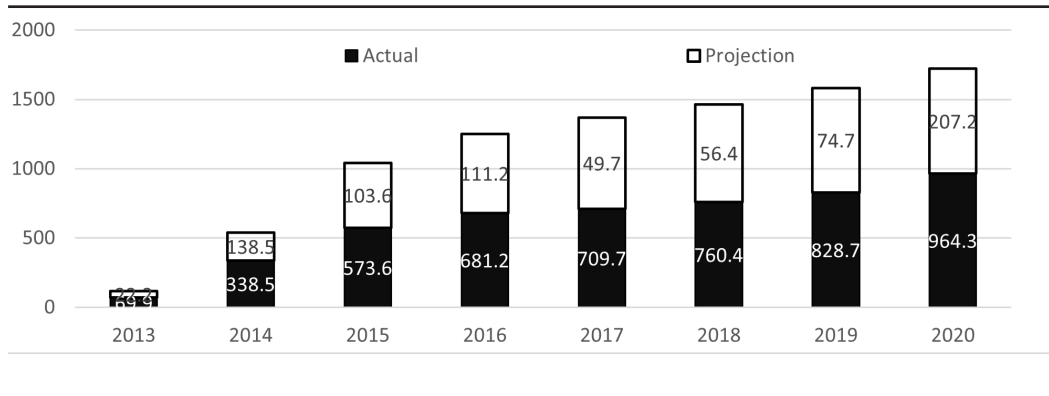
Starting in 2017, the government shifted the healthcare approach from the principle of universality to targeting. These modifications aimed to mitigate the soaring costs of the UHC. After the change, high-income persons were excluded. Differentiated limits and a copayment mechanism were established in the case of the rest, depending on the beneficial status and type of medical services<sup>e</sup>. Regardless, the cost growth dynamic in the UHC system could not be slowed down, and the problem could not be eliminated. Following the adopted decision, the growth rate of expenses decreased only in the same year, although the situation became more intense in the following years (see Figures 1-2).

### *Method and Data*

We received an extensive data set from the Ministry of Internally Displaced Persons from Georgia's Occupied Territories, Labor, Health and Social Affairs. Thus,

Figure 2

*Expenditures of the Universal Health Care Program in Georgia (million GEL)*



*Source: Public finance statistics of the Ministry of Finance of Georgia; Authors' calculations.*

based on this data, we study the moral hazards in inpatient service. Our empirical analysis replicates Englum et al.'s (2016) study conducted in the US in 2016. In this paper, after analyzing the medical history of 884.5 thousand patients, the authors determined that, on average, patients insured by private companies stayed in the hospital for 0.3 days longer than patients without insurance. Furthermore, for the patients who benefited from social insurance, their stay in the hospital was 0.9 days longer.

We analyzed 537.9 thousand hospitalization cases registered in Georgia in 2018-2019, from which we selected 126.3 instances based on our study goals. First, the age group of 20-59 years was chosen for the study because the Universal Health Care program covers the medical costs of pensioners<sup>f</sup>. The selection includes only urgent cases (excluding planned ones). Also, we excluded the patients following criteria: transfer, death, and discontinued treatment. In addition to those listed, the sampling criterion was the length of stay in the hospital. In particular, the sample includes cases where the hospitalization period is less than 60 days.

Finally, according to the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10), cases of hospitalization with the following chapters were excluded:

- Certain infectious and parasitic diseases (A00-B99);
- External causes of morbidity and mortality (V01-Y98);
- Factors influencing health status and contact with health services (Z00-U85);
- Certain conditions originating in the perinatal period (P00 -P96);

Codes for particular purposes (U00-U85);

Mental and behavioural disorders (F00-F99).

There is no uncertainty regarding diseases classified in the first three chapters above, and the information asymmetry must be presented more. For example, it is less likely that a patient with HIV infection or tuberculosis will decide to receive extra diagnostic services. Pediatric cases refer to an age group we exclude. Also, we excluded cases requiring psychiatric services because they require long-term inpatient. In total, 10.56% of cases occurred in excluded groups.

The total sample size is 126.3 thousand cases, including 45.2 thousand (35.8%) financed by private insurance or out-of-pocket. The rest, 81.1 thousand (64.2%) patients' costs, were covered by the budget (the Universal Health Care and other budget programs). To get more accurate results, at the next stage, we divided the cases into separate classes according to ICD-10 (see Table 1).

Based on this sample, we formulated the following hypothesis:

Ha:  $\mu_{\text{private}} < \mu_{\text{public}}$  - the average length of stay hospitalization under public schemes (the Universal Health Care and other budgetary programs) is more than under private (out-of-pocket/insurance companies) funding conditions.

Hence, the null hypothesis will be the contrary:

Ho:  $\mu_{\text{private}} \geq \mu_{\text{public}}$  - the average length of stay hospitalization under Universal Health Care and other budgetary programs is less than or equal to that under private (out-of-pocket/insurance companies) funding conditions.

Our study aims to determine the difference in length of stay between the two samples and the statistical significance of this difference. Thus, we use the point and interval (a 95% confidence interval) estimation methods to increase the reliability of the estimates. For this, we use Student's t-distribution.

### *Results and Discussion*

The data analysis revealed (for detailed data, see Table 2) that in both - private and public - groups, the average length of stay in the hospital was 3.67 days (CI 95%; [3.66-3.69]). However, in the case of public-funded, the average length of stay is 3.77 days (CI 95%; [3.74-3.79]), while in the rest of the cases, the average period is 3.51 days (CI 95%; [3.48-3.54]). The difference between both groups is 0.26 days (CI 95%; [0.22-0.30]), which is statistically significant ( $t = -12.58$ ;  $P < .05$ ). Thus,



Table 1: Number of cases by chapter (ICD-10) and payment type, 2018-2019

Chapter (ICD-10)	Definition	Quantity (Total)	Cases with public financed (%)	Cases with private financed (%)
II	Neoplasms	1417	52,93	47,07
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1417	72,05	27,95
IV	Endocrine, nutritional and metabolic diseases	809	70,46	29,54
VI	Diseases of the nervous system	7003	71,01	28,99
VII	Diseases of the eye and adnexa	142	73,24	26,76
VIII	Diseases of the ear and mastoid process	15	13,33	86,67
IX	Diseases of the circulatory system	17798	65,22	34,78
X	Diseases of the respiratory system	15421	69,76	30,24
XI	Diseases of the digestive system	14999	65,99	34,01
XII	Diseases of the skin and subcutaneous tissue	1856	57,11	42,89
XIII	Diseases of the musculoskeletal system and connective tissue	592	42,57	57,43
XIV	Diseases of the genitourinary system	6949	58,31	41,69
XV	Pregnancy, childbirth, and the puerperium	38416	61,03	38,97
XVII	Congenital malformations, deformations, and chromosomal abnormalities	35	42,86	57,14
XVIII	Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified	4100	63,20	36,80
XIX	Injury, poisoning, and certain other consequences of external causes	15279	65,38	34,62

the results demonstrate that the length of stay inpatient under public-funded is longer than in the case of private-funded. In other words, when government programs pay the costs of medical services, the length of stay is longer than when the costs are reimbursed out of pocket or by a private insurance company.

Also, we studied the ICD-10 chapters separately. The highest proportion has the Pregnancy, Childbirth, and Puerperium group (30.43%), where the difference in the length of stay inpatient is the largest, on average 0.41 days (CI 95%; [0.37 - 0.45]), with statistically significant ( $t = -20.83$ ;  $P < .05$ ). There are similar results in others four groups:

Diseases of the circulatory system (I00-I99)

Diseases of the genitourinary system (N00-N99)

Symptoms, signs, and abnormal clinical and laboratory findings not elsewhere



classified (R00-R99)

Diseases of the skin and subcutaneous tissue (L00-L99)

(See Table 2)

In total, these five groups amount to 54.5% of the cases. However, in the cases of the other groups, the difference is not statistically significant.

Thus, the null hypothesis is rejected in total and some key groups. This result means there is a simulated prolonged length of stay in the hospital under the UHC in Georgia, which has a systemic nature. Therefore, the UHC represents an essential source of increase in profits by healthcare institutions.

### *Conclusion*

Pauly (1968) pointed out that when the government provides “free” treatment, it is not surprising that patients demand more services than before. The same can be said about physicians and clinic managers. As a result, they are also starting to offer more medical care. Our study confirmed this, which refers to the period after introducing the cost-sharing approach in the UHC and is based on 126.3 thousand hospitalization cases. In particular, the study compared the length of inpatient stay between two groups, which differed in funding sources - public-funded and other sources (private insurance and out-of-pocket). The study reveals that the length of stay is longer in the case of public-funded—the results of the analysis point to opportunistic conduct by healthcare institutions and medics. Hence, the study results prove that moral hazards occur in the UHC. Furthermore, our results are consistent with a 2016 US study (Englum et al., 2016), reflecting individuals’ incentive to use a fruitful alternative. Such an outcome was predicted half a century ago by Mark V. Pauly when universal healthcare systems began to be implemented. (See Table 2).

Finally, our study reveals that despite copayments, opportunistic conduct remains higher under government healthcare programs than otherwise. In turn, cost-sharing may not have substantially reduced moral hazard and, as a result, increased out-of-pocket payments for low-income people. Hence, these circumstances should be a guide during the following reforms, to which our study has a modest contribution.

Also, the study could be extended by examining other approaches, such as the DRG system. All of this will help to implement a more effective health policy.

Table 2: Results of statistical analysis of length of stay inpatient for 2018-2019

ICD-10	Private			Public			Private-Public			
	N	M	CI 95%	N	M	CI 95%	Difference	CI 95%	t	P
Total	45161	3.51	3,48 : 3,54	81087	3.77	3,74 : 3,79	-0.26	-0,30 : -0,22	-12.58	.000**
Chapter XV	14971	2.97	2,93 : 3,00	23445	3.37	3,36 : 3,39	-0.41	-0,45 : -0,37	-20.83	.000**
Chapter IX	6191	3.44	3,34 : 3,54	11607	3.78	3,72 : 3,85	-0.35	-0,47 : -0,23	-5.59	.000**
Chapter X	4664	5.45	5,33 : 5,58	10757	5.32	5,25 : 5,39	0.14	-0,01 : 0,28	1.82	.966
Chapter XXI	5289	3.18	3,06 : 3,30	9990	3.00	2,93 : 3,07	0.18	0,04 : 0,32	2.50	.997
Chapter XI	5101	3.93	3,83 : 4,02	9898	3.93	3,87 : 3,99	0.00	-0,12 : 0,11	-0.05	.482
Chapter VI	2030	3.95	3,76 : 4,14	4973	3.72	3,64 : 3,80	0.23	0,03 : 0,44	2.24	.987
Chapter XIV	2897	2.97	2,84 : 3,10	4052	3.57	3,47 : 3,67	-0.60	-0,76 : -0,44	-7.21	.000**
Chapter XVIII	1509	2.71	2,52 : 2,91	2591	3.05	2,92 : 3,18	-0.34	-0,57 : - 0,10	-2.80	.003*
Chapter XII	796	3.17	2,92 : 3,41	1060	3.43	3,28 : 3,57	-0.26	-0,55 : 0,02	-1.76	.036*
Chapter II	667	4.91	4,51 : 5,31	750	5.27	4,95 : 5,59	-0.36	-0,88 : 0,15	-1.39	.083
Chapter III	396	4.26	3,85 : 4,66	1021	4.30	4,10 : 4,51	-0.05	-0,50 : 0,40	-0.22	.414
Chapter IV	239	3.95	3,56 : 4,33	570	3.98	3,71 : 4,24	-0.03	-0,50 : 0,44	-0.13	.451
Chapter XIII	340	3.55	3,20 : 3,91	252	3.90	3,63 : 4,17	-0.35	-0,79 : 0,10	-1.54	.062

\*\* P ≤ .001 the null hypothesis is rejected.  
\* P ≤ .05 the null hypothesis is rejected.  
The other three chapters are not represented because the sample size is small, n < 50.

Notes

a) Resolution of the Government of Georgia #218 - “Medical insurance for the population under the poverty line,” “Health insurance for people’s artists and winners of the Rustaveli Prize,” “Medical insurance for internally displaced persons in compact settlements,” “Medical insurance for children deprived of care” within the state programs “On determining the conditions of the insurance voucher to be given to the population for health insurance in 2010”; Received: 09.12.2009; Retrieved from: <https://matsne.gov.ge/ka/document/view/4372?publication=0>

b) Since 2010, the program’s beneficiaries have been as follows: persons under the poverty line, Internally displaced persons (living in a compact settlement), children deprived of care, people’s artists, and Rustaveli Prize laureates. History of the insurance market. Association of Insurance Companies of Georgia. <https://bit.ly/3dJ94td> National Statistics Office of Georgia.

c) The program financed the following types of residents’ healthcare services: planned outpatient, emergency outpatient, and inpatient, planned surgical services; chemotherapy, hormone, and radiation therapy; delivery and C-section services. Moreover, later, they provide medicines to the socially vulnerable, pensioners, veterans, and others.

d) According to the National Health Reports, out-of-pocket payments were 72.2% in 2002, 73.4% in 2012, and 54.7% in 2017.

e) After the change was implemented in May 2017, the following categories of beneficiaries of the UHC were included: socially vulnerable persons, pensioners, age group 0-6 years, teachers, students, internally displaced persons, and disabled persons. Also, citizens with a monthly income less than 1,000 GEL, self-employed, irregular income, and average-income citizens whose monthly income is more than 1,000 GEL but whose annual income is at most 40,000 GEL benefit from the program.

f) Georgia’s retirement age is  $60 \leq$  years for females and  $65 \leq$  for males.

## Appendix

## Appendix 1. Descriptive statistics and results of statistical analysis

*Table 1: According to the funding source, the average length of stay hospitalisation and inpatient cases in 2018-2019*

Source	N	%	M	SD	min	max
Private	45162	35,77	3,51	3,65	1	60
Public	81087	64,23	3,77	3,08	1	60
Total	126249	100,00	3,67	3,30	1	60

*Note: N - number of cases, M - the average length of stay, SD - standard deviation*

*Table 2: Descriptive statistics of the length of stay hospitalisation for 2018-2019 cases by the International Classification of Diseases 10th Revision*

Chapter	Definition	N	M	S.E.	CI 95%	
					←	→
2	Neoplasms	1417	5,10	0,13	4,85	5,35
3	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1417	4,29	0,09	4,11	4,47
4	Endocrine, nutritional and metabolic diseases	809	3,97	0,11	3,75	4,19
6	Diseases of the nervous System	7003	3,78	0,04	3,71	3,86
7	Diseases of the eye and adnexa	142	1,35	0,23	0,88	1,81
8	Diseases of the ear and mastoid process	15	4,13	0,83	2,35	5,92
9	Diseases of the circulatory system	17798	3,66	0,03	3,61	3,72
10	Diseases of the respiratory system	15421	5,36	0,03	5,30	5,42
11	Diseases of the digestive system	14999	3,93	0,03	3,88	3,98
12	Diseases of the skin and subcutaneous tissue	1856	3,32	0,07	3,18	3,45
13	Diseases of the musculoskeletal system and connective tissue	592	3,70	0,12	3,47	3,94
14	Diseases of the genitourinary system	6949	3,32	0,04	3,24	3,40
15	Pregnancy, childbirth and the puerperium	38416	3,22	0,01	3,20	3,23
17	Congenital malformations, deformations and chromosomal abnormalities	35	4,57	0,90	2,74	6,40
18	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	4100	2,93	0,06	2,82	3,04
19	Injury, poisoning and certain other consequences of external causes	15279	3,06	0,03	3,00	3,12

*Table 3: Distribution of the number of hospitalisation cases in 2018-2019 by the International Classification of Diseases 10th Revision and funding source*

ICD-10		Private		Public		Total	
Chapter	Definition	N	%	N	%	N	%
2	Neoplasms	667	47,07	750	52,93	1417	1,12
3	Diseases of the blood and blood-forming organs and certain disorders ...	396	27,95	1021	72,05	1417	1,12
4	Endocrine, nutritional and metabolic diseases	239	29,54	570	70,46	809	0,64
6	Diseases of the nervous System	2030	28,99	4973	71,01	7003	5,55
7	Diseases of the eye and adnexa	38	26,76	104	73,24	142	0,11
8	Diseases of the ear and mastoid process	13	86,67	2	13,33	15	0,01
9	Diseases of the circulatory system	6191	34,78	11607	65,22	17798	14,10
10	Diseases of the respiratory system	4664	30,24	10757	69,76	15421	12,21
11	Diseases of the digestive system	5101	34,01	9898	65,99	14999	11,88
12	Diseases of the skin and subcutaneous tissue	796	42,89	1060	57,11	1856	1,47
13	Diseases of the musculoskeletal system and connective tissue	340	57,43	252	42,57	592	0,47
14	Diseases of the genitourinary system	2897	41,69	4052	58,31	6949	5,50
15	Pregnancy, childbirth and the puerperium	14971	38,97	23445	61,03	38416	30,43
17	Congenital malformations, deformations and chromosomal abnormalities	20	57,14	15	42,86	35	0,03
18	Symptoms, signs and abnormal clinical and laboratory findings ...	1509	36,80	2591	63,20	4100	3,25
19	Injury, poisoning and certain other consequences of external causes	5289	34,62	9990	65,38	15279	12,10
	Total	45161	35,77	81087	64,23	126248	100,00

Appendix 2. Length of stay hospitalization for 2018-2019 cases by the International Classification of Diseases 10th Revision in Georgia doi: 10.17632/bmxbgmxt84.1

Table 4: Results of the statistical analysis of the length of stay in 2018-2019, according to the International Classification of Diseases 10th Revision

ICD-10	Obs <sub>private</sub>	Obs <sub>public</sub>	Mean <sub>private</sub>	Mean <sub>public</sub>	Std, Dev, private	Std, Dev, public	[95% Conf, Int,] private		[95% Conf, Int,] public		mean <sub>private-public</sub>	Std, Err, diff	t	[Ha: diff < 0 ] Pr(T < t)
2	667	750	4,91	5,27	5,26	4,51	4,51	5,31	4,95	5,59	-0,36	0,26	-1,39	0,083
3	396	1021	4,26	4,30	4,08	3,27	3,85	4,66	4,10	4,51	-0,05	0,23	-0,22	0,415
4	239	570	3,95	3,98	3,04	3,28	3,56	4,33	3,71	4,24	-0,03	0,24	-0,12	0,451
6	203	4973	3,95	3,72	4,31	2,82	3,76	4,14	3,64	3,80	0,23	0,10	2,24	0,987
7	38	104	1,97	1,12	5,35	0,47	0,22	3,73	1,02	1,21	0,86	0,87	0,99	0,835
8	13	2	4,38	2,50	3,40	0,71	2,33	6,44	-3,85	8,85	1,88	1,07	1,76	0,946
9	6191	11607	3,44	3,78	4,05	3,71	3,34	3,54	3,72	3,85	-0,35	0,06	-5,59	0,000
10	4664	10757	5,45	5,32	4,49	3,63	5,33	5,58	5,25	5,39	0,14	0,07	1,82	0,966
11	5101	9898	3,93	3,93	3,55	3,06	3,83	4,02	3,87	3,99	0,00	0,06	-0,05	0,482
12	796	106	3,17	3,43	3,53	2,42	2,92	3,41	3,28	3,57	-0,26	0,15	-1,80	0,036
13	340	252	3,55	3,90	3,34	2,15	3,20	3,91	3,63	4,17	-0,35	0,23	-1,54	0,062
14	2897	4052	2,97	3,57	3,56	3,23	2,84	3,10	3,47	3,67	-0,60	0,08	-7,21	0,000
15	14971	23445	2,97	3,37	2,09	1,49	2,93	3,00	3,36	3,39	-0,41	0,02	-20,83	0,000
17	20	15	4,65	4,47	6,43	3,62	1,64	7,66	2,46	6,47	0,18	1,71	0,11	0,542
18	1509	2591	2,71	3,05	3,85	3,44	2,52	2,91	2,92	3,18	-0,34	0,12	-2,80	0,003
19	5289	999	3,18	3,00	4,57	3,65	3,06	3,30	2,93	3,07	0,18	0,07	2,50	0,994
total (16)	45161	81087	3,51	3,77	3,65	3,08	3,48	3,54	3,74	3,79	-0,26	0,02	-12,58	0,000

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