DIFFERENCES BETWEEN THE REGISTERED AND EXPECTED MORTALITY IN SERBIA IN 2020

Institute of Social medicine
Faculty of Medicine
University of Belgrade

Presenter:
Teaching Associate
Dr Aleksandar Stevanović

AUTHORS

Aleksandar Stevanović[1,2]

Jovana Todorović[1,2]

Nataša Rosić[3]

Gordana Bjelobrk[4]

Milena Šantrić-Milićević[1,2]

[1]**Institute of Social medicine**, Faculty of Medicine, University of Belgrade, Serbia

[2]**Center – School of Public Health**, Faculty of Medicine, University of Belgrade, Serbia

[3]**City Institute of Public Health Belgrade**, Belgrade, Serbia

[4]**Statistical Office of the Republic of Serbia**, Belgrade, Serbia

CONTENTS

1. Background
2. Methods
3. Results
4. Conclusion
5. Discussion?

BACKGROUND

COVID-19 IN SERBIA

First reported case:
March 6, 2020

Formation of the COVID-19 Crisis Team:
Created to follow and evaluate epidemiological situation and recommend implementation of various social measures in order to mitigate the epidemic.

Vaccination campaign:
Sinopharm, Sputnik, Pfizer, AstraZeneca, Moderna…

New healthcare resources:
Infrastructure (COVID-19 hospitals)
Workforce (new jobs for MDs and nurses)
Equipment (ventilators, drugs, PPE)

COVID-19 SURVEILLANCE

Serbian *Law on Protection of the Population Against Communicable Diseases* recognizes the **Institute of Public Health of Serbia „Dr Milan Jovanović Batut“** as the central institution for health surveillance and data collection.

Since the beginning of the pandemic, Institute has been publishing **daily reports** on the epidemiological situation in the country.

VITAL STATISTICS

Serbian *Law on the Official Statistics* recognizes the **Statistical Office of the Republic of Serbia** as the main producer and disseminator of data, responsible professional holder, organizer and coordinator of the official statistics system – including vital statistics.

Statistical Office of the Republic of Serbia publishes **monthly reports** on the number of live births and deaths, as well as the annual demographic reports.

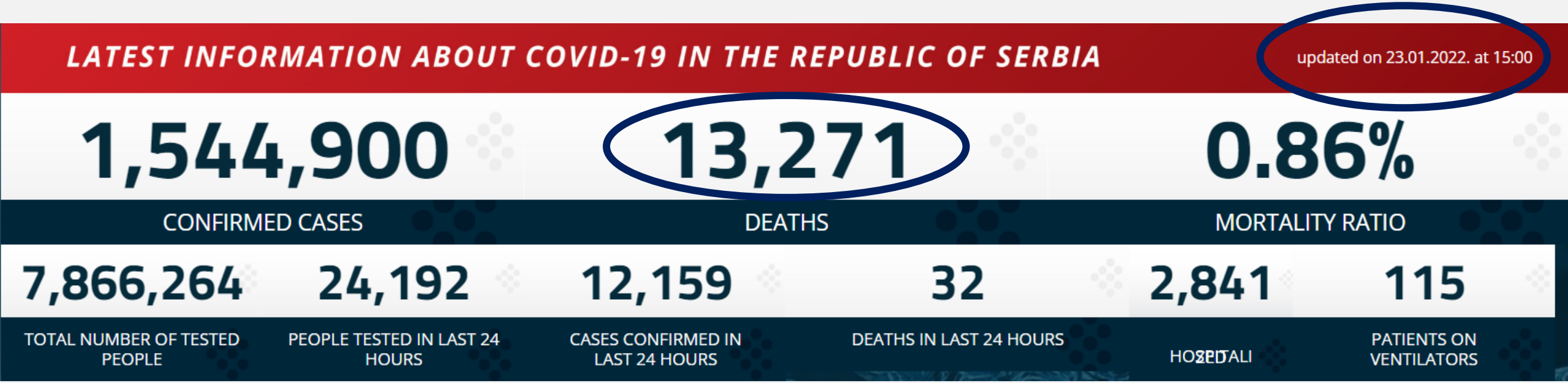
DATA COLLECTION

Death from COVID-19?

Emergency use ICD codes:

- **U07.1** (coronavirus identified)
- **U07.2** (coronavirus not identified)

COVID-19 STATISTICS IN SERBIA



Government of Serbia. Latest information about COVID-19 in Serbia. *Retrieved January 24, 2022, from https://covid19.rs/homepage-english*

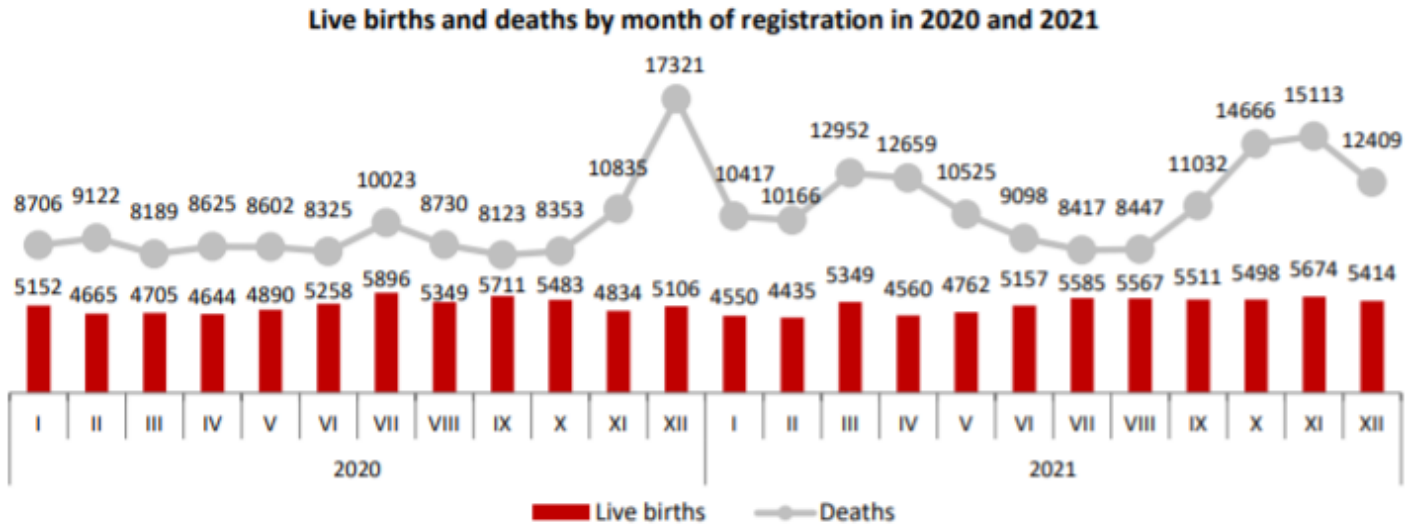
Year	Mid-year population	Live births	Live birth per 1000 inhabitants	Deaths	Deaths per 1000 inhabitants
2000	7516346	73764	9.8	104042	13.8
2001	7503433	78435	10.5	99008	13.2
2002	7500031	78101	10.4	102785	13.7
2003	7480591	79025	10.6	103946	13.9
2004	7463157	78186	10.5	104320	14.0
2005	7440769	72180	9.7	106771	14.3
2006	7411569	70997	9.6	102884	13.9
2007	7381579	68102	9.2	102805	13.9
2008	7350222	69083	9.4	102711	14.0
2009	7320807	70299	9.6	104000	14.2
2010	7291436	68304	9.4	103211	14.2
2011	7236519	65598	9.1	102935	14.2
2012	7201497	67257	9.3	102400	14.2
2013	7166553	65554	9.2	100300	14.0
2014	7131787	66461	9.3	101247	14.2
2015	7095383	65657	9.3	103678	14.6
2016	7058322	64734	9.2	100834	14.3
2017	7020858	64894	9.2	103722	14.8
2018	6982604	63975	9.2	101655	14.6
2019	6945235	64399	9.3	101458	14.6
2020	6899126	61692	8.9	116850	16.9

The number of live births, deaths and infants deaths as well as natural increase in the Republic of Serbia in the period 2000-2020. Statistical Office of the Republic of Serbia.

WHAT ABOUT 2021?

There is no available annual report for 2021 yet, but the last issue of the Statistical Office of the Republic of Serbia is considering the vital statistics in the period from **January to December 2021.**

In this preliminary report, **135,901 deaths** were registered which exceeds by far all mortality rates in the last 20 years.



THE SURPLUS

Average number of annual deaths (2000-2019):

102,736

Reported number of deaths in 2020:

116,850 (+14,114)

Expected number of deaths in 2021:

135,901 (+33,165)

Confirmed number of COVID-19 deaths on 23.01.2022:

13,271

What is the underlying cause of death for 34,000 people?

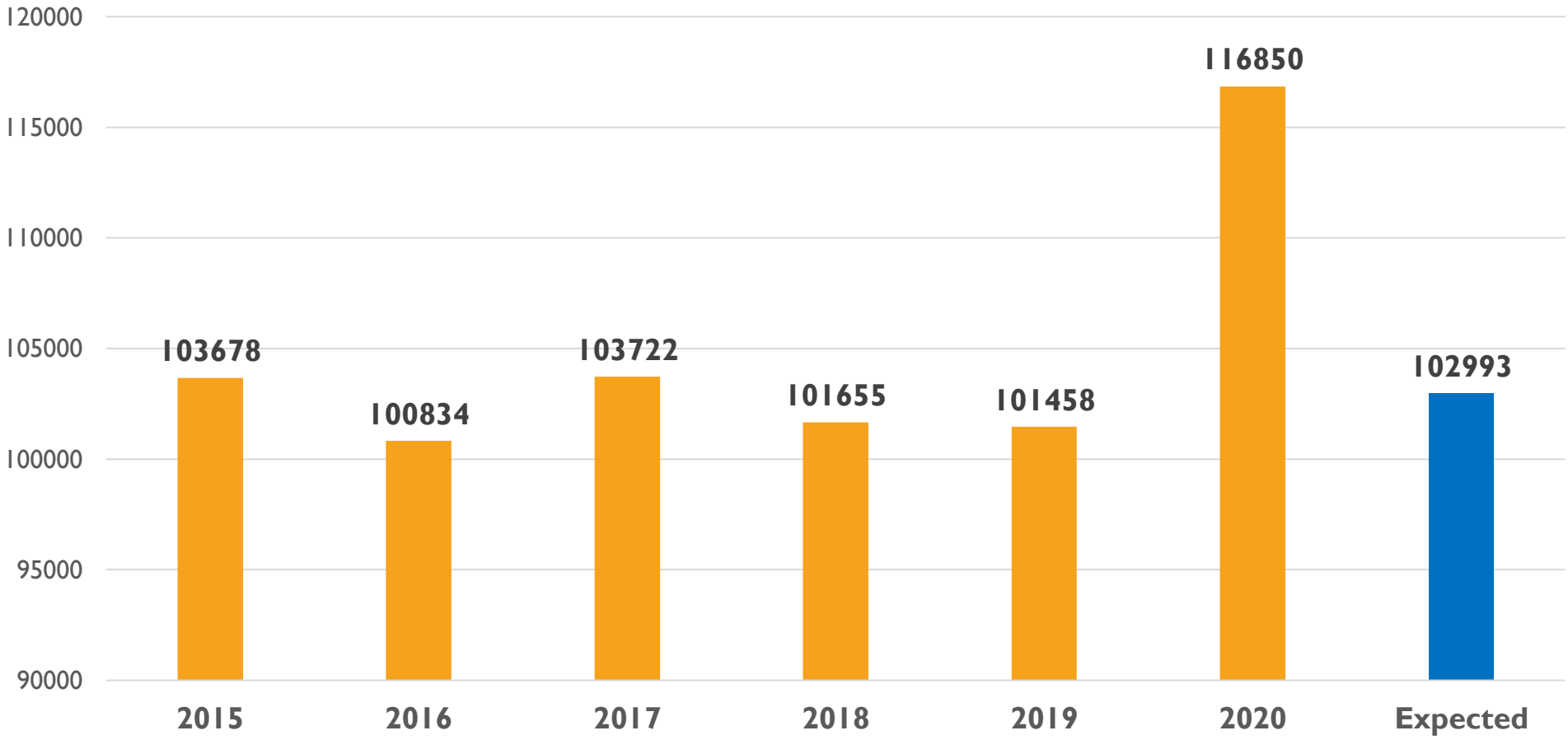
METHODS

METHODS

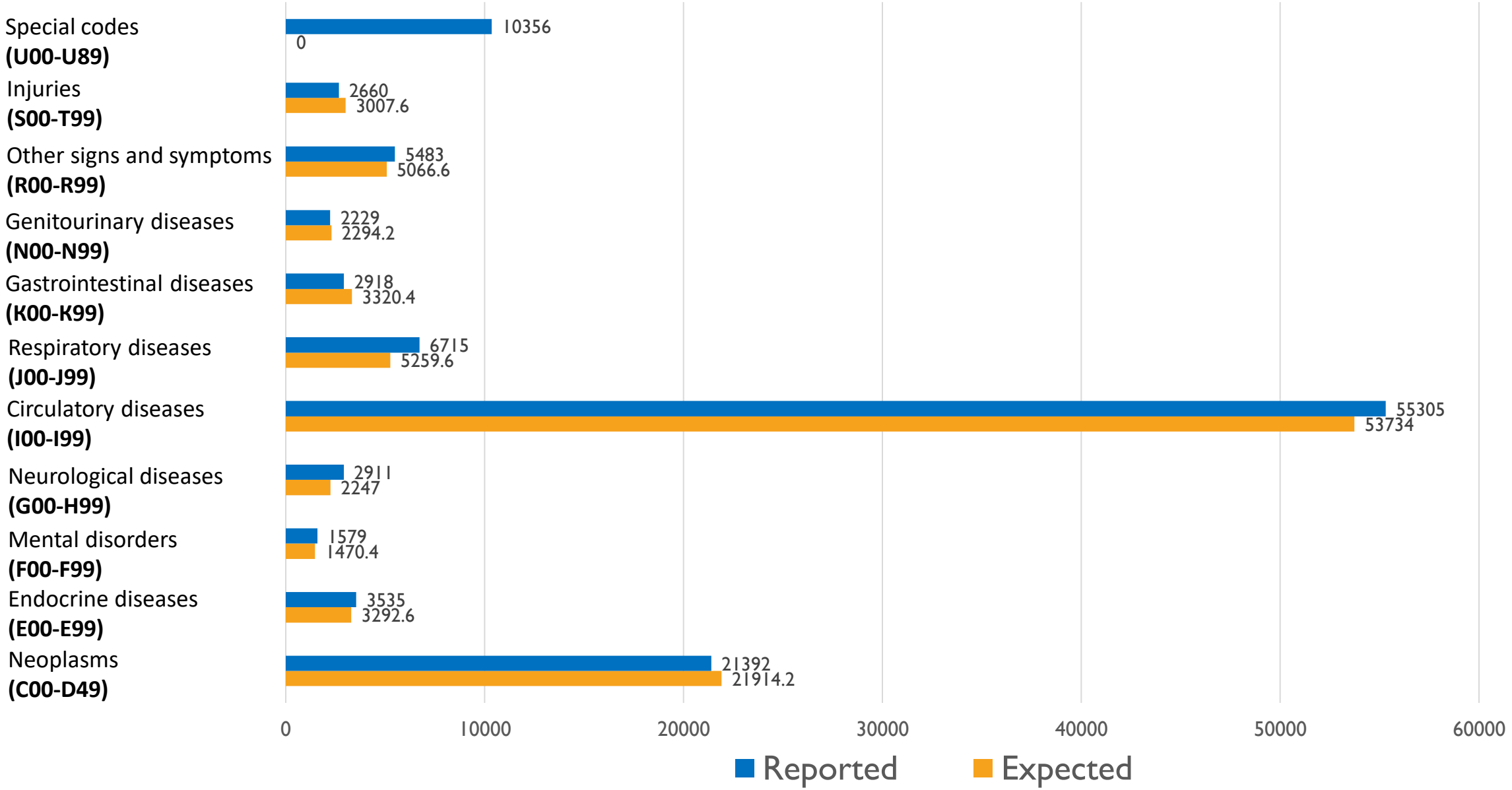
- **Mortality data** disaggregated by **cause** and **sex** were acquired from the Statistical Office of the Republic of Serbia.
- The expected number of deaths ($\mathbf{M_E}$) in 2020 was derived as **a linear trend** for the previous **5-year period** (2015 to 2019), and then compared to the registered number of deaths ($\mathbf{M_R}$) for the same year.
- **Absolute** and **relative changes** in contribution of different causes of death to the all-cause mortality were calculated based on the difference between the registered and the expected number of deaths ($\mathbf{M_R - M_E}$).

RESULTS

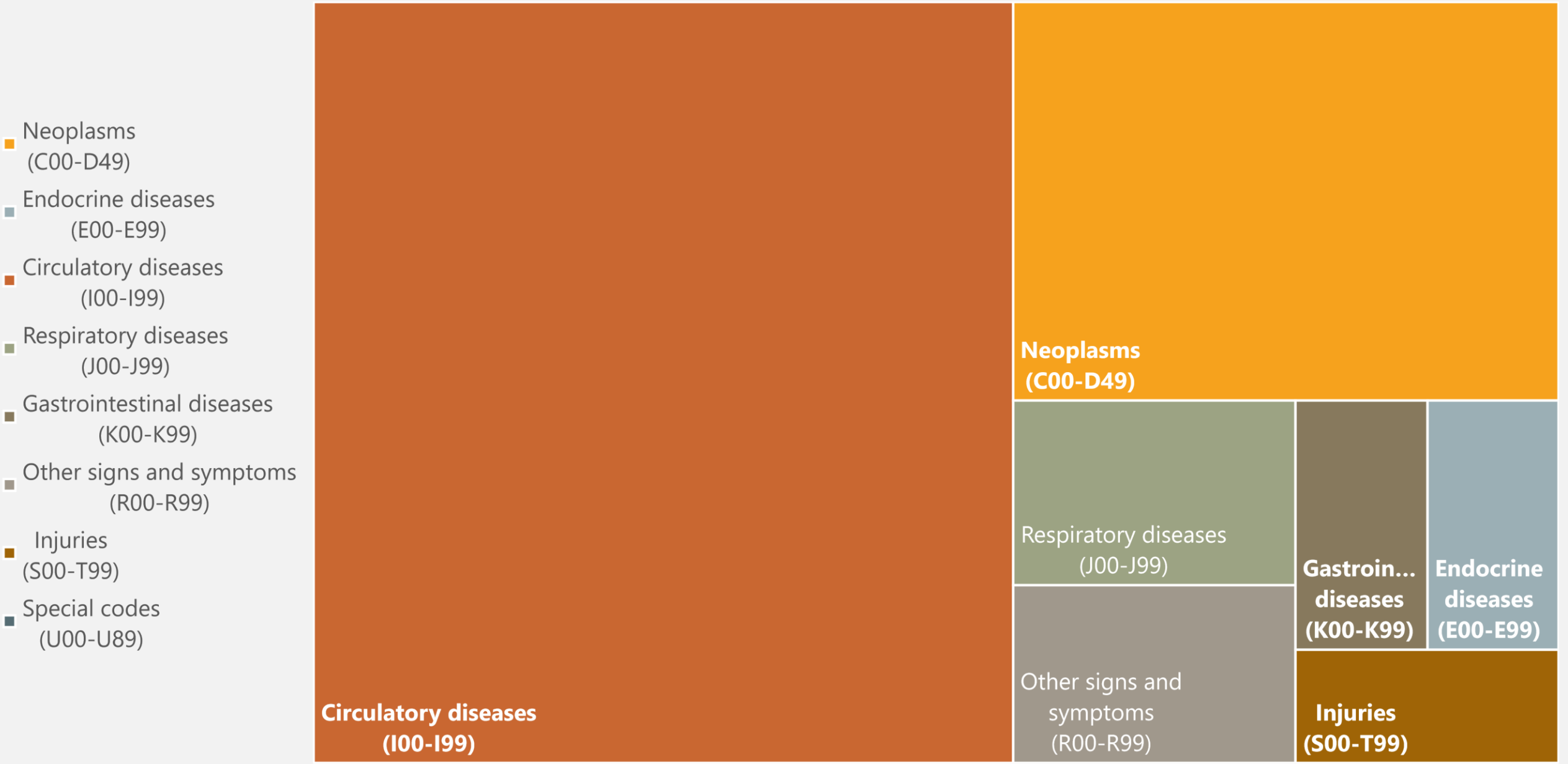
Annual number of deaths 2015-2020



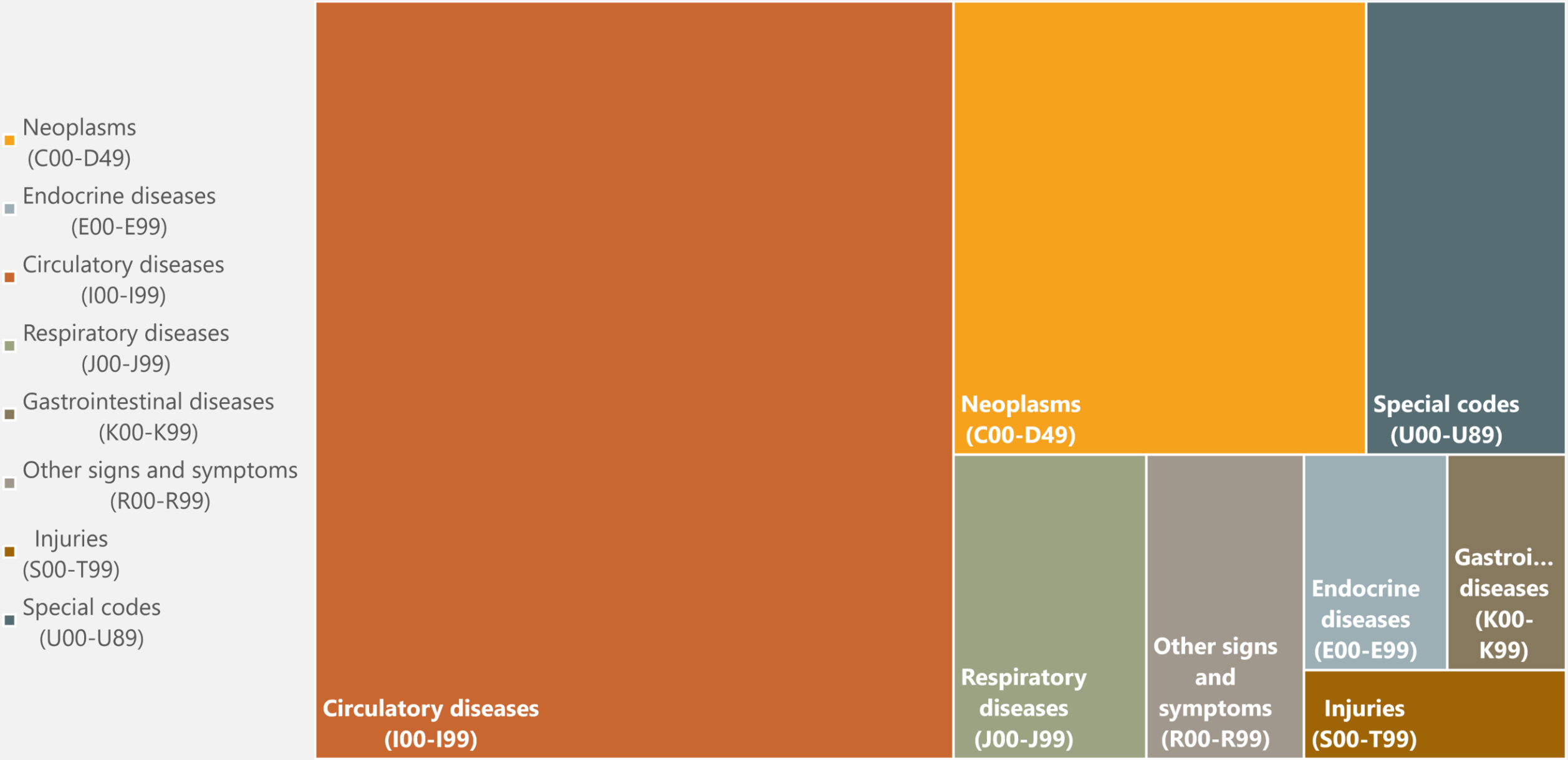
Differences between the expected and reported mortality among different ICD groups in 2020



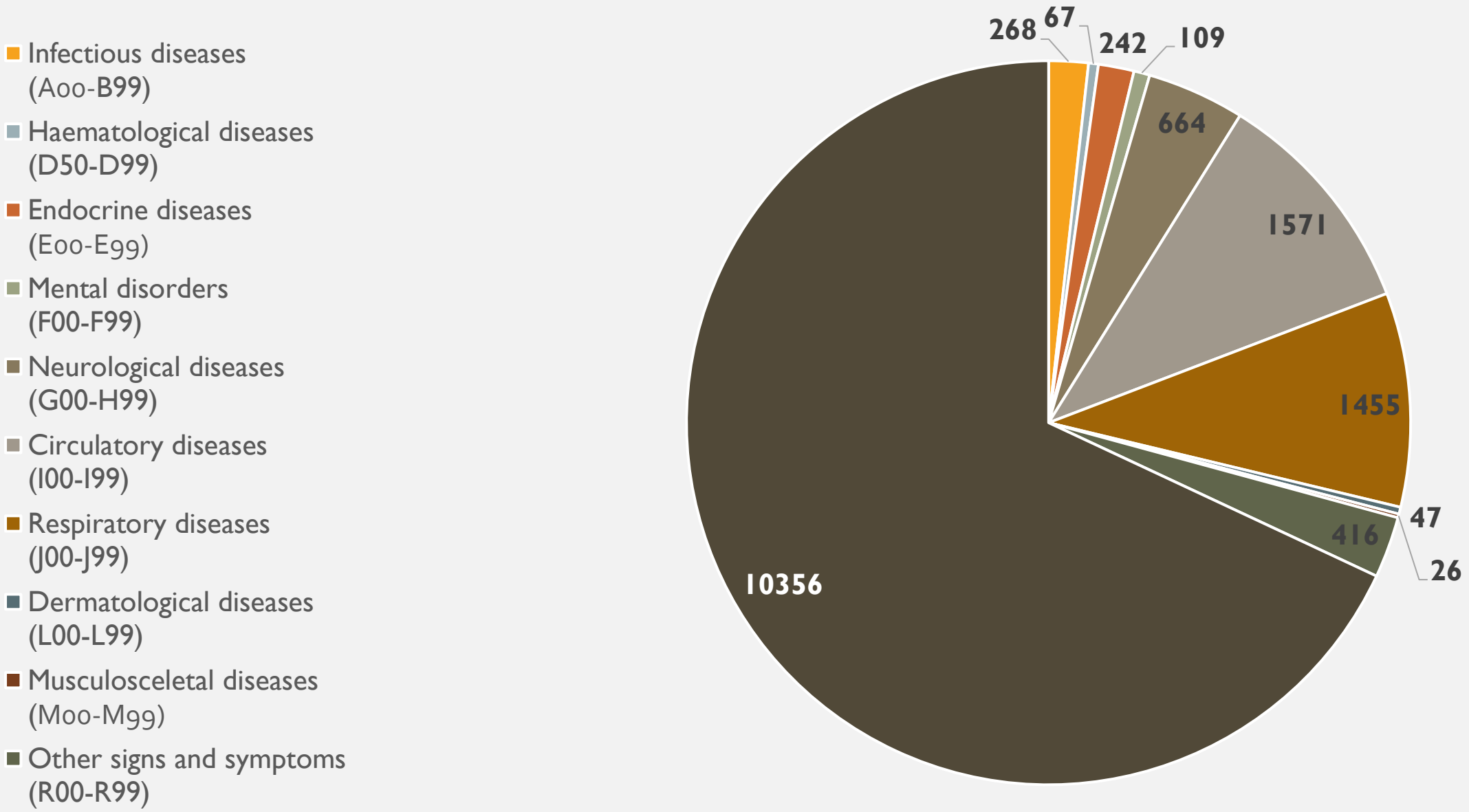
Expected relative contribution to the all-cause mortality of different disease groups in 2020



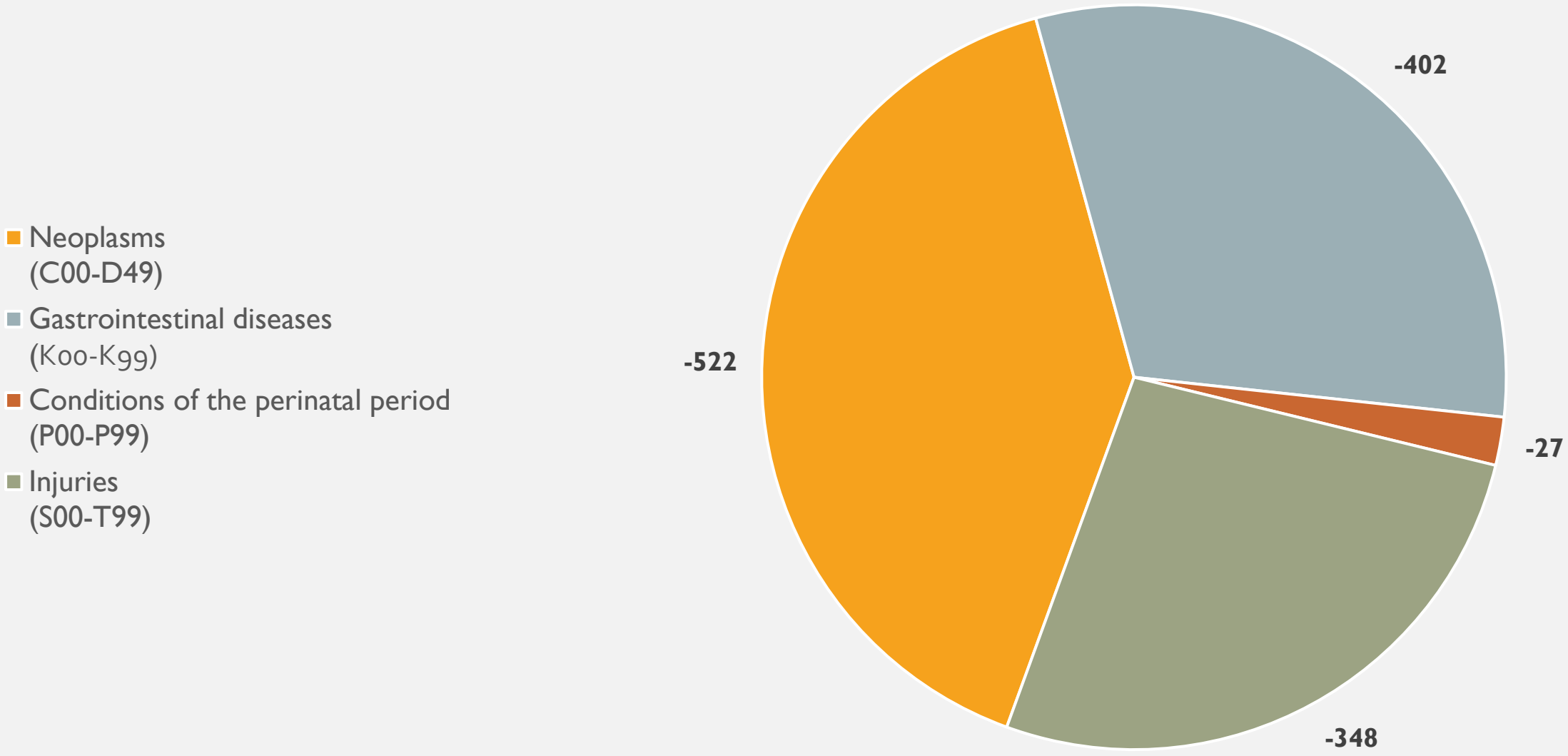
Reported relative contribution to the all-cause mortality of different disease groups in 2020



Different disease groups contribution to the surplus of death in 2020



Different disease groups contribution to the surplus of death in 2020



CONCLUSION

CONCLUSION

- The **impact of the COVID-19 pandemic** on the 2020 **mortality structure** in Serbia is significant.
- **COVID-19** became **the third leading cause of death**.
- Difference between the registered and expected mortality in 2020 **surpasses** the total number of COVID-19 deaths.
- The difference between the registered and the expected number of deaths was the largest for the disease group of the **circulatory** (1571, +2.9%) and **respiratory** system (1455, +27.7%).
- Nevertheless, **relative contribution** of the leading causes of death (circulatory system diseases and neoplasms) **decreased**.

CONCLUSION

- Further research is required in order to calculate **excess mortality** and explain the **surplus** in number of deaths.

- Possible explanations include:
  - **Underreporting** of COVID-19 cases
  - **Miscoding** of COVID-19 deaths
  - COVID-19 **complications** and **sequels**
  - **Decrease** in access to essential **healthcare services**

    (e.g, delayed care, unmet needs)

THANK YOU! ☺ QUESTIONS?