My outbreak report

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## 1 Overview

The outbreak ran from **2021-01-03** to **2022-12-31**. This report covers the period **2021-01-03** to **2022-12-31**. Over the studied period, there were **65669** cases, including **52434** confirmed cases and **1214** confirmed deaths.

## 2 Background

(1) describes trends in suspected and confirmed monkeypox virus cases in the Democratic Republic of Congo using epidemiological and laboratory surveillance data collected from 2010 to 2023.

## 3 Population characteristics

[Table 1](#tbl-1) provides a summary of the demographic characteristics and the outcome proportion for the overall population, while [Table 2](#tbl-2) compares the characteristics of individuals who died versus those who are still alive.

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| Table 1: Population characteristics   | **Characteristic** | **N = 65,669**1 | | --- | --- | | age | 50 (35, 65) | | sex |  | | 1 | 33,114 (50%) | | 2 | 32,555 (50%) | | bmi | 29 (21, 38) | | confirmed |  | | 0 | 13,235 (20%) | | 1 | 52,434 (80%) | | death |  | | 0 | 64,455 (98%) | | 1 | 1,214 (1.8%) | | 1Median (IQR); n (%) | | |

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| Table 2: Demographic characteristics of deceased vs. alive   | **Characteristic** | **Overall**, N = 65,6691 | **0**, N = 64,4551 | **1**, N = 1,2141 | | --- | --- | --- | --- | | sex |  |  |  | | 1 | 33,114 (50%) | 32,504 (50%) | 610 (50%) | | 2 | 32,555 (50%) | 31,951 (50%) | 604 (50%) | | age | 50 (35, 65) | 50 (35, 65) | 52 (37, 67) | | bmi | 29 (21, 38) | 29 (21, 38) | 34 (28, 41) | | 1n (%); Median (IQR) | | | | |

## 4 Outbreak evolution

[Figure 1](#fig-1) illustrates the outbreak’s progression, which can be divided into distinct phases.

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| Figure 1: Weekly count of all cases, confirmed cases and deaths |

## 5 Logistic regression model

In this section, we build and evaluate a logistic regression model to understand the relationship between certain variables and the likelihood of death among confirmed cases.

The logistic regression model uses death as the response variable, and bmi and age as predictor variables. It is implemented in R as shown in the code chunk referenced by [Listing 1](#lst-1).

|  |
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| Listing 1: R code for modelling  #Logistic regression model model <- glm(death ~ bmi + age,  subdf |> dplyr::filter(confirmed == "1"),  family = binomial) |

The results of the logistic regression model are summarized in the formatted regression table, which is presented in [Table 3](#tbl-3).

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| Table 3: Formatted regression table   | **Characteristic** | **OR**1 | **95% CI**1 | **p-value** | | --- | --- | --- | --- | | bmi | 1.04 | 1.03, 1.04 | <0.001 | | age | 1.00 | 1.00, 1.01 | 0.003 | | 1OR = Odds Ratio, CI = Confidence Interval | | | | |

## 6 Appendix

The dataset includes the following variables:

* age = age of the individual (continuous variable) ;
* sex = sex of the individual (binary variable: 1 = male, 2 = female) ;
* bmi = Body Mass Index (BMI) of the individual (continuous variable) ;
* confirmed = flag of confirmed cases (binary variable: 0 = no, 1 = yes)
* death = death outcome (binary variable: 0 = alive, 1 = died)

Data summary

|  |  |
| --- | --- |
| Name | subdf |
| Number of rows | 65669 |
| Number of columns | 8 |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| Column type frequency: |  |
| Date | 2 |
| factor | 3 |
| numeric | 3 |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| Group variables | None |

**Variable type: Date**

| skim\_variable | n\_missing | complete\_rate | min | max | median | n\_unique |
| --- | --- | --- | --- | --- | --- | --- |
| date | 0 | 1 | 2021-01-03 | 2022-12-31 | 2021-11-20 | 725 |
| week | 0 | 1 | 2021-01-03 | 2022-12-25 | 2021-11-14 | 104 |

**Variable type: factor**

| skim\_variable | n\_missing | complete\_rate | ordered | n\_unique | top\_counts |
| --- | --- | --- | --- | --- | --- |
| sex | 0 | 1 | FALSE | 2 | 1: 33114, 2: 32555 |
| confirmed | 0 | 1 | FALSE | 2 | 1: 52434, 0: 13235 |
| death | 0 | 1 | FALSE | 2 | 0: 64455, 1: 1214 |

**Variable type: numeric**

| skim\_variable | n\_missing | complete\_rate | mean | sd | p0 | p25 | p50 | p75 | p100 | hist |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| id | 0 | 1 | 5768.89 | 4029.27 | 1 | 2352 | 4992.00 | 8896.00 | 14993.00 | ▇▆▅▃▂ |
| age | 0 | 1 | 49.96 | 17.58 | 20 | 35 | 50.00 | 65.00 | 80.00 | ▇▇▇▇▇ |
| bmi | 0 | 1 | 30.02 | 11.11 | 10 | 21 | 29.12 | 37.58 | 62.22 | ▆▇▇▃▁ |

1. Bangwen E, Diavita R, De Vos E, Vakaniaki EH, Nundu SS, Mutombo A, et al. Suspected and confirmed mpox cases in DR congo: A retrospective analysis of national epidemiological and laboratory surveillance data, 2010–23. The Lancet [Internet]. 2025 Feb;405(10476):408–19. Available from: <http://dx.doi.org/10.1016/S0140-6736(24)02669-2>