

CLIMATE CHANGE AND THE IMPACT OF VECTOR-BORNE DISEASES IN THE WORKPLACE

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INTRODUCTION

In Spain are established vectors (mosquitoes and ticks) capable of transmitting pathogens that can cause diseases in humans like dengue, West Nile or Lyme diseases.

OBJECTIVE

The objective of the study was to identify occupational activities with a higher susceptibility to vector-borne diseases and to evaluate their impact within the workplace in Spain.

METHODS

The National Institute for Safety and Health at Work collected data from several sources to assess the impact of vector-borne diseases in the workplace:

1. National Epidemiological Surveillance Network database (RENAVE). Carlos III Health Institute.
2. An exploratory literature review.
3. Communication of Occupational Diseases to Social Security (CEPROSS system).

RESULTS

1. RENAVE

Cases of malaria, dengue, Chikungunya and Zika diseases reported to the RENAVE system between 2011-2024 are listed in Table 1. They are classified by reason of the trip. Nearly all cases were imported from third countries.

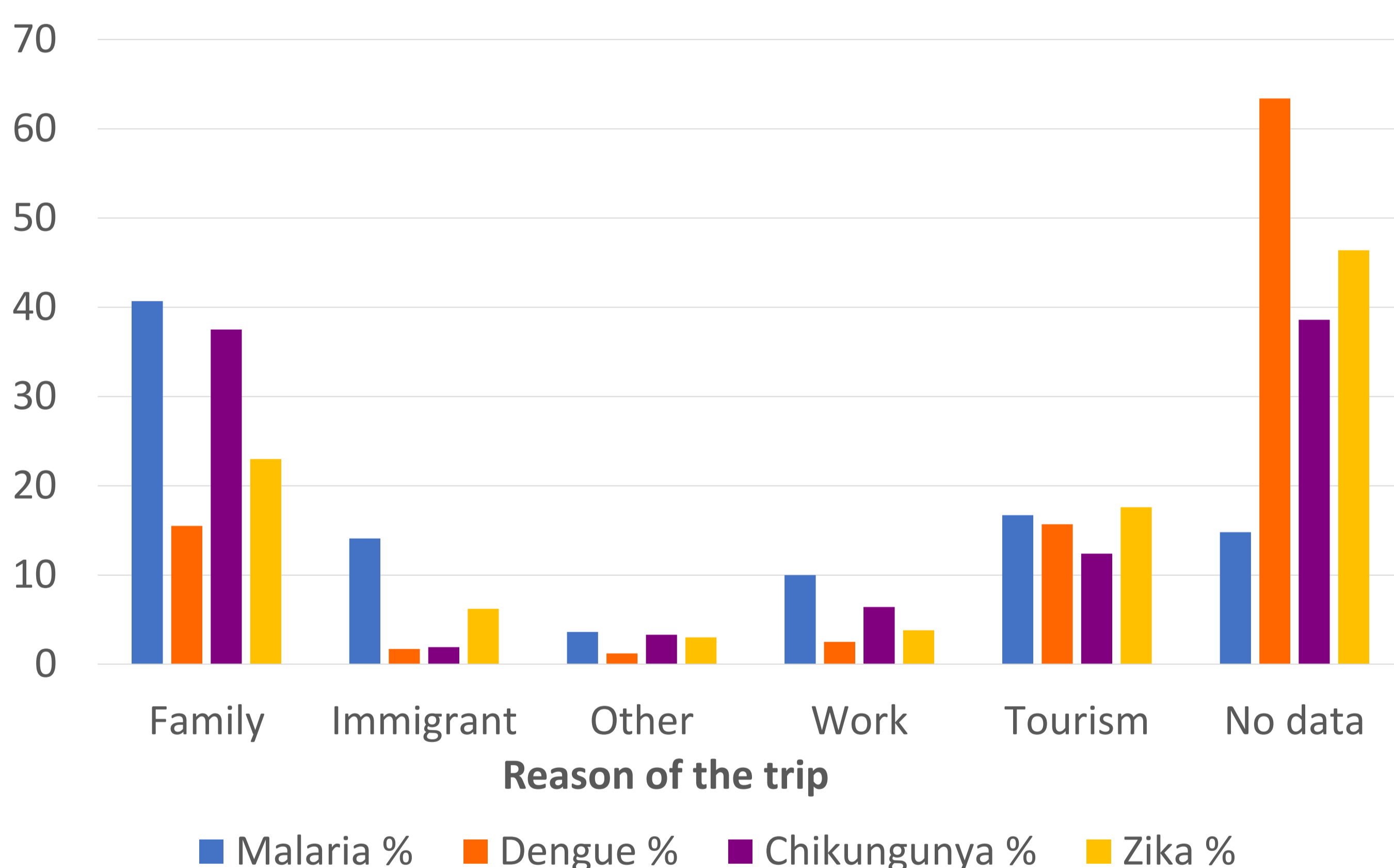


Table 1. Work-related imported cases notified in Spain (suspected and confirmed cases) by reason of the trip (2011-2024). Source: RENAVE, Carlos III Health Institute (ISCIII).

2. EXPLORATORY LITERATURE REVIEW

The scientific literature review focused on 4 viruses transmitted by mosquitoes. The results are summarized in Table 2.

Virus	Main Occupational Risk Pattern
West Nile	Higher prevalence among outdoor workers.
Dengue	No difference between indoor and outdoor work; sector-specific patterns.
Chikungunya	High prevalence in both indoor and outdoor environments.
Zika	Higher prevalence among outdoor and domestic workers.

Table 2. Overview of working activities affected by viruses transmitted by mosquitoes found on the bibliographic review.

3. CEPROSS SYSTEM

Between 2011 and 2023, **177** cases of occupational diseases transmitted by vectors (mosquitoes and ticks) were reported to the CEPROSS system (Figure 1).

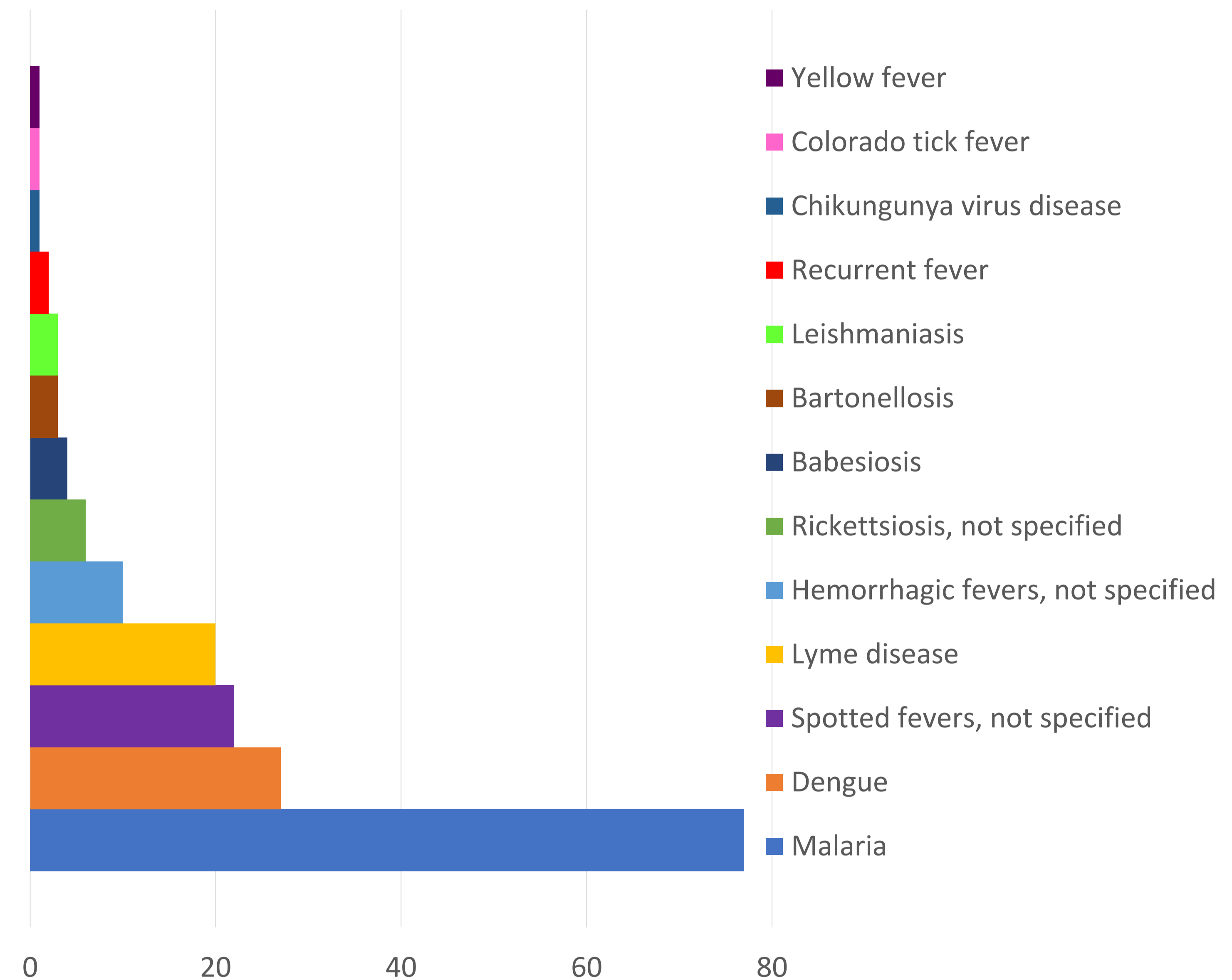


Figure 1. Vector-borne diseases (mosquitoes and ticks) (number of cases) found in the CEPROSS system, 2011-2023.

A total of **45 economic** activities were identified. In Table 3 are listed the most frequently reported activities.

Activity (NACE Rev. 2)	%
Specialised construction activities.	13.6
Human health activities.	13.6
Public administration and defence; compulsory social security.	8.5
Agriculture, livestock farming, hunting and related service activities.	6.8
Architectural and engineering activities; technical testing and analysis.	5.6
Forestry and logging.	4.0
Wholesale trade, except of motor vehicles and motorcycles.	4.0
Activities of membership organisations.	4.0
Fishing and aquaculture.	2.3
Repair and installation of machinery and equipment.	2.3

Table 3. Distribution of the economic activities (percentage) of the vector-borne diseases (mosquitoes and ticks) reported to the CEPROSS system (closed cases), 2011-2023. Source: CEPROSS.

CONCLUSIONS

- ✓ Between **2.5 %** and **10 %** of the cases of malaria, dengue, Chikungunya and Zika diseases reported to the RENAVE system were classified as occupational.
- ✓ **Malaria** and **dengue** were the most frequently reported vector-borne diseases.
- ✓ In endemic areas, both, **outdoor** and **indoor activities** are affected by vector-borne diseases. A risk situation can arise when viremic cases (people or animals capable of transmitting the disease) and competent vectors are present at the same time and place.
- ✓ Vector-borne diseases (mosquitoes and ticks) affect a **large number of economic activities**.