# Abstract

The long-term impacts of climate change on the risk of zoonotic disease outbreaks such as New World arenaviral hemorrhagic fevers are poorly understood and understudied. Endemic areas and their surrounding regions are expected to undergo significant changes in both climate patterns and anthropogenic activities. Through this study we aimed to advance insight into the impact of climate change on the spillover risks of neglected high-impact zoonotic New World Arenaviruses (NWAs) in South America. A robust predictive modeling framework integrating force-of-infection and species distribution algorithms predicted a substantial increase in the risk of NWA spillover from known rodent reservoirs to humans in the next two decades. Spillover risk was predicted to increase in both moderate and sever climate change scenarios. For all NWAs studied, reservoir habitats were predicted to spread out in the future, increasing the chance of human-rodent interactions and consequently the spillover of NWA infections. Depending on the reservoir species, habitat changes were found to be sensitive to the long-term changes in varying climate and land-use features.

## Keywords

*Mammarenavirus*, rodent reservoirs, spillover, species distribution, machine learning