

Population Association of America 2021 Annual Meeting



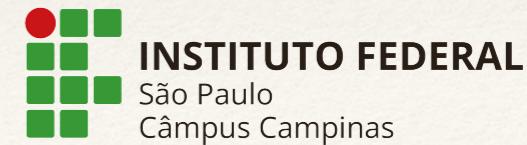
Data Visualization for Epidemiological and Demographic Data for Malaria Surveillance in the Brazilian Amazon, 2007-2019

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Malaria Surveillance Resources

- ❖ Worldwide Public Health Problem
 - ❖ Huge challenge in poor countries, including Brazil
 - ❖ Mortality may impact some Demography studies
- ❖ Use Data Visualization as Surveillance Resources
 - ❖ Is it possible with available public data?
 - ❖ Inputs for public health policies

Objectives

- ❖ Project aligned with **Sustainable Development Goals** and **Global technical strategy for Malaria 2016–2030**
- ❖ Provide resources for monitoring, measurement and evaluation of the epidemiological / demographic profile of Malaria
 - ❖ Develop tools to support health managers, with information enabling a better understanding of the problem
 - ❖ Design interactive dataviz to Malaria Surveillance
 - ❖ Explore SIVEP-Malaria (Brazilian Amazon 2007-2019)

SIVEP-Malaria Dataset

- ❖ Malaria dataset for surveillance in BR
 - ❖ For this study, data from 2007-2019
 - ❖ Data preprocessing: missing, inconsistent, incorrect filling

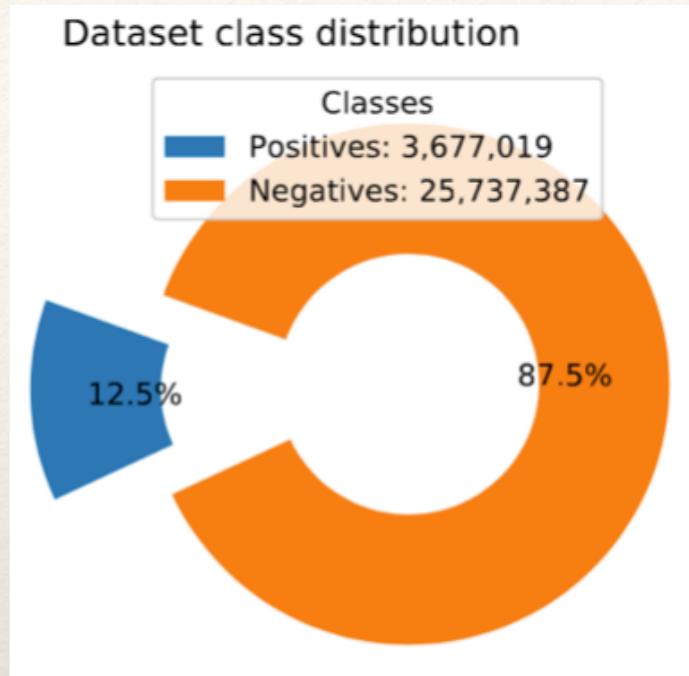


Table 1. SIVEP data description table - Adapted from WIEFELS et al. (2016)

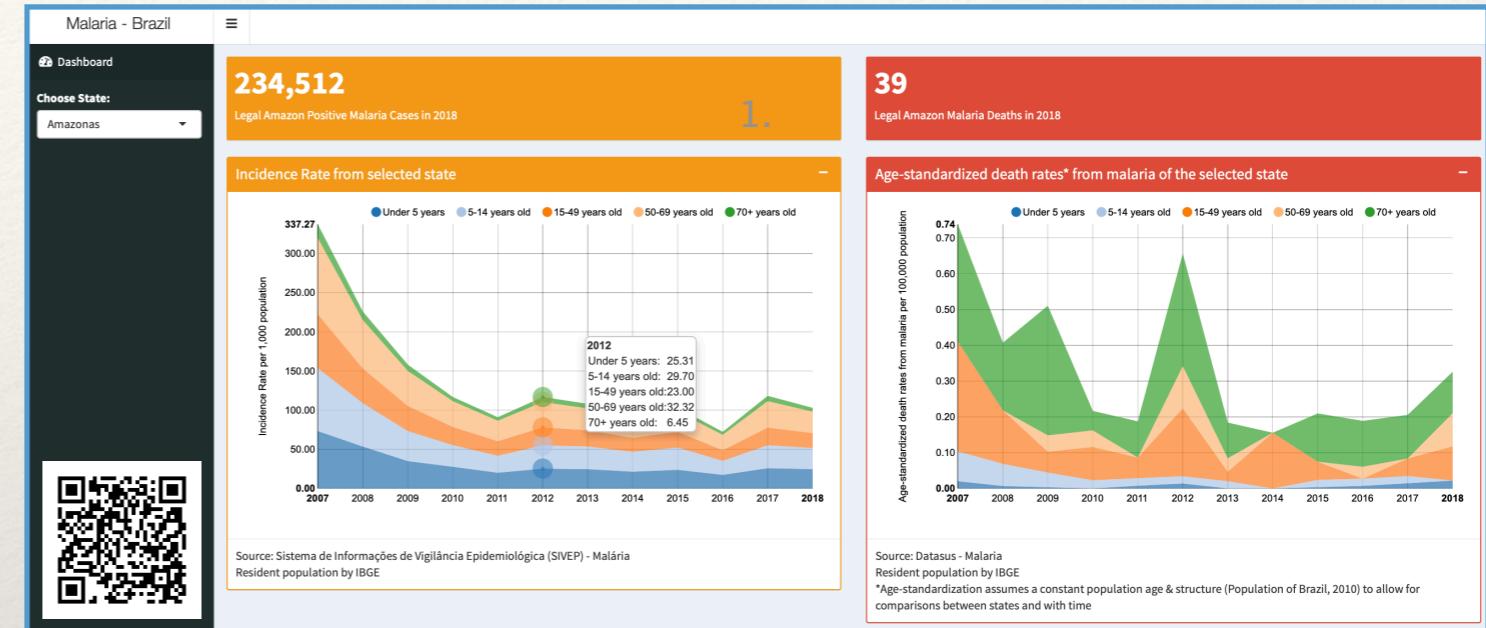
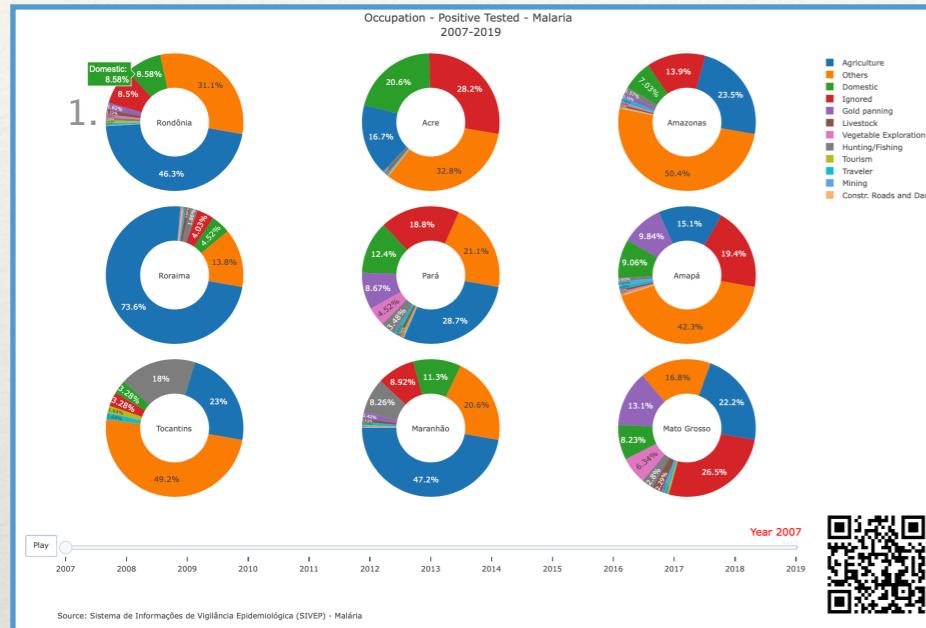
Variável	Definição	Variável	Definição	Variável	Definição	Variável	Definição
COD_NOTI	Notification number	DT_NASCI	Birth date	MUN_RESI	Municipality of residence	LOC_INFE	Locality of infection
DT_NOTIF	Notification date	ID_PACIE	Patient age	LOC_RESI	Locality of residence	DT_EXAME	Examination date
TIPO_LAM	Active/passive	ID_DIMEA	Age writing format	DT_SINTO	First symptoms date	EXAME	Examination method
UF_NOTIF	State of notification	SEXO	Sex	DT_TRATA	Date of treatment	RES_EXAM	Examination results
MUN_NOTI	Municipality of notification	GESTANTE	Pregnancy length	VIVAX	Patient is under Vivax treatment	QTD_CRUZ	Parasitaemia
COD_UNIN	Health unit of notification	NIV_ESCO	Schooling level	FALCIPARUM	Falciparum treatment	QTD_PARA	Parasites by mm ³
COD_AGEN	Health agent code	RACA	race/skin color of the patient	ID_LVC	Follow-up consultation	HEMOPARASI	Hemoparasites
SEM_NOTI	Notification week	COD_OCUP	Employment	PAIS_INF	Country of infection	EXAMINADOR	Examiner code
DT_DIGIT	Date of digitalization	PAIS_RES	Country of residence	UF_INFEC	State of infection	TREATMENT_SCHEDULE	Treatment schedule
DT_ENVLO	Data entering into National database date	UF_RESID	State of residence	MUN_INFE	Municipality of infection	SINTOMAS	Symptoms
Administrative data		Patient data		Epidemiological and laboratorial data			

Methods

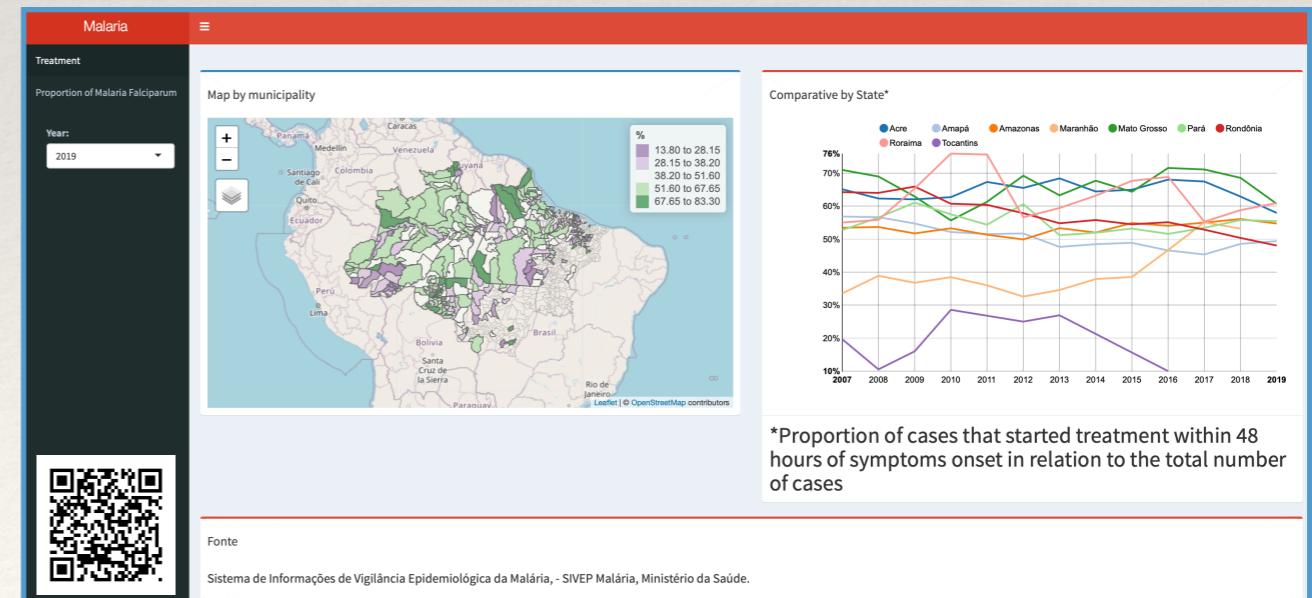
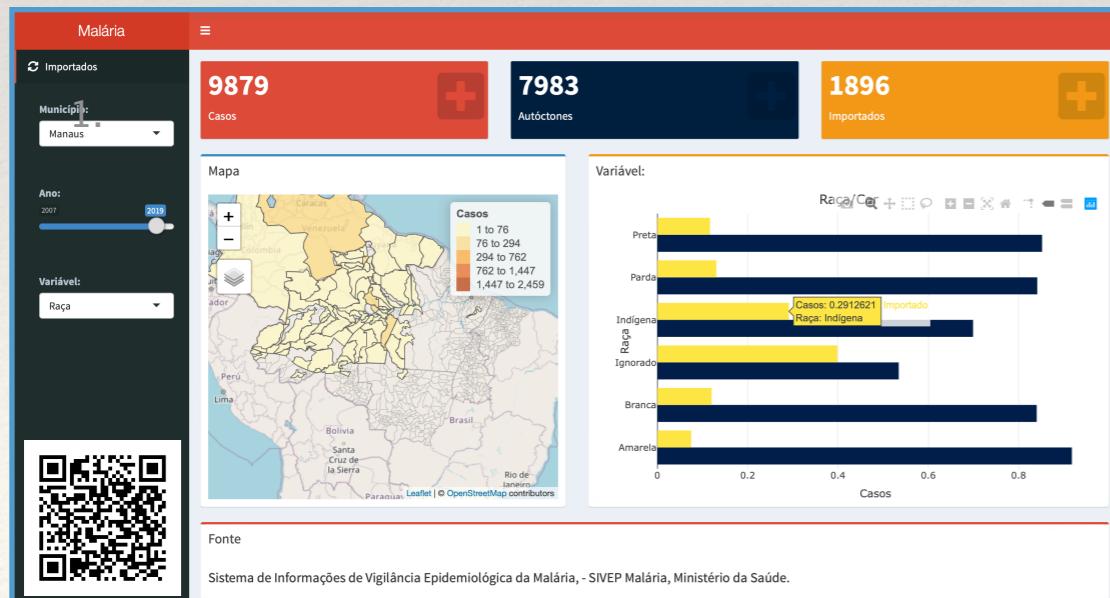
- ❖ Knowledge discovery approach
 - ❖ Obtaining relevant information group by cases (+/-)
 - ❖ Exploration of specific aspects of each class
 - ❖ Developed using R, Plotly, ggplot2 and Shiny
- ❖ Data extracted from the preprocessed dataset in CSV
- ❖ Grouping / summarizations performed using R scripts

Data Visualizations

1) Demographic/Socioeconomic Profile



3) Imported vs Autochthonous



Discussion

- ❖ Urgent need for new and improved tools in global response to Malaria (WHO)
 - ❖ Surveillance basis of operational activities
 - ❖ Objectives:
 - ❖ support reduction of the burden of the disease,
 - ❖ eliminate it and prevent its re-establishment.
- ❖ Reduce barrier to use of data in policy decisions

Thanks!

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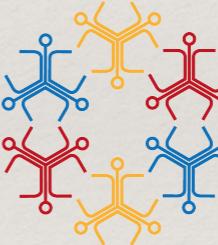
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BILL & MELINDA
GATES *foundation*

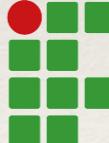
 **CNPq**
*Conselho Nacional de Desenvolvimento
Científico e Tecnológico*

 **NVIDIA**



 **LADDEM**
Laboratório de Análise
de Dados em Demografia



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