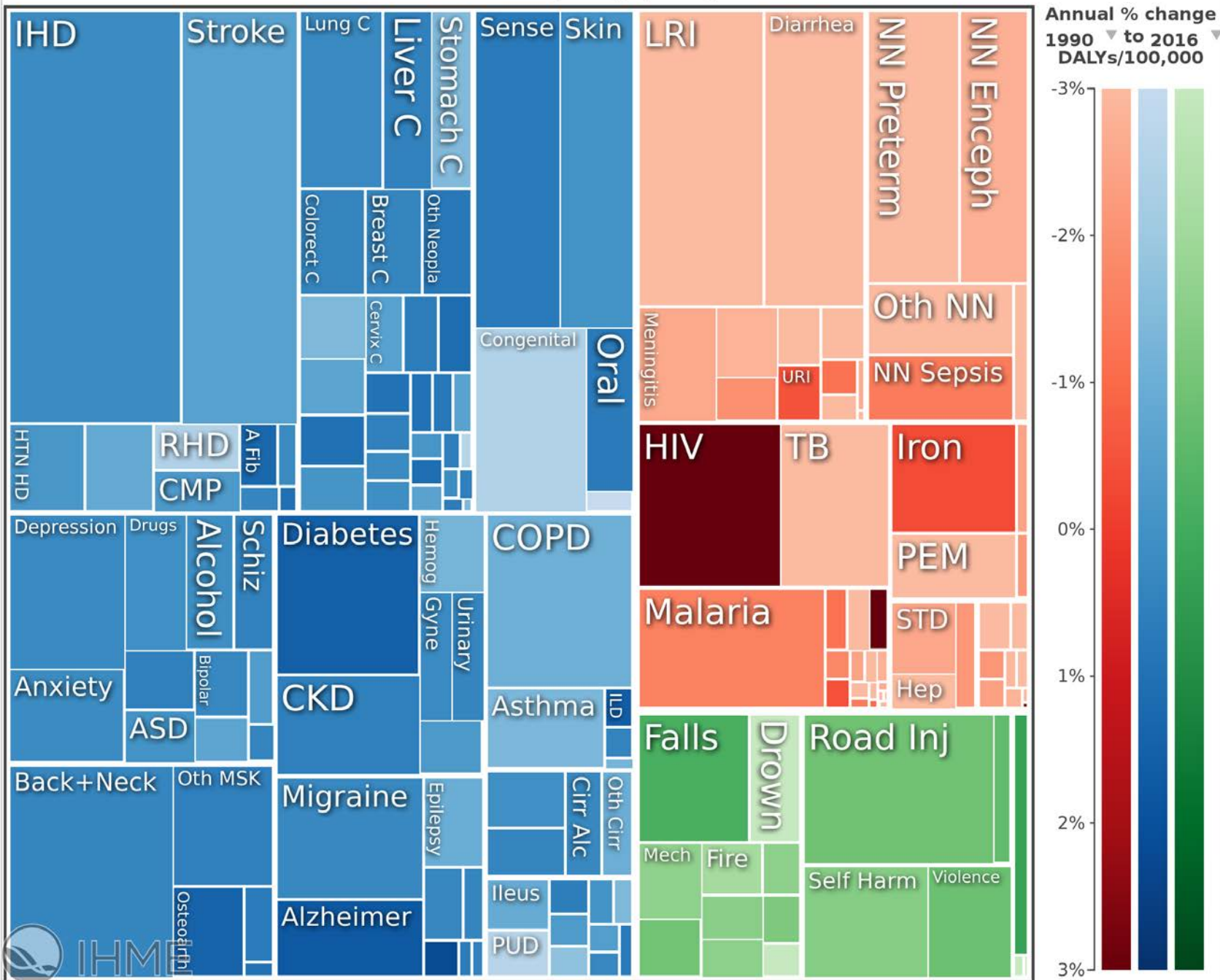




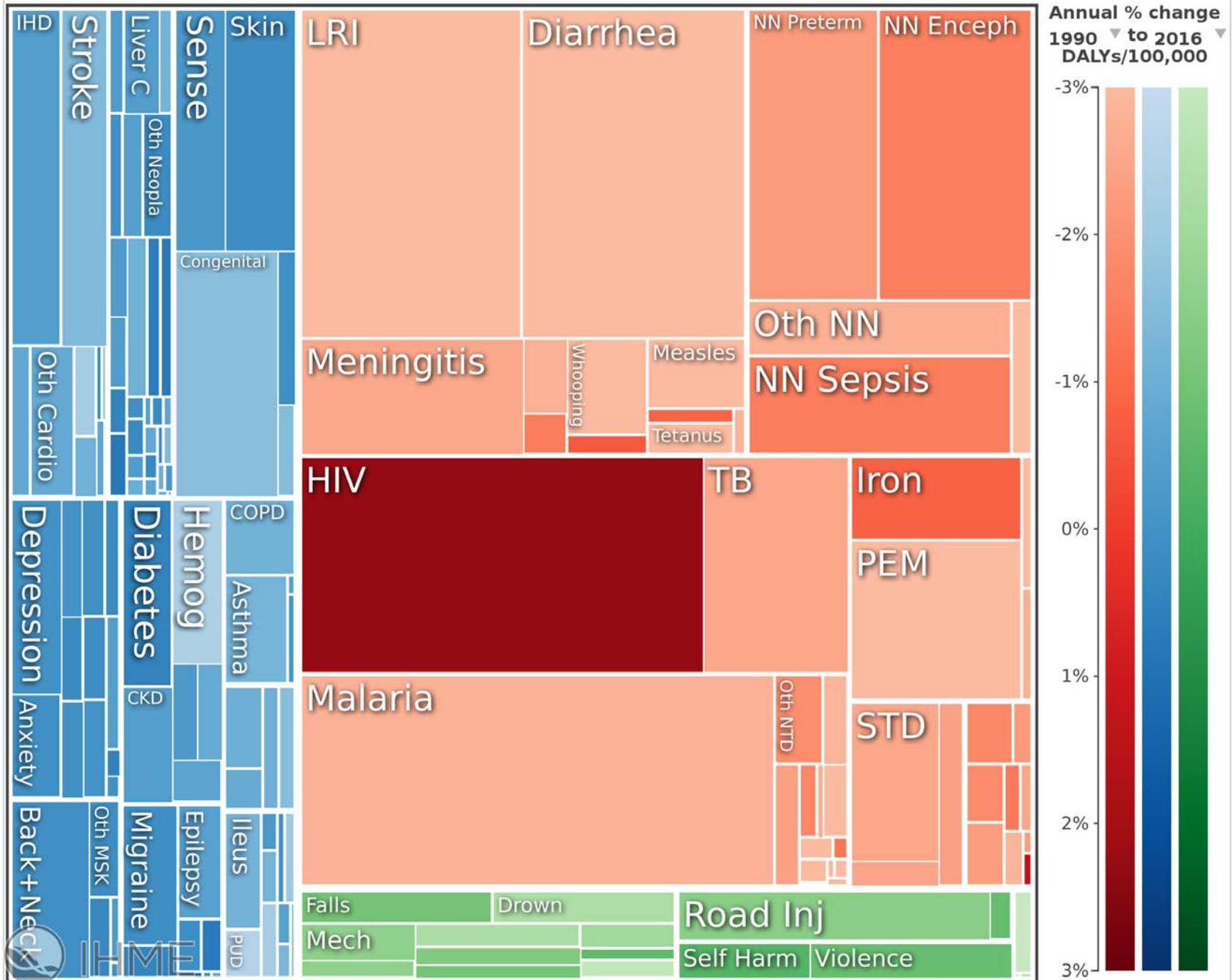
Mosquito University and Mosquito Control Grants in Tennessee

Abelardo C. Moncayo, PhD
Director, Vector-Borne Diseases

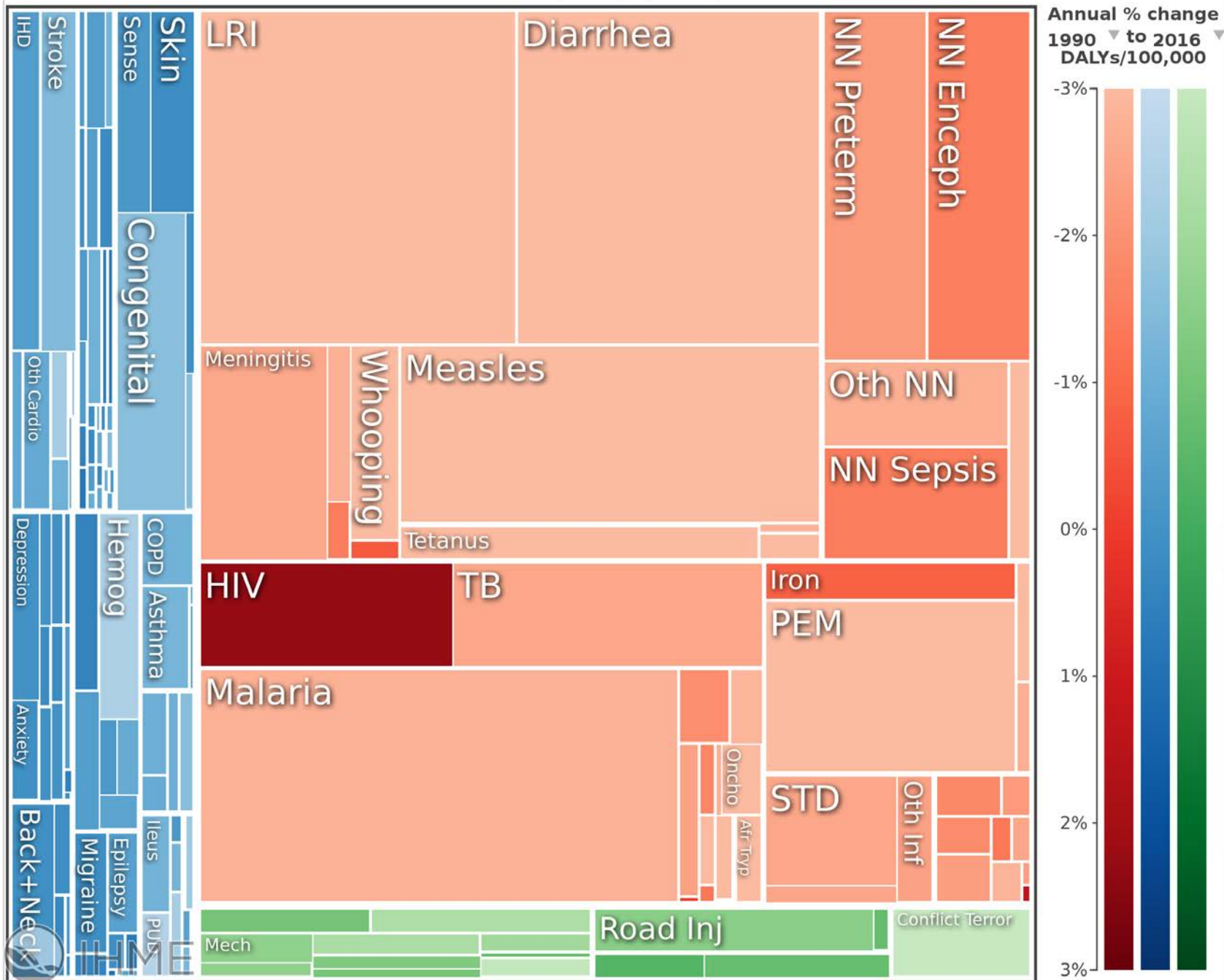
Global
Both sexes, All ages, 2016, DALYs



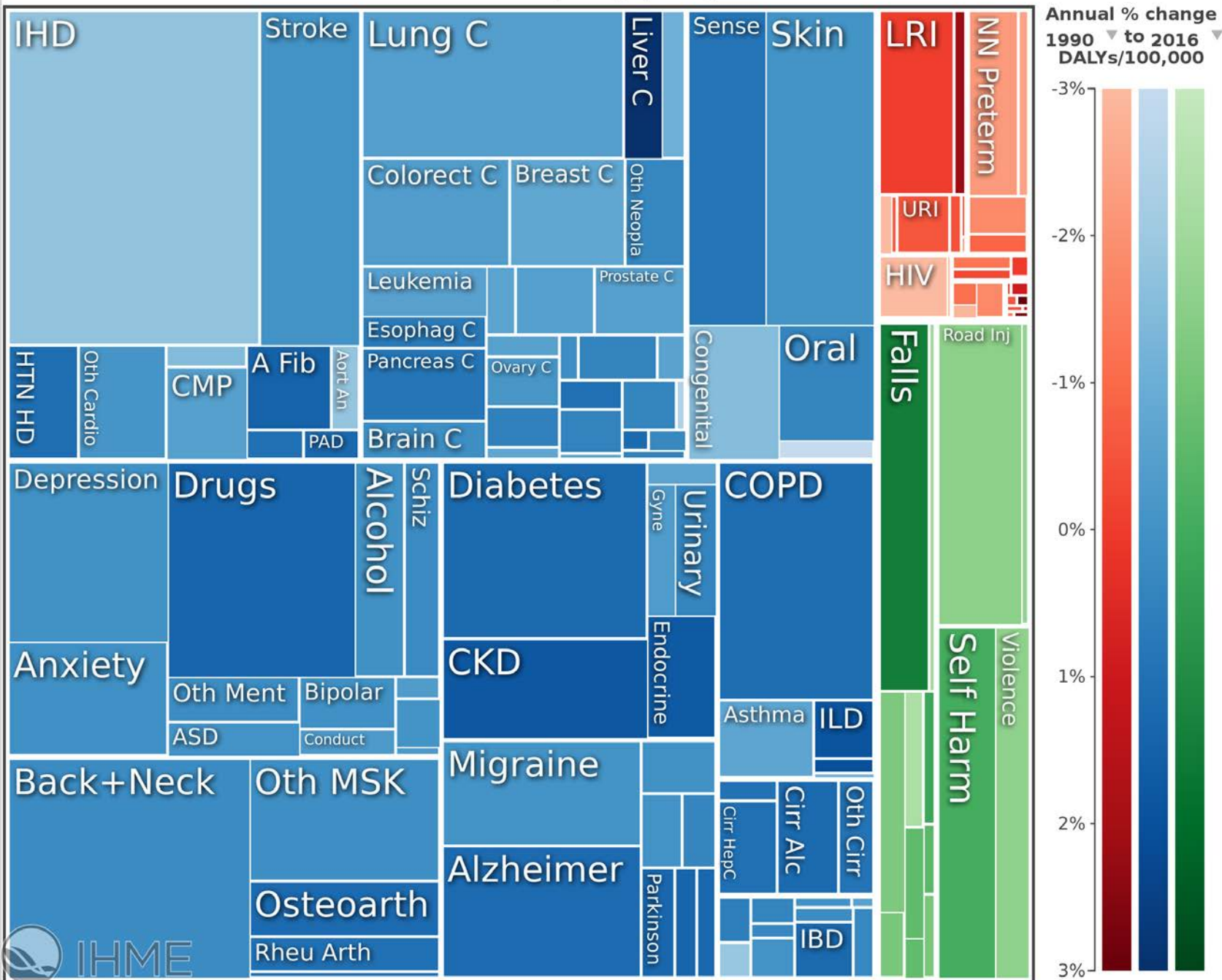
Sub-Saharan Africa
Both sexes, All ages, 2016, DALYs



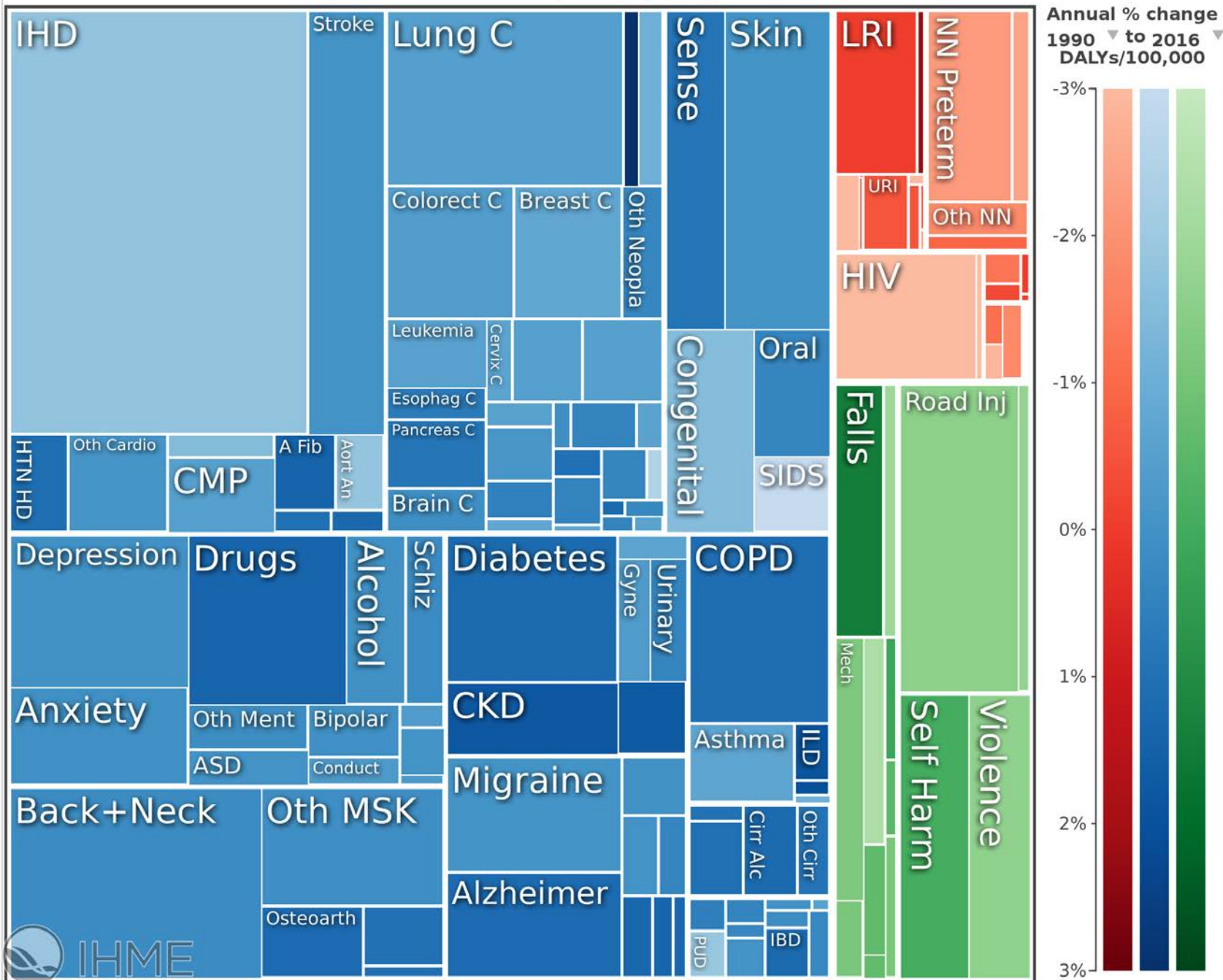
Sub-Saharan Africa
Both sexes, All ages, 1990, DALYs



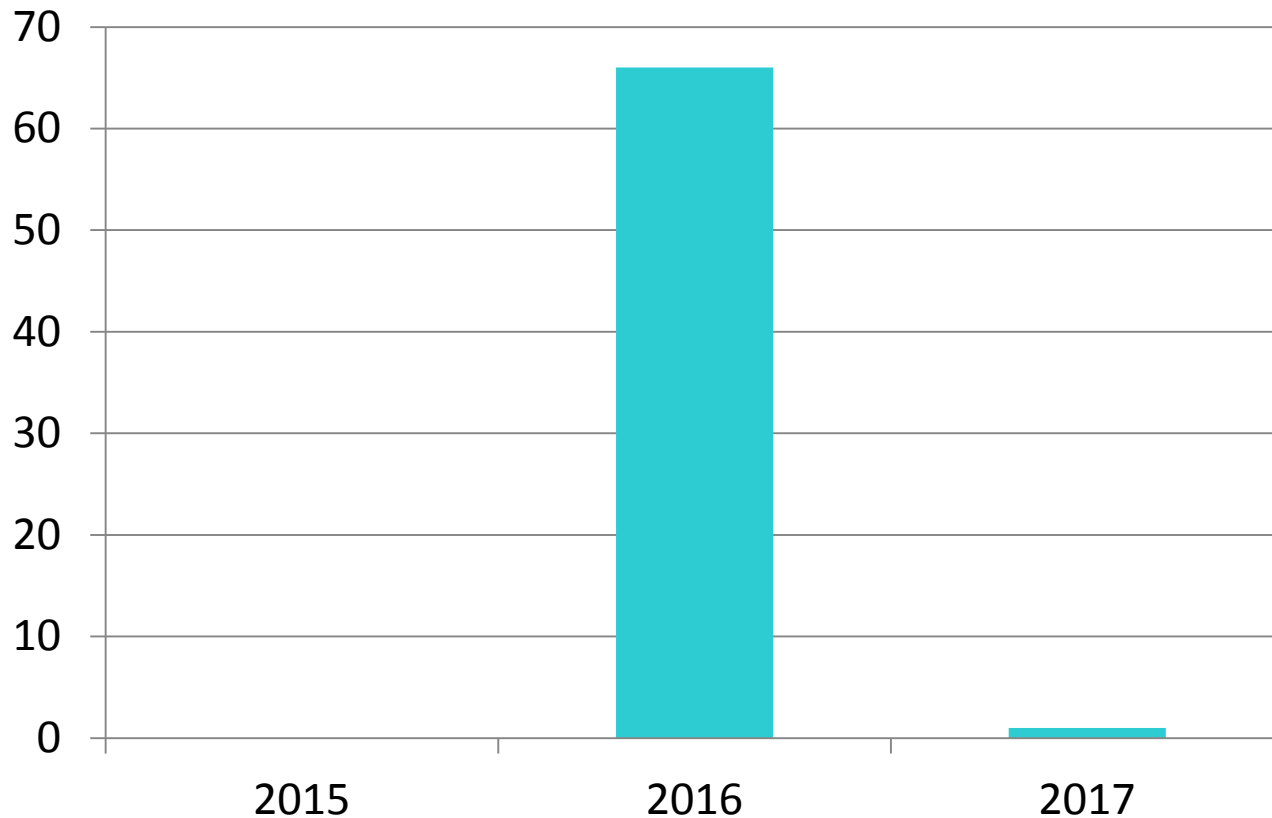
United States
Both sexes, All ages, 2016, DALYs



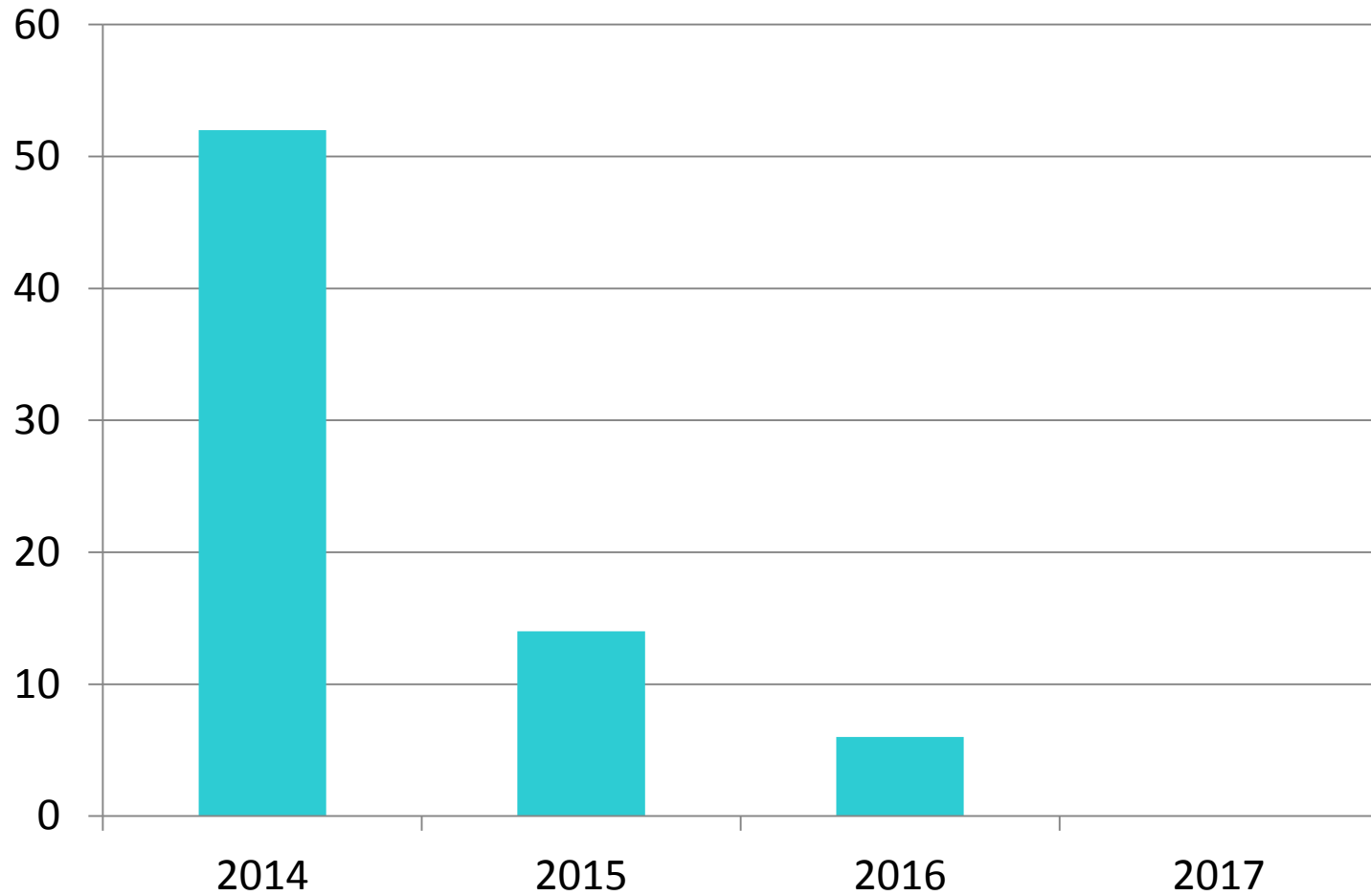
United States
Both sexes, All ages, 1990, DALYs



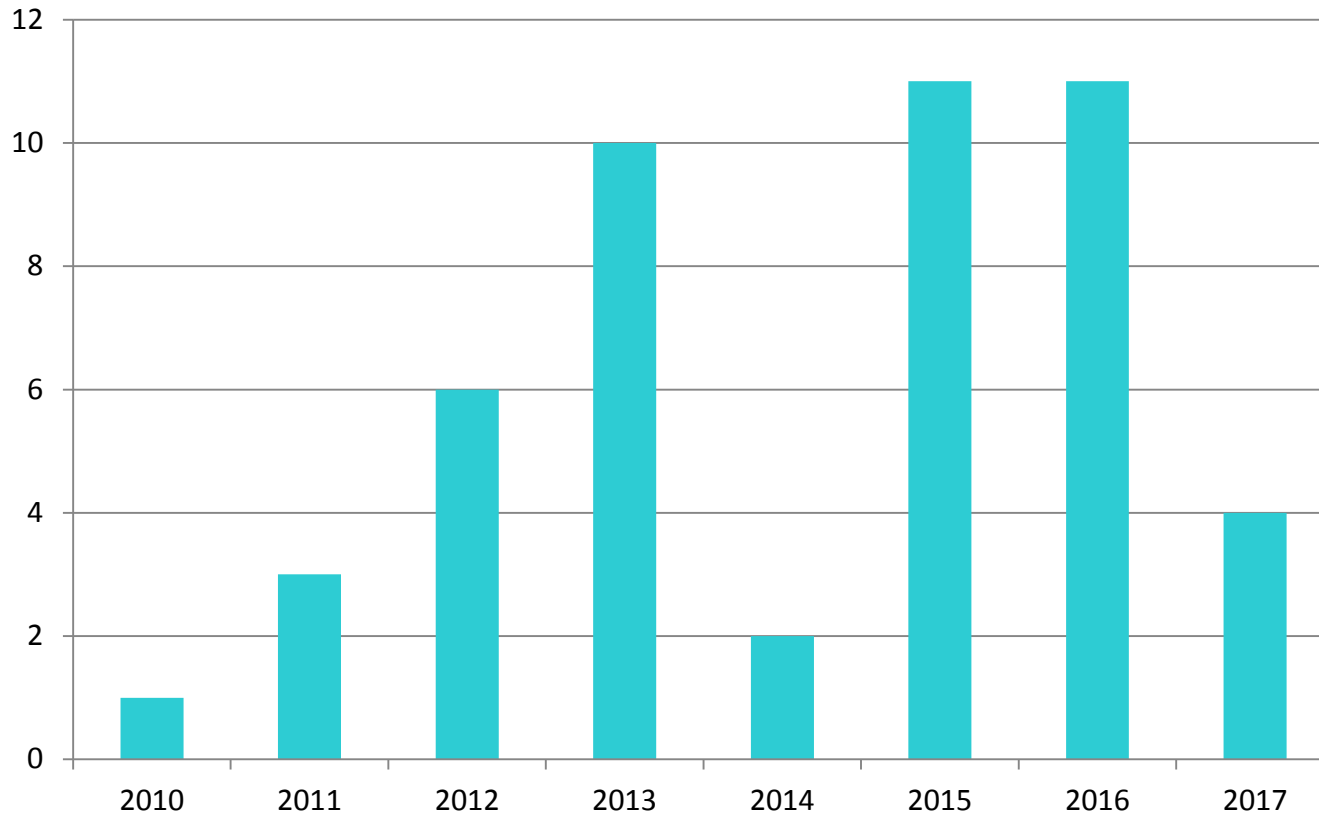
Zika Virus in Tennessee



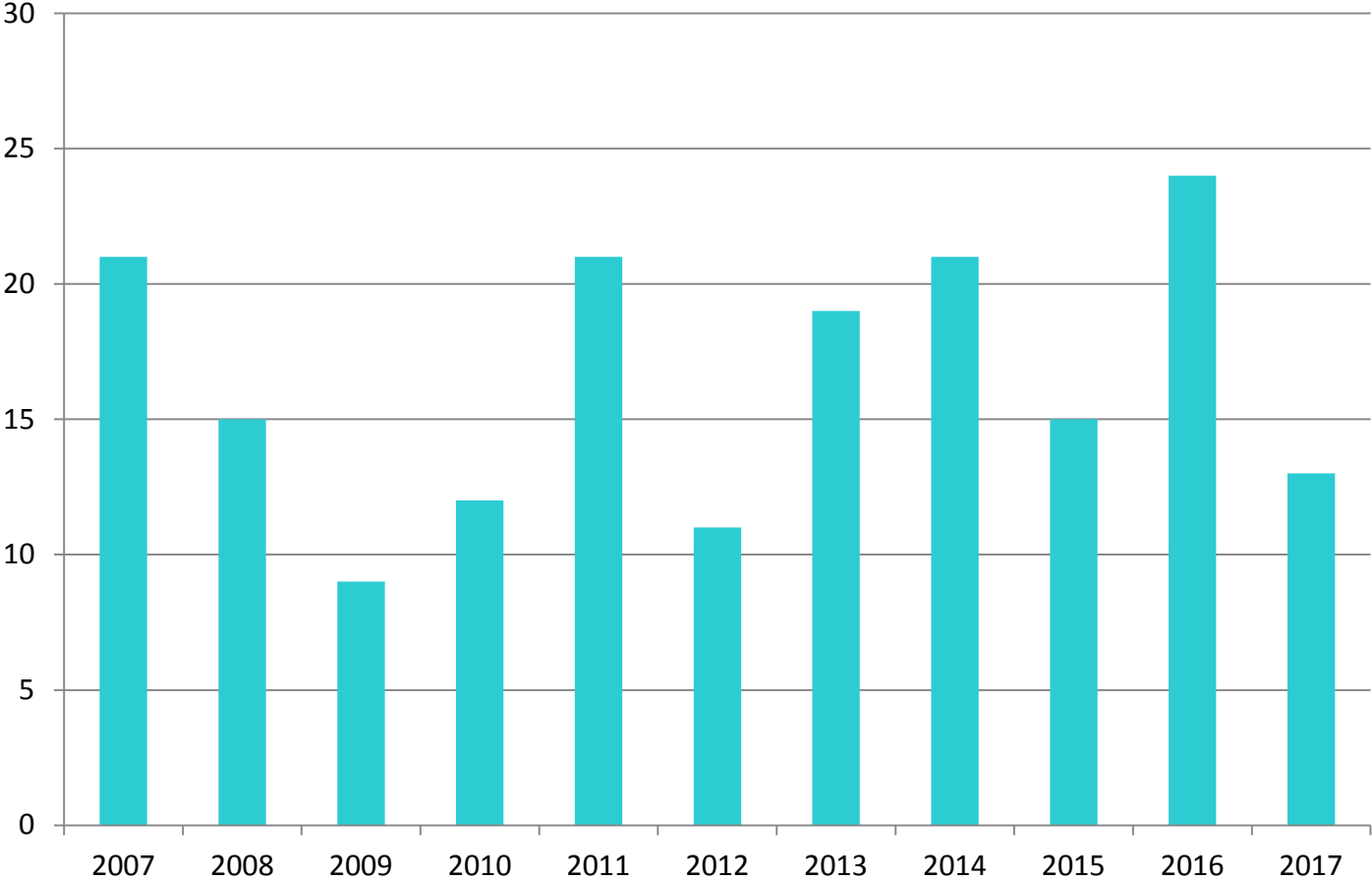
Chikungunya in Tennessee



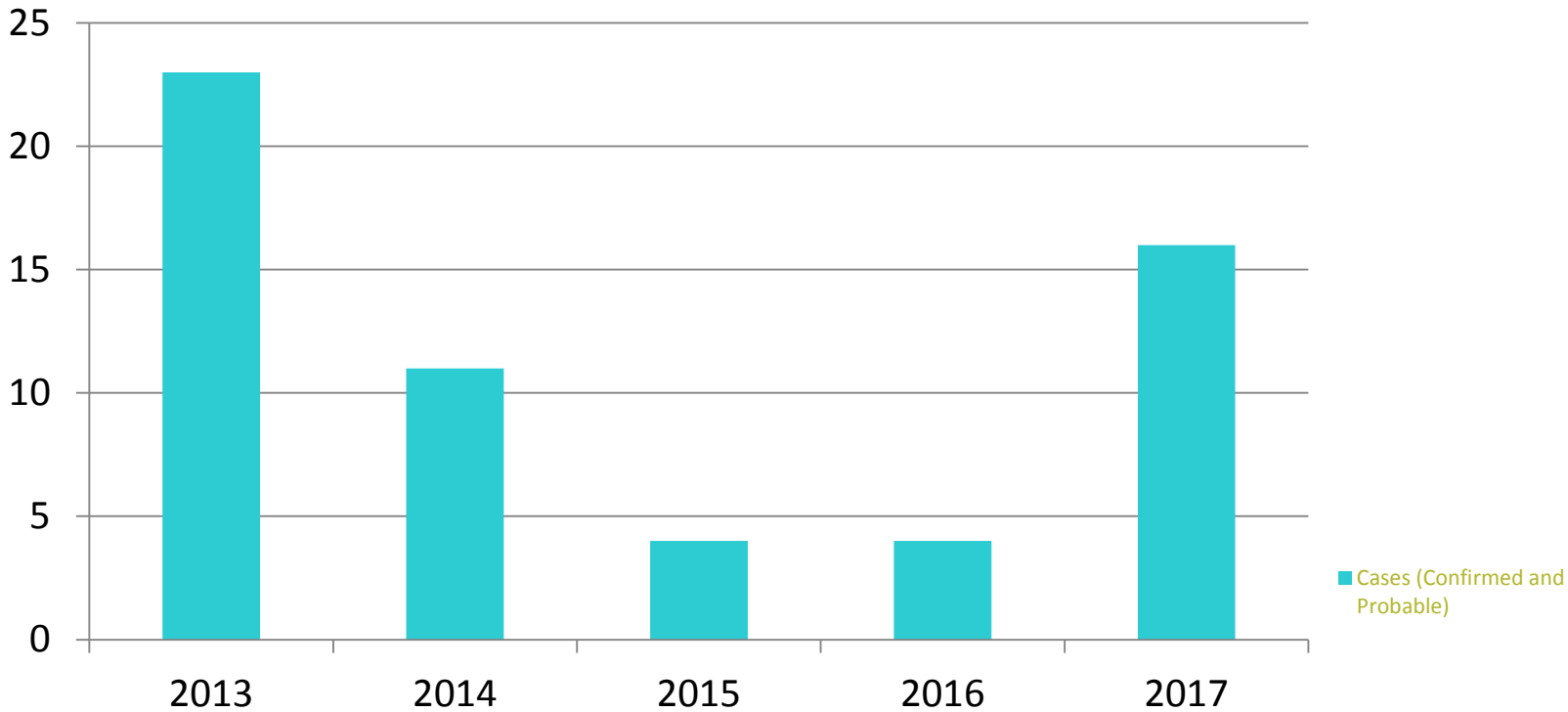
Dengue in Tennessee



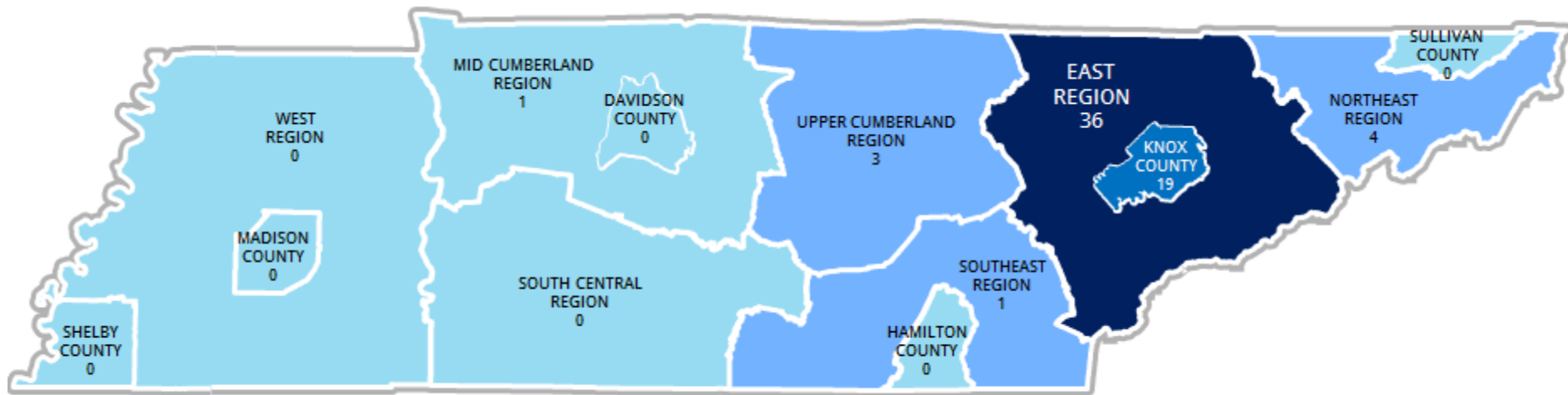
Malaria in Tennessee



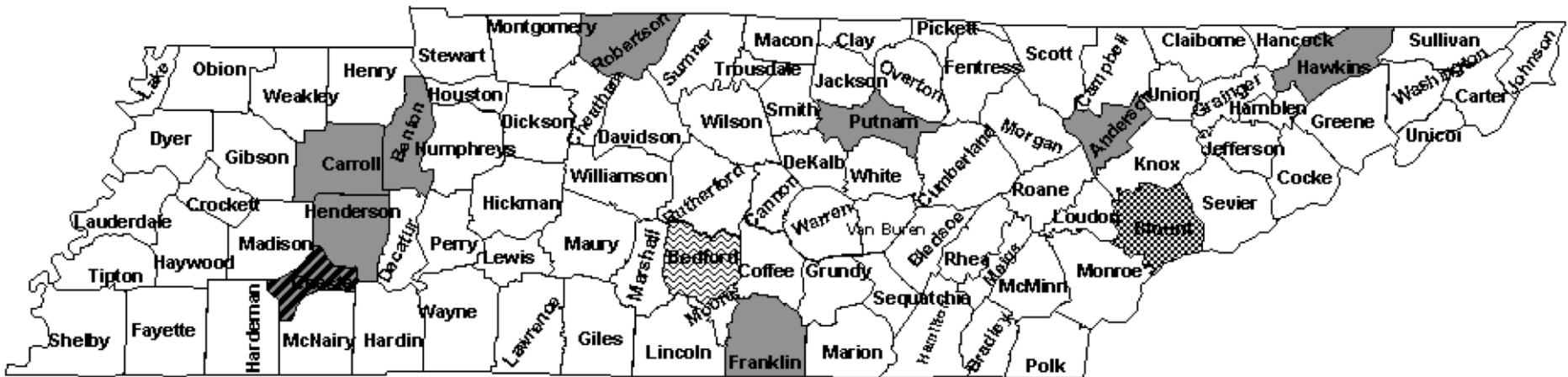
La Crosse Virus in Tennessee







Number of LACV Cases by Public Health Jurisdiction, Tennessee 2013 - 2017

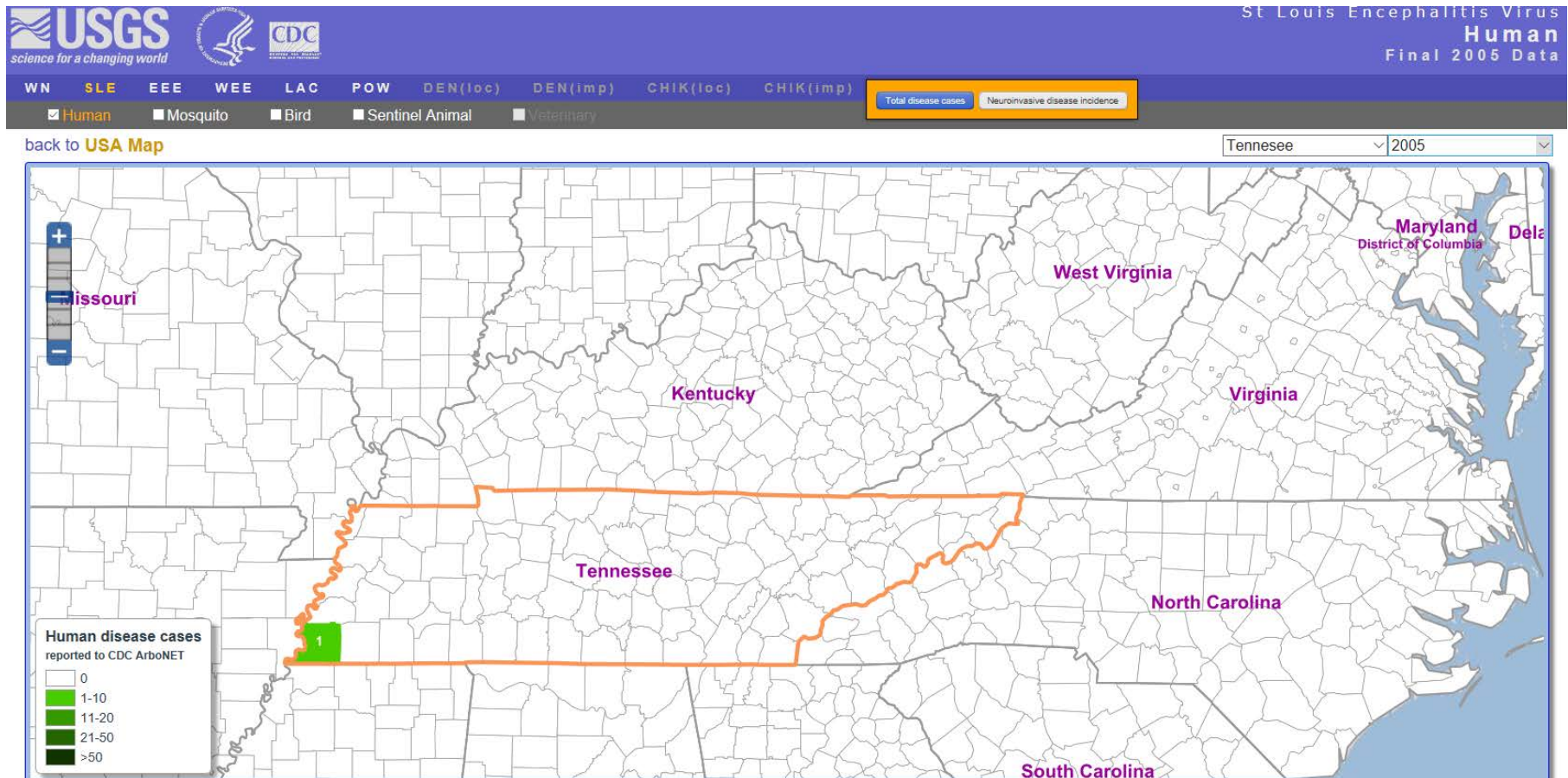


Eastern equine encephalitis in Tennessee



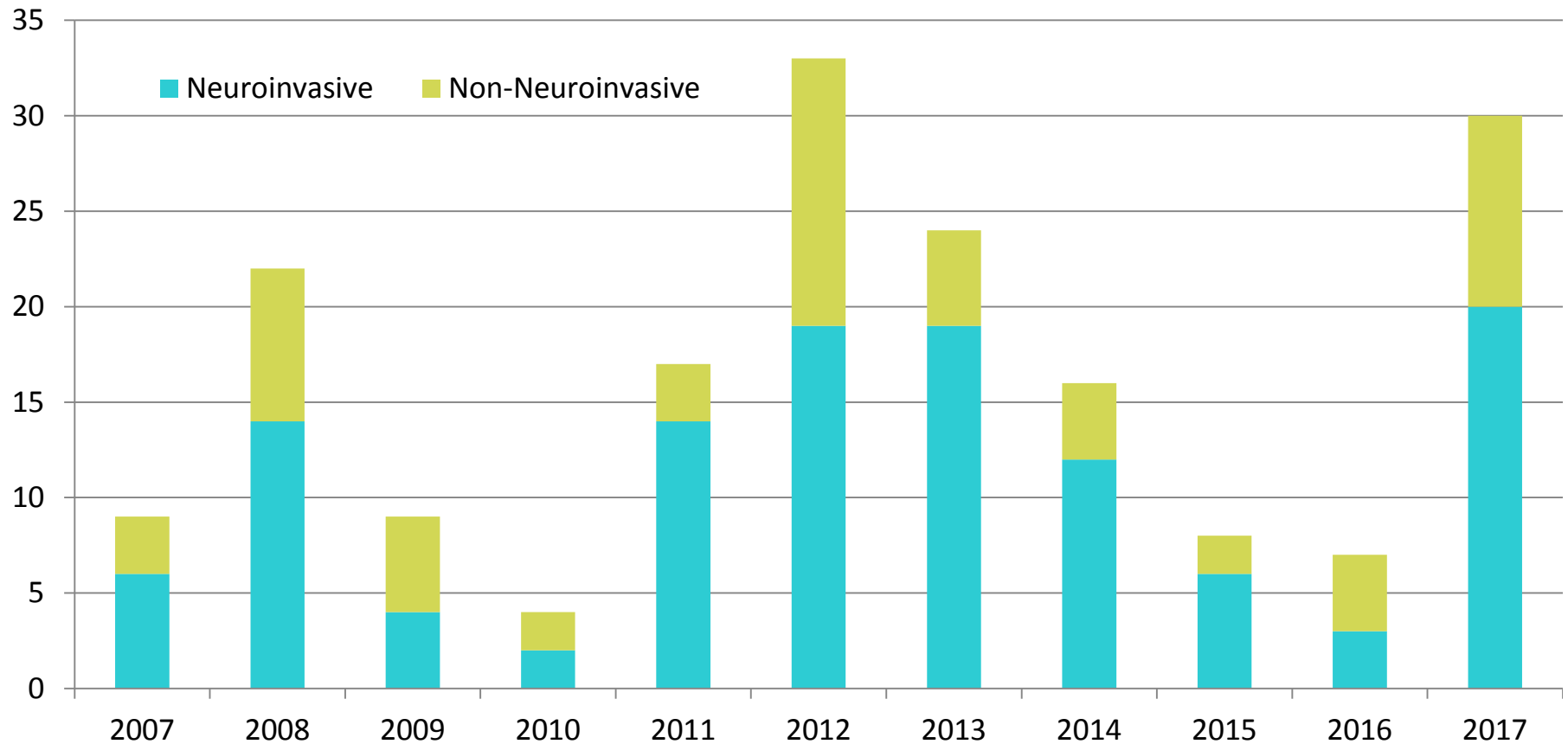
-  Positive Horses 2002
-  Positive Horses 2003
-  Positive Horses 2005
-  Positive Horses 2007

St. Louis Encephalitis in Tennessee



Tennessee had one confirmed human case of SLE in 2005 and has not had any since.

West Nile Virus in Tennessee, 2007 - 2017



Between 2007 – 2017 we have had 11 deaths in the state of Tennessee related to WNV.

Mosquito Surveillance

Mosquito Pools Tested in 2017

County/Region	# Pools Tested	# Pools WNV Positive (%)
Davidson	845	133 15.7%
East	172	8 4.6%
Hamilton	155	62 40%
Knox	368	66 17.9%
Madison	19	3 15.7%
Mid-Cumberland	63	15 23.8%
North East	85	0 0%
Shelby	4905	1340 27.3%
South Central	21	9 42.8%
Southeast	53	14 26.4%
Sullivan	60	2 3.3%
Upper-Cumberland	5	0 0
West	53	20 37.7%

Yellow Fever Cases in TN

Tennessee had 1 Yellow Fever Case in 1996 and has not had any cases since.





ZIKA
VACCINE



Prevention and Control

Mosquito Bite Prevention (United States)

Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.

Type of Mosquito	Viruses spread	Biting habits
 <p><i>Aedes aegypti</i>, <i>Aedes albopictus</i></p>	<p>Chikungunya, Dengue, Zika</p>	<p>Primarily daytime, but can also bite at night</p>
 <p><i>Culex</i> species</p>	<p>West Nile</p>	<p>Evening to morning</p>

Protect yourself and your family from mosquito bites

Use insect repellent

Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

Active ingredient

Higher percentages of active ingredient provide longer protection

DEET

Picaridin (known as KBR 3023 and icaridin outside the US)

IR3535

Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)

2-undecanone



Find the insect repellent that's right for you by using [EPA's search tool](#)®.

* The EPA's search tool is available at: www.epa.gov/insect-repellents/find-insect-repellent-right-you

Protect yourself and your family from mosquito bites (continued)



- Always follow the product label instructions.
- Reapply insect repellent every few hours, depending on which product and strength you choose.
 - Do not spray repellent on the skin under clothing.
 - If you are also using sunscreen, apply sunscreen first and insect repellent second.

Natural insect repellents (repellents not registered with EPA)

- The effectiveness of non-EPA registered insect repellents, including some natural repellents, is not known.
- To protect yourself against diseases like chikungunya, dengue, and Zika, CDC and EPA recommend using an EPA-registered insect repellent.
- When used as directed, EPA-registered insect repellents are proven safe and effective. For more information: www2.epa.gov/insect-repellents

If you have a baby or child



- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months of age.
- Dress your child in clothing that covers arms and legs, or
 - Cover crib, stroller, and baby carrier with mosquito netting.
- Do not apply insect repellent onto a child's hands, eyes, mouth, and cut or irritated skin.
 - Adults: Spray insect repellent onto your hands and then apply to a child's face.
- Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years of age.

Treat clothing and gear



- Treat items such as boots, pants, socks, and tents with permethrin or purchase permethrin-treated clothing and gear.
 - Permethrin-treated clothing will protect you after multiple washings. See product information to find out how long the protection will last.
 - If treating items yourself, follow the product instructions.
 - Do not use permethrin products directly on skin.

Mosquito-proof your home



- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outside.
- Use air conditioning when available.
- Keep mosquitoes from laying eggs in and near standing water.
 - Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers. Check inside and outside your home.

Mosquito University

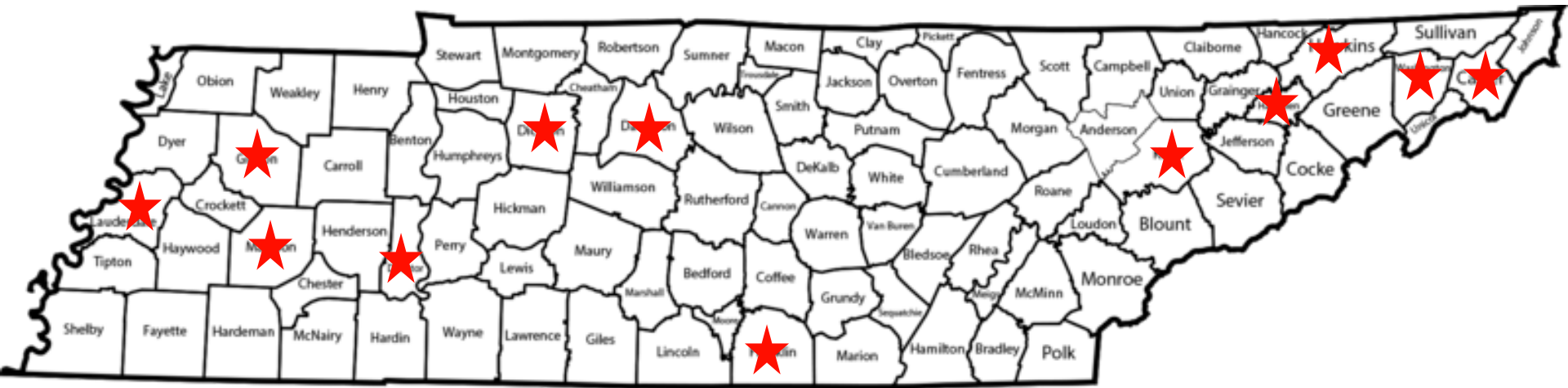








Mosquito University 1.0





Department of
Health

Grant Opportunity!

What: TDH is offering a limited number of one-time grants to government entities for mosquito control activities. Entities with large populations (>90,000) may receive up to \$100,000. Entities with smaller populations may receive up to \$40,000. Funds may be used to purchase mosquito traps, equipment, pesticides, supplies for submitting samples for testing, other expendables, and temporary seasonal hires.

Why: With mosquito-borne viruses on the rise, TDH is encouraging government entities in developing or strengthening mosquito control programs to protect their communities from mosquito-borne diseases

Who: Counties and municipalities may apply. Grants are intended to support activities to develop vector control programs that may be sustained with local resources after this one-time funding.

When: Application deadline to be announced.

How: Applicants must fill out an application form. Priority will be given to entities demonstrating:


1. Plans for sustainable support for mosquito control programs after the grant is used.
2. Commitment to attend training sessions given by TDH.
3. Desire to submit mosquito samples to TDH for viral testing.

Ripple effect
CDC → State → Local





Mosquito University
2.0

A large, modern, multi-story building with a prominent glass facade and a central entrance. The building is surrounded by a lawn and a sidewalk. A sign in the foreground identifies the facility.

**MID-CUMBERLAND
REGIONAL HEALTH FACILITY**

Instructors

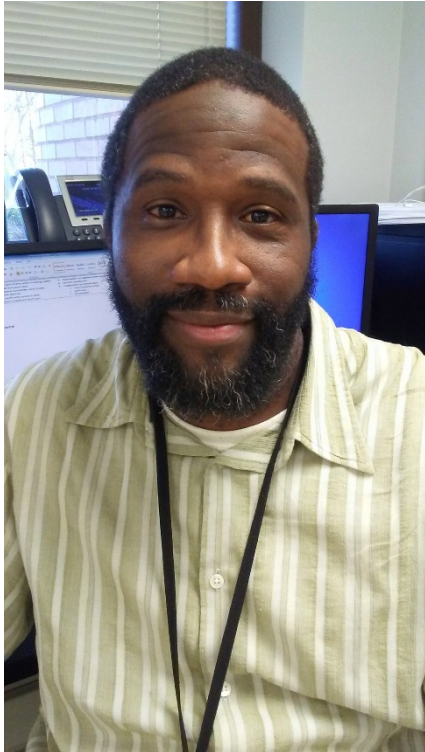


Kelly Orejuela,
Epidemiologist



**Alessandra
Rodriguez,**
Public Health
Laboratory Scientist

Instructors



Kenna Graham,
Environmentalist



Erika Taylor,
Environmentalist



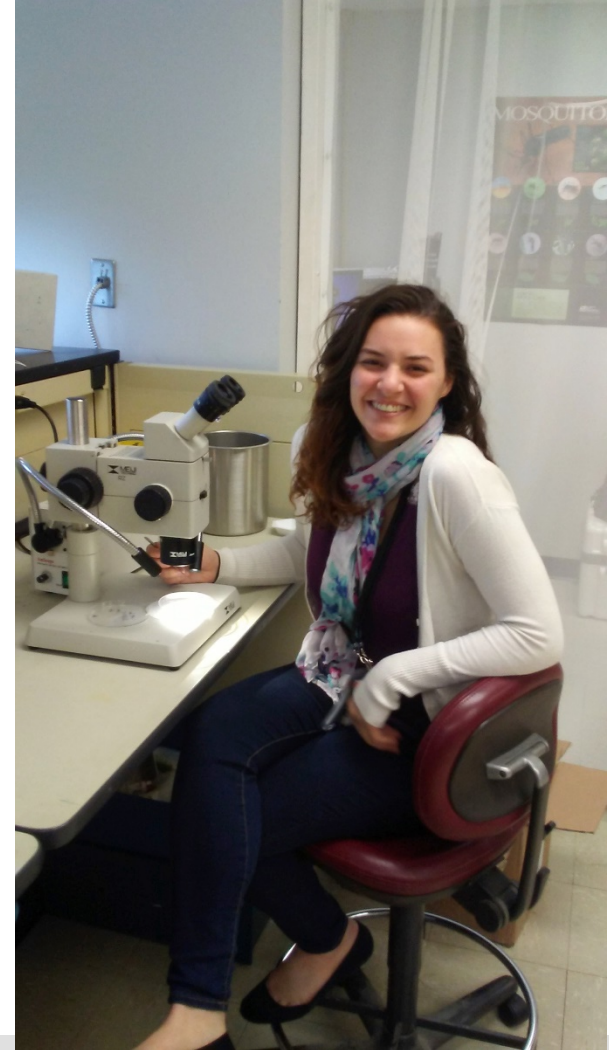
Brad Parman,
Environmental
Epidemiologist

Instructors

Thomas Moore,
CDC-APHL Fellow



Erin Hassett,
Student Intern



Agenda – Day 1 (April 16)

Content	Presenter
Mosquito-borne Diseases in Tennessee	Kelly Orejuela
Pathogen Transmission	Abelardo Moncayo
Mosquitoes of Public Health Importance	Brad Parman
Mosquito ID (hands on identification lab)	Kenna Graham
Mosquito Traps	Erika Taylor
Mosquito Traps (field exercise)	Team

Agenda – Day 2 (April 17)

Content	Presenter
Trap collection (field exercise)	Team
Egg collections	Erin Hassett
New Mosquito Website	Alessandra Rodriguez
Processing field collections for delivery	Brad Parman
Tour of Lab	Alessandra Rodriguez
Testing for arboviruses	Thomas Moore
Integrated Mosquito Management	Kenna Graham
Resistance testing	Erin Hassett

