AHEAD →
America's HIV Epidemic Analysis Dashboard

User Guide

AHEAD.HIV.gov

Ending the HIV Epidemic

AHEAD →
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What is AHEAD?

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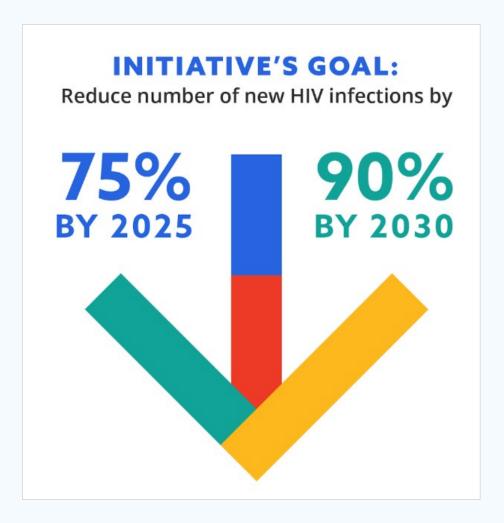
Ending the HIV Epidemic in the U.S.

The EHE Mission

The Ending the HIV Epidemic in the U.S. (EHE) initiative is an operational plan of the U.S. Department of Health and Human Services to end the HIV epidemic in America by 2030.

The initiative empowers local communities to work together and with the federal government to end the HIV epidemic in America.

INITIATIVE'S GOAL: Reduce number of new HIV infections by 75% BY 2025 90% BY 2030

Ending the HIV Epidemic in the U.S.

Catalyzing the EHE Mission

The federal government introduced two programs that will advance the work towards the goal of ending the HIV epidemic in America: AHEAD & Ready, Set, PrEP

AHEAD promotes data transparency and progress by tracking movement towards EHE goals. The data empowers local stakeholders to fine-tune the approach of the 4 EHE strategies and take action within their local communities.
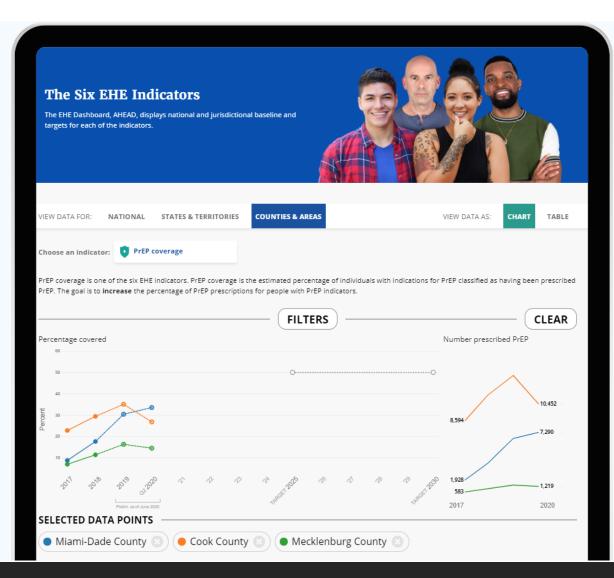
What is AHEAD?

America's HIV Epidemic Analysis Dashboard is a **resource** for EHE priority areas, communities, and other stakeholders to **monitor progress** towards ending the HIV epidemic locally, **effectively coordinating responses**, and **collectively reducing the number of new HIV transmissions** by 90% by 2030.

- **Standardizes the six indicators**
  for Ending the HIV Epidemic initiative

- **Displays the most up-to-date CDC data**
  with quarterly and yearly updates

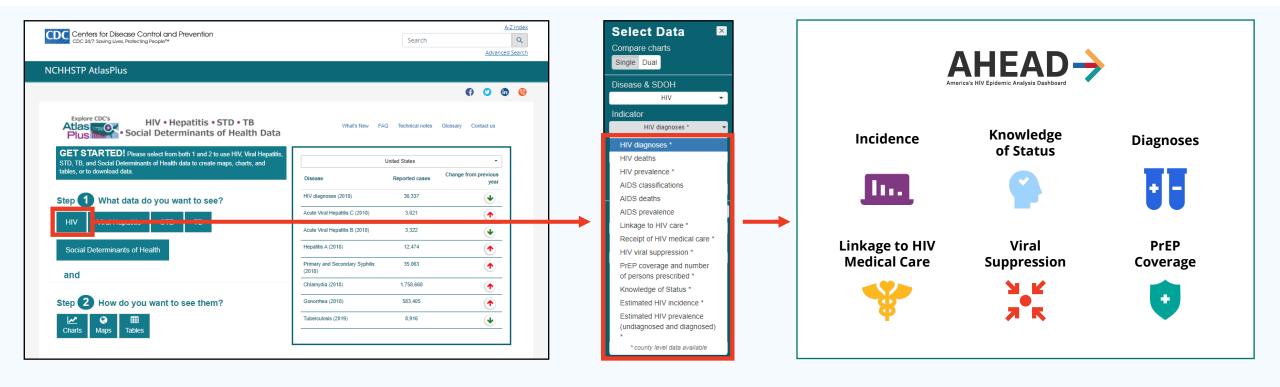- **Tracks progress towards official EHE goals**
  at 3 geographic levels

What is the Purpose of AHEAD?

To make it easy for EHE jurisdictions and other EHE stakeholders to → find, examine, and use → a specific subset of **existing CDC data** related to EHE → for the sole purpose of helping us understand if we are progressing towards our EHE goals.
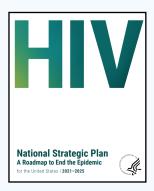
How does AHEAD fit into the Big Picture?

The HIV National Strategic Plan is a **government-wide roadmap** addressing how to reduce the HIV epidemic.	EHE is an **HHS operational plan** to reduce HIV incidence by 90% by 2030.	AHEAD and Ready, Set, PrEP are the two large-scale **EHE components working to achieve the EHE mission.**
Broader focus across federal departments and agencies beyond HHS Covers the entire country and affects all sectors of society 5-year timeframe	Collaboration between HHS and local, state, federal, and community partners to achieve a common goal. Focuses on EHE priority areas 10-year timeframe	

What is AHEAD's Role within EHE?

To map EHE Operational strategies with measurable EHE indicators:

EHE Operational Strategies

Diagnose

Diagnose all people with HIV as early as possible after infection.

Treat

Treat the infection rapidly and effectively to achieve sustained viral suppression.

Prevent

Prevent new HIV transmissions by using proven interventions, including PrEP and syringe services programs (SSPs).

Respond

Respond quickly to potential HIV outbreaks to get prevention and treatment services to people who need them.

EHE Indicators

Incidence

Knowledge of Status

Diagnoses

Linkage to HIV Medical Care

Viral Suppression

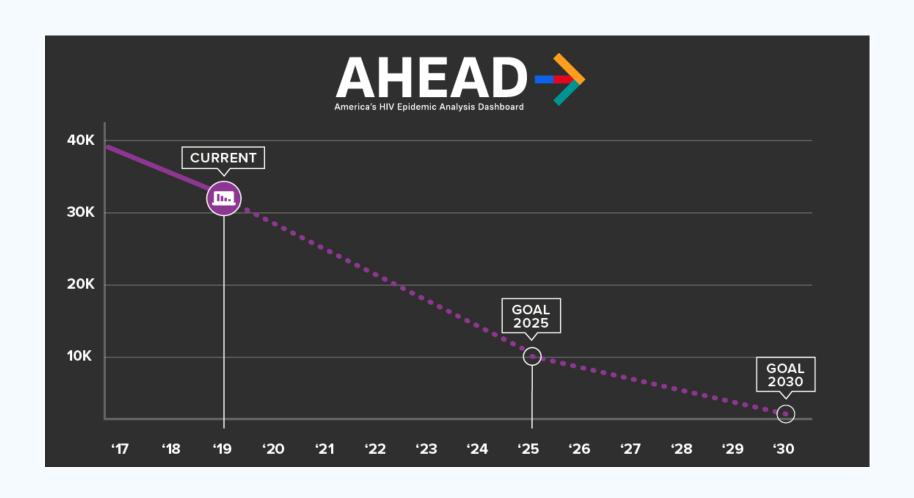**PrEP Coverage**

What is AHEAD's Role within EHE?

Track progress towards reducing new HIV infections in the United States by

75% by 2025

and

90% by 2030.

Which HIV Indicators are Tracked?

The 6 EHE indicators were chosen with specific public health goals in mind.

Incidence	Knowledge of Status	Diagnoses	Linkage to HIV Medical Care	Viral Suppression	PrEP Coverage

This indicator measures our overarching goal of reducing new transmissions by 90% by 2030.

These 3 indicators are key to identifying how many people need to be linked to care and represent important steps on the HIV Care Continuum. Data have shown that, upon diagnosis, immediate linkage to care and treatment results in improved HIV outcomes, so it is important to track how these indicators change over time.

These 2 indicators will have the greatest impact on reducing new transmissions if they are scaled up.
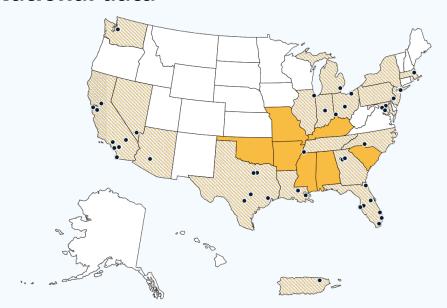
What Geographic Areas are on AHEAD?

County Data
for EHE priority areas

State Data
for all 50 U.S. states
Washington, DC
Puerto Rico

National data

EHE Priority Areas

Alabama
Arizona*
Maricopa County
Arkansas
California*
Alameda County
Los Angeles County
Orange County
Riverside County
Sacramento County
San Diego County
San Francisco County
District of Columbia
Florida*
Broward County
Duval County
Hillsborough County
Miami-Dade County
Orange County
Palm Beach County
Pinellas County
Georgia*
Cobb County
Dekalb County
Fulton County
Gwinnett County

Illinois*
Cook County
Indiana*
Marion County
Kentucky
Louisiana*
East Baton Rouge Parish
Orleans Parish
Maryland*
Baltimore City
Montgomery County
Prince George's County
Massachusetts*
Suffolk County
Michigan*
Wayne County
Mississippi
Missouri
Nevada*
Clark County
New Jersey*
Essex County
Hudson County

New York*
Bronx County
Kings County
New York County
Queens County
North Carolina*
Mecklenburg County
Ohio*
Cuyahoga County
Franklin County
Hamilton County
Oklahoma
Pennsylvania*
Philadelphia County
Puerto Rico*
San Juan Municipio
South Carolina
Tennessee*
Shelby County
Texas*
Bexar County
Dallas County
Harris County
Tarrant County
Travis County
Washington*
King County

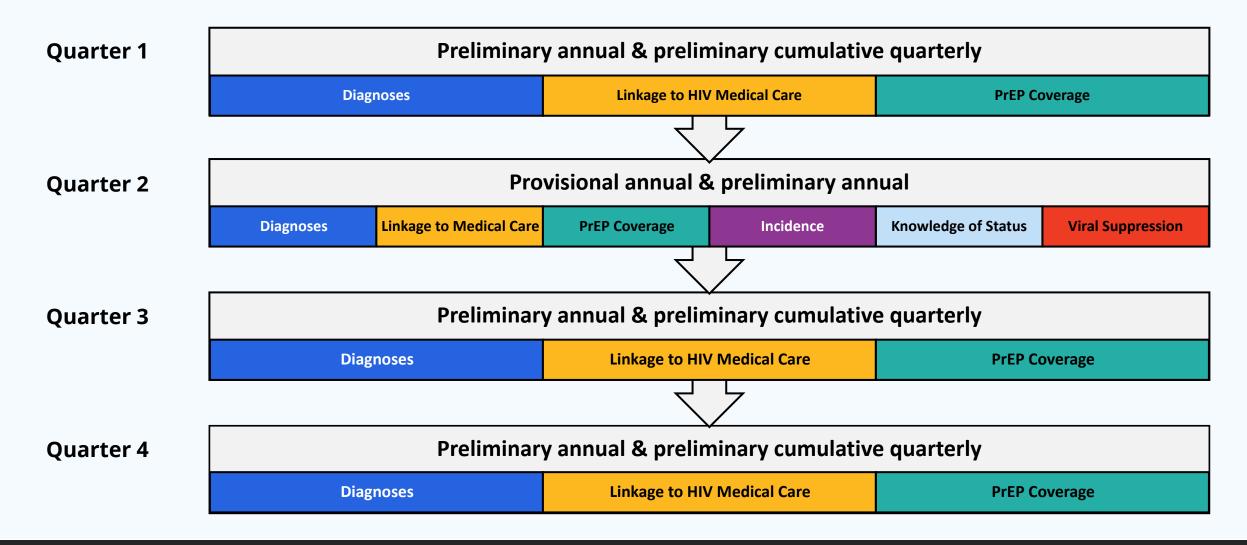*Non-priority state with EHE priority county*

How Often are the Data Updated?

Quarter 1

Preliminary annual & preliminary cumulative quarterly		
Diagnoses	Linkage to HIV Medical Care	PrEP Coverage

Quarter 2

Provisional annual & preliminary annual					
Diagnoses	Linkage to Medical Care	PrEP Coverage	Incidence	Knowledge of Status	Viral Suppression

Quarter 3

Preliminary annual & preliminary cumulative quarterly		
Diagnoses	Linkage to HIV Medical Care	PrEP Coverage

Quarter 4

Preliminary annual & preliminary cumulative quarterly		
Diagnoses	Linkage to HIV Medical Care	PrEP Coverage

What Demographic & Transmission Categories are Available?

At the national level, the following data categories are available:

Indicators	Age	Race/Ethnicity	Sex at Birth or Gender	Transmission Category
Incidence **Knowledge of Status**	• 13-24 • 25-34 • 35-44 • 45-54 • Over 55	• American Indian/Alaska Native • Asian • Black/African American • Hispanic/Latinx • Multiple races • Native Hawaiian/Other Pacific Islander • White	Sex at birth: • Female • Male	• Heterosexual contact (female) • Heterosexual contact (male) • Injection drug use (female) • Injection drug use (male) • Male-to-male sexual contact • Male-to-male sexual contact and injection drug use
Diagnoses **Linkage to HIV Medical Care** **Viral Suppression**	• 13-24 • 25-34 • 35-44 • 45-54 • Over 55	• American Indian/Alaska Native • Asian • Black/African American • Hispanic/Latinx • Multiple races • Native Hawaiian/Other Pacific Islander • White	Gender: • Additional gender identity • Female (gender) • Male (gender) • Transgender female-to-male • Transgender male-to-female	• Heterosexual contact (female) • Heterosexual contact (male) • Injection drug use (female) • Injection drug use (male) • Male-to-male sexual contact • Male-to-male sexual contact and injection drug use • Other (female) • Other (male)
PrEP Coverage	• 13-24 • 25-34 • 35-44 • 45-54 • Over 55	• Asian/other (PrEP only) • Black/African American • Hispanic/Latinx • White	Sex at birth: • Female • Male	

What are the EHE Goals?

Goal (decrease or increase)		Indicator	By 2030...	National	State/Territory/County/Area
⬇		Incidence	By 90%	3,000 people	Numeric goal is specific to the jurisdiction
		Diagnoses	By 90%	3,000 people	Numeric goal is specific to the jurisdiction
⬆		Knowledge of Status	To 95%	95%	95%
		Linkage to HIV Medical Care	To 95%	95%	95%
		Viral Suppression	To 95%	95%	95%
		PrEP Coverage	To 50%	50%	50%

Why Use AHEAD?

Data-Driven & Goal Oriented
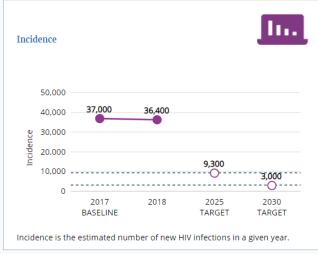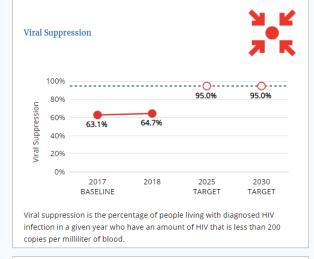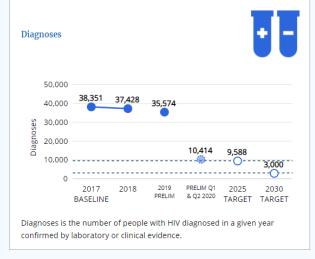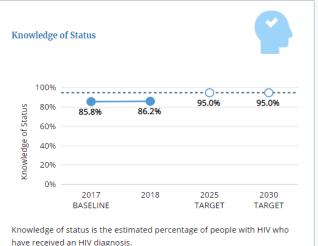
AHEAD is a data-driven effort and the <u>only</u> HIV dashboard to compare progress to official EHE goals.

Linkage to HIV Medical Care

Linkage to HIV medical care is the percentage of people with HIV diagnosed in a given year who have received medical care for their HIV infection within one month of diagnosis.

Incidence

Incidence is the estimated number of new HIV infections in a given year.

Viral Suppression

Viral suppression is the percentage of people living with diagnosed HIV infection in a given year who have an amount of HIV that is less than 200 copies per milliliter of blood.

Diagnoses

Diagnoses is the number of people with HIV diagnosed in a given year confirmed by laboratory or clinical evidence.

Knowledge of Status

Knowledge of status is the estimated percentage of people with HIV who have received an HIV diagnosis.

PrEP Coverage

PrEP coverage is the estimated percentage of individuals with indications for PrEP classified as having been prescribed PrEP.

Based on Feedback from Audience Input

Since August 2019, feedback has been collected from major stakeholder groups to provide input on what data and features would be most helpful to make progress towards ending the HIV epidemic in America.

AHEAD as a Common Resource
As presented at USCHA Workshop, October 20, 2020

JURISDICTIONS
- Compare, coordinate, strategize, evaluate programmatic interventions
- Improve community plans and grant applications

COMMUNITY-BASED ORGANIZATIONS
- Identify service gaps
- Prioritize interventions
- Compare outcomes with CBOs in other jurisdictions

ADVOCATES
- Develop priorities for advocacy and education
- Download information for advocacy briefings
- Benchmark progress against other communities

HEALTH EDUCATORS
- Make educational materials locally relevant and more impactful

SERVICE PROVIDERS
- Understand the specific characteristics of the clients served

Jurisdictional Comparisons

Standardized Data for Comparisons

- **Standardized CDC data**– allows users to customize and compare multiple jurisdictions (even from different states) on the same graph

- **Suggestions of similar jurisdictions based on EHE progress**– Machine learning that helps users identify jurisdictions that are making similar progress across all 6 indicators

New Data Quarterly
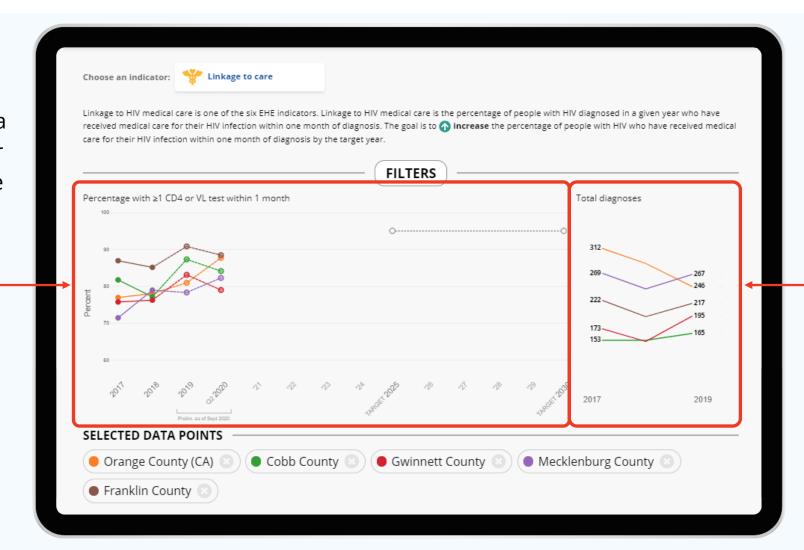
New Data

Data updated on a quarterly basis for diagnoses, linkage to care, and PrEP coverage

Added Context
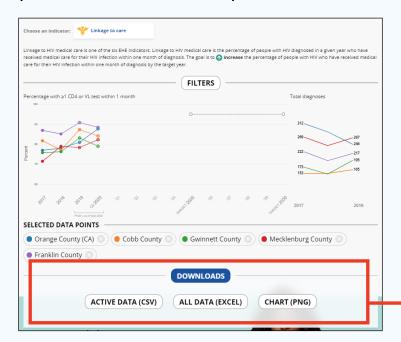
Side-by-side data of related indicators for the same time period

Multiple Download Options
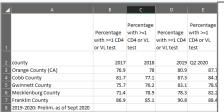
Tailor data downloads, including graphs and selected data points to use in plans, presentations, and reports.

User-selected data downloads available in CSV, Excel, and graph image (PNG).

![AHEAD - America's HIV Epidemic Analysis Dashboard]

How to Use AHEAD

Getting to the Data

① Data page

- Displays interactive graphs
- Best used for comparisons
- Only 1 indicator can be viewed at a time

② Jurisdictions pages
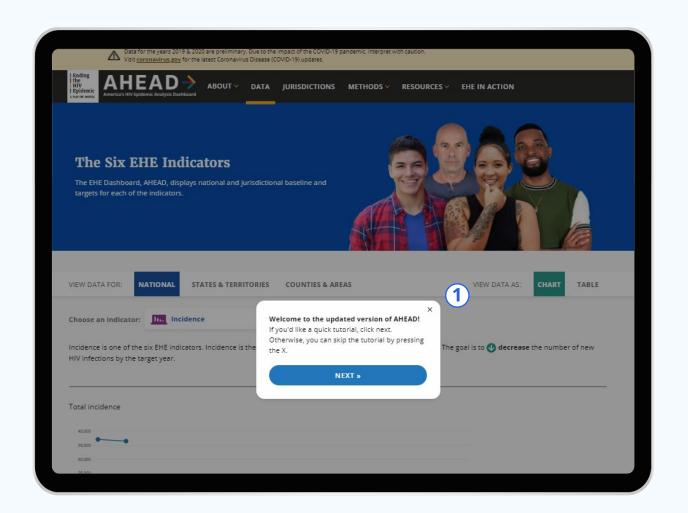
- Displays all 6 indicators for the selected jurisdiction
- Best for a high level overview of one location
- Only 1 location can be viewed at a time

Tutorial Prompts

1. **Upon first visit to the *Data* page, a pop-up will appear to provide a quick walk-through on how to interact with the graph.**

Graph Navigation
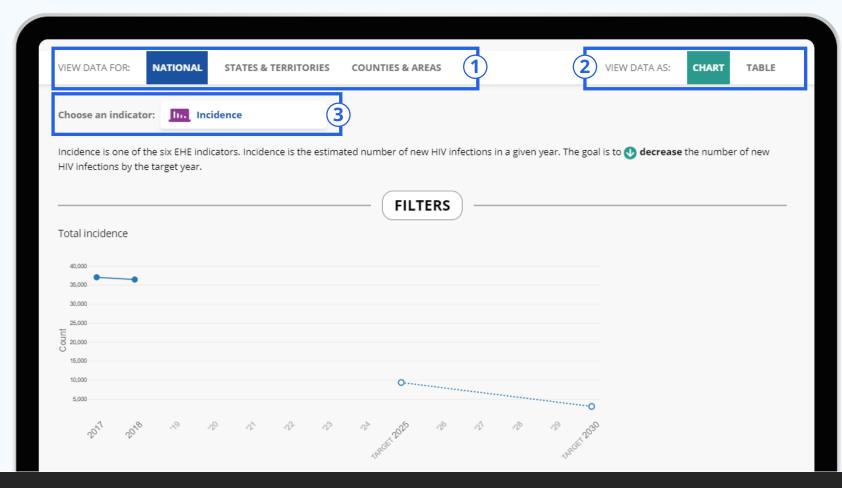
These selections will change what filters are available:

1 Switch between national, state, and local levels

2 View the data graphically or in table format

3 Switch between the 6 EHE indicators

VIEW DATA FOR: | NATIONAL | STATES & TERRITORIES | COUNTIES & AREAS — **1**

2 — VIEW DATA AS: | CHART | TABLE

Choose an indicator: **Incidence** — **3**

Incidence is one of the six EHE indicators. Incidence is the estimated number of new HIV infections in a given year. The goal is to **decrease** the number of new HIV infections by the target year.

FILTERS

Total incidence

Count — 40,000 / 35,000 / 30,000 / 25,000 / 20,000 / 15,000 / 10,000 / 5,000

2017 2018 '19 '20 '21 '22 '23 '24 TARGET 2025 '26 '27 '28 '29 TARGET 2030

National Data Filters

1 At the national level, users can filter by categories such as age, gender/sex, race/ethnicity, and transmission category.

The default is to show total, or overall, national data.

State/Territory Data Filters
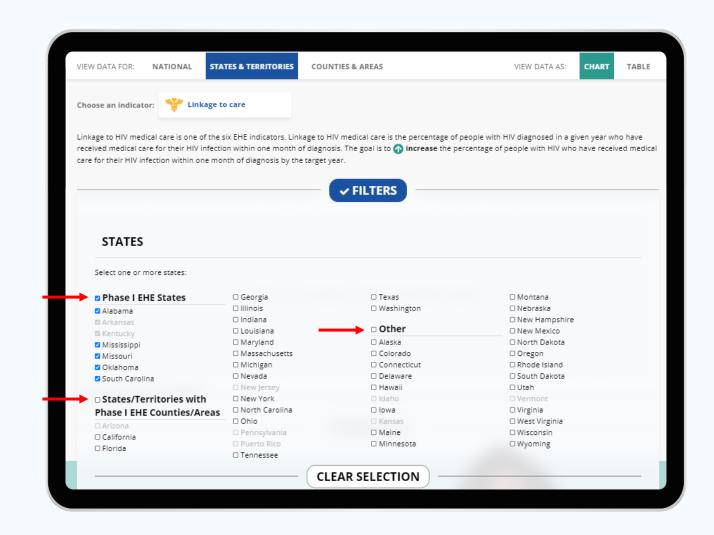
EHE Priority state, States with EHE Counties, and Other states can be compared on the same graph.

By selecting the whole group (such as "Phase I EHE States"), all states within that group will be auto-selected for comparison.

Select "Filters" to see the graph.

County/Area Data Filters
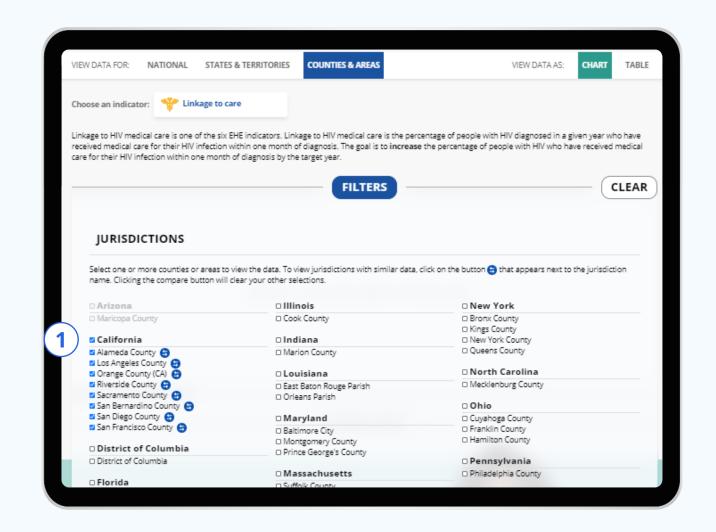
EHE priority counties/areas can be viewed on the same graph as well, whether they are in the same state or not.

1 By selecting the whole group (such as "California"), all counties within that group will be auto-selected for comparison.

Select "Filters" to see the graph.

Similar Jurisdiction Functionality
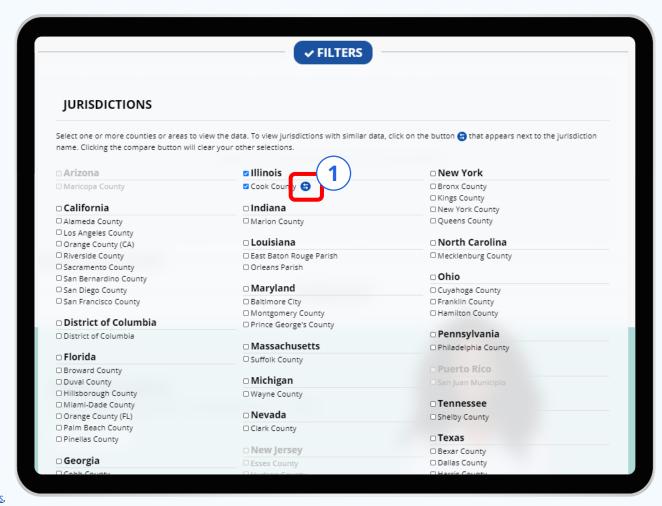
The Similar Jurisdiction Functionality was designed based on stakeholder requests to easily identify and compare similar EHE jurisdictions.

1 The "Show Similar Jurisdiction" functionality identifies the three most similar EHE counties/areas based on a jurisdiction's EHE progress across all six indicators.

Similar jurisdictions may be different along some indicators but will not be significantly different along all of them.

These similar jurisdictions may be interested in communicating with and exploring similar strategies in order to better achieve EHE goals.

For more information on the technical methodologies behind this functionality, see the [backup slides](backup_slides).

Similar Jurisdiction Functionality
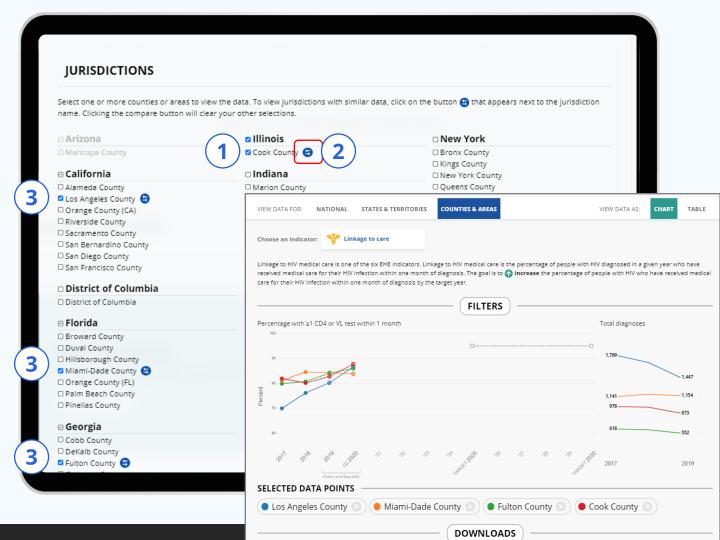
1 Select the checkbox of one county/area.

2 Then select the blue arrows button to the right of that county.

3 Three other counties/areas will auto-select based on similar EHE progress.
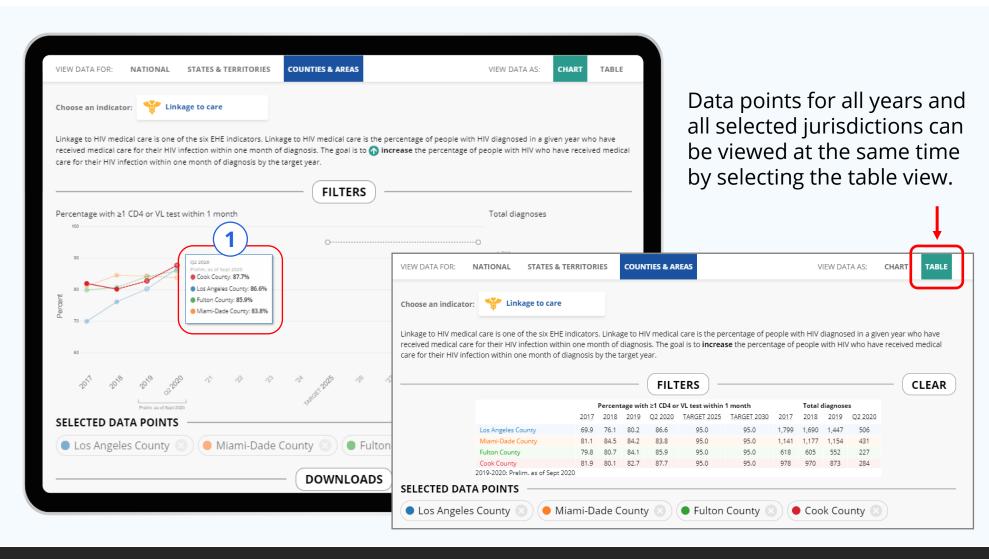
Tooltips

1 Tooltips will display data for all selected jurisdictions for that year. Only one year will show at a time.

A tooltip is also known as a hover-over, pop-up, or text box. This feature displays data when the mouse hovers over a data point.

Data points for all years and all selected jurisdictions can be viewed at the same time by selecting the table view.

	Percentage with ≥1 CD4 or VL test within 1 month						Total diagnoses			
	2017	2018	2019	Q2 2020	TARGET 2025	TARGET 2030	2017	2018	2019	Q2 2020
Los Angeles County	69.9	76.1	80.2	86.6	95.0	95.0	1,799	1,690	1,447	506
Miami-Dade County	81.1	84.5	84.2	83.8	95.0	95.0	1,141	1,177	1,154	431
Fulton County	79.8	80.7	84.1	85.9	95.0	95.0	618	605	552	227
Cook County	81.9	80.1	82.7	87.7	95.0	95.0	978	970	873	284

2019-2020: Prelim. as of Sept 2020

Downloads

1 Active data will only download the data currently shown on the screen. It can be downloaded as a CSV (typically used by data scientists) or as an Excel document for easy-viewing.

2 A formatted Excel document of all data available on AHEAD can be downloaded. This includes some data (such as confidence intervals) not displayed in the table view.

3 An image of the graph and table can be downloaded to use in reports and presentations.

Under the graph, select the downloads button.

Jurisdiction Pages

An individual jurisdiction page can be viewed by:

1 **Selecting from the drop-down and "View Data"**.

Jurisdictions are organized alphabetically by state/territory name, then by county/area name within.
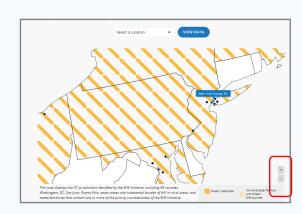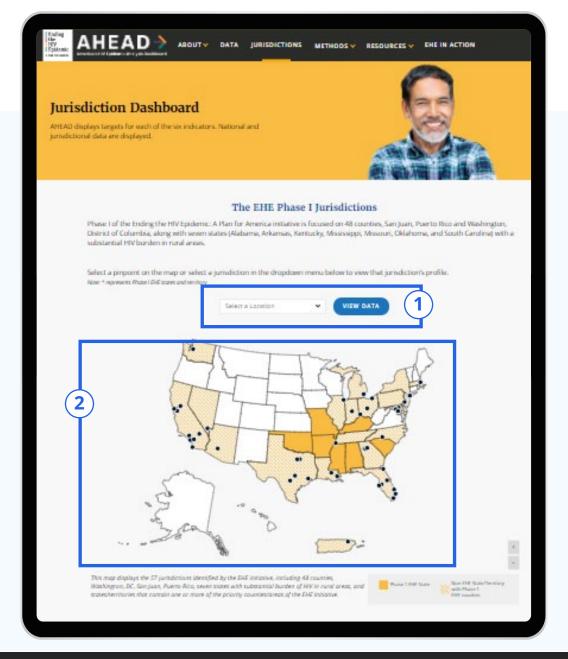
2 **Selecting a state/territory or a pinpoint on the map.**

The map can be zoomed in to clearly see/select areas that are closely clustered geographically.
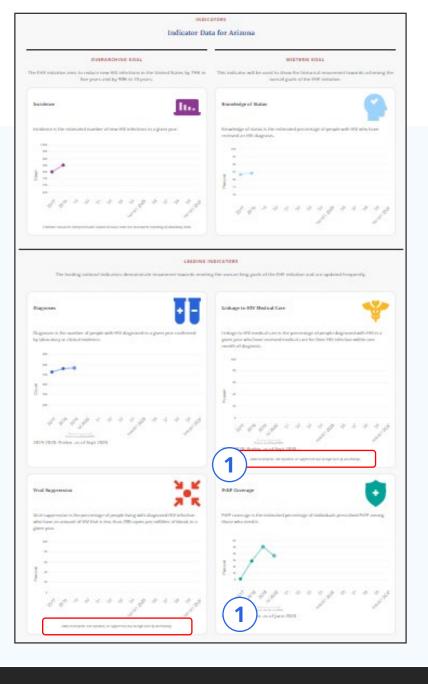
Jurisdiction Pages

All 50 U.S. states, 48 EHE counties, Puerto Rico, San Juan, and Washington D.C. are viewable.

Not all locations have complete data for all indicators. Some locations will have a footnote that states:

① *Data incomplete, not reported, or suppressed due to high level of uncertainty.*

• Some states don't have complete laboratory data (at least 95% of lab results reported to surveillance programs and transmitted to CDC) or don't have laws requiring complete reporting.

• States that don't have enough data are not reported because of reliability concerns. (For instance, PrEP prescription data values <40 are not displayed).

• Areas with relative standard errors of 30-50% are displayed but should be interpreted with caution. Estimates with an RSE >50% are not down due to a high level of uncertainty.

AHEAD
America's HIV Epidemic Analysis Dashboard

Contact us!

EndHIVEpidemic@HHS.GOV

We Welcome Your Questions & Feedback

Featurization

A data frame consisting of important features that have similar variance and low correlation is constructed and rescaled in a way that will not attribute too much importance to any single feature. This is necessary because clustering algorithms typically will not rescale the data. The goal is to include no more than one feature per EHE indicator.

Aggregation

Step 1: Estimates and goals data are ignored for the purpose of this analysis. 2019 preliminary data, 2020 preliminary data, 2025 goal data, and 2030 goal data are dropped.

Step 2: Data is reduced by taking the mean of all time series segments. In other words, for each pair of 2017 and 2018 data points, the mean is used, and the original figures are dropped.

Note: Ignoring 2017 figures in favor of 2018 figures was considered, but ultimately decided against, as this introduced an unnecessarily large number of missing values.

Similar Jurisdiction Functionality
Technical Methodologies

Clustering Methodology

The goal is to show local public health officials which jurisdictions are like their own regarding EHE progress.

A *brute-force nearest-neighbors* approach is used to quickly and easily show each jurisdiction the top *k* most similar jurisdictions to their own. We chose *k* = 3 and ran the algorithm on the features data frame shown on the previous slide.

The distance metric for the clustering algorithm is the Euclidean distance. The clustering algorithm computes a Euclidean distance matrix of size N-by-N for N counties. The nearest neighbors to county A and the *k = 3* closest counties to A according to the distance matrix.

Similar Jurisdiction Functionality
Technical Methodologies

Transformation

A simple *log transform* is applied for quantity variables in order to make the distance between 100 and 1,000 appear the same as the distance between 1,000 and 10,000. This will transform the distribution of values from having an approximately log-normal appearance to an approximately normal appearance.

A *log odds ratio transform* is applied for percentage variables. It transforms variables from a domain of [0, 100] to a range of $(-\infty, \infty)$. The log odds ratio transform is as follows for a variable bounded between 0 and 100.

$$x' = \log\left(\frac{x}{100 - x}\right)$$

Missing Values

Mean-imputation is used on features to fill in missing values. A total of 10 values out of 250 total values were missing and then imputed.