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5th Annual

FOCUS ON EYE HEALTH NATIONAL SUMMIT

VISION TO ACTION: Collaborating Around a National Strategy

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National Vision & Eye Health Surveillance System

Jinan Saaddine
MD, MPH, CDC Vision Health Initiative

David Rein
PhD, NORC at the University of Chicago

John Wittenborn
NORC at the University of Chicago

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

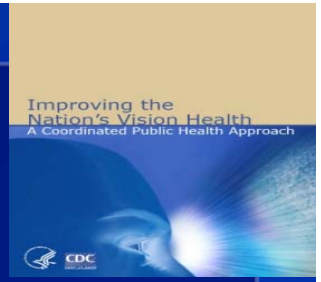
National Vision and Eye Health Surveillance

Jinan B. Saaddine MD, MPH

Centers for Disease Control and Prevention

Vision Health Initiative

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the CDC.



Disclaimer

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Financial Disclosure

I have no relevant commercial entity relationships or financial interests to disclose

Jinan B. Saaddine MD, MPH

CDC

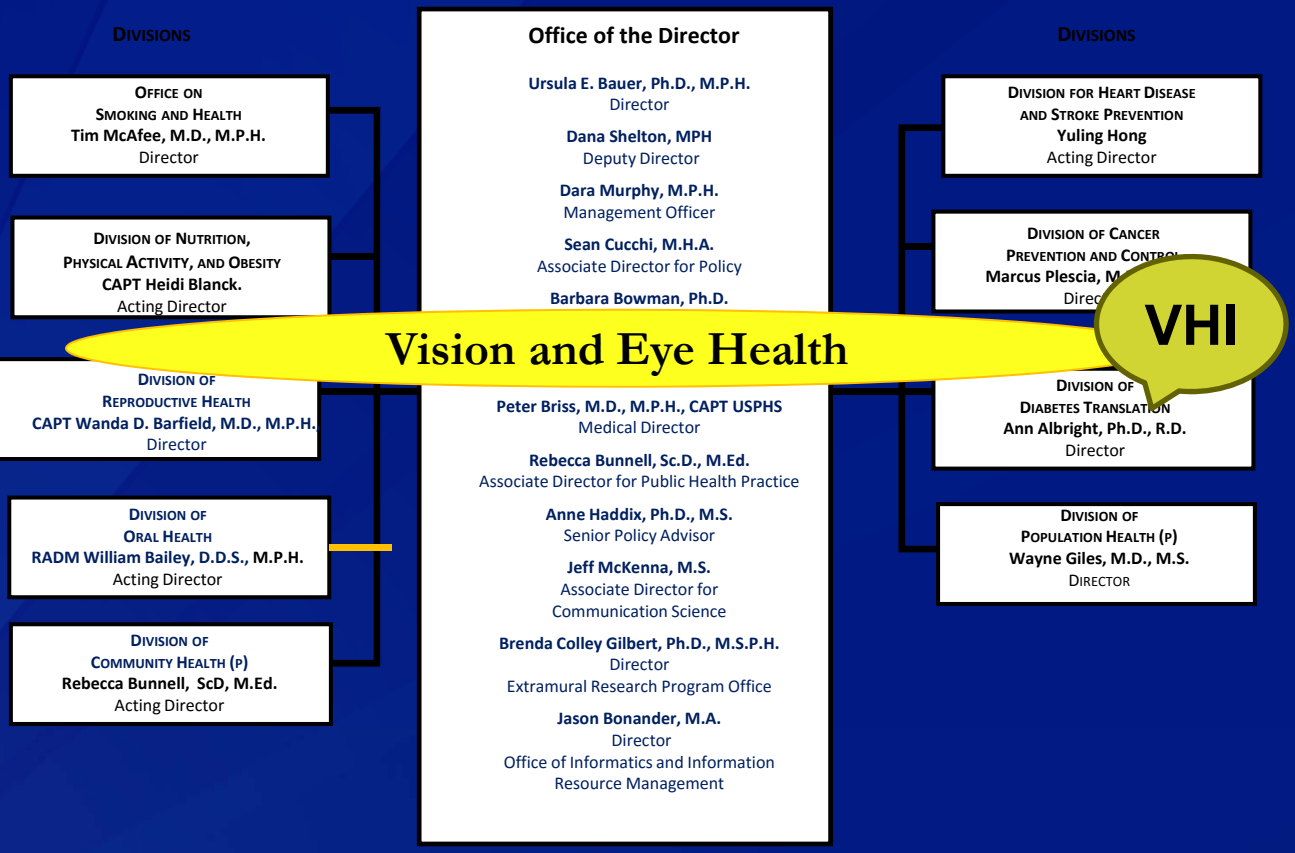
Overview

- Who we are and what we do
- Surveillance and the changing landscape
- National vision and eye health surveillance system project

Centers for Disease Control and Prevention

Vision Health Initiative

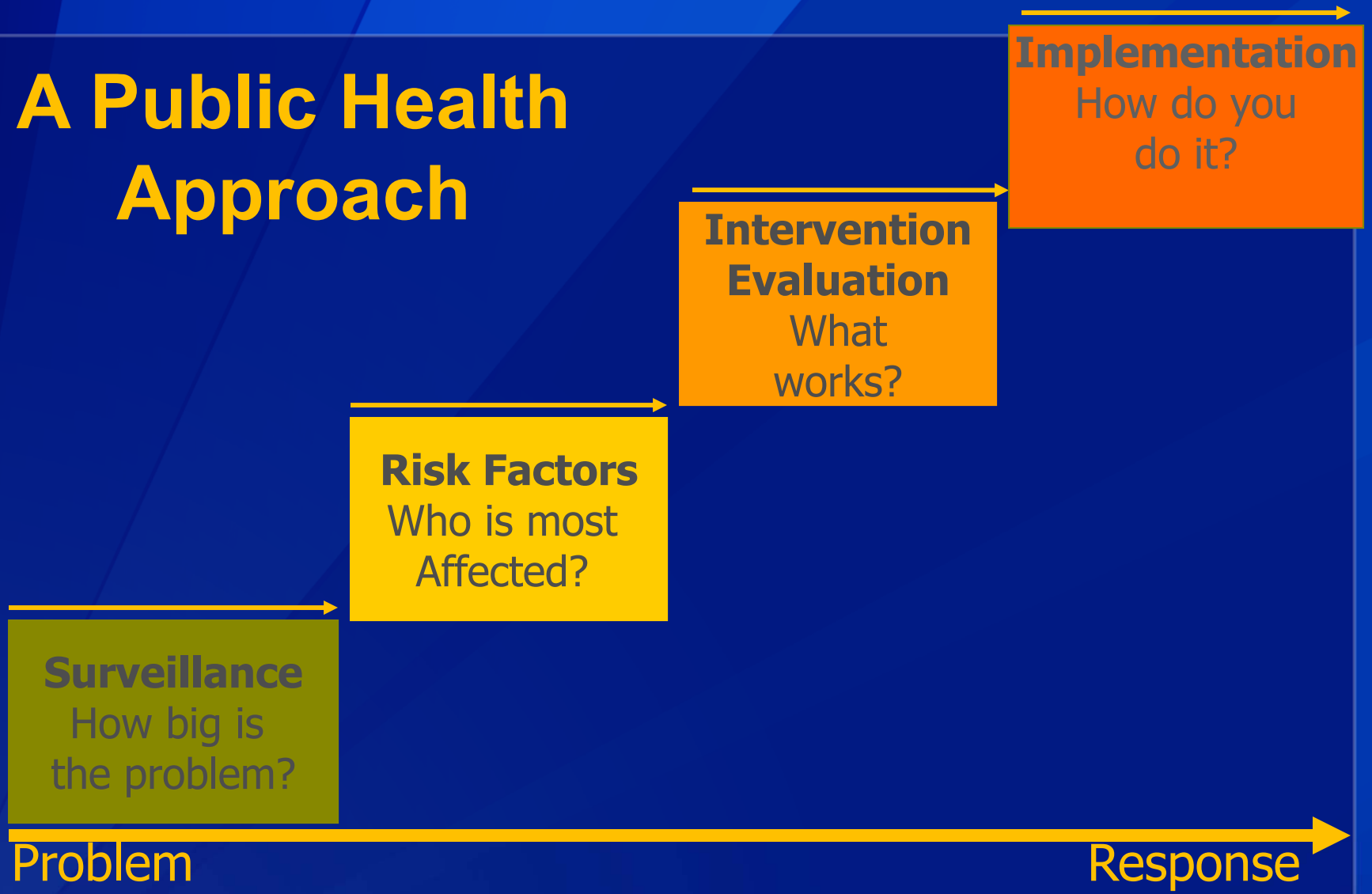
National Center for Chronic Disease Prevention and Health promotion



Mission

VHI's mission is to enhance public health surveillance and research that provides the basis for effective public health policy decision to reduce the burden of vision loss.

A Public Health Approach



Public Health Surveillance

is the ongoing, systematic
collection,
analysis,
interpretation,
and dissemination
of data …for use in public health action

CDC, MMWR, July 27, 2001/50(RR13);1-35.

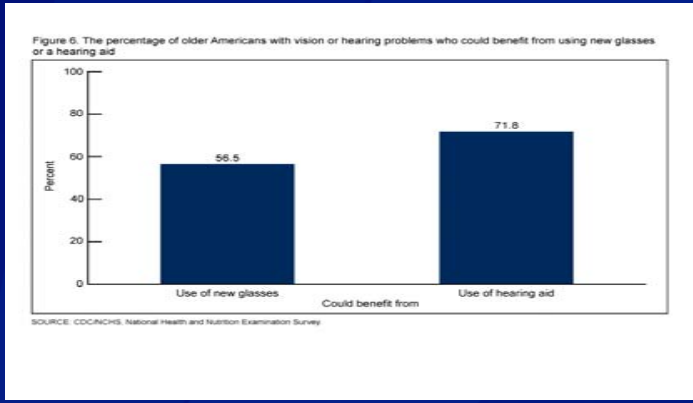
Why
Public Health Surveillance

- Measure the burden and identify high risk groups
- Identify vision/eye health disparity
- Prioritize programs
- Evaluate progress

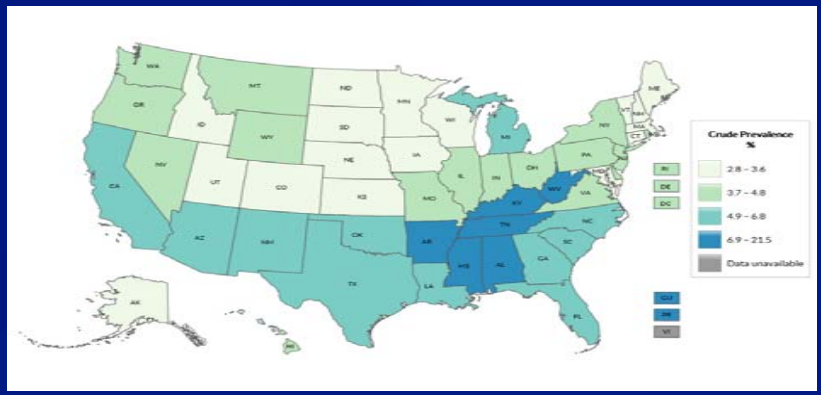
The Changing Landscape of Surveillance

National to Local

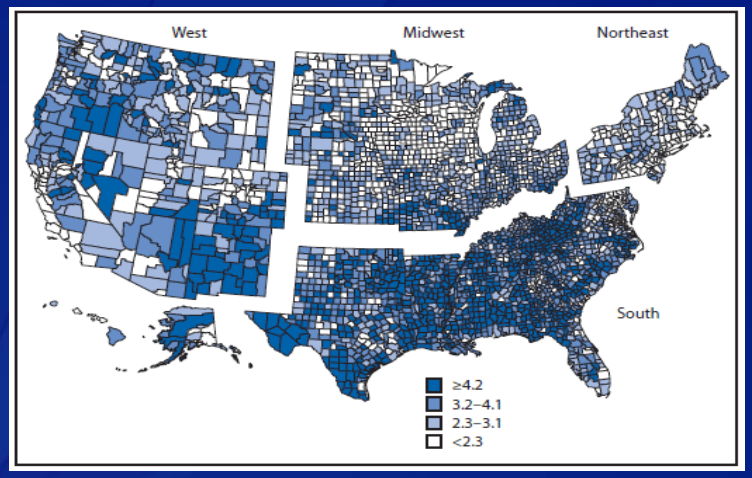
Individual level characteristics



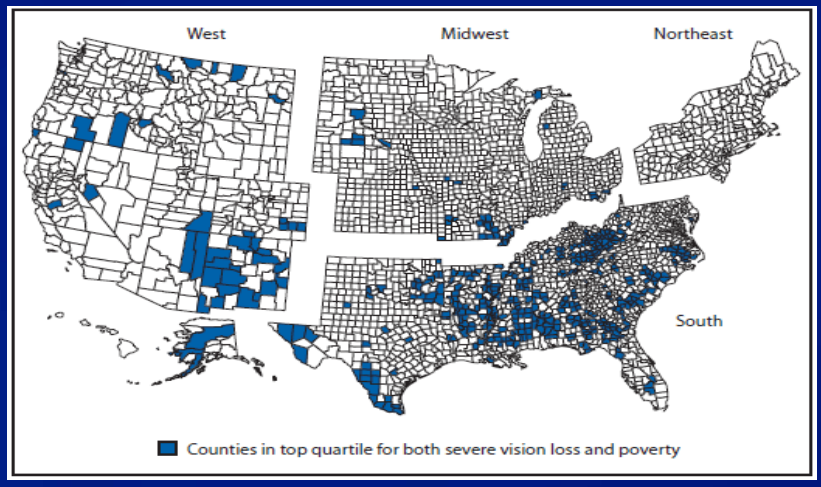
State specific estimates



County estimates



Contextual Factors



The growing field of Electronic Health Records

How Big Data Informs Us About Cataract Surgery: The LXXII Edward Jackson Memorial Lecture

ANNE LOUISE COLEMAN

EDITORIAL

Electronic Health Records and Ophthalmology
A Work in Progress

Michael V. Boland, MD, PhD

Major review

Big data and ophthalmic research

Antony Clark, PhD, FRANZCO[a,b,], Jonathon Q. Ng, PhD, FRANZCO[a,b], Nigel Morlet, FRACS, FRANZCO[a,b], James B. Semmens, MSc, PhD[a,b]*

[a] *Centre for Population Health Research, Faculty of Health Sciences, Curtin University, Bentley, Western Australia*

CrossMark

Survey of Ophthalmology
International Review Journal

Integration and consolidation

- **Amount of available data has increased exponentially**
  - Electronic health records
  - Health insurance claims
  - Smart phone health application
- **Advances in computing power and analytical methodologies**
- **Data can be accessed in timely and cost-efficient manner**

Antony Clark & al. Big Data and Ophthalmic Research. Survey of Ophth 2016

Applications of Ophthalmic Big Data

Disease surveillance

Disease etiology

Health service research

Pharmaco-epidemiology

Health outcomes

Heath economics

Antony Clark & al. Big Data and Ophthalmic Research. Survey of Ophth 2016

The Foundational Stages

Establish Vision and Eye Health Surveillance System (Cooperative Agreement)

Cooperative agreements require substantive agency involvement in the project, which means the program staff will

- assist,
- guide,
- coordinate, or
- participate in project activities.

Project objectives

- Identify, evaluate, and compile existing data sources on vision and eye health
- Create case definitions and analytic algorithms to apply these definitions in a consistent and uniform manner across data sources
- Develop appropriate methodologies to analyze data and provide estimates
- Develop a dissemination plan

Who will use the data

- Researchers and scientists
- Public health departments
- Community and local public health administrators
- Vision community
- Change agents

Thanks

http://www.cdc.gov/visionhealth/

Jsaaddine@CDC.gov

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NORC at the UNIVERSITY of CHICAGO

NATIONAL VISION & EYE HEALTH SURVEILLANCE SYSTEM

ESTABLISHING A VISION AND EYE HEALTH SURVEILLANCE SYSTEM FOR THE NATION

Project Partners

- NORC at the University of Chicago
- University of Wisconsin
- VSP
- Prevent Blindness
- HIV Counts

In process

- American Academy of Ophthalmology

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Project Aims

1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.
    1. Diagnosed prevalence of low vision, blindness, and selected eye disorders
    2. Utilization of selected health services by condition and subpopulation
    3. Model-based estimates of overall (diagnosed and undiagnosed) prevalence of low vision, blindness, and selected eye disorders

Project Aims (cont.)

1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.
2. To support and enhance future vision research
    1. Creation and testing of visual health indicators for application across sources of information.
    2. Creation of public-domain resources for use by other research teams.

Project Aims (cont.)

1. Create new visual health epidemiological and service utilization estimates for the nation and specific subpopulations.
2. To support and enhance future vision research
3. To disseminate estimates and methods to the public
    1. Publications, presentations, and reports
    2. Public use data and/or interactive web-based analysis
    3. Public outreach

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Scope of the Project

- Build a sustainable system
  - What can we do with available resources
- Leverage and support existing data sources
  - What can we measure in existing and new data sources
- Build the system over time
  - Increase measures and complexity over time

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System Development

- Define initial system scope and objectives
- Identify potential data sources
- Identify and define measurement indicators
- Acquire data sources for acquisition and public sources for analysis

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System Development

- Apply common measurement indicators across data sources to generate single source estimates
- Disseminate information
  - Web-based tables, maps, and figures
  - Conference presentations
  - Publications
- Summarize estimates across sources
  - Meta-analysis
  - Model-based regional estimates

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ANALYTIC PLAN

DEVELOPING THE VISION AND EYE HEALTH SURVEILLANCE SYSTEM

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Project Overview

- Engagement and oversight
- Data selection
- Indicator development
- Analysis
  - Single source estimates
  - Combined estimates
- Dissemination and outreach

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Engagement and Oversight

- Establishment of an advisory panel
  - Paul Lee (chair)
  - David Friedman
  - Mary Frances Cotch
  - Charlotte Joslin
  - Abraham Flaxman
- Stakeholder engagement

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Data Selection

- Review multiple data sources in 4 categories
  - National surveys
  - Administrative claims databases
  - EHR databases and Registries
  - Population-based studies and meta-analyses

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National Surveys

- Leverage and support existing vision and eye health content in federal surveys
  - 16 surveys include such information
  - Important differences
    - Measures – questions are not harmonized
    - Methodology – self-report vs examination
    - Sampling frame

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Administrative Claims Data

- Diagnosed prevalence and utilization
- Need multiple sources to cover the full market
  - Medicare
    - all medical, limited vision correction, age 65+
  - Medicaid
    - all medical, vision correction by state, low income
  - Private medical insurance
    - all medical, limited vision correction, based on insurer market
  - Vision insurance
    - vision correction, based on insurer market
  - Other government insurance

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EHR & Registries

- IRIS Registry – American Academy of Ophthalmology's Intelligent Research in Sight
  - Largest source of vision and eye care data
- MORE – American Optometric Association's Measures and Outcomes Registry for Eyecare
  - In development, important measures to be collected in 2017
- Commercial EMR databases

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Population-based Studies

- Epidemiological studies of defined populations
- A primary source for prevalence
  - Including undiagnosed and uninsured, underinsured
- Data reporting
  - Individual studies such as Beaver Dam or LALES
  - Meta-analyses such as EDPRG and Vision Problems in the US

Indicator Development

- Indicators are the measures that we will capture in each data source
  - Conditions
    - Eye disorders (diagnosis codes)
    - Low vision (acuity, self-reported low vision)
  - Utilization
    - Examinations
    - Treatment
  - Attributable outcomes

Analysis Steps

1. Single-source estimates
   - Estimate primary indicator measures in each individual data set
   - Summary measures and frequency counts
2. Combined estimates
   - After completing single-source estimates
   - Linking and harmonization where possible
   - Statistical integration models

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Data Integration

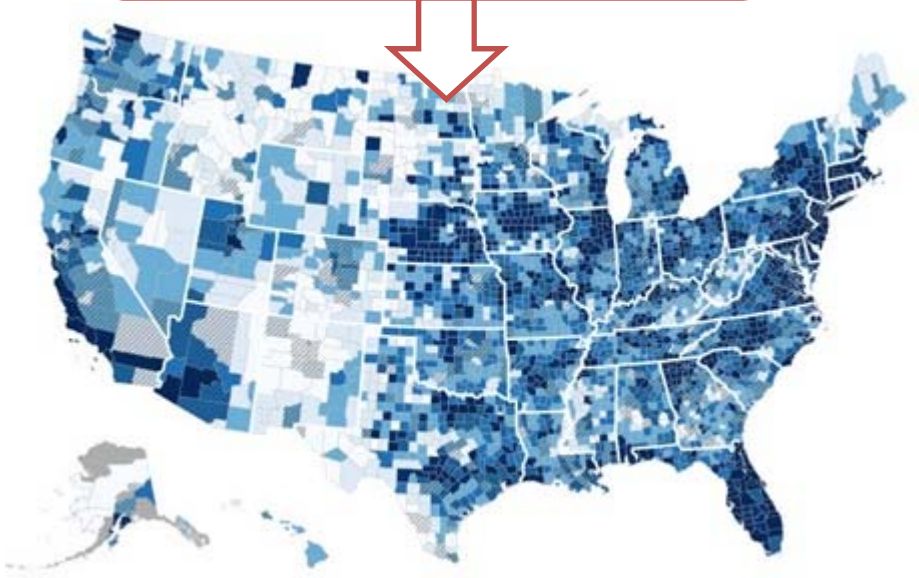
Population-based studies

Claims

Surveys

EMR/ Registries

- Harmonization
- Meta-analysis
- Model-based surveillance



Dissemination

- Prevent Blindness
  - Communications
  - Public health website
- Develop a CDC Vision Surveillance website
  - Reports
  - Summary result tables
  - Interactive figures & maps
  - Downloadable tables
- Publications & Presentations

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Questions & Comments?

NATIONAL VISION & EYE HEALTH SURVEILLANCE SYSTEM


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