The Scope of Vision and Eye Health – Guidance from Surveillance

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Prevent Blindness®
Bringing Americans to Eye Care

Focus on Eye Health
National Summit

A Lifetime of Vision
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THE VISION AND EYE HEALTH SURVEILLANCE SYSTEM

A national data system for vision and eye health

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Presenter: David Rein, PhD

Vision and Eye Health Surveillance System (VEHSS)

- 4-year cooperative agreement awarded in 2015 with 6 primary tasks
  - Stakeholder and Expert Involvement
  - Data Identification and Collection
  - Data Management
  - Data Analysis
  - Engagement and Dissemination
- Currently in year 3.75

Engagement and Dissemination

- Convened an expert panel and partnered with 9 leading vision and eye health organizations to provide review and guidance on major project decisions
  - Creation of indicators
  - Selection of data sources
  - Analysis plans
- Conference presentations, special sessions and professional outreach
- VEHSS website
  - https://www.cdc.gov/visionhealth/vehss

Data Identification

- Abstracted information from potential data sources
  - 16 National Surveys
  - 5 Administrative claims databases
  - 2 Electronic health records registries
  - 100 Published population based studies
- Prepared summary reports for review by expert panelists, CDC, and VEHSS partner group
  - Prioritized data for inclusion in VEHSS

Data Management

- Current Data in VEHSS

Survey Data	Claims and EHR Data
American Community Survey (ACS)	IRIS Registry
Behavioral Risk Factors Surveillance System (BRFSS)	Medicare 100% Fee-For-Service RIF
National Health Interview Survey (NHIS)	VSP Global managed vision plan insurance
National Health and Nutrition Examination Survey (NHANES)	Medicaid MAX
National Survey of Children's Health (NSCH).	MarketScan private commercial insurance

Data Management

- Additional Data

Other Data Used by VEHSS	Pending Data Sources
Abstracted data from published examination studies	Military Health System
AmeriSpeak Pilot Survey	AOA MORE Optometry Registry
	MarketScan Medicare Supplemental

Developing Data Indicators

- Worked with CDC, expert panel and partners to identify surveillance outcomes (case definitions)
- Developed case definition categories and data indicators
  - Standardized definitions and methods to measure and organize outcomes across data sources by the underlying concept of measure
- VEHSS tracks over 200 indicators across
  - Eye health conditions
  - Visual function
  - Service utilization
  - Payments

Developing Data Indicators

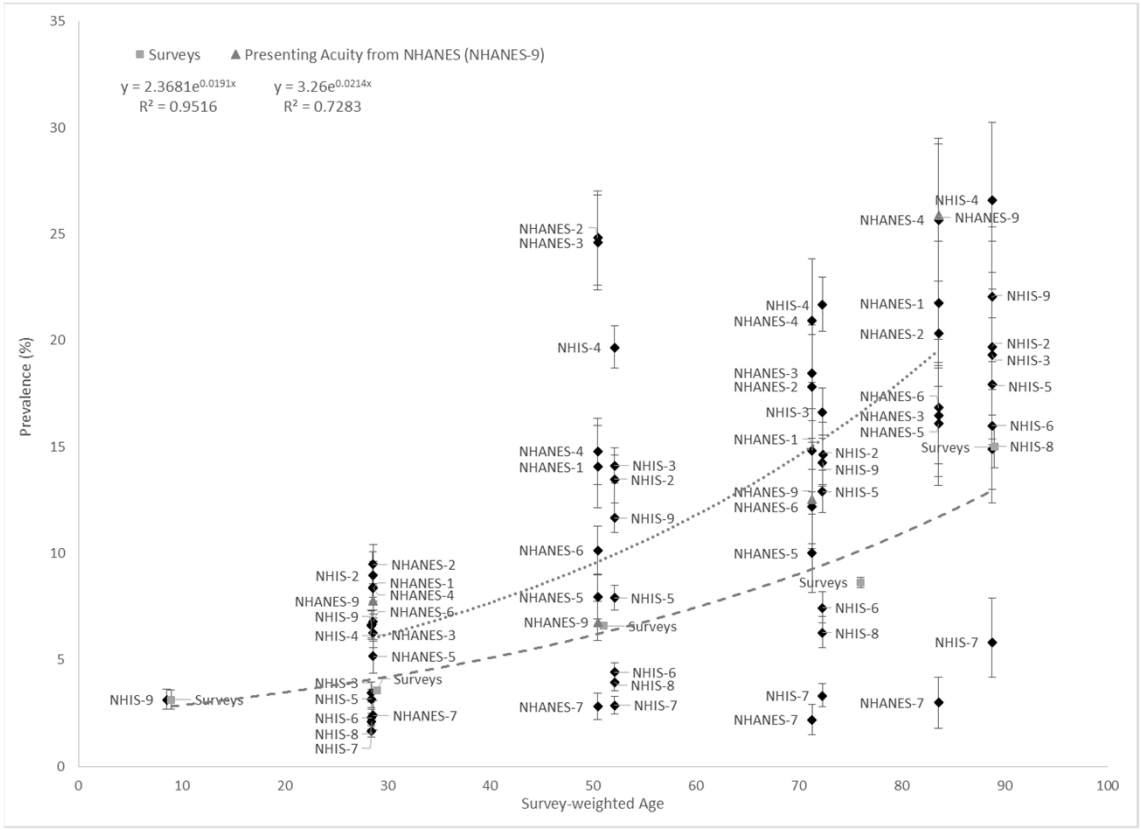
VEHSS tracks over 200 specific indicators across 4 topic areas:

- Eye health conditions
  - Diagnosis code categories, self-reported diagnoses
- Visual function
  - Measured visual acuity, self-assessed vision and functional limitations
- Service utilization
  - Eye exams, medical treatments, low vision services, vision correction
- Insurance and costs
  - Medical payments, insurance coverage

Data Analysis

- Single Source Prevalence Estimates
  - Consistently measured (same age*sex*race/ethnicity*risk factor categories) raw prevalence estimates across all data sets at the national and state level
  - Potentially 4,346,496 different estimates per indicator per data source
  - Implementation of NCHS suppression rules to protect patient privacy
  - Downloadable public use files
- Multi-source prevalence estimates
  - Meta-regression combination of population-based study data, NHANES, and ACS estimates to create state-level updates of the prevalence of VI and B in 2017.

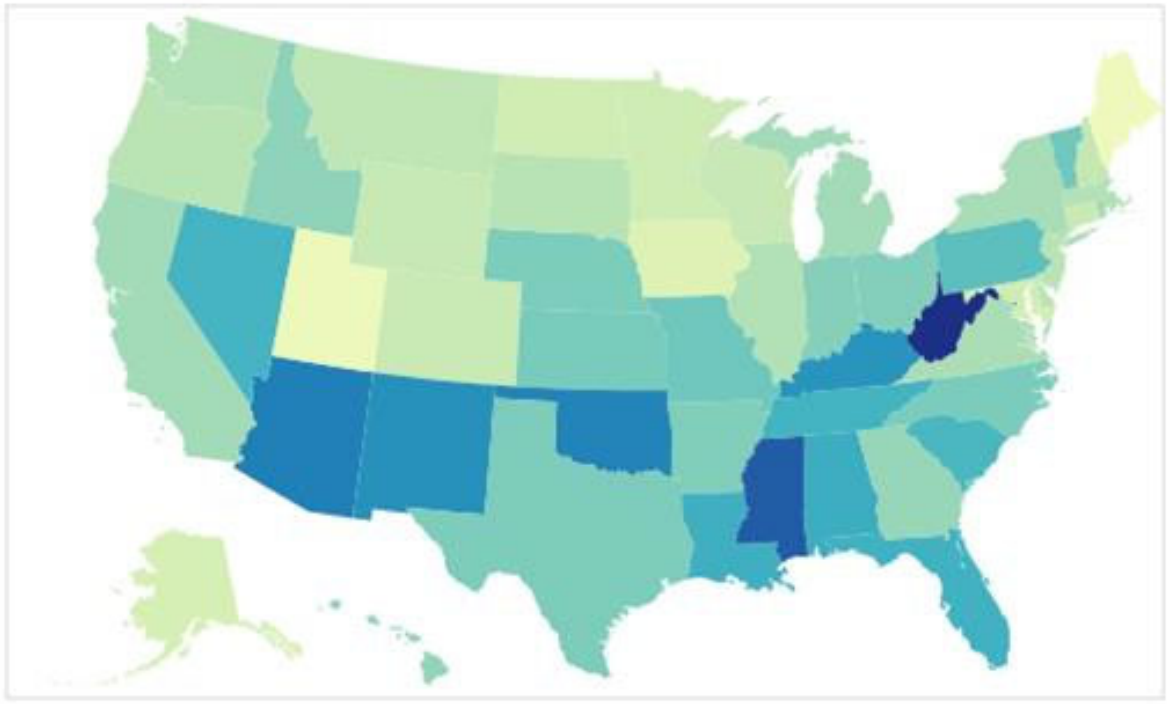
Data Analysis Example: Survey Indicators of Visual Impairment



Integrated Prevalence Estimates

- Creating composite estimates of the prevalence of vision loss and major eye disorders at the state level
- Integrative metaregression model
  - Leverages different strengths from different data sources to produce new composite estimates of national and state prevalence
  - Published examination studies and NHANES exam data
  - Variation in indicators from other data sources
    - Demographic variation
    - Geographic variation
    - Missing populations (oldest age groups, group quarters including nursing homes)
    - Time variation

Data Analysis Example: State Prevalence of Low Vision and Blindness



Engagement and Dissemination

- Speaking engagements (Focus on Eye Health Summit)
- Publications in process
  - Harmonization and prevalence of visual health indicators across multiple surveys
  - Identification and selection of data sources and indicators in VEHSS
  - A review of the published literature on the prevalence of vision loss and major eye disorders
  - Innovative indicators and technologies to collect visual health data for surveillance
  - Analysis of the IRIS® Registry for VEHSS
  - Estimating national and state level prevalence of visual impairment and blindness using multiple VEHSS datasets
  - Estimating national and state level prevalence of major eye diseases using multiple VEHSS datasets

Next Steps in Advancing Vision Surveillance

- Enhancing VEHSS– FOA under consideration at CDC
  - Indicator validation and vision assessment pilot study
  - County level estimates for at least some indicators
  - Assessing mobile technologies for measuring low vision and blindness
- Primary data collection
  - Next generation NHANES to provide updated primary information for use in vision surveillance

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