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EXHALE Strategies and Environmental Health in Nebraska Asthma Management

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Children’s Nebraska/University of Nebraska Medical Center

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Disclosures

- Marketing Advisory Board for Enzyvant
- Primary Investigator for a clinical research trial site with AstraZeneca

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Objectives

Review	Review the history behind the development of national strategies to improve asthma outcomes
Analyze	Analyze the role of environmental and population health in asthma control
Discuss	Discuss an overview of the EXHALE strategies
Relate	Relate EXHALE strategies to the asthma burden and environmental strategies in Nebraska

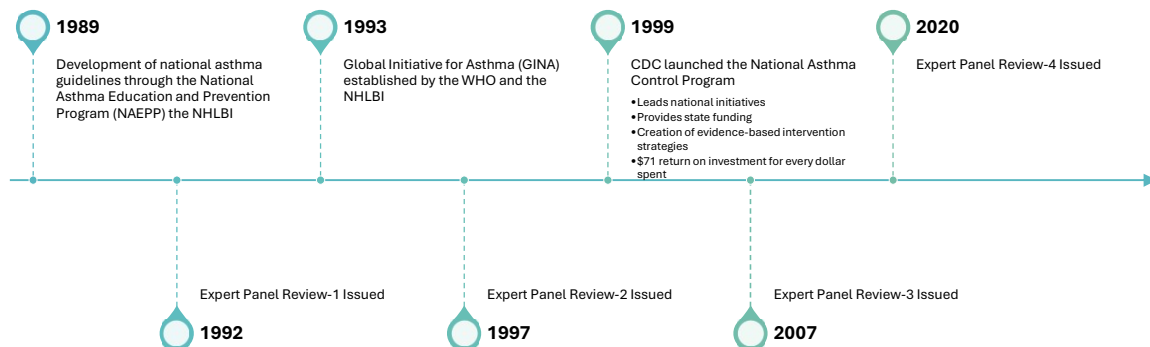
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History and Current Asthma Burden

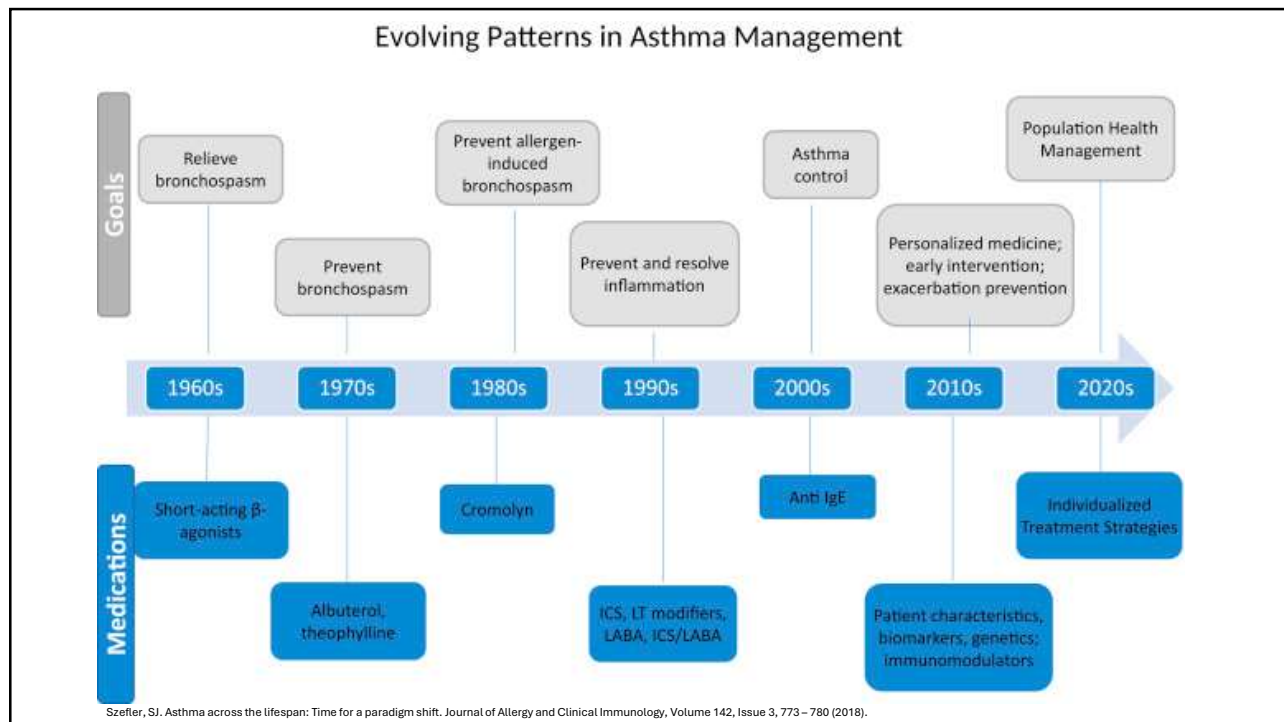
- Increased prevalence since 1980 with rapid growth 1980-1996
- Current prevalence: Approximately 25 million
 - 20% pediatrics, 80% adult
 - Higher proportion of male children and female adults
 - Increased prevalence with lower socioeconomic status
 - Increased prevalence in black non-Hispanic and American Indian/Alaskan Natives
- Economic impact: Estimated at \$56 billion
 - Including direct and indirect costs
 - Nearly 10 million people with asthma attacks annually
- Mortality: 3500 deaths in 2021

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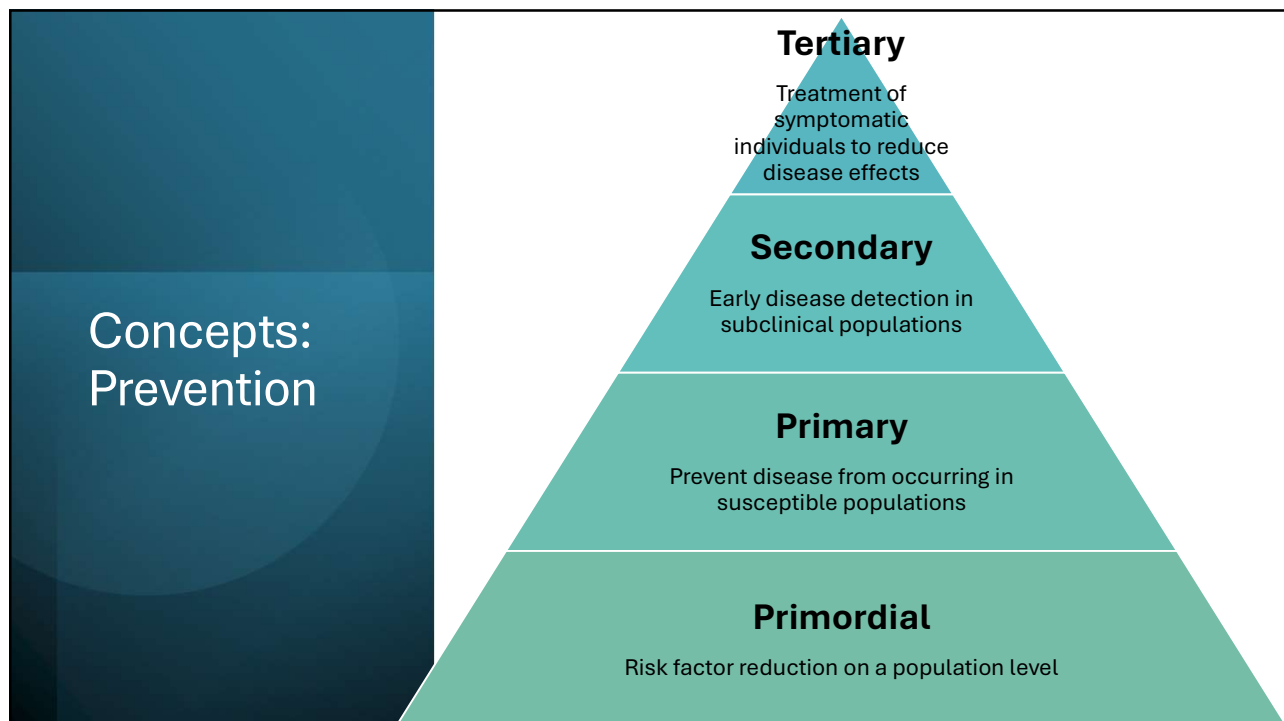
Program Development



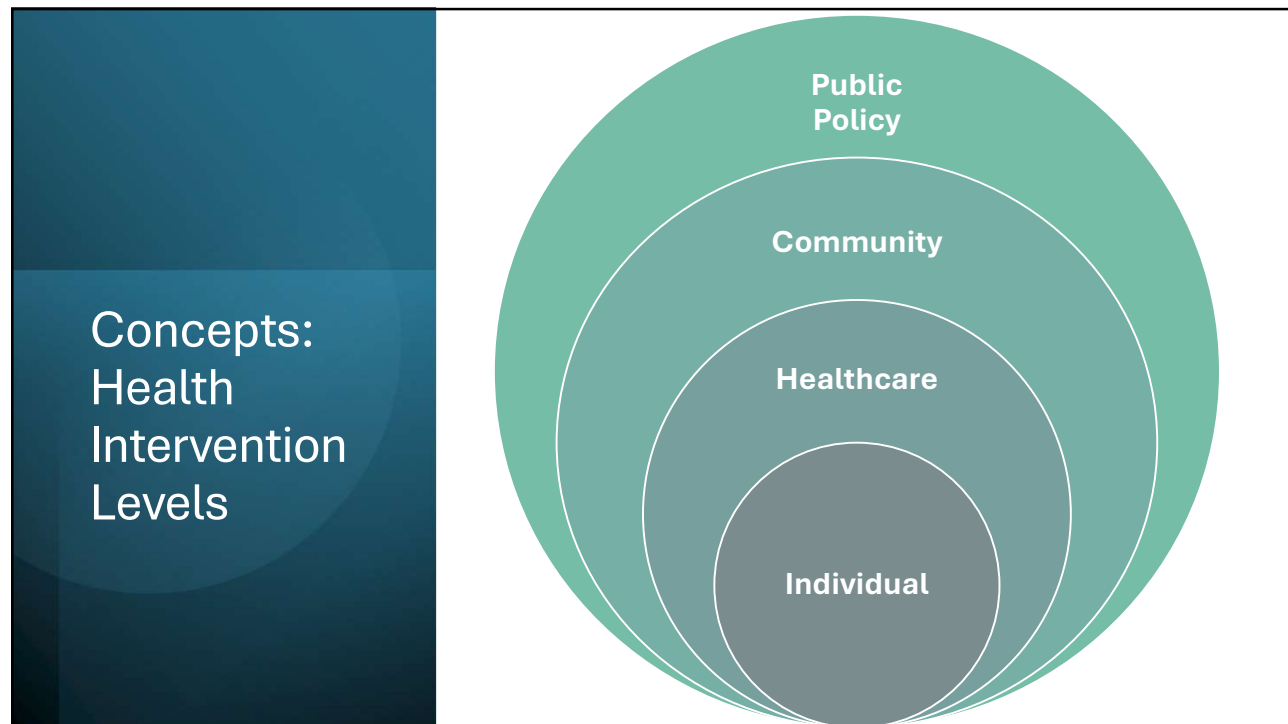
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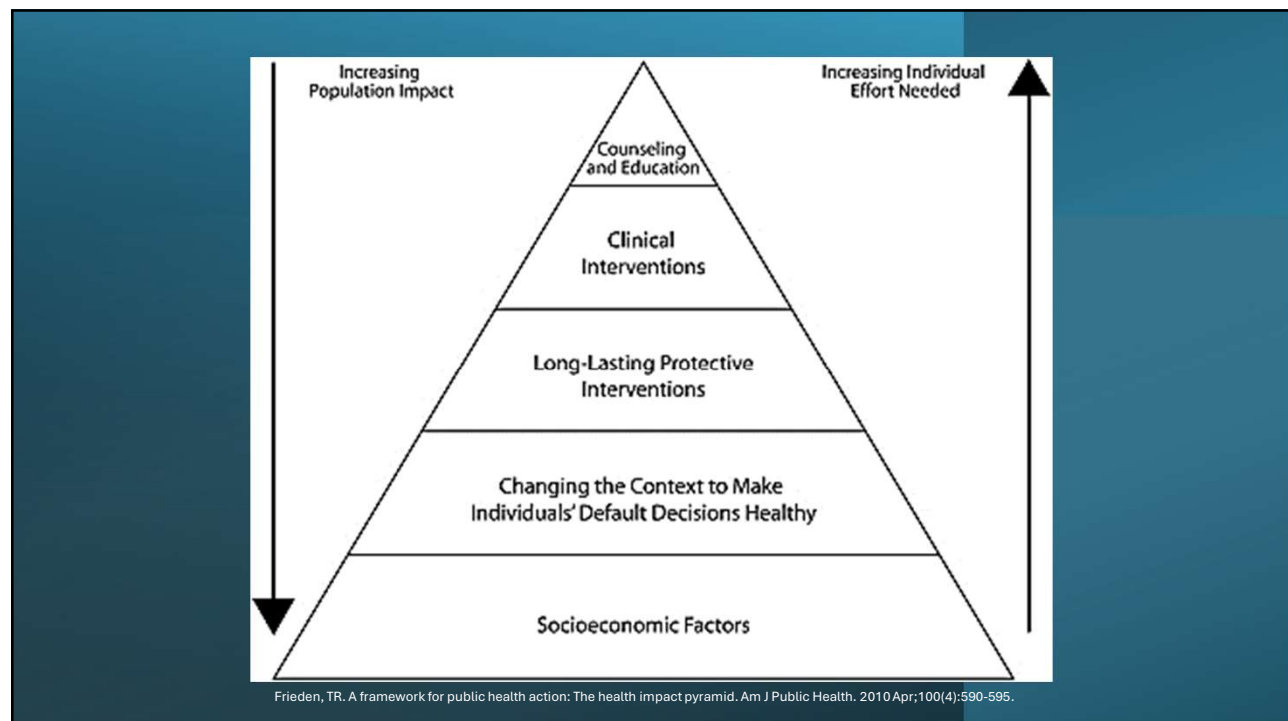
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Education on asthma self-management

X-tinguishing smoking and exposure to secondhand smoke

Home visits for trigger reduction and asthma self-management education

Achievement of guidelines-based medical management

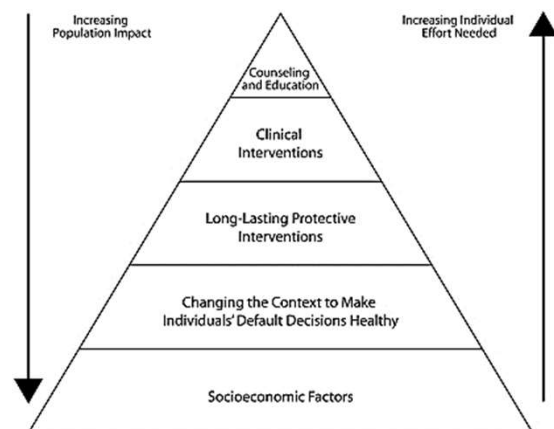
Linkages and coordination of care across settings

Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

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Education on Asthma Self-Management

- Understanding role of medications
- Written action plans
- Providing asthma self-management training
 - Provider and patient resources
 - Online options through ALA, AAE, and AAFA
- Group and community classes



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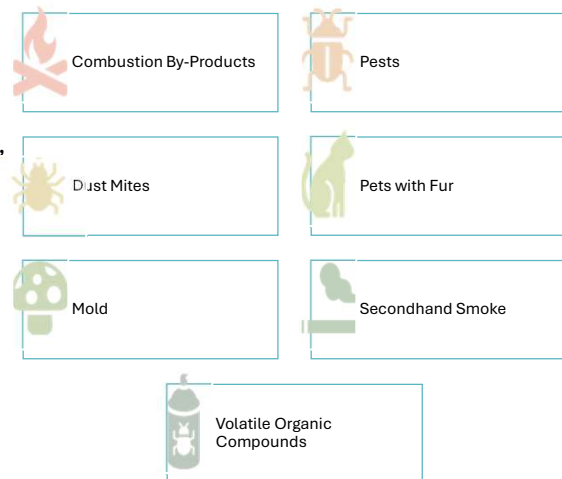
X-tinguishing Smoke Exposure

- Screening for environmental tobacco smoke use and exposure including cigarette, e-cigarettes, and vaping
- Guidelines-based smoking cessation counseling
 - Assess current use and readiness for change
 - Education on importance of cessation
 - Combination of behavioral interventions and pharmacotherapy
- Referral to smoking cessation programs: Nebraska Tobacco Quitline
- Smokefree policies: 2008 Nebraska Clean Indoor Air Act
 - 2020: Vaping/E-cigarettes added

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Home Visits

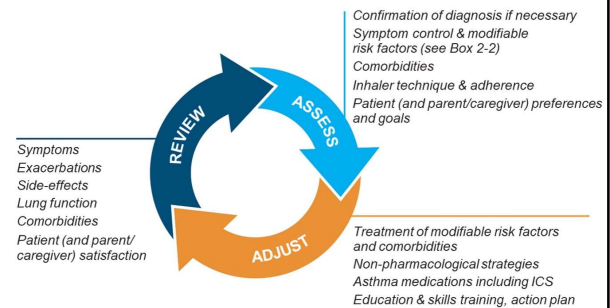
- Home assessments for asthma triggers
 - Checklist developed by the CDC, EPA, HUD, and DHHS
 - Multiple mitigation strategy based on triggers/allergy sensitization
- Opportunity for asthma self-management education
- Resources
 - Home health agencies
 - Healthy Housing Omaha



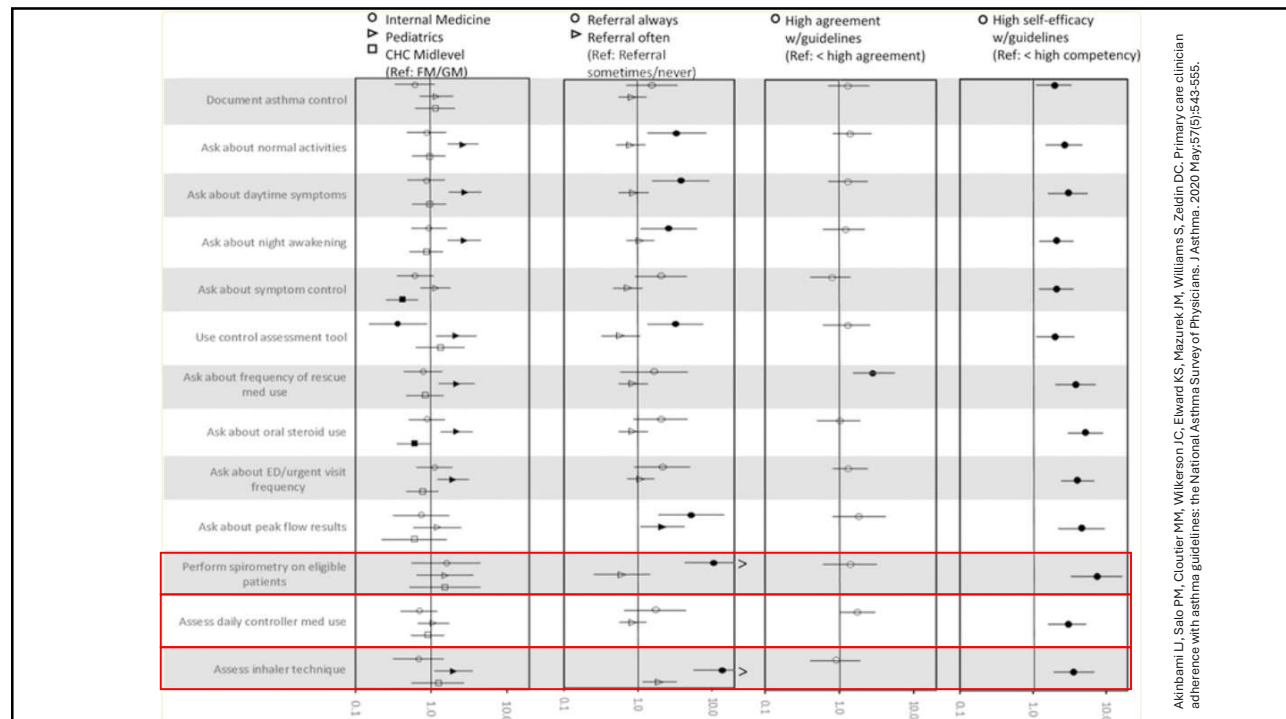
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Achievement of Guidelines-Based Asthma Management

- Guidelines resources
 - NHLBI NAEPP Expert Panel Review
 - GINA
 - Main report
 - Pocket guides
- Process of treatment adjustment based on stepwise therapy



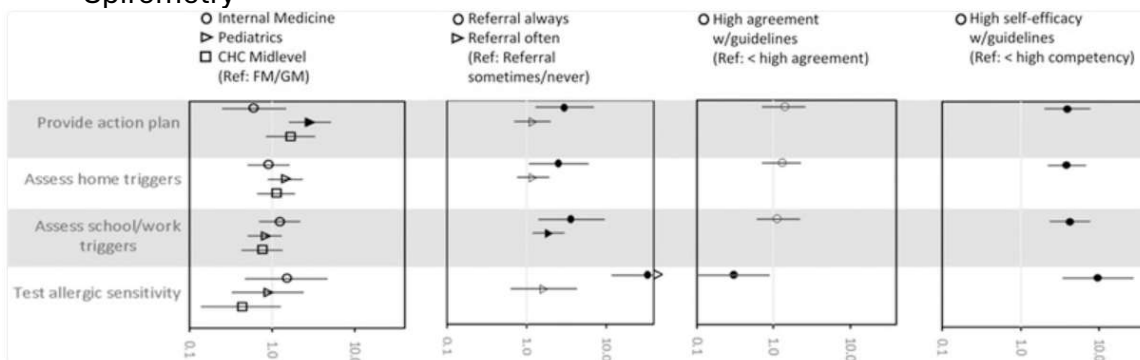
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Achievement of Guidelines-Based Asthma Management

- Addressing the largest gaps in management
 - Written action plans
 - **Validating inhaler technique and usage**
 - Spirometry

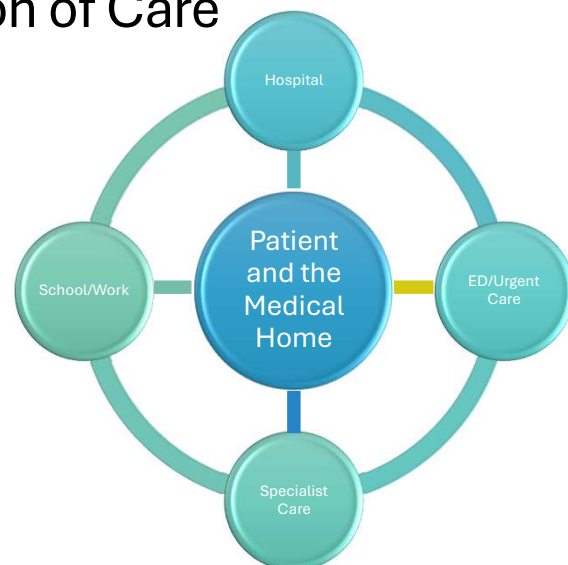


Akinbami LJ et al. Primary care clinician adherence with asthma guidelines: the National Asthma Survey of Physicians. J Asthma. 2020 May;57(5):543-555.

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Linkages and Coordination of Care

- Navigation of the health care system
 - Medical home
 - Case management
 - Community health workers
- Communication between institutions
 - Nebraska Asthma Coalition
 - CyncHealth
 - Schools and Rule 59
- Access to resources
 - Coupon programs
 - Transportation
 - Mailed prescriptions



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Environmental Policies and Trigger Reduction



INDOOR



OUTDOOR

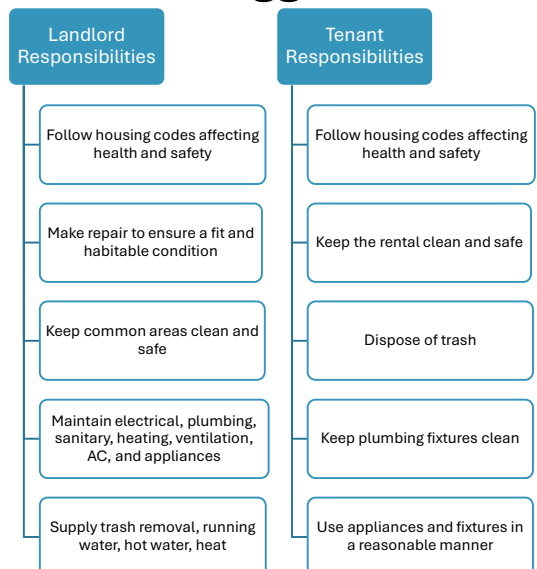


OCCUPATIONAL

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Indoor Environmental Policies and Trigger Reduction

- Uniform Residential Landlord and Tenant Act
 - Shared responsibility for pests
 - Tenant responsibility for allergens and VOC's
 - Landlord responsibility for sources of mold and ventilation of combustion
- Home assessments
 - Environmental triggers for asthma
 - Radon
 - Lead
- Smokefree policies



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Outdoor Environmental Policies and Trigger Reduction

• Sources

Ozone	Particulate matter	NO ₂	SO ₂	CO	Lead
<ul style="list-style-type: none"> VOC's: solvents, paints, cars, refineries NO: fossil fuels Sunlight/heat 	<ul style="list-style-type: none"> PM10: dust, pollen, mold PM2.5: combustion particles, organic compounds 	<ul style="list-style-type: none"> Vehicle emissions Industrial processes 	<ul style="list-style-type: none"> Fossil fuel use in power plants and industry Locomotives Ships Volcanoes 	<ul style="list-style-type: none"> Fossil fuel combustion Gas stoves and heaters 	<ul style="list-style-type: none"> Ore/metal processing Leaded aviation fuel

• Existing policies

- Clean Air Act of 1970, revised 1990
- Diesel Emissions Reduction Act
- Car emissions standards

• Monitoring: Air Quality Index (www.airnow.gov)

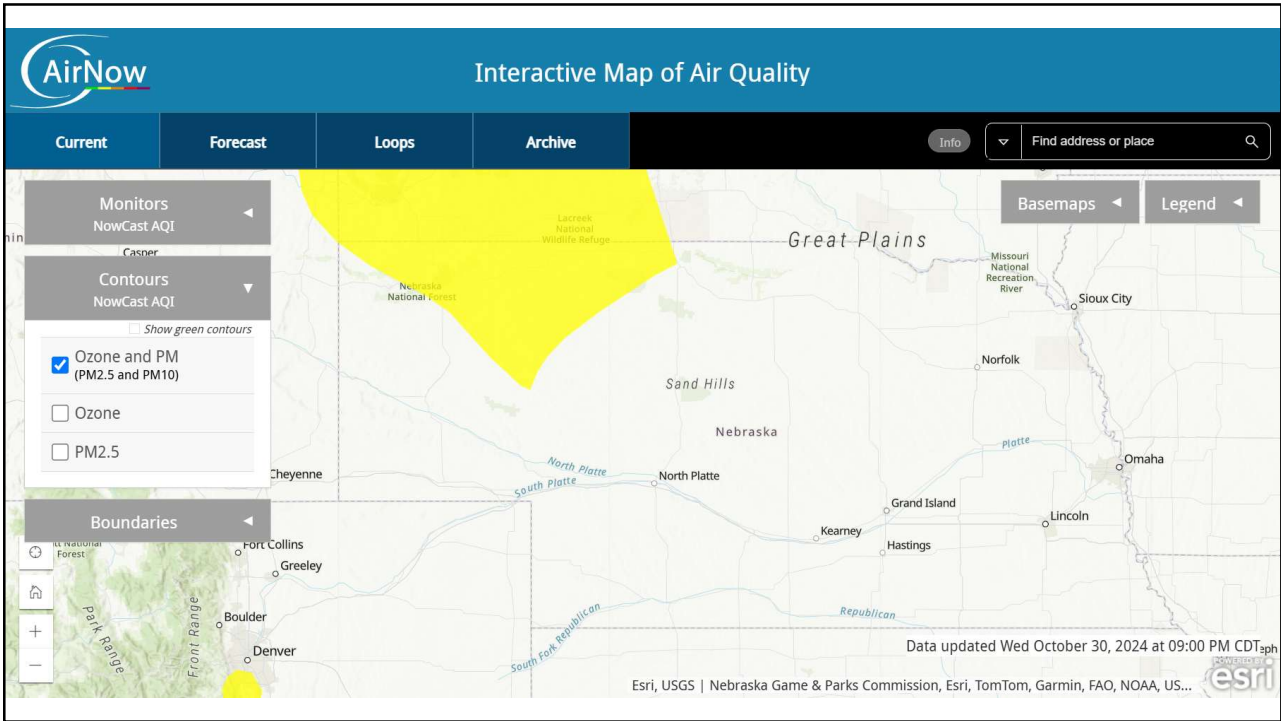
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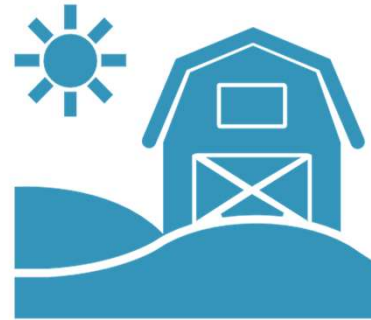
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Occupational Environmental Policies and Trigger Reduction

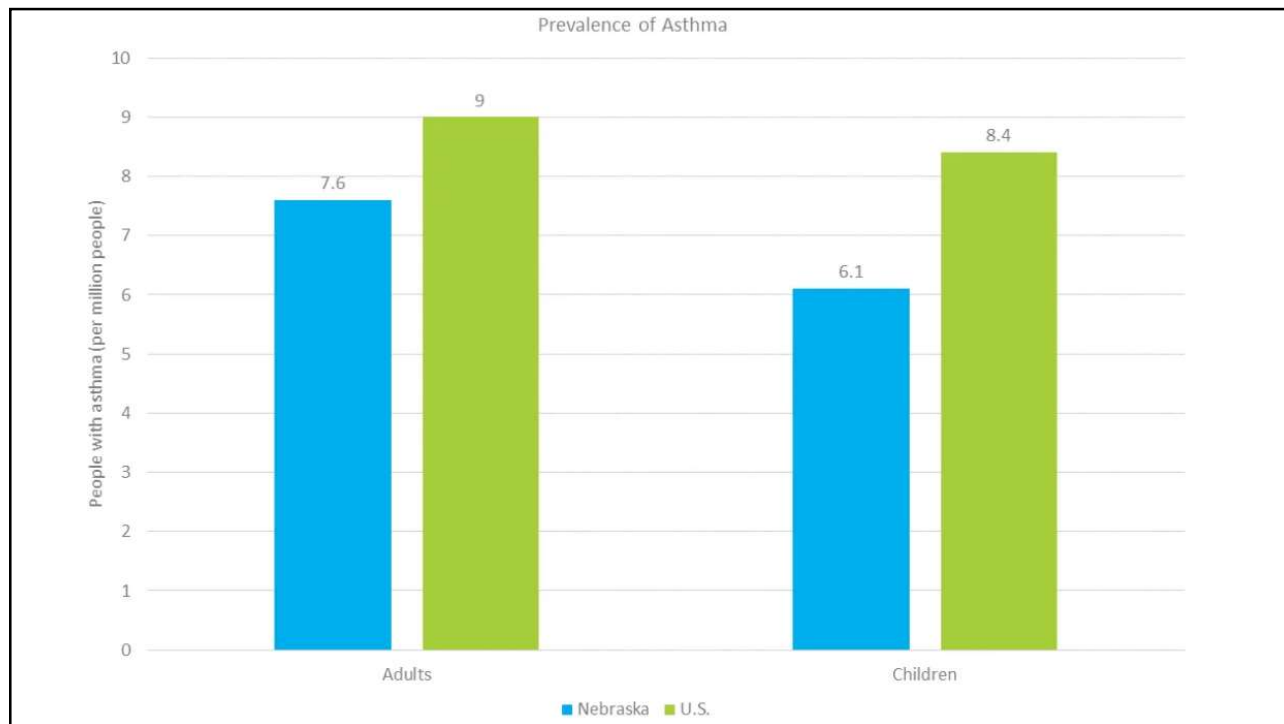
- Sources
 - Farming/Agriculture: equipment emissions, burning, grain dust, unpaved roads
 - Animal Feeding Operations: animal waste
 - Manufacturing
- Monitoring and emissions testing required
- Protective measures
 - Ventilation
 - NIOSH-approved respirators
 - Correct grain storage



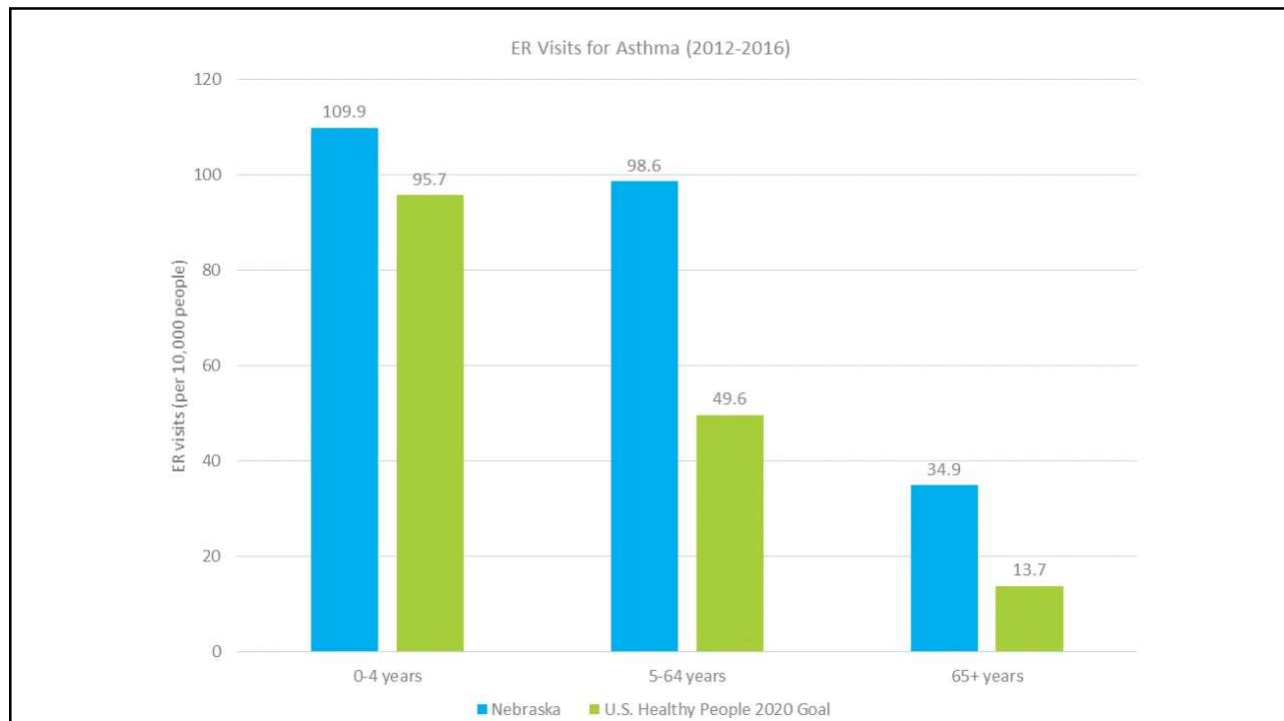
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Asthma in Nebraska

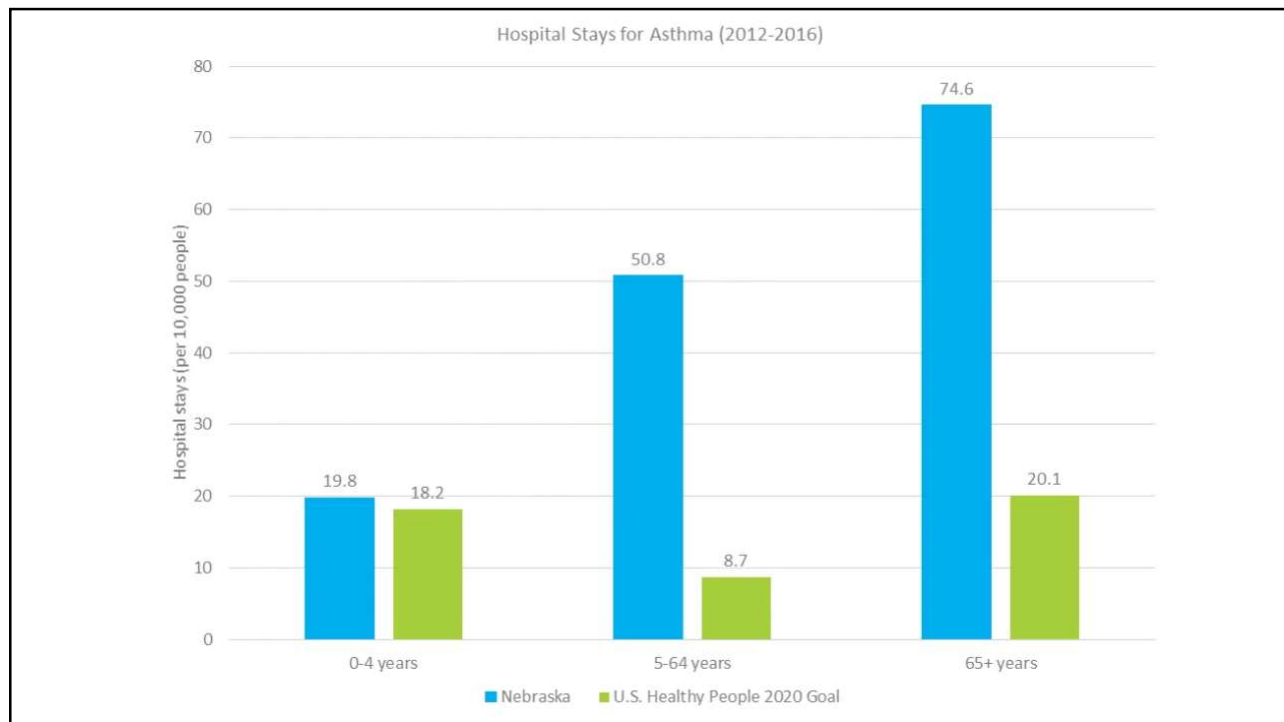
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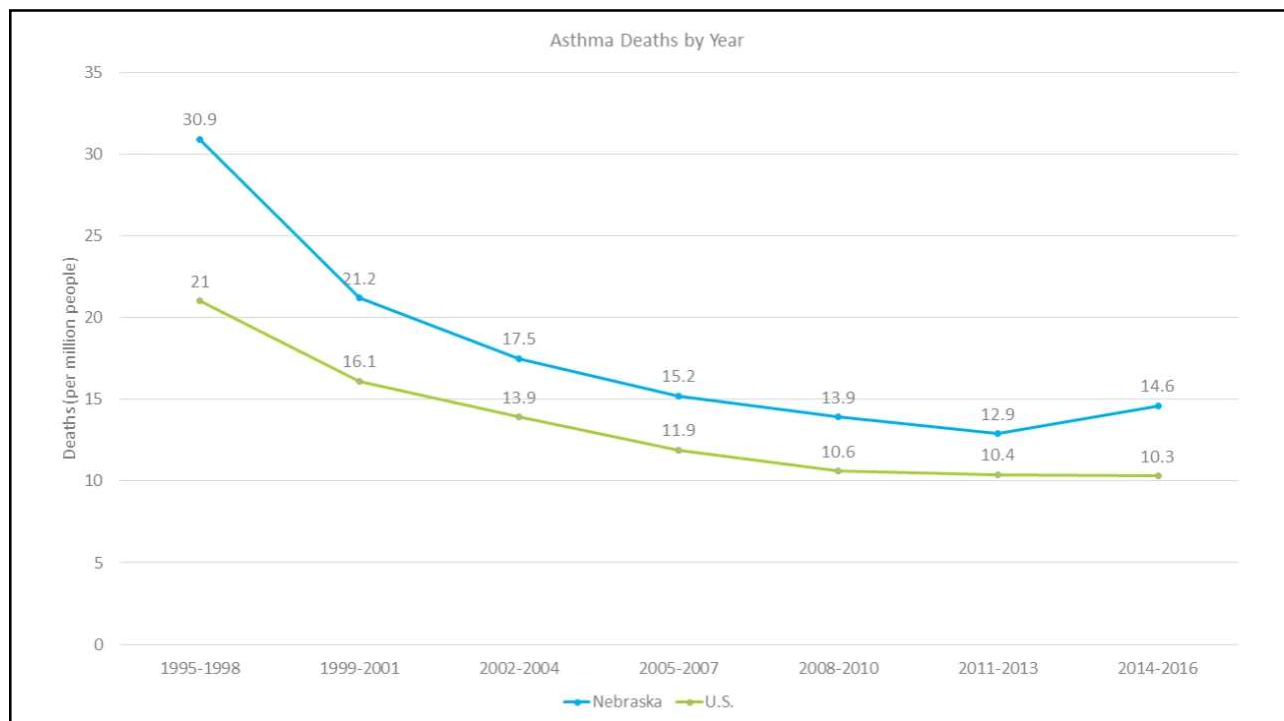
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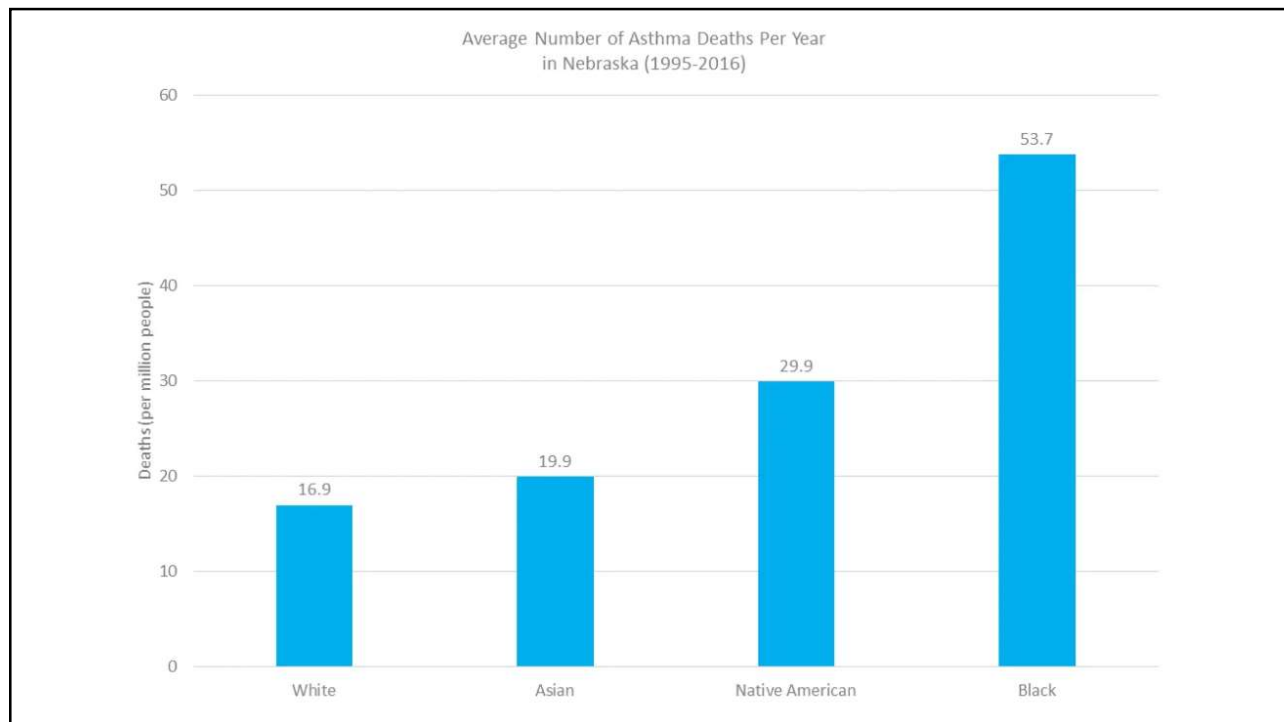
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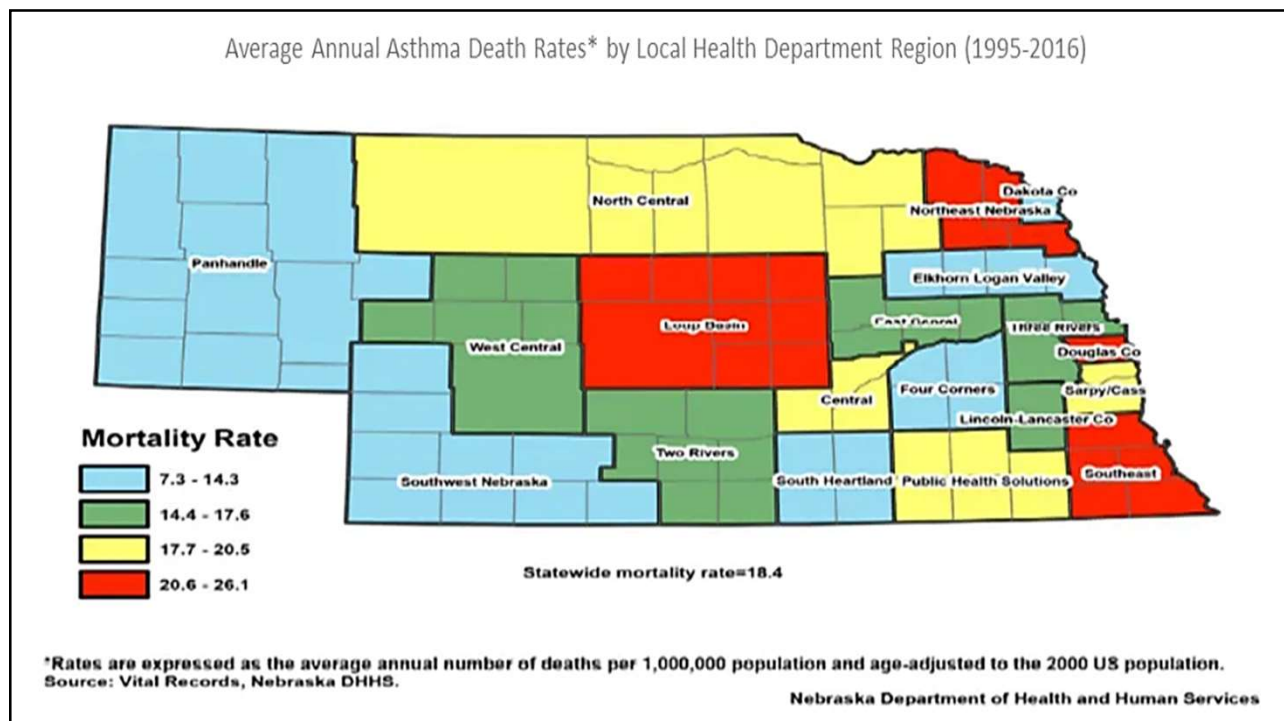
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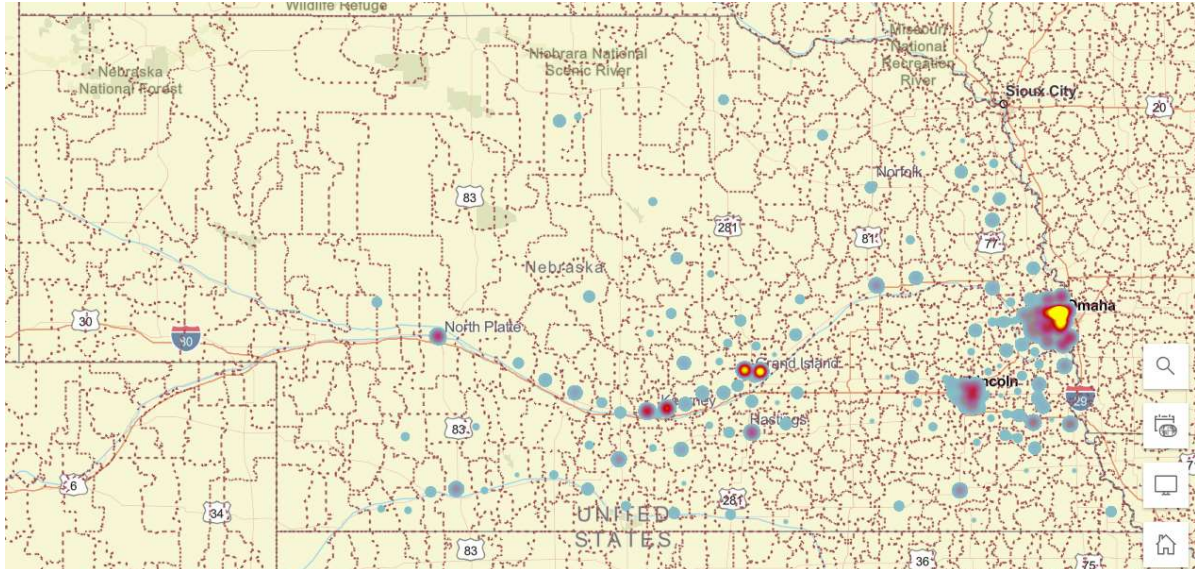


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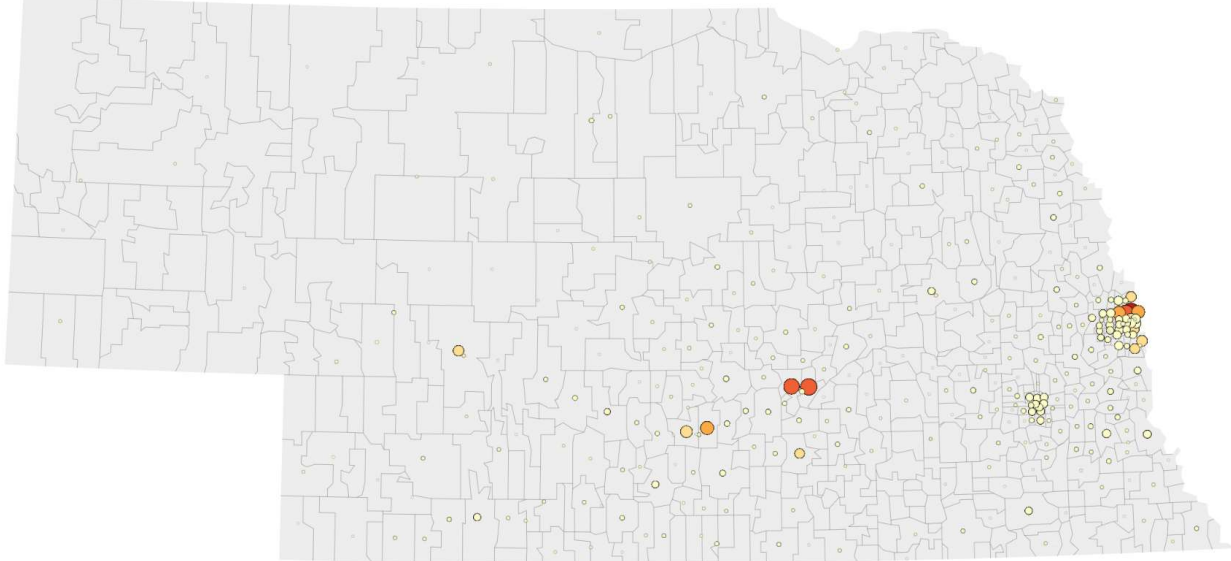
Pediatric Asthma Exacerbations 2019



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Asthma Admissions in 2019

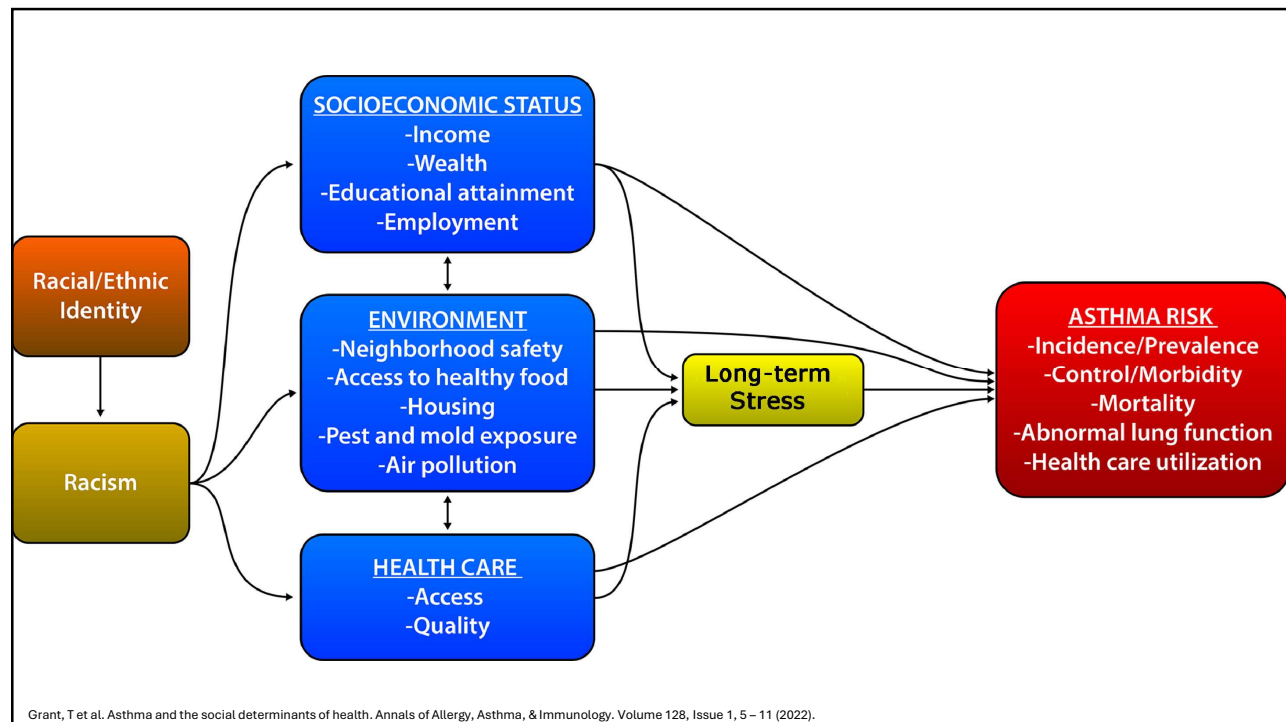
Legend: < 111, 111-221, 221-331, 331-441, ≥ 441



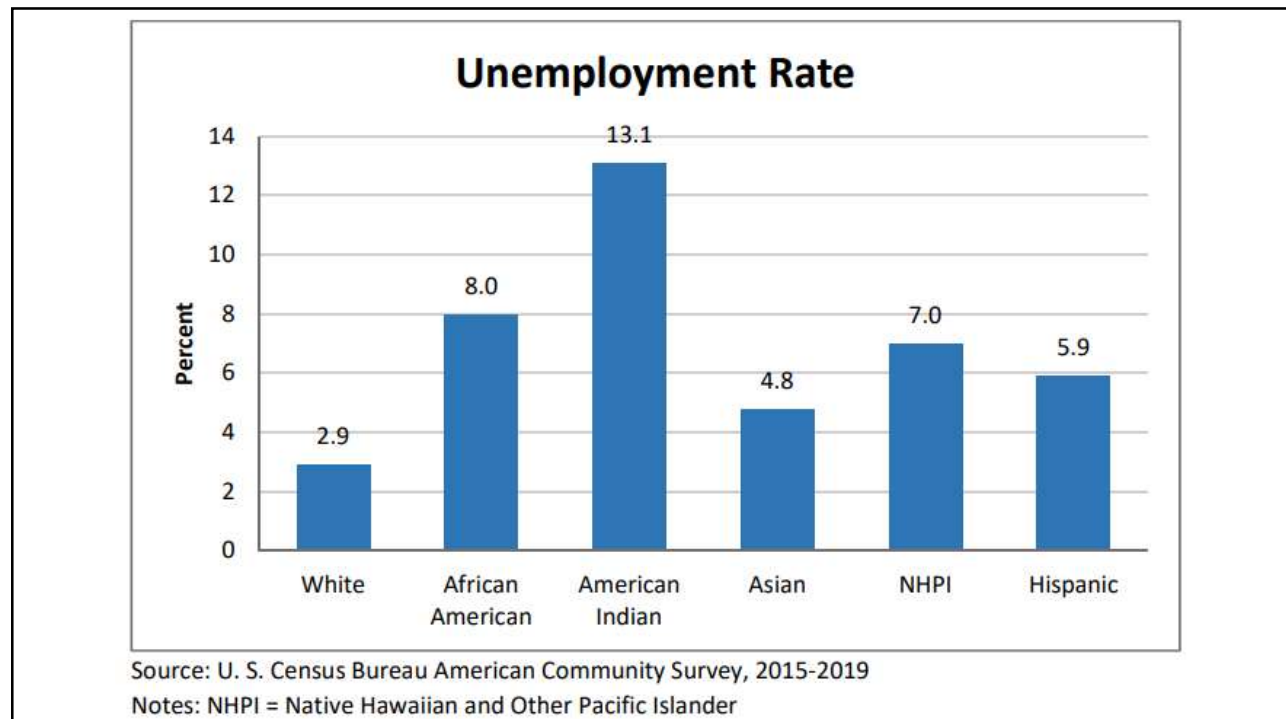
Ting Wang, Dr. Russell Hopp, Dr. Hana Niebur

Map data: © Esri, TomTom North America, Inc., United States Postal Service • Get the data • Created with Datawrapper

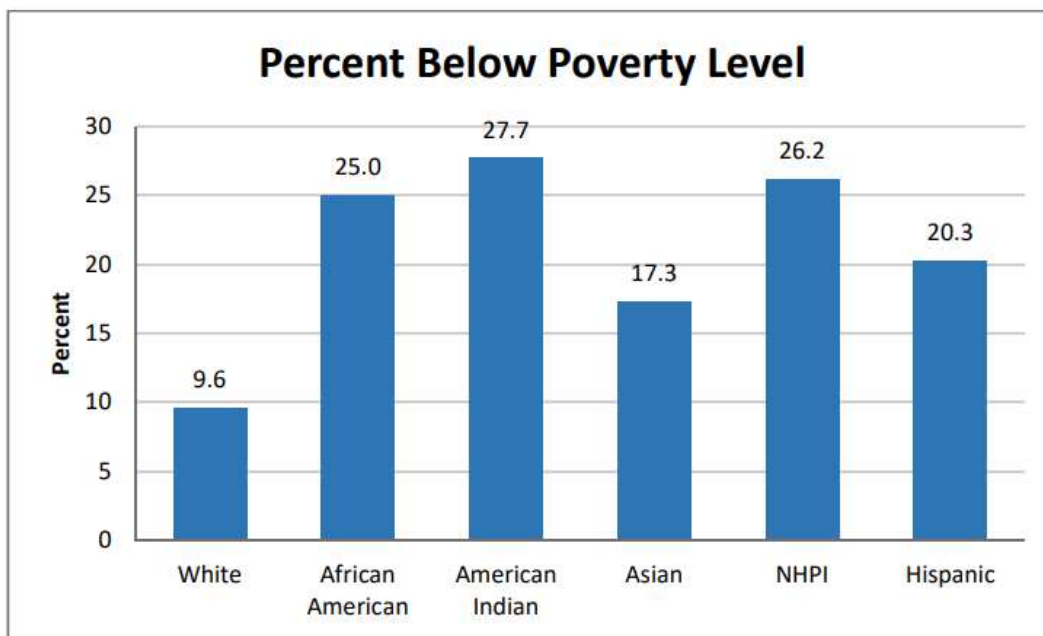
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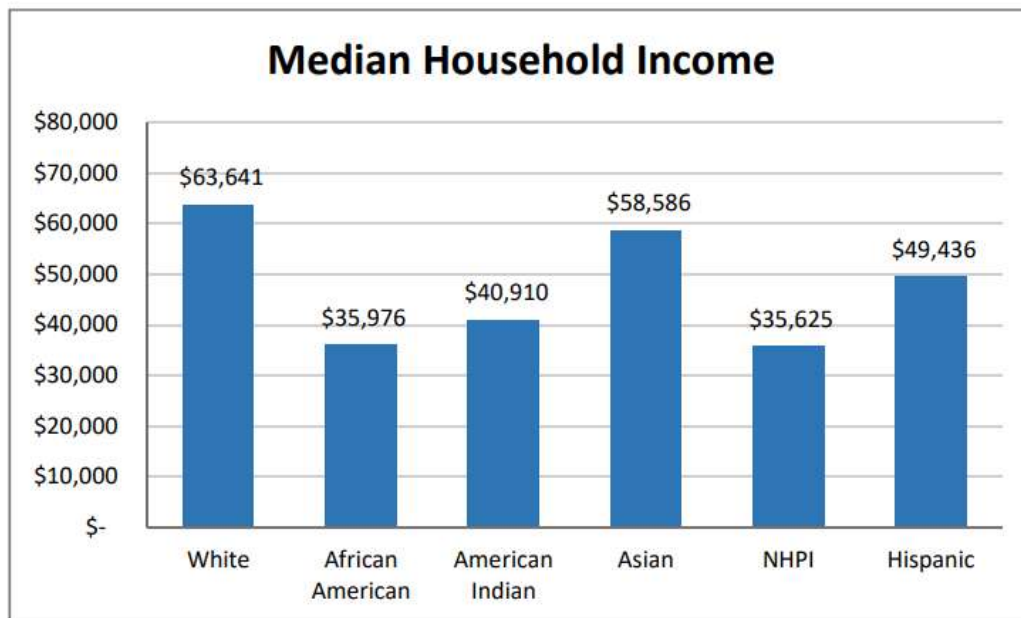
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Source: U. S. Census Bureau American Community Survey, 2015-2019

Notes: NHPI = Native Hawaiian and Other Pacific Islander

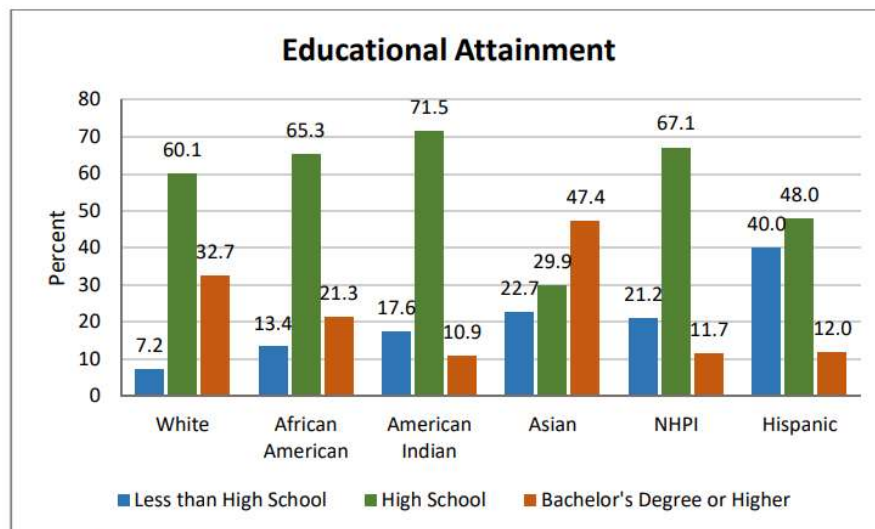
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Source: U. S. Census Bureau American Community Survey, 2015-2019

Notes: NHPI = Native Hawaiian and Other Pacific Islander

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Source: U. S. Census Bureau American Community Survey, 2015-2019

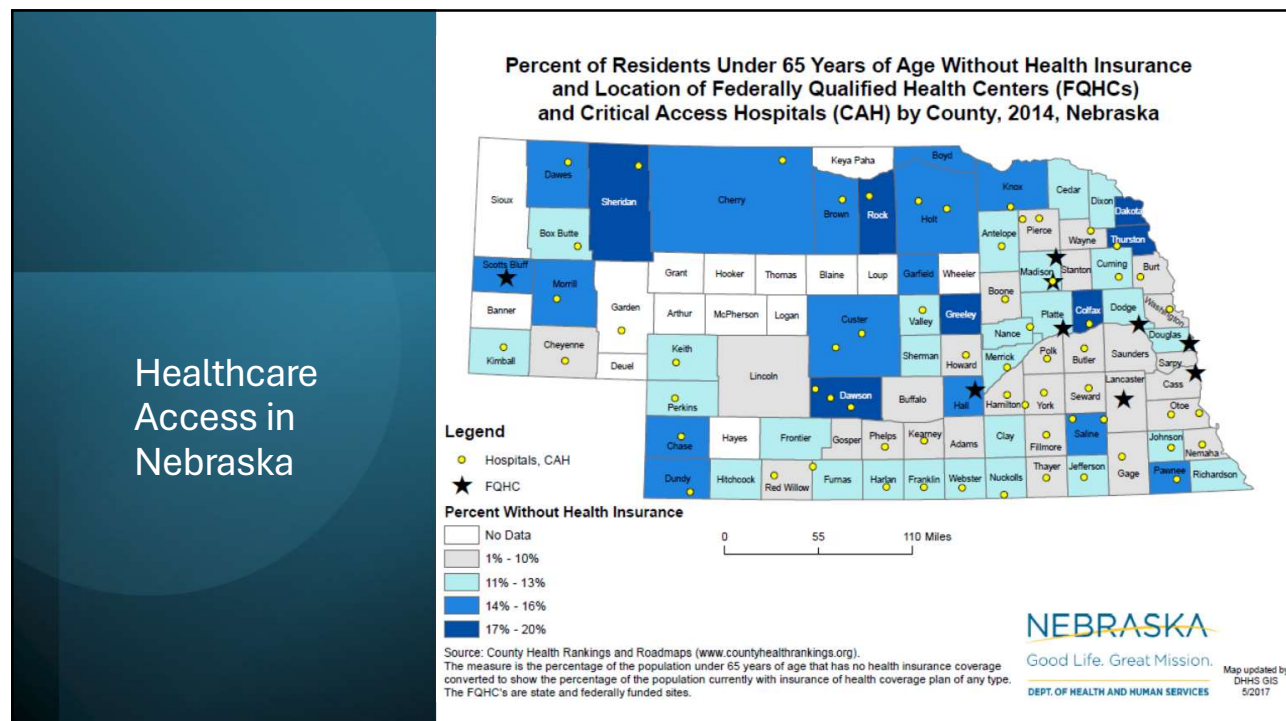
Notes: NHPI = Native Hawaiian and Other Pacific Islander

Less than high school are those that did not graduate high school.

High school are those that graduate high school, those with some college, and associate degrees.

Bachelor's degree is those that graduated college and those with graduate degrees.

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Hope for the Future

- Allergy and Asthma Foundation of America Asthma Capital Rankings
 - 2019: 9
 - 2023: 18
 - 2024: 34
- Existing infrastructure
- New and developing partnerships



Acknowledgements

- Nebraska Asthma Coalition Executive Committee and Members
 - Founder Dr. Jill Hansen
- Pediatric Environmental Specialty Health Unit: www.pehsu.net
 - Mid-America Pediatric Environmental Specialty Health Unit (Dr. Friedman)
 - Show-ME ECHO: <https://showmeecho.org/>
- Children's Nebraska
 - Pulmonology, Allergy, and Sleep Medicine
 - Community Health and Advocacy
 - Children's Nebraska Foundation

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