

The CADH Health Equity Index ©
Its Foundation, Development and Next Steps

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• **What** is this about?

• **Why** are we doing this?

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Roots of this Project

- Historical → PREVENTION
- IOM → "Assure Conditions"
- CDC/NACCHO → Essential Service #5b
- HP 2010 → ELIMINATE DISPARITIES

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HP 2010: Final wording

- HP 2010 recognizes (the) need to take a multi-disciplinary approach to achieving health equity -- (involving) improving health, education, housing, labor, justice, transportation, agriculture, and the environment, as well as data collection itself.

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Project Development

- Year 1: Concept/Planning Funding: None
- Year 2: LHD Survey/HEAT Funding: UHCF
- Year 3: HEI Development Funding: CHF
- Year 4: HEI Pre-test Funding: Joint Center

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Currently:

- Analyze Pre-test
- Develop Orientation Materials
- Design RFP Framework
- Seek Implementation Funding

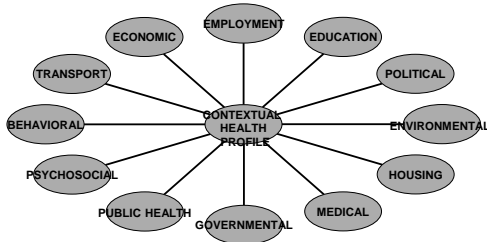
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What is the Health Equity Index (HEI)?

- A way to conceptualize and measure community contextual influences on population health and health disparities.
- Uses traditional and non traditional domains, both quantitative and qualitative data sources to measure
- Aims to trigger policy and regulatory improvements to reduce inequity

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Contextual Dimensions Plausibly linked to Health Status



Source: Measurement Issues in Social Determinants- Hillemeier et al

Index Development

- Research Existing Index Models and Indicator Projects (US and international)
- Identify Determinants of Health Equity
- Identify Indicators (the *Measures*)
- Evaluate Data Sources that can Support Indicators
- Select Indicators Based on Established, Strict Criteria

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Indicator Selection Criteria

- Uniformly Available
- Accessible
- Reliable
- Valid
- Measurable
- Capacity to be Disaggregated
- Sensitive
- Compelling and Interesting
- Affordable
- Relevance/Action-oriented
- Numerator/Denominator

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Health Equity Index

A systematic identification, quantification and measurement of social determinants that give rise to health disparities

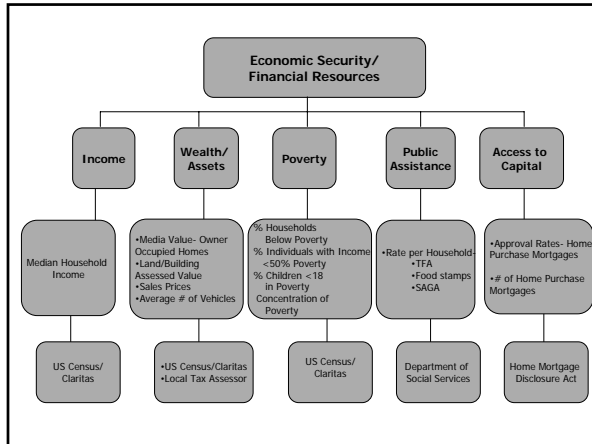
- Social Determinants
 - Components
 - Indicators
 - Core
 - Complementary

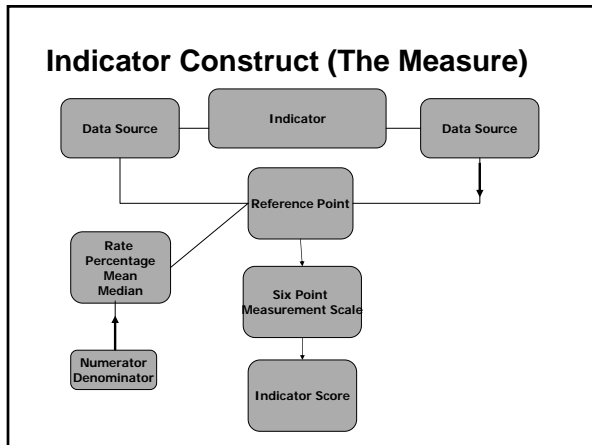
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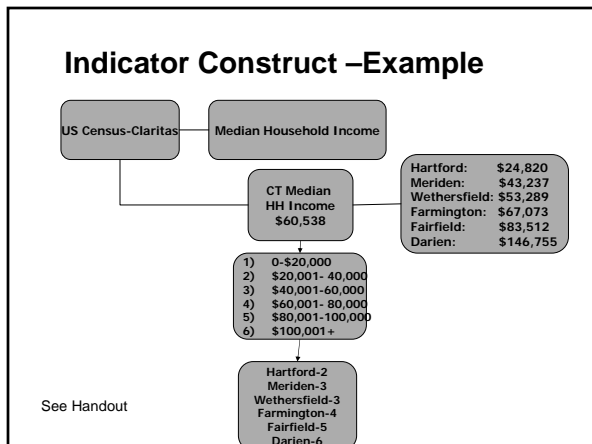
Social Determinants (Core Index)

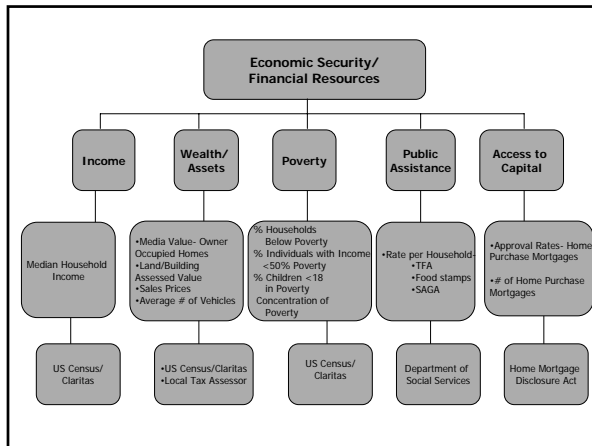
- Set of Nine Social Determinants
 - Economic Security & Financial Resources
 - Livelihood Security & Employment Opportunity
 - School Readiness & Educational Attainment
 - Environmental Quality
 - Civic Involvement & Political Access
 - Availability & Utilization of Quality Health Care
 - Adequate, Affordable & Safe Housing
 - Community Safety & Security
 - Transportation

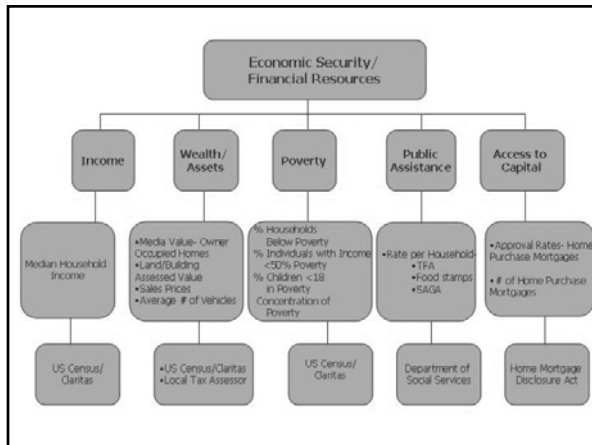
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Framework of Analysis (community-level data)

Health outcome measures against which HEI findings will be analyzed:

- Health Outcomes (43):
 - incidence/prevalence for illness, disease and injury; mortality and years of potential life lost (YPLL)

Framework of Analysis (community-level data)

Demographic measures against which HEI findings will be analyzed:

- Demographic (14):
 - race/ethnicity; gender; age; place of residence; class (educational attainment, income)

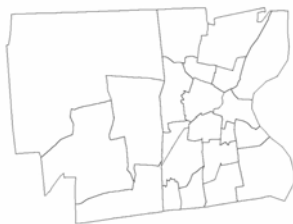
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Pre-Test

- Pre-testing the HEI Instrument
 - 16 Neighborhoods- Hartford
 - 4 Zip Codes- West Hartford
- Acquired All Data for Target Communities
- Calculated Indicator Scores for Neighborhoods
- Screened Indicators for Redundancy, Etc.

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MAP of West Hartford-Hartford



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Pre-Test Instrument Development Using SPSS

- Exploratory Statistical Analysis of HEI as a Measurement Tool
- Descriptive Statistics [means, median, mode, variability, percentages]
- Inferential Statistics [t-tests, pearson correlations, ANOVAs]
- Multivariate Statistics [regression, DFA]

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Selecting Final Indicators and Scales

- Set of 162 preliminary indicators were scaled down to 71 core indicators
- Those rejected added to Complimentary Indicators

See Handout

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Producing the Final HEI

1. **Economic Security:** 14 Indicators
2. **Livelihood and Security:** 12 Indicators
3. **Education:** 17 Indicators
4. **Environmental Quality:** 6 Indicators
5. **Health Care Access:** 8 Indicators
6. **Housing:** 8 Indicators
7. **Civic Involvement/ Political Access:** 3 Indicators
8. **Community Safety and Security:** 2 Indicators
9. **Transportation:** 1 Indicator

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Producing the Final HEI – Raw Scoring

- Raw Scores – based on 71 core indicators and six-point measurement scales
- Range from 71 to 426
- Example: Housing – 8 Indicators
- Scoring range from 8 to 48

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Producing the Final HEI – Standard Scoring

- Method to equate the power and contribution of each Determinant
- Adjust the disparity in the number of indicators for each Determinant
- Divide total summative score for each Determinant by number of indicators that Determinant was composed of
- Standard Score Range: 9 to 54

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Producing the Final HEI – Interpretation of Scores

<u>Interpretation</u>	<u>HEI Total Score</u>
Very Low	9.00 - 16.5
Low	16.51 – 24.0
Mod. Low	24.01 – 31.5
Mod. High	31.51 – 39.0
High	39.01 – 46.5
Very High	46.51 – 54.0

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Testing the HEI with 13 Demographic Variables

- > Race/ Ethnicity (4)
- > Median Household Income (1)
- > Percent of Female-headed Households with Children under 18 (1)
- > Percent of Households w/ Children under 18 (1)
- > Educational Attainment (5)
- > Average Age (1)

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Findings:

Analysis of 20 Neighborhoods:
HEI "Total Score"

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Testing the HEI with Demographic Data - Findings

Positive and Strong Correlation

The higher the HEI Score, the higher the percentage of

- ✓ White racial/ethnic groups
- ✓ Higher median household income levels
- ✓ Bachelor's Degrees
- ✓ Advanced Degrees
- ✓ Older residents

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Testing the HEI with Demographic Data - Findings

Negative and Strong Correlation

The lower the HEI Score, the higher the percentage of

- ✓ Hispanic racial/ ethnic groups
- ✓ Black/ Hispanic racial/ ethnic groups
- ✓ Female-headed Households, with Children <18
- ✓ Residents with less than 12th Grade education
- ✓ Residents with less than 9th Grade education

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Testing the HEI with Health Outcome Variables

- Work with DPH to Identify Availability of Health Outcome Data
- Compile Health Outcome Data by Neighborhood
- Test Strength and Direction of the Correlations Between HEI and the Measures of Health Outcomes

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Testing the HEI with Health Outcome Data

Mental Health Inpatient Hospitalization
Mental Health Emergency Dept. Treatment

Hepatitis C
Chlamydia/ Gonorrhea
AIDS/ HIV

Asthma Inpatient and ED Treatment <18
Elevated Blood Levels

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Testing the HEI with Health Outcome Data

Cancer Incidence

- Stomach
- Colon
- Lung
- Prostate
- Breast
- Oral, Esophagus, Larynx

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Testing the HEI with Health Outcome Data

Age Adjusted Mortality Rates (AAMR) and Years Potential Life Lost (YPLL)

Cardiovascular Disease

Cancer: Overall; Breast; Cervical; Colon; Pancreatic; Prostate; Trachea, Bronchus & Lung

Respiratory Diseases

Diabetes Mellitus and Diabetes-related

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Testing the HEI with Health Outcome Data

Maternal and Child Health

Adequacy of Prenatal care

Timing of Prenatal Care

Low Birth Weights

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Testing the HEI with Health Outcome Data

Accidental Injuries

Intentional Injuries

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Testing the HEI with Health Outcome Data - Findings

Negative and Strong Correlation

The lower the HEI Score, the higher the percentage of

- ✓ Mental Health ED Treatment
- ✓ Hep C, Chlamydia/Gonorrhea, AIDS/HIV
- ✓ Asthma ED and Inpatient Hospitalization
- ✓ Elevated Blood Levels
- ✓ Less Adequate Prenatal Care
- ✓ Later Prenatal Care

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Testing the HEI with Health Outcome Data - Findings

Negative and Strong Correlation

The lower the HEI Score, the higher the percentage of

✓ Age Adjusted Mortality Rates

- Cardiovascular Disease
- All Cancers
- Diabetes Mellitus and Diabetes-related
- HIV
- Intentional Injury

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Testing the HEI with Health Outcome Data - Findings

Negative and Strong Correlation

The lower the HEI Score, the higher the percentage of

✓ Years Potential Life Lost

- Cardiovascular Disease
- Respiratory Diseases
- All Cancers
- Diabetes-related
- HIV
- Intentional Injuries

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Testing the HEI with Health Outcome Data - Findings

Positive and Strong Correlation

The higher the HEI Score, the higher the percentage of

- ✓ Cancer Incidence- overall
- ✓ Breast cancer
- ✓ Colon cancer
- ✓ Lung cancer

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Strength of Correlations

Correlation Coefficient r	Strength
0	No Correlation
. ±.01-.30	Negligible to Low
. ±.31-.50	Moderately Low
. ±.51-.70	Moderately Strong
. ±.71-.99	Very Strong
1.00	Perfect

[Source: Carroll and Carroll, *Statistics Made Simple for School Leaders: Data Driven Decision Making*, Rowman & Littlefield Publishing: MD, 2002, p.119]

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Testing the Determinant Scores with Health Outcome Data - Findings

Determinant	Correlation with Breast Cancer
School Readiness and Educational Attainment	+ .965
Livelihood Security and Employment Opportunity	+ .957
Economic Security and Financial Resources	+ .935
Determinant	Correlation with Mental Health ED Admissions
Environmental Quality	-.907
Adequate, Affordable and Safe Housing	-.856
School Readiness and Educational Attainment	-.797
Determinant	Correlation with Asthma Related ED Visits
Availability and Utilization of Quality Health Care Services	-.828
Livelihood Security and Employment Opportunity	-.800
Environmental Quality	-.776

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Testing the Indicators with Health Outcome Data - Findings

Housing Indicators	Correlation with Hepatitis C
Crowded Housing	-.834
Estimated Percent of Households Unable to Afford 2-Bedroom Apartment at Fair Market Rate	-.794
Concentration of Subsidized Housing per 1000 persons	-.758
Economic Security Indicators	Correlation with AAMR-Cardiovascular
Concentration of Poverty	-.917
Approval Rate of Home Mortgage Loan Applications-per 1000	-.702
Average Number of Vehicles Available	-.695

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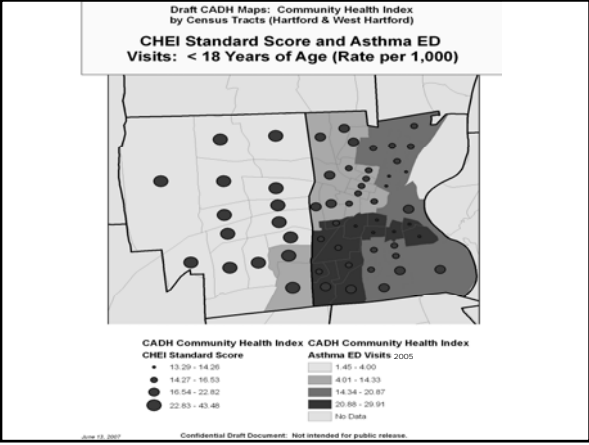
Post Analysis:

- Community Engagement—
Use Statistical findings to point to selection of Complementary Indicators for deeper analysis.

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“A Picture is worth a thousand words...”

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CADH HEI:

- Delivers...
- Transforms...
- Produces...

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HEI Delivers:

- Conceptual Frame
- Rationale
- Definitions
- Protocols for Measurement
- Mechanisms for Analysis and Interpretation

It delivers the INSTRUMENT!

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HEI Transforms:

- Health Departments into “Agents for Change”
- Data Collection into Social Epidemiology
- Focus on Individual Behaviors into the Examination of Root Causes
- Focus on Symptoms into Investigation of Causality
- At Systems Level, it Transforms the Work of Government and Foundations

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HEI Produces:

- Science-based Social Epidemiology
- Strong Platform for Community Engagement
- Cover for Political Leaders
- Credible Framework for Regulatory Change (e.g., HIA)
- Produces momentum for our mission: “to assure the conditions...”

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Currently (Restated):

- Analyze Pre-test
- Develop Orientation Materials
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Demonstration Phase - Conceptual

- LHD as catalyst and “shepherd”
- Requires LHD paradigm shift: emphasis on root causes and political/social change actions through community partnerships
- Application of HEI as one part of multidimensional, extended process of inquiry, collaboration and capacity building aimed at improved health outcomes

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**Demonstration Phase:
LHD Organizational Analysis and
Capacity Building**

- Internal Capacity Assessment
- Workforce Development
- Strategic Planning

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**Demonstration Phase:
Community Engagement, Collaboration and
Capacity Building**

- > Organize a core health equity team before beginning data collection process for core index
- > Community Collaboration: Building a Health Equity Coalition
 - Establish principles of collaboration
 - ID and Address HEI data gaps with coalition
 - Create community action plan

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**Demonstration Phase:
Community Engagement, Collaboration and
Capacity Building**

- > Integrate Principals of Community-based Participatory Research
- > Provide resources, e.g., training on policy development and advocacy, data collection methods, community health mapping, strategic planning, mini grants, staffing for community action committees/work groups, ID local regs to target for change

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DEMONSTRATION PHASE

- Secure funds for 3 demo sites
- 4 Yr funding
- CADH Administration & Technical Support
- Preliminary site selection criteria
 - LHD Readiness
 - LHD Community Record
 - Population Health Concerns & Inequities
 - Local Leadership Support
 - Capacity to Access Local Data

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Thank You!!

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