Incorporating Alternative Definitions of Health Inequity in the Measurement: A Three-stage Approach

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Social Policy and health Inequalities: International Perspective

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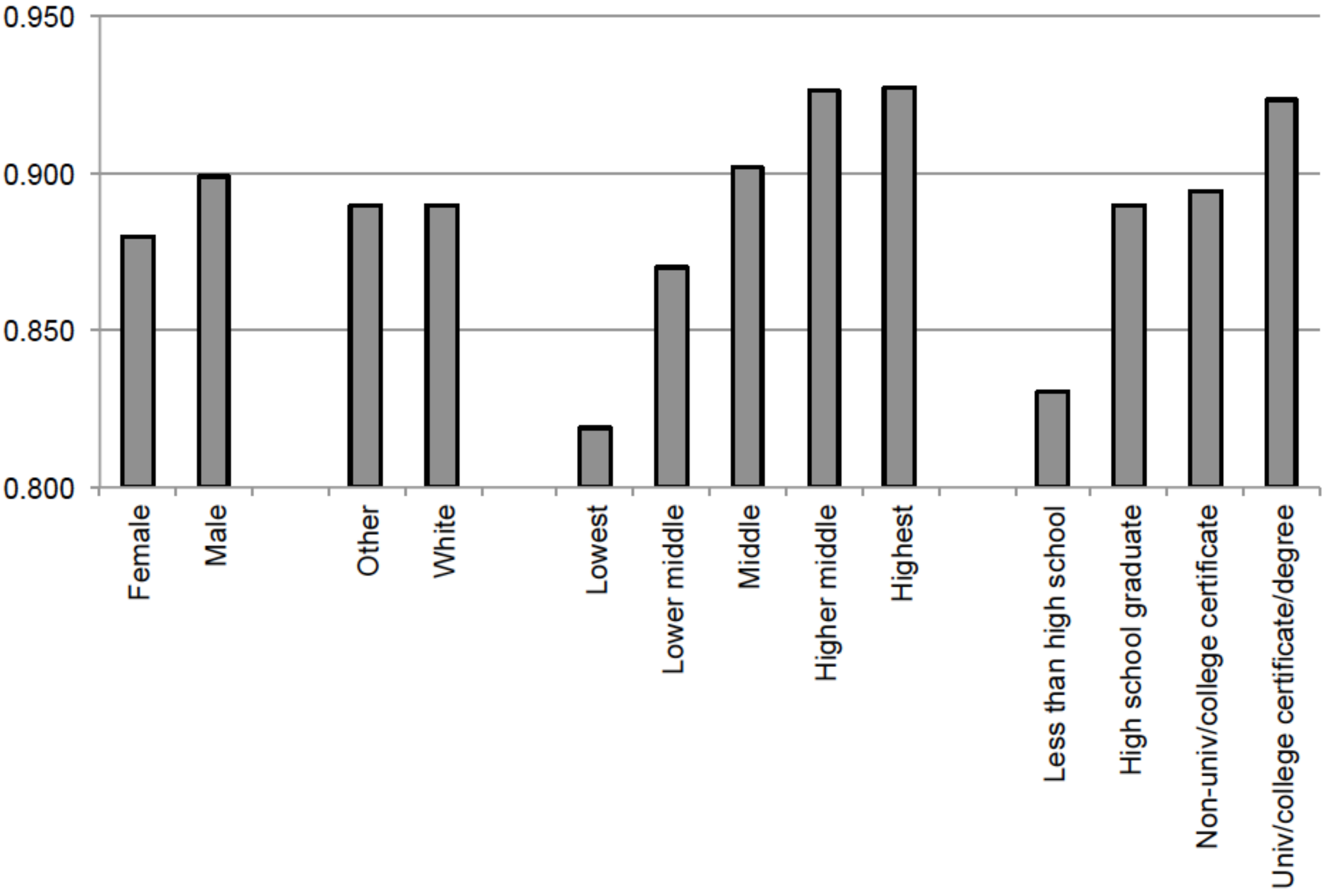
Measurement of health inequities

- Fundamental to all health equity initiatives
- Complex, requiring considerations for ethics, methods, and policy
- Requires advancement in each and its integration
- Growing emphasis on the importance of:
  - distinguishing health inequity from health inequality
  - being explicit and transparent about definitions of health inequity in the measurement exercise

HUI



Data source: Canadian sample of 2002-03 Joint Canada/United State Survey of Health (JCUSH)

The objective

- To propose a three-stage approach that explicitly and transparently incorporates alternative definitions of health inequity

Three-stage approach

- Measures the following in a systematic and comparable manner:

  - Univariate health inequality

  - Univariate health inequity

  - Bivariate health inequities

Three-stage approach

- Measures the following in a systematic and comparable manner:

  - Univariate health inequality

    Distribution of observed health across individuals regardless of its association with other attributes

  - Univariate health inequity

    Distribution of unfair health across individuals

  - Bivariate health inequities

    Independent associations between unfair health and ethically and policy relevant attributes

Three-stage approach

- Measures the following in a systematic and comparable manner:

  - Univariate health inequality

  - Univariate health inequity

  - Bivariate health inequities

Transparency
Empirical significance

Three-stage approach

- Measures the following in a systematic and comparable manner:

  - Univariate health inequality

  - Univariate health inequity ← Flexibility
Empirical significance

  - Bivariate health inequities

Three-stage approach

- Measures the following in a systematic and comparable manner:

  - Univariate health inequality

  - Univariate health inequity

  - Bivariate health inequities

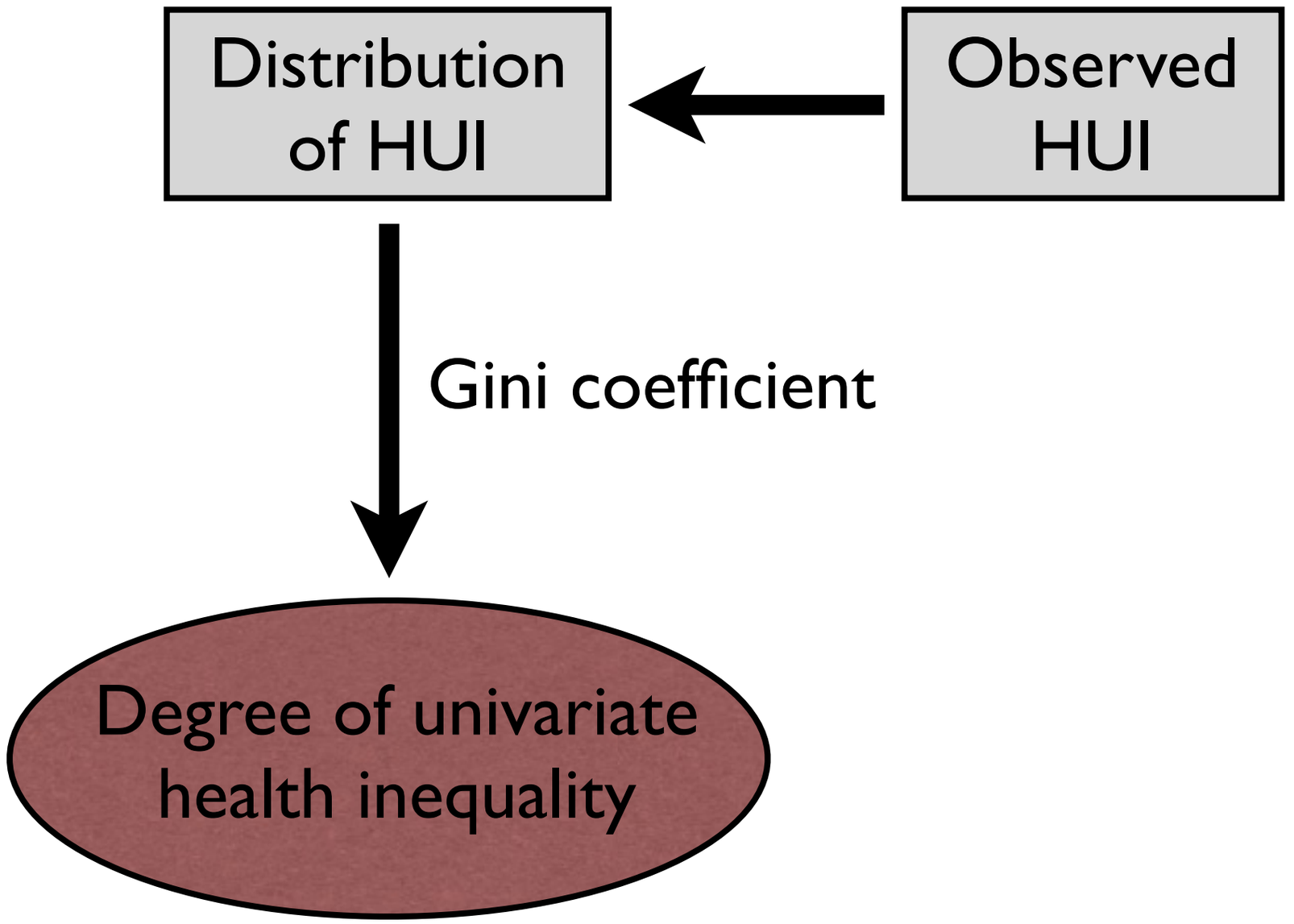
Transparency
Beyond group averages

Methods

Data and variables

- 2002-03 Joint Canada/United States Survey of Health (JCUSH)
  - Conducted by Statistics Canada and the US National Center for Health Statistics
  - Target population: non-institutionalized Canadian and American adults (18+)
  - Complex survey design
  - Canadian sample size for analysis: 3057
- Health measured by the Health Utilities Index Mark 3 (HUI)
- Determinants of health: demographics, socioeconomic status, health behaviour, and health care factors

Analytical step 1:
Measuring univariate health inequality



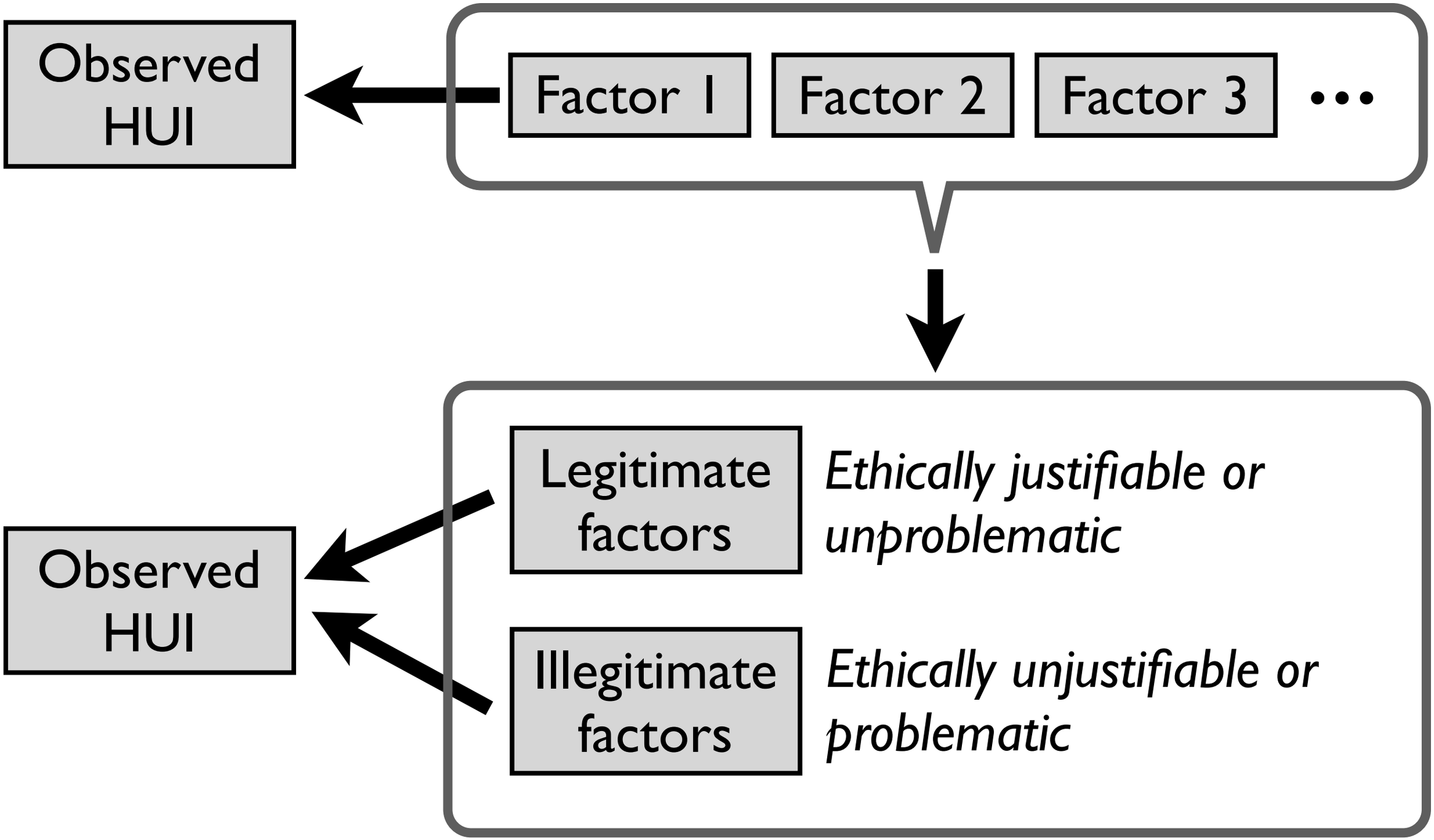
Analytical step 2:
Measuring univariate health inequity

- Estimating *unfair* HUI from observed HUI
  - i. Modeling HUI
  - ii. Defining legitimate vs. illegitimate factors
  - iii. Standardizing fairness
- Quantifying the distribution of unfair HUI

(Fleurbaey & Schokkaert 2009)

i. Modeling HUI

ii. Defining legitimate vs. illegitimate factors



Definitions of health inequity

- Equal opportunity for health
  - Health outcome due to factors beyond individual control is unfair
- Policy amenability
  - Health outcome due to factors amenable to policy intervention is unfair

Fleurbaey-Schokkaert Category
Health endowments
Individual preferences
Available information
Social background
Health care supply

Fleurbaey-Schokkaert Category	Variable
Health endowments	Age
Individual preferences	Smoking, BMI, physical activity
Available information	Education
Social background	Income, income x smoking, race, country of birth, marital status, sex
Health care supply	Basic health care and quality of health care variables

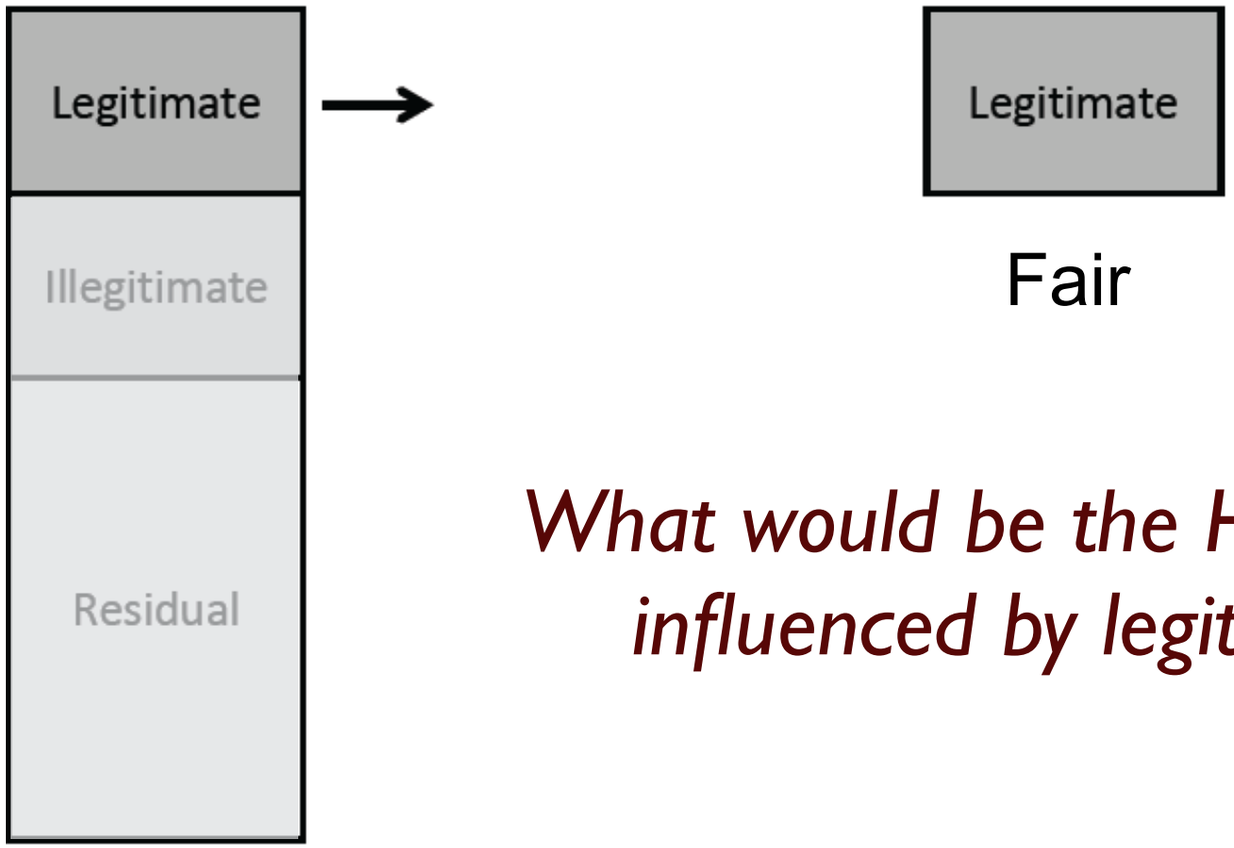
Fleurbaey-Schokkaert Category	Variable	Equal opportunity for health	Policy amenability
Health endowments	Age		
Individual preferences	Smoking, BMI, physical activity		
Available information	Education		
Social background	Income, income x smoking, race, country of birth, marital status, sex		
Health care supply	Basic health care and quality of health care variables		

Fleurbaey-Schokkaert Category	Variable	Equal opportunity for health	Policy amenability
Health endowments	Age	Legitimate	Legitimate
Individual preferences	Smoking, BMI, physical activity	Legitimate	Illegitimate
Available information	Education	Illegitimate	Illegitimate
Social background	Income, income x smoking, race, country of birth, marital status, sex	Illegitimate	Illegitimate
Health care supply	Basic health care and quality of health care variables	Illegitimate	Illegitimate

iii. Standardizing fairness (indirect standardization)

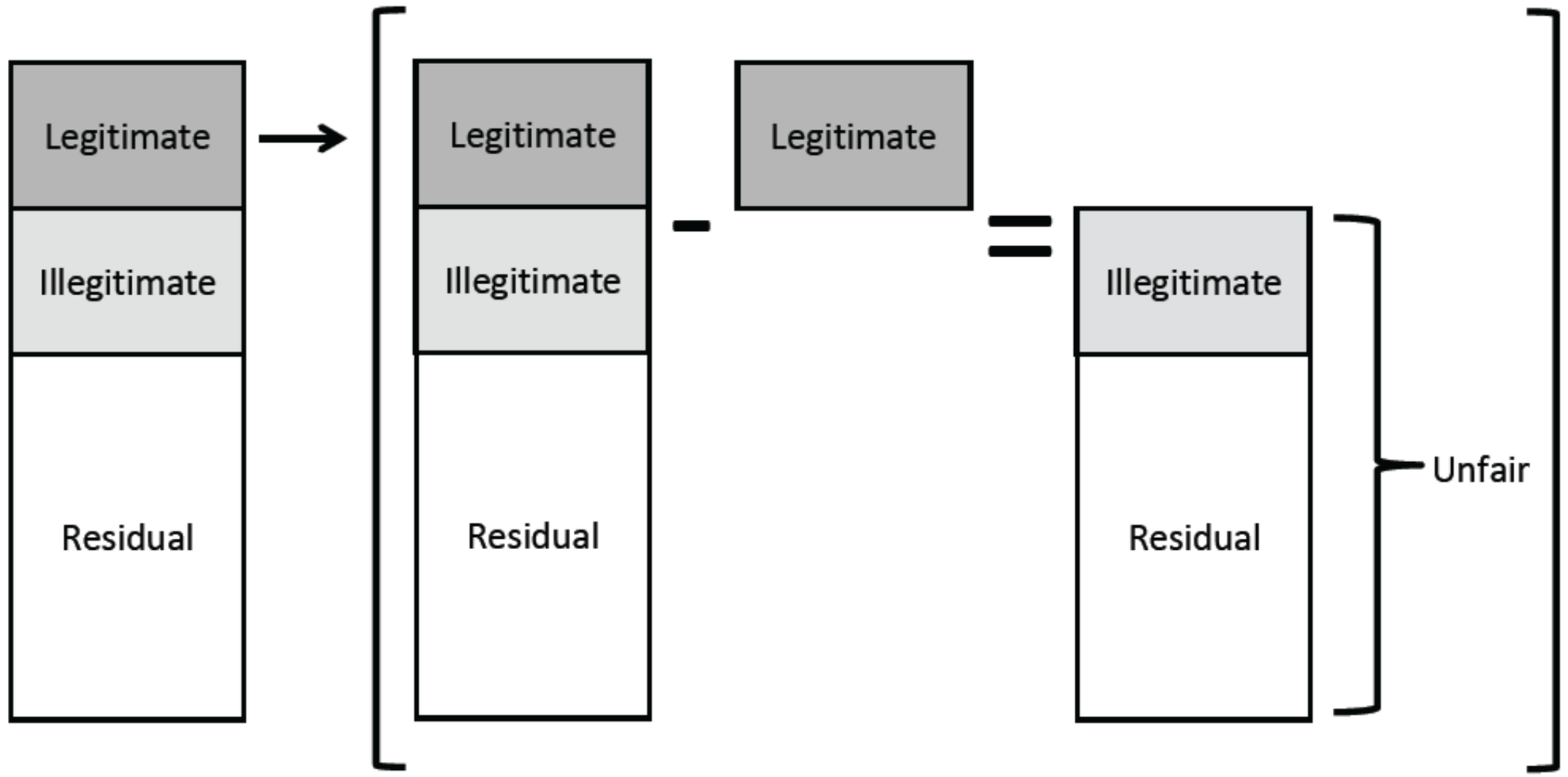
Observed HUI

iii. Standardizing fairness (indirect standardization)



What would be the HUI if it were only influenced by legitimate factors?

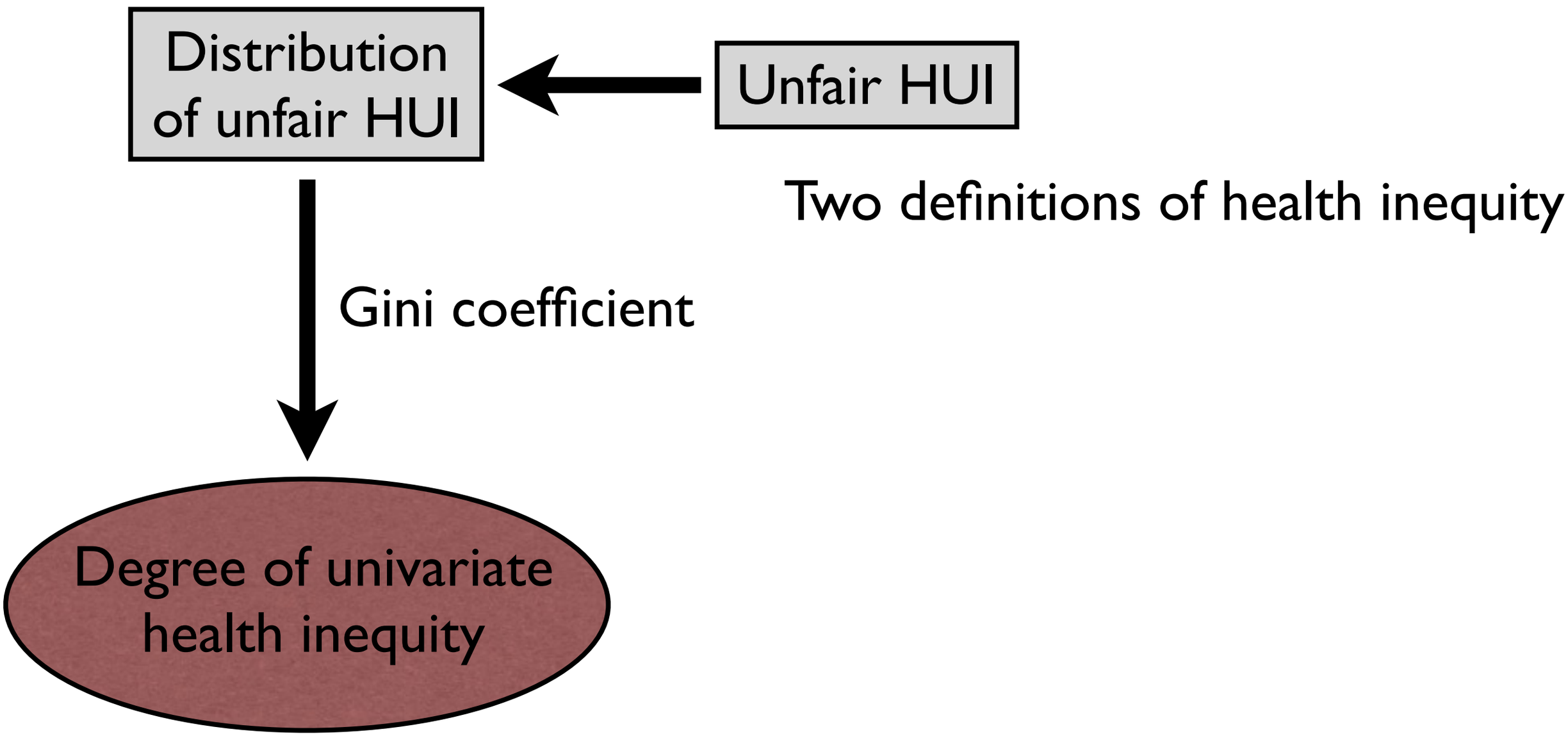
iii. Standardizing fairness (indirect standardization)



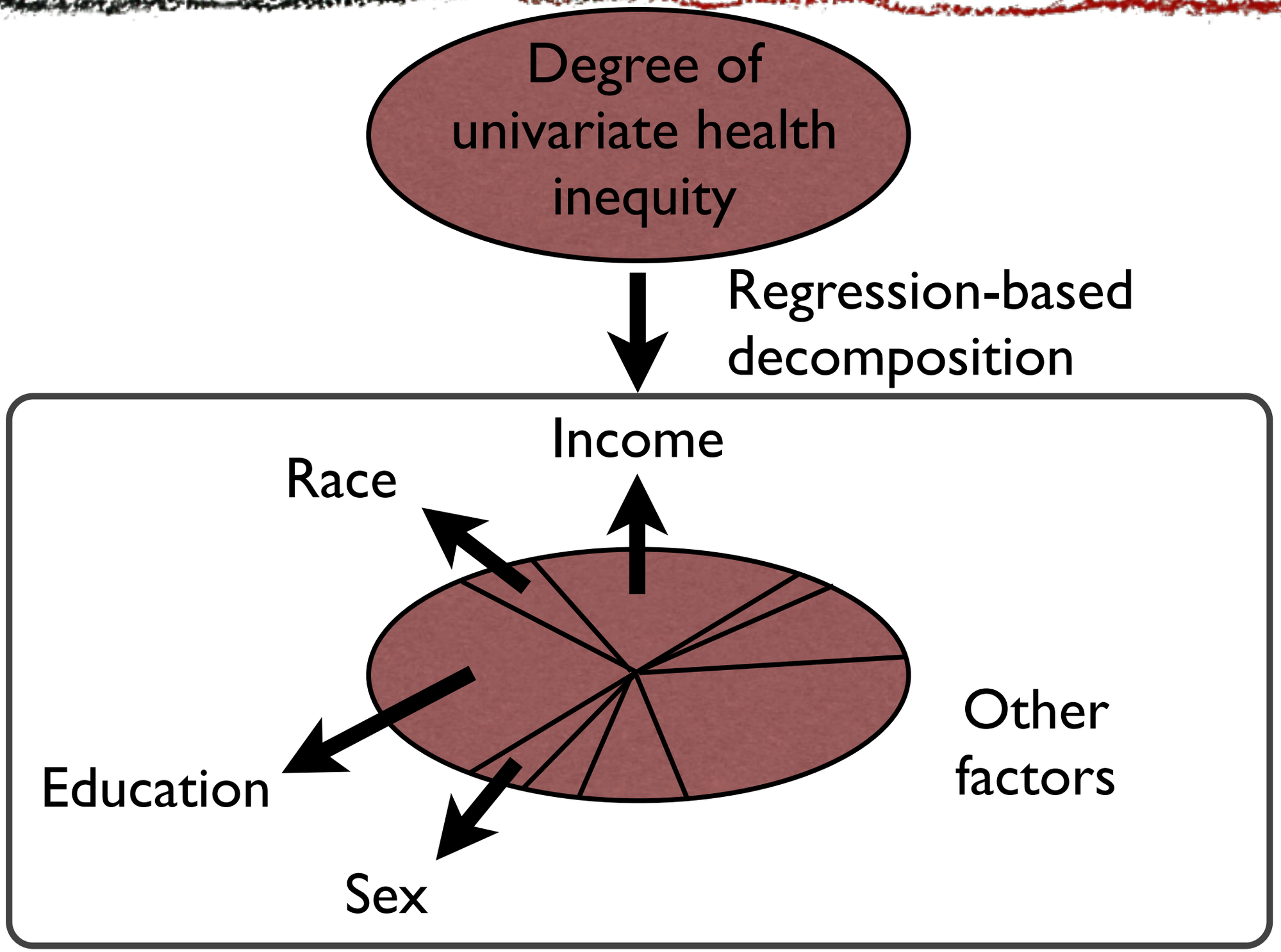
Observed HUI

Unfair HUI

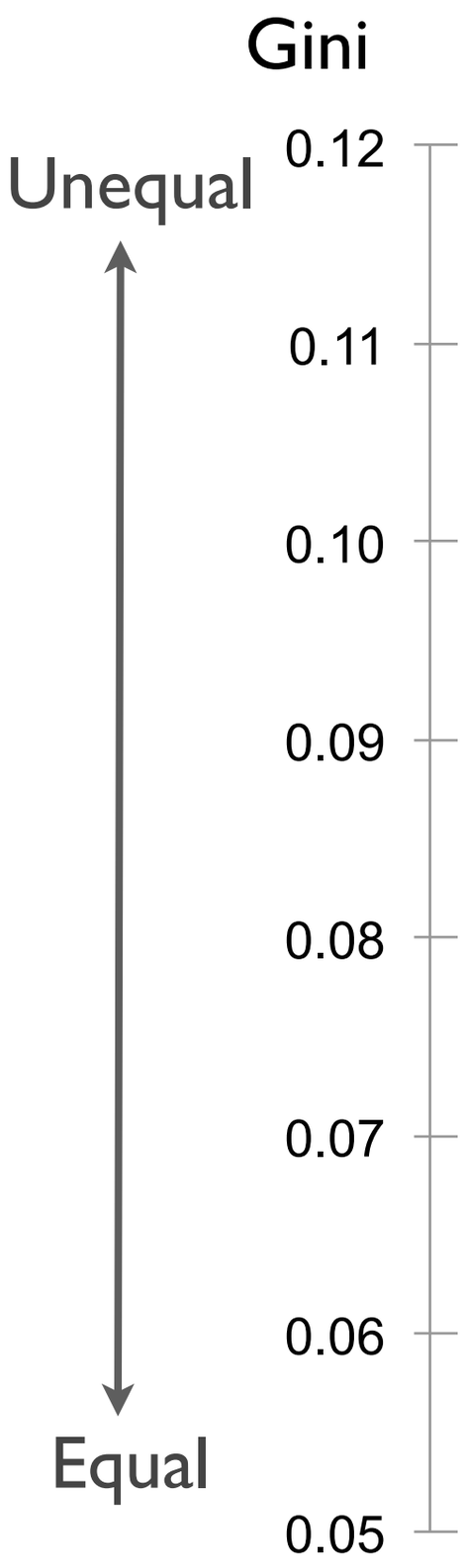
Quantifying the distribution of unfair HUI

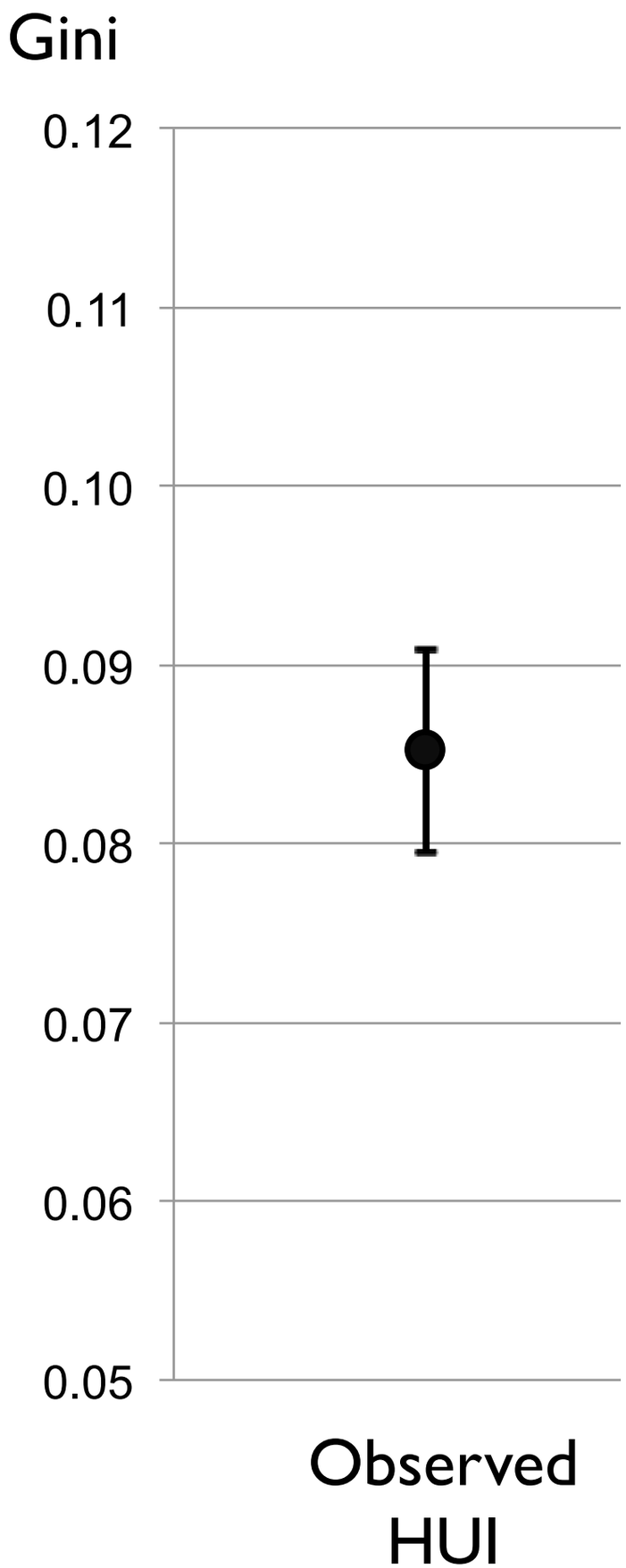


Analytical step 3: Measuring bivariate health inequities associated with ethically and policy-relevant attributes



Results


Gini
Unequal
Equal
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05


Gini
0.12
0.11
0.10
0.09
0.08
0.07
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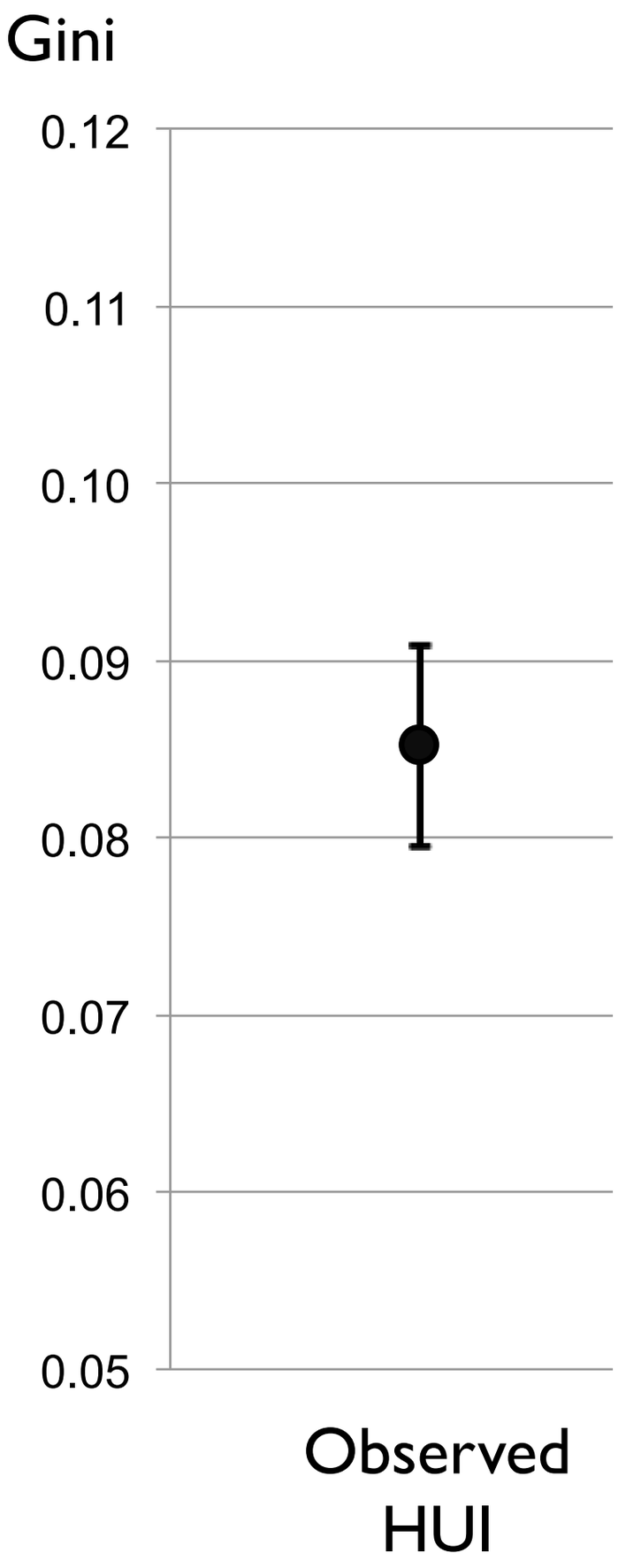
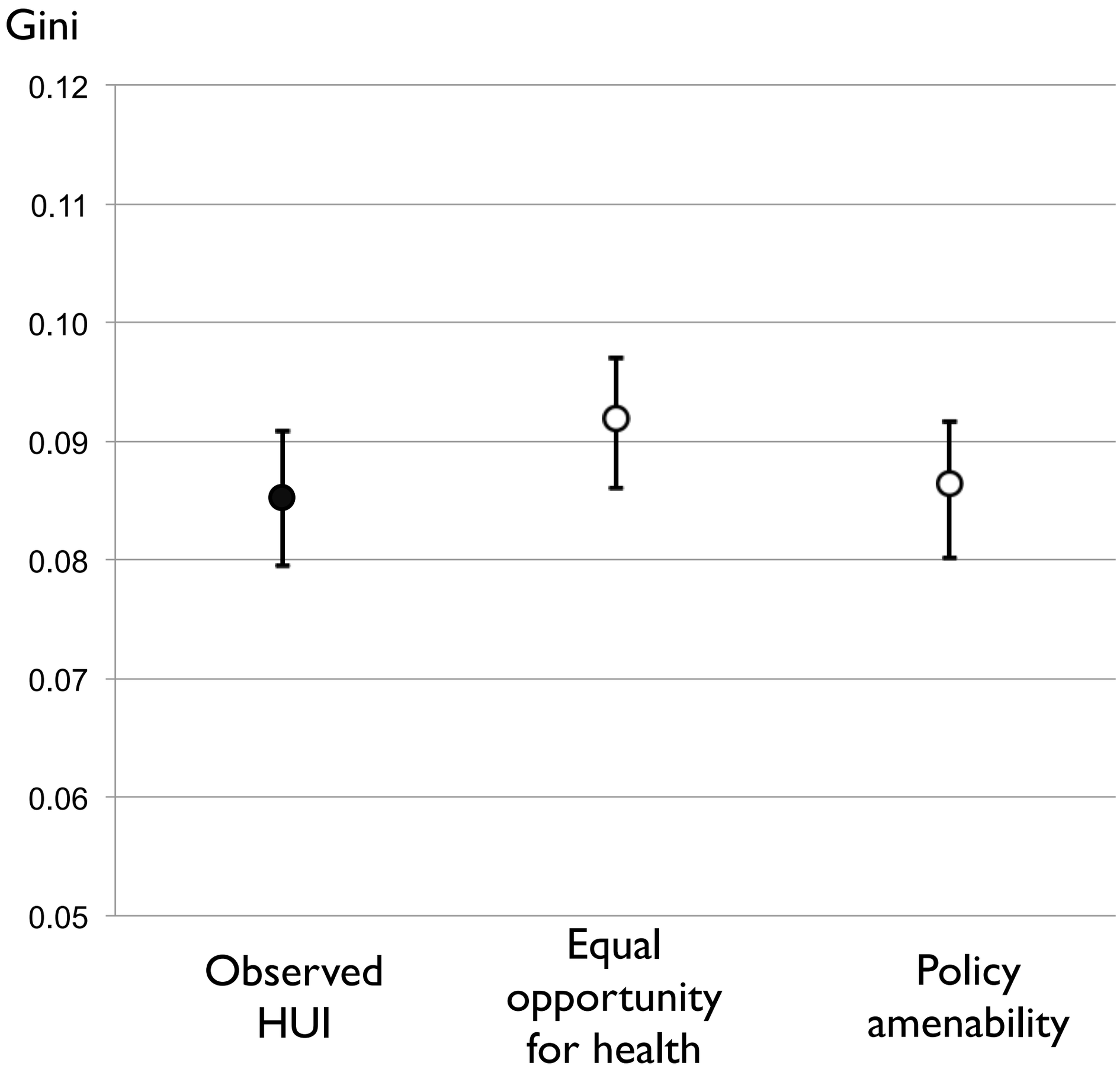
0.05
Observed
HUI



Gini: 0.085, mean HUI: 0.889

Expected mean difference in HUI among two persons randomly chosen in Canada: 0.151
(= 0.085 x 2 x 0.889)

5 times more than minimally clinically significant HUI, 0.03


Gini
0.12
0.11
0.10
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0.06
0.05
Observed HUI
Equal opportunity for health
Policy amenability

Contribution of ethically and policy relevant attributes to explainable univariate inequity

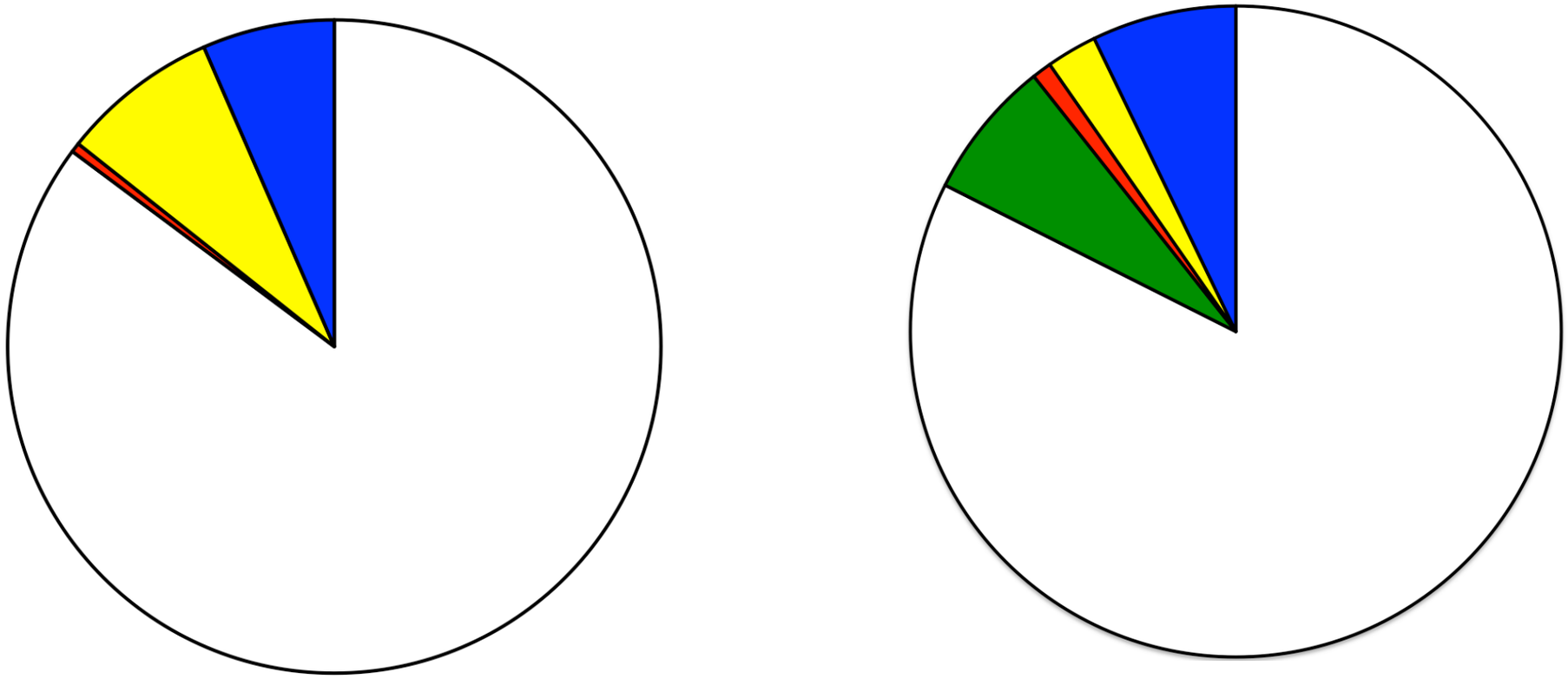
Attribute	Equal opportunity for health	Policy amenability
Income	6.5%	1.4%
Education	0.5%	1.0%
Sex	0.3%	0.2%
Race	0.1%	0%
Unexplained variation	85.2%	82.4%

Based on regression-based decomposition
Adjusted for all other variables in the model

Decomposition of univariate inequity

Equal opportunity for health

Policy amenability



Residual

Social background

Health care supply

Individual preference

Available information

Summary of results

- Regression model explained about 20% of the variation in the observed HUI
- Two definitions of health inequity did not yield statistically significant differences in the estimated amount of univariate inequity
- Income and health care showed strong associations with the unfair HUI

Implications

- Definitions of health inequity, vigorously debated in the field, may have limited empirical significance
- We may have enough conceptual clarity to proceed with policy
- We might miss an important aspect of health inequity by only replying on a priori assumptions about attributes with which we should assess health inequity

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