CONSTRUCTING AN OHIO HUMAN DEVELOPMENT INDEX

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES / EEDS / CAPSTONE #0018

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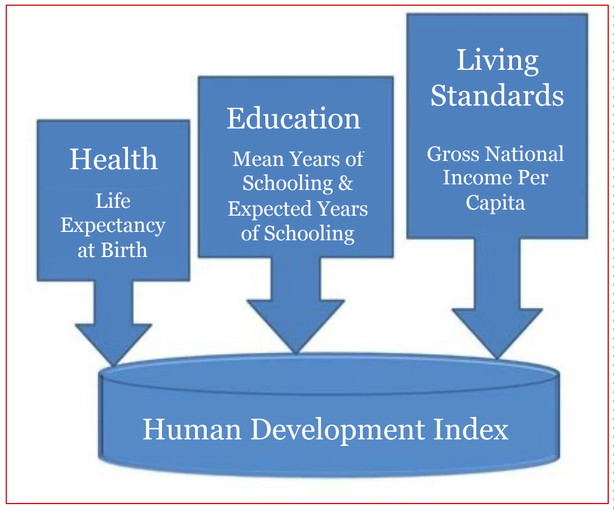
PRESENTED BY EEDS CAPSTONE OHIO HDI

ABSTRACT

Our team collaborated with Scioto Analysis to evaluate Ohio's well-being using a capabilities approach, specifically focusing on the Human Development Index (HDI) with indicators in education, income, and health. The study aims to achieve three primary objectives. Firstly, to develop a 30-year time-series report of HDI data for Ohio, alongside a national HDI map. Secondly, to correlate HDI indicators with demographic factors, analyzing racial demographics within Ohio. Lastly, to geographically map HDI values across counties in Ohio. To ensure reliable data, we conducted analyses using information from the U.S. Census, the Bureau of Economic Analysis (BEA), the Global Data Lab (GDL), and reports from the Ohio Department of Development. Additionally, a comparative study was made using GDL data, for an in-depth contextualization of Ohio's. Initial trends from our first objective indicate an overall increase in Ohio's HDI.

THREE COMPONENTS OF HDI



The three components that make up the Human Development Index and their corresponding indicators. Provided by Dr. Raphael Tabani Mpofu (2013) "Standard of Living".

INTRODUCTION

The Human Development Index (HDI) was developed by the United Nations in 1990 to measure national development in a more holistic sense than the economic indicators used previously, such as Gross Domestic Product (GDP). While HDI is commonly used to compare development between nations, it has not been broadly used in a subnational context. In this study, we aim to effectively translate the HDI formula, $HDI = (I_{Health} \cdot I_{Education} \cdot I_{Income})^{1/3}$, and previous subnational calculations into both visual aids and statistics that allow for development comparisons between both states and within Ohio itself.

OBJECTIVE 1

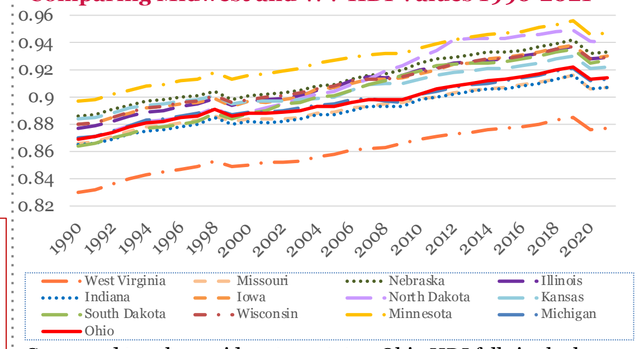
A time series of HDI values for the entire state of Ohio spanning a minimum of 10 years to evaluate the growth or decline of Ohio HDI over time.

METHODS

Using subnational HDI calculations from the Global Data Lab, our team created a 30-year interactive visual time series for Ohio HDI and other states. *To learn more about Global Data Lab subnational HDI calculations and methods scan here:*

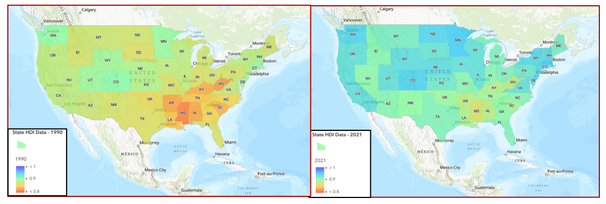
RESULTS

Comparing Midwest and WV HDI Values 1990-2021



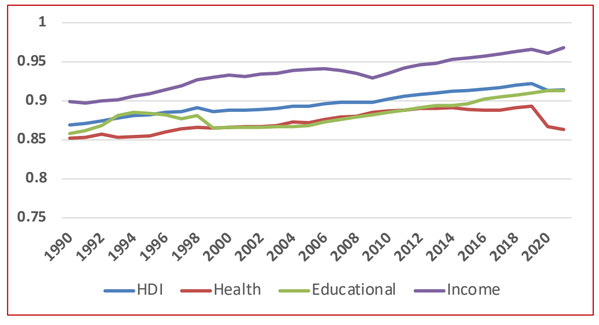
Compared to other midwestern states, Ohio HDI falls in the low-middle HDI, but vastly outpacing the neighboring state of West Virginia. Source: Smits & Permanyer (2021) Global Data Lab

State HDI Values 1990 (Left) and 2021 (Right)



Mapped HDI values show a general increase nationwide from 1990 to 2021. Appalachian states demonstrate lower HDI values, while western and coastal states demonstrate higher HDI. Source: Smits & Permanyer (2021) Global Data Lab

Ohio HDI Index Values from 1990-2021



Ohio's HDI value is largely driven by income as shown in the graph above. Health values dropped significantly in 2020. Source: Smits & Permanyer (2021) Global Data Lab

OBJECTIVE 2

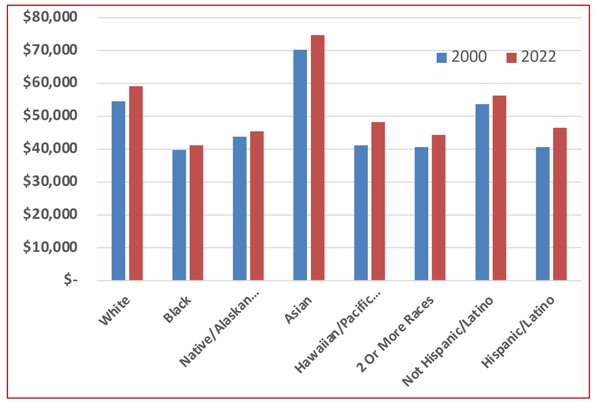
Interpreted data trends and patterns for linking the HDI indicators to demographic components including race.

METHODS

- Each of the three HDI components was analyzed from a demographic standpoint, with the following statistics representing each component:
  - Living Standards: Average yearly earnings
  - Health: Life expectancy after age 65
  - Education: Mean years of schooling

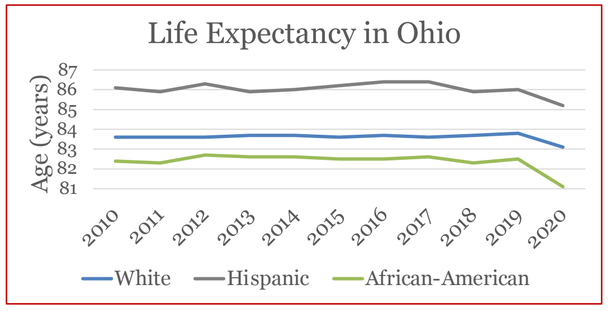
RESULTS

Mean Employee Salary in Ohio by Race in 2023' USD

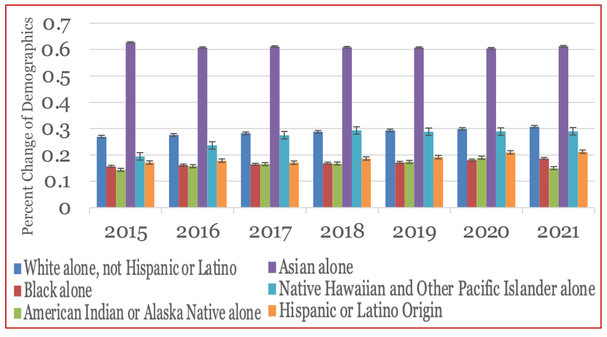


Significant income inequalities between race/ethnicity were found. Asian Ohioans are the highest earning, with Black Ohioans earning the least. All incomes rose from 2000 to 2022.

Life Expectancy in Ohio at Age 65



Percent of Each Population Receiving a Bachelors Degree or Higher



OBJECTIVE 3

Calculate the HDI values for each county within Ohio. to showcase overall wellness.

METHODS

- Education and health metrics were then indexed:

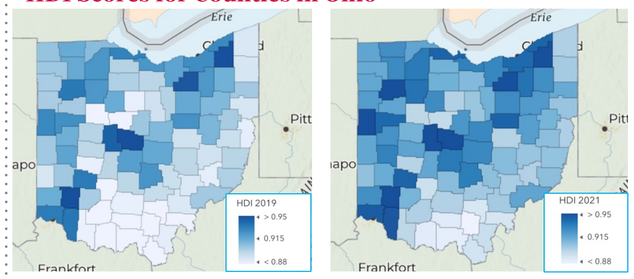
$$I_{H/E} = \frac{Actual\ Value - Minimum\ Value}{Maximum\ Value - Minimum\ Value}$$

- Income value were normalized and indexed:

$$I_{H/E} = \frac{ln(Actual\ Value) - ln(Minimum\ Value)}{ln(Maximum\ Value) - ln(Minimum\ Value)}$$

RESULTS

HDI Scores for Counties in Ohio



2019 HDI **2021 HDI**

Mapped HDI values for each county within Ohio from 2019 to 2021.Overall, the positive shift in HDI throughout the state can be seen. While most of the counties in the Southeastern region have lower HDIs than in the northwest.

Counties in Southeastern Ohio held most of the lower HDI scores. Counties that were known to be focused on agriculture, tended to have lower HDI scores as well. While the counties that surrounded the metropolitan counties had some of the highest HDI scores. As a state, we begin to see over the course of three years the counties become more and more blue. This indicates a shift towards longer life expectancy and an increasing HDI.

RESOURCES & RECOGNITION

Scioto Analysis
Economics | Public Policy

Interactive HDI Maps State and County-Level

References & Acknowledgements