

# Income Distributions and Dynamics in America

Launch Event

November 13, 2023



*The opinions and conclusions expressed here are those of the authors should not be interpreted as reflecting the views of the U.S Census Bureau, the Federal Reserve Board of Governors, the Federal Reserve Bank of Minneapolis, or any other person associated with the Federal Reserve System. The Census Bureau has ensured appropriate access and use of confidential data and has reviewed these results for disclosure avoidance protection (Project 7511151; Disclosure Authorization Numbers CBDRB-FY23-0277, CBDRB-FY23-0373, CBDRB-FY23-CES014-019, and CBDRB-FY23-CES014-016).*

# Speakers



Nathaniel Hendren  
*Professor of Economics,  
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*Director,  
Opportunity & Inclusive Growth Institute*



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Opportunity & Inclusive Growth Institute*



Natalie Gubbay  
*Research Assistant  
Opportunity & Inclusive Growth Institute*



Kevin Rinz  
*Economist  
U.S. Census Bureau*



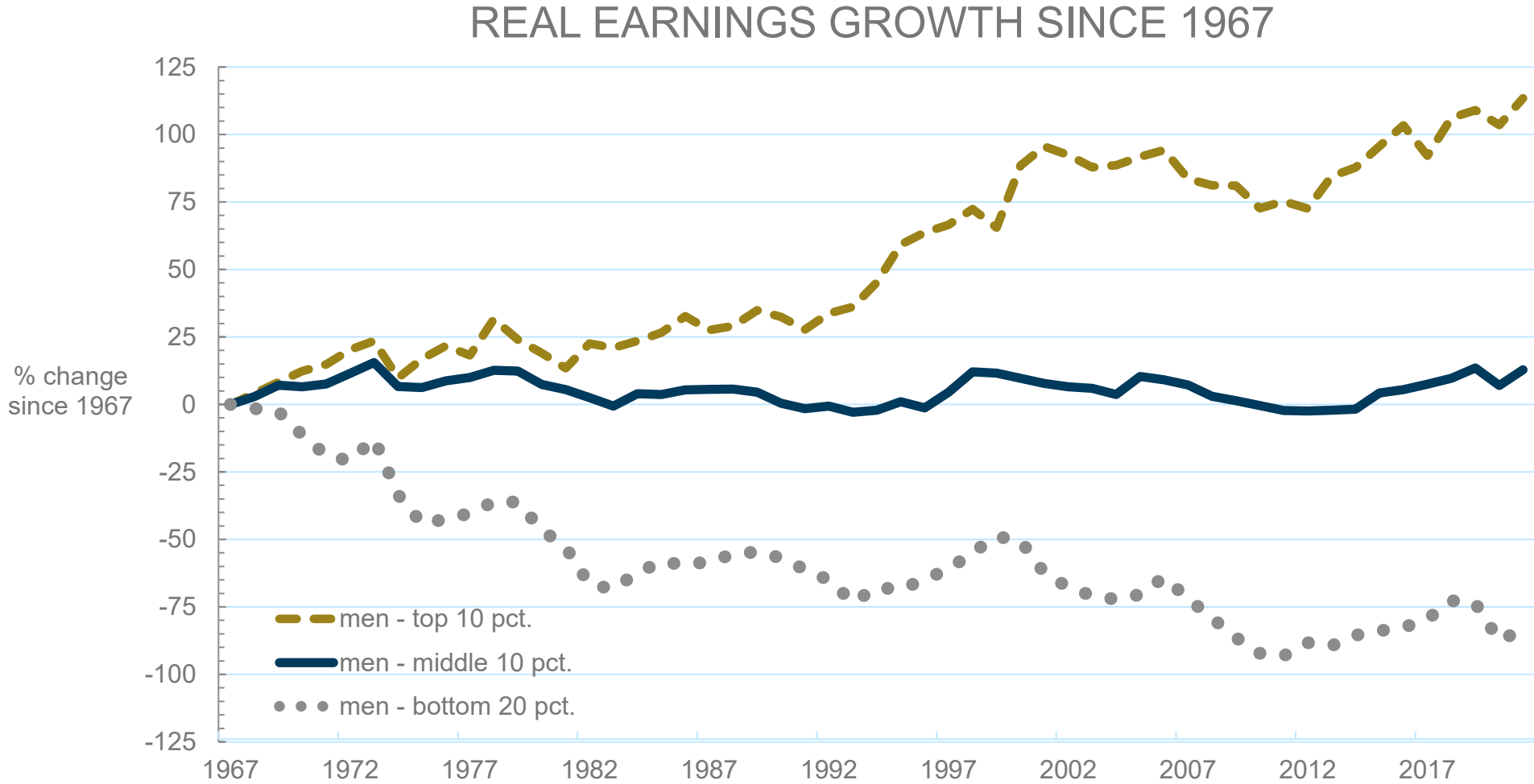
Over the last four decades, the US workforce has seen large changes in earning power, affecting workers from the top to the bottom.

Yet much of what we know about these patterns comes from data with two major limitations: too few observations and (or) no tracking of workers over time.

Without such data, researchers and policymakers cannot answer many important but straightforward questions.



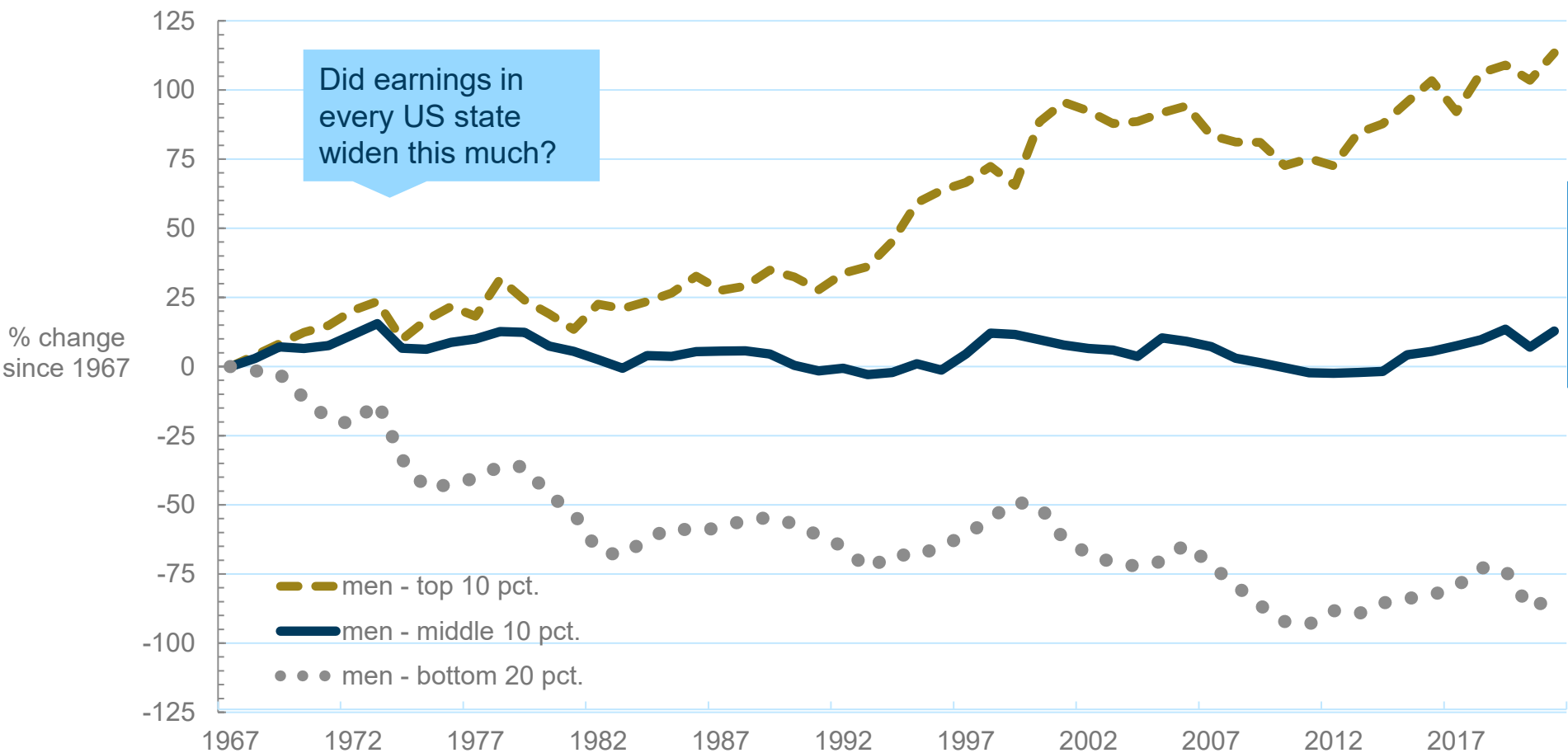
# Income inequality in the U.S. has increased



Source: Heathcote, Perri, Violante, Zhang (2023), original data from the Bureau of Labor Statistics Current Population Survey.

# Income inequality in the U.S. has increased

REAL EARNINGS GROWTH SINCE 1967



What about the top 5% of earners? The top 2% or 0.5%?

Are earnings for non-majority groups between these trends? Or different all together?

What about for women?  
In different states?  
And age groups?

Source: Heathcote, Perri, Violante, Zhang (2023), original data from the Bureau of Labor Statistics Current Population Survey.



INTRODUCING

# Income Distributions and Dynamics in America (IDDA)

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A powerful resource for advancing  
our understanding of income  
differences across America.

[minneapolisfed.org/idda](https://minneapolisfed.org/idda)

The map displays data for the year you choose, while the line chart displays your selected values over time.

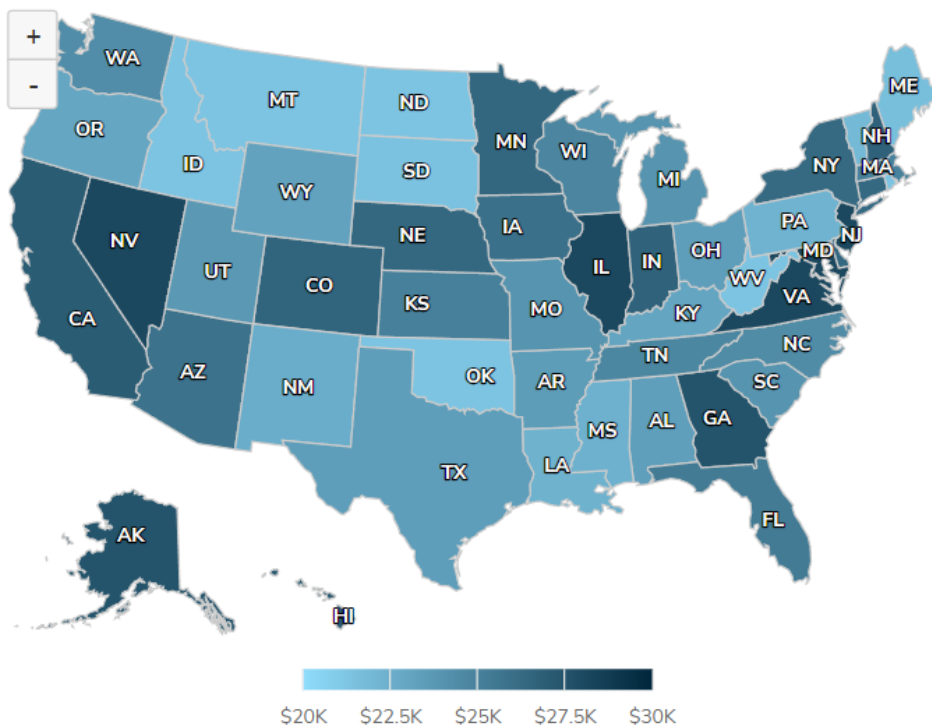
Race and ethnicity **Sex** U.S./Foreign-born Age

Explore the 50th percentile of the distribution of individual earnings among people who are Hispanic in 2005

Compare these values with **White** incomes? ☐ Yes ☒ No

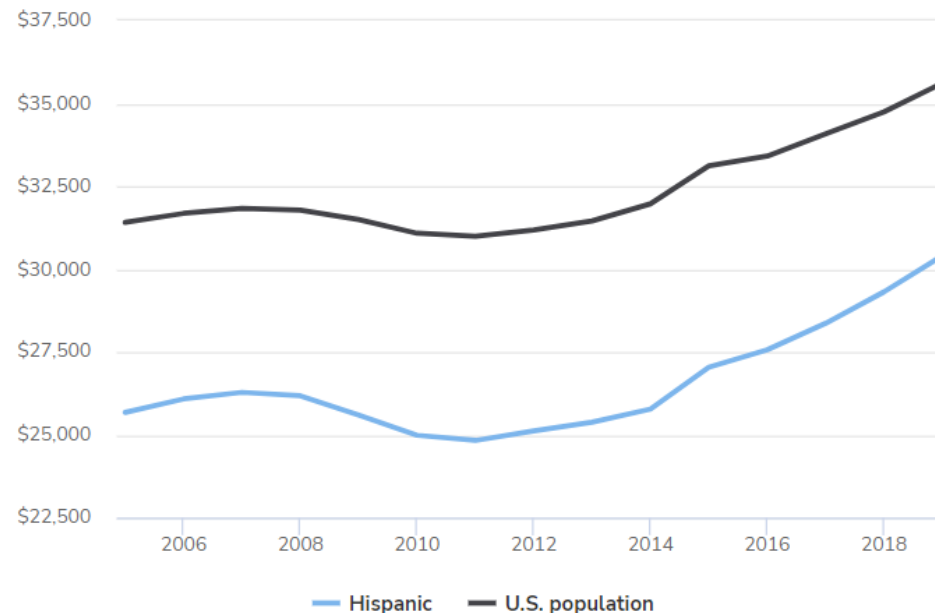
### Hispanic individual earnings

50th percentile, 2005



### Hispanic individual earnings, 2005-2019

50th percentile



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.

The map displays data for the year you choose, while the line chart displays your selected values over time.

Race and ethnicity

Sex

U.S./Foreign-born

Age

Explore the 

50th

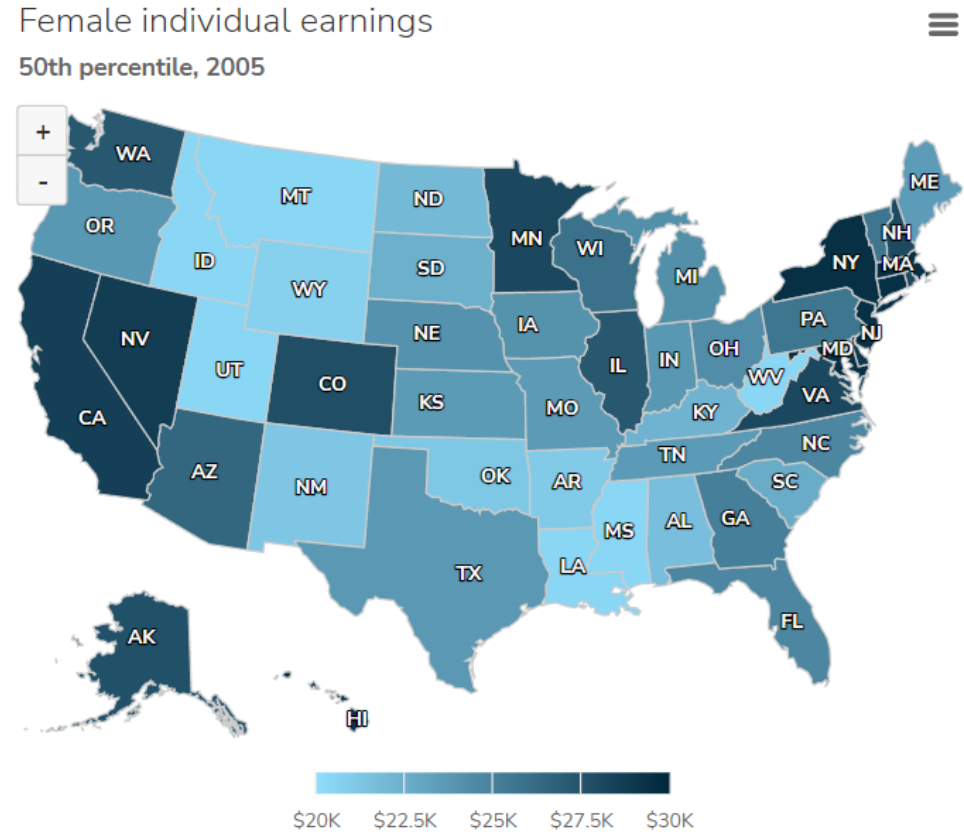
 percentile of the distribution of **individual earnings** among 

Females

 in 

2005

Compare these values with **male** incomes? ☐ Yes ☒ No



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.



The map displays data for the year you choose, while the line chart displays your selected values over time.

Race and ethnicity

Sex

U.S./Foreign-born

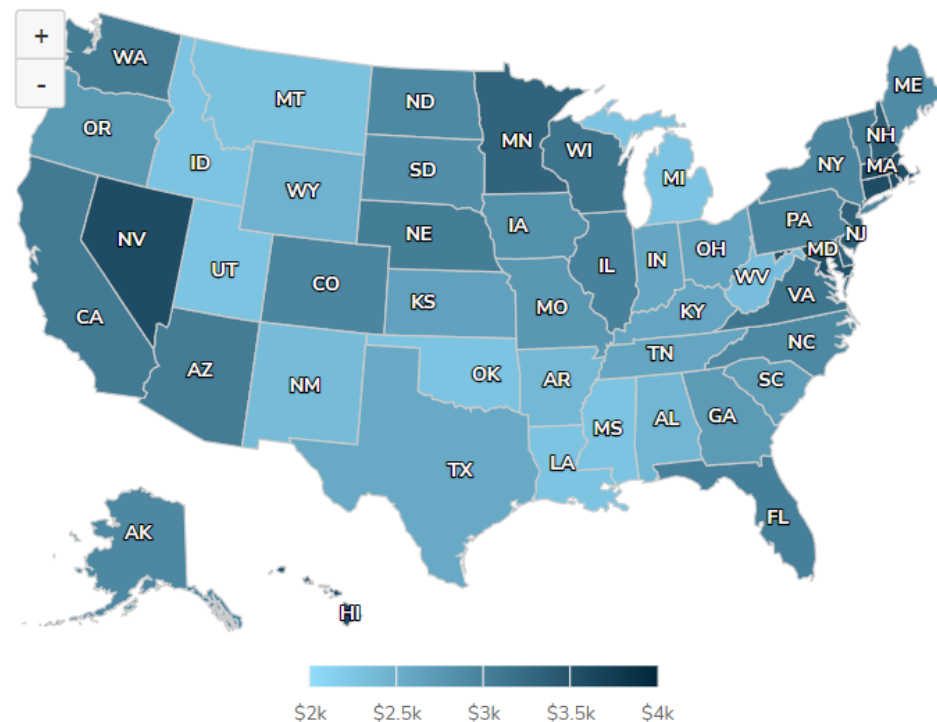
Age

Explore the **10th** percentile of the distribution of **individual earnings** among Females in 2005

Compare these values with **male** incomes? ☐ Yes ☒ No

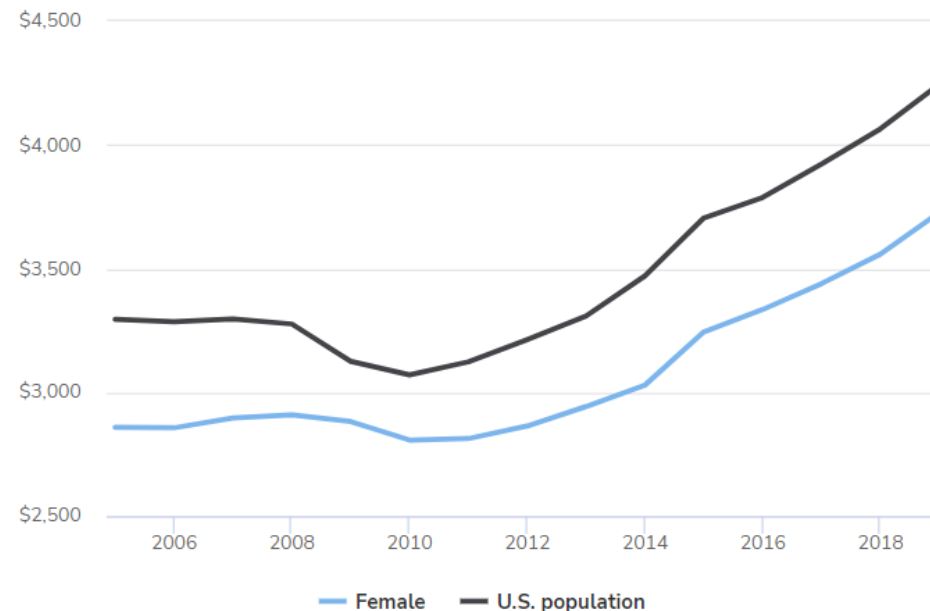
### Female individual earnings

10th percentile, 2005



### Female individual earnings, 2005-2019

10th percentile



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.

The map displays data for the year you choose, while the line chart displays your selected values over time.

Race and ethnicity

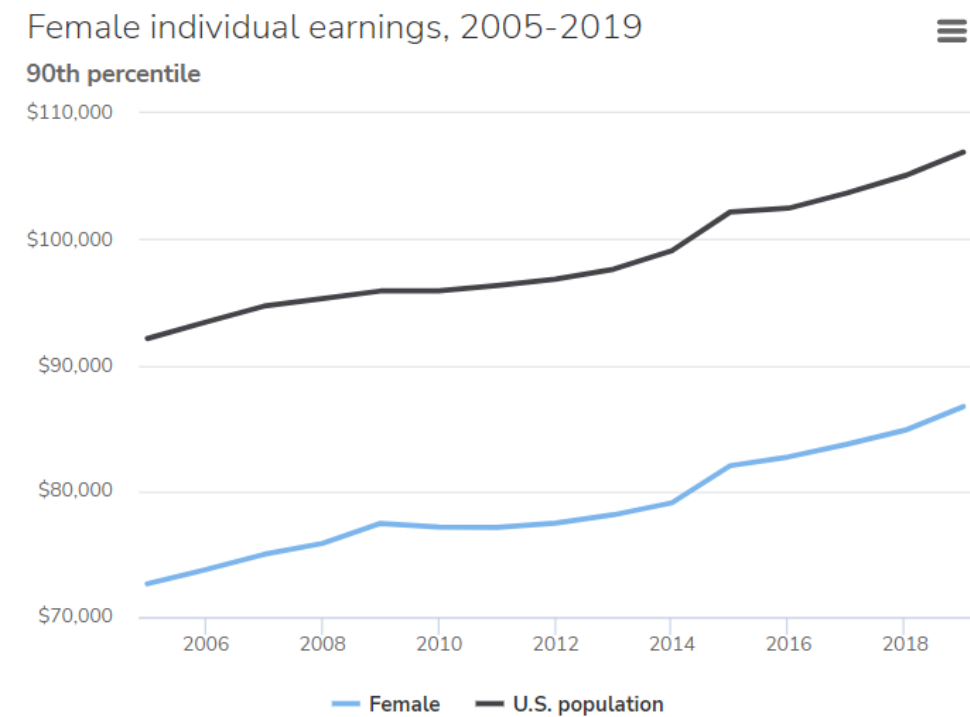
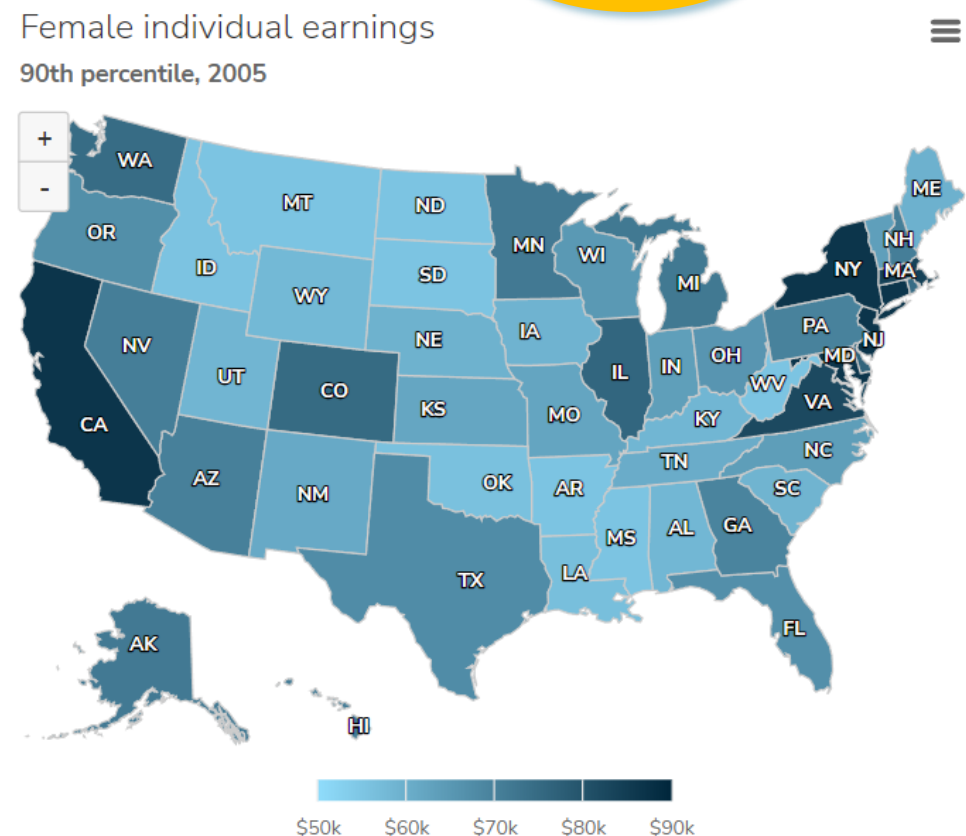
Sex

U.S./Foreign-born

Age

Explore the 90th percentile of the distribution of individual earnings among Females in 2005

Compare these values with male incomes? ☐ Yes ☒ No



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.

The map displays data for the year you choose, while the line chart displays your selected values over time.

Race and ethnicity

Sex

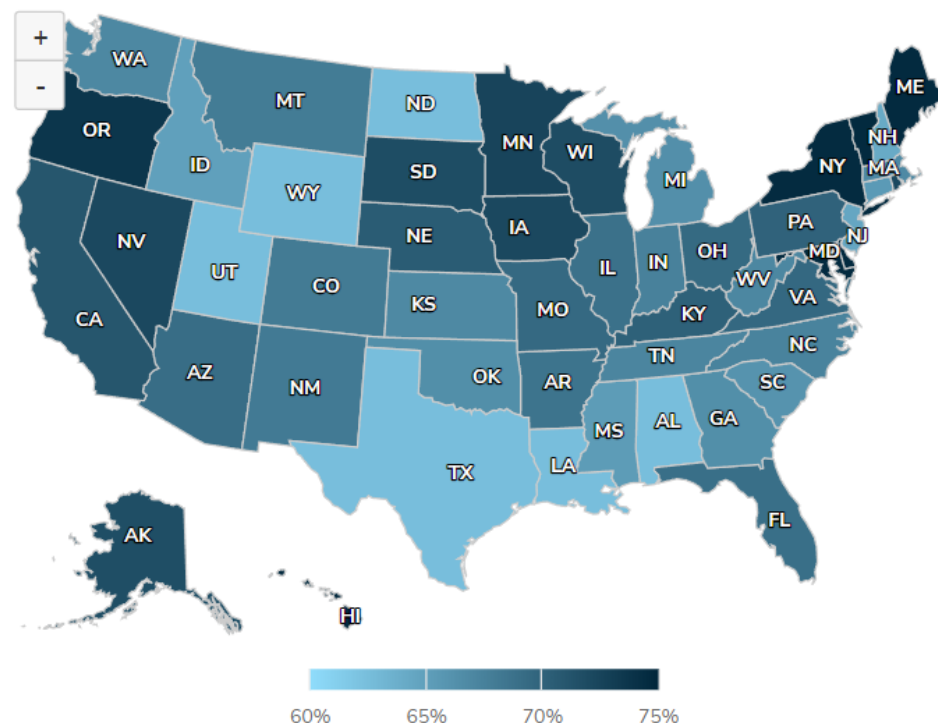
U.S./Foreign-born

Age

Explore the  percentile of the distribution of **individual earnings** among  in

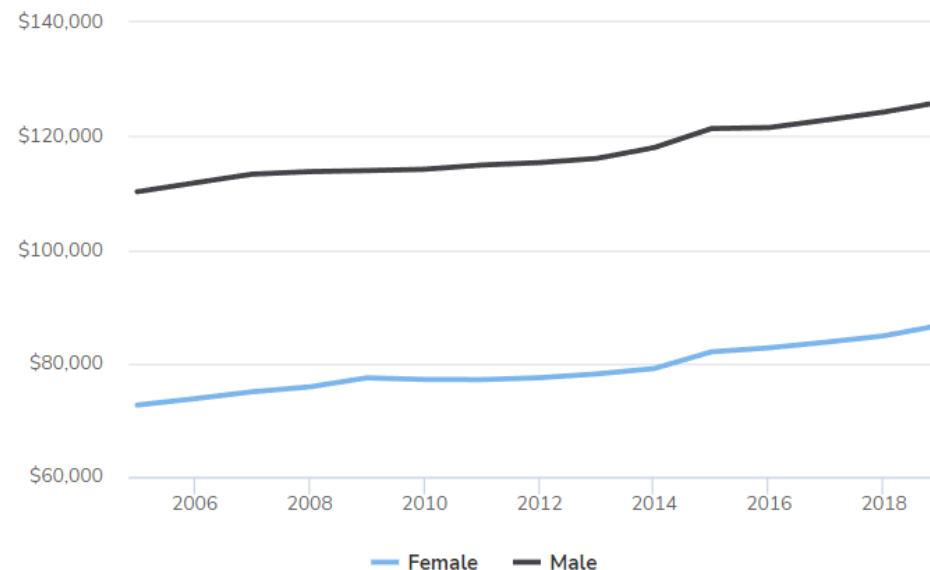
Compare these values with **male** incomes? ☒ Yes ☐ No

Female individual earnings relative to male earnings  
90th percentile, 2019



Female individual earnings compared with male earnings, 2005-2019

90th percentile



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.



What is IDDA?



- A comprehensive resource on income distributions and dynamics for US subpopulations and sub-national geographies
  - Public good: data available to researchers and policymakers
  - Better understanding of how the economy works (including to achieve FOMC mandate)

# IDDA resource = data center + viz tool + articles

Articles:  
narratives,  
features, and  
research papers

Interactive data  
visualization  
tools

Bulk data  
downloads

[www.minneapolisfed.org/idda](http://www.minneapolisfed.org/idda)

# IDDA = data center + viz tool + **articles**

## ARTICLES

Articles:  
narratives, features,  
and research papers



# IDDA = data center + viz tool + articles

0 Race and ethnicity Sex U.S./Foreign-born Age

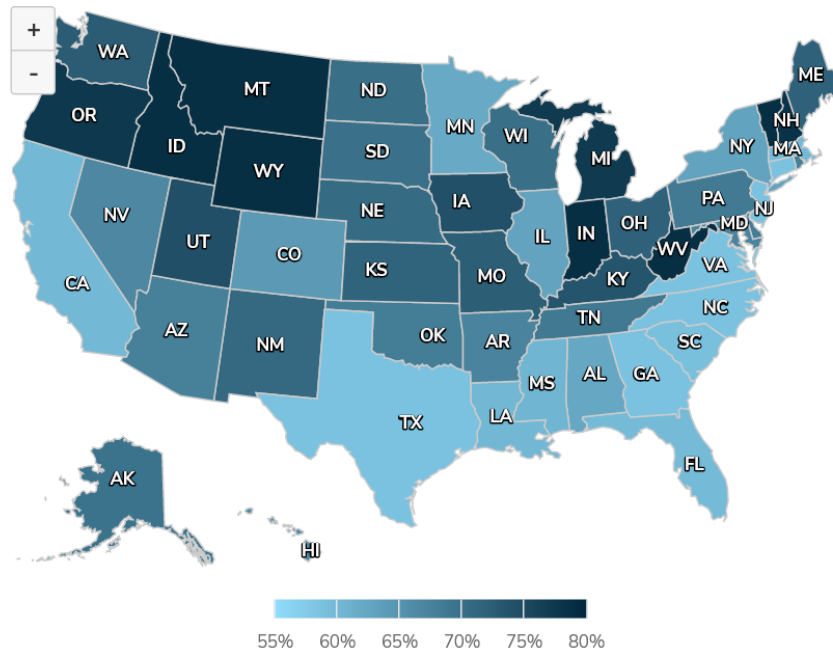
1 Explore the 95th percentile of the distribution of individual earnings among people who are Black in 2005

2 3 4

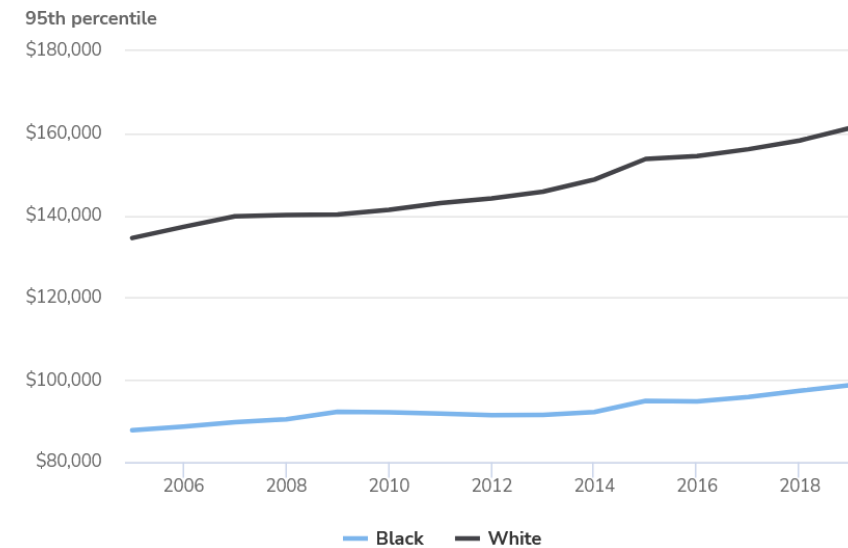
Compare these values with **White** incomes? ☒ Yes ☐ No

Interactive data  
visualization  
tools

Black individual earnings relative to White earnings  
95th percentile, 2005



Black individual earnings compared with White earnings, 2005-2019



All earnings are inflation adjusted to 2019 dollars. The race and ethnicity groups we consider are Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic White. The map legend shows a truncated range to reduce the visual impact of outliers.



# IDDA = dataset + viz tool + articles

## DATA CENTER

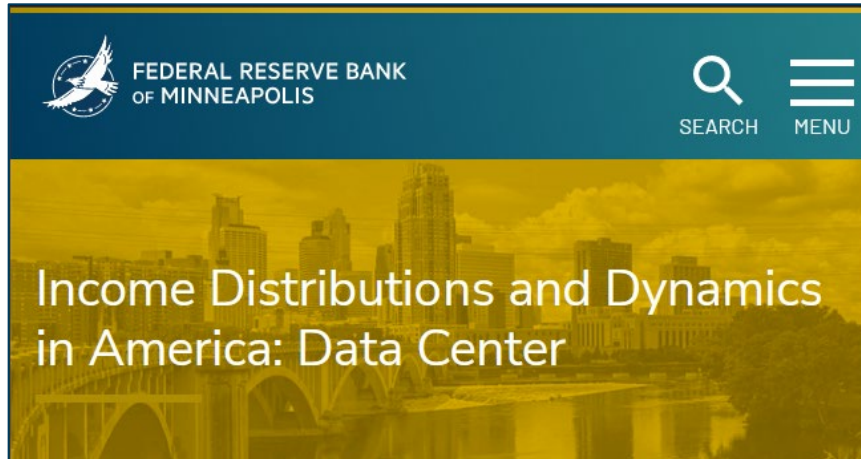


Download the data and access technical documentation explaining the statistics in the datasets.

[Download datasets](#)

1

Bulk data  
downloads



2

You can download the IDDA data from this page. Please refer to our [guidelines below](#) for citation format and for including your reports and papers in the IDDA bibliography.

Download the [IDDA codebook](#) and [documentation](#).

### Percentiles of income module

This file contains select percentiles of incomes by type of income, location, demographic group, and year.

Download full module: [pctl\\_of\\_inc\\_all\\_data.csv](#)

Download submodules by income type and geographic level:

Individual-level W-2 data for U.S.: [pctl\\_of\\_inc\\_us\\_w2.csv](#) (size: 0.8 MB)

Individual-level W-2 data for states: [pctl\\_of\\_inc\\_state\\_w2.csv](#) (size: 5.7 MB)

Address-level 1040 data for U.S.: [pctl\\_of\\_inc\\_us\\_1040.csv](#) (size: 0.6 MB)

Address-level 1040 data for states: [pctl\\_of\\_inc\\_state\\_1040.csv](#) (size: 3.3 MB)

### Top income shares module

This file contains top income share within and across demographic groups by type of income, location, demographic group, and year.

3

# IDDA statistics

- Large **granular** dataset constructed by combining **two big data sources**
  - IRS: tax records
    - **all** filed individual income tax return Form 1040s
    - **all** employer-filed wage and tax statement Form W-2s
  - U.S. Census Bureau:
    - individual demographic information, especially race and ethnicity
- Over 6M statistics built on 20+ years (1998-2019) of administrative data from the IRS and the Census

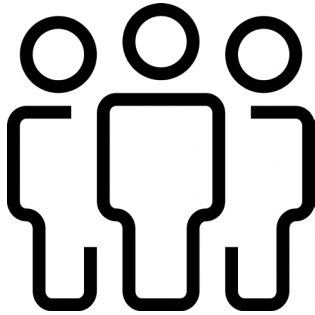
# Building blocks

- Income Tax Return Form **1040**
  - Total wages, salaries and tips (line 7)
  - Adjusted gross income (line 37)
  - 1998-2019
- Wage and Tax Statement Form **W-2**
  - Total wages and salaries (box 1)
  - Deferred compensation (box 12a-12d)
  - 2005-2019
- Census linkages
  - Individual identifier (PIK)
  - Housing unit identifier (MAFID)
- Census demographic data
  - Social Security Administration
    - Sex, place of birth, year of birth/death
  - Best Race and Ethnicity Administrative Records Composite File
  - Master Address File

# Dimensions of IDDA statistics



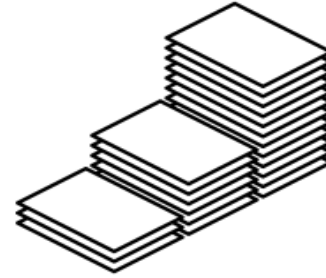
wages & salaries  
total compensation  
gross income  
non-wage income



age  
gender  
race and ethnicity  
[6 Census groups]  
US-born status



federal  
individual state + DC  
combined native areas boundaries



all 1040 households (addresses)  
all W2 earners  
prime-age working W2 earners



year  
[1998/2005-2019]  
change window  
[1/5 year change]



income percentile  
top income share  
change percentile  
income bin  
transition shares



# Consider Asian Women earnings in South Dakota in 2012

- **Top to bottom income value**

- **How much** is the bottom/top decile of earnings?

- **Top incomes' share of the pie**

- **What share** of total earnings **within** group goes to its top earners?

- **Group share of top incomes**

- **What share** of top earnings/earners **across** all groups in SD goes to this group?

- **Bin-to-bin income mobility**

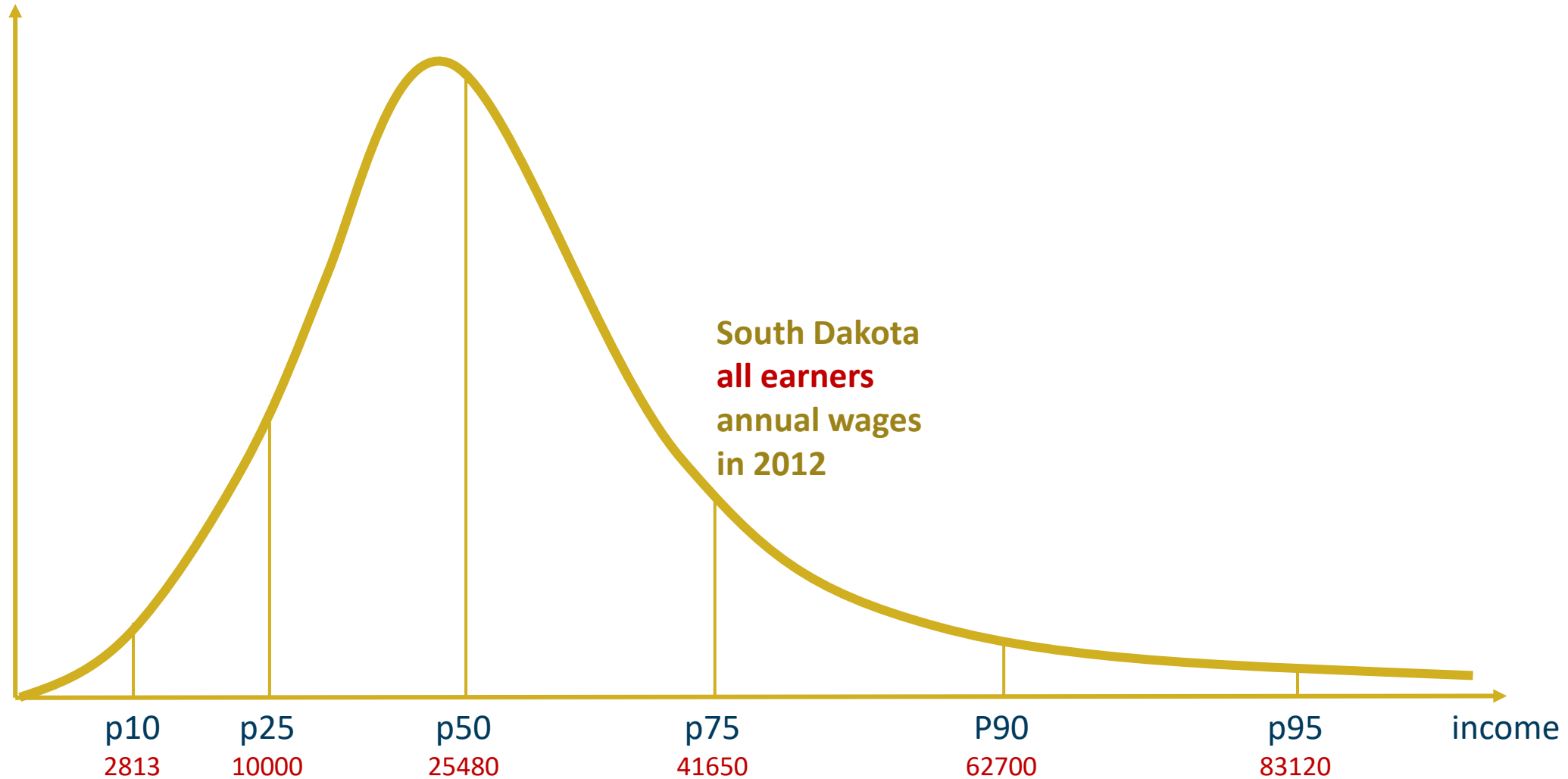
- **What fraction** moves from the bottom to top earnings quartile, say, after 5 years?

- **Top to bottom income change**

- **How much** is the bottom/top decile of earnings **changes** among earners in the **bottom quartile**, say, after **1 year**?

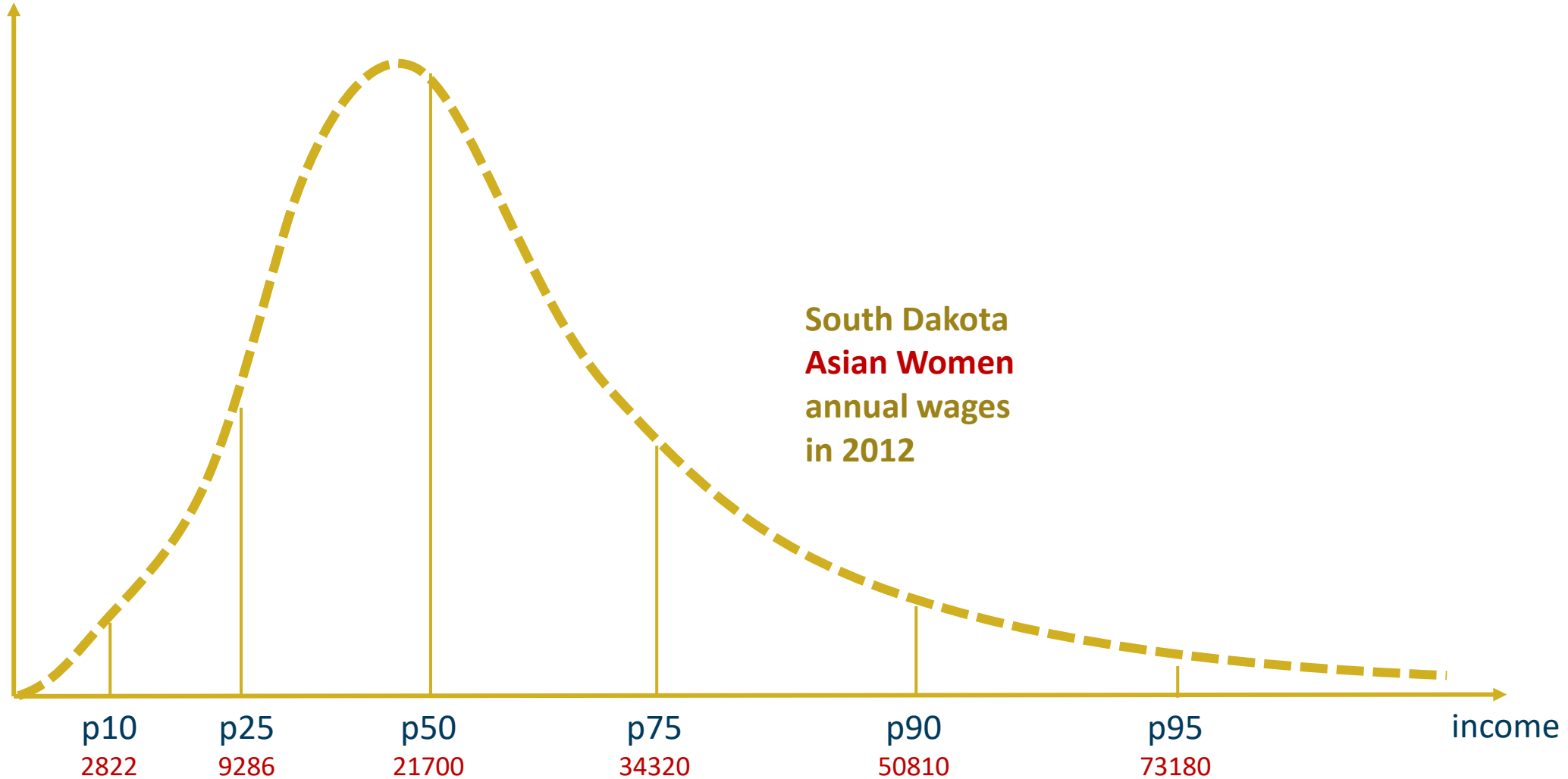
# Income distribution: income percentiles

probability



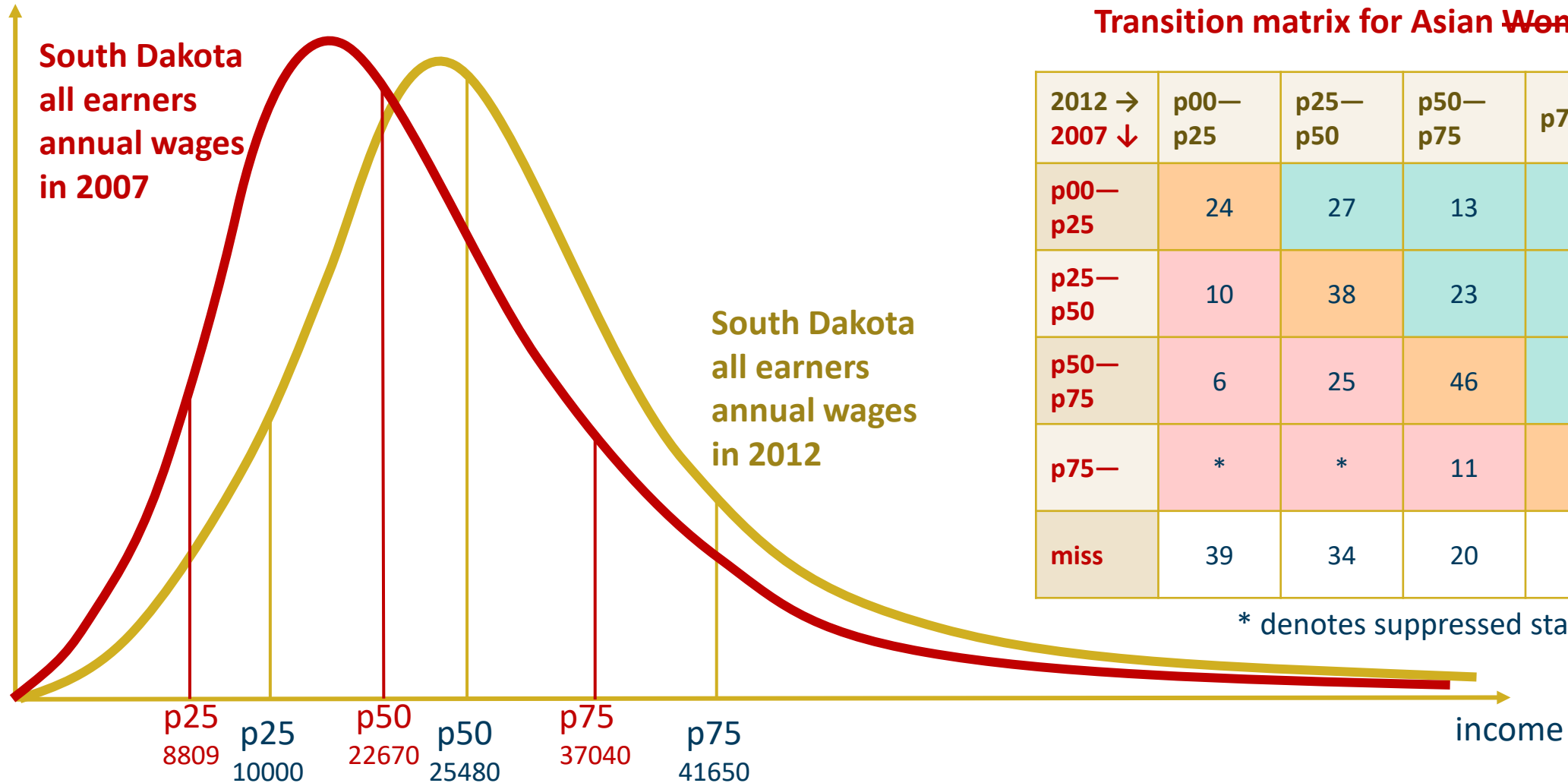
# Income distribution: income percentiles

probability



# Income dynamics: **quartile-to-quartile** transitions

probability



**Transition matrix for Asian ~~Women~~ in SD**

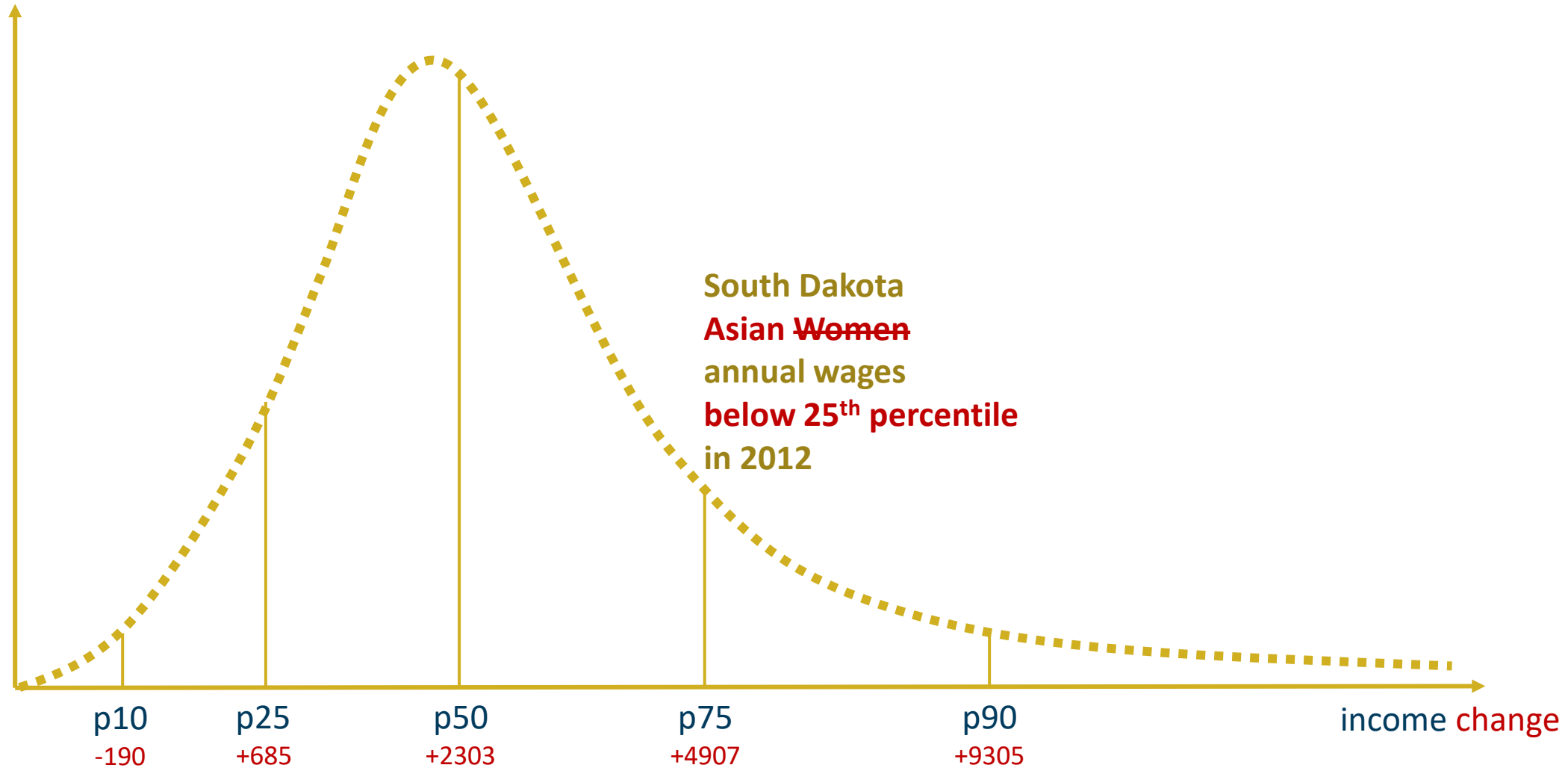
2012 → 2007 ↓	p00— p25	p25— p50	p50— p75	p75—	miss
p00— p25	24	27	13	10	25
p25— p50	10	38	23	10	19
p50— p75	6	25	46	21	12
p75—	*	*	11	75	7
miss	39	34	20	7	

\* denotes suppressed statistics



# Income dynamics: **income change** distribution

probability



# IDDA = **dataset** + viz tool + articles

## Bulk download modules

- Percentiles of income
- Top income shares
- Top income population shares
  - Full module
  - US x W2
  - States x W2
  - US x 1040
  - States x W2

- Income change distributions
- Income transition matrices
  - Full module
  - US x W2 @ 1 or 5-year horizon
  - States x W2 @ 1 or 5-year horizon
  - US x 1040 @ 1 or 5-year horizon
  - States x W2 @ 1 or 5-year horizon

**+ Native Areas statistics**

# Limitations and caveats

Though built from universal administrative data

1. IDDA incomes are only pre-tax and taxable incomes from tax returns.
2. IDDA income therefore do not reflect informal incomes and non-taxable incomes.
3. IDDA does not contain public transfers to low income households, in particular.
4. IDDA does not have a breakdown of non-wage incomes by type.
5. IDDA is only representative of filed incomes, not all state-level or federal incomes.
6. IDDA statistics are not available for all feasible demographic groups or places.
7. IDDA does not contain any statistics on wealth.

Use **Income Distributions and Dynamics in America** statistics to analyze income growth, income mobility, and income inequality within and across groups defined by place, time, race, ethnicity, age, sex, and birthplace.



REGISTER NOW!

Join us for a  
virtual event  
introducing  
IDDA.

**November 13, 2023**  
**11:00 a.m.–12:00 p.m. CT**

**download**

more than 6 million statistics

**visualize**

using our chart and map toolkit

**explore**

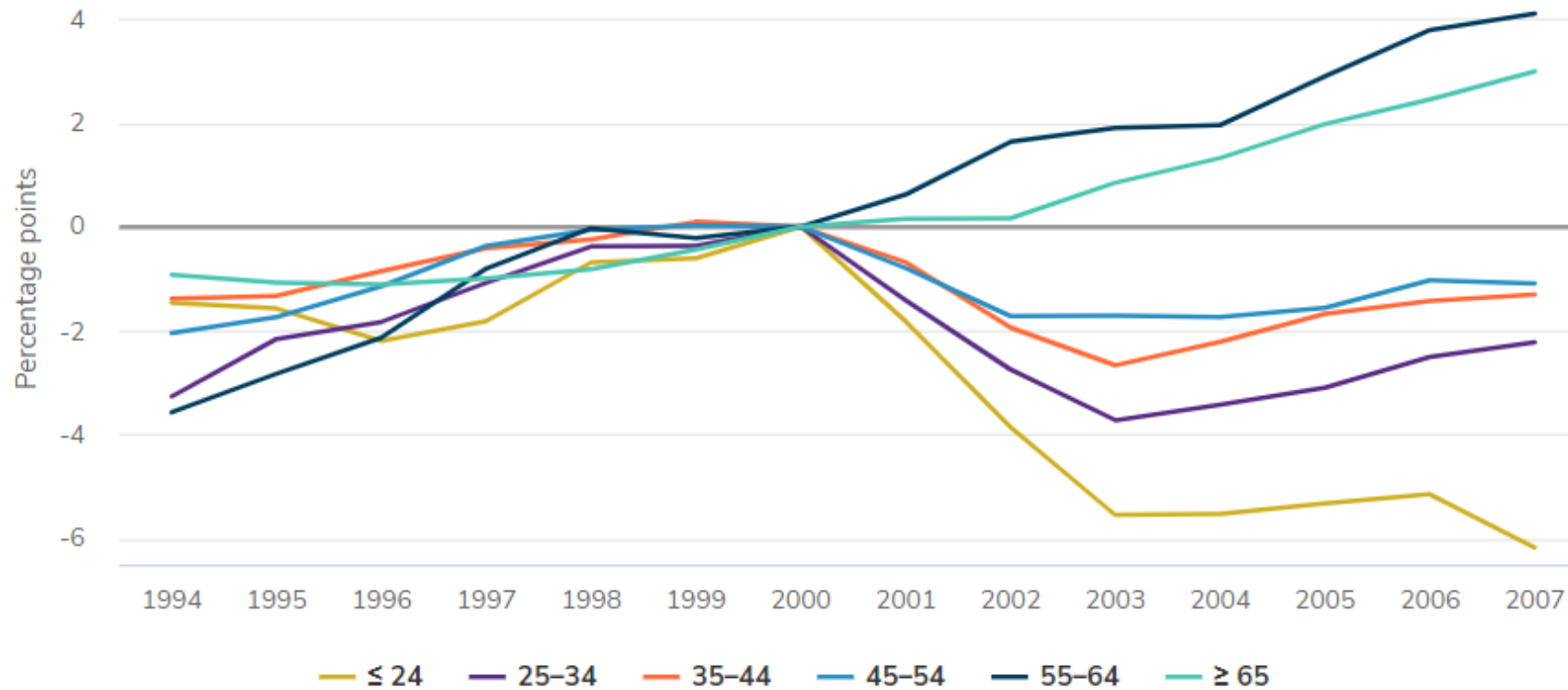
ongoing analysis of IDDA data



# Recession Flash Talk

# Following the 2001 recession, employment fell more for some groups than for others

Change in employment-population ratio from 2000, by age





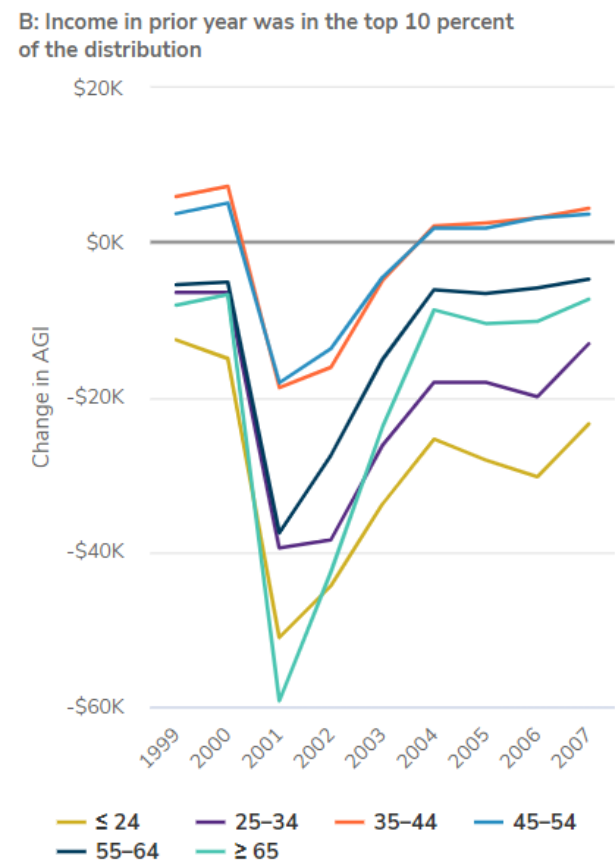
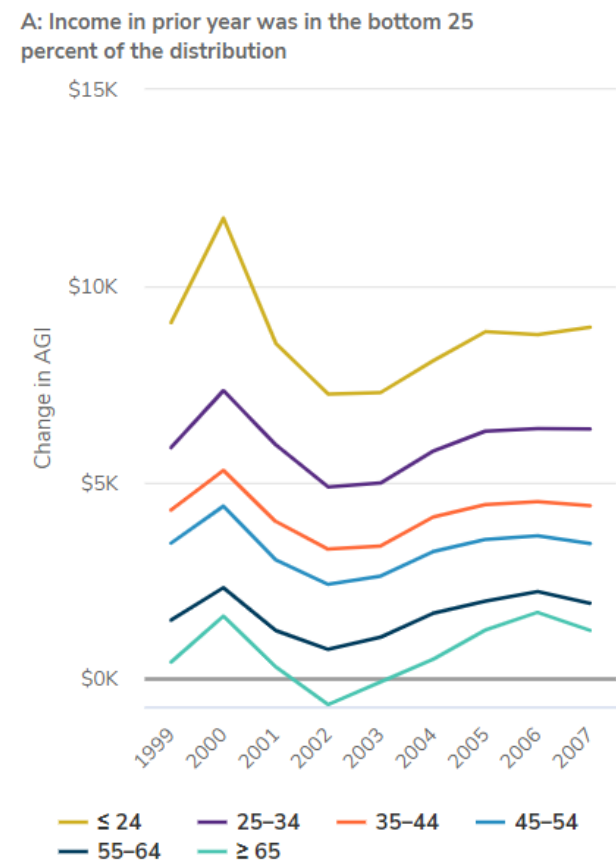


# How do changes in employment relate to changes in income?

## IDDA data help provide insight



Median annual income growth, by age

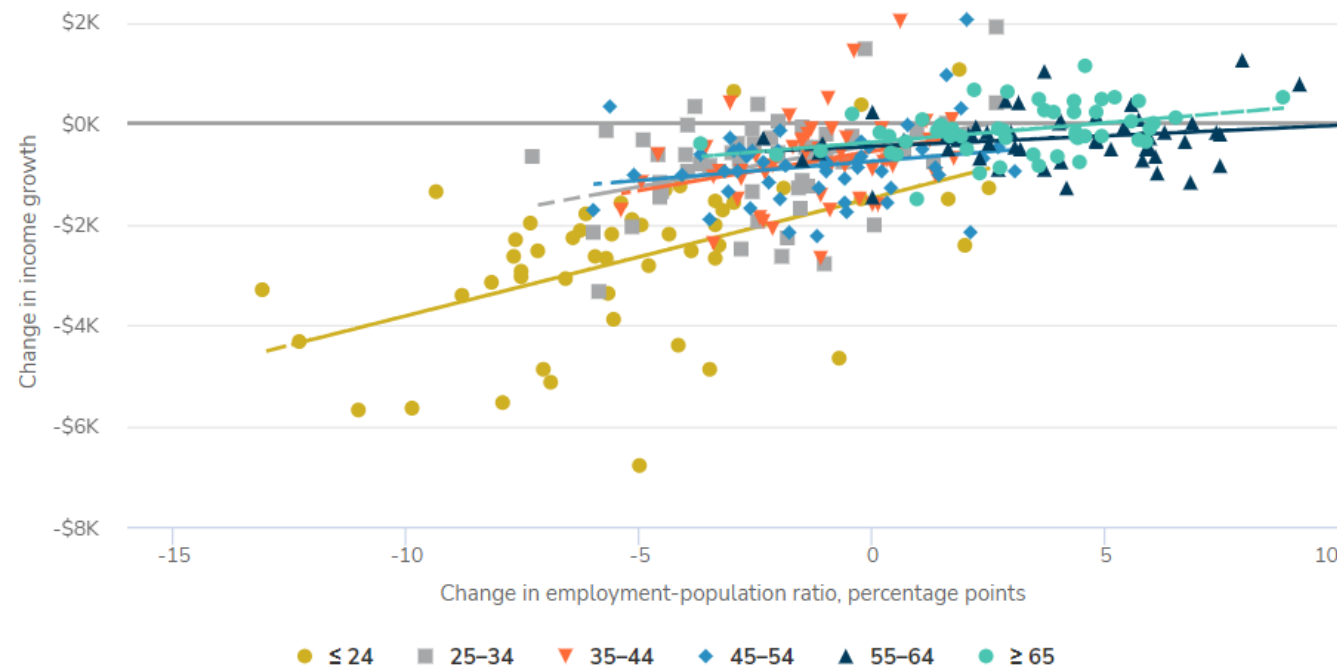


Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America, U.S. household-level data.

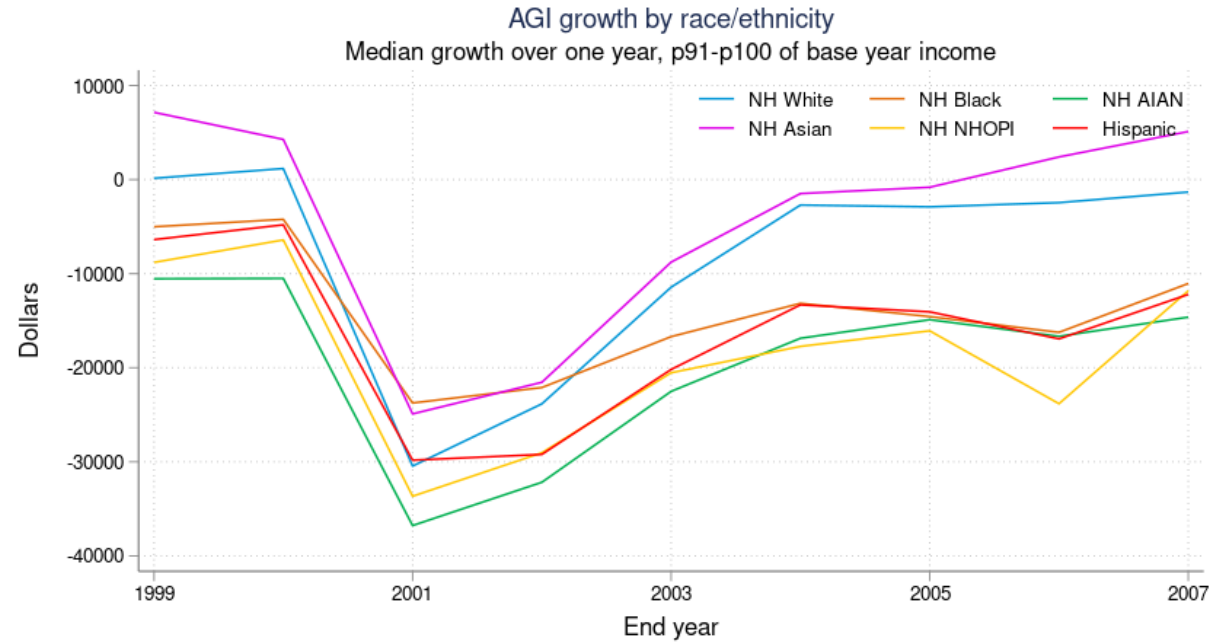
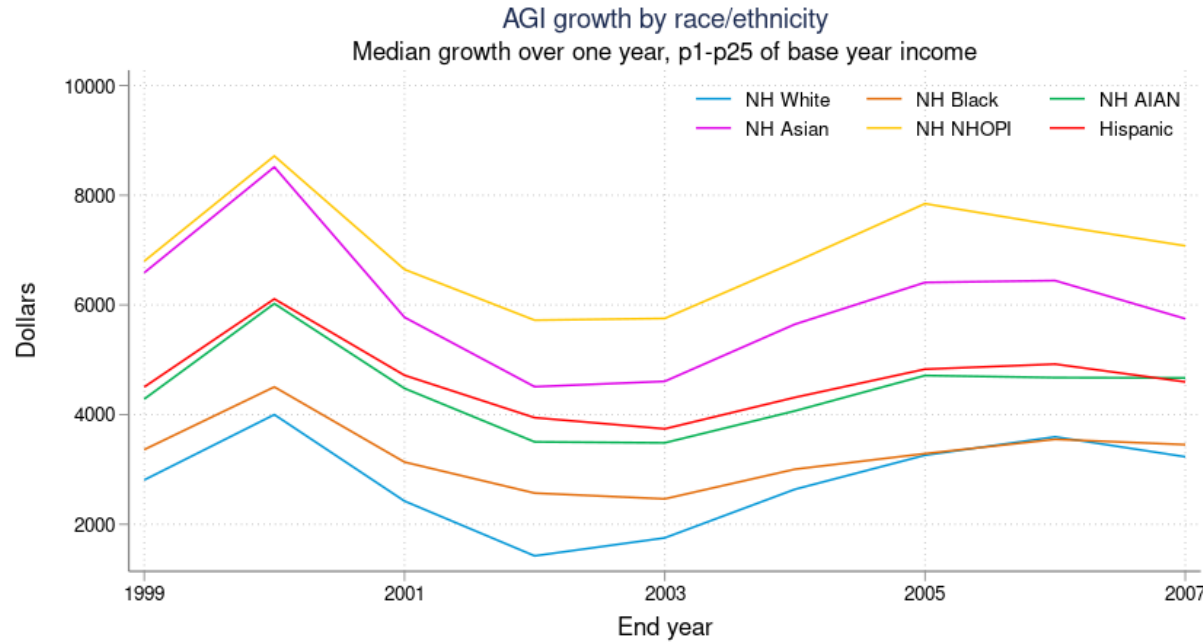
# State data point to larger earnings declines where employment fell more, especially for low earners

How annual income growth and employment changed for bottom 25 percent of income distribution, 2000–2007

50th percentile of income growth

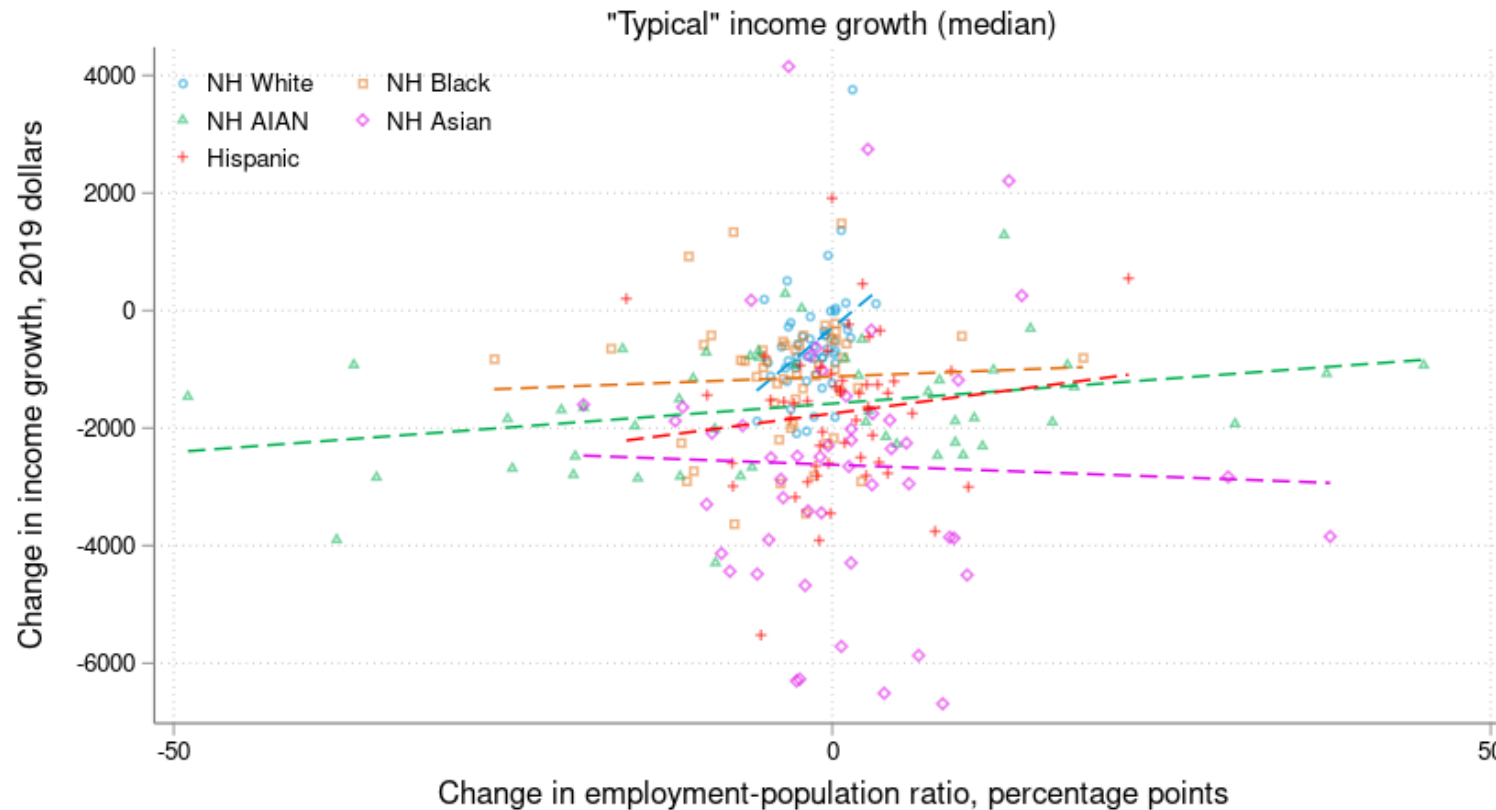


# Data reveal differences in income growth following the recession across race/ethnicity groups as well



Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America, U.S. household-level data.

# Changes in income growth are more strongly associated with changes in employment for non-Hispanic White people





# Native Areas Flash Talk



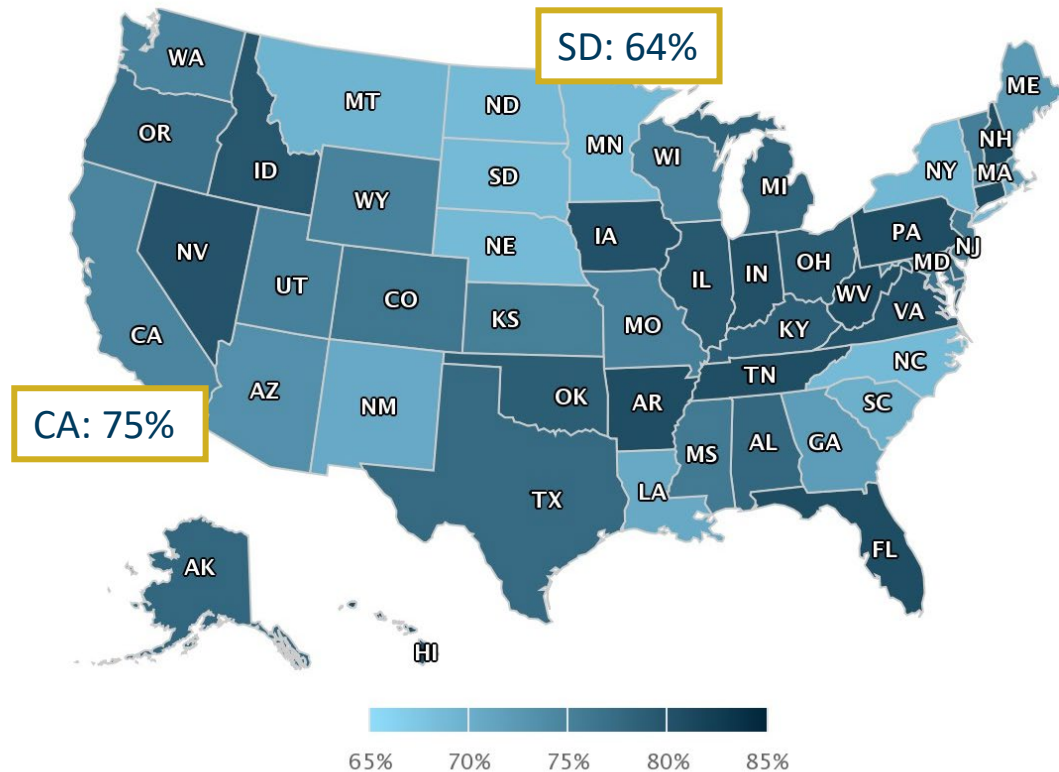
# Native Incomes in IDDA

- Reliable income information for non-Hispanic American Indian or Alaska Native (AIAN) individuals and non-Hispanic Native Hawaiian or other Pacific Islander (NHOPI) individuals within U.S. states
- And for Native and non-Native individuals living in Native areas delineated by the U.S. Census Bureau

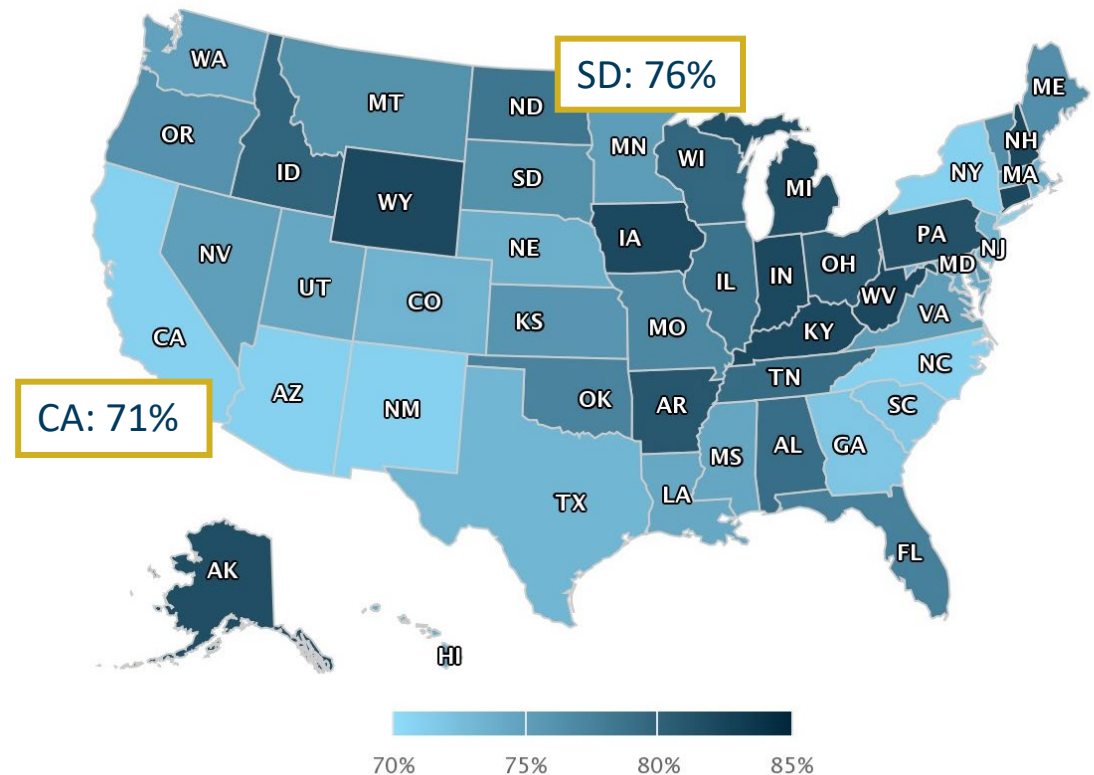


# Income gaps between AIAN and White tax filers vary across U.S. states

**Median income (AGI) among AIAN individuals relative to median White incomes (2005)**

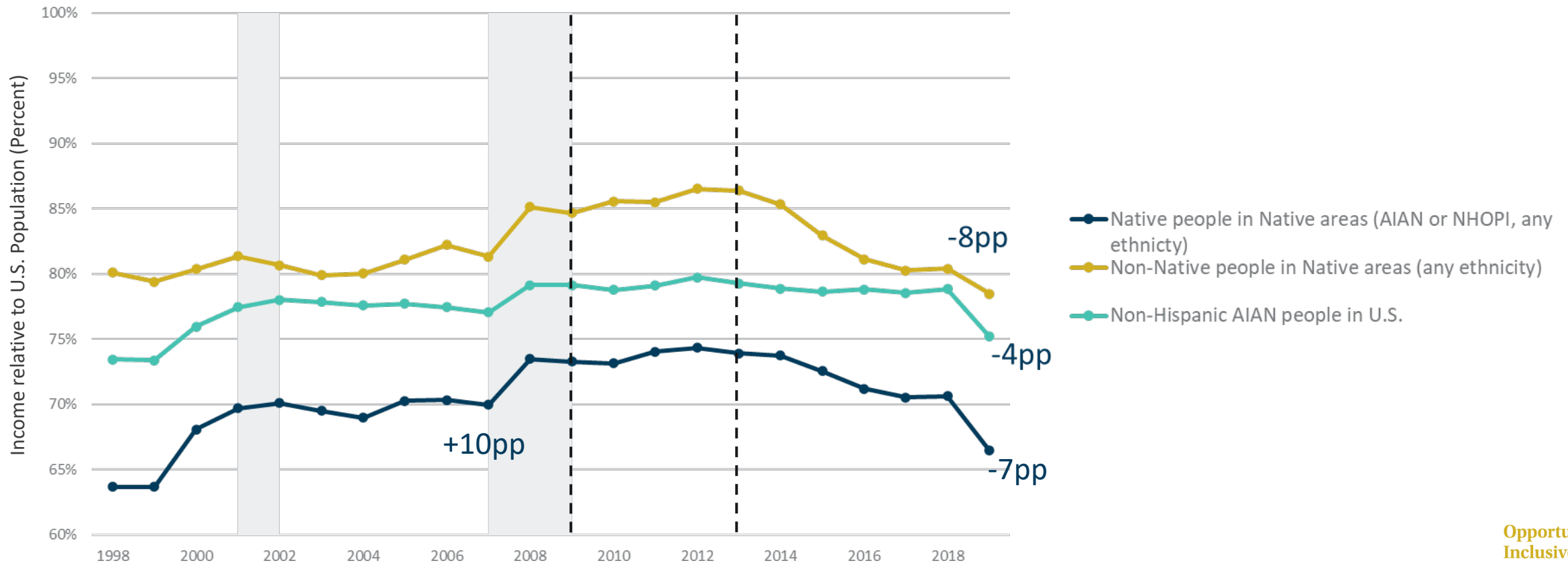


**90<sup>th</sup> percentile of income (AGI) among AIAN individuals relative to White incomes (2005)**



# Since 2009, income convergence in Native areas flattened and then reversed

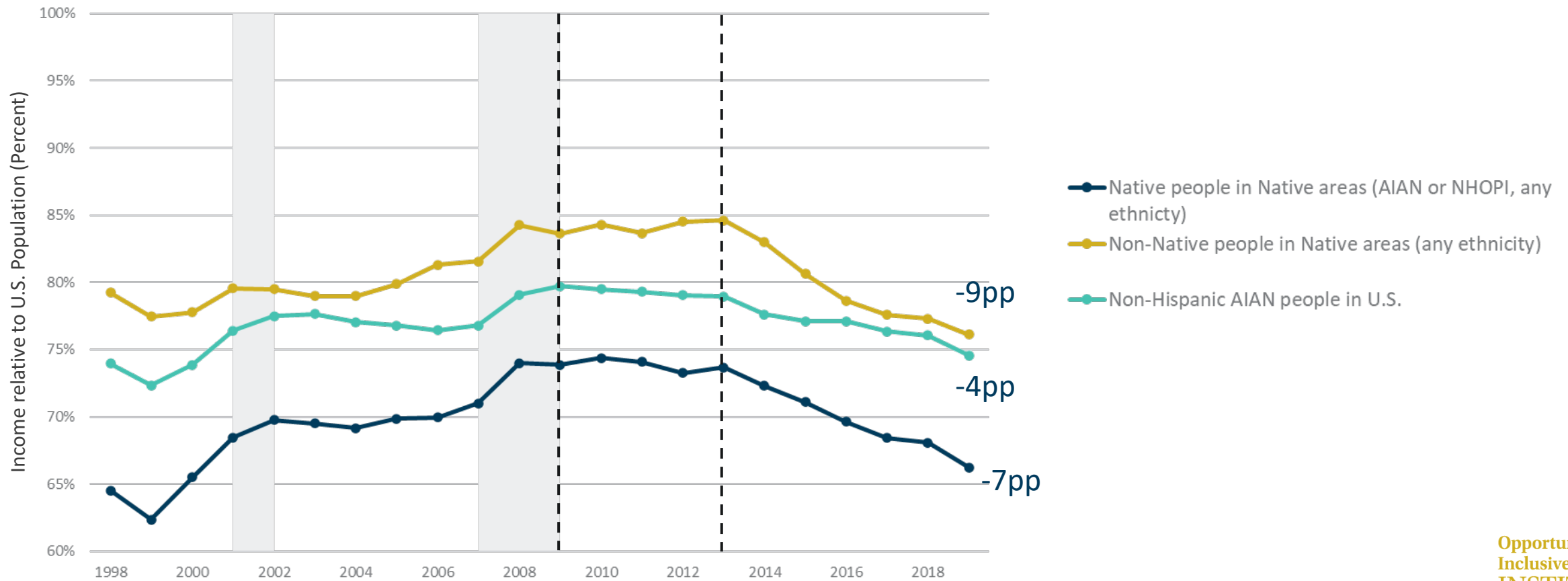
## 50<sup>th</sup> Percentile of Income (AGI) Relative to U.S. Population



Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America

# Incomes in tribal areas also diverge at the top

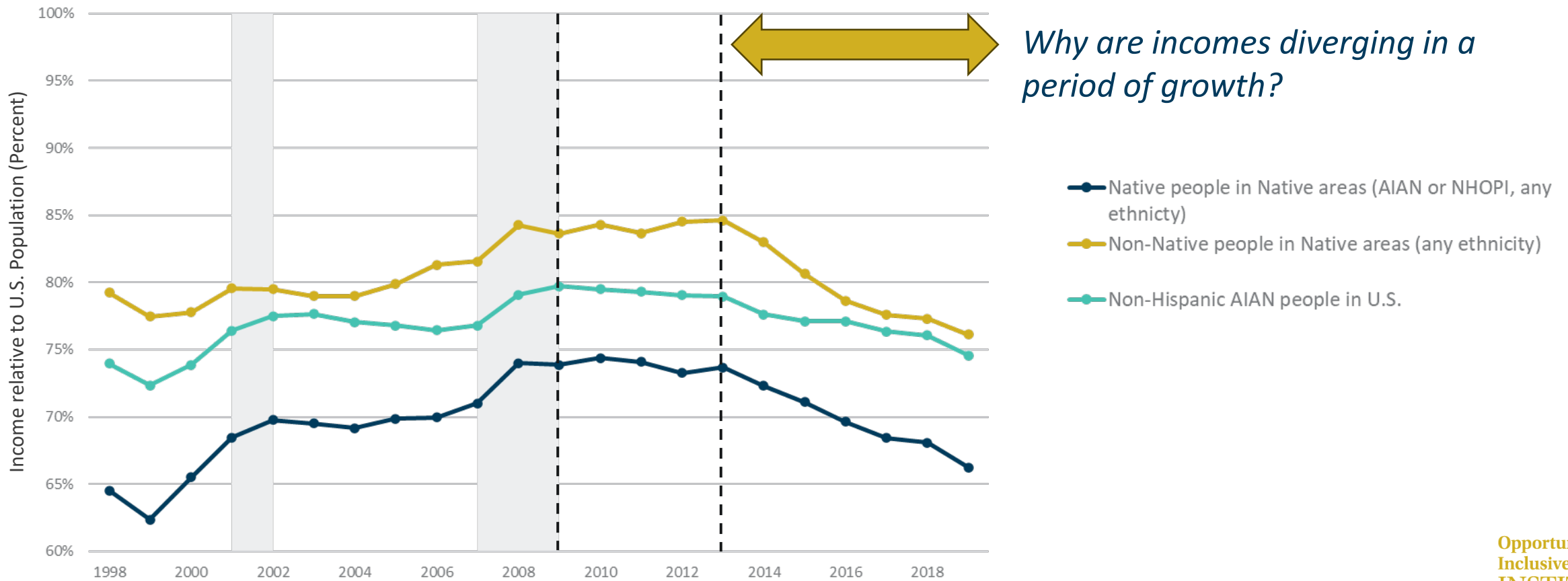
## 90<sup>th</sup> Percentile of Income (AGI) Relative to U.S. Population



Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America

# Incomes in tribal areas also diverge at the top

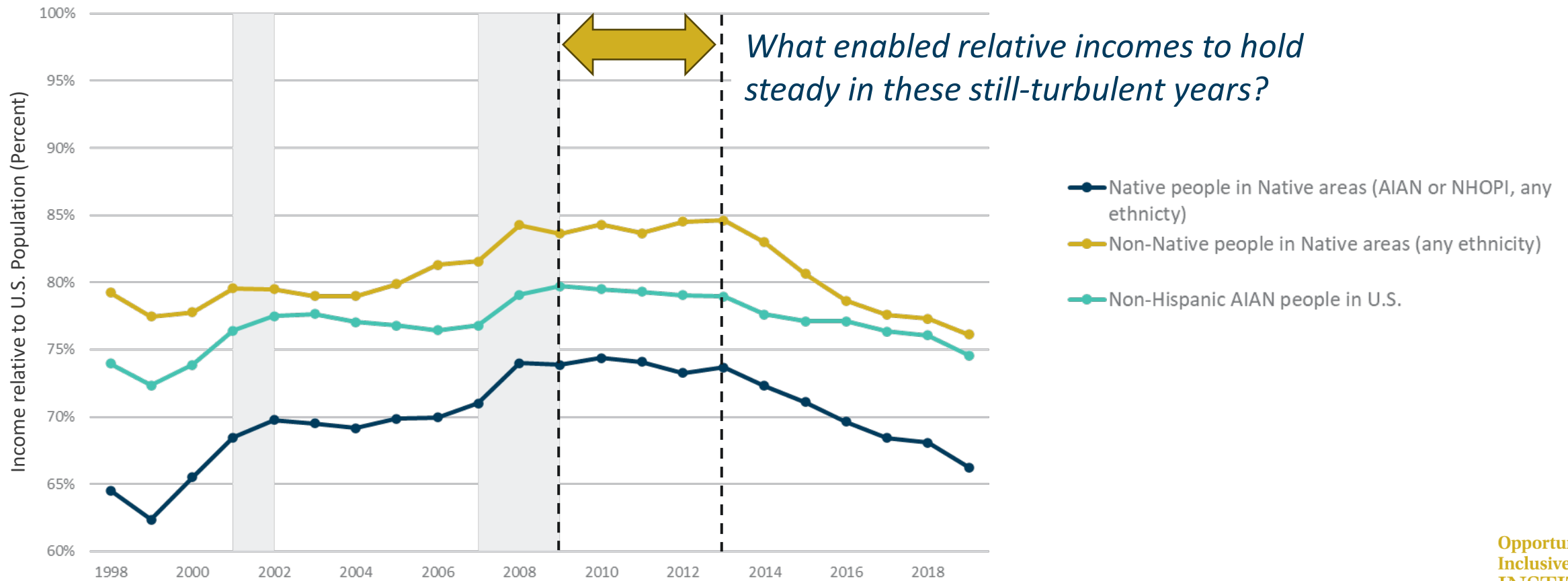
## 90<sup>th</sup> Percentile of Income (AGI) Relative to U.S. Population



Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America

# Incomes in tribal areas also diverge at the top

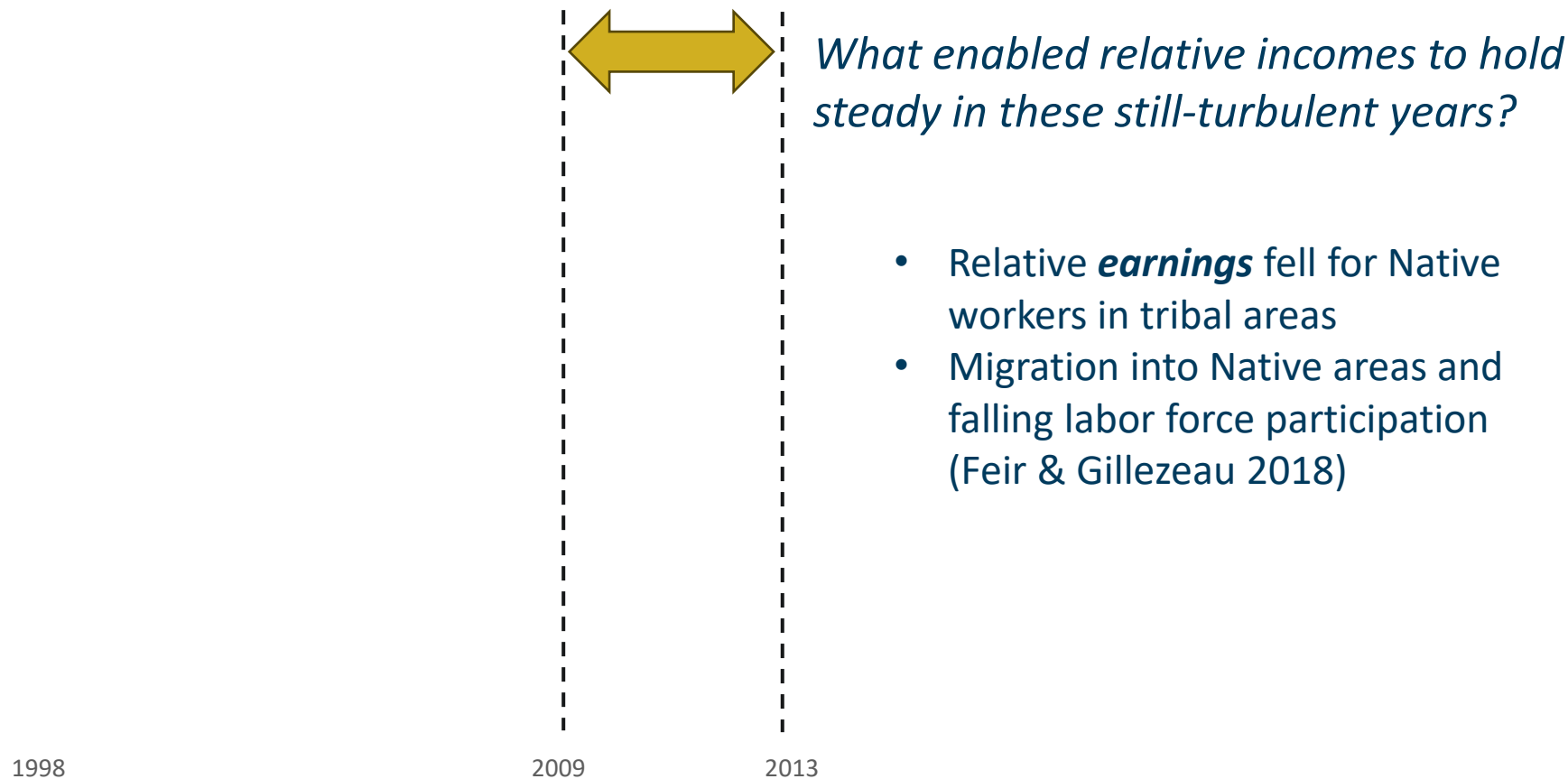
## 90<sup>th</sup> Percentile of Income (AGI) Relative to U.S. Population



Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America

# Incomes in tribal areas also diverge at the top

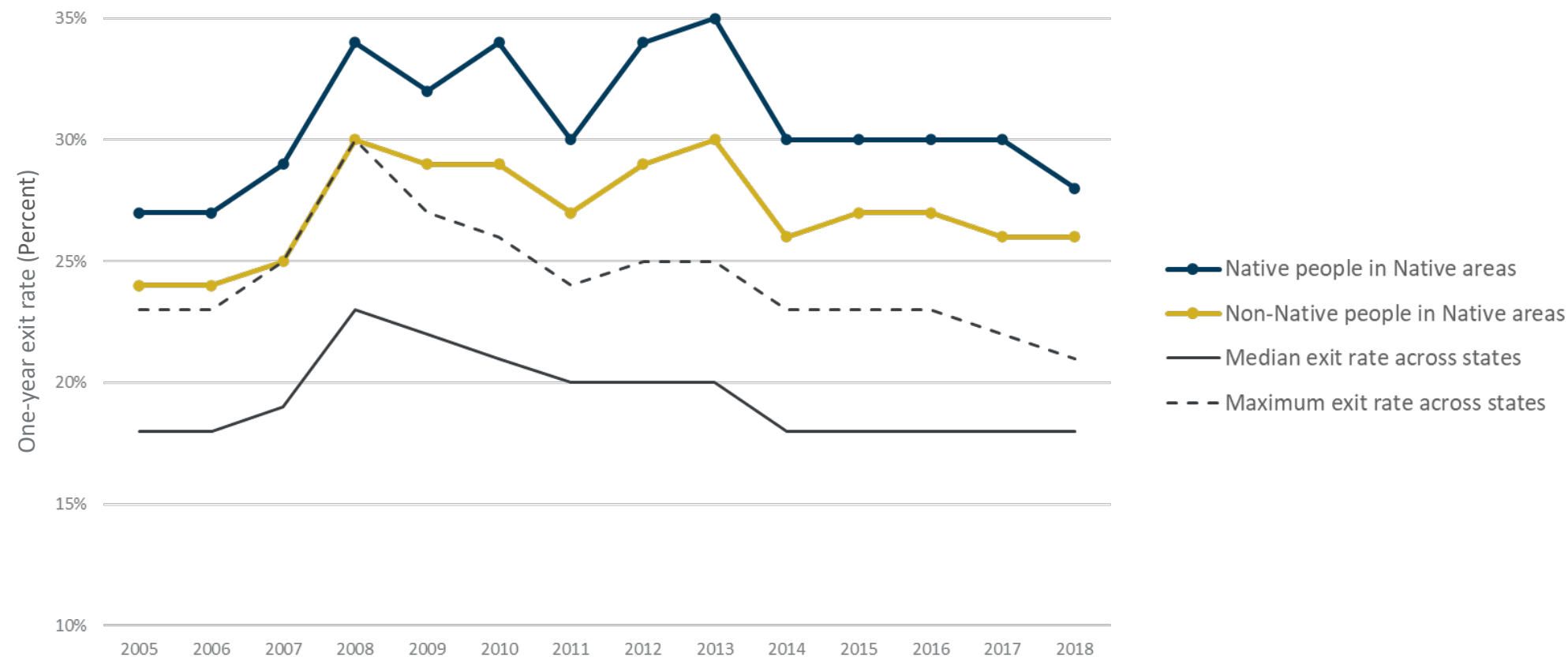
## 90<sup>th</sup> Percentile of Income (AGI) Relative to U.S. Population





# High mobility out of wage employment for low earners...

Transitions out of W-2 sample: Initial earnings in **lowest quartile**

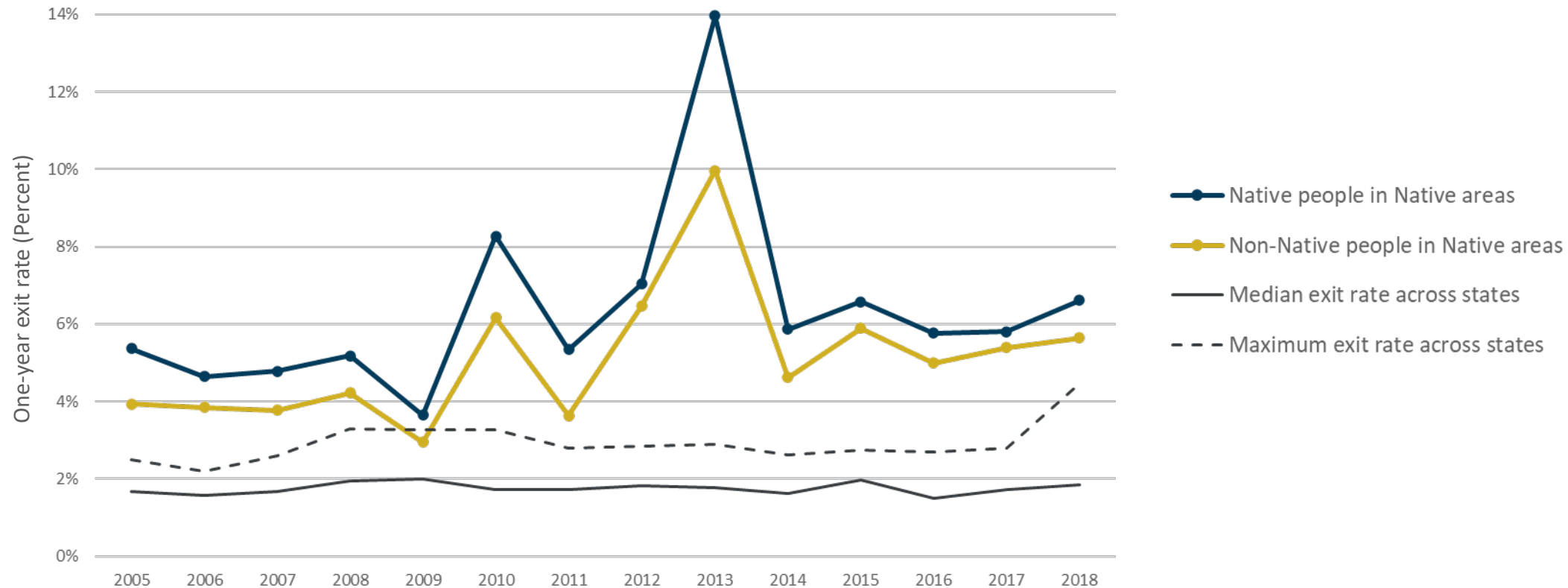


Note: Each point gives the probability that a worker receiving a W-2 from their employer in the initial year (x axis) does not receive a W-2 in the subsequent year. Rate computed among workers living in Native areas in both years. Black lines show the median and maximum exit rate across U.S. states and the District of Columbia.

Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America

# ..and for high earners in Native areas

Transitions out of W-2 sample: Initial earnings in **highest quartile**



Note: Each point gives the probability that a worker receiving a W-2 from their employer in the base year (x axis) does not receive a W-2 in the subsequent year. Rate computed among workers living in Native areas in both years. Black lines show the median and maximum exit rate across U.S. states and the District of Columbia.

Source: Federal Reserve Bank of Minneapolis, Income Distributions and Dynamics in America



# Native Incomes in IDDA

- Tribal incomes have diverged since early 2010s
- Non-labor income sources probably offset the large earnings declines from the Great Recession



- Importance of all types of incomes for granular subgroups
  - Especially alternative income sources in the context of Native economies

# Q & A

For online attendees, please put your questions in the Zoom Q&A.



Learn more.

Use **Stay Connected** at  
**[www.minneapolisfed.org/idda](http://www.minneapolisfed.org/idda)**.

A recording of this webinar will be available shortly.

Or contact the Institute: [MplsInstitute@mpls.frb.org](mailto:MplsInstitute@mpls.frb.org)

# Income Distributions and Dynamics in America

Launch Event

November 13, 2023



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