

# The sources of demographic information

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# Outline

- Three basic demographic data sources
  - National censuses
  - Registration systems
  - Surveys



# National censuses

- Total process of collecting, compiling, and publishing demographic, economic, and social data pertaining, at a specified time, to all persons in a country or delimited territory
- Purpose: obtain data about size, composition, and distribution of the population
  - Demographic characteristics: fertility, mortality, education, employment, economic, health...
  - Information on country of birth, citizenship, language, migration, ethnic heritage...



# Origin and current status

- First censuses: ancient Egypt, China, and Rome
- First modern censuses in large countries
  - 1790 US census: 3.9 million people
    - Differentiated “free white” males by whether they were over or under the age of 16 to determine fiscal and military obligations of citizens
  - 1787 census of Kingdom of Spain: 10.4 million people
- 230+ countries completed a census by the end of the 2010 “census round” (2005–2014)
  - 96% of the world’s population
- Only 7 countries did not complete 2010 round
  - Eritrea, Iraq, Lebanon, Pakistan, Somalia, Uzbekistan, western Sahara



# 1790 American Census

- Assistant marshals listed the name of each head of household and the number of persons in each household of the following descriptions
  - Free White males of 16 years and upward (to assess the country's industrial and military potential)
  - Free White males under 16 years
  - Free White females
  - All other free persons
  - Slaves

[https://www.census.gov/history/www/through\\_the\\_decades/index\\_of\\_questions/1790\\_1.html](https://www.census.gov/history/www/through_the_decades/index_of_questions/1790_1.html)

[https://www.census.gov/history/www/through\\_the\\_decades/overview/1790.html](https://www.census.gov/history/www/through_the_decades/overview/1790.html)

<https://www.census.gov/programs-surveys/decennial-census/decade/decennial-publications.1790.html>

<https://www.census.gov/library/publications/1793/dec/number-of-persons.html>

<https://www.census.gov/library/publications/1907/dec/heads-of-families.html>





SCHEDULE of the whole number of PERSONS within the several Districts of the UNITED STATES, taken according to "An Act providing for the Enumeration of the Inhabitants of the United States;" passed March the 1st, 1790.

DISTRICTS	Free white Males of 16 years and upwards, including heads of families.	Free white Males under sixteen years.	Free white Females, including heads of families.	All other free persons.	Slaves.	Total.
Vermont	22435	22328	40505	255	16	85539
N. Hampshire	36086	34851	70160	630	158	141885
Maine	24384	24748	46870	538	NONE	96540
Massachusetts	95453	87289	190582	5463	NONE	378787
Rhode Island	16019	15799	32652	3407	948	68825
Connecticut	60523	54403	117448	2808	2764	237946
New York	83700	78122	152320	4654	21324	340120
New Jersey	45251	41416	83287	2762	11423	184139
Pennsylvania	110788	106948	206363	6537	3737	434373
Delaware	11783	12143	22384	3899	8887	59094
Maryland	55915	51339	101395	8043	103036	319728
Virginia	110936	116135	215046	12866	292627	747610
Kentucky	15154	17057	28922	114	12430	73677
N. Carolina	69988	77506	140719	4975	100572	393751
S. Carolina	35576	37722	66880	1801	107094	249073
Georgia	13103	14044	25739	398	29264	82548
	807094	791850	1541263	59150	694280	3893635
Total number of Inhabitants of the United States exclusive of S. Western and N. Territory.	Free white Males of 21 years and upwards.	Free Males under 21 years of age.	Free white Females.	All other Free persons.	Slaves.	Total
S. W. territory	6271	10277	15365	361	3417	35691
N. Ditto	—	—	—	—	—	—



# US decennial censuses

- They had short-form and long-form questionnaires until the 2000 censuses
- Since the 2010 census, only the questions from the short-form questionnaire were included in the census questionnaire
  - Name, sex, age, race, ethnicity, relationship, home ownership
- The long-form questionnaire was revised to comprise the major part of the American Community Survey (ACS)
- The census questions are filled by one person in every household and covers every person in the household

Use a blue or black pen.

**Start here**

The Census must count every person living in the United States on April 1, 2010.

Before you answer Question 1, count the people living in this house, apartment, or mobile home using our guidelines.

- Count all people, including babies, who live and sleep here most of the time.

The Census Bureau also conducts counts in institutions and other places, so:

- Do not count anyone living away either at college or in the Armed Forces.
- Do not count anyone in a nursing home, jail, prison, detention facility, etc., on April 1, 2010.
- Leave these people off your form, even if they will return to live here after they leave college, the nursing home, the military, jail, etc. Otherwise, they may be counted twice.

The Census must also include people without a permanent place to stay, so:

- If someone who has no permanent place to stay is staying here on April 1, 2010, count that person. Otherwise, he or she may be missed in the census.

1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?

Number of people -

2. Were there any additional people staying here April 1, 2010 that you did not include in Question 1? Mark  all that apply.

- Children, such as newborn babies or foster children
- Relatives, such as adult children, cousins, or in-laws
- Nonrelatives, such as roommates or live-in baby sitters
- People staying here temporarily
- No additional people

3. Is this house, apartment, or mobile home — Mark  ONE box.

- Owned by you or someone in this household with a mortgage or loan? *Include home equity loans.*
- Owned by you or someone in this household free and clear (without a mortgage or loan)?
- Rented?
- Occupied without payment of rent?

4. What is your telephone number? We may call if we don't understand an answer.

Area Code + Number

-  -

OMB No. 0607-0910-C: Approval Expires 12/31/2011.

Form **D-61** (1-15-2009)

5. Please provide information for each person living here. Start with a person living here who owns or rents this house, apartment, or mobile home. If the owner or renter lives somewhere else, start with any adult living here. This will be Person 1.

What is Person 1's name? *Print name below.*

Last Name

First Name  MI

6. What is Person 1's sex? Mark  ONE box.

- Male  Female

7. What is Person 1's age and what is Person 1's date of birth?

*Please report babies as age 0 when the child is less than 1 year old. Print numbers in boxes.*

Age on April 1, 2010 Month Day Year of birth

→ NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For this census, Hispanic origins are not races.

8. Is Person 1 of Hispanic, Latino, or Spanish origin?

- No, not of Hispanic, Latino, or Spanish origin
- Yes, Mexican, Mexican Am., Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

9. What is Person 1's race? Mark  one or more boxes.

- White
- Black, African Am., or Negro
- American Indian or Alaska Native — *Print name of enrolled or principal tribe.*

- Asian Indian  Japanese  Native Hawaiian
- Chinese  Korean  Guamanian or Chamorro
- Filipino  Vietnamese  Samoan
- Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*

- Some other race — *Print race.*

10. Does Person 1 sometimes live or stay somewhere else?

- No  Yes — Mark  all that apply.

- In college housing  For child custody
- In the military  In jail or prison
- At a seasonal or second residence  In a nursing home
- For another reason

→ If more people were counted in Question 1, continue with Person 2.





# De jure vs. de facto

- De jure (e.g. U.S., Canada): counts persons based on their “usual”/“normal” place of residence
- De facto: counts persons based on their location on the day of the census
- De facto censuses are more common



# Justification for censuses

- Utilization
  - Data for public policy
  - Data for crime/death rates, per capita income...
  - Market analyses by private businesses
  - Estimation of cohabiting households, as well as same-sex households
- Principal reason/justification for censuses written in the US Constitution
  - Provide population counts to be used for apportionment of the House of Representatives



# Gerrymandering

- Issue of political gerrymandering
  - State legislatures draw congressional districts boundaries to favor one party
- Gerrymandering is against the law
  - Unless topography gets in the way, districts are supposed to be contiguous regions
- Using data from the US Census Bureau, Alasdair Rae, a geographer and urban planner at Sheffield University, built maps of all 435 congressional districts



# North Carolina

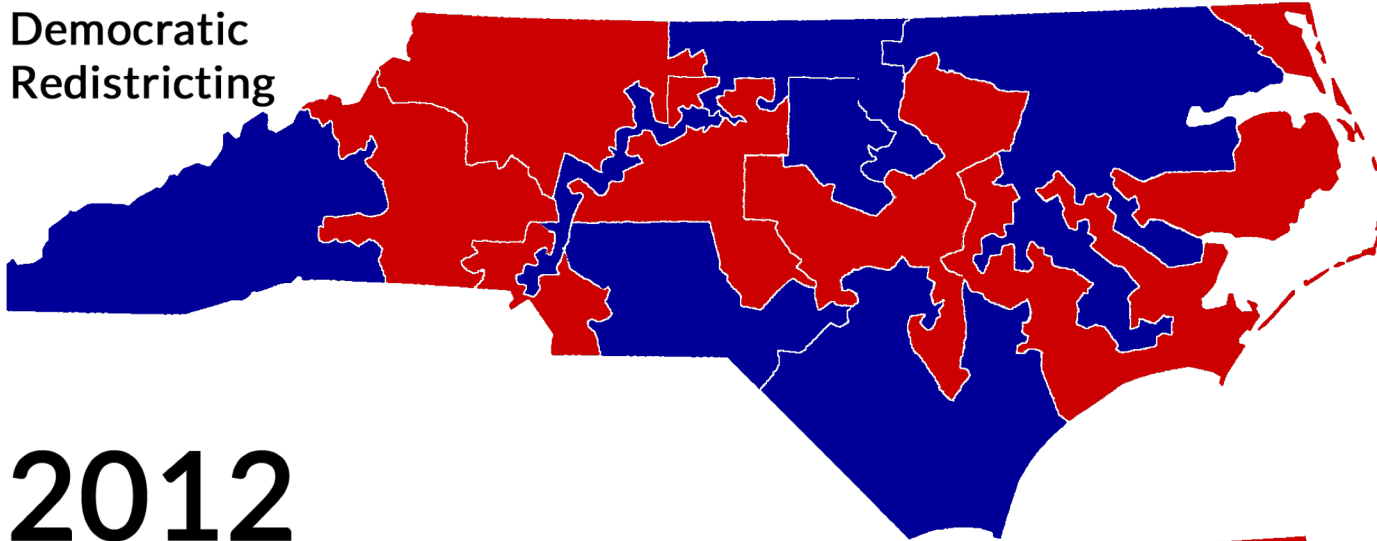
- Republican-drawn legislative map packed African-American and Hispanic voters into a few districts
  - In 2010, Democrats won popular vote and a 7 to 6 majority in the state's House delegation
  - In 2012, Democrats won popular vote, but a racially gerrymandered map allowed Republicans to win a 9 to 4 majority



# North Carolina

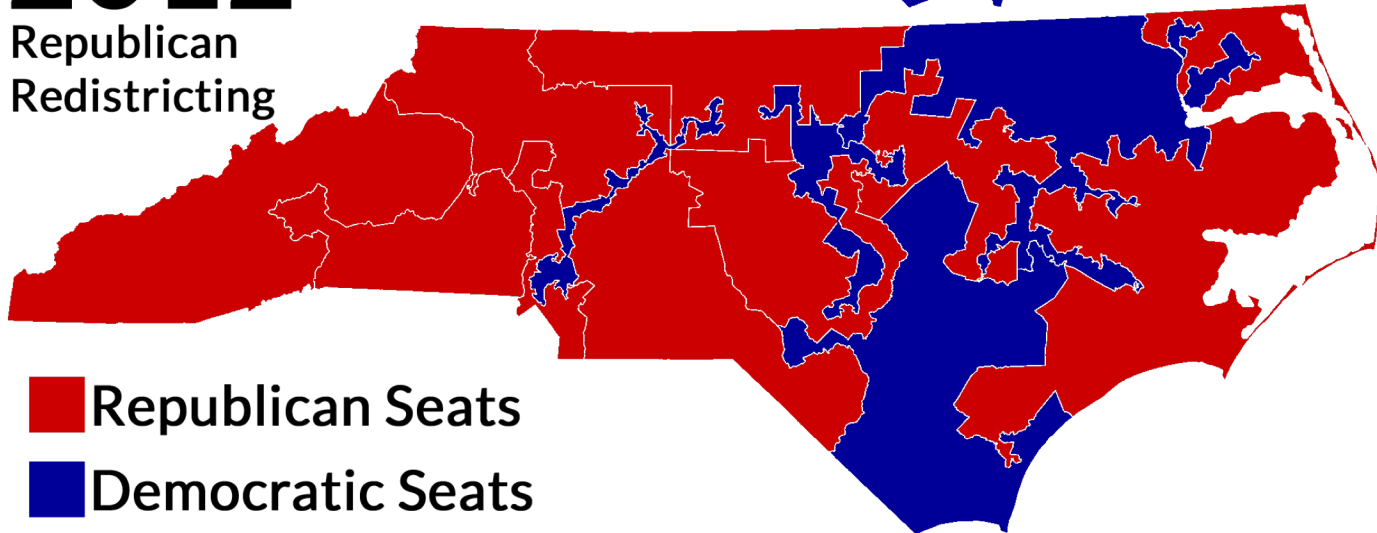
## 2010

Democratic  
Redistricting



## 2012

Republican  
Redistricting



■ Republican Seats

■ Democratic Seats





# North Carolina

## The Evolution of North Carolina's 12th Congressional District

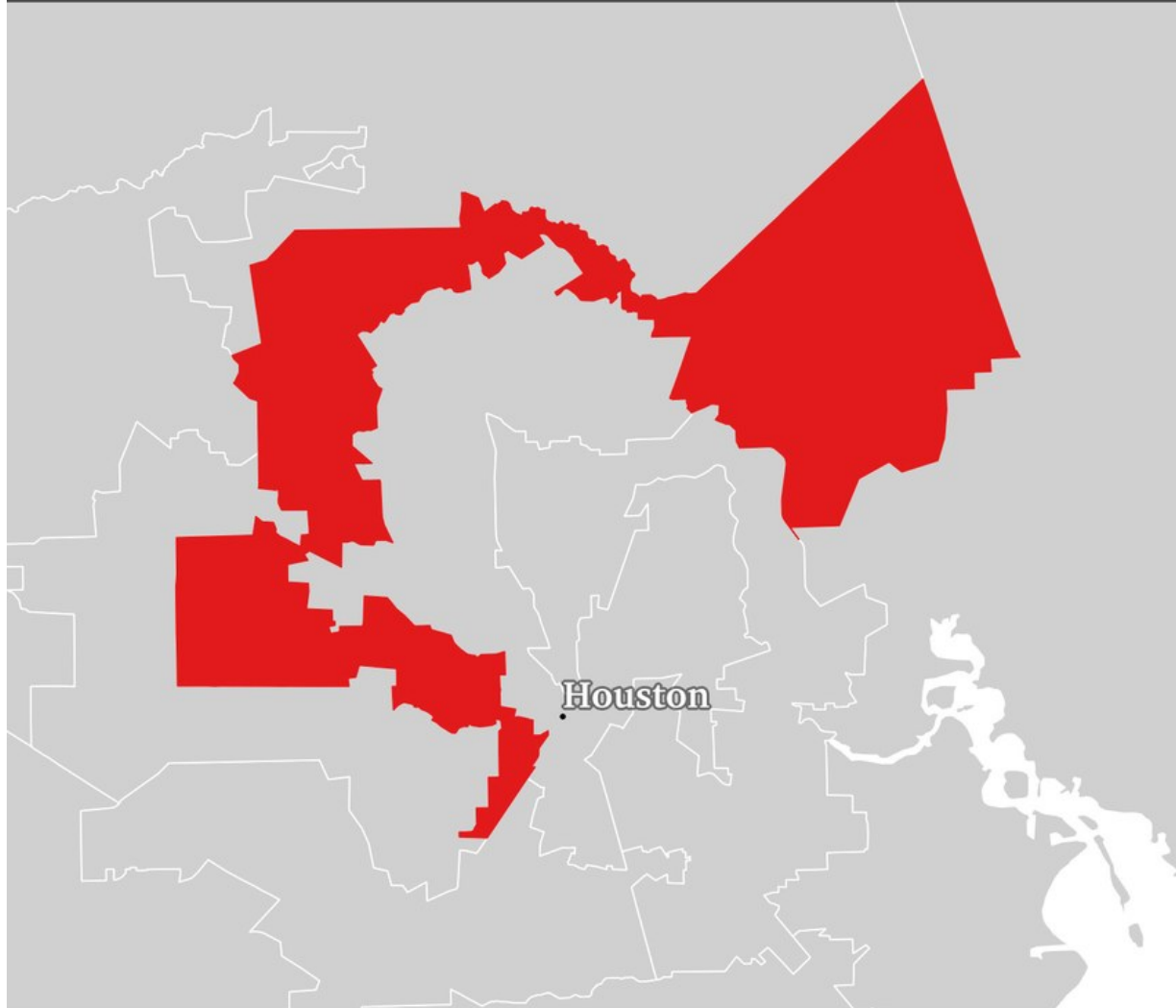


# Court decisions

- In 2016, North Carolina lawmakers were ordered by a US federal court to redraw 28 state House and Senate districts
  - State's legislative map was considered an unconstitutional racial gerrymander
- June 2019, the U.S. Supreme Court ruled that it's not the job of federal courts to decide if boundaries are politically unfair
- September 2019, a state court panel considered the maps as an unconstitutional partisan gerrymander and ordered lawmakers to draw up new ones

# Texas

District: Texas (02)



Location

**114th Congress**

**Rep: Ted Poe**

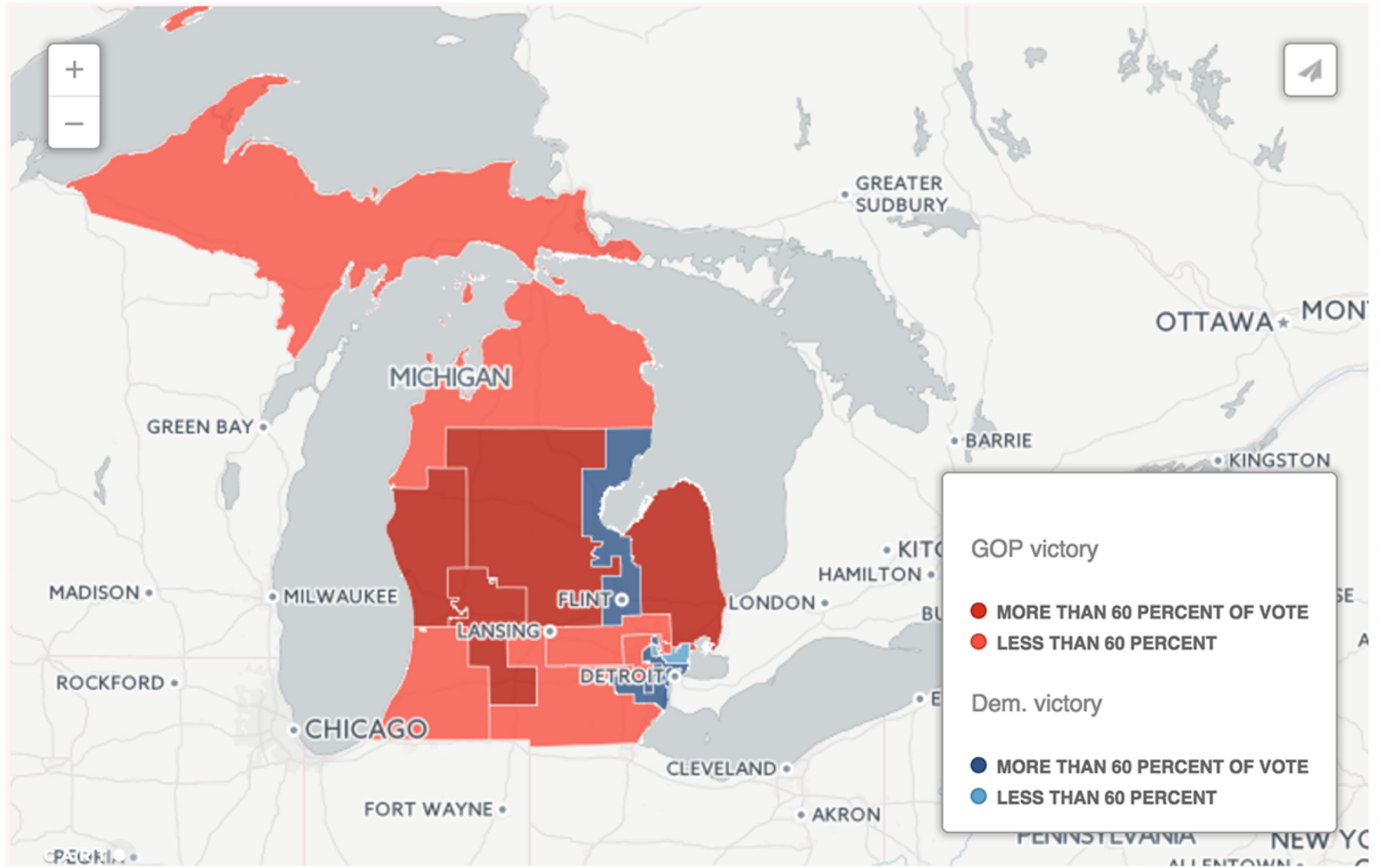
**Party: Republican**

Data source: USGS  
[http://nationalmap.gov/small\\_scale/mld/cgd114p.html](http://nationalmap.gov/small_scale/mld/cgd114p.html)

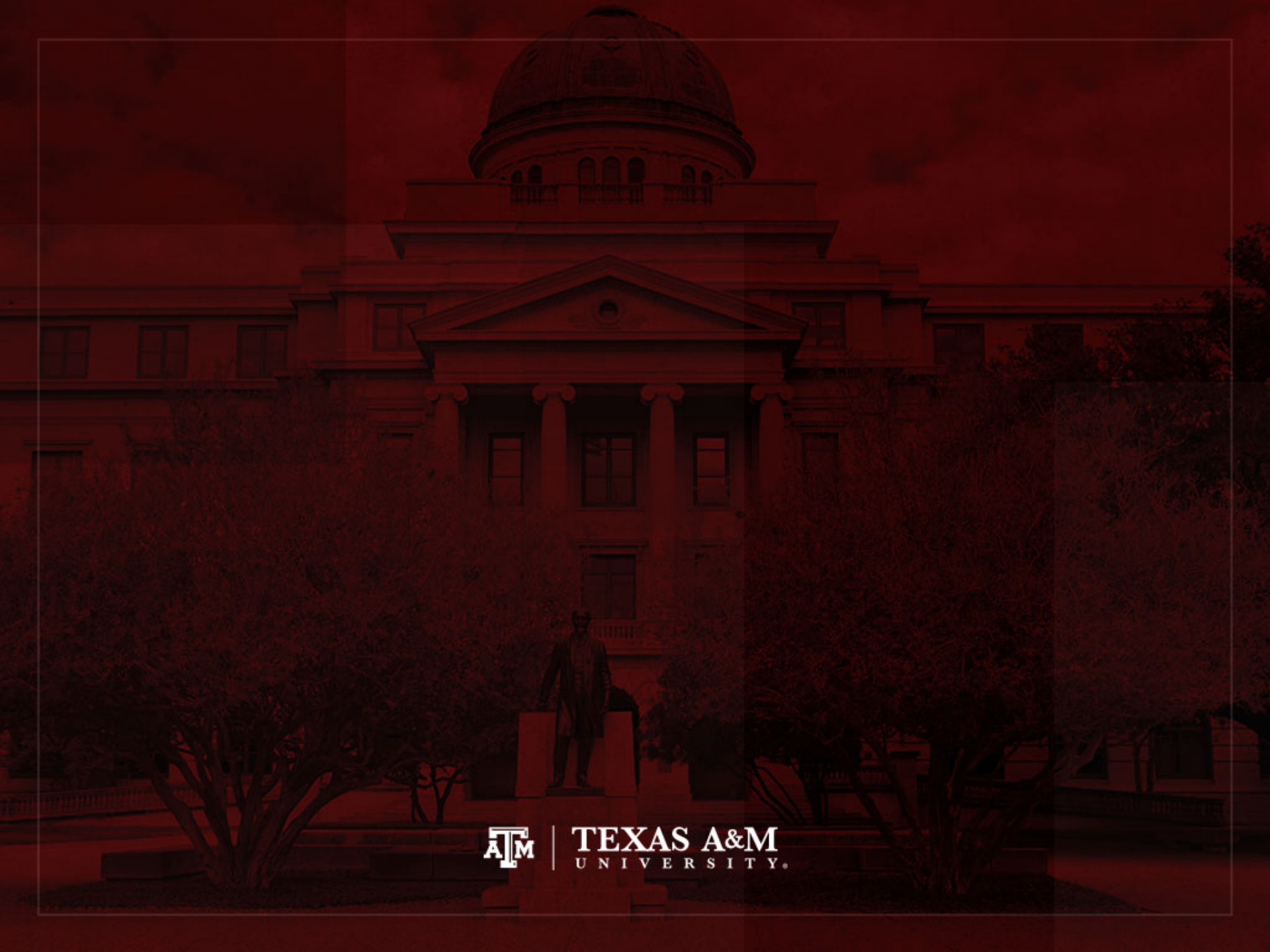
Mapping: Alasdair Rae, University of Sheffield



# Michigan







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# Registration systems

- Population register: national list of persons with their names, addresses, dates of birth, and personal identification numbers
- Vital statistics: data from civil registration systems, as well as from actual records of vital events



# Accuracy worldwide

- Births
  - 57 million unregistered babies in 2012 (UNICEF, 2013)
  - The percentage of children under age five
    - 230 million unregistered children (UNICEF, 2013)
    - 90% are registered in industrialized countries
    - Less than 20% are registered in sub-Saharan Africa
- Deaths
  - Only 25% of the world population lives in countries with 90% or more of deaths registered (usually high-income countries)



# Legal authority

- Vital records were responsibilities of the clergy in 17th century England
  - This practice was followed by the English colonies in North America
- Individual US states are now the legal authorities
  - All US states had birth and death records on file by 1919
- US Registration Areas established
  - Death Registration Area (1900), Birth Registration Area (1915), National Registration Areas for Marriages (1957) and Divorces (1958)
- Birth and death data are sent by the states to the National Center for Health Statistics who compiles the data for the U.S.



# Birth and death certificates

- Birth certificates
  - Names and ages of parents, their occupations, and sometimes levels of education
  - Filled out by physician, midwife, mother, or father
- Death certificates
  - The decedent's age, occupation, place of death, and cause of death
  - Filled out by funeral homes, with personal information about the decedent provided by surviving family members, physician, or coroner



# Registered events

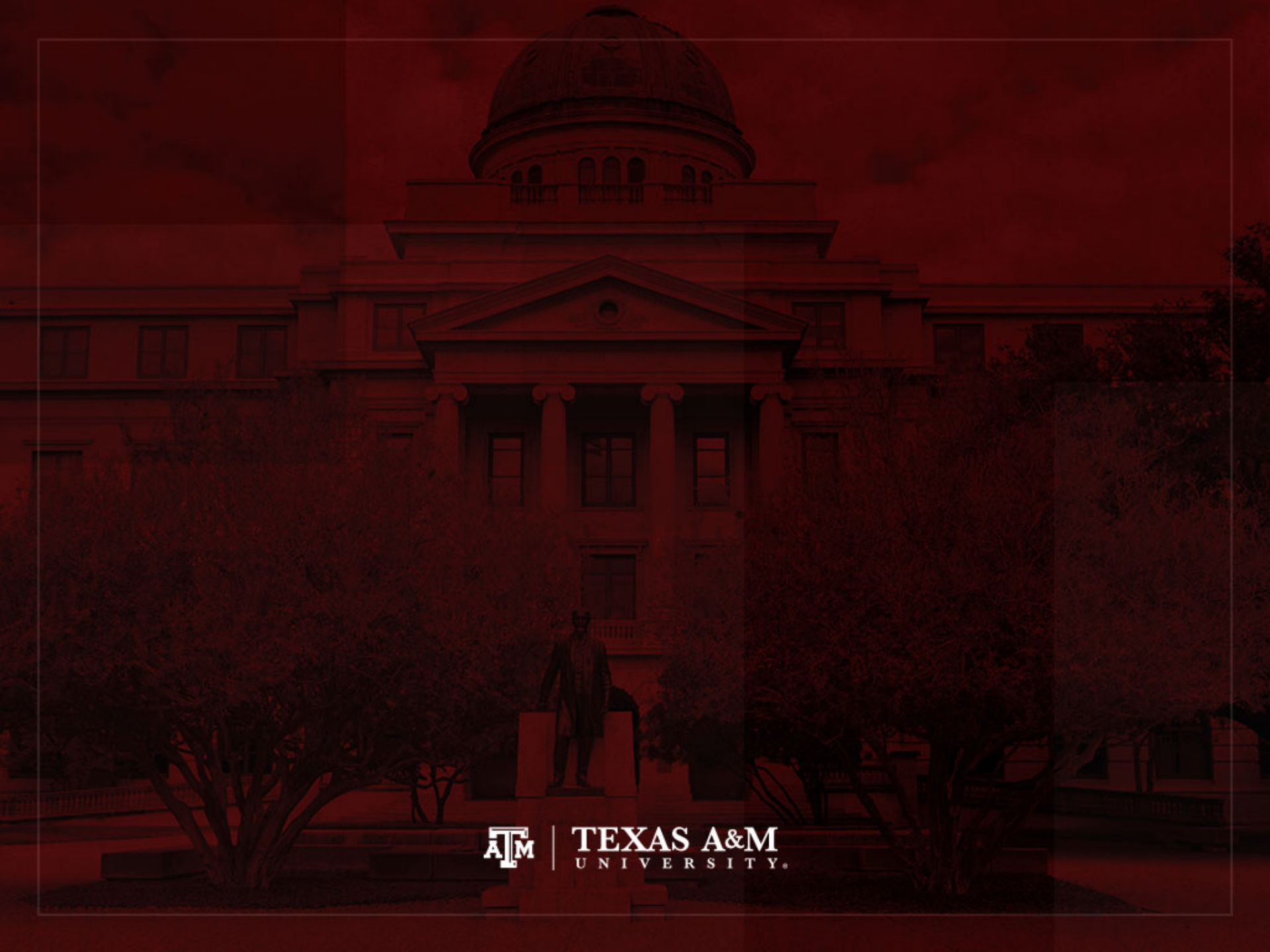
- **Fetal deaths**: Disappearance of life prior to live birth, which include miscarriages, abortions, stillbirths
- **Miscarriages**: Spontaneous or accidental termination of fetal life that occurs early in pregnancy
- **Abortions**: Premature expulsion of a fetus, spontaneous or induced, at a time before it is viable of sustaining life
- **Stillbirths**: Late fetal death of 20–28 weeks or more of gestation
- **Deaths**: Permanent disappearance of all evidence of life at any time after a live birth has taken place
- **Births**: Extraction from its mother of a product of conception, which breathes or shows any evidence of life



# Censuses versus registrations

	<b>Census</b>	<b>Registration</b>
<b>Contents</b>	Cross-sectional portrayal of the size, composition, and distribution	Demographic events (principally births and deaths) measured as they occur
<b>Characteristic</b>	Static	Dynamic and continuous
<b>Authority (U.S.)</b>	Federal government	State government
<b>De jure/de facto (U.S.)</b>	De jure	De jure





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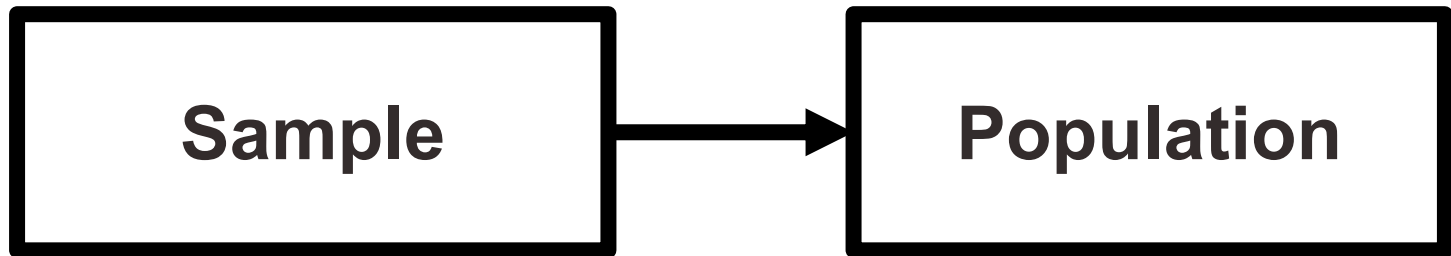
# Inferential statistics

- Social scientists need inferential statistics
  - They almost never have the resources or time to collect data from every case in a population
- Inferential statistics uses data from samples to make generalizations about populations
  - **Population** is the total collection of all cases in which the researcher is interested
  - **Samples** are carefully chosen subsets of the population
- With proper techniques, generalizations based on samples can represent populations

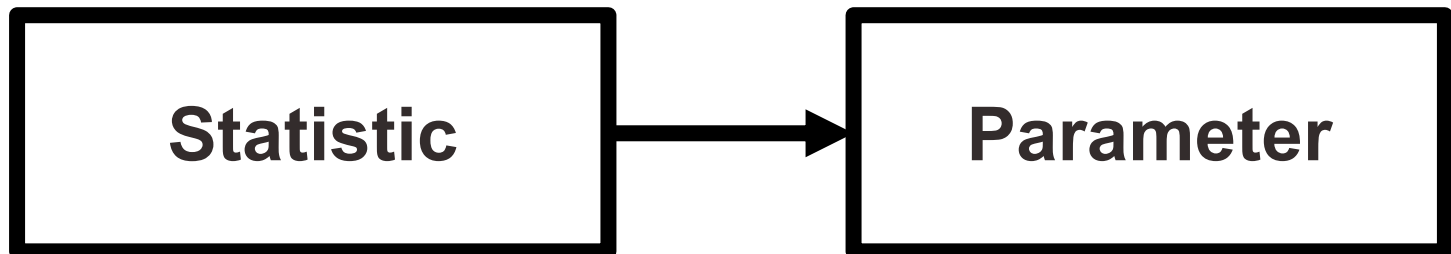


# Basic logic and terminology

- Information from samples is used to estimate information about the population



- Statistics: characteristics of samples
- Parameters: characteristics of populations
- Statistics are used to estimate parameters



# Surveys

- Required for the collection of more detailed demographic information that is not contained on censuses and registers
- Extensive kinds of information available through sample surveys
- Some examples...





# Demographic and Health Surveys

- 260 sample surveys in 90 developing countries since 1984 every five years
- Data on fertility, population, health, and nutrition
- Interim surveys between DHS rounds
- Provide demographic information previously unknown about developing countries
- Total fertility rate, contraceptive use, child mortality rate...



# Examples of fertility surveys

- World Fertility Surveys (WFS)
  - Coordinated cross-national fertility surveys between 1974 and 1986
  - Data on reproductive behavior and related social and psychological indicators in 62 countries, about 40% of the world's population
- Other fertility surveys
  - Focus on a single country or community
  - Examples: European Fertility Project, surveys of family and reproductive behavior in Puerto Rico and Mexico



# U.S. federal government surveys

- American Community Survey (ACS)
- Current Population Survey (CPS)
- National Survey of Family Growth (NSFG)
- National Longitudinal Study of Adolescent to Adult Health (Add Health)



# American Community Survey

- Redesigned from the census long-form questionnaire to be a “continuous measurement” survey in the late 1990s
- Conducted every year in all counties in the U.S. and Puerto Rico
- Purpose: collect economic, demographic, housing data
- Sample
  - Communities with 65,000 and more population: receive data estimates every year since 2006
  - Communities with 20,000 to 64,999: receive data each year based on three-year estimates since 2008
  - Communities with less than 20,000: receives data each year based on five-year estimates since 2010
- ACS sample had 3.54 million housing unit addresses in 2013

# Current Population Survey

- Monthly nationwide survey sponsored by the US Bureau of the Census and US Bureau of Labor Statistics
- Purpose: collect labor force data about the civilian non-institutional population
- Sample: 14 years of age and older in around 60,000 households
- Basic labor force questions, census-type questions, and supplementary questions



# National Survey of Family Growth

- A nationally representative multistage survey conducted on a continuous basis
- Sample: male and female respondents between the ages of 15 and 44
- Purpose: collect data on family life, marriage, divorce, pregnancy, infertility, contraception, and men's and women's health
- Audio Computer-Assisted Self-Interviewing (ACASI) for sensitive topics, such as sexuality





# Add Health

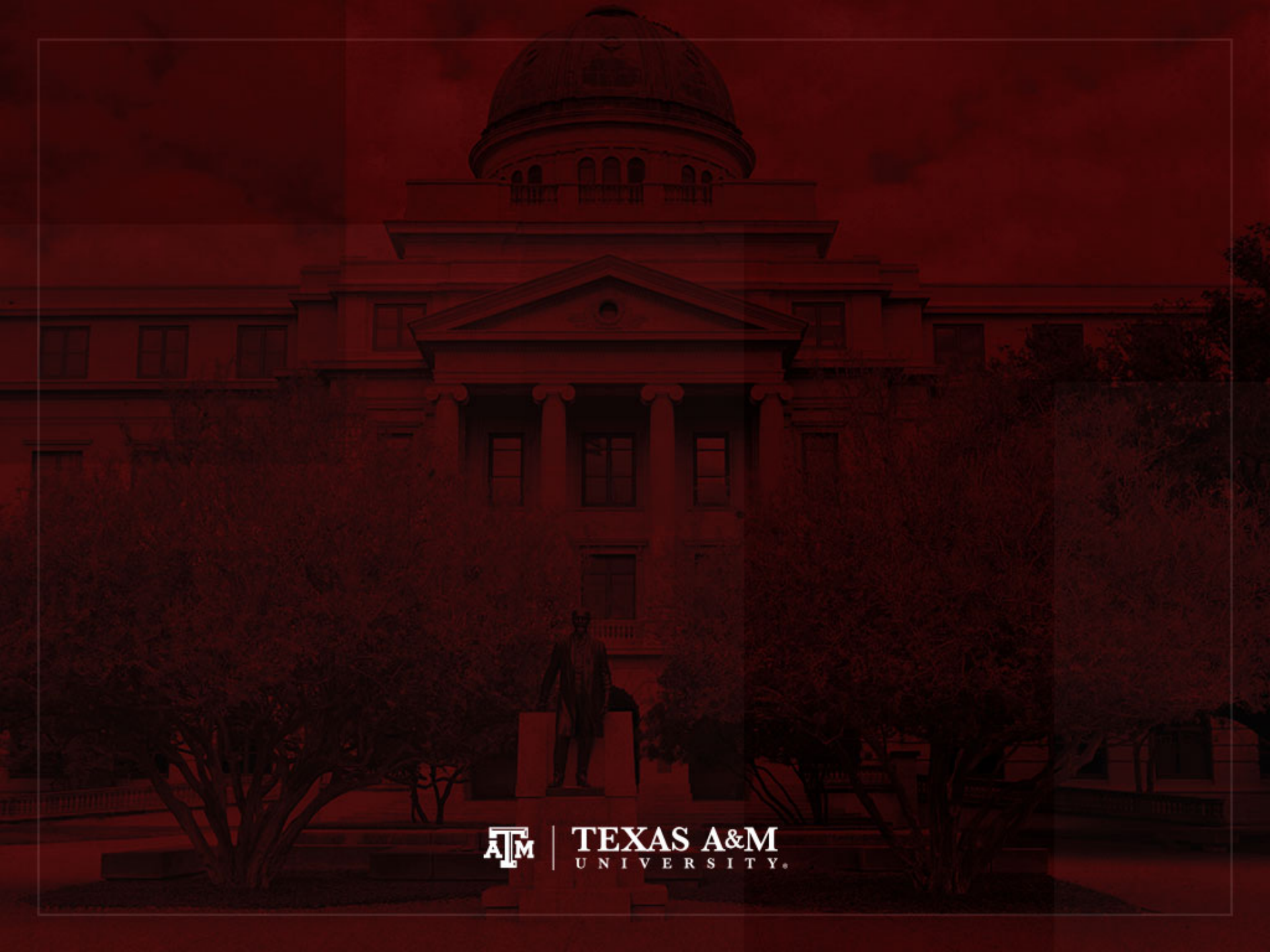
- National Longitudinal Study of Adolescent to Adult Health (Add Health)
- Started by Professor J. Richard Udry in the early 1990s
- Sample: adolescents in grades 7–12 in the U.S. in 1994–1995
- Four follow-up interviews with the adolescent cohort transitioning into young adulthood, the last occurring in 2008



# References

Poston DL, Bouvier LF. 2017. Population and Society: An Introduction to Demography. New York: Cambridge University Press. 2nd edition. Chapter 3 (pp. 35–58).

Weeks JR. 2015. Population: An Introduction to Concepts and Issues. Boston: Cengage Learning. 12th edition. Chapter 4.



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