

Haven't We Been Here Before? Historical Perspectives on the Federal Statistical System

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Outline and Themes

- Examine the “federal statistical system” as a public resource for open data
- History helps!
 - The 1787 Constitution created the platform of the system.
 - The Constitution created two different types of statistical or public data collection and reporting:
 - the decennial census
 - the reports on government revenue and expenditures

Understanding the Statistical System

- As embedded in the larger political, social, economic and demographic situation of the US
- As shaping the larger political, social, economic and demographic situation of the US
- As a technical system

Federal Statistical System Today

- Decentralized: Census, BLS, NASS, NCHS, NCES, BJS, etc.
- 98 agencies with statistical activities; 13 lead agencies
- Federalized: states also provide data through coordinating arrangements: vital statistics

Federal Statistical System

- Chief Statistician resides in OMB and coordinates the system through “forms clearance” and budget authorizations.
- Legislative grounding is in the Paperwork Reduction Act of 1995.
- A diverse system.

Federal Statistical System

- Overall budget of about \$6.8 billion/year (exclusive of decennial census).
- About 40% of expenditures in 13 lead agencies
- Current challenges:
 - Respondent cooperation.
 - Fiscal resource constraints.
 - International comparability.
 - More detailed data
 - Access to data
 - Statistical agency independence
 - Human capital – next generation...

Budgets: Large Agencies (millions of \$)

	FY 2011 Actual	FY 2012 Estimate	FY 2013 Request
Bureau of the Census: Current Program	\$ 289	\$ 276	\$ 289
Periodic Programs	891	634	711
Bureau of Labor Statistics	610	609	618
Bureau of Economic Analysis	93	92	97
Statistics of Income (SOI)	39	40	40
National Agricultural Statistics Service	123	117	116
Census of Agriculture	33	42	63
Economic Research Service	82	78	77
Energy Information Administration	95	105	116
National Center for Health Statistics	139	139	162
National Center for Education Statistics	126	127	133
Bureau of Justice Statistics	68	53	68
Bureau of Transportation Statistics	24	25	38
Science Resources Statistics, NSF	42	44	42

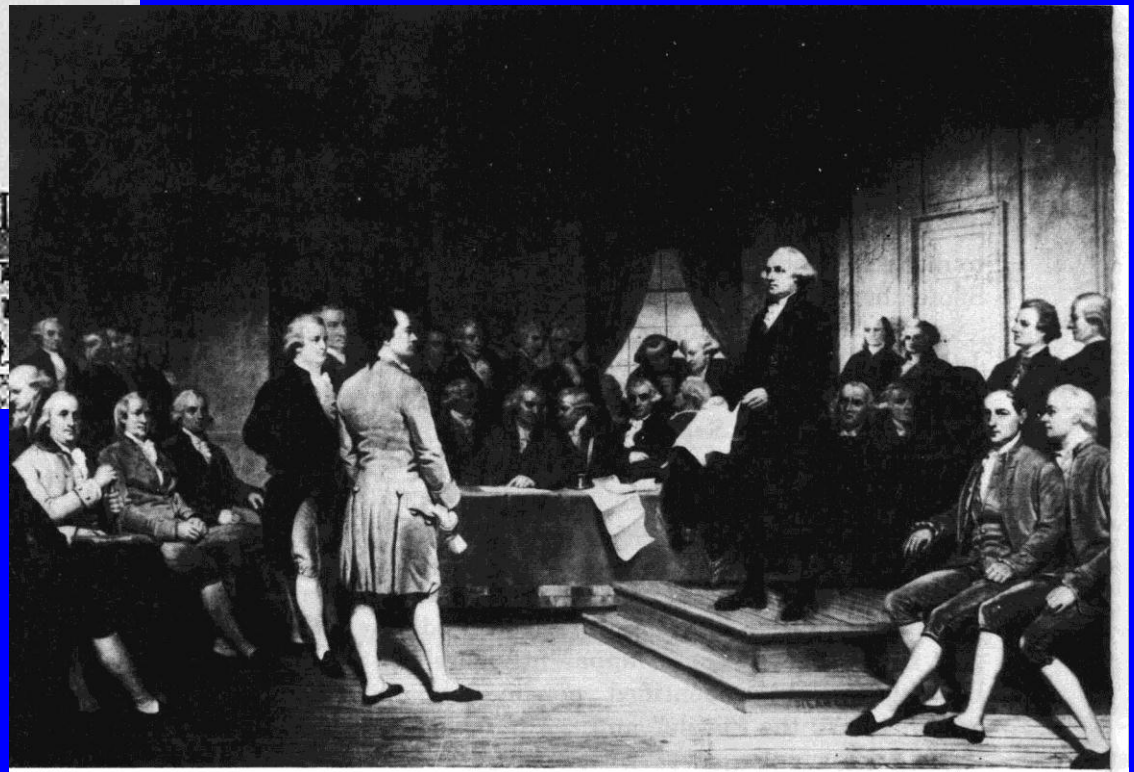
Useful Distinctions

- Survey Data: Data collected for research or policy purposes only, usually sampled: CPS, SIPP, ACS
- Administrative Data: Data collected for administrative functions and then reused or reorganized for statistical data analysis: state unemployment records; tax records, property records, medical records.

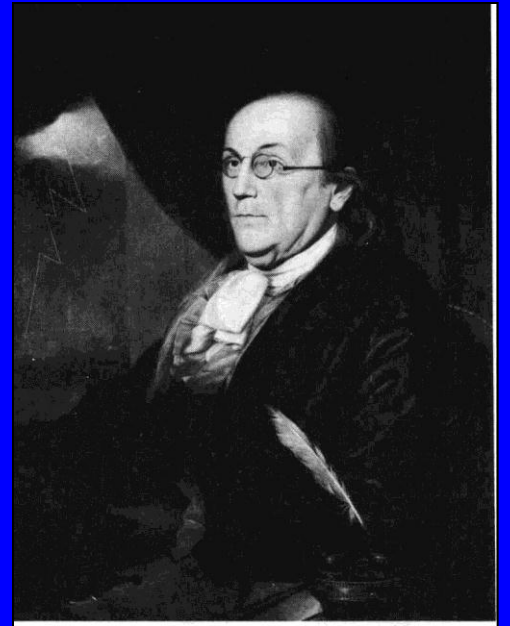
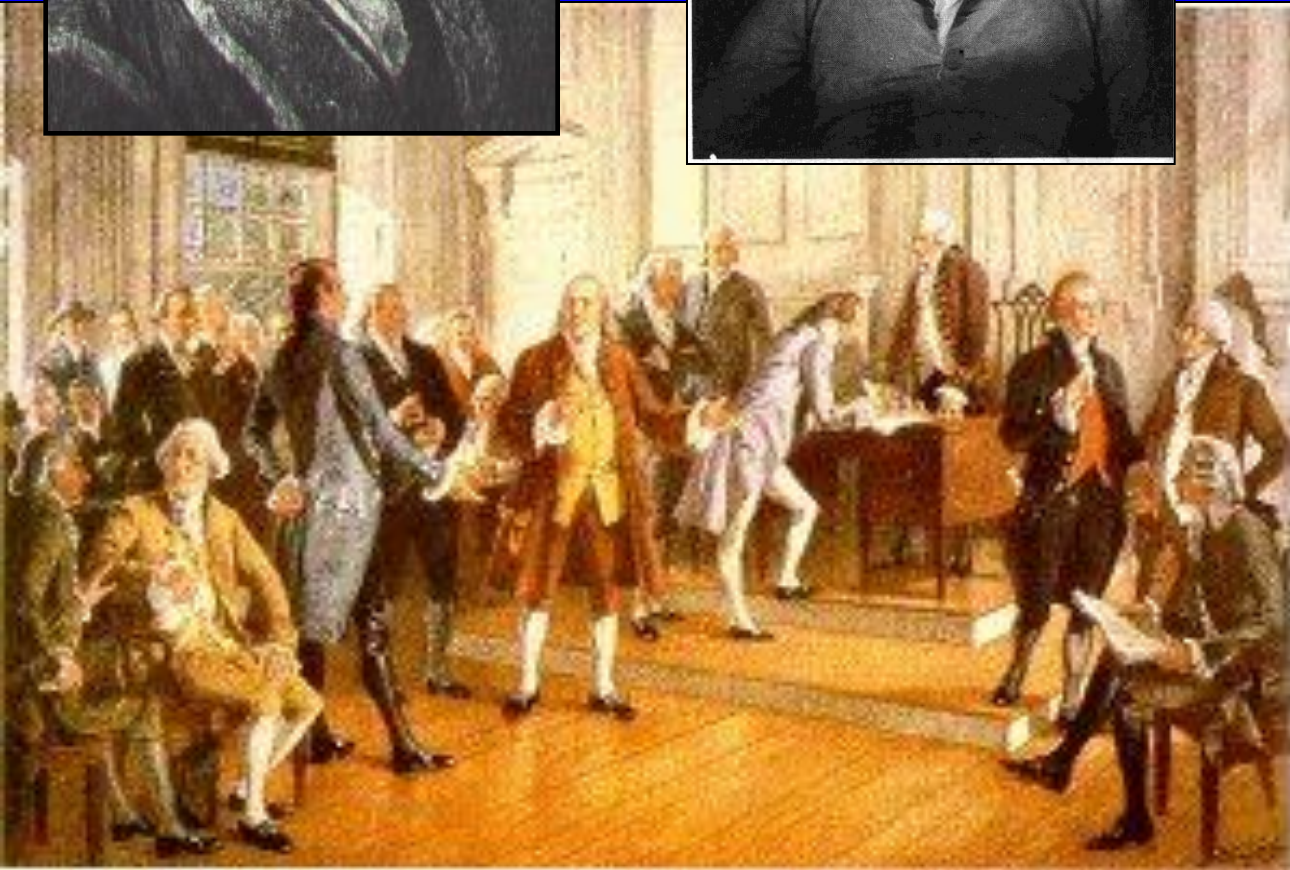
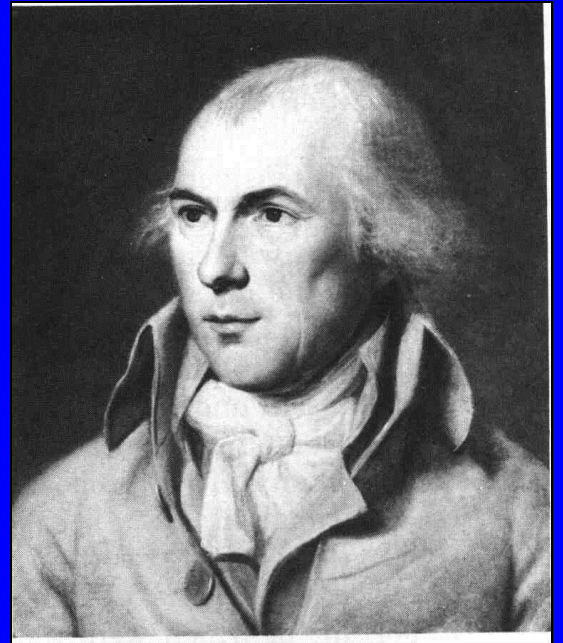
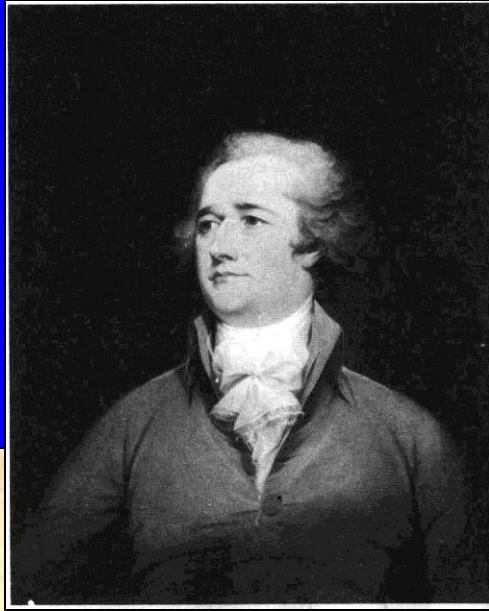
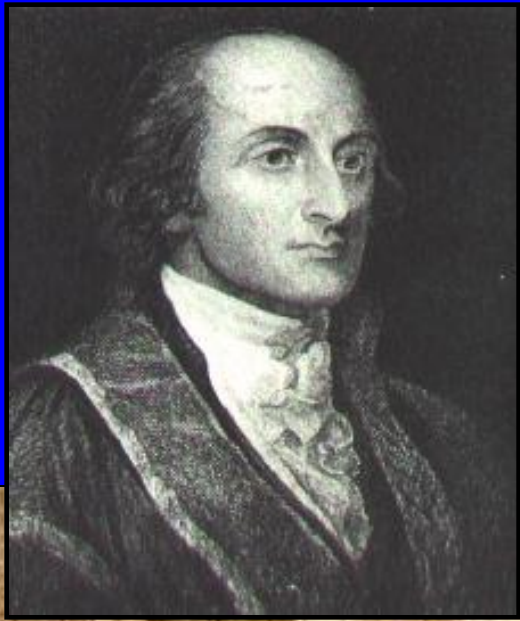
Institutional and Some Technical History

- “Constituting” the system: 1780s
- Implementing the System in the long 19th century, 1790-1900s.
- The technical framework.

I. Building the American State



WE the People
of New-Hampshire,
Rhode-Island and
tations, Connecticut, New-York, Ne
sylvania, Delaware, Maryland, Virgi
lina, South-Carolina, and Georgia, d
and establish the following Constitution
ment of Ourselves and our Posterity.



Article 1, Section 2, of the U.S. Constitution

- "Representatives and direct Taxes shall be apportioned among the several States which may be included within this Union, according to their respective Numbers....The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten Years, in such Manner as they shall by Law direct."

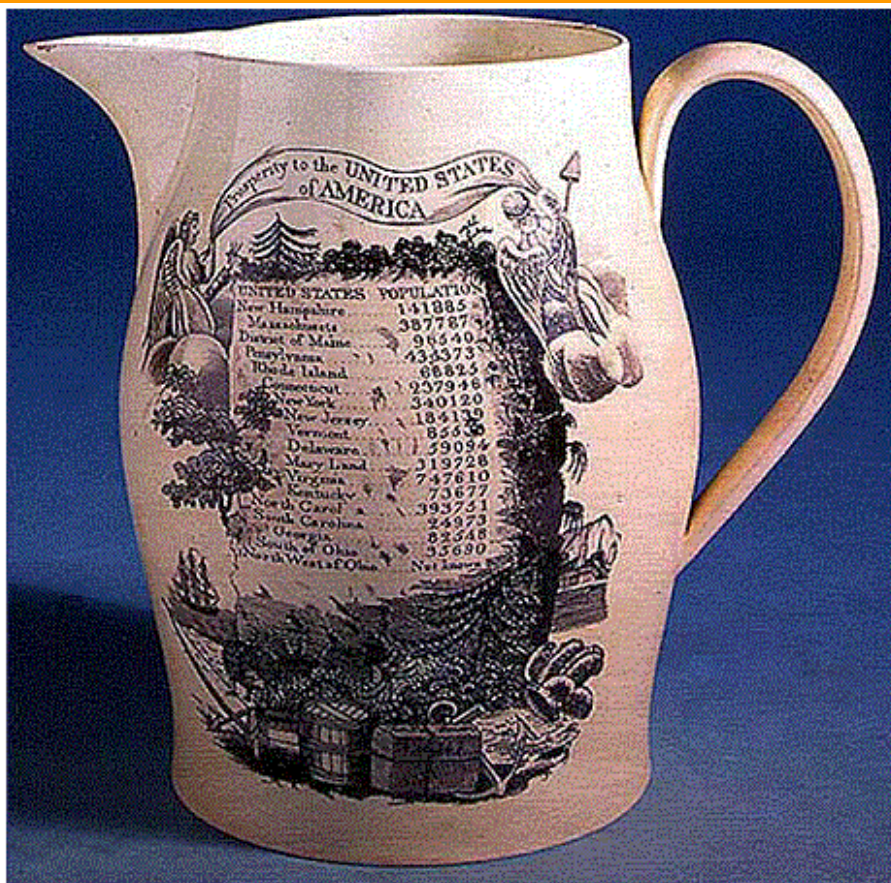
Importance of the Census

- The United States was the first nation in the history of the world to take a population census and use it to allocate seats in a national assembly according to population.

II. Implementing the System

- First census was taken in 1790.
- The House of Representatives and Electoral College was first reapportioned in 1792
- Immediately, government officials and the general public recognized the significance of the new system or allocating representation.

Pitcher Commemorating the 1790 Census



7848

Negative number: 78-16903, 78-16906
Social History Division, NMAH

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1872.

Francis Edmonds, *Taking the Census, 1853*





THE GREAT TRIBULATION.

CHARLES MARSHALL.—“I just want to know how many of you is deaf, dumb, blind, insane and idiotic—how many convicts there is in the family—what all your ages are, especially the old woman and the young ladies—and how many dollars the old gentleman is worth!”

[Tremendous sensation all round the table.]

**“The Great
Tribulation,”
*The Saturday
Evening Post,*
1860**

First Reading of the Emancipation Proclamation



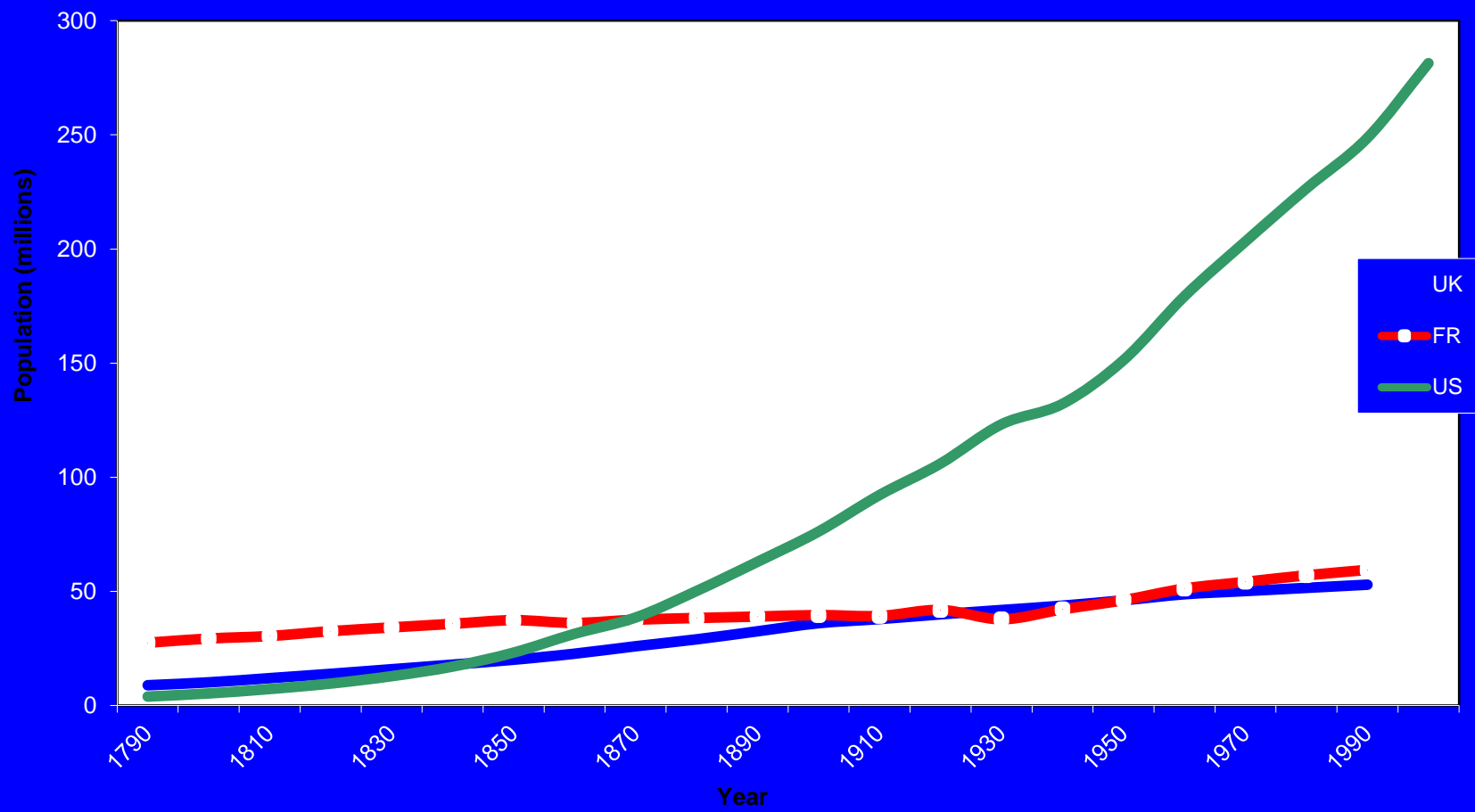
Importance of the Census

- The U.S. has had one of the most demographically dynamic and diverse populations in the history of the world.
- The combination of the census as mechanism to adjust power and resources each decade, in conjunction with the demographic dynamism and diversity, made the census and the statistical system truly central to the functioning of the society and state

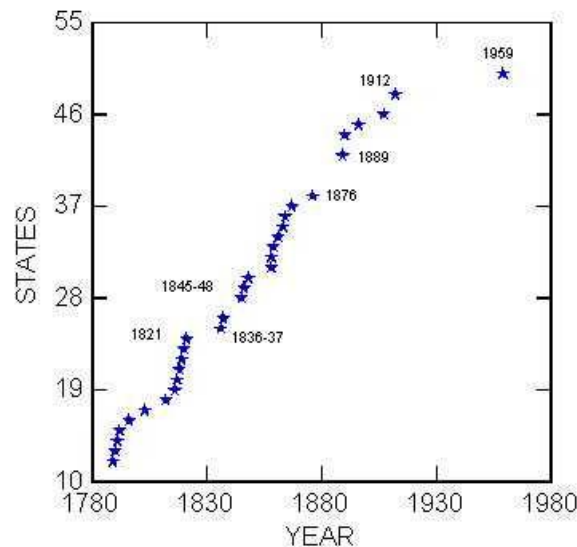
From 3.9 million to 314 million

- 13 states have become 50 states.
- House of Representatives grew from 65 to 435 members.
- The average congressional district today is larger than the total population of any of the original 13 states in 1790.
- Growth has been differential: some states and local areas lose while others gain.

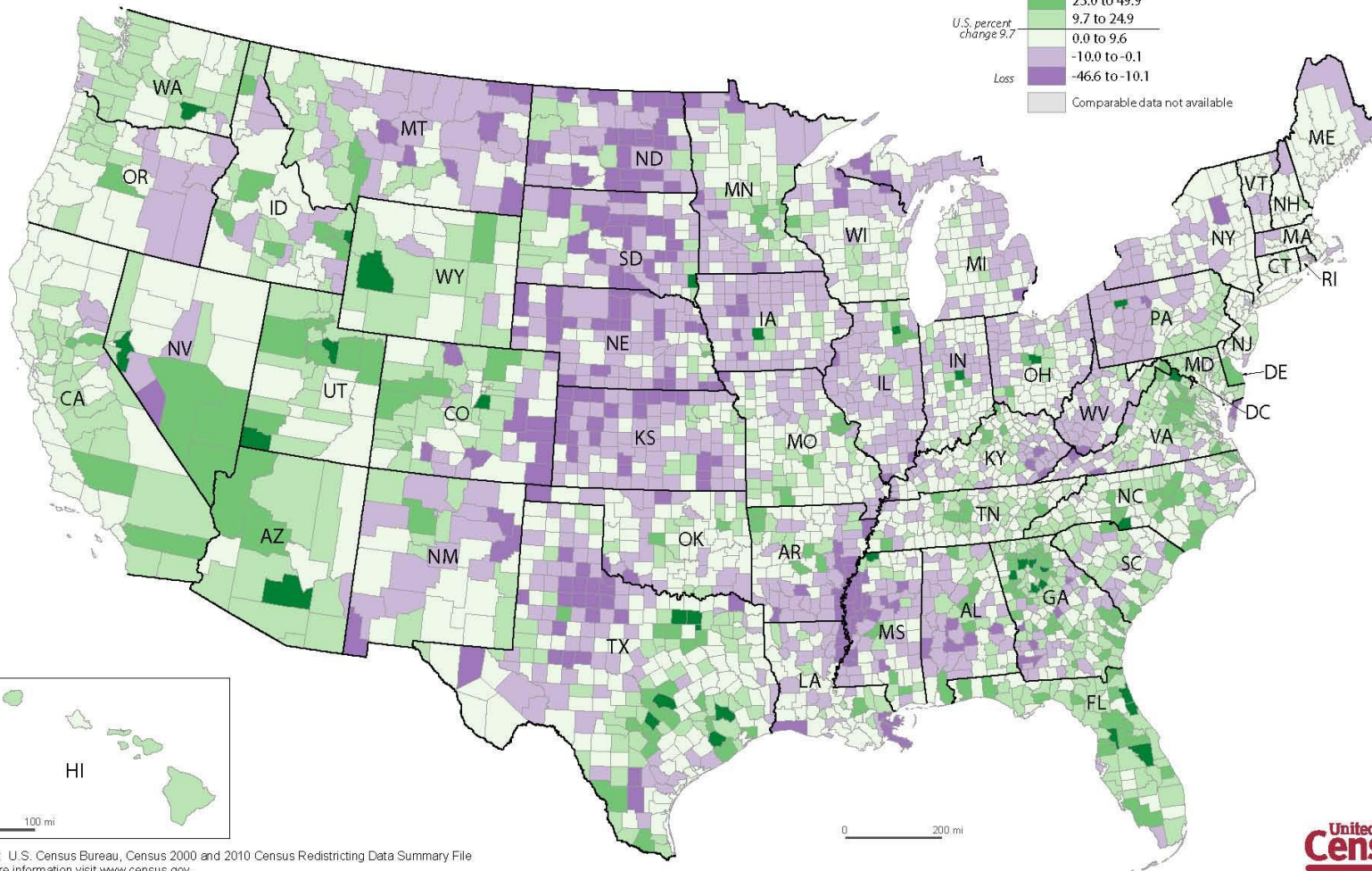
Population Growth, 1790-2000



Admitting States to the Union and Growing the House of Representatives



A map of Alaska with various regions shaded in different colors (green, purple, light green, dark green, and grey). The central region, which is shaded dark green, represents the study area. The map includes a scale bar indicating 0 to 500 miles and the label 'AK' for Alaska.



United States
Census
Bureau

Administrative History of the Census, 1790-1902

- From 1790 to 1902, a temporary agency in the Department of State or Interior.
- Until 1880 the US marshals and their assistants served as the field staff.
- Over the years, Congress added the collection of agricultural, manufacturing, mortality, disability statistics to the decennial.
- A very large administrative operation during the census period, but administrative discontinuity.
- Congress considered proposals for a permanent census office but did not act on them until 1902.

Meanwhile....

- The other constitutionally mandated “leg” of the system developed.

Economic Statistics

- Article 1, Section 9: “a regular Statement and Account of the Receipts and Expenditures of all public Money shall be published from time to time.”
- Article 2, Section 3: The President “shall from time to time give to the Congress Information of the State of the Union and recommend to their Consideration such Measures as he shall judge necessary and expedient.”

Implications....

- Administrative records of the revenue and expenditure of government would be collected and published, making it feasible to develop administrative statistics.
- The government would create an administrative structure to collect, analyze and publish the data.

Private Publications of Federal Statistics Begin Very Early!

- Timothy Pitkin, *A Statistical View of the Commerce of the United States of America* (1816)
- Adam Seybert, *Statistical Annals: Embracing Views of the Population, Commerce, Navigation, Fisheries, Public Lands, Post-Office Establishment, Revenues, Mint, Military and Naval Establishments, Expenditures, Public Debt and Sinking Fund, of the United States of America, Founded on Official Documents, 1789-1818*

Routine Statistical Reporting Starts in the Treasury Department

- 1820: The Secretary of the Treasury began to prepare annual statistical accounts of the commerce of the US with foreign countries.
- 1840-1860s: Congress authorized hiring of clerks, regular publication of reports.

The Treasury Department and Permanent Statistical Offices

- 1866, Bureau of Statistics established in the Treasury Department.
- 1878, the Bureau of Statistics published the first edition of the Statistical Abstract of the United States.

Statistical Agencies in other 19th Century Departments

- Agriculture Department: 1862
- Bureau of Education: 1867
- Bureau of Labor: 1884
- Immigration Statistics: collected in the Treasury Department and State Department

Technical Processes

- Collection – administrative or survey
- Cleaning, editing, coding
- Sorting, ordering, listing, and compilation
- Tabulation, cross tabulation (adding, summing)
- Presentation, publication

Census, 1790-1880

- Technology was paper
 - All processes short of printing for publication done by hand, long hand
 - Type setting done by hand.
-
- Until records reached 50,000,000 for the 1880 census!

69 in the year one thousand eight hundred and twenty. A. B. as-
 70 sistant to the marshal of (or secretary of)
 71 Schedule of the whole number of persons within the divi-
 72 sion allotted to A. B.

	Name of the county, parish, township, town, or city, where the family resides.
	Names of heads of families.
	Free white males under ten years.
	Free white males of ten and under sixteen.
	Free white males of sixteen, and under twenty-six, including heads of families.
	Free white males of twenty-six and under forty-five, including heads of families.
	Free white males of forty five and upwards, including heads of families,
	Free white females under ten years of age.
	Free white females of ten and under sixteen.
	Free white females of sixteen and under twenty-six, including heads of families.
	Free white females of twenty-six and under forty five, including heads of families.
	Free white females of forty-five and upwards, including heads of families.
	All other persons except Indians not taxed.
	Slaves.

1 Sec. 2. *Be it further enacted*, That every assistant, fail-
 2 ing or neglecting to make a proper return, or making a false re-
 3 turn, of the enumeration to the marshal, (or secretary,) within

Early Census Schedule

Individual Level Form

SCHEDULE A.—FREE INHABITANTS in			the County of		and State of							
enumerated by me on the			day of		1850.							
Assistant.												
Dwelling houses numbered in the order of visitation.	No. of rooms in each.	Families numbered in the order of visitation.	DESCRIPTION.			Profession, occupation, or trade of each male person over 15 years of age.	Place of birth.	Owners of real estate.	At school within the past year.	Persons over 20 years of age who cannot read or write.	Married within the past year.	Deaf and dumb, blind, insane, idiotic, or remarks.
1	2	3	The name of every person whose usual place of abode on the 1st day of June, 1850, was in this family.	Age.	Sex.							
4	5	6	7	8	9	10	11	12	13	14		

Census, 1890-1940

- Collection – administrative or survey
- Cleaning, editing, coding
- **Add a step, transfer information to punch card by copying information to card**
- Sorting, ordering, listing, and compilation
- ******Sort cards by machine******
- Tabulation, cross tabulation (adding, summing)
- ******Tabulate cards by machine******
- Presentation, publication
- ******Read results directly to print medium******

1910 census punch card

1	2	3	4	Hd	0	50	N	Ala	Ill	Mo	Pa	US	LC	US	LC	NP	Na	0	10	0	0	0	Emp	
5	6	7	8	Wf	1	55	F	Ark	Ind	Nbr	R.I.	Un	OL	Un	OL	FP	Al	1	11	1	1	1	W	
1	2	3	4	SD	5	60	S	Au	Ger	Rou	AFM	Au	Mol	Au	Mol	10	Pa	2	12	2	2	2	OA	
A	B	C	D	Ot	10	65	M	Clf	Ky	N.D.	S.D.	Can	Hun	Can	Hun	09	Un	3	13	3	3	3	Un	
1	2	3	4	M	15	70	Wd	Col	La	Nev	Ten	Den	Ire	Den	Ire	08	En	4	14	4	4	4	Yes	
5	6	7	8	F	20	75	D	Ct	Mas	N.H.	Tex	Eng	It	Eng	It	07	LO	5	15	5	5	5	No	
9	1	2	3	W	21	80	Un	D. C.	Mch	N.J.	Uta	Fr	Nor	Fr	Nor	06	Ot	6	16	6	6	6	0	
4	5	6	7	B	25	85	0	Del	Md	N.M.	Va	Gee	Rus	Gee	Rus	05	90& prior	7	17	7	7	7	1	
8	1	2	3	Mu	30	90	1	Fla	Me	N.Y.	Vt	Ger	Sc	Ger	Sc	01	Un	8	18	8	8	8	7	
4	5	6	7	Ch	35	95+	3	Den	Mex	Szd	Rut	Gee	Sc	Gee	Sc	04	CA	9	19	9	9	9	14	
8	1	2	3	Jp	40	Un	3	Ga	Mia	Chi	Wis	Wyo	Swe	Szd	Swe	96	CA	9	19	9	9	9	28	
4	5	6	7	In	45	5	4	Fin	Nfd	TyE	Siv	OL	Ot	Wa	Szd	91	CN	NG	Ot	Yes	X	X	27	
								Ida	Mnt	Ore	W.Va	NS	Sea	Ot	Wa	Ot	UA	UN	X	No	YY	NN	YN	52
								Fr	Nor	Wa	Syr													

A CENSUS CARD.

Punch card operators, WWII



1950 census schedule

[illegible][illegible]

Accelerating technical capacity

- 1950: UNIVAC computer processing
- 1960: FOSDIC machine reading of hand written responses
- 1970: Mail census
- 1970s: Terminal data entry
- 1980: Micro computers
- 1990s: Web
 - Presentation
 - Storage and downloading
 - On line tabulation

Census, 1950

- Collection – administrative or survey
- Cleaning, editing, coding
- **Transfer information to punch card by copying information to card**
- Sorting, ordering, listing, and compilation
- ******Sort cards by computer******
- Tabulation, cross tabulation (adding, summing)
- ******Tabulate cards by computer ******
- Presentation, publication
- ******Read results directly to print medium******

Census, 1960

- Collection – administrative or survey
- Cleaning, editing, coding
- ****** Transfer records (information) to tape by machine reading of paper form (FOSDIC)******
- Sorting, ordering, listing, and compilation
- ******Sort records by computer******
- Tabulation, cross tabulation (adding, summing)
- ******Tabulate records by computer ******
- Presentation, publication
- ******Read results directly to print medium******

Fast Forward, 2010

- Collection – administrative or survey
- Cleaning, editing, coding
- **Transfer records (information) to electronic storage by machine reading paper form (OCR)**
- Sorting, ordering, listing, and compilation
- ******Sort records by computer******
- Tabulation, cross tabulation (adding, summing)
- ******Tabulate records by computer ******
- Presentation, publication
- ******Read results directly to electronic summary file for use with web extraction tool******

Final Thoughts

- More technical innovation is likely
- Public Data requires a technical expertise and knowledge to manage and maintain it.
- The processes are labor intensive
- The processes are politically sensitive

**Thank you. For more
information...**

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