water

Article

Analysis of 220 Years of Floodplain Population Dynamics in the US at Different Spatial Scales

Firoza Akhter [1], Maurizio Mazzoleni [2,3] and Luigia Brandimarte [1,*]

Supplementary Materials

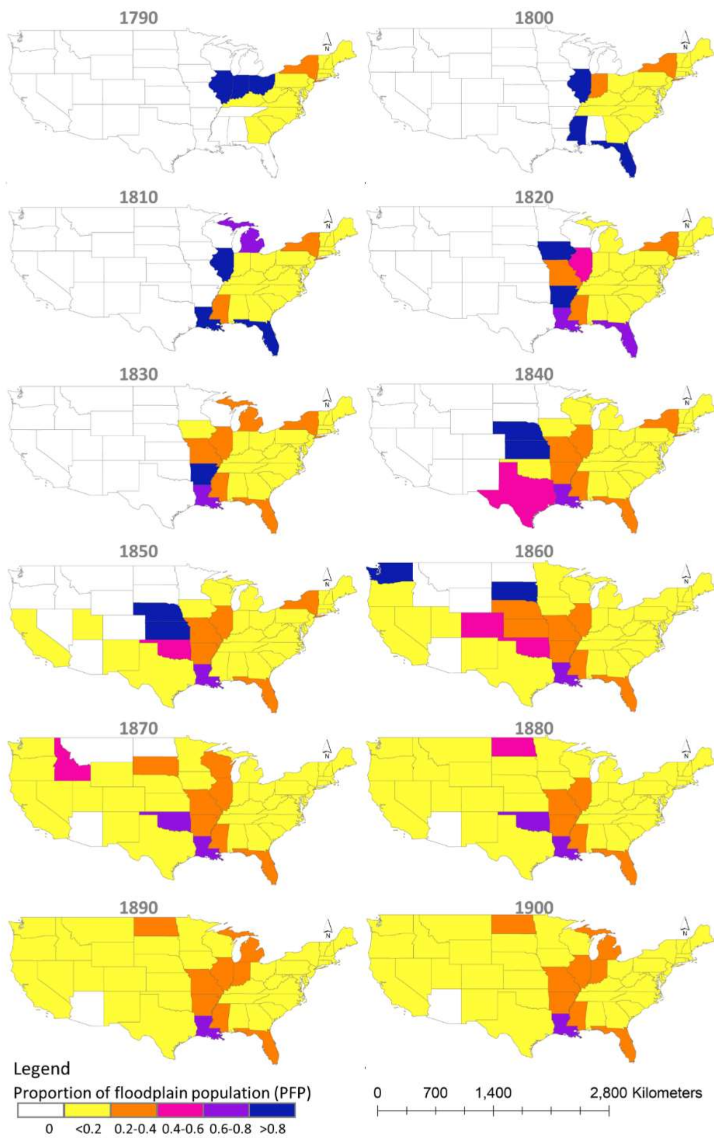

Figure S1a. Spatial distribution of the ratio between floodplain population and total population for the US States for the period 1790–2010 in 10-year intervals.

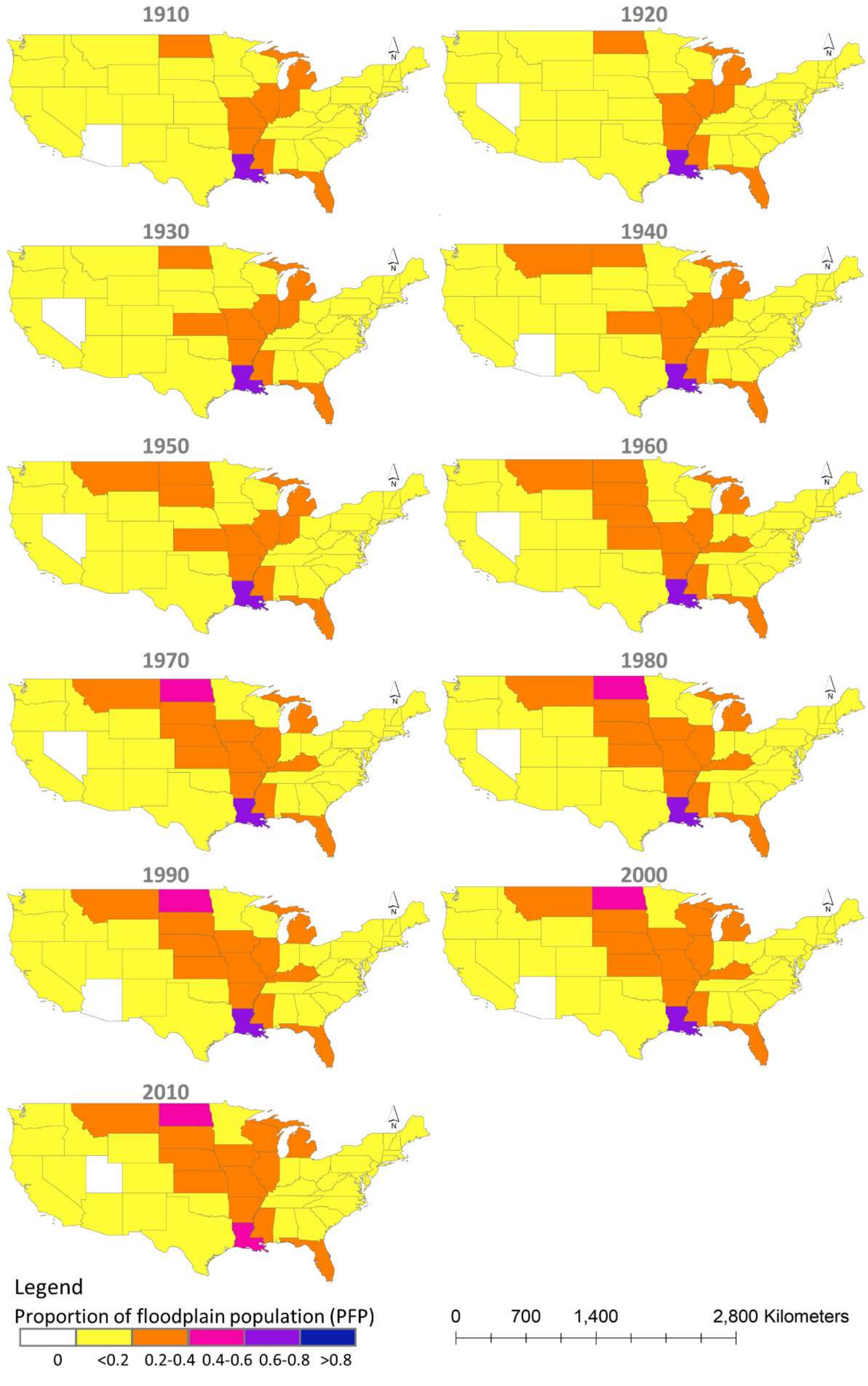

Figure S1b. Spatial distribution of the ratio between floodplain population and total population for the US States for the period 1790–2010 in 10-year intervals.

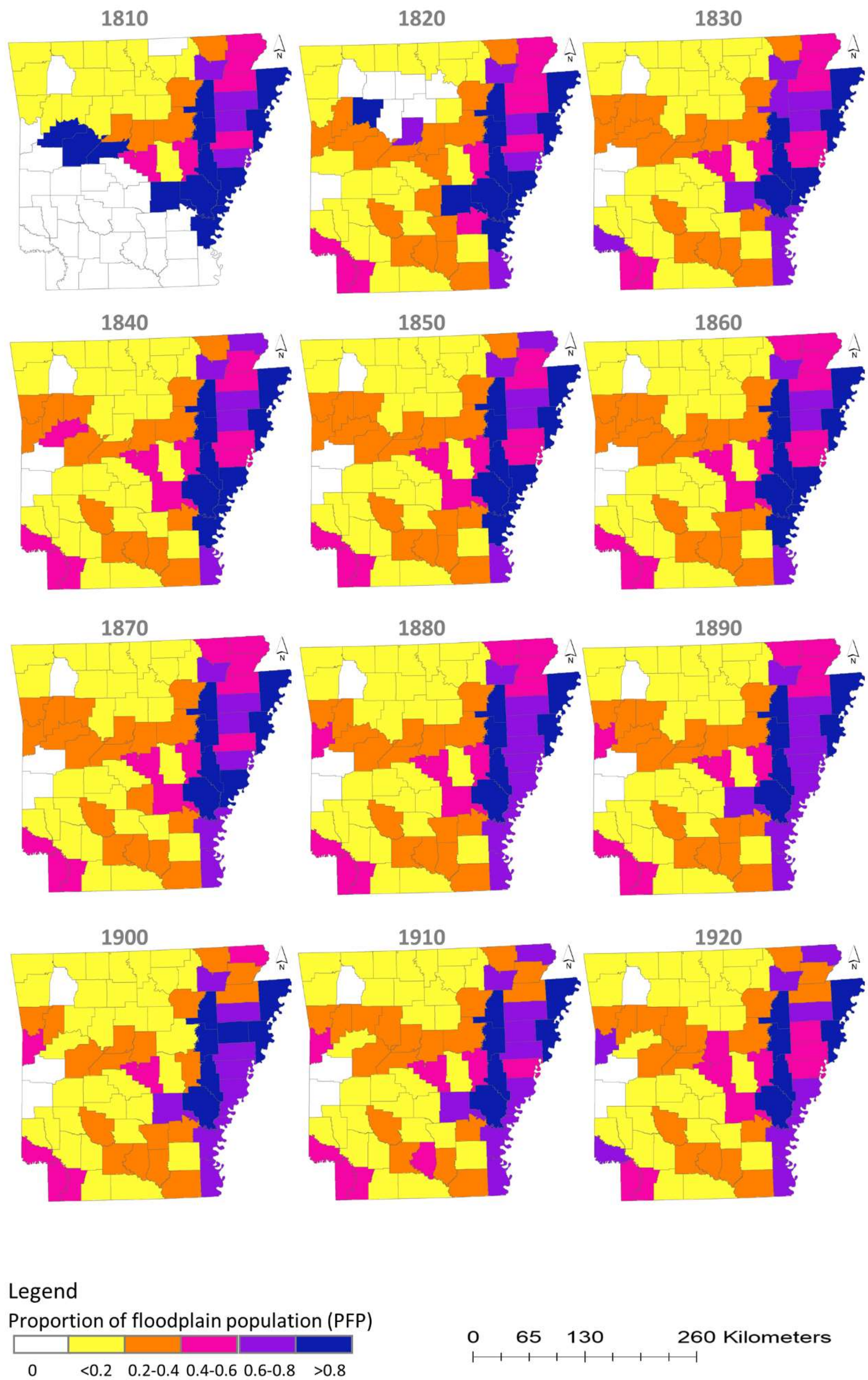

Figure 2. a. Proportion of floodplain population for Arkansas state starting from 1810 in 10-year intervals.

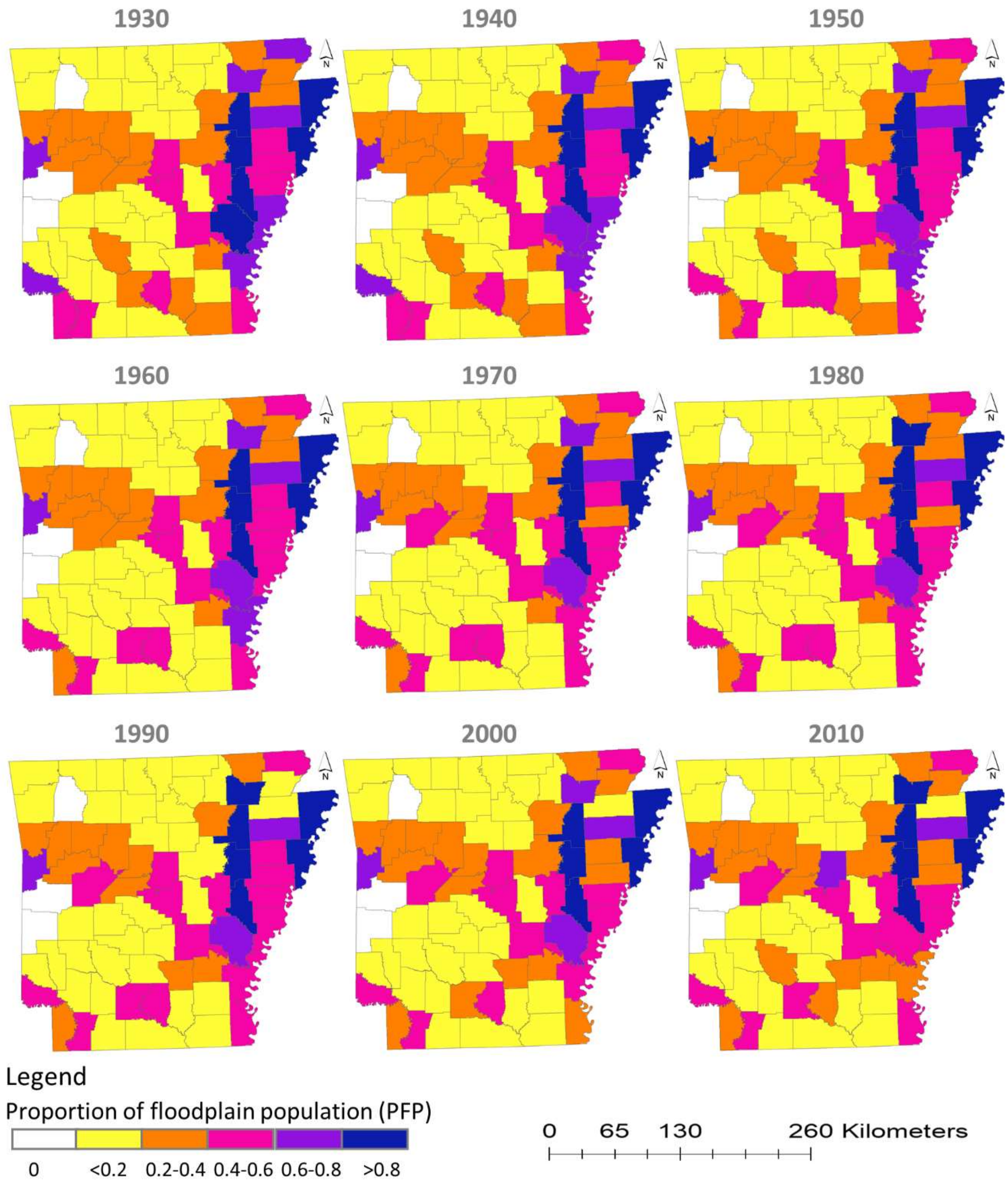

Figure S2b. Proportion of floodplain population for Arkansas state starting from 1810 in 10-year intervals.

Table 1. Statistical analysis of proportion of floodplain population (*PFP*) for each state of the United States

State	Max	Min	Variance	Std. Deviation
Alabama	0.185	0.094	0.001	0.026
Arizona	0.002	0.000	0.000	0.000
Arkansas	1.000	0.250	0.043	0.208
California	0.122	0.071	0.000	0.010
Colorado	0.413	0.000	0.007	0.084
Connecticut	0.079	0.054	0.000	0.007
Delaware	0.087	0.051	0.000	0.011
District of Columbia	0.199	0.000	0.002	0.046
Florida	1.000	0.209	0.055	0.234
Georgia	0.144	0.065	0.000	0.016
Idaho	0.539	0.000	0.016	0.128
Illinois	1.000	0.215	0.069	0.262
Indiana	0.840	0.122	0.020	0.141
Iowa	1.000	0.125	0.035	0.188
Kansas	1.000	0.145	0.065	0.256
Kentucky	0.229	0.088	0.002	0.042
Louisiana	0.901	0.580	0.005	0.069
Maine	0.126	0.057	0.000	0.022
Maryland	0.024	0.013	0.000	0.003
Massachusetts	0.090	0.063	0.000	0.006
Michigan	0.725	0.087	0.016	0.127
Minnesota	0.197	0.080	0.001	0.036
Mississippi	1.000	0.187	0.027	0.164
Missouri	0.377	0.207	0.003	0.057
Montana	0.257	0.000	0.006	0.078
Nebraska	1.000	0.148	0.066	0.258
Nevada	0.046	0.000	0.000	0.011
New Hampshire	0.164	0.087	0.001	0.026
New Jersey	0.169	0.127	0.000	0.010
New Mexico	0.057	0.007	0.000	0.016
New York	0.264	0.117	0.003	0.052
North Carolina	0.113	0.062	0.000	0.013
North Dakota	0.496	0.243	0.008	0.092
Ohio	0.822	0.074	0.023	0.153
Oklahoma	0.709	0.026	0.037	0.193
Oregon	0.188	0.056	0.002	0.042
Pennsylvania	0.170	0.123	0.000	0.011
Rhode Island	0.053	0.026	0.000	0.006
South Carolina	0.168	0.092	0.000	0.021
South Dakota	1.000	0.170	0.041	0.203
Tennessee	0.198	0.000	0.003	0.052
Texas	0.500	0.124	0.008	0.087

State	Max	Min	Variance	Std. Deviation
Utah	0.006	0.001	0.000	0.002
Vermont	0.129	0.079	0.000	0.010
Virginia	0.070	0.040	0.000	0.009
Washington	1.000	0.025	0.055	0.235
West Virginia	0.147	0.058	0.001	0.029
Wisconsin	0.206	0.107	0.001	0.024
Wyoming	0.097	0.000	0.001	0.037

Table S2. Statistical analysis of the proportion of floodplain population (*PFP*) for each county of Arkansas

County	Max	Min	Variance	Std. Deviation
Arkansas	0.975	0.598	0.018	0.133
Ashley	0.385	0.149	0.006	0.077
Baxter	0.076	0.050	0.000	0.009
Benton	0.072	0.011	0.000	0.015
Boone	0.031	0.012	0.000	0.005
Bradley	0.292	0.125	0.004	0.059
Calhoun	0.518	0.366	0.003	0.057
Carroll	0.051	0.022	0.000	0.006
Chicot	0.645	0.331	0.008	0.090
Clark	0.257	0.151	0.001	0.033
Clay	0.658	0.486	0.003	0.051
Cleburne	0.098	0.050	0.000	0.011
Cleveland	0.332	0.121	0.003	0.050
Columbia	0.091	0.022	0.000	0.019
Conway	0.609	0.171	0.006	0.079
Craighead	0.532	0.157	0.017	0.132
Crawford	0.388	0.014	0.009	0.093
Crittenden	1.000	1.000	0.000	0.000
Cross	0.810	0.382	0.013	0.113
Dallas	0.135	0.060	0.001	0.023
Desha	0.961	0.306	0.027	0.165
Drew	0.196	0.080	0.001	0.037
Faulkner	0.637	0.231	0.018	0.133
Franklin	0.343	0.081	0.002	0.045
Fulton	0.009	0.007	0.000	0.001
Garland	0.107	0.030	0.001	0.023
Grant	0.237	0.135	0.000	0.022
Greene	0.539	0.197	0.014	0.120
Hempstead	0.109	0.057	0.000	0.017
Hot Spring	0.110	0.052	0.000	0.022
Howard	0.045	0.019	0.000	0.008
Independence	0.319	0.234	0.000	0.020
Izard	0.029	0.018	0.000	0.002

County	Max	Min	Variance	Std. Deviation
Jackson	0.970	0.797	0.001	0.034
Jefferson	0.915	0.491	0.013	0.112
Johnson	0.301	0.140	0.002	0.043
Lafayette	0.538	0.417	0.001	0.029
Lawrence	0.819	0.653	0.003	0.058
Lee	0.652	0.454	0.004	0.067
Lincoln	0.521	0.254	0.003	0.053
Little River	0.637	0.469	0.003	0.057
Logan	0.455	0.154	0.006	0.078
Lonoke	0.098	0.033	0.001	0.023
Madison	0.000	0.000	-	-
Marion	0.175	0.069	0.000	0.020
Miller	0.588	0.215	0.019	0.139
Mississippi	0.989	0.933	0.000	0.014
Monroe	0.992	0.979	0.000	0.004
Montgomery	0.079	0.051	0.000	0.008
Nevada	0.115	0.038	0.001	0.023
Newton	0.015	0.000	0.000	0.003
Ouachita	0.414	0.249	0.003	0.052
Perry	0.371	0.246	0.002	0.040
Phillips	0.903	0.411	0.031	0.175
Pike	0.057	0.034	0.000	0.005
Poinsett	0.794	0.552	0.003	0.057
Polk	0.000	0.000	-	-
Pope	0.337	0.097	0.005	0.071
Prairie	0.552	0.337	0.002	0.048
Pulaski	0.521	0.392	0.001	0.037
Randolph	0.430	0.207	0.005	0.071
Saline	0.159	0.055	0.001	0.030
Scott	0.006	0.003	0.000	0.001
Searcy	0.033	0.024	0.000	0.002
Sebastian	0.801	0.292	0.037	0.193
Sevier	0.198	0.109	0.001	0.027
Sharp	0.044	0.023	0.000	0.006
St. Francis	0.777	0.348	0.014	0.120
Stone	0.036	0.024	0.000	0.003
Union	0.145	0.046	0.001	0.032
Van Buren	0.018	0.000	0.000	0.004
Washington	0.047	0.009	0.000	0.008
White	0.381	0.167	0.002	0.044
Woodruff	0.965	0.943	0.000	0.006
Yell	0.465	0.281	0.004	0.064

Table S3. Summary of flood events, damage, and flood protection measures with the year of flood occurrence, the introduction of flood protection measures and source of information in Arkansas State

Sl No.	Year	Flood events dichotomous variable ("0" and "1")	Damage [6] (in Thousand USD)	Structural Protection measures dichotomous variable ("0" and "1")	Non – Structural Protection measures dichotomous variable ("0" and "1")	Description
1	1833	1		0		US Army Engineers identified it as most significant flood record of that time[1]
2	1844	1		0		Considered as the most significant flood in the valley by the community[1]
3	1849	0		1		Swamp Acts of 1849-1850[2]
4	1858	1		0		The Humphreys-Abbot report about protecting the alluvial region of Mississippi used this flood to design levee. [2]
5	1874	1		1		1874 flood resulted in the creation of a "Levee Commission" to survey the system and submit a plan for reclamation of the Alluvial Valley[2]
6	1882	0		1		Mississippi River Commission (MRC) proposed 'Levees Only' Policy in 1882[2]
7	1912	1		0		Flood of 1912 causes a change in Levee design in 1914[2]
8	1914	0		1		An increase in the levee grade by 3 feet above the 1912 flood line and change design cross-section of levee[2]
9	1916	1		0		The Arkansas River at Fort Smith reached 10 feet above flood stage. Desha County almost totally flooded. Clarendon in Monroe County flooded with five to 12 feet of water.[4]
10	1917	0		1		First Federal Flood Control Act, 1917[2]
11	1920	0		1		Mechanized earthwork in a flood control structure and floodplain drainage[2]
12	1922	0		1		Authority of MRC extended[2]
13	1923	0		1		The area protected by levees increased to 1555 miles[2]
14	1927	1		0		The great 1927 flood. [1,2,3,4]
15	1928	0		1		1928 Flood Control Act (Mississippi Rivers and Tributaries) [2]
16	1931	0		1		Length of levee system extended up to 1830 miles[2]
17	1937	1		0		Flood in lower Mississippi river[2]
18	1938	0		1		The resolution passed by MRC to use the levee crown for gravel road construction. [2] Levee construction in Arkansas and Black river (length: 23.1 km, covered area: 95.4 sq. km)[5]
19	1939	0		1		Levee construction in Arkansas and White river (length: 137.25 km and covered area: 711.31 sq km) [5]
20	1940	0		1		levee construction in the Black River (length: 65 km covered area: 207 sq. km) [5]
21	1943	1		0		The water reaches 41.7 feet height near Fort Smith, Sebastian County[1]
22	1945	0		0		

Sl No.	Year	Flood events dichotomous variable ("0" and "1")	Damage [6] (in Thousand USD)	Structural Protection measures dichotomous variable ("0" and "1")	Non – Structural Protection measures dichotomous variable ("0" and "1")	Description
23	1947	0		1		Change in levee design; Soil compaction mandated by MRC[2]; Levee construction in Arkansas river (length: 7 km, covered area: 7.6 sq. km) [5]
24	1948	0		1		Levee construction in Arkansas river (length: 44.3 km, covered area: 81.5 sq. km) [5]
25	1949	0		1		Levee construction in Arkansas river (length: 98.5 km, covered area: 293 sq. km) [5]
26	1950	0		1		Levee construction in Arkansas, Mississippi, St. Francis and White River (length: 1780 km, covered area: 55,000 sq. km) [5]
27	1951	0		1		Levee construction in Arkansas river and Point remove creek (length: 34.15 km, covered area: 96 sq. km) [5]
28	1952	0		1		Levee construction in Arkansas river (length: 34.26 km, covered area: 120.4 sq. km) [5]
29	1953	0				
30	1954	0				
31	1955	1	61			
32	1956	1	255			
33	1957	1	27,938			
34	1958	1*	6202	1		Levee construction in Arkansas river (length: 4.23 km, covered area: 5.47 sq. km) [5]
35	1959	1	3090			
36	1960	1	580			
37	1961	1*	3503	1		Levee construction in Spadra Creek (length: 1.67 km, covered area: 0.51 sq. km) [5]
38	1962	1	91			
39	1963	1*	2500	0		
40	1964	1*	598	1		Levee construction in Lake Dardanelle and Prairie Creek (length: 1.93 km, covered area: 5.82 sq. km) [5]
41	1965	1	143	1		Levee construction in Arkansas river (length: 21.53 km, covered area: 23.73 sq. km) [5]
42	1966	1	5055			
43	1967	1	1497	0		
44	1968	1*	21,099	0	1	National Flood Insurance Act, 1968
45	1969	1*	3411	1		Levee construction in Arkansas river (length: 0.8 km, covered area: 0.06 sq. km) [5]
46	1970	1	639			
47	1971	1	2549			
48	1972	1*	1780	0	1	The NFIP's subsidized rates for flood insurance rate are lowered by 37.5 per cent to encourage increased participation in the program
49	1973	1*	129,579	0	1	Amendment in Flood insurance Act, increase the amount of flood insurance to the property owner. Flood Disaster Protection Act, 1973
50	1974	1*	8746	0	1	Rates for flood insurance lowered
51	1975	1*	21,387	0		

Sl No.	Year	Flood events dichotomous variable ("0" and "1")	Damage [6] (in Thousand USD)	Structural Protection measures dichotomous variable ("0" and "1")	Non – Structural Protection measures dichotomous variable ("0" and "1")	Description
52	1976	1				
53	1977	1	130			
54	1978	1*	23,900	1		Benchmark Standards for Levee Design and Maintenance, 1978[2]
55	1979	1	2620			
56	1980	0				
57	1981	0			1	NFIP increase flood insurance premium rate by 19% at first then by 45% and planned to increase it to 120% by the next seven years.
58	1982	0				
60	1983	1*	500,000	0	1	Private-sector property insurers are approved to take part in NFIP
61	1984	1	5000			
62	1985	1	19,823			
63	1986	1	2240	1		Levee construction in White river (length: 9.66 km, covered area: 12.53 sq. km)[5]
64	1987	1*	15045	0	1	President's budget proposal suggested eliminating all subsidies for flood insurance and asked to increase rates to recover costs. Also stated to provide insurance by the private sector to the homeowners.
65	1988	1	12,612		1	Insurance rates for Pre-FIRM structures increased to $1000 from $750
66	1989	1	2320			
67	1990	1*	143,056	0	1	The Community Rating System (CRS) begins. Under CRS, discounts on flood insurance premiums are available in communities that voluntarily initiate activities that reduce flood losses or that increase the number of flood insurance policies
68	1991	1*	12,006	0		
69	1992	1	909			
70	1993	1	2680			
71	1994	1	2024	1	1	The Community Development and Regulatory Improvement Act (PL 103-325), the National Flood Insurance Reform Act of 1994, includes the most sweeping changes to the NFIP. Three hundred fifty-six damaged levees repaired after the 1993 flood.
72	1995	0				
73	1996	1	205	1		Levee construction in White river (length: 0.09 km, covered area: 0.2 sq. km) [5]
74	1997	1*	12,874	0	1	As mandated in the National Flood Insurance Reform Act of 1994, Increased Cost of Compliance (ICC) coverage is included in all new and renewed flood insurance policies effective on or after June 1, 1997. This coverage helps to cover the costs of bringing flood-damaged homes and businesses into

Sl No.	Year	Flood events dichotomous variable (“0” and “1”)	Damage [6] (in Thousand USD)	Structural Protection measures dichotomous variable (“0” and “1”)	Non – Structural Protection measures dichotomous variable (“0” and “1”)	Description
						compliance with community floodplain ordinances. The coverage limit of $15,000 helps to pay for elevating, floodproofing, demolishing, or relocating a structure that has been substantially or repetitively damaged by flooding.
75	1998	1	2045			
76	1999	1	1777			
77	2000	1	2773			
78	2001	0				
79	2002	1*		0		
80	2003	0			1	FEMA increases the maximum claim payout for Increased Cost of Compliance (ICC) coverage from $20,000 to $30,000
81	2004	0				
82	2005	0				
83	2006	0				
84	2007	0				
85	2008	1*	124,631	0		
86	2009	1*	34,675	0		
87	2010	1*	240	0		

[1] Park, H., 1943. The Arkansas River Floods of 1943. The Arkansas Historical Quarterly, [online] 2(3), p.202.
[2] Rogers, J., 2004. Evolution of the Levee System Along the Lower Mississippi River.
[3] Barry, J., 1997. Rising Tide. 6th ed. Riverside: Simon & Schuster.
[4] Dillard, T., 2020. The Floods Of 1916. Arkansas Online. Available online at: https://www.arkansasonline.com/news/2016/jan/24/the-floods-of-1916-20160124/ [Accessed 5 May 2020]. (Dillard, 2020)
[5] Levees.sec.usace.army.mil. 2007.National Levee Database. Available online at: https://levees.sec.usace.army.mil
[6] Pielke, Jr., R.A., M.W. Downton, and J.Z. Barnard Miller, 2002: Flood Damage in the United States, 1926-2000: A Reanalysis of National Weather Service Estimates. Boulder, CO: UCAR.
[7] Federal Emergency Management Agency (FEMA), 2005. A Chronology of Major Events Affecting The National Flood Insurance Program. Maryland: The Pacific Institute for Research and Evaluation.
* Flood event data retrieved from fema.gov. The agency's preferred citation for each dataset is included in its metadata. Users should also cite the date that data was accessed or retrieved from fema.gov or Data.gov. Finally, users must clearly state that "FEMA and the Federal Government cannot vouch for the data or analyses derived from these data after the data have been retrieved from the Agency's website(s) or Data.gov."

Table S4. Summary of the historical flood events, flood damage data in terms of property damage in thousand USD, structural protection measures and related acts, policies, design guideline and construction time, non-structural measure, i.e. flood insurance-related acts, guidelines, modifications and related decisions in Sebastian County, Arkansas.

Sl No.	Year	Flood events dichotomous variable[1, 2,3] ("0" and "1")	Damage [4] (in Thousand USD)	Structural Protection measures dichotomous variable ("0" and "1")[5, 6]	Non – Structural Protection measures dichotomous variable ("0" and "1")[7]	Description
1	1833	1		0		US Army Engineers identified it as most significant flood record of that time [1]
2	1844	1		0		Considered as the greatest flood in the valley by the community[1]
3	1849			1		Swamp Act 1949
4	1874			1		Levee commission
5	1882			1		Mississippi river commission proposed levee only policy
6	1914			1		Increase in levee grade by 3 feet above 1912 flood in Mississippi river
7	1917			1		First federal flood control act, 1917
8	1920			1		Levee construction earthwork mechanization
9	1928			1		Federal flood control act (Mississippi River and its tributaries)
10	1943	1		0		the highest flood stage ever recorded for the Arkansas River (38 feet) at Fort Smith[2]
11	1948	0				Fort Smith Levee District No. 1
12	1958	1				
13	1961	1				
14	1963	1				
15	1964	1				
16	1965			1		Southern Enterprise Private Levee
17	1966			1		Park Lake Dam (CFIR)
18	1968				1	Flood Insurance Act, 1968
19	1971				1	Fort Smith City registered in the Flood Insurance Program
20	1972	1			1	Referred to Table 2
21	1973				1	Amendment in Flood insurance Act, increase the amount of flood insurance to the property owner.
22	1974				1	Referred to Table 2
23	1976				1	Huntington city registered in the flood insurance program
24	1978			1		Referred to Table 2
25	1979	1	*			
26	1981				1	Greenwood city was registered in the Flood insurance program.
27	1982	1	*		1	Hackett, Hartford, Lavaca city registered in the flood insurance program
28	1983				1	Referred to Table 2
29	1986	1	*			

Sl No.	**Year**	**Flood events dichotomous variable[1, 2,3] ("0" and "1")**	**Damage [4] (in Thousand USD)**	**Structural Protection measures dichotomous variable ("0" and "1")[5, 6]**	**Non – Structural Protection measures dichotomous variable ("0" and "1")[7]**	**Description**
30	1987	1	*		1	Mansfield, the Midland city, included in the flood insurance program.
31	1988				1	Referred to Table 2
32	1990	1	*			Referred to Table 2
33	1991		*			
34	1994				1	Referred to Table 2
35	1997				1	Referred to Table 2
36	1999	1	*		1	The central city registered in the flood insurance program
37	2000	0				
38	2001	1	*			
39	2002		*			
40	2003	1			1	Referred to Table 2
41	2004	1	*			
42	2007	1			1	Barling city registered flood insurance program
43	2008	1				

[1] Park, H., 1943. The Arkansas River Floods of 1943.The Arkansas Historical Quarterly, [online] 2(3), p.202.
[2] Hanley, S., 1999.Sebastian And Crawford Counties. Chicago, IL: Arcadia Publishing.
[3] Flood event data retrieved from fema.gov. The agency's preferred citation for each dataset is included in its metadata. Users should also cite the date that data was accessed or retrieved from fema.gov or Data.gov. Finally, users must clearly state that "FEMA and the Federal Government cannot vouch for the data or analyses derived from these data after the data have been retrieved from the Agency's website(s) or Data.gov."
[4] Hazards and Vulnerability Research Institute. (2020). The spatial hazard events and losses database for the United States, version 9.0. Columbia: University of South Carolina. http://www.sheldus.org. It was accessed on 5 June 2020.
* Data cannot be retrieved in the raw format according to SHELDUS® END-USER LICENSE AGREEMENT
[5] Levees.sec.usace.army.mil. 2007.National Levee Database. Available online at: https://levees.sec.usace.army.mil
[6] Rogers, J., 2004. Evolution of the Levee System Along the Lower Mississippi River.
[7] Federal Emergency Management Agency (FEMA), 2005.A Chronology of Major Events Affecting the National Flood Insurance Program. Maryland: The Pacific Institute for Research and Evaluation.

Table 5. Total floodplain population per state from 1790–2010.

States	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Alabama		286.86	1322.48	24593.50	50050.19	97236.79	124398.84	149076.23	152877.68	185805.66	207873.23	246082.84	270535.78	284269.63	308373.45	335367.24	350654.43	368828.96	387003.49	441601.11	453431.56	521656.92	541544.12
Arizona								3.01	5.41	43.57	89.27	160.05	258.10	374.17	443.69	424.67	358.54	403.87	449.20	1153.67	613.11	5171.36	9794.63
Arkansas			815.59	3888.81	10300.96	29114.35	62564.69	135636.19	155528.81	252966.48	368251.03	422572.18	542031.95	629865.87	700300.09	751843.54	738884.11	714714.84	690545.58	746674.47	741276.26	791280.91	824645.19
California							9343.01	34183.66	60630.57	83202.82	103857.61	129300.80	195960.88	308106.91	502692.93	650603.64	922715.33	1267048.55	1611381.77	1963917.99	2527490.67	3200981.73	3690065.78
Colorado								2861.73	2094.80	15265.88	34512.88	43822.53	72787.10	89992.11	100201.07	108223.85	126669.42	148535.67	170401.92	194495.41	212928.62	286118.23	327364.40
Connecticut	15349.65	15898.57	16574.92	18478.18	19614.69	20035.19	22676.01	25270.23	28520.62	36081.83	43372.20	55320.77	70709.01	84693.56	109770.49	119414.94	157169.57	193716.02	230262.48	230345.60	245275.51	245029.68	267121.31
Delaware	3053.94	4097.02	3856.53	4361.20	4733.21	6550.24	6995.26	7690.32	9504.13	10987.86	13491.16	15820.17	17841.50	19411.57	20572.56	22469.76	24671.15	31832.03	38992.91	39319.48	43904.14	48587.98	67111.85
District of Columbia	173.31		1577.54		5933.89	5080.04	5088.88	0.00	9571.14	0.00	18287.11	0.00	26209.05	34640.27	38542.94	52813.53	63891.46	61560.40	59229.34	49976.93	47515.95	45160.92	43608.83
Florida					7377.18	11870.91	20804.12	37172.90	49479.59	68662.95	96104.56	127057.23	160655.27	200624.46	320815.37	455085.82	725042.13	1391838.49	2058634.87	2898692.65	3717549.34	4674278.29	5487253.92
Georgia	11682.04	16609.55	22389.29	27942.94	36626.13	53267.28	69339.39	87099.15	103899.26	133004.98	153846.42	198478.16	244596.79	272552.91	276613.44	289771.70	348833.58	385890.16	422946.73	483877.54	509164.35	596903.53	727188.39
Idaho							0.12	0.04	2543.84	1595.54	5438.83	10550.93	19213.97	20659.84	21388.81	24417.40	26737.66	27698.22	28658.77	32897.30	32414.02	47674.59	54770.49
Illinois		963.70	2777.69	17494.09	43476.19	105785.44	184341.48	374255.64	631161.51	823652.12	940505.84	1116787.42	1327178.82	1561009.42	1859882.30	1924445.15	2150774.66	2411334.24	2671893.82	2645505.00	2578373.04	2799778.02	2757660.77
Indiana	1.02	474.76	4340.40	27687.06	48741.38	96656.26	158877.65	231326.02	311638.52	379966.32	450540.22	511617.38	575055.78	617677.26	665311.12	690953.70	789604.70	878114.43	966624.15	1039353.93	1054950.37	1163254.83	1214342.78
Iowa				41.65		7081.54	26249.90	83866.50	160684.24	215401.74	280352.85	333997.08	362932.39	403094.02	428373.75	448546.96	481527.77	519730.49	557933.20	571798.03	542862.60	564653.36	595737.16
Kansas								19373.19	62139.64	143114.43	217534.32	237412.68	308622.35	330810.19	394708.01	394665.13	472706.13	525675.44	578644.75	603036.22	632388.32	687913.24	717083.65
Kentucky	8595.29	21467.75	42403.15	61730.18	80899.79	104031.96	143408.84	191891.35	232995.05	288246.32	341125.28	401359.14	424650.16	444202.05	491342.91	525616.33	576509.19	658819.51	741129.84	789484.89	784090.86	855124.16	875665.10
Louisiana			62556.28	101700.14	146781.92	241414.28	234013.37	447366.52	451662.65	602812.38	695320.03	851411.26	1019555.05	1112852.49	1313379.08	1485051.04	1729331.61	2039941.75	2350551.90	2623707.60	2578770.61	2704713.39	2612632.34
Maine	6367.77	8664.91	12788.89	15885.05	22678.75	33747.45	40731.01	43425.80	47611.31	49475.23	52825.21	56990.85	66980.60	74898.68	82062.34	86626.43	100150.29	105781.31	111412.33	120324.74	128924.84	125876.28	122738.55
Maryland	3797.89	4869.52	5023.70	5494.94	6243.28	10413.62	12793.57	13505.57	14715.79	16757.95	16681.06	17933.31	19378.32	26815.70	30661.09	28449.64	29916.62	37268.84	44621.07	45912.86	58012.97	57296.33	86157.46
Massachusetts	24762.58	27945.54	32869.12	37612.61	48463.88	63733.03	77585.73	85191.34	97719.25	110080.23	160163.74	198557.26	246855.80	285043.20	318367.12	321682.78	343299.34	392643.26	441987.19	446664.53	460008.18	478291.99	502894.14
Michigan		366.13	1945.92	1050.09	5755.06	22572.37	49682.41	104473.40	195381.16	312392.77	420377.97	477347.53	581445.31	866136.64	1200955.77	1292804.04	1604842.14	1883048.35	2161254.56	2200402.96	2162969.15	2315972.61	2270291.05
Minnesota		52.65	347.40	143.25	205.44	294.19	981.51	15424.41	43729.47	88345.74	159688.13	232112.45	282086.54	331910.19	371712.83	415672.00	465105.97	574327.08	683548.20	756305.58	823355.67	952803.44	1044689.60
Mississippi		1779.45	8105.43	15640.40	32566.92	79546.10	115538.11	168461.51	175431.06	253099.37	313453.98	386040.12	446868.72	477836.70	558869.08	595993.18	587199.16	562846.11	538493.05	585229.44	576524.56	627786.00	603193.82
Missouri		0.19	2727.53	16994.08	32090.82	86648.46	145480.39	242493.96	387359.09	646886.51	794726.84	983029.82	1115503.71	1225804.70	1348715.14	1405743.21	1490010.47	1515966.61	1541922.75	1422578.92	1388800.39	1429195.03	1482734.06
Montana								0.00	1282.83	2394.05	13527.03	23343.78	44916.79	72908.37	74561.87	89880.61	110033.38	125843.87	141654.36	157016.41	160340.51	197611.12	226243.80
Nebraska								5790.34	23300.12	66395.45	156117.06	158557.91	178973.83	213918.94	243395.01	245367.24	260182.74	294677.23	329171.72	357148.28	360053.40	395841.01	441973.34
Nevada								0.01	57.64	47.68	21.76	40.14	48.30	40.82	38.93	49.90	31.08	51.50	71.91	130.71	53585.31	8037.75	5803.77
New Hampshire	10376.24	14478.48	16924.29	19134.88	21226.15	24393.79	27117.91	33803.54	35335.59	38316.11	45118.98	56028.87	61332.31	64430.38	72078.62	73674.57	78398.79	88048.16	97697.53	112772.51	123284.45	133995.88	139826.46
New Jersey	24104.79	27315.66	31481.19	35032.31	39873.12	46298.01	57769.67	89010.43	105448.54	128759.16	213388.18	257943.53	318095.60	392468.36	490532.13	498422.32	553333.75	727067.54	900801.32	921770.77	963893.02	1002650.74	1105923.38
New Mexico							1152.16	1263.76	2865.66	3252.23	4019.78	4851.84	9879.52	9241.64	8937.95	11304.21	9766.48	9428.74	9091.00	11817.00	13182.96	16923.48	16372.48
New York	66081.91	133024.49	213990.65	321743.15	444279.30	540199.61	644931.42	723061.38	787257.69	875652.64	957996.00	1045911.96	1179477.74	1285540.10	1465414.10	1500905.72	1694406.58	1906535.94	2118665.30	2106469.94	2137481.30	2103598.17	2251313.28
North Carolina	42564.26	47562.72	53986.96	57771.36	63619.71	62996.32	73492.97	86673.52	92660.99	121151.51	130729.06	148039.91	182117.74	213236.03	241201.26	272171.18	312513.20	329528.47	346543.75	373581.14	406326.63	497794.15	604823.13
North Dakota							159.29	0.00	519.20	11488.73	50577.70	81409.39	129900.59	147572.99	162820.18	169603.54	175298.74	199659.28	224019.82	252495.16	270821.90	281834.48	303259.54
Ohio		2259.71	18727.32	42986.21	68877.01	111554.47	151719.79	197715.25	232343.68	300408.14	360429.39	412138.01	467035.32	558441.18	643407.36	670798.73	748473.10	869683.82	990894.54	1016287.42	1021991.33	1095421.64	1109621.35
Oklahoma				403.50			0.16	7.36	10.23	39.65	7784.64	117202.23	257714.39	327414.98	387488.33	382668.20	375124.09	402726.42	430328.75	507887.00	517766.78	580519.91	632216.21
Oregon							724.81	3415.39	5774.98	8227.76	20868.00	28052.52	66969.45	76548.43	112493.34	133945.27	216423.49	271883.56	327343.64	434035.63	469231.40	614184.71	715040.38
Pennsylvania	47631.70	82841.88	115888.92	147352.32	196803.30	257312.28	354466.67	474093.11	603295.79	706503.79	868627.37	1043925.23	1276729.24	1467439.47	1641033.42	1671677.28	1747005.45	1817515.64	1888025.84	1879740.33	1815626.94	1928463.40	2141829.35
Rhode Island	1767.57	3081.41	3775.10	3871.58	4571.13	5740.75	5892.71	9226.22	11034.41	13799.08	21137.20	22201.41	32488.58	37777.15	43150.22	44269.24	45205.44	49059.01	52912.59	52583.01	55513.49	59124.62	58583.97
South Carolina	37402.32	49360.62	58119.10	73639.01	83931.70	83257.22	93572.47	96276.01	92474.32	126307.84	141216.52	161349.59	171128.82	192022.56	189909.85	208413.46	218621.45	227156.13	235690.80	291709.05	327779.81	379704.02	464431.99
South Dakota							89.16	0.00	3492.22	16873.84	59546.82	64574.53	92831.20	111310.85	118397.60	114761.14	121867.71	127808.75	133749.79	142017.32	146480.50	161666.83	170865.26
Tennessee		7544.82	18246.56	30107.04	56796.41	78458.92	105059.18	134174.15	164651.68	201992.26	253354.07	301733.08	347505.17	386204.14	465025.20	507599.16	583734.46	676595.67	769456.89	884221.85	931823.97	1022781.51	1071489.65
Texas				136.39	107.94	1.51	32792.35	84957.25	111188.33	199392.62	272996.99	369527.35	482713.62	601646.83	773337.10	846140.48	1028049.82	1203032.37	1378014.91	1767719.71	2076841.89	2683743.60	3205439.36
Utah							29.15	74.59	231.48	696.70	937.76	1301.43	1435.29	1627.72	1525.80	1474.59	1408.11	1846.85	2285.60	2429.20	2614.13	2966.03	4204.85
Vermont	6962.55	14940.98	21951.41	23654.01	27656.79	29149.81	32212.84	30935.80	33018.98	34816.60	35568.30	36963.27	38147.24	39818.58	41570.73	42755.06	42492.63	45849.49	49206.35	57386.83	63683.97	74397.55	82134.36
Virginia	34451.41	40561.63	41657.33	44130.26	50293.73	47739.91	53421.20	57374.06	56511.23	69326.13	85929.73	107906.88	135994.05	154014.31	168124.20	181699.99	202553.27	215278.60	228003.92	239999.93	257851.02	286283.08	341688.22
Washington							100.21	446.30	853.16	2350.06	9055.27	13554.01	43233.68	72664.66	93060.23	103546.95	167546.16	210505.39	253464.63	326042.95	367952.27	481963.34	652059.57
West Virginia	4049.80	4742.99	6041.78	8049.47	10048.13	11844.13	16736.37	20886.98	26452.63	38501.13	50162.12	72663.04	99186.54	138636.81	175543.26	184836.71	212281.20	216971.02	221660.85	233313.90	219797.79	246006.70	275210.80
Wisconsin		25.55	160.73	182.01	357.02	3878.92	45433.97	151183.76	211517.06	252838.63	320831.12	383077.03	421563.35	460300.04	517919.79	566473.50	629723.65	718745.37	807767.10	876085.37	973762.62	1087668.78	1155395.65
Wyoming								0.02	224.24	331.58	848.92	1262.44	2231.31	5225.44	6613.11	7369.79	15839.87	19771.48	23703.09	36890.59	31098.95	35033.89	41611.87
Contiguous US total	349176.04	531217.55	823373.21	1188931.66	1670981.12	2377905.13	3207768.73	4700417.88	5988687.28	7937712.06	9969209.60	11967321.31	14439562.60	16733733.31	19601634.98	20956494.53	23856920.07	27452834.97	31048749.88	33974808.83	36070381.41	40603719.21	44143651.41

Table S6. Growth rate of Floodplain Population (*GFP*) in each state from 1790–2010

States	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Alabama		3.61	17.60	1.04	0.94	0.28	0.20	0.03	0.22	0.12	0.18	0.10	0.05	0.08	0.09	0.05	0.05	0.05	0.14	0.03	0.15	0.04
Arizona								0.80	7.06	1.05	0.79	0.61	0.45	0.19	-0.04	-0.16	0.13	0.11	1.57	-0.47	7.43	0.89
Arkansas			3.77	1.65	1.83	1.15	1.17	0.15	0.63	0.46	0.15	0.28	0.16	0.11	0.07	-0.02	-0.03	-0.03	0.08	-0.01	0.07	0.04
California							2.66	0.77	0.37	0.25	0.24	0.52	0.57	0.63	0.29	0.42	0.37	0.27	0.22	0.29	0.27	0.15
Colorado								-0.27	6.29	1.26	0.27	0.66	0.24	0.11	0.08	0.17	0.17	0.15	0.14	0.09	0.34	0.14
Connecticut	0.04	0.04	0.11	0.06	0.02	0.13	0.11	0.13	0.27	0.20	0.28	0.28	0.20	0.30	0.09	0.32	0.23	0.19	0.00	0.06	0.00	0.09
Delaware	0.34	-0.06	0.13	0.09	0.38	0.07	0.10	0.24	0.16	0.23	0.17	0.13	0.09	0.06	0.09	0.10	0.29	0.22	0.01	0.12	0.11	0.38
District of Columbia	-1.00		-1.00		-0.14	0.00	-1.00		-1.00		-1.00		0.32	0.11	0.37	0.21	-0.04	-0.04	-0.16	-0.05	-0.05	-0.03
Florida					0.61	0.75	0.79	0.33	0.39	0.40	0.32	0.26	0.25	0.60	0.42	0.59	0.92	0.48	0.41	0.28	0.26	0.17
Georgia	0.42	0.35	0.25	0.31	0.45	0.30	0.26	0.19	0.28	0.16	0.29	0.23	0.11	0.01	0.05	0.20	0.11	0.10	0.14	0.05	0.17	0.22
Idaho							-0.62		-0.37	2.41	0.94	0.82	0.08	0.04	0.14	0.10	0.04	0.03	0.15	-0.01	0.47	0.15
Illinois		1.88	5.30	1.49	1.43	0.74	1.03	0.69	0.30	0.14	0.19	0.19	0.18	0.19	0.03	0.12	0.12	0.11	-0.01	-0.03	0.09	-0.02
Indiana	466.33	8.14	5.38	0.76	0.98	0.64	0.46	0.35	0.22	0.19	0.14	0.12	0.07	0.08	0.04	0.14	0.11	0.10	0.08	0.02	0.10	0.04
Iowa				-1.00		2.71	2.19	0.92	0.34	0.30	0.19	0.09	0.11	0.06	0.05	0.07	0.08	0.07	0.02	-0.05	0.04	0.06
Kansas								2.21	1.30	0.52	0.09	0.30	0.07	0.19	0.00	0.20	0.11	0.10	0.04	0.05	0.09	0.04
Kentucky	1.50	0.98	0.46	0.31	0.29	0.38	0.34	0.21	0.24	0.18	0.18	0.06	0.05	0.11	0.07	0.10	0.14	0.12	0.07	-0.01	0.09	0.02
Louisiana			0.63	0.44	0.64	-0.03	0.91	0.01	0.33	0.15	0.22	0.20	0.09	0.18	0.13	0.16	0.18	0.15	0.12	-0.02	0.05	-0.03
Maine	0.36	0.48	0.24	0.43	0.49	0.21	0.07	0.10	0.04	0.07	0.08	0.18	0.12	0.10	0.06	0.16	0.06	0.05	0.08	0.07	-0.02	-0.02
Maryland	0.28	0.03	0.09	0.14	0.67	0.23	0.06	0.09	0.14	0.00	0.08	0.08	0.38	0.14	-0.07	0.05	0.25	0.20	0.03	0.26	-0.01	0.50
Massachusetts	0.13	0.18	0.14	0.29	0.32	0.22	0.10	0.15	0.13	0.45	0.24	0.24	0.15	0.12	0.01	0.07	0.14	0.13	0.01	0.03	0.04	0.05
Michigan		4.31	-0.46	4.48	2.92	1.20	1.10	0.87	0.60	0.35	0.14	0.22	0.49	0.39	0.08	0.24	0.17	0.15	0.02	-0.02	0.07	-0.02
Minnesota		5.60	-0.59	0.43	0.43	2.34	14.72	1.84	1.02	0.81	0.45	0.22	0.18	0.12	0.12	0.12	0.23	0.19	0.11	0.09	0.16	0.10
Mississippi		3.56	0.93	1.08	1.44	0.45	0.46	0.04	0.44	0.24	0.23	0.16	0.07	0.17	0.07	-0.01	-0.04	-0.04	0.09	-0.01	0.09	-0.04
Missouri		14340.96	5.23	0.89	1.70	0.68	0.67	0.60	0.67	0.23	0.24	0.13	0.10	0.10	0.04	0.06	0.02	0.02	-0.08	-0.02	0.03	0.04
Montana									0.87	4.65	0.73	0.92	0.62	0.02	0.21	0.22	0.14	0.13	0.11	0.02	0.23	0.14
Nebraska								3.02	1.85	1.35	0.02	0.13	0.20	0.14	0.01	0.06	0.13	0.12	0.08	0.01	0.10	0.12
Nevada									-0.17	-0.54	0.84	0.20	-0.15	-0.05	0.28	-0.38	0.66	0.40	0.82	408.96	-0.85	-0.28
New Hampshire	0.40	0.17	0.13	0.11	0.15	0.11	0.25	0.05	0.08	0.18	0.24	0.09	0.05	0.12	0.02	0.06	0.12	0.11	0.15	0.09	0.09	0.04
New Jersey	0.13	0.15	0.11	0.14	0.16	0.25	0.54	0.18	0.22	0.66	0.21	0.23	0.23	0.25	0.02	0.11	0.31	0.24	0.02	0.05	0.04	0.10
New Mexico							0.10	1.27	0.13	0.24	0.21	1.04	-0.06	-0.03	0.26	-0.14	-0.03	-0.04	0.30	0.12	0.28	-0.03
New York	1.01	0.61	0.50	0.38	0.22	0.19	0.12	0.09	0.11	0.09	0.09	0.13	0.09	0.14	0.02	0.13	0.13	0.11	-0.01	0.01	-0.02	0.07
North Carolina	0.12	0.14	0.07	0.10	-0.01	0.17	0.18	0.07	0.31	0.08	0.13	0.23	0.17	0.13	0.13	0.15	0.05	0.05	0.08	0.09	0.23	0.22
North Dakota							-1.00		21.13	3.40	0.61	0.60	0.14	0.10	0.04	0.03	0.14	0.12	0.13	0.07	0.04	0.08
Ohio		7.29	1.30	0.60	0.62	0.36	0.30	0.18	0.29	0.20	0.14	0.13	0.20	0.15	0.04	0.12	0.16	0.14	0.03	0.01	0.07	0.01
Oklahoma				-1.00			44.24	0.39	2.88	195.36	14.06	1.20	0.27	0.18	-0.01	-0.02	0.07	0.07	0.18	0.02	0.12	0.09
Oregon							3.71	0.69	0.42	1.54	0.34	1.39	0.14	0.47	0.19	0.62	0.26	0.20	0.33	0.08	0.31	0.16
Pennsylvania	0.74	0.40	0.27	0.34	0.31	0.38	0.34	0.27	0.17	0.23	0.20	0.22	0.15	0.12	0.02	0.05	0.04	0.04	0.00	-0.03	0.06	0.11
Rhode Island	0.74	0.23	0.03	0.18	0.26	0.03	0.57	0.20	0.25	0.53	0.05	0.46	0.16	0.14	0.03	0.02	0.09	0.08	-0.01	0.06	0.07	-0.01
South Carolina	0.32	0.18	0.27	0.14	-0.01	0.12	0.03	-0.04	0.37	0.12	0.14	0.06	0.12	-0.01	0.10	0.05	0.04	0.04	0.24	0.12	0.16	0.22
South Dakota							-1.00		3.83	2.53	0.08	0.44	0.20	0.06	-0.03	0.06	0.05	0.05	0.06	0.03	0.10	0.06
Tennessee		1.42	0.65	0.89	0.38	0.34	0.28	0.23	0.23	0.25	0.19	0.15	0.11	0.20	0.09	0.15	0.16	0.14	0.15	0.05	0.10	0.05
Texas				-0.21	-0.99	21733.25	1.59	0.31	0.79	0.37	0.35	0.31	0.25	0.29	0.09	0.21	0.17	0.15	0.28	0.17	0.29	0.19
Utah							1.56	2.10	2.01	0.35	0.39	0.10	0.13	-0.06	-0.03	-0.05	0.31	0.24	0.06	0.08	0.13	0.42
Vermont	1.15	0.47	0.08	0.17	0.05	0.11	-0.04	0.07	0.05	0.02	0.04	0.03	0.04	0.04	0.03	-0.01	0.08	0.07	0.17	0.11	0.17	0.10
Virginia	0.18	0.03	0.06	0.14	-0.05	0.12	0.07	-0.02	0.23	0.24	0.26	0.26	0.13	0.09	0.08	0.11	0.06	0.06	0.05	0.07	0.11	0.19
Washington							3.45	0.91	1.75	2.85	0.50	2.19	0.68	0.28	0.11	0.62	0.26	0.20	0.29	0.13	0.31	0.35
West Virginia	0.17	0.27	0.33	0.25	0.18	0.41	0.25	0.27	0.46	0.30	0.45	0.37	0.40	0.27	0.05	0.15	0.02	0.02	0.05	-0.06	0.12	0.12
Wisconsin		5.29	0.13	0.96	9.86	10.71	2.33	0.40	0.20	0.27	0.19	0.10	0.09	0.13	0.09	0.11	0.14	0.12	0.08	0.11	0.12	0.06
Wyoming									0.48	1.56	0.49	0.77	1.34	0.27	0.11	1.15	0.25	0.20	0.56	-0.16	0.13	0.19
Contiguous US total	0.52	0.55	0.44	0.41	0.42	0.35	0.47	0.27	0.33	0.26	0.20	0.21	0.16	0.17	0.07	0.14	0.15	0.13	0.09	0.06	0.13	0.09

Table 7. Proportion of Floodplain Population (*PFP*) in each state from 1790–2010.

State	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Alabama			0.094	0.185	0.170	0.158	0.148	0.140	0.142	0.138	0.128	0.125	0.116	0.110	0.104	0.105	0.100	0.100	0.100	0.105	0.105	0.103	0.100
Arizona								0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.002
Arkansas				1.000	1.000	0.250	0.308	0.315	0.328	0.322	0.331	0.325	0.348	0.364	0.383	0.388	0.391	0.377	0.363	0.330	0.318	0.298	0.284
California							0.071	0.087	0.122	0.102	0.090	0.092	0.085	0.093	0.091	0.097	0.092	0.089	0.087	0.090	0.094	0.095	0.100
Colorado							0.000	0.413	0.097	0.114	0.103	0.100	0.102	0.105	0.106	0.103	0.102	0.088	0.079	0.068	0.066	0.068	0.066
Connecticut	0.068	0.065	0.064	0.068	0.067	0.065	0.062	0.056	0.054	0.059	0.059	0.061	0.064	0.062	0.068	0.069	0.079	0.077	0.076	0.075	0.075	0.072	0.075
Delaware	0.051	0.062	0.052	0.058	0.061	0.084	0.076	0.068	0.075	0.074	0.079	0.084	0.087	0.086	0.084	0.083	0.076	0.072	0.070	0.065	0.065	0.061	0.074
District of Columbia	0.105	0.000	0.136	0.000	0.199	0.151	0.105	0.149	0.083	0.149	0.082	0.163	0.082	0.082	0.082	0.083	0.084	0.084	0.084	0.084	0.084	0.085	0.079
Florida		1.000	0.952	0.793	0.211	0.209	0.225	0.271	0.280	0.272	0.256	0.248	0.220	0.210	0.227	0.250	0.279	0.314	0.328	0.324	0.314	0.311	0.308
Georgia	0.144	0.101	0.083	0.076	0.065	0.086	0.088	0.099	0.101	0.094	0.091	0.097	0.101	0.101	0.103	0.100	0.109	0.102	0.097	0.091	0.080	0.074	0.076
Idaho								0.000	0.539	0.183	0.108	0.071	0.061	0.039	0.042	0.042	0.042	0.040	0.039	0.033	0.030	0.036	0.034
Illinois	1.000	1.000	1.000	0.451	0.310	0.229	0.220	0.221	0.251	0.273	0.251	0.236	0.239	0.244	0.246	0.246	0.249	0.245	0.241	0.232	0.226	0.225	0.215
Indiana	0.840	0.353	0.122	0.181	0.143	0.141	0.159	0.173	0.187	0.194	0.208	0.207	0.217	0.215	0.209	0.205	0.204	0.195	0.189	0.192	0.193	0.193	0.190
Iowa				1.000	0.125	0.158	0.140	0.125	0.136	0.134	0.148	0.151	0.165	0.171	0.178	0.183	0.190	0.198	0.205	0.204	0.203	0.200	0.204
Kansas						1.000	1.000	0.210	0.175	0.145	0.156	0.167	0.189	0.193	0.217	0.228	0.258	0.263	0.268	0.264	0.263	0.263	0.258
Kentucky	0.116	0.088	0.096	0.104	0.115	0.131	0.144	0.165	0.175	0.173	0.182	0.185	0.184	0.183	0.187	0.184	0.195	0.213	0.229	0.215	0.212	0.209	0.196
Louisiana			0.901	0.736	0.741	0.731	0.604	0.650	0.633	0.655	0.634	0.626	0.622	0.626	0.632	0.635	0.654	0.655	0.656	0.637	0.624	0.609	0.580
Maine	0.070	0.061	0.059	0.057	0.061	0.073	0.077	0.077	0.085	0.085	0.088	0.091	0.097	0.104	0.109	0.108	0.121	0.124	0.126	0.119	0.115	0.104	0.097
Maryland	0.014	0.016	0.017	0.018	0.015	0.024	0.024	0.021	0.021	0.019	0.018	0.016	0.018	0.022	0.022	0.019	0.016	0.014	0.013	0.013	0.014	0.013	0.017
Massachusetts	0.079	0.069	0.078	0.082	0.083	0.090	0.081	0.071	0.068	0.063	0.074	0.073	0.076	0.076	0.077	0.077	0.075	0.078	0.080	0.080	0.079	0.078	0.079
Michigan			0.725	0.087	0.348	0.107	0.123	0.141	0.168	0.195	0.206	0.201	0.211	0.240	0.252	0.250	0.255	0.250	0.246	0.239	0.234	0.234	0.231
Minnesota								0.080	0.097	0.109	0.120	0.131	0.136	0.139	0.145	0.149	0.157	0.171	0.182	0.188	0.191	0.195	0.197
Mississippi		1.000	0.282	0.220	0.242	0.211	0.187	0.215	0.212	0.224	0.244	0.250	0.251	0.269	0.281	0.276	0.271	0.258	0.245	0.235	0.227	0.222	0.204
Missouri				0.374	0.245	0.245	0.220	0.207	0.228	0.299	0.296	0.315	0.337	0.359	0.370	0.370	0.377	0.351	0.329	0.288	0.270	0.253	0.244
Montana									0.000	0.040	0.141	0.124	0.161	0.171	0.178	0.204	0.237	0.243	0.246	0.235	0.235	0.249	0.257
Nebraska						1.000	0.970	0.243	0.193	0.148	0.151	0.151	0.152	0.166	0.177	0.186	0.196	0.210	0.221	0.227	0.226	0.228	0.236
Nevada							0.000	0.000	0.002	0.001	0.000	0.001	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.046	0.004	0.002
New Hampshire	0.087	0.089	0.089	0.088	0.087	0.094	0.093	0.111	0.119	0.119	0.129	0.146	0.152	0.155	0.164	0.158	0.155	0.146	0.138	0.128	0.116	0.114	0.112
New Jersey	0.143	0.142	0.143	0.144	0.148	0.144	0.139	0.156	0.137	0.135	0.169	0.156	0.143	0.140	0.136	0.134	0.127	0.132	0.136	0.135	0.135	0.129	0.135
New Mexico							0.029	0.036	0.031	0.057	0.048	0.036	0.040	0.030	0.022	0.022	0.014	0.010	0.008	0.008	0.008	0.009	0.007
New York	0.229	0.237	0.255	0.264	0.240	0.231	0.218	0.196	0.190	0.180	0.167	0.150	0.136	0.132	0.123	0.118	0.121	0.121	0.122	0.126	0.125	0.117	0.122
North Carolina	0.113	0.100	0.098	0.092	0.087	0.085	0.085	0.088	0.086	0.087	0.081	0.078	0.083	0.084	0.076	0.077	0.078	0.073	0.069	0.064	0.062	0.062	0.064
North Dakota										0.443	0.314	0.286	0.243	0.248	0.259	0.290	0.312	0.359	0.403	0.430	0.470	0.482	0.496
Ohio	0.822	0.123	0.078	0.076	0.075	0.074	0.077	0.085	0.087	0.094	0.099	0.100	0.099	0.098	0.098	0.098	0.095	0.095	0.094	0.095	0.095	0.098	0.099
Oklahoma						0.026	0.418	0.567	0.641	0.709	0.156	0.154	0.160	0.166	0.165	0.168	0.173	0.172	0.172	0.172	0.169	0.169	0.169
Oregon								0.076	0.096	0.056	0.082	0.084	0.113	0.112	0.129	0.133	0.150	0.159	0.165	0.172	0.172	0.180	0.188
Pennsylvania	0.123	0.140	0.145	0.141	0.145	0.151	0.156	0.161	0.170	0.163	0.163	0.164	0.164	0.165	0.167	0.166	0.164	0.160	0.156	0.154	0.148	0.153	0.165
Rhode Island	0.026	0.041	0.044	0.041	0.042	0.047	0.037	0.049	0.050	0.048	0.053	0.045	0.051	0.053	0.053	0.053	0.049	0.048	0.047	0.047	0.047	0.049	0.050
South Carolina	0.168	0.144	0.141	0.149	0.146	0.141	0.142	0.138	0.133	0.128	0.124	0.122	0.114	0.116	0.110	0.111	0.105	0.098	0.092	0.095	0.096	0.096	0.102
South Dakota								1.000	0.395	0.184	0.192	0.172	0.170	0.191	0.187	0.195	0.207	0.215	0.223	0.230	0.231	0.232	0.225
Tennessee	0.000	0.081	0.072	0.073	0.082	0.095	0.104	0.122	0.132	0.131	0.144	0.150	0.160	0.166	0.179	0.177	0.179	0.189	0.198	0.194	0.192	0.180	0.170
Texas						0.500	0.149	0.145	0.142	0.127	0.124	0.124	0.126	0.133	0.136	0.135	0.137	0.130	0.125	0.126	0.124	0.130	0.128
Utah							0.001	0.002	0.003	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.002
Vermont	0.079	0.097	0.102	0.100	0.100	0.102	0.105	0.101	0.103	0.107	0.107	0.106	0.105	0.111	0.114	0.118	0.111	0.110	0.109	0.111	0.112	0.119	0.129
Virginia	0.053	0.052	0.050	0.050	0.049	0.047	0.048	0.047	0.046	0.046	0.053	0.060	0.067	0.068	0.070	0.069	0.061	0.054	0.049	0.045	0.042	0.040	0.042
Washington								1.000	0.065	0.030	0.025	0.027	0.039	0.056	0.062	0.062	0.073	0.075	0.077	0.083	0.079	0.087	0.102
West Virginia	0.064	0.058	0.063	0.066	0.062	0.058	0.064	0.066	0.069	0.071	0.073	0.080	0.085	0.097	0.104	0.099	0.108	0.118	0.131	0.122	0.125	0.139	0.147
Wisconsin						0.107	0.146	0.199	0.206	0.196	0.191	0.183	0.178	0.173	0.175	0.179	0.182	0.183	0.183	0.187	0.200	0.203	0.203
Wyoming									0.014	0.000	0.001	0.009	0.015	0.037	0.040	0.038	0.074	0.083	0.090	0.097	0.084	0.085	0.087

Table S8. Total Floodplain Population, Floodplain to the total population ratio (*PFP*) and floodplain population growth rate (*GFP*) in Sebastian County:

County	Sebastian, Arkansas			
Year	Total county population	Total floodplain population	Floodplain to the total population ratio	Floodplain population growth rate
1790	0.00	0.00		
1800	0.00	0.00		
1810	0.00	0.00		
1820	105.02	30.62	0.29	
1830	461.27	146.45	0.32	3.78
1840	1525.22	579.81	0.38	2.96
1850	4594.92	1420.34	0.31	1.45
1860	7194.80	2139.94	0.30	0.51
1870	10075.97	2995.33	0.30	0.40
1880	15922.71	6870.27	0.43	1.29
1890	28299.33	16071.49	0.57	1.34
1900	37162.88	17803.65	0.48	0.11
1910	52352.64	30335.75	0.58	0.70
1920	56794.32	36492.98	0.64	0.20
1930	54478.79	37756.36	0.69	0.03
1940	62905.51	43479.48	0.69	0.15
1950	64295.45	51496.72	0.80	0.18
1960	71798.08	56794.73	0.79	0.10
1970	79300.72	62092.73	0.78	0.09
1980	95226.61	72338.47	0.76	0.17
1990	99642.14	74243.77	0.75	0.03
2000	115120.32	82339.87	0.72	0.11
2010	125584.17	86036.12	0.69	0.04