

Floods in the United States

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Introduction

Floods are extremely destructive storm events that are negatively impactful in any area of the world. Specifically, in the United States, post-flood recovery is offered through the Federal Emergency Management Agency (FEMA).

Post-Flood Recovery Experiences

Experiences of post-flood recovery in the United States (US) vary by neighborhood (Varela Varela 2023). Additionally, these experiences differ for low-, middle-, or high-income populations (Varela Varela 2023).

Economically Marginalized Groups

Low-income populations already have previous material and relational hardships they experience daily ((Varela Varela 2023; Mijs and Roe 2021)). Traumatic events, like floods, can exacerbate their hardships. Children and adolescents living in low-income households may experience long-term developmental impacts due to floods.

Low-Income Children and Adolescents

Low-income children and adolescents directly and indirectly experience several material and relational hardships due to their economic status. Traumatic events, like floods, can increase developmental impacts, such as educational attainment ((Ahmed et al. 2022))), depressive symptoms ((Felton, Cole, and Martin 2013)), and post-traumatic stress disorder ((Liu et al. 2007))). Each of these impacts can impede children from reaching their full potential across their development.

Family Stress Model

Risk Factors

Figure 1 shows the Family Stress Model Framework ((Masarik and Conger 2017)), which conceptualizes how risks, like floods, can impact low-income children. The economic hardship, like floods, is placed upon the household, which increases economic pressure. This increases parental/caregiver psychological distress, which is likely to impact relationships and parenting. Ultimately, the child may be impacted by experiencing adjustment problems across their development.

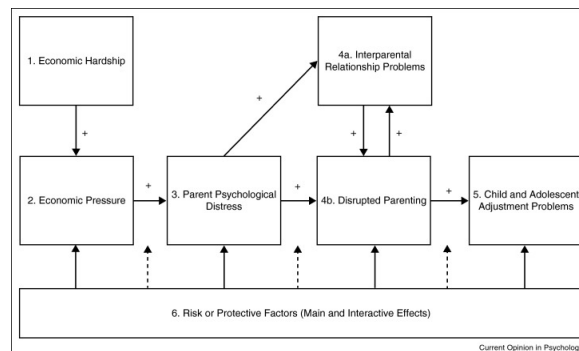


Figure 1: Family Stress Model Framework. (Masarik & Conger, 2017)

Protective Factors

When protective factors, such as supports from Federal Emergency Management Agency (FEMA), are implemented to reduce economic hardships, then the family and child can be protected from the full impact of the economic hardship.

FEMA Assistance

FEMA's mission is "helping people before, during, and after disasters." ([FEMA-Strategic-Plan](#)) They specifically provide post-disaster relief, in order to reduce the hardships that tend to arise. Additionally, they look to promote resilience against disasters, such as floods ([FEMA-Resilience](#)). There are three types of assistance programs that FEMA offers: Individuals and Households (IHA), Public Assistance (PA), and Hazard Mitigation (HM) ([FEMA-Declarations](#)).

Individuals and Households Assistance Program

The IHA Program is additional support offered to uninsured and under-insured expenses and needs through financial and direct services for individuals and households who experienced a disaster-related event ([FEMA-IHA](#)). They can cover the following expenses and needs: money for temporary housing, a temporary housing unit, repairs or replacement of owner-occupied homes, and hazard mitigation to repair or rebuild stronger, more durable homes. Additionally other areas of need can be covered: damage to essential household items, clothing, clean-up items, tools and specialized clothing needed for one's job, educational materials, accessibility items, an essential vehicle, disaster-related funeral and burial expenses, disaster-related child-care expenses, medical and dental expenses, and moving and storage expenses ([FEMA-IHA-Services](#)).

Public Assistance Program

The PA program has four eligibility components: **applicant** must be a state, territory, tribe, local government, or a certain nonprofit organization; a **facility** is a building, public works system, equipment, or improved and maintained natural feature; **work** is an "emergency" or "permanent" required because of the disaster-related event; **costs** must be used for disaster-related work. Ultimately, the PA program offers grants to particular types of applicants to do particular disaster-related work for a particular period of time necessary to support post-disaster relief ([FEMA-PA](#)).

Emergency Work (Duration: 6 Months)

- Category A: Debris removal
- Category B: Emergency protective measures

Permanent Work (Duration: 18 Months)

- Category C: Roads and bridges
- Category D: Water control facilities
- Category E: Public buildings and equipment
- Category F: Public utilities
- Category G: Parks, recreational, and other facilities

Aim

It is important to delineate how different racial and economic groups were impacted by floods, specifically among different counties in the US. This will have implications on different additional community resources that should be offered to those are racially and economically marginalized and experience hardships prior to disasters, such as floods.

Data Acquisition & Assessment

There are three data sets used for this exploratory data analysis: one on Census data for all the counties in the US from 2023, and the other two on storm event data from the National Centers for Environmental Information (NOAA), one from 2020 and the other from 2021.

Figure 2. Length of Floods

Total Population in Poverty by County

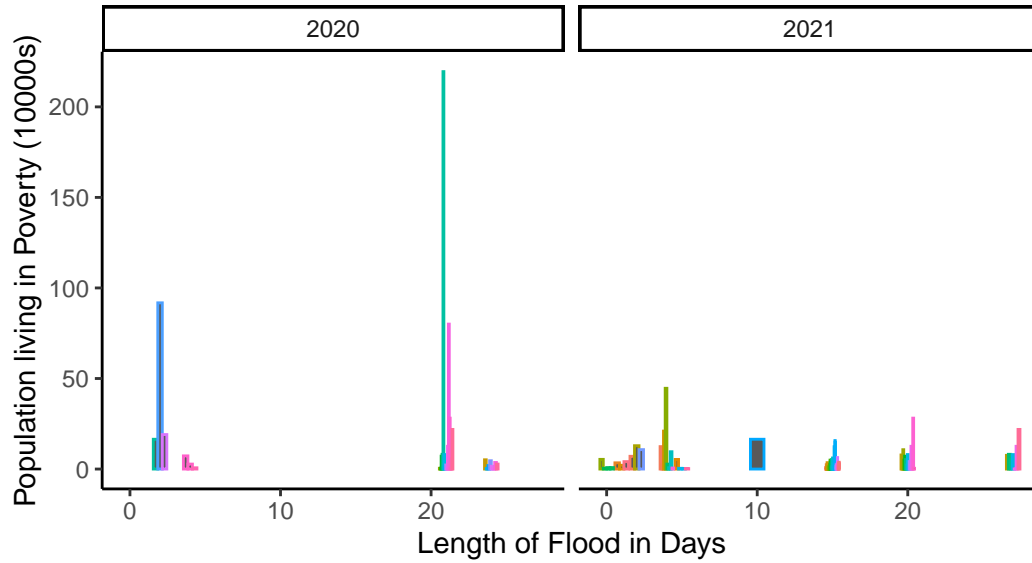
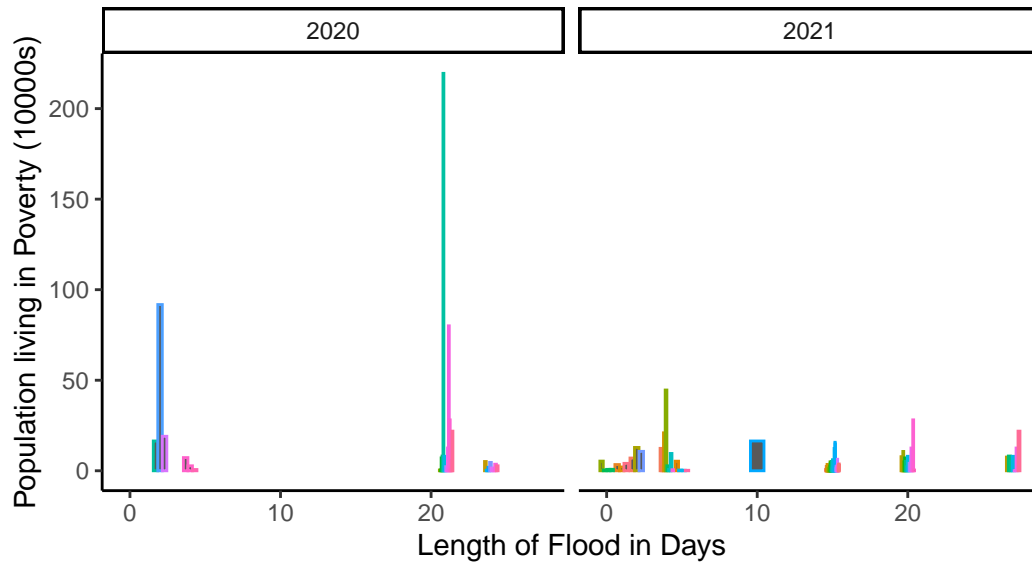


Figure 2. Length of Floods

Total Population in Poverty by County



Population living in Poverty: Under 5 Years (10000s)

Figure 2. Length of Floods

Total Population in Poverty Under the Age of 5 by County

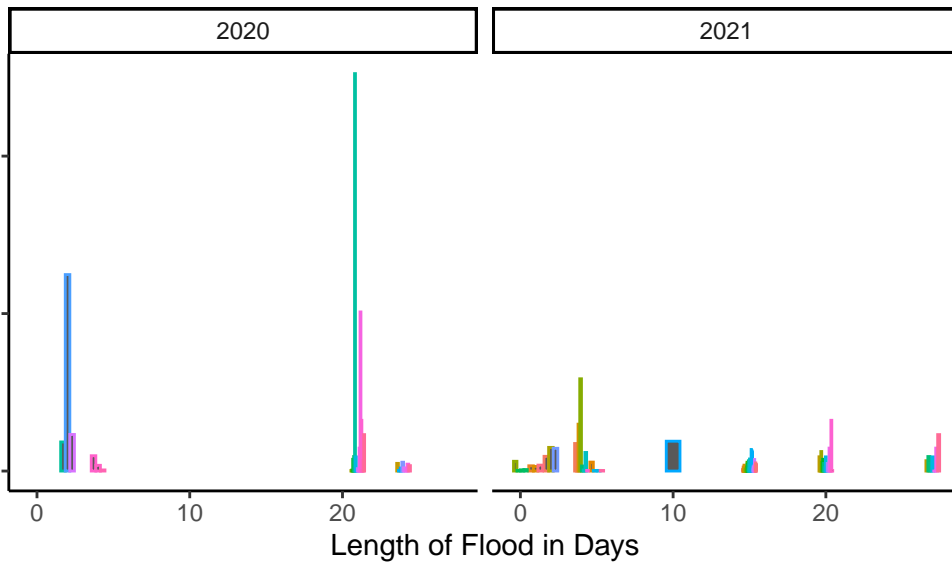
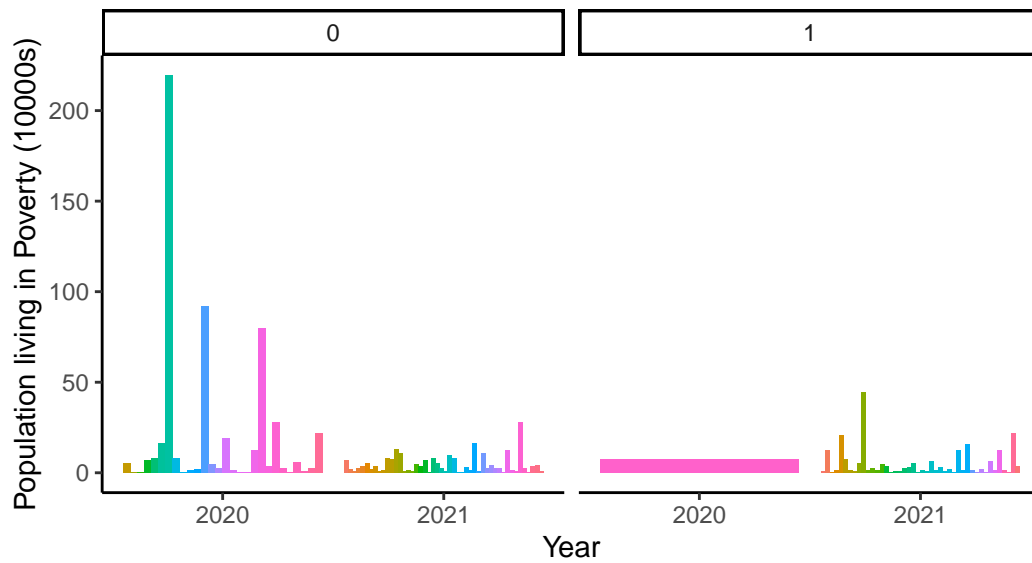


Figure 2. Individuals and Household Program Declaration

Total Population in Poverty by County



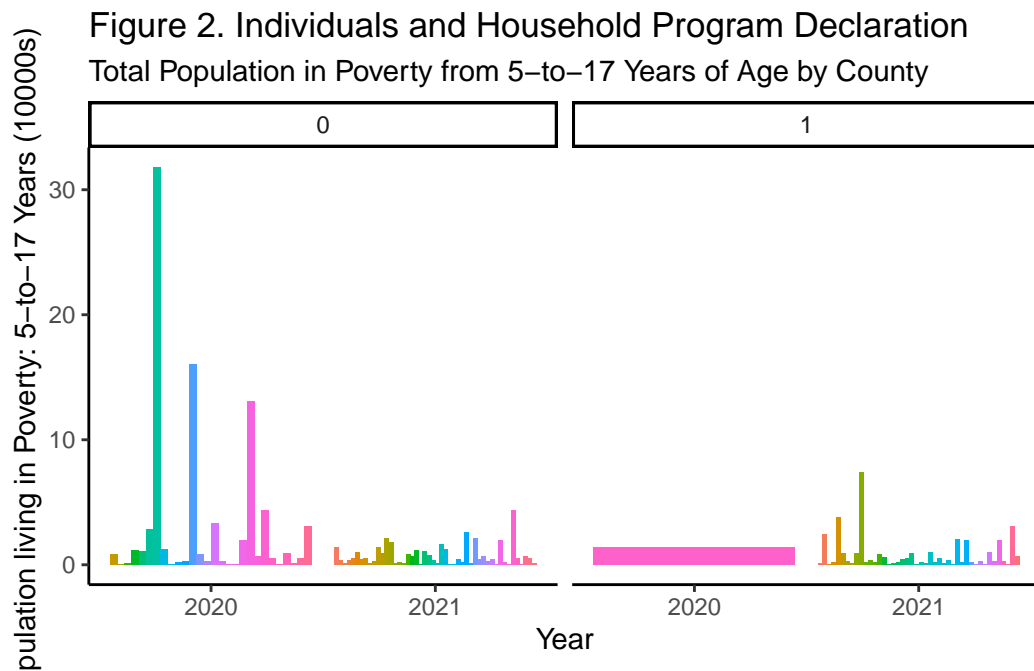
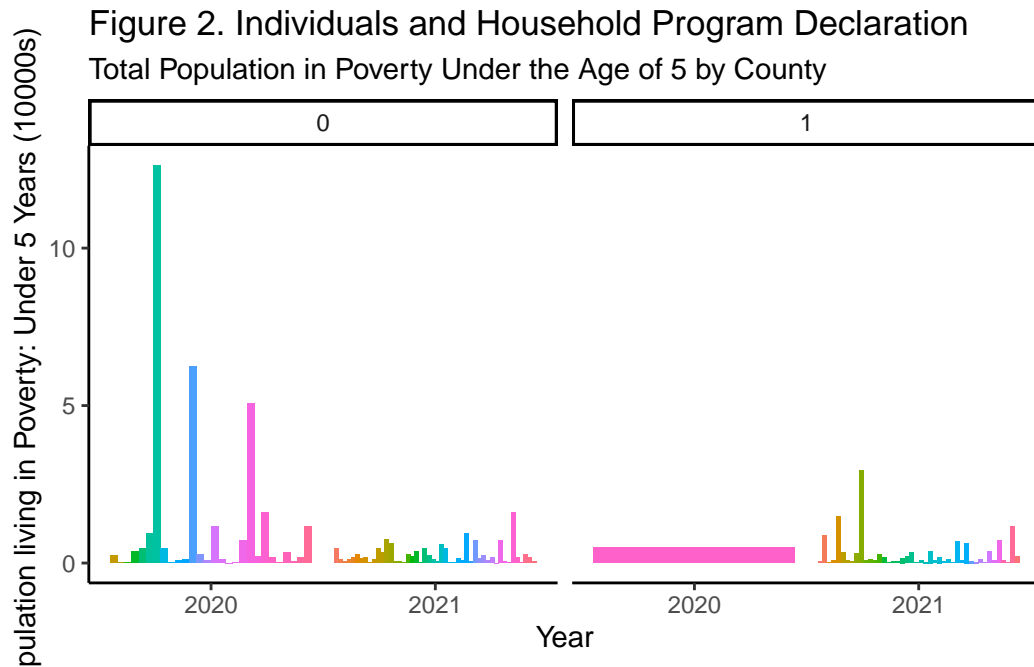


Figure 2. Individuals Assistance Program Declaration
Total Population in Poverty by County

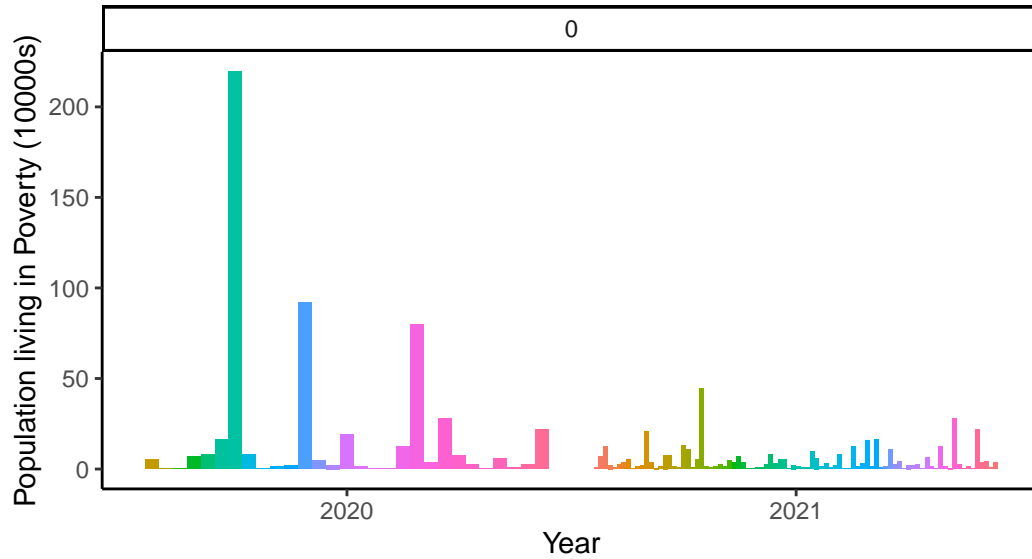
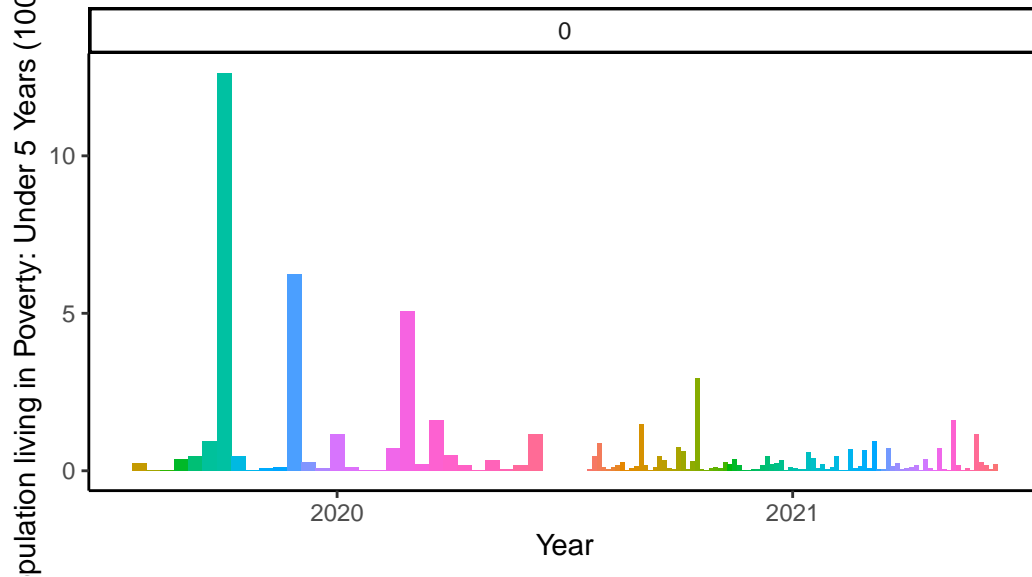
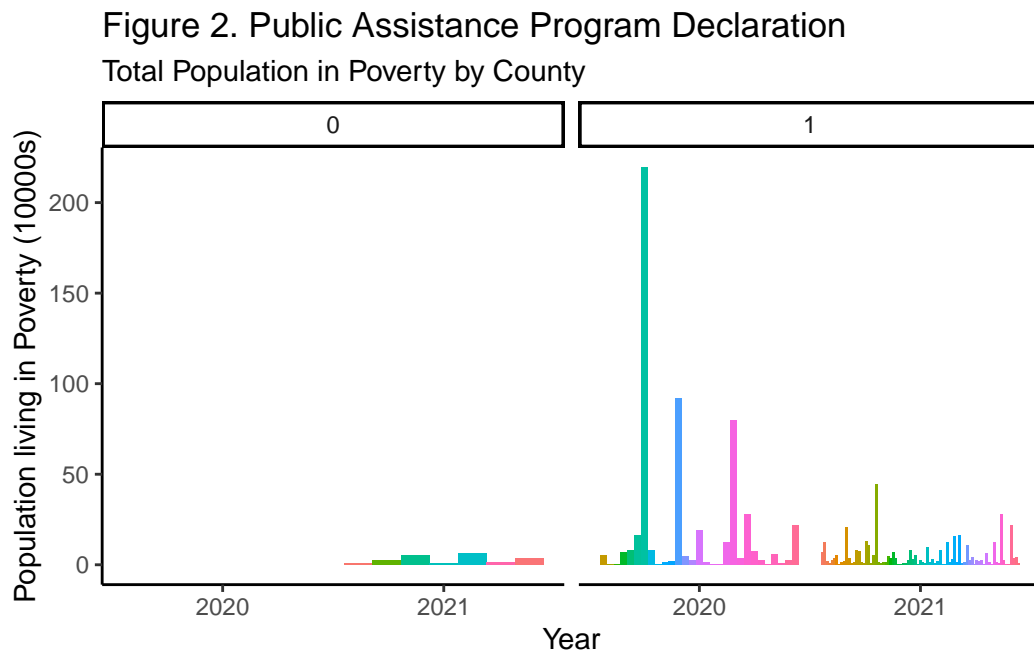
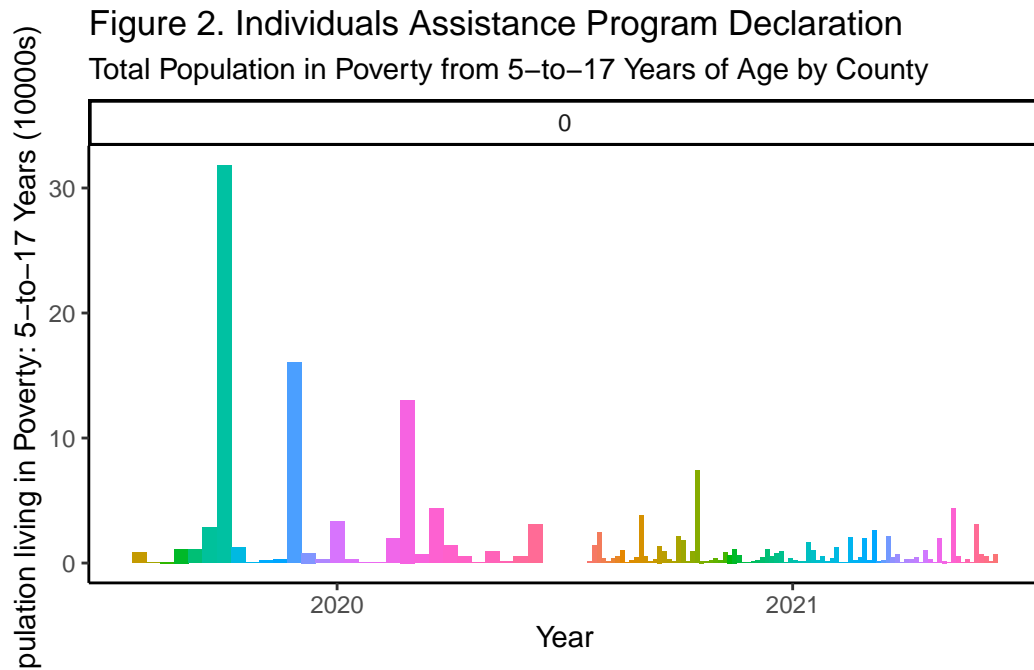


Figure 2. Individuals Assistance Program Declaration
Total Population in Poverty Under the Age of 5 by County





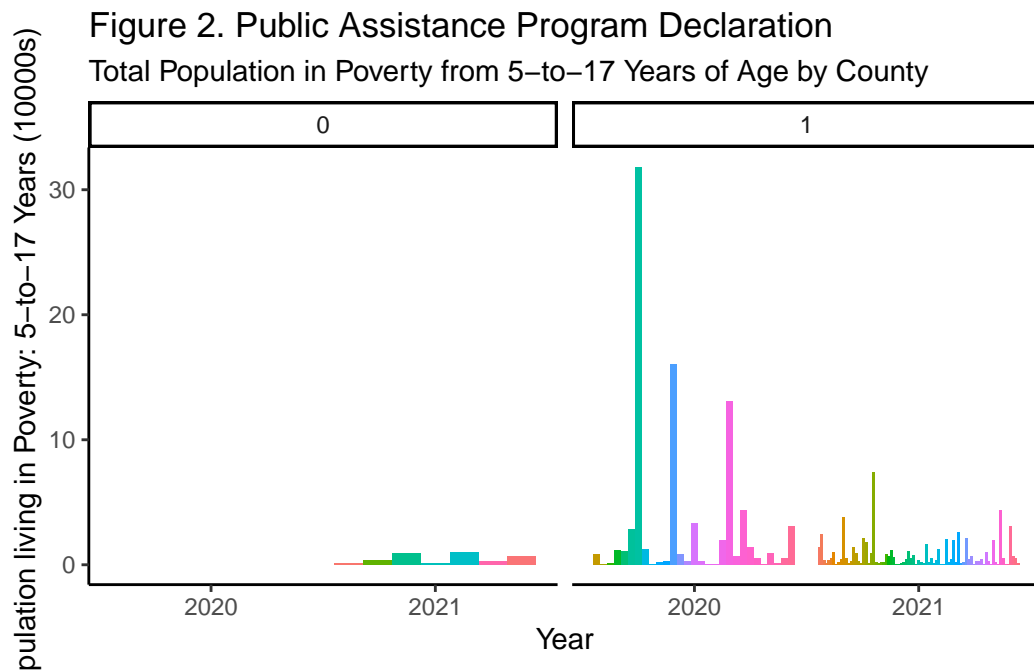
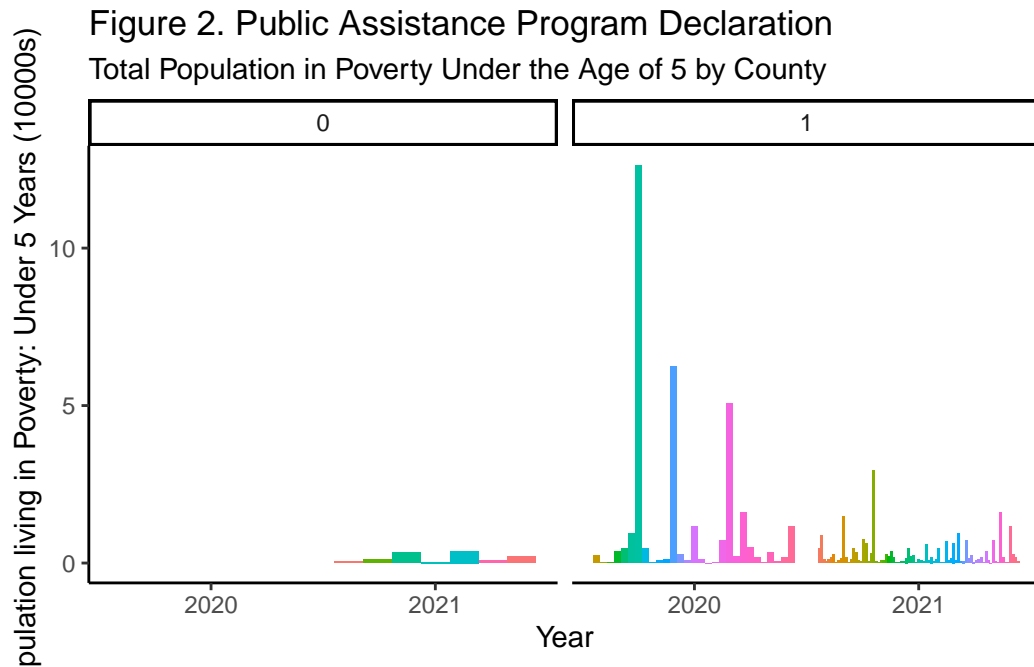


Figure 2. Hazard Mitigation Program Declaration

Total Population in Poverty by County

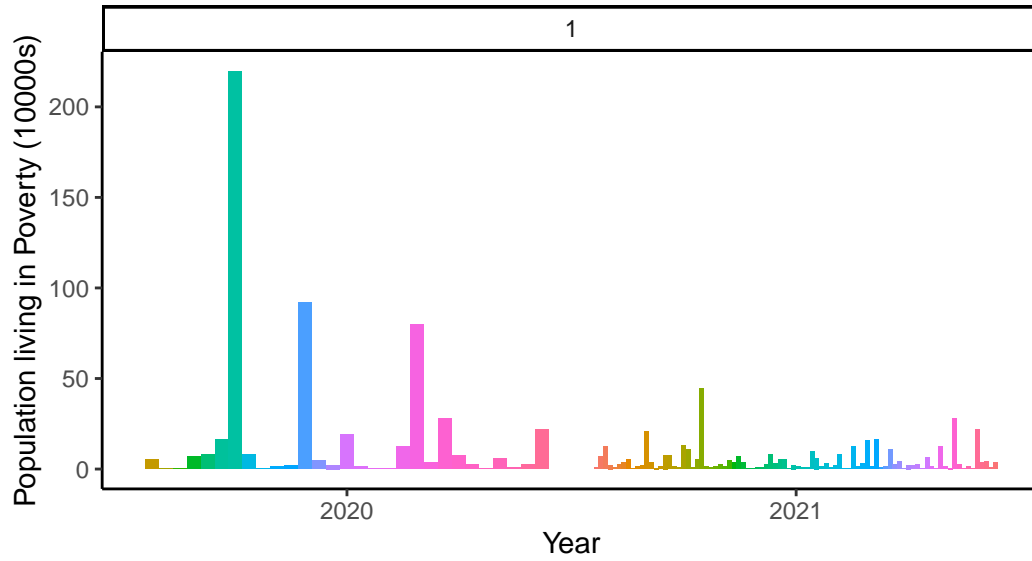
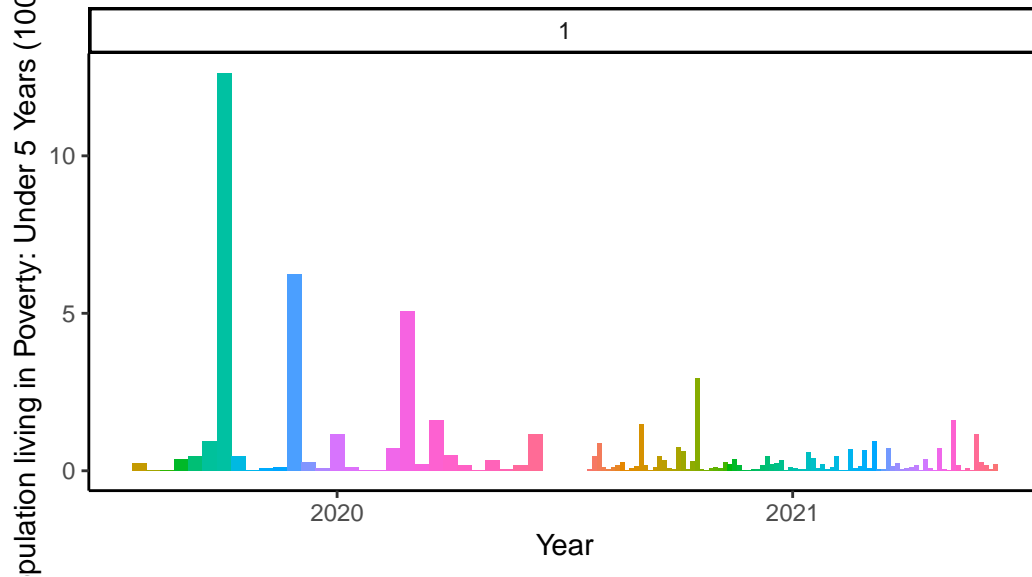
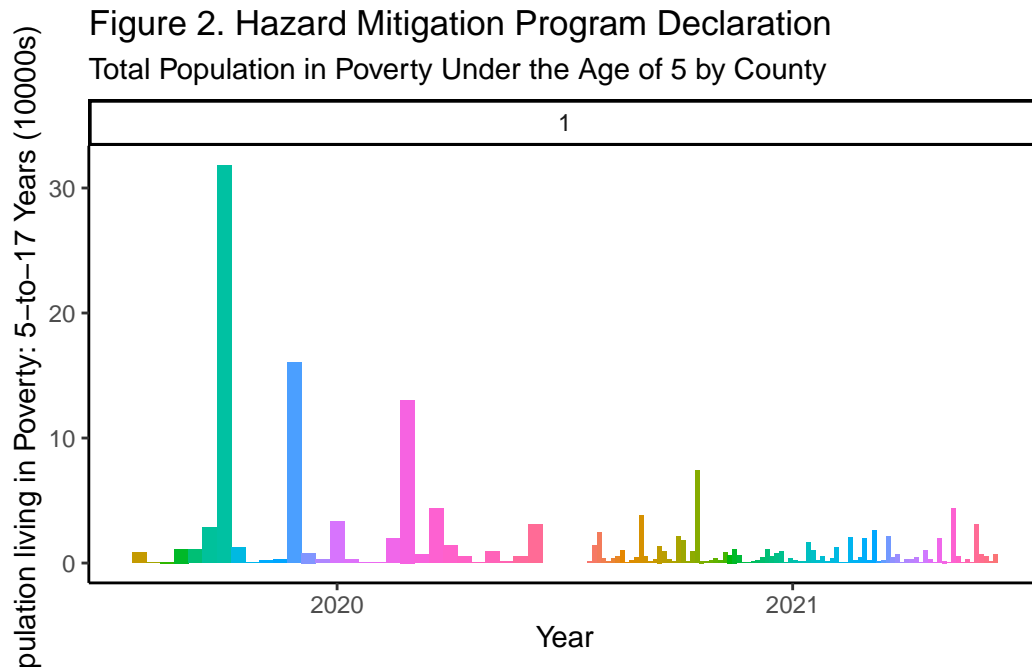


Figure 2. Hazard Mitigation Program Declaration

Total Population in Poverty Under the Age of 5 by County





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