



US Bank Failures 2001-2023

Contributors:

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Why this topic?



- **Banks affect people** and bank failures could give the illusion that there is financial uncertainty in a community.
- **Options for data sources**
 - We did not want to spend too much time looking for data but rather spend our time in data analysis and visualization.
- Nice graphs exist but are there **different ways to slice the data**?
 - FDIC at data.gov
 - Charts of number of time and total assets over time [LINK](#)
 - Can we dive deeper/differently?

The questions:

- What was the distribution of the closures amongst the states? This gives an indication if the closures were evenly distributed or clustered.
- What was the distribution of assets of the banks that closed? This gives an indication of the size of the banks that were affected by closures.
- What banks took over the smaller and/or failing banks? Are there certain banks that are more involved in buying out failed banks than others?



The page:

Bank Failures Drill Down

Use the interactive charts below to explore the dataset

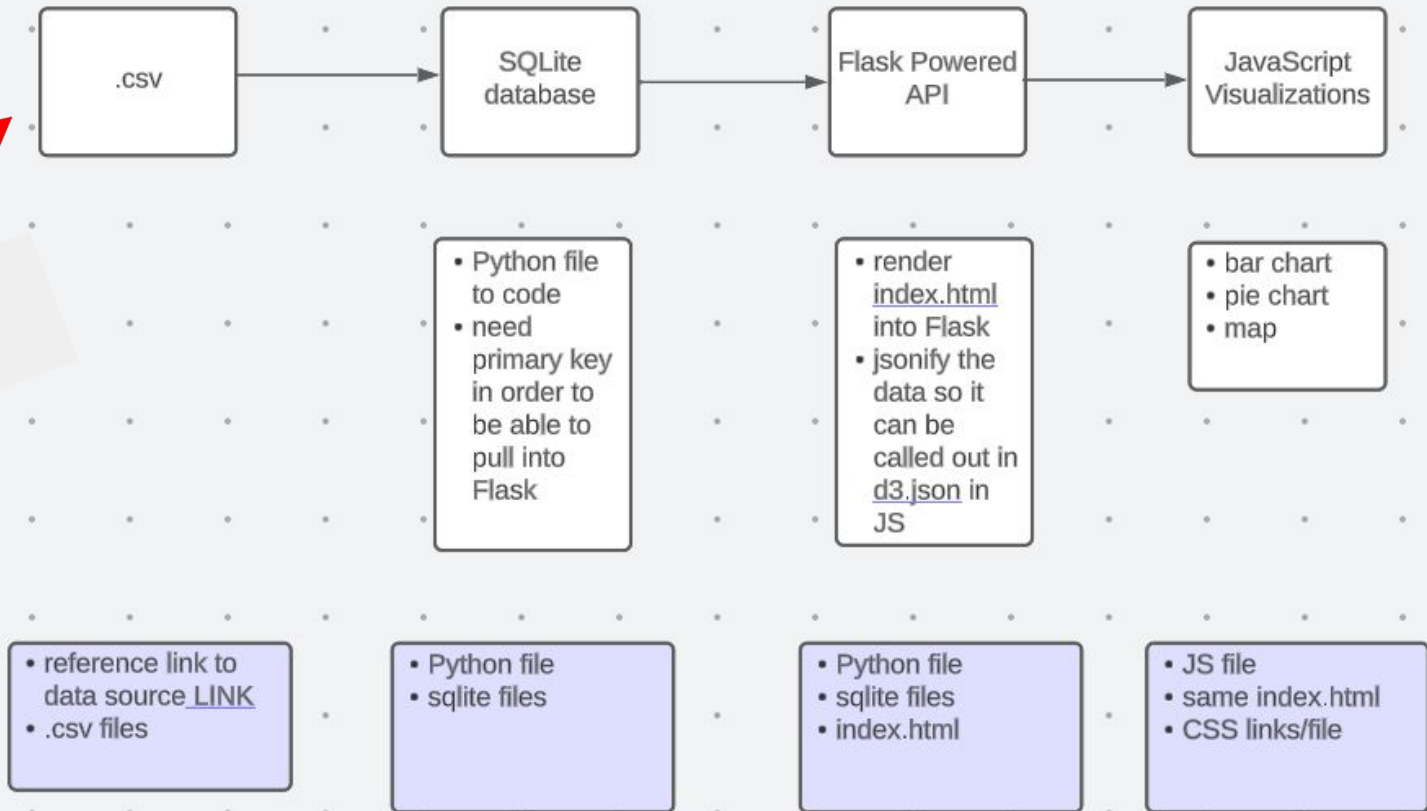
- Bank Failures Drill Down Page contains
 - an interactive bar chart showing the distribution of assets for the failed banks
 - a pie chart that shows the top 5 acquiring banks
- State map is separate at this point but could be a link to a separate page



Overview of the process:

(created by lucid.app)

data.gov
FDIC data



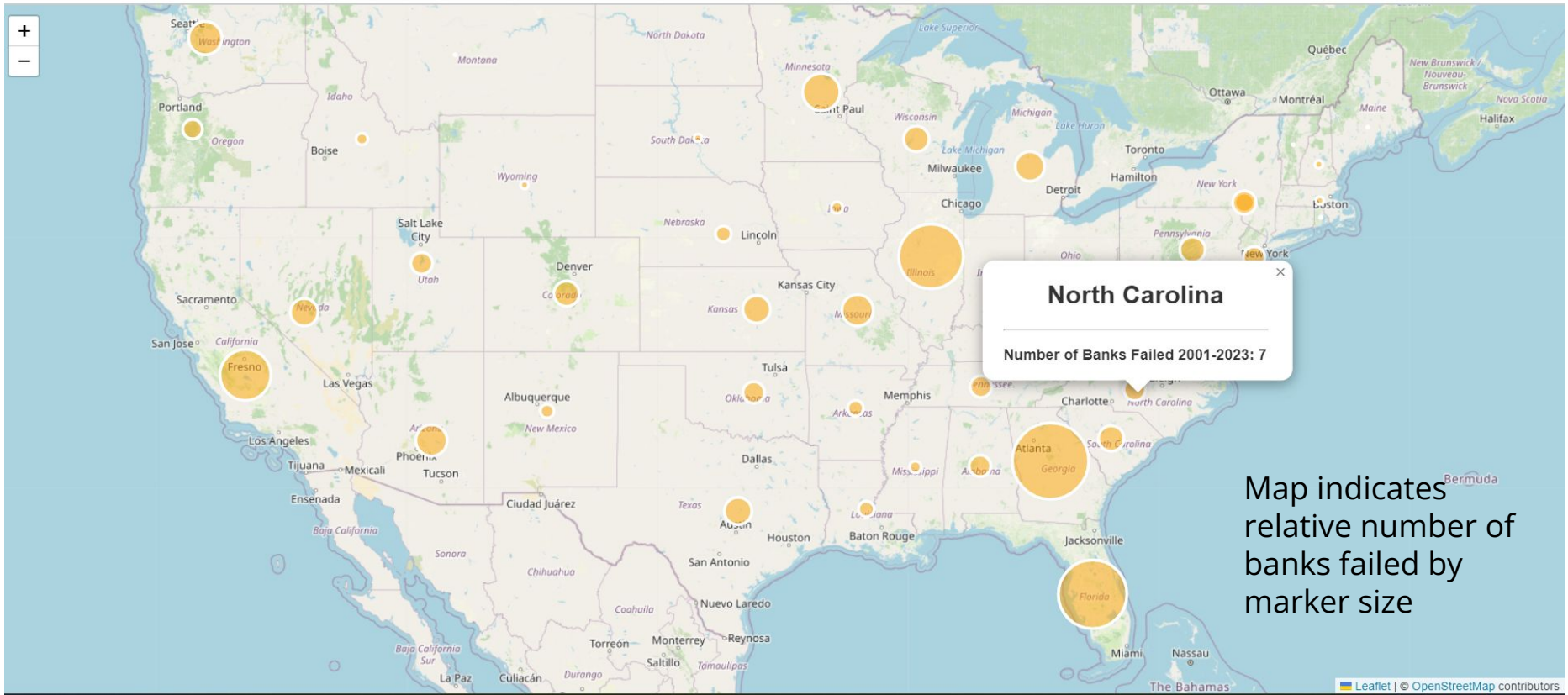
Question: Where in the US were most of the failures?

Leaflet map

- jsonified database file was queried by state and number of failures by state and coordinate location was added for each state (found [Geojson](#) later)
- Leaflet map was created where the radius of the circle gives a relative indication of how many banks failed by state in the timeframe queried (2001-2023)

Two trace plot comparing # of failures vs state population

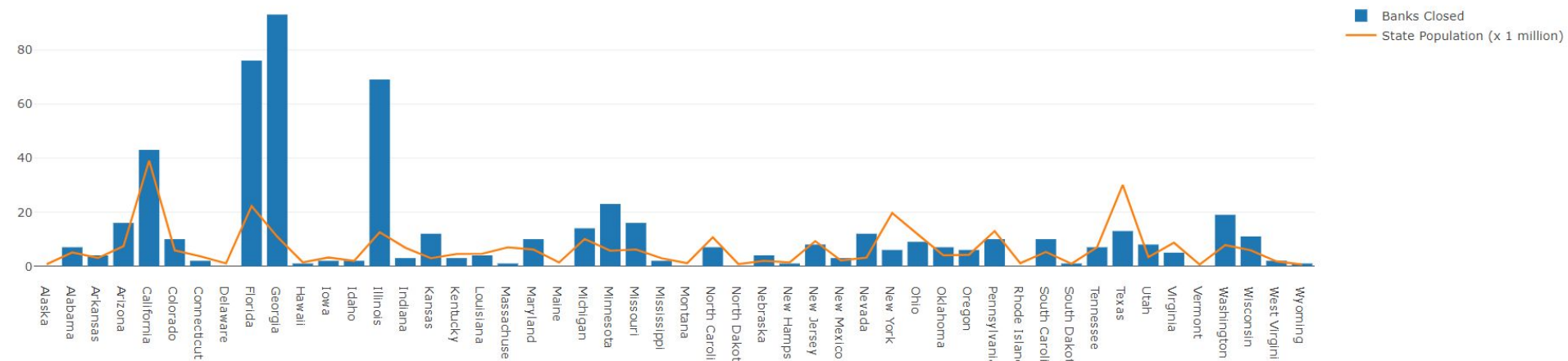
- Quick plotly chart to see if there are any correlations



Map indicates
relative number of
banks failed by
marker size

Failures vs. State Population Size

Number of Banks Closed vs. State Population Size



Question: What were the assets held by the banks that failed?

The process:

Extract total assets data from jsonified database and put it into a list (using D3), then sort it into various pools on conditional values.

Using Chart.js documentation, make the chart layout beforehand to insert sorted values.

Create a set of buttons to insert the various pools and swap as necessary.

Also, insert the necessary Chart.js cdn for proper access to its tools.

```
// setup
const data = {
  type: 'bar',
  labels: [0, 0, 0],
  datasets: [{
    label: 'Asset Pool Counts',
    data: [0, 0, 0],
    backgroundColor: [
      // 'rgba(255, 26, 104, 0.2)',
      'rgba(54, 162, 235, 0.2)',
      // 'rgba(255, 206, 86, 0.2)',
      // 'rgba(75, 192, 192, 0.2)',
      // 'rgba(153, 102, 255, 0.2)',
      // 'rgba(255, 159, 64, 0.2)',
      // 'rgba(0, 0, 0, 0.2)'
    ],
  }],
  border: {
    color: 'black',
    width: 1,
  },
  legend: {
    display: false,
  },
  title: {
    display: false,
  },
  xLabels: {
    display: false,
  },
  yLabels: {
    display: false,
  },
  xTicks: {
    display: false,
  },
  yTicks: {
    display: false,
  },
  animation: {
    duration: 0,
  },
  responsive: true,
  maintainAspectRatio: false,
  plugins: {
    legend: {
      display: false,
    },
  },
  options: {
    barPercentage: 0.5,
    barSpacing: 10,
    legend: {
      display: false,
    },
  },
}
```

```
//Three bars; increasing large pool
function Chart4() {
  d3.json(bankdataUrl).then(function(data) {

    dataList = [];

    data.forEach(function(response){
      dataList.push(response.qbasset);
    });

    var counterLarge = 0;
    var counterMedium = 0;
    var counterSmall = 0;

    for(var i = 0; i < dataList.length; i++) {
      var x = dataList[i]
      if(x >= 1000000) {
        counterLarge++;
      }
      else if(x < 1000000) {
        counterSmall++;
      }
      else {
        counterMedium++;
      }
    };
    myChart.config.data.labels = ['< 100000', '100000 to 999999', '>= 1000000'];
    myChart.config.data.datasets[0].data = [counterSmall, counterMedium, counterLarge];
    myChart.update();
  });
}
```

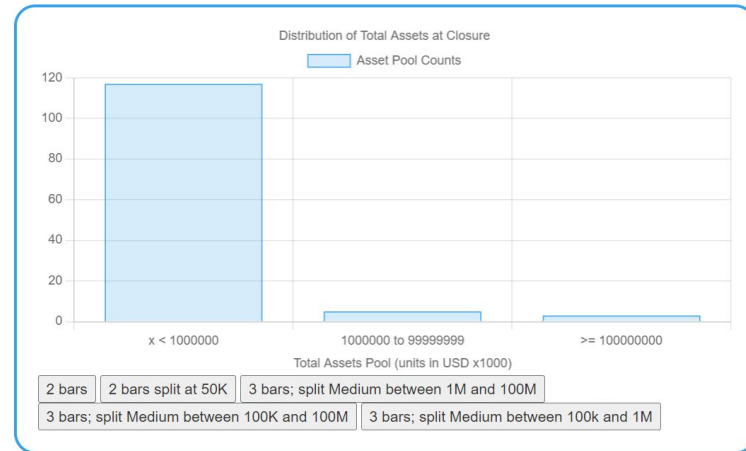
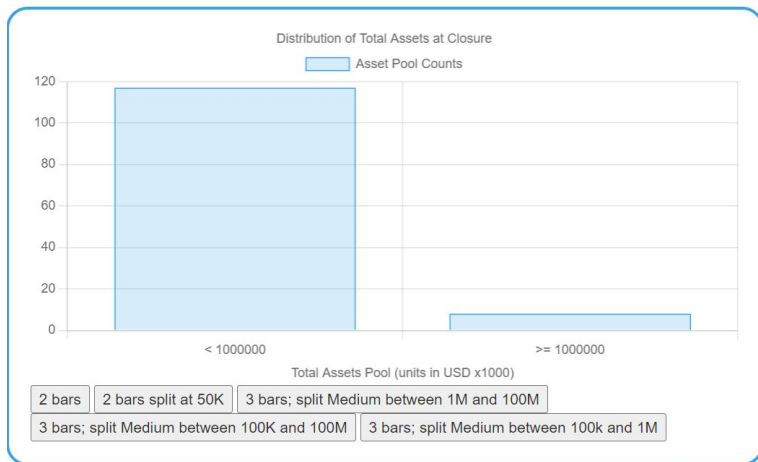
```
<!-- Chart.js code -->
<div class="chartCard">
  <div class="chartBox">
    <canvas id="myChart"></canvas>
    <!-- Buttons to change graph -->
    <button onclick="Chart1()">2 bars</button>
    <button onclick="Chart5()">2 bars split at 50K</button>
    <button onclick="Chart2()">3 bars; split Medium between 1M and 100M</button>
    <button onclick="Chart3()">3 bars; split Medium between 100K and 100M</button>
    <button onclick="Chart4()">3 bars; split Medium between 100k and 1M</button>
  </div>
</div>

<script type="text/javascript" src="https://cdn.jsdelivr.net/npm/chart.js/dist/chart.umd.min.js">
```

Question: What were the assets held by the banks that failed?

Very few of the banks had assets in the billions on closure.

Even fewer in the trillions.

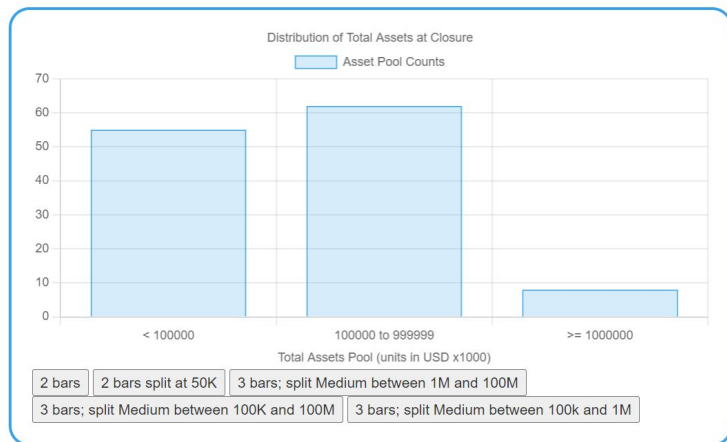


Question: What were the assets held by the banks that failed?

Majority of bank failures were 6 figures, though not by much.

Overall no trend in data, but the 3 largest are quite an outlier

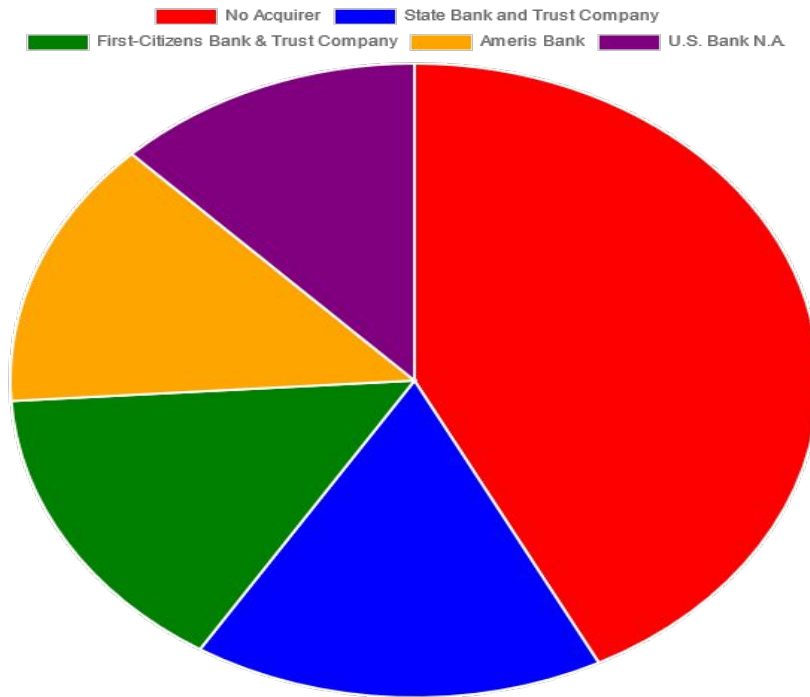
Could hint at destabilized economy, given all three happened in the same year, and that no other year has approached said values.



Question: Who took over the failed banks?

In the hundreds of bank closures that were documented, we found a lot of small banks acquiring a single failed bank. Overall, the bank that took over the most failed banks was State Bank and Trust Company.

31 of the banks in the data ended up not being absorbed into another bank (which is shown on the graph on the right)



Conclusion and further questions



- Georgia had the most bank closures over the past 20+ years with 93, followed by Florida (76) and Illinois (69). There is not a visual correlation between number of closures and state population size.
- Majority of banks close with less than \$1B in assets, and those with more than \$100B are of significant concern.
- State bank and Trust bought 12 properties in Georgia, and one in Illinois. Interesting to see that it was clustered in one state and have an outlier so far away.

Further questions:

- What additional info would be needed to make this analysis predictive for future trends in bank closures?

Challenges and lessons learned

- Pulling the data and creating databases
- The connection between python db and json files through index.html
- Beyond basics in html/css files in terms of format/placement
- Adding “additional” information to make visualizations interesting and multifaceted
- Multiple people = multiple versions of files to reconcile
- It takes time!!

