Sources and Sinks of Life Time in U.S. Air Travel

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Motivation

- Some airline flights arrive early, others late.
  - Sometimes only minutes are gained or lost but even hours can disappear

- Where do we gain and lose life time in U.S. air travel?
Data

- All commercial flights within the United States of America between 1987 and 2008
  - 123 million flights among 350+ airports

- Focus is on the difference between scheduled arrival time and actual arrival time
  - 30 or more minutes early
    - 770,000
    - 0.6% of all flights
  - 60 or more minutes late
    - 5,600,000
    - 4.6% of all flights

"Early" and "late" refer to these cutoffs throughout
Data cleanliness

- 2,300,000 cancelled flights (1.9%)
  - An additional 280,000 flights (0.2%), though not cancelled, have no arrival delay recorded
    - These were omitted
Visualization

- Directed networks were constructed from airport-airport flight data and laid out geographically.

- We would like to ask:
  - How often are flights to a particular airport early or late?
  - How often are flights between a particular pair of airports early or late?

Visualization

- Airport nodes
  - Area size coded by total incoming traffic
  - Color coded by the proportion of those flights that arrived early (or late, respectively)

- Airport-airport edges
  - Width coded by total traffic
  - Color coded by the proportion of those flights that arrived early (or late, respectively)

- As the network is highly reciprocal, eastward and westward routes are isolated into two distinct groups for readability.

- The comparatively few flights to and from the associated states of the U.S. in the far Pacific were omitted.
Sinks of Life Time - Westward

Late Westward Flights

<table>
<thead>
<tr>
<th>Route</th>
<th>Percentage Late</th>
<th>Total Flights</th>
</tr>
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<tbody>
<tr>
<td>JFK to ATL</td>
<td>5.0%</td>
<td>100,000</td>
</tr>
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<td>6.0%</td>
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</tr>
<tr>
<td>SEA to LAX</td>
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Sinks of Life Time - Eastward

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Contributors

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