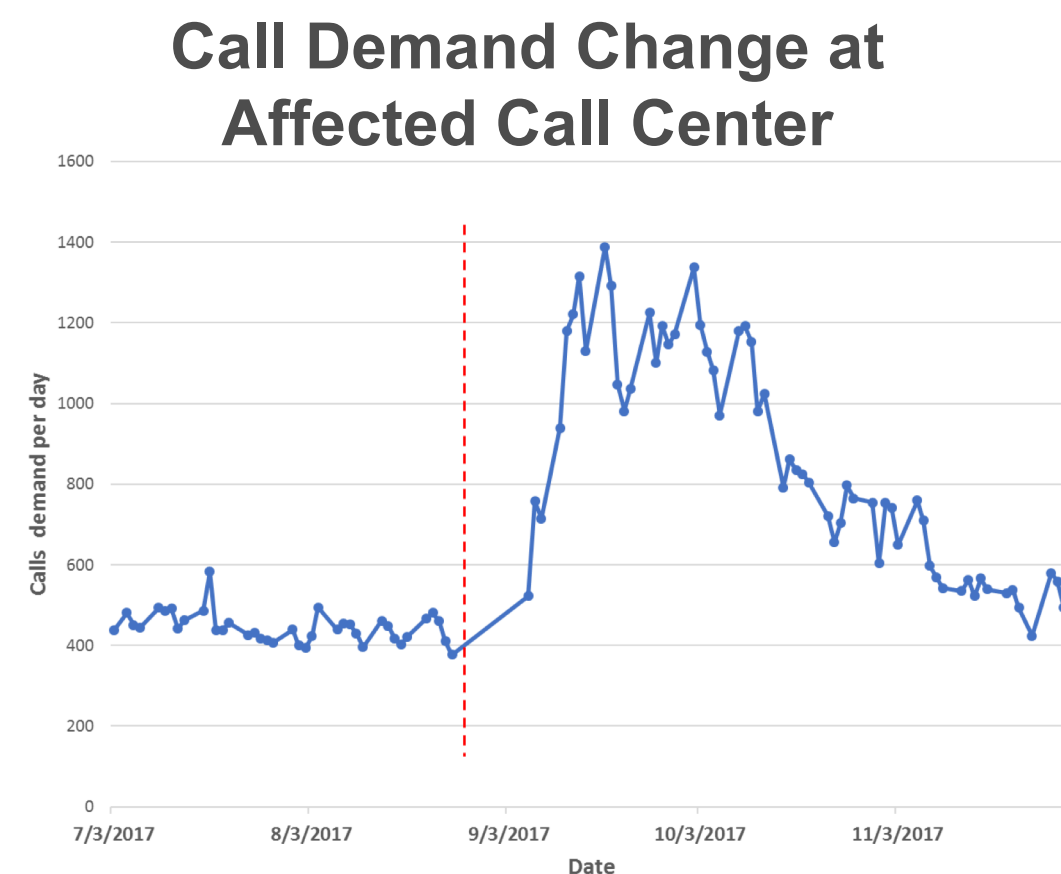


Risk Mitigation at Call Centers

Motivation / Background

- 150+ sister call centers.
- Increases of incoming calls during specific climate events
- Low customer service level
- Meeting customer service levels is key to the success and sustainability of a network of call centers.



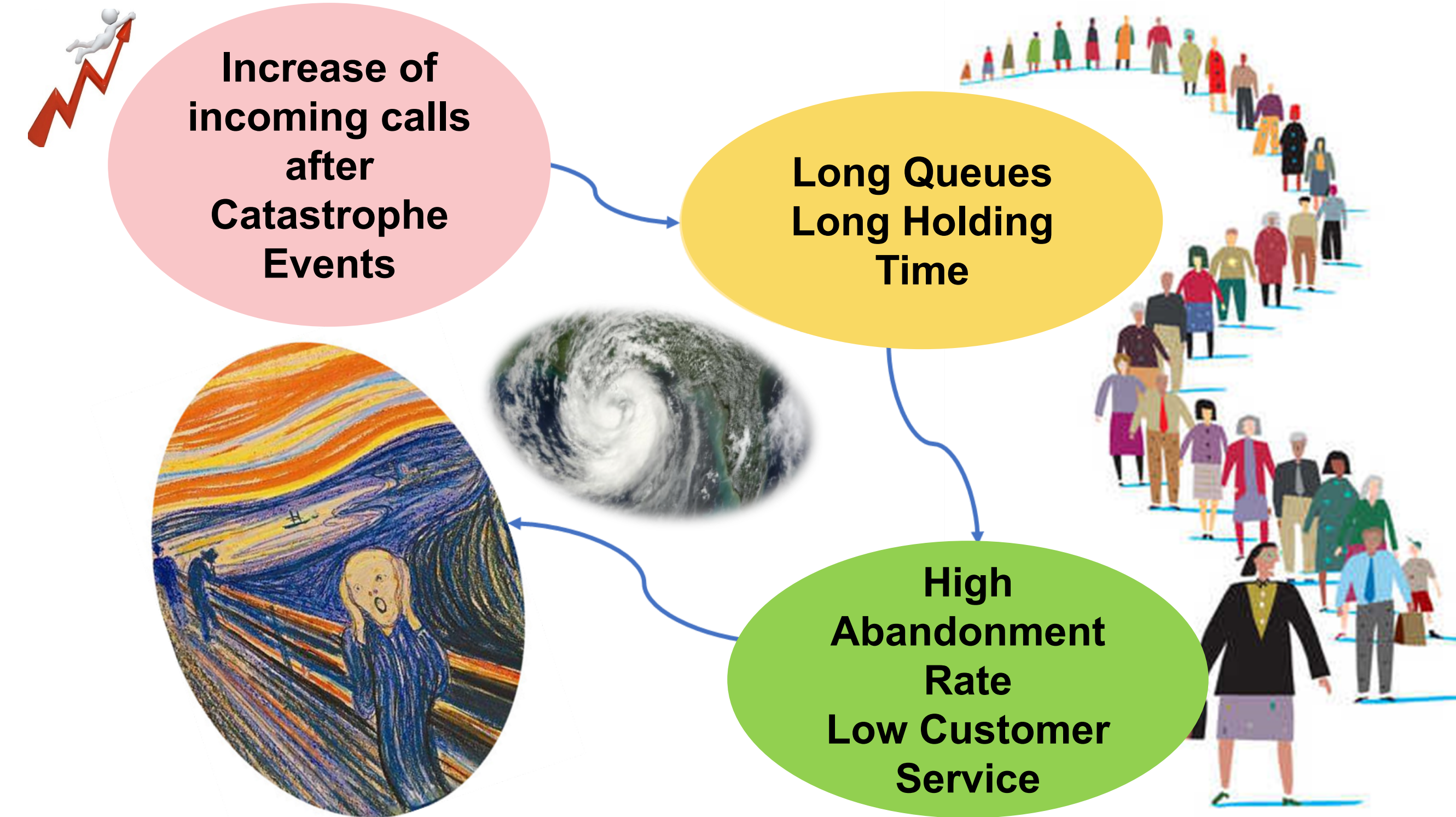
Key Question / Hypothesis

Key Question: How to temporarily reroute incoming calls from affected call centers to call centers with available human resources in other geographic locations.

Hypothesis: Fluctuations of incoming calls could be affected by many factors. We will only focus on the acute increases which are caused by destructive climate events like hurricanes.

Relevant Literature

- Avoiding an uncertain catastrophe: climate change mitigation under risk and wealth heterogeneity
- Staffing Call-Centers With Uncertain Demand Forecasts
- NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2017).



Methodology

Service Level Agreement (SLA):

- Holding time: 95% of calls to be answered in less than 60 seconds
- Abandonment rate lower than 5%

1. Descriptive analytics and data preprocessing

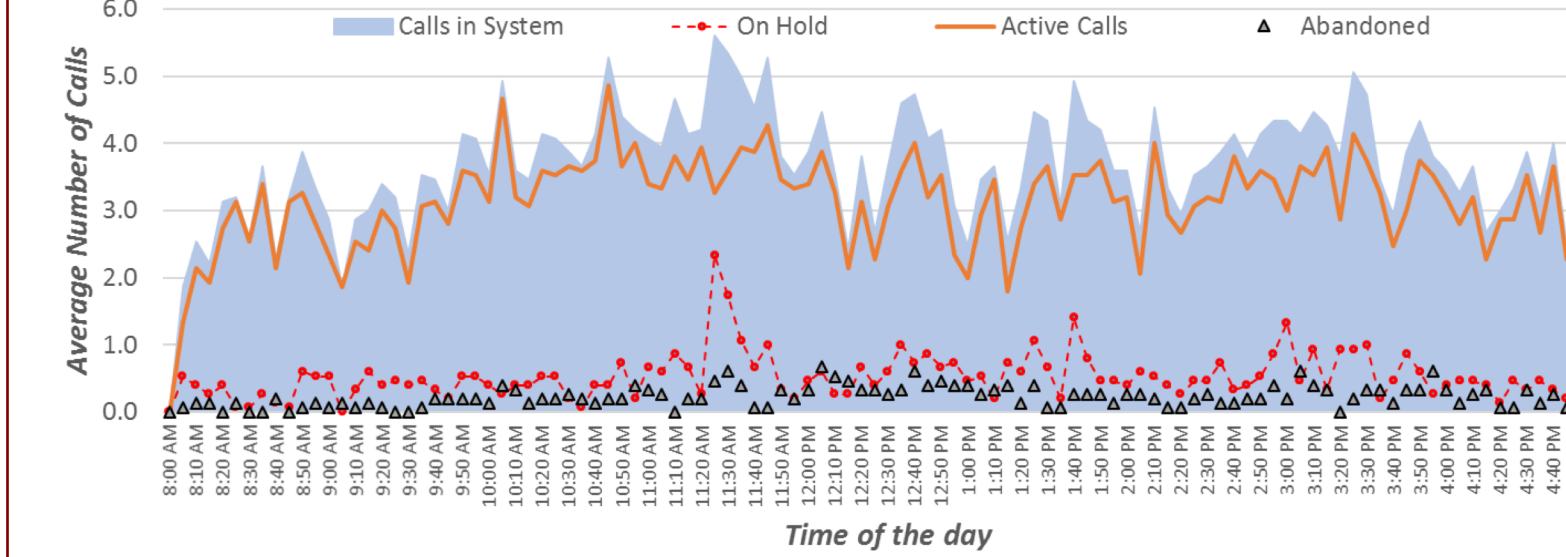
2. Demand Analysis

3. Capacity Analysis

4. Dynamic Optimization Model

Initial Analysis

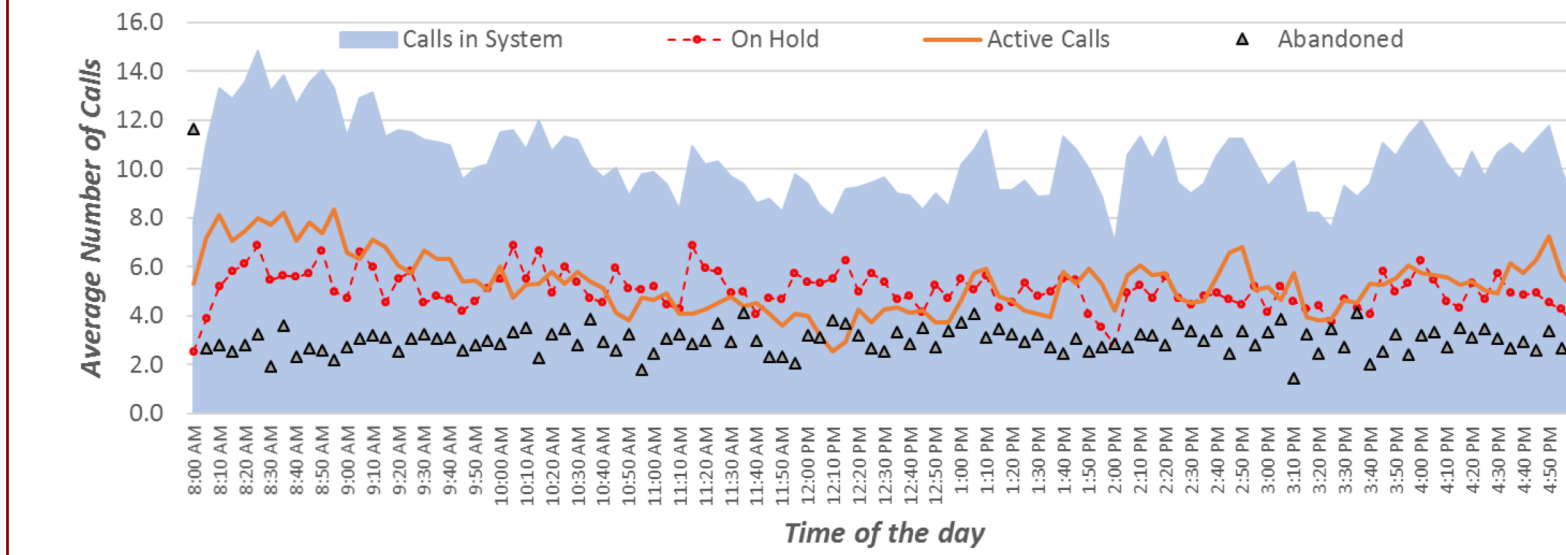
Before Catastrophe Event*



Increase in calls
141%

Waiting Time
32 sec → **143 sec**

After Catastrophe Event**



Drop Calls
4.3% → **28.9%**

**Data Source: Three weeks of data after climate event

Expected Contribution

Dynamic model that can select the appropriate call centers to divert inbound call queues. Model includes:

- Optimization of Human Resources across call centers
- Use of constraints:
 - Service Level
 - Abandonment rate
 - Time zone restrictions
- Live connection to databases
- Scalable

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