Problem Statement Worksheet (Hypothesis Formation)

Fires impact large portions of forest recreation and nearby populations throughout the year in California and particularly during fire season. How do we anticipate the fire season, fire size (acres), and fire duration in the Eldorado National Forest?

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1 Context

Community Support & Fire Season Readiness
Resource allocation: firefighters, fire prevention, etc.
Retail Readiness: stock up on supplies: masks, purifiers, etc.
Predicting changes to fire seasonality or intensity could significantly impact strategic decisions all of the above fields.

2 Criteria for success

<What is the key criteria that will deem this work successful?>
A model that will produce an output prediction for a fire season length, fire size/intensity and/or fire duration that can be used to inform natural resource, forest recreation and first responder planning, community awareness and retail inventory stock planning.

3 Scope of solution space

<What is the focus of this initiative? I.e. What are you specific items will you focus on exclusively?>
Data is available for outbreaks nationwide, but because resource allocation and other responses to fires are typically managed regionally, we will focus on just Eldorado national forest. The process used could be replicated with additional regions.

4 Constraints within solution space

<What constraints exist that may prevent this initiative from succeeding?>
None of us works in disaster relief. Judgement calls involving scenarios that overwhelm response systems may be difficult to make. For example, how many fires, of what size, in what proximity, are too many to manage with standard staffing? How might this knowledge gap impact modeling, and where should we go to learn more?

5 Stakeholders to provide key insight

<Who are the key stakeholders?

- **Forest Service and National Parks Leaders**
- **Cal Fire**
- **Retail Leaders**
- **Emergency Management and Public Information Officers**

6 Key data sources

<What are the key pieces of data you need to answer the questions related to the problem you are trying to solve?>
The following variables may be combined via feature engineering to create one or more dependent variables with which to conduct ML time series analysis: discovery and containment date, fire size.

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