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Group 18 Requirements Document

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Project overview

Anyone who does long distance driving knows that gas prices can vary by as much as $1 between states. For particularly long drives, such as from coast to coast, there are many route options, as well. If the distance only varies by a small amount, it may be less costly to drive via I-70 than I-80, or even I-10 or I-20, based solely on the price of fuel.

Purpose/Scope

This document addresses the requirements related to producing a web visualization of fuel prices across the United States.

Description

- Users
    - Anyone with means of web browsing and wanting a user-friendly way of displaying gas prices across the US
    - User has basic knowledge of using a map on the internet. For example, how to zoom, pan, etc.
    - User is familiar with US pricing (dollars), units of gasoline (gallons), and grades of fuel (regular, mid, premium, diesel)

- Assumptions
    - This will be a web based tool, so it assumed that users have web access with the appropriate web browser.

- Constraints
    - Initially, service will be optimized for Mozilla Firefox.

- Dependencies
    - web visualization tool will require that gas price data is updated at some interval
        - gas price data will be downloaded from yet to be determined (TBD)

Requirements(Functional Requirements)

There are two distinct parts required for this system to work in concert; the map and the data. The requirements are listed below the description of each part.

MAP

The map utilized should be a choropleth map of the United States

- From wikipedia: *A choropleth map is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map, such as population density or per-capita income. The choropleth map provides an easy way to visualize how a measurement varies across a geographic area or it shows the level of variability within a region.*

DATA

the data visualized in the map will be average gas price.

Priority 1 Requirements

1. The map used will be of the United States.
2. Map will display state boundaries.
3. Each shaded area will be a zip code.
4. Data used to shade each zip code will be the average fuel price.
5. User will select which type of fuel to display: regular, midgrade, premium, or diesel.

Priority 2 Requirements

1. Map will be zoomable.
2. Map will be draggable.
3. Each area (zip code) will be clickable.
4. Clicking an area should result in displaying the zip code, fuel type, and fuel price.
5. Map will provide search bar for user to search by city, state, or zip code.
6. Map will contain a legend.
7. Legend will display corresponding colors and fuel prices.
8. Fuel prices will be stored (rather than remotely queried).

Non-Functional Requirements (User Interface Requirements)

Usability

- Website should be self explanatory, with easy navigation.
- User hints, for example: “click on an area to display gas price”.

Availability

- Hours of operation should be nearly continuous beyond server maintenance events.
- Bookmarked website will display stored fuel prices when connection not available

Efficiency(Performance)

- Fuel price data can be stored locally and updated daily with regional change or scheduled times.
    - Generally, gas prices are updated frequently and occasionally several times a day.

Integrity

- Necessary safeguards shall be in place to prevent any malicious user input via search field
- Other user selections will be control to prevent any malicious input; i.e. drop down lists or radio buttons

Testability (Monitoring)

- Simple check of gas prices during daily upload
    - If highest price is more than TBD more than lowest price
        - Verify prices via TBD

Portability

- Map should be mobile friendly and display correctly

Interoperability

- Web tool, so should work across multiple browsers
    - Chrome, Mozilla Firefox, Safari
    - Mobile browsers
        - Android
        - Safari