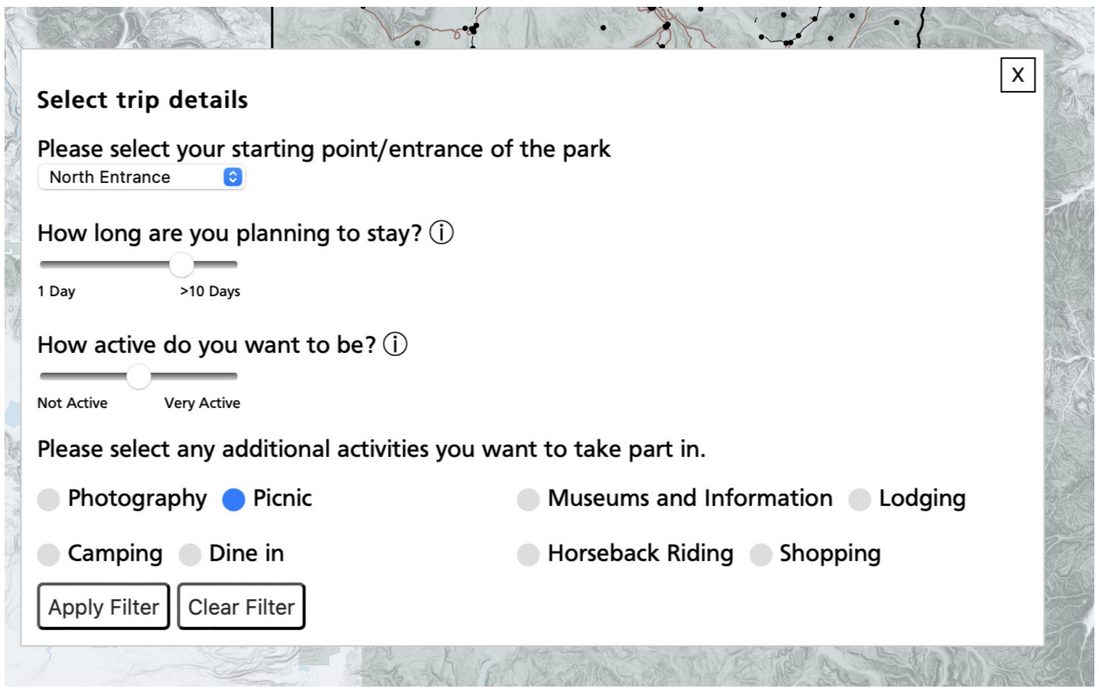
Blazing the Trail -
Creating a customisable Web Map for Yellowstone and Grand Canyon National Parks

by Vanessa Henkes

Millions of people visit National Parks (NPs) in the United States every year, and a sizable amount of the budget awarded to the National Park Service (NPS) is put toward creating a good user experience to those visitors. Adding to the existing, official cartographic depictions of the parks, this thesis aims to create a customisable interface for users to completely decide for themselves what to display on the map, based on their motivations and preferences when visiting each of the included parks.



Screenshot showcasing the individual filtering settings for Yellowstone NP

Study Sites

For the web map, two national parks were chosen, based on their innate differences, both physically and platially. Yellowstone, located in Wyoming, takes up a somewhat square space in the northern part of the state. It's distinct geothermal features and vast wilderness invites visitors to go on backcountry adventures. Meanwhile, Grand Canyon NP, located in Arizona with its more linear shape, showcases mainly the canyon itself, providing visitors with an untamable , deep crevice that gives people insights into the immense power of nature that created the canyon.

Methodology

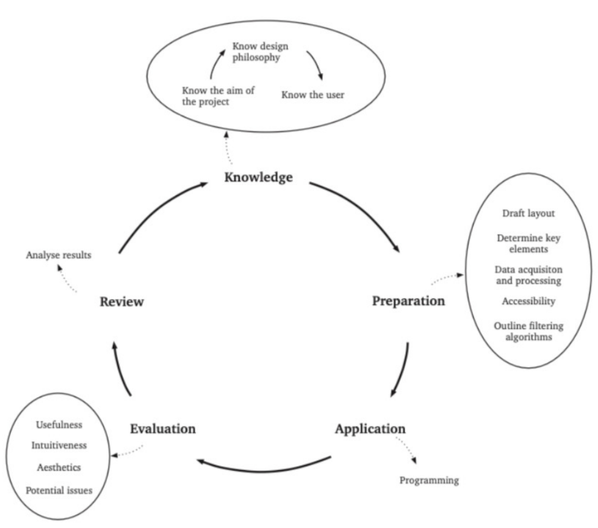
After the acquisition and processing of the data for the trails and POIs of Yellowstone NP, a preliminary web map could be created. Taking into account literature regarding hiking formulas and visitors potential preferences and motivations for visiting the NPs (namely Benson et al.'s 2013 paper on visitor cluster in Yellowstone NP), filtering algorithms could be programmed. Providing potential users with a choice between individual and predefined settings, a user study was conducted with the preliminary web map of Yellowstone NP. After suggestions, remarks, and results from the study could be analysed, Grand Canyon NP was added to the algorithm and the map itself, and a conceptual framework for creating user-centric web maps was created, to be used as a guideline by fellow researchers.

Results

Although a limited sample size of only 20 participants was included in the user study, insights could still be drawn from the results. The majority of participants found the website to be useful for trip planning which was the initial purpose of the map. Between the individual and the predefined settings. participants showed a slight preference for individual settings, however in general both filtering mechanisms received comments, which is why it may be important to include both mechanisms.

Framework

As part of the process, a conceptual framework for the creation of user-centric web maps in a natural landscape setting, such as the one of national parks was created, encompassing the stages Knowledge, Preparation, Application, Evaluation and Review.



Conceptual Framework for creating customisable web maps of national parks

Conclusion

Although with a limited sample size, insightful remarks could still be drawn from the results of the user study. Both filtering mechanisms showed promise in the process of inviting users to display map items entirely due to their own decisions. For future iterations of the project, more people should be included in the user study and an emphasis on platial differences between the parks, and how to include this in the cartographic depiction should be given.

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References

[1] Benson, C., Watson., P., Taylor, G., Cook, P., & Hollenhorst, S. (2013). Who Visits a National Park and What do They get Out Of It?: A Joint Visitor Cluster Analysis and Travel Cost Model for Yellowstone National Park. Environmental Management, 52(4), 917-928. https://doi.org/10.1007/s00267-013-0143-4

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