Redesigning the Vacation Planning Experience

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ABSTRACT

Today there are many websites that cater to individuals looking to flights, hotels, and activities; however, they do not do good job addressing the use case of a customer who does not know where they want to travel too. This is important because the travel industry is continuously growing and for companies like TripAdvisor to stay competitive, they need to consider various use cases, new travel trends, and also make those feature evident on their website. This paper uses data collected from a literature review, qualitative user interviews, and a design analysis to propose a new iteration of TripAdvisor's website.

Author Keywords

Travel Planning, Personalization, TripAdvisor

INTRODUCTION

There are many travel sites where users can book flights, hotels, cruises, cars, and sometimes attractions to and at the destinations of their choice. This implies that a user already has a destination in mind when they arrive at the website's homepage and may have already done all the prior needed research on that destination. There are many factors that users may not realize they need to consider while planning a vacation, such as the implications of weather, cultural holidays, and exchange rates. Uncovering all this other information requires extensive research from multiple different websites and a potentially significant time commitment. Many travel sites are not set up to assist the types of users who may not know the ins and outs of planning an optimal vacation for their individual requirements (budget, activities, etc.). This project focuses on the redesign of the TripAdvisor website, integrating some of the precursory steps of research into the current website's workflow in order to reduce the cognitive load on the users' working memory, decrease the time spent conducting this work, and to assist users in optimal decision making.

LITERATURE REVIEW

Currently, many travel websites are focused on booking flights and hotels. Some have diversified and included the ability to purchase attractions, but not many have focused on pre-trip planning. TripAdvisor tries to give users 'inspiration' about where to go; however, those options are categorized very generically and do not give the user a well-rounded understanding of what they can expect there. Eight articles have been reviewed which discuss travelers' changing expectations, motivations, generational implications, as well as the impact of smart tourism, easy access to information, usability issues for city tourism websites, and current travel user trends.

Missaoui et al. (2019) talks about the changing expectations of tourists today and how a new recommender system can help meet those expectations. As our technology advances and becomes more accessible, tourists no longer want to do the research required to plan vacations by themselves. Instead, they expect that technology assist them in making optimal choices by giving them personalized suggestions (Missaoui, et al., 2019, p. 1). Missaoui et al. (2019) introduce Looker, a recommender system for tourism and travel, that implements a multi-layered strategy to give recommendations to tourists based on their geological location and user profiles. The user profiles are created based on reviews that the user has previously written for various locations on social media websites like Facebook, Twitter, and TripAdvisor (Missaoui, et al., 2019, p. 3). It uses this information to create an understanding of the user so that it can give accurate recommendations at the user's convenience. The authors conducted two usability tests on this mobile application to evaluate the usability and usefulness of the application as well as the effectiveness of the recommendations provided to users.

The information presented in Missaoui et al. (2019) highlights the changes in tourists' expectations. They are expecting a more personalized experience based on their individual tastes, and more importantly, they expect that this information is given to them rather than them having to seek it out on their own. Additionally, it explains how Looker provides personalized suggestions for users. This system is currently only being utilized for food, shopping, health, and attractions; however, adding the ability to recommend destinations based on a user profile is a valuable addition that would benefit TripAdvisor's users, especially considering it already utilizes the data from TripAdvisor reviews to make suggestions.

Li, Lu, & Hudson (2013) conducted a generational analysis on American international traveler's attitudes and behavior.

This analysis is important because, in the last 10 years, American citizens are spending more money outside the US, so understanding travel patterns and trends for each American generation is crucial for websites that are trying to improve their overall experience (Li, Li, & Hudson, 2013). The author focuses on four generations: the silent generation, baby boomers, generation X, and generation Y. Each generation identifies with different core values that influence and impact their travel behavior. Through the research conducted in their article, Li, Lu, & Hudson (2013) can ascertain that generation X and generation Y seek "more non-mainstream destinations that have the potential to offer a more meaningful experience". They're also more likely to explore new destinations, which match their individual motivations, that were less visited in the past like many Asian countries (Li, Li, & Hudson, 2013). The travel trends for each generation is important information to consider during a redesign in order to cater to a wider audience of customers. (Rocco & Isa, 2016) discuss the changes in emotions during the four stages of travel planning. For the purposes of this paper the pre-planning, the decision-making that occurs before a user travels to their destination, is what is important. This paper explains that images that can trigger a strong emotional response for potential customers, causing them to recall memories quickly. Rocco & Ida (2013) summarized that a consumer's behavior is driven by a combination of their emotions and memorable tourism experiences. This is important because it implies the importance of pictures to attract and influence a customer's behavior. By understanding this, websites like TripAdvisor can gain a competitive advantage by designing a way for consumers to connect to those desired memorable experiences, inevitably assisting in choosing a new destination to visit.

Soldatenko & Backer (2019) focus on the motivational factors that influence the travel decision-making process. The travel decision-making process is built upon two categories of motivation: the push factor and the pull factor (Soldatenko & Backer, 2019). The push factor is an individual's motivations for traveling in general and the pull factor is an individual's needs and desires that attract them toward a specific destination. A limitation for this study is that it only focuses on a certain type of push factor that influences travel-making decisions and other influences, like budget, were not covered. Travelers' needs, motivations, expectations, and requirements differ immensely and can be significantly influenced by culture. For example, British travelers were motivated to travel to a destination which provided them the opportunity to socialize, pleasure-seek, and experience outdoor adventure, while Chinese travelers were motivated to travel to see famous sights and learn about the history and culture of the destination they are visiting. The author states that understanding the impact of culture on the travel decision-making process can aid countries in attracting more tourism; however, this is also applicable for travel websites that are looking to attract more users. By understanding the factors that influence an individual's motivation for where to travel, websites will know how to categorize their destination options to assist users in choosing a destination that fits their expectations quickly and intuitively without having to conduct a lot of research. TripAdvisor currently provides their users with 'travel inspiration' to help them decide where to go, but the locations are categorized very one-dimensionally. For example, the city of Barcelona is categorized under just "a city known for architecture", but it does not provide any other information which many entice a user who is motivated to travel for socialization, music, or romance unless they do additional research about the city. Other cursory categorizations included "best destinations for art lovers" and "where to journey into the jungle". These categories do not successfully capture all the possibilities for their destinations.

Technology is advancing today at an accelerated rate, and because of this Nyblom (2014) says that people make the false assumption that information is easier to process. Information today may be easier to access; however, the vast amount of accessible information is not necessarily easier to process and can cause people to satisfice. Satisficing is when an individual, due to the overwhelming amount of information, chooses the 'good enough' option and not the optimal one. With the overwhelming amount of information available, it is also hard for some people to know what information to look for that may impact their decision (Nyblom, 2014). Nyblom (2014) determines through qualitative research that the type of information needed to make an optimal decision varies based on the situation; however, a diverse amount of information allows users to be more fully prepared. Keeping this in mind and recalling Missaoui et al. (2019) research on changing tourists' expectations poses an interesting design opportunity to provide users with a dashboard of easily processable pieces of information, along with the opportunity to seek additional information within the source.

Li, Hu, Huang, & Duan (2017) discuss the concept of smart tourism. Smart tourism is the application of technology to develop tools for the tourism industry. The level of 'smartness' varies, and it can range from the addition of environmental sensors to collect data or a phone application to provide users with accessible information (Li, Hu, Huang, & Duan, 2017). This paper focuses on smart tourism in the Chinese market; however, those ideas can also be applied towards the creation of a 'smart' website which caters to the individual. Smart tourism gives the user's information which can impact their travel consumption; however, as stated by Nyblom (2014) a large amount of information can result in satisficing. Currently TripAdvisor recommends activities, restaurants, and hotels based on an amalgamation of hundreds of reviews; however, not all those reviewers may have the same travel motivation as a single user. By implementing smart tourism, with the Look recommender

system discussed earlier, a more personalized experience can be given to a larger audience of people.

Zhou & DeSantis (2005) concentrates on the usability issues for city tourism websites. Although this paper does not specifically focus on online travel agency websites, the goals of both types of websites are to provide information and encourage travel, therefore the usability issues discussed are very applicable. Zhou & DeSantis (2005) assert that there are many factors that equate to the success of tourism website design; however, for this paper, they focus on information content and media. This is significant because it reiterates the importance of providing the user with a rich quantity of data in a single place to improve their vacation planning experience. Xiang, Magnini, & Fesenmaier (2015) discuss the impact of technology and the changing trends of travel industry customers today. Users, especially in the younger generations, are currently much more active in pre-trip planning and are dependent on the internet as a vital source of information for those purposes (Xiang, Magnini, & Fesenmaier, 2015, p. 246). Although online travel agencies do provide users with information to help them plan their vacations, they do not provide them with enough as users still need to utilize numerous other sources like travel portals, virtual communities, and social media in order to collect all the necessary information throughout the various stages of planning. This understanding of the changing trends is important because it recognizes the "clear saturation of Internet use for travel planning" and that travel websites, like TripAdvisor, need to find new ways to differentiate themselves to remain competitive (Xiang, Magnini, & Fesenmaier, 2015, p. 246).

Based on the research reviewed, there is an opportunity to both reduce the number of external sources that users need to reference as well as provide a more personalized travel planning experience. Currently, TripAdvisor provides its users with a lot of information about flights, hotels, food, attractions, and reviews for them. However, they do not provide much information or personalized assistance to help users determine where and when they should go on vacation. Potential improvements to the interface include a feature that considered the user's motivations for going on vacation and provide fewer but more tailored destinations based on it. Another improvement is to provide the user with more information about those destinations such as the exchange rate, a quick overview of the average cost of items, and visa requirements based on the user's country of origin. Additional improvements include providing information to determine when a good time to travel to the destination would be based on historic weather patterns, like monsoon months, and the implications of holidays. Another potential improvement is, after a user books their vacation, offering a 'quick tip guide' that provides important phrases in the destination's national language, cultural norms, taboos, gestures, and relevant important laws.

The research conducted with these eight papers has helped gain a better understanding of the factors that contribute to a successful travel website and understand where the existing designs are not meeting users' expectations and current trends. There is a user population whose needs are not being met by current travel booking websites, and the current trends are shifting towards these tech savvy users who seek out a variety of information on their own before booking vacations. The internet is currently saturated with different websites for booking flights and hotels, so companies now must try and differentiate themselves in order to stay competitive. With our advancing technology, there exists an opportunity to use this information to create a more user friendly 'one stop shop' to meet users' current needs.

DOMAIN, USER(S), TASKS, AND CONTEXT OF USE

Domain

This is a domain within the travel industry which focuses on the planning and creation of travel itineraries on a digital platform by the user/customer.

User(s)

The user population for this domain are members of the general population. Some users have prior experience with organizing vacations and understand the pre-planning that needs to be done before booking, while others may not have this knowledge. In general, there is a high intrinsic cognitive load placed on the user's working memory because they need to search through various independent sources to collect enough information to create a vacation that is optimized to their individual needs and requirements. Additionally, users may have the added anxiety of budget constraints or PTO conflicts with family or friends.

Tasks

There are multiple tasks that need to be accomplished to plan a vacation, each of which has many dependencies which will be discussed in more detail in a later portion of this paper. At the highest level, the main tasks that need to be completed are as follows: first the customer would choose which city or cities they would like to visit and then they would need to determine when they want to travel to that destination. Afterwards, a customer would book a flight, hotel, and attractions that they would like to participate in during their vacation. Finally, the customer would do more research on the requirements for visiting that destination as well as on the customs and culture of their destination.

Some of the tasks above require users to search through copious independent sources to gather the necessary information to make an optimal decision on tasks like where, when, and how they want to vacation, to name a few. Due to the limited capacity and duration of human working memory, remembering the various sources of uncovered data places a high cognitive load on the user's working memory. Additionally, the busyness and anxiety of an individual's everyday life further increases the user's cognitive demands.

Out of the four tasks mentioned above, this redesign focuses on task one, two, and four. The first task is how a customer chooses 'where' they want to go, the second is how they determine 'when' they want to go, and the fourth is the additional research done to understand the requirements for travel as well as the customs and culture of their chosen destination. This redesign does not address the process of booking flights, accommodations, or activities. Although these three things are an important step in the planning process, there are already sites, including TripAdvisor, that provide this service well.

Context of Use

People can use TripAdvisor either on their desktop or on their mobile device. Both options can be in environments that are auditorily and visually distracting and anxiety producing because this is a task that is usually completed while users are going about their daily lives. For example, a parent trying to plan a vacation for the family while also thinking about the kid's homework, what to make for dinner, and upcoming deadlines at work.

METHODS

User Research

User research was conducted with a sample size of five people using interviewing as the primary methodology. The target users were those who have either traveled domestically or internationally within the last two years for pleasure, not business. Of the five participants, two were male and three were female and all five participants were between the ages of twenty-five and thirty-two years of age. Each interview lasted approximately sixty minutes and was conducted via the software application Zoom. In order to maximize participant feedback while ensuring all topics were discussed, a discussion guide was developed. Additionally, prior to the interview, participants completed a short open-ended questionnaire asking them to recall the last three locations they traveled to along with other relevant details. Since the recall of information from an individual's long-term memory is based on its salience as well as the time passed since the information was encoded, participants were asked to complete the questionnaire prior to the start of the interview to increase the probability of accurate recall of information. For this study, Snowball sampling was utilized for recruitment purposes. Snowball sampling is a method of recruitment where existing participants recruit future participants from among their acquaintances.

At the beginning of the interview, participants were asked how they felt while planning a vacation and all five participants responded negatively. None of them enjoyed planning a vacation because it involved a lot of time-consuming research and reading. One participant, a twenty-eight-year-old working professional, stated "I hate planning, there is so much research involved. Research and lists. It is not fun." while another participant, a twenty-nine-year-old working professional, exclaimed "Figuring out this stuff [of vacation logistics] is so stressful. I have a full-time job … A vacation needs to be my escape, but that [reading thirty different blogs] is just another task to my list." When asked why they travel, each participant stated that the main reasons were to have fun and partake in new experiences. Although each participant responded to this question almost identically, upon further probing, it was uncovered that all five participants' individual expectations for those experiences were vastly different. One enjoyed challenging physical activities, like hiking up Mount Kilimanjaro, and seeing historical sites. He stated that on his spring break he passed up the opportunity to go to Cancun with his friends because "they wanted to party in Cancun, and for me that [partying] is not fun. It would have been a waste of my money and time, so I decided to go to Peru alone to go see Machu Picchu … it [Machu Picchu] was so inspiring", while another participant said she prefers being on the beach during the day and then enjoying the nightlife.

During the interview, the participants talked about the different factors that impact where they go on vacation. Weather, personal motivation, who they are traveling with, budget, and bucket lists were the responses which overlapped the most among the five participants. Personal motivations, as noted above, has a large impact on where participants choose to travel; however, who they were traveling with had a greater impact for many because the presence of their companions changed the group's motivations for travel. One participant stated that when she is traveling with her core group of friends, good nightlife and parties are a strong motivating factor for them, but if she is traveling with her boyfriend, their motivation for traveling does not include nightlife at all. Budget was also mentioned as an important consideration, but budget included more than just the flight and hotel. Many noted that the cost of living or exchange rate were also considered when determining budget. For example, one participant noted that she would be willing to spend more on the flight if she knew that her American dollar had more buying power in the country she was visiting.

Key takeaways from the user interviews conducted are that people are primarily looking for new and exciting experiences when they go on vacation, whether that is energizing nightlife or a breathtaking wildlife experience, and they need to find a city or cities that specifically cater to their individual needs and expectations. Additionally, when they travel also impacts their individual expectations. A common thread during the interviews was that participants stated that they had to perform a copious amount of research to collect the necessary information relating to the factors that influence their decisions on where and when to go. The collection of that information, as noted earlier, is a process that was described as time-consuming and stressful by all.

Analysis of Existing Design

The interviews, discussed above, were coded and analyzed based on three main categories: phrases and concepts that

were repeated by multiple interviewees, specific concepts that were explicitly stated as important, and concepts that were similar to research gathered during the literature review. That information was then used to recreate a user flow from the moment that a customer enters TripAdvisor, with the vague goal of planning a vacation, to when they successfully book a trip. This also helped illustrate when during the journey a user would need to seek information from other independent sources to make an optimal decision, which aided in pinpointing exactly what pages needed the most redesign effort. Subsequently, with a greater knowledge of the qualitative data collected, a heuristic evaluation was conducted utilizing the design principles from Tidwell (2011) and Lidwell, Holden, & Butler (2010) as a guide. The heuristic evaluation uncovered aspects of TripAdvisor's current design which could be improved to benefit individuals with various levels of defined goals and different cognitive styles. Those identified aspects, along with others, were focused on during this redesign process.

To redesign TripAdvisor's current website, numerous preliminary sketches were created and then iterated upon based on the design principles as well as the knowledge collected during the interviews and literature review. After many iterations, a medium fidelity wireframe was created in UXPin, and additional iterations were made. During the wireframing process, a style guide and template were created to maintain consistency of color, typography, and pixel distance within the redesigned prototype. The result was a medium-high fidelity interactive prototype in UXPin.

RESULTS AND DISCUSSION

Tasks

There are multiple tasks that need to be completed to plan an optimal vacation. Each one has many dependencies or subtasks that need to be considered in order to complete them successfully. They can also be quite time-consuming since a user may need to reference numerous independent sources to collect the needed information. Some of the most common tasks that a user would need to perform, along with their subtasks, to organize a vacation are discussed below. A user would first need to determine which city or cities, within a certain country, they would like to visit. This task may be difficult for some because, although they may have a vague idea of what type of vacation they would like to go on, they may not know where they would be able to get the experience that they are hoping for. This requires research into various locations around the world to find a destination that would fit their individual requirements. Users, especially those who are conscious of their budget, would also need to determine the cost of vacationing in a certain area and would need to research the cost of living, exchange rate, and buying power of their currency at that destination. This task can be difficult because humans are innately bad with making decisions, especially when they are presented with a task without a clearly defined goal and a high volume of options.

After choosing where they want to go, a user would then have to figure out when they want to go on vacation. They would need to coordinate their own paid time off with the individuals, if any, who are accompanying them and may also need to make sure that they have coverage at work. They would also need to see, depending on their budget, when their trip would be most monetarily feasible. Additionally, they also need to consider the historic weather patterns of the location that they are planning on visiting to see whether it matches up with the type of vacation they are looking for. For example, a user who does not like rain and wants to visit Thailand would have to consider that each region of Thailand has their monsoon season during different months: Northern Thailand near Chiang Mai has their monsoon season from July to September, Bangkok's monsoon season is from July to October, while the Thai islands down south have their monsoon season from October to December. Furthermore, another factor that people would need to consider when planning on going to a certain destination is that country's holidays and the implications of those holidays. For example, during the month of Ramadan in Dubai, eating and drinking are strictly forbidden in public, even for tourists, and in Thailand in 2017, for five days at the end of October, a royal cremation ceremony took place for the late king who died the prior year, which resulted in all of the major tourist attractions being closed. The last task that a user should do, if they choose to travel internationally, is to get a better understanding of the travel requirements for that country as well as their culture and customs. Travel requirements, like visas, differ between countries. For example, a US citizen would not need to get a visa to travel to Thailand; however, they would need one to travel to India or Brazil, and it takes a minimum of one to two weeks to get a visa. Having a better understanding of the country's customs and culture would also come in handy. For example, men and women are not allowed to wear tight, short, or semitransparent clothing in most major tourist attractions in Thailand, and if they are not dressed appropriately, they are required to purchase more suitable clothing before entering. Another example is in Japanese culture, where tipping, a norm in the United States, is seen as insulting. Additionally, being able to speak and understand vital phrases may come in handy, as well as knowing some cultural taboos and gestures. This redesign aims to simplify the process by compiling all the information needed into TripAdvisor's current workflow in order to assist users in optimal decision making, decrease the time commitment, and reduce the cognitive load on a user's working memory.

Design Comparisons and Justifications

The TripAdvisor homepage (Figure 1) has an appealing symmetrical layout which considers the rule of thirds. At the top of the page there is a sponsored advertisement for a part of the world, currently it is Los Angeles. In the middle of the sponsored advertisement, there is a small oval white shape with the text "Where to?" written inside it with a thin green

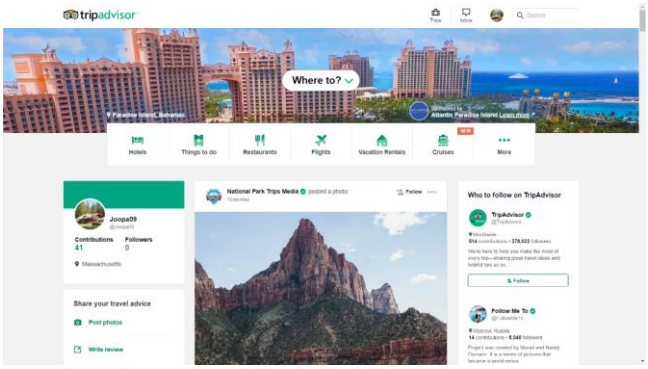

Figure 1: Current TripAdvisor homepage

arrow pointing downwards next to it. This white oval is meant for the user to type into and search for a city or country they are interested in going to; however, due to ad blindness this can be accidentally overlooked due to a combination of proximity to an advertisement and the lack of salience and affordances (Tidwell, 2011). Right underneath the Los Angeles advertisement, there are seven buttons that are salient and highly visible and draws a user's attention to them immediately. The buttons utilize a good balance of recognizable icons and text; however, when you click on them you are prompted to type in a city or country. This can be confusing for a user who does not yet know where they want to go, and they may be unsure of how to continue. As the user scrolls down, a social media newsfeed is prominently displayed in the center column of the page. In the left column, there is a brief overview of the user's account details along with a prompt for the user to share their travel advice. Finally, the right column has tips on other users to follow, which would increase the user's social media feed on TripAdvisor.

As noted above, the symmetrical layout of Figure 1 is visually appealing, so it is retained during subsequent iterations of the redesign. The first change to TripAdvisor's homepage (Figure 2), is to make the search bar at the top of the page more prominent to combat any potential ad blindness and to signify that users can type and search in it. A shadow is added to the inside of the search bar to afford the action of typing and an icon commonly associated with the search action is added to the left corner of the search bar. Additionally, the search bar is enlarged to increase its salience and the verbiage inside the box is changed to indicate that it is not limited to just searching by destination. The current verbiage "Where to?" implies that the customer who is using TripAdvisor already has a well-defined goal and knows exactly which destination they are traveling to; however, not all customers enter a task with a clearly defined goal. Additionally, according to Li, Li, & Hudson (2013), millennials tend to look more for experiences when they travel. Considering both of those factors, the verbiage is altered to "What do you want to experience?" to cater to a wider audience. Finally, the tailored recommendations provided by the intelligent recommender system is moved to

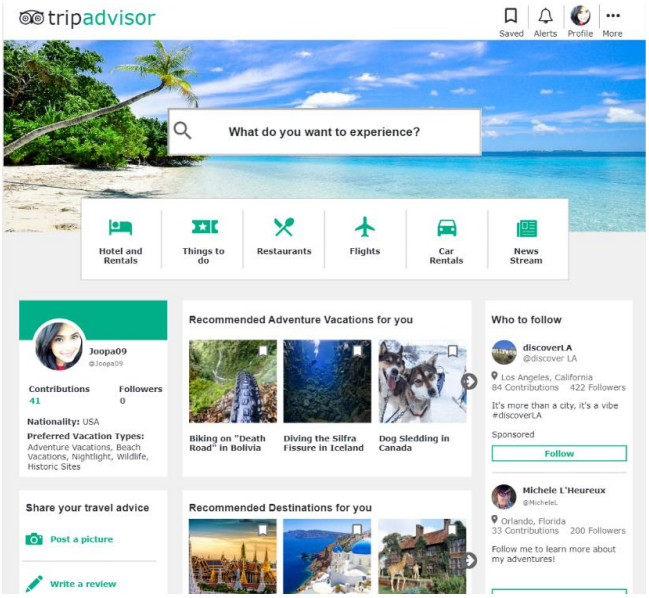

Figure 2: Redesigned homepage

the top of the page because important information that would be used to aid a user in decision-making should be placed at the top of the page.

1) **Affordances: "A property in which the physical characteristics of an object or environment influence its function"** (Lidwell, Holden, & Bulter, 2010, p. 22).
   a) Summary: An affordance is when an object infers a particular action to a user. A large flat rock, for example, infers to an individual that it can be sat on. When an object infers an action, humans can act quickly and do not need to waste their attention on trying to figure out what to do with it. This should be applied when creating interfaces so that the main actions are intuitive for users and do not cause additional intrinsic cognitive load.
   b) Application to Prototype: In Figure 2 a shadow is added to the inside of the search bar to afford its intended function of typing and searching. This decreases the chance that a user will exert an overt amount of cognitive load looking for a way to search for the type of trip or destination they want. A task like this should be easy and not deplete a user's attention which can lead to an increase in error or a decrease in performance in subsequent tasks.

2) **Inverted Pyramid: "A method of information presentation in which information is presented in descending order of importance"** (Lidwell, Holden, & Bulter, 2010, p. 140).
   a) Summary: This principle describes the order in which information should be presented on an interface to the user. The important information, especially if it assists in the decision-making

process, should be presented first to allow for efficient scanning of information.

b) Application to Prototype: As noted in the literature review, Missaoui et al. (2019) states that tourists today expect to receive personalized recommendations that will assist them in making optimal decisions when it comes to travel. Taking this and the inverted pyramid design principle into consideration, the "Recommended Adventure Vacations for you" was moved from the middle of the news stream to the top of the page to allow for quick and efficient scanning of important information (Figure 2).

In TripAdvisor's current interface (Figure 3) when the user clicks on the 'Where to?' search bar, a drop-down menu appears prompting the user to input a specific country or city they want to travel to. As noted previously, this implies that the user has a specific destination already in mind and does not consider the user who does not have a well-defined goal but wants to quickly find a destination that fits their individual needs and expectations.

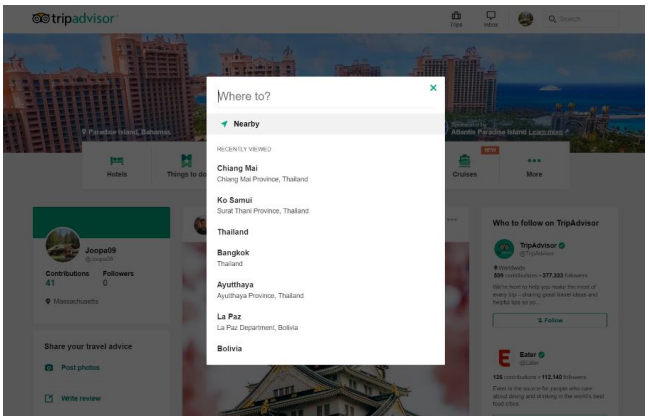

Figure 3: Current TripAdvisor search interface

During the user interviews that were conducted, it became evident that one of the main reasons people travel is to partake in exciting experiences, it is also one of the driving factors for why they travel to certain destinations. Taking this into consideration, the newly designed search bar (Figure 4) allows users, who may not know where they want to travel to, to search for a destination based on their individual motivations and expectations. In Figure 4, the user prefers vacations with wildlife, temples, and nightlife and the newly designed search bar allows them to determine the destinations that fit those expectations without having to conduct a copious amount of research from independent sources.

3) **Recognition over Recall: "Memory for recognizing things is better than memory for recalling things"** (Lidwell, Holden, & Bulter, 2010, p. 200)

a) Summary: By making a user's potential options clearly visible, their cognitive load is decreased because they are better able to recognize information without having to recall it from their long-term memory.

b) Application to prototype: Recognition over recall is utilized in the redesigned search bar when a user starts typing a word, like nightlife, into the search bar. The interface anticipates their potential input and shows them a list of words and phrases which they can select from (Figure 4).

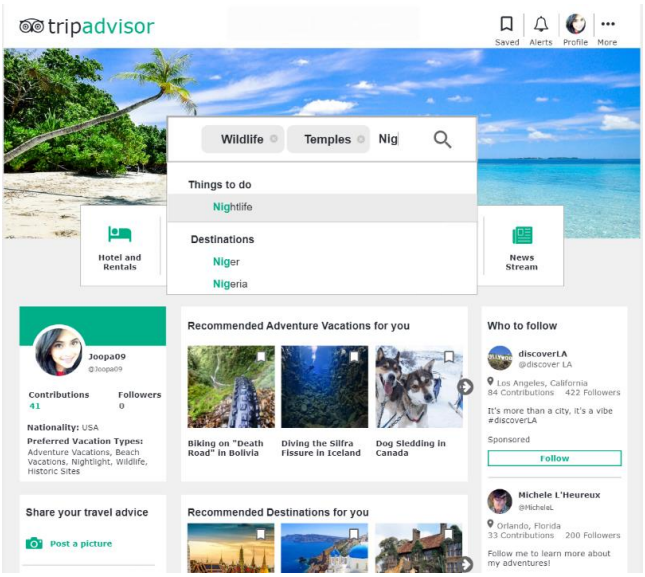

Figure 4: Redesigned search interface

In Figure 5, there is a three-column symmetrical layout with the newsfeed in the middle, the account name on the left, and 'Who to follow on TripAdvisor' on the right. This content and placement remains static throughout the entire user work flow in the current design. In the proposed designed shown in Figure 6, the content of the prior three static columns is changed. Instead, the content is now composed of tailored events, city suggestions, and activities based on the user's personal profile. Additionally, the right most column contains important yet scannable information regarding the country's visa policy, vaccine suggestions, potential travel advisories, and exchange rate which are all customized to the user's home country. The design shown in Figure 6 adds an

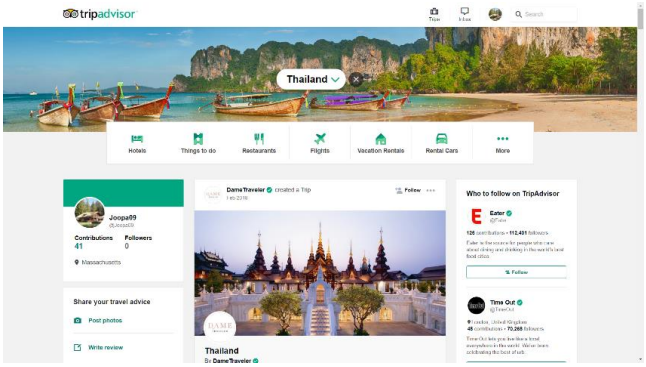

Figure 5: Current TripAdvisor country specific page

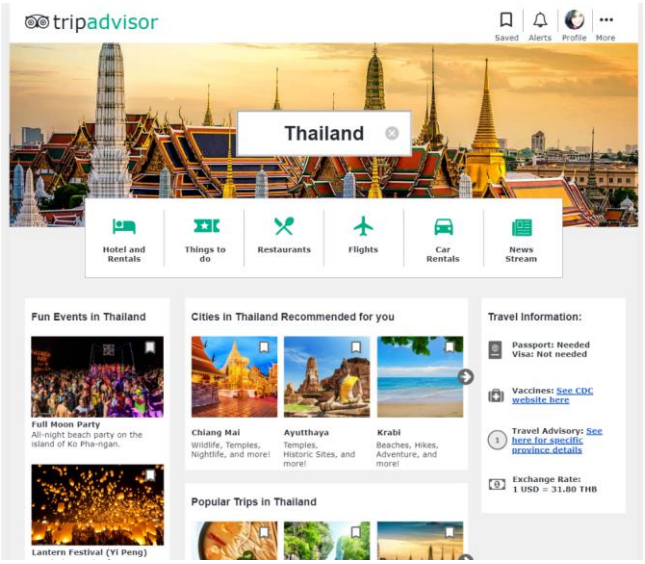

Figure 6: Redesigned country specific page

element of personalization for the user, while still giving them the opportunity to scan the newsfeed if they would like.

4) **Proximity: "Elements that are close together are perceived to be more related than elements that are farther apart"** (Lidwell, Holden, & Bulter, 2010, p. 196)
   a) Summary: People will perceive elements or information as related when they are placed close together. Proximity is a pre-attentive organizing principle that is usually perceived faster and seen as more influential than other pre-attentive principles.
   b) Application to prototype: Underneath the banner in Figure 5, there are seven buttons. Out of the seven buttons, six are focused on things which are related to the destination named on the page, in this case Thailand. Users can see hotels, vacation rentals, and flights in Thailand; however, the seventh button which is labeled 'more' is a combination of different links from booking rental cars to travel forums, and the help center. The actions that can be performed through the 'more' button are not like the other six. Considering this, in Figure 6 the 'more' button has been moved to the top navigation where a user can utilize it when needed and has been replaced with the newsfeed button which, when clicked, will show the user all social media posts related to the destination named at the top of the page.

5) **"Consider putting related information inside a closed contour. A line is adequate for regions having a simple shape. Color or texture can be used to define regions that have more complex shapes"** (Ware, 2013, p. 187)
   a) Summary: Humans are pattern seekers and for them to process and understand that certain information is related, it should be group together by region. A region is a powerful grouping factor that can be created by a shape or closed contour. However, if there are multiple pieces of information that need to be grouped separately, color and texture can also be used to differentiate the multiple regions.
   b) Application to prototype: The information in Figure 6 is pre-attentively grouped by shape (or closed contour) as well as color. Related information is placed in a white square in order to differentiate it from unrelated information. For example, because of the white color and the square shape, the information in the 'Cities in Thailand Recommended for you" can be differentiated from the "Travel Information"

6) **Iconic Representation: "The use of pictorial images to improve recognition and recall of signs and controls"** (Lidwell, Holden, & Bulter, 2010, p. 132)
   a) Summary: Using images to represent an action, object, or concept helps a user find and recognize that information more easily, resulting in a decrease in cognitive load.
   b) Application to prototype: In the right-hand column in Figure 6, there is a section labeled 'Travel Information'. Within that closed contour, there are scannable pieces of information that are accompanied by an iconic representation to make them easier to locate, recognize, and process. For example, an icon of a passport is located just to the left of the information regarding passports and visas and an icon representing money is located right next to the exchange rate.

The current TripAdvisor interface for the city page, seen in Figure 7, has the same information as the home page and country page. In the proposed redesign, seen in Figure 8, crucial information that a user would usually have to research through another source is displayed on this page,

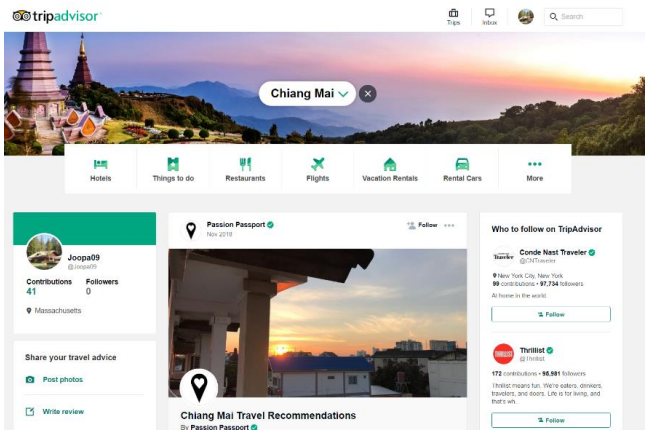

Figure 7: Current TripAdvisor city specific page

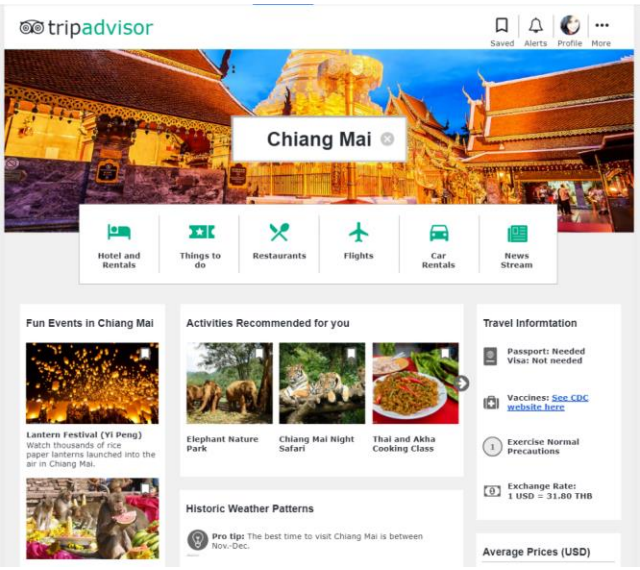

Figure 8: Redesigned city specific page

such as historic weather patterns, average prices for accommodations, food and transportation, as well as personalized events and activities.

7) **Consistency: "The usability of a system is improved when similar parts are expressed in similar ways"** (Lidwell, Holden, & Bulter, 2010, p. 56)
   a) Summary: When consistency is applied to an interface, its usability increases, and the cognitive load needed to navigate the website decreases. Consistency allows a user to preserve their spatial memory, which is an important pattern that allows humans to work more efficiently and decrease their cognitive load by remembering where certain actions or pieces of information are usually placed.
   b) Application to prototype: There are four types of consistency: aesthetic, functional, internal, and external. In the prototype (Figure 8) there is aesthetic consistency in terms of the color and font. Additionally, consistency is applied in terms of the location of information, for example the 'Travel Information' is always located in the top right corner, while the 'Fun Events' are always located in the top left corner. That way, if a user is looking for that specific information, they are able to easily find it without increasing their cognitive load.

8) **Accordion: "Put modules of content into a collinear stack of panels that can be closed and open and independently of each other"** (Tidwell, 2011, p. 159)
   a) Summary: When there is a lot of information to show on a single page but no room for it, the information should be placed in an accordion to declutter the interface while also giving the user agency to view the information at their convenience
   b) Application to prototype: During the user interviews, average price of typical vacation expenses, such as dining, were noted as an important consideration when deciding where to travel. Taking this fact into consideration, all of that information is added to the prototype (Figure 8). However, adding all that information separately resulted in a lot of visual clutter. To declutter the page and make the information easier to process, an accordion was added to allow users to view the information they wanted to see at their own convenience. Using the accordion also decreased the 'cost of navigation' which would have added intrinsic cognitive load if that information had been separated into two pages.

9) **Thumbnail-and-Text List: "present a selectable list of items, with each item contains a thumbnail image, and some text, and possibly smaller text as well. If appropriate, you lose a bold colors, icons, and other visual differentiators."** (Tidwell, 2011, p. 459)
   a) Summary: When an interface has a lot of complex information or context, the goal should be to make that information both visually pleasing and easy to process. Although this principle is noted under mobile design, it is very applicable to a web interface that contains a lot of complex information.
   b) Application to prototype: In Figure 8, for the 'Fun Events' box on the left-hand side of the screen, images are added of the events along with the text. This serves three purposes: to make the interface visually appealing, easier to process, and to incite an emotional connection in the user.

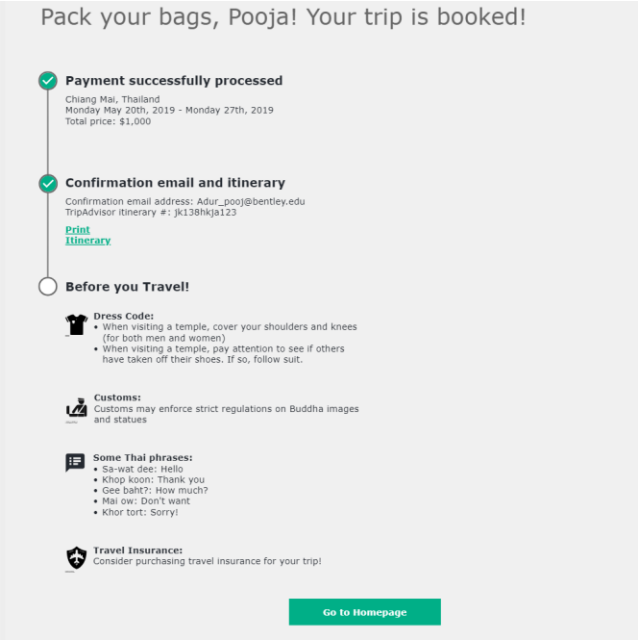

Figure 9: New post booking information page

10) **Progress Indicator: "show the user how much progress has been that may itself are on a time-consuming operation"** (Tidwell, 2011, p. 266)
    a) Summary: A progress indicator is important because it signifies to the user the different steps that are involved in their current task and what has been finished, or how much time is left until they finish their task. Including a progress indicator gives valuable feedback which can result in less frustration and impatience for the user.
    b) Application to prototype: In Figure 9, a progress indicator is used to inform the user that their payment has been successfully processed and their itinerary has been sent to their email address. It also shows a subsequent task which encourages the user to read several important pieces of information regarding the country they are visiting, such as appropriate dress code and potential customs issues.

Limitations

There were a several limitations and constraints faced during the redesign of TripAdvisor's vacation planning workflow. Due to the time sensitive nature of the project, only five participants were interviewed during the data collection phase. For this reason, the data collected may not be generalizable to a larger population.

This redesign focuses on specifically three of the four tasks originally discussed in the beginning of this paper. The third task, which relates to how a user books flights, accommodations, and activities, was explicitly omitted from this redesign process. Even though it is an important task in finalizing a vacation plan, many websites, including TripAdvisor, already perform this task well. It is understood that there is always room for improvement; however, this redesign focused on aspects that are currently not available to users.

Future Directions

The research and redesign provided in this paper can serve as the first step to better understanding different types of potential customers, each with a set of unique goals, cognitive styles, and life circumstances. A future study can be conducted with a larger sample size to ensure that a broader range of customers are interviewed to get a more comprehensive understanding of the different approaches and perspectives to vacation planning. Additionally, a usability study can be conducted on the current TripAdvisor interface to ascertain the 20% of features that are being used by 80% of the customers. By understanding this 80/20 rule, future redesign efforts can be targeted to the most important features.

Furthermore, a formal usability study can be conducted on the redesigned TripAdvisor interface proposed in this paper to ascertain its usability and pinpoint potential problems to be corrected in future iterations. Many pieces of important information have been added to this redesign, based on the user interviews and heuristic evaluation conducted on the original interface. An interesting opportunity would be to see if all that information is actively being used to plan a vacation. According to Lidwell, Holden, & Butler (2010), the 80/20 rule states that 80% of customers utilize only 20% of a product's features. It would be interesting to see what 20% of information is being utilized the most and use that to potentially inform a future iteration of the proposed prototype.

CONCLUSION

As noted in this paper, the current TripAdvisor interface specifically caters to one particular type of user, the one who already knows their intended destination. Although TripAdvisor does provide excellent reviews on activities, hotels, and even cruises, it lacks user specific personalization and the ease provided by a 'one stop shop' of information to users who may not be as confident in their travel planning skills. Based on the literature review, user interviews, and design analysis conducted, the proposed redesign has the potential to expand the user base to be more inviting to less experienced users without harming the usability for more seasoned travelers.

PROTOTYPE LINK

https://preview.uxpin.com/4efdd97c6d2402b31aa3515eae571ba2664d80cb#/pages/109710148

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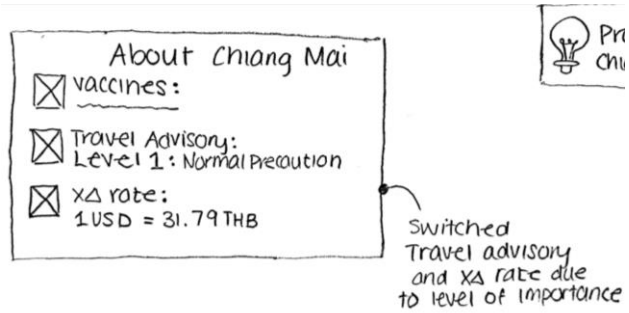
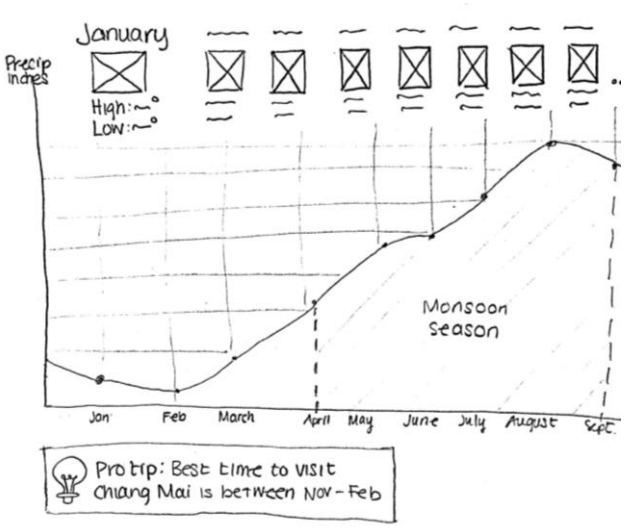
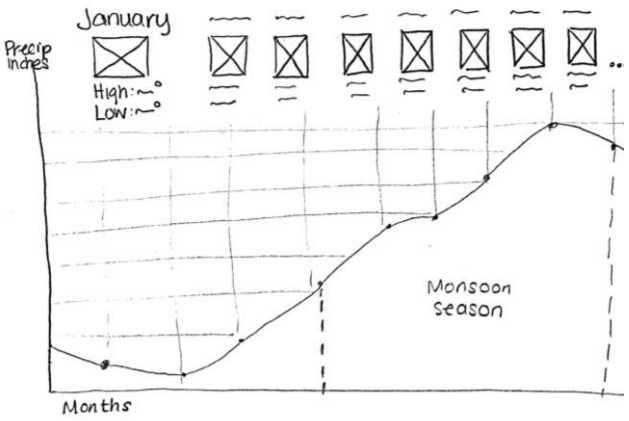
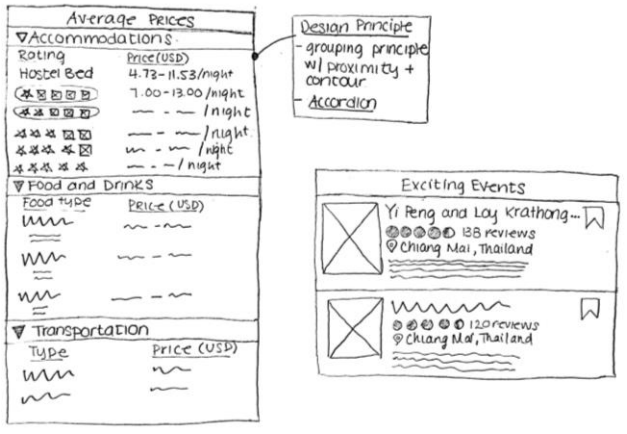
APPENDIX A

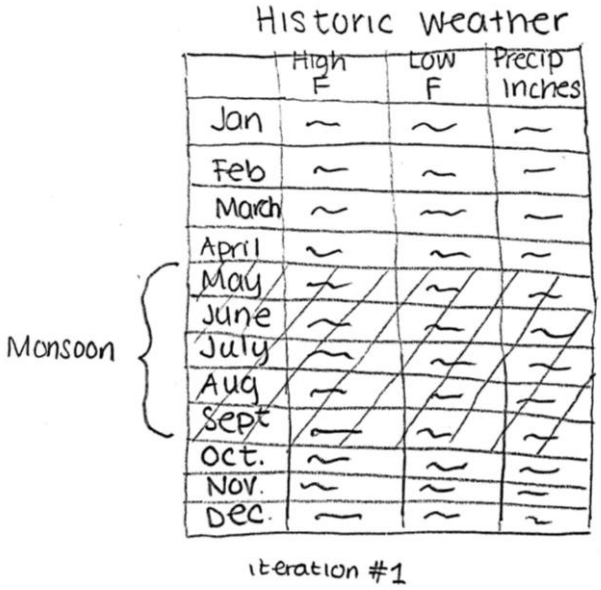
Prototype sketches

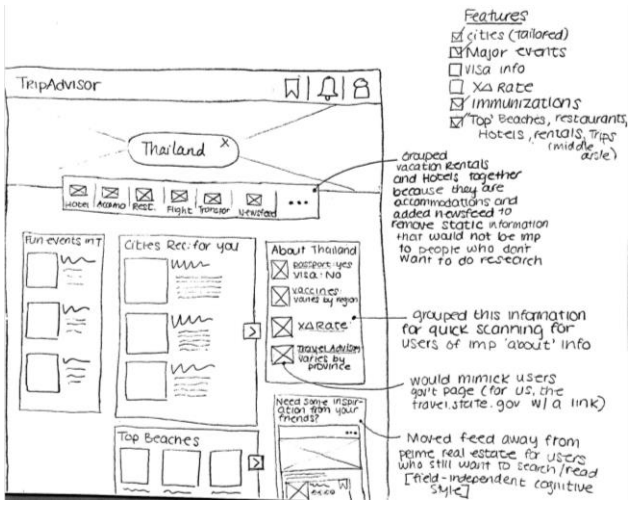


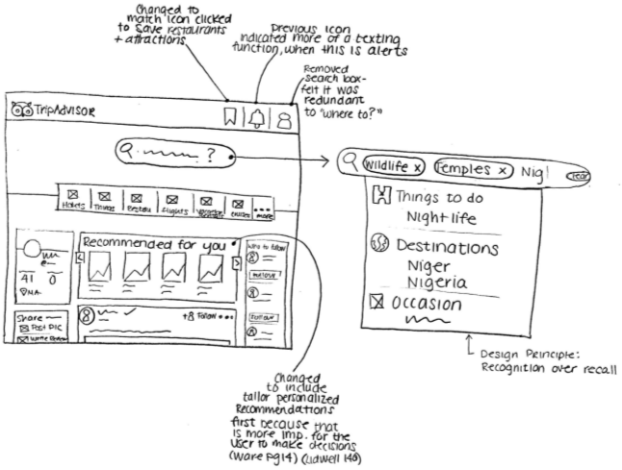


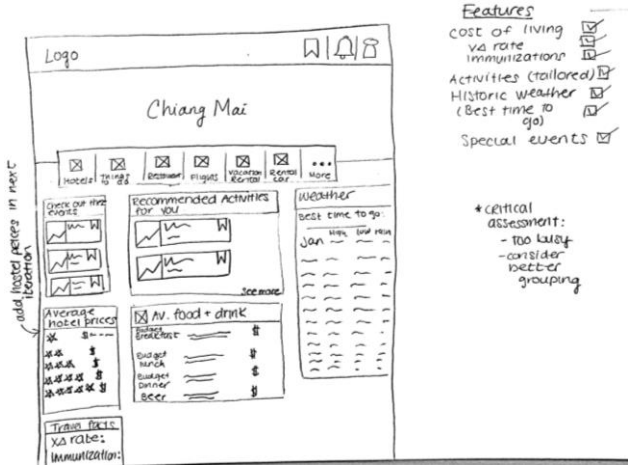


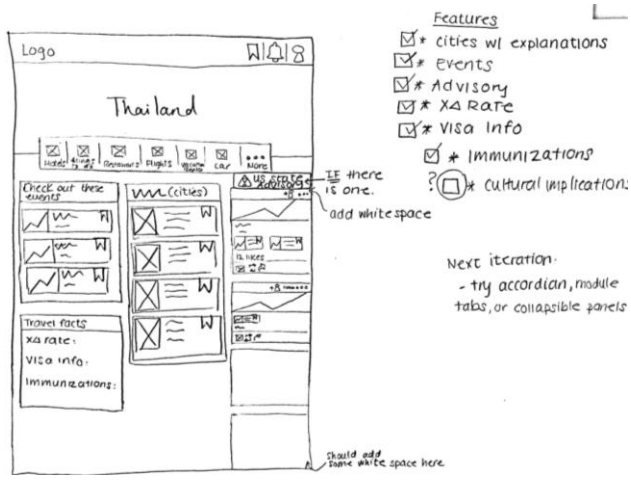





Features
cities (Tailored)
Major events
Visa info
XA Rate
Immunizations
Top Beaches, restaurants, Hotels, rentals, Trips (middle circle)
TripAdvisor
Thailand
Fun events nT
Cities Rec: for you
About Thailand
Top Beaches
grouped vacation rentals and Hotels together because they are accommodations and added newsfeed to remove static information that would not be imp to people who don't want to do research
grouped this information for quick scanning for users of imp 'about' info
would mimick users go'n page (for us, the travel.state.gov w/ a link)
Moved feed away from prime real estate for users who still want to search/read [Field-Independent cognitive style]


Changed to match icon clicked to take restaurants + attractions
Previous icon indicated more of a texting function, when this is alerts
Removed search box- felt it was redundant to "where to?"
TripAdvisor
Recommended for you
Wildlife x
Temples x
Things to do
Night-life
Destinations
Niger
Nigeria
Occasion
Design Principle: Recognition over recall
Changed to include tailor personalized Recommendations first because that is more imp. for the User to make decisions (Ware Pg14) (Caldwell 148)


Features
cost of living
XA rate
Immunizations
Activities (tailored)
Historic weather (Best time to go)
Special events
Logo
Chiang Mai
Recommended Activities for you
Weather
Best time to go:
Av. food + drink
Average hotel prices
Travel facts
XA rate:
Immunization:
add hotel prices in next iteration
*Critical assessment:
- too busy
- consider better grouping


Features
* cities w/ explanations
* Events
* Advisory
* XA Rate
* Visa Info
* Immunizations
* cultural implication
Logo
Thailand
Check out these events!
(cities)
Travel facts
XA rate:
Visa info:
Immunizations:
If there is one.
add whitespace
Next iteration:
- try accordian, module tabs, or collapsible panels
Should add some white space here