Healthcare.gov Application

Accessibility & UX Audit

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Brief Introduction to Heuristic Principles

10 Usability Heuristics for User Interface Design

1. Visibility of system status
The application should always keep clients informed about what is going on through appropriate feedback within a reasonable amount of time.

2. Match between system and the real world
The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon.

3. User control and freedom
Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

4. Consistency and standards
Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

5. Error prevention
Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

6. Recognition rather than recall
Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another.

7. Flexibility and efficiency of use
Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. Aesthetic and minimalist design
Interfaces should not contain information which is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

9. Error recovery - Help users recognize, diagnose, and recover from errors
Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

10. Help and documentation
It’s best if the system doesn’t need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

* Nielsen Norman Group's Best Practices. You can also use the Accessibility Checklist by Deque to do an accessibility audit.

Focus Areas & Recommendations

Focus Area #1

User Control and Freedom

Description: **User Control and Freedom** refers to the ability for the application to provide a clearly marked “emergency exit” and for the applicant to be able to navigate freely throughout the application in order to complete their task.

Benefits:

- Leave applicants feeling in control of the experience
  - Lack of control will leave applicants feeling trapped and dissatisfied
- Clear and flexible navigation allows ease of use
  - Complex navigation standards can lead to slow and inefficient application completion

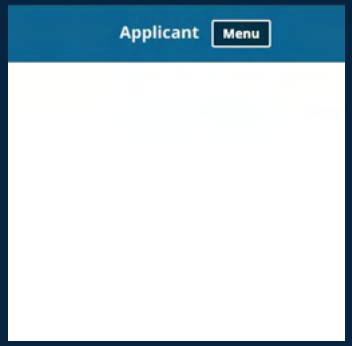
Focus Area #1: Application Status

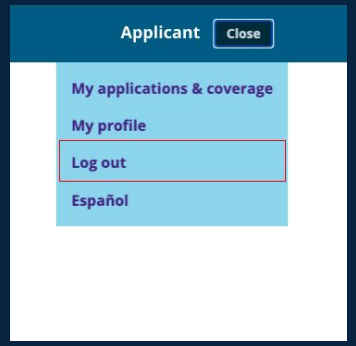
Close and Progress Save

Needs improvement

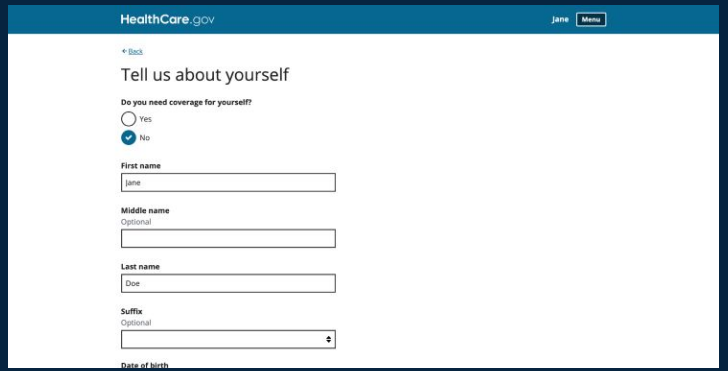
- Closing the application is not easily discoverable (example 1)
- Interface does not resume from the applicant's last position (example 2)

Heuristics: *User control and freedom, Recognition rather than recall, Error Prevention*





example 1



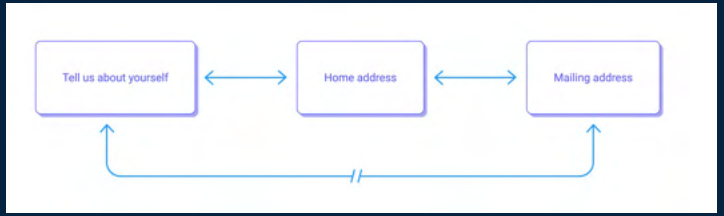
example 2

Focus Area #1: Application Status

Navigation

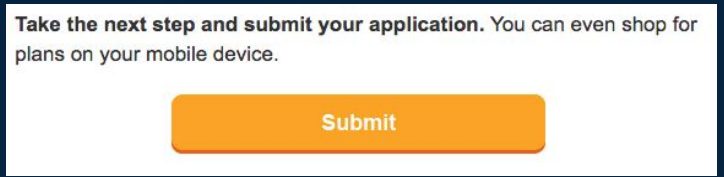
Needs improvement

- Applicants can only navigate page-by-page (*example 1*)
- Navigational controls are “*Back*” and “*Save & Continue,*” but their treatment and placement are inconsistent. *(example 2)*
- Email links that mention a specific application do not take applicant to the intended target (*example 3*)



example 1

example 2



example 3

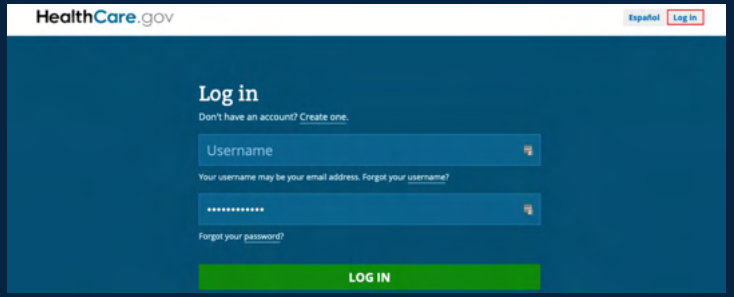
Heuristics: *User control and freedom*

Focus Area #1: Application Status

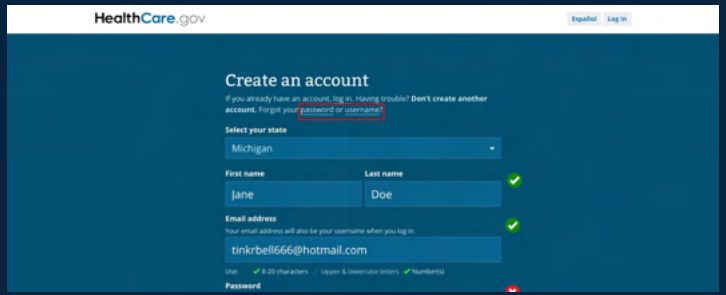
Distracting UI Elements

Needs improvement

- Extra “Log in” button in the “log in” screen (example 1)
- Unnecessary “password” or “username” recovery in the “create account” screen (example 2)



example 1



example 2

Heuristics: *Aesthetic and minimalist design*

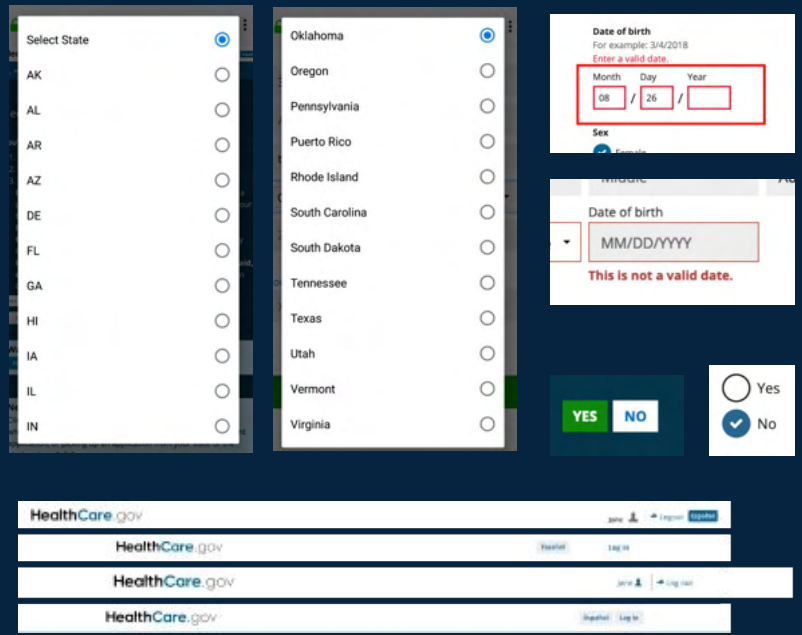
Focus Area #2

Inconsistent UI

Description: Consistency in user interface (UI) design is concerned with making sure elements in the interface is uniform. This helps create a sense of control, familiarity, and reliability. **Inconsistent UI** confuses and frustrates applicants and can drive even the most promising products to failure.

Benefits:

- Applicants will learn faster how to use the website
  - An inconsistent interface is similar to trying to talk with the applicant while switching languages
- Consistency eliminates confusion
  - When applicants feels confused, the next stage is frustration
- Consistency saves money and time
  - Consistent design is built with a consistent UI



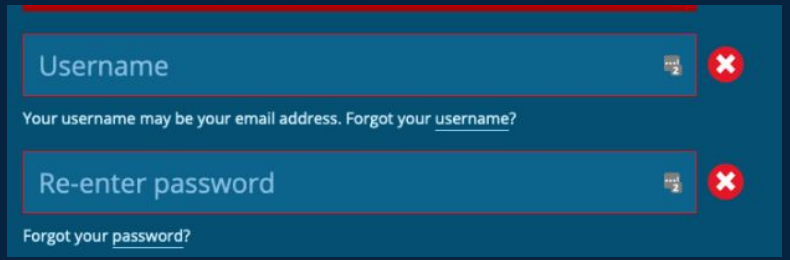
Focus Area #2: Inconsistent UI

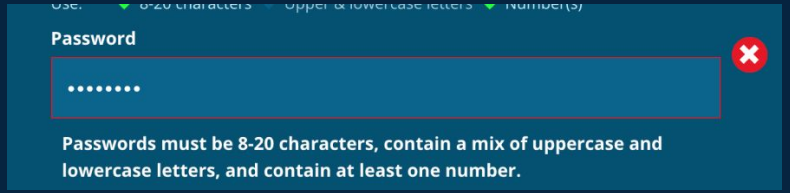
Menus, Forms, Headers and Buttons

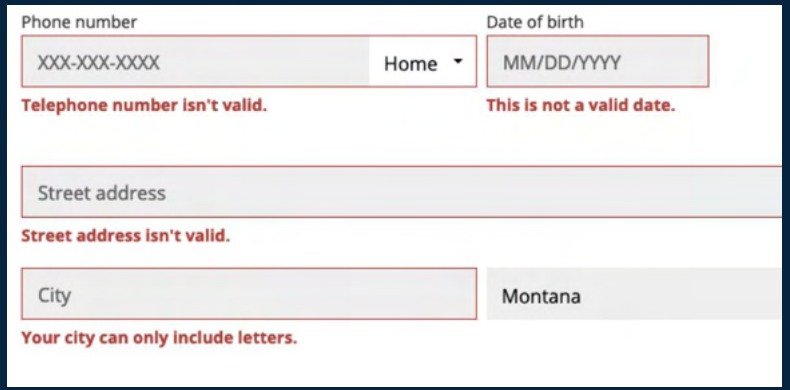
Needs improvement

- Dropdown menus, forms and headers need to be consistent and uniform throughout the site
- Button size and button formats should be standardized across all pages
- Repeat patterns and elements any time you can

Heuristics: *Consistency and Standards*







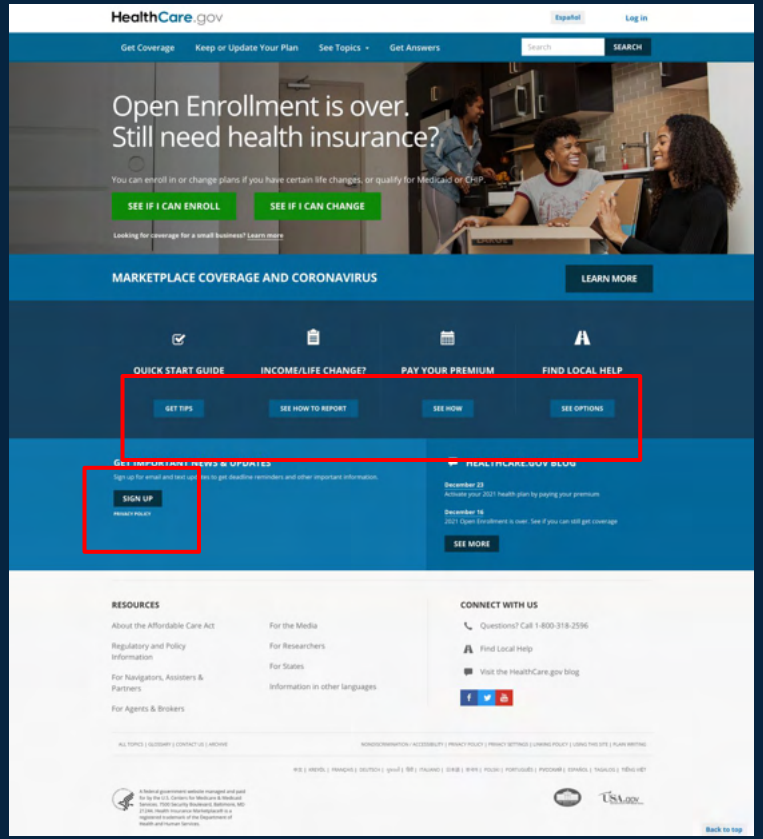
Focus Area #2: Inconsistent UI

Error Messages

Needs improvement

- Error indicators should be consistent in appearance and location
- Error messages should inform applicants why their input was rejected

Heuristics: *Error prevention, Help users recognize, diagnose, and recover from errors*



Focus Area #2: Inconsistent UI

Font Size

Needs improvement

- Font size for body text should be 16px as a best practice
- Font standards apply to text in buttons as well
- Text that is too small with different background colors makes it harder for applicant to complete the task

Resource: *AccessibleWeb on Minimum Font Sizes*

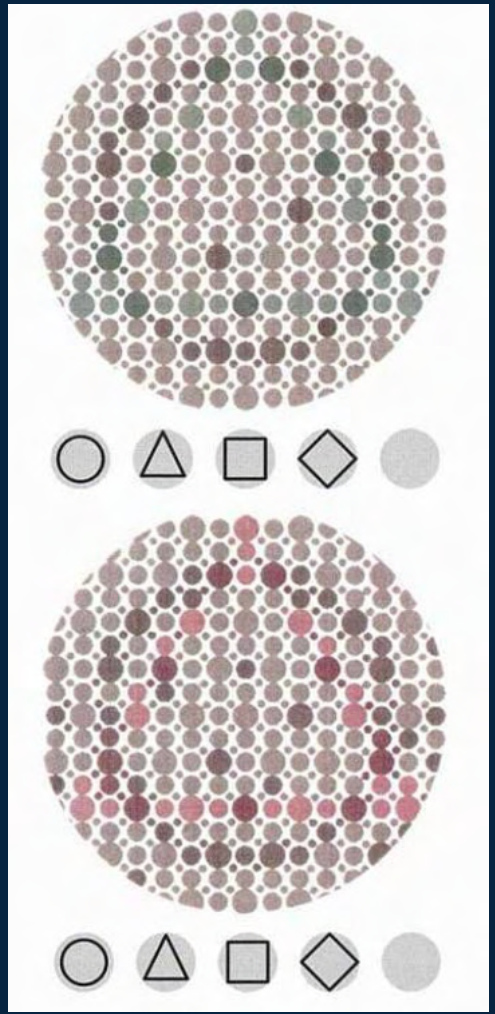
Focus Area #3

Color Usage and Dependence

Description: The **use of color** is meant to enhance other design techniques, never distract. Color helps lend consistency, variety, and importance to an intended message and usage of an interface. Color should never be used on its own to convey important information.

Benefits:

- Reinforces the intuitive use of an interface
- Alleviates confusion and frustration
- Reduces barriers and obstacles



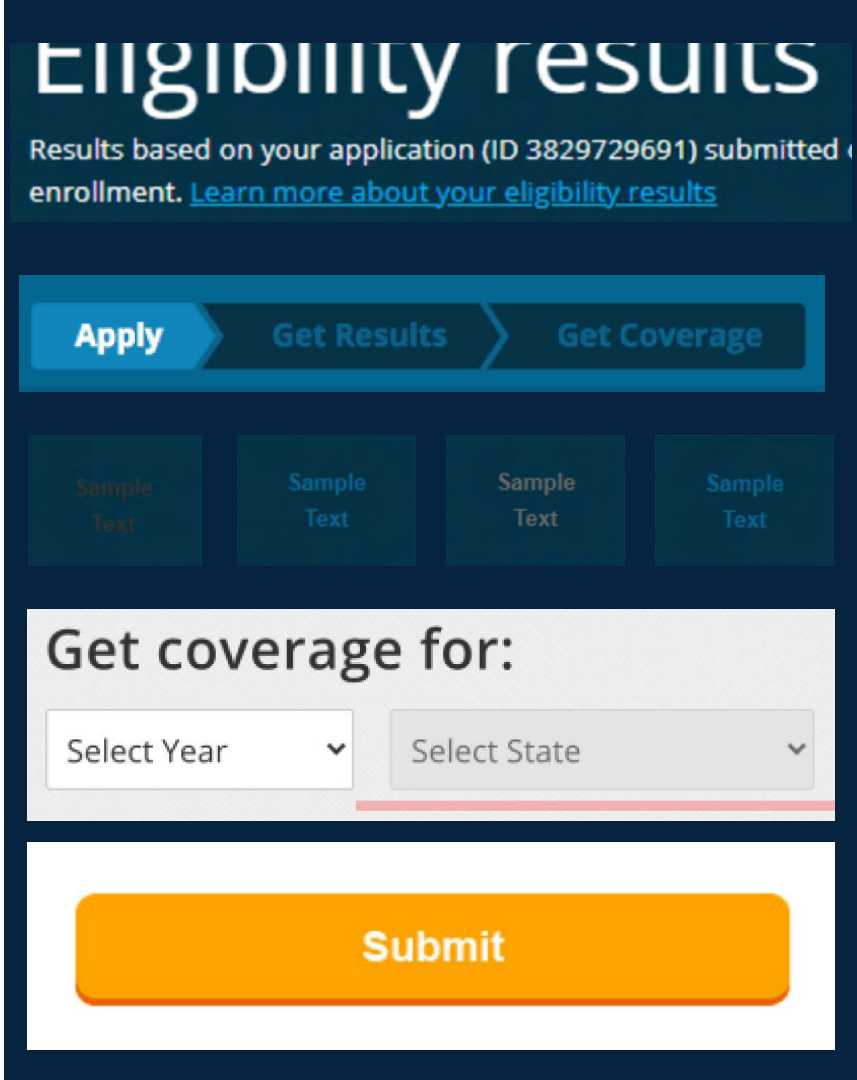
Focus Area #3 - Color Usage and Dependence

Color Contrast

- Some people cannot read text if there is too little contrast between text and background.
- W3C Web Content Accessibility Guidelines 2.0 require color combinations meet clearly defined contrast ratios
- Level AA compliance: Text/images of text must have a contrast ratio of at least 4.5:1

Resource: *University of Washington on Effective Use of Color*

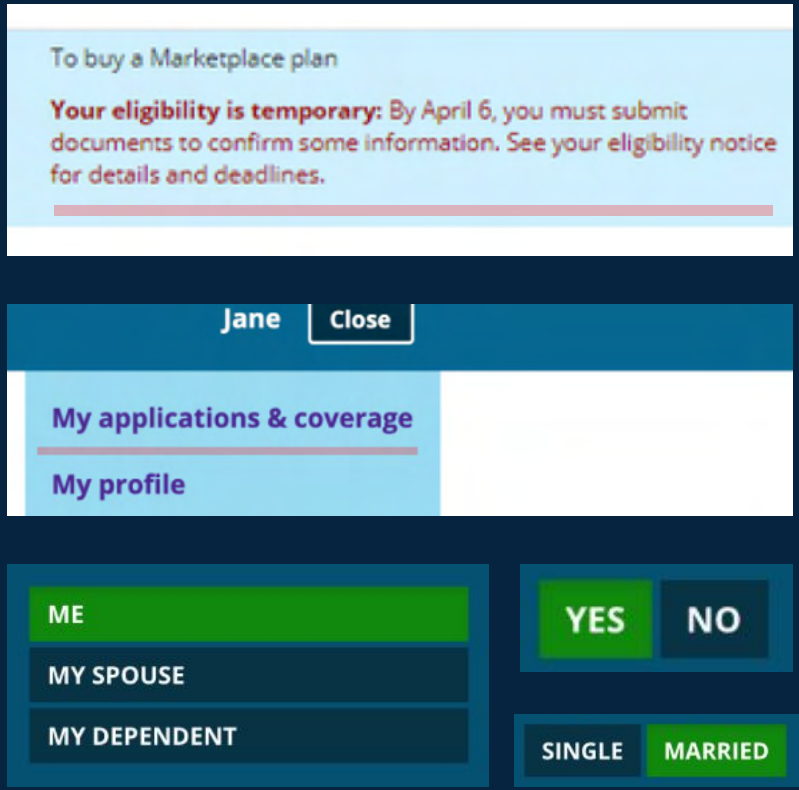
Heuristics: *Consistency and standards / Aesthetic and minimalist design*



Focus Area #3 - Color Usage and Dependence

Avoiding Color Dependence

- Some people are unable to perceive color differences, or may not perceive color the same way others do
- It is important to avoid using color alone to communicate information



Resource: *University of Washington on Effective Use of Color*

Heuristics: *Consistency and standards / Error prevention / Error recovery*

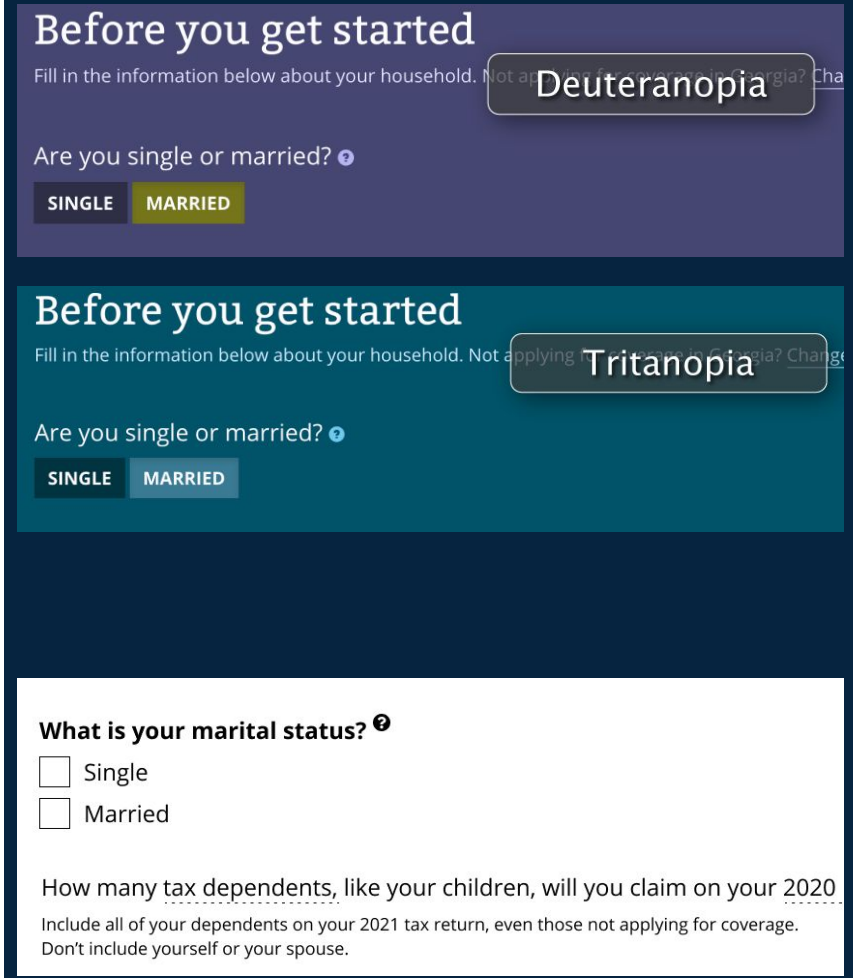
Focus Area #3 - Color Usage and Dependence

Color Insensitivity

- Color insensitivity can make it difficult, or impossible, for some to distinguish hues
- Common vision problems like astigmatism and short/nearsightedness can affect how well people perceive color and contrast
- Almost 15 million people (1 in 12 men, and 1 in 200 women) have some kind of color insensitivity,

Resource: *National Eye Institute on Color Blindness*

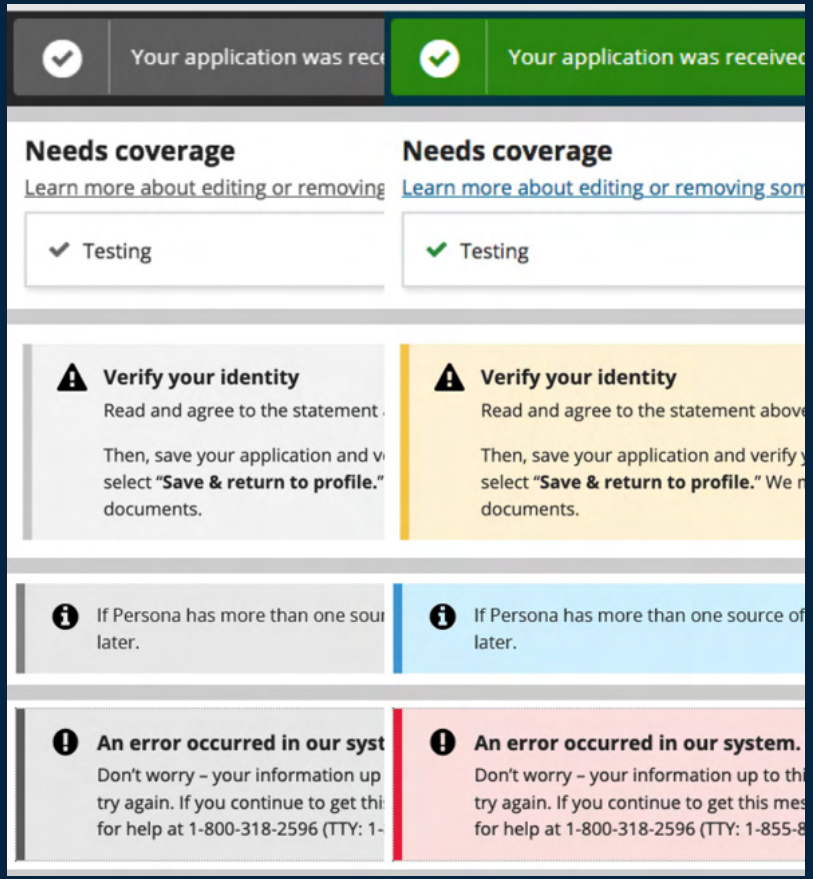
Heuristics: *Consistency and standards / Aesthetic and minimalist design*



Focus Area #3 - Color Usage and Dependence

Color + Icon = Win/Win

- Color is powerful but unreliable; its effects are neither consistent nor predictable across a population
- Readability issues can be vitally important when a website contains documentation or detailed text that requires concentration
- Areas of the application where color is paired with icons can reduce or eliminate color dependence

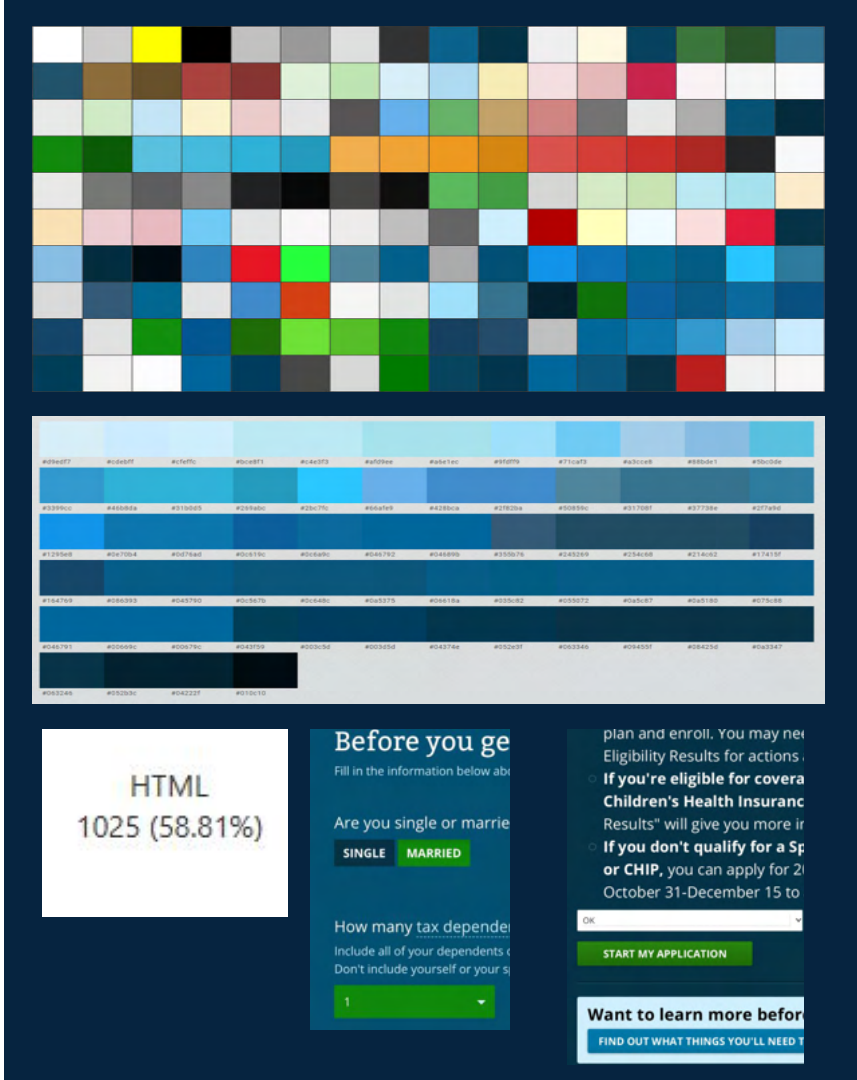


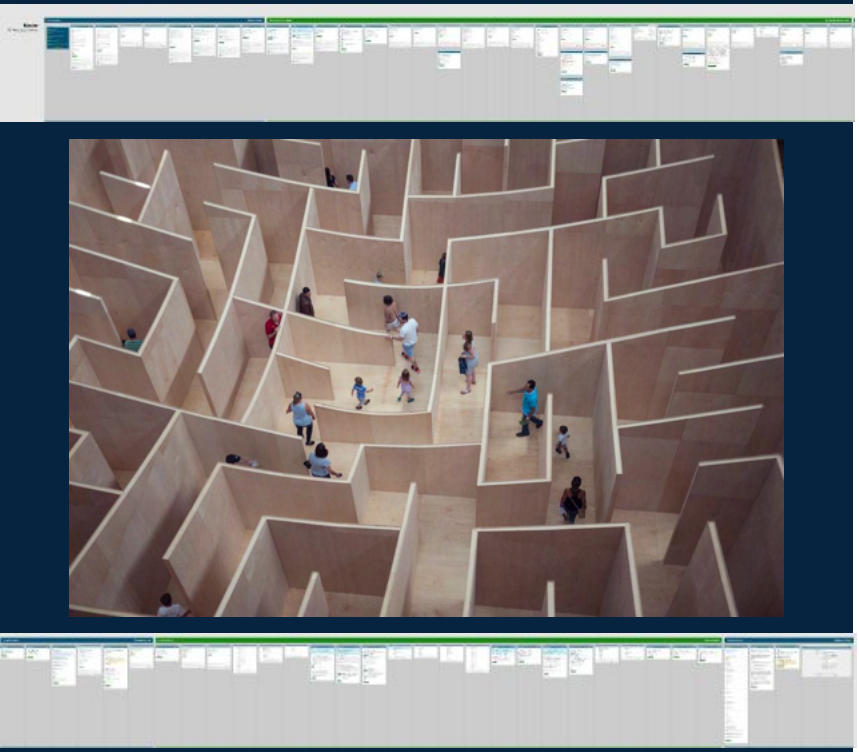
Heuristics: *Consistency and standards / Error prevention / Error recovery*

Focus Area #3 - Color Usage and Dependence

Color Analysis and Breakdown

- **Reduce colors**
  - 160+ colors, 64 of those are "blue", and more than 295 instances of contrast failure
  - Review how, where, and why they are used
- **Decrease risk, liability, and sight bias**
  - Avoiding pure black text on white can help people with Irlen Syndrome, dyslexia, light sensitivity, and autism
  - Best contrast combination: Max color contrast of white/light text on a black/dark background
  - 1,000+ pages of potential risk (508a/ADA)





Focus Area #4

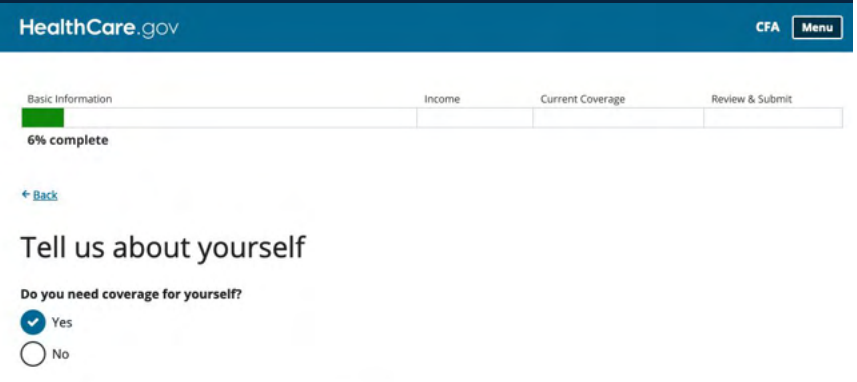
Cognitive Load

Description: The **cognitive load** is the amount of mental resources required to operate the user interface.

Benefits:

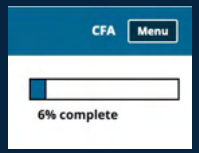
- Reduce applicant overwhelm
- Lower chances of mistakes and misunderstandings
- Faster application completion

Design Idea #1



Design Idea #2

Design Idea #3



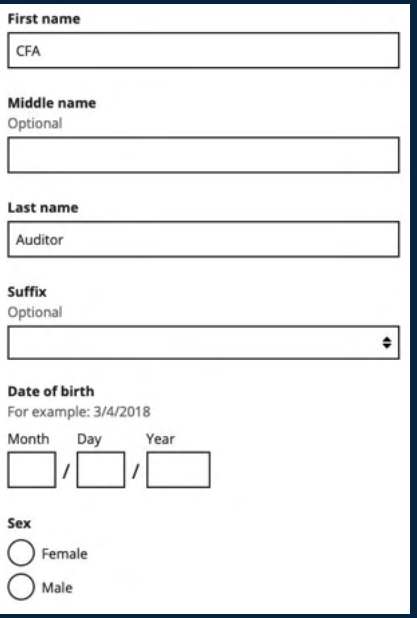
Focus Area #4: Cognitive Load

Progress Bar

- Tells the applicant how far they are, and how much more they have to go
- Splits the application into “stages”

Heuristics: *Visibility of Application Status, Match Between System & Real World*

Current (with optional)



Proposed (with required)

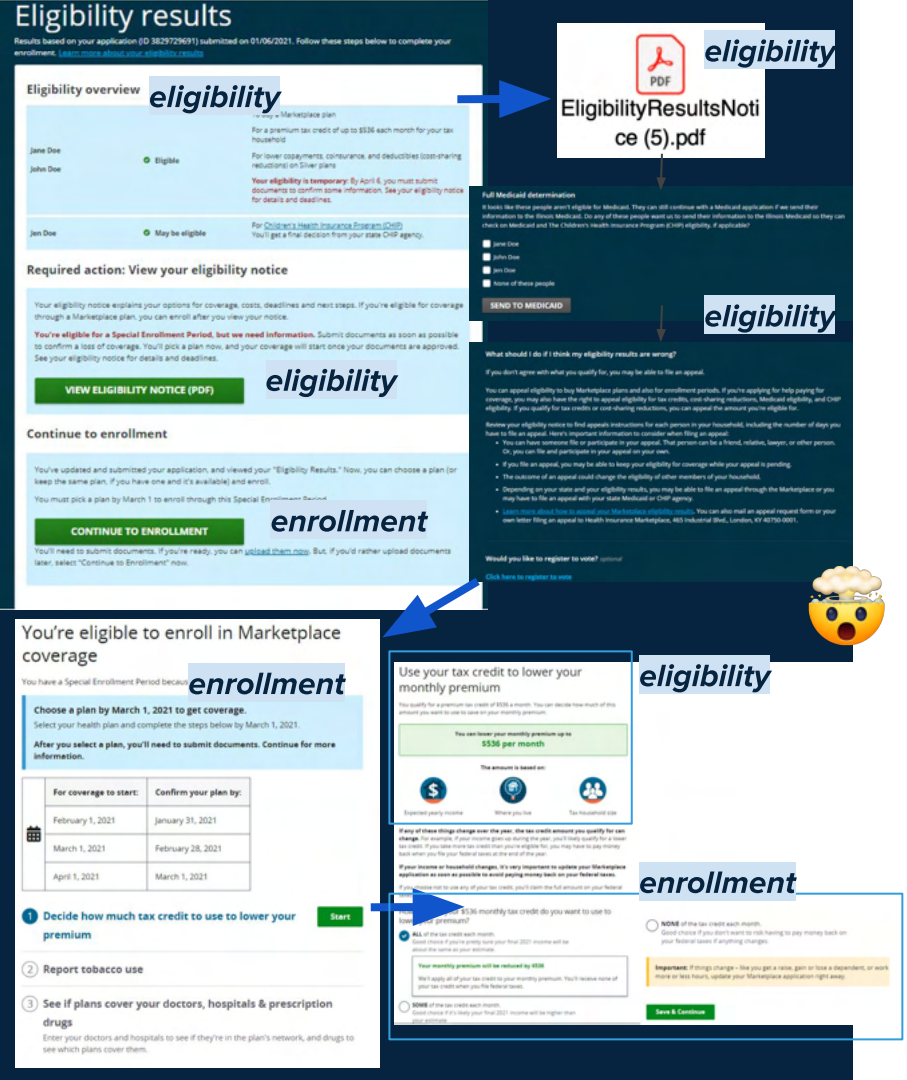
Focus Area #4: Cognitive Load

“Required” Fields

- Marking “required” explicitly makes it less likely the user will make an erroneous form submission
- Screen readers will read “required”

Resource: *Accessibility Guidance on Required Fields*

Heuristics: *Error Prevention, Recognition Rather Than Recall*



Focus Area #4: Cognitive Load

Understanding Eligibility

- A high volume of complex information at once
- Information about eligibility and enrollment are interleaved
- Would benefit to guide the applicant via smaller chunks of information and asking them questions

Heuristics: *Aesthetic and Minimalist Design, Match Between System and the Real World*

Focus Area #4: Cognitive Load

First, guide the applicant through their eligibility.

You and your family are eligible to buy a healthcare plan on the marketplace.

You are also eligible for a premium tax credit. A premium tax credit is...

OR

You are not eligible for a premium tax credit, because _____.

We determined that you are not eligible for Medicaid. **Would you like to send your application to Medicaid anyway to verify?**

Here is a PDF with more details about your eligibility for further reference.

Do you want to challenge your eligibility results?

If so, we'll give you more information about how to challenge the decision.

Your eligibility is temporary.

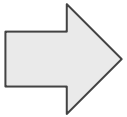
Proceed to enrollment...

Focus Area #4: Cognitive Load

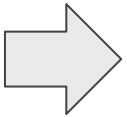
Then, present enrollment.

Now you will enroll.

You must select a plan by this date for your eligibility results to apply for this date of coverage.

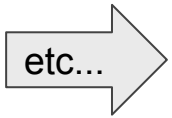


Here is an overview of the next steps for you to enroll in a healthcare plan.



How much of the PTC would you like to apply to your plan cost?

Here is more information about the tax implications about this decision.



Focus Area #5

User Empathy

Description: **User empathy** is the understanding of how a person's experience with a product, service, or process can affect the level of confidence and trust the applicant has towards the larger establishment.

Benefits:

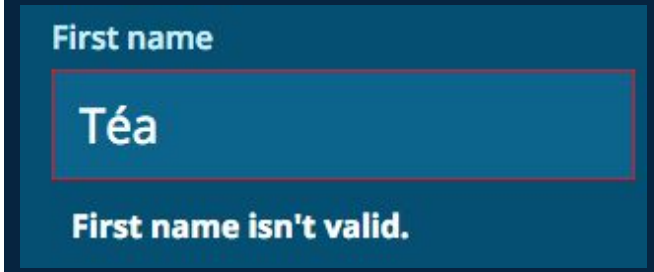
- Elevated faith in authenticity
  - Question tone may entrench applicant’s beliefs of institutionalized discrimination
- Increased credibility of intent
  - Complicated or invasive processes may reduce applicant’s trust in the process
- Enhanced sense of dependability
  - Increased anxiety in an environment limits the applicant’s ability to think and reason

Focus Area #5: User Empathy

Invalidating Language

needs improvement

- Confusing error messages
  - Messages—sometimes no messages—do not help the applicant resolve an error
- Distressing messages and questions
  - Questions that are phrased in a way that implies wrongness or lesser personhood
- Use of language assumes understanding
  - Expectation that the applicant will immediately know complicated or specialized language



Heuristics: *Error Prevention, Match between system and the real world*

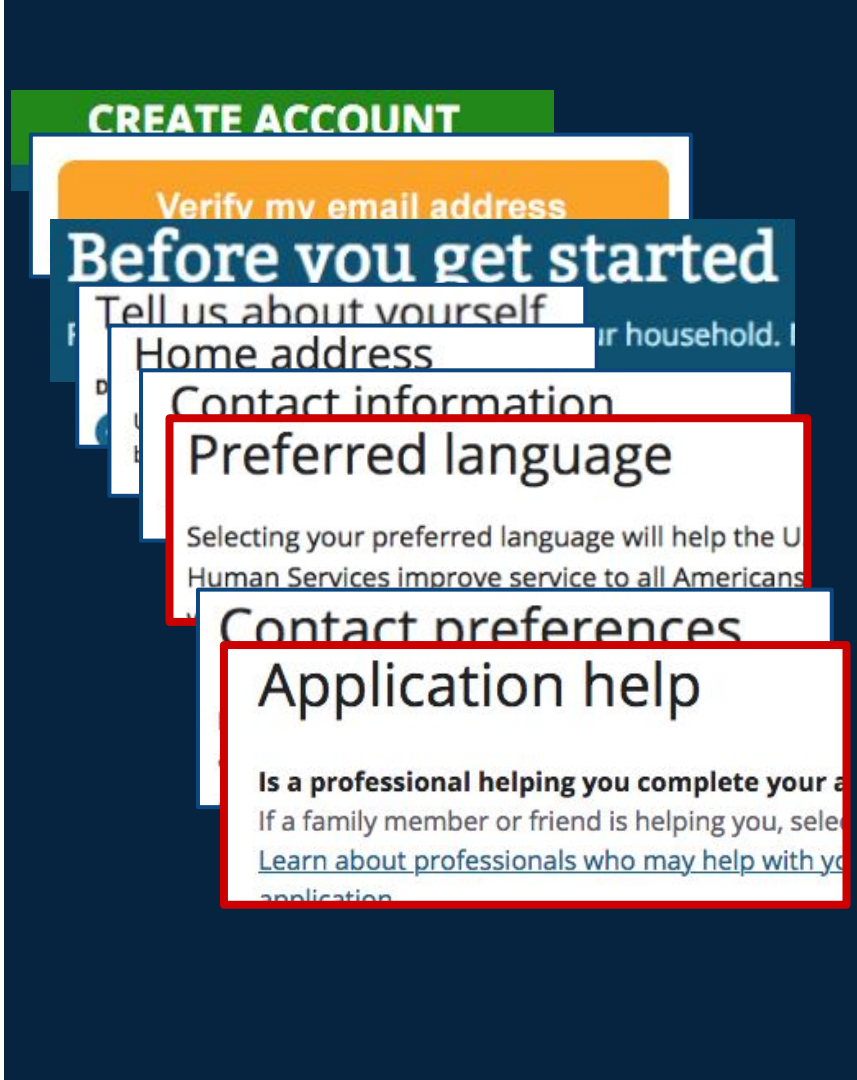
Focus Area: User Empathy

Hidden Resources

needs improvement

- Help offered several screens into coverage application
  - Help should be one of the first things an applicant can ask for
- Preferred language not immediately available
  - Language selection should be clearly visible and available as soon as possible
- Assuming that gender precludes healthcare needs
  - System automatically removes a person from certain healthcare options based sex

Heuristics: *Control and Freedom, Help and Documentation*

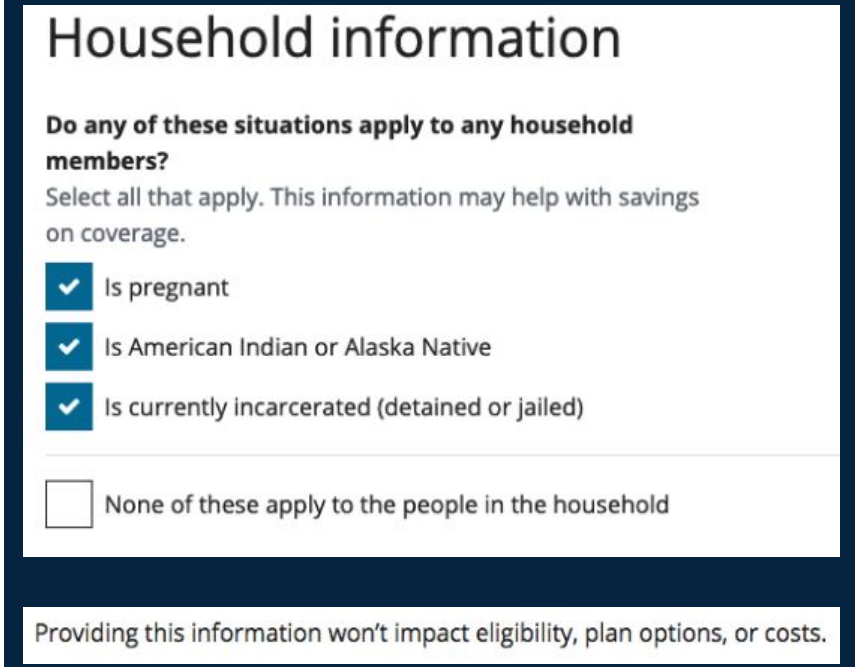


Focus Area #5: User Empathy

Stigmatizing Implications

needs improvement

- Grouping heritage with “negative” conditions
  - Grouping can infer a relationship between options
- Gathering data that will not affect eligibility
  - Minorities experience biases that affect them, even when promised safety
- Impersonal verbiage
  - Many questions ask an applicant about their life circumstances in a way that denies humanity



Heuristics: *Consistency and Standards, Match between system and real world*

Top 5 Recommendations

1. **User Control & Freedom:**
   Allow Applicants to freely navigate throughout the application

2. **Inconsistent UI:**
   All UI elements need to be consistent throughout

3. **Color Usage and Dependence:**
   Reduce colors, review how, where, and why they are used

4. **Cognitive Load:**
   Guide Applicants through eligibility/enrollment

5. **User Empathy:**
   Remove stigmatizing implications about Applicants

THANK YOU!

We will follow up with details

Q&A

Hattie Chau, Evan Suarez, Tatia Wallin, Chris Stevenson, Smai Fullerton

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