Retirement Planning Calculator: Testing and Redesign

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Usability and Design Testing

To implement design and usability testing of the retirement planning calculator, two different users were chosen. These users were then introduced to and told what the software's purpose was. Each user was informed that they could use their own personal financial information or choose to make up some fake data. The users were then left to discover how to use the retirement planning calculator in their own time and were observed. To increase the effectiveness of this observational testing, users with contrasting characteristic profiles were chosen.

User Characteristic s

Here are some short profiles of each user:

User #1 – The first user that I choose was a 22 year old female, college student. She had only basic technical skills and knowledge of computing. Furthermore, User #1 being a younger adult than most had very little knowledge of investment planning and finances. This would give the retirement planning calculator a good review of whether it could be understood easily by less knowledgeable users.

User #2 – The second user that was chosen was a very contrasting, 50 year old male. This user was not a student, but had been employed by a traditional fortune 500 company for the past 25 years. Additionally, User #2 had intermediate technical and computing experience. Since this user had been more advanced in both financial knowledge and computing skills, they would provide for a good measure of how the retirement planning calculator would perform under conditions contrasting to User #1's scenario.

Usability Issues Observed

Throughout user observation and afterward discussion many minor usability and design issues were noted as follows:

> The tool tips were not very helpful for describing fields and both user's struggled keeping them visible long enough to read or make full use of them.
> There was not enough information to describe the contents required for each field.
> Not enough overall description of the retirement planning calculator and what went into figuring out the final values.
> Users did not understand the format in which data should be entered, such as whether to include commas (,) or periods (.).
> Not enough space or organization between differing fields.
> Was not enough output or calculation information such as monthly saving's required.
> Negative numerical results from the calculation confused users.

Design Conclusions

Overall, the original design seemed to be lacking an intuitive understanding of the calculation process. Both users understood that it was going to calculate their retirement needs but little more than that. A lot of this confusion was probably due to the lack of information and explanation provided. Originally, I decided to try to include as few fields as possible to make the process quick and simple. However, without providing proper explanation, this seemed to make users very untrusting of the program. Both users were continuously confused as to include social security information or 401k data, etc. The simplicity of the program seemed to make them think it wasn't getting all the data that was required to calculate an estimation. Therefore rewriting a better description of the program, as well as offering additional information for each field will probably be needed.

Also along these lines, was the fact that the users were not very aware that they could hold their cursor over a field to make a tool tip appear. Furthermore, since these tips would disappear if moved at all, it was not very friendly to the older users like user #2.

Another confusing part of the program for the users seemed to be when and if they would get a negative value for their results. Since the users did not always properly entering in their information, they could actually get a negative value. This made them not know whether the program was broken or whether they had input incorrect information. Some changes will probably have to be made to notify the user of why this is happening.

Furthermore, users often times wanted to naturally include the ".00" or the thousands place comma (,) when inputting numerical data. Since you could only include numeric digits this would crash the problem or cause an error.

One enhancement suggested by User #2 was to offer output based on monthly data rather than just annually, arguing that he found it easier to plan a budget on a monthly basis rather than a yearly one. This sounded like a good idea and should be implemented during the redesign.

Also one problem particularly noticed with User #2 was that the texts for each field was relatively close together and hard to read sometimes. This could easily be fixed by categorizing fields by color and spacing them out better. Furthermore, aligning all the textual data and field data uniformly would probably help people's eyes adapt to the form better.

Redesign Decisions

After revising the notes taken from observing the users and comments from the user's themselves, I came up with the following redesign decisions:

> Better overall explanation at top of window frame talking about how the calculator works, including notes about taxes, inflation, and Social Security.
> Additional information for each field in a more visible format than just tool tips. Such as [?] icons next to each field.

Greater white-space between fields as well as making each row a different color for quick tracing.

Inform the user of what a negative (-) result means.

Replace "Print" button label with more intuitive "Print Results"

Improved input validation messages and dialogues.

Fix input values so that including a comma (,) or cents (.00) is valid.

Added additional calculation that shows savings needed monthly.

Screenshots

Below are a few screenshots that show the before and after changes, as well as different features that were implemented in the retirement planning calculator.

These two screenshots show the original design (left) next to the new redesign (right):

This screenshot shows extra information being displayed after clicking a [?] icon:
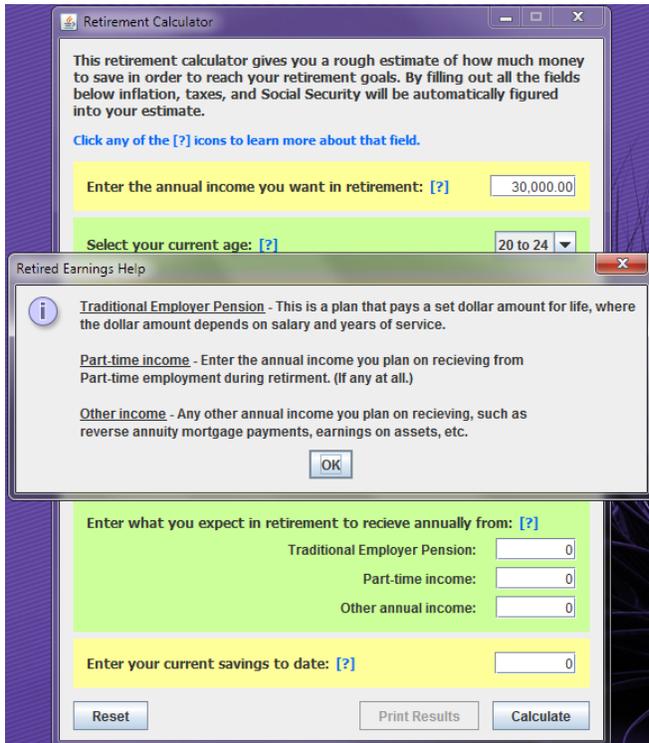
This screenshot shows the dialog after the user has used financial data leading to a negative result:

Retirement Calculator

This retirement calculator gives you a rough estimate of how much money to save in order to reach your retirement goals. By filling out all the fields below inflation, taxes, and Social Security will be automatically figured into your estimate.

Click any of the [?] icons to learn more about that field.

Enter the annual income you want in retirement: [?]   `1000`

Select your current age: [?]   `20 to 24` ▼

Retirement Estimation

(Warning: According to the values you input, you already have enough money for retirement. You may wish to revise your financial data.)

To meet your retirement goals you must save:

Total Savings: $-178535.00
Annual Savings: $-2320.00 / year
Monthly Savings: $-193.00 / month

[OK]

Enter what you expect in retirement to recieve annually from: [?]

Traditional Employer Pension: `100`
Part-time income: `3000`
Other annual income: `0`

Enter your current savings to date: [?]   `1000`

[Reset]   [Print Results]   [Calculate]