

The Price is Your Right: A Design Challenge

Come on Down (Prices)! Design Brief

Please address all the following questions. Each response should not exceed 250 words.

I. Description of your team's objective.

1. **Who is your target audience (e.g. age, gender, individuals with specific conditions) and why did you choose this group?**

The experience focuses on women aged 40-55, for whom timely mammograms are important to ensure any breast cancer warning signs are detected early.

While not the costliest procedure, mammograms are administered frequently (since every woman in the age range should be screened regularly) and have a high percentage of cost variance. The New Hampshire and Massachusetts data sets both recorded a decent sample size of these procedures, which enabled creation of a meaningful experience powered *exclusively utilizing the information provided in the MA and NH data sets.*

Due to the simplicity of the use case, utilization only of provided data, and ≤ 5 UI-screen model, **we could build this application in under two weeks.**

Note: the experience is designed to be generalizable to many other procedures, and integrating payer eligibility would require additional effort.

2. **Are you designing a mobile app or website and why?**

A mobile app, though the design can easily be visualized on a website or other medium for individuals less comfortable with using a small screen. We utilized the small screen as a design challenge, to ensure we prioritized key information rather than overwhelm the user. This decision both increases the challenge in displaying all important context and also ensures tough UX decisions are made before the user opens the app.

3. **In what situations do you think this mobile app or website would come in handy?**

First, what is the app NOT designed to do.

The app is not designed to help a patient select a procedure. My belief is the typical patient – especially for mammograms -- is only performing research about a procedure because she feels it's necessary. The choice of which procedure should be doctor-informed, and this app in its does not provide clinical guidance.

This app would be useful because...

Selecting a doctor can be an overwhelming process. The preferred method of selecting a doctor for family and friends I spoke with is receiving a referral. A referral represents trust in the method of selection, and **this app is designed to build that trust by taking the user along with the system's thought process and letting the user change course at any time.** The hypothesis is that if someone could receive a trusted referral at any given time for a procedure, they would accept it...given a few core constraints which the app (guided by the user) prioritizes such as accessibility, cost, and volume.

II. Description of mobile app or website.

1. What information would a user need to input (if any) to retrieve the data that is of most interest to them?

User inputs include:

- Procedure – this is the anchor of the system
- Location (systematically captured if available, then user simply confirms)
- Prioritization of Decision-Inputs (Quality, Cost, Access)
- User Name (for personalization only)

2. What pieces of information does your mobile app or website provide to help the user decide where/when/to whom to go for care? (e.g. cost per procedure, plus ability to filter data by healthcare provider, insurance provider, plan type, location, consumer ratings, accessibility, quality ratings)

Two Notes:

- 1) *The first step taken in this process was normalization across the MA and NH data sets, so most inputs coalesce distinct fields which represent the same information across the two states.*
- 2) *Since the prerogative is to build a system which can function exclusively from available information, insurance eligibility was largely excluded from this design. A follow-on version would include integration with eligibility systems to enable advanced cost calculations.*

a. List out the data fields that you'd pull in from the MA or NH cost datasets

- Provider_Name
- ServiceCode OR ProcedureCode
- State
- Zip
- CostEstimate OR MED_ALLOW
- NumberServices OR VOLUME_SERVICES_ANNUAL
- ServiceLevel (1,2, and 3) OR ServiceTypeLevel and Descriptions
- *Omitted*
 - o PRICE_PRECISION – *not frequently enough populated, but would like to utilize to add a "Confidence Badge"*
 - o Provider_NPI – *definitely an improved way to match across providers, but opted for a simpler approach to start*

b. List out the data elements that you'd pull in from other data sources. What are some existing sources that you could retrieve this data from?

- Location, from the mobile device / IP address
 1. Also, longitude and latitudes to calculate distance
 - a. Or Google Maps integration
- *Quality ratings of providers, both through in-app capture and integration with existing services such as Health Grades or RateMDs*
- *Historical inputs gathered through the app by the same user*
- *Many others would be valuable, including:*
 1. *Provider Information at Doctor Level (rather than Location)*

2. Provider-to-Insurance Plan Mapping
3. Bundling Information (ex: orthopedic surgery requires follow-on care which incurs cost)

Provider information would need to be sourced from clinical data stores such as analytics services, HIEs / aggregated marts (or EHRs if available for partnerships). Payer information would be gathered from insurance companies, though their incentives to provide that information are limited, so perhaps CMS or other deidentified / aggregated data sets could provide meaningful cost and benchmarking information.

Rather than aggregating large data sets, gathering relevant information on demand via API endpoints – such as the BCBS In-Network lookup – would be meaningful and performant ways to access information in real-time without making large-scale requests of companies or having to worry about whether the information provided is out-of-date.

3. How does this data enable users to be better healthcare consumers?

Rather than incrementally assist people who go to the doctor regularly, the primary intent of this application is to get people who have fallen out of the healthcare system into the doctor's office. It can also assist active patients who know the procedure they need to quickly understand if the cost they're being told is reasonable or not.

4. Why do you think your design would appeal to your target audience?

There are three common designs in healthcare today:

1. Populate and analyze everything yourself
That approach requires meaningful effort and time from the user, which leads to high rates of abandonment. Abandonment frequently leads to users who would have utilized the healthcare system remaining on their couches...which in turn leads to unidentified risk factors materializing into debilitating and costly health problems.
2. Populate everything yourself then let the system analyze for you
That approach requires much less effort and time from the user, but in turn loses trust. Many users complete the flow but then go elsewhere to get second and third opinions...which results in higher overall effort and time from the user to get a confusing combination of results.
3. Populate *only-what's-missing-to-make-the-decision*, then review the pre-built analysis
This design is focused on solving a specific problem for the user – which doctor is best for the given procedure. By reducing the number of problems we're trying to solve, we can greatly simplify the process by anchoring on the procedure code.

Building trust is key, which is why:

- *The user prioritizes the variables used for analysis*
- *The user can see why the system chose a certain provider*
- *Contextualized benchmarks and informational links are available throughout the guided flow*

5. How would you make the language and design accessible to people with different levels of health and numerical literacy?

Accessibility is always a challenge. The first step would be to broaden the channels through which a user can interact with the system – meaning extend from the mobile app to a website to a web form to a call IVR – that way people who would miss it because they're not visual-learners or computer savvy can still participate. Second: simplicity of language and context – no acronyms and no formal verbiage without a clear explanation, and different language and context based on the channel through which the user accesses the system. Third: ghosting, iconography, and other design principles which help the user understand what the system is asking of them as well as what any action they take will perform. The app could also be available in multiple languages.

III. Description of what's needed to bring your design to life.

1. How would you keep the information in your mobile app or website up-to-date?

By integrating with external APIs, we could retrieve timely data required in real-time. For more challenging data sets to integrate, we could update the information on a designated schedule (ex: prior year statistics would only need to be updated annually).

2. What are the challenges of providing this information via a mobile app or website? What are some limitations associated with using your selected platform to deliver this information?

In general, different people utilize different channels (call, email, web, mobile, etc.) and it's important to meet them where they are. In addition, the beauty of a well-designed system is equally behind-the-scenes in performing real-time context gathering (via backend APIs) and decision-making in a configurable and scalable way.

Please see question #5 above for additional thoughts.

IV. Description of your marketing strategy.

1. How would you promote your mobile app or website? Discuss some strategies that may be well-suited to your target audience. Please cite sources where appropriate.

Many avenues exist – on a macro-level we could partner with a high-volume health system and market to key interaction points with their user base. Those could include scheduling conversations, patient portal log-ins, and old-fashioned in-office recommendations. This app is ideal for offices attempting to grow their patient base, as they can advertise their procedures and providers and see how their own cost ranks against those around them. Insurance companies would also be highly invested in advertising this application to patients as they want to encourage preventative services to reduce costs long term for patients in their network.

In our team's opinion, promotion is most effective when it can be tested and tweaked frequently and easily. In pursuit of that end, we would start with micro-promotions specific to 40-55 y/o women for whom a future procedure has already been selected (they need a mammogram OR a risk algorithm identifies risk factors for which a mammogram is important part of risk mitigation). Since the procedure anchors the system, with only a location as input (if administered physically, could do it with 0 inputs) the system can make an informed recommendation to the prospective patient and that happy group of superusers can drive adoption and lead us to the next meaningful use case and associated user base to market to.