Driving population health initiatives with Midwest Health Collaborative’s user-driven design process for visualization

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Creative Director, Analytics
Agenda

About MHC + Front Health

How we deliver analytics products to our clients with Tableau

How we design analytics products for our clients

Our analytics products

  Total Cost of Care Analytics

  Quality and Risk Adjustment Analytics

  Care Management Suite

The results of using Tableau for our products, and our next steps
About MHC + Front Health
In a value-based world, individual systems...

- Lack **sufficient network adequacy** to entertain meaningful employer contracts
- Have **limited ability to share and discuss** clinical program best practices
- Lack **scale to garner attention** of payers to obtain most-innovative value-based contracts
- Have **low attributed membership** to distribute risk across providers
- Lack **cost prohibitive tools and resources** to manage risk contracts
- See **competitor systems increasingly collaborate**

Lack sufficient network adequacy to entertain meaningful employer contracts

Have limited ability to share and discuss clinical program best practices

Lack scale to garner attention of payers to obtain most-innovative value-based contracts

Have low attributed membership to distribute risk across providers

Lack cost prohibitive tools and resources to manage risk contracts

See competitor systems increasingly collaborate
A collective and impactful force for change

- Founded in 2015, Midwest Health Collaborative is a consortia of five health systems, providers, and clinically integrated organizations
- MHC is dedicated to delivering exceptional clinical outcomes and increased satisfaction at lower costs
- Front Health was born out of MHC to offer analytics and clinical transformation services to external clients

1. Nearly 1 million covered lives in risk-based contracts
2. 7 of the top 10 U.S. News Best Hospitals in Ohio (2016)
3. Approximately 17,000 multi-specialty providers
4. More than 1,900 sites of care
5. More than 45 regional hospitals
Analytics is a critical dimension for success

Network
MHC will have a high performing network that meets the needs of the populations we serve

Go to Market
MHC will offer distinctive products and services that are demanded by employers, payers, and members

Data & analytics
Front Health delivers the right resources to the right people to enable decision-making that improves the quality of patient care, and provide visualization design education

Clinical
Front Health improves the health of managed populations at a lower cost through a consistent approach to care, pairing clinical expertise with data-driven insights
How we deliver analytics to our clients with Tableau
Before: a tangled, manual, expensive web

Data manipulation and analysis performed manually in Excel, and delivered to clients in manually created PowerPoint files
After: our embedded Tableau framework

Numerous users across all our clients can access user-friendly analytics anytime
Our analytics are accessed through Okta.
Our analytics are accessed through Okta.
Our analytics are accessed through Okta.
Our analytics are accessed through Okta.
How we design analytics products for our clients
Question:

Have you ever diligently gathered and built to stakeholder requirements, only to end up with low user adoption?
“If I had asked people what they wanted, they would have said a faster horse.”

~ Henry Ford, maybe?
Problems resulting in low user adoption:

Existing products in the value-based space…

- fail to combine the data necessary for decision making (i.e., clinical and claims)
- consist of disparate dashboards that lack coherent navigation
- don’t fit user workflows
- hinder analytics with clunky interfaces and user-agnostic application of visualization best practices
Problems resulting in low user adoption:

Existing products…

are built by data people with a focus on data and technology.
Our charge: “class of our own” visualization

Our goals are to…

• provide comprehensive longitudinal patient records, with all data necessary to make decisions

• design a coherent visualization ecosystem

• streamline analytics into user workflows

• Enhance analytics through intuitive interfaces
How do we get there?

We design with the users, combining their business expertise with our data expertise.
Our user-driven design philosophy
Our user-driven design philosophy

Understand
Our user-driven design philosophy

Ideate
Our user-driven design philosophy

Understand

Ideate
Understanding the users

A library of user personas will help you understand your users.

- social research
- artifact analysis
- interviews
## TYPICAL DAY

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730</td>
<td>BOD: Socializing</td>
</tr>
<tr>
<td>0745</td>
<td>Staff huddle: patients, acute complaints</td>
</tr>
<tr>
<td>0800</td>
<td>Patient appointments</td>
</tr>
<tr>
<td>1200</td>
<td>Lunch, messaging, patient records</td>
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<tr>
<td>1300</td>
<td>Patient appointments / ~2 days per week for</td>
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<tr>
<td></td>
<td>administrative duties, including committee</td>
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<tr>
<td></td>
<td>meetings, etc.</td>
</tr>
<tr>
<td>1700</td>
<td>EOD: Messaging, patient records. Continue</td>
</tr>
<tr>
<td></td>
<td>work as necessary into evening</td>
</tr>
</tbody>
</table>

## GOALS
- Quality care
- Patient relationships
- Business performance
- Work/life balance + social/financial security

## OBSTACLES
- Administrative overhead
- Reimbursement + industry complexity
- Production drive (fee-for-service)
- Delegating with confidence

## STATISTICS
- Epidemiological / clinical metrics
- Central tendency + hypothesis testing

## COMMON VISUALIZATIONS
- Textual presentation / tables using markers to identify significance
- Interaction + main effect charts
**Director of Medical Economics / [executive, strategist]**

Name: Lisa Gao  
Age: 42  
Family: Married, 1 child  
Title: Vice President, Value-based Care

**TEAMS**  
- Administrators  
- Other analysts  
- Providers  
- Consultants

**GOALS**  
- Population cost reduction  
- Competitive product designs  
- Successful team leadership

**EDUCATION**  
- Bachelor of Science, Economics, 1994 - 1998  

**RELEVANT CAREER POSITIONS**  
- Consumer Health Analytics Manager, 2005 - 2008  
- Director of Medical Economics, 2008 - 2011  
- Senior Director, 2011 - 2014  
- Vice President, Value-based Care, 2014 - present

**OBSTACLES**  
- Bureaucratic structure  
- Lack of information for decision making  
- Competing priorities and loaded schedules  
- Competing goals and cannibalization

**TECHNOLOGIES**  
- Software: Office suite, Excel, business dashboards  
- Hardware: Laptop, mobile

**STATISTICS**  
- Central tendency  
- Hypothesis testing + confidence intervals  
- Regression output  
- Basic probability + expected utility

**COMMON VISUALIZATIONS**  
- Textual presentation / tables using markers to identify significance, w/ conditional formatting  
- Trend lines

**TYPICAL DAY**

- 0845: BOD: Emails, daily planning  
- 0900: Meetings, with periodic moments to catch up on emails. Lunch between or during meetings. 25% travel, so may spend time in car / plane.  
- 0915: Lunch, messaging  
- 1200: Lunch  
- 1230:  
- 1700: EOD: Answer urgent messages. Continue work as necessary into evening
Understanding the decision-making process

Making a decision map will help you understand how users use information to make decisions.

- **define the action space**: what are all the possible actions users can do to accomplish their goals?

- Identify the key questions users ask to determine which action(s) to take and how to execute these actions

- *Don’t just ask users what they want to see!*
Ideating a solution

The users participate in our design process.

• Whiteboard wireframe ideas *with* the user (best when they have a marker!)

• We provide design ideas to “nudge” them toward best practices, but we actively seek out their own design ideas

• Teach the users how they can use different/new charts for decision making, and the trade-offs of using different charts
We provide multiple opportunities for feedback before “finalizing” a design.

- Review low fidelity mockups (static, stylized, often in PowerPoint)
- Review high-fidelity mockups (dynamic, interactive, in Tableau)
- By this point, the users have often learned enough to provide recommendations in line with best practices!
Our analytics product
Total Cost of Care
Use case: System Performance Dashboard

Use case

- How is our PMPM trending?
- What’s driving this trend?
- What are our areas of waste?

Impact

- Automating these analytics in Tableau has saved over $96,000 in resource and contractor costs
- Executives can quickly identify opportunities and strategize interventions in areas of high spend or increasing spend
Quality and Risk Adjustment
Use case: Quality and Risk Adjustment

Use case

• How am I performing against quality goals across all my contracts?
• What patients should I target for outreach to address gaps in quality and documentation?

Impact

• Automating this process in Tableau saves $12,000 per patient list in resource costs, with a combined potential savings of $576,000 per year
• Practice coordinators can perform targeted patient outreach to maximize quality performance across contracts
Care Management
Use case: Care Management Scorecard

**Use case**
- How can I intervene in high cost patient spending?
- How is my care management program performing?

**Impact**
- Automating this in Tableau saves $75,000 per year
- Supervisors are able to assess and make structural changes to improve program performance
Use case: Pre-Post Impact Tracker

**Use case**
- What impact is my care management program having on patients?
- Is this a true impact, or is it confounded by other variables?

**Impact**
- Automating this in Tableau saves $32,000 per year
- Executives and supervisors are able to target care management where specifics impacts are needed
Use case: Matched Impact Tracker

**Use case**

- How does the impact of my care managed patients compare to matched control groups?
- Is this a true difference, or is it confounded by different variables?

**Impact**

- Automating this in Tableau saves $32,000 per year
- Executives and supervisors are able to consider the results of expanding the results of the care management program
The results of using Tableau for our analytics, and next steps
Key lessons: what we did to get here

- Moving from manual, static deliverables to dynamic Tableau dashboards for on-demand, automated insights
- Developing strong analytics products requires more than the blind application of visualization best practices
- Understanding the users and their decision-making processes ensures the data are actionable
- Ideating with the users combines data and visualization expertise with the users’ subject matter expertise
Measurable benefits from visual analytics + our process

- Our static, manual analytics supported initiatives that **decreased the PMPM spend trend from 5% to 2%** - imagine what we can do with interactive analytics that are always available?

- Automating our analytics in Tableau has saved us $886,000 per year

- We’ve generated demand and gained strong political capital for deeper engagements with our members and increased access to end users

- One user literally **danced** when she got to play with the dashboard for the first time
New products to support our clinical and system performance improvement initiatives:

- Physician scorecards
- Pharmacy spend dashboards
- Specific condition quality + spend dashboards
- Bundle performance dashboards (i.e. Maternity)

We will also be further integrating predictive analytics into our dashboards, starting with spend forecasting

In 2019, we plan to embed our Tableau dashboards into a custom Front Health website
Thank you!

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