Dashbirth

UI MANUAL

Data Shack 2024

Harvard-Politecnico di Milano Joint Program on Data Science

Introduction

This handbook encapsulates all the work done during the Data Shack project, a joint program between Politecnico di Milano and Harvard University, between January and June 2024 for Ariadne Labs' Team Birth research group. In particular, the information in this guide shows all the work and user centered design process to better understand the UI and user flow of Dashbirth. This manual serves as a supplement to the partial code provided to TeamBirth that consists of a fully functional section of Dashbirth. The rest of Dashbirth will be presented in prototype form but analyzed in equal detail. The goal of this manual is to make a possible full development of Dashbirth by TeamBirth easier, presenting all the work that has been done so that it can be exploited by those in charge in the future. In addition to the user side, which will remain the focus of this guide, additional information related to Dashbirth will also be presented, thus trying to give as complete a picture as possible of the developed interface.

About Ariadne Labs

Ariadne Labs is a joint center for health systems innovation at Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health.

About TeamBirth

The implementation of TeamBirth in pilot trial hospitals proved acceptable, feasible, and safe for both patients and clinicians. TeamBirth is establishing a new industry standard for safe and dignified childbirth while offering the ne- cessary tools for its implementation. By the end of 2023, TeamBirth is expected to have affected around 500,000 lives.

INDEX

1. Dashbirth

1.1 Description 05

2. Brand Guidelines

2.1 Naming, logo & logotype 07

2.2 Color palette 10

2.3 Tipography 12

3. User Flow

3.1 About the survey 14

3.2 Structure 16

3.3 Personas 19

3.4 User Journey 20

4. User Interface

4.1 Introduction 24

4.2 Elements 27

4.3 Pages 29

4.4 About the code 42

DASHBIRTH

Description

Dashbirth is a web interface to be used for data analysis on surveys from the TeamBirth project. It is able to be run locally and can then be deployed on a server, possibly extending the scope to include different credentials for different hospitals to see their data online. These are its function:

- Automatically detect correctly formatted files containing the questionnaires from an online cloud (details to be defined with TB)
- Automatically perform censoring of open feedback questions, in particular removing references to people's names, numbers (e.g. number of days spent in the hospital) and rare conditions that could help re-identify the patient
- Automatically pre-process the dataset to group answers to demographic questions (e.g. age, ethnicity, education, insurance type) under "other" if they represent too small of a group and could be re-identified
- Generate simple visualizations (e.g. barplots) from multiple choice questions
  - Barplot visualizing the total number of answers of each type for every question
    - Break down the total number of answers by age, ethnicity, education, insurance type or participation in the program
    - Trend of answers by month
    - Filter answers by age, ethnicity, education, insurance type or participation in the program
  - Compare all-time answers of different questions in the same section of the survey
- Generate simple analysis of open feedback
  - Allow the user to search for a specific keyword in the open feedbacks
  - Compute the most used keywords in the open feedbacks
- Use a chatbot for new insights within the data and facilitate the TeamBirth data analysis process through the discovery of new leads provided by the chatbot.

BRAND GUIDELINES

Naming, logo & logotype

The term *Dashbirth* combines the words *dashboard* and *TeamBirth*, clearly highlighting the product and target audience. Indeed, the designed interface begins with a dashboard that provides a visual overview of the most relevant information about the questionnaires conducted by Teambirth, usually in the form of charts, numbers, or key metrics. It is designed to allow users to quickly and easily monitor performance, trends, or other important data.

The logotype echoes orange, TeamBirth's main color, but seeks to detach itself and make itself a new element in its own right through the predominance of other colors and new typography. Orange becomes the first element displayed in the logotype through the square, an element typically used to define specific sections or areas dedicated to different categories of data, including in particular dashboards. In the logotype and the logo, the orange square determines distances and sizes.

TEAMBIRTH

TeamBirth logo

Dashbirth

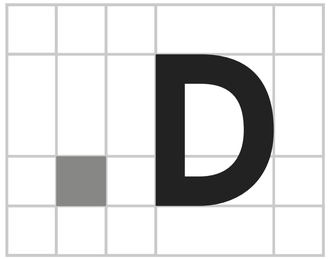
Dashbirth logotype

D

Dashbirth logo

Naming, logo & logotype

Logotype construction grid



Logo construction grid

Naming, logo & logotype

Examples of logo and logotype usage

Color palette

As mentioned before, the first color chosen for the palette is orange derived from the TeamBirth logo, but kept only as a secondary, detail color. The new palette primarily uses a scale of blue, a calm and serene color typically associated with the healthcare and medical fields, which seeks to facilitate the reading of data within the dashboard. The primary blue is the one present in the logotype, which is also used for most of the text present, due to its excellent legibility. The secondary blue is used for the graphs, along with the third blue, which is used to show the data in the minority. Other more complex graphs use different color scales, which will be analyzed on the next page. A light gray is used for the background color, which helps to lighten the view.

Primary color
#01224D
R: 1
G: 34
B: 77

Secondary color
#B6D2D0
R: 182
G: 210
B: 108

Tertiary color
#4E7286
R: 78
G: 114
B: 134

Details color
#FF6C00
R: 255
G: 108
B: 0

Background color
#F3F3F3
R: 243
G: 243
B: 243

Color palette

The most complex charts that are present in the various sections of Dashbirth are stacked area charts and stacked bar charts. These two views use different palettes, depending on the information they represent. The first type of palette represents two views at opposite poles and therefore uses two different colors. The second type of palette represents a distribution of categories, as in the case of demographic section, e.g., the age range question. In both cases, the option "Prefer not to answer" is always provided and is represented in white.

Palette for question
with two poles/opinions

Palette for question
with a scale/categories

Tipography

There are two fonts used for Dashbirth: the first is Interstate, the main typography, used for all text, buttons in the interface, and in chart legends. The second is Roc Grotesk, used mainly to represent numbers in the dashboard and in charts in general. A second use of Roc Grotesk is to indicate the hospital in the Home and Chatbot section.

Interstate Light
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789

Interstate Bold
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789

Interstate Regular
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789

Roc Grotesk Regular
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789

USER FLOW

About the survey

Before delving into the User Flow part, it is important to understand the structure of the questionnaires, which was followed to organize the various sections of the site. The questionnaire has 5 main sections: Preferences, Trust & Decision Making, TeamBirth Experience, Demographics, and lastly Open Feedback. The first four sections are multiple-choice questions, while the last is a single open-ended question. The first three sections have one question that encapsulates several issues with the same possible answers. These issues can be compared with each other since they belong to the same question and will be represented in the overview section, as will be seen later on. Sections with multiple choice questions will follow a similar structure and interface with each other while open feedback will have a dedicated section.

PREFERENCES

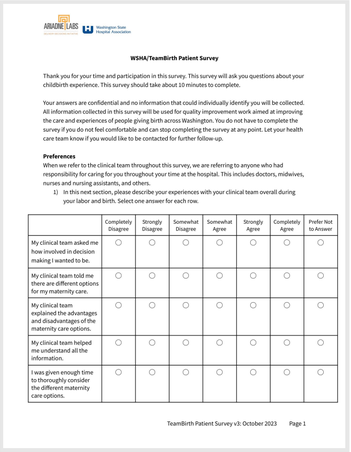
T&D MAKING

TB EXPERIENCE

DEMOGRAPHICS

OPEN FEEDBACK

About the survey



WSHA/TeamBirth Patient Survey

Thank you for your time and participation in this survey. This survey will ask you questions about your childbirth experience. This survey should take about 10 minutes to complete.

Your answers are confidential and no information that could individually identify you will be collected. All information collected in this survey will be used for quality improvement work aimed at improving the care and experiences of people giving birth across Washington. You do not have to complete the survey if you do not feel comfortable and can stop completing the survey at any point. Let your health care team know if you would like to be contacted for further follow-up.

Preferences

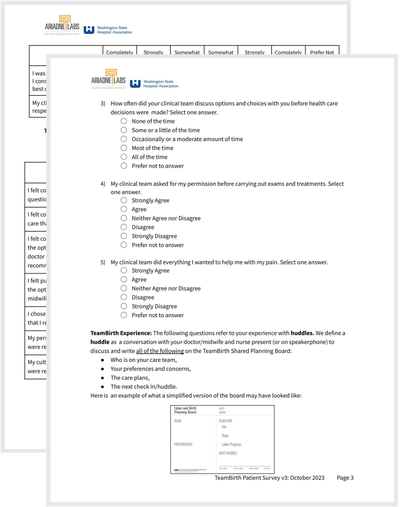
When we refer to the clinical team throughout this survey, we are referring to anyone who had responsibility for caring for you throughout your time at the hospital. This includes doctors, midwives, nurses and nursing assistants, and others.

1) In this next section, please describe your experiences with your clinical team overall during your labor and birth. Select one answer for each row.

	Completely Disagree	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Completely Agree	Prefer Not to Answer
My clinical team asked me how involved in decision making I wanted to be.	○	○	○	○	○	○	○
My clinical team told me there are different options for my maternity care.	○	○	○	○	○	○	○
My clinical team explained the advantages and disadvantages of the maternity care options.	○	○	○	○	○	○	○
My clinical team helped me understand all the information.	○	○	○	○	○	○	○
I was given enough time to thoroughly consider the different maternity care options.	○	○	○	○	○	○	○

TeamBirth Patient Survey v3: October 2023 Page 1

PREFERENCES



3) How often did your clinical team discuss options and choices with you before health care decisions were made? Select one answer.
- ○ None of the time
- ○ Some or a little of the time
- ○ Occasionally or a moderate amount of time
- ○ Most of the time
- ○ All of the time
- ○ Prefer not to answer

4) My clinical team asked for my permission before carrying out exams and treatments. Select one answer.
- ○ Strongly Agree
- ○ Agree
- ○ Neither Agree nor Disagree
- ○ Disagree
- ○ Strongly Disagree
- ○ Prefer not to answer

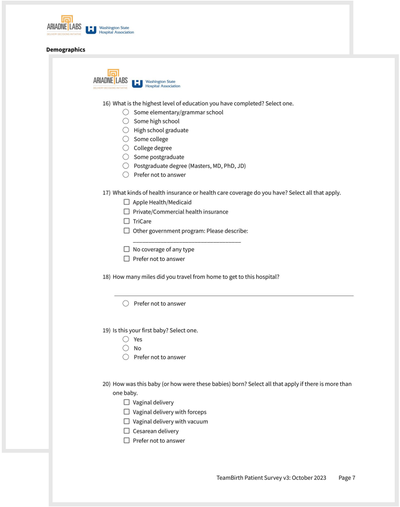
5) My clinical team did everything I wanted to help me with my pain. Select one answer.
- ○ Strongly Agree
- ○ Agree
- ○ Neither Agree nor Disagree
- ○ Disagree
- ○ Strongly Disagree
- ○ Prefer not to answer

TeamBirth Experience: The following questions refer to your experience with **huddles.** We define a **huddle** as: a conversation with your doctor/midwife and nurse present (or on speakerphone) to discuss and write all of the following on the TeamBirth Shared Planning Board:
- Who is on your care team,
- Your preferences and concerns,
- The care plans,
- The next check in/huddle.

Here is an example of what a simplified version of the board may have looked like:

TeamBirth Patient Survey v3: October 2023 Page 3

T&D MAKING



Demographics

16) What is the highest level of education you have completed? Select one.
- ○ Some elementary/grammar school
- ○ Some high school
- ○ High school graduate
- ○ Some college
- ○ College degree
- ○ Some postgraduate
- ○ Postgraduate degree (Masters, MD, PhD, JD)
- ○ Prefer not to answer

17) What kinds of health insurance or health care coverage do you have? Select all that apply.
- ☐ Apple Health,Medicaid
- ☐ Private/Commercial health insurance
- ☐ TriCare
- ☐ Other government program: Please describe:
- ☐ No coverage of any type
- ☐ Prefer not to answer

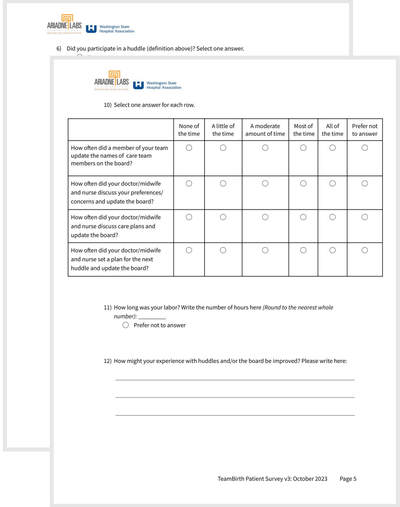
18) How many miles did you travel from home to get to this hospital?
- ○ Prefer not to answer

19) Is this your first baby? Select one.
- ○ Yes
- ○ No
- ○ Prefer not to answer

20) How was this baby (or how were these babies) born? Select all that apply if there is more than one baby.
- ☐ Vaginal delivery
- ☐ Vaginal delivery with forceps
- ☐ Vaginal delivery with vacuum
- ☐ Cesarean delivery
- ☐ Prefer not to answer

TeamBirth Patient Survey v3: October 2023 Page 7

TB EXPERIENCE



6) Did you participate in a huddle (definition above)? Select one answer.

10) Select one answer for each row.

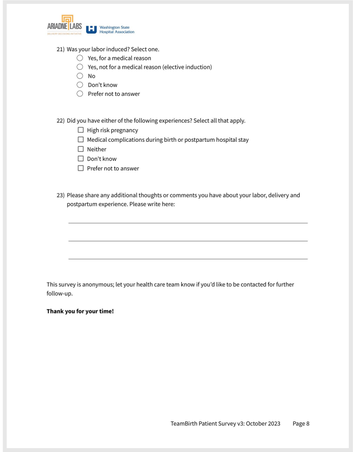
	None of the time	A little of the time	A moderate amount of time	Most of the time	All of the time	Prefer not to answer
How often did a member of your team update the names of care team members on the board?	○	○	○	○	○	○
How often did your doctor/midwife and nurse discuss your preferences/ concerns and update the board?	○	○	○	○	○	○
How often did your doctor/midwife and nurse discuss care plans and update the board?	○	○	○	○	○	○
How often did your doctor/midwife and nurse set a plan for the next huddle and update the board?	○	○	○	○	○	○

11) How long was your labor? Write the number of hours here *(Round to the nearest whole number)*: _____
- ○ Prefer not to answer

12) How might your experience with huddles and/or the board be improved? Please write here:

TeamBirth Patient Survey v3: October 2023 Page 5

DEMOGRAPHICS



21) Was your labor induced? Select one.
- ○ Yes, for a medical reason
- ○ Yes, not for a medical reason (elective induction)
- ○ No
- ○ Don't know
- ○ Prefer not to answer

22) Did you have either of the following experiences? Select all that apply.
- ☐ High risk pregnancy
- ☐ Medical complications during birth or postpartum hospital stay
- ☐ Neither
- ☐ Don't know
- ☐ Prefer not to answer

23) Please share any additional thoughts or comments you have about your labor, delivery and postpartum experience. Please write here:

This survey is anonymous; let your health care team know if you'd like to be contacted for further follow-up.

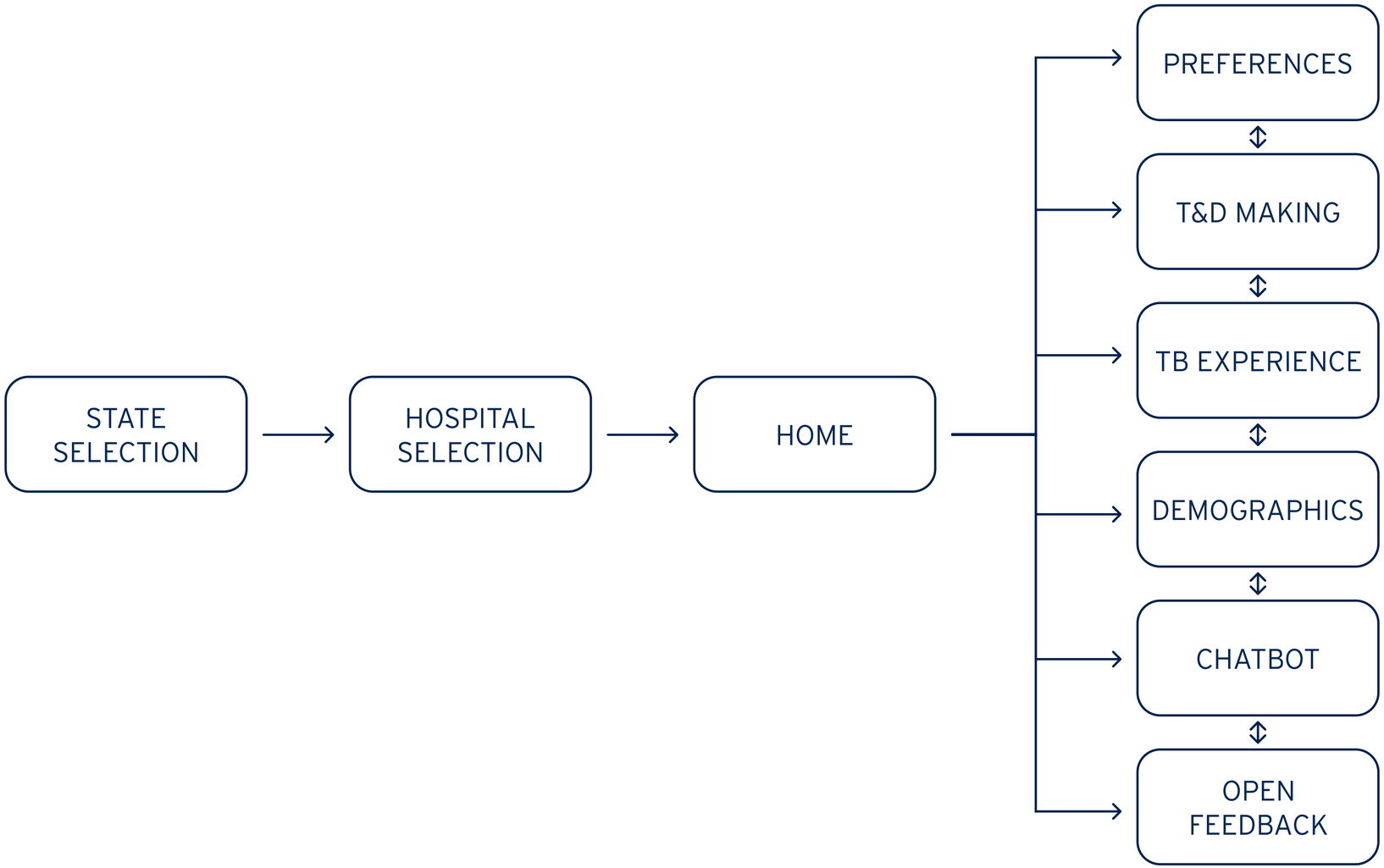
Thank you for your time!

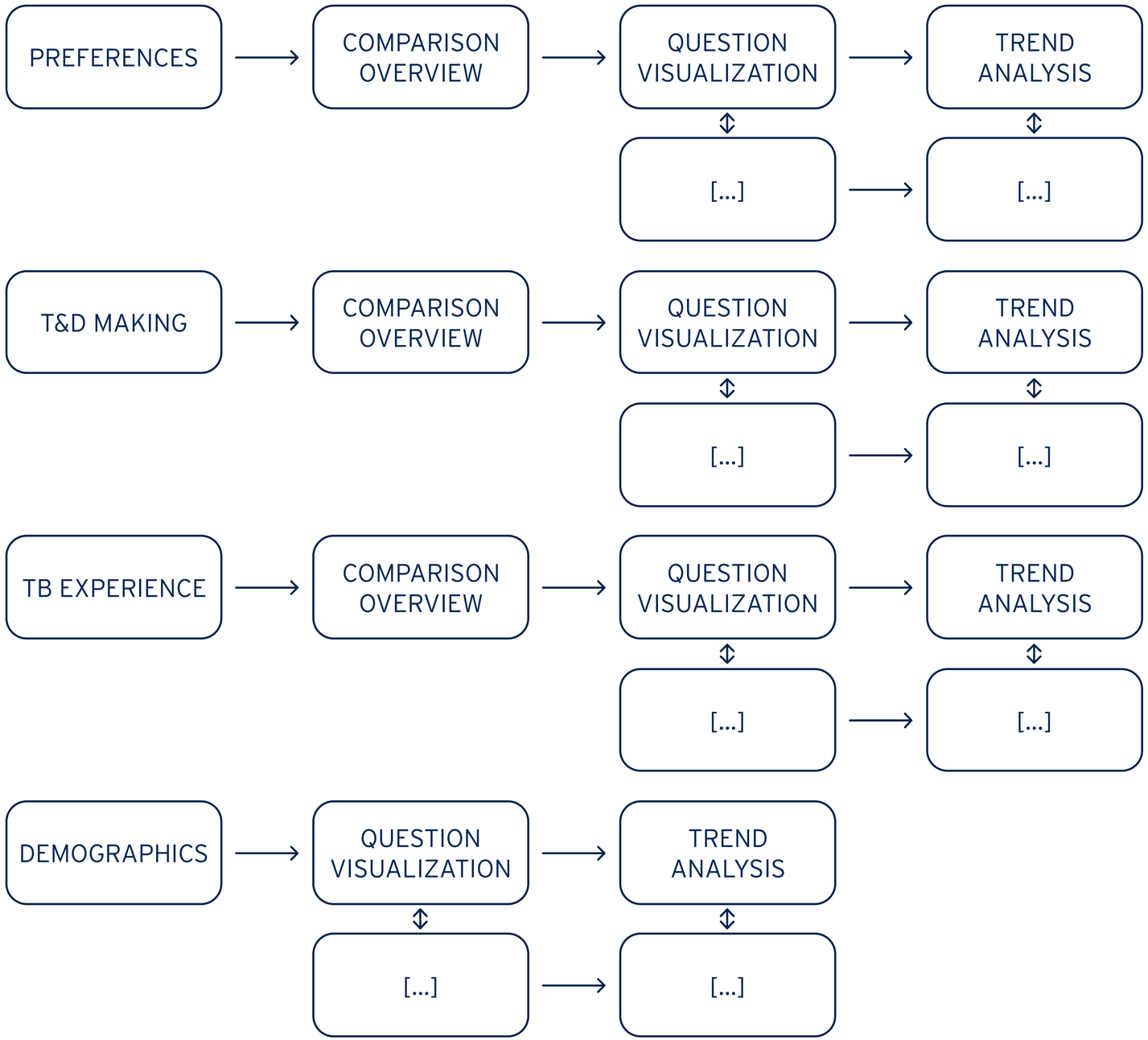
TeamBirth Patient Survey v3: October 2023 Page 8

OPEN FEEDBACK

Structure

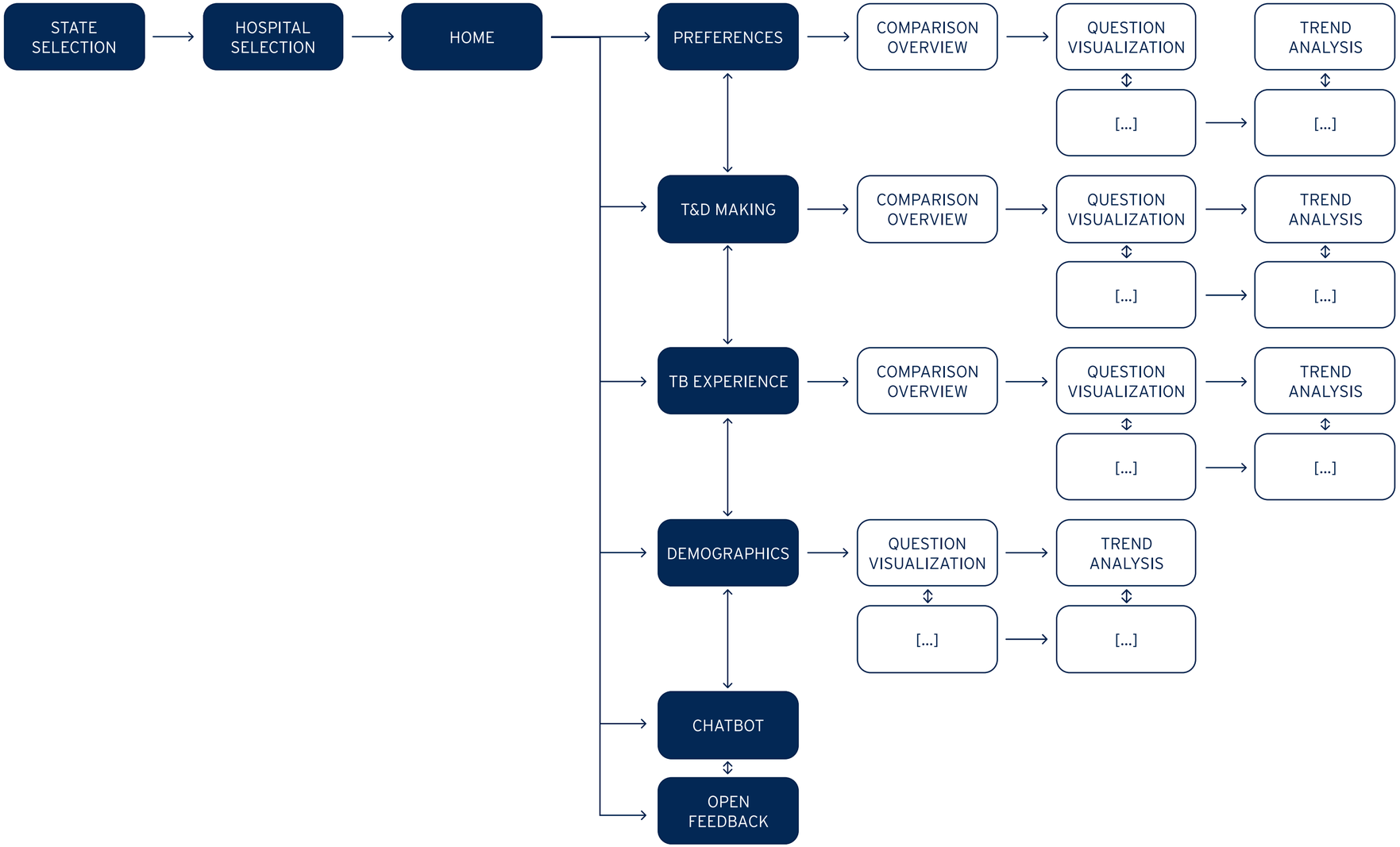
The structure of the User Flow is shown in the diagram opposite. The first step to complete once Dashbirth is opened is to select the state whose data you want to view. Then the specific hospital is selected (with the ability to view data from all hospitals in the selected state). Once these two steps are completed, we enter the Home, the actual dashboard, from which data exploration begins. From here we can navigate to all sections of Dashbirth: each part of the questionnaire has its own page and in addition we find the Chatbot. On the following page we find more in detail the User flow related to each of the multiple choice questions.





This diagram illustrates the User Flow of the multiple-choice question sections. As mentioned before, the first three sections have one question each with different questions within them that have the same answer parameters, which, for ease of understanding, we will call Question by Comparison. These three sections, once entered will show a view specifically for Questions by Comparison, which allows you to compare the results with each other. From this overview of the questions, thereafter, you can explore each question specifically, simply viewing the results or switching to trend analysis. The symbol "[...]" indicates repetition of the same form for each question. Finally, the Demographic section, which does not have a Question for Comparison, once selected will directly open the first question belonging to the section, without initial overview.

Complete User Flow Scheme



Personas

Before moving on to the actual UI, three personas with related user journey examples will be shown. Obviously the three personas are all members of TeamBirth, since Dashbirth is a specially designed product, but the visualizations that Dashbirth allows can also be shared and used by hospitals, again at the discretion of TeamBirth.

As visualized below, the three personas are Ashley, Mark, and Jennifer. The information displayed after the names indicates, in succession: section of the questionnaire to be analyzed, section of Dashbirth used, and finally, complete actions with Dashbirth.

Ashley
MADM
Preferences
Filtering, downloading

Mark
Open feedback
Open feedback
Uploading, data analysis, downloadng

Jennifer
Open feedback
Chatbot, Open feedback
Data analysis

User Journey 1 - Filtering the MADM questions

Opening the dashboard

- Ashley (a member of TeamBirth) is preparing for her weekly meet-up with the hospital staff.
- She opens the dashboard and navigates to the "Preferences" section to look at the MADM questions.

Using the dashboard

- She is wondering if black patients might have a different experience, so she uses the "filter" option to select only answers from black patients.
- Indeed, black patients score on average lower across the MADM questions.

Sharing the results

- She saves the graphs showing the answers as a png file to put in her presentation for the hospital staff.
- She shares the informations that she got with the hospital staff.

User Journey 2 - Analysing the open feedback

OUploading the data

- Mark (a member of TeamBirth) is preparing for his weekly meet-up with the hospital staff.
- He opens Dashbirth and upload the .xlsx file with all the questionnaires from one hospital.

Using the dashboard

- He navigates to the “Open Feedback” section.
- On the left, Mark sees a list of common topics referenced in the open feedback, ordered by relevance.
- He notices that among the first few topics there is the word “teamwork” and clicks on it.

Sharing the results

- The page now shows the open feedbacks relating to the word “teamwork”, showing that a lot of patients appreciated the teamwork capabilities of the hospital staff.
- He selects a few of these comments to put in her presentation for the meeting.

User Journey 3 - Using the chatbot

Opening the dashboard

- Jennifer (a member of TeamBirth) wants to analysise the data that Mark uploaded it but she has no leads.
- She uses the chatbot section of DashBirth in order to ask some general questions about the questionnaires result.

Using the dashboard

- Jennifer asks which are the major concerns in these documents and the chatbot informs her that there is inconsistency in the advice from the medical staff.
- Jennifer asks other questions to the chatbot in order to have it better explain the problem.

Analysing the data

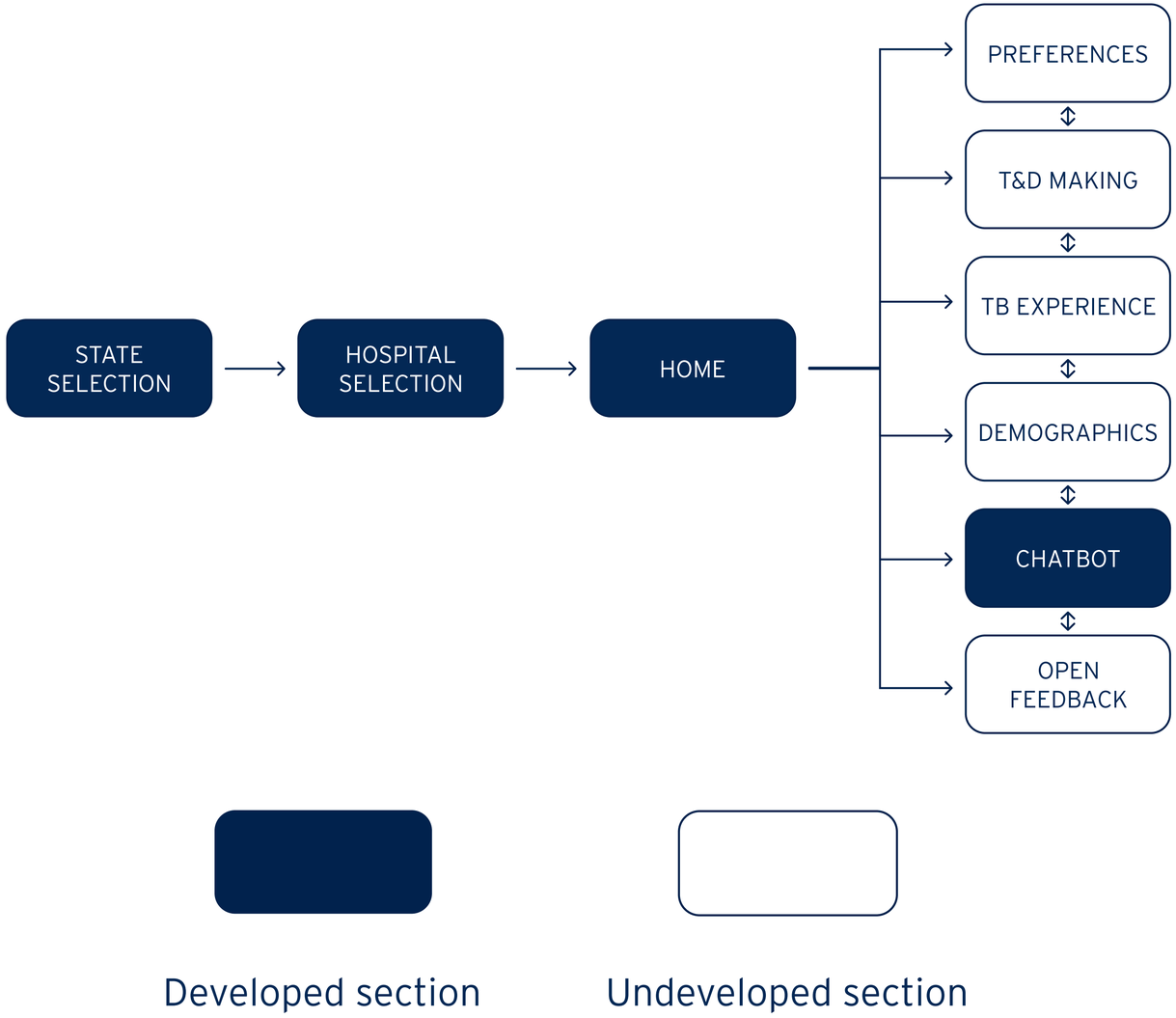
- Jennifer goes into the “Open Questions” section and search for the keyword “inconsistency”.
- The page now shows the open feedbacks relating to the word “inconsistency”, and Jennifer can start reading them to understand the problem.

USER INTERFACE

Introduction

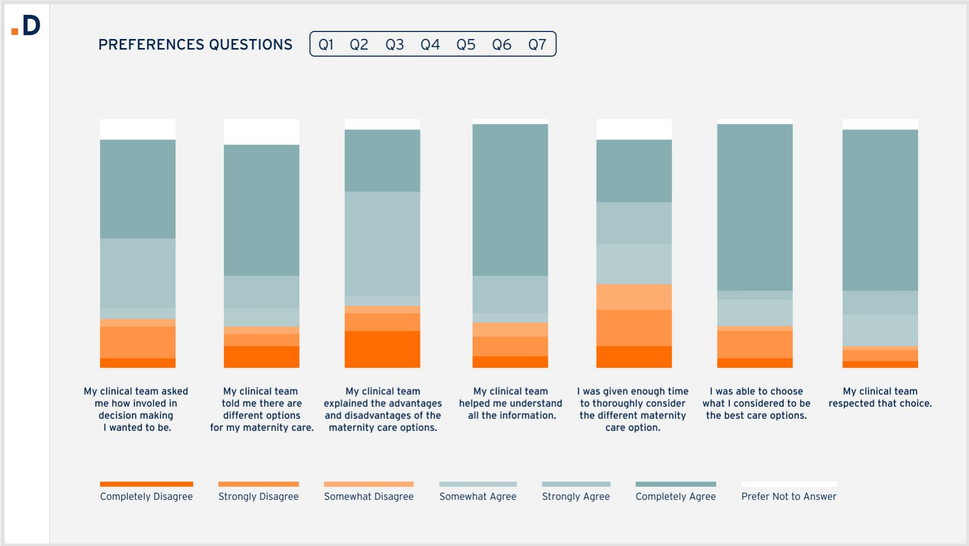
For timing reasons and complications with the back-end connection, not all of Dashbirth was programmed, as the diagram opposite explains. For the code we prioritized obviously the first few pages, then the hospital status selection and the initial dashboard, an essential part of our project. In addition, we decided to develop the Chatbot, the only one among the other sections of the site that could function in its own right. In this way, with the code present now, it is possible to use Dashbirth (already connected to the back-end and therefore able to read the data) to have a general analysis of the questionnaires, through the data present in the Home and using the Chatbot, which as we have seen in the User Journeys, is useful for finding leads in the data analysis.

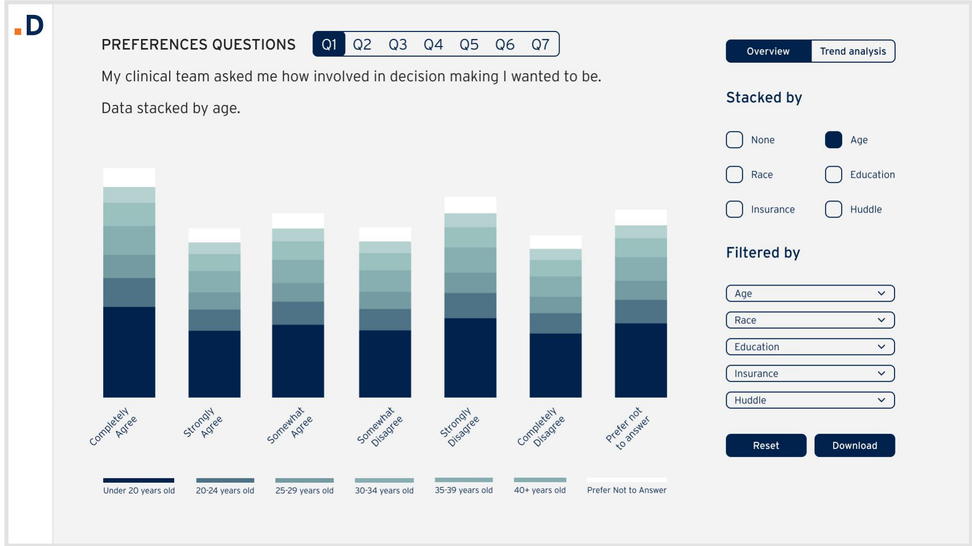
Before moving on to the other sections of the manual and going into detail about each screen and element of the UI, screenshots of the main sections will now be provided on the following pages in order to provide a general background and to finally present the final form of the Dashbirth.

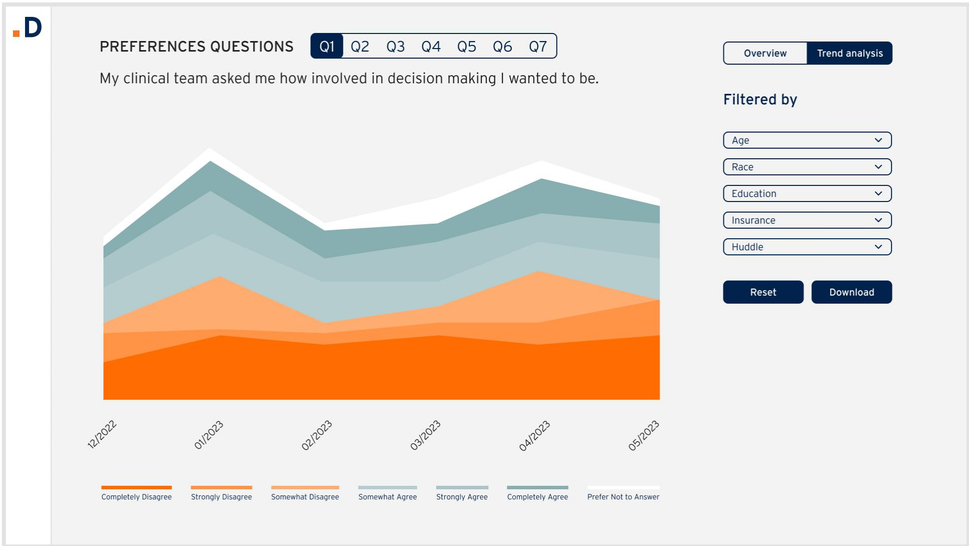


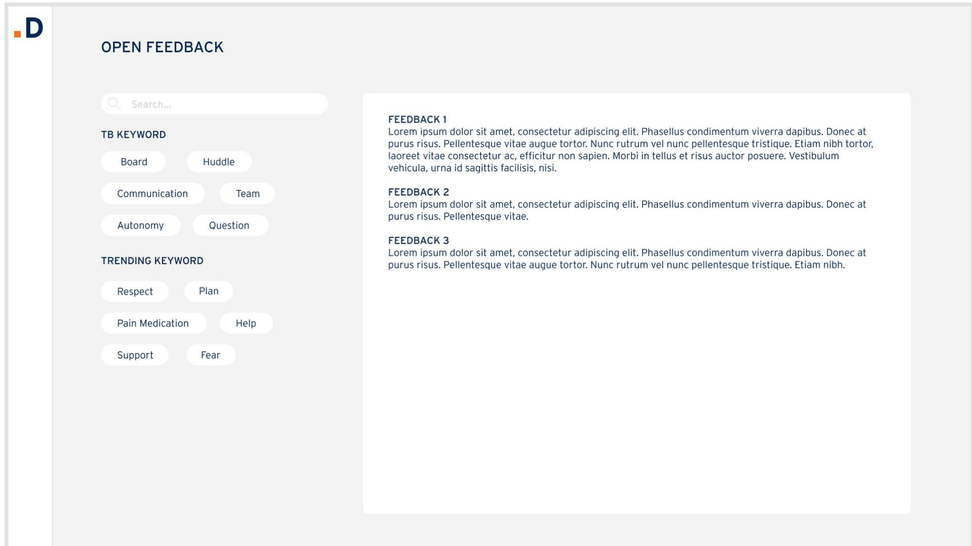
UI of developed pages

UI of undeveloped pages









Elements

This section is intended to show the main elements of the UI before going into the specifics of the pages, so that better understanding of how it works and coming prepared to study the individual screens.

Buttons for question selection

Q1 Q2 Q3 Q4 Q5 Q6 Q7

Q1 Q2 Q3 Q4 Q5 Q6 Q7

Single-use buttons

CHANGE HOSPITAL | Reset | Download

Buttons for *Stacked by*

None | Age | Race

Function switch button

Overview | Trend analysis

Overview | Trend analysis

Buttons for *Filtering*

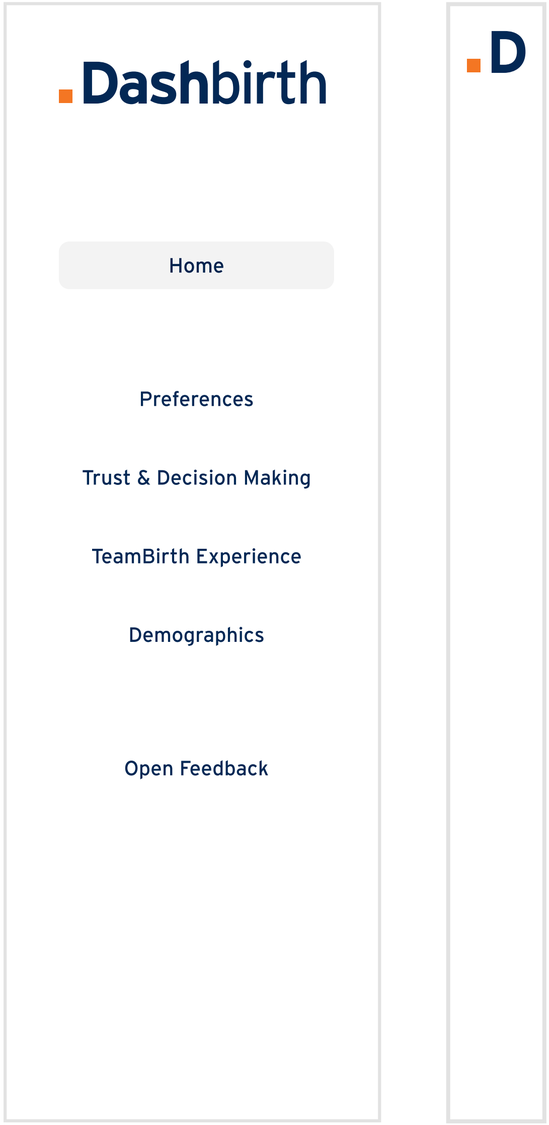
Huddle

Huddle
Huddle Yes
Huddle No

Elements

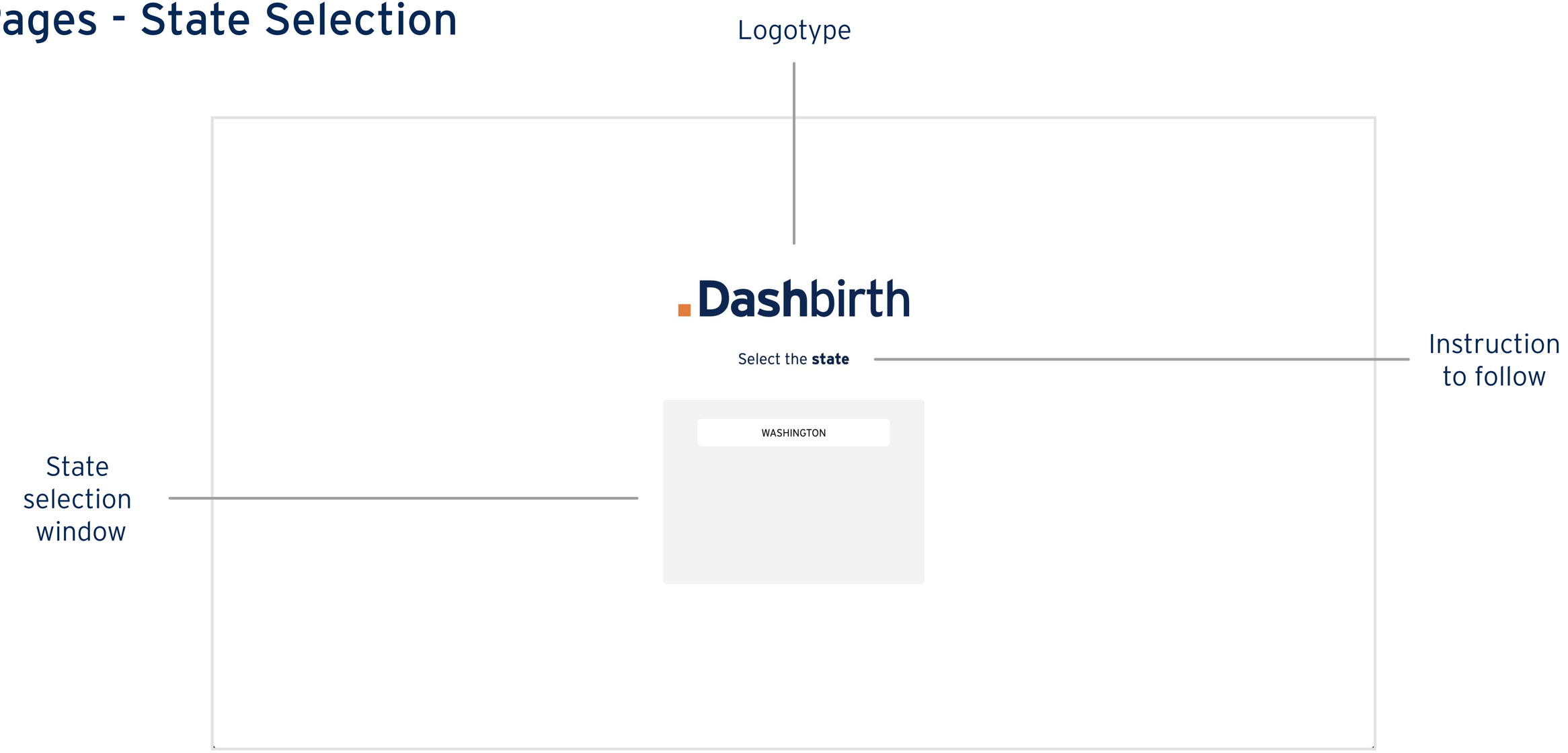
Hospital/state selection window

Dashboard elements



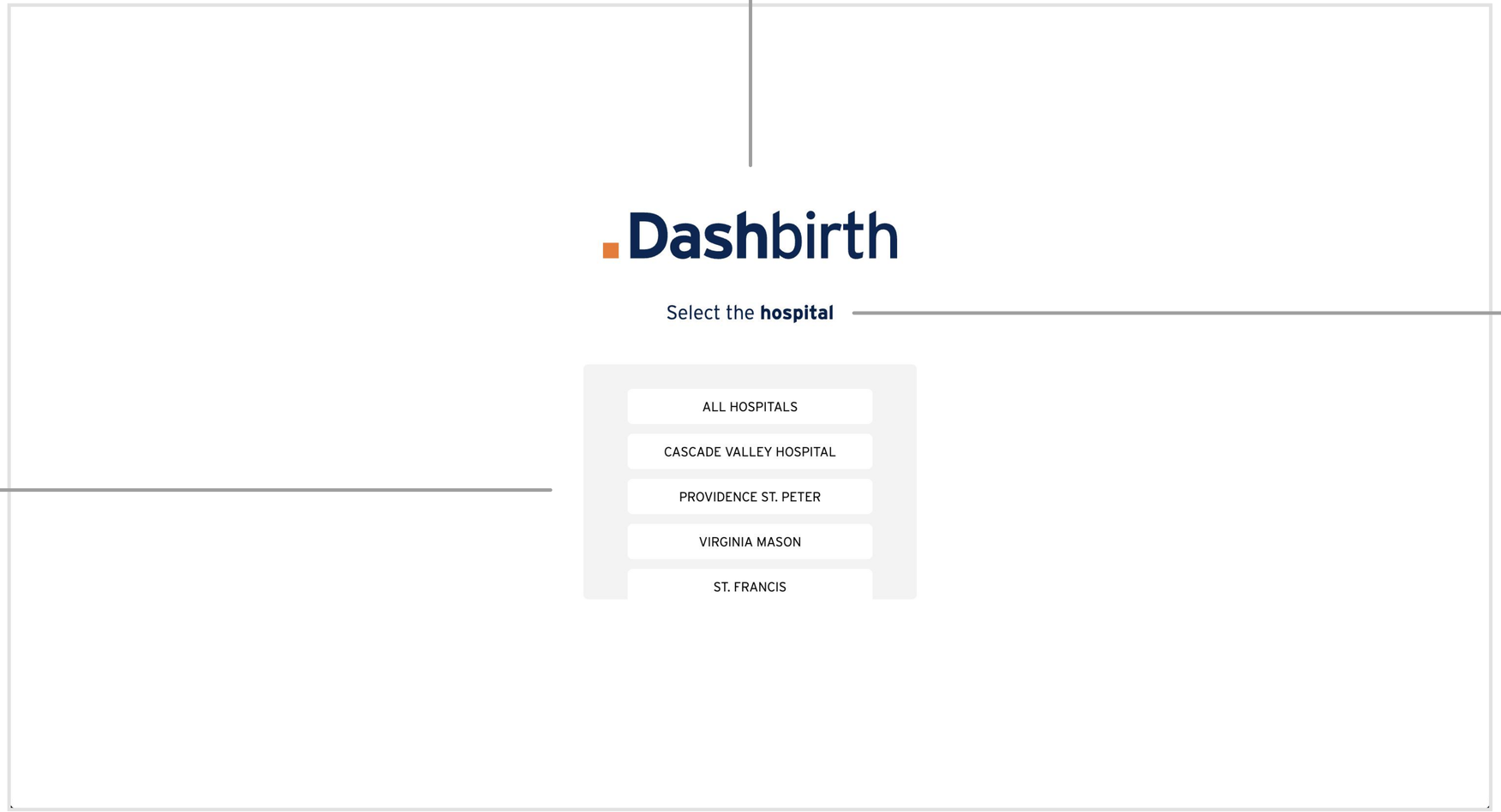
Extended and compressed menu

Pages - State Selection



Pages - Hospital Selection

Logotype



Instruction to follow

Hospital selection window

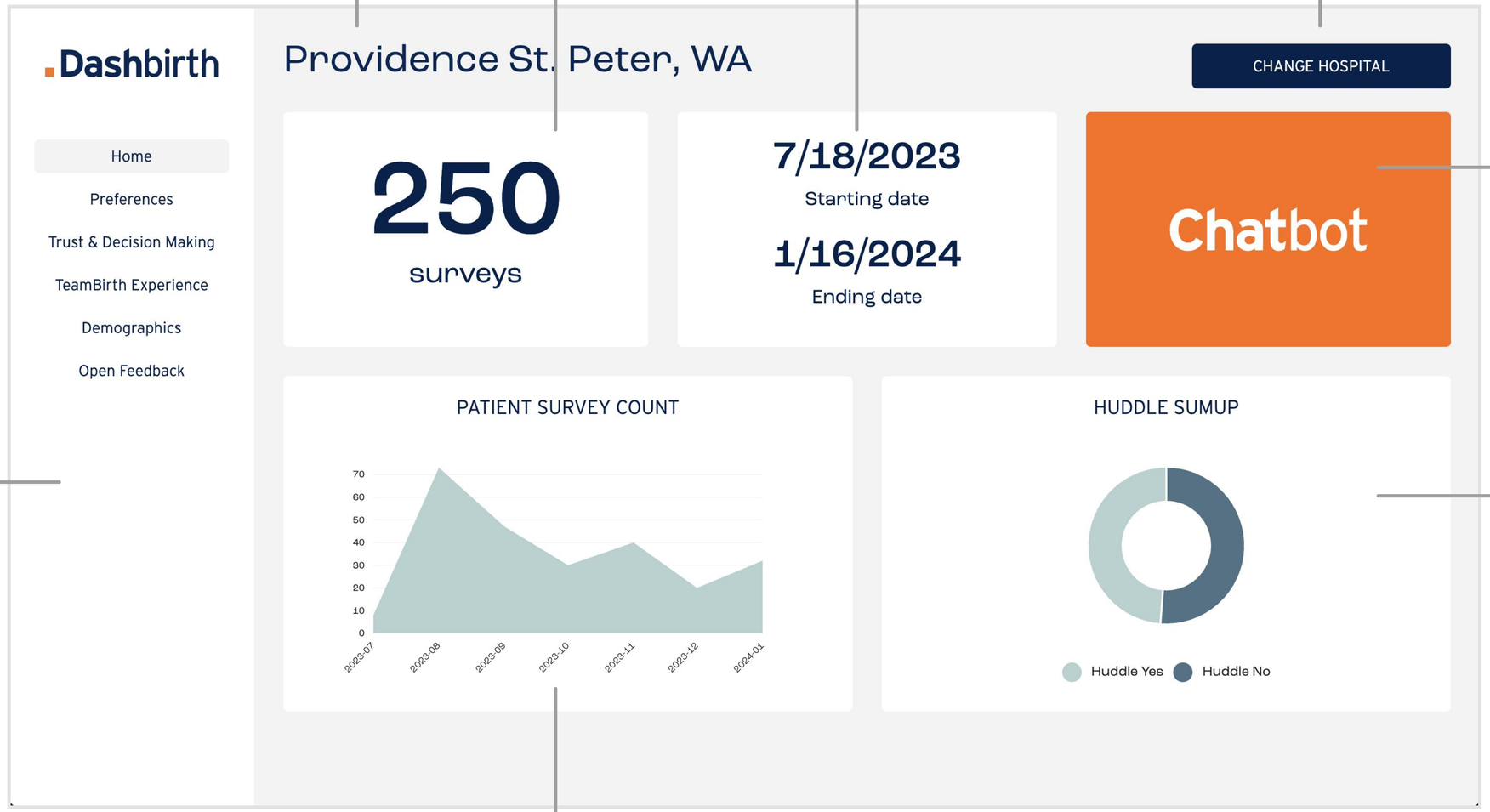
Pages - Home

Hospital selected

Total number of surveys

Starting and ending date of TeamBirth program

Button for changing the hospital (go back to state selection)



Shortcut to Chatbot

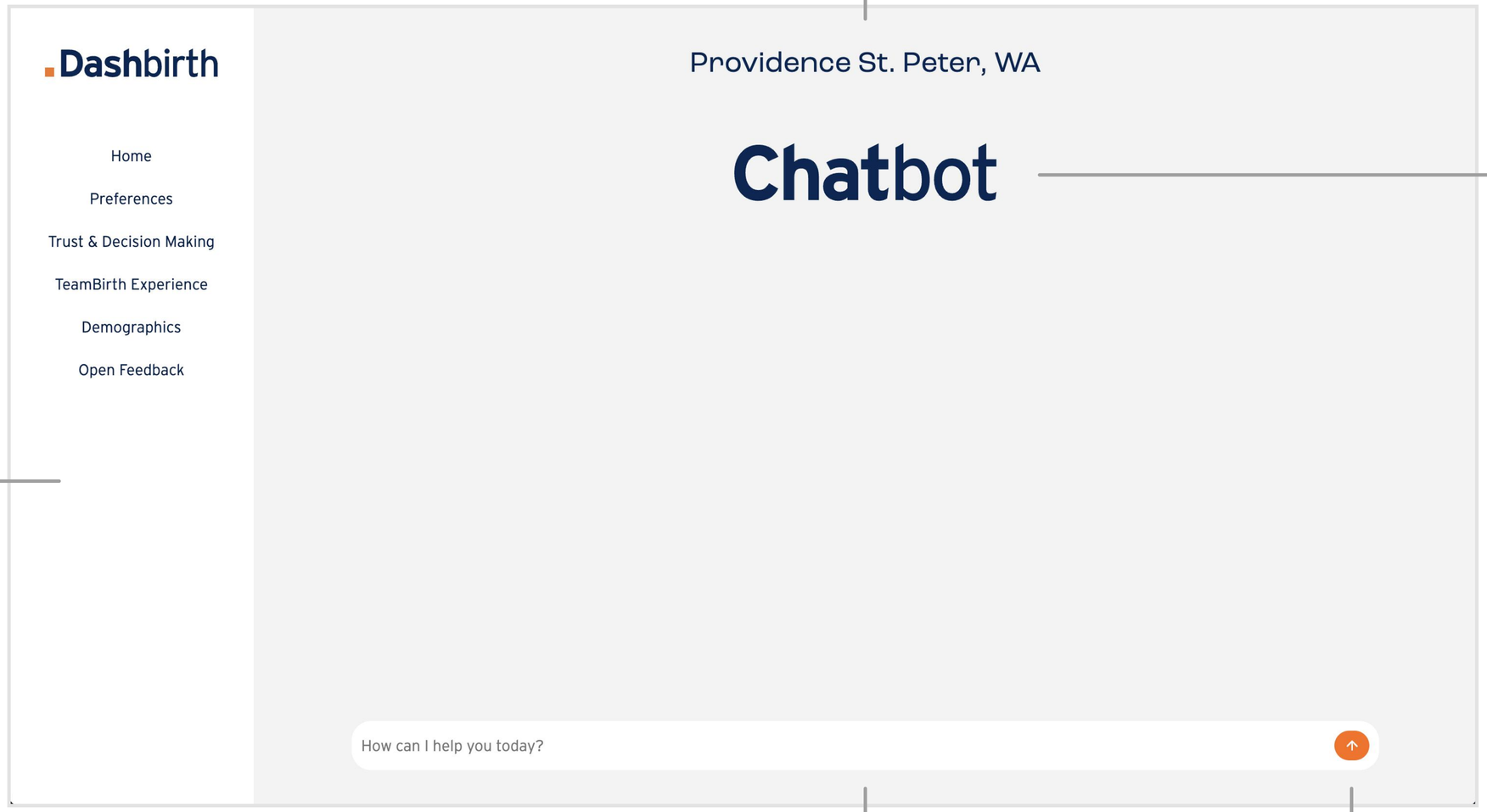
Extended menu (the selected page has a different background)

Huddle Sumup graph: shows the percentage of patients who had an Huddle

The two graphs, in hover, show more detailed data

Patient Survey Count: trend analysis of patients who exploited the TeamBirth program

Pages - Chatbot



Hospital selected

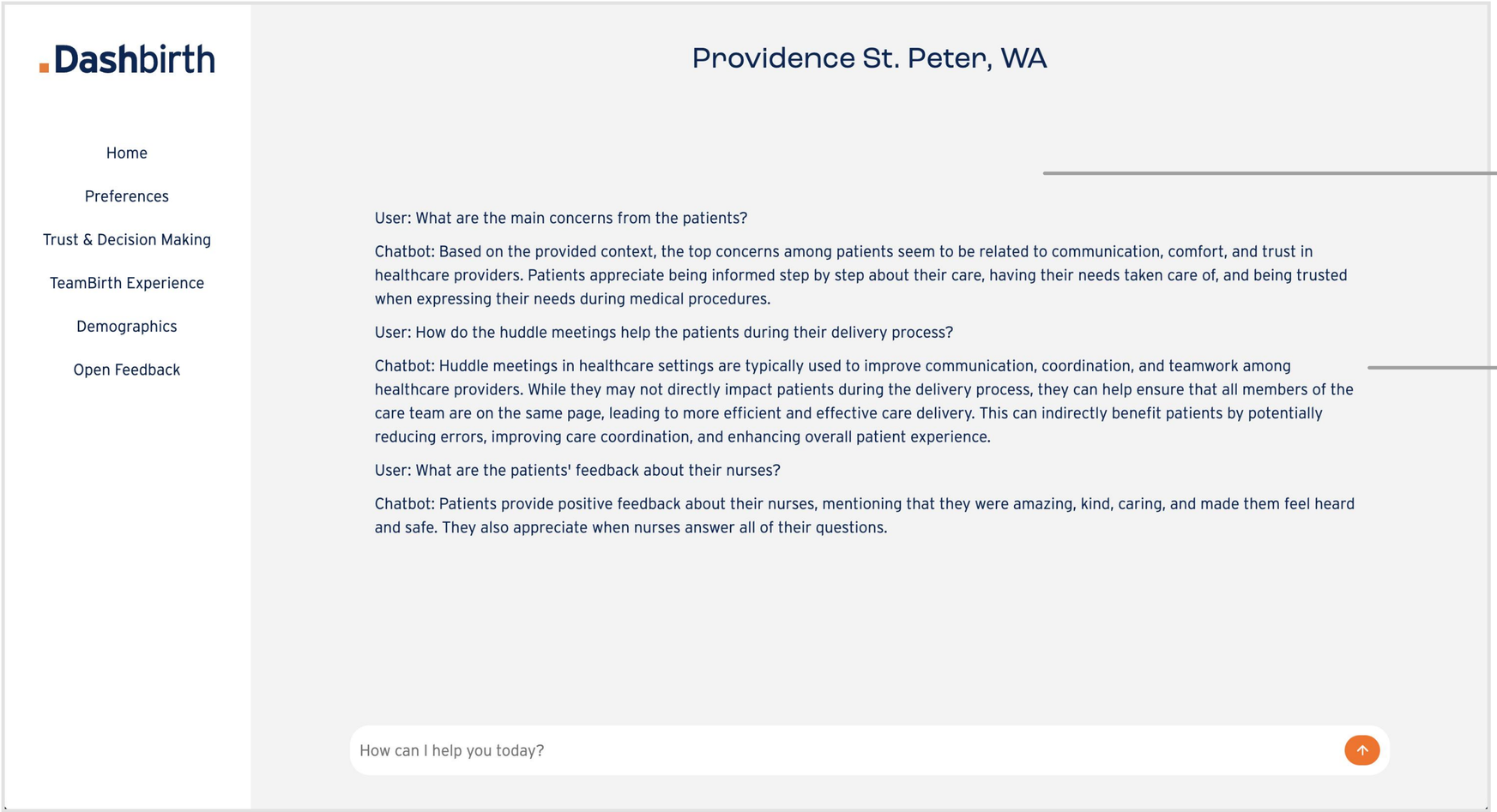
Chatbot logo

Extended menu

Message window

Send message button

Pages - Chatbot with conversation

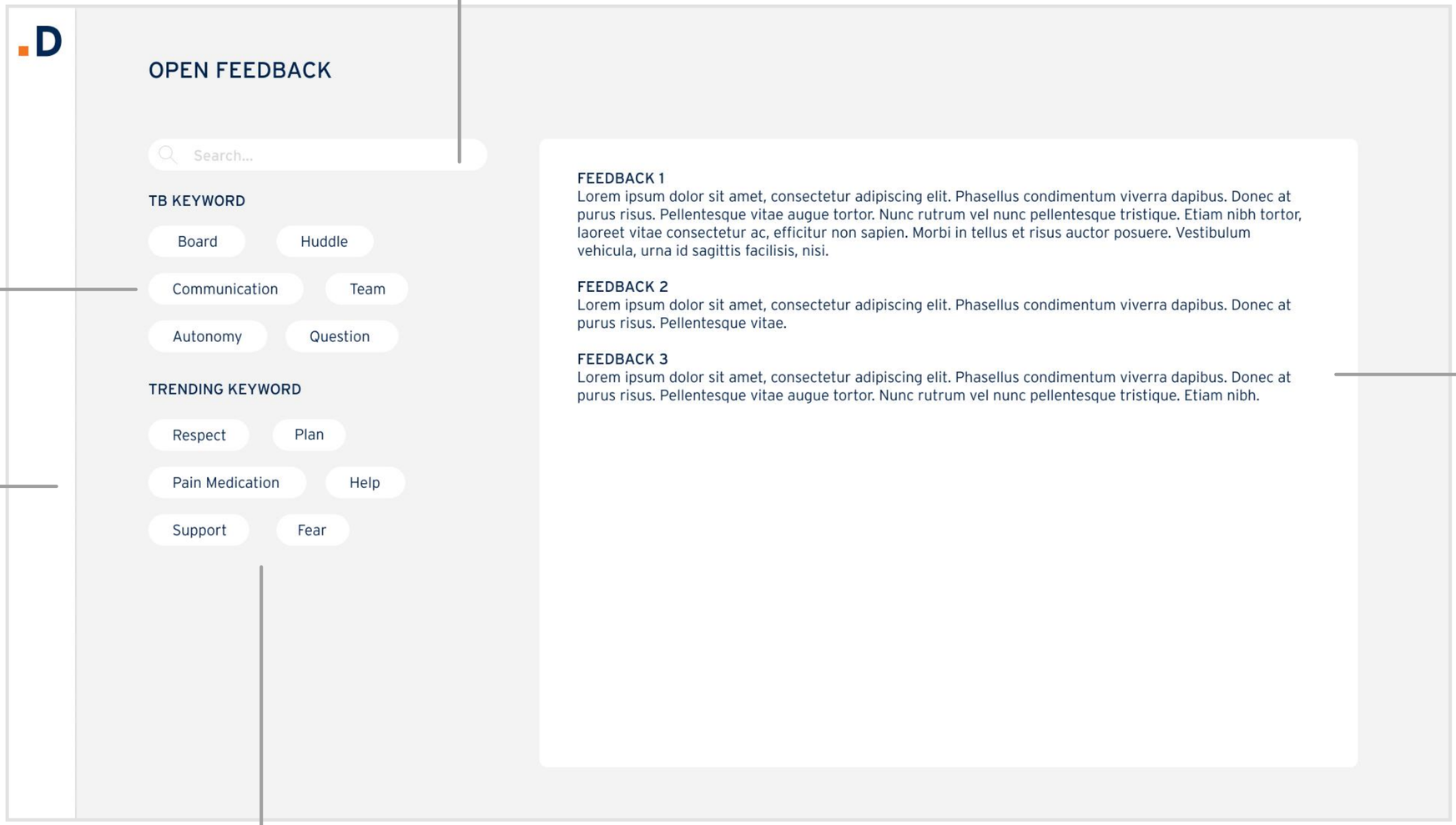


Chatbot logo disappeared

Conversation with Chatbot

Pages - Open Feedback

Research bar
for keywords



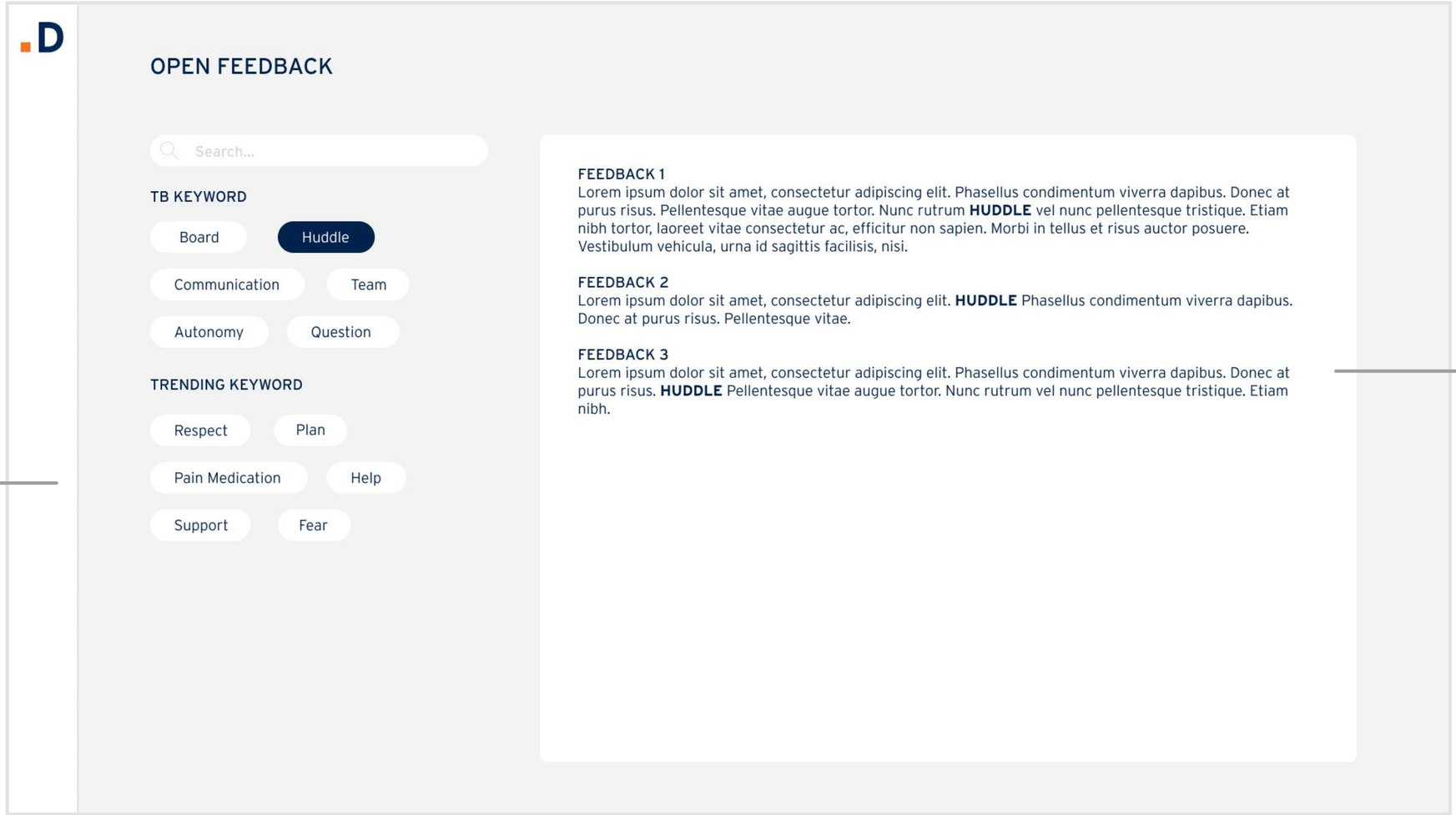
Selection of keywords
from TeamBirth

Compressed menu

Open feedbacks
displayed

Keywords most mentioned in open feedbacks

Pages - Open Feedback with Keyword selected

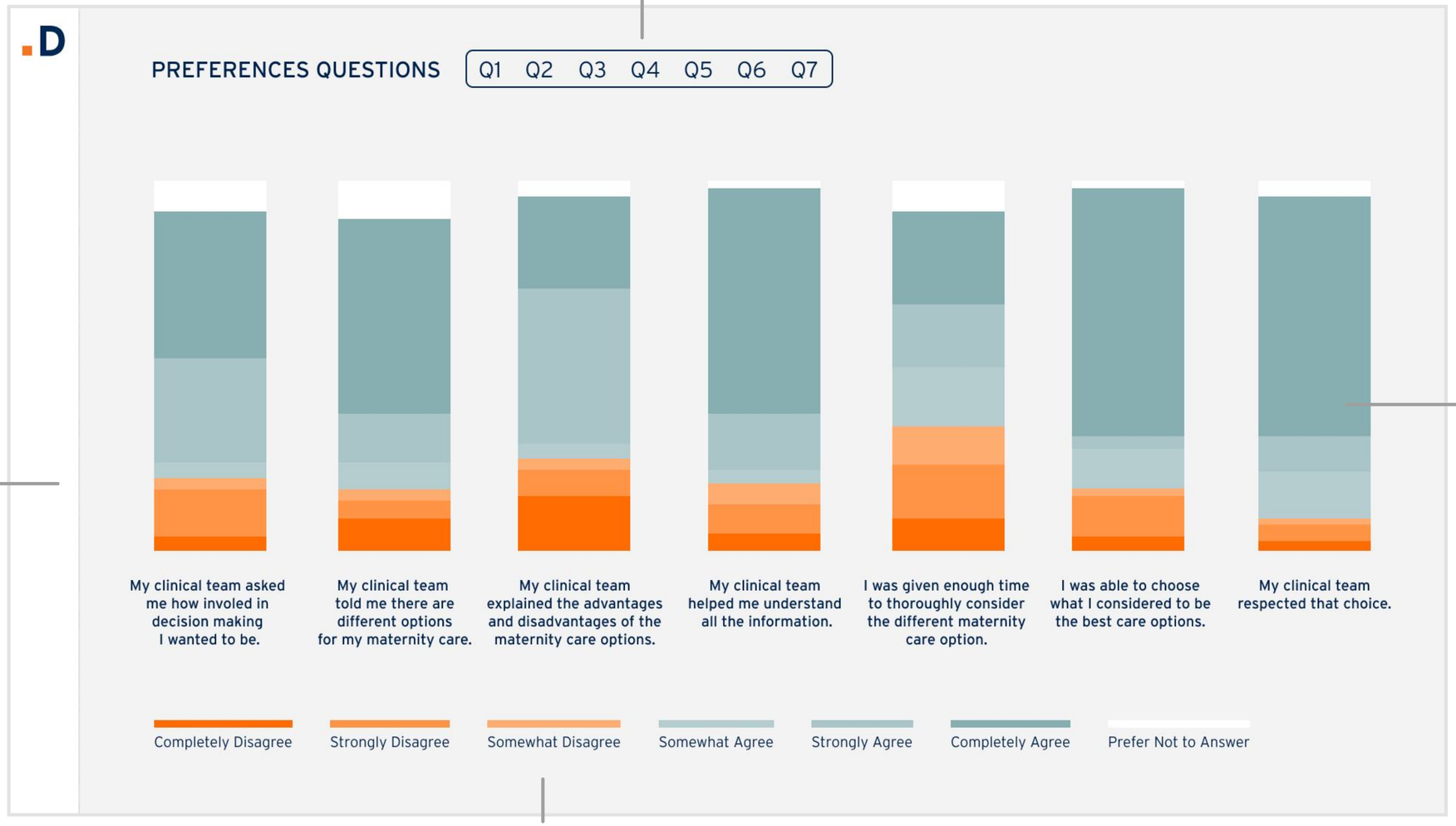


Compressed menu

Open feedbacks displayed with the selected keyword highlighted

Pages - Preferences

Single question selection



Preferences visualization

Compressed menu

Legend

Pages - Single question

Single question selection

Overview and trend analysis switch button

Stacked by options

Compressed menu

Filtering options

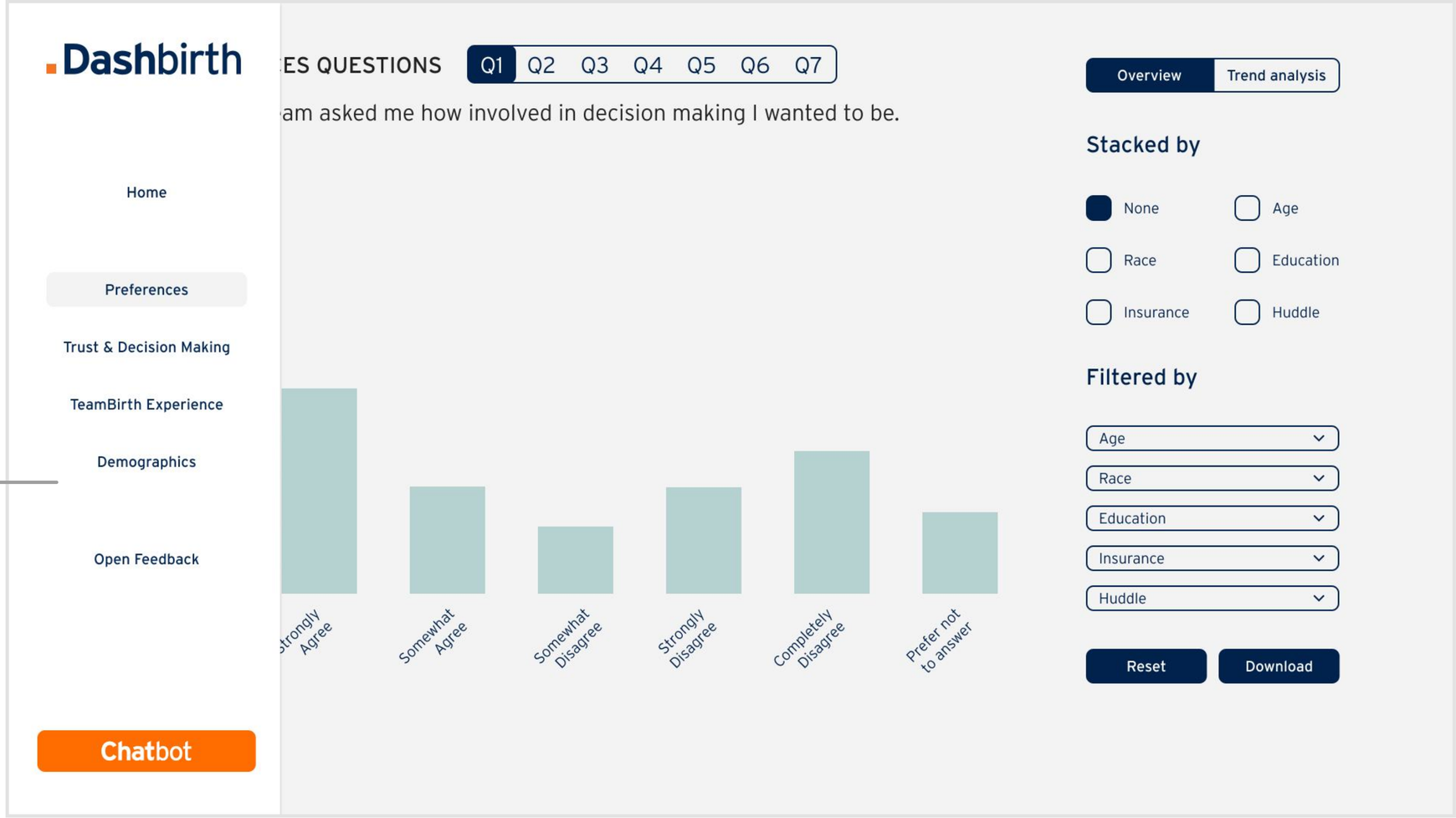
Download button

Data visualization with legend

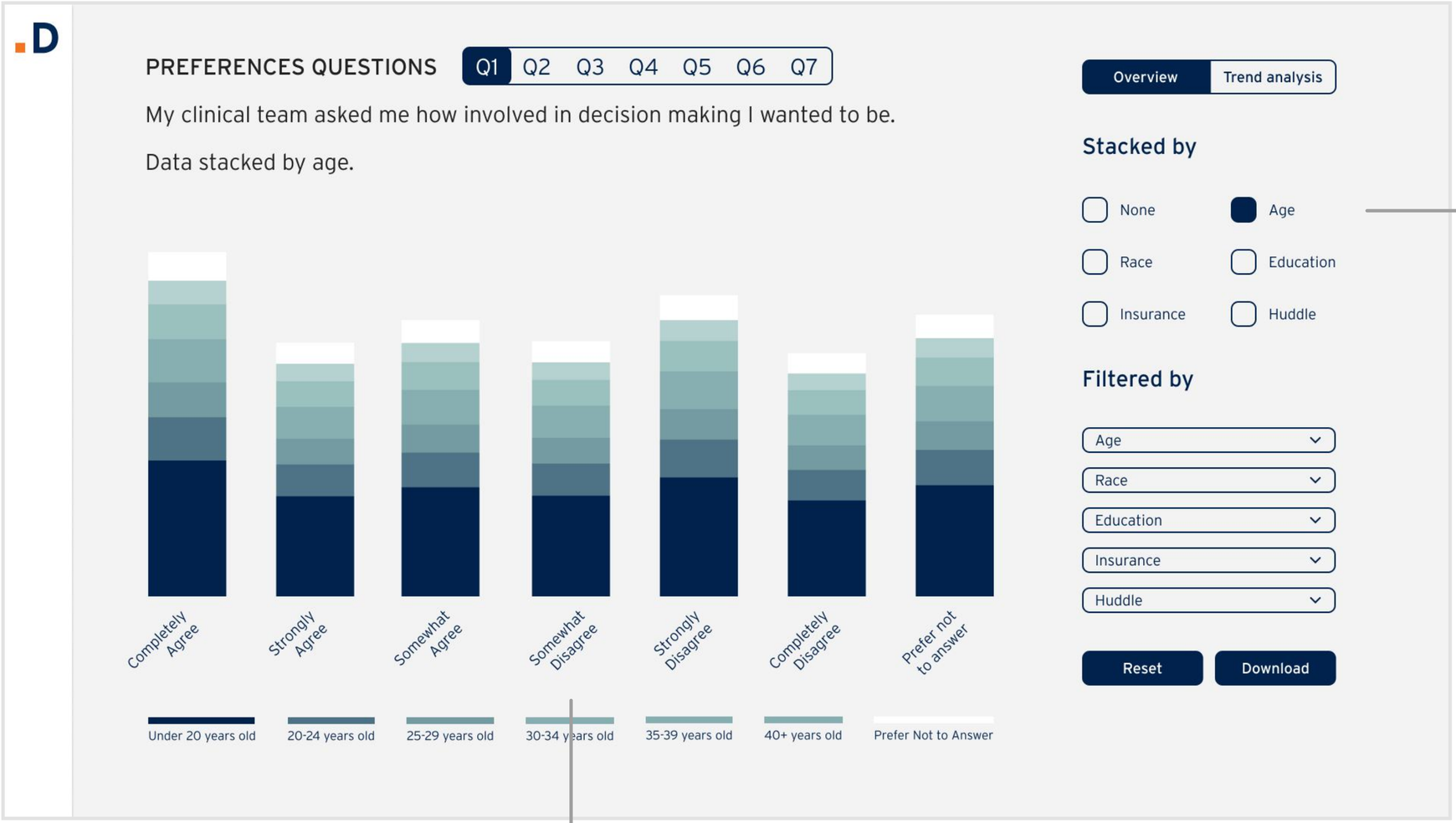
Reset parameters button

Pages - Single question with menu open

When clicked the compressed menu opens and it also has the chatbot button



Pages - Single question stacked

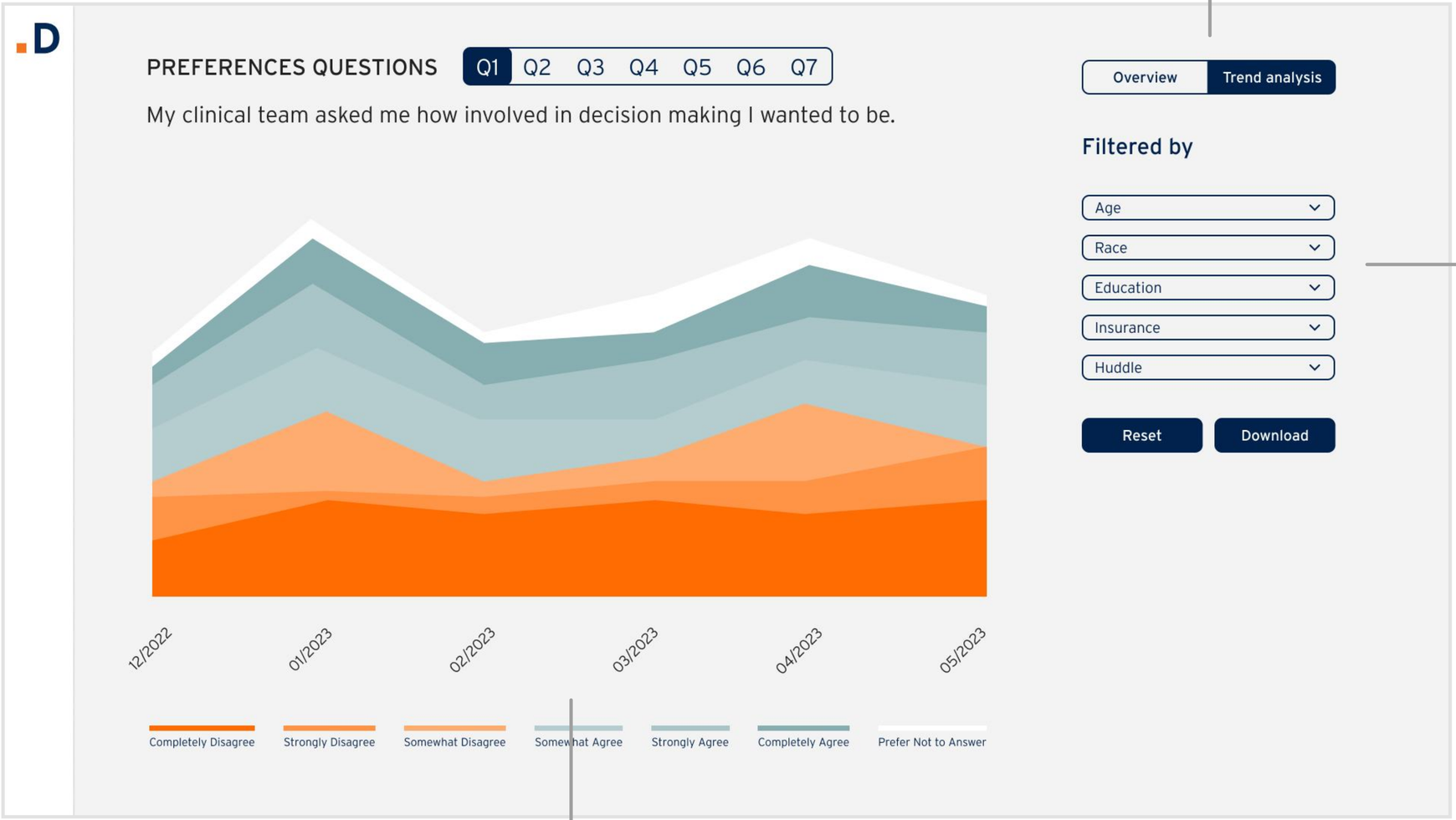


Stacked by age option selected

Data visualization stacked with legend

Pages - Trend Analysis

Trend analysis selected



Stacked by options disappeared (not possible with trend analysis)

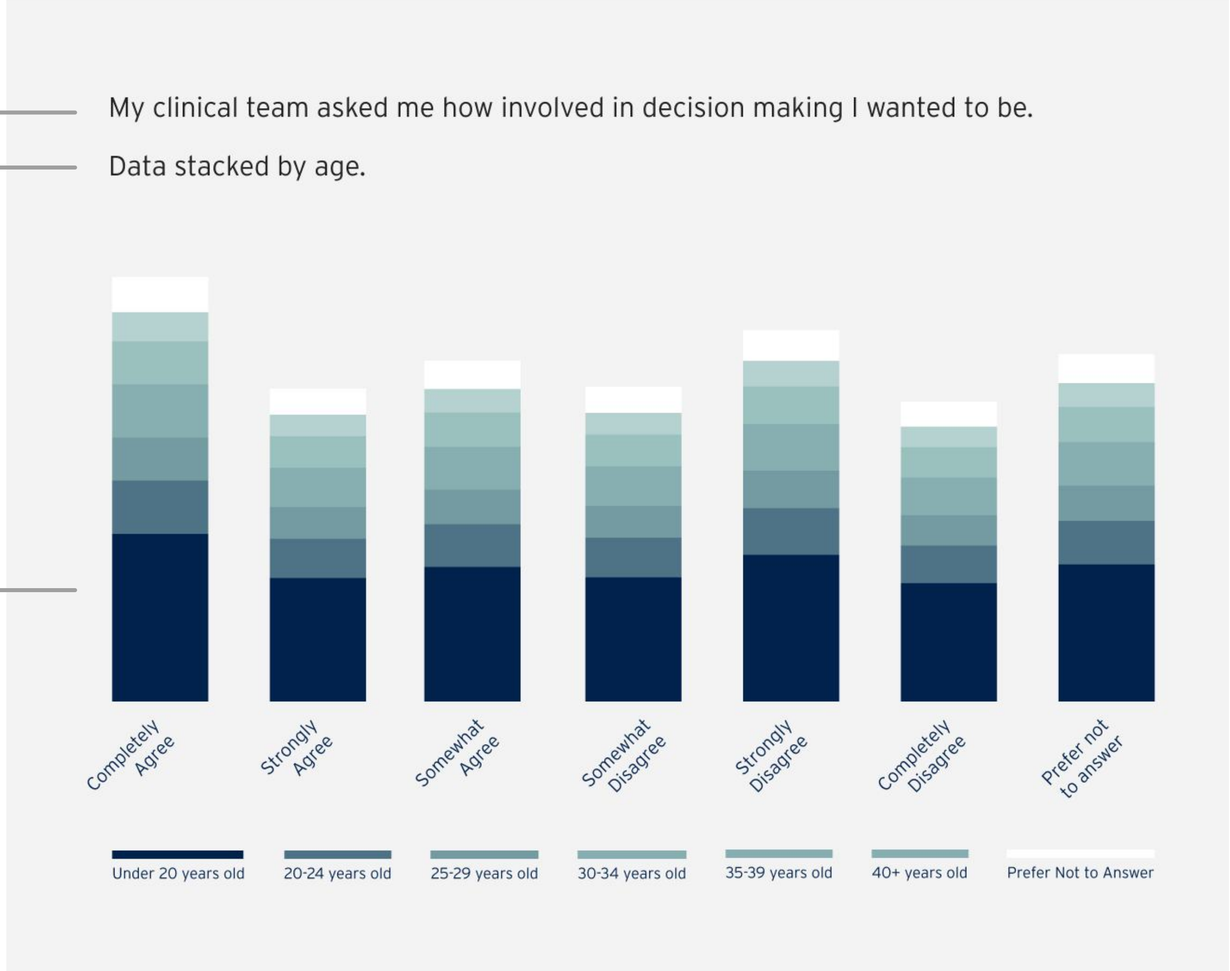
Data visualization with legend

Pages - Download output example

Question

Data info

Data visualization with legend



About the code

As was already communicated at the beginning, this manual serves as a supplement to the code provided for Dashbirth. Below is a link to a semi-functioning Figma prototype, which can help with understanding User Flow and interface design. For sections already developed and linked to the backend, please still refer to the provided code.

FIGMA LINK