CalmDrive

Enhancing Traffic Safety By Preventing Driver Anger And Saving
3,300 Lives Annually With Loved One's Voice Messages

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Agenda

Context

Road rage shootings in the United States have **increased by 449%** over the past decade.
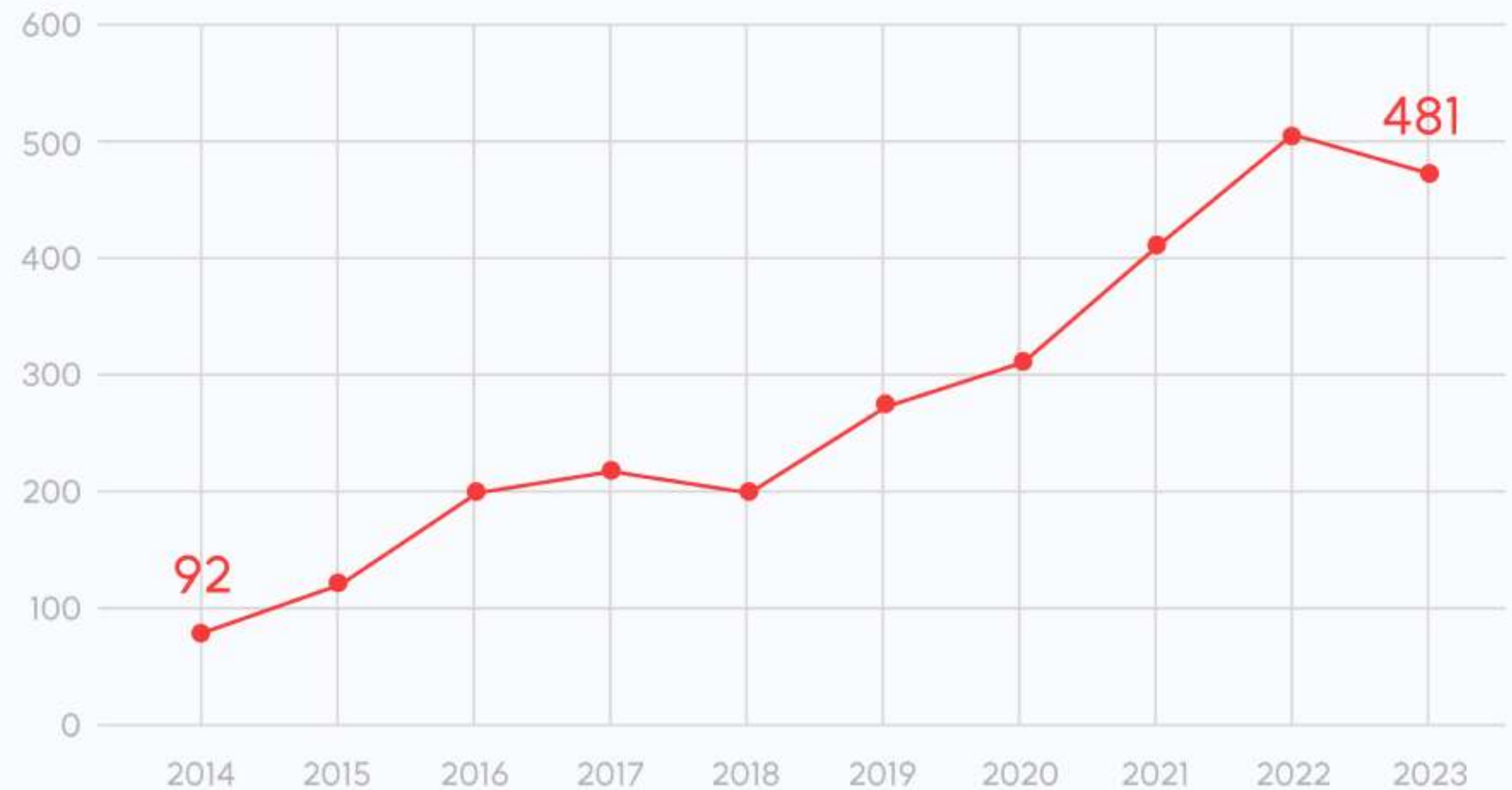
* Total Road Rage Shooting Incidents from the nonprofit Gun Violence Archive.

Problem Statement

When drivers become angry on the road , the likelihood of serious accidents, including injuries or fatalities, increases. Preventing drivers from falling into anger problems could lead to safer traffic.

Competitive Analysis

Current solutions are limited.

It is expensive to implement and not effective for drivers who are already angry.

1. Visage SDK's Face tracking

2. Valeo's Interior Lighting

3. KIA's Real-time Emotion Adaptive Driving

Interview

I interviewed drivers to better understand the problem.

- Semi-structured interview

- 45 to 60 minutes per person

- 9 drivers living in US

- 1 Faciliator, 1 Notetaker, 1 Interviewer

Insights

I discovered key findings and insights.

01. Preventing anger before the driver enters the anger zone

Because, No driver wants to drive angry, as it can lead to unpredictable consequences.

02. Connecting with emotionally close individuals

Because, Passenger intervention, especially from family members, can help drivers calm their anger.

03. Diverting attention from anger to focus on driving

Because, Anger makes it hard for drivers to focus, as they keep thinking about why other drivers act a certain way.

Driver Needing Anger Prevention.

A driver living in Michigan who commutes daily to support his family.

- Sometimes, he gets angry due to traffic situations or other drivers' rude behavior.

- He wants to prevent anger before it escalates into road rage.

- The intervention of a loved one helps him refocus on driving when he is angry.

Prototypes

I developed 1) Gadgets and 2) Mobile App that are more affordable and effective in preventing anger.
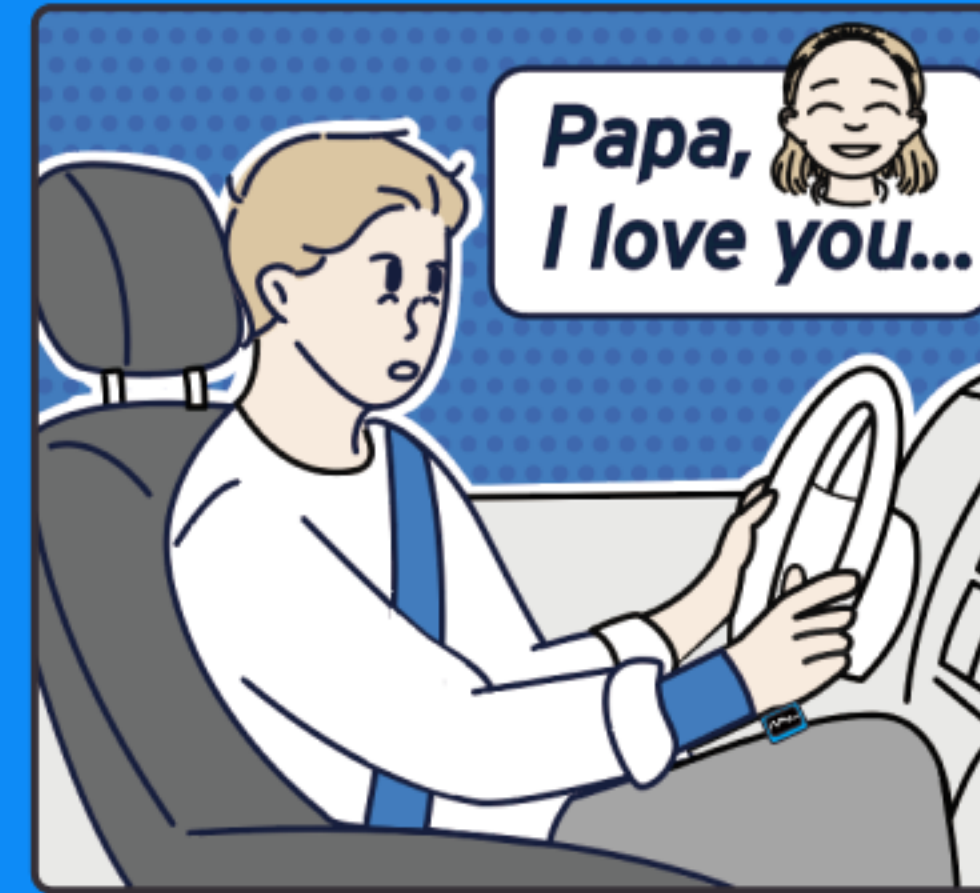
Prototypes

1. Gadgets: Detects anger sign while driving and plays a loved one's voice message.

01. Traffic jam

02. Frustration

03. Voice message

04. Refocus on driving

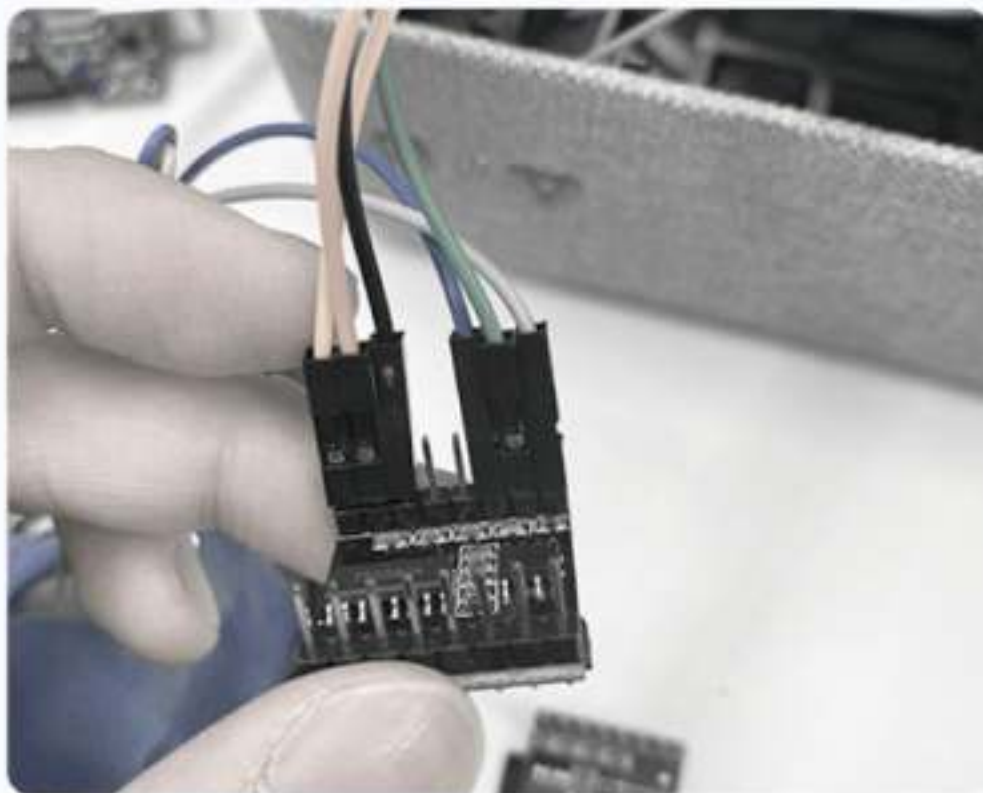# The process of creating gadget prototypes
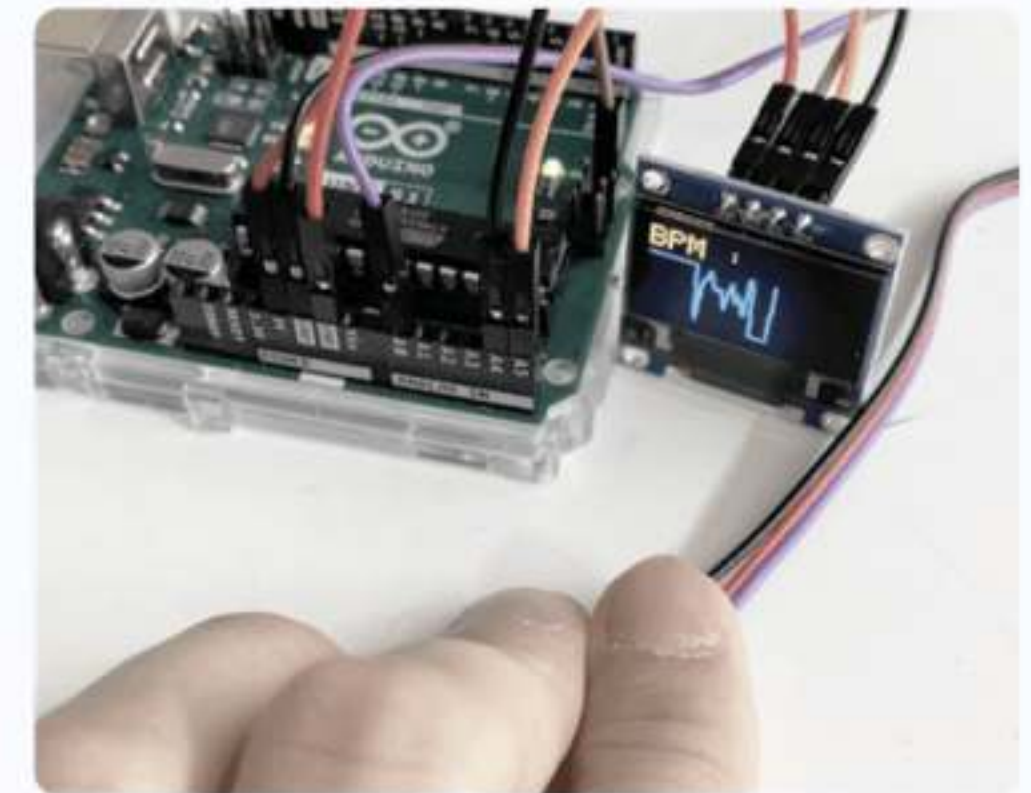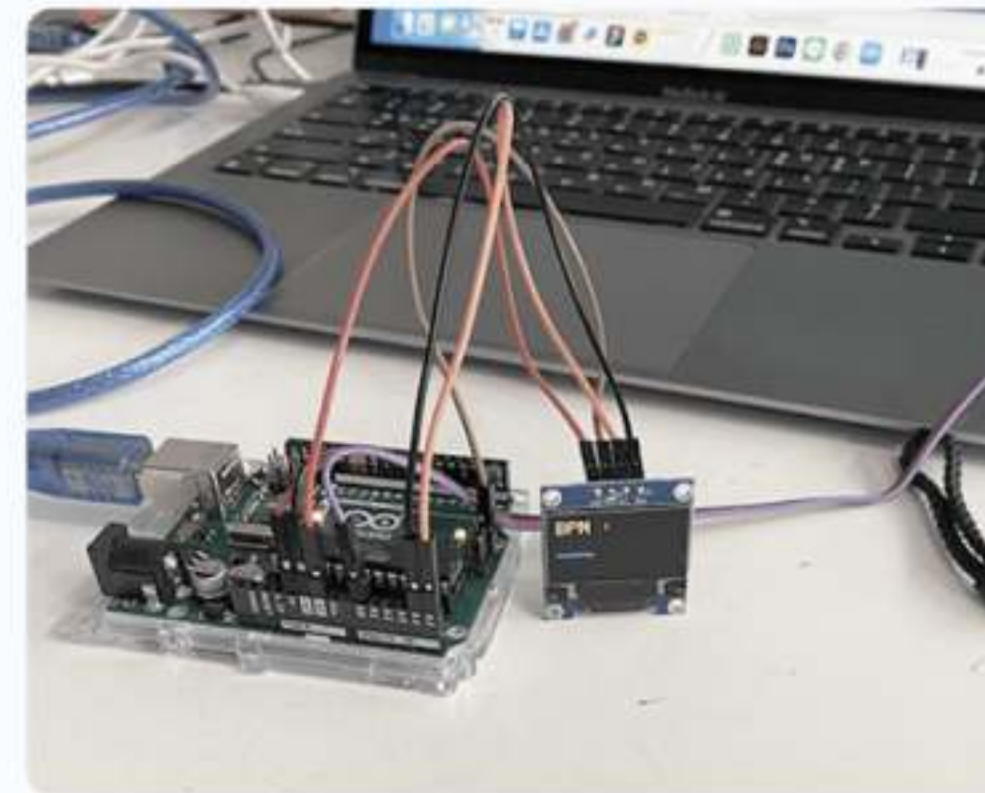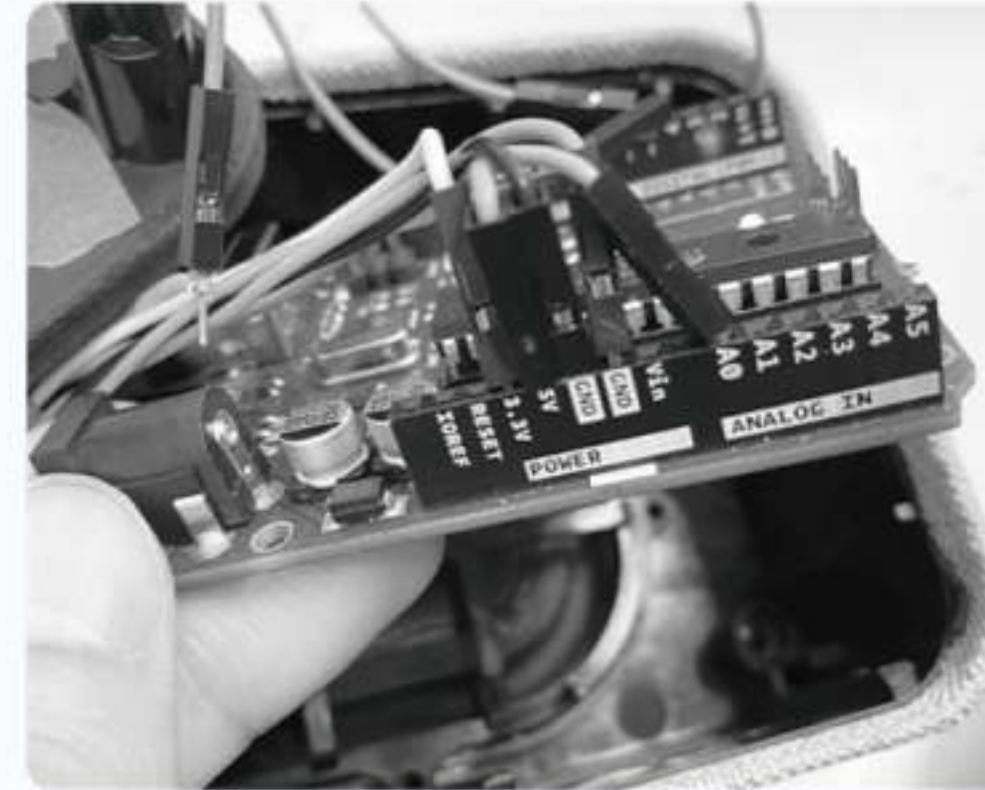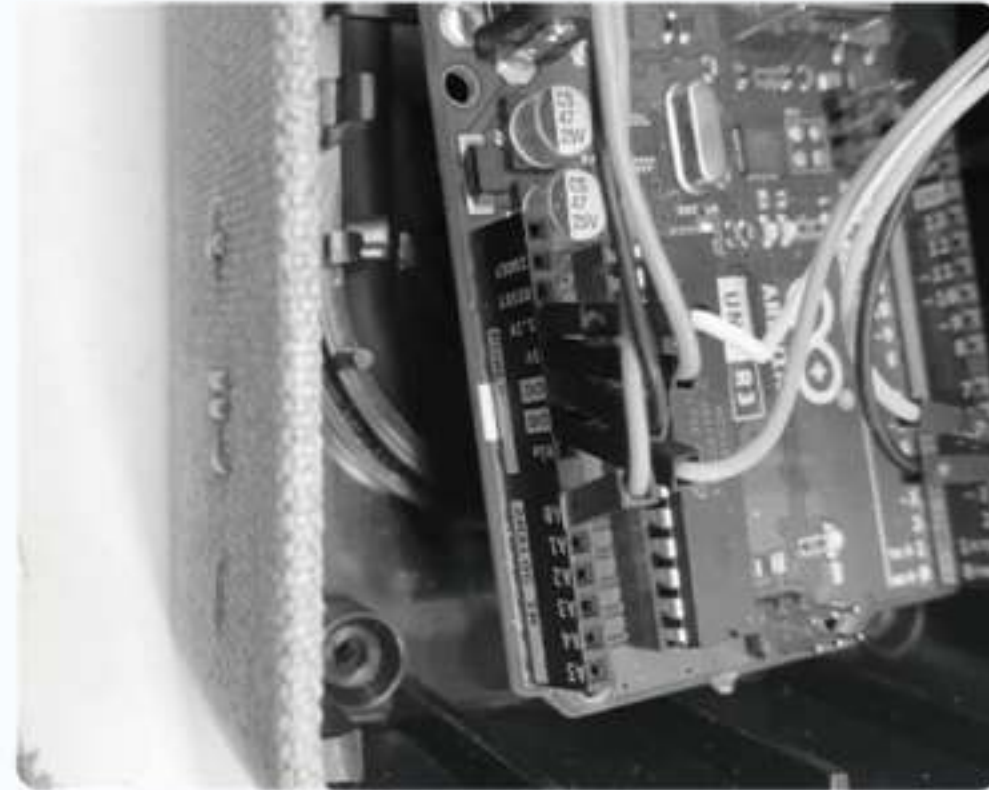
Feedbacks from usability testing

A loved one's voice message reduced heart rate by 25% and stress by 27%.

Before
After

2.75
2.0

Stress Level (µS)

116
86

Pulse Rate (BPM)
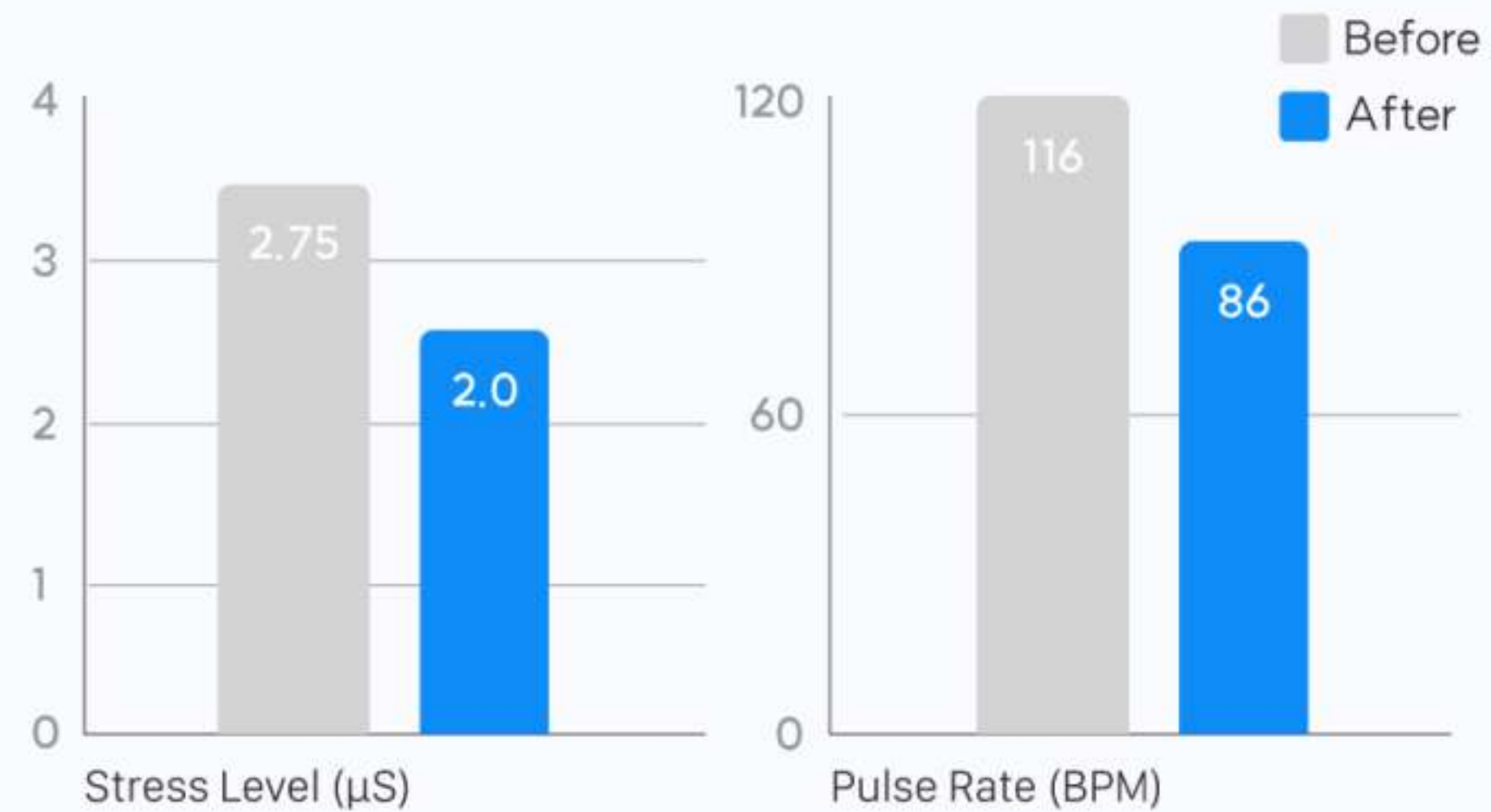
Usability Testing

Usability issues with the wristband's display.

Improving the terminology and display position

It is difficult to understand the terminology, and the display is not visible while driving.
I changed the terminology (μS → Stress) and reposition the display to a more visible location while driving.

Before

After

Prototypes

2. Mobile app with personalized solutions for preventing anger before and after driving.

01. Recommendation by CalmDrive A.I. Assistant

02. Accepting the recommendation

03. Enjoying calm driving

01. Tracking physiological data

01. Sensors detecting

Sensors of seatbelt and wristband

02. Summary dashboard

11:00

SUMMARY

👍 You are **25% less angry** than last week

Your Calm Score   10:00 PM >

1 hour ago
85
Calm

About my calm score ⓘ
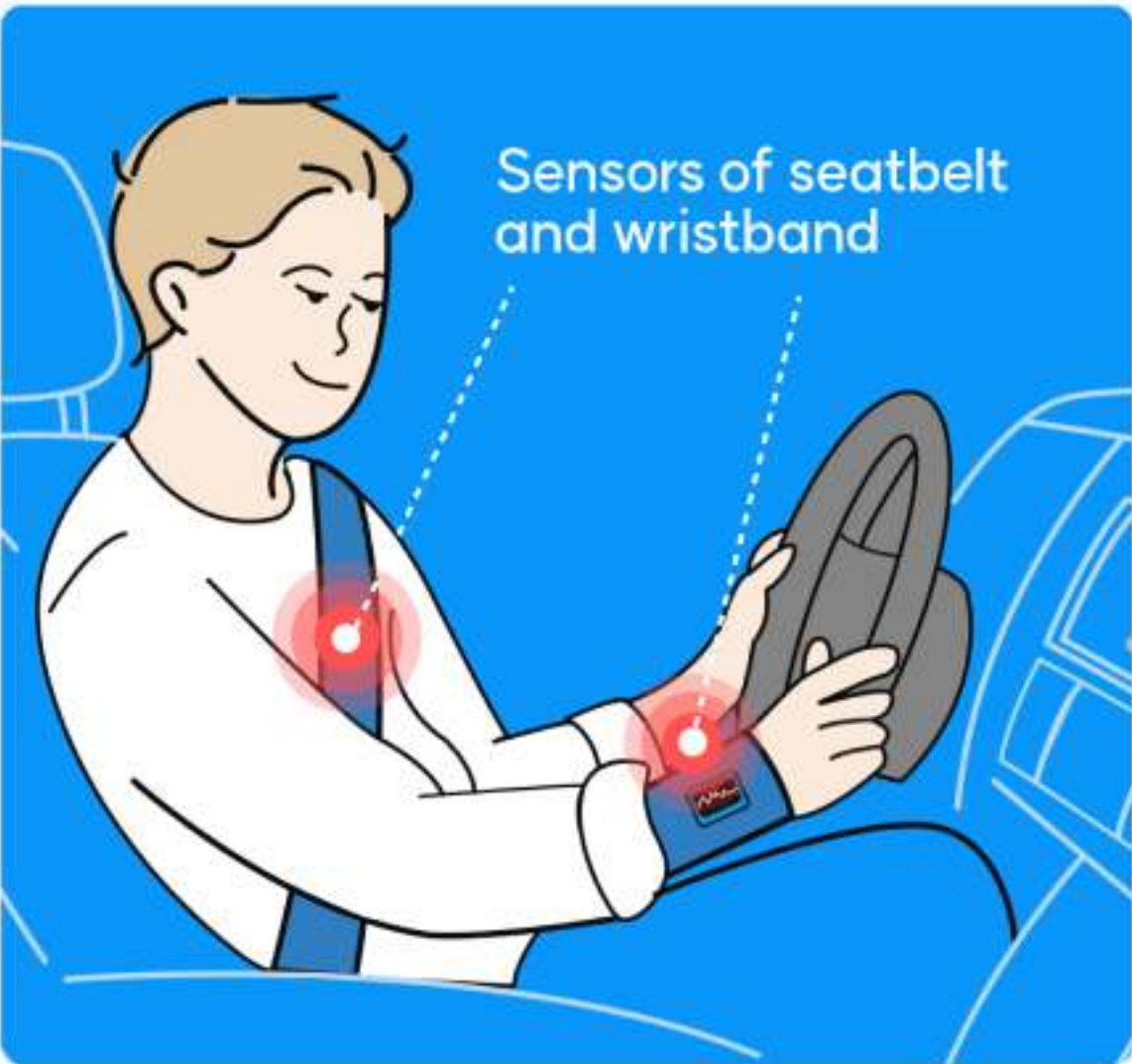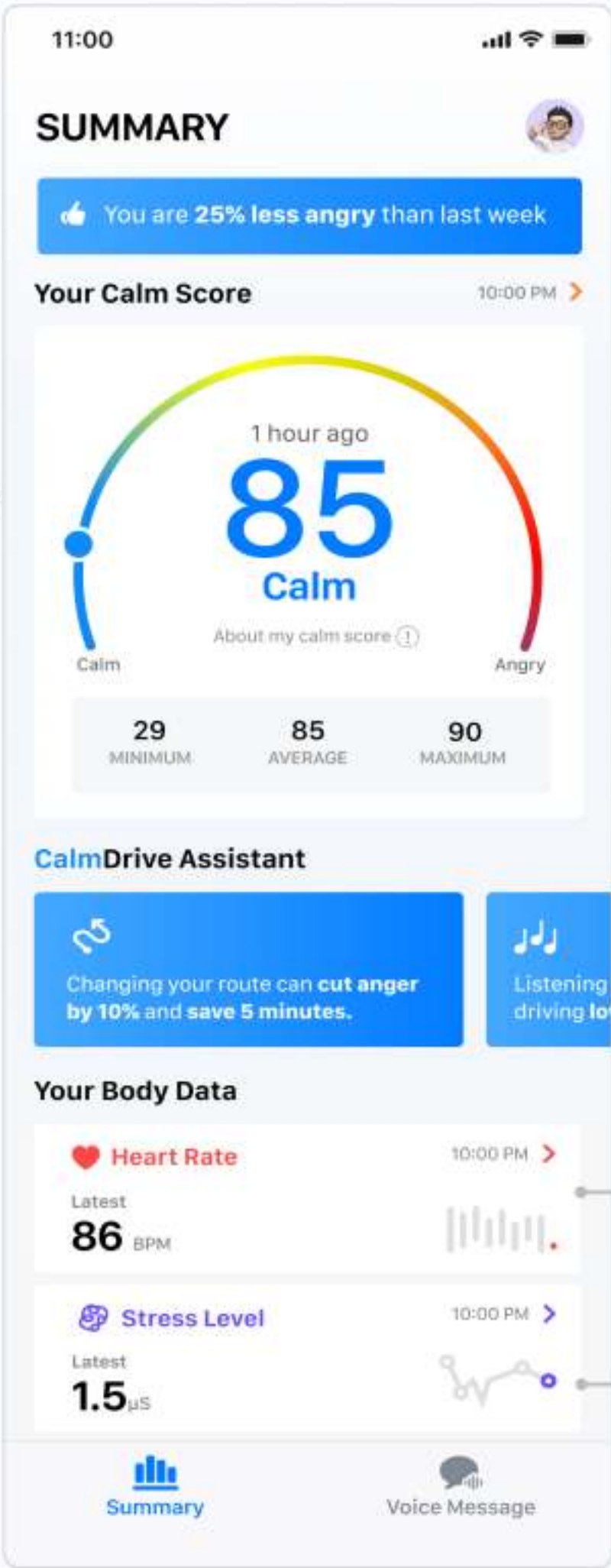
Calm   Angry

29	85	90
MINIMUM	AVERAGE	MAXIMUM

CalmDrive Assistant

Changing your route can **cut anger by 10%** and **save 5 minutes.**

Listening driving lo...

Your Body Data

❤️ **Heart Rate**   10:00 PM >
Latest
86 BPM

🧠 **Stress Level**   10:00 PM >
Latest
1.5 μS

Summary   Voice Message

03. Heart rate tracking

11:00

‹ Back   ❤️ **HEART RATE**

Daily | Weekly | Monthly | Yearly

RANGE
86-120 BPM
Today, May 8, 2024

❗ It's crucial to stay calm after 9:15pm.

86

9:00 PM   9:15 PM   9:30 PM   9:45 PM

Lasted: Aug 2024	**86 BPM**
Range	**80-120** BPM *

* Try to keep your heart rate between 60 – 80 BPM to secure calm driving.

Summary   Voice Message

04. Stress level tracking

11:00

‹ Back   🧠 **STRESS LEVEL**

Daily | Weekly | Monthly | Yearly

RANGE
1.3-2.1 μS
Today, May 8, 2024

❗ It's crucial to stay calm after 9:15pm.

9:00 PM   9:15 PM   9:30 PM   9:45 PM

Lasted: Aug 2024	**1.8 μS**
Range	**1.3 - 2.1** μS *

* Try to keep your stress level between 1.2 – 1.5μS to secure calm driving.

Summary   Voice Message
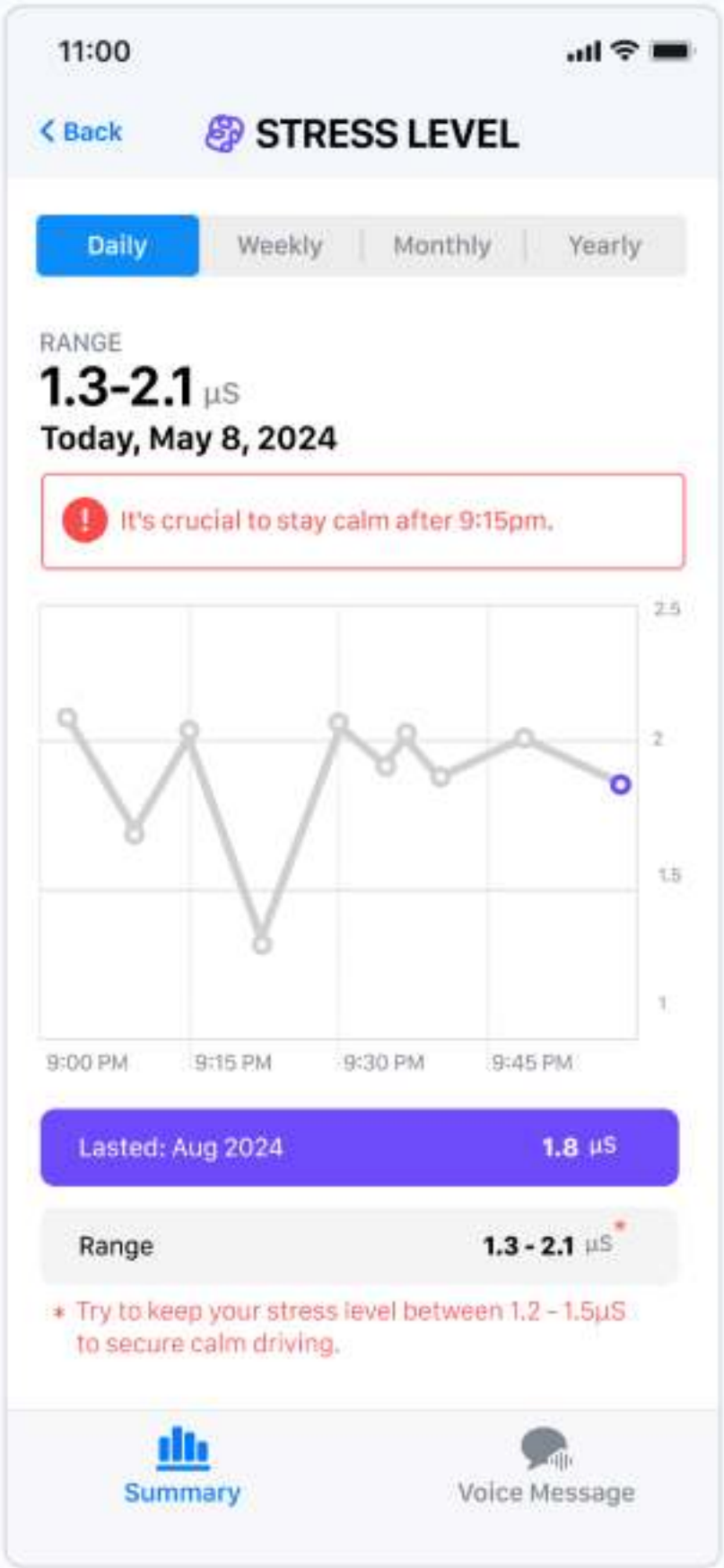
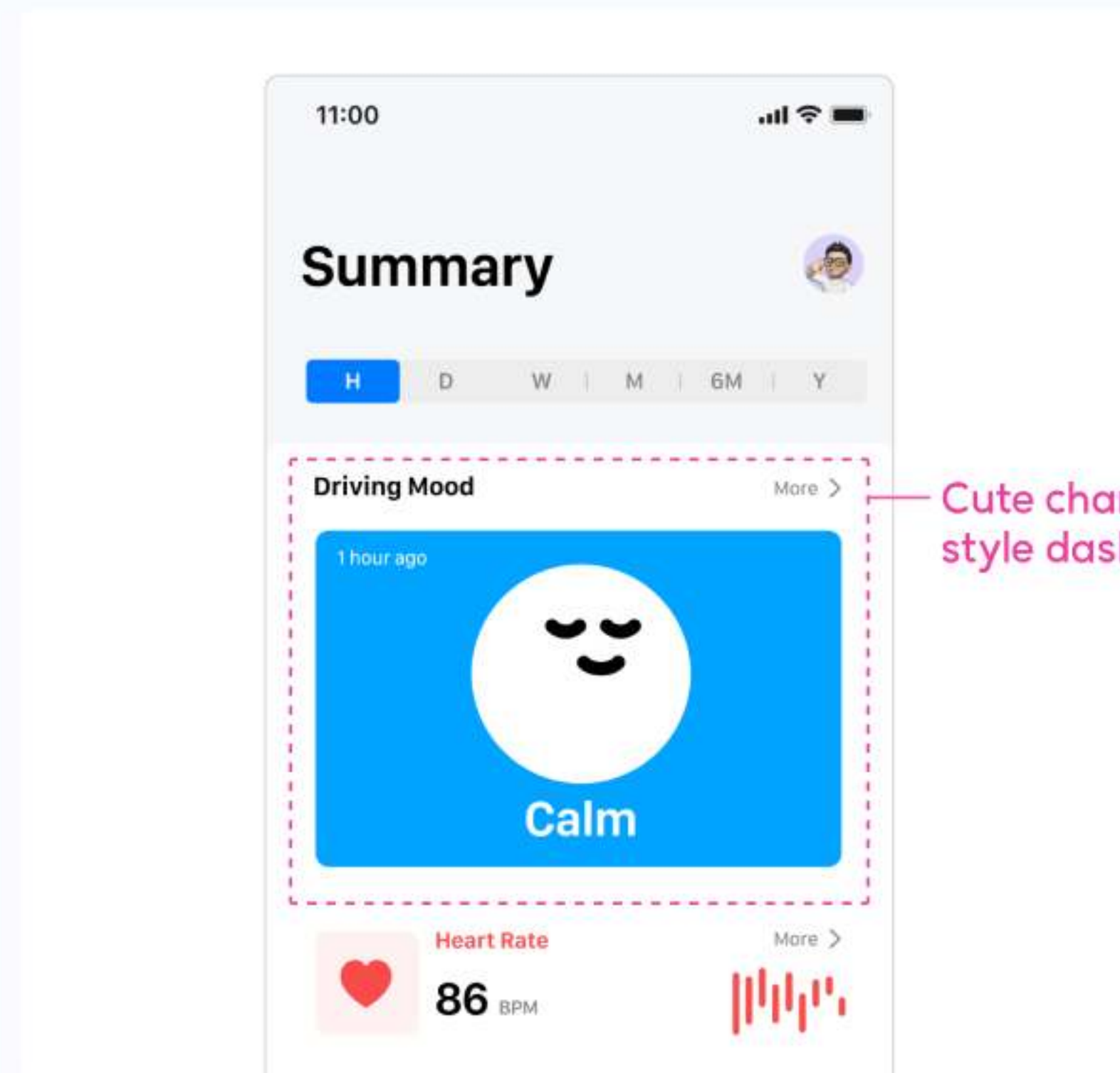# Improving the summary dashboard

Before

Cute character style dashboard

- Character to show the driver's mood, but the target users are adult. Therefore, the cute character style could feel childish to them, reducing the credibility of the information.

After
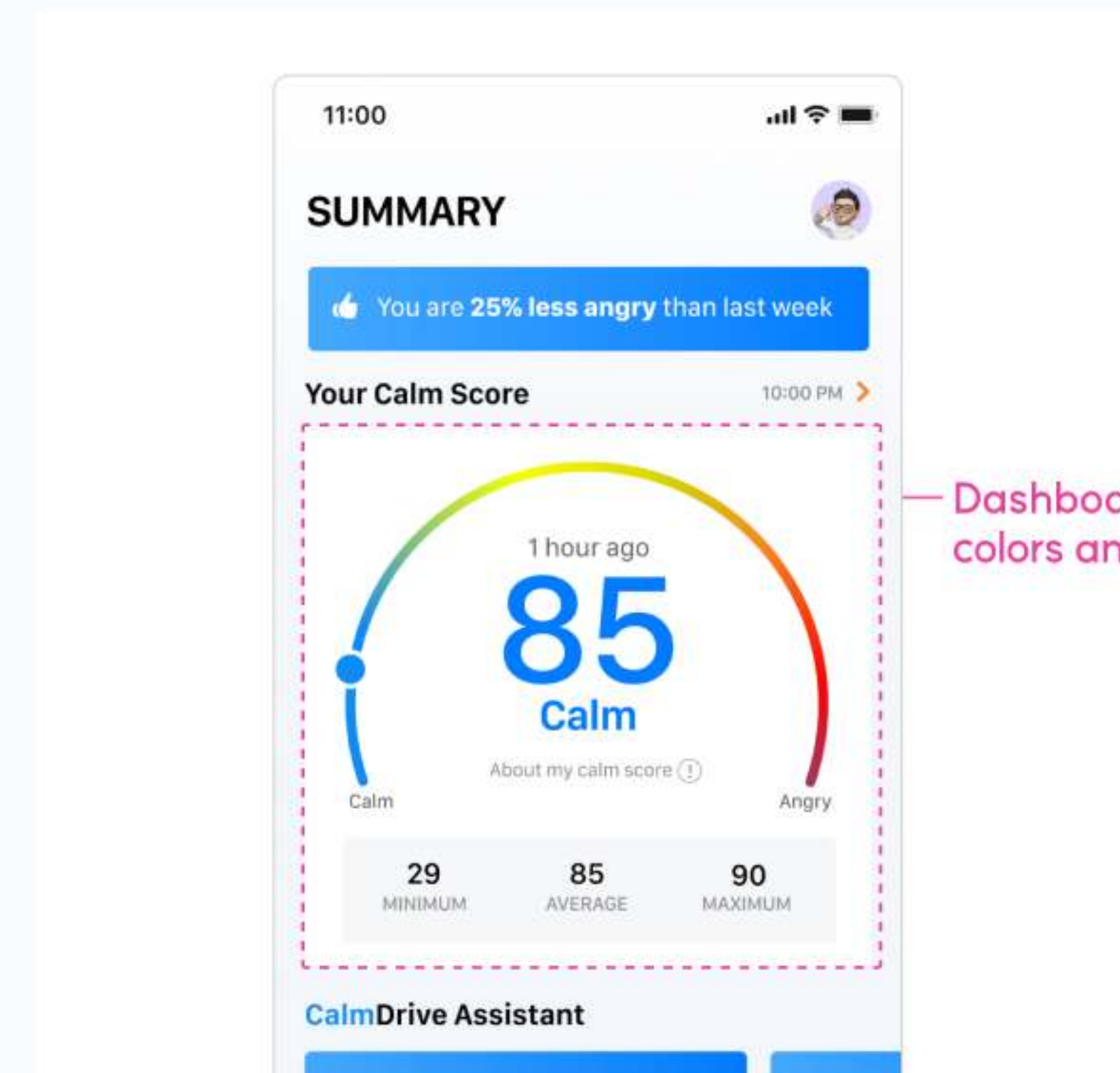
Dashboard with colors and numbers

- I replaced the character with colors and numbers to indicate how calm or angry the driver is. Users reported feeling more credibility.

02. Personalized recommendation

01. Recommendations from calmdrive assistant
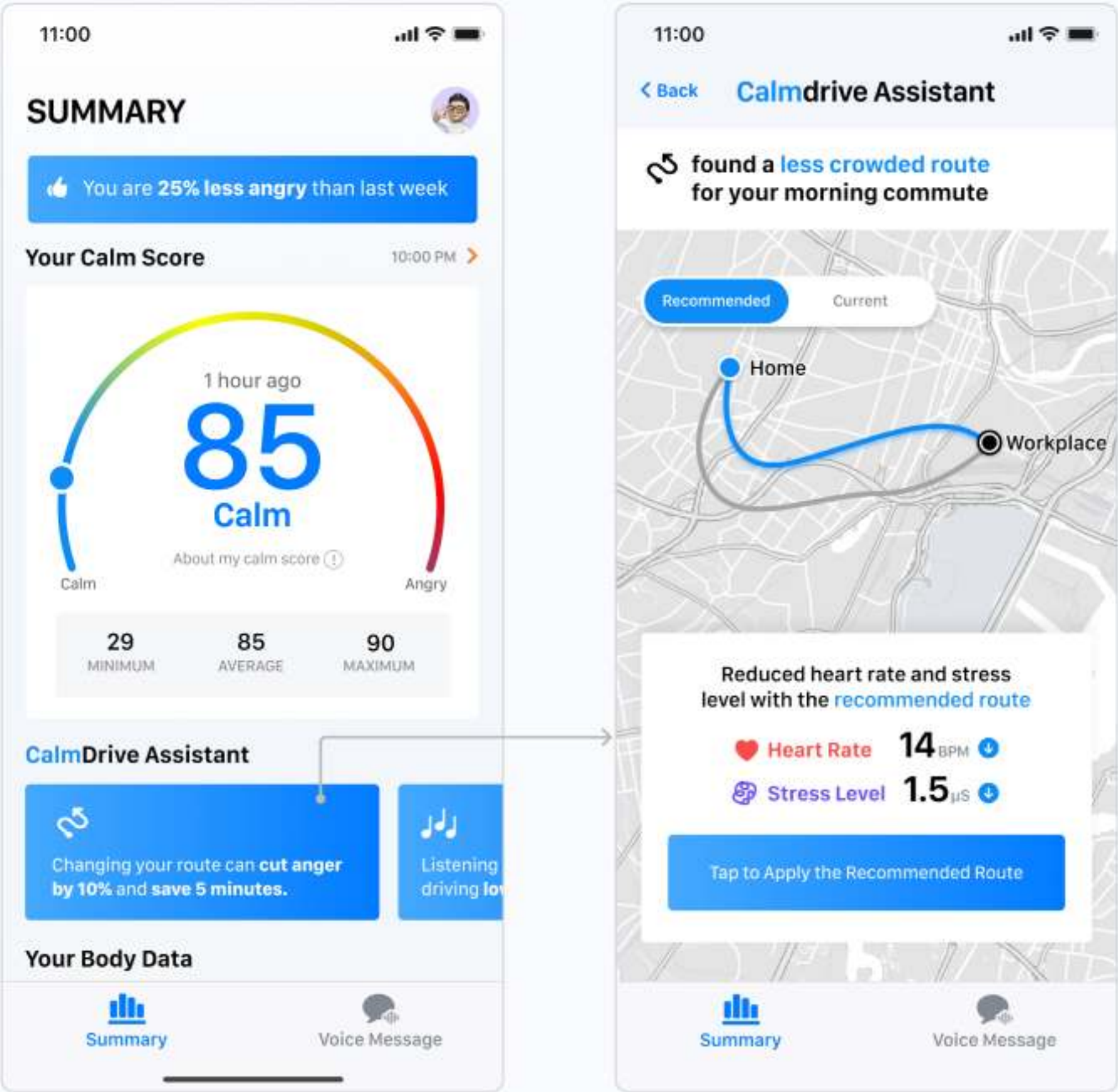
02. Recommendations from heart rate
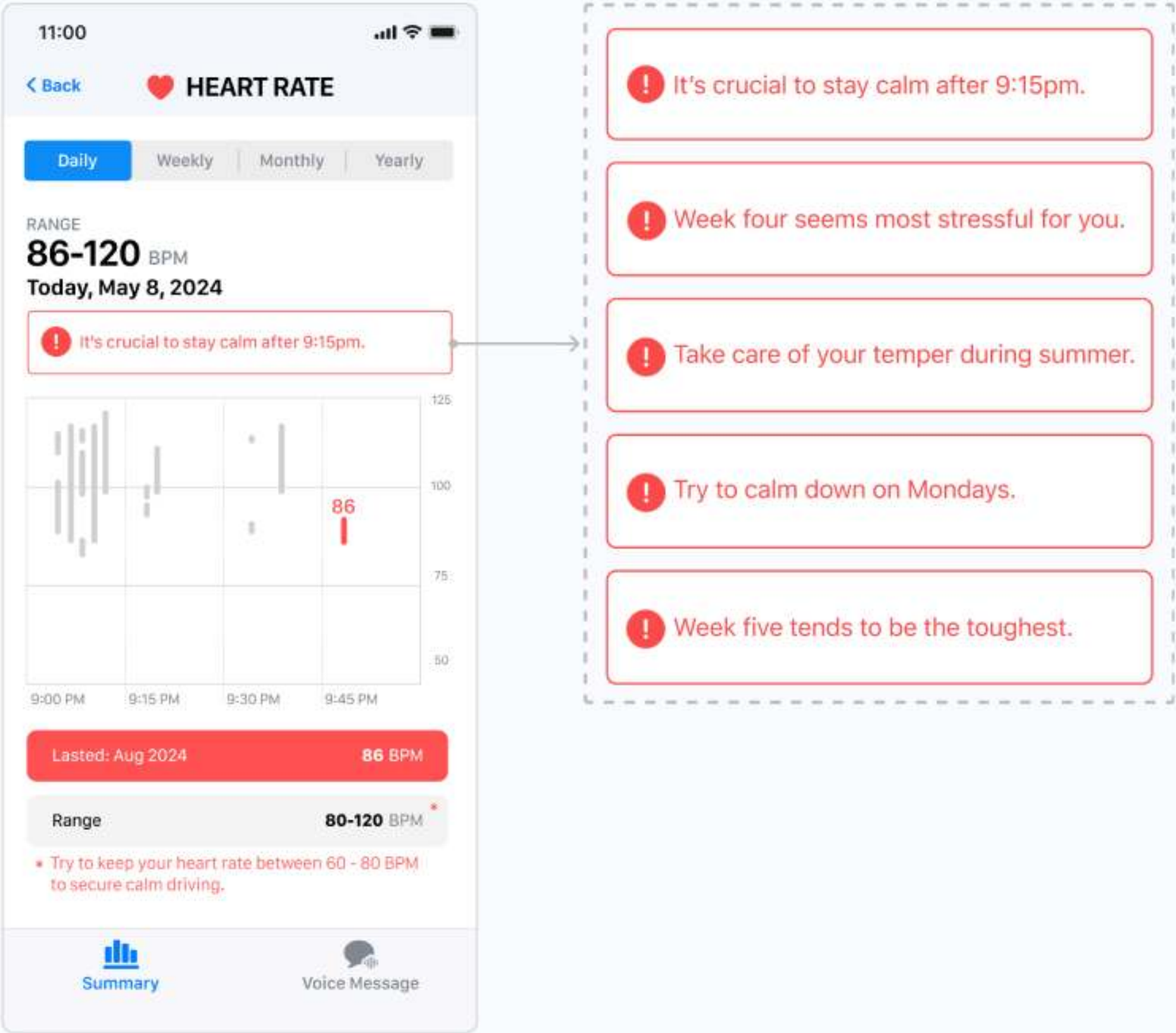
Improving personalized recommendations from heart rate

Before

After

Personalized recommendation

Personalized recommendation
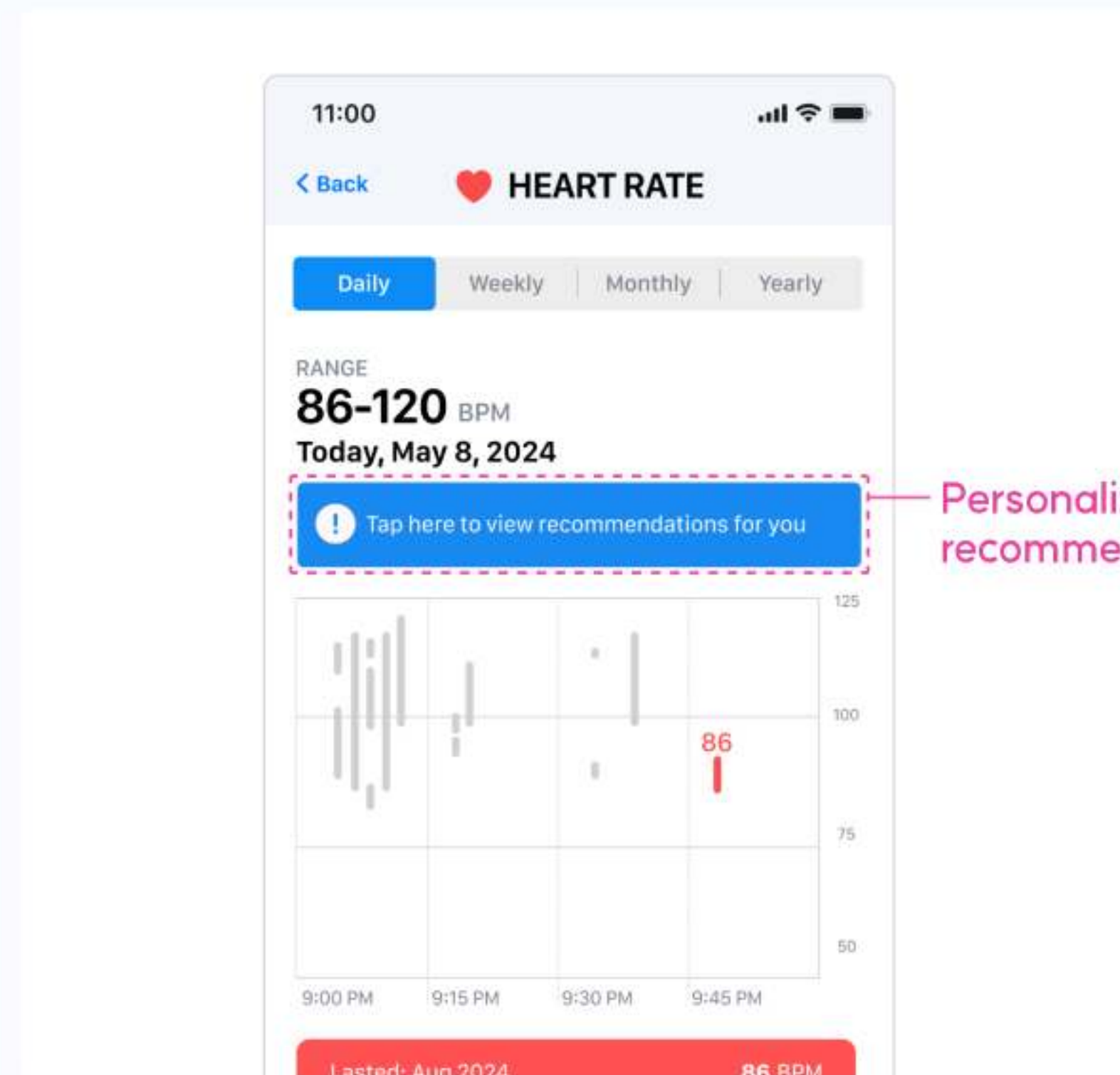
- Blue for recommendation maintained brand identity but made it seem less important since blue often signifies positive information.

- Personalized recommendation carries warnings for drivers. Therefore, I changed the color from blue to red, as red better conveys warnings.

03. Recording & Customizing voice message

01. Voice message dashboard

11:00

VOICE MESSAGE

ⓘ Here are some calming recording tips

Recorded Message

01. Recording_first
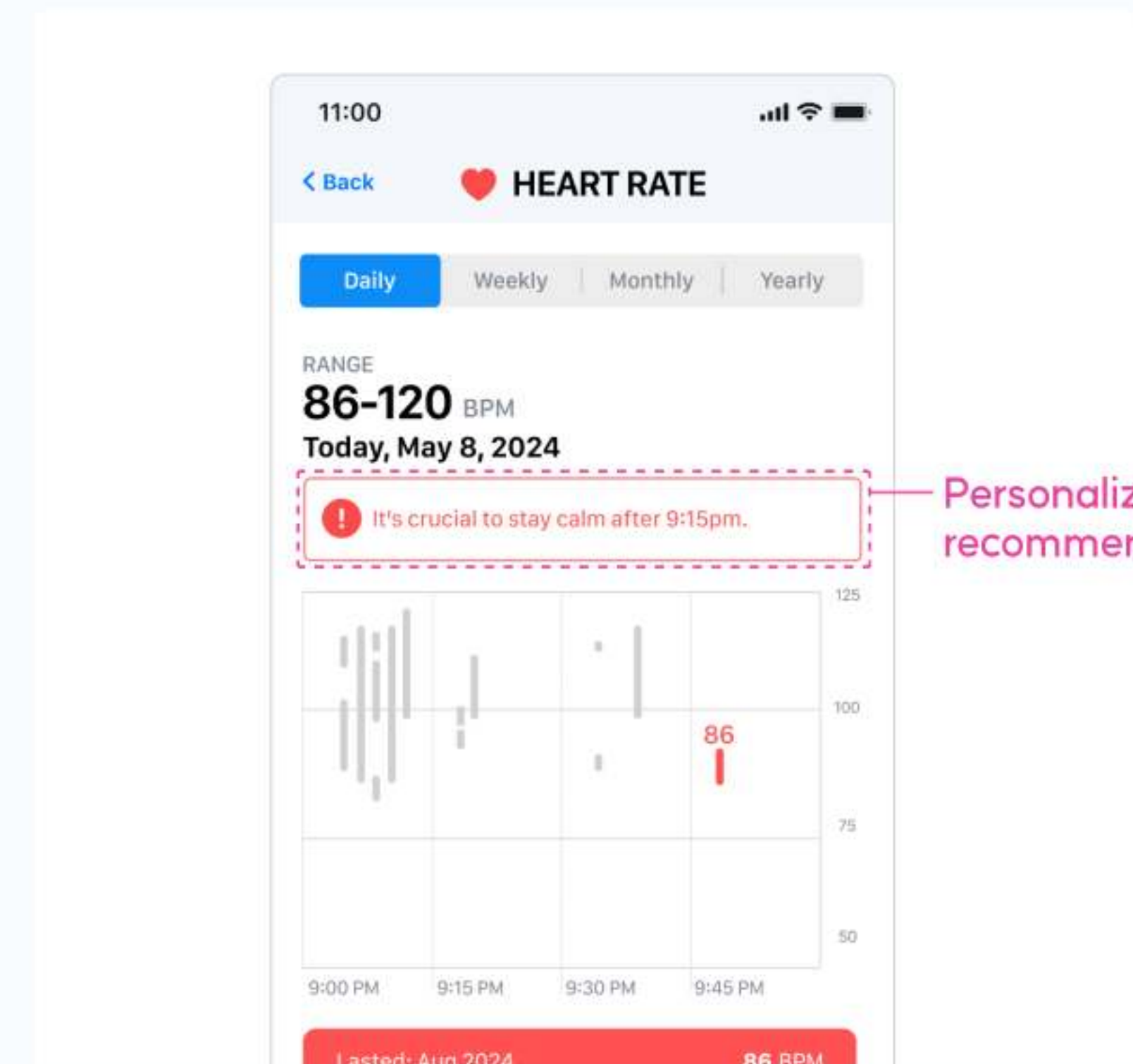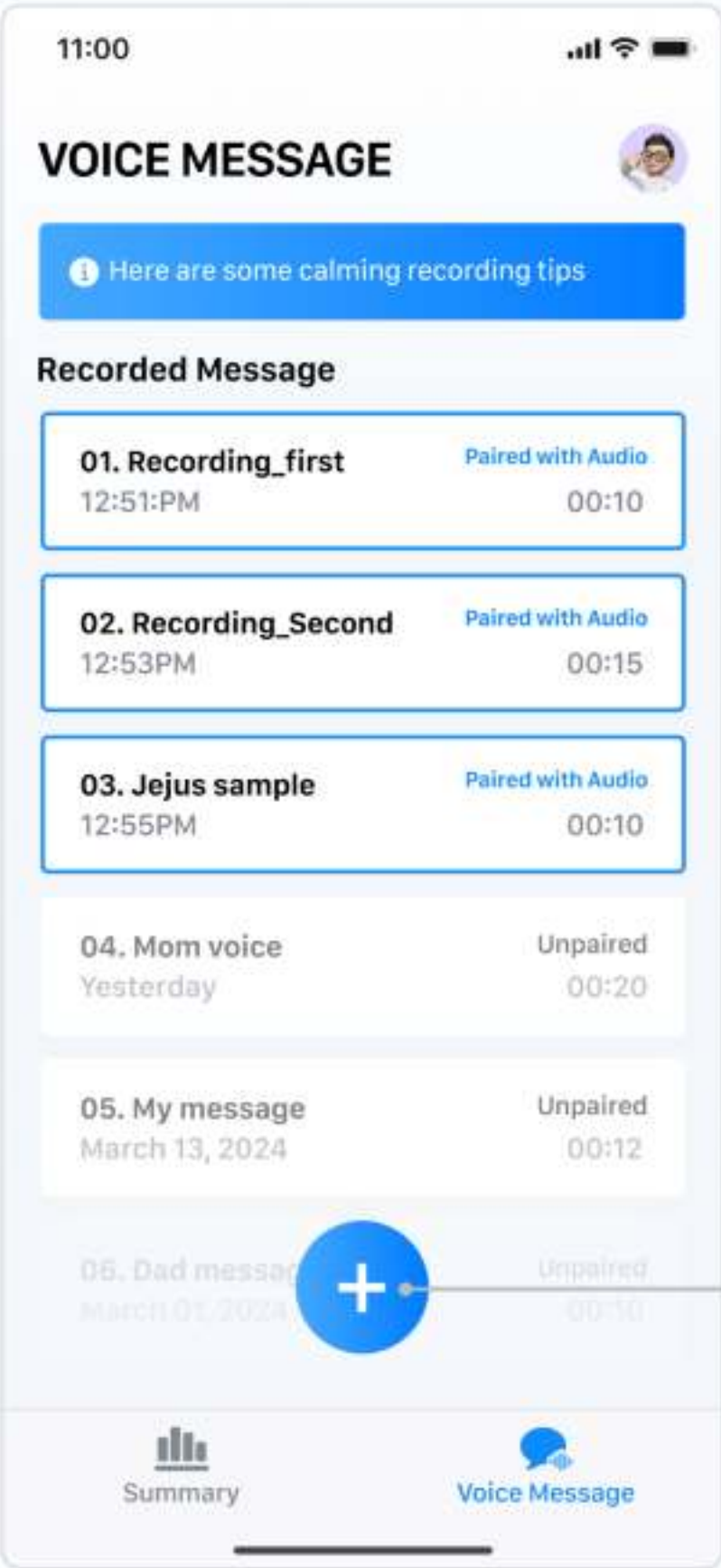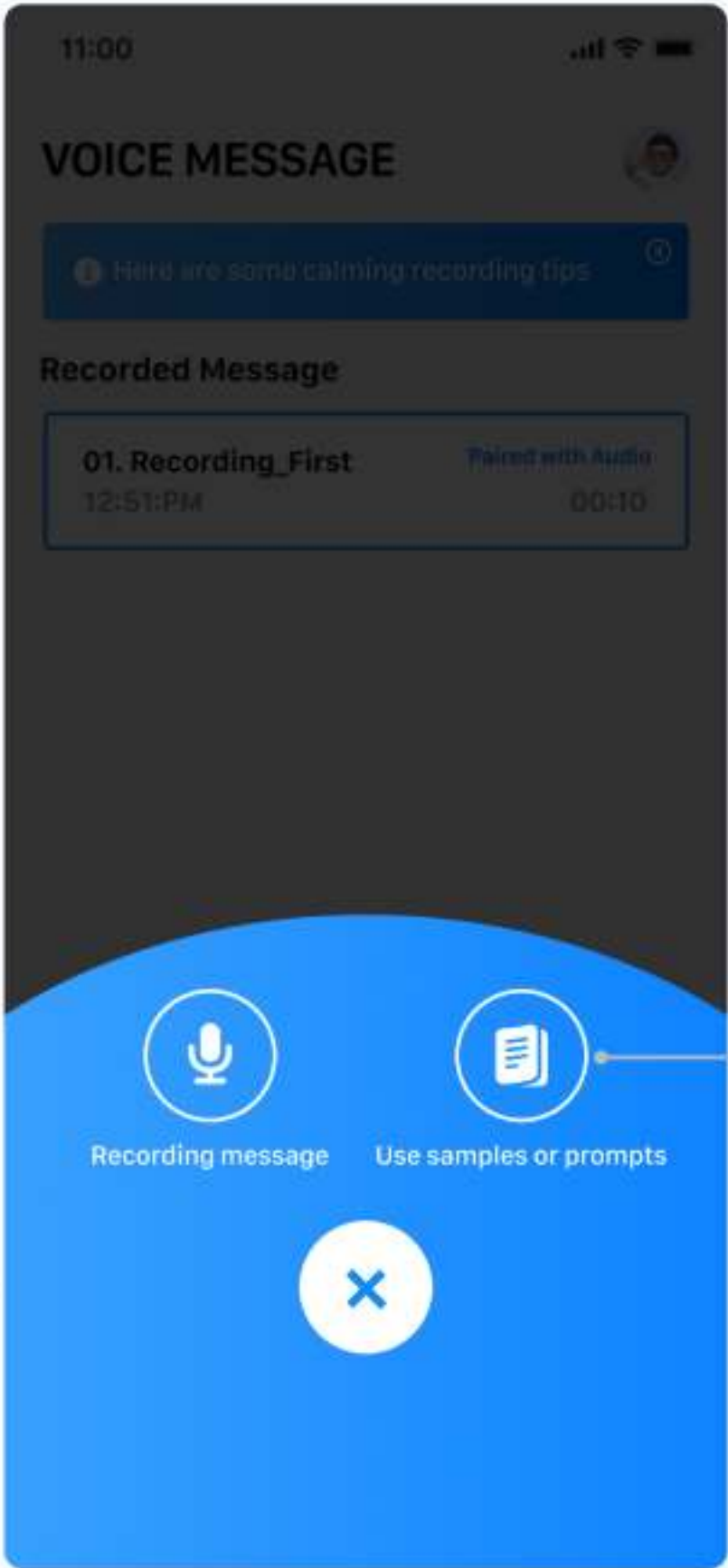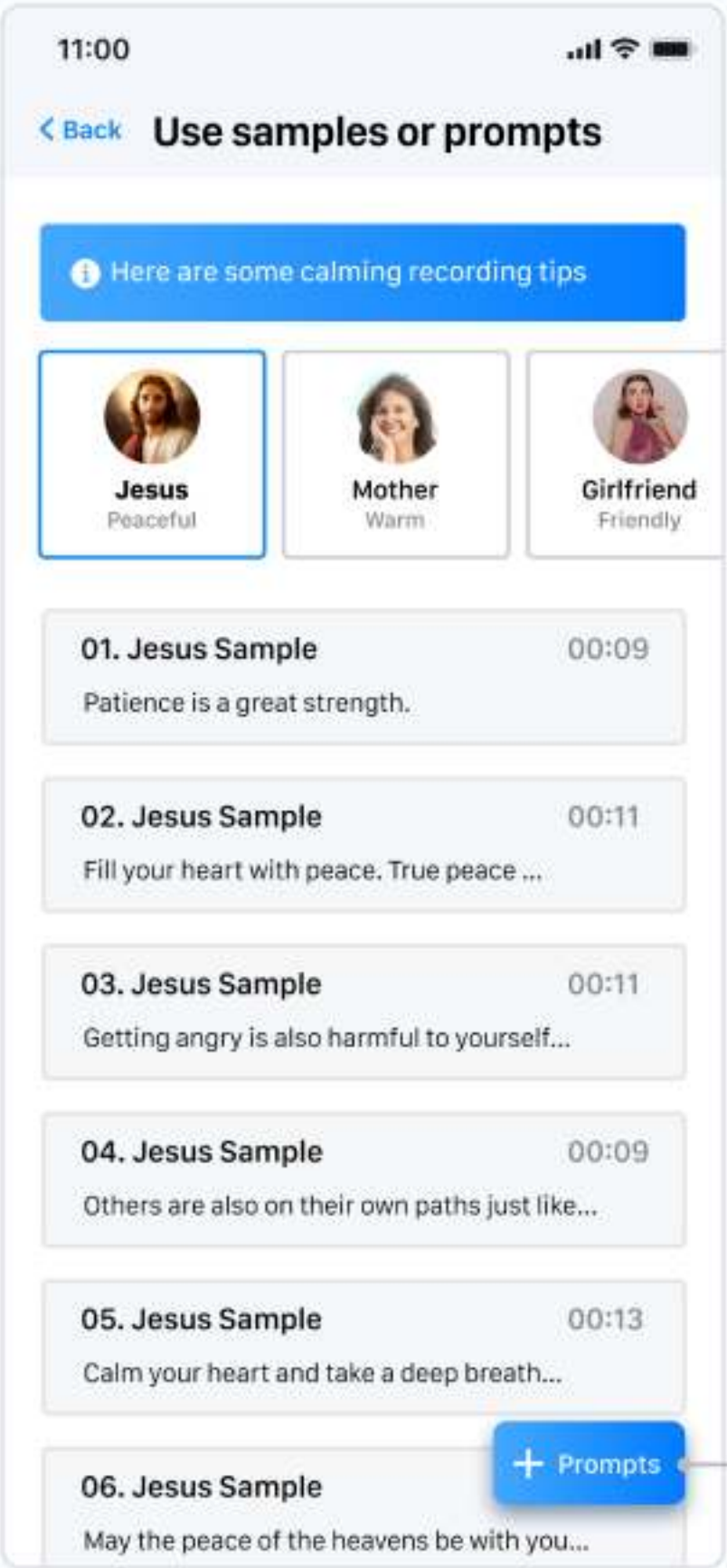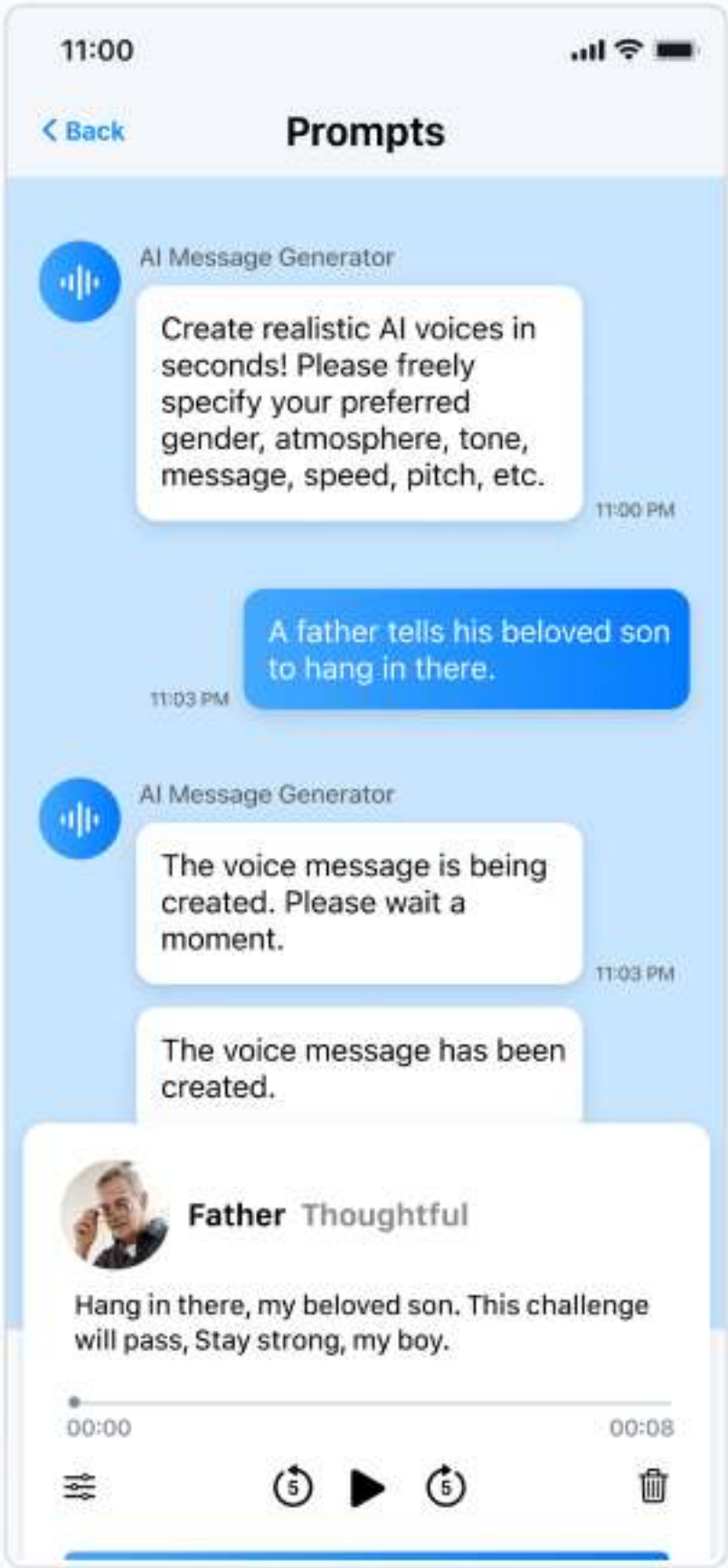12:51:PM   Paired with Audio
                           00:10

02. Recording_Second
12:53PM   Paired with Audio
                           00:15

03. Jejus sample
12:55PM   Paired with Audio
                           00:10

04. Mom voice   Unpaired
Yesterday   00:20

05. My message   Unpaired
March 13, 2024   00:12

06. Dad message   Unpaired
March 01 2024   00:10

Summary   Voice Message

02. Selecting options

11:00

VOICE MESSAGE

ⓘ Here are some calming recording tips

Recorded Message

01. Recording_First
12:51:PM   Paired with Audio
                           00:10

🎙️ Recording message   📄 Use samples or prompts

✕

03. Using samples

11:00

< Back   **Use samples or prompts**

ⓘ Here are some calming recording tips

Jesus   **Mother**   **Girlfriend**
Peaceful   Warm   Friendly

01. Jesus Sample   00:09
Patience is a great strength.

02. Jesus Sample   00:11
Fill your heart with peace. True peace ...

03. Jesus Sample   00:11
Getting angry is also harmful to yourself...

04. Jesus Sample   00:09
Others are also on their own paths just like...

05. Jesus Sample   00:13
Calm your heart and take a deep breath...

06. Jesus Sample
May the peace of the heavens be with you...

+ Prompts

04. Generating prompts

11:00

< Back   **Prompts**

AI Message Generator

Create realistic AI voices in seconds! Please freely specify your preferred gender, atmosphere, tone, message, speed, pitch, etc.
11:00 PM

A father tells his beloved son to hang in there.
11:03 PM

AI Message Generator

The voice message is being created. Please wait a moment.
11:03 PM

The voice message has been created.

👤 **Father** Thoughtful

Hang in there, my beloved son. This challenge will pass, Stay strong, my boy.
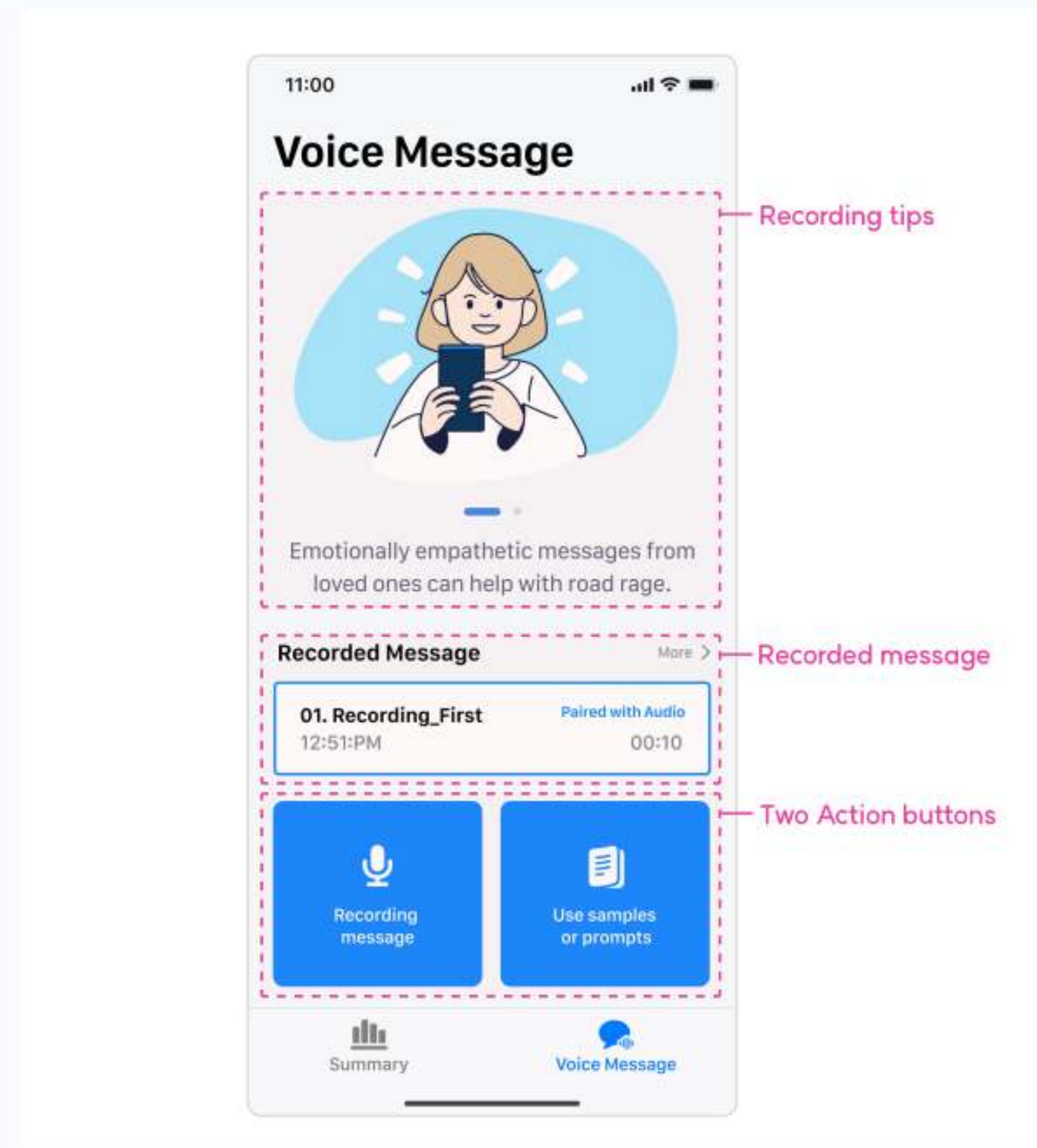
00:00   00:08
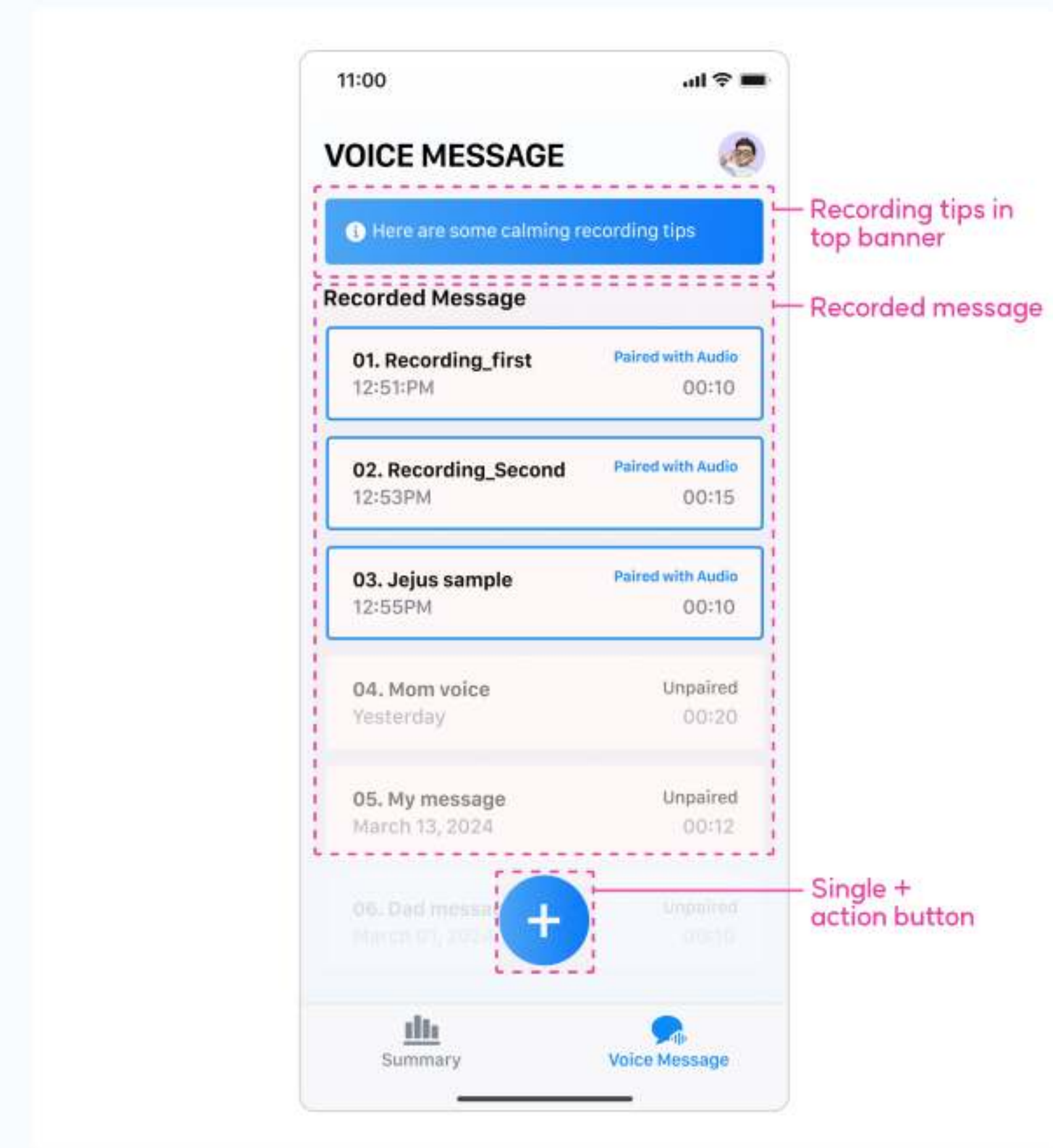
⚙️   ⏱️ ▶️ ⏱️   🗑️

Improving the voice message dashboard

Before

After

- Drivers had to keep seeing recording tips even after checking.

- I moved the recording tips to a top banner, allowing drivers to view them only when they want.

Impact

If the Calmdrive system were implemented to prevent road rage incidents,

1) Save approximately 3,300 lives annually.

With 66% of fatal traffic accidents related to road rage, if 25% of the 220 million drivers use the Calmdrive system and it has a 50% success rate, overall traffic accidents could decrease by 8.25%, potentially saving around 3,300 annually.

2) Mitigate increases in insurance premiums.

In Hawaii, auto insurance premiums can increase by up to 96% after receiving a fine for road rage-related behavior, with similar increases seen in California (74%), Michigan (69%), North Carolina (65%), and New Jersey (54%).

Thank You