EVALUATION REPORT: NAVIGATION TO IMPROVE HEALTH EQUITY IN BIRTH OUTCOMES

CENTER FOR COMMUNITY HEALTH AND EVALUATION

CCHE.ORG

DECEMBER 2022

TABLE OF CONTENTS

SUMMARY

A national health care system implemented an initiative to improve outcomes for birthing persons using a community-based navigator alongside a text-messaging platform (navigation program). The California Health Care Foundation retained the Center for Community Health and Evaluation to understand the program's impact in two of the health care system's California hospitals. The evaluators worked with the hospitals, the navigation program, and other stakeholders to understand the implementation of the program and its contribution to patient experience, engagement, and birth outcomes. The main findings of the mixed-methods evaluation are detailed below:

Outcomes:

- **Patients had an overall positive experience with the care they received at the hospital and the support they received from the navigators.** They appreciated the check-ins and support they received from the navigators.
- **Navigation was perceived by both patients and staff to improve patient knowledge and awareness and helped patients feel connected and cared for.** Patients reported having trust in their health care providers and being treated fairly.
- **Given that navigation happened late in pregnancy or post-delivery, the evaluation was unable to assess impact on birth outcomes.**

Implementation:

- **Implementation of the program at the two hospitals was challenging**. Implementation was impacted by the Covid-19 pandemic, lack of buy-in and engagement from hospital staff and primary care partners.
- **At both hospitals, navigators mostly reached patients post-delivery, and if reached pre-delivery, it was most often within the month prior to delivery.** Outreach occurred as soon as the patient was in contact with the hospital, which was mostly late in pregnancy or in preparation for delivery. During Covid-19, patients were engaging with the hospital later in pregnancy because of Covid restrictions on opportunities to connect in-person (e.g., tours, birthing classes, etc.).
- **Patients who spoke Spanish engaged at a slightly higher frequency than those that preferred English.** There were no differences in engagement with navigation by race and ethnicity.

Based on these findings, the evaluation offers considerations for future implementation of this program or similar programs. These considerations focus on implementation and patient engagement:

- **Implementation:** ensure high levels of buy-in among key stakeholders (including impacted staff and community partners), understand readiness to implement, and collaboratively design workflows and data sharing protocols.
- **Patient engagement:** broaden outreach/engagement to reach patients earlier in their pregnancies by working with primary care or obstetrics clinics as well as streamlining hospital pre-registration procedures, ensure patients are aware of the full breadth of support available, and continue to offer multimodal ways to engage with patients, including text messaging.

BACKGROUND

According to the CDC, Black and African American birthing people are three times more likely to die from a pregnancy-related issue than their white counterparts. There are 41 pregnancy-related deaths for Black individuals for every 100,000 live births compared to 13 per every 100,000 births for white individuals (Peterson 2019). Possible causes of these disparities are "differences in access to care, quality of care, and prevalence of chronic diseases" (Howell 2018), which are often a result of individual and institutional racism and bias.

The fragmented nature of care for birthing people further exacerbates difficulties addressing disparities in birth outcomes. Gaps exist between ambulatory clinics and the hospitals where deliveries occur, with differential access, treatment, and outcomes (Simon 2020). The California Health Care Foundation (CHCF) supports the creation of integrated pathways to close these gaps, particularly for Black birthing people. As part of this strategy, CHCF invested in a technology-enabled services company that contracts with health care systems to provide a navigation text-messaging platform staffed by a team of local patient navigators. CHCF also invested in an evaluation to understand the impact of implementation of this navigation program at two hospitals in California.

Through this program, navigators support pregnant and birthing people by providing recommended educational information, helping them adhere to specified perinatal care plans, and providing navigation support across ambulatory, inpatient, and community-based service providers. Navigators initiate support through text messaging and phone call follow-ups with patients to inform them about available resources and ask if they need support.

Studies of text-based programs and applications (apps) that encourage health-promoting behaviors in patients yield mixed results. A systematic review of maternal health lifestyle and medical health apps found that they successfully promoted a variety of health outcomes, including reducing gestational weight gain, increasing intake of healthy foods, and decreasing smoking (Overdijkink 2018). Another systematic review of 15 randomized control trials (RCTs) found that text programs led to "increased pregnant women's motherhood readiness, negative attitudes against alcohol usage, and beliefs about vitamin intake during pregnancy." They were also effective in promoting "antenatal health knowledge and awareness, increasing nutritional knowledge and creating behavioral changes in the fight against obesity among individuals" (Balci 2019).

Conversely, a RCT of almost 500 pregnant women found a text messaging program led to no significant differences in smoking cessation in the control versus intervention group at six months post-intervention (Abroms 2017). Another RCT of the effect of texting on sedentary behaviors in pregnant women, determined that regardless of the frequency or timing of texts there was no increase in the amount of physical activity in the control versus intervention groups (Huberty 2017). A trial investigating the effect of educational texts on gestational weight gain found no significant weight difference between the control and intervention groups (Holmes 2020). The systematic review of 15 RCTs mentioned earlier also found that text programs were not effective on their own in increasing flu vaccination, encouraging the use of certain diabetic management tests, or in reducing anxiety in pregnant women (Balci 2019).

It remains unclear whether text-based and multimodal messaging programs are a strong enough intervention to decrease birth inequities in birthing people. The current research is limited and has produced mixed results. The evaluation of this navigation program was intended to add to the existing research and expand the understanding of the extent to which text-based approaches and navigation can improve birth outcomes and provide insight into the effectiveness of these interventions on Black birthing people more specifically.

EVALUATION OVERVIEW

The Center for Community Health and Evaluation (CCHE) evaluated the implementation of the navigation program at two California hospitals from July 1, 2021, to December 31, 2022. A collaboratively developed logic model for the navigator program guided the evaluation. The logic model described key program components and intended outcomes (see Appendix 1) and informed the development of an evaluation plan that included goals and evaluation questions, measures, and data collection methods (see Appendix 2). The evaluation aimed to understand the contribution of the navigation program to patient experience, patient engagement, and birth outcomes (e.g., care plan adherence, utilization, and clinical outcomes), and to assess staff and provider experiences. CCHE examined differences in birth outcomes by race/ethnicity and other demographics. CCHE used a mixed-methods approach, combining qualitative key stakeholder interviews with quantitative analysis of data from both the navigation program and hospital's electronic health records.

EVALUATION TIMELINE

JULY 2021
Evaluation begins;
IRB gives a "Determination of Not Research"

AUGUST 2021
Data sharing agreement process started

JANUARY - FEBRUARY 2022
Interviews with hospital staff, navigators, national health system enterprise staff, and navigation program staff

APRIL 2022
Data sharing agreement fully executed, enabling health care system and navigation program to provide data to CCHE

MAY 2022
Health care system and navigation program provide CCHE with initial quantitative datasets; CCHE provides feedback on data quality to informal final data pull

AUGUST 2022
Final quantitative dataset regarding patient outcomes provided to CCHE

AUGUST - NOVEMBER 2022
Patient interviews completed;
Outcomes analysis conducted

OCTOBER 2022
Additional data provided to CCHE to expand the patient interview population

EVALUATION FINDINGS: IMPLEMENTATION

Implementation findings came from interviews conducted with staff from each hospital site, the national hospital system, the navigation program, and patients. Interview themes were triangulated with quantitative data from the navigation partner and the hospitals' electronic health record. The following section discusses findings related to implementation and outcomes.

The national health care system identified addressing disparities in maternal mortality and morbidity as an enterprise priority in its Health Equity Roadmap, with a particular focus on Black birthing people. In April 2020, to advance this priority, the national health care system entered an enterprise-level contract with a technology-enabled navigation program to provide additional navigation support for pregnant persons across its hospitals. Eight hospitals—seven in California and one in Arizona—were identified for phased program implementation between December 2020 and September 2021. The two hospitals selected to participate in the evaluation were two of the initial four sites based in California and had a high volume of births.

To support implementation, the health system's national team identified the business sponsor, operational leader, and steering committee to provide guidance and facilitate the phased implementation. The national operational leaders helped schedule meetings and make connections between the local hospital staff and the navigation program. Local hospital leadership, maternity directors, the navigation program team, and national operational leaders were invited to attend monthly operational meetings to plan and implement the program. Due to Covid-19 restrictions, all planning meetings shifted from in-person to virtual.

In addition to the internal implementation team, an external consultant met with the navigation program to review their health equity strategy and provide feedback. The consultant also supported the navigation program and hospital collaboration by facilitating conversations with maternity directors about health equity (see Appendix 3 for Equity Framework).

Staff Engagement

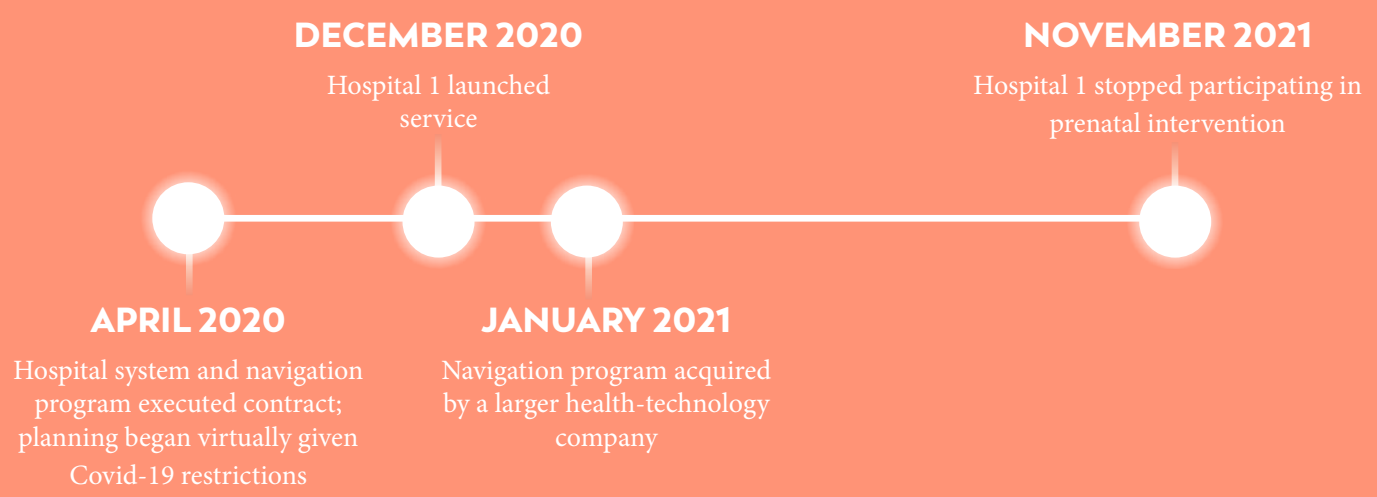
The navigation program was designed to complement existing outreach and educational services each hospital provides and have minimal impact on hospital staff workflows (i.e., was intended to support staff and patients by providing additional navigation services). The navigation program received patient information through an automated data feed (discussed later). The navigators then reached out directly to patients as an extension of the hospital staff and introduced themselves as part of the hospital team. Hospital staff were engaged in two areas:

- Identifying relevant, local resources to ensure the navigation program referred patients to appropriate resources (e.g., specific materials created by the hospital for Black and African American persons or specific packing lists for giving birth). Hospital staff were asked to update, maintain, and share resource lists.

- Responding to 'escalation' requests for patients who needed support outside of the navigators' scope (i.e., clinical advice), in which case, the navigators contacted the hospital to follow up with the patient to provide that support.

As mentioned above, implementation coincided with the onset of the Covid-19 pandemic shifting program launch meetings to a virtual environment. Additionally, during the implementation period, the national health care system, hospitals, and the navigation program all experienced significant changes in staffing and structure. The nature of virtual engagement, as well as staffing and structural changes, made building strong relationships between teams difficult and likely contributed to some of the challenges in hospital staff engagement and buy-in throughout the implementation period. Challenges included:

IMPLEMENTATION TIMELINE



- **Identifying impacted staff:** The initial meetings between the hospital and navigation program were with the clinical teams to ensure clinical staff were aware this resource was available and able to respond to escalations as needed. In interviews, hospital staff noted that other staff who would be impacted by the program—particularly staff responsible for outreach and community partnerships—were not adequately engaged at the outset to consider how program implementation would impact their work. In interviews, hospital staff at one hospital reported duplication and confusion about the work of the navigators and the hospital's outreach staff, particularly during pregnancy. They also indicated that coordinating with the navigation program and maintaining the resource lists was time intensive and challenging. As a result, one hospital requested the navigation program stop all prenatal outreach in November 2021 due to concerns about duplication with its outreach team and impact on community partnerships.

- **Building trust and relationships between staff:** While there were substantial efforts to build relationships at the leadership level, relationship building opportunities at the staff level were minimal. This meant that hospital outreach staff did not personally know the navigators who were supporting their patients. For example, hospital staff reported that the navigators were not familiar with local context or resources because they worked for a national organization, but the navigators assigned to the hospital lived locally. The lack of relationships at the staff level made coordination and collaboration more difficult, especially when concerns arose around potential duplication or when there was a need for escalation. For example, the navigation program reported that at one hospital they were having challenges connecting with the appropriate staff to respond to escalations.

- **Establishing buy-in for the program:** Buy-in from hospital staff and leaders was critical for successful implementation. Buy-in varied at both hospitals, with one hospital indicating that the program added additional burden to their staff without providing a clear benefit. One representative from the second hospital indicated that the program helped bring patients back to the hospital for education and check-ups. To keep internal stakeholders informed, national operations executives, maternity directors at the hospital, and navigation program staff monitored patient engagement measures monthly. However, hospital leadership and staff noted that it was difficult to find readily available information about the program and would have liked to see more data on patient impact and engagement. Additionally, hospital leaders expressed concerns about the high ongoing cost to the hospital for providing the program and wanted to understand the program's return on investment and how patients benefited.

“It felt like we were giving [the program] information instead of vice versa. They sent us lists of people who needed info from hospital, but we already had those patients [identified]. It was double the work trying to assist them.”

– Staff member

“Facility support and provider buy-in is critical for our ability to support patients. Without that buy in, it limits our ability to be fully present and available for our patients.”

– Navigator

Patient Outreach and Engagement

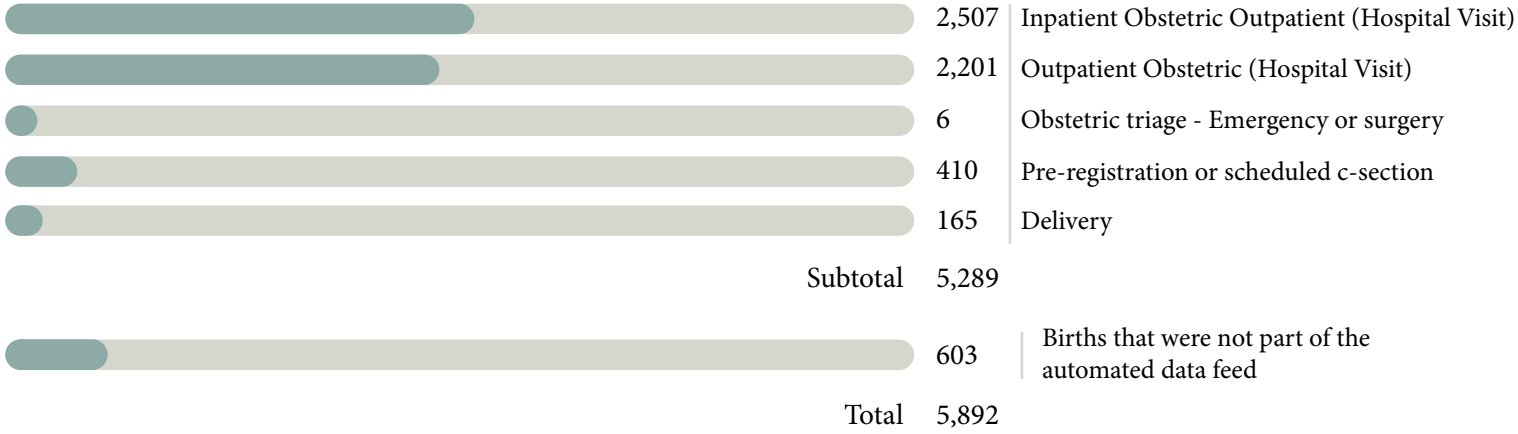
The navigation program was designed to have multiple points of contact with patients, each intending to assess needs and provide support (see Figure 1). The workflow below shows the ideal workflow if a patient was engaged early in pregnancy. This included, but was not limited to:

- **Prenatal support:** screening for needs related to housing, food insecurity, safety at home, and transportation; providing social services resources when appropriate; providing information on c-sections; providing contact information for birth tours and prenatal education classes; supplying information and support on breast- or chest-feeding[1]; supplying information on car seats (local resources for obtaining them and installing them); and linking to hospital-specific resources.
- **Post-discharge support:** encouraging patients to connect with their and their baby's provider; providing support on lactation (e.g., available lactation groups); providing mental health support; and conducting further screening on needs related to housing, food insecurity, home safety, and transportation.

Figure 1: Model Workflow

[1] https://www.cdc.gov/nutrition/emergencies-infant-feeding/glossary.html: Chestfeeding is a "term used by many masculine-identified trans people to describe the act of feeding their baby from their chest, regardless of whether they have had chest/top surgery (to alter or remove mammary tissue)."

Figure 2: How Birthing Person Entered Automated Data Feed to Technology Partner



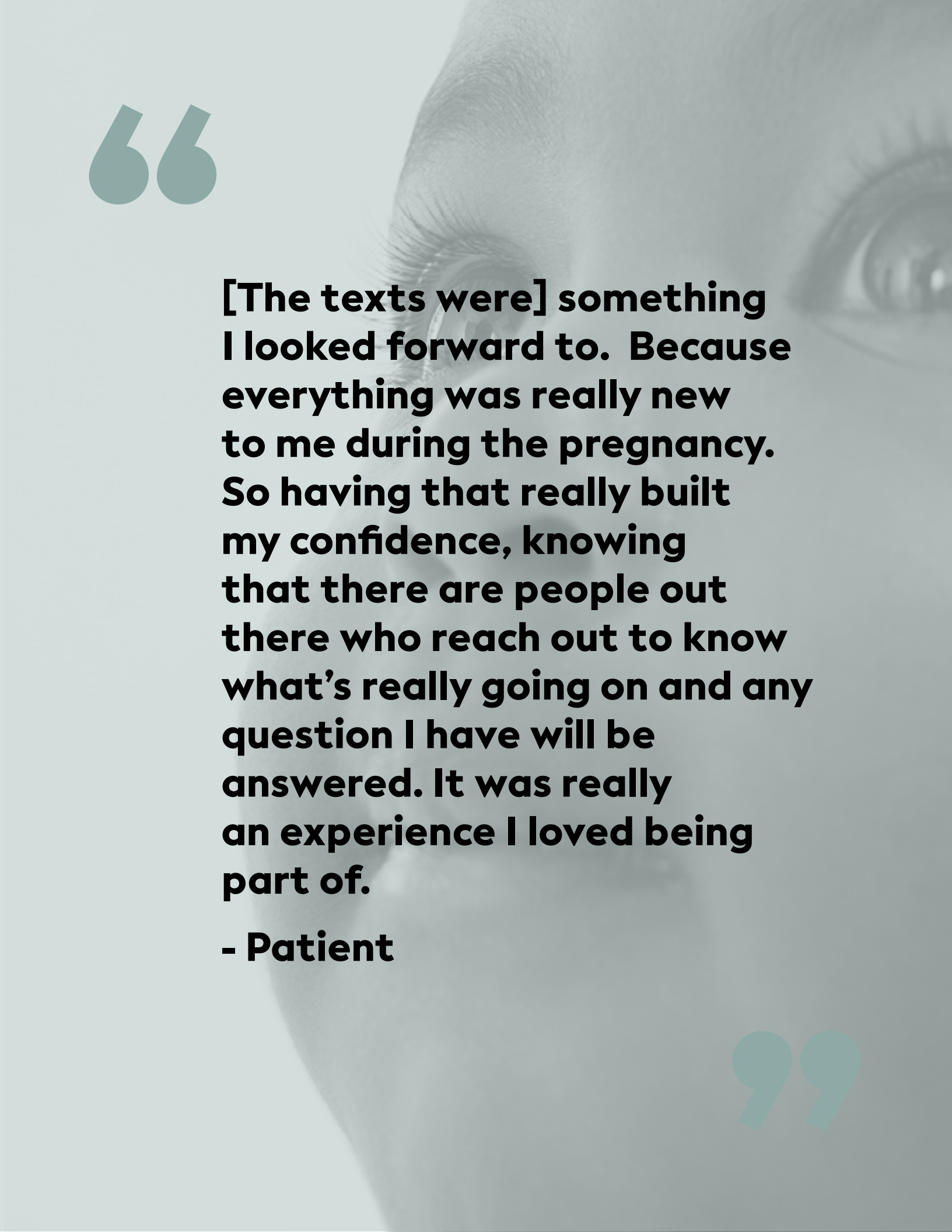
The navigation program first engaged with pregnant people after notification from the hospital via an automated data feed. Almost all patients entered the automated data feed after having an inpatient or outpatient visit at the hospital. Patients were also added to the data feed through other channels: if they pre-registered to give birth at the hospital; if they registered for birth tours or education classes; if they scheduled a c-section at the hospital; and at discharge from the hospital post-delivery (see Figure 2).

Restrictions and patient concerns related to Covid-19 made it less likely that patients would be in contact with the hospitals early in their pregnancy. The pandemic made it less likely that patients connected with the hospital early on to schedule birth tours, attend classes, pre-register, or access non-urgent in-person care. Given the low pre-registration rate, the hospitals and navigation program had limited opportunity to interact with pregnant persons before they delivered. Early/pre-delivery patient interactions likely occurred more frequency for patients with high-risk pregnancies or experiencing complications. 5,892 births occurred at the two hospitals between December 1, 2020, and May 16, 2022. The navigation program had the opportunity to connect (received data and contact information) with 5,289 patients. The navigation program reached out to 4,813 patients, representing 82% of births at the two hospitals and 91% of births that the navigation program had data on. Most connections took place post-delivery (see Figure 3).

Figure 3: Timing of Patient Contact (#/% of patients)

	N	%
Not contacted	476	9%
Contacted both pre- and post-delivery	1,704	32%
Contacted post-delivery only [2]	2,908	55%
Contacted pre-delivery only	23	<1%
Contacted at an unspecified time during/after pregnancy	178	3%
Total # of patients for which navigation program had data	5,289	

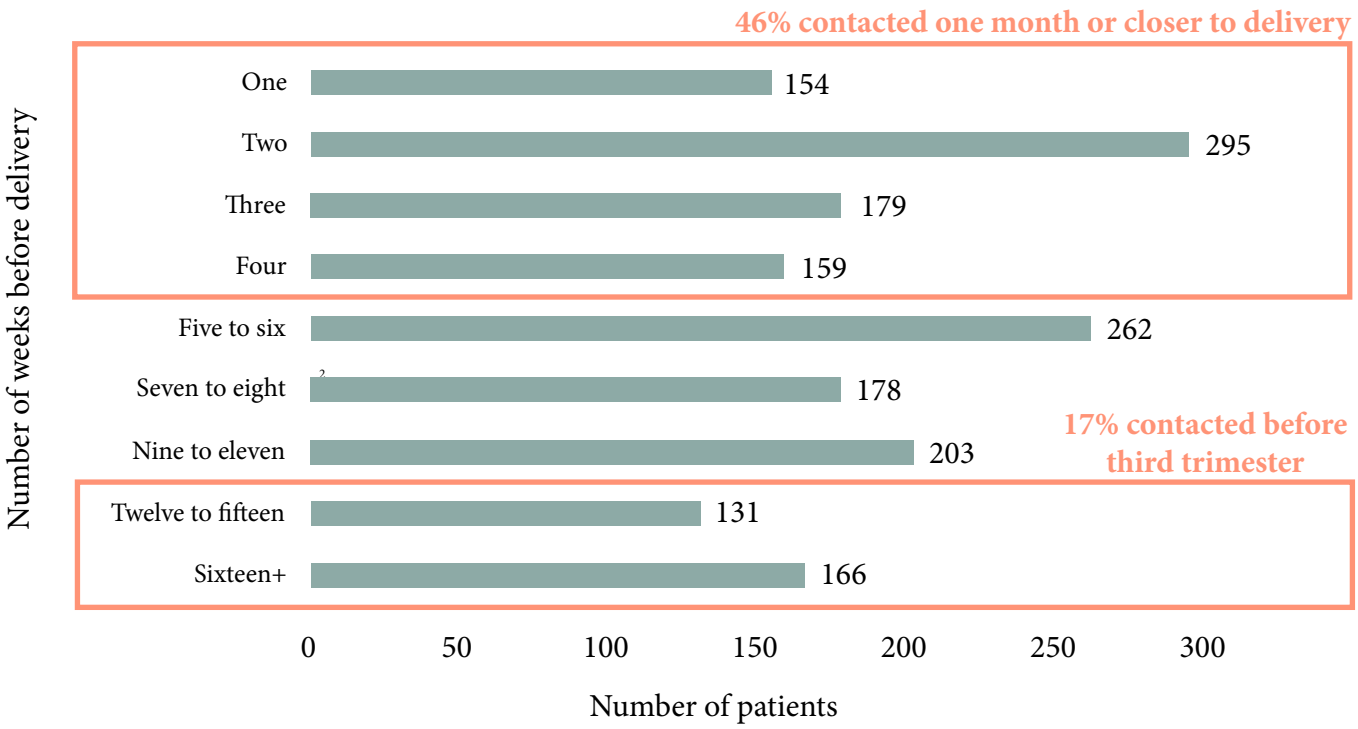
[2] As mentioned earlier, one of the hospitals requested that the navigation program stop pre-delivery outreach in November 2021, which may have contributed to the high percentage of patients reached post-delivery only



[The texts were] something I looked forward to. Because everything was really new to me during the pregnancy. So having that really built my confidence, knowing that there are people out there who reach out to know what's really going on and any question I have will be answered. It was really an experience I loved being part of.

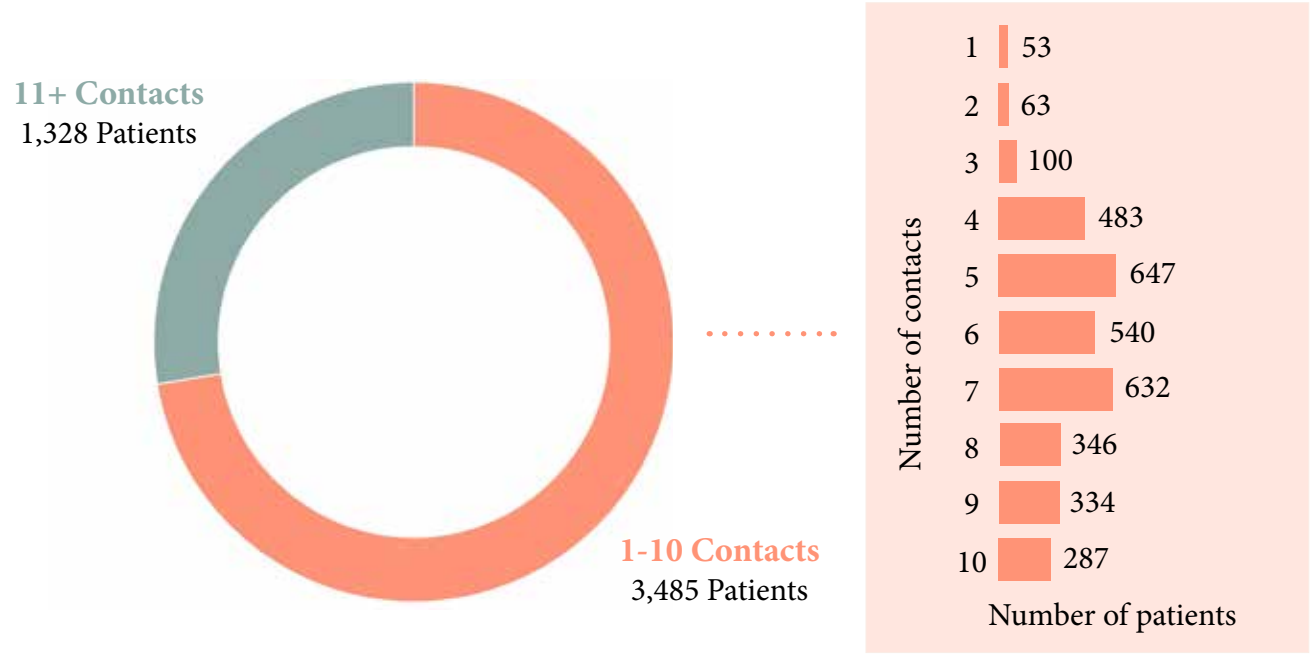
- Patient

Figure 4: Initial Contact by Number of Weeks Before Delivery



Among patients contacted pre-delivery (N = 1,727), almost half were first contacted by navigators in the month prior to their delivery (46%). Only 17% of patients were contacted at least 12 weeks prior to delivery (see Figure 4).

Figure 5: Number of Contacts to Patients by Navigation Program (# of Patients)



After initial contact, the navigation program contacted patients an average of 7.1 times and a median of 6 times. When only including patients that the navigation program contacted at least once, the average increases to 8.6 times and the median increases to 7 times. About three-quarters of patients (n=3,485) were contacted by the navigation program between 1-10 times (see Figure 5).

Patients who were contacted both pre- and post-delivery had the largest median number of contacts from navigators (see Figure 6).

Figure 6: Median Number of Contacts by Navigator Relative to Delivery

Navigators contacted patients	Median number of contacts from navigators
Both pre- and post-delivery	10
Post-delivery only	6
Pre-delivery only	4
At unspecified time	3.5

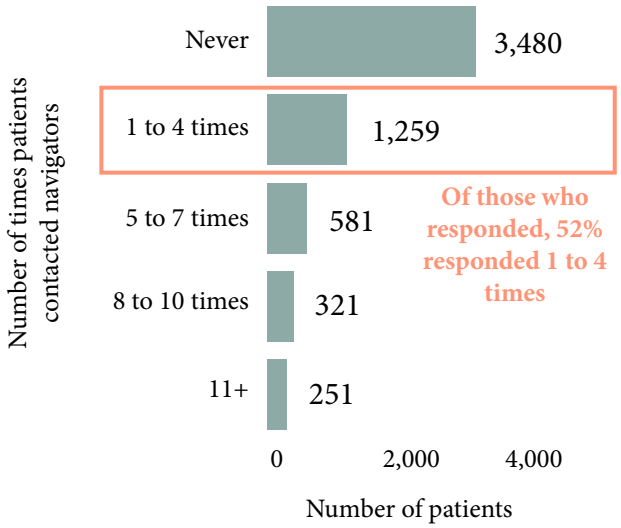
The program was multimodal, reaching out to patients both via phone calls and text messages. Most navigator contacts were made via text message. During the study period, navigators sent more than 40,000 text messages to 4,804 patients (99.8% of the 4,813 patients who were contacted at least once) and made around 1,500 calls to 1,481 patients (30.8% of patients).

The number of times navigators reached out to patients was associated with the number of times the patients contacted the navigators (see Figure 7a). Patients who responded to the navigators most commonly responded between one and four times (see Figure 7b).

Figure 7a: Average Number of Contacts by Patients by How Many Times Navigator Contacted Them

Navigators reached out to or contacted patients	Average number of contacts from patient to navigators
0 times (n=476)	-
1 to 4 times (n=699)	0.1
5 to 7 times (n=1,819)	0.4
8 to 10 times (n=967)	2.3
11+ times (n=1,328)	7.1

Figure 7b: Number of Patients Responding to Navigators



Given well-documented disparities in birth outcomes, the evaluation looked at engagement data by race, ethnicity, and language spoken to understand any differences in how people engaged with the program. The evaluation specifically looked at two race/ethnic groups and found no differences between groups. No statistical differences were found when comparing Black patients and non-Black patients by the average number of navigator contacts, or to the number of contacts made by the patients. There were also no statistical differences when comparing Hispanic or Latino patients to non-Hispanic and non-Latino patients by contact to or from the navigators. Given a significant proportion of the patient population seen by these two hospitals spoke Spanish as their primary language, the evaluation also looked at differences by preferred language. There was no statistical difference in the average contacts made by the navigators to patients who spoke English compared to those who spoke Spanish. However, **those who preferred to speak Spanish averaged more contacts to the navigators (2.6) compared to those who preferred to speak English (2.0 average contacts)** (see Figure 8).

"I think the navigation program was really good. They're following up with you after the hospital. That usually doesn't happen. It was good if you're having a baby alone, they can just call and check up on you, make sure your head is in the game rather than letting you take the baby home and then that's it." - Patient

Figure 8: Patient Contacts by Race, Ethnicity, Language

	Black patients (n=874)	**Non-Black patients (n=5,018)**
Average # of contact from navigators	7.1	6.8
Average # of contacts from patient	2.1	2.1
	Hispanic/Latinx patients (n=4,538)	**Non-Hispanic/Latinx (n=1,354)**
Average # of contact from navigators	6.9	7.1
Average # of contacts from patient	2.2	2.1
	English-speaking patients (n=4,318)	**Spanish-speaking patients (n=1,574)**
Average # of contact from navigators	7.0	7.2
Average # of contacts from patient**	2.0	2.6

**Statistically significant one-way ANOVA, $P < .001$. All other comparisons in this table were not statistically significant.

“[The navigation made me more comfortable] because sometimes it’s a little bit difficult sharing your health issues when you are in the hospital or through phone calls. But the text messages, I would say the privacy it had, talking to the person and knowing that it’s just between you and the person was really nice.

- Patient

Engagement of Primary Care Practices

The hospitals and the navigation program recognized that in order for the program to have the greatest impact on birth outcomes, they needed to connect with patients earlier during their pregnancy. The hospital providers did not provide prenatal care at the hospitals, so patients generally had their first contact with the hospital later in their pregnancy—either when they were planning for delivery or when they were experiencing complications and needed to seek urgent, emergency, or in-patient care at the hospital. Staff at both hospitals indicated that lack of early engagement in pregnancy was a missed opportunity to have a greater impact.

Patients received prenatal care at other ambulatory sites, often at one of the local Federally Qualified Health Centers (FQHCs) or community clinics. Reaching patients earlier in their pregnancy would require engagement with primary care providers who provide prenatal care. One hospital site reported some early concerns with not engaging primary care partners because their partners, having heard about the program, expressed concerns about:

- the redundancies between the navigation program and the support primary care clinics provide
- their patients being referred to other primary care practices after delivery

The navigation program listened to concerns about navigators sending patients to clinics based on zip codes for services instead of the patients' medical homes. As a result of this feedback, the navigation program modified the workflow to encourage patients to reach out to their primary care provider rather than referring them to a specific clinic.

To explore opportunities to better engage primary care practices, the partners engaged a consultant to expand community partnerships and engage with the local FQHCs and community clinics. At one clinic, the consultant conducted informal interviews with key community partners and elevated concerns to the hospitals and navigation program.

EVALUATION FINDINGS: OUTCOMES

Outcomes findings came from interviews conducted with staff from each hospital site, the national hospital system. The navigation program, and patients. Interview themes were triangulated with quantitative data from the navigation partner and the hospitals' electronic health record. The following section discusses findings related to outcomes, including patient experience, patient knowledge and self-efficacy, and birth outcomes."

Patient Experience

To understand patient experience, the evaluation conducted phone interviews with 16 Black/African American patients who delivered at one of the two hospitals between January 2022 and August 2022 and who had been contacted by the navigation program (please see Appendix 2 for details). The interviews focused on understanding overall experience with the navigation program and any impact of the program. Patients had an overall positive experience with the care they received at the hospital and the support they received from the navigators.

Patient experience with navigators: Overall, interviewees reported positive experiences with navigators. They appreciated the check-ins and support they received, specifically having someone they could talk to, who was asking how they and their baby were doing. No interviewees reported negative experiences with the navigators.

Regarding the technical aspects of navigation interaction, all interviewees reported preferring texts to phone calls because they could respond when they were available and felt better able to express themselves over text. The vast majority of respondents thought the amount of contact by the navigators was just right, and most felt that texting was a positive experience. A small number of interviewees mentioned they were ambivalent or disliked the texts. One found the texts to be overbearing and was bothered by having an unknown number text them. Another did not feel it was helpful because they didn't feel they needed the services the navigators offered. One interviewee said the texts were too repetitive.

All but one interviewee responded at least once to the navigator texts. Among those that responded, they attributed their response to the fact that the texts came from the hospital, a trusted source, and/or they needed the assistance the navigators offered. The one interviewee who did not respond at all said she was too busy but didn't feel burdened by receiving a text even if she did not respond.

Figure 9: Number of Patients by their Likelihood to Recommend the Hospital

	Hospital 1	Hospital 2
Detractors (score zero to six)	31	24
Passives (score seven to eight)	28	19
Promoters (score nine to ten)	231	179
Total	290	222

Six weeks after they give birth, the navigator program asked patients "how likely are you to recommend this hospital to a friend?" on a scale of 0 (would not recommend) to 10 (would highly recommend). While data were only available for a small sample of patients (only 11% patients responded to this question (512 out of 4,813)), about 80% of respondents rated their experiences as a 9 or 10 out of 10. About 10% of respondents rated their likelihood at 6 or lower. These ratings resulted in a Net Promoter Score[3] of about 69.0 for each hospital. Responses were similar across both hospitals (see Figure 9).

[3] Reichheld FF. The one number you need to grow. Harvard Business Review. 2003;81(12):46–55. https://hbr.org/2003/12/the-one-number-you-need-to-grow.

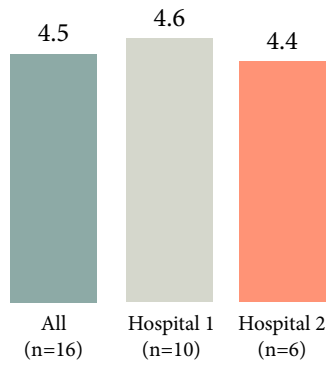
Patient experience interacting with hospital: The interviews also asked patients to reflect on the care they received at the hospital during their pregnancy and delivery. Patients had an overall positive experience with the care they received at the hospitals (see Figure 10).

Almost all patients reported trusting the health care providers at the hospital. When asked to rate on a scale of 1 to 5 how much they agreed with the statement "I trust my health care providers at the hospital," interviewees gave an average rating of 4.5, which indicated a strong level of agreement. The ratings ranged from 2 to 5, with most respondents giving a 5 rating. Patients reported that contributors to feeling a sense of trust in the health care system included the birth going well, providers expressing concern about them and making them feel comfortable, and providers being able to answer their questions. A poor birth experience led to decreased trust (n=1).

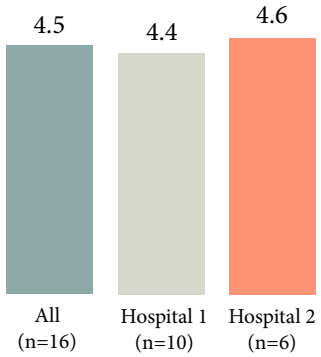
Patients reported mixed experiences with feeling included in decision making. Interviewees gave an average score of 4.2 when asked to rate on a scale of 1 to 5 on how strongly they agreed with the statement "I was included in the decision-making about what happened with my body and my baby at the hospital." The ratings ranged from 1 to 5, with the majority of respondents giving a 5 rating. Some hospital actions that increased patients' sense of inclusion included when the providers let patients know what was happening and when they asked permission before each step in the labor and delivery process. A few interviewees reported not feeling included because they felt pressured into procedures and felt rushed during labor.

Most interviewees reported fair treatment at the hospital. When asked to rate on a scale of 1 to 5 how much they agreed with the statement "I was treated fairly, with dignity and respect and without discrimination at the hospital," interviewees gave an average rating of 4.5. The ratings ranged from 3 to 5, with most respondents giving a 5 rating. Patients provided examples of actions that made them feel they were treated fairly and with dignity and respect, citing that their provider included the baby's father in the labor process and that staff were friendly. A small number of interviewees reported feeling unfairly treated because they felt some of the clinical staff were rude to them.

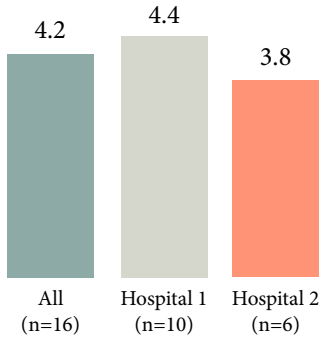
Figure 10: Patient Experience with Care at the Hospital (Average Rating)



I trust my health care providers at the hospital.



I was treated fairly, with dignity and respect and without discrimination at the hospital.



I was included in decision-making about what happened with my body and my baby at the hospital.

Interviewees were asked to rate on a scale of 1 to 5 how strongly they agreed with the above statements, with 1 indicating they strongly disagree and 5 indicating they strongly agree.

Patient Knowledge and Self-Efficacy

The program logic model identified several intermediate outcomes for the program, including improving patient knowledge of available resources, access to resources, ability to navigate the health care system (self-efficacy and engagement in care), and trust in the health care system (discussed above). Interviews with hospital staff, navigation program staff, and patients asked about perceptions that these outcomes were met. In addition to these outcomes, interviewees emphasized that a key benefit of the navigation program was alleviating social isolation, which was not identified explicitly in the logic model.

Increasing patient knowledge about available resources and services

From the hospital facility perspective, many staff indicated they didn't have enough information to comment on the benefits to patients. Among staff who were able to identify benefits of the program, they talked about the program's ability to improve patient knowledge and awareness of available resources. A few staff emphasized that the navigation program provided a different way of reaching patients (via text) than what is provided by the hospital directly, which is mostly in-person or via phone. They felt this type of outreach had the potential to reach and engage patients who preferred that mode of communication. The navigation program staff agreed that a key benefit of the program was increasing awareness of available resources.

Patients mentioned that the navigators sharing information on a variety of services and resources. The most commonly noted resources were for breastfeeding and post-partum/mental health support. Some patients also recalled receiving appointment reminders and information about the Women, Infant, and Children (WIC) program, Mommy and Me classes, transportation, food, Medi-Cal, healthy eating habits, and how to care for their baby.

During the interviews, some patients reported not being aware of all the resources and services available to them and a desire for the navigators to provide more information about the breadth of services and support available.

Improving confidence in navigating the health care system

National health care system staff, navigation program staff, and patients indicated that the program resulted in patients feeling more empowered and having increased confidence in navigating the health care system.

Most interviewed patients said they felt confident that they could access the services and support they needed. A few said that connection with the navigator improved their confidence in their ability to access resources, because they knew they had someone they could call or who would be reaching out to them.

Examples of how the program contributed to patients increased ability to navigate the health care system included:

- A few patients mentioned that the navigators helped them connect to Medi-Cal and other social support service to get coverage for themselves or their baby.

- One patient said the navigator provided her with the information she needed to recognize that she was experiencing post-partum depression, and the navigator provided the encouragement she needed to see her doctor for treatment.

In addition to navigating the health care system, several patients expressed feeling comfortable talking with their health care providers about their questions and concerns. A few patients said navigation increased their comfort because the texts prepared them and helped them think through what to talk about with their providers. The patients that highlighted this benefit noted that texting felt more private and less difficult than having verbal conversations about health on the phone or in-person.

Many patients felt that navigation made a difference when comparing their most recent birth to previous births. They felt they had someone who cared about

them, could guide them, and offer assistance. The few patients that felt navigation did not make a difference said they had little interaction with the navigator, or they did not use any of the provided resources or information.

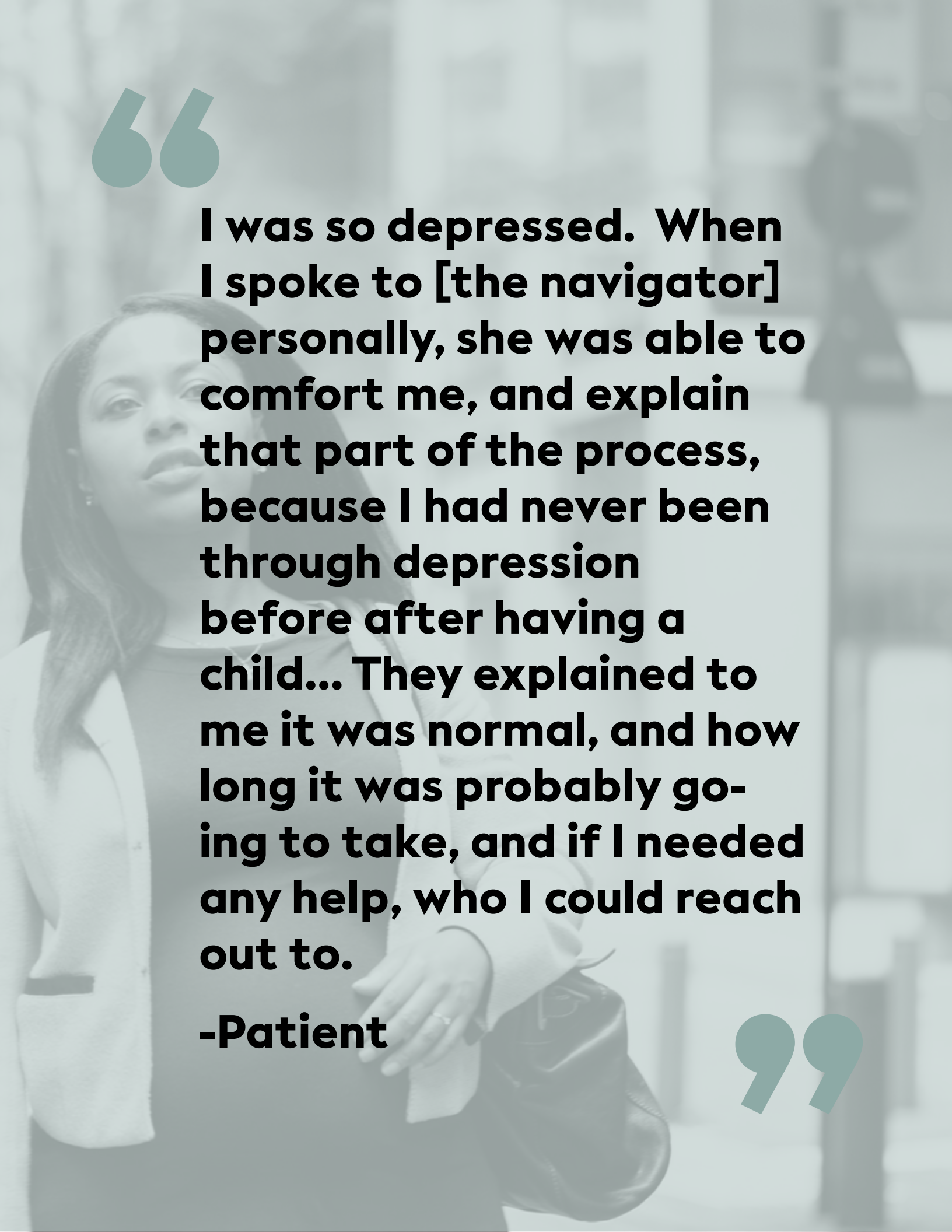
Alleviating social isolation

Interviews with hospital staff, navigation program staff, and patients identified alleviating social isolation as a key benefit of the program, which may have been a more significant need due to the Covid-19 pandemic. Patients discussed how much they appreciated having someone check in, listen, and respond to their needs. This theme aligned with how the navigators saw their role. As one navigator explained, "[There is a benefit to having someone who is kind, empathetic and caring ask how their day is going and having them ask things that they wouldn't have been able to ask their doctors in their appointment. Being able to ask questions like that can decrease their stress levels."

Birth outcomes

To understand whether the intervention affected birth outcomes, the evaluation analyzed key process measures from the navigation program's data against outcome measures in the hospitals' electronic health records. The evaluation sought to understand relationships between the navigation program's workflows and resources and outcomes from the logic model (see Appendix 1). The navigation program aimed to influence the average length of stay in the hospital, readmissions, and rate of c-section through providing resources on topics such as scheduling doctor's appointments, attending birth tours, social health needs (e.g., around food, housing, transportation, interpersonal violence, and social support).

The evaluation was unable to draw conclusions about the impact of the program on birth outcomes because most interactions between patients and navigators occurred late in pregnancy or post-partum. Even among patients contacted pre-delivery (N=1,727), only 297 patients were contacted at least 12 weeks prior to delivery. The outcomes listed above would only be impacted by prenatal outreach and the patient population with early prenatal contacts in this evaluation was too small to detect measurable impacts on birth outcomes.



I was so depressed. When I spoke to [the navigator] personally, she was able to comfort me, and explain that part of the process, because I had never been through depression before after having a child... They explained to me it was normal, and how long it was probably going to take, and if I needed any help, who I could reach out to.

-Patient

CONSIDERATIONS

Interviews with staff and patients highlighted some opportunities to strengthen the implementation of the navigation program at new sites and to inform the implementation of similar programs and interventions.

1

Establish the need and buy-in for the intervention: Throughout the implementation of this program, buy-in from the hospital facilities was a challenge. At the hospital with less buy-in, implementation challenges were more significant. Before beginning implementation, the hospital and the navigation program should build a case for the program including: a clear understanding of what needs or gaps the program will address, who will champion the work, the cost of implementation, who incurs the costs and benefits, and whether the program meets the needs of the patient population (e.g., cultural appropriateness, language concordance, accessible/acceptable technology).

2

Determine hospital readiness to engage and implement: The two hospitals were at different stages of readiness for implementing the program and had different levels of need for the program. Conducting a readiness assessment before implementation could help guide implementation decisions, including shared understanding of:

- Existing outreach, resources, and support that the hospital is providing and determining how the program can complement and coordinate with existing resources
- How the proposed program is different than what is already provided
- What support champions need to be effective in building buy-in across the organization
- How the intervention will impact existing staff
- How patient voice will inform adoption and implementation
- How the intervention will impact external stakeholders (e.g., primary care providers)

3

Engage impacted staff early during implementation: The two hospitals did not engage key staff early enough during implementation, which created implementation challenges for the program. The hospital and navigation program should develop a strategy to engage staff in program implementation including:

- Focusing on how to introduce the program and what additional training or information staff will need
- Ensuring staff most impacted by implementation are engaged in decisions about how the program will be implemented
- Investing in relationship building between the hospital and navigation program staff who are engaging with patients to ensure that both entities understand each other's perspectives, roles, and know who to contact when there are challenges (e.g., challenges with the escalation pathway)
- Determining how staff will stay informed of implementation and outcomes

4

Design workflows and data sharing agreements to optimize implementation: During implementation, many hospital staff felt the program created extra work for them that was often unanticipated. Facilities may need to create or revise workflows to integrate the program into patient care. Staff should be engaged in determining the implications on current workflows and what needs to be created or clarified.

There were also challenges with data sharing—both the technical process for sharing data and shared understanding of which data were shared:

- Technical process: The hospitals' automated data feed shared with the navigation program did not include all eligible patients (i.e., data missed about 10% of the potential patient population).
- Data content: Hospital staff commented on how the engagement data they received from the navigation program was not sufficient to answer their questions about the impact of the program. They requested more data on the impact on patients. Whereas, the navigation program also would have benefited from more data about the birth and birth experience from the hospital.

Both entities should consider data sharing agreements and systems to clarify which data will be shared with whom and how often, who is responsible for pulling and sharing the data, and who is responsible for monitoring the quality and completeness of the shared data.
Finally, for such navigation programs, both the program and the hospital system should clarify who is responsible for maintaining and updating the information in resource directories and ensure that staff understand and are supported in keeping information updated. Some hospital staff reported that this required significant effort to maintain.

5 **Broaden outreach and engagement for earlier intervention:** A key limitation of the program was how late navigators engaged pregnant patients. The hospital and navigation program should consider ways to promote earlier engagement to have a greater impact. Earlier engagement may require promoting directly to the patient, engaging with external primary care providers where patients receive ongoing care, or determining other partners or points of care that pregnant persons may access earlier in their pregnancy.

6 **Ensure patients are aware of breadth of services available:** Patients were inconsistently aware of the breadth of support and referrals this program could provide. Patients spoke about services or resources they would have liked but did not receive (e.g., lactation consultation, breastfeeding support, doulas, support groups, etc.). Many of these resources were available and within scope for the navigators. It may be helpful to determine a more direct way of informing patients of the extent of available resources. Providing more specific offers for support in the future could help increase uptake and utilization of resources.

7 **Leverage multimodal ways to connect with patients:** Generally, patients appreciated receiving text messages, in addition to phone calls, from the navigators and other services provided by the hospital. In this multi-modal program, navigators engaged across demographics and linked patients to resources. Interviews reinforced that patients generally appreciated the support and didn't find it burdensome. Additionally, interviewed patients indicated that they preferred receiving texts instead of phone calls because it allowed them to respond when it was convenient for them. Different modes of outreach will reach different patients and continuing to conduct some outreach via text may reach and engage different patients than those who would access services in-person or on the phone.

REFERENCES

Abroms LC, Johnson PR, Leavitt LE, Cleary SD, Bushar J, Brandon TH, Chiang SC. A Randomized Trial of Text Messaging for Smoking Cessation in Pregnant Women. Am J Prev Med. 2017 Dec;53(6):781-790. doi: 10.1016/j.amepre.2017.08.002. Epub 2017 Oct 2. PMID: 28982527; PMCID: PMC5696101.

Balci, A. S. & Kadioglu, H. (2019). Text Messages Based Interventions for Pregnant Women's Health: Systematic Review . Clinical and Experimental Health Sciences , 9 (1) , 85-90 . DOI: 10.33808/marusbed.546694

Bressman E, Long JA, Honig K, et al. Evaluation of an Automated Text Message–Based Program to Reduce Use of Acute Health Care Resources After Hospital Discharge. JAMA Netw Open. 2022;5(10):e2238293. doi:10.1001/jamanetworkopen.2022.38293

Hannah Holmes, Cristina Palacios, Yan Yan Wu, Jinan Banna, Effect of Educational Short Message Service (SMS) on Excessive Gestational Weight Gain (GWG), Current Developments in Nutrition, Volume 4, Issue Supplement_2, June 2020, Page 1004, https://doi.org/10.1093/cdn/nzaa054_076

Howell EA. Reducing disparities in severe maternal morbidity and mortality. Clin Obstet Gynecol 2018;61:387–99.

Huberty JL, Buman MP, Leiferman JA, Bushar J, Hekler EB, Adams MA. Dose and timing of text messages for increasing physical activity among pregnant women: a randomized controlled trial. Transl Behav Med. 2017 Jun;7(2):212-223. doi: 10.1007/s13142-016-0445-1. PMID: 27800565; PMCID: PMC5526801.

Overdijkink SB, Velu AV, Rosman AN, van Beukering MD, Kok M, Steegers-Theunissen RP. The Usability and Effectiveness of Mobile Health Technology-Based Lifestyle and Medical Intervention Apps Supporting Health Care During Pregnancy: Systematic Review. JMIR Mhealth Uhealth. 2018 Apr 24;6(4):e109. doi: 10.2196/mhealth.8834. PMID: 29691216; PMCID: PMC5941088.

Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. MMWR Morb Mortal Wkly Rep 2019;68:762–765. DOI: http://dx.doi.org/10.15585/mmwr.mm6835a3.

Simon, M. (2020) Innovation Landscape: Maternity Care in Medi-Cal. Retrieved from https://www.chcf.org/wp-content/uploads/2020/08/InnovationLandscapeSeriesMaternityCareMediCal.pdf

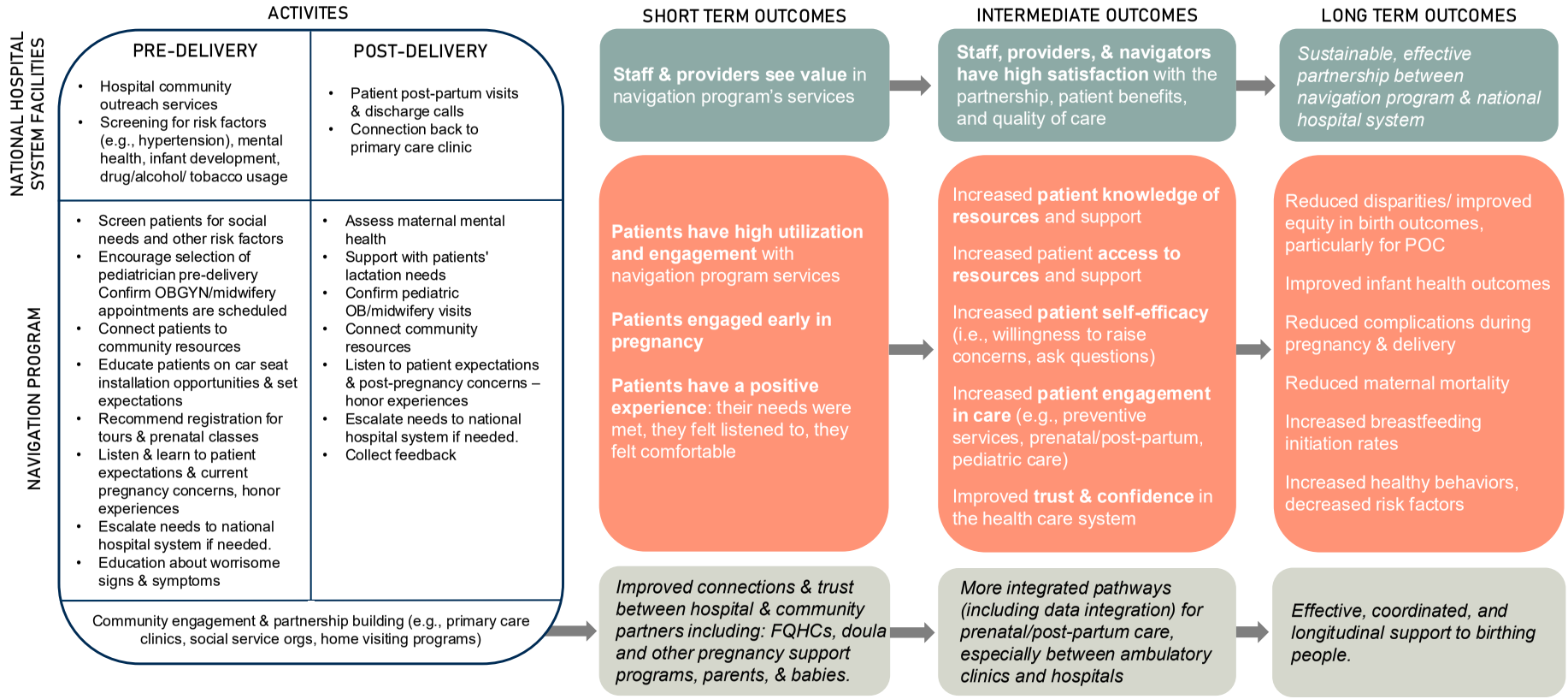
About the Center for Community Health

The Center for Community Health and Evaluation (CCHE) is part of Kaiser Permanente Washington Health Research Institute. Based in Seattle, CCHE designs and evaluates health-related programs and initiatives across the United States. Our mission is to improve the health of communities with collaborative approaches to planning, assessment, and evaluation.

www.cche.org

APPENDIX 1: LOGIC MODEL

Navigation Program Logic Model



APPENDIX 2: METHODS

Data Collection

This table includes the evaluation questions and the corresponding avenues to collect data. The next section describes scope and analysis methods.

	Mode of data collection (x indicates it was used to answer the evaluation question)			
Evaluation question	**Hospital staff interviews**	**Technology partner interviews**	**Patient interviews**	**Quantitative data**
Implementation: How has the navigation program been implemented at the two hospitals?	X	X		
Staff experience: What are experiences of hospital staff and navigation program staff?	X	X		
Reach and utilization: Who is reached by the navigation program with what services and resources?				X
Patient experience: What is the experience of participants with the navigation program?			X	X
Short-term patient outcomes: How does the navigation program impact patient engagement, knowledge, and self-efficacy?			X	
Long-term patient outcomes: What is the impact of the navigation program on outcomes for birthing people and babies?				X
Disparities: Are there differences in engagement, experience, or outcomes by race or other demographics?				X
Contribution: How did the navigation program contribute to patient engagement, knowledge, self-efficacy, health outcomes?			X	X
Improvement: What are potential areas for improvement for the partnership to improve outcomes?	X	X	X	X

APPENDIX 2: METHODS

Scope of Data Collection and Analysis Methods

Interviews

Staff interviews: Staff interviews were conducted between February and April 2022. A total of 16 interviews were conducted, including: five at hospital 1, three at hospital 2, 3 with the national health care system staff, three with navigators, and two with the navigation program's leadership team. The staff from the hospitals were those who had been most involved in the navigation program implementation. The navigators who were interviewed were those who worked directly with patients at these two hospitals.

Patient interviews: Interviews with patients who interacted with the navigation program took place between August and November 2022. Patients were included in the interview sample if they were Black or African American, spoke English, had a phone number on record, were in both the navigation program and hospitals' datasets, did not opt out of participating in the navigation program, delivered between January and August 2022, and did not have a stillbirth. This led to a sample of 100 patients, all of whom were contacted via text at least three times. i. Patients who participated in the telephone interview were given a $25 gift card as an incentive. Interviews lasted 15 minutes or shorter. A total of 18 patients were interviewed. Two patients that were interviewed were later found to be ineligible due to a data error in their delivery date and so were excluded from the analysis. As a result, data from 16 patients were part of the analysis. Seven additional patients were initially scheduled but were unable to be contacted at the time of the interview and did not respond to requests to reschedule.

Qualitative analysis: All interviews were transcribed and coded using emergent theming. The strength of themes was based on how many interviewees mentioned a theme and whether the theme was mentioned from multiple perspectives. In some cases, suggestions that were only mentioned by one interviewee are highlighted because it was an important point to include.

Quantitative data

Quantitative data from the navigation program were merged with electronic health record data from the hospitals. Data were included for births that took place between December 2020 and April 2022. Descriptive statistics were tabulated for key demographic and implementation measures.

Methods for comparing impact of the pre-delivery contact compared to those with no contact: Patients were assigned to two groups for analysis: (1) those who were contacted pre-delivery, which could also include patients who were contacted both pre- and post-delivery; (2) and those who were not contacted pre-delivery (i.e., patients who were not contacted were either those who were not in the navigation program dataset or those whose contact was not documented in the data). Key outcomes of interest were coded as yes/no variables, and included readmittance, c-section, pre-term birth, diagnosis that complicated delivery, and stillbirth. A chi-square test was used to determine whether an association existed for the yes/no variables and whether patients were contacted pre-delivery.

Methods for ascertaining disparities: Patients were classified as Black/not Black, Hispanic/not Hispanic, and English- or Spanish-speaking based on how they self-identified to the navigator via text or how they were identified in the electronic health record if they did not respond to that question via text. One-way ANOVA was used to describe the association between these demographic variables and the numbers of contacts that the navigators made and the numbers of contacts that the patients made to the navigators.

APPENDIX 3:
EQUITY FRAMEWORK

Equity Framework for Patient Resource and Support Navigation Tools Implementation

PREPARE

- Identify & name the disparity - analyze birth data with an equity lens
- Analyze social determinants of health and general health outcome data for impacted groups
- Identify the people who interact with the birthing clients within the hospital
- Map community resources with a direct perinatal connection (Federally-Qualified Health Centers, clinics, community organizations) for the navigation program to refer to in the future

EQUIP

- Conduct equity trainings with staff (e.g., implicit bias, cultural humility, birth equity)
- Conduct "navigation program 101" trainings with core staff
- Conduct "hospital 101" training with navigation program staff
- Include staff with lived experience in early trainings and feedback sessions

PARTNER

- Conduct "navigation program 101" with FQHCs
- Conduct "navigation program 101" with community wisdom keepers and resources
- Establish community advisory group of wisdom keepers, resources, and Federally-Qualified Health Centers

DESIGN

- Work alongside core Staff and community advisory group on: navigation pathways, script review, testing, outreach, and opportunities for both prenatal enrollment and closed loops
- Identify enrollment incentives

COMMUNICATE

- Develop communications tool kit, inclusive of: promotional fliers, orientation deck, signage, posters and social media posts.
- Roll out internal communications and trainings to expanded staff groups or departments within hospital
- Roll out external communications and promotions (in concert with hospital)

Developed by Growth Mindset Communication 2022. www.growthmindsetcomms.com