

NASCIO 2018 Nomination for Information Communications Technology Innovations: Have you met Liv?



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EXECUTIVE SUMMARY

Indiana has consistently lagged behind the national average for infant mortality rate. In fact, Indiana saw a rise of in the rate of infant mortality from 7.3 in 2015 to 7.5 in 2016.

Indiana was faced with the challenge of how to educate new or expecting mothers on healthy behaviors to ultimately decrease the infant mortality rate. How do we create a tool that is widely used and accessed that contains all of the information a new or expecting parent may need? How do we encourage him or her to want to engage in a government developed mobile app?

So...Liv was born. Liv was created to be a warm, friendly mobile environment that promotes early prenatal care and education from planning to pregnancy and parenting. The app includes a searchable library filled with dozens of articles, calculators for due date and baby weight, an interactive calendar, a journal feature, checklists, and an “Ask Liv” feature for getting answers not addressed in the app. Liv grants the user access to other resources including contacts for doctors, hospitals, food banks, Women, Infants, and Children (WIC) clinics, drug treatment centers, and crib distribution sites, all based on the location of the user. Users can also sign up to receive messages and alerts appropriate to their stage of pregnancy.

The app was launched at the Indiana Labor of Love Infant Mortality Summit in November 2017 and is available for free in the Apple Store and Google Play in both English and Spanish. It may also be used on a computer at: www.askliv.com.

The information in this app has been a collaborative effort across the Indiana State Department of Health (ISDH), the Indiana Family and Social Services Administration (FSSA), the Indiana Office of Technology (IOT), and the Indiana Management Performance Hub (MPH). There are plans to include more resources and features from the Indiana Department of Education and the Indiana Department of Child Services.



Infant Mortality is the #1 indicator of health status in the world.

NARRATIVE

Problem Statement: Infant Mortality

Infant mortality is any death of an infant before his or her first birthday. Indiana saw a rise in the infant mortality rate from 7.3 in 2015 to 7.5 in 2016. In Indiana, the number of babies that die before their first birthday are 623 in a year, which is:

- More than 50 babies EVERY month
- Nearly 12 babies EVERY week
- Nearly 3,000 infant lives lost in the last 5 years
- Nearly 42 school buses at maximum capacity

The picture to the right is from the Labor of Love conference in 2017 where this display had a baby bootie for each baby that died in 2016.



Forty-six percent of infant mortalities are due to preventable causes such as pre-birth maternal risks and unsafe sleep practices. Indiana had to bridge the gap through an effort that could educate those that are planning, pregnant, or parenting in a way that was engaging and accessible.

As Governor Holcomb outlined in his State of the State Address:

Of course, “people” include our most vulnerable. Despite focused efforts, Indiana’s infant mortality rate is unacceptable. Indiana regularly ranks among the worst states in the nation for infant mortality, lagging behind the national average and that of our Midwestern neighbors.

Six hundred twenty-three babies didn’t live past the age of one in Indiana in 2016: 623.

We can and we will save more of them. Our infant mortality rate is a direct lens into the overall health of Hoosiers—so leading the charge will be our Health Commissioner Dr. Kris Box, who has devoted her career to mothers and babies, and FSSA secretary Dr. Jennifer Walthall, who to this day still works a shift a week at Riley Hospital for Children in addition to her day job.

We’ll take an important step this year by working with you to implement a Levels of Care program to assure that the highest-risk babies are delivered at hospitals with the facilities to meet the needs of the mother and the baby.

But we must do more.

So tonight, I’m setting a goal to become the best state in the Midwest for infant mortality rates by 2024.

How Liv came to be...

In Indiana, MPH, initially a coordinated effort between IOT and the Office of Management and Budget, and now a state agency unto itself, provides analytics solutions tailored to address complex management and policy questions enabling improved outcomes for Hoosiers. MPH empowers its partners to leverage data in innovative ways, facilitating data-driven decision making and data-informed policy making. As such, a data analytics initiative was created in 2014 that involves multiple state agencies aimed at reducing the infant mortality rate in Indiana by identifying previously misunderstood factors affecting the infant mortality rate and providing methods to address these factors.

“According to the state's findings, mothers 15 to 20 years of age and those enrolled in Medicaid have a higher risk of poor outcomes for their infants. Although young mothers on the whole typically have better outcomes, they are also 50 percent more likely to receive Medicaid, with which they are not getting the appropriate prenatal care, according to the report.

But the risk condition most predictive of adverse birth outcomes was the number of prenatal visits. According to the report, nearly 65 percent of infant deaths were to mothers with 10 or fewer prenatal visits.

Infants born to the highest risk, 1.6 percent of mothers with these combined factors tended to face many health-related challenges. Although these infants made up 5 percent of all Medicaid births, they accounted for 35 percent of its birth-related expenses, according to the report.” (Hughes, Jessica. “Data Analytics Helps Indiana Change its Approach to Infant Mortality” *gt. Government Technology*, 3 February, 2015. Web. 21 May 2018.)

This research and analysis was presented to the Indiana General Assembly as it enacted legislation and earmarked additional funding to address infant mortality during the 2015 legislative session. Indiana determined a way to provide education to those who are planning, pregnant and parenting on healthy behaviors was imperative to helping reduce the infant mortality rate and legislation was approved to require a mobile application be created for this purpose. ISDH led this initiative and partnered with eimagine after a competitive procurement to develop and launch Liv, a mobile application.

CONCEPT

To ensure the impact of the Liv App on reducing infant mortality, the information must be accessible by a majority of the target audience and was created to include demographical questions in the profile to ensure that those using the app are the population most affected.

Liv is a hybrid mobile and web application created in four layers consisting of UI, logic, data storage, and integration hub. The app was built using Ionic as an Angular-based styling engine that allows the app the flexibility to run ubiquitously on mobile and computing devices both old and new without straining the system. Significant care was given in architecting the ASP.NET web-based API to provide secure and responsive communication, while weaving in multiple external data sources to maximize the user experience.

Ironically, the timeline for the implementation and production of the Liv Mobile App was 9 months. Included in the creation efforts were many other entities who provided their expertise and consultation: Health Care Providers, the MOMs Helpline, Indiana Perinatal Quality Improvement Collaborative (IPQIC),

various ISDH divisions: (Woman, Infants & Children (WIC), Maternal & Child Health (MCH), Women’s Health, HIV/STD, Center for Deaf & Hard of Hearing Education, Immunization, Minority Health, Trauma & Injury Prevention, Children’s Special Health Care, etc.), practitioners, and end users via Medicaid Baby Showers.

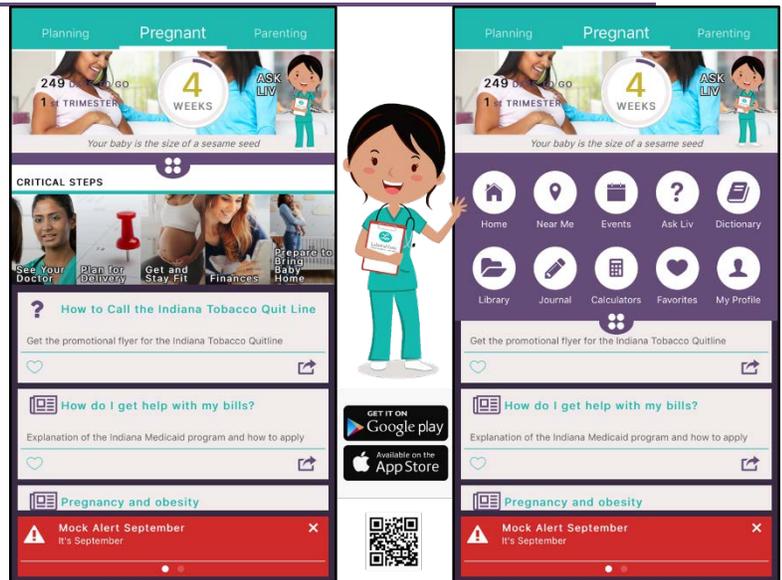
The app was announced at the third annual Labor of Love Summit hosted by the Indiana State Department of Health. Liv was introduced to an enthusiastic audience made up of over 1,200 people in the medical, social, education, and Medicaid fields.

SIGNIFICANCE

With the ultimate goal to lower Indiana’s infant mortality rates, the tool had to be accessible and usable by anyone, anywhere within the state. To ensure this priority was met, eimagine and ISDH hosted and visited focus groups in the format of Medicaid “Baby Showers” with the intent of getting feedback and suggestions from those planning, pregnant, or parenting in the core demographic.

A few highlighted features included in the app are:

- English/Spanish translations of all content/app screens
- Ability to view content as a guest without being logged into the app
- Over 130 Articles geared toward the 3 stages: Planning, Pregnant, Parenting
- Critical Step articles along with relevancy to risks identified in the user’s profile
- Alert box (if any critical information needs to be communicated to app users)
- Events – local events, ability for the user to add a prenatal appointment
- Push/Email notifications to remind users to go to their appointment and follow up after their appointment
- Click to call the MOMs Helpline for a live person
- Progress indicator for Pregnant (# of weeks), and Parenting (youngest child’s age)
- Tips (planning/parenting) or baby size (pregnant) text
- Ability to share the articles on text, email, social media
- Push, Email, Text notification based on profile fields (such as pushing content if you don’t have a crib or if you are currently smoking)
- Pregnancy week by week to show fetal development, size of the baby, what the mother-to-be may be experiencing, and pregnancy symptoms



- Baby development by month, to educate users' on what developmental goals their baby should be targeting for each month.
- Near Me - resources throughout Indiana via a Map or a List view with ability to filter by category and to click to call or to get directions
- Ask Liv - ability to view FAQs, ask questions, get an email response
- Ability to view common medical terms regarding pregnancy
- Journal - ability for the user to add journal entries (such as questions for their doctor)
- Calculators - ability to calculate your due date and ability to track multiple children's weight from birth through 1 year
- Badges to encourage the use of the app

Additional ideas across agencies continue to surface, so features and content will continue to be added such as:

- Providing information on child care
- Providing information for domestic violence
- Weighting articles on the landing screen based on the users' profile decisions. This feature will highlight suggested articles based on the user profile that can improve their health and the health of their baby.
- Expanding the gamification and badging aspects of the app to encourage use of the app.
- Adding a period tracker for early pregnancy detection and spacing. If the users' start using the app while they are planning, then there is a high probability that they will continue to use the app into the pregnancy stage, which is the main focus of the app.
- Improving the quizzes section of the app to include reasons why the answers are correct to reinforce good behaviors.

IMPACT

Infant mortality rates are the number one indicator of health status in the world. It is safe to say that if a country emphasizes the health of their babies, then the health of their overall population will thrive.

Liv was created to be a resource and a hub of information for anyone looking for answers or support no matter what their stage in becoming a parent. The focus of the app is to educate users and reduce barriers in access to care. The most used feature to date is the 'Ask Liv' feature in which users can ask real questions, and receive a genuine nurse reviewed response within about 24 hours. This is safer than users posting on a forum and getting answers from a social network.

The Liv Pregnancy App is available in both the Apple Store and the Google Play store. It is also available online as a web application. To date, over 1,200 downloads have occurred since the November 2017 launch with the most frequently used articles being those around early pregnancy vitamins, obesity, and where to get an ultrasound. Downloads continue to increase as the app is marketed in doctors' offices, the Family and Social Services, Division of Family Resources (DFR) field offices, and many other local resources across the state of Indiana.

The data is reviewed on a quarterly basis to ensure that Liv is getting into the hands of those that need it. The main metrics that are analyzed to ensure the target population is being reached are the number of total downloads, the number of downloads by zip code, the age, race, ethnicity of the users, age,

race, and ethnicity of the users by zip code, and the stage of the user (Planning, Pregnancy, Parenting). There are plans to dive deeper into the data once the user base grows to track the users' smoking, drinking, opioid habits, as well as see if the app has encouraged users to get a car seat, crib, and breast feed. In addition, the data collected in the app can be compared to birth/death certificates to determine if the app itself is helping improve the infant mortality rate in Indiana.

Anecdotally, a great example of an impact already made is through a young woman in her early 20's who is on Medicaid. When working with a DFR caseworker she discussed how difficult it was to find information when she searched the internet and social media sites. Upon learning of the launch of Liv, the caseworker shared with the woman how to download the app. After using it, she exclaimed to the caseworker "this is exactly what I was trying to tell you!" in affirmation on needing and wanting information at her fingertips.

While the exact impact Liv has on the infant mortality rate will take time to measure, Indiana is off to a great start on improving communication to a difficult to reach population through collaboration with providers across the state. Providing a meaningful, useful tool for Hoosiers is helping increase the health and well-being of moms and children.