



# Lessons Learned Regarding Out-of-Hospital Birth Demographics, Screening, and Follow-Up

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## ABSTRACT

Illinois Vital Records designates all out-of-hospital births, planned or unplanned and then transferred to a birthing facility, as a homebirth. Births resulting from freestanding facilities are a separate category as they are not a hospital birth or an out-of-hospital birth. To increase accuracy within the EHDl program, data elements between the HiTrack (the EHDl-IS) and Illinois Vital Record System (IVRS) should be defined to designate homebirths versus homebirths that were transferred to a birthing facility. By state law, infants born at an out-of-hospital location and transferred to a birthing facility are required to have up to two newborn hearing screenings. Infants not transferring to a licensed birthing facility do not fall under the Illinois mandate. This project reviewed the current classifications of infants by comparing the out-of-hospital birth designation between HiTrack and IVRS. Data definitions and program procedures were reviewed to assure the quality of the data represented and match the data definitions of the Centers for Disease Control and Prevention definition.

Additionally, an online multi-state query was distributed to all EHDl state and territory coordinators requesting information about out-of-hospital birth population and regulations. Analysis of the data allowed for comparison of Illinois EHDl's policies and other areas of the United States.

Per IVRS, 0.6% of all infants born in Illinois are designated as a homebirth or out-of-hospital birth. Illinois' data analysis showed that 44% of infants identified by IVRS as an out-of-hospital birth were born out of the hospital but transferred to a birthing facility and received an inpatient hearing screening. Illinois' homebirth rate for infants not transferring is slightly under 0.4% for 2016. The data also showed that roughly a quarter of all planned out-of-hospital births received outpatient hearing screening services. Considering the state law, this number is a positive sign of parents knowledge in the importance of newborn hearing screening. Further improvements in outreach to families of infants born out-of-hospital will need to be addressed.

## BACKGROUND & OBJECTIVES

In 2016 within Illinois, there were 619 out-of-hospital births identified by Illinois Vital Records. These births were categorized as planned homebirth, unplanned homebirth, delivery in route, or delivery at a non-birthing facility. Infants born at freestanding birth facilities were removed from this data because these facilities fall under Illinois mandate of providing obstetrical services and are subject to the Illinois EHDl law. This study was constructed in order to identify areas where Illinois could increase the rate of newborn hearing screening, decrease loss to follow-up, and improve the quality of the data in the EHDl-IS. The information would then lead education and outreach related to the state's learning communities and quality improvement efforts.

Objectives:

- Analyze data definitions for out-of-hospital birth in the EHDl-IS and Illinois Vital Records Data System
- Improve data quality for documenting out-of-hospital births
- Develop a statewide protocol to support quality service and tracking for the population
- Increase the number of infants identified by Illinois Vital Records as an out-of-hospital birth receiving a newborn hearing screening no later than 1 month of age
- Collaborate with other states and territories on current practices for newborn hearing screening within the out-of-hospital birth population

## METHODS

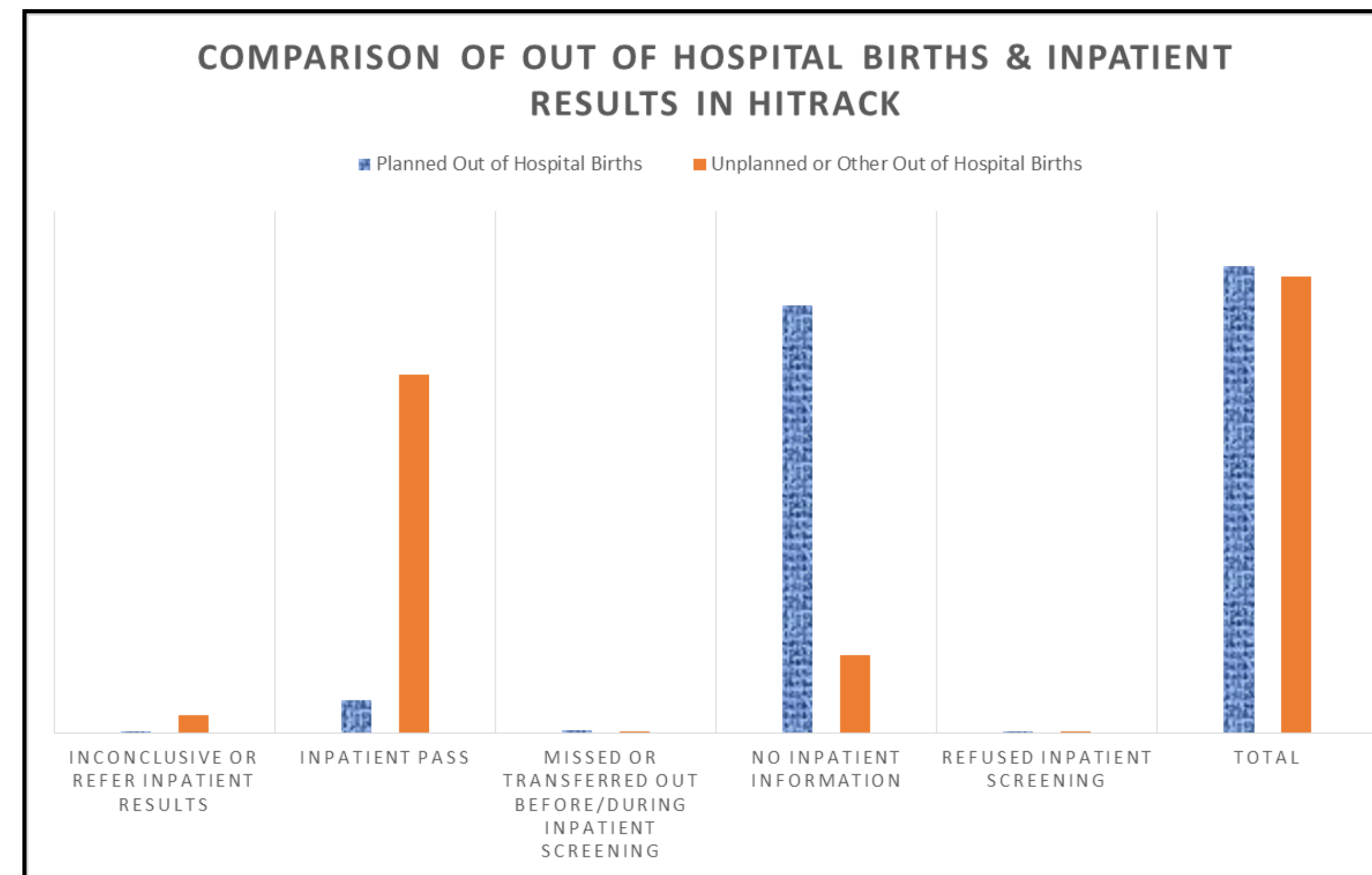
HiTrack and IVRS were used as data sources. Through a matching process in Microsoft Excel, records were compared for all out-of-hospital births in Illinois during the 2016 birth cohort. Furthermore, inpatient and outpatient screening results were analyzed for all infants receiving a newborn hearing screening. The birth location categorization per IVRS was correlated to birthing facility identified in HiTrack.

An online multi-state query constructed through SurveyMonkey was disseminated to all states and territories to garner additional information about out-of-hospital birth legislation and screening services.

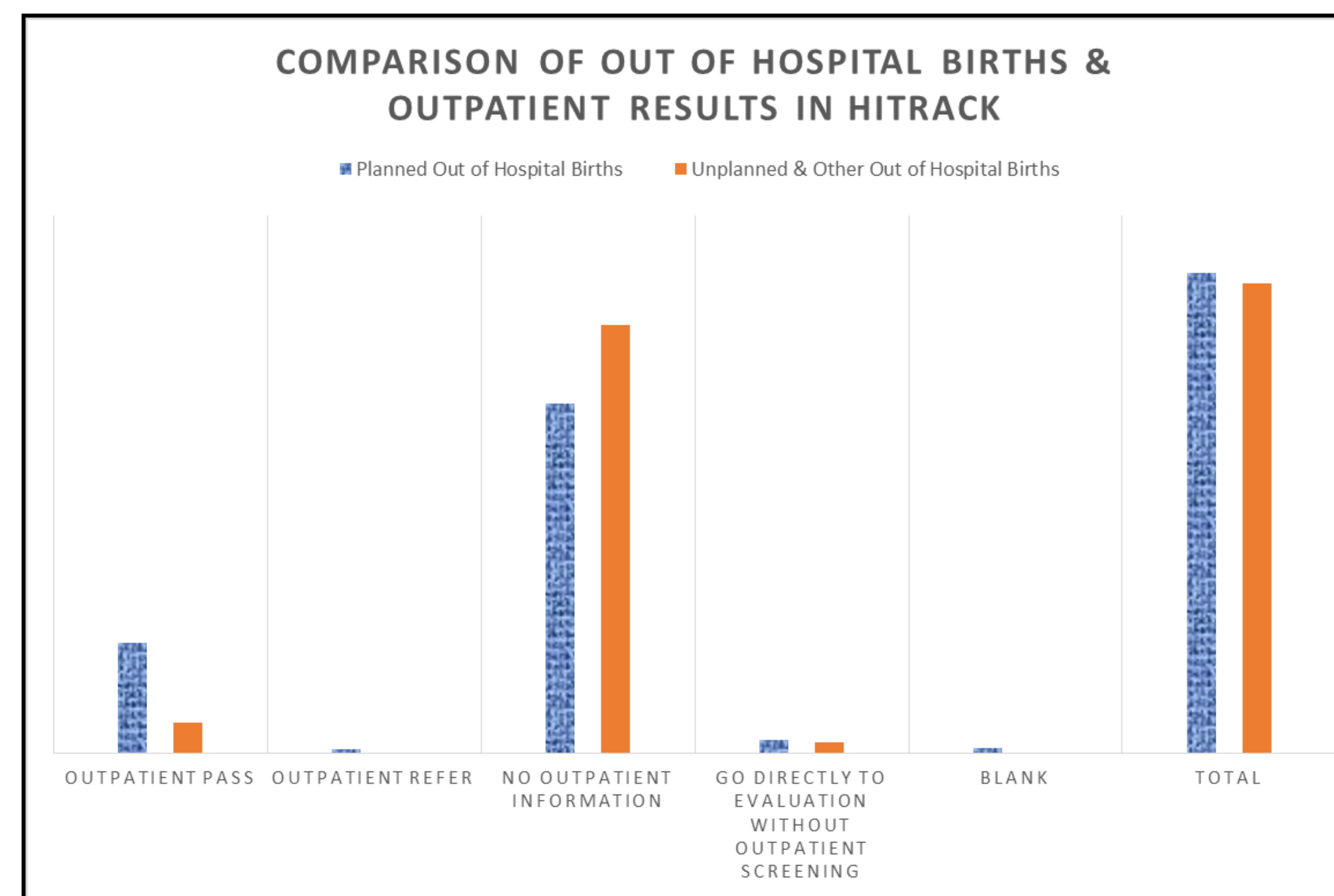
## RESULTS OF RESEARCH

- Comparison of out-of-hospital birth data per system: There were 619 births identified by IVRS as out-of-hospital births (any type). HiTrack noted 76% of these infants as homebirths and 24% were listed incorrectly as hospital births or the birthing facility was not identified
- Identifying infants incorrectly in the EHDl data system increases the workload, misrepresents the homebirth population in the state, and incorrectly represents the data on the CDC annual data report
- Of the 313 planned out-of-hospital births per IVRS:
  - 91% of these infants had no inpatient information
  - Those planned out-of-hospital babies who had no inpatient information and no outpatient information resulted in 66%
  - 25% planned out-of-hospital infants who received no inpatient services went on to have some sort of outpatient screening, either outpatient pass, refer, or go directly to evaluation without outpatient screening
- Of the 306 infants who were unknown or other out-of-hospital births:
  - 17% did not receive any inpatient information
  - 12% of unknown or other out-of-hospital births did not have any services, inpatient or outpatient
- Of the total out-of-hospital birth population
  - 46% of infants did receive inpatient hearing screening
  - Of those babies who did not receive inpatient screening, 28% went on to have some kind of outpatient hearing screening or diagnostic services
- The percentage of infants in the out-of-hospital birth population as identified by IVRS not receiving inpatient or outpatient services was 39%

## RESULTS OF RESEARCH



The inpatient results data for both categories of out-of-hospital births presented as would be expected. For inpatient passing results, the unplanned or other out-of-hospital birth section had a 78% rate which relates to these children being unintentionally born outside a hospital then immediately transferring to a birthing facility. The 0.07% in the planned out-of-hospital birth category that had inpatient results are incorrectly placed as if they were a intentional out-of-hospital birth, there would be no inpatient results, perhaps only outpatient or no results at all. Conversely, the no inpatient information section for the planned out-of-hospital birth section correlates that those infants would not be seen inpatient at a birthing facility. Regarding the unplanned or other out-of-hospital birth section, the no inpatient information had 17% meaning these infants did not receive inpatient services despite being unplanned out of a hospital setting.



Illinois legislation does not require out-of-hospital births to have hearing screening testing. Despite this, 23% of planned out-of-hospital birth infants did receive outpatient testing with a passed result. 73% of planned out-of-hospital births resulted in no outpatient information which correlates to the circumstances of a planned birth this way. For unplanned and other out-of-hospital births, 91% of babies did not receive outpatient testing. Of those that completed an outpatient pass, 0.07%, occurred with children not having inpatient information, but instead an outpatient pass. This aligns with some out-of-hospital birth data being unknown, therefore the infants were not transferred to a birthing facility directly after birth and received services later.

## RESULTS OF MULTI-STATE QUERY

There were 26 state respondent's to the online inquiry distributed: Colorado, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Mississippi, Nebraska, New Jersey, New York, North Dakota, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, and Wyoming. Additionally, Northern Mariana Islands replied over personal email indicating there are no out-of-hospital births in their territory.

ANSWER CHOICES	RESPONSES
Certified Nurse Midwives (CNM): registered nurses educated in the two disciplines of nursing and midwifery; possess certification through the American College of Nurse-Midwives	84.00% 21
Certified Professional Midwives (CPM): knowledgeable, skilled professional independent midwifery practitioners who have met the standards for certification set by the North American Registry of Midwives; focus on out of hospital births	64.00% 16
Direct Entry Midwives: independent practitioners educated in the discipline of midwifery through self-study, apprenticeship, midwifery school or a college program distinct from the discipline of nursing; focus on out of hospital births	60.00% 15
Traditional Midwives: "lay midwife"; uncertified and unlicensed; educated through informal routes such as self-study or apprenticeship rather than a formal program; mainly focus on home births; not required to have formal physician backup	64.00% 16
Total Respondents: 25	

- Midwives often perform out-of-hospital setting births. The definition of a midwife can vary depending on level of education, certification, and practice. States have various regulations of legal midwives to perform births. Multiple responses could be chosen by states and territories in this inquiry dependent upon what is allowed for midwife led births. Typically, less regulatory states frequently utilize midwives as birth attendants, for example, the Old Order Amish community, have higher out-of-hospital birth rates
- Regarding if legislation specifically addresses homebirths and/or out-of-hospital births, 35% of respondent's indicated the state does not clarify this matter
- For states that require legislation to specifically address out-of-hospital births, 32% indicated that families who had a homebirth and/or out-of-hospital birth are required to have their infant screened for hearing
- The top screening providers for homebirth and/or out-of-hospital births were birthing facilities as an outpatient (85%), audiologist (70%), and midwives of any type (62%). (Multiple responses could be chosen regarding this question)
- States or territories that provide financial assistance (other than private insurance/state insurance/Medicaid) for homebirth and/or out-of-hospital birth infants to have newborn hearing screening fell at 27%
- There were seven states who responded to the inquiry and indicated the EHDl program has targeted initiatives towards populations such as Old Order Amish, Mennonites, Brethren, German Baptists, etc. These states were: Idaho, Indiana, Iowa, Mississippi, Ohio, Tennessee, and Wyoming. This population typically uses midwives and out-of-hospital birth settings for delivery. Newborn hearing screening may be more challenging within these communities. Targeted initiatives can allow access for these infants to have newborn hearing screening
- A concern with this query is that respondent's were unsure how to define the out-of-hospital birth population regarding planned homebirths, unplanned or unknown homebirths, and freestanding birth facilities

## NEXT STEPS

- Per Illinois records within the 2016 out-of-hospital birth population, 87% of infants had received newborn genetic screening services within 30 days of age. By comparison, only 57% of infants had received newborn hearing screening services in that time frame. Since the newborn screening programs in Illinois are both housed in the Office of Health Promotion, targeted education to new parents on importance of both tests being performed especially when an out-of-hospital births is identified will be established
  - Illinois will investigate the process of sending letters to parents of out-of-hospital born infants who did not receive services within the first month of life
  - Future research at 60 and 90 days past birth and after letters have been sent may indicate if unscreened out-of-hospital born infants received outpatient hearing screening services
- The query asked states and territories to indicate if there is support of out-of-hospital birth screening through midwife training, equipment (purchased, loaned, or partial monetary support), providing data reports to midwives, having workshops related to this issue, and other personal statements. The majority of responses were equipment and midwife training as the highest support. The feedback of these options are helpful towards better support for Illinois out-of-hospital birth screening initiatives
- Otoacoustic emissions (OAE) have recently been placed in Southern Illinois and Cook County (Chicago) local health departments to assist with initial infant hearing screening and outpatient infant hearing screening. Data tracking of these efforts will be needed for future training and education
- Educational outreach to Illinois' freestanding birth facilities on promoting outpatient hearing services for out-of-hospital births in the state may be targeted