

Maternity Care Center at Chatham Hospital

By

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Scope of the Project

- The goal is to determine whether a Low Risk Birthing Unit (LRBU) is a sustainable model at Chatham Hospital, and the allocation of resources necessary to achieve this.

Background

- Childbirth is the most common cause for hospitalization in the U.S.¹
- As the number of physicians providing obstetric care decreases in rural areas, the infant mortality rate increases.

Background

- 2.3% The increase in infant mortality with the loss of one Family Physician in a rural county. ²
- 33%. The decrease in OB services in rural counties from 1995-2012. ³
- 6,000,000 Number of women that live in rural counties without obstetricians. ⁴
80% of those are without access to a hospital with OB services ⁴

Background

Importance of birth volume

- < 100 annual births are low volume
- 100-250 is medium volume
- 250-450 is medium-high volume
- >500 is high volume.

Birth volumes correlate directly to population density; thus, low birth volumes are associated with rural areas, while high birth volumes are associated with urban areas.⁵

Lower annual birth volumes show increases in both infant and maternal mortality rates.¹

Background

Provider Trends

- Nearly 55% of low volume rural hospitals employ family medicine physicians as primary obstetric providers.⁶
- Rural obstetric care is thus dependent on family physicians.
- The number of family physician perinatal visits decreased by nearly 50% over a 10-year span.⁷
- 98% of rural hospitals report staffing challenges related to retaining physicians, whether obstetricians or family physicians.⁵

Background

Development of Critical Access Hospitals

- In 1997 the US government began an initiative to promote healthcare infrastructure in rural communities by licensing hospitals as Critical Access Hospitals (CAHs). ⁴
- American Academy of Family Physicians states 17.3% of rural family medicine patients use Medicaid. ⁸
- South Atlantic region increases to 33%. ⁸

Background

Levels of Maternity Care

- Level I (Basic Care)
- Level II (specialty care)
- Level III (subspecialty care)
- Level IV (regional perinatal healthcare centers)

Background

Chatham Hospital and Obstetric Care

- The hospital is staffed entirely by The University of North Carolina's Department of Family Medicine.
- In 2014, the Chatham county community health assessment determined that access to healthcare is one of the top three priorities.⁹
- The county has 66% of its population living in rural areas.
- Currently there are no hospitals in Chatham County that provide labor and delivery services.

Methods

Literature Review

- Total of 824 articles
- 98 were determined to be relevant and reviewed for this paper
- 16 research articles were included as direct references

Methods

Development of a Care Model at Chatham Hospital

- Key areas of focus were identified, to include:
 - (1) Understanding Chatham hospitals area of influence
 - (2) Creating a historic and predictive model to forecast the potential number of births per year at Chatham Hospital using the identified area of influence
 - (3) Establishing Low-risk birth parameters for the unit
 - (4) Identifying a staffing model with a successful track record
 - (5) Determine the logistics needed to support the new unit

Methods

Development of a Care Model at Chatham Hospital

- Zip code
- Type of encounter (International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes
- Healthcare system
- Primary payer
- Diagnostic code
- Diagnosis description

Methods

Development of a Care Model at Chatham Hospital

Table 1. Total Births by Healthcare System Fiscal Year 2015-2017.^a

HOSPITAL SYSTEM	Births
UNIVERSITY OF NORTH CAROLINA HOSPITALS	1143
RANDOLPH HOSPITAL	278
CONE HEALTH	267
ALAMANCE REGIONAL MEDICAL CENTER	220
CENTRAL CAROLINA HOSPITAL	129
FIRST HEALTH MOORE REGIONAL HOSPITAL	63
WAKEMED CARY	56
DUKE REGIONAL HOSPITAL	52
DUKE UNIVERSITY MEDICAL CENTER	51
REX HEALTHCARE	39
NOVANT HEALTH FORSYTH MEDICAL CENTER	27
HIGH POINT REGIONAL HOSPITAL	17
WAKEMED	8
CHATHAM HOSPITAL	3
JOHNSTON HEALTH CLAYTON	2
NOVANT HEALTH THOMASVILLE MEDICAL CENTER	2
CAPE FEAR VALLEY HEALTH SYSTEM	1
NEW HANOVER REGIONAL MEDICAL CENTER	1
WAKE FOREST BAPTIST HEALTH - WILKES MEDICAL CENTER	1
WAKE FOREST BAPTIST MEDICAL CENTER	1
Grand Total	2361

^aData Adapted from Truven Health Analytics

Key stakeholders with the help of Truven Health Analytics (a company that provides healthcare data and analytic services) wanted to identify zip codes.

A market share analysis was conducted to determine the break down of patient by healthcare system (Table 1).

Methods

Development of a Care Model at Chatham Hospital

Table 2. Birth Risk Stratification.

Low Risk	High Risk
Term birth ¹	HIV
Live Birth	Maternal heart disease
Singleton	Fetal brain malformation
Vertex position	Eclampsia
No previous Cesarean	Retroverted uterous
No high risk diagnosis	Failed forceps or vacuum extraction
Maternal age ²	Umbilical cord prolapse
	Vasa previa & placenta previa
	Uterine rupture
	Maternal age ³

¹ greater than or equal to 37 weeks

² less than 35 years old

³ greater than 35 years old

Methods

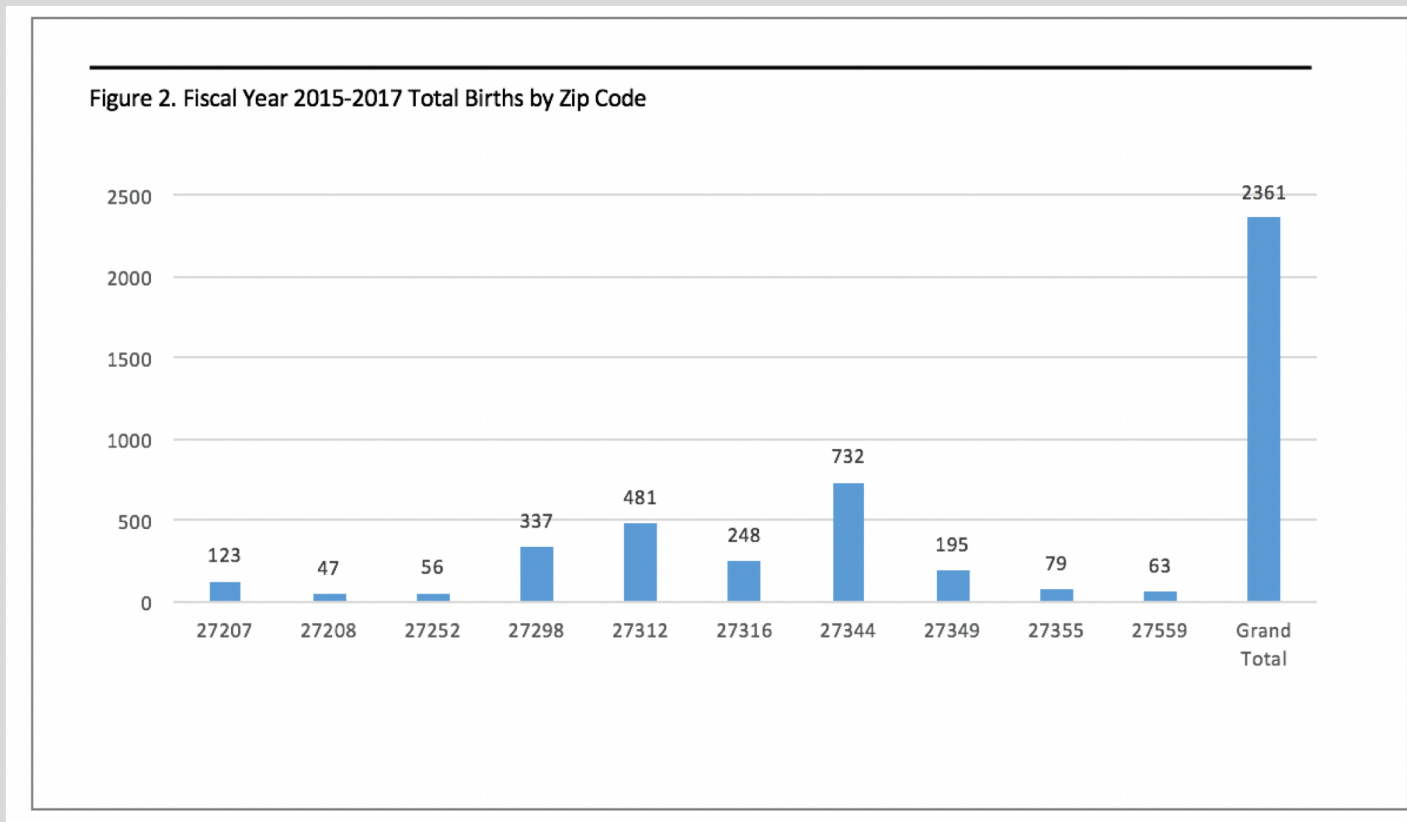
Development of a Care Model at Chatham Hospital

The historical data collected over fiscal year 2015-2017 was then broken down into three categories by the previously mentioned stakeholders:

1. Meets criteria for Chatham Hospital's proposed LRBU
2. Does not meet Criteria for Chatham Hospital's LRBU
3. Unable to determine whether criteria are meant for Chatham Hospital's LRBU

Data Analysis

- The data received from Truven Health Analytics identified 10 primary zip codes surrounding Chatham hospital.



Data Analysis

Table 1. Total Births by Healthcare System Fiscal Year 2015-2017.^a

HOSPITAL SYSTEM	Births
UNIVERSITY OF NORTH CAROLINA HOSPITALS	1143
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CAPE FEAR VALLEY HEALTH SYSTEM	1
NEW HANOVER REGIONAL MEDICAL CENTER	1
WAKE FOREST BAPTIST HEALTH - WILKES MEDICAL CENTER	1
WAKE FOREST BAPTIST MEDICAL CENTER	1
Grand Total	2361

^aData Adapted from Truven Health Analytics

Data Analysis

Figure 3. Birthing Data for Identified Zip Codes

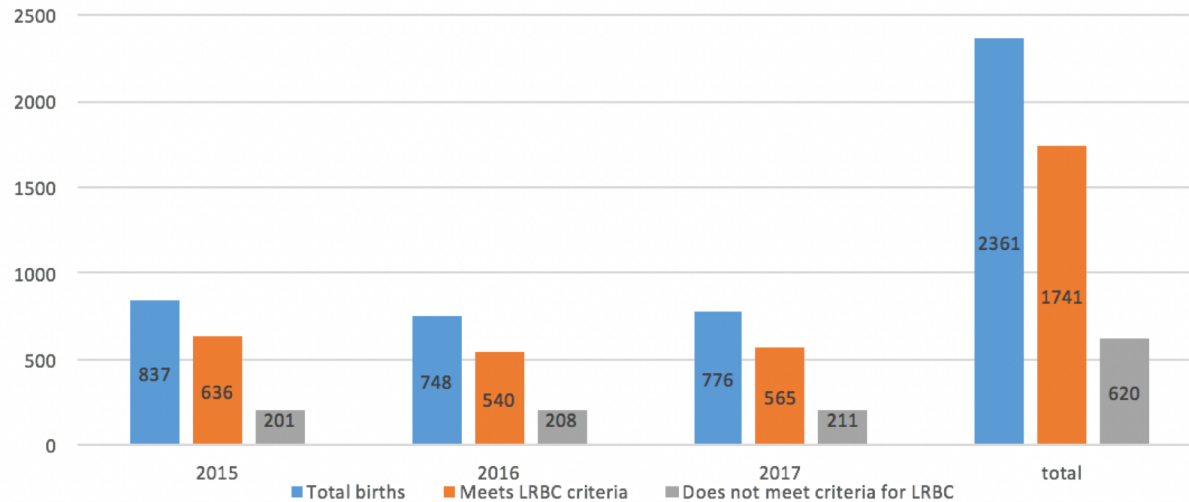


Table 3. Births by Healthcare System Fiscal Year 2015-2017 That Meet LRBU Criteria.*

HOSPITAL SYSTEM	Births
UNIVERSITY OF NORTH CAROLINA HOSPITALS	787
RANDOLPH HOSPITAL	243
CONE HEALTH	194
ALAMANCE REGIONAL MEDICAL CENTER	167
CENTRAL CAROLINA HOSPITAL	98
FIRST HEALTH MOORE REGIONAL HOSPITAL	58
WAKEMED CARY	50
DUKE REGIONAL HOSPITAL	40
DUKE UNIVERSITY MEDICAL CENTER	30
REX HEALTHCARE	29
HIGH POINT REGIONAL HOSPITAL	15
NOVANT HEALTH FORSYTH MEDICAL CENTER	12
WAKEMED	6
CHATHAM HOSPITAL	3
OTHER	3
JOHNSTON HEALTH CLAYTON	2
NOVANT HEALTH THOMASVILLE MEDICAL CENTER	2
WAKE FOREST BAPTIST HEALTH - WILKES MEDICAL CENTER	1
WAKE FOREST BAPTIST MEDICAL CENTER	1
GRAND TOTAL	1741

*Data Adapted from Truven Health Analytics

Data Analysis

Figure 4. Fiscal Year 2015-2017 Low Risk Births by Zip Code

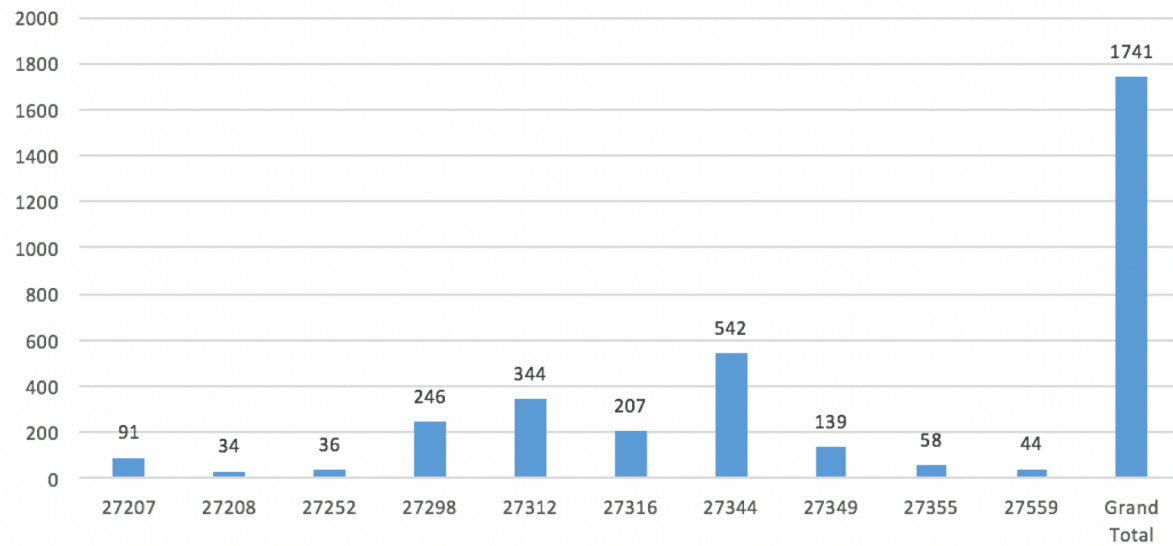
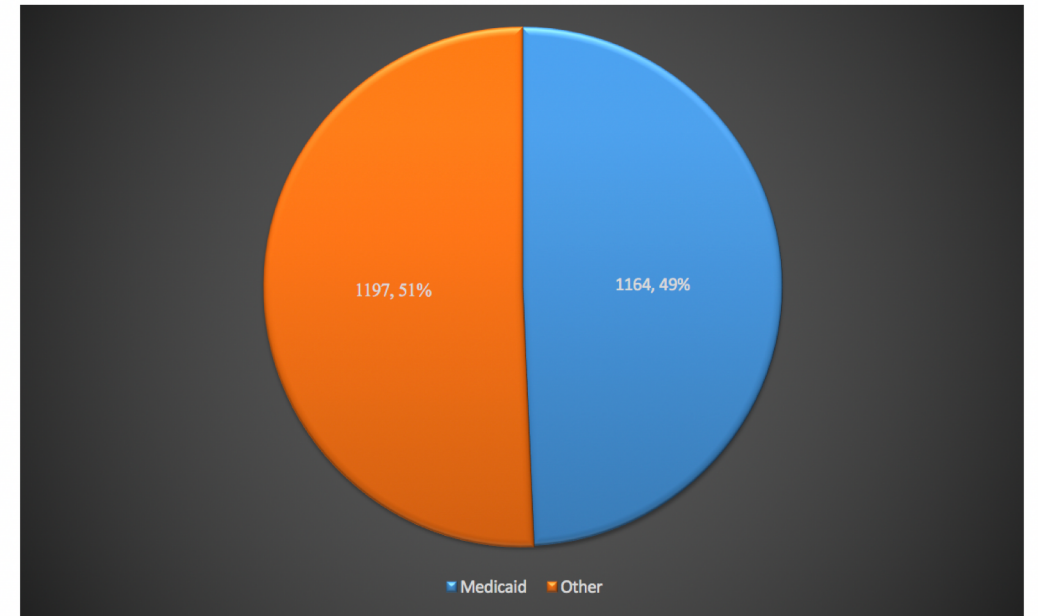


Figure 5. Primary Payer for Chatham Hospital Area of Influence.



Discussion

- Chatham Hospital's area of influence demonstrated roughly 790 total births per year throughout fiscal years 2015-2017.
- Roughly 580 births per year meeting the selection criteria for the proposed Level I Maternity Care Unit or LRBU.
- Zip code 27344 accounted for roughly 244 births per year, with 180 of those yearly births meeting the criteria for the proposed birthing unit.
- Medicaid accounted for 66% percent of the births within zip code 27344.

Discussion

- 15% market share
 - 87 annual deliveries: low volume birthing center.
- 20% market share
 - 116 annual deliveries: medium volume birthing center.
- 1250 new jobs in 2019
 - New chicken processing plant
- 200 annual births in 1996
 - Historical data from the birthing unit in Siler City prior to closing.

Discussion

- The hospital will need to provide:
 - Either
 - A full-time family medicine provider on site that is certified to perform emergency cesarean sections
 - Staff an on-call obstetrician to support a midwife or family physician who does not perform cesarean sections
 - And
 - 24/7 access to anesthesia or CRNA
 - Operating rooms
 - The ability to perform emergency cesarean sections.

Next Steps

- The statistical data supports the need for a LRBV/Maternity care center at Chatham Hospital.
- Surveying all key stakeholders.
- Demographics

References

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