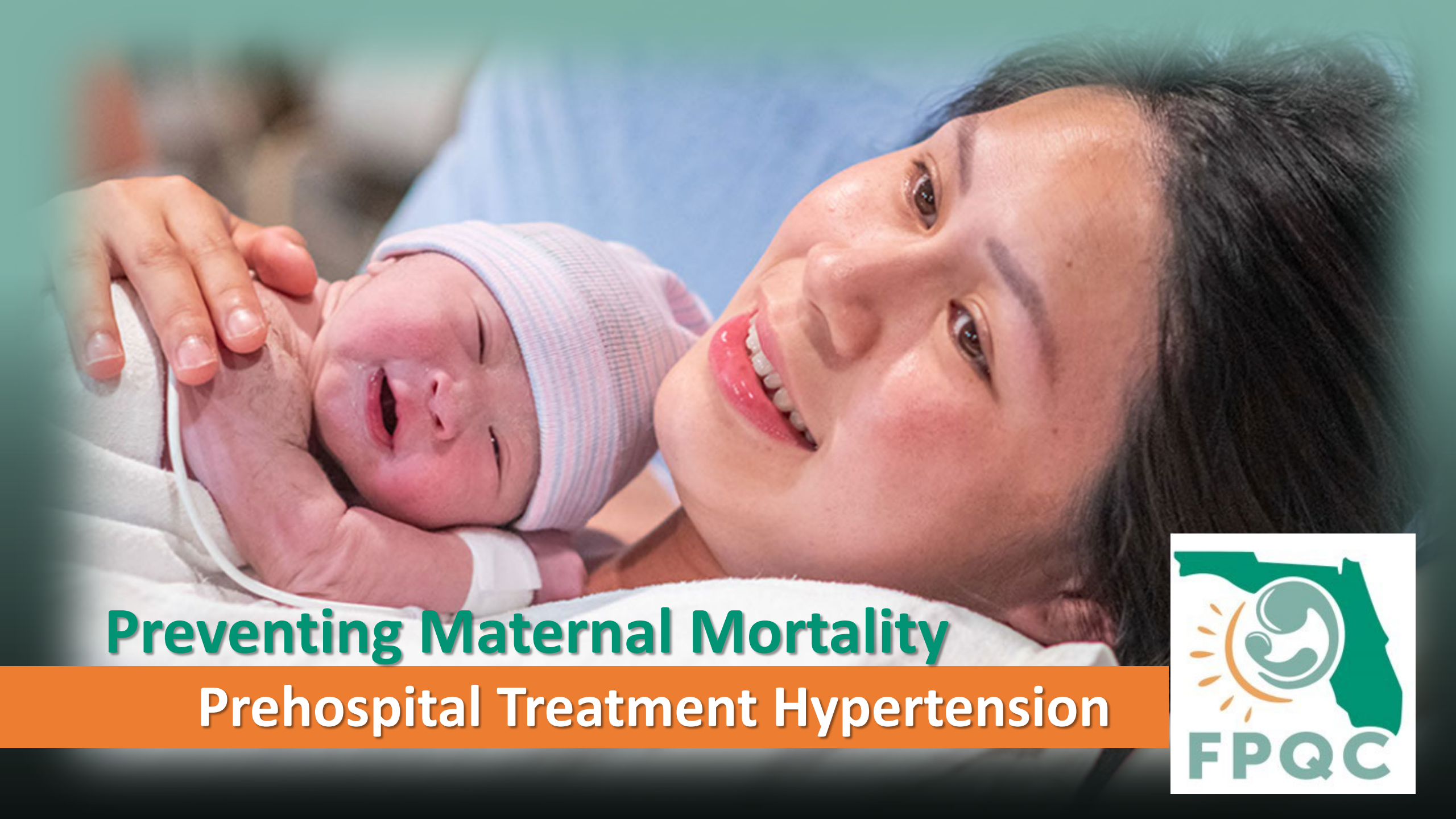


Preventing Maternal Mortality

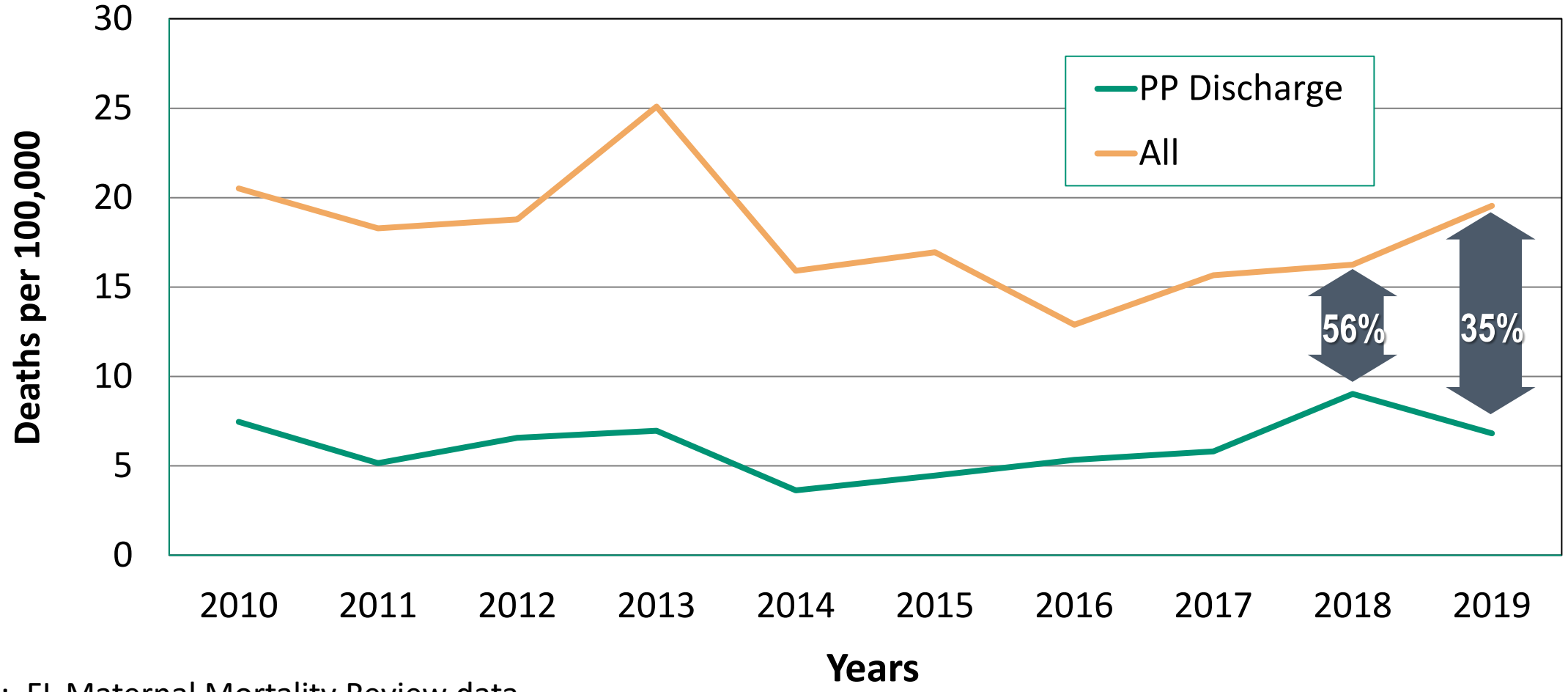
Prehospital Treatment Hypertension

FPQC

Objectives

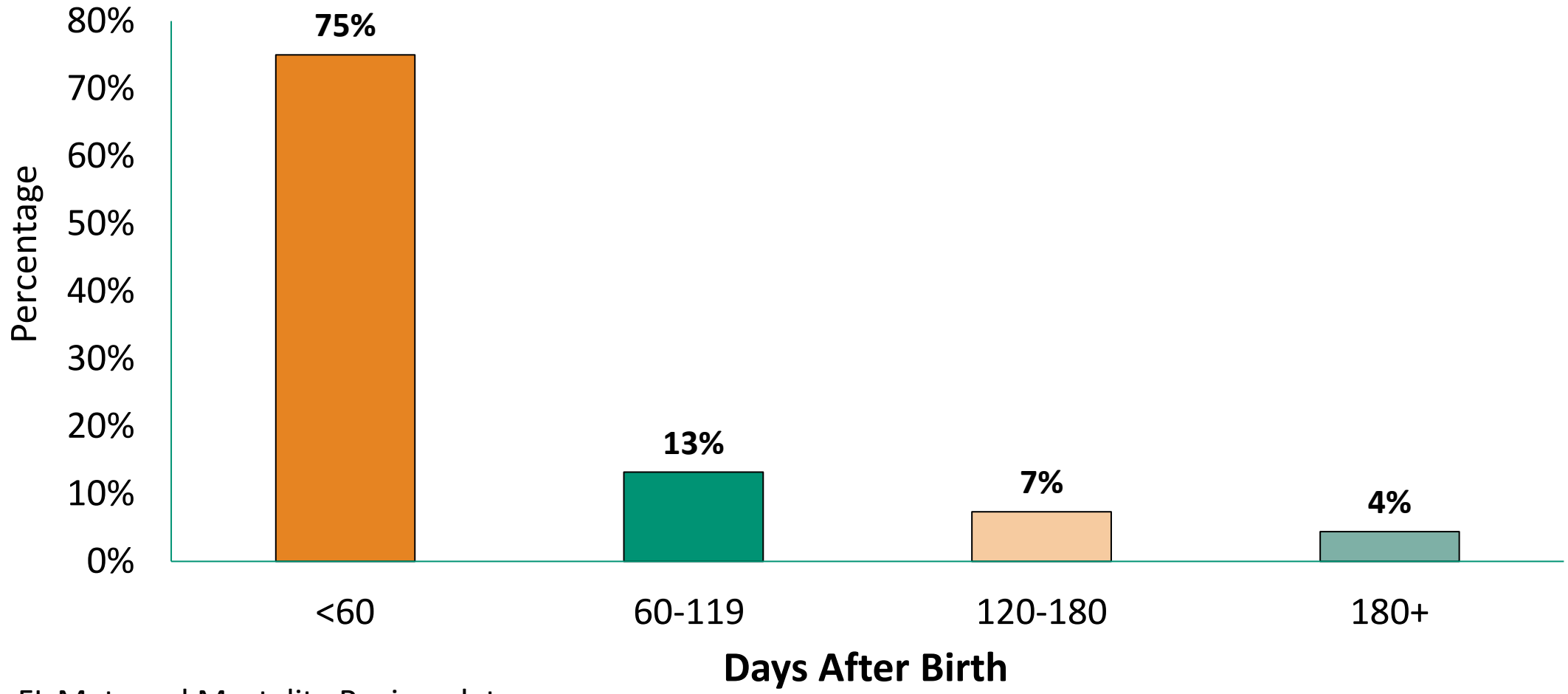
- Review current maternal mortality trends in Florida
- Define, “What is an obstetrical desert?”
- Review available toolkit from ACOG: Obstetric Emergencies in Non-Obstetric Settings: https://www.acog.org/programs/obstetric-emergencies-in-nonobstetric-settings

Pregnancy-Related Mortality Rates
Florida, 2010 to 2019



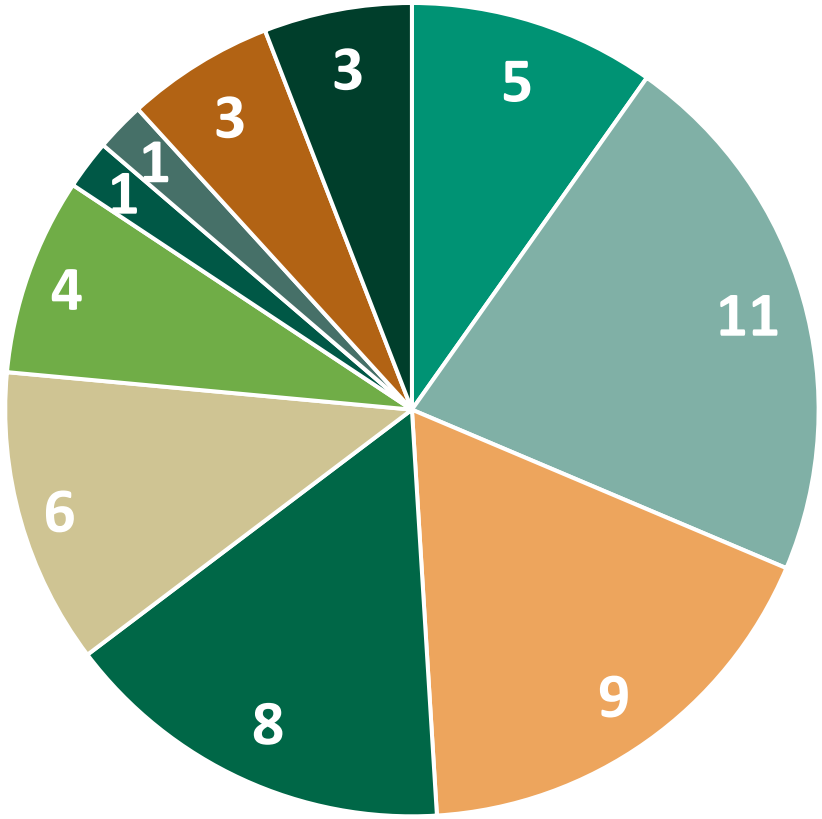
Source: FL Maternal Mortality Review data

Postpartum Discharge Pregnancy-Related Deaths By Time Period, Florida, 2015 to 2019



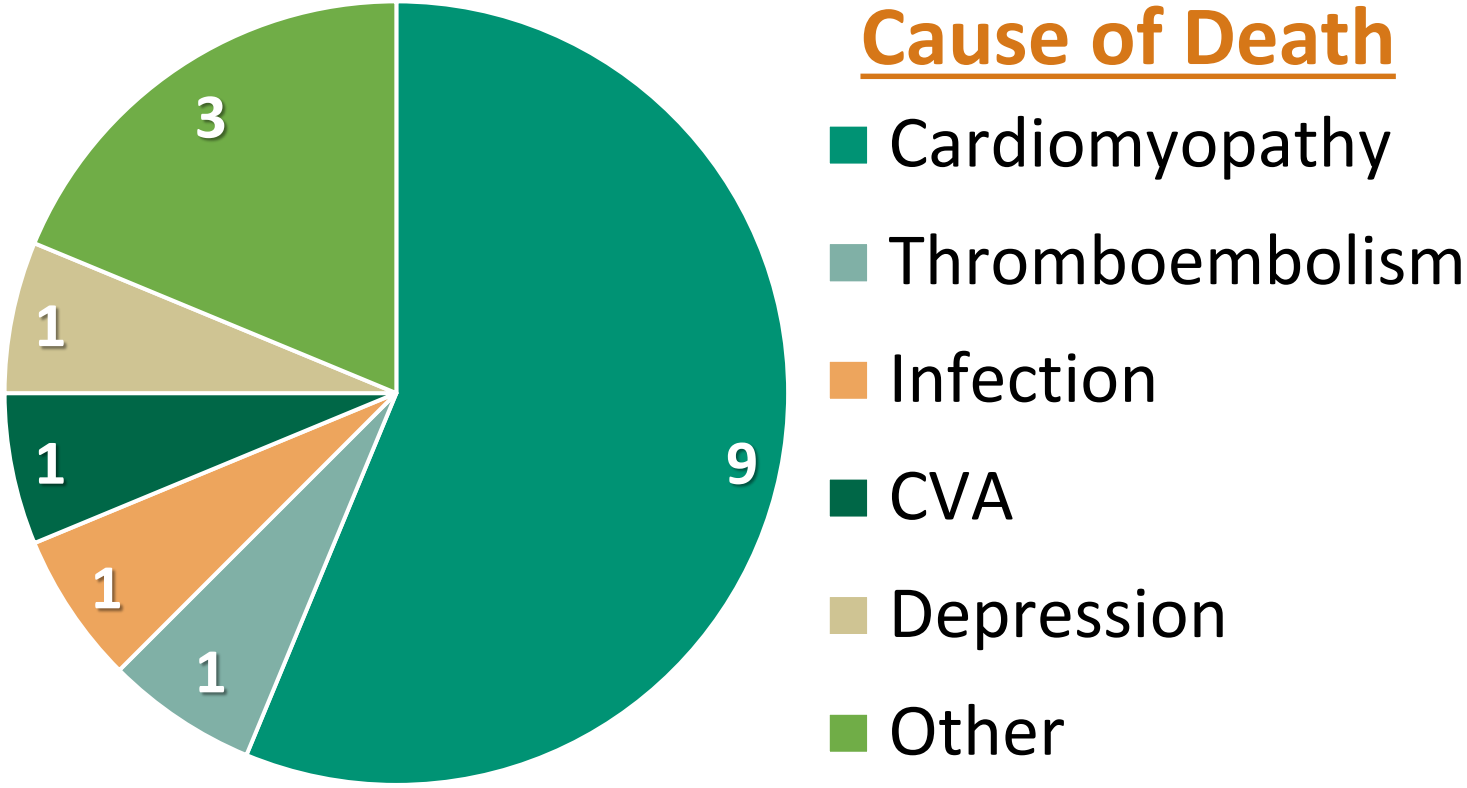
Source: FL Maternal Mortality Review data

Underlying Cause of Death for Less Than the First 60 Days Postpartum Discharge Pregnancy-Related Deaths By Time Period, Florida, 2015 to 2019



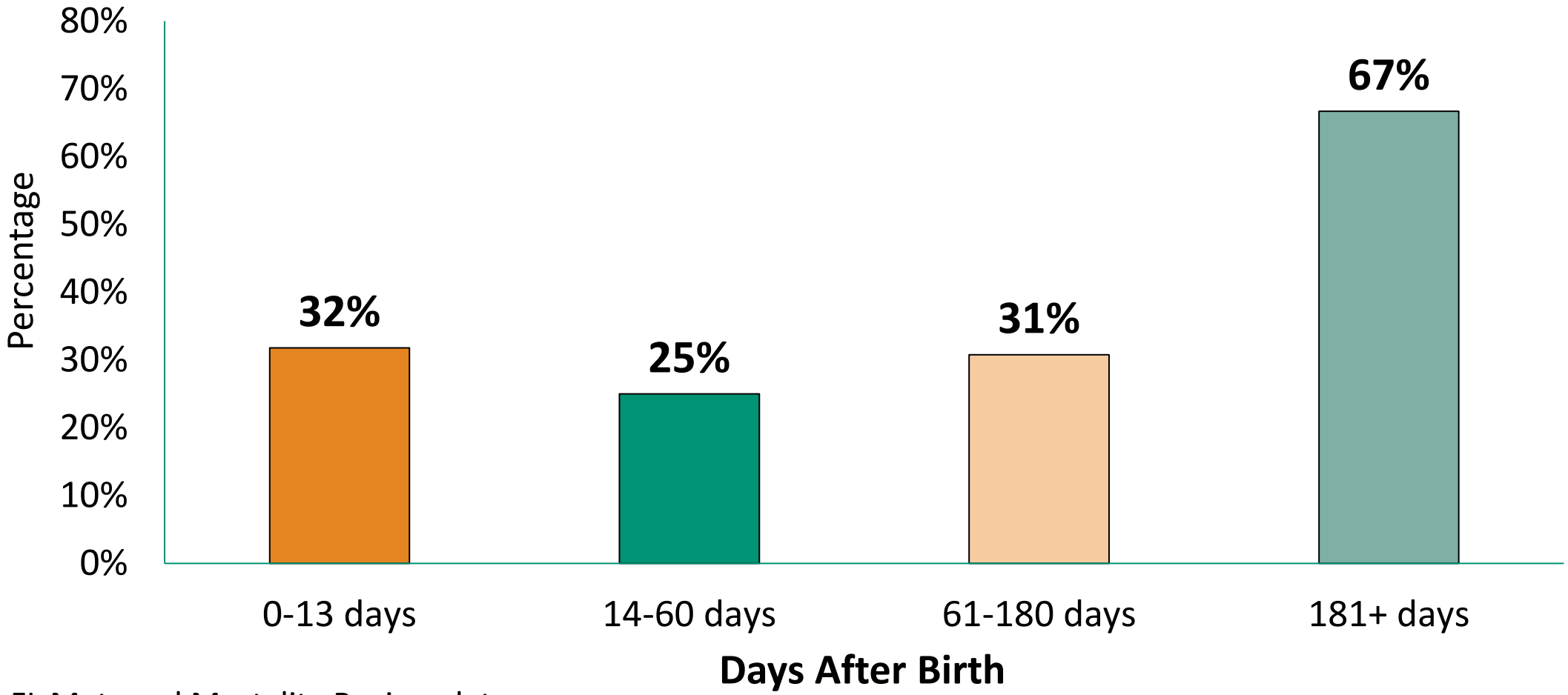
Source: FL Maternal Mortality Review data

Underlying Cause of Death for 60+ Days Postpartum Discharge Pregnancy-Related Deaths By Time Period, Florida, 2015 to 2019



Source: FL Maternal Mortality Review data

Postpartum Discharge Pregnancy-Related Deaths with a Stand-Alone Postpartum ER Visit, Florida, 2015 to 2019



Source: FL Maternal Mortality Review data

Florida's Maternal Mortality Review Committee 2020

DISTRIBUTION OF PREVENTABILITY AMONG PREGNANCY-RELATED DEATHS AND CAUSE, FLORIDA, 2020 (N=44)

	PRDs with Chance to Alter Outcome				Total	
Cause of PRDs	Good	Some	Unable to Determine	None		Percent Preventable
Thrombotic embolism	1	1	0	1	3	66.7%
Hypertensive disorder	4	4	0	0	8	100.0%
Cardiovascular disorders	1	1	0	1	3	66.7%
Infection	0	3	0	3	6	50.0%
Hemorrhage	2	1	0	1	4	75.0%
Cardiomyopathy	0	2	0	1	3	50.0%
Amniotic fluid embolism	0	1	0	0	1	100.0%
Cerebrovascular accident	1	0	0	3	4	25.0%
Depression	2	1	0	0	3	100.0%
Other remaining causes*	2	2	0	1	5	80.0%
Unknown**	0	0	1	0	1	100.0%
Total	13	16	1	11	44	68.2%

*Other remaining causes is comprised of various causes of deaths not easily captured with enough numbers in a homogeneous category. Percent preventable is (good + some + unable to determine/Total **There were 3 cases in the unknown category that had missing committee determination of preventability and were only included in the total column.

Clinical—Maternal Early Warning System

Maternal Early Warning Measurements		
Systolic BP (mmHg)	≤80	≥160
Diastolic BP (mmHg)	≤49	≥110
Respiratory Rate (breaths per minute)	≤10	≥30
Heart Rate (beats per minute)	≤50	≥120
Oxygen Saturation (% at room air)	≤94	
Urine Output (ml per hour for 2 hours)	≤35	
Maternal agitation, confusion or unresponsiveness		
Patient with hypertension reporting a non-remitting headache or shortness of breath		
Patient report of constant, systemic and severe musculoskeletal pain		
RED	Immediate action needed; call provider immediately to come evaluate	
Yellow	Reassess and confirm calling the provider in 10 minutes	

Source: FDOH, ACOG/AIM

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Postpartum ER Care—Mortality Prevention

Ask all women ages 15-45 years if they have been pregnant in the past year?

This question should be integrated into your triage and/or patient assessment system

ACOG/AIM* Severe Hypertension in Pregnancy Patient Safety Bundle (2022)

Response — Every Event

Response Element	Key Points
Standardized, facility-wide protocols	Should include: • Onset and duration of magnesium sulfate therapy • Advance preparation for seizure prophylaxis and magnesium toxicity • Notification of physician or primary care provider if systolic pressure is 160 mm Hg or more or diastolic pressure is 110 mm Hg or more for two measurements within 15 minutes • Monitoring cases of borderline severe hypertension (150 to 159 mm Hg systolic and/or 105-109 mm Hg diastolic) closely for progression to severe hypertension. • Initiating treatment within 60 minutes of verification after first severe range blood pressure reading, assuming confirmation of persistent elevation through a second reading. • Escalation measures for ongoing observation and management

**AIM (Alliance for Innovation on Maternal Health)*

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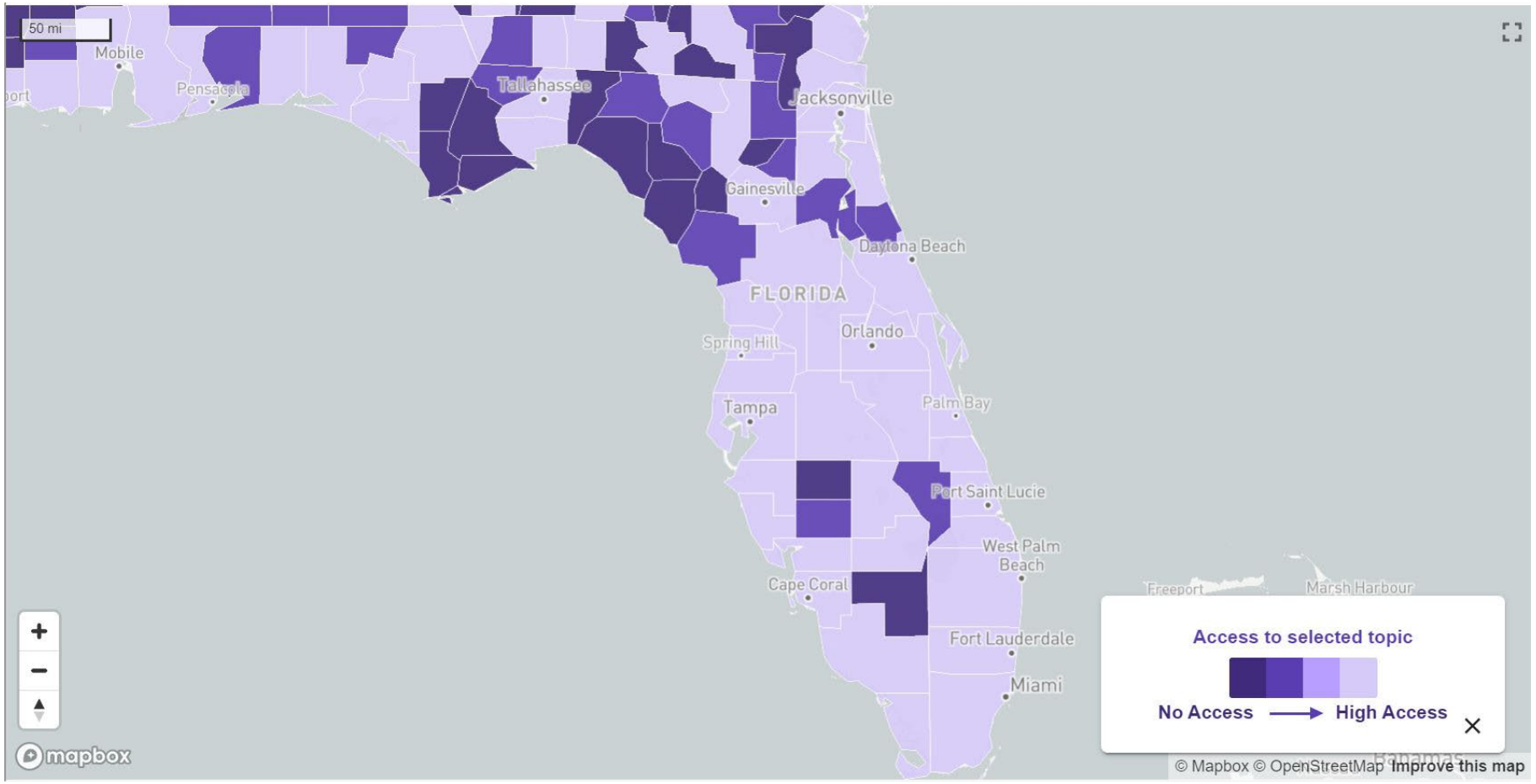
Maternity Care Desert: March of Dimes

- Maternity care desert: any county without a hospital or birth center offering obstetric care and without any obstetric providers
- Low access to care: have no more than one hospital or birth center offering obstetric care, no more than 60 obstetrical providers per 100,000 people or greater than 10 percent of uninsured
- Moderate access to care: have no more than one hospital or birth center offering obstetrical care, no more than 60 obstetrical providers per 100,000 people and less than 10 percent of uninsured
- Full access to care: availability of hospitals, birth centers, and providers offering obstetrical care

Suggested citation: Brigance, C., Lucas R., Jones, E., Davis, A., Oinuma, M., Mishkin, K. and Henderson, Z. (2022). *Nowhere to Go: Maternity Care Deserts Across the U.S.* (Report No. 3). March of Dimes. https://www.marchofdimes.org/research/maternity-care-deserts-report.aspx

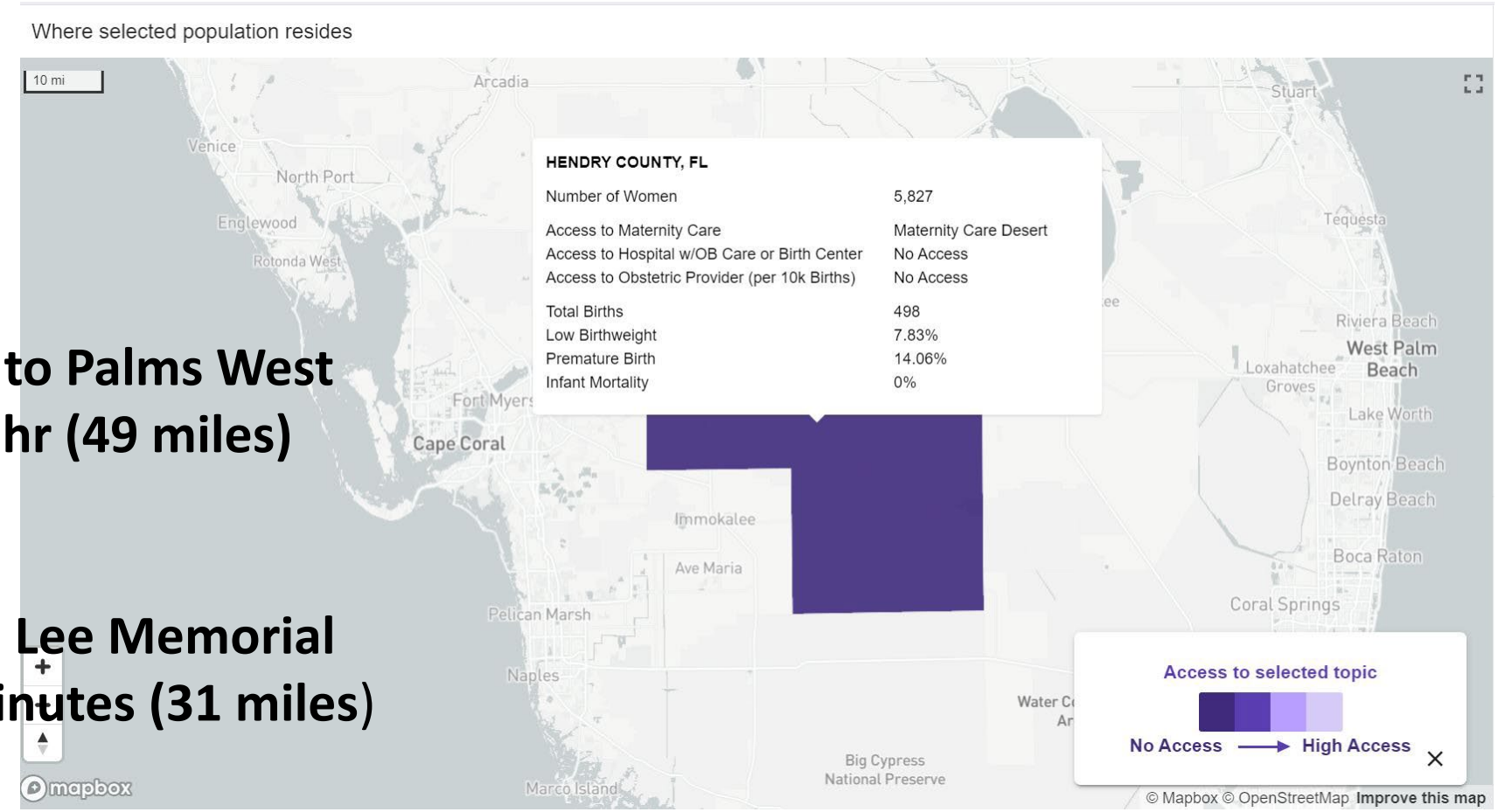
Accessed at: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/march-of-dimes-maternity-care-deserts-dashboard.html



Accessed at: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/march-of-dimes-maternity-care-deserts-dashboard.html

Clewiston, FL to Palms West Hospital: 1 hr (49 miles)

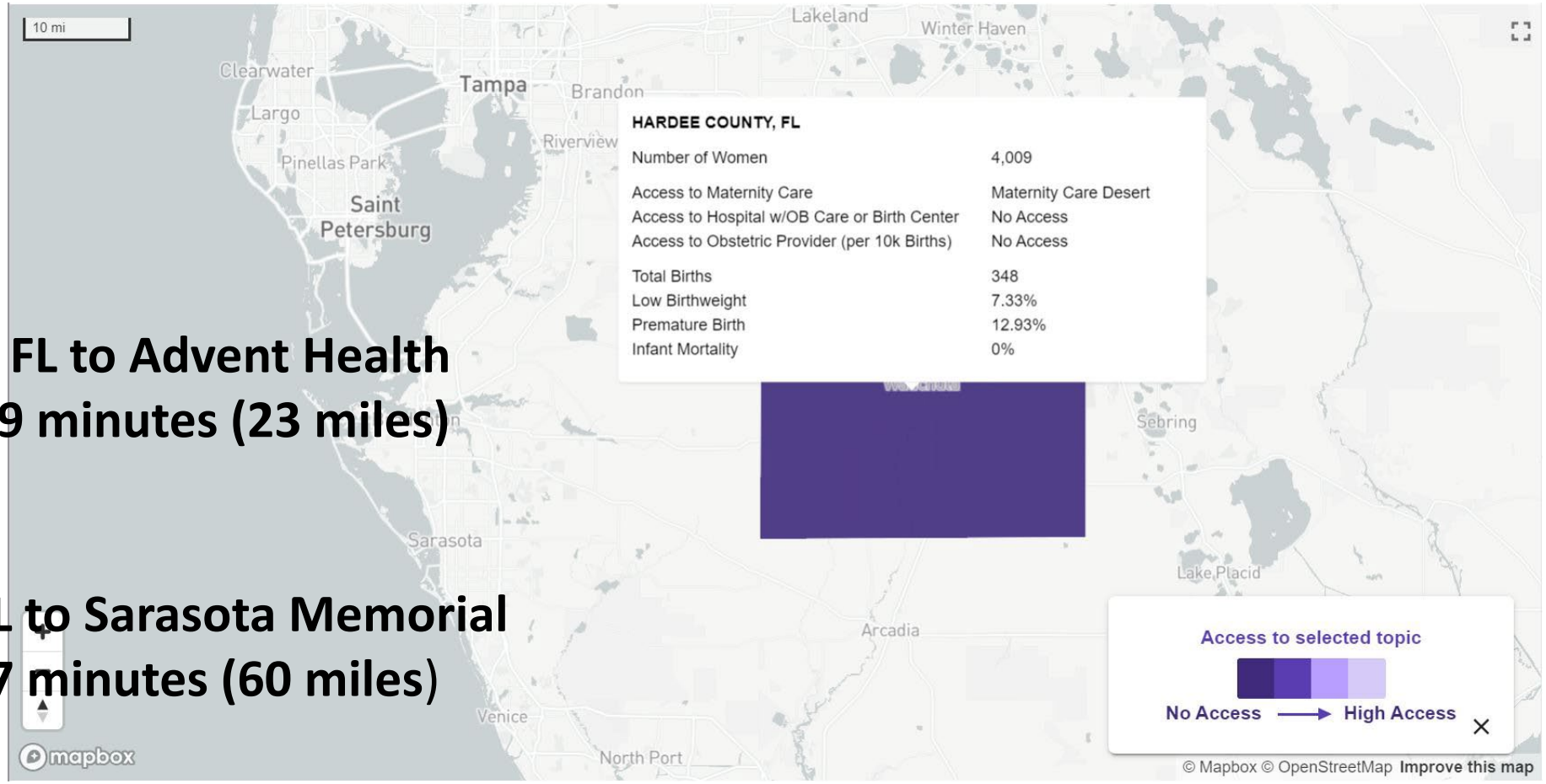
Labelle, FL to Lee Memorial Hospital: 49 minutes (31 miles)



Accessed at: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/march-of-dimes-maternity-care-deserts-dashboard.html

Wauchula, FL to Advent Health Sebring: 29 minutes (23 miles)

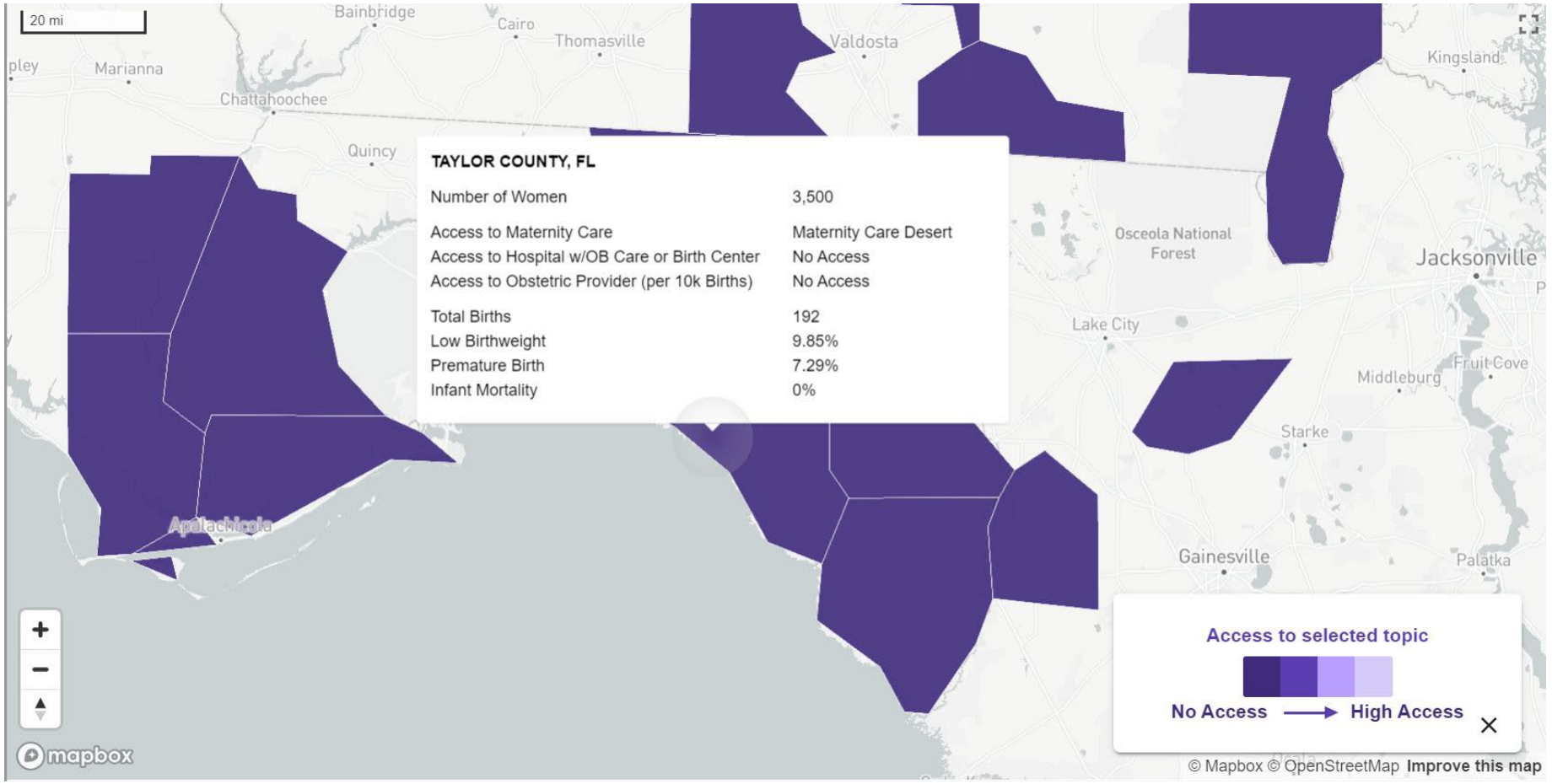
Wauchula, FL to Sarasota Memorial Health: 77 minutes (60 miles)



Accessed at: https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/march-of-dimes-maternity-care-deserts-dashboard.html

Perry, FL to Shand's Hospital Gainesville: 105 minutes (92 miles)

Perry, FL to Tallahassee Memorial Healthcare: 59 minutes (53 miles)



Frequency of out of hospital, high acuity obstetrical events

- Cross-sectional analysis for all activations recorded in the NEMSIS database for 2018
- Identified the primary symptom and primary assessment of emergency activations for an obstetric complaint and pregnant patient
- Complaint categories were categorized based upon ICD-10 codes
- Results:
  - 107,000 activations (87,538 had complete evaluations)
  - Circulatory signs and symptoms: n = 4,107 (4%)
  - Medical examination/evaluation: n = 1,810 (2)
  - Mental health and substance use: n = 1,429 (1%)
  - **High acuity patient (MEOWS): 34% (of these, 70% were related to eclampsia, preeclampsia, and hypertensive condition)**

Cash RE, Swor RA, Samuels-Kalow M, Eisenbrey D, Kaimal AJ, Camargo CA Jr. Frequency and Severity of Prehospital Obstetric Events Encountered by Emergency Medical Services in the United States. BMC Pregnancy Childbirth 2021;21(1):655.

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Likelihood for clinically significant events (CSE)during maternal transport

- Transport of pregnant persons poses unique challenges for EMS providers because:
  - Unique anatomic, physiologic triggers, and treatment variation when compared to non-pregnant persons
  - Relatively low incidence of clinically significant events (delivery of baby, hypotension, hypoxia, exacerbation of hypertension, altered mental status, need for intubation, and cardiac arrest)
  - Inconsistent training by paramedic students regarding obstetrical standards
- Five-year, retrospective review of interfacility transport within a single hospital system
  - Included 1,223 pregnant patient encounters (809 by ground and 414 by air)
  - Call-to-bedside, out-of-hospital, and total-patient times were less by air transport ($p < 0.01$)
  - Preterm labor was the most common indication for transport (n = 430 patients)
  - Hypertension in pregnancy (n = 187 patients), other life-threatening maternal disease (n = 168)
  - **Most common CSE: exacerbation of hypertension (n = 49)**
- **Author's conclusion: Knowledge about low incidence CSE is vital to maintain safety**

Nawrocki PS, Levy M, Tang N, Trautman S, Margolis A (2019). Interfacility Transport of the Pregnant Patient: A 5-year Retrospective Review of a Single Critical Care Transport Program, Prehospital Emergency Care, 23:3, 377-384

Can maternal transport contribute to maternal death?

- Retrospective of Ohio MMRC data between 2010 – 2016, focusing on the role of maternal transport
- Groups included:
  - Field to hospital (FTH)
  - Hospital to hospital (HTH)
- Pregnancy related maternal deaths: n = 136
  - PRMD requiring maternal transport: n = 56 (71% FTH, 23% HTH, 6% FTH then HTH)
  - **PRMD where transport played a role: n = 19**
  - Contributing factors included:
    - Inadequate response by EMS
    - Transport to a hospital with inadequate level of care
- **Authors recommended: facilities develop clear transport plans with an understanding about patient need and time needed for transport**

DeSisto CL, Oza-Frank R, Goodman D, Conrey E, Shellhaas C. Maternal Transport: An Opportunity to Improve the System of Risk-Appropriate Care. J Perinatol 2021;41(9):2141-2146.

EMS Activation and Hypertension in Pregnancy

- Retrospective review of pregnant patients and severe hypertension who were transported by EMS in Columbus, Ohio during calendar year 2016
- Mean EMS call duration: 17 minutes
- EMS calls with obstetrical patients: n = 1,575
- Most complaints were related to labor (n = 1015)
- **Although one patient called with a complaint of hypertension, one-third (n = 504) had hypertension**
- Patients with severe hypertension: n = 75 (15%)
- **Author's conclusion: Consider prehospital treatment of severe hypertension in pregnancy in rural and remote areas with longer transit times**

Hutchcraft ML, Ola O, McLaughlin EM, Hade EM, Murphy AJ, Frey HA, Larrimore A, Panchal AR. A One-Year Cross Sectional Analysis of Emergency Medical Services Utilization and Its Association with Hypertension in Pregnancy. Prehosp Emerg Care 2022;26(6):838-847.

INTERIM UPDATE

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG COMMITTEE OPINION

Number 767

(Replaces Committee Opinion Number 692, September 2017)

Emergent Therapy for Acute-Onset, Severe Hypertension During Pregnancy and the Postpartum Period

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following recommendations and conclusions:

- Introducing standardized, evidence-based clinical guidelines for the management of patients with preeclampsia and eclampsia has been demonstrated to reduce the incidence of adverse maternal outcomes.
- Pregnant women or women in the postpartum period with acute-onset, severe systolic hypertension; severe diastolic hypertension; or both require urgent antihypertensive therapy.
- Close maternal and fetal monitoring by a physician and nursing staff are advised during the treatment of acute-onset, severe hypertension.
- After initial stabilization, the team should monitor blood pressure closely and institute maintenance therapy as needed.
- Intravenous (IV) labetalol and hydralazine have long been considered first-line medications for the management of acute-onset, severe hypertension in pregnant women and women in the postpartum period.
- Immediate release oral nifedipine also may be considered as a first-line therapy, particularly when IV access is not available.
- The use of IV labetalol, IV hydralazine, or immediate release oral nifedipine for the treatment of acute-onset, severe hypertension for pregnant or postpartum patients does not require cardiac monitoring.

Accessed at: Obstetric Emergencies in Nonobstetric Settings | ACOG

ACOG Resources

Emergency Departments

Algorithms

- Cardiovascular Disease (CVD) in Pregnancy and Postpartum Algorithm (PDF)
- Acute Hypertension in Pregnancy and Postpartum Algorithm (PDF)
  - Download our Printer-Friendly Version
- Eclampsia Algorithm (PDF)
  - Download our Printer-Friendly Version

Signs and Posters

- Pregnancy Status Signs in English and Spanish (PDF)

EMS

- EMS Information Sheet
- *Model EMS guidelines for postpartum hemorrhage, elevated blood pressure in pregnancy and up to six weeks postpartum, and eclampsia are coming soon!*

https://www.acog.org/programs/obstetric-emergencies-in-nonobstetric-settings

Resources for Emergency Room Providers

- FPQC Training for Emergency Room Physicians, accessed at Pregnant in the Last Year | USF Health
  - Includes:
    - Postpartum ER Training Slides
    - FPQC ER PP Conditions Poster including QR codes for various postpartum complications
    - Postpartum Conditions Diagnoses and Treatment Management
    - Postpartum Discharge and Pregnancy-related deaths: Are these deaths preventable
- FPQC Hypertension in Pregnancy Initiative: stay tuned for forthcoming resources

FPQC ED Poster

FPQC

??? Questions ???