Enhanced Perinatal Surveillance in Georgia, 2005-2010

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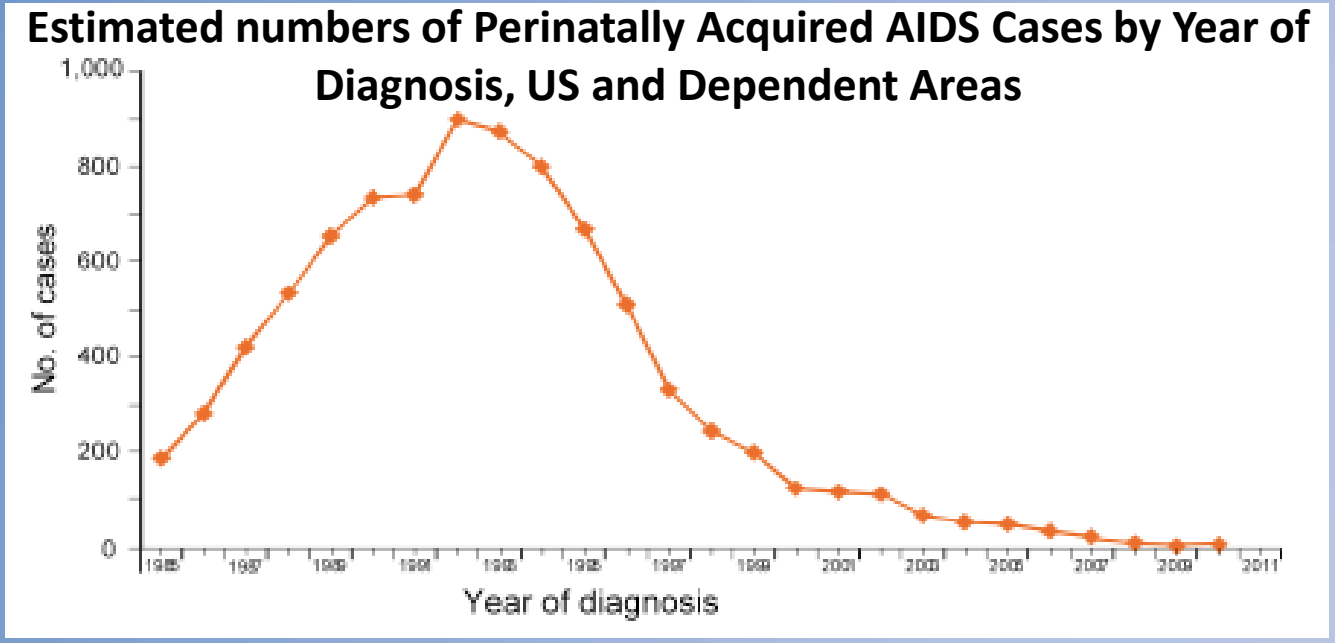
Agenda

- Perinatal HIV Transmission
  - Guidelines for Prevention
- Enhanced Perinatal Surveillance (EPS) – Georgia, 2005-2010
  - Methods
  - Results
- Mother-to-Child Transmission in Georgia
- Future Directions and Recommendations

Perinatal HIV Transmission

- Occurs in utero, intrapartum and postpartum
- Currently estimated < 200 HIV-infected infants born per year in US



CDC. *Eliminating Perinatal HIV: A curriculum for OB/GYN Resident and Midwifery Programs*. http://www.cdc.gov/primarycare/materials/hivtransmission/docs/hivtransmission.pdf. Accessed 30 June 2013.

Current Guidelines for the Prevention of Perinatal Transmission of HIV

- Diagnosis of Pregnant Women
  - Routine counseling and testing of all pregnant women using opt-out approach
  - Repeat 3rd trimester testing considered for all seronegative pregnant women and recommended for those at high risk for infection
  - Rapid HIV antibody testing at labor/delivery for women with unknown HIV status
- Treatment of Pregnant Women
  - Prenatal and intrapartum combination ART
  - Elective cesarean delivery at 38 weeks for women with HIV RNA > 1000 copies/mL
  - No breastfeeding
- Treatment of Neonates
  - AZT for 6 weeks or combination ART if no prenatal/intrapartum ART
  - PCP prophylaxis at 4-6 weeks for HIV-positive and indeterminate infants

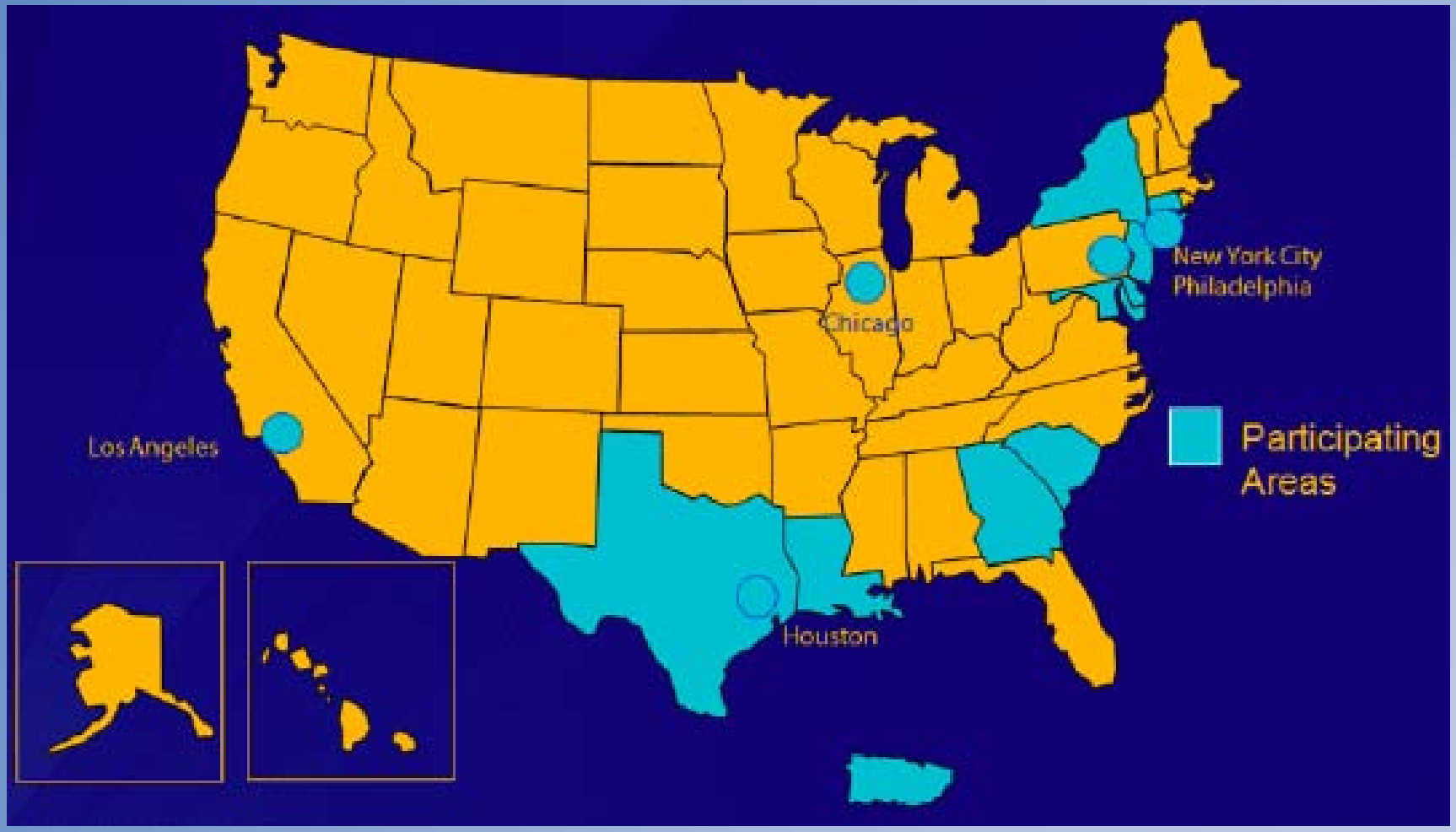
Panel on Antiretroviral Therapy and Medical Management of HIV-Infected Children. "Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection." Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/pediatricguidelines.pdf. Accessed 26 June 2013.

Panel on Treatment of HIV-Infected Pregnant Women and the Prevention of Perinatal Transmission. "Recommendations for the Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV Transmission in the United States." Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/perinatalGL.pdf. Accessed 29 June 2013.

Challenges to HIV Surveillance in Pregnant Women and Children

- No exposure-based reporting
  - System is not alerted when a woman known to be infected with HIV becomes pregnant or delivers
- Diagnostic testing in infants is different than adults
  - Virologic testing (HIV DNA PCR or HIV RNA assays) to diagnose infants < 18 months
  - Multiple tests at specified ages
    - Virologic testing for infants with known exposure recommended at 14-21 days, 1-2 months, and 4-6 months
    - Can be considered at birth in infants at high-risk for infection
  - Definitive exclusion of HIV infection in non-breastfed infants
    - 1) ≥ 2 negative virologic tests, 1 at ≥ 1 month and 1 at ≥ 4 months, OR
    - 2) ≥ 2 negative antibody tests at ≥ 6 months

Enhanced Perinatal Surveillance (EPS), 2005-2008



Methods: Georgia

Case Identification

- Eligibility
  - HIV-infected pregnant women giving birth to a live infant 2005-2010
- Cases identified via multiple methods
  - Routine pediatric surveillance
  - Birth registry match with eHARS
  - Facility-based identification

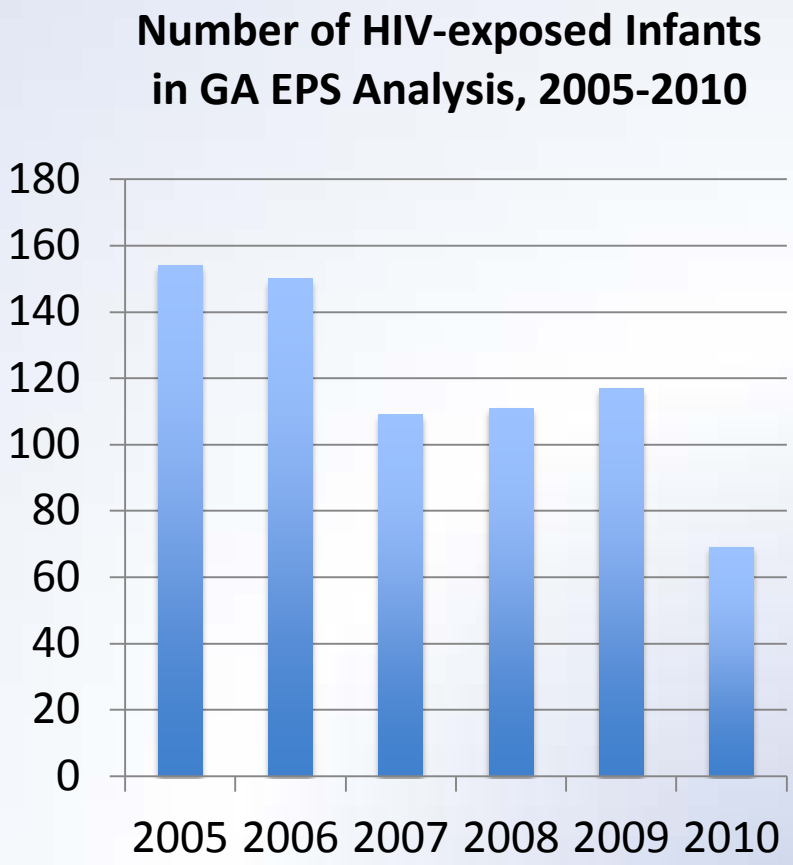
Data Collection and Follow-up

- On-site record review of maternal and pediatric medical records, birth and death certificates, and health department records
- 8-page data abstraction form
  - Demographics
  - Prenatal care
  - Substance use
  - Maternal clinical and laboratory information
  - Maternal and infant ART
  - Birth history and pediatric history
- Infants followed every 6 months for HIV infection status

Methods: Methodology Changes in Georgia

- 2005-2006: EPS review attempted for every HIV-infected pregnancy
- 2007-2009: EPS review limited to 7 tertiary care facilities in Georgia doing high-risk obstetrics
- 2010: Close-out year, fewer case investigations

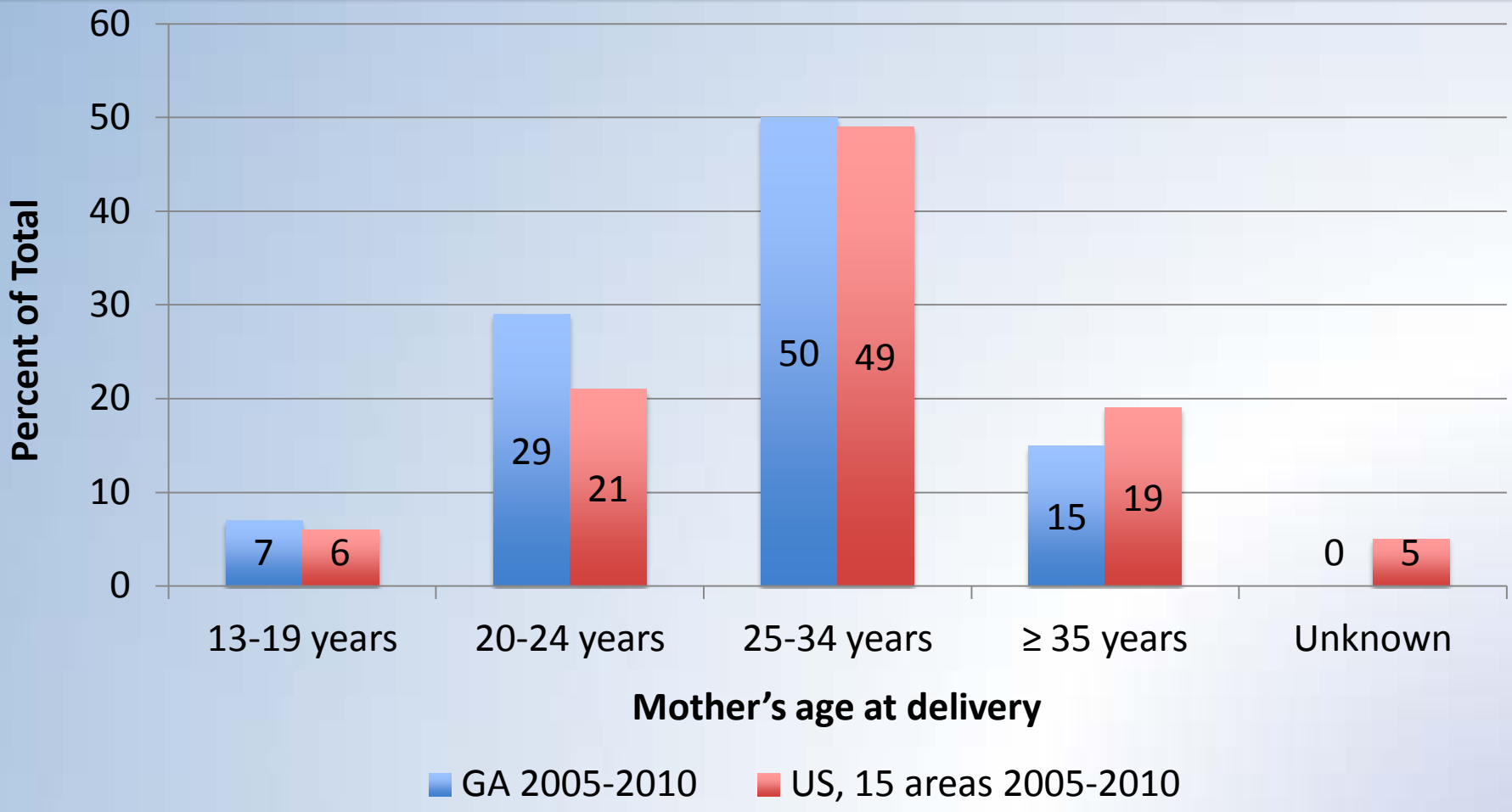
→ EPS in Georgia transitioned from a population-based (2005-2006) to a facility-based surveillance system (2007-2010)



Results

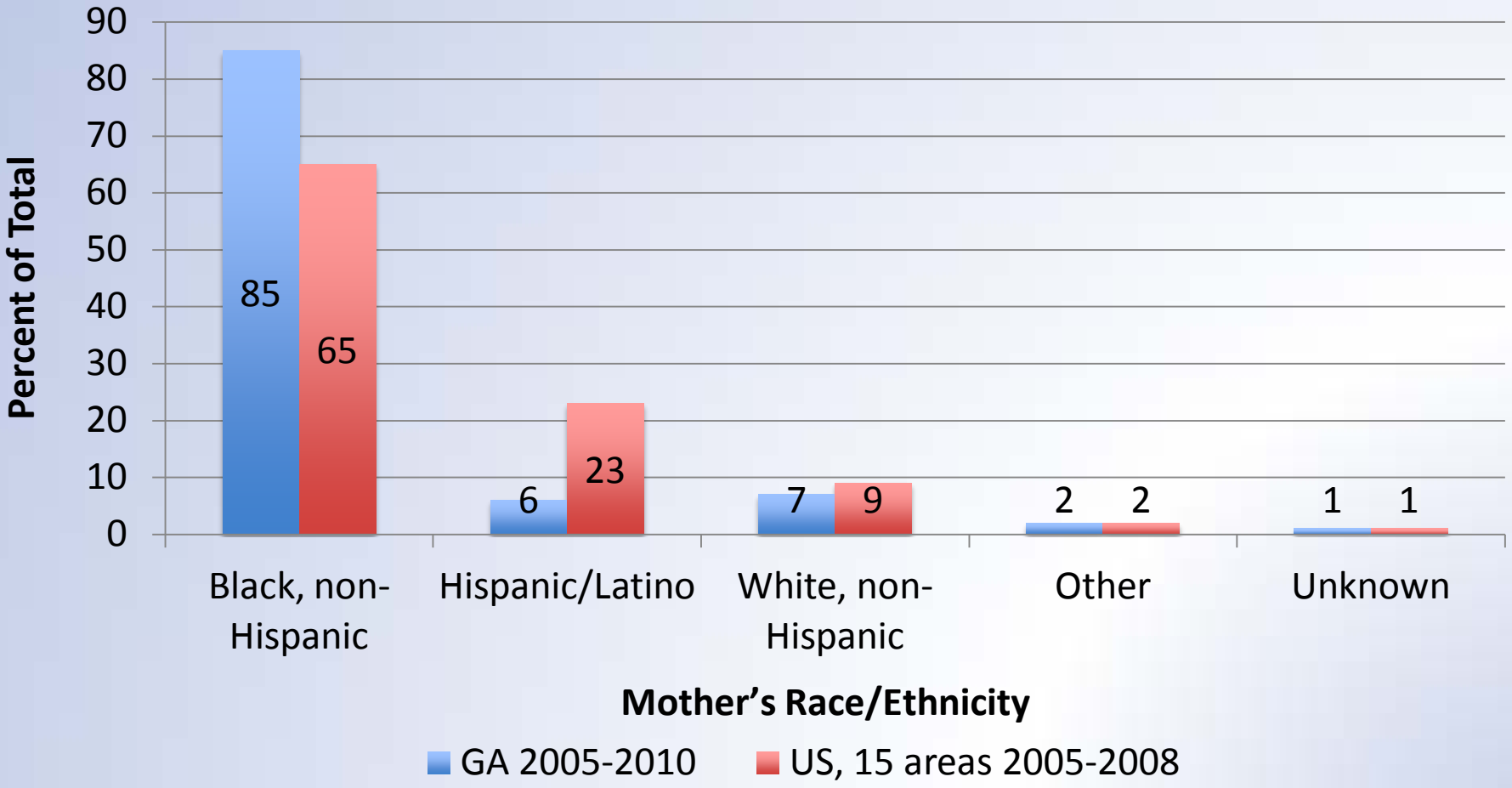
- EPS Georgia sample: 695 HIV-infected pregnancies that resulted in 710 live births in Georgia during the years 2005-2010
- Comparison of this Georgia sample is made with a national sample of 8,054 HIV-exposed infants from 15 jurisdictions during the years 2005-2008

Proportion of HIV-infected Pregnant Women by Age



Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-infected Pregnant Women by Race/Ethnicity



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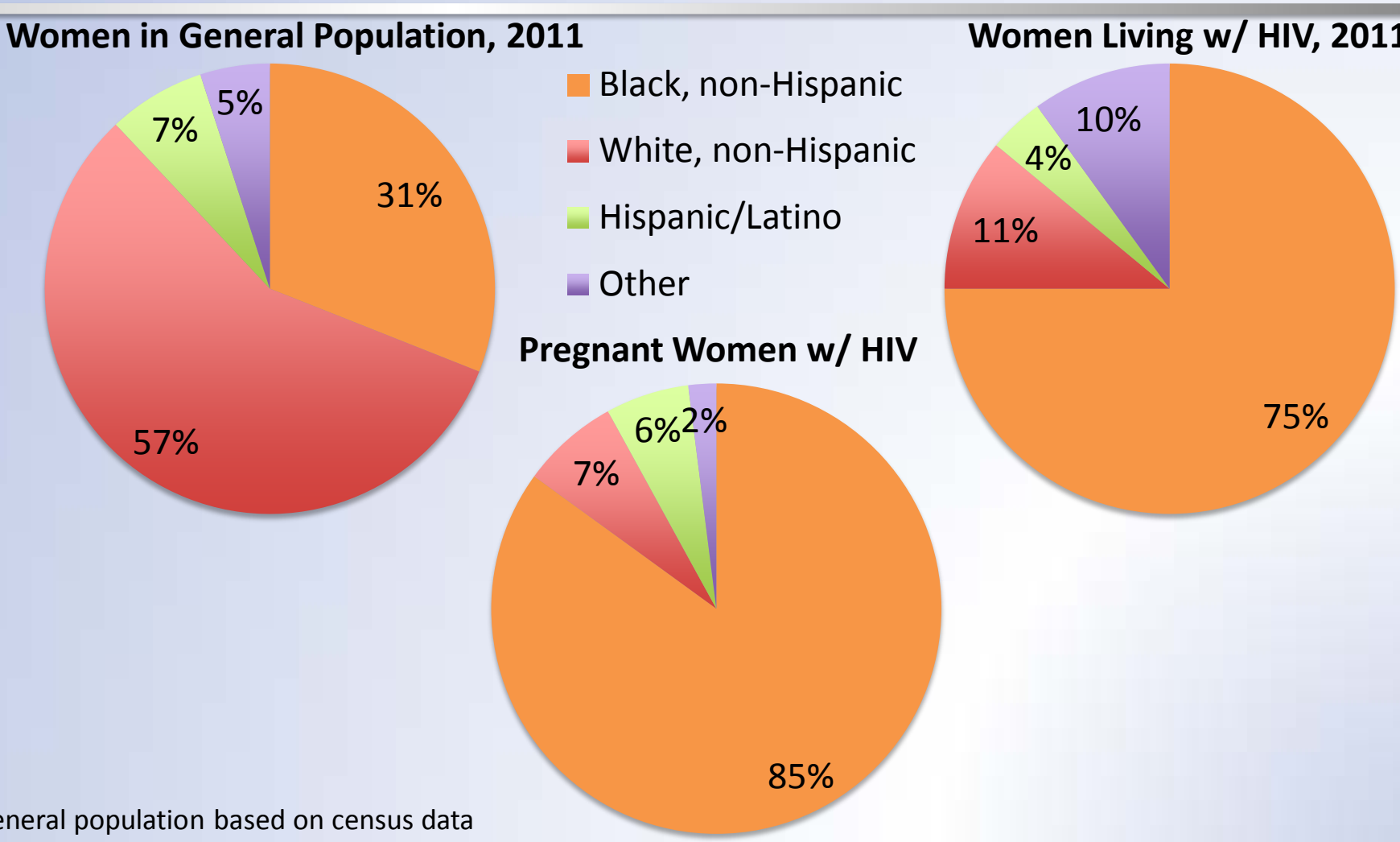
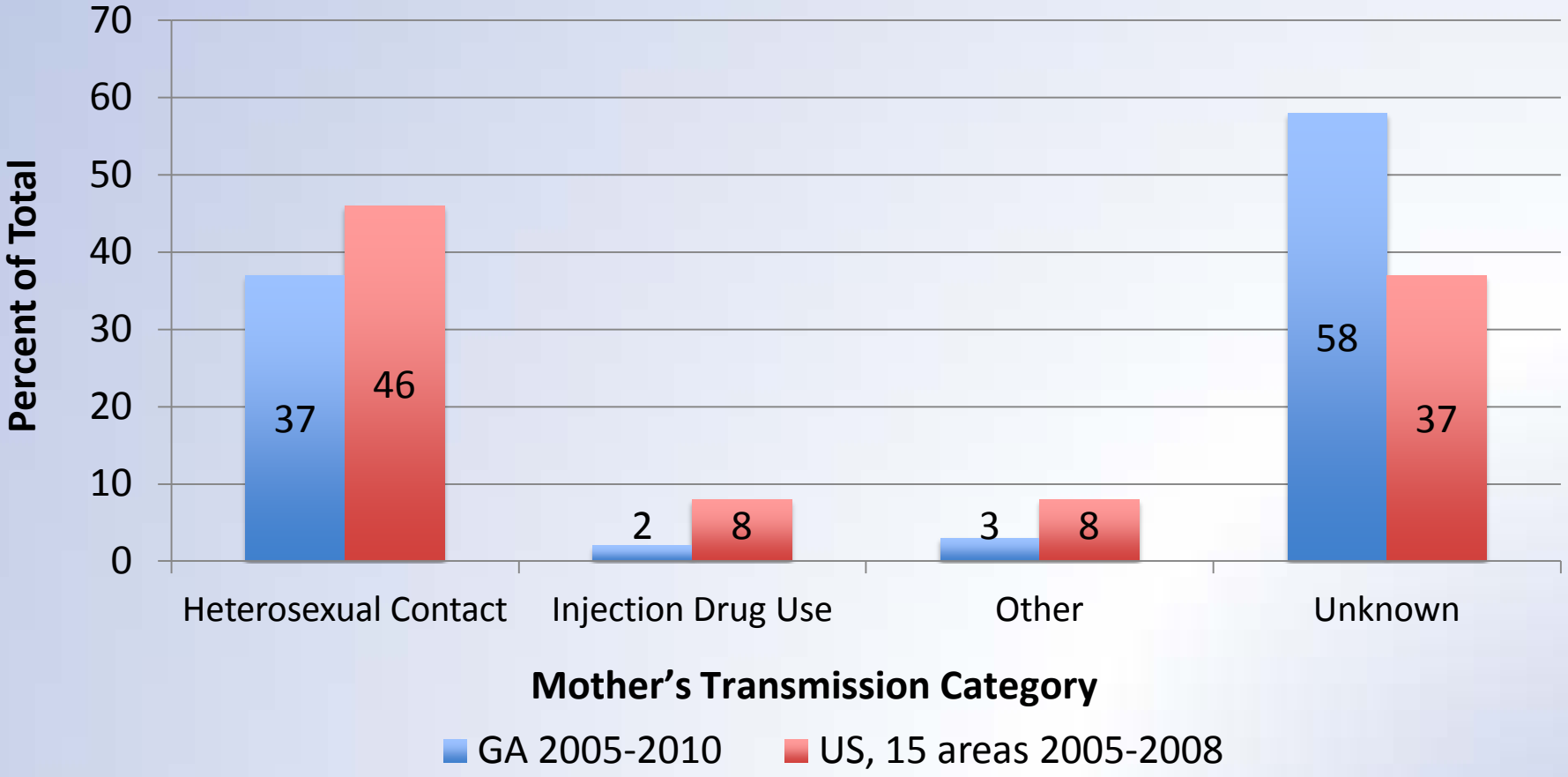
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Race/Ethnicity Distribution of the General Population, Women Living with HIV/AIDS, and Pregnant Women with HIV in Georgia



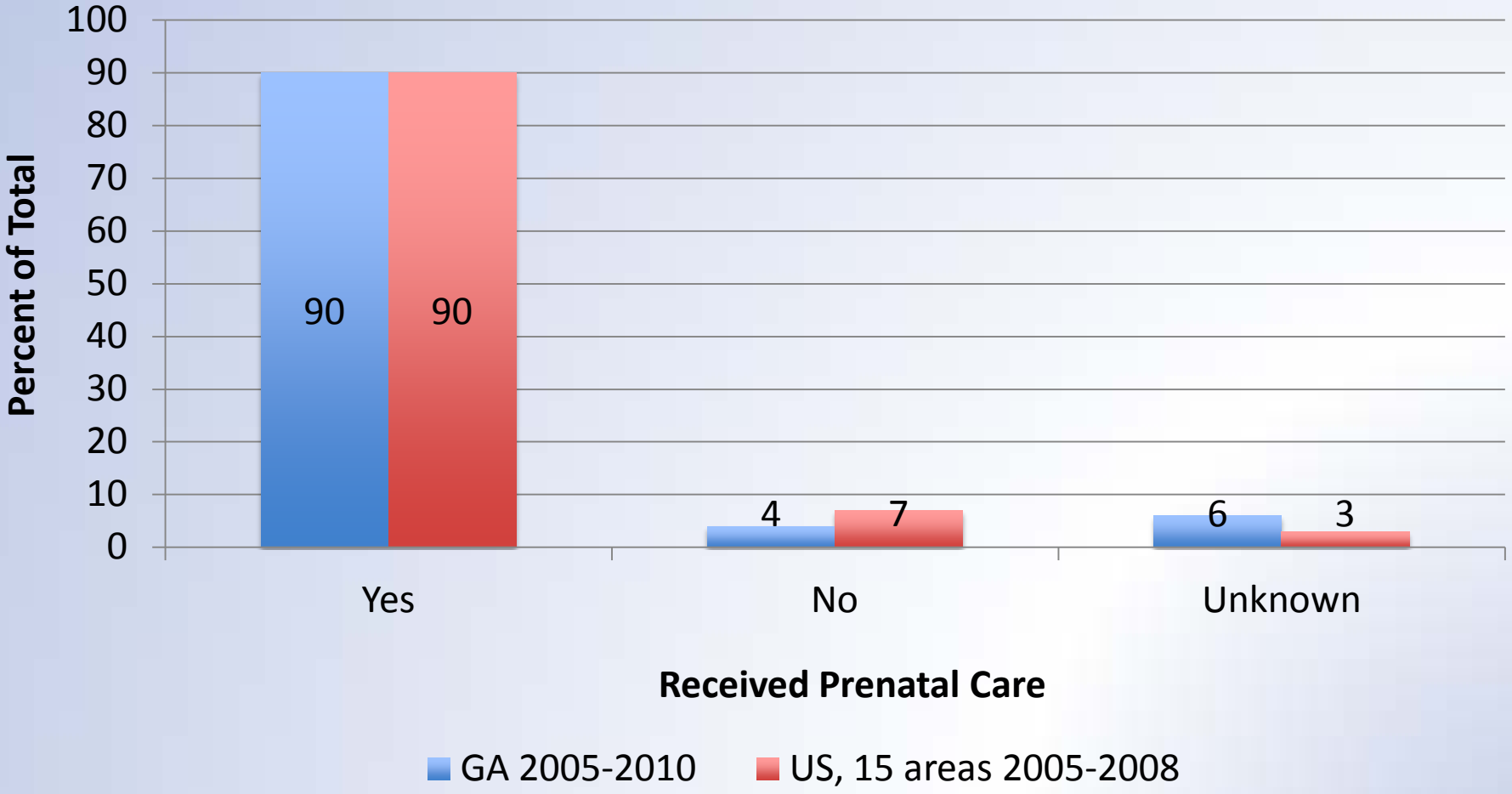
General population based on census data
HIV/AIDS prevalence based on eHARS data
Pregnant women with HIV from Georgia sample of 695 pregnancies delivered 2005-2010

Proportion of HIV-infected Pregnant Women by Transmission Category



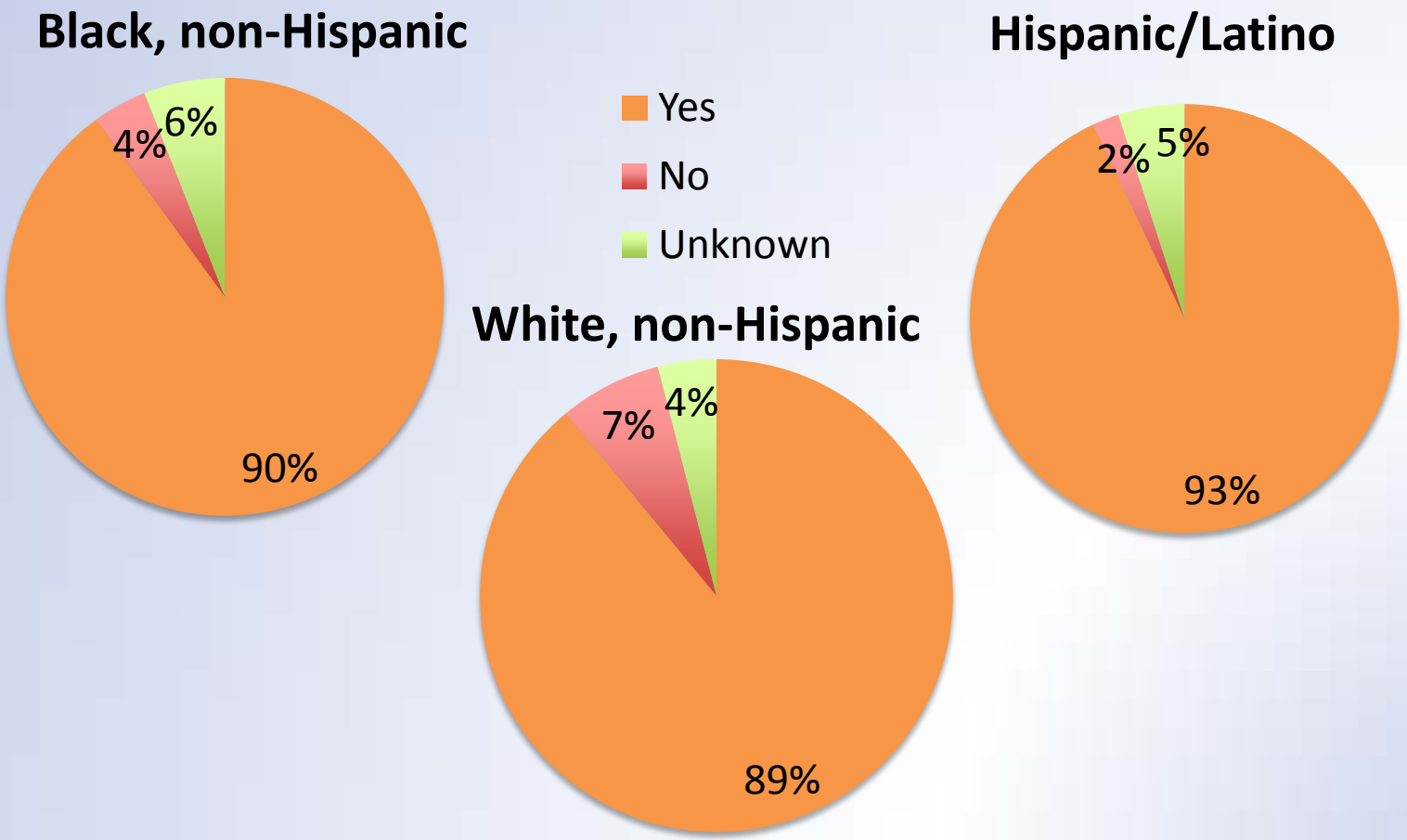
Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008
Heterosexual contact includes with a person known to have or be at high-risk for HIV
Other includes perinatal transmission and blood transfusion

Proportion of HIV-infected Pregnant Women Receiving Prenatal Care



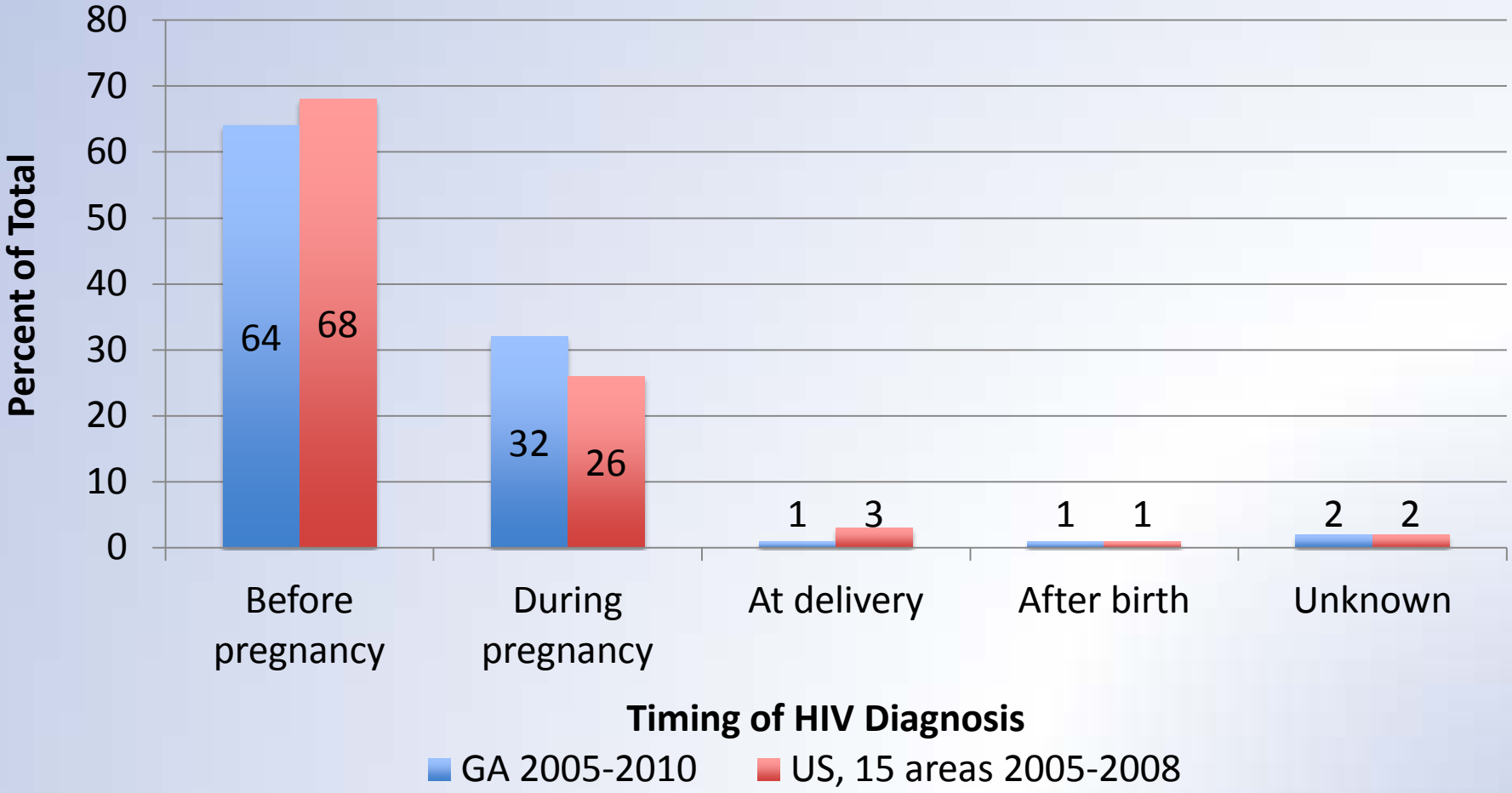
Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-infected Women in Georgia Receiving Prenatal Care by Race/Ethnicity



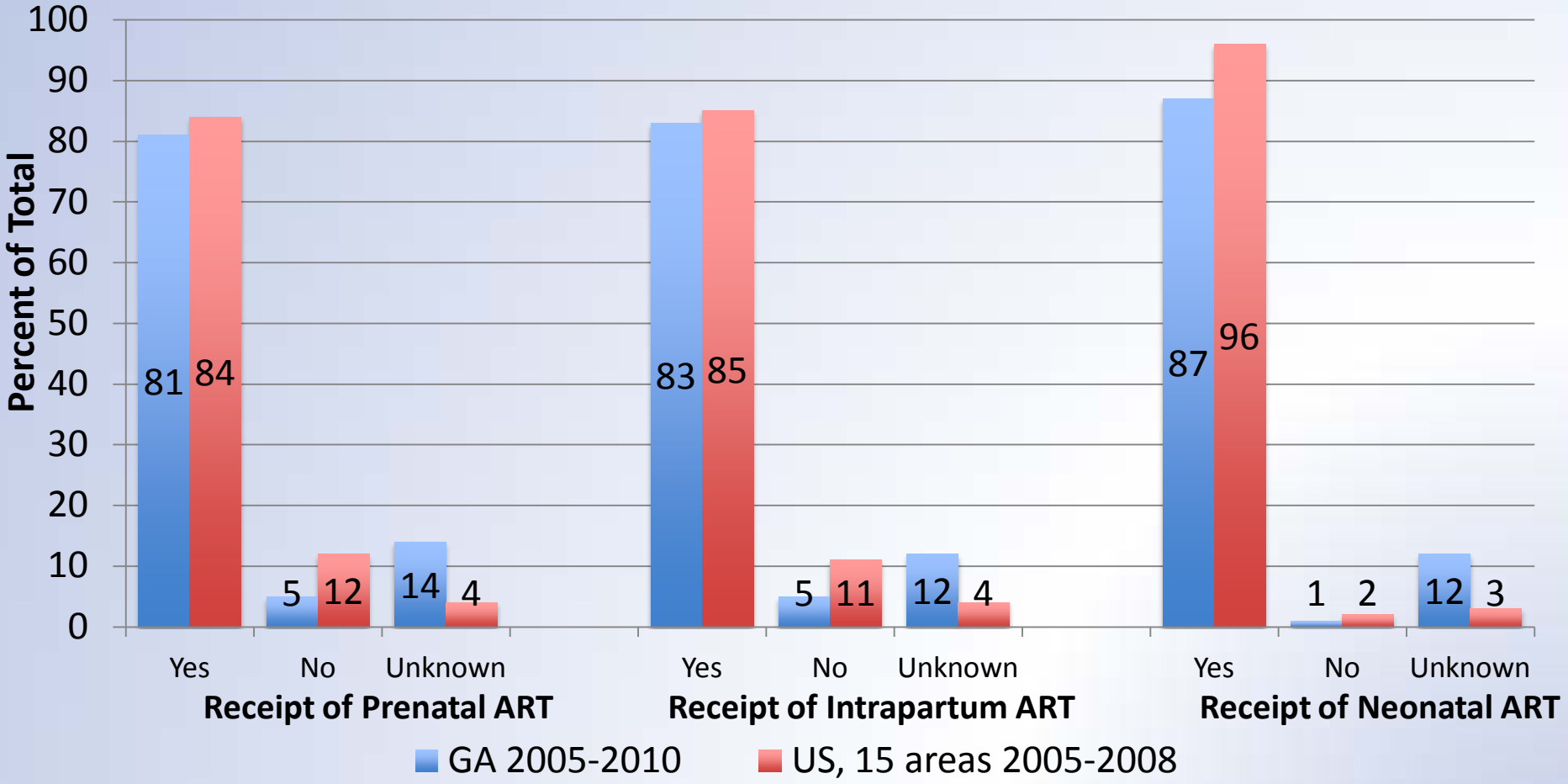
Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-infected Pregnant Women by Timing of HIV Diagnosis



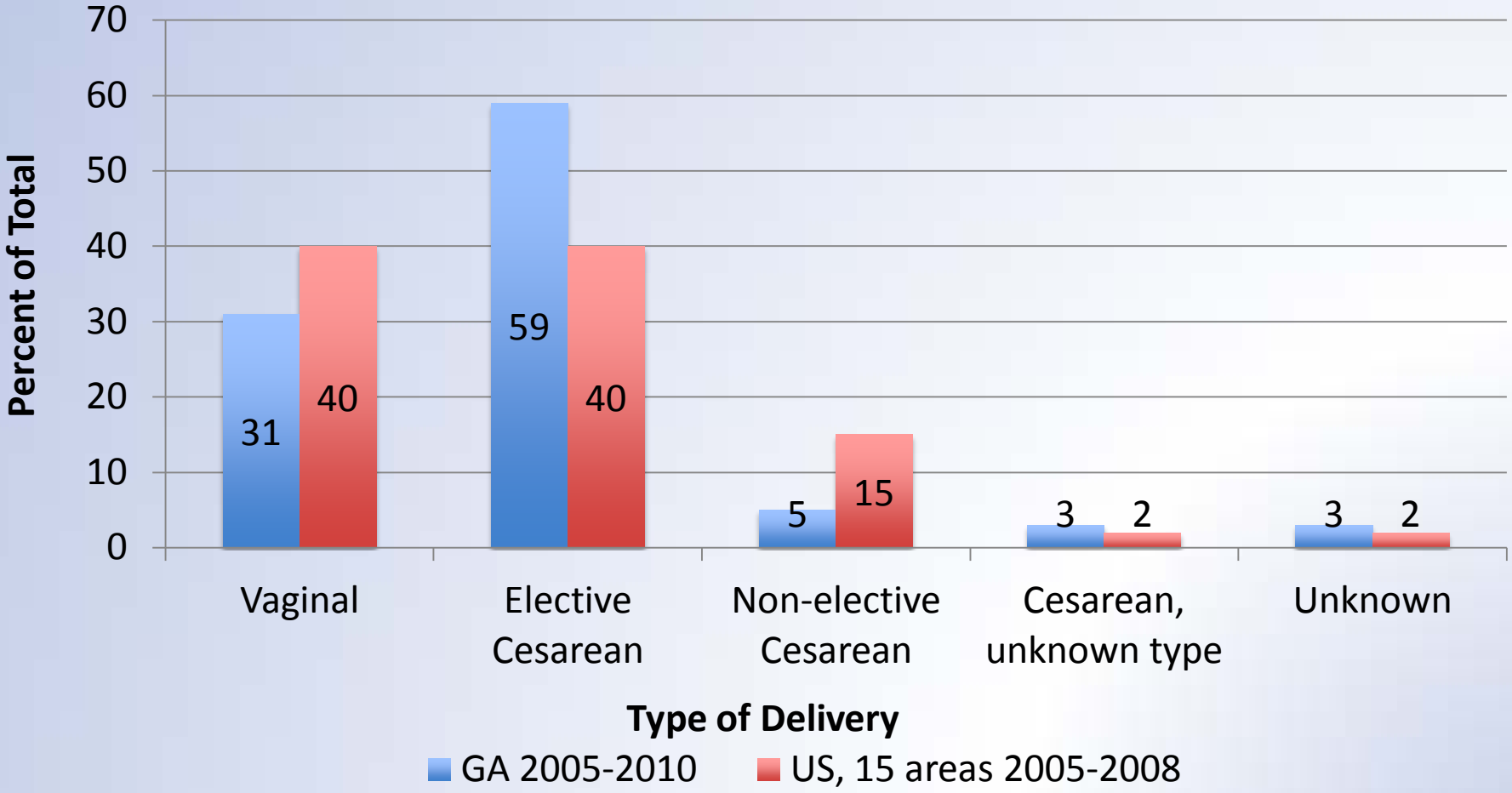
Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-infected Pregnant Women and HIV-exposed Infants Receiving Antiretroviral Therapy (ART)



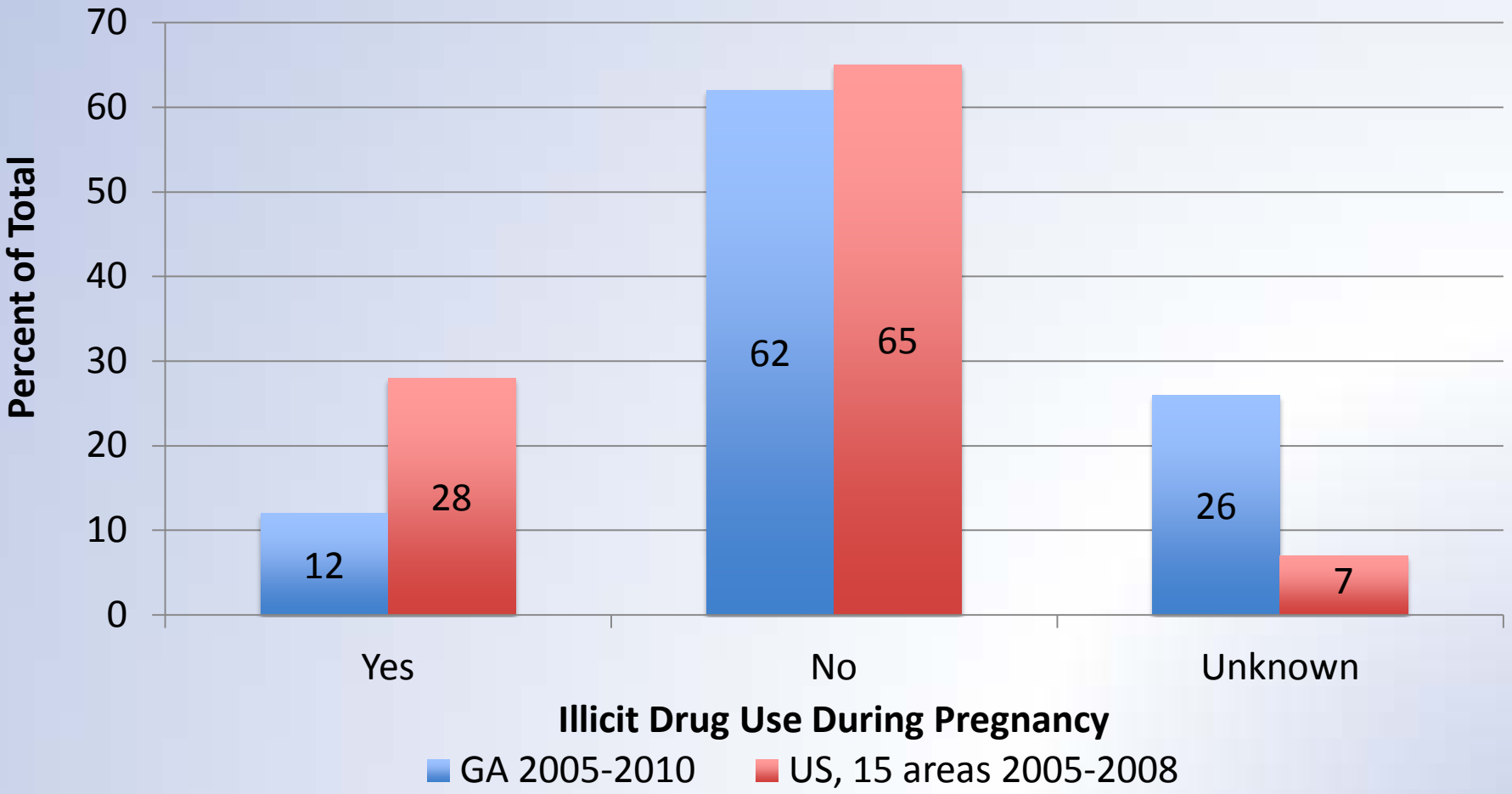
Georgia sample of 710 infants from 695 HIV-infected pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-infected Pregnant Women by Type of Delivery



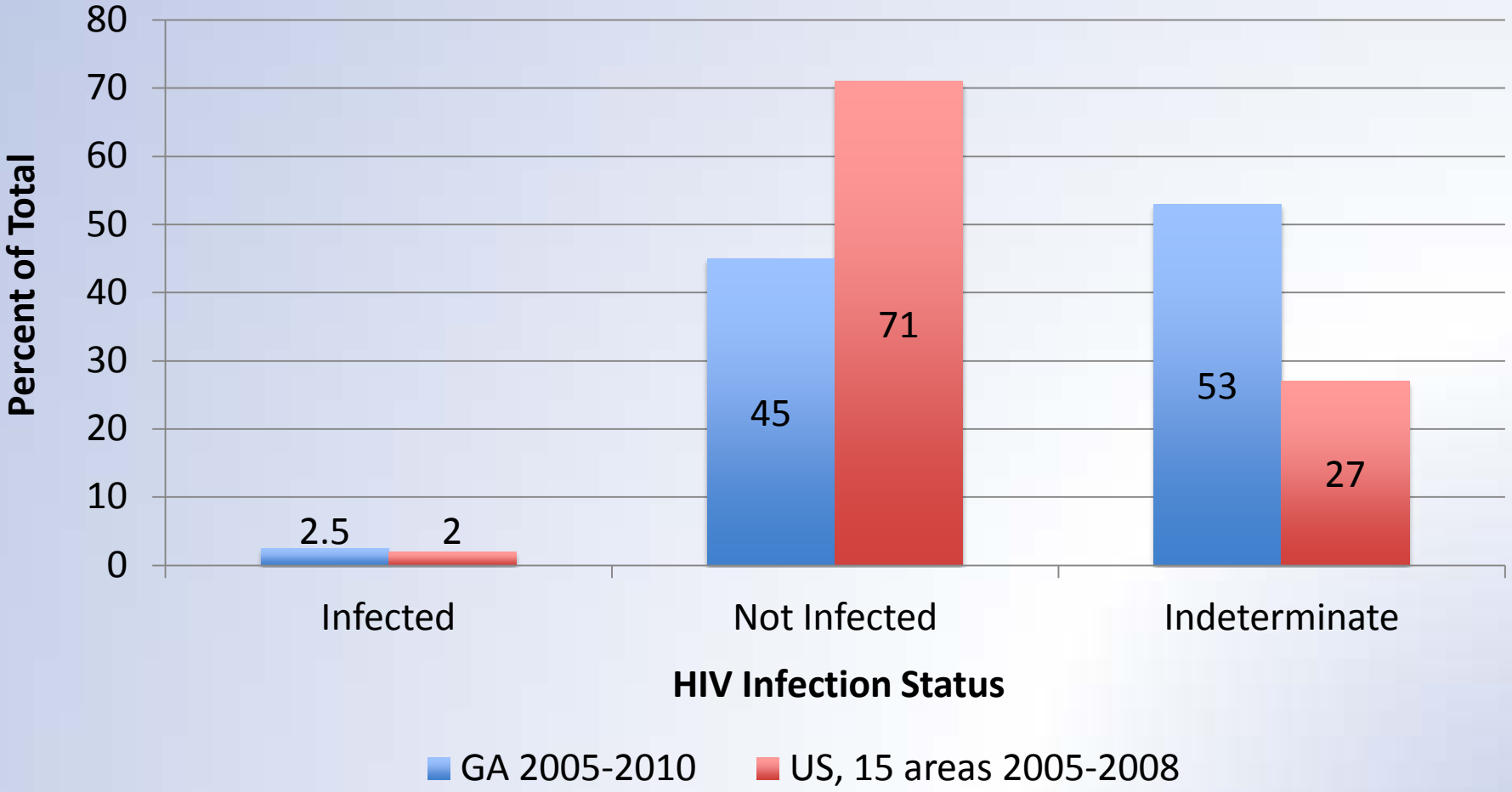
Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008
Elective cesarean is performed prior to membrane rupture and onset of labor

Proportion of HIV-infected Pregnant Women with Illicit Drug Use During Pregnancy



Georgia sample of 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008

Proportion of HIV-exposed Infants Infected with HIV through Mother-to-Child Transmission



Georgia sample of 710 HIV-exposed infants from 695 pregnancies delivered 2005-2010
US sample of 8,054 pregnancies from 15 jurisdictions delivered 2005-2008
HIV infection status as of May 2013

Mother-to-Child (MTC) Transmission in Georgia, 2005-2010

- 18/710 live births (2.5%) resulted in MTC HIV transmission, comparable to the national sample (2%)
- 12 received at least one prenatal visit (range 5-10)
  - 10 were diagnosed with HIV infection before or during pregnancy
    - 8 received ART during pregnancy, 1 was not adherent to ART, 1 unknown
    - 9 received intrapartum ART, 1 delivered precipitously while in jail
  - 1 diagnosis timing was unknown
  - 1 was HIV− early in pregnancy, diagnosed after birth and faced extenuating social circumstances, including IVDU/homelessness

Mother-to-Child (MTC) Transmission in Georgia, 2005-2010

- 6 women with no or unknown prenatal care
  - 3/6 were known to be HIV-infected before pregnancy
  - 3/6 were diagnosed at or after delivery
- 4 received no prenatal care
  - 1 had CD4 and/or viral loads measured during pregnancy and received prenatal and intrapartum ART
  - 1 woman noted a lack of insurance coverage
  - 1 was born outside the US with significant language barrier
  - 1 had a history of psychiatric disorder and substance abuse
- 2 unknown prenatal care
  - One woman with unknown prenatal care had documented prenatal and intrapartum ART use

Mother-to-Child (MTC) Transmission in Georgia, 2005-2010

- 4 women had AIDS (CD4 < 200 or OI) during pregnancy
- 15 women delivered via cesarean section (12 elective)
- 11 were preterm deliveries (range 27-36 weeks)
- All 18 infants received ART at birth
  - 3 received ART > 12 hours of life, all moms were diagnosed at/after delivery
- 1 infant was breastfed, 16 were formula fed, 1 unknown
- 2 infants had a diagnosis of AIDS
- Many of these mothers faced challenging social circumstances
  - STD diagnosed during pregnancy (8)
  - Substance abuse during pregnancy (7)
  - Homelessness (1), psychiatric disorder (1), incarceration during pregnancy (1), referral to DFCS (1) and language barrier (1)

Variables associated with MTC transmission in GA EPS analysis

- Any prenatal care ($p<0.0026$)
  - 1.8% infection rate in infants whose mother received PNC vs. 14.3% in infants whose mother didn't receive PNC
- HIV Diagnosis Timing ($p=0.0057$)
  - 1.8% in infants whose mother received a diagnosis before/during pregnancy vs. 33.3% in infants whose mother was diagnosed at/after delivery
- Prenatal ART ($p<0.0001$)
  - 1.6% in infants whose mother received prenatal ART vs. 18.2% in infants whose mother didn't receive prenatal ART
- Intrapartum ART ($p<0.0001$)
  - 1.7% in infants whose mother received intrapartum ART vs. 18.2% of those whose mother didn't receive intrapartum ART

Missed Opportunities

- 8/14 cases of MTC transmissions with sufficient data can be attributed to a missed opportunity for prevention
  - 3 lack of PNC associated with lack of diagnosis
  - 1 lack of PNC as the only missed opportunity
  - 1 lack of diagnosis prior to delivery despite PNC
  - 2 lack of prenatal and/or intrapartum ART
  - 3 had a vaginal delivery instead of C-section
    - 1 vaginal delivery despite known HIV diagnosis prior to delivery
  - 1 breastfeeding
- 6/14 MTC transmissions with no identified missed opportunity

Limitations

- Change in methodology precludes trend analysis
- Facility-based sample may not accurately reflect all HIV+ pregnancies in Georgia
- Large proportion of unknown values for some variables limits comparisons within category and to the national sample
- Large proportion of indeterminate HIV status for HIV-exposed infants limits calculation of MTC transmission in Georgia

Future Directions and Recommendations

- Strengthen surveillance system for perinatal transmission
  - Mandate reporting for perinatal *exposure* to HIV
- Programs to ensure universal access to prenatal care and connection of women with appropriate social support services
- Role of preconception and interconception care
  - Appropriate contraception to reduce unintended pregnancy
  - Appropriate ART prior to conception, address ART with teratogenic potential
  - Treatment options for serodiscordant couples
- Close follow up of exposed newborns
  - Identify mother's unmet needs
  - Consider directly observed therapy approach for exposed infant ART
- Programs to enhance coordination between public health and providers
  - Legislative proposal to enable sharing of Personal Health Information (PHI)
- HIV prevention efforts
  - Increased coordination between HIV Epidemiology and Programs Sections

Acknowledgements

- Participating healthcare facility staff
- GDPH HIV Epidemiology Core HIV surveillance staff
  - Mildred McGainey – Enhanced Perinatal Surveillance Project Coordinator for Georgia, 2006-2011
  - Jane Kelly, MD – HIV Epidemiology Section Leader

Questions?

THANK YOU!