The Power of Unique, Large, Linked Datasets

Birth Certificates

- CDC Database(s)
- Pesticide Use Reports
- Water Database
- Air Pollution Database
- Other

Office of Statewide Health Planning and Development

CA Maternal Quality Care Collaborative

CA Perinatal Quality Care Collaborative

Project Biologic and Clinical Data

Newborn Bloodspots

Mid-Pregnancy Serum/Clot Specimens

1st Trimester Serum and Clots
Administrative Data Sets

- CA Birth/Death Certificates: 1970-2012 (>20 million)
- CA Patient Discharge Data (OSHPD), 1991-2011
- US Birth/Death Certificates: 1960-2014 (>170 million)
- US Census 2000 and 2010
California Perinatal Quality Care Collaborative
CPQCC

• System for benchmarking and performance improvement activities for perinatal care throughout California

• Includes 131 member hospitals, representing over 90% of all neonates cared for in California NICUs providing care and outcome data

• ~350,000 livebirths and 55,000 NICU admissions

• Linkable to birth certificate for research
PESTICIDE USE REPORT

- Commercial pesticide applications
  - For 1990-2013, 76.3 million reports
  - 1,525 unique active ingredient codes
  - 80% of records are agriculture-related
- Records include:
  - Date
  - Crop
  - Active ingredient
  - Pounds of active ingredient
  - Location (as public land survey section)
STANFORD PREGNANCY COHORT SPECIMENS

<table>
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<tr>
<th>Pre-Preg</th>
<th>1st TM</th>
<th>2nd TM</th>
<th>3rd TM</th>
<th>Post-Preg</th>
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VAGINA, MOUTH
GUT, SKIN
URINE

MATERNAL BLOOD

AMNIOTIC FLUID

PLACenta, CORD BLOOD, NEO. BLOOD

400 women, >90,000 samples
CA Bio-repositories
**Mid-Pregnancy Specimens**

- State Dept of Public Health
- Blood from mom at 15-20 weeks gestation
- Two 1-ml tubes of serum
- One tube (SST) of centrifuged cells
- Cells stored at -20° C and serum at -80° C
- Approximately 1,200,000 women
- Numbers increase by ~100,000/yr
- Linkable to birth certificates, medical records, bloodspots............
Newborn Bloodspots

- since 1983 – 15,000,000 babies
- Linkable
- DNA good quality and high yield
- sufficient for whole genome/whole exome sequencing
- analytes, e.g., lead, halogenated hydrocarbons, nutrients, viral signatures....
National Birth Defects Prevention Study

- Multi-site, population-based study of ~30 major structural birth defects
- Exposures during pregnancy
- ~32,000 case women interviewed
- ~12,000 control women interviewed
- Genetics on trios, 50% of interviewed
Center for Policy, Outcomes and Prevention

Available Data Sets
2015
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