

TriCounty Adverse Birth Outcomes Statistical Review

Daggett, Duchesne, and Uintah Counties



Utah counties, with the study area in green.

Public Meetings

The Environmental Epidemiology Program of the Utah Department of Health hosted two public meetings to discuss the findings of the TriCounty adverse birth outcomes study with the community. All interested parties were encouraged to attend.

[View the presentation from the public meetings here \(2015\)](#)

Documents

[TriCounty Adverse Birth Outcomes Statistical Review - 2017 Update](#)

- Public release on April 26, 2017
- Added an additional two-year analytical study period (2014-2015) to the original study
 - As with the previous study, there were no statistical differences in adverse birth outcome rates between the TriCounty area and the rest of the state.
 - There are indications of progress in reducing some maternal risk factors since 2015.

[TriCounty Adverse Birth Outcomes Statistical Review](#)

- Public release on March 18, 2015

[Presentation to the TriCounty Board of Health on the study design \(March 2014\)](#)

[Presentation to the TriCounty Board of Health on the study findings \(March 2015\)](#)

Background

In June 2013, the Environmental Epidemiology Program (EEP) of the Utah Department of Health (UDOH) became aware of a perceived increased rate of stillbirths in the Uintah Basin through a series of communications with the University of Utah School of Medicine's Department of Pediatrics. At that time, the EEP contacted the TriCounty Health Department (TCHD) to offer assistance in conducting a statistical review of adverse birth outcomes for Daggett, Duchesne, and Uintah counties. In March 2014, the TCHD authorized this investigation, but requested that it be delayed until data for 2013 could be made available. This occurred in October 2014.

Using data from 1991 to 2013, this study examined five types of adverse birth outcomes:

- [Low-birth-weight](#)

- Small-for-gestational-age
- Premature births
- Stillbirths (fetal death)
- Infant deaths

The rest of the state outside the study area was used as the comparison population.

Findings

- The TriCounty study area had a past problem with small-for-gestational-age births.
 - This problem does not seem to have persisted.
- There was no evidence of any other consistent patterns of increased risk for adverse birth outcomes among the population within the study area when compared to the remainder of the state.
 - Historically, the rates of adverse birth outcomes have generally been lower for the study area than the state as a whole.
- However, this investigation did reveal patterns of adverse birth outcomes that are concerning from a local perspective, particularly for small-for-gestational-age births and stillbirths.
 - This investigation confirms the validity of the initial observations that the incidence of stillbirths in the TriCounty area during 2012-2013 was higher than historically observed for that region.
 - Some results suggest an overall decline in reproductive and neonatal health and wellbeing in the study area.

Recommendations

- The EEP recommends that community advocates, political leaders, and policy-makers use this report as a tool to empower public health policy regarding pregnancy in the TriCounty area.
- Communities and political leaders should evaluate the feasibility of seeking a robust investigation into the causes of adverse birth outcomes in the study area.
- The EEP recommends that the TCHD coordinate with the UDOH [Maternal and Infant Health Program \(MIHP\)](#) to conduct a review of infant mortalities due to perinatal conditions.
 - Additionally, they are recommended to evaluate current local programs aimed at improving pregnancy and infant health outcomes.
- TCHD is recommended to request that the UDOH or the EEP conduct follow-up adverse birth outcome statistical reviews in two and four years.
 - The first follow-up investigation will be useful to determine whether the stillbirth pattern presented in this report is a statistical artifact or a true emerging public health problem.

- o The second investigation will be useful to monitor the effectiveness of intervention activities implemented after this report.

Explore the Data

The links below lead to public query modules for UDOH's data on adverse birth outcomes in Utah. You are encouraged to explore them to learn more about birth defects, low birth weight, mortality, prematurity, and other outcomes in Utah. Both the EPHTN and IBIS portals use the same data, but present it in different ways.

Utah's Environmental Public Health Tracking Network (EPHTN)

- Reproductive and Birth Outcomes
 - o Birth rates, mortality, low birth weight, prematurity, fertility, and gender ratios
- Birth Defects
 - o Congenital heart defects, limb defects, Down syndrome, orofacial clefts, etc.

Utah's Public Health Indicator Based Information System (IBIS)

- Births and Maternity
 - o Birth defects, breastfeeding, cesarean deliveries, mortality, maternal obesity, etc.

As these public query modules are limited in how they can divide the data, including by geography, it is not possible to exactly duplicate the results of the report presented above. However, the patterns that are discussed in the report are consistent, and you are able to explore areas that were not addressed by the EEP investigation.

Frequently Asked Questions

Why were adverse birth outcome rates in the TriCounty area not compared with national rates?

In general, Utah tends to be healthier than the nation as a whole. For every type of adverse birth outcome, Utah is among the 10 states with the lowest rates, so the national average rates will be higher. Because the national rates for adverse birth

outcomes are higher across the board than both the TriCounty and state rates, no comparison using a national rate would have indicated a potential problem. Using national data for the comparison group would have only strengthened the conclusion that there are not statistically elevated rates of adverse birth outcomes in the TriCounty area. Below are some examples.

The below rates are per 1,000 live births.

RR is the relative risk or risk ratio (they are interchangeable terms). It is calculated by dividing the study area rate by the comparison group rate. In the examples below, this is dividing the TriCounty rate by either the Utah rate or the national rate. A RR above 1 means that the study area rate is elevated; a RR below 1 means that the study area rate is low; a RR equaling (or very nearly equaling) 1 means that the two rates are essentially identical.

National rates were obtained from the CDC ([1](#), [2](#)) and the [NIH](#).

- Low-birth-weight rates in 2013
 - TriCounty: 59.1
 - Utah: 57.7 (RR = 1.02)
 - National: 82.6 (RR = 0.72)

- Premature birth rates in 2013
 - TriCounty: 77.2
 - Utah: 76.5 (RR = 1.01)
 - National: 113.9 (RR = 0.68)

- Infant death rates in 2010
 - TriCounty: 5.3
 - Utah: 4.1 (RR = 1.29)
 - National: 6.2 (RR = 0.85)

- Stillbirth rate in 2013
 - TriCounty: 5.9
 - Utah: 4.8 (RR = 1.29)
 - National: 6.3 (RR = 0.94)

Additionally, the national adverse birth outcome rates cannot be stratified to control for intrinsic or extrinsic risk factors (e.g., teen pregnancy, smoking, diabetes, etc.); the rates have been published, and we are not aware of what, if any, adjustments or

manipulations have been made to those data. The national data are often not current, as well. In the above examples, the national rate of infant death is only available through 2010.

Why didn't the study try to find the causes of adverse birth outcomes in the TriCounty area?

The public often wants public health investigations to determine if a community health concern (like adverse birth outcomes) is caused by an environmental hazard. However, determining these causal relationships is both difficult and costly, and is not feasible with many study designs.

This study is a statistical review, and used annual adverse birth outcomes data reported to the Utah Department of Health as part of vital birth and death records. Using this sort of pre-existing data has significant advantages in both cost and speed. However, birth and death records do not contain any information about the frequency, duration, or intensity of exposure to potential environmental hazards.

Overcoming this limitation requires a comprehensive assessment of individual risk, which is usually accompanied by substantial cost and privacy concerns. Statistical reviews, which are well suited to identifying trends and elevated rates, can help determine when a more far-reaching risk assessment may be warranted.

Why isn't there a map showing the locations of the adverse birth outcomes?

Making maps available with the case locations identified would violate both state and federal privacy laws. Even when the underlying reference data (such as street names) are removed, it is possible to re-reference the point on the map to streets and discover the address, and thus identity, of the case. It is the EEP's policy to never make maps containing such point data publicly available.

Why wasn't a cluster analysis performed?

People naturally cluster by various criteria. For example, all cities will have some neighborhoods with predominantly younger adults, while other areas will have concentrations of seniors and retirees. Any health outcome that is associated with age (e.g., adverse birth outcomes, which of course only occur with women of child-bearing age) will also cluster along those same lines. Each area has unique types of clustering,

and investigators must be knowledgeable about the specific patterns to properly conduct a cluster analysis. As such, it was decided not to conduct that type of assessment at this time.

Could the adverse birth outcomes be related to houses contaminated with methamphetamine?

This is unknown. The state legislature has specifically prohibited the UDOH from maintaining any kind of list, database, or registry of meth houses. UDOH also does not investigate meth houses. The authority to investigate and maintain records on meth houses lies with the local health departments (specifically, the TriCounty Health Department for this study area). However, most of Utah's 13 local health departments do not maintain such a registry. Once the house has been successfully decontaminated, there isn't a good public health reason to keep those records.

Documents

- [TriCounty Adverse Birth Outcomes Update \(2017\)](#)
- [TriCounty Adverse Birth Outcomes Study \(2015\)](#)
- [Public Meeting Presentation \(April 2015\)](#)
- [Presentation on the Findings \(2015\)](#)
- [Presentation on the Study Design \(2014\)](#)

Adverse Birth Outcome Information

- Low-Birth-Weight
- Small-for-Gestational-Age
- Premature Birth
- Stillbirth (Fetal Death)
- Infant Death

Additional Links

- [TriCounty Health Department](#)
- [Utah Department of Health](#)
 - [Environmental Epidemiology Program](#)
 - [Maternal and Infant Health Program](#)
 - [Baby Your Baby Utah](#)
 - [MotherToBaby / Pregnancy Risk Line](#)