

Reproductive Health and the Environment Mapping Assessment Project (RHE)MAP

Comparing spatial and social determinants on reproductive health outcomes

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Abstract:

The Reproductive Health and the Environment: Mapping Assessment Project (RHE)MAP seeks to investigate the relationship between birth outcomes and the environment. Variables from the California Vital Statistics Master Birth File: birth weight, gestational age and birth abnormalities were compiled into a Birth Outcome Index. Birth outcome patterns in Los Angeles County were then spatially assessed with Geographic Information Systems (GIS) technologies. The mapped records were compared to Los Angeles County Tax Assessor Land Use parcel data to identify patterns between birth outcomes and these potentially toxic areas of select commercial and industrial land use.

Findings:

No relationship was detected between birth outcome index and distance from the suspect parcels, nor was there a relationship with proximity to freeways. However, there are a few areas of interest with higher proportion of birth outcome index ≥ 2 . These areas of concern are most pronounced when visually assessed by Los Angeles County neighborhood boundaries as defined by the Los Angeles Times' ongoing "Mapping LA" project. Many of the neighborhoods with the highest proportion of birth outcome index ≥ 2 are located along the San Gabriel Mountain foothills. The elevated odds ratio (OR) of birth index score ≥ 2 is maintained for all births in these neighborhoods regardless of maternal education, maternal age, or timing of prenatal care onset.

Discussion:

Simply looking at social determinants and birth outcomes did not fully capture the complexity that the places in which women live have on their reproductive health. Explorations in disparities in birth outcomes should consider the locations pregnant mothers live, not only during pregnancy but over their life courses, in addition to commonly known social determinants of health. Alternate dimensions besides land use and proximity to major freeways should be explored along with potential alternate routes of exposure. Additional attention could be paid to weather systems and physical areas of cumulative exposures. The combination of spatial and social determinants on reproductive outcomes must be explored further to understand how the physical environment systems are influencing health.