Speed Limits and their Effect on Air Quality

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Abstract:

Mobile emissions are the largest contributor to poor air quality in Salt Lake County. Several studies indicate that fuel economy peaks around 45-55 mph and decreases steadily above that range. While higher speeds shorten driving times per trip, the total emissions per trip increase. In the 2013 (HB 83) and 2014 (HB 80) Utah legislative sessions, bills were passed to expand the ability of the Utah Department of Transportation (UDOT) to post higher speed limits on Utah Interstates. Following these changes to Utah law, UDOT increased speed limits on several sections of Utah Interstates. This study analyzes pollutant, emission, demographic, and traffic-related data to determine the impact of these speed limit changes on air quality in Utah. Annual pollutant and emission data were collected from the Environmental Protection Agency (EPA) from 2008-2016. County and state demographic data for Utah was gathered from the Kem C. Gardner Policy Institute from 2010-2018. Several datasets evaluating traffic were compiled, including vehicle registrations (Utah Tax Commission 2010-2018), vehicle miles traveled (VMT) (UDOT 2008-2016), annual average daily traffic (UDOT 2008-2016), and fuel sold (Federal Highway Administration (FHWA) 2008-2017). With this data we will analyze relationships between pollutant concentrations, mobile emissions, demographics, and traffic statistics. Our aim is to determine the contribution of mobile emissions to total air quality in Salt Lake County, before and after speed limits were increased. Air quality is a major health concern along the Wasatch Front of Utah. If this study shows a positive relationship between speed limits and air quality, lawmakers could enact legislation to improve air quality by reducing speed limits in Utah; a simple yet impactful change. Until then, mobile emissions may continue to be the largest contributor to poor air quality in Salt Lake County and Utah.

