



Health cobenefits and transportation-related reductions in greenhouse gas emissions in the San Francisco Bay area

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Abstract: OBJECTIVES: We quantified health benefits of transportation strategies to reduce greenhouse gas emissions (GHGE). METHODS: Statistics on travel patterns and injuries, physical activity, fine particulate matter, and GHGE in the San Francisco Bay Area, California, were input to a model that calculated the health impacts of walking and bicycling short distances usually traveled by car or driving low-emission automobiles. We measured the change in disease burden in disability-adjusted life years (DALYs) based on dose-response relationships and the distributions of physical activity, particulate matter, and traffic injuries. RESULTS: Increasing median daily walking and bicycling from 4 to 22 minutes reduced the burden of cardiovascular disease and diabetes by 14% (32,466 DALYs), increased the traffic injury burden by 39% (5907 DALYS), and decreased GHGE by 14%. Low-carbon driving reduced GHGE by 33.5% and cardiorespiratory disease burden by less than 1%. CONCLUSIONS: Increased physical activity associated with active transport could generate a large net improvement in population health. Measures would be needed to minimize pedestrian and bicyclist injuries. Together, active transport and low-carbon driving could achieve GHGE reductions sufficient for California to meet legislative mandates.

Resource Description

Exposure

Air Pollution

- **Air Pollution:** Particulate Matter

Geographic Feature

Ocean/Coastal

Climate Change and Human Health Literature Portal

Geographic Location

United States

Health Impact

Cardiovascular Impact, Injury, Morbidity/Mortality, Respiratory Impact

- **Cardiovascular Impact, Injury, Morbidity/Mortality, Respiratory Impact:**

Other Cardiovascular Impact, Specify

- **Cardiovascular Impact, Injury, Morbidity/Mortality, Respiratory Impact:**

Other Respiratory Impact, Specify

- **Other Respiratory Impact, Specify:** non-malignant respiratory disease, not specified

Respiratory Condition (other)

Model/Methodology

Exposure Change Prediction, Outcome Change Prediction

Model Timescale

Long-Term (>10 years)

Resource Type

Research Article

Special Topic

Mitigation

- **Mitigation** : Adaptation Co-Benefit/Co-Harm

- **Mitigation** : Mitigation Co-Benefit/Co-Harm

Climate Change and Socioeconomic Scenarios

Other Climate Change Scenario, Specify

