TransBASE: Linking Transportation Systems to Our Health

What is TransBASE?

The collection and analysis of transportation and health data, especially in spatial terms, can be a complicated process. The San Francisco Department of Public Health's Program on Health, Equity and Sustainability (SFDPH-PHES) has developed TransBASE—an innovative relational database management system designed to access, manage, and apply spatial data —to inform solutions to transportation problems. TransBASE currently includes over 200 spatially referenced variables from multiple agencies and across a range of geographic scales, including infrastructure, transportation, zoning, sociodemographic, and collision data, all linked to an intersection or street segment.

TransBASE facilitates a data-driven approach to understanding and addressing transportation-related health issues, informed by a large and growing evidence base regarding the importance of transportation system design and land use decisions for health. TransBASE's purpose is to inform public and private efforts to improve transportation system safety, sustainability, community health and equity in San Francisco.

TransBASE: SAMPLE DATASETS

Businesses: Alcohol outlets within a quarter mile *(ABC)*; Supermarkets within a quarter mile *(Dun & Bradstreet)*; Nearest farmers market, feet *(Dun & Bradstreet)*

Collisions (resulting in injury to pedestrians or cyclists): Collision year; Collision distance from intersection; Collision day of the week; Party age; Party sobriety; Party movement preceding collision; Victim sex; Victim Age; Victim degree of injury

Community: Public art displays within a quarter mile *(San Francisco Art Commission)*; Nearest childcare center, feet *(California Department of Social Services)*; Community gardens within a quarter mile *(San Francisco Garden Resource Organization)*

Demographic: People below 200% of the poverty line within a quarter mile, number *(ACS 2005-2009)*; People of color within a quarter mile, number *(2010 US Census)*; Residential population within a quarter mile, number *(2010 US Census)*

Education: Elementary or middle schools within a quarter mile *(SFUSD)*; Nearest elementary school, feet *(SFUSD)*

Health Exposures and Outcomes: Fine Particulate Matter Concentrations; Traffic Related Noise Levels; Asthma Rates; Zip Code *(SFDPH)*

Healthcare: Pharmacies within a quarter mile *(SFDPH)*; Nearest pharmacy, feet *(SFDPH)*; Public clinics within a quarter mile *(SFDPH)*

High Vehicle-Pedestrian Injury Corridor: Unique ID and Name for each High Injury Corridor *(SFDPH)*

Infrastructure: Signalized intersection *(SFMTA)*; Intersection legs, number *(SFDPW)*; One-way street at intersection *(SFCTA)* ; Auto Lanes during PM Peak, number *(SFCTA)*; Speed Limit *(SFMTA)*; Caltrans Street *(SFDPW)*

Transportation: Walk or Bike trips from origin, Transportation Analysis Zone level *(SFCTA)*; Daily transit ridership within a quarter mile *(SFMTA);* Vehicle Traffic and Bus Volumes, Estimated Daily *(SFCTA)*; Daily Ridership within a quarter mile *(SFMTA)*

Zoning: Commercial, Mixed Use, or Neighborhood Commercial zoning within a quarter mile, % *(SF Planning)*

ABC: California Department of Alcohol Beverage Control; ACS: American Community Survey; CHP: California Highway Patrol; SFCTA: SF County Transportation Authority; SFDPH: SF Department of Public Health; SFDPW: SF Department of Public Works; SFMTA: SF Municipal Transportation Agency; SFUSD: SF Unified School District
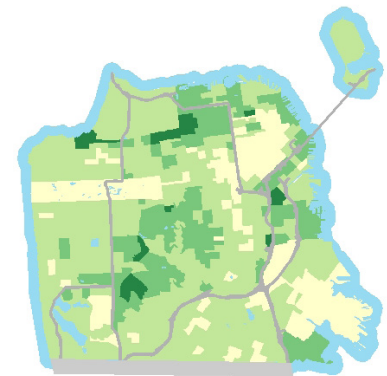
**Average Income**
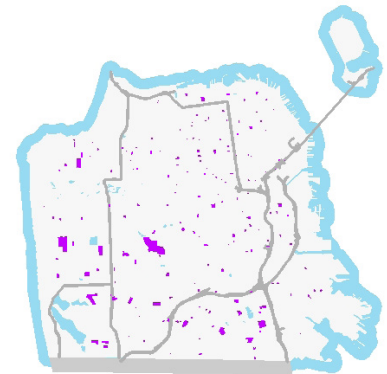
Public and Private Schools

Speed Limits

TransBASE Origins and Applications to date

TransBASE grew out of SFDPH-PHES's work on pedestrian safety. In San Francisco, approximately half of fatal injuries in motor vehicle collisions are suffered by people walking–compared to 13% nationally. Approximately 20 pedestrians die each year in motor vehicle collisions, and over 800 people are injured annually. Transportation system-related injuries and deaths have high associated social and medical costs, with pedestrian injury-related hospital costs at San Francisco General Hospital alone estimated at $15 million annually. Understanding spatially correlated environmental factors that contribute to the safety of the transportation system can inform targeted, efficient safety practice.

Data applications of TransBASE to date to integrate health considerations into transportation initiatives include:

- Identifying high-injury corridors for targeted safety efforts for **San Francisco's Pedestrian Strategy**, developed to achieve the City's target of reducing severe and fatal pedestrian injuries by 50% by 2021.
- Informing **WalkFirst** – an inter-agency collaboration to create San Francisco's Pedestrian Safety Capital Improvements Investment Strategy - with crash data linked to street, transit, infrastructure, land use, and population factors for systematic, citywide analyses of crash patterns.
- Developing multivariate models to identify environmental correlates of pedestrian injuries to support the City's prioritization of areas and countermeasures for safety improvements.
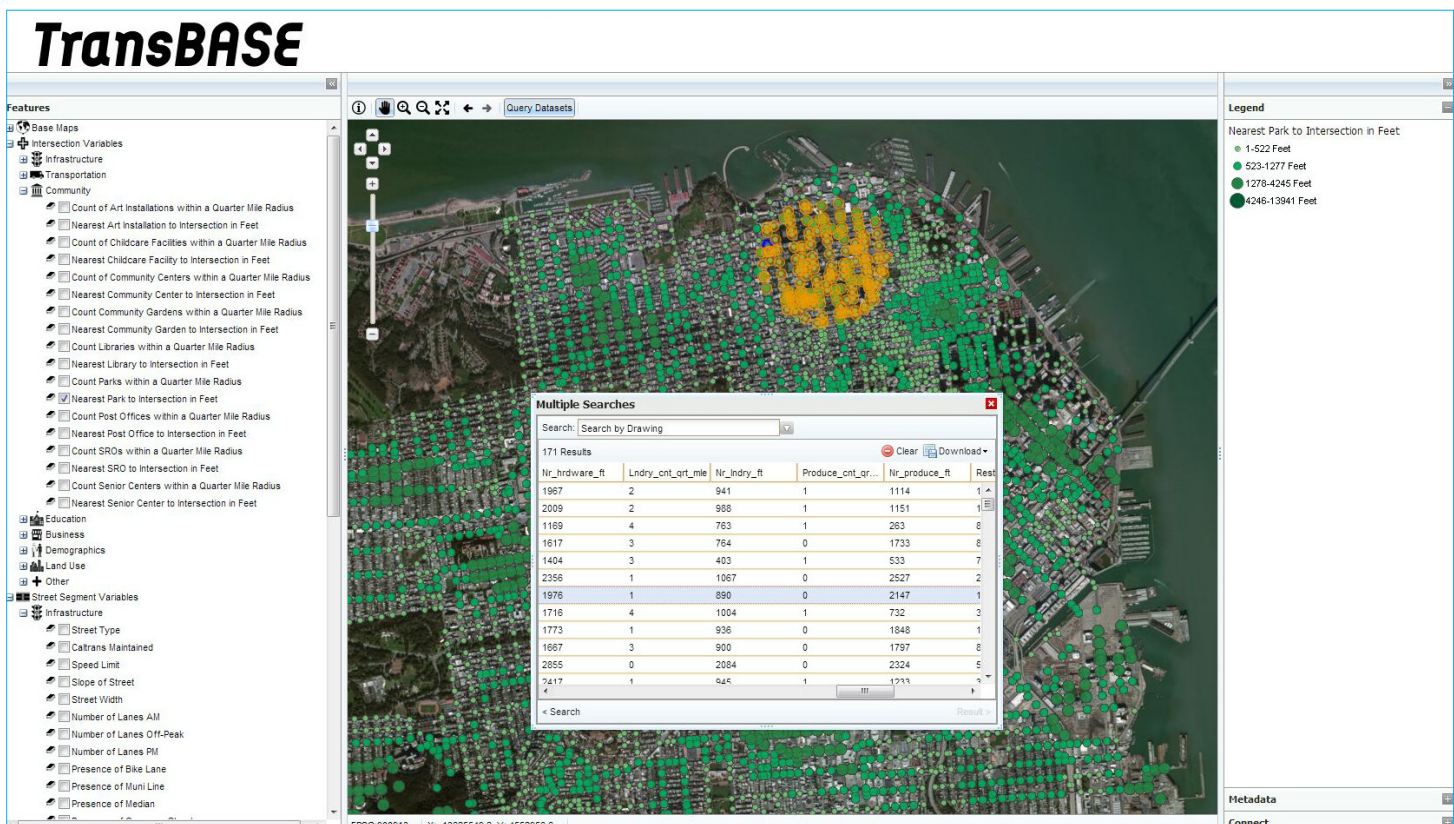
TransBASE: Destinations

While its origins are in pedestrian safety, TransBASE is being developed to inform a comprehensive approach to understanding health impacts of transportation systems, including safety, access, physical activity, air and noise quality, and health disparities. TransBASE is part of a larger SFDPH-PHES effort to improve city services through San Francisco's Open Data Policy. The goal of open data initiatives is to keep the San Francisco community informed, connected, and engaged with government. To that end, SFDPH-PHES is working to improve the content and accessibility of TransBASE in coordination with City agencies and community partners so that it can help address transportation system safety, sustainability, community health, and equity in San Francisco. The long-term goal is for TransBase to serve as the central data repository for all public health-related transportation data; to be a free and open data resource for the general public to use; and to support interagency collaboration, data standards, and data sharing within San Francisco.