Focus on New Baseline Conditions, Indicators and Analytic Approaches

Lindsey Realmuto, MPH

Health Program Planner

San Francisco Department of Public Health

SFDPH
Environmental **HEALTH**
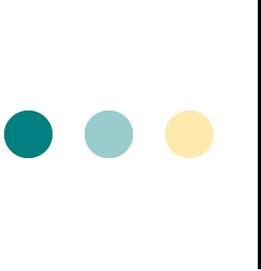
Overview

- HIA Assessment Tools
- HDMT and Baseline Health Assessments
- Pedestrian Environmental Quality Index
- Air Quality Modeling
- Pedestrian Injury Modeling

Methods to Evaluate Health-Relevant Baseline Conditions

○ **Social/Environmental/Political Determinants**

- Physical environment
  - Where?
  - Proximity?
  - Adjacent?
- Social, demographics and economic factors
  - Distribution
- Inequities

San Francisco's Fast Food Establishments

SFDPH
Environmental HEALTH
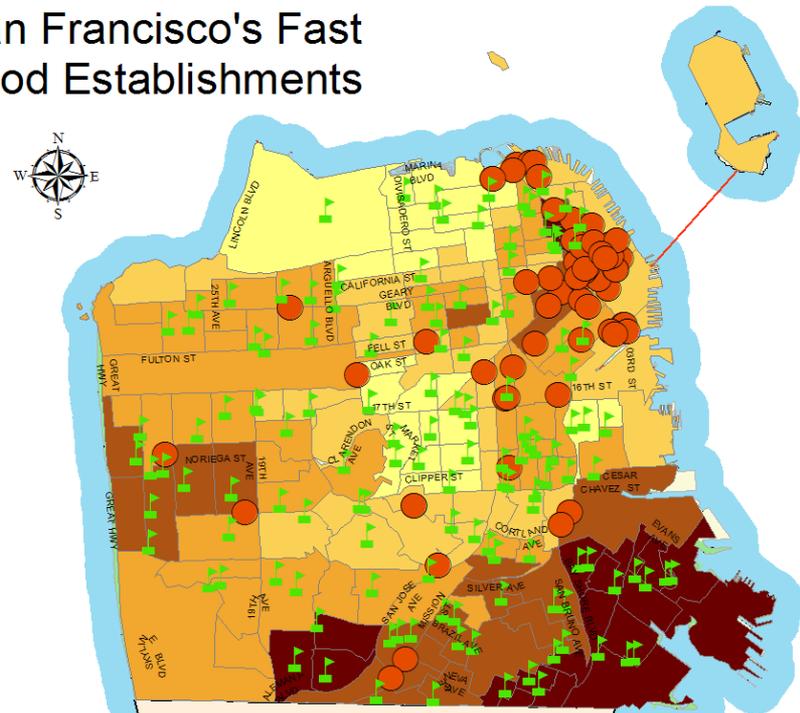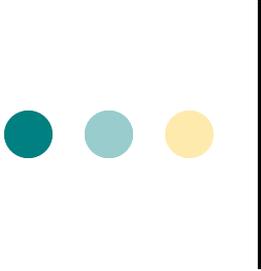
HIA Assessment Tools

○ HIA assessment tools typically fall into two categories:
- Process tools
- Analytic tools

○ Tools assess conditions that affect health and are able to respond to health inequities and policy gaps
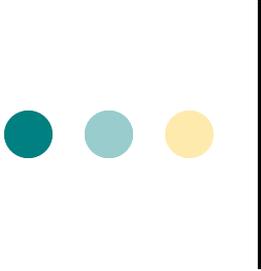
# Healthy Development Measurement Tool

What is it?

The Healthy Development Measurement Tool (www.TheHDMT.org) is a comprehensive evaluation metric that supports the inclusion and consideration of health needs in urban land use plans and projects.

Why did SFDPH create it?

SFDPH developed the HDMT to systematically evaluate health impacts to improve the social, economic, and environmental conditions needed for a healthy city.

SFDPH
Environmental HEALTH

HDMT Organization
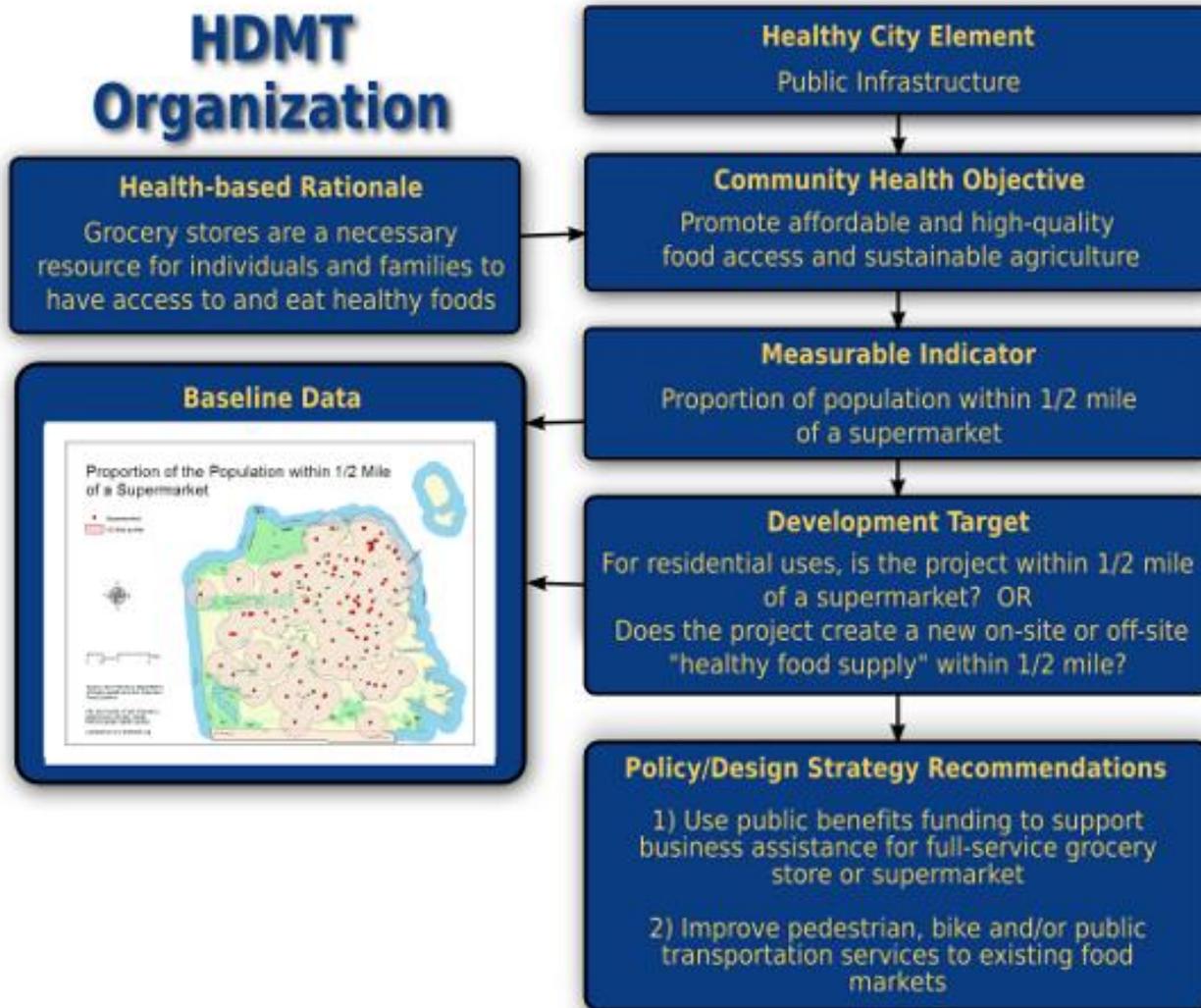
Example of the HDMT

Hope SF Project

The goal of this assessment is to provide information on the existing conditions of HOPE SF sites and to help identify priority needs in the master site planning and resident planning processes.

Baseline Conditions Summary of Hope SF - Potrero Terrace and Annex

Pedestrian Environmental Quality Index (PEQI)

What is it?

The PEQI is a tool to evaluate existing environmental factors that support or prevent safe walking. It is a quantitative, observational survey instrument to collect street segment and intersection level indicators.

What did SFDPH create it?

Walkable neighborhoods are important because they promote physical activity, which decreases chronic disease such as obesity, heart disease and diabetes. The outcome from the PEQI is aimed at increasing walkability and safety.

SFDPH
Environmental HEALTH

PEQI Composition

5 Categories of Physical Environmental Factors

- Traffic
- Street Design
- Land Use
- Intersection Safety
- Perceived Safety

SFDPH
Environmental HEALTH

Example of the PEQI

Treasure Island Community Transportation Plan

- Treasure Island is a former Naval base situated midway between San Francisco and West Oakland under going major redevelopment

- PEQI used to show existing conditions and provide policy suggestions

Pedestrian Environmental Quality Index (PEQI)
Treasure Island

PEQI

Range	Description
49 - 60	Environment not suitable for pedestrians
61 - 66	Poor pedestrian conditions exist
67 - 72	Basic pedestrian conditions exist
73 - 83	Reasonable pedestrian conditions exist
84 - 100	Ideal pedestrian conditions exist

Streets
Bay Bridge
Buildings

SFDPH
Environmental HEALTH
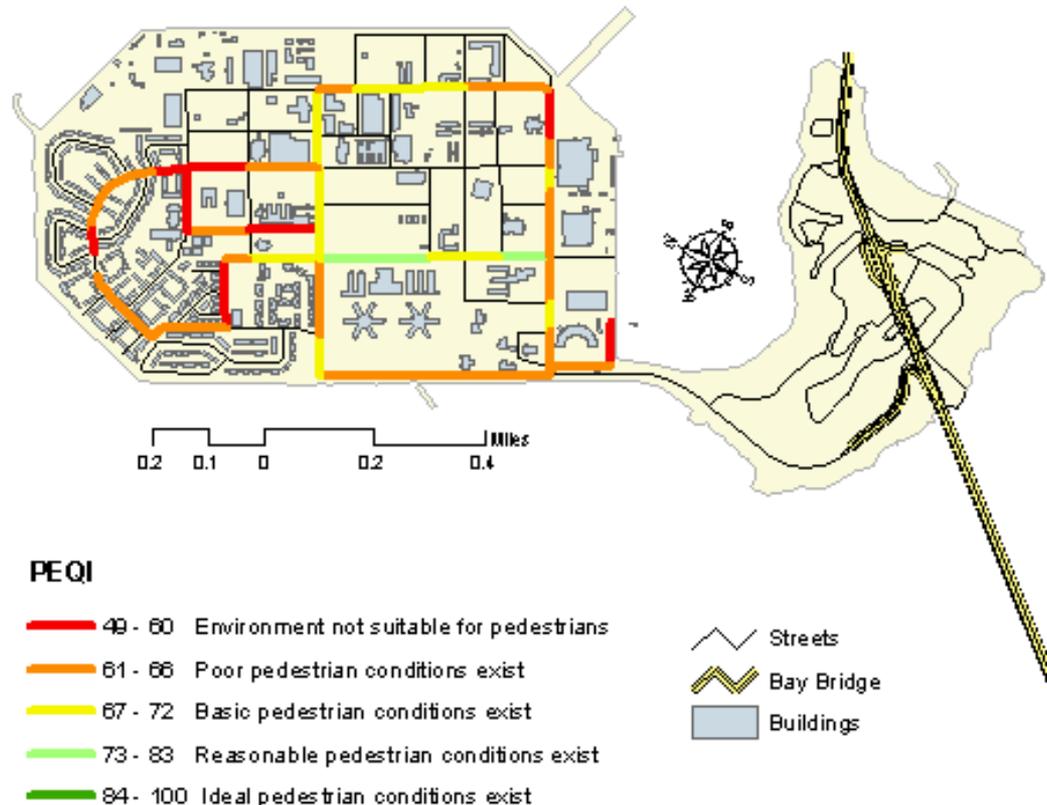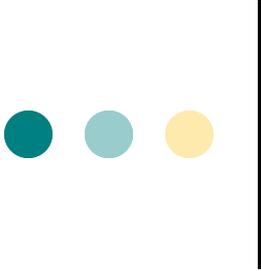
# Air Quality Measurement and Modeling

What is it?

A combination of several existing tools to characterize air pollutant concentrations and hot spots within the City. All data is displayed geographically.

Why did SFDPH develop it?

SFDPH developed the air quality measurement and modeling tools to respond to the growing need to identify air quality problem areas in the City. They also help support guidance and regulations to prevent health impacts associated with air pollution hot spots.

SFDPH
Environmental HEALTH

Air Quality Modeling Applications

In the context of land use planning, SFDPH routinely models roadway PM 2.5 exposures using "off the shelf" modeling tools


PM 2.5 Atributable to 2005 Traffic

PM 2.5 (ug/m3)

- 0.1 - 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0
- 4.1 - 7.3

SFDPH
Environmental HEALTH
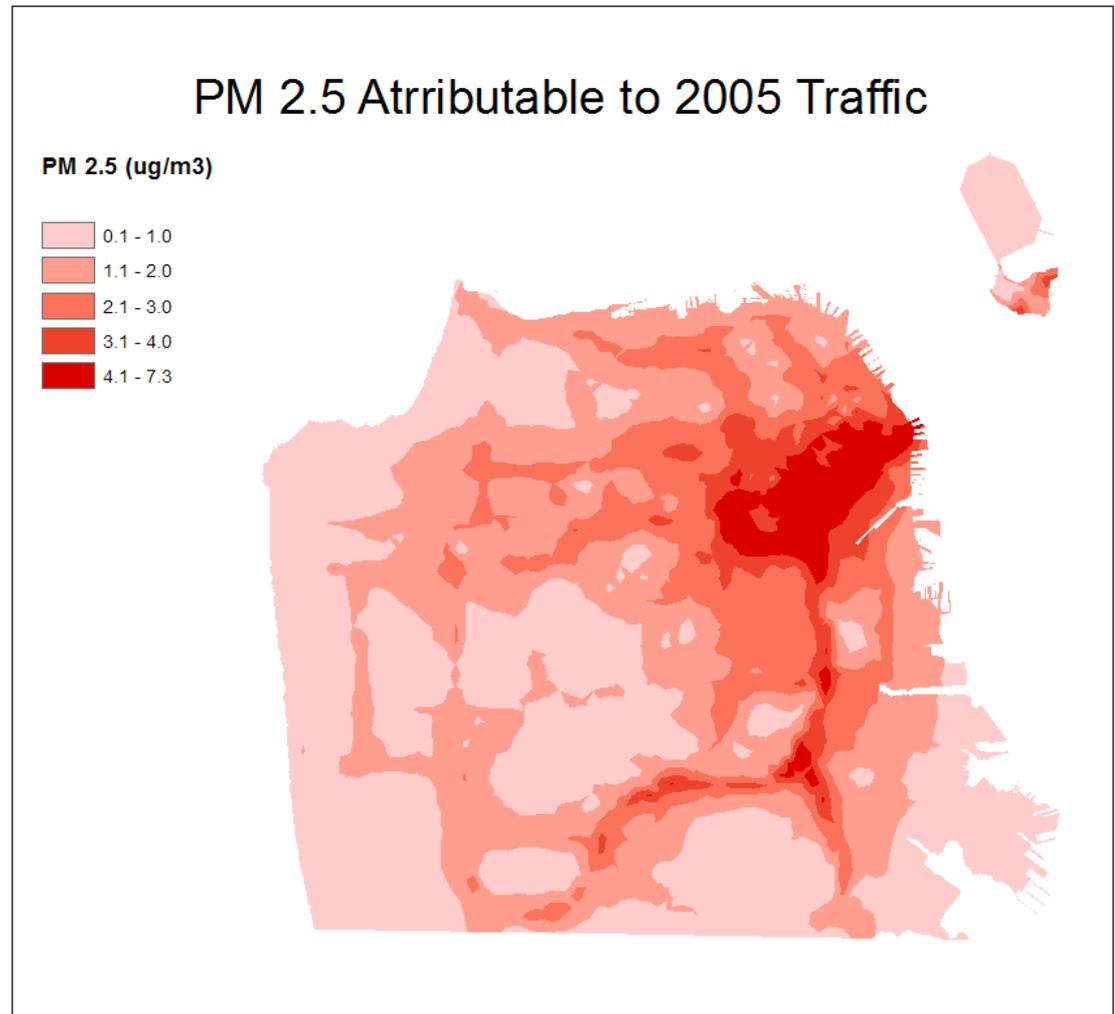
Example of Air Quality Modeling

Lyell/Still Freeway Health Impact Assessment

PM 2.5, Average Annual Exposure due Exclusively to Traffic, no background
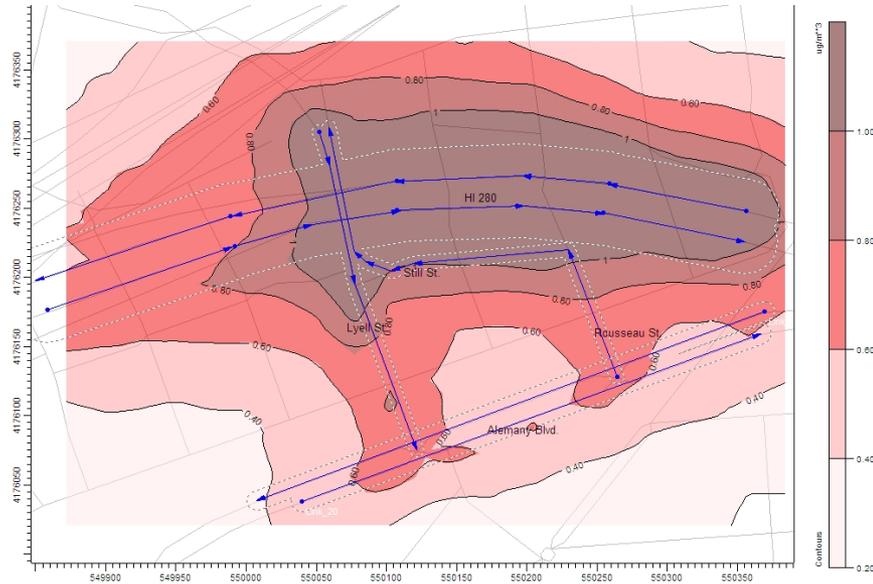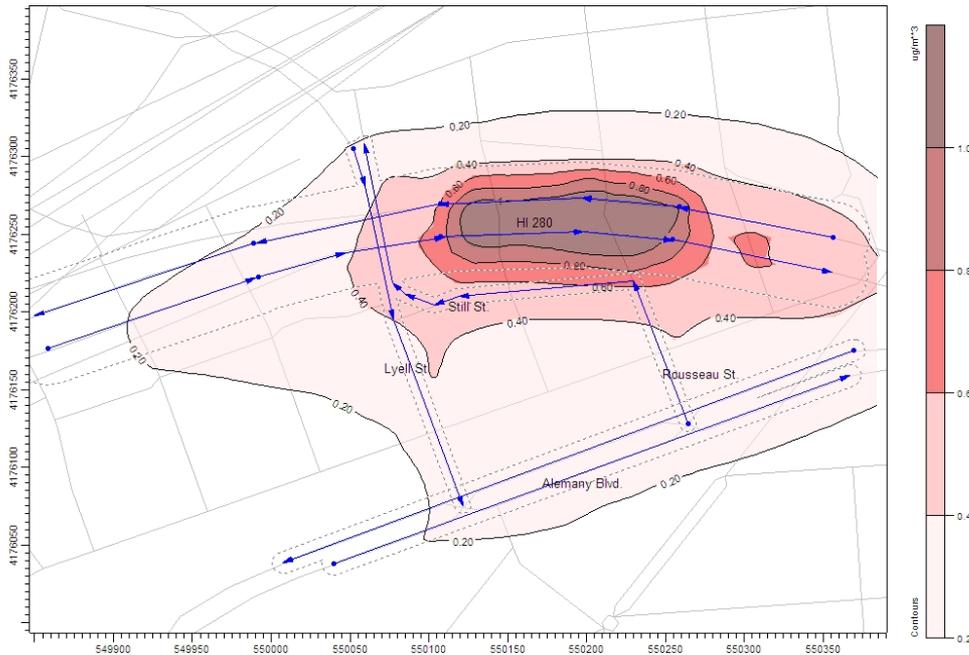
PM 2.5, Highest Day Exposure due Exclusively to Traffic, no background

SFDPH
Environmental HEALTH
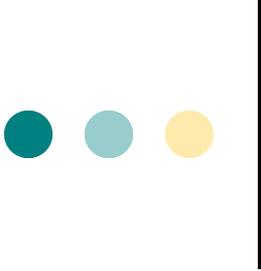
Pedestrian Injury Forecasting Model

What is it?

Predicts change in the number of collisions resulting in pedestrian injury or death associated with area-level changes in street, land use and population characteristics due to new development or transportation system changes.

Why did SFDPH create it?

SFDPH developed the pedestrian injury model to understand how changes in traffic and other environmental factors impacted by development decision in SF predict vehicle-pedestrian injury collisions.

SFDPH
Environmental HEALTH

Development of the Pedestrian Injury Forecasting Model

```
        ┌─────────────────┐
        │   Pedestrian    │
        │   Collisions    │
        └─────────────────┘
                 │
      ┌──────────┼──────────┐
┌──────────┐ ┌──────────┐ ┌──────────┐
│ Traffic  │ │          │ │Population│
│ Volume   │ │Pedestrian│ │Age       │
│ Street   │ │Exposures │ │Socio-    │
│Character-│ │          │ │economic  │
│ istics   │ │          │ │Status    │
└──────────┘ └──────────┘ └──────────┘
```
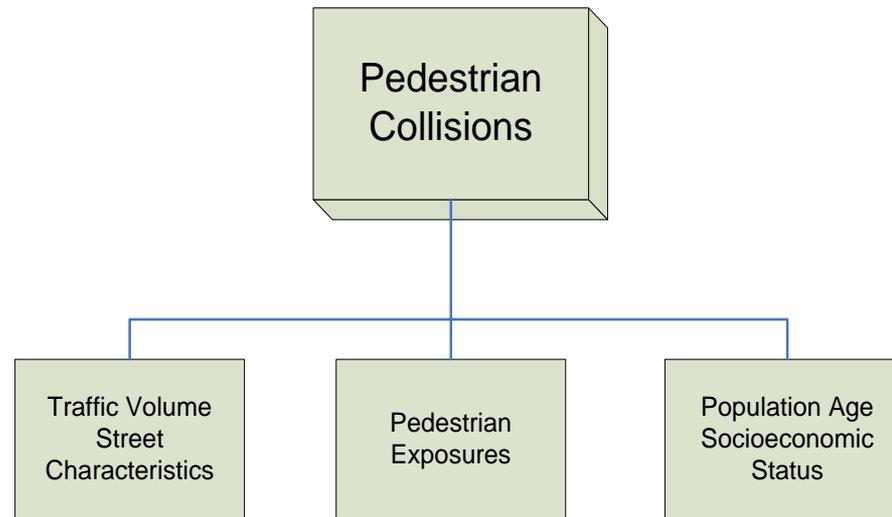
Significant predictors in the model are:

- **Traffic volume**
- Arterial streets (%, without Muni transit)
- Land area (square miles)
- Car ownership (%, access by housing unit)
- Commuting via walking or public transit (%, pop.)
- Number of residents

Example of Pedestrian Injury Model

Health Impacts of Road Pricing in San Francisco, California

Baseline conditions analyzed against projected pedestrian injuries with and without congestion pricing.

Vehicle-Pedestrian Injury Collisions by Census Tract San Francisco, CA (2015 BAU to 2015 RP)

SFDPH
Environmental HEALTH

Questions?

Contact Information

Lindsey Realmuto

Lindsey.realmuto@sfdph.org

Check out our new website!

www.sfphes.org

SFDPH
Environmental HEALTH