



# SFDPH Program on Health, Equity, and Sustainability

## Urban Health and Place Team

### Pedestrian Flow Model – June 2009



### Pedestrian Flow Model

#### Description

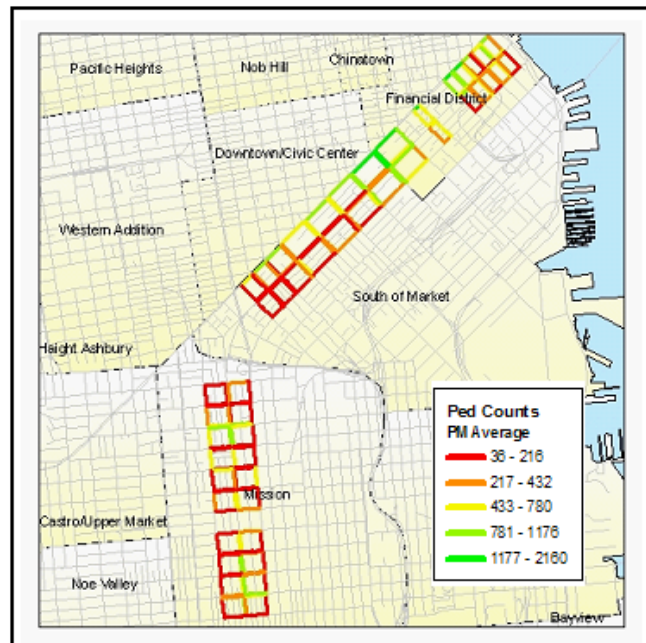
The Pedestrian Flow Model is a practical forecasting tool which relates pedestrian activity at a street-level to modifiable environmental characteristics within developing and established mixed-use neighborhoods in San Francisco. SFDPH intends to apply this model to planning scenarios and infrastructure proposals emerging out of ongoing neighborhood planning efforts in order to identify and prioritize enhancements to the pedestrian environment. Pedestrian flow counts are generated at a street-level, accounting for the following built environment factors:

- Street network configuration/connectivity
- Street design
- Transit system access
- Population and employment density
- Land use mix
- Jobs-housing balance
- Aesthetics
- Safety

#### Background and Development

Modifiable environmental factors known to influence walking behaviors may be grouped into two categories: 1) the design and spatial arrangements of streets and transit systems; and 2) the land use and socioeconomic development of the adjacent neighborhoods. Design and spatial arrangement factors include street network connectivity, traffic volume, roadway width, traffic speed, sidewalk quality, pedestrian crossings and conflicts, relative travel times, and parking availability. Land use and socioeconomic factors include residential density, commercial density, jobs-housing linkages, the types of land use, public spaces, demographics, auto-ownership, and safety. Currently, the tools available to evaluate the impacts of land use planning on pedestrian safety conditions are limited to existing conditions assessments of collisions or qualitative analyses of the pedestrian environment.

#### Pedestrian Counts Taken Mid Block for the Pedestrian Flow Model





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SFDPH began developing this linear-regression based, multivariate model to understand how the built environment and related changes affect pedestrian activity. Correspondingly, development of this tool provides a means to identify impacts (positive or negative) of particular development projects or proposed scenarios on pedestrian activity. This allows for modification of priority challenges and investments for enhancing and encouraging pedestrian activity. The Pedestrian Flow Model is currently under development. SFDPH aims to complete model development in the next few months and to publish findings in a journal with audiences including both the public health and transportation disciplines.

#### Collaborations/Constituencies Involved

In 2005, the SFDPH organized *The People Count 2005*. This was a pedestrian awareness event that employed volunteers to collect pedestrian counts in seven different neighborhoods throughout San Francisco. For few hours, in the morning and evening volunteers to adopted sidewalk segments and counted people in a two block radius. Each volunteer was assigned a customized route and training on how to properly collect pedestrian counts. SFDPH partnered with San Francisco State University, Children's Environmental Health, Urban Ecology, MAC and many other concerned citizens to make this event a success.



#### Relevance to Health and Health Equity

Walking, both as an alternative to driving and as a leisure activity, can be beneficial for human health by reducing the risk of motor vehicle collisions, reducing motor vehicle-related noise and air pollution, and increasing physical activity and social cohesion.

In San Francisco, neighborhoods with some of the lowest proportions of households owning cars are disproportionately burdened by streets with high traffic volumes, posing serious hazards to pedestrians. Those neighborhoods also have some of the highest concentrations of poverty and people dependent on walking or public transportation as their primary mode of travel.

Walking is the most sustainable travel mode, which can be supported by land use, street network and design, aesthetics, and safe environments which promote such activity. Land use and transportation planning processes provide an opportunity to assess pedestrian activity and safety conditions for current and future San Francisco residents and workers, and to intervene to improve the pedestrian environment and support safe, sustainable transportation modes - provided there are tools to conduct these assessments.

#### Applications and Policy Targets

The primary aim of the Pedestrian Flow Model application is to identify the need and mechanisms for promoting pedestrian activity in the course of land use and transportation planning. Potential street- and area-level interventions that improve pedestrian safety include planning and design decisions that ensure well designed and configured streets; adequate access to transit systems; reduction in traffic volumes, speeds, and the need to drive, while promoting more walkable, safe environments; and appropriate aesthetics and an adequate level of service and safety.

**For more information, please visit:**

[www.sfphe.org](http://www.sfphe.org)