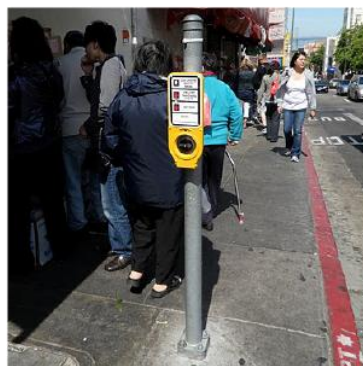# San Francisco Chinatown Pedestrian Safety Needs Assessment

October 2010

Chinatown Community Development Center
華協中心

Table of Contents

Executive Summary

In 2010, the Chinatown Community Development Center in partnership with Chinatown TRIP developed a Pedestrian Safety Plan to address the needs and concerns of residents, merchants, and visitors in Chinatown. After conducting a comprehensive study of pedestrian conditions and issues, we propose recommendations to improve safety and quality of life within the community.

Pedestrian safety is a major concern in Chinatown, the densest residential neighborhood in San Francisco, where the majority of residents depend on public transportation and walking. A large population of elderly and low-income residents, Chinatown's role as a commercial and tourist destination, and the neighborhood's narrow sidewalks and steep streets pose unique challenges. Additionally, residents and visitors face high rates of pedestrian-vehicle collisions, congestion, and air and noise pollution because of car-oriented street designs.
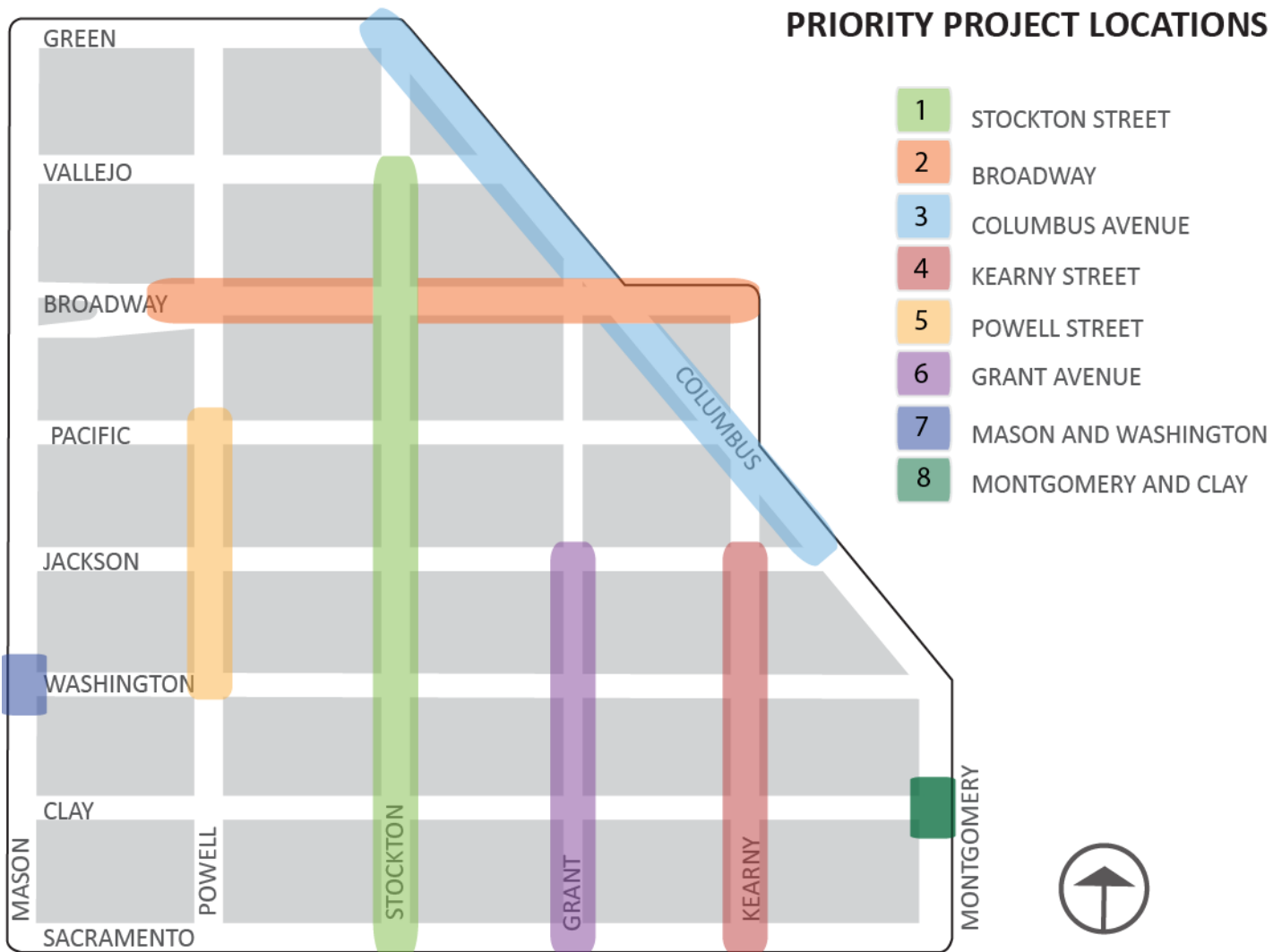
The **Pedestrian Safety Needs Assessment** examined the area bounded by Mason, Sacramento, Montgomery, Green and Columbus Avenue. It evaluated 142 intersections using police collision reports, tenant surveys, and merchant interviews to narrow down to a list of 21 priority intersections for further study. Pedestrian and bike counts were conducted at these intersections, and all sidewalks were scored using a standard measure of pedestrian comfort (i.e., the SFDPH Pedestrian Environment Quality Index). Initial recommendations for the 21 intersections were vetted in a public forum and from this feedback we developed a Pedestrian Safety Plan.

The **Pedestrian Safety Plan** prioritizes 8 project areas to direct future funding. Project areas of highest priority have high pedestrian volumes, poor pedestrian amenities, and frequent mention in interviews and at the public forum. For each project area, we recommend specific design improvements that aim to reduce the speed of cars, enhance pedestrian visibility and comfort, and improve the quality of life with safer streets in Chinatown.

Rather than waiting for another pedestrian fatality or accident before taking action, CCDC proactively initiated the Pedestrian Safety Plan to assess pedestrian conditions and offer design solutions that will ideally complement both enforcement and public education efforts. Our next steps are to advocate for funding to plan and implement the 8 priority projects, present the findings and gather feedback from community members, and provide support to other neighborhood-based community organizations undertaking pedestrian assessments.

RANKED LIST OF PROJECT AREAS:

1) Stockton Street from Sacramento Street to Broadway
2) Broadway from Powell Street to Kearny Street
3) Columbus Avenue from Stockton/Green Street to Jackson Street
4) Kearny Street from Sacramento Street to Jackson Street
5) Powell Street Corridor from Washington Street to Pacific
6) Grant Avenue Corridor from Sacramento Street to Broadway
7) Mason and Washington Street Intersection
8) Montgomery and Clay Street Intersection

PRIORITY PROJECT LOCATIONS

1	STOCKTON STREET
2	BROADWAY
3	COLUMBUS AVENUE
4	KEARNY STREET
5	POWELL STREET
6	GRANT AVENUE
7	MASON AND WASHINGTON
8	MONTGOMERY AND CLAY

GREEN
VALLEJO
BROADWAY
PACIFIC
JACKSON
WASHINGTON
CLAY
SACRAMENTO

MASON
POWELL
STOCKTON
GRANT
KEARNY
MONTGOMERY
COLUMBUS

Project Rationale

The Chinatown Pedestrian Safety Plan aims to understand pedestrian behaviors, identify priority areas that are prone to vehicle-pedestrian collisions, and develop solutions to minimize potential conflicts between different modes of transportation.

As San Francisco's densest neighborhood with 64,000 individuals per square mile, Chinatown suffers from tremendous congestion throughout the day. Pedestrians, cars and transit regularly compete for right-of-way on Chinatown's narrow streets, alleyways, and sidewalks.

According to the California Statewide Integrated Traffic Records System (SWITRS), 3,962 people in San Francisco were injured or killed in vehicle-pedestrian collisions between 2004 and 2008. Three percent (134) of the pedestrian collisions took place in Chinatown. **The rate of collisions involving injury to pedestrians in the Chinatown study area is significantly higher than the rate for San Francisco as a whole**.[i]

Safe, Walkable Streets as an Environmental and Social Justice Issue

Chinatown's demographics require a culturally-sensitive approach to transportation planning. The population consists of low-income, elderly, and monolingual immigrants who overwhelmingly travel by foot and public transit. The 2000 Census reported the median income for the neighborhood as $18,339, with a median age of 50. The proportion of the population living below the poverty level in 2000 was 21% versus 11% citywide, and has likely increased over the last ten years.[ii] Further, the neighborhood has the lowest rate of automobile ownership in the city, with only 17% of households owning cars.

The provision of safe, walkable streets is a social justice issue, as low-income communities are disproportionately affected by the lack of walkable streets. **Although Chinatown has the lowest rate of car ownership, it has the highest volume of traffic of any San Francisco neighborhood.** 78% of households live within 150 meters of a truck route.[iii] Furthermore, low-income individuals are more likely to be hit by a car and suffer from traffic, noise and air pollution;[iv] the proportion of Chinatown households living with traffic-related air quality hazards is 100% compared to 68% citywide.[v] Also, older adults are more likely to die as a result of being struck by a vehicle, regardless of vehicle speed or severity of the collision.[vi]

Due to language barriers, Chinatown residents are historically underrepresented in transportation planning. CCDC and TRIP's linguistic and cultural competency has been crucial to the execution of the Pedestrian Safety Plan, which aims to engage residents in making their neighborhood a safer and more pleasant place to walk. We hope that the Pedestrian Safety Needs Assessment and its subsequent outcome, the Pedestrian Safety Plan, will serve as an example of effective community planning in dense, low-income communities of color.

Engineering and Design Recommendations

Collisions are more likely to happen at intersections— In fact, 50% of all road crashes in the United States occur at intersections. Engineers cite 56 "conflict" points at a four-way intersection, in which 24 are spots where vehicles can hit pedestrians.[vii] The Pedestrian Safety Plan offers recommendations that target intersections.

The recommendations in the Plan also aim to reduce the speed of vehicles. Pedestrians struck by a vehicle traveling 36 to 45 mph are *four times* more likely to be killed than by a vehicle traveling 26 to 30 mph.[viii]

While we need enforcement against sidewalk encroachment and public education, these strategies along with other improvements can have a major effect on pedestrian safety. Adding traffic signals and crosswalk treatments, and designing streets to reduce vehicle speeds can mean the difference between life and death.

The Pedestrian Safety Plan aims to improve the quality of life for Chinatown residents and visitors by proposing design solutions that will make the community friendlier to pedestrians. Before working on the Pedestrian Safety Plan, CCDC and TRIP implemented a pedestrian education campaign in August of 2009 with SFDPH funding, which resulted in pedestrian safety public service radio announcements, a workshop attended by 500 residents, and distribution of brochures to local merchants addressing the issue of sidewalk encroachment.

As the next step, the Pedestrian Safety Plan focuses on opportunities to improve Chinatown's streets. These recommendations should be explored simultaneously with education campaigns and stricter enforcement.

Smart Growth and Alternative Modes of Transportation in Chinatown

Chinatown has always been a smart growth neighborhood due to its high residential density and majority of residents relying on public transit and walking rather than driving. The incoming Central Subway development, slated for operation in 2018, will further reinforce Chinatown as a smart growth, Transit-First neighborhood. The Chinatown Pedestrian Safety Plan complements City and regional Transit-First and sustainable policy frameworks, as the recommendations will create attractive alternative modes of transportation in Chinatown.

Methodology

1. We **identified** 142 intersections within the study boundaries (Mason to the west, Sacramento to the south, Montgomery to the east, and Columbus and Green Street to the north).

2. We **surveyed** 102 tenants and 21 merchants within the Chinatown study area.

3. We created a **scorecard** to narrow down the 142 intersections to 21 priority intersections for further study. The scorecard weighed the intersections according to a ranking system of the following variables:

   ▪ 10 years of collision data from the San Francisco Police Department (1999-2009)
   ▪ Merchant and tenant surveys
   ▪ Incoming and ongoing projects: Central Subway, Broadway Streetscape Improvement Project, Chinatown Alleyway Master Plan, DPW 5-Year Repaving Plan, Transit Preferential Streets
   ▪ Existing transit connectivity (cable car, buses, and transfer points)

TOP 21 PRIORITY INTERSECTIONS
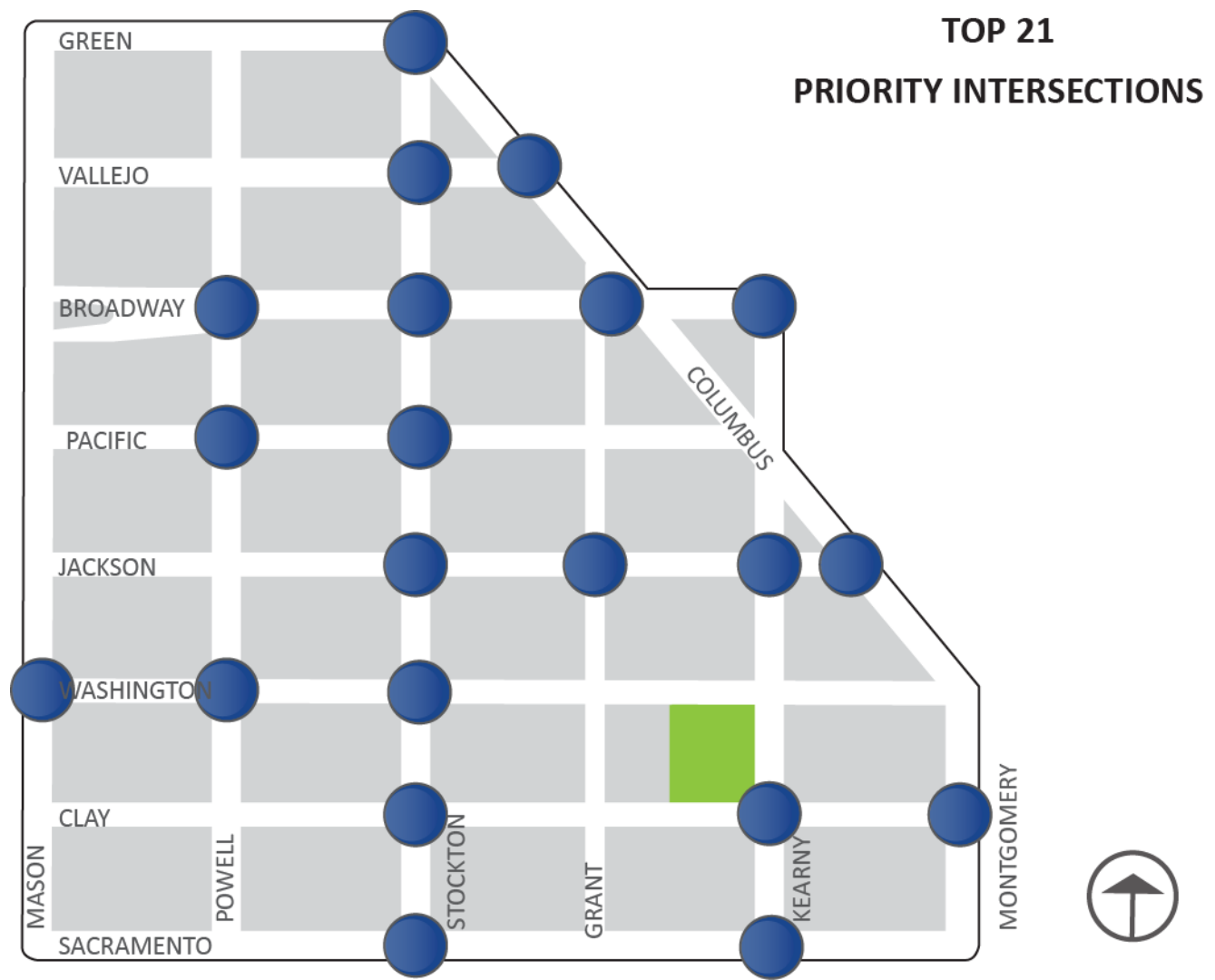
4. We carried out **pedestrian and bike counts** at the 21 priority intersections during weekday AM (Tuesday-Thursday 10am-noon), PM weekday (Tuesday-Thursday 3pm-5pm), and weekend (Saturday-Sunday noon-2pm).

- For scramble intersections along Stockton Street, four team members stood at each corner and counted the number of people leaving that corner. The total count reflects all corners.
- For signalized intersections, we counted pedestrians crossing within the crosswalk in both parallel directions during their right-of-way.
- For intersections without traffic signals (those with only STOP or YIELD signs), we counted the number of people who entered the intersection at any given time.
- We did not count jaywalkers, so the pedestrian counts reflect a conservative number.

5. We used the **Pedestrian Environmental Quality Index (PEQI)** to evaluate all intersections and sidewalks within the study area for pedestrian comfort and amenities. While canvassing the neighborhood by foot, we also recorded observations of pedestrian and vehicle behaviors.

6. We hosted a public **community meeting** in mid-July to ask community members to weigh in on the proposed design recommendations for the 21 priority intersections. Participants were able to visualize possible recommendations and be actively engaged in the evaluation of the proposed interventions.

7. Using data from the Pedestrian counts and PEQI analysis, we ranked the 21 priority intersections into a **priority project list** of corridors and target intersections. The priority projects have been ranked according to the severity of these measures: 1) high pedestrian counts (i.e., frequent crossings) 2) poor pedestrian conditions, (i.e., a low PEQI score), and 3) were frequently mentioned as dangerous at the public forum.

PRIORITY PROJECT LOCATIONS

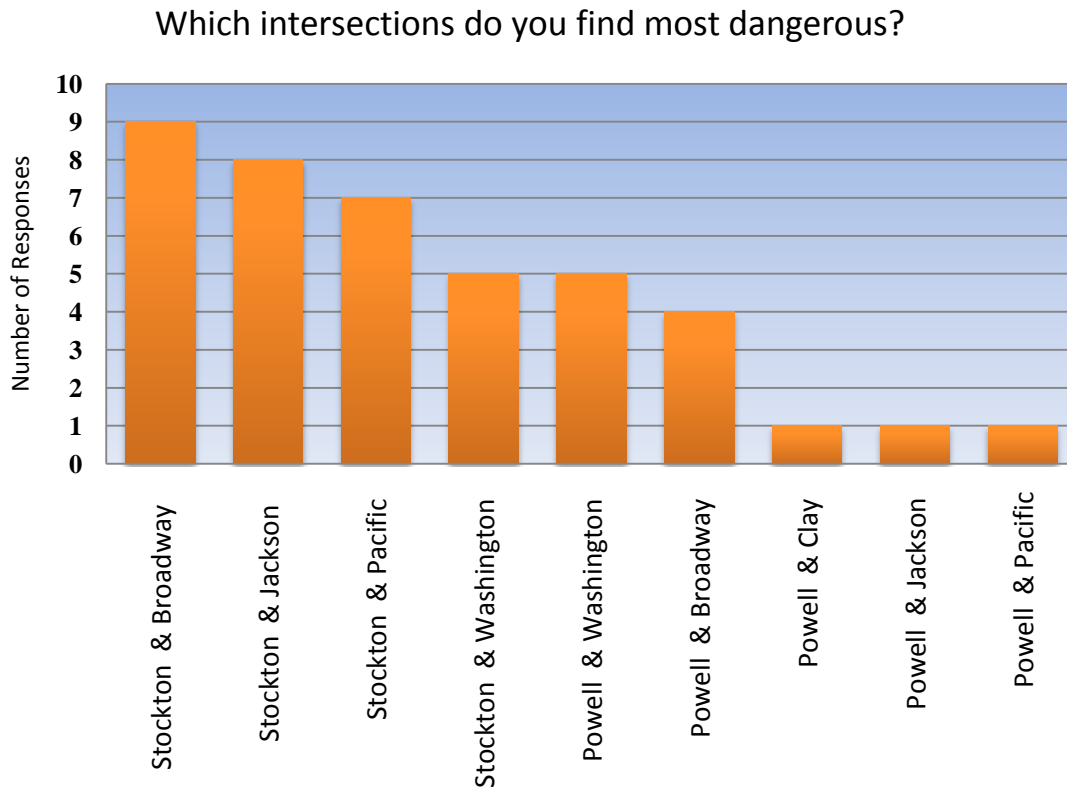|	
1	STOCKTON STREET
2	BROADWAY
3	COLUMBUS AVENUE
4	KEARNY STREET
5	POWELL STREET
6	GRANT AVENUE
7	MASON AND WASHINGTON
8	MONTGOMERY AND CLAY
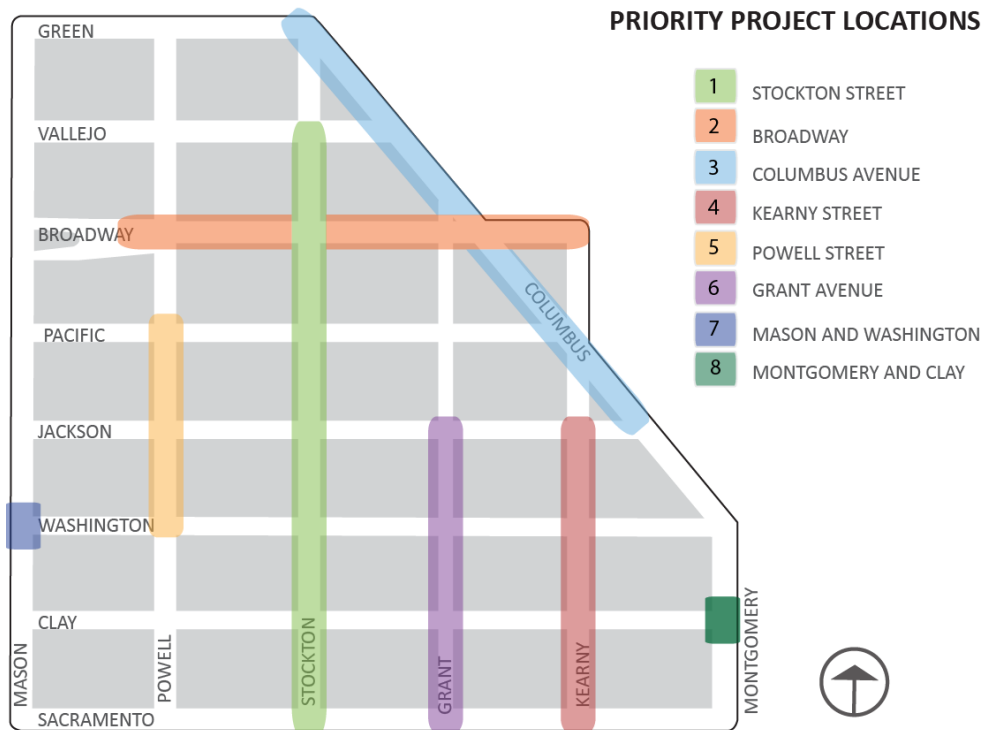
8. For each project, we propose short-term and long-term **recommendations**.

Findings

1) Chinatown Merchant Surveys

21 merchant surveys were conducted along major corridors throughout the Chinatown study area; including Stockton, Kearny, and Broadway. We began interviewing merchants who had previously worked with CCDC and continued by visiting one to two businesses on each block within the site boundaries.

The interviews generally took around ten to fifteen minutes to complete. Merchants were asked a series of questions in Cantonese and/or English. The questions served to gain a sense of which intersections were perceived as dangerous, which alleyways are frequently used by pedestrians, and general pedestrian safety issues in the neighborhood. All surveys were conducted from 12:00pm-4:00pm in March 2010.

Which intersections do you find most dangerous?

Intersection	Number of Responses
Stockton & Broadway	9
Stockton & Jackson	8
Stockton & Pacific	7
Stockton & Washington	5
Powell & Washington	5
Powell & Broadway	4
Powell & Clay	1
Powell & Jackson	1
Powell & Pacific	1

SUMMARY: The majority of perceived dangerous intersections are located along Stockton and Powell.

Merchants were asked to list all the intersections in Chinatown that they perceive as dangerous. They frequently cited Stockton & Broadway, Stockton & Jackson, and Stockton & Pacific as most dangerous.

Merchant Comments

Stockton Street
- Sidewalks along Stockton are often slippery due to loading of wet fruits and vegetables.
- Sidewalks along Stockton are narrow and congested due to merchandise encroachment.
- Cars traveling on Stockton have to wait too long to turn left at intersections and are often stuck at the crosswalk during the pedestrian scramble signal.
- Scramble signals along Stockton have made it easier for pedestrians to cross the intersection.
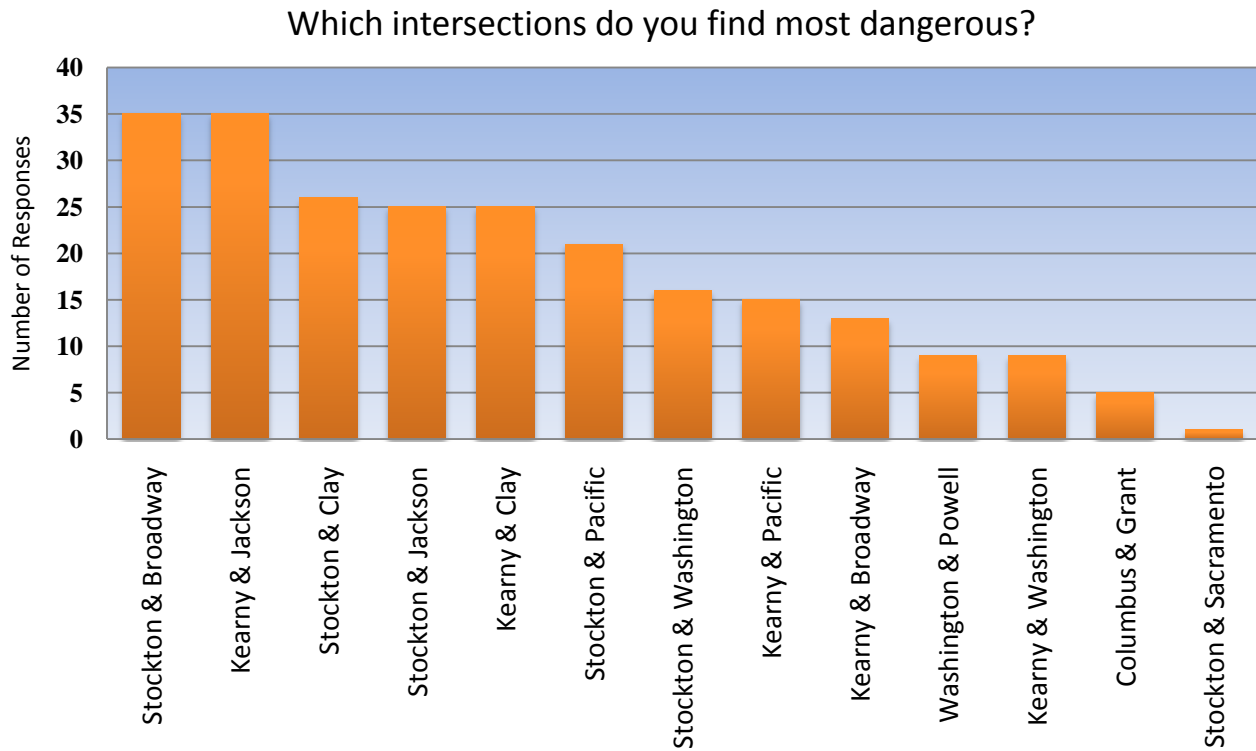
Powell Street
- Cable car crossings are particularly confusing along Powell Street due to the unclear meaning of the flashing vehicle traffic signals and separate cable car lights.

Merchant Recommendations
- Make stop signs larger and more visible for senior citizens who may have difficulty seeing.
- There should be strategically placed bollards to protect pedestrians.
- The City should regulate permit allowances to reduce square footage for sidewalk merchandise display.

2) CCDC Tenant Surveys

CCDC received a Pedestrian Safety grant from SFDPH in August of 2009 to conduct a public safety education campaign and a survey to identify pedestrian safety issues. A total of 102 tenants were surveyed from seven CCDC-owned buildings, which primarily serve senior citizens and low-income families.

Which intersections do you find most dangerous?

Intersection	Number of Responses
Stockton & Broadway	35
Kearny & Jackson	35
Stockton & Clay	26
Stockton & Jackson	25
Kearny & Clay	25
Stockton & Pacific	21
Stockton & Washington	16
Kearny & Pacific	15
Kearny & Broadway	13
Washington & Powell	9
Kearny & Washington	9
Columbus & Grant	5
Stockton & Sacramento	1

SUMMARY: The majority of perceived dangerous intersections are located along Stockton and Kearny.

Residents were asked to list all of the intersections in Chinatown that they perceived as dangerous. They cited Stockton & Broadway and Kearny & Jackson as the top two most dangerous intersections.

Which intersections do you cross most often?
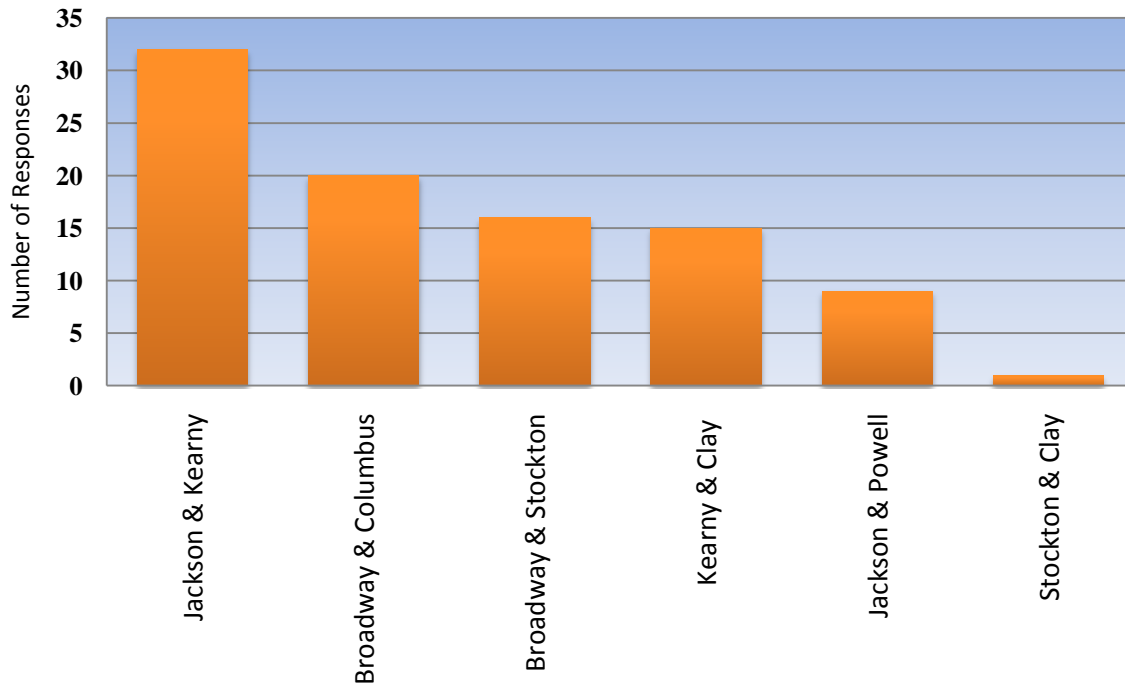
- Tenants reported that they crossed the Jackson & Kearny Street intersection most frequently.

- The Jackson & Kearny intersection will soon become a community institution area frequented by St. Mary's Elementary School students, elderly residents from the International Hotel, and college students from the City College San Francisco campus. Existing high numbers of pedestrian crossings indicate that this intersection will become more congested in the future as a result of higher daily crossings.

What is your general approach before crossing the street?
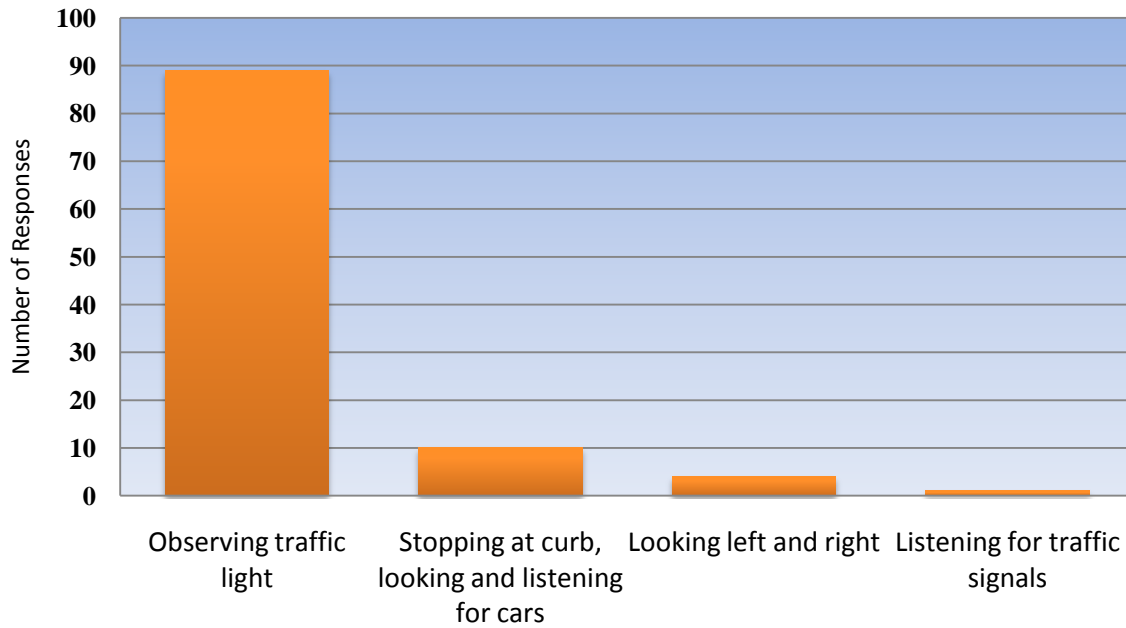
- The majority of tenants said that their general approach before crossing the street was to observe the traffic light. Few tenants said that they relied on audio indicators as a crossing strategy. This suggests a preference for visual rather than audio cues at traffic signals.

3) San Francisco Police Department (SFPD) Collision and Fatality Data

CCDC requested citywide collision data information from the SFPD Traffic Center and received data from 1999 through 2009. Each year's database includes the case number, time, date, location, party types involved and the primary California vehicle code violation for each collision recorded by the SFPD. The map below shows only pedestrian injuries and fatalities occurring within the Chinatown study area.
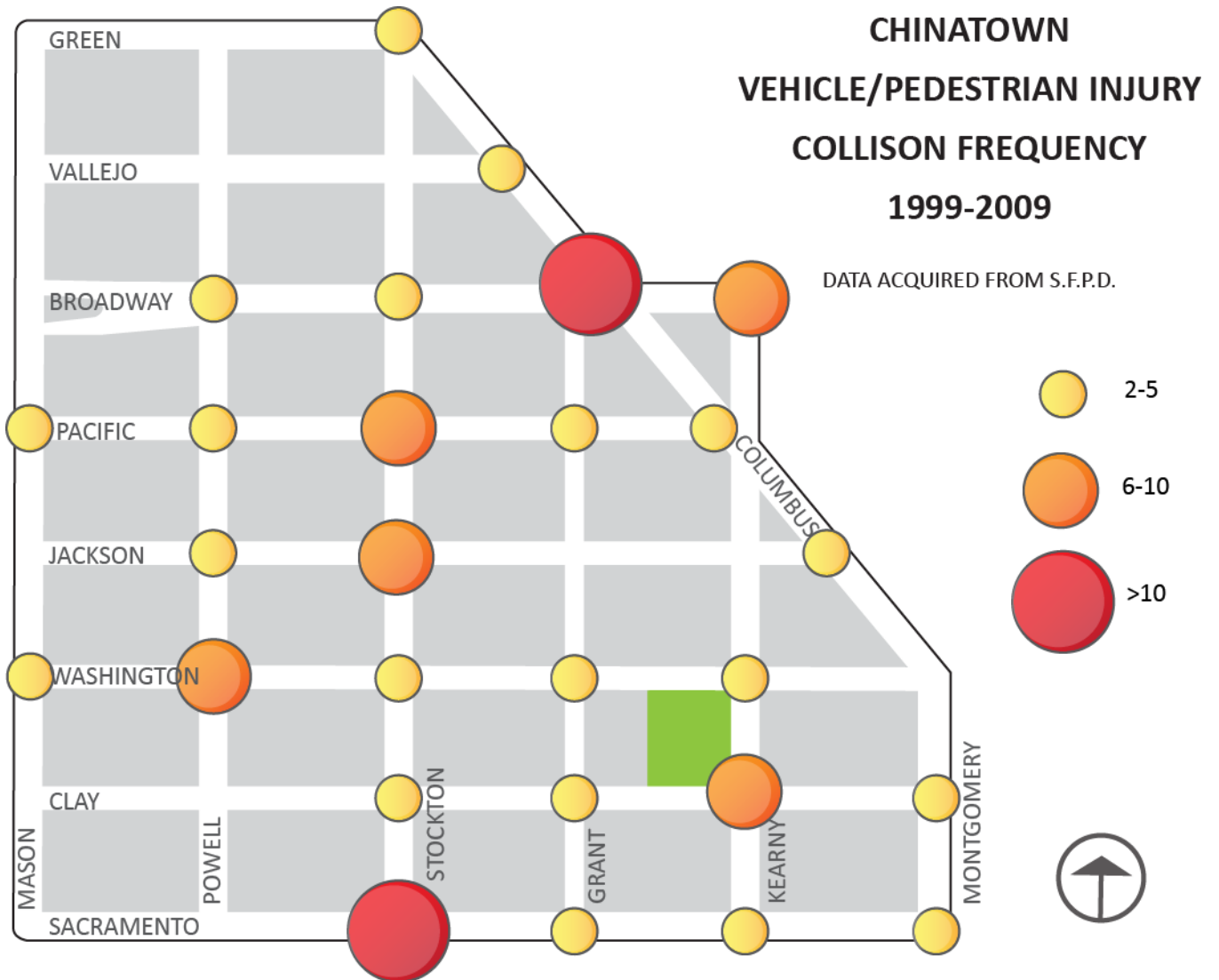
- The most vehicle-pedestrian collisions occurred at Sacramento & Stockton and Broadway & Grant/Columbus.

- Other vehicle-pedestrian collision hotspot intersections include Washington & Powell, Stockton & Pacific, Stockton & Jackson, and Kearny & Broadway.

CHINATOWN
PEDESTRIAN FATALITIES
1999-2009

DATA ACQUIRED FROM S.F.P.D.
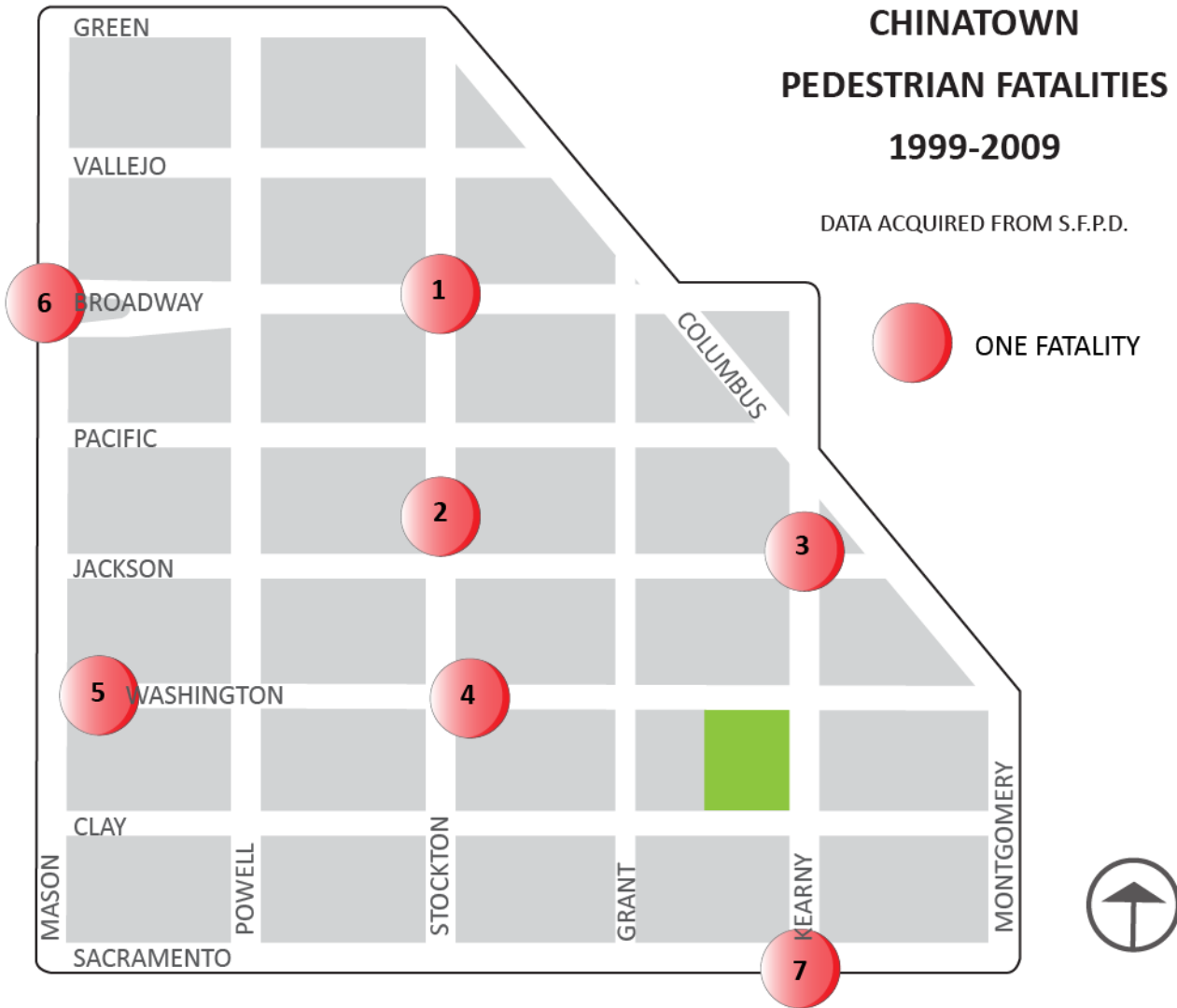
ONE FATALITY

- There have been a total of 7 fatalities in the Chinatown study area from 1999-2009. The majority of these fatalities occurred at high volume corridors such as Kearny and Stockton Street.

- Two-thirds of the Stockton Street fatalities occurred after 2002, when the pedestrian scramble signals were installed. Further interventions are still necessary to improve the safety of these intersections.

Dot #	Date	Occurred at:	Party 1	Party 2	Primary California Vehicle Code Violation =
1	6/1/1999	West of Stockton along Broadway	Truck Tractor with Trailer	Pedestrian	21950A = Right-of-way violation on part of vehicle
2	3/14/2006	14 ft. North of Jackson along Stockton	MUNI vehicle or other bus	Pedestrian	22350 = Basic speed law violation
3	7/14/2006	8 ft. North of Jackson along Kearny	Pedestrian	Bus	21950B = Right-of-way violation on part of pedestrian
4	8/28/2006	2 ft. East of Stockton along Washington	Truck/Truck Tractor	Pedestrian	21950A = Right-of-way violation on part of vehicle
5	7/14/2007*	67 ft. East of Mason along Washington	Truck/Truck Tractor	Pedestrian	22350 = Basic speed law violation
6	9/24/2008	Mason and Broadway	Pedestrian	Cable Car	
7	5/4/2009	Kearny and Sacramento	Auto	Pedestrian	22106 = Unsafe starting/backing of vehicle

* Third Party Involved: Parked Vehicle.

4) Pedestrian Environmental Quality Index (PEQI)

SFDPH developed the PEQI in order to assess the quality and safety of the physical pedestrian environment and inform pedestrian planning needs. The PEQI draws on published research and work from numerous cities to assess how the physical environment impacts how people walk in a neighborhood. The PEQI is an observational survey that quantifies street and intersection factors empirically known to affect people's travel behaviors and is organized into five categories: traffic, street design, land use, intersections, and safety. Within these categories are 30 indicators that reflect the quality of the built environment for pedestrians and comprise the variables of the survey used for data collection. SFDPH aggregates these indicators to create a weighted summary index, which can then be reported as an overall index or deconstructed by pedestrian environmental category or even by individual indicators. Additional information regarding the PEQI, including a methods report, manual, and data collection forms, can be accessed online at: http://www.sfphes.org/HIA_Tools_PEQI.htm. [1]

Pedestrian Quality Variables Gathered in PEQI Survey

Intersection Safety	Traffic	Street Design	Perceived Safety	Land Use
▪ Crosswalks ▪ Ladder crosswalk ▪ Countdown signal ▪ Signal at intersection ▪ Crossing speed ▪ Crosswalk scramble ▪ No turn on red ▪ Traffic calming features ▪ Additional signs for pedestrians	▪ Number of vehicle lanes ▪ Two-way traffic ▪ Vehicle speed ▪ Traffic volume ▪ Traffic calming features	▪ Width of sidewalk ▪ Sidewalk impediments ▪ Large sidewalk obstructions ▪ Presence of curb ▪ Driveway cuts ▪ Trees ▪ Planters/gardens ▪ Public seating ▪ Presence of a buffer	▪ Illegal graffiti ▪ Litter ▪ Lighting ▪ Construction sites ▪ Abandoned buildings	▪ Public art/historic sites ▪ Restaurant and retail use

---

[1] Chinatown Pedestrian Environmental Quality. San Francisco Department of Public Health, Program on Health, Equity and Sustainability, August 2010.

Pedestrian Environmental Quality Index Scores in Chinatown

CCDC canvassed the study area to conduct the PEQI survey for all the intersections and street segments (see Figures 1 and 2). After receiving the completed database, the SFDPH created these maps.

Figure 1: PEQI for North/East Side of the Street

- Poor Pedestrian Conditions exist:
    - Broadway between Powell to Mason
    - Stockton between Jackson and Washington
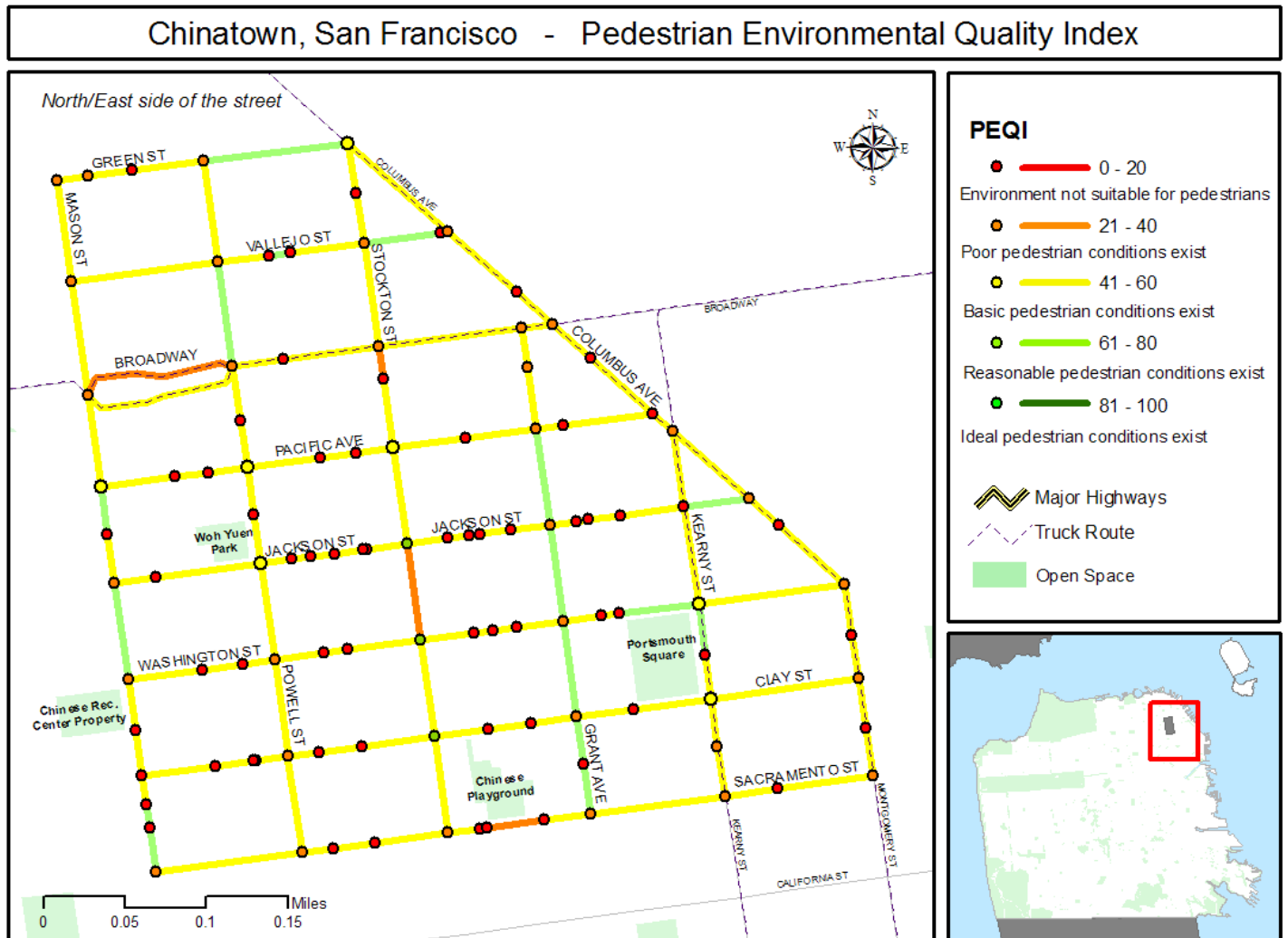   - Sacramento between Hang Ah and Waverly Place
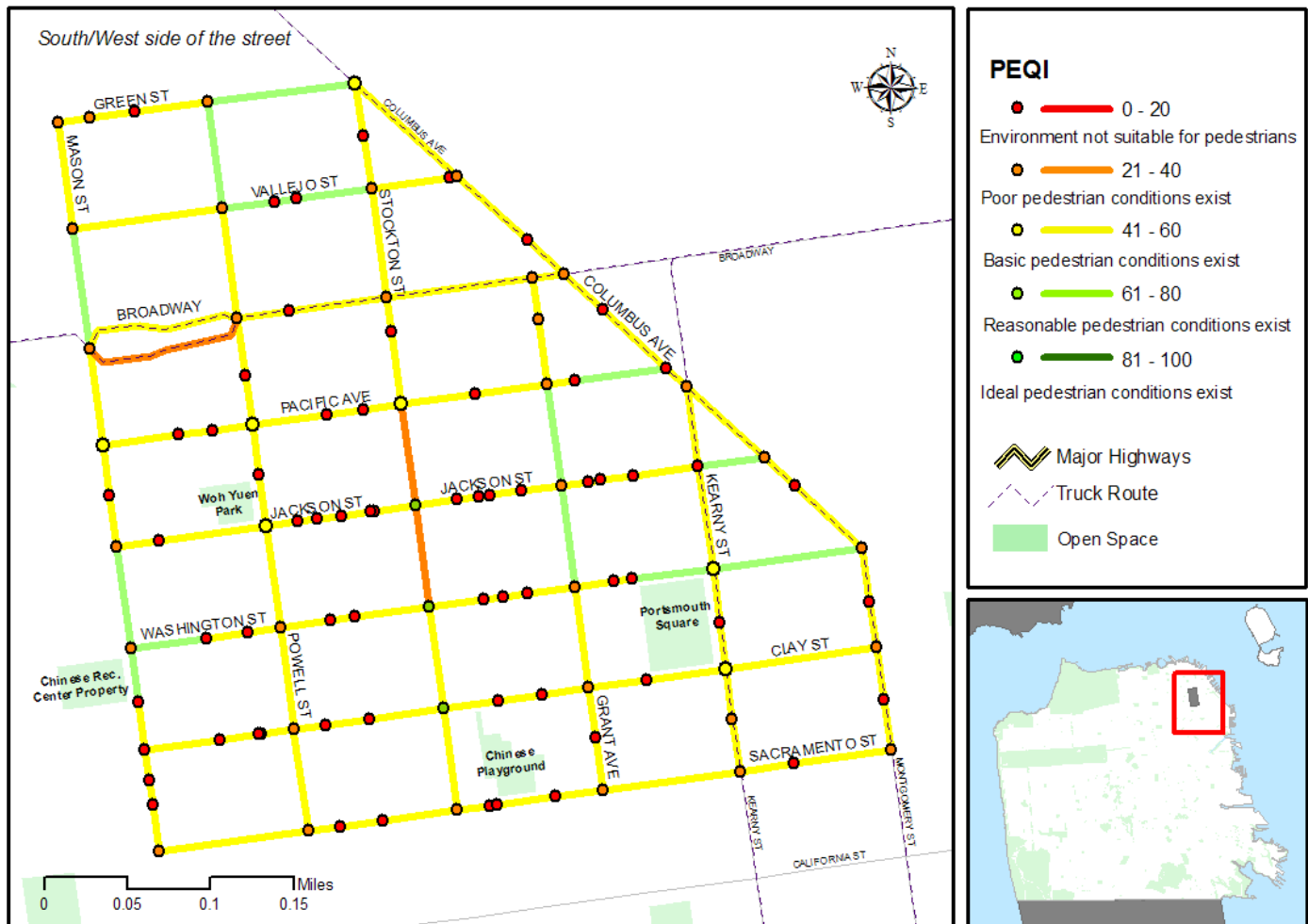
Figure 2: PEQI for South/West Side of the Street

- Poor Pedestrian Conditions exist:
    - Broadway between Powell to Mason
    - Stockton between Pacific and Jackson
    - Stockton between Jackson and Washington

5) Pedestrian Counts

Weekday (Tuesday, Wednesday, or Thursday) from 10AM-Noon
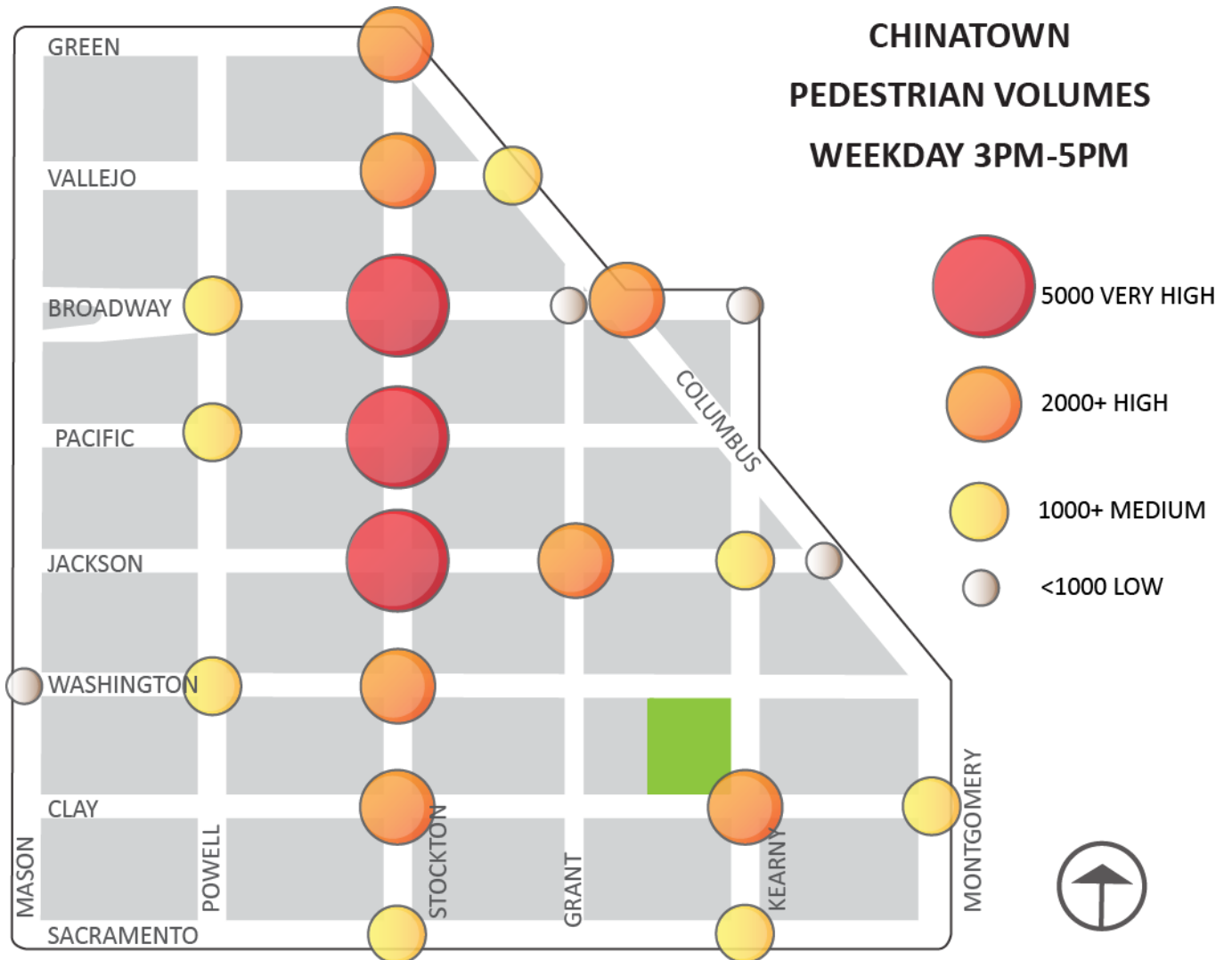
- Very High (5000+ Pedestrian Volumes):
    - Broadway and Stockton
    - Stockton and Pacific
    - Stockton and Jackson

- High (2000+ Pedestrian Volumes):
    - Green and Columbus
    - Vallejo and Stockton
    - Stockton and Washington
    - Stockton and Clay
    - Grant and Jackson
    - Kearny and Clay
    - Montgomery and Clay
    - Columbus and Broadway

CHINATOWN PEDESTRIAN VOLUMES WEEKDAY 3PM-5PM

Legend:
- 5000 VERY HIGH
- 2000+ HIGH
- 1000+ MEDIUM
- <1000 LOW

- Very High (5000+ Pedestrian Volumes):
    o Broadway and Stockton
    o Stockton and Pacific
    o Stockton and Jackson

- High (2000+ Pedestrian Volumes):
    o Green and Columbus
    o Vallejo and Stockton
    o Stockton and Washington
    o Stockton and Clay
    o Grant and Jackson
    o Kearny and Clay
    o Montgomery and Clay
    o Columbus and Broadway

CHINATOWN
PEDESTRIAN VOLUMES
WEEKEND 10AM-12PM

5000 VERY HIGH

2000+ HIGH

1000+ MEDIUM

<1000 LOW
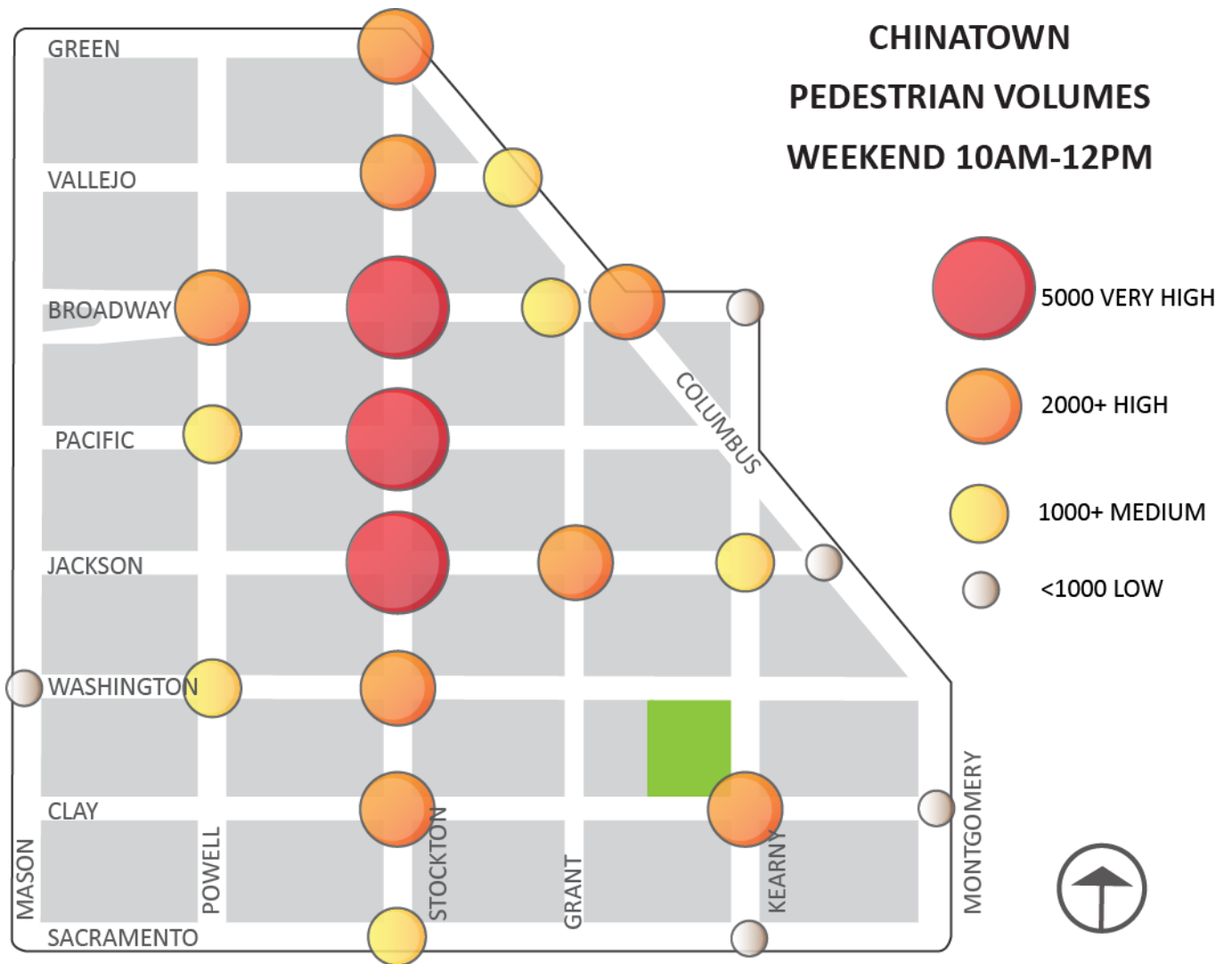
- Very High (5000+ Pedestrian Volumes):
  - Broadway and Stockton
  - Stockton and Pacific
  - Stockton and Jackson

- High (2000+ Pedestrian Volumes):
  - Green and Columbus
  - Vallejo and Stockton
  - Stockton and Washington
  - Stockton and Clay
  - Grant and Jackson
  - Kearny and Clay
  - Montgomery and Clay
  - Columbus and Broadway

6) Bicyclist Volumes

Weekday 10am-12pm

Legend: ■ Adult Male ■ Adult Female ■ Child
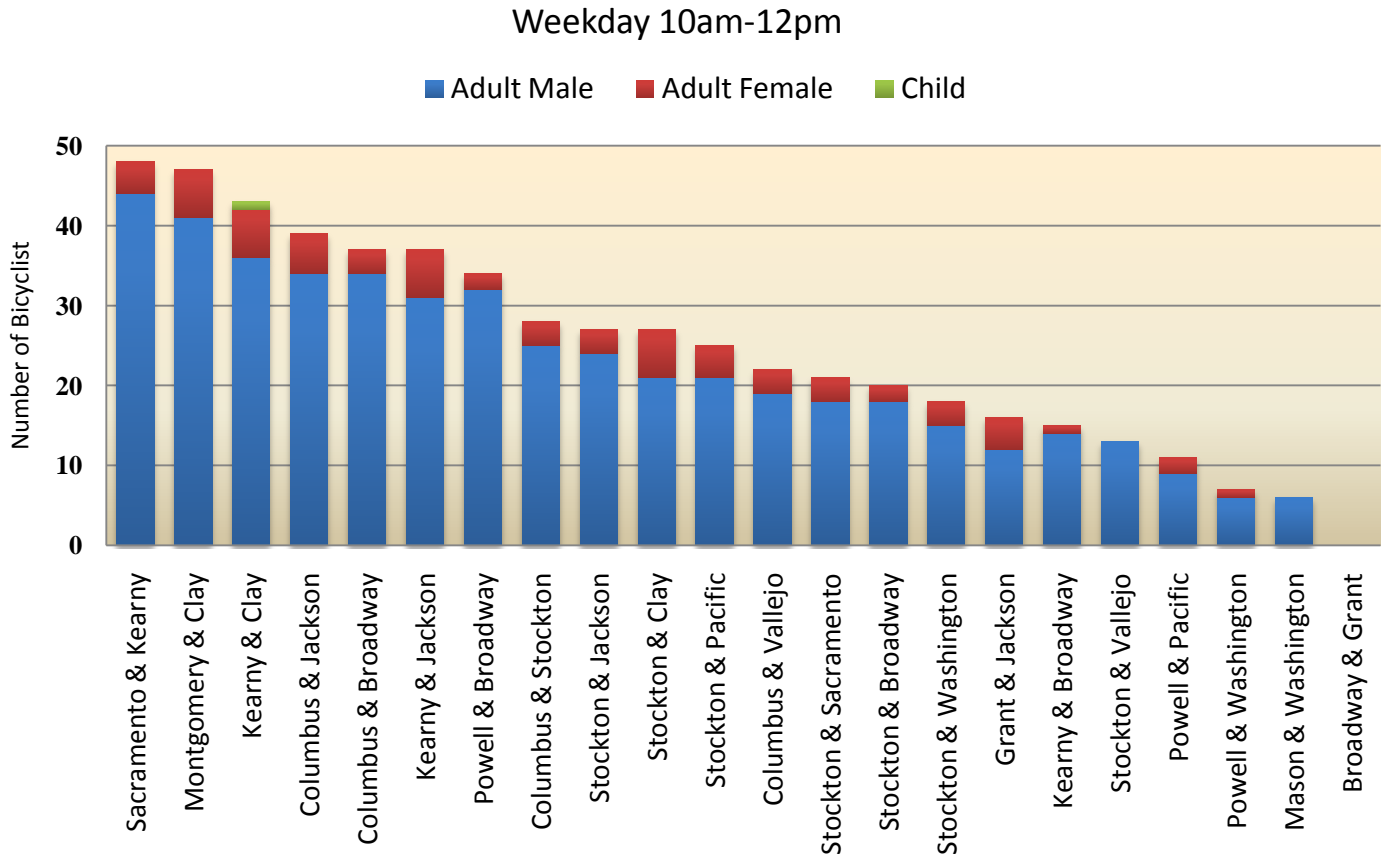
- Popular weekday morning bicycle corridors are Kearny and Columbus Avenue.

- Other popular weekday morning bicycle intersections:
    - Kearny & Sacramento, Kearny & Clay, and Kearny & Jackson
    - Montgomery & Clay (Route 11)
    - Columbus & Jackson, Columbus & Broadway (Route 10), and Columbus & Stockton (Route 11)

Weekday 3-5pm

Legend: ■ Adult Male   ■ Adult Female   ■ Child

Y-axis: Number of Bicyclist (0 to 80)

X-axis categories:
Columbus & Broadway, Montgomery & Clay, Stockton & Broadway, Stockton & Clay, Columbus & Stockton, Stockton & Washington, Kearny & Clay, Sacramento & Kearny, Stockton & Jackson, Kearny & Jackson, Stockton & Vallejo, Powell & Broadway, Columbus & Jackson, Stockton & Pacific, Columbus & Vallejo, Kearny & Broadway, Stockton & Sacramento, Powell & Washington, Powell & Pacific, Broadway & Grant, Grant & Jackson, Mason & Washington

- Popular weekday afternoon bicycle corridors are Montgomery, Stockton, and Columbus Avenue.

- Other popular weekday afternoon bicycle intersections:
  o Columbus & Broadway and Columbus & Stockton (Route 11, Route 10)
  o Montgomery & Clay (Route 11)
  o Stockton & Broadway, Stockton & Clay, Stockton & Washington and Stockton & Jackson (Route 17)
  o Kearny & Clay, Kearny & Sacramento, and Kearny & Jackson

- The Stockton & Clay intersection count was influenced by a supervised youth bike group tour.

Weekend 10-12pm

Legend: Adult Male, Adult Female, Child
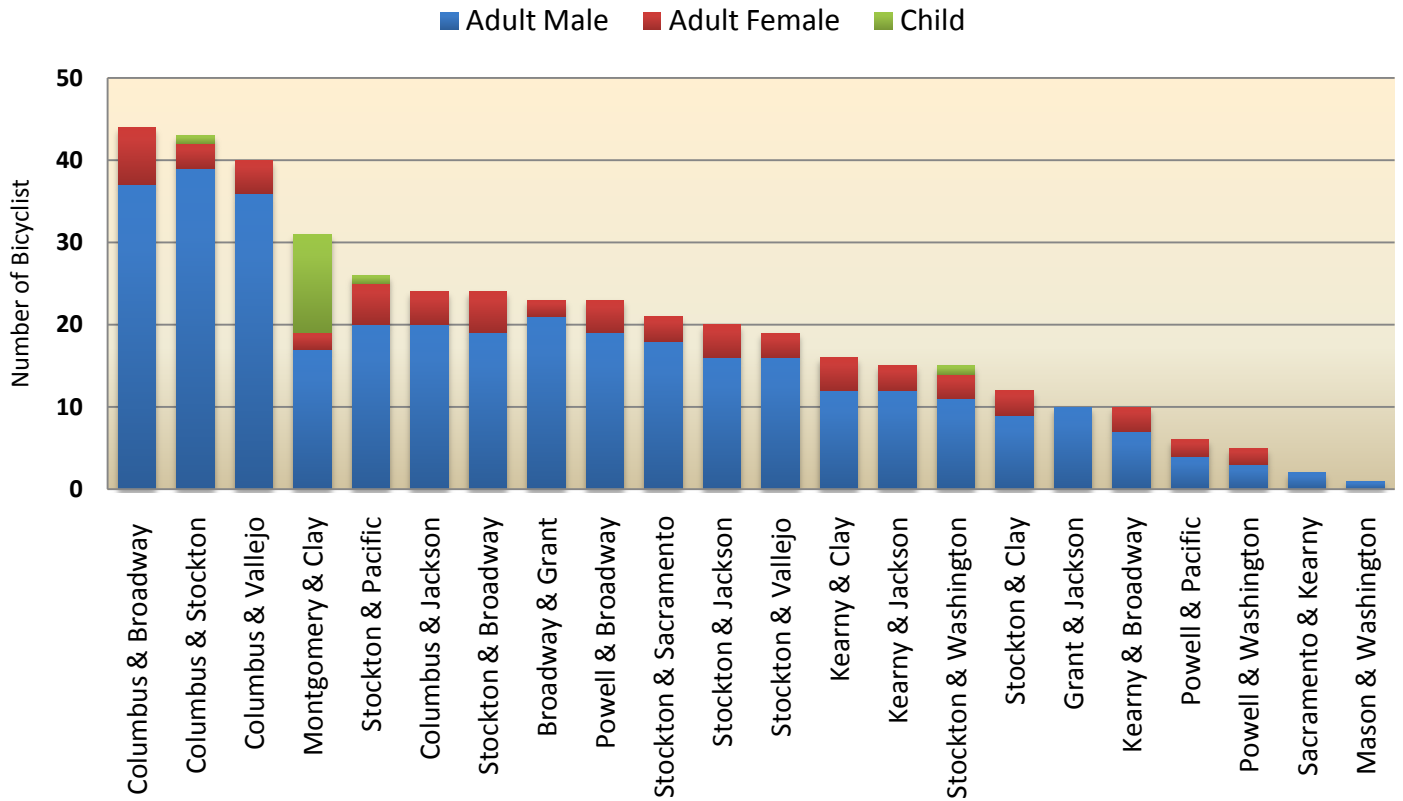
- The most popular weekend bicycle corridor is Columbus Avenue.

- Other popular weekend bicycle intersections:
    - Columbus & Broadway (Route 10), Columbus & Stockton, and Columbus & Vallejo (Route 11)
    - Montgomery & Clay (Route 11)

- The Montgomery and Clay intersection count was influenced by a supervised youth tour bike group.

7) Community Public Forum

CCDC and TRIP held a Pedestrian Safety Plan Community Forum on July 14th, 2010 from 4:15pm-6:00pm at the CCDC offices. Approximately 21 people attended the meeting. Most attendees spoke Cantonese as their primary language. The meeting started with a presentation from a CCDC planner. Two CCDC community organizers were present at the meeting to translate for the facilitator and meeting attendees.

Based on the Better Streets Plan and the Chinatown Area Plan in the City's General Plan, CCDC and TRIP categorized the 21 priority intersections into 4 typologies. We used these typologies to structure the discussion around key problem areas while easing community understanding and maximizing their input. Each type was presented on a poster board with descriptive characteristics and possible solutions.

Typology 1: Community Commercial Streets

■ Like ■ Dislike

Chart: Number of Responses

Category	Like	Dislike
Scramble Crosswalk	4	1
Curb Extension/Bulb Out	3	
Pedestrian Countdown Signal	3	
Cross Ladder	2	
Sidewalk Treatment	2	
Pedestrian Scale Lighting	2	
Yield Pedestrian Signs	1	
Improved No Turn on Red Signs	1	
Individual Seating	1	
Consolidated Parking Meters		1
Consolidated Newspaper Stands		1
Raised Crosswalk		3

- Most community attendees said that a scramble pedestrian signal is beneficial, especially to guide crossings along Stockton Street and to avoid conflict with vehicles.

- They also liked the idea of curb extension and bulb-outs, particularly due to Stockton Street's congested sidewalks.

- Due to the high volume of elderly pedestrians in Chinatown, community attendees wanted to see longer pedestrian countdown signals at the signalized intersections.

- Raised crosswalks were not seen as a feasible and realistic option along a congested corridor such as Stockton Street.

Typology 2: Business Commercial Streets

Legend: ■ Like ■ Dislike

(Y-axis: Number of Responses, 0–5)

Categories:
- Improved No Turn on Red Signs — 4 (Like)
- Curb Extension/Bulb Out — 2 (Like)
- Raised Crosswalk — 2 (Like)
- Pedestrian Countdown Signal — 2 (Like)
- Seating along Store Fronts — 2 (Like)
- Pedestrian Scale Lighting — 2 (Like)
- Individual Seating — 1 (Like)
- Consolidated Parking Meters — 1 (Dislike)
- Consolidated Newspaper Stands — 4 (Dislike)
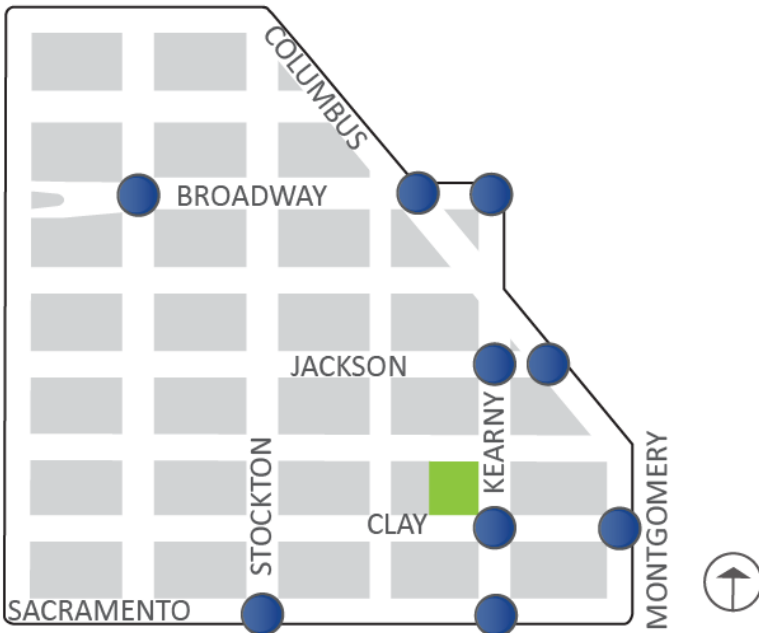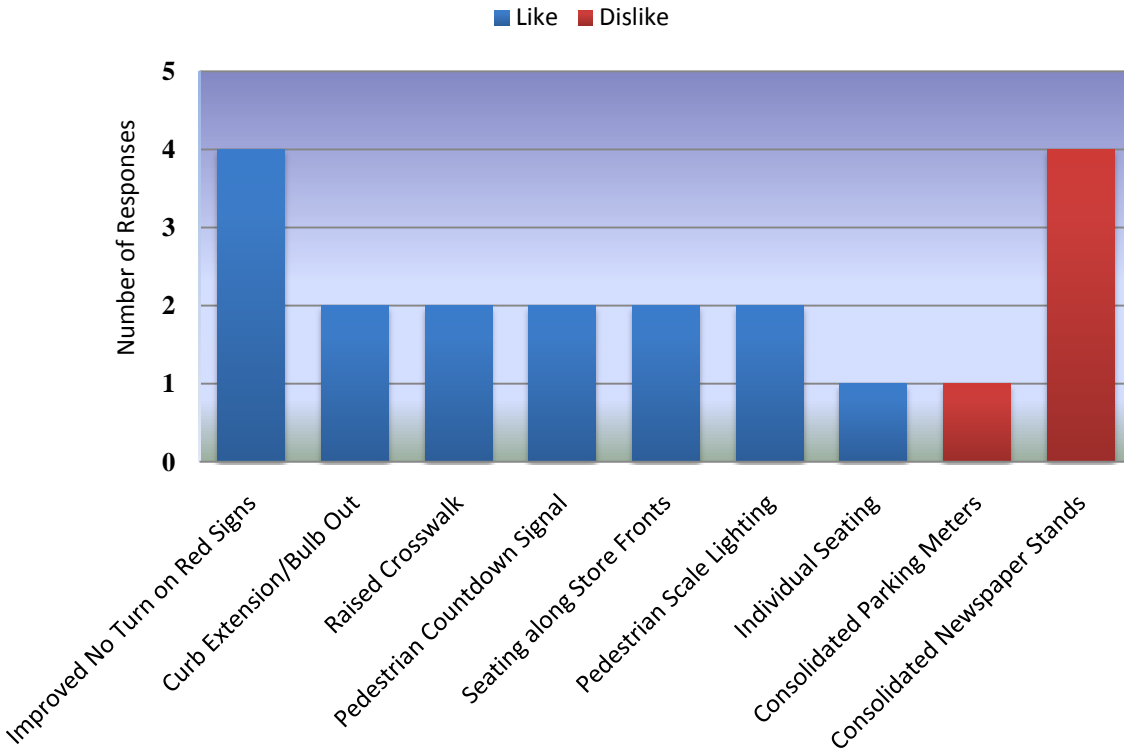
- Community members liked the idea of improved no turn on red signals, particularly on Kearny Street where many fast moving cars would turn onto neighborhood streets.

- Consolidated newspaper stands were not a popular option because attendees felt that sidewalks in Chinatown need to be less cluttered in general and should have minimal furnishings.

Typology 3: Community Residential Streets
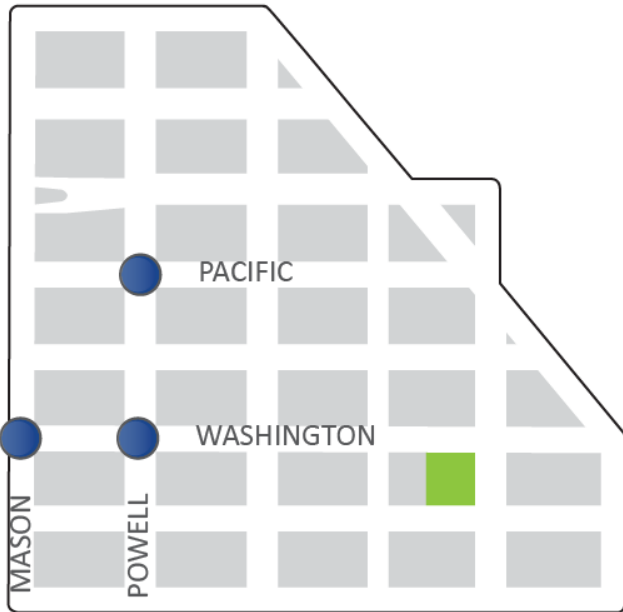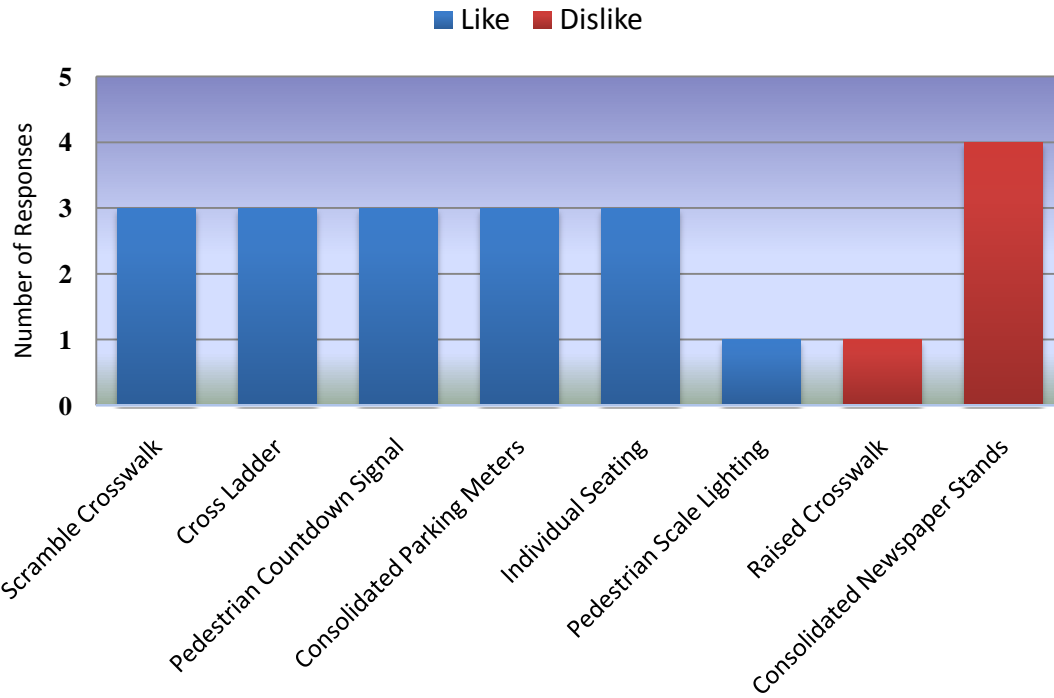
■ Meeting attendees generally liked scramble crosswalk, cross ladder, (longer) pedestrian countdown signals, consolidated parking meters, and individual seating along intersections along Powell and Mason Streets that exhibit a residential character.

■ Consolidated newspaper stands were not a popular option because attendees felt that sidewalks in Chinatown need to be less cluttered in general and should have minimal furnishings.

Typology 4: Tourist Destination Streets
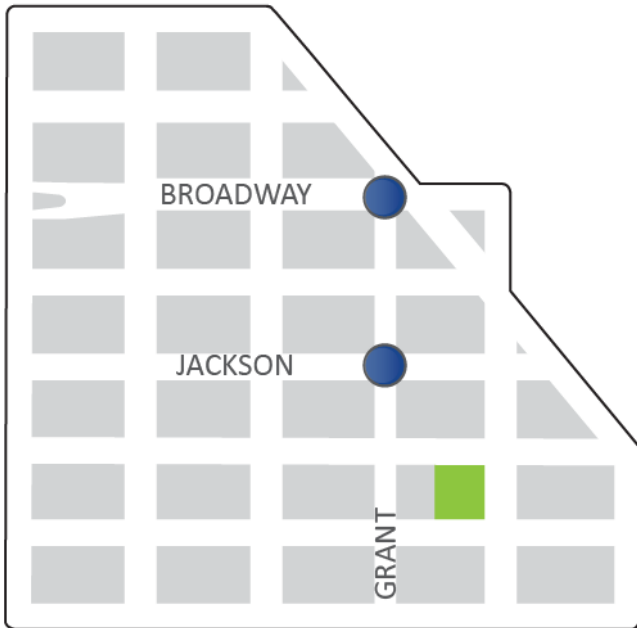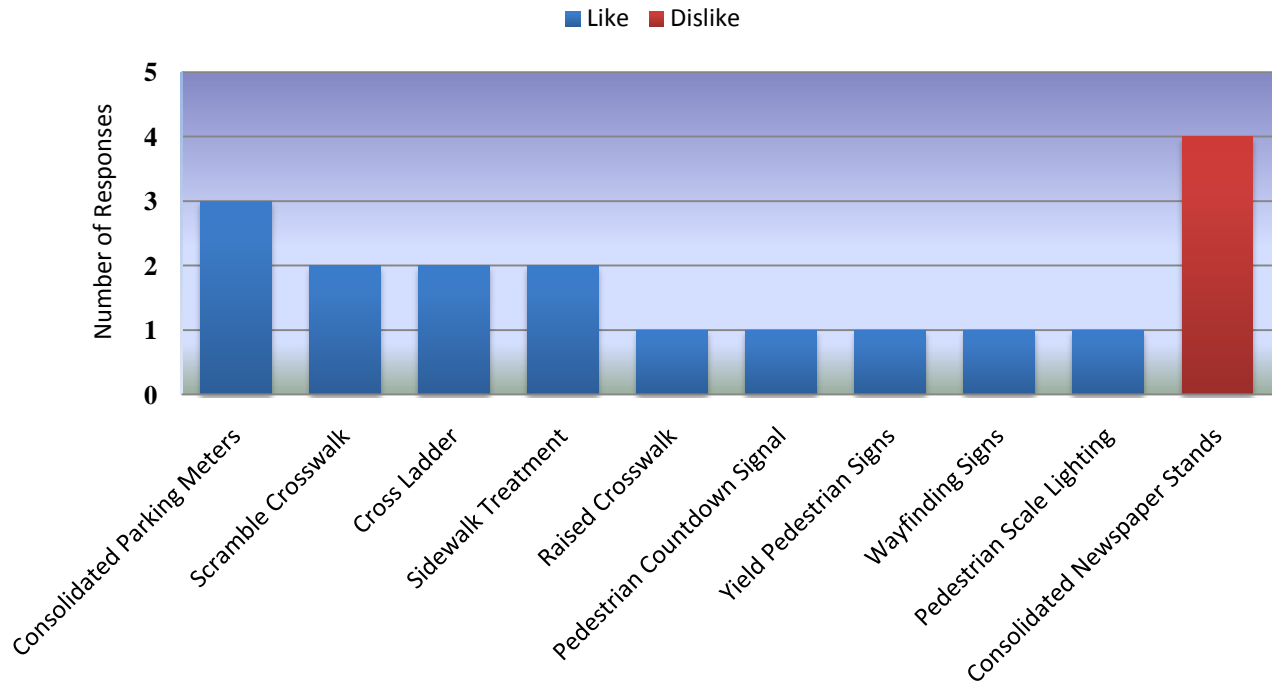
- Consolidated parking meters, scramble crosswalk, cross ladder, and sidewalk treats were seen as favorable options along Grant Avenue and Columbus Avenue.

- Consolidated newspaper stands were not a popular option because attendees felt that sidewalks in Chinatown need to be less cluttered in general and should have minimal furnishings.

Next Steps

1. **Seek Priority Project Funding Sources**
   a. Seek federal, state, and local grants for planning and implementation of priority areas
      - Safe Routes to School program funding
      - Safe Routes for Seniors program funding
      - Americans with Disabilities Act funding
   b. Opportunities for adding improvements along with other planned development/redevelopment projects

2. **Solicit Community Input on Proposed Recommendations**
   a. Coordinate a community meeting to present final recommendations
   b. Incorporate community feedback into final document
   c. Use feedback to inform next steps

3. **Develop Cost Estimate of Improvements**
   a. Identify base costs for each improvement
   b. Develop a list of less costly alternatives for expensive design features (ex. Bulb-Outs)
   c. Prepare estimate of maintenance costs for improvements requiring upkeep

4. **Statistical Analysis of SFPD Collision data**
   a. Further analysis of SFPD collision data
      - Collisions occurring directly at an intersection vs. along street segments
      - Collisions that list vehicle operation error as primary violation
      - Collisions that list pedestrian error as primary violation
      - Code data from police reports and add to SPSS for behavioral analysis

5. **Statistical Analysis of PEQI data**
   a. Further analysis of PEQI data
      - Number & Percentage of street segments fitting into each ranking category
      - Number & Percentage of intersections with crosswalks and without crosswalks
      - Number & Percentage with pedestrian countdown signals, etc.

6. **Wayfinding Analysis and Planning**
   a. Develop a menu of potential wayfinding designs
      - Develop a context sensitive wayfinding strategy for Chinatown and surrounding neighborhoods
      - Determine best method(s) of implementation:
         1. Public Arts as wayfinding: types, sizes, and locations
         2. Signage for wayfinding: types, sizes, locations, and text

1. Which intersections in Chinatown do you find most dangerous? (Each respondent may choose 2.)

2. Have you, or your customers, gotten hurt slipping on sidewalks or at curbs?
   - ☐ Yes and if so, where: _____
   - ☐ No

3. Which intersections do you cross most often? If they feel safer to you, what makes them safe?

4. Which intersections do you avoid crossing on purpose and why?

5. What is the difference between a safe intersection and a dangerous intersection?

6. Which alleyways do you like to use and why?

7. Which alleyways do you not like to use and why?

8. How do you get to Chinatown every day? (Check the longest route.)
   - ☐ Drive. From where? _____ Where do you park? _____
   - ☐ Walk. From where? _____
   - ☐ Bus. Which lines? _____

9. How do your customers get to Chinatown? (Mark the longest route.)
   - ☐ Drive. From where? _____ Where do they park? _____
   - ☐ Walk. From where? _____
   - ☐ Bus. Which lines? _____

10. What are your ideas on improving pedestrian traffic safety in and around Chinatown?

Intersection	SFPD Collision Data		Stakeholder Mention		Planning Projects/City Policies				Existing Transit			SCORE
	Injuries	Fatalities (1X10)	Residents	Merchants	Central Subway	Broadway	DPT 5-yr Repaving Plan	Transit Preferential Streets	Cable Car	Buses	Transfer Station	
Columbus/Broadway/Grant	23	0	1			1	4	4		1	2	36
Stockton/Jackson	12	10	1	1				2		1	2	29
Stockton/Broadway	9	10	1	1		1		2		1	2	27
Stockton/Washington	8	10	1	1	1			2		1	2	26
Sacramento/Stockton	20	0	1					2		1		24
Stockton/Pacific	12	0	1	1				2		1	2	19
Sacramento/Kearny	5	10		1						1		17
Kearny/Clay	14	0	1							1		16
Powell/Washington	13	0	1	1					1			16
Columbus/Vallejo	7	0					4	2		1	2	16
Stockton/Clay	9	0	1					2		1	2	15
Columbus/Stockton	8	0					2	2		1	2	15
Kearny/Jackson	3	10	1							1		15
Mason/Washington	3	10							1			14
Grant/Jackson	13	0										13
Powell/Pacific	9	0		1						1	2	13
Kearny/Broadway	10	0	1							1		12
Stockton/Vallejo	5	0					2	2		1	2	12
Columbus/Jackson	3	0					4	2		1	2	12
Montgomery/Clay	10	0								1		11
Powell/Broadway	2	0	1	1		1	2	2		1		10

Pedestrian Volume Raw Counts

Weekday 10am-12pm								
Intersection	Weather	Adult Bicyclist		Child	Sidewalk	Adult Pedestrian	*s	Child
		Male	Female					
Broadway/Grant	Overcast	0	0	0	0	574	0	8
Columbus/Broadway (E-W)	Overcast	11	1	0	0	897	0	12
Columbus/Broadway (N-S)	Overcast	23	2	0	5	827	0	17
Columbus/Jackson	Sunny	34	5	0	6	783	0	17
Columbus/Stockton	Cloudy/Light Rain	25	3	0	0	2093	0	78
Columbus/Vallejo	Raining	19	3	0	5	956	0	5
Grant/Jackson	Overcast (55D)	12	4	0	1	2775	1	53
Kearny/Broadway	Sunny	14	1	0	5	582	1	14
Kearny/Clay	Sunny with clouds	36	6	1	0	2426	0	32
Kearny/Jackson	Sunny/Clear	31	6	0	8	1322	1	21
Mason/Washington	Sunny	6	0	0	1	431	2	41
Montgomery/Clay	Sunny/Mild	41	6	0	9	2018	2	6
Powell/Broadway	Sunny	32	2	0	6	1315	2	35
Powell/Pacific	Sunny	9	2	0	0	1287	0	111
Powell/Washington	Overcast/Sunny	6	1	0	0	1020	1	78
Sacramento/Kearny	Sunny	44	4	0	7	1605	0	27
Stockton/Broadway (E-W)	Cloudy/Light Rain	18	2	0	8	3950	0	75
Stockton/Broadway (N-S)	Cloudy/Light Rain	0	0	0	0	3671	0	79
Stockton/Clay	Sunny	21	6	0	2	3810	0	108
Stockton/Jackson	Sunny	24	3	0	2	6957	0	133
Stockton/Pacific	Sunny/Cool	21	4	0	2	7715	1	169
Stockton/Sacramento	Overcast	18	3	0	3	1530	1	13
Stockton/Vallejo	Partly cloudy	13	0	0	0	3437	0	63
Stockton/Washington	Sunny/Chilly	15	3	0	2	3908	3	147

Weekday 3-5pm								
Intersection	Weather	Adult Bicyclist		Chil	Sidewalk	Adult Pedestrian	*	Child
		Mal	Female					
Broadway/Grant	Sunny/2nd hr. Cloudy	7	0	0	3	712	1	18
Columbus/Broadway (E-W)	Sunny/2nd hr. Cloudy	25	3	0	1	1281	2	69
Columbus/Broadway (N-S)	Sunny/2nd hr. Cloudy	40	8	0	7	1275	1	24
Columbus/Jackson	Sunny	31	2	0	3	827	0	12
Columbus/Stockton	Sunny/Cloudy	51	4	0	10	3025	4	83
Columbus/Vallejo	Sunny	22	1	0	2	1115	1	65
Grant/Jackson	Sunny	5	1	0	0	2524	0	37
Kearny/Broadway	Sunny/Warm	17	2	0	9	957	1	115
Kearny/Clay	Sunny	43	6	0	4	2355	0	82
Kearny/Jackson	Sunny, Few clouds	32	5	0	4	1374	1	63
Mason/Washington	Cloudy/Overcast	0	0	0	2	514	0	171
Montgomery/Clay	Sunny	58	13	0	0	1882	1	15
Powell/Broadway	Sunny	30	4	0	3	1427	2	113
Powell/Pacific	Sunny	9	1	0	3	1468	1	68
Powell/Washington	Sunny	11	1	0	0	1297	0	143
Sacramento/Kearny	Sunny/Light & Med Rain	41	4	0	8	1672	2	33
Stockton/Broadway (E-W)	Sunny	37	6	1	3	2892	0	113
Stockton/Broadway (N-S)	Sunny	23	1	0	5	4547	0	173
Stockton/Clay	Sunny	36	10	11	7	3684	3	158
Stockton/Jackson	Sunny/Mild	37	4	1	2	6540	0	255
Stockton/Pacific	Sunny	26	3	0	1	6966	4	187
Stockton/Sacramento	Sunny	13	3	0	0	1543	5	69
Stockton/Vallejo	Sunny/Clear	27	7	1	0	3417	2	36
Stockton/Washington	Sunny	50	4	1	2	4127	4	242

Weekend 10am-12pm								
Intersection	Weather	Adult Bicyclist		Child	Sidewalk	Adult Pedestrian	*s	Child
		Male	Female					
Broadway/Grant	Overcast (55D)	21	2	0	5	1956	0	84
Columbus/Broadway (E-W)	Overcast (55D)	24	4	0	3	1261	0	48
Columbus/Broadway (N-S)	Overcast (55D)	13	3	0	3	1165	1	36
Columbus/Jackson	Sunny	20	4	0	4	546	0	22
Columbus/Stockton	Sunny (70D)	39	3	1	2	3569	1	238
Columbus/Vallejo	Sunny	36	4	0	7	1983	2	55
Grant/Jackson	Sunny	10	0	0	1	3593	0	219
Kearny/Broadway	Sunny	7	3	0	3	834	0	21
Kearny/Clay	Sunny	12	4	0	2	2442	3	117
Kearny/Jackson	Sunny	12	3	0	5	1327	1	99
Mason/Washington	Sunny	1	0	0	0	765	0	73
Montgomery/Clay	Overcast	17	2	12	0	676	0	12
Powell/Broadway	Cloudy	19	4	0	6	2523	0	225
Powell/Pacific	Sunny	4	2	0	1	1948	0	130
Powell/Washington	Sunny	3	2	0	2	1538	0	158
Sacramento/Kearny	Sunny/Mild	2	0	0	0	382	0	12
Stockton/Broadway (E-W)	Sunny/Mild	13	4	0	1	4416	4	152
Stockton/Broadway (N-S)	Sunny/Mild	6	1	0	0	5443	1	18
Stockton/Clay	Overcast	9	3	0	2	3399	1	210
Stockton/Jackson	Sunny (60D)	16	4	0	1	9343	0	498
Stockton/Pacific	Sunny	20	5	1	0	9060	1	372
Stockton/Sacramento	Sunny/Breezy	18	3	0	0	1510	1	39
Stockton/Vallejo	Sunny	16	3	0	10	4712	0	253
Stockton/Washington	Sunny (65D)	11	3	1	0	4700	2	257

Community Meeting Results

Treatment	Intersection Type 1	Intersection Type 2	Intersection Type 3	Intersection Type 4
Scramble Crosswalks	4 Yes, 1 No		3 Yes	2 Yes
Cross ladder	2 Yes		3 Yes	2 Yes
Sidewalk Treatment	2 Yes			2 Yes
Curb Extension/ Bulb Out	3 Yes	2 Yes		
Raised Crosswalk	3 No	2 Yes	1 No	1 Yes
Pedestrian Countdown Signal	3 Yes	2 Yes	3 Yes	1 Yes
Yield Pedestrian Signs	1 Yes			1 Yes
Improved No Turn on Red Signs	1 Yes	4 Yes		
Wayfinding Signs				1 Yes
Consolidated Parking Meters	1 No	1 No	3 Yes	3 Yes
Consolidated Newspaper Stands	1 No	4 No	4 No	4 No
Trees				
Individual Seating	1 Yes	1 Yes	3 Yes	
Seating along Store Fronts		2 Yes		
Pedestrian Scale Lighting	2 Yes	2 Yes	1 Yes	1 Yes
Planters				

About CCDC/TRIP

On January 1, 1998, the Chinatown Resource Center and the Chinese Community Housing Corporation formed the **Chinatown Community Development Center (CCDC).** In partnership with the **Chinatown Transportation Research and Improvement Project (TRIP)**— an active 36-year old volunteer organization committed to improving transit service and pedestrian safety in San Francisco's densest residential neighborhoods— CCDC has worked with community members and city agencies to advocate for transportation improvements in Chinatown and North Beach. Our transportation justice work has resulted in pedestrian improvements along Stockton Street and streetscape improvements along Broadway, two new community-serving bus lines, and better public transit service to relieve congestion in low-income immigrant communities.

CCDC staff and TRIP members continue to provide education and participatory planning workshops to empower community residents to understand neighborhood transportation issues. We offer opportunities for low-income, monolingual immigrant populations historically excluded from the transportation planning process to give meaningful input and take action on those issues. Our core mission is to advocate for grassroots-based planning processes to empower community members and residents, providing the necessary multilingual outreach and education to develop strategies and improve the quality of life in San Francisco.

Acknowledgements

Community Groups:
Adopt-An-Alleyway Empowerment Project
Chinatown Alleyways Tour
Community Tenants Association
Ping Yuen Residents Improvement Association
SRO Families Collaborative
Walk SF

City Departments:
San Francisco Department of Public Health:
Environmental Health
Program on Health Equity and Sustainability
San Francisco Police Department:
Public Affairs Office
The Traffic Center

Collaborators:
1) Chinatown Community
   Development Center:

Cindy Wu
Deland Chan
Vivian Chang
Tan Chow
Cathie Lam

2) Chinatown Transportation
   Research and Improvement Project:

Wil Din
Landy Dong
Helen Kwan
Harvey Louie
Ken Nim
Wendy Tran

Interns:
Abigail Shull
Sandra Wong
Morgan Galli

Volunteers:
Daniel Bean
Steve Bowles
Yvonne Chan
Irene Lee
Mike Li
Richard Marin
Michael Rhodes
Nathan Rogers
Adrien Salazar
Gregory Wong

華協中心

Works Cited

[i] Chinatown Pedestrian Environmental Quality. San Francisco Department of Public Health, Program on Health, Equity and Sustainability, August 2010.

[ii] San Francisco Department of Public Health, Healthy Development Measurement Tool, "Proportion of population living below the poverty level": http://www.thehdmt.org/indicators/view/163

[iii] Chinatown Pedestrian Environmental Quality. San Francisco Department of Public Health, Program on Health, Equity and Sustainability, August 2010.

[iv] C.Cubbin, F.B. Le Clere, G.S. Smith. 2000. Socioeconomic Status and the Occurrence of Fatal and Nonfatal Injury in the United States. American Journal of Public Health. 90(1): 70-77.

[v] San Francisco Department of Public Health, Healthy Development Measurement Tool, "Proportion of Streets with Annual Average Daily PM 2.5 Emissions 0.2 ug/m3 or Greater": http://www.thehdmt.org/indicators/view/40

[vi] City Oakland Pedestrian Master Plan, p. 18

[vii] Tom Vanderbilt, Traffic: Why We Drive the Way We Do (New York: Vintage Books, 2008, p. 178) citing Timothy J. Gates and Robert E. Maki, "Converting Old Traffic Circles to Modern Roundabouts: Michigan State University Case Study." In ITE Annual Meeting Compendium (Washington, D.C.: Institute for Transportation Engines, 2000).

[viii] Tom Vanderbilt, Traffic: Why We Drive the Way We Do (New York: Vintage Books, 2008, p. 207) citing National Highway Traffic Safety Administration, "Literature Review on Vehicle Travel Speeds and Pedestrian Injuries," DOT HS 809 021, October 1999.