Using Video Data to Enhance Pedestrian Safety

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Session Objectives

- Discover why traffic counts provide limited information relative to pedestrian safety
- Analyze how site context can influence pedestrian safety
- Utilize video data to improve the safety of crossings in your community
- Utilize video data to communicate study findings to the public

Pre-Study Background

- Ongoing Citizen Concerns
- A New Focus on Non-Motorized Mobility
- Mayor’s Direction for Action
Purpose of Issaquah Study

• Identify locations where the public was uncomfortable crossing the street
• Recommend enhancements to improve the identified crossings

Study Process

• Hold community open house and workshop
• Review available data including accident history and citizen input
• Identify priority pedestrian crossing locations
• Conduct field reviews
• Collect current pedestrian and vehicle counts and video recordings
• Evaluate field and video data
  – NCHRP REPORT 562: Improving Pedestrian Safety at Unsignalized Crossings, 2006
  – HRT-04-100: Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations, 2005
• Present recommendations for enhancements at a follow up public meeting
Community Open House

- Residents identified concerns with crossings at a July 27 open house by placing pins in aerial maps and submitting written comments.

Resulting Study Locations
Why Video?

• If a picture is worth a thousand words a video must be priceless
• Actually, it costs about $400
• Traffic counts provide a limited amount of data
• NCHRP REPORT 562 identified the value of video but technology was not available in 2006 – Required a truck

Limitations of Traffic Counts

• Volumes Only
• No Behaviors
  – Pedestrians
  – Bicycles
  – Autos
  – Trucks
  – Other
Before You Start

• Check with local agency for permit requirements
• Inform the public information officer and other departments that may get calls regarding the equipment
• Consider a handout or web page describing the process

Privacy Issues

• Low resolution video is sufficient for counting but does not allow for facial or license plate recognition
• Does allow for identification of approximate age/ability of non-motorized users
Miovision Video Collection Unit

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What Can Video Show You?

- Video shows how facilities are being used
  - Vehicles
    - Complying with signs and markings
    - Queuing
    - Yielding
  - Pedestrians
    - Appropriate use of crossing
    - Risk taking
  - Bicycles
    - Appropriate use of crossing
    - Risk taking

Typical Pedestrian Count

- The count identifies two pedestrian crossings between 5:45 and 6:00 PM

- What did the video show?
Video Observation

School Crossing Count

- 247 crossing NE Park Drive
- 233 crossing School driveway
- 888 entering vehicles
- Adult and student crossing guards
School Crossing Still

School Crossing Video
Examples of Behaviors vs. Numbers

Unmarked Trail Crossing
Unmarked Trail Crossing

Late for the Library?
Crosswalk vs. Shortest Path

Far Side Crosswalk Conflict
Left-turns Across Crosswalk

Vehicle Creeping Over Crosswalk
Cyclist Taking the Lane

Young Cyclist Using Crosswalk
New Trail Too Far From Crossing

Ad Hoc Crossing Flag
Visually Impaired?

Shadows, Light, and Glare

• Same location
• 8:00 AM
• Noon
• 3:00 PM
• 6:00 PM
• 8:00 PM
General Findings of the Study

• All of the crossings reviewed in the study met accepted national standards in place at the time of their installation

• Enhancements could be made to help the visibility of certain crossings, as well as the usability of the crossing

• The four “E’s” of traffic calming (Enhancement, Engineering, Education (or Engagement), and Enforcement) are necessary to provide the highest level of safety for all users of the transportation system
Additional Findings - People

- People demonstrated lower compliance to signs and markings than vehicles.
- People did not appear to exercise as much caution as needed in many circumstances:
  - Did not wait for approaching vehicles to stop – assumed they would
  - Did not appear to make eye contact with drivers – assumed the right-of-way
- Some people were unwilling to use facilities that required extra distance to use:
  - Mid block pedestrian signal 300 feet from trail crossing
  - Marked crosswalk at back of large curb radius
- Some people did not take advantage of existing facilities:
  - Did not activate pedestrian beacons
  - Did not use marked crosswalks

Additional Findings - Vehicles

- Vehicles demonstrated good yielding rates to pedestrians.
- Vehicle yielding rates declined in higher volume locations.
- Queuing from upstream traffic signals/controls impacted several crossings.
- All-way stop intersections experienced conflicts with “far side” and left-turn pedestrian crossing conflicts.
Additional Findings - Facilities

• More frequent maintenance of existing systems, including functionality tests should be considered
  – Markings
  – Sweeping
  – Solar/battery powered systems

• Existing pedestrian crossing treatments should be reviewed to determine if newer pedestrian crossing systems should be considered
  – Sign legends, colors, and supplementary plaques
  – RRFB
  – Pedestrian Hybrid Signal

• Growth has the potential to change the type of crossing controls at a previously improved location
  – Increased vehicle volumes may warrant more control or other enhancements
  – Growth may increase pedestrian demand at existing locations

Advice for Drivers

• Obey the speed limit
• Watch for and comply with traffic control devices
  – Obey signs and signals
  – Comply with pavement markings
    • Don’t block crosswalks when waiting at signals, roundabouts, or stop signs
• Make eye contact with pedestrians
  – Watch for darting or distracted pedestrians
Advice for Pedestrians

• Use marked crosswalks when available
• Make eye contact with drivers
  – Paint doesn’t stop cars
  – Signs don’t stop cars
  – Signals don’t stop cars
  – Drivers stop cars
• Don’t assume cars will stop
  – Watch for inattentive/distracted drivers
  – Wait for cars to stop before proceeding

Advice for Bicyclists

• Use marked bike lanes when available
• Signal your turns
• Make eye contact with drivers
  – Paint doesn’t stop cars
  – Signs don’t stop cars
  – Signals don’t stop cars
  – Drivers stop cars
Communicating Study Findings

• Using the still images from the video communicated much more information to the public

• Public feedback from the final meeting was positive

• Public Input and Study Recommendations considered by City Council for 2016 Budget Development

Issaquah City Council Action

• The City of Issaquah plans to spend $820,000 to improve pedestrian crossings around the City in 2015 and 2016

• The City Council acted to lower speed limits on several streets
2015 Actions

- Front Street/Dogwood Install Turning Vehicles Yield To Pedestrians Sign **Installation Scheduled**
- Highlands Drive/Discovery Restripe Crosswalk **Complete**
- Front St/SE Bush Street Trim Vegetation & Add RPM's At Ends Of Crosswalk RPM's **Pending Sign Delivery**
- W Sunset Way/1st Ave NW Remove Old Metro Sign & Add Supplementary Crossing **Pending Sign Delivery**
- W Lake Sammamish Pkwy “Pinch Point” Increased Street Sweeping **Swept 2x's Monthly**
- Three Trails Crossing/Gilman Replace Worn Pavement Markings **Complete**
- NE Park Drive/NE Federal Restripe Crosswalk & Install Stop For Pedestrian Sign In Island **Complete**
- Talus/Shy Bear Way Ongoing Work With Current Developers **Complete**
- Newport/54th Street Relocate No Trucks Sign & Add Supplemental Plaques **Complete**
- Newport/Pine Cone Relocate Bike Lane And Parking Signs **Complete**
- Newport Way & Oakcrest Relocate Radar Speed Sign & Install RRFB **Complete**
- E. Lake Sammamish Pkwy/SE 56th St/Trail Restripe Crosswalk & Install Additional Signing **Complete**
- SR 900/NW Sammamish Road/12th Ave NW Restripe Crosswalk & Install Additional Signs **Complete**
2016 Actions

- Kick-off Education Program
- 2nd Ave SE At Rainer/Poo Poo Point Trail
- Formalize Crossing Install Crosswalk Pavement Markings, Curb Ramps, & RRFB
- Front St S (600-800 Block) New Mid-block Crossing By Installing Median Refuge Island, RRFB, Radar Speed Sign, And Curb Ramps
- Front St/SE Bush Street Install Pedestrian Refuge Island
- Front St Mid-block Between Sunset & Alder Install RRFB In Design
- Front St Mid-block Between Alder & Dogwood Install RRFB In Design
- Front Street (Sunset To Alder) Drainage & Sidewalk Project In Design
- Sunset/1st Ave SE/Rainier Blvd Relocate EB Ped Warning Sign Closer To Crossing
- Newport Way & 54th Install RRFB
- Newport Way & Pinecone Install RRFB

2016 Actions

- Newport & Dogwood Complete Missing Sidewalk Link
- Newport Way Survey In Preparation For Larger Corridor Project Design
- Maple Street NW At Target/Trader Joe's Interim: Relocate Crosswalks And Ramps, Remove Decorative Pavement As Needed
- E Lake Sammamish Pkwy/SE 56th St/Trail Ped Activated Yellow Flashing Beacons
- Costco/10th/Pickering Driveway, Access, Ped Crossing Study
- Black Nugget & Overlake/Fred Meyer Formalize Crossing, Install Crosswalk Pavement Markings, Curb Ramps, RRFB, Radar Speed Sign & Revise Channelization In Coordination With Developer
- Highlands Drive & Discovery Drive Revise Pedestrian Push Buttons To Meet ADA Compliance
- E Lake Sammamish Pkwy & 43rd Roundabout Study Elimination Of Bypass Lane
2016 Actions

Conclusions - Video Observations

- Counted volumes don’t tell the whole story

- Behaviors tell a lot more
  - Pedestrians
    - Use of facilities
    - Interactions with vehicles
  - Vehicles
    - Yielding behavior
    - Queuing impacts

- Site conditions don’t show up in counts
  - Signs and pavement markings
  - Shadows and glare
Questions