

Risk Assessment – Traffic Scenario

Modes of transportation that promote physical activity (as alternatives to automobile dependence) are less likely to be adopted in many cities and towns unless environments are designed or retrofitted to permit walking or bicycling. The location of schools, work sites, and shopping centers near residential areas will require substantial changes in community or regional design.

The following scenario illustrates an event where high traffic congestion leads to vehicle and pedestrian conflicts along routes to school X, inevitably leading to more traffic accidents, injuries and death. Ironically, parents that are most concerned about their child getting safely to school and who decide to drive them, may contribute significantly to the risk of walking or biking to school.

Background

School X

- 1000 Elementary School Students
- There are 2.2 students per household

Parent Drop-Off: Parents drop-off and pick-up students in front of the school along 1st Street or travel southbound on 1st Street and make a U-turn on Avenue B, dropping their children off on the other side of 1st Street. In addition, many students are dropped off in the school’s parking lot which is not designated a drop-off site. And some parents walk their children across the street, using the angled parking spaces in the front of the school.

Bus Drop-off: School X has no off-street bus loading area. Therefore, bus loading and unloading occurs on 1st Street, in front of the school.

Cross Walk: There is currently a crosswalk with yellow stripes at the intersection of 1st and Avenue A. White parallel cross walks are at 1st and Avenue B. There is crossing guard but this position is filled by rotating school staff, none of whom have formal training.

Bicycles: School X has a bicycle rack for students’ bikes on campus. Bike lanes are stripped on Avenue A, a road running adjacent to the school but no other bike lanes are in the neighborhood.

Adapted from Neighborhood Planning for Safe Routes to School around Pacific Elem. School

Statistics/ Data:

Baseline				Intervention			Post				
Total Students	Non-walkers	Walkers	Walking trips/wk	% increase in walking			Total Walkers	New walkers	Previous walkers	Increase	
	Avg distance to school	Min/hr	mi/hr	Minutes per trip	Baseline trips/wk	Minutes of PA/week from WTS	Post Trips/wk	Minutes of PA/week from WTS	Avg daily increase	# students	Weekly minutes change per student
Previous Walkers	0.60	60	2.07	17	6	104	10	174	10	240	70
New Walkers	0.60	60	2.07	17	0	0	10	174	25	154	174
Total Impacted						104		348	16	394	243
Total Students						104		348		1,000	243
$c=2.07$ Children's walking speed (Waters et al, 1998) $d= (a*b)/c$ [(Average distance to school x minutes in an hour)/ miles per hour](Nat'l Household Trans Survey, Sacramento MSA, 2001) $e= 6$ (3 days x 2 trips) days walked per wk- Based on school survey $f= d*e$ (Minutes per trip x baseline trips per week) $h= d*g$ (Minutes per trip x post trips per week) $i= (h-f)/7$ [(Baseline minutes of PA per week from WTS- Post minutes of PA per week from WTS)/7 days per week] Assump based on Staunton, et $k= h-f$ (Baseline minutes of PA per week from WTS- Post minutes of PA per week from WTS)											