Caltrans, Division of Local Assistance
Results and Lessons Learned from
Cycle 4 of the Highway Safety Improvement Program (HSIP)

Results (using the HSIP Application and Evaluation Tool):

- **179 project applications** out of a total of 357 (50%) were funded.
- $743 Million in collision reduction benefits are expected from these 179 projects, which is **88% of the total benefit value** expected from all 357 applications.
- Average Benefit/Cost Ratio (B/C) for the funded projects was over **ten times higher** than the average B/C for the unfunded projects.
- Of the funded projects, the average B/C of **Systemic** countermeasures was almost twice the B/C for all countermeasures.
- 48% of all applications that included a "Ped and Bike" countermeasure were funded.
- 47% of all funded applications included one or more of the following words in their Project Description: Pedestrian, Bicycle, Children, School, Crossing, Crosswalk, Countdown, Sidewalk, or Curb Ramps.
  - When applications with "Signal" improvements were also included, the percentage of funded projects which included Pedestrian and/or Bicycle oriented improvements is 73%.
- Detailed charts and graphs of the results are included on the following pages:

Lessons Learned:

Key factors associated with applications receiving funding:

- Based on the results and statewide reviews of the applications, the most successful applications were the ones prepared based on agencies' analysis of High Collision Concentration Locations (HCCLs) or agencies' focused on low cost improvements at numerous locations.
- Focusing on low-cost improvements was also important. Agencies striving to develop projects with high B/Cs need to keep project costs down.

Application Tool:

- The new application tool and B/C calculations proved extremely effective in maximizing the benefits of the program with the limited available funding.
- Although the overall feedback on the new tool and selection criteria was positive, several elements will be improved before the next call, including:
  - Provide additional suggestions on how agencies should go about selecting their proposed projects.
  - Update the HSIP webpage to better support the tool.
  - Explain the specific projects types each countermeasure is intended for.
  - Modify the mix of available countermeasures based on results from Cycle 4 to further maximize the goals of the overall HSIP program.
  - Provide better examples of collision diagrams and show minimum information required.
  - Add a stronger warning to applicants informing them that if they fail to provide the required information or if they apply the countermeasures and collision data erroneously, their applications will be rejected with no feedback until after the final results are finalized (this will be done due to workload and timing necessities.)

Results from HSIP - Cycle 4

HIGHWAY SAFETY IMPROVEMENT PROGRAM - Cycle 4

Statewide Summary of Grant Applications

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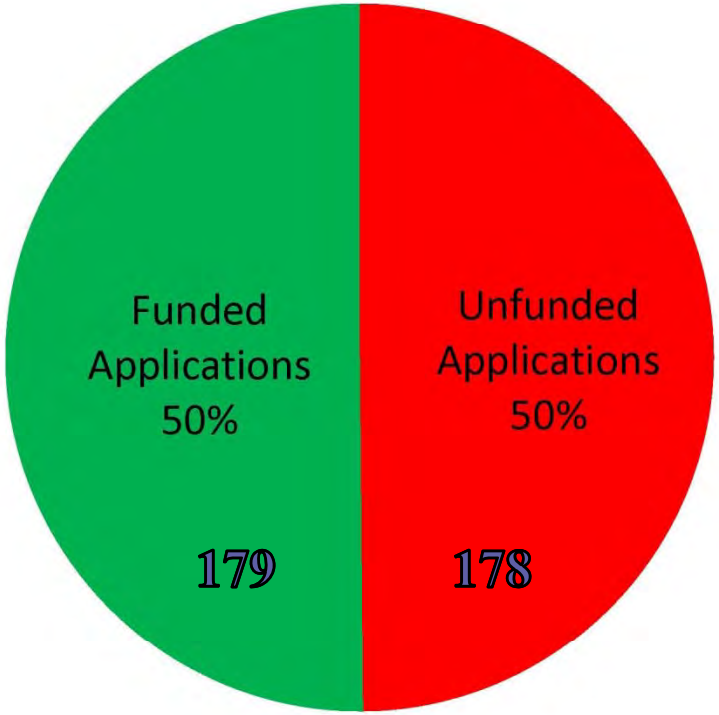
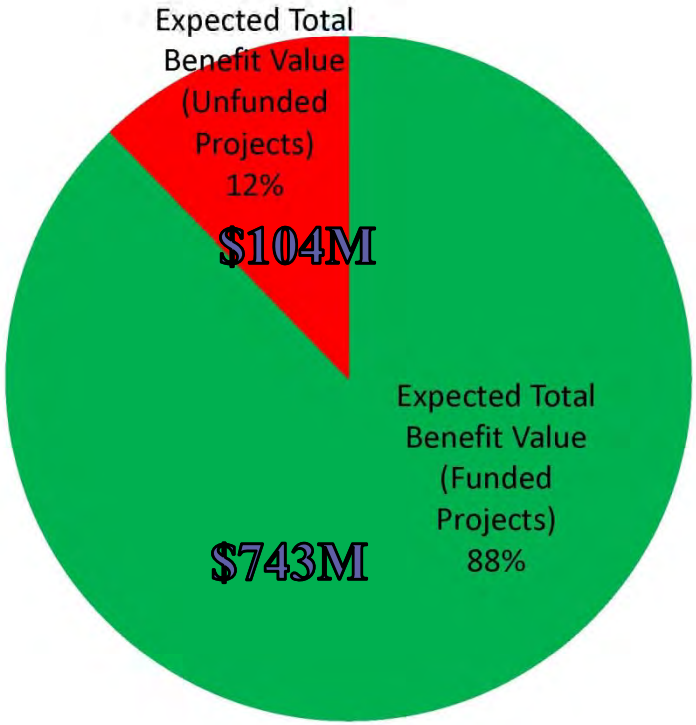
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	Statewide Totals
Total Applications Submitted													
Total Applications Submitted	11	6	30	49	23	48	81	31	6	21	29	22	**357**
Total Cost of Projects	$5,898,641	$3,787,972	$42,494,326	$36,968,632	$9,966,789	$21,398,830	$49,906,078	$20,459,331	$934,829	$18,906,225	$19,866,061	$10,248,218	**$240,835,932**
Total Federal Funds Requested	$5,297,600	$3,409,100	$17,196,900	$27,714,300	$7,257,600	$17,842,900	$33,704,200	$14,538,300	$841,000	$13,630,700	$15,287,400	$8,909,100	**$165,629,100**
Expected Total Benefit Value	$6,649,320	$8,920,214	$118,140,240	$90,173,948	$75,277,395	$47,731,478	$190,634,583	$106,534,310	$198,306	$92,518,507	$68,800,620	$41,065,091	**$846,644,012**
Average B/C Ratio	1.13	2.35	2.78	2.44	7.55	2.23	3.82	5.21	0.21	4.89	3.46	4.01	**3.5**
Funded Applications													
Total Funded Applications	3	4	9	25	8	15	55	20	2	5	16	17	**179**
Total Cost of Projects	$1,431,831	$2,499,972	$5,574,244	$17,655,557	$4,720,665	$6,321,629	$24,361,876	$9,854,500	$813,415	$3,815,900	$9,710,963	$7,071,058	**$93,831,610**
Total Federal Funds Requested	$1,288,600	$2,249,900	$4,914,000	$12,687,900	$2,971,600	$4,787,900	$19,736,700	$8,506,700	$731,900	$3,414,400	$7,147,200	$6,102,800	**$74,539,600**
Expected Total Benefit Value	$4,157,850	$8,542,430	$91,459,829	$81,955,238	$70,837,851	$41,908,275	$180,593,028	$102,425,208	$198,306	$55,957,223	$63,782,046	$41,003,615	**$742,820,899**
Average B/C Ratio	2.9	3.42	16.41	4.64	15.01	6.63	7.41	10.39	0.24	14.66	6.57	5.8	**7.9**
B/C Ratio by Countermeasures													
"Unsignalized Intersection"	1.66	1.87	5.42	3.89	0.72	4.76	6.17	13.38	0.31	39.14	5.17	2.4	**7.1**
"Signalized Intersection"			1.48	2.31		6.2	6.13	5.85		10.35	3.11	2.87	**4.8**
"Roadway Segment"	3.22	3.02	19.55	5.6	15.75	11.1	4.99	8.11		8.83	8.98	2.34	**8.3**
"Systemic"	0.66		18.73	6.87	13.36	10.21	16.38	19.74		20	11.01	21.87	**13.9**
% Funded Apps vs. Total Apps													
Percent of Applications Funded	27%	67%	30%	51%	35%	31%	68%	65%	33%	24%	55%	77%	**50%**
Percent of Total Cost of Projects	24%	66%	13%	48%	47%	30%	49%	48%	87%	20%	49%	69%	**39%**
Percent of Fed. Funds Requested	24%	66%	29%	46%	41%	27%	59%	59%	87%	25%	47%	69%	**45%**
Percent of Benefit Value Expected	63%	96%	77%	91%	94%	88%	95%	96%	100%	60%	93%	100%	**88%**
Unfunded Applications													
Total Unfunded Applications	8	2	21	24	15	33	26	11	4	16	13	5	**178**
Total Cost of Projects	$4,466,810	$1,288,000	$36,920,082	$19,313,075	$5,246,124	$15,077,201	$25,544,202	$10,604,831	$121,414	$15,090,325	$10,155,098	$3,177,160	**$147,004,322**
Total Federal Funds Requested	$4,009,000	$1,159,200	$12,282,900	$15,026,400	$4,286,000	$13,055,000	$13,967,500	$6,031,600	$109,100	$10,216,300	$8,140,200	$2,806,300	**$91,089,500**
Expected Total Benefit Value	$2,491,470	$377,784	$26,680,411	$8,218,710	$4,439,544	$5,823,203	$10,041,555	$4,109,102	$0	$36,561,284	$5,018,574	$61,476	**$103,823,113**
Average B/C Ratio	0.56	0.29	0.72	0.43	0.85	0.39	0.39	0.39	0	2.42	0.49	0.02	**0.7**

Data Updated as of: 5/13/2011

Results from HSIP - Cycle 4



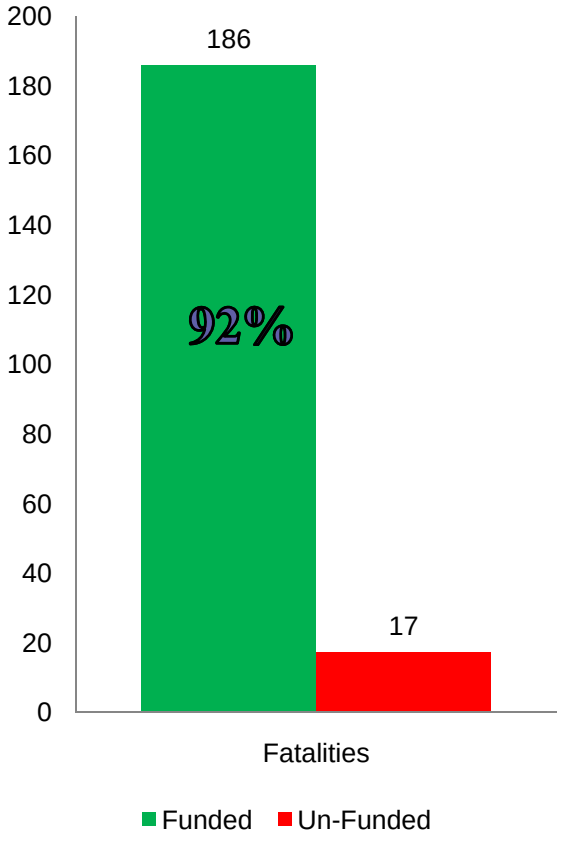
Funded vs. Unfunded



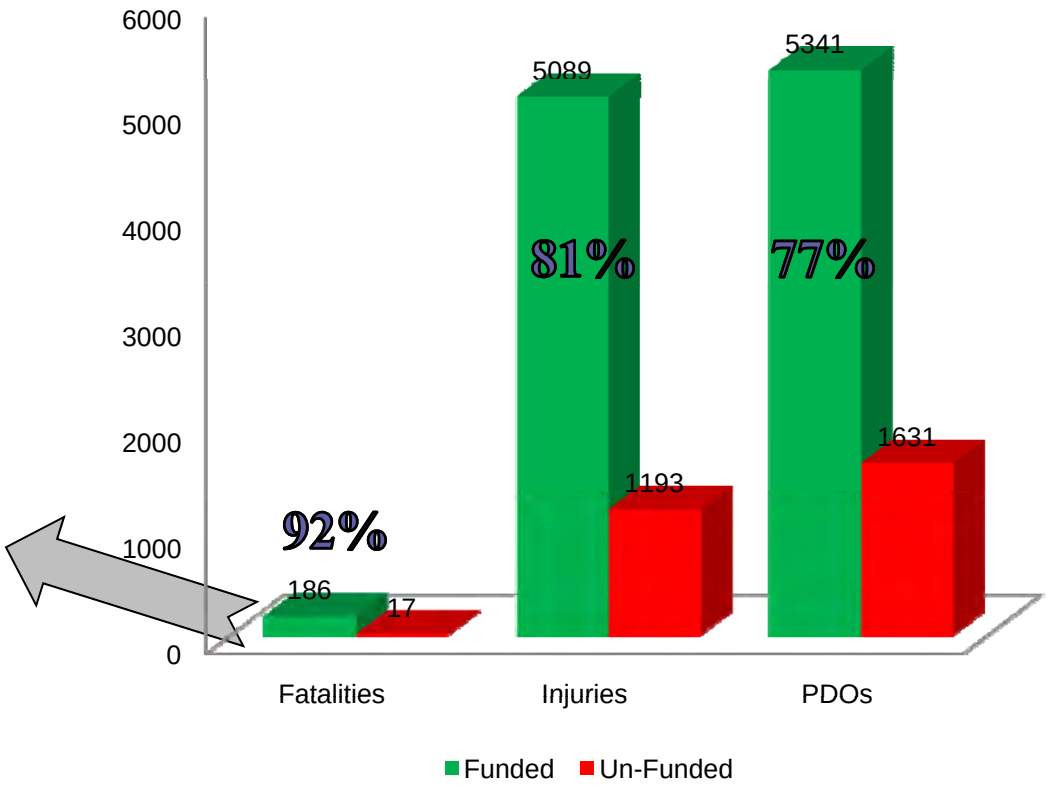
Expected Total Benefit Value (Funded vs. Unfunded)

Results from HSIP - Cycle 4

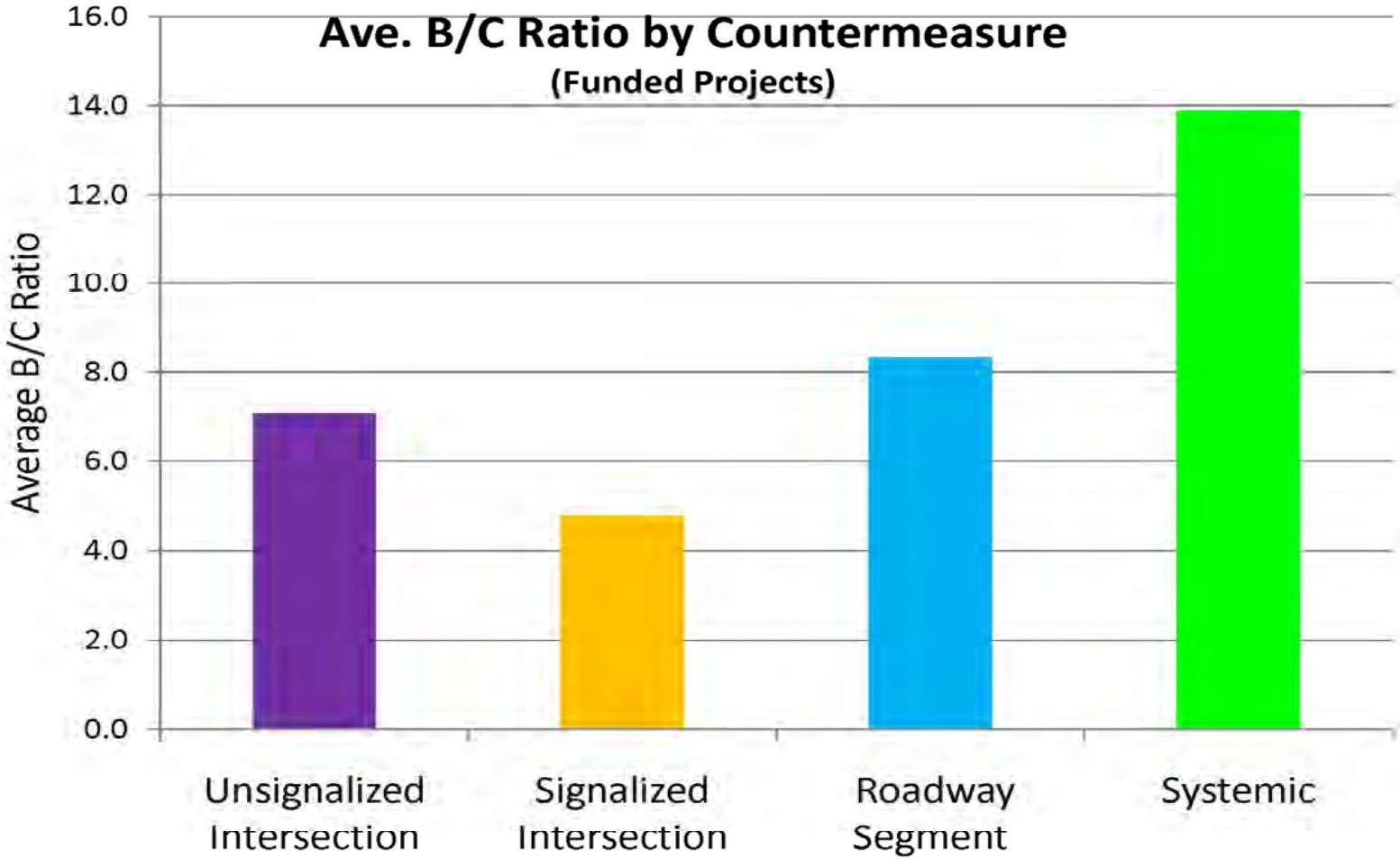
Expected Reduction in the # of Fatalities from Cycle 4 Projects



Expected Reduction in the # of Fatalities, Injuries and PDOs from Cycle 4 Projects

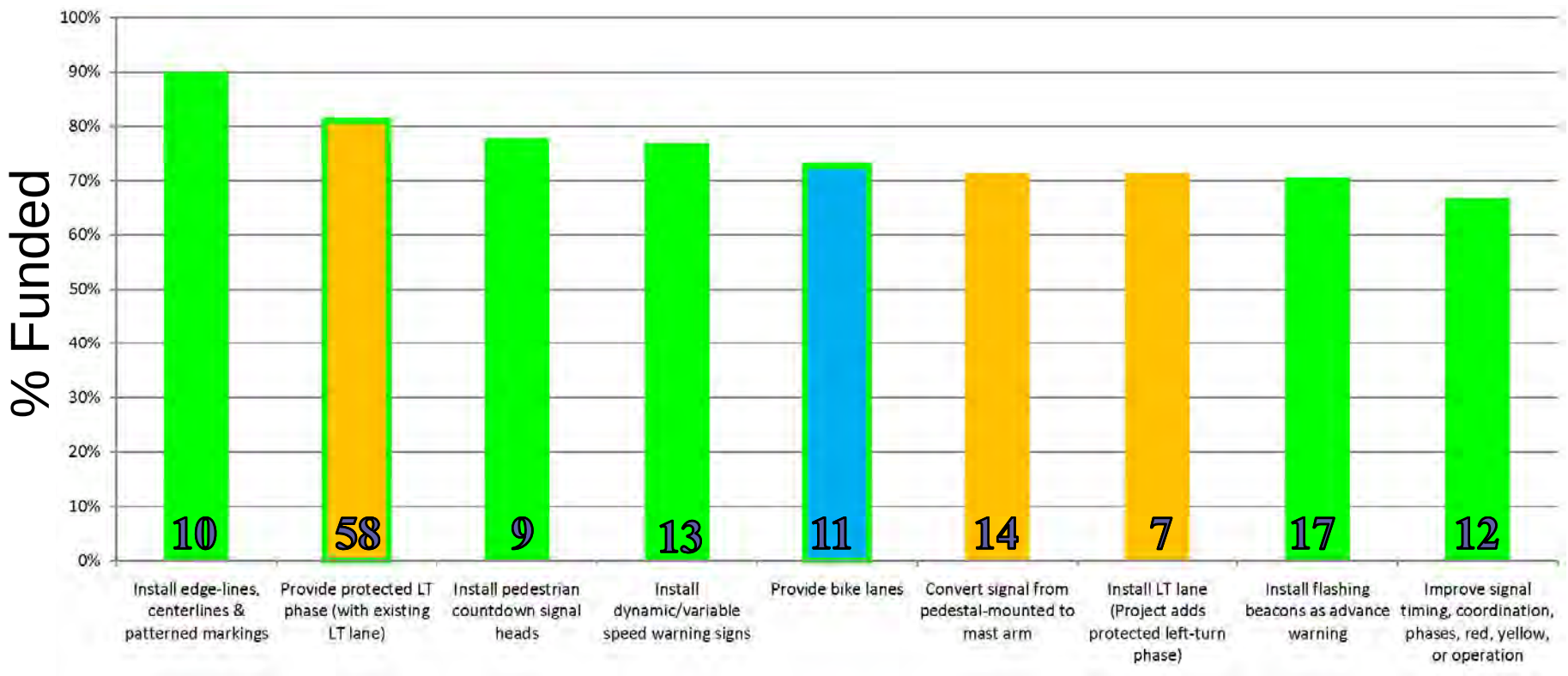


Results from HSIP - Cycle 4



Results from HSIP - Cycle 4

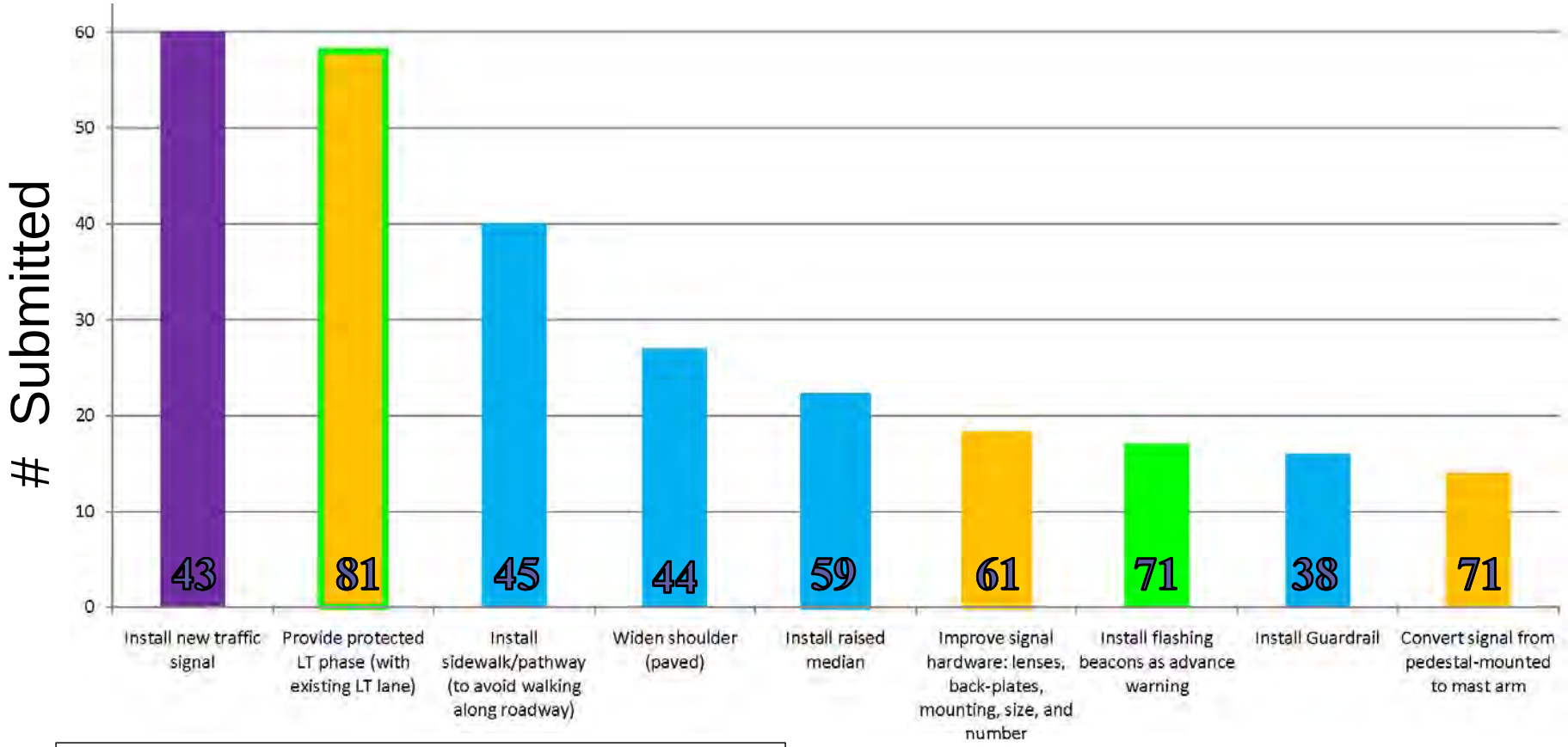
Top Funded Countermeasures (by %)



= No. of times CM used

Results from HSIP - Cycle 4

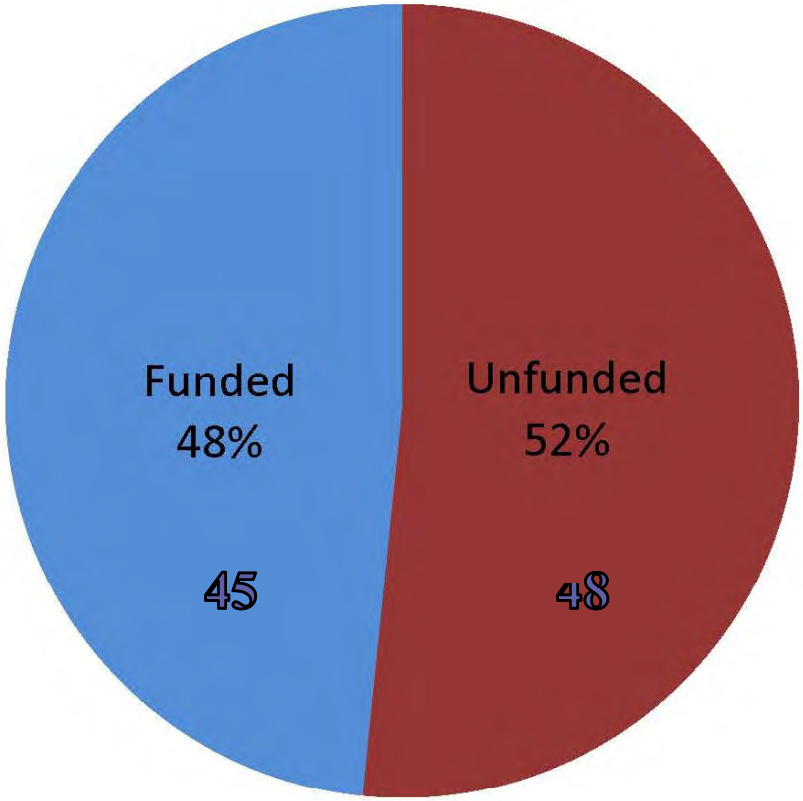
Top Submitted Countermeasures (by #)



= % of the time CM was funded

Results from HSIP - Cycle 4

“Ped & Bike” Countermeasures Funded



Results from HSIP - Cycle 4

CMs used 5 or more times

Summary of Countermeasures Funded - Sorted by % Funded

(Countermeasures used 5 or more times)

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	Countermeasures	Funded Sub-Total	Unfunded Sub-Total	Total Submitted	% Funded (submitted)	Countermeasure Type UI, SI, RS, S
1	Install edge-lines, centerlines & patterned markings	9	1	10	90%	S
2	Provide protected left turn phase (with existing LT lane)	47	11	58	81%	SI
3	Install pedestrian countdown signal heads	7	2	9	78%	S
4	Install dynamic/variable speed warning signs	10	3	13	77%	S
5	Provide bike lanes	8	3	11	73%	RS
6	Convert signal from pedestal-mounted to mast arm	10	4	14	71%	SI
7	Install left-turn lane (Project adds protected left-turn phase)	5	2	7	71%	SI
8	Install flashing beacons as advance warning	12	5	17	71%	S
9	Improve signal timing, coordination, phases, red, yellow, or operation	8	4	12	67%	S
10	Improve signal hardware: lenses, back-plates, mounting, size, and number	11	7	18	61%	SI
11	Create directional median openings to allow(and restrict) left-turns and u-turns	3	2	5	60%	UI
12	Install raised median	13	9	22	59%	RS
13	Install/Upgrade signs (general)	8	6	14	57%	S
14	Improve pavement friction (overlay)	3	3	6	50%	S
15	Install beacon (flashing) at intersection	4	4	8	50%	UI
16	Install left-turn lane	6	6	12	50%	UI
17	Install pedestrian crossing	7	7	14	50%	S
18	Install raised medians (refuge islands)	4	4	8	50%	UI
19	Widen lane (initially less than 10 ft)	3	3	6	50%	RS
20	Install sidewalk/pathway (to avoid walking along roadway)	18	22	40	45%	RS
21	Widen shoulder (paved)	12	15	27	44%	RS
22	Install new traffic signal	26	34	60	43%	UI
23	Improve horizontal alignment (flatten curves)	3	4	7	43%	RS
24	Add segment lighting	2	3	5	40%	RS
25	Install centerline or eddgeline rumble strips	2	3	5	40%	S
26	Install Guardrail	6	10	16	38%	RS
27	Add intersection lighting	2	5	7	29%	UI
28	Convert intersection to roundabout (from 2-way stop)	2	6	8	25%	UI
29	Improve horizontal and vertical alignments	2	6	8	25%	RS
30	Install Median Barrier	1	4	5	20%	RS
31	Install right-turn lane	2	8	10	20%	UI
32	Install emergency vehicle pre-emption systems	1	5	6	17%	S
33	Improve sight distance to intersection	1	7	8	13%	UI
34	Install pedestrian signal	1	8	9	11%	UI

* UI = Unsignalized Intersection
SI = Signalized Intersection
RS = Roadway Segment
S = Systemic

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CMs used 1 to 4 times

Summary of Countermeasures Funded - Sorted by % Funded

(Countermeasures used 1 to 4 times)

DRAFT

	Countermeasures	Funded Sub-Total	Unfunded Sub-Total	Total Submitted	% Funded (submitted)	Countermeasure Type UI, SI, RS, S
	Countermeasures used 4 times or less					
35	Convert from two-way to one-way traffic	1	0	1	100%	RS
36	Convert to all-way STOP control (from 2-way or Yield control)	1	0	1	100%	S
37	Improve curve superelevation	1	0	1	100%	RS
38	Install left-turn lane (signal has no turn phase)	1	0	1	100%	SI
39	Narrow cross section (4 to 3 lanes with two way left-turn lane)	3	1	4	75%	RS
40	Flatten side slopes	2	1	3	67%	RS
41	Convert intersection to roundabout (from signal)	1	2	3	33%	SI
42	Pave existing shoulder	1	2	3	33%	RS
43	Remove or relocate fixed objects outside of clear zone	1	2	3	33%	RS
44	Install acceleration/ deceleration lanes	1	3	4	25%	RS
45	Widen shoulder (unpaved)	1	3	4	25%	RS
46	Add exclusive pedestrian phasing	0	1	1	0%	SI
47	Flatten crest vertical curve	0	3	3	0%	RS
48	Flatten side slopes and remove guardrail	0	1	1	0%	RS
49	Improve Guardrail	0	4	4	0%	RS
50	Install animal fencing	0	1	1	0%	RS
51	Install curve advance warning signs	0	1	1	0%	S
52	Install delineators and reflectors (general)	0	1	1	0%	S
53	Install impact attenuators	0	1	1	0%	RS
54	Install larger or additional stop signs or other warning signs	0	2	2	0%	S
55	Install median (flush)	0	2	2	0%	RS
56	Install no-passing line (where passing is currently allowed)	0	2	2	0%	S
57	Install pedestrian overpass/underpass	0	1	1	0%	SI
58	Upgrade bridge railing	0	2	2	0%	RS
				535		

* UI = Unsignalized Intersection
SI = Signalized Intersection
RS = Roadway Segment
S = Systemic

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