

Student Pedestrian Walking Speeds at Crosswalks Near Schools

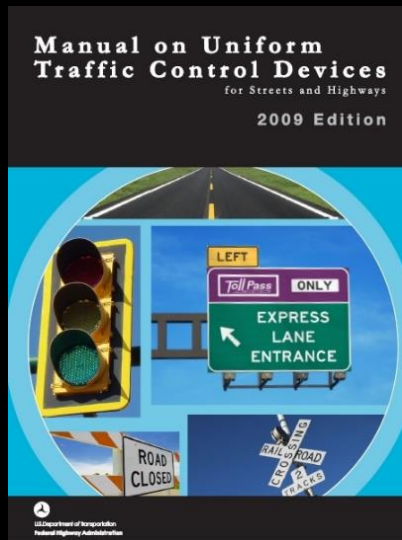
Kevin Chang, Ph.D., P.E.
Peter Foss, Meagan Larrea, and Edinson Bautista

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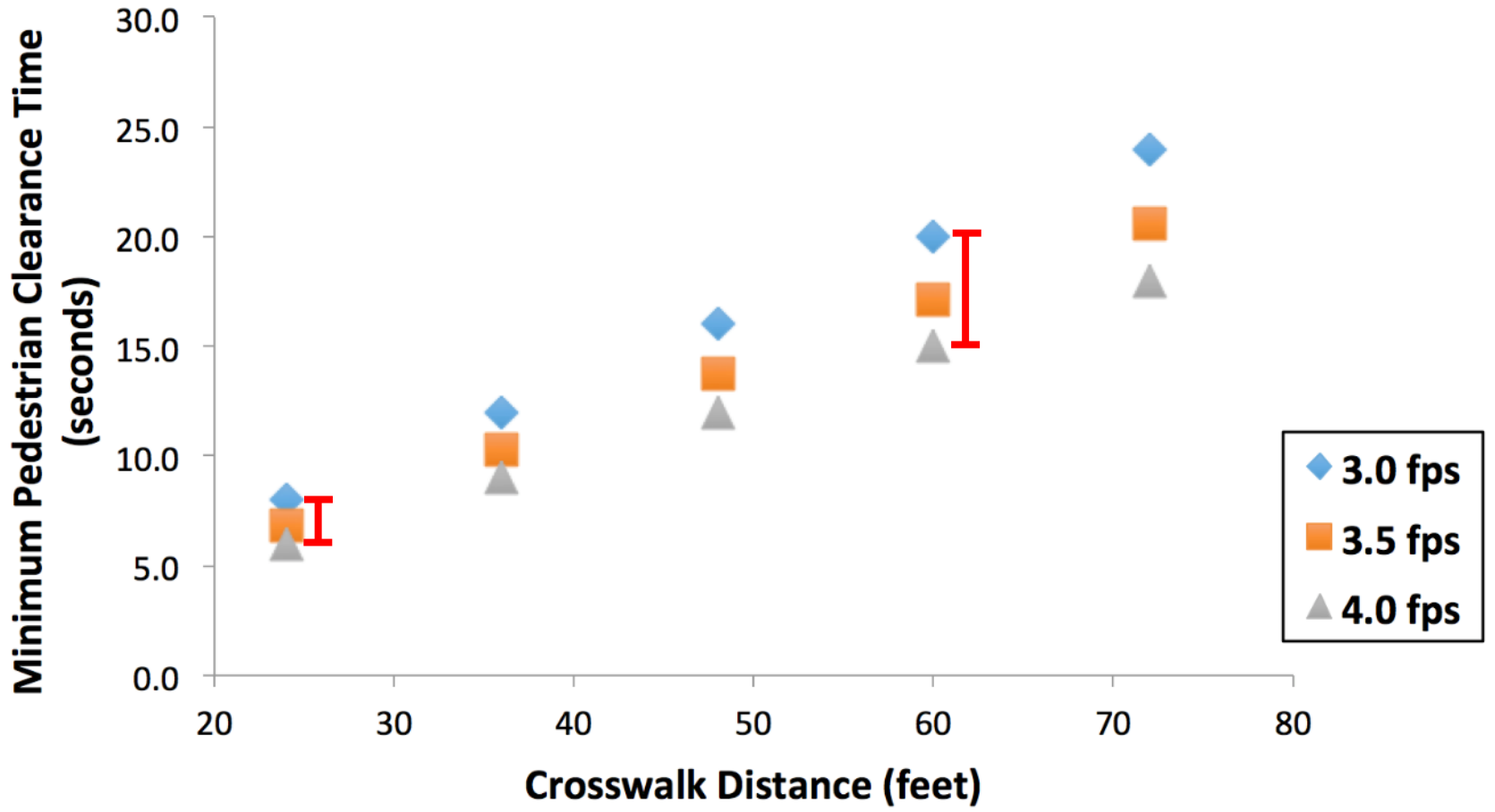
Section 4E.06 Pedestrian Intervals and Signal Phases

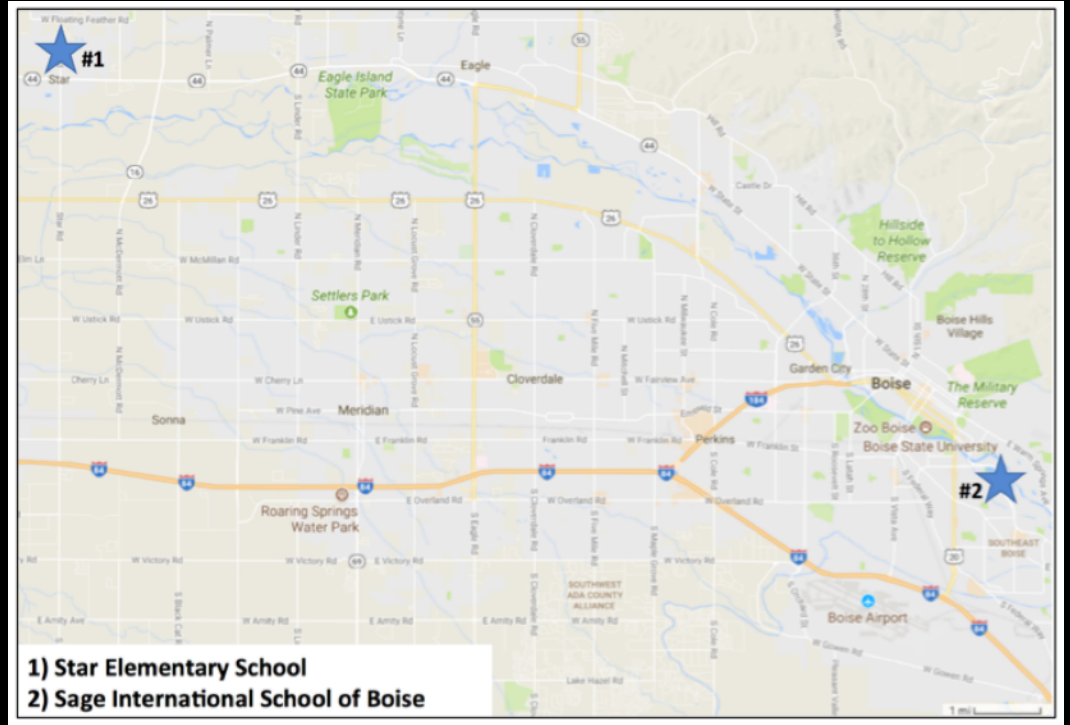
Guidance:

- 07 *Except as provided in Paragraph 8, the pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the curb or shoulder at the end of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 3.5 feet per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait.*

Guidance:

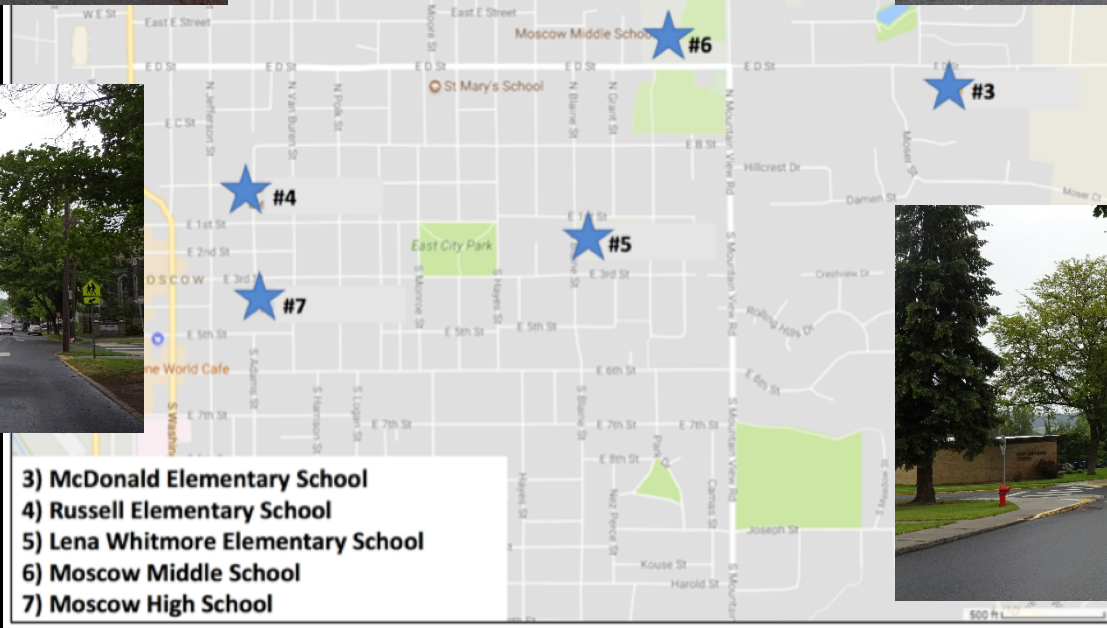
- 14 *The total of the walk interval and pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the pedestrian detector (or, if no pedestrian detector is present, a location 6 feet from the face of the curb or from the edge of the pavement) at the beginning of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 3 feet per second to the far side of the traveled way being crossed or to the median if a two-stage pedestrian crossing sequence is used. Any additional time that is required to satisfy the conditions of this paragraph should be added to the walk interval.*





- 1) Star Elementary School
- 2) Sage International School of Boise





- 3) McDonald Elementary School
- 4) Russell Elementary School
- 5) Lena Whitmore Elementary School
- 6) Moscow Middle School
- 7) Moscow High School



Author(s)	Student Age Range (years old)	Sample Size	Average Walking Speed (fps)	Year
Sutherland, <u>Olshen</u> , et al.	1 to 7	169	3.7	1988
Knutson, <u>Schimmel</u> , and Ruff	6 to 13	227	4.3 - 5.5	1999
David and Sullivan	5 to 12	370	3.7 – 4.7	2005
Christina de David, <u>Esteves</u> , et al.	3 to 6	20	3.7 – 4.3	2006
Stansfield, Hillman, et al.	7 to 12	16	2.4 - 5.4	2006
<u>Dusing</u> and Thorpe	1 to 10	438	2.7 - 4.4	2007
<u>Lythgo</u> , Wilson, and <u>Galea</u>	5 to 27* *study included young adults	898	4.3 - 4.6	2009

School	Crosswalk Location	Crossing Distance	Posted Speed
Star	N Star Rd and W Blake Dr (north leg)	60'	30 mph
McDonald	E D St and Eisenhower St (north and east legs)	44'	25 mph
Russell	E A St and N Adams St (south and west legs)	30'	25 mph
Whitmore	E First St and S Blaine St (east leg and south legs)	24' or 30'	25 mph
Moscow Middle	E D St @ south entrance (east leg)	28'	25 mph
Moscow High	E Third St and S Adams St (east, west, and north legs)	30', 42', or 52'	25 mph
Sage	E Parkcenter Blvd and E Mallard Dr (south leg)	94'	35 mph

	ALL		
LOCATION	#	AVG	SD
Star	74	5.54	0.86
McDonald	46	5.98	2.43
Russell	54	4.59	1.17
Whitmore	112	4.25	0.95
Moscow Middle	83	4.84	0.89
Moscow High	213	5.01	1.17
Sage	65	6.09	1.87
All	647	5.06	1.42

Star	15th	50th	85th
ALL	4.68	5.36	6.32
INDIV	5.21	6.22	6.47
GROUP	4.61	5.26	6.25

McDonald	15th	50th	85th
ALL	3.29	5.95	9.00
INDIV	3.22	4.59	8.07
GROUP	4.37	6.39	9.81

Russell	15th	50th	85th
ALL	3.38	4.41	5.95
INDIV	3.41	4.49	6.12
GROUP	3.43	4.32	5.21

Whitmore	15th	50th	85th
ALL	3.50	4.08	4.90
INDIV	3.50	4.29	6.00
GROUP	3.50	4.08	4.82

Moscow Middle	15th	50th	85th
ALL	4.00	4.67	5.60
INDIV	4.15	4.67	5.60
GROUP	4.00	4.60	5.06

Moscow High	15th	50th	85th
ALL	4.31	5.08	5.90
INDIV	4.38	5.19	5.93
GROUP	4.17	4.73	5.19

Sage	15th	50th	85th
ALL	4.75	5.63	7.50
INDIV	5.30	5.73	9.09
GROUP	4.64	4.99	6.78

All	15th	50th	85th
ALL	4.00	4.90	6.00
INDIV	4.05	5.12	6.11
GROUP	3.92	4.67	5.75

Conclusions

- Elementary school-aged children tend to walk slower than middle and high school-aged children
- Middle and high school-aged children generally walk at a rate of 4.0 feet per second or greater
- If traffic control devices are used, the guidance described in the MUTCD seems to be conservative
- Any enhancement must consider accommodations for wheelchair and mobility-challenged students

Future Work

- Assessing other contributors to walking speeds (i.e., backpack usage, texting, smartphone usage, etc.)
- Examining the impact of other external factors (i.e., inclement vs. sunny weather)
- Linking traffic control devices with connected vehicles

Questions?



kchang@uidaho.edu