Reporting and Scoring of CDC-HAN Audit Tool – Key Indicators, v. 1-19-16

An overall summary is useful, i.e, with/without, etc. Analysis can look at block faces or combine block faces for segments. Combining is most practical, unless goal is to identify specific problem locations for remediation. Key indicators also dictate the Level of Walkability and Safety for any given segment, although in some instance, modifying factors may affect the rating. It may also be useful to identify the segments with the most problems (or most severe problems) since these might be priorities for intervention. For a route, the total score can only be as good as it weakest link.

Accordingly, segmented approach suggested:

- Overall look at quality of walking environment by segments
- Identification of specific segments with problems
- Extent to which segments can be combined into continuous routes that are safe and walkable; could map these
    - Lack of continuity a typical problem in rural areas or small towns

Safety Domain – Segment Tool	Supportive Features	Problematic Features	Level of Walkability & Safety* [1-4]-	Modifiers to LWS, if any	Potential impact on LWS rating	Notes
			*Problem moves rating from 1(pristine) to identified # LWS classification 2-4); #s shown in LWS column reflect presence of problematic features to the left			
Walkways (WW)	Note that WW safety & walkability are moderated by adjacent roadway conditions. An otherwise pristine sidewalk cannot sufficiently compensate for multilane, high volume or high-speed traffic conditions that increase risk for pedestrians.					
Dedicated WWs (7)	#/% segments (or block faces) where present	#/% where missing	4	All affected by traffic volume and speed and type of roadway configuration. Also affected by maintenance.		Dedicated, paved WWs are the gold standard, but other WWs in good condition may function very well and be safe for most people; accessibility is an issue for non-paved options
Other (8a-e)		Frequencies for other options; could combine 8a-d in contrast to 8e				
Other (8e)		If 8e, then issues ei/eii				
WW width (9)	#/% measuring 9 a-b 2 or 3	#/% measuring 9a or b1	2-3			Accessibility issue; wider better; standards change over time
WW surface (10)	#/% segments paved (10a3)	#/% unpaved (other options a1, a2, a4)	3	Maintenance crucial modifying factor; walkability/safety of paved surface can be greatly diminished by poor condition/design		Some non-paved surfaces could be quite good for walkers, but less likely for mobility device users
WW buffers (11)	#/% where present	#/% where missing	2	Modifer for roadway issues; buffers enhance all WWs		

Modifiable WW conditions (15-16, 19-21, 21)	**Supportive Features**	**Problematic Features**	**LWS**	**Modifiers to LWS, if any**	**Potential impact on rating**	**Notes**
Trip hazards (15)	#/% without hazards	#/% with hazards				Typically can be resolved by public works, e.g., grinding down WW discontinuities, filling holes or replacing sections, addressing drainage issues, etc.
A few		#/% with a few	3	Modifiable		
A lot		#/% with a lot	4			
Maintenance (16)	#/% with *no* or *minor* maintenance issue	#/% with *moderate* or *major* maintenance issue	3 – moderate 4 - major			
Obstructions (19-20)	#/% without	#/% with				
Permanent (19)	#/% without	#/% with	4	Public works often able to do work arounds for permanent obstructions		Accessibility issue
Temporary (20)	#/% without	#/% with; Break out *some* or *many* for fuller description	4	Modifiable with neighborhood education, law enforcement or public works		Accessibility issue
Slip hazards (21)	#/% without	#/% with	3 or 4	Modifiable, but can be challenging given changing conditions		Neighborhood; may be seasonal
Railing/barrier (23)		#/% where needed but missing	3 or 4	Readily modified		Public works
Other WW features						
Steepness/incline (17)	#/% level	#/% moderate slope	3	An area where functional status is important; what is a problem for one person may not be for another		Incline is often a local given while cross slope is a design issue that could be fixed.
		#/% steep	4			
Cross-slope (18)	#/% level	#/% sloped	3			
		#/% steep	4			
Driveways/alleys (24)	#/% 24 1-3 (5 or less)	#/% 24 4 (*6 or more)*	3	Surface Rx (26b)	Can augment safety	
Traffic vol (25)	#/% 25 (1 or 3) *light, moderate or periodic*	#/% 25-2 *heavy*	2-3	Volume and speed clearly related		
WW slope (26a)	#/% level	#/& not level	2-4	May be modifiable		
Curb ramps (14)	#/% with	#/% missing	4			Accessibility issue to be addressed by public works

Roadways (27-31)	**Supportive Features**	**Problematic Features**	**LWS**	**Modifiers to LWS, if any**		**Potential impact on rating**
	Useful to look at segments/routes x roadway features. Could choose either type or speed as indicator, e.g., how many segments are located adjacent to challenging road types or where higher speeds constitute a risk factor? Does that proximity necessitate moderating the LWS rating for the segment?					
Type road	#/% 27 d-e	#/% 27 b	4			Worst configuration for peds
	#/% 27 f	#/% 27 a	4	Calming devices (31b)	Can improve LWS significantly	
		#/% 27 c	3			City/county data
Traffic volume (28b)	#/%28b 1-3	#/% 28b4	variable			City/county data
Speed limit (29)	#/% 35 or less	#/% >36	3-4			City/county data
				Ped related signs (31d)	Can improve LWS somewhat	
Classification (28a)				Can be used as proxy for speed/volume if needed, but difficult since municipalities vary in their classification criteria		
Parking facilities	#/% 30b	#/% 30d *(medium to large or garage*)	2-3	Largely descriptive, but medium to large lots may affect safety and perceived safety; on street parking provides buffer for peds		
Crossings within segment						
Mid-block crossings (31f)	#/% existing	#/% existing but without 30' advance stop line (31g)				
Ped. Bridges (31e)	#/% existing			Improve LWS potentially		Judgment call here- Does ped bridge replace what would otherwise be a difficult crossing? Is it accessible and of good quality?
Visibility/motorists (22)	#/% with visibility	#/% without visibility	3-4			

Wayfinding Domain	Item #s	Description	For Summary	Level of Walkability & Safety Indicators*
Segment Tool			**Summary of supports & problems**	
Supports -Continuity	Items 12-14	# segments w/wo continuity	Total presence/absence across items	+2 for any given segment with "no"
	31 a (optional to include)	Count cul-de-sac/dead end as wo continuity	Can include in above if desired	
Supports - Orientation/image	32, 42	# segments w/wo	If no features for orientation or if monotonous, aids (and problems) become more important.	
Supports -WF Aids	33	Total items by type		
Problems -WF Aids	34	Total items by type/subtype		
Problems -Lighting	35, 36			+1
Problems -Other	48 g-h		Behavioral factors not easily remedied	
Transit	37 b & c	If present, is marked (b) w route info (c)?	Total stops marked & with route info (Q _ is WF adequate at transit stops?)	
Intersection Tool			**Summary of intersection problems if any**	
Problems - Street signs missing, lacking visibility,	1 (a, b)	Total of a1 + a4 + b-no		+1
Problems – Street signs w one or more other problems	1 (d)	sum of d		
Problems – intersection configuration	2(a) – 5 way star or 6 way			
Problems – curb ramps	3a2 or 3a3	Sum intersections with no/missing ramps	Total intersections with no/missing ramps	+1
Problems – Other crossing features (curb ramp features & Other)	3a4-7, 5 b-d, 3a8 – count if NOT present	Total by type		
Problems- lighting	9a			

* These are key problem indicators that move the Level of Walkability and Safety from Level 1 (pristine, highly walkable and safe) to a higher less desirable category (see description of levels). The LWS is assigned per segment or intersection. For a route, the total score can only be as good as it weakest link.

Other Key Indicators (Older Adult Emphasis)

Note: *Absence of supports could necessitate adjusting some LWS ratings. Also, some features, e.g., places to rest are areas where improvements can often be made.

Comfort/Disorder	**Item #**		**?**	**LWS**
Comfort Supports				
Transit stop	37a &b	Total segments with stops present & accessible ÷ # segments	Gives general idea how many blocks someone would have to walk w/o transit access	
Places to rest	38b-d	Total segments with places to rest ÷# segments	Is there a place to rest on each segment or every other segment?	*
Trees/porticos	39a	Total segments with present ÷# segments	Does each segment offer some shade?	*
Restrooms	39e	Total segments with present ÷# segments	Gives general idea how many blocks someone would have to walk w/o restroom access	*
Eyes on street	40b	Total segments with present ÷# segments	What proportion of segments have opportunities to be seen? Important for perceived safety.	
Comfort Problems				
Loud sounds	48d	% segments with problem		
Crowded/chaotic	48g	% segments with problem	Esp problematic for vulnerable; increase falls risk	*
Competing use walkways	48h	% segments with problem	Esp problematic for vulnerable; increase falls risk	*
Daytime crime rate	City/county data		Can be used to adjust WW ratings as needed	**
Pleasant features absent	41b	% segments with problem		
Poor building maintenance	43b	% segments with problem		
Disorder indicators present	44	Total a-f; range for segments on route		
Extent physical/social disorder	45b,c 46 b,c	% segment with some vs. a lot		
Air pollutants	48a	% segments with problem	Esp problematic for vulnerable; asthma, cardiovascular, COPD	*
Industrial buildings	3c, 4c	% segments with industry		

Safety Domain - Intersection	Supports	Problems	LWS	Potential Modifier	Potential Impact on Rating	Notes
Controlled vs Uncontrolled (6a)	#/% controlled (6a)	#/% uncontrolled (6a)	4	Key ? for intersections as uncontrolled almost always less safe than controlled intersections.		
Controlled Intersection Only (6b-e)				Negative and positive modifying features below in red are pertinent to width, configuration, volume and speed.		
Width widest leg in lanes (2b)	#/% with 2 or fewer lanes	#/% with 3-4 lanes	3			
		#/% with more than 4 lanes	4			
				Specially identified lanes: *(2c1)* Right turn or *(2c2)* Left turn	Context specific	Can add to pedestrian confusion
Configuration (2a)	#/% T (a) or 4-way (b)	#/% with 5-way (c) or 6-way (d)	4	Angled intersection (2c8)	Negative impact on rating	
				Wide turning radius *(2c9)*		
Traffic volume (8)	#/% a-c	#/% d	2-4	Especially wide lanes (2c6)		
Cross-street speed (segment data (29) or per city)	#/% 35 or less	#/% >36	3-4	Refuge islands (2c3)	Positive impact on rating	
				Center median strip (2c4)		
				Curb extension (2c7)		
Intersection Control (6)						
Type control	#/% with traffic signal (6e)	#/% with yield (6c)	3		Context specific, i.e., yield or stop signs could be entirely ok in some locations with low speeds and traffic volume	
		#/% with stop (6d)	2			
Traffic circle, Roundabout (6b)		#/% with roundabout	3			Can be challenging for peds
Signalization (if present (7)						
Green arrows for dedicated vehicle turns present*(7a)*					Context specific	
Ped "Walk" signals *(7b)*	#/% with "Walk" (7b)	#/% without "Walk" (7b)	2	Ped push buttons present*(7c)*		Desirable, but not always feasible

				Buttons accessible (7d)		Accessibility issue
				Countdown signal (7e)		Desirable, but not always feasible
				Audible walk signal (7f)		Accessibility issue
Crossing time (7h)	#/% with adequate time	#/% without adequate time	2-3			Important for older adults with mobility challenges
Behavioral Factors		#/% per type			These factors negatively impact LWS; however, these observational data will likely be unreliable without some sort of time sampling. If observed, nonetheless, then these are public education and law enforcement issues.	
Fast turning traffic(8e)	Unreliable to count if "not observed", i.e., just because you failed to see it while auditing does not mean that it does not happen					
Drivers failing to yield (8f)						
Parked too close to intersection (8g)						
Drivers stopping in crosswalk (8h)						
Curb Ramps (3a-b)	#/% with all corners (31a)	#/% with missing (3a2-3)	4	Could give some credit if *some* present, but still problematic		Accessibility issue
Ramp condition – transitions (3a8)	#/% with transitions*(3a8)*	#/% without transitions*(3a8)*	2			
Ramp condition-problems (3a4-7)	#/% without specific problems	#/% don't line up (3a4)	3			Poor design or maintenance issues
		Poor condition(3a5)	4			
		Drainage (3a6)	3			
		Permanent obstructions (3a7)	4			
b. Crossing	#/% marked (4a)	#/% unmarked(4a)	2-3	Faded markings (5d) negatively influence rating for marked CW.		
Condition crossing surface (5c)	#/% not poor	#/% poor	2-4			Not unusual for WW condition to be good, but crossing surface poor
Temporary obstructions (5b)	#/% without obstructions	#/% without obstructions	4			Safety/accessibility issue; should be fixed
Slope/cross-slope (5a)	#/% not steep (5a)	#/% steep (5a)	3-4			
Marked CW features (4a)	#/% with high-vis. striping (4b)	#/% without high-vis. striping (4b)				
	#/% with advance stop lines (4c)	#/% without advance stop lines (4c)	2-3 4	Controlled Uncontrolled		

	#/% with warnings (4d)	#/% without warnings (4d)	2-3 4	Controlled Uncontrolled		
	#/% with raised crosswalk (4e)	#/% without raised crosswalk (4e)			Context specific	Adds to safety, but reserved for specific apps
One-way street (2c5)						Info only
Crossing time (7h)	#/% with adequate time	#/% without adequate time	2-3			Important for older adults with mobility challenges
Street Name Signage (1a)						See wayfinding domain
Visibility						
Lighting (9a)	#/% with lampposts/street lamps	#/% without lampposts/street lamps	3			Safety, accessibility & wayfinding issue
Poor visibility peds/motorists (9b)	#/% without poor visibility	#/% with poor visibility	4			See also segment visibility
Sign visibility (1b)	#/% visible	#/% not visible	2-3			Potentially correctable