

**Supplementary Information:** The following city-specific HOLC map GIS shapefiles were merged or polygons separated because the initial HOLC maps were drawn in the same region by different assessors, on different years, or within the same general urban area, or with overlapping polygons: New York City (NYC), NY; Boston, MA; Portland, OR; Minneapolis, MN; Seattle, WA; and Norfolk/Newport News, VA.

Some NYC security categories had overlapping polygons where C grade districts surrounded D grade districts, causing the two polygons to be treated as a single polygon in subsequent spatial analysis. In each of these cases, overlapping polygons were separated into two distinct polygons, and were treated as unique entities for  $\delta$ LST analysis. Of the HOLC polygons in the NYC districts, we assessed trends by combining Hudson County, Brooklyn and Queens Districts.

Our "Greater NYC Area" thus incorporates Bergen County, the Bronx, Brooklyn, Essex County, Hudson County, Westchester County, Manhattan, Staten Island, and Queens.

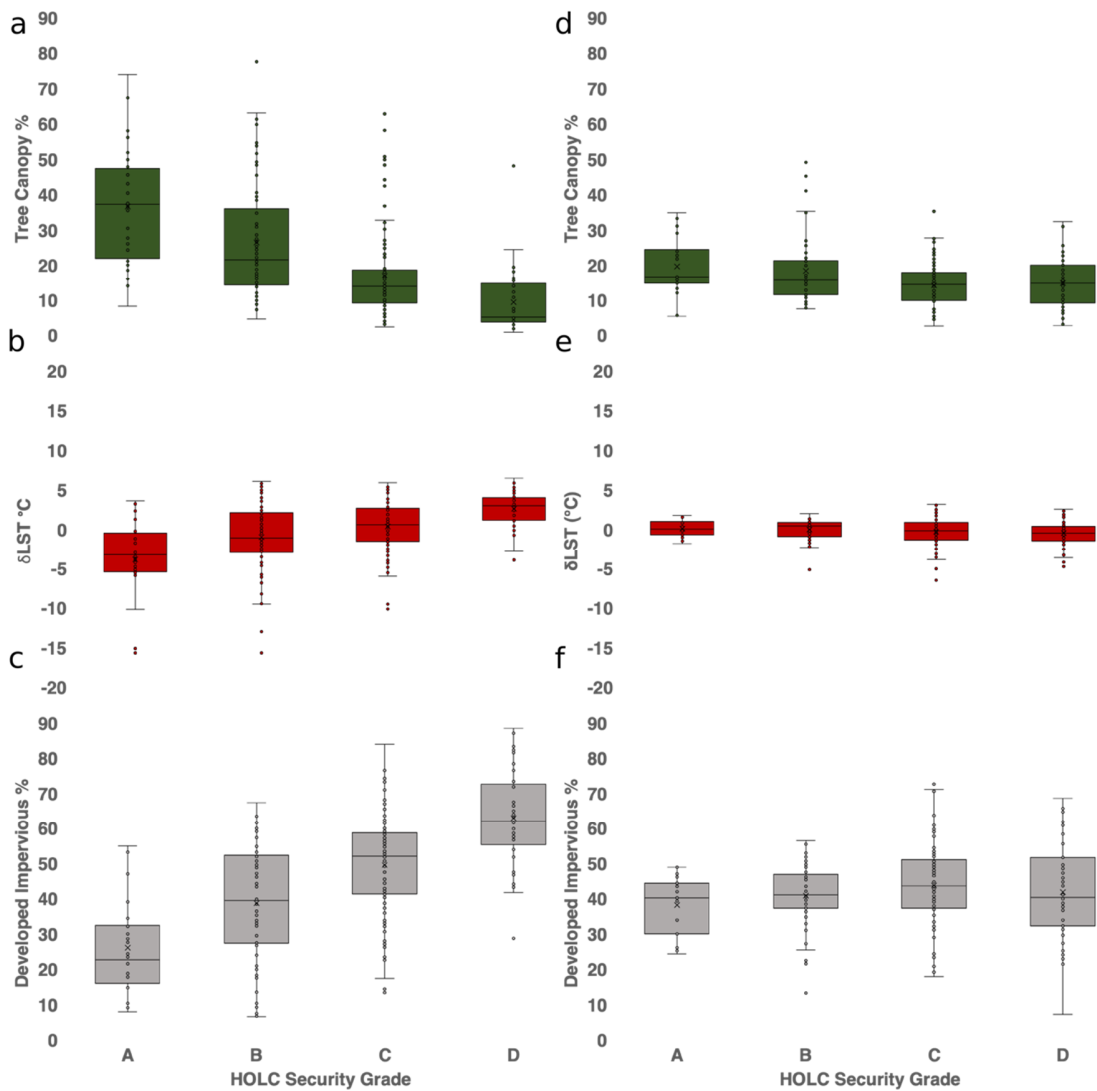
The Greater Boston Area includes: Arlington, Belmont, Boston, Braintree, Brookline, Cambridge, Chelsea, Dedham, Everett, Lexington, Malden, Medford, Melrose, Milton, Needham, Newton, Quincy, Revere, Saugus, Somerville, Waltham, Watertown, Winchester, Winthrop

Portland: Oregon was affected by the same problem as the NYC districts with a C district surrounding a D district. This was fixed using the same approach of creating distinct polygons, and also followed by  $\delta$ LST analysis.

Minneapolis: MN has many parks which feature lakes/ponds located within the drawn HOLC polygons. Unlike all other cities in this study with similar park/waterbodies, Minneapolis' HOLC polygons did not specifically dissociate its parks from its housing districts, allowing for these waterbodies to appear within the HOLC districts in Minneapolis only. As all other HOLC maps did not include waterbodies, Minneapolis' waterbodies were cropped out of the district polygons using a bodies of water polygon file ("Bodies of Water USA") downloaded from ArcGIS Online's public site to serve as the cropping target, followed by  $\delta$ LST analysis.

Seattle: WA and Norfolk/Newport News, VA HOLC map lines were not uniform to the present-day coastlines, resulting in the edge of their polygons stretching into the nearby bodies of water. Using the same method as in Minneapolis, the district lines were cropped to reflect land-only LSTs.

Norfolk/Newport News are special cases as the two distinct cities carried polygons of that overlapped and showed differing security ratings of the HOLC shapefile within the same area. Norfolk's was the more recent of the two HOLC security maps, and as such its grades were assigned for any overlapping polygons between the cities. The remaining districts unique to Newport News were merged into a combined HOLC shapefile between the two cities that accounted for shared and unique polygons.



**Figure S1.** (a) Box-whisker plot of average tree canopy percent by HOLC polygons (see text for HOLC security rating descriptions) in the four “warmest” urban areas described in the Results section of the text: Portland, OR; Baltimore, MD; Chattanooga, TN; and Denver, CO, (b) Box-whisker plot of  $\Delta$ LST values by HOLC polygons (c) Box-whisker plot of average percent developed impervious surfaces by HOLC polygons; (d) Box-whisker plot of average percent tree canopy by HOLC polygons in the six Midwestern urban areas discussed in the Results section that show negative D-A differences (Table S1): Joliet, IL; Lima, OH; Pontiac and Saginaw, MI; and Lake County and Evansville, IN, (e) Box-whisker plot of  $\Delta$ LST values by HOLC polygons in six Midwestern urban areas, (f) Box-whisker plot of average percent developed impervious surfaces by HOLC polygon in six Midwestern urban areas.

**Table S1.** US urban area-specific  $\delta$ LSTs ( $^{\circ}$ C) grouped by HOLC security rating and US Census Bureau Region, “D-A” means total  $\delta$ LST difference between D and A polygons within that urban area. The date of the Landsat 8 image acquisition is also listed.

Region	Landsat Date	State	Urban Area	A $\delta$ LST	B $\delta$ LST	C $\delta$ LST	D $\delta$ LST	D-A ( $^{\circ}$ C)
Midwest	29-Jul-17	IL	Joliet	0.70	0.95	-0.10	-0.77	-1.47
	9-Aug-17	OH	Lima	2.64	-2.07	0.08	1.81	-0.83
	6-Jul-17	IN	Lake County	0.31	-0.42	0.26	-0.19	-0.50
	1-Aug-14	MI	Pontiac	1.07	-0.15	-0.58	0.68	-0.39
	20-Jun-17	IN	Evansville	-0.08	0.02	0.28	-0.47	-0.39
	5-Jun-14	MI	Saginaw	0.04	-0.16	0.06	-0.10	-0.14
	30-Aug-15	MN	Duluth	-0.62	0.62	0.17	-0.51	0.12
	12-Jun-16	OH	Canton	-0.44	0.13	-0.04	0.01	0.45
	4-Aug-15	OH	Springfield	-1.17	0.61	0.61	-0.65	0.52
	1-Aug-14	MI	Flint	-0.72	0.09	0.16	-0.09	0.64
	7-Jun-14	OH	Akron	-0.60	0.42	-0.09	0.05	0.66
	3-Jun-14	IL	Aurora	-0.46	-0.62	0.16	0.34	0.80
	25-Jun-17	MO	Springfield	-0.98	-1.06	0.55	-0.05	0.94
	8-Aug-16	OH	Youngstown	-1.08	0.26	0.16	-0.01	1.07
	5-Jun-14	IN	Fort Wayne	-0.79	0.11	0.00	0.34	1.14
	21-Aug-15	MO	St. Joseph	-0.79	-0.32	-0.16	0.39	1.19
	2-Aug-15	IN	Terre Haute	-2.17	1.23	1.27	-0.89	1.28
	28-Jul-15	OH	Columbus	-0.65	-0.44	0.24	0.69	1.34
	29-Jul-17	IN	Decatur	-1.48	-0.13	0.58	0.08	1.56
	17-Aug-17	KS	Wichita	-0.92	-0.40	-0.34	0.78	1.70
	21-Jun-16	OH	Warren	-1.02	-0.18	-0.08	0.72	1.74
	19-Jun-16	MI	Detroit	-1.36	-0.55	0.08	0.52	1.88
	31-Jul-17	MI	Battle Creek	-2.01	0.01	0.26	0.13	2.14
	24-Jun-16	WI	Milwaukee	-1.74	-0.36	0.34	0.47	2.21
	19-Jun-16	OH	Toledo	-1.72	0.44	0.13	0.69	2.41
	25-Jul-17	MO	Greater Kansas City	-1.99	-0.56	0.25	0.53	2.52
	12-Jun-16	OH	Cleveland	-1.22	-0.31	0.27	1.32	2.55
	8-Jun-16	MO	St. Louis	-0.97	-0.14	0.23	1.66	2.63
	5-Jun-14	MI	Bay City	-2.26	0.65	-0.58	0.40	2.66
	15-Aug-14	IN	South Bend	-1.48	-0.32	0.00	1.19	2.67
	9-Aug-17	OH	Dayton	-2.00	-0.33	0.54	0.68	2.68
	26-Jul-16	WI	Kenosha	-2.56	-0.85	0.31	0.35	2.91
	17-Jun-16	MI	Grand Rapids	-1.83	-0.02	0.12	1.13	2.96
	9-Aug-17	OH	Hamilton	-2.43	-0.78	0.42	0.59	3.02
	17-Jun-16	MI	Kalamazoo	-2.37	-0.82	0.32	0.68	3.06
29-Jul-17	IL	Chicago	-2.57	-0.80	0.39	0.70	3.28	
17-Jun-16	MI	Muskegon	-3.65	0.18	0.63	-0.32	3.32	
26-Jul-16	WI	Racine	-3.51	-0.24	0.05	0.50	4.01	
13-Aug-15	OH	Portsmouth	-3.12	1.06	-0.08	0.97	4.10	
31-Jul-17	IN	Indianapolis	-4.38	-0.89	0.54	0.91	5.29	
22-Jul-17	MN	Minneapolis	-3.08	-0.82	1.05	2.94	6.02	
Northeast	30-Jul-17	NJ	Atlantic City	1.12	0.16	-0.29	0.31	-0.81
	16-Jul-15	NY	Elmira	-1.29	0.48	0.78	-1.12	0.17
	8-Aug-16	PA	New Castle	-0.25	0.42	-0.73	0.45	0.71

	20-Aug-17	PA	Pittsburgh	-0.82	-0.25	0.40	-0.03	0.79
	16-Jul-15	NY	Johnson City	0.09	0.41	-0.82	1.13	1.04
	14-Jun-16	NY	Niagara Falls	-0.28	0.01	-0.41	0.93	1.21
	14-Jun-17	MA	Brockton	-1.41	0.21	0.86	0.06	1.47
	11-Jul-14	NY	Buffalo	-1.44	0.17	0.90	0.15	1.59
	18-Jun-16	NY	Poughkeepsie	-2.18	-0.07	0.52	-0.24	1.93
	20-Aug-17	PA	Altoona	-1.62	-0.21	0.37	0.45	2.07
	16-Jul-17	NH	Manchester	-1.82	-0.46	0.03	0.26	2.08
	16-Jul-15	NY	Syracuse	-0.96	-0.48	0.39	1.23	2.18
	16-Jul-17	MA	Haverhill	-1.58	0.26	-0.57	0.95	2.53
	30-Jul-17	NY	G. NYC Area	-2.33	-0.79	0.42	0.89	3.22
	1-Aug-17	MA	G. Boston Area	-1.66	-0.87	0.70	1.69	3.35
	18-Jun-16	MA	Holyoke Chicopee	-2.29	-0.10	-0.17	1.14	3.43
	18-Jun-16	CT	New Haven	-2.14	-0.58	0.55	1.33	3.48
	18-Jun-16	CT	New Britain	-2.39	0.18	1.45	1.15	3.55
	18-Jun-16	CT	Stamford Area	-2.01	0.19	1.44	1.86	3.87
	21-Jun-16	PA	Erie	-2.84	-0.29	0.48	1.08	3.93
	16-Jul-15	NY	Utica	-3.20	-0.19	0.75	0.88	4.08
	28-Aug-16	NJ	Camden	-2.19	-0.42	0.19	2.09	4.28
	30-Jul-17	NJ	Trenton	-2.46	0.20	0.13	2.12	4.58
	14-Jun-16	NY	Rochester	-2.67	-0.19	0.75	2.22	4.90
	28-Aug-16	PA	Philadelphia	-3.63	-0.91	1.09	1.58	5.21
	18-Jun-16	CT	East Harford	-2.65	-0.19	1.41	2.74	5.39
<b>South</b>	28-Aug-14	FL	Tampa	-0.41	0.22	-0.21	0.40	0.81
	26-Aug-16	VA	Lynchburg	-0.97	-0.59	0.35	0.04	1.01
	23-Jul-16	NC	Asheville	-1.63	0.28	0.95	-0.43	1.20
	22-Aug-15	WV	Wheeling	-2.13	0.75	1.09	-0.81	1.32
	23-Jul-16	WV	Charleston	-2.15	0.47	1.05	-0.79	1.37
	10-Jun-16	AL	Mobile	-1.25	-0.10	0.43	0.85	2.10
	28-Aug-14	FL	St. Petersburg	-1.39	-0.73	0.01	0.95	2.33
	2-Aug-15	LA	New Orleans	-2.05	-0.64	0.22	0.48	2.53
	2-Jul-16	VA	Richmond	-1.69	-0.29	0.36	0.93	2.62
	25-Jul-16	NC	Winston-Salem	-2.39	-0.86	0.43	0.32	2.72
	5-Aug-15	TX	Dallas	-2.00	-0.10	1.13	0.87	2.87
	25-Jul-15	VA	Norfolk	-1.91	-1.42	0.02	1.05	2.96
	28-Jun-15	GA	Augusta	-2.37	-0.74	0.18	0.64	3.00
	26-Aug-16	NC	Durham	-2.00	-0.28	0.79	1.03	3.02
	25-Aug-17	AL	Montgomery	-2.04	0.14	-0.68	1.40	3.45
	13-Aug-15	TN	Knoxville	-3.19	-0.04	0.52	0.42	3.61
	8-Jun-17	GA	Macon	-3.64	-0.75	0.47	0.26	3.90
	25-Aug-17	KY	Lexington	-2.92	-0.42	0.45	1.04	3.97
	30-Jun-15	FL	Miami	-1.69	-0.80	0.60	2.53	4.22
	10-Jun-16	AL	Birmingham	-4.75	-0.44	1.44	-0.36	4.39
	14-Jun-16	NC	Charlotte	-3.29	-0.62	0.13	1.14	4.43
	14-Jun-16	NC	Greensboro	-3.54	-0.69	1.27	1.12	4.67
	14-Jul-16	GA	Atlanta	-2.85	-1.49	0.08	2.00	4.85
	2-Jul-16	MD	Baltimore	-2.00	-1.49	0.71	3.15	5.15
	15-Jul-17	KY	Louisville	-3.10	-0.67	0.48	2.10	5.20

<b>West</b>	14-Jun-16	VA	Roanoke	-4.52	0.18	0.64	0.74	5.26
	4-Aug-15	TN	Chattanooga	-2.06	-2.32	0.35	3.28	5.34
	9-Jul-16	FL	Jacksonville	-3.06	-0.44	1.09	2.42	5.48
	18-Jun-15	GA	Columbus	-3.53	-1.41	1.46	2.18	5.70
	14-Jul-17	WA	Seattle	-1.45	0.15	0.90	-0.95	0.50
	1-Aug-17	CA	Sacramento	-1.99	-0.63	0.57	-0.18	1.81
	14-Jul-17	WA	Tacoma	-1.63	-1.01	0.52	0.45	2.08
	1-Aug-17	CA	Stockton	-1.67	-0.66	0.37	0.88	2.55
	16-Jul-17	CA	San Jose	-2.00	-0.58	0.05	0.65	2.66
	29-Aug-14	CA	San Diego	-1.75	-0.65	1.45	1.54	3.29
	10-Aug-17	WA	Spokane	-2.32	-0.69	0.59	1.38	3.70
	14-Jun-17	CA	San Francisco	-2.16	-1.04	1.02	1.93	4.09
	7-Jun-17	CA	Fresno	-3.49	-0.54	0.40	0.61	4.10
	9-Jun-17	CA	Los Angeles	-3.03	-0.56	0.99	1.18	4.21
	1-Aug-16	CO	Denver	-4.09	-2.08	0.40	2.59	6.68
	28-Aug-16	OR	Portland	-4.42	0.52	0.72	2.67	7.09

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