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Assessing the Urban Vacant Land Potential for Infill Housing: A Case Study in Oklahoma City, USA

Supplemental Data

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Table S1: Geodatabase Inventory

GDB	File type	Year update	Author	Link
Aerial and street view images	Image	2017-2022	Google Maps	https://www.google.com/maps/@37.6,-95.665,4z/
Brownfields	Shapefile	2022/10	Oklahoma DEQ Brownfields	https://gisdata-deq.opendata.arcgis.com/datasets/DEQ::landweb-brownfields/explore?location=35.464704%2C-97.488830%2C13.91
Building footprint (2020)	Shapefile	2022/01	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Building%20Footprints%202020&view=map
Census tracts (2020)	Shapefile	2022/03	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Census%20Tracts%202020&view=map
Contour lines (2')	Shapefile	2015/01	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Elevation%20Contours%202015&view=map
FEMA National flood hazard map	Shapefile	2020/01	FEMA	https://owrb.maps.arcgis.com/home/item.html?id=f3ea621ad7e74d379532712cfbc3382b
Loveland calculated building count data	CSV	2022	Regrid	https://regrid.com/
Low-moderate income areas 2021	Shapefile	2021/09	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Low%20Moderate%20Income%20Areas%202021&view=map
Ocura oil wells	KMZ	2022	Ocura	https://www.google.com/maps/d/viewer?mid=1Qg_THrKrChLY5xQJkVJSqAuAnUwPj_p&ll=35.479553905001666%2C-97.49673547118734&z=13
Ocura undevelopable land	KMZ	2022	Ocura	https://www.google.com/maps/d/viewer?mid=1Qg_THrKrChLY5xQJkVJSqAuAnUwPj_p&ll=35.479553905001666%2C-97.49673547118734&z=13
Parcels	Shapefile	2022/09	Oklahoma County GIS Department	https://oklahomacounty.geocortex.com/Html5Viewer/lookup.html?configBase=http://oklahomacounty.geocortex.com/Geocortex/Essentials/REST/sites/OKCAssessor/viewers/OKCAssessor_gvh/virtualdirectory/Resources/Config/Default
Parks and green spaces	Shapefile	2022/12	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Parks&view=map
Railroad network	Shapefile	2019	Oklahoma Office of Geographic Information / Open Street Map	https://okmaps.org/OGI/search.aspx
Riparian areas	Shapefile	2022	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=PlanOKC%20Upland%20Forest%20Areas&view=map
Street network	Shapefile	2022	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Street%20Centerlines&view=map
Upland forests	Shapefile	2022	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=PlanOKC%20Upland%20Forest%20Areas&view=map
Watersheds, lakes, rivers	Shapefile	2014	Oklahoma Office of Geographic Information / OWRB Open Data Portal	https://okmaps.org/OGI/search.aspx
Zoning	Shapefile	2022/12	City of Oklahoma City Open Data Portal	https://data.okc.gov/portal/page/viewer?datasetName=Straight%20Zoning&view=map

Notes:
The Geodatabase was assembled between September and December 2022.

Table S2a: UVL detection

Parcel type	No.	Area (ac)	Area (ha)	% to total tax parcels in the urban core
Tax parcels in the urban core	65940	24197.10	9792.43	100.00
^a Vacant parcels (UVL*, Regrid + Oklahoma County Assessor GDB)	9223	4113.01	1664.51	13.99
Visual verification with Building footprint shapefiles and Google Maps/Street View	287	344.36	139.36	0.44
^b Total UVL	8936	3768.65	1525.15	13.55

Table S2b: DUVL detection

Parcel type	No.	Area (ac)	Area (ha)	% to UVL
Total UVL	8936	3768.65	1525.15	100.00
UVL in parks	348	346.58	140.26	3.89
^c UVL in riparian areas	1310	1119.10	452.89	14.66
Undevelopable Ocura UVL	60	11.91	4.82	0.67
Undevelopable Ocura UVL (Oil Wells)	49	7.62	3.08	0.55
UVL in brownfields	4	39.71	16.07	0.04
^d UVL touched by highways	40	35.74	14.46	0.45
^e UVL touched by railroads	62	119.07	48.19	0.69
Steep UVL (>25% slope)	0	0.00	0.00	0.00
UVL in agricultural land	0	0.00	0.00	0.00
^f UVL in upland forests	48	100.58	40.70	0.54
^g Total Developable UVL (DUVL)	7015	1988.33	804.67	78.50

Notes:

- ^a UVL* database is the combination of Regrid point data (Loveland parcels with no buildings, provided by Regrid) merged with County Assessor tax parcel data.
- ^b UVL is the UVL* database intersected with the Building Footprint shapefile provided by the OKC Data Portal and checked through Google Maps/Street View.
- ^c To be included in the calculations, the parcel must have at least 10% of the area in riparian areas. The total is 1372 parcels / 2.00 sq. mi. 62 parcels were excluded because they were already counted in the Parks category.
- ^d To be included in the calculations, the parcel must have at least been touched by a highway. The total is 48 parcels / 0.26 sq. mi. 8 parcels were excluded because they were already counted in the Riparian Areas category.
- ^e 78 parcels / 0.26 sq. mi. 16 parcels were excluded because they were already counted in the Riparian Areas category.
- ^f To be included in the calculations, the parcel must have at least 10% of the area covered by forests. The total is 99 parcels / 0.79 sq. mi. 51 lots were excluded because they were already counted in the Riparian Areas category.
- ^g Developable UVL (DUVL): public and private tax parcels located in the urban core, with no area or width limitation, not constrained by natural hazards or designated or zoned to protect natural resources, unoccupied by permanent structures, roads, or railroads.

Table S3: Spatial distribution of DUVL per census tract

	Ct ID	Main neighborhood(s)	Gross area (ac)	No. of tax parcels	N. of DUVL parcels	% of DUVL parcels	Tax parcel area (ac)	DUVL area (ac)	% of DUVL area
	1001	Douglas Edgemere	527.29	1664	133	7.99	381.47	27.11	7.11
b	1003	Crown Heights	516.23	1272	22	1.73	382.01	5.36	1.40
	1004	Martin Luther King	640.85	1419	326	22.97	522.84	72.72	13.91
	1005	Capitol Campus	675.05	1164	191	16.41	513.26	76.31	14.87
	1008	Original Military Park	320.89	968	46	4.75	211.32	8.93	4.23
	1009	Denniston Park	201.04	717	6	0.84	151.50	1.84	1.21
a	1010	Epworth	322.03	872	166	19.04	230.46	30.44	13.21
	1011	Paseo	160.52	360	42	11.67	119.86	10.32	8.61
	1012	East Paseo-Goodholm Park	151.00	396	18	4.55	76.22	2.46	3.23
	1013	Ross Heights	365.89	1331	138	10.37	260.14	26.69	10.26
	1014	Pitts Park	224.47	895	167	18.66	158.16	27.92	17.66
	1015	Classen North Highland Park-Lincoln Terrace	454.51	720	67	9.31	284.90	23.35	8.20
	1018	Mesta Park	159.80	558	16	2.87	102.31	5.23	5.11
	1019	Gatewood UCD	320.87	1059	26	2.46	221.67	6.65	3.00
	1020	Crestwood-Pennville-Las Vegas	324.87	1231	20	1.62	229.50	2.90	1.26
	1021	Linwood Place-Milam Place	251.93	792	26	3.28	169.62	14.01	8.26
a	1022	Reed Park	230.50	788	18	2.28	154.52	2.92	1.89
a	1023	Miller Youngs-Englewood	322.77	1243	36	2.90	220.68	5.42	2.46
	1024	Classen-Ten-Penn	321.65	1243	137	11.02	224.10	26.24	11.71
	1025	Classen Dr-Campbell Park	188.94	337	117	34.72	123.62	30.21	24.44
	1032	Sosa	253.14	468	177	37.82	168.78	35.26	20.89
b	1033	Metro Park	263.74	791	160	20.23	191.66	26.62	13.89
	1039	Shidler Wheeler	876.50	2051	472	23.01	641.13	119.11	18.58
	1041	Rotary Park-Wheeler District	798.37	1231	103	8.37	598.02	46.93	7.85
	1042	Woodson Park	459.97	850	36	4.24	348.06	6.57	1.89
a/b	1043	Aurora-Jackson	406.15	1339	65	4.85	277.56	11.22	4.04
	1044	Heronville	364.19	1303	74	5.68	222.75	22.47	10.09
	1045	Airpark	324.85	1249	37	2.96	232.01	13.10	5.65
	1046	Capitol Hill	201.54	463	40	8.64	142.01	7.42	5.22
	1047	Central Capitol Hill	309.08	637	122	19.15	229.50	26.24	11.43
b	1048	South Lindsey-Oliver Park South	479.06	1235	136	11.01	361.78	29.20	8.07
	1049	Oliver Park	479.82	1490	102	6.85	311.63	32.41	10.40
	1050	Western Hills	319.27	798	29	3.63	239.44	6.22	2.60
	1053	Top of the Town	1056.90	1225	144	11.76	749.00	36.20	4.83
b	1054	Shield-Davis	217.30	535	78	14.58	159.06	36.00	22.63
a	1055	Brook River SW 41ST	308.11	1040	51	4.90	216.91	12.39	5.71
	1056	Oak Grove Rockwood	289.56	684	142	20.76	213.48	32.03	15.00
a/b	1060	Forest Park	16.91	0	0	0.00	0.00	0.00	0.00
	1061	Persimmons Hill-Zoo-North Creston Hill	2352.27	1170	73	6.24	2079.69	49.19	2.37
a	1062	Wildewood Hills/Heights	372.22	180	69	38.33	279.86	23.91	8.55
a	1093	Edgemere Park	298.84	1014	36	3.55	196.42	7.46	3.80
	1094	Heritage Hills	327.61	682	45	6.60	210.37	18.29	8.69
	1095	Culbertson-JFK-Carverdale	1405.22	2170	528	24.33	1091.23	185.92	17.04
a/b	1096	OU Campus	262.33	297	36	12.12	168.20	22.94	13.64
	1097	Deep Deuce-Bricktown-Harrison Walnut	946.83	1375	615	44.73	529.42	122.09	23.06
b	1098	Pilot Center Park	662.11	795	232	29.18	467.45	55.20	11.81
b	1099	Automobile Alley-Film Row-Riverside	807.07	998	446	44.69	578.63	117.54	20.31
b	1100	Westlawn Gardens	1284.27	1551	487	31.40	973.46	162.13	16.65
b	100201	Shepherd Historic District	281.83	643	3	0.47	192.95	0.66	0.34
	100202	Putnam West Heights	232.92	758	40	5.28	171.27	14.01	8.18
b	100203	Sequoyah	314.20	1224	45	3.68	241.29	8.64	3.58

	105101	Zachary Taylor	1421.47	1185	285	24.05	1072.91	135.97	12.67
	105201	Woods Block Club	322.91	723	20	2.77	266.02	5.52	2.08
	105202	Springlake Park	316.97	556	22	3.96	272.36	11.60	4.26
	105904	Lyons Park	407.25	1325	19	1.43	302.59	6.35	2.10
a	106501	Fbir-Wileman's Belle Isle	541.25	1178	15	1.27	427.31	2.74	0.64
	106502	Belle Isle View Community 2000	599.47	1596	49	3.07	437.65	22.78	5.20
b	106503	Glenbrook	648.63	636	19	2.99	531.38	20.72	3.90
	106601	Mayfair West	295.48	946	38	4.02	212.70	12.14	5.71
a	106608	Edgewater-Lakepointe	4.53	0	0	0.00	0.00	0.00	0.00
a	106609	Mayview-Lakeside	51.11	55	3	5.45	43.60	1.82	4.18
a	106610	Roberts Crest	252.34	411	6	1.46	192.15	1.98	1.03
	106611	Wileman 3-Mayfair	166.01	121	6	4.96	129.47	4.11	3.17
a	107001	Industrial Heights	208.67	622	16	2.57	159.92	2.94	1.84
a	107002	State Fair Park	647.98	24	1	4.17	540.16	0.14	0.03
a/b	107103	Mayridge	164.72	634	2	0.32	128.99	0.25	0.19
	107104	Goldman Park	329.56	753	5	0.66	224.49	1.14	0.51
	107215	Ceena	315.72	1405	5	0.36	246.92	8.56	3.47
	107216	Brock Creek	321.03	852	8	0.94	252.34	3.85	1.53
	107217	US Grant High School	141.67	497	3	0.60	107.76	0.49	0.45
a	107218	Rancho Village Watchful Eyes	312.23	893	14	1.57	246.51	3.74	1.52
	107219	Highlander Community South	149.20	569	15	2.64	111.91	2.68	2.39
a	107223	South Walker	149.47	568	0	0.00	113.03	0.00	0.00
a	107225	SouthEast High School	215.24	442	13	2.94	178.81	2.96	1.65
a	107305	Trosper Park Golf Club	435.23	329	46	13.98	336.401	23.11	6.87
a/b	107306	Shallow Brook	114.90	36	9	25.00	90.30	1.91	2.12
a	980002	Integris Baptist Medical Center	36.90	7	1	14.29	24.78	1.45	5.85
	980003	Chesapeake Energy	115.00	71	19	26.76	88.18	6.92	7.85
	980005	Oklahoma City VA Medical Center	34.58	14	1	7.14	27.61	0.17	0.61
	980006	Cottage District	30.19	20	3	15.00	21.01	0.08	0.38
	980007	Central Business District	98.84	53	1	1.89	68.20	0.11	0.16
	980008	OU Medical Center	99.75	87	21	24.14	73.91	4.91	6.64
	980009	Scissortail Park	87.32	57	9	15.79	46.56	2.81	6.03
	Total	/	32688.90	65940	7015	/	24197.10	1988.33	/

Notes:

- a Census tracts with boundary out of the urban core area (only the area within the urban core is calculated).
- b Parcels on two census tracts were included in the census tract where they extended with more area.

Table S4: Property type analysis

Property Type	No. of DUVL parcels	% of tot DUVL parcels
Commercial	1385	19.74
Commercial Residential	1	0.01
Tax-Exempt	1817	25.90
Industrial	453	6.46
Partial Exempt	6	0.09
Public Service	107	1.53
Residential	3246	46.27
Total	7015	100.00

Table S5a: Zoning analysis

Zoning district (ZD)	No. of DUVL in ZD	Distribution of DUVL in ZD (%)	No. of tax parcels in ZD	% of DUVL in ZD
AA Agricultural District	0	0.00	5	0.00
BC Bricktown Core Development District	26	0.38	122	21.31
C-1 Neighborhood Commercial District	8	0.12	26	30.77
C-3 Community Commercial District	247	3.61	1267	19.49
C-4 General Commercial District	175	2.56	959	18.25
C-CBD Central Business District	27	0.40	169	15.98
DBD Downtown Business District	253	3.70	766	33.03
DTD-1 Downtown Transitional District Limited	203	2.97	573	35.43
DTD-2 Downtown Transitional District General	312	4.57	645	48.37
HP Historic Preservation District	24	0.35	2238	1.07
I-1 Light Industrial District	157	2.30	682	23.02
I-2 Moderate Industrial District	664	9.72	2577	25.77
I-3 Heavy Industrial District	93	1.36	378	24.60
NB Neighborhood Business District	35	0.51	123	28.46
NC Neighborhood Conservation District	34	0.50	337	10.09
O-1 Limited Office District	18	0.26	52	34.62
O-2 General Office District	72	1.05	378	19.05
PUD Planned Unit Development District	474	6.94	1582	29.96
R-1 Single-Family Residential (6000 sq ft minimum) District	2297	33.61	37866	6.07
R-2 Medium-Low Residential District	950	13.90	10301	9.22
R-3 Medium Density Residential District	264	3.86	1014	26.04
R-4 General Residential District	233	3.41	1261	18.48
R-MH-2 Manufactured (Mobile) Home Park District	2	0.03	4	50.00
SPUD Simplified Planned Unit Development District	258	3.78	734	35.15
SYD Stockyards City Development District	8	0.12	32	25.00
Total	6834 *	100.00	64091	/

Notes:

* The zoning analysis considered data for base and special purpose districts in OKC's urban core available in the City Open Data Portal. The total number of tax parcels surveyed in the analysis is 6834, less than the number of DUVL in the urban core (7015). DUVL parcels in the University of Oklahoma Medical Center and in the Oklahoma State Capitol area (Capitol View neighborhood) are not surveyed.

Table S5b: Zoning analysis, non-conforming DUVL parcels in R-1 zones

R-1 DUVL parcels less than 557,41 m ² (6000 sq ft)	% of non-conforming R-1 DUVL parcels for minimum area requirements	R-1 DUVL parcels less than 15,24 m (50') wide	% of non-conforming R-1 DUVL parcels for minimum width requirements	R-1 DUVL parcels more than 557,41 m ² and less than 15,24 m wide	% of on-conforming R-1 DUVL according to minimum standards
552	24.03	332	14.45	6	24.29

Table S6: Street type analysis

Street Type	No. of DUVL	% of DUVL
Freeway	13	0.19
Industrial	62	0.93
Local	4838	72.41
Local Collector	21	0.31
Major Arterial	967	14.47
Major Collector	469	7.02
Minor Arterial	206	3.08
Private	99	1.48
Ramp	6	0.09
Total	6681 *	100.00

Notes:

* Total missing DUVL=334. Accuracy percentage=95.24%

Table S7: Proximity to urban elements analysis

Proximity to OKC geographic center

Distance from the geographic center	Circle net area (ac)	Distribution of urban core area in the net circles (%)	No. of DUVL parcels	No. of DUVL per ac	Distribution of DUVL in the net circles (%)	No. of tax parcels in the net circles	% of DUVL compared to tax parcels in the net circles
<1/4 mile radius circle	123.60	0.38	18	0.15	0.26	124	14.52
1/4-1/2 mile radius circle	370.81	1.13	103	0.28	1.47	436	23.62
1/2-1 mile radius circle	1483.22	4.54	911	0.61	12.99	2048	44.48
1-2 mile radius circle	5932.89	18.15	1974	0.33	28.14	10800	18.28
2-4 mile radius circle	17263.30	52.81	3508	0.20	50.01	39772	8.82
4-6 mile radius circle	7481.26	22.89	500	0.07	7.13	12713	3.93
6-8 mile radius circle	33.82	0.10	1	0.03	0.01	47	2.13
Total	32688.90	100	7015	/	100	65940	/

Proximity to railroads

Distance from railroads	Buffer net area (ac)	Distribution of urban core area in the buffers (%)	No. of DUVL parcels	No. of DUVL per ac	Distribution of DUVL in the buffers (%)	No. of tax parcels in the buffer	% of DUVL compared to tax parcels in the buffer
<1/4 mile buffer	9534.54	29.17	2578	0.27	36.75	12968	19.88
1/4-1/2 mile buffer	6493.21	19.86	1993	0.31	28.41	12169	16.38
1/2-1 mile buffer	7511.57	22.98	1604	0.21	22.87	17473	9.18
1-2 mile buffer	6964.94	21.31	698	0.10	9.95	18317	3.81
>2 mile buffer	2184.64	6.68	142	0.06	2.02	5013	2.83
Total	32688.90	100.00	7015	/	100	65940	/

Proximity to highways

Distance from highways	Buffer net area (ac)	Distribution of urban core area in the buffers (%)	No. of DUVL parcels	No. of DUVL per ac	Distribution of DUVL in the buffers (%)	No. of tax parcels in the buffer	% of DUVL compared to tax parcels in the buffer
<1/4 mile buffer	9528.498413	29.15	1832	0.19	26.12	12247	14.96
1/4-1/2 mile buffer	6786.16	20.76	1474	0.22	21.01	10255	14.37
1/2-1 mile buffer	9834.40	30.08	2564	0.26	36.55	24439	10.49
1-2 mile buffer	6126.20	18.74	1114	0.18	15.88	18007	6.19
>2 mile buffer	413.65	1.27	31	0.07	0.44	992	3.13
Total	32688.90	100.00	7015	/	100	65940	/

Proximity to brownfields

Distance from brownfields	Buffer net area (ac)	Distribution of urban core area in the buffers (%)	No. of DUVL parcels	No. of DUVL per ac	Distribution of DUVL in the buffers (%)	No. of tax parcels in the buffer	% of DUVL compared to tax parcels in the buffer
<1/4 mile buffer	1473.83	4.51	503	0.34	7.17	1461	34.43
1/4-1/2 mile buffer	1779.41	5.44	867	0.49	12.36	2213	39.18
1/2-1 mile buffer	3827.66	11.71	1263	0.33	18.00	6754	18.70
1-2 mile buffer	7272.86	22.25	2281	0.31	32.52	16487	13.84
2-4 mile buffer	14397.40	44.04	1929	0.13	27.50	30484	6.33
4-6 mile buffer	3937.73	12.05	172	0.04	2.45	8541	2.01
Total	32688.90	100.00	7015	/	100	65940	/

Proximity to riparian areas

Distance from riparian areas	Buffer net area (ac)	Distribution of urban core area in the buffers (%)	No. of DUVL parcels	No. of DUVL per ac	Distribution of DUVL in the buffers (%)	No. of tax parcels in the buffer	% of DUVL compared to tax parcels in the buffer
<1/4 mile buffer	17947.23	54.90	3072	0.17	43.79	29051	10.57
1/4-1/2 mile buffer	7299.23	22.33	1717	0.24	24.48	17647	9.73
1/2-1 mile buffer	6194.80	18.95	1911	0.31	27.24	16370	11.67
1-2 mile buffer	1247.64	3.82	315	0.25	4.49	2872	10.97
Total	32688.90	100.00	7015	/	100	65940	/

Table S8: Slope analysis

Slope percentage	<2.5%	2.5-5%	5.0-7.5%	7.5-10%	10-12.5%	12.5-15%	>15%	Total
No. of DUVL parcels	4239	2324	417	35	0	0	0	7015
% of DUVL parcels	60.43	33.13	5.94	0.50	0.00	0.00	0.00	100.00
No. of tax parcels	42704	20663	2346	209	15	3	0	65940
% of tax parcels	64.76	31.34	3.56	0.32	0.02	0.00	0.00	100.00

Table S9: Geometric analysis by shape and area

Parcel type according to street access	No.	%									No. of DUVL in the category	% of DUVL in the category
On-street DUVL parcels	6909	98.49										
DUVL parcels with no street access	106	1.51										
Total	7015	100.00										
Parcel category	< 1/8 ac	1/8-1/4 ac	1/4-1/2 ac	1/2-1 ac	1-2 ac	2-4 ac	4-6 ac	6-8 ac	8-10 ac	>10ac	No. of DUVL in the category	% of DUVL in the category
On-Street DUVL parcels												
No. of triangular DUVL parcels	52	14	8	4	1	1	0	0	0	0	80	1.14
No. of rectangular DUVL parcels	1253	3401	676	222	65	18	11	0	2	0	5648	80.51
No. of irregular quadrilateral DUVL parcels	117	129	80	28	12	5	0	0	1	0	372	5.30
No. of sliced DUVL parcels	179	10	15	6	2	0	0	0	0	0	212	3.02
No. of panhandled DUVL parcels	17	3	5	3	2	1	0	0	0	0	31	0.44
No. of complex DUVL parcels	101	153	126	80	56	25	10	7	3	5	566	8.07
DUVL parcels with no access to streets												
No. of triangular DUVL parcels	4	0	0	1	0	0	0	0	0	0	5	0.07
No. of rectangular DUVL parcels	35	22	12	0	2	0	0	0	0	0	71	1.01
No. of irregular quadrilateral DUVL parcels	2	0	0	1	1	2	1	1	0	0	8	0.11
No. of sliced DUVL parcels	2	0	0	0	0	0	0	0	0	0	2	0.03
No. of panhandled DUVL parcels	2	0	0	0	0	1	0	0	0	0	3	0.04
No. of complex DUVL parcels	4	2	0	2	5	2	1	1	0	0	17	0.24
Total	1768	3734	922	347	146	55	23	9	6	5	7015	100.00

Table S10: Area comparison between DUVL and tax parcels

	< 1/8 ac	1/8 - 1/4 ac	1/4 - 1/2 ac	1/2 - 1 ac	1 - 2 ac	2 - 4 ac	4 - 6 ac	6-8 ac	8-10 ac	> 10 ac	Total
No. of DUVL	1768	3734	922	347	146	55	23	9	6	5	7015
% of DUVL	25.20	53.23	13.14	4.95	2.08	0.78	0.33	0.13	0.09	0.07	100.00
	< 1/8 ac	1/8 - 1/4 ac	1/4 - 1/2 ac	1/2 - 1 ac	1 - 2 ac	2 - 4 ac	4 - 6 ac	6-8 ac	8-10 ac	> 10 ac	Total
No. of tax parcels	5613	48740	6998	2219	1085	664	261	95	63	202	65940
% of tax parcels	8.51	73.92	10.61	3.37	1.65	1.01	0.40	0.14	0.10	0.31	100.00
Occurrence of DUVL per area group (%)	31.50	7.66	13.18	15.64	13.46	8.28	8.81	9.47	9.52	2.48	/

Table S11a: OKC current main zoning development standards

Zones	Residential uses permitted	Density standards	Minimum lot area	Minimum lot width	Max height
AA	Only SF permitted	1 du/ 5 ac	5 ac	150'	45'
BC	Both SF/MF permitted	No restrictions	No restrictions	No restrictions	140'
C-1	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
C-3	No residential use/MF only allowed within the Mayfair Heights	No restrictions	For rezoning 12000 sq ft	50'	Various, between 35' and 6 stories
C-4	No residential use	No restrictions	For rezoning: 40000 sq ft	No restrictions	Various, between 35' and 6 stories
C-CBD	Only MF permitted	No restrictions	No restrictions	No restrictions	20 standard stories
DBD	Both SF/MF permitted	No restrictions	No restrictions	No restrictions	No restrictions
DTD-1	Both SF/MF permitted	No restrictions	No restrictions	No restrictions	No restrictions
DTD-2	Both SF/MF permitted	No restrictions	No restrictions	No restrictions	3 stories or 50'
HP	SF permitted/MF special exception	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions
I-1	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
I-2	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
I-3	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
NB	SF permitted/MF conditional	No restrictions	No restrictions	No restrictions	Various, between 20 and 35'
NC	Both SF/MF permitted	Single-Family: 1 du/4,000 sq ft Two-Family: 1 du/2,000 sq ft	Dwelling: 4,000 sq ft	Dwelling: 40'	2½ stories or 35 sq ft
O-1	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
O-2	No residential use	Does not apply	Does not apply	Does not apply	Does not apply
PUD	Both SF/MF permitted	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions
R-1	Only SF permitted	1 du/6000 sq ft	6000 sq ft	50'	2½ stories or 35 sq ft
R-2	Both SF/MF permitted	Two-Family: 1du/3000 sq ft Single-Family: 1du/5000 sq ft	Two-Family: 6000 sq ft Single-Family: 5000 sq ft	Two-Family: 50'	2½ stories or 35 sq ft
R-3	Both SF/MF permitted	Single-Family: 5,000 sq ft Two-Family: 5000 sf or 1du/2500 sq ft Three-Family and Four-Family: 7000 sq ft	Single-Family: 1du/5000 sq ft Two-Family: 1du/2500 sq ft Three-Family and Four-Family: 1du/1750 sq ft	Single-Family: 50' Two-Family: 50' or 1du/30' Other: 100'	2½ stories or 35 ft
R-4	Both SF/MF permitted	Single-Family: 1du/5000 sq ft Two-Family: 1du/2500 sq ft Other: 1du/1250 sq ft	Single-Family: 5,000 sq ft Two-Family: 5000 sq ft or 1du/2500 sq ft Other: 7500 sq ft	Single-Family: 50' Two-Family: 50' or 1du/30' Other Uses: 100'	Various, between 60 ft and 75 ft
R-MH-2	Only manufactured/mobile homes permitted	10 manufactured (mobile) homes/acre	2.5 ac	No restrictions	35'
SPUD	Both SF/MF permitted	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions	Restrictions need discussions
SYD	No residential use	Does not apply	Does not apply	Does not apply	Does not apply

Notes:

SF: single family housing. MF: multifamily housing.

Table S11b: Housing potential assessment: applied density for each scenario

Zoning District	Plan OKC Land Use Typology Area	Scenario 1 Density (du/ac)	Scenario 2 Density (du/ac)	Scenario 3 Density (du/ac)
DBD	Downtown	50	87.5	125
BC; DTD-1; DTD-2	Urban High Intensity	40	70	100
C-CBD; HP; NB; NC; PUD; SPUD	Urban Medium Intensity	10	25	40
C1; C3; O-1; O-2	Urban Medium Intensity	Not calculated	Not calculated	40
C-4; I-1; I-2; I-3; SYD	Urban Low Intensity	Not calculated	Not calculated	19
R1	Urban Medium Intensity	1 du/6000 sq ft	15	19
R2	Urban Medium Intensity	Two-Family: 1du/3000 sq ft Single-Family: 1du/5000 sq ft	15	19
R3	Urban Medium Intensity	Single-Family: 5000 sq ft Two-Family: 5000 sq ft or 1du/2500 sq ft Three-Family and Four-Family: 7000 sq ft	20	40
R4	Urban Medium Intensity	Single-Family: 1du/5000 sq ft Two-Family: 1du/2500 sq ft Other: 1du/1250 sq ft	25	40
RM-H2	Urban Medium Intensity	10 manufactured (mobile) homes/ac	10	10

Table S12a: Housing potential assessment: scenario 1

Zoning District	Parcels surveyed	Area (ac)	Applied density (du/acre)	No. of units	No. of residents
AA Agricultural District	0	0.00	0	0	0
BC Bricktown Core Development District	23	8.97	40	346	892
C-1 Neighborhood Commercial District	0	0.00	0	0	0
C-3 Community Commercial District	0	0.00	0	0	0
C-4 General Commercial District	0	0.00	0	0	0
C-CBD Central Business District	27	7.35	10	60	154
DBD Downtown Business District	246	68.34	50	3312	8544
DTD-1 Downtown Transitional District Limited	200	41.23	40	1543	3980
DTD-2 Downtown Transitional District General	308	64.81	40	2441	6297
HP Historic Preservation District	20	4.70	10	37	95
I-1 Light Industrial District	0	0.00	0	0	0
I-2 Moderate Industrial District	0	0.00	0	0	0
I-3 Heavy Industrial District	0	0.00	0	0	0
NB Neighborhood Business District	34	8.51	10	69	178
NC Neighborhood Conservation District	34	7.74	10	58	149
O-1 Limited Office District	0	0.00	0	0	0
O-2 General Office District	0	0.00	0	0	0
PUD Planned Unit Development District	456	87.45	10	621	1602
R-1 Single-Family Residential (6000 sq ft minimum) District	2243	432.20	1 du/6000 sq ft	2318	5980
R-2 Medium-Low Residential District	938	154.33	Two-Family: 1du/3000 sq ft Single-Family: 1du/5000 sq ft	1723	4445
R-3 Medium Density Residential District	259	34.64	Single-Family: 5000 sq ft Two-Family: 5000 sq ft or 1du/2500 sq ft Three-Family and Four-Family: 7000 sq ft	726	1873
R-4 General Residential District	221	41.60	Single-Family: 1du/5000 sq ft Two-Family: 1du/2500 sq ft Other: 1du/1250 sq ft	582	1501
R-MH-2 Manufactured (Mobile) Home Park District	1	0.03	10 manufactured (mobile) homes/ac	0	0
SPUD Simplified Planned Unit Development District	251	58.59	10	461	1189
SYD Stockyards City Development District	0	0.00	0	0	0
Total	5261	1020.50	/	14297	36879

Notes:

For scenario 1:

Parcels < 1000 sq ft are excluded from calculations.

Capitol/University of Oklahoma Medical Center zones are excluded.

Parcels > 2 ac are excluded.

Commercial, office, and industrial zones are excluded.

Deductions for future streets and sidewalks are calculated as follows:

Tax parcels under 3/8 ac assume 0% of land deducted;

Tax parcels between 3/8 ac and 1 ac assume a 10% of land deducted;

Tax parcels greater than 1 ac assume an 18.5% of land deducted.

Deductions are calculated for each parcel.

Table S12b: Housing potential assessment: scenario 2

Zoning District	Parcels surveyed	Area (ac)	Applied density (du/acre)	No. of units	No. of residents
AA Agricultural District	0	0.00	0	0	0
BC Bricktown Core Development District	25	16.32	70	1130	2915
C-1 Neighborhood Commercial District	0	0.00	0	0	0
C-3 Community Commercial District	0	0.00	0	0	0
C-4 General Commercial District	0	0.00	0	0	0
C-CBD Central Business District	27	7.35	25	170	438
DBD Downtown Business District	249	77.53	87.5	6667	17200
DTD-1 Downtown Transitional District Limited	200	41.23	70	2784	7182
DTD-2 Downtown Transitional District General	308	64.81	70	4377	11292
HP Historic Preservation District	20	4.70	25	107	276
I-1 Light Industrial District	0	0.00	0	0	0
I-2 Moderate Industrial District	0	0.00	0	0	0
I-3 Heavy Industrial District	0	0.00	0	0	0
NB Neighborhood Business District	34	8.51	25	197	508
NC Neighborhood Conservation District	34	7.74	25	181	466
O-1 Limited Office District	0	0.00	0	0	0
O-2 General Office District	0	0.00	0	0	0
PUD Planned Unit Development District	470	148.11	25	3488	8999
R-1 Single-Family Residential (6000 sq ft minimum) District	2253	464.15	15	5978	15423
R-2 Medium-Low Residential District	938	154.33	15	1893	4883
R-3 Medium Density Residential District	260	37.32	20	668	1723
R-4 General Residential District	227	68.65	25	1538	3968
R-MH-2 Manufactured (Mobile) Home Park District	2	1.98	10	19	49
SPUD Simplified Planned Unit Development District	254	65.84	25	1513	3903
SYD Stockyards City Development District	0	0.00	0	0	0
Total	5301	1168.58	/	30710	79225

Notes:

For scenario 2:

Parcels < 1000 sq ft are excluded from calculations.

Capitol/University of Oklahoma Medical Center zones are excluded.

Parcels > 2 ac are included.

Commercial, office, and industrial zones are excluded.

Deductions for future streets and sidewalks are calculated as follow:

Tax parcels under 3/8 ac assume 0% of land deducted;

Tax parcels between 3/8 ac and 1 ac assume a 10% of land deducted;

Tax parcels greater than 1 ac assume an 18.5% of land deducted.

Deductions are calculated for each parcel.

Table S12c: Housing potential assessment: scenario 3

Zoning District	Parcels surveyed	Area (ac)	Applied density (du/acre)	No. of units	No. of residents
AA Agricultural District	0	0.00	0	0	0
BC Bricktown Core Development District	25	16.32	100	1618	4174
C-1 Neighborhood Commercial District	8	1.43	40	138	356
C-3 Community Commercial District	230	83.04	40	3203	8263
C-4 General Commercial District	169	0.13	19	555	1431
C-CBD Central Business District	27	7.35	40	281	724
DBD Downtown Business District	249	77.53	125	9581	24718
DTD-1 Downtown Transitional District Limited	200	41.23	100	4026	10387
DTD-2 Downtown Transitional District General	308	64.81	100	6347	16375
HP Historic Preservation District	20	4.70	40	177	456
I-1 Light Industrial District	155	33.94	19	583	1504
I-2 Moderate Industrial District	639	247.63	19	4399	11349
I-3 Heavy Industrial District	87	120.67	19	2253	5812
NB Neighborhood Business District	34	8.51	40	325	838
NC Neighborhood Conservation District	34	7.74	40	293	755
O-1 Limited Office District	18	3.22	40	119	307
O-2 General Office District	72	34.30	40	1337	3449
PUD Planned Unit Development District	470	148.11	40	5691	14682
R-1 Single-Family Residential (6000 sq ft minimum) District	2253	464.15	19	7733	19951
R-2 Medium-Low Residential District	938	154.33	19	2360	6088
R-3 Medium Density Residential District	260	37.32	40	1543	3980
R-4 General Residential District	227	68.65	40	2641	6813
R-MH-2 Manufactured (Mobile) Home Park District	2	1.98	10	37	95
SPUD Simplified Planned Unit Development District	254	65.84	40	2493	6431
SYD Stockyards City Development District	8	1.29	19	20	51
Total	6687	1694.21	/	57753	148989

Notes:

For scenario 3:

Parcels < 1000 sq ft are excluded from calculations.

Capitol/University of Oklahoma Medical Center zones are excluded.

Parcels > 2 ac are included.

Commercial, office, and industrial zones are included.

Deductions for future streets and sidewalks are calculated as follows:

Tax parcels under 3/8 ac assume 0% of land deducted;

Tax parcels between 3/8 ac and 1 ac assume a 10% of land deducted;

Tax parcels greater than 1 ac assume an 18.5% of land deducted.

Deductions are calculated for each parcel.