Redlining Parcels’ greenspace area

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|  | 1990 | 2020 | Change |
| Redlining Area | 12462 km2 | 12462 km2 | 0 |
| Total Vegetation Area | 1002.51 km2 | 718.64 km2 | -283.87 km2 (-28.3%) |
| Percentage | 8.04% | 5.77% | -2.27% |
| Grade A Vegetation (%) | 113.80 km2 (8.90%) | 92.37km2  (8.51%) | -21.43km2  (-18.83% from 90s) |
| Grade B | 231.04 km2  (8.51%) | 168.50km2  (7.22%) | -62.53km2  (-27.07% from 90s) |
| Grade C | 416.54km2  (8.03%) | 291.58km2  (5.62%) | -124.50km2  (-30.00% from 90s) |
| Grade D | 241.13km2  (7.35%) | 166.19km2  (5.06%) | -74.94km2  (-31.08% from 90s) |

Sensitive Test

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| Cutoff Value | 1990 | Reduce | 2020 | Reduce |
| 0.05 | 16988860 | 0 | 16418459 | 0 |
| 0.1 | 16919793 | -69067 | 15572217 | -846242 |
| 0.15 | 16738166 | -181627 | 14682234 | -889983 |
| 0.2 | 16379630 | -358536 | 13756139 | -926095 |
| 0.25 | 15859238 | -520392 | 12776695 | -979444 |
| 0.3 | 15227870 | -631368 | 11707478 | -1069217 |
| 0.35 | 14511844 | -716026 | 10528135 | -1179343 |
| 0.4 | 13720073 | -791771 | 9242691 | -1285444 |
| 0.45 | 12847595 | -872478 | 7876994 | -1365697 |
| 0.5 | 11865758 | -981837 | 6492335 | -1384659 |
| 0.6 | 9267116 | -2598642 | 3918082 | -2574253 |
| 0.7 | 5536817 | -3730299 | 1893635 | -2024447 |
| 0.8 | 2183487 | -3353330 | 650248 | -1243387 |
| 0.9 | 595635 | -1587852 | 164317 | -485931 |
| 1 | 153122 | -442513 | 42449 | -121868 |

Redlining Parcels’ landscape metrics summary (Changes)/Cut off value as 0.3

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| Indicators | Implications | Grade A | Grade B | Grade C | Grade D |
| AI | Aggregation (+) | -5.20  (-5.4%) | -9.61  (-10.1%) | -12.04  (-12.8%) | -11.43  (-12.5%) |
| CAI | Core Area (+) | -21.12  (-29.7%) | -28.02  (-43.7%) | -29.31  (-55.2%) | -23.91  (-53.7%) |
| ED | Fragm & Complexity (+) | 3.9\*10e6  (261.2%) | 5.0\*10e6  (186.5%) | 4.8\*10e6  (110.4%) | 3.5\*10e6  (61.8%) |
| PD | Fragmentation (+) | 2.9\*10e5  (84.4%) | 5.9\*10e5  (139.0%) | 7.3\*10e5  (166.1%) | 7.5\*10e5  (113.1%) |
| CA | Area size (+) | -13.37  (-9.1%) | -27.80  (-20.4%) | -45.86  (26.1%) | -47.73  (-29.6%) |
| Contig | Connectivity (+) | -0.17  (-20.5%) | -0.23  (-29.6%) | -0.24  (-34.9%) | -0.20  (-32.0%) |
| Area | Area size (edge con.) | -48.3  (43.3%) | -53.00  (57.4%) | -61.77  (-68.5%) | -46.45  (-69.4%) |

Landscape metrics interpretations

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| Indicator | Definition |
| PD | Patch density is an 'Aggregation metric'. It is calculated by the number of patches of class i divided by total area. Then the result would multiply 1\*1000000. It describes the fragmentation of a class, however, does not necessarily contain information about the configuration or composition of the class. Value Range: 0-10\*e+06. The higher the value is, the more class of landscape becomes patchy or fragmented.  (Function in R: lsm\_c\_pd) |
| ED | Edge density: lengths of all urban patch type’s edge segments divided by the total landscape area (and multiplied by 10000). It measured the fragmentation of urban landcover. Value Range: >=0, the higher the value is, the landscape is becoming more fragmented or patchy  (Function in R: lsm\_c\_ed) |
| CAI\_MN | Core area metric: The metric summarizes each class as the meaning of the core area index of all patches belonging to class i. The core area index is the percentage of core area in relation to patch area. A cell is defined as core area if the cell has no neighbour with a different value than itself. Value Range: 0-100; CAI\_MN = 0 when all patches have no core area and approaches CAI\_MN = 100 with increasing percentage of core area within patches. (Function in R: lsm\_cai\_mn). |
| AI | Aggregation Metrics (Index): 'Aggregation metric'. It equals the number of like adjacencies divided by the theoretical maximum possible number of like adjacencies for that class. The metric is based on the adjacency matrix and the single-count method. Value Range: 0-100; Equals 0 for maximally disaggregated and 100 for maximally aggregated classes. (Function in R: lsm\_c\_ai) |
| CONTIG\_MN | A type of 'Shape metric' measuring the connectivity. It summarizes each class as the meaning of each patch belonging to class i. CONTIG\_MN asses the spatial connectedness (contiguity) of cells in patches. The metric coerces patch values to a value of 1 and the background to NA. The contiguity index in landscape metrics is a measure used to assess the spatial connectedness or compactness of a particular land cover type within a landscape. It quantifies how contiguous or uninterrupted a class of land cover type is, helping to identify areas of fragmentation or isolation. Value range: 0-1; The larger and more connections between patch cells in the rookie case result in larger contiguity index values. (Function in R: lsm\_c\_contig\_mn) |
| Area\_MN | AREA\_MN is an 'Area and Edge metric'. The metric summarises each class as the mean of all patch areas belonging to class i. Value Range: >=0; Approaches AREA\_MN = 0 if all patches are small. Increases, without limit, as the patch areas increase. (Function in R: lsm\_c\_area\_mn) |
| CA\_MN | CA is an 'Area and edge metric' and a measure of composition. The total (class) area sums the area of all patches belonging to class i. It shows if the landscape is e.g. dominated by one class or if all classes are equally present. CA is an absolute measure, making comparisons among landscapes with different total areas difficult. Range: CA>0. Approaches CA > 0 as the patch areas of class i become small. Increases, without limit, as the patch areas of class i become large. CA = TA if only one class is present. |