A satellite nightlights map of Punjab, India, showing a dense network of yellow and orange lights representing urban areas and infrastructure. The map is set against a dark blue background with some cloud cover.

REPORT ON NIGHTLIGHTS DATA OF PUNJAB

Gross Domestic Product (GDP), historically has been a standard measure of economic activity. It records the value of all final goods and services produced within the country during a given period, net of the value of inputs. GDP data requires estimations and extrapolations because not all economic activities can be completely captured.

In recent time, night-time radiance, traced from outer space through satellites, has increasingly emerged as a pertinent measure for changes in economic activities irrespective of their sources (formal or informal sectors). It is also a more significant representation of economic activities in manufacturing and services, than agriculture. Farmers have lower access to electricity, and primarily use it for pumping water that doesn't generate nightlights. Ideally, an increase in luminosity eyes the essence of a country's developmental and its macro-economic indicators, for example - access to electricity, reliable power supply, increased electricity consumption, increased income level, industrial production, money and credit growth.

Nightlights has become a reasonable indicator for GDP at the national and sub-national levels, with a very high level of spatial granularity. It does not suffer from questions around data quality or manipulation, and its errors are considered to be free of political bias.

Ahead of assembly elections in Punjab, we present nightlights data to enable a constituency-level comparison for the economic activities over six years, covering 2015 to 2020.

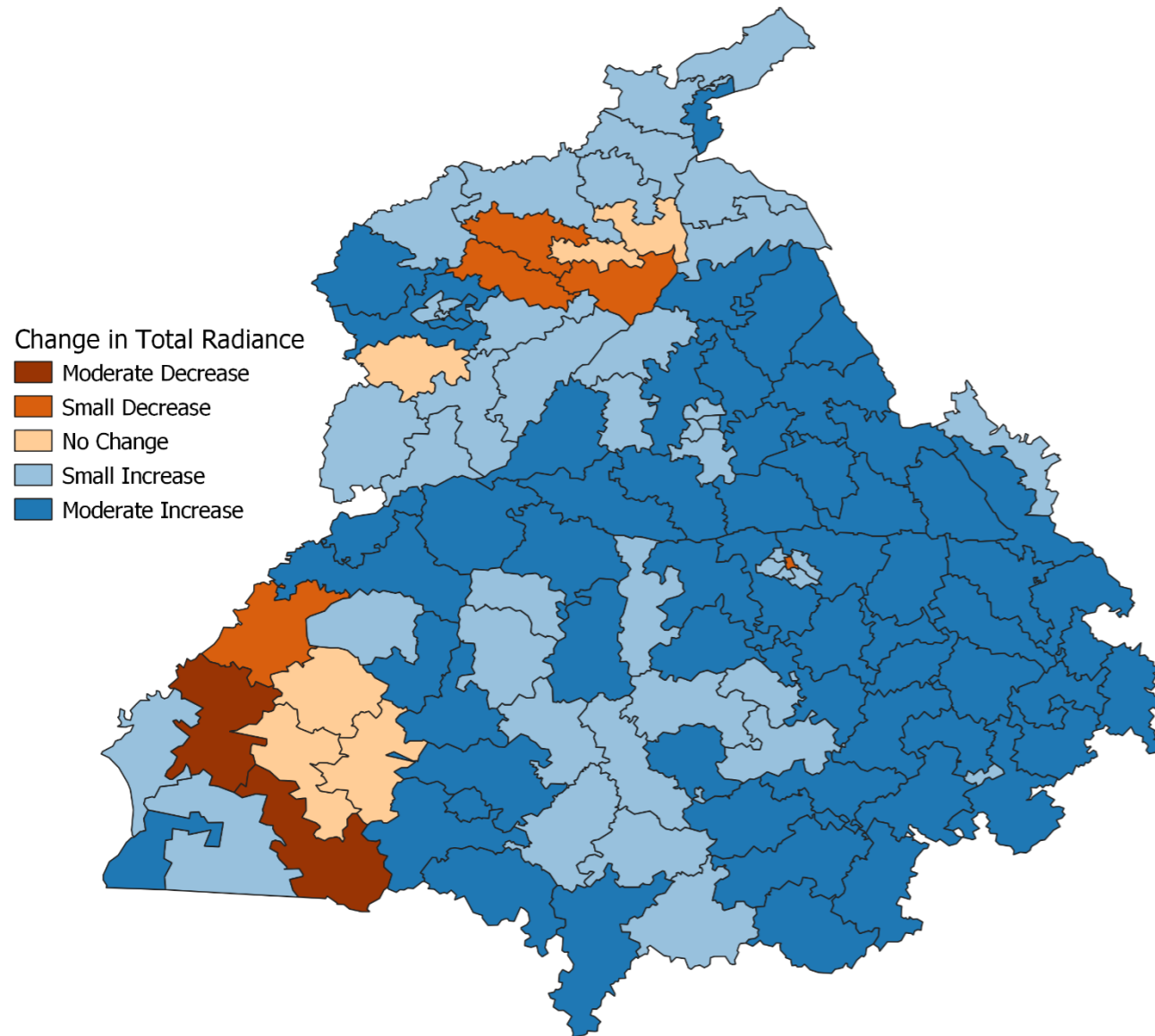
Nightlights as the Indicator of Growth in Economic Activity in Punjab

This report presents data and visualisations for the state of Punjab, and provides pertinent insights from illustrations on the level and change in economic activity for all of its 117 assembly constituencies.

The three nightlight variables highlighted here include total radiance, change in total number of lit pixels and percentage change in lit pixels.

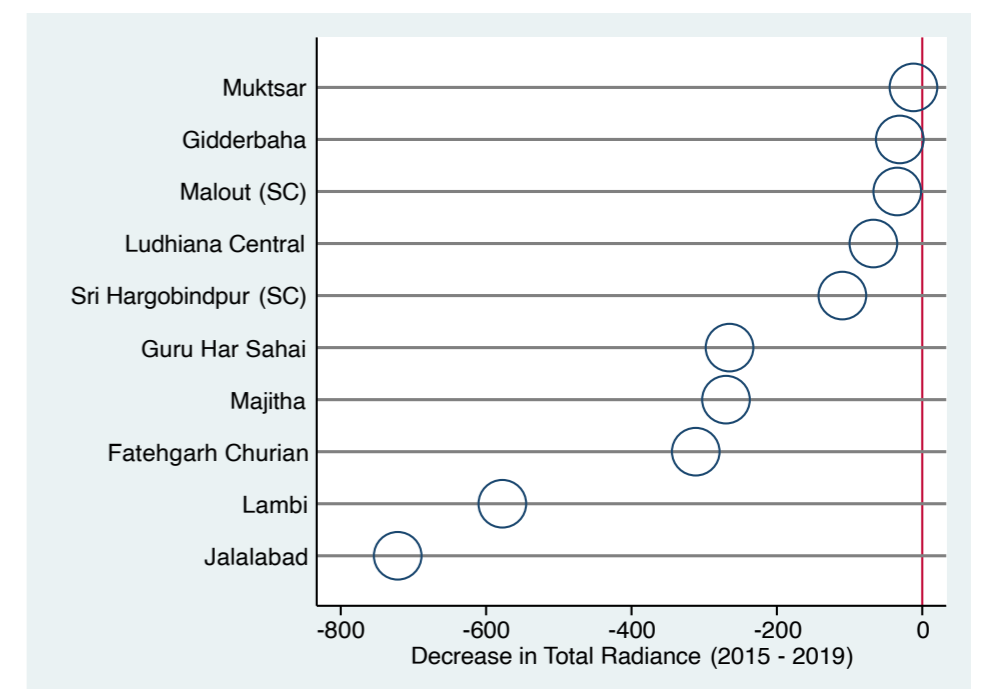
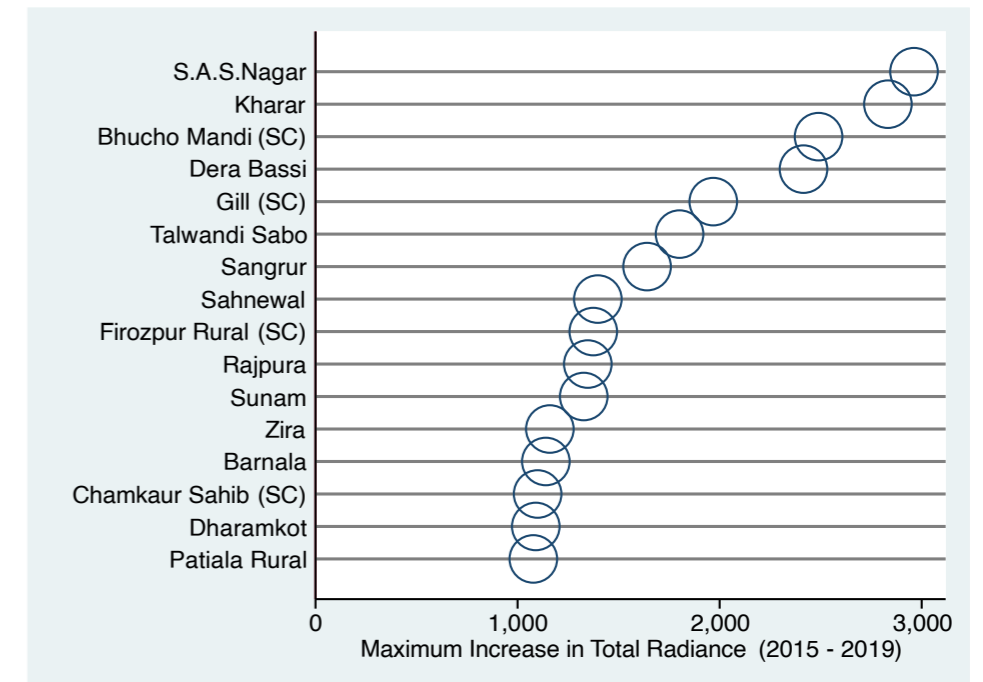
An increasing number of lit pixels suggests that economic activity is expanding to new areas, as previously dark pixels begin to show radiance in satellite images. On the other hand, total radiance denotes increasing economic activity without saying anything about its distribution over space. Looking at both total radiance and per cent of lit pixels provides a better picture of economic activity.

Growth Pattern of Total Radiance across constituencies from 2015 to 2019

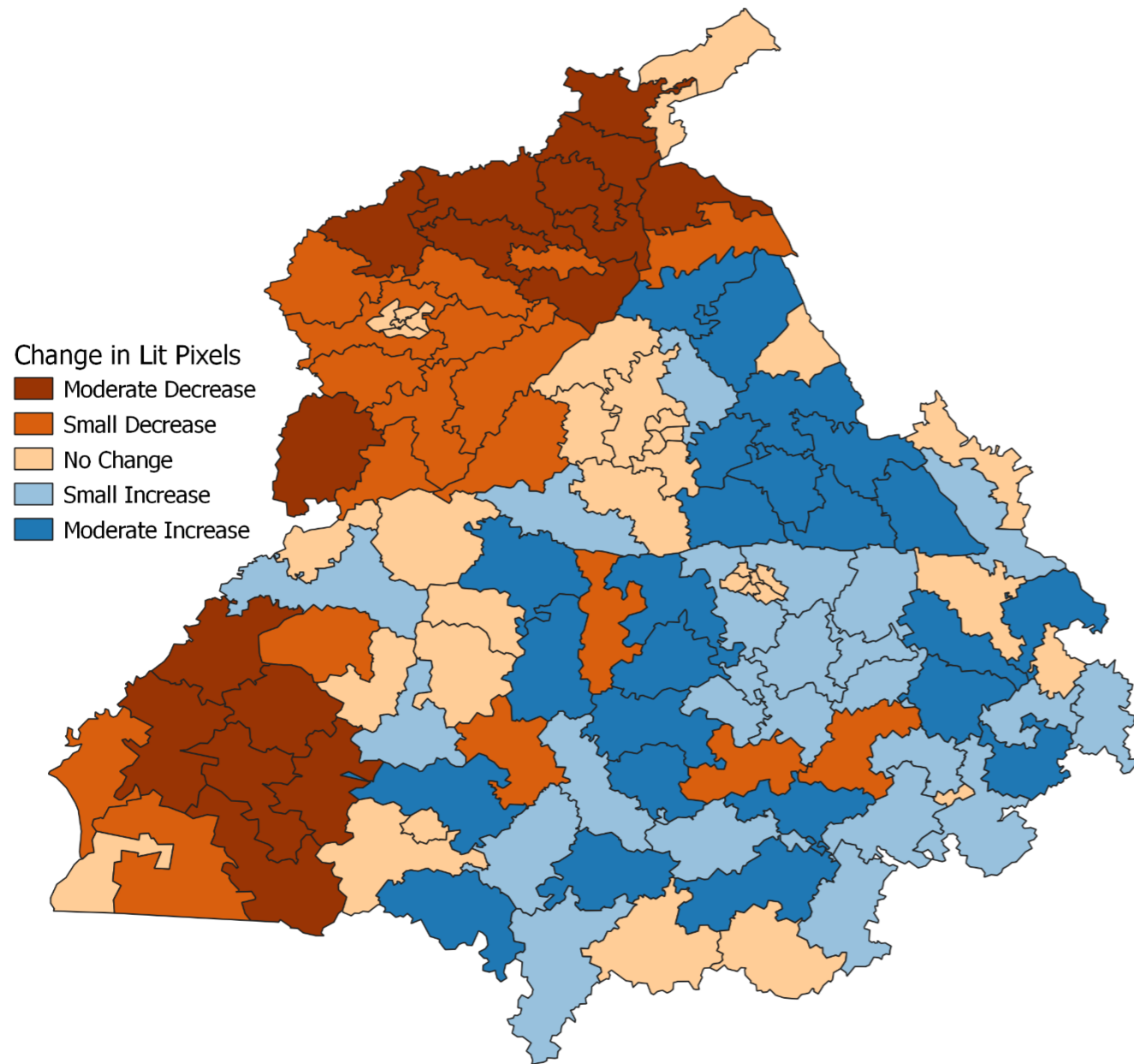


The visual illustrated here describes a five-year growth trend in total radiance across all 117 assembly constituencies in Punjab, from years 2015 to 2019. It is predominantly visible that most of Punjab has had a small to moderate increase in total radiance, signifying surging economic activity in the state. Only two constituencies, Jalalabad and Lambi have witnessed moderate decline in total radiance. Five constituencies of Guru Har Sahai, Sri Hargobindpur, Fatehgarh Churian, Majitha and Ludhiana Central have shown a small decline. Six constituencies have shown no change in total radiance. Other than these, 104 constituencies of 117, comprising 88.88% of the state have shown an increase in total radiance.

The visuals on right represent constituencies with the highest increase in total radiance; and the constituencies with the most decrease in total radiance, from 2015 to 2019. The graph above depicts the 16 constituencies which have shown a greater than 1000-point increase in total radiance. SAS Nagar has shown the most increase of 3000 point in the five-year period, followed by Kharar, with an almost 2800 point increase, pointing towards an immense surge in economic activity. In terms of decrease in total radiance, Jalalabad, with a decline of more than 700 points, has shown the most decline; followed by Lambi, with an almost 600 point decline, indicating a decline in economic activity in these constituencies.

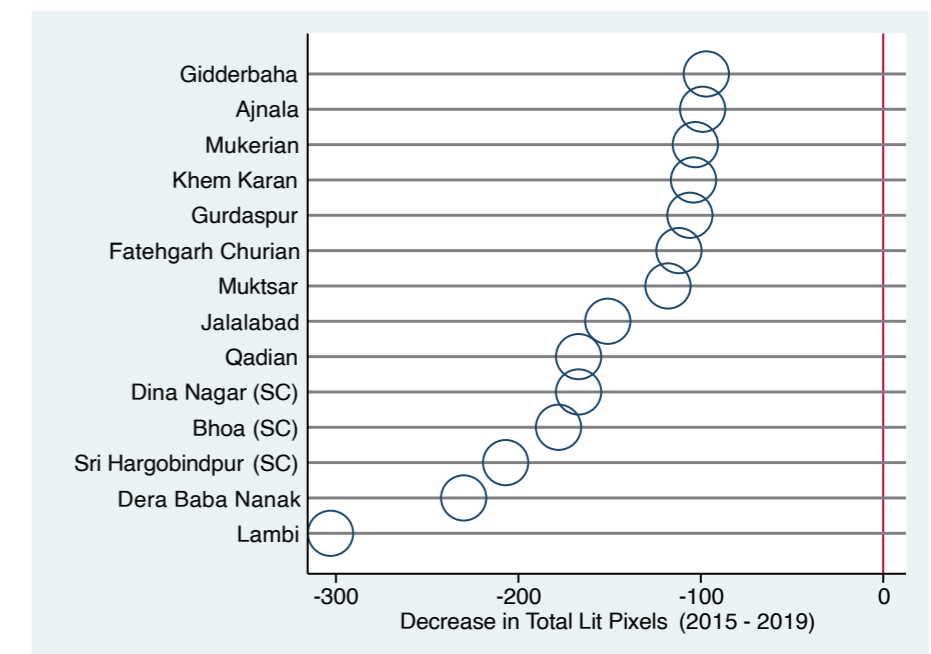
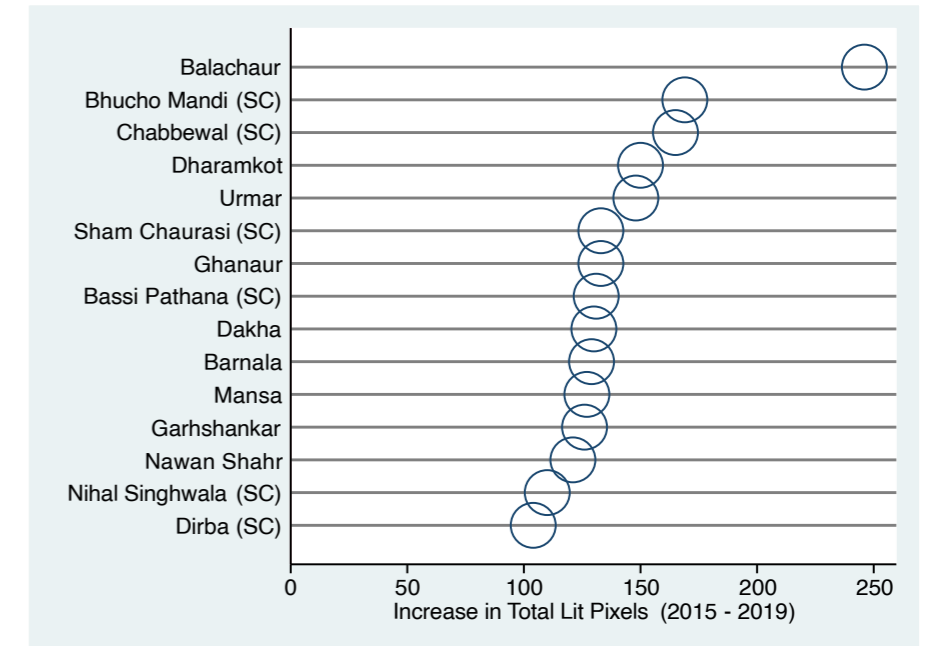


Growth Pattern of Change in total number of lit pixels across constituencies from 2015 to 2019 - Indicates the distribution of night lights in the assembly constituency area

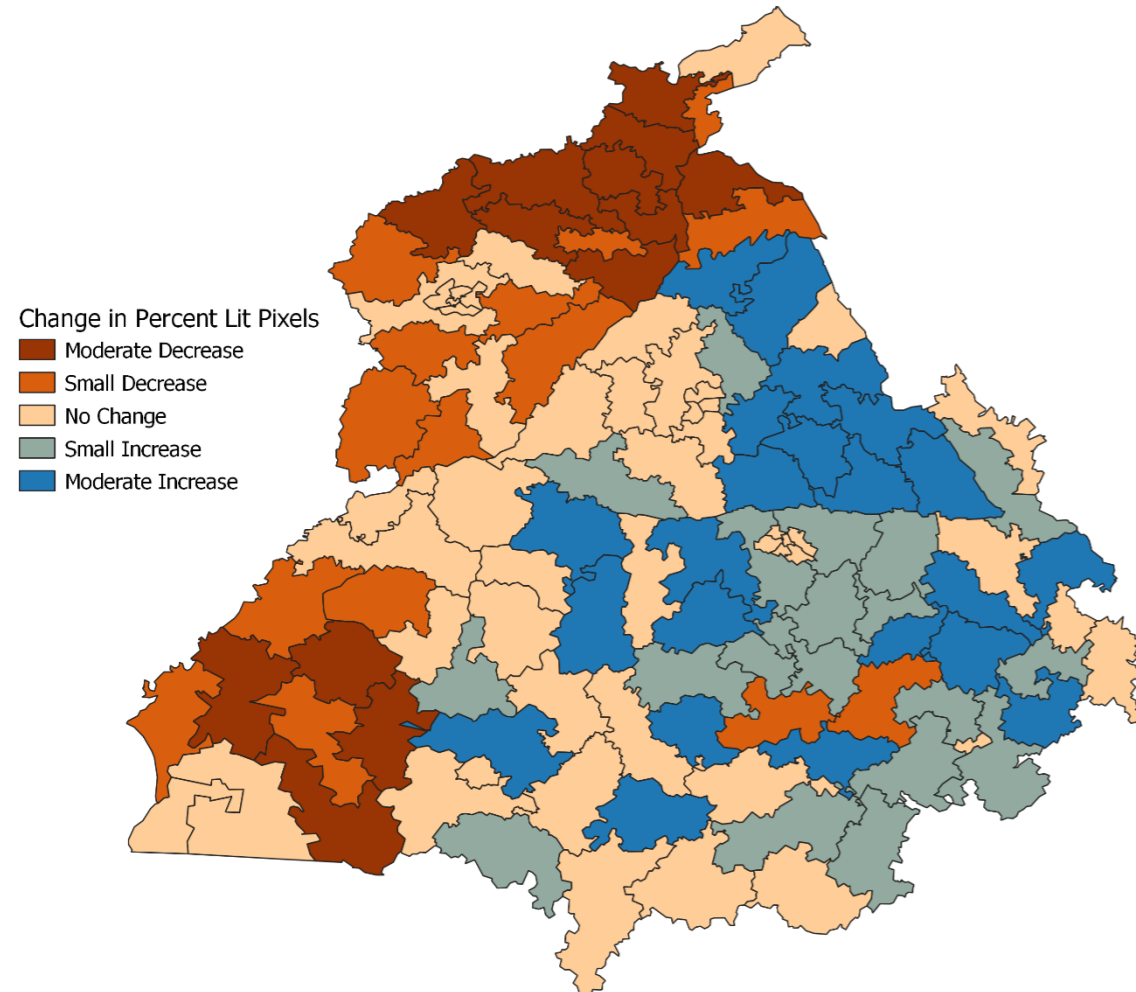


The visual presented here illustrates a five year change in lit pixels, from 2015 to 2019 and represents economic activity in more detail than the total radiance, as it encompasses distribution of economic activity. It is noted that most of the border districts have witnessed decrease in lit pixels. 24 constituencies have shown a moderate increase in lit pixels; and 23 constituencies have shown a small increase in lit pixels, i.e. 40.1% constituencies have shown a small to moderate increase in lit pixels, indicating diversification/expansion of economic activity to other areas in these constituencies. 34 constituencies have shown no change in lit pixels, and 36 constituencies, i.e. 30.7% constituencies have shown a decrease in lit pixels.

The visuals presented on right comprise of the constituencies with highest increase and highest decrease in lit pixels, from 2015 to 2019. In the visual above, 15 constituencies having a 100 point increase in lit pixels have been ranked. Balachaur, with a 250 point increase in lit pixels has the most increase, followed by Bhucho Mandi and Chabbewal. It indicates significant expansion of economic activity in newer areas in these constituencies. In the visual below, 14 constituencies with the most decrease in lit pixels have been mentioned. Here, Lambi has shown to have the most decrease in lit pixels, with a 300 point decrease. Dera Baba Nanak and Sri Hargobindpur have shown a more than 200 point decrease in lit pixels, signifying contraction of economic activity from certain areas in these constituencies.

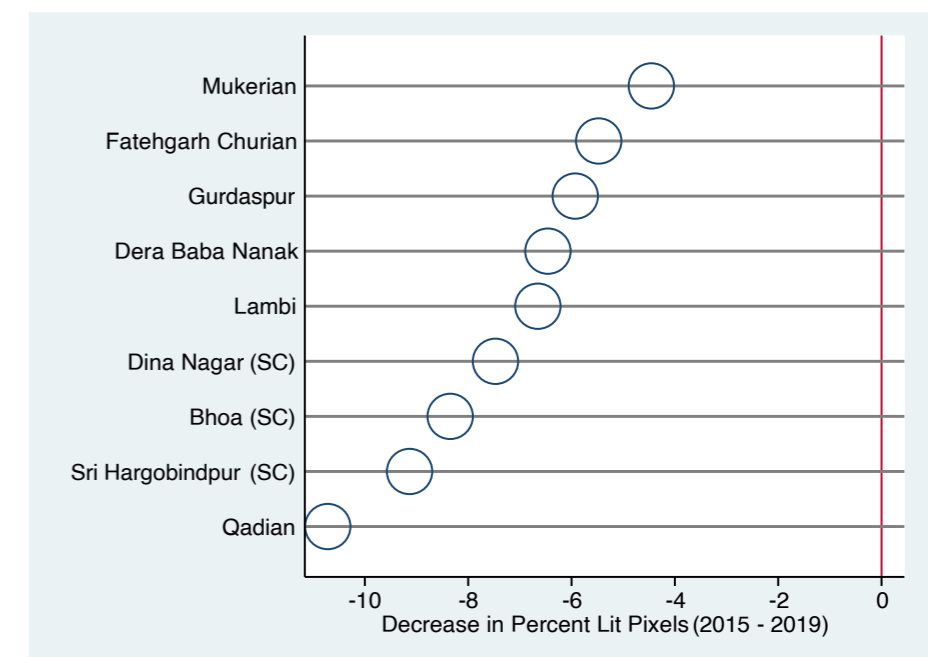
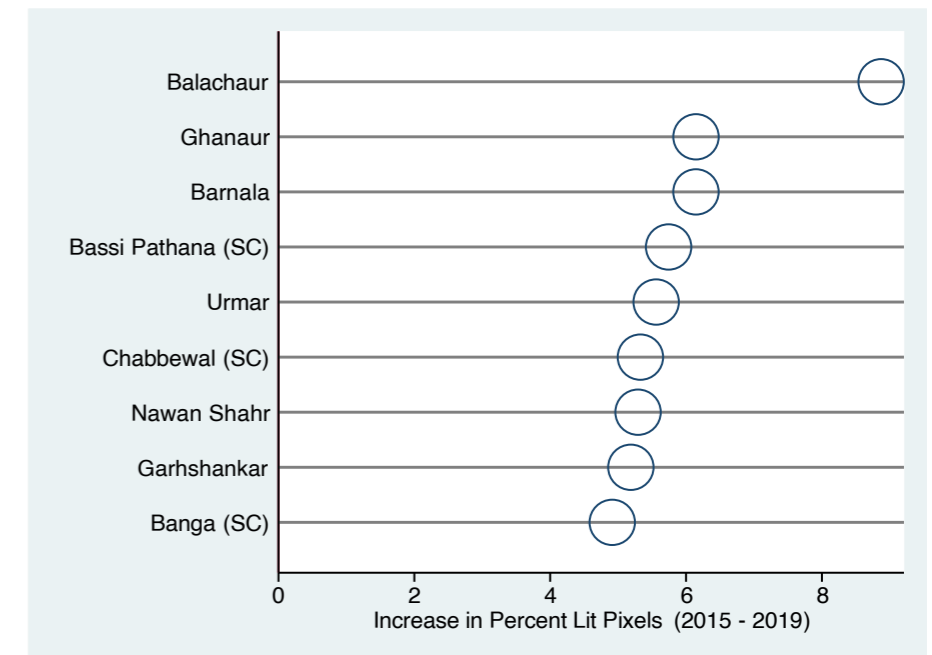


Growth Pattern of Percentage change in lit pixels across constituencies from 2015 to 2019 - indicates the percentage of lit pixels with respect to total pixels

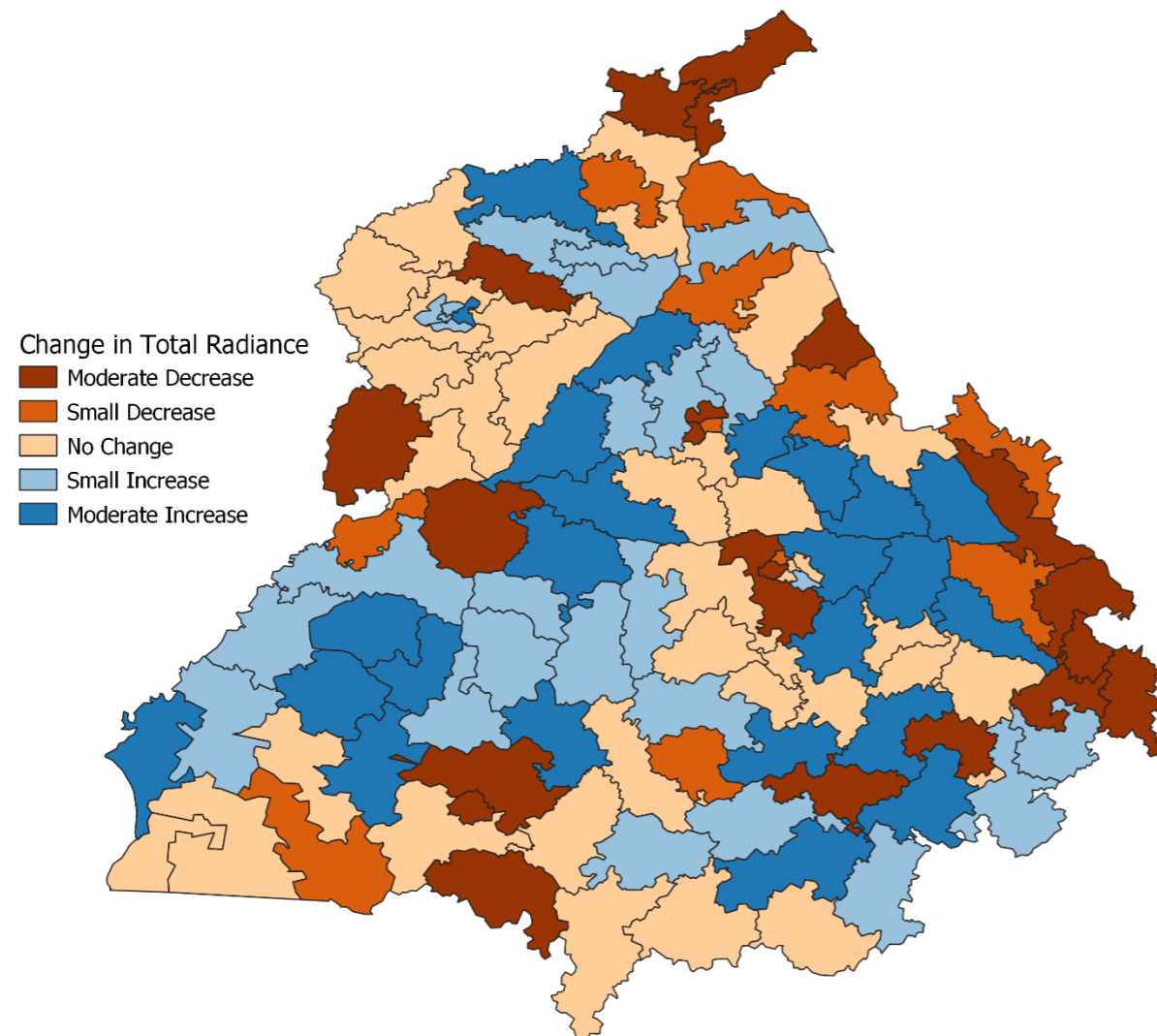


The two graph visuals depicted on right signify the constituencies with most increase and decrease in percent lit pixels, from 2015 to 2019. Balachaur, with an 8% increase in lit pixels shows the most increase. Ghanaur and Barnala have shown a more than 6% increase in lit pixels. Constituencies mentioned in the lower graph denotes 9 constituencies with the most decrease in lit pixels. Qadian has shown the most decrease in percent lit pixels, with a greater than 10 percent decrease. Constituencies Sri Hargobindpur, Bhoa, Dina Nagar, Lambi, Dera Baba Nanak and Gurdaspur have shown a greater than 6% decrease in lit pixels.

The visual presented here signifies that from 2015 to 2019, 40 constituencies, i.e. 34.19%, have shown no change in percent lit pixels, highlighting the developed nature of the state. 22 constituencies have shown a moderate increase, and 19 have shown a small increase in percent lit pixels. In total, 41 constituencies, i.e. 35% have shown a rise in percent lit pixels over the given period, while 36 constituencies, i.e. 30.7% of the constituencies have shown a small to moderate decrease in lit pixels.



Pandemic Impact on Total Radiance across constituencies from 2019 to 2020

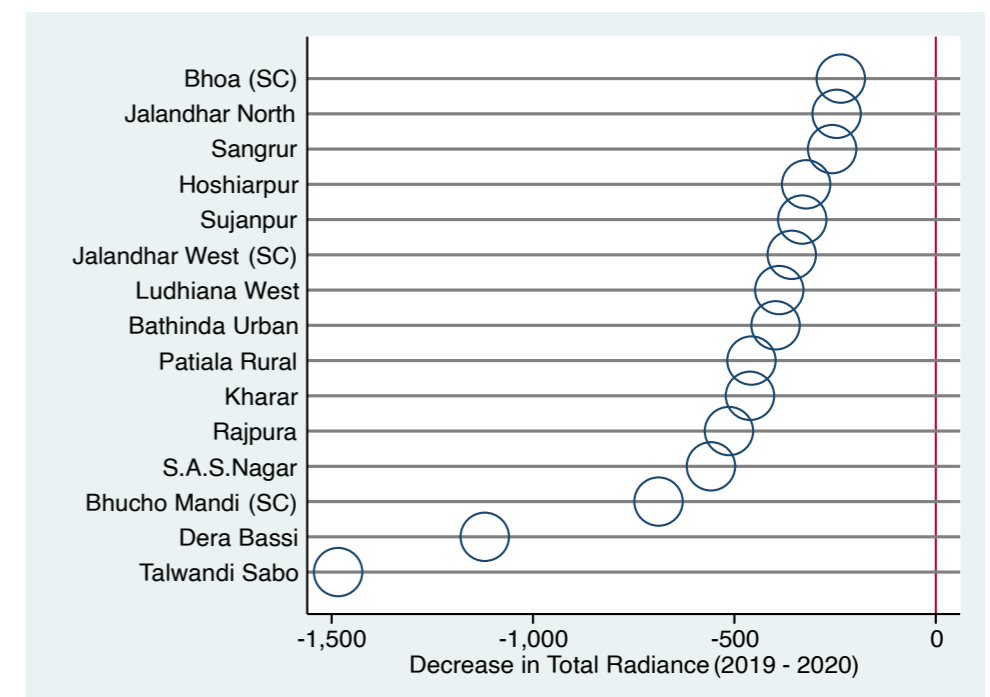
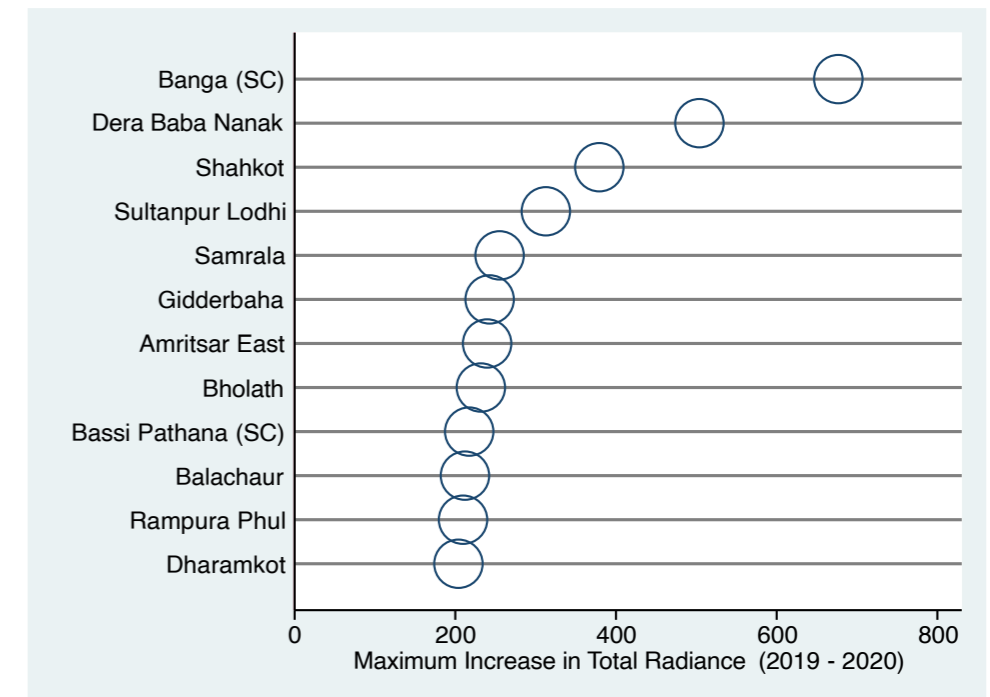


This visual describes the pandemic effect on change in total radiance, by comparing year 2019 with 2020. Out of 117 constituencies, 21 (i.e., 18%) have shown moderate decrease, 9 (i.e., 8%) have recorded small decrease and 37 constituencies (i.e., 32%) have observed no change. While 26 constituencies (i.e., 22%) have seen small increase and 24 (i.e., 21%) showed moderate increase. These five extensive categories elaborate upon the intensity of economic activities and show 75% of the constituencies in Punjab remain immune to the pandemic effect.

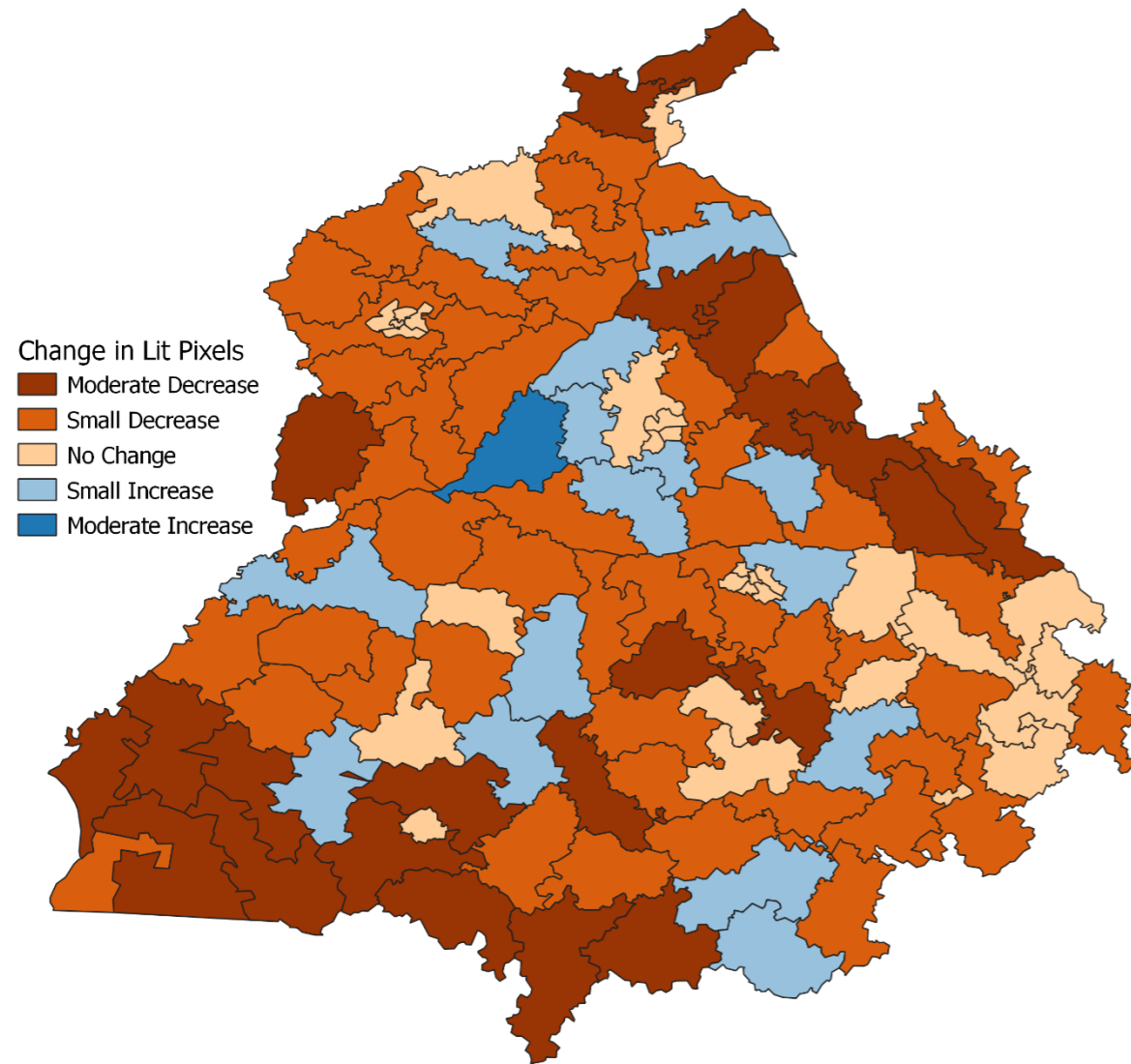
The visual on the right describes change in total radiance in the constituencies of Punjab where maximum increase and decrease are seen, to record the pandemic effect from 2019 to 2020.

Maximum increase in total radiance is recorded in 12 constituencies. Banga, Dera Baba Nanak, Shahkot and Sultanpur Lodhi are the top 4 constituencies to show highest positive change which vary from a range of 300-700 pixels. These constituencies defy the pandemic effect and reflect highest growth in economic activities.

Fifteen constituencies show highest negative change in total radiance that varied from a range of -250 to -1500, represent stalled economic activities in the pandemic year. Maximum decrease in total radiance is recorded in the constituencies of Talwandi Sabo and Dera Bassi in a range of -1100 to -1500.



Pandemic Impact on Change in total number of lit pixels across constituencies from 2019 to 2020 - Indicates the distribution of night lights in the assembly constituency area



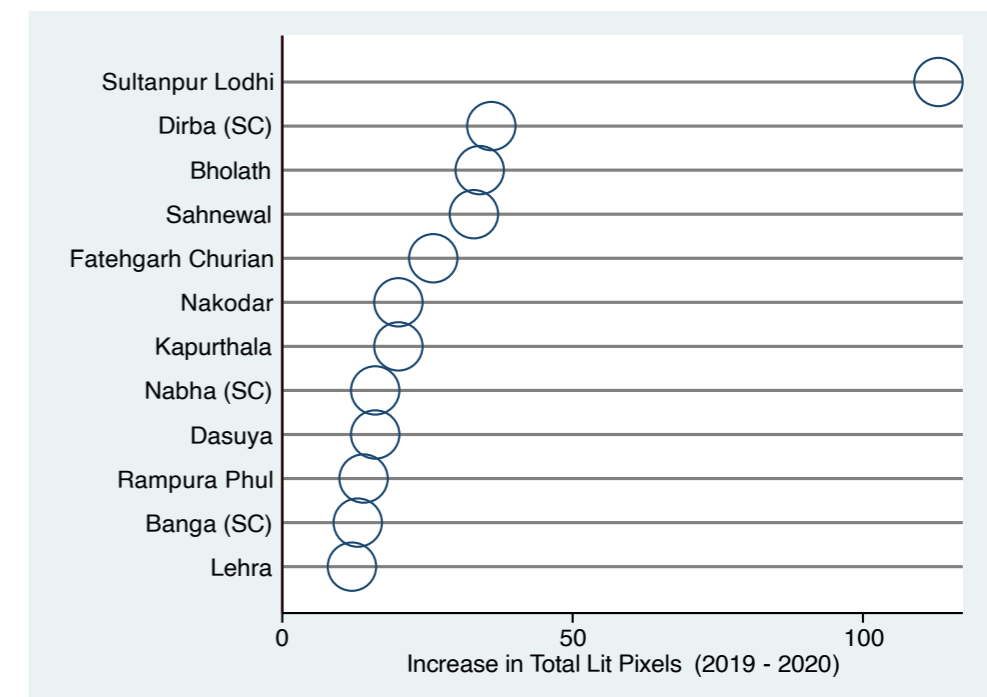
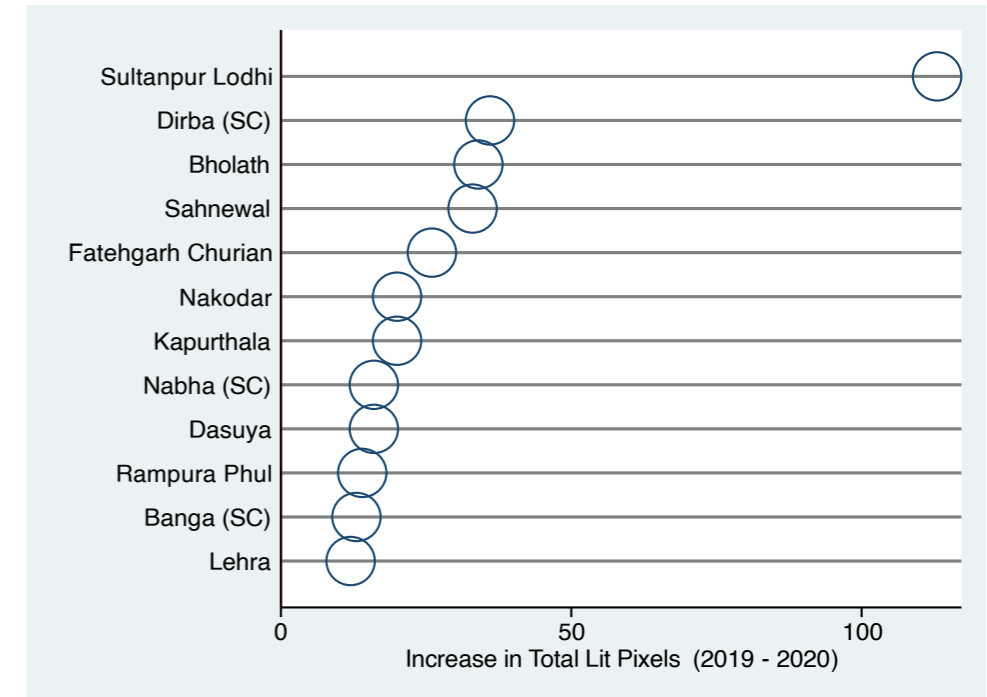
To record the pandemic effect, the visual on the right illustrates the change in total lit pixels in the constituencies of Punjab where maximum increase and decrease are found between 2019 to 2020.

Maximum increase in lit pixels is recorded in 12 constituencies. Sultanpur Lodhi, Dirba, Bholath and Sahnewal are the top 4 constituencies to show highest positive change that varies from a range of 35 to 120 pixels. These constituencies have resisted the pandemic effect and reflect highest growth in economic activities.

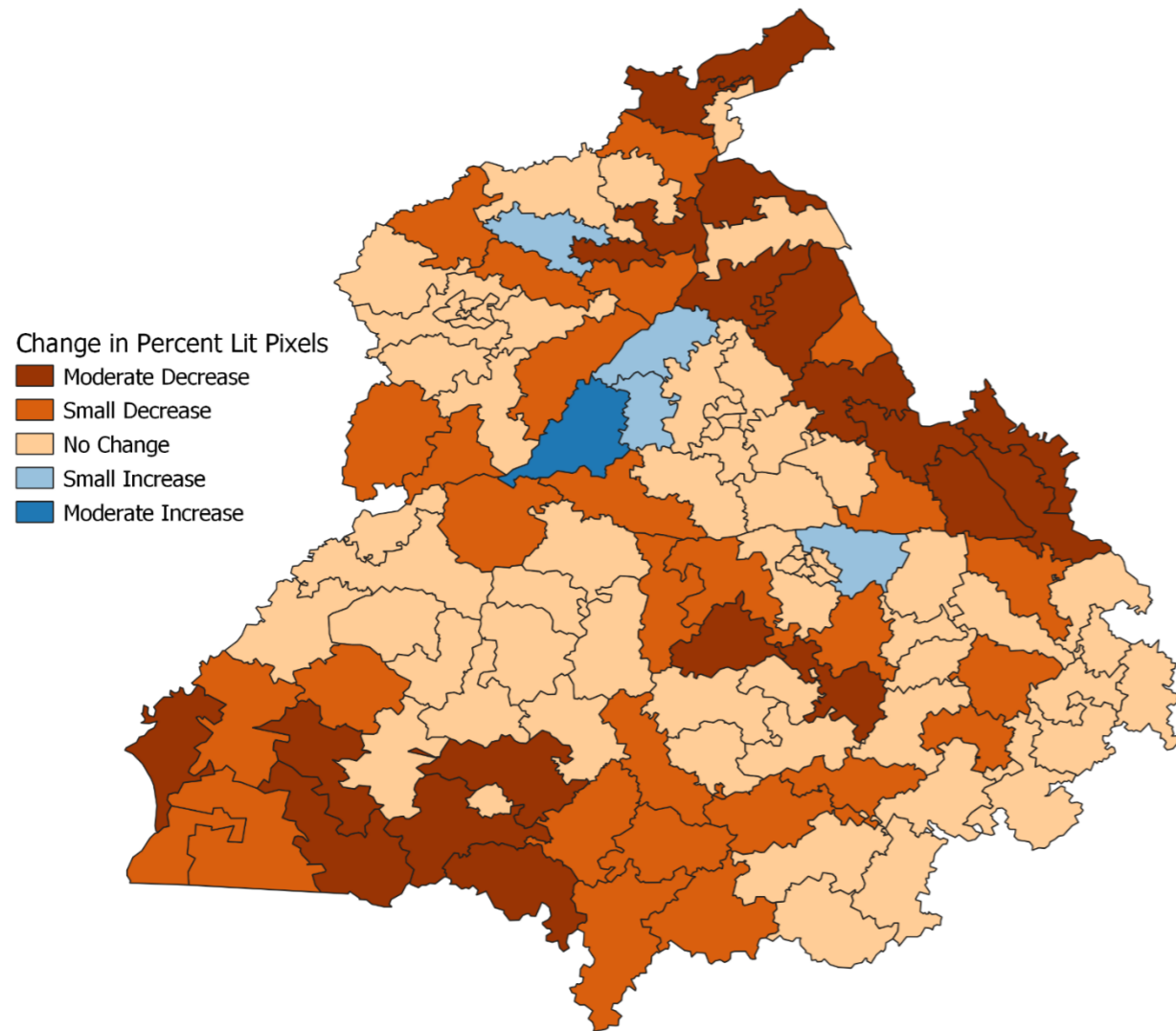
However, 18 constituencies show highest negative change in lit pixels that varied from a range of - 75 to - 200, confirm an attenuated effect on economic activities in the pandemic year. Maximum decrease in total lit pixels is recorded in the constituencies of Lambi and Chabbewal.

The visual describes change in total number of lit pixels in 117 constituencies of Punjab from 2019 to 2020. Through these five varied categories we show an in-depth record of pandemic impact on the economic activities.

Out of 117 constituencies, only 20% showed moderate decrease, 42% recorded a small decrease, 25% reflects no change, 15% indicated small increase and Sultanpur Lodhi constituency showed moderate increase. The effect of the pandemic largely remains muted on the economic activities as 82% of the total constituencies either fall under small decrease, no change and small increase category.



Pandemic impact on Percentage change in lit pixels across constituencies from 2019 to 2020 - indicates the percentage of lit pixels with respect to total pixels



The visual describes change in percent lit pixels in 117 constituencies of Punjab between 2019 and 2020. With the help of the five distinct categories, we paint the most compelling illustration of the pandemic effect on the economic activities.

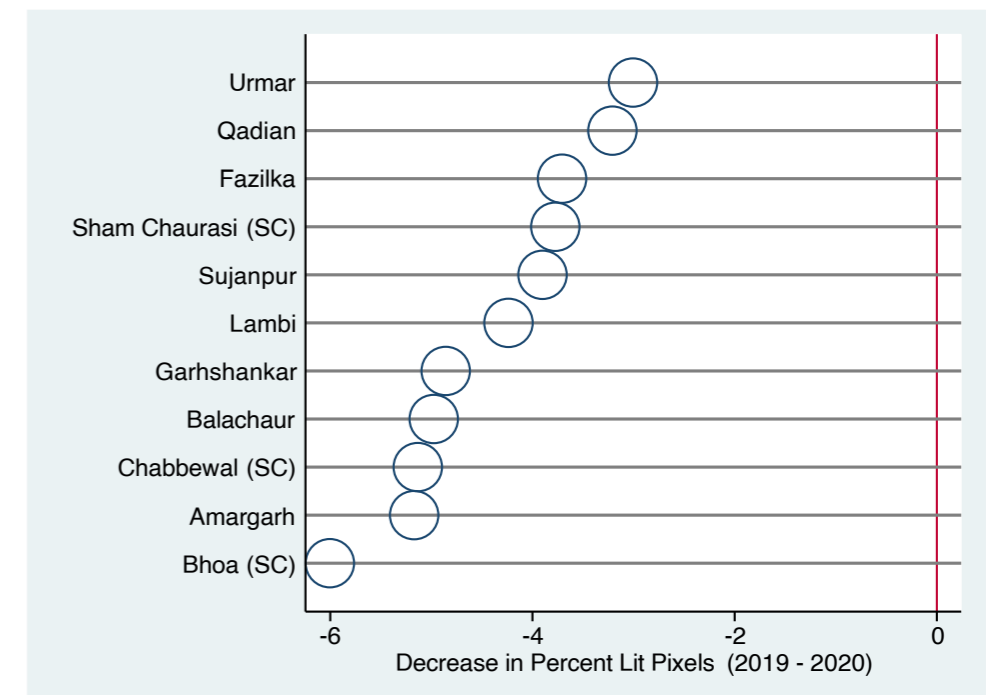
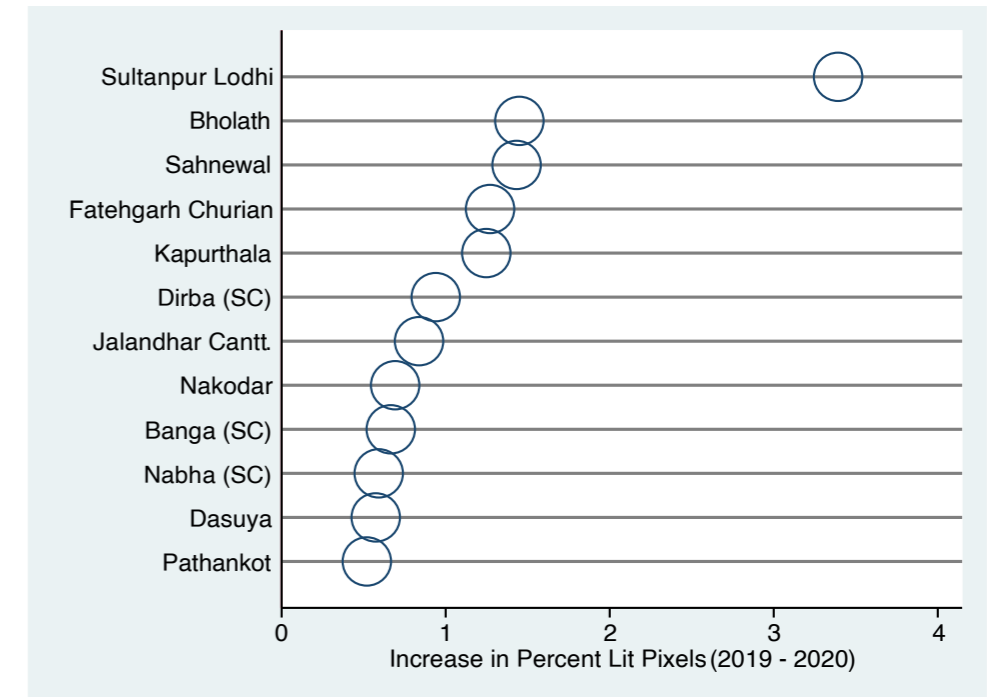
Out of 117 constituencies, only 19% recorded moderate decrease and 24% showed small decrease in change in percent lit pixels.

While 54% of the constituencies recorded no change, 4 constituencies (Bholath, Sahnewal, Fatehgarh Churian, Kapurthala) depicted small increase and Sultanpur Lodhi showed moderate increase in percent lit pixels. This indicator demonstrates that almost 58% of the constituencies in Punjab had a very subdued impact of pandemic and the economic activities remain largely unaffected from 2019 to 2020.

To record the pandemic effect, the visual on the right illustrates the change in percent lit pixels in the constituencies of Punjab where maximum increase and decrease are found between 2019 to 2020.

Maximum increase in percent lit pixels is recorded in 12 constituencies. Sultanpur Lodhi, Dirba, Bholath, Sahnewal, Kapurthala are the top 5 constituencies to show highest positive change that varies from a range between 1% -3.5%. These constituencies have endured the pandemic effect and have indicated highest growth in economic activities.

However, 11 constituencies show highest negative change in percent lit pixels that varied from a range of -3% to -6%, substantiating a weakened pandemic effect on economic activities. Maximum decrease in percent lit pixels is recorded in the constituencies of Urmar and Qadian.



Findings: In this report, we have listed three major indicators from nightlight data that shows varied ways to capture the depth of the economic activities. The year-by-year comparison of the change in luminosity demonstrates how economic activities have expanded to newer areas, whether areas have transformed from no light to light and light to more light regions.

Growth trend in the constituencies of Punjab between 2015 and 2019

Change in total radiance depicts that SAS Nagar has shown the most increase of 3000 pixels in these five years, followed by Kharar, with an almost 2800-point increase, pointing towards an immense surge in economic and developmental activities. Whereas five constituencies of Guru Har Sahai, Sri Hargobindpur, Fatehgarh Churian, Majitha and Ludhiana Central have shown a moderate decline and reflect a decline in economic activity. On this parameter, 88.88% of constituencies in Punjab have illustrated an increase in total radiance.

In terms of change in percent lit pixels, 34% of the constituencies have shown no change in per cent lit pixels, highlighting the developed nature of the state. In total, 35% have shown rise in percent lit pixels between 2015 and 2019. Balachur and Ghanaur constituencies are some of the notable mentions for economic development.

Pandemic Impact in the constituencies of Punjab between 2019 and 2020

The **change in total radiance** shows the state of Punjab largely remained immune to the pandemic impact, as out of 117 constituencies 18% have shown moderate decrease, 8% have recorded small decrease, and 32% have observed no change. While 22% have seen small increase and 21% showed moderate increase. These five extensive categories elaborate upon the intensity of economic activities and demonstrate 75% of the constituencies in Punjab remain immune to the pandemic effect.

The **change in percent lit pixels** tells us, 54% of the constituencies recorded no change, 4 constituencies of Bholath, Sahnewal, Fatehgarh Churian, Kapurthala depicted small increase and Sultanpur Lodhi showed moderate increase in percent lit pixels. This indicator demonstrates almost 58% of the constituencies in Punjab had a very subdued impact of pandemic and the economic activities largely remained unaffected between 2019 and 2020. Maximum increase in percent lit pixels is recorded in 12 constituencies. Sultanpur Lodhi, Dirba, Bholath, Sahnewal, Kapurthala are the top 5 constituencies to show highest positive change that varies from a range between 1% -3.5%. These constituencies have endured the pandemic effect and have indicated highest growth in economic activities.

Appendix: Punjab Nightlights Data (By Assembly Constituency)

No.	Name	Total Pixels	Total Radiance 2015	Total Radiance 2019	Total Radiance 2020	Lit Pixels 2015	Lit Pixels 2019	Lit Pixels 2020	Percent Lit Pixels 2015	Percent Lit Pixels 2019	Percent Lit Pixels 2020
1	Sujanpur	2333.0	3212.0	3513.2	3181.6	1184.0	1186.0	1095.0	0.51	0.51	0.47
2	Bhoa (SC)	2132.0	2437.3	2526.6	2290.7	1819.0	1641.0	1513.0	0.85	0.77	0.71
3	Pathankot	770.0	1843.1	2579.9	2378.2	680.0	667.0	671.0	0.88	0.87	0.87
4	Gurdaspur	1788.0	2061.8	2322.6	2235.7	1469.0	1363.0	1350.0	0.82	0.76	0.76
5	Dina Nagar (SC)	2235.0	1492.5	1674.7	1676.8	1701.0	1534.0	1492.0	0.76	0.69	0.67
6	Qadian	1558.0	843.2	855.8	865.2	1182.0	1015.0	965.0	0.76	0.65	0.62
7	Batala	878.0	1834.4	1847.9	1899.1	853.0	831.0	805.0	0.97	0.95	0.92
8	Sri Hargobindpur (SC)	2266.0	1932.8	1822.8	1881.6	1978.0	1771.0	1736.0	0.87	0.78	0.77
9	Fatehgarh Churian	2046.0	2581.0	2269.4	2395.6	1991.0	1879.0	1905.0	0.97	0.92	0.93
10	Dera Baba Nanak	3562.0	2726.9	3000.4	3504.3	3110.0	2880.0	2876.0	0.87	0.81	0.81
11	Ajnala	2820.0	2935.9	3100.5	3127.5	2562.0	2463.0	2424.0	0.91	0.87	0.86
12	Raja Sansi	3117.0	4666.9	5180.6	5156.0	2969.0	2908.0	2902.0	0.95	0.93	0.93
13	Majitha	1997.0	3200.5	2930.4	2753.2	1954.0	1936.0	1897.0	0.98	0.97	0.95
14	Jandiala (SC)	1962.0	2851.3	3107.0	3139.6	1844.0	1791.0	1786.0	0.94	0.91	0.91
15	Amritsar North	102.0	2651.0	2975.6	3072.0	102.0	102.0	102.0	1.00	1.00	1.00
16	Amritsar West (SC)	241.0	2960.1	3403.1	3508.7	241.0	241.0	241.0	1.00	1.00	1.00
17	Amritsar Central	38.0	924.2	1295.9	1412.9	38.0	38.0	38.0	1.00	1.00	1.00
18	Amritsar East	180.0	2115.2	2577.0	2816.6	180.0	180.0	180.0	1.00	1.00	1.00
19	Amritsar South	164.0	1835.8	2340.3	2433.8	164.0	164.0	164.0	1.00	1.00	1.00
20	Attari (SC)	2604.0	6775.4	7649.7	7671.7	2567.0	2541.0	2525.0	0.99	0.98	0.97
21	Tarn Taran	2197.0	3809.5	3853.0	3898.8	2097.0	2042.0	2029.0	0.95	0.93	0.92
22	Khem Karan	3969.0	6921.8	7300.7	7082.8	3895.0	3791.0	3727.0	0.98	0.96	0.94
23	Patti	2001.0	3101.4	3261.5	3280.8	1927.0	1868.0	1837.0	0.96	0.93	0.92

No.	Name	Total Pixels	Total Radiance 2015	Total Radiance 2019	Total Radiance 2020	Lit Pixels 2015	Lit Pixels 2019	Lit Pixels 2020	Percent Lit Pixels 2015	Percent Lit Pixels 2019	Percent Lit Pixels 2020
24	Khadoor Sahib	2812.0	4166.4	4482.7	4491.0	2643.0	2622.0	2610.0	0.94	0.93	0.93
25	Baba Bakala (SC)	3662.0	4776.7	4940.7	4932.3	3182.0	3125.0	3072.0	0.87	0.85	0.84
26	Bholath	2346.0	1691.7	2066.8	2298.6	1702.0	1698.0	1732.0	0.73	0.72	0.74
27	Kapurthala	1603.0	2931.6	3361.8	3436.2	1444.0	1438.0	1458.0	0.90	0.90	0.91
28	Sultanpur Lodhi	3331.0	1846.2	2616.2	2928.9	2256.0	2230.0	2343.0	0.68	0.67	0.70
29	Phagwara (SC)	1628.0	2712.1	3384.5	3572.0	1298.0	1369.0	1357.0	0.80	0.84	0.83
30	Phillaur (SC)	2448.0	2222.0	2907.8	2905.0	1963.0	2049.0	2038.0	0.80	0.84	0.83
31	Nakodar	2890.0	2712.4	3541.8	3550.1	2385.0	2400.0	2420.0	0.83	0.83	0.84
32	Shahkot	3174.0	2708.0	3457.9	3837.1	2808.0	2845.0	2790.0	0.88	0.90	0.88
33	Kartarpur (SC)	2305.0	6464.9	7361.9	7412.5	2151.0	2155.0	2160.0	0.93	0.93	0.94
34	Jalandhar West (SC)	157.0	2447.8	2659.5	2301.9	157.0	157.0	157.0	1.00	1.00	1.00
35	Jalandhar Central	131.0	1491.9	1782.6	1686.5	131.0	131.0	131.0	1.00	1.00	1.00
36	Jalandhar North	268.0	3553.1	3915.6	3669.4	268.0	268.0	268.0	1.00	1.00	1.00
37	Jalandhar Cantt.	955.0	1847.0	2180.8	2160.1	845.0	843.0	851.0	0.88	0.88	0.89
38	Adampur (SC)	2049.0	1710.3	2402.0	2503.8	1690.0	1743.0	1731.0	0.82	0.85	0.84
39	Mukerian	2312.0	1382.4	1547.0	1461.4	1392.0	1289.0	1234.0	0.60	0.56	0.53
40	Dasuya	2789.0	1059.9	1243.9	1341.4	1103.0	1070.0	1086.0	0.40	0.38	0.39
41	Urmar	2662.0	1016.4	1561.5	1502.1	1330.0	1478.0	1398.0	0.50	0.56	0.53
42	Sham Chaurasi (SC)	3630.0	1304.8	2014.8	2032.2	1631.0	1764.0	1627.0	0.45	0.49	0.45
43	Hoshiarpur	1570.0	2267.4	3108.4	2786.5	902.0	903.0	882.0	0.57	0.58	0.56
44	Chabbewal (SC)	3097.0	1142.8	1673.9	1612.5	1697.0	1862.0	1703.0	0.55	0.60	0.55
45	Garhshankar	2429.0	1271.8	1862.5	1829.0	1626.0	1752.0	1634.0	0.67	0.72	0.67
46	Banga (SC)	1954.0	1421.7	2012.6	2689.4	1568.0	1664.0	1677.0	0.80	0.85	0.86
47	Nawan Shahr	2286.0	1524.1	2088.2	2256.2	1521.0	1642.0	1604.0	0.67	0.72	0.70
48	Balachaur	2773.0	1419.4	2112.1	2324.1	1505.0	1751.0	1613.0	0.54	0.63	0.58
49	Anandpur Sahib	2189.0	3261.0	3540.1	3443.4	1641.0	1646.0	1596.0	0.75	0.75	0.73

No.	Name	Total Pixels	Total Radiance 2015	Total Radiance 2019	Total Radiance 2020	Lit Pixels 2015	Lit Pixels 2019	Lit Pixels 2020	Percent Lit Pixels 2015	Percent Lit Pixels 2019	Percent Lit Pixels 2020
50	Rupnagar	2908.0	2672.9	3217.1	3024.1	1740.0	1790.0	1712.0	0.60	0.62	0.59
51	Chamkaur Sahib (SC)	2748.0	2546.8	3646.0	3582.5	2270.0	2268.0	2220.0	0.83	0.83	0.81
52	Kharar	2422.0	4832.7	7665.5	7204.2	1948.0	2030.0	2035.0	0.80	0.84	0.84
53	S.A.S.Nagar	1019.0	8246.1	11208.0	10649.8	1011.0	1014.0	1014.0	0.99	1.00	1.00
54	Bassi Pathana (SC)	2281.0	1774.7	2468.3	2685.6	1883.0	2014.0	2017.0	0.83	0.88	0.88
55	Fatehgarh Sahib	2576.0	2695.7	3631.5	3644.3	2136.0	2218.0	2179.0	0.83	0.86	0.85
56	Amloh	1440.0	2682.3	3432.2	3479.8	1246.0	1306.0	1307.0	0.87	0.91	0.91
57	Khanna	1157.0	2316.0	3104.9	3106.1	1062.0	1095.0	1087.0	0.92	0.95	0.94
58	Samrala	2703.0	2396.0	3193.5	3448.6	2131.0	2201.0	2206.0	0.79	0.81	0.82
59	Sahnewal	2304.0	5321.9	6719.1	6880.0	2038.0	2072.0	2105.0	0.88	0.90	0.91
60	Ludhiana East	193.0	3603.4	3710.4	3754.6	193.0	193.0	193.0	1.00	1.00	1.00
61	Ludhiana South	158.0	2585.2	2787.1	2860.4	158.0	158.0	158.0	1.00	1.00	1.00
62	Atam Nagar	77.0	1822.0	1880.9	1903.1	77.0	77.0	77.0	1.00	1.00	1.00
63	Ludhiana Central	49.0	1350.5	1283.3	1293.5	49.0	49.0	49.0	1.00	1.00	1.00
64	Ludhiana West	167.0	3531.5	3785.6	3397.0	167.0	167.0	167.0	1.00	1.00	1.00
65	Ludhiana North	85.0	1787.8	1940.8	1862.4	85.0	85.0	85.0	1.00	1.00	1.00
66	Gill (SC)	2331.0	4990.4	6958.8	6760.1	2110.0	2171.0	2166.0	0.91	0.93	0.93
67	Payal (SC)	2407.0	2209.9	2796.8	2938.1	1993.0	2019.0	1986.0	0.83	0.84	0.83
68	Dakha	3208.0	3243.6	3951.2	3968.2	2600.0	2730.0	2691.0	0.81	0.85	0.84
69	Raikot (SC)	2438.0	2143.5	2666.6	2712.7	1995.0	2079.0	2016.0	0.82	0.85	0.83
70	Jagraon (SC)	2632.0	2726.0	3003.2	3136.2	2050.0	2035.0	2003.0	0.78	0.77	0.76
71	Nihal Singhwala (SC)	3504.0	3315.9	3835.6	3919.4	2666.0	2776.0	2782.0	0.76	0.79	0.79
72	Bhagha Purana	3246.0	2547.2	2896.5	2988.7	2432.0	2430.0	2417.0	0.75	0.75	0.74
73	Moga	1932.0	2961.2	3214.9	3339.2	1607.0	1620.0	1623.0	0.83	0.84	0.84
74	Dharamkot	3509.0	2767.4	3857.4	4061.3	2746.0	2896.0	2885.0	0.78	0.83	0.82
75	Zira	4032.0	4164.7	5324.4	5122.8	3710.0	3722.0	3666.0	0.92	0.92	0.91

No.	Name	Total Pixels	Total Radiance 2015	Total Radiance 2019	Total Radiance 2020	Lit Pixels 2015	Lit Pixels 2019	Lit Pixels 2020	Percent Lit Pixels 2015	Percent Lit Pixels 2019	Percent Lit Pixels 2020
76	Firozpur City	1630.0	3405.3	3884.9	3834.5	1520.0	1518.0	1512.0	0.93	0.93	0.93
77	Firozpur Rural (SC)	4434.0	4414.6	5789.3	5886.5	3971.0	4007.0	4013.0	0.90	0.90	0.91
78	Guru Har Sahai	3565.0	4462.7	4197.6	4305.3	3263.0	3183.0	3158.0	0.92	0.89	0.89
79	Jalalabad	4270.0	5099.5	4377.9	4512.8	3617.0	3466.0	3391.0	0.85	0.81	0.79
80	Fazilka	3048.0	3766.6	3962.4	4105.9	2586.0	2555.0	2442.0	0.85	0.84	0.80
81	Abohar	2076.0	1530.9	1980.9	1934.1	1156.0	1168.0	1131.0	0.56	0.56	0.54
82	Balluana (SC)	5379.0	2428.4	2762.8	2803.7	2975.0	2956.0	2851.0	0.55	0.55	0.53
83	Lambi	4555.0	3561.5	2983.8	2896.1	3394.0	3091.0	2898.0	0.75	0.68	0.64
84	Gidderbaha	3229.0	2537.4	2506.5	2749.2	2325.0	2228.0	2237.0	0.72	0.69	0.69
85	Malout (SC)	3301.0	3174.5	3140.1	3159.0	2460.0	2375.0	2276.0	0.75	0.72	0.69
86	Muktsar	3190.0	3584.3	3572.2	3736.1	2592.0	2474.0	2434.0	0.81	0.78	0.76
87	Faridkot	2928.0	3162.9	3257.7	3422.3	2253.0	2186.0	2167.0	0.77	0.75	0.74
88	Kotkapura	2291.0	2192.6	2787.3	2962.3	1795.0	1805.0	1800.0	0.78	0.79	0.79
89	Jaitu (SC)	2692.0	1883.3	2437.2	2521.3	1933.0	1965.0	1970.0	0.72	0.73	0.73
90	Rampura Phul	2853.0	2658.2	2883.5	3093.1	2138.0	2117.0	2131.0	0.75	0.74	0.75
91	Bhucho Mandi (SC)	3816.0	4645.0	7134.6	6446.2	2876.0	3045.0	2944.0	0.75	0.80	0.77
92	Bathinda Urban	489.0	4268.6	5249.7	4851.9	487.0	489.0	488.0	1.00	1.00	1.00
93	Bathinda Rural (SC)	3885.0	4251.9	4871.5	4887.2	2933.0	2927.0	2831.0	0.75	0.75	0.73
94	Talwandi Sabo	3744.0	6471.0	8272.7	6788.8	2497.0	2580.0	2474.0	0.67	0.69	0.66
95	Maur	3431.0	3180.9	3365.9	3397.7	2551.0	2576.0	2518.0	0.74	0.75	0.73
96	Mansa	3098.0	2148.9	2533.2	2587.8	2020.0	2147.0	2088.0	0.65	0.69	0.67
97	Sardulgarh	4759.0	3382.6	3889.7	3852.3	3358.0	3382.0	3300.0	0.71	0.71	0.69
98	Budhlada (SC)	3847.0	2680.0	2749.6	2721.4	2690.0	2694.0	2624.0	0.70	0.70	0.68
99	Lehra	3296.0	2625.6	3134.8	3144.4	2510.0	2501.0	2513.0	0.76	0.76	0.76
100	Dirba (SC)	3831.0	2231.3	2901.4	3093.6	2625.0	2729.0	2765.0	0.69	0.71	0.72
101	Sunam	3105.0	3354.7	4682.2	4735.5	2391.0	2418.0	2386.0	0.77	0.78	0.77

No.	Name	Total Pixels	Total Radiance 2015	Total Radiance 2019	Total Radiance 2020	Lit Pixels 2015	Lit Pixels 2019	Lit Pixels 2020	Percent Lit Pixels 2015	Percent Lit Pixels 2019	Percent Lit Pixels 2020
102	Bhadaur (SC)	3163.0	2585.6	2984.4	2953.5	2347.0	2368.0	2308.0	0.74	0.75	0.73
103	Barnala	2099.0	2674.0	3813.9	3739.1	1597.0	1726.0	1713.0	0.76	0.82	0.82
104	Mehal Kalan (SC)	3188.0	1914.1	2194.6	2306.4	2186.0	2275.0	2256.0	0.69	0.71	0.71
105	Malerkotla	1384.0	1554.5	1912.1	1946.3	1104.0	1130.0	1129.0	0.80	0.82	0.82
106	Amargarh	2321.0	2025.3	2515.0	2498.3	1877.0	1932.0	1812.0	0.81	0.83	0.78
107	Dhuri	2497.0	2096.2	2515.3	2661.6	1943.0	1916.0	1919.0	0.78	0.77	0.77
108	Sangrur	2332.0	2770.1	4411.0	4153.7	1917.0	2006.0	1979.0	0.82	0.86	0.85
109	Nabha (SC)	2703.0	2222.7	2756.7	2940.7	2087.0	2057.0	2073.0	0.77	0.76	0.77
110	Patiala Rural	1730.0	6039.0	7116.9	6659.3	1472.0	1501.0	1473.0	0.85	0.87	0.85
111	Rajpura	1694.0	4101.8	5449.4	4935.9	1607.0	1641.0	1642.0	0.95	0.97	0.97
112	Dera Bassi	2124.0	8200.7	10615.7	9495.8	2053.0	2070.0	2059.0	0.97	0.97	0.97
113	Ghanaur	2164.0	1954.4	2948.8	3072.3	1765.0	1898.0	1894.0	0.82	0.88	0.88
114	Sanour	3285.0	2624.3	3559.8	3646.9	2729.0	2793.0	2763.0	0.83	0.85	0.84
115	Patiala	199.0	469.3	562.9	565.8	195.0	196.0	195.0	0.98	0.98	0.98
116	Samana	2923.0	2856.1	3672.4	3856.9	2527.0	2597.0	2569.0	0.86	0.89	0.88
117	Shutrana (SC)	3137.0	2657.8	3402.0	3516.9	2489.0	2536.0	2526.0	0.79	0.81	0.81