Project : The Data of Democracy– Analysis of Maharashtra 2024 Assembly Elections.

Problem Statement : In a democracy, we choose their leaders by voting in elections. But we do not know much about the candidates who stand for elections → such as their education, criminal records, wealth, or how these factors affect their chances of winning. This lack of clear information makes it difficult for citizens to understand what kind of leaders they are choosing.

Key Objectives of the Project

- To collect data of all candidates from the 2024 Maharashtra Assembly Elections.

- To clean and organize the data for easy understanding.

- To compare scraped data with official results to check accuracy.

- To analyze candidates based on education, wealth, and criminal records.

- To find out how these factors affect a candidate's chance of winning.

- To present the findings using simple charts and visuals.

Data collection :

Used Web scaping to collect the data
Total Candidate

Data="https://www.myneta.info/Maharashtra2024/index.php?action=summary&subAction=candidates_analyzed&sort=candidate#summary"

Around 4,100 candidates stood for the election.

The columns I obtained after scraping are: Candidate Name, Constituency, Party Name, Criminal Cases, Education, Total Assets, and Liabilities

Winners Candidate

Data="https://www.myneta.info/Maharashtra2024/index.php?action=summary&subAction=winner_analyzed&sort=candidate#summary"

The website shows that 286 candidates are winners, but according to Wikipedia, 288 candidates are winners, and there are 288 seats.

Maharashtra Assembly Result

Wikipedia="https://en.wikipedia.org/wiki/2024_Maharashtra_Legislative_Assembly_election"

Total Candidate Dataframe

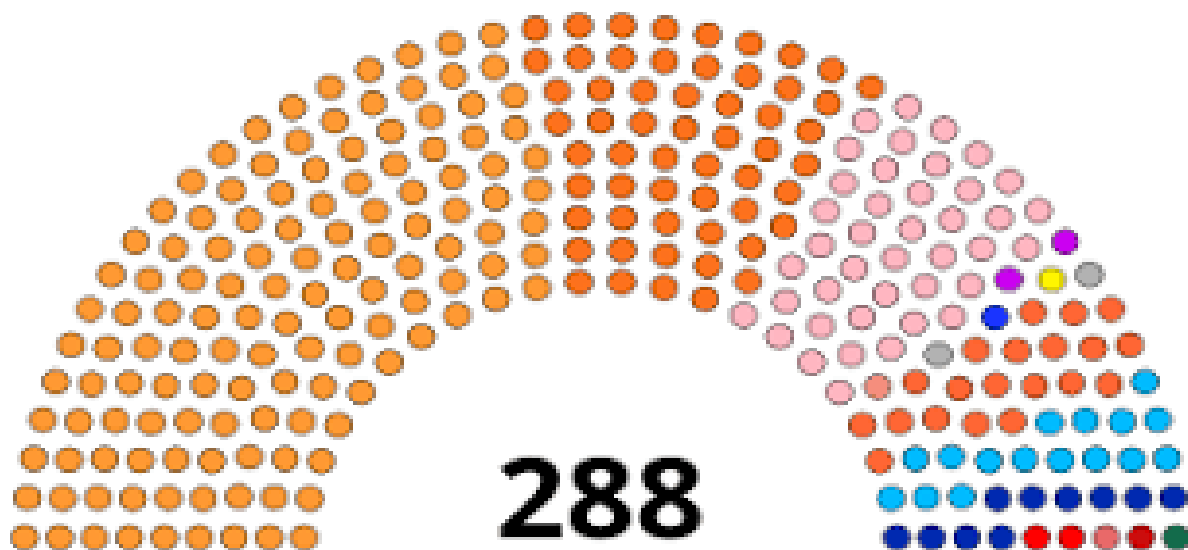|	Sno	Candidate▽	Constituency	Party	Criminal Case	Education	Total Assets	Liabilities
0	1	Ajay Piraji Kamble	UDGIR (SC)	IND	0	Graduate	Rs 8,00,000 ~ 8 Lacs+	Rs 0 ~
1	2	Amol Haribhau Jawale	RAVER	BJP	0	Post Graduate	Rs 13,55,74,362 ~ 13 Crore+	Rs 39,65,284 ~ 39 Lacs+
2	3	Dr. Vijay Bhika Pagare	KALYAN WEST	IND	0	Graduate Professional		
3	4	Madhav Narsing Mekewad	BHOKAR	IND	0	Post Graduate	Rs 11,85,000 ~ 11 Lacs+	Rs 80,000 ~ 80 Thou+
4	5	A. Kadir Mastan Sayyed (Goregaonkar)	HINGOLI	IND	0	8th Pass	Rs 7,40,000 ~ 7 Lacs+	Rs 0 ~
...	...	...	...	...	...	...	...	...
4083	4084	Zameer Yaqoobsab Shaikh	AKKALKOT	Prahar Janshakti Party	9	12th Pass	Rs 5,47,99,087 ~ 5 Crore+	Rs 3,98,32,328 ~ 3 Crore+
4084	4085	Zeeshan Baba Siddique	VANDRE EAST	NCP	4	Post Graduate	Rs 36,90,53,000 ~ 36 Crore+	Rs 8,77,50,352 ~ 8 Crore+
4085	4086	Zeeshan Siddique	VANDRE EAST	IND	0	12th Pass		
4086	4087	Zete Sachin Vitthal	LATUR RURAL	IND	0	Post Graduate	Rs 12,88,066 ~ 12 Lacs+	Rs 0 ~
4087	4088	Zulfeqar Ahmad Ansari	NAGPUR CENTRAL	IND	0	12th Pass	Rs 31,000 ~ 31 Thou+	Rs 0 ~

4088 rows × 8 columns

Winners Candidate

	Sno	Candidate▽	Constituency	Party	Criminal Case	Education	Total Assets	Liabilities
0	1	Amol Haribhau Jawale	RAVER	BJP	0	Post Graduate	Rs 13,55,74,362 ~ 13 Crore+	Rs 39,65,284 ~ 39 Lacs+
1	2	Abdul Sattar	SILLOD	Shiv Sena	6	Graduate	Rs 27,77,04,390 ~ 27 Crore+	Rs 92,68,548 ~ 92 Lacs+
2	3	Abhijeet Dhananjay Patil	MADHA	NCP-Sharadchandra Pawar	3	10th Pass		
3	4	Abhimanyu Dattatray Pawar	AUSA	BJP	1	Post Graduate	Rs 3,01,32,667 ~ 3 Crore+	Rs 19,95,000 ~ 19 Lacs+
4	5	Abitkar Prakash Anandrao	RADHANAGARI	Shiv Sena	0	Graduate	Rs 1,60,85,796 ~ 1 Crore+	Rs 18,56,994 ~ 18 Lacs+
...	...	...	...	...	...	...	...	...
281	282	Vilas Sukur Tare	BOISAR (ST)	Shiv Sena	0	5th Pass		
282	283	Vinod Bhiva Nikole	DAHANU (ST)	CPI(M)	5	12th Pass	Rs 82,01,803 ~ 82 Lacs+	Rs 0 ~
283	284	Vishwanath Atmaram Bhoir	KALYAN WEST	Shiv Sena	2	Graduate	Rs 3,35,02,015 ~ 3 Crore+	Rs 37,83,384 ~ 37 Lacs+
284	285	Vitthal Vakilrao Langhe	NEVASA	Shiv Sena	0	8th Pass		
285	286	Yogesh Sagar	CHARKOP	BJP	2	10th Pass	Rs 7,89,89,368 ~ 7 Crore+	Rs 2,03,77,906 ~ 2 Crore+

286 rows × 8 columns

Maharashtra Assembly Result Wikipedia

	District	Constituency	MLA	Party
0	Nandurbar	Akkalkuwa (ST)	Aamshya Padavi	SHS
1	Nandurbar	Shahada (ST)	Rajesh Padvi	BJP
2	Nandurbar	Nandurbar (ST)	Vijaykumar Gavit	BJP
3	Nandurbar	Navapur (ST)	Shirishkumar Naik	INC
4	Dhule	Sakri (ST)	Manjula Gavit	SHS
...	...	...	...	...
283	Sangli	Shirala	Satyajit Deshmukh	BJP
284	Sangli	Palus-Kadegaon	Vishwajeet Kadam	INC
285	Sangli	Khanapur	Suhas Babar	SHS
286	Sangli	Tasgaon-Kavathe Mahankal	Rohit Patil	NCP-SP
287	Sangli	Jat	Gopichand Padalkar	BJP

288

there are 288 seats.

Cleaning and Feature engineering

- Cleaned text columns and removed extra symbols.
- Converted assets and liabilities into numeric values.
- Created Total_Assets_Value and s_Value columns.
- Calculated Net_Worth and Net_Worth_Words.
- Added Winner_Flag and Result_Label.
- Added Has_Debt column.
- Extracted district columns.
- Fixed education labels and handled missing values.
- Standardized party and constituency names.
- Deleted unwanted columns like Total_asset and Liabilities

Data Frame after cleaning and feature engineering

	Candidate	Constituency	Party	Criminal_Case	Education	Total_Assets	Liabilities	Total_Assets_Value	Total_Assets_Label	Liabilities_Valu
0	Amshya Fulji Padvi	AKKALKUWA (ST)	Shiv Sena	5	12th Pass	Rs 6,64,87,579 ~ 6 Crore+	Rs 79,99,997 ~ 79 Lacs+	66487579	6 Crore+	799999
1	Eng. Jelsing Bijala Pawara	AKKALKUWA (ST)	IND	0	Graduate Professional	Rs 2,51,92,273 ~ 2 Crore+	Rs 4,41,872 ~ 4 Lacs+	25192273	2 Crore+	44187
2	Padmakar Vijaysing Valvi	AKKALKUWA (ST)	Bharat Adivasi Party	0	Graduate Professional	Rs 3,81,14,408 ~ 3 Crore+	Rs 80,82,490 ~ 80 Lacs+	38114408	3 Crore+	808249
3	Sarya Dharma Padvi	AKKALKUWA (ST)	IND	0	Post Graduate	Rs 44,20,000 ~ 44 Lacs+	Rs 68,71,000 ~ 68 Lacs+	4420000	44 Lacs+	687100
4	Sushilkumar Jahangir Pawara	AKKALKUWA (ST)	IND	1	Others	Rs 7,69,000 ~ 7 Lacs+	Rs 30,00,000 ~ 30 Lacs+	769000	7 Lacs+	300000

Liabilities_Label	Net_Worth	Net_Worth_Words	District	Winner_Flag	Result_Label	party_clean	Party_std	consti_no	Has_Debt	Constituency_cleaned
79 Lacs+	58487582	5.85 Crore+	Nandurbar	1	Winner	SHS	SHS	1	False	Akkalkuwa ((ST))
4 Lacs+	24750401	2.48 Crore+	Nandurbar	0	Loser	IND	IND	1	False	Akkalkuwa ((ST))
80 Lacs+	30031918	3.00 Crore+	Nandurbar	0	Loser	BAP	BHARAT ADIVASI PARTY	1	False	Akkalkuwa ((ST))
68 Lacs+	-2451000	-2451000	Nandurbar	0	Loser	IND	IND	1	True	Akkalkuwa ((ST))
30 Lacs+	-2231000	-2231000	Nandurbar	0	Loser	IND	IND	1	True	Akkalkuwa ((ST))

Result Difference Between Wikipedia Data and Scraped Data

	Party	Winner_Count
0	BJP	132
1	SHS	57
2	NCP	41
3	SS-UBT	20
4	INC	16
5	NCP-SP	10
6	SP	2
7	IND	2
8	JSS	2
9	RYSP[C]	1
10	RSPS	1
11	AIMIM	1
12	CPI(M)	1
13	PWPI	1
14	RSVA[D]	1

	Party	Winner_Count
0	BJP	128
1	SHS	56
2	NCP	41
3	SS-UBT	20
4	INC	17
5	NCP-SP	8
6	IND	5
7	SP	2
8	JSS	2
9	RYSP[C]	1
10	RSPS	1
11	AIMIM	1
12	CPI(M)	1
13	SNS	1
14	PWPI	1
15	RSVA[D]	1

Wikipedia Result   **Result From Scrapped Data**

Wikipedia Result is correct is uploaded official by the election commission of india

I check sort the data on the basis of party and then check from actual and scrapped data compare both and then get misclassified data or candidate then manually fill that data and make the result perfect .
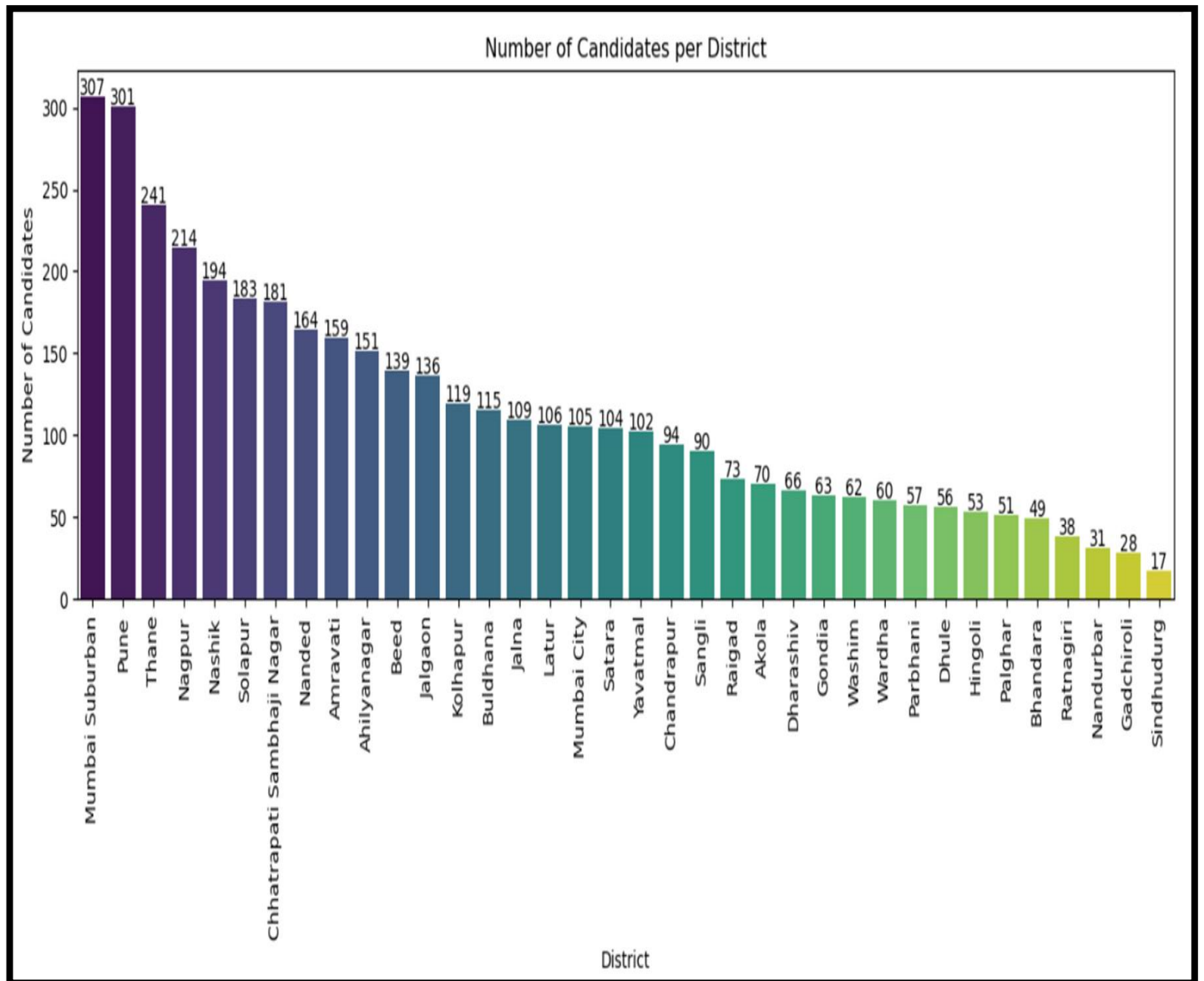
Perform Exploratory Data Analysis

1. Univariate Analysis

2. Bivariate Analysis

- Numerical vs Numerical
- Categorical vs Numerical
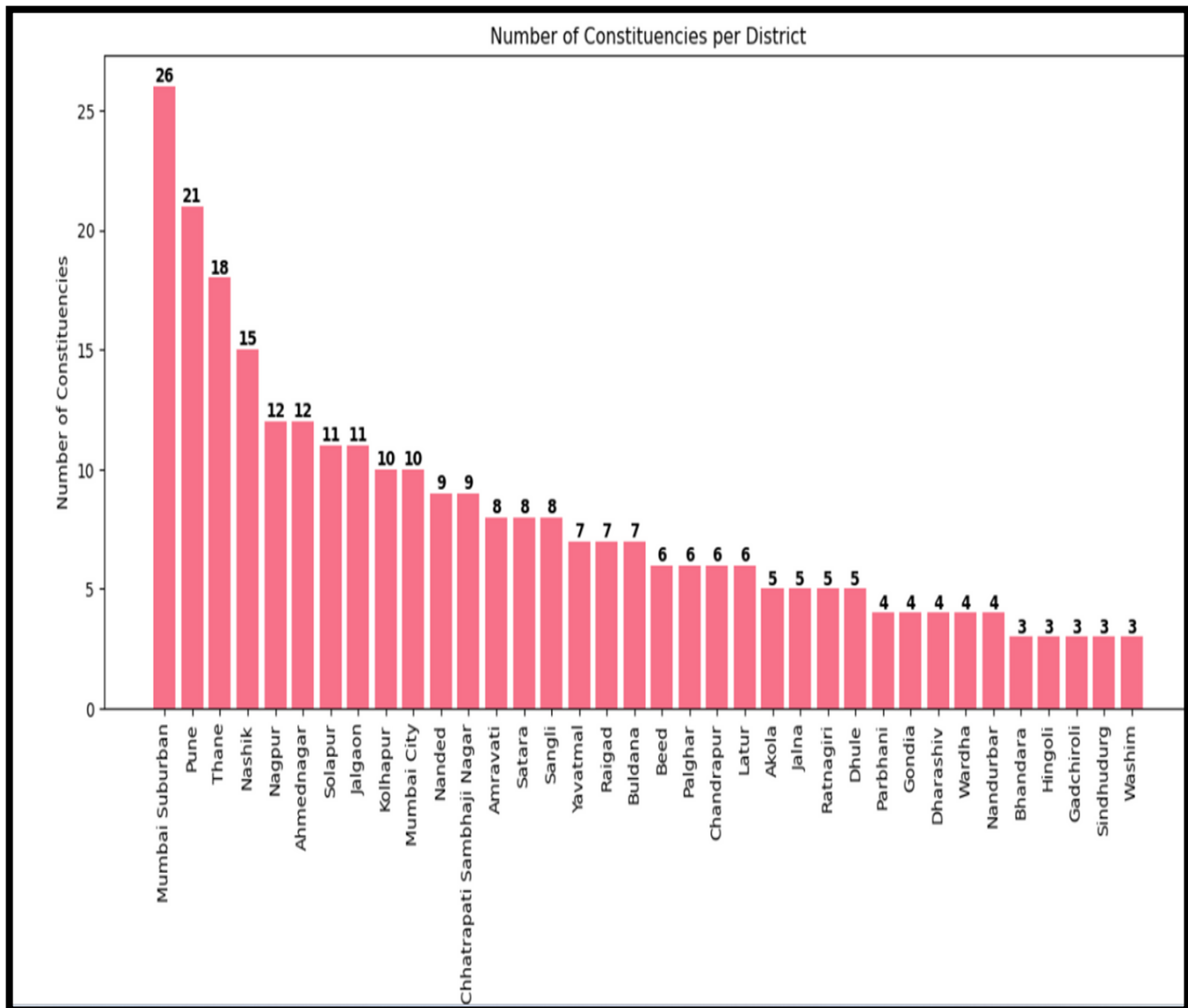- Categorical vs Categorical

Number Of Candidates Per District

Number of Candidates per District

Observations:

- Mumbai Suburban and Pune have the highest number of candidates, showing that big urban districts attract much more political competition.

- Districts like Sindhudurg, Gadchiroli, and Nandurbar have very few candidates, which suggests lower political activity or fewer contesting parties in those regions.

- Overall, metros and large districts clearly show heavier participation, while smaller or rural districts see limited candidate turnout.
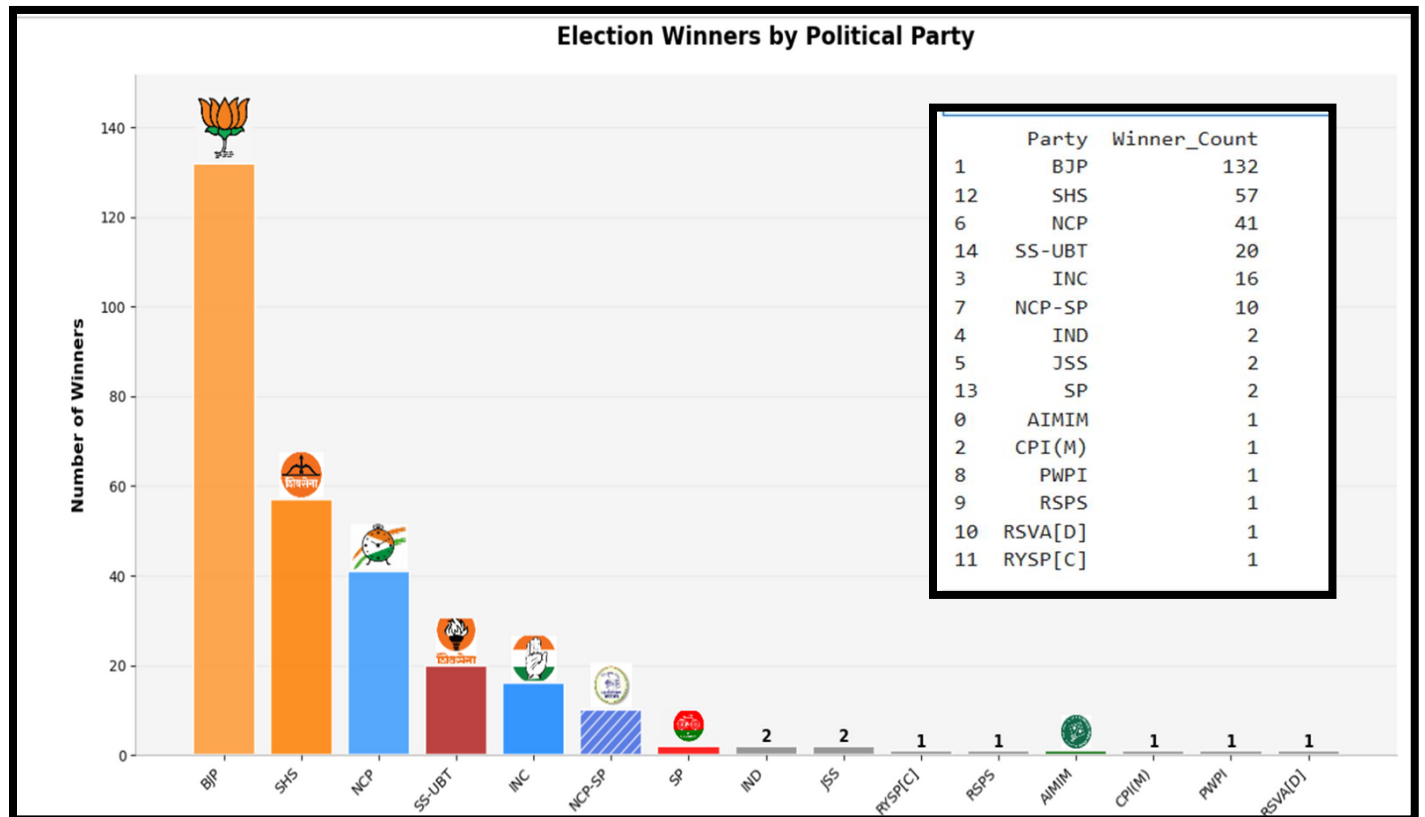
Number Of Constituncies By District

Number of Constituencies per District

Observations:

- Mumbai Suburban has the highest number of constituencies (26), followed by Pune (21) and Thane (18), showing that these urban and highly populated districts have larger political representation.

- Most other districts fall in the 3 to 12 constituency range, which indicates a more balanced distribution across the state.

- Districts like Sindhudurg, Washim, Gadchiroli, and Hingoli have only 3 constituencies, reflecting smaller populations or lower geographic/administrative size.

Election Winners By Party (Election Result)

Election Winners by Political Party

	Party	Winner_Count
1	BJP	132
12	SHS	57
6	NCP	41
14	SS-UBT	20
3	INC	16
7	NCP-SP	10
4	IND	2
5	JSS	2
13	SP	2
0	AIMIM	1
2	CPI(M)	1
8	PWPI	1
9	RSPS	1
10	RSVA[D]	1
11	RYSP[C]	1

Observations:

 BJP clearly leads the election results, winning the highest number of seats by a big margin compared to all other parties.

Shiv Sena (Shinde faction) and NCP follow next, but their seat counts are much lower than BJP, showing a noticeable gap in performance.

 Several smaller parties and independents won only 1–2 seats each, which shows that the competition outside the major parties was limited.
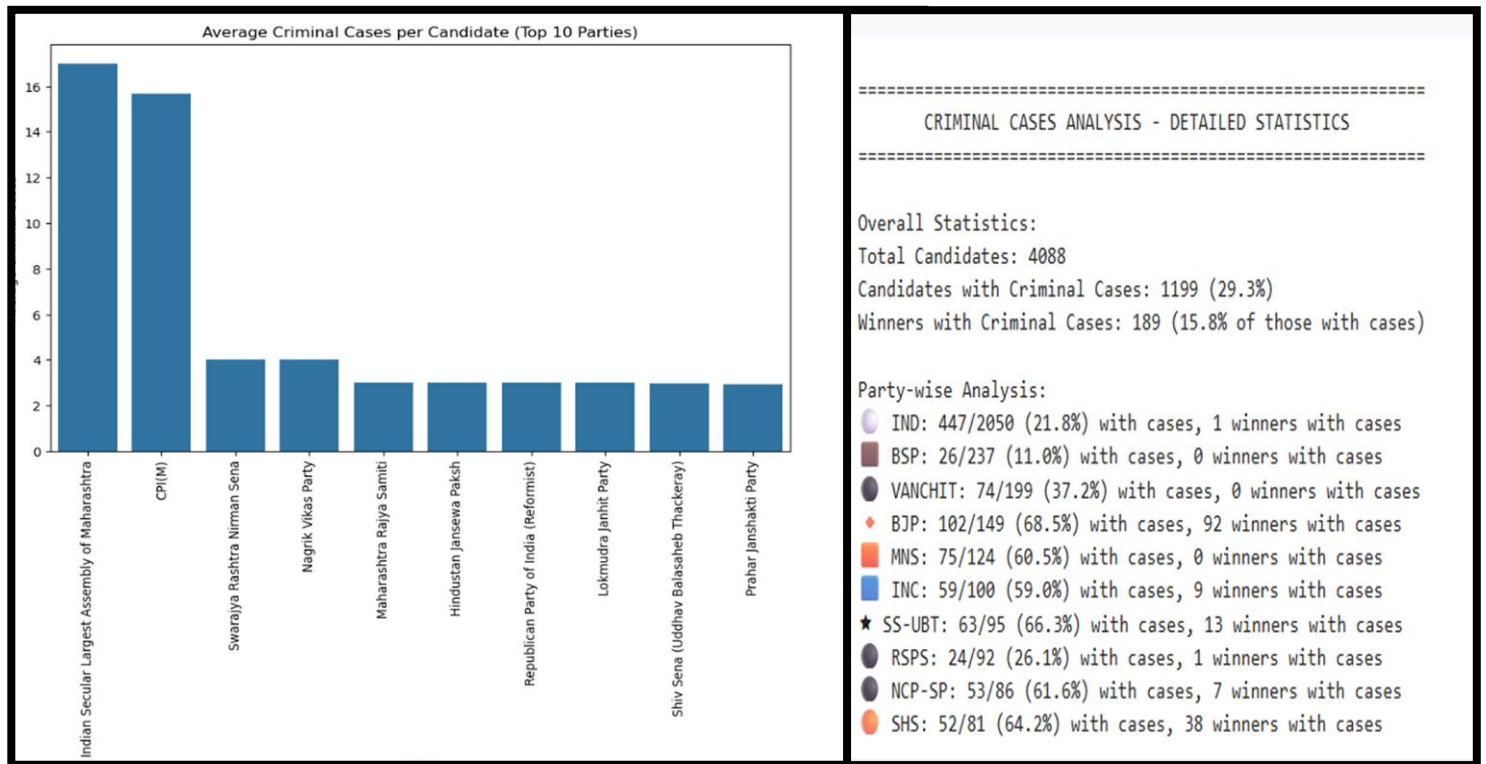
Winning Probability of Political Parties in Maharashtra Assembly Elections 2024

	Party_std	Total_Candidates	Winners	Win_Probability_%
44	BJP	149	132	88.59
141	SHS	81	57	70.37
100	NCP	59	41	69.49
145	SS-UBT	95	20	21.05
62	INC	100	16	16.00
101	NCP-SP	86	10	11.63
63	IND	2050	2	0.10
78	JSS	6	2	33.33
144	SP	9	2	22.22
6	AIMIM	17	1	5.88
50	CPI(M)	3	1	33.33
130	RYSP[C]	2	1	50.00
110	PWPI	18	1	5.56
129	RSVA[D]	1	1	100.00
128	RSPS	92	1	1.09
107	PEOPLES PARTY OF INDIA (DEMOCRATIC)	44	0	0.00
105	OPEN PEOPLE'S PARTY	1	0	0.00
106	PEACE PARTY	6	0	0.00
108	PEOPLES UNION PARTY	1	0	0.00
103	NEW RASHTRIYA SAMAJ PARTY	3	0	0.00

Observation :

- BJP has the highest winning probability (88.59%), showing that most of its candidates were successful compared to other major parties.

- SHS and NCP also performed strongly, each winning around 70% of their contested seats.

- SS-UBT and INC have much lower success rates, indicating that many of their candidates were unable to convert participation into wins.

- Independent candidates contested in very large numbers, but their win rate is extremely low (0.10%), showing how tough it is for independents to win without party support.

- Some small parties show high percentages (like RSVA[D] – 100%), but this is only because they fielded just one candidate, making the percentage less meaningful for comparison
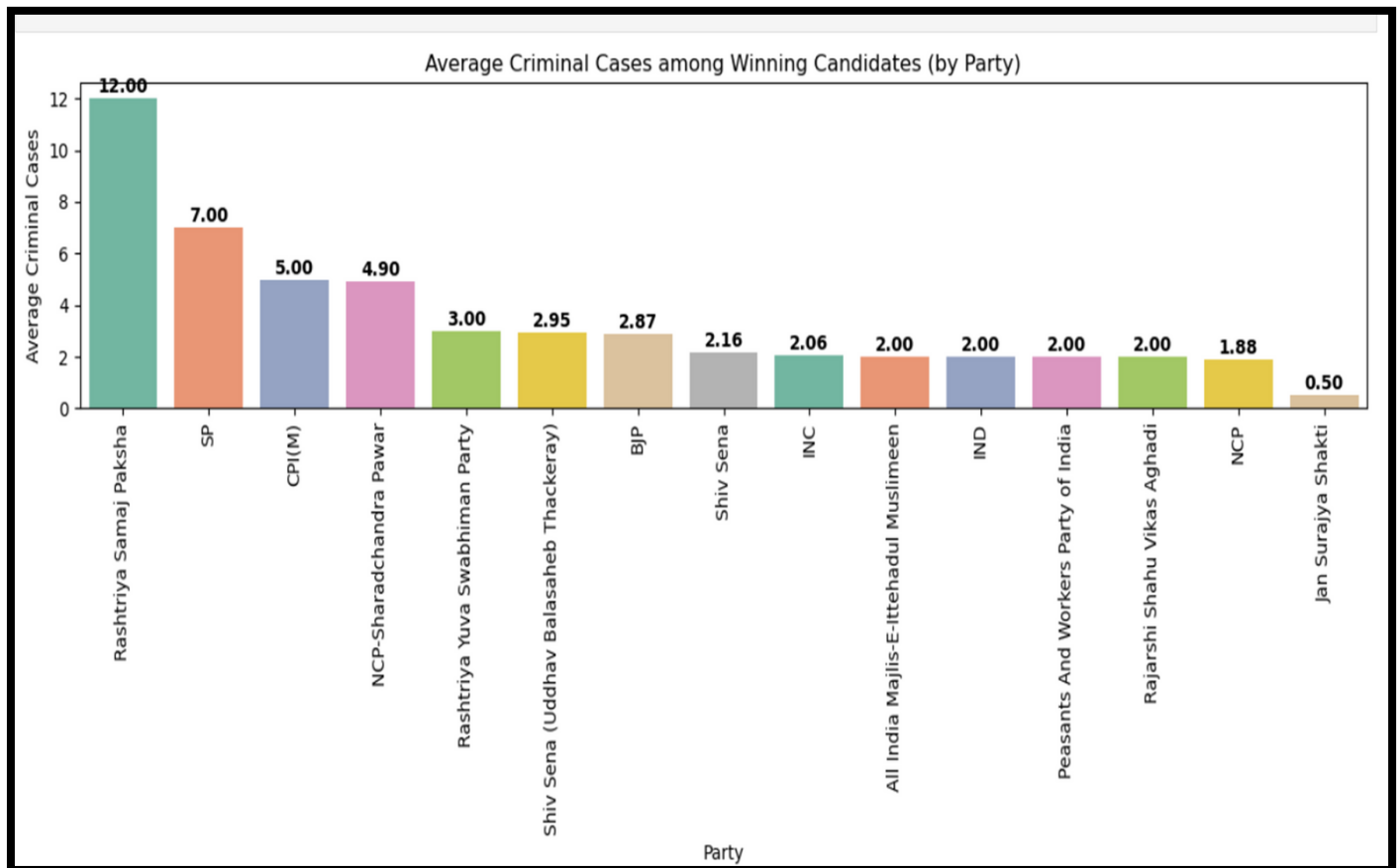
Average Criminal Cases Per Candidate (Top 10 Parties)


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============================================================
        CRIMINAL CASES ANALYSIS - DETAILED STATISTICS
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Overall Statistics:
Total Candidates: 4088
Candidates with Criminal Cases: 1199 (29.3%)
Winners with Criminal Cases: 189 (15.8% of those with cases)

Party-wise Analysis:
 IND: 447/2050 (21.8%) with cases, 1 winners with cases
 BSP: 26/237 (11.0%) with cases, 0 winners with cases
 VANCHIT: 74/199 (37.2%) with cases, 0 winners with cases
 BJP: 102/149 (68.5%) with cases, 92 winners with cases
 MNS: 75/124 (60.5%) with cases, 0 winners with cases
 INC: 59/100 (59.0%) with cases, 9 winners with cases
★ SS-UBT: 63/95 (66.3%) with cases, 13 winners with cases
 RSPS: 24/92 (26.1%) with cases, 1 winners with cases
 NCP-SP: 53/86 (61.6%) with cases, 7 winners with cases
 SHS: 52/81 (64.2%) with cases, 38 winners with cases
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Observations :

- Around 30% of all candidates have criminal cases.

- Even among the winners, some candidates also have cases, showing it doesn't stop them from winning.

- Big parties like BJP, SHS, SS-UBT, and NCP-SP have many candidates with criminal cases.

- Independent candidates contest in large numbers, but only a few have cases and very few win.

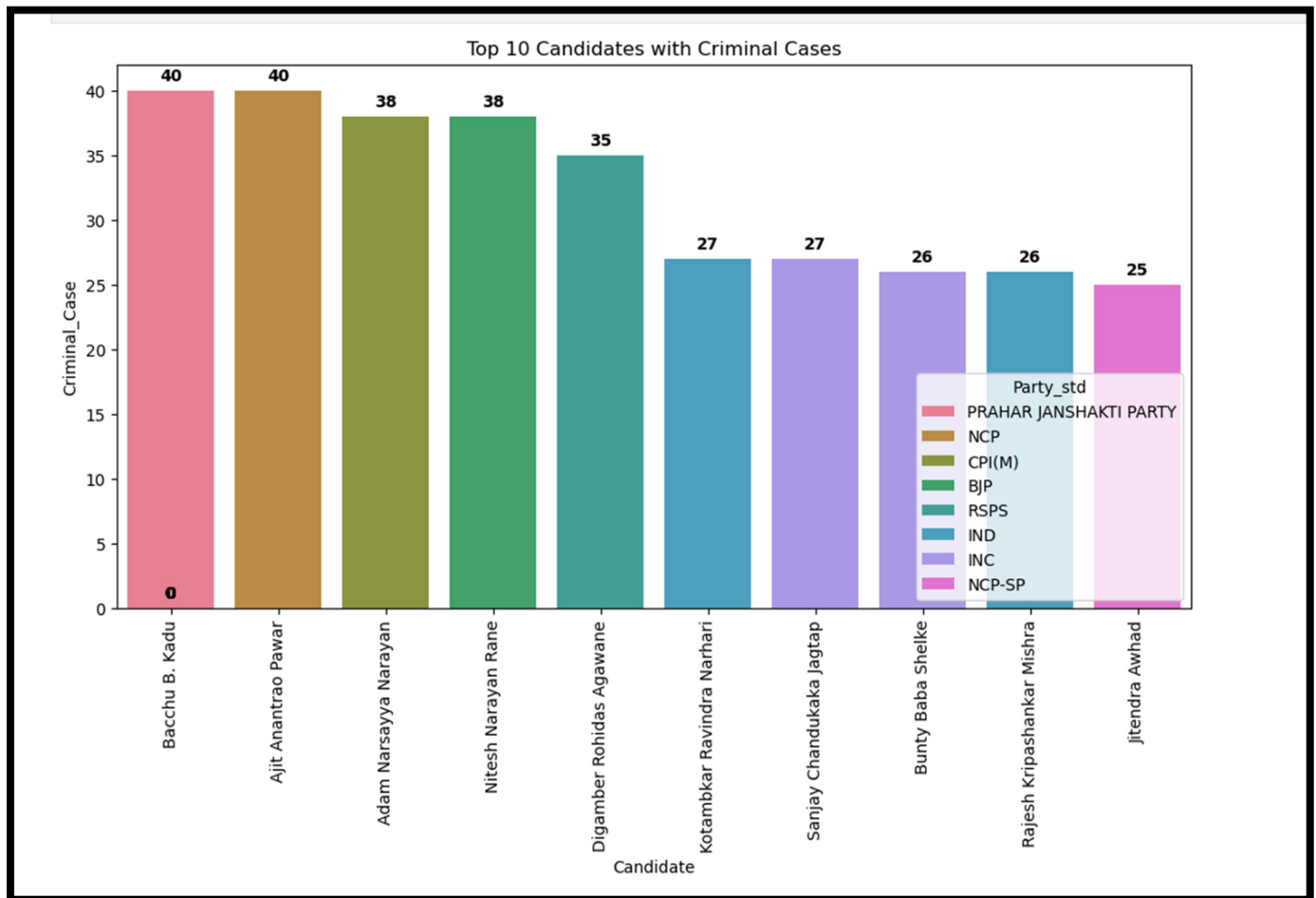- Overall, criminal cases are still common among candidates in the election.

Average Criminal Cases Among Winning (By Party)

Average Criminal Cases among Winning Candidates (by Party)

Observation :

- Rashtriya Samaj Paksha has the highest average cases (12) among its winning candidates.

- SP and CPI(M) winners also show higher averages compared to other parties.

- Most major parties like BJP, SHS, INC, and NCP have winning candidates with around 2–3 average cases.

- Jan Surajya Shakti has the lowest average (0.5), meaning its winning candidates have very few cases.

- Overall, criminal cases are present across many parties, but the average varies widely from party to party.
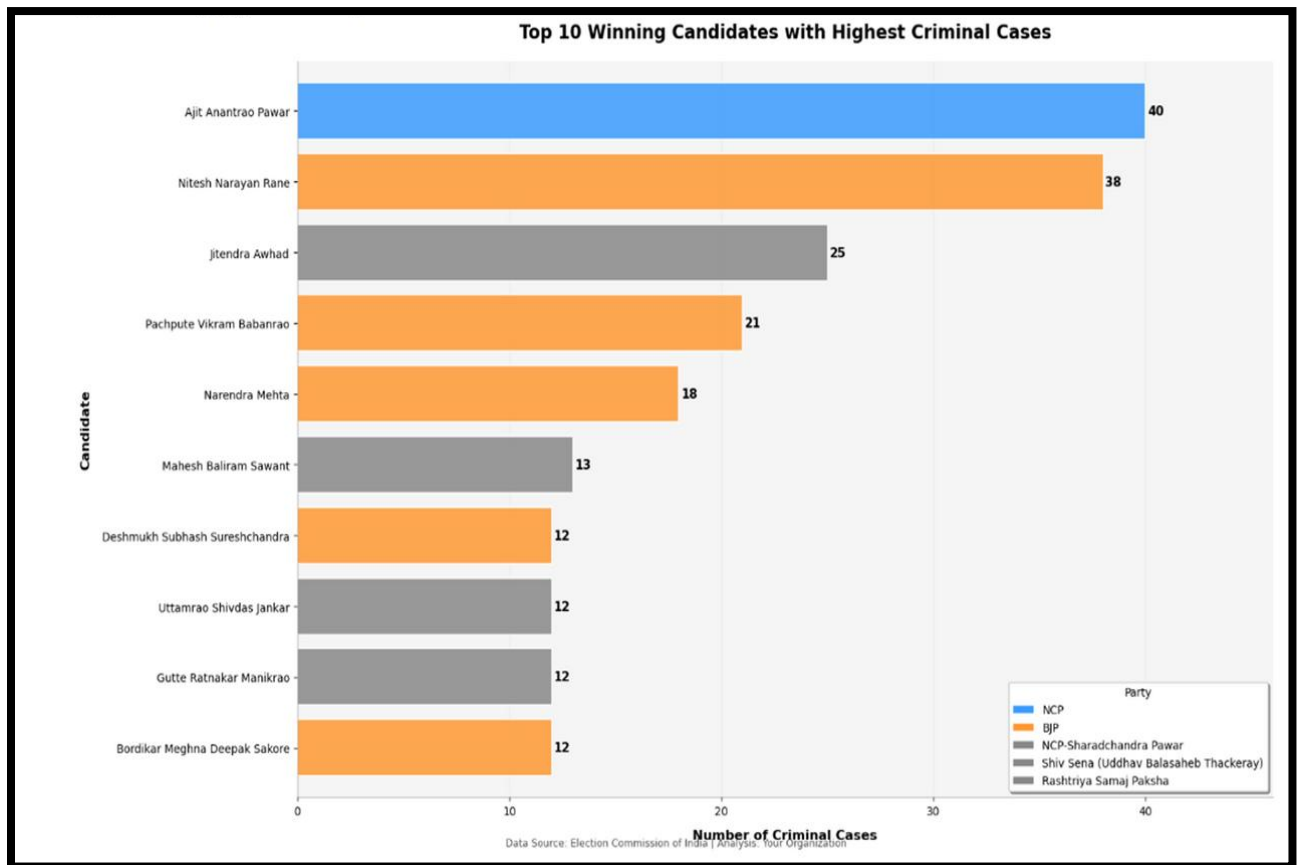
Top 10 Candidates with criminal Cases with party

Observations :

- Bacchu B. Kadu and Ajit Anantrao Pawar have the highest number of cases (40 each) among all candidates.

- Two more candidates — Adam Narasayya Narayan and Nitesh Narayan Rane — follow closely with 38 cases each.

- The rest of the top candidates have between 25 to 35 cases, which is still very high compared to others.

- Overall, the graph shows that some candidates are contesting elections despite having a large number of criminal charges.
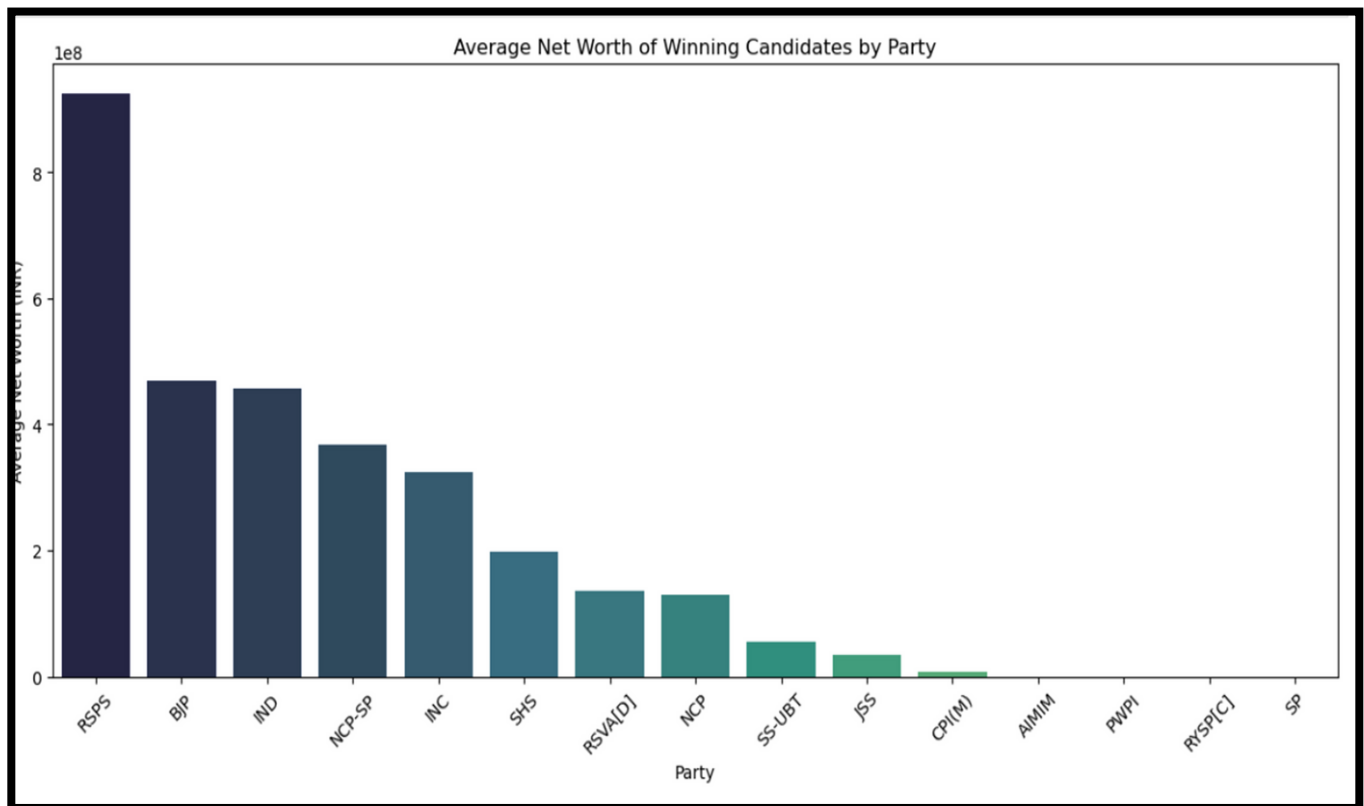
Top 10 Winning Candidates with highest Criminal Cases

Observations :

- Several winning candidates in the 2024 Maharashtra elections have multiple criminal cases.

- Ajit Anantrao Pawar has the highest number of cases (40), followed by Nitesh Narayan Rane (38).

- The rest of the candidates have between 12 and 25 cases.

- Candidates with criminal cases are found across different political parties.
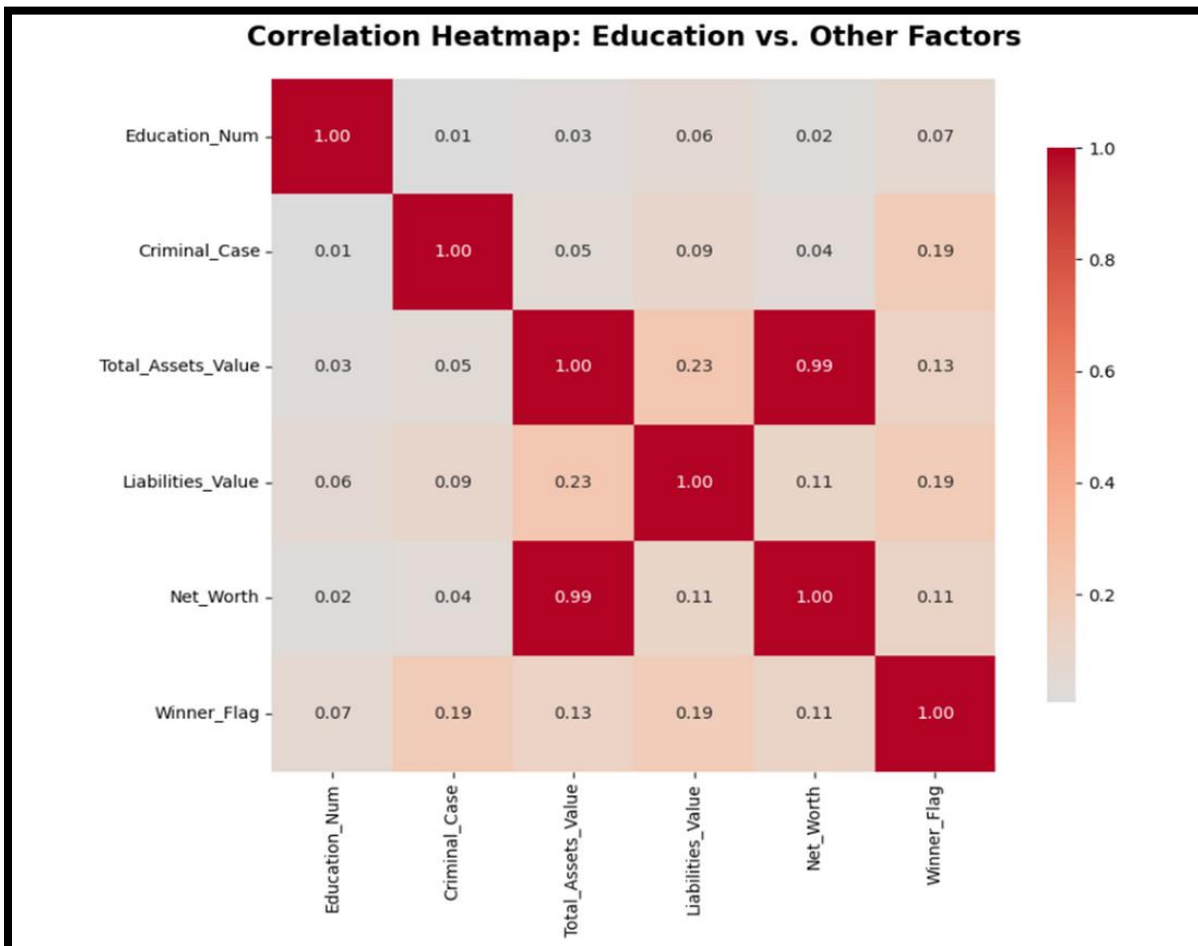
Average Net Worth Of Winning Candidates By Party

Observations

- RSPS winning candidates have the highest average net worth, far ahead of all other parties.

- BJP and Independent candidates also show high average wealth levels.

- Parties like NCP–SP, INC, and SHS fall in the mid-range of average net worth.

- Smaller parties such as SS-UBT, JSS, CPI(M), AIMIM, PWPI, RYSP(C), and SP have much lower average net worth among their winning candidates.

- Overall, the graph shows a big wealth gap between candidates of different parties.
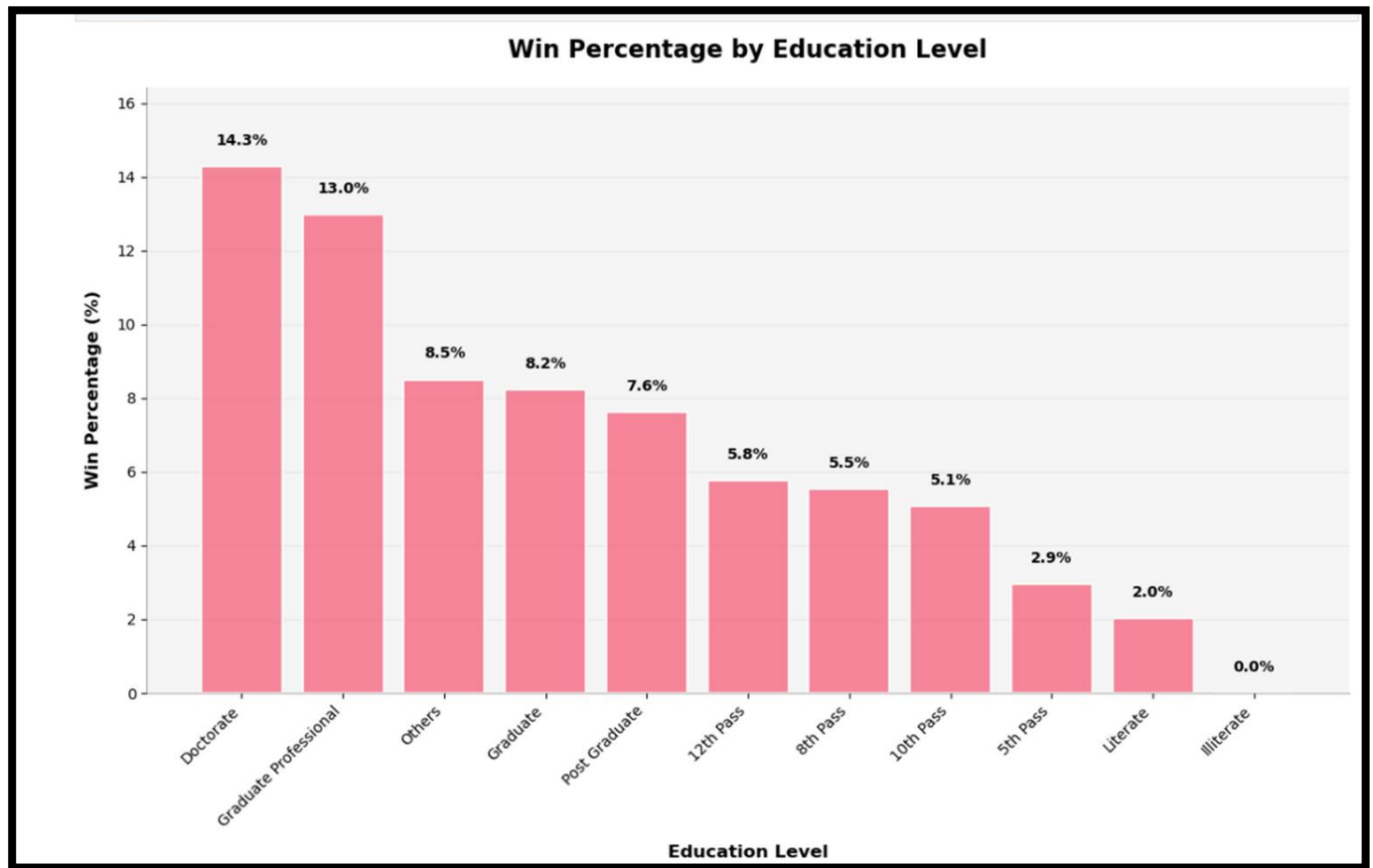
Correlation Between Education and Other Candidate Factors

Correlation Heatmap: Education vs. Other Factors

	Education_Num	Criminal_Case	Total_Assets_Value	Liabilities_Value	Net_Worth	Winner_Flag
Education_Num	1.00	0.01	0.03	0.06	0.02	0.07
Criminal_Case	0.01	1.00	0.05	0.09	0.04	0.19
Total_Assets_Value	0.03	0.05	1.00	0.23	0.99	0.13
Liabilities_Value	0.06	0.09	0.23	1.00	0.11	0.19
Net_Worth	0.02	0.04	0.99	0.11	1.00	0.11
Winner_Flag	0.07	0.19	0.13	0.19	0.11	1.00

Observations:

- Education level has almost no strong relationship with any other factor.

- Total assets and net worth show a very high correlation, meaning they move together.

- Criminal cases have a weak correlation with winning chances.

- Liabilities show only a small link with assets and criminal cases.

- Overall, no factor strongly influences education, and most correlations are weak except assets vs. net worth.
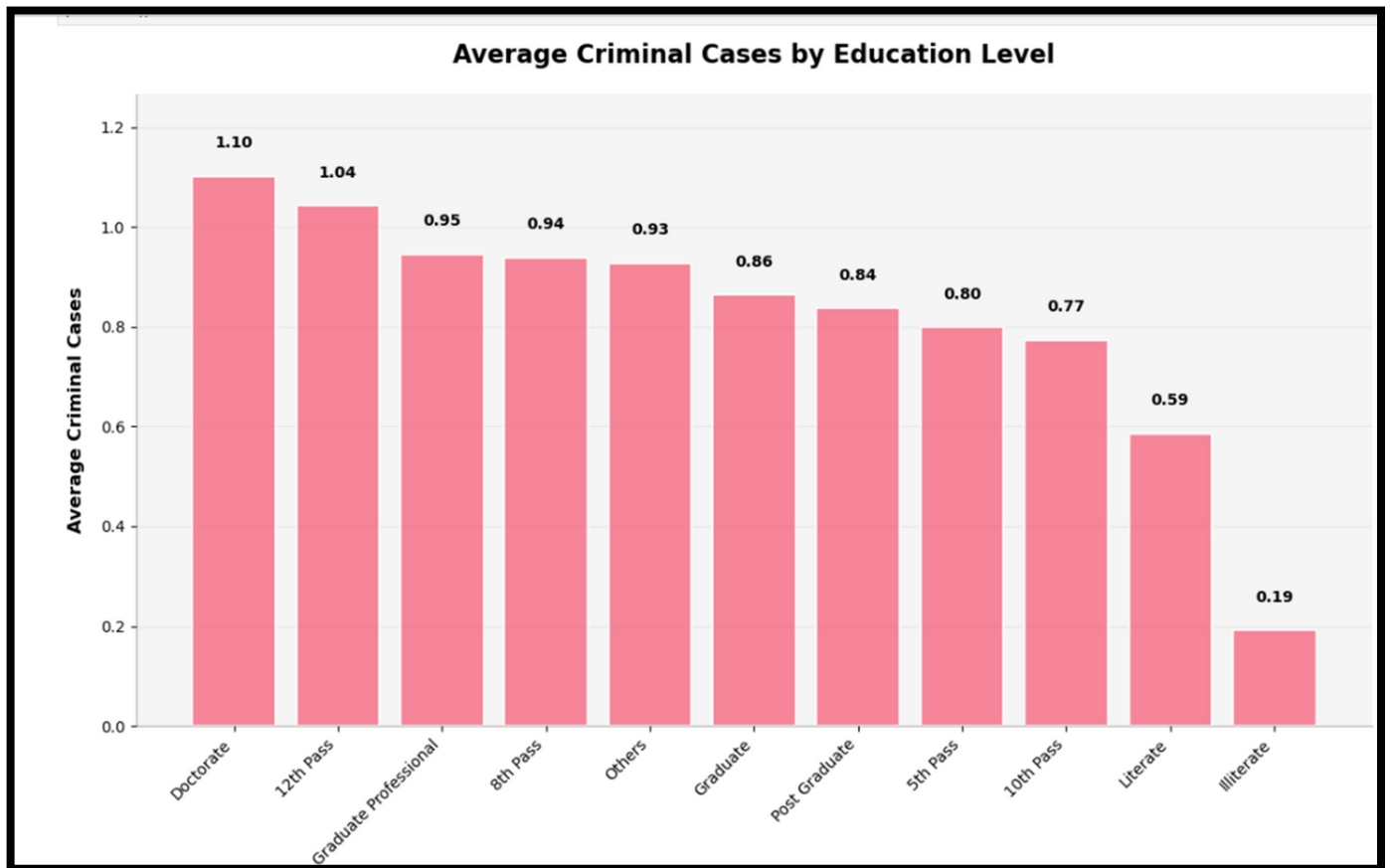
Win Percentage Based on Education Level

Win Percentage by Education Level

Observations:

- Candidates with Doctorate and Graduate Professional degrees have the highest win percentage.

- Win percentage gradually drops as education level decreases.

- Graduate and Post-Graduate candidates show moderate win rates.

- Candidates with lower education (10th Pass, 8th Pass, 5th Pass, Literate) have much lower chances of winning.

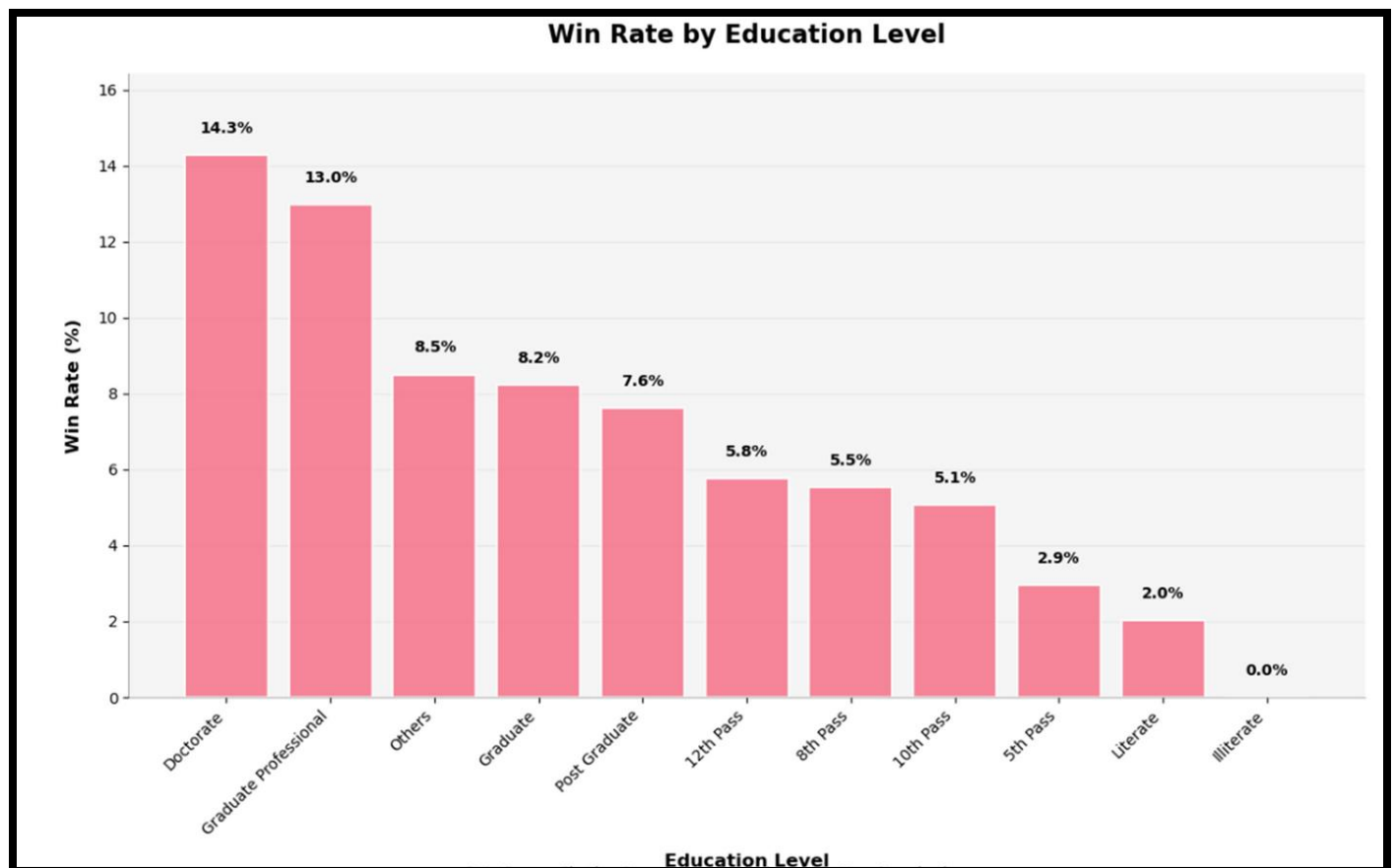- Illiterate candidates have 0% win rate in the dataset.

Average Criminal Cases by Education Level

Observations:

- Candidates with higher education levels (Doctorate, 12th Pass, Graduate Professional) show slightly higher average criminal cases.

- The average number of cases gradually decreases as education level goes down.

- Literate and Illiterate candidates have the lowest average criminal cases.
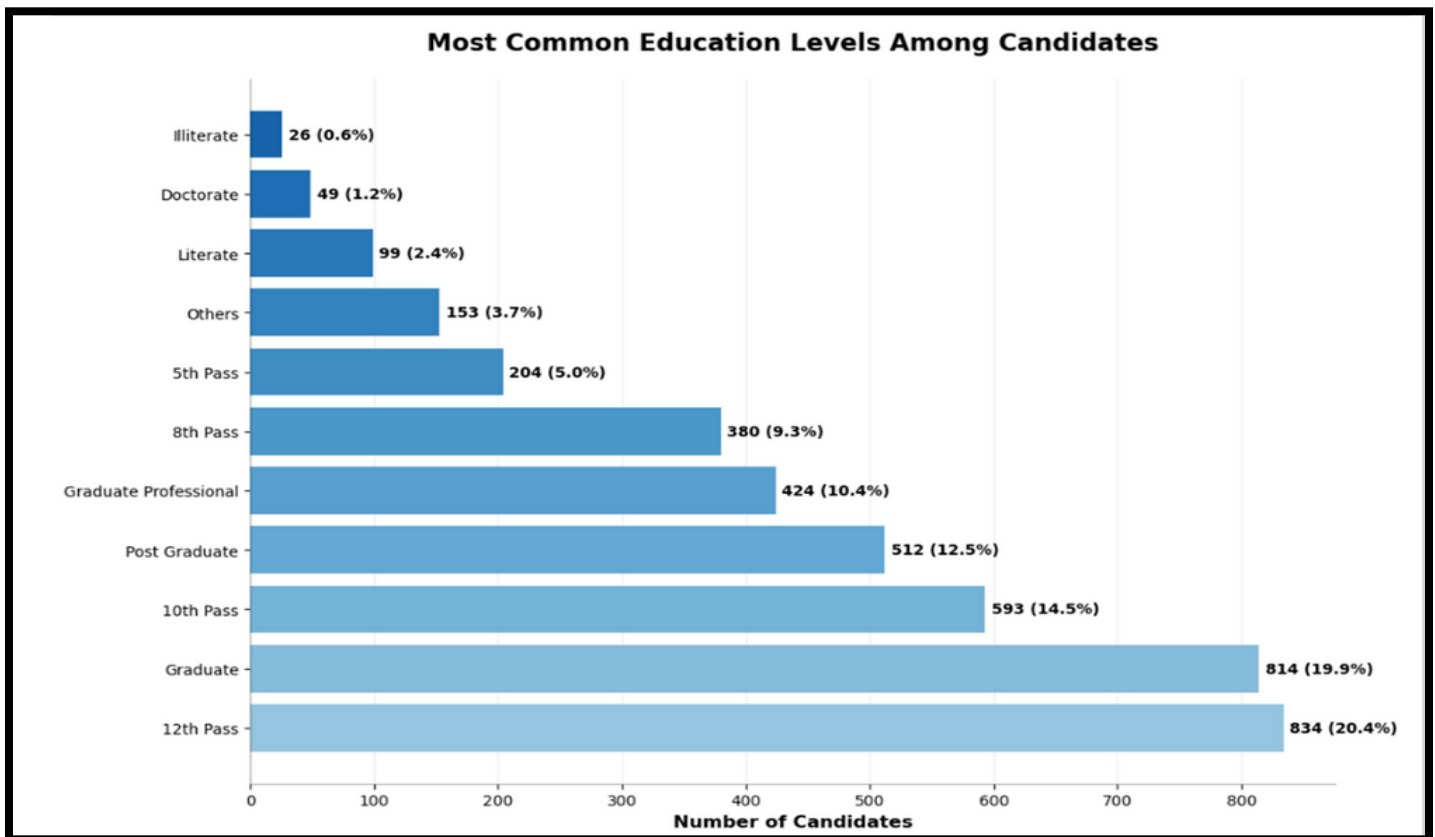
Win Rate by Education Level

Win Rate by Education Level

Observations:

- Higher education leads to better winning chances in the Maharashtra Assembly Elections 2024.

- Doctorate and Graduate Professional candidates have the highest win rates.

- Graduates perform better than candidates with only school-level education.

- Win rate gradually declines with lower education levels.

- Illiterate candidates have almost zero success, showing strong voter preference for educated leaders.

Education Levels of Candidates in Maharashtra Assembly Elections 2024

Most Common Education Levels Among Candidates

Education Level	Number of Candidates (Percentage)
Illiterate	26 (0.6%)
Doctorate	49 (1.2%)
Literate	99 (2.4%)
Others	153 (3.7%)
5th Pass	204 (5.0%)
8th Pass	380 (9.3%)
Graduate Professional	424 (10.4%)
Post Graduate	512 (12.5%)
10th Pass	593 (14.5%)
Graduate	814 (19.9%)
12th Pass	834 (20.4%)

Number of Candidates

Observations:

- The most common education level among candidates is 12th Pass, followed closely by Graduates.

- A large number of candidates have school-level education (10th and 12th Pass).

- Candidates with very high education (Doctorate) are very few in number.

- Illiterate candidates are extremely rare, showing that most contesting candidates have at least basic education.

Final Anaysis

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KEY INSIGHTS FROM EDUCATION ANALYSIS:
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1. MOST COMMON EDUCATION LEVELS:
    - 12th Pass: 834 candidates (20.4%)
    - Graduate: 814 candidates (19.9%)
    - 10th Pass: 593 candidates (14.5%)

2. WIN RATE BY EDUCATION:
    - Highest win rate: Doctorate (14.3%)
    - Lowest win rate: Illiterate (0.0%)

3. CRIMINAL CASES BY EDUCATION:
    - Most criminal cases: Doctorate (1.10 cases on average)
    - Least criminal cases: Illiterate (0.19 cases on average)

4. WEALTH BY EDUCATION:
    - Highest assets: Doctorate (₹18.11 crores on average)
    - Lowest assets: Illiterate (₹0.13 crores on average)

5. CORRELATION ANALYSIS:
    - Education level vs Win Rate: 0.002
    - Education level vs Criminal Cases: -0.019
    - Education level vs Assets: -0.001
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                 DETAILED ANALYSIS: WINNERS WITH CRIMINAL CASES
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Overall Statistics:
Total Winners: 288
Winners with Criminal Cases: 189 (65.6%)

Party-wise Breakdown:
⚫ RSPS: 1/1 (100.0%)
♦ BJP: 92/132 (69.7%)
★ SS-UBT: 13/20 (65.0%)
🟦 INC: 9/16 (56.2%)
⚪ IND: 1/2 (50.0%)
🟫 BSP: 0/0 (0.0%)
⚫ VANCHIT: 0/0 (0.0%)
🟧 MNS: 0/0 (0.0%)

Assets Comparison:
Median Assets - Winners with Cases: ₹53,133,517
Median Assets - Winners without Cases: ₹38,476,994
Ratio: 1.38x

Education Analysis:
Top Education Levels - Winners with Cases:
  Graduate: 103 winners (54.5%)
  High School: 52 winners (27.5%)
  Schooling: 21 winners (11.1%)
  Doctorate: 5 winners (2.6%)
  Other: 8 winners (4.2%)

Top Constituencies with Winners Having Criminal Cases:
  AKKALKUWA (ST): 1 winners
  KHED ALANDI: 1 winners
  MUMBADEVI: 1 winners
  COLABA: 1 winners
  PANVEL: 1 winners
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================================================================================
                  DEEP DIVE ANALYSIS: WINNERS WITH CRIMINAL CASES
================================================================================


Overall Statistics:
Total Winners: 288
Winners with Criminal Cases: 189 (65.6%)
Average Criminal Cases per Winner: 2.66

Party-wise Analysis (Winners with Criminal Cases):
● RSPS: 1/1 winners with cases (100.0%) | 12.00 average cases
● NCP-SP: 7/10 winners with cases (70.0%) | 4.90 average cases
★ SS-UBT: 13/20 winners with cases (65.0%) | 2.95 average cases
◆ BJP: 92/132 winners with cases (69.7%) | 2.87 average cases
● SHS: 38/57 winners with cases (66.7%) | 2.16 average cases
■ INC: 9/16 winners with cases (56.2%) | 2.06 average cases
○ IND: 1/2 winners with cases (50.0%) | 2.00 average cases
■ BSP: 0/0 winners with cases (0.0%) | nan average cases
● VANCHIT: 0/0 winners with cases (0.0%) | nan average cases
■ MNS: 0/0 winners with cases (0.0%) | nan average cases


Assets Comparison:
Median Assets - Winners with Cases: ₹60,642,469
Median Assets - Winners without Cases: ₹43,811,927
Ratio: 1.38x


Education Level Analysis:
Top Education Levels - Winners with Cases:
  Graduate: 43 winners (22.8%)
  Graduate Professional: 39 winners (20.6%)
  12th Pass: 27 winners (14.3%)
  10th Pass: 25 winners (13.2%)
  Post Graduate: 21 winners (11.1%)
Top Education Levels - Winners without Cases:
  Graduate: 24 winners (24.2%)
  12th Pass: 21 winners (21.2%)
  Post Graduate: 18 winners (18.2%)
  Graduate Professional: 16 winners (16.2%)
  Others: 5 winners (5.1%)

Constituencies with Most Winners Having Criminal Cases:
  AKKALKUWA (ST): 1 winners
  KHED ALANDI: 1 winners
  MUMBADEVI: 1 winners
  COLABA: 1 winners
  PANVEL: 1 winners
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