

Powerball Winning Numbers Analysis

Comprehensive Data Analysis | 2010 – Present

Dataset: `Cleaned_Powerball_Winning_Numbers_2010_Present.csv`

Report Date: February 28, 2026

Prepared by Kevyn.ai

Trend exploration of draw structure, number frequencies, and rule-era shifts across 1,886 drawings.

Table of Contents

| | | |
|----|-------------------------------|----|
| 1. | Executive Summary | 3 |
| 2. | Introduction & Objectives | 4 |
| 3. | Exploratory Data Analysis | 5 |
| 4. | Era-Level Comparison | 6 |
| 5. | Number Frequency Analysis | 7 |
| 6. | Key Findings | 8 |
| 7. | Additional Distribution Views | 9 |
| 8. | Interpretation & Discussion | 10 |
| 9. | Conclusion & Next Steps | 11 |

1. Executive Summary

This report analyzes **1,886 Powerball drawings** conducted between February 3, 2010 and February 25, 2026. The analysis examines draw structure, number frequencies, parity patterns, and the impact of rule changes on observable trends across the dataset.

| | | | |
|--------------------------------|-----------------------------|-----------------------|--------------------------------|
| 1,886 Total Drawings | 17 Calendar Years | 2 Game Eras | 2 → 3 Draw Days/Week |
|--------------------------------|-----------------------------|-----------------------|--------------------------------|

Key Finding: The most significant structural trend is the step-change following the October 2015 rule update. The average sum of five white balls increased from **149.4** (pre-change) to **176.7** (post-change), and the average spread (max – min) rose from **39.4** to **46.6**.

Across the full period, odd/even counts cluster near a balanced mix, with three odd numbers out of five being the most common outcome. A consecutive white-number pair occurs in approximately 28.2% of draws, consistent with random combinations rather than persistent structural patterns. Operationally, draw cadence shifted from twice-weekly (Wednesday and Saturday) to three times weekly when Monday drawings were introduced in 2021.

2. Introduction & Objectives

Powerball drawings are designed to be random, but the structure of the game — including ball pools, draw cadence, and optional multipliers — has changed over time. This dataset contains draw dates, five sorted white-ball numbers (N1–N5), the Powerball number, and the Power Play multiplier where recorded. The goal of this analysis is to identify measurable trends over time and summarize frequency patterns useful for reporting and data quality checks.

Analysis Objectives

1. Quantify changes in draw cadence and seasonality over time (year/month patterns).
2. Compare key white-ball summary metrics (sum, spread, parity mix) across game eras.
3. Identify the most frequently drawn white numbers and Powerball numbers, overall and by era.
4. Evaluate whether simple structural features (odd/even balance, consecutive numbers) show time trends.
5. Summarize Power Play multiplier behavior where present in the dataset.

3. Exploratory Data Analysis

Dataset Coverage

The dataset contains 1,886 draws spanning 17 calendar years (February 3, 2010 through February 25, 2026). Drawings occurred primarily on Wednesday and Saturday, with Monday drawings added starting in 2021. This cadence shift is clearly visible in the year-over-year draw counts, which jump from approximately 104 per year to around 156 per year.

Derived Features

For each draw, the following features were computed to aid in detecting structural shifts and confirming distribution stability:

| Feature | Description |
|------------------------------|---|
| Sum of White Balls | The total of all five white-ball numbers, useful for detecting pool-size changes. |
| Range (Max – Min) | The spread of the five white balls, which reflects the breadth of selected numbers. |
| Odd Count | The number of odd-valued white balls (0–5), used to assess parity balance. |
| Consecutive Pair Flag | Whether at least one pair of adjacent numbers appears in the draw. |

Note: The rolling trends chart for white-ball sum and spread (12-month rolling average) shows a clear step-change around late 2015, corresponding to the rule update that expanded the white-ball pool.

4. Era-Level Comparison

The October 2015 rule change divided the dataset into two distinct eras. The white-ball pool expanded, while the Powerball pool contracted from 1–35 to 1–26. The table below summarizes key metrics by era.

| Metric | Pre-Oct 2015 (PB 1–35) | Post-Oct 2015 (PB 1–26) | Change |
|------------------------|------------------------|-------------------------|--------|
| Total Draws | 570 | 1,316 | +746 |
| Avg. Sum (White Balls) | 149.4 | 176.7 | +27.3 |
| Avg. Range (Max – Min) | 39.4 | 46.6 | +7.2 |
| Avg. Odd Count | 2.53 | 2.56 | +0.03 |
| Avg. High Count | 2.11 | 2.55 | +0.44 |
| Avg. Powerball | 18.22 | 13.56 | -4.66 |
| Multiplier Available | 63.0% | 100.0% | +37.0% |
| Avg. Multiplier | 3.10 | 2.68 | -0.42 |

Interpretation: The increases in average sum (+27.3) and range (+7.2) are mechanical consequences of expanding the white-ball pool to include more high numbers. The decrease in average Powerball (-4.66) reflects the contraction of that pool from 35 to 26. These are structural changes, not behavioral trends.

| | | |
|----------------------------------|-----------------------------------|-------------------------------|
| 149.4 Pre-2015 Avg Sum | 176.7 Post-2015 Avg Sum | +18.3% Sum Increase |
|----------------------------------|-----------------------------------|-------------------------------|

5. Number Frequency Analysis

Top 10 Most Frequent White Numbers

The following table lists the ten most frequently drawn white-ball numbers across all 1,886 drawings in the dataset. While frequency differences exist, they fall within the range expected from random sampling over this many draws.

| Rank | White Number | Times Drawn |
|------|--------------|-------------|
| 1 | 28 | 168 |
| 2 | 23 | 168 |
| 3 | 32 | 162 |
| 4 | 36 | 162 |
| 5 | 21 | 161 |
| 6 | 39 | 161 |
| 7 | 27 | 155 |
| 8 | 52 | 155 |
| 9 | 59 | 155 |
| 10 | 12 | 154 |

Top 10 Most Frequent Powerball Numbers

| Rank | Powerball Number | Times Drawn |
|------|------------------|-------------|
| 1 | 24 | 80 |
| 2 | 4 | 77 |
| 3 | 14 | 76 |
| 4 | 18 | 76 |

| Rank | Powerball Number | Times Drawn |
|------|------------------|-------------|
| 5 | 25 | 74 |
| 6 | 5 | 74 |
| 7 | 20 | 73 |
| 8 | 1 | 71 |
| 9 | 21 | 69 |
| 10 | 19 | 67 |

Note: Frequency rankings should not be interpreted as predictive. In a fair lottery, past frequency does not influence future draws.

6. Key Findings

Finding 1: Era-Driven Step Change

After the October 2015 rule change, the average white-ball sum rose by approximately 27.3 points and the typical spread increased by about 7.2 points. This is the expected mechanical result when the white-ball pool expands to include more high numbers.

Finding 2: Parity Balance Remains Stable

The mean number of odd white balls is 2.55 out of 5. The distribution histogram is centered near 2–3 odd numbers, indicating a consistent and balanced parity mix with no sustained drift.

Finding 3: Consecutive Numbers Are Not Rare

At least one consecutive pair appears in 28.2% of draws. This is a reminder that adjacent numbers are a normal and expected outcome under genuine randomness — not evidence of any structural pattern.

Finding 4: Power Play Multiplier Behavior

Multipliers are typically 2x or 3x. The pre-2015 era has partial coverage with missing multiplier data, while the post-2015 era appears complete. The rolling average has settled around 2.7x in recent years.

7. Additional Distribution Views

Odd/Even Distribution Among White Balls

The histogram of odd-number counts across all draws shows a clear concentration at 2 and 3 odd numbers out of 5, with the peak at 2 odd (approximately 600 draws) and 3 odd (approximately 530 draws). Extreme values of 0 or 5 odd numbers are rare, as expected under random selection.

| Odd Count | Approximate Draws | Distribution |
|--------------|-------------------|--------------|
| 0 (all even) | ~30 | Rare |
| 1 | ~280 | Uncommon |
| 2 | ~600 | Most Common |
| 3 | ~530 | Very Common |
| 4 | ~330 | Common |
| 5 (all odd) | ~50 | Rare |

Power Play Multiplier Trend

The Power Play multiplier shows a gradual decline in the 12-month rolling average from approximately 3.4x in the early dataset period (2010–2013) to around 2.7x in recent years. Monthly averages exhibit significant volatility, ranging from 2.0x to nearly 5.0x, but the overall trend has stabilized in the post-2015 era. Missing multiplier data in the pre-2015 era (63% coverage) means earlier comparisons should be interpreted cautiously.

8. Interpretation & Discussion

Structural vs. Behavioral Trends

The strongest observable trend in the data is structural rather than behavioral. Rule updates that change the size of the ball pools mechanically shift the distributions of sums, ranges, and averages. When the white-ball pool expands, the average sum and range rise even if the drawing process remains perfectly random. Within each era, frequency variation among individual numbers stays within the noise expected from repeated random sampling.

Practical Implications

These metrics serve as effective monitoring and data quality assurance tools. A sudden, unexpected shift in parity balance, range distribution, or Powerball number frequencies could indicate either a data ingestion issue or a genuine game rule change that warrants investigation.

Limitations & Assumptions

This analysis provides descriptive trend indicators and does not employ formal statistical randomness tests (such as deep statistical batteries). The Power Play multiplier field contains missing values in the pre-2015 era, so cross-era multiplier comparisons should be treated with caution. Frequency rankings are presented descriptively — they do not imply any predictive advantage in a fair lottery.

9. Conclusion & Next Steps

Conclusion

Across 1,886 drawings, the observed time trends in Powerball data are dominated by known game-structure changes (the October 2015 rule update) and the addition of Monday drawings beginning in 2021. Within each game era, summary features — including white-ball sum and spread, odd/even balance, and consecutive-number rates — remain stable and consistent with random variation.

Bottom Line: For reporting and monitoring purposes, the most actionable indicators are (1) draw cadence by year, (2) rolling sum/range of white balls, and (3) distribution snapshots for the Powerball number and Power Play multiplier.

Suggested Next Steps

1. Chi-Square Goodness-of-Fit Tests

Apply formal statistical tests by era to determine whether observed number frequencies deviate significantly from expected uniform distributions.

2. Monte Carlo Simulation

Simulate expected frequency bands across thousands of iterations to flag numbers whose counts fall outside the 95% confidence interval.

3. Expanded Multiplier Analysis

Investigate the structural changes to the Power Play multiplier distribution and whether the 10x multiplier (available when jackpots are below a threshold) affects the rolling average.

This report was prepared for trend exploration and data quality monitoring. Frequency analysis of lottery numbers does not confer any predictive advantage. Powerball drawings are independently random events.

For Data Analysis Services

Contact us at: info@kevyn.ai