US Political Future Index (UPFI) Methodology

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1. Executive Summary

1.1 Index Purpose and Design

The US Political Future Index (UPFI) provides a comprehensive, real-time measure of anticipated Republican versus Democratic political control across major US electoral offices. Built on prediction market data from Kalshi, UPFI aggregates market-based probabilities to deliver a forward-looking gauge of political sentiment and power distribution expectations.

1.2 Key Methodology Highlights

UPFI exclusively uses Kalshi prediction market data due to its CFTC oversight and to maintain data consistency across all included markets.

The index employs a weighting methodology that reflects both political significance and market characteristics:

- Category Weights: Presidential (40%), Senate (30%), House (20%), Gubernatorial (8%), Mayoral (2%)
- Market Weights: Volume sensitivity, time to expiration, population representation, and inherent political impact

Following established financial market conventions, UPFI uses a 100-based scale where 100 represents perfect political balance, values above 100 indicate Republican advantage, and values below 100 indicate Democratic advantage.

The index spans five major office categories across federal, state, and local levels, incorporating markets for Presidential elections, Senate races, House contests, Gubernatorial elections, and qualifying Mayoral races.

UPFI updates 24/7 on a 5min lag with a 1hr simple moving average (SMA).

2. Index Overview

2.1 Objective

The US Political Future Index (UPFI) is provides a comprehensive, forward-looking measure of anticipated Republican versus Democratic political control across major US electoral offices. The index serves as a gauge of market expectations regarding future political power and sentiment distribution in the United States.

Political outcomes significantly impact financial markets, policy decisions, and economic conditions. Traditional polling data suffers from methodological limitations, lag, and predictive inaccuracy. By aggregating prediction market data, where participants have financial incentives for accuracy, UPFI provides a more reliable and timely measure of political sentiment than conventional polling or pundit analysis.

What UPFI Measures

- Forward-looking political expectations: Market-based probabilities of Republican vs. Democratic electoral success
- Aggregate political sentiment: Weighted average across multiple office types and electoral contests
- Real-time political momentum: Dynamic updating based on new information and market activity
- Relative party strength: Comparative advantage between major political parties

What UPFI Does Not Measure

- Current approval ratings: Not a measure of incumbent satisfaction or job performance
- Public opinion polls: Does not reflect survey-based sentiment or voter preferences
- Policy positions: Not an indicator of specific policy outcomes or legislative priorities
- Electoral vote predictions: Not a direct forecast of specific election results
- Third-party influence: Focused exclusively on Republican vs. Democratic binary outcomes

2.2 Index Design Principles

Forward Looking

UPFI is exclusively focused on future political outcomes rather than current or historical political conditions. The index only incorporates markets for elections that have not yet occurred, immediately removing resolved events.

Pricing

The index relies on prediction market mechanisms where participants risk capital based on their expectations. This approach leverages the "wisdom of crowds" effect and provides financial incentives for accurate prediction, generally producing more reliable forecasts than cost-free opinion surveys.

UPFI updates continuously to reflect new information and changing political dynamics. This real-time capability enables the index to capture rapid shifts in political momentum that might not be reflected in traditional polling for days or weeks.

All index components, weights, and calculation methodologies are publicly documented to ensure transparency and enable independent verification. Data sources are clearly identified, and calculation procedures are designed to be replicable by third parties with access to the same underlying market data.

The index methodology is designed to be politically agnostic, reflecting market expectations rather than partisan preferences. Weighting schemes and calculation procedures are based on objective criteria such as political significance and electoral impact rather than ideological considerations.

Standardization

Following established practices in financial markets, UPFI uses a 100-based scale where:

- 100 represents perfect political balance (50/50 Republican/Democratic probability)
- Values above 100 indicate Republican advantage
- Values below 100 indicate Democratic advantage
- UPFI = 100 + (Republican Probability - 50)

2.3 Target Users and Applications

Institutional Investors

- Portfolio risk management: Hedging political risk in sector-specific investments
- Asset allocation decisions: Adjusting portfolio composition based on anticipated political outcomes
- Sector rotation strategies: Positioning for policy changes that affect different industries

Hedge Funds and Trading Firms

- Directional political trading: Taking positions based on political momentum

- Volatility strategies: Trading around periods of political uncertainty
- Cross-asset arbitrage: Exploiting pricing discrepancies between political and financial markets

Academic Researchers

- Political science research: Analyzing the relationship between market expectations and electoral outcomes
- Behavioral finance studies: Examining how political sentiment affects financial market behavior
- Policy impact analysis: Measuring market reactions to political developments

Media and Commentary

- Real-time political analysis: Providing data-driven political commentary
- Election coverage: Offering market-based perspective alongside traditional polling
- Trend identification: Identifying shifts in political momentum before they appear in polls

Policy Analysts and Think Tanks

- Political risk assessment: Evaluating the likelihood of different policy scenarios
- Stakeholder communication**:** Providing objective measures of political probability
- Strategic planning: Incorporating political expectations into long-term planning processes

3. Universe Definition

3.1 Eligible Markets

The UPFI universe includes prediction markets for electoral contests within the United States at federal, state, and local levels. UPFI incorporates the following categories of electoral contests.

1. Presidential Elections (Federal)
   - General election markets (Republican party vs. Democrat party)
   - Party Margin of Victory markets are used when available
2. Senate Races (Federal)
   - Senate control markets (Republican party vs. Democrat party majority control)
   - Special elections to fill vacant seats
   - Party Margin of Victory markets are used when available
3. House of Representatives (Federal)
   - House control markets (Republican party vs. Democrat party majority control)
   - Special elections for vacant seats
   - Party Margin of Victory markets are used when available
4. Gubernatorial Elections (State)
   - Party representative winner markets (Republican party vs. Democratic party)
   - Party Margin of Victory markets are used when available

5. Mayoral Contests (Local)
   ○ Party representative winner markets (Republican party vs. Democratic party)
   ○ Party Margin of Victory markets are used when available

Platform Requirements

Currently the UPFI is composed exclusively of Kalshi-listed prediction markets.

There are currently no plans for inclusions of other markets from other prediction market exchanges. However, future eligibility considerations for inclusion would likely center upon the following criteria:

● Licensed and regulated prediction market operators
● Minimum 12-month operational history
● Demonstrated market integrity and settlement procedures
● Real-time data feeds available via API or direct access
● Transparent terms of service and market rules
● Broad market listing across electoral contest categories laid out in the above section with reasonable volume and intent to list future election markets after resolution

Volume Thresholds

UPFI does not currently impose minimum volume or trading activity thresholds for market inclusion. This approach is adopted for several reasons

● Many politically significant contests occur in markets with naturally limited liquidity and/or volume
● Early exclusion of low-volume markets would reduce the index's comprehensive coverage
● Emerging markets require time to develop trading activity and election markets are often listed multiple years in advance
● Volume thresholds could inadvertently exclude important but niche electoral contests such as politically relevant local elections
● Fixed volume requirements create incentives for artificial volume inflation and potential manipulation

Rather than excluding markets based on volume, UPFI incorporates volume based weighting

● Lower-volume markets receive proportionally reduced weight in index calculations
● Volume-weighted pricing mechanisms reduce the impact of thinly traded markets

The Index Committee reserves the right to introduce volume-based inclusion criteria as prediction markets mature:

● Minimum 1-month advance notice before implementing volume thresholds
● Gradual phase-in over 1-month period to allow market adaptation

- Grandfathering provisions for existing included markets
- Regular reassessment of threshold appropriateness

Data Quality

All included markets must meet the following data quality requirements

- Real-time price updates (≤5 minute delay acceptable)
- Historical price data availability for ≥30 days
- Volume and open interest data available
- Clear timestamp and timezone information

Constituent markets must have

- Unambiguous resolution criteria
- Clear Republican vs. Democratic classification
- Standardized contract specifications
- Reliable settlement history

Future Categories

The Index Committee reserves the right to introduce new markets in the future such as:

- Candidate markets
- National popular vote markets
- Electoral College outcome markets
- State-by-state presidential markets (swing states prioritized)
- Individual seat contests (typically 33-34 seats per cycle)
- Senate majority control markets
- Competitive seat identification (races within 40-60% probability range)
- Special elections
- Open seat contests
- High-profile incumbent challenges
- House majority control markets
- Seat count over/under markets
- Geographic region control markets (where available)
- Recall elections (California-style)
- Succession/resignation replacement contests
- Recall/special elections in major cities
- Proposition/ballot measure markets (policy rather than candidate)

3.2 Inclusion/Exclusion Criteria

Markets are eligible for UPFI inclusion if they meet all of the following criteria:

1. Binary Republican vs. Democratic outcomes - Clear two-party classification possible

2. Future resolution date - Contest has not yet occurred or been resolved
3. Minimum time horizon - ≥30 days until resolution
4. Platform eligibility - Listed on approved prediction market platform
5. Volume threshold - Meets minimum volume and activity requirements
6. Data availability - Real-time pricing and historical data accessible
7. Geographic relevance - US federal, state, or qualifying local contest

Markets are excluded from UPFI if they exhibit any of the following characteristics:

- Markets that have already resolved
- Markets with unclear or subjective resolution criteria
- Markets with settlement disputes or integrity issues
- Suspended or halted trading markets

Special Election Handling

The Index committee reserves the right to follow an accelerated inclusion process in special circumstances, including but not limited to: listing of a major market with ≥30 days until resolution with clear large volume or relevance (i.e. Presidential market only opening 15 days before the election).

Market Lifecycle Management

- Weekly screening process for newly listed markets
- 48-hour evaluation period before inclusion
- Daily liquidity and data quality checks
- Weekly comprehensive review of market status
- Monthly composition analysis and reporting

4. Data Sources

4.1 Primary Data Providers

UPFI currently sources all prediction market data exclusively from Kalshi, a CFTC-regulated prediction market platform. Ensuring data consistency, regulatory compliance, and operational simplicity during the index's initial implementation phase.

4.2 Data Quality

All market data incorporated into UPFI calculations must meet various real-time quality standards

Latency

- Maximum acceptable data delay of 5 minutes from trade execution

- Bid price, ask price, and last trade price for each market
- Trade volume and open interest data
- Contract specifications and resolution criteria
- Market status (active, suspended, resolved)
- Missing data point identification and interpolation procedures

Historical Coverage

- Complete trade-by-trade data for volume-weighted calculations
- Daily OHLC and volume data
- Market lifecycle events (creation, suspension, resolution)

Data Retention

- Indefinite retention of daily summary statistics
- Minimum 2-year retention of tick-by-tick trade data
- Permanent retention of final settlement prices and resolution details
- Monthly data quality audits and integrity verification

Historical Data Validation

- Systematic review of data gaps or anomalies in historical series
- Cross-validation of settlement prices against official resolution sources
- Regular auditing of data accuracy for resolved markets
- Correction procedures for identified historical data errors

Market Definition Quality Standards

Accurate market classification and interpretation requires rigorous definition standards:

Resolution Criteria Standards

- Unambiguous Republican vs. Democratic outcome classification
- Clear resolution timing and information source specification
- Objective, verifiable resolution criteria without subjective interpretation
- Documented dispute resolution procedures and appeal processes

Contract Specification Requirements

- Standardized contract naming conventions
- Clear expiration dates and settlement procedures
- Explicit definition of eligible candidates or outcomes
- Geographic and jurisdictional scope specification

Market Status Monitoring

- Real-time tracking of market status changes (active, suspended, resolved)

- Automated alerts for market suspension or trading halts
- Resolution verification against official election results
- Post-resolution data retention and archival procedures

4.3 Market Selection Process

While UPFI currently uses only Kalshi data, the framework for evaluating potential additional platforms includes:

Regulatory Assessment

- Regulatory authorization and oversight in relevant jurisdictions
- Compliance with applicable financial markets regulations
- Settlement guarantee mechanisms and customer protection measures
- Transparent governance and operational procedures

Infrastructure Evaluation

- API reliability and data feed consistency
- Historical uptime and system performance metrics
- Data format standardization and integration compatibility
- Scalability and system capacity for increased usage

Market Quality Assessment

- Average daily trading volume and reasonable market depth
- Bid-ask spread consistency and market maker presence
- Settlement reliability and dispute resolution history
- Market integrity measures and manipulation detection

5. Weighting Methodology

5.1 Office Type Weights

UPFI employs a two-tier weighting system that reflects both the political significance of different office types and the relative impact of individual markets within each category.

The index allocates weights across five major office categories based on their relative importance to US political power distribution:

- **Presidential**: **40%** - Executive branch control and national policy direction
- **Senate**: **30%** - Upper chamber legislative control and judicial confirmations
- **House**: **20%** - Lower chamber legislative control and federal budget authority
- **Gubernatorial**: **8%** - State-level executive power and policy implementation

- **Mayoral**: **2%** - Local governance and urban policy leadership

5.2 Weight Rationale

The category weight allocation reflects empirical analysis of US political power distribution and institutional impact

Presidential Weight (40%) Justification

- Executive order authority and regulatory policy control
- Supreme Court and federal judiciary appointment power
- Foreign policy and national security leadership
- Veto power over congressional legislation
- National emergency and crisis response authority

Senate Weight (30%) Justification

- Confirmation authority for judicial and executive appointments
- Treaty ratification and foreign policy oversight
- Equal state representation providing disproportionate small-state influence
- Filibuster rules requiring supermajority consensus on major legislation
- Academic research indicating Senate control affects federal policy outcomes independent of House control

House Weight (20%) Justification

- Constitutional authority over federal budget and taxation
- Impeachment initiation power and government oversight
- Population-based representation reflecting democratic will
- Two-year election cycles providing more frequent democratic input
- Historical analysis showing House control correlation with fiscal policy direction

Gubernatorial Weight (8%) Justification

- State-level policy implementation and regulatory authority
- Emergency powers and public health authority
- State budget control and taxation policy
- Influence over redistricting and electoral administration
- Policy laboratory effect influencing national political trends

Mayoral Weight (2%) Justification

- Limited federal policy impact but significant local governance influence
- Urban policy leadership and municipal service delivery
- Economic development and local business environment control
- Constrained weight reflects primarily local rather than national political significance

5.3 Individual Market Weights

Within each category, individual markets receive weights based on four key factors, each scored on a 1-10 sensitivity scale:

Volume Sensitivity (Default: 7/10)

- Rationale: Higher trading volume indicates greater market confidence and information aggregation
- Calculation: Normalized volume relative to maximum across all markets in the index
- Formula: volumeScore = marketVolume / maxVolumeAcrossAllMarkets
- Weight Application: volumeScore × (volumeSensitivity / 10)

Time to Expiration Sensitivity (Default: 6/10)

- Rationale: Markets closer to resolution provide more reliable probability estimates
- Calculation: Inverse relationship with days to expiration, normalized to 4-year maximum
- Formula: timeScore = max(0, 1 - daysToExpiration / 1460)
- Weight Application: timeScore × (timeSensitivity / 10)

Population Sensitivity (Default: 5/10)

- Rationale: Larger population jurisdictions have greater political and economic significance
- Calculation: Normalized population relative to maximum across all markets in the index
- Formula: populationScore = marketPopulation / maxPopulationAcrossAllMarkets
- Application: Used for House, Gubernatorial, and Mayoral categories only
- Exclusion: Presidential and Senate categories excluded due to national/statewide scope
- Weight Application: populationScore × (populationSensitivity / 10)

Impact Sensitivity (Default: 8/10)

- Rationale: Different office types have varying inherent political significance
- Calculation: Fixed impact scores by category (Presidential: 10, Senate: 8, House: 6, Gubernatorial: 7, Mayoral: 4)
- Formula: impactScore = categoryImpactScore / 10
- Weight Application: impactScore × (impactSensitivity / 10)

Individual market weights combine all applicable factors:

Standard Formula (House, Gubernatorial, Mayoral)

marketWeight = (volumeScore × volumeSensitivity + timeScore × timeSensitivity + populationScore × populationSensitivity + impactScore × impactSensitivity) / 4

Modified Formula (Presidential, Senate)

marketWeight = (volumeScore × volumeSensitivity + timeScore × timeSensitivity + impactScore × impactSensitivity) / 3

Normalization Process

- Calculate weighted probability: marketProbability × marketWeight
- Sum across all markets in category: Σ(weightedProbabilities)
- Sum total weights: Σ(marketWeights)
- Category index: Σ(weightedProbabilities) / Σ(marketWeights) × 100

Index Calculation Formula

UPFI uses a standardized financial market convention that aligns with established practices in interest rate and volatility futures:

Core Formula

- Formula: UPFI = 100 + (Republican Probability - 50)
- Interpretation:
  - 100 = Perfect political balance (50/50 Republican/Democratic probability)
  - Values above 100 = Republican advantage
  - Values below 100 = Democratic advantage
- Rationale: Follows established financial market conventions (similar to VIX futures and Federal Funds futures pricing)

Example Calculations

- Republican Probability 55% → UPFI = 100 + (55 - 50) = 105
- Republican Probability 45% → UPFI = 100 + (45 - 50) = 95
- Republican Probability 50% → UPFI = 100 + (50 - 50) = 100

The index uses a 1 hour simple moving average (SMA) to smooth out large spikes across markets.

Volume Weighting Implementation

Rather than imposing minimum volume thresholds, UPFI incorporates volume into the weighting calculation:

Volume-Weighted Approach

- Higher-volume markets receive proportionally increased weight within categories
- Volume sensitivity parameter (default 7/10) controls influence of trading activity
- Total market volume calculated as: republicanVolume / (republicanProbability / 100)
- Approach prevents exclusion of politically significant but lower-volume markets

Quality Control Through Weighting

- Low-volume markets naturally receive reduced influence rather than exclusion
- Maintains comprehensive political coverage while emphasizing liquid markets
- Dynamic adjustment based on relative volume within each category
- Preserves market representation during development periods

Sensitivity Configuration

The weighting system allows customization of sensitivity parameters:

Default Sensitivity Settings

- Volume: 7/10 (high importance of trading activity)
  - Emphasizes market confidence and information aggregation
- Time: 6/10 (moderate preference for near-term markets)
  - Balances near-term accuracy with long-term coverage
- Population: 5/10 (balanced geographic representation)
  - Avoids excessive bias toward large jurisdictions while maintaining proportional representation
- Impact: 8/10 (strong emphasis on inherent political significance)
  - Maintains focus on politically significant contests

6. Index Calculation

6.1 Core Formula

UPFI employs a standardized financial market convention that provides intuitive interpretation while conforming to established practices in derivatives markets.

UPFI = 100 + (Republican Probability - 50)

Where:

- Republican Probability = Weighted average Republican probability across all categories
- 100 = Perfect political balance baseline (50/50 split)
- Values above 100 = Republican advantage
- Values below 100 = Democratic advantage

This convention mirrors established financial instruments such as VIX futures and Federal Funds futures, where pricing reflects inverse relationships to underlying rates. The 100-based scale provides professional familiarity while enabling clear interpretation:

Example Calculations

- Republican Probability 55% → UPFI = 100 + (55 - 50) = 105

- Republican Probability 45% → UPFI = 100 + (45 - 50) = 95
- Republican Probability 50% → UPFI = 100 + (50 - 50) = 100

The Republican Probability input represents a weighted composite across all office categories:

Category Contribution Formula

Republican Probability = Σ(CategoryIndex × CategoryWeight) / Σ(CategoryWeight)

Where:

- **CategoryIndex** = Republican probability for each office type (Presidential, Senate, House, Gubernatorial, Mayoral)
- **CategoryWeight** = Fixed weights (40%, 30%, 20%, 8%, 2% respectively)
- **Normalization** = Division by total active category weights when some categories lack markets

6.2 Probability Extraction

Market Price to Probability Conversion

UPFI extracts Republican probabilities directly from Kalshi prediction market data using streamlined data integration

- Kalshi Data Structure: Binary outcome markets provide single probability values
- Republican Probability = Direct probability field from market data (as percentage)
- Data Source: market.probability field from Kalshi API response
- Validation: Probability values expected to range 0-100%

Markets without probability data receive 0% default

Volume Weighting Integration

Rather than excluding low-volume markets, UPFI incorporates volume directly into probability weighting

Category Probability = Σ(Market Probability × Market Weight) / Σ(Market Weight)

Where Market Weight incorporates volume sensitivity as described in Section 5.3.

Volume Impact Mechanism

- High Volume Markets: Receive proportionally higher weight
- Low Volume Markets: Contribute to index but with reduced weight
- Dynamic Adjustment: Weights update as volume patterns change

Outlier Treatment

UPFI employs systematic procedures to identify and handle probability outliers:

Outlier Detection Criteria

- Extreme Values: Probabilities >95% or <5% may receive additional scrutiny
- Rapid Changes: Probability movements >20% within 24 hours may be flagged for review
- Volume Context: Low-volume markets with extreme probabilities may be monitored closely
- Market Context: May be cross-referenced with electoral significance and news events

Outlier Handling Procedures

- Weight Adjustment: Volume sensitivity mechanism naturally reduces impact of low-confidence outliers
- Monitoring Enhancement: Additional surveillance for markets exhibiting extreme behavior
- Documentation: Logging of outlier events and their treatment in index calculation
- Manual Review: Index Committee assessment of persistent outlier situations

7. Index Maintenance

7.1 Rebalancing Procedures

The index updates continuously with maximum 5-minute delay from market price changes. Daily comprehensive rebalancing at day of market inclusion, incorporating new markets and removing expired contests.

Weight changes occur as market volumes change and time to expiration decreases and as new census data is released for population weighted categories. New markets are added or removed as they are opened for trading. Category weight shifts are triggered by significant changes in market composition or extraordinary political events requiring Index Committee review.

7.2 Market Disruptions

The index maintains real-time accuracy by updating continuously throughout trading hours, with market price changes reflected within a maximum five-minute delay.

When Kalshi experiences technical disruptions the index will not be updated since all underlying markets are on the Kalshi platform. When the platform is back up any prices that were not reported will be updated.

9. Governance

9.1 Index Committee

Sessions occur on an ad-hoc basis, around key election dates and listing of new markets to be included. Emergency meetings called within 48 hours for critical issues.

Full committee approval required for methodology changes affecting index calculation. Trading prohibition in UPFI-constituent markets during tenure.

9.2 Methodology Changes

A formal written proposal including rationale, implementation plan, and impact assessment, including markets that settle to the index is required. Technical review by methodology team for feasibility evaluation.

The rationale will be publicly posted and the methodology will be updated accordingly after a 30 day period.

10. Risk Factors and Limitations

10.1 Market Risk Factors

The UPFI relies on prediction markets whose participants may not represent the broader population demographically, potentially creating biases in probability estimates. Information asymmetries exist where some market participants may have access to non-public information, while behavioral biases such as overconfidence or partisan preferences can affect trading decisions and market accuracy. Prediction markets remain vulnerable to potential manipulation through coordinated trading efforts, and their accuracy varies significantly based on the time horizon until resolution, with longer-term markets generally exhibiting greater uncertainty.

Many politically significant contests, particularly at the state and local level, suffer from thin trading volumes that can result in inefficient price discovery and increased volatility. Wide bid-ask spreads in illiquid markets may not accurately reflect the true underlying probabilities, while limited market depth means that even moderate trading activity can cause significant price movements that may not reflect genuine changes in electoral prospects.

10.2 Methodology Limitations

Initially there are sampling limitations due to selective market coverage and limited listings around margin of victory markets. A list of market types that could be included are covered in section 3.1.

Currently markets are excluded as soon as they resolve even if the elected candidate does not start to serve a term for a few months following. During this time period there may not be the next cycle's markets listed yet and the index can potentially be significantly underweight a given category. In the future this can be addressed by including markets until the term begins, possibly with an aggressive decay function into when the next cycle market is listed.