

POLYMARKET INVESTMENT BRIEFING

January 16, 2026

EXECUTIVE SUMMARY

Metric	IF 2% Edge	IF 0% Edge
E(X)	+\$3.02	-\$0.20
P(all 6 win)	74.3%	65.4%
P(at least 1 loss)	25.7%	34.6%

Portfolio: 6 trades \times \$25 = \$150

Payoffs:

- All 6 win: **+\$11.02**
- 5 win, 1 lose: **-\$15.81**
- Max loss: **-\$150**

Key Question: Does the 2% favorite-longshot bias exist on Polymarket? This is UNVALIDATED.

METHODOLOGY

Formulas Used

```
profit_if_win = stake  $\times$  (1 - price) / price
spread_cost = stake  $\times$  spread / 2 / price
E(X) = true_prob  $\times$  profit_if_win + (1 - true_prob)  $\times$  (-stake) - spread_cost
P(all win) = product of individual true_probabilities
```

Edge Assumptions

Scenario	true_probability	Interpretation
2% edge	market_price + 0.02	Favorite-longshot bias exists
0% edge	market_price	Markets are efficient

Example Calculation (49ers Super Bowl NO)

price = 95.2%
spread = 0.11%
stake = \$25

profit_if_win = $\$25 \times (1 - 0.952) / 0.952 = \1.26
spread_cost = $\$25 \times 0.0011 / 2 / 0.952 = \0.01

IF 2% EDGE:

true_prob = $0.952 + 0.02 = 0.972$
 $E(X) = 0.972 \times \$1.26 + 0.028 \times (-\$25) - \$0.01$
 $= \$1.22 - \$0.70 - \$0.01$
 $= +\$0.51$

IF 0% EDGE:

true_prob = 0.952
 $E(X) = 0.952 \times \$1.26 + 0.048 \times (-\$25) - \$0.01$
 $= \$1.20 - \$1.20 - \$0.01$
 $= -\$0.01$

MARKET DATA

6 Selected Trades (from live order books)

#	Market	Side	Price	Spread	Profit if Win
1	49ers Super Bowl	NO	95.2%	0.11%	\$1.26
2	Bears Super Bowl	NO	94.5%	0.11%	\$1.46
3	Texans Super Bowl	NO	91.0%	0.11%	\$2.47
4	49ers NFC	NO	90.4%	0.22%	\$2.65
5	Rob Jetten NL PM	YES	95.8%	0.31%	\$1.10
6	McMillan OROY	YES	92.3%	0.65%	\$2.09

Total profit if all win: \$11.02

Per-Trade E(X)

Trade	E(X) if 2% Edge	E(X) if 0% Edge
49ers Super Bowl	+\$0.51	-\$0.01
Bears Super Bowl	+\$0.51	-\$0.01
Texans Super Bowl	+\$0.53	-\$0.02
49ers NFC	+\$0.52	-\$0.03

Trade	E(X) if 2% Edge	E(X) if 0% Edge
Rob Jetten	+\$0.48	-\$0.04
McMillan OROY	+\$0.45	-\$0.09
TOTAL	+\$3.02	-\$0.20

SCENARIO ANALYSIS

IF 2% Edge Exists

Outcome	Probability	Profit
6W/0L	74.3%	+\$11.02
5W/1L	22.7%	-\$15.81
4W/2L	2.8%	-\$42.65
3W/3L	0.2%	-\$69.49
Worse	<0.1%	-\$96 to -\$150

E(X) = +\$3.02

IF 0% Edge (Markets Efficient)

Outcome	Probability	Profit
6W/0L	65.4%	+\$11.02
5W/1L	28.9%	-\$15.81
4W/2L	5.2%	-\$42.65
3W/3L	0.5%	-\$69.49
Worse	<0.1%	-\$96 to -\$150

E(X) = -\$0.20 (spread cost)

CORRELATION ANALYSIS

Key Insight: E(X) Does NOT Change with Correlation

☑ + E[Y], regardless of correlation.

Correlation affects:

- **Variance** (higher correlation = more volatile outcomes)
- **Joint probabilities** (P(all win), P(all lose))
- **Outcome distribution** (more extreme results)

Correlation does **NOT** affect:

- Expected value (E(X) stays constant)

Methodology: Gaussian Copula Simulation

1. Generate correlated standard normal variables
2. Transform to uniform via CDF (copula step)
3. Convert to binary outcomes by comparing to win probabilities
4. Run 100,000 Monte Carlo simulations

Results (2% Edge)

Correlation	P(all win)	P(all lose)	Std Dev	E(X)
0%	74.4%	0.000%	\$14.14	+\$3.02
10%	75.6%	0.000%	\$14.90	+\$3.02
20%	76.9%	0.002%	\$15.84	+\$3.02
30%	78.3%	0.006%	\$17.04	+\$3.02

Observation: E(X) = +\$3.02 is CONSTANT regardless of correlation.

Results (0% Edge)

Correlation	P(all win)	P(all lose)	Std Dev	E(X)
0%	65.4%	0.000%	\$16.62	-\$0.20
10%	67.3%	0.000%	\$17.78	-\$0.20
20%	69.5%	0.002%	\$19.12	-\$0.20
30%	71.5%	0.019%	\$20.67	-\$0.20

What This Means

For this portfolio of high-probability bets (all >90% implied):

1. **Positive correlation HELPS** - P(all win) increases from 74% to 78%
2. **But risk also increases** - P(all lose) goes from 0% to 0.006%
3. **Volatility increases** - Std dev goes from \$14 to \$17
4. **E(X) is unchanged** - Your expected profit doesn't depend on correlation

Correlation Sources

Our trades have potential correlation because:

- 4 NFL markets may move together (common league factors)
- Dutch politics market is independent of NFL
- NFL awards market has partial correlation with game outcomes

Estimated portfolio correlation: ~10-20% for NFL-heavy portion

THEORETICAL FOUNDATION

The Favorite-Longshot Bias

Kahneman & Tversky (1979) - Prospect Theory

People systematically overweight small probabilities and underweight near-certainties.

Snowberg & Wolfers (2010) - NBER Working Paper 15923

Implied Prob	Actual Win Rate	Edge
90.9%	93.2%	+2.3%
95.2%	97.1%	+1.9%
98.0%	98.9%	+0.9%

Caveat: This research is from horse racing and sports betting. It has NOT been validated on Polymarket.

RISK ASSESSMENT

Key Risk: You Must Win ALL 6

- Win all 6: +\$11.02 profit
- Lose just 1: -\$15.81 loss (wipes out gains)
- The strategy is binary: profit only if perfect

Risk Metrics

Metric	Value
Capital at risk	\$150
Max loss	-\$150 (100%)
P(loss) if 2% edge	25.7%
P(loss) if 0% edge	34.6%

RECOMMENDATION

Execute These 6 Trades

Market	Side	Price	Amount
49ers Super Bowl	NO	95.2%	\$25
Bears Super Bowl	NO	94.5%	\$25
Texans Super Bowl	NO	91.0%	\$25
49ers NFC	NO	90.4%	\$25
Rob Jetten NL PM	YES	95.8%	\$25
McMillan OROY	YES	92.3%	\$25

Total: \$150

Do Not Trade

Market	Reason
Jaxson Dart OROY	Spread (1.77%) exceeds net edge
McCaffrey Comeback	Spread > edge
Protector of Year	Spreads 8-18%

APPENDIX

Data Sources

- **Prices/Spreads:** Polymarket CLOB API (live order books, January 16, 2026)
- **Research:** Kahneman & Tversky (1979), Snowberg & Wolfers (2010)

Code

All calculations can be reproduced by running:

```
python advanced_risk_analysis.py
```

Outputs

- [results/visualizations/advanced_risk_analysis.png](#) - Main risk analysis charts
 - [results/visualizations/correlation_analysis.png](#) - Correlation effects visualization
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Status: 2% edge is UNVALIDATED on Polymarket