John McKenna

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PROFESSIONAL SUMMARY

I'm an independent researcher with a B.S. in Chemical Engineering and five years of experience modeling casino promotional economics. I build analytical tools that quantify promotional value, model player decision-making, and analyze multi-platform optimization strategies. This work provides insight into how sophisticated players assess promotional structures and where design choices create unintended cost exposure. I'm currently analyzing high-purity electronic gases at Linde Electronics, applying rigorous statistical validation to high-stakes manufacturing processes. I'm also a FanDuel VIP customer with firsthand understanding of player engagement and reward transparency challenges.

TECHNICAL SKILLS

- **Analytical Tools:** Excel (advanced modeling, complex formulas, VBA), Python (data analysis, statistical modeling, optimization), SQL, Tableau, React/JavaScript (interactive analytical tools)
- **Domain Expertise:** Promotional value quantification, player behavior modeling, wagering requirement economics, multi-platform optimization strategies, expected value calculation, constraint optimization
- **Methodologies:** Prescriptive modeling, statistical hypothesis testing, iterative optimization algorithms, decision tree analysis, sequential variance analysis, structured experimentation

ANALYTICAL PROJECTS

Casino Promotional Value Analyzer

- Built analytical engine that calculates exact expected value of casino promotional offers by modeling hedged bet positioning across platforms.
- Developed iterative solver handling deposit bonuses and loss rebates, calculating optimal bet sizing that produces deterministic outcomes.
- **Key Insight:** Demonstrated that wagering requirements can be satisfied with zero actual gambling risk through structural understanding of game mechanics and cross-platform hedging.

Baccarat Shoe Time Analysis

- Conducted statistical hypothesis testing to analyze whether betting window duration in live dealer baccarat correlates with outcome patterns or bonus bet success rates.
- Built data collection framework extracting timing data from live sessions, performed correlation analysis and significance testing across multiple variables.
- **Key Insight:** Failed to reject the null hypothesis, but the methodology demonstrated rigorous experimental design and hypothesis validation—more valuable than a spurious correlation would have been.

Risk-Adjusted Betting Model

- Developed sequential betting methodology that uses bonus value to reshape gambling risk profiles, establishing zero-downside floor (break-even worst case) while preserving exponential upside from win streaks.
- Built calculation engine that determines maximum "safe" bet sizes at each decision point where losses still result in break-even after completing wagering requirements through mini-hedging.
- **Key Insight:** Demonstrates that bonuses create optionality allowing sophisticated players to structure positions with significantly higher expected value than face-value bonus amounts, revealing unintended cost exposure for operators.

Additional analytical projects available at johnmckenna.info

PROFESSIONAL EXPERIENCE

Linde Electronics Alpha, NJ

Quality Control Lab Technician II *May 2020 – Present*

- Lead analyst for octafluorocyclobutane (C_4F_8) product line serving semiconductor manufacturing clients.
- Identified a five-year systematic error in lab standard preparation through rigorous investigation, implementing a new validation protocol that eliminated the variance.
- Execute statistical process control (SPC) on high-purity electronic gases, identifying and resolving quality issues before products reach customers.

EDUCATION

Rowan University Glassboro, NJ

Bachelor of Science, Chemical Engineering

- **Relevant Coursework:** Statistics for Engineers, Design of Experiments (DOE), Process Control, Computational Modeling.
- **Certification:** Engineer-in-Training (EIT) – Passed Fundamentals of Engineering exam demonstrating analytical rigor.