# Playground to Portfolio:
# Uncovering the Potential for Investment Grade Returns in Collectible Sports and Pokémon Cards

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## Abstract

On August 28, 2022, a 1952 Mickey Mantle baseball card sold for $12.6 million. High price sales such as these sparked interest into the investment capabilities of collectible trading cards. Current literature suggests that collectible investments are unlikely to be competitive with traditional assets, such as stocks and bonds. Furthermore, existing investment literature fails to address the continually growing trading card market. This thesis explores the sports and non-sports card market to see if there is potential for investment-grade returns. We use card sales data scraped from PriceCharting.com from Jan 2021 to Dec 2023, covering the baseball, basketball, football, and Pokémon card market. We then compare returns between collectible cards and the S&P 500 and a risk-free bond index. We also use linear regressions to demonstrate which card characteristics correlate with higher return in the short- and long-run. We constructed portfolios of collectibles and show that they underperformed the S&P. For example, a portfolio of all sports cards returned -0.39% annually while the portfolio of all Pokémon cards returned -4.72% annually. In the short-term, only card age correlates with an increase in portfolio value, with all other card characteristics showing little affect. In the long-term, the oldest or newest rookie cards of the best players have the highest return. These results coincide with the consensus on the card market that cards, as collectibles, are not normally a good investment. However, some cards are worth the money.

## Introduction

### How does an investment into sports and non-sports cards compare with that of an equity/bond index?

Hypothesis
1. The sports and non-sports card market can be a suitable investment as they will have comparable risk and return to an equity index and bond index
2. Cards that make the best investment are older rookie cards featuring the best players
3. Collectors who invest in cards will purchase cards regardless of underperformance, as collectible goods provide added utility

Motivation
- Took interest in my father's collections of coins and die-cast cars as a kid
- Collected cards all throughout my childhood, accumulating upwards of 10,000 cards
- Love for collecting inspired this project

Importance in Society
- Little collectible research in financial literature; especially pop-culture collectibles
- Fills a gap in financial collectible literature by providing knowledge on an emerging alternative investment
- Research to inspire collectors to think of their cards as more than a hobby, but also as an investment

## Data and Methodology

### Hypothesis 1: Index Comparison
- Scraped all football, basketball, and baseball card's sales listed on *pricecharting.com* between Jan 2021 to Dec 2023 from the main set of the decade's leading manufacturer, starting from 1970 sets until 2019 sets
- Collected S&P 500 and Treasury Bill index data between 2021 to 2023 to compare
- Repeat-sales regression to create price indexes comparing equity and bonds to different groups of cards; sports cards by decades, Pokémon cards by era, sports cards by sport; sports and non-sports cards, and multiple-time MVPs

**Total Transactions Collected (by category)**

| | Baseball | Basketball | Football | Sports | | Pokémon |
|---|---|---|---|---|---|---|
| 1970s | 870 | 4304 | 4153 | | Classic | 6290 |
| 1980s | 5864 | 5099 | 6451 | | Transition | 3283 |
| 1990s | 3617 | 2646 | 1147 | | Modern | 4240 |
| 2000s | 1168 | 1079 | 1540 | | | |
| 2010s | 2066 | 5156 | 1505 | | | |
| Total | 13585 | 18284 | 14796 | | | 13813 |
| All Card Total | | | | 46665 | | |

### Hypothesis 2: Card Comparison
- Ranked each sport card's 3-year return and price from highest to lowest, split by sport, from the index comparison dataset
- Used stratified sampling to choose the top 10, middle 10, and worst 10 cards from each sport
- Created a status variable via award recognition for each player's cards, along with gathering rookie card designation and card decade
- Linear regression on short-term returns and long-term price to see which factors influence card performance

**Average Annual Return Regression Summary**

| Variables | Observations | Mean | Standard Deviation | Min | Max |
|---|---|---|---|---|---|
| Average Annual Return | 88 | 0.164 | 0.836 | -0.945 | 2.502 |
| Status | 88 | 13.682 | 10.668 | 0 | 41 |
| Decades | 88 | 2.818 | 1.369 | 1 | 5 |
| Rookie Card | 88 | 0.261 | 0.442 | 0 | 1 |

**Average Price Regression Summary**

| Variables | Observations | Mean | Standard Deviation | Min | Max |
|---|---|---|---|---|---|
| Average Annual Return | 75 | 1943.707 | 4360.503 | 0.99 | 17100 |
| Status | 75 | 10.920 | 9.340 | 0 | 43 |
| Rookie Card | 75 | 0.347 | 0.479 | 0 | 1 |
| Decades | 75 | 3.067 | 1.329 | 1 | 5 |
| Decades*Decades | 75 | 11.147 | 8.283 | 1 | 25 |

## Results

### Hypothesis 1: Index Comparison
- No card portfolio of the short-term three-year indices outperformed the S&P 500 or Treasury Bills
- Conglomerate sports portfolio returned 0.39% annually and Pokémon cards at -4.72% annually
- Handful of investments had lower risk, but no comparable Sharpe Ratios


Sports and Non-Sports Cards Index Comparison (Jan 2021 - Dec 2023)
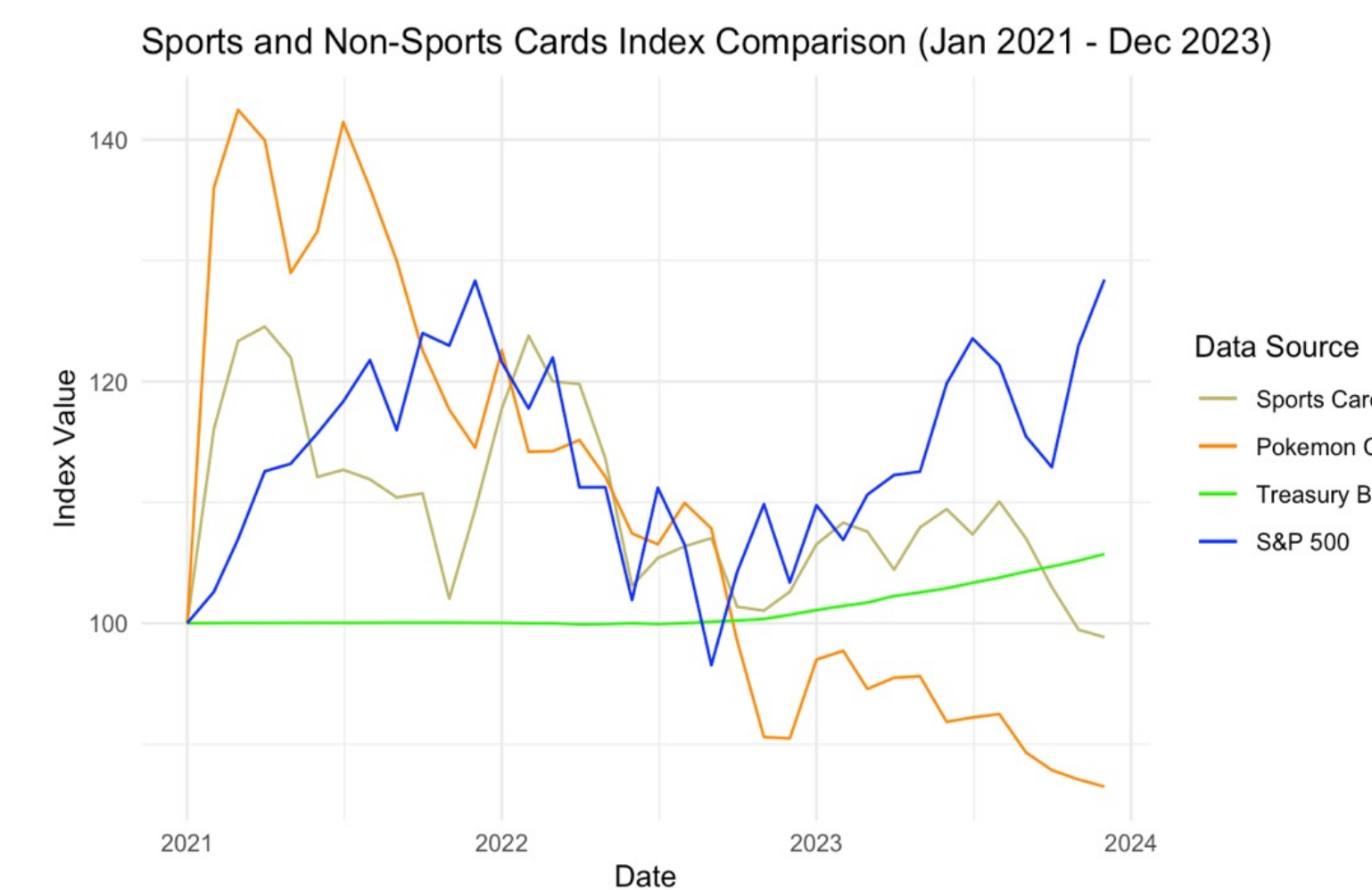
### Hypothesis 2: Card Comparison
- *Short-term (3-year annual return)*
  - Only decade variable was significant showing older cards to have higher returns in the short-term
  - Status and rookie card variables were insignificant, showing short-term returns to be mostly random

| Average Annual Return (%) | Coefficient | Standard Error | T-Statistic | P > |t| |
|---|---|---|---|---|
| Status | -0.001 | 0.009 | -0.08 | 0.936 |
| Decades | -0.202*** | 0.067 | -2.99 | 0.004 |
| Rookie Card | 0.251 | 0.219 | 1.15 | 0.255 |
| Constant | 0.677*** | 0.218 | 3.11 | 0.003 |

- *Long-term (Price)*
  - Status, rookie card, decade, and decade² were all significant
  - Highest priced cards are old and new rookie cards of the best players

| Average Sale Value ($) | Coefficient | Robust Standard Error | T-Statistic | P>|t| |
|---|---|---|---|---|
| Status | 174.2885*** | 51.53474 | 3.38 | 0.001 |
| Decades | -5720.711*** | 1557.043 | -3.67 | 0.000 |
| Decades² | 1030.183*** | 281.5941 | 3.66 | 0.000 |
| Rookie Card | 2625.23*** | 975.6422 | 2.69 | 0.009 |
| Constant | 5190.803** | 2432.475 | 2.13 | 0.036 |

## Conclusion and Implications

**Main Conclusions**
- No evidence that the trading card market can be a suitable investment, but some individual cards are worth an investment
- Card prices in the short-term are basically random
- Sports card prices in the long-term are highly determined by age of the card, rookie card, and status of the player

**Implications**
- Trading cards can be viewed as an asset class with additional utility provided through their social value
- Baseline for how to invest in sports cards
  - Owning as many new rookie cards as possible, keeping them in pristine shape, and hope that some of the players become all-time greats
  - Using a "Buy and Hold" strategy as short-term returns are mostly random, but long-term returns are plausible
- First appearance of the repeat-sales regression in trading card market literature

**Geometric Annual Returns**

| | Baseball | Basketball | Football | Sports | | Pokémon |
|---|---|---|---|---|---|---|
| 1970s | -4.11% | -1.37% | 0.54% | | Classic | -1.83% |
| 1980s | -4.27% | -1.60% | 0.75% | | Transition | -0.39% |
| 1990s | -1.29% | 1.59% | -2.81% | | Modern | -1.64% |
| 2000s | -6.93% | -23.63% | -11.59% | | | |
| 2010s | -4.77% | -2.06% | -2.53% | | | |
| Total | -3.37% | -2.19% | -1.56% | | | -4.72% |
| All Card Total | | | | -0.39% | | |
| Multiple-MVPs | | | | -5.48% | | |
| | Treasury | S&P 500 | | | | |
| | 1.87% | 8.70% | | | | |

**Card Return Correlation Matrix**
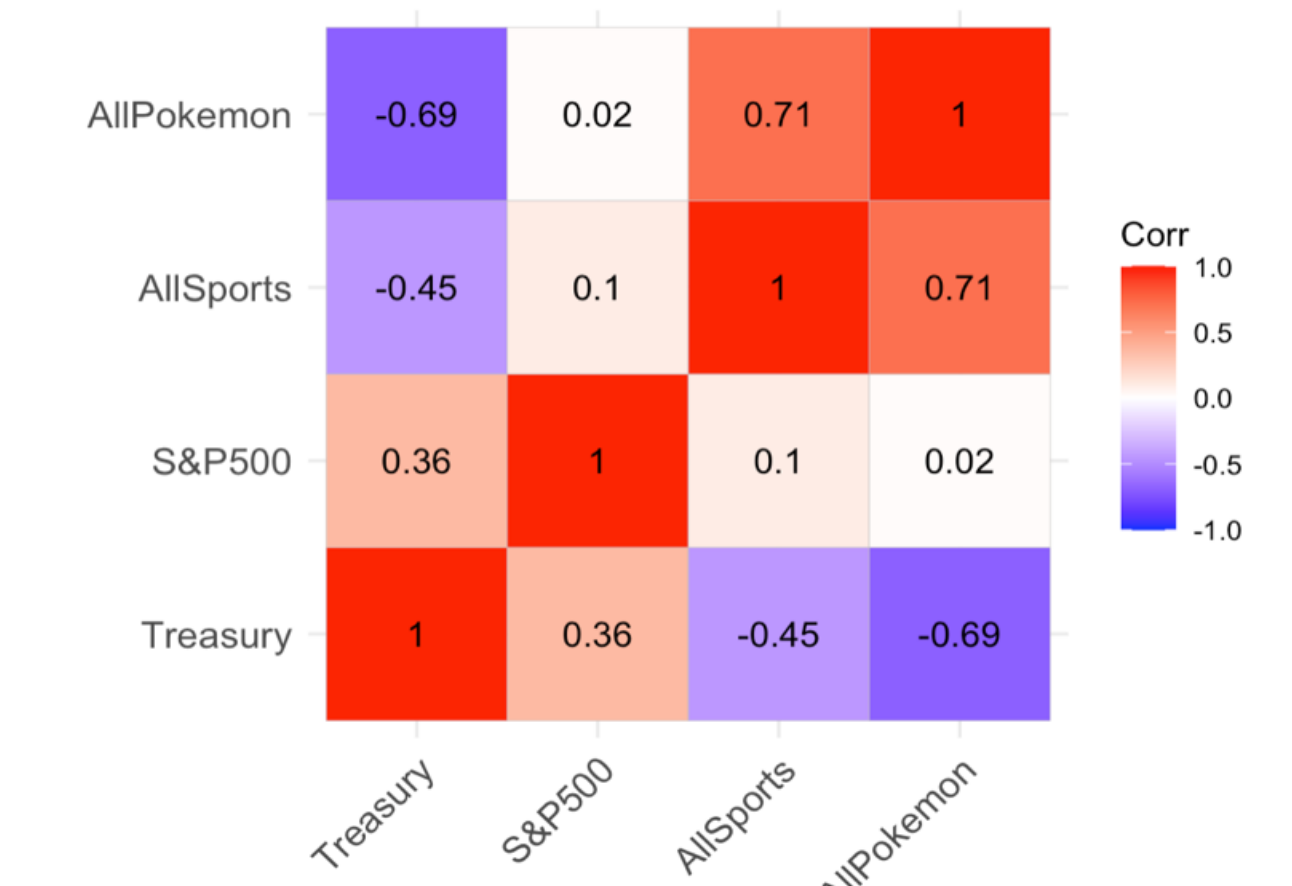


## References

*1909 T206 Baseball Honus Wagner SGC 3.* (2021). photograph.
*1952 Topps Baseball #311 Mickey Mantle Rookie Mint SGC 9.5.* (2022). photograph.
*1972 Topps Football #200 Roger Staubach Rookie Mint PSA 9.* (2014). photograph.
*1986 Fleer Basketball #57 Michael Jordan Rookie Mint PSA 10.* (2024). photograph.
*1999 Pokémon Card Game #4 Charizard Holo Mint PSA 10.* (2022). photograph.
*2009 Playoff National Treasure 1/1 Basketball #206 Stephen Curry Rookie Near Mint PSA 8.* (2021). photograph.