About the Presenter

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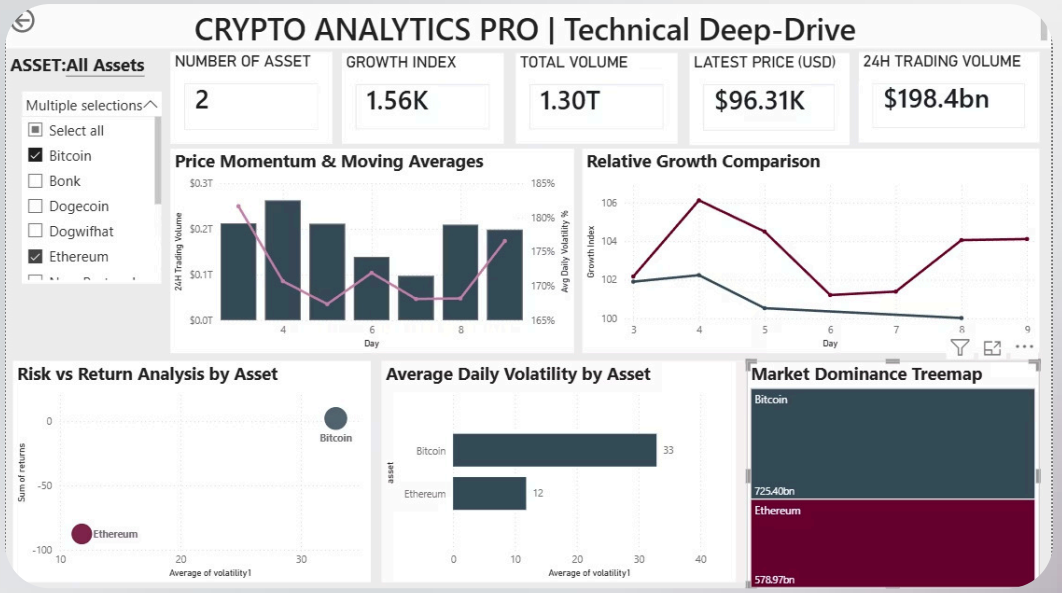


Cryptocurrency Market Performance & Volatility Analysis

A comprehensive data analytics project evaluating market trends, asset risk, and capital flow using Python, SQL, and Power BI. Presented by a Junior Data Analyst, December 2025.

Speaker Note: Good morning. Today, I am presenting a deep-dive analysis into the cryptocurrency market's performance for December 2025. This project demonstrates how I translate raw, high-frequency market data into actionable investment intelligence using a robust technical pipeline.

Executive Summary & Objectives

Project Goal

To quantify market volatility and performance across diverse asset classes, from Blue-chips like Bitcoin to high-variance Memecoins.

Core Deliverables

- Performance Tracking: Real-time and historical growth monitoring.
- Risk Assessment: Quantifying price swings for strategic hedging.
- Liquidity Analysis: Identifying market dominance through volume.

Speaker Note: The objective was clear: create a framework that identifies where the value lies and where the risk is hidden. We focused on three pillars—Performance, Risk, and Liquidity—to provide a 360-degree view of the market state.

Technical Stack & Tools

Python (Pandas/NumPy)

Used for initial ETL processes, handling missing values, and time-series feature engineering.

SQL (PostgreSQL)

Applied complex Window Functions and CTEs for moving averages and asset ranking.

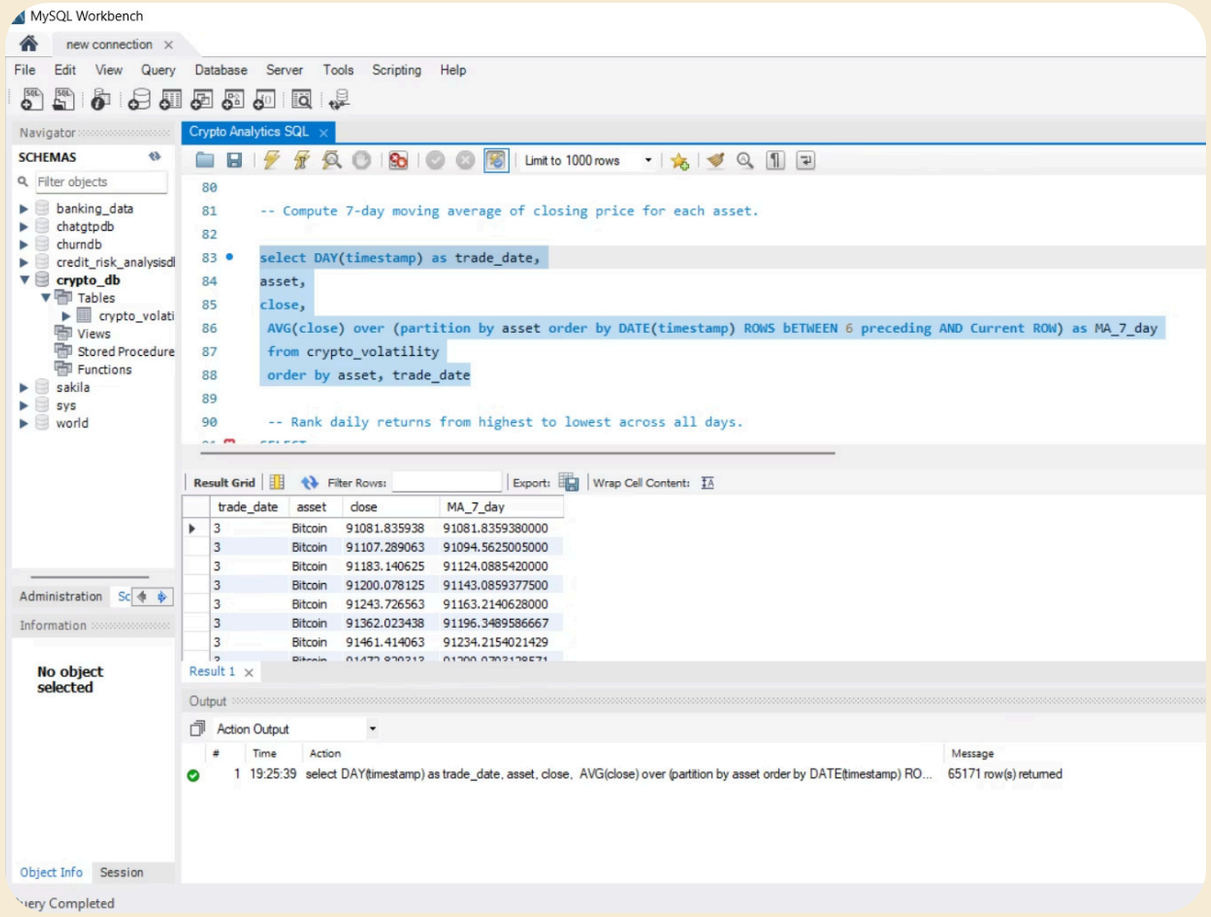
Power BI

Developed an interactive dashboard with DAX-driven measures for Growth Indexing.

Speaker Note: My technical approach utilizes the best of each world: Python for flexible data cleaning, SQL for high-performance complex aggregations, and Power BI for delivering an intuitive user experience to stakeholders.

Data Pipeline: Cleaning & SQL Logic

Transforming Raw Data into Insights



- **Imputation:** Handled null values in OHLC data to ensure calculation integrity.
- **Ranking:** Used `DENSE_RANK()` to identify top performers by volume.
- **Granularity:** Processed 1-minute interval data for high precision.

Speaker Note: The SQL layer is the engine of this project. By using Window Functions, I calculated rolling averages that smooth out "noise," allowing us to identify true market trends rather than temporary price spikes.

The Growth Index (Base 100)

Normalizing Asset Comparison

$$Growth\ Index = \frac{Current\ Price}{Initial\ Price} \times 100$$

This metric allows a direct "apples-to-apples" comparison between Bitcoin ($91k) and Pepe ($0.00002) by tracking percentage growth from a common starting point.

Speaker Note: Price scales in crypto vary wildly. The Growth Index is vital because it shows that a $100 investment in a low-cap coin might outperform a "stable" asset in percentage terms, regardless of the nominal unit price.

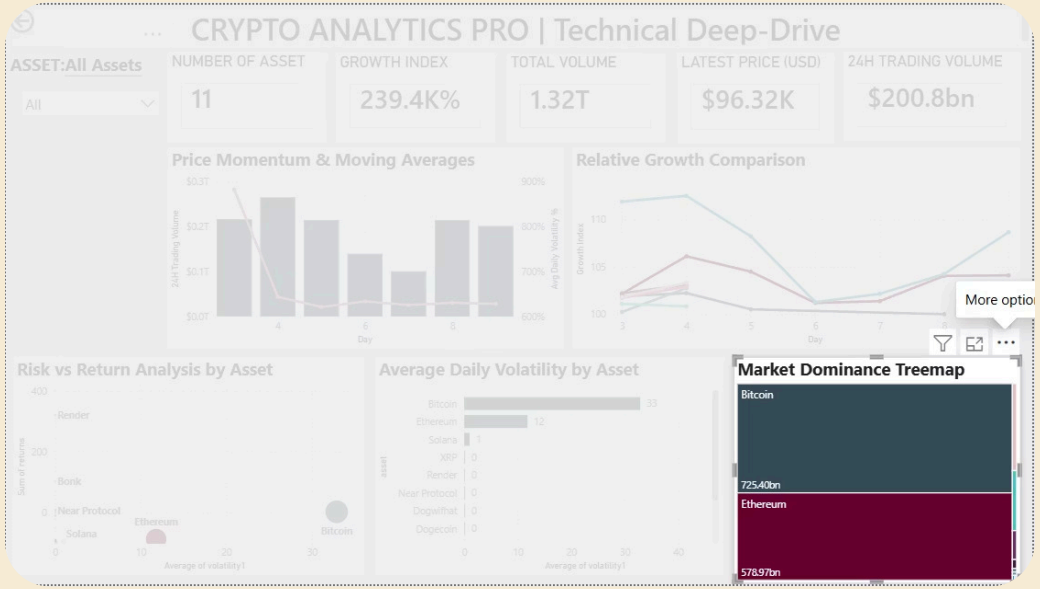
Risk vs. Reward Analysis

Analyzing Volatility Patterns

Speaker Note: This scatter matrix is the core of our risk management strategy. It categorizes assets into quadrants. We identified that while Altcoins offered 20% higher returns, their risk profile was significantly more aggressive than Blue-chips.

Market Dominance & Liquidity

Volume Treemap Analysis



Trading volume is the ultimate indicator of market interest. Our Treemap highlights:

- **Capital Concentration:** Where the "Smart Money" is flowing.
- **Exit Liquidity:** Identifying assets that can be traded without massive slippage.
- **Emerging Trends:** Small boxes growing in size indicate rising interest.

Speaker Note: Price alone is misleading without volume. This Treemap shows that even if a coin's price is rising, low volume makes it a "liquidity trap," whereas high-volume assets provide a safer entry and exit for investors.

Integrated Power BI Dashboard

The "Hero" View: Full Market Intelligence

A unified interactive experience allowing stakeholders to filter by asset class, timeframe, and risk tolerance levels.

Speaker Note: This is the final product. It combines all our SQL and Python logic into a single source of truth. The dashboard is fully interactive, enabling a manager to drill down from a global market view to individual asset minute-level performance.

Untitled - Power BI Desktop

Search

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File Home Insert Modeling View Optimize Help Format Data / Drill

Share

Paste Cut Copy Format painter — Clipboard

Get data Excel workbook OneLake catalog SQL Server Enter data Dataverse Recent sources — Data

Transform data Refresh — Queries

New visual Text box More visuals — Insert

New visual calculation New measure Quick measure — Calculations

Sensitivity — Sensitivity

Publish — Share

Prep data for AI Copilot — Copilot

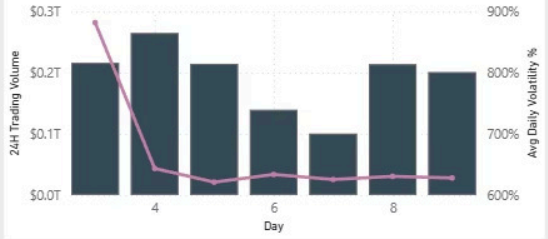
CRYPTO ANALYTICS PRO | Technical Deep-Drive

ASSET:All Assets

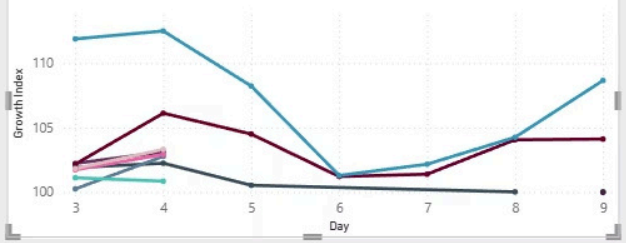
All

NUMBER OF ASSET	GROWTH INDEX	TOTAL VOLUME	LATEST PRICE (USD)	24H TRADING VOLUME
11	239.4K%	1.32T	$96.32K	$200.8bn

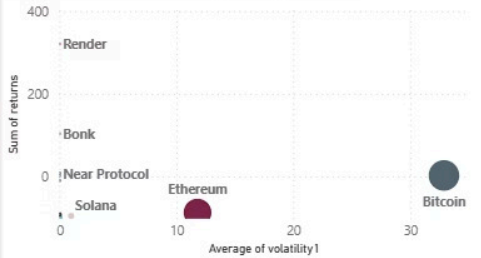
Price Momentum & Moving Averages



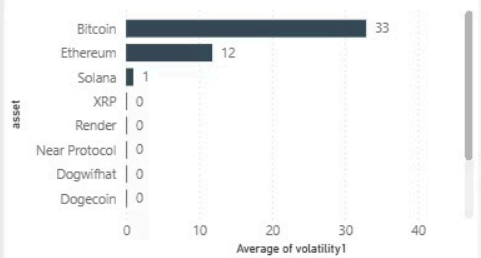
Relative Growth Comparison



Risk vs Return Analysis by Asset



Average Daily Volatility by Asset



Market Dominance Treemap

Filters

Search

Filters on this visual

asset
is (All)

Growth Index
is greater than 100

Show items when the value
is greater than
100

And Or

Apply filter

timestamp - Day
is (All)

Add data fields here

Filters on this page

Visualizations

Build visual

X-axis
timestamp
Day

Y-axis
Growth Index

Secondary y-axis
Add data fields here

Legend
asset

Data

Search

- avg_high
- avg_low
- BB High
- BB Lower
- BB Middle
- BB StdDev
- close
- Daily Return %
- Growth
- Growth Index
- high
- Latest Price
- low
- open
- Price
- returns
- Selected Asset
- symbol
- timestamp
- Total volume
- Volatility Alert...
- volatility1
- volume

Page 1

Page 1 of 1

70%

27°C Partly cloudy

Search

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12/23/2025

Key Findings & Recommendations

Volatility Trends

Altcoins showed 15-20% higher volatility than Bitcoin, requiring tighter stop-loss strategies for these assets.

Volume Correlation

Periods of peak volume coincided with positive price momentum, confirming strong market support during growth.

Strategic Allocation

Recommendation: 70% capital allocation to "Low Volatility/High Index" assets to maximize the Sharpe Ratio.

Speaker Note: My analysis concludes that a data-driven balanced portfolio (70/30 split) is the most sustainable approach. The data proves that chasing high-index "memecoins" without volume support is statistically unfavorable.

Conclusion & Future Roadmap

Current Success

Established a scalable pipeline for real-time crypto analytics and risk scoring.

Next Phase: ML Integration

Implementing ARIMA or LSTM models in Python for predictive price forecasting.

Let's Connect

Project documentation available on GitHub. Open for technical discussions.

Speaker Note: This project is just the beginning. The next step is to move from descriptive to predictive analytics using Machine Learning. Thank you for your time, and I am now open to any technical or business-related questions.