

Santé Ventures



The University of Texas at Austin
Texas McCombs
MS Business Analytics
McCombs School of Business



Augmenting Healthcare VC Strategy

Analyzing Exit Success and Firm Uniqueness with Agent-Based Intelligence

Shafee Syed-Quadri
Felipe Zapater
Mallika Singh
Alex Imhoff
Geer Zhang
Alexander Schmelzeis



Agenda

01. Objective

02. Foundational Analysis

03. LLM Agent Development

04. Conclusion & Use-Cases

Strategic Objective

Santé Ventures is focused on **identifying standout firms and successful exits**, while bridging the gap between deep analytics and everyday usability.



Phase 1: Foundational Analysis



We examined the structure, content, and relationships within Santé's database to:

- Quantify **firm uniqueness and exit success**
- Engineer a structured dataset to **support downstream LLM** agent development
- Run an **NLP-based uniqueness** analysis using **z-scores** to flag companies with truly novel positioning



Foundational Analysis

From Raw Data to Strategic Insights



Deal Data

- ~25,000 portfolio companies and ~50,000 investment rounds
- Spanning fifteen years

Core Attributes

- *Company level* - Company Vertical (Biotech, Medtech, Healthtech), Company Description, Website, Investor List
- *Deal Level* - Deal Size, Deal Type (IPO, M&A, Seed Round, etc.), Deal Date, Pre/Post Deal Valuations

Goal: Quantify Exit Success and Firm Uniqueness

Quantifying Exit Success



Developed an **exit performance metric** combining:

Return

$$\text{MOIC} = \frac{\text{Total Value Returned}}{\text{Total Money Invested}}$$



Time to Exit

$$\text{Time to Exit} = \text{Exit Date} - \text{Initial Investment Date}$$



Exit Performance Metric

$$\text{MOIC Adjusted} = 0.9 \times \text{MOIC} - 0.1 \times \log(\text{Exit Time} + 1)$$

Deal Success Tiers



Grouped deals into success tiers based on the ratio of **MOIC Adjusted** to the **Vertical Median**. This normalization allows comparison across sectors with different return profiles.

Success Tiers:



Deal Success Tiers



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Success Tiers:

- **Group 0** - *Insufficient Data*: Missing Valuation Data
- **Group 1** - *Not an Exit*: Early stage funding (Seed, Series A, Series B)



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-
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-

Deal Success Tiers

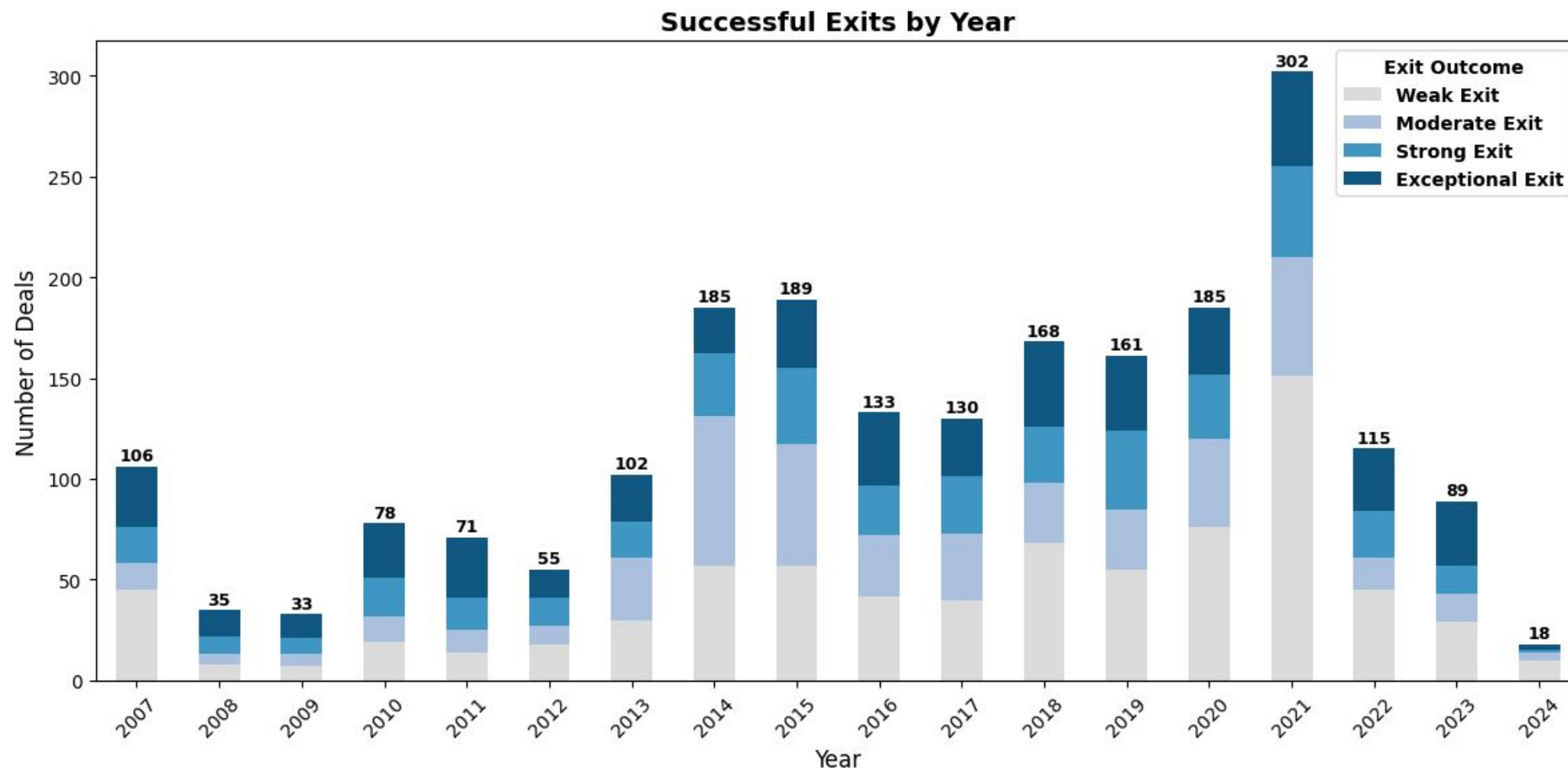


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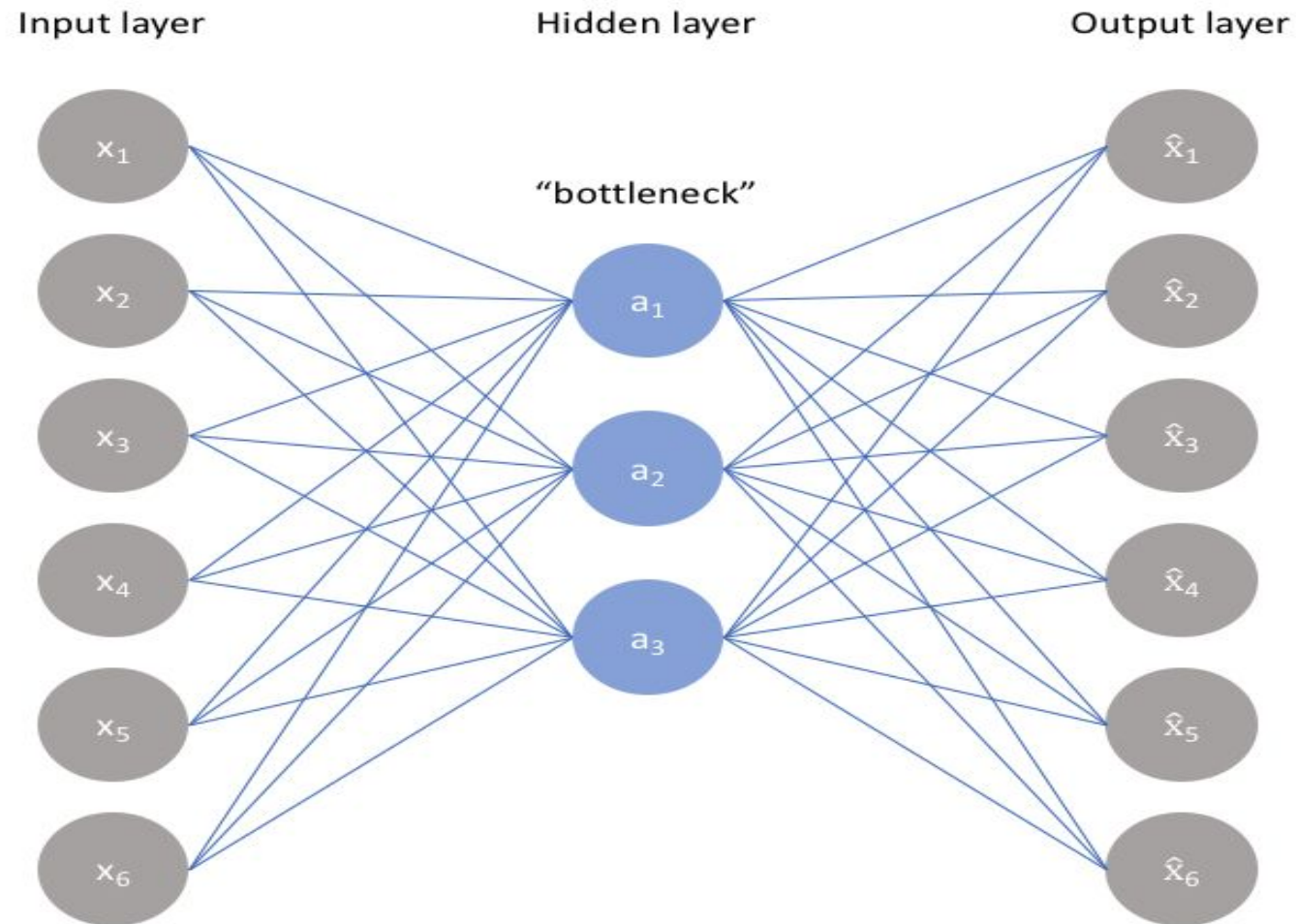
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- **Group 2** - *Weak Exit*: MOIC Adjusted below Vertical Median
- **Group 3** - *Moderate Success*: MOIC Adjusted between 1.0x - 1.25x Vertical Median
- **Group 4** - *Strong Success*: MOIC Adjusted between 1.25x - 2.0x Vertical Median
- **Group 5** - *Exceptional Success*: MOIC Adjusted exceeds 2.0x the Vertical Median

Successful Exits by Year



Quantifying Firm Uniqueness

*Firms with a **z-score greater than 2** were classified as **unique** in our analysis.*

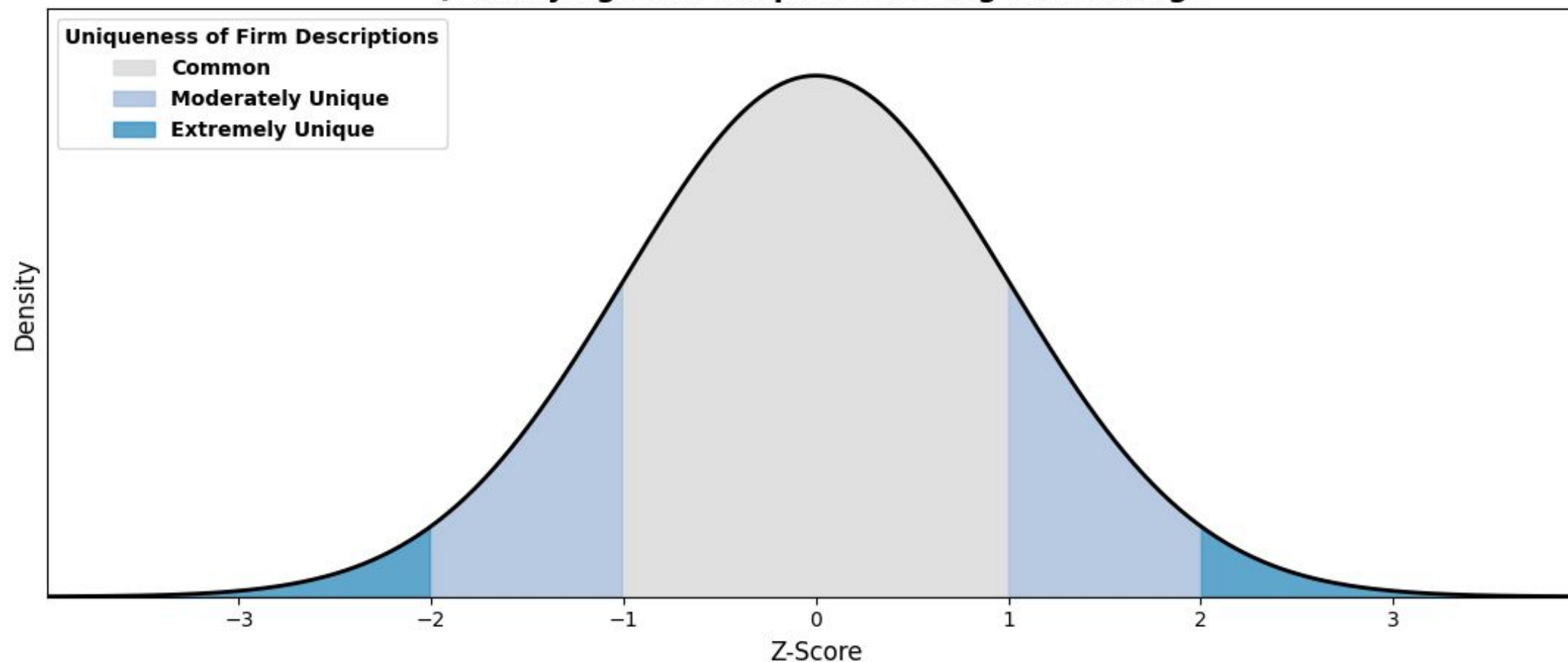


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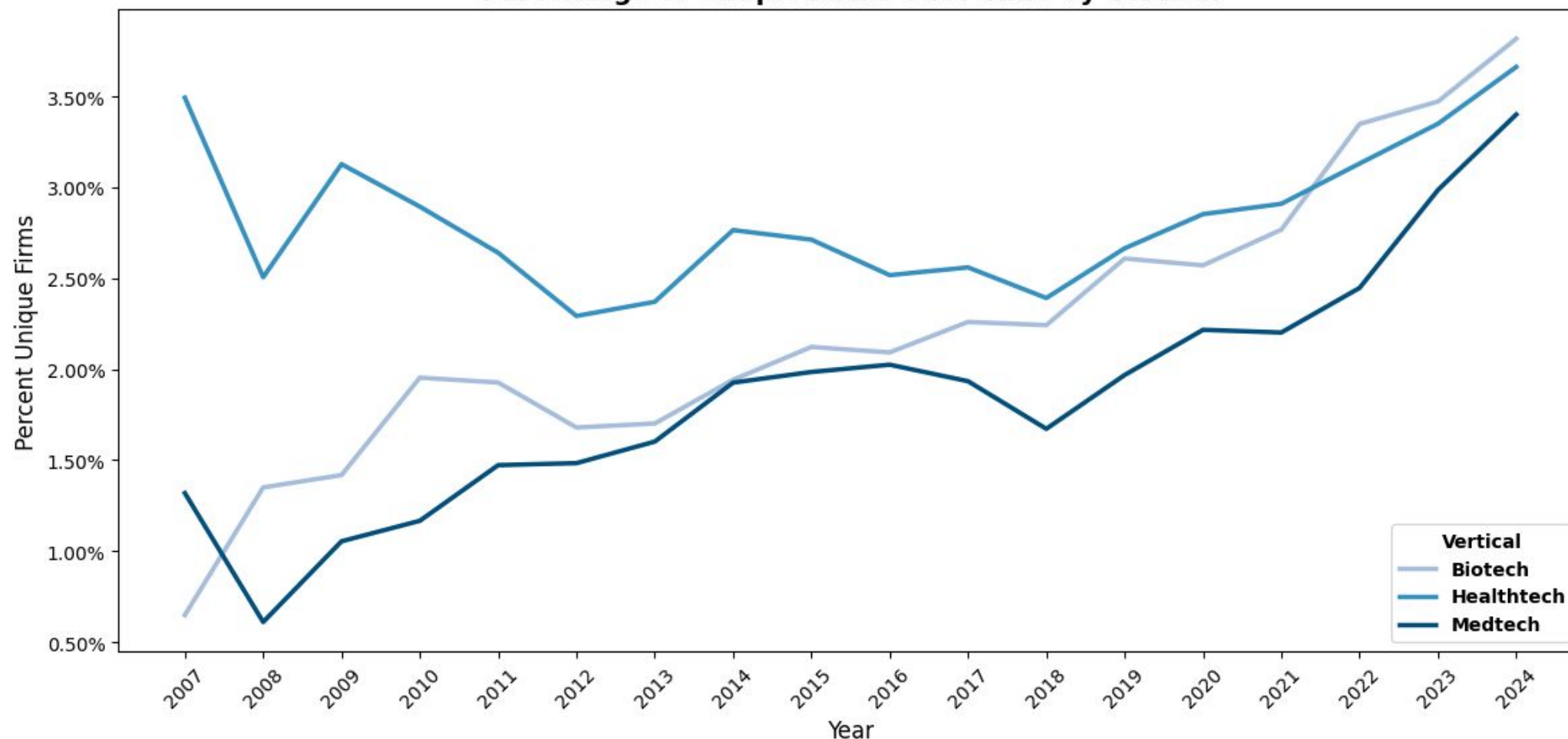
Quantifying Firm Uniqueness Using Embeddings



Quantifying Firm Uniqueness



Percentage of Unique Firms Over Time by Vertical





But Who Can Use It?

While we had **robust data analysis** in place, non-technical stakeholders at the firm couldn't easily access or explore insights on their own. We needed a solution that allowed partners and analysts to interact with the data, ***without writing a single line of code.***

Phase 2: LLM Agent Development



We built three custom agents to help with user querying:

- **Successful Exits Agent** – Surfaces firms with strong outcomes based on custom success definitions
- **Unique Firms Agent** – Highlights firms with differentiated positioning using z-score metrics
- **Neo4j Graph Visualization Agent** – Enables users to explore investor-company connections interactively



LLM Agent Development

Overview



A closer look at the various agents we worked with, in addition to the three we created.





Successful Exits Agent

The **Successful Exits Agent** specializes in interpreting deal-level performance using a backend scoring system (like Weighted Score and Exit Bin) to assess how well companies performed, while delivering narrative insights about what made a deal successful or not.





Successful Exits Agent



Agent Initializing...

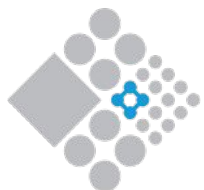




Unique Firms Agent

The **Unique Firms Agent** focuses on identifying and contextualizing the most unique or differentiated companies in healthcare. It uses pre-calculated Z-scores and year-based uniqueness flags to assess how firms stand out over time.





Unique Firms Agent

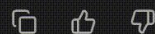


Success Factor: As a healthcare company operator, Home Health Holdings benefited from the rising demand for home-based healthcare services. The company's strategic positioning in the healthcare delivery market and its operational scale likely drove its successful exit.

5. Bichsel Medical Marketing Group (2019)

- **Deal Date:** May 1, 2019
- **Deal Type:** Merger/Acquisition
- **Deal Size:** \$71.63 million
- **Success Factors:** Bichsel's expertise in medical marketing and branding strategies made it a key player in the biotech and healthcare sectors. The company's ability to enhance brand visibility and market penetration for healthcare products likely contributed to its acquisition.

These exits were successful due to a combination of strategic positioning in high-demand areas, innovative solutions that addressed market needs, and the ability to integrate or enhance existing healthcare systems.



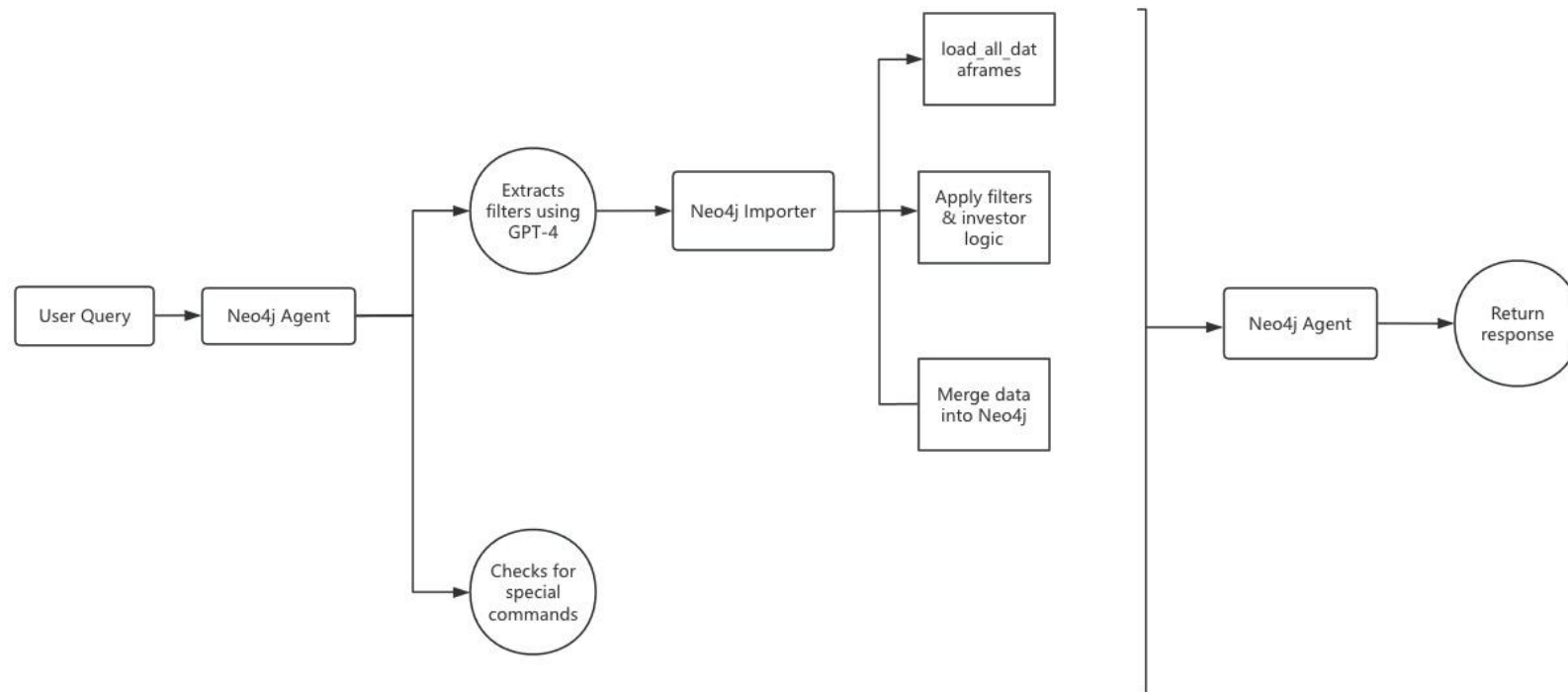


Neo4j Graph Agent

The **Neo4j agent** interprets natural language queries, extracts filters, builds a dynamic graph from investment data, and answers questions using Cypher, enabling intuitive exploration of investor, company, and deal relationships.



Neo4j Graph Agent



How it works: *Neo4j Graph Example*



show me the graph for Sante and S3 Ventures



Routing to Neo4j Graph Specialist.

Since you are requesting to view or explore a knowledge graph related to Sante Ventures and S3 Ventures, the Neo4j Graph Specialist is the appropriate expert to assist with this.

```
{"investor": ["Sante", "S3 Ventures"]}
```

```
MATCH (i
{name: 'S3 Ventures'})-[r
]→(c
), (i2
{name: 'Sante'})-[r2
]→(c2
) RETURN i, r, c, i2, r2, c2
```





Final Insights



Developed a ***comprehensive framework*** for analyzing venture-backed healthcare deals through the lenses of:

Performance (exit success)

Distinctiveness (firm uniqueness)

Connectivity (investor–company relationships)

Our approach combined:

Time-adjusted exit binning using MOIC and exit time

Autoencoded Z-score uniqueness from textual embeddings

A Neo4j knowledge graph for intuitive relationship exploration

Applying These Agents Across the Investment Lifecycle



1. Deal Sourcing

- **Use:** *Unique Firms Agent*
- **Goal:** Identify startups with distinctive positioning based on historical Z-scores and description analysis
- **Impact:** Prioritize differentiated companies early in the funnel

Applying These Agents Across the Investment Lifecycle



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3. Portfolio Review & Strategy

- **Use:** *Neo4j Graph Agent*
- **Goal:** Explore relationships between investors, companies, and verticals using natural language
- **Impact:** Discover co-investors, track vertical trends, and identify exit clusters for ongoing strategy refinement

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These agents empower partners and analysts to move faster, ask better questions, and make data-informed decisions without heavily relying on engineering support



THANK YOU

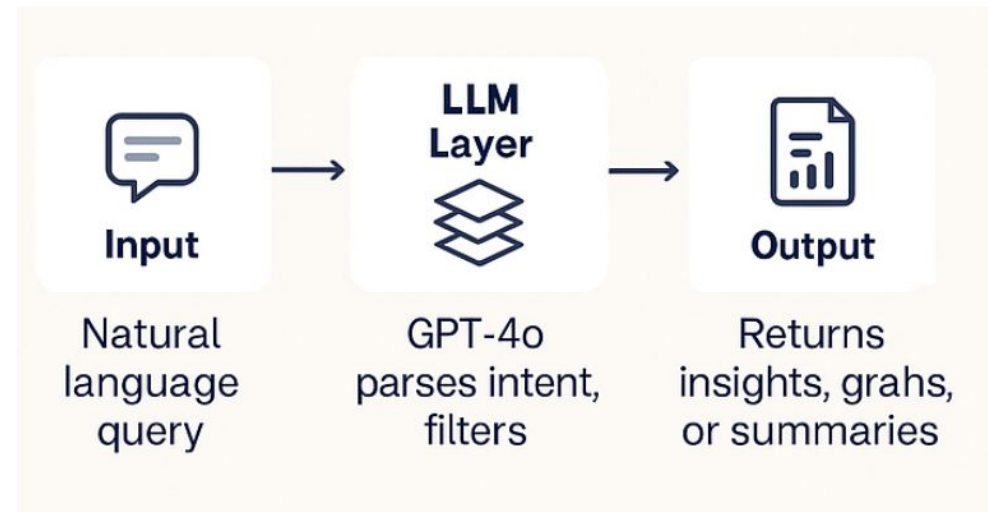
Scalable Intelligence for Venture Analysis

What are Agents?

Agents are AI-driven tools built on top of Large Language Models (LLMs)

They interact with structured and unstructured data to answer complex queries

Users can engage with them using natural language—no code required



Firm Uniqueness vs. Exit Performance



Business Value



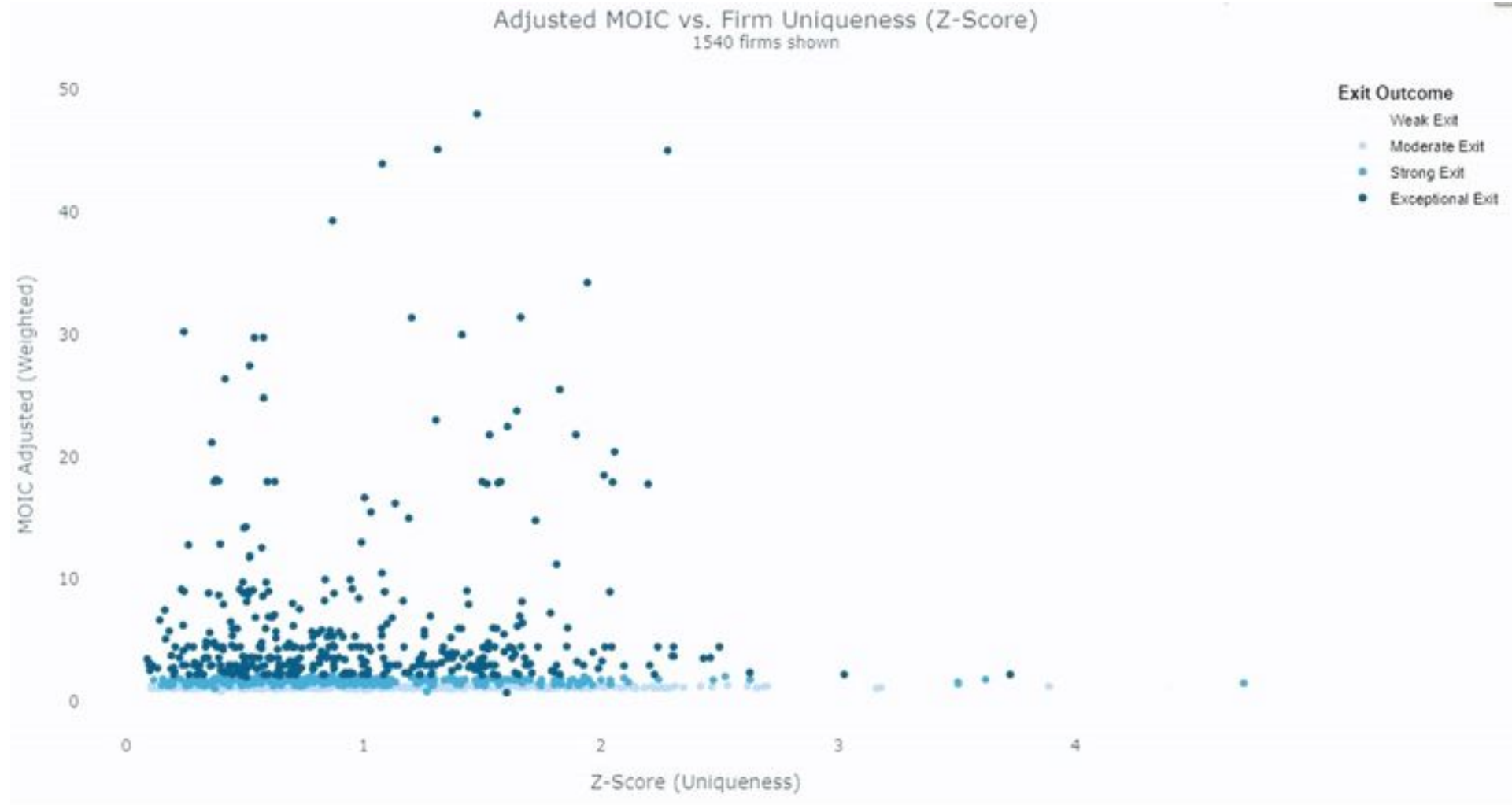
01. Accelerated Insight Discovery

02. Identifying High-Return Opportunities

03. Preserved Institutional Knowledge

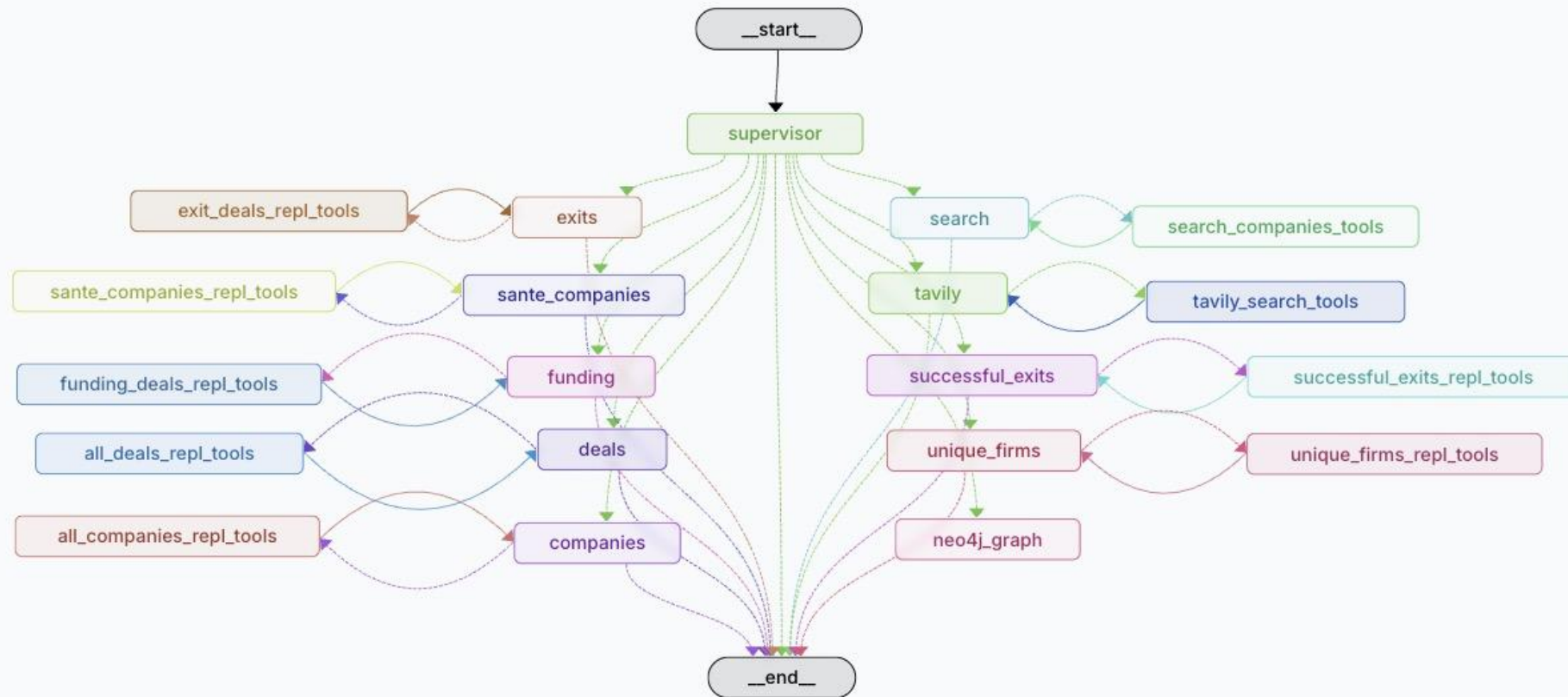
04. Interactive Data Exploration

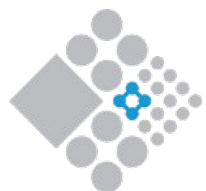
Firm Uniqueness vs. Exit Performance



Overview

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Successful Exits Agent

successful_exits_repl_tools

Source Data: successful_exits dataframe

Purpose: Provides access to all healthcare deals labeled with success bins (0–5), MOIC values, exit timing, and performance scores.



Metric	Definition	Meaning
Final_Z_Score	A firm's uniqueness at the present time	How unique the firm is in today's market
Max_Z_Score	The highest Z-score the company has ever reached	The most unique the firm has ever been
Abs_Z_Score	The absolute value of the highest Z-score	The most unique the firm has ever been (magnitude of uniqueness)

Unique Firms Agent



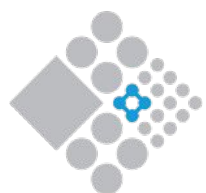
unique_firms_repl_tools

Source Data: unique_firms dataframe

Purpose: Gives access to historical and current uniqueness metrics across firms based on Z-scores.



**Unique
Firms
Agent**



Neo4j Graph Agent

Core filters			
Filter Key	Description	Example Value	Match Type
company	Company name (exact match)	Groupe Inovie	Case-insensitive exact
investor	Investor/VC firm name (exact match in investor list)	Santé Ventures	Case-insensitive exact
vertical	Industry vertical	Healthtech	Case-insensitive exact
deal_type	Type of investment deal	Later Stage VC	Case-insensitive exact
country	Company headquarters country	France	Case-insensitive exact
keyword	Keywords associated with the company	AI	Partial match
Temporal Filters			
Filter Key	Description	Example Value	Format
start_date	Start date for deal filtering	2022-01-01	YYYY-MM-DD
end_date	End date for deal filtering	2023-12-31	YYYY-MM-DD
year	Specific year	2022	Integer/float (2022.0)
month	month	3 (March)	Integer/float (3.0)
Deal Size Filters			
Filter Key	Description	Example Value	
min_deal_size	Minimum deal size (in millions)	10	
max_deal_size	Maximum deal size (in millions)	100	





Neo4j Graph Agent

neo4j_graph_agent.py – The Orchestrator

- **Filter Extraction** using LLMs.
- **Data Import Trigger** with relevant filters.
- **Graph-based Q&A** powered by Cypher generation.
- **Clear Graph Command** support for easy resets.

neo4j_importer.py – The Graph Builder

- **Flexible Filter Logic** for investor, company, year, vertical, etc.
- **Investor Expansion Rules** based on the number of investors.
- **Smart Cleaning** with diacritics and whitespace handling.
- **Cypher Queries** to upsert nodes and relationships in Neo4j.