PoliWatch

Identifying Conflicts of Interest in the Securities Transactions of U.S. Congressional Members
Problem Statement

Congress has an insider trading problem. Can the American people be sure that congressional members are acting in the best interest of the public over private investment portfolios?
Stock trades reported by nearly a fifth of congress show possible conflicts

– The New York Times
The Big Read  US politics & policy

US Congress: how investment funds became the new insider trading risk

Lawmakers are subject to strict reporting requirements on stocks, but the rules on funds are lighter thanks to a decades-old exception.

Congress Stock Watcher @SenateStock - May 12
Rep Michael Simpson (ID-02) filed a strategic disclosure today.

Strategic in the sense that 21 of the 22 trades violated the STOCK ACT.

By Monday, the ethics committee will have just clocked out a few hours ago.

Lawmakers made hundreds of stock transactions during pandemic, watchdog finds

The nonprofit is calling for laws that would ban lawmakers from making individual stock trades.

Does Congress Have an Insider Trading Problem?

Allegations of senators insider trading have been an easy fix.

Nancy Pelosi makes millions off tech stocks – and scoffs at push to ban congressional trades
>25,000 Trades made by congressional members since 2012

$500M Volume of trades made by congress since 2012
1978
*Ethics in Government Act*

2012
*STOCK Act*

2011
60 Minutes report on congressional insider trading

2020
DOJ probe into congressional insider trading around COVID

2021
DOJ closes probe on COVID insider trading

2023
*Ban Congressional Stock Trading Act* proposed

Today
Little accountability at scale for congress’ personal investments
Example: Sen. David Perdue

Transaction Report | March 3rd, 2020

- Purchased $150k worth of shares in Pfizer
- Purchased $100k worth of shares in DuPont
- Sold $50k worth of shares in Caesar’s Entertainment
Investigative journalism uncovered that Sen. Perdue attended a hearing on Jan 24, 2020 about how COVID would impact the U.S.
Timeline for Sen. Perdue

Jan 24, 2020
Senate Hearing on projected COVID impact

Feb 26, 2020
First purchase of Pfizer

Mar 6, 2020
Congress approves $8.3B to fight COVID

Jan 24, 2020
First purchase of DuPont

Feb 27, 2020
$250k Purchase of PFE and DD

Mar 20, 2020
NYT op-ed on insider trading
What if a tool existed that automatically provided potential sources of insider information for Senator Perdue’s stock trades?
The Team

Matthew Dodd  
*Data Engineer & App Developer*

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*Data & ML Engineer*

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*Data Engineer & App Developer*

Connor Ethan Yen  
*Project Manager & Lead*

Spencer Zezulka  
*Data Engineer*

The American Public
Our Product

A dashboard that uses AI on top of a first-of-its-kind dataset to contextualize securities transactions with relevant congressional activity.
How it Works

Transaction Query → Transaction Disclosures → Retriever

CONTEXT
congressional knowledge impacting transaction decision

Congressional Activity
- Committee Assignments
- Sponsored Bills
- Attended Hearings
- 3rd Party Sponsored Travel
- Press Statements
Demo
**Volume**
All transaction disclosures. Hundreds of thousands of sources of context.

**Variety**
Pull context from a wide range of government and news sources.

**Velocity**
Analyze transactions as they are filed.

**Veracity**
Contextual data has legal governance assuring its integrity.
Congressional Activity

Transaction Query → Transaction Disclosures → Retriever → CONTEXT
congressional knowledge impacting transaction decision

Committee Assignments
Sponsored Bills
Attended Hearings
3rd Party Sponsored Travel
Press Statements
>25,000 Transactions disclosed to the House Clerk and Senate Ethics Committee

94% Cleaned transactions that can be analyzed through our product
Data Structure

- Committee assignments
- Sponsored/Co-sponsored bills
- Committee-hosted hearings
- 3rd party-sponsored travel disclosures
- Press releases (via ProPublica)
- 25,685 Transaction, 300K Documents
- 286 members of congress
Transaction Query \rightarrow Transaction Disclosures \rightarrow Retriever \rightarrow CONTEXT congressional knowledge impacting transaction decision

Congressional Activity:
- Committee Assignments
- Sponsored Bills
- Attended Hearings
- 3rd Party Sponsored Travel
- Press Statements
Retriever Architecture

Ingestion
- Congressional Activity
  - BERT
  - Vector Store

Transaction Metadata → GPT-4 → Enhanced Metadata Description → Rank of activities relevant to transaction industry → Relevant Documents
Performance and Evaluation

Evaluation

- 12/13 pieces of information cited by the NYT and AP identified by our model.
- Assess 58 transactions listed in the DOJ probe on congressional trading during COVID.
- Manually identify 117 pieces of information in our database that are relevant to the transactions.
- Retriever identifies 91% of the tagged information as top-10 most relevant points to their respective transactions.
Challenges and Key Learnings

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<tr>
<th>Challenges</th>
<th>Solutions</th>
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<tr>
<td>Data is from various sources.</td>
<td>Create a centralized linked database.</td>
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<td>Information retrieval without compromising completeness.</td>
<td>Rank documents according to transaction relevance and develop heuristic filters (e.g. date cutoffs).</td>
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<td>Computation of embeddings and semantic similarity is expensive.</td>
<td>Batch process context documents. Vectorize similarity computation.</td>
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<td>Project staffing was highly dynamic due to unforeseen personal issues.</td>
<td>Ensure that each phase deliverable produced deployable value.</td>
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Future Direction

- Live data ingestion
- RAG-type chatbot
- Transaction disclosures from top-executives
- Legal actionability
Congress has an insider trading problem. We must hold Congress accountable to restore the American public’s faith in government.