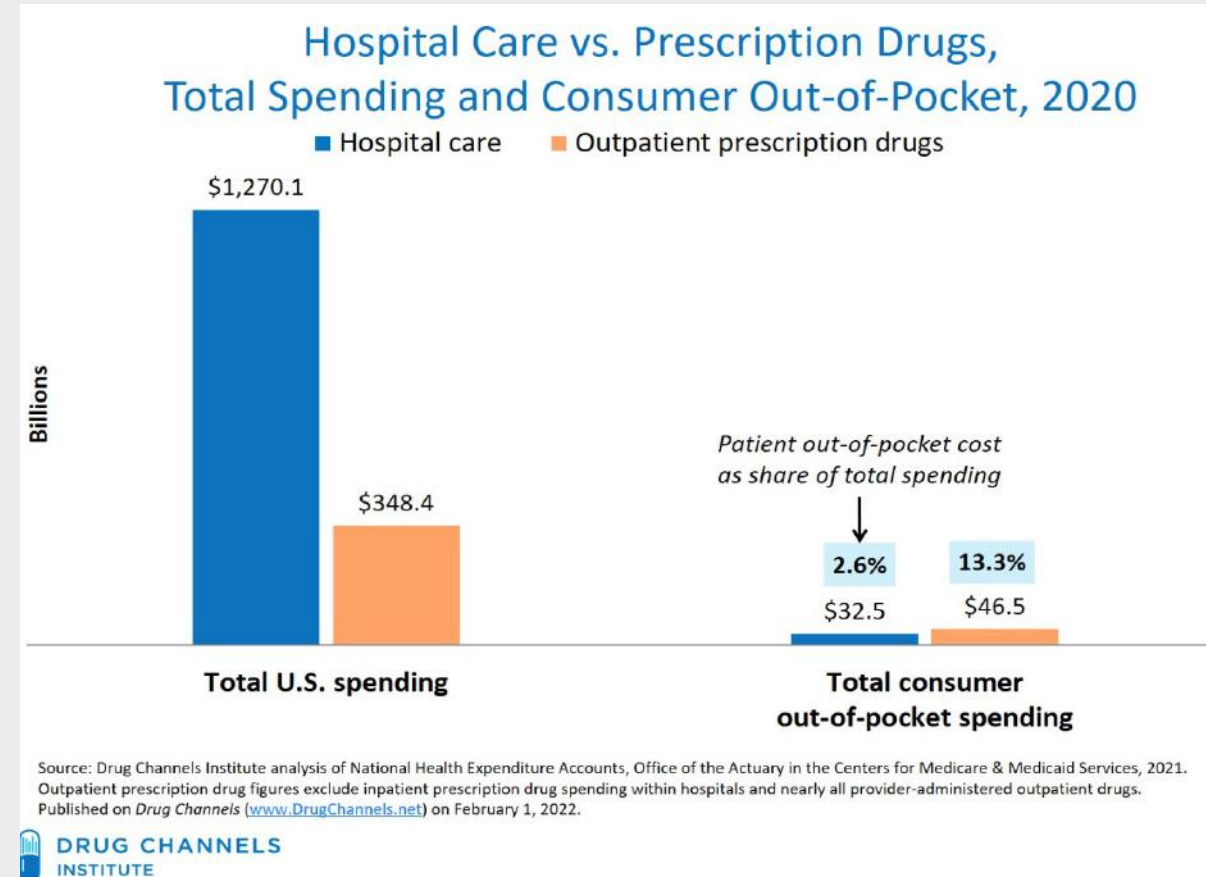# Agenda

Topics for this session

- The US prescription drug system is broken: PBM's, Spread, and No Transparency

- Disrupting the market with AI: bringing transparency, affordable drugs, and better care to people

- Building blockchain–based Rx solutions, and Data + AI Pharma/Healthcare Platform on Databricks

- Our AI and Data service architecture

- Case study: **my**Rx AI Pricing

- Next steps and conclusions

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U.S. prescription drug spending

1. U.S. prescription drug spending is **$348.4 billion** – 8% of total National Health Expenditure in 2020

2. Patient out-of-pocket costs for prescription drugs are **13.3%** while hospital care is 2.6%

Hospital Care vs. Prescription Drugs, Total Spending and Consumer Out-of-Pocket, 2020

■ Hospital care ■ Outpatient prescription drugs

$1,270.1

$348.4

Billions

Patient out-of-pocket cost as share of total spending

2.6% 13.3%
$32.5 $46.5

Total U.S. spending

Total consumer out-of-pocket spending

Source: Drug Channels Institute analysis of National Health Expenditure Accounts, Office of the Actuary in the Centers for Medicare & Medicaid Services, 2021. Outpatient prescription drug figures exclude inpatient prescription drug spending within hospitals and nearly all provider-administered outpatient drugs. Published on *Drug Channels* (www.DrugChannels.net) on February 1, 2022.

DRUG CHANNELS INSTITUTE

U.S. prescription drug spending

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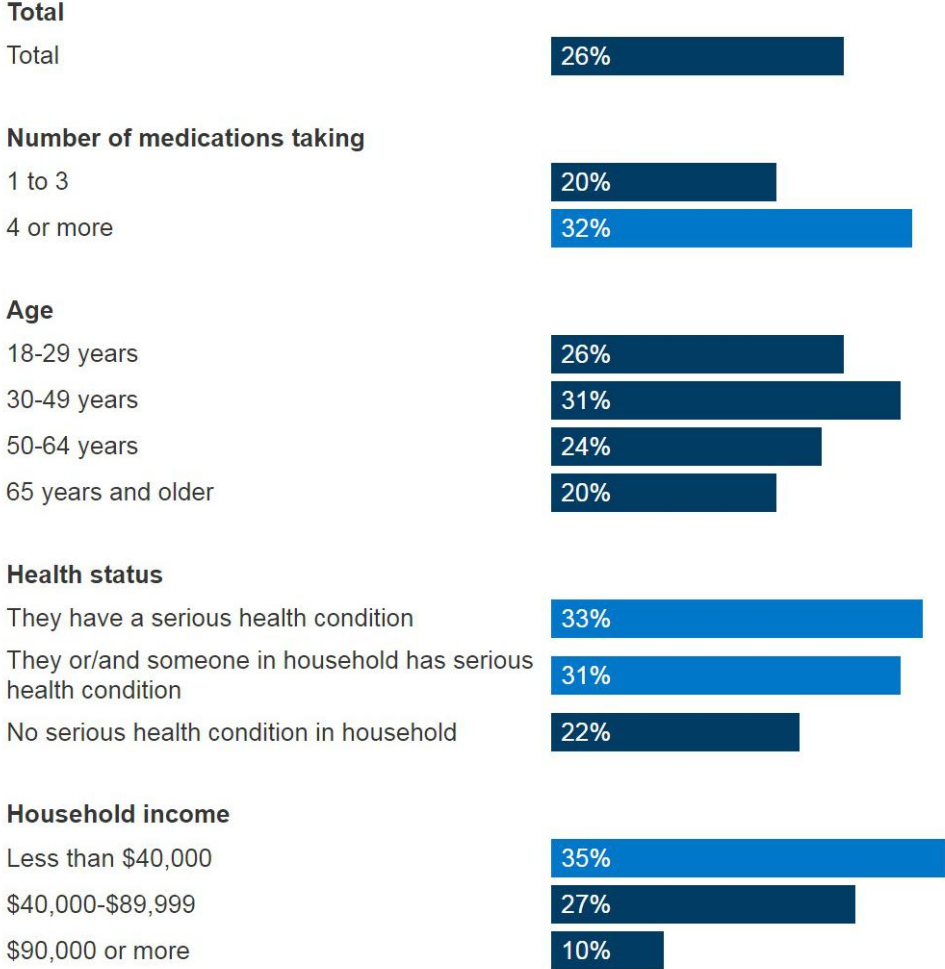2. Patient out-of-pocket costs for prescription drugs are **13.3%** while hospital care is 2.6%

3. Prescription drug prices in the U.S. are **256% higher** than those in other countries on average

Source: "International Prescription Drug Price Comparison", RAND Corporation, 2021

Who Has Difficulty Affording Their Prescription Drugs?

Percent who say it is difficult to afford the cost of their prescription medicine:

Total
Total — 26%

Number of medications taking
1 to 3 — 20%
4 or more — 32%

Age
18-29 years — 26%
30-49 years — 31%
50-64 years — 24%
65 years and older — 20%

Health status
They have a serious health condition — 33%
They or/and someone in household has serious health condition — 31%
No serious health condition in household — 22%

Household income
Less than $40,000 — 35%
$40,000-$89,999 — 27%
$90,000 or more — 10%

NOTE: See topline for full question wording.
SOURCE: KFF Health Tracking Poll (Sept. 23- Oct. 4, 2021) • PNG

U.S. prescription drug spending

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4. Prescription **affordability** impacts patient **adherence**

About Three In Ten Say They Haven't Taken Their Medicine As Prescribed Due To Costs

Percent who say they have done the following in the past 12 months because of the cost:

Not filled a prescription for a medicine — 18%

Taken an over-the-counter drug instead — 21%

Cut pills in half or skipped doses — 15%

Did at least one of the above — 29%

NOTE: See topline for full question wording.
SOURCE: KFF Health Tracking Poll (March 15-22, 2022) • PNG
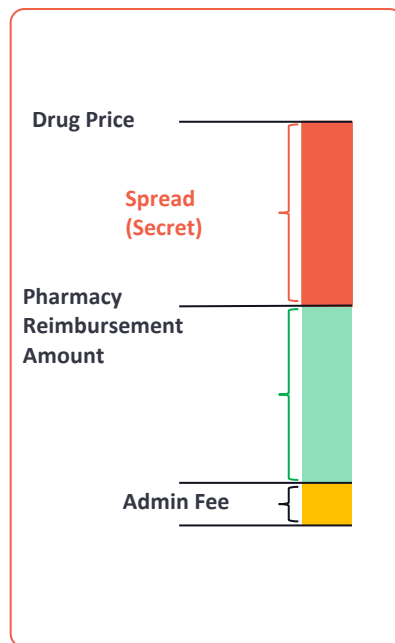
KFF

US Prescription Drug Market:

The Traits of a Broken System

Legacy PBM's, Spread, and Lack of Transparency are making drugs unaffordable AND are killing the pharmacies

---

The Spread (Secret)

Drug Price

Spread (Secret)

Pharmacy Reimbursement Amount

Admin Fee

- Legacy Pharmacy Benefit Managers - PBM's (middlemen) and Discount Cards set a Drug **Sale Price** but a **different (lower) Reimbursement Amount** to Pharmacies

- PBM's and Discount Cards pocket the **Spread**

- Endemic **lack of transparency** and **regulatory oversight** gives PBM's and Discount Cards the upper hand

- **Pharmacies → Razor-thin margins**
  - For some drugs pharmacies even sell at a loss: reimbursement price below acquisition cost

---

"PBM spread pricing costs federal and state taxpayers hundreds of millions of dollars every year. It does nothing to reduce the cost of drugs [...], and it drives local pharmacies out of business"

"If the goal for policymakers is to provide the best health care to low-income residents at the best price for taxpayers, they must eliminate spread pricing"

"Federal and state taxpayers are getting ripped off, local pharmacies are being squeezed out of the programs, and the PBMs are making a fortune."

B. Douglas Hoey
Chief Executive Officer
National Community Pharmacists Association

https://ncpa.org/newsroom/news-releases/2021/09/15/community-pharmacy-makes-goal-line-push-eliminate-pbm-spread

Disrupting the prescription market with AI and Data

Goals

- ✅ Bring transparency into the drug market

- ✅ Deliver benefits directly to consumers and the first-line providers

- ✅ Use platform to scale prescription marketplace

How?

- ✅ Unleash the power of AI to break the barrier of non-transparency issues

- ✅ Use Blockchain/Web 3.0 to give the power to the consumers/providers

- ✅ Build scalable Data + AI Pharma/Healthcare Platform as foundation

Data + AI: challenges, strategies, and execution

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Challenges ▶

- ✓ Legacy and ad hoc data solutions
- ✓ Lack of real-time capabilities
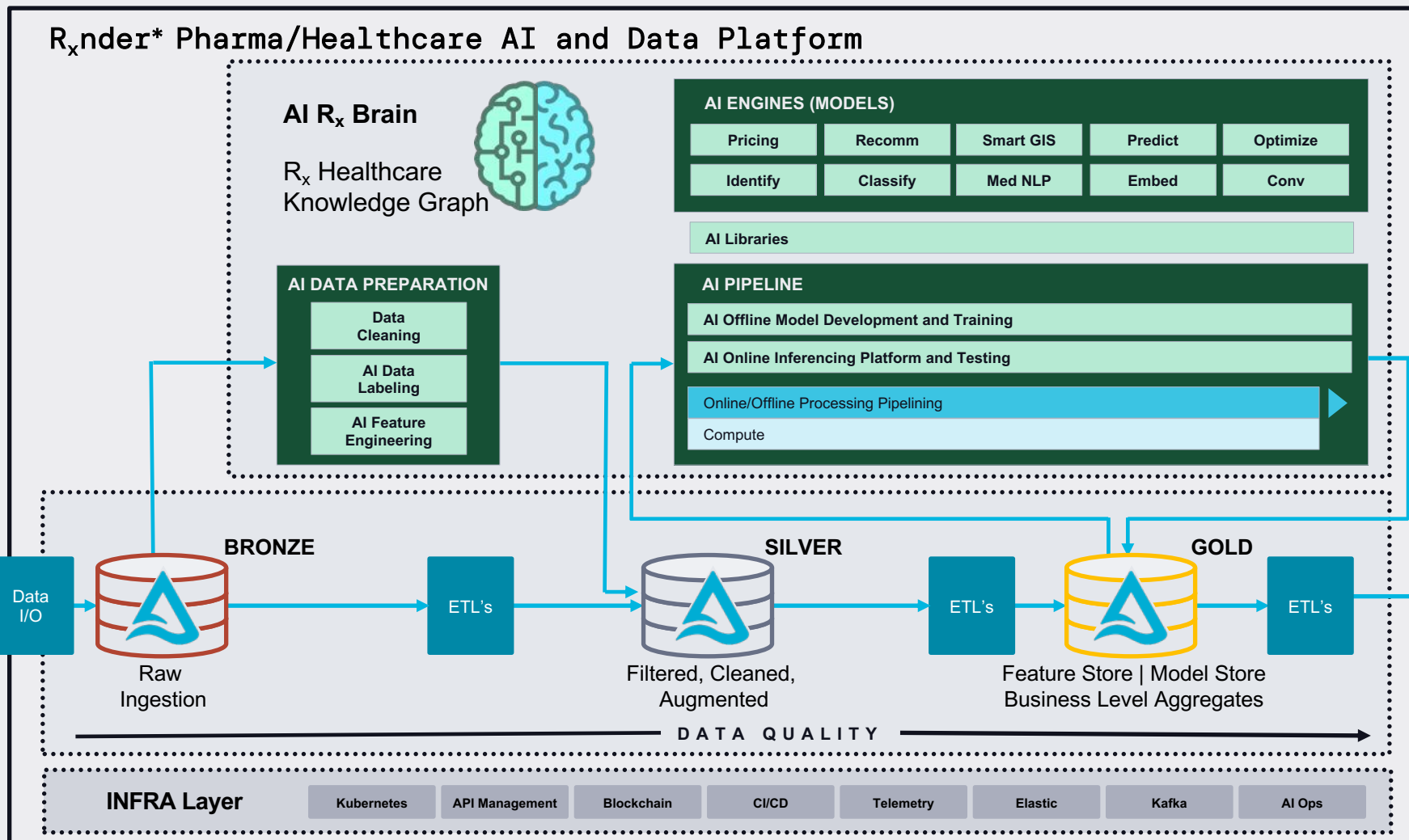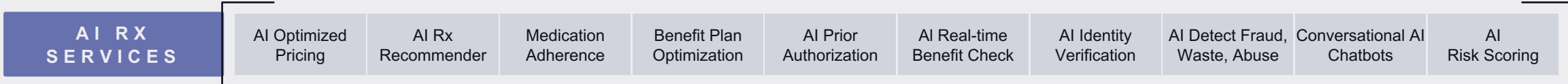- ✓ Lack of scalable, performing, and automated Data + AI pipelines

Strategies ▶

- ✓ Invest in single Data + AI platform as infra-foundation
- ✓ Design scalable, secure, and performing intelligent platform
- ✓ Produce real-time healthcare AI and BI

Execution ▶

- ✓ Build Data + AI with Databricks Lakehouse
- ✓ Deploy AI and BI solutions quickly, incrementally
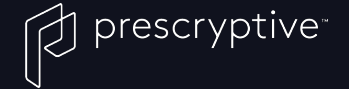- ✓ Implement real-time solutions to unleash the power of AI

AI and data platform on Databricks

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AI Optimized Pricing	AI Rx Recommender	Medication Adherence	Benefit Plan Optimization	AI Prior Authorization	AI Real-time Benefit Check	AI Identity Verification	AI Detect Fraud, Waste, Abuse	Conversational AI Chatbots	AI Risk Scoring

R$_x$nder* Pharma/Healthcare AI and Data Platform

AI R$_x$ Brain

R$_x$ Healthcare Knowledge Graph

AI ENGINES (MODELS)

Pricing	Recomm	Smart GIS	Predict	Optimize
Identify	Classify	Med NLP	Embed	Conv

AI Libraries

AI DATA PREPARATION

- Data Cleaning
- AI Data Labeling
- AI Feature Engineering

AI PIPELINE

- AI Offline Model Development and Training
- AI Online Inferencing Platform and Testing
- Online/Offline Processing Pipelining
- Compute

EXTERNAL SOURCES

- NADAC — BATCH
- MEDISPAN — BATCH
- NCPDP — BATCH
- GEO — BATCH

myRx USERS

- QUERIES — STREAM
- GEO — STREAM

PHARMACIES

- CLINICAL SVS — STREAM
- R$_x$ CLAIMS — STREAM

Data I/O

BRONZE
Raw Ingestion

ETL's

SILVER
Filtered, Cleaned, Augmented

ETL's

GOLD
Feature Store | Model Store
Business Level Aggregates

ETL's

Responses (to myRx) — STREAM

Prices (to Claims) — STREAM

BI Analytics Dashboards Reporting

DATA QUALITY

INFRA Layer

Kubernetes	API Management	Blockchain	CI/CD	Telemetry	Elastic	Kafka	AI Ops

*Alexander Fleming: 1981-1955

DATA+AI SUMMIT 2022

7

Healthcare AI and data at scale

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Working with Databricks to make it happen

Jump-started with Databricks collaboration

Continued learning, building, and deploying with Databricks Lakehouse

Databricks Professional Services

Architecture design

Insight of Databricks platform capabilities

Initial AI use cases on prescription drug pricing

Data ingestion (batch and streaming), ETL

Standards and external (NCPDP, NADAC, MEDISPAN)

Claims data; etc.

AI Production Services

Model deployment

Data processing pipeline

Healthcare KG building

BI Production Services

Moving onto single data platform

Real-time BI reporting and dashboards

Case study

AI-optimized prescription drug pricing

We use AI and blockchain to fix the notoriously broken prescription system to bring price transparency and benefits directly to pharmacies and consumers

AI Innovation powers a new, game-changing business model

Enables pharmacies to stay competitive and profitable

Eliminates "spread pricing" and other opaque PBM practices

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myRx™

AI PRICING

Use AI to eliminate Spread & optimize pricing

## Find the *best competitive price* for each drug, personalized per pharmacy

- Build and deploy AI Models on Databricks platform, provide accurate estimate of Willingness-to-Pay (WtP) and Price-Demand Elasticity (PDE) per drug, per pharmacy.

- Models account for all factors affecting WtP and PDE, such as *competition, geolocation, demographics, therapeutic, profitability, popularity, and seasonality*.

- **NO SPREAD**, no claw back charge to pharmacies.

- **FULL PRICE TRANSPARENCY** to patients and pharmacies.
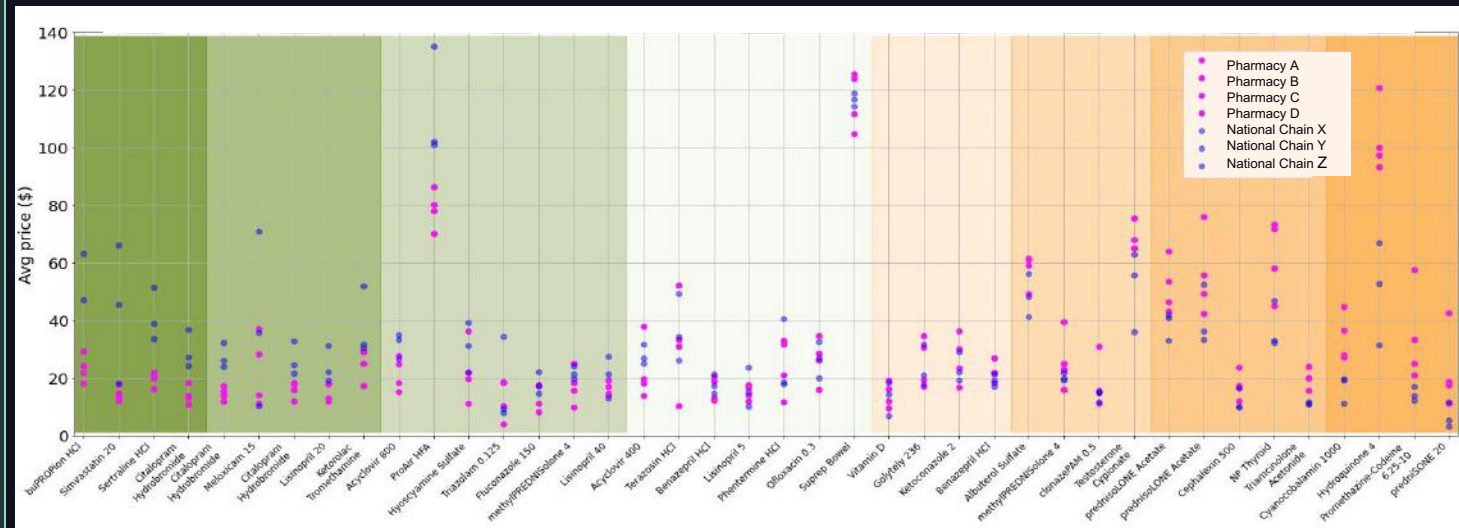
Competitive Analysis Examples:
- Pharmacy A, B, C, and D are four independent pharmacies in US Northwest
- National Chains X, Y, and Z are nationwide pharmacy chains in the same locations

Use AI to eliminate Spread & optimize pricing

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SAMPLE DATA: FOR ILLUSTRATIVE PURPOSES ONLY

Pharmacy Name vs. Competitor Pricing
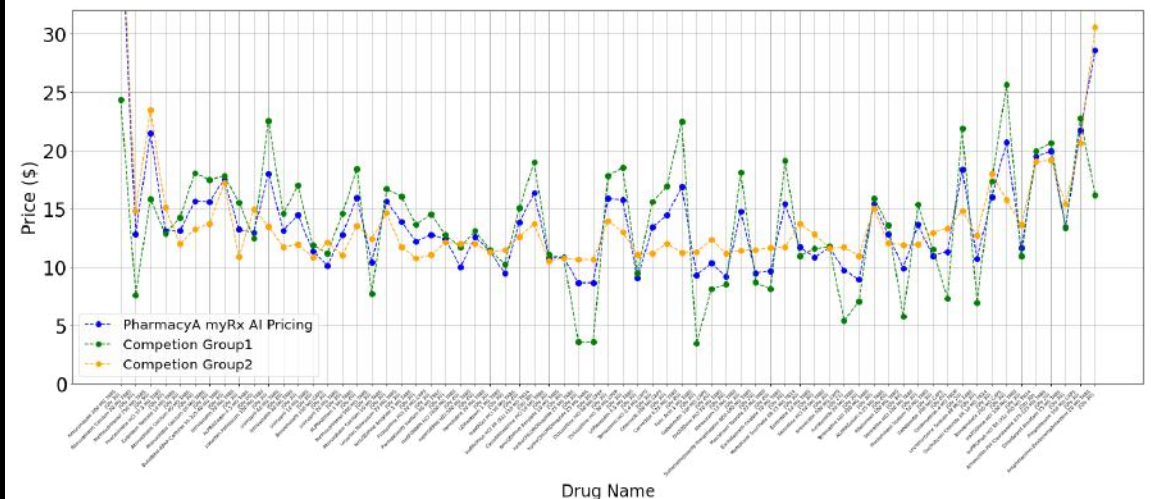
Pharmacy customer case study

prescryptive™
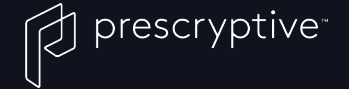
Purdy Costless Pharmacy, Gig Harbor, WA

We partnered closely with Purdy Costless Pharmacy of Peninsula, in Gig Harbor, WA using myRx AI pricing services to enable sustainable profitability growth.

1   After just six weeks of myRx AI Pricing in place, Purdy Costless Pharmacy saw a profitability increase of 21%.

———————————————————————

2   Targeting even higher profitability growth in the next 12–18 months while maintaining competitiveness, so they can continue serving their local community with better personalized services.

But the only data point that *really* matters is …
Delighting the customer!

"I was taken aback with the thoroughness and sophistication of the analysis and the solution … We got down to the drug-level, detail-by-detail."

"Once we got the model in place, the business impact was noticeable in just a matter of days … I look forward to expanding the solution across all of my pharmacies in 2022."
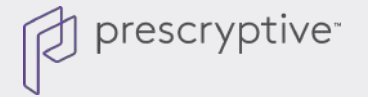
Jeff Harrell, PharmD

CEO of Peninsula Pharmacies
Co-owner of 26 Independent Pharmacies, including Purdy Costless Pharmacy
National Community Pharmacists Ass. (NCPA) BoD Member
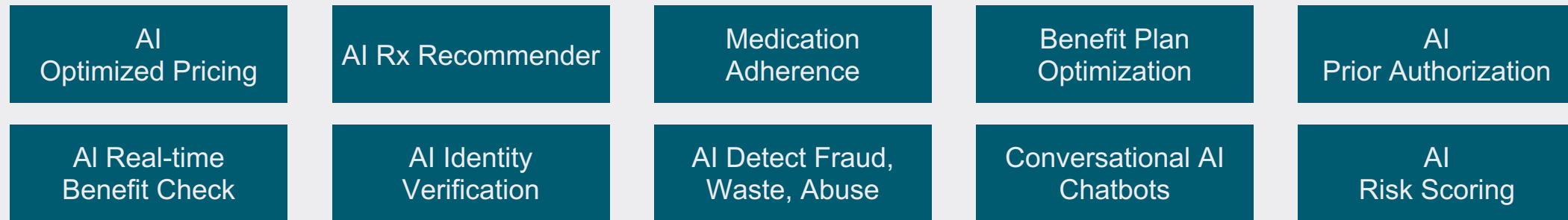Technology Advocate and influential leader

https://prescryptive.com/project/purdy-case-study/

Coming next:
Building out myRx AI service portfolio

An array of AI-Driven Pharma and Healthcare services to empower providers and patients and elevate patient care

AI Optimized Pricing	AI Rx Recommender	Medication Adherence	Benefit Plan Optimization	AI Prior Authorization
AI Real-time Benefit Check	AI Identity Verification	AI Detect Fraud, Waste, Abuse	Conversational AI Chatbots	AI Risk Scoring
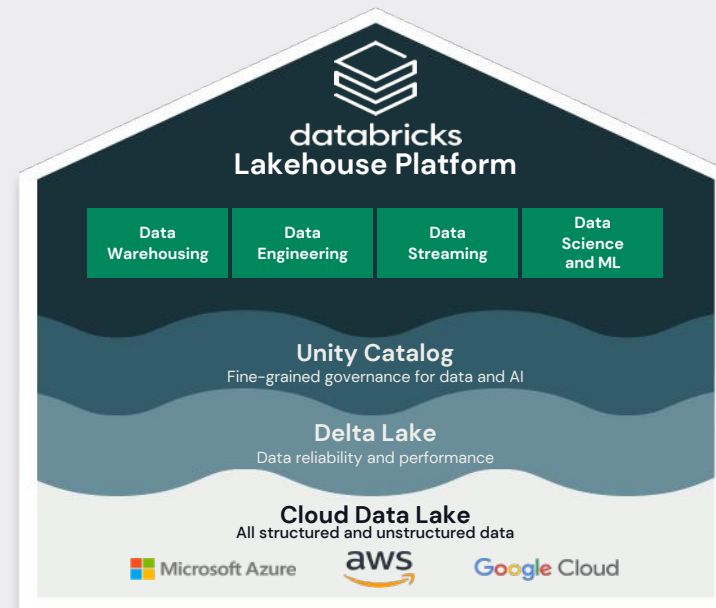
Conclusions

We are on a mission to fix the broken prescription drug system and bring affordable drugs and better care to communities coast to coast
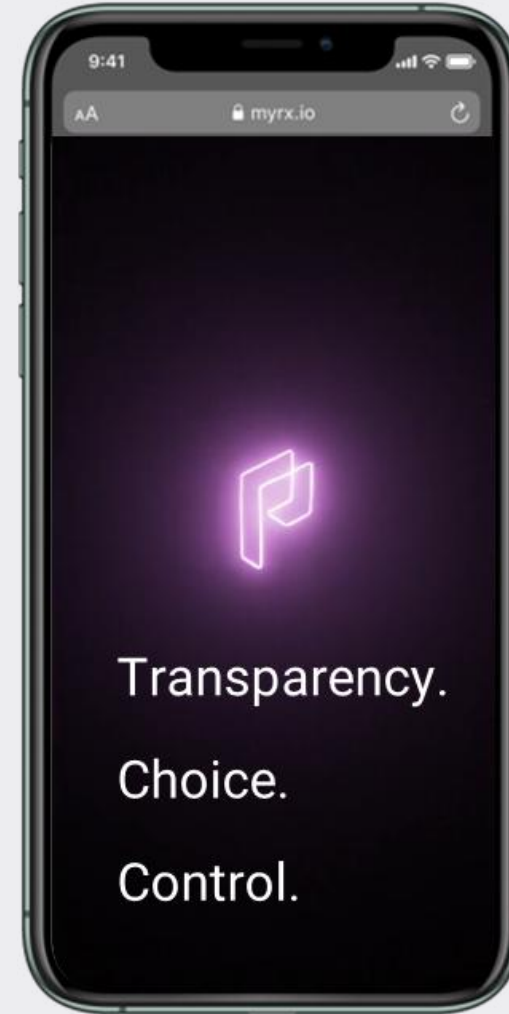
AI and data as enablers to achieve unparalleled transparency

Delta Lake allows us to support AI and BI on the same platform, with real-time applications

Our AI pricing solutions are built and deployed on Databricks platform – with much more to come!

Rewriting the Script™

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