

AGENT VDO

Automating actionable insights from data

100% Automated LLM agentic workflow

Benjamin Zhou | Academic Supervisor: Dr. Goh Han Leong | National University of Singapore

Healthcare's Value-Driven Outcomes (VDO) Challenge



Hospitals must track **100+ metrics/month** for **national benchmarking**



To lift these metrics, clinicians wade through **dozens** of dashboards and **hundreds** of patients' data

Teams need actionable insights, not more dashboards.

Agent VDO generates regular reports containing data-driven actionable insights

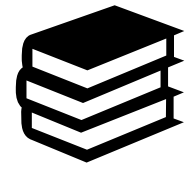
QUARTERLY ANALYTICS REPORT

Population: Rolling 12-month cohort, by [medical condition]*

5-7 PRIORITY INTEVENTIONS

Aligned to business context

- What to do
- Why do it
- Who does it
- How to implement



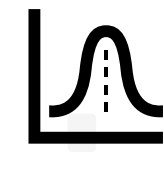
PUBMED LITERATURE SUPPORT

Latest evidence-based research

Provides external validation

15-20 SYNERGISTIC INSIGHTS

Key outcome predictors identified
Mechanisms explained



STATISTICAL APPENDIX

Significant variables
Effect sizes

Every intervention and finding is:

✓ Statistically grounded

✓ Traceable to source data

*Agent VDO was piloted and validated on the hip fracture VDO cohort

Institutional impact

Clinicians
Improve decision making

Data teams
Automation frees capacity

Patients
Better decisions → Better care → Better outcomes

Lean deployment

32B open-source LLMs

Single GPU server

Fully automated

Clinical expert validation (n=3)

8.3/10 OVERALL RATING

4.3/5 SAFETY SCORE

100% DEPLOYMENT CONSENSUS

Automated validation

97% TIME SAVED

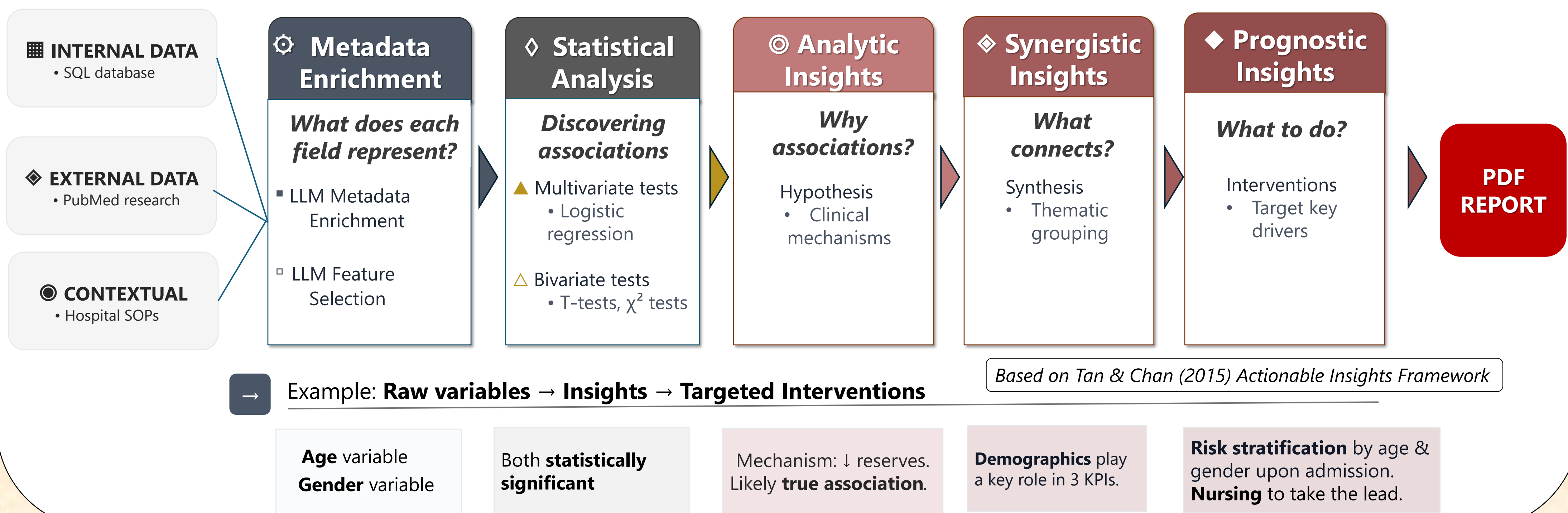
0% HALLUCINATION

87% LLM-JUDGED INTERPRETIVE ACCURACY

"Agent VDO transformed our quarterly reviews from exhausting data marathons into strategic planning sessions. **This is the future of quality improvement.**"

- Dr. A.S., Medical Director, Public hospital

Architecture: Agentic orchestration with open-source LLMs. Statistical foundation.



Open-source stack for air-gapped environments

LLM: Qwen3 | Hosting: Ollama | Statistics: leaun

Orchestrator: LangGraph | LLMOps: mlflow | PDF report: ReportLab

Key innovations & contributions

- Clinically acceptable accuracy achieved with mid-sized 32B LLMs
- First agentic workflow automating Singapore's VDO reporting
- Generalizable framework applicable to any KPI dataset or industry



NUS Business Analytics Centre

SUPPORTED BY NUS BUSINESS SCHOOL & NUS COMPUTING