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Maximize the Value of Your Predictive Modeling Activities by Identifying and Correcting Data Leakages

September 10, 2019

Providers & Provider Groups Continue to Move From FFS

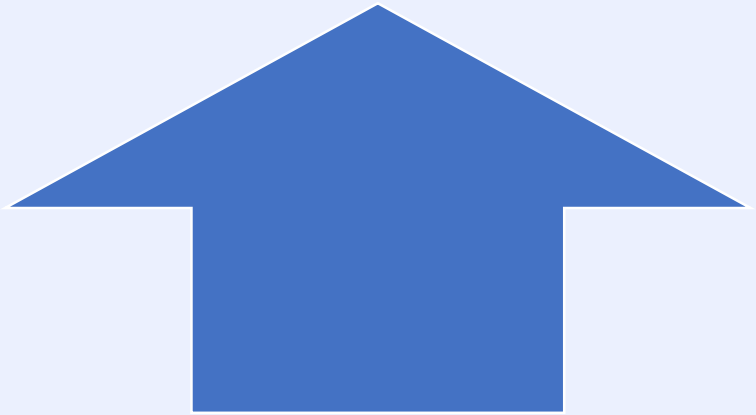
Fee For Service Contracting

Value Based Contracting

Value Based Provider Payments & Data

Full Risk & *Value Based* provider payments diminishes data capture and completeness due to minimal provider incentives

Full Risk & *Value Based* provider payments increases the need to demonstrate appropriate quality of care and full risk score capture to ensure all needed care is covered



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Theorem 1

Virtually All Capitated Care Based Data Sets are Likely to be Incomplete and/or Biased Due to a Complex Data Flow

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Office Practice System

Billing Service

Paper Clearinghouse # 1

EDI Clearinghouse # 1

EDI Clearinghouse # 2

MSO Administrative System & Analytical Data Marts

Health Plan Administrative System & Analytical Data Marts

Outbound Clearinghouse #1

Potential Point of Leakage

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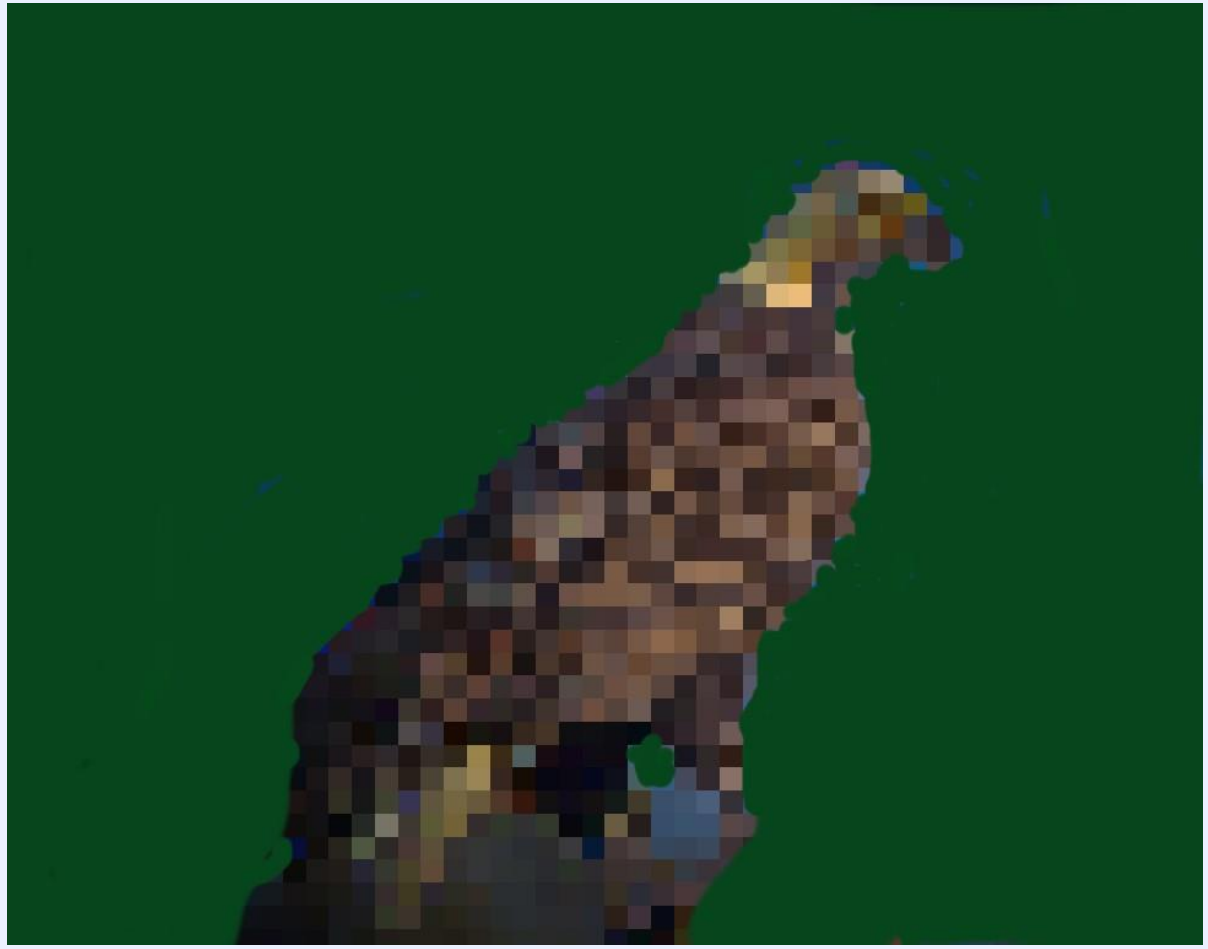
Typical Managed Care Data

Prod	Pats	Days	aND	aOT	aPD	aPH	aSP	aSW	cDrug
A06Z	16	533	271	474		1,994	283	209	12,837
C08Z	38	38							81
D11Z	26	29							358
D13Z	21	21							2
D40Z	134	144				3		36	690
D67Z	21	41	4	29		12	12	9	637
E02C	27	43	1			3			100
F06A	30	240		115		662		18	1,247
F15Z	39	87		6		23		5	2,071
F42B	43	91	2						409
F74Z	72	110	23	11		48		16	1,516
G07B	22	60				9		5	74
G08Z	23	48	13			66		42	409
G09Z	26	38				7			70
G44C	168	168							70
G45B	179	179				5			84
G67B	64	142	6	55		44	18	9	1,858
H04B	27	47				25			228
I13C	29	118	3	78		208		12	213
I18Z	30	57	42	18		73		7	180
I23Z	17	25				11		2	7
I26Z	47	71				33		17	1,965
I69C	10	15		5		2			13,770
J11Z	91	194		79		127		26	193



Data are incomplete and you can't really tell what exactly they represent. So you turn to advanced analytics and predictive models to gain insight.

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Theorem 2

Incomplete data diminishes the efficacy of your predictive models, no matter how advanced your mathematics are.

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Predicted, Traditional Modeling

Traditional Regression prediction based on incomplete data

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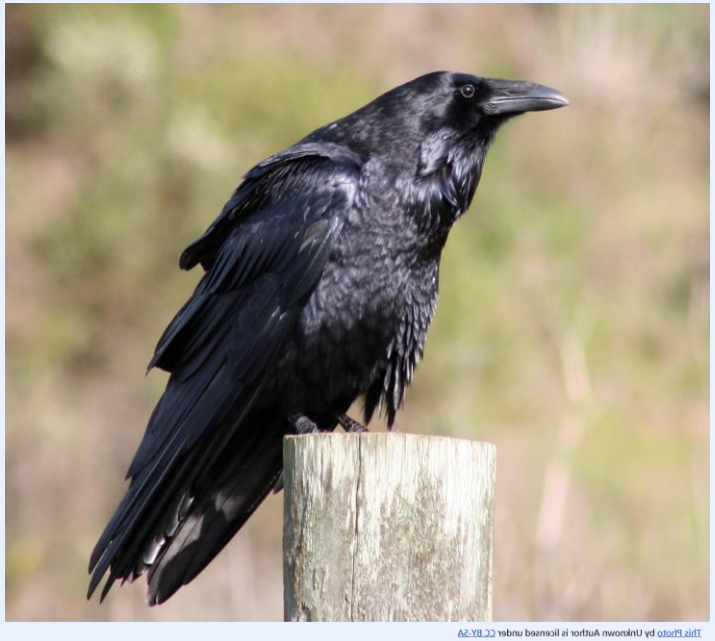
Predicted, AI/Machine Learning Based Modeling

Traditional Regression prediction based on incomplete data



AI/Machine Learning prediction based on incomplete data

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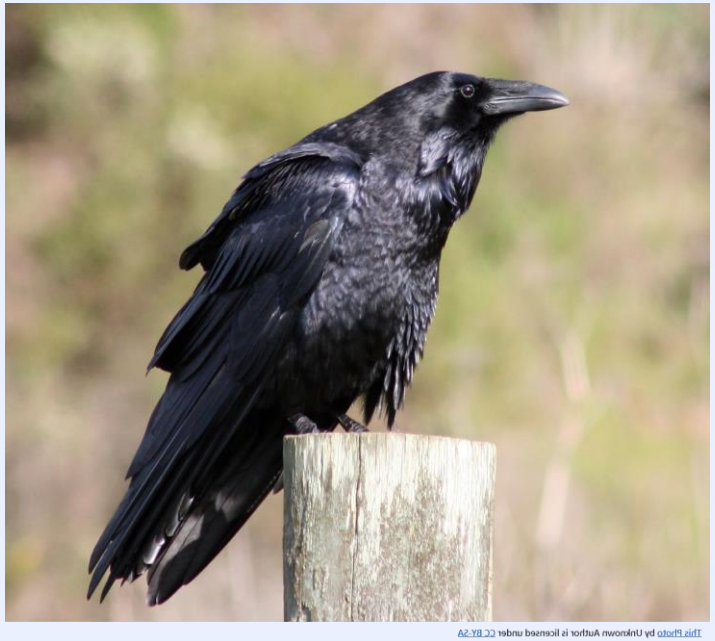
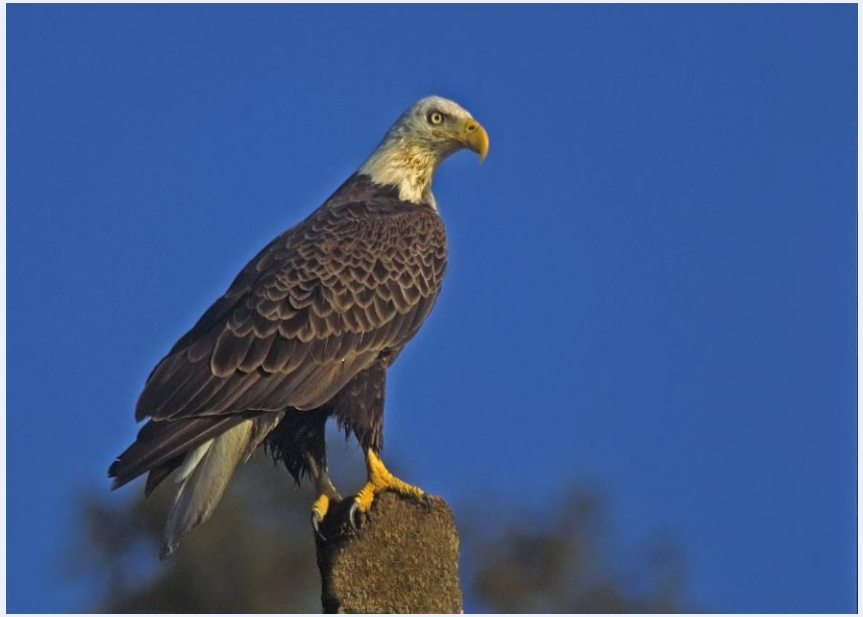
Predicted vs Actual

Traditional Regression prediction based on incomplete data



AI/Machine Learning prediction based on incomplete data



Actual based on complete data

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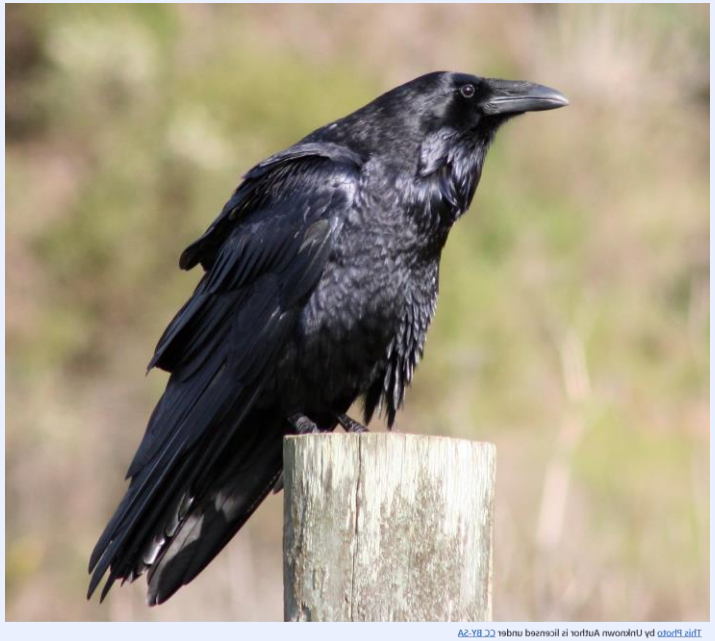
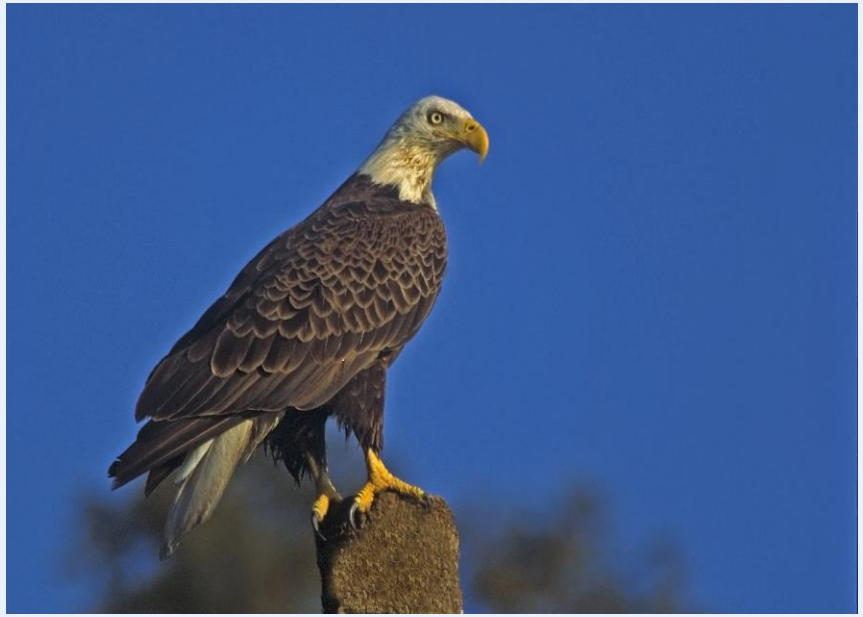
Predicted vs Actual

Traditional Regression prediction based on incomplete data



AI/Machine Learning prediction based on incomplete data



Actual based on complete data

When the data are incomplete, the insight obtained from the most advanced modeling techniques may still be inaccurate.

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Measuring & Improving Data Completeness

A Multi-Faceted Dashboard Reporting Approach

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Ensuring Data Completeness - Dashboard Reporting

- **Consider metrics at each and every step in the data flow**
  - This is only way to discover and correct data leakages where they occur
- **Couple trend metrics with current performance metrics**
- **Report key metrics at all actionable levels of aggregation**
  - Provider, clinic, provider group, region, etc.
- **Avoid "What does this mean to me?" reports**
  - Always have a point of reference or comparison
- **Calculate and use benchmarks**
  - Consider demographics, specialty, and panel condition profile when possible
- **Fancy graphics are nice - but not required.**

Dashboard Reporting: Recommended Content

Metric	Jan-18	Jul-18	Jan-19	Trend	Benchmark	Benchmark Comparison
Members	1,525	1,690	1,857	↑	1,465	★★★★★
EDI Inbound PMPY*	6.3	6.4	6.6	↑	6.1	★★★★
Paper Inbound PMPY	1.9	1.8	1.8	↔	1.9	★★★
Adjudicated PMPY	8.2	8.2	8.4	↔	8.0	★★★
Outbound Accepted PMPY	8.1	8.1	8.2	↔	8.0	★★★

* There may be multiple EDI Clearinghouses

Trend

↑ Up ($p<.05$)
↔ Flat
↓ Down ($p<.05$)

Benchmark Comparison

★★★★★ Excellent (+2 SD)
★★★★ Good (+1 SD)
★★★ Average
★★ Sub-Standard (-1 SD)
★ Poor (-2 SD)

Note: These figures are composite and do not reflect any individual, plan or organization

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Key Takeaways

- Providers and provider groups are moving more to full risk and value-based contracting
- Value based payments and full capitation diminish data completeness due to reduced provider incentives
- AI, Machine Learning and advanced analytics cannot overcome all data deficiencies and may mis-specify model results
- Health Care data flows are complex and intertwined leading to many points of potential leakage.
- Monitor data completeness at multiple points in your health care data flow in order to identify and remediate data leakages.

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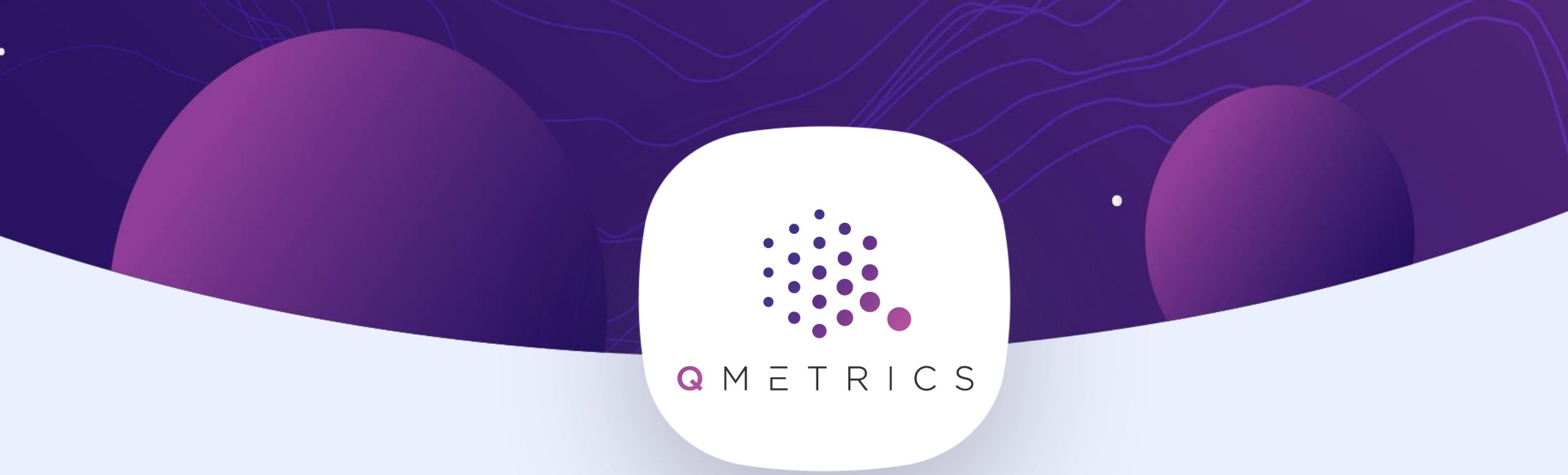

THANK YOU

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