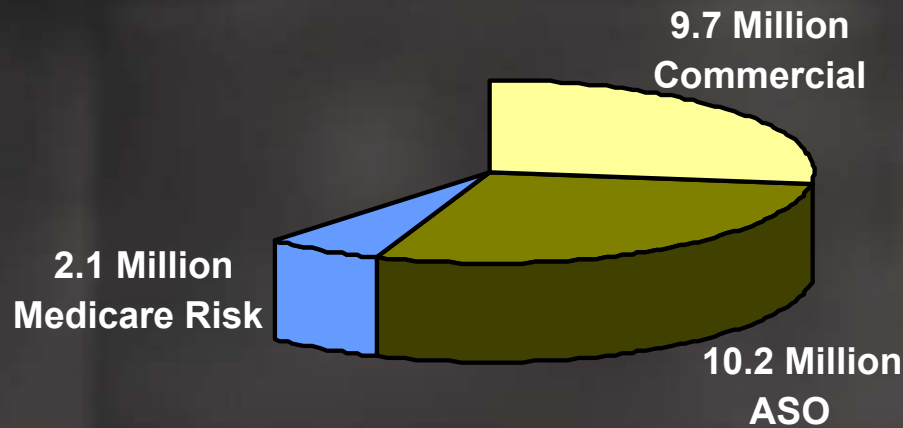




- Founded in 1981
- Nation's leading & largest provider of disease & care management services
- Serve Health Plans and their employer groups
- **AMHC programs have produced outcomes that bend the overall medical cost trend for health plans and their employer customers.**
- **Worked with Johns Hopkins to establish standardized measurement methodology**

Serving the Need

In the private sector there are 22 million people suffering from conditions served by existing AMHC programs¹



Our Latest Products: Cancer, CKD and ESRD will increase that number

¹ Includes Diabetes, CHF, CAD, COPD, Asthma, Impact and S1 according to AMHC Disease hierarchy

Our Value Proposition is Aligned with Stakeholders

“Outcomes Improvement”

Improve health of populations,

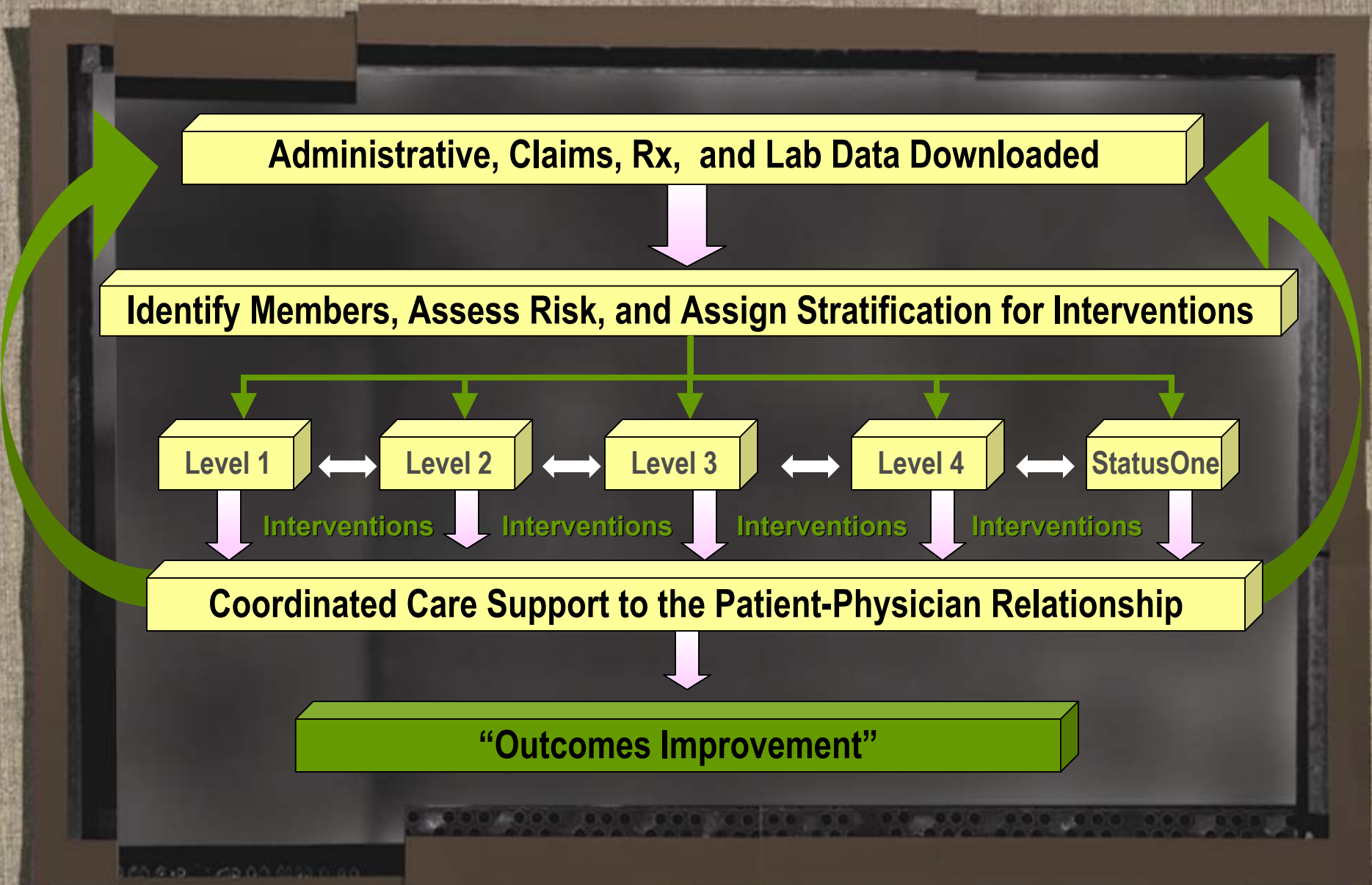
Enhance patient satisfaction & care experience,

Enhance physician satisfaction & delivery experience,

Reduce total health care cost, and

Improve work force productivity

Our Core Processes



How We Deliver

Supporting the Patient / Physician Relationship

We work proactively with members via telephone, print, web and face-to-face support to ensure their needs are met



We work with physicians to ensure data and other resources are leveraged at “point of care” to reduce variance

1.



We leverage our proprietary system, Platform, tools and analytics to create a scalable “outcomes centric” intervention model

2.



“Care Enhancement” call centers and home-based telework teams are staffed by empathetic and highly skilled nurses

3.



Field-based nurses work face to face with patients, physicians, and other providers to ensure best outcomes

AMHC Health Management Programs

ENDOCRINOLOGY

Diabetes
Chronic Kidney Disease
ESRD

CARDIAC

Heart Failure
CAD
Atrial Fibrillation

RESPIRATORY

COPD
Asthma

MUSCULOSKELETAL

Low Back Pain
Osteoarthritis
Fibromyalgia

GASTROINTESTINAL DISORDERS

Inflammatory Bowel Syndrome
Irritable Bowel Syndrome
Acid Related Stomach Disorders
Hepatitis C

GENITOURINARY

Urinary Incontinence

DERMATOLOGICAL

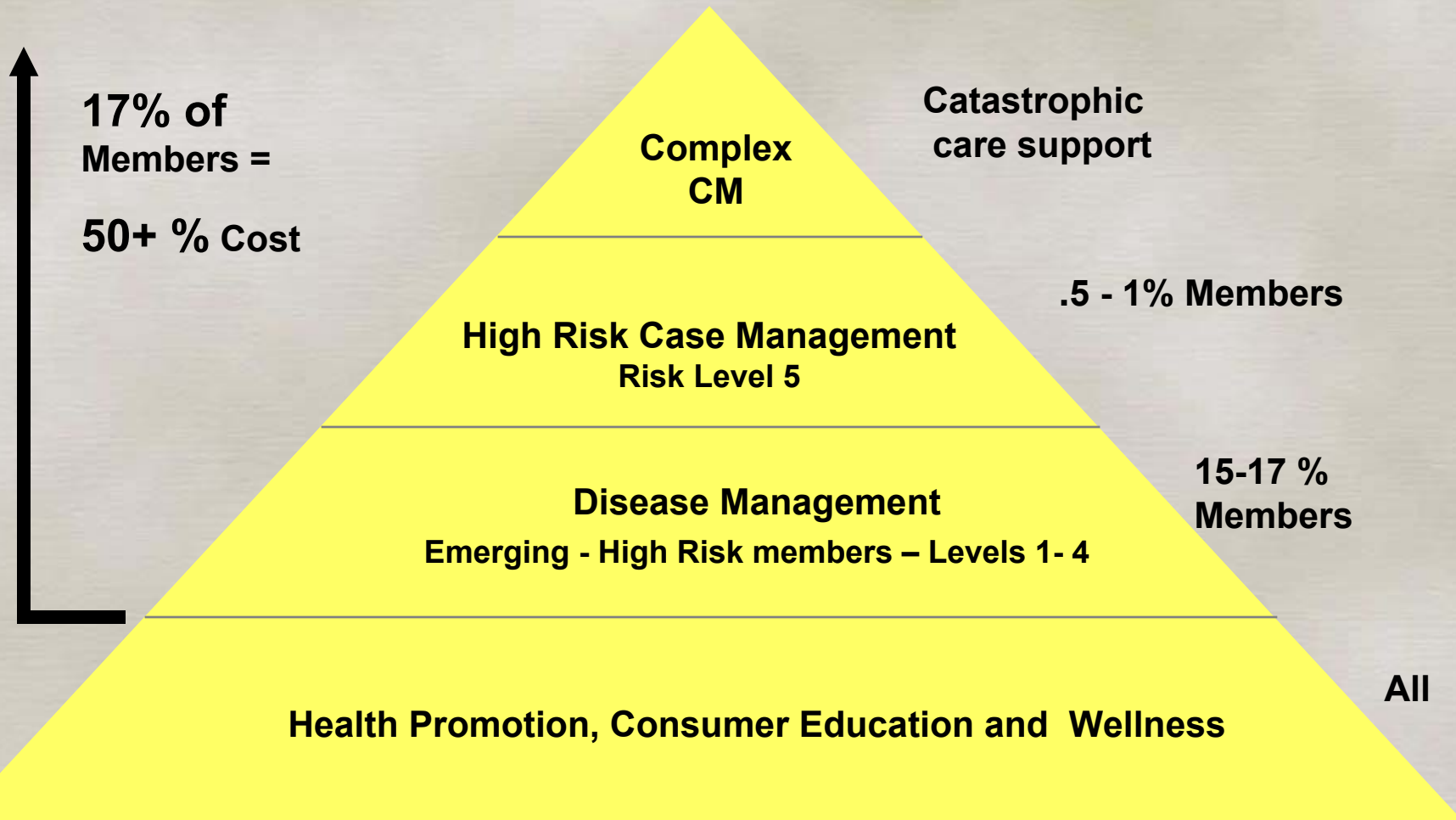
Decubitus Ulcer

CANCER (PILOT)

HIGH RISK POPULATION

“Disease Agnostic”

17% of Members drive 50% of Cost

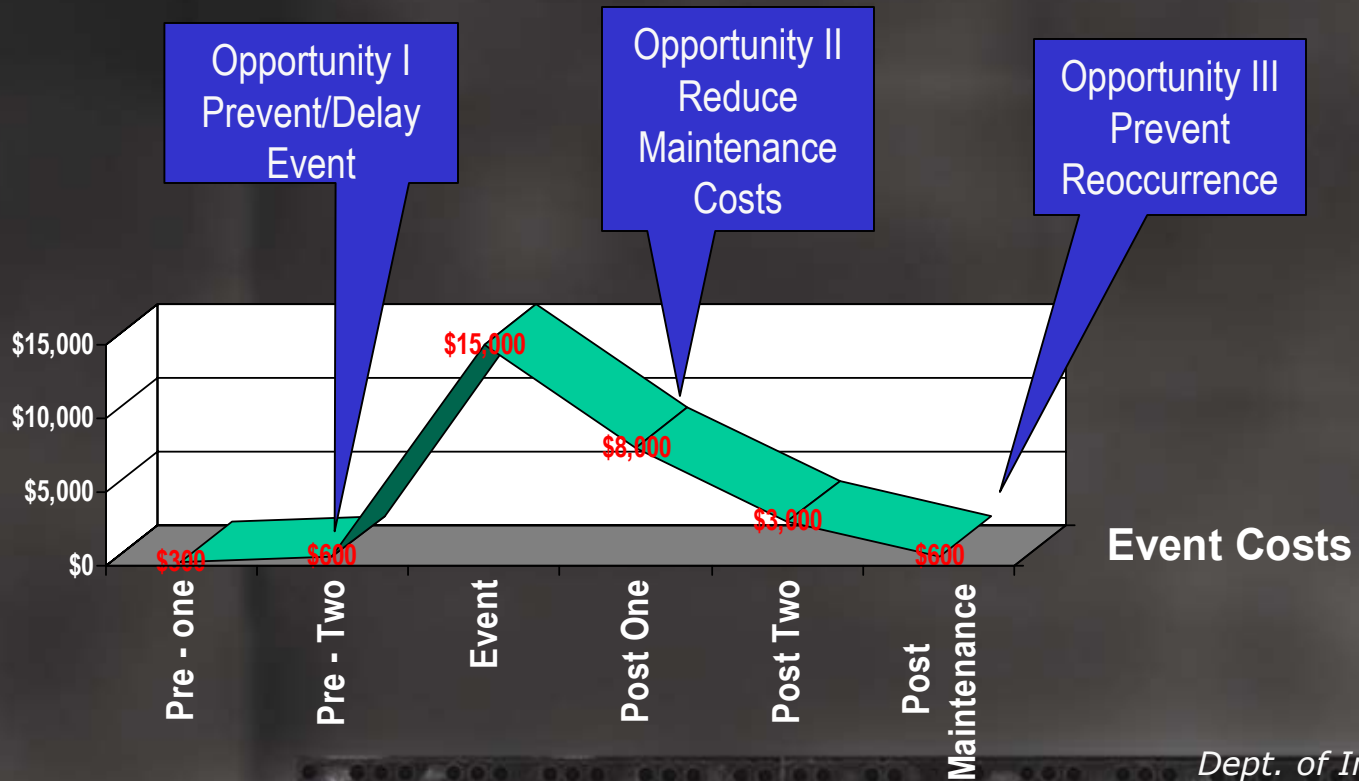


Predictive Modeling: Identifying Members at Risk

- Predictive Modeling refers to the process of finding rules (models) for predicting an event from prior patterns within a given time frame and applying these rules to current data in order to predict a future event.
- American Healthways applies artificial intelligence neural network predictive modeling techniques on a population of health plan members in order to accurately predict members who are highest risk for future high total medical cost.
- This predictive risk classification procedure, supplemented by the current health status of members, allows American Healthways to maximize its ability to allocate the right resources on the appropriate members at the optimum time.

We CAN Get To People Earlier

Critical Risk Management Information for Patients is Often Unavailable or Unknown Until 6-12 Months Following an Event



What are we predicting and why?

- We predict the likelihood of a member having total medical expenditures (TME) at a specified level of occurrence, usually somewhere between the top 5% - 30% of high-cost members for the coming year based on their derived predictive score.
- Future TME was chosen over future utilization because TME is a proxy for high utilization (i.e., TME and high utilization are highly correlated)

What is Predictive Modeling?

*In the context of AMHC, PM refers to the process of building a model (“model calibration”) on 24-months of claims history, using claims information in the first 12 months (“model year 1”) to predict *high* TME in the next 12 months (“model year 2”). Then, applying this model to predict the next (“unknown”) 12 months.*

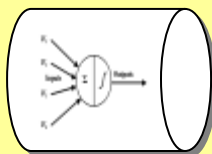
MODEL CALIBRATION

Model Year One Factors

CALIBRATE MODEL

Model Year Two High Cost

Using historical data, the Neural Network model has been created, or “calibrated”



Once “calibrated”, the model is available to make predictions about the future from claims data.

RISK PREDICTION

Model Year Two Factors

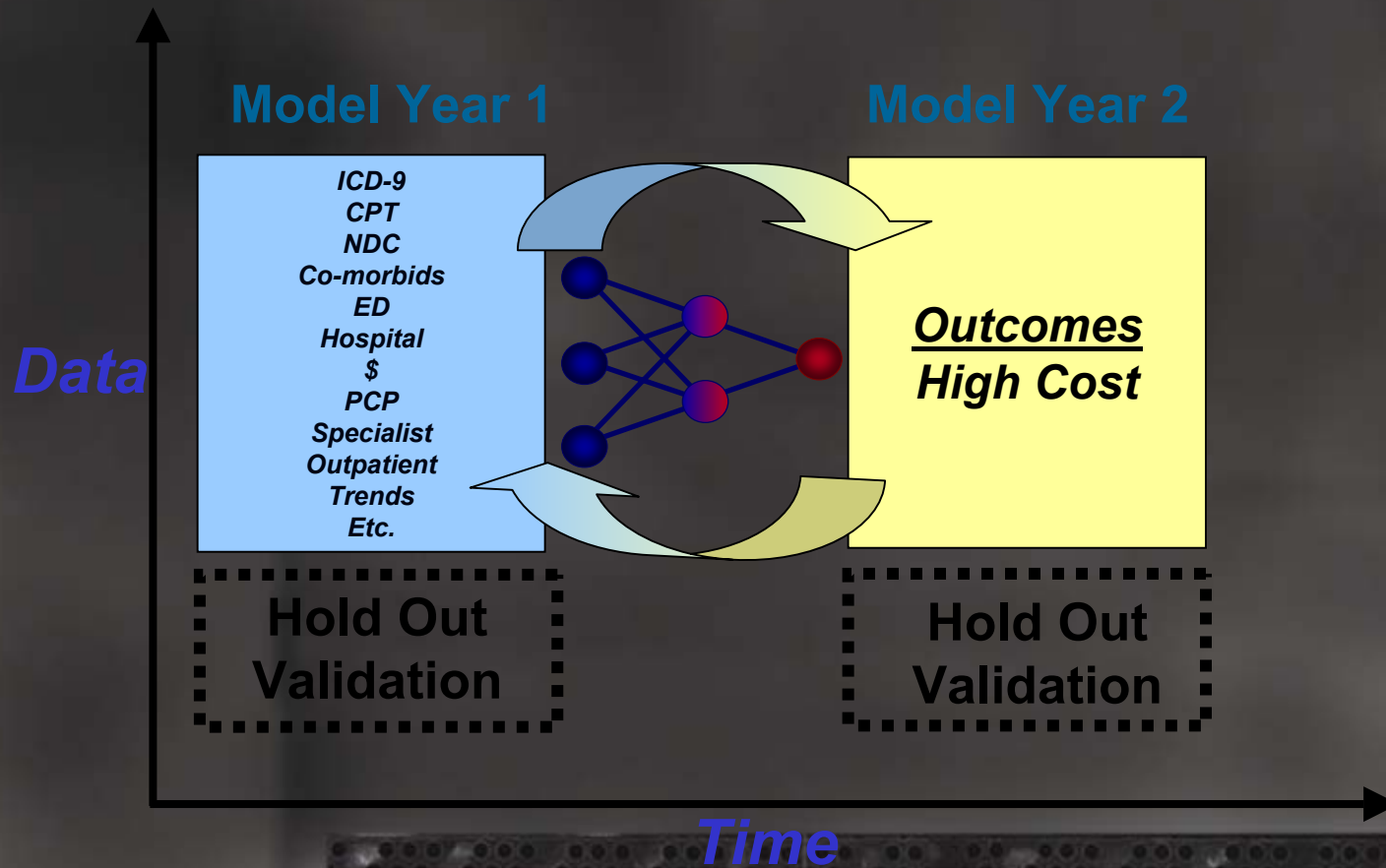
PREDICT

Future Year Three High Cost (Unknown)

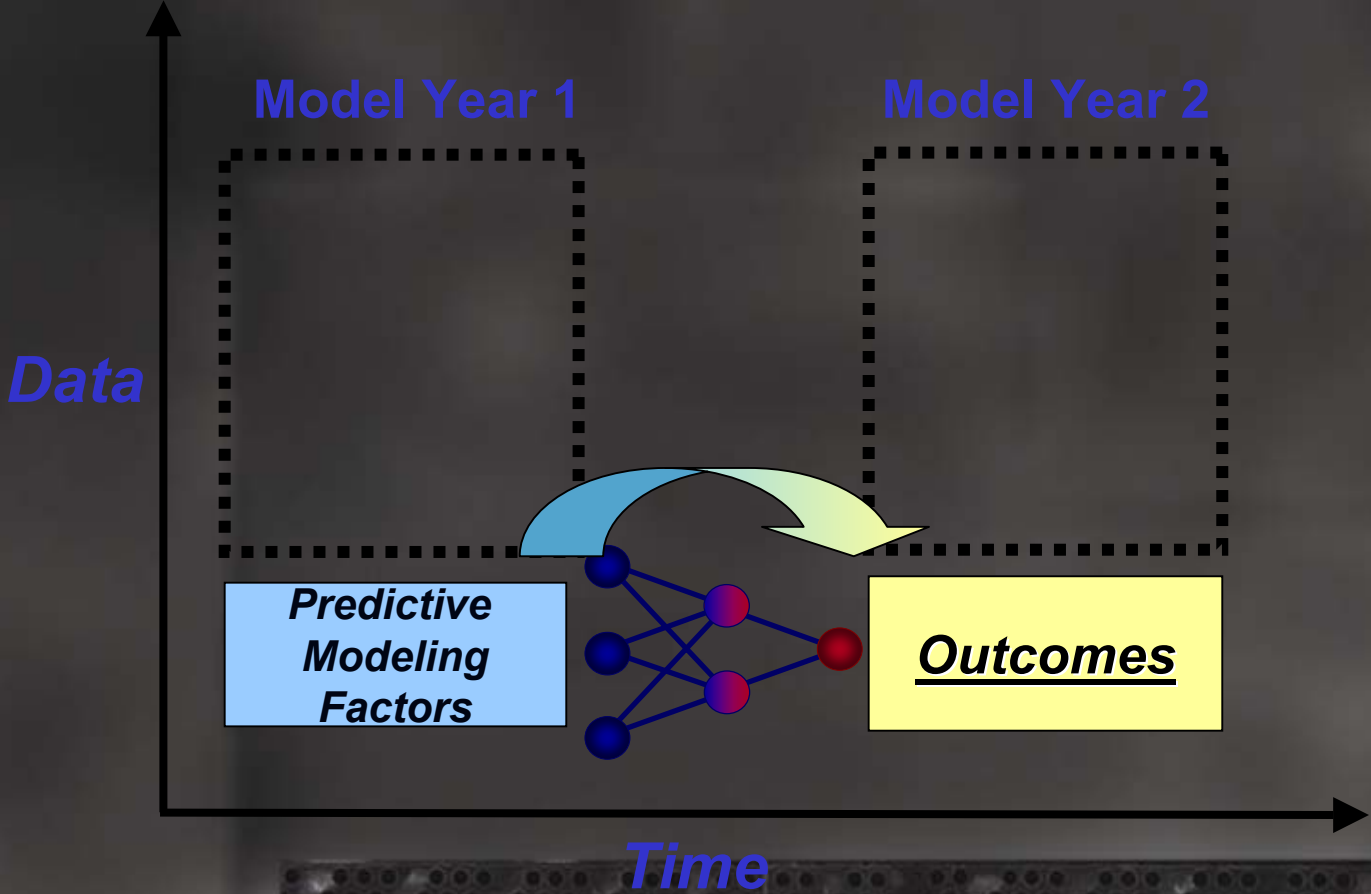
The Calibrated model is applied to Year Two factors to make a risk prediction for each member in the coming year.

Member	Risk Score
John Davis	0.999
Mary Smith	0.984
Bob Jones	0.889
Carol Evens	0.786

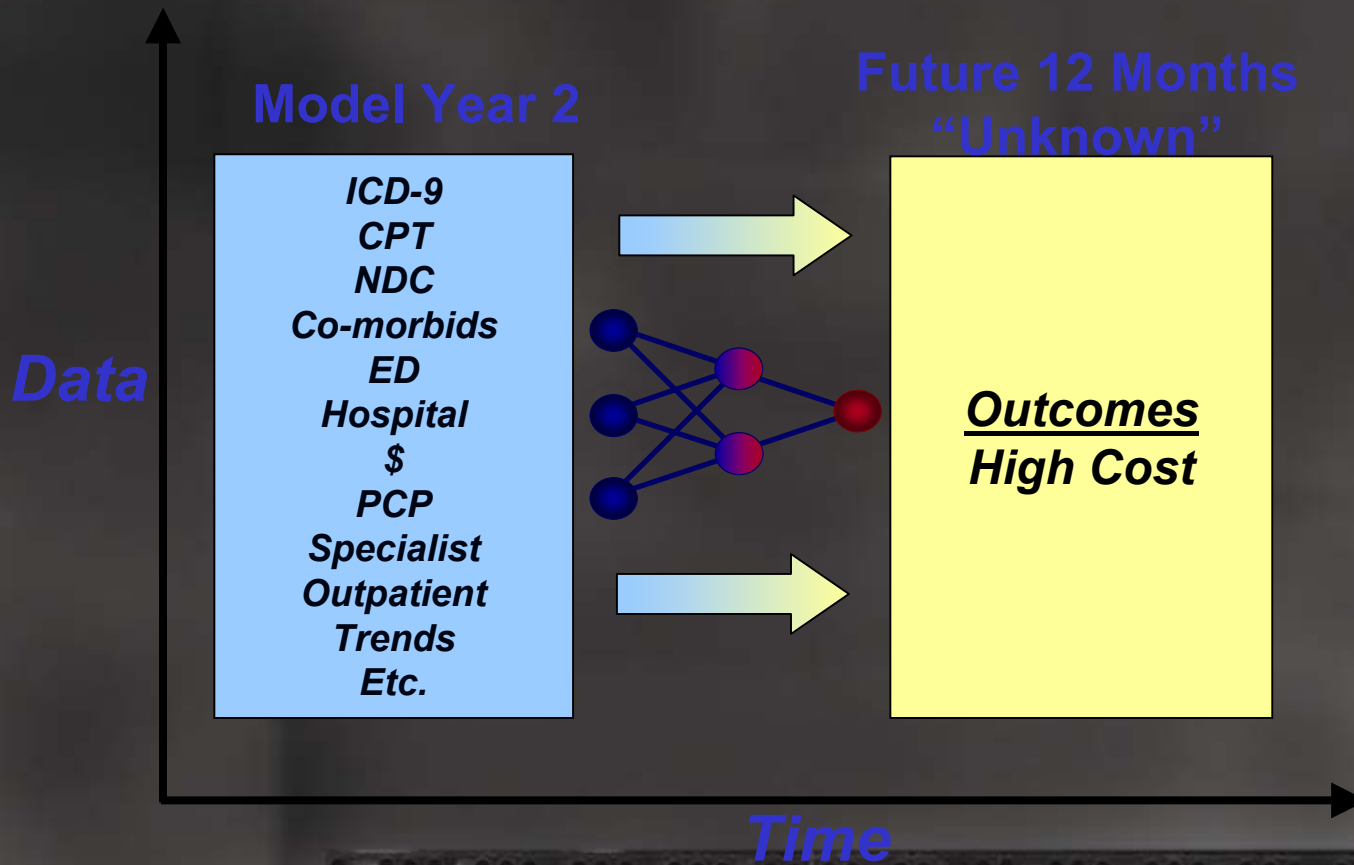
Data Mining/ Network Training



Data Mining/ Network Validation



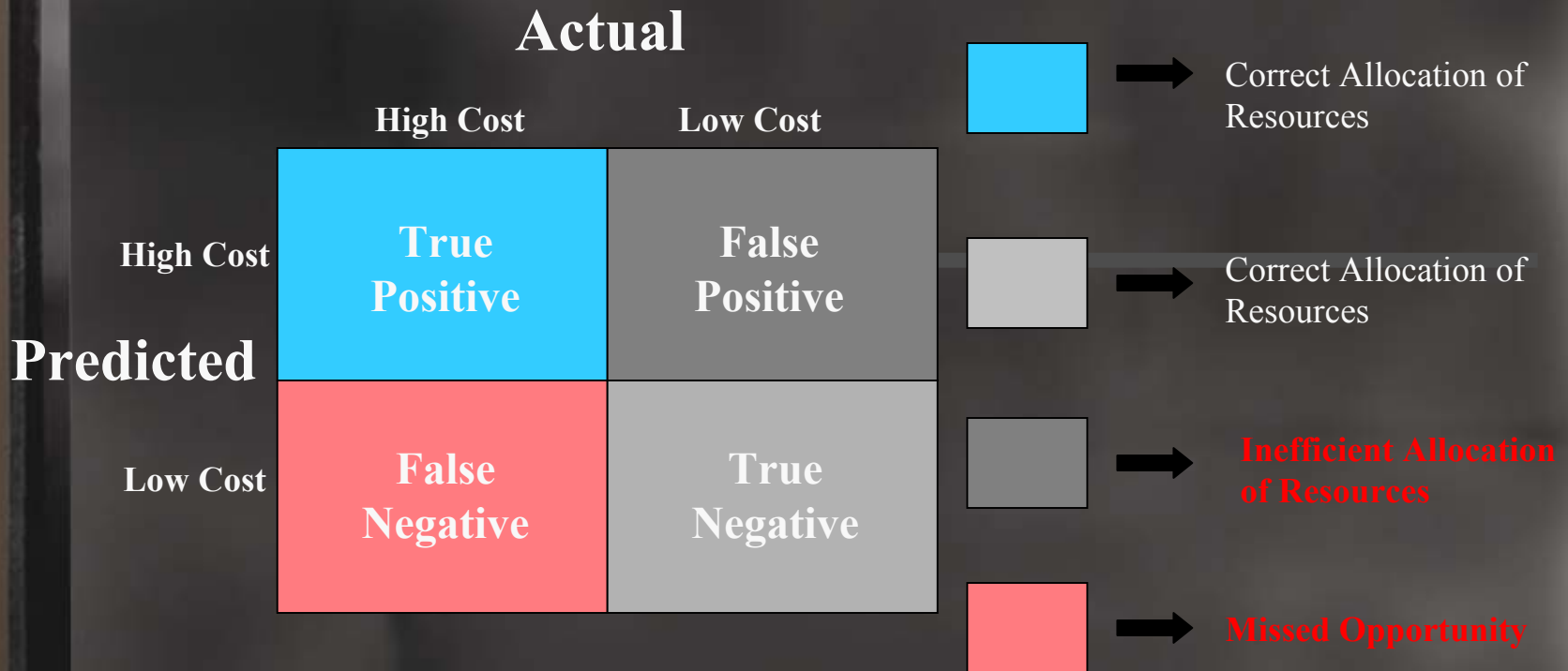
Data Mining/ Network Scoring



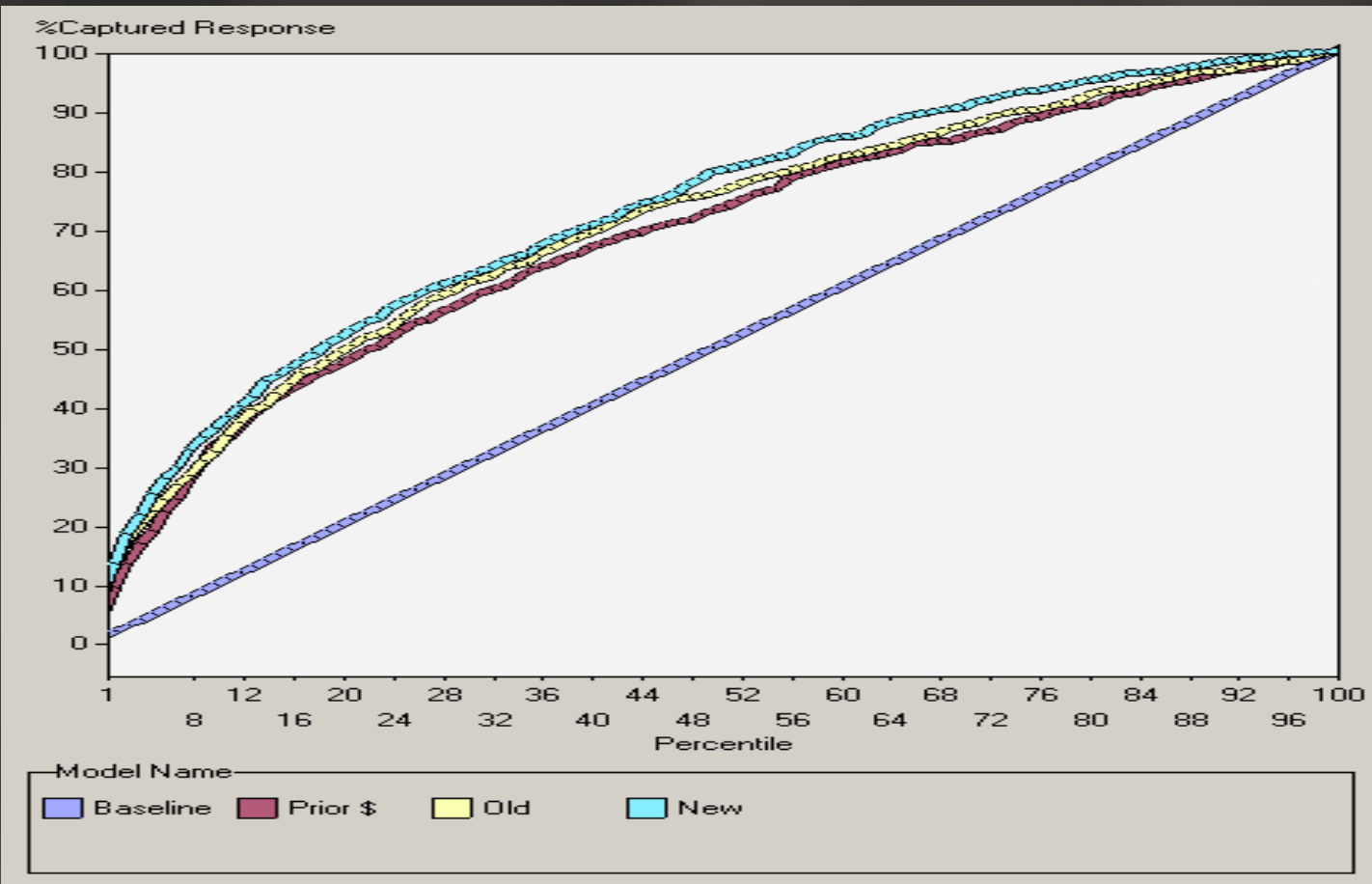
Some of Advantages of Neural Nets

1. Can identify patterns between dependent and independent variables in noisy data
2. Can create a specialized regression model or model adjustment for all patterns discovered during analysis
3. Relatively insensitive to data discontinuities, outliers, and multicollinearity
4. Well suited for identifying and handling complex, non-linear features in data
5. Since prior model specification is not required NN are particularly advantageous for exploratory research

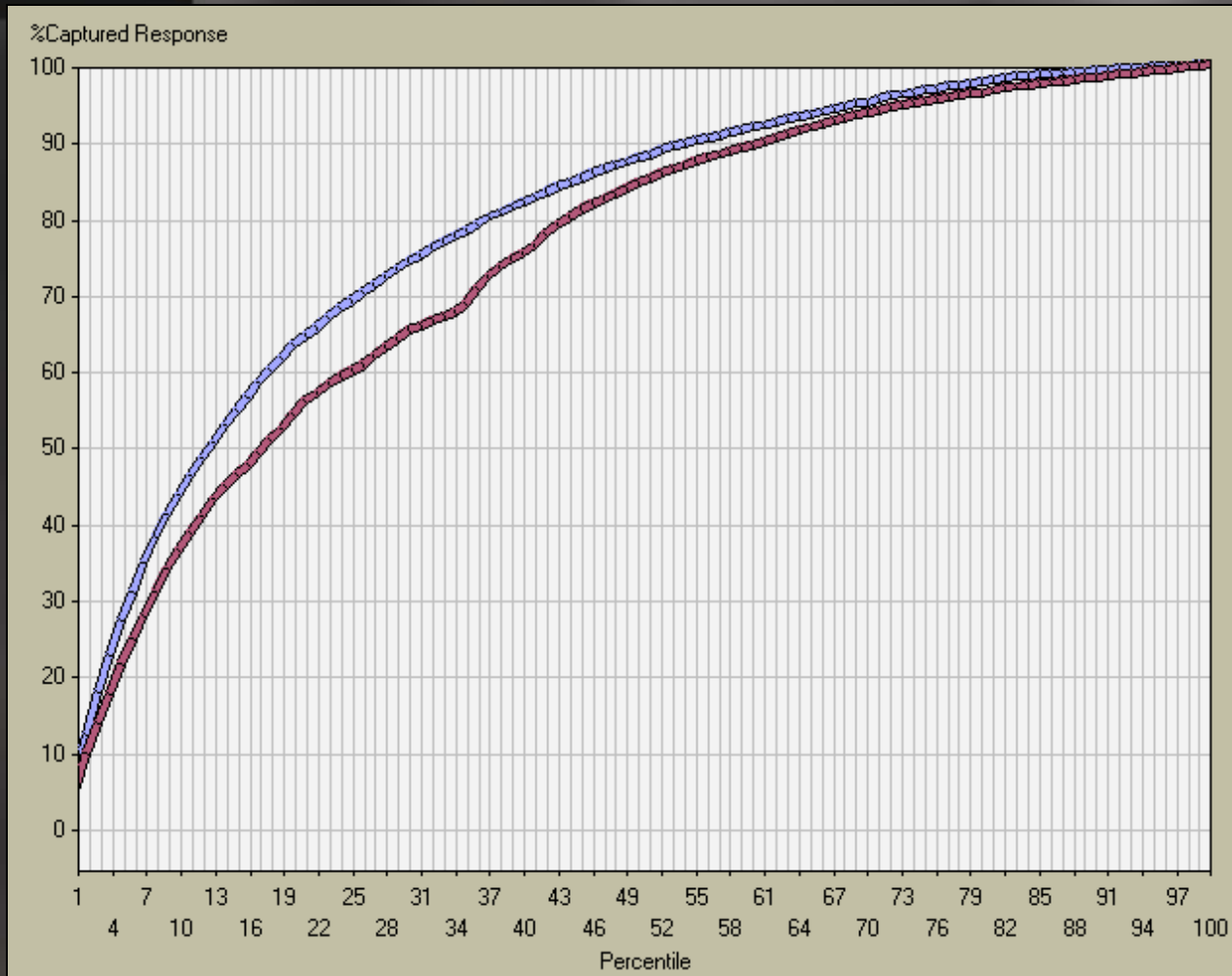
Resource Rationalization



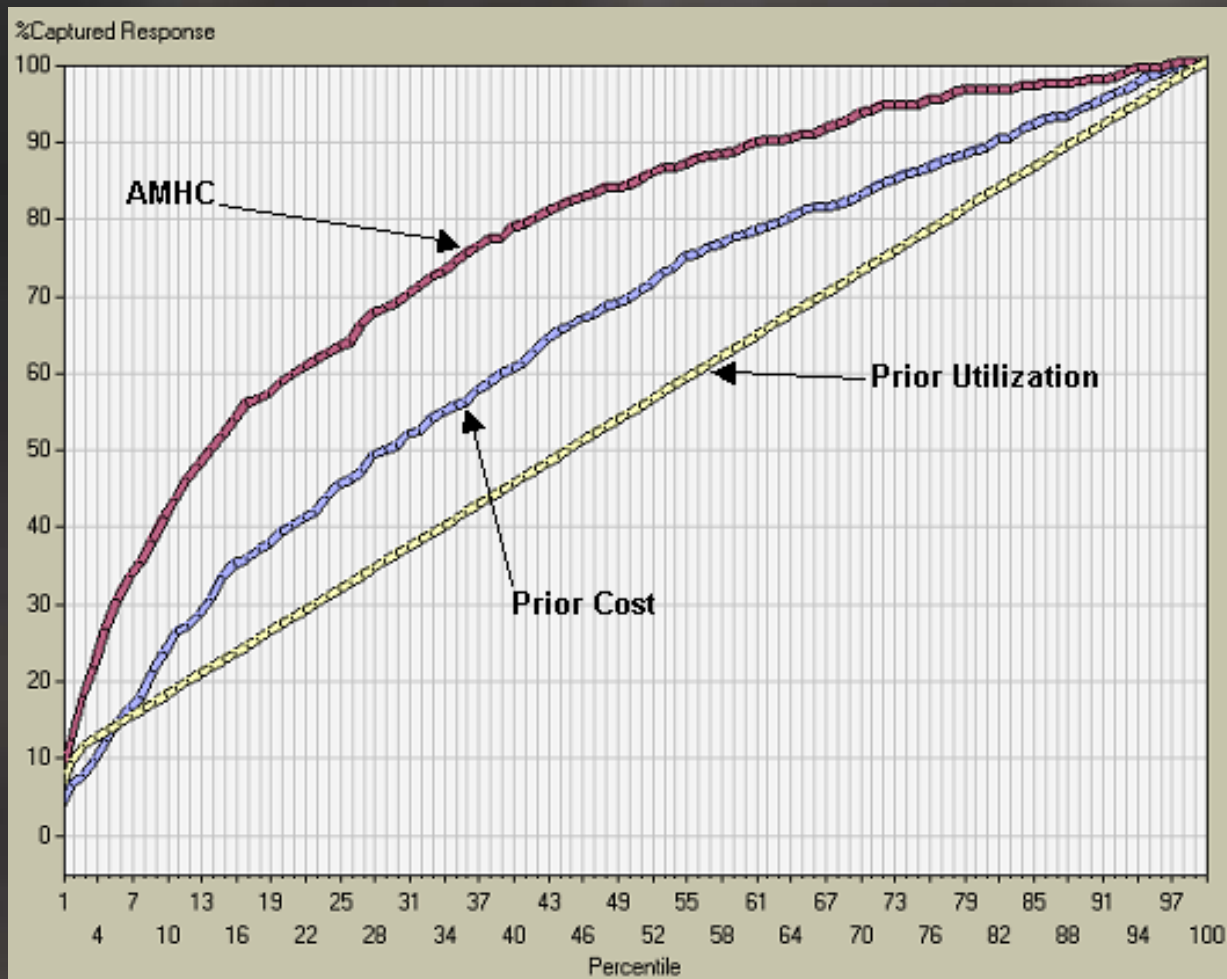
Sensitivity Curves



Sensitivity Curves



Sensitivity Curves



Current and Future PM R&D Projects

- New predictive factors for identifying high-cost members
- Specialized models using pharmacy data
- Mortality models for specific populations (e.g. Medicare)
- Models based on lab/test values
- Exploratory models to evaluate HRA data
- Evaluation of the potential contribution of Census Data

Predictive Modeling Summary

- Allows more effective targeting of true high cost members
- Outperforms traditional (e.g. prior cost) models
- Maximizes ability to allocate the right resources to the appropriate members of a population at the optimum time.
- AMHC has developed an optimized and highly efficient pipeline for leveraging our predictive modeling capabilities
- Ongoing R&D efforts continue to enhance our predictive capabilities