"Control Cost and Maintain Choice with Risk Adjustment"

National Predictive Modeling Summit

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Predictive Health Cost Solutions, LLC

'The Perfect Score'

- Predictive Modeling Risk Assessment Services
  - Timely
  - Efficient
  - Cost effective

- Consulting
  - Evaluation of Health Plan Costs
  - Premium Adjustment
  - Identification of Potential High Cost Members

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Agenda

- Why Risk Adjustment?
  - Lack of Choice in Health Insurance Marketplace
  - Adverse Selection is the Obstacle
    - Financial Effects
  - How Choice Should Be Managed
    - Pricing at Group Risk Level
      - Fixed Dollar Employer Contribution
    - Payments to Carriers Enrolled Risk Level
      - Unlocks Hidden Costs
  - Risk Adjustment is the Enabler

Employer Based Health Insurance Marketplace

Insurance Carrier

- Grow market share
- Revenue commensurate with risk

Competition for Employer, not Employee

Employer

- Provide good coverage
- Keep costs down
- Satisfy employees

Employees

- Meet health and medical needs
  - Medical conditions
  - Delivery model preference

Desired Employer Solution: Network Access

Insurer #1

Insurer #2

Insurer #3

Employer

Fixed Subsidy

Jim

Bob

Sara

Rick

Employees

Desired Employer Situation: Cost Management

Premium— ***Set at Group Level***

$250

Insurer #1

$270

Insurer #2

$290

Insurer #3

EE Contribution— ***Based on Premium***

$10

$30

$50

$240

Fixed Subsidy

Employer

Jim

Bob

Sara

Rick

Employees

Desired Employer Situation: Enrollment

Premium—
Set at Group Level

$250

Insurer #1

$270

Insurer #2

$290

Insurer #3

EE Contribution—
Based on Premium

$10

$30

$50

$240

Fixed
Subsidy

Employer

Jim

Bob

Sara

Rick

Employees

Desired Employer Situation: Unstable Platform

Premium—
Set at Group Level

$250 **$270** **$290**



Insurer #1 **Insurer #2** **Insurer #3**

EE Contribution—
Based on Premium

$10 **$30** **$50**

Adverse Selection!

$240
Fixed Subsidy

Employer


Jim
--Healthy


Bob
--Hypertension


Sara
--Maternity


Rick
--Diabetes
--CHF
--Arrhythmia

Employees

Defining Adverse Selection

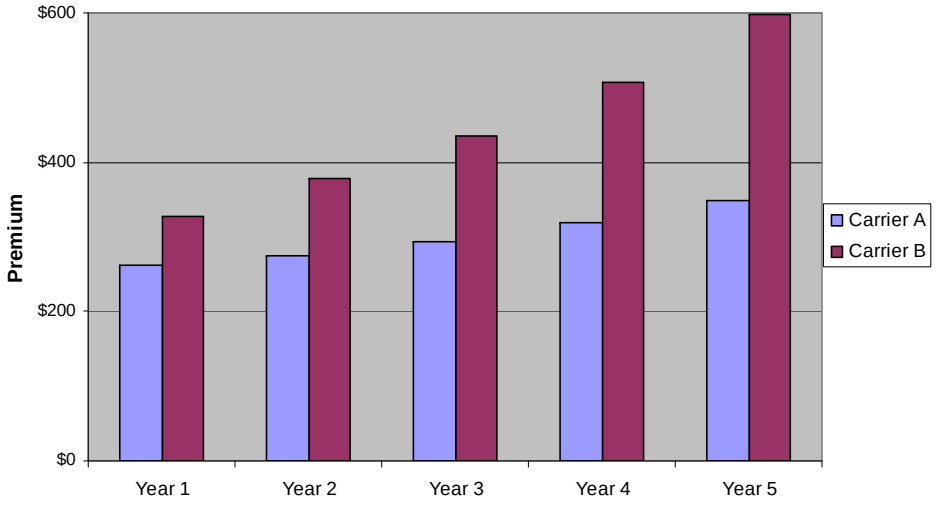
- A carrier enrolling a risk profile worse than anticipated

- Caused by…
  - Individual choice within group health insurance
    - Rate determined at a group risk level
    - Enrollment decision is at individual level

Impact of Adverse Selection

- Premium Separation and Death Spiral
  - Harvard Employee Benefits Case Study--1995
    - D. Cutler, and S. Reber (1998). “Paying for health insurance: the trade-off between competition and adverse selection,” Quarterly Journal of Economics 113(2): 443-466.

- Leads to No Choice!



Addressing Adverse Selection

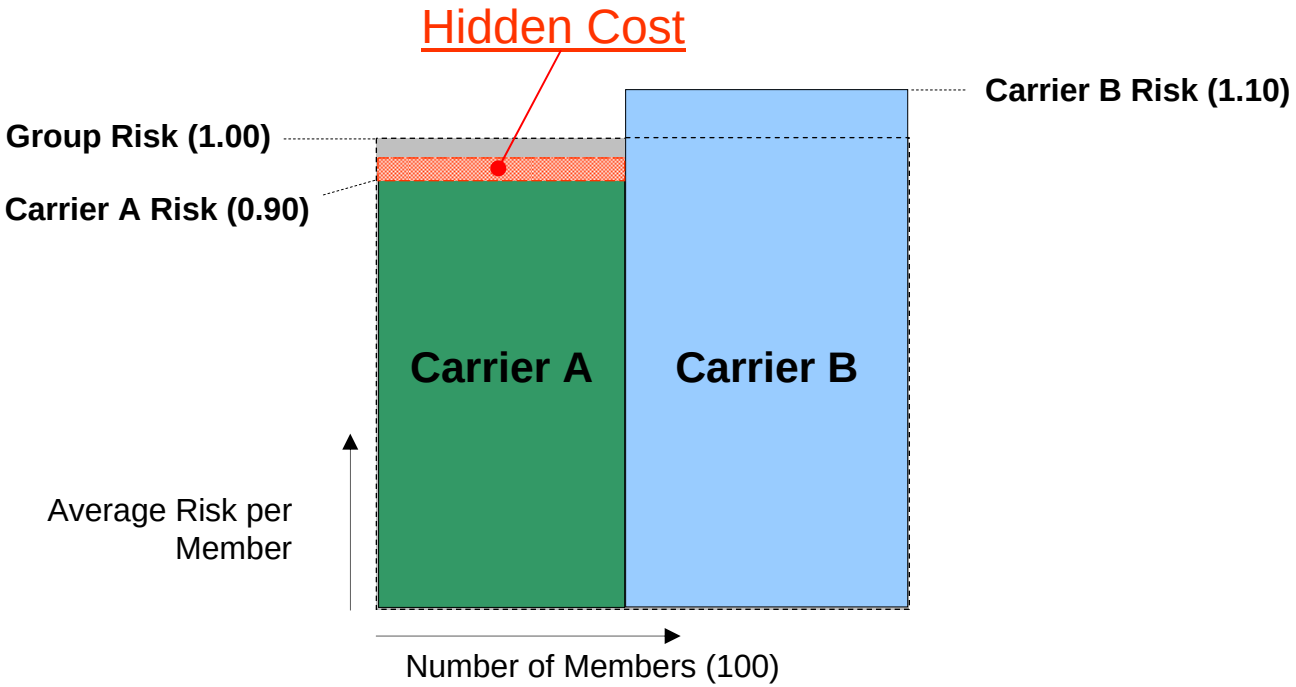
- No Choice
  - Not optimal
    - Costly
- Front End Methods (prevention)
  - Standardizing Plan Designs
  - Minimize Employee Cost Differences (% of premium employer contribution)
    - Costly
- Back End Methods (correcting the effects)
  - Whole Group Pricing with Fixed Dollar Employer Contribution
  - Enabled by Risk-Adjustment
    - Optimal

Factors That Affect Premium

- Plan Design
  - Co-pays, deductibles
- Plan Efficiency
  - Network contracts, utilization controls
- Risk Profile Enrolled
  - Chronically ill or healthy?

Offering Choice of Carriers w/o Risk Adjustment Creates Hidden Costs

- Adverse Selection is the Cause

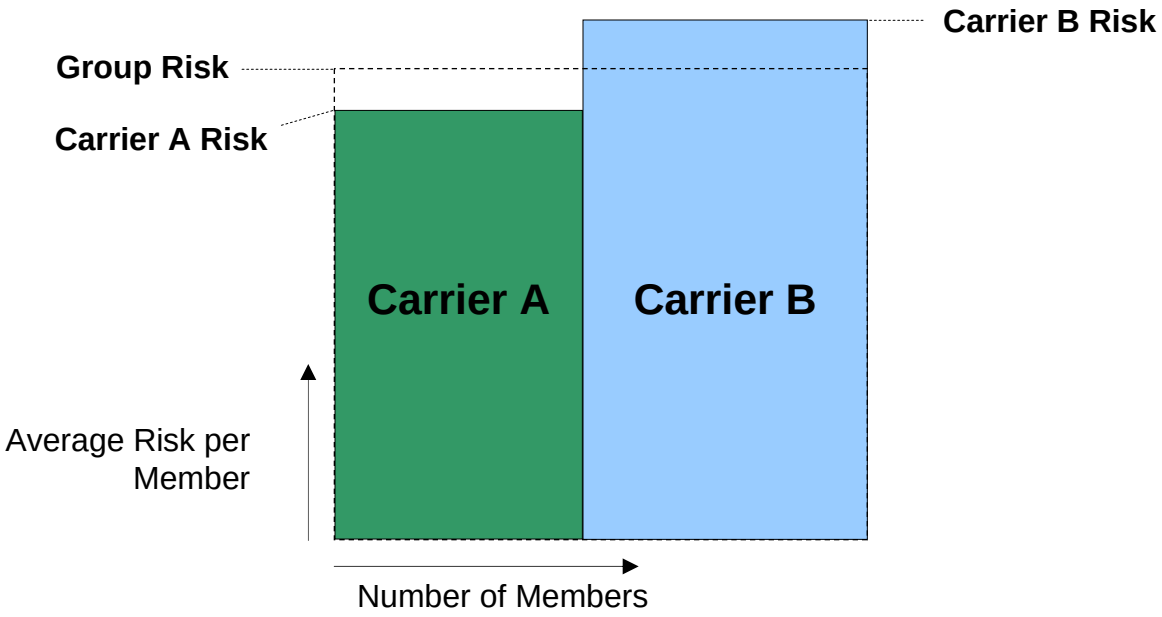


Adverse selection makes Carrier A very profitable and Carrier B unprofitable

- Carrier B has big renewal increase to make up for loss
- Carrier A should have little to no increase, but increases more than it needs to preserve profits above target

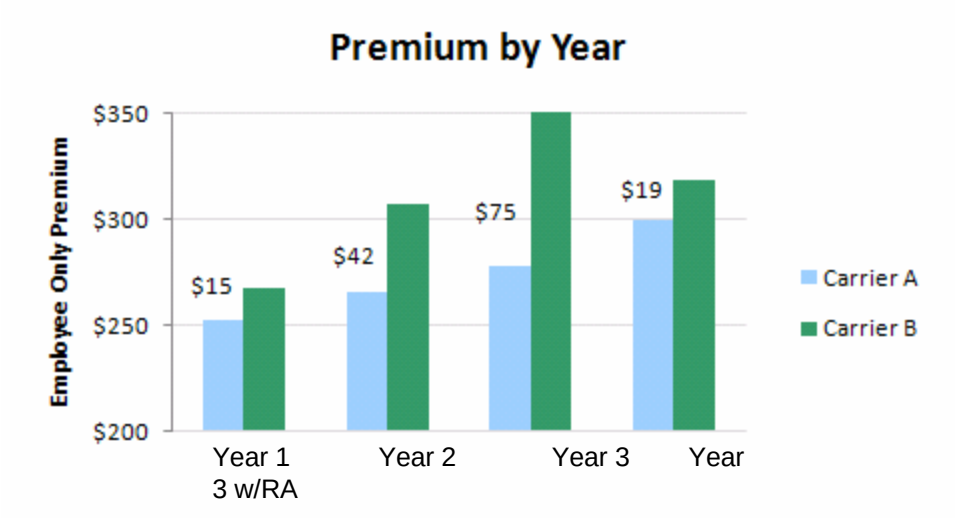
Risk Adjustment Unlocks Hidden Costs

- Customers see pricing at group risk level
- Carriers paid for risk enrolled
- Risk adjustment mechanism is key



Case Study

- Professional Employee Organization
  - Offers choice of carriers to its contracted employees
  - Significant premium separation without risk adjustment
  - Risk adjustment brings premium back in alignment



	Year 1	Year 2	Year 3	Year 3 w/ RA
Carrier A	$252	$265	$278	$300
Carrier B	$267	$307	$353	$319
$ difference	**$15**	**$42**	**$75**	**$19**

	Carrier A	Carrier B	Group
Risk Score	0.903	1.109	1.000
Unadjusted	$2,656,896	$3,016,080	$5,672,976
Adjusted	$2,862,364	$2,722,085	$5,584,449
		Monthly Savings	**$88,527**

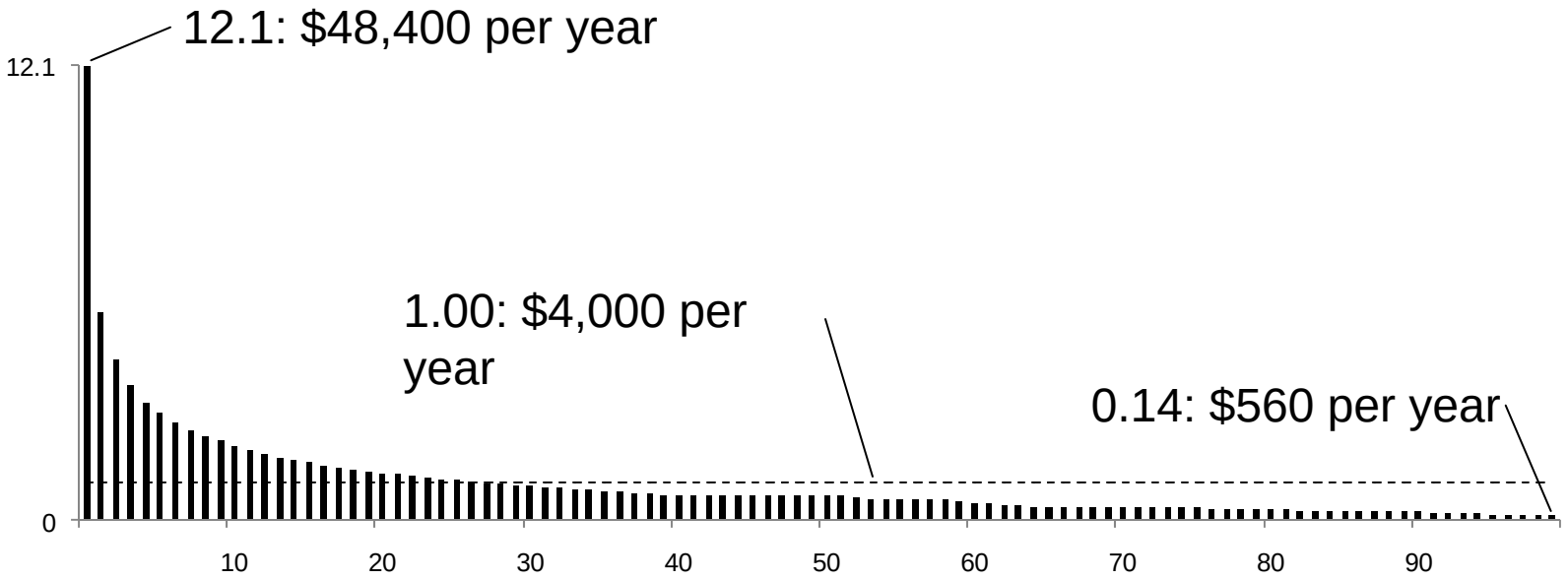
What is Health Insurance?

- One part insurance, and two parts something else…
- Insurance
  - A financial vehicle that spread the risk of financial calamity due to rare, unpredictable events among a large pool of members
- The Something Else
  - Service Plan
  - Social Program

Average Cost Payment System

Example: 250,000 member group

- Prospective Risk Scores, 1% cohorts, ordered left to right, highest to lowest



Highest score: 71.8
Lowest score: 0.099

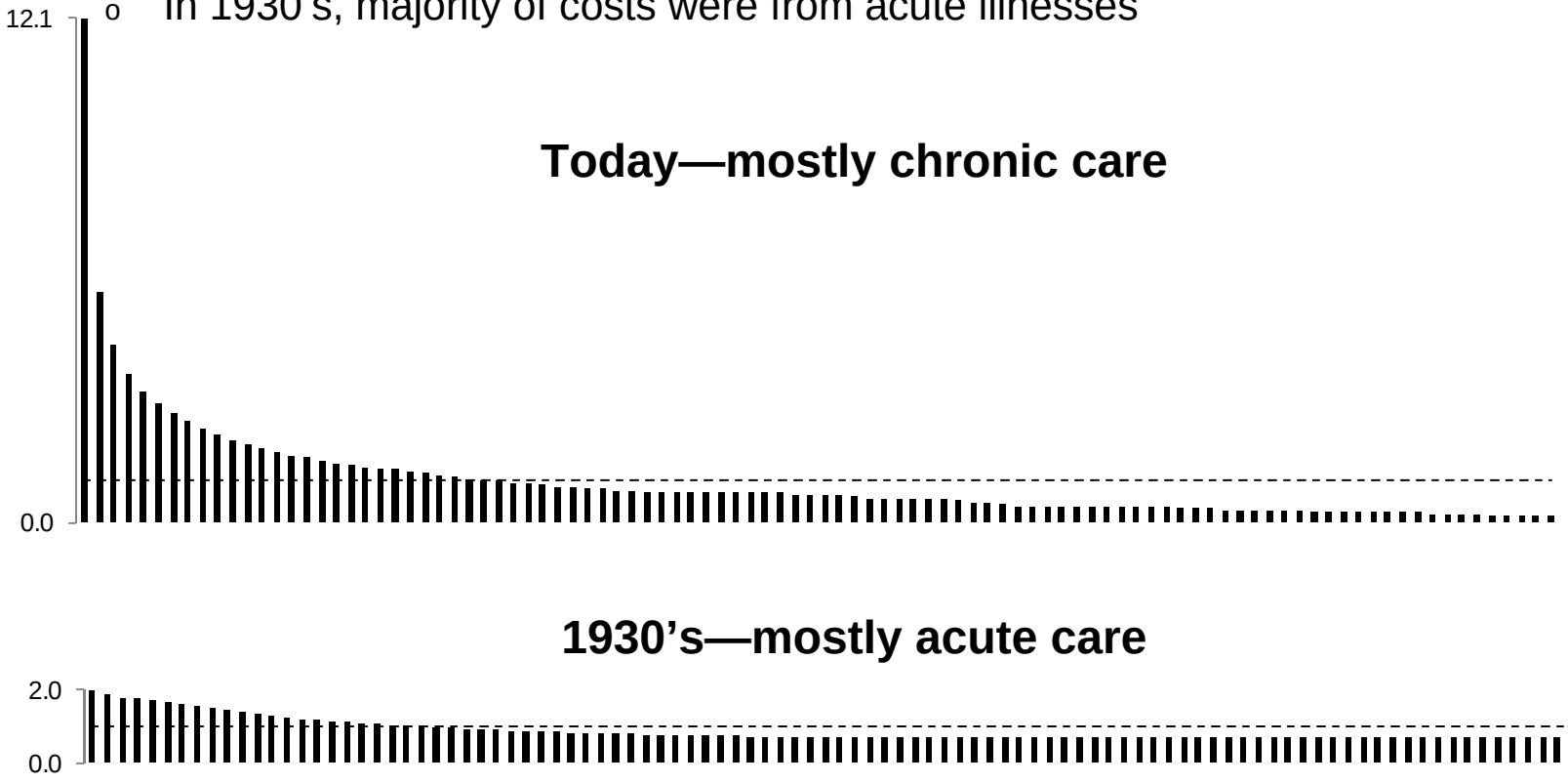
725 X

Huge Variation in Expected Costs!!!

Variation in Costs Now vs. 1930's

Little Variation in Costs in 1930's compared to today

- Today, majority of costs are from chronic illnesses
- In 1930's, majority of costs were from acute illnesses



Health Plan Advertising

Future Health Plan Advertising?

What is Risk Adjustment?

- Risk Assessment
  - Objective way to assess risk
    - Methodology
      - Demographics (not precise)
      - Predictive Modeling (much better)
    - Member Level
    - Pre-enrollment (prospective)

- Premium Reallocation
  - Algorithm by which risk assessment scores are used to adjust premium

Risk Assessment

- Demographics
  - Look up risk score for age and gender for each member in Demographic Factor table

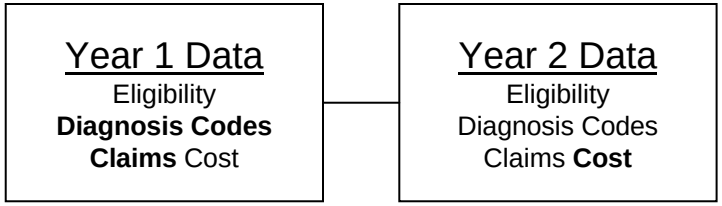
Name	Age	Gender	Demo
Jim	32	Male	0.581
Bob	37	Male	0.719
Sara	29	Female	1.234
Rick	46	Male	0.951
		average	**0.871**

Demographic Factors

Age	Male	Female
<1	1.365	1.365
1-4	0.683	0.683
5-9	0.504	0.504
10-14	0.504	0.504
15-17	0.494	0.494
18-19	0.494	0.494
20-24	0.470	0.926
25-29	0.588	1.234
30-34	0.581	1.329
35-39	0.719	1.154
40-44	0.800	1.189
45-49	0.951	1.334
50-54	1.282	1.456
55-59	1.668	1.857
60-64	2.473	2.348
65+	2.500	2.393

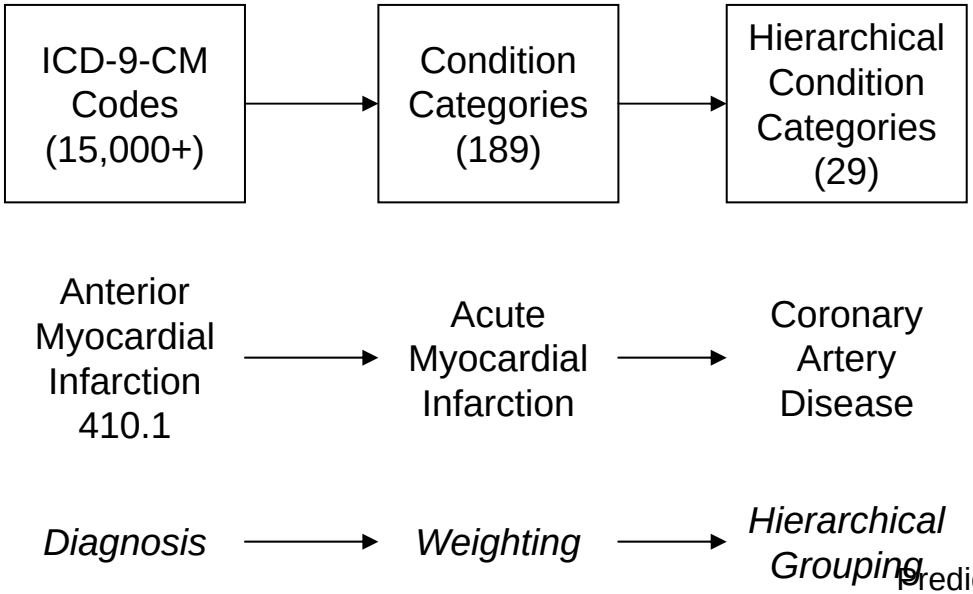
Risk Assessment

- Predictive Modeling
  - Using clinical information to predict future costs
  - Development started in 1980's
  - Large data sets—two years
  - Through statistical regression techniques, associate given diagnoses in year one with costs in year 2—prospective risk scores



Risk Assessment: Predictive Modeling

- Diagnosis
  - Use ICD-9-CM codes from claims data to predict future costs
  - Each ICD-9-CM code maps into a unique condition category
  - Each condition category has its own cost weight
  - Hierarchies imposed



Example of Diagnosis-Based Risk Assessment

- Diagnosis Risk Assessment

Base Premium
$250.00

Jim

	Condition	Weight	Counted Weight	Monthly Premium
Demo	32 year old Male	0.353	0.353	
			0.353	**$88.25**

Bob

	Condition	Weight	Counted Weight	
Demo	37 year old Male	0.477	0.477	
	Hypertension	0.354	0.354	
	Hypercholesterolemia	0.126	0.126	
			0.957	**$239.25**

Sara

	Condition	Weight	Counted Weight	
Demo	29 year old Female	0.807	0.807	
			0.807	**$201.75**

Rick

	Condition	Weight	Counted Weight	
Demo	46 year old Male	0.590	0.590	
CC16	Diabetes with Neurologic or Other Specified Manifestation	0.652	0.652	
CC19	Diabetes without Complication	0.200		
CC80	Congestive Heart Failure	0.817	0.817	
CC83	Angina Pectoris/Old Myocardial Infarction	0.435		
CC92	Specified Heart Arrhythmias	0.766	0.766	
INT1	DM*CHF	0.453	0.453	
			3.278	**$819.50**

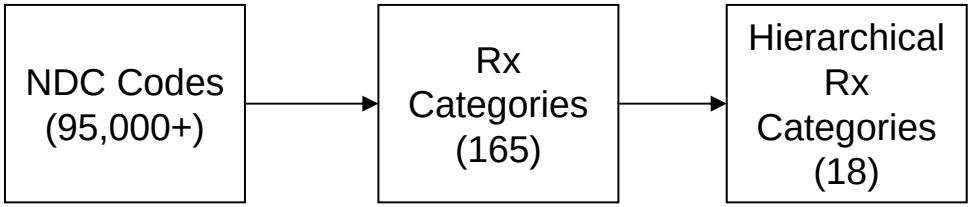
*Cost weights shown are for demonstrative purposes only

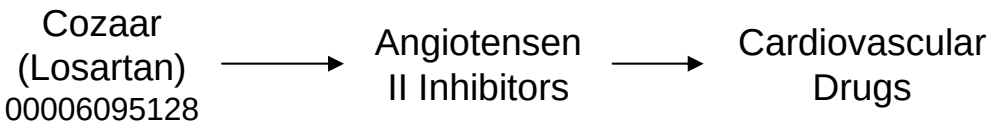
Avg Risk Score
1.349

Avg Premium
$337.19

Risk Assessment: Predictive Modeling

- Pharmacy
  - Use NDC codes from claims data to predict future costs
  - Each NDC code maps into a unique Rx category
  - Each Rx category has its own cost weight
  - Hierarchies imposed





Example of Pharmacy-Based Risk Assessment

- Pharmacy Risk Assessment

Jim

	Condition	Weight	Counted Weight
Demo	32 year old Male	0.347	0.347
			0.347

Bob

	Condition	Weight	Counted Weight
Demo	37 year old Male	0.306	0.306
	HCTZ (Hypertension)	0.381	0.381
	Lipitor (Hypercholesterolemia)	0.252	0.252
			0.939

Sara

	Condition	Weight	Counted Weight
Demo	29 year old Female	0.716	0.716
			0.716

Rick

	Condition	Weight	Counted Weight
Demo	46 year old Male	0.581	0.581
Rx123	Insulin (Diabetes)	0.962	0.962
Rx124	Oral Hypoglycemic (Diabetes)	0.483	
Rx42	Angiotension II Inhibitors (Congestive Heart Failure)	1.183	1.183
Rx46	Antiarrythmic (Specified Arrythmia)	0.693	
Rx48	Beta-Blocker (Angina Pectoris/Old Myocardial Infarction)	0.173	
INT1	Interaction	0.456	0.456
			3.182

*Cost weights shown are for demonstrative purposes only

Avg Risk Score
1.296

Predictive Power of Models

- Ideal risk adjuster should predict at least 20%
  - Joe Newhouse, Pricing the Priceless
  - If a risk adjuster could predict 100%, then there would be no need for insurance
  - If a risk adjuster could not predict anything, there would be no adverse selection

Model	R^2(complete data)	R^2(no run out)	Remark
Demographics	3-4%		Poor predictive power
Diagnosis Model	22.3%	16.8%	Has been improving with better data availability
Pharmacy Model	23.8%	21.1%	Clean complete timely data
Medicare Diagnosis Model	9-10%		Data requirements drastically reduced to get health plans to play

* Society of Actuaries: A Comparative Analysis of Claims Based Tools for Health Risk Assessment, April 2007

Example of Premium Reallocation

Pharmacy Risk Score Premium Adjustment



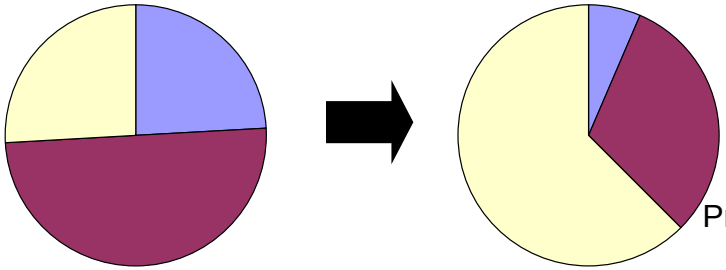

Jim	0.347	0.347	Insurer #1
Bob	0.939	0.828	Insurer #2
Sara	0.716		
Rick	3.182	3.182	Insurer #3
avg	1.296		


Insurer #1


Insurer #2


Insurer #3

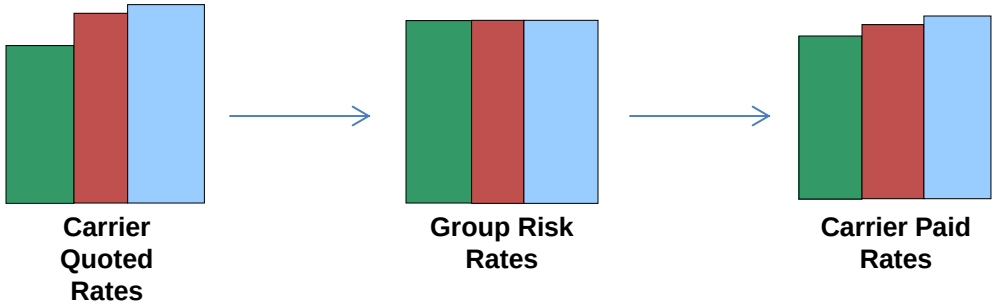
	Insurer #1	Insurer #2	Insurer #3
Quoted Premium	$250.00	$260.00	$270.00
Risk Adjusted Premium	**$66.94**	**$166.01**	**$662.92**



Predictive Health Cost Solutions, LLC
'The Perfect Score'

Premium Adjustment Overview

- Carriers quote their own enrollment (Carrier Quoted Rates)
  - Carrier's revenue requirement for their existing membership
- Carrier Quoted Rates converted to Group Risk Rates
  - Quoted Premium Adjustment
- Group Risk Rates collected and paid to carriers
  - Internal transfer payments netted to/from payments each month
    - Makes effective payment to carriers at Carrier Paid Rates
    - Initial Carrier Paid Rates are same as Carrier Quoted Rates



Risk Adjustment: Enables Consumer Competition for Health Plans

- Employers:
  - Expands Network Access
    - Allows access to proprietary networks
  - Manages Costs
    - Fixed Dollar Contribution Strategy
    - Prevents Death Spiral
    - Unlocks Hidden Costs in Renewals

- Carriers
  - Premium Stability
    - Premium commensurate with risk enrolled
  - Profitable Membership Growth

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