OUTCOMES MEASUREMENT FOR DUMMIES…AND SMARTIES

Training in Critical Outcomes Report Analysis

DMPC

Disease Management

Purchasing Consortium Advisory Council

Agenda: Outcomes Measurement for Dummies…and Smarties

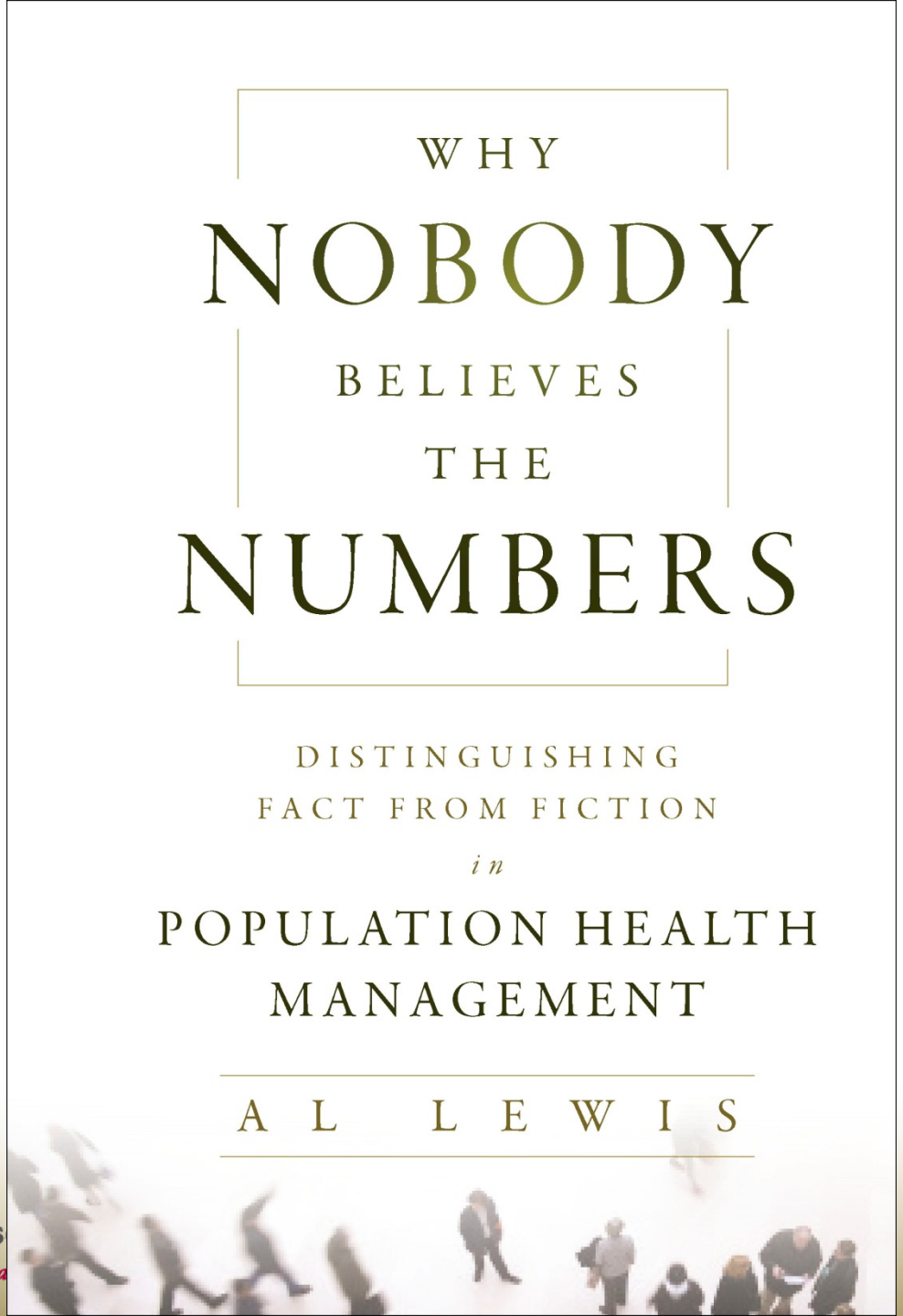
- 8:00 AM
  - How to do Critical Outcomes Report Analysis (CORA)
    - Basic Factoids and the 7 Rules of Plausibility
- 9:15 AM
  - Split into teams and do samples

****

- 9:45 AM
  - Break
- 10:00 AM
  - Option 1: Take CORA test for certification now (in your room or elsewhere)
  - Option 2: Take CORA test later or another day (recommended not to wait too long)
  - Option 3: I will do a sample CORA deconstruction of wellness. You can take the CORA test later on your own. (Note: this requires sign-up)

Who Am I? Why Am I Here?

- Inventor of Disease Management (not really)
- Founder and first president of Care Continuum Alliance (DMAA)
- Provide the field's only analytic credential (Critical Outcomes Report Analysis)
- Called "best in the country" at outcomes report analysis by *9th Annual Report on the DM and Wellness Industries*
- Author of 3 books on DM/wellness, including *Why Nobody Believes the Numbers*



DMPC | Dis
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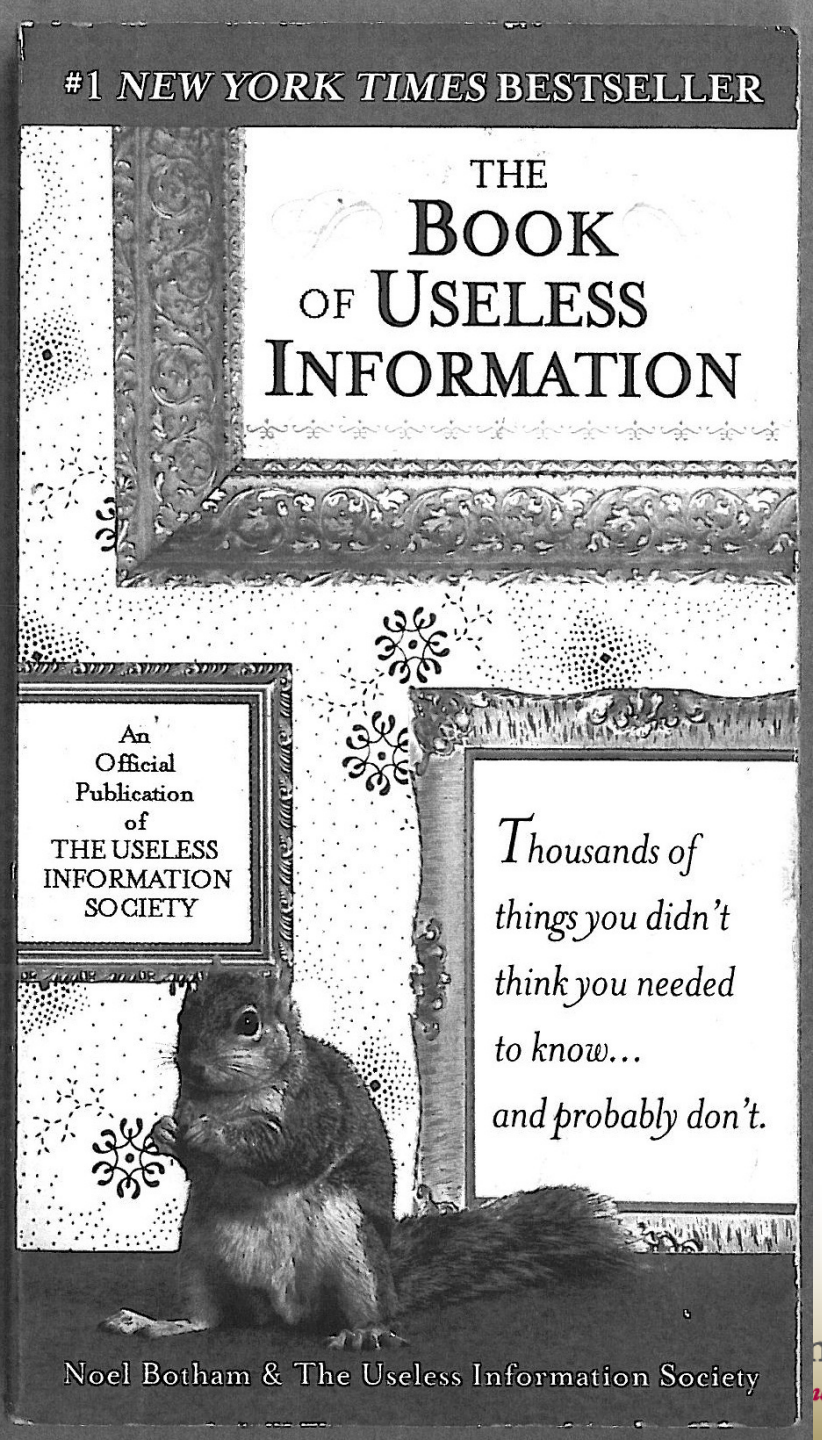
Preliminary #1

To paraphrase the immortal words of the great philosopher Frank Morgan

Pay no attention to that man behind the podium (regardless of qualifications)

“Who are you gonna believe, me or your own eyes?”

Raise your hand if I make a mistake and you get a free basic membership in DMPC ($2000 “value”)



Preliminary #2: Warm-Up Trivia

#1 *New York Times* Bestseller

Because this is a quantitative Session, let's look at some of the more quantitative facts

NO WONDER WE'RE FAT

During your lifetime, you will eat sixty thousand pounds of food—the weight of six elephants.

The average American chews 190 sticks of gum, drinks 600 sodas and 800 gallons of water, and eats 135 pounds of sugar and 19 pounds of cereal per year.

The biggest-selling restaurant food is french fries.

The estimated number of M&Ms sold each day in the United States is two hundred million.

The amount of potato chips Americans eat each year weighs six times more than the *Titanic*.

A can of SPAM is opened every four seconds.

Americans on average eat eighteen acres of pizza every day. Saturday night is the biggest night of the week for eating pizza.

Dunkin' Donuts serves about 112,500 doughnuts each day.

More popcorn is sold in Dallas than anywhere else in the United States.

Two million different combinations of sandwiches can be created from a Subway menu.

p. 99: "Dunkin Donuts serves 112,500 donuts a day"

The largest hamburger in the world weighed in at 5,520 pounds.

The largest ketchup bottle is a 170-foot water tower.

INTERNATIONAL PALETTES

Dinner guests during the medieval times in England were expected to bring their own knives to the table.

In eighteenth-century France, visitors to the royal palace in Versailles were allowed to stand in a roped-off section of the main dining room and watch the king and queen eat.

In certain parts of India and ancient China, mouse meat was considered a delicacy.

Each year, Americans spend more on cat food than on baby food.

It is estimated that Americans consume ten million tons of turkey on Thanksgiving Day. Due to turkey's high sulfur content, Americans also produce enough gas to fly a fleet of seventy-five *Hindenburgs* from Los Angeles to New York in twenty-four hours.

p. 103: "Americans consume 10-million tons of turkey on Thanksgiving Day."

On the new U.S. $100 bill, the time on the clock tower of Independence Hall is 4:10.

The Australian $5, $10, $20, $50, and $100 notes are made of plastic.

The face of a penny can hold thirty drops of water.

The first coins issued by authority of the United States government were minted in 1787. These pennies were inscribed with the plainspoken motto, "Mind your own business."

The original fifty-cent piece in Australian decimal currency had around $100 worth of silver in it before it was replaced with a less-expensive twelve-sided coin.

At the height of inflation in Germany in the early 1920s, approximately two dollars were equal to a quintillion German marks.

KISSABLY FRESH

Colgate faced a big obstacle marketing toothpaste in Spanish-speaking countries. *Colgate* translates into the command "go hang yourself."

More people use blue toothbrushes than red ones.

p. 111: "The original [1967] Australian fifty-cent piece had $100 of silver in it."

Preliminary #3
Any Questions?

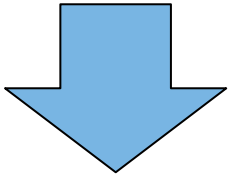
- Back to the agenda. If there aren't any questions or comments, we'll get on with ***Outcomes Measurement for Dummies…and Smarties***
- In the immortal words of the great philosopher Irving Berlin

Let's Go On with the Show

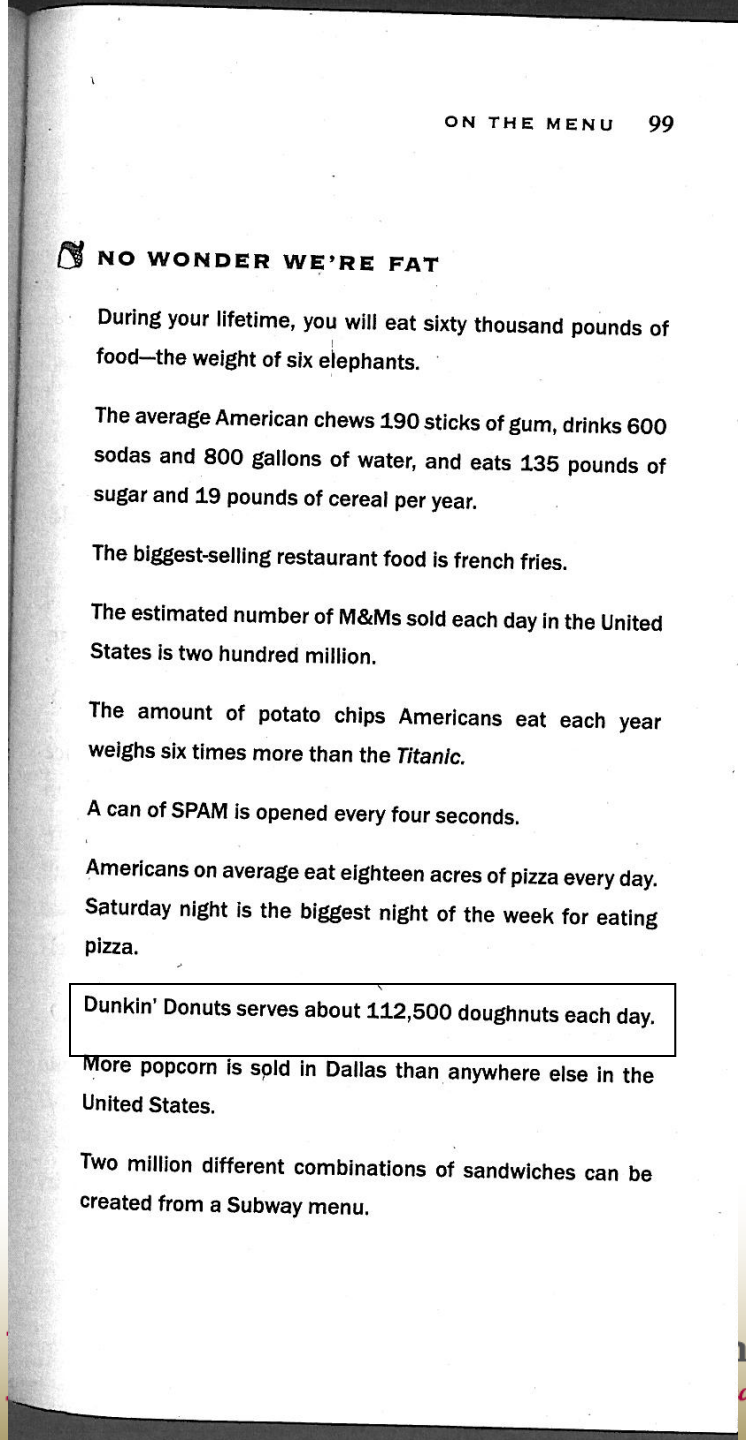
- Back to the agenda. If there aren't any questions we'll get on with Outcomes Measurement for Dummies…and Smarties

Here's Why: All these "facts" are dead wrong

- Each is off by almost TWO orders of magnitude



And yet no reader, no reviewer, no editor noticed…and the book has been in print for 5 years. Everyone assumed that if experts said it, it had to be right.



ON THE MENU 99

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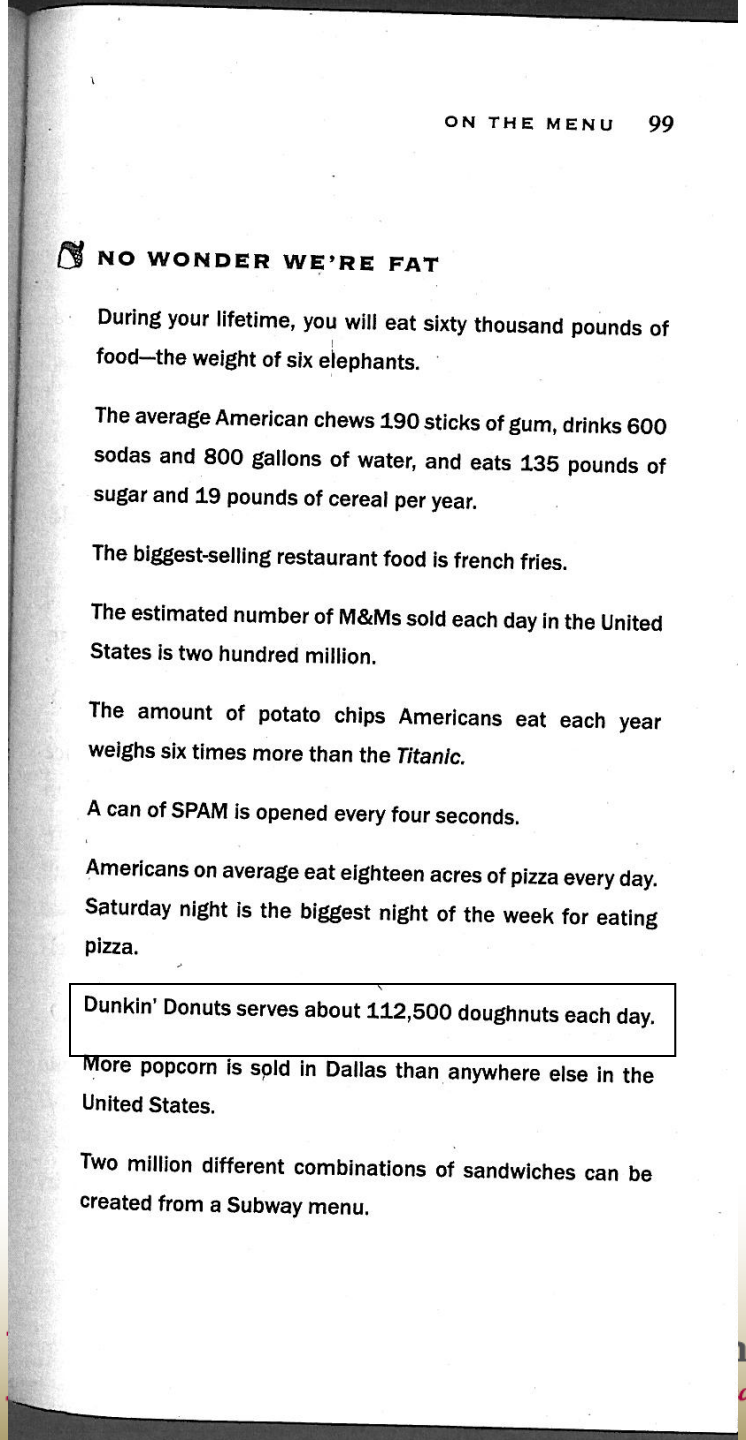

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Did you **think**: "Wait, there must be thousands of Dunkin Donuts stores – that's only a few dozen donuts a day/store" ?

The largest hamburger in the world weighed in at 5,520 pounds.

The largest ketchup bottle is a 170-foot water tower.

INTERNATIONAL PALETTES

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Did you ***think***:
"Wait, that's 20-billion pounds, almost 100 pounds per person" ?

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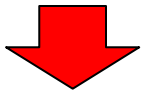
Did you ***think***:
"Wait, a country would go bankrupt if it did that"

What did we just prove in a real-time experiment?

- Most people won't challenge something that an expert tells them in a credible setting (example: it's in a bestselling book)
- Don't believe a self-anointed "expert." Believe your own eyes.



Critical Outcomes Report Analysis is about doing exactly that

The same thing happens in outcomes measurement

- The following example is from Lincoln Industries, considered the best wellness program in the US as measured by the number of awards bestowed upon it

Lincoln Industries –Description and Awards

- **Based in Lincoln NE < 500 employees**
- **Nation's leading supplier of products requiring high-performance metal finishing**

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- ***HR* magazine four years in a row: "Top 25 Medium Companies to Work for in America"**

Lincoln Industries –Description and Awards

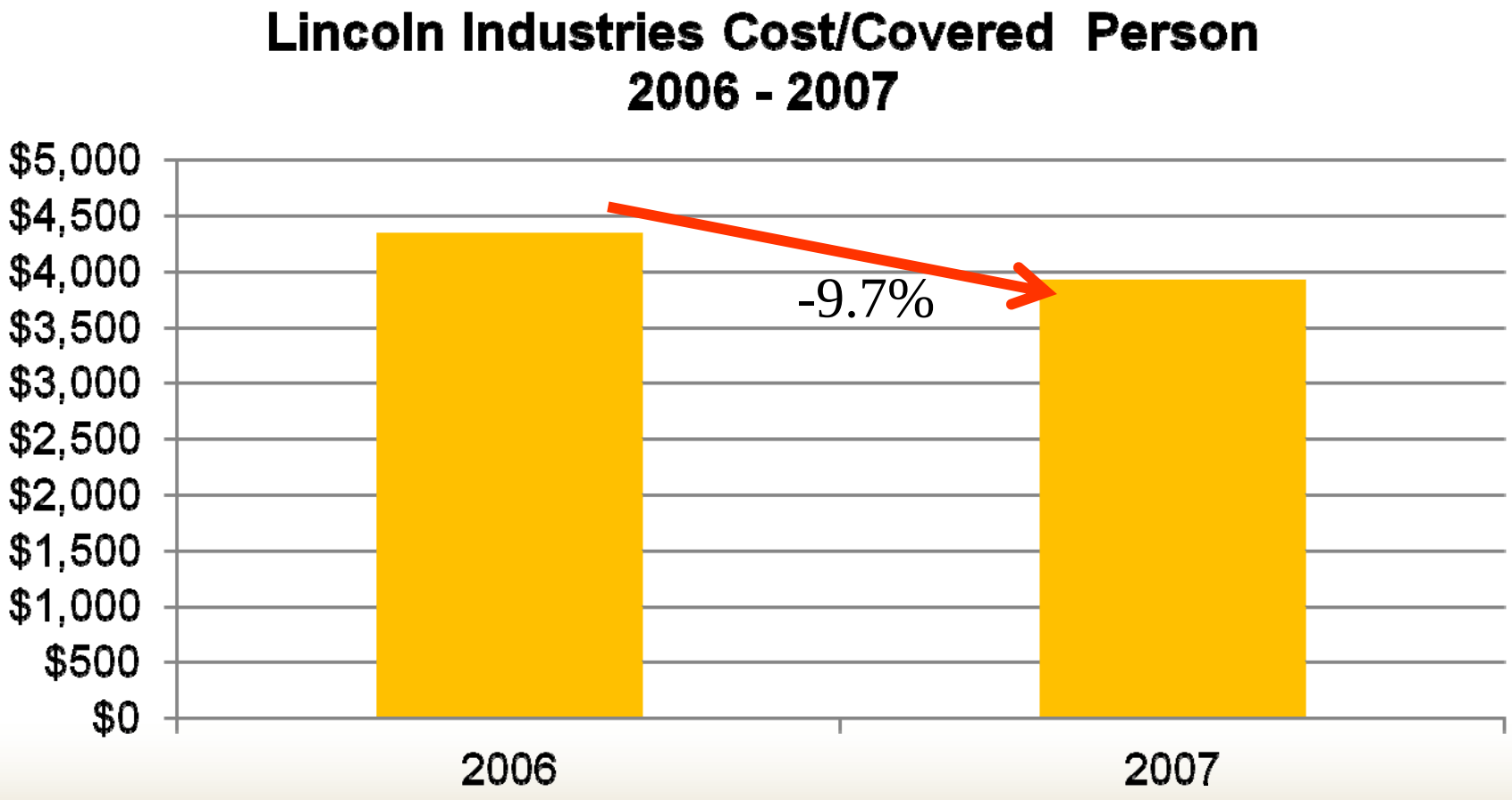
- **Based in Lincoln NE < 500 employees**
- **Nation's leading supplier of products requiring high-performance metal finishing**
- **HR magazine "Top 25 Medium Companies to Work for in America" four years in a row**
- **National recognition for wellness:**

•C. Everett Koop National Health Award -2008
•US Department of Health and Human Services: "Innovation in Prevention" Award -2007
•Great Place to Work® Institutes: "Respect" Award for Wellness Focus -2007
•American Heart Association: Platinum Award for "Start! Fit-Friendly Workplace" -2007
•Partners for Prevention: "Leading by Example" Company -2007
•Center for Disease Control: Worksite Wellness "SWAT" Project 2005-2007
•Wellness Councils of America (WELCOA): Two Time Platinum Award Winner –2003, 2006

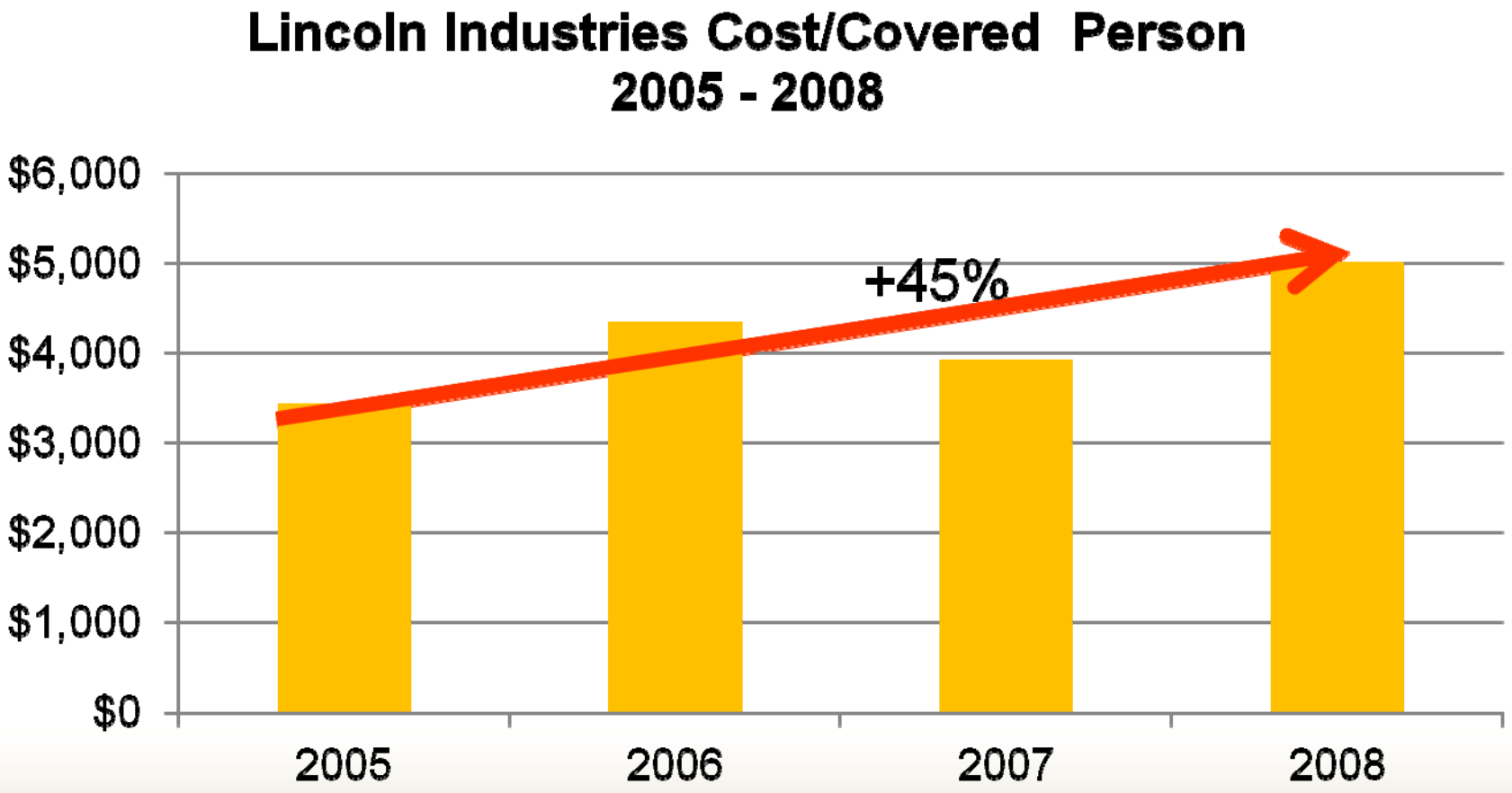
Lincoln Industries – ROI & Health Care Cost Trends Cut-and-Pasted from Their Website

- **Koop award documentation**
  - –100% of employees participate in the program
  - –5.30:1 ROI including health care and productivity-related savings
  - –9.7% *reduction in health care costs from 2006 to 2007*
- ***Favorable health care cost trend –Lincoln corporate website:***

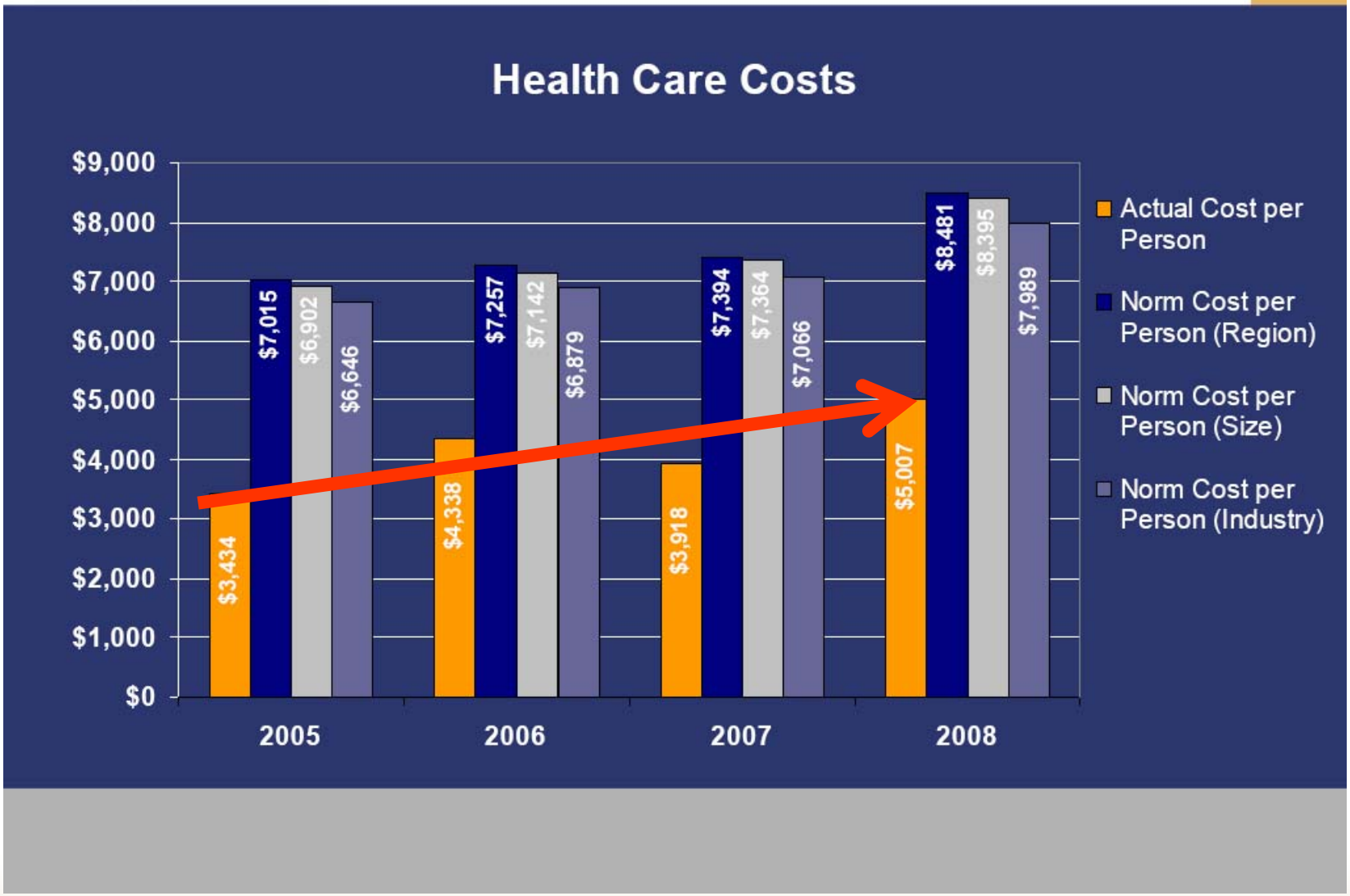
"[We Achieved a] 9.7% Reduction in Cost from 2006 to 2007"



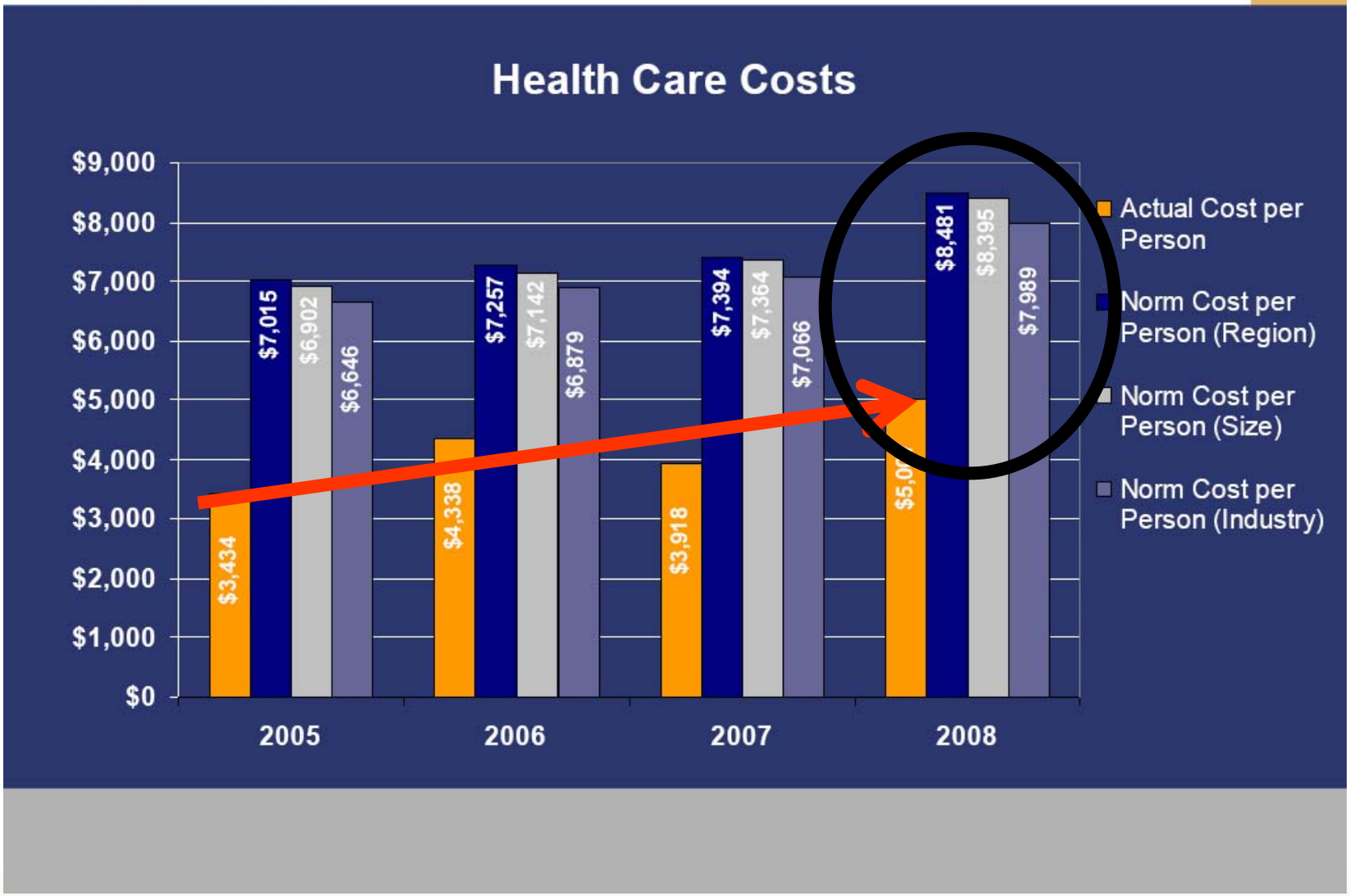
Oh, by the way, they forgot to mention…



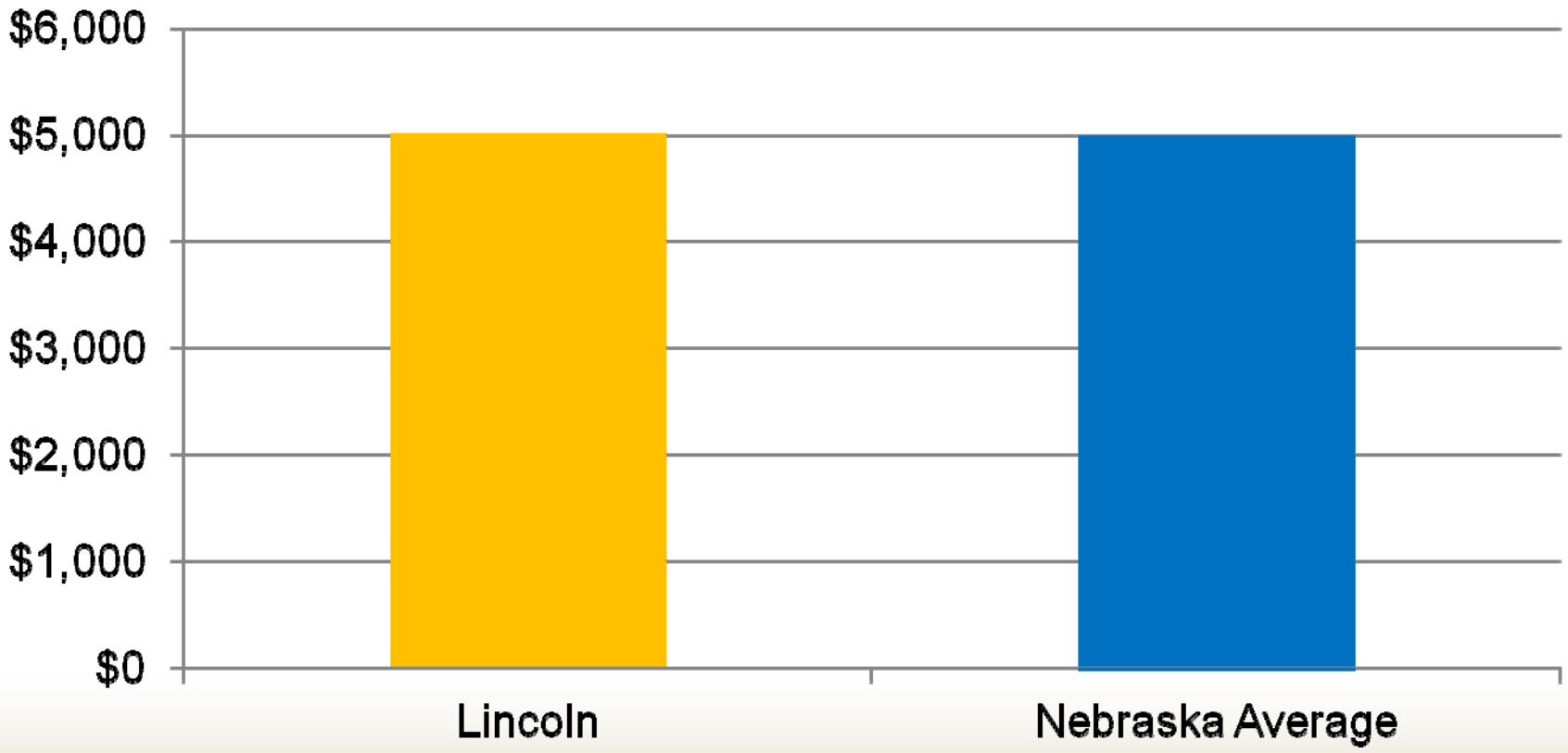
LINCOLN INDUSTRIES WELLNESS



LINCOLN INDUSTRIES
WELLNESS



Actual Cost/Covered *Person*
Lincoln vs. Benchmark



Source: Commonwealth Fund

This Lincoln Mistake Illustrates The Importance of a Knowledge Base

- Basic CORA knowledge base
  - Factoids
  - The 7 Rules of Plausibility

Basic CORA factoids:
Some health economics trivia questions (all <65)

- Annual spending per person? (average and by the top 5 conditions)
- Cost per day in hospital?
- Cost per ER visit?
- Heart attack rates
- Asthma attack rates
- MD visit rates
- Admit rates per 1000

Some factoids (all <65) – real ones this time (rough guesses)

- Annual spending per person? (average and by the top 5 conditions)
  - About $5000; for top five conditions:
    - Asthma $4000, CAD $8000, CHF $20,000 COPD $14,000, diabetes $10,000
- Cost per day/stay in hospital? About $3000/$12,000
- Cost per ER visit? $600 to $1200
- Heart attack rates 1 in 1000 claim-generating ones
- Asthma attack rates 3-4 in 1000 people IP/ER
- MD visit rates +/- 3/year to PCPs; 5-6/year overall to providers
- Admit rates per 1000 60-70

This Lincoln Mistake Illustrates The Importance of a Knowledge Base

- Basic CORA knowledge base
  - Factoids
  - The 7 Rules of Plausibility

The Seven Rules of Plausibility

1. **The 100% Rule** – You can't reduce a number by more than 100%
2. **The Every Metric Can't Improve Rule** – people have to get their care from somewhere
3. **The 25% Savings Rule –** Nothing declines by a quarter or more in a voluntary non-incentivized program
4. **The Nexus Rule—**reduction has to be related to intervention
5. **The Quality Dose--Cost Response Rule**—costs can't fall faster or more than quality indicators improve
6. **The Control Group Equivalency Rule**—"trend" and "matched controls" and "pre-post historic" don't cut it
7. **The Multiple Violations Rule**—if one rule is violated, so are others

The Seven Rules of Plausibility

1. **The 100% Rule** – You can't reduce a number by more than 100% **no matter how hard you try**

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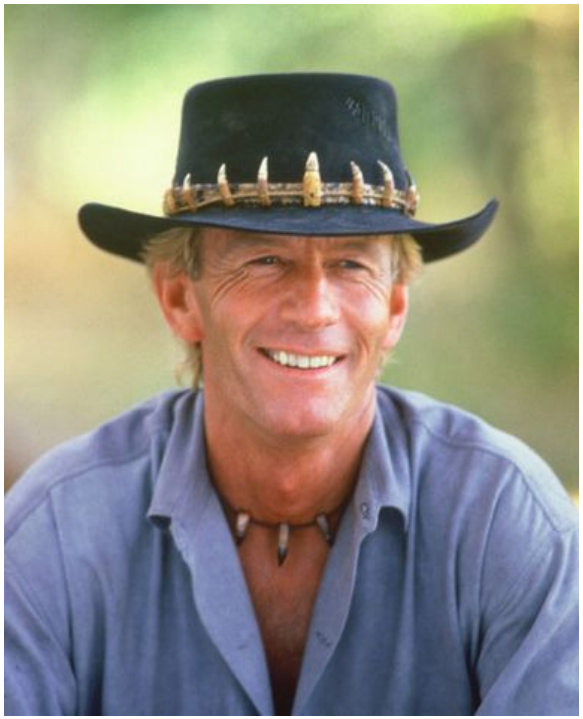


Nice work if you can get it…

Wellness Program Case Study
The Children's Hospital

The Children's Hospital of Denver (TCH) started their first comprehensive wellness progr[redacted] a personalized approach focused around a high trust, high engagement strategy with [redacted] The following provides data resulting directly from this program.

Access and Participation

All benefit eligible employees at TCH - approximately 3,200 people - were granted access to participate in the program. Those receiving benefits – approximately 2,400 people – were provided a moderate incentive to participate. The program grew quickly to 1,400 active participants upon launch and has since exceeded 2,000 active participants at the end of 2009. This comprised 63% of total eligible employees and a full **83% of incentivized employees**. Active participation was not based simply on completion of an online document or logging onto a site to register. Rather, it involved ongoing discussions with the individual's own personal wellness coach in setting goals, identifying areas for change, etc.

Sick Time

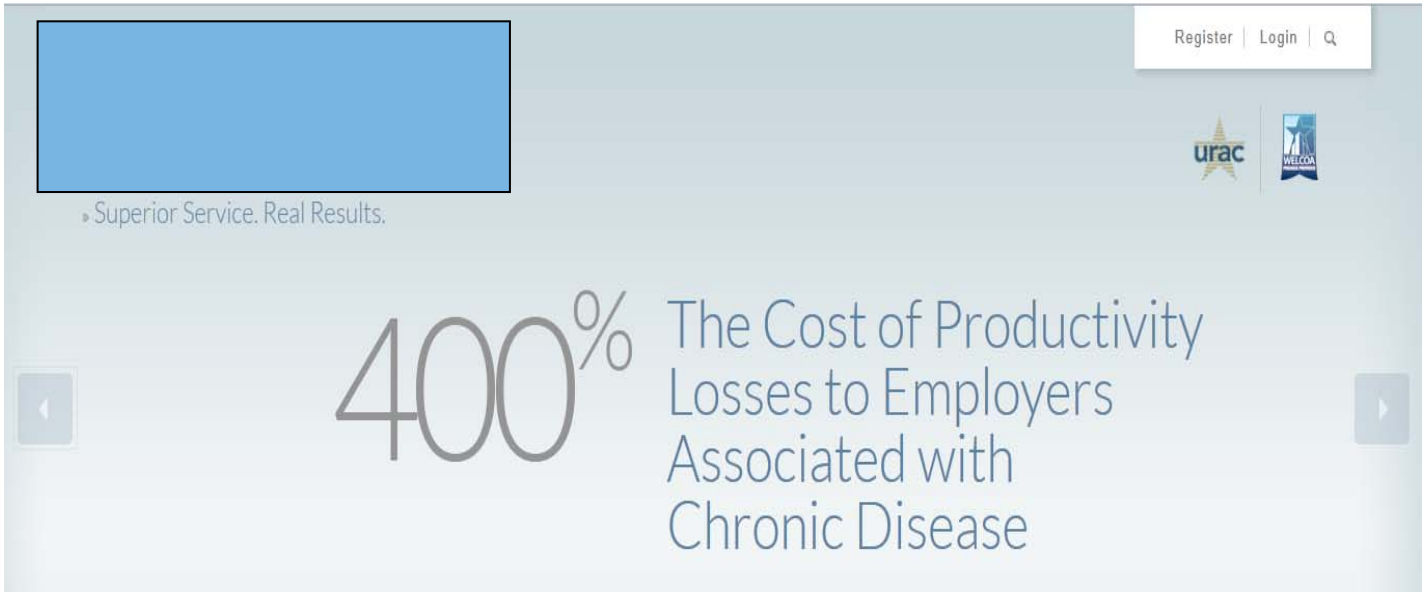
Like many organizations, TCH combines the first 16 hours of sick time along with vacation into a PTO bank. Hours tied to sick time beyond 16 hours are categorized as EIB (Extended Illness Benefit), and this was the focus of the analysis . Maternity and anomalies (totaling 3%) were pulled out and the remaining 97% plus of the total population was analyzed at TCH, with the following results:

- Wellness program participants are **230% less likely to utilize EIB** than non-participants

Disease Management

Purchasing Consortium Advisory Council

I Can Get It For You Wholesale



PCMH Effectiveness: The Proof Is In

HI-WIRE

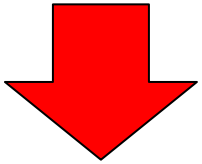
George Miller

January 04, 2010

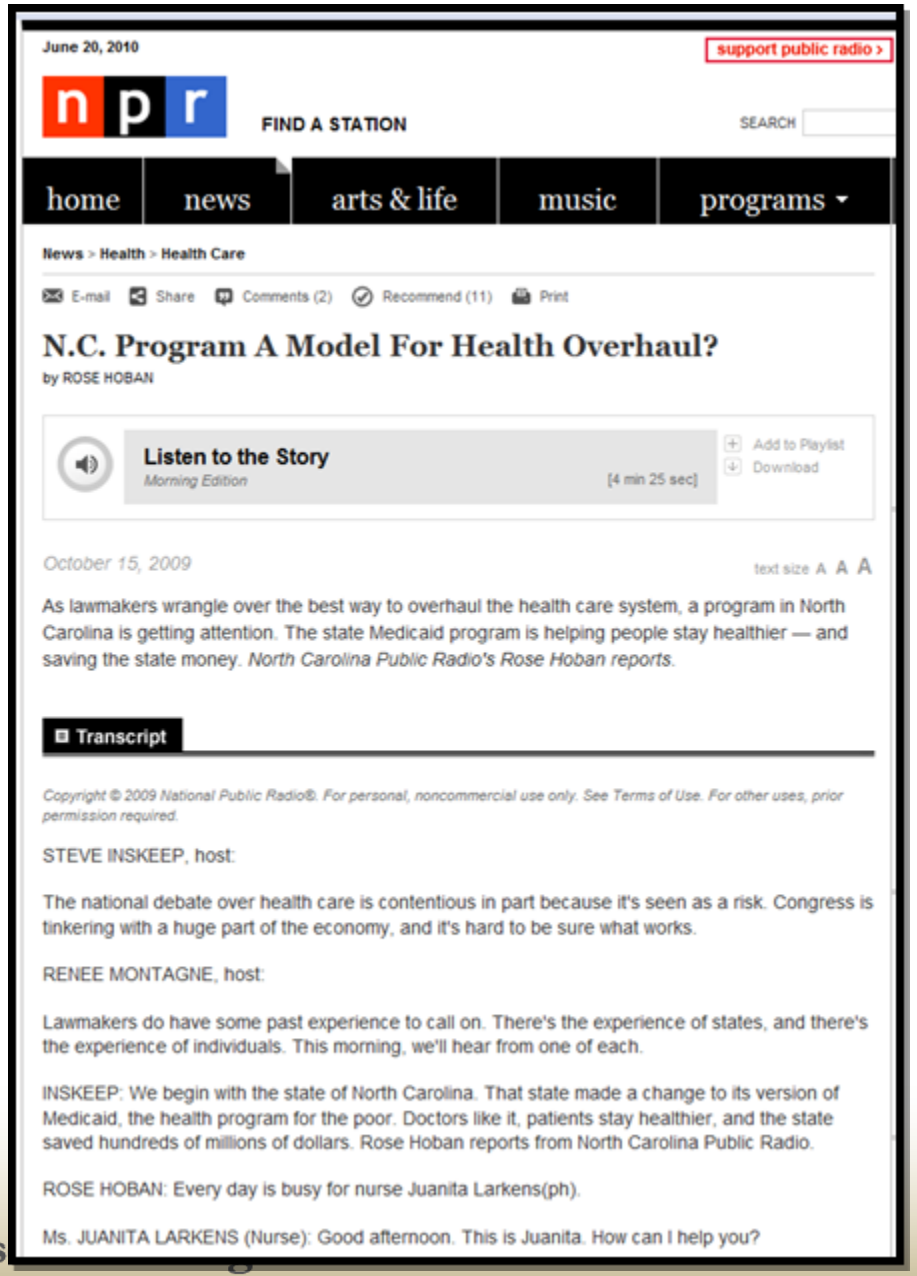
A five-year prospective evaluation of the model yields a 129% increase in patients receiving optimal diabetes care and a 48% increase for heart-disease patients. The model also achieved a 350% reduction in appointment waiting time, as reported by the Institute for Healthcare Improvement.

The Seven Rules of Plausibility

1. **The 100% Rule** – a number can't decline >100%
2. **The Every Metric Can't Improve Rule** – people have to get their care from somewhere
   - Insulating your house saves money on heat, but not on insulation



Example from the "poster child" of medical homes, NC



June 20, 2010

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N.C. Program A Model For Health Overhaul?

by ROSE HOBAN

Listen to the Story

Morning Edition [4 min 25 sec]

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October 15, 2009

text size A A A

As lawmakers wrangle over the best way to overhaul the health care system, a program in North Carolina is getting attention. The state Medicaid program is helping people stay healthier — and saving the state money. *North Carolina Public Radio's Rose Hoban reports.*

Transcript

STEVE INSKEEP, host:

The national debate over health care is contentious in part because it's seen as a risk. Congress is tinkering with a huge part of the economy, and it's hard to be sure what works.

RENEE MONTAGNE, host:

Lawmakers do have some past experience to call on. There's the experience of states, and there's the experience of individuals. This morning, we'll hear from one of each.

INSKEEP: We begin with the state of North Carolina. That state made a change to its version of Medicaid, the health program for the poor. Doctors like it, patients stay healthier, and the state saved hundreds of millions of dollars. Rose Hoban reports from North Carolina Public Radio.

ROSE HOBAN: Every day is busy for nurse Juanita Larkens(ph).

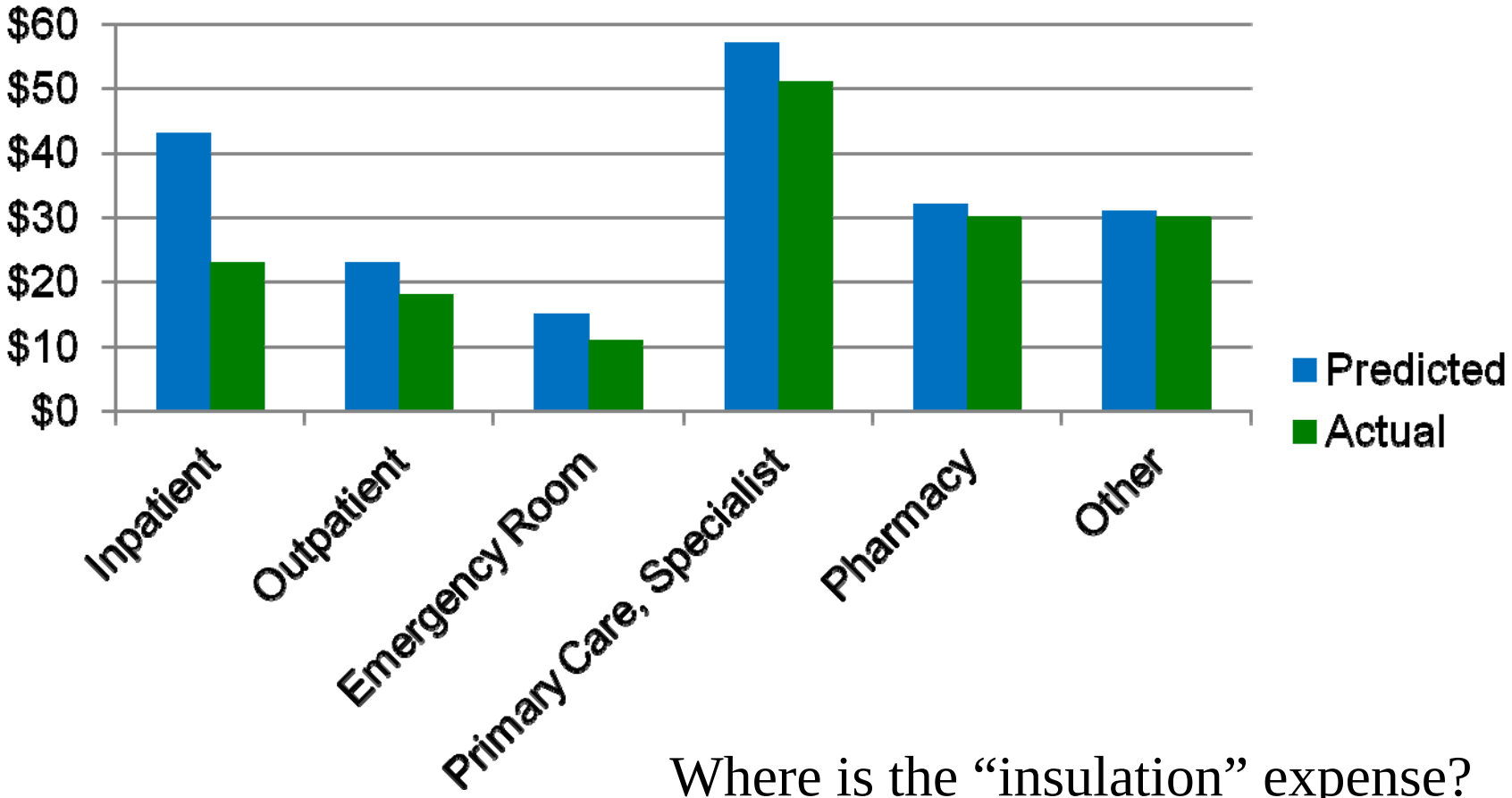
Ms. JUANITA LARKENS (Nurse): Good afternoon. This is Juanita. How can I help you?

(Cut-and-pasted from the Mercer report)

Attachment 5
SFY06 Savings
Using Statewide Benchmark
(by Category of Service)

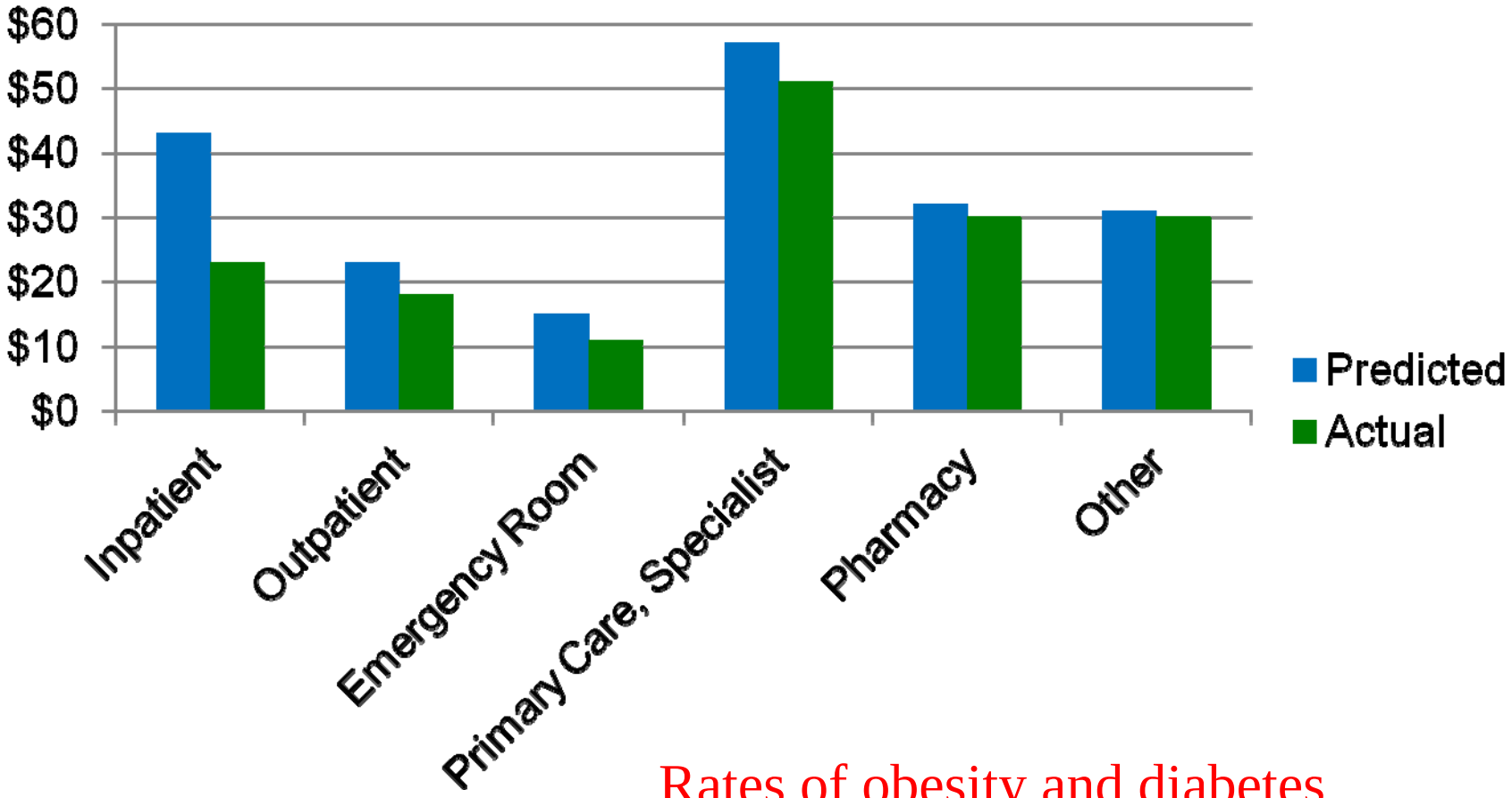
AFDC - All Rate Cells Combined	PREDICTED	ACTUAL	
SFY06 Member Months	7,962,681		
Category of Service	SFY06 Projected Benchmark PMPM [1]	Actual SFY06 PMPM [2]	Estimated Savings from Benchmark [3]
Inpatient	$ 43.25	$ 23.16	$ 159,963,111
Outpatient	$ 23.47	$ 17.73	$ 45,660,400
Emergency Room	$ 15.11	$ 11.30	$ 30,324,253
Primary Care, Specialist	$ 56.90	$ 50.91	$ 47,751,911
Pharmacy	$ 31.72	$ 30.14	$ 12,601,550
Other	$ 30.78	$ 30.46	$ 2,516,055
Totals	$ 201.23	$ 163.70	$ 298,817,281

Predicted vs. Actual PMPM Results for North Carolina (blown up from previous page)



Where is the “insulation” expense?

No, the state's residents didn't just get healthier



Rates of obesity and diabetes rose faster than national averages

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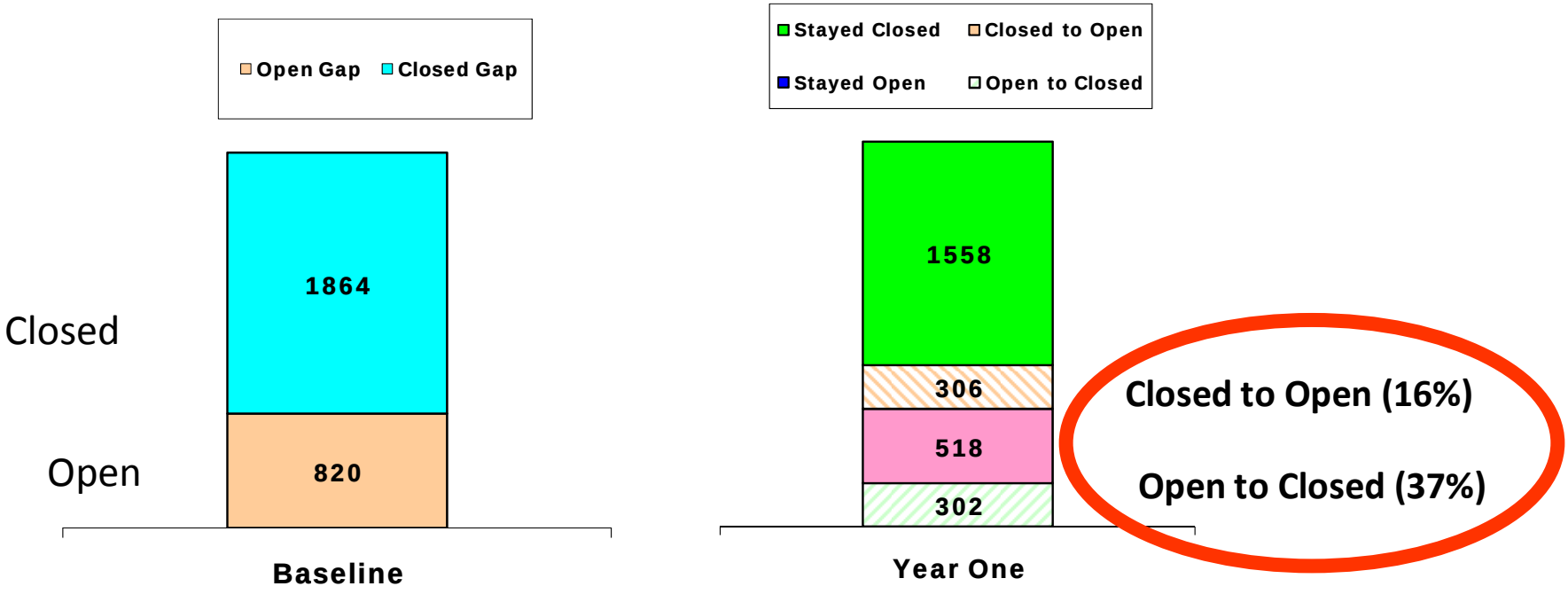
3. **The 25% Savings Rule –** Nothing declines by a quarter or more in a voluntary non-incentivized program
   - When it looks like that has happened, there is always another explanation (example: Lincoln)
   - It is usually due to making a classic mistake in pre-post analysis, which is invalid, period

Figure 8: Changes in Care Gaps for Engaged Members with the Condition in the Baseline: 37% of Open Gaps Closed While Only 16% of Closed Gaps Opened



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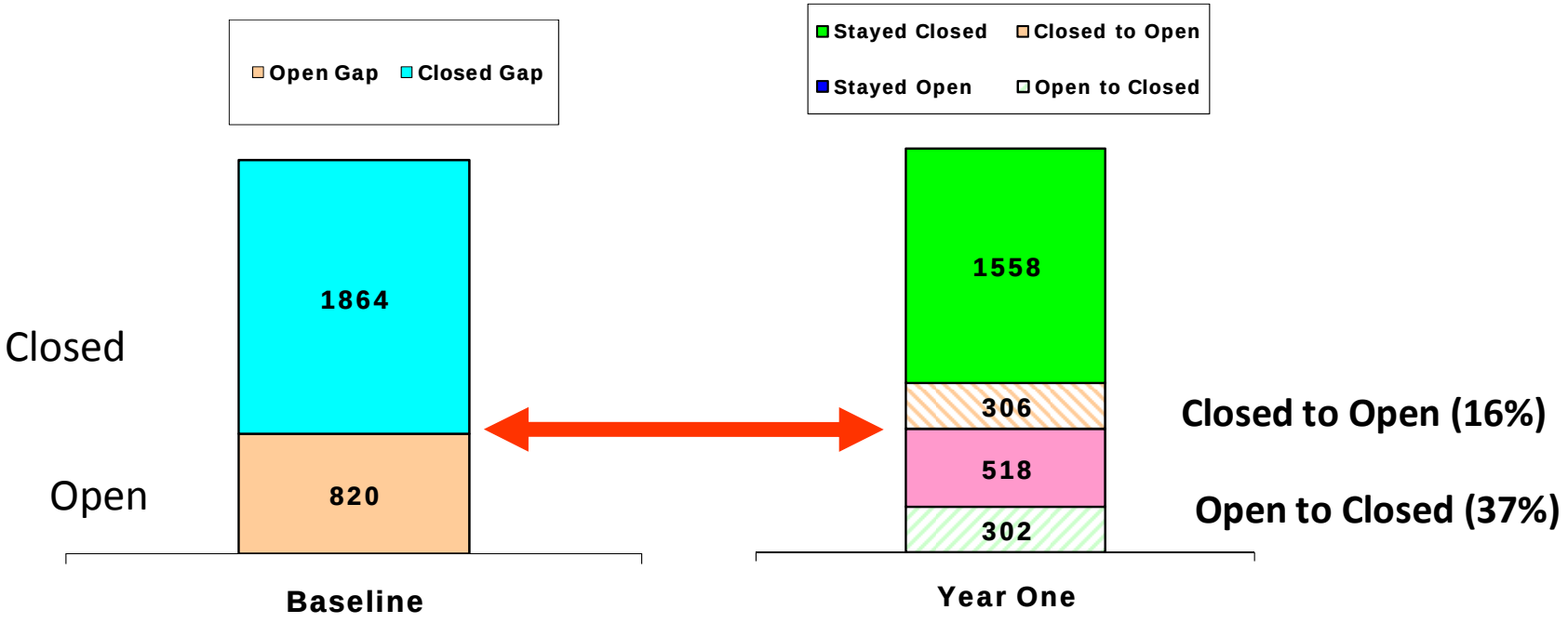

Highlights of Pharos Findings (according to their website)

- 79% reduction in admissions
- 85% reduction in total cost

Pharos Results not just validated…

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According to their website, their results are "strongly validated"

Pharos Results not just validated…

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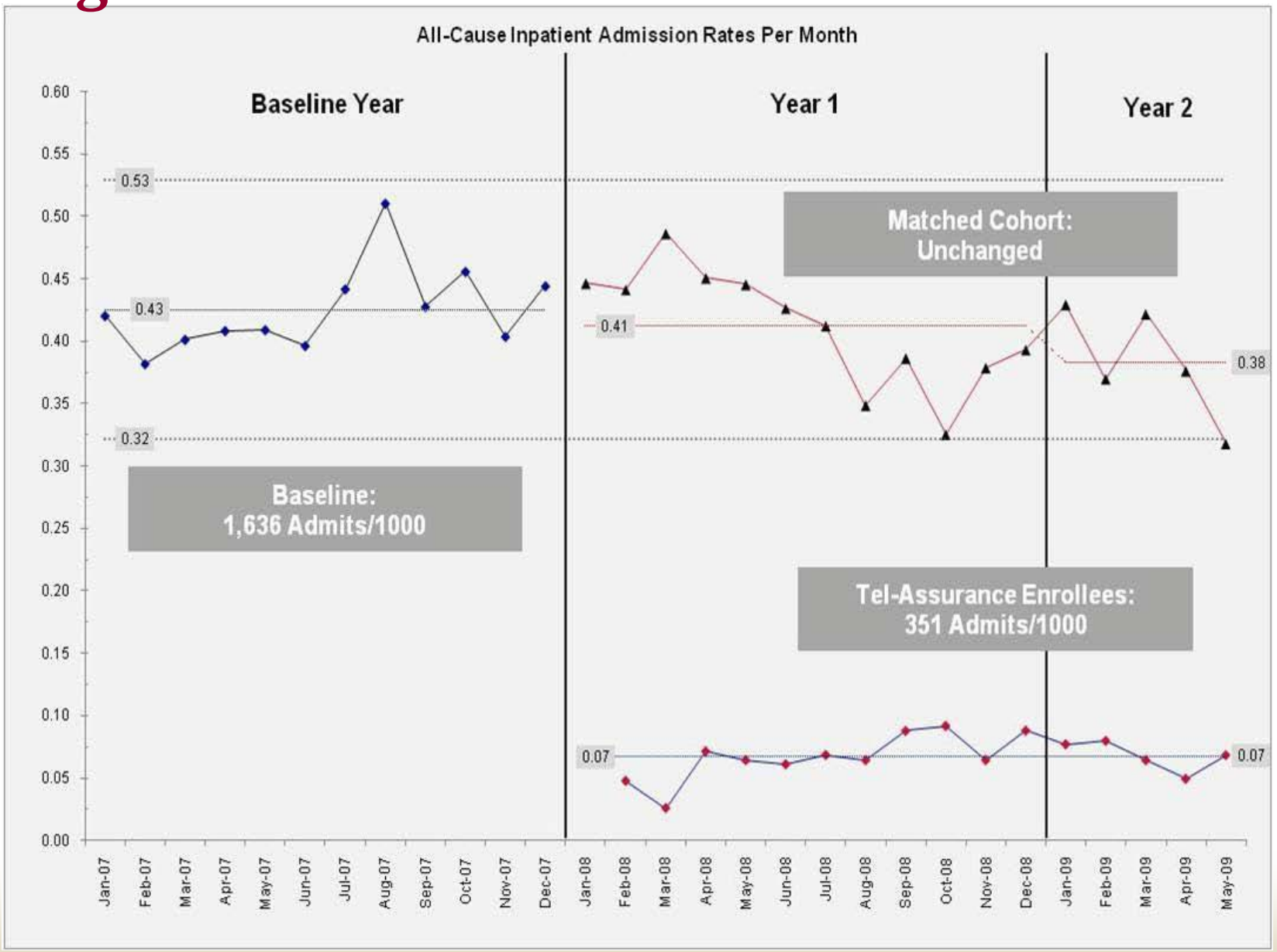
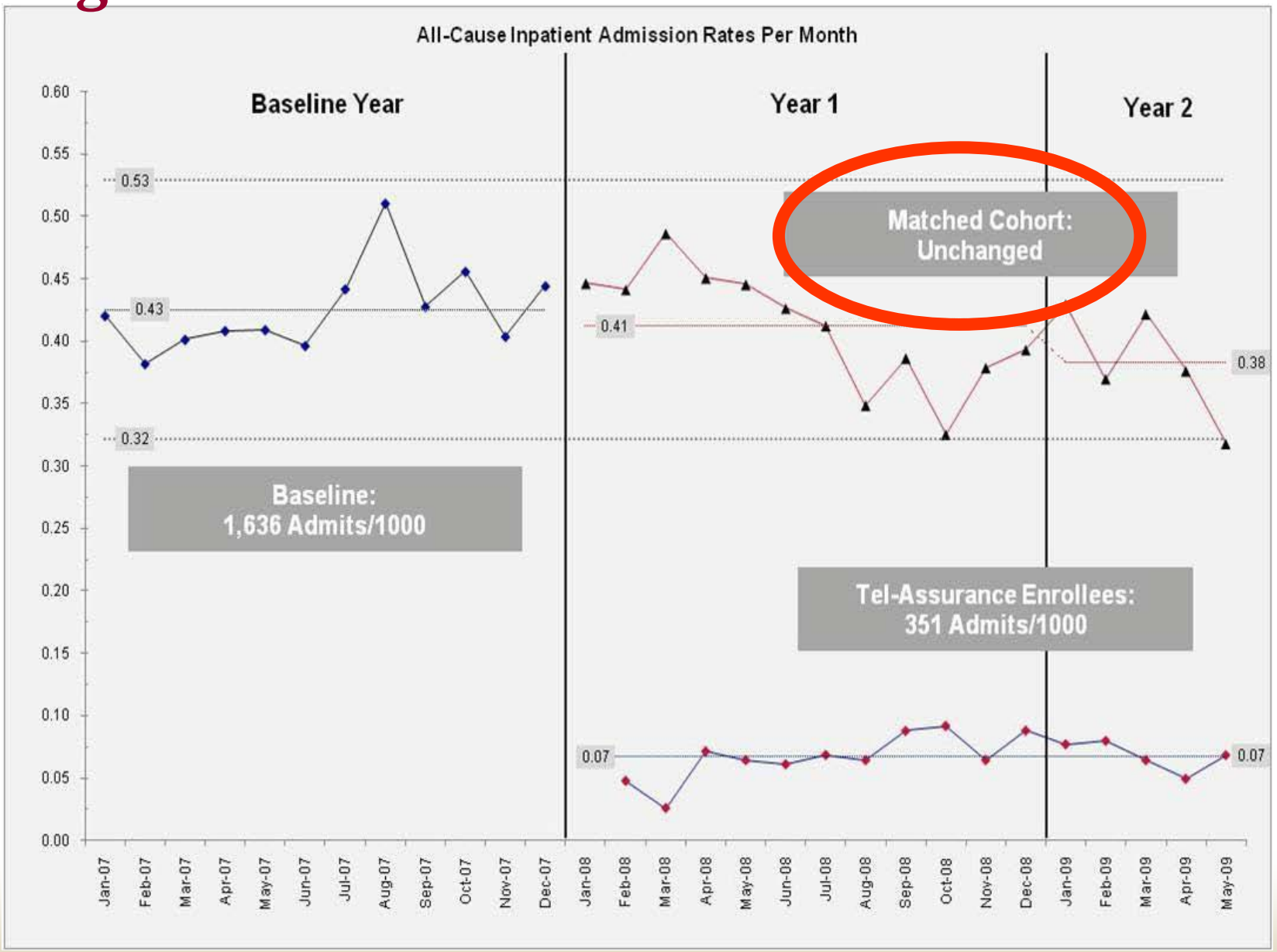
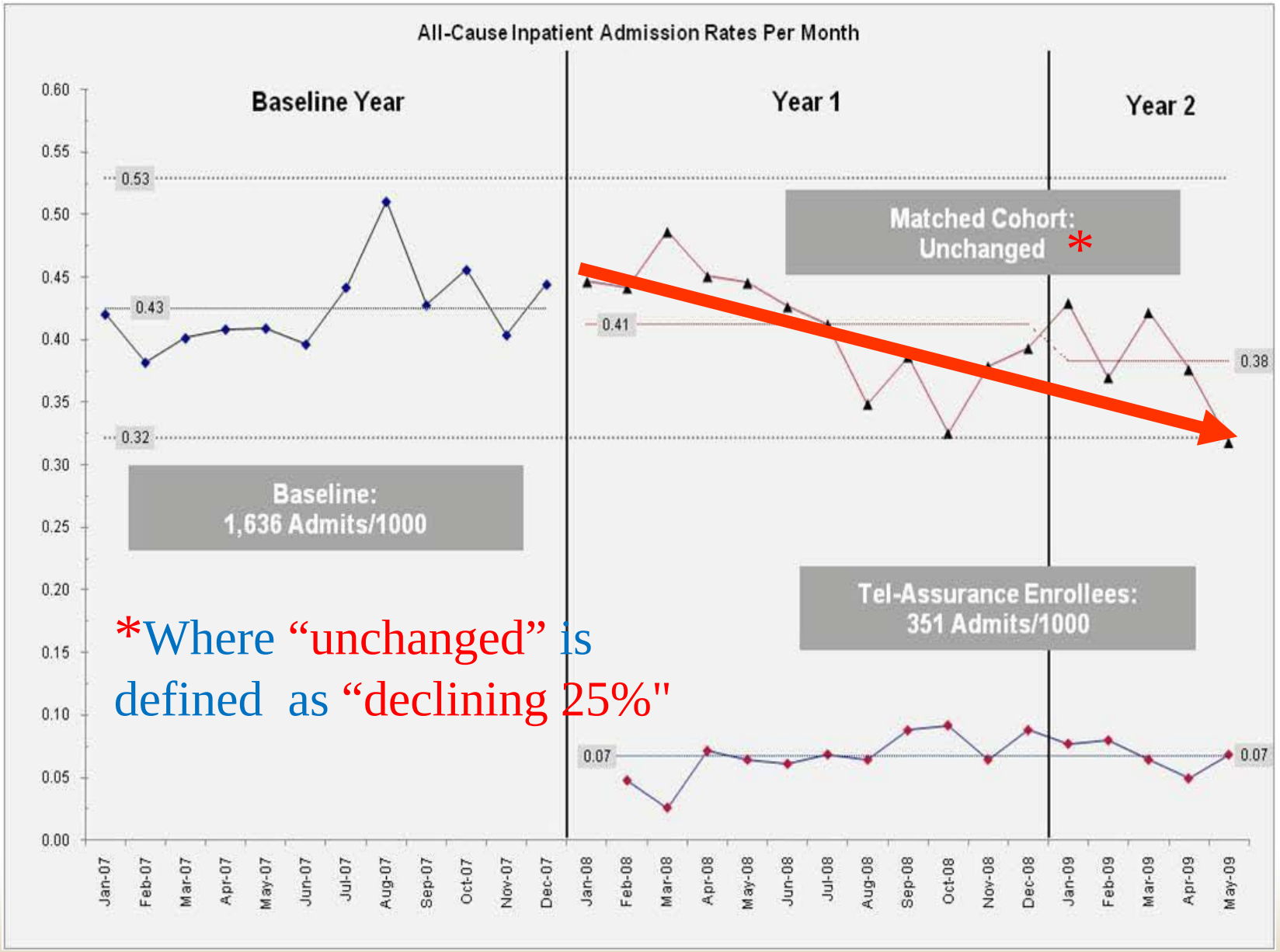
Regular validation is for sissies

Alleged Pharos "Results"



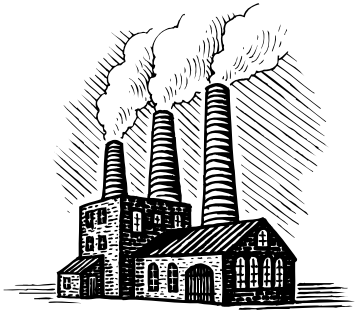
Alleged Pharos "Results"




All-Cause Inpatient Admission Rates Per Month
Baseline Year
Year 1
Year 2
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.53
0.43
0.32
0.41
0.38
0.07
0.07
Matched Cohort:
Unchanged *
Baseline:
1,636 Admits/1000
Tel-Assurance Enrollees:
351 Admits/1000
*Where "unchanged" is defined as "declining 25%"
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09

Highlights of Pharos Findings (according to their website)

- 79% reduction in admissions
- 85% reduction in total cost



Highlights of Pharos Findings (according to their website)

- 79% reduction in admissions
- 85% reduction in total cost

Where is the ‘insulation expense” ?

i

In case anyone still has any doubt about Pharos results

"There were no significant differences between the two groups with respect to the secondary end points or the time to the primary end point or its components."

The Seven Rules of Plausibility

1. **The 100% Rule** – a number can't decline >100%
2. **The Every Metric Can't Improve Rule** – people have to get their care from somewhere
3. **The 25% Savings Rule –** Nothing declines by a quarter or more in a voluntary non-incentivized program
   - When it looks like that has happened, there is always another explanation
   - It is usually due to making a classic mistake in pre-post analysis, which is invalid, period
     - Examples from disease management and wellness

The “pre” population in pre-post

- All Identifiable members with the disease in question
- (or high risk, if wellness)

The whole "pre" population? Really? Could there be people with the disease you can't identify…

- …Who might have a condition though they are not identifiable?
  - Let's call these people "tails"
  - "Tails" have lower cost since they don't have enough claims to be identified

How might someone with a condition not be identifiable to the health plan or vendor?

Why might outcomes measurement not recognize that a member has a condition ("Tails")?

1. Member is new employee
2. Member is too mild to have disease-identifiable claims
3. Member has disease-identifiable claims, but not enough to trigger the algorithm (for instance, you need two 250.xx MD visits to be classified as diabetic)
4. Member is non-compliant and doesn't fill scripts
5. Member is misdiagnosed
6. Member is correctly diagnosed but the physician doesn't want to enter correct diagnosis in their file
7. Member does not himself or herself know he/she has the condition.
8. Maybe they got diagnosed too recently for the claim to have shown up
9. Get their drugs from WalMart so don't generate a claim
10. Belong to a culture where acknowledging a diagnosis is discouraged

Clearly there are a lot of tails and they generate lower claims

Clearly there are tails as well as heads

- Identifiable (higher-cost) members

Non-identifiable members
With condition (lower-cost)

Clearly there are tails as well as heads

- Identifiable (higher-cost) members

Non-identifiable members
With condition (lower-cost)

If you flip the heads, some will flip to lower-cost “tails” on their own

- Identifiable members

- Example: People who had heart attacks in baseline (“heads”), but not this year (“Tails”)

The effect of Tails on measuring savings vs. predicted results

- Heads flipping to tails count as savings
- But no one flips the Tails and offset the savings from Heads-turning-Tails with the Tails-turning-Heads

Example: Tim Russert (not a "heads" in the baseline but had a heart attack anyway – would not have been counted against savings)

Tim Russert Not in “Pre” Population – had no previous CAD claims and his only health issue was having the world’s third-widest head

#3

Tim Russert Not in “Pre” Population – had no previous claims and his only health issue was having the world’s third-widest head

#3

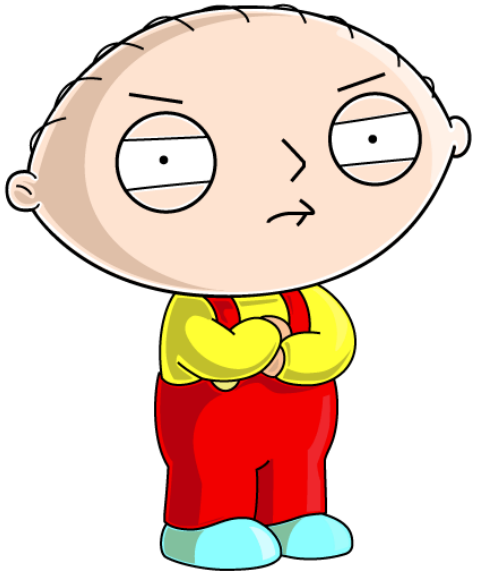
#2

Tim Russert Not in "Pre" Population – had no previous claims and his only health issue was having the world's third-widest head

#3

#2

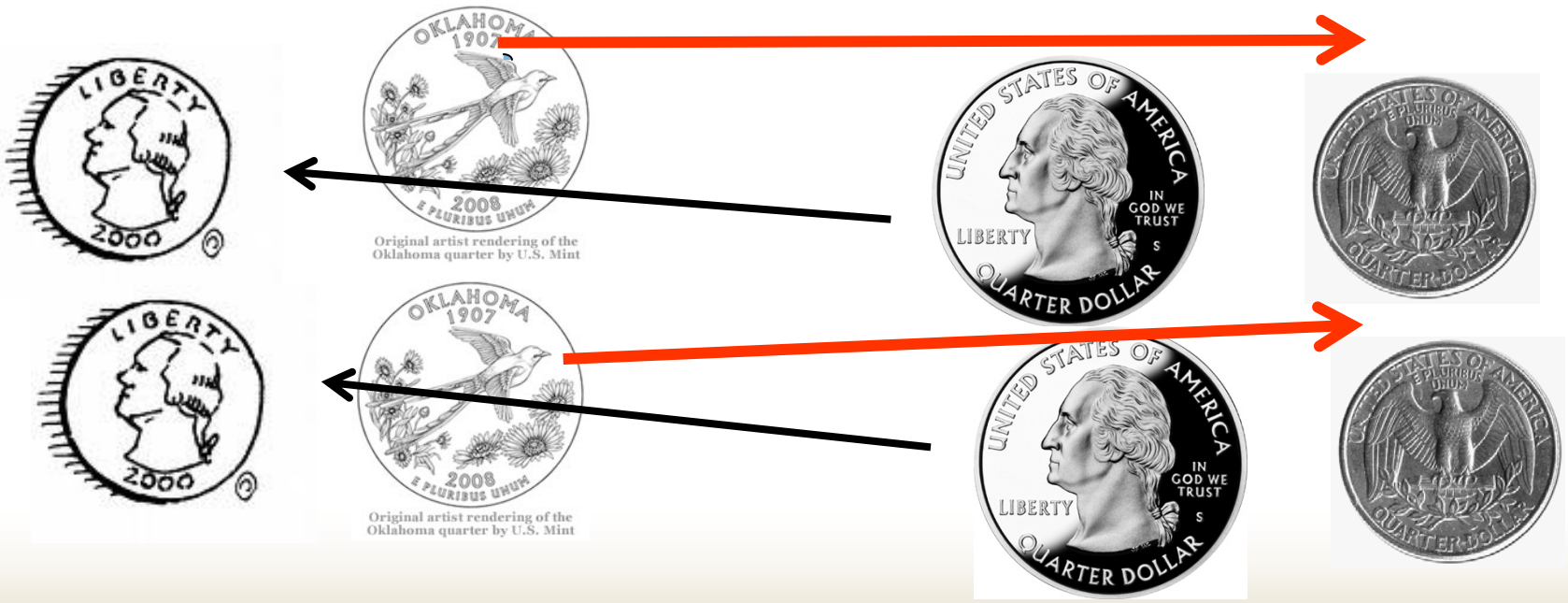
#1



Watch what happens when you also flip the tails as well as the heads

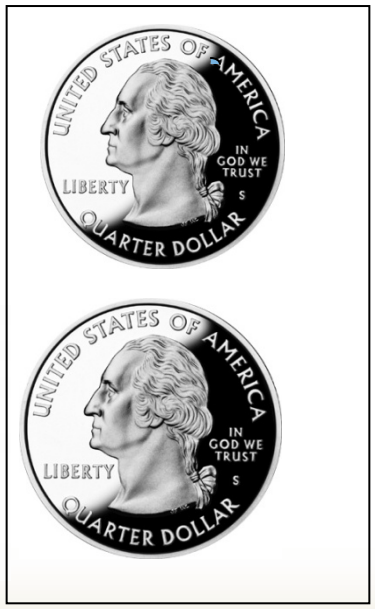
- Identifiable (higher-cost) members

Non-identifiable members
With condition (lower-cost)



So you still have 4 heads and 4 tails in the study year but two of the heads were not counted because they started out as tails

Not counted



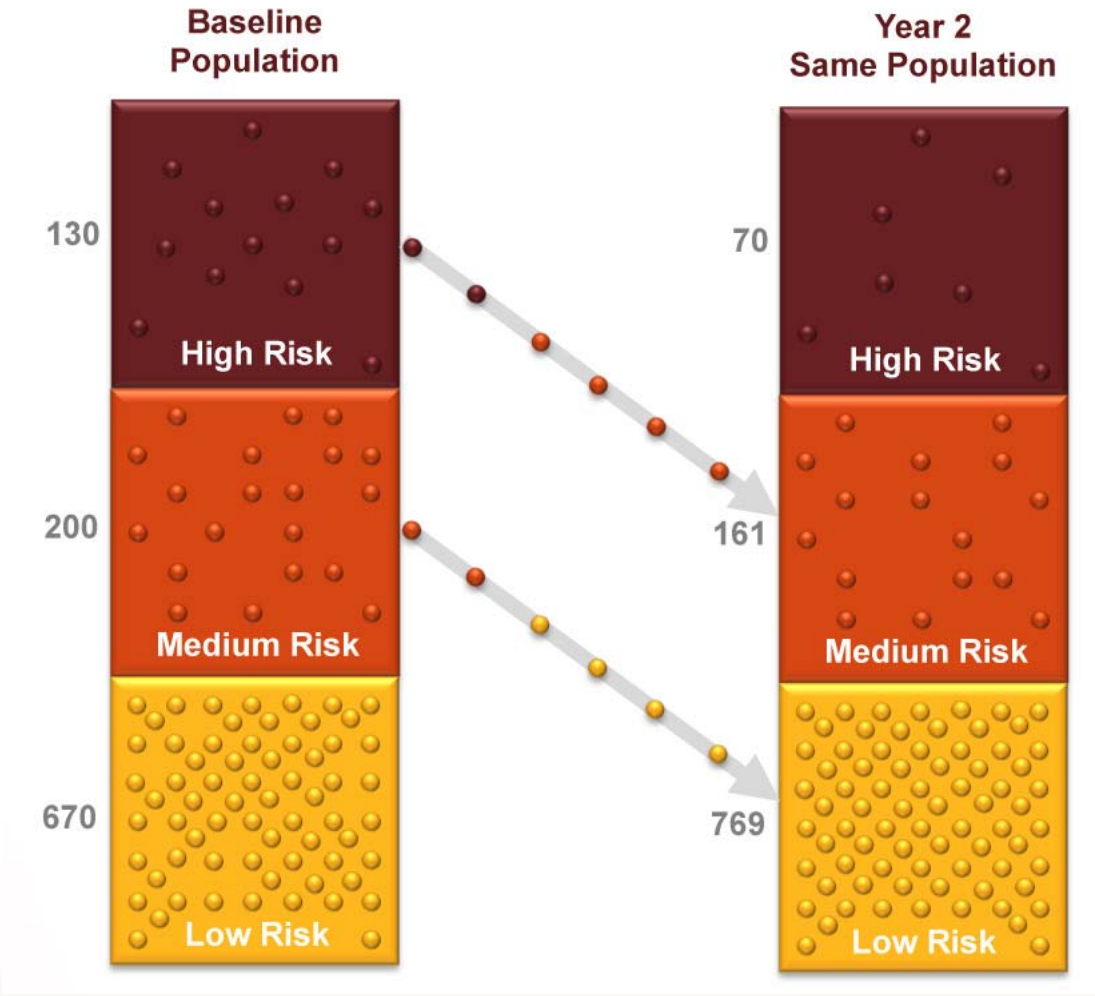
Original artist rendering of the Oklahoma quarter by U.S. Mint

Original artist rendering of the Oklahoma quarter by U.S. Mint

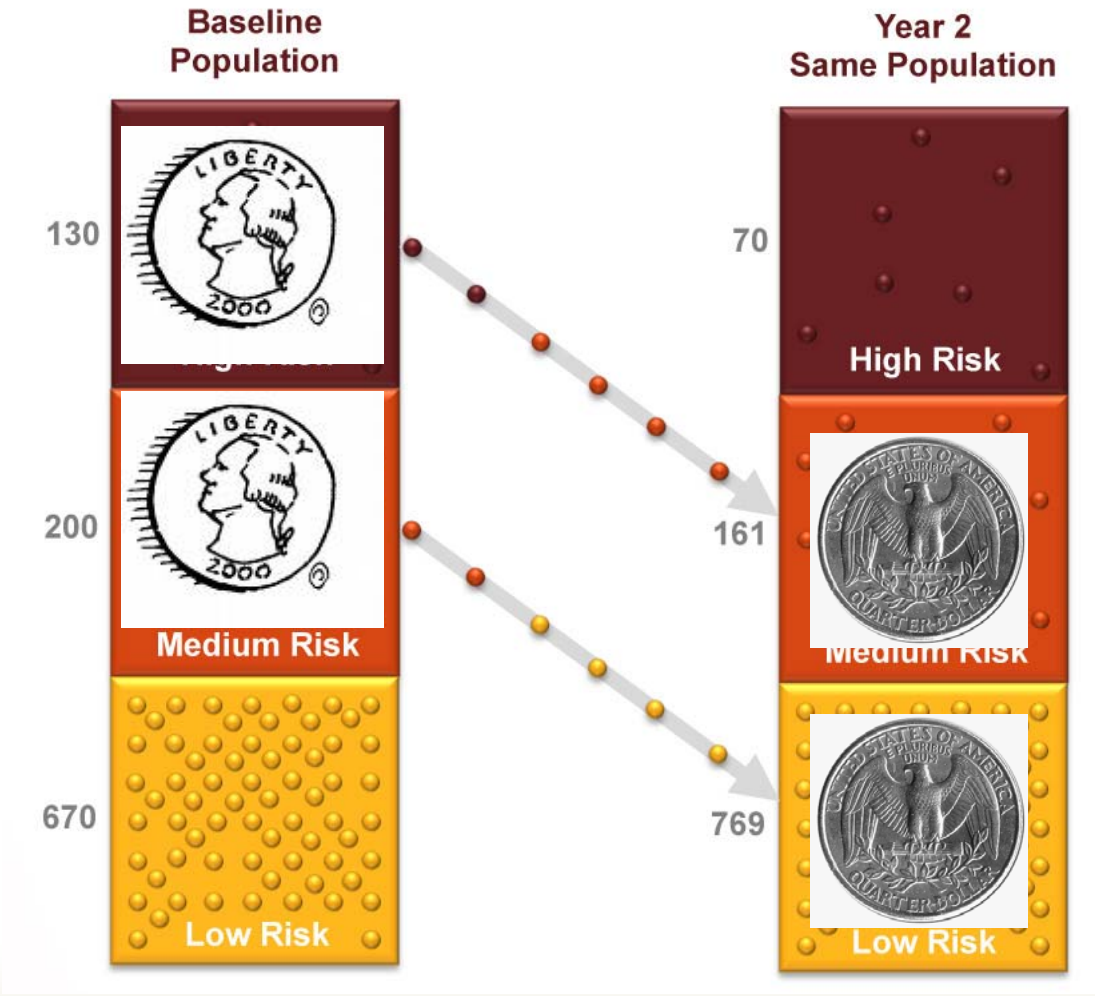
Example of Using Heads-to-Tails to Create Guaranteed Savings: Wellness

- This vendor guarantees a 30% shift from high/medium risk to low risk
- Note in the following slides that only the heads-to-tails (risk reduction in high-risk people) is counted, not the tails to heads (risk increase in low-risk people)

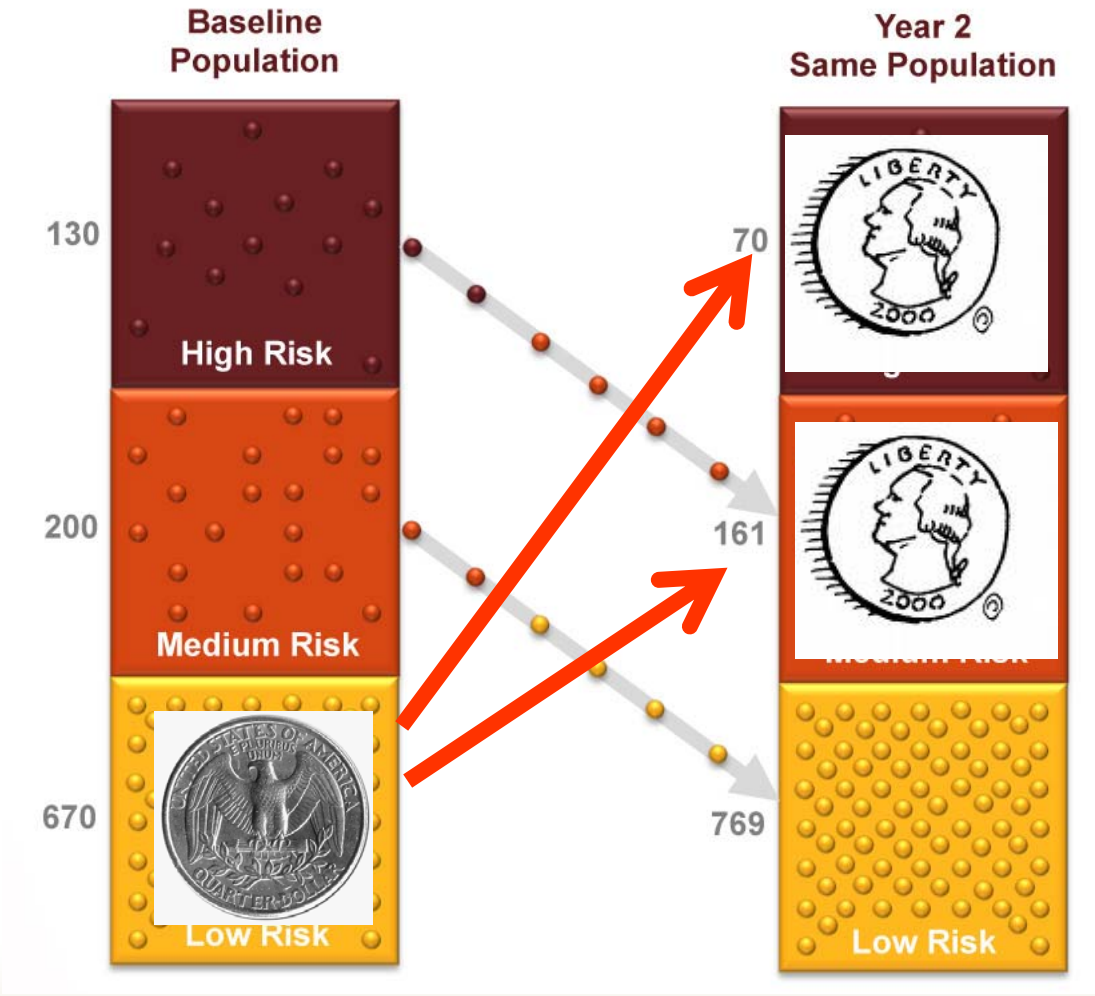
Cigna Guarantees that 30% of High and Medium Risk will decline in risk:



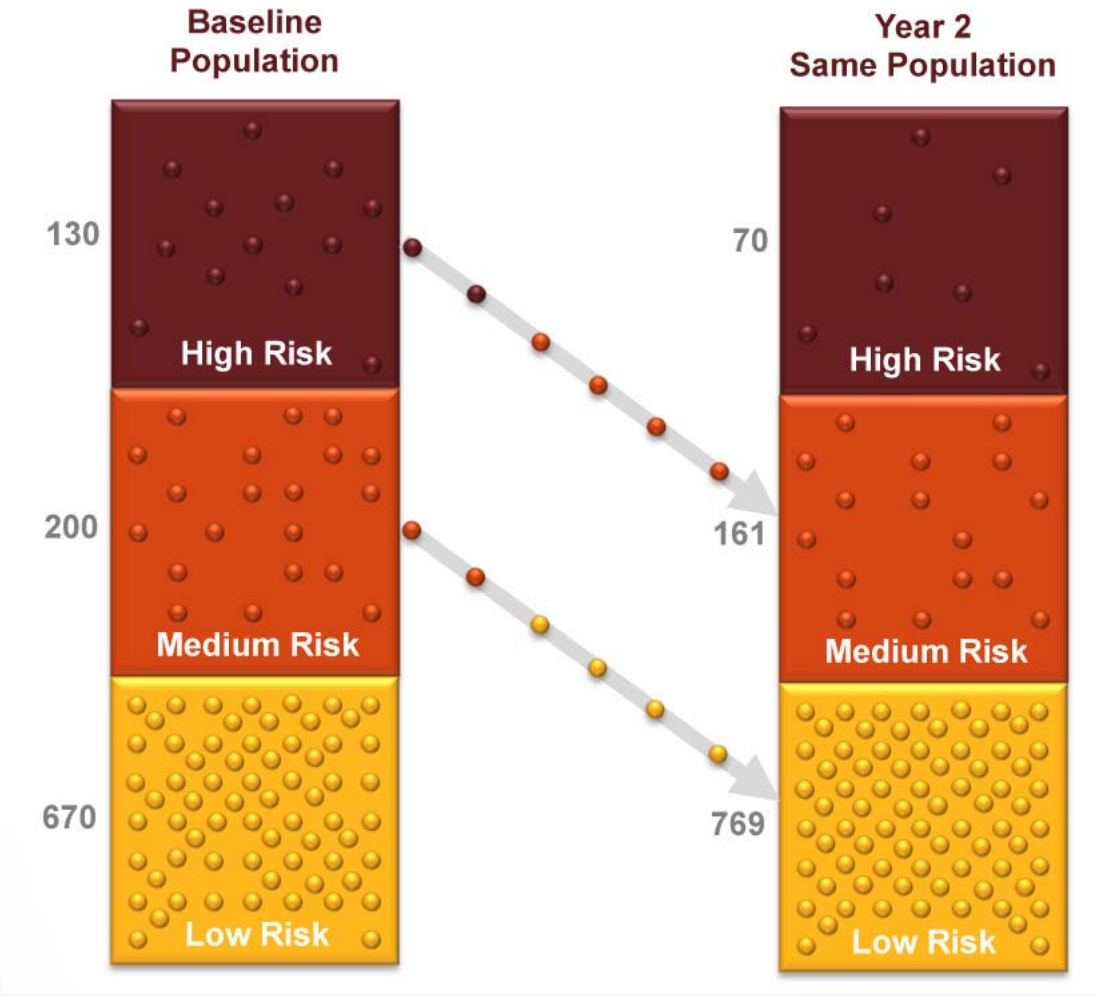
First question: Isn't that just guaranteeing that 30% of heads will flip to tails?



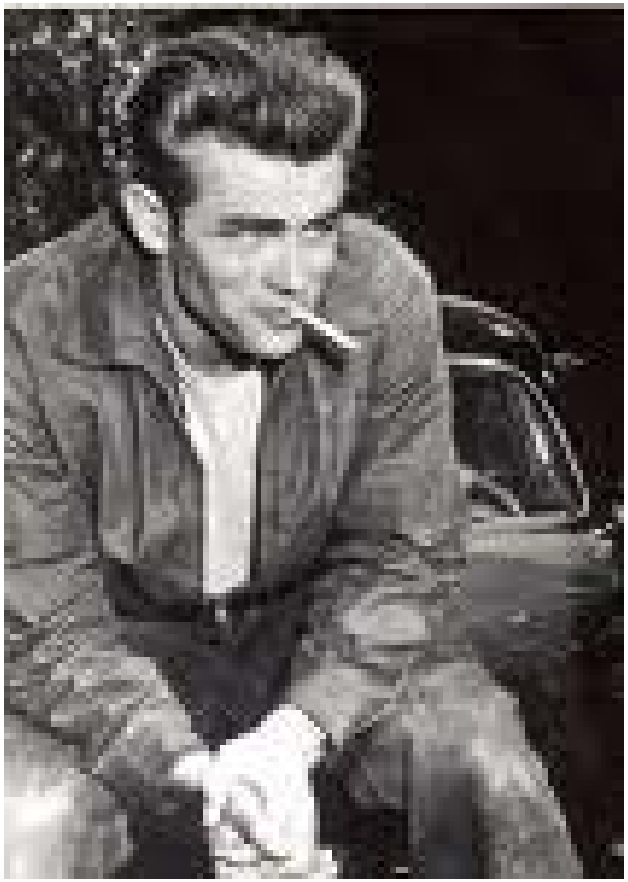
Second question: What about these people flipping from tails to heads? Shouldn't they be counted too?



Third question: Should Cigna have drawn the 670-person low-risk segment larger than the 200 and 130?



Example from Wellness using Cigna methodology: Smoking Cessation

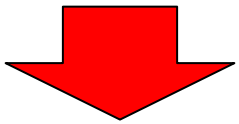


Smoking hypothetical

- Suppose everyone in your organization smokes and quits in alternate years, and that smoking is the only risk factor
- So the 50% of the workforce smokes every year but it's a different 50% each year

Smoking hypothetical

- Suppose everyone in your organization smokes and quits in alternate years, and that smoking is the only risk factor
  - Only smokers are high-risk
- So the 50% of the workforce smokes every year but it's different 50%



This methodology would find a 100% reduction
Every year even though the smoking rate remains unchanged

Are you **ready to improve the health** of your employees?

Better Health. Guaranteed.[SM]

A promise only CIGNA can make.

The Seven Rules of Plausibility

1. **The 100% Rule** – a number can't decline >100%
2. **The Every Metric Can't Improve Rule** – people have to get their care from somewhere
3. **The 25% Savings Rule –** Nothing declines by a quarter or more in a voluntary non-incentivized program
4. **The Nexus Rule—**reduction has to be related to intervention
   - You can't just say "it happened so the program did it"

State of North Carolina

Attachment 6
SFY06 Savings
Using Statewide Benchmark
(by Rate Cell)

Final

AFDC - Specified Categories of Service

PREDICTED ACTUAL

Age and Sex Description	Member Months [1]	SFY06 Projected Benchmark PMPM [2]	Actual SFY06 PMPM [3]	Estimated Savings from Benchmark [4]
< 1 year M & F	670,070	$ 411.38	$ 186.80	150,479,255
1 - 13 years M & F	4,672,745	$ 102.70	$ 100.37	10,901,303
14 - 18 years F	596,909	$ 224.57	$ 166.58	34,614,787
14 - 18 years M	547,434	$ 112.82	$ 109.84	1,632,831
19 - 44 years F	1,167,464	$ 413.69	$ 359.99	62,695,031
19 - 44 years M	174,219	$ 452.90	$ 310.30	24,844,077
45 years & up M & F	133,840	$ 665.60	$ 563.62	13,649,997
Totals	**7,962,681**	**$ 201.23**	**$ 163.70**	**298,817,281**

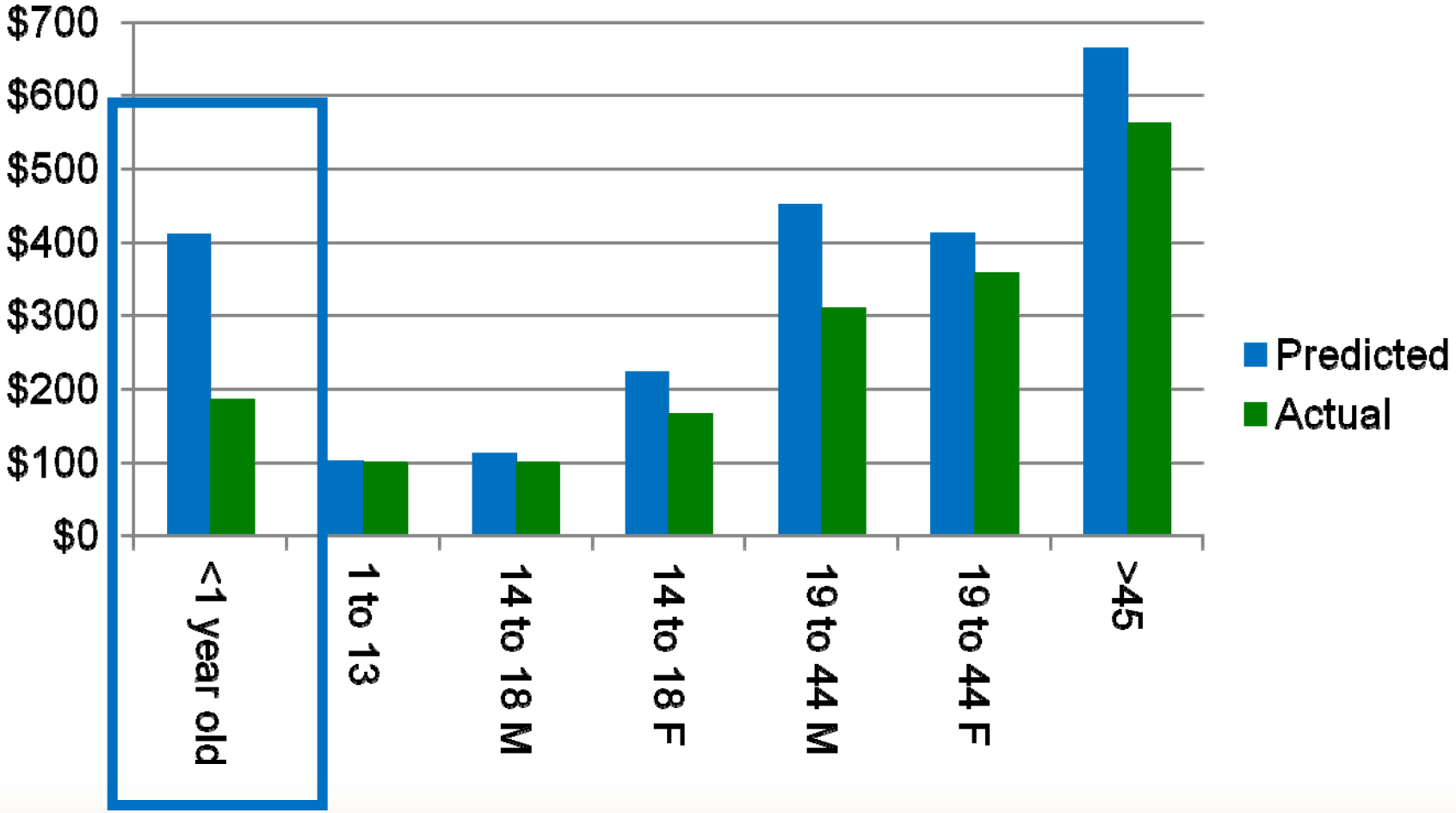
1 - CCNC/ACCESS only member months for SFY06.

2 - The Statewide Benchmark SFY06 PMPM was calculated using the historical 36 months of data from SFY00, SFY01, and SFY02. The PMPM shown here is calculated by weighting each rate cell's SFY06 base PMPM with the actual CCNC/ACCESS member months distribution by rate cell for SFY06.

3 - Calculated using the date of service data for SFY06; represents all CCNC/ACCESS program (I, II, and III) costs for dates of service from July 2005 through June 2006.

4 - Projected savings calculated using the SFY06 actuals; the benchmark minus the actual, multiplied by the actual SFY06 CCNC/ACCESS member months,equals the projected savings.

Predicted vs. Actual PMPM Results for North Carolina (blown up from previous page)



How you know this wasn't caused by the NC Medical Home

- No Nexus: NC Medical Home focused on common chronic disease

How you know this wasn't caused by the NC Medical Home

- No Nexus I: NC Medical Home focused on common chronic disease
- No Nexus 2: Medicaid babies weren't enrolled in the medical home program

Oh, by the way…

- NC Medical Home focused on chronic disease
- Most Medicaid babies weren't enrolled in the medical home program
- It turns out they made the whole thing up anyway – there wasn't any reduction in utilization among babies (covered in the 10 AM show)

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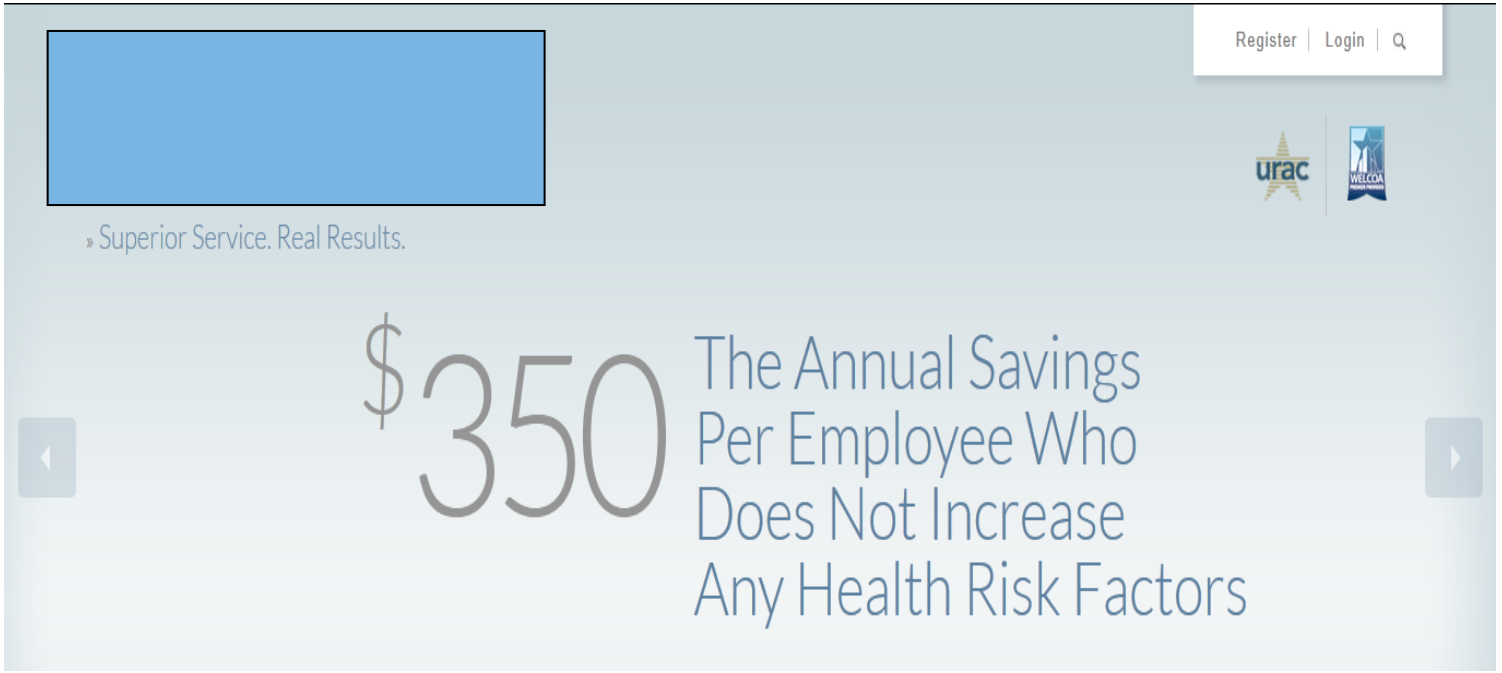
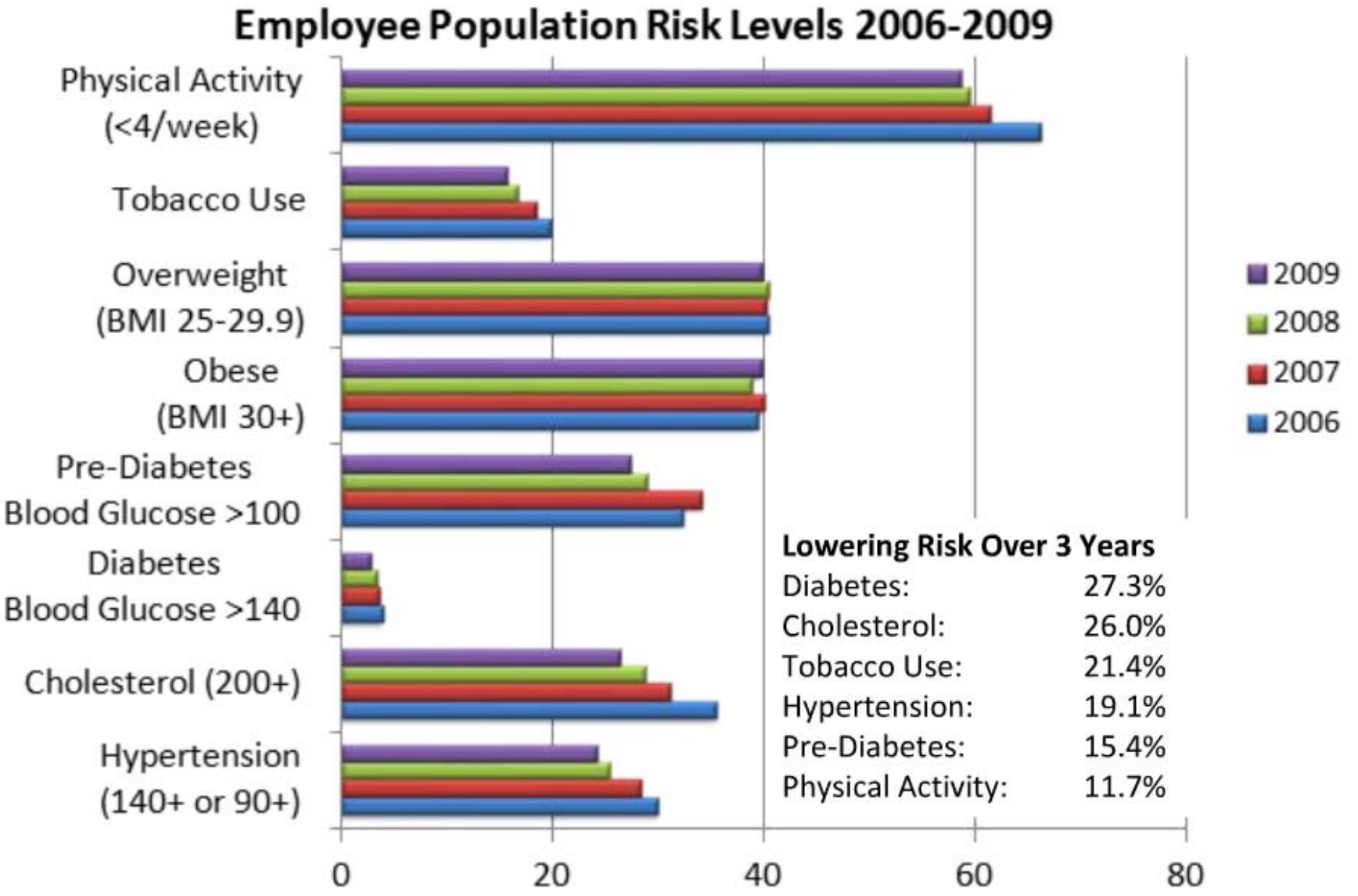
Seinfeld meets Wellness: It's About Nothing



Seinfeld meets Wellness



Average risk reduction: 15% (includes all 8)

How Risk Reduction Drives Cost Reduction

Category	Factor (in %)
Risk Reduction	15% -- from previous slide
Risk-Sensitive Hospital/ER Events	
Hospital/ER Events as a % of Total Spend	
Total Savings	

How Risk Reduction Drives Cost Reduction

Category	Factor (in %)
Risk Reduction	15%
Risk-Sensitive Hospital/ER Events	20% of all Hospital Events*
Hospital/ER Events as a % of Total Spend	
Total Savings	

*Heart events and diabetes events combined account for about 7%. Let's assume generously that another 13% just can't be found but are happening

How Risk Reduction Drives Cost Reduction

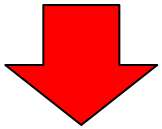
Category	Factor (in %)
Risk Reduction	15%
Risk-Sensitive Hospital/ER Events	20% of all Hospital Events*
Hospital/ER Events as a % of Total Spend	
Total Savings	

3%

A 15% reduction in 20% of hospital spending nets a 3% reduction in hospital spending

How Risk Reduction Drives Cost Reduction

Category	Factor (in %)	
Risk Reduction	15% achieved	3%
Risk-Sensitive Hospital/ER Events	20% estimated	
Hospital/ER Events as a % of Total Spend	50% calculated (approx.)	
Total Savings		



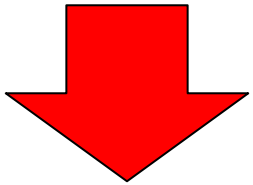
If you save 3% of hospital spending and hospital spending is Half your total spending, your net savings is…

How Risk Reduction Drives Cost Reduction

Category	Factor (in %)
A) Risk Reduction	15% achieved
B) Risk-Sensitive Hospital/ER Events	20% estimated
C) Hospital/ER Events as a % of Total Spend	50% calculated
Total Savings (A x B x C)	15% x 20% x 50%

How Risk Reduction Drives Cost Reduction

Category	Factor (in %)
Risk Reduction	15% achieved
Risk-Sensitive Hospital/ER Events	20% estimated
Hospital/ER Events as a % of Total Spend	50% calculated
Total Savings	1.5%

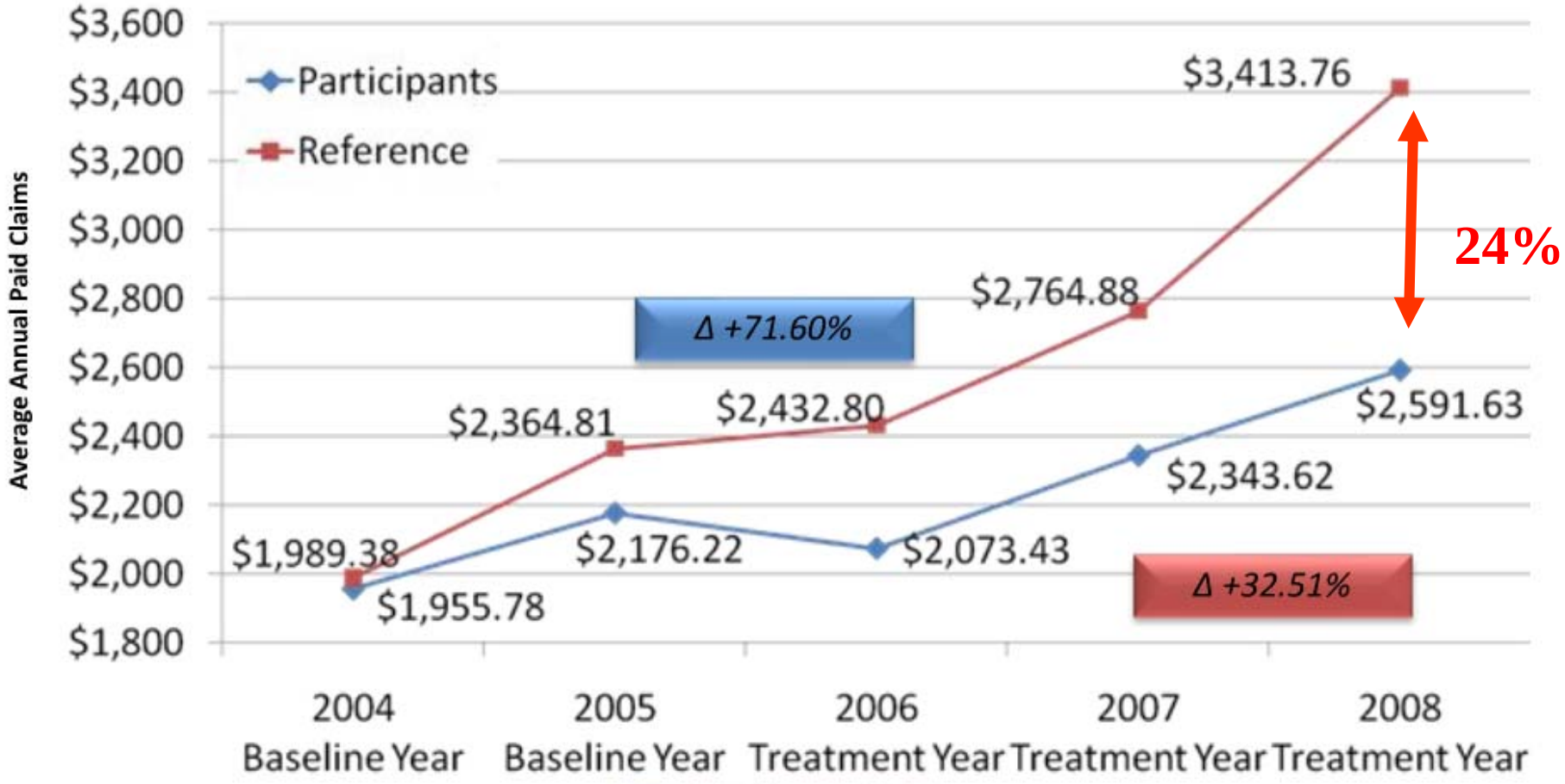


Simplified biostatistical “mediation analysis” translates 15% risk reduction into 1.5% cost reduction -- unless you are…

Total Savings

PMPY savings: $460

ROI: 3.2



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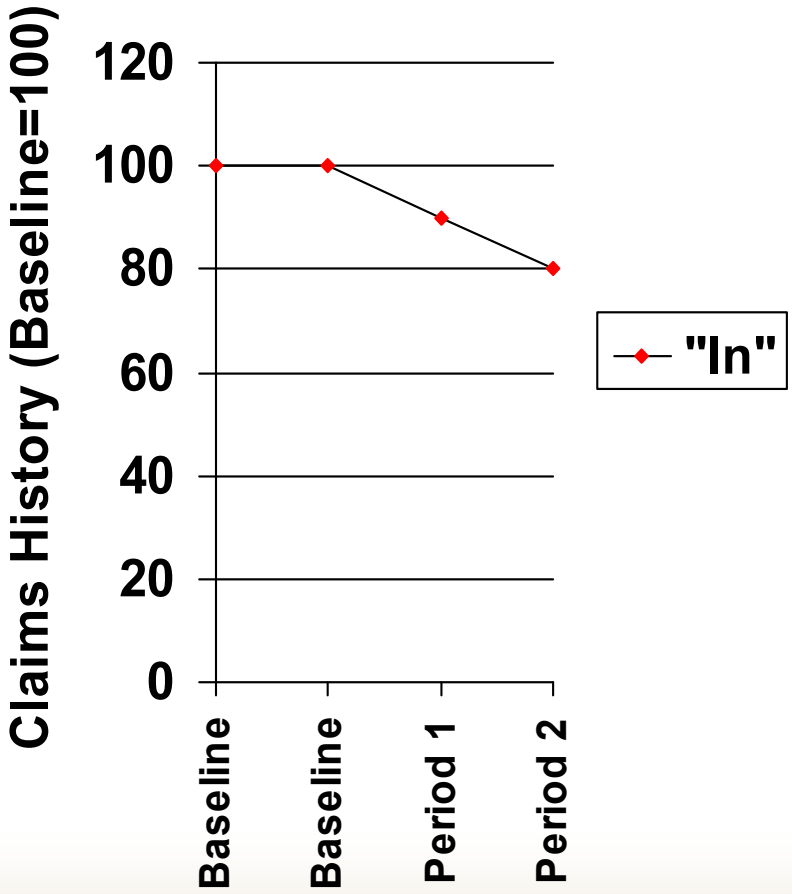
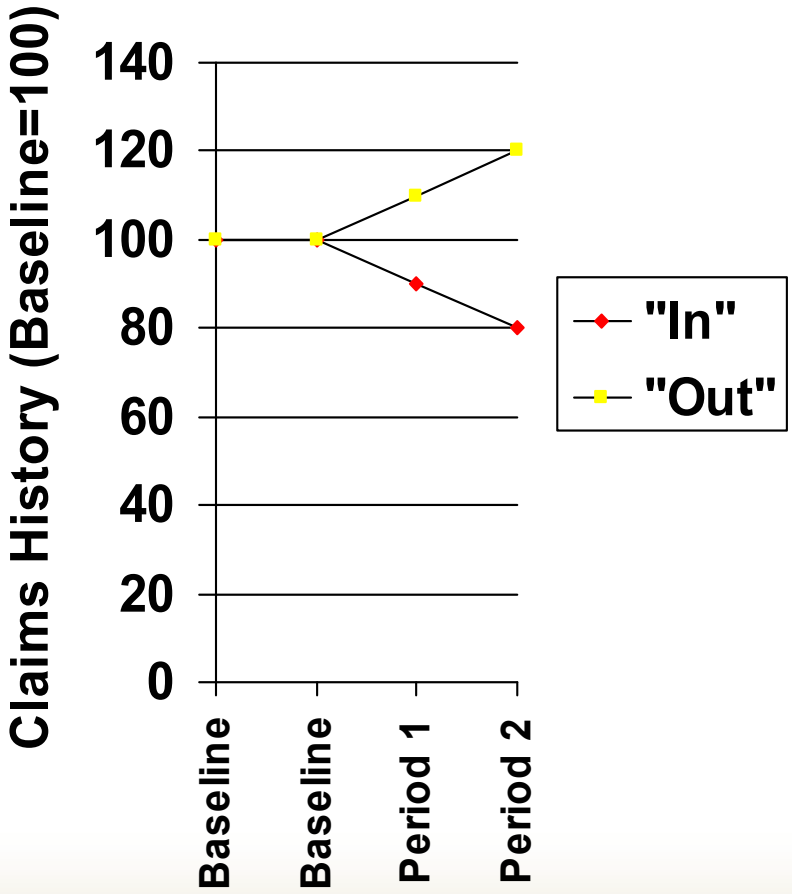
5. **The Quality Dose--Cost Response Rule**—costs can't fall faster or more than quality indicators improve
6. **The Control Group Equivalency Rule**—"matched controls" and "pre-post historic vs. non-disease trend" don't cut it because participants will always outperform non-participants

Participation Bias



- "The participating member's claims went down 20% over two periods vs. a control group

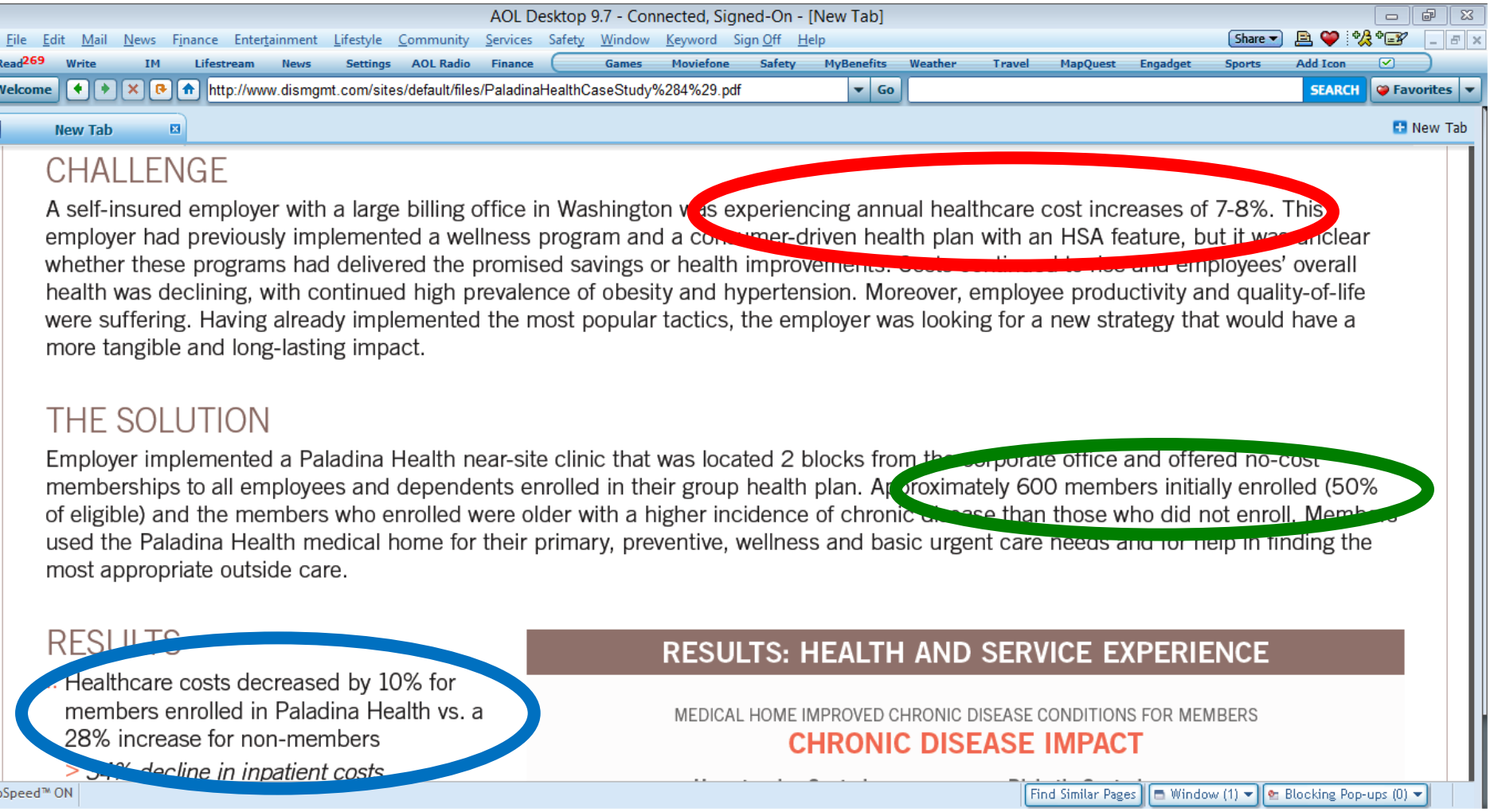
Participation Bias



The participating group consists of motivated people only!

The population has everybody

Example: Paladina Health

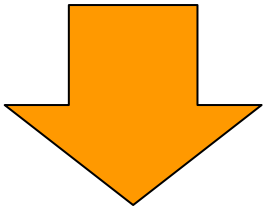


So…

- Trend was 7-8%
- 50% enrolled and their costs declined 10%
- 50% didn’t enroll and their costs increased 28%

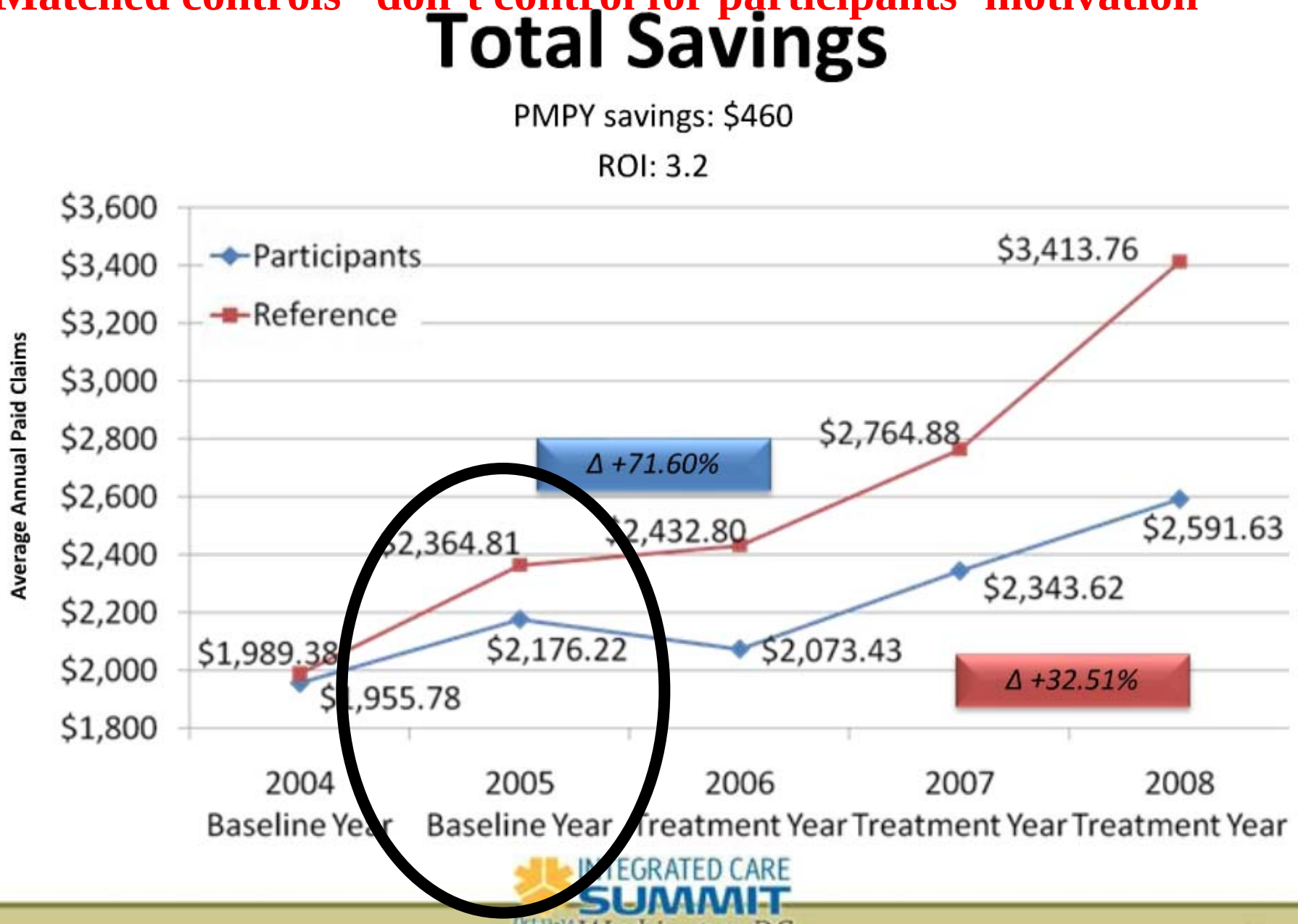
So…

- Trend was 7-8%
- 50% enrolled and their costs declined 10%
- 50% didn't enroll and their costs increased 28%



- Average -10% and +28% = ***9%*** trend now

“Matched controls” don’t control for participants’ motivation



Pre-post vs. the trend of non-disease control, the "official" CCA methodology, is pure fiction on both levels

1. Pre-post is pure fiction, provably false
2. "Adjusted for Trend" is pure fiction, provably false.

Both are covered at length in my book but here is a short version

Base Case: Example from Asthma
First asthmatic has a $1000 IP claim in 2010

	2010 (baseline)	2011 (contract)
Asthmatic #1 (heads)	1000	
Asthmatic #2 (tails)	0	
Cost/asthmatic		

Example from Asthma

Second asthmatic has an IP claim in 2011 while first asthmatic goes on drugs (common post-event)

	2010 (baseline)	2011 (contract)
Asthmatic #1 (heads)	1000	100
Asthmatic #2 (tails)	**0**	**1000**
Cost/asthmatic		

What is the Cost/asthmatic In the baseline?

Cost/asthmatic in baseline?

	2010 (baseline)	2011 (contract)
Asthmatic #1	1000	100
Asthmatic #2	0	1000
Cost/asthmatic	**$1000**	

Vendors don't count #2 in 2010 bec. he can't be found ("tails")

Cost/asthmatic in contract period?

	2010 (baseline)	2011 (contract)
Asthmatic #1	1000	**100**
Asthmatic #2	0	**1000**
Cost/asthmatic	**$1000**	**$550**

Base Case: The effect of flipping the heads

	2010 (baseline)	2011 (contract)
Asthmatic #1	1000	**100**
Asthmatic #2	0	**1000**
Cost/asthmatic	**$1000**	**$550**

In this case, using the official methodology Cost/asthmatic falls 45%

The giveaway that this invalidity is taking place

	2010 (baseline)	2011 (contract)
Asthmatic #1	1000	**100**
Asthmatic #2	0	**1000**
Number of asthmatics in prevalence	1	**2**

Next, look at the non-disease population for a "trend'

	2010 (baseline)	2011 (contract)
Asthmatic #1 (disease population)	1000	**100**
Asthmatic #2 (non-disease population for trend)	0	**1000**

Calculate the trend in the identified disease population

	2010 (baseline)	2011 (contract)
Asthmatic #1 --	1000	**100**
result		**-90%**

90% reduction is great unless…

- …the non-disease population declines at a greater rate
  - Remember, the disease population trend has to be adjusted for *what would have happened anyway in the non-disease population*, using the standard CCA methodology
  - Person in this room has written an article on this using data
- Before you claim savings in the disease population, you need to adjust for the non-disease population

Calculate the trend in the identified non-disease population

	2010 (baseline)	2011 (contract)
Asthmatic #1 – disease pop.	$1000	**$100**
Asthmatic #2— non-disease pop	$0	**$1000**
Non-disease trend		+ ∞

Hunh?

- Not-yet-identified people with the condition don't just get left out of the disease population. They get added to the non-disease population, thus exacerbating the invalidity.

The Seven Rules of Plausibility

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6. **The Control Group Equivalency Rule**—"trend" and "matched controls" and "pre-post historic" don't cut it
7. **The Multiple Violations Rule**—if one rule is violated, so are others

Multiple Violations: Check These Examples against the Plausibility Rules

Rule	Mercer/North Carolina	Vendor A	Pharos	Eastman Chemical
100%				
Every Metric can't Improve				
25% declines				
Nexus				
Quality Dose-Cost Response				
Control Group Equivalency/Trend				

The Keys to the Kingdom

- There is no substitute for a careful reading and applying common sense
- The “answer” is a combination of the factoids, the 7 Rules, common sense and observational skills
- This is the tip of the iceberg: Much more in my book

4 Examples

Find the flaws and (if self-study) write them down

Share with group or (if self-study) email them to alewis@dismgmt.com

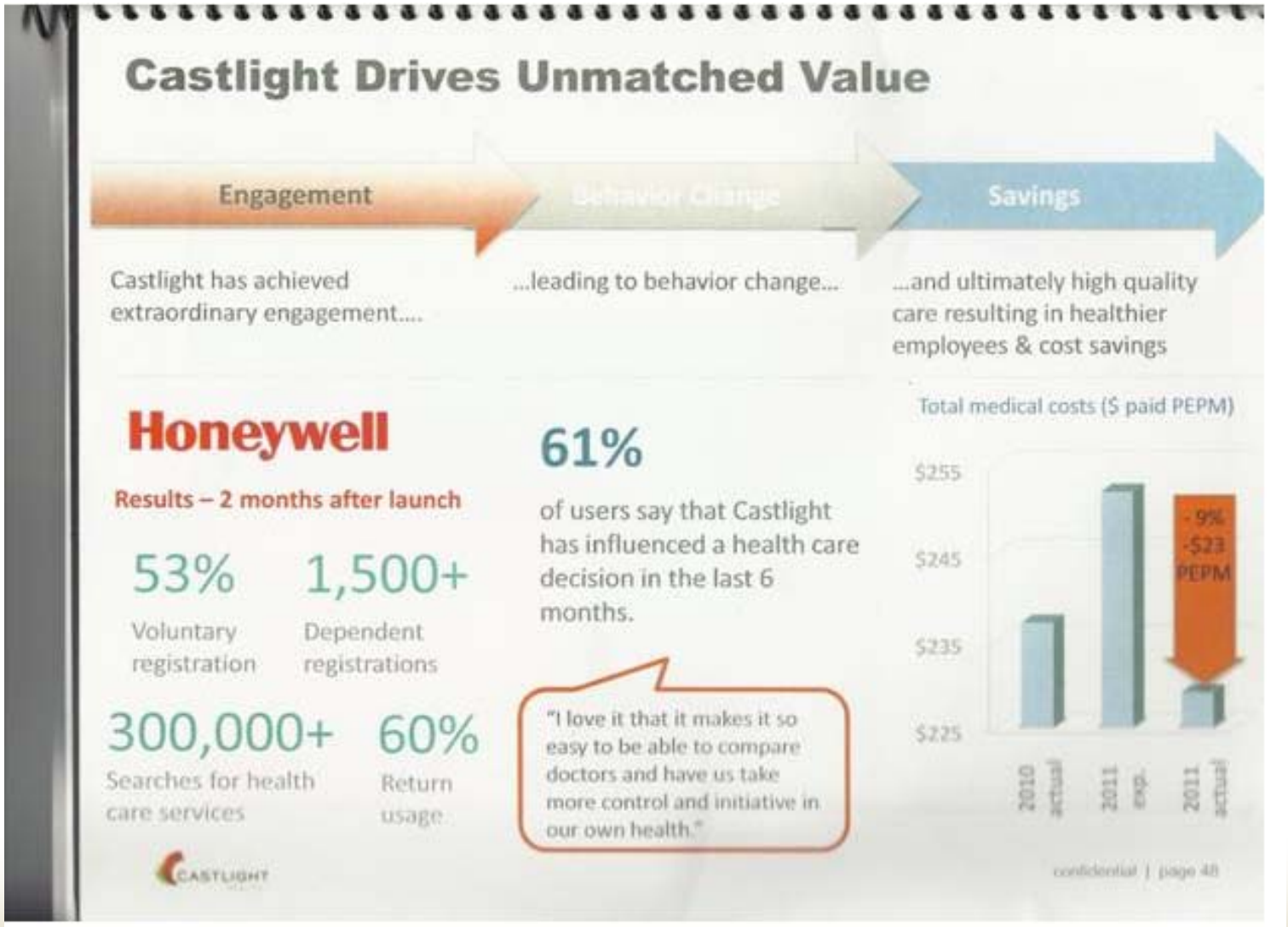
Program Year One – Clinical Indicators

1. What is wrong with this outcomes slide?

	Percentage of Continuously Enrolled Members		
	Base	Post Year 1	*mprovemen*
% of CHD Members with an LDL screen	75.0%	77.0%	***2.0%***
% of CHD Members with at least one claim for a Statin	69.0%	70.5%	***1.5%***
% of CHD Members receiving an ACE inhibitor or alternative	43.5%	44.7%	***1.2%***
% of CHD Members post-MI with at least one claim for a beta-blocker	0.89	0.89	***0.0%***
Hospitalizations/1,000 CHD Members for a primary diagnosis of Myocardial Infarction*	47.60	24.38	***-48.8%***

*measure based on total membership, not just "continuously enrolled" membership

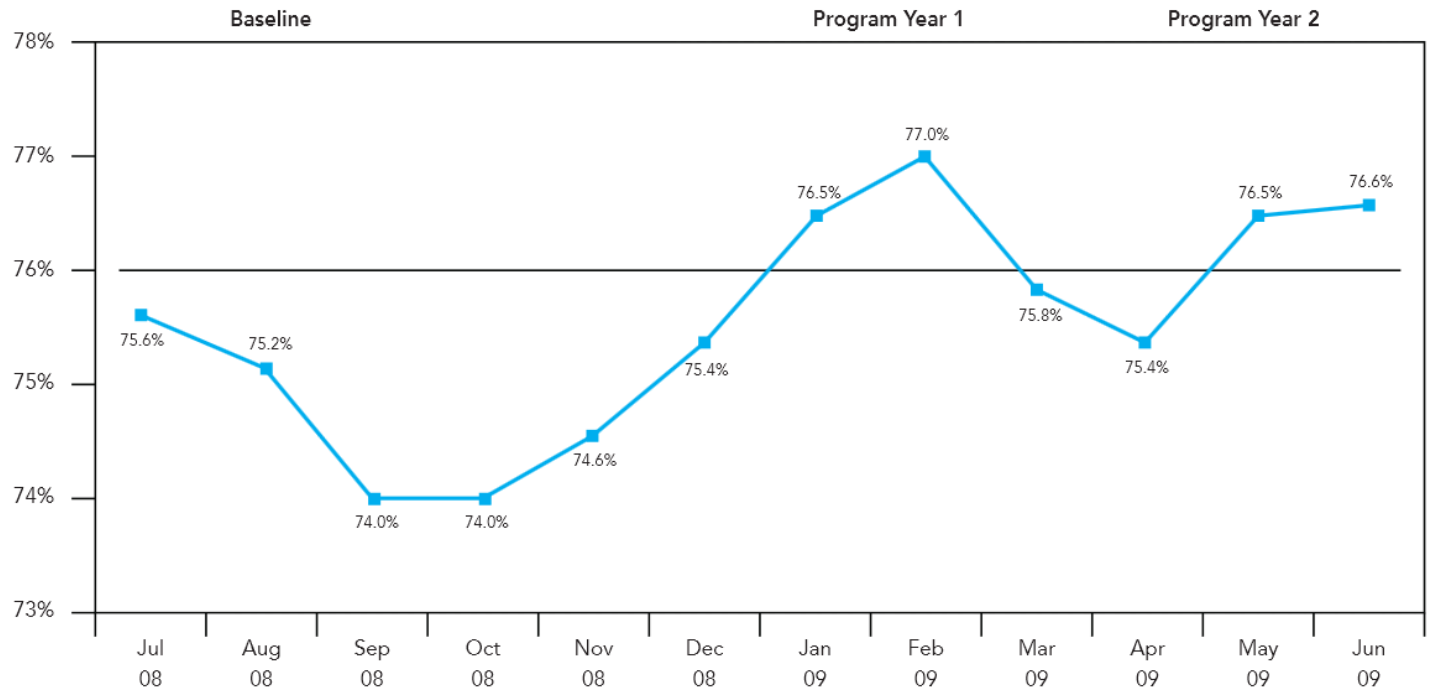
Does Castlight Save Money?



Question 3

- Comment on how good a job you think these guys did and what mistakes they might have made accidentally or on purpose

CAD Lipid Rx Adherence Rate



Purchasing Consortium Advisory Council

Wellnet and Cumulus Media

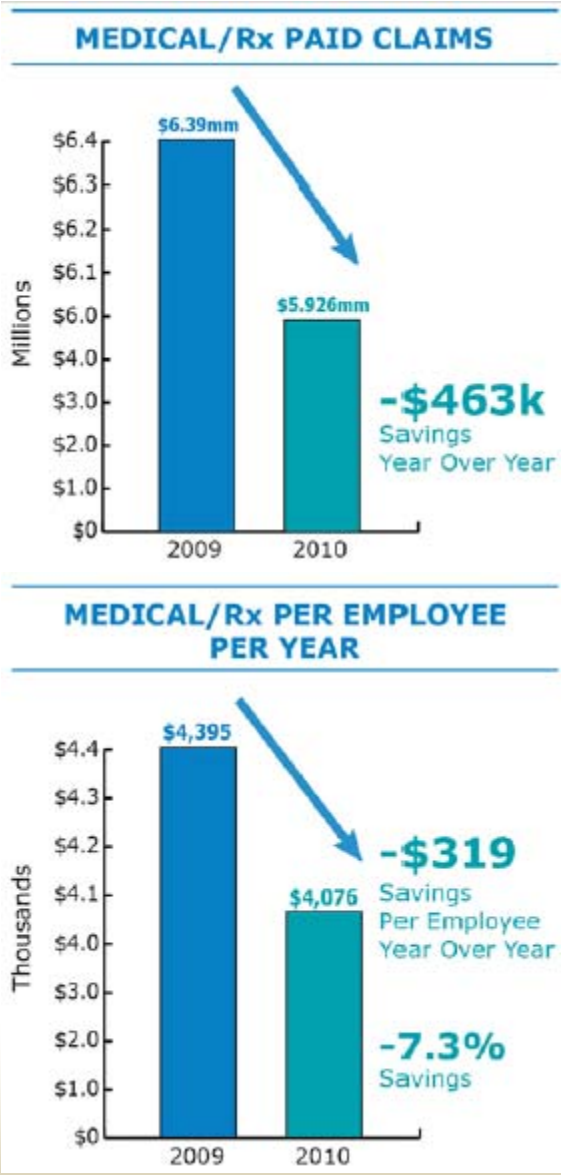
KEY FACTS

Headquarters:	Atlanta, Georgia
Start Date:	January, 2009
Business:	National Radio Station Operator
Population:	1,454 ee's/2,572 members
Executive Endorsement:	Strong
Member Participation:	79%
Member Communication:	Ongoing
Incentive:	Premium Reduction
Medical Plan Trend Reduction:	8% to .06%

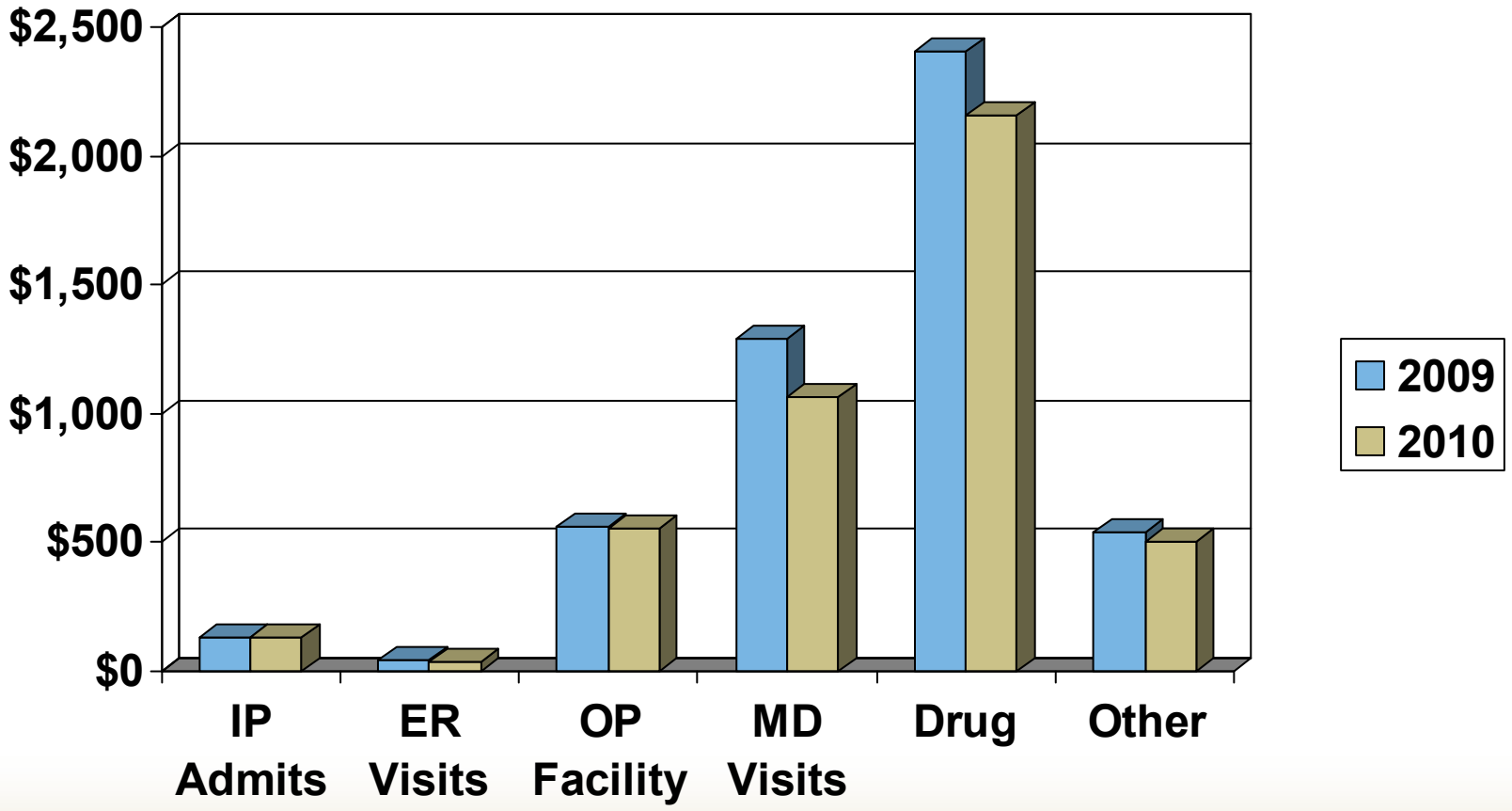
RETURN ON INVESTMENT: 18:1

INTEGRATED CARE MANAGEMENT

High Risk Members:	55 members
	2% of population
	5.5 conditions per member
	$4mm in undetected claims cost
Medium Risk Members:	453 members
	18% of population
	3 conditions per member
	$17mm in undetected claims cost



Savings by Category of Utilization per 1000 members per month (2010 vs. 2009)
(note: The *difference* between the bars is the savings)



#4 – Disease/Case Management Program Results

Category	Base	Intervention
Total Commercial Membership	605,000	611,000
Prevalence of selected case mgmt conditions	24%	24%
Annual claims cost	$952	$915
Annual admission rate	96	76
Annual Admission cost	$259	$242
Annual MD visit rate per 1000 members	4335	4275
Annual MD visit costs/member	$139	$135
Annual ED visit rate/1000	431	369
Annual ED costs/member	$39	$33