OUTCOMES MEASUREMENT FOR DUMMIES…AND SMARTIES

MARCH 2011

DMPC

Disease Management

Purchasing Consortium Advisory Council

Don’t listen to a word I say

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

If your own eyes find a math mistake on any slide, raise your hand and point it out – you get a free Critical Outcomes Report Analysis course and certification

Outcomes Measurement for Dummies…and Smarties: Agenda

- Lightening things up with some great trivia
- Applying Your Critical Thinking Skills
  - -- Innumeracy Generally
  - – Medical Home
  - – Disease Management/Wellness
- Why This Happens
- The Seven Rules of Plausibility

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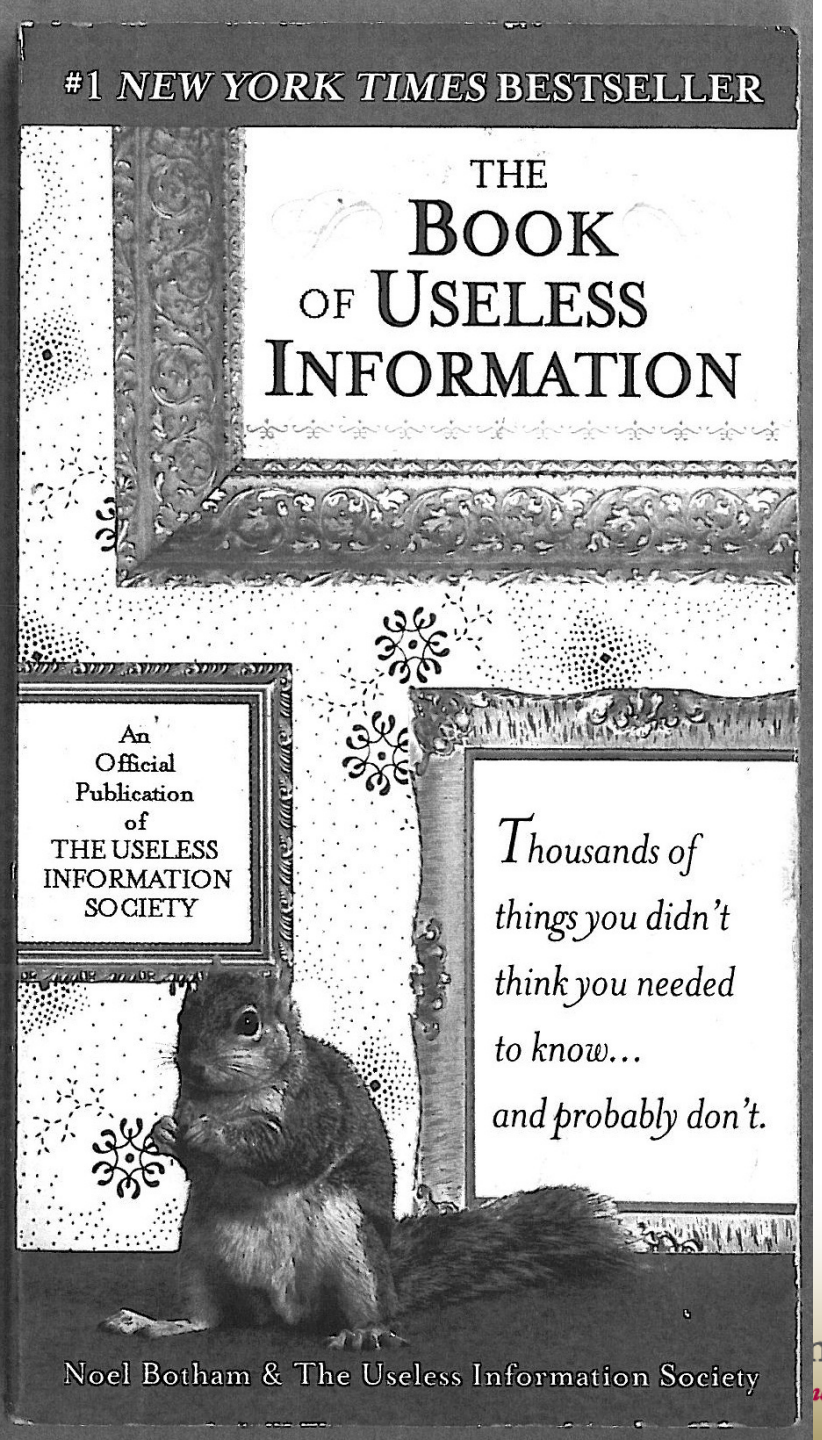

#1 *New York Times* Bestseller

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."

Let's Go On with the Show

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

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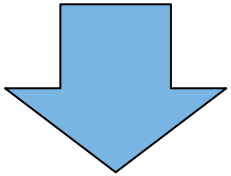
Here's Why: All these "facts" are dead wrong

- 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.

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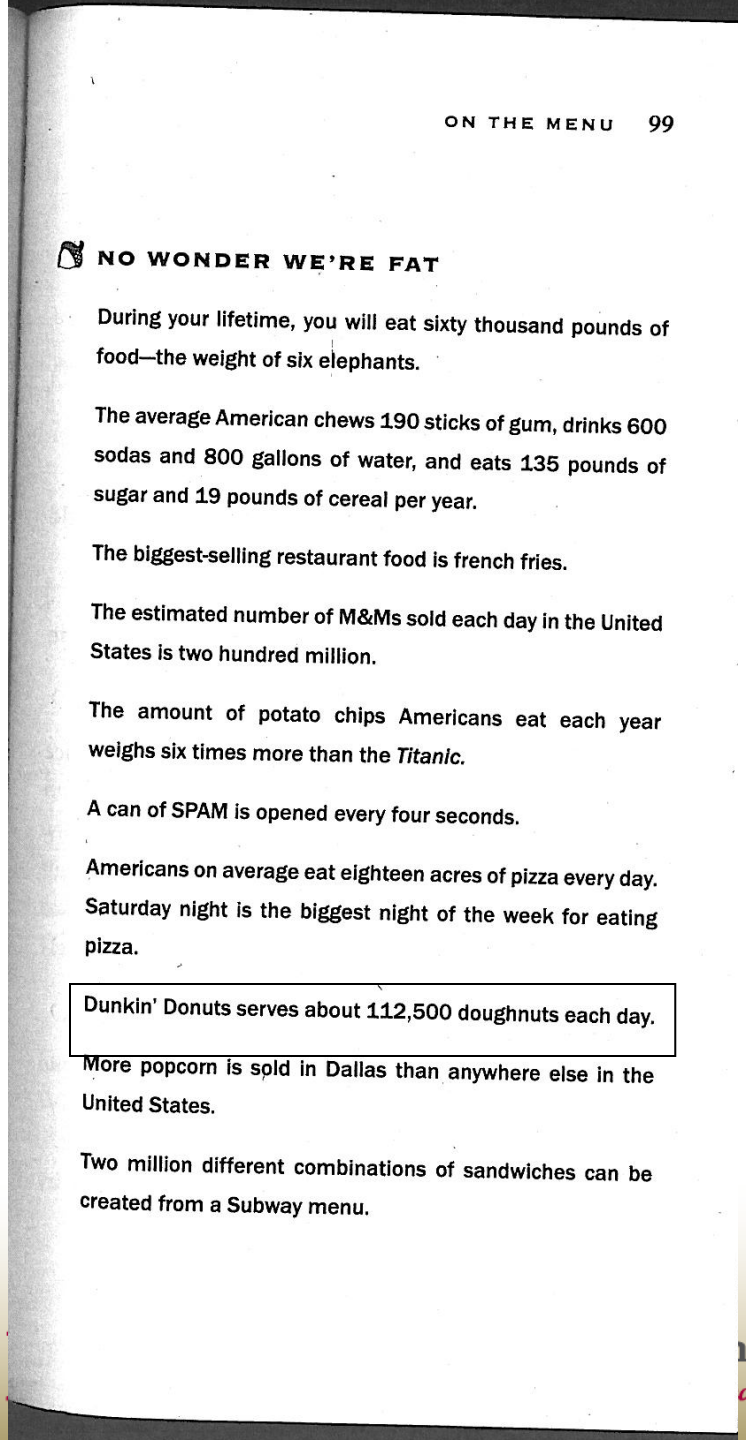

ON THE MENU 99

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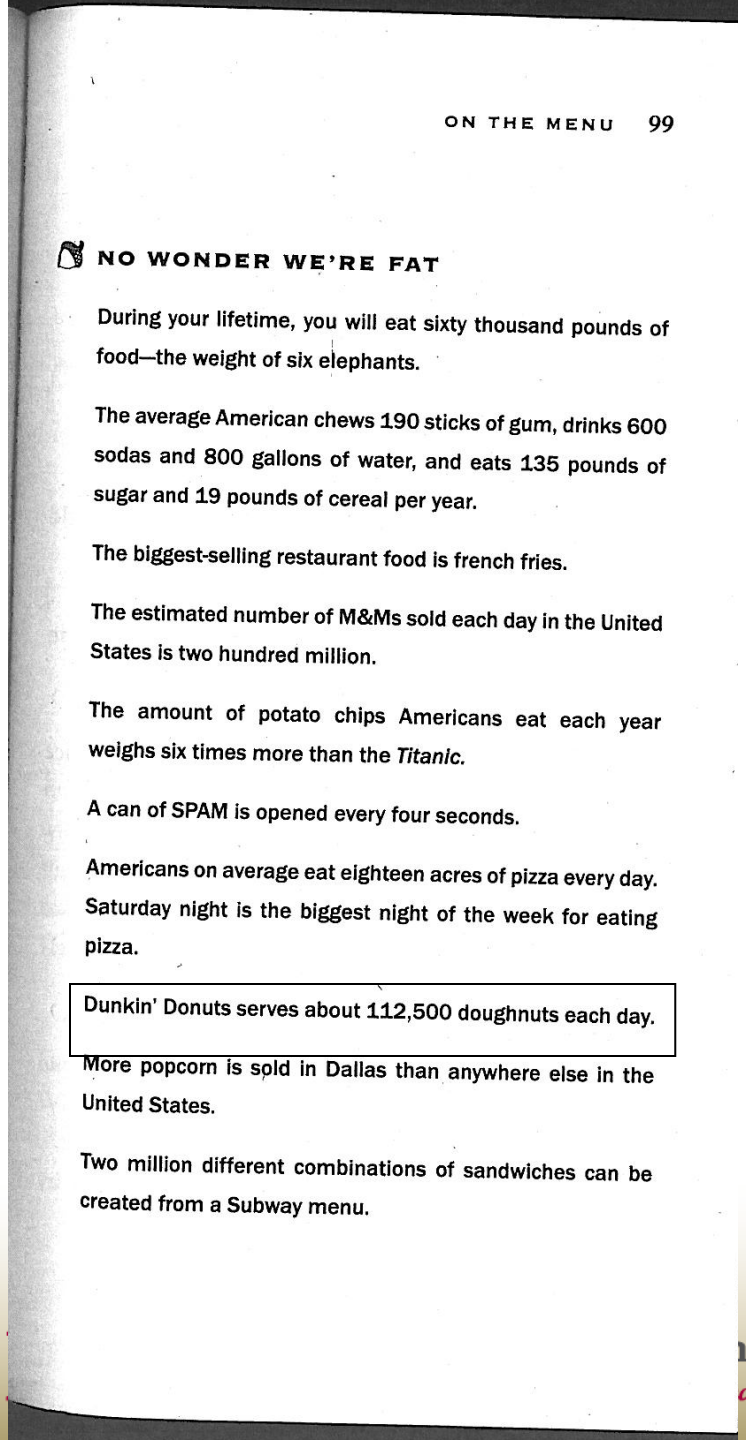

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Did you **think**: "Wait, there must be thousands of Dunkin Donuts stores – that's only a few dozen donuts a day/store" ?

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

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

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

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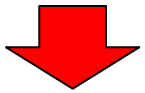
Did you ***think***:
"Wait, a country would go bankrupt if it did that"

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.



Let's take examples from health care

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- Why This Happens
  - – Disease Management/Wellness Example
- How to Fix: The 7 Rules of Plausibility

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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 program in 2007, implementing a personalized approach focused around a high trust, high engagement strategy with US Corporate Wellness. The following provides data resulting directly from this program.

Access and Participation

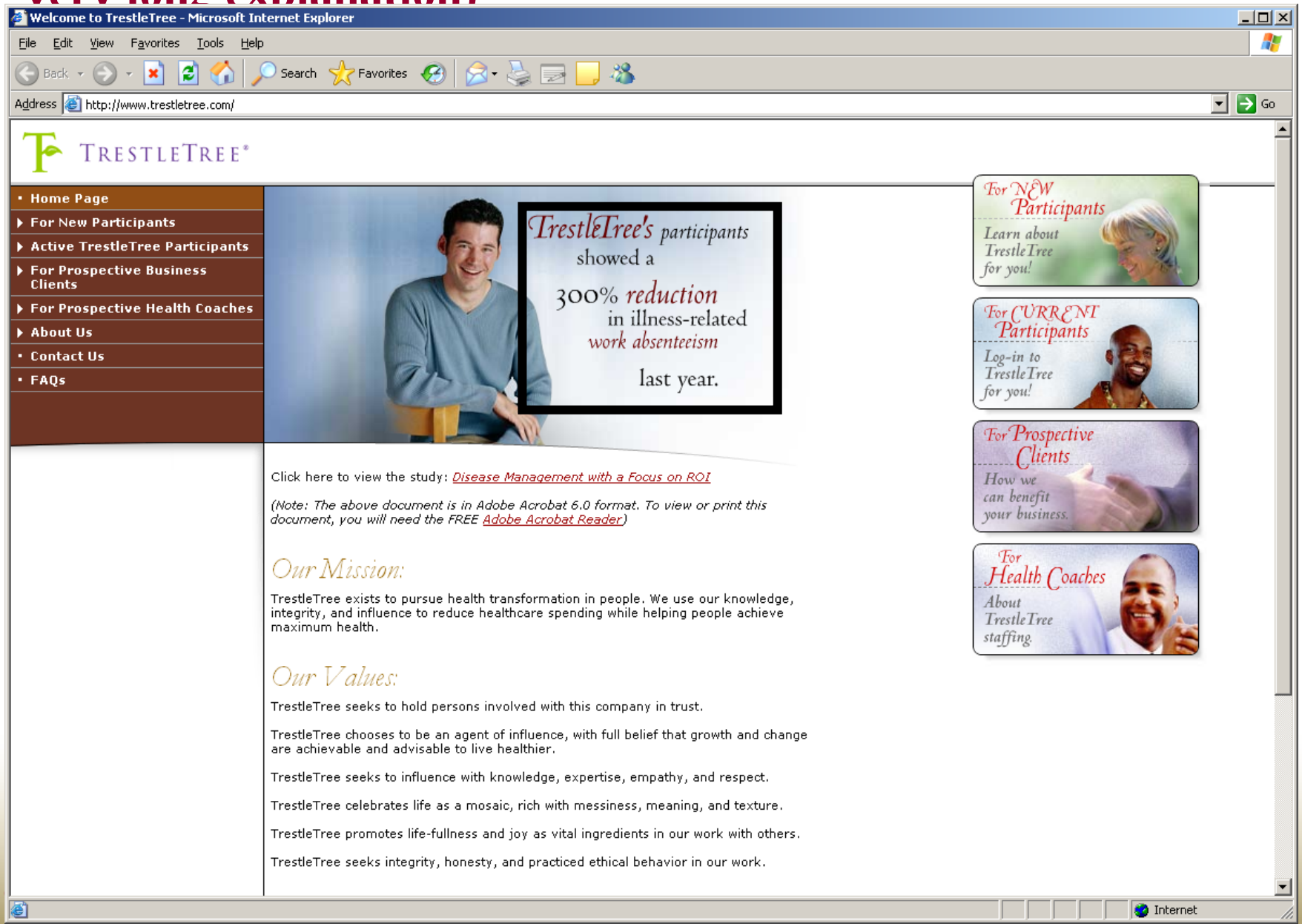
All benefit eligible employees at TCH - approximately 3,200 people - were granted access to participate in the program. Those receiving benefits – approximately 2,400 people – were provided a moderate incentive to participate. The program grew quickly to 1,400 active participants upon launch and has 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

Luckily Math is not a popularity contest because here is another vote for >100% reductions (subsequently fixed after a very long explanation)



Next example: Medical Homes

- Mercer analysis for North Carolina Medicaid

- Finding was: “The [state] saved $284-million to $314-million in [fiscal] 2006 (the last year studied)”, vs. prediction

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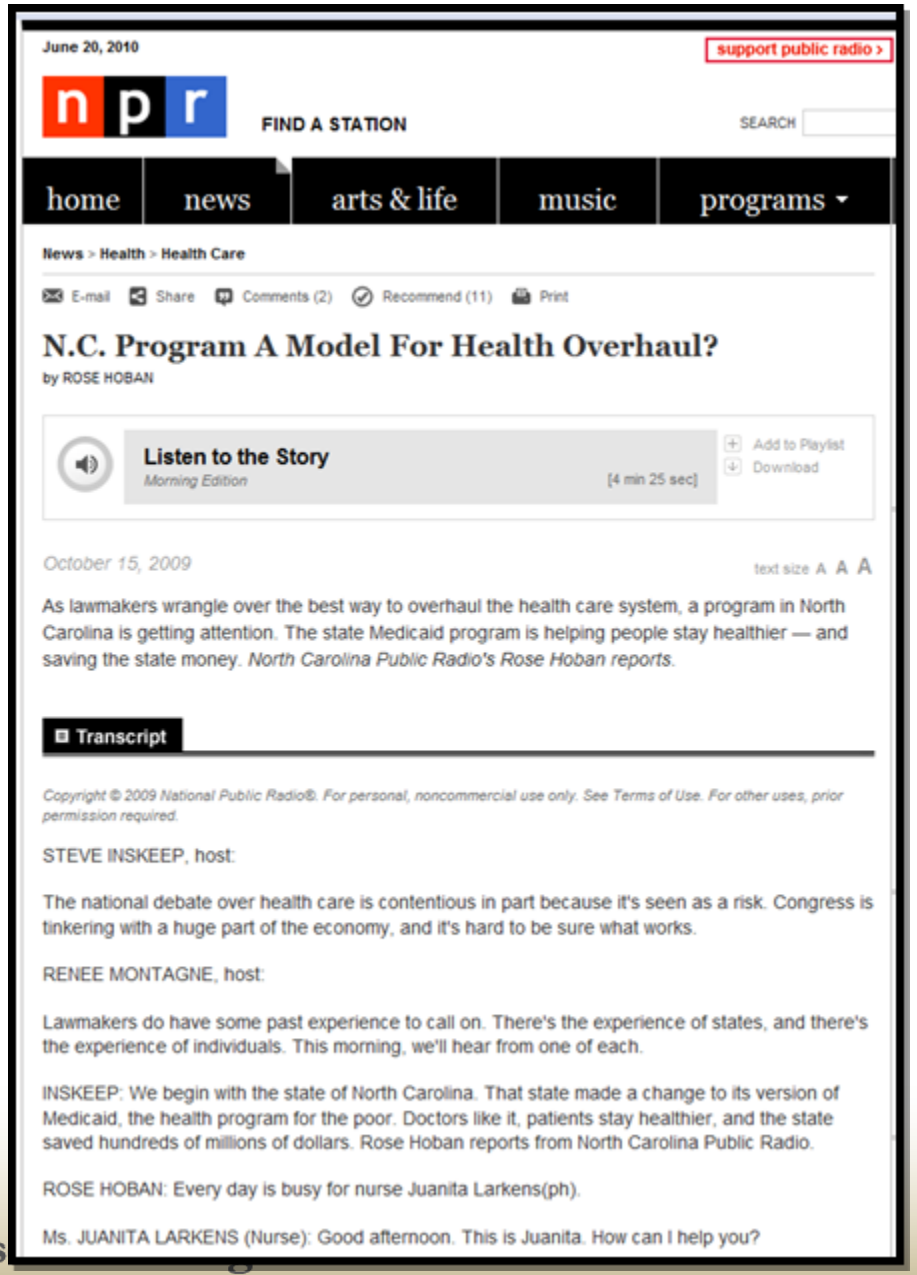

June 20, 2010

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N.C. Program A Model For Health Overhaul?

by ROSE HOBAN

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Morning Edition [4 min 25 sec]

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October 15, 2009

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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).

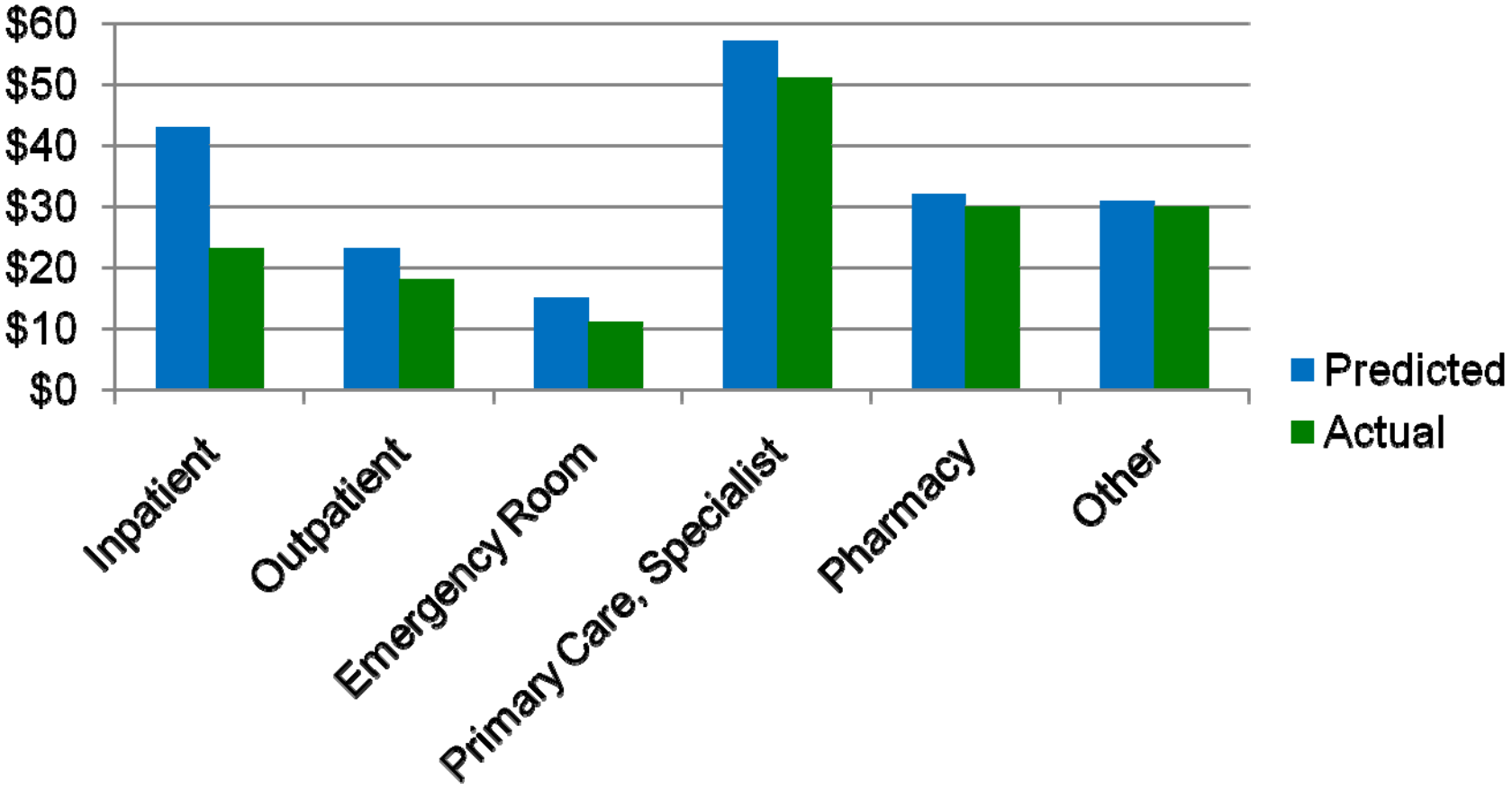
Ms. JUANITA LARKENS (Nurse): Good afternoon. This is Juanita. How can I help you?

(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)



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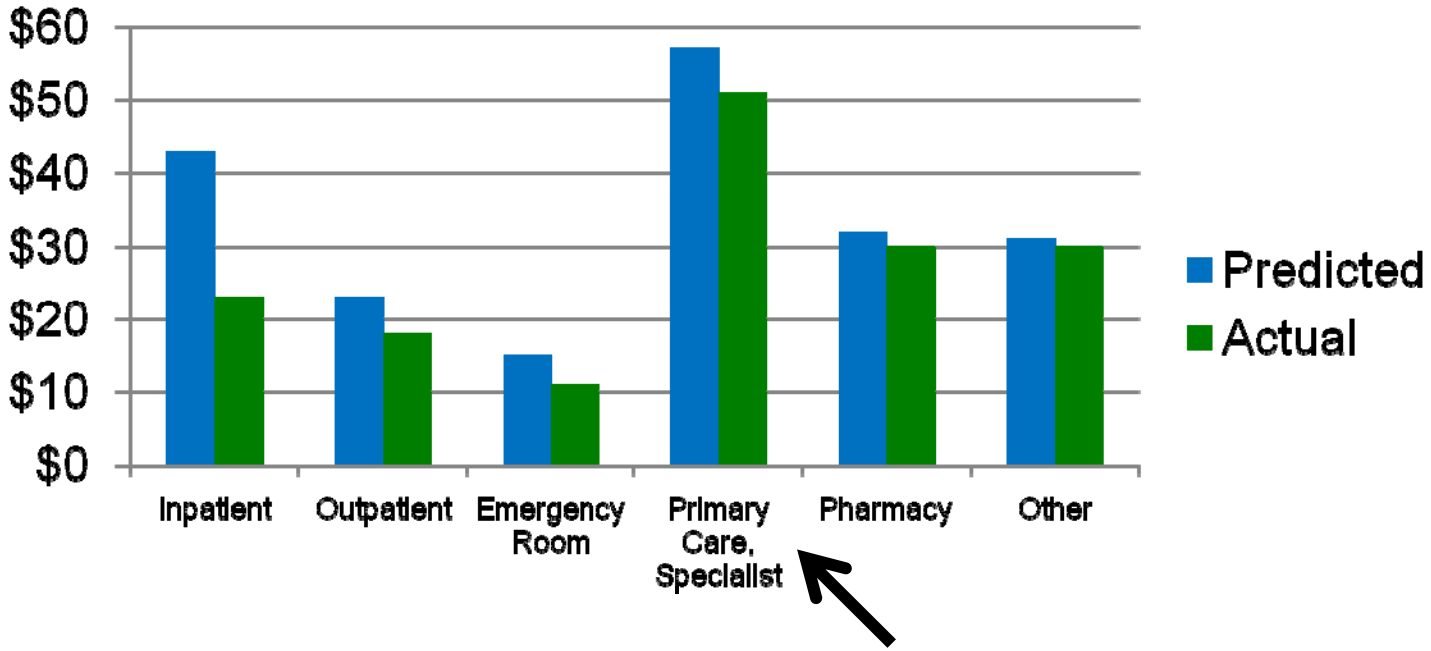
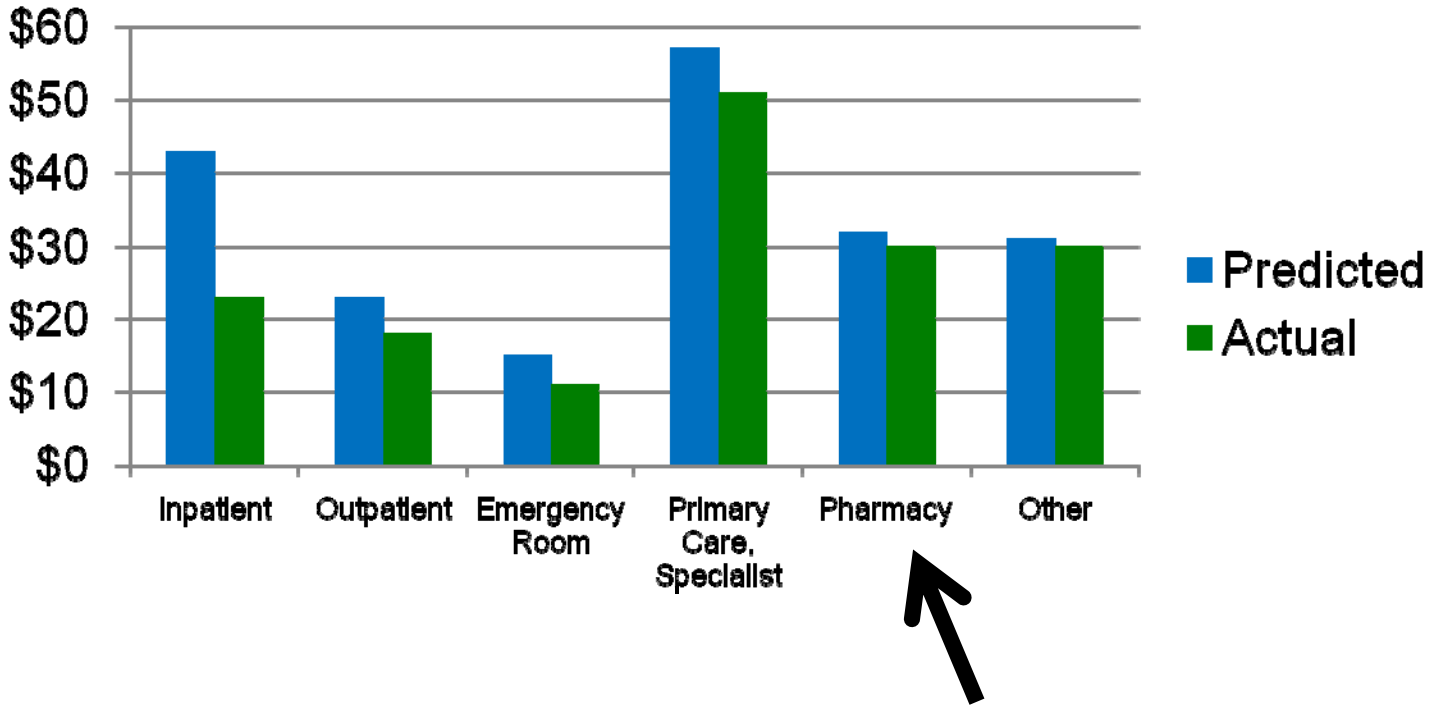


•Why are the doctors so supportive if they are working harder and making less money?

•Why did Mercer lump specialists and PCPs together even though increased PCP use was supposed to reduce specialist visits?

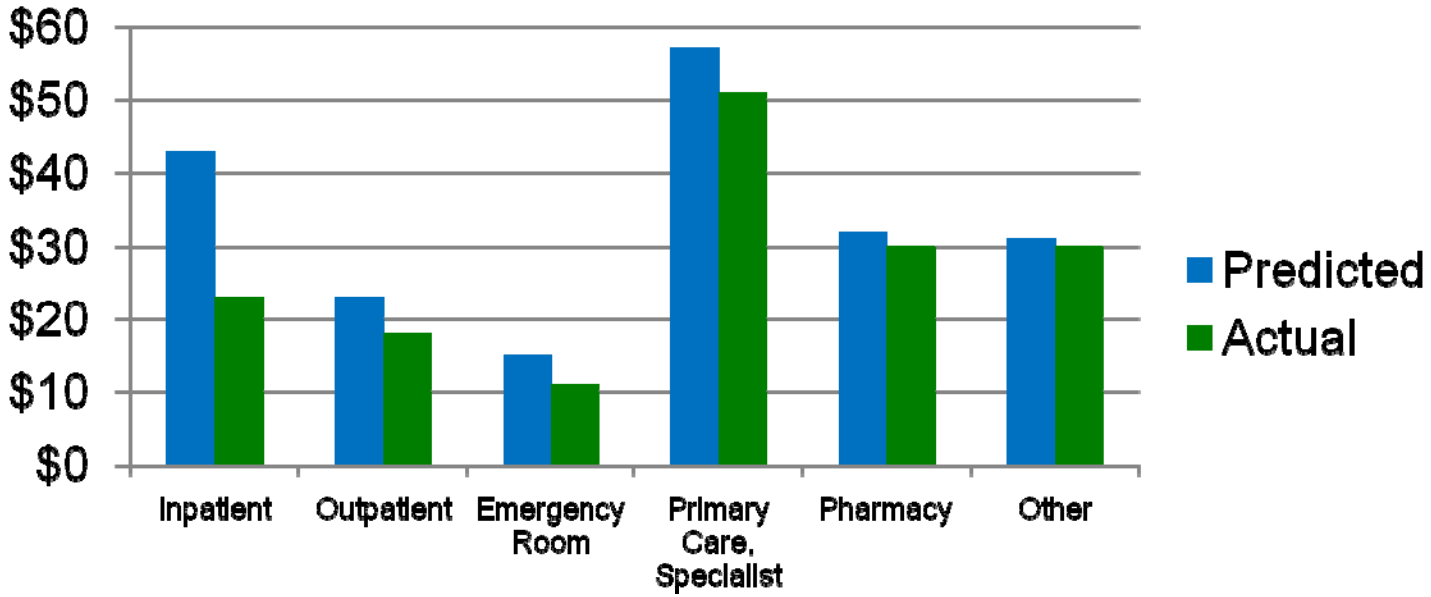
Predicted vs. Actual PMPM Results for North Carolina (blown up from previous page)



- How can they be putting more people on preventive meds if drug expense went down? (note that generic substitution is NOT a part of medical homes – this is supposed to be savings DUE TO medical homes)

- Where are the patients getting their care, if not from hospitals, ER visits, OP clinics, doctors, drugs, or other?

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



- Why are the doctors so supportive if they are working harder and making less money?
- Why did Mercer lump specialists and PCPs together even though increased PCP use was supposed to reduce specialist visits?
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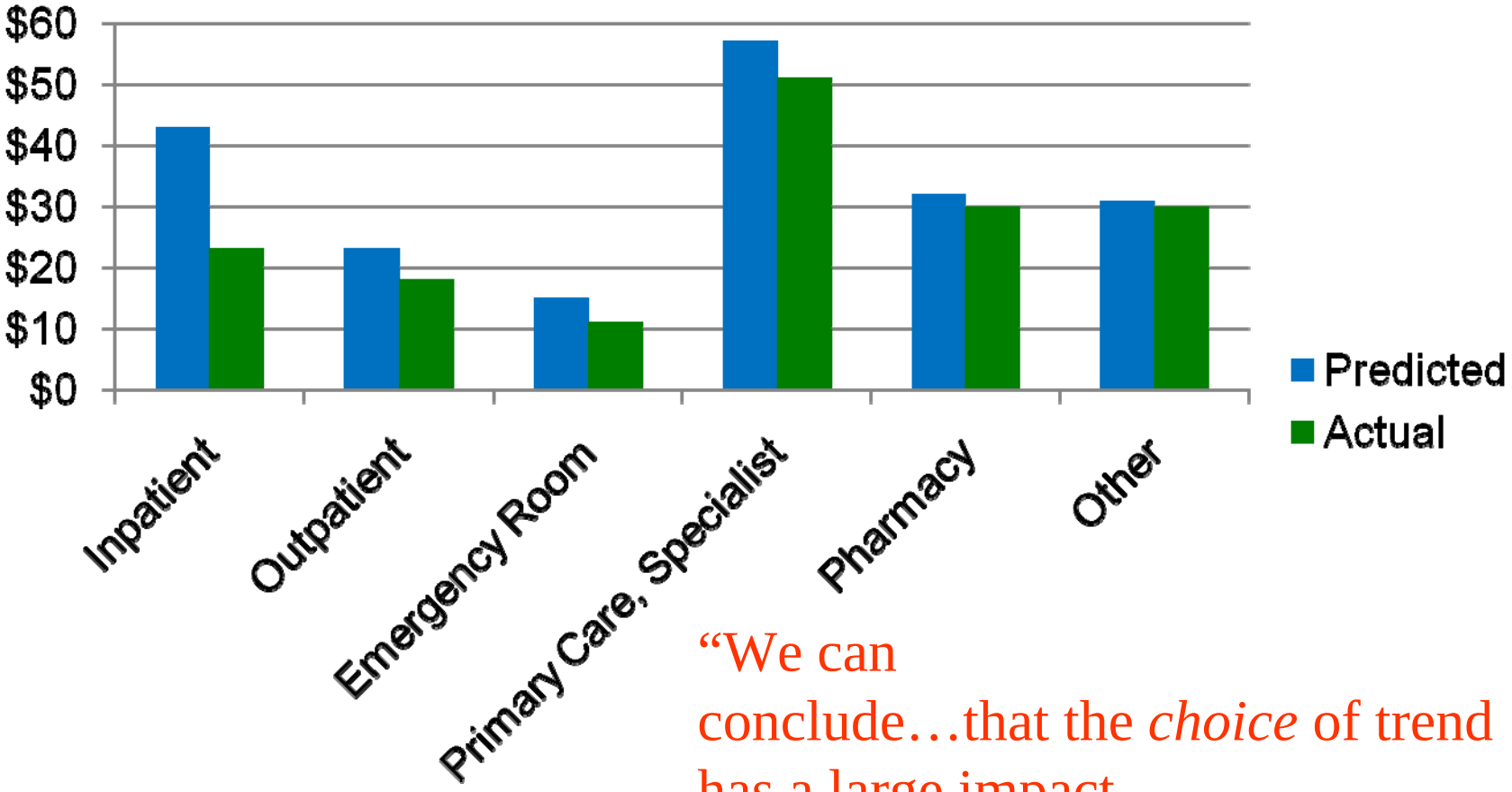
- Where are the patients getting their care, if not from hospitals, ER vis OP clinics, doctors, drugs, or other?
- ***Could something be wrong with the trend assumption?***

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



"We can conclude…that the *choice* of trend has a large impact on estimates of financial savings."

--Seth Serxner, Mercer

Draw Your Own Conclusions – Use Your Own Eyes

- Can uses of all resources decline?
- Could the “choice” of trend have been influenced by the desired outcome?

Now let's apply the one of the Rules of Plausibility: The 100% Rule (like US Corporate Wellness and Trestletree)

- When you are looking to determine if a savings outcome is wrong, you focus on the biggest number.
- If that number is wrong, so are all the others (analysis all done the same way)
- Let's see if we can find a 100% Rule violation in the biggest number

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.

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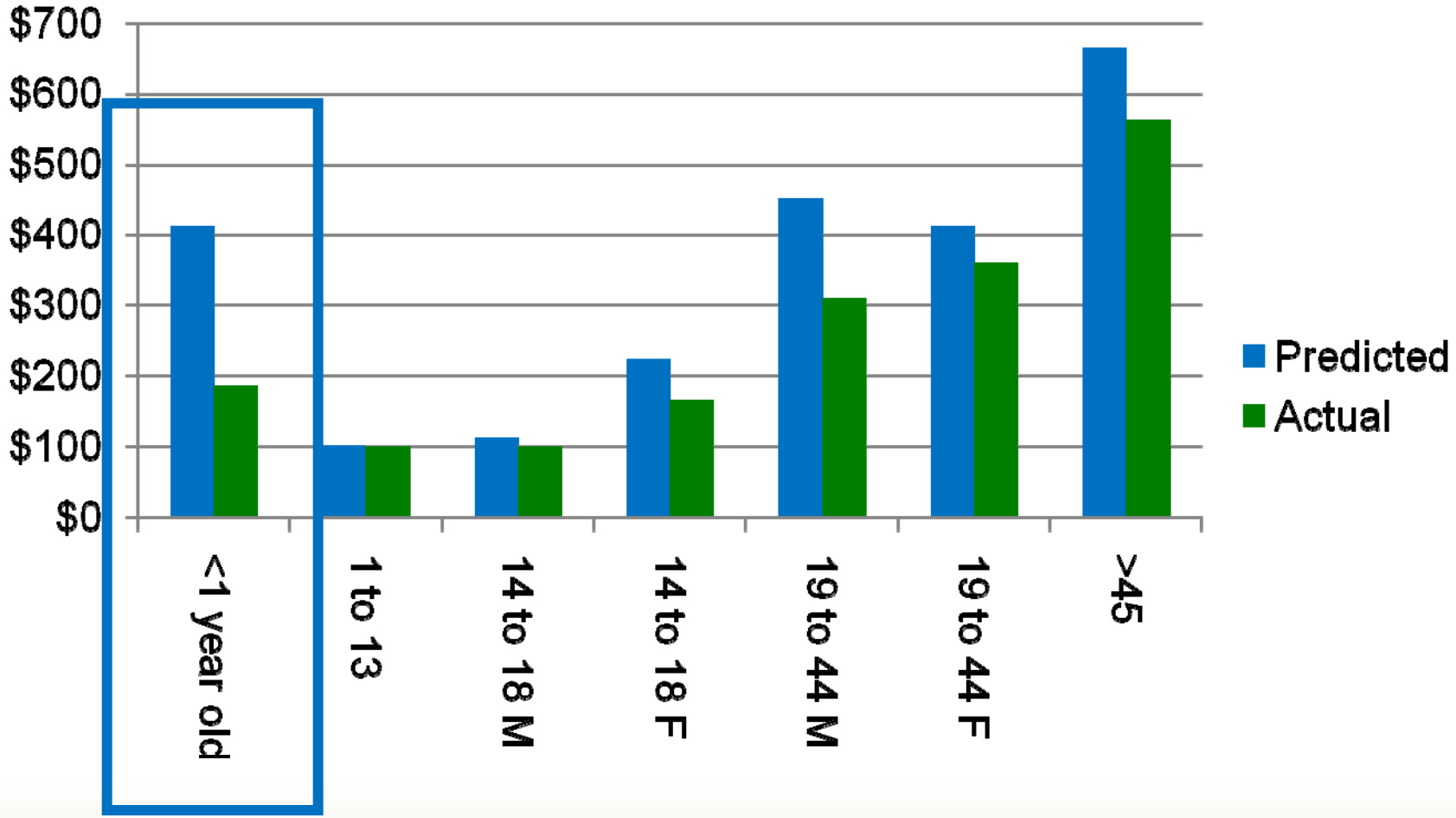

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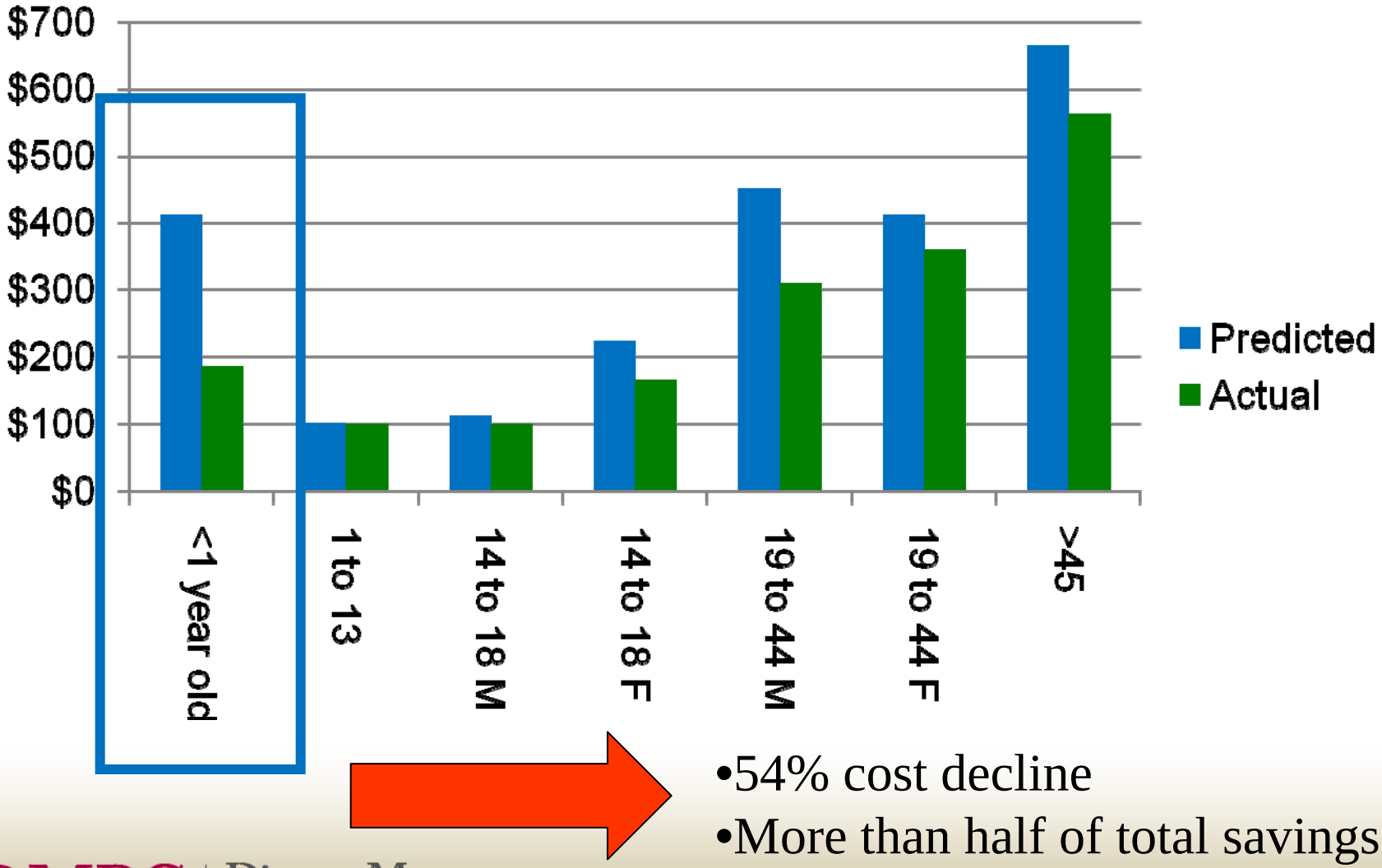

- 54% cost decline
- More than half of total savings are in this one category

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Purchasing Consortium Advisory Council

Questions to ask yourself as an informed reader of reports: Where could the savings have come from in the <1 year-olds?

Category	Plausibility
Pediatricians	
Drugs	
Childhood diseases	
Fewer babies	

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Category	Your-own-eyes answer
Pediatricians	No– they get paid more
Drugs	No—PCMH compliance-oriented
Childhood diseases	No change in older children
Fewer babies	This was based on cost per baby-month, not total babies

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Neonatal Care	***This must have declined >100% to get a 54% overall reduction in this age category***

- Let's look at the actual data – maybe the reduction approaches 100%

Actual days of care for NC neonates from baseline (2000-2002) to endpoint (2006)

Study Period in green

Baseline in Red

		2000	2001	2002	2004	2005	2006	2007
DRG	Non-normal discharges	**33,631**	**30,227**	**27,776**	29,192	30,594	**32,390**	33,045
386-390	LOS (length of stay), days (mean)	**6.4**	**6.9**	**7.1**	7.1	7.2	**7.1**	7.3
	Discharge days	**216,257**	**207,897**	**196,181**	207,906	219,630	**229,969**	240,339

	Baseline		Study
Average Discharges	30,544	vs.	32,390
Average Days:	206,778	vs.	229,969

Actual days of care for NC normal and neonates

Study Period in green

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Diagnosis Related Group 391, Normal newborn

391	Total number of discharges	79,875	80,419	81,090	85,441	87,356	89,643	93,280
	LOS (length of stay), days (mean)	2	2	2	2.1	2.1	2.1	2.1
		159,750	160,838	162,180	179,426	183,448	188,250	195,888

Discharge	AVG:	80461	89,653
Days	AVG	160992	188250

DMPC

Let's see if the RATIO of neonates to normal newborns declined

Baseline in Red

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		159,750	160,838	162,180	179,426	183,448	**188,250**	195,888
	Total newborns	113,506	110,646	108,866	114,633	117,950	**122,033**	126,325
	% Non-normal discharges	29.6%	27.3%	25.5%	25.5%	25.9%	**26.5%**	26.2%
	% Normal discharges	70.4%	72.7%	74.5%	74.5%	74.1%	**73.5%**	73.8%

To summarize North Carolina…

	Study baseline 2000-02	Study period 2006	change
North Carolina % non-normal births (of total births)	27.5%	26.5%	-1.0%

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North Carolina: >100% needed, 1% found*

- Maybe the neonatal rate would have gone way up absent medical home
- Let's compare North Carolina to South Carolina to test that hypothesis

*technically speaking, that is 1 percentage point, not 1%

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Using South Carolina's neonatal rate as a "control" for North Carolina's – maybe SC went way up?

	baseline	Study period	change
	2000-02	2006	
North Carolina % non-normal births (of total births)	27.5%	26.5%	-1.0%
South Carolina % non-normal births (of total births)	26.0%	25.5%	-0.5%

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Which do you believe?

- Mercer's NC analysis
- Your own eyes

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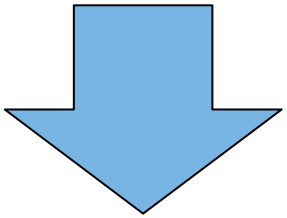

Why might there be a large gap between your own eyes
And what vendors/consultants tell you?

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Outcomes Measurement for Dummies…and Smarties: Agenda

- Lightening things up with some great trivia
- Applying Your Critical Thinking Skills
  - -- Innumeracy Generally
  - – Medical Home
- Why This Happens
  - – Disease Management/Wellness Example
- How to Fix: The 7 Rules of Plausibility

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“Whole disease population” is usually the basis for measuring any chronic disease program

- All Identifiable members with the disease in question

"Whole Disease 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

Why might an 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

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

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

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

The effect of Tails on measuring savings vs. predicted results

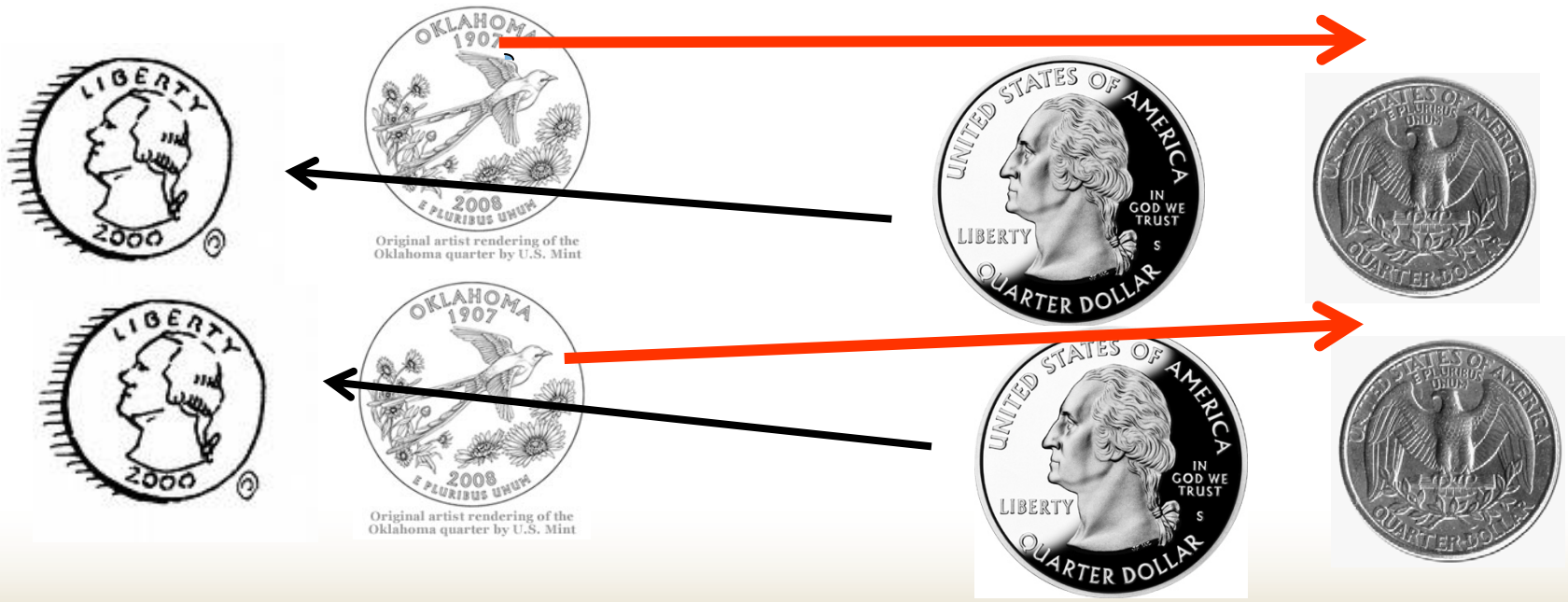
- Heads flipping to tails count as savings
- But no one flips the Tails and offset the savings from Heads-turning-Tails with the Tails-turning-Heads

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

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: XXX Wellness

- XXX 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)

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

Better Health. Guaranteed.[SM]

A promise only [redacted] can make.

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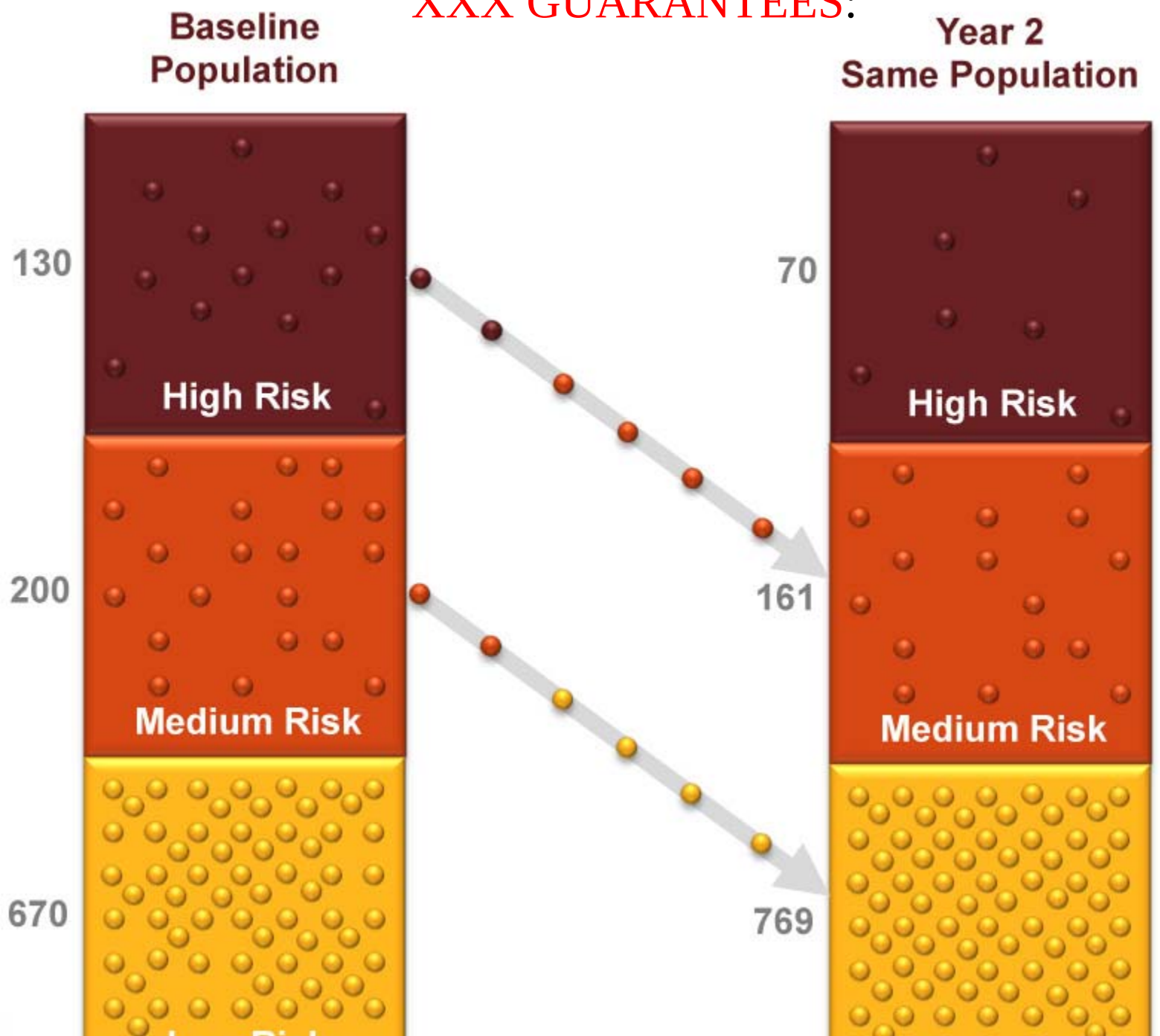
XXX GUARANTEES:



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Target Ris

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Goal / Con

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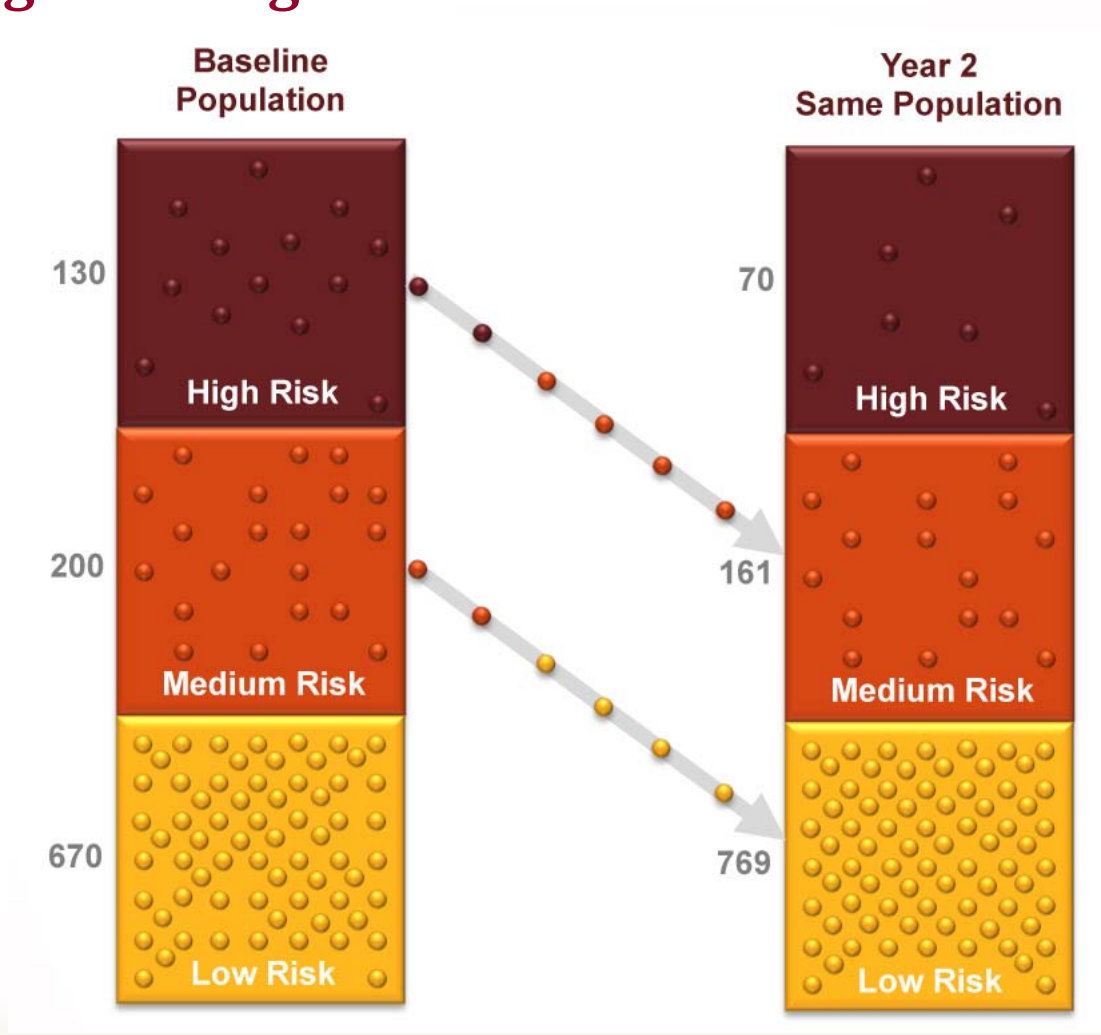
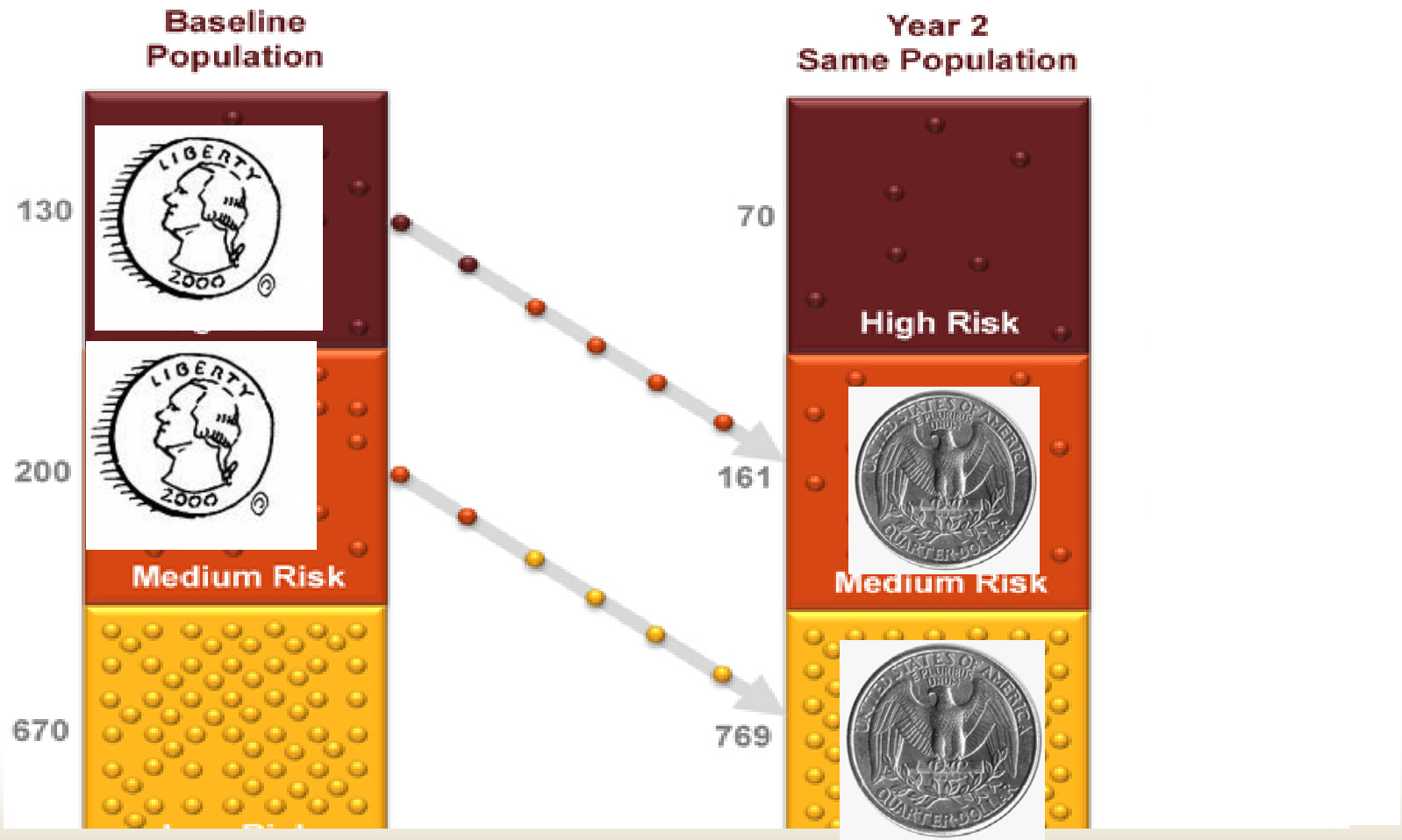
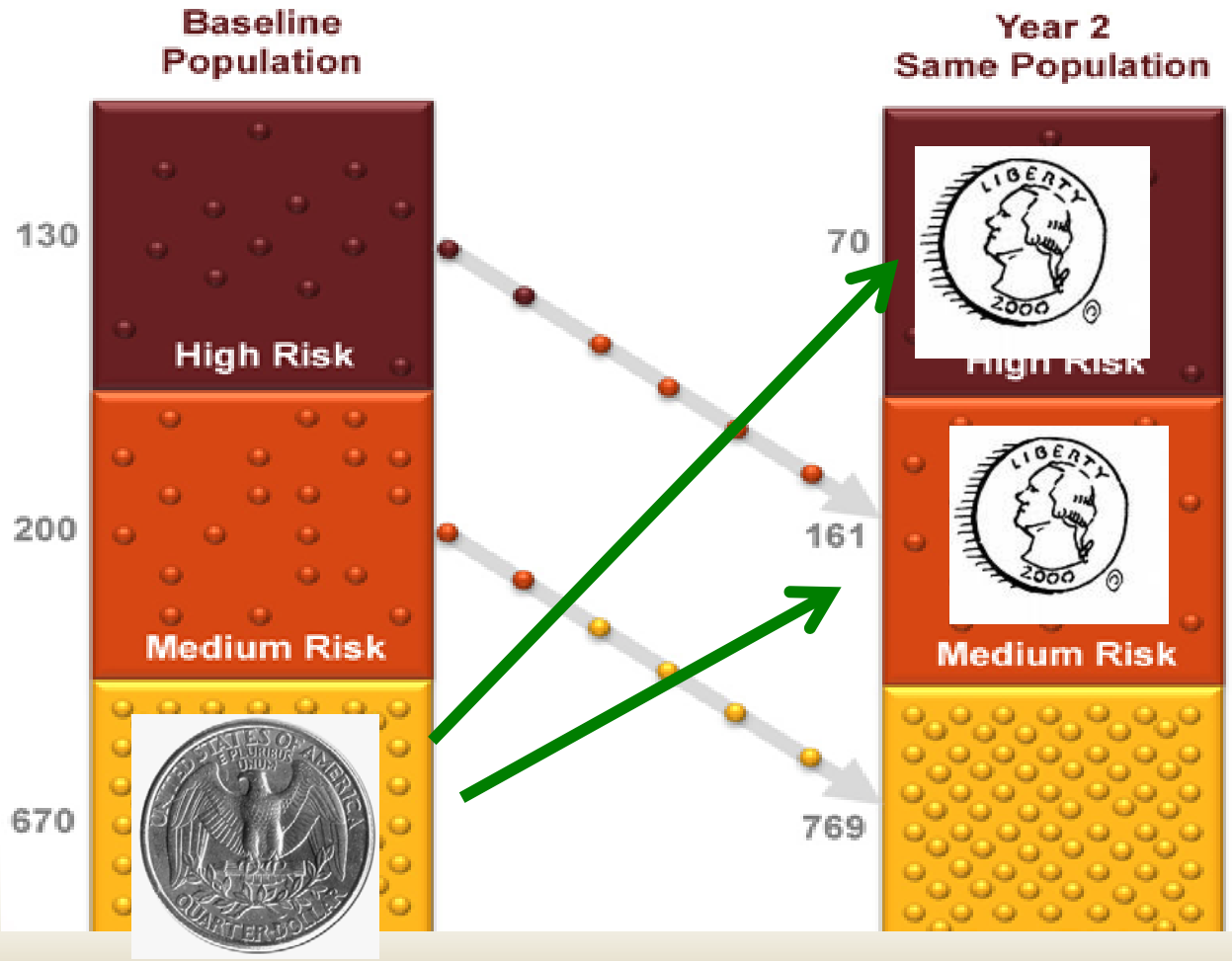
First question: Should XXX have drawn the 670-person low-risk segment larger than the 200 and 130?



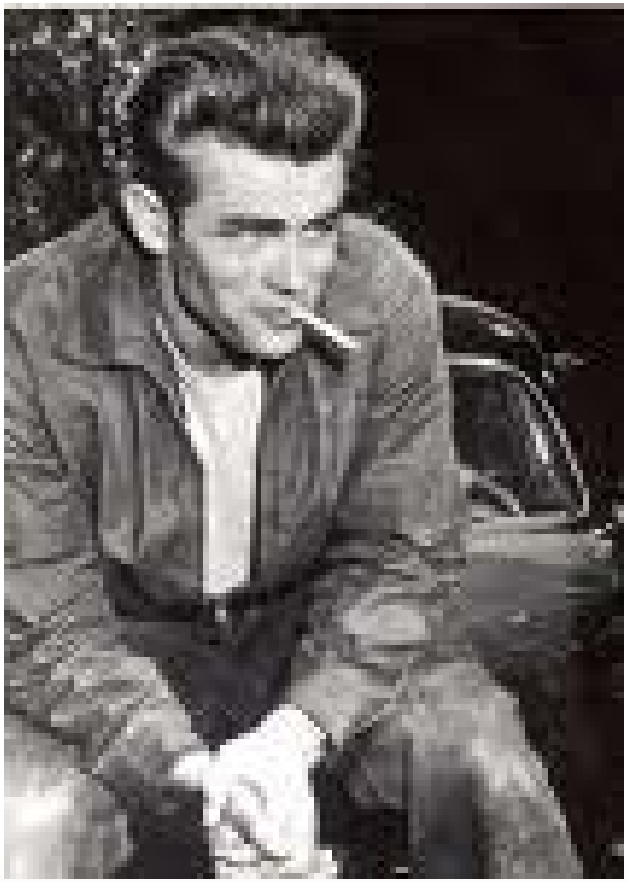
XXX's Guarantee: 30% of "heads" will flip to "tails"



What about these people? Shouldn't they be counted in the guarantee?



Example from Wellness using XXX methodology: Smoking Cessation

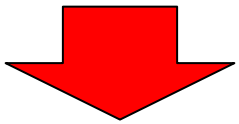


Smoking hypothetical

- 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%



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

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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
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

Check North Carolina and XXX against the Plausibility Rules

Rule	North Carolina	XXX
100%		
Every Metric can't Improve		
25% declines		
Nexus		
Quality Dose-Cost Response	HEDIS indicators not provided	
Control Group Equivalency/Trend		
Multiple Violations		

Plenty More Examples Where These Two Came From—Most of You Can Have the Whole Report

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VALUE INNOVATION

Impact from using your own eyes (meaning plausibility analysis) to validate results

- Chances of your vendors taking advantage of you: lower
- Chances of your organization saving money and improving outcomes: higher

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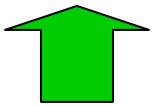
- Chances of your organization saving money and improving outcomes: higher 

Your own credibility:

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Your own credibility: priceless

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