

ROI measurement: Finding the Fallacies

ROI

- How ROI is calculated
- Some examples of what ROIs are
- How to know when it is calculated wrong, as it usually is
 - Best way to understand ROI is to spot examples of how it is calculated wrong
 - Like learning to drive by getting behind the wheel rather than watching someone else

ROI

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- Trend it forward by the plan's inflation rate
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- Calculate the actual spending on that disease and compare it to the adjusted baseline
- $\text{TOTAL savings on claims} / \text{TOTAL fees} = \text{ROI}^*$
- Savings are usually calculated wrong

*

- Total savings/total fees = ROI
- Total savings – total fees = net savings
- Example:
 - Program cost \$100
 - Program savings \$400
 - ROI is 4:1
 - Net savings is \$300

In pre-post

- You find everyone in the baseline year(s) with claims for the disease
- You develop a baseline year cost/disease person
- You trend that cost forward and compare the “actual” cost for the disease-managed population
- Example: Asthma

In the example

- Assume no inflation, no claims other than asthma
 - These assumptions just simplify. They don't distort

Example from Asthma

First asthmatic has a claim in 2004

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2		
Cost/asthmatic		

Example from Asthma

Second asthmatic has a claim in 2005

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2	0	1000
Cost/asthmatic		

Question

- What is your cost/asthmatic during the baseline year?

Cost/asthmatic in baseline?

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2	0	1000
Cost/asthmatic		

Cost/asthmatic in baseline?

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2	0	1000
Cost/ asthmatic	\$1000	

In pre-post – remember this slide?

- You find everyone in the baseline year(s) with claims for the disease
- You develop a baseline year cost/disease person
- You trend that cost forward and compare the “actual” cost for the disease-managed population
- Example: Asthma

Cost/asthmatic in contract period?

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2	0	1000
Cost/ asthmatic	\$1000	

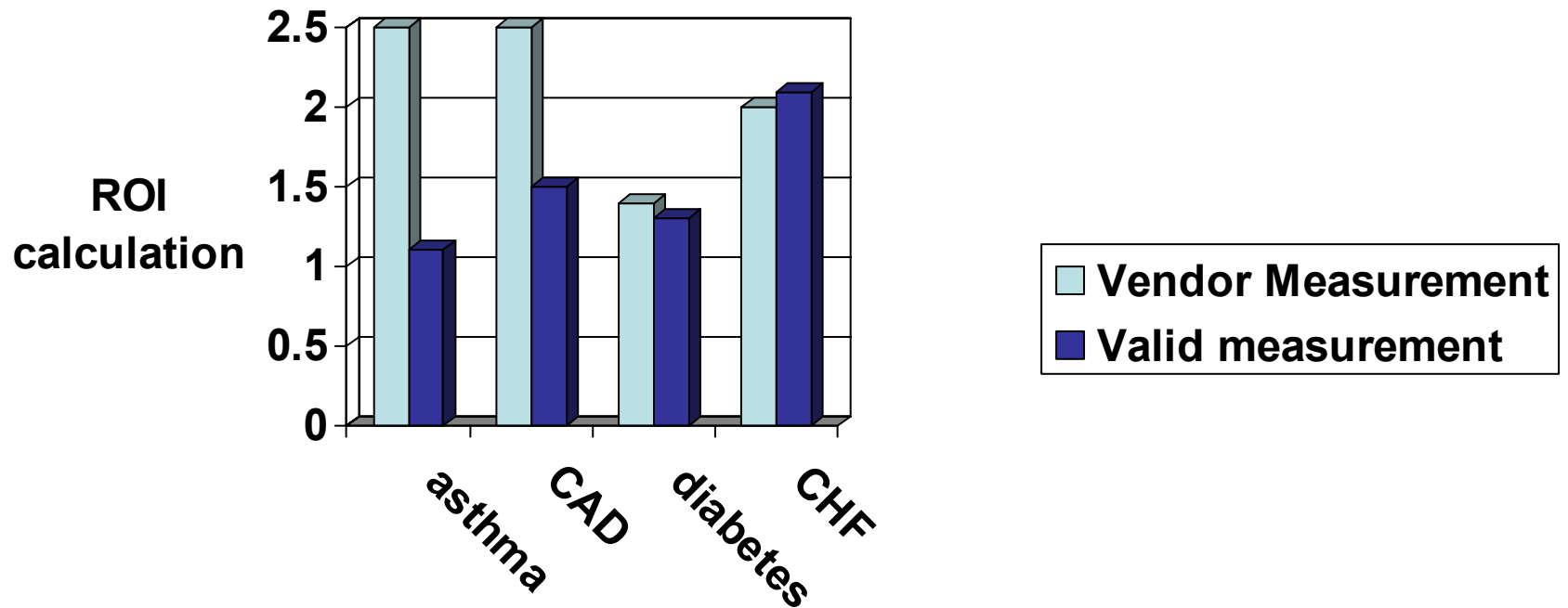
Cost/asthmatic in contract period?

	2004 (baseline)	2005 (contract)
Asthmatic #1	1000	0
Asthmatic #2	0	1000
Cost/asthmatic	\$1000	\$500

Congratulations

- You just “saved” 50% by doing nothing
- This is called the “zeroes” or “planes on the ground” fallacy (planes on the ground aren’t spotted by radar)
 - The claims extraction methodology only works if someone with the disease has disease-specific claims in the baseline year
- Note that the way you can spot this fallacy is that prevalence rises dramatically, reductions in cost bears no resemblance to quality improvements, and claims fall without any “nexus” to the program

ROI By Disease: Impact of the fallacy



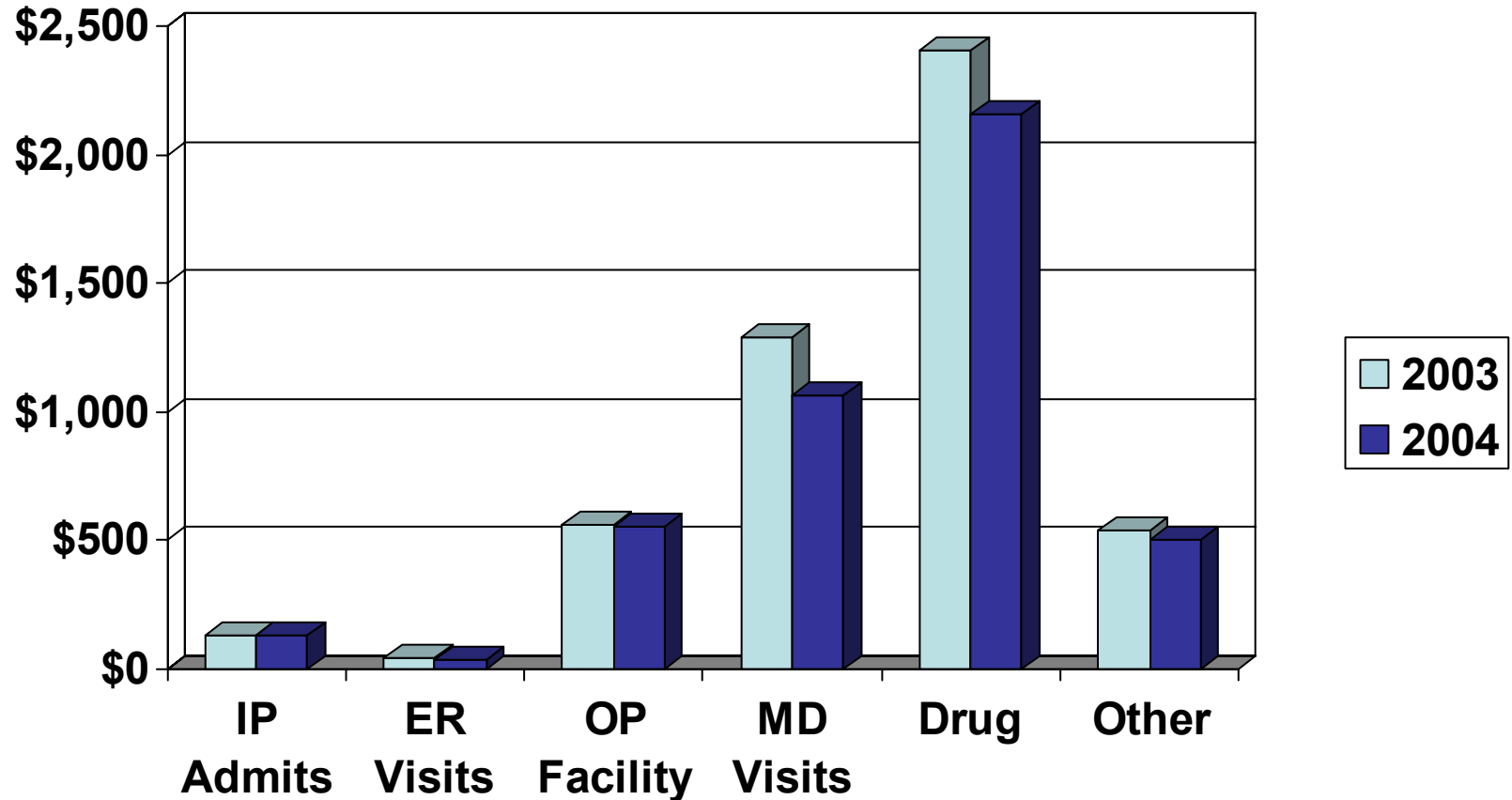
Examples of invalid calculations

- ROI mistake #1: Let's go to the web...

ROI Mistake #2

- In the following example, utilization figures were multiplied by the (assume to be correct) cost figures to get a savings
- Assume (correctly) no other changes were taking place
- Why is this obviously incorrect?

Savings by Category of Utilization per 1000 members



Issue-spotter #3

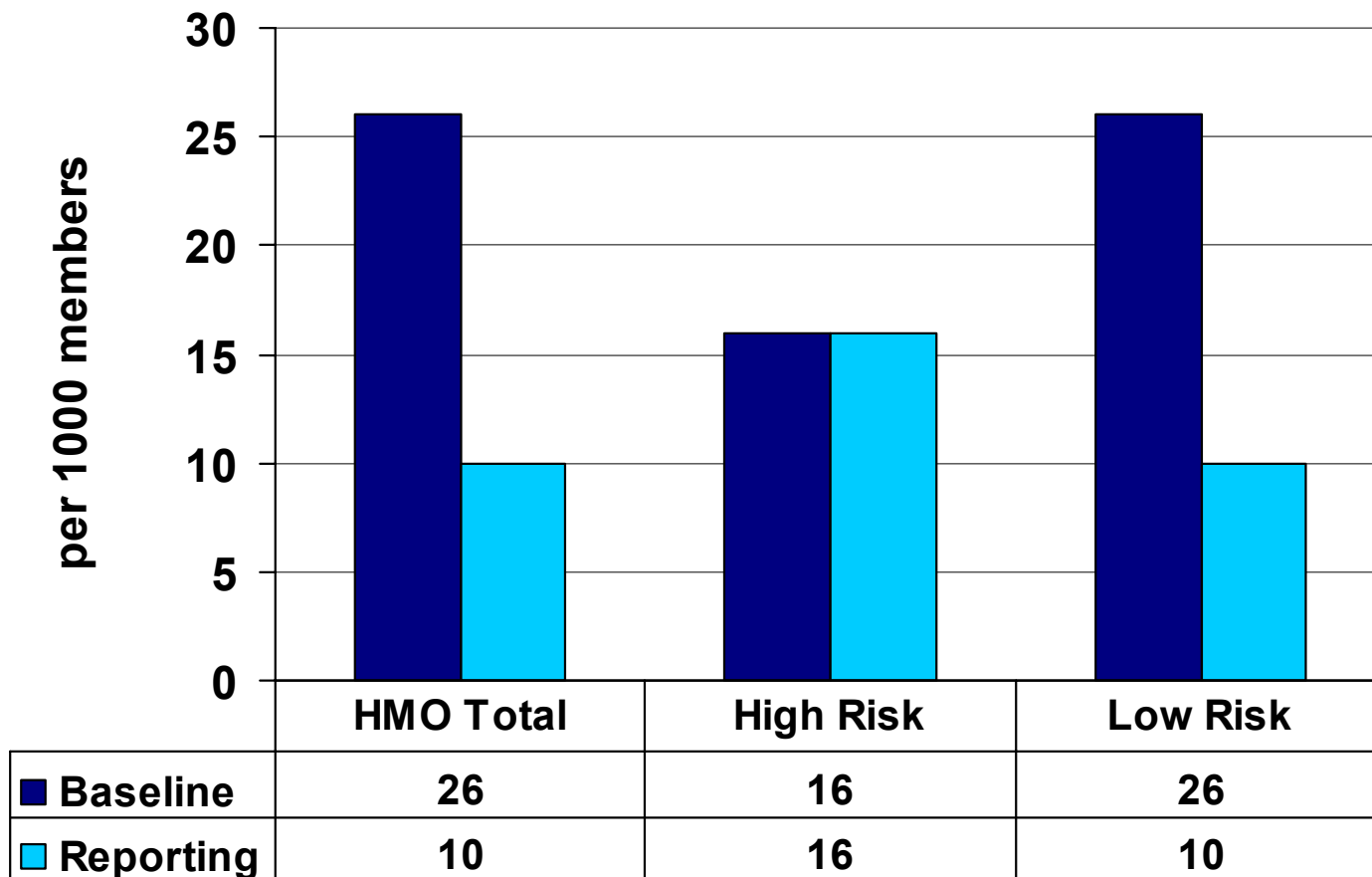
Can you critically analyze these presented numbers from a major national health plan?*

Disease Category	Admission Reduction	Cost Reduction
Asthma	2%	12%
cardiology	5%	15%

*The name of this health plan will not be provided – you had to be there

Emergency Room Visits

Total N = 781 High Risk N = 61 Low Risk N = 720

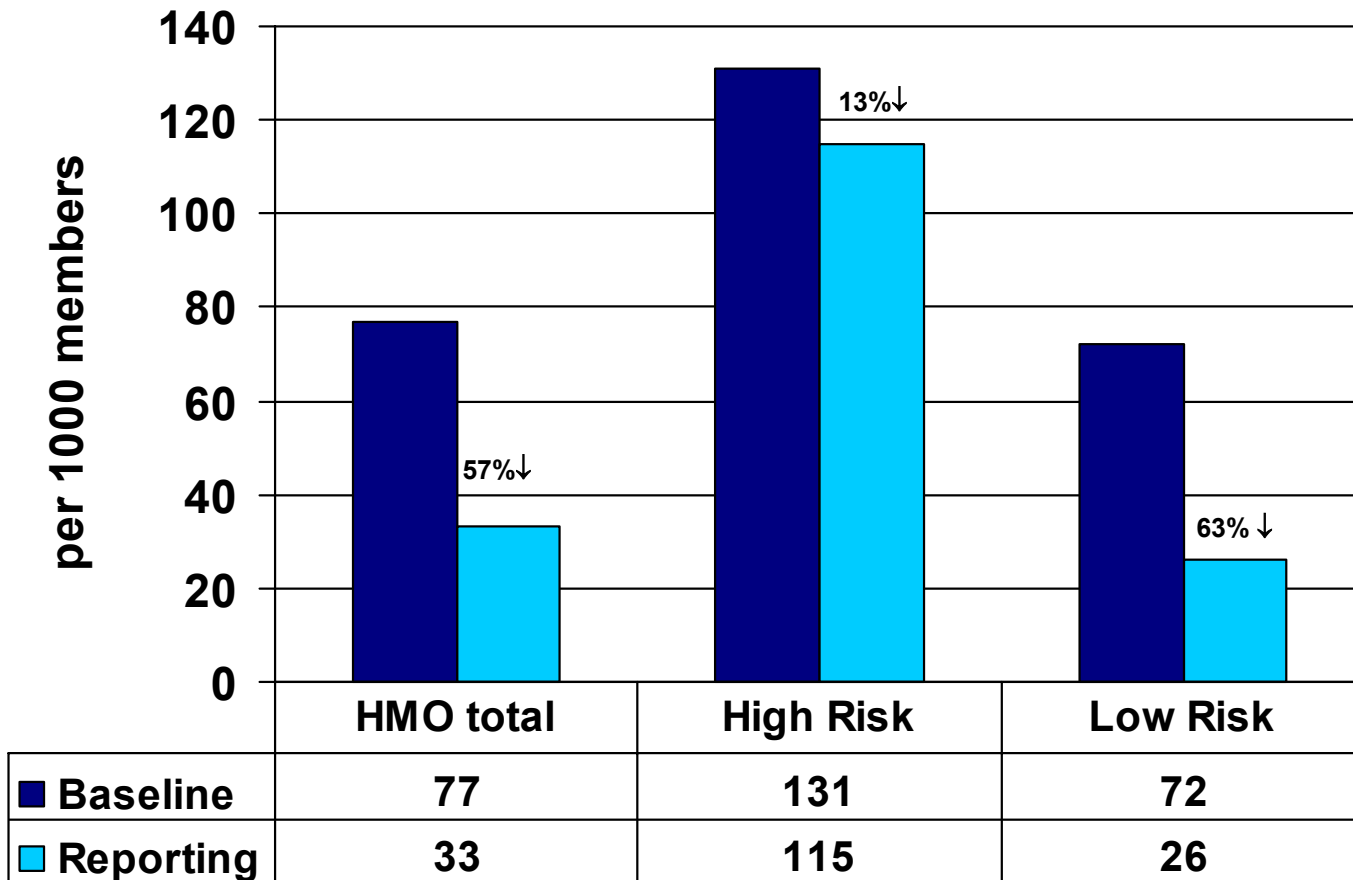


Note: name of vendor can be shared upon NDA

Issue-Spotter #5

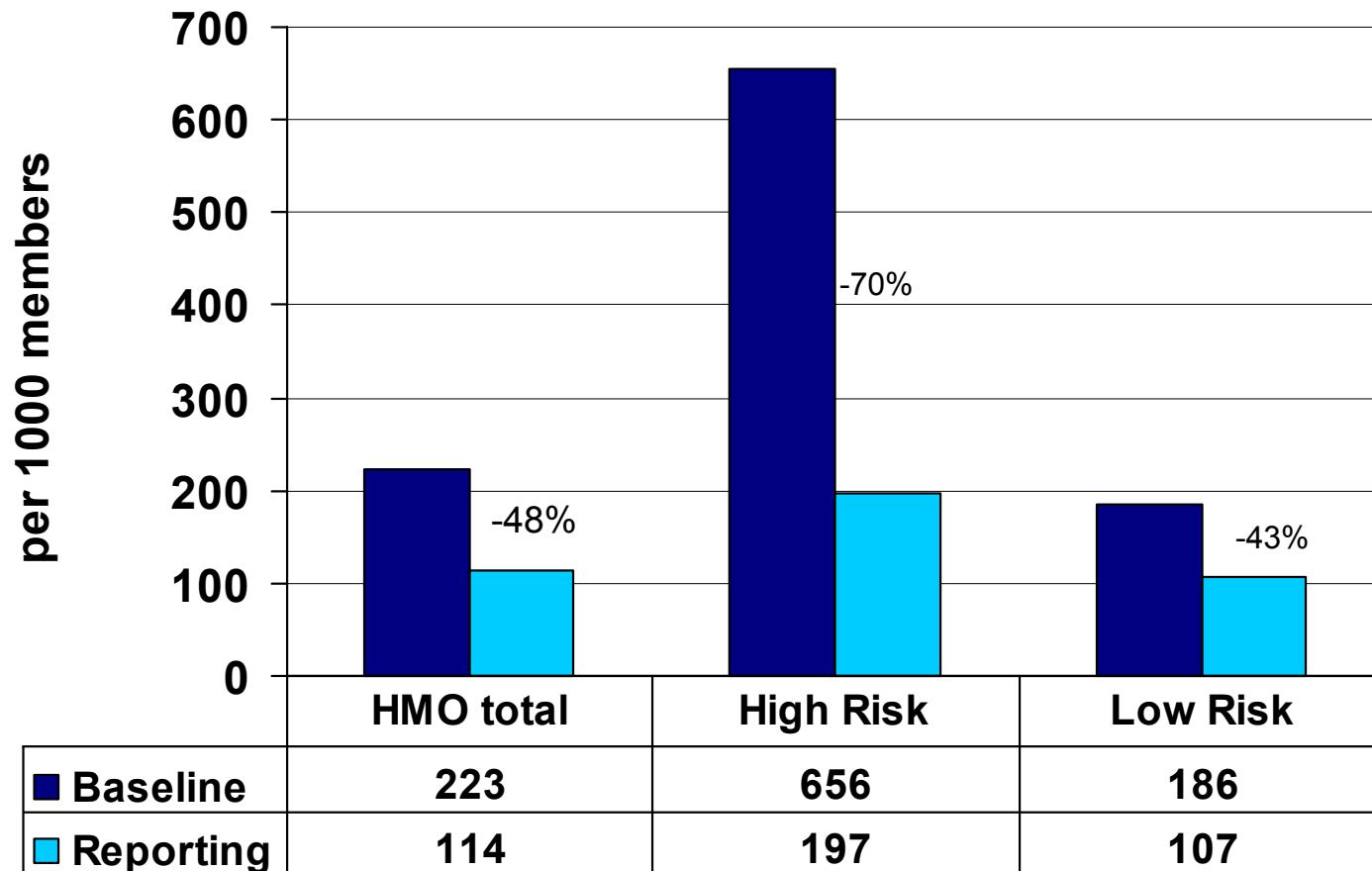
- Look at the next two slides together

Asthma Hospital Admissions



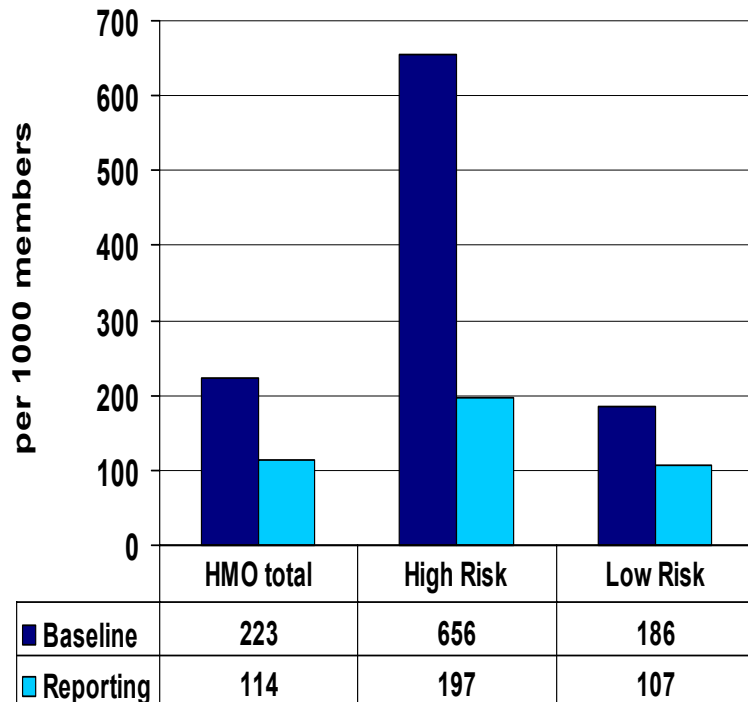
Asthma Hospital Days

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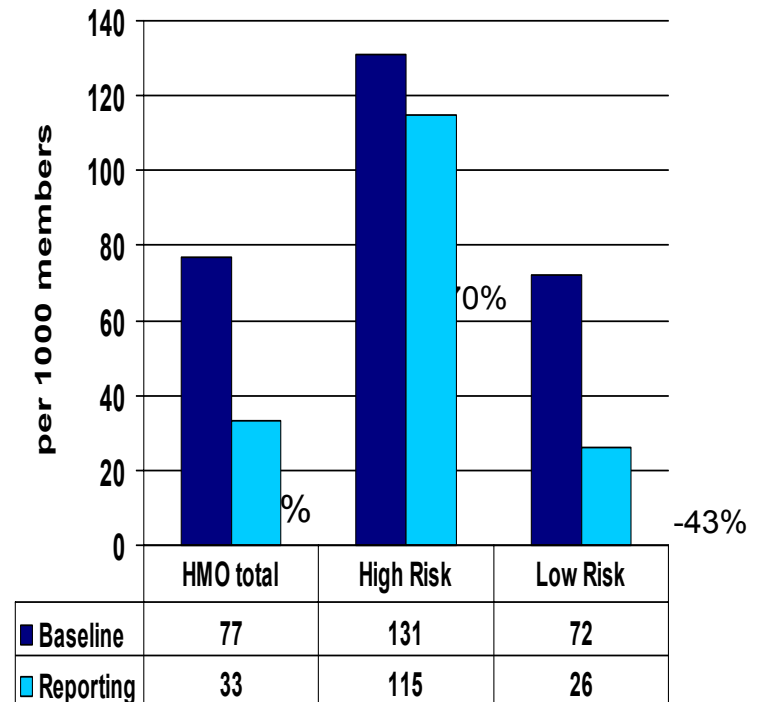


Asthma Hospital Days and Admissions

DAYS



ADMISSIONS



Issue-Spotter #6

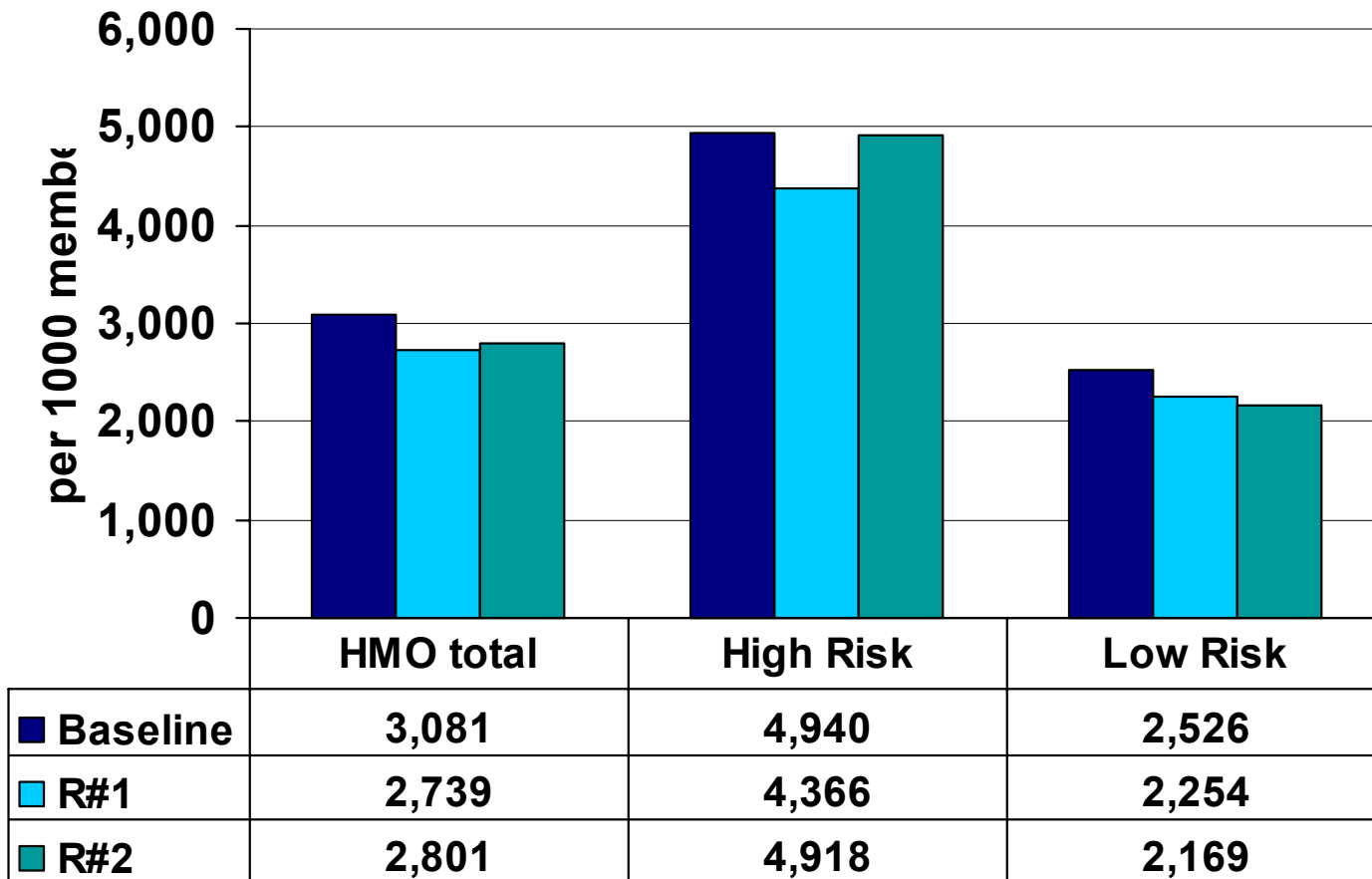
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Care to try your luck at this one?

CHF Group #1

Emergency Room Visits/Year

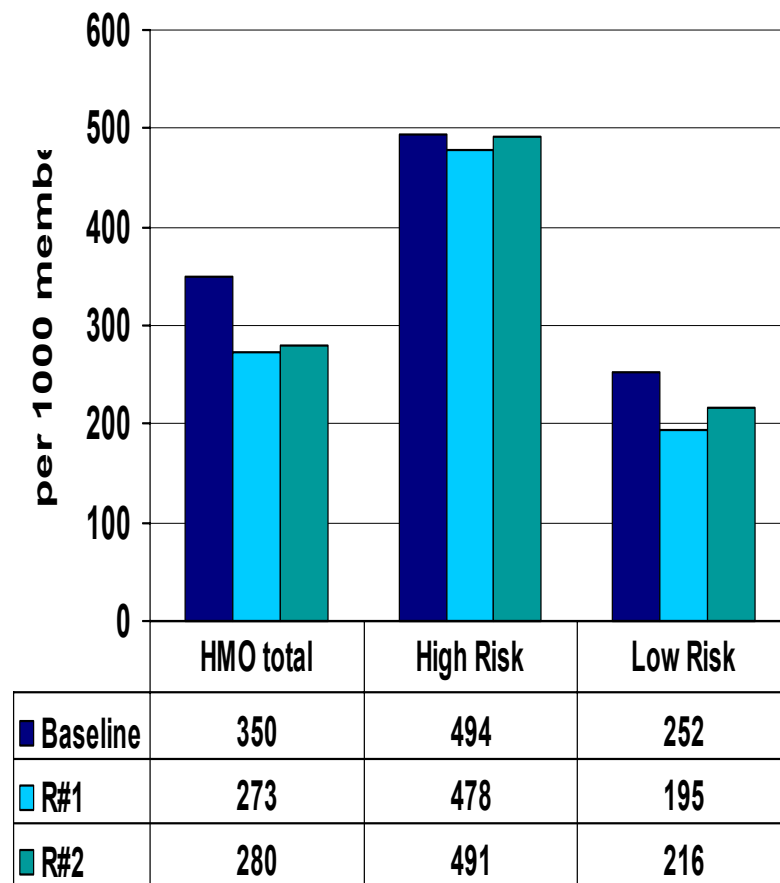
Total N = 1166 High Risk N = 268 Low Risk N = 898



Care to try your luck at this one vs. the other one?

CHF Group #1 Inpatient Admissions/Year

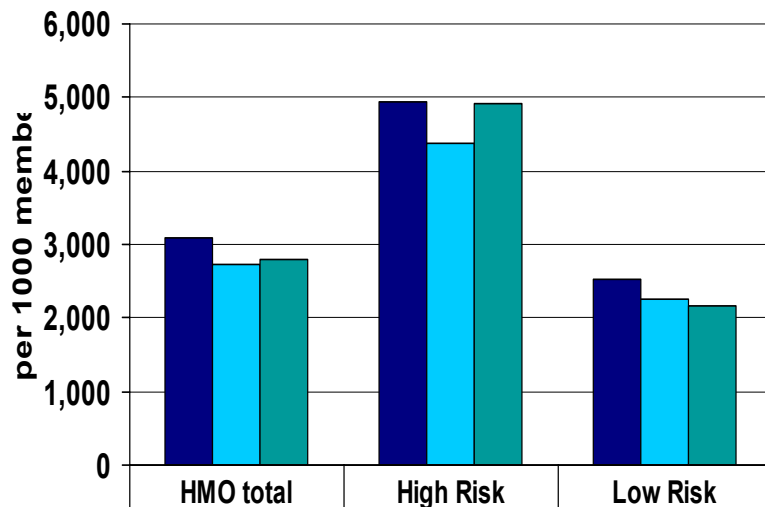
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Care to try your luck at this one?

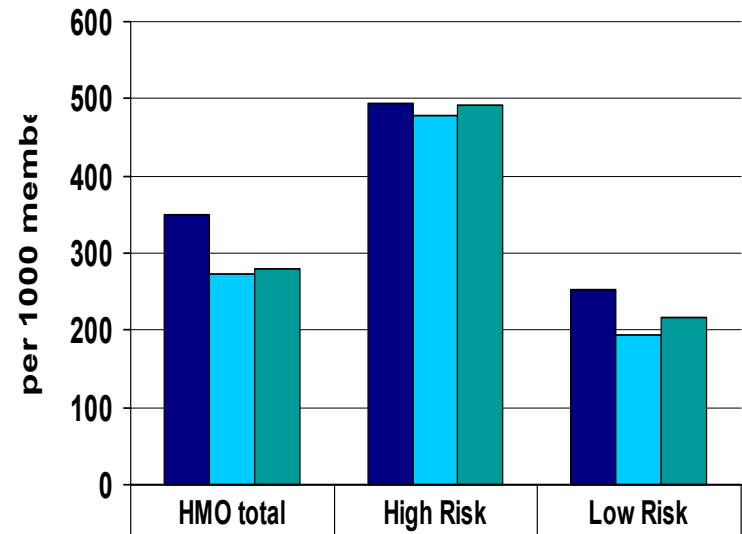
Emergency Room Visits and IP stays/Year

ER Visits



	HMO total	High Risk	Low Risk
Baseline	3,081	4,940	2,526
R#1	2,739	4,366	2,254
R#2	2,801	4,918	2,169

IP Stays



	HMO total	High Risk	Low Risk
Baseline	350	494	252
R#1	273	478	195
R#2	280	491	216

Issue-Spotter #7

- Can you find the mistake which a major actuarial firm missed?

Pre-post comparison: Asthma Medicaid Disabled Population

	Baseline Period 1/03-12/03 paid through 6/30/04	Study Period 1/04-12/04, paid through 2/28/05
Member-months	15047	31884
Cost PDMPM	\$432	\$391
Gross savings & ROI		\$2,400,125 2.72 – to -1

Issue Spotter #8

- What do you see in these two slides?
 - Within either, or comparing the two?
 - This was presented by Blue Cross of Minnesota

Cohort Study Results (all claims, all members)

Condition	% Changes: \$PMPM		% Changes: ER Rate		% Changes: Admission Rate	
	Care support	Reference	Care support	Reference	Care support	Reference
Asthma	12%	17%	-17%	-1%	-3%	12%
Heart	2%	23%	-15%	3%	-40%	6%
COPD	19%	32%	-4%	6%	6%	40%
Diabetes	21%	19%	-7%	2%	7%	2%
Core Conditions	2%	20%	-18%	1%	-25%	7%
Extended	21%	21%	-15%	-3%	7%	7%
All Conditions	17%	20%	-15%	-1%	-5%	7%

ROI and PMPM reductions at 6 Months

- Reporting Period
 - July - December 2002
- Base Period
 - July - December 2001
- Total ROI **2.48 : 1**
 - Extended Conditions
4.23 : 1
 - Core Conditions
1.86 : 1
- “Our Auditors validated a \$42 PMPM reduction due to this program”

Combined

- Reporting Period
 - July - Dec 2002
- Base Period
 - July - Dec 2001
- Total ROI **2.48 : 1**
 - Extended Conditions
- **4.23 : 1**
 - Core Conditions
- **1.86 : 1**
- Auditors validated a \$42 PMPM savings

Condition	% Changes: \$PMPM		% Changes: ER Rate		% Changes: Admission Rate	
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#9 – What's wrong with these outcomes?

Program Year One – Clinical Indicators

Clinical Outcomes:

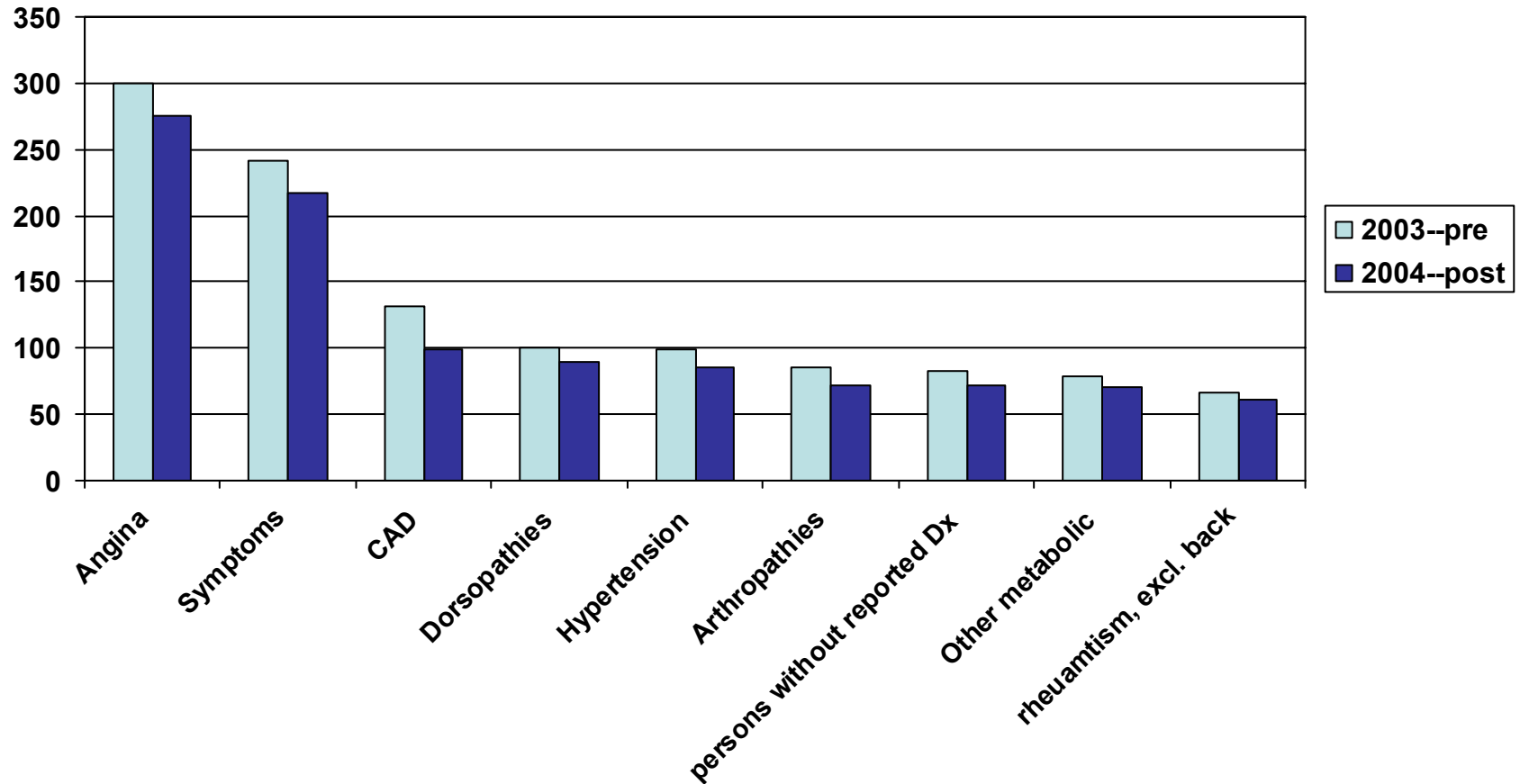
	Percentage of Continuously Enrolled Members		
	Base	Post Year 1	Improvement
% of CHD Members with an LDL screen	75.0%	77.0%	2.0%
% of CHD Members with at least one claim for a Statin	69.0%	70.5%	1.5%
% of CHD Members receiving an ACE inhibitor or alternative	43.5%	44.7%	1.2%
% of CHD Members post-MI 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

Issue-Spotter #10

- What kills the credibility of the savings reported on the next slide?

Top Ten Diagnoses—admissions per 100 Cardio Disease Management Members (pre- and post-DM)



Conclusion

- Don't assume that it's right just because it's written down
- 75% of reporting has major, invalidating mistakes in it
- Who feels better equipped to look for them?