

# **Statistical Risks in the Establishment of ACO Expenditure Savings**

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# Acknowledgement

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## Proposed ACO rules by CMS

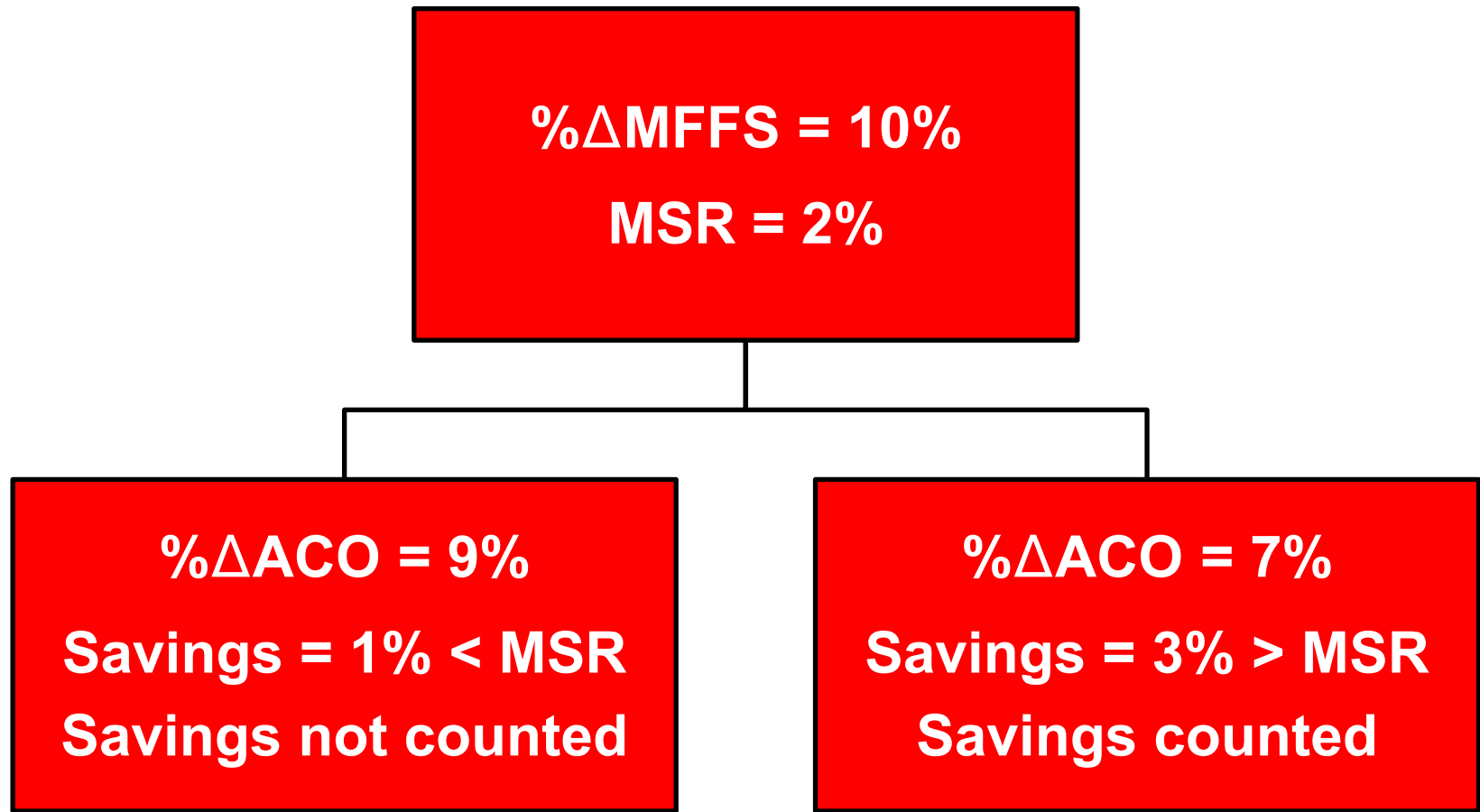
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- ACO responsible for defined group of Medicare patients
- ACO rewarded for reducing PC Medicare spending
  - Without harming quality
- Savings =  $\% \Delta \text{Medicare FFS nationally} - \% \Delta \text{ACO}$ 
  - Risk-adjusted
- Presentation: Focus on 1-sided model
- **Normal variation**
  - Set **minimum savings rate (MSR)**



## MSR example

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## Proposed calculation as a hypothesis test

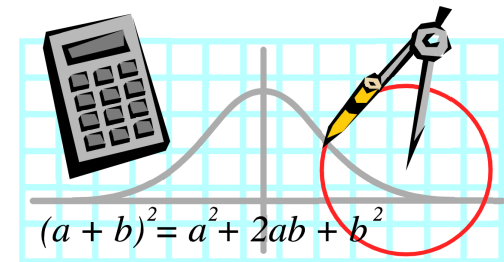
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- Null hypothesis  $H_0$ : ACO does not produce savings
- Reject  $H_0$  if savings  $>$  MSR
- Type I error: Rejection of a true  $H_0$ 
  - CMS spends \$ inappropriately
  - Set @ 0.10, 0.05, or 0.01 depending on ACO size
- Type II error: Failure to reject a false  $H_0$ 
  - ACO not rewarded for achieving Medicare savings
  - Not directly addressed in proposed regs



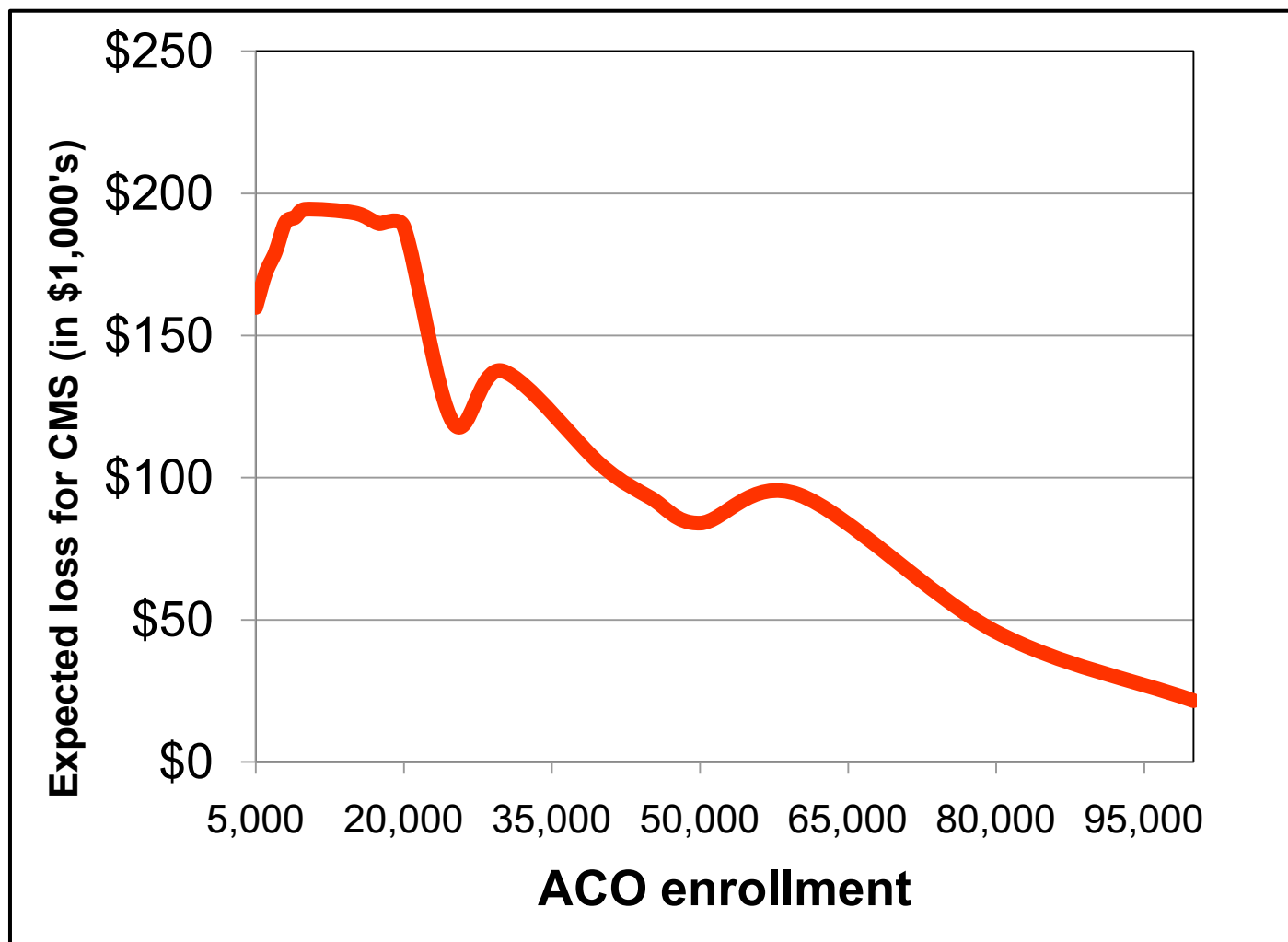
# Calculation of statistical risks faced by CMS & ACOs

- Assumptions in proposed rules



1. Expected financial losses to CMS due to Type I error
  - Assume real savings = 0
  - Expected value of shared savings payments to ACO (loss to CMS)
2. Expected ACO income from shared savings
  - Assumptions about real savings: 0.03, 0.04, 0.05
  - Probability of Type II error
  - Expected value of shared savings payments to ACO (income for ACO)

# Financial risk to CMS created by Type I error



Assumes savings shared equally by ACO's & CMS and 1<sup>st</sup> \$ payment for savings.

## Type II errors & expected income (EI) for ACO's

ACO size	MSR	True ACO savings	Probability of Type II error	EI (\$millions)
5,000	0.039	0.03	0.62	\$0.69
5,000	0.039	0.04	0.49	\$0.98
5,000	0.039	0.05	0.36	\$1.30
20,000	0.025	0.03	0.37	\$2.95
20,000	0.025	0.04	0.16	\$4.47
20,000	0.025	0.05	0.05	\$5.89
50,000	0.020	0.03	0.20	\$7.99
50,000	0.020	0.04	0.03	\$11.83
50,000	0.020	0.05	< 0.01	\$14.99

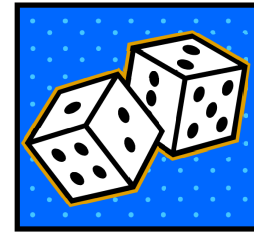
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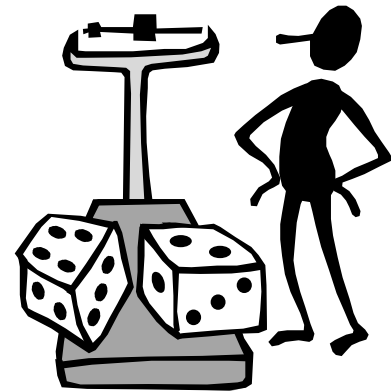
## Other issues

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- Proposed rules contain other limits on ACO income from shared savings
  - ACO risks likely larger
  - CMS risks likely smaller



- Proposed formulas ignore other sources of statistical risk
  - Baseline performance & risk adjustment
  - Statistical risks are even riskier



## Policy implications

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- Expected ACO income may be too low to offset costs
  - ACO costs  $\approx$  several million \$
  - ACO's have 3-year window to recover costs
- Less risk/greater expected income for larger ACOs
  - CMS may attract only very large ACOs
  - New risks  $\implies$  market dominance, diseconomies of scale
- Probably need lower MSRs to attract smaller ACOs
  - Type I error  $\uparrow$  (but CMS \$ is currently small)
- Findings consistent w/criticisms  $\implies$  rules create too many barriers for ACOs