THE DARTMOUTH INSTITUTE
FOR HEALTH POLICY & CLINICAL PRACTICE
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Steven Woloshin, MD, MS & Lisa M. Schwartz, MD, MS
Co-Directors, VA Outcomes Group, White River Junction VA Medical Center
Co-Directors, Center for Medicine and the Media, The Dartmouth Institute
www.tdi-dartmouth.edu/research/healthy-skepticism/

NUMBERS GLOSSARY

All examples are based on the following scenario: In a randomized trial, 200 adults were given either DRUG or placebo for 5 years. Here's what happened:

	UNEXPOSED Placebo (100 adults)	EXPOSED DRUG (100 adults)
Died during study	30	10

MEASURE	DEFINITION	EXAMPLE
Absolute risk Analogy: Price Absolute risk (*unexposed*) is the *regular* price. Absolute risk (*exposed*) is the *sales* price.	Number who had outcome / Number who could have had outcome	**Absolute risk** (DRUG group) = 10/100 = 0.10 = **10%** **Absolute risk** (Placebo group) = 30/100 = 0.30 = **30%** Over 5 years, **10%** of adults in the DRUG group died compared to **30%** in the placebo group.
Absolute risk reduction (ARR) "percentage points lower" Analogy: Savings from a sale. Subtract the sales price from the regular price.	Absolute risk (unexposed) − Absolute risk (exposed)	**Absolute risk reduction** = 30% - 10% = 20% = **20 in 100** Over 5 years, DRUG lowered the chance of dying by **20 percentage points** compared to placebo: 10% vs. 30% **If** for 5 years, **100 adults took DRUG** instead of placebo, **20 fewer** would die.
Number needed to treat (NNT)	1 / Absolute risk reduction	**Number needed to treat** = 1/20% = 1/0.20 = **5** **5 adults** would have to take DRUG for five years to prevent **1 death**.
Relative risk (RR)	Absolute risk (exposed) / Absolute risk (unexposed)	**Relative Risk** = 10%/30% = 0.1/0.3 = **0.33** Over 5 years, the chance of dying for the DRUG group was **one third** (or **0.33 times)** that of the placebo group: 10% vs. 30%.
Relative risk reduction (RRR) "% lower" Analogy: "% off" for the sale ("67% off regular price")	1 - Relative risk	**Relative risk reduction** = 1 - 0.33 = 0.67 or **67%** Over 5 years, DRUG lowered the chance of dying by **67 percent (or two-thirds)** compared to placebo: 10% vs. 30%.

BOTTOM LINE Always report absolute risks for each group (no matter what other numbers are used)

For all risks, you need to be clear about 3 things: exactly what the outcome is (e.g. having a heart attack), over what time period the outcome occurred (e.g. 5 years) and in whom (e.g. adults with diabetes).

Statistics Glossary

All examples are based on the following scenario:

In a randomized trial, 200 adults were given either DRUG or placebo for 5 years. Here's what happened:

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Measure	Explanation	Example
Statistics		
p value	Probability that the observed results could arise by chance *alone*. if p ≥ 0.05, we say "consistent with chance", "not statistically significant". if p < 0.05, we say "not consistent with chance", "statistically significant Remember, even with a very low P value ("highly statistically significant"), results can still be very wrong: the study may be biased or confounded.	Relative risk reduction = 0.67, **p=0.0004** The observed difference in the 5-year risk of death between the DRUG and placebo groups is **not consistent with chance alone** (i.e. p=0.0004 - there is only a **4 in 10,000** chance of seeing differences this big or bigger if DRUG and placebo were equally effective).
Confidence interval (95% CI)	Because the observed value is only an estimate of the truth, we know it has a "margin of error". The range of plausible values around the observed value that will contain the truth 95% of the time.	Relative Risk Reduction **(95% CI)** = 0.67 **(0.36 - 0.83)** While our best estimate is that DRUG lowers the 5-year risk of death by 67%, the results of this study say it is possible that DRUG may lower the risk **by as little as 36% or as much as 83%**.
Early Detection Statistics		
Survival	Number alive 5 (or 10) years after Cancer X diagnosis / Number diagnosed with Cancer X Comparing survival of patients diagnosed in different ways tells you nothing about the benefit of early detection. Consequently, comparing survival across time (e.g. 1970 vs. 2008) or place (e.g. UK vs. US) - when patterns of testing are different - is misleading. They cannot tell you whether anyone is living longer.	10-year lung cancer survival was: **29%** for patients diagnosed by screening chest x-rays **14%** for patients diagnosed by symptoms **29%** of lung cancer patients diagnosed by screening chest x-ray survived 10 years compared to **14%** of lung cancer patients diagnosed because of symptoms (like cough or weight loss). **Warning:** This statement is misleading. It tells you nothing about the benefit of screening.
Mortality	Number of Cancer X deaths / Total No. of people in study/population (i.e. with & without Cancer X diagnosis) Mortality is the most valid measure for judging the benefit of screening.	In a randomized trial of chest x-ray screening, **10-year lung cancer mortality** was: **4.1%** for the chest x-ray screening group **3.9**% for the control group (not screened) The **10-year lung cancer mortality** among the chest x-ray screening group was **4.1%** versus **3.9%** in the control group.