Misclassification Bias Exercises

A population based, case-control study identified 450 patients with melanoma from registries and 450 controls randomly selected from drivers license lists. A phone-interviewer asked participants to self-report their number of indoor tanning sessions over their lifetime; >10 sessions was classified as exposed and ≤10 session as unexposed.

In the spreadsheet, enter the following numbers into the 2x2 table if these were the known true distribution and write down the true OR:

	Melanoma case	Control
>10 tanning sessions	325	240
≤10 tanning sessions	125	210

True OR: _____

1. What if 5% of all participants who truly had >10 tanning sessions, under-reported their number of tanning sessions (i.e., 5% of ALL exposed are misclassified as unexposed).
    a. Would this be non-differential or differential misclassification?

    b. How do you predict that the misclassification will affect the OR?

    c. Using the spreadsheet, enter the % that are misclassified, how does the misclassification affect the OR?

2. What if 15% cases and 5% of controls who truly had ≤10 tanning sessions reported that they had >10 sessions (i.e., 15% of CASES who are unexposed are misclassified as exposed & 5% of CONTROLS who are unexposed are misclassified as exposed)?
    a. Would this be non-differential or differential misclassification?

    b. How do you predict that the misclassification will affect the OR?

    c. Using the spreadsheet, enter the % that are misclassified, how does the misclassification affect the OR?

A prospective cohort study asked its participants to self-report the number of fruits and vegetable servings they consume regularly over the week in 1997, those consuming >5 servings of fruits and vegetables are considered exposed, and those consuming ≤5 servings a week are considered unexposed. Information on whether participants had a hip fracture between 1998 and 2010 was then obtained from patient registries.

In the spreadsheet, enter the following numbers into the 2x2 table if these were the known true distribution and write down the true RR:

	Hip fracture	No hip fracture
>5 servings/wk fruits & vegetables	1000	24000
≤5 servings/wk fruits & vegetables	2500	47500

True RR: _____

3. What if 15% of all participants who truly consumed ≤5 servings/wk over-reported their intake as >5 servings/wk (i.e., 15% of ALL unexposed are misclassified as exposed)?
    a. Would this be non-differential or differential misclassification?

    b. How do you predict that the misclassification will affect the RR?

    c. Using the spreadsheet, enter the % that are misclassified, how does the misclassification affect the RR?

4. What if 15% of all participants who truly consumed ≤5 servings/wk over-reported their intake as >5 servings/wk AND 10% of all participants who truly consumed >5 servings/wk under-reported their intake as ≤5 servings/wk (i.e., 15% of ALL unexposed are misclassified as exposed AND 10% of ALL exposed are misclassified as unexposed)?
    a. Would this be non-differential or differential misclassification?

    b. How do you predict that the misclassification will affect the RR?

    c. Using the spreadsheet, enter the % that are misclassified, how does the misclassification affect the RR?