# Reporting Results

P9419
Class #6
November 17, 2003

## Why discuss Results in the Proposal course?

- Components of proposal abstract
- Research question
- Background
- Hypotheses
- Methods
- Results?
- Discussion?

## Epidemiologic detective story

- Results=who done it
- May also exonerate the innocent
- *Results answer research question*.
- *Support/falsify hypotheses.*
- *Background/literature review will help readers appreciate your results*

## Dataset issues

- Population
- Variables
- Can the data help to answer your research question?
- Sample size constraints
- Exploratory/hypothesis-generating vs. hypothesis-testing

## Go back to your literature review

- How do other investigators present their results?
- Weaknesses and strengths

## Statistical methods

- What methods can be applied to your dataset to get those answers?
- Credibility of your answers depends on appropriateness of your methods.

## Results I.

- How did your methods work out?
- Not the same as in Methods
- Methods describes:
  - Study design, population, time period
  - recruitment methods
  - eligibility criteria
  - informed consent
  - follow-up, etc.
- Results I describes:
  - how many study participants you contacted
  - how many refused, were ineligible, could not be reached, etc.
  - Usually text, but if important, table

## Table 1

- Demographic characteristics
  - Age
  - Sex
  - Race/ethnicity
  - Income . . .
- Clinical characteristics
  - Stage of disease
  - Presence/absence/level of biomarkers
  - Comorbid conditions . . .
- Confounders/effect modifiers

## The most important question in epidemiology

- **Compared to what?**
- Participants to refusers
- Cases to controls
- Exposed to unexposed
- Subjects recruited/interviewed by one method to subjects recruited/interviewed by another method

Table 1. Demographic characteristics of cases and controls

| | Cases N=200 | | Controls N=200 | |
|---|---|---|---|---|
| Characteristics | N | % | N | % |
| Females | 80 | 40 | 80 | 40 |
| Birthplace | | | | |
| NYC | 70 | 35 | 90 | 45 |
| USA, not NYC | 50 | 25 | 80 | 40 |
| Not USA | 80 | 40 | 30 | 15 |
| Mean age (SD) | 36 (10) | | 35 (13)* | |

## Results II: Main finding(s)

- Measure(s) of effect of the hypothesized exposure on the hypothesized outcome
- Risk/rate ratio, odds ratio, prevalence ratio
- Correlation
- Risk/rate difference
- Mean difference
- Assessment of statistical significance
- Statistical tests used
- Confidence intervals
- P values and P for trend
- Identification of confounders/effect modifiers

## Reporting on covariates

- Adjusting
- Stratifying
- Separate analysis of interaction
- Interaction term in multivariable model

## Other important findings

- Secondary endpoints/exposures
- Subgroup analyses
- Analyses done in response to questions raised by the main findings

## Reporting on adjusted analyses

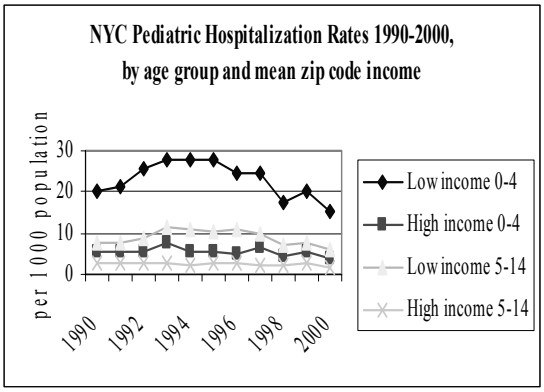
- **OR=3.2 (95% CI 1.5-6.8)***
  *Adjusted for age, sex, tobacco use . . .

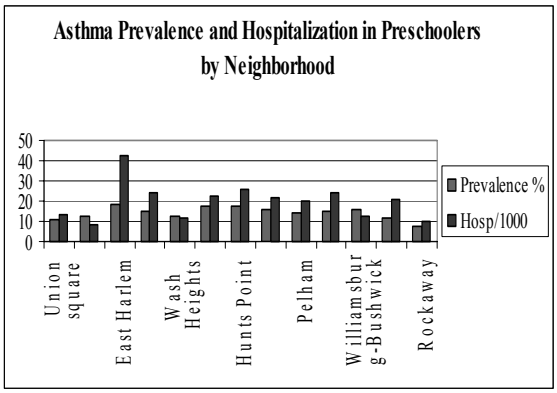
| Variable | OR | 95% CI |
|---|---|---|
| Main exposure | 3.2 | 1.5-6.8 |
| Age >50 | 0.9 | 0.8-1.0 |
| Sex, female | 1.1 | 1.0-1.2 |
| Tobacco use | 1.5 | 1.2-1.8 |

## Reporting on stratified analyses

- OR=3.0 (95% CI 1.5-8.9) among males*
  OR=3.5 (95% CI 1.8-9.5) among females*
  *Adjusted for age, birthplace, alcohol intake . . .
- **Table 3. Odds ratios for main exposure and other factors among *males*.**

| Variable | OR | 95% CI |
|---|---|---|
| Main exposure | 3.0 | 1.5-8.9 |
| Age >50 | 0.9 | 0.8-1.0 |
| Birthplace | | |
| NYC | 1.0 | (Referent) |
| USA, not NYC | 1.2 | 0.7-1.8 |
| Not USA | 1.6 | 1.0-2.5 |




## Your results may. . .

- *Confirm your hypotheses* – gratifying but doesn't mean you are a better epidemiologist than if they
- *Refute your hypotheses* – annoying, but not a cause for shame or mourning
- *Be inconclusive* – may be embarrassing unless you knew in front that your dataset had limitations (e.g., small sample size, narrow range of exposures, etc.)
- *Surprise you* – report surprises as hypothesis generating . . .

## Discussion

- Interpret results
- Limit to results presented
- Identify unresolved questions
- Recommend ways to address them