Department of Epidemiology
School of Public Health
University of North Carolina

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CASE HISTORY, CROSS-SECTIONAL AND
COHORT STUDIES

PART I

A case history study was undertaken to determine whether patients with
lung cancer differed from other persons in respect to their smoking
habits. Patients initially diagnosed as having cancer of the lung and
subjects without cancer of the lung were interviewed to find out the
number of cigarettes smoked. It is a "blind" study, meaning that the
interviewer did not know whether the respondent was a lung cancer patient
or a control. The following table gives the percent of subjects, with
and without lung cancer, according to the quantity of cigarettes smoked.

Also Group question together better

wording [

Table 1: Most Recent Amount Smoked by Patients With and Without Cancer
of the Lung (Response of Patients at Interview)

	Number of Cigarettes Smoked Daily									
	0		1-4		5-14		15-24		25+	
	No.	%	No.	%	No.	%	No.	%	No.	%
Subjects with cancer (1918)	56	6.1	65	7.1	352	38.3	255	27.8	190	20.7
Subjects without cancer (1553)	342	22.0	160	10.3	580	37.3	321	20.7	150	9.6

those that belong together should be put together with spaces in between

What associations are shown in Table 1?

Could any of the biases inherent in case history studies have influenced
the results of this study?

If so, which bias or biases?

What additional data would enable you to test for this bias?

watch "bias" the word

Remember that Table 1 was drawn from initial diagnosis. A more thorough diagnostic procedure on patients having cancer revealed that some persons who were first classified as having cancer did not actually have a malignancy.

Now knowing that some of the patients who thought they had cancer at the time they were interviewed about their smoking habits turned out to be incorrectly diagnosed, can you think of any way of using this information to check on the presence of any bias that you have suspected?

Table 2: Most Recent Amount Smoked by Patients Incorrectly Diagnosed
(Response of Patients at Interview)

Subjects In-correctly thought to have cancer of Lung (209)	Number of Cigarettes Smoked Daily									
	0		1-4		5-14		15-24		25+	
	No.	%	No.	%	No.	%	No.	%	No.	%
	35	16.7	25	12.0	83	39.7	50	23.9	16	7.6

Can you use this new information to test your hypotheses about bias?

How would you interpret these results?

Some fascinating recent studies have investigated the possible relation-
ships of psychological variables, "personality types" or "behavior
patterns", and coronary heart disease. In the study used in this ex-
ercise, Type A behavior pattern is defined as a person manifesting an
intense, sustained drive for achievement and as being continually in-
volved in competition and deadlines. Type B is the more relaxed person,
not showing this intense drive and involvement in competition.

A study was done in which a representative sample of a given population
was examined at one point in time and at this time persons were classified
for behavior type and coronary heart disease.

Table 3: Coronary Heart Disease by Age and Behavior Pattern. *Cross-Sectional* ~~Case History~~ Study

Behavior Pattern	Basis	40-49 Years		50-59 Years		Total Subjects	
		CHD Present	CHD Absent	CHD Present	CHD Absent	CHD Present	CHD Absent
Type A	.033	41	1196	39	577 .068	80	1773 .043
Type B	.015	19	1220	14	418	33	1636 .020
Total		60	2416	53	995 .032	113	3411

What association between behavior type and coronary heart disease are
shown in Table 3?

How would you state these relationships quantitatively (in terms of rates)?

For purposes of your calculations, explain why you choose the figures you
used for the numerator and denominator?

What are the possible limitations of cross-sectional studies?

For the further exploration of behavior type and the risk of coronary heart
disease, what additional data do you need?

        (Do not turn the page until you have worked through this problem)

A next step in this research involved the use of a cohort study design. In other words, a group of subjects without coronary heart disease but already classified in regard to behavior type were followed over a period of time to see how many developed coronary heart disease.

Table 4: Coronary Heart Disease by Age and Behavior Pattern. Cohort Study

Behavior Pattern Basis	40-49 Years		50-59 Years		Total Subjects	
	CHD Present	CHD Absent	CHD Present	CHD Absent	CHD Present	CHD Absent
Type A	45	1072	49	530	94	1602
Type B	18	1186	21	394	39	1580
Total	63	2258	70	924	133	3182

What associations between behavior type and coronary heart disease are shown in Table 4?

How would you state these relationships quantitatively?

Why did you choose the figures you used for the numerator and denominator?

Does this kind of study help you solve the antecedent--consequence problem (or the cart before the horse problem).

What kinds of statements about the risk of coronary heart disease can you legitimately make from this type of study?

Can you calculate the relative risk of coronary heart disease for Type A persons and Type B persons?

Calculate the appropriate risk for:
 a) ages 40 - 49
 b) ages 50 - 59
 c) Total subjects

If it were possible for us to change behavior pattern, ~~how much~~ COULD coronary heart disease ~~could~~ be prevented?

Can you do any calculations that would state the amount of coronary heart disease which could be attributed to behavior pattern?

Calculate the appropriate risk for:
 a) ages 40 - 49
 b) ages 50 - 59
 c) Total ages

For the purpose of studying coronary heart disease among Blacks and
Whites in Evans County, Georgia, a sample of all persons aged 40 to 74
and 50 percent of the persons 15-39 was selected from the population.
Medical histories, physical examinations and laboratory tests were per-
formed on these persons. In addition, the social class was determined
for each person based on their occupation, source of income and education-
al attainment.

Figure I

CHD CASES PER 1000 EXAMINED

120, 80, 40

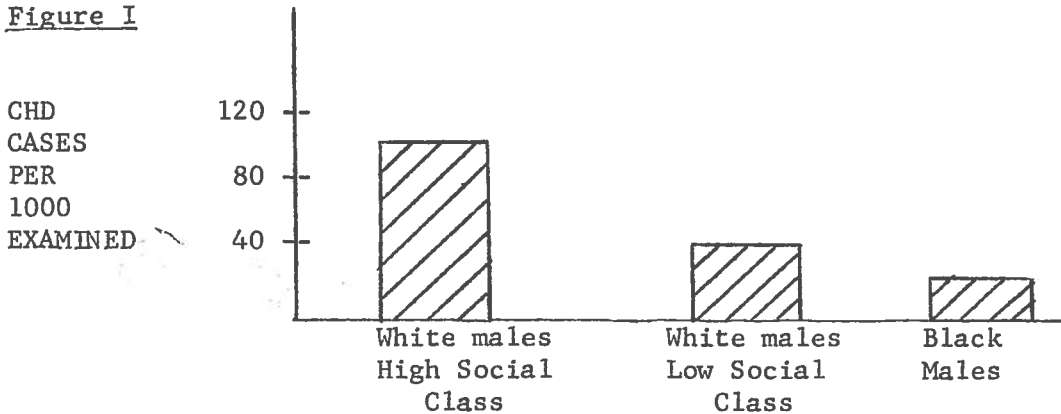White males High Social Class — White males Low Social Class — Black Males

Figure I shows the prevalence of coronary heart disease by social class
for White and Black males aged 40 - 74 years. The rates have been age-
adjusted.

Because of the small number of cases of coronary heart disease, the White
Males were classified into only upper and lower social class and the Black
were not divided.

What associations are shown in Figure. I?

Could this apparent association be the result of a bias?

What method could be used to determine if such a bias exists?

[handwritten annotations: not really bias; better phrasing; From these data would you think Upper Soc. Cl. White males of higher risk of CHD than the L SC white males? Same for LSC vs Black comparison; over]