APDU 199 Statistical Literacy Reading Rates and Percents 1 1 1 Association of Public Data Users October 26, 1999 1 Milo Schield 1 Augsburg College Minneapolis Minnesota USA www.augsburg.edu/ppages/schield

schield @augsburg.edu

APDU '99

Student Experiences

10/90

2

In Statistical Literacy, college students have described and compared rates and percentages.

Most student problems reflect ignorance:

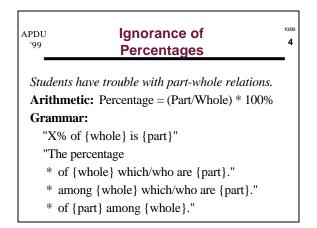
- of comparisons (test and base),
- of English grammar used to state comparisons
- of rates and percentages (part and whole)
- of English grammar used to describe and compare rates and percentages

APDU '99 Ignorance of Comparisons 3

Students have trouble with basic comparisons:

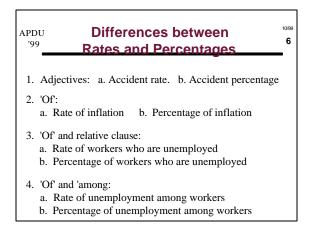
- simple difference (test base), "more than"
- simple ratio, (test/base), "times as much as"
- relative difference, (test-base)/base, "more than"

See "Common Errors in Forming Comparisons", by Schield, 1999 in Of Significance, Vol1, Num. 1.



APDU lgnorance of 5 5 Students have trouble with part-whole relations when the part and whole are different (c.f., rate of accidents per million miles). Grammar: "rate of {part} per/among {whole}" "{part} rate per/among {whole}" "rate which/who are {part} per/among {whole}"

"{part} rate who are {part} per/among {whole}"

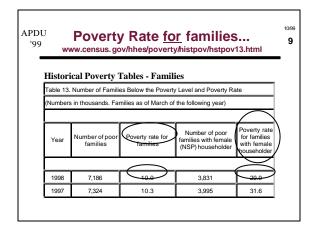


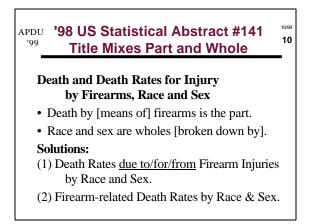
¹⁹⁹ Some students problems 7 are due to Titles of Tables

In describing rates and percentages, the titles of tables, columns and rows may precipitate student problems in identifying part and whole:

- Titles are too brief
- Titles only list the topic
- Same indicator words are used for part and whole
- Part and whole are combined: used as adjacent adjectives used as adjective noun.

PPDU Percent: In or Below Poverty '99 www.census.gov/hhes/poverty/pov95/povest1.html							
Table A. Persons and Families & Poverty by Selected Characteristic							
(Numbers in thousands)	ies M	POVELLY by	Serect	eu charach	.eristi		
	Belo	w poverty	>				
19	95	1994		differ	rence		
Characteristic	Per)	Per	Number H	overty		
Number	cent	Number	cent	of poor	rate		
PERSONS	\sim	-					
Total 36,425	13.8	38,059	14.5	-1635*	-0.7*		
White 24,423	11.2	25,379	11.7	-955*	-0.5*		
Non Hispanic 16,267	8.5	18,110	9.4	-1843*	-0.9*		
Black	9.3	10,196	30.6	-324	-1.3*		
Asian 1,411	14.6	974	14.6	437	-0.0		
	6	8,416	30.7	159	-0.4		





APDU US Government Statistics				
DIVISION AND STATE	% <u>OF</u> BIRTHS <u>WITH</u> LOW BIRTH WEIGHT			
United States Dist.of Columbia	7.0			
New England Middle Atlantic	5.9			
East North Centry	al 7.1			

