1. Premature Death in Jazz Musicians: Fact or Fiction? *letter from retired professor to American J Public Health 1991 June; 81(6): 804-805*

"Jazz musicians tend to be more liable than other professions to die early deaths from drink, drugs, women, or overwork.[1]

"The career of the ODJB (Original Dixieland Jazz Band) was both as fantastic and as typical as any that jazz has had to offer. Its story features... the petty jealousies, alcoholism, premature deaths, and all the rest."[2] "Catlett's career was a singularly queer one, even for jazz, whose history is filled with the wreckage of poverty, sudden obscurity, and premature death."[3]

Statistical study of 86 jazz musicians listed in a university syllabus refutes these tenets,[4] the second and third of which were made by two of America's most respected critics, and all of which foster the commonly held view that jazz players die prematurely. Dates of birth, and of death when it had occurred, were tabulated, and longevity matched with that expected in the United States by year of birth, race, and sex.[5-7] One musician who had not reached the age of his life expectancy was excluded from the list; the musicians were born in the US.

Birth years ranged from 1862 to 1938; 16 births occurred before 1900, 23 between 1900 and 1909, 19 between 1910 and 1919, 22 between 1920 and 1929, and five between 1930 and 1939. Comparison with national values showed that 70 (82%) of the musicians exceeded their life expectancy; four-fifths of the Black men, three fourths of the White men, and all the women lived longer than expected as shown in this frequency distribution.

	Male			Female		
	Total	n	%	Total	n	%
White	19	14	74	-	-	-
Black	59	49	83	7	7	100

Jazz was born in the "sporting houses" of New Orleans and nurtured in the speakeasies and night clubs of Chicago, Kansas City, and New York. Its association with vice and crime in its early days has led to the assumption that to play jazz is to court depravity and death. Although the size and sex distribution of the sample limits the inferences to be drawn, the data suggest that jazz musicians do not die young. Most of the 85 musicians in this study have survived the potential hazards of irregular hours of work and meals, the ready temptation of drugs and alcohol, and the perils of racial prejudice, and

to have overcome "the problem of the artist who is creative within a socially and racially discriminatory world."[8]

Questions:

i. Give two reasons why the author's comparison group gave the jazz musicians an unfair longevity advantage. [2] [3]

ii. "Comparison with national values showed that 70 (82%) of the musicians exceeded their life expectancy". In the Canadian lifetable used in the previous exercise, what percentage of 100000 newborns would be expected to exceed the life expectancy at birth? Comment![4]

iii. What is the shape of the distribution of the ages-at-death in that lifetable? Does this explain how, as in Lake Wobegon, http://en.wikipedia.org/wiki/Lake_Wobegon_effect, more than 50% can genuinely be "above average"?[5]

2. Clinical Research in General Medical Journals: A 30-Year Perspective *Table from Fletcher et al., NEJM 301: 180-183, 1979*

Fletcher et al. studied the features of 612 randomly selected articles published in the NEJM, JAMA and Lancet since 1946. Two features were the number of authors per article and the number of subjects studied in each article.

Year	No. articles examined	No. authors Mean	(SD)	No. Subjects Median
1946	151	2.0	(1.4)	25
1956	149	2.3	(1.6)	36
1966	157	2.8	(1.2)	16
1976	155	4.9	(7.3)	30

[1] [1] Lindsay M: Teach Yourself Jazz. London: English Universities Press, 1958. [2] Schuller G: Early Jazz. Its Roots and Musical Development. New York: Oxford University Press, 1968: 176. [3] Balliett W: The Sound of Surprise. New York: Da Capo Press, 1918: 144. [4] Norton P, Schumacher HJ: Topics in American Culture: Jazz Styles. Ann Arbor, MI: University of Michigan Extension Service, 1978; xiv-xvi. [5] Chilton J: Who's Who of Jazz. Philadelphia: Chilton Book Co. 1972. [6] Feather L: The Encyclopedia of Jazz. New Ed. Bonanza Books, 1960. [7] US Department of Commerce: Historical Statistics of the United States. Colonial Times to 1957. Washington, DC: Govt Print ing Olfice, 1461; 24-25. [8] Berendt J: The Jazz Book. New York: Lawrence Hill, 1915: 256.

[2]Hint: one has to do with a *vital* –pun intended– requirement for becoming a famous jazz musician; the other with the difference between current and truly cohort lifetables, and the trends in age-specific US mortality rates over the last century. Drawing lifelines on a Lexis diagram for years 1862-1991, ages 0-100, may help illustrate the 2 issues.

[3]If interested in a fairer comparison, you could look at the Methods in the 'Elvis to Eminem' study (bottom of Resources for risk/cumulative incidence, lifetables, webpage).

[4]JH suspects that the author, if asked, would have argued: 'under the null hypothesis, the expected percentage that exceeded the life expectancy at birth should be 50%.'

[5]The editor of Amer. Journal of Roentgenology missed this point in JH's 1994 article, as did the British newspaper *The Independent* when it wrote "The usually wonderful Jeremy Paxman, introducing a Newsnight discussion last Friday on the teaching of reading skills, expressed dismay that 'a third of our primary schoolchildren have below-average reading ability'. Had he paid more attention in his 'rithmetic lessons, perhaps Paxman would have realised that half our schoolchildren are below average in everything. As, indeed. are half our Newsnight presenters."

Questions on 2.:

i. From the mean and SD, *roughly* reconstruct the actual frequency distribution of the no. of authors per article for 1946 [Excel or `R` can help]

ii. Can the 1976 SD of 7.3 really be larger than the mean of 4.9? Explain.

3. Statistics in the U.K. Parliament (*Hansard 29 November 1991*)

Mr. Arbuthnot: the Labour party's suggestion of a minimum wage is in itself rather obscure and bizarre. As I understand it, it is tied to the average and would therefore not only be relatively high at £3.40 but would increase as the average wage itself increased. With each increase in the average rate of pay, the minimum wage itself would have to go up and it would be forever chasing its own tail.

Mr. Tony Lloyd: Perhaps I can help the hon. Gentleman. It will be tied to the median, which is not the same as the average. It is simply a mid-point on the range and would not be affected by changes in the minimum wage.

Mr. Arbuthnot: From what I understand, even an amount tied to the median would be affected because if the lowest wage were increased to £3.40 per hour, the median would have to rise.

Mr. Tony Lloyd: I shall put the matter in simple terms. The median, the mid-point in a series of numbers such as 2.2, 5.6 and 7, is defined as being the difference between 2 and 7, which is 3.5. If we alter the figures 2 and 2 to 3.5, the middle figure of 5 would remain unaltered because it is independent of the bottom figures.

Mr. Arbuthnot: I do not understand the hon. Gentleman's mathematics and I slightly doubt whether he does.

Mr. Matthew Carrington (Fulham): I am extremely confused. I studied mathematics for some years at school and I have not totally forgotten all of them. The median is not the mid-point between the first number and the last. It is where the largest number of items in a sample comes to, whereas the average is obviously the sample multiplied by the number of items. The hon. Member for Stretford (Mr Lloyd) is obviously extremely confused. The median has a precise mathematical definition which is absolutely right, and my hon. Friend is correct in saying that the median is bound to alter if the number at the bottom on the scale is changed. That will alter the average as well in a different way, but it is bound to alter the median. Perhaps the hon. Member for Stretford wishes to define median in a non mathematical sense.

Mr. Arbuthnot: I am grateful to my hon. Friend for sorting out at least the hon. Gentleman's mathematics with obvious skill and knowledge.

Exercise: Correct the honourable Gentlemen

4. Who is more variable (relatively speaking)?

i. a younger child who consumes 887, 672, 757, 867, 899 and 872 calories on 6 observed days or

ii. an older child who consumes 1155, 1193, 1167, 1315, 1401 and 1133?

5. Describe the students in EPIB606/EPIB607 in 2001

In 2001 JH and DM carried out a web-based questionnaire survey to help the course instructors know better the background of the students taking this course, and their potential instructional needs. The data from this survey are available under (Web-based) Survey of students in McGill intro Epi and Biostat courses, 2001, URL `http://www.epi.mcgill.ca/hanley/bios601/Surveys`.

i. Prepare[6] (in LateX or a word processor or in your own handwriting) a Table entitled "Demographic and Educational Background of Students in EPIB606/EPIB607 in 2001" that gives a 'statistical picture' of these students, separated by sex, using 8-10 variables.[7]

ii. Prepare[6] (in `R` or `SAS` or in your own handwriting) a Figure entitled "Relationship between .. " that shows the relationship (or lack of one) between two variables in the dataset.[8]

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[6] You may hand in 1 set of answers for a pair of you.

[7] To find examples to follow, I suggest you Google with search words such as Table 1 characteristics subjects/patients. Or you might want to browse through a specific medical journal such as CMAJ (`http://www.cmaj.ca`) or BMJ (`http://www.bmj.com/`, or look at websites of Statistics Canada or the Public Health Agency of Canada, or ISQ or RAMQ, or NCHS or CDC. I will be asking you separately to bring to the Lab session one example of a clear and well-made Table, and a clear Figure, as well as a table and a figure at the other end of the scale!

[8] the CDC site `http://www.cdc.gov/mmwr/mguide_qs.html` has some nice simple graphs.