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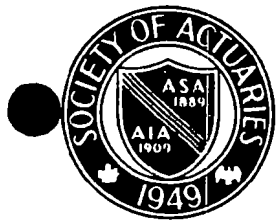
ACTUARIAL MATHEMATICS COURSE AT THE CLAREMONT COLLEGES

by Murray Projector

The Claremont (Calif.) Colleges offer an actuarial mathematics course, which began its second year of operation in February. The course is provided by the mathematics department of Harvey Mudd College, but is available to all undergraduate students in the cluster of independent colleges comprising the Claremont Colleges.

The course, which draws students from Pomona College, Claremont Men's College, and Harvey Mudd College, is a two-semester sequence, spring and fall. During the summer vacation, students are given an opportunity for actuarial employment with Los Angeles companies.

Designed as a six-credit academic mathematics course for mathematics majors, as well as for those interested in actuarial careers, the course is based on Kellison's *Theory of Interest*, and Jordan's *Life Contingencies*.

A Society examination center has been established at Harvey Mudd College, which attracts not only students enrolled in the actuarial course but qualified outside students as well. Passing ratios for the examinations are high, because of the Colleges' high academic standards.

Career and placement guidance is also furnished not only for those students who are native to Southern California but for those from other parts of the country. More than half the members of the undergraduate student bodies at the Clarmeont Colleges are from out of state.

The course was first proposed by the Los Angeles Actuarial Club, and implemented by its members through financial support and other help. Arrangements were worked out with two members of the Harvey Mudd Mathematics faculty,

"WHAT'S IN A NAME?"

by Ralph E. Edward

Mr. Gerald Hutchinson of the Social Security Administration talked to the Baltimore Actuaries Club recently on the subject of surnames. For their records a surname has six or fewer letters, so Smith is separate, but others like Martin, Martinez and Martinson are deemed identical. It follows that their count understates the number of different surnames.

By frequency, Smith (2,383,000) is most frequent, grading down through, in order, Johnso, Willia, Brown, Jones, Miller, Davis, Martin, and Anders to Wilson (788,000). The list has 3200 names before the count is under 10,000, 468,700 before the count is under 10 and 839,600 before the count is less than two, leaving 447,000 where the surname is unique, for a total of 1,286,600 different surnames. These correspond to the total number of names (239,928,000) from 1936 to June 1972, living and deceased. This exceeds the number of different social security numbers (207,027,-000) because of name changes, such as at marriage.

The frequency of initial letters (by number of records) goes from S (10.1%) to M B H C W R G P D L K F T A J E N O V Y Z I U Q to X (less than .05%). The frequency of initial letters (by number of different surnames) goes from S (9.8%) to B M K D P C G L A T H R F W N V O E Z J Y I U Q to X (.1%).

The surname Hutchi appears 105,943 times and it ranks 232nd in frequency of appearance. (Edward ranks 50th with 317,197 appearances).

Surnames range from Aa to Zyzys. Q is the only letter of the alphabet not a surname by itself, while Fifteen is the

ENVIRONMENT, CHEMICALS, CANCER

by Arthur Pedoe

This is a report of a symposium held in Sweden in March 1972, which was initiated and sponsored by the Swedish insurance companies. Thirty-four specialists participated included five from the U.S.A. and four from Great Britain. They were drawn from departments of medical genetics, environmental hygiene and biochemistry from various universities, hospitals and research institutes. The subject is of major interest to actuaries; no actuaries participated, because the views of these other specialists was evidently the purpose of the symposium. We should thank the Swedish insurance companies; it might lead to similar action on this side of the Atlantic.

The reports on the various matters discussed are quite brief and addressed to fellow specialists with references to 86 technical books and papers on the subjects under review.

The opening paragraph states: "Side effects of the development of modern chemical industry are pollution problems of entirely new dimensions. Living organisms, including human beings, are constantly exposed to a variety of chemicals released in the environment. It is almost a truism to state that the biological consequences of the pollution are largely unknown." It is stated that in the U.S.A. the production of synthetic organic chemicals approaches 10,000 million kilograms a year including pesticides, food dyes and many additives to plastics, rubber, paper and detergents.

The release of known toxic metals into the water and air has reached enormous magnitudes. The danger of lead

TABLE I **Social Security Approval Proportions**

Age	12-14 Mos. Duration	24-29 Mos. Duration	Financially Effective
<40	52%	64%	73.0%
40-44	54%	70%	78.6%
45-49	68%	82%	83.7%
50-54	75%	82%	87.6%
55-59	80%	88%	89.2%
60-64	86%	95%	88.8%
Total	73% (802 claims)	84% (1260 claims)	

Although the number of female claims does not justify development of financially effective approval rates differentiating by sex, the approval proportions for females were separately calculated and are shown in Table II. Table II shows the relative approval proportions by industry, by case average monthly salary and by employee contribution status. With the exception of the sex approval proportions and the aggregate year end rates, which are taken from 1971 data, Table II presents a summary of claims catagorized as of the claim duration in December, 1970.

TABLE II **Aggregate Approval Proportions**

	12-14 Mos. Duration	24-29 Mos. Duration
Sex		
Male	78% (573 claims)	86% (771 claims)
Female	57% (185 claims)	75% (271 claims)
Industry		
Manufacturing	70% (480)	86% (588)
Financial	66% (77)	77% (145)
Case Average Salary		
$700	68% (133)	68% (204)
$700-$1000	68% (82)	78% (83)
$1000	71% (51)	82% (66)
Employee Contributions		
Employee Pay All	71% (82)	72% (152)
Employee Pay All	71% (356)	86% (487)
Both Pay	68% (455)	79% (514)

The study examined the approved Social Security claims under these cases having the right to offset family, as well as primary benefits, to determine the frequency with which family awards vs. primary-only awards were made. Table III presents these results for male and female claimants. This table also shows the number of claims with family offsets. For females, this number is quite low and it is questionable whether any significance should be given to it. In any case, it should be remembered that many of these family offsets may revert to primary-only offsets as the children attain the limiting Social Security age, and this fact must be reflected in development of the family offset credit.

TABLE III **Proportion of Claimants With Social Security Benefits Receiving Family Benefits (6-41 Mon. Duration)**

Age	Male		Female	
40	66%	(with Family Benefits)	40%	(41 with Family Benefits)
40-44	55	(102)	30	(20)
45-49	42	(150)	14	(18)
50-54	30	(177)	10	(11)
55-59	15	(137)	5	(9)
60-64	13	(89)	—	(0)

"What's in a Name?"

only one of the first twenty numbers that is not a surname. There are 1,186 persons named Man but only 60 "Men" — some of them women; 1,065 persons are named Lady, including many men. Anything can turn up as a surname, including two named Anything and 181 named Thing. Others are named Other, Once, Only, Odear and Oboy, which may lead you to say Ostop or Ohno, both of which are surnames.

Pi and Mo are probably what is left of longer names. But what about Noodle, Charm, Smile or Liver. Some are burdened with names like Oaf, Cheap, John, Moron, Ape, Skunk, Ghoul, Frumpy, Ghost, Boob, Slob, Lout and Goon. You can say "We have more family names in this country than you can shake a stick at" and not have used a word that is not someone's surname.

Remembering that many surnames identify the occupation of the bearer, the reader can, from the offbeat names on the list, construct mythical firms with appropriate occupations. For example:

Double (2,472) & Trouble (582) — Income Tax Assistance

Hell (426) & Back (7,024) — Travel Agency

Head (28,615) & Tail (82) — Medical Clinic

Mr. Hutchi concluded with novelty full names including John 5/8 Smith, Queen Victoria, Merry Christmas and Earnest Truelove. And now you know, if you noticed, why the last letter is missing from your reporter's surname. ☐

Claremont

Professors Melvin Henriksen and John Greever, and two representatives of the Los Angeles Actuarial Club, John Tiller and Walter B. Lowrie. The many actuarial alumni in the Los Angeles area have been most gratified that their colleges have given this recognition to actuarial careers. They have shown their approval by actively supporting the program. ☐