Service Project Descriptions (cont'd.)

this with the measured height of some portion of the composite resonance spectra.

Investigator: M. Lexie Nall
Dept. of Dermatology
Project Began April 1969

Project: L_NALL. PSORIASI
Non-Realtime

The computer is used to perform calculations in connection with a study of the genetics of psoriasis. A questionnaire requesting information on presence or absence of the disease in relatives was sent to almost 700 psoriasis sufferers and to 100 controls. A statistically significant familial concentration of the disease has been demonstrated which, together with twin studies, supports the concept that hereditary factors contribute to the etiology of psoriasis.

Pedigree analysis and frequencies of psoriasis among siblings of sufferers were not consistent with inheritance of genetic differences at a single autosomal or x-linked locus, even with decreased penetrance due to delayed age of onset. These findings, plus further analysis, suggested that psoriasis is determined by multifactorial inheritance.

Application of the twin method to this study is still in process. The sample of monozygotic and dizygotic twins (one or both members affected) was drawn from the United States.

The questionnaire used in this study has been translated into several languages. An international information exchange and coordination center is being set up in the Department of Dermatology.

Investigator: John Petralli
Stanford Univ. Hospital Clinical
Lab. - Infectious Disease
Project Began January 1969

Project: J_PETRAL. MED_DATA
J_PETRAL. INFCON
J_PETRAL. PROGRESS
Non-Realtime

Antibiotic-sensitivity testing gives physicians important information about treatment of specific infections. To improve the quality of antibiotic-sensitivity data (high potency single disc method) and to guide the interpretation of results and antibiotic selection, a computer program has been developed. Clinical information and zone sizes are entered into the ACME computer each day. As the information is given to the computer, the quality-control program immediately detects and challenges unusual results and directs the laboratory technicians to appropriate restudy of the organism in question. This system converts zone sizes to resistant, intermediate, or sensitive and prints final reports from its memory. These final results are generated three days to eight weeks after the specimen enters the lab. Reports for "routine" specimens are printed for distribution to the nursing units. Antibiotic sensitivity test

Service Project Descriptions (cont'd.)

results are compared to previous results and unusual values are flagged for further study before release to the physician. Results which pass this screening are interpreted for the physician. Previous results are analyzed every six months to allow updating of acceptable criteria and to provide the fellows and residents of Infectious Diseases with patterns of antibiotic susceptibility for approximately fifty organisms. The results for rare organisms are accumulated until sufficient data is present to include them in the daily quality control program.

Decreased potency of an antibiotic disc is detected by comparison of periodically determined mean zone sizes. Limits of confidence of a single reading are established by review of zone sizes observed with a standard organism tested on different occasions.

Knowledge of antibiotic sensitivities of organisms isolated from a specific site such as blood or urine will help to guide the selection of antibiotics before specific sensitivities are known. Such information is of value in selection of antibiotics in treating rarely encountered organisms with less well-known sensitivity patterns or in selection of alternate antibiotics when the first choice drug is hazardous. Yearly comparison of antibiotic sensitivity patterns obtained will give information about major trends and suggest appropriate changes in treatment of various infections.

Currently the project is testing the feasibility of automatically generating patient charges from the specimen identification data entered into ACME. This would hopefully decrease the paperwork for the lab personnel, facilitate data control and practically eliminate keypunching from charge slips. This also involves automatic routing of charges, depending on whether the patient made an in-house, clinic, or other outpatient visit.

There are plans to use ACME to provide physicians with preliminary results on a daily basis. Such a system would be adaptable to a hospital information system to provide instant preliminary and final results at nursing units as they are generated. This system should be running on a small scale within the near future.

Another plan involves using ACME to study the possibility of routinely identifying bacteria with gas chromatography.

This summer we will begin parallel testing of an automated sensitivity testing instrument for approximately four months. The machine will provide sensitivity results twenty hours sooner than conventional methods.

In addition to improving the accuracy of laboratory results for the benefit of patients, the computer has proved valuable in checking the work of laboratory technicians and students in training.

TRAINING PROJECTS

Investigator: James Calvert
Medical Student
Project Began November 1969

Project: J_CALVER. TEXT
Non-Realtime

The computer is used for calculations involving the economics of investment in biomedical research. Given some fraction of the gross national product as appropriate for the total national expenditure on health, national investment policy can be made more explicit and rational by considering for each major disease category:

(1) medical care costs and lost income per year,

(2) yearly probability of premature death or continued disability,

(3) fraction of the health budget allocated to research,

(4) discount (interest) rate for patient lives saved or improved,

(5) the maximum number of years allowed to complete cure or prevention of the particular disease.

A second study investigates the economics of effectiveness and efficiency in patient care. Effective patient care simultaneously focuses on the patient's visit, the current illness, the patient's year, and the patient's lifetime. Schedules for effective care are integrated by a simultaneous analysis of policies relating investments of professionals and facilities to benefits of patient care at each of the four time foci. Optimal schedules can then be derived for the care of individual patients within the national population by a weighting matrix of investment policies.

Efficient utilization of invested professionals and facilities is markedly influenced by such human capital factors as:

(1) degree of specialization and rate of ongoing improvement,

(2) flexibility of allocation, and

(3) overall state of the technical art.

Investigator: Glenn Funk
Medical Student
Project Began June 1971

Project: GAFUNK. RHINO
Non-Realtime

The intent of this project is to study rhinovirus defectiveness from three approaches:

(1) an attempt to derive a subgenomic "defective interfering" (DI) rhinovirion by rapid passage at high multiplicity of infection.

Training Project Descriptions (cont'd)

(2) study of the kinetics of viral RNA production at permissive and non-permissive temperatures, and

(3) study of the intracellular development of rhinovirions under both temperature conditions using an electron microscope.

In addition, an attempt will be made to determine a particle-to-PFU-ratio as an indicator of the degree of defectiveness of a viral suspension.

Investigator: Rodney Levine
Medical Student
Project Began December 1968

Project: RLLEVINE. CPS
Non-Realtime

The project was undertaken to clarify some of the mechanisms of pyrimidine synthesis in mammals, and the relationship of that synthesis to the control of cellular proliferation. The computer is used for data analysis and statistical evaluation. It greatly accelerates the pace of the experiments.

As the work has progressed into an examination of enzyme kinetics, the computer has been used for theoretical curve fitting. Important properties of the enzyme system have been deduced, and theoretical equations have led to the conclusion that an allosteric enzyme is involved.

The computer has been an indispensable aid in calculation related to prediction of enzyme preparation behavior in a sucrose gradient centrifugation.

Investigator: D. Craig Miller
Medical Student
Project Began February 1972

Project: C_MILLER. CAB
Non-Realtime

This project is an attempt to define concrete risk/benefit guidelines for the new saphenous vein - coronary artery bypass surgery.

Method:

1. Collection of 15 significant pre-operative parameters on 400 patients who have undergone the surgery at Stanford.

2. Collection of follow-up clinical and angiographic data on as many of the 400 patients as possible.

3. Collection of 5 operative parameters.

4. Using computer and non-parametric multivariable biostatistical methods, attempt to find correlations among the parameters collected.

Training Project Descriptions (cont'd)

5. Report Stanford's results and formulate pre-operative risk/benefit guidelines from the above data.

6. Report on subpopulations of patients with unique pre-op or post-op courses.

Investigator: Larry Nestor
Medical Student
Project Began January 1970

Project: L_NESTOR. DIFFDX
Non-Realtime

This project has developed a program to aid in diagnosis. Its original purpose was to provide a teaching aid for students. The program would output differential diagnoses with probability-like values associated with them, in response to a given set of symptoms.

Clinical practitioners can also make use of the program in an effort to avoid overlooking an obscure diagnosis. By asking the program what other diseases can show a given set of symptoms, the number of missed diagnoses can be reduced.

Investigator: Marc Nuwer
Medical Student
Project Began February 1971

Project: MRNUWER. NEURON
Non-Realtime

The computer is used for modeling of neurons and groups of neurons. Arrays are constructed which simulate the temporal and spatial relationships of electrical activity on neuron surfaces, using an array for the soma, and a set of arrays for dendrites. In this manner, the interactions of "slow potential" gradients on neurons can be matched; inputs can interact with both spatial and temporal summation.

Plans have been formulated to order the modeling to fit the parameters of known neuron types (e.g. pyramidal cells, stellate cells, etc.).

Array values will be changed to simulate the properties of the neuron membranes in a way which will simulate learning and memory, principally as proposed in a holographic memory model.

Investigator: William Rosenthal
Medical Student
Project Began December 1968

Project: W_ROSENT. RESEARCH
Non-Realtime

This project investigates speech and language pathology and normal speech perception, utilizing studies of language-deviant children. ACME is used for

Training Project Descriptions (cont'd)

statistical data reduction of auditory processing of these children and for longitudinal study and follow-up.

The project includes research into the effectiveness of stuttering therapy, speech and auditory perception in aphasic children, and normal speech perception in adults and children.

VIII. UTILIZATION DATA

A. Interpreting Utilization Charts

The terms used to discuss ACME utilization involve charging units and categories of users.

1. Charging Units

Last year, the computer service charge units were:

page minutes
terminal connect time
blocks of disk storage
terminal service charge

In April, 1972, our rate structure was revised and charge units for batch execution, CPU time slices, and tape mounts were added. However, due to their recent incorporation in the rate structure, no data is included for them.

A pageminute is defined as occupancy of 4096 bytes of core for one minute. Terminal connect time is the total number of minutes that a terminal is connected to the system in a logged-on condition. A block of disk storage is a fixed length block of 2000 bytes of 2314-type disk storage. The terminal service charge covers monthly terminal rent plus other services offered by the ACME staff. This service charge is handled by the University independent of the ACME grant.

2. User Categories

This table shows the category identifier, rate, and definition of each user category. The rate charged per pageminute varies by user categories and some categories are subsidized 100% by the ACME Grant. An asterisk next to the category identifier (*4) designates those so subsidized. All other categories are paying. There is a distinction between real-time and non-realtime users. Realtime users use the 1800 processor or 2701 data adapter for data collection or process control functions.

PAGE-MINUTE CHARGE TABLE

	Category	cents/pageminute Pre-April,72	Post-April,72
1.	Realtime User - Sponsored Research	.50	1.00
2.	Non-Realtime User - Sponsored Research	1.00	1.70
3.	Non-Stanford Medical	2.00	2.50
*4.	Medical Students	1.00	2.00
*5.	Realtime User - Core Research	.50	2.00
*6.	Non-Realtime User - Core Research	1.00	2.00
*7.	ACME Staff	1.00	2.00
8.	Hospital Data Processing	1.25	1.70
9.	Non-Medical - Stanford and Non-Stanford	2.50	2.00
*10.	Realtime - Pilot and Pending Proposal	.50	2.00
*11.	Non-Realtime - Pilot and Pending Proposal	1.00	2.00
*12.	Realtime - Extended Non-Funded	.50	2.00
*13.	Non-Realtime - Extended Non-Funded	1.00	2.00
16.	Negotiated Rates - Combination of Core Research and Medical Administration	.25	1.20

*No cash charges, i.e., absorbed by the ACME project budget.

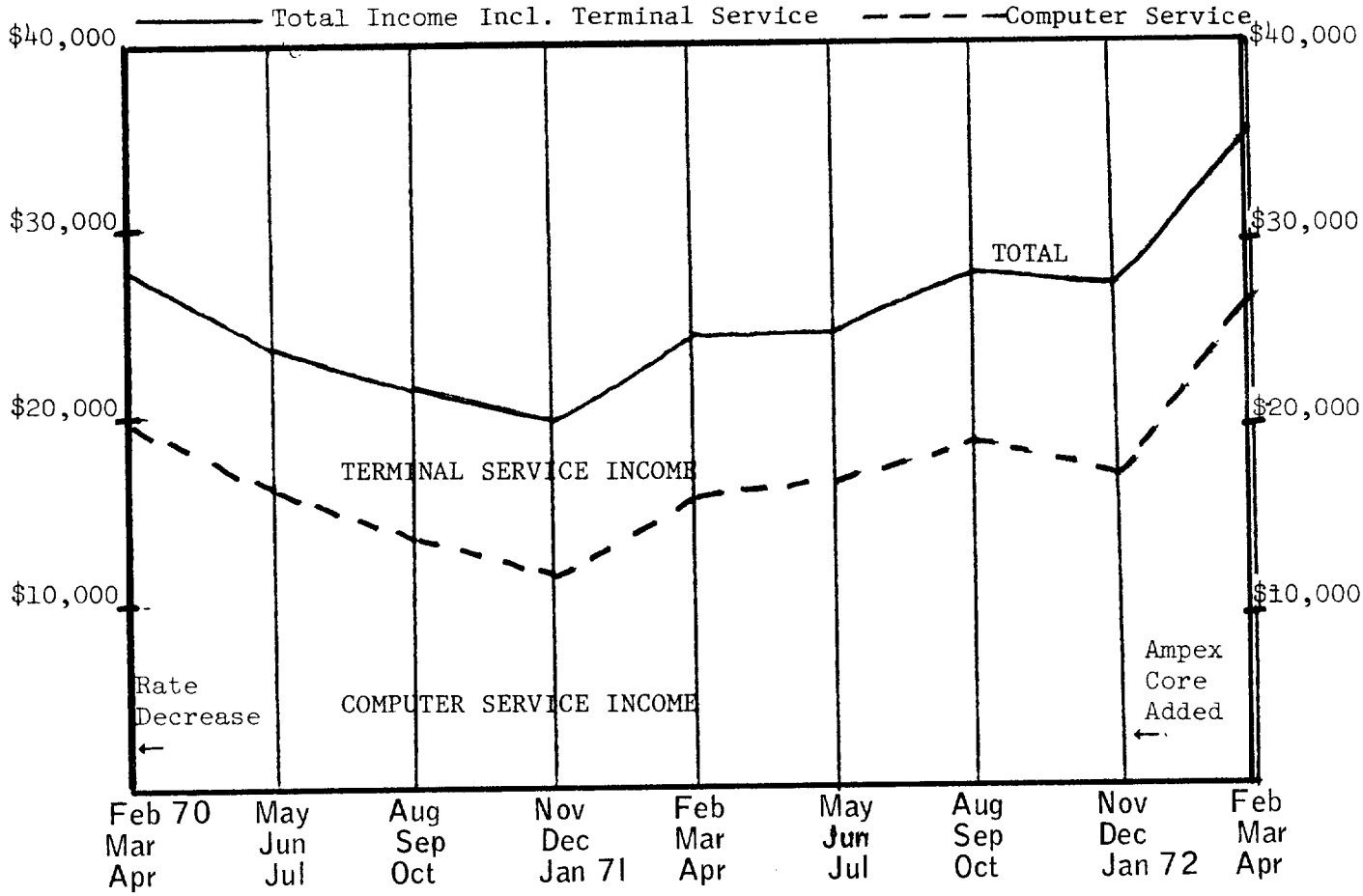
The four graphs in Section C show utilization since February, 1970 by user-supplied income, pageminutes of use, block storage, and number of terminal connect time hours. An additional table in Section C summarizes ACME utilization by Department. Section D summarizes computer resource usage by charge category and primary investigator.

B. Patterns of Use

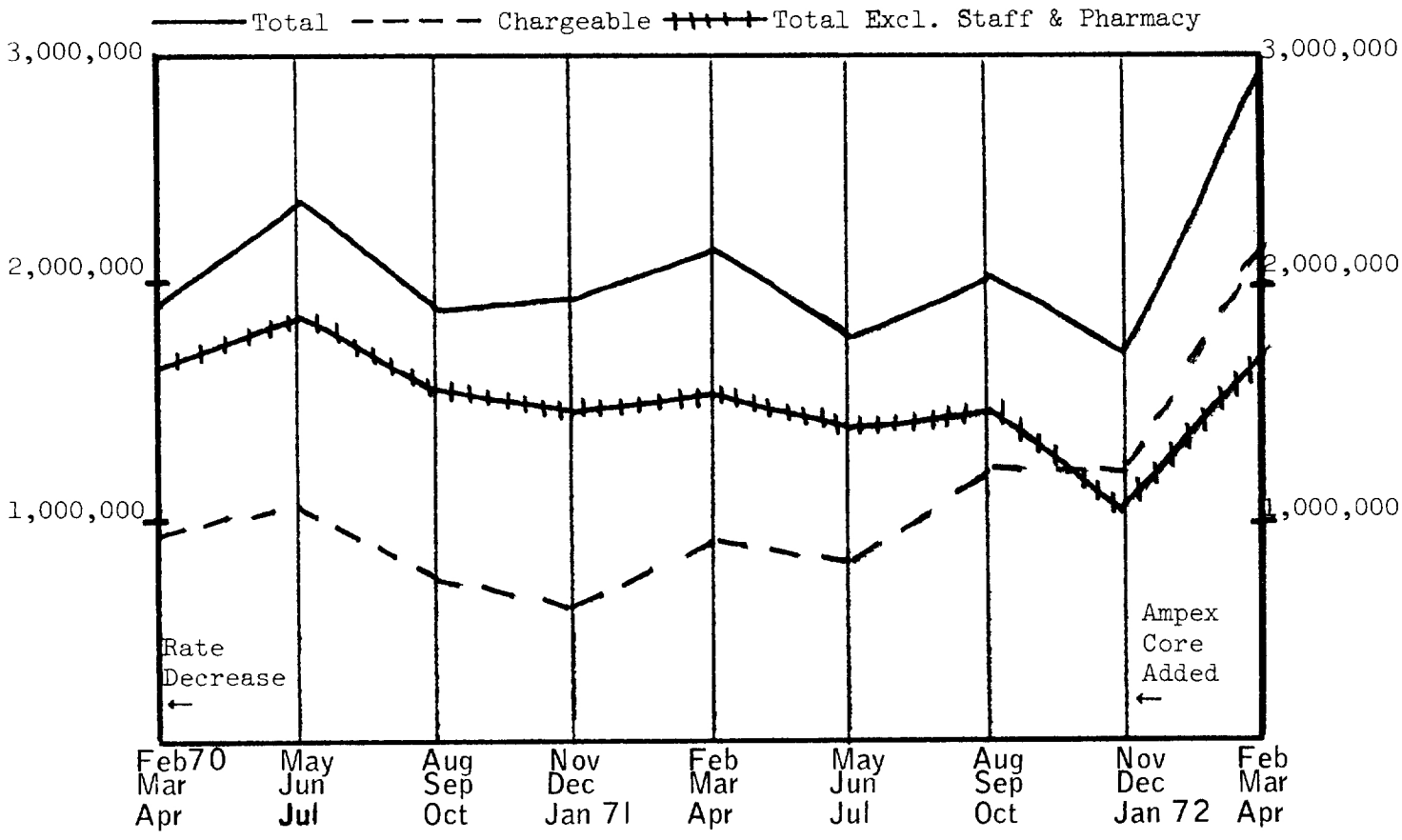
During fiscal year 1972, a noticeable shift has occurred from a preponderance of program development to execution. Approximately two years ago, it was normal to find 50% of logged-on users in execution with another 50% performing data entry functions or program development. One year ago, approximately 2/3 of those logged-on to the system were found to be in execution during normal daytime hours. More recently it appears that 75% of the users logged-on to the system are in program execution. The effect of this trend is that more cycles per user hour are absorbed than was the case two years ago. It also indicates that a certain amount of work performed on the system is now more or less routine or operates in a "production" mode. Much of this so-called production-type work is used to support research in the Medical Center. Examples of this are the realtime data collection from spectrometers and the data collection phase of the Drug Interaction Program.

During the past year, approximately 75%-85% of the available disk storage for users has been used. Frequently we have run out of space on individual packs during the normal operating hours. This has caused considerable inconvenience to all users, especially those who attempt to create very large files. Next month a number of data compression routines will be made available to all users. These routines will permit a considerable reduction in the amount of space used for individual files. We expect that our users will quickly adopt these techniques to reduce their disk storage charges.

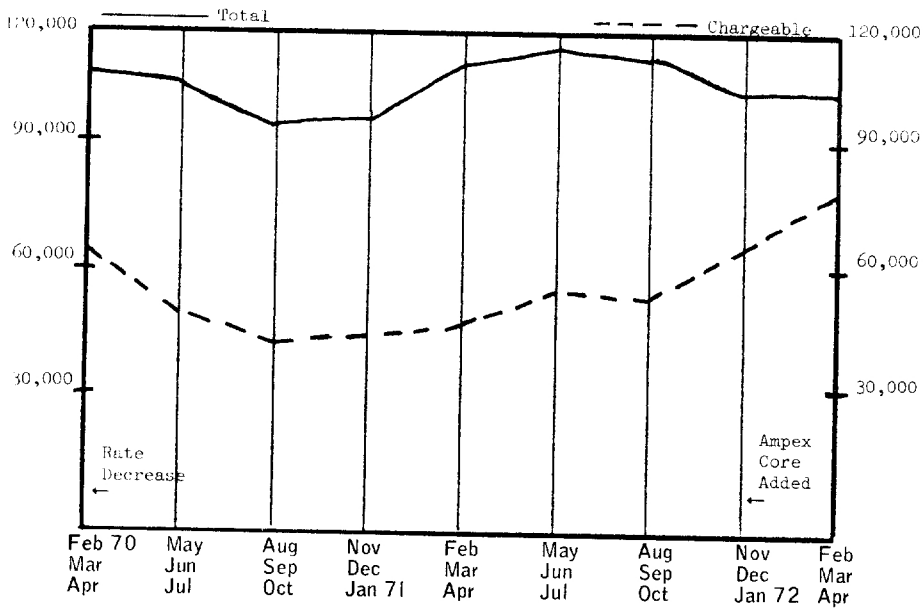
INCOME



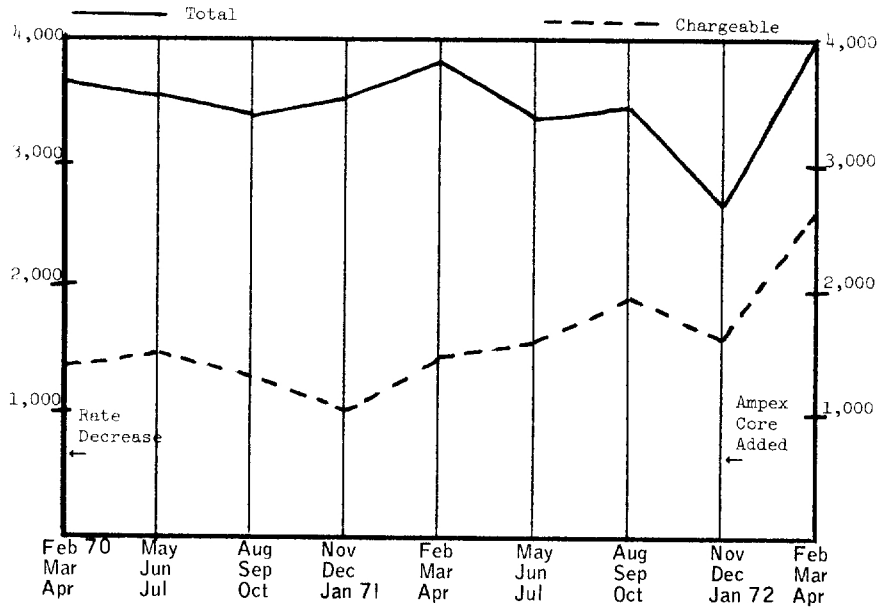
PAGEMINUTES



BLOCK STORAGE



TERMINAL HOURS



ACME UTILIZATION BY DEPARTMENT
Nine-Month Period - August 1971-April 1972

Department/Division	# of Terminals	PAGEMINUTES students	PAGEMINUTES non-chargeable	PAGEMINUTES chargeable	BLOCKS students	BLOCKS non-chargeable	BLOCKS chargeable	TOTAL CHARGE students	TOTAL CHARGE non-chargeable	TOTAL CHARGE chargeable	
MEDICAL SCHOOL											
Anesthesia	1.58	206,364	63,511	220,697	11,206	278	41,813	$3,184.24	$ 345.34	$6,222.87	
Biochemistry	1.00	23,428		88,402	538		3,885	288.08		1,272.52	
Comm and Prev Med				-0-			4			.40	
Biostatistics	.25	1,456		99,128	1,261		8,976	140.66		1,888.88	$ 1,889.28
Dermatology				1,199			1,534			165.39	
Genetics	4.00	176,282	221,019	1,837,843	19,580	32,222	57,677	3,720.82	5,417.69	19,185.78	
Gyn/Ob				32,373			3,287			652.43	
Medical Microbiology	1.00	21,113		308,022	1,053		17,035	316.43		4,783.72	
Medicine	1.00			278,457			22,668			5,051.37	
Cardiology		43,010			6,540			1,084.10			
Clinical Pharmacology	2.00		541,390	357,723		39,732	39,519		9,387.10	7,529.13	
Gastroenterology				6,628			508			117.08	
Hematology				221,618			7,726			2,988.78	$21,385.78
Immunology				29,053			133			303.83	
Infectious Diseases		20,585		3,536	1,408		1,812	346.65		216.56	
Endocrin & Metab Dis	3.00	22,318		410,063	1,053		10,784	328.48		5,179.03	
Oncology		3,540			1,217			157.10			
Respiratory Medicine		4,212			152			57.32			
Neurology		-0-		167,710	39		2,034	3.90		1,041.94	
Pathology	1.00	2,456		277,023	402		6,550	64.76		2,086.74	
Pediatrics		57,234		180,190	9,247		31,470	1,497.04		4,948.90	
Pharmacology	1.00		-0-	208,538		429	5,786		42.90	2,663.98	
Physiology		20,580			672			273.00			
Psychiatry	2.00	100,467	52,712	211,356	26,999	10,793	12,902	3,704.57	1,490.21	3,226.00	
Radiology	1.00			327,714			8,880			4,165.14	
Diagnostic Radiology	1.00	60,469		136,984	5,445		10,655	1,149.19		1,750.41	
Nuclear Medicine	1.00	6,407		155,006	640		2,563	128.07		1,149.40	$15,789.55
Radiation Therapy	.50			633,942			17,304			8,069.82	
Radiobiology	1.00			56,788			869			654.78	
Surgery				30,653			4,209			727.43	
Cardiovascular		22,329	-0-	120,497	1,977	12	9,202	420.99	1.20	1,522.64	
Ophthalmology				14,900			40			153.00	
Otolaryngology		7,480	899	-0-	598	36	18	134.60	12.59	1.80	$ 3,227.95
Urology	.67		146,802	130,450		1,351	1,265		869.08	823.08	
Admissions Committee				94,529			10,771			2,022.39	
Fleischmann Labs				148,025			1,495			1,629.75	
Joint Teaching & Research	1.50			126,782			13,667			2,491.04	
Regional Medical Program	1.00			139,759			12,813			2,678.89	
MEDICAL SCHOOL TOTAL	25.50	799,730	1,026,333	7,055,588	90,027	84,853	369,854	$17,000.00	$17,566.11	$97,364.90	

Department/Division	# of Terminals	PAGEMINUTES students	PAGEMINUTES non-chargeable	PAGEMINUTES chargeable	BLOCKS students	BLOCKS non-chargeable	BLOCKS chargeable	TOTAL CHARGE students	TOTAL CHARGE non-chargeable	TOTAL CHARGE chargeable
HOSPITAL										
Cardiology	1.00									
Clin Lab-Immunology				1,432			14			$ 15.72
Clin Lab-Infec Diseases	1.00			835,795			27,898			11,147.75
Clin Lab-Pathology	3.00			1,000,064			7,163			5,935.00
Data Processing	1.00			788			36			13.44
Pharmacy	1.00		-0-	3,358,931		2	30,317		$ .20	11,429.02
HOSPITAL TOTAL	7.00		-0-	5,197,010		2	65,428		$ .20	$28,540.93
SUH CLINICS	1.00			203,599			16,793			$2,809.75
OTHER CLINICS AND HOSP	1.00			385,256			4,896			$6,975.80
CAMPUS										
Aero and Astro				4,232			1,178			$ 223.58
Biosciences	1.00	-0-		406,973	16		4,590	$ 1.60		2,493.81
Chemistry	1.00	9	272,084	893,354	389	17,443	46,824	38.99	3,272.56	15,141.67
Civil Engineering		-0-			144			14.40		
Communications				17,640			703			511.29
Computer Science*				2,044,603			91,706			20,195.92
Grad School of Business				-0-			9			.90
Law				6,525			1,327			295.81
Math	1.00			13,982			45			144.32
Physics				75,255			3,233			1,452.01
Psychology				27,768			871			698.58
Statistics	.50	2,942		8,268	147		473	44.12		145.38
CAMPUS TOTAL	7.50	2,951	272,084	3,408,600	696	17,443	150,959	$ 99.11	$3,272.56	$41,303.27
UNKNOWN SCRATCH**		288,839			273			$2,915.69		
OTHER (SLAC, SEL, Carnegie, etc.)				220,639			12,694			$5,231.54
USER TOTALS	42.00	1,091,520	1,298,417	16,550,692	90,996	102,298	620,624	$20,014.80	$20,838.87	$182,226.19
ACME	11.00		5,565,832***			202,525			75,910.43	
GRAND TOTALS	53.00	1,091,520	6,864,249	16,550,692	90,996	304,823	620,624	$20,014.80	$96,749.30	$182,226.19

Terminal distribution is that of April 1972. One terminal (A86), owned by the Genetics Dept., is listed as an ACME terminal, because it is located in the Machine Room.

*Primarily the DENDRAL project, serving the Departments of Genetics, Chemistry, and Computer Science.

**Unknown users, mostly medical students.

***Of this total, 3,292,566 pageminutes were used by Operations to run the system.

PAGEMINUTES GRAND TOTAL: 24,506,461
BLOCKS GRAND TOTAL: 1,016,433

SUMMARY OF COMPUTER RESOURCE USAGE

April 17, 1971 - April 16, 1972

* Cor = Core Research and Development
C = Collaborative
S = Service
T = Training

INVESTIGATOR	DEPARTMENT/ INSTITUTION	PROJECT TITLE	DIRECT GRANT OR CONTRACT SUPPORT Identification Number	Agency	Current Annual Amt.	BRR Category*	AMOUNT OF USAGE - TIME SHARING COMPUTER Terminal Access Hours	Pageminutes (K) @ $ .005 per pageminute	Block Storage (K) (Blocks-in bytes) @ $ .10 per block
Category 1 Realtime, Sponsored Research (CHARGEABLE)									
Bacon, Virginia	Genetics	GAME. Computer control of Finnigan 1015 quadrupole mass spectrometer.	NGR004	NASA	$240,000.00	C	786.3	918.487	20.553
Constantinou, Christos	Urology	UROL. Investigation of upper urinary tract physiology.	AM05513	NIH	71,598.00	C	180.5	94.513	0.930
DeGrazia, Joseph	Nuclear Medicine	RADIOREN. Development of radioisotope techniques for the evaluation of differential kidney function.	--	Public Health Hosp. S.F.	--	S	6.4	2.767	1.759
DeGrazia, Joseph	Nuclear Medicine	CLINIGAS. Coordination of computer and metabolic gas analyser.	--	Univ Funds	--	S	189.8	109.244	1.859
Dong, Eugene	Cardiovascular Surgery	LAB. Study of the principles of mammalian heart rate control, emphasis on sino-atrial node.	HE08696	NIH	117,708.00	C	133.8	109.499	8.725
Dong, Eugene	Cardiovascular Surgery	PATIENT. Examination of cardiac surgery patient data.	--	Clinic Budget	--	S	335.8	235.456	22.371
Dong, Eugene	Cardiovascular Surgery	CLIN. General data reduction.	HE13108	NIH	243,003.00	S	40.5	15.976	3.140
Gersch, Will	Neurology	SYNTHESI. Application of time series methods to problems in neurophysiology and medicine.	--	Univ Funds	--	S	297.3	183.199	2.741
Glick, David	Pathology	LASER. Laser microprobe analytical system for elemental analysis of microscopic biological samples.	GM16181	NIH	112,446.00	S	481.5	280.334	6.687
Gold, Jerome	Diagnostic Radiology	SWALLOW. Esophageal blood flow studies.	GM01707	NIH	119,608.00	C	190.3	108.434	10.265
Green, Paul	Biosciences	AVENA. Kinetic analysis of hormones affecting the growth process.	GB28667	NSF	90,000.00	S	142.8	156.047	1.699
Hanawalt, Philip	Biosciences	TRI CARB. Use of radioisotope tracers to study molecular biology of cell growth and repair of damage to genetic material.	GM00365	NIH	44,096.00	S	333.7	207.484	3.676
Harrison, Donald	Cardiology	CATH LAB. On-line cardiac catheterization data analysis; recognition of abnormal EKG complexes.	HE05709	NIH	63,274.00	C	116.2	40.644	16.137
Kennedy, Donald	Biosciences	NERVOUS. Analysis of neurophysiological data with aim of understanding the nervous system.	NS09744	NIH	62,660.00	S	3.8	1.191	0.025
Kopell, Bert	Psychiatry	ICON. Study of AER's (Averaged Evoked Responses) in EEG's.	MH19918	NIH	74,666.00	S	20.2	4.948	0.261
Lederberg, Joshua	Genetics	EXPT. Use of a Packard liquid scintillation counter to analyze the incorporation of radiolabeled amino acids into brain.	GM00295	NIH	139,457.00	S	137.4	93.816	3.484
Mazze, Richard	Anesthesia	RENAL. Study of renal failure following general anesthesia.	--	PAVA Hosp	--	S	195.3	87.775	2.085

SUMMARY OF COMPUTER RESOURCE USAGE

April 17, 1971 - April 16, 1972

* Cor = Core Research and Development
C = Collaborative
S = Service
T = Training

INVESTIGATOR	DEPARTMENT/ INSTITUTION	PROJECT TITLE	DIRECT GRANT OR CONTRACT SUPPORT Identification Number	Agency	Current Annual Amt.	BRR Category*	AMOUNT OF USAGE - TIME SHARING COMPUTER Terminal Access Hours	Pageminutes(K) @ $ .005 per pageminute	Block Storage(K) /Block=2K bytes @ $ .10 per block
Category 1 (cont'd.)	Realtime, Sponsored Research (CHARGEABLE)								
Pauling, Linus	Chemistry	MENTLRES. Research on the molecular basis of mental disease, involving gas chromatography.	MH18149	NIH	$139,812.00	S	817.3	468.472	47.003
Reynolds, Walt	Genetics	SOOT. Automation of mass spectrometer instrumentation systems.	NGR004	NASA	240,000.00	S	22.6	5.425	3.074
Reynolds, Walt	Genetics	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	C	118.2	45.794	6.812
Rindfleisch, Thomas	Genetics	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	C	125.7	73.279	1.225
Ross, Robert	Chemistry	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	C	841.0	1050.203	47.988
Roth, Walton	Psychiatry	AER. Research into computer processing of EEG data.	MH19918	NIH	74,666.00	S	27.2	10.037	0.201
Smith, Norman	Anesthesia	BABOONS. Cardiovascular data file storage; statistical analysis.	GM12527	NIH	536,448.00	S	0.0	0.0	0.010
Smith, Norman	Anesthesia	MAC. Calculation of human cardiovascular data.	GM12527	NIH	536,448.00	S	0.0	0.0	0.340
Smythe, Harvey	Psychiatry	SLEEP. Analysis of data from all-night sleep EEG's.	MH19071	NIH	58,689.00	S	63.1	17.226	0.513
Stefik, Mark	Genetics	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	C	566.4	363.554	16.954
Stillman, Robert	Chemistry	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	C	172.7	111.690	8.826
Sussman, Howard	SUH - Clin. Lab. - Pathology	LAB_PAT/LABSYSO. Development of an automated data processing system for the clinical pathology laboratory of Stanford Hospital.	--	Hosp Funds	--	C	1280.4	819.292	7.347
Swanson, George	Anesthesia	RESPRE. Investigation of neural mechanisms which sustain ventilation in absence of chemical stimulation.	GM12527	NIH	536,448.00	S	0.6	0.122	0.009
Tatton, William	Biosciences	DPERKEL. Characterization of neural circuits underlying behavior and sensory information processing in mammals and invertebrates.	NS09744	NIH	62,660.00	S	90.6	47.656	0.282
Tucker, Robert	Genetics	MS. Control of Mass spectrometer - GLC apparatus.	NGR004	NASA	240,000.00	S	0.0	0.0	1.892
Wilson, Donald	Biosciences	NERVOUS. Analysis of neurophysiological data.	NS02944	NIH	56,690.00	S	0.0	0.0	0.008
					SUB-TOTAL		7717.4	5662.564	248.881

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Category 2 (cont'd.)	Non-Realtime, Sponsored Research (CHARGEABLE)								
Brutlag, Douglas	Biochemistry	ULTRA. Studies of the role of divalent metal ions in the reaction mechanism of the enzyme DNA polymerase.	GM07581	NIH	$299,344.00	S	49.7	15.566	1.422
Buchanan, Bruce	Computer Science	STAT. Statistical demonstration programs for a course in biostatistics.	GM01922	NIH	269,243.00	T	91.0	30.443	0.224
Butler, Edmond	Urology	UROSTATS. Urology operative statistics information and retrieval program.	--	Univ Funds	--	S	12.0	15.050	3.759
Cady, Paxton	Psychiatry	THYROID. Study of the relationship between stress and a partial genetic defect in thyroid function.	--	Personal Funds	--	S	0.0	0.0	6.106
Cann, Howard	Pediatrics	GUAT. Population genetics studies of Mayan Indians of Guatemala.	GM15593	NIH	37,598.00	S	473.8	176.387	34.735
Cavalli, Luca	Genetics	KEN. Analysis of genetic models of disease; simulation programs.	AT (04-3)-326-PA-33	AEC	30,000.00	S	18.5	5.230	0.115
Cavalli, Luca	Genetics	LAURA. Data analysis on population genetics.	AT (04-3)-326-PA-33	AEC	30,000.00	S	145.7	81.100	1.062
Cavalli, Luca	Genetics	MARK. Analysis of pygmy anthropometric and demographic data; simulation of genetic drift and selection models.	AT (04-3)-326-PA-33	AEC	30,000.00	S	2.0	0.422	0.020
Cavalli, Luca	Genetics	PAVIA. Population genetics: evolutionary rate, patterns of inheritance in behavioral traits, analysis of record linkage and pedigree information.	AT (04-3)-326-PA-33	AEC	30,000.00	S	367.4	194.046	2.371
Cavalli, Luca	Genetics	JUDY. Text editing for population genetics research.	AT (04-3)-326-PA-33	AEC	30,000.00	S	54.8	23.067	0.982
Chan, Piu-Chu	Radiobiology	GROWTH. Simulation of cellular population growth pattern.	CA04542	NIH	30,838.00	S	36.4	13.302	0.252
Chase, Robert	Surgery	CPGRAC. Evaluation of facial growth in cleft palate children and determination of velopharyngeal competence.	DE02803	NIH	30,160.00	S	0.0	0.0	0.516
Clayton, Raymond	Psychiatry	SEXBRAIN. Effect of steroids and hormones on RNA activity of the brain.	HD00801	NIH	54,084.00	S	0.0	0.0	2.460
Cohen, Stan	Clinical Pharmacology	DRUGALRT. Computerized system to warn of interactions of drugs administered to patients.	HS00739	NIH	278,303.00	C	467.6	287.556	39.519
Conner, James	Comm & Prev Med	HEALTH. Statistical analysis of health training study.	AH00695	NIH	72,864.00	S	22.9	4.814	0.309
Conner, Robert	Psychiatry	RATRACE. Relation of neuroendocrine function to behavior.	HD02881	NIH	203,864.00	S	99.5	63.864	0.887
Cooper, John	Psychiatry	SEXDIFF. Investigation of biochemical correlates of neonatal sexual differentiation in rats.	HD00801	NIH	54,084.00	S	9.5	5.912	0.307

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Category 2 (cont'd.)	Non-Realtime,	Sponsored Research (CHARGEABLE)							
Daly, Virginia	SUH - Immunol Lab	CH50. Establishment of normal values for human serum total complement levels and clinical tests on patients to determine their level.	--	Hosp Funds	$ --	S	2.7	1.027	0.014
Dilley, Jeanette	Immunology	CYTOTOX. Study of murine transplantation antigens on various tissues; description of biological and biochemical characteristics of the soluble transplantations from these tissues.	AM05425	NIH	87,336.00	S	40.1	27.254	0.137
Dirks, Judie	Psychiatry	PORNO. Analysis of normal subjects' average evoked responses to pictures of nudes.	MH19918	NIH	74,666.00	S	29.9	9.840	1.069
Doering, Charles	Psychiatry	DESMOLAS. Investigation of the biochemical connection between hormones and stress.	HD00801	NIH	54,084.00	S	12.5	3.642	0.775
Drake, Karl	Psychiatry	NEUROPSY. Analysis of neurophysiological and neurobehavioral data, including power spectrum analysis of EEG's.	MH12970	NIH	218,539.00	S	6.8	1.432	0.044
Eddy, David	Engineering	MARKOV. Use of a Markov model of coronary artery disease for optimum treatment decision.	--	Univ Funds	--	S	22.6	18.637	0.121
Fletcher, Grant	Anesthesia	DIALYSIS. Statistical analysis of lab results of in vivo and in vitro studies of uptake, metabolism and elimination of sedative drugs.	--	Hartford Fdn.	65,000.00	S	1.5	0.323	0.044
Forrest, William	Anesthesia	DATA. Development of an inexpensive system of quality and quantity control of large amounts of clinical data.	DADA 17-70-C-0104	Army	15,000.00	S	0.1	0.018	4.792
Forrest, William	Anesthesia	SCHEDULE. Automation of monthly scheduling of doctors for "on call" duty.	--	Clinic Budget	--	S	29.4	24.737	2.086
Forrest, William	Anesthesia	SURGICAL. Maintenance of records on surgical operations; source of data for reports on these operations.	--	Univ Funds	--	S	77.2	31.433	2.885
Forrest, William	Anesthesia	ANALGESI. Development of an inexpensive system of quality and quantity control of large amounts of clinical data.	GM12527	NIH	536,448.00	S	89.7	77.400	35.598
Fowkes, William	Regional Medical Program	ANALYSIS. Analysis of data from registry of stroke patients.	--	CCRMP	143,127.00	S	31.2	23.100	0.244
Fowkes, William	Regional Medical Program	STROKE. Development of a county wide registry for stroke patients in Santa Cruz County; development of a population base for study and analysis.	--	CCRMP	143,127.00	S	134.2	104.979	11.112
Friedland, Gerald	Diagnostic Radiology	SLINGFI. Determination of the action of the gastric sling fibers.	GM01707	NIH	119,608.00	S	9.4	5.038	0.796

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Category 2 (cont'd.)	Non-Realtime,	Sponsored Research (CHARGEABLE)							
Fries, James	Medicine	DATABANK. Establishment of a large clinical databank of time-oriented patient records; exploration of multiple uses of the stored information.	--	Arthritis Fdn.	$ 12,796.00	C	589.8	254.362	27.220
Goldstein, Avram	Pharmacology	OFFSTUFF. Study of methadone maintenance programs for heroin addicts.	MH18960	NIH	21,988.00	S	106.0	110.809	4.647
Goldstein, Avram	Pharmacology	NARCO. Mechanism of the action of narcotics and the fundamental aspects of narcotic addiction.	MH13963	NIH	183,208.00	S	35.7	10.670	0.874
Goldstein, Dora	Pharmacology	BARB. Establishment of essential parameters for enzyme kinetics in inhibition of flavin enzymes by barbituates.	MH13963	NIH	183,208.00	S	130.5	60.178	0.668
Grant, Scott	Ophthalmology	CORNEA. Simulation of light scattering by the cornea using electromagnetic theory.	EY00431	NIH	175,604.00	S	29.9	10.412	0.040
Greenberg, Peter	Hematology	CSFASSAY. Evaluation of factors regulating granulopoiesis in human disease states.	577	Amer Cancer Soc, Inc.	11,669.00	S	9.7	2.839	0.016
Guess, Harry	Mathematics	EVOL. Genetics research: model simulation using various values of mutation rate, population size and mutant fitness distribution.	GM10452	NIH	81,248.00	S	26.2	10.047	0.045
Hahn, George	Radiobiology	RADIATE. Simulation of kinetics of mammalian cell proliferation, design of theoretical dose scheduling for leukemia treatment.	CA04542	NIH	30,838.00	S	0.8	0.289	0.416
Herzenberg, Leonard	Gyn/Ob	STORE/LAB/PIGGY. Immunology, genetics and maternal-fetal immunologic relationships in the mouse.	HD01287	NIH	52,370.00	S	78.6	27.444	2.293
Hjelmeland, Larry	Computer Science	DENDRAL. Development of LISP programs for DENDRAL project.	RR00612	NIH	295,125.00	S	50.0	100.971	0.438
Hogness, David	Biochemistry	OREGON R. Analysis of DNA fragments from Drosophila melanogaster.	AM07535	NIH	84,425.00	S	15.9	4.991	0.694
Jazwinski, Stanislaw	Biochemistry	MEMBRANE. Characterization of membrane-bound phospholipase; data obtained from enzyme assays, multi-channel separations, etc.	GM07581	NIH	299,344.00	S	9.4	1.937	0.139
Jones, Stephen	Radiology	LYMPHOMA. Statistical study of various groups and sub-groups of non-Hodgkins lymphoma patients.	CA08122	NIH	253,471.00	S	124.9	104.596	0.621
Jovin, Thomas	Biochemistry	ARG. Data reduction and generation of systems for electrophonic separations based upon theoretical models.	GM07581	NIH	299,344.00	S	0.0	0.0	0.120
Kakihana, Ryoko	Psychiatry	ETHANOL. Data analysis for neuroendocrine research on hormones and stress.	MH14364	NIH	40,572.00	S	21.8	7.094	0.385

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Category 2 Non-Realtime, Sponsored Research (CHARGEABLE)									
Aronow, Lewis	Pharmacology	LCELL. Laboratory calculation of mechanisms of anti-cancer drug action.	CA05672	NIH	$ 49,908.00	S	35.3	11.744	0.283
Assaykeen, Tatiana	Urology	RENIN. Study of renin secretion mechanisms.	AM13548	NIH	44,086.00	S	26.8	5.616	0.444
Atkinson, Martha	Med School Admissions Committee	FINANCE. Examination of Yale medical student loan system's applicability to Stanford.	--	Univ Funds	--	S	44.5	26.852	0.616
Atkinson, Martha	Med School Admissions Committee	FLYHIGH. Aid to Admissions Committee in selecting new medical school classes from applicants.	--	Univ Funds	--	S	89.5	58.370	10.775
Atkinson, Martha	Med School Admissions Committee	MATCHES. Matching of medical students clerkship requests with available positions.	--	Univ Funds	--	S	0.2	0.038	0.024
Axline, Stanton	Medicine	LYSOSOME. Analysis of kinetics of protein turnover by tissue culture cells.	AI10055	NIH	38,520.00	S	0.0	0.0	0.002
Bagshaw, Malcolm	Radiation Therapy	SUMMARY. Patient data storage and information retrieval; statistical programs relating to radiation dosimetry.	CA05838	NIH	1104,398.00	S	717.1	510.102	20.524
Baldwin, Robert	Biochemistry	OLIGOMER. Study of short DNA helices and their helix-forming properties.	AM04763	NIH	69,160.00	S	0.0	0.0	0.074
Bausek, Gerald	Radiation Therapy	HODPAT. Study of lymphomas: causes and treatment.	CA05838	NIH	1104,398.00	S	0.0	0.0	0.270
Belt, Donald	Otolaryngology	HSA. Hearing and vision screening: processing of results of tests administered to elementary school children.	--	Personal Funds	--	S	115.9	70.782	5.055
Berns, Robert	Computer Science	LISP. Development of LISP language for DENDRAL project.	RR00612	NIH	295,125.00	S	23.3	48.509	13.926
Biggs, Suzanne	Pharmacology	REGRESS. Analysis of membrane proteins.	GM00322	NIH	145,904.00	S	7.2	2.545	0.167
Bodmer, Walter	Genetics	POPGEN. Human white blood cells and population genetics.	GM14650	NIH	21,081.00	S	440.8	361.866	26.802
Brown, Byron	Anesthesia	BIOSTAT. Computations in support of Dept of Anesthesia research projects.	GM12527	NIH	536,448.00	S	25.1	7.480	7.835
Brown, Byron	Anesthesia	JOBST. Analysis of EKG data.	HE10202	NIH	162,430.00	S	147.8	66.214	5.283
Brown, Byron	Biostatistics	CONSULT. Biostatistical computations in support of many medical research projects.	RR05353	NIH	366,959.00	S	182.6	54.117	9.248
Brown, Byron	Biostatistics	CLASS. Classwork for course in biostatistics.	GM01922	NIH	269,243.00	T	73.7	25.499	1.111
Brown, Byron	Biostatistics	RESEARCH. Computations in support of development of new biostatistical techniques.	RR05353	NIH	366,959.00	S	76.6	29.315	2.553

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Category 2 (cont'd.	Non-Realtime,	Sponsored Research (CHARGEABLE)							
Kallman, Robert	Radiobiology	SURVIVAL. Analysis of data relating the survival of experimental tumor cells to the dose of irradiation received by the cells.	CA03353	NIH	$ 21,626.00	S	1.1	0.287	0.136
Kalman, Sumner	Pharmacology	DIGIMUNE. Routine calculation of daily assays of plasma, urine, and other biological fluids containing digoxin.	HE13618	NIH	35,959.00	S	19.3	7.445	0.081
Kendig, Joan	Anesthesia	RESPOT. Effects of drugs (anesthetic agents, muscle relaxants and catecholamines) on skeletal muscle-resting potential and ion distribution.	GM12527	NIH	536,448.00	S	17.2	4.426	0.193
Kessler, Seymour	Psychiatry	MATSPEED. Analysis of mating speed experiments.	MH14364	NIH	40,572.00	S	10.6	2.758	0.380
Kraemer, Helena	Psychiatry	PSYSTAT. Analysis of data from various psychiatric research projects.	--	Univ Funds	--	S	109.8	27.602	4.171
Kriss, Joseph	Nuclear Medicine	ASSAY. Studies on the pathogenesis of Graves' disease, the effects of X-ray therapy on thyroid function, and the pathogenesis of other endocrine disorders associated with autoimmunity.	AM07642	NIH	64,079.00	S	59.8	22.400	1.619
Kriss, Joseph	Nuclear Medicine	BLDVOL1. Calculation of plasma volume, blood volume, red cell mass, red cell life span, iron turnover and renal clearance in patients who receive radioactive tracer material.	AM07642	NIH	64,079.00	S	0.0	0.0	0.048
Laipis, Philip	Genetics	LIGASE. Reduction of data from experiments on sucrose and cesium chloride gradients in the ultracentrifuge.	GM14108	NIH	35,197.00	S	0.2	0.040	0.030
Lamb, Emmett	Gyn/Ob	EMPIRE. Calculation of relative potency and confidence limits of total gonadotropen activity of human urine extracts.	--	Univ Funds	--	S	30.1	9.969	2.028
Lederberg, Joshua	Genetics	GENLIB1. Statistical and miscellaneous other programs for use of the Genetics Department.	GM00295	NIH	139,457.00	S	0.0	0.0	0.004
Lehman, I. Robert	Biochemistry	LIGASE. Studies of the enzymatic mechanism of the DNA Ligase of E. coli.	GM06196	NIH	133,128.00	S	19.3	7.342	0.199
Leiderman, P. Herbert	Psychiatry	KENYA. Analysis of data collected in Kenya, relating the effect of social structure of primary family on infants' social attachments in the first year of life.	--	Grant Fdn.	8,000.00	S	41.8	13.717	1.470
Leiderman, P. Herbert	Psychiatry	PREMIE. Study of human maternal behavior relating the degree of interaction between mother and infant in the post-partum period to later maternal attachment and infant development.	MH20162	NIH	39,420.00	S	14.9	6.174	0.676

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Category 2 (cont'd.	Non-Realtime,	Sponsored Research (CHARGEABLE)							
Lucas, Zoltan	Surgery	KIDTRANS. Tabulation of survival data for renal transplant patients.	--	Univ Funds	$ --	S	7.9	6.564	0.618
Luetscher, John	Endocrinology and Metab. Diseases	BLOOD PR. Secretion and metabolism of adrenal hormones; identification of curable forms of hypertension.	HE13817	NIH	53,119.00	S	190.2	56.778	4.635
Luzzatti, Luigi	Pediatrics	GRAGSON. Morphology of the late-replicating X Chromosome.	--	National Fdn.	30,000.00	S	4.5	1.336	0.745
Maffly, Roy	Endocrinology and Metab. Diseases	CO2. Sodium transport; predictive value of tests for blood urea nitrogen and decreased serum sodium concentration.	AM05678	NIH	51,776.00	S	46.4	16.734	0.362
Maffly, Roy	Endocrinology and Metab. Diseases	TEACH. Teaching programs for students and staff: evaluation of patients acid-base disorders; displayed on Beehive terminal and projected onto large screen for class use.	---	Univ.Funds	--	T	199.7	118.653	1.837
McConnell, Harden	Chemistry	ABSORB. Paramagnetic resonance spectra research; hemoglobin mutations, fluidity of membranes, electrochemical potential of membranes.	GP26456	NSF	38,500.00	S	427.1	275.752	2.946
McDevitt, Hugh	Immunology	MARGALO. Calculation of the antigen-binding activity of antisera from mice immunized with various branched multichain synthetic polypeptide antigens.	AI07757	NIH	147,741.00	S	1.2	0.405	0.013
Melen, Robert	Electronics Lab	ISLCHROM. Development of a system of automatic classification of human chrosomes.	N0044	Navy	25,000.00	S	20.3	38.071	0.316
Melges, Frederick	Psychiatry	TEMPO. Study of psychotic processes; especially relating changes in temporal experience to psychopathological symptoms.	MH19918	NIH	74,666.00	S	38.6	9.883	2.419
Miller, Rupert	Statistics	THESES. Biostatistical computing by graduate students for theses or other educational use.	GM00025	NIH	85,388.00	T	17.3	4.589	0.235
Miller, Rupert	Statistics	COURSES. Computing done by staff in connection with the teaching of biostatistics.	GM00025	NIH	85,388.00	T	0.1	0.036	0.042
Minami, Roland	Surgery	RSP. Evaluation of respiratory studies as a measure of velopharyngeal incompetence, comparing it with age, cine-fluorographic results, operation, and time.	DE02803	NIH	30,160.00	S	11.5	4.392	0.032
Morris, Randall	Surgery	CTX. In vitro assay of transplantation immunity aimed at development of a superior immunosuppressive protocol.	GM01922	NIH	269,243.00	S	40.2	10.374	0.177
Nall, Lexie	Dermatology	PSORIASI. Psoriasis research.	--	Univ Funds	--	S	6.4	2.399	2.661

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Category 2 (cont'd.)	Non-Realtime, Sponsored Research (CHARGEABLE)								
Nelson, Thomas	Radiology	ADRENAL. Clinical cancer research.	GA08122	NIH	$253,471.00	S	0.0	0.0	0.306
Nye, William	Med. Microbiology	STRUCTUR. Statistical calculations and bibliography compilations in the field of immunochemistry.	AI00082	NIH	146,576.00	S	72.0	19.264	0.802
Ordal, John	Immunology	ALGERNON. Calculation of antigen-binding activity of antisera from mice immunized with various branched multichain synthetic polypeptide antigens.	GM01922	NIH	269,243.00	S	23.7	5.689	0.041
Ostrem, Dennis	Biochemistry	GLYCYLRS. Enzyme research on glycl-TRNA: kinetics of subunit association, ultracentrifuge experiments, and amino acid analysis.	GM13235	NIH	166,947.00	S	38.2	26.638	0.646
Payne, Rose	Hematology	SERNAL. Extension and classification of leukocyte and/or tissue antigens by serologic and genetic analysis of specific human antisera.	HE03365	NIH	78,049.00	S	226.5	352.708	21.063
Petralli, John	SUH - Cli Lab. Inf. Dis.	MED DATA. Computer method for improvement of antibiotic sensitivity data and guidance in therapy.	--	Hosp. Funds	--	S	1929.3	755.325	31.560
Petralli, John	SUH - Cli Lab. Inf. Dis.	INFCON. Infection control: data on isolation patients.	--	Hosp. Funds	--	S	51.5	12.161	0.564
Petralli, John	SUH - Cli Lab. Inf. Dis.	PROGRESS. Program development for Infectious Disease Lab computing.	--	Hosp. Funds	--	S	64.4	19.313	0.550
Pfendt, Eva	Med Microbiology	CANVIRTU. In vitro studies of human tumors.	NCI-69-2053	NIH	179,810.00	S	4.8	1.196	0.113
Rapp, Wolfgang	Gastroenterology	OUDINLIN. Immunological determination of the gastric antigenic esterase VI A in gastric juices of patients with gastric diseases.	AM06971	NIH	92,644.00	S	0.0	0.0	0.252
Reaven, Gerald	Endocrinology and Metab. Disease	PAT DATA. Risk factors in coronary heart disease; modeling of metabolite action important in diabetes mellitus and atherosclerosis; inpatient data on metabolic disorders; participation in nationwide clinical trial of "lipid hypothesis".	71-2161	NIH	409,873.00	C	573.1	234.050	6.396
Reaven, Gerald	Endocrinology and Metab. Disease	DISPLAY. Graphics display program and modeling programs for the research detailed above.	HE08506	NIH	72,990.00	C	118.5	107.979	2.351
Reitan, John	Anesthesia	INDIRECT. Processing cardiac interval timing to monitor contractile state under varying loads and drugs.	GM00862	NIH	72,871.00	S	0.0	0.0	0.935

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Category 2 (cont'd.)	Non-Realtime, Sponsored Research (CHARGEABLE)								
Reynolds, Walter	Genetics	VIKING75. Text editing and logic development for computer instrumented checkout of scientific instruments designed to fly on the VIKING 75 mission to Mars.	RC0-446200	Air Force	$ 49,824.00	S	16.4	3.544	0.419
Reynolds, Walter	Genetics	TEXTS. Text management support for engineering efforts in instrumentation: commercial technical data and information retrieval programs.	NGR004	NASA	240,000.00	S	49.0	58.781	5.269
Rindfleisch, Thomas	Genetics	DENDRAL. Mass spectra analysis and interpretation.	RR00612	NIH	295,125.00	S	8.7	3.543	0.010
Robertson, William	Pediatrics	UGAG. Urinary analysis of glycosamenoglycans; immunoglobin concentrations in sera; binding of ligands to macromolecules.	--	Hartford Fdn.	50,000.00	S	18.3	6.786	0.234
Rosenberg, Leon	Med. Microbiology	ALEXINE. Studies of serum complement in mice.	AI09341	NIH	49,202.00	S	72.8	24.225	0.447
Rosenberg, Saul	Radiology	MEDONCOL. Development of time-oriented patient record system for patients with malignant diseases.	CA08122	NIH	253,471.00	C	427.9	235.614	10.693
Rosenquist, Grace	Gastroenterology	GASTRIN. Calculation of serum gastrin concentrations of normals and patients with G.I. tract diseases.	AM06971	NIH	92,644.00	S	25.4	5.297	0.110
Russell, Alan	Biochemistry	AFFINITY. Enzyme assay calculation.	GM07581	NIH	299,344.00	S	42.8	9.909	0.390
Schubert, Earl	Otolaryngology	SONICS. Analysis of signal waveforms by Fourier, correlational and similar techniques.	--	Sonic Research Fdn	--	S	0.0	0.0	0.024
Shaw, Natalie	Orthopedics	CRASH. Calculation of vehicle dynamics, occupant kinematics, and loading for multidisciplinary investigation of automobile crashes.	HS-085-1	DOT	106,500.00	S	0.0	0.0	0.015
Simpson, Jack	Physics	SUSIE. Design work for a superconducting magnetic beam transport channel for use in pion cancer therapy.	GP27708	NSF	375,000.00	S	104.2	60.376	2.588
Sklar, Alan	Psychiatry	CATAPULT. Relationship of parental separations during the first 18 years of life and personality characteristics of children.	--	Univ Funds	--	S	0.0	0.0	0.002
Smith, James	Med. Microbiology	CANVIR. Development of automated system for classification of human chromosomes.	NCI-69-2053	NIH	179,810.00	S	236.9	326.890	11.480
Smith, Kendric	Radiobiology	CHBR. Data analysis of sedimentation patterns of DNA following X-irradiation.	CA10372	NIH	498,286.00	S	137.9	36.980	0.221
Solomon, George	Psychiatry	STRESS. Relating various forms of stress and environmental manipulation to immunity.	--	Scottish Rite	20,154.00	S	20.9	5.438	0.574

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Category 2 (cont'd.)	Non-Realtime, Sponsored Research (CHARGEABLE)								
Spevac, Abraham	Psychiatry	CONDIT. Analysis of data from behavioral and neurophysiological experiments on monkeys and cats.	MH08304	NIH	$253,794.00	S	10.0	5.071	0.305
Stark, George	Biochemistry	CHAOS. Enzyme experiment data analysis and processing of chromatograms generated by an amino acid analyzer.	GM11788	NIH	80,732.00	S	71.4	20.435	1.748
Stocker, Bruce	Med. Microbiology	STM. Genetics and physiology of salmonella typhimurium.	AI07168	NIH	90,515.00	S	46.3	14.413	9.071
Strickland, Robert	Gastroenterology	GASTRIC. Analysis of gastric secretory function tests.	AM05418	NIH	64,852.00	S	0.0	0.0	0.300
Stuedeman, Don	Genetics	ADMIN. Capital equipment inventory.	NGR004	NASA	240,000.00	S	0.0	0.0	1.992
Sussman, Howard	SUH - Clin Lab Pathology	CL050937. Statistical analysis programs for data generated by Clinical Laboratory Information System.	--	Hosp. Funds	--	C	145.3	35.321	1.138
Swartout, William	Comm & Prev Med	AIRPOLLU. Evaluation of the effects of air pollution on student health.	GY08322	NSF	10,758.00	S	0.0	0.0	0.010
Vosti, Kenneth	Infectious Disease	VOSTI. Cross-tabulation of variables associated with bacterial infections.	AI03638	NIH	40,924.00	S	7.3	2.433	2.364
Weissman, Irving	Pathology	THYMUS. Statistical analysis and data handling for pathology research.	AI09072	NIH	50,184.00	S	31.4	7.342	0.455
Whitson, Robert	Regional Medical Program	MPS EVAL. Evaluation of multiphasic screening project in San Joaquin County to discover its effect on disease treatment patterns.	--	CCRMP	63,900.00	S	102.2	43.516	4.600
Wolcott, Lesley	Psychiatry	MINPIN. Testing statistical correlations between drug and non-drug data, e.g., amphetamines, placebos, THC, etc.	MH19918	NIH	74,666.00	S	4.6	0.965	0.119
					SUB-TOTAL		11590.9	6320.625	446.608
Category 3	Non-Stanford Medical (CHARGEABLE)							@ $ .02 per pageminute	@ $ .10 per block
Belt, Donald	Otolaryngology	SEC. Process and evaluate hearing and vision screening data.	--	Personal Funds	--	S	0.3	0.079	0.030
Daughters, George	Palo Alto Medical Research Fdn.	CINES. Myocardial dynamics.	--	PAMR	--	S	86.1	22.546	0.647
Daughters, George	Palo Alto Medical Research Fdn.	LABCHECK. Routine terminal use for PAMR Clinical Laboratory.	--	PAMR	--	S	35.9	7.527	0.145
Daughters, George	Palo Alto Medical Research Fdn.	PLAYTIME. Instruction in computer use for PAMR staff.	--	PAMR	--	T	6.9	1.497	0.386

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Category 3 (cont'd.)	Non-Stanford Medical (CHARGEABLE)								
Efron, Brad	Statistics	EFRON. Biostatistical analysis of drug data.	--	Personal Funds	--	S	11.7	3.747	0.317
Kountz, Samuel	San Francisco Medical Center	KIDNEY. Selection of recipients for renal homotransplantation; measurement and calculation of hemodynamic changes in transplant patients for detection of incipient rejection.	--	Univ. of California	--	S	314.3	230.367	2.915
Tickner, Ernest	Palo Alto Medical Research Fdn.	VISCOUS. Viscous behavior of blood.	--	PAMR	--	S	46.3	20.892	0.314
					SUB-TOTAL		501.5	286.655	4.754
Category 4	Medical Students (FREE)							@ $ .01 per pageminute	@ $ .10 per block
Battista, John	Student	STRESS. Analysis of questionnaire administered to medical students regarding meaningfulness of various factors in their lives.				T	112.1	27.720	5.099
Brast, Neil	Student	RODENTS. Statistical programs for student's research.				T	0.3	0.054	1.228
Britt, Richard	Student	STARR. Auditory pathway responses to meaningful acoustic stimuli.				T	0.0	0.002	0.077
Brody, William	Student	FLYHIGH. History taking and formation of differential diagnoses.				T	0.0	0.0	1.309
Brown, Byron	Biostatistics	CLASS. Classwork for course in biostatistics.				T	10.7	2.464	2.088
Brown, B. Norman	Student	PROTEIN. Correlation of serum level of therapeutic agents with age, body weight, surface area, etc; pharmacotherapy study of 900 hospitalized pediatric patients.				T	0.1	0.024	4.525
Brunda, Michael	Student	MEDMICRO. Evaluation of data from gamma counter on per cent cytotoxicity in cell suspensions exposed to a variety of developed antisera against thymus and brain determinants.				T	0.0	0.016	0.009
Buchanan, Bruce	Computer Science	STAT. Statistical demonstration programs for a course in biostatistics.				T	51.2	14.916	6.204
Buchanan, Bruce	Genetics	GEN217. Computer instruction for medical students in Genetics Department.				T	257.9	113.604	4.908
Bull, Kenneth	Student	K BULL. Effects of injections of epinephrine v. nor-epinephrine on agonistic (agressive, withdrawal, fear) and autistic behaviors in Rhesus monkeys.				T	14.1	5.285	0.187