COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES IN THE HEALTH CARE INDUSTRY

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COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES IN THE HEALTH CARE INDUSTRY

Prepared For:

CITIBANK, N.A.

SEPTEMBER 1979

COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES IN THE HEALTH CARE INDUSTRY

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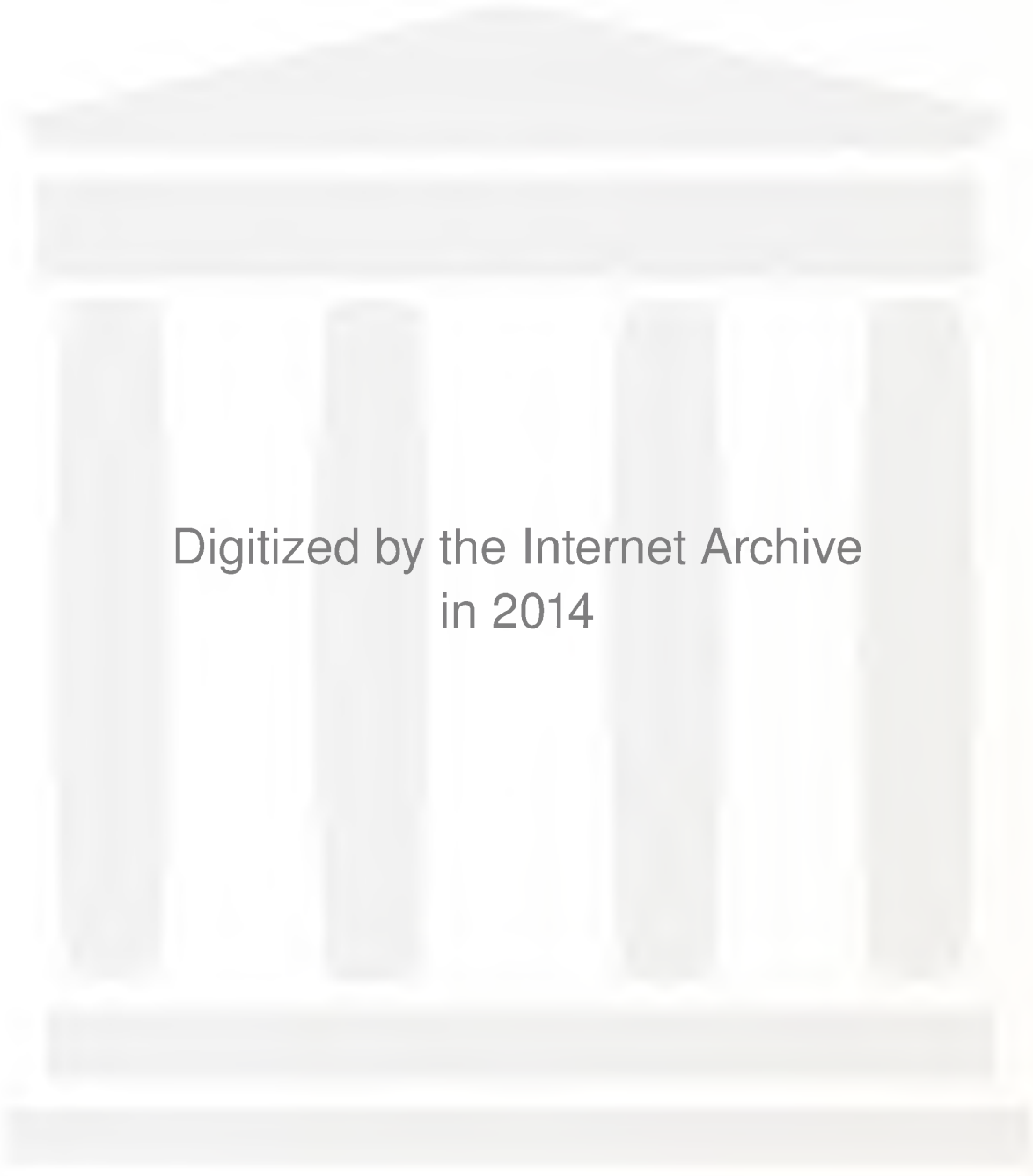


COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES IN THE HEALTH CARE INDUSTRY

LIST OF EXHIBITS

I INTRODUCTION

- This report was prepared by INPUT for Citibank, N.A., and covers computer and financial services opportunities in the health care industry.

- The industry that is the focus of this study is the Medical Practitioner, Dental Practitioner, and Hospitals. In particular it is SIC-801, Office of Physicians; SIC-802, Office of Dentists; and SIC-806, Hospitals.

- Interviews were conducted with the following three groups:

  - Physicans and Dentists.

  - Hospitals - Executives and Financial.

  - Hospitals - Data Processing Director.

  Copies of the questionnaires used are in Appendix C.

- The number of interviews conducted were:

  - One hundred and fifty telephone interviews with offices of physicians and dentists.
  - Seventy-six hospitals were interviewed (52 telephone, 24 on-site).

- The interviews were evenly distributed between the states of New York, Illinois, Florida, Texas, California, and other.

- Details of the interview sample are shown in Appendix A.

- Interviews were conducted in the month of July, 1979.

- A midpoint review was held with Citibank N.A. at INPUT on August 23 and 24, 1979.

- Respondents were generally cooperative and were interested in receiving the executive summary of the research results which was promised early in the interview.

- Respondents were advised that they would not be identified by name in any published report.

- Forecasts found in this report (AAGR) are based on current U.S. dollars, and include an allowance of 6% for inflation.

- All ratings found in this report are on a scale of 1-5, with 5 being high or best.

- Definitions of the terms used throughout this report can be found in Appendix E.

II EXECUTIVE SUMMARY

A. COMPUTER AND FINANCIAL SERVICES MARKET FOR PHYSICIANS AND DENTAL GROUPS AND HOSPITALS

1. MARKET STRUCTURE

a. Physicians And Dental Groups

- A total of 214,710 physicians in the United States practice in 121,171 establishments and 111,178 dentists practice in 76,694 establishments. These are all non-federal government, office based.

- Of the total population, this study was focused on physicians and dentists practicing in groups. These groups are either three or more practicing together (group practice) or solo professionals whose practices are located in a common facility (solo co-located). A summary is shown below:

	No. Of MDs or DDS	Total Annual Revenue
Group Practice:		
MDs	75,694	$8.3 billion
DDS	13,255	1.2
Solo Co-Located:		
MDs	69,508	$7.6 billion
DDS	48,961	5.7

- The market segment of physicians in group practice is particularly attractive. Thirty-five percent of the total physician population can be reached in 8% of total establishments. Dental group practices are not as well developed, but are growing at a rate of 10% per year.

- The number of physicians and dentists grows at a rate of about 2% per year and is not an important factor in growth in the market. However, the degree of market penetration of EDP is estimated to be 10% and the market is expanding at the rate of 24% per year, 1.5 times the average growth rate of the total information processing industry.

b. Hospitals

- Approximately 6,000 non-federal, short term general hospitals in the United States provide just under one million beds.

- Total annual expenses for the group are over $45 billion.

- Total health care costs in the United States are rising at an annual rate of 13% and are now estimated to be 9% of total G.N.P.

- The number of hospitals is not growing, but market growth for computer equipment and services will come from expanded market penetration. INPUT estimates the current market penetration to be 30% and annual growth rate to be around 16% per year, which is equal to the AAGR for total computer services.

2. PRESENT MARKET AND MARKET FORECAST

- Present and future markets for computer and financial services for all groups and hospitals are shown in Exhibit II-1.

EXHIBIT II-1

PRESENT MARKET AND MARKET FORECAST
COMPUTER AND FINANCIAL SERVICES
PHYSICIANS AND DENTAL GROUPS
AND HOSPITALS

TYPE OF USER	USING COMPUTERS NOW	USING COMPUTERS IN TWO YEARS	PRESENT USERS PLANNING TO EXPAND	EXPENDITURES FOR COMPUTER EQUIPMENT AND SERVICES		POTENTIAL MARKET FOR MEDICARD SYSTEMS	
				1979 $ MILLION	1984 $ MILLION	1979 $ BILLION	1984 $ BILLION
PHYSICIAN AND DENTAL GROUPS	34%	45%	13%	$ 29	$ 85	$ .6	$ 1.2
HOSPITALS	93	98	85	313	619	2.3	4.2
TOTAL INDUSTRY	-	-		$ 342	$ 704	$ 2.9	$ 5.6

- Thirty-four percent of all physician and dental groups are presently using computers and the number is expected to reach 45% in the next two years.

- Use of computers by hospitals is universal with only some of the small hospitals not automated. Ninety-three percent of all hospitals are using computers and the number is expected to reach 98% in the next two years. Eighty-five percent of present users expect to expand their computer usage.

- The first and most frequent functions automated are patient billing and accounts receivable. Among the physician and dental groups over 80% have automated these functions and among hospitals, 98% have. However, all financial services are a small part of the potential market with patient management, medical, and professional services markets expected to be several times as large in the next five years.

- The level of satisfaction with their computer systems and services is relatively high among all users. Respondents were asked to express their level of satisfaction by rating their systems or services on a scale of 1-5. The number of ratings in the 4 and 5 categories are as follows:

	No. Of 4 and 5 Ratings
Physicians and Dental Groups	85%
Hospitals:	
In-house systems	68
Remote services	59

The lowest degree of satisfaction is among hospital users of remote computing services.

- There are no established or dominant vendors of computer equipment and services in the physician and dental group market.

- In the hospital market for computer equipment, IBM, Four Phase, DEC, Burroughts, and Honeywell are the dominant vendors, with IBM well ahead of the rest. In the hospital market for remote computing services SMS and McAuto are clearly the leaders.

- Current annual expenditures for computer equipment and services by the total industry are $342 million and are expected to reach $704 million in five years.

- The potential market for the medicard system for the total industry at 3% of collections, is $2.9 billion in 1979 and is expected to grow to $5.6 billion in 1984. These figures relate to billing and collection only. They do not include other computer services or other financial services.

- Physician and dental groups and hospitals all have a difficult time collecting outstanding receivables, which have a very negative effect on cash flow.

- Total outstanding receivables over 60 days for medium and large size hospitals alone is currently estimated to be $6.2 billion. If the medicard system is effective in making large improvements in timely collection, the positive financial effects on cash flow are very large and the system would be cost effective.

- Fifty-two percent of all physicians and dental groups are using financial services now. The largest percentage of use is by physicians group practices where 66% are using financial services. The predominant use is for equipment leasing and is attributable primarily to leasing of photocopy equipment.

- Eighty-eight percent of all hospitals are using financial services now. All of the large hospitals of over 500 beds interviewed are using financial services. The largest percentage use was co-op buying (70%).

3. ASSESSMENT OF MEDICARD CONCEPT

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). First, an overall rating of the card was made, and then each individual feature was rated. Ratings are on a scale of 1 to 5, with 5 being high. Results of the ratings for physician and dental groups and hospitals are shown in Exhibit II-2. The response was most positive and reconciles with the impressions obtained in the on-site interviews. In many instances the responses were even enthusiastic. Sixty-five percent of all ratings were either 4 or 5.

- The proposed system is regarded by most to be extremely ambitious, and properly so. This leads to widespread skepticism about the vendor's ability to successfully implement the system and keep it current with the myriad of required changes of information.

- There is concern over losing control over patient billing and collection, the financial backbone of the user. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.

- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.

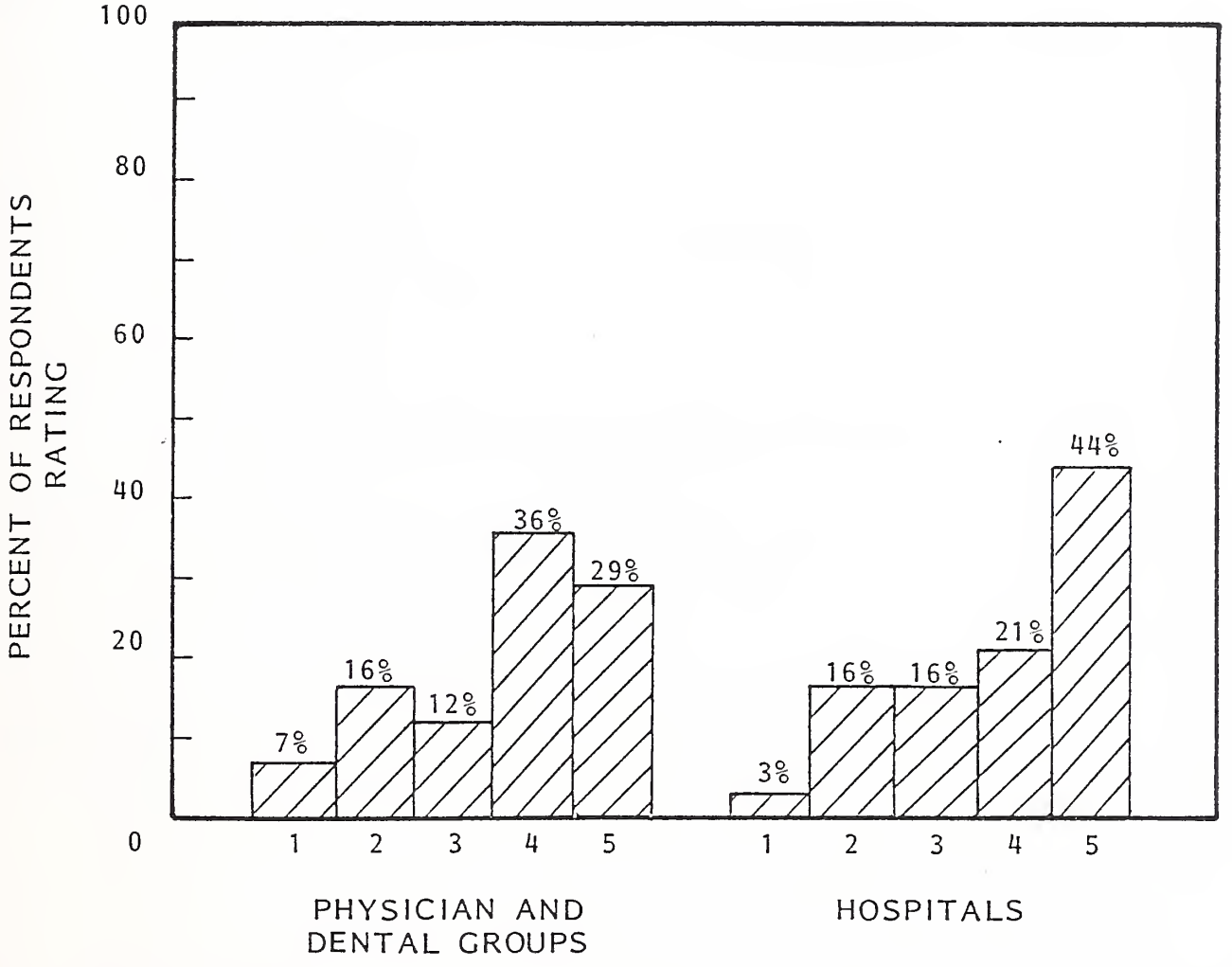
- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.

- Eliminating the problems involving third party payers and governmental regulation is very attractive.

- To sum up, the proposed card system concept is highly regarded by a majority of potential users and the market for the services is real and unpenetrated.

EXHIBIT II-2

OVERALL RATING OF PROPOSED
MEDICAL CREDIT CARD SYSTEM



4. INDUSTRY ISSUES

- Typical remarks by respondents concerning basic industry problems and issues are shown in Exhibit II-3 and II-4.

- The overriding concern among physician and dental groups is with the difficulties of the billing and collection process.

- The overriding concern among hospitals is imposed governmental regulations.

B. STRATEGIC ISSUES

1. PREMISE

- The medicard system can become a major force in the computer and financial services market in the health care industry.

- All collections, except cash or other charge cards, will be made by the medicard system, avoiding the problem of running dual systems.

- The fundamental economic reasons for installing the system, from the point of view of the client, are improved cash flow coming primarily from earlier collections and from labor displacement.

2. IMPLEMENTATION

a. Acquisition Of A Computer Services Vendor Serving The Health Care Industry

- This type of acquisition would provide a position in the market, help establish credibility, and provide developmental capability.

EXHIBIT II-3

TYPICAL REMARKS BY RESPONDENTS
CONCERNING BASIC PROBLEMS AND ISSUES
(PHYSICIAN AND DENTAL GROUPS)

- "TRYING TO STAY EVEN IN BILLING INSURANCE COMPANIES."
- "NEED TO HAVE PATIENTS' FINANCIAL RECORDS FOLLOW HIM LIKE CREDIT RATING."
- "SHARED COMPUTER SERVICES ARE NOT FLEXIBLE ENOUGH TO MEET ALL NEEDS."
- "A WAY TO AUTOMATE PATIENT CHARTS EFFICIENTLY."
- "LACK OF UNIFORMITY TO THE FORMS OF THE VARIOUS PRIVATE INSURANCE COMPANIES."
- "PROFESSION IS VIEWED AS A LENDING INSTITUTION - PROVIDING LONG TERM LOANS TO PATIENTS."
- "PAPER VOLUME."
- "IT IS GETTING WORSE PEOPLE PAY LATER AFTER MORE BILLING."

EXHIBIT II-4

TYPICAL REMARKS BY RESPONDENTS
CONCERNING BASIC PROBLEMS AND ISSUES
(HOSPITALS)

- "OPERATIONAL COSTS - WE HAVE TO EDUCATE THE PUBLIC THAT IF THEY WANT THE BEST MEDICAL CARE, THEY WILL HAVE TO PAY FOR IT."
- "STATE AND FEDERAL REGULATIONS ARE INCREASINGLY RESTRICTING MANAGEMENT'S PEROGATIVES."
- "MEDICARE/MEDICAID REIMBURSEMENT RESTRICTIONS."
- "OCCUPANCY IS THE PROBLEM."
- "COST CONTAINMENT."
- "WANT AN ON-LINE, UP TO DATE, MANAGEMENT INFORMATION SYSTEM."
- "IT ALL COMES DOWN TO CASH FLOW."
- "GOVERNMENT REGULATION DOES NOT BELONG IN THIS INDUSTRY."
- "OVER UTILIZATION OF SERVICES."
- "GOVERNMENT AND THIRD PARTY REQUIREMENTS FOR PAPERWORK ARE BURYING US."

- However, the acquired customer base would be geographically disbursed, rather than regionally clustered, as needed for the introduction of a successful card system. It would be questionable whether the acquired vendor would have the total capability to design and develop a system of the magnitude of medicard.

b. System Development

- Whether or not an acquisition is accomplished, the development effort for the medicard computer system is very large due to the volume of information to be captured and processed and the multiple interfaces to be established and maintained among health care providers, third party payers, employers, and patients. Once the initial system is complete, there is a substantial continuing effort required to keep the information current and to make ongoing changes to the system as governmental and other requirements change.

  - The magnitude (dollars and time) of the initial and ongoing system development should be estimated and provisions made to accomplish it.

  - The use of an outside software development contractor to supplement internal capability would appear to be attractive. It would reduce start-up time and eliminate the need to expand existing in-house staff in a very tight personnel market. However, outside support should be limited to the development of carefully specified segments of the system.

  - One major decision in the system design is whether the system would be limited to the financial applications only, or will include the areas of patient management, medical applications, and professional services. This decision will effect both the type of acquisition and the size of the development effort.

  - Restricting the computer system to financial services (medicard) would greatly reduce the development effort and emphasize the largest

market area. However, the system would have to interface with other medically oriented systems.

- Expanding the computer system to include these advanced applications would emphasize the largest part of the computer services market while also providing for entry into the financial services market. However, this would increase the size of the development effort and might delay the introduction of the medicard system. A careful examination should be made to determine if these applications could be acquired rather than developed.

- Potential users expressed a significant concern about "losing control over receivables." Once collections are completely turned over to an outside vendor, such as a medicard system, the economic life of the group is fully dependent on the vendor. The system design must satisfy this major concern in order to make the system attractive to users.

c. Revolutionary Versus Evolutionary Approach

- The computer services market in the health care industry has been an evolutionary series of advancements in automation of functions. However, inherent in the medicard concept is a very large change to basic financial functions (billing and collections) which have to be made over a relatively short time span.

  - This aspect which potentially can produce a major improvement in cash flow and minimize the problems of dealing with all of the parties involved is what make the system so attractive to users.

  - On the other hand, the changes are "revolutionary" and, if there were substantial unsolved problems, the effect could be disastrous. The question of credibility is a large issue which must be addressed.

- Modeling the medicard system in a chosen community and proving its worth would be a powerful, but ambitious, answer to the credibility question. Once established the concept could be sold regionally to achieve large market penetration.

3. POTENTIAL IMPACT

a. Impact On The Health Care Industry

- The medicard system has the potential for making a significant financial impact on the health care industry.

  - If really significant improvements are made in cost savings and improved cash flow for the initial groups or hospitals involved, there would be considerable motivation and pressures involved for others to adopt the same methods.

b. Impact On Computer Equipment And Services Vendors

- Success of the medicard system would force existing computer equipment and service vendors to respond by making major changes in order to compete over the long run.

  - The medicard system conceptually could have sufficient impact to force a major restructuring of the efforts of present vendors.

  - It would also provide a possible "franchise" market for the medicard system. This would provide an additional source of revenue and would help force uniformity on all vendors to the health care industry.

III COMPUTER AND FINANCIAL SERVICES MARKETS IN PHYSICIAN AND DENTAL GROUPS

A. INDUSTRY STRUCTURE

1. FUNCTIONAL DESCRIPTION

- The industry which is the focus of this part of the study is the Medical Practitioner and Dental Practitioner. In particular it is SIC-801, Offices of Physicans, and SIC-802, Offices of Dentists.

- In 1976 (the latest year for which there are published data) there were 214,710 physicians practicing in 121,171 establishments and 111,178 dentists practicing in 76,359 establishments. These are all non-federal government, office based.

- The number of physicans and dentists practicing in groups of three or more, hereafter referred to as group practice, are:

  - Physicians: 75,694 (35% of total) in 10,167 (8% of total) establishments average seven MDs per group.

  - Dentists: 13,255 (12% of total) in 2,459 (3% of total) establishments average 5 DDS per group.

- The market segment of physicians in group practice using computer automation is particularly attractive. Thirty-five percent of the total physician population can be reached in 8% of total establishments, and have a total of $8.3 billion in annual revenues. This market segment is the subject of a related INPUT report referenced in Appendix D.

- Group practice among dentists is not as well developed as it is among physicians. Only 12% of dentists are in group practice with total annual revenues of $1.2 billion, but the number in groups is growing at the compound rate of 10% per year. This segment has doubled since 1972.

- The average annual gross revenue per professional is:

Physicians	=	$110,000
Dentists	=	$91,000

- The interview sample was further broken down in the following manner:

  - MD GROUP-SMALL (3-6 MDs)

  - MD GROUP-MEDIUM (7-19 MDs)

  - MD GROUP-LARGE (20+ MDs)

  - MD GROUP PRACTICES: Total of all physician groups practicing in groups of three or more.

  - SOLO CO-LOCATED MDs: Physicians in solo practice whose practices are located together in a common facility, such as a medical office building. INPUT estimates this group to be 50% of all physicians not in group practice, or 69,508 physicians with annual revenues of $7.6 billion.

- DENTAL GROUPS: Comprised of both dentists in group practice and dentists in solo practice, co-located in a common office building. Eighty percent of the sample were group practices and 20% were solo co-located. INPUT estimates the solo co-located groups to be 50% of all dentists not in group practice or 48,961 dentists with annual revenues of $4.5 billion. All market projections for dentists include the total of both group practices and solo co-located, or 66,216 dentists with annual revenues of $5.7 billion.

- Of those interviewed, 80% held the position of administrator, office manager, or financial manager and 20% were either physicians or medical secretaries.

- Over 90% of all physicians groups are located in medical office buildings or hospital affiliated buildings. The majority (56%) of dental groups are located in commercial office buildings with 40% located in medical office buildings. Location of practices are shown in Exhibit III-1.

- The type of facility ownership is shown in Exhibit III-2.

- Sixty-eight percent of physician group practices were specialized as opposed to general practice. For solo co-located MDs, 78% were specialized practices. For dental groups, the mix is reversed with 62% of the groups in general practice.

- The average number of patients seen per day per MD are:

  - MD Group Practice 10
  - Solo Co-Located MDs 20
  - Dental Groups 15

- For further information see Appendix B: Market Forecast Data.

EXHIBIT III-1

LOCATION OF PRACTICES
(GROUPS)

TYPE OF PRACTICE	MEDICAL OFFICE BUILDING (PERCENT)	HOSPITAL AFFILIATED BUILDING (PERCENT)	HOSPITAL (PERCENT)	OFFICE BUILDING (PERCENT)
MD GROUP PRACTICES	76%	12%	4%	8%
SOLO CO-LOCATED MDs	86	7	1	6
DENTAL GROUPS	40	2	2	56
TOTAL ALL GROUPS	65%	6%	8%	21%

NUMBER OF RESPONDENTS = 149(99%)

EXHIBIT III-2

OWNERSHIP OF FACILITIES
(GROUPS)

TYPE OF PRACTICE	OWNED (PERCENT)	RENTED (PERCENT)	LEASED (PERCENT)
MD GROUP PRACTICES	31%	27%	42%
SOLO CO-LOCATED MDs	10	49	41
DENTAL GROUPS	34%	24%	42%

NUMBER OF RESPONDENTS = 144(96%)

2. GROWTH HISTORY AND FORECAST

- Over the six year period from 1970 to 1976, the number of office based private physicans and dentists grew 14%; a 2.2% per year average rate. This slow growth is expected to continue and will not be an important factor in expansion of the market.

- The number of physician group practices with three or more MDs follows the same slow trend. However, as previously reported, dental group practices are growing at a rate of 10% per year, enhancing the attractiveness of this market segment.

- The growth in use of automation by medical and dental groups will come from expanded market penetration instead of industry growth. INPUT estimates that the growth in computer equipment and services will be about 24% per year. Market penetration is small (INPUT estimates 10%), however, physician and dental groups have a great interest in data processing. This industry is expected to experience about 1.5 times the average growth rate of the total information processing industry.

B. USE OF COMPUTER EQUIPMENT AND SERVICES

1. DEGREE OF COMPUTER AUTOMATION

a. Present Use Of Computer Automation

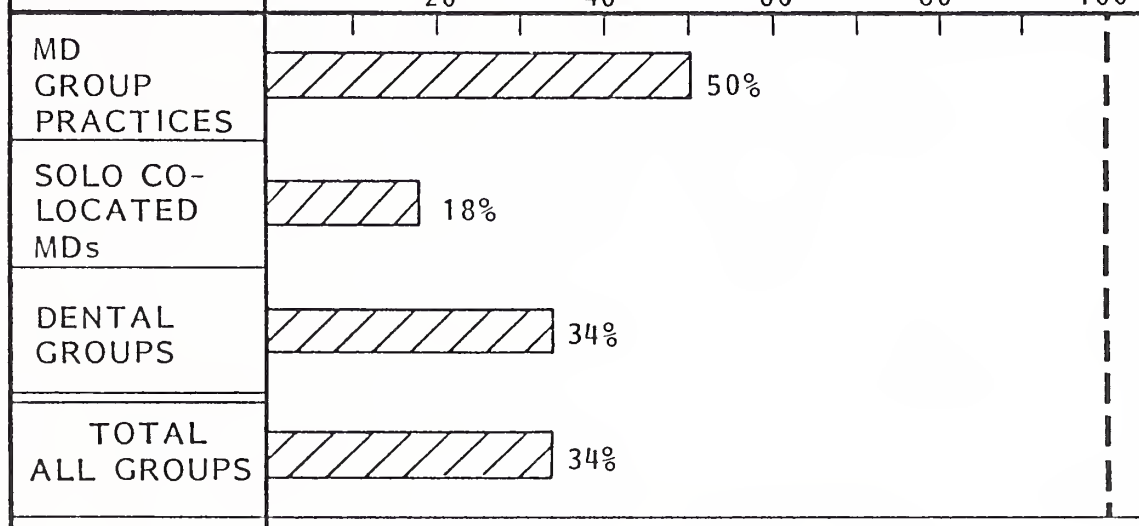
- Physician and dental groups have considerable involvement in, and awareness of, computer equipment and services, but present applications are limited almost entirely to business office functions.

- Thirty-four percent of physicans and dental groups interviewed are presently using computer equipment and services, as shown in Exhibit III-3.

EXHIBIT III-3

PRESENT USERS OF
COMPUTER EQUIPMENT AND SERVICES
(GROUPS)

TYPE OF PRACTICE	USING COMPUTERS NOW (PERCENT)	SITE - PERCENT OF USERS			USING HOSPITAL D.P. (PERCENT)
		IN-HOUSE (PERCENT)	REMOTE (PERCENT)	BOTH (PERCENT)	
MD GROUP PRACTICES	50%	28%	69%	3%	25%
SOLO CO-LOCATED MDs	18%	11	89	0	9
DENTAL GROUPS	34%	13	81	6	6
TOTAL ALL GROUPS	34%	20%	76%	4%	16%
NUMBER OF RESPONDENTS	150 (100%)	54(36%)			49 (32%)



- Fifty percent of MD group practices interviewed are using computers. This result of this study confirms a previous finding in a related INPUT report (Appendix D).

- There are notable differences in the use of computers depending on the size and nature of groups. For MD group practices only 30% of the small groups were involved, compared to 80% of medium and large groups. This is because large groups found the burden of manual processing of large volumes of paperwork too costly. They were forced to use data processing early. The small groups could handle the volume manually, so they are moving into automation later.

- Solo co-located MDs (18%) and dental groups (34%) are less involved with computers, but are moving in that direction

- All of the groups are much more involved with remote computing services (76%) than they are with in-house systems (20%). For remote computing services the dominant mode of operation is batch processing. Using remote computing services is less expensive and involves less risk than use of in-house installations. This preference is expected to change because of the possible economies offered by minicomputers and small business systems.

- MD group practices interviewed had a significant (25%) involvement with hospital data processing facilities.

b. Level Of User Satisfaction

- Respondents were asked to rate their computer equipment and services on a scale of 1-5. Eight-six percent of respondents using computers rated their in-house installations or remote computing service vendors. Almost uniformly, over 85% of the ratings were either 4 or 5 on the scale, indicating a very high degree of satisfaction among all groups.

- Over 70% of those groups not using computers indicated that computers were not needed because there was not enough volume to justify.

c. Vendors

- Vendors mentioned by respondents are listed in Exhibit III-4. The well known equipment manufacturers are listed, but their degree of penetraton of this market is small (number of mentions was 7% of total mentions). Remote computing service vendors listed tend to be small and regional in nature.

- A general conclusion of this study is that there are not yet established or dominant vendors in the medical and dental group markets.

d. Current Expenditures

- Annual EDP expenditures for in-house systems and for remote computing services are reported in Exhibit III-5 and III-6. The averages and ranges of expenditures shown are estimated from scattered data. They are included because they are believed to be significant, particularly the $31,000 per year average expenditure for in-house systems and the $18,000 per year average for remote computing services for physician group practice. These two figures reconcile well with other data from another related INPUT report (Appendix D).

2. APPLICATION ANALYSIS

a. Functional Use Of Computer Equipment And Services

- As previously noted, 34% of physicians and dental groups are using computer automation.

  - Applications are mostly limited to financial and administrative functions with patient management and professional services applications just beginning to appear.

EXHIBIT III-4

VENDORS MENTIONED
BY RESPONDENTS
(GROUPS)

MD GROUP PRACTICES	DENTAL GROUPS	SOLO CO-LOCATED MDs
EQUIPMENT IBM NCR DEC TI HONEYWELL LOCKHEED BYTRONICS SYCOR BURROUGHS	EQUIPMENT DATA GENERAL OLIVETTI POLYMORPHIC	EQUIPMENT NONE
REMOTE COMPUTING SERVICES ITEL MCAUTO ST. MARY'S HOSPITAL ROCHESTER HOSPITAL MANAGEMENT SYSTEMS SCIENCE DYNAMICS COON, OLSEN & WEST GEMINI BUSINESS SERVICES	REMOTE COMPUTING SERVICES ADVANCE MANAGEMENT SYCOM PBP CLINIC SERVICE COMPANY CARA CORPORATION FIRST TRUST BANK SAFEGUARD BUSINESS SYSTEMS DATA MEDIC COMPUTER DYNAMICS ADA SERVICES AGENCY DENTAL HEALTH	REMOTE COMPUTING SERVICES MEDICAL ARTS HOSPITAL MV SYSTEMS MEDIPAC MOTE DATA SYSTEM MANAGEMENT SYSTEMS SERVICES FOR MEDICAL SOCIETY OF ATLANTA

EXHIBIT III-5

ANNUAL EDP EXPENDITURES–
IN-HOUSE SYSTEMS
RANGE AND AVERAGE (▼)
(GROUPS)

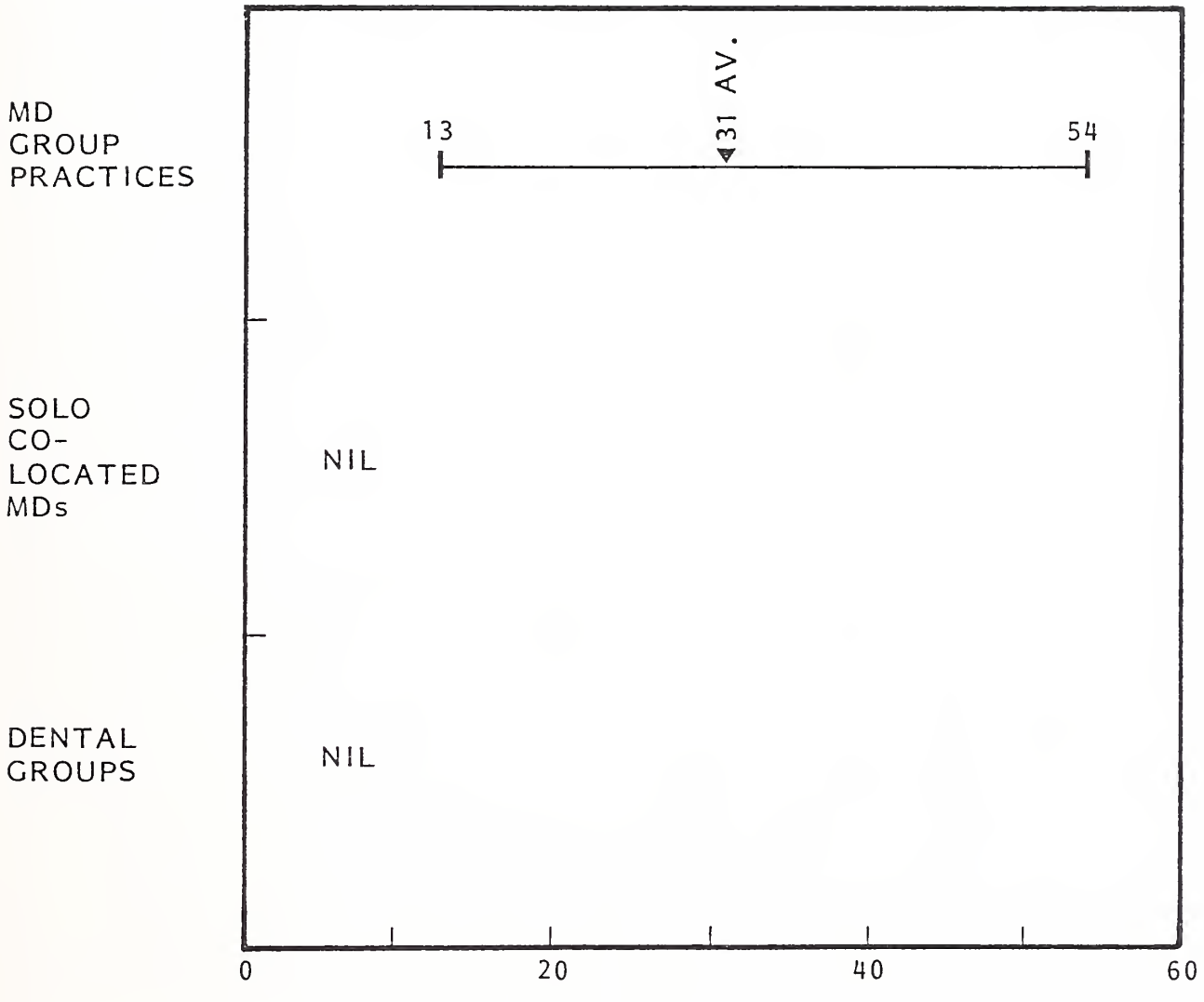
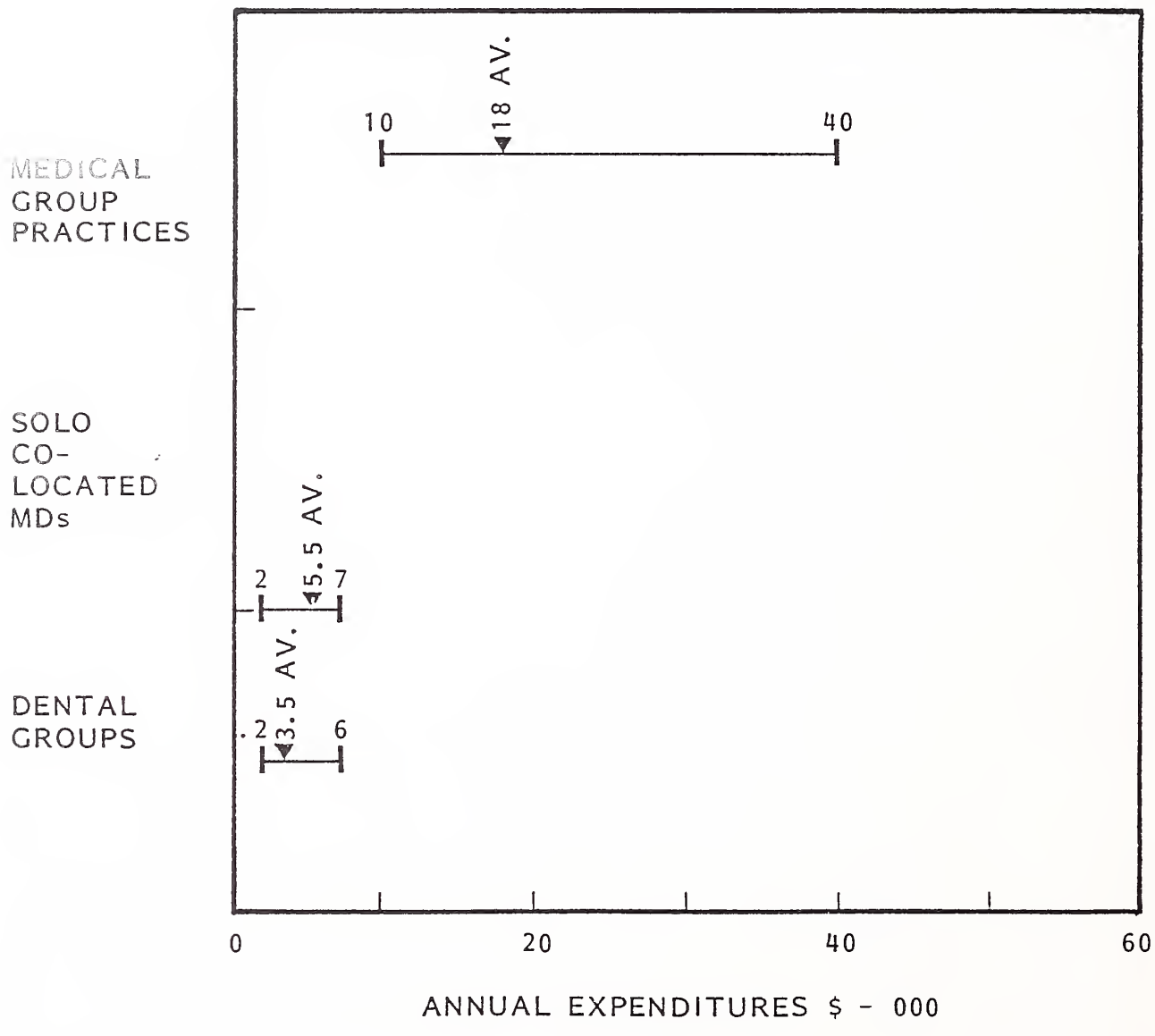


EXHIBIT III-6

ANNUAL EDP EXPENDITURES–
REMOTE COMPUTING SERVICES
RANGE AND AVERAGE (▼)
(GROUPS)



INPU

- Compared to the industry potential, penetration of the computer automation market is very small. INPUT estimates it to be 10%, and this is the figure used in this study for determining the present EDP expenditures.

- An elaboration of the market data concerning physician group practices is included in a related INPUT report (Appendix D).

- The present degree of automation is shown in Exhibit III-7.

  - Patient billing (88%) and accounts receivable (84%) are the most heavily automated functions, as they are high paper volume functions.

  - Patient management functions are less than 7% automated, as a percent of all groups. Of the 34% of groups using computers, only 20% have automated patient management functions.

  - Professional services have hardly been touched.

- The market for computer equipment and services for physician and dental groups is an unpenetrated but emerging market.

b. Reasons For Automating

- Reasons for automating were given only for financial applications. There was insufficient data for patient management and professional services applications because of the low present utilization level of these applications.

  - For all groups, the four most dominant reasons for automation of the financial applications in order of importance are:

    . Reduce costs.

    . Better management control.

EXHIBIT III-7

FUNCTIONS NOW AUTOMATED
PERCENT OF GROUPS AUTOMATED
(GROUPS)

TYPE OF PRACTICE	NUMBER IN SAMPLE	NUMBER AUTOMATED	FINANCIAL APPLICATIONS						PATIENT MANAGEMENT				PROFESSIONAL SERVICES				
			PATIENT BILLING	ACCOUNTS RECEIVABLE	INSURANCE CLAIMS	PERSONNEL AND PAYROLL	GENERAL LEDGER	INVENTORY	PATIENT REGISTRATION	PATIENT RECORDS	LAB REPORTING	RADIOLOGY	PROFESSIONAL EDUCATION	PATIENT EDUCATION	RESEARCH	PERSONAL FINANCIAL REC.	INVESTMENT ANALYSIS
MD GROUP PRACTICES	50	25	84%	88%	72%	56%	48%	16%	24%	24%	20%	16%	8%	-	-	8%	-
SOLO CO-LOCATED MDs	50	9	89	67	67	11	22	-	11	11	11	11	-	11	-	11	-
DENTAL GROUPS	50	17	94	88	52	29	35	12	29	35	12	6	-	-	6	12	-
TOTAL ALL GROUPS	150	51	88%	84%	65%	39%	39%	12%	24%	25%	16%	12%	6%	2%	2%	10%	-

. Improve schedules.

. Better quality control.

c. Level Of User Satisfaction

- Respondents from all groups uniformly reported a high degree of satisfaction with automation of financial services. At least 80% of all ratings were in the two highest categories, 4 and 5.

C. COMPUTER EQUIPMENT AND SERVICES MARKET

1. SIZE OF PRESENT MARKET AND MARKET FORECAST

- MD group practices total revenues by size of group are reported in Exhibit III-8.

- Total revenues for all physican and dental groups are reported in Exhibit III-9.

- Plans for use of (or further use of) computers as reported by respondents are shown in Exhibit III-10.

  - There is a considerable increase in the use of computer automation in all sectors of the market among those groups not using computers now but planning to within two years and those now using computers and planning to expand within two years.

  - MD Group Practices:

    . Of the 50% of the groups now using computers, 32% plan to expand use within the next two years.

EXHIBIT III-8

MD GROUP PRACTICES-
TOTAL REVENUES BY SIZE OF GROUP
(GROUPS)

SIZE OF GROUP	AVERAGE NUMBER OF MDs	TOTAL REVENUES - $ MILLION					NUMBER OF RESPONDENTS
		<.2M (PERCENT)	.2-.5M (PERCENT)	.5-1M (PERCENT)	1M-2.5M (PERCENT)	1.5M+ (PERCENT)	
MD GROUP SMALL 3-6 MDs	5	18%	41%	29%	6%	6%	17(56%)
MD GROUP MEDIUM 7-19 MDs	13	22	11	22	34	11	9(90%)
MD GROUP LARGE 20+ MDs	25	-	17	-	33	50	6(60%)
MD GROUP TOTAL	10	16%	28%	22%	19%	15%	32(64%)

EXHIBIT III-9

PHYSICIAN AND DENTAL GROUPS
TOTAL REVENUES IN DOLLARS
(GROUPS)

TYPE OF PRACTICE	TOTAL REVENUES - $ MILLION				
	< .2M (PERCENT)	.2-.5M (PERCENT)	.5-1M (PERCENT)	1M-2.5M (PERCENT)	2.5M+ (PERCENT)
MD GROUP PRACTICES	16%	28%	22%	19%	15%
SOLO CO-LOCATED MDs	76	14	8	-	2
DENTAL GROUPS	23%	18%	33%	23%	3%

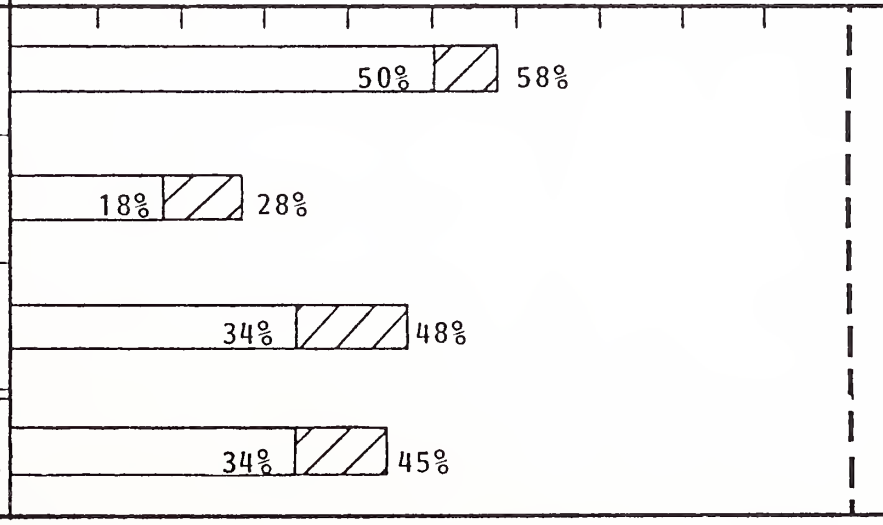
NUMBER OF RESPONDENTS = 108 (72%)

EXHIBIT III-10

PLANS FOR USE OF COMPUTERS
AS REPORTED BY RESPONDENTS:

- NON USERS PLANNING TO START WITHIN TWO YEARS
- PRESENT USERS PLANNING TO EXPAND WITHIN TWO YEARS

(GROUPS)



TYPE OF PRACTICE	USING COMPUTERS - NOW/PLANNED IN TWO YEARS (PERCENT)	PRESENT USERS PLANNING TO EXPAND WITHIN TWO YEARS			
		NUMBER IN SAMPLE	NUMBER NOW AUTO-MATED	NUMBER PLANNING TO EXPAND	PERCENT PRESENT USERS PLANNING TO EXPAND
MD GROUP PRACTICES	50% / 58%	50	25	16	32%
SOLO CO-LOCATED MDs	18% / 28%	50	9	1	2
DENTAL GROUPS	34% / 48%	50	17	3	6
TOTAL ALL GROUPS	34% / 45%	150	51	20	13%

PRESENTLY USING COMPUTERS

NON USERS PLANNING TO START WITHIN TWO YEARS

. The number of groups using computers is expanding at the rate of 8% per year (50% to 58%).

- Solo Co-Located MDs:

  . Of the 18% of the groups now using computers, 2% plan to expand use within the next two years (18% to 28%).

  . The number of groups using computers are expanding at the rate of 25% per year.

- Dental Groups:

  . Of the 34% of the groups now using computers, 6% plan to expand use within the next two years.

  . The number of groups using computers are expanding at the rate of 19% per year (34% to 48%).

- Total All Groups:

  . Of the 34% of the groups now using computers, 13% plan to expand use within the next two years.

  . The number of groups using computers are expanding at the rate of 15% per year (34% to 45%).

- Considering the combined effects of more first time users of computer automation and expanding applications in all groups, INPUT estimates the AAGR for computer equipment and services in this market to be 24%.

- The market data for computer equipment and services shown in Exhibit III-11 are based on total annual revenues, data processing revenues as a percent of total revenue, and percent market penetration (see Appendix B: Market Forecast Data).

- The present EDP market for all groups is estimated to be $29 million and is expected to expand to $85 million in five years.

D. FINANCIAL SERVICES MARKET

1. PATIENT ACCOUNTING AND COLLECTIONS

a. Billing And Collections

- When payments are collected for all groups are shown in Exhibit III-12.

  - MDs in group practice and solo co-located MDs are nearly identical with respect to when payments are collected. The most prevalent method (60%) is to mail the bills monthly and then wait for collection, which results in a receivables problem. About 26% of the bills are paid immediately after service.

  - Dental groups are different, with 52% of the bills collected immediately after service and only 40% mailed monthly, resulting in improved cash flow.

- With respect to direct billing of major third party payers, Medicare, Medicaid, Blue Cross, and commercial insurance companies:

  - Physicians in group practice and solo co-located MDs nearly all bill the four third party payers directly.

EXHIBIT III-11

FORECAST OF USER EXPENDITURES FOR
COMPUTER EQUIPMENT AND SERVICES
FOR MEDICAL AND DENTAL GROUPS
(1979 - 1984)
(GROUPS)

TYPE OF GROUP	EXPENDITURES	
	1979 ($ MILLION)	1984 ($ MILLION)
MD GROUP PRACTICES	$15	$44
SOLO CO-LOCATED MDs	7	21
DENTAL GROUPS	7	20
TOTAL	$29	$85

AAGR = 24%

EXHIBIT III-12

WHEN PAYMENTS ARE COLLECTED
(GROUPS)

TYPE OF PRACTICE	BILL MAILED (PERCENT)	BILL AT TIME OF VISIT (PERCENT)	PAYMENT IMMEDIATELY AFTER SERVICE (PERCENT)	PREPAID (PERCENT)
MD GROUP PRACTICES	62%	8%	26%	4%
SOLO CO-LOCATED MDs	57	16	27	0
DENTAL GROUPS	40	4	52	4
TOTAL ALL GROUPS	53%	9%	35%	3%

NUMBER OF RESPONDENTS = 133(87%)

- Dental groups do very little billing to Medicare and Medicaid. Nearly all groups bill Blue Cross and commercial insurance companies. Twenty-four percent of the groups do no direct billing of third party payers.

- The percent of respondents preparing billing directly by computer is shown in Exhibit III-13.

- When routine methods of bill collection have been exhausted, 51% of all groups try extraordinary methods of collection themselves first, and then turn the bills over to a outside collection agency as a last resort. Forty-nine percent turn such bills over to an agency first. The practice among all groups is quite consistant.

- All groups consider approximately 130 days to be the length of time when an unpaid bill is declared a bad debt.

- All groups reported that 6% of total receivables were classified as bad debt. With over $15 billion in outstanding receivables for all groups, there is a total of $900 milion classified as bad debt outstanding.

- Among all groups, 70% rated the degree of satisfaction with the present collection system a 3 or 4. Compared to other ratings in this study, this is a low rating and indicates a desire for improvement among all groups.

- Typical comments by respondents:

  - "Bad debt prevention is a losing game."

  - "We would increase staff and expense to increase cash flow."

  - "Public aid means no control."

  - "The process is OK, it's the people."

EXHIBIT III-13

PERCENT OF RESPONDENTS PREPARING BILLING
DIRECTLY BY COMPUTER
(GROUPS)

TYPE OF PRACTICE	MEDICARE (PERCENT)	MEDICAID (PERCENT)	BLUE CROSS (PERCENT)	COMMER - CIAL (PERCENT)	PATIENT (PERCENT)	ALL PAYERS (PERCENT)
MD GROUP PRACTICES	36%	39%	36%	32%	44%	38%
SOLO CO-LOCATED MDs	12	12	6	6	10	9
DENTAL GROUPS	NIL	NIL	27	27	25	26
TOTAL ALL GROUPS	27%	29%	23%	22%	27%	25%

INP

- "Collections are difficult."

- "Bad checks are a problem."

b. Accounts Receivable

- The percent of respondents reporting average age of accounts receivable over 90 days:

- MD Group Practice	26%
- Solo Co-Located MDs	20%
- Dental Groups	43%

- Ninety-nine percent of respondents furnished data on average age of accounts receivable, so the preceding data is a good indication of the problems with timely collections, and the consequent negative impact on cash flow all of the groups face.

- Percent of total billing represented by each payer are shown in Exhibit III-14. Physicians in group practice and solo co-located MDs have substantial billings with each category of payer, but the largest amounts are paid directly by the patient. Dentists reported negligible billings to Medicare and Medicaid and over 50% of billings directly to the patient.

- The average age of accounts receivable among the groups are as follows:

- MD Group Practices	67 days
- Solo Co-Located MDs	51 days
- Dental Groups	70 days

EXHIBIT III-14

PERCENT OF TOTAL BILLING
REPRESENTED BY EACH PAYER
(GROUPS)

TYPE OF PRACTICE	MEDICARE (PERCENT)	MEDICAID (PERCENT)	BLUE CROSS (PERCENT)	COMMER-CIAL (PERCENT)	PATIENT (PERCENT)
MED GROUP PRACTICES	13%	13%	13%	20%	41%
SOLO CO-LOCATED MDs	17	15	14	14	40
DENTAL GROUP	NIL	NIL	24	23	53
TOTAL ALL GROUPS	14%	14%	14%	17%	41%

- The solo co-located MDs have a less severe problem with a 51 day average age, but still 20% reported over 90 days.

- The dental groups report a very severe problem with an average age of 70 days and 43% reported over 90 days.

- All groups are experiencing a difficult problem collecting accounts receivable. Computer based collection systems that are effective in advancing collections would result in large improvements in cash flow, and consequently would be cost effective.

- Total amounts of outstanding accounts receivable by age are shown in Exhibit III-15. Note that the percent response to this question was small (6%), particularly among the solo co-located MDs. However, the data shows the magnitude of the problem. Among all groups there are over $2 billion receivables over 60 days outstanding.

c. Present Use Of Credit Cards

- Respondents accepting credit cards and the amount of billing paid by credit card and by cash are reported in Exhibit III-16. Forty-three percent of all groups accept credit cards. Acceptance was highest with dental groups (43%) and lowest among solo practices (14%).

- Among those groups accepting credit cards, VISA and Mastercharge were universally accepted. These was no significant mention of any other card.

- Although 43% accept credit cards, only 4% of billing was paid by card, indicating very little usage.

- Among all groups, 8% of billing was paid by cash (meaning actual cash, not checks).

EXHIBIT III-15

AMOUNTS OF OUTSTANDING RECEIVABLES -
BY AGE
AVERAGE PER GROUP
(GROUPS)

TYPE OF PRACTICE	IN-HOUSE UN-BILLED ($ 000)	UNDER 30 DAYS ($ 000)	30-60 DAYS ($ 000)	60-90 DAYS ($ 000)	OVER 90 DAYS ($ 000)	TOTAL OUT-STAND-ING ($ 000)
MD GROUP PRACTICES	$44	$28	$24	$19	$9	$124
SOLO-CO-LOCATED MDs	NIL	7	17	2	NIL	30
DENTAL GROUPS	27	37	31	24	14	133

NUMBER OF RESPONDENTS:

MD GROUP PRACTICES = 12(24%)
SOLO CO-LOCATED MDs = 3(6%)
DENTAL GROUPS = 7(14%)
TOTAL ALL GROUPS = 22(15%)

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EXHIBIT III-16

PERCENT OF BILLS
PAID BY CREDIT CARD OR CASH
(GROUPS)

TYPE OF PRACTICE	RESPONDENTS ACCEPTING CREDIT CARDS (PERCENT)	PAID BY CREDIT CARD (PERCENT)	PAID BY CASH (PERCENT)
MD GROUP PRACTICES	50%	3%	8%
SOLO CO-LOCATED MDs	14	NIL	8
DENTAL GROUPS	65	4	8
TOTAL ALL GROUPS	43%	4%	8%

NUMBER OF RESPONDENTS = 134(89%)

2. ASSESSMENT OF THE MEDICAL CREDIT CARD CONCEPT

a. Rating

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). One hundred forty out of 150 (93%) rated Medicard. First, an overall rating of the card was made, and then each individual feature was rated.

- The wording of the question as it appeared in the questionnaire is as follows:

  - I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

    . Include identification and current health insurance coverage as part of the card.

    . Emergency medical data, i.e., bloodtype, allergies.

    . Provide a personal credit line in addition to insurance.

    . Produce all insurance claims and file and collect them for you.

    . Provide guarantee of payment of claims.

    . Produce and collect patient bills, guaranteeing the patient bill to you.

  - Please rate the attractiveness of the individual features.

    . Identification.

    . Verify health insurance coverage.

. Provide emergency medical data.

. Produce, file, and collect insurance claims.

. Provide guarantee of payment of claims.

. Produce, collect, and guarantee patient bills.

- Ratings are on a scale of 1 to 5, with 5 being high. Results of the rating are shown in Exhibits III-17 through III-23. The graphic presentation in these exhibits is the best way to review the results. However, as a simple measure, any rating of over 50% for the total of 4 and 5 ratings is positive.

• A summary of the ratings follow.

- Overall, Exhibit III-17:

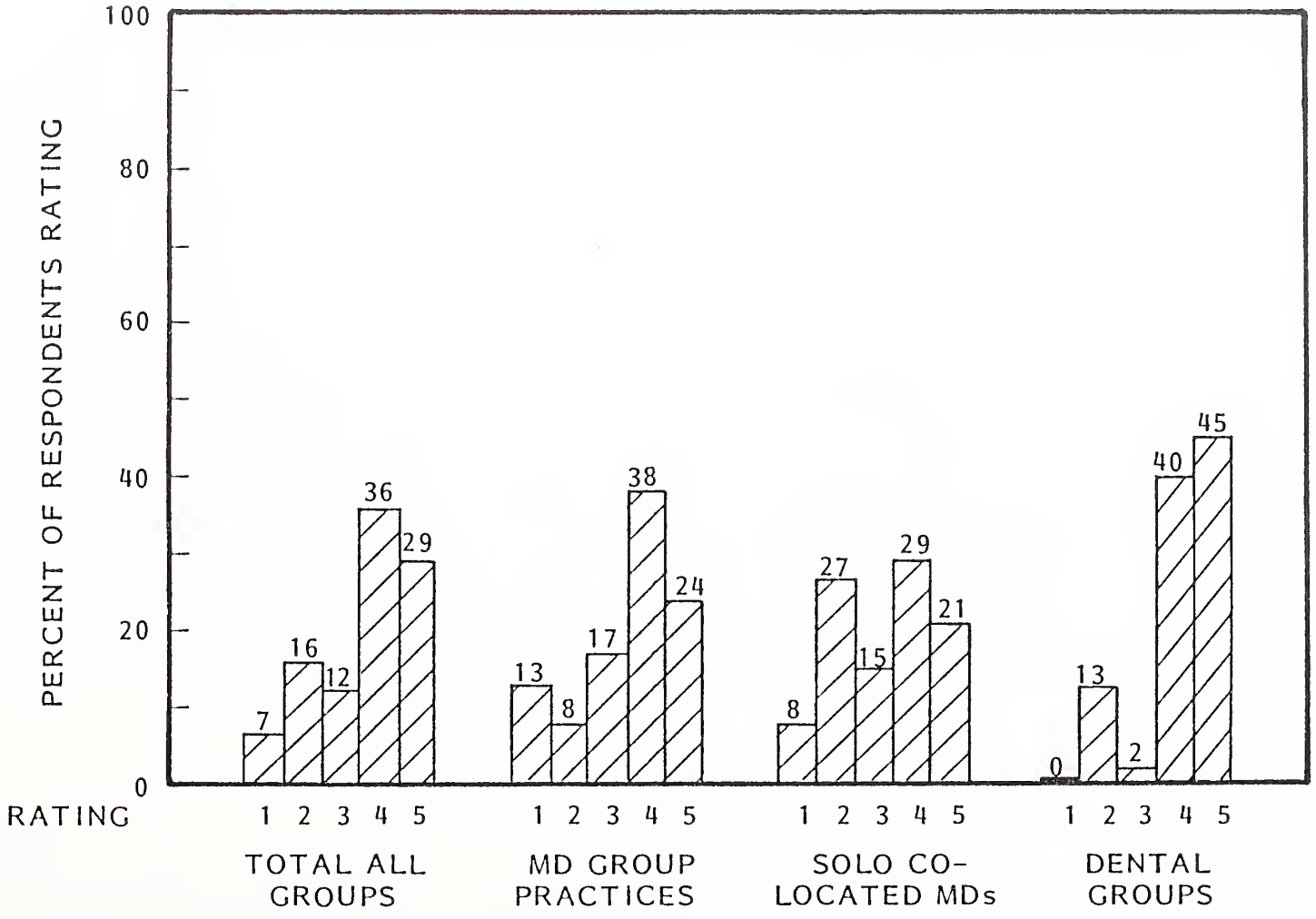
	Percent Rated 4 to 5
Total	65
MD Group	62
Solo MD	50
DDS	85

This is a positive response and reconciles with the impressions obtained in the on-site interviews, although the Solo co-located MD groups rating is marginal with respect to the overall rating.

- Identification, Exhibit III-18:

EXHIBIT III-17

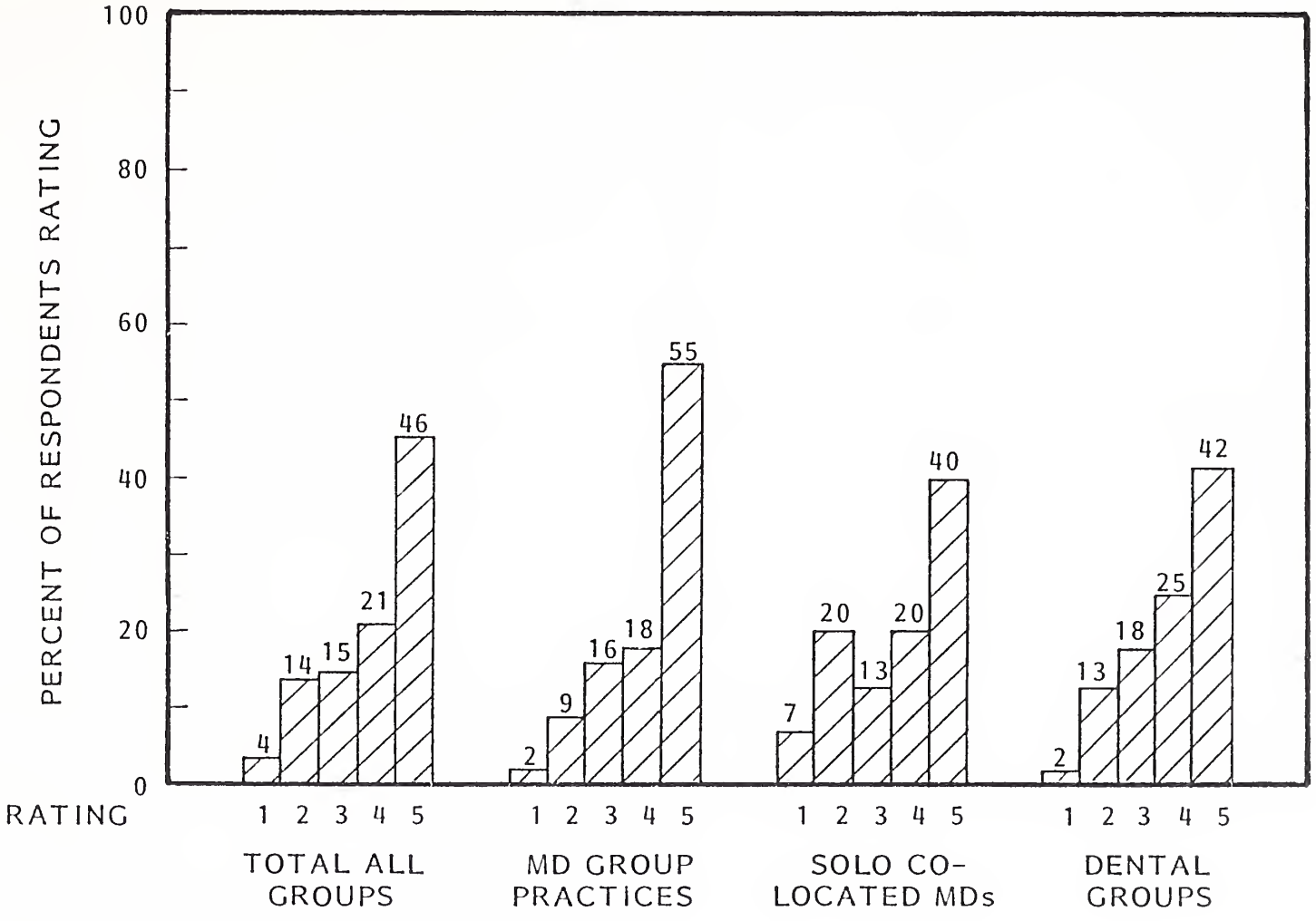
OVERALL RATING OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-18

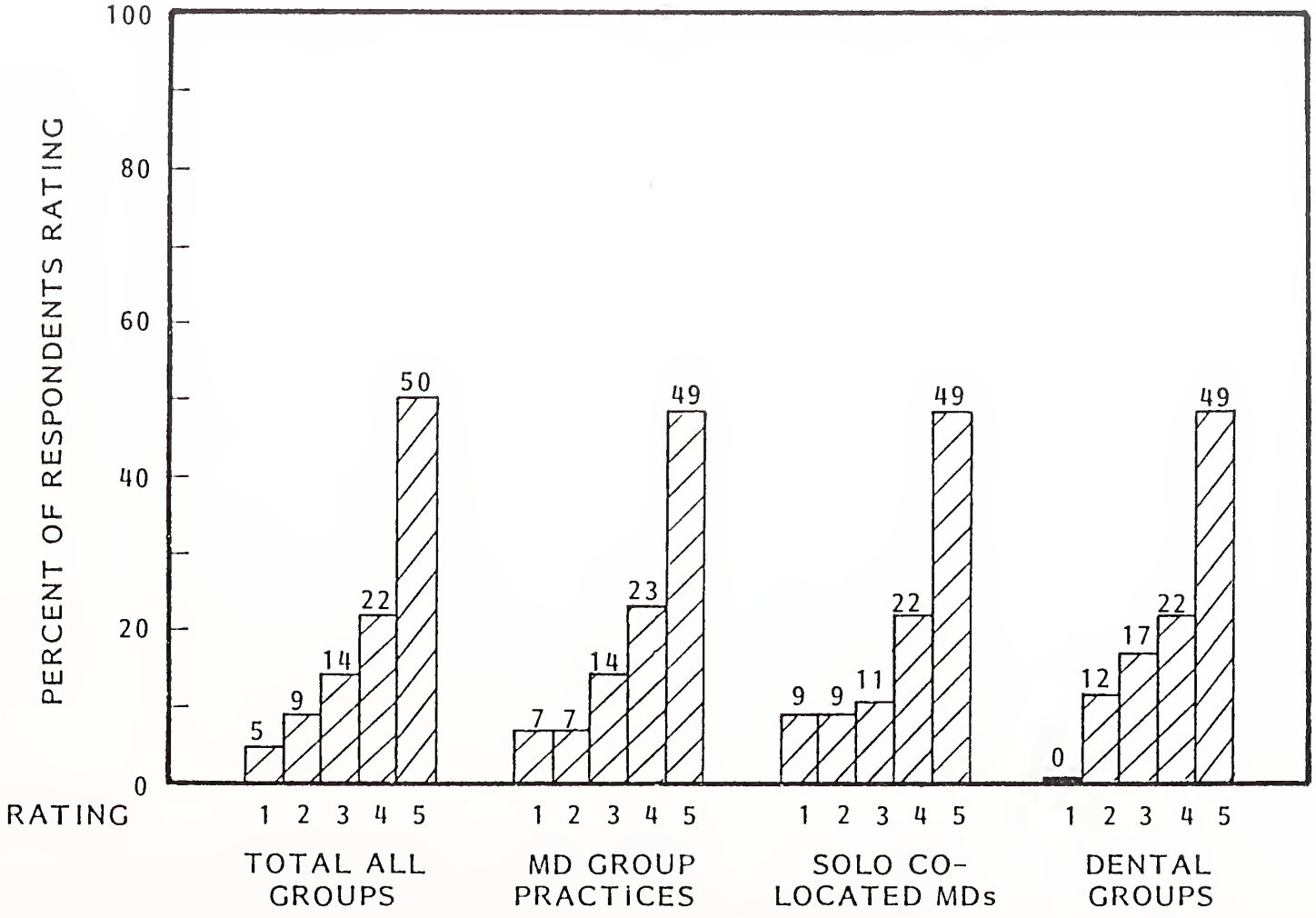
RATING OF IDENTIFICATION FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-19

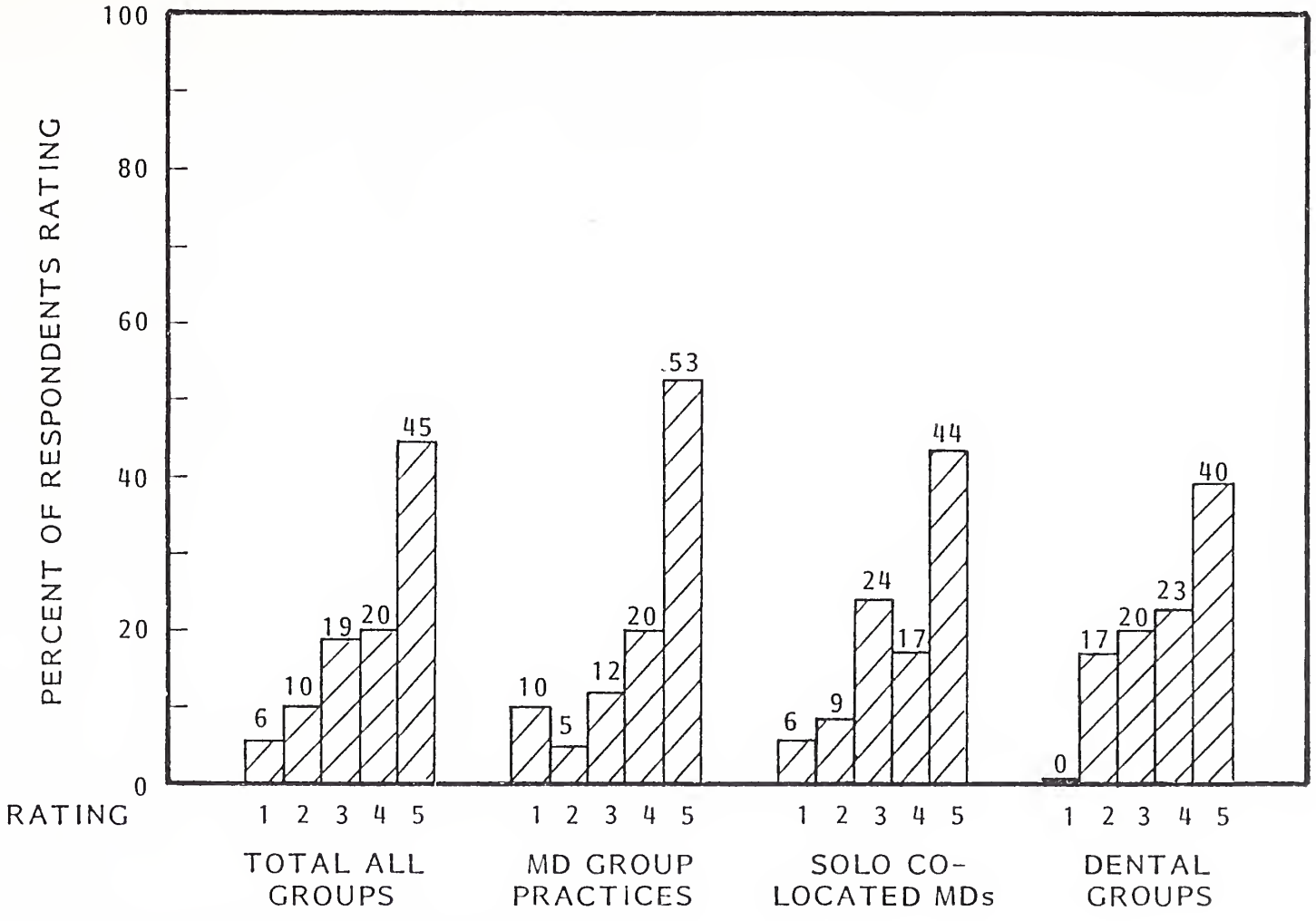
RATING OF VERIFICATION OF HEALTH INSURANCE FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM (GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-20

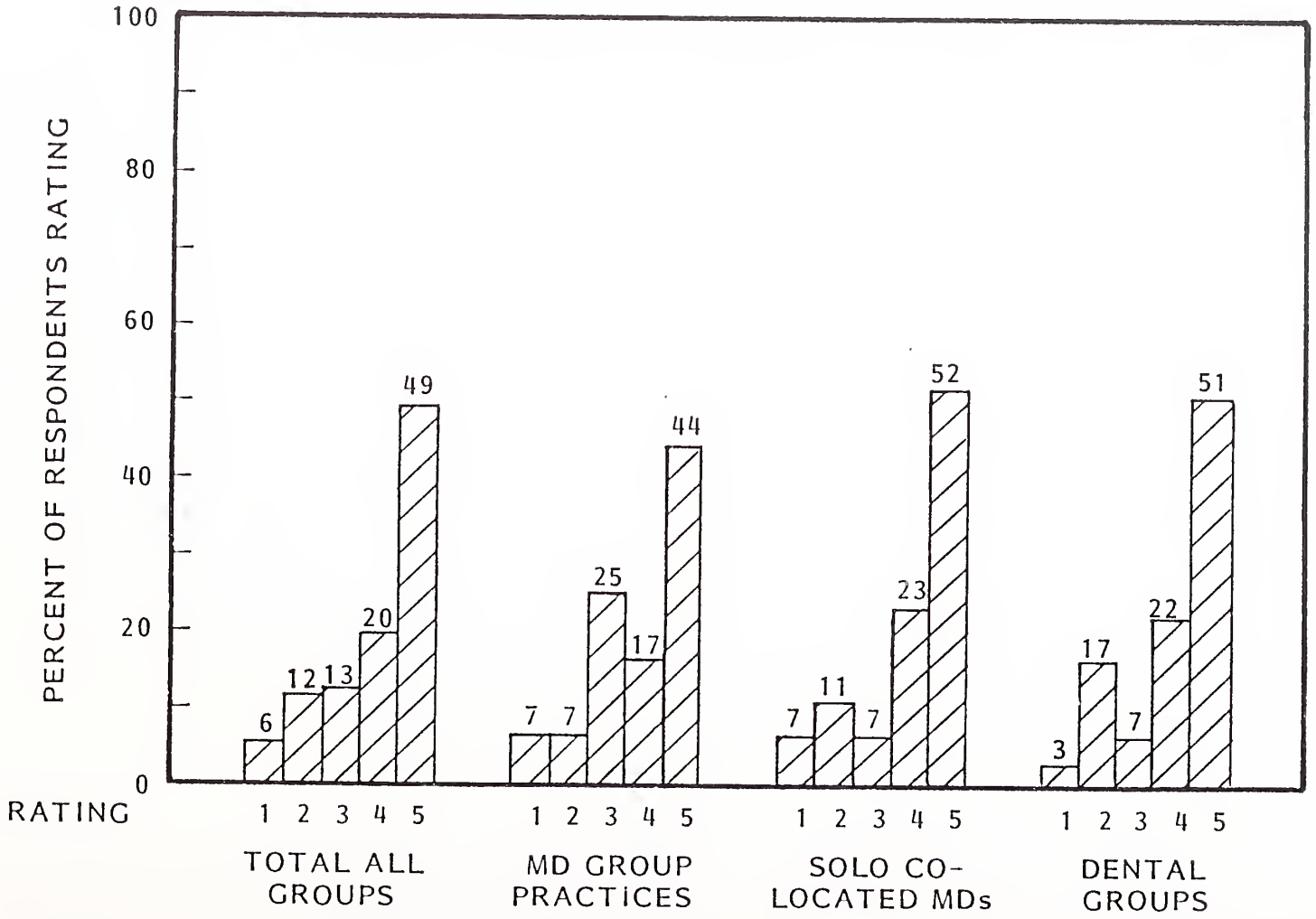
RATING OF EMERGENCY MEDICAL DATA FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-21

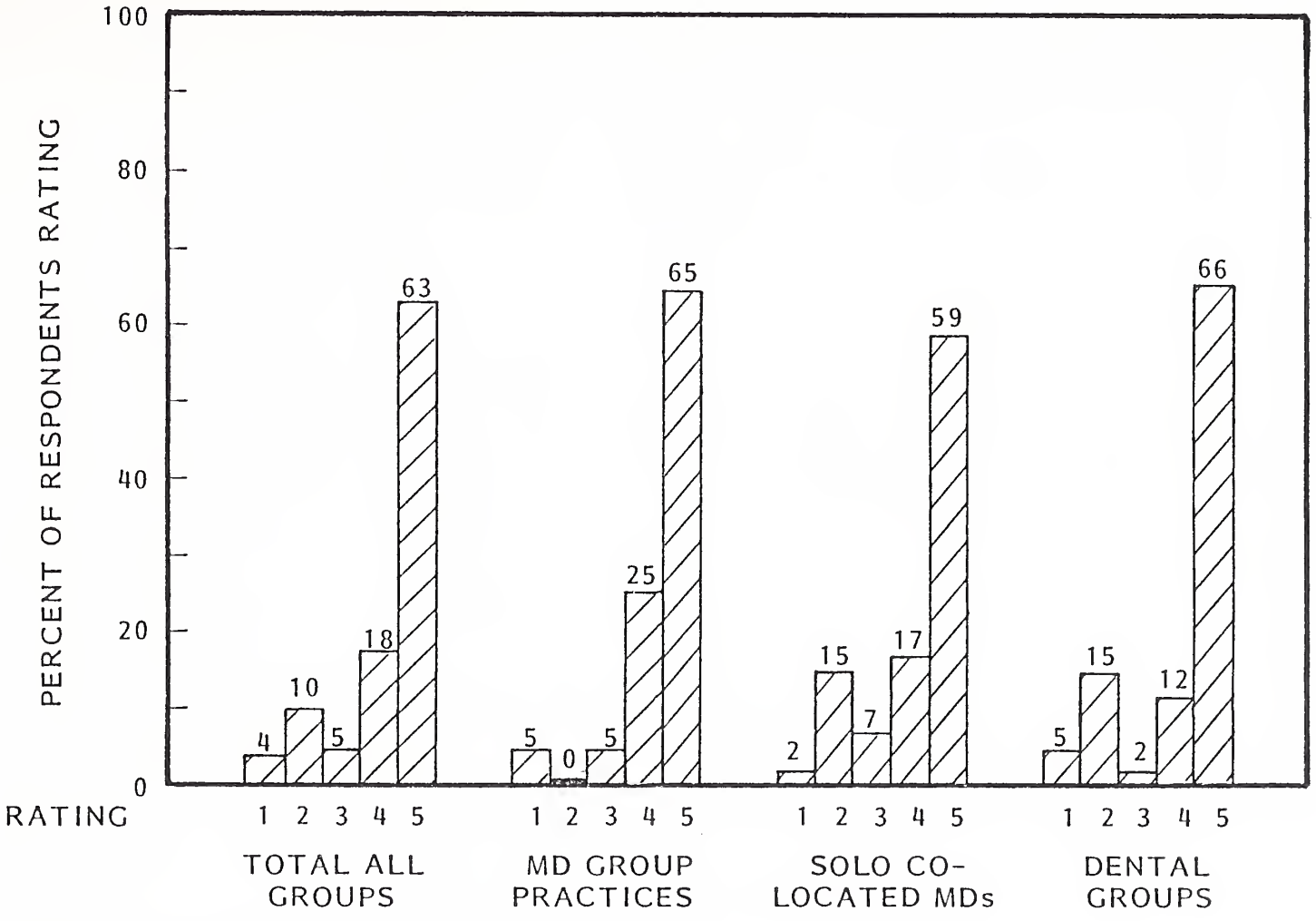
RATING OF FILING AND COLLECTING INSURANCE CLAIMS FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM (GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-22

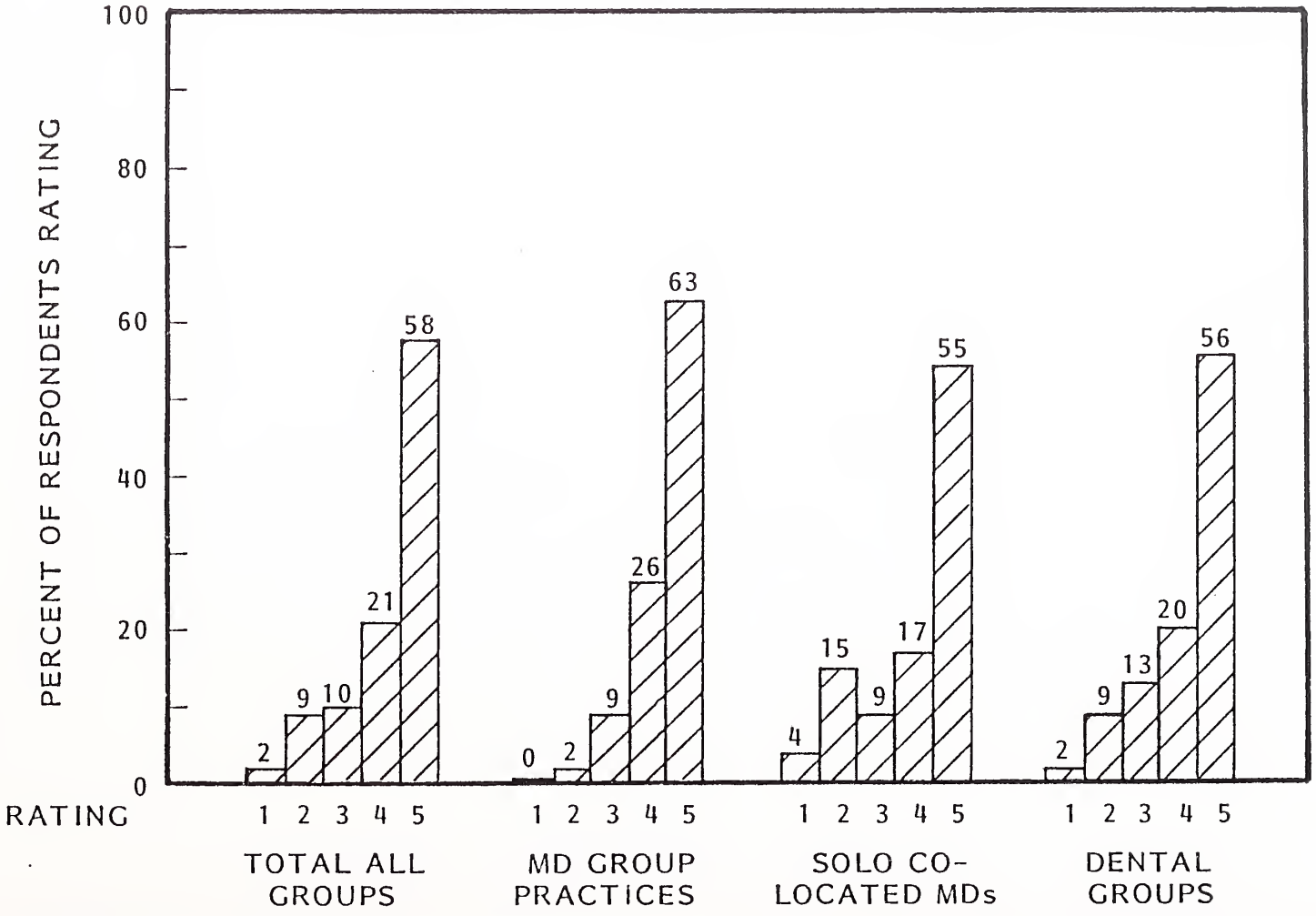
RATING OF GUARANTEE OF PAYMENT OF INSURANCE CLAIMS FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM (GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

EXHIBIT III-23

RATING OF GUARANTEE OF PAYMENT AND COLLECTING PATIENT BILLS FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM (GROUPS)



NUMBER OF RESPONDENTS = 140(93%)

	Percent Rated 4 to 5
Total	67
MD Group	73
Solo MD	60
DDS	67

Groups found the identification feature attractive, but were generally skeptical about keeping the data current.

- Verification of Insurance, Exhibit III-19:

	Percent Rated 4 to 5
Total	72
MD Group	72
Solo MD	71
DDS	71

A very high rating, verification is one of the most important feature of the card.

- Emergency Medical Data, Exhibit III-20:

	Percent Rated 4 to 5
Total	65
MD Group	73
Solo MD	61
DDS	63

This rating is believed to be misleading, generally physicians felt that they would not rely on the coding because of the difficulty in keeping it

current and the importance of it in an emergency. INPUT recommends that this feature be dropped from the card.

- Collecting Insurance Claims, Exhibit III-21:

	Percent Rated 4 to 5
Total	69
MD Group	61
Solo MD	75
DDS	73

- Guarantee of payment of insurance claims, Exhibit III-22.

	Percent Rated 4 to 5
Total	81
MD Group	90
Solo MD	76
DDS	78

This high rating indicates the importance of the collecting insurance claims feature of the card system.

Guarantee of payment of insurance claims is one of two most attractive features of the card system and is of importance in selling groups on using the card system.

- Guarantee of Payment of Patient Bills, Exhibit III-23:

	Percent Rated 4 to 5
Total	79
MD Group	89
Solo MD	72
DDS	76

Guarantee of payment of patient bills is the other most attractive feature and is of equal importance as guaranteeing payment of insurance claims.

b. User Perceptions And Comments

- After completing the ratings of the proposed medical credit card system, respondents were asked to elaborate on their assessment of the card. Typical remarks are shown in Exhibit III-24.

- Respondents were also asked what they did not like about the card. Typical remarks are shown in Exhibit III-25.

c. Overall Assessment Of The Medicard Concept

- All groups reaction to the proposed medical credit card systems is clearly favorable, in many instances enthusiastic.

- The proposal is regarded by most as being extremely ambitious, and properly so. This leads to widespread skepticism about the vendor's ability to successfully implement the system and keep it current with the myriad of required changes of information.

- There is concern over losing control over patient billing, the financial backbone of the practice. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.

EXHIBIT III-24

TYPICAL REMARKS BY RESPONDENTS CONCERNING
THE PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

- "SOUNDS GOOD."
- "MUST SEE IT IN ACTION BEFORE CONSIDERING IT."
- "WOULD ONLY CONSIDER IT IF A LOT OF INSURANCE COMPANIES WENT THAT WAY."
- "ASSURED PAYMENT IS THE BEST PART."
- "WE ARE CONCERNED OVER LOSING CONTROL OF BILLING."
- "PAYMENT NEEDS TO BE FAST AND IN FULL."
- "WHAT WOULD IT COST."
- "A GOOD IDEA FOR OTHERS BUT WOULD NOT USE HERE." (SOLO PRACTICE MD)

EXHIBIT III-25

TYPICAL REMARKS BY RESPONDENTS EXPRESSING
WHAT THEY DON'T LIKE ABOUT THE CARD
(GROUPS)

- "HOW TO VERIFY CURRENCY OF COVERAGE - CRITICAL TO PREVENT REBILLING."
- "ANY FEE WE WOULD HAVE TO PAY."
- "TAKES AWAY CONTROL OVER BILLING."
- "WOULD LOSE PERSONAL CONTACT WITH THE PATIENT IF COLLECTION IS AUTOMATED."
- "POSSIBLE LOSS OR THEFT OF CARDS."
- "DUPLICATES EXISTING SYSTEM - CAN'T RUN DUAL SYSTEMS."
- "CATEGORIZES PEOPLE - LUMPS THEM TOGETHER."
- "POSSIBLE DISCLOSURE OF CONFIDENTIAL PATIENT INFORMATION."

- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.

- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.

- Getting rid of the problems involving third party payers and governmental regulation is also attractive.

- To sum up, the proposed card system concept is highly regarded by a large majority of potential users and the market for the services is real and unpenetrated.

3. MARKET POTENTIAL OF MEDICARD SYSTEM

- At 3% of total revenue as a charge for the system, the potential market for the medicard system is estimated to be $649 million (Exhibit III-26). This figure is for the card system alone and does not include any allowance for other computer services or financial services.

4. USE OF FINANCIAL SERVICES

- Fifty-two percent of all groups are using financial services now. The largest percentage of use is by MD group practices (66%). Use of financial services is shown in Exhibit III-27.

- The predominant use of financial services is for equipment leasing, 62% for all groups. This is primarily attributable to leasing of photocopy equipment.

- Present uses also include (all groups):

EXHIBIT III-26

POTENTIAL MARKET FOR PROPOSED
MEDICAL CREDIT CARD SYSTEM
FOR MEDICAL AND DENTAL GROUPS
(GROUPS)

TYPE OF PRACTICE	TOTAL NUMBER	AVERAGE REVENUE PER EACH MD OR DDS	TOTAL ANNUAL REVENUE ($ MILLION)	POTENTIAL MARKET - 3% OF REVENUE ($ MILLION)
MD GROUP PRACTICES	75,694	$110,000	$ 8,300	$250
SOLO CO-LOCATED MDs	69,508	110,000	7,600	228
DENTAL GROUPS	62,216	91,000	5,700	171
TOTAL ALL GROUPS	-	-	$21,600	$649

ASSUMED CHARGE = 3% OF COLLECTIONS

EXHIBIT III-27

USE OF FINANCIAL SERVICES
(GROUPS)

TYPE OF PRACTICE	USING FINANCIAL SERVICES NOW (PERCENT)	AVERAGE NUMBER OF FINANCIAL SERVICES PER USER	PERCENT OF THOSE NOW USING FINANCIAL SERVICES					
			CONSTRUCTION LOANS	EQUIPMENT LEASING	INVESTMENT	CASH MANAGEMENT	MORTGAGES	CO-OP BUYING
MD GROUP PRACTICES	66%	1.8	9%	76%	27%	21%	24%	21%
SOLO CO-LOCATED MDs	46%	1.2	NIL	35	26	30	13	13
DENTAL GROUPS	44%	2.2	23	68	64	23	23	18
TOTAL ALL GROUPS	52%	1.7	10%	62%	37%	24%	21%	18%

20 40 60 80

NUMBER OF RESPONDENTS = 122(81%)

- Investment 37%
- Cash Management 24%
- Mortgages 21%
- Co-op buying 18%
- Construction loans 10%

- Eighty-five percent of present users of financial services (all groups) rated the level of satisfaction 4 or 5.

- There is no significant use of factoring or borrowing against receivables.

- Institutions providing financial services, as reported by respondents, are listed in Exhibit III-28.

  - Equipment leasing by Xerox heads the list.
  - E.F. Hutton was a prominent choice for investment management.
  - Other institutions are primarily local in nature and there is no established dominant institution.

EXHIBIT III-28

INSTITUTIONS PROVIDING
FINANCIAL SERVICES AS REPORTED
BY RESPONDENTS
(GROUPS)

CONSTRUCTION LOANS

- NONE

EQUIPMENT LEASING

- XEROX
- TRANSLEASING
- PARILIAMENT LEASING
- ROYAL BOND
- TOPA LOAN AND SAVINGS
- MEDICAL EQUIPMENT CO.
- MEDACOZIAN BANK (CHICAGO)
- OFFICE EQUIPMENT STORE

INVESTMENT MANAGEMENT

- E. F. HUTTON
- PROFIT SHARING BOARD
- MASSACHUSETTS INVESTMENTS
- CPAs

CASH MANAGEMENT

- E. F. HUTTON
- ST. LUKES HOSPITAL
- BANKS
- CPAs

MORTGAGES

- ROCHESTER HEALTH NETWORK
- BANKS

CO-OP BUYING

- ROCHESTER HOSPITAL GROUP
- ST. MARY'S HOSPITAL
- MEDICAL CENTERS
- MT. SINAI HOSPITAL (CHICAGO)
- ARCHER DENTAL
- CENTRAL DENTAL SUPPLY

IV COMPUTER AND FINANCIAL SERVICES MARKET IN HOSPITALS

A. INDUSTRY STRUCTURE

1. FUNCTIONAL DESCRIPTION

- The industry which is the focus of this part of the study is the non-Federal Government operated short term general hospital. In particular, it is SIC-8062, General Medical and Surgical Hospitals.
- In 1976, the latest year for which there is published data, 5956 hospitals provide just under one million beds.
- The average size for the groups is 160 beds.
- This group represents 84% of the total number of hospitals in the United States.
- Total expenses for the group were over $45 billion in 1976. Average annual expense per hospital was $9.5 million.
- Total health care costs in the United States have risen to an estimated 9% of total GNP.
- For further information see Appendix D - Related INPUT Reports.

- The interview sample is shown in Appendix A, Exhibit A-2. Seventy-six hospitals were interviewed, of which 24 were on-site interviews. Each telephone interview involved two individuals: a financial officer and the data processing director. Each on-site interview involved three individuals: administrator, financial officer, and data processing director. In all, 176 individuals were interviewed throughout the United States.

- The hospitals are categorized in this report as small (50-100 beds), medium (100-500 beds), and large (over 500 beds).

- Two questionnaires were used: executive and financial, and data processing director. Copies are in Appendix C.

- The type of hospitals included in the interview sample are:

  - Independent, non profit 79%

  - Govermental (state and local) 15%

  - For profit (proprietary) 6%

- Specific characteristics of the hospitals included in the interview sample are shown in Exhibit IV-1.

  - Annual expense per hospital ranges from $4-45 million.

  - Number of employees ranges from 205 to 2,180.

  - Small hospitals have an occupancy problem, an average of only 58%, which translates into a cash flow problem.

- Overall, one-third of the hospitals were planning a physical expansion of their facilities, but two-thirds of the group of large hospitals were expanding.

EXHIBIT IV-1

CHARACTERISTICS OF THE HOSPITALS
INCLUDED IN THE INTERVIEW SAMPLE-
AVERAGES
(HOSPITALS)

SIZE BY NUMBER OF BEDS	ADMIS-SIONS	CENSUS	PERCENT OCCU-PANCY	AVERAGE LENGTH OF STAY (DAYS)	EMER-GENCY VISITS	OUT PATIENT VISITS	OPERAT-ING INCOME ($ MILLION)	ANNUAL EXPENSE ($ MILLION)	PAYROLL ($ MILLION)	PERSON-NEL
SMALL 50-100	3,000	49	58%	6.7	17,000	12,000	$ 5.0M	$ 4.0M	$ 1.8M	205
MEDIUM 100-500	13,700	237	75	7.0	31,800	64,900	20.7	18.6	9.1	900
LARGE >500	28,700	606	80	8.1	48,000	57,200	40.1	45.2	26.8	2,180
TOTAL	15,500	272	74%	7.2	33,000	55,300	$22.7M	$21.1M	$11.7M	1,050

NUMBER OF RESPONDENTS = 76(100%)

- Eighty-seven percent have a formal planning process, 76% in data processing.

2. GROWTH HISTORY AND FORECAST

- Over the six year period from 1970 to 1976, the number of hospitals and the number of beds have remained level. However, over the same period of time hospital expenses increased at a compound rate of over 13% per year. This substantial inflation is a major factor in driving up health care costs. A great deal of attention and effort is focused on "cost containment" programs in the hospital industry.

- The growth in use of automation in hospitals will come from expanded market penetration rather than from growth in overall expenditures. Automation in the patient management area and transfer of existing batch applications to on-line delivery modes will provide the growth.

- INPUT estimates that the growth in computer equipment and services will be around 16% per year; which is equal to the AAGR for total computer services.

B. USE OF COMPUTER EQUIPMENT AND SERVICES

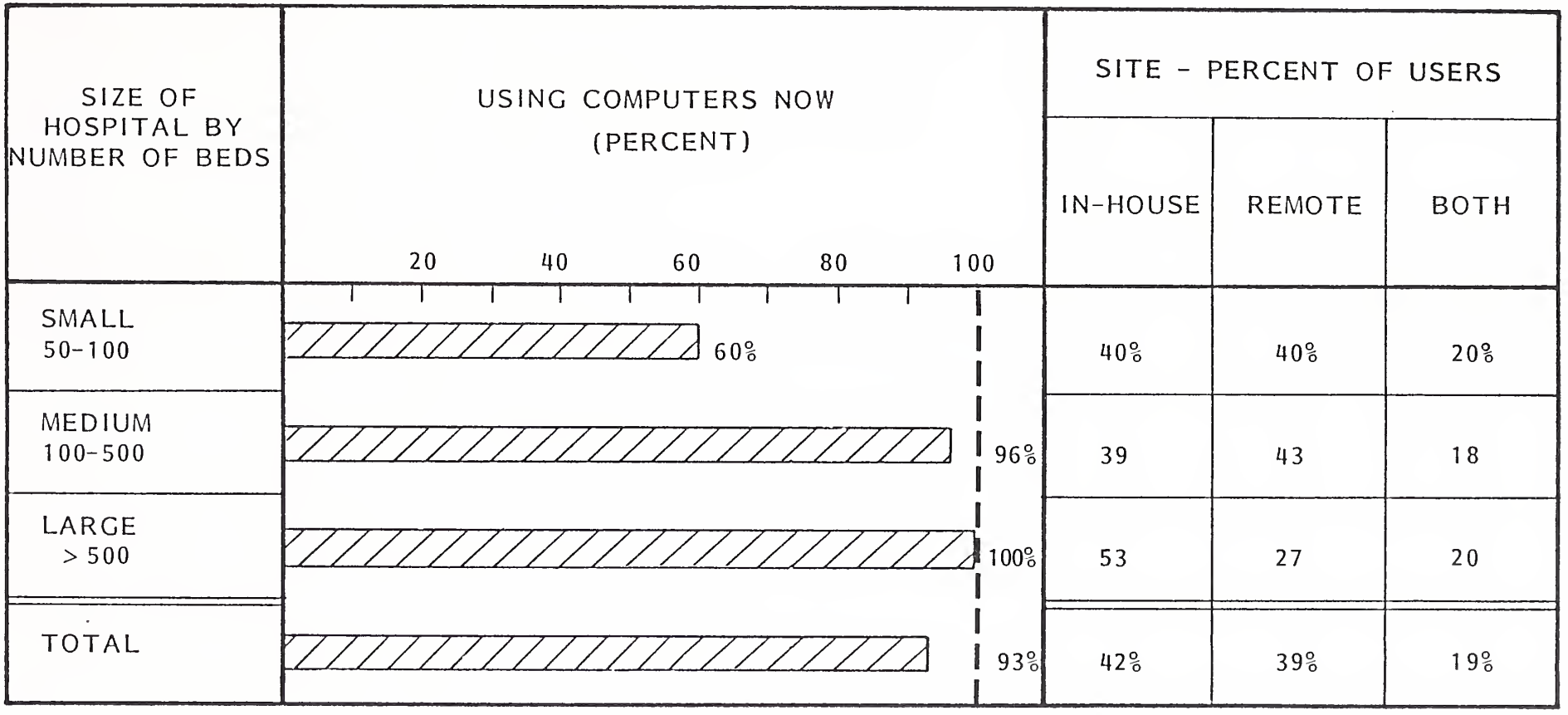
1. DEGREE OF COMPUTER AUTOMATION

a. Present Use Of Computer Automation

- Use of computers in hospitals is almost universal, 93% of all hospitals interviewed are presently involved (see Exhibit IV-2). Automation of the business office functions started in the mid sixties and is now an essential tool for almost all hospitals. Even 60% of the small hospitals of less than 100 beds interviewed are using computers.

EXHIBIT IV-2

PRESENT USERS OF COMPUTER EQUIPMENT AND SERVICES
PERCENT
(HOSPITALS)



NUMBER OF RESPONDENTS = 76(100%)

- Choice of in-house systems or remote services are almost equally divided among all groups. The 76 respondent hospitals reported 46 in-house computer installations and 44 remote service contracts.

- The 15 large hospitals of over 500 beds interviewed reported 11 in-house installations and 7 remote service contracts, a more decided preference for in-house computer installations.

b. Level Of User Satisfaction

- The general level of satisfaction with in-house computer systems is shown on Exhibit IV-3.

  - Ratings are on a scale 1 to 5, and 68% of all hospitals rated the in-house systems either 4 of 5 indicating a high degree of user satisfaction.

- The general level of user satisfaction with remote computer services is shown on Exhibit IV-4.

  - The level of satisfaction with remote computer services is less than for in-house systems. Fifty-nine percent of all groups rated the service 4 or 5 on the scale indicating a substantial level of dissatisfaction.

  - This is particularly true for small hospitals where only 33% rated the service 4 or 5 on the scale.

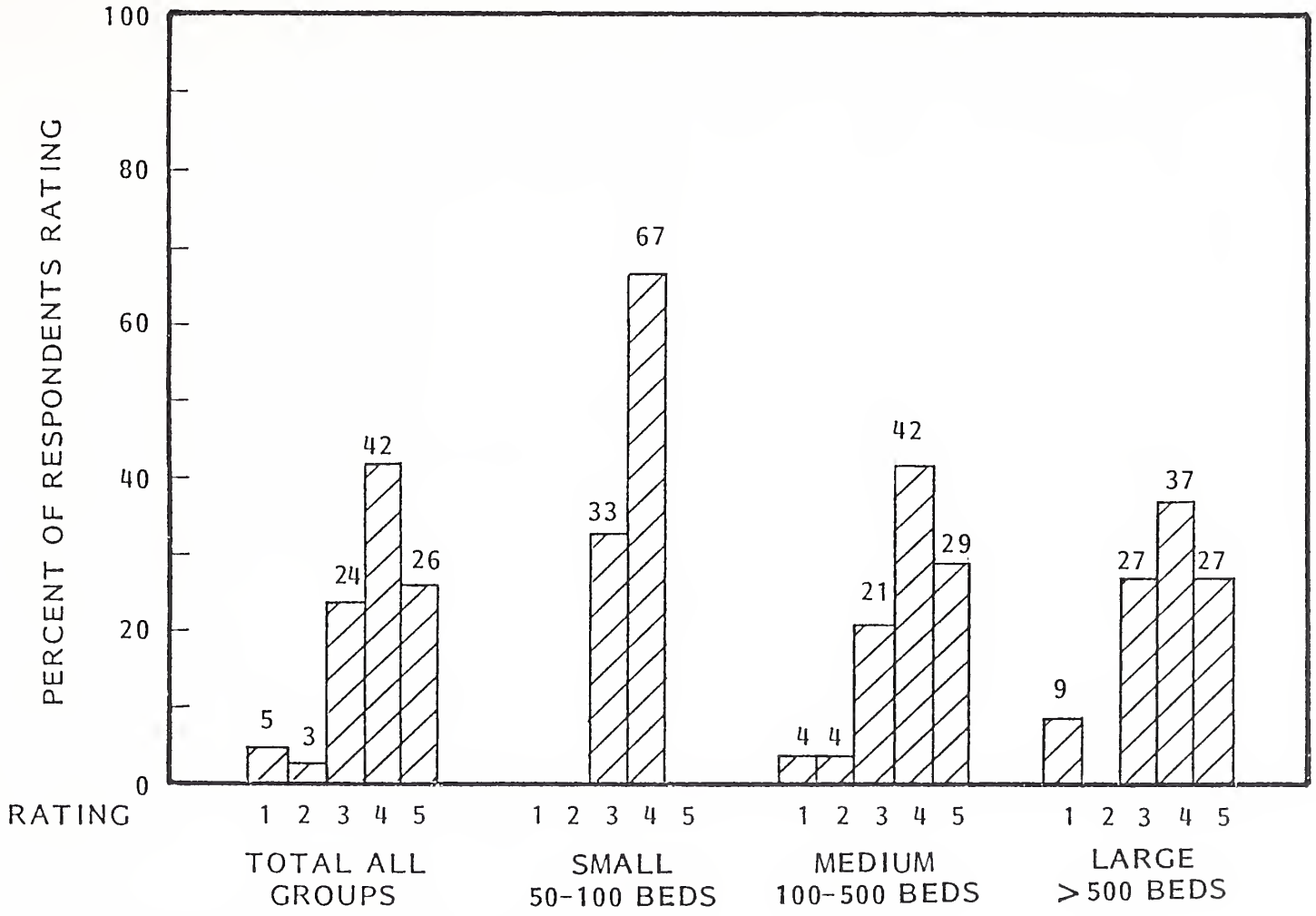
- Almost all of the hospitals that are not presently using computers had plans to do so in the future.

c. Vendors

- Equipment vendors mentioned by respondents are shown in Exhibit IV-5. IBM is the most frequently mentioned vendor (24% of all mentions). IBM has been

EXHIBIT IV-3

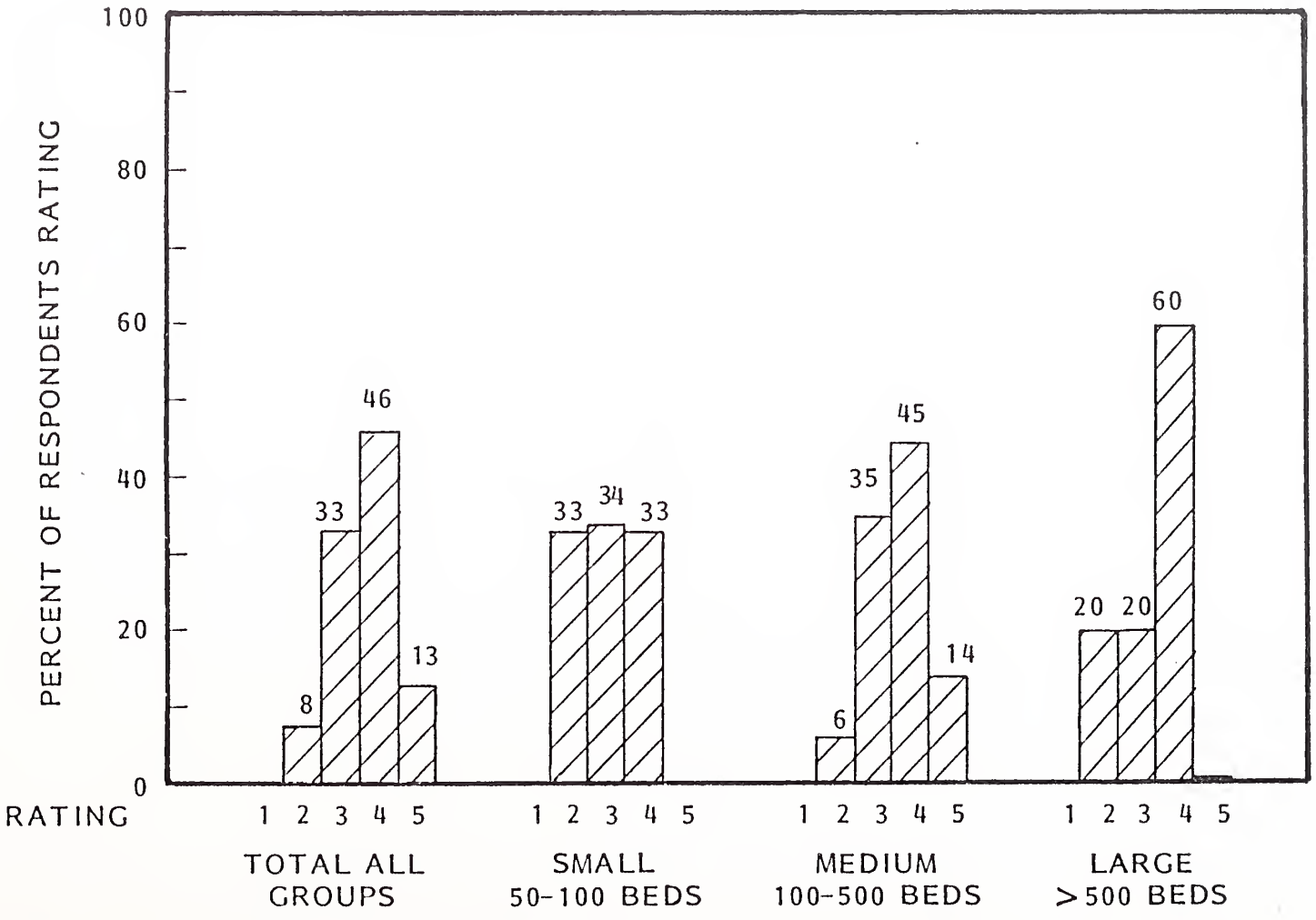
GENERAL LEVEL OF SATISFACTION WITH
IN HOUSE COMPUTER SYSTEMS
(HOSPITALS)



NUMBER OF RESPONDENTS = 38(50%)

EXHIBIT IV-4

GENERAL LEVEL OF SATISFACTION
WITH REMOTE COMPUTER SERVICES
(HOSPITALS)



NUMBER OF RESPONDENTS = 39(51%)

INP

EXHIBIT IV-5

EQUIPMENT VENDORS MENTIONED BY RESPONDENTS
(HOSPITALS)

VENDOR	NUMBER OF MENTIONS
• IBM	10
• FOUR PHASE	7
• DEC	6
• BURROUGHS	5
• HONEYWELL	4
• NCR	1
• HEWLETT-PACKARD	1
• UNIVAC	1
• OTHER MINICOMPUTER VENDORS	6
TOTAL	41

a dominent factor in developing the market, starting with their Shared Hospital Accounting System (SHAS) software package. Four other equipment vendors had multiple mentions: Four Phase, DEC, Burroughs and Honeywell.

- The major equipment vendors have a well established position in the hospital data processing market.

- Source of the software is shown on Exhibit IV-6.

  - Small hospitals are dependent on software companies and consultants for software.

  - Many large hospitals (56%) have an in-house software development capability with help from software companies and equipment vendors.

- Remote computing service and turnkey systems vendors are listed on Exhibit IV-7.

  - SMS is clearly the dominant service vendor for business office services, followed by McAuto. Neither of these vendors have moved substantially beyond the business office.

  - Technicon, Medicus, and HBO have all extended well into patient management and Technicon and Medicus into medical applications.

  - For further discussion see Appendix D - Related INPUT Reports.

d. Current Expenditures

- Annual EDP expenditures for in-house systems and for remote computing services are reported in Exhibit IV-8 and IV-9.

  - These relatively large expenditures for data processing reflect the high utilization of computers by the hospital industry for business applica-

EXHIBIT IV-6

SOURCE OF THE SOFTWARE
PERCENT
(HOSPITALS)

SIZE BY NUMBER OF BEDS	IN-HOUSE	SOFTWARE COMPANY	INDUSTRY STANDARD PROGRAMS	CONSULTANTS	EQUIPMENT VENDOR
SMALL 50-100	25%	25%	-	50%	-
MEDIUM 100-500	35	13	4	11	37
LARGE >500	56	17	-	5	22
TOTAL	40%	15%	3%	12%	30%

NUMBER OF RESPONDENTS = 68(89%)

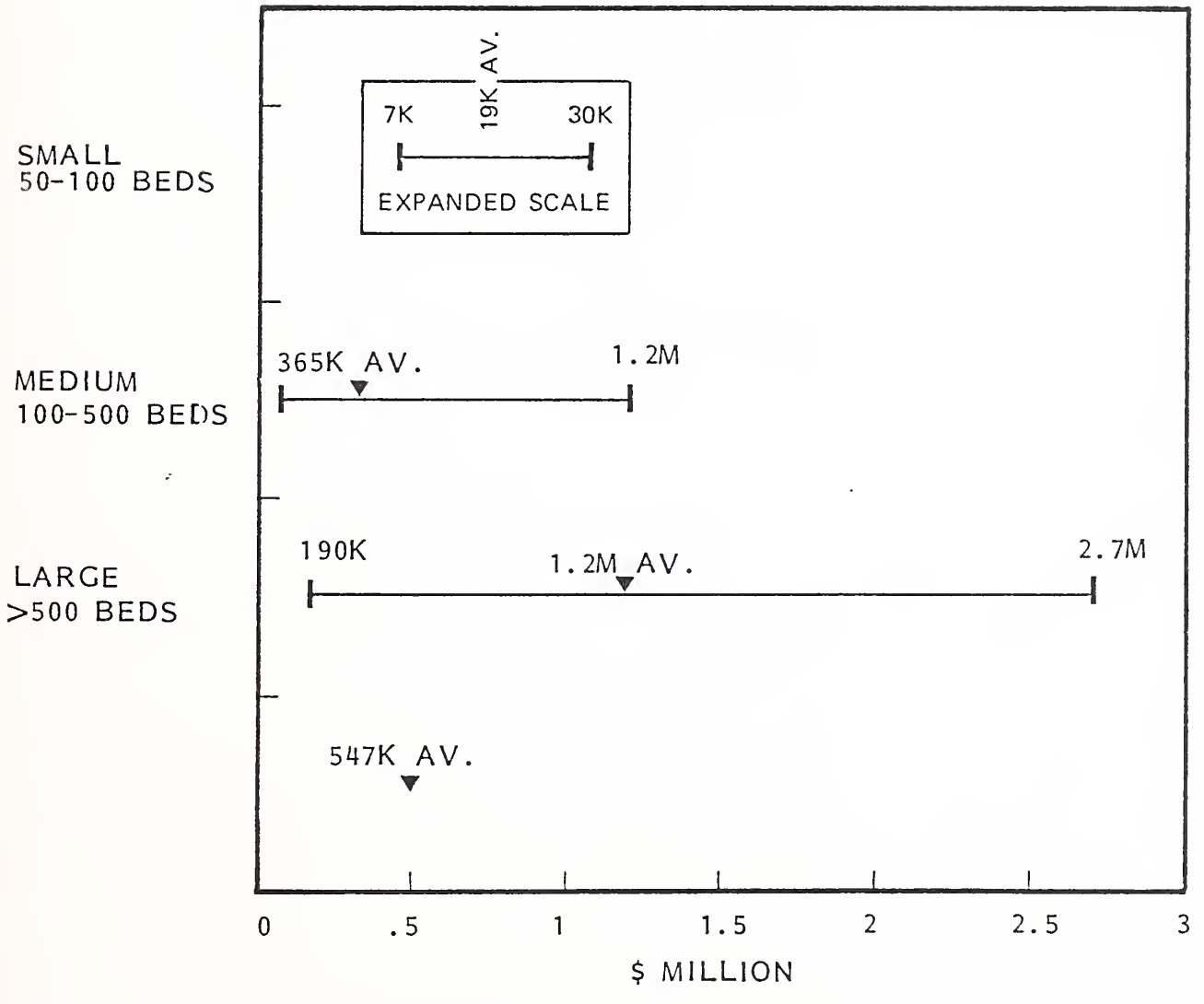
EXHIBIT IV-7

REMOTE COMPUTING SERVICE AND TURNKEY SYSTEMS
VENDORS MENTIONED BY RESPONDENTS
(HOSPITALS)

VENDOR	NUMBER OF MENTIONS
• SMS	10
• MCAUTO	5
• TECHNICON	5
• MEDICUS	2
• HBO	1
• RELIGIOUS ORDERS	1 EACH, 8 ORDERS
• HUMANA	1
• UNIVAC	1
• ADP	1
• ITEL	1
• TYMSHARE	1
• PENTAMATION	1
TOTAL	37

EXHIBIT IV-8

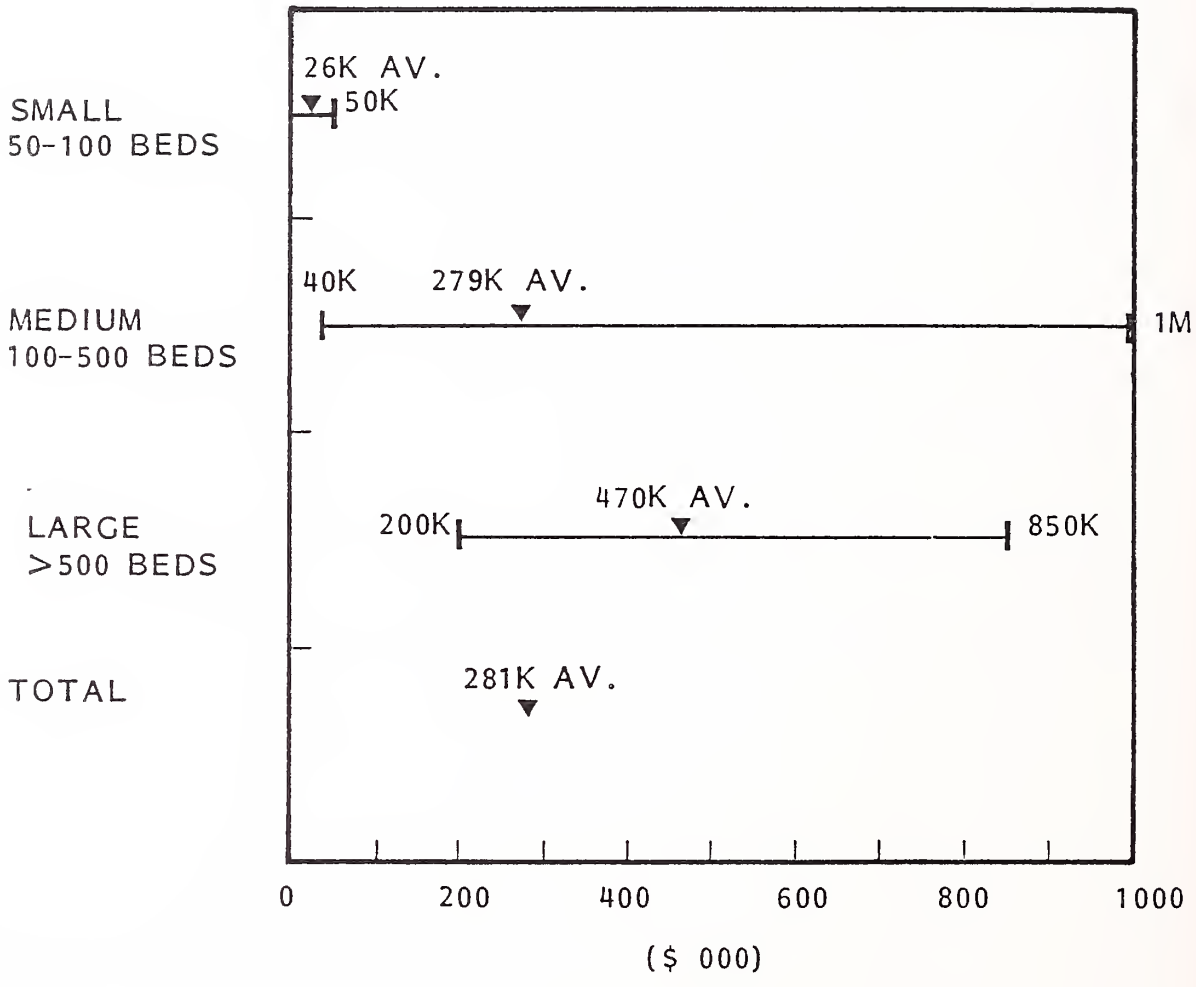
ANNUAL EDP EXPENDITURES
IN HOUSE SYSTEMS
RANGE AND AVERAGE (▼)
(HOSPITALS)



NUMBER OF RESPONDENTS = 31(70%)

EXHIBIT IV-9

ANNUAL EDP EXPENDITURES -
REMOTE COMPUTING SERVICES



NUMBER OF RESPONDENTS = 27(66%)

INP

tions. Expenditures will continue to grow as applications are expanded into patient management and medical areas.

- On the average, remote computing services for medium size hospitals have a 30% cost advantage over in-house systems.

- The size of the data processing staff was reported by 89% of the hospitals interviewed. The average size of DP staff by size of hospital is as follows:

Small 50-100 beds	4 persons
Medium 100-500	9 persons
Large over 500 beds	27 persons
All hospitals	12 persons

2. APPLICATION ANALYSIS

a. Functional Use Of Computer Equipment And Services

- Although 93% of all hospitals are using computers now, applications are mostly limited to financial and administrative functions, with patient management and professional services applications just beginning to appear. INPUT estimates the present market penetration to be 30%.

- Functions now automated by percent of hospitals automated are reported in Exhibit IV-10.

- Financial applications are already well automated, particularly the large paper volume functions, patient billing (99%) and accounts receivable (97%).

EXHIBIT IV-10

FUNCTIONS NOW AUTOMATED BY
PERCENT OF HOSPITALS AUTOMATED
(HOSPITALS)

SIZE BY NUMBER OF BEDS	NUMBER IN SAMPLE	NUMBER AUTOMATED	FINANCIAL APPLICATIONS						PATIENT MANAGEMENT						PROFESSIONAL SERVICES		
			PATIENT BILLING	ACCOUNTS RECEIVABLE	INSURANCE CLAIMS	PAYROLL	GENERAL LEDGER	INVENTORY	PATIENT REGISTRATION	PATIENT RECORDS	LAB REPORTING	PHARMACY	RADIOLOGY	ORDER ENTRY	PROFESSIONAL EDUCATION	PATIENT EDUCATION	RESEARCH
SMALL 50-100	8	5	80%	100%	60%	80%	60%	0	0	0	0	0	0	0	0	0	0
MEDIUM 100-500	53	51	100	96	88	96	94	59	59	55	18	33	16	14	0	0	0
LARGE >500	15	15	100	100	93	100	100	60	80	27	60	53	27	27	7	7	7
TOTAL	76	71	99%	97%	87%	96%	93%	55%	59%	45%	25%	35%	17%	16%	1%	1%	1%

- The first patient management functions to be automated are patient registration and patient records. However, the largest potential for computer automation is in capturing order entry directly at the necessary stations and tying it on-line to all ancillary departments. These applications are just beginning.

- Professional services applications are not yet evident.

b. Reasons For Automating

- The dominant reason hospitals have automated the financial applications are cost and cash flow.

- Reasons given for automating as a percent of responses are:

	Percent
Cost and cash flow	56
Quality control	15
Improved schedules	14
Better management control	12
Systems improvement	3

- Reasons expressed for dissatisfaction with present automation are:

	Percent
Maintaining control	40
Reliable performance	27
Timeliness	13
Cost	12
Other	8

c. Level Of User Satisfaction

- Level of user satisfaction for present automation of financial applications is qualified, only 60% of the ratings were in the two highest categories, 4 and 5.

C. COMPUTER EQUIPMENT AND SERVICES MARKET

1. USER FUTURE PLANS AND REASONS FOR FURTHER AUTOMATION

- Present user's plans to further automate within the next two years are shown in Exhibit IV-11.

  - Eighty-five percent of the hospitals now using computers plan to expand their data processing applications within the next two years.

  - It is significant, and a clear indication of an emerging market, that 30% of present users plan to automate order entry within the next two years; similarly lab reporting (45%), pharmacy (38%), and radiology (35%).

EXHIBIT IV-11

PRESENT USERS' PLANS TO FURTHER AUTOMATE WITHIN THE NEXT TWO YEARS
(HOSPITALS)

SIZE BY NUMBER OF BEDS	NUMBER NOW USING COMPUTERS	PLAN TO FURTHER AUTOMATE (%)	OF THOSE PLANNING FURTHER AUTOMATION - % BY APPLICATION											
			FINANCIAL APPLICATIONS						PATIENT MANAGEMENT APPLICATIONS					
			PATIENT BILLING	ACCOUNTS RECEIVABLE	INSURANCE CLAIMS	PAYROLL	GENERAL LEDGER	INVENTORY CONTROL	PATIENT REGISTRATION	PATIENT RECORDS	LAB REPORTING	PHARMACY	RADIOLOGY	ORDER ENTRY
SMALL 50-100	5	100%	40%	20%	20%	0	60%	60%	20%	0	20%	20%	0	20%
MEDIUM 100-500	51	82	33	60	43	69	36	33	50	41	57	41	43	33
LARGE > 500	15	87	15	15	15	31	15	39	8	39	15	39	23	31
TOTAL	71	85%	30%	33%	35%	22%	33%	37%	38%	38%	45%	38%	35%	30%

- Of these hospitals not presently automated, 80% plan to automate in the next two years.

2. SIZE OF PRESENT MARKET AND MARKET FORECAST

- The market data for computer equipment and services shown on Exhibit IV-12 are average annual expenditure for data processing, the number of hospitals, and present market penetration (see Appendix B - Market Forecast Data).

- AAGR is estimated to be 16%.

- The present market for computer equipment and services in hospitals is estimated to be $313 million and is expected to grow to $619 million in five years.

D. FINANCIAL SERVICES MARKET

1. PATIENT ACCOUNTING AND COLLECTIONS

a. Billing And Collection

- How all hospitals accomplish patient insurance coverage verification is reported on Exhibit IV-13.

  - Verification of Medicare and Medicaid insurace coverage is mostly accomplished by accepting the card as evidence.

  - In addition to accepting Blue Cross cards as verification, there also is a substantial number of hospitals verifying directly by computer.

  - The largest amount of manual verification is for commercial insurance companies.

EXHIBIT IV-12

FORECAST OF USER EXPENDITURES FOR
COMPUTER EQUIPMENT AND SERVICES FOR HOSPITALS
(1979 - 1984)
(HOSPITALS)

SIZE BY NUMBER OF BEDS	EXPENDITURES	
	1979 ($ MILLION)	1984 ($ MILLION)
SMALL 50-100	$ 26	$ 51
MEDIUM 100-500	225	445
LARGE >500	62	123
TOTAL	$313	$619

AAGR = 15%

EXHIBIT IV-13

PATIENT INSURANCE COVERAGE VERIFICATION–TOTAL FOR ALL HOSPITALS
(HOSPITALS)

THIRD PARTY PAYER	CARD ACCEPTED AS EVIDENCE (PERCENT)			DIRECT BY COMPUTER (PERCENT)			MANUALLY (PERCENT)		
	I	O	ER	I	O	ER	I	O	ER
MEDICARE	67%	74%	81%	16%	9%	6%	17%	17%	13%
MEDICAID	75	80	89	7	2	0	18	18	11
BLUE CROSS	51	59	79	32	18	12	17	23	9
COMMERCIAL INSURANCE	46%	59%	71%	2%	0%	2%	52%	41%	27%

NUMBER OF RESPONSES = 60(79%)

I = INPATIENT
O = OUTPATIENT
ER = EMERGENCY ROOM

- Percent of hospital billing prepared directly by computer is shown in Exhibit IV-14.

  - Percent of computer prepared billings are:

Hospital Size	Percent
Small 50-100 beds	0-25
Medium 100-500 beds	50-73
Large Over 500 beds	83-92
Total	52-73

  - The highest percent (73%) of computer prepared billing is for Medicare.

- Percent of total billing represented by each payer is shown in Exhibit IV-15.

  - Among the hospitals interviewed, Medicare was the largest third party payer.

b. Accounts Receivable

- The average age of accounts receivable by size of hospital is:

EXHIBIT IV-14

PERCENT OF BILLING PREPARED BY COMPUTER DIRECTLY
(HOSPITALS)

SIZE BY NUMBER OF BEDS	MEDICARE	MEDICAID	BLUE CROSS	COM-MERCIAL	PATIENT	ALL PAYERS
SMALL 50-100	25%	0	25%	13%	0	13%
MEDIUM 100-500	73	52	68	50	70	63
LARGE > 500	92	85	85	83	91	89
TOTAL	73%	52%	68%	52%	66%	62%

NUMBER OF RESPONDENTS = 45(59%)

EXHIBIT IV-15

PERCENT OF TOTAL BILLING
REPRESENTED BY EACH PAYER
(HOSPITALS)

SIZE BY NUMBER OF BEDS	MEDICARE	MEDICAID	BLUE CROSS	COMMER-CIAL	PATIENT
SMALL 50-100	39%	9%	22%	22%	8%
MEDIUM 100-500	36	9	19	25	11
LARGE >500	42	10	19	22	7
TOTAL	39%	9%	20%	24%	8%

NUMBER OF RESPONDENTS = 45(59%)

Hospital Size	Average Age (Days)
Small 50-100 beds	72
Medium 100-500 beds	60
Large Over 500 beds	62
Total	61

- Total amounts of outstanding receivables by age are shown on Exhibit IV-16.

  - The total amount of receivables over 60 days old for medium and large size hospitals equals $6.2 billion; $4.6 billion for medium and $1.7 billion for large.

  - All hospitals are experiencing a difficult problem in collecting accounts receivable. Computer based collection systems that are effective in advancing collections would result in large improvements in cash flow, and consequently would be cost effective.

- The average for all respondents concerning when an overdue bill is considered to be bad debt is 120 days.

- When routine methods of collection have been exhausted the actions taken are as follows (average for all hospitals):

EXHIBIT IV-16

TOTAL AMOUNTS OF OUTSTANDING RECEIVABLES BY AGE
AVERAGE PER HOSPITAL

SIZE BY NUMBER OF BEDS	IN-HOUSE UNBILLED ($ MILLION)	UNDER 30 DAYS ($ MILLION)	30-60 DAYS ($ MILLION)	60-90 DAYS ($ MILLION)	OVER 90 DAYS ($ MILLION)	TOTAL OUT-STANDING ($ MILLION)
SMALL 50-100	-	-	-	-	-	-
MEDIUM 100-500	0.73	1.46	0.65	0.67	0.99	4.41
LARGE >500	4.20	5.20	4.70	2.00	3.50	19.60

NUMBER OF RESPONDENTS:

SMALL = 0
MEDIUM = 18(34%)
LARGE = 2(15%)

- Collection is in-house only 10%

- Immediately turn accounts over to outside collection agency 25%

- First try to collect in-house and then turn over to outside collection agency 65%

c. Present Use Of Credit Cards

- Credit cards are broadly accepted by hospitals, but account for a very small percentage of collections. Percent of bills paid by credit card or cash are shown on Exhibit IV-17.

  - Seventy-eight percent of hospitals accept credit cards.

  - Credit cards account for only 1.6% of collections and are used mainly for out-patient services.

  - Payment by cash is more prevalent, accounting for 3.7% of collections.

- Of those hospitals accepting credit cards, the type of card by percent of mentions are as follows:

Card	Percent
VISA	92
Master Charge	90
American Express	17
Regional	9

EXHIBIT IV-17

PERCENT OF BILLS PAID
BY CREDIT CARD OR CASH
(HOSPITALS)

SIZE BY NUMBER OF BEDS	RESPONDENTS ACCEPTING CREDIT CARDS	PAID BY CREDIT CARD	PAID BY CASH
SMALL 50-100	63%	0.7%	4.8%
MEDIUM 100-500	76	1.5	3.6
LARGE > 500	93	2.1	3.3
TOTAL	78%	1.6%	3.7%

2. ASSESSMENT OF THE MEDICAL CREDIT CARD CONCEPT

a. Rating

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). Seventy out of 76 respondents (92%) rated Medicard. First, an overall rating of the card was made, and then each individual feature was rated.

- The wording of the question as it appeared in the questionnaire is as follows:

  - I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

    . Include identification and current health insurance coverage as part of the card.

    . Emergency medical data; i.e., blood type, allergies.

    . Provide a personal credit line in addition to insurance.

    . Produce all insurance claims and file and collect them for you.

    . Provide guarantee of payment of claims.

    . Produce and collect patient bills, guaranteeing the patient bill to you.

  - Please rate the attractiveness of the individual features.

    . Identification.

    . Verify health insurance coverage.

. Provide emergency medical data.

. Produce, file, and collect insurance claims.

. Provide guarantee of payment of claims.

. Produce, collect, and guarantee patient bills.

- Ratings are on a scale of 1 to 5. Results of the rating are shown on Exhibit IV-18 through IV-24. The graphic presentation in these exhibits is the best way to review the results. However, as a simple measure, rating of over 50% for the total of 4 and 5 ratings is positive.

• A summary of the ratings follow.

- Overall, Exhibit IV-18:

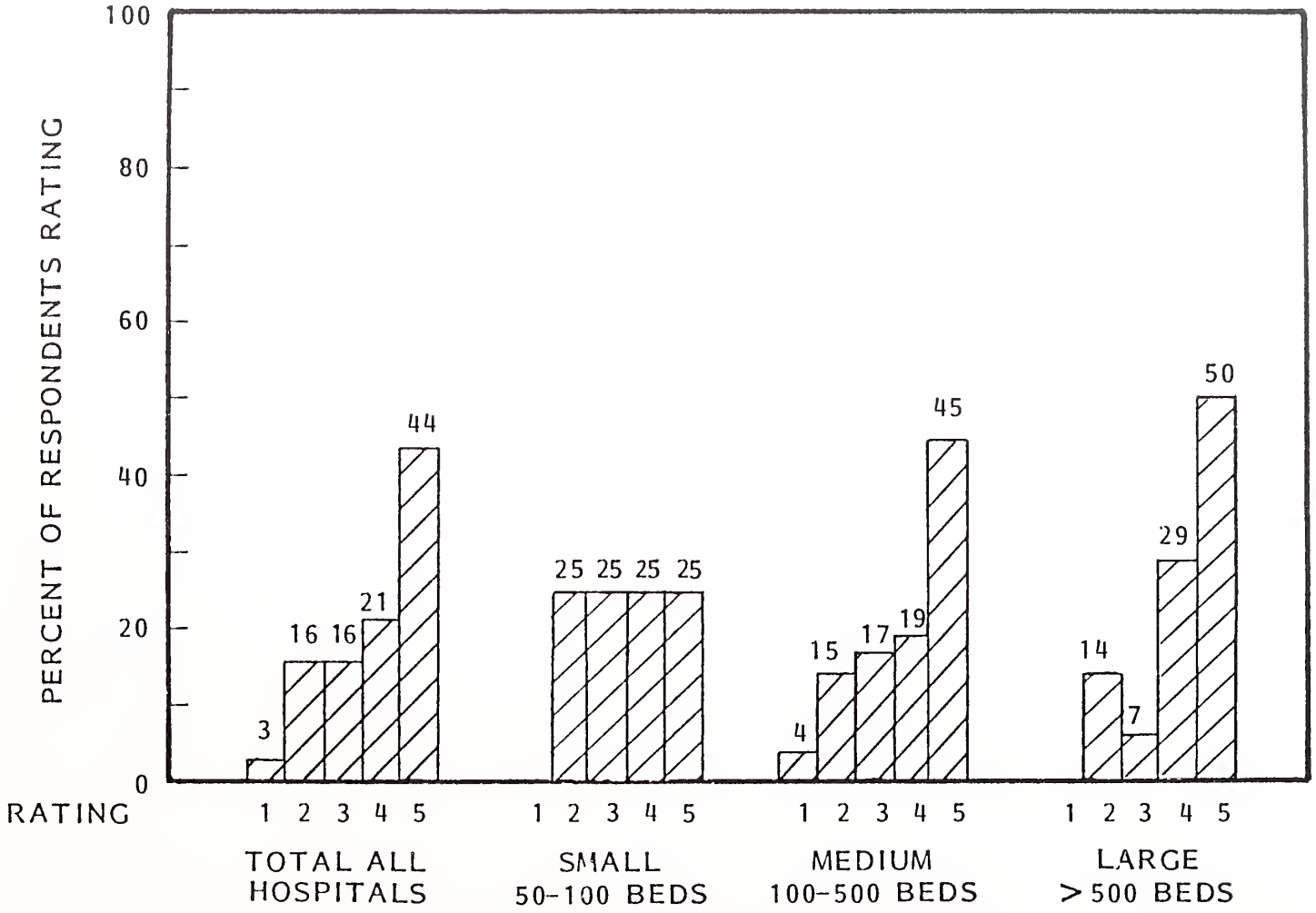
	Percent Rated 4 to 5
Total	65
Small	50
Medium	64
Large	79

This is a positive response and it reconciles with the impressions obtained in the on-site interviews. It is apparent however, that the larger the hospital the more positive is the rating. The rating by small hospitals of 50-100 beds is marginal.

- Identification, Exhibit IV-19.

EXHIBIT IV-18

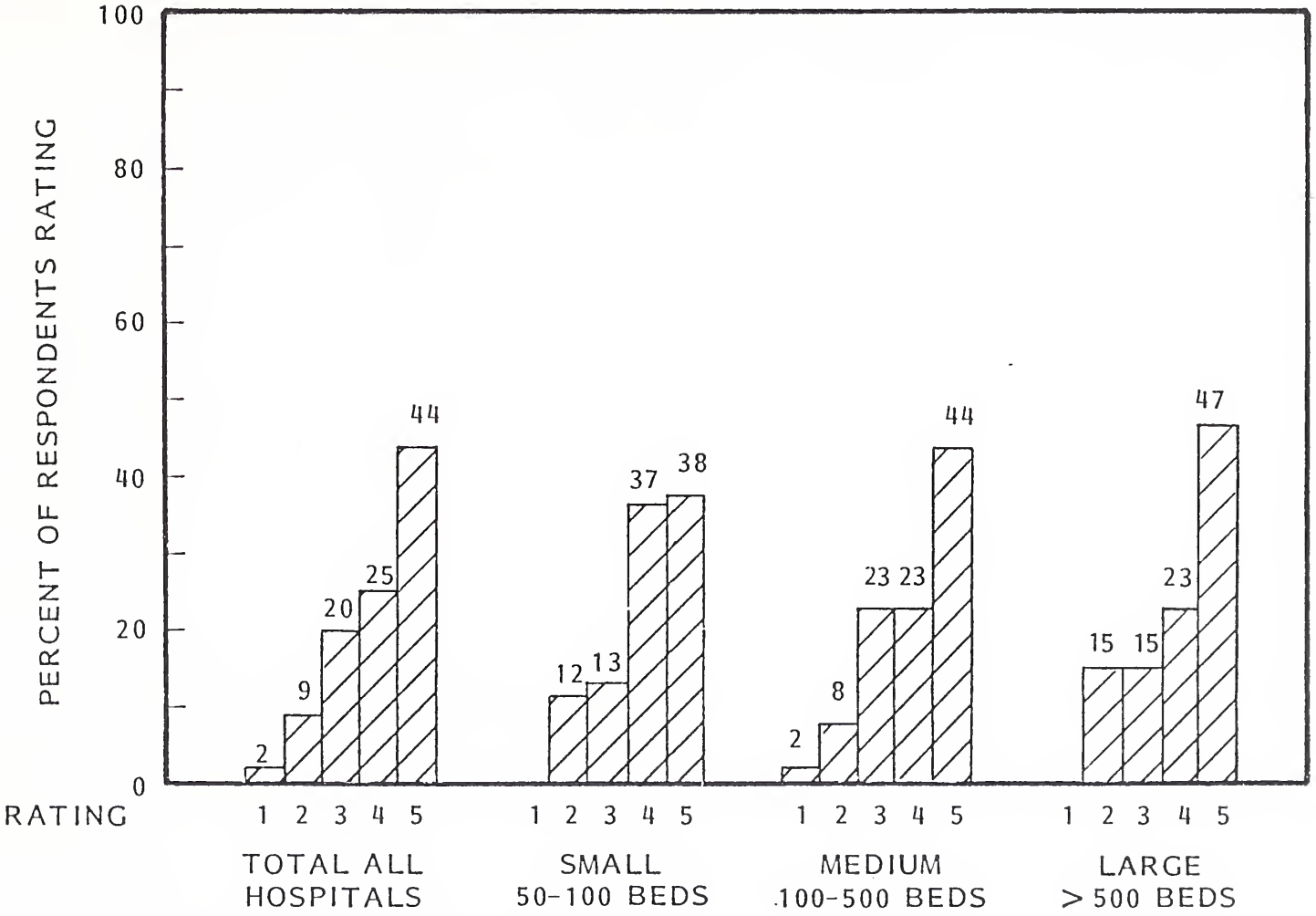
OVERALL RATING OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 70(92%)

EXHIBIT IV-19

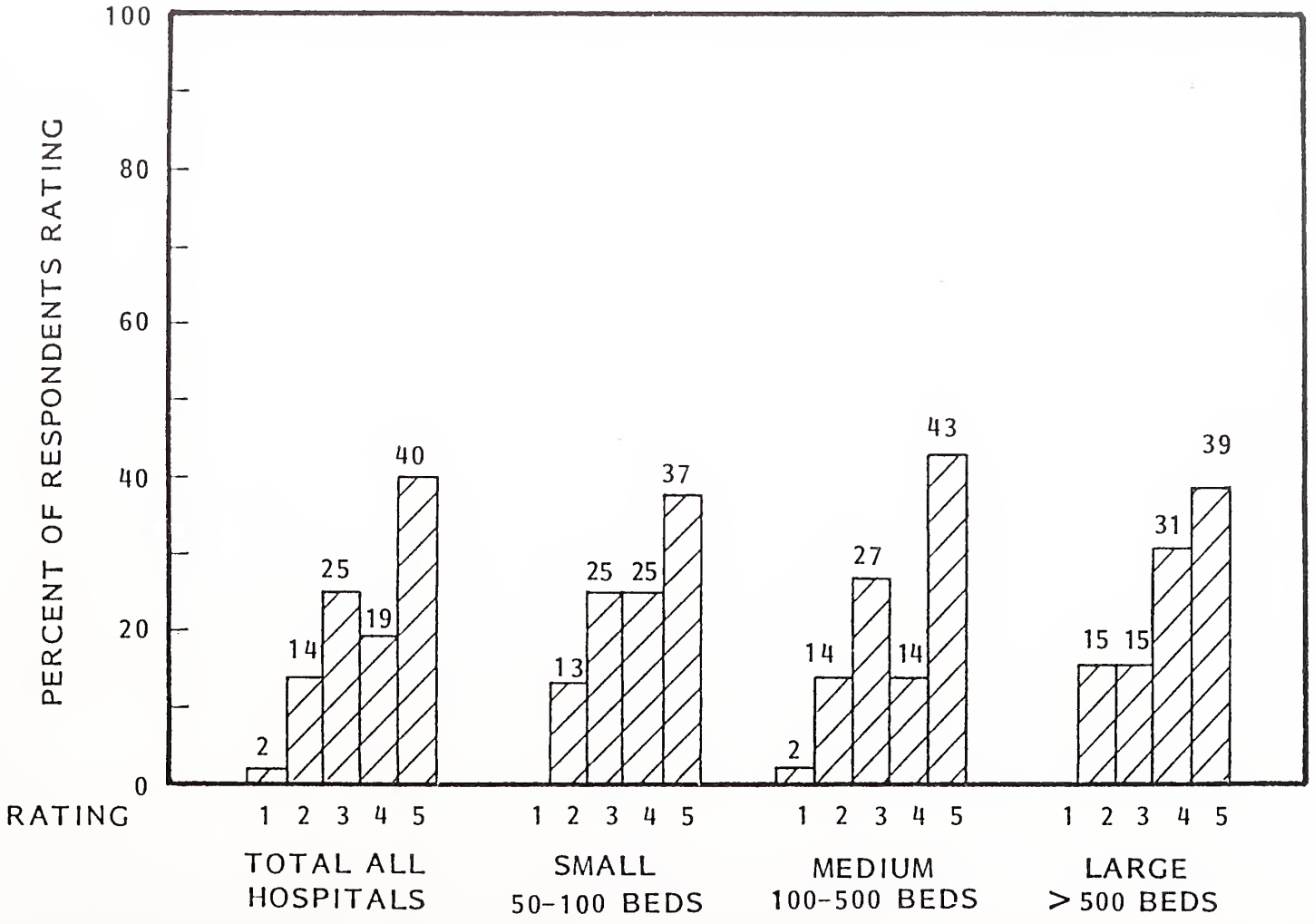
RATING OF IDENTIFICATION FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 64(84%)

EXHIBIT IV-20

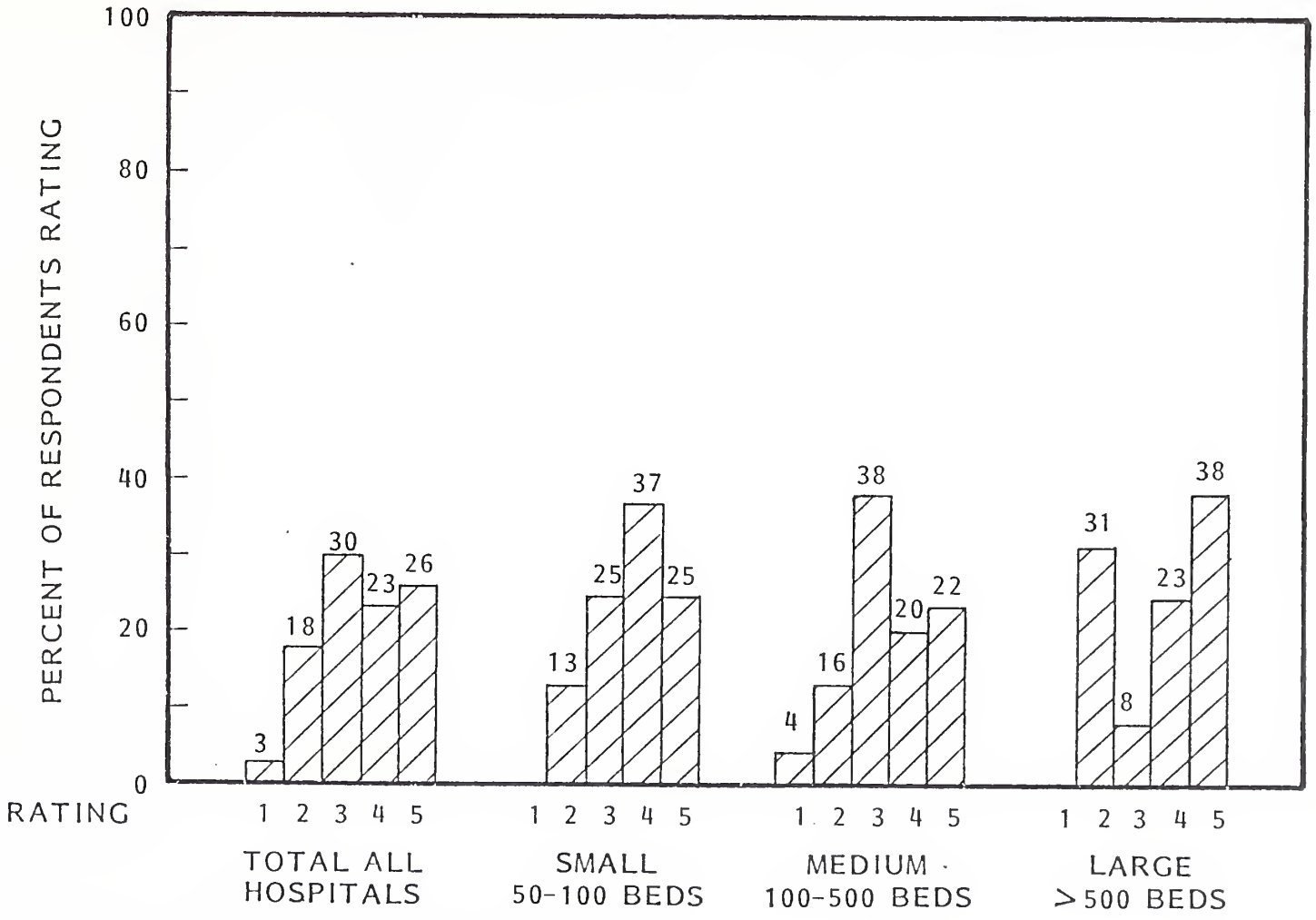
RATING OF VERIFICATION OF HEALTH INSURANCE FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM (HOSPITALS)



NUMBER OF RESPONDENTS = 65(85%)

EXHIBIT IV-21

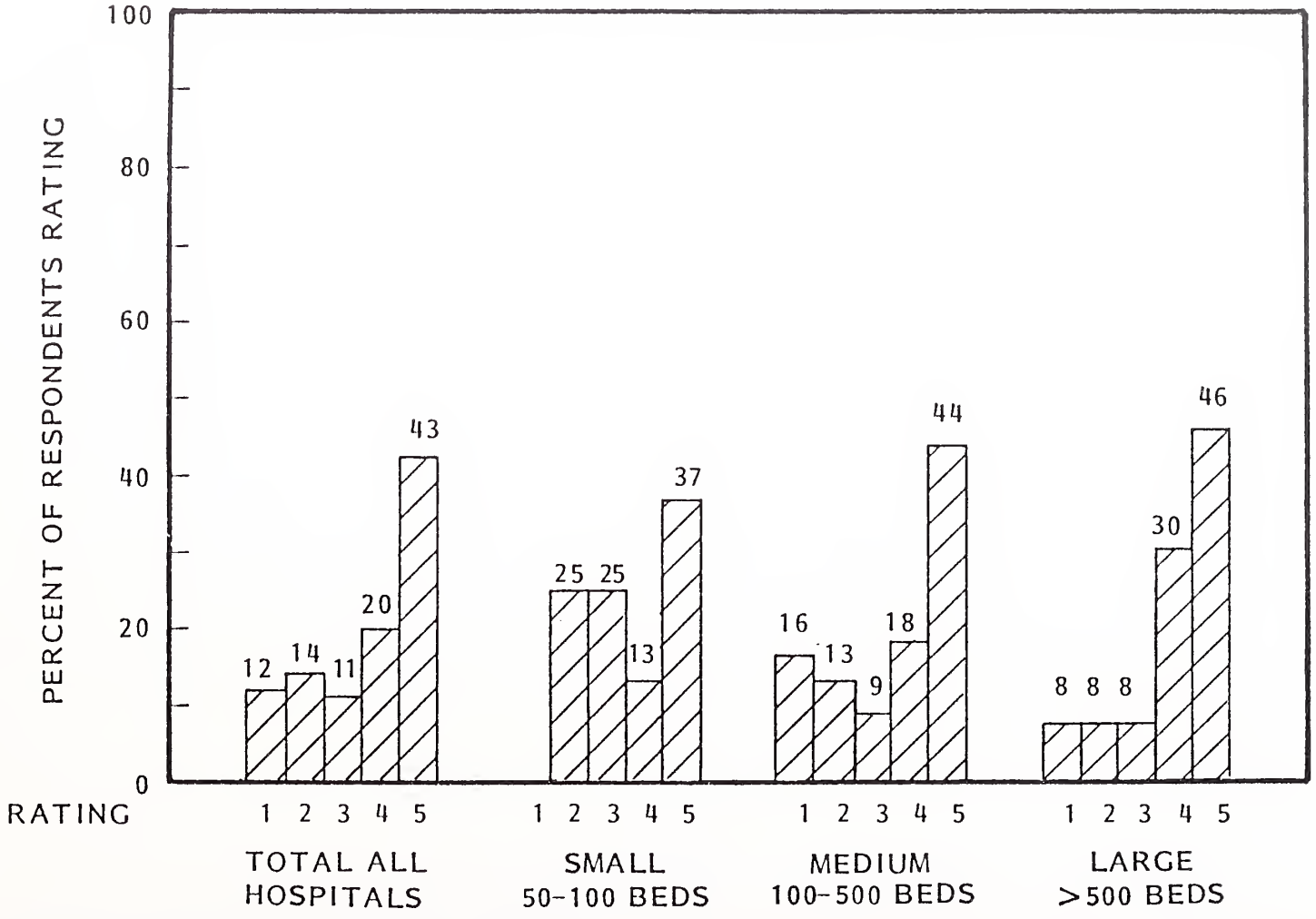
RATING OF EMERGENCY MEDICAL DATA FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 66(87%)

EXHIBIT IV-22

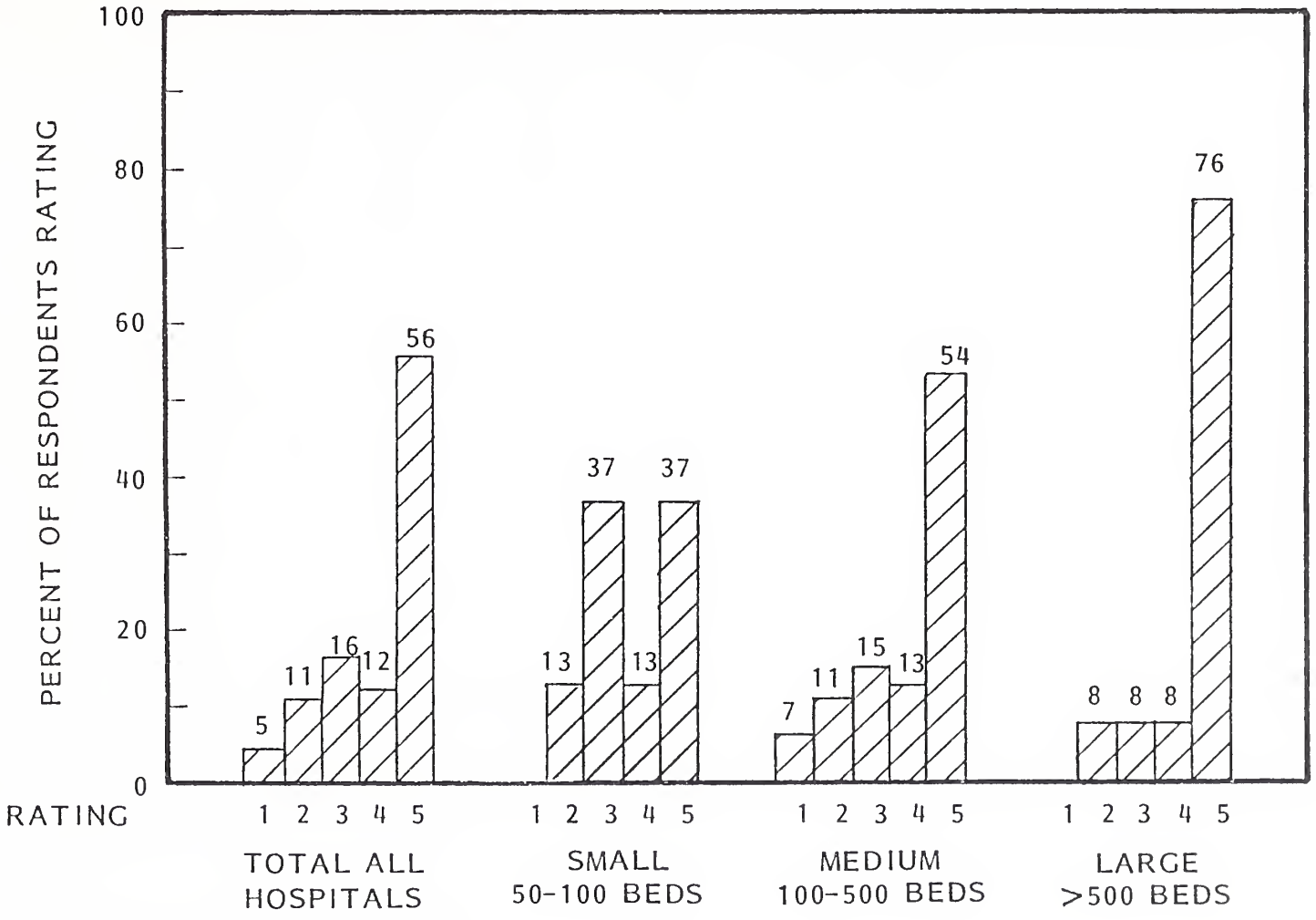
RATING OF FILING AND COLLECTING INSURANCE CLAIMS
FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 66(87%)

EXHIBIT IV-23

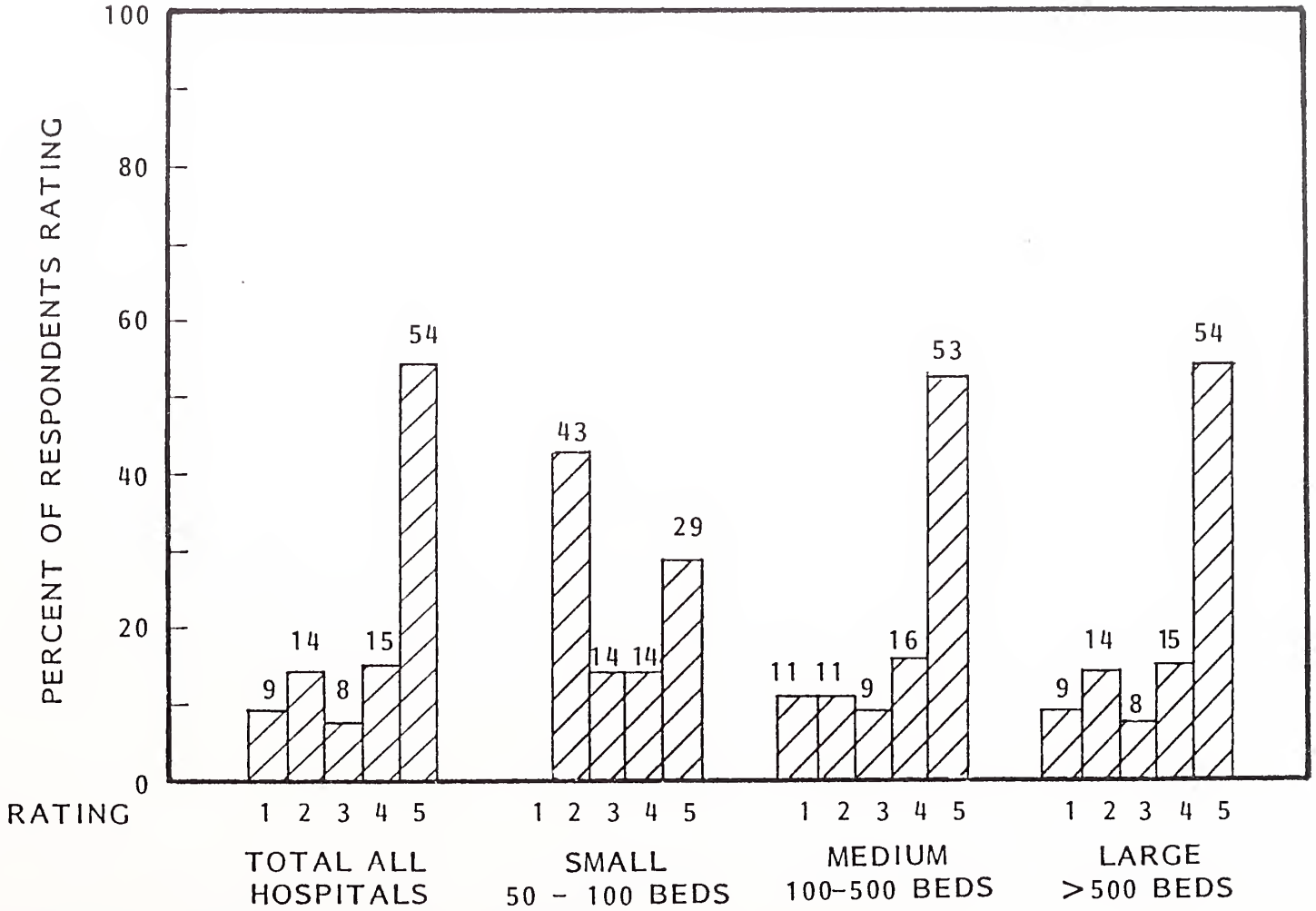
RATING OF GUARANTEE OF PAYMENT OF INSURANCE CLAIMS FEATURE
OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 66(87%)

EXHIBIT IV-24

RATING OF GUARANTEE OF PAYMENT AND COLLECTING PATIENT BILLS
FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



NUMBER OF RESPONDENTS = 66(87%)

	Percent Rated 4 to 5
Total	69
Small	75
Medium	67
Large	70

All of the hospitals found the identification feature of the card attractive, but were generally skeptical about keeping the data current.

- Verification of insurance, Exhibit IV-20.

	Percent Rated 4 to 5
Total	59
Small	62
Medium	57
Large	70

A high rating, particularly among the large hospitals, verification is an important feature of the card.

- Emergency medical data, Exhibit IV-21.

	Percent Rated 4 to 5
Total	49
Small	62
Medium	44
Large	61

A low rating, generally physicians felt that they would not rely on the coding because of the difficulty of keeping it current and the importance of it in an emergency. INPUT recommends that this feature be dropped from the card.

- Collecting insurance claims, Exhibit IV-22.

	Percent Rating 4 to 5
Total	63
Small	50
Medium	62
Large	76

Although the small hospitals of 50-100 beds rated this feature marginally, the larger hospitals find it to be one of the most important features of the card systems. Impressions gained from the on-site interviews also support this conclusion.

- Guarantee of payment of insurance claims, Exhibit IV-23.

	Percent Rating 4 to 5
Total	68
Small	50
Medium	67
Large	84

Although marginally rated by small hospitals guarantee of payment of insurance claims is an attractive feature of the card system and is of importance in selling hospitals on using the card system.

- Guarantee of payment of patient bills, Exhibit IV-24.

	Percent Rating 4 to 5
Total	69
Small	43
Medium	69
Large	69

Guarantee of payment of patient bills is an important feature, but is of less importance to the large hospitals than guarantee of payment of insurance claim.

b. User Perceptions And Comments

- After completing the ratings of the proposed medical credit card system, repsondents were asked to elaborate on their assessment of the card. Typical remarks are shown on Exhibit IV-25.

EXHIBIT IV-25

TYPICAL REMARKS BY RESPONDENTS CONCERNING
THE PROPOSED MEDICAL CARD SYSTEM
(HOSPITALS)

- "SOUNDS TERRIFIC BUT ALSO SOUNDS LIKE NATIONAL HEALTH INSURANCE."
- "SUCCESS DEPENDS ON HOW MUCH THE CARD IS PRESENTED IN THE AREA."
- "BIG THING IS TO SELL IT TO THE PUBLIC."
- "DEPENDS ON TESTED ACCEPTANCE - MEDICARE SOUNDED GOOD IN 1956."
- "THE GUARANTEE IS THE KICKER."
- "IF RECEIVABLES COULD BE REDUCED TO LESS THAN THIRTY DAYS, THEN IT WOULD BE EFFECTIVE."
- "IT WOULD BE WORTH 1% OF TOTAL OUTSTANDING RECEIVABLES - MAYBE MORE."
- "I WOULD PAY 3% OF RECEIVABLES."
- "IDENTIFICATION IS GOOD - BUT NOT IF SOME DO NOT HAVE THE CARD."

- Respondents were also asked what they did not like about the card. Typical remarks are shown in Exhibit IV-26.

c. Overall Assessment Of The Medicard Concept

- With the exception of small 50 to 100 bed hospitals, all hospitals reaction to the proposed medical credit card system is clearly very favorable, in many instances even enthusiastic.

- The proposal is regarded by most as being extremely ambitious, and properly so. This leads to widespread skepticism about the vendors' ability to successfully implement the system and keep it current with the myriad of required changes of information.

- There is concern over losing control over patient billing, the financial backbone of the hospital. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.

- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.

- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.

- Eliminating the problems involving third party payers and governmental regulation is also very attractive.

- To sum up, the proposed card system concept is highly regarded by a majority of potential users and the market for the services is real and unpenetrated.

EXHIBIT IV-26

TYPICAL REMARKS BY RESPONDENTS EXPRESSING
WHAT THEY DON'T LIKE ABOUT THE CARD
(HOSPITALS)

- "IF ONLY GOOD RISKS COULD GET THE CARD, THEN IT WOULD NOT BE WORTH THE 2-3% COST."
- "3% TAKE IS TOO HIGH."
- "WOULD NOT LIKE TO LOSE CONTROL OF BILLING - HOSPITAL WOULD HAVE NO RECORDS."
- "P.R. PROBLEMS - WOULD NOT LIKE FOR PATIENTS TO GO ELSEWHERE BECAUSE CARD COMPANY LEANED ON THEM."
- "ALREADY GUARANTEED 90+% OF BILLINGS."
- "PROBLEMS OF KEEPING THE COSTS UP TO DATE."
- "TOO CLOSE TO NATIONAL HEALTH INSURANCE."
- "THE PROBLEMS WOULD NOT GET A CARD SO GUARANTEES ARE MEANINGLESS."
- "IN COUNTY HOSPITALS THE CONCEPT WOULD NEVER GET BY THE BOARD OF SUPERVISORS."

3. MARKET POTENTIAL OF MEDICARD SYSTEM

- At 3% of total revenue as a charge for the system, the potential market for the medicard system is estimated to be $2.3 billion, Exhibit IV-27. This figure is for the card system alone and does not include any allowance for the computer services or for other financial services.

4. USE OF FINANCIAL SERVICES

- Eighty-eight percent of all hospitals are using financial services now. All of the large hospitals of over 500 beds interviewed are using financial services. Use of financial services is shown on Exhibit IV-28.

  - The largest percentage use was co-op buying (70%).

  - Percentage use of financial services in descending order are:

Services	Percent
Co-op buying	70
Equipment leasing	57
Construction loans	36
Investment	33
Cash management	27
Mortgage bonds	24
Mortgages	21

- Eighty-six percent of all hospital users of financial services interviewed rated the level of satisfaction 4 or 5.

EXHIBIT IV-27

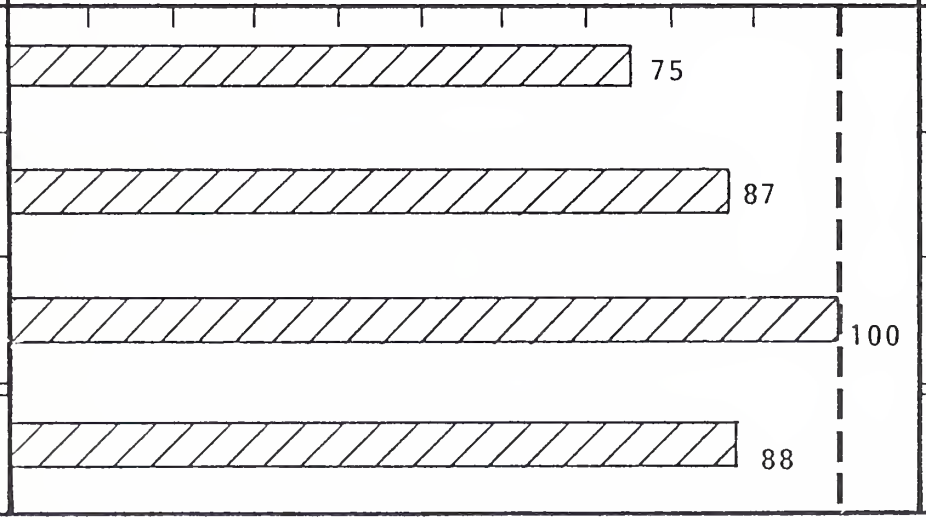
POTENTIAL MARKET FOR PROPOSED
MEDICAL CREDIT CARD SYSTEM
FOR HOSPITALS
(HOSPITALS)

SIZE BY NUMBER OF BEDS	AVERAGE ANNUAL REVENUE PER HOSPITAL ($ MILLION)	NUMBER OF HOSPITALS	TOTAL ANNUAL REVENUES ($ BILLION)	POTENTIAL MARKET - 3% OF REVENUE ($ MILLION)
SMALL 50-100	$ 5	1,467	$ 7	$ 210
MEDIUM 100-500	21	2,700	57	1,710
LARGE >500	40	306	12	360
TOTAL	-	4,473	$ 76	$ 2,280

ASSUMED CHARGE = 3% OF COLLECTIONS

EXHIBIT IV-28

USE OF FINANCIAL SERVICES
(HOSPITALS)



SIZE OF HOSPITAL BY NUMBER OF BEDS	USING FINANCIAL SERVICES NOW (PERCENT)	AVERAGE NUMBER OF FINANCIAL SERVICES PER USER	PERCENT OF THOSE NOW USING FINANCIAL SERVICES						
			CONSTRUCTION LOANS	EQUIPMENT LEASING	INVESTMENT	CASH MANAGEMENT	MORTGAGES	COOP BUYING	MORTGAGE BONDS
SMALL 50-100	75	1.0	17%	67%	0	17%	17%	83%	0
MEDIUM 100-500	87	2.2	35	57	33	24	24	70	26
LARGE >500	100	2.3	47	53	47	40	13	67	27
TOTAL	88	2.1	36%	57%	33%	27%	21%	70%	24%

NUMBER OF RESPONDENTS = 67 (88%)

- There is no significant use of factoring or borrowing against receivables.

- A significant number of those using financial services now expressed a desire to make a change to another service (over 25%). This was particularly so in:

	Percent
Co-op buying	33
Cash management	33
Investment	33

E. INDUSTRY ISSUES

- State and Federal government regulations, both present and proposed, are of great concern to the hospital industry and will have an effect on the industry's use of computers. A discussion of the issues is contained in a related INPUT report, Computer Services Markets in Hospitals (October 1978), Appendix D.

- The Federal government (HEW) is seeking to impose on hospitals a uniform reporting system, System For Hospital Uniform Reporting (SHUR).

  - When implemented, SHUR would force hospitals to make major revisions to their current financial applications programs.

  - A 600 page revised SHUR manual was published in the Federal Register in January, 1979. It immediately drew opposition from the American Hospital Association and the Hospital Financial Management Association. There were replys from 4,000 hospitals. Another revision is expected about October 1, 1979.

- The most basic point at issue covers a provision that redefines Medicare reimbursement rates.

- Implementation costs are estimated by HEW to be $66 million, and by AHA to be $100 million. In any event, if SHUR is imposed, it will force very large changes on hospitals and vendors.

- The Hospital Cost Containment Act of 1977 is still in committee. If passed it would limit even further the funds that acute care hospitals could spend for new capital improvements, including computer systems.

  - The bill is very controversial and is being actively opposed by the hospital industry on the grounds that it is inequitable.

  - Additional cost justification documents would impose additional work load on the EDP departments.

- Privacy of patient information is of concern to the industry.

  - Although there is no current federal or state legislation that will affect the handling of patient medical information, if it comes, there would be an impact on the computer systems.

EXHIBIT A-1

INTERVIEW SAMPLE -
MEDICAL AND DENTAL OFFICES
(GROUPS)

TYPE OF PRACTICE	NEW YORK	ILLINOIS	FLORIDA	TEXAS	CALI-FORNIA	OTHER	TOTAL
MD GROUP PRACTICES • SMALL (3-6 MDs)	5	5	5	5	5	5	30
• MEDIUM (7-19 MDs)	2	2	2	2	2	–	10
• LARGE (20 OR MORE MDs)	2	2	2	2	2	–	10
TOTAL GROUP PRACTICES	9	9	9	9	9	5	50
SOLO/CO-LOCATED MDS	8	8	8	8	8	10	50
DENTAL GROUPS	8	8	8	8	8	10	50
TOTAL ALL GROUPS	25	25	25	25	25	25	150

EXHIBIT A-2

INTERVIEW SAMPLE
HOSPITALS
(GROUP)

BED SIZE	NEW YORK	ILLINOIS	FLORIDA	TEXAS	CALI-FORNIA	OTHER	TOTAL
• SMALL 50-100	1	1	1	1	2	2	8
• MEDIUM 100-500	9	9	7	8	9	11	53
• LARGE >500	1	2	4	4	2	2	15
TOTAL TELEPHONE*	6	7	8	8	8	15	52
TOTAL ON-SITE*	5	5	4	5	5	–	24
TOTAL INTERVIEWS	11	12	12	12	13	15	76

NOTE:
*EACH PHONE INTERVIEW WITH TWO INDIVIDUALS
*EACH ON-SITE INTERVIEW WITH THREE INDIVIDUALS

APPENDIX B: MARKET FORECAST DATA

A. MARKET POTENTIAL AND CURRENT EXPENDITURES

1. NATIONAL STATISTICS

- National statistics for physicians and dentists are shown in Exhibit B-1.

2. MARKET POTENTIAL PHYSICIANS AND DENTISTS

- Assumptions:
  - Present market penetration is 10%.
  - Fifty percent of solo physicians and dentists are co-located.
  - Expenditures for computer equipment and services for physicians and dental group practices are 1.75% of total revenues.
  - Expenditures for computer equipment and services for solo co-located physicians and dentists are 1% of total revenues.
  - Average annual growth rate is 24%.
- Physicians in group practice:

EXHIBIT B-1

PHYSICIANS AND DENTISTS
NATIONAL STATISTICS

	SOLO		GROUPS		TOTALS		AVERAGE REVENUE PER PROFESSIONAL ($000)			AVERAGE NUMBER PER GROUP
	PROFES-SIONALS	ESTABLISH-MENTS	PROFES-SIONALS	ESTABLISH-MENTS	PROFES-SIONALS	ESTABLISH-MENTS	NET	SUPPORT	TOTAL	
PHYSICIANS	139,016	111,004	75,694 35%	10,167 8%	214,710	121,171	65,000	35,000	110,000	7
DENTISTS	97,923	73,900	13,255 12%	2,459 3%	111,178	76,359	57,000	34,000	91,000	5

AVERAGE: 1 MD OR 1 DDS EMPLOYS 2 SUPPORT PERSONNEL

PRIMARY SOURCE: COUNTY BUSINESS PATTERNS. U.S. BUREAU OF THE CENSUS.

- No. 75,694 x Annual Revenues $110,000 x % of Expenditures 1.75% = $150 million per year market potential.

- Estimated market potential = 10%.

- Current expenditures for EDP = $15 million per year.

- Co-located solo physicians:

  - No. 139,016 x Annual Revenues $110,000 x % of Expenditures 1% x 50% are co-located = $76 million per year market potential.

  - Estimated market penetration = 10%.

  - Current expenditures for EDP = $7 million per year.

  - Cross check:

    . $18,000 per year/group x 10,167 group = $180 million per year market potential. Compares to $150 million per year arrived at by the first method.

- Dental groups:

  - Dental group practices:

    . No. 13,255 x Annual Revenues $91,000 x % of Expenditures 1.75% = $21 million per year market potential.

  - Solo co-located dentists:

    . No. 97,923 x Annual Revenues $91,000 x % of Expenditures 1% x 50% are co-located = $45 million per year potential

- Total dental groups = $66 million per year market potential.
- Estimated market penetration = 10%.
- Current expenditures for EDP = $7 million per year.

3. MARKET POTENTIAL HOSPITALS

	No. Of Hospitals	Size	Avg. Annual Expense $ Million	Total Annual Expense $ Billion
	1,467	Small	$ 4.0	$ 5.9
	2,700	Medium	18.6	50.2
	306	Large	45.2	13.8
TOTAL	4,473	-	-	$69.9

- Potential EDP market at 1.5% of total expense:

	Size Hospital	Potential EDP Market $ Million	Present Expenditures For EDP At 30% Penetration $ Million
	Small	$ 88	$ 26
	Medium	753	225
	Large	207	62
TOTAL		$1,048	$313

- Cross Check:

	No. Of Hospitals	Size	Avg. EDP Expenditures	EDP Potential Market $ Million
	1,467	Small	$ 26,000	$ 38
	2,700	Medium	279,000	753
	306	Large	420,000	144
TOTAL	4,473	-	-	$935

SHORT TERM HOSPITALS
GENERAL MEDICAL AND SURGICAL

1. Do you employ:
   ( ) In House EDP
   ( ) Remote Computing Services
   ( ) Both

2. Installed equipment (If applicable).

EQUIPMENT	VENDOR	MODEL
Large Computer		
Small Business Computer		
Minicomputer(s)		

3. What is the source of your software?
   ( ) Written In House ( ) Outside Software Co. ( ) Industry Standard Programs ( ) By Consultants ( ) Equipment vendor
   Names of vendors: _____
   _____
   Level of satisfaction on a scale of 1-5 (5 is high). _____

4. Remote Computing Service (If applicable):
   Name(s) of Service Vendor:
   _____
   _____

5. Expenditures. How much do you spend annually on EDP?
   ( ) In House $ _____ per mo. ( ) per yr. ( )
   ( ) Outside Services $ _____ per mo. ( ) per yr. ( )
   Are These:
   ( ) Direct Costs Only
   ( ) Include Fringe Benefits and Overhead Allocations Also:

6. Staff. How large is your EDP staff? (If applicable).
   No. of personnel _____?

SECTION III. Applications (If not automated, ask future plans on III-2).

1. Degree of automation. Check (✓)

APPLICATION	CHECK (✓) FUNCTIONS NOW AUTOMATED	LOCATION OF SERVICE		LARGE COMPUTER		SMALL COMPUTER	
		IN HOUSE	OUTSIDE SERVICE	BATCH	ON LINE	STAND ALONE	DISTRIBUTED
MANAGEMENT, ACCOUNTING, AND FINANCIAL							
Patient Billing							
Accounts Receivable							
Insurance Claims							
Personnel, Payroll							
General Ledger							
Inventory							
Other							
PATIENT MANAGEMENT							
Patient Registration & Scheduling							
Patient records, Storage And Retreival							
Laboratory Reporting							
Radiology							
Other							

SECTION III. Applications (Cont'd)

1. Degree of automation. Check (√)

APPLICATION	CHECK (√) FUNCTIONS NOW AUTOMATED	LOCATION OF SERVICE		LARGE COMPUTER		SMALL COMPUTER	
		IN HOUSE	OUTSIDE SERVICE	BATCH	ON LINE	STAND ALONE	DISTRIBUTED
PROFESSIONAL SERVICES							
Professional Education							
Patient Education							
Research							
Other							

SECTION III: Applications (If not automated, ask future plans)

2. Degree of satisfaction and reasons for automating. (Check (✓) or use CODE on following page).

APPLICATION	(FROM III-1) CHECK (✓) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓)	REASONS FOR PLANNED EXPANSION (CODE)
MANAGEMENT, ACCOUNTING, AND FINANCIAL					
Patient Billing					
Accounts Receivable					
Insurance Claims					
Personnel, Payroll					
General Ledger					
Inventory					
Other					
PATIENT MANAGEMENT					
Patient Registration & Scheduling					
Patient records, Storage And Retreival					
Laboratory Reporting					
Radiology					
Other					

SECTION III: Applications (Cont'd)

2. Degree of satisfaction and reasons for automating (Check (✓) or use CODE on following page).

APPLICATION	CHECK (✓) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓)	REASONS FOR PLANNED EXPANSION (CODE)
PROFESSIONAL SERVICES					
Professional Education					
Patient Education					
Research					
Personal Financial Records					
Investment & Portfolio Analysis					
Other					

3. CODE: (NOTE: Do not read this list to person being interviewed, use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. Cost:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____
2. _____
3. _____
4. _____

4. To sum up, briefly, what are the basic problems and issues of concern to you?

_____

_____

_____

_____

_____

_____

PHYSICIANS AND DENTISTS

SECTION I: Group Description

1. How many people work in your group?

MDs _____	DDSs _____
Lab technicians _____	Lab technicians _____
Nurses _____	Dental assistants _____
Clerical/administrative _____	Hygenists _____
Total: _____	Clerical/administrative _____
	Total: _____

2. How many patients are seen per day? _____

3. Is your group:

( ) General Practice

( ) Multispecialty

( ) Specialized

If so, what specialty? _____

What number of hospitals are you affiliated with? _____

4. Is your facility:

( ) Owned

( ) Rented

( ) Leased

SECTION II: Use of Computer Equipment And Services

1. Does your group use computers now?

( ) Yes ( ) No

If No, why aren't you? _____

_____

If No, skip to Section III

2. Do you employ:

( ) In house EDP

( ) Remote Computing Services

( ) Both

3. Do you utilize any hospital data processing facilities?

( ) Yes ( ) No

4. Please rate your general level of satisfaction with your EDP operation on a scale of 1-5. (5 is high).

( ) In House _____ ( ) Outside Service _____
Comments: _____

_____

5. Installed equipment (If applicable).

EQUIPMENT	VENDOR	MODEL	WHEN INSTALLED
Large Computer			
Small Business Computer			
Minicomputer(s)			

6. What is the source of your software?

( ) Written In House ( ) Outside Software Co. ( ) Industry Standard Programs ( ) By Consultants ( ) Equipment Vendor

Name(s) of vendor(s):

_____

_____

_____

7. Remote Computing Service (if applicable):

Name(s) of Service Vendor:

_____

_____

8. Mode of Operation

TYPE	BATCH	INTERACTIVE (ON-LINE)
Installed Equipment		
Remote Computer Services		

9. Expendidures. How much do you spend annually on EDP?

( ) In House $ _____ per mo. ( ) per yr. ( )

( ) Outside Services $ _____ per mo. ( ) per yr. ( )

10. Staff. How large is your EDP staff? (If applicable)

No. of personnel _____

SECTION III: Applications (NOTE: Do not read this list to person being interviewed, use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. Cost:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions.

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____
2. _____
3. _____
4. _____

SECTION III: Applications (If not automated, ask future plans)

1. Degree of Automation (Check (√) or use CODE on previous page).

APPLICATION	CHECK (√) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (√)	REASONS FOR PLANNED EXPANSION (CODE)
MANAGEMENT, ACCOUNTING, AND FINANCIAL					
Patient Billing					
Accounts Receivable					
Insurance Claims					
Personnel, Payroll					
General Ledger					
Inventory					
Other					
PATIENT MANAGEMENT					
Patient Registration & Scheduling					
Patient records, Storage And Retreival					
Laboratory Reporting					
Radiology					
Other					

CATALOG NO. YCBM

SECTION III: Applications (Cont'd)

1. Degree of Automation (Check (√) or use CODE on page 3).

APPLICATION	CHECK (√) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (√)	REASONS FOR PLANNED EXPANSION (CODE)
PROFESSIONAL SERVICES					
Professional Education					
Patient Education					
Research					
Personal Financial Records					
Investment & Portfolio Analysis					
Other					

SECTION IV: Patient Billing-Claims Processing-Accounts Receivable-Collections.

1. Method of Billing.

When do you collect payment?

	Percent of Total Collections
( ) Bill Mailed	_____ %
( ) Bill Given At Time Of Visit	_____ %
( ) Payment Immediately After Service	_____ %
( ) Prepaid	_____ %

2. Which third party payors do you bill direct?

( ) Blue Cross/Blue Shield ( ) Medicare

( ) Commercial Insurance Cos. ( ) Medicaid

( ) Other _____

( ) None

3. Are you generally satisfied with your present collections process?

From Point of View of:	Range 1-5:	Remarks:
Overall	_____	_____
Effectiveness	_____	_____
Timeliness	_____	_____
Bad Debt Prevention	_____	_____
Expense	_____	_____
Staff Time	_____	_____

4. Billing. How is your billing prepared and what percent of total billing is represented by each payer? (Ask question for each payer)

PAYER	DIRECT BY COMPUTER	MANUALLY	PERCENT OF TOTAL BILLING
Medicare			
Medicaid			
Blue Cross			
Commercial Insurance Co.			
Patient			

5. Accounts receivable. What is the average age of your outstanding receivables?

_____ days

6. What are the total amounts of your outstanding receivables, by length of time?

	(Thousands) Paid By 3rd Party	Paid By Patient
In House unbilled	_____	_____
Under 30 days	_____	_____
30 - 60 days	_____	_____
60 - 90 days	_____	_____
Over 90 days	_____	_____
Total outstanding	_____	_____

7. Collections. When routine methods of bill collection have been exhausted do you:

First try to collect them yourselves ( ) Yes ( ) No

Turn them over to a collection agency ( ) Yes ( ) No

Do both ( ) Yes ( ) No

8. Bad Debt. After what length of time do you consider an unpaid bill a bad debt?

_____ days

What percentage of total receivables are bad debt? _____ %

What percentage of bad debts are third party payers? _____%

SECTION V: Financial Services

1. Do you accept credit cards?

( ) Yes ( ) No

2. If yes, which ones?

_____

_____

What percent of bills are paid by credit card? _____ %

What percent of bills are paid by cash? _____%

3. I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

- Include identification and current health insurance coverage as part of the card.
- Includes emergency medical data, i.e., blood type, alergies.
- Extends a personal credit line in addition to insurance.
- Produce all insurance claims on file and collect them for you.
- Produce and collect patient bills, guaranteeing the patient bill to you.

On a scale of 1-5 (5 being high) would you be interested in accepting such a credit card?

Scale _____

With respect to the attractiveness of the individual features, rate them on a scale from 1-5 (5 being high):

- Identification:

  Scale _____

- Verify health insurance coverage:

  Scale _____

- Provide emergency medical data:

  Scale _____

- Produce, file and collect insurance claims:

  Scale _____

- Provide guarantee of payment of insurance claims:

  Scale _____

- Produce, collect and guarantee patient bills:

  Scale _____

REMARKS: (Please elaborate)

What don't you like about the card?

4. With respect to factoring or borrowing against your receivables, are you:

( ) Presently involved?

If so, with what institution(s)?

What are the charges or interest rates involved?

Is this tied in with your bill processing function?

( ) Yes ( ) No

( ) If you are not presently involved, are you interested in becoming involved?

( ) Yes ( ) No

5. Please express your interest in using the following financial services.

SERVICE	PRESENTLY INVOLVED			LEVEL OF SATISFACTION SCALE (1-5)	INTERESTED IN BECOMING INVOLVED (Yes/No)	CONSIDERING A CHANGE (Yes/No)	IF YES, WHY CHANGE?
	NO	YES	IF SO, WITH WHAT INSTITUTION				
Construction Loans							
Equipment Leasing							
Investment Counseling and Management							
Cash Management							
Mortgages							
Coop Buying							
Other: _____ _____ _____ _____							

CATALOG NO. Y|C|B|M|□|□|□

6. To sum up, briefly, what are the basic problems and issues of concern to you?

SHORT TERM HOSPITALS
GENERAL MEDICAL AND SURGICAL

SECTION I: Hospital Description: (Data largely available from AHA Guide).

1. Classification:

( ) Independant - Non Profit (voluntary)
( ) Church Operated
( ) University Affiliated
( ) Part Of A Group Or Chain
( ) Governmental
( ) Other _____

( ) Run under management contract.
( ) Investor Owned
( ) Hospital District or Authority
( ) Proprietary

2. Admissions _____
3. Census _____
4. Percent Of Occupancy _____
5. Average Length Of Stay _____
6. Emergency Room Visits _____
7. Outpatient Visits _____
8. Total Operating Income _____
9. Total Annual Expense _____
10. Payroll _____
11. Personnel _____
12. Number of Locations _____

13. Do you have any major expansion plans in the next two years?

( ) Yes ( ) No

Comments _____

_____

_____

14. Do you have a formal planning process?

( ) Yes ( ) No

In Data Processing?

( ) Yes ( ) No

SECTION II: Use of Computer Equipment And Services

1. Does your hospital use computers now?

( ) Yes ( ) No

If No, why not? _____

_____

If No, skip to Section III

2. Do you employ:

( ) In House EDP
( ) Remote Computing Services
( ) Both

3. Please rate your general level of satisfaction with your EDP operation on a scale of 1-5 (5 is high).

( ) In House _____ ( ) Outside Service _____

(NOTE: If an interview with the director of data processing is included for this hospital, skip questions 4 - 9 and procede to SECTION III.)

4. Installed equipment (if applicable).

EQUIPMENT	VENDOR	MODEL
Large Computer		
Small Business Computer		
Minicomputer(s)		

5. What is the source of your software?

( ) Written In House ( ) Outside Software Co. ( ) Industry Standard Programs ( ) By Consultants ( ) Equipment Vendor

Names of vendors: _____

_____

6. Remote Computing Service (if applicable):

Name(s) of Service Vendor:

_____

_____

_____

7. Mode of Operation

TYPE	BATCH	INTERACTIVE (ON-LINE)
Installed Equipment		
Remote Computer Services		

8. Expenditures. How much do you spend annually on EDP?

( ) In House $ _____ per mo. ( ) per yr. ( )

( ) Outside Services $ _____ per mo. ( ) per yr. ( )

9. Staff. How large is your EDP staff? (If applicable)

No. of personnel _____

SECTION III: Applications.

(NOTE: Do not read this list to person being interviewed, use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. COST:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions.

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

SECTION III: Applications (If not automated, ask future plans)

1. Degree of Automation (Check (√) or use CODE on previous page).

APPLICATION	CHECK (√) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (√)	REASONS FOR PLANNED EXPANSION (CODE)
MANAGEMENT, ACCOUNTING, AND FINANCIAL					
Patient Billing					
Accounts Receivable					
Insurance Claims					
Personnel, Payroll					
General Ledger					
Inventory					
Other					
PATIENT MANAGEMENT					
Admission, Transfer & Discharge					
Medical Records Storage And Retreival					
Laboratory Reporting					
Pharmacy					
Radiology					

SECTION III: Applications (cont'd)

1. Degree of Automation (Check (✓) or use CODE on Page 3).

APPLICATION	CHECK (✓) FUNCTIONS NOW AUTOMATED	LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5)	REASONS FOR AUTOMATING (CODE)	PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓)	REASONS FOR PLANNED EXPANSION (CODE)
PATIENT MANAGEMENT (CONT'D)					
Order Entry					
Other					
PROFESSIONAL SERVICES					
Professional Education					
Patient Education					
Research					
Personal Financial Record Keeping					
Investment Portfolio Analysis					
Other					

3. If you are dissatisfied with any of your presently automated functions, what are the reasons for dissatisfaction?

( ) Cost

( ) Time

( ) Performance Quality

( ) Control & Information

( ) Other _____

_____

_____

SECTION IV: Patient Billing-Claims Processing-Accounts Receivable-Collections

1. Patient Insurance Coverage Verifications. How does your hospital verify insurance coverage for a patient to be admitted? (Check one for each line).

I=In Patient O=Out Patient ER=Emergency Room

THIRD PARTY PAYER	CARD ACCEPTED AS EVIDENCE			DIRECT BY COMPUTER			MANUALLY			OTHER		
	I	O	ER	I	O	ER	I	O	ER	I	O	ER
Medicare												
Medicaid												
Blue Cross												
Commercial Insurance Co.												
Other												

2. When do you verify?

In Patient _____

Out Patient _____

Emergency Room _____

3. Are you generally satisfied with your present verification process? (Scale 1-5)

From Point Of View Of:	Scale	Remarks:
Effectiveness	_____	_____
Timeliness	_____	_____
Expense	_____	_____
Staff Time	_____	_____
Patient Satisfaction	_____	_____
Bad Debt Prevention	_____	_____

4. Billing. How is your third party billing prepared and what percentage of total billing is represented by each payer? (ask question for each payer). I=In Patient O=Out Patient ER=Emergency Room

PAYER	DIRECT BY COMPUTER			MANUALLY			PERCENT OF TOTAL BILLING		
	I	O	ER	I	O	ER	I	O	ER
Medicare									
Medicaid									
Blue Cross									
Commercial Insurance Co.									
Patient Funds									

5. Accounts receivable. What is the average age of your outstanding receivables? _____ days.

6. What are the total amounts of your outstanding receivables, by length of time?

(In Thousands)

	Paid By Third Party	Paid By Patient
In House unbilled	_____	_____
Under 30 days	_____	_____
30 - 60 days	_____	_____
60 - 90 days	_____	_____
Over 90 days	_____	_____
Total	_____	_____

7. Collections. When routine methods of bill collection have been exhausted do you:

First try to collect them yourselves ( ) Yes ( ) No

Turn them over to a collection agency ( ) Yes ( ) No

Do both ( ) Yes ( ) No

8. After how long a period of time do you consider an unpaid bill a bad debt? _____ days.

9. What percentage of receivables are bad debt? _____%

What percentage of bad debts are third party payers? _____%

SECTION V: Financial Services

1. Do you accept credit cards?

In patient services ( ) Yes ( ) No

Outpatient services ( ) Yes ( ) No

Emergency services ( ) Yes ( ) No

2. If yes, which ones?

In patient: _____

Outpatient: _____

Emergency Room: _____

3. What percentage of total bills are paid by credit cards?

_____%

What percentage of total bills are paid by cash? _____%

4. I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

- Include identification and current health insurance coverage as part of the card.
- Emergency medical data, i.e., bloodtype, allergies.
- Provide a personal credit line in addition to insurance.
- Produce all insurance claims and file and collect them for you.
- Provide guarantee of payment of claims.
- Produce and collect patient bills, guaranteeing the patient bill to you.

On a scale of 1-5 (5 being high) would you be interested in accepting such a credit card?

Scale_____

With respect to the attractiveness of the individual features, rate them on a scale from 1-5 (5 being high):

- Identification:

  Scale_____

- Verify health insurance coverage:

  Scale_____

- Provide emergency medical data:

  Scale_____

- Produce, file and collect insurance claims:

  Scale_____

- Provide guarantee of payment of claims:

  Scale_____

- Produce, collect and guarantee patient bills:

  Scale_____

REMARKS: (Please elaborate)

_____

_____

_____

_____

What don't you like about the card?

_____

_____

_____

_____

5. Advances

Do you receive advances on uncollectable receivables from third party payers?

( ) Yes ( ) No

What percentage of receivables are covered by advances?

_____%

6. Factoring/Borrowing

With respect to factoring or borrowing against your receivables, are you:

( ) Presently involved?

If so, with what institution(s)?

_____

_____

_____

( ) Interested in becoming involved.

( ) Not interested.

If involved, what rate of interest or charges do you pay?

Interest_____% Charges _____

7. Please express your interest in using the following financial services.

SERVICE	PRESENTLY INVOLVED			LEVEL OF SATISFACTION SCALE (1-5)	INTERESTED IN BECOMING INVOLVED (Yes/No)	CONSIDERING A CHANGE (Yes/No)	IF YES, WHY CHANGE?
	NO	YES	IF SO, WITH WHAT INSTITUTION				
Construction Loans							
Equipment Leasing							
Investment Counseling and Management							
Cash Management							
Mortgages							
Coop Buying							
Mortgage Placement Bonds							
Other: _____ _____ _____							

CATALOG NO. Y CBM

INPU

8. To sum up, briefly, what are the basic problems and issues of concern to you?

APPENDIX D: RELATED INPUT REPORTS

- Medical Office And Clinics, May 1979.
- Computer Services Markets In Hospitals, October 1978.

APPENDIX E: DEFINITIONS

- AAGR

  The average annual growth rate. The AAGR is a compounded growth rate over a time period in years, expressed as an average in terms of percent (%).

- COMPUTER SERVICES

  These are services provided by vendors which perform data processing functions using vendor computers, or assist users to perform such functions on their own computers.

- REMOTE COMPUTING SERVICES (RCS)

  Provision of data processing to a user by means of terminals at the user's site(s) connected by a data communications network to the vendor's central computer. The three sub-modes of RCS are:

  1. INTERACTIVE (timesharing) is characterized by interaction of the user with the system, primarily for problem solving timesharing, but also for data entry and transaction processing; the user is "on-line" to the program/files.

2. REMOTE BATCH is where the user hands over control of a job to the vendor's computer which schedules job execution according to priorities and resource requirements.

3. DATA BASE is characterized by the retrieval of information from a vendor-maintained data base. This may be owned by the vendor or a third party.

- BATCH SERVICES

This includes data processing performed at vendors' sites of user programs and data which are physically transported (as opposed to electronically by telecommunications media) to and from those sites. Data entry and data output services, such as keypunching and COM processing, are also included. Batch services include those expenditures by users which take their data to a vendor site which has a terminal connected to a remote computer used for the actual processing.

- FACILITIES MANAGEMENT (FM)

(Also referred to as "Resource Management" or "Systems Management.") The management of all or part of a user's data processing functions under a long-term contract (not less than one year). To qualify as FM, the contractor must directly plan and control as well as operate the facility provided to the user on-site, through communications lines, or mixed mode. Simply providing resources, even though under a long-term contract and/or for all of a users' processing needs, does not necessarily qualify as FM.

- PROFESSIONAL SERVICES

Management consulting related to EDP, systems consulting, systems design and programming, and other professional services are included in this category. Services can be provided on a basis of: "Time and Materials," whereby the user pays for the time used of an individual on a daily or other

fixed rate, or "Fixed Price," where the user pays a fixed fee for a specific task or series of tasks.

- SOFTWARE PRODUCTS

This category is for users' purchases of systems and applications packages for use on in-house computer systems. The figures quoted include lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organizations other than the package vendor are counted in professional services.