

AMI COHORT—LEVEL OF SERVICE AND DISTANCE

Level of Service and Distance for VA Patients with AMI

Methods

Characteristics of Facilities Treating Patients with AMI in the VHA and Private Sector

We characterized hospitals treating patients with AMI in the VA and in the private sector using administrative data from the VA, the Medicare program, and the Healthcare Cost and Utilization Project (see below). We also used data from annual surveys by the American Hospital Association, the 1998 Blue Book [Billian, 1998], and an internal VA survey performed in 2001. For each analysis we included only hospitals with at least 5 admissions for patients with a primary diagnosis of AMI (ICD-9-CM codes 410, excluding 410.x2). We present data for VA patients treated in FY 1994, 1999 and FY2000 and for private sector patients treated in FY 1999.

VA facilities. We used VA administrative data (PTF) to identify all VA facilities treating AMI patients in FY1994, 1999 and 2000. We summarized several characteristics of each of these facilities. These included the following:

- Teaching status. Membership in the Council of Teaching Hospitals, obtained from the 1994, 1999 and 2000 American Hospital Association (AHA) Annual Surveys.
- Availability of intensive care services [ICU and cardiac ICU (CCU)]. Availability of a general ICU and a cardiac ICU and the number of beds per unit in FY 1994 and 1999 was obtained from the 1994 and 1999 AHA survey. Availability of a general ICU and a cardiac ICU in FY 1999 was supplemented with data from the 1998 Blue Book for hospitals that we were either unable to link to the AHA database or for facilities with data missing from the AHA survey. Availability of a general ICU and a cardiac ICU and

Program Evaluation of Cardiac Care Programs in the VHA

number of beds in FY 2000 was obtained from a survey performed by the VA in 2001¹. Using this survey data, we considered a hospital to have a cardiac ICU if it responded that it had either a full CCU or a mixed medical ICU and CCU. Hospitals were considered to have a general ICU if they had a medical ICU, a surgical ICU, a mixed surgical and medical ICU or a mixed ICU. A mixed ICU is an identified multi-purpose unit for the care of patients requiring a combination of specialized intensive care services. (Combinations such as: Medical/Surgical/Cardiac, Surgical/Burn, etc.).

- Volume of AMI patients. This was calculated for each year as the number of admissions for patients with a primary discharge diagnosis of AMI (ICD-9-CM codes 410, excluding 410.x2).
- Availability of interventional facilities (catheterization, PCI and CABG). We used VA administrative data (PTF and OPC) to determine whether a hospital had catheterization or revascularization capabilities (see Table G1 for ICD-9-CM and CPT-4 procedure codes). We considered a hospital as having a catheterization facility if there were 5 or more claims for catheterization; facilities were coded as having PCI or CABG capabilities if there were 10 or more claims [McClellan, 1994].
- Volume of procedures. We used VA administrative data (PTF and OPC) to compute volume of catheterization, PCI, and CABG procedures (see Table G1 for CPT codes) performed in FY 1994, 1999 and 2000. Volume computations include procedures performed for all diagnoses and for patients of all ages.

¹ Ideally we would have used an internal VA survey conducted in 2000 for the 2000 cohort. However, no such survey was available, and we used data closest to this time.

Program Evaluation of Cardiac Care Programs in the VHA

Table G1: Procedure Codes		
Procedure Category	Identifying Codes	
	ICD-9	CPT-4
Coronary Artery Bypass Graft (CABG)	36.10	33510
	36.11	33511
	36.12	33512
	36.13	33513
	36.14	33514
	36.15	33516
	36.16	33517
	36.19	33518
		33519
		33521
		33522
		33523
		33533
		33534
	33535	
	33536	
Percutaneous Coronary Interventions (PCI)	36.01	92980
	36.02	92981
	36.05	92982
	36.06	92984
Catheterization	37.22	93508
	37.23	93510
	88.53	93511
	88.54	93524
	88.55	93526
	88.56	93539
	88.57	93540
	93545	

Private sector facilities treating elderly AMI patients. We used Medicare administrative data (hospital inpatient, hospital outpatient, and Part B files) to identify hospitals treating elderly patients with an AMI in FY 1999; these are the most recent data available for Medicare for this purpose. We characterized hospitals as we did for the VA:

- Teaching status (member of the Council of Teaching Hospitals). This was obtained by linking facilities to the 1999 American Hospital Association (AHA) Survey.

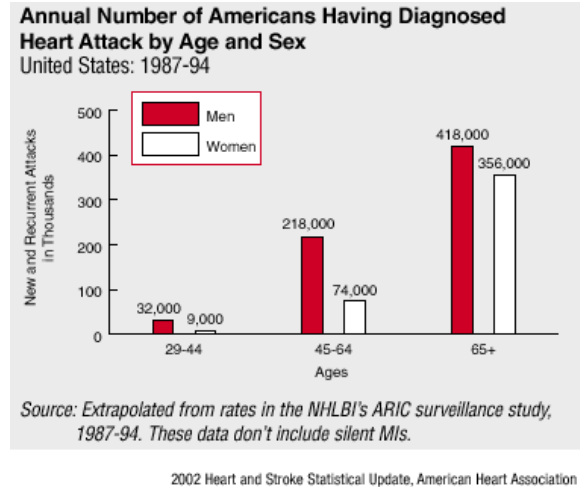
Program Evaluation of Cardiac Care Programs in the VHA

- Availability of intensive care services [ICU and cardiac ICU (CCU)]. Availability of a general ICU and a cardiac ICU and number of beds per unit were obtained by linking facilities to the 1999 AHA Annual Survey. Availability of a general ICU and a cardiac ICU was supplemented with data from the 1998 Blue Book for hospitals that had missing data in the AHA survey.
- Volume of AMI patients. This was calculated in each year as the number of admissions for patients with a primary discharge diagnosis of AMI (ICD-9-CM codes 410, excluding 410.x2).
- Availability of interventional facilities (catheterization, PCI and CABG). We used hospital inpatient, hospital outpatient or Part B claims to determine whether a hospital had catheterization or revascularization capabilities (see Tables G1 for CPT codes). We considered a hospital to have catheterization facilities if there were 5 or more claims for catheterization; facilities were coded as having PCI or CABG capabilities if there were 10 or more claims.

Private sector facilities treating AMI patients of any age. We studied private sector community hospitals that treated patients in 1999 to obtain information on the volume of AMI patients seen and the volume of procedures performed. Because nationally only 70% of patients with AMI are 65 years of age or older (Figure G1) a more representative view of diagnosis and volume data was necessary than would be obtained from Medicare data alone. [Association, 2001]

Program Evaluation of Cardiac Care Programs in the VHA

Figure G1



For this purpose we used the 1999 National Inpatient Sample (NIS), a national database of inpatient hospital stays that was developed by the Agency for Healthcare Quality and Research for the Healthcare Cost and Utilization Project (HCUP). The database contains information on a nationally representative, stratified sample of approximately 1000 hospitals in 24 states.

We compare the HCUP data with data from the VA sector in terms of total hospital volume, first quartile, median and third quartile. For subsequent analyses we considered a facility to be a high volume hospital if it was in the top 25% of the distribution of volume as estimated from the HCUP data (i.e., more than 214 admissions for patients with AMI per year). Because the HCUP database does not report outpatient data, our estimates represent use of inpatient procedures only and therefore may be an underestimate of some procedures (e.g., catheterization).

Program Evaluation of Cardiac Care Programs in the VHA

Level of Services Available to Patients within the VHA and the Private Sector

To compare the level of services available within VHA and the private sector, we estimated the number of hospitals with catheterization capability, number of hospitals with CABG capability, and number of ICU/CCU beds per expected admission for AMI in the VA and in the private sector in FY 1999.

We used VA administrative data in combination with demographic data on VHA enrollees in FY 1999 to estimate the rate of hospitalization for AMI in the veteran enrollee population in several age and gender subgroups. We then used the age and gender distribution of VHA enrollees in each VISN to compute the expected number of admissions for an AMI. This estimate served as the denominator in computations of the number of services (ICU/CCU beds, number of facilities with angiography or CABG capability per expected AMI patient). Similarly, we used the HCUP data in combination with U.S. Census data to compute the rate of hospitalization for AMI in the private sector. We then estimated the expected number of AMI admissions to facilities located in the geographic area defined by each VISN using census estimates of the age and gender distributions of the population in the counties that comprise the VISN. The use of VA and HCUP data to estimate the rates of AMI in the veteran and private sector respectively controls for differential rates of hospitalization for AMI between the veteran and general population and for differences in the age and gender distribution of the two populations. In addition, use of the age and gender distribution of each population within the VISNs controls for geographic variation in age and gender.

The numerators in the computations of the level of services (number of ICU/CCU beds, number of facilities with angiography or CABG capability per expected AMI patient) were computed as described above. Because we wished to compare these characteristics across

Program Evaluation of Cardiac Care Programs in the VHA

VISNs in all 50 states (rather than just the 24 states represented in the HCUP data set), we used Medicare data linked to the AHA survey to compute the numerators for the private benchmarks (HCUP data were used to compute the denominators so that we could estimate the expected number of patients with AMI of all ages). We report the average level of services per expected 100 AMI patients in the two systems as well as VISN-specific estimates.

Distance Between Patients' Residences and Facilities in the VA and Private Sector for Patients Treated for an AMI

We computed the distance traveled between a patient's residence and the facility or facilities in which he received care. We computed these distances for Veterans treated for an AMI in a VA facility in FY 1994, 1999 and 2000 and for Medicare patients treated in a private facility for an AMI in FY 1999. We estimated distance by calculating the arc distance along the earth's surface from the median latitude and longitude of the zip code of the patient's residence to the hospital's latitude and longitude obtained from the AHA data. This is similar to the approach used by McClellan et al. [McClellan, 1994]. If the exact latitude and longitude of the hospital was unknown, it was estimated using the median latitude and longitude of the hospital's zip code. We estimated the distance between a patient's residence and his admitting hospital, the distance between a patient's residence and the transfer facility among all patients transferred to another hospital to receive a cardiac catheterization during their index episode of admission, the distance between a patient's residence and the transfer facility among all patients transferred to another hospital to receive PCI, and the distance between a patient's residence and the transfer facility among all patients transferred to another hospital to receive CABG.

From the original AMI cohort we further excluded the following individuals for this analysis: (1) VA and Medicare patients transferred from a facility without a 410 diagnosis (2) VA patients admitted to a non-VA facility that we could not identify and (3) Medicare patients

Program Evaluation of Cardiac Care Programs in the VHA

admitted to a facility more than 200 miles from their residence, and (4) VA patients admitted to a facility more than 200 miles from their residence and outside their home service network (we assumed that these patients were traveling at the time of their AMI).

We also estimated distances to the nearest hospital that treated patients with AMI (facilities with claims for at least 5 admissions for patients with an AMI). We estimated the mean distance to the closest hospital of any type and the closest hospitals with cardiac catheterization, PCI, or CABG capability. For VA patients with AMI we estimated distances both to VA facilities and private sector hospitals.

Results

Characteristics of Facilities Treating Patients with AMI in the VA and Private Sector

The VHA system hospitals that admitted five or more patients with an AMI each year were more likely to be teaching hospitals than were hospitals in the private sector (Table G2). Most hospitals in both the VA and private sector caring for Medicare patients had general ICUs. Fewer hospitals (about 50%) in either sector had cardiac ICUs

Program Evaluation of Cardiac Care Programs in the VHA

Table G2

Characteristics of hospitals admitting at least 5 patients of any age with an AMI in the VA system (1994, 1999, 2000) and at least 5 Medicare patients with an AMI in the private sector (1999)

	VA			Private Sector
	FY 1994	FY 1999	FY 2000	FY 1999
Number of Facilities	157	141	137	3626
Teaching^a (%)	55.9%, N ^d =145	55.1%, N=127	52.8%, N=123	7.1%, N=3616
General ICU	95.4%, N=88 ^a	88.6%, N=114 ^b	92.1%, N=137 ^c	85.3%, N=3154 ^b
Cardiac ICU	51.1%, N=88 ^a	47.5%, N=120 ^b	38.1%, N=137 ^c	48.9%, N=3470 ^b

^a AHA data

^b AHA data supplemented with 1998 Blue Book

^c For the VA system the percent of institutions with ICU and CCU beds in 2000 was calculated using the VA survey whereas data for the previous years were calculated using information from the AHA; this latter source had many missing data elements.

^d The N in each cell refers to the number of hospitals with non-missing data

Hospitals in the private sector tended to admit more patients with an AMI (Table G3).

However, there was less variability in the number of patients with an AMI treated in VA facilities compared to the distribution of patients in the private sector (i.e., difference between first and third quartiles was around 60 in the VA and 180 in the private sector).

Program Evaluation of Cardiac Care Programs in the VHA

Table G3

Diagnosis and procedure volume among hospitals admitting at least 5 patients of any age with an AMI in the VA system (1994, 1999, 2000) and at least 5 patients with an AMI in the private sector (2000)

	VA			Private Sector
	FY 1994	FY 1999	FY 2000	1999
Number of Facilities	157	141	137	871
Volume of AMI Admissions^a:				
1st Quartile	28	35	37	33
Median	51	59	62	89
3rd Quartile	88	94	92	214
% of Hospitals that Performed Catheterization for any Diagnosis^{a,b}:	49.7%	55.3%	56.9%	47.0%
Volume (of those w/any capacity):				
1st Quartile	235	235	230	171
Median	327	338	307	387
3rd Quartile	465	498	523	956
% of Hospitals that Performed PCI for any Diagnosis^{a,c}:	32.5%	40.4%	42.3%	24.5%
Volume (of those w/any capacity):				
1st Quartile	56	64	90	195
Median	83	109	128	439
3rd Quartile	133	176	171	750
% of Hospitals that Performed CABG for any Diagnosis^{a,c}:	28.0%	29.8%	32.1%	21.1%
Volume (of those w/any capacity):				
1st quartile	119	117	102	171
Median	156	136	125	300
3rd Quartile	185	178	170	536

^a PTF/OPC claims for VA facilities; HCUP Data for Private Sector

^b ≥ 5 procedures

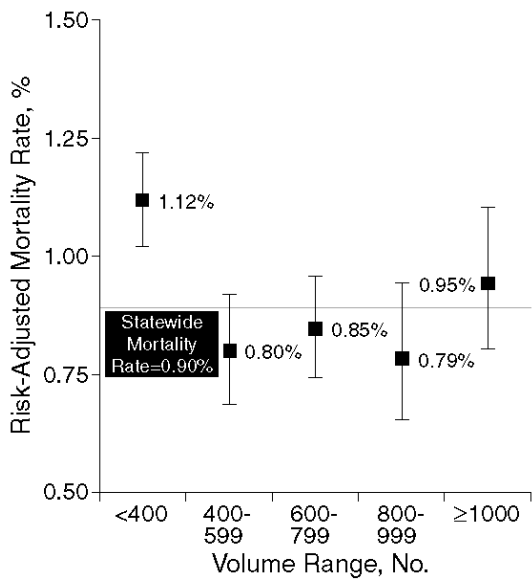
^c ≥ 10 procedures

In FY 1999 and 2000 VA facilities were more likely to have catheterization, PCI and CABG capability, but facilities tended to perform fewer PCI and CABG procedures (for any diagnosis) compared to non-VA hospitals. The median number of catheterization procedures

Program Evaluation of Cardiac Care Programs in the VHA

done within the VA system was essentially constant from FY 1994 to 2000 while the median number of PCI procedures per facility increased by about 50% to 128, and the median number of CABG procedures decreased by about 15% to 125. An earlier study using pilot data from the Cooperative Cardiovascular Study in four states in 1992 and 1993 showed an increased incidence of in-hospital bypass surgery or death (in-hospital or 30 day) for hospitals performing fewer than 100 PCIs per year compared to those performing more. [Jollis, 1997] In about this same time period in New York State, hospitals performing fewer than 400 angioplasties per year had a significantly higher mortality rate than did hospitals performing a higher number [Hannan, 1997] (Figure G2).

Figure G2



Program Evaluation of Cardiac Care Programs in the VHA

Level of Services

Within the VA system there are more hospitals with cardiac catheterization capabilities and more hospitals with CABG capabilities per expected number of patients with AMI than in the private sector (0.8 per 100 expected patients with AMI compared to 0.3 per 100 expected patients with AMI for hospitals with catheterization facilities and 0.4 per 100 expected patients with AMI compared to 0.1 per 100 expected patients with AMI for hospitals with CABG capabilities) (Tables G4 and G5). The number of facilities with cardiac catheterization capabilities per 100 expected AMI patients also varied substantially across the service networks. VISN 4 had only 0.3 hospitals with catheterization capabilities per 100 expected patients with AMI compared to VISN 9 with 1.5 per 100 expected patients. As with cardiac catheterization capabilities, VISN 4 was the lowest with regard to CABG capability as well (0.1 facility/100 expected AMI patients).

Within the VA system there are considerably more ICU/CCU beds per expected number of patients with AMI than in the private sector (18 per 100 expected patients with AMI compared to 7 per 100 expected patients with AMI) (Table G6). The number ICU/CCU beds per 100 expected AMI patients also varied substantially across the service networks. VISN 2 had only 12 beds per 100 expected patients with AMI compared to VISN 19 with 28 beds per 100 expected patients with AMI.

Program Evaluation of Cardiac Care Programs in the VHA

Table G4

Number of Hospitals with Cardiac Catheterization Capabilities per 100 Expected Patients with AMI in the VA and in the Private Sector (1999)

VISN	VA			Private Sector		
	# of Hospitals with Cath Capabilities	Number of Expected AMI Patients	Facilities/100 Expected AMI Patients	# of Hospitals with Cath Capabilities	Number of Expected AMI Patients	Facilities/100 Expected AMI Patients
1	5	503	1.0	88	38108	0.2
2	3	332	0.9	42	17283	0.2
3	5	647	0.8	100	52143	0.2
4	2	674	0.3	141	46646	0.3
5	2	244	0.8	56	19067	0.3
6	4	495	0.8	107	32503	0.3
7	5	553	0.9	123	35207	0.3
8	6	907	0.7	123	51882	0.2
9	7	454	1.5	106	30476	0.3
10	3	384	0.8	91	28534	0.3
11	3	406	0.7	130	42845	0.3
12	5	502	1.0	120	38193	0.3
13	1	269	0.4	36	19260	0.2
14	3	221	1.4	37	14851	0.2
15	3	402	0.7	91	28552	0.3
16	6	851	0.7	192	50132	0.4
17	3	429	0.7	87	26936	0.3
18	3	459	0.7	67	22388	0.3
19	3	287	1.0	54	17683	0.3
20	2	400	0.5	59	27835	0.2
21	2	461	0.4	87	35982	0.2
22	4	556	0.7	116	68769	0.2
Average	3.6	474	0.8	93.3	33876	0.3

Program Evaluation of Cardiac Care Programs in the VHA

**Table G5
Number of Hospitals with CABG Capabilities per 100 Expected Patients with AMI in the
VA and in the Private Sector (1999)**

VISN	VA			Private Sector		
	# of Hospitals with CABG Capabilities	Number of Expected AMI Patients	Facilities/100 Expected AMI Patients	# of Hospitals with CABG Capabilities	Number of Expected AMI Patients	Facilities/100 Expected AMI Patients
1	3	503	0.6	30	38108	0.1
2	1	332	0.3	13	17283	0.1
3	1	647	0.2	31	52143	0.1
4	1	674	0.1	62	46646	0.1
5	1	244	0.4	17	19067	0.1
6	3	495	0.6	36	32503	0.1
7	4	553	0.7	43	35207	0.1
8	3	907	0.3	53	51882	0.1
9	2	454	0.4	43	30476	0.1
10	1	384	0.3	43	28534	0.2
11	2	406	0.5	54	42845	0.1
12	3	502	0.6	72	38193	0.2
13	1	269	0.4	28	19260	0.1
14	0	221	0.0	21	14851	0.1
15	1	402	0.2	57	28552	0.2
16	3	851	0.4	106	50132	0.2
17	3	429	0.7	62	26936	0.2
18	2	459	0.4	41	22388	0.2
19	2	287	0.7	32	17683	0.2
20	2	400	0.5	30	27835	0.1
21	3	461	0.7	51	35982	0.1
22	2	556	0.4	80	68769	0.1
Average	2.0	474	0.4	45.7	33876	0.1

Program Evaluation of Cardiac Care Programs in the VHA

**Table G6
Number of ICU/CCU Beds per 100 Expected Patients with AMI in the VA and in the
Private Sector (1999)**

VISN	VA			Private Sector		
	# of ICU/CCU Beds	Number of Expected AMI Patients	ICU/CCU Beds/100 Expected AMI Patients	# of ICU/CCU Beds	Number of Expected AMI Patients	ICU/CCU Beds/100 Expected AMI Patients
1	57	503	11.3	2644	38108	6.9
2	40	332	12.0	1154	17283	6.7
3	94	647	14.5	3036	52143	5.8
4	94	674	14.0	3334	46646	7.1
5	53	244	21.7	1467	19067	7.7
6	109	495	22.0	2687	32503	8.3
7	121	553	21.9	3206	35207	9.1
8	135	907	14.9	2901	51882	5.6
9	121	454	26.7	2535	30476	8.3
10	59	384	15.3	2236	28534	7.8
11	93	406	22.9	3211	42845	7.5
12	98	502	19.5	2331	38193	6.1
13	37	269	13.8	1159	19260	6.0
14	33	221	14.9	1059	14851	7.1
15	77	402	19.1	2440	28552	8.5
16	180	851	21.2	4810	50132	9.6
17	83	429	19.4	2333	26936	8.7
18	82	459	17.9	1593	22388	7.1
19	81	287	28.3	1198	17683	6.8
20	69	400	17.3	1657	27835	6.0
21	71	461	15.4	1530	35982	4.3
22	110	556	19.8	3024	68769	4.4
Average	86	474	18.4	2343	33876	7.1

Program Evaluation of Cardiac Care Programs in the VHA

Distance Between Patients' Residences and Facilities in the VA and Private Sector for Patients Treated for an AMI

For all years VA patients 65 years of age or older who had an AMI traveled an average of about 30 miles from their residence to their admitting hospital (Table G7). Elderly VA patients traveled farther to their admitting hospital compared to Medicare patients (29 versus 15 miles in FY 1999).

Approximately 8% of elderly VA patients were transferred to a different facility to receive a cardiac catheterization procedure. These patients received care in a facility an average of 140-150 miles from their home and over 70% of the patients transferred to receive catheterization traveled more than 50 miles from their home. Smaller numbers of elderly VA patients were transferred to receive PCI or bypass surgery, but a majority (over 60%) traveled more than 50 miles from home. Compared to Medicare patients with AMI, fewer elderly VA patients were transferred for invasive cardiac procedures and those transferred traveled farther distances. Patients transferred to a hospital to received both catheterization and CABG are included in both the catheterization and CABG distance analyses.

Program Evaluation of Cardiac Care Programs in the VHA

Table G7
Distances from Patients' Residence to Treating Facilities
Elderly (≥65) VA and Medicare Patients with an AMI and
Percent of Patients Traveling More than 51 Miles

	VA			Medicare
	FY 1994	FY 1999	FY 2000	FY 1999
Number of Patients^a	4533	4802	5129	148133
Distance to:				
Admitting Hospital				
Mean distance (Miles)	27.6	28.7	30.8	14.4
Median distance (Miles)	12.9	14.4	16.7	6.4
51+ Miles	18.3%	18.4%	20.0%	6.3%
Transfer for catheterization				
Percent transferred	7.3%	8.5%	5.7%	13.9%
Mean distance (Miles)	138.8	143.6	150.6	77.3
Median distance (Miles)	91.1	91.5	107.2	31.8
51+ Miles	73.6%	69.9%	88.8%	31.2%
Transfer for PCI				
Percent transferred	2.1%	3.4%	2.4%	8.7%
Mean distance (Miles)	130.4	152.1	153.2	78.8
Median distance (Miles)	73.2	92.3	127.8	30.4
51+ Miles	63.4%	66.7%	4.6%	30.1%
Transfer for CABG				
Percent transferred	3.7%	3.2%	1.7%	6.6%
Mean distance (Miles)	120.9	134.1	170.5	76.3
Median distance (Miles)	77.4	78.4	137.6	28.3
51+ Miles	64.5%	62.3%	82.8%	27.9%

^a Excludes (1) VA and Medicare patients transferred from a facility without a 410 diagnosis (2) VA patients admitted to a non-VA facility that we could not identify and (3) Medicare patients admitted to a facility more than 200 miles from their residence and VA patients admitted to a facility more than 200 miles from their residence and outside their home service network (we assumed that these patients were traveling at the time of their MI).

Program Evaluation of Cardiac Care Programs in the VHA

Within the VA the distances traveled to transfer facilities for patients of all ages were approximately the same as those reported above for VA patients aged 65 and over (Table AG1 in Appendix G).

Patients 65 years of age or older who had an AMI and who were treated in a VA hospital lived an average of about 25 miles from the nearest VA facility compared to 8 miles from a private sector hospital (Table G8). For all years, there was an 80 mile differential between the nearest private sector hospital with CABG facilities and the nearest VA facility able to provide CABG.

For VA patients the distances to the nearest facility were approximately the same as those reported above for VA patients age ≥ 65 . (Table AG2 in Appendix G).

There was large variation across VISNs in the distance between patients' residence and his admitting hospital (Figures G3 – G5). In FY 2000 VA patients with AMI treated in VISN 13 traveled the furthest on average (over 50 miles), while patients treated in VISN 3 traveled distances that were less than a third of the national average. While elderly VA patients traveled on average much further to their admitting hospital compared to Medicare patients, the geographic patterns are similar in the two systems (Figure G6).

Program Evaluation of Cardiac Care Programs in the VHA

**Table G8
Mean Distance to Nearest Hospital (Miles)
Elderly (≥65) VA and Medicare Patients with an AMI**

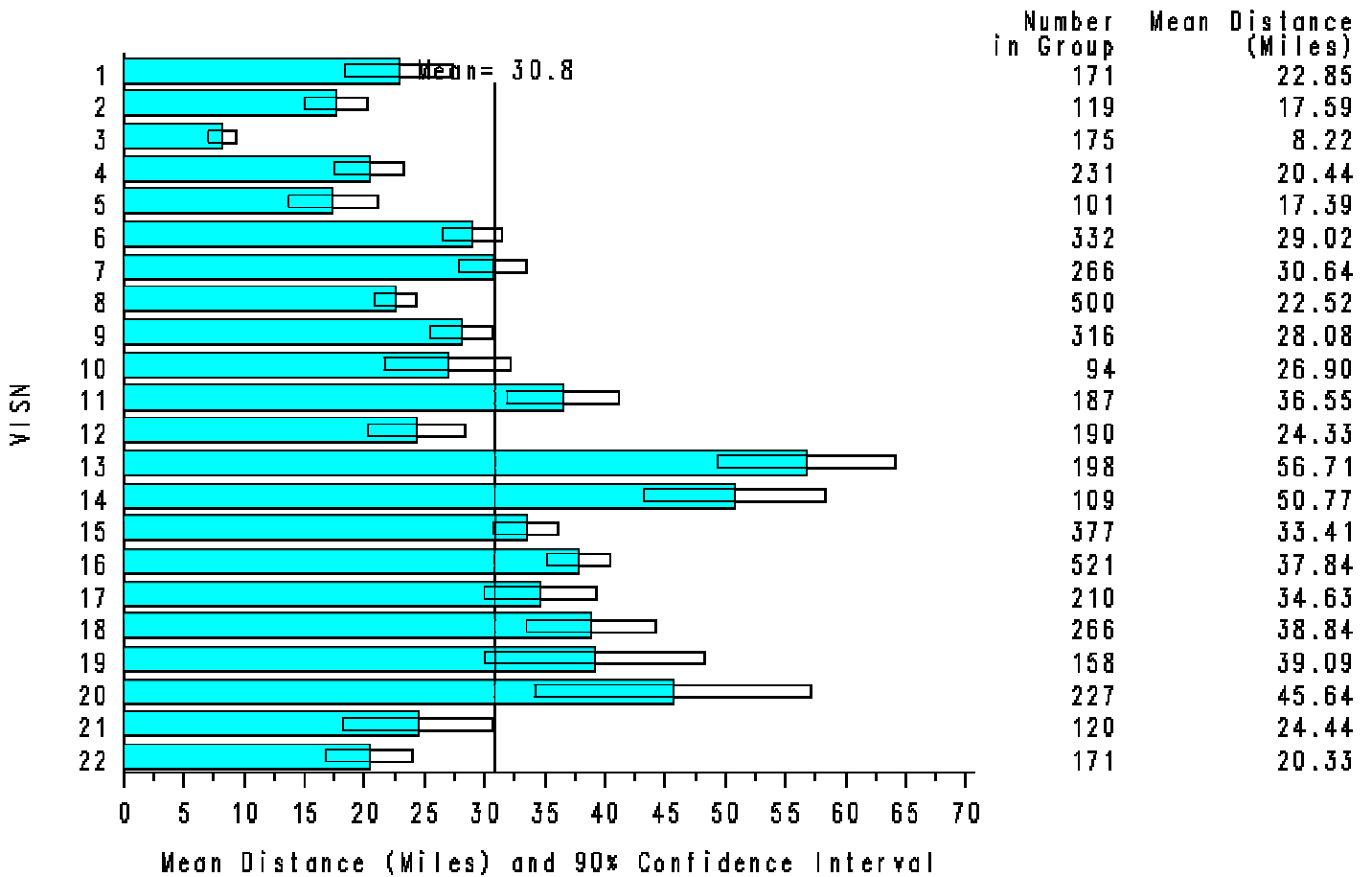
	VA			Medicare
	FY 1994	FY 1999	FY 2000	FY 1999
Number of Patients^a	4533	4802	5129	141997
Mean Distance to Nearest Hospital (Miles)				
Any VA	25.8	27.8	27.4	
Any Private Sector	7.4	7.7	7.2	7.1
Catheterization (VA)	55.2	57.5	54.9	
Catheterization (Private Sector)	13.3	13.7	13.1	18.7
PCI (VA)	97.2	101.2	103.6	
PCI (Private Sector)	19.9	20.6	20.0	25.6
CABG (VA)	103.0	115.8	118.0	
CABG (Private Sector)	20.6	21.4	20.7	26.3

^a Excludes (1) VA and Medicare patients transferred from a facility without a 410 diagnosis (2) VA patients admitted to a non-VA facility that we could not identify and (3) Medicare patients admitted to a facility more than 200 miles from their residence and VA patients admitted to a facility more than 200 miles from their residence and outside their home service network (we assumed that these patients were traveling at the time of their MI).

Program Evaluation of Cardiac Care Programs in the VHA

Figure G3

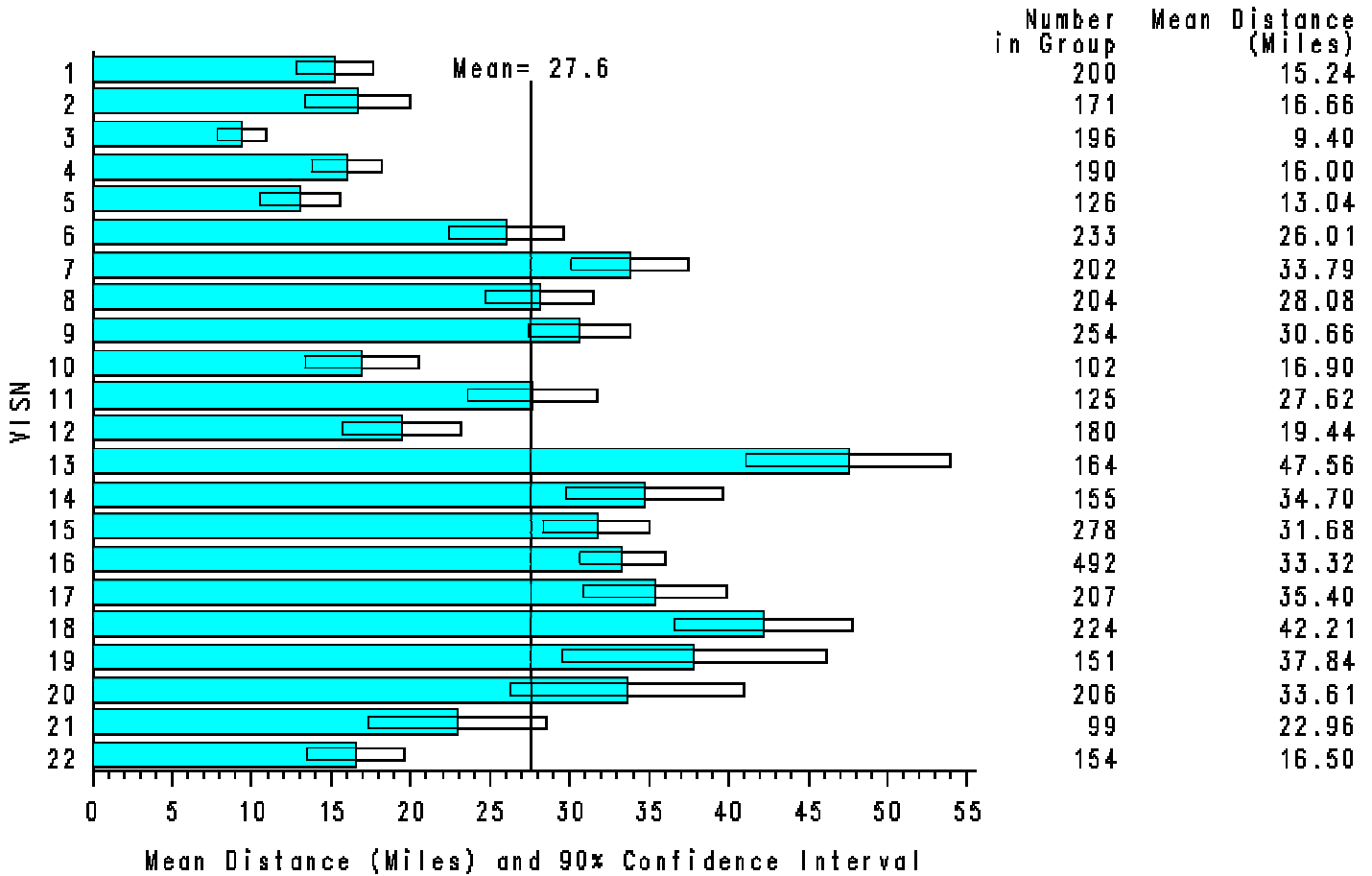
**Mean Distance to Admitting Hospital by VISN
For 2000 VA Patients \geq Age 65 with an AMI**



Program Evaluation of Cardiac Care Programs in the VHA

Figure G4

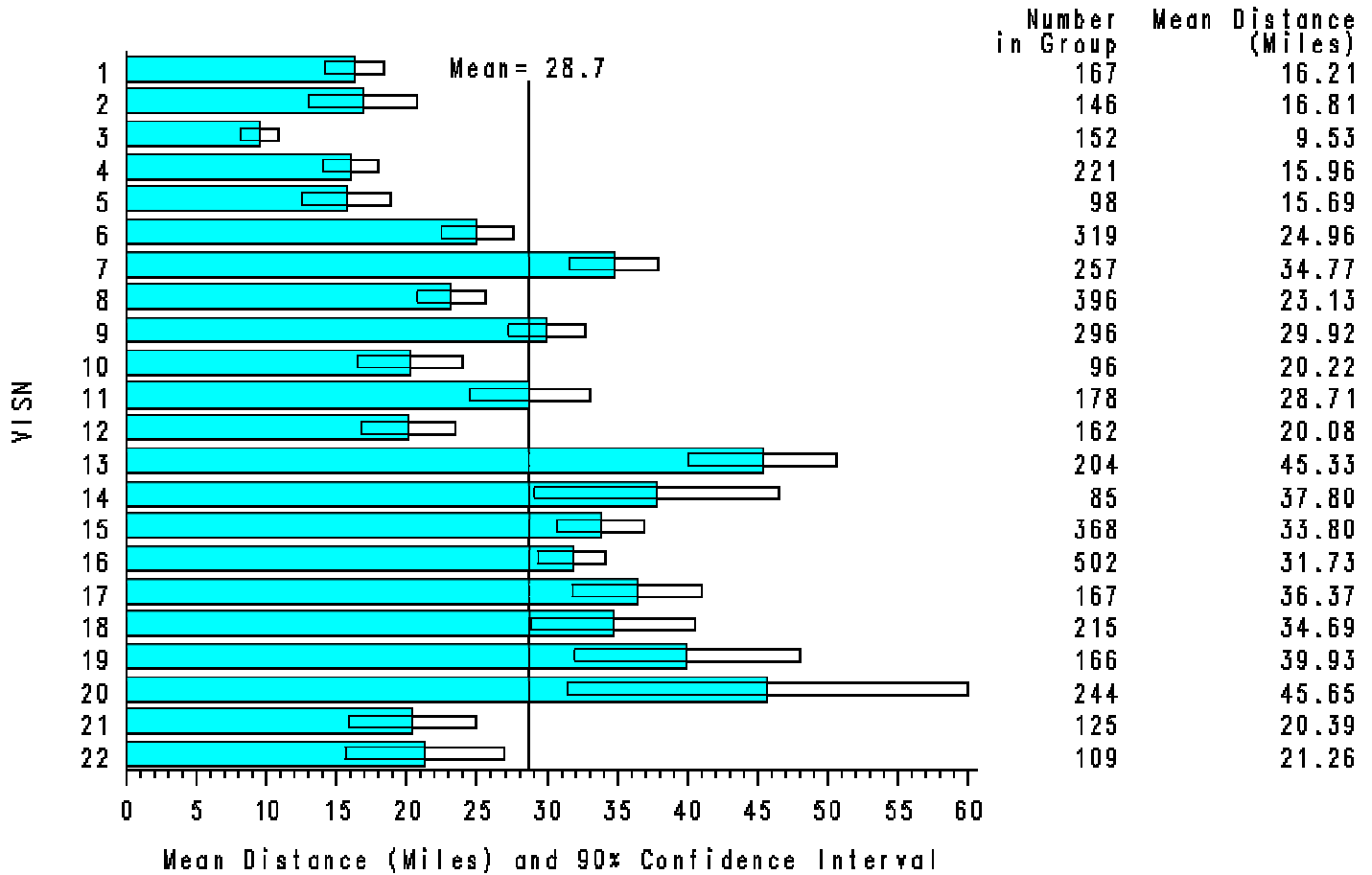
**Mean Distance to Admitting Hospital by VISN
For 1994 VA Patients \geq Age 65 with an AMI**



Program Evaluation of Cardiac Care Programs in the VHA

Figure G5

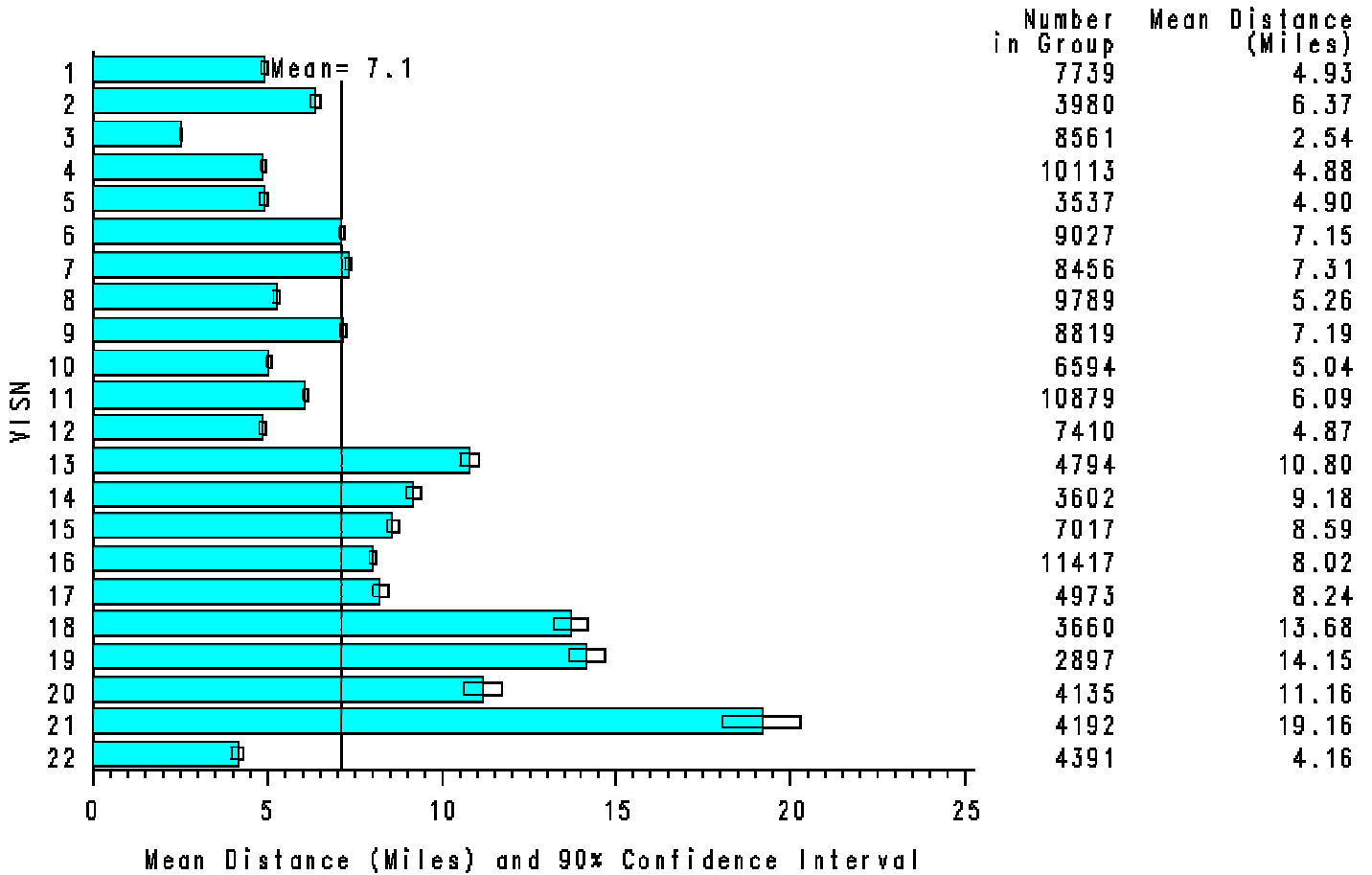
Mean Distance to Admitting Hospital by VISN For 1999 VA Patients \geq Age 65 with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure G6

Mean Distance to Closest Hospital by VISN For 1999 Medicare Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

References

Association, A. H. (2001). Heart and Stroke Statistical Update, American Heart Association, Dallas TX. 2002.

Billian (1998). Official National Hospital Blue Book. Atlanta, GA, Billian.

Hannan, E. L., M. Racz, et al. (1997). "Coronary angioplasty volume-outcome relationships for hospitals and cardiologists," JAMA 277(11): 892-8.

Jollis, J. G., E. R. DeLong, et al. (1996). "Outcome of acute myocardial infarction according to the specialty of the admitting physician." New England Journal of Medicine 335(25): 1880-7.

McClellan, M., B. J. McNeil, et al. (1994). "Does more intensive treatment of acute myocardial infarction in the elderly reduce mortality? Analysis using instrumental variables. [see comments]." JAMA 272(11): 859-66.

Program Evaluation of Cardiac Care Programs in the VHA

Appendix G

Program Evaluation of Cardiac Care Programs in the VHA

**Table AG1
Distances from Patients' Residence to Treating Facilities
VA Patients with an AMI (all ages) and
Percent of Patients Traveling More than 51 Miles**

	VA		
	FY 1994	FY 1999	FY 2000
Number of Patients^a	8359	8356	8459
Distance to:			
Admitting Hospital			
Mean distance (Miles)	30.1	31.7	32.3
Median (Miles)	14.6	15.8	17.0
51+ Miles	25.0%	20.9%	21.1%
Transfer for catheterization			
Percent Transferred	8.4%	9.0%	7.2%
Mean distance (Miles)	147.3	151.7	150.1
Median (Miles)	102.0	107.5	113.5
51+ Miles	80.3%	76.2%	88.9%
Transfer for PCI			
Percent Transferred	2.5%	4.3%	3.5%
Mean distance (Miles)	143.2	157.9	153.9
Median (Miles)	108.5	103.7	123.2
51+ Miles	77.4%	71.7%	6.0%
Transfer for CABG			
Percent Transferred	3.8%	3.0%	2.0%
Mean distance (Miles)	146.8	150.7	154.6
Median (Miles)	104.3	110.5	127.5
51+ Miles	73.7%	70.0%	80.7%

^a Excludes (1) VA and Medicare patients transferred from a facility without a 410 diagnosis (2) VA patients admitted to a non-VA facility that we could not identify and (3) Medicare patients admitted to a facility more than 200 miles from their residence and VA patients admitted to a facility more than 200 miles from their residence and outside their home service network (we assumed that these patients were traveling at the time of their MI).

Program Evaluation of Cardiac Care Programs in the VHA

**Table AG2
Mean Distance from Patients' Residence to Nearest Hospital (Miles)
VA Patients (all ages) with an AMI**

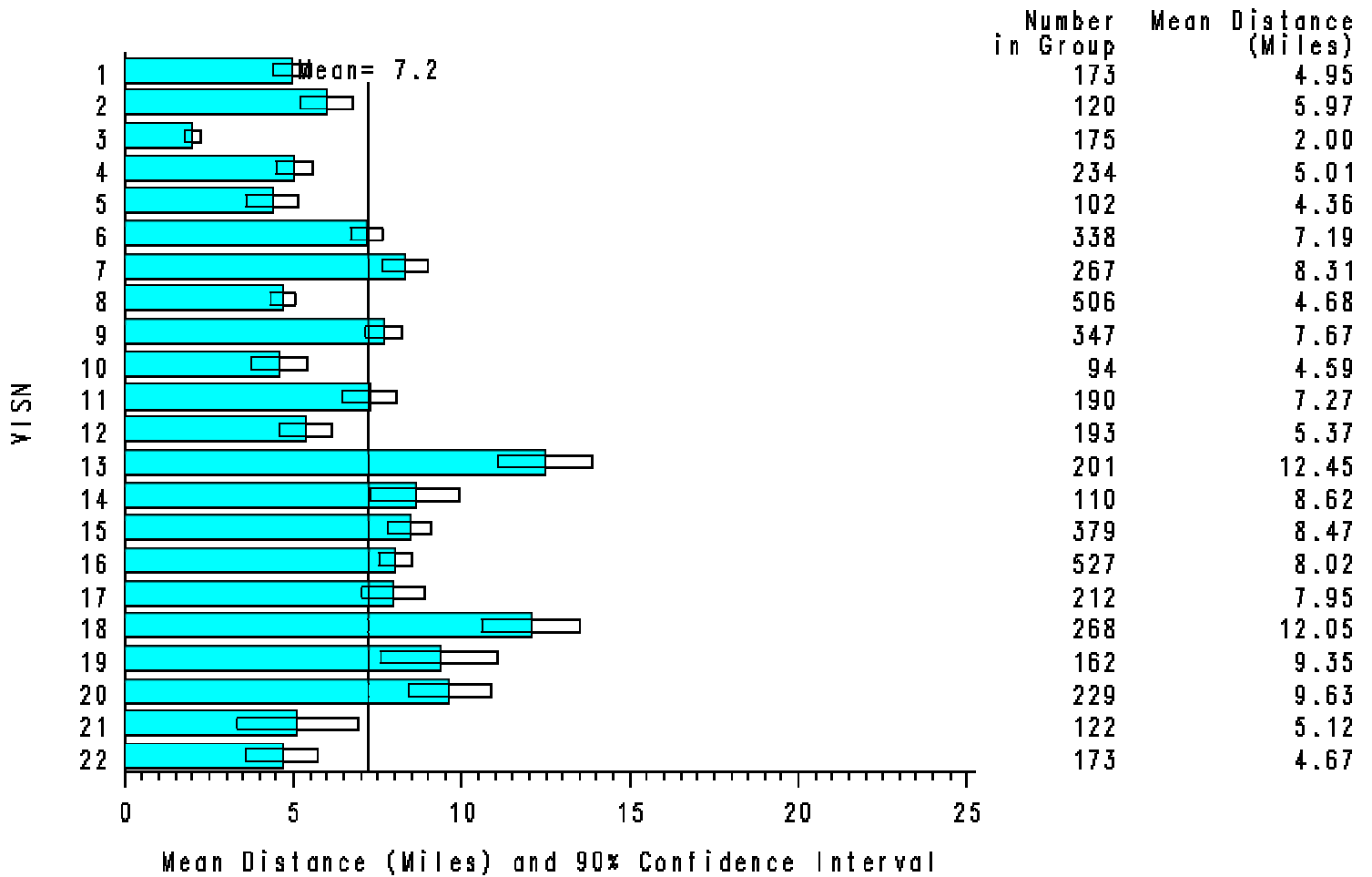
	VA		
	FY 1994	FY 1999	FY 2000
Number of Patients^a	8359	8356	8459
Mean Distance to Nearest Hospital (Miles):			
Any VA	27.0	29.4	28.3
Any Private Sector	7.4	7.6	7.2
Catheterization (VA)	55.1	57.2	53.8
Catheterization (Private Sector)	13.3	13.7	12.9
PCI (VA)	94.2	93.3	94.6
PCI (Private Sector)	19.9	20.4	19.7
CABG (VA)	100.1	108.0	108.9
CABG (Private Sector)	20.5	21.2	20.4

^a Excludes (1) VA and Medicare patients transferred from a facility without a 410 diagnosis (2) VA patients admitted to a non-VA facility that we could not identify and (3) Medicare patients admitted to a facility more than 200 miles from their residence and VA patients admitted to a facility more than 200 miles from their residence and outside their home service network (we assumed that these patients were traveling at the time of their MI).

Program Evaluation of Cardiac Care Programs in the VHA

Figure AG1

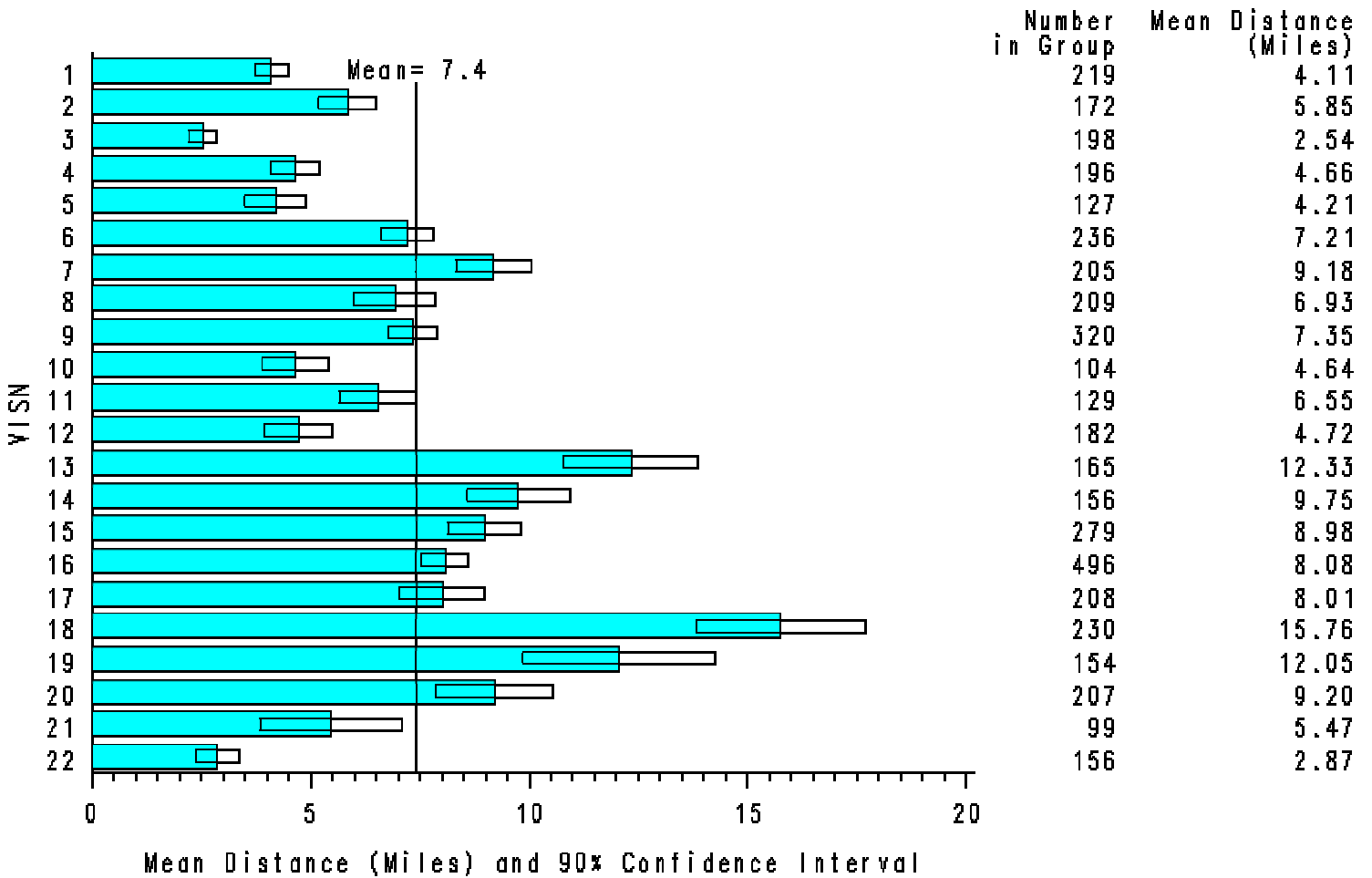
Mean Distance to Closest Hospital by VISN For 2000 VA Patients \geq Age 65 with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG2

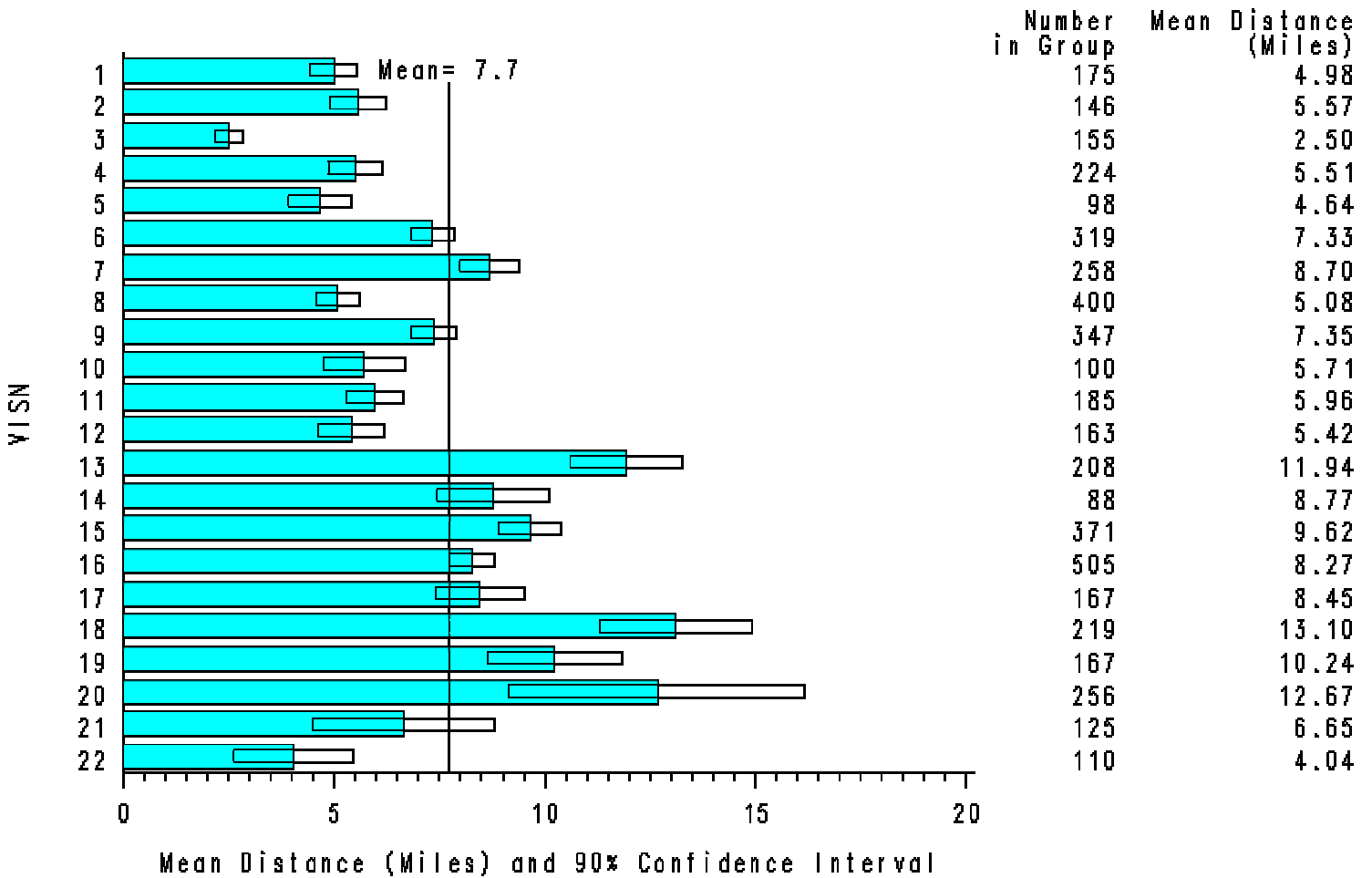
Mean Distance to Closest Hospital by VISN For 1994 VA Patients \geq Age 65 with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG3

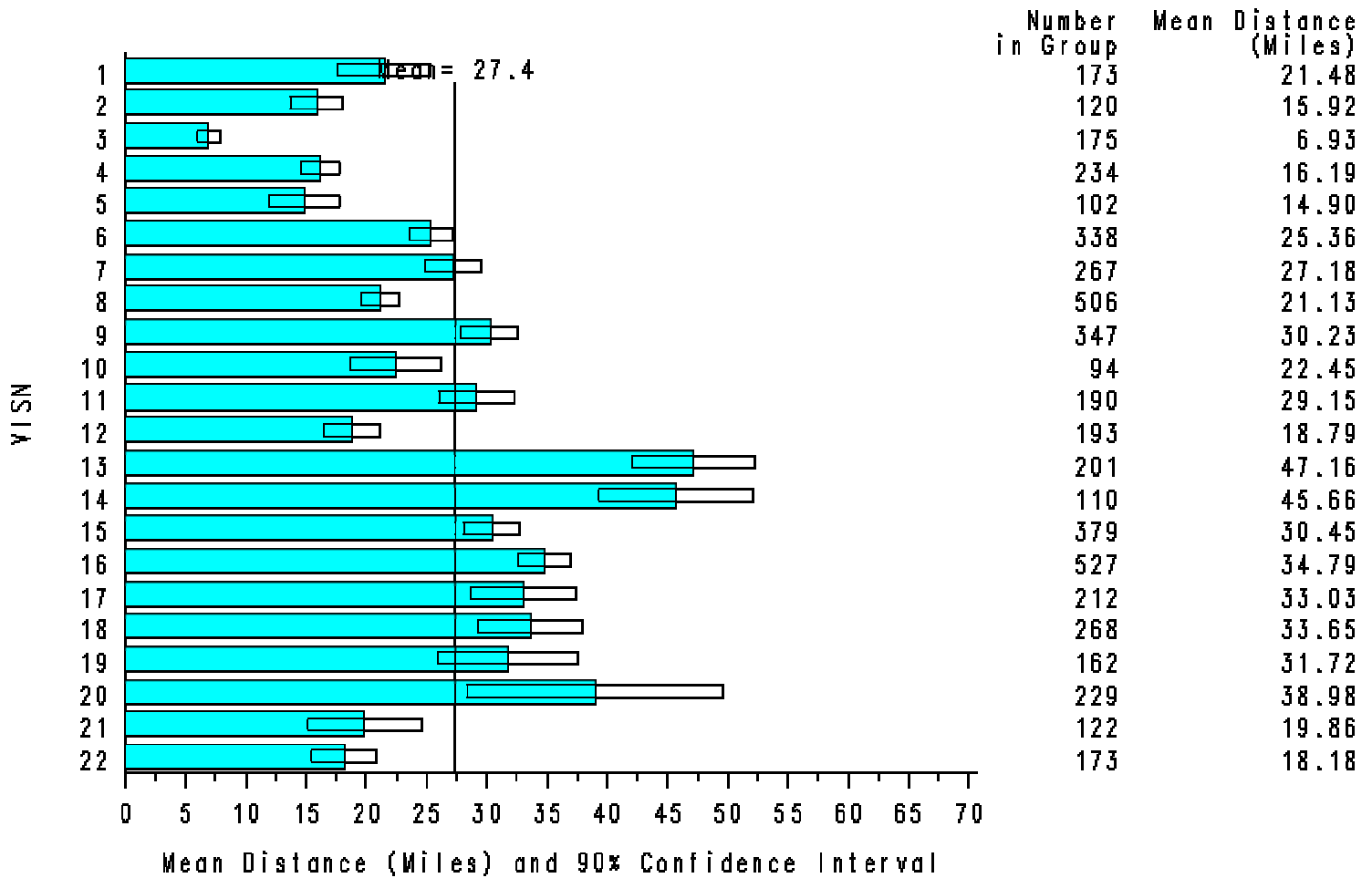
Mean Distance to Closest Hospital by VISN For 1999 VA Patients \geq Age 65 with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG4

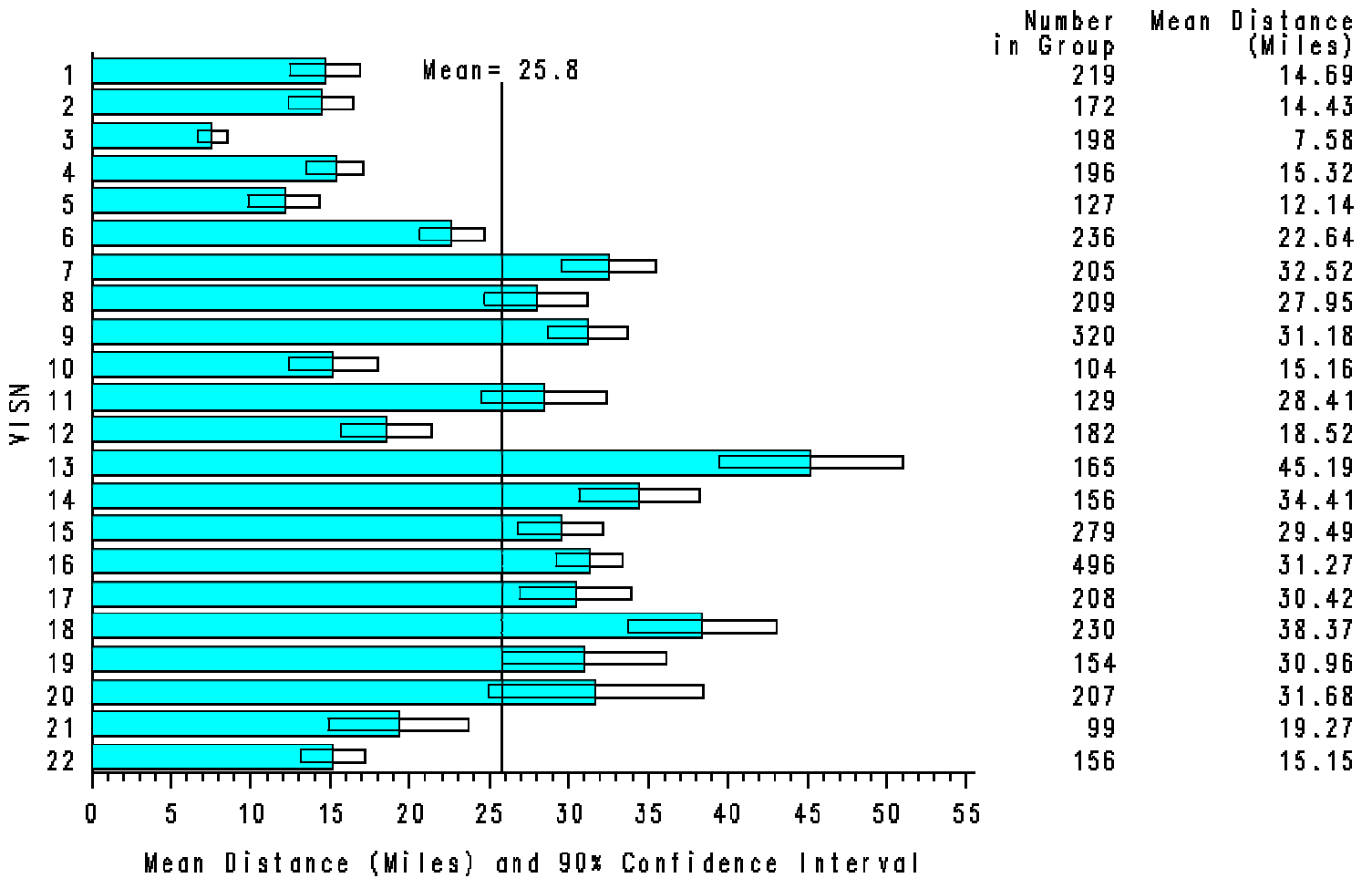
**Mean Distance to Closest VA Hospital by VISN
For 2000 VA Patients > = Age 65 with an AMI**



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG5

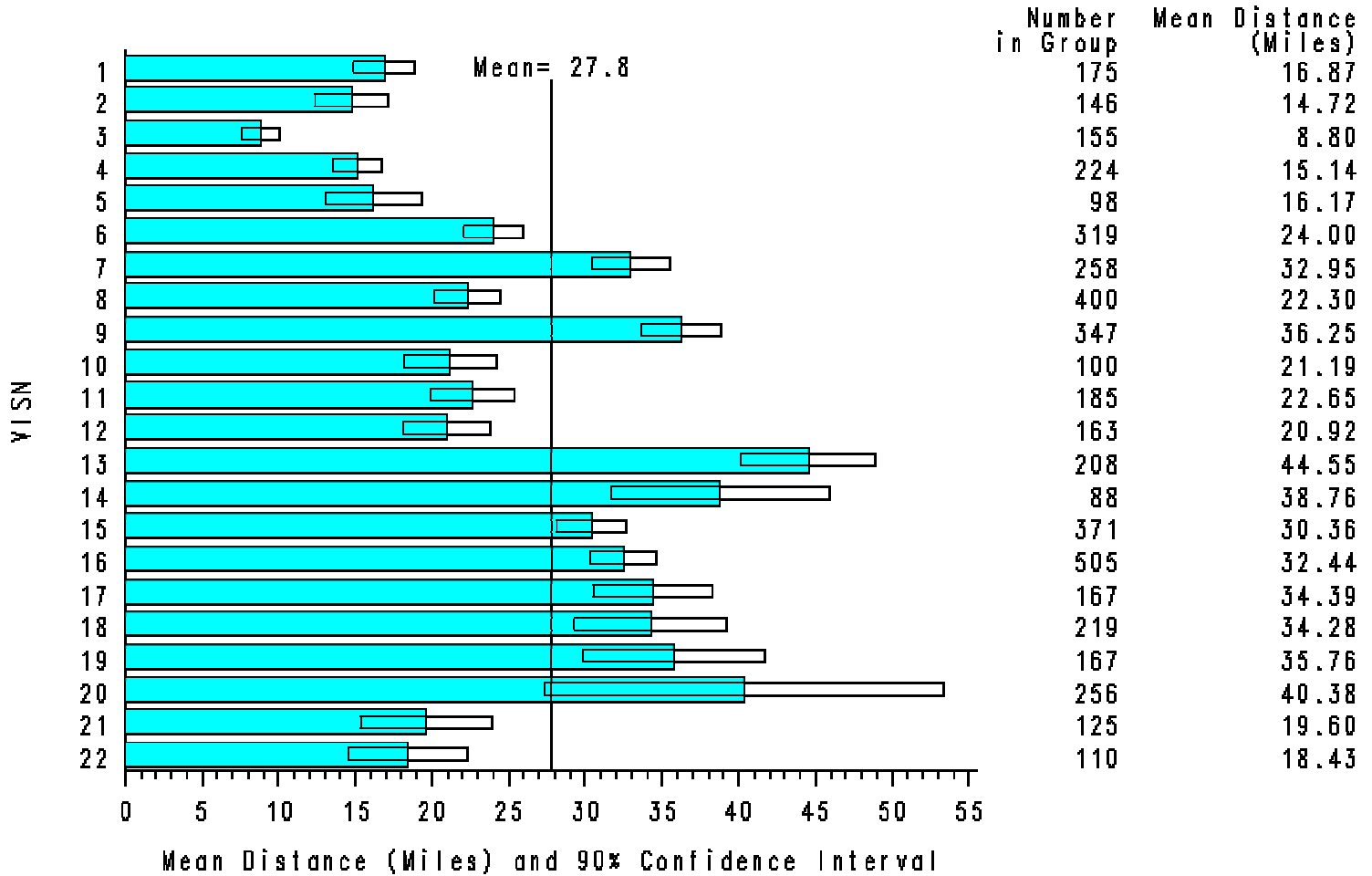
**Mean Distance to Closest VA Hospital by VISN
For 1994 VA Patients \geq Age 65 with an AMI**



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG6

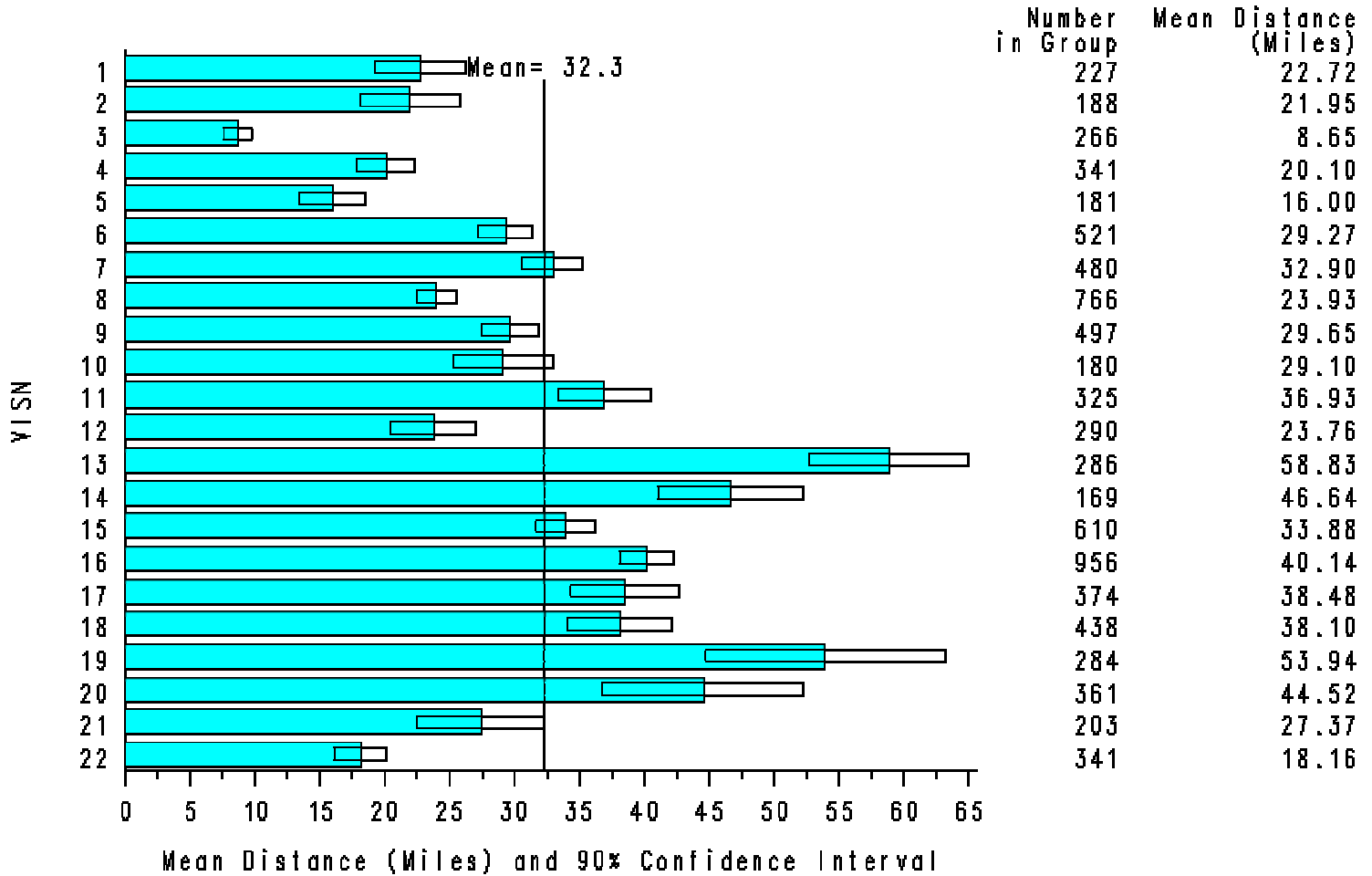
Mean Distance to Closest VA Hospital by VISN For 1999 VA Patients > = Age 65 with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG7

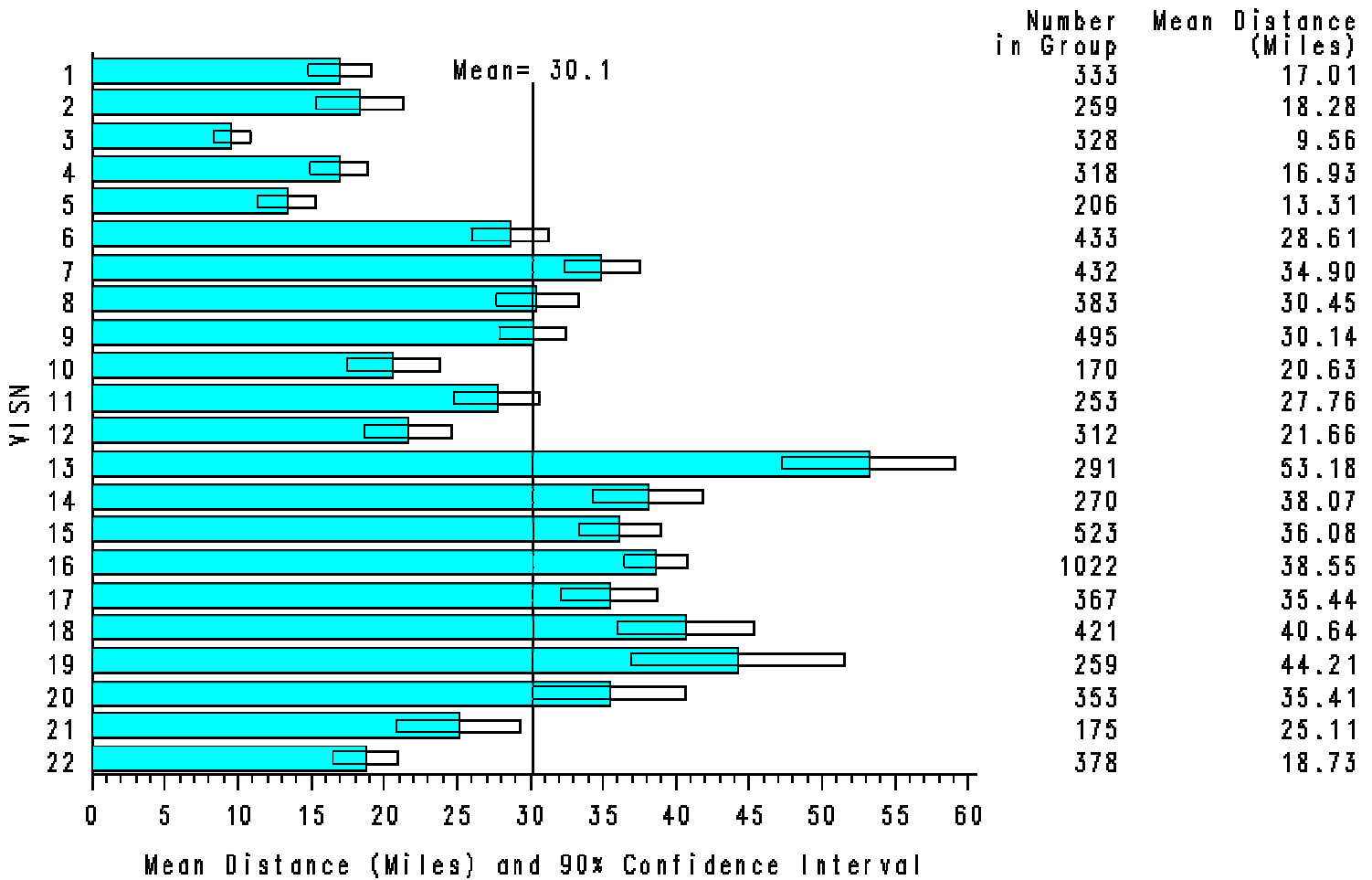
Mean Distance to Admitting Hospital by VISN For 2000 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG8

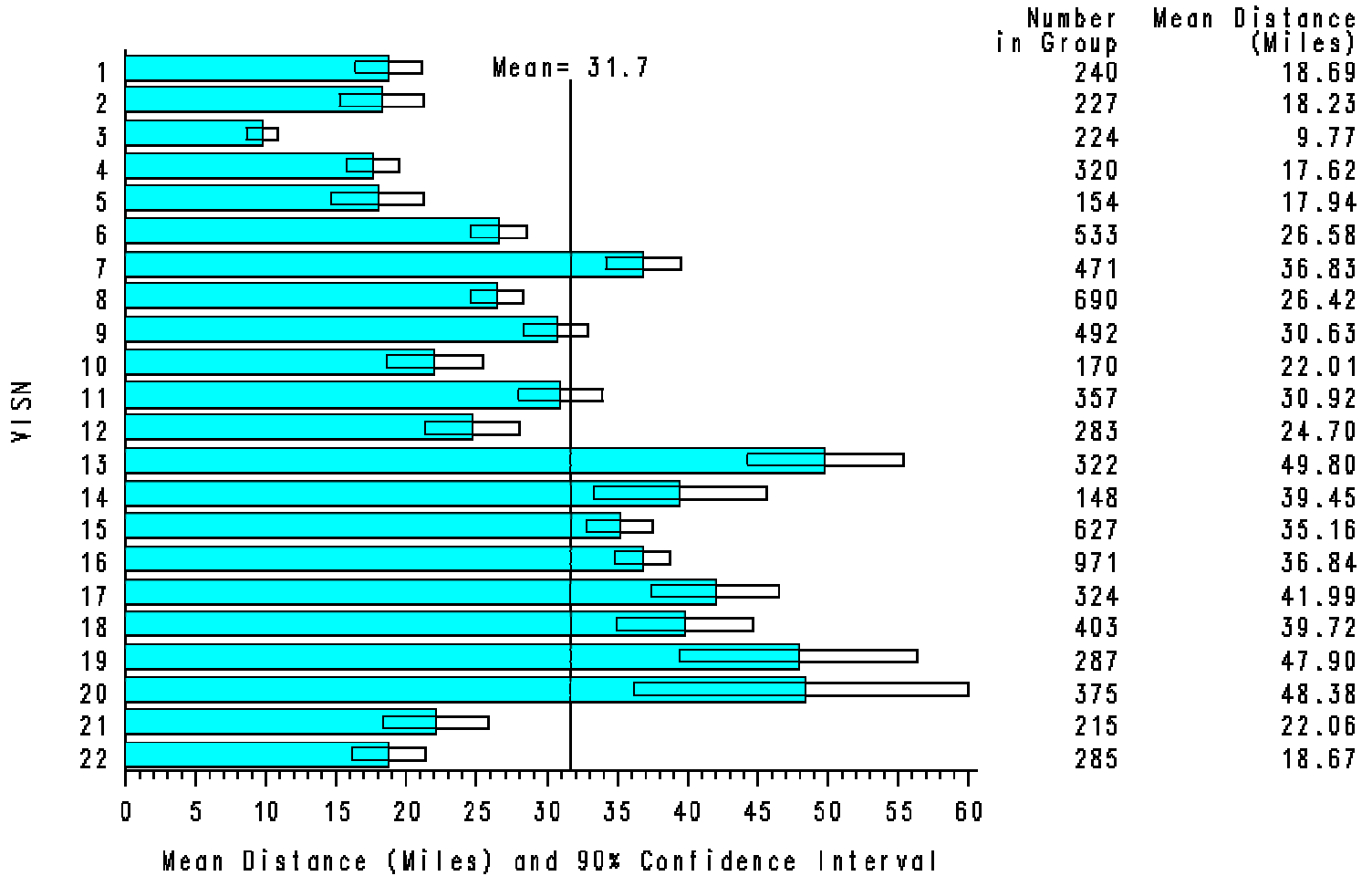
Mean Distance to Admitting Hospital by VISN For 1994 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG9

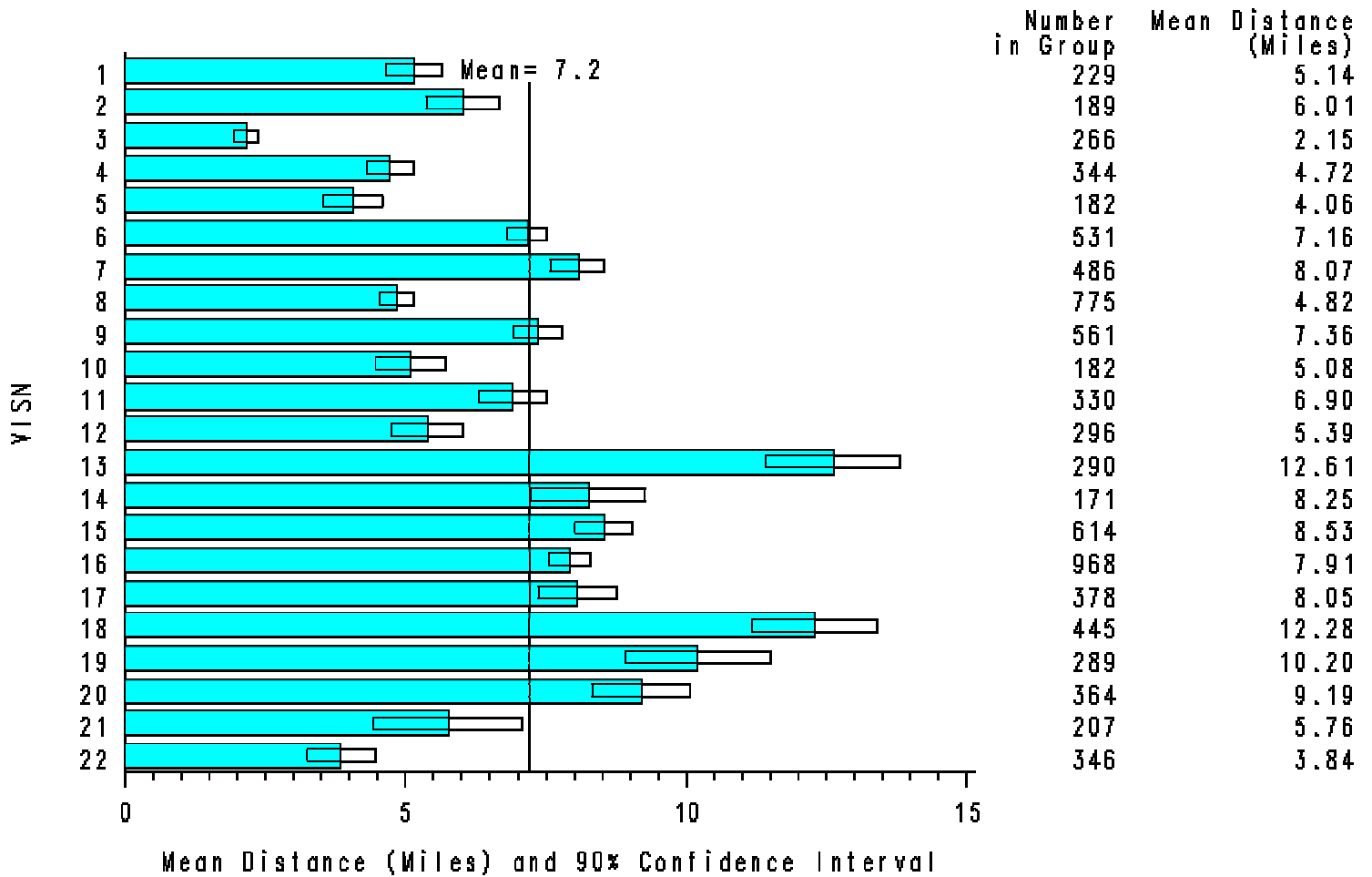
Mean Distance to Admitting Hospital by VISN For 1999 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG10

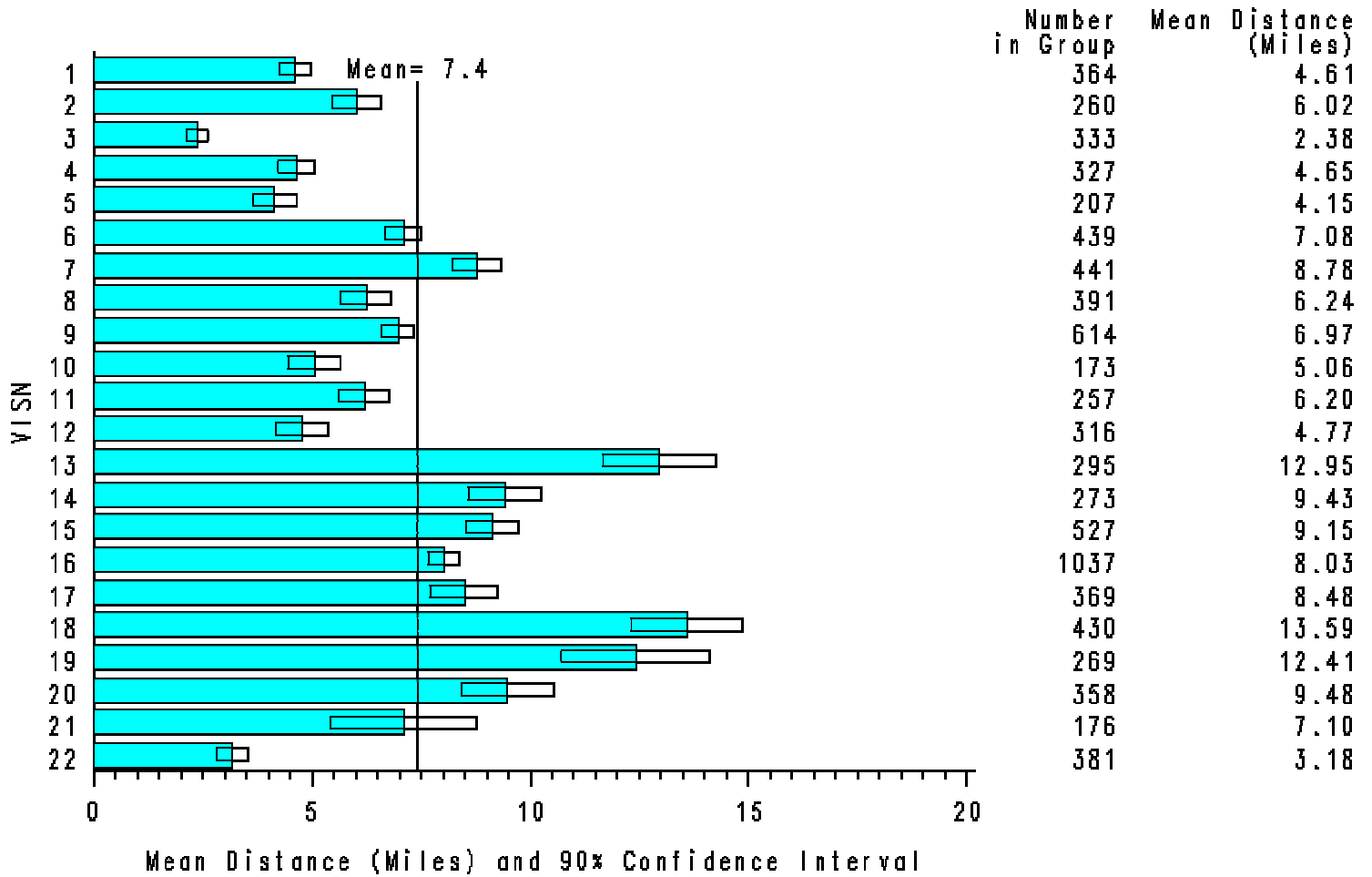
Mean Distance to Closest Hospital by VISN For 2000 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG11

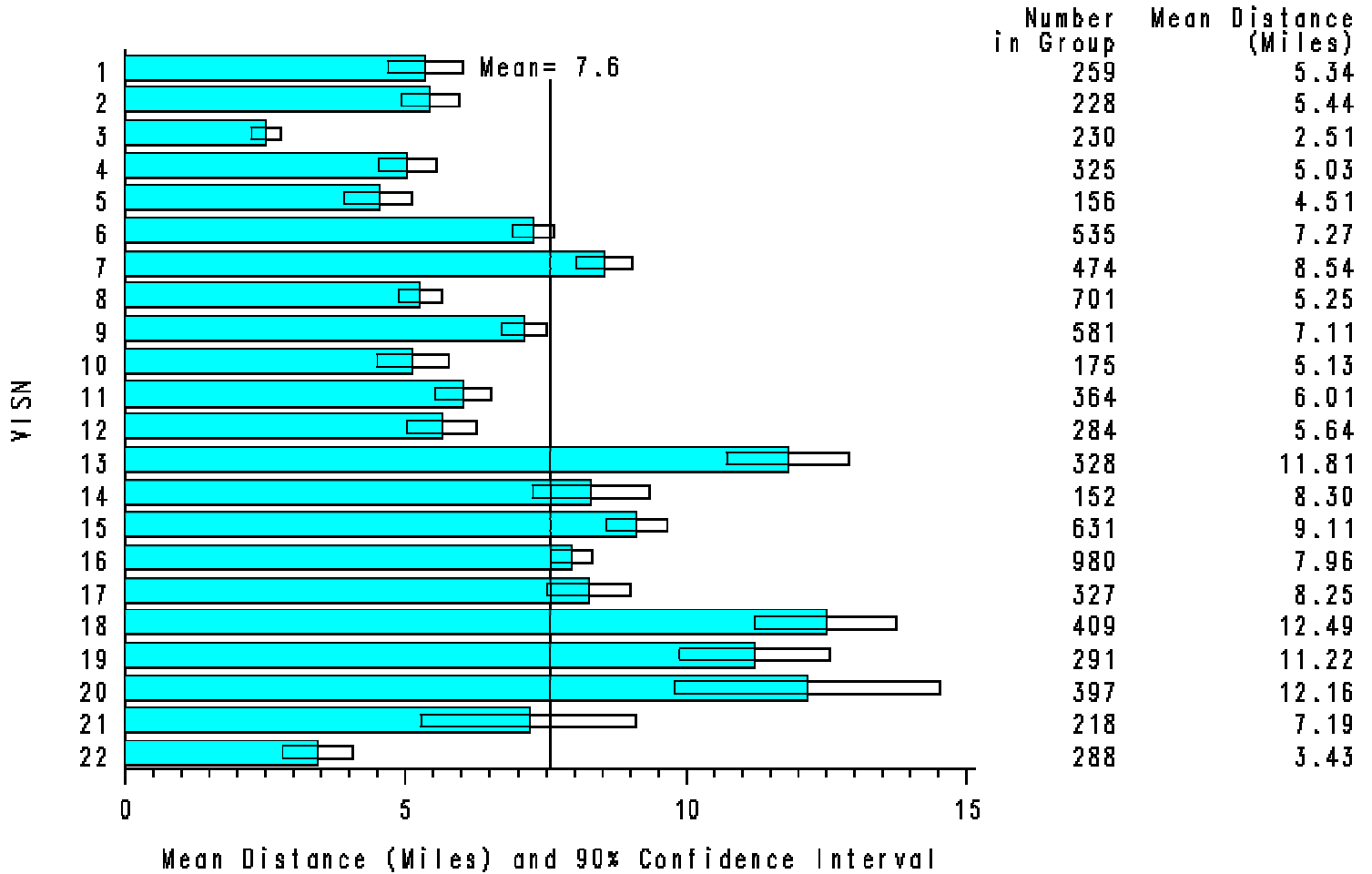
Mean Distance to Closest Hospital by VISN For 1994 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG12

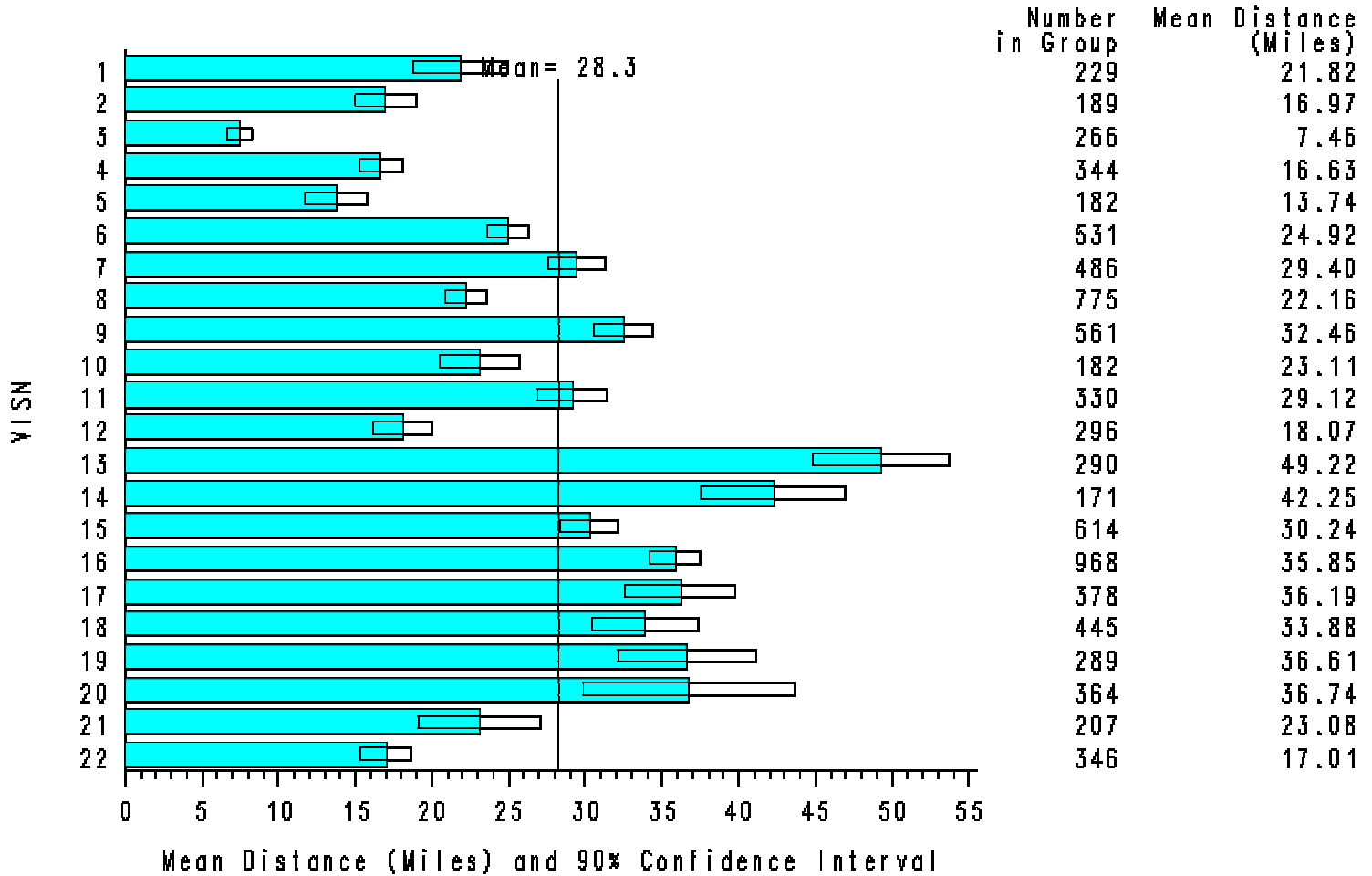
Mean Distance to Closest Hospital by VISN For 1999 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG13

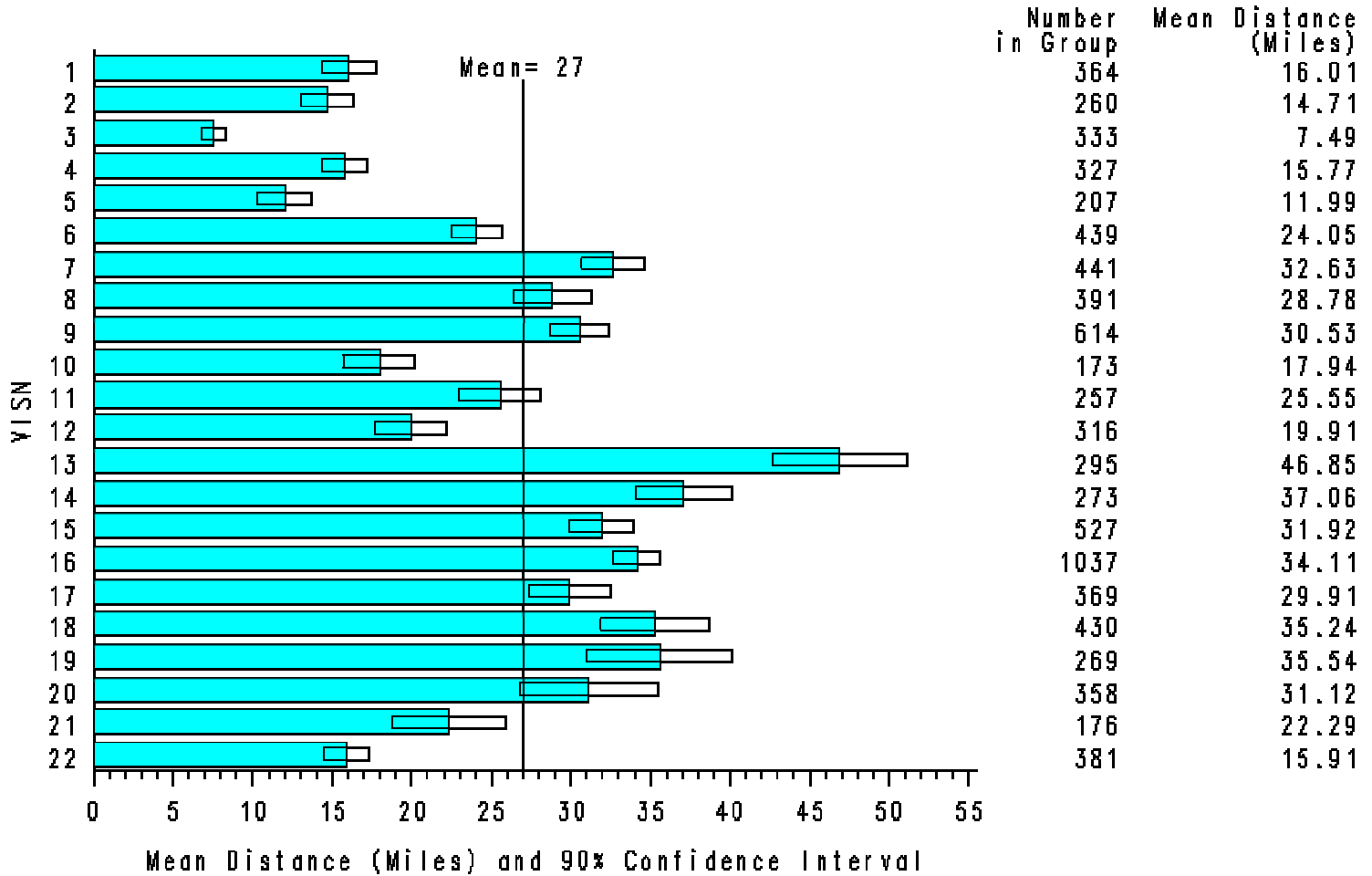
Mean Distance to Closest VA Hospital by VISN For 2000 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG14

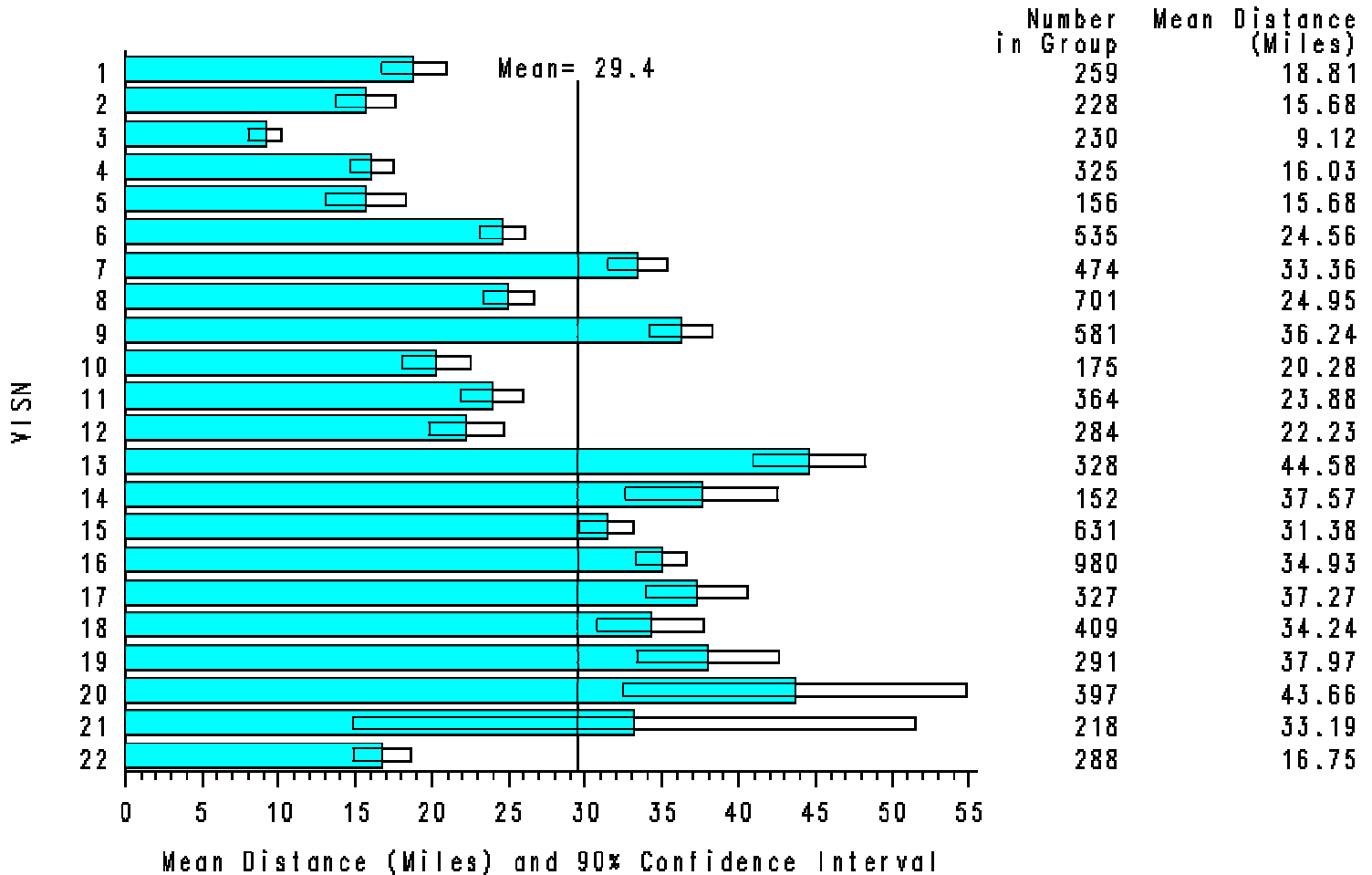
Mean Distance to Closest VA Hospital by VISN For 1994 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG15

Mean Distance to Closest VA Hospital by VISN For 1999 VA Patients with an AMI



Program Evaluation of Cardiac Care Programs in the VHA

Figure AG16

Mean Distance to Closest Hospital by VISN For 1999 Medicare Patients with an AMI

