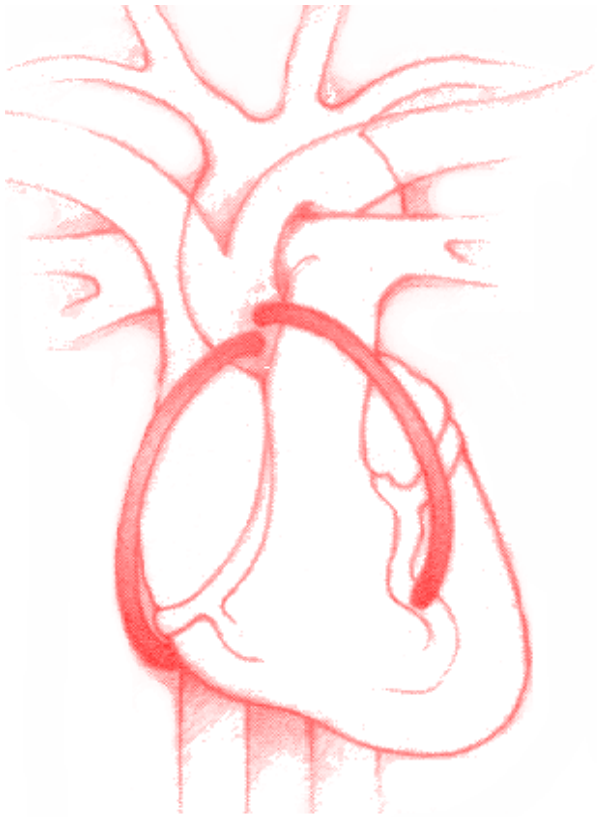
PENNSYLVANIA'S GUIDE TO

CORONARY ARTERY BYPASS GRAFT SURGERY

1994-1995

Information about Hospitals, Cardiac Surgeons, and Health Plans.



Pennsylvania Health Care Cost Containment Council

May 1998

Pennsylvania Health Care Cost Containment Council

Council Members

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Additional information related to this report can be found in the Guide's *Technical Appendix*, which contains more detailed information including length of stay according to cardiac surgeons, *Research Methods and Results*, a description of the methodology and research decisions that form the foundation of this report, and *Health Plan, Hospital and Physicians Comments.*

These documents are free and available upon request.

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Principal Findings

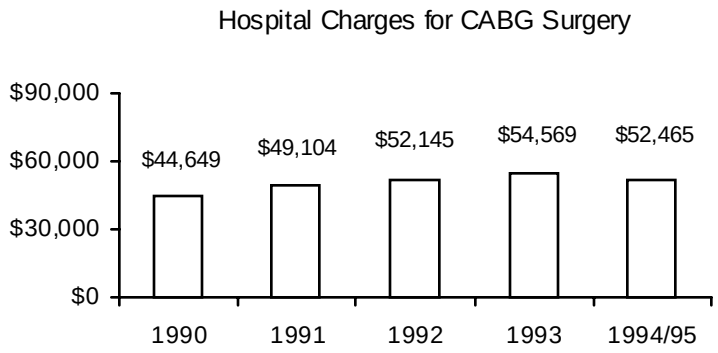
Quality is Increasing

- There is good news for Pennsylvanians facing coronary artery bypass graft (CABG) surgery. In 1994-95, the years covered by this study, 97% of the health plans, 91% of the hospitals, and 90% of the surgeons had risk-adjusted patient mortality rates that were well within what was expected or better after accounting for patient risk.

- In-hospital mortality was 22% lower in 1995 than it was in 1991 (4.9% of the patients died in 1991 compared to 3.8% in 1995). At the same time, patient risk has remained constant and the total number of CABG surgeries has increased (up almost 25% since 1991).

Charges are Decreasing

- Statewide, the average charge was 3.9% lower in 1994-95 than it was in 1993, the first decrease since public reporting began with 1990 data. In general, a number of hospitals with higher charges *decreased* their charges while a number of hospitals with lower charges *increased* their charges.



Health Plans

- Of the cases reported in the payor analysis, 89.2% were covered by fee-for-service plans (or some variation); only 10.8% were covered by HMO plans during 1994-95.

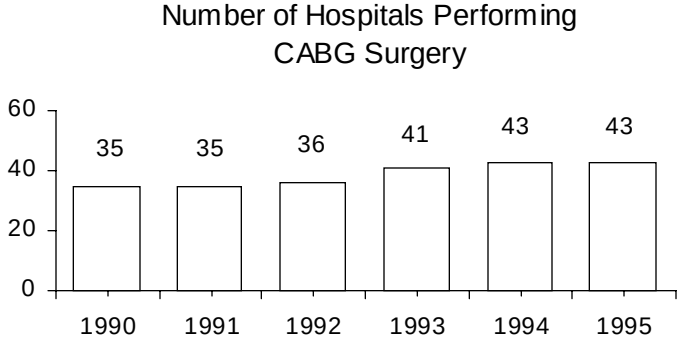
- The patient's insurance plan was not a determinant of in-hospital mortality.

Patient Characteristics

- Of those discharged alive from the hospital in 1994-95, 98.6% were alive 3 months later; 97.4% were alive 9 months later. Of those who died after discharge, 58% died of heart-related causes.
- In 1992, 1.87 out of every 1,000 adult residents underwent CABG surgery. In 1995, 2.21 out of every 1,000 adult residents had this procedure. For males, the figures were 2.77 per 1,000 in 1992 and 3.20 per 1,000 in 1995. For females, they were 1.07 per 1,000 in 1992 and 1.32 per 1,000 in 1995.
- 70% of the CABG patients were men; 30% were women.
- Men tended to undergo CABG at an earlier age than women. Of those under 65 years of age, 78% were men and 22% were women. The average age for women was 68, compared to 64 for men.
- The most common risk factor for the patients in this study was heart failure. The next most common was having had previous CABG and/or valve surgery.
- The majority of patients had a relatively low risk (1.6%) of in-hospital death. Only 5% of the cases had a risk of in-hospital mortality of 10% or higher.

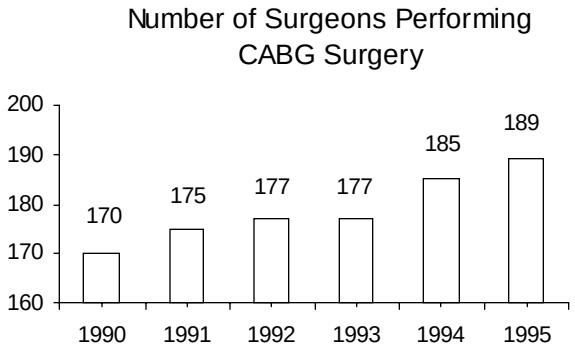
Hospital Characteristics

- After accounting for patient risk, average *post-surgical* length of stay ranged across hospitals from 5.2 days to 8.6 days.
- There are regional differences in how long a patient stayed in the hospital following CABG surgery:
- The patients in hospitals located in Central & Northeastern Pennsylvania had *shorter* stays than expected.
- The patients in hospitals located in Southeastern Pennsylvania or Western Pennsylvania had *longer* stays than expected.
- The number of hospitals performing CABG surgery in Pennsylvania has increased since 1990.



Physician Characteristics

- The number of surgeons performing CABG surgery in Pennsylvania has increased since 1990.



- The surgeon's volume of open heart surgery cases was an important determinant of in-hospital survival. Higher volume was associated with *increased* survival. The number of open-heart surgeries performed, on average, by a Pennsylvania cardiac surgeon in 1994-95 was 127 per year.

Goals

There are several goals for this project. The first is to provide an increasingly comprehensive picture of the "system" of health care. Where hospitals, physicians and health insurers were once separate and independent, those distinctions are swiftly becoming less clear. With the growth of managed care and the emergence of highly organized health systems, it is increasingly important to examine the interrelationships among these three groups. By reporting patient outcome information about these important entities in one place, the Council is allowing the public to examine these interrelationships and ask intelligent questions about the quality of health care.

Secondly, the guide is designed to provide purchasers with information that they can use to obtain greater value for the health care dollar when it comes to making health care purchasing decisions. Heart disease remains the number one cause of death in the United States. Coronary artery bypass graft (CABG) surgery, a treatment for one kind of heart disease and the subject of this report, is a high-volume, high-dollar procedure.

The third goal is to provide hospitals, surgeons and health plans with meaningful comparative data about CABG patients and the outcomes of bypass surgery. There is evidence that this kind of information prompts providers to take steps to improve the overall quality of bypass surgery.

The fourth goal, as always, is to provide patients who are considering CABG surgery, and their families, with data that will help them have more informed discussions with their physicians***. Since every patient has different health concerns and risks, the Council encourages patients to discuss the information in this guide with the appropriate physicians who can answer their questions and concerns.***

Readers' Guide

Beginning in November of 1992, the Pennsylvania Health Care Cost Containment Council has released a series of public reports about coronary artery bypass graft (CABG) surgery. These reports contained information about the risk-adjusted patient mortality statistics for Pennsylvania's cardiac surgeons (who perform CABG surgery) and the Pennsylvania hospitals where the procedures are performed. This report, which includes data from 1994 and 1995, is the latest in the series.

What's new in this report?

This report contains two new additions: Information about the length of hospitalization after surgery and information about CABG patients according to selected health plans.

While Pennsylvania's CABG report has historically contained information about the risk-adjusted mortality numbers for CABG patients specific to Pennsylvania hospitals and cardiac surgeons, this report marks the first time that similar data for individual health plans is included.

Why has information about health plans been added to this report?

The health care industry is experiencing enormous change. Part of this movement involves a shift in traditional roles, especially as it relates to the management of health care. Larger hospital and health care systems are emerging. The relationships among hospitals, physicians and insurers are changing.

Payors have evolved from the traditional approach of financing the delivery of health care to one of influencing, on an increasing basis, the organization of the delivery system. This takes the form of quality improvement efforts, re-certification, utilization management, promulgation of physician practice guidelines, development of select physician and hospital networks, and financial incentives — the increasing "management" of care. While it is important to remember that patients are not treated by payors, rather by doctors and hospitals, it is increasingly the case that payors influence, directly or indirectly, the delivery of care in today's market.

In late 1995, the Pennsylvania Health Care Cost Containment Council, through a series of strategic planning sessions, identified as its primary future role the development of information about the influence of managed care on health care cost and quality issues.

This report is a first step in the direction of measuring health plans in that it includes for the first time in a Council report risk-adjusted mortality and length of hospital stay data for enrollees in selected health plans that had CABG surgery. In doing so, it builds upon previous Council CABG reports that have included data about Pennsylvania hospitals where CABG operations have been performed, and the cardiac surgeons who have performed them. (This report also contains the hospital and surgeon-related risk-adjusted mortality and length of hospital stay data.)

As with any first-time initiative, these health plan data should be interpreted with caution. The data in this report should *not* be the only factor in any health care decision, *particularly with regard to choosing a health plan.* Many other factors should be weighed before making such a decision.

A Limited View of Managed Care

What do we mean by managed care?

It is important to note that this first step is a limited one. Managed care is a general term that means different things to different people. In its most restrictive sense the term can be applied to Health Maintenance Organizations (HMOs), which are included in this report. There is a broad range of health insurance plans in Pennsylvania, including many different types of employer or employee-determined managed care arrangements and levels of health care management, some of which will be found within traditional fee-for-service plans, others as options or variations within licensed HMOs.

For the purposes of this report, however, the Council reported only on those managed care plans that are licensed by the Pennsylvania Department of Health as Health Maintenance Organizations (HMOs). In addition, the report includes traditional fee for service plans, Medicare and Medicaid. Beyond these broad categories, the Council did not differentiate among the different insurance products available in Pennsylvania. To do so would involve significant additional data collection and verification among the hospitals, health plans, and the Council.

CABG surgery constitutes a small portion of overall health plan admissions

While the Council's ultimate goal is to provide an increasingly comprehensive picture of the system of care, this report focuses on only one procedure. Although a high-volume, high-cost procedure, CABG surgery generally represents a small portion of the overall health care utilization of health insurance plan enrollees. ***Therefore, a plan's results in this report should not be used to generalize about the overall quality of a health plan.***

Times have changed — and so has the health care market

The data is this report are from 1994 and 1995, the most recent data available. The marketplace, especially with the growth of managed care plans, has changed dramatically since that time. The same categories examined today might show very different results. While managed care covers only a small percentage of CABG patients in 1994 and 1995, the Council will use this time period as a baseline for comparison with later years when the market penetration of managed care has grown.

Measuring quality

The risk-adjusted mortality and risk-adjusted length of stay statistics included in this report are important measures of quality as well as resource utilization, but are not and cannot be considered the only measures of importance. Additional measures, such as whether CABG surgery was the appropriate treatment option, readmission rates, or the quality of patients' lives after receiving surgery are not captured here.

The measurement of quality is highly complex and the information used to capture such measures is limited. Hospital deaths are frequently an unavoidable consequence of a patient's medical condition. Hospitals and physicians may do everything right and still the patient can die. In addition, marked differences in health plan populations in terms of social, economic, and behavioral characteristics might put some groups at higher risk of mortality — factors not completely captured by the Council's risk-adjustment model.

However, after taking the significant patient risk factors available to the Council into account, differences with respect to patient mortality and lengths of stay do exist among hospitals, cardiac surgeons, and health plans.

Other measures of quality

HEDIS (Health Plan Employer Data and Information Set), a system for measuring health plan effectiveness developed by the National Committee for Quality Assurance, uses a number of measures related to utilization rates per 1,000 covered lives. Additionally, these rates include only enrollees with a sufficient record of enrollment, normally 12 to 36 months of continuous enrollment. This report does not account for differences in the length of enrollment among plans. In order to do so in future reports, the Council would need the cooperation of health insurers in providing enrollment data.

Overall patient satisfaction can be an important component in assessing quality. Several states such as Utah, Maryland and New Jersey have developed and published patient/consumer satisfaction surveys as measures of the quality of care received within health plans.

The report is not all-inclusive

This report includes only inpatient hospital information, and only information about hospitals, surgeons and health plans with 30 or more cases in 1994 and 1995. While taking into account such issues as the race, ethnicity and urban/rural status of CABG patients, the report may not fully capture the impact of socioeconomic status on CABG patients' risk of mortality. It does not allow for trend analysis since the data cover only two years.

The verification of data for health insurers

The Council formed a new Payor Advisory Group to assist in developing ways to approach various issues related to the development of this report, in particular the verification of plan data. The verification of the plan data, which originates with the hospitals, was a two-step process.

First, the hospital where the procedure was performed verified the plan that paid for the surgery.

Secondly, all plans were given an opportunity to verify that the hospital identification of the CABG payor was correct. Many plans chose to do so and the Council would like to acknowledge those plans for their participation. However, some plans chose not to verify the hospital identification of the payor and in those instances, the hospital-only data is reported.

In some instances the plan with financial responsibility for a CABG case was not necessarily the plan that managed or oversaw the treatment of the same case. In these situations, the Council assigned the case to the plan that paid for the case. In situations where more than one plan was financially responsible for a CABG patient, the plan listed as the primary payor was assigned the case.

An important beginning

It's important to recognize that efforts to compare health plans are still in their infancy. This report is just a starting point; useful as a basis for identifying both similarities and differences among health plans, asking why they exist, and as a basis for further study.

The treatment of patients is a varied and complex process, one that involves many players. The Council would like to emphasize that this report is about pointing out differences in patient outcomes. It is about asking why those differences exist. It is about stimulating a dialogue among purchasers, consumers, providers and payors, and a quality improvement dynamic that will attempt to raise appropriate questions.

So, while this report represents a limited view of managed care, it is nevertheless an important step and can serve as a baseline for future reporting. Future reports can better serve the public with the inclusion of enrollment information, data which can only be provided by the health plans themselves and which can serve to overcome some of the limitations of this project. The report is a start towards helping Pennsylvanians examine the system of care involved in treating CABG surgery patients. It is a start in helping the Council examine additional areas of health care delivery and the growing interrelationships among hospitals, physicians, and payors in delivering quality outcomes for the patients and enrollees for which they provide, pay and manage care.

Heart Disease and Coronary Artery Bypass Graft Surgery in Pennsylvania

About 57 million Americans have some form of heart-related disease. It is the leading cause of death in the United States. This booklet is designed to provide the public with information on the surgical procedure used to treat one type of heart disease known as atherosclerotic coronary artery disease.

This booklet provides comparisons among hospitals and cardiac surgeons should surgical treatment for coronary artery disease be required. It provides information that can be used as a basis for asking questions and to make more informed choices when selecting a hospital or surgeon for coronary artery bypass graft (CABG) surgery. This information should be used in conjunction with a doctor, hospital and health plan representative.

The charts show the number of CABG surgery cases and the risk-adjusted patient mortality percentages for each hospital, health plan and cardiac surgeon in Pennsylvania where at least 30 coronary artery bypass graft operations were performed in 1994-1995. Thirty is considered by the Council to be a minimum number in order for the information to be statistically meaningful.

What is atherosclerotic coronary artery disease?

Atherosclerotic coronary artery disease occurs when the arteries which supply blood to the heart muscle become lined with fatty deposits, harden, and become partially blocked. The amount of blood reaching the heart is reduced. This reduced flow of blood can cause chest pain (angina) or a heart attack.

Which methods are used to treat heart disease?

It is important to discuss this with a physician. Depending on a patient's condition and the doctor's recommendation, the following are among treatment methods that might be used: changes in lifestyle habits such as diet or smoking, medication, balloon angioplasty, laser angioplasty, and coronary artery bypass graft surgery.

This report deals with coronary artery bypass graft operations, which are performed by a cardiac surgeon. However, when seeking treatment for heart disease, a cardiologist is usually involved in the diagnosis of heart disease. In general, it is the cardiologist who will diagnose the problem and refer the patient to a cardiac surgeon if surgery is being considered or recommended. This report can be used in conjunction with the advice of a cardiologist in selecting a cardiac surgeon.

What is coronary artery bypass graft surgery?

An alternate path for blood, or "bypass," is made around the narrowed or blocked part of the coronary artery that has been identified during cardiac catheterization. The surgeon removes or diverts a section of blood vessel from another part of the body and attaches it around the blockage in the coronary artery. The blood flows through the inserted section, bypassing the blockage, to restore the blood flow to the heart muscle.

A Focus on Patient Outcomes

The primary focus of this report is on the outcome or result of CABG surgery. Although there are other ways to view a successful result of CABG surgery (lack of complications, improved quality of life, and recovery time), this report focuses on in-hospital mortality statistics and risk-adjusted lengths of hospitalization as measures of the outcome of CABG surgery. To be fair, the mortality data and length of stay data are adjusted to account for significant patient risk and severity of illness factors. The first section of this report includes risk-adjusted mortality statistics for CABG patients in 1994-1995 according to the health plan or program they belonged to, the hospital they were admitted to, and the cardiac surgeon of record who performed the coronary artery bypass graft surgery. The statistics are calculated and displayed in the same way for health plans, hospitals and cardiac surgeons. The health plans, hospitals and surgeons in this report were offered the opportunity to review the data applicable to them and attest to its accuracy.

ABOUT FIGURE 1 — Health Plans — Risk-Adjusted In-hospital Mortality

There are 34 health plans (including Medicare and Medicaid) covered in this report. These include fee for service plans (Blue Cross and Commercial Insurance Companies), Pennsylvania-licensed Health Maintenance Organizations (HMOs), as well as the Medicare and Medicaid programs. However, only plans that had 30 or more CABG cases in 1994-1995 after exclusions are reported. (For a detailed list of exclusion criteria, see the Council's *Research Methods and Results.*

A risk-adjusted mortality percentage has been calculated for each plan and is presented in this section. The health plans are grouped according to the type of plan: Commercial fee for service plans together, Blue Cross-related fee for service plans together, Licensed HMOs, Medicare, and Medicaid.

ABOUT FIGURES 2A, 2B, 2C — Hospitals — Risk-Adjusted In-hospital Mortality

Forty-four hospitals in Pennsylvania were approved to perform CABG surgery during 1994-1995. This report provides risk-adjusted mortality data, risk-adjusted lengths of hospital stay, and hospital charges for the 43 of those hospitals that had 30 or more cases. Passavant Hospital began its open-heart program in late 1995, and as such did not have enough cases to be reported. There are additional hospitals that have been set up to perform CABG surgery since 1995 but those hospitals do not appear in this report. In addition, hospital names may have changed since 1994-1995.

ABOUT FIGURES 3A, 3B, 3C — Cardiac Surgeons — Risk-Adjusted In-hospital Mortality

Risk-adjusted mortality statistics are also reported for the CABG patients of Pennsylvania cardiac surgeons who performed CABG surgery during 1994-1995. There are surgeons who practiced at more than one hospital and that is noted in the report.

Figure 3 lists all the cardiac surgeons who practiced at a given hospital under that hospital name. The hospitals are sorted by region, then listed alphabetically, with each surgeon who practiced in that hospital also listed alphabetically. Many surgeons practiced at more than one hospital so they will be listed more than once. Only surgeons who treated 30 or more cases in 1994-1995 were rated; others are listed with the number of cases they performed.

ABOUT FIGURES 4 and 5A, 5B, 5C — RISK-ADJUSTED POST-SURGICAL AVERAGE LENGTH OF STAY ACCORDING TO HEALTH PLANS AND HOSPITALS

In this report, the length of stay is post-surgical (hospital days prior to surgery are not counted) and has also been adjusted to take patient risk factors into account. The statistics are developed in the same way as the patient outcomes (mortality) section. An expected length of hospitalization is calculated and can be compared to the actual length of stay. These figures are expressed in number of days in the hospital. An asterisk (*) next to the hospital (or plan) name means that a hospital's actual length of stay was significantly greater than expected. An open bullet (°) next to the hospital (or plan) name means the length of stay was significantly less than expected. The absence of a symbol means that the actual length of hospital stay was within the expected range.

Length of stay data for each cardiac surgeon is reported in a separate *Technical Appendix* available from the Council upon request.

ABOUT FIGURE 6 — Average Hospital Charges for CABG Surgery

This column shows the average amount a hospital charged for coronary artery bypass graft surgery in 1994-1995. The charges do not include physician fees, and are usually more than actual payments received by hospitals from the payor (such as your insurance company). For example, for Medicare patients, the actual payment to a hospital is based on a different formula and may be lower. Charges are, however, a reasonable and consistent basis for comparison.

Charges vs. Revenues

The amount a hospital bills for a patient's care is known as the charge. What the hospital actually receives is known as revenue. This report lists the average charges billed by hospitals for a CABG surgery. The charges are derived from hospital billing forms, which list the actual charges for each patient. However, hospitals generally do not receive full reimbursement of their charges. Hospitals frequently negotiate discounts with insurance companies or other large purchasers of health care services. The amount collected by the hospital may differ substantially from the amount billed.

An analogy can be made to the purchase of an automobile. Each automobile has a manufacturer's suggested list price (the charge). But the amount the buyer actually pays depends upon his or her ability to negotiate a discount from that charge. Purchasers of fleet vehicles have greater clout in negotiating discounts than do the buyers of a single vehicle. In

the same way, large group purchasers have greater purchasing power when buying insurance or negotiating health care discounts than do privately or self-insured individuals.

ABOUT TABLE 1

Table 1 contains for each plan a listing of the hospitals that account for approximately 75% of the plan's CABG patients and the number of cases for each plan in each of the hospitals.

ABOUT FIGURES 7A, 7B — The Issue of Volume

The number of procedures performed in hospitals or by cardiac surgeons is often considered an important factor in deciding upon treatment options. Figure 7A provides a view of the total number of bypass procedures as well as the number of total open-heart procedures performed by Pennsylvania hospitals. Figure 7B details the average number of open-heart procedures per surgeon in each Pennsylvania hospital.

Interpreting the Data

Actual To Expected Patient Mortality (Death)

Under the expert guidance of its Technical Advisory Group, a committee of physicians and health researchers, the Council develops a complex methodology to measure expected mortality. First, the Council identifies a list of health factors that have an impact upon patients' risk of dying during or following (prior to hospital discharge) CABG surgery. In compiling this list, the Council examines the scientific literature, and solicits feedback from hospital staff and physicians.

The next step is to determine which risk factors (of those available to the Council) had a significant impact on the in-hospital mortality of those patients hospitalized for a coronary artery bypass in 1994-1995. The rating system gives a certain weight (or importance) to key health factors that influence in-hospital mortality for each patient receiving a coronary artery bypass operation in 1994-1995. These risk factors are taken into consideration to create a risk profile for each patient.

By looking at all the individual patient data together, the Council is able to calculate an expected mortality percentage for each hospital, health plan and cardiac surgeon. The statistics are adjusted for the higher or lower risk of the patients of each provider and health plan. This provides a fair basis for comparison. By adjusting for risk, hospitals, health plans and cardiac surgeons are given extra credit for having treated "sicker" patients or patients with more risk factors. The higher the risk, the more deaths to be expected.

The figures allow you to compare the actual number of mortalities with the expected number of mortalities. These are expressed as percentage points. The expected mortality is expressed as a range of percentages representing the lowest number of mortalities you could expect to the highest. The expected range is based on a calculation that takes into account

the risk factors of the patients treated. The horizontal bar represents the expected range for that calculation. The length of the bar is based on a combination of patient volume and diversity of patient risk. Generally, the more CABG patients or the more similar patient risk is across hospital, surgeon, or health plan, the smaller the bar will be.

How to Interpret the Graphs

If the point falls within the bar, [●] it means that the difference between the actual mortality and the expected mortality was not statistically significant. If the point falls to the left of the bar, ● [ ] the actual mortality was significantly lower statistically than what was expected. This is highlighted by an open bullet (°) next to the hospital, health plan, or surgeon's name. If the point falls to the right, [ ] ● the actual mortality was significantly higher than the expected. This is highlighted by a single asterisk (*) next to the hospital, health plan or surgeon's name. A point that is statistically significant will always fall *clearly* outside the bar. Tables that provide the numbers that correspond to the graphs in the mortality section are contained in the *Technical Appendix*.

What we Mean by Statistical Significance

Scientists use the term "statistical significance" to indicate when a measurement or calculation is certain enough to be caused by something other than chance or random variation. If the actual percent mortality falls outside the expected bar, we can conclude with 95% certainty that the difference between what was expected and what actually occurred was not because of chance or random variation. If the actual percent mortality falls inside the bar, the difference may have been due to chance or random variation.

Technical Appendix

The actual figures related to the graphs presented in this report are contained in a separate *Technical Appendix*. The appendix also contains surgeon length of hospital stay data and a list of patient risk factors.

Risk-Adjusted In-hospital Mortality Outcomes

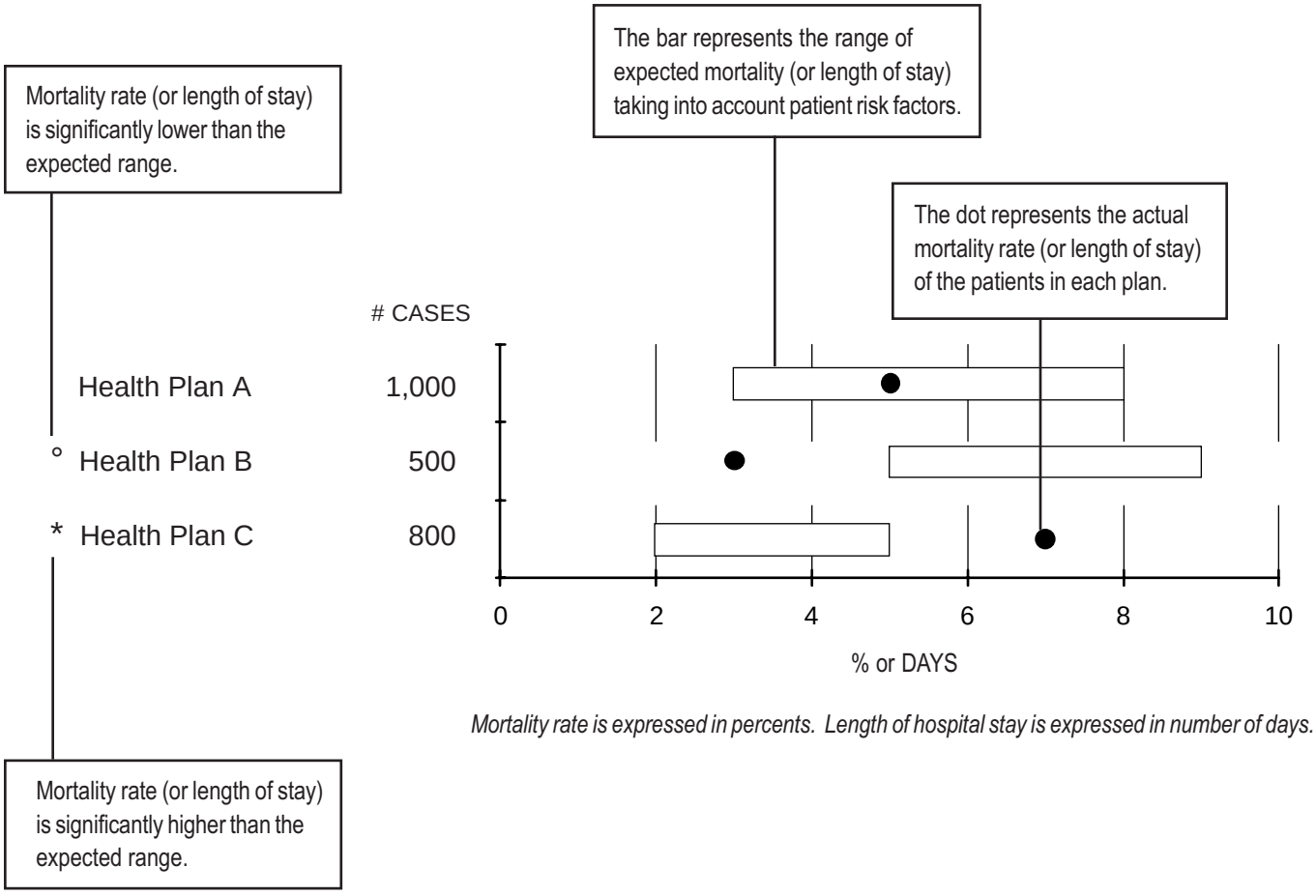
Health Plans

Hospitals

Cardiac Surgeons

How to Read the Graphs

(This is identical for Health Plans, Hospitals, and Cardiac Surgeons.)



Mortality rate is expressed in percents. Length of hospital stay is expressed in number of days.

Note: The graphs in this report allow you to compare actual mortality and length of stay with an expected range, which is determined by both volume and diversity of patient risk. The expected range is expressed as a percent for mortality and in days for length of stay. More patients and/or less diversity of risk will result in a shorter bar.

KEY

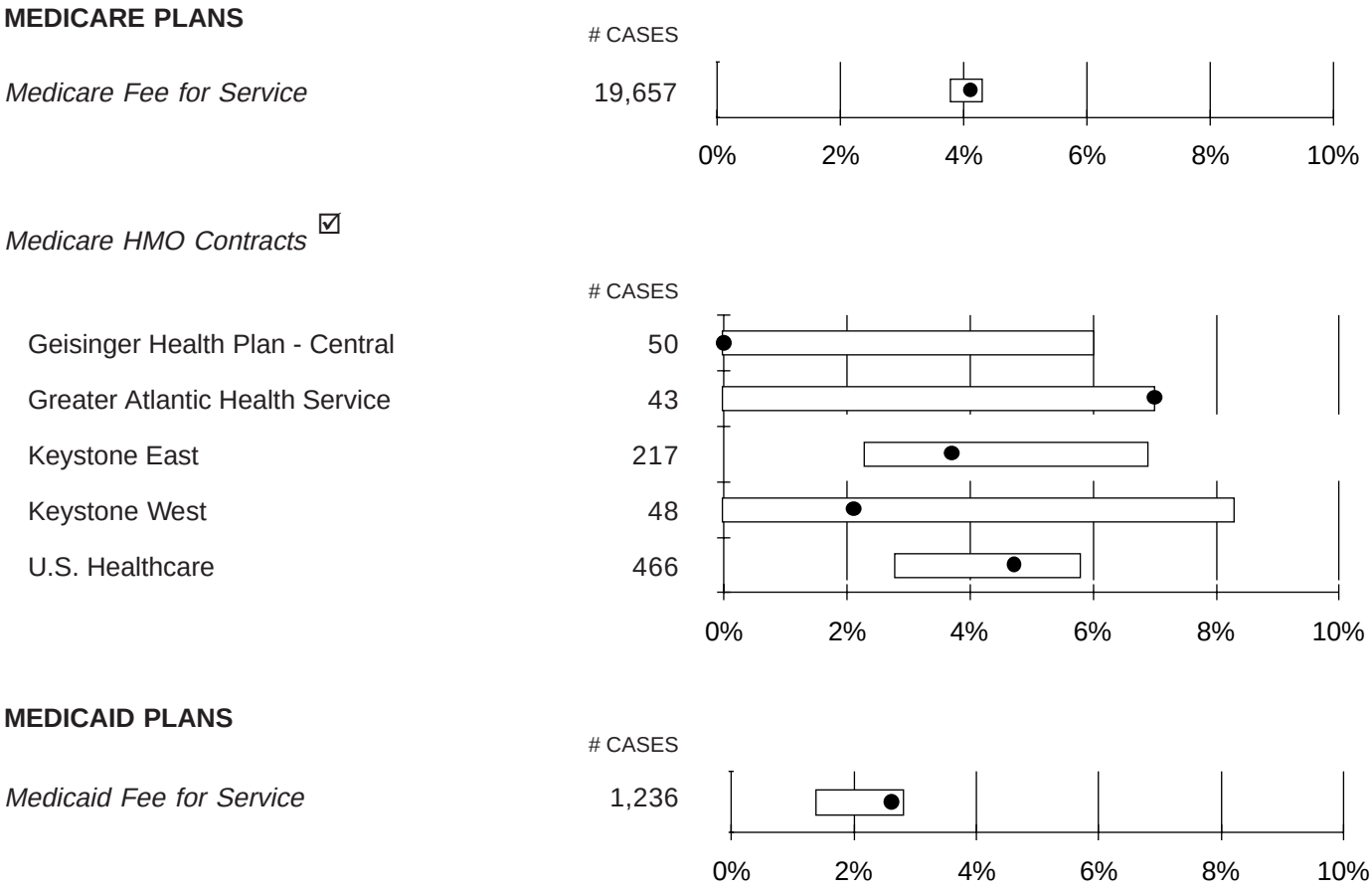
* Actual significantly higher than Expected

° Actual significantly lower than Expected

● Actual Rate

▭ Range of Expected

FIGURE 1: Actual to Expected Mortality, by Health Plan, 1994-1995



Medicaid HMO Contracts — There were 9 HMO plans that were the primary payor for Medicaid CABG cases in 1994-95; none had 30 or more cases and so are not reported.

☑ Includes only Medicare patients

KEY

* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

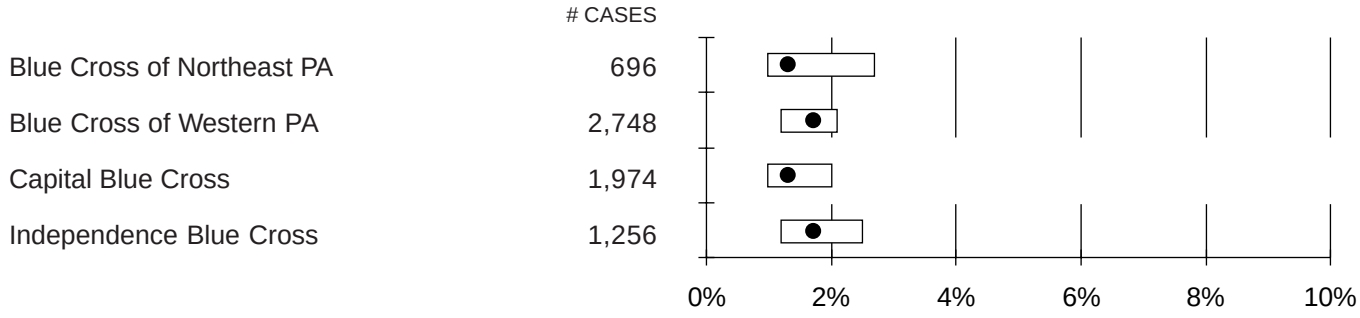
● Actual Mortality Rate

▭ Range of Expected Mortality

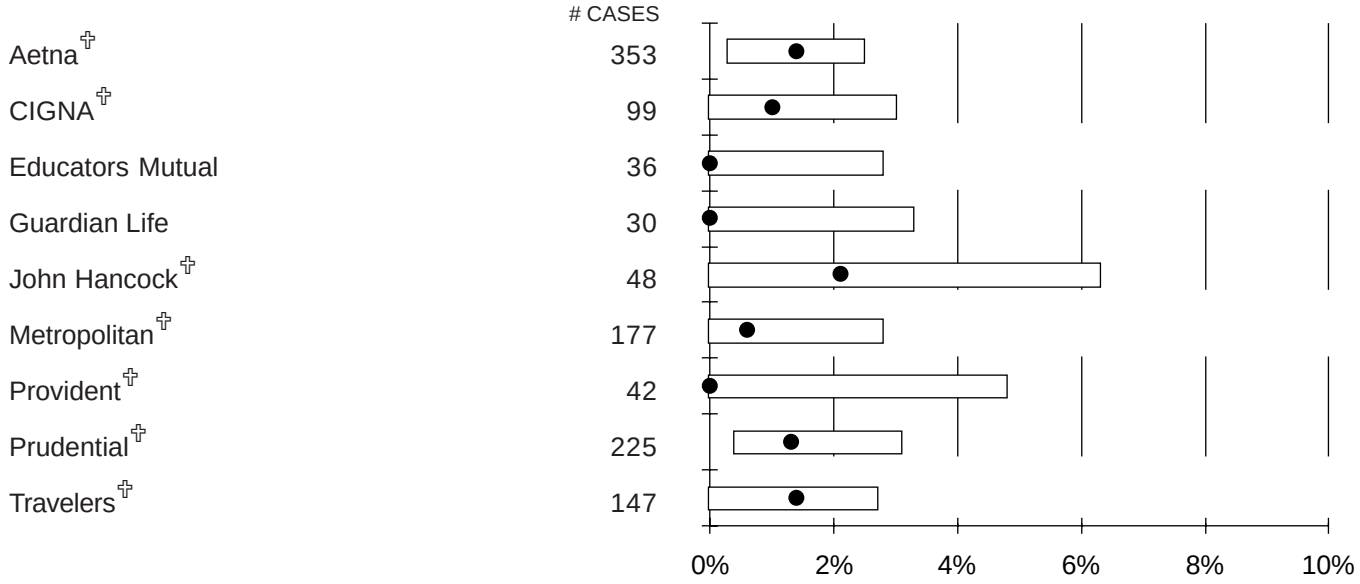
FIGURE 1: Actual to Expected Mortality, by Health Plan, 1994-1995

FEE FOR SERVICE

Blue Cross Companies



Commercial Insurance Companies



✞ This insurer represents more than one individual licensed insurance company under the same parent name.

KEY

* Actual Mortality significantly higher than Expected

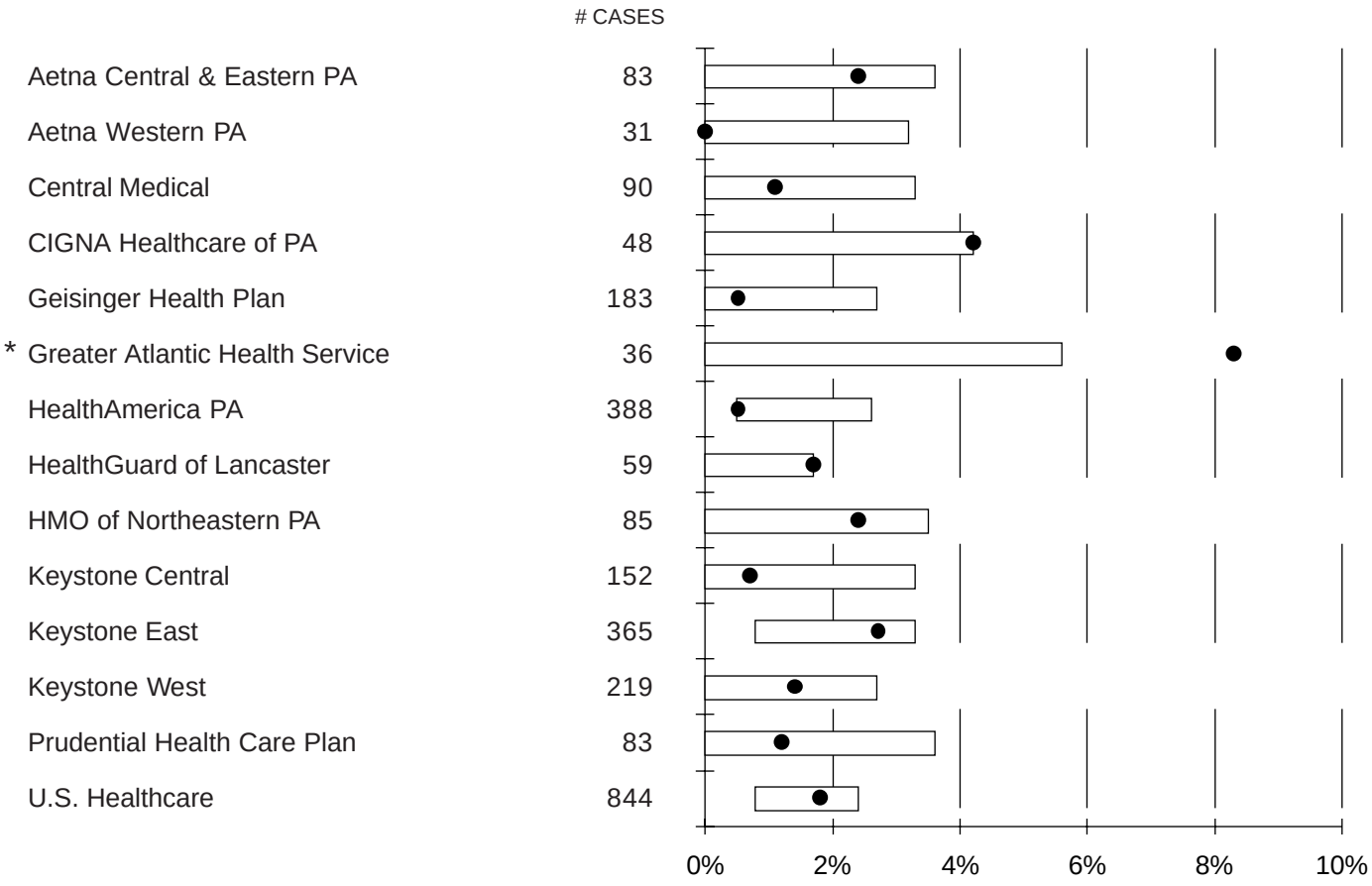
° Actual Mortality significantly lower than Expected

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 1: Actual to Expected Mortality, by Health Plan, 1994-1995

LICENSED HMO PLANS ☑



☑ Does not include Medicare or Medicaid patients

KEY

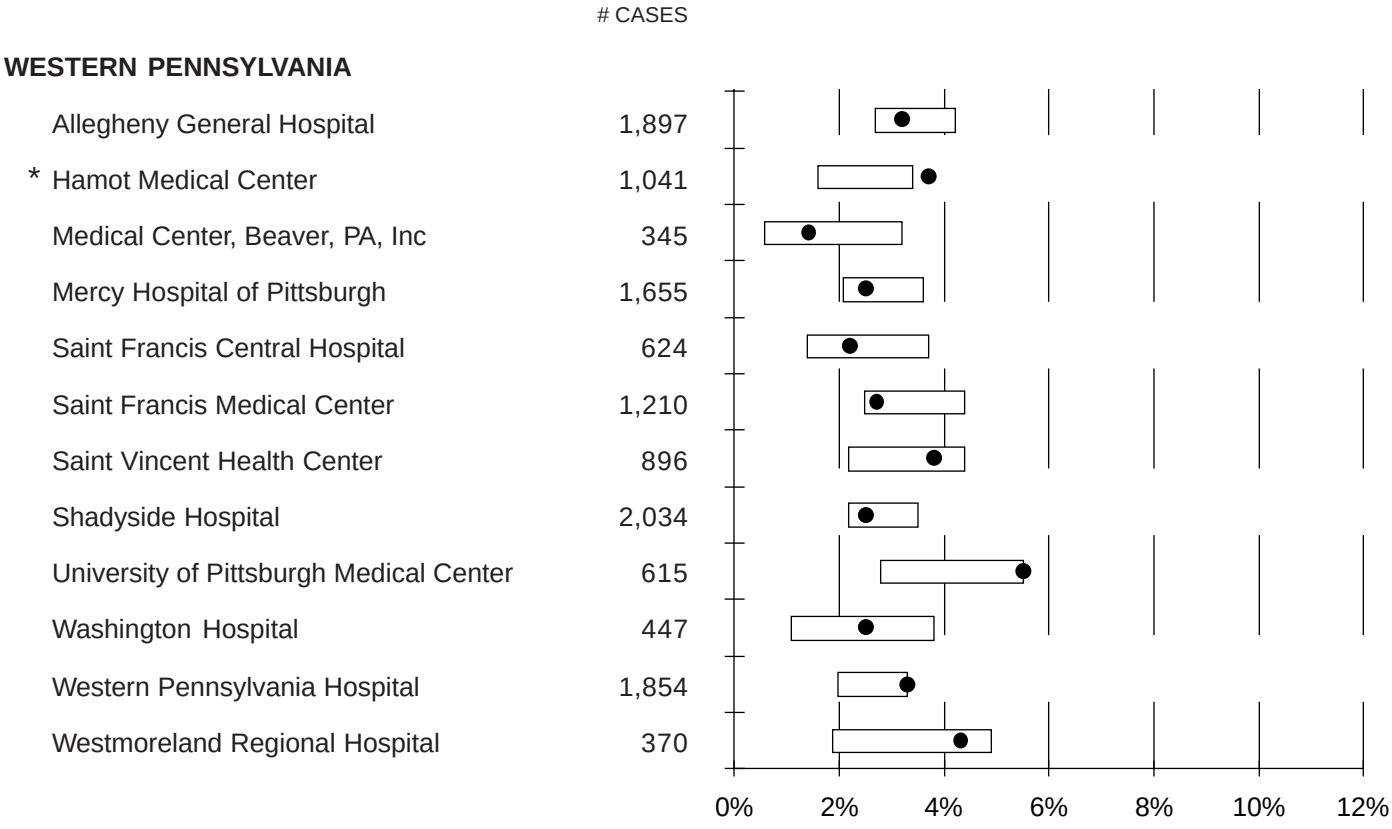
* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 2A: Actual to Expected Mortality, by Hospital, 1994-1995



KEY

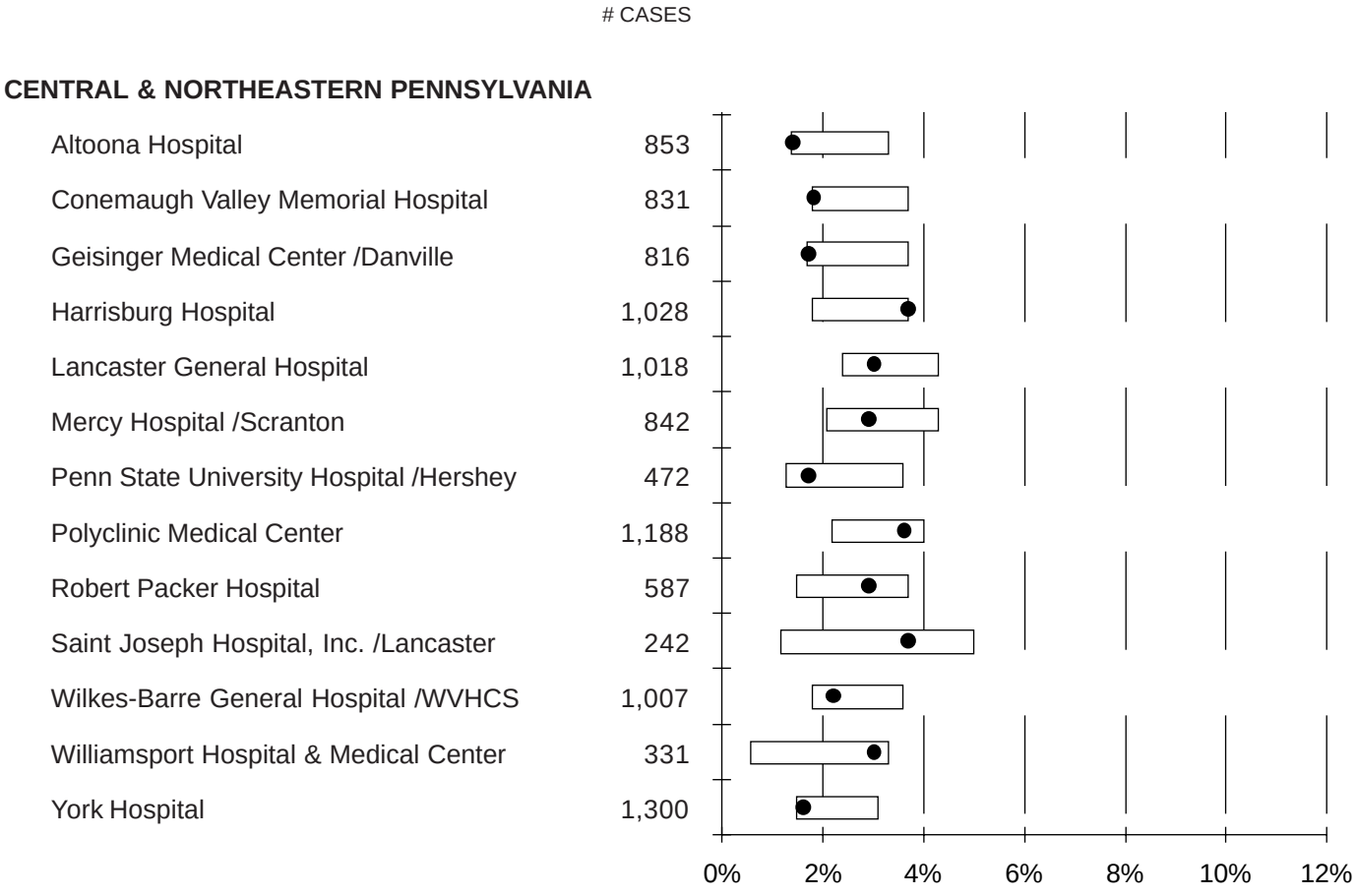
* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 2B: Actual to Expected Mortality, by Hospital, 1994-1995



KEY

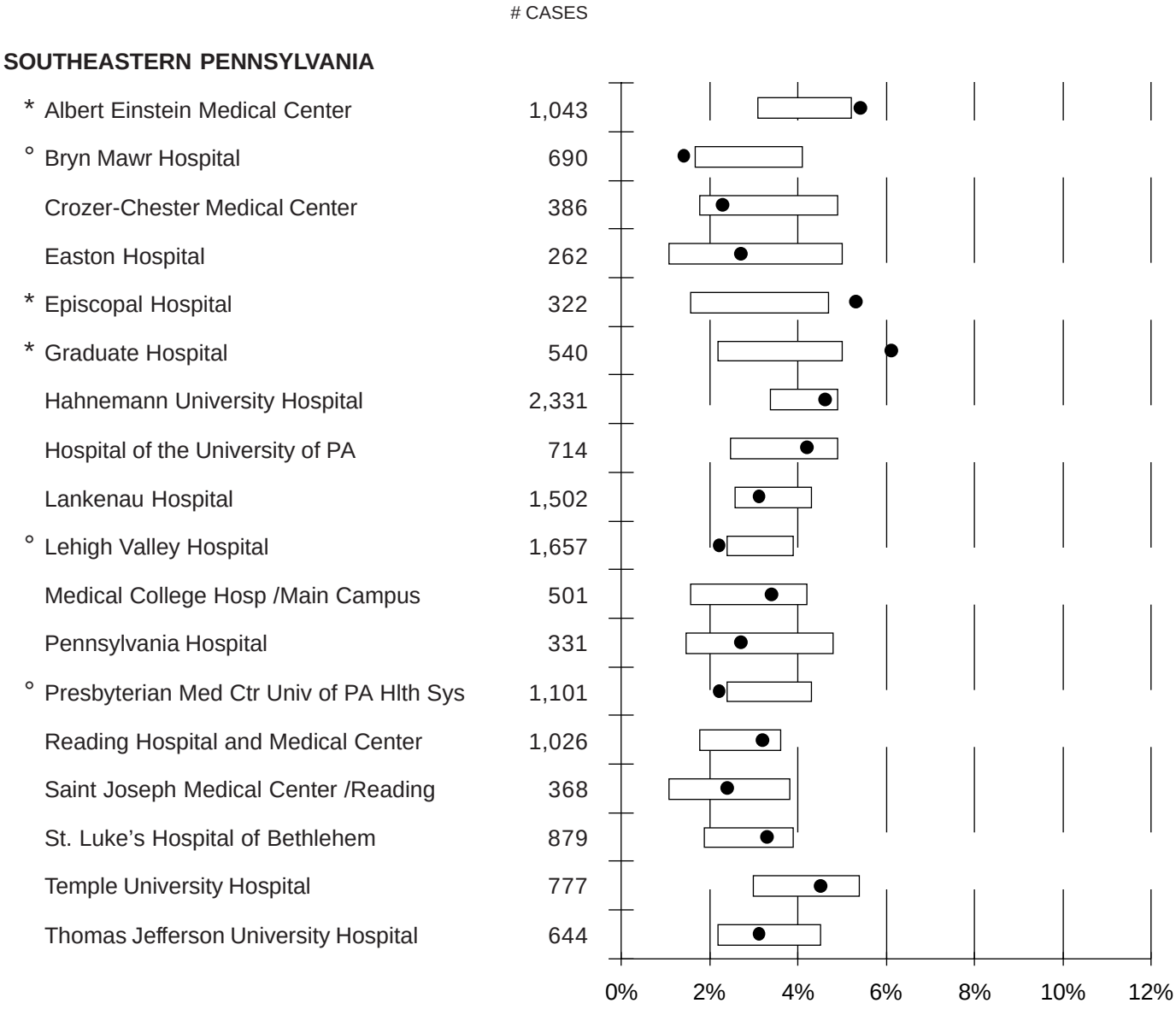
* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 2C: Actual to Expected Mortality, by Hospital, 1994-1995



KEY

* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

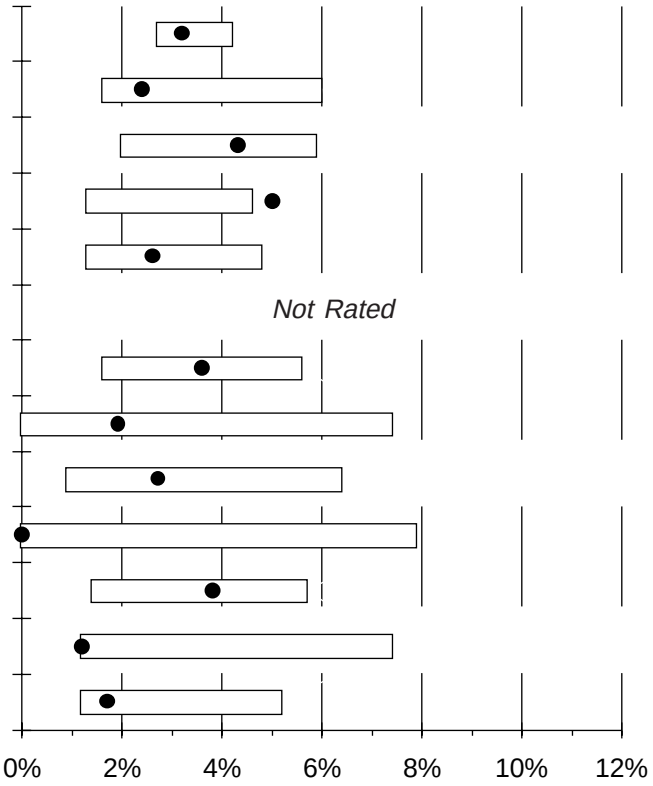
● Actual Mortality Rate

▭ Range of Expected Mortality

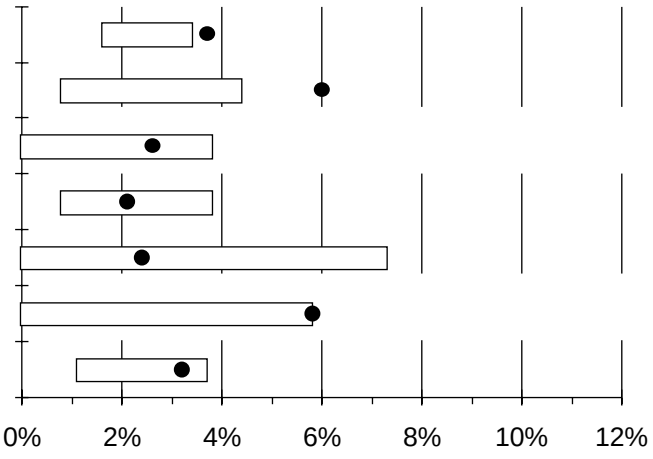
FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995

WESTERN PENNSYLVANIA

		# CASES
	Allegheny General Hospital	**1,897**
	Benckart, Daniel H. [2]	251
	Burkholder, John A. [2]	256
*	Liebler, George A. [2]	240
	Magovern, George J., Jr. [2]	227
	Magovern, George J., Sr.	9
	Magovern, James A. [2]	249
	Maher, Thomas D., Jr. [3]	54
	Marrone, Gary C. [2]	110
	Park, Sang B. [3]	38
	Savage, Edward B. [2]	209
	Szydlowski, Gary W. [2]	81
	Wiechmann, Robert J. [2]	173



		# CASES
*	**Hamot Medical Center**	**1,041**
*	D'Angelo, George J.	248
	Kish, George F.	78
	Michalak, Dennis M.	239
	O'Connor, James V.	41
	Sardesai, Prabhaker G.	86
	Tan, Wilfredo S.	349



KEY

* Actual Mortality significantly higher than Expected

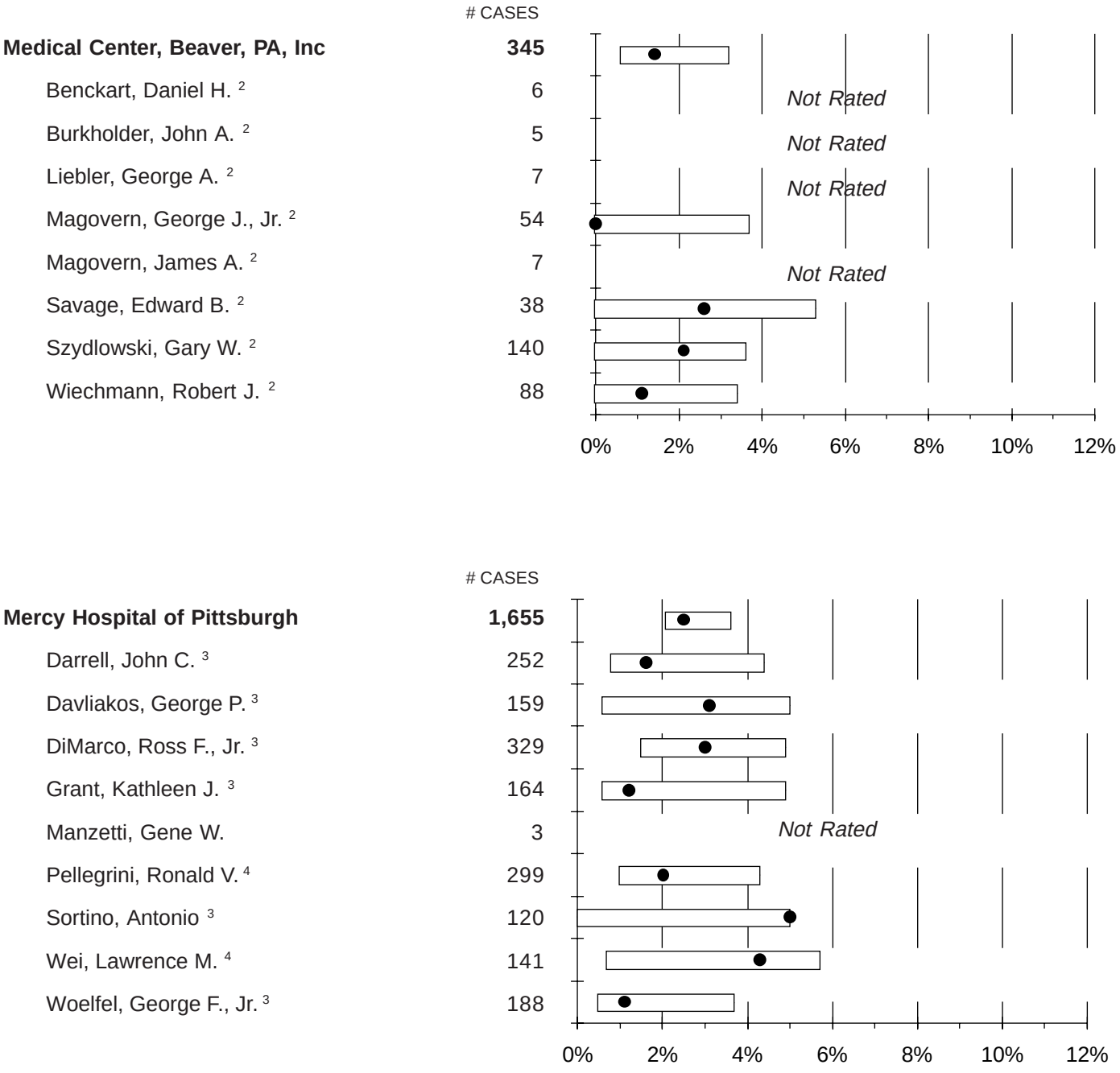
° Actual Mortality significantly lower than Expected

[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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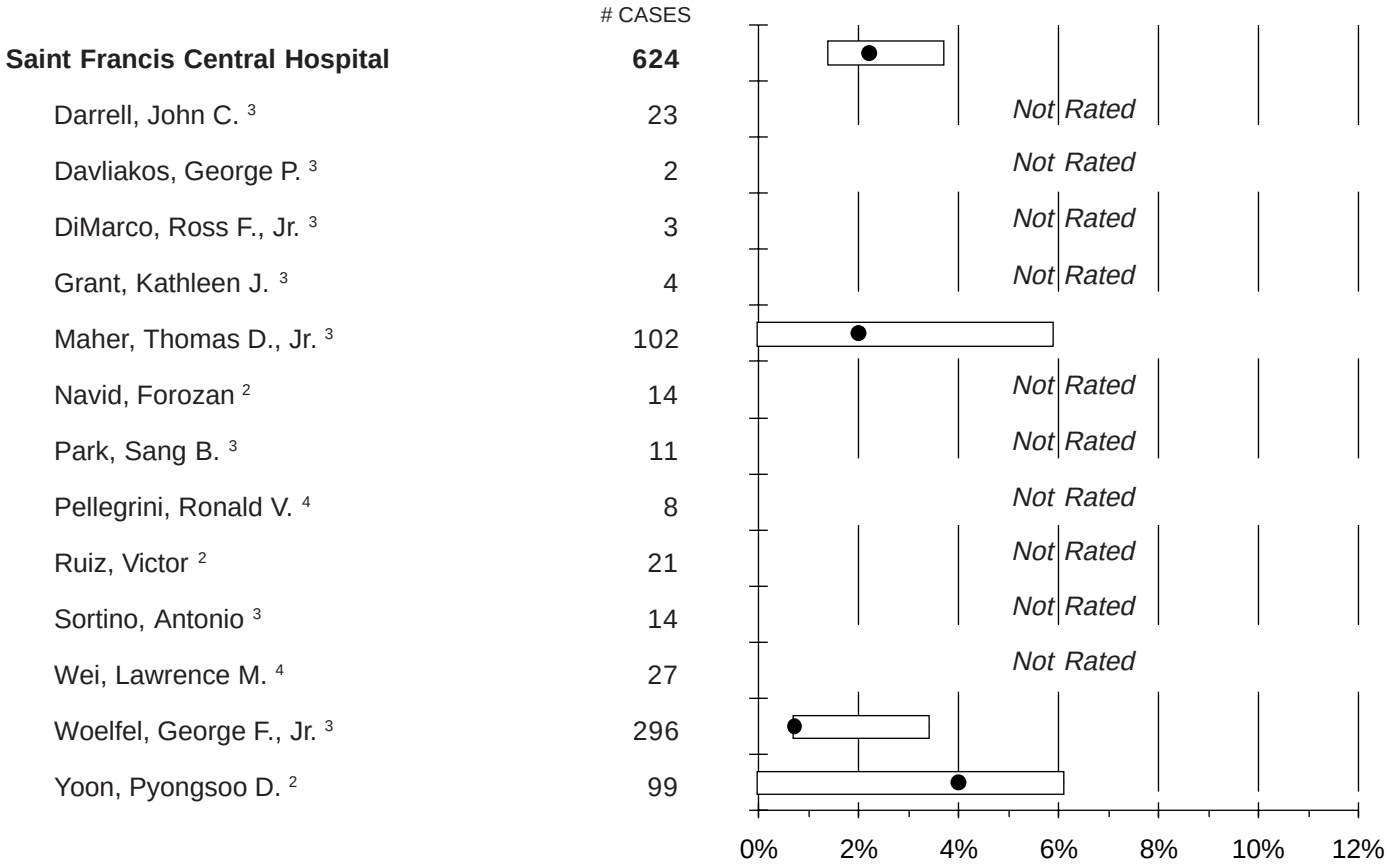
° Actual Mortality significantly lower than Expected

2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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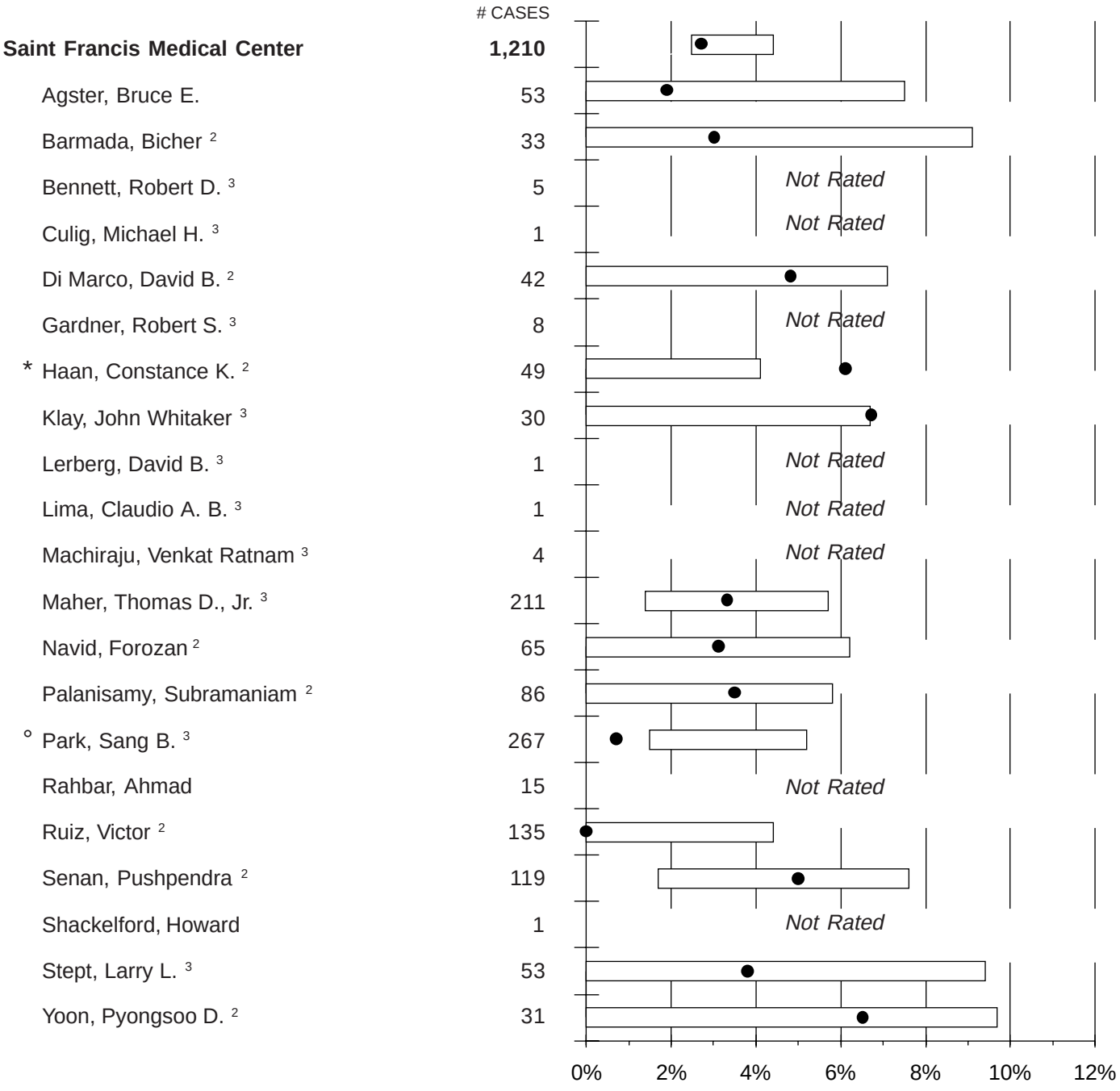
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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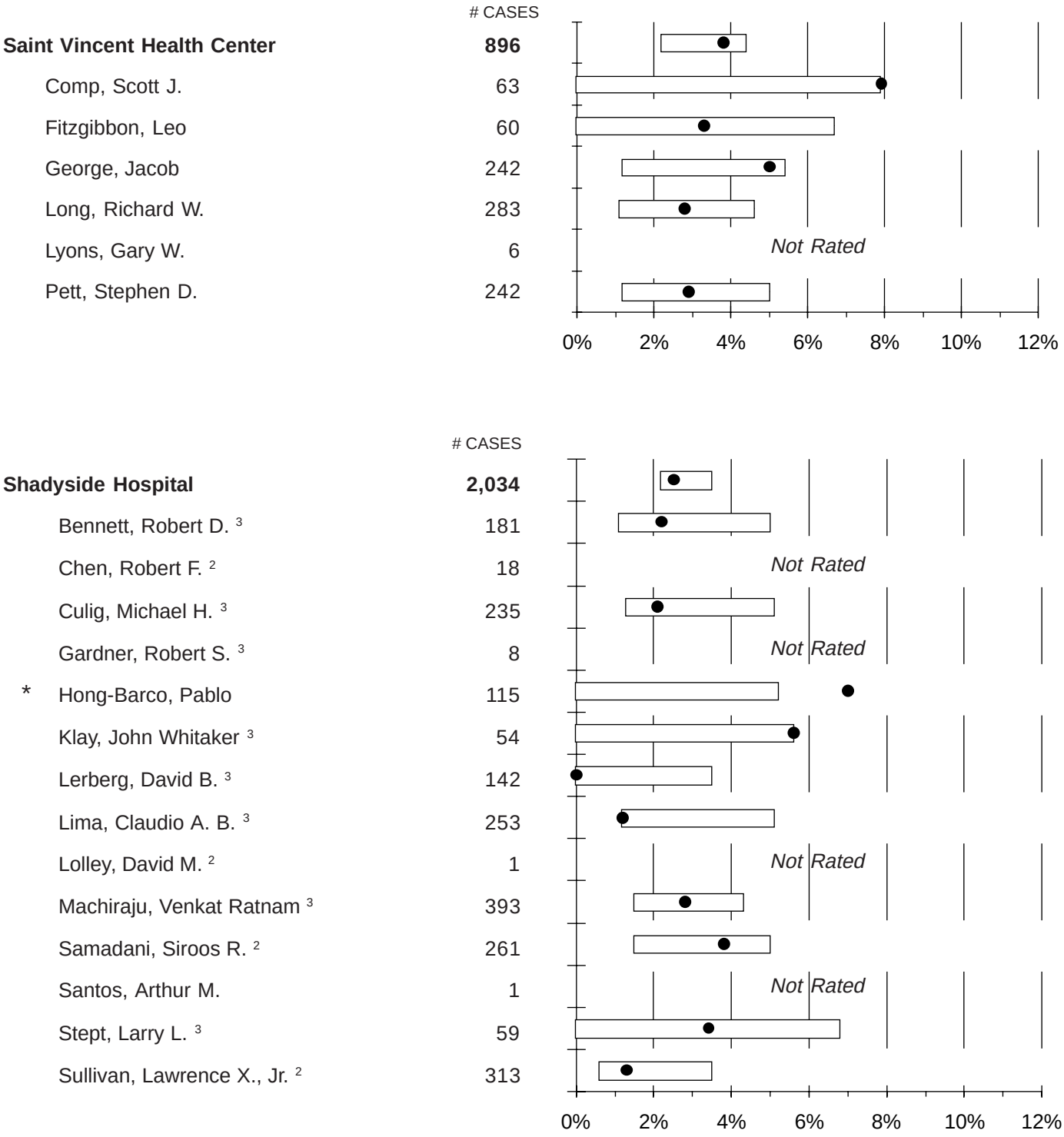
[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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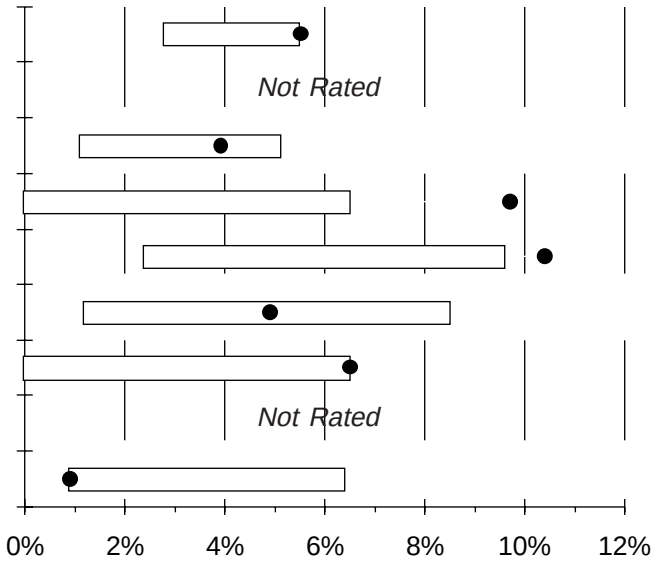
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

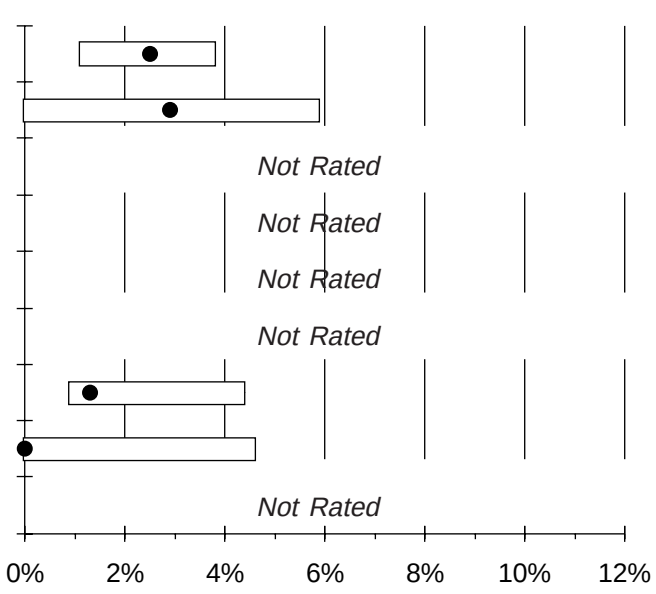
▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995

		# CASES
University of Pittsburgh Medical Center		**615**
	Armitage, John M.	29
	Griffith, Bartley P.	178
*	Hardesty, Robert L. [2]	31
*	Hattler, Brack G. [2]	125
	Kormos, Robert	82
	Pellegrini, Ronald V. [4]	46
	Pham, Si	15
	Wei, Lawrence M. [4]	109



		# CASES
Washington Hospital		**447**
	Darrell, John C. [3]	68
	Davliakos, George P. [3]	25
	DiMarco, Ross F., Jr. [3]	10
	Grant, Kathleen J. [3]	29
	Pellegrini, Ronald V. [4]	21
	Sortino, Antonio [3]	228
	Wei, Lawrence M. [4]	65
	Woelfel, George F., Jr. [3]	1



KEY

* Actual Mortality significantly higher than Expected

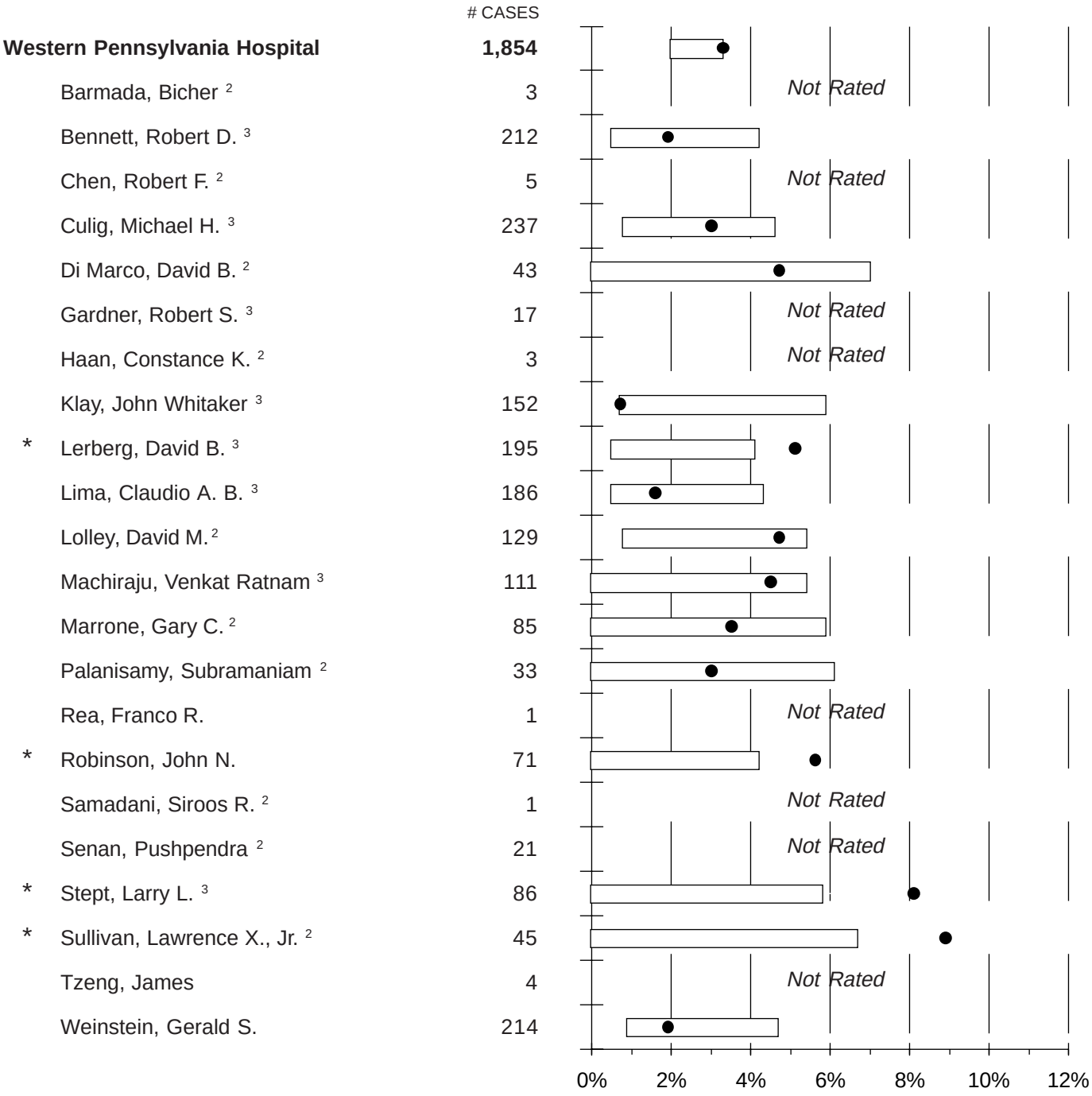
° Actual Mortality significantly lower than Expected

[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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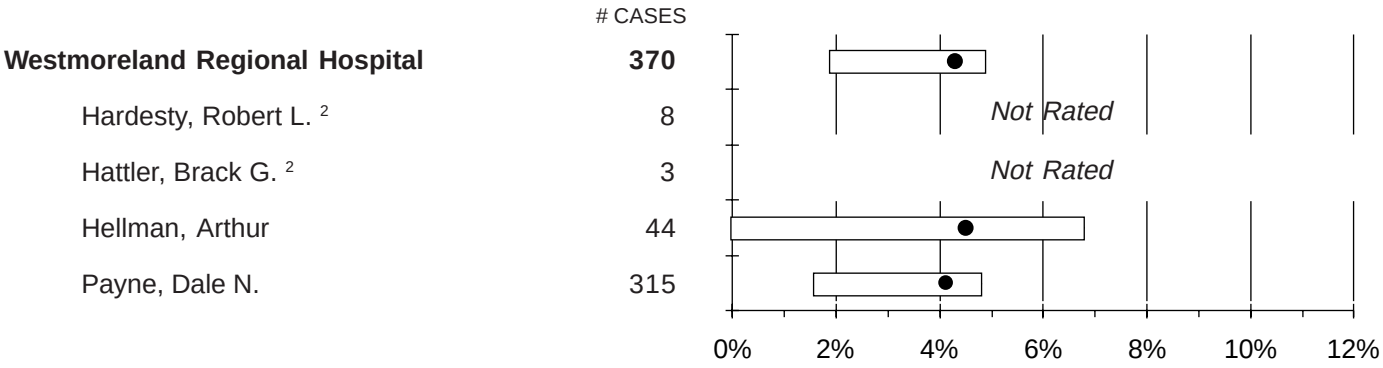
[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3A: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

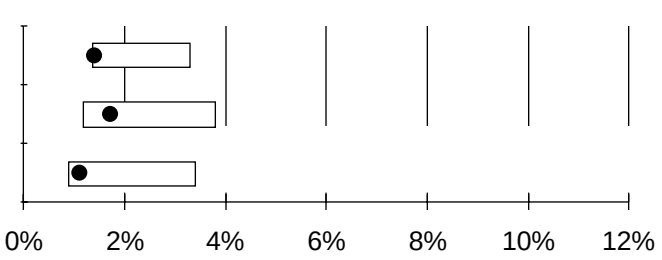
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

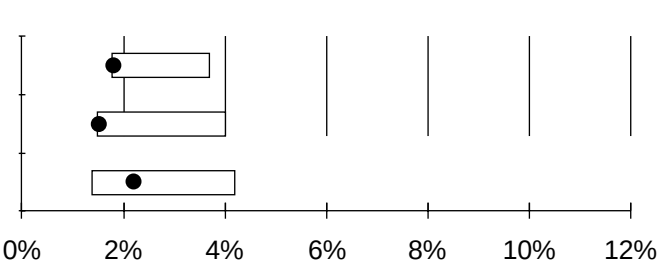
▭ Range of Expected Mortality

FIGURE 3B: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995

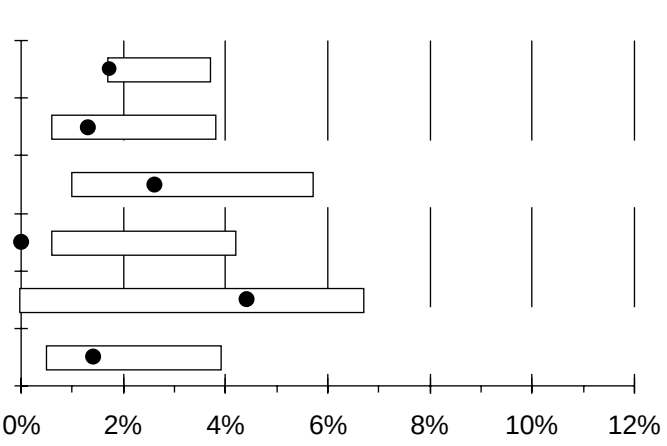
CENTRAL AND NORTHEASTERN PENNSYLVANIA



	# CASES
Altoona Hospital	**853**
Anastasi, John S.	417
Fazi, Burt	436



	# CASES
Conemaugh Valley Memorial Hospital	**831**
Devineni, Rajsekhar	475
Kolff, Jacob	356



	# CASES
Geisinger Medical Center /Danville	**816**
Benoit, Charles H.	159
Dietl, Charles Albert	194
° Gilbert, Christian L.	166
Pharr, William F.	90
Woods, Edward Lawson	207

KEY

* Actual Mortality significantly higher than Expected

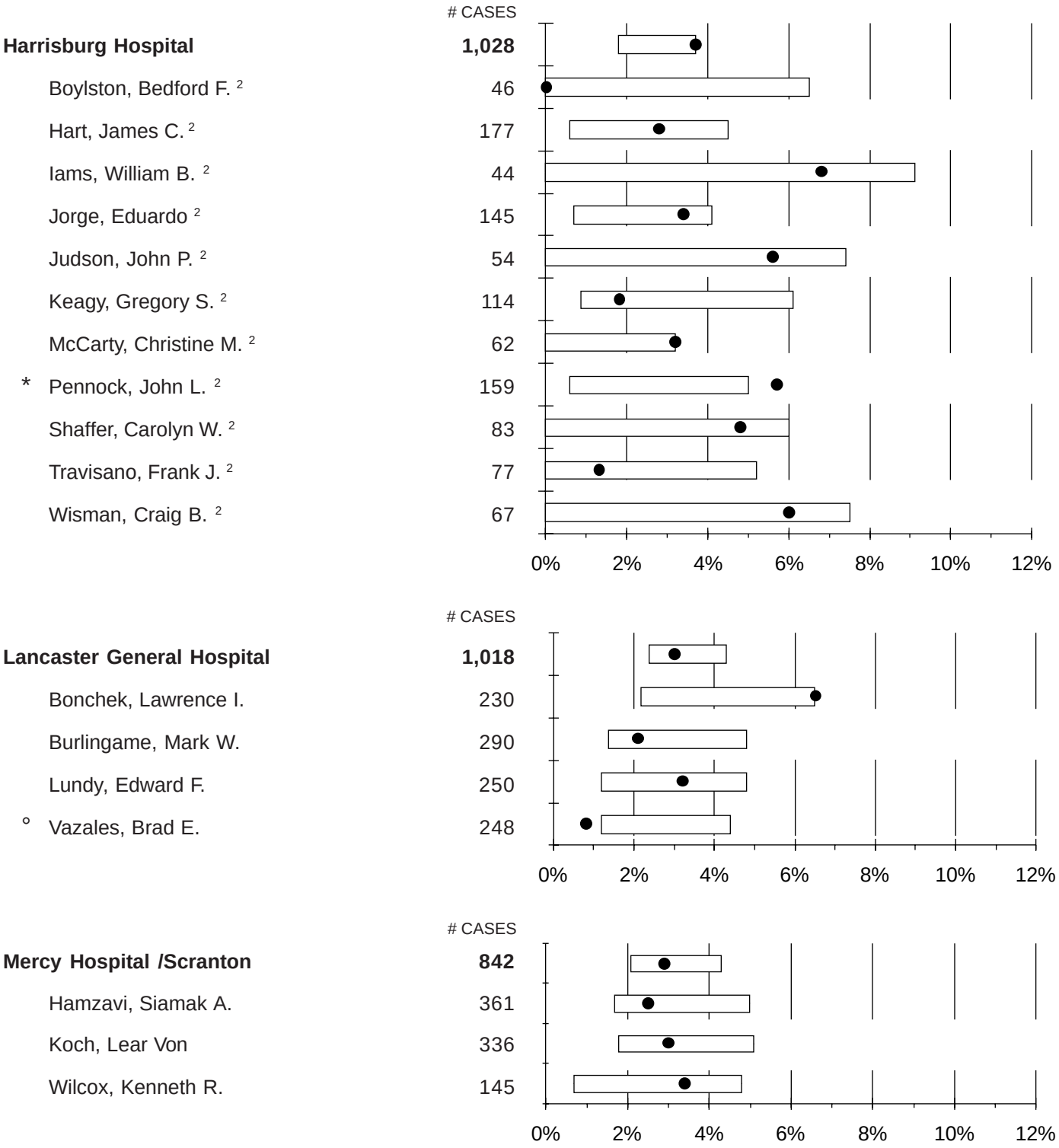
° Actual Mortality significantly lower than Expected

2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3B: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

* Actual Mortality significantly higher than Expected

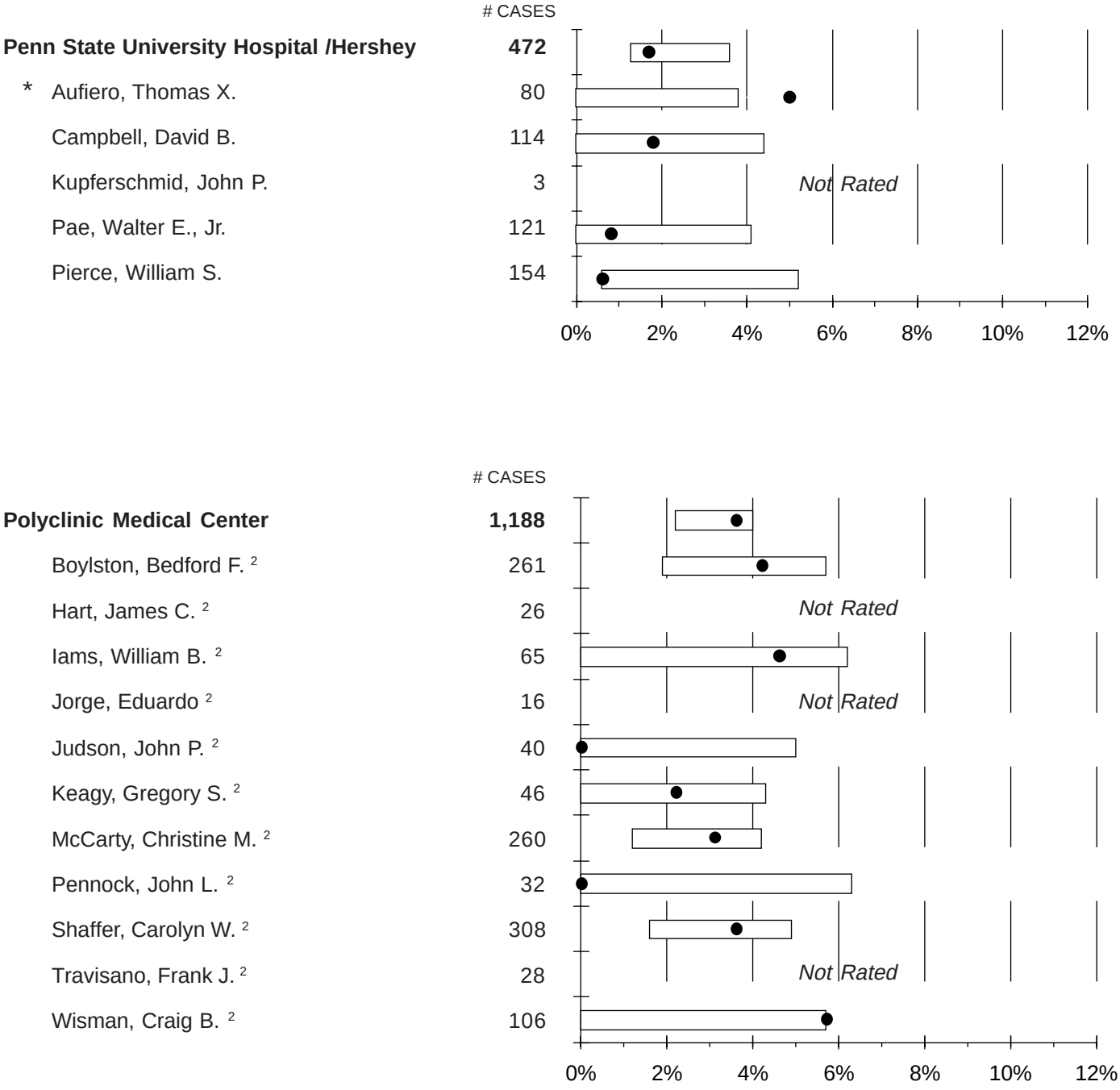
° Actual Mortality significantly lower than Expected

[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

□ Range of Expected Mortality

FIGURE 3B: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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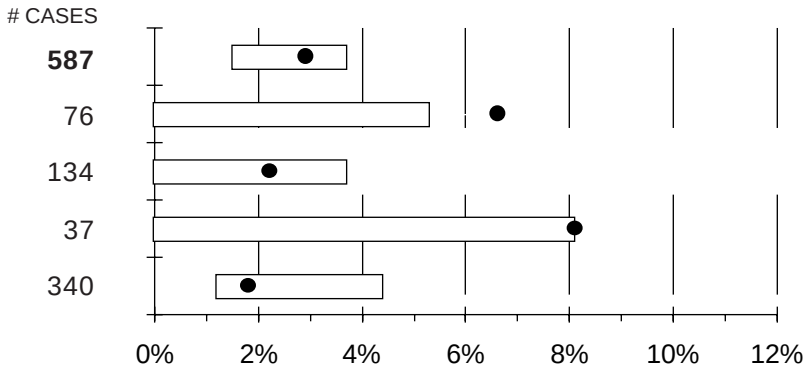
° Actual Mortality significantly lower than Expected

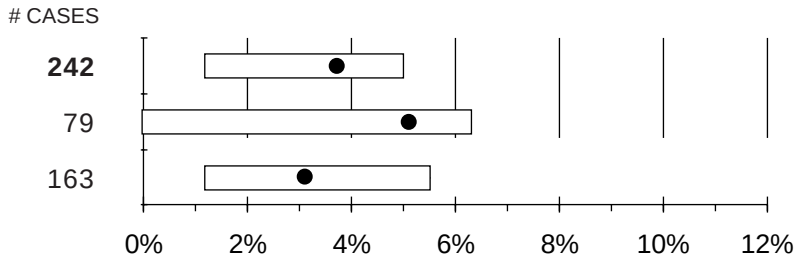
2,3,4 Number of Hospitals where Surgeon Performed CABG

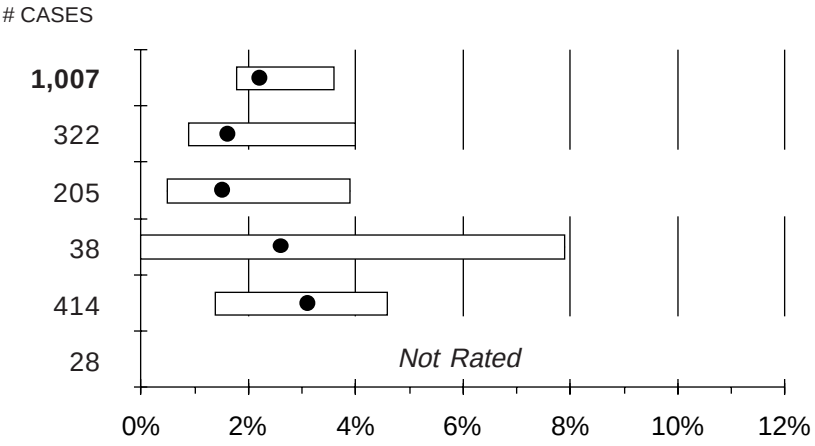
● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3B: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995







KEY

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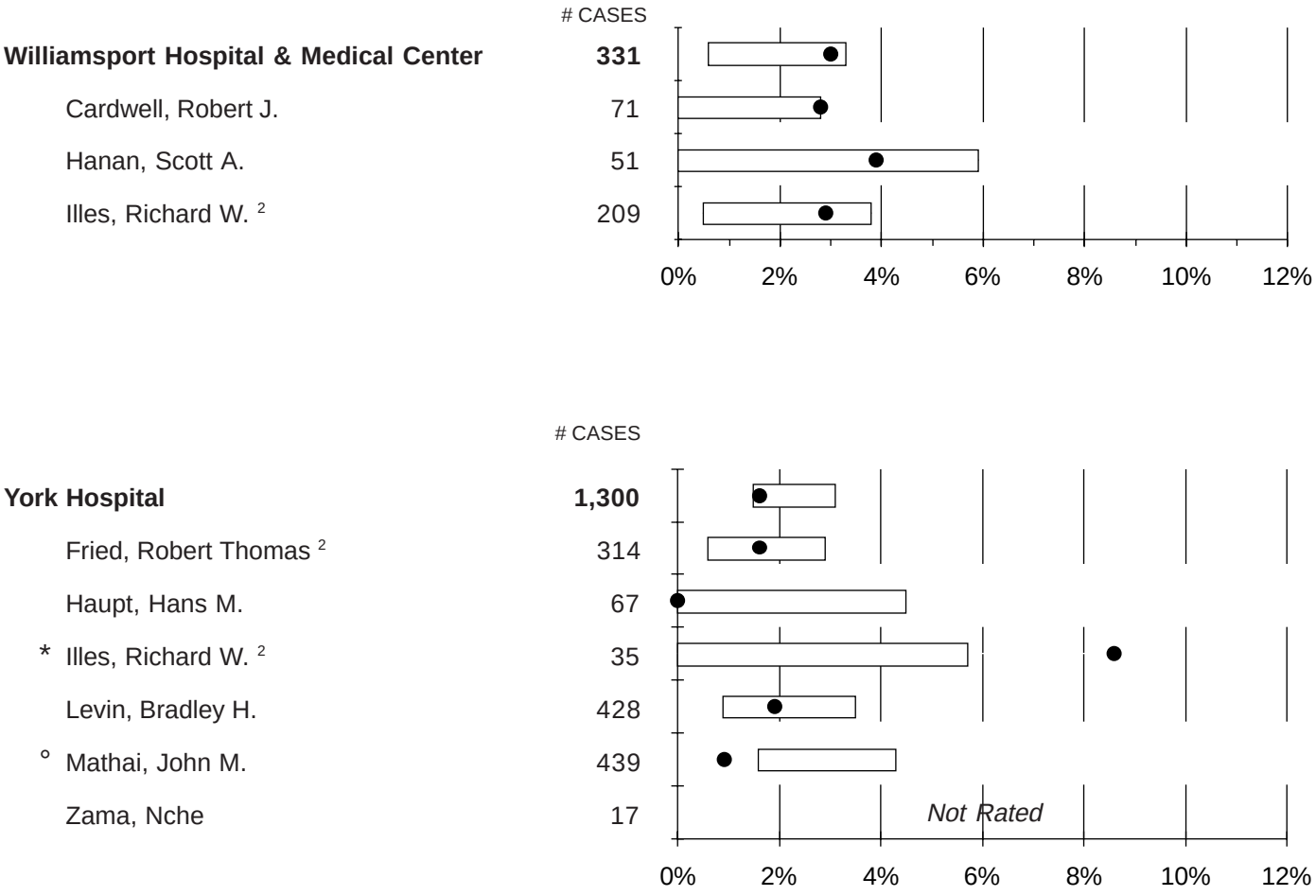
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3B: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

* Actual Mortality significantly higher than Expected

° Actual Mortality significantly lower than Expected

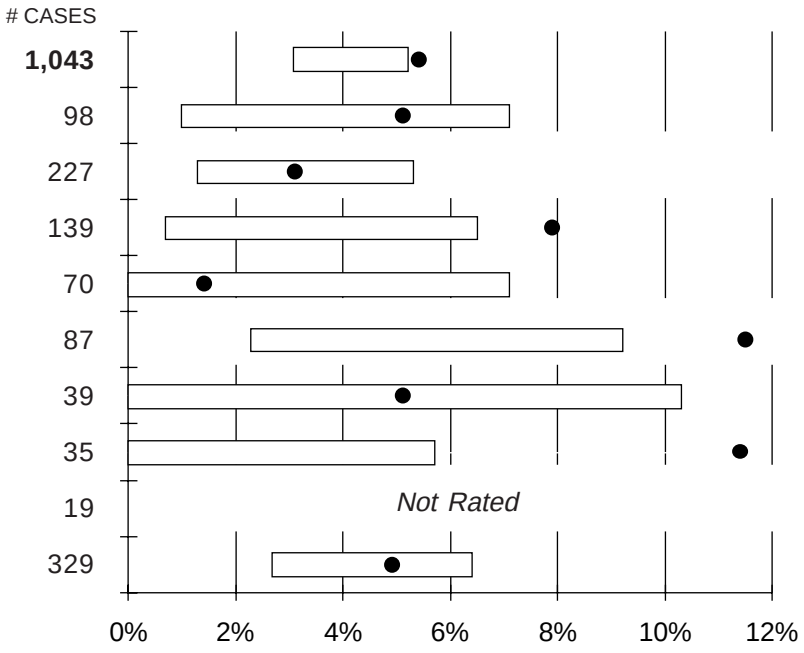
2,3,4 Number of Hospitals where Surgeon Performed CABG

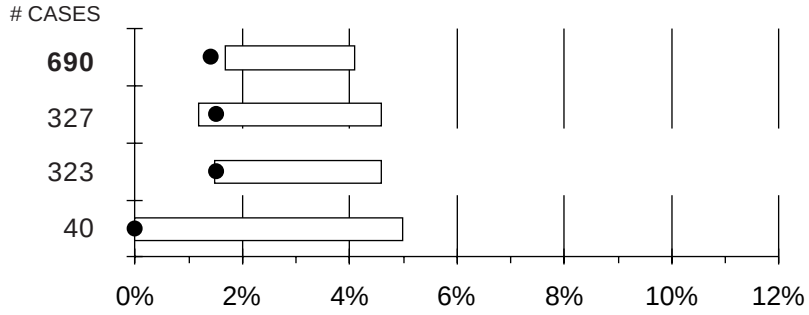
● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995

SOUTHEASTERN PENNSYLVANIA





KEY

* Actual Mortality significantly higher than Expected

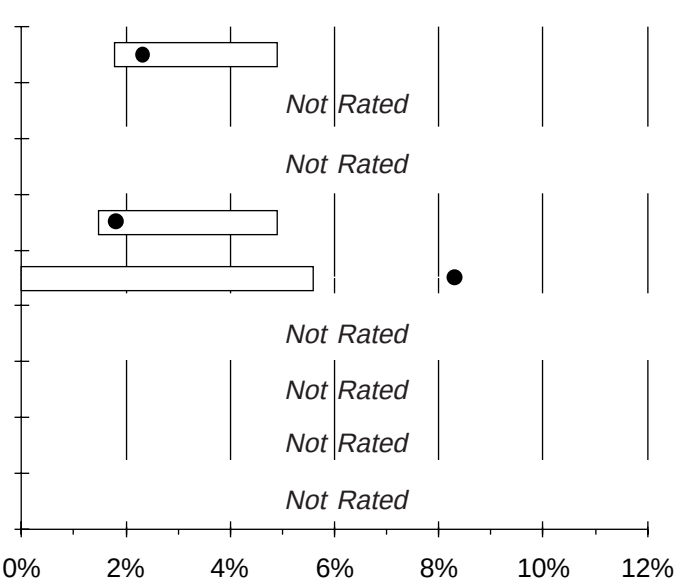
° Actual Mortality significantly lower than Expected

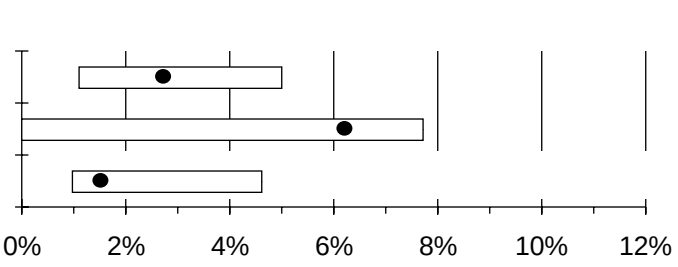
[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995





KEY

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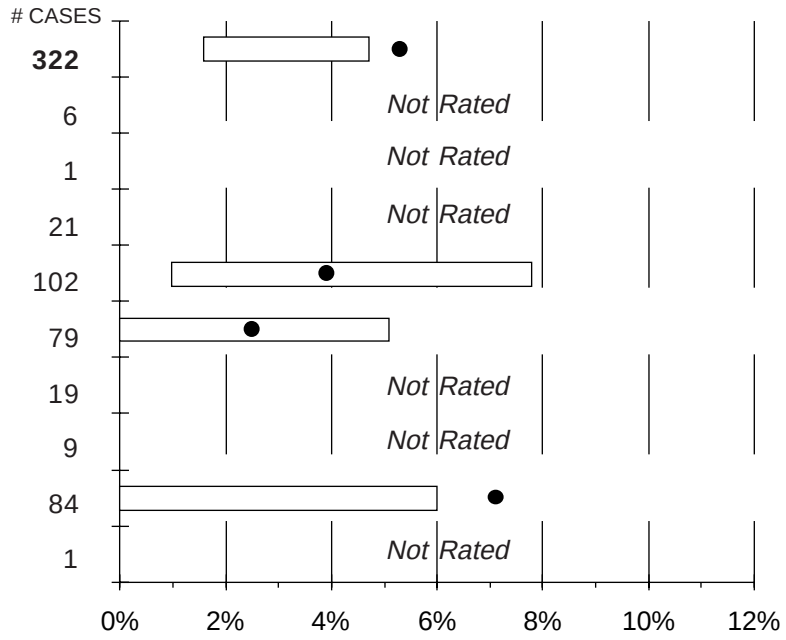
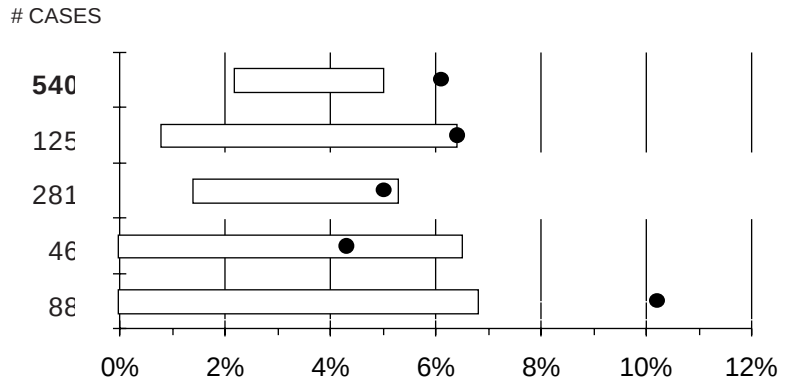
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995





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2,3,4 Number of Hospitals where Surgeon Performed CABG

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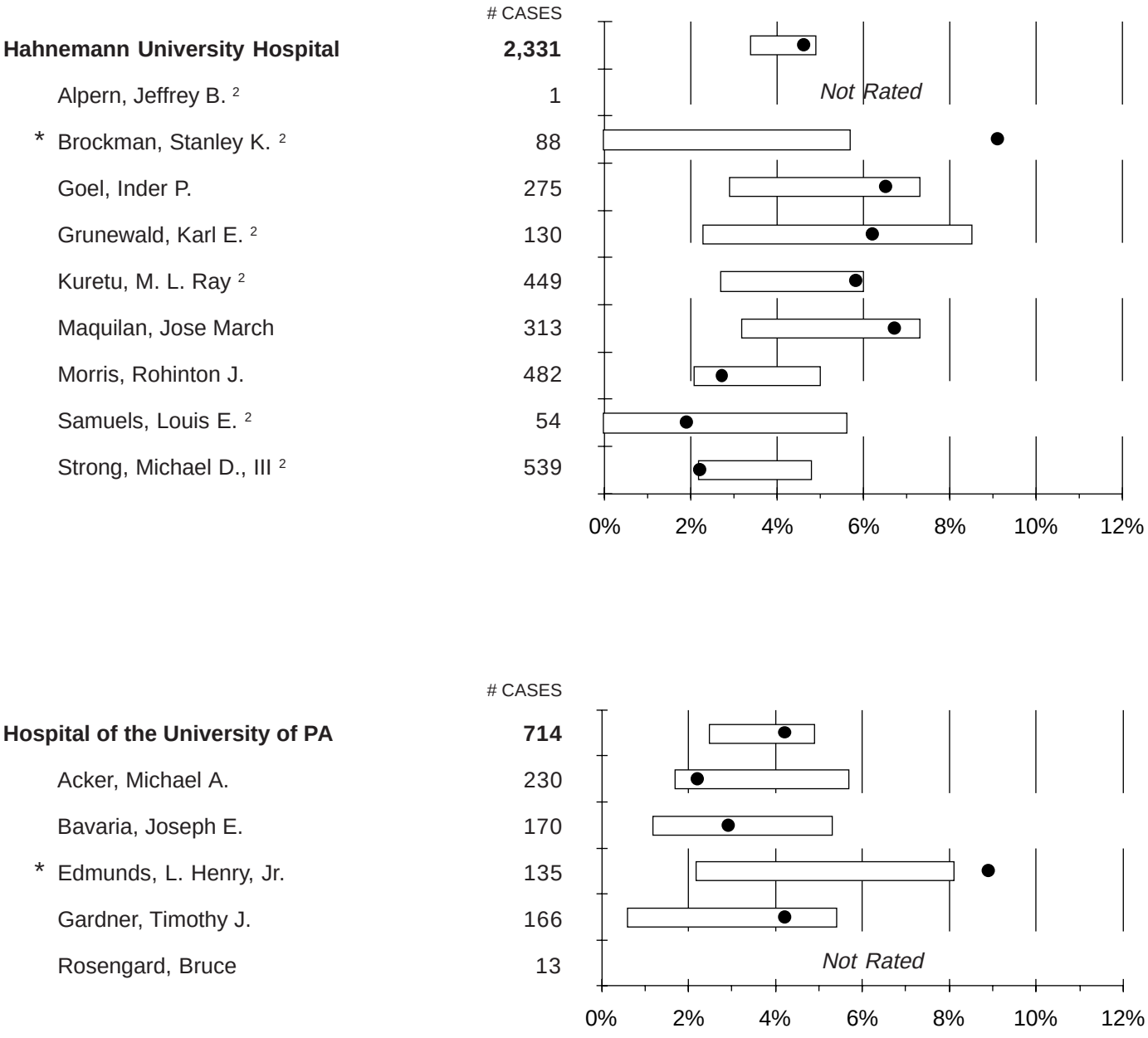
FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



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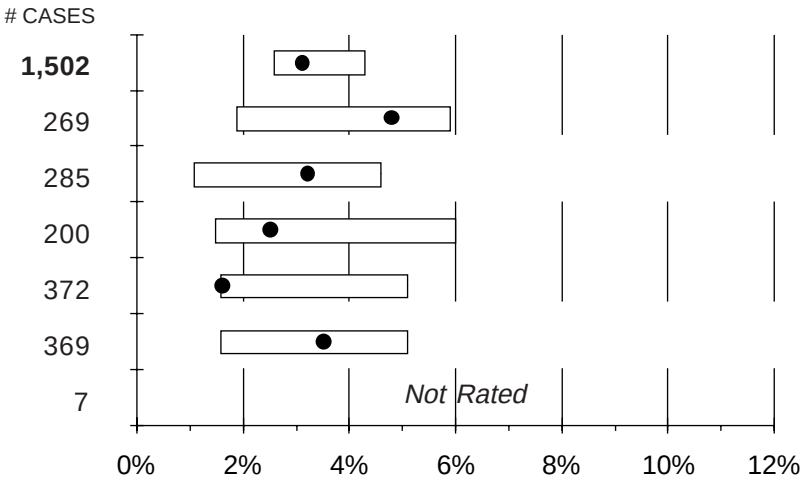
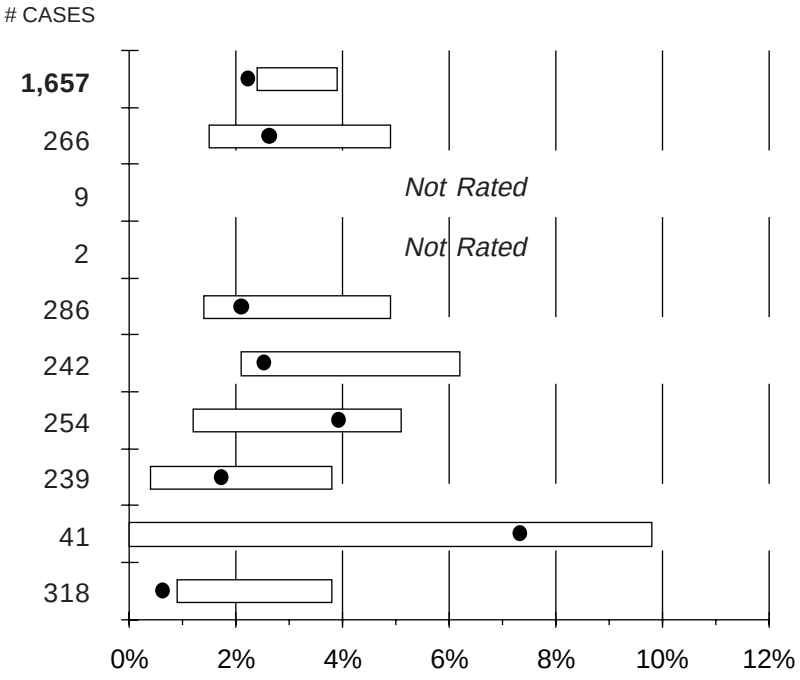
▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995





KEY

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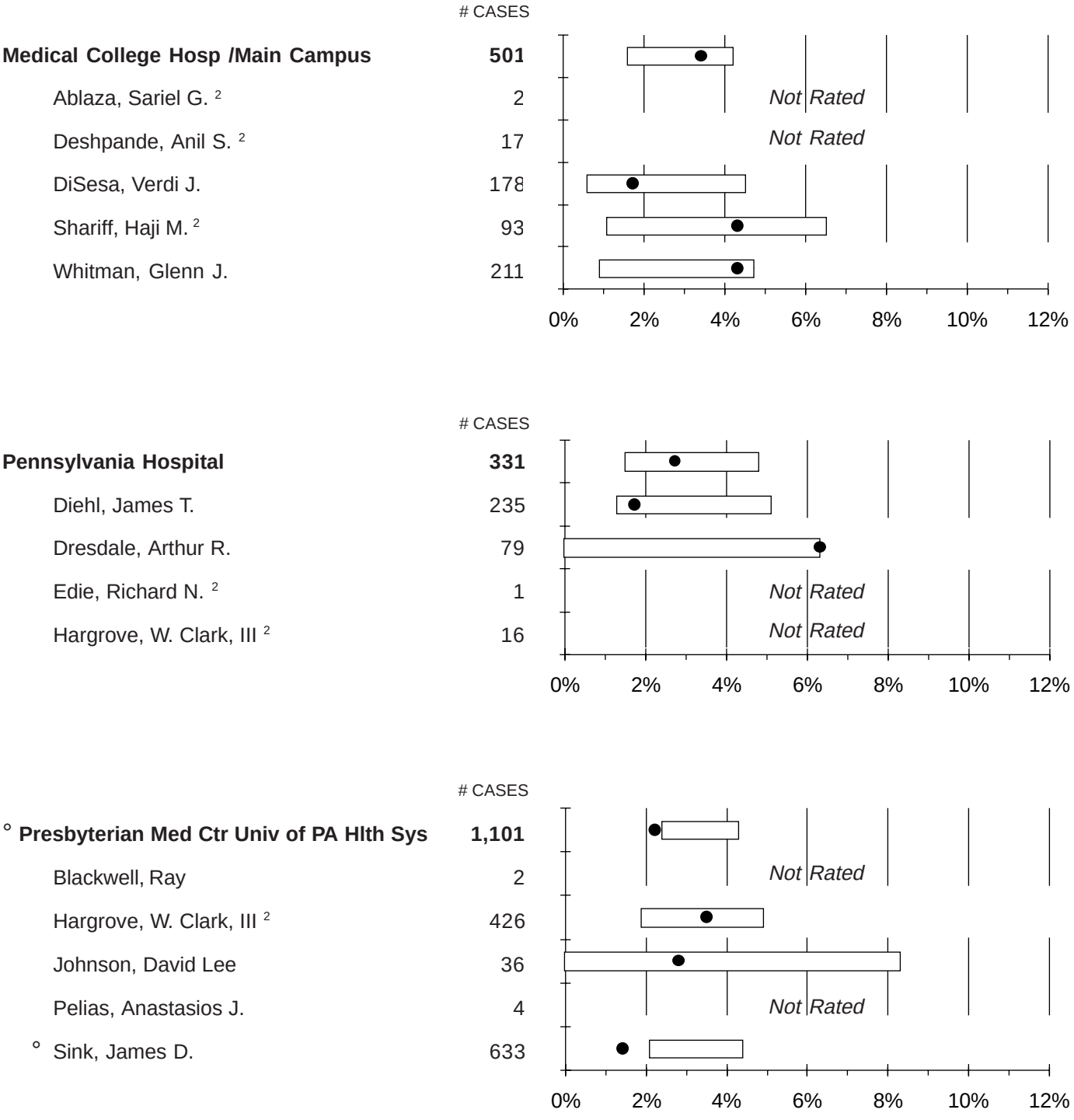
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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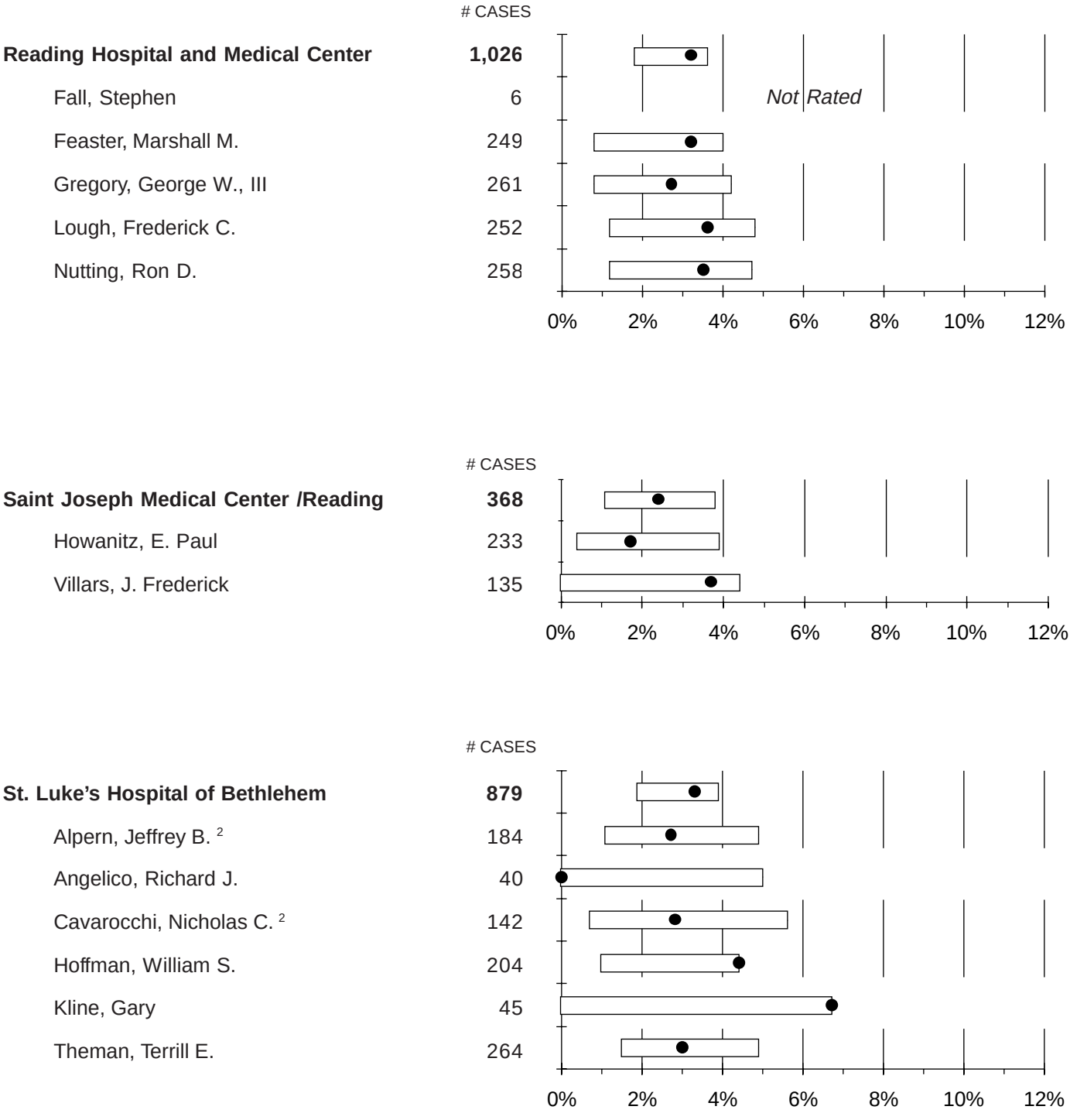
[2,3,4] Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



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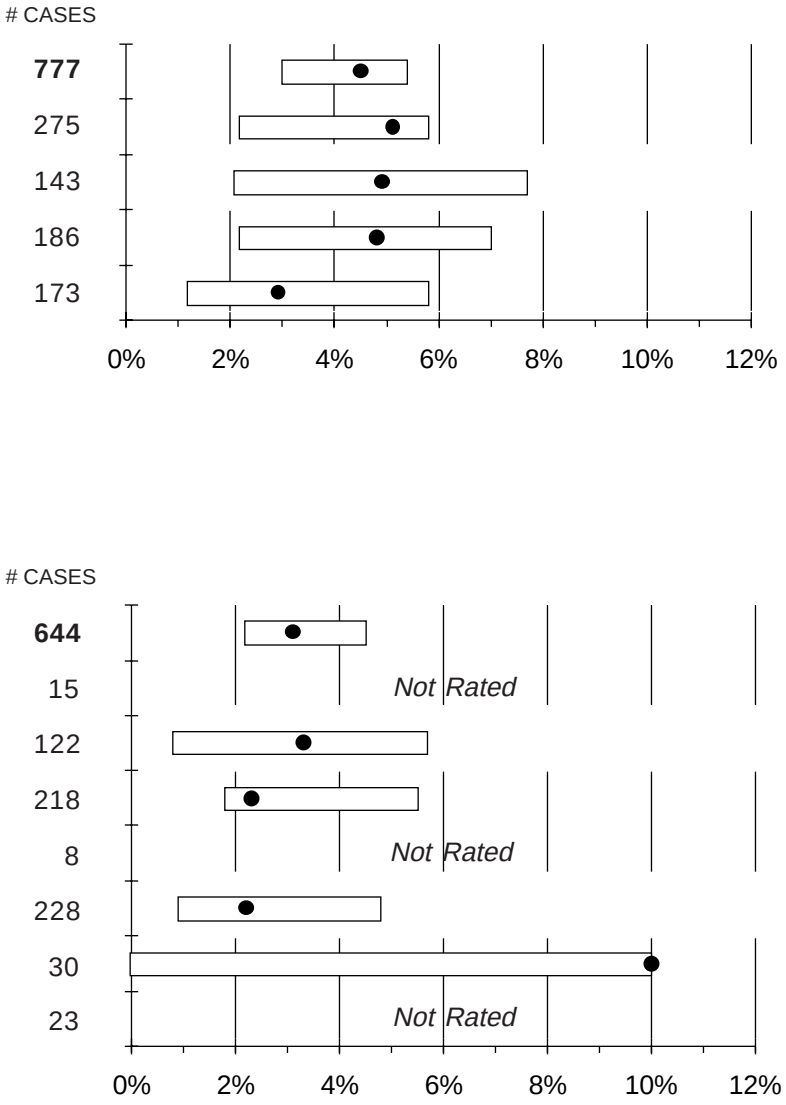
2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

FIGURE 3C: Actual to Expected Mortality, by Cardiac Surgeon, 1994-1995



KEY

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2,3,4 Number of Hospitals where Surgeon Performed CABG

● Actual Mortality Rate

▭ Range of Expected Mortality

Risk-Adjusted (Post-Surgical) Length of Stay

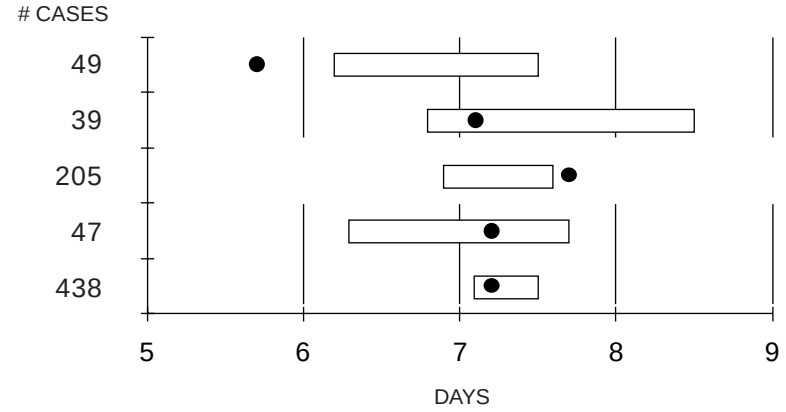
Health Plans

Hospitals

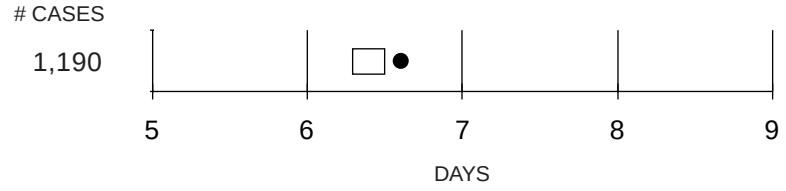
FIGURE 4: Actual to Expected (Post-Surgical) Length of Stay, by Health Plan, 1994-1995

MEDICARE PLANS

Medicare HMO Contracts ☑



MEDICAID PLANS



Medicaid HMO Contracts — There were 9 HMO plans that were the primary payor for Medicaid CABG cases in 1994-95; none had 30 or more cases and so are not reported.

☑ Includes only Medicare patients

KEY

* Actual Length of Stay significantly higher than Expected

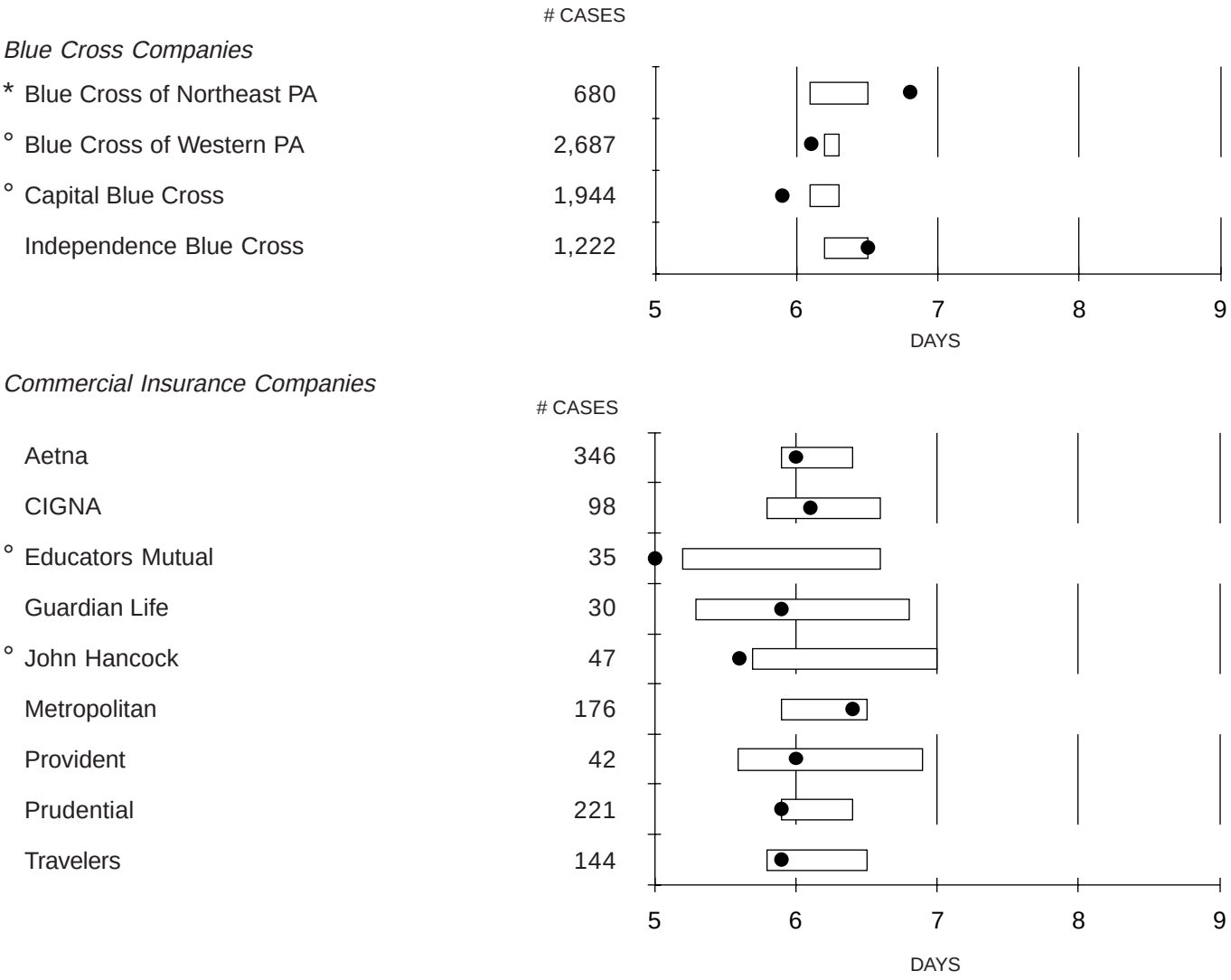
° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

▭ Range of Expected Length of Stay

FIGURE 4: Actual to Expected (Post-Surgical) Length of Stay, by Health Plan, 1994-1995

FEE FOR SERVICE



KEY

* Actual Length of Stay significantly higher than Expected

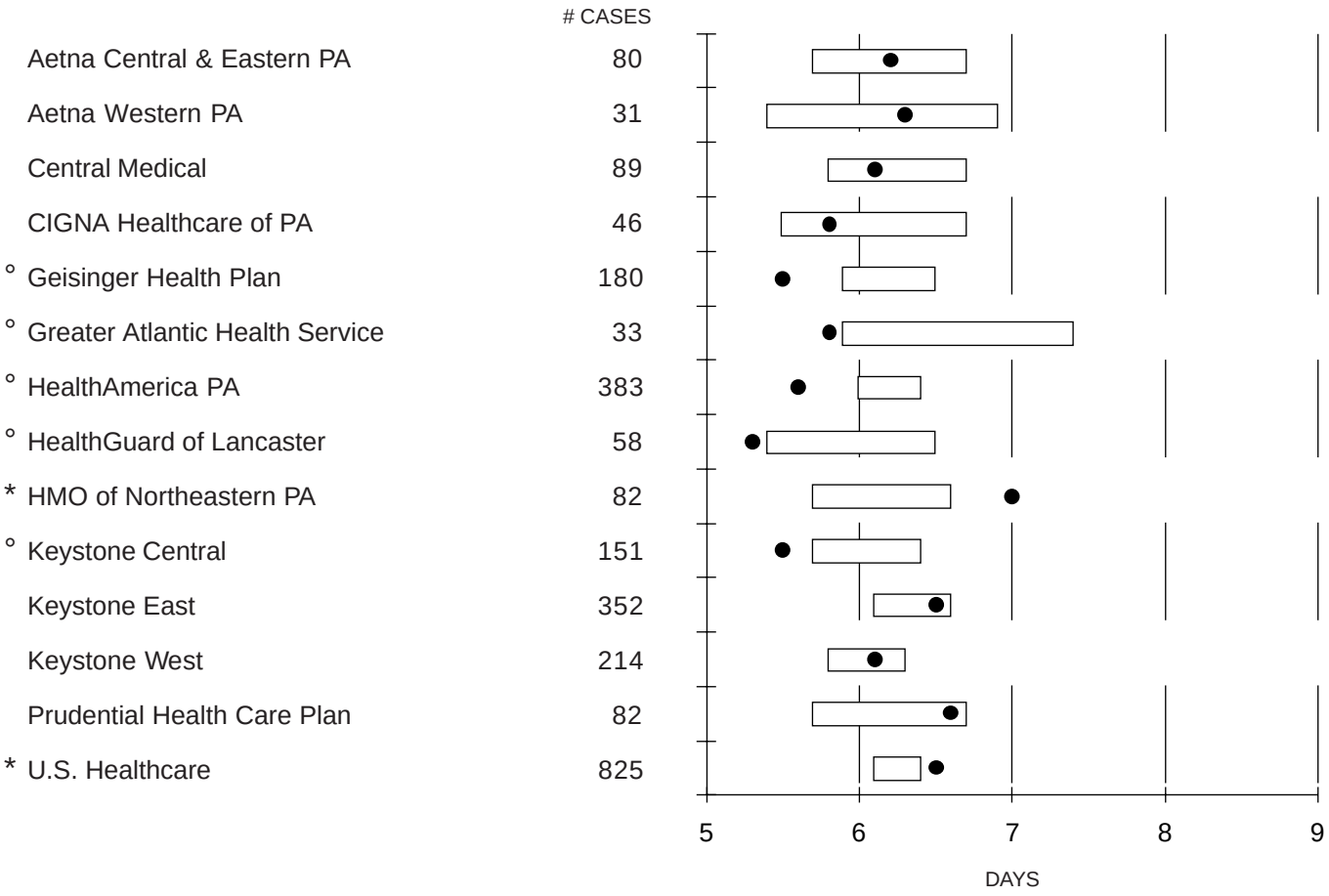
° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

▭ Range of Expected Length of Stay

FIGURE 4: Actual to Expected (Post-Surgical) Length of Stay, by Health Plan, 1994-1995

LICENSED HMO PLANS ☑



☑ Does not include Medicare or Medicaid patients

KEY

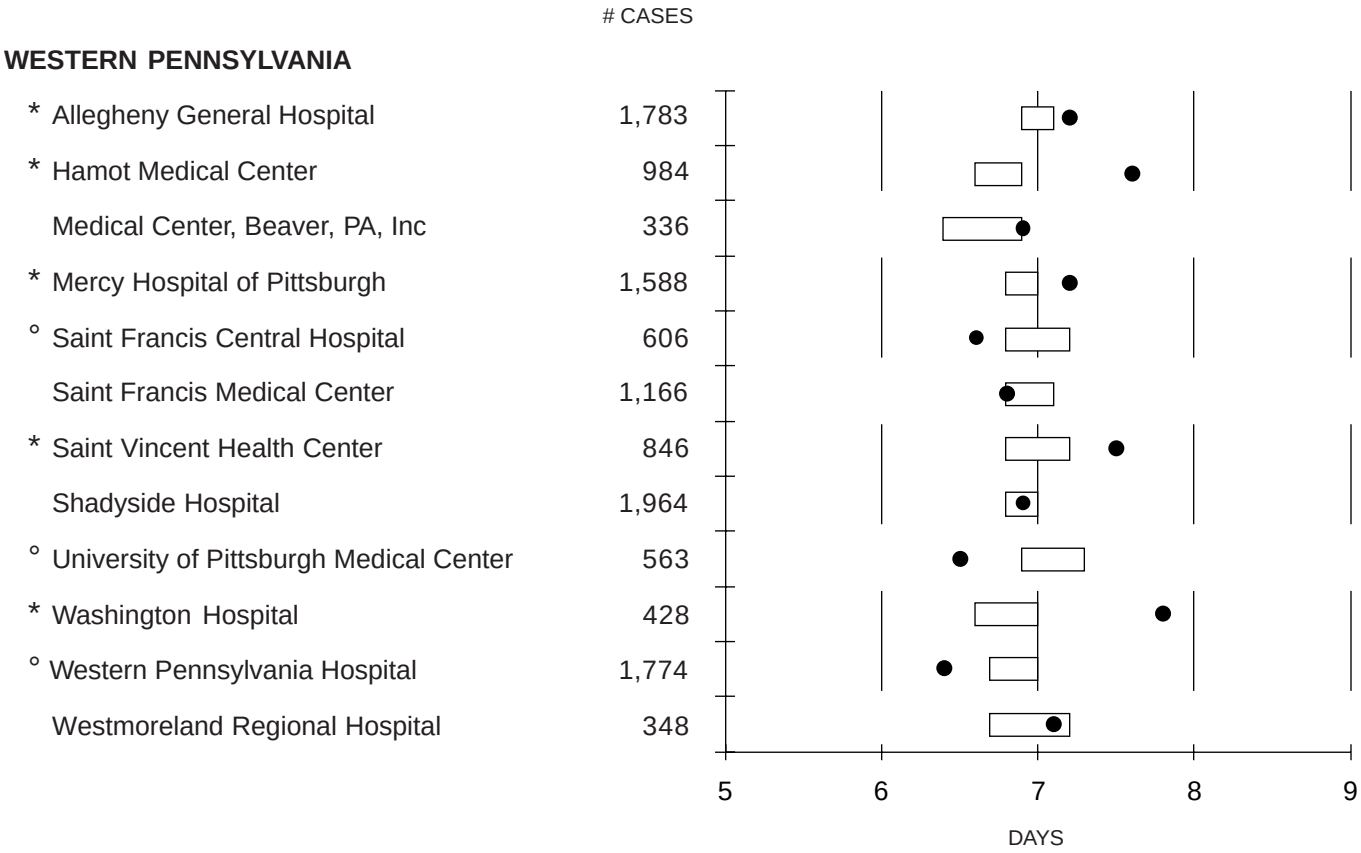
* Actual Length of Stay significantly higher than Expected

° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

▭ Range of Expected Length of Stay

FIGURE 5A: Actual to Expected (Post-Surgical) Length of Stay, by Hospital, 1994-1995



KEY

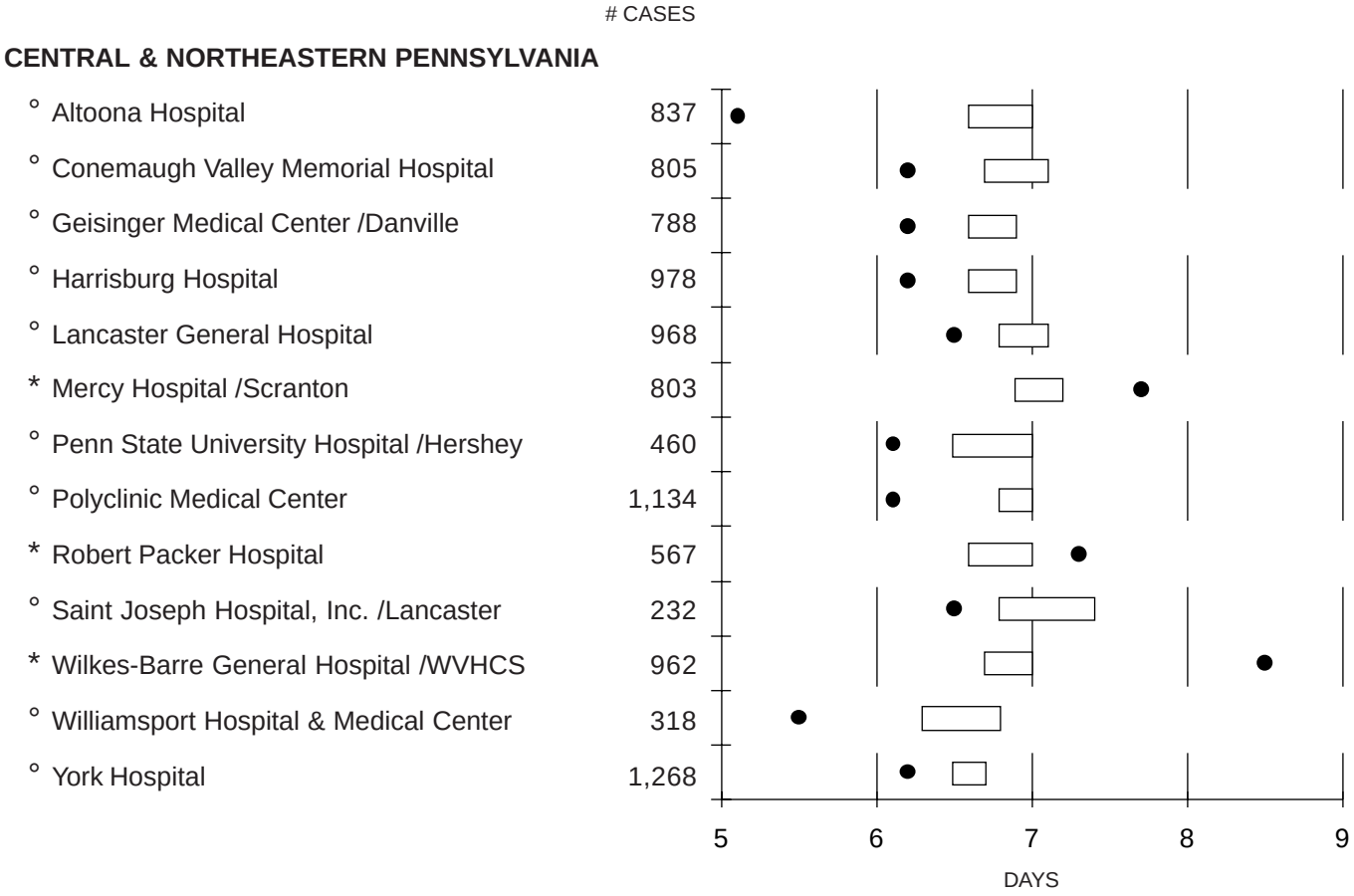
* Actual Length of Stay significantly higher than Expected

° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

□ Range of Expected Length of Stay

FIGURE 5B: Actual to Expected (Post-Surgical) Length of Stay, by Hospital, 1994-1995



KEY

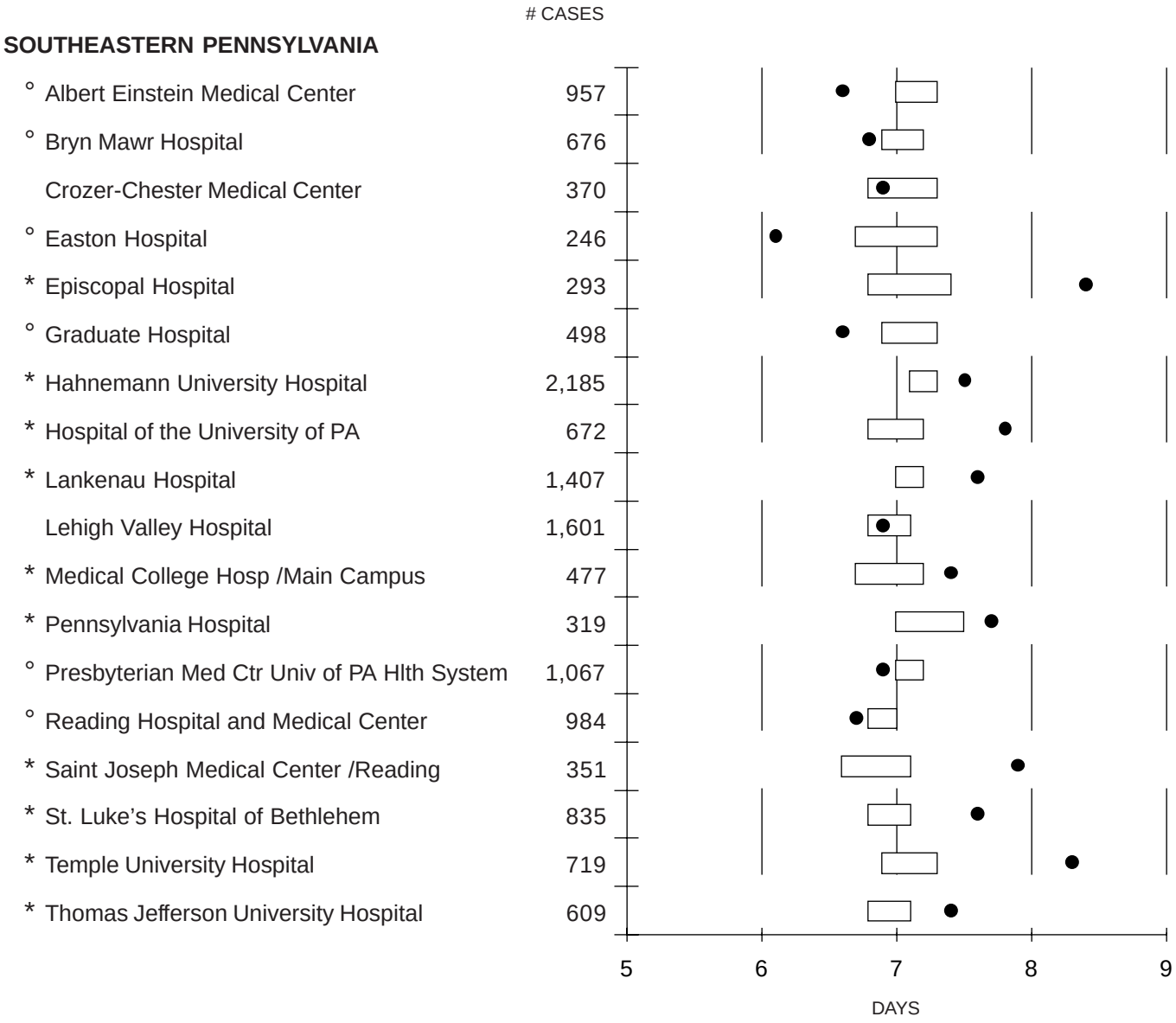
* Actual Length of Stay significantly higher than Expected

° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

▭ Range of Expected Length of Stay

FIGURE 5C: Actual to Expected (Post-Surgical) Length of Stay, by Hospital, 1994-1995



KEY

* Actual Length of Stay significantly higher than Expected

° Actual Length of Stay significantly lower than Expected

● Actual Length of Stay

▭ Range of Expected Length of Stay

Hospital Average Charges

FIGURE 6: Average Charges, by Hospital, 1994-1995

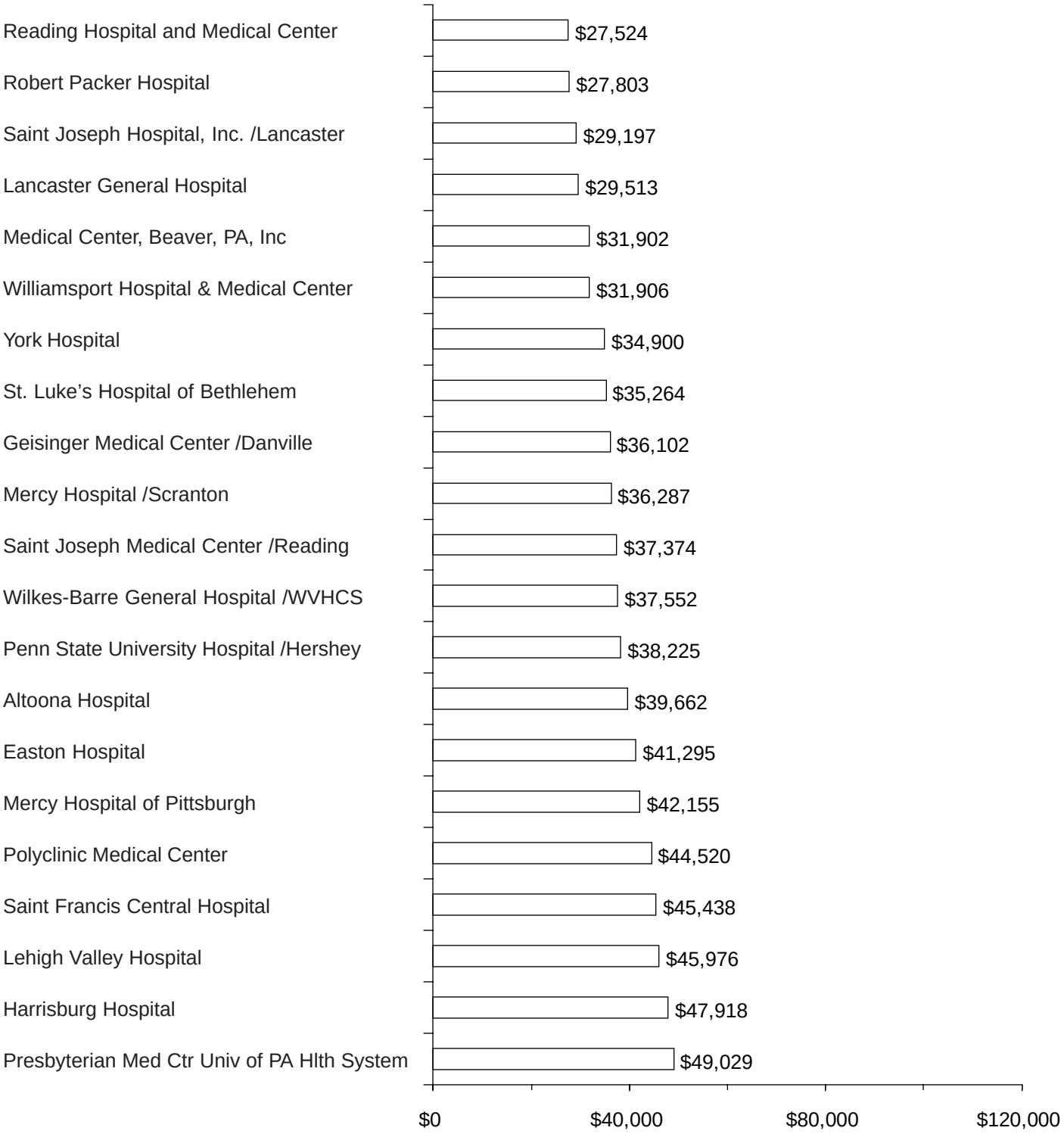
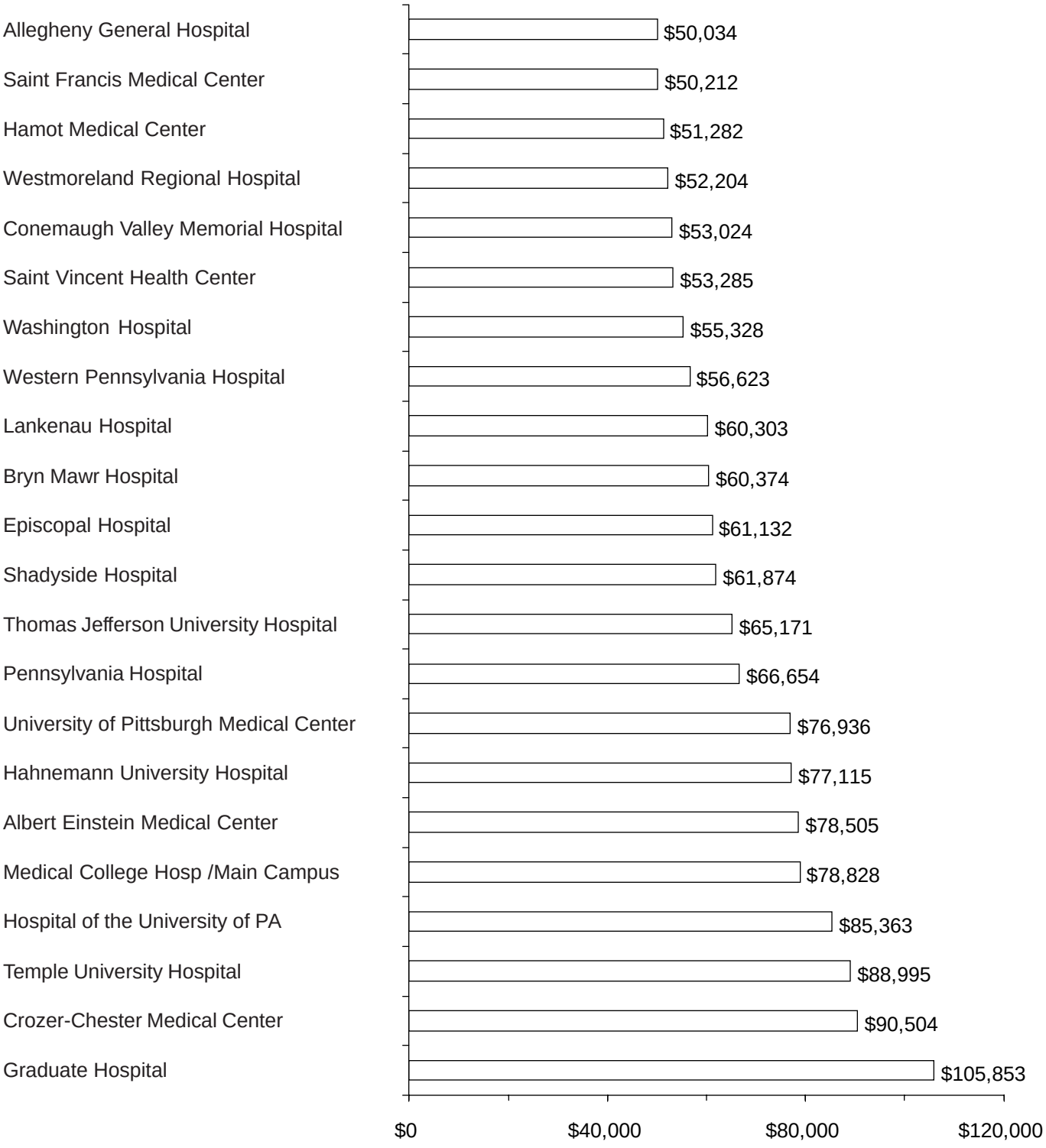


FIGURE 6: Average Charges, by Hospital, 1994-1995



Percent of Health Plan CABG Cases by Hospital

TABLE 1: Percent of Health Plan CABG Cases, by Hospital, 1994-1995

	# CASES	%
MEDICARE - FEE FOR SERVICE	19,657	100%
Allegheny General Hospital	1,077	5.5%
Shadyside Hospital	1,059	5.4%
Western Pennsylvania Hospital	1,029	5.2%
Mercy Hospital of Pittsburgh	1,024	5.2%
Lehigh Valley Hospital	870	4.4%
Lankenau Hospital	826	4.2%
Hahnemann University Hospital	802	4.1%
Saint Francis Medical Center	671	3.4%
Polyclinic Medical Center	660	3.4%
York Hospital	617	3.1%
Reading Hospital and Medical Center	591	3.0%
Lancaster General Hospital	575	2.9%
Albert Einstein Medical Center	564	2.9%
Altoona Hospital	542	2.8%
Saint Vincent Health Center	533	2.7%
Wilkes-Barre General Hospital /WVHCS	533	2.7%
Conemaugh Valley Memorial Hospital	516	2.6%
Harrisburg Hospital	510	2.6%
Mercy Hospital /Scranton	486	2.5%
St. Luke's Hospital of Bethlehem	483	2.5%
Hamot Medical Center	437	2.2%
Bryn Mawr Hospital	362	1.8%
Other hospitals	4,890	24.9%

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MEDICARE HMO CONTRACTS

GEISINGER HEALTH PLAN - CENTRAL	50	100%
Geisinger Medical Center /Danville	50	100%
GREATER ATLANTIC HEALTH SERVICE	43	100%
Graduate Hospital	32	74.4%
Crozer-Chester Medical Center	7	16.3%
Other hospitals	4	9.3%
KEYSTONE EAST	217	100%
Hahnemann University Hospital	51	23.5%
Albert Einstein Medical Center	31	14.3%
Lankenau Hospital	24	11.1%
Presbyterian Med Ctr Univ of PA Hlth System	21	9.7%
Temple University Hospital	17	7.8%
Bryn Mawr Hospital	16	7.4%
Crozer-Chester Medical Center	12	5.5%
Other hospitals	45	20.7%
KEYSTONE WEST	48	100%
Shadyside Hospital	10	20.8%
Allegheny General Hospital	7	14.6%
Medical Center, Beaver, PA, Inc	6	12.5%
University of Pittsburgh Medical Center	6	12.5%
Western Pennsylvania Hospital	6	12.5%
Mercy Hospital of Pittsburgh	5	10.4%
Washington Hospital	5	10.4%
Other hospitals	3	6.3%

	# CASES	%
U.S. HEALTHCARE	466	100%
Hahnemann University Hospital	133	28.5%
Presbyterian Med Ctr Univ of PA Hlth System	46	9.9%
Albert Einstein Medical Center	37	7.9%
Lankenau Hospital	34	7.3%
Temple University Hospital	32	6.9%
Western Pennsylvania Hospital	25	5.4%
Bryn Mawr Hospital	19	4.1%
Saint Francis Medical Center	16	3.4%
Graduate Hospital	15	3.2%
St. Luke's Hospital of Bethlehem	15	3.2%
Other hospitals	94	20.2%

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MEDICAID - FEE FOR SERVICE	1,236	100%
Allegheny General Hospital	65	5.3%
Mercy Hospital of Pittsburgh	65	5.3%
Albert Einstein Medical Center	62	5.0%
Wilkes-Barre General Hospital /WVHCS	55	4.4%
Shadyside Hospital	54	4.4%
Western Pennsylvania Hospital	52	4.2%
Hahnemann University Hospital	50	4.0%
Altoona Hospital	41	3.3%
York Hospital	41	3.3%
Conemaugh Valley Memorial Hospital	40	3.2%
Lankenau Hospital	39	3.2%
Lehigh Valley Hospital	39	3.2%
Hamot Medical Center	38	3.1%
Saint Francis Medical Center	36	2.9%
Polyclinic Medical Center	35	2.8%
Saint Francis Central Hospital	33	2.7%
Temple University Hospital	33	2.7%
Lancaster General Hospital	32	2.6%
Mercy Hospital/Scranton	31	2.5%
University of Pittsburgh Medical Center	31	2.5%
Episcopal Hospital	28	2.3%
Geisinger Medical Center /Danville	26	2.1%
Saint Vincent Health Center	26	2.1%
Other hospitals	284	23.0%

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FEE FOR SERVICE PLANS

BLUE CROSS OF NORTHEAST PA	696	100%
Wilkes-Barre General Hospital /WVHCS	204	29.3%
Mercy Hospital /Scranton	178	25.6%
Lehigh Valley Hospital	78	11.2%
Robert Packer Hospital	55	7.9%
St. Luke's Hospital of Bethlehem	54	7.8%
Williamsport Hospital & Med Center	54	7.8%
Other hospitals	73	10.5%

* Percentages may not add to 100% due to rounding

TABLE 1: Percent of Health Plan CABG Cases, by Hospital, 1994-1995

	# CASES	%
BLUE CROSS OF WESTERN PA	2,748	100%
Allegheny General Hospital	390	14.2%
Shadyside Hospital	363	13.2%
Mercy Hospital of Pittsburgh	317	11.5%
Western Pennsylvania Hospital	300	10.9%
Hamot Medical Center	210	7.6%
Saint Francis Medical Center	202	7.4%
Saint Vincent Health Center	196	7.1%
Conemaugh Valley Memorial Hospital	192	7.0%
Other Hospitals	578	21.0%
CAPITAL BLUE CROSS	1,974	100%
Polyclinic Medical Center	279	14.1%
Harrisburg Hospital	252	12.8%
Lehigh Valley Hospital	240	12.2%
Reading Hospital and Medical Center	225	11.4%
York Hospital	196	9.9%
St. Luke's Hospital of Bethlehem	123	6.2%
Penn State University Hospital /Hershey	81	4.1%
Lancaster General Hospital	77	3.9%
Geisinger Medical Center /Danville	69	3.5%
Other hospitals	432	21.9%
INDEPENDENCE BLUE CROSS	1,256	100%
Hahnemann University Hospital	246	19.6%
Lankenau Hospital	214	17.0%
Albert Einstein Medical Center	128	10.2%
Presbyterian Med Ctr Univ of PA Hlth Sys	102	8.1%
Bryn Mawr Hospital	88	7.0%
Temple University Hospital	84	6.7%
Thomas Jefferson Univ Hospital	81	6.4%
Other hospitals	313	24.9%
AETNA	353	100%
Lehigh Valley Hospital	31	8.8%
Hahnemann University Hospital	26	7.4%
Shadyside Hospital	23	6.5%
Lankenau Hospital	19	5.4%
Presbyterian Med Ctr Univ of PA Hlth System	17	4.8%
Western Pennsylvania Hospital	16	4.5%
Allegheny General Hospital	15	4.2%
Temple University Hospital	15	4.2%
York Hospital	15	4.2%
Altoona Hospital	14	4.0%
Harrisburg Hospital	13	3.7%
Lancaster General Hospital	13	3.7%
Hamot Medical Center	11	3.1%
Pennsylvania Hospital	10	2.8%
Wilkes-Barre General Hospital /WVHCS	10	2.8%
Robert Packer Hospital	9	2.5%
Washington Hospital	9	2.5%
Other hospitals	87	24.6%

	# CASES	%
CIGNA	99	100%
Lehigh Valley Hospital	26	26.3%
Hahnemann University Hospital	10	10.1%
Graduate Hospital	9	9.1%
Lankenau Hospital	8	8.1%
Harrisburg Hospital	7	7.1%
Temple University Hospital	6	6.1%
Allegheny General Hospital	5	5.1%
Penn State University Hospital /Hershey	4	4.0%
Shadyside Hospital	4	4.0%
Thomas Jefferson Univ Hospital	4	4.0%
Other hospitals	16	16.2%
EDUCATORS MUTUAL	36	100%
Lancaster General Hospital	21	58.3%
York Hospital	8	22.2%
Other hospitals	7	19.4%
GUARDIAN LIFE	30	100%
Lehigh Valley Hospital	5	16.7%
Robert Packer Hospital	5	16.7%
Hospital of the University of PA	4	13.3%
Allegheny General Hospital	2	6.7%
Hamot Medical Center	2	6.7%
University of Pittsburgh Medical Center	2	6.7%
Other hospitals	10	33.3%
JOHN HANCOCK	48	100%
York Hospital	20	41.7%
Hamot Medical Center	5	10.4%
Lehigh Valley Hospital	3	6.3%
Western Pennsylvania Hospital	3	6.3%
Albert Einstein Medical Center	2	4.2%
Bryn Mawr Hospital	2	4.2%
Mercy Hospital /Scranton	2	4.2%
St. Luke's Hospital of Bethlehem	2	4.2%
Temple University Hospital	2	4.2%
Other hospitals	7	14.6%
METROPOLITAN	177	100%
York Hospital	25	14.1%
Allegheny General Hospital	19	10.7%
Hahnemann University Hospital	14	7.9%
Lehigh Valley Hospital	13	7.3%
Robert Packer Hospital	12	6.8%
Shadyside Hospital	12	6.8%
Western Pennsylvania Hospital	10	5.6%
Mercy Hospital of Pittsburgh	9	5.1%
Temple University Hospital	7	4.0%
Hamot Medical Center	6	3.4%
Lankenau Hospital	4	2.3%
Thomas Jefferson Univ Hospital	4	2.3%
Wilkes-Barre General Hospital /WVHCS	4	2.3%
Other hospitals	38	21.5%

* Percentages may not add to 100% due to rounding

TABLE 1: Percent of Health Plan CABG Cases, by Hospital, 1994-1995

	# CASES	%
PROVIDENT	42	100%
Lancaster General Hospital	9	21.4%
Shadyside Hospital	6	14.3%
Lehigh Valley Hospital	4	9.5%
Bryn Mawr Hospital	3	7.1%
Saint Francis Medical Center	3	7.1%
Western Pennsylvania Hospital	3	7.1%
York Hospital	3	7.1%
Allegheny General Hospital	2	4.8%
Hospital of the University of PA	2	4.8%
Other hospitals	7	16.7%
PRUDENTIAL	225	100%
Presby Med Ctr Univ of PA Hlth Sys	48	21.3%
Reading Hospital and Medical Center	17	7.6%
Harrisburg Hospital	13	5.8%
Shadyside Hospital	13	5.8%
York Hospital	11	4.9%
Lehigh Valley Hospital	10	4.4%
Lankenau Hospital	9	4.0%
Hahnemann University Hospital	8	3.6%
Penn State University Hospital /Hershey	8	3.6%
Lancaster General Hospital	7	3.1%
Medical College Hosp /Main Campus	7	3.1%
Western Pennsylvania Hospital	7	3.1%
Albert Einstein Medical Center	5	2.2%
Allegheny General Hospital	5	2.2%
Altoona Hospital	5	2.2%
Mercy Hospital of Pittsburgh	5	2.2%
Pennsylvania Hospital	5	2.2%
St. Luke's Hospital of Bethlehem	5	2.2%
Thomas Jefferson Univ Hospital	5	2.2%
Other hospitals	32	14.2%
TRAVELERS	147	100%
Mercy Hospital of Pittsburgh	17	11.6%
Hamot Medical Center	12	8.2%
Medical Center, Beaver, PA, Inc	10	6.8%
Harrisburg Hospital	9	6.1%
Hahnemann University Hospital	8	5.4%
Allegheny General Hospital	7	4.8%
Lancaster General Hospital	7	4.8%
Lankenau Hospital	7	4.8%
Lehigh Valley Hospital	7	4.8%
Western Pennsylvania Hospital	7	4.8%
Altoona Hospital	6	4.1%
Thomas Jefferson Univ Hospital	5	3.4%
Saint Francis Medical Center	4	2.7%
Saint Joseph Hospital, Inc. /Lancaster	4	2.7%
Bryn Mawr Hospital	3	2.0%
Conemaugh Valley Memorial Hospital	3	2.0%
Mercy Hospital /Scranton	3	2.0%
Robert Packer Hospital	3	2.0%
Wilkes-Barre General Hospital /WVHCS	3	2.0%
Other hospitals	22	15.0%

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LICENSED HMO PLANS - PRIVATE MARKET ONLY	# CASES	%
AETNA CENTRAL & EASTERN PA	83	100%
Hospital of the University of PA	20	24.1%
Polyclinic Medical Center	12	14.5%
Bryn Mawr Hospital	9	10.8%
Crozer-Chester Medical Center	9	10.8%
Lankenau Hospital	7	8.4%
Hahnemann University Hospital	6	7.2%
Other hospitals	20	24.1%
AETNA WESTERN PA	31	100%
Mercy Hospital of Pittsburgh	10	32.3%
Western Pennsylvania Hospital	10	32.3%
Shadyside Hospital	4	12.9%
Other hospitals	7	22.6%
CENTRAL MEDICAL	90	100%
Saint Francis Medical Center	56	62.2%
Saint Francis Central Hospital	34	37.8%
CIGNA HEALTHCARE OF PA	48	100%
York Hospital	16	33.3%
Crozer-Chester Medical Center	9	18.8%
Thomas Jefferson Univ Hospital	6	12.5%
Western Pennsylvania Hospital	5	10.4%
Albert Einstein Medical Center	4	8.3%
Mercy Hospital of Pittsburgh	4	8.3%
Other hospitals	4	8.3%
GEISINGER HEALTH PLAN	183	100%
Geisinger Medical Center /Danville	183	100%
GREATER ATLANTIC HEALTH SERVICE	36	100%
Graduate Hospital	22	61.1%
Albert Einstein Medical Center	5	13.9%
Other hospitals	9	25.0%
HEALTHAMERICA PA	388	100%
Western Pennsylvania Hospital	157	40.5%
York Hospital	43	11.1%
Harrisburg Hospital	41	10.6%
Medical Center, Beaver, PA, Inc	26	6.7%
Polyclinic Medical Center	26	6.7%
Other hospitals	95	24.5%
HEALTHGUARD OF LANCASTER	59	100%
Lancaster General Hospital	39	66.1%
Saint Joseph Hospital, Inc. /Lancaster	20	33.9%
HMO OF NORTHEASTERN PA	85	100%
Wilkes-Barre General Hospital /WVHCS	45	52.9%
Mercy Hospital /Scranton	29	34.1%
Other hospitals	11	12.9%

* Percentages may not add to 100% due to rounding

TABLE 1: Percent of Health Plan CABG Cases, by Hospital, 1994-1995

	# CASES	%
KEYSTONE CENTRAL	152	100%
York Hospital	60	39.5%
Harrisburg Hospital	23	15.1%
Lehigh Valley Hospital	20	13.2%
Polyclinic Medical Center	16	10.5%
Other hospitals	33	21.7%
KEYSTONE EAST	365	100%
Hahnemann University Hospital	94	25.8%
Lankenau Hospital	51	14.0%
Albert Einstein Medical Center	41	11.2%
Crozer-Chester Medical Center	41	11.2%
Bryn Mawr Hospital	27	7.4%
Presbyterian Med Ctr Univ of PA Hlth Sys	24	6.6%
Other hospitals	87	23.8%
KEYSTONE WEST	219	100%
Shadyside Hospital	62	28.3%
Mercy Hospital of Pittsburgh	46	21.0%
Saint Francis Medical Center	31	14.2%
Western Pennsylvania Hospital	22	10.0%
Allegheny General Hospital	17	7.8%
Other hospitals	41	18.7%

	# CASES	%
PRUDENTIAL HEALTH CARE PLAN	83	100%
Lehigh Valley Hospital	28	33.7%
Temple University Hospital	21	25.3%
Hospital of the University of PA	11	13.3%
Bryn Mawr Hospital	8	9.6%
Other hospitals	15	18.1%
U.S. HEALTHCARE	844	100%
Hahnemann University Hospital	227	26.9%
Presbyterian Med Ctr Univ of PA Hlth Sys	81	9.6%
Lankenau Hospital	74	8.8%
Albert Einstein Medical Center	72	8.5%
Temple University Hospital	69	8.2%
Graduate Hospital	41	4.9%
Bryn Mawr Hospital	32	3.8%
Medical College Hosp /Main Campus	27	3.2%
Thomas Jefferson Univ Hospital	27	3.2%
Other hospitals	194	23.0%

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Volume of Procedures

FIGURE 7A: Number of CABG and Total Open Heart Procedures, by Hospital, 1994-1995

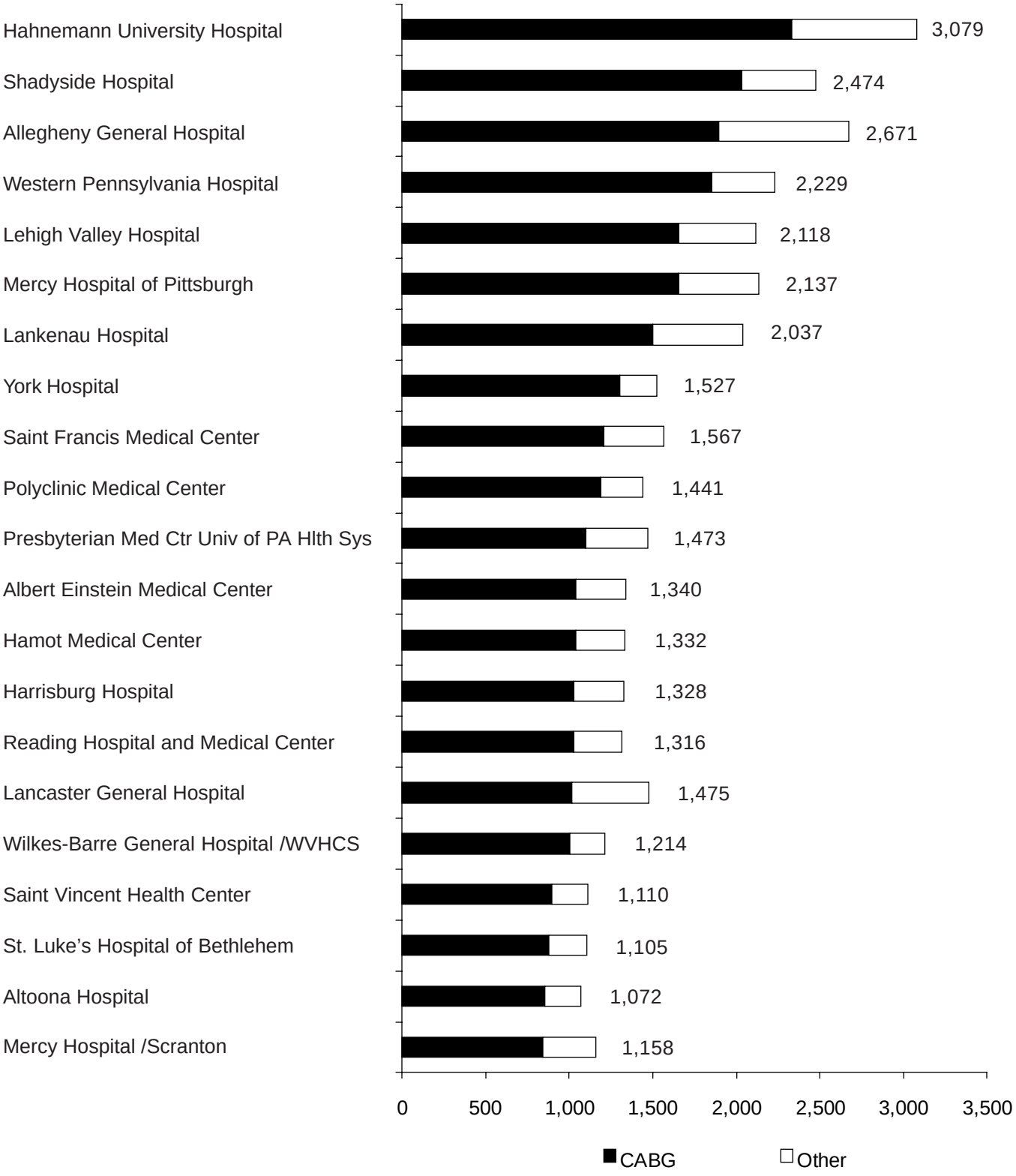

FIGURE 7A: Number of CABG and Total Open Heart Procedures, by Hospital, 1994-1995

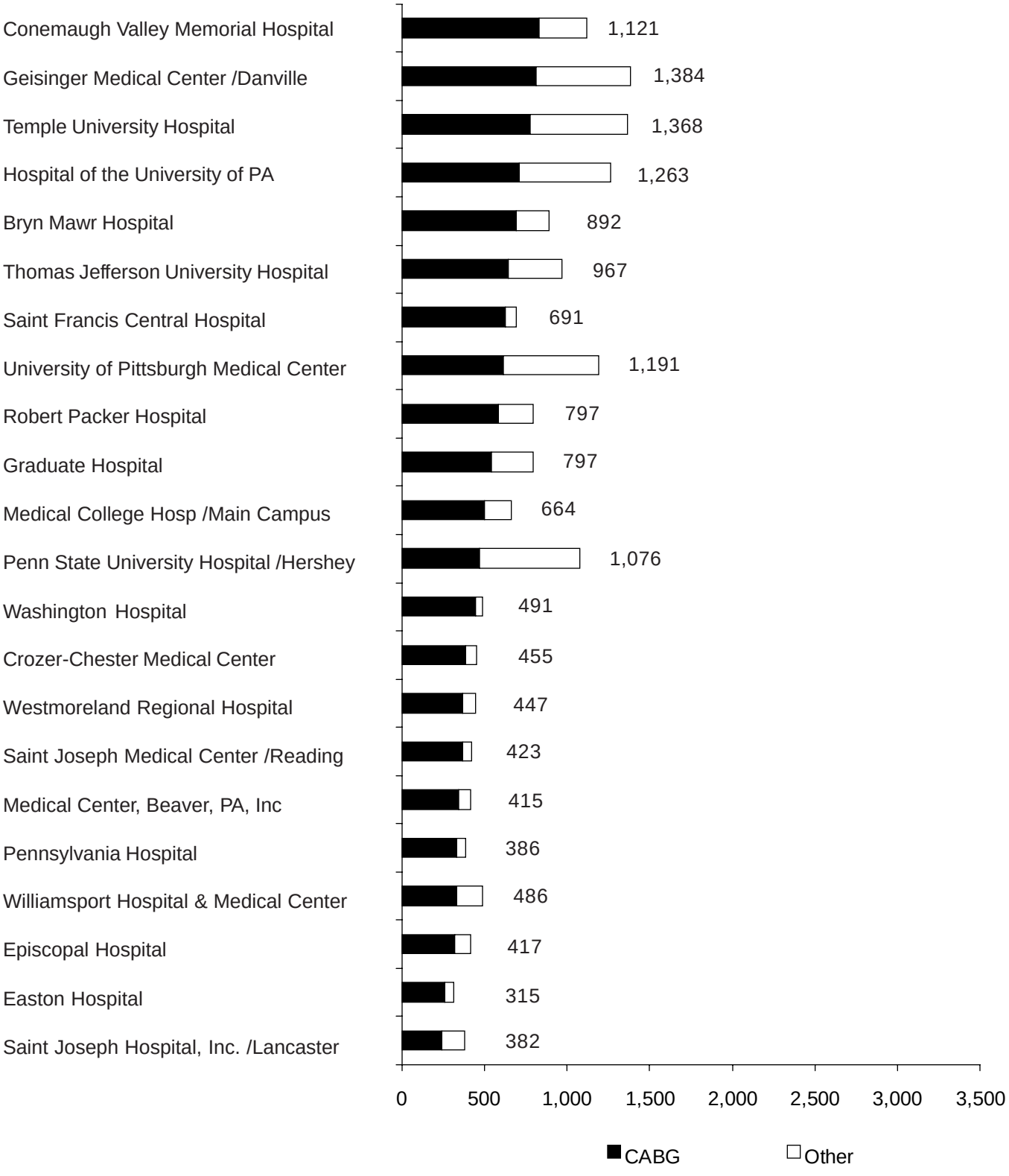

FIGURE 7B: Average Number of Total Open Heart Procedures per Cardiac Surgeon, by Hospital, 1994-1995

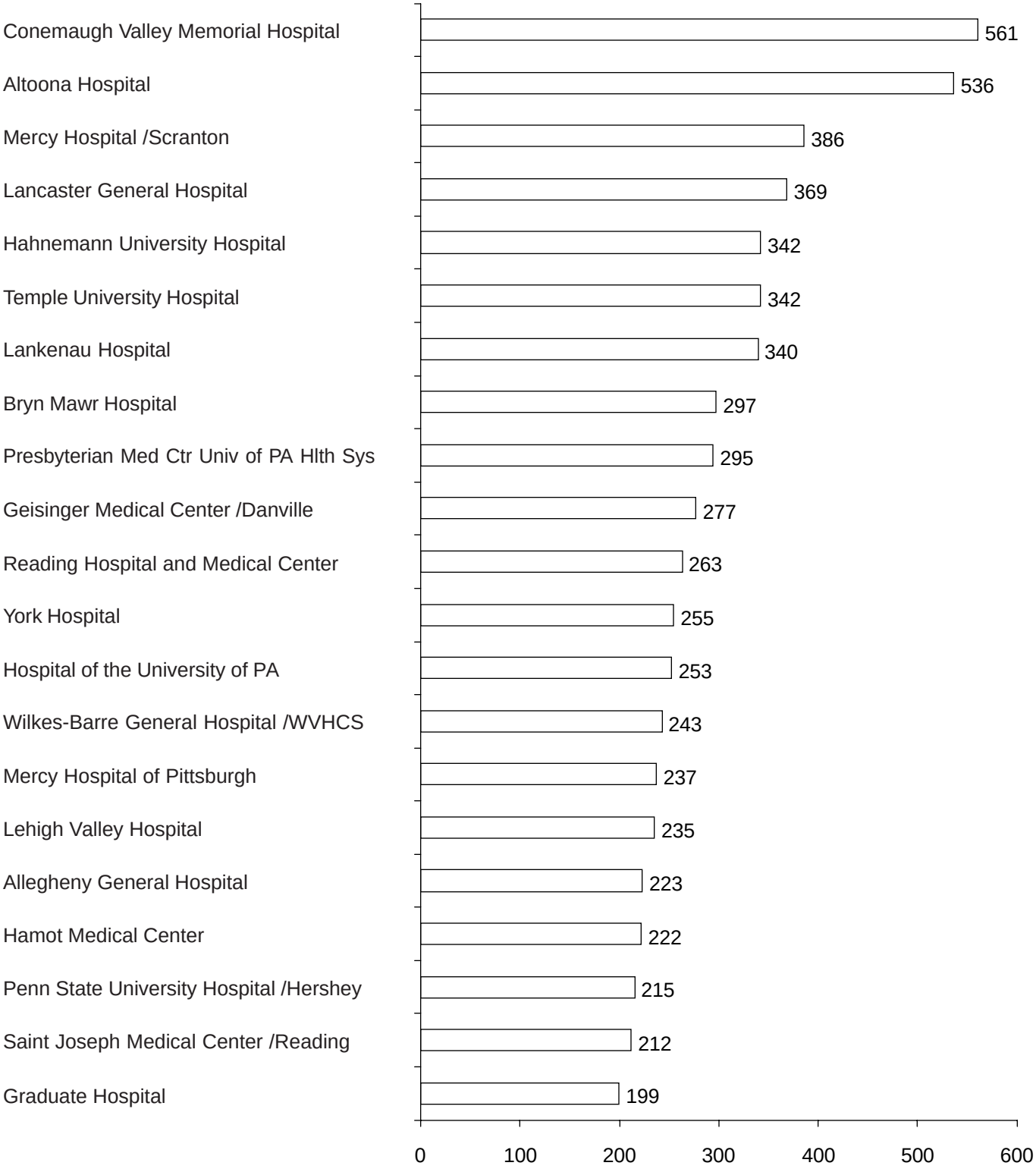

FIGURE 7B: Average Number of Total Open Heart Procedures per Cardiac Surgeon, by Hospital, 1994-1995