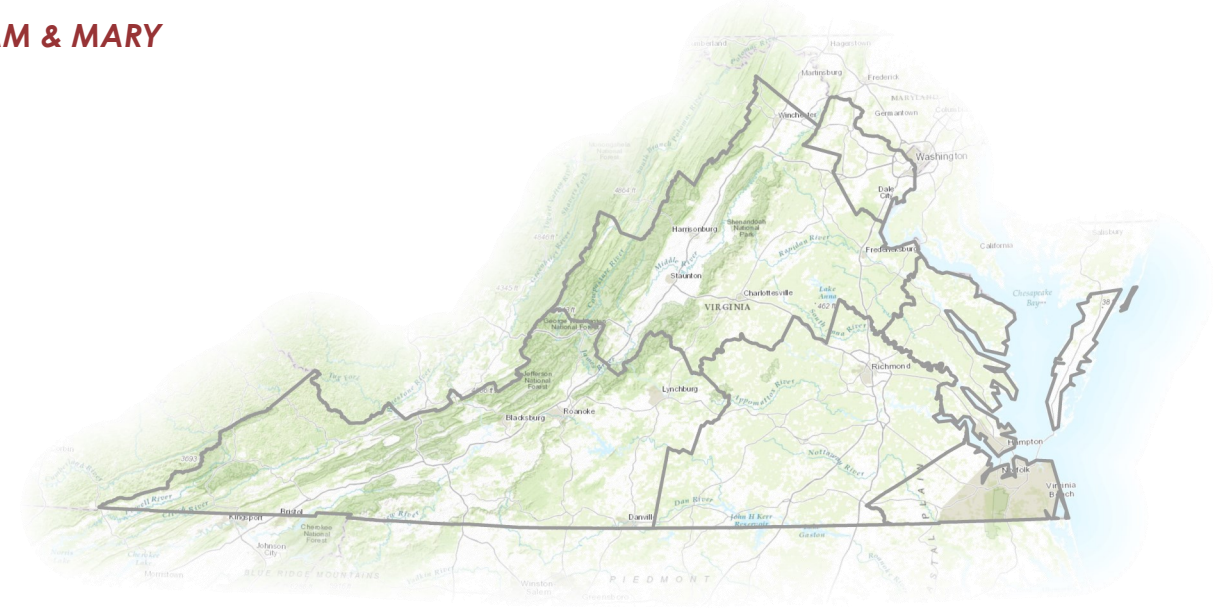
INPATIENT HOSPITAL UTILIZATION IN THE COMMONWEALTH OF VIRGINIA

2015 Data Analysis

SCHROEDER CENTER FOR HEALTH POLICY

COLLEGE OF WILLIAM & MARY

MAY 2017



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ABOUT THIS REPORT

As policymakers seek to improve healthcare access and quality and to curb healthcare spending growth, information on hospital utilization provides valuable insights. Hospital care represents a significant share of all healthcare spending. In 2015, inpatient and outpatient hospital care accounted for 32% of the $3.2 trillion spent on healthcare in the U.S. (CMS, 2016). While only 1 in 14 persons has a hospital stay in a given year, inpatient hospital stays are one of the most expensive types of healthcare. The average annual expense associated with inpatient hospital care, among persons who have an inpatient stay, was more than $18,000 in 2012 (Carper and Stagnitti, 2014).

In Virginia, dozens of short-term general hospitals, critical access hospitals, and children's hospitals provide inpatient acute care to Virginia residents and visitors to the state. The purpose of this report is to provide a detailed description of the inpatient care provided during nearly 850,000 hospitalizations in 2015. The primary data source is patient level data from Virginia Health Information (VHI, 2017). These data include information on all discharges occurring at licensed hospitals in Virginia.

This report describes the demographic traits of patients hospitalized in Virginia, their admission types, and the conditions for which they were treated. In addition, data pertaining to patients' discharge status and length of stay are presented along with information on billable charges and the primary source of payment for inpatient hospital care. This report also provides statistical summaries of inpatient hospital stays by the geographic locations of hospitals and patients.

Sources:

Carper, K. and Stagnitti, MN. (2014). "National Health Care Expenses Per Person in the U.S. Civilian Noninstitutionalized Population, 2012." Statistical Brief #457. Agency for Healthcare Research and Quality, Rockville, MD.

Centers for Medicare & Medicaid Services. (2016). "National Health Expenditures 2015 Highlights." Accessed 3/14/17.

Virginia Health Information (VHI). (2017). "Patient Level Data." Richmond, VA. Accessed 3/15/17.

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Overview of Virginia's Hospitals

Currently, there are 165 hospitals located in Virginia (Exhibit 1). Nearly half of all hospitals are acute care hospitals, where patients generally receive treatment for acute illnesses or conditions or for traumatic injuries.[1] Thirty-six percent of hospitals are classified as ambulatory surgical hospitals, where patients receive care on an outpatient basis. The remaining 20% of hospitals are categorized as critical access, long-term acute care, rehabilitation, children, and psychiatric hospitals.

Virginia is divided into five health planning regions: Central, Eastern, Northern, Northwest, and Southwest. Fifty percent of the 165 hospitals in Virginia are located in the Eastern and Southwest regions (Exhibit 1). The Central, Northern, and Northwest regions account for 19%, 16%, and 15%, respectively, of hospitals in the state.

EXHIBIT 1. Virginia Hospitals by Facility Type and Health Planning Region

	Health Planning Region					
Facility Type	**Central**	**Eastern**	**Northern**	**Northwest**	**Southwest**	**TOTAL**
Acute	13	17	11	11	21	73
Ambulatory surgical	11	20	12	7	9	59
Critical access	0	1	-	4	3	8
Long-term acute care	1	3	-	1	1	6
Rehabilitation	4	1	1	2	1	9
Children's	1	1	-	-	-	2
Psychiatric	1	4	2	-	1	8
TOTAL	**31**	**47**	**26**	**25**	**36**	**165**

SOURCE: Virginia Health Information, "Hospital Information." Accessed 5/17/17.

Overview of Virginia's Population

Although Virginia's hospitals treat patients who do not live in the state, the vast majority of patients who receive treatment are Virginia residents. In 2015, the Virginia population totaled over 8 million people. A slightly higher percentage of residents were female (51%), and the majority of residents were white non-Hispanic (63%) (Exhibit 2). Compared to the population of the United States, Virginia's population has a greater share of black residents (19% vs. 12%) and a lower share of Hispanics (9% vs. 17%). Sixty-four percent of Virginia residents are between the ages of 18 and 64. Twenty-three percent of the population consists of children and youth age 17 and under and 13% is comprised of adults age 65 and over. This is similar to the age distribution of the United States.

[1] Virginia Health Information, "Hospital Information." Accessed 4/18/17.

EXHIBIT 2. Population Statistics for the United States and Virginia, 2015

	United States		Virginia	
	Number	Percent	Number	Percent
Population	316,515,021	100.0%	8,256,630	100.0%
Sex				
Female	160,780,741	50.8%	4,195,682	50.8%
Male	155,734,280	49.2%	4,060,948	49.2%
Race/Ethnicity				
White non-Hispanic	197,258,278	62.3%	5,237,848	63.4%
Black non-Hispanic	38,785,726	12.3%	1,560,316	18.9%
American Indian	2,078,613	0.7%	17,015	0.2%
Asian	16,054,074	5.1%	489,610	5.9%
Hispanic, any race	54,232,205	17.1%	709,156	8.6%
Other Race	8,106,125	2.6%	242,685	2.9%
Age (years)				
≤ 17	73,747,998	23.3%	1,865,998	22.6%
18 to 64	198,138,405	62.6%	5,292,500	64.1%
65 ≥	44,628,618	14.1%	1,098,132	13.3%

SOURCE: U.S. Census Bureau, American Fact Finder, 2015 American Community Survey (ACS), 5-year estimates.

Data Sources and Samples

Several data sources and tools were used to prepare this report (Exhibit 3). The primary data source is patient level discharge data obtained from Virginia Health Information (VHI), whose mission is to create and disseminate healthcare information in Virginia.[2] The patient level data includes information on hospital discharges from licensed hospitals in the state, including information on patient demographic traits, primary and secondary diagnoses, and the billable charges associated with the hospital stay,[3] among other types of information.

[2] Virginia Health Information, "About Us." Accessed 4/19/17.

[3] Hospital billed charges are list prices and do not represent a hospital's expected remuneration for services offered. Health insurers and public programs remunerate hospitals at negotiated rates that are typically less than the hospital's billed charge.

EXHIBIT 3. Data Sources

Patient Level Data (Discharge Data)
Virginia Health Information, Patient Level Data, 2015. Virginia Health Information (VHI) has provided non-confidential patient level information used in this report which it has compiled in accordance with Virginia law but which it has no authority to independently verify. By using this report, the user agrees to assume all risks that may be associated with or arise from the use of inaccurate data. VHI cannot and does not represent that the use of VHI's data was appropriate for this report or endorse or support any conclusions or inferences that may be drawn from the use of VHI's data.

State Population Estimates (U.S. and Virginia Population Data)
U.S. Census Bureau, American Fact Finder, 2015 American Community Survey (ACS), 5-year estimates.

Clinical Classifications Software
Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

Chronic Conditions Indicator
Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Chronic Conditions Indicator (CCI) for ICD-9-CM and ICD-10-CM/PCS.

Health Planning Regions
Virginia Department of Health, "Health Planning Regions in Virginia" and "Location of Counties and Selected Cities in Virginia."

Rural and Urban Hospitals
Virginia Health Information, "Hospital Operating and Total Margins: Location per CMS POS File and FY Final Rule Correction Notices." Accessed by clicking "Click here (Excel)" at this VHI website.

Hospitals Analyzed in This Report

The report focuses on patient discharges from Virginia community hospitals in 2015. For the purpose of this report, community hospitals are defined as acute care hospitals, critical access hospitals, and children's hospitals. A total of 81 such hospitals were included in the VHI data in 2015. Excluded from the analysis are long-term care facilities such as rehabilitation, psychiatric, and long-term acute care hospitals as well as ambulatory facilities. In this way, this analysis is similar to reports completed by the Agency for Healthcare Research and Quality using the HCUP State Inpatient Databases.[4]

The three types of hospitals included in our definition of community hospitals are defined as follows by VHI:[5]

[4] See, for example: Heslin, K.C. and Weiss, A.J. (2015). "Hospital Readmissions Involving Psychiatric Disorders, 2012." HCUP Statistical Brief #189. Agency for Healthcare Research and Quality. Accessed 5/6/17.
[5] Virginia Health Information, "Hospital Information." Accessed 4/18/17.

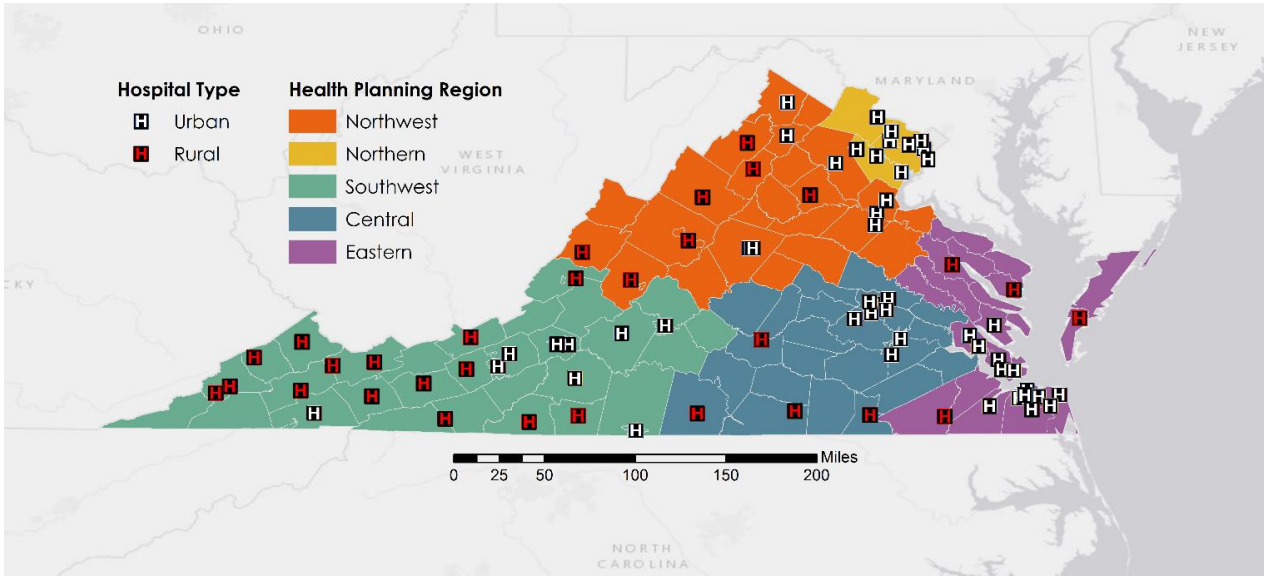
- **Acute** – "Hospitals delivering care to patients with acute illness or trauma. Acute care generally occurs in a hospital or emergency room setting."

- **Critical Access** – "A hospital operating no more than 25 beds with no more than 15 used for acute inpatient care at any one time with a maximum stay of 96 hours."

- **Children's** – "A specialized hospital that provides long-term rehabilitation and specialty care services for children."

These hospitals are located around the state, in all health planning regions, and in both rural and urban locations (Exhibit 4).

EXHIBIT 4. Map of Virginia's Urban and Rural Hospitals by Health Planning Region



SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; U.S. Census Bureau, TIGER/Line Shapefiles and TIGER/Line Files, "2015 TIGER/Line Shapefiles;" Virginia Health Information, "Hospital Operating and Total Margins: Location per CMS POS File and FY Final Rule Correction Notices." Accessed by clicking "Click here (Excel)" at this VHI website; ESRI, ArcGIS, "Light Gray Canvas;" Virginia Department of Health, "Health Planning Regions in Virginia" and "Location of Counties and Selected Cities in Virginia."

Patient Discharges Analyzed in This Report

This report focuses on discharges of both Virginia residents and non-residents who received inpatient care during 2015 at one of the 81 community hospitals defined above. The analysis uses one of three samples (Exhibit 5):

Main Sample – Unless otherwise stated, analysis is conducted on a sample of 840,781 inpatient discharges from 81 community hospitals in Virginia. Actual sample sizes may be smaller due to missing data on a particular trait associated with the hospitalization or the patient.

Main Sample Excluding Obstetric Discharges – Some analysis is based on a sample of discharges that excludes 198,069 obstetric-related discharges, resulting in a sample of 642,712 discharges. Obstetric-related discharges fall into two categories:

- Neonatal discharges, defined as discharges where the age at admission is between 0 and 28 days and the admission type is newborn, or where the age at admission is between 0 and 28 days and the major diagnostic category is classified as "newborn/neonatal."
- Maternal/pregnancy-related discharges, defined as discharges where the major diagnostic category is classified as "pregnancy, childbirth or puerperium."

Maternal Discharges Only – Some analysis focuses only on maternal or pregnancy-related discharges, as defined above.

EXHIBIT 5. Summary of Inpatient Discharge Samples Used

Main Sample	Main Sample Excluding Obstetric Discharges	Maternal Discharges Only
Total Discharges: 866,295	**Total Eligible Discharges**: 840,781	**Total Eligible Discharges**: 840,781
Excluded from Analysis: 25,514 Discharges from Specialty Hospitals	**Excluded from Analysis:** 198,069 Obstetric Discharges	**Excluded from Analysis:** 740,073 Non-Maternal Discharges
Total Eligible Discharges Remaining: 840,781	**Total Eligible Discharges Excluding Obstetric Discharges**: 642,712	**Total Maternal Discharge Sample:** 100,708

See the Appendix for additional definitions used in the analysis.

DEMOGRAPHIC CHARACTERISTICS OF PATIENTS HOSPITALIZED IN VIRGINIA

DEMOGRAPHIC CHARACTERISTICS: Patient Age, Sex, and Race/Ethnicity

Patient Age

Adults between the ages of 65 and 84 represent the single largest group of patients admitted to Virginia's hospitals, whether or not obstetric patients (mothers and newborns) are included (Exhibit 6). Among all discharges, for example, the 233,181discharges of patients in this age group account for nearly 28% of all discharges. The share in this age group rises to 36% of all discharges when obstetric patients are excluded.

When patients are grouped by age into broader categories of youth ages 17 and under, adults age 18 to 64, and the elderly age 65 and over, adults age 18 to 64 account for the largest share of discharges at 49%. The next largest share is the elderly, at 36%, followed by persons under age 18, at 15%.

Patient Sex

Female patients account for a higher share of discharges than male patients, even when obstetric discharges are excluded (Exhibit 7). Nearly 53% of the 642,712 discharges in Virginia hospitals (excluding obstetric discharges) are for female patients.

Patient Race/Ethnicity

Of the 840,781 discharges in 2015, nearly 87% were discharges of white non-Hispanic and black non-Hispanic patients (Exhibit 8). White non-Hispanic patients, at just over 64% of all discharges, were the single largest racial/ethnic group. With obstetric patients excluded, the share of discharges accounted for by white non-Hispanic and black non-Hispanic patients rises to 92%, and the white non-Hispanic share increases to 69%. The other four racial/ethnic categories account for only 6% of non-obstetric discharges.

NOTES: Rate per 10,000 – Exhibit 7 includes the number of discharges per 10,000 people of each sex in Virginia.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; U.S. Census Bureau, American Fact Finder, 2015 American Community Survey (ACS), 5-year estimates.

EXHIBIT 6. Total Discharges by Patient Age

Patient Age (years)	All Discharges		Obstetric Discharges Excluded	
	Number	Percent	Number	Percent
Less than 1	102,510	12.2%	5,149	0.8%
1 to 17	24,820	3.0%	23,634	3.7%
18 to 44	207,890	24.7%	108,603	16.9%
45 to 64	205,598	24.5%	205,363	31.9%
65 to 84	233,181	27.7%	233,181	36.3%
85 and over	66,782	7.9%	66,782	10.4%
TOTAL	**840,781**	**100.0%**	**642,712**	**100.0%**

EXHIBIT 7. Total Discharges by Patient Sex

	All Discharges			Obstetric Discharges Excluded		
Patient Sex	Number	Percent	Rate per 10,000	Number	Percent	Rate per 10,000
Female	486,618	57.9%	1,160	338,657	52.7%	807
Male	354,110	42.1%	872	304,050	47.3%	749
Unknown	53	0.0%		5	0.0%	
TOTAL	**840,781**	**100.0%**		**642,712**	**100.0%**	

EXHIBIT 8. Total Discharges by Patient Race/Ethnicity

	All Discharges		Obstetric Discharges Excluded	
Patient Race	Number	Percent	Number	Percent
White non-Hispanic	539,248	64.1%	442,221	68.8%
Black non-Hispanic	190,099	22.6%	151,091	23.5%
Other race	35,127	4.2%	15,974	2.5%
Asian	26,085	3.1%	10,727	1.7%
American Indian	878	0.1%	658	0.1%
Hispanic, any race	15,448	1.8%	7,897	1.2%
Unknown	33,896	4.1%	14,144	2.2%
TOTAL	**840,781**	**100.0%**	**642,712**	**100.0%**

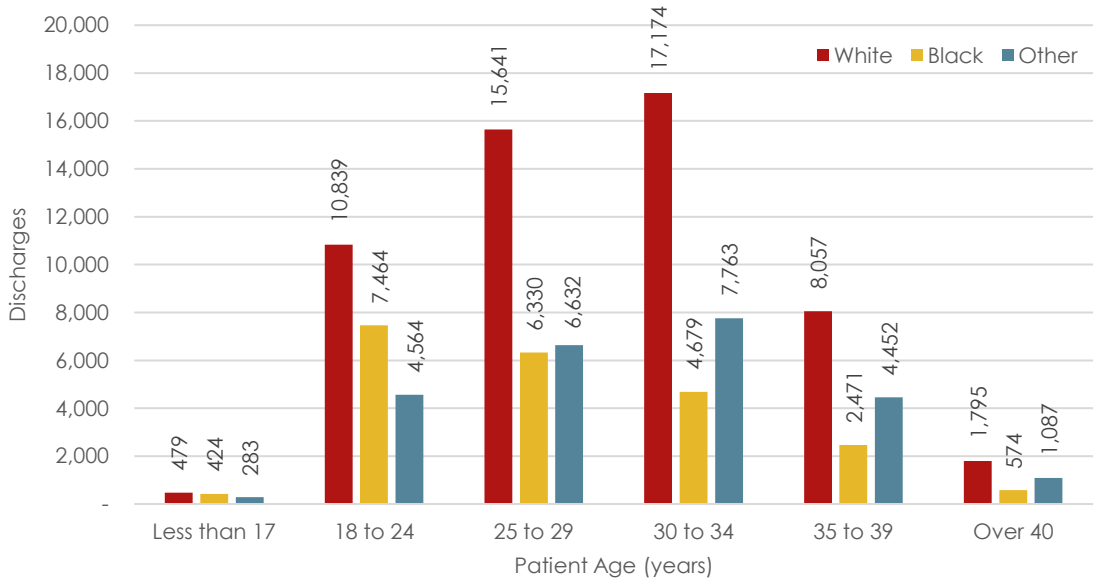
DEMOGRAPHIC CHARACTERISTICS: Maternal Discharges

Among maternal discharges, women between the ages of 30 and 34 account for the highest total number of discharges, and white non-Hispanic women have the largest share of discharges within each age group (Exhibit 9). Most maternal stays by white non-Hispanic women and women of other races are for women between the ages of 30 and 34, while most maternal stays by black non-Hispanic women are for women between the ages of 18 and 24.

NOTES: Patient Race/Ethnicity -- Exhibit 9 simplifies race categories into three groups: white, black, and other (Asian, American Indian, Hispanic [any race], unknown, and other).

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 9. Total Maternal Discharges by Patient Age and Race/Ethnicity



NOTE: There are a total of 100,708 maternal discharges.

TYPE OF ADMISSION AND PATIENTS' SOURCES OF ENTRY INTO VIRGINIA'S HOSPITALS

TYPE OF HOSPITAL ADMISSION: Overall and by Age

Overall

Half of all discharges (or 420,454 discharges) in Virginia's hospitals are emergency admissions, which are not necessarily limited to admissions from the emergency department (Exhibit 10). Another 22% (or 181,721 discharges) are elective admissions, and 17% of discharges (or 139,870 discharges) pertain to patients admitted on an urgent basis.

Age

In all three broad age ranges, emergency admissions account for the largest share of hospital discharges (Exhibit 11). This is especially the case among elderly patients ages 65 and over; nearly 70% of discharges in this age group are emergency admissions. The share of all discharges that are elective admissions is highest among adults age 18 to 64 (28%), and the share of all discharges that are urgent admissions is highest among youth ages 17 and under (30%).

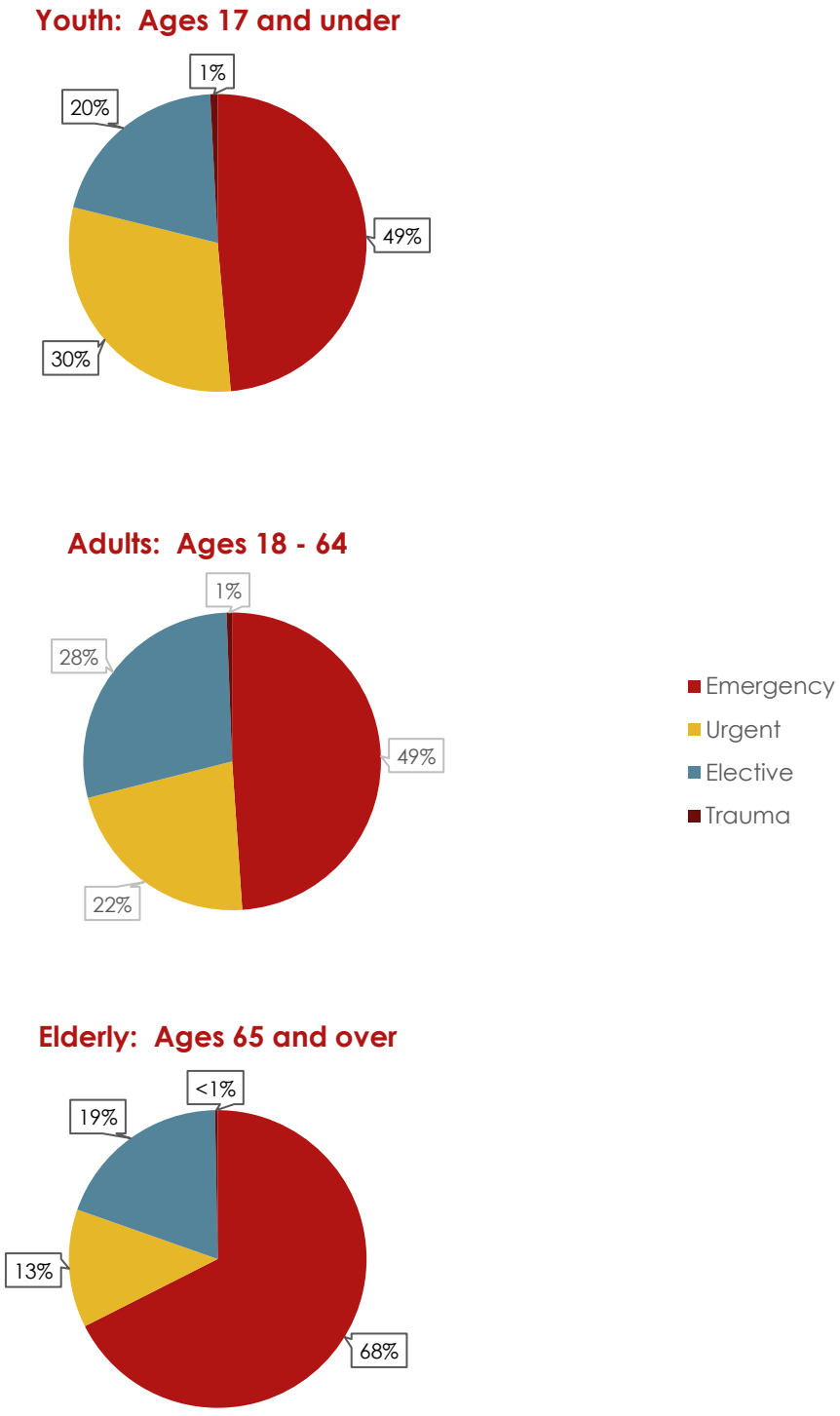
NOTES: Patient Age – Exhibit 11 excludes all type of admissions classified as newborn from the analysis, but includes children under the age of 1 in the category "17 and under" if they do not have a "newborn" type of admissions classification.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 10: Type of Hospital Admission

Admission Type	Number	Percent
Emergency	420,454	50.0%
Elective	181,721	21.6%
Urgent	139,870	16.6%
Newborn	94,342	11.2%
Trauma	3,596	0.4%
Unknown	798	0.1%
TOTAL	**840,781**	**100.0%**

EXHIBIT 11. Type of Hospital Admission by Patient Age (Excluding Newborn Admissions)



NOTE: There are a total of 745,641 discharges containing information on hospital admission type and patient age, with 32,766 youth discharges, 413,055 discharges of adults age 18 to 64, and 299,820 elderly discharges.

SOURCE OF HOSPITAL ADMISSION: Overall and by Patient Age

Overall

Nearly 65% of hospital discharges (or 543,024 discharges) pertain to patients admitted from a non-healthcare facility (Exhibit 12). Over 15% (or 127,804 discharges) were admitted to the hospital by way of a clinic or physicians' office, and 11% (or 94,103 discharges) were newborns born in the hospital.

Patient Age

In all broad age groups, the most common admission source is from outside of a healthcare facility (Exhibit 13). Among adults age 18 to 64 and the elderly, nearly 75% of discharges were admitted from outside of a healthcare facility. For youth age 17 and under, over 60% were admitted from outside of a healthcare facility. The second most common source of hospital admissions for adults age 18 to 64 and the elderly is from a clinic or physicians' office. For youth, the second most common source of admissions is a transfer from another hospital.

NOTES: Admission Source -- Exhibit 13 excludes 9,985 discharges where the source of admission is not available as shown in Exhibit 12. Patient Age -- Exhibit 13 excludes all sources of admission classified as newborn from the analysis, but includes children under the age of 1 in the category "17 and under" if they do not have a "newborn" source of admissions classification.

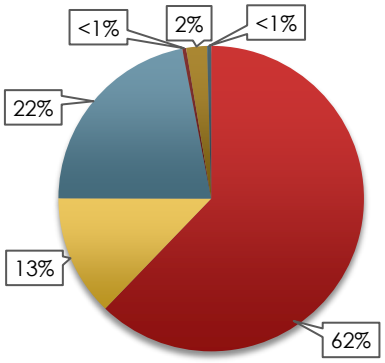
SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 12. Source of Hospital Admission

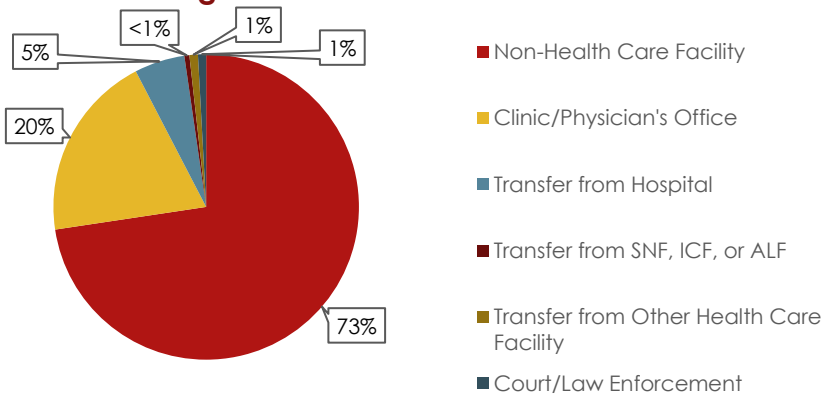
	Discharges	
Admission Source	**Number**	**Percent**
Non-health care facility	543,024	64.6%
Clinic or physician's office	127,804	15.2%
Newborn born in this hospital	94,103	11.2%
Transfer from hospital	43,783	5.2%
Transfer from skilled nursing facility, intermediate care facility, or assisted living facility	10,870	1.3%
Transfer from other health care facility	6,887	0.8%
Court/law enforcement	4,086	0.5%
Newborn born outside of this hospital	239	0.0%
Information not available	9,985	1.2%
TOTAL	**840,781**	**100.0%**

EXHIBIT 13. Source of Hospital Admission by Patient Age (Excluding Newborn Admissions)

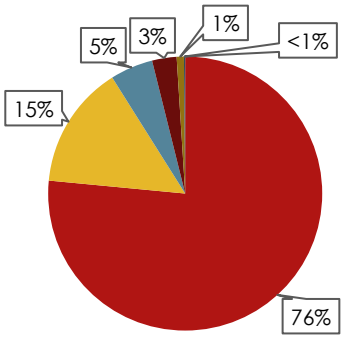
Youth: Ages 17 and Under



Adults: Ages 18 - 64



Elderly: Ages 65 and Over



NOTE: There are a total of 736,454 discharges containing information on hospital admission source and patient age, with 32,291 youth discharges, 407,344 discharges of adults age 18 to 64, and 296,819 elderly discharges.

CONDITIONS FOR WHICH PATIENTS ARE HOSPITALIZED

PATIENT CONDITIONS: Twenty Most Common Reasons for Hospitalization

The 20 most common reasons for hospitalization account for over half of all patient discharges from Virginia's community hospitals (Exhibit 14). The most common patient condition for hospitalization is childbirth, which accounts for 94,606 discharges, or 11%. Septicemia is the second most common reason for hospitalization at 47,964 discharges, or 6%. Compared to the other 19 clinical conditions reported in Exhibit 14, septicemia has the longest average length of stay (6.9 days) and the highest amount of total charges ($2.5 billion).

Aside from childbirth and septicemia, each of the other conditions listed in Exhibit 14 accounts for 3% or less of all hospital discharges. Excluding septicemia, the other three conditions with the longest average length of stay are respiratory failure in adults (6.2 days), complication of a device, implant, or graft (6.1 days), and mood disorders (5.7 days).

Excluding septicemia, the conditions resulting in the highest total charges are osteoarthritis ($1.7 billion), acute myocardial infarction or heart attack ($1.2 billion), and complication of a device, implant, or graft (also $1.2 billion). Of the 20 most common reasons for hospitalization, spondylosis, intervertebral disc disorders, and other back problems account for the highest average charges per stay ($80,607) and the highest charges per day ($35,597).

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 14. Twenty Most Common Reasons for Hospitalization

		Discharges		Average			Total
	Clinical Classification	Number	Percent	LOS (days)	Charges per Stay	Charges per Day	Charges (millions)
1	Liveborn	94,606	11.2%	3.5	$9,935	$1,592	$940.0
2	Septicemia (except in labor)	47,964	5.7%	6.9	$52,218	$7,833	$2,504.6
3	Osteoarthritis	27,698	3.3%	2.3	$60,634	$32,466	$1,679.5
4	Mood disorders	27,635	3.3%	5.7	$14,781	$2,768	$408.5
5	Congestive heart failure; nonhypertensive	23,976	2.9%	5.2	$37,575	$7,307	$900.9
6	Acute cerebrovascular disease	16,696	2.0%	5.3	$47,484	$10,650	$792.8
7	Cardiac dysrhythmias	16,613	2.0%	3.7	$36,598	$11,678	$608.0
8	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	16,541	2.0%	4.7	$28,620	$6,364	$473.4
9	Other complications of birth; puerperium affecting management of mother	16,420	2.0%	2.7	$13,927	$5,422	$228.7
10	Complication of device; implant or graft	15,796	1.9%	6.1	$73,299	$17,335	$1,157.8
11	Acute myocardial infarction	15,628	1.9%	4.4	$75,480	$22,867	$1,179.6
12	Acute and unspecified renal failure	14,081	1.7%	4.8	$27,284	$6,217	$384.2
13	Diabetes mellitus with complications	13,602	1.6%	4.5	$31,830	$7,694	$433.0
14	OB-related trauma to perineum and vulva	13,415	1.6%	2.1	$9,928	$4,871	$133.2
15	Other complications of pregnancy	13,027	1.5%	2.5	$12,713	$5,387	$165.6
16	Respiratory failure; insufficiency; arrest (adult)	12,847	1.5%	6.2	$49,692	$8,637	$638.4
17	Chronic obstructive pulmonary disease and bronchiectasis	12,742	1.5%	4.3	$24,759	$6,583	$315.5
18	Previous C-section	12,311	1.5%	2.6	$15,047	$6,048	$185.2
19	Spondylosis; intervertebral disc disorders; other back problems	12,126	1.4%	3.2	$80,607	$35,597	$977.5
20	Skin and subcutaneous tissue infections	11,514	1.4%	4.2	$22,399	$5,950	$257.9
TOTAL		**435,238**	**51.8%**				**$14,364.3**

PATIENT CONDITIONS: Most Common Reasons for Hospitalization by Patient Age

For infants less than age 1 and for adults between age 18 and 44, the most common reasons for hospitalization are related to childbirth (Exhibit 15). For youth between the ages of 1 and 17, the most common reason for hospitalization is mood disorders, which account for 16% of all discharges for this age group. For adults age 45 and older, the most common reason for hospitalization is septicemia (also known as blood poisoning). Other common reasons for hospitalization include osteoarthritis for adults between the ages of 45 and 84 (26,418 discharges), acute myocardial infarction for adults between the ages of 45 and 64 (6,200 discharges), and congestive heart failure and acute cerebrovascular diseases for the oldest adults above age 65 (17,335 and 10,689 discharges, respectively).

Mood disorders are among the top three reasons for hospitalization in patients between the ages of 1 and 64, with total charges reaching over $368 million. The average length of stay for these hospitalizations is between 4.9 and 6.3 days, depending on the age group.

Pregnancy-related hospitalizations account for four out of the top five reasons for hospitalization for patients between the ages of 18 and 44. Mood disorders, also in the top five, account for 13,895 discharges among this age group. Total charges for these pregnancy-related and mood disorder hospitalizations are nearly $878 million.

Of the top five reasons for hospitalization across all age groups, the longest average length of stay is for discharges of patients under age 1 hospitalized for short gestation, low birth weight, and fetal growth retardation. Average length of stay is 47.2 days for discharges of this type. The second longest average length of stay is 7.9 days for discharges associated with other perinatal conditions for newborns under age 1.

NOTES: Patient Age -- Percentages shown are percentage of discharges for each particular age category.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 15. Five Most Common Reasons for Hospitalization by Patient Age

Age (years)		Clinical Classification	Discharges		Average LOS (days)	Average Charges per Stay	Average Charges per Day	Total Charges (millions)
			Number	Percent				
Less than 1	1	Liveborn	94,606	92.3%	3.5	$9,936	$1,592	$940.0
	2	Other perinatal conditions	1,264	1.2%	7.9	$52,104	$6,070	$65.8
	3	Acute bronchitis	1,182	1.2%	3.5	$18,571	$4,795	$21.9
	4	Hemolytic jaundice and perinatal jaundice	838	0.8%	1.6	$5,190	$2,821	$4.3
	5	Short gestation; low birth weight; and fetal growth retardation	392	0.4%	47.2	$327,266	$7,517	$128.3
1 to 17	1	Mood disorders	4,002	16.1%	6.3	$15,157	$2,495	$60.7
	2	Asthma	1,495	6.0%	1.9	$16,566	$8,223	$24.8
	3	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	1,255	5.1%	3.0	$19,087	$6,176	$24.0
	4	Epilepsy; convulsions	905	3.6%	2.5	$23,152	$9,510	$21.0
	5	Appendicitis and other appendiceal conditions	755	3.0%	3.4	$39,223	$17,214	$29.6
18 to 44	1	Other complications of birth; puerperium affecting management of mother	16,112	7.8%	2.7	$13,937	$5,429	$224.6
	2	Mood disorders	13,895	6.7%	4.9	$12,548	$2,752	$174.4
	3	OB-related trauma to perineum and vulva	13,209	6.4%	2.1	$9,925	$4,877	$131.1
	4	Other complications of pregnancy	12,840	6.2%	2.5	$12,690	$5,382	$162.9
	5	Previous C-section	12,267	5.9%	2.6	$15,055	$6,051	$184.7
45 to 64	1	Septicemia (except in labor)	13,885	6.8%	7.6	$61,058	$8,435	$847.8
	2	Osteoarthritis	11,304	5.5%	2.1	$62,516	$36,009	$706.7
	3	Mood disorders	8,097	3.9%	6.1	$16,436	$2,896	$133.1
	4	Acute myocardial infarction	6,200	3.0%	4.0	$79,484	$26,741	$492.8
	5	Complication of device; implant or graft	5,857	2.8%	6.1	$78,258	$19,005	$458.4
65 to 84	1	Septicemia (except in labor)	20,271	8.7%	7.0	$51,749	$7,731	$1,049.0
	2	Osteoarthritis	15,114	6.5%	2.5	$59,105	$29,941	$893.3
	3	Congestive heart failure; nonhypertensive	11,820	5.1%	5.2	$35,809	$7,322	$423.3
	4	Cardiac dysrhythmias	8,984	3.9%	3.7	$37,731	$12,098	$339.0
	5	Acute cerebrovascular disease	7,739	3.3%	4.9	$43,194	$10,396	$334.3
85 and over	1	Septicemia (except in labor)	7,569	11.3%	6.1	$36,260	$6,544	$274.5
	2	Congestive heart failure; nonhypertensive	5,515	8.3%	4.6	$24,501	$5,778	$135.1
	3	Acute cerebrovascular disease	2,950	4.4%	4.6	$32,206	$8,166	$95.0
	4	Urinary tract infections	2,908	4.4%	4.2	$19,296	$5,283	$56.1
	5	Fracture of neck of femur (hip)	2,897	4.3%	5.4	$54,168	$11,310	$156.9

PATIENT CONDITIONS: Most Frequent Hospitalizations at Rural and Urban Hospitals

Among the 10 most common reasons that patients are hospitalized in rural and urban hospitals, six conditions are common to both types of hospitals: septicemia, childbirth, congestive heart failure, mood disorders, osteoarthritis, and cardiac dysrhythmias (Exhibit 16). In rural hospitals, the 10 most common reasons for hospitalization account for 37,376 discharges, or 42% of all discharges. In urban hospitals, the 10 most common reasons account for 271,961 discharges, or 36% of all discharges.

At both rural and urban hospitals, some of the most common types of hospitalizations can be characterized as potentially preventable or avoidable in certain circumstances and for particular age groups. These include hospitalizations for congestive heart failure, some types of pneumonia, and chronic obstructive pulmonary disease. Discharges of patients diagnosed with congestive heart failure are among the top five reasons for hospitalization in both rural and urban hospitals. Rural hospitals frequently admit patients who are diagnosed with pneumonia (3,649 discharges) and chronic obstructive pulmonary disease (3,498 discharges).

For patients treated for the same condition, the average length of stay is typically somewhat longer at urban hospitals than at rural hospitals. Hospitalizations for osteoarthritis are an exception; length of stay for these hospitalizations is somewhat longer in rural hospitals (2.6 days vs. 2.3 days in urban hospitals). The largest difference in length of stay between rural and urban hospitals is for septicemia, where patients at urban hospitals tend to remain in the hospital longer (7.3 days in urban hospitals vs. 4.9 days in rural hospitals).

Among frequent reasons for hospitalizations that are common to both rural and urban hospitals, urban hospitals have higher average charges per stay than do rural hospitals. The difference in average charges per stay at urban hospitals versus rural hospitals ranges from a low of $1,991 for mood disorders to a high of $28,337 for septicemia.

Among frequent reasons for hospitalizations that are common to both rural and urban hospitals, urban hospitals also have higher average charges per day. For childbirth and mood disorder discharges, the differences are small ($9 and $242, respectively). For osteoarthritis and cardiac dysrhythmia discharges, the differences in average charges per day between urban and rural hospitals are much larger ($7,872 and $4,564, respectively).

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS; Virginia Health Information, "Hospital Operating and Total Margins: Location per CMS POS File and FY Final Rule Correction Notices." Accessed by clicking "Click here (Excel)"; Agency for Healthcare Research and Quality, "Appendix B. Ambulatory Care Sensitive Conditions." Accessed 4/26/17; Agency for Healthcare Research and Quality, "Prevention Quality Indicators Technical Specifications Update – Version 6.0 (ICD-9)." Accessed 5/12/17.

EXHIBIT 16. Ten Most Common Reasons for Hospitalization at Rural and Urban Hospitals

Rural Hospitals

		Discharges		Average			
	Clinical Classification	Number	Percent	LOS (days)	Charges per Stay	Charges per Day	Total Charges (millions)
1	Septicemia (except in labor)	7,789	8.7%	4.9	$28,483	$6,598	$221.9
2	Liveborn	6,476	7.3%	2.0	$3,117	$1,584	$20.2
3	Congestive heart failure; nonhypertensive	4,111	4.6%	3.9	$20,521	$5,973	$84.4
4	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	3,649	4.1%	4.1	$22,339	$5,912	$81.5
5	Chronic obstructive pulmonary disease and bronchiectasis	3,498	3.9%	4.1	$19,524	$6,045	$68.3
6	Mood disorders	2,775	3.1%	5.4	$12,990	$2,551	$36.0
7	Osteoarthritis	2,472	2.8%	2.6	$57,431	$25,297	$142.0
8	Respiratory failure; insufficiency; arrest (adult)	2,277	2.5%	5.5	$26,685	$6,843	$60.8
9	Acute and unspecified renal failure	2,224	2.5%	3.8	$18,302	$5,509	$40.7
10	Cardiac dysrhythmias	2,105	2.4%	3.4	$20,291	$7,693	$42.7
TOTAL		**37,376**	**41.9%**				**$798.5**

Urban Hospitals

		Discharges		Average			
	Clinical Classification	Number	Percent	LOS (days)	Charges per Stay	Charges per Day	Total Charges (millions)
1	Liveborn	88,130	11.7%	3.6	$10,437	$1,593	$919.8
2	Septicemia (except in labor)	40,175	5.3%	7.3	$56,820	$8,073	$2,282.7
3	Osteoarthritis	25,226	3.4%	2.3	$60,949	$33,169	$1,537.5
4	Mood disorders	24,860	3.3%	5.7	$14,981	$2,793	$372.4
5	Congestive heart failure; nonhypertensive	19,865	2.6%	5.4	$41,105	$7,584	$816.6
6	Other complications of birth; puerperium affecting management of mother	15,356	2.0%	2.8	$14,085	$5,423	$216.3
7	Acute cerebrovascular disease	15,036	2.0%	5.5	$50,251	$10,888	$755.6
8	Complication of device; implant or graft	14,751	2.0%	6.1	$75,755	$17,748	$1,117.5
9	Cardiac dysrhythmias	14,508	1.9%	3.7	$38,964	$12,257	$565.3
10	Acute myocardial infarction	14,054	1.9%	4.5	$79,397	$23,574	$1,115.9
TOTAL		**271,961**	**36.1%**				**$9,699.6**

PATIENT CONDITIONS: Chronic and Non-Chronic

Non-chronic conditions account for 513,867 discharges, or over 61% of all hospitalizations in Virginia community hospitals (Exhibit 17). Chronic conditions account for 326,914 discharges, or 39% of all hospitalizations.

Chronic conditions result in a longer average length of stay when compared to non-chronic conditions (4.9 days vs. 4.4 days). Chronic conditions also result in higher average charges per stay ($46,366 vs. $30,170) and higher average charges per day ($13,572 vs. $7,487) when compared to non-chronic conditions. Hospitalizations for non-chronic conditions result in slightly higher total charges ($15.5 billion) compared to hospitalizations for chronic conditions ($15.2 billion).

NOTES: Patient Condition – Type of condition is based on a patient's primary diagnosis.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Chronic Conditions Indicator (CCI) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 17. Hospitalizations for Chronic and Non-Chronic Conditions

	Discharges		Average			
Condition Type	Number	Percent	LOS (days)	Charges per Stay	Charges per Day	Total Charges (millions)
Non-Chronic	513,867	61.1%	4.4	$30,170	$7,487	$15,503.4
Chronic	326,914	38.9%	4.9	$46,366	$13,572	$15,157.6
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**$30,661.1**

PATIENT CONDITIONS: Reasons for Hospitalization of Chronic and Non-Chronic Conditions

Chronic Conditions

Nearly 40% of hospitalizations for chronic conditions are due to only six diagnoses: osteoarthritis, mood disorders, congestive heart failure, acute cerebrovascular disease, cardiac dysrhythmias, and acute myocardial infarction (Exhibit 18). Among all chronic conditions, osteoarthritis is the most common reason for hospitalization, accounting for 27,698 discharges or 9% of all chronic condition hospitalizations. Mood disorders is the second most common chronic condition resulting in hospitalization, accounting for 27,607 discharges.

For patients treated for chronic conditions, some of the most common types of hospitalizations can be characterized as potentially preventable or avoidable in certain circumstances and for particular age groups. These include hospitalizations for congestive heart failure and chronic obstructive pulmonary disease and some types of diabetes hospitalizations. Together, all hospitalizations for congestive heart failure, chronic obstructive pulmonary disease, and diabetes account for 50,120 discharges or over 15% of hospitalizations for chronic conditions. Average length of stay for these three conditions ranges from 4.3 to 5.2 days and average charges per stay range from $24,727 to $37,576.

Non-Chronic Conditions

Two conditions, childbirth and septicemia, account for 28% of all non-chronic conditions. Childbirth accounts for 94,606 discharges and septicemia accounts for 47,964 discharges; these constitute 18% and 9% of total non-chronic hospitalizations, respectively (Exhibit 19). All other non-chronic condition hospitalizations are due to conditions accounting for 3% or less of all such hospitalizations. Of particular note, over 16,500 discharges are for pneumonia caused by something other than tuberculosis or sexually transmitted diseases. As shown in Exhibit 19, pneumonia accounts for over $473 million in total charges with an average charge per stay of $28,621.

NOTES: Patient Condition – Type of condition is based on a patient's primary diagnosis.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Chronic Conditions Indicator (CCI) for ICD-9-CM and ICD-10-CM/PCS; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS; Agency for Healthcare Research and Quality, "Prevention Quality Indicators Technical Specifications Update – Version 6.0 (ICD-9)." Accessed 5/12/17.

EXHIBIT 18. Ten Most Common Reasons for Hospitalization for Chronic Conditions

		Discharges		Average			Total
	Clinical Classification	Number	Percent	LOS	Charges per Stay	Charges per Day	Charges (millions)
1	Osteoarthritis	27,698	8.5%	2.3	$60,635	$32,466	$1,679.5
2	Mood disorders	27,607	8.4%	5.7	$14,781	$2,769	$408.1
3	Congestive heart failure; nonhypertensive	23,976	7.3%	5.2	$37,576	$7,308	$900.9
4	Acute cerebrovascular disease	16,696	5.1%	5.3	$47,484	$10,651	$792.8
5	Cardiac dysrhythmias	16,294	5.0%	3.7	$36,812	$11,709	$599.8
6	Acute myocardial infarction	15,628	4.8%	4.4	$75,480	$22,868	$1,179.6
7	Diabetes mellitus with complications	13,602	4.2%	4.5	$31,830	$7,694	$433.0
8	Chronic obstructive pulmonary disease and bronchiectasis	12,542	3.8%	4.3	$24,727	$6,570	$310.1
9	Schizophrenia and other psychotic disorders	9,599	2.9%	8.6	$21,123	$2,747	$202.8
10	Alcohol-related disorders	9,529	2.9%	4.8	$23,912	$5,395	$227.9
TOTAL		**173,171**	**52.9%**				**$6734.5**

EXHIBIT 19. Ten Most Common Reasons for Hospitalization for Non-Chronic Conditions

		Discharges		Average			Total
	Clinical Classification	Number	Percent	LOS	Charges per Stay	Charges per Day	Charges (millions)
1	Liveborn	94,606	18.4%	3.5	$9,936	$1,592	$940.0
2	Septicemia (except in labor)	47,964	9.3%	6.9	$52,218	$7,834	$2,504.6
3	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	16,541	3.2%	4.7	$28,621	$6,365	$473.4
4	Other complications of birth; puerperium affecting management of mother	15,951	3.1%	2.8	$14,000	$5,428	$223.3
5	Acute and unspecified renal failure	14,074	2.7%	4.8	$27,292	$6,216	$384.1
6	Complication of device; implant or graft	13,546	2.6%	6.1	$74,136	$17,723	$1,004.3
7	OB-related trauma to perineum and vulva	13,415	2.6%	2.1	$9,928	$4,872	$133.2
8	Previous C-section	12,311	2.4%	2.6	$15,047	$6,048	$185.2
9	Skin and subcutaneous tissue infections	11,514	2.4%	4.2	$22,400	$5,950	$257.9
10	Other complications of pregnancy	11,503	2.2%	2.5	$12,826	$5,406	$147.5
TOTAL		**251,425**	**48%**				**$6,253.5**

PATIENT CONDITIONS: Reasons for Emergency Hospitalizations

The 20 most common reasons for emergency hospitalizations account for 231,117 discharges, or 55% of all emergency hospitalizations, resulting in $8.7 billion in total charges (Exhibit 20). Septicemia is the most frequent reason for hospitalization with 40,730 discharges, followed by nonhypertensive congestive heart failure at 20,003 discharges. Together, these two conditions represent 15% of all emergency hospitalizations. Acute myocardial infarction is the condition with the highest average charges per stay ($73,668) and the highest average charges per day ($22,692).

Six of the most common types of emergency hospitalizations are sometimes characterized as potentially preventable or avoidable in certain circumstances and for particular age groups. These include hospitalizations for congestive heart failure, some types of pneumonia, some types of diabetes, chronic obstructive pulmonary disease, urinary tract infections, and asthma in some age groups. Hospitalizations for these conditions are often characterized as preventable or avoidable because they would not be needed if the patient had access to quality outpatient care. Together, all hospitalizations for congestive heart failure, pneumonia, diabetes, chronic obstructive pulmonary disease, urinary tract infections, and asthma account for 69,704 discharges with charges totaling $1.9 billion, which does not take into account individual circumstances or patient age. The average lengths of stay for these discharges range between 3.9 and 4.9 days, and the average charges per stay are between $20,701 and $32,892.

NOTES: Reason for Hospitalization – Exhibit 20 includes only those discharges where type of hospital admission is classified as emergency.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 20. Twenty Most Common Conditions Resulting in Emergency Hospitalizations

	Clinical Classification	Discharges		Average			Total Charges (millions)
		Number	Percent	LOS	Charges per Stay	Charges per Day	
1	Septicemia (except in labor)	40,730	9.7%	6.8	$50,803	$7,870	$2,069.2
2	Congestive heart failure; nonhypertensive	20,003	4.8%	4.9	$32,892	$7,012	$657.9
3	Acute cerebrovascular disease	13,738	3.3%	5.3	$47,510	$10,761	$652.7
4	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	13,536	3.2%	4.6	$28,619	$6,519	$387.4
5	Cardiac dysrhythmias	12,161	2.9%	3.6	$32,751	$9,962	$398.3
6	Acute and unspecified renal failure	11,871	2.8%	4.7	$27,003	$6,284	$320.6
7	Acute myocardial infarction	11,654	2.8%	4.3	$73,668	$22,692	$858.5
8	Mood disorders	11,212	2.7%	5.6	$14,900	$2,936	$167.1
9	Diabetes mellitus with complications	10,829	2.6%	4.2	$28,503	$7,332	$308.7
10	Respiratory failure; insufficiency; arrest (adult)	10,573	2.5%	5.8	$48,140	$8,790	$509.0
11	Chronic obstructive pulmonary disease and bronchiectasis	10,375	2.5%	4.1	$24,677	$6,716	$256.0
12	Urinary tract infections	9,073	2.2%	3.9	$20,701	$6,133	$187.8
13	Skin and subcutaneous tissue infections	8,809	2.1%	4.0	$22,372	$6,106	$197.1
14	Complication of device; implant or graft	7,846	1.9%	6.7	$59,557	$10,014	$467.3
15	Gastrointestinal hemorrhage	7,588	1.8%	4.0	$31,326	$8,381	$237.7
16	Fluid and electrolyte disorders	6,863	1.6%	3.4	$20,743	$7,080	$142.4
17	Intestinal obstruction without hernia	6,522	1.6%	5.3	$35,341	$7,014	$230.5
18	Fracture of neck of femur (hip)	5,968	1.4%	5.3	$57,285	$12,267	$341.9
19	Pancreatic disorders (not diabetes)	5,888	1.4%	4.4	$29,977	$7,267	$176.5
20	Asthma	5,878	1.4%	3.5	$22,214	$7,186	$130.6
TOTAL		**231,117**	**55.2%**				**$8,697.2**

PATIENT CONDITIONS: Mental Health Conditions Requiring Hospitalization

Many patients are treated in community hospitals for mental health conditions, resulting in over $1.1 billion in hospital charges. Of the more than 59,000 hospitalizations for mental health conditions, nearly half of these are related to mood disorders with total hospital charges for this condition alone reaching over $409 million (Exhibit 21). Schizophrenia and other psychotic disorders and alcohol-related disorders together account for one-third of mental health-related hospitalizations and over $434 million in hospital charges. Other common mental health conditions resulting in hospital stays include substance-related disorders (4,508 discharges), adjustment disorders (1,997 discharges), delirium (1,871 discharges), and anxiety disorders (1,103 discharges).

Notes: Mental Health Conditions -- Exhibit 21 includes discharges assigned to Clinical Classifications Software (CCS) categories for mental conditions, namely CCS categories 650-663, and 670.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 21. Mental Health Conditions Requiring Hospitalization

	Discharges		Average			Total
Clinical Classification	Number	Percent	LOS	Charges per Stay	Charges per Day	Charges (millions)
Mood disorders	27,635	46.7%	5.7	$14,781	$2,769	$408.5
Schizophrenia and other psychotic disorders	9,686	16.4%	8.6	$21,123	$2,752	$204.6
Alcohol-related disorders	9,608	16.2%	4.8	$23,885	$5,413	$229.5
Substance-related disorders	4,508	7.6%	4.2	$17,449	$5,139	$78.7
Adjustment disorders	1,997	3.4%	3.7	$10,579	$3,033	$21.1
Delirium	1,871	3.2%	8.8	$24,565	$4,210	$46.0
Anxiety disorders	1,103	1.9%	4.3	$12,939	$3,768	$14.3
Miscellaneous mental health disorders	1,096	1.9%	3.4	$15,804	$5,734	$17.3
Suicide and intentional self-inflicted injury	858	1.5%	3.3	$22,497	$8,301	$19.3
Attention-deficit	301	0.5%	6.2	$15,471	$2,637	$4.7
Personality disorders	164	0.3%	3.9	$11,998	$3,317	$2.0
Disorders usually diagnosed in infancy	140	0.2%	6.2	$14,247	$2,576	$2.0
Impulse control disorders	104	0.2%	5.8	$13,534	$2,358	$1.4
Developmental disorders	32	0.1%	3.8	$19,176	$7,341	$0.6
Screening and history of mental health and substance abuse codes	26	0.0%	10.0	$67,243	$7,788	$1.7
TOTAL	**59,129**	**100%**				**$1,051.7**

PATIENT CONDITIONS: Mood Disorders Requiring Hospitalization

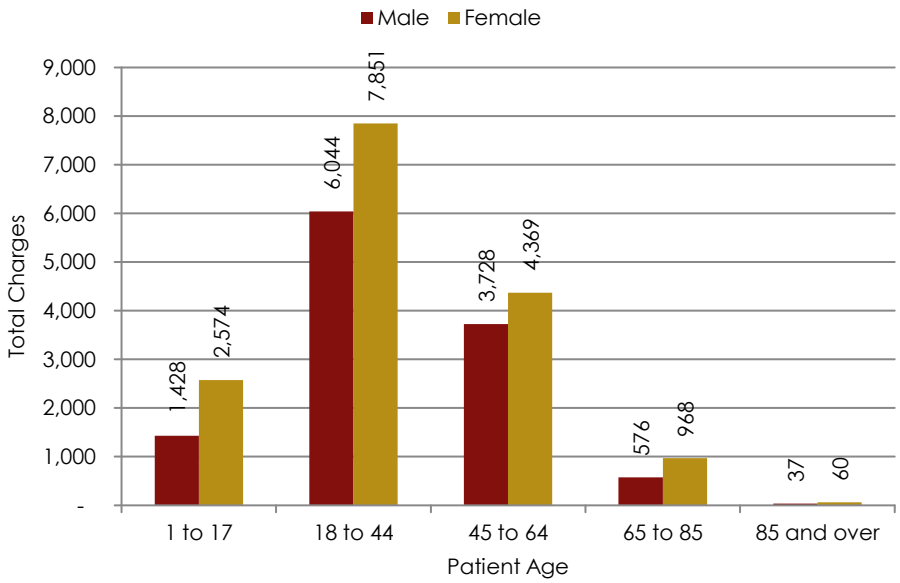
Female patients account for 57% of all mood disorder hospitalizations (e.g., hospitalization for bipolar disorder, manic disorder, and major depressive disorder) as shown in Exhibit 21. Female patients, in fact, have more hospitalizations for mood disorders than male patients across all age categories (Exhibit 22).

Adults between the ages of 18 and 44 account for about half of all mood disorder hospitalizations (Exhibit 22), but account for 37% of the Virginia population (data not shown).

NOTES: Mood Disorder Discharges – Exhibit 22 includes those discharges assigned to the Clinical Classifications Software (CCS) category for mood disorders, namely CCS category 657. Patient Sex – Exhibit 22 excludes from analysis those patients whose sex is unknown. Patient Age – Children under age 1 are not included in this analysis.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS; U.S. Census Bureau, American Fact Finder, 2015 American Community Survey (ACS), 5-year estimates.

EXHIBIT 22. Mood Disorders Requiring Hospitalization by Patient Sex and Age



NOTE: There are a total of 27,635 discharges containing information on mood disorders, patient age, and patient sex.

DISCHARGE STATUS

DISCHARGE STATUS: All Patients

The vast majority of patients treated at Virginia's hospitals have a routine discharge (Exhibit 23). Over 66% of all discharges were routine discharges where patients were sent home after their hospital stay. In approximately 15% of discharges, patients were transferred to another medical facility or short-term general hospital for inpatient care, and in another 16% of discharges, patients were discharged to home health or hospice care. Nearly 18,800 patients died in the hospital. Patients who left against medical advice accounted for less than 1% of all discharges.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 23. Discharge Status

	All Discharges	
Discharge Status	**Number**	**Percent**
Discharged to home or self-care; routine	556,541	66.2%
Discharged to home health or hospice care	130,792	15.6%
Discharged or transferred to another medical facility	110,640	13.2%
In-hospital deaths	18,783	2.2%
Discharged or transferred to short-term general hospital for inpatient care	14,544	1.7%
Left against medical advice	7,323	0.9%
Other	2,158	0.3%
TOTAL	**840,781**	**100.0%**

DISCHARGE STATUS: Most Common Reasons for Hospitalization among Those Who Died in the Hospital

Of those patients who died in the hospital, 49% were female and 51% were male. Almost half of all in-hospital deaths (8,817) occurred among adults age 65 to 84 (data not shown).

About 62% of all patients who died in the hospital were hospitalized for one of 10 conditions (Exhibit 24). The most common reason for hospitalization among patients who died was septicemia; the second most common reason was respiratory failure.

The average charges per stay and average charges per day varied considerably among the common reasons for hospitalizations resulting in in-hospital deaths. For example, charges per stay range from $13,870 to $154,921. Patients who were hospitalized with septicemia as their primary diagnosis and who later died accounted for the highest total charges ($384 million).

NOTES: In-Hospital Deaths – These deaths include patients with the following discharge status: expired; expired in a medical facility such as a hospital, skilled nursing facility, intermediate care facility, or freestanding hospice; and expired place unknown. The data presented in Exhibit 24 below are the most frequent reasons for hospitalization among those patients who later died in the hospital. These diagnoses may not be the cause of the in-hospital death.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

EXHIBIT 24. Ten Most Common Reasons for Hospitalization among In-Hospital Deaths

	Clinical Classification	Deaths	Average Age (years)	Average LOS (days)	Average Charges per Stay	Average Charges per Day	Total Charges (millions)
1	Septicemia (except in labor)	5,224	73.4	6.8	$73,537	$13,621	$384.1
2	Respiratory failure; insufficiency; arrest (adult)	1,458	71.0	6.5	$67,606	$12,328	$98.6
3	Acute cerebrovascular disease	1,341	73.7	5.5	$63,077	$15,239	$84.6
4	Acute myocardial infarction	750	74.9	5.7	$109,452	$25,494	$82.1
5	Congestive heart failure; nonhypertensive	744	77.5	7.4	$90,991	$9,817	$67.7
6	Intracranial injury	458	66.2	5.6	$88,041	$23,344	$40.3
7	Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	453	77.5	7.0	$55,607	$7,900	$25.2
8	Other aftercare	418	73.1	5.4	$13,870	$2,220	$5.8
9	Acute and unspecified renal failure	415	77.2	6.7	$47,045	$7,233	$19.5
10	Complication of device; implant or graft	360	69.7	11.9	$154,921	$15,957	$55.8
TOTAL		**11,621**					**$863.7**

LENGTH OF STAY, CHARGES, AND PRIMARY SOURCE OF PAYMENT

LENGTH OF STAY AND CHARGES: By Patient Age, Sex, and Race/Ethnicity

Patient Age

Compared to other age groups, patients age 45 to 64 have both the highest average charges per stay ($48,406) and highest average charges per day ($13,438) (Exhibit 25). Adults age 65 to 84 represent the largest share of all discharges (28%) and have the highest total charges for any age group, at $11.1 billion. Youth age 1 to 17 have the lowest total charges for any age group, at $809 million.

Patient Sex

While female patients account for the greater share of discharges from Virginia's hospitals, male patients tend to stay longer once in the hospital (4.9 vs. 4.3 days) (Exhibit 26). Compared to female patients, male patients also have higher average charges per stay ($41,739 vs. $32,634) and higher average charges per day ($10,716 vs. $9,225). However, because female patients account for a larger share of discharges, they account for a higher amount of total charges than males ($15.9 billion vs. $14.8 billion).

Patient Race/Ethnicity

Non-Hispanic white patients have the longest total length of stay (2.4 million days) and the highest total charges at $20.4 billion (Exhibit 27). Compared to other racial/ethnic groups, non-Hispanic black patients have both the highest average length of stay in the hospital (5 days) and the highest average charges per stay ($40,333). Compared to other racial/ethnic groups, Hispanic patients have both the shortest length of stay in the hospital at 3.7 days and the lowest average charges per stay at $21,077.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 25. Length of Stay and Charges by Patient Age

Patient Age (years)	Discharges		Average			Total	
	Number	Percent	LOS (days)	Charge per Stay	Charge per Day	LOS (days)	Charges (millions)
1 or under	102,510	12.2%	3.9	$14,156	$2,011	394,706	$1,451.1
1 to 17	24,820	3.0%	4.2	$32,585	$9,000	103,432	$808.7
18 to 44	207,890	24.7%	3.7	$24,892	$7,839	760,979	$5,174.9
45 to 64	205,598	24.5%	5.1	$48,406	$13,438	1,039,704	$9,952.2
65 to 84	233,181	27.7%	5.1	$47,468	$12,591	1,198,138	$11,068.7
85 and over	66,782	7.9%	5.0	$33,024	$7,876	337,192	$2,205.4
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**3,834,151**	**$30,661.1**

EXHIBIT 26. Length of Stay and Charges by Patient Sex

Patient Sex	Discharges		Average			Total	
	Number	Percent	LOS (days)	Charge per Stay	Charge per Day	LOS (days)	Charges (millions)
Male	354,110	42.1%	4.9	$41,739	$10,716	1,746,227	$14,780.2
Female	486,618	57.9%	4.3	$32,634	$9,225	2,087,789	$15,880.4
Unknown	53	0.0%	2.5	$8,524	$2,538	135	$0.5
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**3,834,151**	**$30,661.1**

EXHIBIT 27. Length of Stay and Charges by Patient Race/Ethnicity

Patient Race/Ethnicity	Discharges		Average			Total	
	Number	Percent	LOS (days)	Charge per Stay	Charge per Day	LOS (days)	Charges (millions)
White non-Hispanic	539,248	64.1%	4.5	$37,832	$10,678	2,435,140	$20,400.8
Black non-Hispanic	190,099	22.6%	5.0	$40,333	$9,706	949,561	$7,667.2
Hispanic of any race	15,448	1.8%	3.7	$21,077	$6,364	57,349	$325.6
Asian	26,085	3.1%	3.9	$21,738	$5,849	100,591	$567.0
American Indian	878	0.1%	4.7	$38,070	$10,683	4,097	$33.4
Other	35,127	4.2%	4.0	$25,564	$6,589	141,912	$898.0
Unknown	33,896	4.0%	4.3	$22,689	$5,587	145,501	$769.1
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**3,834,151**	**$30,661.1**

PRIMARY PAYER: Total Discharges

Medicare is the primary source of payment for 40% of discharges and private insurance is the primary source of payment for 34% of discharges (Exhibit 28). Together, public insurance programs (Medicare and Medicaid) are the primary payer for more than half (56%) of hospitalizations in Virginia. For nearly 5% of discharges, patients are the primary payer for their own hospital care.

Among maternal discharges, private insurance is listed as the primary payer for nearly 60% and Medicaid is listed as the primary payer for 34% (data not shown). The remaining payers account for only 6% of all maternal discharges.

Discharges for which Medicare is the primary payer have, on average, the longest length of stay (5.2 days) and the highest charges (charges per stay of $44,224, charges per day of $11,302, and total charges of $15.0 billion). Discharges for which private insurance is the primary payer tend to have the shortest length of stay, on average, at 3.9 days. Discharges for which Medicaid is the primary payer have average charges per stay of $27,880.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 28. Total Discharges, Length of Stay, and Charges by Primary Payer

	Discharges		Average			Total
Primary Payer	Number	Percent	LOS (days)	Charge per Stay	Charge per Day	Charges (millions)
Medicare	339,439	40.4%	5.2	$44,224	$11,302	$15,011.3
Medicaid	131,376	15.6%	4.6	$27,880	$6,279	$3,662.8
Private	281,415	33.5%	3.9	$32,174	$9,930	$9,054.1
Self-Pay	40,728	4.8%	4.0	$30,274	$9,144	$1,233.0
No Charge	14,091	1.7%	4.7	$40,546	$10,314	$571.3
Other	32,346	3.8%	4.4	$33,820	$9,287	$1,094.0
Unknown	1,386	.2%	4.6	$24,999	$7,340	$34.6
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**$30,661.1**

PRIMARY PAYER: By Patient Age, Sex, and Race/Ethnicity

Patient Age

Adults age 65 and over are most likely to have Medicare as the primary payer of their hospital stay compared to any other payer, while adults and youth under age 64 are more likely to rely on private insurance (Exhibit 29). Youth age 17 and under are more likely than the other age groups to have Medicaid serve as primary payer.

Patient Sex

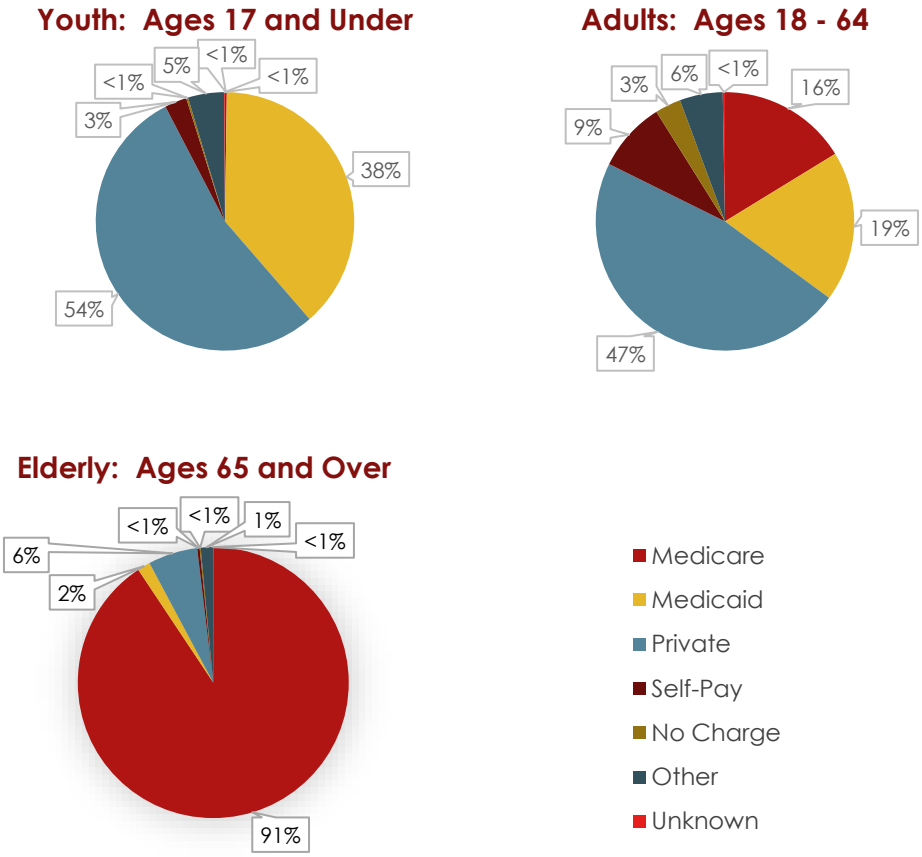
For both male and female patients of all ages, Medicare is the most common primary payer, followed by private insurance (Exhibit 30). Female patients are slightly more likely than male patients to use Medicare, Medicaid, and private insurance to pay for their hospital stays. Male patients, on the other hand, are slightly more likely than females to self-pay or not be charged.

Patient Race/Ethnicity

Non-Hispanic white and black patients are most likely to use Medicare to pay for their hospital stays (Exhibit 31). Patients whose race/ethnicity is Hispanic or listed as "other" are most likely to use Medicaid.

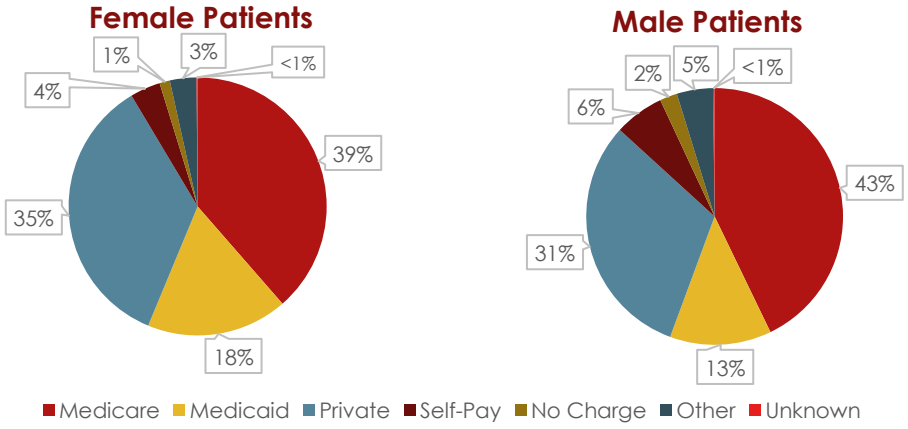
SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data.

EXHIBIT 29. Total Discharges by Primary Payer and Patient Age



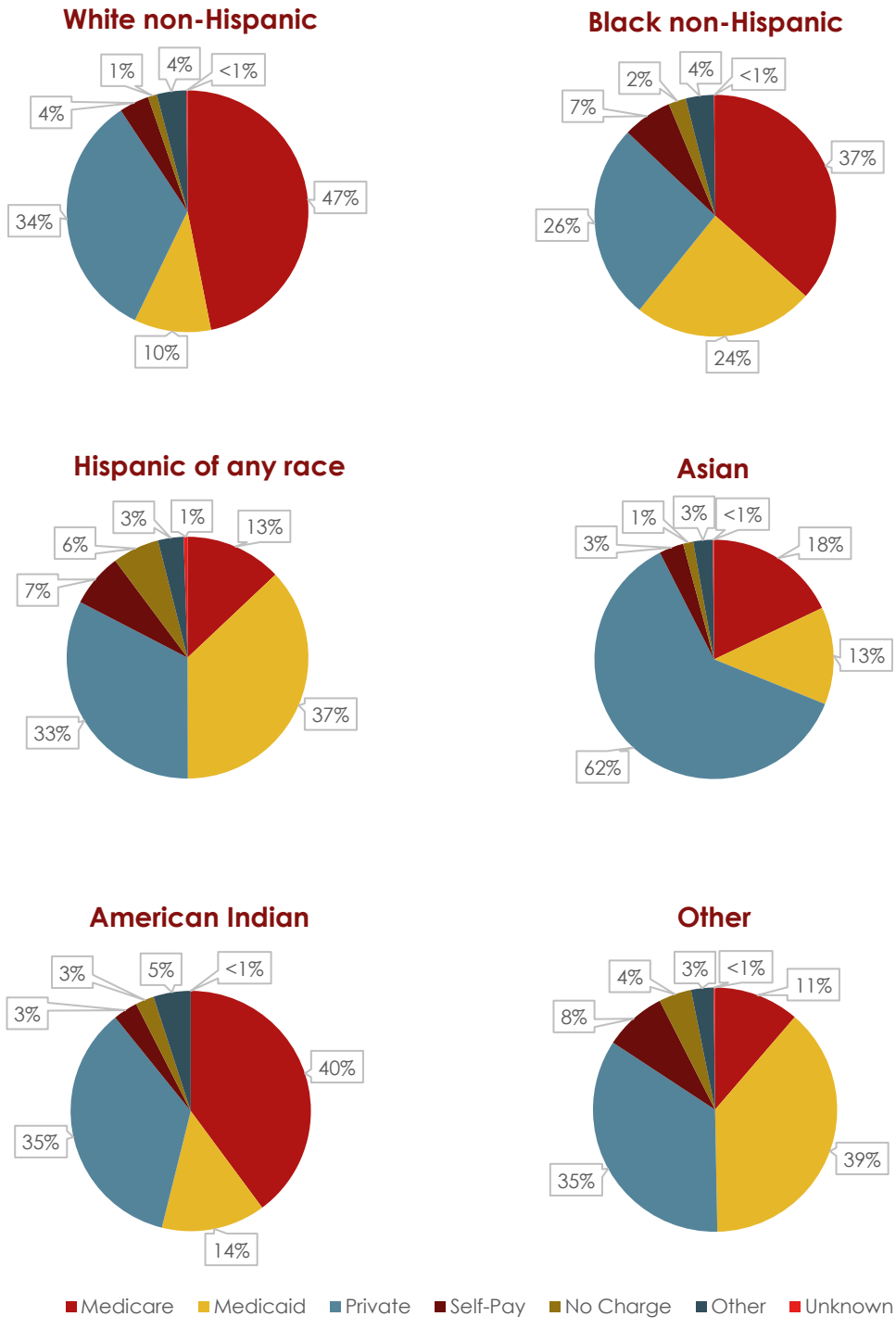
NOTE: There are a total of 840,781 discharges containing information on primary payer and patient age, with 127,330 youth discharges, 413,488 adult discharges, and 299,963 elderly discharges.

EXHIBIT 30. Total Discharges by Primary Payer and Patient Sex



NOTE: There are 840,728 discharges containing information on patient sex, with 486,618 female discharges and 354,110 male discharges.

EXHIBIT 31. Total Discharges by Primary Payer and Patient Race/Ethnicity



NOTE: There are 806,885 discharges containing information on patient race/ethnicity, with 539,248 white non-Hispanic discharges, 190,099 black non-Hispanic discharges, 15,448 Hispanic of any race discharges, 26,085 Asian discharges, 878 American Indian discharges, and 35,127 discharges of other races.

PRIMARY PAYER: By Urban and Rural Hospitals

At both urban and rural hospitals, over half of all discharges list Medicare or Medicaid as the primary payer for hospital care (Exhibit 32). However, at rural hospitals a much larger share (69%) of discharges is paid by these two public programs compared to urban hospitals (55%). When obstetric patients are excluded from the analysis, the share of discharges paid by Medicare and Medicaid increases to 73% in rural hospitals and 61% in urban hospitals.

Private insurance is listed as the primary payer for a higher share of discharges occurring at urban hospitals than at rural hospitals (35% vs. 23%). At both types of hospitals, private insurance is listed as the primary payer for a smaller share of discharges when obstetrics patients are excluded (27% in urban hospitals and 18% in rural hospitals).

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Virginia Health Information, "Hospital Operating and Total Margins: Location per CMS POS File and FY Final Rule Correction Notices." Accessed by clicking on "Click here (Excel)."

EXHIBIT 32. Total Discharges from Urban and Rural Hospitals by Primary Payer

	All Discharges				Obstetric Discharges Excluded			
	Urban		Rural		Urban		Rural	
Payer	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Medicare	290,584	38.7%	48,855	54.7%	290,045	51.2%	48,636	64.2%
Medicaid	118,377	15.8%	12,999	14.6%	56,022	9.9%	6,712	8.9%
Private	261,365	34.8%	20,050	22.5%	153,337	27.0%	13,705	18.1%
Self-Pay	37,080	4.9%	3,648	4.1%	32,635	5.8%	3,235	4.3%
No Charge	12,829	1.7%	1,262	1.4%	12,317	2.2%	1,227	1.6%
Other	30,211	4.0%	2,135	2.4%	21,639	3.8%	1,977	2.6%
Unknown	1,030	0.1%	356	0.4%	907	0.2%	318	0.4%
TOTAL	**751,476**	**100.0%**	**89,305**	**100.0%**	**566,902**	**100.0%**	**75,810**	**100.0%**

UTILIZATION BY GEOGRAPHIC LOCATION

UTILIZATION BY GEOGRAPHIC LOCATION: Health Planning Region

Discharges appear to be fairly evenly distributed across Virginia's Health Planning Regions (Exhibit 33). While the Eastern region has the largest share of hospitalizations (185,653 or 22%), the Northwest region has the lowest share (143,442 or 17%).

Average length of stay is similar across the five health planning regions; it ranges from 4.3 days in the Northern region to a high of 4.9 days in the Central region.

Charges per stay and total charges differ across the five health planning regions. The highest charges (average charge per stay and total charges) occur among hospitalizations in the Central region ($58,247 and $10.5 billion, respectively), while the lowest average charges per stay ($24,229) and the lowest total charges ($4.3 billion) occur among hospitals in the Northern region.

DATA DESCRIPTION: Hospital Planning Region – Percentages shown in Exhibit 33 are percentage of discharges for each particular Health Planning Region.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Virginia Department of Health, "Health Planning Regions in Virginia" and "Location of Counties and Selected Cities in Virginia."

EXHIBIT 33. Total Discharges, Length of Stay, and Charges by Hospital Health Planning Region

Hospital Planning Region	Discharges		Average		Total	
	Number	Percent	LOS (days)	Charges per Stay	LOS (days)	Charges (millions)
Central	180,414	21.5%	4.9	$58,247	887,791	$10,508.6
Eastern	185,653	22.1%	4.6	$33,313	858,112	$6,184.7
Northern	175,482	20.9%	4.3	$24,229	755,774	$4,251.8
Northwest	143,442	17.1%	4.4	$33,735	629,557	$4,839.0
Southwest	155,790	18.5%	4.5	$31,305	702,917	$4,876.9
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**3,834,151**	**$30,661.1**

UTILIZATION BY GEOGRAPHIC LOCATION: Urban and Rural

Nearly 90% of discharges occur at urban hospitals (Exhibit 34). Exhibit 4 provides a map showing the location of these hospitals. Compared to hospitalizations at rural hospitals, hospitalizations at urban hospitals are marked by a longer average length of stay (4.6 days vs. 3.9 days), higher average charges per stay ($38,150 vs. $22,309) and higher average charges per day ($10,146 vs. $7,383). In terms of total charges, urban hospitals account for 94% of all charges ($28.7 billion) compared to $2 billion for rural hospitals. These differences remain the same when obstetric patients are excluded from the analysis.

When obstetric patients are excluded, the average lengths of stays at both urban and rural hospitals increase (5.1 and 4.2 days, respectively) as do the average charges per stay ($46,256 and $24,951) and average charges per day ($12,290 and $8,070) (data not shown).

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; Virginia Health Information, "Hospital Operating and Total Margins: Location per CMS POS File and FY Final Rule Correction Notices." Accessed by clicking on "Click here (Excel)."

EXHIBIT 34. Total Discharges, Length of Stay, and Charges at Urban and Rural Hospitals

	Discharges		Average			Total	
Hospital Location	Number	Percent	LOS (days)	Charges per Stay	Charges per Day	LOS (days)	Charges (millions)
Urban	751,476	89.4%	4.6	$38,150	$10,146	3,487,817	$28,668.8
Rural	89,305	10.6%	3.9	$22,309	$7,383	346,334	$1,992.3
TOTAL	**840,781**	**100.0%**	**4.6**	**$36,467**	**$9,853**	**3,834,151**	**$30,661.1**

UTILIZATION BY GEOGRAPHIC LOCATION: Locality of Residence

The most populous areas of the state have the largest number of patient discharges. Residents of Fairfax County, for example, account for 73,808 hospitalizations, or just over 9% of all discharges (data not shown). Nearly 42% of all Virginia hospitalizations are accounted for by residents of just ten localities in the state. These include the cities of Virginia Beach, Richmond, Norfolk, Chesapeake, and Newport News as well as the counties of Fairfax, Chesterfield, Henrico, Prince William, and Loudoun. As expected, all of these localities also rank among the most populous in Virginia.

Data on discharge rates, or the number of discharges per 1,000 population, presents a different pattern (Exhibit 35). Discharge rates range from a high of 163.2 in the city of Petersburg to a low of 11.2 in Scott County. Fourteen of Virginia's cities and counties have discharge rates higher than 140.0, and half of these localities are located in the Central health planning region. The other half are located in the Southwest, Northwest, and Eastern health planning regions. None of the localities with the highest discharge rates are located in the Northern health planning region.

Of the 14 localities with the lowest discharge rates (i.e., rates at or below 78.3 per 1,000 population), 86% are located in the Northern and Southwest health planning regions. The remaining two localities, the city of Charlottesville and York County, are located in the Northwest and Eastern health planning regions, respectively. None of the localities with the lowest discharge rates are located in the Central health planning region.

NOTES: Patient Residence -- This exhibit excludes patients who are discharged from a Virginia hospital but who are not residents of the state.

SOURCES: Schroeder Center for Health Policy analysis of hospital discharge data obtained from Virginia Health Information, 2015 Patient Level Data; American Academy of Family Physicians, UDS Mapper, "Zip Code to ZCTA Crosswalk"; Missouri Census Data Center, "MABLE/Geocorr 12: Geographic Correspondence Engine; U.S. Census Bureau, American Fact Finder, 2015 American Community Survey (ACS), 5-year estimates.

EXHIBIT 35. Hospital Discharge Rates by Patient Locality of Residence

	City/County	Discharges Number	Discharges Rate per 1,000		City/County	Discharges Number	Discharges Rate per 1,000
1	Petersburg City	5,293	163.2	44	Highland County	276	122.2
2	Roanoke City	15,856	161.9	45	Winchester City	3,301	122.1
3	Alleghany County	2,480	153.7	46	Wythe County	3,567	121.9
4	Dinwiddie County	4,196	149.9	47	Prince Edward County	2,820	121.9
5	Hopewell City	3,300	147.5	48	Martinsville City	1,674	121.8
6	Pulaski County	5,037	145.4	49	Mecklenburg County	3,854	120.8
7	Franklin City	1,218	142.7	50	King and Queen County	851	120.3
8	Bath County	657	141.5	51	Sussex County	1,432	120.1
9	Colonial Heights City	2,479	141.3	52	Buena Vista City	803	120.1
10	Craig County	736	141.3	53	Middlesex County	1,295	119.7
11	Greensville County	1,682	141.2	54	Lynchburg City	9,188	118.4
12	Nottoway County	2,217	140.7	55	Halifax County	4,200	117.6
13	Emporia City	799	140.6	56	Mathews County	1,049	117.6
14	Staunton City	3,381	140.1	57	Franklin County	6,622	117.5
15	Cumberland County	1,385	139.7	58	Augusta County	8,598	116.7
16	Amelia County	1,777	139.2	59	Nelson County	1,731	116.2
17	Covington City	810	138.4	60	Surry County	796	115.6
18	Richmond City	28,715	136.0	61	Bedford County	8,698	115.0
19	Page County	3,249	135.9	62	Botetourt County	3,808	115.0
20	Lancaster County	1,511	134.6	63	Russell County	3,245	114.1
21	Appomattox County	2,031	134.2	64	Henrico County	35,895	114.0
22	Prince George County	4,924	133.8	65	Orange County	3,877	113.2
23	Salem City	3,361	133.8	66	Warren County	4,313	113.1
24	Westmoreland County	2,343	133.7	67	Chesterfield County	36,651	113.0
25	Northumberland County	1,646	133.6	68	Spotsylvania County	14,230	112.8
26	Northampton County	1,618	132.0	69	Madison County	1,482	112.2
27	Fredericksburg City	3,452	129.6	70	Louisa County	3,778	112.0
28	Portsmouth City	12,382	129.0	71	Gloucester County	4,136	112.0
29	Giles County	2,182	128.2	72	King William County	1,790	111.5
30	Caroline County	3,723	128.1	73	Buckingham County	1,893	110.9
31	Smyth County	4,060	127.4	74	Culpeper County	5,274	110.1
32	Charlotte County	1,579	127.3	75	Henry County	5,820	109.9
33	Waynesboro City	2,693	127.2	76	Pittsylvania County	6,883	109.3
34	Brunswick County	2,156	127.1	77	Rockbridge County	2,421	108.2
35	Lunenburg County	1,601	126.4	78	Galax City	749	107.3
36	Danville City	5,396	126.3	79	Richmond County	969	106.8
37	Charles City County	903	126.2	80	Rockingham County	8,226	106.3
38	Campbell County	6,891	125.7	81	Isle of Wight County	3,771	106.2
39	Shenandoah County	5,339	125.5	82	Frederick County	8,503	105.8
40	Southampton County	2,300	125.2	83	Norton City	425	105.8
41	Roanoke County	11,640	124.9	84	Norfolk City	25,661	104.8
42	Amherst County	3,959	122.8	85	Suffolk City	8,951	104.7
43	Essex County	1,367	122.4	86	Floyd County	1,609	104.1

EXHIBIT 35. Hospital Discharge Rates by Patient Locality of Residence (continued)

		Discharges				Discharges	
	City/County	Number	Rate per 1,000		City/County	Number	Rate per 1,000
87	New Kent County	1,996	104.0	**111**	Harrisonburg City	4,548	89.5
88	Powhatan County	2,908	103.1	**112**	Grayson County	1,344	88.1
89	Chesapeake City	23,362	102.4	**113**	Carroll County	2,632	88.1
90	Goochland County	2,211	102.2	**114**	Albemarle County	8,919	87.5
91	Buchanan County	2,384	100.7	**115**	Accomack County	2,857	86.1
92	Fauquier County	6,696	100.4	**116**	Manassas City	3,334	82.4
93	Hanover County	10,081	100.1	**117**	Alexandria City	12,023	82.1
94	King George County	2,460	100.1	**118**	Montgomery County	7,678	80.1
95	Greene County	1,878	100.1	**119**	Manassas Park City	1,199	80.0
96	Newport News City	18,148	100.1	**120**	Charlottesville City	3,485	78.3
97	Hampton City	13,688	100.0	**121**	Radford City	1,330	78.3
98	Dickenson County	1,524	97.6	**122**	York County	4,944	75.1
99	James City County	6,804	97.4	**123**	Prince William County	31,935	74.5
100	Fluvanna County	2,506	96.6	**124**	Bland County	500	74.3
101	Clarke County	1,366	95.7	**125**	Patrick County	1,354	73.8
102	Tazewell County	4,242	95.7	**126**	Loudoun County	24,275	71.6
103	Rappahannock County	711	95.5	**127**	Fairfax County	73,808	66.1
104	Lexington City	679	95.4	**128**	Fairfax City	1,477	62.8
105	Washington County	5,097	93.0	**129**	Falls Church City	757	57.9
106	Stafford County	12,312	91.4	**130**	Arlington County	12,187	55.4
107	Williamsburg City	1,314	91.2	**131**	Lee County	1,119	44.1
108	Virginia Beach City	40,634	91.2	**132**	Bristol City	341	19.4
109	Wise County	3,701	90.6	**133**	Scott County	255	11.2
110	Poquoson City	1,092	90.2		**TOTAL**	**799,535**	

APPENDIX: Definitions

The following definitions were used in preparing this report:

Race/Ethnicity

Patient race/ethnicity is categorized in the raw data as either white, black, other, Asian, American Indian, Hispanic, black Hispanic, or unknown. In most analyses in this report, Hispanic and black Hispanic are combined into a single category called Hispanic (any race). In some analyses, patients are categorized into one of only three racial/ethnic categories (white, black, and other), where other includes Asians, American Indians, Hispanics of any race, unknown race and other race.

Diagnoses and Procedures

Patient diagnoses and procedures are reported following the International Classification of Diseases (ICD).[6] Prior to October 1, 2015, diagnoses and procedure code fields in the raw data include ICD-9-CM classifications. After this date, ICD-10CM/PCS classifications are used.

Most Common Reasons for Hospitalization

To identify the most common reasons for hospitalization, patient discharges are linked to a larger clinical classification category by merging the principal diagnosis code on the discharge record to the Agency for Healthcare Research and Quality's Clinical Classifications Software (CCS) for either ICD-9-CM or ICD-10-CM/PCS.[7] Discharges in each CCS category are counted, and the CCS categories with the highest counts of discharges are considered the most frequent conditions or reasons for hospitalization.

Chronic and Non-Chronic Conditions

Patient discharges are identified as being attributable to either a chronic or a non-chronic condition by merging the primary diagnosis code to the Agency for Healthcare Research and Quality's Chronic Conditions Indicator (CCI) software for either ICD-9-CM or ICD-10-CM/PCS.[8]

Total Charges

Total charges are reported for discharges grouped by CCS category, or by patient age, sex, or race/ethnicity, or by primary payer. For each group, the total charges in the group

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[6] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, "International Classification of Diseases, (ICD-10-CM/PCS) Transition – Background." Accessed 4/19/17.

[7] Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Clinical Classifications Software (CCS) for ICD-9-CM and ICD-10-CM/PCS.

[8] Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Chronic Conditions Indicator (CCI) for ICD-9-CM and ICD-10-CM/PCS.

are calculated by summing the total charge amount on the discharge record for all discharge records in the group.

Average Charge per Stay

Average charges per stay are reported for discharges grouped by CCS category, or by patient age, sex, or race/ethnicity, or by primary payer. For each group, the average charge per stay is calculated by dividing total charges in the group by the number of discharges in the group.

Average Charge per Day

Average charges per day are reported for discharges grouped by CCS category, or by patient age, sex, or race/ethnicity, or by primary payer. For each group, the charge per day is calculated as follows. First, for each discharge, the total charge is divided by the length of stay to determine the discharge's charge per day. Second, the average charge per day is calculated by taking the mean of the charge per day for all discharges in the group. Note that the average charge per day will not equal the average charge per stay divided by the average length of stay unless all discharges in the group have the same charge per day. Also note that patient length of stay is listed as 0 days for a small percent of discharges, and when calculating average charges per day (and only in this case), length of stay values equal to 0 are recoded to 1.

Patient County of Residence and Hospital Health Planning Region

Patient county of residence is assigned to the discharge record using the patient ZIP code and a ZIP-to-ZCTA crosswalk from UDS Mapper[9] and a ZCTA-to-county crosswalk from Mable/Geocorr12.[10] In those cases where a patient discharge cannot be matched to a ZCTA, the discharges are assigned manually to a county on an individual basis. In cases where a ZIP code lies within more than one county, the discharge records in question are allocated to all counties in which the ZIP code is located, and summary statistics such as counts are weighted by the proportion of the ZIP code in each county.

Counties are assigned to the appropriate Virginia Health Planning Region using information provided by the Virginia Department of Health.[11]

Rural and Urban Hospitals

Hospitals are classified as rural or urban according to documentation available from Virginia Health Information.[12]

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[9] American Academy of Family Physicians, UDS Mapper. (No Date). "ZIP Code to ZCTA Crosswalk." Accessed 2/22/17.
[10] Missouri Census Data Center. (No date). "MABLE/Geocorr12: Geographic Correspondence Engine." Accessed 2/22/17.
[11] Virginia Department of Health. (No Date). "Health Planning Regions in Virginia" and "Location of Counties and Selected Cities in Virginia." Accessed February 22, 2017.
[12] Virginia Health Information, Hospital Information, Central Virginia, Bon Secours Memorial Regional Medical Center. (2016). Click on "Click here (Excel) for more information on operating and total margins." See row entitled "Location per CMS POS file and FY final rule correction notices."

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