The State of the Region

HAMPTON ROADS 2009

REGIONAL STUDIES INSTITUTE | OLD DOMINION UNIVERSITY


Roxbury
Providence Forge
Windsor Shades
Barhamsville
Ark
Nuttall
North
Mathews
Bridgetown
Birdsnest
Machipongo
CHARLES CITY
Holdcroft
Allmondsville
Gloucester
Ware Neck
Mobjack
New Point
Bavon
Wayside
Ruthville
Charles City
CHICKAHOMINY WILDLIFE MGT. AREA
Toano
Lightfoot
JAMES CITY
RICHMOND 94 Miles NORFOLK
York
White Marsh
Naxera
Mobjack Bay
Eastville
Cheriton
Cobb Bay
EVELYNTON
BERKELEY
SHERWOOD FOREST
Williamsburg
COLONIAL PKWY
Hayes
Severn
Achilles
New Point Comfort
Intracoastal
Cape Charles
Bay View
South Bay
WESTOVER GARDENS
FLOWERDEW HUNDRED
BRANDON GARDENS
COLONIAL WILLIAMSBURG
Garysville
Claremont
COLLEGE OF WILLIAM AND MARY
Jamestown
Grove
BUSCH GARDENS
Gloucester Point
Yorktown
MOCKHORN I.
Capeville
Burrowsville
Prince George
Newville
Bohemia
Cabin Point
Spring Grove
Scotland
COLONIAL NAT'L HIST. PK.
JAMESTOWN NAT'L HIST. SITE
SURRY NUCLEAR POWER PLANT
Cobham Wharf
Surry
CHIPPOKES PLANTATION
FT. EUSTIS
Grafton
Tabb
Poquoson
Townsend
Kiptopeke
SMITH ISLAND
CAPE CHARLES LIGHTHOUSE
FISHERMANS ISLAND NAT'L WILDLIFE REFUGE
FISHERMANS ISLAND
Disputanta
SURRY
Bacons Castle
James River
NASA LANGLEY AIR FORCE BASE
MARINERS MUSEUM
Hampton
Rushmere
WAR MEMORIAL MUSEUM OF VIRGINIA
FORT MONROE
Old Point Comfort
CHESAPEAKE BAY BRIDGE-TUNNEL
(TOLL)
AT NORFOLK
U.S. NAVAL SHIPYARD
HAMPTON ROADS NAVAL BASE
NORFOLK GARDENS BY THE SEA
GEN. MACARTHUR MEMORIAL
Waverly
Runnymede
Dendron
Rescue
Newport News
NORFOLK
CAPE HENRY LIGHTHOUSE
Wakefield
Goodrich Fork
Pons
Smithfield
U.S. NAVAL BASE
Hampton Roads
Little Cr.
SEASHORE
FORT STORY
Homeville
ISLE OF WIGHT
Benns Church
Isle of Wight
Littleton
Ivor
Zuni
Lynnhaven
Bayside
Portsmouth
Virginia Beach
Berlin
Windsor
NAVAL AIR STATION
VIRGINIA BEACH-NORFOLK EXPWY.
Kempsville
Sleepy Hole
Princess Anne
Vicksville
Sebrell
Sedley
Walters
Chuckatuck
GREAT DISMAL SWAMP NAT'L WILDLIFE REFUGE
Canal
Virginia Beach
Courtland
Capron
Carrsville
Fentress
Great Bridge
Pungo
BACK BAY NAT'L WILDLIFE REFUGE
SOUTHAMPTON
Franklin
Cypress
Suffolk
Great Dismal Swamp
Hickory
Chesapeake
Newsoms
Holy Neck
Whaleyville
Lake Drummond
Feeder Ditch
Blackwater
Back Bay
FALSE CAPE
Boykins

October 2009

Dear Reader:

This is Old Dominion University's 10th annual State of the Region report. While it represents the work of many people connected in various ways to the university, the report does not constitute an official viewpoint of Old Dominion, or its president, John R. Broderick. The State of the Region reports maintain the goal of stimulating thought and discussion that ultimately will make Hampton Roads an even better place to live. We are proud of our region's many successes, but realize it is possible to improve our performance. In order to do so, we must have accurate information about "where we are" and a sound understanding of the policy options available to us.

The 2009 report is divided into eight parts:

- **The Regional Economy Contracts:** Defense spending continues to cushion our economic downturn, but two other major drivers, the port and tourism, have contracted. We also report stress tests for our major regional banks.
- **The Hotel Industry:** Stagnant or declining patronage and excess capacity have made this a very challenging time for an industry that is vital to our future.
- **The "Silver Tsunami":** In recognition of our aging population, we present extensive data and ratings concerning 57 nursing home facilities, 104 assisted living facilities and eight continuing care facilities in Hampton Roads.
- **Gasoline Prices, Carbon Emissions and Other Unpleasant Subjects:** Carbon emissions are on nearly everyone's mind. We trace our regional carbon emissions and explore the ways (including higher prices) that we might deal with them.
- **Climate Change, Global Warming and Ocean Levels:** To the extent that global warming occurs, it will bring with it rising sea levels, which, in the absence of new dikes and levees, will cover vast areas of the Peninsula and Norfolk, Chesapeake and the Virginia Beach oceanfront.
- **Traffic Congestion: Identifying and Measuring Our Bottlenecks:** A well-known national analysis of traffic congestion identifies the 15 worst choke points in Hampton Roads. Most of them are connected to our tunnels.
- **The Tunnels That Connect Hampton Roads:** Wonderful Assets or Potential Achilles' Heels? The prosperity of our region depends upon five major bridge/tunnel installations, all of which potentially can be closed either by accidents or terrorism. As we recently have discovered, they are vulnerable to a variety of possible threats.
- **The Chrysler Museum in 2009:** The Chrysler Museum of Art is one of the foremost cultural jewels of our region, but now faces challenges that stem both from significant economic constraints and internal reorganizations.

Old Dominion University, via the president's and provost's offices, and the College of Business and Public Administration, via the dean's office, continue to provide support for this report. However, it would not appear without the vital backing of the private donors whose names appear below. They believe in Hampton Roads and in the power of rational discussion to improve our circumstances, but are not responsible for the views expressed in the report.

The Aimee and Frank Batten Jr. Foundation
Frank Batten Sr.
R. Bruce Bradley
Ramon W. Breeden Jr.
Arthur A. Diamonstein
George Dragas Jr.
Kaufman and Canoles
Thomas Lyons
Arnold McKinnon (in memoriam)
Patricia W. and J. Douglas Perry
Anne B. Shumadine

I am delighted to announce that Kaufman and Canoles has agreed to provide financial support for all State of the Region presentations subsequent to the traditional Lead Hampton Roads/Chamber of Commerce opening breakfast.

The following individuals were instrumental in the research, writing, editing, design and dissemination of the report:

Vinod Agarwal
John R. Broderick
Grace Chen
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Vicky Curtis
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Sharon Lomax
Linda McGreevy
Janet Molinaro
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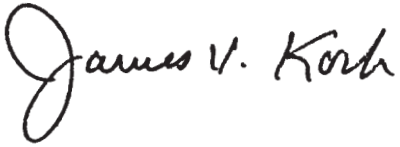
Ken Plum
Gilbert Yochum

Special recognition is merited for Vinod Agarwal and Gilbert Yochum of the Old Dominion University Economic Forecasting Project, which Professor Yochum directs. Their penetrating analyses of the regional and Commonwealth economies are by consensus the baseline by which numerous economic activities are measured.

My hope is that you, the reader, will be stimulated by the report and will use it as a vehicle to promote productive discussions about our future. Please contact me at jkoch@odu.edu or 757-683-3458 should you have questions.

All 10 of the State of the Region reports may be found at www.odu.edu/forecasting and www.jamesvkoch.com.

Sincerely,



James V. Koch

Board of Visitors Professor of Economics
and President Emeritus

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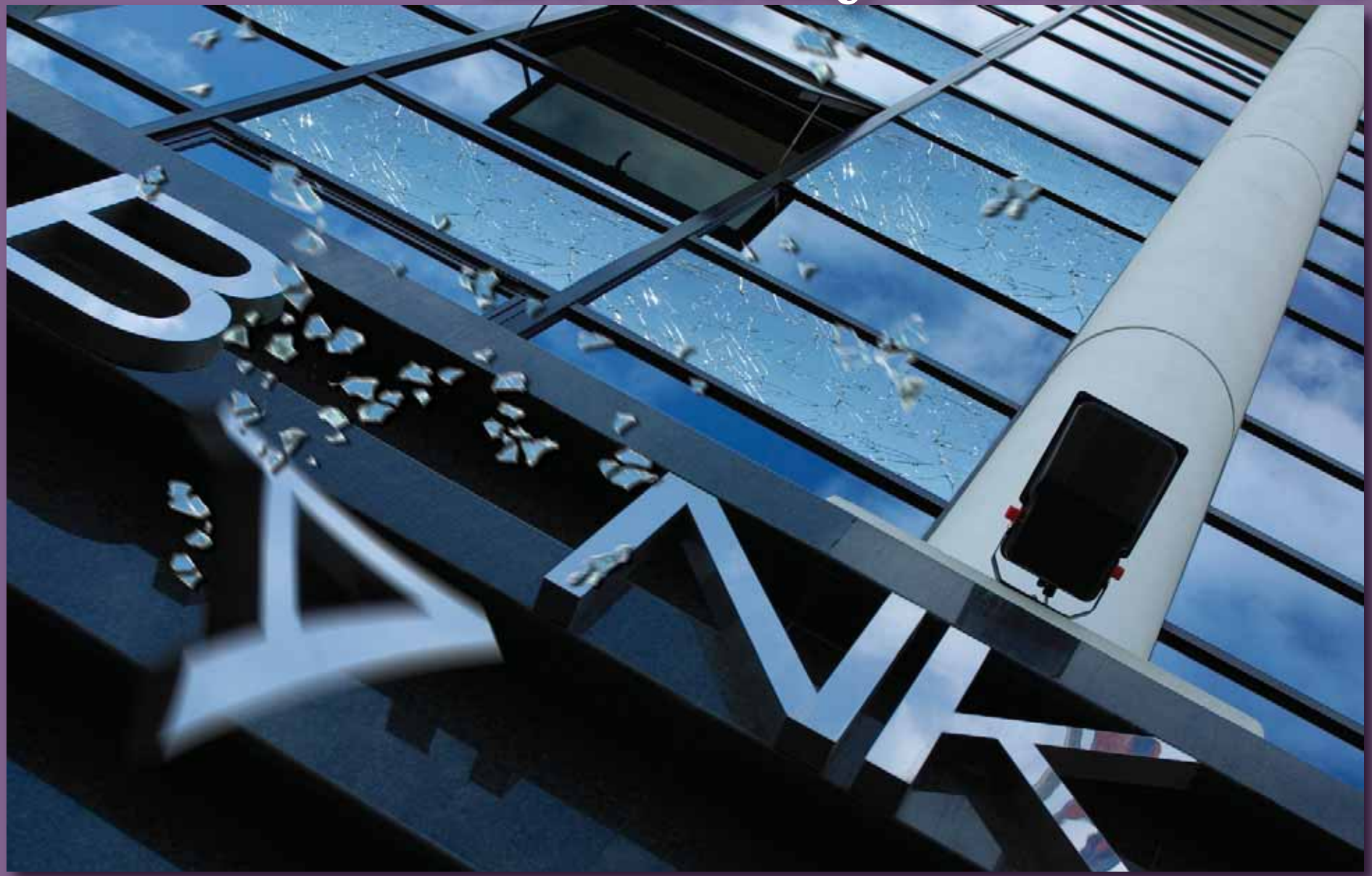
The Regional Economy Contracts



THE REGIONAL ECONOMY CONTRACTS: FEELING PAIN, BUT DOING BETTER THAN MOST OF THE REST

It's a recession when your neighbor loses his job; it's a depression when you lose yours.

– President Harry S. Truman

Since fall 2008, serious financial and structural problems within the national and global economies have spread to Hampton Roads. When combined with economic issues peculiar to our region, these problems have put a crimp in our economic well-being. Hence, in 2009 we will experience negative economic growth. That is, our gross regional product (GRP), adjusted for prices, actually has declined in 2009. Table 1 estimates our negative economic growth at -.3 percent in 2009, a far cry from the heady 5+ percent growth rates we experienced early in this decade.

While a .3 percent decline in our GRP may seem modest, this recession will be our worst in 40 years. Graph 1 reveals that although the Hampton Roads economy flirted with negative growth in 1990 and 1995 during the post-Cold War defense drawdown, the region has not had a year of gross output decline since 1975, when GRP dropped by .2 percent. Further, the region has not experienced a larger output decline since 1970, when our gross output fell by .6 percent. In 1970, Hampton Roads reeled from a one-two punch in the form of a national recession and cuts in the region's military presence because of Vietnam.

TABLE 1

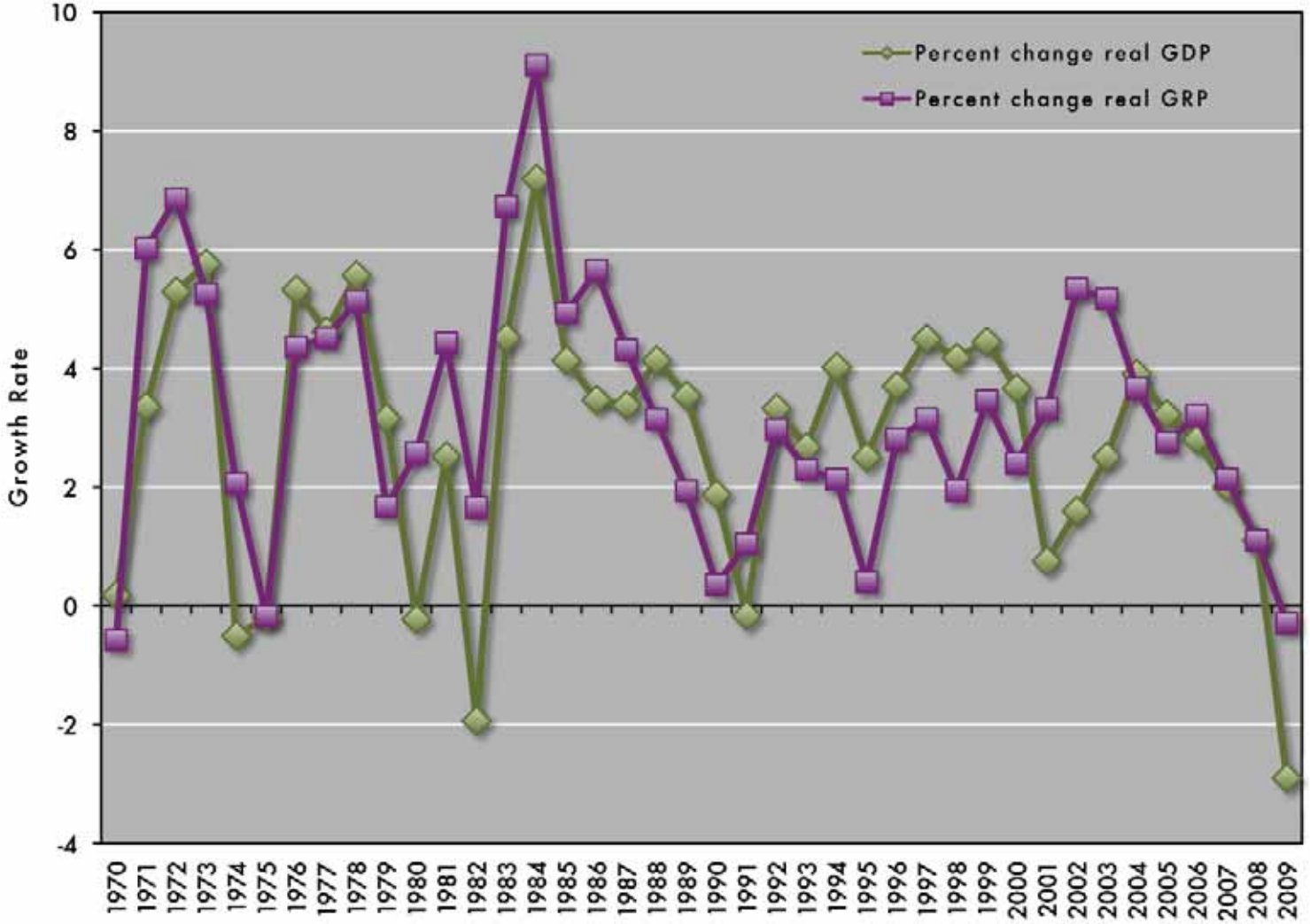
ESTIMATED HAMPTON ROADS GROSS REGIONAL PRODUCT (GRP) NOMINAL AND REAL, 2000 TO 2009

Year	Nominal GRP Billions of $	Real GRP (2000=100) Billions of $	Real GRP Growth Rate Percent
2000	48.36	48.36	2.4
2001	51.16	49.96	3.3
2002	54.83	52.63	5.3
2003	58.89	55.34	5.2
2004	62.80	57.37	3.7
2005	66.51	58.86	2.8
2006	70.80	60.74	3.2
2007	74.24	62.04	2.1
2008	76.79	62.73	1.1
2009	76.84	62.55	-0.3

Sources: Old Dominion University Economic Forecasting Project. (Data incorporate U.S. Department of Commerce personal income revisions through May 2009.)

GRAPH 1

RATES OF GROWTH OF GDP (U.S.) AND GRP (HAMPTON ROADS)



Source: Old Dominion University Economic Forecasting Project

But There Is Some Good News

The decline in our region's economic growth rate will be tempered by the large military presence in Hampton Roads and increased funding for U.S. Department of Defense (DOD) procurement and military operations. Since 2000, estimated DOD spending in the region has nearly doubled (see Graph 2). Department of Defense direct spending in Hampton Roads for 2009 has approximated $18.9 billion, a 4 percent increase over 2008. The Old Dominion University Economic Forecasting Project estimates that the sum of both direct and indirect effects of this spending accounts for roughly 45 percent of gross economic activity in Hampton Roads. This makes defense spending in the region a nice umbrella to keep us dry during the recessionary rain.

Of course, there is no guarantee that defense spending in the region will continue to rise, though it is worth noting that aggregate DOD spending in Hampton Roads in 2009 has increased despite the continuing negative impact of the Base Realignment and Closure Commission (BRAC) decisions. The effect of BRAC on the region's economy in 2009 approximates a $200 million loss in GRP and about 1,800 jobs.

Looking down the road, however, it may well be the case that defense spending in Hampton Roads will stagnate. This could occur for two reasons. First, we may lose yet another aircraft carrier battle group to another state (such as Florida or Hawaii), or to the Pacific Rim. Each month an aircraft carrier task force is gone from Hampton Roads, this reduces our annual GRP by almost .1 percent. This translates to approximately $900 million per year and constitutes a big hit by any standard – substantially larger than the negative economic impact of the Ford Motor Co. plant closure, for example.

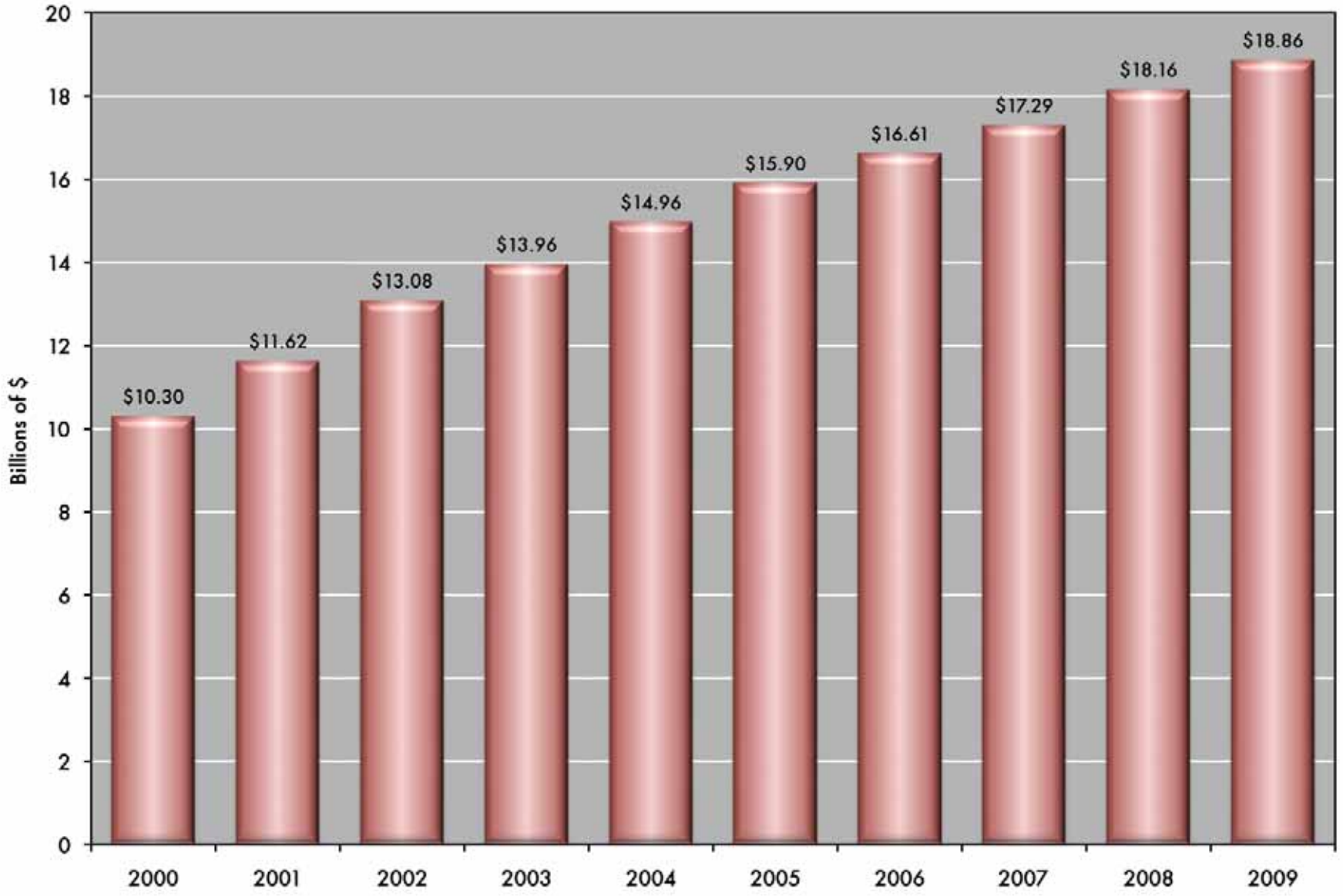
The second potential adverse influence on regional defense spending relates to the increased emphasis within the Department of Defense on "boots on the ground," that is, ground forces. This could cause marginal changes in defense spending that would benefit other regions of the United States more than Hampton Roads.

Against this, in the next few years, there is likely to be sustained interest in modeling and simulation projects within the DOD. Hampton Roads is well positioned to take advantage of such an emphasis.

Nevertheless, all things considered, only Dr. Pangloss (who always foresaw the "best of all possible worlds") would forecast defense expenditures within Hampton Roads that consistently exceed the growth of the consumer price index. We have been fortunate during this decade to be favored by significant increases in defense spending. However, we should remember that this has not always been the case. We would be well advised to remember the observation of economist Herb Stein: "If something cannot go on forever, it doesn't." Simple advice, but worth remembering.

GRAPH 2

ESTIMATED DIRECT DOD SPENDING IN HAMPTON ROADS, 2000-2009*



Source: Old Dominion University Economic Forecasting Project
*Includes federal civilian and military personnel and procurement

However, Bad News Predominates

Defense spending not withstanding, the economic downturn in the national economy, as well as the lagged effect of the Ford plant closing and implementation of the BRAC directives, led to continuously declining employment in Hampton Roads throughout 2008. Still, the region's output growth rate exceeded that of the nation. Job losses were particularly heavy in the fourth quarter of 2008. U.S. Department of Labor data indicate that the region lost about 7,755 jobs between the fourth quarter of 2007 and the same period in 2008. Like their national counterparts, Hampton Roads employers struggled with declining demand for services and products, rising inventories and a significant tightening of available credit.

Regional employment losses continued into 2009, although the rate of decline began to taper off. We have, however, done better than most comparable metropolitan areas on the eastern seaboard (see Graph 3). Given that most of these regions outperformed us job-wise earlier in this decade, perhaps Hampton Roads can be permitted a tiny bit of *Schadenfreude*. Even so, as Graph 4 discloses, our region lost jobs in both 2008 and 2009.

Job losses in 2008 in Hampton Roads were concentrated in construction and retail trade (see Graph 5). Construction industry contractions that we documented in previous State of the Region reports have continued into 2009. Retail trade employment has found itself in a similar fix. Year-to-date through April 2009, this sector was 3,000 jobs below that of the same period in 2008, and the decline is expected to continue through the rest of the year.

Job losses in manufacturing have resulted primarily from the decline, and in some cases disappearance, of the support industries for Ford truck production. This process will continue through 2009. The final toll of job losses attributable to Norfolk's Ford Motor Co. closing is expected to approach 7,000 jobs.

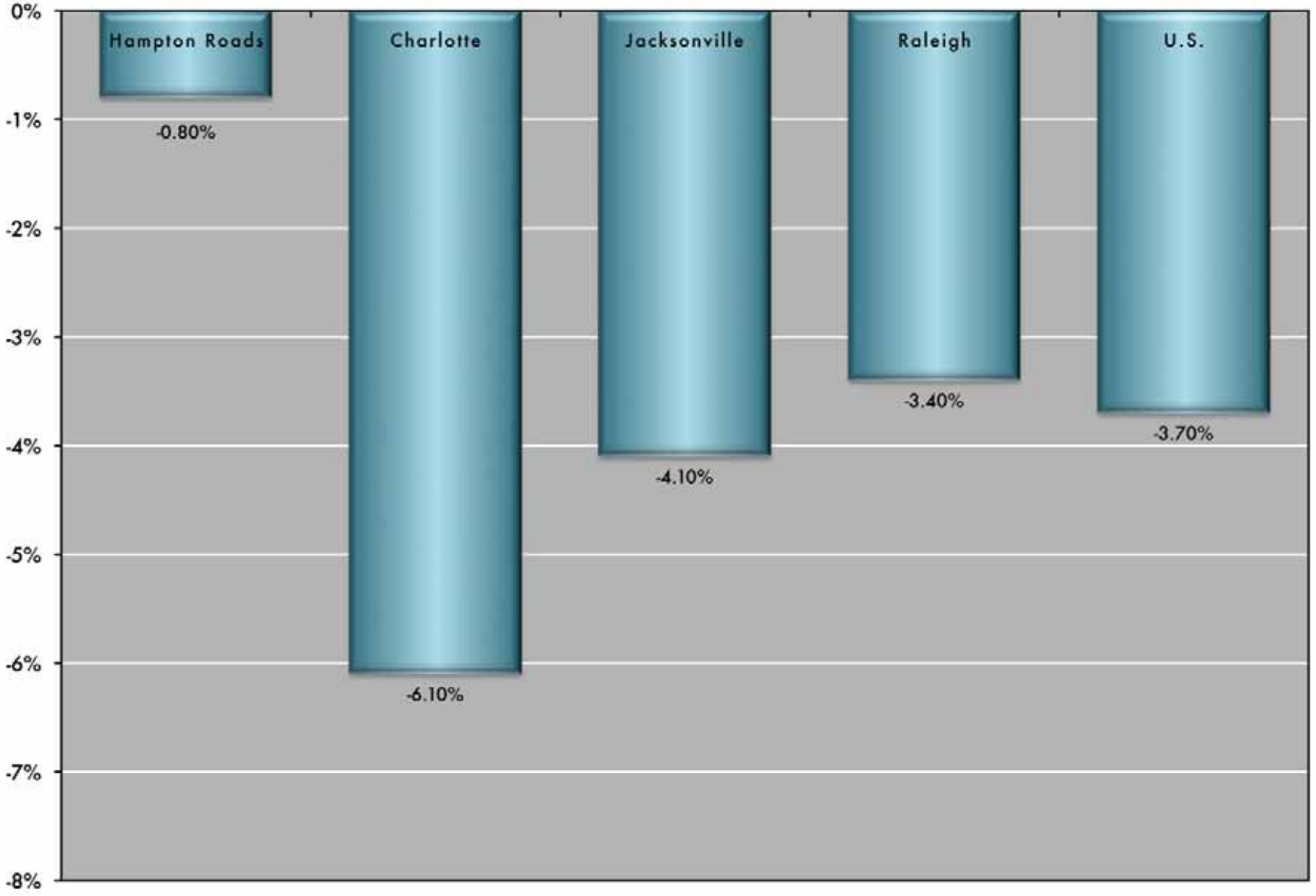
On a more positive note, however, employment in another major contributor to Hampton Roads manufacturing jobs – ship and boat building – remained relatively stable in 2008, and continued stable employment is likely through 2009 because DOD procurement funds are continuing to flow to this industry.

Employment in the transportation and warehousing sector suffered from declining port cargo, which fell by 13 percent in the fourth quarter of 2008, as well as from a lower volume of retail trade.

The region's job losses between September 2008 and May 2009 resulted in a dramatic increase in the number of people collecting unemployment insurance. Graph 6 shows that this number jumped by more than 50 percent between September 2008 and December 2008, and nearly doubled between September 2008 and March 2009 to 19,345, as job losses peaked. But all is not lost. Claims fell by 500 between March 2009 and May 2009, and the number of insurance recipients declined to 18,810. This suggests that our regional economic decline may be "bottoming out," to use popular terminology. We expect the regional unemployment rate to top out at about 7.5 percent in late 2009 and recovery, albeit modest, to take hold thereafter.

GRAPH 3

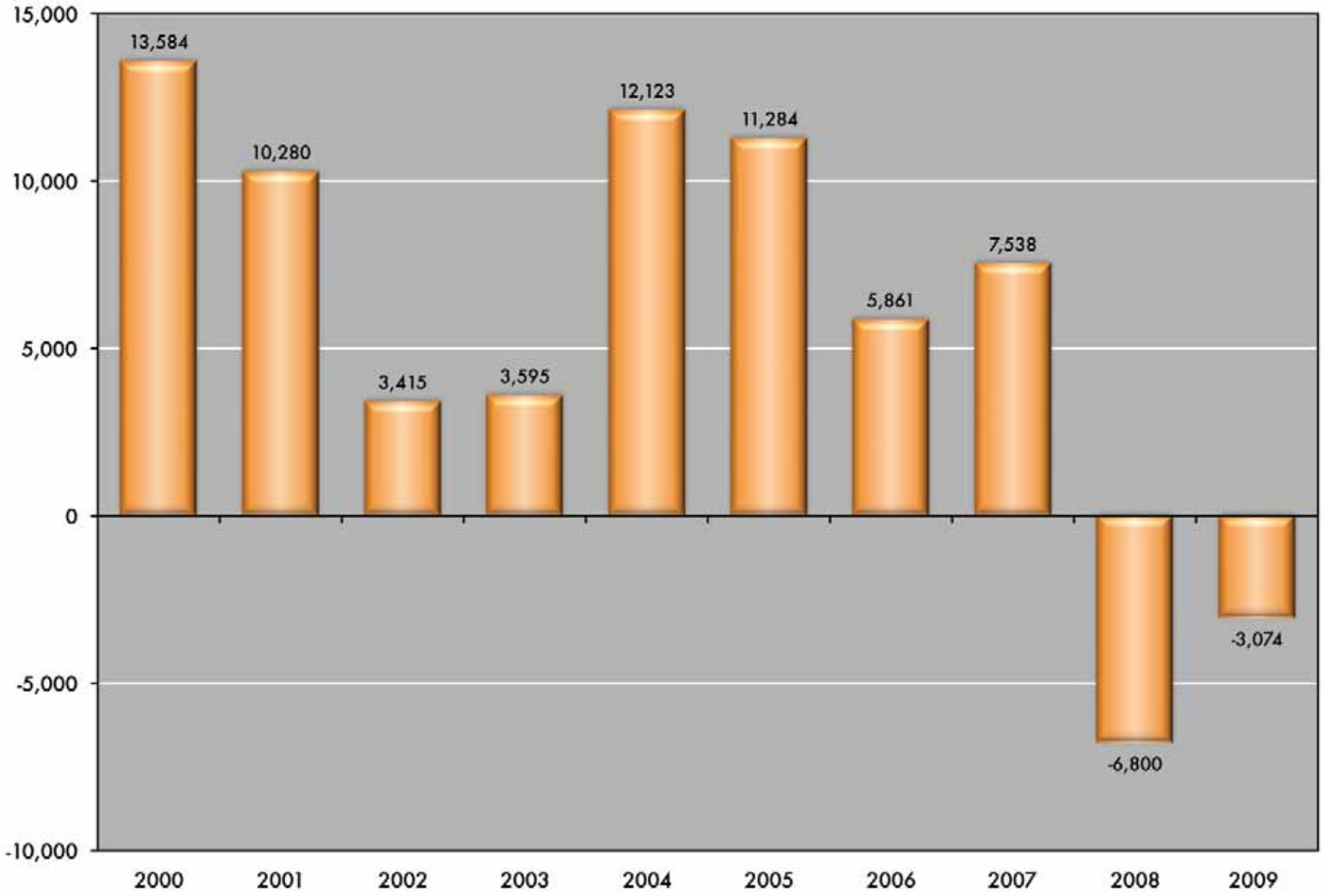
APRIL 2008 TO APRIL 2009 CIVILIAN EMPLOYMENT GROWTH RATE IN SELECTED MSAs AND THE U.S.



Sources: U.S. Department of Labor (5/26/08) and the Old Dominion University Economic Forecasting Project

GRAPH 4

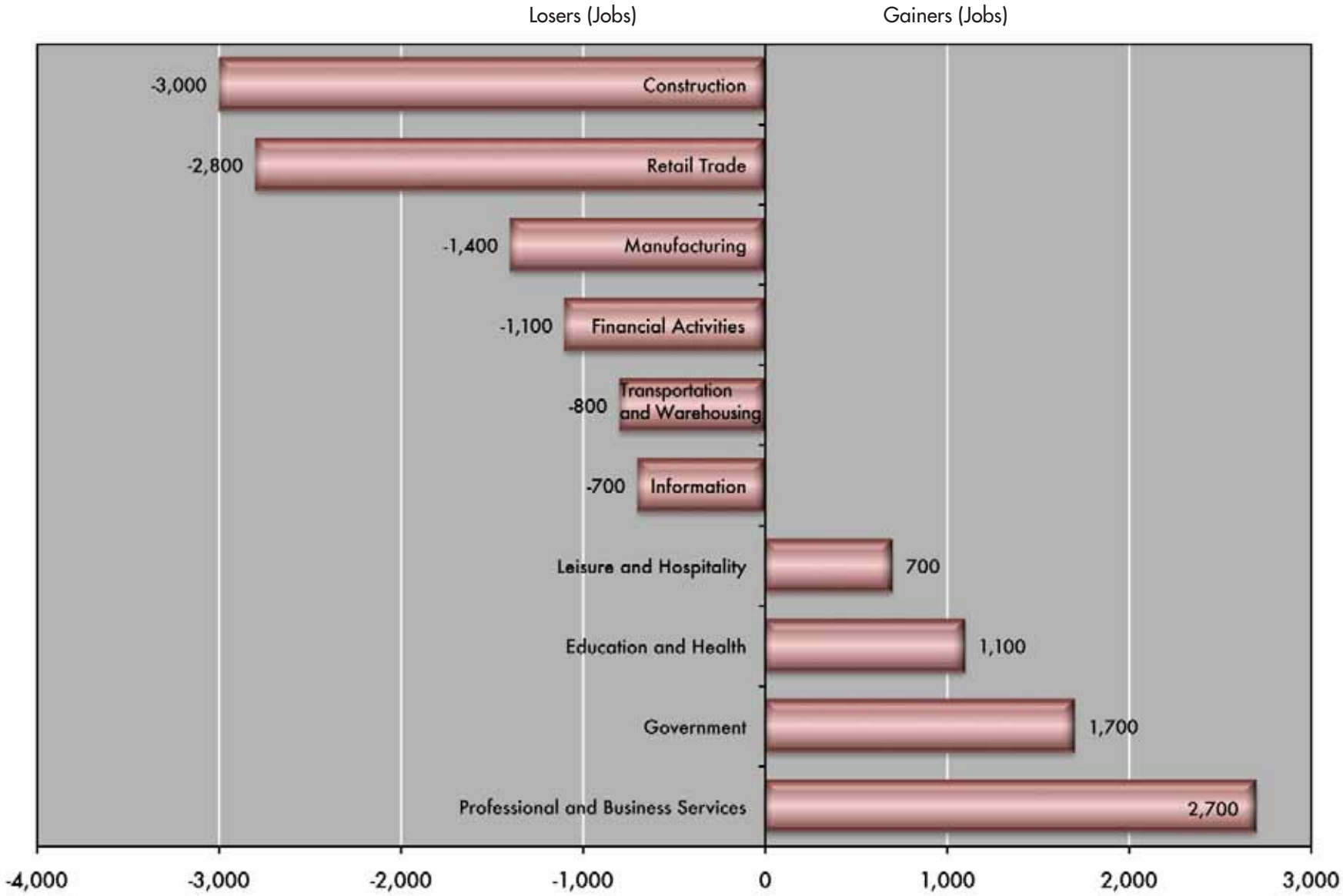
NET NEW PRIVATE-SECTOR WAGE AND SALARY JOBS CREATED IN HAMPTON ROADS, 2000-2009



Sources: U.S. Department of Labor and the Old Dominion University Economic Forecasting Project

GRAPH 5

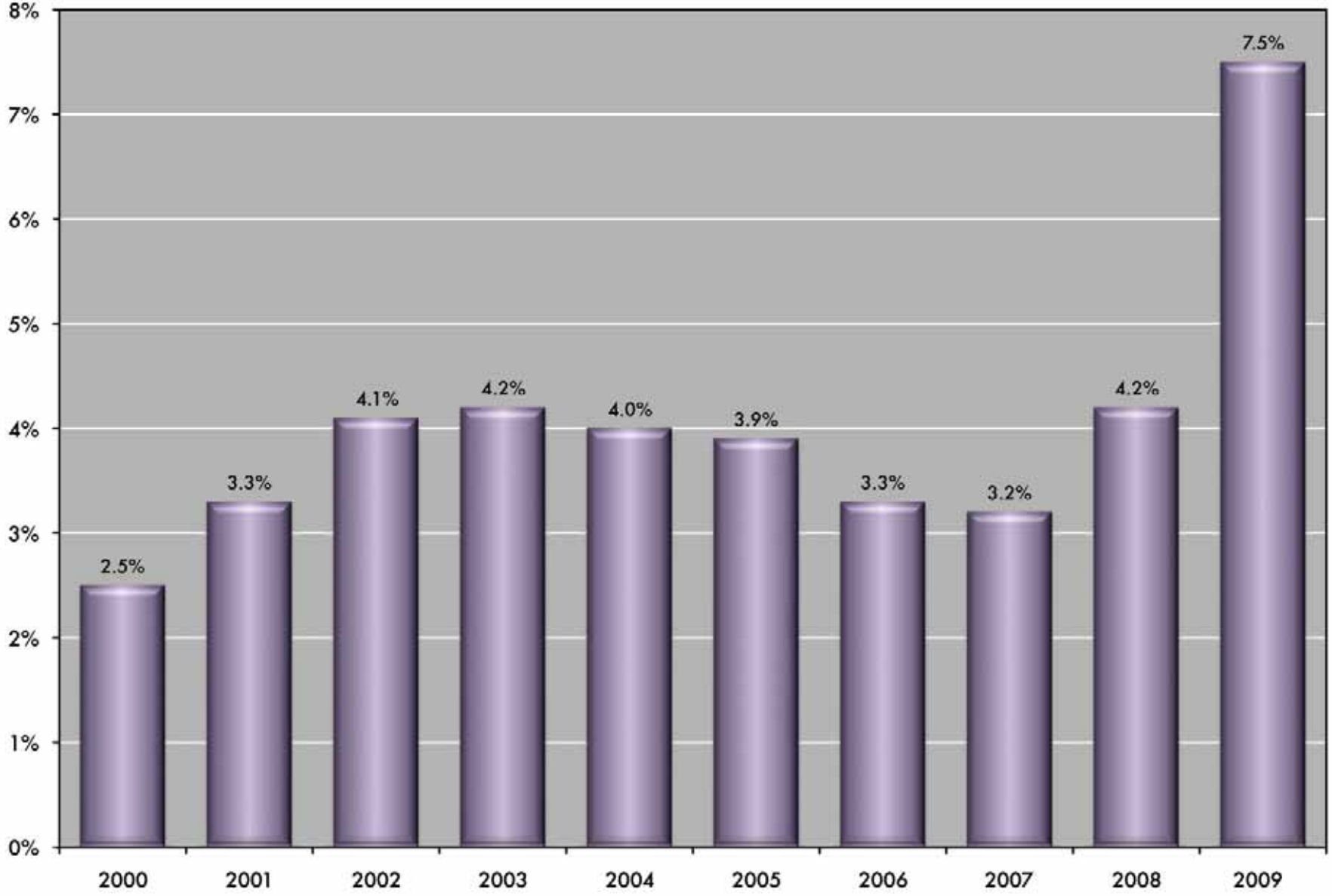
EMPLOYMENT GAINS AND LOSSES IN HAMPTON ROADS IN 2008



Sources: U.S. Department of Labor and the Old Dominion University Economic Forecasting Project, as revised on March 10, 2009

GRAPH 6

HAMPTON ROADS ANNUAL UNEMPLOYMENT RATE, 2000-2009



Sources: U.S. Department of Labor and the Old Dominion University Economic Forecasting Project

Focus Upon Particular Sectors of Our Economy

AUTOMOBILES

Retail automobile sales revenue, represented by its close proxy, taxable sales, declined substantially during the past year. The 6.5 percent fall in sales depicted in Graph 7 is the largest year-over-year decline since at least 1991, a time of national recession. New auto registrations dropped even more dramatically over the period, falling 37.5 percent.

TOURISM

Regional tourism activity did not escape the national and local economic downturn. Hotel revenue in Hampton Roads declined by 4.5 percent between the first quarter of 2008 and the first quarter of 2009. Grim as these data are, regional tourism fared better than for the nation as a whole, where hotel revenue dropped by an estimated 11.6 percent. (In a succeeding chapter of this report, we focus more intently upon the hotel industry in Hampton Roads.)

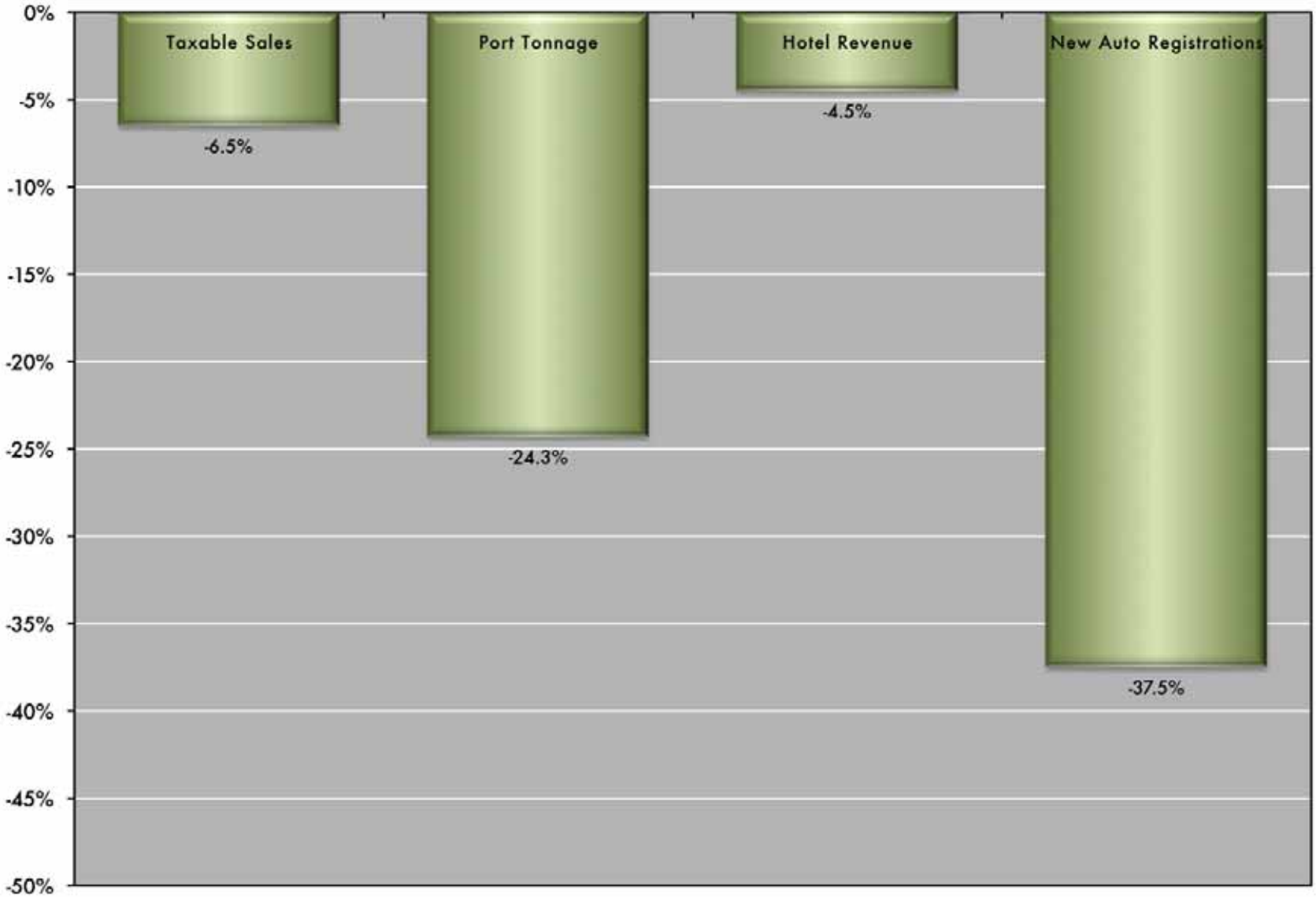
The decline in hotel revenues was not spread equally across the region, however. Williamsburg, in particular, has suffered significantly during this recession, as one can see in Graph 8. This graph also reveals that the plunge in tourism revenues was much more dramatic after September 2008, when several major national financial organizations, such as Lehman Brothers, either failed or had to be rescued.

THE PORT

During 2008, the Port of Hampton Roads experienced a modest increase of .6 percent in its general cargo tonnage. However, this figure obscures the fact that both the amount of cargo tonnage and containers handled, much like tourism within the region, fell dramatically from September to December of 2008 as international trade throughout the world declined substantially. Graph 9 reveals that what looked like a reasonable year of modest growth evolved into something much different in the latter part of 2008. **A review of Graph 7 reminds us that cargo tonnage shipped through the Port of Hampton Roads fell by almost 25 percent from first-quarter 2008 to first-quarter 2009.**

GRAPH 7

ANNUAL PERCENT CHANGES IN TAXABLE SALES, PORT TONNAGE, HOTEL REVENUE AND AUTO SALES, HAMPTON ROADS, 1ST QTR 2008 TO 1ST QTR 2009

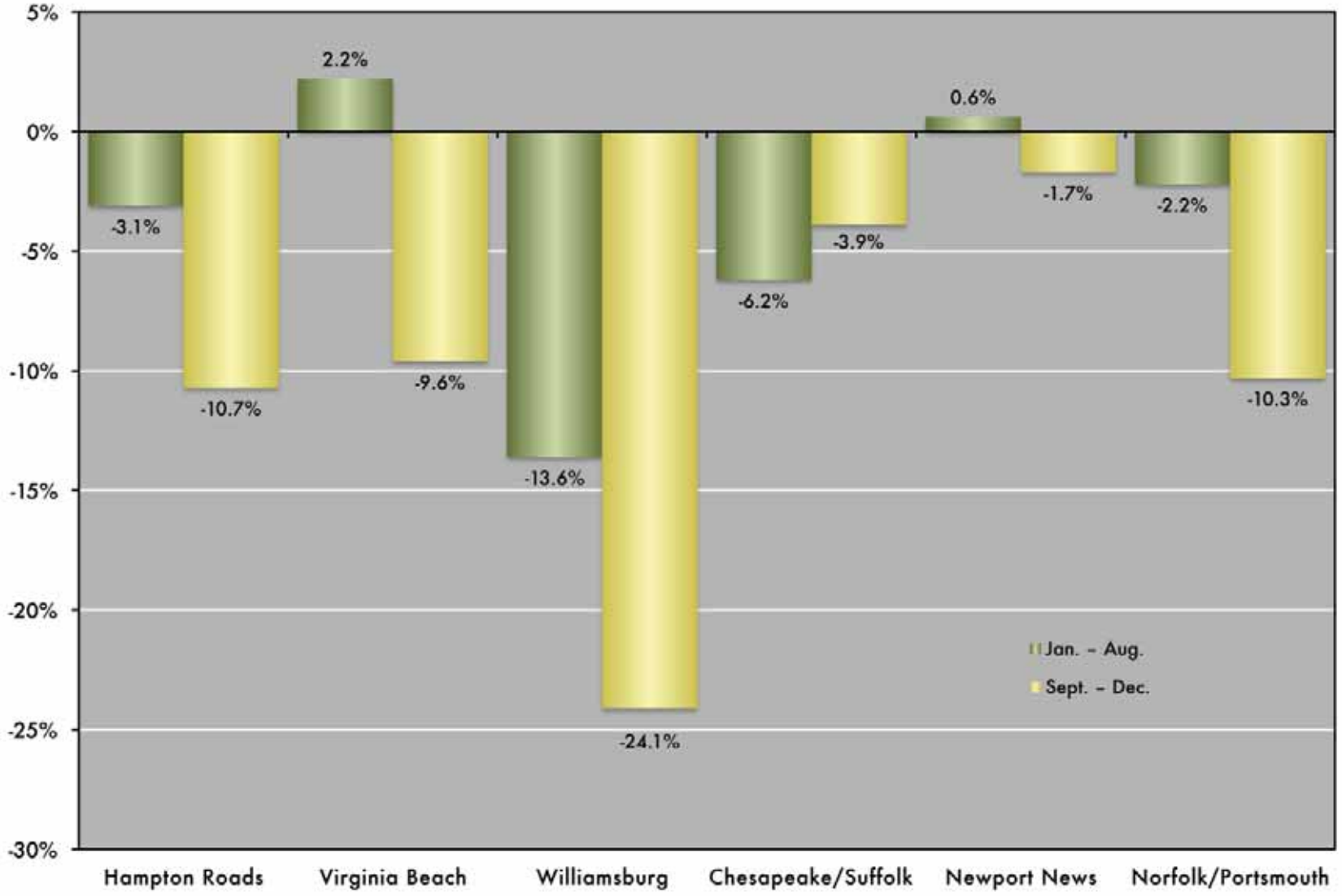


Source: Old Dominion University Economic Forecasting Project

GRAPH 8

CHANGE IN HOTEL REVENUES FROM 2007 TO 2008,

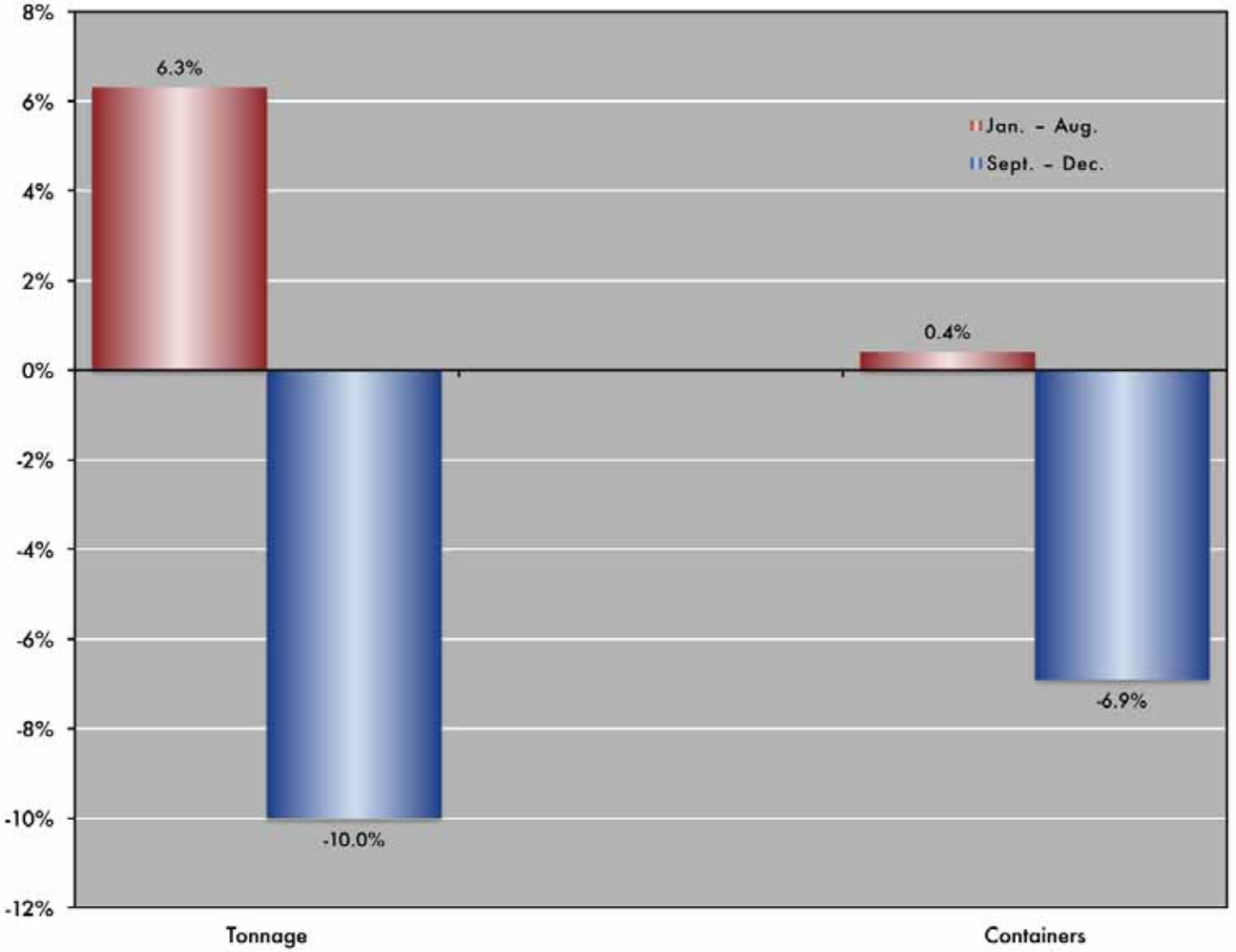
JANUARY TO AUGUST, AND SEPTEMBER TO DECEMBER



Sources: Smith Travel Research Trend Report, Feb.10, 2009, and the Old Dominion University Economic Forecasting Project

GRAPH 9

CHANGE IN CARGO TONNAGE AND CONTAINERS FROM 2007 TO 2008, JANUARY TO AUGUST, AND SEPTEMBER TO DECEMBER



Sources: Virginia Port Authority and the Old Dominion University Economic Forecasting Project

Households Under Siege

We estimate that household income in Hampton Roads rose by about 3 percent in 2008 and is expected to remain relatively stable in 2009. If this is true, then why have local retail and auto sales, noted previously, suffered so much? We believe there are three reasons:

- Significant declines in regional household wealth
- Tightening of lending standards and credit
- Higher household savings rates.

We'll now discuss each of these trends. Household wealth is very different from income. Wealth refers to household assets that have fluctuating value and includes houses, cars, retirement accounts, savings accounts and stock market holdings. There is a "wealth effect" associated with assets. For every dollar increase in their wealth, households are likely to spend an additional four cents. Thus, if the value of one's home increases by $100,000, then this is likely to spur an additional $4,000 of consumption by that individual.

The opposite holds true if wealth is declining. **Graph 10 reports that the household net worth (wealth) of Hampton Roads families declined by an estimated 16.6 percent, or about $47 billion in 2008. If the 4 percent rule holds true, then this would lead to a $1.88 billion decline ($47 billion x .04) in regional household consumption.** This is not peanuts and goes far to explain declining retail sales, automobile purchases and tourism expenditures in our region.

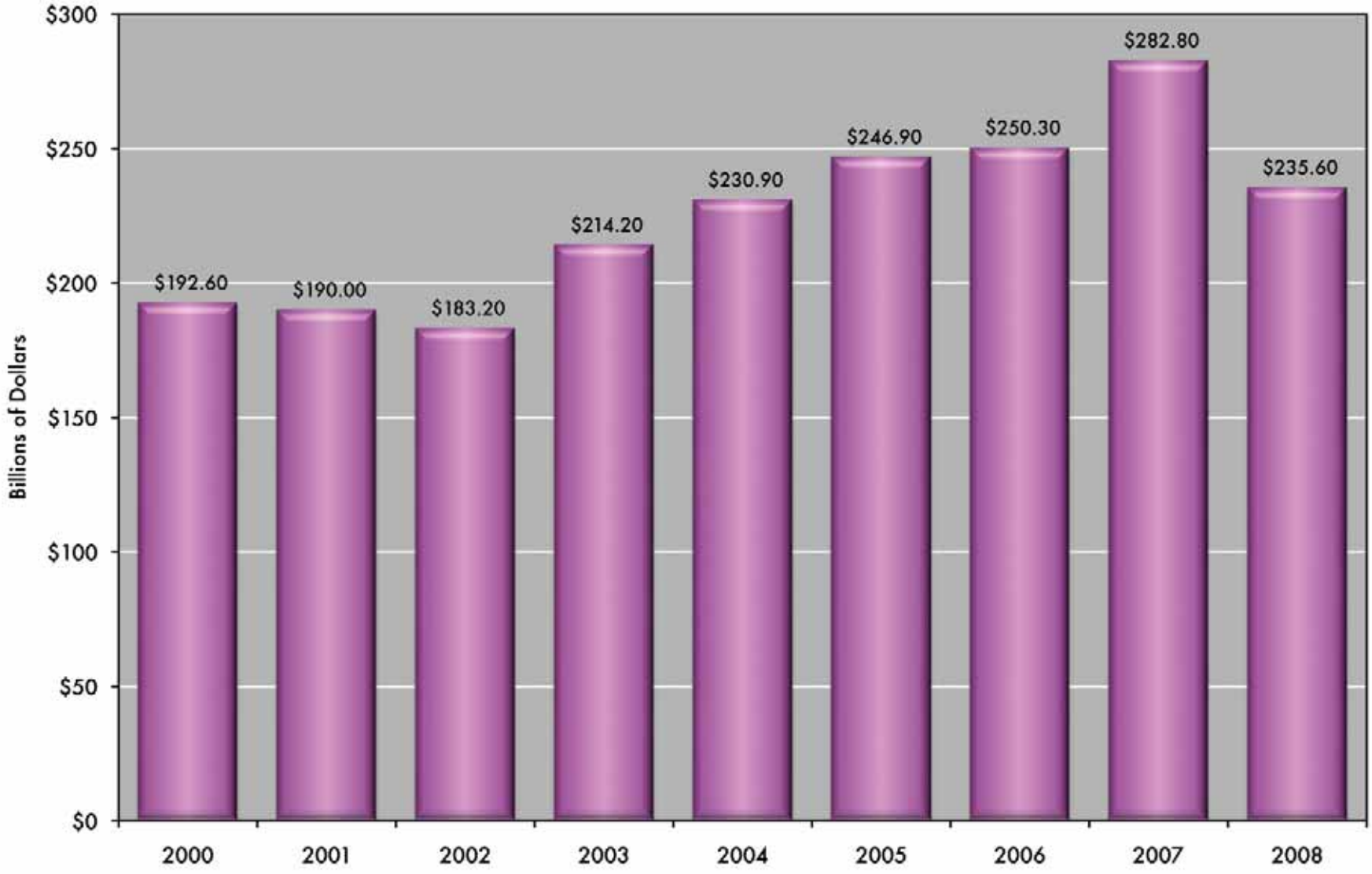
The tightening of lending standards and falling housing prices has made credit harder to obtain for Hampton Roads households. It is also true that households' demand for credit have slowed as they attempt to repair the damage inflicted upon their balance sheets by recent economic events. Graph 11 provides estimates of the changes in outstanding quarterly consumer loan balances for Hampton Roads households for 2007 and 2008. Included in these balances are mortgages, home equity loans, auto loans, and consumer and student loans. While the size of overall household debt balances actually is increasing, note the continuous decline in the rate of growth of these balances from the fourth quarter of 2007, through the fourth quarter of 2008. This means that the discretionary spending capability of Hampton Roads households has tapered off substantially.

One indicator of loan balances that have become too large for households to handle is the volume of bankruptcy filings. Unfortunately, these have roughly quadrupled in Hampton Roads between 2006 and 2009 (see Graph 12). However, this is due not only to deteriorating economic conditions, but also to the passage of the new bankruptcy law in 2005. The 2009 number (8,020) translates roughly to 1 in every 77 households in the region – historically a high number, but only a fraction of the bankruptcy rates in states such as California, Florida and Michigan. Regardless, households that declare bankruptcy usually are not eligible for new credit, and therefore this is another reason why the total amount of credit extended to households in the region has grown only modestly in recent months.

The third prong of our explanation of why retail sales have fallen in Hampton Roads even while income has been rising is household savings rates. Graph 13 illustrates that personal savings rates have spiked upward since first-quarter 2008. In the long term, this is quite a good thing, as it will result in fewer bankruptcies, larger pools of funds to finance vital investments, a stronger dollar and lower interest rates. All of these developments usually spur economic growth. In the short term, however, higher savings rates put a damper on consumption and many merchants in Hampton Roads are feeling the effects.

GRAPH 10

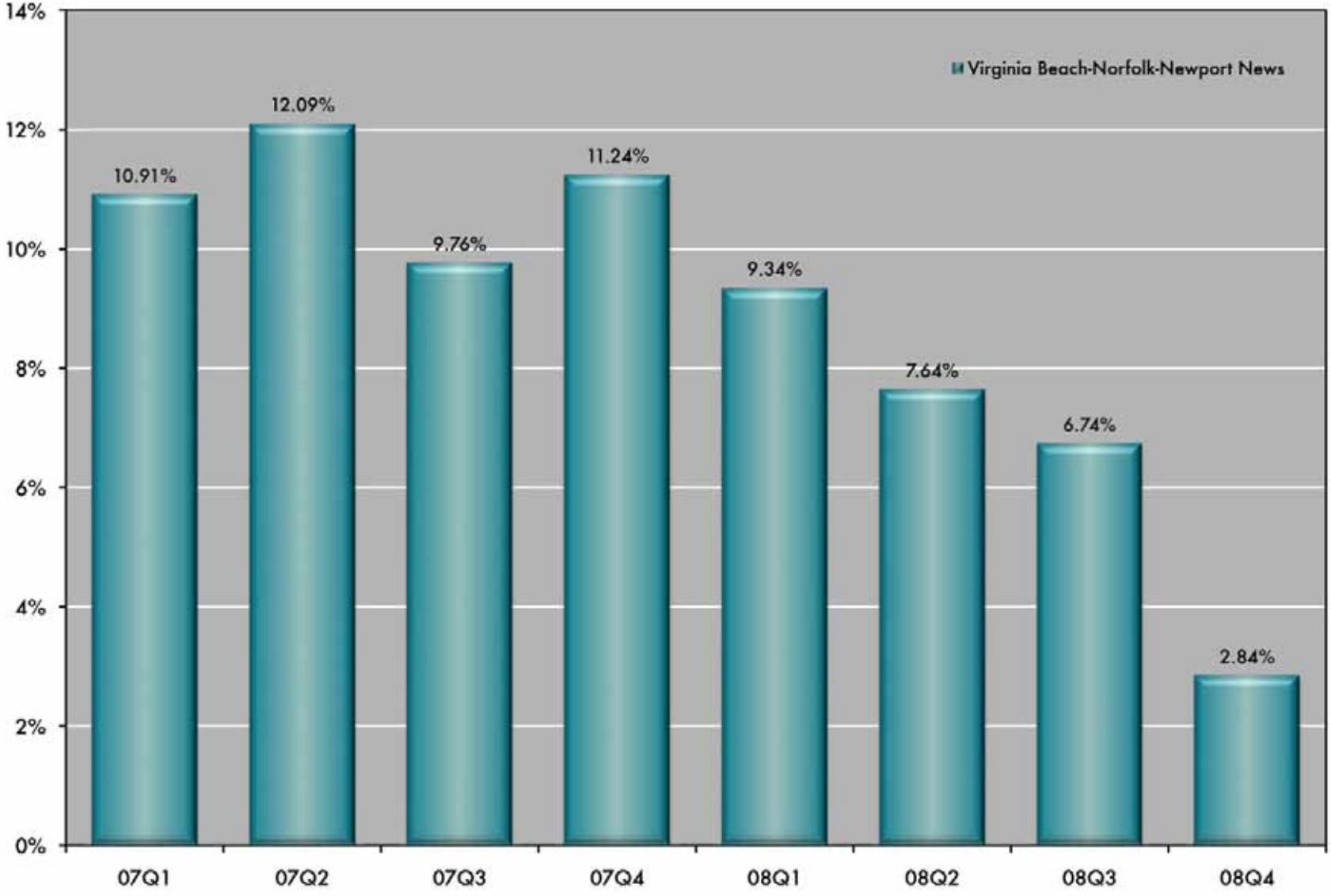
ESTIMATED HOUSEHOLD NET WORTH, HAMPTON ROADS, 2000 TO 2008, BILLIONS OF $



Source: Old Dominion University Economic Forecasting Project

GRAPH 11

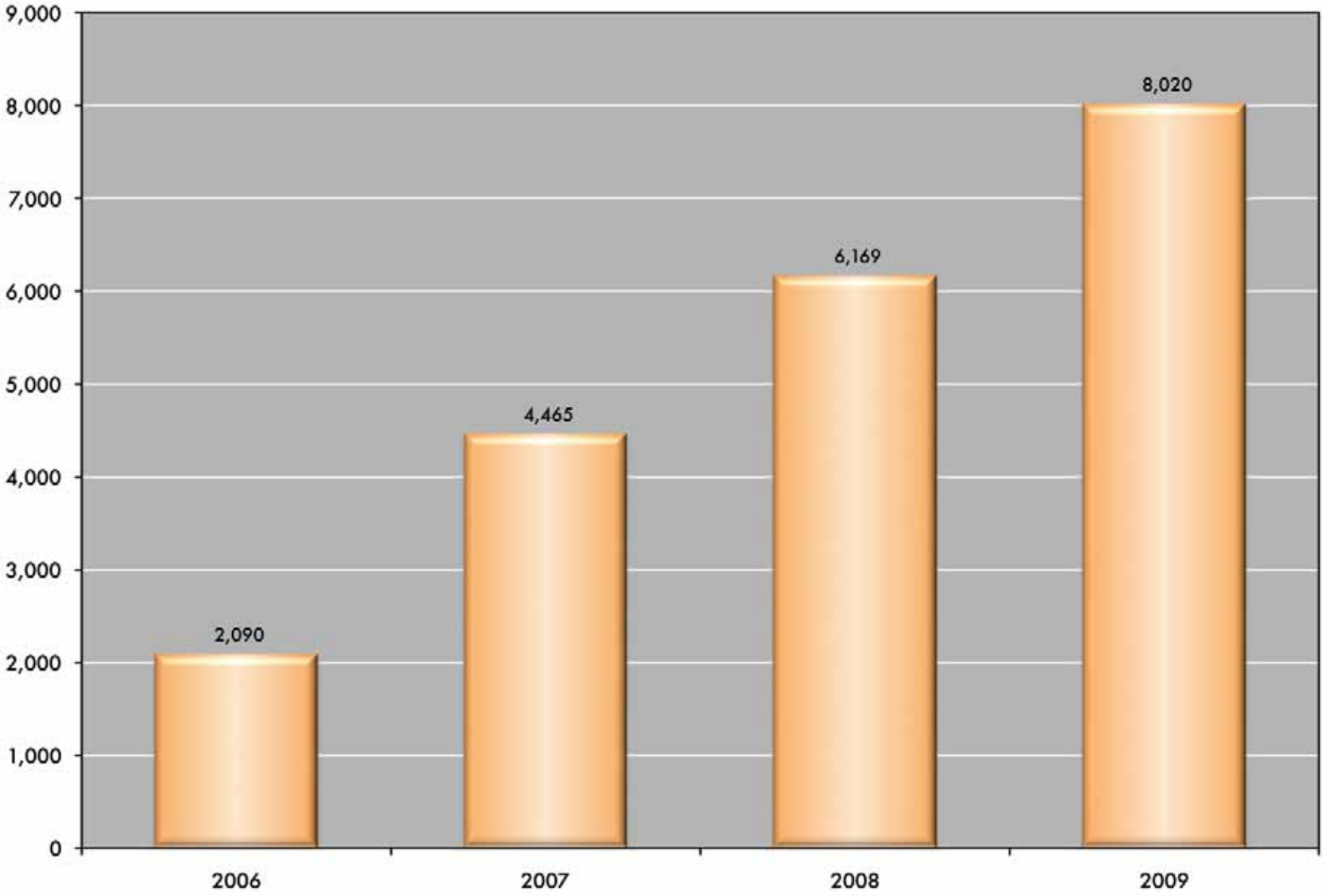
PERCENT QUARTERLY CHANGE, CONSUMER LOAN BALANCES, HAMPTON ROADS, 1ST QUARTER 2007 TO 4TH QUARTER 2008



Sources: Equifax, Moody's Economy.com and The Wall Street Journal, March 30, 2009
(Balances include mortgages, and home equity, auto, consumer and student loans.)

GRAPH 12

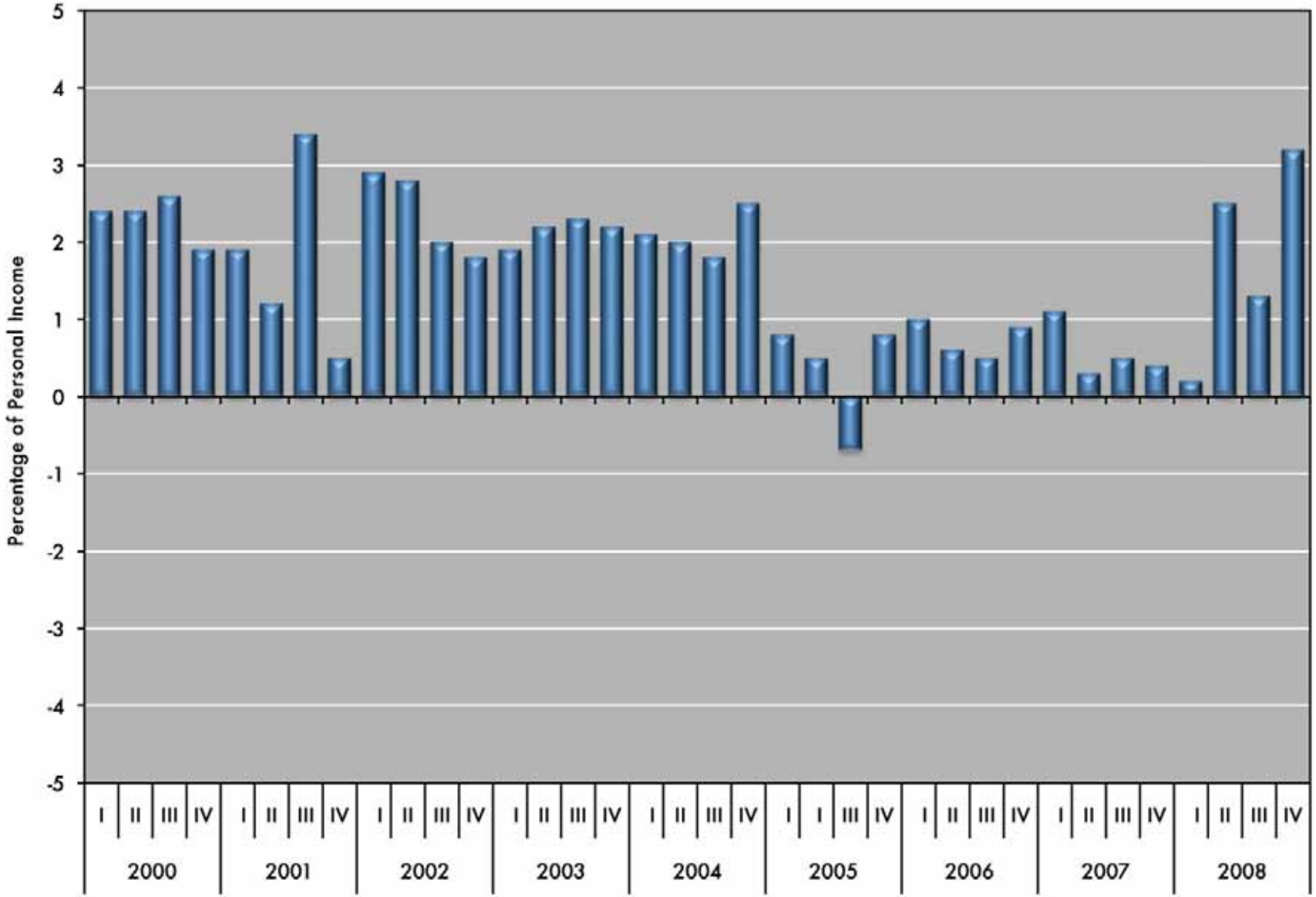
HAMPTON ROADS BANKRUPTCIES, 2006-2009



Source: Old Dominion University Economic Forecasting Project

GRAPH 13

PERSONAL SAVINGS RATES, U.S.: 2000-2008



Source: U.S. Bureau of Economic Analysis


FEDERAL RESERVE NOTE
THE UNITED STATES OF AMERICA
AJ19981663A

Housing Markets in Hampton Roads

We now return to a hardy perennial in the State of the Region reports – the status of our housing markets. **Our region is in the process of working through wrenching housing market adjustments that feature falling prices, excessive inventory due at least partially to past overbuilding, relatively low rental rates, relatively high home-owner vacancy rates, and longer times between listing and sale.** As if this laundry list of maladies were not enough, until late into the first quarter of 2009, many prospective borrowers found that mortgages were quite difficult to obtain. Or, if they were offered a mortgage, it often featured relatively high interest rates and high down payments. Recent actions by the Federal Reserve System have whittled down these difficulties, though the heady days of "NINJA" mortgage loans (no income, no job or assets) are long gone. This also is distinctly a good thing, but the adjustment process is not easy.

What follows is a wide-ranging discussion and documentation of different aspects of Hampton Roads housing markets.

HOUSING PRICES

Housing sale prices have fallen across the board regionally over the past several years. In every category – new homes, existing homes, condominiums – prices have fallen. Graph 14 provides a specific example, the decline in the median (50th percentile) prices of existing homes, both in Hampton Roads and the United States. However painful housing market adjustments have been locally, they pale before those afflicting many other areas of the country. That said, we do need to point out that the data presented in Graph 14 are in some ways "apples and oranges" sales numbers because they reflect the reported selling prices of all homes, not comparable homes. Thus, these data do not control for changes in the mix of houses that are sold from one year to the next, and therefore may not provide us with the information we seek. With this caveat in mind, however, we have confidence in asserting that the price of the median house sold in Hampton Roads has been declining. It appears that housing prices in our region peaked in the third quarter of 2007, two years later than the entire country.

If there is an exception to our sweeping dictum about falling home sale prices, it is lower-priced, existing homes, most often those $225,000 and below. Prices in this category have been sticky downward, though even here, effective sales prices actually may be falling because real estate agents tell us that price concessions averaging 7 percent of sales prices have become routine. Rather than settle for and publicize lower prices, sellers will pick up closing costs, pay for upgrades, etc. Published residential housing price data therefore may be a less reliable guide today than they have been for some time.

As shown in Graph 14, the decline in Hampton Roads existing home prices has been half that of U.S. prices. Housing prices in the region continued to fall on a year-to-date basis through May 2009, the latest data available at this writing.

RESIDENTIAL HOME INVENTORIES

The inventory of residential homes is the number of homes that are listed for sale, but as yet unsold. **As can be seen in Graph 15, Hampton Roads' *existing* residential home inventory more than quadrupled since 2004, while our inventory of *new* homes more than tripled over the same period.** Even though home prices have fallen by 13 percent since the third quarter of 2007, the price decline has not been sufficient to reduce inventory significantly. Nevertheless, the inventory of unsold homes would be much larger were it not for the decline in home prices. We estimate that the total inventory of new and existing homes will decline from 15,324 houses in 2008 to 14,325 houses in 2009. According to some veteran observers of local real estate markets, this rather modest decline may reflect the reality that some homeowners who have wished to sell their houses have not placed them on the market and instead have decided to wait for improved selling conditions. If so, then these homes progressively will trickle into the market and prop up inventory numbers.

The region's large housing inventory has influenced the behavior of local builders. Graph 16 shows that new-home builders reacted to the relatively large

increase in 2006's new-home inventory with a 22 percent reduction in construction in that year. Those reductions continued through 2009, when new-home permits sank to approximately 1,250, the lowest in 30 years. Prior to 2007, the lowest new-home permit year was 1981, with 4,674 permits. Because housing permits from previous years can be utilized by builders, it appears that the actual number of new homes constructed in Hampton Roads in 2009 has been 1,887, a 76 percent decline from 2003.

Graph 16 also demonstrates a crucial relationship – that between total regional employment and the level of new-home construction in Hampton Roads. In fact, total employment, including military personnel, is an important aid in predicting new-home construction. Military employment is likely to remain stable in 2009. However, civilian employment has fallen in 2009. **Given falling employment numbers and an already large inventory of homes for sale, it does not seem likely either that new-home construction will increase significantly, or that housing markets will improve dramatically in 2010.**

HOUSING FORECLOSURES

A housing foreclosure is the legal process whereby the ownership of a property is terminated. Typically, it involves the forced sale of the property by the lender to a new owner, sometimes at a public auction. Foreclosures influence both the existing and future supplies of for-sale housing. **Graph 17 reveals that foreclosure filings in Hampton Roads were 11 times higher in 2009 than in 2006.** Although the federal government has allocated significant financial resources through the Troubled Asset Relief Program (TARP) in an effort to help keep stressed homeowners in their houses, 2009 filings in Hampton Roads are expected to rise by 30 percent over those of 2008. The large number of recent foreclosure filings (some of which involved renegotiated mortgages with easier terms) poses a serious threat to home prices in Hampton Roads and will delay housing price stabilization.

VACANCY RATES

Oftentimes, homes that cannot be sold either stand vacant, or they are rented. What has been happening in this regard in Hampton Roads? Approximately 14,200 homes stood vacant in 2008. This is about 4,500 units above the historical mean for our region. Large numbers of home vacancies help create impressions of weak and struggling housing markets. **Graph 18 demonstrates that home vacancy rates are higher now than they have been in the past 20 years. Meanwhile, rental vacancy rates have fallen more than 50 percent since 2004-05. In a nutshell, many people have chosen to rent rather than to own.** This could reflect the fact that their economic circumstances have deteriorated, or that higher mortgage standards mean they cannot obtain a mortgage.

COMPARING OWNING TO RENTING

Rational home buyers weigh the price of renting against that of owning before purchasing a home. Table 2 compares the median cost of renting a three-bedroom home to the monthly mortgage payment for a comparable home. One can see that in 2003, owning one's own home, and paying down a mortgage, appeared to be a better deal than renting the same home. However, as housing prices inflated rapidly, by 2006 it was clear that renting was increasingly attractive.

The "owning versus renting" ratios in Table 2 tell us that the calculus has recently swung in favor of buying rather than renting. While many factors determine whether one chooses to own or rent, the limited analysis presented in Table 2 informs us that the general economics of owning a home are about as favorable in 2009 as in 2001, before the housing bubble inflated. Viewed historically, mortgage rates are relatively low and this contributes to the lower ratios.

The decline in the owning versus renting ratio should add buyers to the housing market, assuming they have jobs generating respectable incomes and can obtain mortgages. Let's focus on the income aspect of this situation. Since 2006, median household income needed to pay the principle and interest on a mortgage for the purchase of the median-priced home in Hampton Roads has fallen by one-third. Indeed, Graph 19 shows that by this measure, regional housing is at its most affordable level in 10 years and is not very far away from its most affordable scenario in the past 30 years. Housing prices have fallen, mortgage rates are modest and regional incomes have been rising, albeit not

TABLE 2

ESTIMATED HOUSE RENTAL AND PRINCIPLE AND INTEREST FOR A HOUSE PAYMENT IN HAMPTON ROADS, 2000-2009

	Median Monthly Rent for a Three-Bedroom House	P&I Monthly for a Median House	Ratio of Monthly P&I to Rent
2000	$882	$ 854	0.97
2001	911	809	0.89
2002	1,037	827	0.8
2003	1,044	779	0.75
2004	1,087	971	0.89
2005	1,118	1,202	1.08
2006	1,164	1,459	1.25
2007	1,257	1,495	1.19
2008	1,336	1,472	1.1
2009	1,315	1,171	0.89

Sources: U.S. Department of Housing and Urban Development and the Old Dominion University Economic Forecasting Project

by a lot. The bottom line? **The data tell us this is one of the best times in recent decades to purchase a home.**

The increased affordability of housing enhances the pool of buyers eligible to purchase homes in Hampton Roads, if these individuals have the confidence to do so and can qualify for a mortgage. Of course, realism requires us to note that one's ability to obtain a mortgage is not the same in 2009 as it was in 2001. A non-negligible down payment now is required in most cases, prospective borrowers must have good credit records, and they must be able to document their employment and income stream. These requirements may seem to represent the essence of common sense, but often were relaxed or eliminated in the first half of this decade by many lenders. This ill-advised behavior was one of the causes of the housing crisis we now are observing.

RELATING HOUSING SUPPLY TO HOUSING DEMAND

Despite the recent draconian reductions in new-home building, the current supply of houses in the Hampton Roads housing market is near historical highs. On the demand side, rising unemployment and rising consumer caution have more than offset the decline in the relative price of owning versus renting and the greater affordability of housing. Putting these two sides of the Hampton Roads housing market together, it appears that 2009 will see continued distress as housing prices continue to edge downward to correct the imbalance between demand and supply.

Graph 20 displays estimates of excess supply and demand in regional housing markets relative to annual changes in real (inflation-adjusted) house prices for 1995 to 2009. For example, in 1996, there was an excess supply of housing amounting to more than 2,000 units in light of the supply-and-demand influences we have just sketched. By 2004, things had reversed and there was excess demand for housing by 5,028 units. In that year, home prices increased 22 percent in Hampton Roads. Many readers may remember homes being sold before even going formally on the market; unsolicited buyers appearing at someone's front door; buyers actively bidding against each other for specific properties; low interest rates; lax lending standards; and homes selling for more than their owners' asking prices. It appeared that there was a shortage of homes for sale. This was excess demand in full flower and it contributed to the housing price bubble, which began to deflate already in early 2007.

By 2008, the estimated excess supply of housing had risen to 4,555 units and remains historically high at 4,318 units in 2009. It is this excess supply that continues to put downward pressure on prices in the region's housing market.

Is the current excess supply condition likely to change? **The Old Dominion University Economic Forecasting Project estimates that home prices will decline another 5 percent in 2009. It seems likely that additional downward price adjustments are likely in 2010.** Graph 21 shows that it will take time to bring the housing market back to equilibrium. Sales have been declining and the typical home now remains on the market 83 days, up from only 27 days in 2004. This will do little to diminish the excess supply of homes for sale.

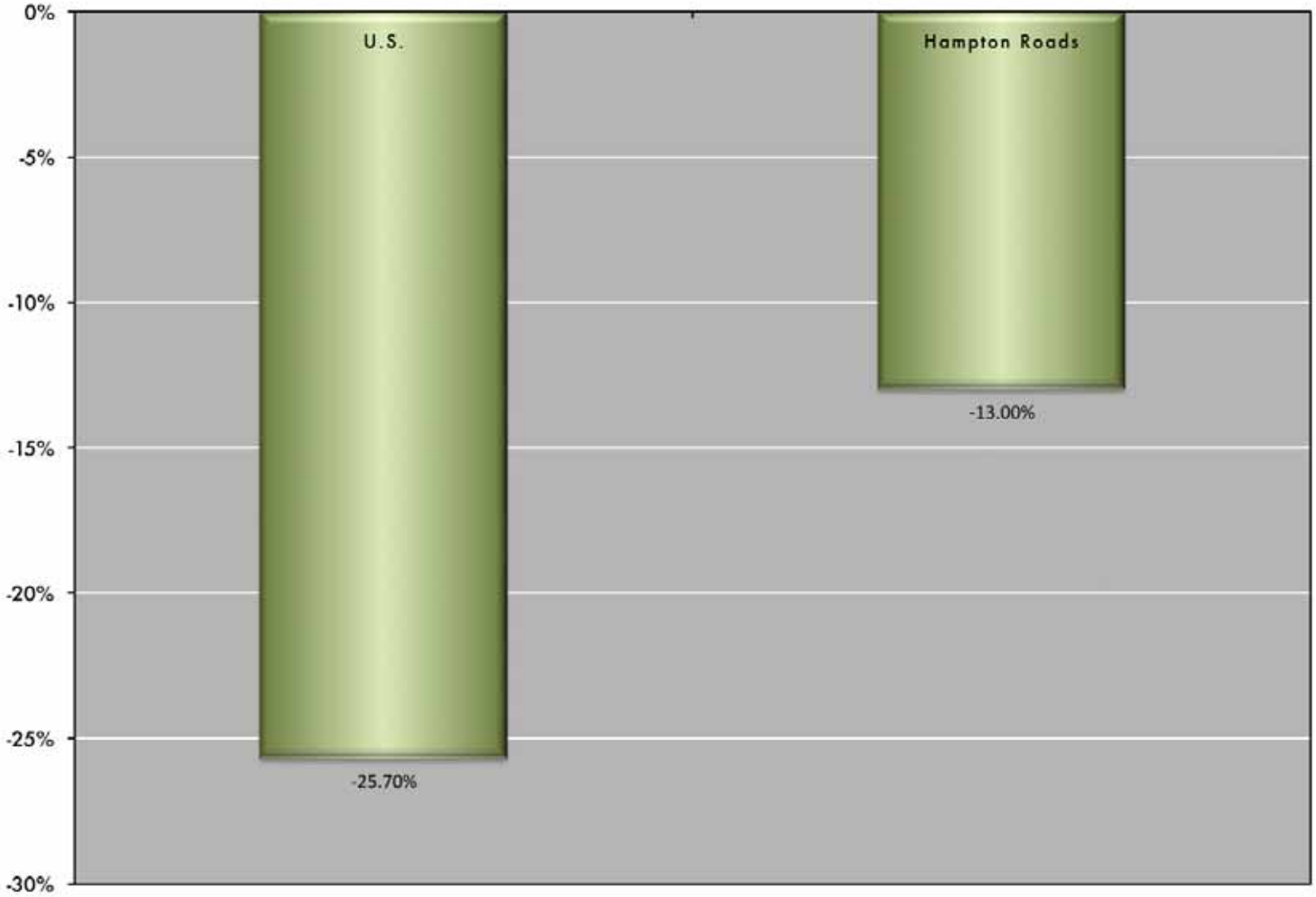
Ironically, if the housing crisis had been deeper in Hampton Roads, and home prices had fallen more, then the region's chances for a quick rebound would be more favorable. It's not a mystery. Other things held constant, falling prices stimulate sales. When prices don't fall very much (and they have fallen much less in Hampton Roads than nationally), it takes housing markets longer to "clear," that is, to attain rough equilibrium between supply and demand.

Miscellaneous blips in housing numbers during the past year have caused some observers to posit that regional residential housing markets are "turning around." There are at least four major measures of residential housing market performance – unsold inventory, number of sales, sales price and days on market until sale. In any given month, one of these variables might reverse course, but it signals little. When all four indicators reverse course, it will be time to take notice. The harsh reality is that this is unlikely to occur unless employment within the region begins to move upward. Until then, regional housing markets are unlikely to change significantly.

Since World War II, Hampton Roads has experienced several spells when housing markets were in the doldrums for half a decade. We could be traversing such a time period now – one that began in early 2007, but still has a ways to go. We have spoken of several harsh realities. Yet another is that the general, overall economic conditions to which our housing markets are so sensitive are determined substantially by factors well outside of our local and regional control. Let's examine one of those outside factors, the federal government's economic stimulus plan, in the next section.

GRAPH 14

CUMULATIVE DECLINE IN MEDIAN SINGLE-FAMILY HOUSE PRICES FOR EXISTING HOMES, FROM PEAK* TO 1ST QUARTER 2009

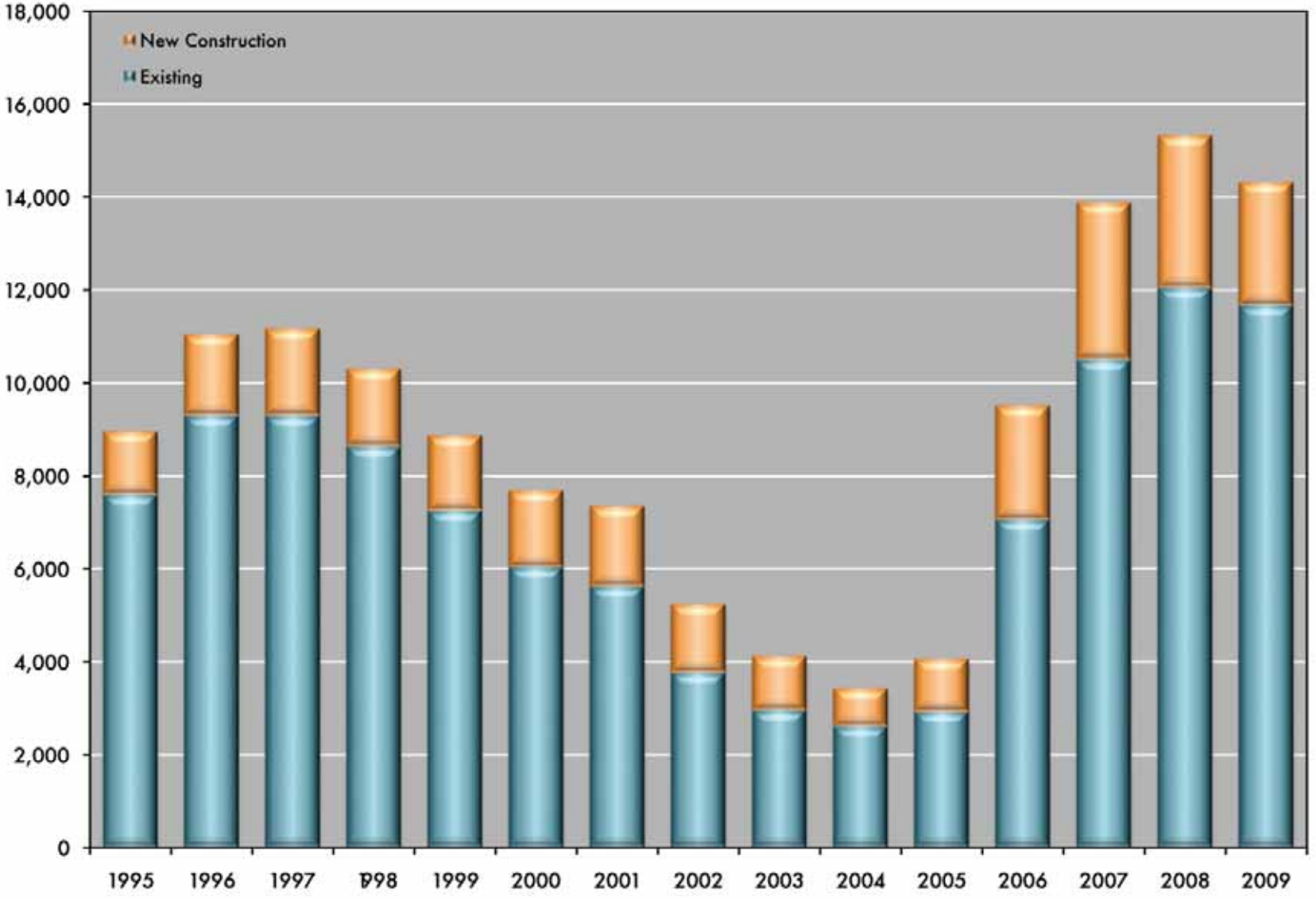


Sources: National Association of Realtors (NAR), the Real Estate Information Network Inc.(REIN) and the Old Dominion University Economic Forecasting Project

*U.S. house prices peaked in 3Q 2005 (NAR); Hampton Roads in 3Q 2007 (REIN)

GRAPH 15

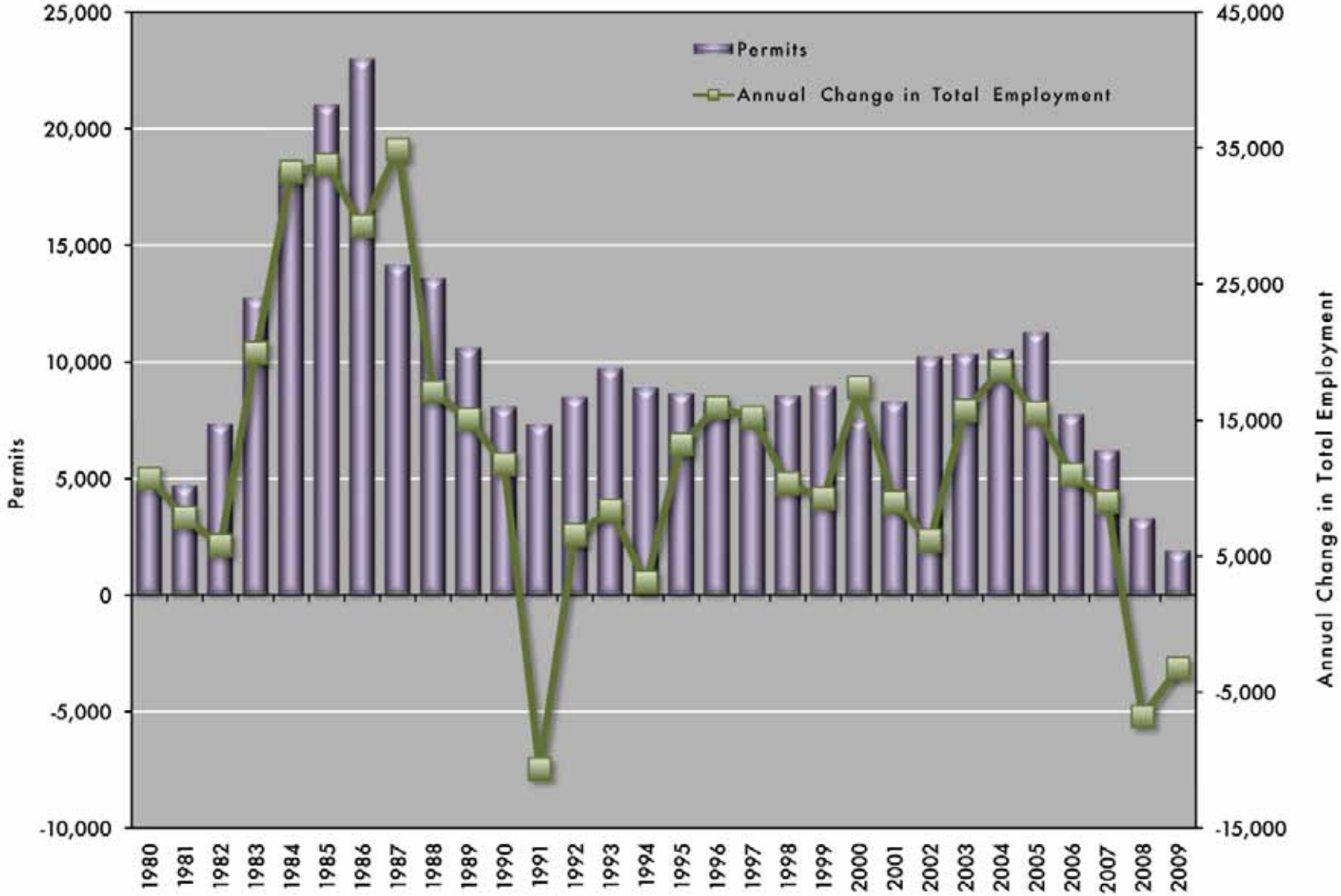
ESTIMATED INVENTORY OF TOTAL (NEW CONSTRUCTION AND EXISTING) RESIDENTIAL HOME IN HAMPTON ROADS, ACTIVE LISTINGS ON MAY 31 OF EACH YEAR



Sources: Real Estate Information Network Inc. and the Old Dominion University Economic Forecasting Project (information deemed reliable but not guaranteed)

GRAPH 16

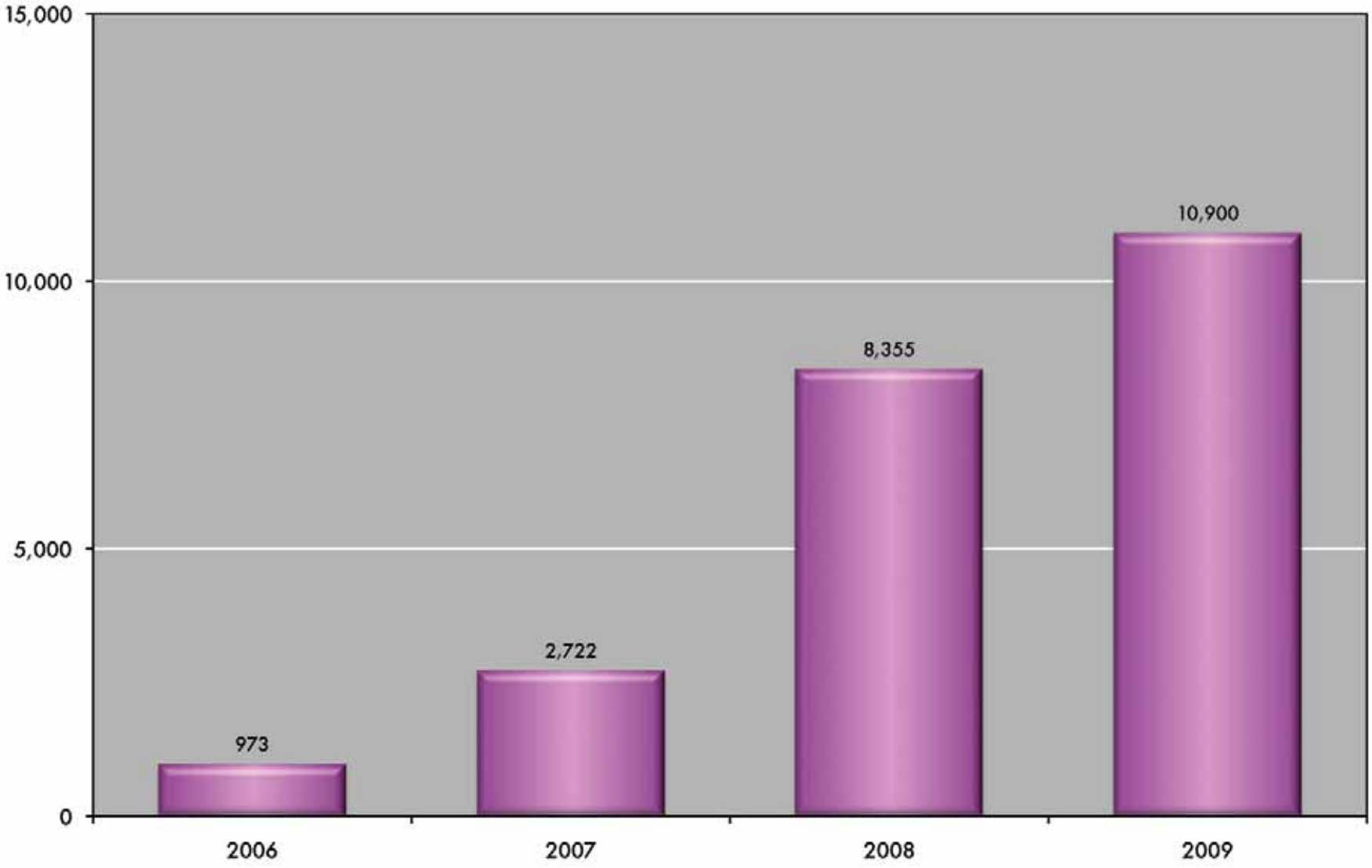
ANNUAL CHANGE IN TOTAL EMPLOYMENT AND NEW HOUSING PERMITS IN HAMPTON ROADS, 1980-2009



Sources: U.S. Census Bureau and the Old Dominion University Economic Forecasting Project
*Actual 1991 total employment change is a negative 10,658 jobs

GRAPH 17

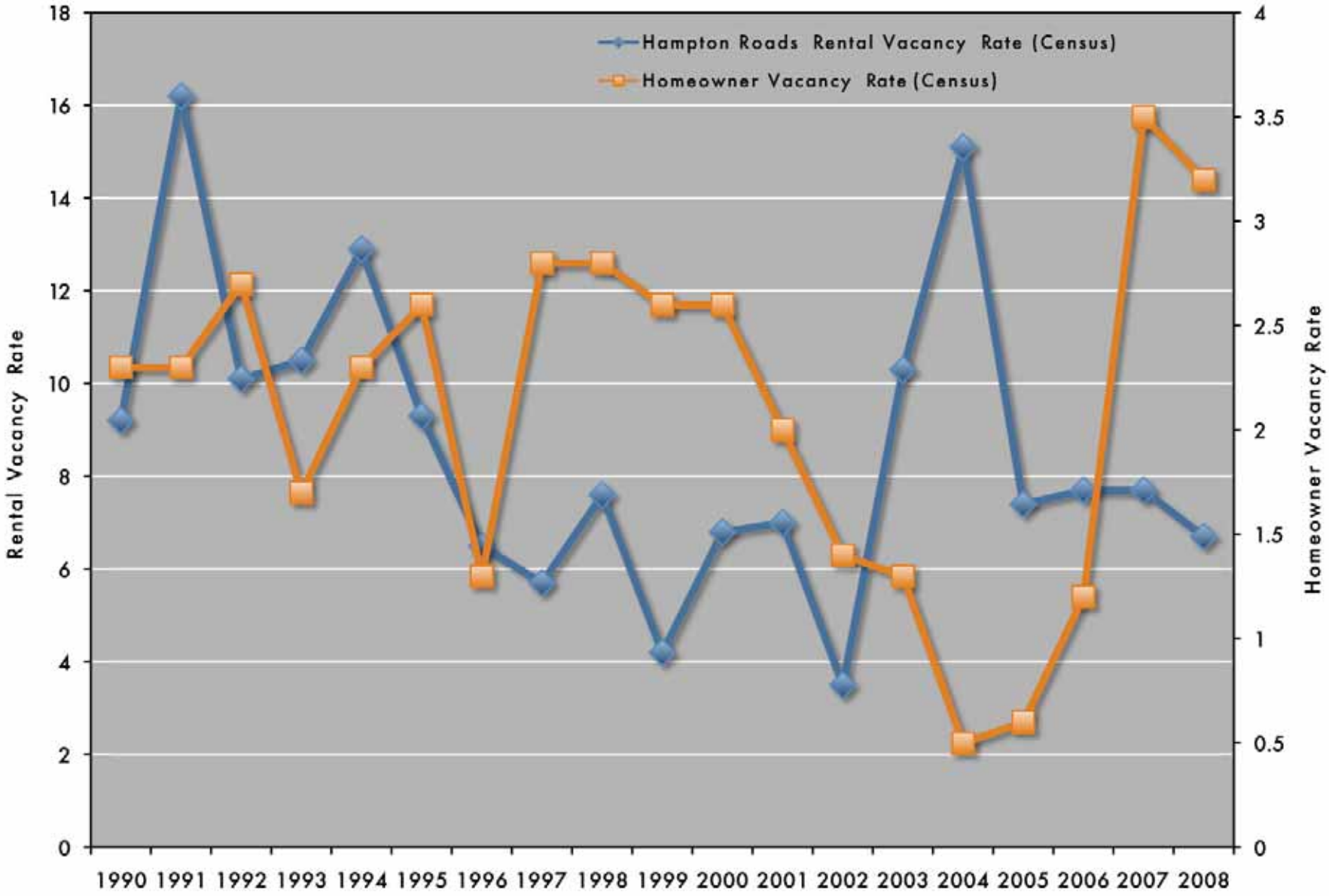
HAMPTON ROADS RESIDENTIAL FORECLOSURE FILINGS, 2006 TO 2009



Sources: Realty Trac and the Old Dominion University Economic Forecasting Project

GRAPH 18

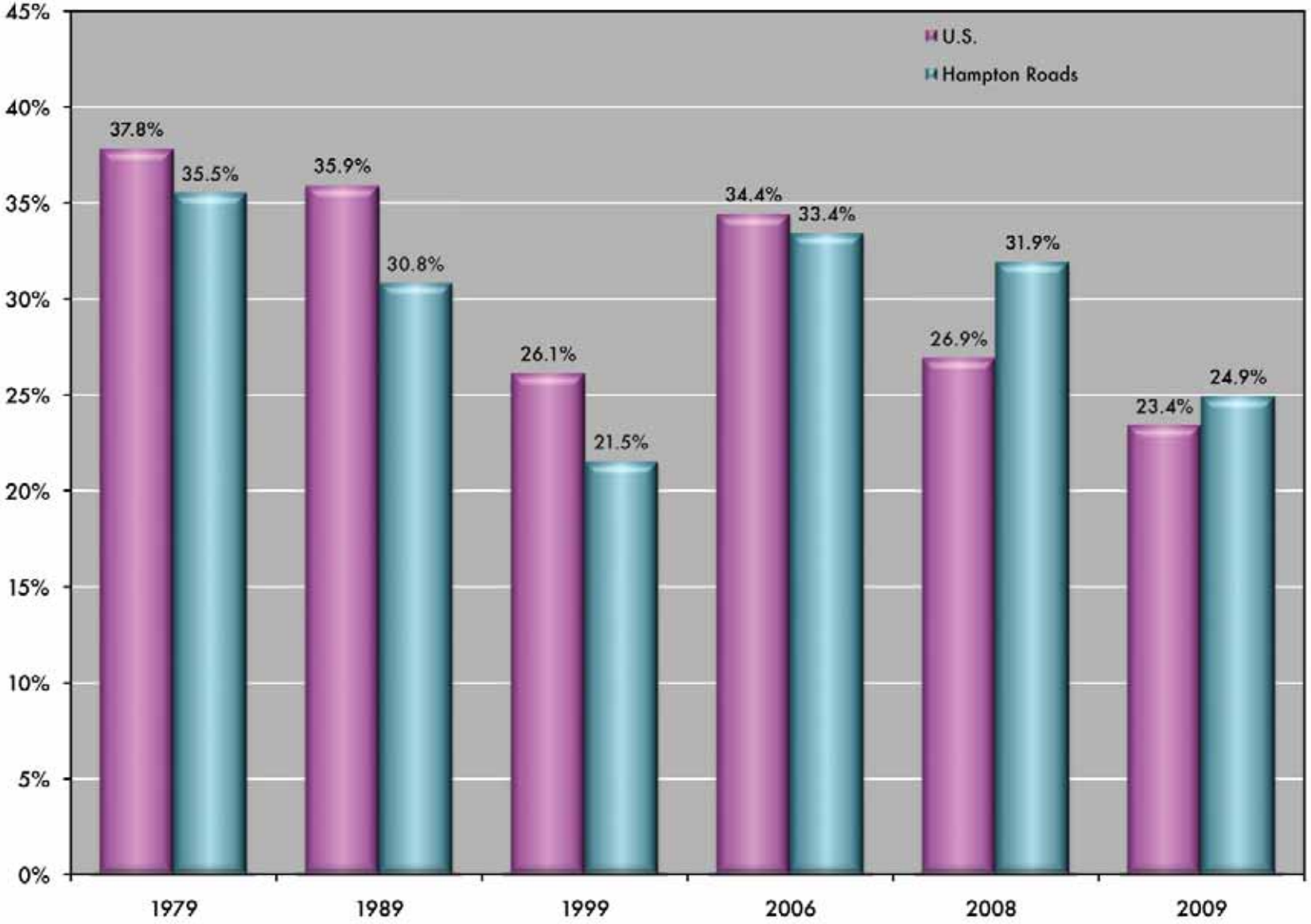
RENTAL AND HOMEOWNER VACANCY RATES, HAMPTON ROADS, 1990-2008



Source: U.S. Census Bureau

GRAPH 19

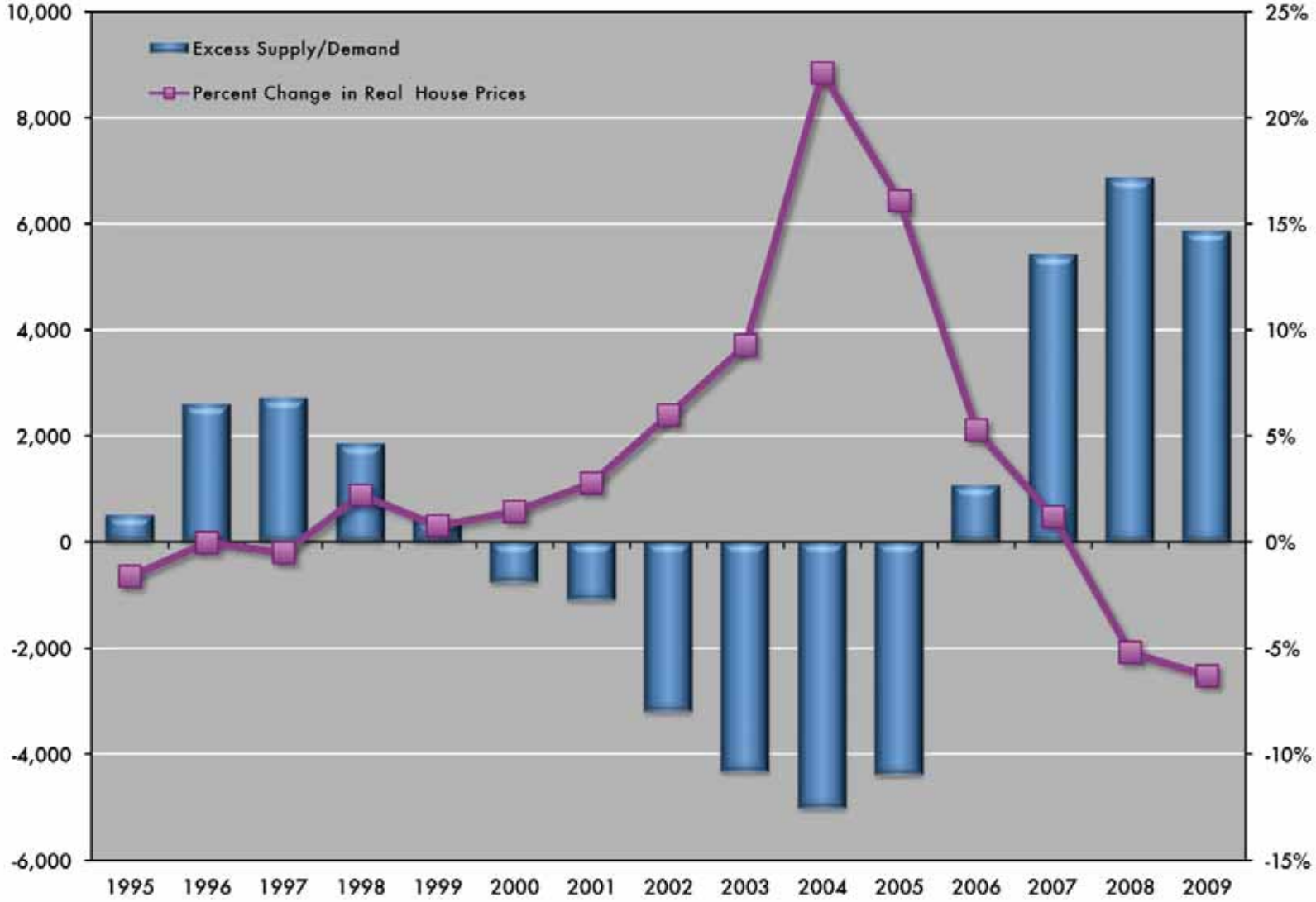
HOUSING AFFORDABILITY: MONTHLY PAYMENT FOR A MEDIAN PRICE RESALE HOUSE AS A PERCENTAGE OF MEDIAN HOUSEHOLD MONTHLY INCOME IN HAMPTON ROADS AND THE U.S., 1979 TO 2009



Source: Old Dominion University Economic Forecasting Project

GRAPH 20

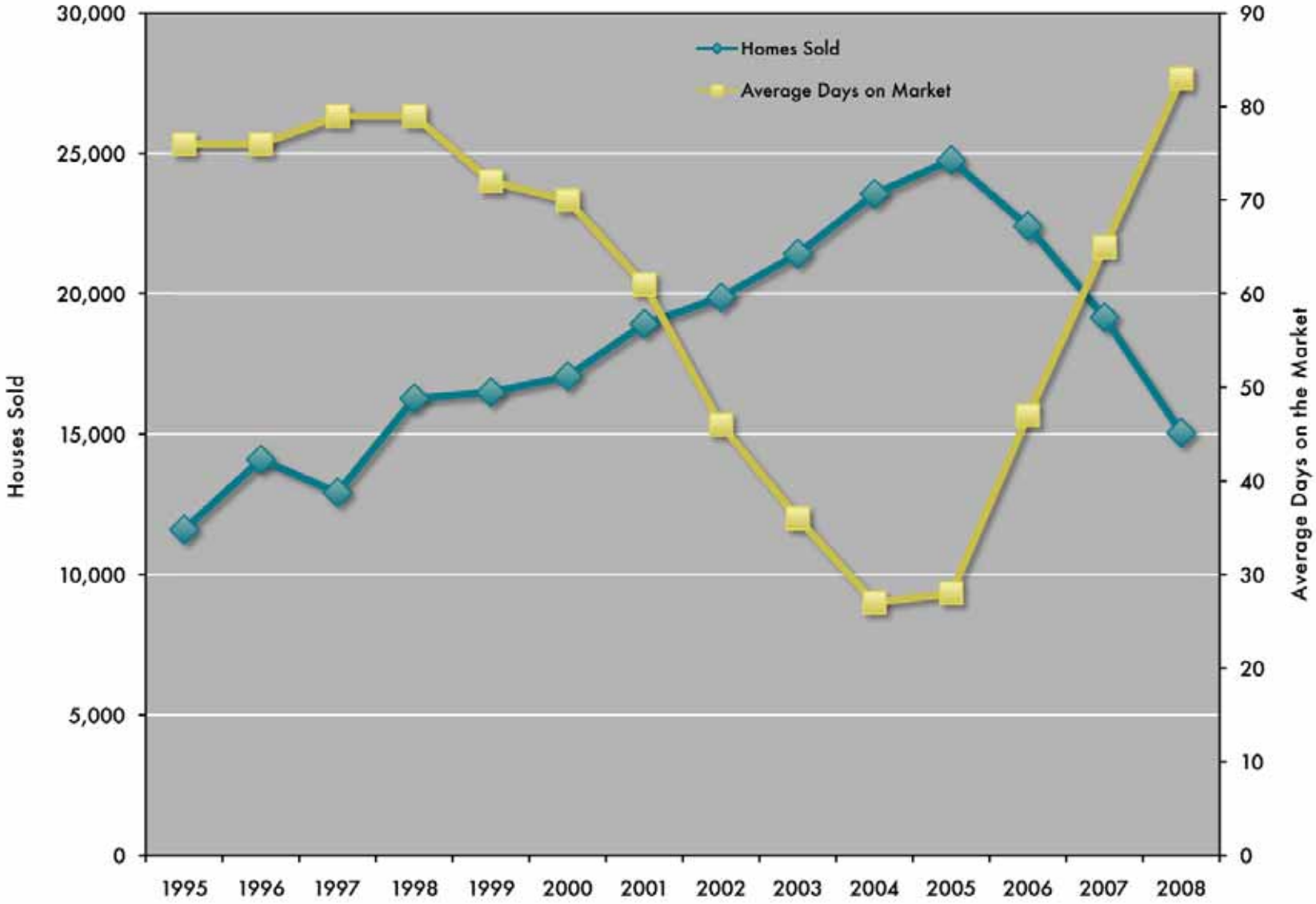
ESTIMATED EXCESS SUPPLY/EXCESS DEMAND OF HOUSES IN THE HAMPTON ROADS SINGLE-FAMILY HOUSING MARKET (RIGHT SCALE) RELATIVE TO THE ANNUAL CHANGE IN REAL HOUSE PRICES (LEFT SCALE)



Source: Old Dominion University Economic Forecasting Project

GRAPH 21

HAMPTON ROADS EXISTING RESIDENTIAL HOMES SOLD AND AVERAGE NUMBER OF DAYS ON THE MARKET (1995-2008)



Sources: Real Estate Information Network Inc. and the Old Dominion University Economic Forecasting Project
(Days on market calculated from the date listed to the date under contract for existing homes sold.)

The Economic Stimulus Plan

In February 2009, Congress passed the American Recovery and Reinvestment Act of 2009, or "Economic Stimulus Plan" (ESP), with a budget of $787 billion. The plan consists of a combination of tax cuts and additional spending financed by the federal government. The plan could have a positive and significant effect on our regional economy in 2009, if people spend rather than save their tax cuts and if the monies scheduled for Virginia and Hampton Roads actually are spent. Neither of these conditions should be taken as a given. Recent "one-time-only" tax cuts have hardly registered a blip on the screen of household consumption. Perhaps households will view these tax cuts as "permanent" and behave differently. By mid-summer 2009, only about 10 percent of all ESP monies actually had been expended nationally. The upshot is that the economic impact of the ESP may be smaller than anticipated and will only begin to be felt in the latter months of 2009 and in 2010.

Spending from the ESP will reach Hampton Roads from multiple sources, including direct Virginia allocations to the region's local governments, increased Commonwealth spending that affects the region (for example, increased unemployment compensation eligibility and road repair), federal tax reductions, federal spending and subsidies, and increased demand for goods produced in Hampton Roads and sold outside of the region.

Virginia's allocation from the ESP is $7.19 billion, to be spent over the period from 2009 to 2011. Taking into account money allocated back to Virginia's "rainy day" fund, based on a per capita estimate, Hampton Roads might receive about $1.4 billion in tax and spending benefits between now and 2011. Bear in mind, however, that at this stage in the allocation process, there is no precise way to know the final tally of Virginia ESP funds that eventually will be spent in Hampton Roads.

Even so, we can gain a sense of spending that might be targeted here. By mid-summer 2009, the Commonwealth had committed $318.8 million of ESP funds to Hampton Roads governmental units. The data in Table 3 reflect the reality that our current allocation is heavily concentrated upon spending for education: $275 million, or 86 percent of ESP funds, is targeted for education. It is likely that there will be more funds directly allocated to Hampton Roads as spending plans submitted by localities wend their way through the approval process.

TABLE 3

ECONOMIC STIMULUS FUNDS (AMERICAN RECOVERY AND RE-INVESTMENT ACT) ALLOCATED *DIRECTLY* TO HAMPTON ROADS AS OF JUNE 2009

Purpose	Allocation (Millions)
Education	
K-12	$166.2
Higher Education	$50
Special Education	$58.8
Highways and Budgets	$34
Other	$9.8
Total	$318.8

Source: Commonwealth of Virginia

How will these dollars affect economic life in Hampton Roads? That is, what impact upon employment and GRP (gross regional product) will these expenditures have? There is some economic controversy attached to the administration's ESP score card in this regard. Using the administration's methodology (Christina Romer and Jared Bernstein, "The Job Impact of the American Recovery and Reinvestment Plan," Obama Administration Transition Papers, Jan. 11, 2009), the Old Dominion University Economic Forecasting Project has developed ESP job and GRP estimates for Hampton Roads. Table 4 reveals these estimates, which predict that 8,537 jobs will be "saved" or created in 2009, and that $314 million will be added to the GRP. Comparable predictions for 2010 are 20,131 jobs and $988.5 million added to the GRP.

TABLE 4

ESTIMATED JOBS "SAVED" OR CREATED IN HAMPTON ROADS BY THE AMERICAN RECOVERY AND REINVESTMENT ACT AS OF THE FOURTH QUARTER OF EACH YEAR, AND ESTIMATED ADDITION TO GRP

Year	Estimated Jobs Saved or Created as of the 4th Qtr	Estimated Output Added to the GRP (Millions of $)
2009	8,537	$314.4
2010	20,131	$988.5

Source: Old Dominion University Economic Forecasting Project

Graph 22 estimates how the predicted "saved" or created jobs will be distributed across major segments of the regional economy by the end of 2010. Construction jobs (presumably reflecting building and road construction) will increase the most. Curiously, even though the lion's share of expenditures thus far has focused on education, the combined category of education and health services ranks only seventh among segments in terms of the predicted jobs impact.

There are several problems with the Romer-Bernstein methodology that stand behind these projections. First and foremost, the notion of a "saved" job ultimately is impossible to know or to measure. It is based upon a counterfactual examination of what would have happened except for ESP tax cuts and spending. An econometrician can generate a mathematical answer in such a situation. But, that answer will rely upon critical assumptions such as how much of their tax cuts households actually will spend and how quickly monies allocated for particular tasks such as construction will be spent. Recall the flaccid effect upon consumer spending of stimulus checks sent to American taxpayers in the past few years. Households chose to save these monies rather than spend them, and this confounded the forecasts of some. Pursuing this illustration, in 2009 and 2010, rising savings rates (review Graph 13) could stifle expenditures and wreak havoc on the optimistic Romer-Bernstein projections.

A second problem is that the models of Romer-Bernstein predicted that the national unemployment rate would top out at 8 percent if the ESP were passed. It did pass in February 2009, but in mid-summer 2009, the rate of unemployment already was 9.1 percent and at this writing appears headed for the 10 percent neighborhood. This suggests either that the duo's models are inaccurate, or that they are politically driven.

Those criticisms understood, we should offer some charitable words about the work of Romer-Bernstein. The current economic recession is the most complicated contraction since the Great Depression of the 1930s. This recession is complicated by the implosion of major financial institutions, massive uncertainty associated with new asset packages that few actually understand, and an anguishing housing crisis brought on by the failure or malfeasance of multiple institutions and trainloads of unwise behavior by both businesses and individuals. It is not easy to model such circumstances and to make projections that could be invalidated in a minute by the actions of uncontrollable factors such as the weather, the decisions of the mullahs of Iran, or the missile shots of the "Dear Leader" of North Korea. **A well-known aphorism among economic forecasters is that those who rely upon the crystal ball sooner or later are destined to eat glass. So also is it here. This is an unpredictable time and individuals such as Romer-Bernstein face huge obstacles as they attempt to model what is going on in the American economy. However, these uncertain circumstances also warn us that perhaps we should take the already outdated Romer-Bernstein projections *cum grano salis*.**

The Regional Banking Industry

Since the failure of Lehman Brothers in September 2008, news about the banking industry and the viability of banks has been prominently featured in the media. In April 2009, the Federal Reserve Bank completed a well-publicized "stress test" of the 19 largest banking organizations located in the United States. The objective of this test was similar to that of the Bank Holiday of 1933: restore confidence in the banking system by demonstrating that the examined banks are healthy. If the stress test demonstrated that banks were sufficiently capitalized, and consequently their prospects for survival likely under the most adverse economic circumstances, then confidence in the banking system would be restored.

Many of these 19 institutions take deposits in Hampton Roads, including SunTrust, Bank of America, Wachovia (now Wells Fargo) and BB&T. All of these banks were recipients of U.S. Treasury Troubled Asset Relief Program (TARP) money and as a result are better capitalized than they would have been without this program. The stress test provided much readily available information about the financial status and potential viability of these banks. However, what about other banks that take deposits in Hampton Roads? What about our local and regional banks? Are they well capitalized? Can they withstand a severe economic downturn?

BASEL 1 REQUIREMENTS AND THE FED'S STRESS TEST

Two useful statistics that provide us information about the soundness of a bank are the relative size of its Tier 1 risk capital and its non-performing loans as a percentage of its total assets. Let's examine each of these measures in greater detail.

The Tier 1 risk-based capital ratio measures a bank's ability to maintain its solvency, both today and in the future. It represents a bank's immediate ability to satisfy its depositors if they wish to withdraw funds and/or to survive and prosper if those it has lent money to cannot pay that money back. What is the appropriate Tier 1 risk-based capital ratio for a bank? A set of banking agreements known as the Basel Accords (1988 and subsequent years) established internationally recognized comparative standards and benchmarks for bank performance. The Basel 1 standard requires that banks hold capital equal to at least 4 percent of their risk-weighted assets for "minimum adequacy" to protect those banks against future credit and lending risks.[1] Nevertheless, in its spring 2009 bank stress test, the Federal Reserve set an even higher standard – 6 percent Tier 1 capital – that banks needed to meet.

Table 5 reports Tier 1 risk-based capital ratio data for 10 local and regional banks (but none of the 19 nationally oriented banks already subjected to a stress test by the Federal Reserve). RBC Centura, though a Canadian bank with an international presence, was included among the 10 local and regional banks because it was not given a stress test by the Fed. We also have supplied data on each bank's non-performing assets as a percentage of its total assets. Non-performing refers to a loan at least 30 days in arrears.

As of first-quarter 2009, all 10 of the banks we tested clearly exceeded both the Basel 1 and the Fed's Tier 1 risk-based capital standards. There is, however, considerable variation among the banks with respect to the percentages of their non-performing loans. Nevertheless, even if these banks were able to recover only 30 cents on the dollar of their non-performing loans and were forced to write those loans off their books today, all of them would pass the Federal Reserve's more stringent capital standard *as of the first quarter of 2009*.

1 The asset weights (to reflect risk) are: 0 percent for cash, central bank and government debt and any OECD government debt; 0 percent, 10 percent, 20 percent or 50 percent for public-sector debt; 20 percent for development bank debt, OECD bank debt, OECD securities firm debt, non-OECD bank debt (under one-year maturity) and non-OECD public-sector debt, cash in collection; 50 percent for residential mortgages; and 100 percent for private-sector debt, non-OECD bank debt (maturity over a year), real estate, plant and equipment, and capital instruments issued at other banks. A bank must maintain capital equal to at least 4 percent of its risk-weighted assets. For example, if a bank has risk-weighted assets of $100 million, it must maintain capital of at least $4 million.

TABLE 5

FIRST QUARTER 2009 BANK RISK-BASED EQUITY CAPITAL AND NON-PERFORMING LOANS FOR REGIONAL BANKS IN HAMPTON ROADS

	Tier 1 Risk-Based Capital Ratio (Regulatory)	Non-Performing Loans* as a % of Assets
Monarch Bank	10.69%	1.29%
Towne Bank	12.15%	0.34%
Old Point National	11.62%	1.41%
RBC Centura**	9.63%	3.32%
Heritage Bank	12.12%	0.01%
Fulton Bank	8.70%	1.36%
Bank of the Commonwealth	11.63%	5.69%
Bank of Hampton Roads	13.26%	1.61%
Farmers Bank	13.01%	1.85%
Virginia Company Bank	9.06%	0.91%

Sources: Federal Financial Institution Examination Council; the Federal Reserve Board; FRY-9C reports; and the Old Dominion University Economic Forecasting Project

*Loans past due more than 90 days and still accruing plus all non-accruing loans, leases and other assets.

** RBC Centura is not a Hampton Roads-based bank. However, it has numerous branches throughout the region. It was not one of the 19 banks the Federal Reserve publicly subjected to stress tests.

WHAT IF? SCENARIOS

The 10 Hampton Roads banks in Table 5 pass the Fed's 6 percent risk capital benchmark. Even so, what if the recession worsens and unemployment in Hampton Roads climbs to 8 percent or 9 percent in 2010 from its current level of 6.5 percent (April 2009)? Such an economic scenario would place strains on our banks and likely would cause more delinquencies and defaults in the loan portfolios of the region's banks. This "what if" is the motive behind stress testing banks. Let's consider some of these possibilities.

Based on the Federal Reserve's stress test methodology ("The Supervisory Capital Assessment Program: Design and Implementation," Board of Governors, Federal Reserve Bank, April 24, 2009), the State of the Region report has designed and conducted a more demanding stress test of banks with home offices in Hampton Roads for the period covering 2009 and 2010. The home office banks included in the test sample are Bank of Hampton Roads, Bank of the Commonwealth, Towne Bank, Heritage Bank, Monarch Bank, Old Point Bank, Virginia Company Bank and Farmers Bank. RBC Centura (with its U.S. home office in North Carolina) and Fulton Bank (with its home office in Pennsylvania) were not included in this stress test sample because they carry large loan portfolios outside of Hampton Roads.

Table 6 presents an alternative economic scenario for Hampton Roads that is much less attractive than the scenario posed by the Federal Reserve in its stress test. For example, if the unemployment rate in 2010 is 10.3 percent rather than 8.8 percent, then how will this affect our local and regional banks? The different scenarios create different loan loss rates, which negatively affect a bank's Tier 1 risk-equity capital. A range of projected loan loss rates was set by the Fed for the baseline and more adverse scenarios.

By the fourth quarter of 2010, the stress test results for Hampton Roads, displayed in Graph 23, found cumulative loan losses of $376 million for all eight of the banks in the sample when the simulation was conducted under the conditions of the baseline economic scenario described above and in Table 6. The loan losses in this scenario are heavily concentrated in commercial real estate loans. CRE loans account for two-thirds of the projected total losses in the baseline scenario.

TABLE 6

BANK STRESS TESTS: BASELINE AND MORE ADVERSE ECONOMIC SCENARIOS

Real GDP	2009	2010
Average Baseline	-2.0%	2.1%
More Adverse	-3.3	0.5
Civilian Unemployment Rate		
Average Baseline	8.4%	8.8%
More Adverse	8.9	10.3
House Prices		
Baseline	-14%	-4%
More Adverse	-22	-7

Source: "The Supervisory Capital Assessment Program: Design and Implementation," Board of Governors, Federal Reserve Bank, April 24, 2009

When simulating the more adverse scenario, cumulative loan losses through the fourth quarter of 2010 rise to $666 million, a 77 percent increase over the projected baseline losses. As with the baseline losses, the more adverse scenario losses are heavily concentrated in CREs and again accounted for nearly two-thirds of the projected total.

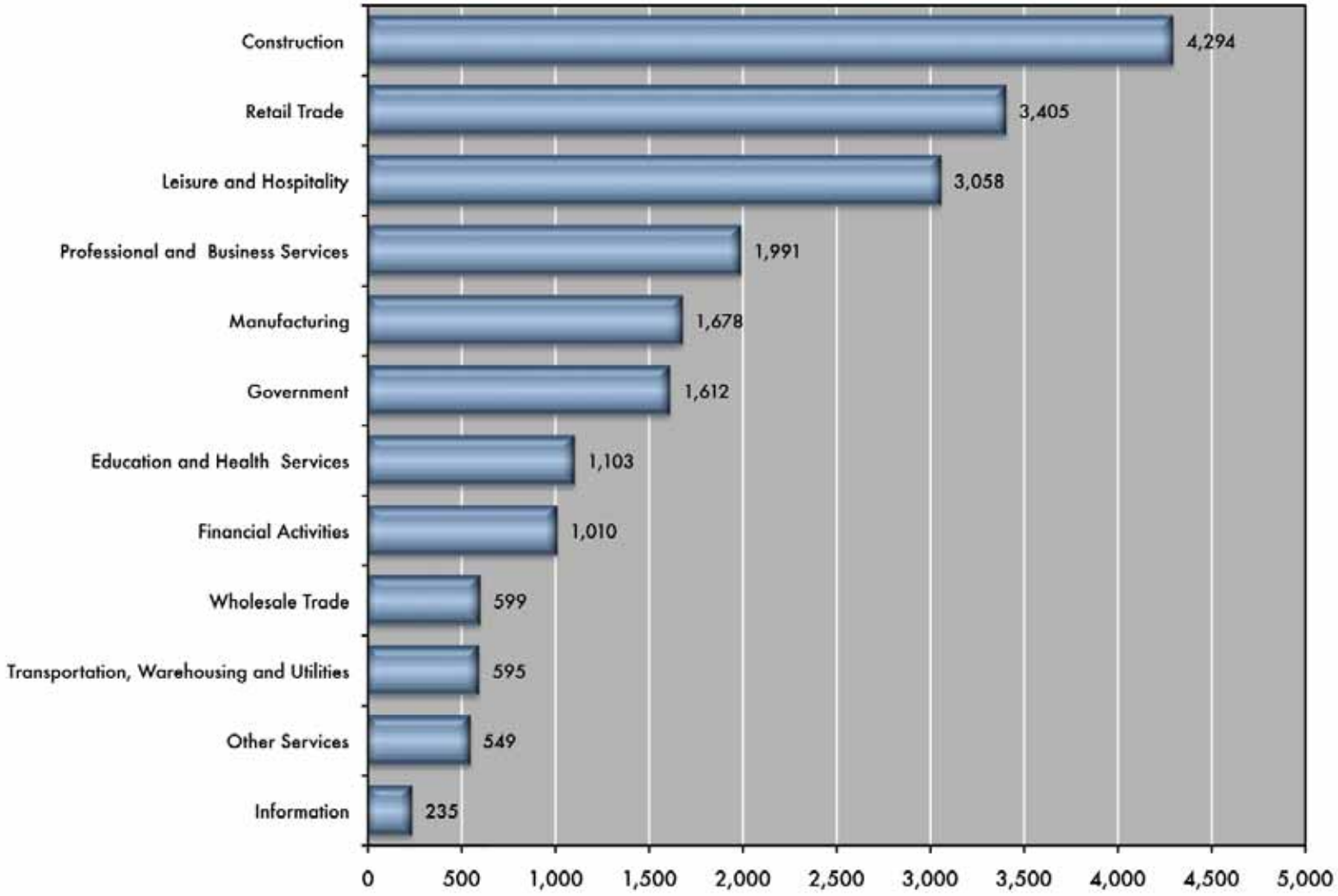
Tier 1 risk-based capital ratio stress test results are presented in Graph 24. Each ratio represents an average of all eight banks in the sample. For example, based on Federal Financial Institution Examination Council (FFIEC) data, in the fourth quarter of 2008 the average actual Tier 1 capital ratio for the eight banks was 11.9 percent. By the first quarter of 2009 the ratio had increased to 12 percent, double the Federal Reserve's stress test standard.

For the baseline case, which projects loan losses through the fourth quarter of 2010, despite loan losses of $376 million, Hampton Roads-based banks as a group did well with respect to the average bank's Tier 1 risk-based capital ratio. The average for the sample of the eight banks, 8.9 percent, was well above that of the Federal Reserve's standard of 6 percent. Only one of the eight banks fell below the standard, and it would require only a modest infusion of equity capital, estimated at $1.2 million, to bring it up to the Fed's standard.

Loan losses of $666 million through the fourth quarter of 2010, generated by the economic conditions of the more adverse scenario, yield much different results. The Tier 1 capital ratio of the average bank in the sample group falls from the baseline scenario to 5.3 percent, well above the "minimum adequacy" requirement of Basel I but below that of the Federal Reserve's standard. Furthermore, six of the eight banks fall below the Federal Reserve standard in the more adverse scenario. To get these banks back above the standard would require an estimated capital infusion of $21.57 million.

GRAPH 22

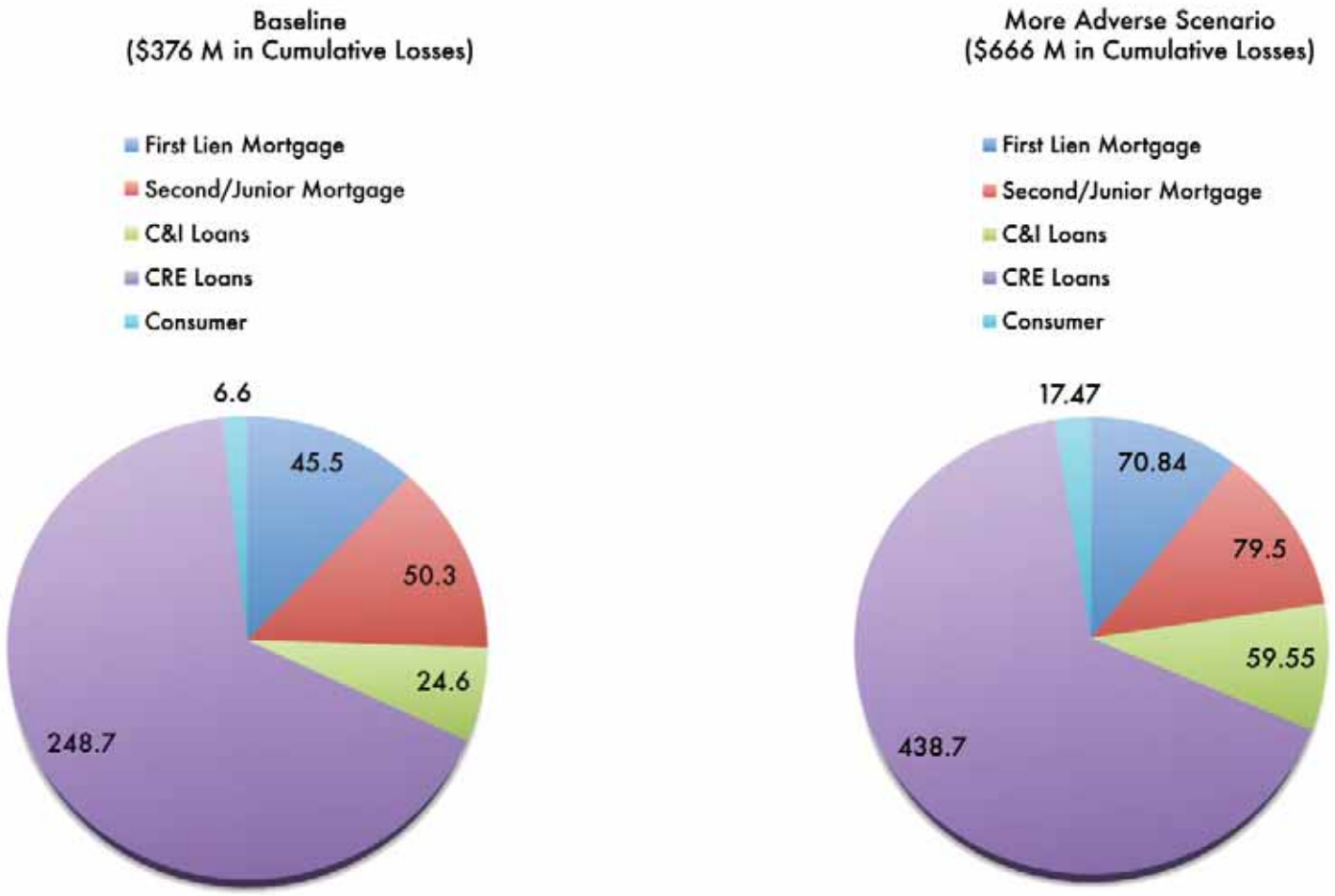
ESTIMATED EMPLOYMENT IMPACT BY INDUSTRY WITHIN HAMPTON ROADS OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ECONOMIC STIMULUS) THROUGH THE 4TH QUARTER OF 2010



Source: Old Dominion University Economic Forecasting Project
(Estimates are based on the methodology presented by Christina Romer and Jared Bernstein in "The Job Impact of the American Recovery and Reinvestment Plan," Obama Administration Transition Papers, Jan. 11, 2009.)

GRAPH 23

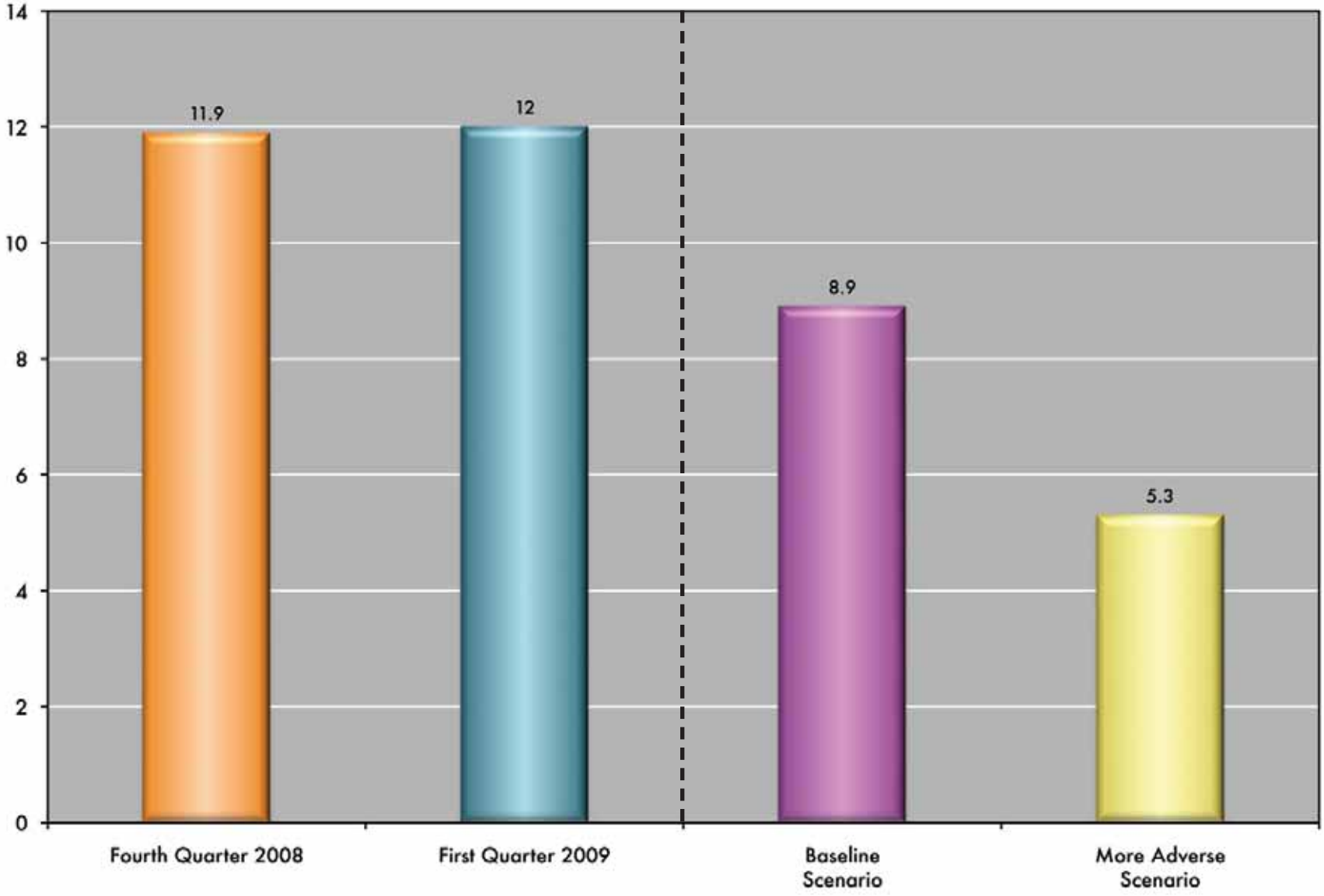
STRESS TEST RESULTS: HAMPTON ROADS' REGIONAL BANKS ESTIMATED CUMULATIVE LOAN LOSSES BY ECONOMIC SCENARIO AND TYPE OF LOAN THROUGH 4TH QUARTER 2010 (MILLIONS OF DOLLARS)



Source: Old Dominion University Economic Forecasting Project

GRAPH 24

STRESS TEST RESULTS: ESTIMATED AVERAGE TIER 1 RISK-BASED CAPITAL RATIO F0R HAMPTON ROADS' REGIONAL BANKS UNDER VARIOUS SCENARIOS THROUGH 4TH QUARTER 2010



Source: Old Dominion University Economic Forecasting Project

Providing Some Context

These are historic times, economically speaking. Unprecedented events, particularly in financial markets, have whizzed by our eyes in a blur since the middle of 2008. Like a "100-year" hurricane that we expect to see only once per century, the financial havoc of 2008 and 2009 was thought by most experts to be highly unlikely (at least, until it actually occurred!). Indeed, sophisticated quantitative risk evaluation models suggested that events such as the collapse of Lehman Brothers and AIG, while not unthinkable, were certainly highly improbable.

The problem was these models ingested faulty data that generated rose-colored predictions. Economic modelers, in fact, virtually all of the professionals in the financial system, did not sufficiently understand many of the new financial vehicles that had been developed. Some of these contained assets combinations ("tranches") that disguised the presence of risky subprime mortgages and other potentially perilous asset blends. Hence, they relied upon data and risk estimates that were erroneous and subsequently underpriced those risks. Underpriced risks encouraged individuals, firms and the government to expose themselves to hazards that ordinarily they would eschew.

We have seen the results of these miscalculations, both nationally and in Hampton Roads. However, for us, there have been two important differences. First, regional economic conditions continue to lag national events. An important reason for this is that Hampton Roads contains fewer of the technology-intensive and manufacturing-heavy industries that usually lead national economic declines and expansions. Second, Department of Defense expenditures, which now account for more than 40 percent of our regional economy, have increased over the past year in Hampton Roads and therefore have diminished the impact of the national recession on us. Consequently, while unemployment rates have risen and housing prices have declined, these changes have been much more modest than those nationally.

Hampton Roads will recover economically when the country as a whole recovers. In the last analysis, our economic fate is largely dependent upon events and decisions that take place elsewhere. Because our residential housing markets are highly sensitive to overall economic conditions and regional employment numbers, we should not expect significant recovery in housing markets within Hampton Roads until we begin to see national economic recovery. Even then, the very high number of unsold houses that currently clogs our markets will cause that recovery to be gradual.

The Hotel Industry

THE HOTEL INDUSTRY IN HAMPTON ROADS

A hotel isn't like a home, but it's better than being a house guest.

– William Feather (American business author, d. 1981)

Real estate professionals often divide the commercial real estate market into five sub-markets: (1) Multifamily Housing, (2) Office Space, (3) Industrial Space, (4) Retail Space and (5) Hotels and Casinos. In this chapter, we focus on the hotel market, which is in a state of flux because of economic recession.

There are two primary ways to analyze the health of the hotel industry. The first is to undertake a macro-level examination of revenue trends for the industry as a whole. Graph 1 does so by displaying the historical trend of total hotel revenue in Hampton Roads from 1988 to 2008. **One can see that regional hotel revenue more than doubled, from $355 million in 1988 to $718 million in 2007, a healthy upward surge of 102 percent. However, hotel revenue declined in 2008 to $680 million (-5.3 percent), due to increased gasoline prices observed during the first eight months of 2008, slightly higher average room rates and the economic recession that took firm hold in fall 2008.**

The hotel industry in Hampton Roads has been getting larger, at least in terms of the number of rooms available for rental. Between 1988 and 2007, the number of hotel rooms in our region increased by 25.4 percent (see Graph 2). Further, in 2008, the number of rooms grew by another 1,000 to a total of 38,000.

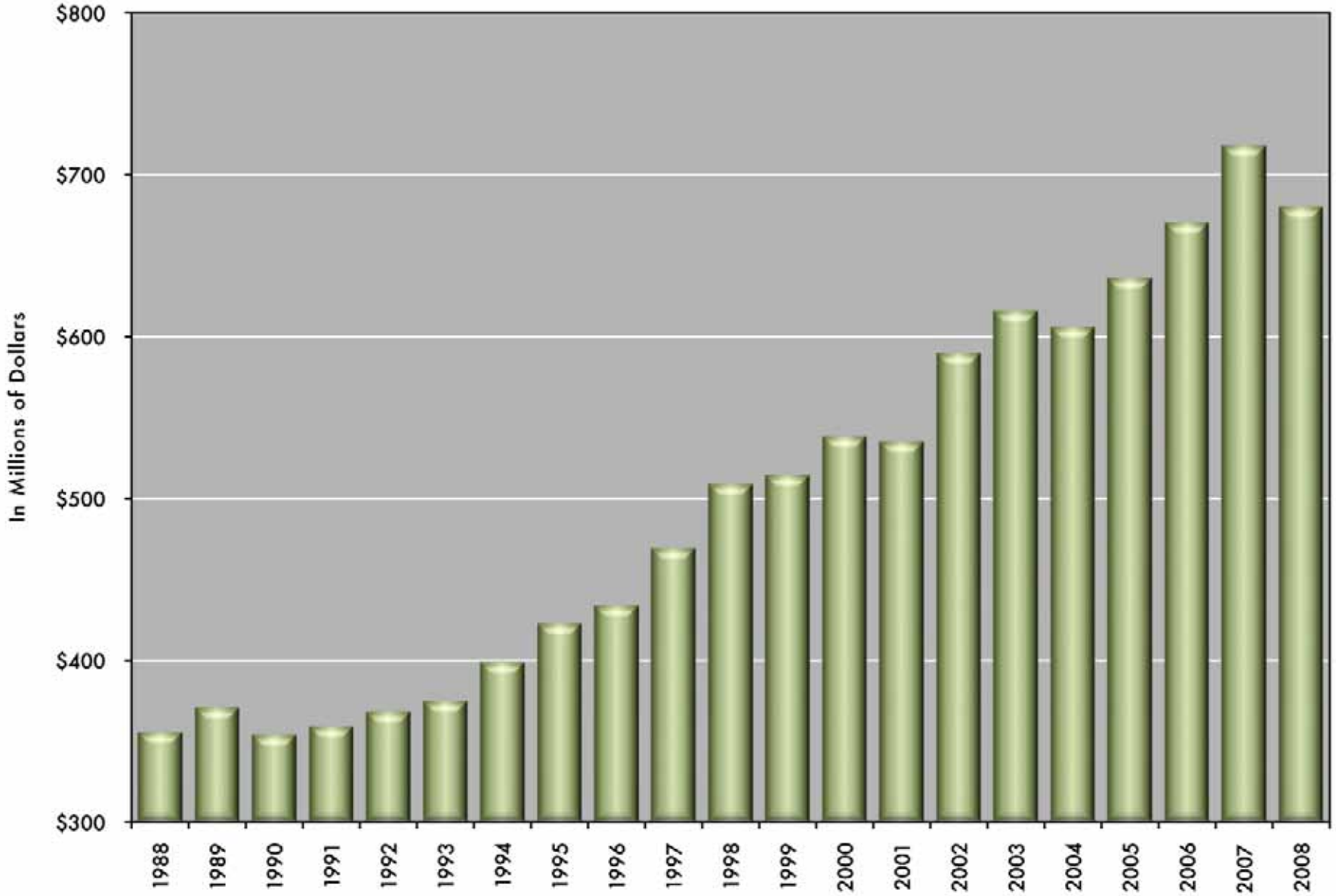
The second major way to analyze the economics of the hotel industry is to take a micro-level approach and focus upon individual hotels. This approach usually looks at measures of single-hotel performance, such as a hotel's room occupancy rate, the average daily revenue it receives per occupancy (ADR) and the revenue it generates per available room (REVPAR).

A hotel's occupancy rate is straightforward – the ratio of room nights rented to the number of rentable room nights it has available. ADR is the average room rate collected by a hotel. REVPAR combines these two measures and is the ratio of hotel revenue received during a specified period of time to the total number of room nights available to rent during the same period. It is the preferred measure of the economic performance of a hotel.

If two comparable hotels have the same REVPAR, then the hotel with a lower occupancy rate usually is viewed as having a better performance. There are two reasons for this. First, the operating costs of a hotel will be less for the hotel with the lower occupancy rate. Such a hotel doesn't have to incur as many costs in order to attain a given REVPAR. Second, many hoteliers believe it is easier to drive up their revenue by paying for additional advertising and marketing that results in greater occupancy than it is for them to augment revenue by raising prices. If competitors do not increase their room rates at the same time, then a single hotel that increases its room rates likely will encounter problems.

GRAPH 1

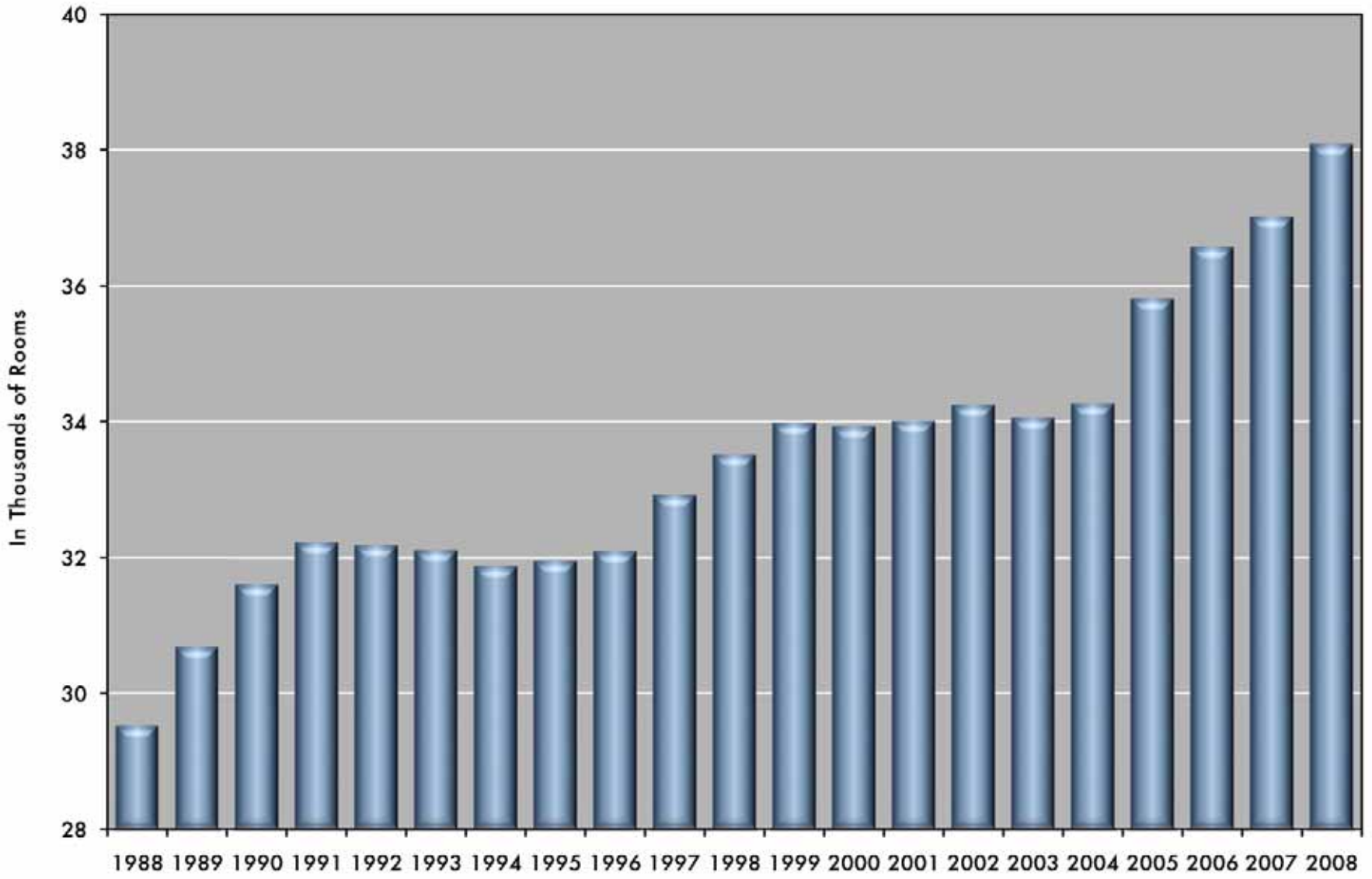
TOTAL HOTEL REVENUE IN HAMPTON ROADS, 1988 TO 2008



Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

GRAPH 2

NUMBER OF HOTEL ROOMS IN HAMPTON ROADS, 1988 TO 2008



Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

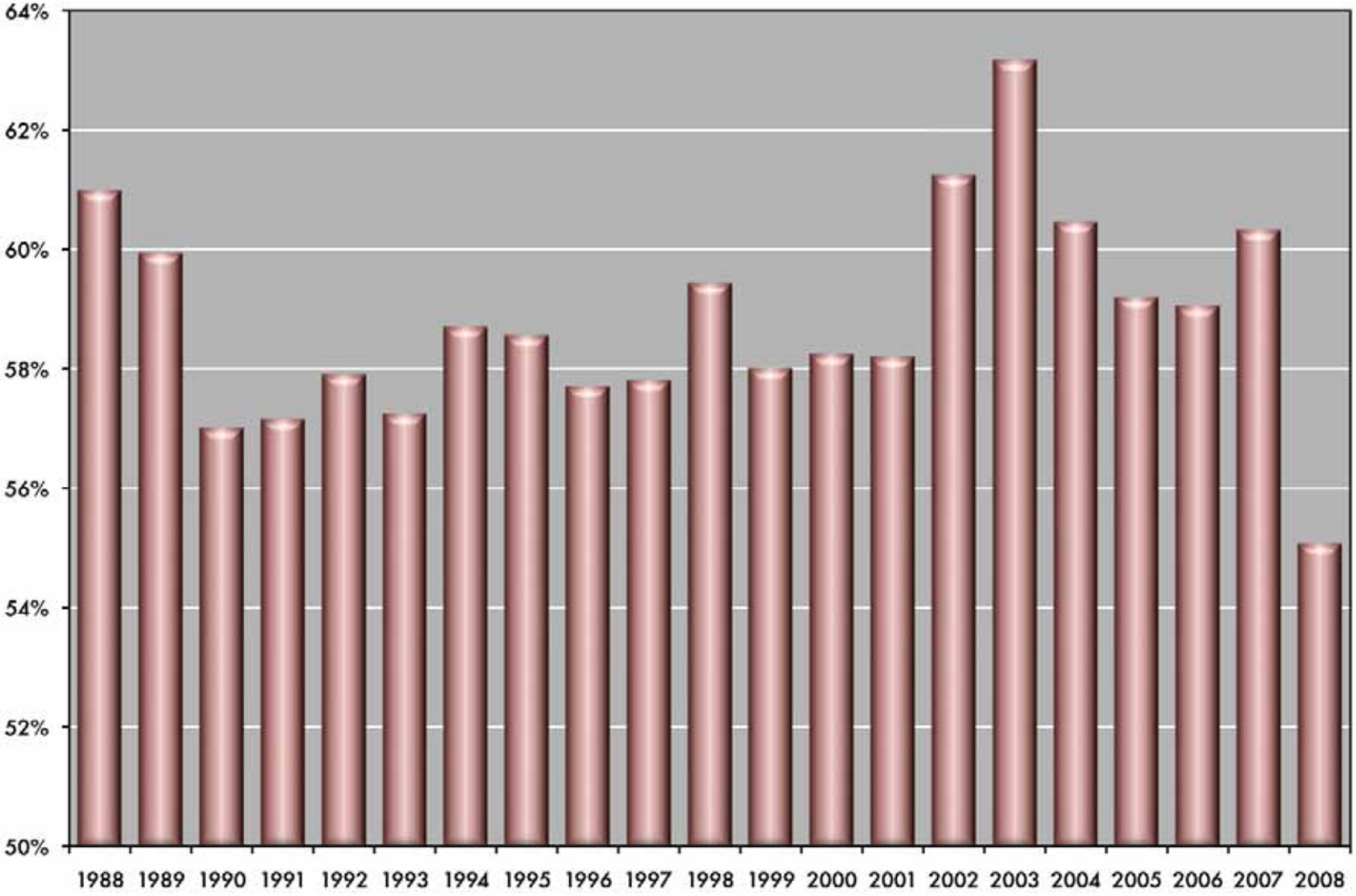
Graphs 3 through 5 record the occupancy rates, ADR and REVPAR for hotels in Hampton Roads between 1988 and 2008. **Hotel occupancy rates (Graph 3) have fluctuated between 55 percent and 63 percent over the past two decades, with the average occupancy rate being 59 percent. Nevertheless, in 2008, occupancy rates fell to a much lower level, 55.1 percent.** The villains appear to be higher gasoline prices, slightly higher average room rates, deteriorating economic conditions and the addition of 1,000 hotel rooms in the region.

Graphs 4 and 5, respectively, show ADR and REVPAR between 1988 and 2008. Note that ADR (average room revenue) increased in all but three years during that time, and even increased slightly in 2008. As Graph 4 illustrates, ADR increased 64 percent during this two-decade time period. However, REVPAR (revenue earned per available room) has been much more variable and declined in about one-third of those years. The REVPAR for the typical hotel in the region took a steep fall in 2008, primarily due to the decline in occupancy that we noted above (see Graph 5).

The Old Dominion University Forecasting Team projects a decline of 2.2 percent in total hotel revenue in Hampton Roads in 2009. This will be compounded by the fact that yet an additional 877 hotel rooms could potentially open in Hampton Roads in 2009. Needless to say, this does not bode well for the profitability of the hotel industry in the region because a smaller revenue pie will be divided among a larger number of rooms and operators. We expect REVPAR to decline further, to about $47 in 2009, a level not seen since 2002.

GRAPH 3

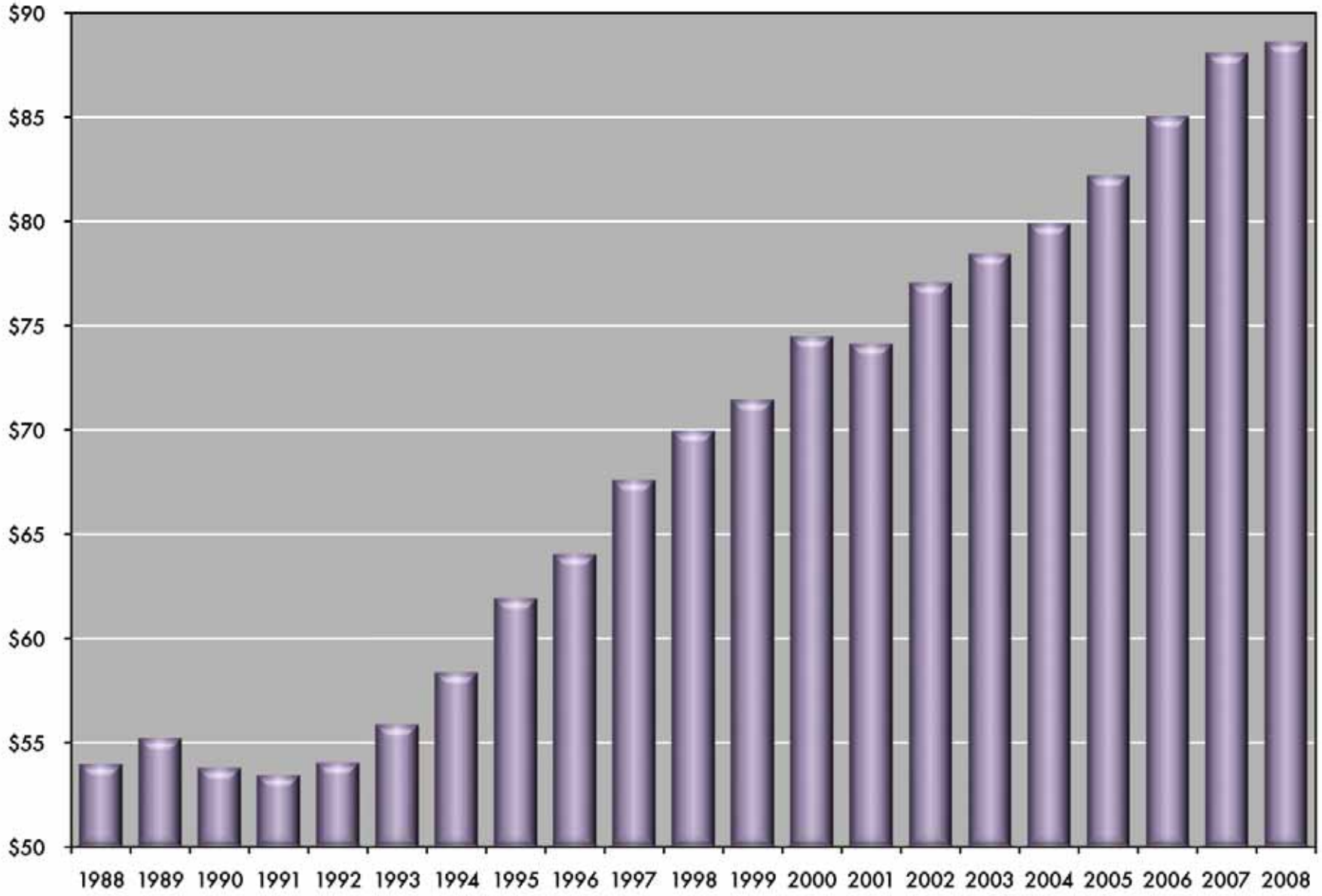
OCCUPANCY RATES OF HOTELS IN HAMPTON ROADS, 1988 TO 2008



Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

GRAPH 4

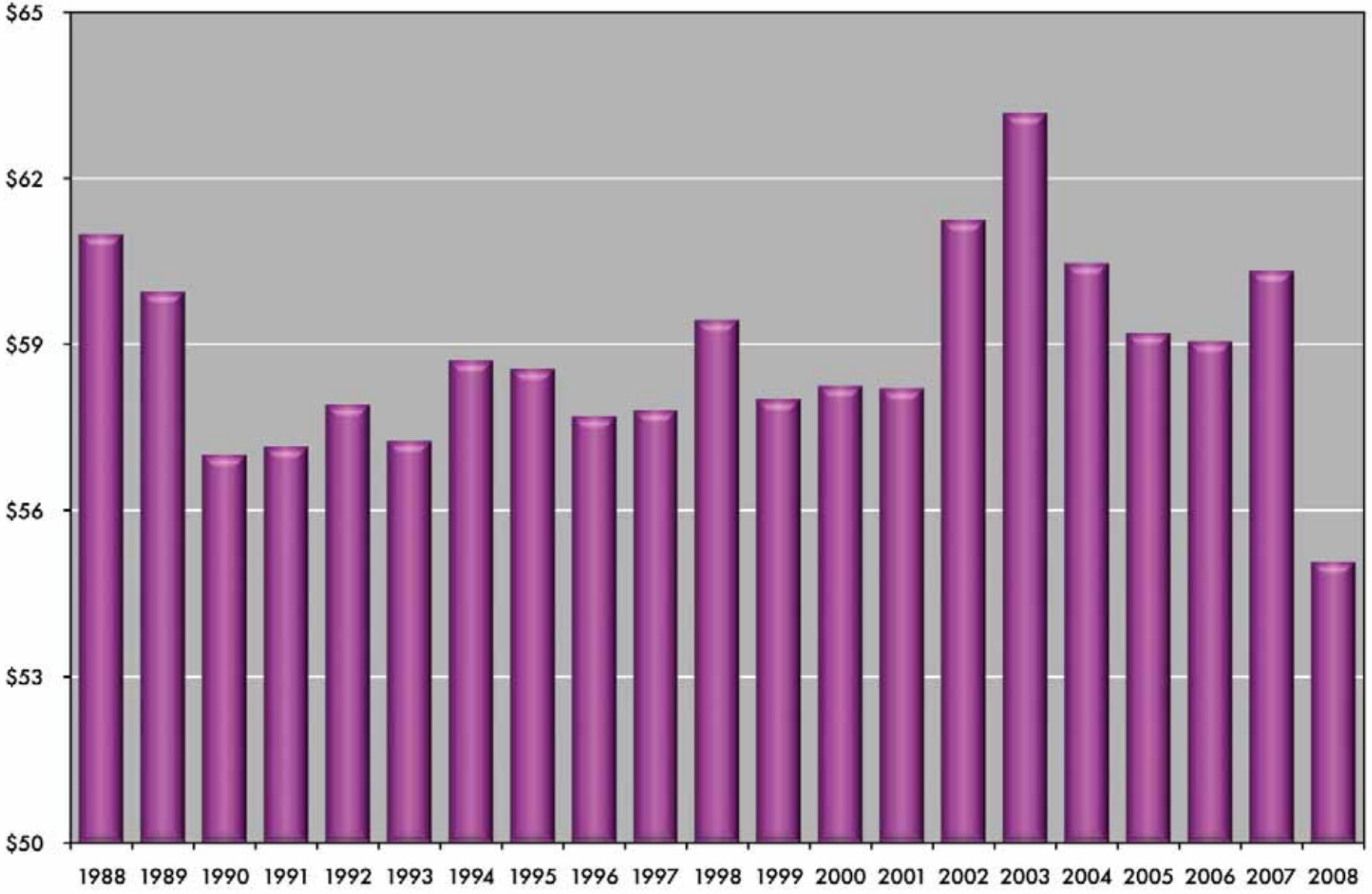
AVERAGE DAILY RATE OF HOTELS IN HAMPTON ROADS, 1988 TO 2008



Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

GRAPH 5

REVENUE PER AVALIABLE ROOM FOR HOTELS IN HAMPTON ROADS, 1988 TO 2008



Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

Comparing Hampton Roads to Other Metropolitan Areas

Let's accept as a given that the hotel industry in Hampton Roads currently is facing significant economic challenges. How are we doing relative to comparable metropolitan areas? Tables 1 and 2 provide information in that regard for the years 1988 to 2007, and 2007 to 2008, respectively.

It is evident from Table 1 that the hotel industry in Hampton Roads is much larger than any of those in the other five Atlantic Coast metropolitan areas drawn for comparison. In fact, the hotel industry in our region is 52 percent greater than its next largest competitor, Jacksonville, in terms of total annual hotel revenue earned. From 1988 through 2007, our average annual hotel revenues totaled $491.8 million, more than double those generated in Richmond.

During this approximate two-decade time period, Hampton Roads offered, on average, 33,220 rooms, 42 percent more than the next largest market in this regard (Charlotte). Nevertheless, we also can see that the growth in total hotel revenues easily was the smallest in Hampton Roads compared to the other five regions. Between 1988 and 2007, hotel revenues in Hampton Roads grew by 102 percent, while they increased 312 percent in Charleston and more than 250 percent in both Charlotte and Raleigh-Durham-Chapel Hill.

One also can see in Table 1 that the Charlotte metropolitan area led the pack insofar as adding additional hotel rooms was concerned. No doubt this spurt has been tempered by the serious economic problems the city's major banks have encountered over the past year.

In addition, the average occupancy rate of hotel rooms in Hampton Roads was lower than the rates of all five of the other metropolitan regions (59 percent compared to Charleston's leading 67 percent).

REVPAR, an important key to hotel industry health, also lagged in Hampton Roads and grew only 61.5 percent. The highest growth (139.5 percent) occurred in the Charleston market.

TABLE 1

COMPARING AVERAGE HOTEL INDUSTRY PERFORMANCE: HAMPTON ROADS AND OTHER METROPOLITAN AREAS, 1988-2007

Measure	Hampton Roads, VA	Jacksonville, FL	Charlotte, NC	Raleigh, NC	Charleston, SC	Richmond, VA
Hotel Industry Revenue (Average)	$491.8 M	$323.9 M	$311.1 M	$282.2 M	$246.2 M	$208.3 M
Hotel Rooms (Average)	33,220	19,939	23,466	18,848	12,678	15,821
Change in Hotel Revenue	102.0%	222.0%	267.8%	260.0%	311.5%	163.1%
Change in Hotel Rooms	25.4%	50.3%	95.0%	72.4%	72.3%	47.1%
REVPAR (Average)	$40.2	$43.1	$35.3	$39.9	$51.2	$35.3
Change in REVPAR	61.5%	114.8%	89.1%	109.4%	139.5%	79.3%
Occupancy Rate (Average)	59.0%	63.6%	59.2%	64.0%	67.0%	60.6%

Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

Of course, economic conditions have changed substantially in the past two years. Among other developments, housing markets deteriorated substantially, gasoline prices spiked during summer 2008, and the economy plunged into a recession that now has been dated as beginning in December 2007. All of these events adversely affected the hotel industry in Hampton Roads and Table 2 shows how. Regional hotel revenue declined by 5.3 percent in 2008, our occupancy rate fell by 8.7 percent and REVPAR decreased by 8.1 percent.

All in all, 2008 was not a good year for the hotel industry in Hampton Roads. Further, the hotel industry here fared worse than in the other five Atlantic Coast metropolitan areas in our comparisons. In Table 2, one can also see that total hotel revenue, REVPAR and occupancy all declined more in Hampton Roads in 2008 than in any of the other five metro areas.

That generalization, however, hides some interesting differences during 2008 and does not speak to 2009, which has been agreeably different. Let's see how.

The highly publicized crisis in the banking system accelerated dramatically in the public consciousness in September 2008. It's useful, therefore, to compare what happened to the hotel industry prior to Sept. 1 to what occurred after that date. And, to put this in perspective, let's compare those time periods in 2008 to the identical time periods of 2007.

Table 3 reveals that in contrast to Hampton Roads, total hotel revenue actually increased in three of the other five markets, while REVPAR increased in one of these markets. Occupancy rates fell noticeably in all five of the other markets. Thus, for the first eight months of 2008, the hotel industry deteriorated more rapidly in Hampton Roads than in these other regions.

Table 4 undertakes the same type of analysis, but focuses on the Sept. 1 to Dec. 31 time period. Once again, 2008 is compared to 2007 in Hampton Roads and the other five metropolitan areas. One can see that the differences between Hampton Roads and the other regions moderated substantially, and in one case (occupancy rates), Hampton Roads no longer was last.

Things began to change, however, in 2009. During the first three months of 2009, Hampton Roads experienced the smallest declines in hotel revenue, REVPAR and occupancy rates of any of the regions in our comparison. By way of illustration, REVPAR declined 7.6 percent in Hampton Roads, but between 17.1 percent and 21.7 percent in the other five regions (see Table 5). It would be a misnomer to label this a recovery for the Hampton Roads hotel industry since all of our region's critical numbers are negative. Even so, it is correct to observe that hotels in Hampton Roads now are weathering this economic contraction much better than the hotels in comparable metropolitan areas along the Atlantic Coast. Of the other five regions, Charlotte appears to be suffering the most. This is not surprising, given the demise of Wachovia Bank and the teetering financial circumstances of Bank of America, both of which are headquartered in Charlotte.

We observed at the beginning of this report that Hampton Roads has been less severely impacted by this economic recession than most other metropolitan areas in the United States. Indeed, a June 2009 study issued by the Brookings Institution Metropolitan Study Program reported that, economically speaking, Hampton Roads had fared 16th best among the 100 largest metropolitan areas in the country up to that point. It is apparent that the significant expenditures the Department of Defense makes within Hampton Roads have cushioned our economic descent. **In years past, some critics have faulted Hampton Roads for a lack of diversification in its economic base. More than 40 percent of our region's economy is related to defense spending. In the current economic milieu, however, this has turned out to be an important advantage. We are not as dependent upon private-sector business travel as other metropolitan areas, and this has diminished the economic damage done to our region's hotels and motels.**

TABLE 2

CHANGES IN REVENUE AND OCCUPANCY, 2007 TO 2008

Measure	Hampton Roads, VA	Jacksonville, FL	Charlotte, NC	Raleigh, NC	Charleston, SC	Richmond, VA
Change in Hotel Revenue	-5.3%	-3.0%	-2.6%	0.1%	-0.7%	-1.9%
Change in REVPAR	-8.1%	-7.8%	-3.5%	-2.5%	-4.9%	-5.7%
Change in Occupancy Rate	-8.7%	-7.5%	-8.1%	-5.7%	-7.7%	-8.5%

Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

TABLE 3

CHANGES IN REVENUE AND OCCUPANCY, JANUARY-AUGUST 2007 VERSUS JANUARY-AUGUST 2008

Measure	Hampton Roads, VA	Jacksonville, FL	Charlotte, NC	Raleigh, NC	Charleston, SC	Richmond, VA
Change in Hotel Revenue	-3.3%	-1.2%	0.9%	2.2%	3.5%	-0.3%
Change in REVPAR	-5.8%	-5.8%	0.2%	-0.3%	-1.2%	-3.1%
Change in Occupancy Rate	-7.2%	-6.7%	-6.2%	-4.5%	-5.8%	-7.0%

Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

TABLE 4

CHANGES IN REVENUE AND OCCUPANCY, SEPTEMBER-DECEMBER 2007 VERSUS SEPTEMBER-DECEMBER 2008

Measure	Hampton Roads, VA	Jacksonville, FL	Charlotte, NC	Raleigh, NC	Charleston, SC	Richmond, VA
Change in Hotel Revenue	-10.9%	-7.4%	-10.0%	-4.1%	-10.4%	-5.2%
Change in REVPAR	-14.4%	-12.5%	-11.2%	-7.2%	-13.5%	-10.9%
Change in Occupancy Rate	-12.2%	-9.1%	-12.4%	-8.2%	-12.2%	-11.5%

Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

TABLE 5

CHANGES IN REVENUE AND OCCUPANCY, JANUARY-MARCH 2008 VERSUS JANUARY-MARCH 2009

Measure	Hampton Roads, VA	Jacksonville, FL	Charlotte, NC	Raleigh, NC	Charleston, SC	Richmond, VA
Change in Hotel Revenue	-4.5%	-17.4%	-18.0%	-14.1%	-16.2%	-11.7%
Change in REVPAR	-7.6%	-21.7%	-20.3%	-17.1%	-17.5%	-18.6%
Change in Occupancy Rate	-4.5%	-13.9%	-16.8%	-12.4%	-10.8%	-16.5%

Sources: Smith Travel Research Trend Report, May 6, 2009, and the Old Dominion University Economic Forecasting Project

Summing It Up

These are difficult times for the hotel industry in Hampton Roads, though not quite as difficult as those being experienced by hotel owners in at least five other comparable metropolitan areas along the Atlantic Coast. All of the most important variables relating to hotel economics (total hotel revenue, average rates, revenue per room and occupancy rates) have been deteriorating. Despite these discouraging developments, an additional 1,000 hotel rooms were added in 2008 in Hampton Roads and another 877 hotel rooms currently are under construction. Hence, the regional hotel industry appears to be expanding its capacity at a time when the demand for its rooms has been declining.

Should these conditions continue, it is likely that marginal hotel operations will be forced out of the Hampton Roads market. Marginal here should be understood to mean unprofitable and does not connote expensive versus inexpensive hotels, or nationally branded hotels versus those that are not. A veteran real estate broker in Hampton Roads told us, "There is excess capacity now in hotel markets in Hampton Roads and this will drive the least capable operators out." This is a harsh conclusion, but one that actually could hasten recovery in the industry, if it comes to pass.

The “Silver Tsunami”

THE "SILVER TSUNAMI": RESIDENTIAL LIFE AND CARE FOR SENIORS IN HAMPTON ROADS

In 2011, the oldest members of the baby boom generation will turn 65. The upcoming "silver tsunami" will transform the demographics of American society, stretching the resources of our country's health care and Social Security systems as never before. Virginia's senior population is expected to double between 2007 and 2030; the number of Virginians 85 and older will increase by 114 percent (see Table 1). Ongoing medical advances against cancer, heart disease and other once-fatal afflictions will extend the life spans of both the boomers and their parents – while simultaneously increasing the likelihood that they will at some point require long-term care.

Long-term care has been defined as "the services and supports that people need when their ability to care for themselves has been reduced by a chronic illness or disability."[1] Long-term care may include assistance or supervision with "activities of daily living" (ADLs) such as bathing, dressing, eating or toileting, or with "instrumental activities of daily living" (IADLs) such as shopping, cleaning, driving or managing money. People of all ages can require long-term care, but seniors are the primary users. A 2005 study in the health care journal Inquiry indicated that more than two-thirds (69 percent) of people over 65 eventually would need some kind of long-term care, with an average duration of about three years.

The costs of long-term care are substantial. According to the MetLife Mature Market Institute's 2008 survey, the average annual base rate at an assisted living facility is $36,372. Nursing home private-pay rates are steeper still – $77,380 for private and $69,715 for semiprivate accommodations (see Table 2). These costs can quickly eradicate the savings of otherwise financially comfortable seniors. Thus, the greatest share of all long-term care spending ($97 billion in 2007) has fallen to Medicaid, the payer of last resort. The informal costs of long-term care are larger still. AARP researchers estimate that the total economic value of (unpaid) family care-giving reached $375 billion in 2007, easily surpassing all Medicaid spending for institutional and home- and community-based long-term care service.

Long-term care is an issue that affects us all, both as taxpayers and potential beneficiaries of its services. Yet, public awareness about the functioning and costs of long-term care is regrettably low. Media coverage too often swings between extremes: on one hand, hair-raising exposés of neglect or abuse in deficient institutions; on the other, upbeat features about active seniors taking up arts and crafts or ballroom dancing. This chapter strives for a more comprehensive assessment of long-term care in Hampton Roads, focusing on the quality and accessibility of the region's nursing homes and assisted living facilities.

The Continuum of Care

Social workers, health care providers and other advocates for the disabled often refer to long-term care as a "continuum." In part, this refers to the broad spectrum of needs that can require some caregiving. In Virginia, all recipients of publicly funded long-term care services are first evaluated by a diagnostic tool

[1] Kaiser Commission on Medicaid and the Uninsured, "Long-Term Care: Understanding Medicaid's Role for the Elderly and Disabled" (2005), available at: http://www.kff.org/medicaid/longtermcare.cfm

called the Uniform Assessment Instrument. The UAI considers social and economic resources, mental and physical health, as well as proficiency in the activities and instrumental activities of daily living (ADLs and IADLs). The UAI can provide a basis for an individualized service plan that may include one or more sources of external support. Hampton Roads' two Area Agencies on Aging, the Peninsula Agency on Aging (PAA) and Senior Services of Southeastern Virginia (SSSEVA), administer the UAI without cost. Together these agencies provided or helped to coordinate services for more than 28,000 Hampton Roads seniors in the 2007-08 fiscal year.

The "continuum of care" likewise refers to the broad spectrum of supports and services that are available to assist disabled persons. These include nursing homes and assisted living facilities, but also a wide variety of home- and community-based services (HCBS) such as personal health care, companion care, home-delivered meals, assisted transportation and adult day care centers. Whereas in decades past the notion of long-term care may have been nearly synonymous with nursing home residence, today an array of resources exists that provides different levels of assistance entirely in a home- or community-based setting. Surveys consistently demonstrate that the overwhelming majority of seniors would prefer to "age in place," remaining in their own homes as long as possible. The work of the Area Agencies on Aging in Hampton Roads and elsewhere is grounded upon this very principle – "to help seniors live independently and with dignity," as stated succinctly in SSSEVA's 2008 annual report.

Residential facilities remain, however, among the most established and numerically influential providers of long-term care. Despite a growing movement among federal and state policymakers to balance long-term care spending more equitably between institutional services and HCBS, 73 percent of all Medicaid long-term care spending for older people and adults with physical disabilities is currently paid to nursing homes. (Although this percentage varies widely from state to state, Virginia's Medicaid program approaches the national average, directing 74 percent of this spending, or $720 million, toward nursing homes in 2007.) Further, the regulatory standards that govern nursing homes are more uniform and specific than those for most HCBS. The diversity of HCBS contributes to their appeal, yet as a consequence there are less data available for evaluating their performance comparatively. For practical purposes, then, the State of the Region report focuses on residential long-term care facilities – nursing homes, assisted living facilities and Continuing Care Retirement Communities (CCRCs).

Nursing Homes

Nursing homes serve seniors (and others) with the most intense long-term care needs. These facilities provide not only skilled nursing care, but also room and board, assistance with ADLs, and social and recreational activities. There are nearly 29,000 nursing home residents in the Commonwealth of Virginia. Table 3 summarizes nursing facility data for Hampton Roads and other jurisdictions.

Despite an aging population, the number of nursing home residents in Virginia and elsewhere has remained steady or increased only gradually throughout the past decade. This is largely attributable to the expansion of assisted living and other home- and community-based long-term care services. As a consequence, the percentage of nursing home residents who are sicker and more frail is higher than in the past. One recent study notes that "three-fourths of people living in nursing homes need assistance with three or more ADLs"; they are also more apt to suffer from Alzheimer's disease and related dementias than other users of long-term care.[2]

Today's nursing homes are largely a product of the Omnibus Budget Reconciliation Act of 1987 (OBRA 87), landmark legislation that reformed the U.S. nursing home system. Motivated by repeated exposés of institutional fraud, abuse and neglect, OBRA 87 upgraded staffing requirements, established new regulatory standards, and tightened inspection and enforcement. Perhaps most significantly, the new standards placed greater emphasis on residents' quality of life, in addition to a facility's maintenance and cleanliness. The Medicare and

[2] National Commission for Quality Long-Term Care, "Long-Term Care in America: An Introduction" (2007), www.qualitylongtermcarecommission.org/pdf/ltc_america_introduction.pdf

Medicaid certification processes merged into a single system, eliminating the largest state-to-state disparities that had previously characterized nursing home standards.

THE CMS RATINGS

Survey data from the Centers for Medicare & Medicaid Services (CMS) informs the Nursing Home Compare Web site, http://www.medicare.gov/NHCompare, which has been online since 1998. CMS-certified nursing homes – in other words, all those that accept Medicare or Medicaid – are rated in three different categories: health inspections, staffing and quality measures. (Quality measures include an array of statistics such as the percentage of residents suffering from bedsores, or the percentage that have been immunized against the flu.) Ratings range between 1 (much below average) and 5 (much above average). As of December 2008, each nursing home receives a composite 5-star quality rating as well. Thus, consumers in Hampton Roads and elsewhere have ready access to a comprehensive rating system for nearly all U.S. nursing homes (see Table 4).

How accurate are these ratings? Even the CMS emphasizes that they are no substitute for observing a facility's premises and daily routine in person. Some aspects of the CMS ratings derive from a single annual inspection, and thus may not accurately reflect an institution's overall quality. Differences also persist among state inspection authorities, leading to inconsistencies from place to place. Further, much of the data that informs the CMS ratings is reported by the nursing homes themselves. No ratings system is perfect, but Nursing Home Compare offers consumers at least a rough measure of a facility's overall performance. While the distinction between a 3-star and a 4-star rating may be slight, nursing home residents and their families would be well advised to consider the larger divide between a 1-star and 5-star rating. Ratings are updated on a monthly basis; we consulted the site at the end of January 2009.

Of the 54 ranked facilities in the Virginia Beach-Norfolk-Newport News Metropolitan Statistical Area (excluding Currituck County, N.C.), 19 (35 percent) received above average or much above average grades. Twenty-two, or 41 percent, ranked below average or much below average. The distribution of Hampton Roads' scores resembles that of the entire United States (35 percent with 4- or 5-star ratings, and 44 percent with 1- or 2-star rank). Overall, our facilities stand out positively compared to others in the Commonwealth of Virginia. On average, Hampton Roads nursing homes outperform those in Northern Virginia (29 percent with 4- or 5-star ratings, and 51 percent with 1- or 2-star ratings) and the Greater Richmond area (21 percent with 4- or 5-star ratings and 63 percent with 1- or 2-star ratings).

On the other hand, Hampton Roads bears the dubious distinction of hosting two of Virginia's three "Special Focus Facilities." The CMS has singled out these facilities as having "a history of serious quality issues" and required their participation "in a special program to stimulate improvements in their quality of care." Beacon Shores Nursing and Rehabilitation Center in Virginia Beach has been on the Special Focus Facility list for 13 months; Harbour Pointe Medical and Rehabilitation Center in Norfolk has stayed there for 48 months (see Table 4).

Four- and 5-star nursing facilities are located in nearly all Hampton Roads cities. Their most significant common bond is ownership. **Fifteen out of 19 are nonprofit institutions, in many cases affiliated either with a religious denomination, or with a hospital network such as Riverside or Sentara.** Conversely, 18 of the 22 1- and 2-star facilities in Hampton Roads are operated for profit, and many of these are affiliated with a large nursing home chain. This list includes four homes owned by Kindred Healthcare (which operates 226 nursing facilities nationwide), as well as four homes owned by Medical Facilities of America (which owns 31 facilities in Virginia). The correlation between nursing home ownership and quality of care has been raised elsewhere in the national media, notably Consumer Reports[3] and The New York Times. **A Times investigative report from Sept. 23, 2007, highlighted the decline in nursing care among facilities that were recently acquired by large private equity firms.**

[3] See the helpful Consumer Reports Nursing Home Quality Guide, at: http://www.consumerreports.org/cro/health-fitness/nursing-home-guide/0608_nursing-home-guide.htm.

Table 4 also reveals that staffing poses a persistent problem for all nursing homes, regardless of ownership, and Hampton Roads is no exception. Only 11, or 22 percent of our region's nursing homes, earned a 4- or 5-star rating in this category; 31, or 62 percent, received one or two stars. These numbers do not directly address quality of care, but rather the average number of staff hours per resident per day. High vacancy and turnover rates contribute to low staffing ratings. According to a 2007 survey conducted by the American Health Care Association, the staff turnover rates in Virginia nursing facilities exceeded national averages. Data from the U.S. Bureau of Labor Statistics, meanwhile, show that the wages of both licensed nurses (RNs and LPNs/LVNs) and certified nursing assistants (CNAs) in Virginia lag behind national averages. Readers of this report should note that CNAs provide the majority of direct care (in Virginia, an average of 2.1 hours per day) to nursing home residents. CNAs' compensation, however, is not much higher than that of many unskilled workers with significantly lesser responsibilities and training requirements. One of the greatest challenges facing nursing homes in Hampton Roads and elsewhere is attracting and retaining talented caregivers amidst the backdrop of ever-tightening budget constraints and a chronic U.S. nursing shortage.

OTHER NURSING HOME QUALITY INDICATORS

Surprisingly, there is not a dominant type of accreditation (outside of CMS certification) that is decisive for nursing facilities. The Joint Commission, which is best known for accrediting hospitals, does offer long-term care accreditation. But the Joint Commission's "Gold Seal of Approval" has been acquired by only one Hampton Roads nursing facility that is not affiliated with a larger hospital, the James River Convalescent and Rehabilitation Center in Newport News. CARF, the Commission on Accreditation of Rehabilitation Facilities, also offers accreditation for nursing facilities and other "aging services." In the aging services field, CARF is most influential in the accreditation of Continuing Care Retirement Communities. Fifteen CCRCs in Virginia have obtained this qualification, although none are in Hampton Roads. Thus, while accreditation from CARF or the Joint Commission can be a positive indicator of nursing home quality, neither agency currently bears much influence in our region.

Perhaps the most visible alternative to the CMS ratings is the "Quality First" initiative of the American Health Care Association (AHCA), the organizational arm of the nursing home industry itself. Unsurprisingly, the AHCA is among the most vocal critics of the CMS 5-star ratings, which it believes to be premised upon a flawed survey system. Alternatively, Quality First represents a "public commitment by long-term care providers to voluntarily and collectively agree to work toward the highest standards of quality." Twenty-two nursing facilities in Hampton Roads have pledged their allegiance to Quality First principles. The initiative rightfully emphasizes that regulatory compliance alone (the CMS's chief concern) cannot fully assess an institution's quality of care. In the absence of outside monitoring or evaluation, however, the Quality First pledge remains more a statement of goodwill than a reliable quality assurance.

ACCESSIBILITY AND COST AT NURSING HOMES

Virginia's supply of nursing beds is overseen by the Certificate of Public Need (COPN) division within the Department of Health. At present, a new nursing facility (excepting those affiliated with CCRCs) may be established only when the COPN division issues a specific request for applications. Such requests are rare, since the occupancy rate of Virginia's nursing homes has held steady at 91 percent or lower over the past several years. According to COPN analyst Sam Clement, 93 percent occupancy is the division's indication that a need exists for more nursing beds in one of the state's 22 planning districts. The average occupancy rate in Hampton Roads, which roughly encompasses Planning Districts 20 and 21, is just under 92 percent. There have been few recent additions to our region's established nursing homes. The most recently established or expanded facilities – including Harbor's Edge, Windsor Meade of Williamsburg and Westminster-Canterbury on Chesapeake Bay – are all affiliated with Continuing Care Retirement Communities.

According to figures from the 2009 edition of the AARP's "Across the States: Profiles of Long-Term Care and Independent Living," there are 35 nursing home beds in Virginia for every 1,000 residents ages 65 and above, 10 beds fewer than the national average. Our own investigations indicate that the Hampton Roads region also has 35 beds per 1,000 seniors, mirroring the Commonwealth of Virginia as a whole. The Greater Richmond area has slightly more

beds (38 per 1,000 seniors), while Northern Virginia has fewer (25 per 1,000 seniors). Despite the proportionally low number of beds in Northern Virginia, the region's occupancy rates (averaging 88 percent) are also among the lowest in the Commonwealth. Given the region's high cost of living and nursing facility private-pay rates, it seems likely that some seniors leave Northern Virginia for cost reasons when making the transition to nursing care. From a national perspective, however, even Northern Virginia nursing homes are comparatively full. (The average national rate of occupancy is 85 percent, ranging from 65 percent in Oregon to 95 percent in Hawaii.)

These statistics suggest that it may be more difficult for seniors in Hampton Roads and elsewhere in Virginia to obtain space in a desirable facility. According to our conversations with long-term care specialists in the region, however, much depends upon prospective residents' individual needs. Most Hampton Roads seniors are able to locate a convenient and appropriate facility. Those with severe symptoms of dementia, particularly when accompanied by aggressive or other troublesome behaviors, are much more likely to encounter difficulties. Many nursing homes are reluctant or unable to provide space for these patients, whose caregiving needs are particularly intensive. Only one facility in Hampton Roads is dedicated solely to the care of this population: the 150-bed Hancock Geriatric Treatment Center, part of Eastern State Hospital in Williamsburg.

From the perspective of cost, Hampton Roads nursing facilities appear to be a relative bargain. According to the MetLife Mature Market Institute's 2008 survey, the average daily room rate in a U.S. nursing facility is $191 for private and $212 for semiprivate accommodations; in Virginia, the average rates are $182 and $202. The average daily room rates in Hampton Roads, according to Virginia Health Information figures, are $172 and $190 – below the averages in the Greater Richmond area as well as in Northern Virginia.

Intriguingly, there is no obvious correlation between the room rates of Hampton Roads facilities and their CMS ratings; consumers should not assume that paying more money ensures a higher standard of care. (The exception to this rule may be Continuing Care Retirement Communities, which are not included in the averages because of their different cost structures.)

Assisted Living

In recent decades, assisted living has emerged as an increasingly popular long-term care option for seniors who need assistance with some ADLs or IADLs, but not round-the-clock nursing care. In 2007, Virginia had 583 assisted living facilities (ALFs) with a total licensed capacity of 31,964 (see Table 5). Virginia's ALFs are roughly equitable to nursing homes in terms of resident population. There are, however, more than twice as many ALFs as nursing homes, a figure that reflects their diversity and, in many cases, smaller size. A licensed ALF in Virginia may house as few as four residents, while nursing homes rarely have fewer than 50 beds. The 100 ALFs in Hampton Roads vary in size between five and 153 licensed beds. The smallest facilities are the Open Arms and Hemal Blossom Village Adult Homes in Newport News and Hampton (five beds each); the largest are Atria Assisted Living (153) and Brighton Gardens by Sunrise (150), both of which are affiliated with large national chains and located in Virginia Beach (see Table 6).

The services provided by Hampton Roads' ALFs are equally diverse. A minority are licensed to provide "residential living care" only, meaning "minimal assistance with the activities of daily living." Most facilities possess "assisted living care" licensure, meaning that they offer moderate assistance to residents in need of care. In addition to help with ADLs, facilities may provide housekeeping and laundry services, meal plans, medication management, transportation, and a menu of social and recreational opportunities. Some are specially qualified to care for non-ambulatory residents "who by reason of physical or mental impairment are not capable of self-preservation without the assistance of another person." Others maintain special care units for residents with Alzheimer's disease or other forms of dementia. While some ALFs resemble nursing homes, others are more like no-frills boarding houses; still others function almost as full-service hotels.

A SOMEWHAT CHECKERED PAST FOR ASSISTED LIVING

"Assisted living" is a relatively young concept. Many ALFs that cater to seniors were founded only in the 1980s or 1990s. These facilities were patterned after European models of social care that encouraged seniors in need of some

assistance to live as independently as possible, in private units within a larger community. Assisted living became a booming business, and numerous for-profit chains sprung up across the United States. Harder times have since befallen the industry, a result of over-building and, more recently, the dramatic reduction of seniors' home equity and nest eggs for retirement (encouraging many to delay their moves to assisted living as long as possible). In March 2009, The Washington Post reported that the Northern Virginia-based Sunrise Senior Living chain, one of the largest in the country, might soon seek bankruptcy protection.

Other ALFs, however, are less dependent upon market fortunes. The social and legal concerns that led to the nursing home reforms of OBRA 87 also encouraged the growth of another branch of today's assisted living industry. In the 1970s and 1980s, social workers and other policy experts worked to move mentally ill and disabled patients out of large government-run institutions into smaller, more home-like settings. In practice, this meant that private "adult homes" that had traditionally taken in elderly boarders increasingly served a new clientele as well. The number of Virginia's "assisted living facilities" – as such homes now came to be known – grew by leaps and bounds. The best-run ALFs provided a humane (and cost-effective) residential alternative for Virginians with mild disabilities. In the worst cases, however, the facilities became "a housing solution of last resort," mixing "disabled young adults and the elderly, brain-injury victims and Alzheimer's patients, the mentally ill and the mentally retarded, as well as the criminally insane, convicted murderers and sex offenders."

This volatile mixture became the subject of a hair-raising Washington Post exposé of abuses at Virginia assisted living facilities, which was published over four days in May 2004.[4] The Post series drew attention to the insufficient regulatory oversight of ALFs all across Virginia. (The articles singled out very few Hampton Roads institutions, however.) Indirectly, The Post series highlighted the inconsistent – and often weak – regulation of ALFs throughout the United States. Since Medicare and Medicaid rarely pay for assisted living, no federal regulations govern the industry. Licensing requirements vary from state to state, as do the authorities that enforce them. Virginia's ALFs are licensed by the Department of Social Services (as opposed to its nursing homes, which are licensed by the Department of Health). In the immediate aftermath of The Post articles' publication, the Department of Social Services (DSS) and a state task force on aging began to assemble proposals to reform Virginia's assisted living industry.

A MORE PROMISING FUTURE FOR ASSISTED LIVING?

As a result of these efforts, Gov. Mark Warner signed an assisted living reform bill into law in March 2005. The legislation addressed management and staffing concerns by mandating that all ALF administrators receive professional licensure, and by requiring formal training for all workers entrusted with administering medications. Maximum monetary penalties for regulatory violations increased from $500 per inspection to $10,000 within a 24-month period, and tougher procedures for inspection and enforcement were introduced as well. In December 2006, the DSS instituted further regulations that raised minimum standards for ALFs in areas such as staff qualification and training, emergency preparedness, coordination with mental health services, and the installation of air conditioning in at least the "largest common area used by residents."

A 2007 report by the Joint Legislative Audit and Review Commission (JLARC) to the governor and General Assembly of Virginia asserts that "taken together, the new regulations will lead to substantial improvements in assisted living," with the qualification that "strong enforcement will be necessary to ensure these results."[5] However, as the report's authors also note, "quality of care" is difficult to measure. The nationwide data that inform the CMS nursing home ratings are not collected for assisted living facilities. Thus, JLARC's final report on the impact of Virginia's assisted living facility regulations uses regulatory compliance and verified complaints as "proxies" for assessing quality of care. The report's authors find that "89 percent [of Virginia's 583 licensed ALFs] have no recent history of compliance problems, and 59 percent have no recent verified complaints."

[4] The original Washington Post articles and related resources may still be viewed online at: http://www.washingtonpost.com/wp-dyn/articles/A47732-2004May22.html.

[5] JLARC Final Report on the Impact of Assisted Living Facility Regulations (2007): http://jlarc.state.va.us/Reports/Rpt355.pdf

On the other hand, the JLARC report identifies 114 (or, 20 percent of all licensed facilities) as "ALFs of Concern." These facilities do have a history of compliance problems, and/or a relatively high number of verified complaints. As noted in the report, ALFs of Concern are located disproportionately in Virginia's northern and western regions. Using additional data supplied by JLARC staff, we determined that Hampton Roads had 13 ALFs of Concern – or, roughly 13 percent of all ALFs in our region – in 2007. (Three of these facilities are no longer licensed.) By contrast, 8 percent of facilities in the Greater Richmond area and 22 percent in Northern Virginia were designated as ALFs of Concern.

Consumers can learn more about the compliance histories of these and all other ALFs in Virginia at the Department of Social Services' Web site, http://www.dss.state.va.us/facility/search/alf.cgi, where the facilities' inspection reports have been placed online dating back to July 2003. The site contains a wealth of information about each ALF, although it does not translate this information into quantifiable ratings. Rather, visitors to the DSS Web site must draw their own conclusions about the dozen or more inspection reports posted for each facility. Unlike the Nursing Home Compare site, which allows users to compare and contrast a large number of institutions at a glance, the DSS site is more suited to investigating individual facilities in depth. In general, the inspection reports reveal most about what a facility may be doing wrong or badly (as opposed to how well it cares for residents). Thus, users will likely find the site helpful in determining which ALFs they would prefer to avoid, if not necessarily in identifying which ones provide the best care.

Nearly every inspection report records some violations. These range from minor infractions like small oversights in record-keeping or not holding a fire drill within a designated period of time, to much more serious conditions that could directly threaten residents' well-being. In examining the recent inspection reports of Hampton Roads facilities that were designated as "ALFs of Concern" in 2007, we found a wide spectrum of outcomes. Some facilities had comparatively few violations. Other reports related disturbing incidents such as:

- The death of a Chesapeake Home resident who drank "an unknown quantity of a liquid cleaning product" that was left in his room by a staff member.
- At Living Options of Chesapeake, there were several occasions when no staff member was present overnight. Other problems included restrooms without hand soap or toilet paper, sagging and torn mattresses, as well as the presence of flies throughout the facility.
- Poor maintenance throughout Suffolk's Nub Jones ALF: cracked or lifting floor tiles, broken heating/cooling units, inoperable signaling systems in resident rooms.
- Brighton Gardens by Sunrise in Virginia Beach "failed to notify the licensing office of a serious incident which negatively affected the health, safety, & welfare of a resident in seven out of seven incidents for the period of 12/05/08 through 12/30/08." Earlier inspections indicated that residents' call bells had not been answered in a timely way.

Clearly, these kinds of violations are not the norm for Hampton Roads ALFs – but they are also not as exceptional as one might hope. A brief exploration of the DSS Web site reveals that the so-called "ALFs of Concern" are not the only facilities in our region with troubling compliance histories.

What is to be done with low-performing ALFs? Washington Post reporters raised this question five years ago, but it remains largely unresolved, the reforms of 2005-06 notwithstanding. **The Commonwealth of Virginia relies upon ALFs to house disabled persons who may be unable to afford different or better care. In many cases, no ready housing alternative exists. Shutting down a facility can place tremendous pressures on a social services network that is already stretched thin.** Lynne Williams, director of licensing programs at DSS, emphasized to us that the agency's goal is to bring ALFs into compliance wherever possible, taking away their licensure only as a last resort.

The DSS issues five different kinds of licenses to assisted living facilities: conditional, one-year, two-year, three-year and provisional. Newly opened facilities receive conditional licenses, while facilities that are "temporarily unable to comply" with regulatory requirements receive only provisional licenses. Both are valid for only six months. Most of Virginia's ALFs possess one-year licenses; facilities with a record of meeting and exceeding minimum standards may receive

licensure for two or three years. When we consulted the DSS Web site in March 2009, no facility in Hampton Roads operated under a provisional license. Eight of our region's 100 ALFs possessed a desirable three-year license: The Devonshire and Shelton on the Bay (Hampton), Assisted Living at Warwick Forest and The Chesapeake (both Newport News), Dominion Village at Poquoson, Hillcrest Retirement Center (Suffolk), Our Lady of Perpetual Help (Virginia Beach) and Woodhaven Manor at Williamsburg Landing. Five of the eight are nonprofit facilities; three are a part of Continuing Care Retirement Communities (CCRCs).

ACCESSIBILITY AND COSTS AT ASSISTED LIVING FACILITIES

Residence in a well-appointed assisted living facility can approach or exceed the costs of skilled nursing care. The 2008 MetLife Market Survey (which did not isolate Hampton Roads as a region) found that the base rates of Virginia ALFs ranged between $1,900 and $5,800 per month. However, as Table 7 reveals, residents in these facilities often pay substantially more, depending on the services they require. Most ALFs charge higher fees for dementia or Alzheimer's care; others offer services such as transportation or medical care at additional cost. Moreover, the average stay in assisted living is longer than in nursing homes, where residents are older and sicker (or may require only short-term care). Since Medicare and Medicaid rarely pay for assisted living, residents and their families may eventually be unable to cover the costs.

By contrast, owning a successful assisted living facility can be a profitable undertaking. For-profit facilities prevail in Hampton Roads and elsewhere, since assisted living has – at least until recently – been a lucrative and growing industry, constrained by comparatively few government regulations. Seventy-one percent of Hampton Roads' ALFs operate on a for-profit basis (in contrast to 54 percent of our region's nursing homes). The nation's largest assisted living chains are, however, underrepresented in Hampton Roads. Regionally, the two most influential chains are Commonwealth Assisted Living, which operates 12 facilities throughout Virginia (eight of which are located in Hampton Roads), and Five Star Quality Care, which has 140 facilities nationwide (including five in Hampton Roads).

JLARC's Final Report on the Impact of Assisted Living Facility Regulations states that "there are no indications that individuals with the financial resources to purchase long-term care face significant barriers to assisted living care. Although there can be waiting lists for private-pay residents, these waiting lists usually reflect strong demand for popular facilities." The barriers for those without such financial resources, however, are considerable.

Medicaid pays for home- and community-based services (HCBS) chiefly through waiver programs that vary considerably from state to state. Most long-term care policy experts support the expansion of HCBS waiver programs as a cost-effective means of paying for long-term care, as well as a means of providing seniors in need of care with alternatives to nursing homes. In Virginia, only one Medicaid waiver program helps to cover the costs of assisted living. Established in 2005, the Alzheimer's Assisted Living (AAL) Waiver Program may pay $50 a day to as many as 200 Virginians with Alzheimer's disease or a related dementia that would otherwise require nursing home care. Thus far, the program's enrollment is small – only 26 individuals, according to DMAS (Department of Medical Assistance Services) administrator Steve Ankiel. There are several preconditions for participation: waivers may be used only in facilities with secure special care units that have formally enrolled in the waiver program. These ALFs must also accept auxiliary grants, which the AAL waivers are intended to supplement.

At present, the most influential source of public support for Virginians in assisted living is the auxiliary grant program funded jointly by the state (80 percent) and individual localities (20 percent). Recipients of Supplemental Security Income (SSI) are eligible to receive the grants, which provide a small personal allowance and contribute to the cost of residence at an assisted living facility. ALFs are not, however, compelled to accept auxiliary grants – and in fact most do not, given their low rate of reimbursement. The current auxiliary grant rate is $1,112 per month ($1,279 per month in Northern Virginia), accompanied by an $81 personal needs allowance. In 2007, JLARC estimated that auxiliary grant recipients occupied 21 percent of all assisted living beds in Virginia. The locations of these grant beds, however, were spread disproportionately throughout the state. Using additional data from JLARC, we determined that auxiliary grant recipients occupied 964 (or 17 percent) of Hampton Roads'

5,535 licensed assisted living beds in 2007. The greatest number (278) was located in Chesapeake, followed by Newport News (150) and Norfolk (120). By contrast, 21 percent of the assisted living beds in Greater Richmond were auxiliary grant beds, but only 4 percent in Northern Virginia.

Since these figures are estimates, JLARC staff could not identify the specific facilities associated with each bed. The 2007 JLARC report does, however, assert that the 114 ALFs of Concern are "more likely to house auxiliary grant recipients." A Virginian-Pilot article from the same year depicted the difficulties one Virginia Beach resident experienced in finding a high-quality ALF that would accept his mother's auxiliary grant. The article identified the nonprofit Marian Manor in Virginia Beach as "one of the few larger, well-appointed facilities in South Hampton Roads to accept the grants." According to Tom Spivak, the facility's administrator, Marian Manor "takes a financial hit" by offering around 10 percent of its apartments to auxiliary grant recipients, "but considers that part of its charitable mission."

In sum, there is currently little incentive for ALFs in Hampton Roads or elsewhere in Virginia to provide services to the financially needy. Excepting the minority of facilities that are driven more by charitable mission than by the need to earn a profit, it seems that the ALFs most likely to accept auxiliary grant recipients are those with the lowest operating costs and offering the fewest services. Merely increasing the level of auxiliary grants will not solve all of the problems witnessed in Virginia's most troubled facilities, but there is a kernel of truth in the familiar saying "You get what you pay for." Until assisted living facilities are reimbursed more completely for the important social service they provide (whether through Medicaid waivers, auxiliary grants, nonprofit foundations or some other source), concerns about the quality of care are unlikely to go away.

Continuing Care Retirement Communities (CCRCs)

Planning ahead for long-term care can be tricky. Some of us will never require formal caregiving, while others may need months or even years of assistance. Since it's difficult to predict one's own needs, when the time comes, the decision-making (and financial responsibility) for seniors' long-term care often falls to someone else, usually a child or other relative.

What if seniors could eliminate this uncertainty by "aging in place" in a community that guaranteed access to high-quality services all along the care continuum? This is the promise of Continuing Care Retirement Communities (CCRCs), the fastest-growing long-term care option for seniors today. The first such community was founded by Quakers in Montgomery County, Pa., in 1967. The idea took off, and there are now more than 1,800 CCRCs nationwide, including eight in Hampton Roads (see Table 8). CCRCs unite independent living, assisted living and skilled nursing facilities under one roof (or under several roofs on a single campus). New residents must generally be 60 years of age or older, and usually are able to live independently. The price of admission is typically a large entrance fee or deposit that must be paid upfront, followed by smaller monthly fees that cover rent and other services. These costs are substantial, and they represent a significant barrier to most Americans who are contemplating retirement. For those who can foot the bill, however, the payback is substantial: guaranteed care for life.

As the number of CCRCs has proliferated, so too has the elaborate menu of services and amenities that they offer. Today's CCRCs "look a lot more like four-star resorts than old folks' homes," as aptly stated by Money magazine in March 2009. Multiple dining venues, swimming pools, spas, tennis courts and movie theaters are among the amenities found in Hampton Roads CCRCs. Independent living residences range in size from efficiency apartments to two- and three-bedroom villas. The financial decisions to be made by prospective residents have proliferated as well. Many communities now offer a choice of multiple fee structures, refundable entrance deposits and/or à la carte service plans. "Deciding to move to a CCRC and selecting the right one have serious

lifestyle and financial ramifications and risks," one consumer guide sternly warns.[6] Prospective residents should always obtain financial and legal counsel before signing any contract.

THE ABCS OF CONTINUING CARE RETIREMENT COMMUNITIES

Although they come in many variations, there are three basic types of CCRC contracts: life care (Type A), modified (Type B) and fee-for-service (Type C). Communities offering Type A, or life care, contracts do not substantially raise the monthly fees of residents who require assisted living or skilled nursing care. Excepting cost-of-living increases (Money magazine estimates that these average 3 percent to 6 percent per year), seniors in life care CCRCs can expect to pay the same monthly fee throughout their residence, regardless of the care they require. The price of this financial security is typically contained within the initial entrance fee; residents pay more upfront, but they won't need to budget for long-term care later on. The first CCRCs were grounded upon this model, and indeed, Hampton Roads' oldest CCRC, The Chesapeake in Newport News (established in 1969), is a traditional life care community. Seniors pay a one-time entrance fee upon moving to The Chesapeake (currently between $141,000 and $309,000 for a single resident). During the first 50 months of residence, the fee is refundable on a declining basis. If a resident dies or leaves the community for any other reason thereafter, the fee is nonrefundable. Table 9 provides analogous data for the CCRCs located in Hampton Roads.

Other Hampton Roads CCRCs with Type A contracts offer different refund options for the initial entrance fee. Harbor's Edge in Norfolk, for example, maintains a 90 percent refundable entrance fee (which currently ranges between $321,379 and $876,750 for a single resident), regardless of the length of time a senior resides in the community. Warwick Forest and Westminster-Canterbury on Chesapeake Bay allow residents to choose between multiple refund plans. In general, larger refunds mean higher entrance fees. These plans are best suited to seniors who wish to preserve their assets for passing along to heirs or to charity – or for maintaining their financial independence, should they wish to depart the community for any reason.

According to a June 10, 2007, report in The New York Times, "as recently as 1998, Type A communities were by far the most common type, with 42 percent of the market … but that has changed with the proliferation of payment models: in 2005, Type A communities accounted for just 29 percent of the total." The dominant CCRC model is now the Type C, or fee-for-service community, with a 47 percent market share in 2005. Hampton Roads' eight CCRCs, however, do not reflect this national trend – four are Type A, one is Type B and three are Type C.

Hampton Roads' three Type C communities are Lake Prince Woods in Suffolk, Williamsburg Landing and Windsor Meade of Williamsburg. These CCRCs guarantee their residents access to assisted living and skilled nursing care – but at the cost of a higher monthly fee, if and when this care is needed. Residents enjoy comparatively low entrance fees and monthly fees for independent living, but they will face a greater financial burden if they require extended care later on.

One reason for the increased appeal of fee-for-service communities is the changing philosophy of long-term care that has been reflected elsewhere in the rise of home- and community-based services, at the expense of traditional nursing home residence. **In other words, the belief that aging adults move through a predictable continuum of assisted living and skilled nursing care is increasingly being challenged.** An administrator at Erickson Retirement Communities (which owns Greenspring, the largest fee-for-service community in Northern Virginia) notes that more and more residents are remaining longer in independent apartments, "using home health aides when necessary and taking advantage of wellness and fitness programs."[7] Thus, residents of life care communities risk paying upfront for services that a growing number of them may not require.

One response to this dilemma is the Type B, or modified, contract. Less prevalent than the other two types of CCRCs, Type B communities offer a kind of middle way between them. A typical modified contract might offer residents several weeks of higher-level care before increasing their monthly fees. (This option is particularly attractive for holders of long-term care insurance policies, which

[6] CARF's "Consumer Guide to Understanding Financial Performance and Reporting in Continuing Care Retirement Communities" is available online at: http://www.carf.org/pdf/ccac.pdf.

[7] Michael Vitez, "It's a new generation of retirement homes: Continuing-care communities, once revolutionary, change with times," Philadelphia Inquirer (Nov. 29, 2007)

often do not pay benefits for the first 90 days of care.) Other CCRCs charge a standard, discounted rate for assisted living or skilled nursing care that could in some cases actually represent a *decrease* in a resident's monthly fee, if he or she had selected one of the community's costlier independent living residences. Such is the case for Patriots Colony in Williamsburg, which currently offers residential health care at $2,697 or $3,089 per month, depending upon the initial entrance fee selected.

HOW DO HAMPTON ROADS CCRCS MEASURE UP?

It's difficult to draw direct comparisons between CCRCs in Hampton Roads or elsewhere, since so many different variables influence residents' total out-of-pocket costs and the services they receive in return. For most seniors, the value of a CCRC will depend not only upon its costs and quality of care, but also upon the kind of lifestyle it promotes. Hampton Roads' CCRCs offer a wide spectrum of living options. Harbor's Edge and Westminster-Canterbury on Chesapeake Bay are essentially upscale high-rise apartment complexes. Harbor's Edge boasts "a prime location near the revitalized downtown Norfolk district," while Virginia Beach's Westminster-Canterbury offers "waterfront retirement living" and attractive views of the Chesapeake Bay. CCRCs in Suffolk and Williamsburg, meanwhile, promote a more rural lifestyle, with expansive campuses full of green space and individual cottages in neighborhood-like settings.

The targeted audience of these communities differs as well. Williamsburg's CCRCs are among the most upscale in the region, attracting well-heeled retirees from well beyond the Hampton Roads area. "You'll meet actors, artists, scientists and scholars from all over the country," promises a glossy brochure from Williamsburg Landing that touts the community's "gracious, resort-style amenities and services." By contrast, other CCRCs place greater emphasis on their efforts to provide cost-conscious seniors with the best value for their money. Lake Prince Woods in Suffolk is among the most affordable fee-for-service CCRCs in Hampton Roads, advertising "quality services with an affordable price tag." Among the region's life care communities, Warwick Forest in Newport News offers comparatively cost-effective residence plans.

The suitability of CCRCs' independent living options is largely a matter of personal taste, but statistics can provide a basis for evaluating these communities' nursing and assisted living facilities. Nursing facilities that are affiliated with CCRCs tend to receive higher than average Centers for Medicare & Medicaid Services (CMS) ratings. **Two of the eight 5-star nursing facilities in Hampton Roads are part of CCRCs (Lake Prince Woods and Westminster-Canterbury on Chesapeake Bay). This advantage is particularly prominent in Northern Virginia, where nearly *all* 4- and 5-star facilities are affiliated with CCRCs. Likewise, the assisted living facilities associated with CCRCs measure up well.** With the exception of Lake Prince Woods and Windsor Meade of Williamsburg (the latter of which still possesses a conditional license), all of the assisted living facilities within Hampton Roads CCRCs have earned DSS licensure for two or three years. Thus, these facilities have demonstrated a record of meeting or exceeding minimum standards. Whether these advantages justify the considerable costs paid by CCRC residents for long-term care, however, remains an open question.

The current economic climate may discourage seniors from making large financial commitments. Nonetheless, the Hampton Roads market for CCRCs appears still to have room for diversification and expansion. Hampton Roads has fewer CCRC residences than either Northern Virginia or the Greater Richmond area, both in real numbers and in proportion to our region's total senior population. CCRCs in Virginia's other major metropolitan markets offer residents a choice between life care and fee-for-service contracts, an option not yet publicized by any Hampton Roads communities. (A representative from Patriots Colony told us by telephone, however, that it was adding a fee-for-service option.) Likewise, a substantial proportion of the CCRCs elsewhere in Virginia have been accredited by CARF-CCAC – a distinction not held by any Hampton Roads communities (although Williamsburg Landing is currently engaged in the accreditation process). Accreditation is purely voluntary, so its absence does not necessarily indicate that Hampton Roads' CCRCs are deficient in any way. Accreditation does, however, provide reassurance that a community is well managed, its financials are in order and its facilities are well maintained.

Aging in Place: Living Outside of a CCRC

Continuing Care Retirement Communities (CCRCs) are the most prominent residential option for seniors who live independently but seek reassurance that their future long-term care needs will be fully met. CCRCs with hefty entrance fees are not, however, the only retirement communities in Hampton Roads that offer independent living, assisted living and skilled nursing care on a single campus. Seniors desiring to "age in place" may also consider the following sites, all of which receive comparatively high marks on the Nursing Home Compare and Virginia Department of Social Services Web sites.

SANDERS (GLOUCESTER)

This "active adult community" sponsored by the Riverside Health System evolved over the course of several decades, responding to the changing needs of seniors in Hampton Roads' northeastern corner. The community's core is the Frances N. Sanders Nursing Home, which was established in 1955. With the construction of independent living and assisted living residences in the 1980s and 1990s, Sanders now offers living options along the entire care continuum. Sanders – like the town of Gloucester itself – is a small community. Indeed, it advertises itself as a "village within a village" that is nestled within the heart of historic Gloucester Court House. Monthly fees for independent living (currently between $2,130 and $2,471) include housekeeping, interior and exterior maintenance, a daily noon meal and 24-hour accessibility to a licensed nurse, though perhaps not the resort-style amenities touted by other CCRCs in our region. Demand for residence at Sanders is high. Marketing director Tami Nunn reports that, as of April 2009, there was a wait list of 17 for the community's 12 independent living cottages.

BETH SHOLOM VILLAGE (VIRGINIA BEACH)

Beth Sholom Village is Hampton Roads' only continuum-of-care community whose mission includes the promotion of Jewish values and traditions. This community, too, evolved and expanded over time. The Beth Sholom Home of Eastern Virginia (now the Berger-Goldrich Home at Beth Sholom Village) was established in 1980 in the College Park area of Virginia Beach. The 120-bed skilled nursing facility now includes a rehabilitation pavilion and a specialized wing for Alzheimer's patients. In 1982, an adjacent set of independent living residences known as The Sands opened its doors to low-income seniors. In 2004, an assisted living facility known as The Terrace became the village's newest addition. Although the entire care continuum is present at Beth Sholom Village, each residential component serves a somewhat different population. The Sands' independent living residences participate in HUD's Section 8 housing program, while The Terrace is an upscale assisted living facility with monthly rates beginning at $3,600. Thus, a resident of The Sands in need of some daily assistance would be unlikely to move to The Terrace. Seniors receiving nursing care at the Berger-Goldrich Home do, however, regularly move into or from the Village's other two facilities, according to executive director David Abraham.

ATLANTIC SHORES (VIRGINIA BEACH)

Atlantic Shores claims its unique niche among our region's continuum-of-care communities through equity ownership. Its approximately 600 independent living residences – which include apartments and villa homes in a wide array of sizes and floor plans – are purchased, not rented. Thus, when a resident eventually departs his home for any reason – including a move into assisted living or skilled nursing care – he can expect to resell the home at its current market value. (Needless to say, the favorability of this arrangement depends upon the current state of the real estate market.) Home prices currently range from $148,600 to $532,200; monthly fees range from $824 to $2,661. The "cost of admission" and amenities at Atlantic Shores resemble those of other well-appointed CCRCs in our region. The cooperative retirement community, which was founded in 1995, boasts an attractive 100-acre campus on the shore of Red Wing Lake. Residents can play tennis and shuffleboard, dine at their choice of restaurants, and receive health care at an on-site wellness center, among other perks of membership. Resident fees do not, however, include the guarantee of long-term care that is a hallmark of CCRCs. Atlantic Shores homeowners do receive priority admission to the community's two long-term care

residences: Harbourway, an assisted living facility with 54 apartments, and Seaside, a 50-bed skilled nursing facility.

Focus on Award Winners

These long-term care facilities have received media attention and professional accolades that extend well beyond Hampton Roads.

HANCOCK GERIATRIC TREATMENT CENTER (WILLIAMSBURG)

The Hancock Geriatric Treatment Center is part of Eastern State Hospital, the first public facility in the United States built solely for the care and treatment of people with mental illness. Since 1976, the Hancock Center has provided care to seniors with particularly severe symptoms of Alzheimer's disease and other kinds of dementia, who could pose a danger to themselves or to others. Some residents stay at the center for only a short period of evaluation and treatment; others may remain for many years. As a part of Eastern State Hospital, the Hancock Center is overseen by the Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services (DMHMRSAS). Thus, all residents of the Hancock Center must first be screened and referred by local mental health authorities.

In 2006, the Hancock Center was rated favorably by the Consumer Reports Nursing Home Quality Monitor, which purports to be more discriminating than the CMS Nursing Home Compare ratings.[8] Drawing upon state inspection surveys, staffing data and select CMS quality indicators, the Consumer Reports staff generated a short list of "potentially good" facilities in each state. The Hancock Center was the only nursing facility in Hampton Roads to make the cut (among 14 in Virginia).

In 2008, the Hancock Center moved into a $28 million, state-of-the-art facility on the Eastern State campus.[9] The new facility, which houses 150 residents, is the fruit of a public-private partnership between DMHMRSAS and Gilbane Development Co. According to a joint press release, the building's design "reflects a new national standard in evidence-based practices," accommodating the special needs of geriatric patients "by incorporating age-appropriate activity, visual cues, acoustics and personal space." Among the building's most striking features is its main hallway that unites four resident wings. Decorated in bold colors to resemble traditional downtown storefronts, "Main Street" is an easy-to-navigate communal space that leads to rooms for therapy and other activities. The Hancock Geriatric Treatment Center was one of three locations across the country to receive a 2008 Innovation Award from the National Council for Public-Private Partnerships.

MARIAN MANOR (VIRGINIA BEACH)

Residents of Marian Manor, a 117-apartment assisted living facility near Town Center in Virginia Beach, can claim honors in a very different field: wine-making. Since their first entry in 2002, Marian Manor's Vintage Vintners have walked away with three medals in the WineMaker International Amateur Wine Competition. Their top-ranked libation, a scuppernong wine called Golden Glow, earned a gold medal in the competition's White Native American Varietal category in 2003, besting all other entrants. Each year a group of 10-20 residents, assisted by amateur vintner Ron Peperak, produces a small batch of wine from start to finish – picking the grapes, pressing them by hand, and bottling and labeling the finished product. In 2006, the winemaking program drew the attention of AARP Bulletin Today, which included Marian Manor among the nation's "most innovative assisted living homes where residents are well cared for and respected."

[8] Available online at: http://www.consumerreports.org/cro/health-fitness/nursing-home-guide/nursing-home-quality-monitor/0608_nursing-home-quality-monitor.htm

[9] A slideshow of photographs of the new Hancock Geriatric Treatment Center is available online at: http://www.behavioral.net/ME2/dirmod.asp?sid=BB72A6D997D64BC3A1560C92179825B8&nm=Design+Showcase&type=SlideShow&mod=Design%3A%3ASlide+Show+Titles&mid=5FC59CAE3ED74F5CB7962AA457AF518B&id=DBCB0119C18A426AB51A42EF6F9657D2&tier=3&p=1.

Participation in the Vintage Vintners is one of many activities available to seniors who reside at Marian Manor, one of several long-term care facilities in Hampton Roads that is sponsored by the Catholic Diocese of Richmond. According to DSS regulations, all licensed ALFs in Virginia must provide their residents with 11 hours of planned activities per week (16 hours in special care units). The offerings at Marian Manor exceed these minimums several times over. Cooking and exercise classes, bell chimes practices, Bible studies and game nights are just a few of the regular activities on the facility's calendar. Annual special events include a formal "senior" prom in the spring, and Santa and Mrs. Claus training classes at Christmastime. Activities director Thess Escobar reports that 12 Santa and Mrs. Clauses from Marian Manor answered around 800 telephone calls from children during the past holiday season.

Marian Manor offers four distinct levels of assisted living care. Monthly fees range from $2,974 to $5,220 per month, depending on the type of residence and the level of care received. Fifteen of the facility's beds are, however, reserved for low-income seniors who pay with state auxiliary grants (currently $1,112 per month). Predictably, the wait list for these beds is long – around 36 prospective residents, according to administrator Tom Spivak.

Final Thoughts

The operation of nursing homes and assisted living facilities is a difficult business. Administrators face persistent cost pressures, shortages of trained personnel and a daunting amount of paperwork in their interactions with insurance providers, Medicaid, Medicare and state regulatory authorities. Nurses and other members of the long-term care workforce have great responsibilities, but their financial compensation is often low. In Hampton Roads and elsewhere, long-term care is a field with many unsung heroes.

Although statistics can never fully capture the quality of care that long-term care facilities provide, Hampton Roads' institutions appear to measure up well with respect to others in the Commonwealth of Virginia. Hampton Roads possesses a wide array of residential long-term care options for seniors, at a range of different price levels. Most of these facilities provide outstanding care, although some clearly do not. No obvious correlation exists between the cost and quality of care in our region's nursing homes (with the notable exception of CCRCs) – a situation that may be attributed to the subsidizing role of Medicaid and Medicare. The same cannot be said of our region's assisted living facilities. Low-income seniors who rely upon auxiliary grants to pay for assisted living care are more likely to reside in troubled facilities.

As with many aspects of long-term care, funding is an issue that transcends the boundaries of our region. **The well-being of Hampton Roads' long-term facilities depends substantially upon policies formulated by the Commonwealth of Virginia's leadership in Richmond, and administered by the departments of Health, Social Services and Medical Assistance Services.** Virginia's rapidly aging population will place unprecedented pressures upon these agencies in the years to come. The success of our long-term care system will require not only the sufficient funding and oversight of traditional nursing facilities, but also a greater investment in assisted living and other home- and community-based services.

TABLE 1

OUR AGING POPULATION: A DEMOGRAPHIC PORTRAIT

Age Group		Virginia	United States
Population (000s)	2007	7,712	301,621
	2030 est.	9,825	363,584
	Pct. Chg.	+27%	+21%
Age 65+	2007	11.8%	12.6%
	2030 est.	18.8%	19.7%
	Pct. Chg.	103%	89%
Age 85+	2007	1.5%	1.8%
	2030 est.	2.5%	2.6%
	Pct. Chg.	114%	96%
Persons Aged 65+ With Disabilities, 2007			
Sensory Disability		15%	16%
Physical Disability		31%	31%
Mobility Disability		17%	18%
Self-Care Disability		10%	10%
Any Disability		39%	41%
Persons Aged 65+ With Alzheimer's Disease, 2010 Estimate			
		13%	13%

Sources: Virginia Department for the Aging and U.S. Census Bureau

TABLE 2

THE COSTS OF LONG-TERM CARE

	Virginia	United States
Medicaid Expenditures		
Total Medicaid Expenditures (millions), 2007	$4,968	$311,848
Increase Over 2002	43%	28%
Medicaid Long-Term Care Expenditures for Older People and Those with Physical Disabilities		
	$979	$64,169
Increase Over 2002	20%	18%
Increase in Nursing Facilities	3%	7%
Increase in Home and Community-Based Services		
	123%	68%
Primary Payers		
Medicaid Is Primary Payer	60%	64%
Medicare Is Primary Payer	17%	14%
Other Primary Payer	22%	22%
Public and Private Payment Rates		
Medicaid Payment Per Day	$145	$158
Medicare Payment Per Day	$282	$305
Average Private Payment Per Day	$180	$209

Sources: Virginia Department for the Aging and U.S. Census Bureau

TABLE 3

NURSING FACILITY SUMMARY STATISTICS

	Number of NFs	Population Age 65+	NF Beds Per 1,000 Age 65+	Average Occupancy Rate	Average Semi-Private Daily Room Rate	Average Private Daily Room Rate	Percentage of NFs with 5-Star Rating	Percentage of NFs with 4-Star Rating	Percentage of NFs with 3-Star Rating	Percentage of NFs with 2-Star Rating	Percentage of NFs with 1-Star Rating
Hampton Roads	57	181,315	35	92%	$172	$190	15%	20%	24%	15%	26%
Richmond Area	44	141,641	38	91%	$183	$201	5%	16%	16%	14%	49%
Northern Virginia	41	212,151	25	88%	$213	$237	5%	24%	19%	16%	35%
Virginia	282	909,522	35	91%	$182	$202	10%	20%	19%	19%	32%
United States	1,699,494	37,887,958	45	85%	$191	$212	12%	23%	21%	21%	23%

Sources: Centers for Medicare & Medicaid Services, at: www.medicare.gov/NHCompare (accessed January 2009)
2007 Population Estimates, at http://factfinder.census.gov
Across the States: Profiles of Long-Term Care and Independent Living, 8th ed. (2009), at: http://assets.aarp.org/rgcenter/il/d19105_2008_ats.pdf
Virginia Health Information, at: www.vhi.org (accessed February 2009)
The MetLife Market Survey of Nursing Home & Assisted Living Costs (October 2008), at: http://www.metlife.com/mmi/publications/research-studies/index.html
Virginia Department of Health, Division of COPN (statistics from fiscal years ending in 2007)

TABLE 4

NURSING FACILITY RATINGS IN HAMPTON ROADS

Name	Profit or Nonprofit	Affiliated Chain/ Corporation (Total Nursing Facilities)	Licensed Beds	Occupancy Rate	5-Star Rating (1/15/09)	Health Inspections (1/15/09)	Staffing (1/15/09)	Quality Measures (1/15/09)	Quality First Pledge	Joint Comm. Accred.	Semi-Private Daily Room Rate	Private Daily Room Rate	Other Residential Options
Chesapeake													
Autumn Care of Great Bridge	P	Autumn Care (24)	55	92.0%	****	****	***	****			$147	NA	
Chesapeake Health and Rehabilitation Center	P	Medical Facilities of America (31)	240	94.1%	**	***	*	**			$172	$185	
Sentara Nursing Center - Chesapeake	NP	Sentara Healthcare (7)	120	92.5%	*	*	**	***	X		$188	$215	Asst Living
Carrington Place of Chesapeake	P	Traditions Management (12)	120	94.4%	**	*	****	**			$136	$147	
Hampton													
Coliseum Park Nursing Home	P		180	90.9%	***	***	**	**			$160	$165	
Northampton Convalescent Center	P	Virginia Health Services Inc. (6)	60	97.1%	***	****	*	**			$169	$176	
Riverside Convalescent Center - Hampton	NP	Riverside Health System (9)	130	90.5%	***	****	*	**	X		$158	$167	
Sentara Nursing and Rehabilitation Center - Hampton	NP	Sentara Healthcare (7)	86	90.8%	***	****	*	****			$160	$280	
Newport News													
The Chesapeake (CCRC)	NP	Virginia Baptist Homes (4)	52	NA	NA	NA	NA	NA			NA	NA	Ind, Asst Liv
James River Convalescent and Rehabilitation Center	P	Virginia Health Services Inc. (6)	189	90.9%	***	****	*	***		X	$172	$187	
Newport News Nursing and Rehabilitation Center	P	Consulate Health Care (57)	102	92.7%	*	**	*	*	X		$153	$163	

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Newport News													
The Newport	P	Virginia Health Services Inc. (6)	45	97.0%	*****	*****	**	****			$174	$180	
The Gardens at Warwick Forest (includes CCRC)	NP	Riverside Health System (9)	242	83.7%	**	***	*	***	X		$158	$168	Ind, Asst Liv
St. Francis Nursing Center	NP	Bon Secours Health System Inc. (6)	115	88.8%	*	*	NA	***	X		$161	$173	
Norfolk													
Autumn Care of Norfolk	P	Autumn Care (24)	120	95.5%	***	***	***	***			$153	$163	
Bon Secours DePaul - TCU	NP	Bon Secours Health System Inc. (6)	24	87.1%	****	*****	*****	*			$300	$350	Asst Living
Harbor's Edge (CCRC)	NP		33	NA	NA	NA	NA	NA			NA	NA	Ind, Asst Liv
Harbour Pointe Medical and Rehabilitation Center	P	Kindred Healthcare Inc. (226)	172	91.3%	* SFF	*	NA	*	X		$195	$221	
Lake Taylor Transitional Care Hospital	NP		192	90.3%	*****	*****	***	**	X		$155	$170	
Norfolk Healthcare Center	P	Medical Facilities of America (31)	180	93.3%	*	**	*	*			$205	$213	
Envoy of Thornton Hall (formerly Ruxton Health)	P	Envoy Health Care (13)	60	95.8%	*****	*****	***	**	X		$136	$152	Asst Living
Sentara Nursing Center - Norfolk	NP	Sentara Healthcare (7)	193	95.5%	***	**	****	***			$268	$275	Asst Living
Tandem Health Care of Norfolk	P	Consulate Health Care (57)	222	92.6%	*	*	*	**	X		$155	$165	

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Poquoson													
Golden LivingCenter - Bayside of Poquoson	P	Golden Living (317)	60	96.3%	****	*****	*	****	X		$175	$182	
Portsmouth													
Autumn Care of Portsmouth	P	Autumn Care (24)	108	93.5%	***	****	*	***			$147	$155	
Golden LivingCenter - Portsmouth	P	Golden Living (317)	120	92.6%	*	*	*	****	X		$142	$159	
Sentara Nursing Center - Portsmouth	NP	Sentara Healthcare (7)	132	93.0%	*****	*****	**	*****			$210	$228	
Suffolk													
Autumn Care of Suffolk	P	Autumn Care (24)	120	94.9%	***	****	****	*	X		$158	NA	
Lake Prince Woods (CCRC)	NP	United Church Homes and Services (3)	40	NA	*****	****	*****	***			NA	NA	Ind, Asst Liv
Maryview Nursing Care Center	NFP	Bon Secours Health System Inc. (6)	120	93.5%	****	****	**	***	X		$147	$168	Asst Living
Nansemond Pointe Rehabilitation and Healthcare Center	P	Kindred Healthcare Inc. (226)	160	97.5%	**	***	**	*	X		$176	$195	
Virginia Beach													
Bay Pointe Medical and Rehabilitation Center	P	Kindred Healthcare Inc. (226)	118	83.3%	*	**	*	*	X		$163	$178	
Bayside Health Care Center	P	Medical Facilities of America (31)	60	90.6%	***	****	*	**			$197	$208	

TABLE 4

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Virginia Beach													
Beacon Shores Nursing and Rehabilitation Center	P		180	76.7%	* SFF	*	***	*			$150	$183	
Beth Sholom Home of Eastern Virginia	NP		120	92.2%	****	**	****	*****			$224	$231	Ind, Asst Liv
Heritage Hall - Virginia Beach	P	American Healthcare LLC (17)	90	88.7%	*	**	*	***	X		$147	$157	
Oakwood Nursing and Rehabilitation Center	FP		60	89.7%	***	***	*	*****			$155	$175	
Our Lady of Perpetual Help	NP	Catholic Diocese of Richmond / Coordinated Services Management Inc. (4)	30	100.0%	****	****	****	****			$179	$194	Asst Living
River Pointe Rehabilitation and Healthcare Center	P	Kindred Healthcare Inc. (226)	145	88.8%	**	***	*	***	X		$157	$192	
Seaside Health Center at Atlantic Shores	NP		50	NA	****	***	****	***			NA	NA	Ind, Asst Liv
Sentara Nursing Center - Virginia Beach	NP	Sentara Healthcare (7)	120	92.5%	****	****	***	***			$238	$268	Asst Living
Sentara Nursing Center - Windemere	NP	Sentara Healthcare (7)	90	94.7%	*****	*****	*	*****			$167	$180	
Virginia Beach Healthcare and Rehabilitation Center	P	Medical Facilities of America (31)	240	91.5%	*	*	*	*			$189	$203	
Westminster-Canterbury on Chesapeake Bay (CCRC)	NP		95	NA	*****	*****	****	****			NA	NA	Ind, Asst Liv

TABLE 4

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Williamsburg													
Consulate Healthcare of Williamsburg	P	Consulate Health Care (57)	90	95.2%	*	*	***	****	X		$173	$188	
The Convalescent Center at Patriot's Colony (CCRC)	NP	Riverside Health System (9)	60	NA	**	**	**	****			NA	NA	Ind, Asst Liv
Hancock Geriatric Treatment Center	NP		150	NA	****	**	*****	*****		X	NA	NA	
Envoy of Williamsburg (formerly Ruxton Health)	P	Envoy Health Care (13)	130	90.0%	*	*	***	***	X		$166	$174	
WindsorMeade of Williamsburg (CCRC)	NP	Virginia United Methodist Homes Inc. (5)	12	NA	NA	NA	NA	NA			NA	NA	Ind, Asst Liv
Woodhaven Hall at Williamsburg Landing (CCRC)	NP		58	NA	****	****	NA	***			NA	NA	Ind, Asst Liv
Gloucester County													
Frances N. Sanders Nursing Home (includes CCRC)	NP	Riverside Health System (9)	55	60.1%	****	***	****	***			$155	$171	
Walter Reed Convalescent and Rehabilitation Center	P	Virginia Health Services Inc. (6)	191	91.5%	**	***	*	****			$172	$182	
Isle of Wight County													
Riverside Convalescent Center - Smithfield	NP	Riverside Health System (9)	95	90.3%	*****	*****	**	***	X		$145	$152	
Consulate Health Care of Windsor	P	Consulate Health Care (57)	114	96.5%	***	*****	*	*	X		$150	$160	

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Mathews County													
Riverside Convalescent Center - Mathews	NP	Riverside Health System (8)	60	97.2%	***	****	*	**	X		$166	$175	
York County													
Regency Health Care Center	P	Medical Facilities of America (31)	60	91.3%	**	****	*	*			$166	$175	
York Convalescent Center	P	Virginia Health Services Inc. (6)	60	95.8%	*	**	*	***			$172	$182	
			6325										

Source for ratings: Centers for Medicare & Medicaid Services, at: www.medicare.gov/NHCompare (accessed January 2009)
Source for room rates: Virginia Health Information, at: www.vhi.org (accessed February 2009)
Source for beds and occupancy rates: Virginia Department of Health, Division of COPN (statistics from fiscal years ending in 2007)
Source for corporate affiliations: Billian's Healthdata (2009)

TABLE 5

ASSISTED LIVING FACILITIES: SUMMARY STATISTICS

	Number of ALFs	Population Age 65+	ALF Beds per 1,000 age 65+	ALFs "of Concern"	Percent ALFs "of Concern"	Auxiliary Grant Beds	Percent Aux. Grant Beds "of Concern"
Hampton Roads	104	181,315	31	13	12.5%	964	17.4%
Greater Richmond	123	141,641	48	10	8.1%	1,436	21.2%
Northern Virginia	107	212,151	36	24	22.4%	309	4.1%
Virginia	583	909,522	35	114	19.6%	6,697	21.0%
United States	39,005	37,887,958	26				

Source for regional and Virginia assisted living data: Joint Legislative Audit and Review Commission to the Governor and General Assembly of Virginia (JLARC)
The JLARC final report on the Impact of Assisted Living Facility Regulations (2007) is available at: http://jlarc.state.va.us/pubs_rec.htm.
Source for Virginia and U.S. assisted living data: "Across the States: Profiles of Long-Term Care and Independent Living," 8th ed. (2009), at: http://assets.aarp.org/rgcenter/il/d19105_2008_ats.pdf
Source for population figures: 2007 Population Estimates, at http://factfinder.census.gov

TABLE 6

ASSISTED LIVING FACILITIES IN HAMPTON ROADS

	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Chesapeake									
Allzwell Assisted Living Center	FP		70	2-Year		X			
Carebridge Assisted Living	FP		66	1-Year		X			
Cedar Manor	NFP	Chesapeake Regional Medical Center	93	1-Year			X		
The Charity House	FP		26	1-Year					
Chesapeake Home	FP		34	1-Year		X		X	
Chesapeake Place	FP	Capital Senior Living Corporation (55)	92	1-Year					Ind Living
Colonial Home	FP		32	1-Year		X			
Deep Creek Manor	FP		22	2-Year					
Dominion Village at Chesapeake	FP	Five Star Quality Care Inc. (140)	50	1-Year			X		
Georgian Manor at River Walk	FP	Commonwealth Assisted Living (12)	50	Conditional		X			
Hills Home for Adults	FP		48	1-Year				X	
Indian River Residential Community	FP		110	1-Year				X	
LAV'M Adult Residence	FP		21	1-Year					
Living Options of Chesapeake	FP		20	1-Year				X	
Parsons Residential Care	FP		60	1-Year		X			
Sentara Village at Chesapeake	NFP	Sentara Healthcare (3)	106	1-Year					NF
Virginia Home for Adults	FP		52	1-Year					
Whitehurst Manor	FP		16	1-Year					
Hampton									
Bethel Helping Hands	FP		6	2-Year					
Commonwealth Assisted Living at Hampton	FP	Commonwealth Assisted Living (12)	56	1-Year					

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	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Hampton									
The Devonshire	FP		55	3-Year					
Eden Court	FP	Commonwealth Assisted Living (12)	52	2-Year			X		
Rest Haven Manor	FP		96	1-Year		X		X	
Shelton on the Bay	NFP		55	3-Year					
Tender Care Adult Residence	FP		7	1-Year					
Newport News									
Agape Home for Adults	FP		14	1-Year					
Assisted Living at Warwick Forest (includes CCRC)	NFP	Riverside Health System (5)	117	3-Year			X		Ind Living, Nursing
Caring and Sharing Home for Adults	NFP		46	1-Year					
The Chesapeake (CCRC)	NFP	Virginia Baptist Homes (4)	90	3-Year			X		Ind Living, Nursing
Cote De Neige	FP		11	1-Year					
Governors Inn Estate Assisted Living	FP		56	1-Year					
Heart & Soul I	FP		8	1-Year					
Heart & Soul II	FP		9	1-Year					
Heart & Soul III	FP		27	Conditional					
The Hidenwood	FP	Retirement Unlimited (7)	125	1-Year					Ind Living
Hilton Plaza	FP		71	2-Year					
Mennowood Retirement Community	NFP		90	2-Year			X		Ind Living
Mile-A-Way	FP		10	2-Year	X				
Morningside of Newport News	FP	Five Star Quality Care Inc. (140)	110	1-Year			X		
Open Arms Adult Home	FP		5	2-Year					
Open Arms II	FP		10	2-Year					

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	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Norfolk									
The Ballentine	FP		96	2-Year					
Ballentine Manor	FP		60	1-Year					
Envoy of Thornton Hall (formerly Ruxton Health)	FP		25	Conditional					Nursing
Harbor's Edge (CCRC)	NFP		50	2-Year		X	X		Ind Living, Nursing
Hemal Blossom Vill Adult Home	FP		5	1-Year				X	
Leigh Hall	FP	Commonwealth Assisted Living (12)	40	1-Year		X			
Lydia Roper Home	NFP		27	1-Year	X				
Madonna Home	NFP	Catholic Diocese of Richmond	16	1-Year				X	
Pinewood Inn	FP	Commonwealth Assisted Living (12)	37	1-Year		X	X		
Province Place DePaul	NFP	Bon Secours Health System Inc. (5)	97	1-Year			X		Nursing
Sentara Village at Norfolk	NFP	Sentara Healthcare (3)	96	2-Year		X	X	X	Nursing
Shepherd's Village @ Park Avenue	NFP	First Baptist Church	20	1-Year					
Poquoson									
Dominion Village at Poquoson	FP	Five Star Quality Care Inc. (140)	48	3-Year					
Portsmouth									
Bell's Residential Adult Care Home	FP		30	1-Year					
Churchland House	FP	Commonwealth Assisted Living (12)	74	1-Year		X	X		
Emily Green Shores	NFP	Portsmouth Baptist Association	39	2-Year					
Lillian's Loving Care	FP		32	1-Year		X			
Mayfair House	FP		60	Conditional		X			
Province Place Maryview	NFP	Bon Secours Health System Inc. (5)	78	1-Year			X		Nursing
Westhaven Manor	FP		31	1-Year					

TABLE 6

ASSISTED LIVING FACILITIES IN HAMPTON ROADS

	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Suffolk									
Hillcrest Retirement Center	FP		34	3-Year					
Lake Prince Center (CCRC)	NFP	United Church Homes and Services (3)	54	1-Year			X		Ind Living, Nursing
NubJones ALF	FP		100	1-Year				X	
Virginia Beach									
Abundant Care	FP		8	1-Year					
Acredale Assisted Living	FP		8	1-Year					
Assisted Living at Pritchard Road	FP		12	1-Year					
Atria Assisted Living at Virginia Beach	FP	Atria Senior Living Group (127)	153	1-Year			X	X	
Baylake Retirement Community	FP	Retirement Unlimited (7)	90	2-Year			X		
Brighton Gardens by Sunrise	FP	Sunrise Senior Living (391)	150	1-Year			X	X	
First Colonial Inn ALF	FP	Kisco Senior Living (19)	36	1-Year					Ind Living
Golden Living Community - Lynn Shores Chateau	FP	Golden Living Centers (16)	16	1-Year					
Harbourway at Atlantic Shores	NFP		74	1-Year		X	X		Ind Living, Nursing
Hope Haven Adult Home	NFP	Union Mission Ministries	19	1-Year					
King's Grant House	FP	Commonwealth Assisted Living (12)	46	1-Year		X			
Marian Manor	NFP	Catholic Diocese of Richmond/Coordinated Services Management Inc. (6)	145	1-Year					
Our Lady of Perpetual Help Health Center	NFP	Catholic Diocese of Richmond/Coordinated Services Management Inc. (6)	95	3-Year			X		Nursing
Pacifica Senior Living Virginia Beach	FP	Northstar Senior Living (15)	103	1-Year		X	X		
Sentara Village at Virginia Beach	NFP	Sentara Healthcare (3)	96	1-Year					Nursing

TABLE 6

ASSISTED LIVING FACILITIES IN HAMPTON ROADS

	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Virginia Beach									
The Memory Center of Virginia Beach	FP		48	Conditional		X	X		
The Terrace at Beth Sholom Village	NFP		78	2-Year		X	X		Ind Living, Nursing
Virginia Beach Estates	FP	Sunrise Senior Living (391)	60	2-Year					
Westminster Canterbury on Chesapeake Bay (CCRC)	NFP		109	2-Year		X	X		Ind Living, Nursing
Williamsburg									
Assisted Living at Patriot's Colony (CCRC)	NFP	Riverside Health System (5)	68	2-Year					Ind Living, Nursing
Colonial Manor	FP		39	1-Year		X			Ind Living
Dominion Village of Williamsburg	FP	Five Star Quality Care Inc. (140)	58	2-Year					
Madison Retirement Center	FP		92	1-Year					
Morningside of Williamsburg	FP	Five Star Quality Care Inc. (140)	100	2-Year			X		
Spring Arbor of Williamsburg	FP	H.H. Hunt Assisted Living (21)	92	2-Year					
St. Charles Lwanga House	NFP		8	1-Year					
WindsorMeade of Williamsburg (CCRC)	NFP	Virginia United Methodist Homes Inc. (5)	20	Conditional					Ind Living, Nursing
Woodhaven Manor at Williamsburg Landing (CCRC)	NFP		60	3-Year			X		Ind Living, Nursing
Gloucester County									
Assisted Living at Sanders (includes CCRC)	NFP	Riverside Health System (5)	45	3-Year					Ind Living, Nursing
Cary Avenue Adult Home	FP		60	1-Year					
Gloucester House	FP	Commonwealth Assisted Living (12)	76	2-Year		X	X		
Ransom Home for Adults	FP		10	1-Year	X				

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ASSISTED LIVING FACILITIES IN HAMPTON ROADS

	Owner Type	Affiliated Chain/Corporation (Total Assisted Living Facilities)	Total Beds	Type of License	Residential Care Only	Non-Ambulatory	Special Care Unit	ALF of Concern (2007)	Other Residential Options
Isle of Wight County									
Magnolia Manor	NFP	Riverside Health System (5)	60	2-Year			X		
New Horizon Home for Adults	FP		19	1-Year	X				
James City County									
Chambrel at Williamsburg	FP	Brookdale Senior Living (496)	68	2-Year					Ind Living
York County									
Lakeside Adult Home	FP		12	2-Year	X				

Sources: JLARC, Billian's Healthdata (2009) and the Virginia Department of Social Services, at: http://www.dss.virginia.gov/facility/search/alf.cgi

TABLE 7 ASSISTED LIVING FACILITY BASE RATES (COSTS)			
	Base Rates Per Month		
Area	Low	High	Average
Richmond (232 ZIP codes)	$1,900	$4,300	$3,557
Northern Virginia (220-223 ZIP codes)	$2,500	$5,800	$3,709
Remainder of Virginia	$2,040	$5,685	$3,734
Virginia	$1,900	$5,800	$3,651
United States	NA	NA	$3,031

Source: 2008 MetLife Market Survey. Note that MetLife did not compute data for Hampton Roads, and its Richmond and Northern Virginia data are restricted to only some ZIP codes in those regions.

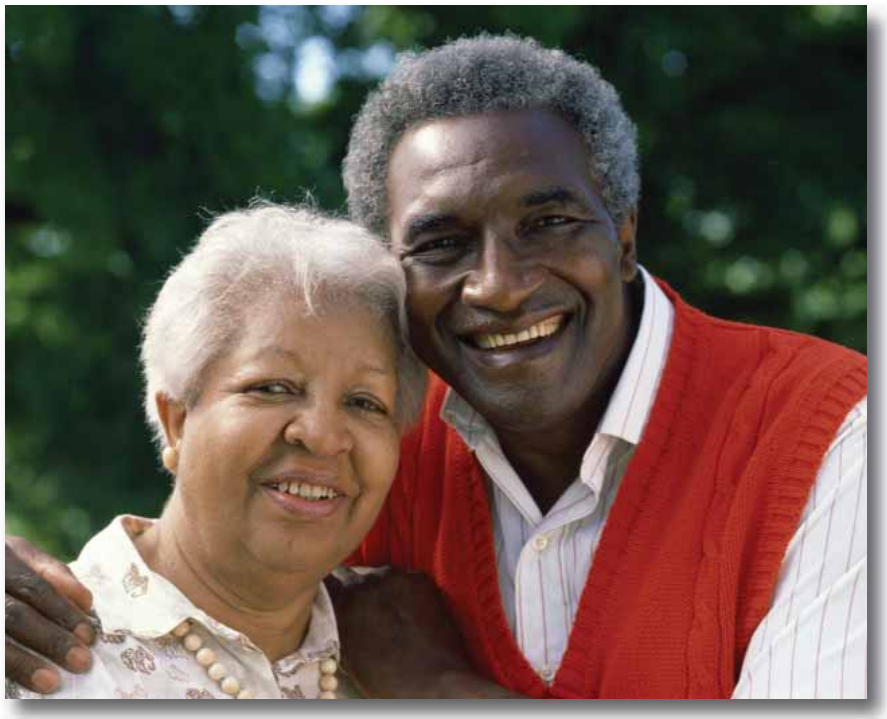


TABLE 8 CONTINUING CARE RETIREMENT COMMUNITIES SUMMARY DATA					
Location	Number of CCRCs	Number of Accredited CCRCs	Population 65+ Years	Number of CCRC Residents	Residents Per 1,000 Persons 65+ Years
Hampton Roads	8	0	181,315	1,841	1.02%
Richmond	8	4	141,641	1,866	1.32%
Northern Virginia	10	6	212,151	4,106	1.94%

Sources: 2007 Population Estimates at http://factfinder.census.gov, and Commission on Accreditation of Rehabilitation Facilities, http:www.carf.org

Gasoline Prices, Carbon Emissions and Other Unpleasant Subjects

GASOLINE PRICES, CARBON EMISSIONS AND OTHER UNPLEASANT SUBJECTS

July 16, 2008. A day of infamy? Probably not, but that was the day the average price of a gallon of regular, unleaded gasoline maxed out at $3.99 per gallon here in Hampton Roads. In a few locations within our region, the price at the pump climbed as high as $4.20 per gallon. During that memorable summer, Louisville, Ky., led the "east of the Mississippi" crowd with a maximum average price per gallon of $4.27 (see Table 1).

The rapid spike in gasoline prices nationally elicited howls of pain and not a few assertions that the market for gasoline was monopolized. Of course, during the subsequent fall in prices to $1.80, those allegations were quickly forgotten. After all, if the oil companies really were monopolists, why did they allow the price of gasoline to fall by more than 50 percent in the space of only a few months?

The primary causes of the upheaval in gasoline prices lay elsewhere. They included:

- Rapid increases in the demand for gasoline in India, the People's Republic of China and various other countries;
- A concern that the world may have hit its peak in terms of oil production;
- Uncertainty as to levels of future oil production in unstable countries in the Middle East and Western Hemisphere countries such as Venezuela; and
- Fear of hurricanes disrupting the production and distribution of gasoline in the United States.

In other words, **the price spikes primarily reflected ordinary supply and demand influences rather than nefarious activities.**

Nevertheless, $4 per gallon gasoline (the highest "real," inflation-adjusted price for gasoline in the United States since 1918) was a shock and it caused many people and organizations to re-evaluate their lifestyles. Did we really need to drive that much and could we find ways to economize on our gasoline usage? Would such a price spike occur again in the near future? Could we look more to "green" alternatives as a response to the challenge of higher gasoline prices? Was now the time to figure out how to reduce carbon emissions, deal with global warming threats and reduce environmental pollution? These are the topics that we explore in this chapter.

What Determines Gasoline Prices?

Hampton Roads and Virginia are completely dependent on other states for the gasoline they consume. Virginia has no currently producing crude oil fields and Western Refining Yorktown is the only oil refinery in the state. Virginians get the largest share of their gasoline from oil port facilities located in Newport News and Norfolk. Further, Virginia does not have a crude oil pipeline running into the state. All of this doesn't sound good, but as we shall see, it's not as bad as it may seem.

By far the largest factor in the price of gasoline is the price of the crude oil from which gasoline is obtained. While the share of crude oil of the total price of gasoline has changed somewhat over time, since the turn of the century, crude oil prices have accounted for about one-half of the price of gasoline. Since 2007, this share has risen to almost 60 percent.

A second significant determinant of the price of gasoline is the cost of refining crude oil into gasoline and any profits earned by refiners. Since 2000, the percentage of the price of gasoline going to refiners has been relatively stable at about 17 percent.

TABLE 1

GASOLINE PRICE SPIKES IN SUMMER 2008

Location	Highest Price Date, Regular Unleaded	Highest Price, Regular Unleaded	March 27, 2009 Price, Regular Unleaded	VR Ratio 1	2009 Q1 Price	VR Ratio 2	Reformulated Gasoline
Norfolk/ Virginia Beach/ Newport News	7/16/08	3.989	1.932	2.0647	1.732	2.3031	Yes
Roanoke	9/15/08	4.138	1.904	2.1733	NA	NA	No
Richmond	7/16/08	4.000	1.941	2.0608	NA	NA	Yes
Charlottesville	7/15/08	4.015	1.950	2.0589	NA	NA	No
Washington, D.C.	7/16/08	4.188	2.076	2.01731	2.006	2.0877	Yes
Atlanta	9/16/08	4.114	1.934	2.1272	1.632	2.5208	No
Baltimore	6/19/08	4.029	2.003	2.0115	1.812	2.2235	Yes
Charlotte	9/15/08	4.181	1.999	2.0915	NA	NA	No
Louisville	6/30/08	4.268	2.048	2.0840	1.852	2.3045	Yes
Memphis	7/17/08	3.901	1.919	2.0328	1.792	2.1769	No
Philadelphia	6/20/08	4.155	2.041	2.0358	1.901	2.1857	Yes

Sources: American Automobile Association, Oil and Gas Journal and Energy Information Agency

A third large factor influencing the price of gasoline is the cost of distributing and marketing the product. The Energy Information Administration (an agency of the U.S. government) estimates this share to be about 10 percent to 12 percent of the price of gasoline.

The fourth major contributor to the price of gasoline is state and federal taxes. These taxes, which are denominated in cents per gallon (not a percentage tax rate), fall as a percentage of the price when the price of gasoline increases. The current federal tax rate on gasoline is 18.4 cents per gallon. The federal tax on diesel fuel is higher at 24.4 cents per gallon, while the federal tax on gasohol is lower at 13.3 cents per gallon. Table 2 provides data on state fuel taxes in Virginia and selected other states. The data reveal a wide variance between the taxes imposed by the states. Included in the table are the states

TABLE 2

STATE GASOLINE TAXES

State	Gasoline and Gasohol Tax, Cents per Gallon	Diesel Tax, Cents per Gallon
Virginia	17.50	16.00
North Carolina	29.70	29.70
Washington, D.C.	20.00	20.00
West Virginia	27.00	27.00
South Carolina	16.00	16.00
Maryland	23.50	24.25
Pennsylvania	31.20	38.10
Tennessee	21.00	18.00
Georgia	7.50	7.50
Washington	36.00	36.00
Average for All States	21.50	22.05

Source: Energy Information Administration, Petroleum Marketing Monthly

with the highest and lowest tax rates on fuel – Washington and Georgia, respectively.

Virginia maintains the lowest fuel taxes in the mid-Atlantic region. South Carolina is the closest state to have lower fuel taxes. Virginia is one of the few states that taxes diesel fuel less than gasoline and gasohol. Only nine of the 50 states tax diesel fuel at a rate less than gasoline.

Gasoline Price Spikes in Hampton Roads: 2008

Referring back to Table 1, we can see both the date and the amount of the highest recorded average price of a gallon of regular, unleaded gasoline in 2008 for cities in Virginia and selected other cities. In general, the highest per-gallon prices for gasoline occurred in July 2008. For comparison purposes, we also have provided the price of gasoline in the same cities during March 2009. The simple ratio of the July to March prices provides a rough measure of the size of gasoline price spikes, and we label this VR1 (our first "vulnerability ratio"). The larger the ratio, the larger the spike during summer 2008 and the more economically vulnerable the region.

Within Virginia, Roanoke experienced the largest gas price shock during summer 2008. The price spike in Hampton Roads was smaller and was similar to that experienced by Richmond and Charlottesville. One can see in Table 1 that the price spike in Hampton Roads was not unusually high or low. We experienced a relatively greater gasoline price shock than Baltimore, Washington, D.C., Memphis and Philadelphia, but a smaller shock than Atlanta, Charlotte and Louisville. With the exception of Memphis, the cities that experienced smaller price hikes all were located close to the East Coast. This reflects the obvious influence of transportation costs on the price of gasoline.

How did the high prices of summer 2008 compare to early 2009 prices? Using data from the Oil and Gas Journal, Table 1 also records the average price of unleaded gasoline for the first quarter of 2009, though the sample of cities differs somewhat. The ratio of peak price in summer 2008 to the average price in first quarter 2009 produces VR2, our second measure of the vulnerability of Hampton Roads to gasoline price spikes. Once again, Baltimore, Memphis, Philadelphia and Washington, D.C., all had lower vulnerability ratios than Norfolk.

The final column of Table 1 indicates whether or not gasoline in the market is "reformulated." Reformulated gasoline utilizes a recipe designed to make it burn cleaner and produce less pollution. The Clean Air Act of 1990 specifies triggers that allow the governor of a state to require reformulated gasoline. Currently, about 30 percent of the gasoline sold in the United States is reformulated. Most of the residents of Hampton Roads patronize gasoline stations that pump reformulated gasoline. Adjacent areas that do not use reformulated gasoline include Isle of Wight County, Gloucester, northeastern North Carolina and Virginia's Eastern Shore. Richmond also utilizes reformulated gasoline, as does the Washington, D.C., metropolitan area.

The Implications of Gasoline Price Spikes for Hampton Roads

When gasoline prices spike, as they did in summer 2008, drivers react in a fashion similar to any consumers who face a price increase – they attempt to cut back on their usage. **The demand for gasoline, however, is "price inelastic," a term economists use to reflect a situation where the quantity consumed of a good is not very responsive to price changes. In the very short run (a week or less), increases in the price of gasoline generate only very small decreases in gasoline purchases. A 10 percent increase in gasoline prices may stifle gasoline purchases by less than 1 percent.**

As time passes, however, gasoline consumers find ways to adjust. They drive less; they use public transportation; they carpool; they tune up their vehicles to obtain better gas mileage; and, ultimately, they purchase more fuel-efficient vehicles. In the long run (one to three years), a 10 percent increase in gasoline prices causes a 7 percent decline in gasoline purchases.

Thus, in summer 2008, when gasoline prices approximately doubled (let's round this off by making it a 100 percent increase), this reduced regional gasoline consumption hardly at all. However, by fall 2008, regional gasoline consumption had declined by almost 4 percent. At the close of 2008, however, the restoration of "cheap" gasoline brought most of this gradual adjustment to an end. The moral to this story? Drivers do react to changes in the price of gasoline. But it takes them a while to do so.

Estimates from the Bureau of Labor Statistics indicate that urban citizens designate about 8 percent of their total expenditures for energy, with 3.8 percent of those expenditures devoted to gasoline consumption. A report by the Natural Resource Defense Council (NRDC) during the height of the gasoline price increase in summer 2008 ranked Virginia 30th in the vulnerability of its households' budgets to gasoline price increases, as measured by the percentage of income allocated to gasoline consumption. **In 2007, drivers in Virginia on average spent 5.13 percent of their income (or $2,121 on average) on gasoline.**

In this regard, the state with the highest proportion of household budgets devoted to the purchase of gasoline was Mississippi, at 7.87 percent, while Connecticut was the lowest, at 3.17 percent. It is easy to see that the residents of poorer states spend more of their incomes on gasoline than those living in more wealthy states. Table 3 discloses these data.

TABLE 3

PROPORTION OF INCOMES SPENT ON GASOLINE, SELECTED STATES, 2007

State	Percent of Income Spent on Gasoline	State Ranking
Virginia	5.13	30
North Carolina	5.70	24
West Virginia	6.17	11
Mississippi	7.87	1
Maryland	4.52	41
Pennsylvania	4.41	43
Tennessee	5.82	17
Georgia	7.08	3
Connecticut	3.17	50

Source: "Ranking States' Oil Vulnerability and Solutions for Change," Natural Resources Defense Council

Environmental Issues

Because of its proximity to the ocean and the winds that result, air pollution levels in Hampton Roads are lower than in other similarly sized metropolitan areas. Nevertheless, we are vulnerable to air pollution because of traffic congestion, especially during our tourist-heavy summer months; when military traffic is particularly heavy; or virtually anytime our tunnels and bridges are congested. Further, Hampton Roads is not immune to natural events that increase pollution, such as the wildfires that burned in Hyde County, N.C., and Chesapeake during summer 2007.

TABLE 4

TRANSPORTATION CARBON EMISSIONS IN SELECTED METROPOLITAN STATISTICAL AREAS, 2005

MSA	Total Emissions and Rank Among 100 MSAs	Auto Emissions and Rank Among 100 MSAs	Truck Emissions and Rank Among 100 MSAs
Virginia Beach/ Norfolk/Newport News	1.145 (18)	1.004 (33)	0.141 (4)
Richmond	1.738 (79)	1.335 (92)	0.404 (56)
Charlottesville	1.724 (77)	1.256 (73)	0.068 (73)
Washington, D.C.	1.157 (20)	0.984 (30)	0.173 (10)
Atlanta	1.634 (66)	1.224 (73)	0.410 (58)
Baltimore	1.355 (40)	1.044 (44)	0.311 (40)
Charlotte	1.724 (77)	1.256 (79)	0.468 (73)
Louisville	1.700 (73)	1.129 (59)	0.571 (91)
Memphis	1.692 (72)	1.162 (65)	0.530 (85)
Philadelphia	1.023 (6)	0.789 (5)	0.234 (22)

Source: "Shrinking the Carbon Footprint in Metropolitan America," the Brookings Institution

A 2008 report by the Brookings Institution investigated the "carbon footprint" of U.S. metropolitan areas. A region's carbon footprint is its per capita emissions of carbon, measured in metric tons, from transportation activities and from residential use. We will focus on the carbon emissions from transportation here.

Table 4 presents Brookings Institution data on transportation carbon emissions for selected metropolitan areas in 2005. The better the ranking of the metropolitan statistical area (MSA), the smaller the carbon footprint for that area – that is, the lower its carbon emissions. **Hampton Roads emerges rather well from the Brookings analysis in terms of its carbon footprint. This is particularly true where trucks are concerned. This comes somewhat as a surprise, since our region's location and the presence of the port make it a trucking-intensive area. However, emissions that otherwise might produce a bad score are vitiated by the size of Hampton Roads and the reality that large portions of our region still are predominantly rural.**

The Hampton Roads MSA has a much smaller carbon footprint than Richmond, which ranks in the bottom one-quarter of the largest 100 MSAs in terms of its overall carbon emissions. The only MSA with a better transportation carbon footprint than Hampton Roads is Philadelphia. The Hampton Roads data are slightly worse for auto emissions, but better in terms of truck emissions, than the Washington, D.C., data.

What can be done to reduce carbon emissions? The Natural Resources Defense Council report mentioned earlier discussed four different categories of solutions: Clean Vehicles and Efficient Use, Research and Development, Clean Fuels, and Smart Growth and Transit. From these four categories, 10 different solutions were identified, most of which relate to transportation policies, such as developing an efficient state vehicle fleet. Virginia ranked only 31st in carbon emission reduction among the states, according to the NRDC. On the positive side, the Commonwealth has taken steps to develop an efficient fleet of state vehicles, has imposed idling restrictions on inspected cars, and is attempting to coordinate growth investments across state agencies (see Table 5).

On the negative side of the ledger, however, Virginia does not provide incentives for the purchase of plug-in hybrid cars, or require emission standards con-

TABLE 5

TRANSPORTATION-EFFICIENT PUBLIC POLICIES IN SELECTED STATES

State	Hybrid Incentives	Fleet Efficiency	R&D Grants	Clean Fuel Station Incentives	Coordinated Development or Growth Management	Percentage Spent on Mass Transit
Virginia	No	Yes	No	No	Yes	7.9
North Carolina	No	Yes	Yes	Yes	No	4.12
West Virginia	No	Yes	No	No	No	1.11
Mississippi	No	No	No	No	No	0.67
Maryland	Yes	Yes	No	No	Yes	38.08
Pennsylvania	Yes	Yes	Yes	Yes	Yes	14.82
Tennessee	No	Yes	No	Yes	Yes	3.22
Georgia	No	Yes	No	Yes	Yes	5.99
New York	Yes	Yes	Yes	Yes	Yes	50.31

Source: "Ranking States' Oil Vulnerability and Solutions for Change," Natural Resources Defense Council

sistent with California's clean cars program. Also, Virginia does not offer state grants for research and development for smart cars, and does not specify standards, or provide incentives, for low-carbon fuels. The NRDC study also computed an index of mass-transit spending by state, which it measures as the share of money spent on transit divided by total highway spending. The NRDC gave Virginia high marks for its high ratio (7.9 percent) of mass-transit spending to highway spending. This ranked the Commonwealth 14th among the 50 states. It is worth noting, however, that most of this spending has been on the Washington, D.C., Metro system extensions in Northern Virginia and does not include significant expenditures in Hampton Roads.

The upshot is that Hampton Roads is not excessively burdened with pollution generated by gasoline consumption (at least compared with other metropolitan areas). However, the state has not been as aggressive as many other states in taking steps to reduce carbon emissions. For example, Virginia is not a member of the Regional Greenhouse Gas Initiative. The RGGI consists of New England and mid-Atlantic states that have agreed to set limits on the greenhouse gases from power plants.

One of the policies favored by President Obama involves the use of carbon taxes, or "cap and trade," in order to reduce carbon emissions. The intent is to set specific limits on carbon that can be emitted by a region or a state. There are two major variations on this theme. In the most commonly proposed cap-and-trade scenario, those who wish to emit carbon will have to purchase permits in a competitive auction that would give them the "right to pollute." Thus, cap and trade would simultaneously limit carbon emissions and invoke price penalties on those who elect not to curtail emissions. Because the carbon emission permits would be distributed via a competitive auction, these permits presumably would be purchased by those who will earn the highest profits if they

own the permits. In turn, this means that the permits ultimately will be purchased by the individuals and firms that produce the goods and services that consumers regard as most essential.

In another commonly discussed version of cap and trade, current emitters of carbon (for example, manufacturing plants) would receive a free allocation of permits, but the number of those permits would be limited to a level that would reduce total carbon emissions. Then, those who desire more permits than they received initially will be forced to bid to acquire more if they want to emit additional carbon. In this cap-and-trade scenario, those who choose to discharge additional carbon will incur higher costs. Simultaneously, an incentive is created for some individuals not to emit carbon so that they are able to sell their permits.

Under either cap-and-trade scenario, however, consumers end up paying higher prices for the things they purchase because carbon-emitting businesses will do their very best to pass the costs of their carbon permits on to consumers. For obvious reasons, this aspect of cap-and-trade proposals often is glossed over by elected officials who propose cap-and-trade systems. Elected officials also tend to say little about the additional tax revenue a cap-and-trade system will generate for the federal government, though those in the know clearly have plans how to spend these incremental dollars.

By most accounts, Virginia would be less affected by a cap-and-trade system than many other states because it is not home to many manufacturing operations that emit carbon. In general, the same "we won't be affected as much as other regions" judgment applies to Hampton Roads because our region is characterized by relatively low carbon emissions per person. Geographically, the most vulnerable region in Virginia where cap and trade is concerned appears to be the Richmond metropolitan area, because of its elevated carbon emission levels.

At this point, however, we must insert a note of reality. Because a cap-and-trade system, properly understood, introduces a new, broad tax on economic activity, and new taxes always are unpopular, it is not preordained that such a system will be adopted. Even so, as this material is being written, it does appear that some type of cap-and-trade system seems likely to be legislated at the federal level.

Sustainability in Hampton Roads

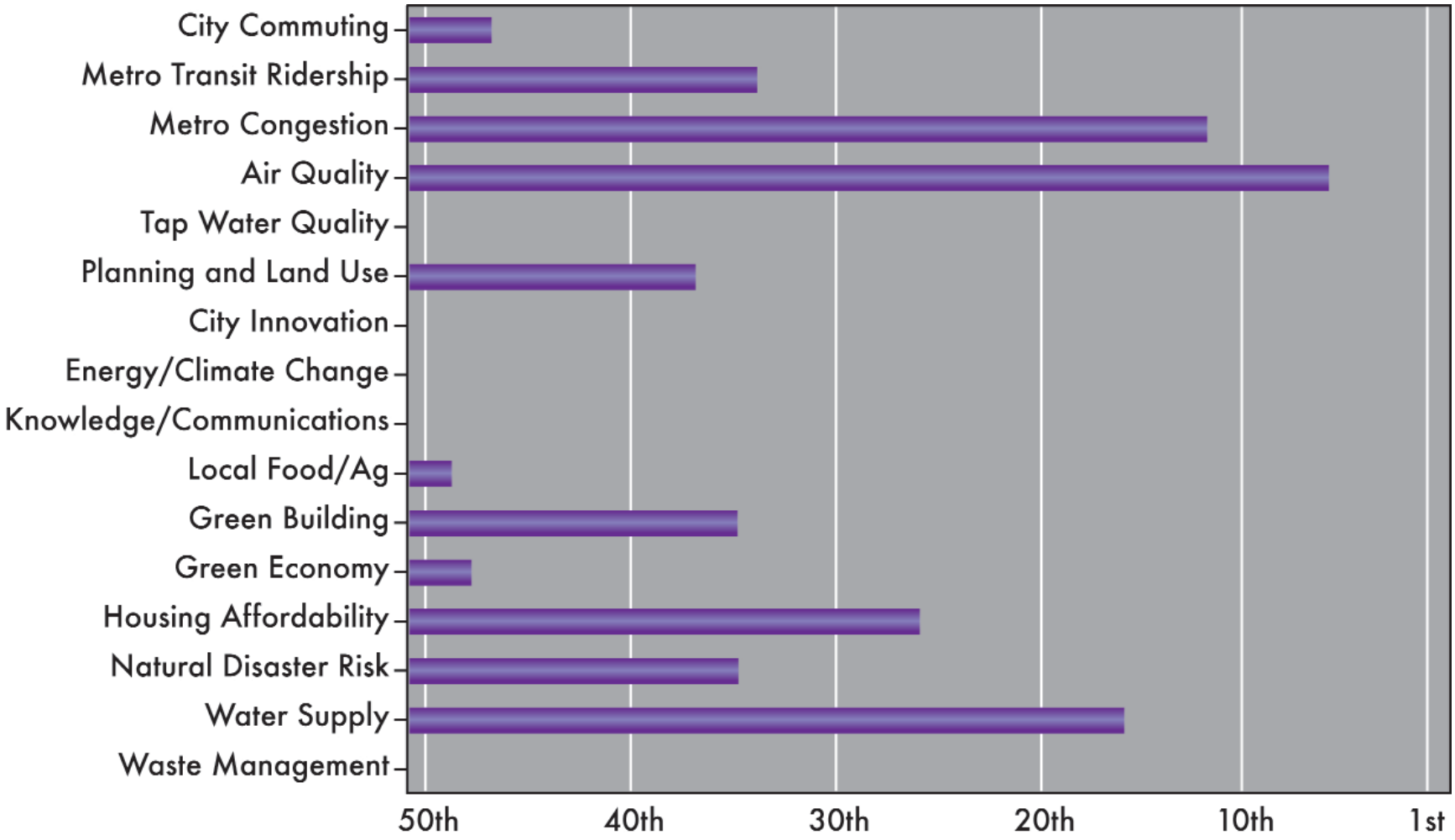
The notion of sustainable economic activity is one that has attracted considerable attention in recent years. At its most basic, it focuses on economic activity that can be perpetuated and sustained over very long periods of time. **The question is: Can humans develop patterns of economic activity that meet current needs, yet replenish resources and preserve the environment in ways that do not impoverish future generations?**

One can extend the notion of sustainability to cities and regions. Based upon a variety of indicators, www.sustainlane.com provides a ranking of the degree of sustainability of the 50 most populated cities in the country. Graph 1 presents information for the only Virginia city in the Top 50, Virginia Beach. The Beach receives high marks for some of its policies, for example, having 10 percent of its school buses that run on biodiesel and introducing LEED-certified (environmentally efficient) buildings. It also does well in terms of air quality, water supply and the relative absence of traffic congestion. However, Virginia Beach ultimately ranks only 45th overall among the 50 largest cities because of long commutes (often to Norfolk), low usage of mass public transportation, relative low usage of farmers' markets, and inadequate planning and land use. Even so, this represents an improvement over 2006, when it was ranked 48th.

Of course, not all observers would choose the same criteria, or assign the same weights on these criteria, as www.sustainlane.com. Further, there are many other significant economic enterprises in Hampton Roads (the military, Norfolk Southern, Northrop Grumman Shipbuilding, Smithfield Packing, K-12 public schools, universities) whose sustainability might usefully be measured.

GRAPH 1

VIRGINIA BEACH'S RANKINGS AS A SUSTAINABLE CITY, 2008



Source: www.sustainlane.com
Note: The sample consists of the largest 50 cities in the country. The highest (most favorable) ranking a city can receive is 1st; the lowest (least favorable) is 50th. Virginia Beach was not measured in five of the categories.

Final Thoughts

This chapter started by examining the vulnerability of Hampton Roads to price spikes in gasoline and ended by probing our region's long-term economic sustainability. How are these topics related? First, rising energy prices (and the extent to which these prices rise in Hampton Roads) could disadvantage the region in the future. However, **our region appears to be somewhat less vulnerable to energy price spikes (for example, in gasoline) than many other regions, primarily because of our coastal location. In this respect, our economic model may be more sustainable than that of many other metropolitan areas.**

Second, sustainable economic development worldwide appears to require limiting carbon emissions, and several cap-and-trade taxation schemes have been proposed to use prices and markets to achieve this goal. Because Hampton Roads is one of the lower carbon-emitting regions, we will not be affected as much as other areas (such as Richmond) that emit much larger amounts of carbon.

Third, however, **our region is not particularly "green" in terms of its daily existence. Virginia Beach is the only city in the region examined for its sustainability practices by www.sustainlane.com and it ranked only 45th among the largest cities in the country. In general, topics such as recycling, protecting our numerous waterways and even "turning off the lights" are not at the top of most individuals' agendas in our region.** Clearly, Hampton Roads is not to be confused with Portland, Ore., on environmental and sustainability issues.

Ultimately, we will reduce our vulnerability to gasoline price spikes, and increase our long-term viability, if we:

- Rely more heavily upon mass transportation;
- Pay higher prices for gasoline and other fuels so that people will drive fewer miles, purchase more fuel-efficient vehicles, increase carpooling, utilize mass transportation more often, and emit fewer carbons and other pollutants;
- Utilize increased amounts of reformulated gasoline;
- Build more LEED-certified, environmentally efficient buildings; and
- Increase recycling.

Climate Change, Global Warming and Ocean Levels

Climate Change, Global Warming and Ocean Levels in Hampton Roads

Global warming is too serious for the world any longer to ignore its danger or split into opposing factions on it.

–Tony Blair, Prime Minister of Great Britain, 1997-2007

Hampton Roads could be a very different place for our great-grandchildren to live, if predictions by reputable scientists concerning global warming and rising sea levels come true. In a nutshell, here's what might happen: Large amounts of prime beach and waterfront property will sink underwater; our tunnels will periodically fill with water; our port facilities will incur huge costs in order to continue operating; many residential and commercial properties will become uninsurable; and certain wildlife and fauna will disappear.

Global Warming

Few reputable scientists argue against the proposition that the Earth has been getting warmer, though not all agree why the warming has been occurring. Even so, average global temperatures have been rising for at least 50 years. Graph 1 illustrates this trend.

The average rise in sea levels worldwide has been about 8 inches per century, or about 2 millimeters per year. Graph 2, which depicts average sea-level measurements from 23 long tide gauges in locations around the world that have been geologically stable, illustrates this trend.

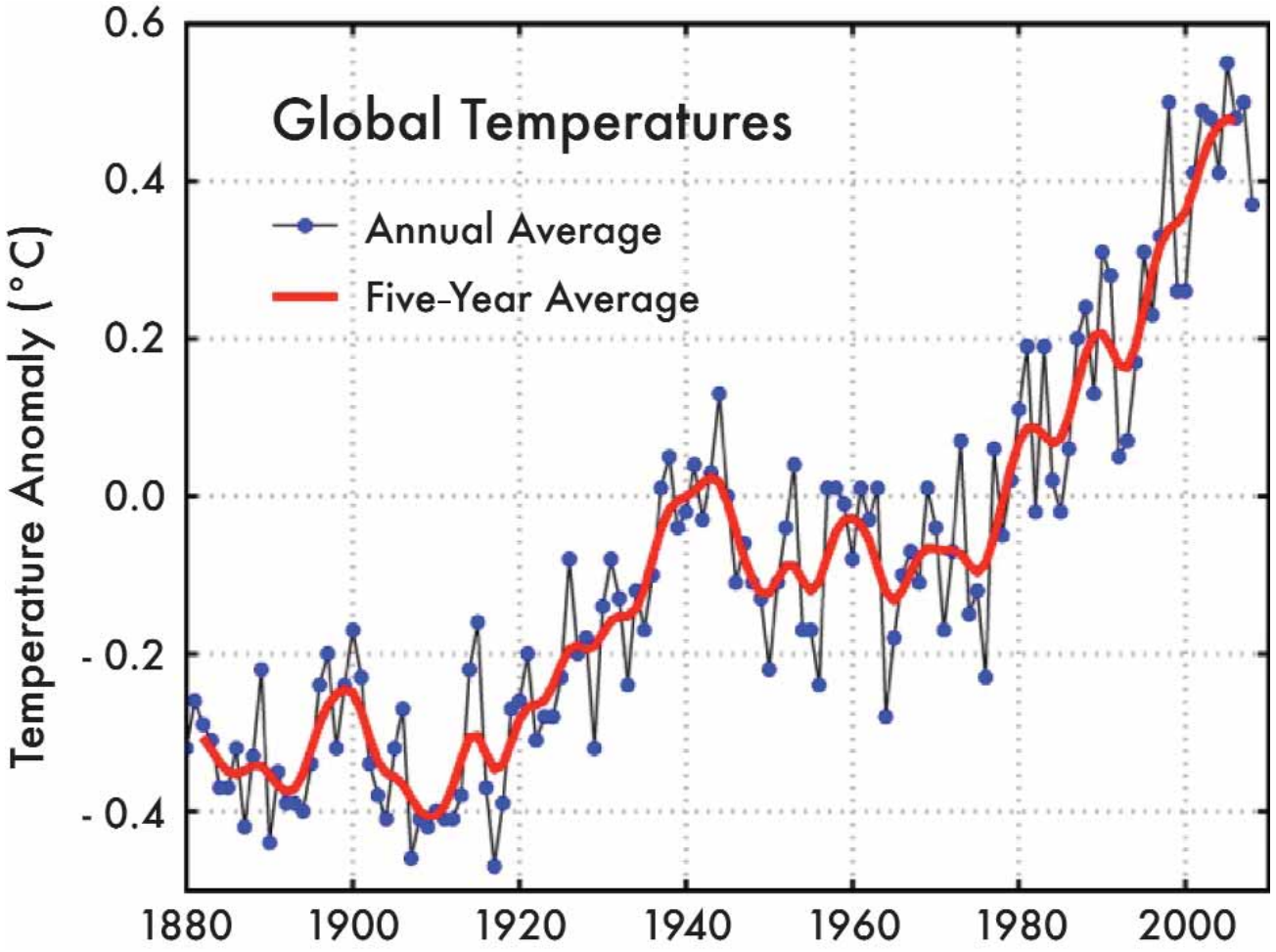
Several reputable models predict that Hampton Roads will be more than 3 degrees Celsius (5.4 degrees Fahrenheit) warmer by 2100. The Intergovernmental Panel on Climate Change's Fourth Assessment Report states that its current climate models predict that mean global warming in 2100 will range from 1.1 degrees C to 6.4 degrees C higher than today. A mid-range estimate, and one that assumes only moderate changes in carbon emissions over this century, forecasts global warming of 2.8 degrees C (5.04 degrees F).

Scientists at George Mason University and the Center for Ocean-Land-Atmosphere Studies in Maryland predict warming for the same period in Virginia and nearby areas to be 3.1 degrees C (5.58 degrees F) and precipitation to increase by 11 percent.

Global warming comes about in part because of increased burning of fossil fuels, such as coal and oil, and from deforestation. All of these activities result in the concentration of heat-trapping "greenhouse gases" in the atmosphere that prevent heat from escaping into space. According to the Environmental Protection Agency, energy-consuming activities account for three-quarters of human-generated greenhouse emissions, mostly in the form of carbon dioxide emissions from burning fossil fuels. Industrial processes (such as the production of cement, steel and aluminum), agriculture, forestry, other land use, waste management and transportation are also significant sources of greenhouse gas emissions.

GRAPH 1

GLOBAL WARMING: 1880-2000



Source: Wikipedia.com

Rising Sea Levels

Warming of the Earth increases the thermal volume of water in the ocean; water molecules expand when heated. However, warming also melts ice, for example, at the poles, though notably also in non-polar locations such as Mount Kilimanjaro and Glacier National Park. Although this melting occurs slowly, it pushes more water into our oceans. Warmer, larger oceans also alter weather patterns and may lead to more frequent and severe weather conditions, including hurricanes. Graph 2 illustrates average rising sea levels since 1880, based upon observations at 23 geologically stable sites around the globe.

According to a study endorsed by the Organization for Economic Cooperation and Development, Hampton Roads is the 10th-largest coastal metropolitan area in the world in terms of total assets exposed to increasing flooding from rising sea levels. This reflects the fact that much of the land in our region is at or near sea level. It does not take very much of a rise in the sea level for water to spill over the land. Graph 3 illustrates especially vulnerable regions of the United States, including Hampton Roads.

Approximately 3.4 million people in the mid-Atlantic coastal region (about 10 percent of the U.S. population) live on land less than one meter above monthly highest tides ("Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region," U.S. Climate Change Science Program, Environmental Protection Agency, January 2009, p. 333). This has particular relevance to Hampton Roads because the sea level is expected to rise between 0.7 meters and 1.6 meters (2.3 - 5.2 feet) by 2100, according to the Chesapeake Bay Program's Scientific and Technical Advisory Committee. Table 1 summarizes the evidence on rising sea levels in Hampton Roads and other Atlantic Coast communities.

Let's assume that a mid-range estimate of a 3.7-foot higher sea level is correct for 2100. Vast areas of the region will be inundated with water unless a massive dike and levee system is developed to prevent such flooding. Most of the land east of highway U.S. 17 could be covered with water. From north to south, vast areas of Mathews, Gloucester and York counties, most of Poquoson, and much of the cities Hampton, Norfolk, Chesapeake and the Virginia Beach oceanfront will be underwater unless protected by dikes and levees. A recent report, "The Impact of Climate Change on Hampton Roads," written by the Hampton Roads Research Partnership and funded by NASA Langley Research Center, provides detail.

TABLE 1

POTENTIAL FOR SHORELINE CHANGES DUE TO SEA-LEVEL RISE ALONG THE U.S. MID-ATLANTIC REGION

RATES OF RELATIVE SEA-LEVEL RISE FOR SELECTED LONG-TERM TIDE GAUGES

Station	Rate of Sea- Level Rise (mm/yr)	Time Span of Record
Atlantic City, NJ	3.98 ±0.11	1922-1999
Philadelphia, PA	2.75 ±0.12	1900-1999
Lews, DE	3.16 ±0.16	1919-1999
Annapolis, MD	3.53 ±0.13	1928-1999
Solomons Island, MD	3.29 ±0.17	1937-1999
Washington, DC	3.13 ±0.12	1931-1999
Hampton Roads, VA	4.42 ±0.16	1927-1999
Wilmington, NC	2.22 ±0.25	1935-1999
Charleston, SC	3.28 ±0.14	1921-1999
Miami, FL	2.39 ±0.22	1931-1999
Key West, FL	2.27 ±0.09	1913-1999

Sources: Woods Hole Science Center and the U.S. Geological Survey

There is yet another fly in the ointment for Hampton Roads, however. Most of the land in our region is slowly sinking at a rate between 0.15 meter and 0.23 meter (5 - 7.5 inches) per century. The land continues to sink because of the "isostatic rebound" of the crust of the Earth from the weight of long-absent glaciers, groundwater removal and slippage of the coast into the crater we now

know as the Chesapeake Bay. The bottom line is that this "sinking land effect" must be added to the projected sea-level rises we have just noted in order to determine the total tidal increase that we will observe in Hampton Roads.

What does all of this add up to? Table 2 reports estimates of the impact of water inundation on regional habitat (much would be destroyed), while Graph 3 illustrates the flooding impact of various magnitudes of hurricanes upon Hampton Roads. The colored areas will be covered by water when a hurricane strikes. While designed to illustrate hurricane water damage, Graph 3 also aptly shows which regional land areas are most susceptible to water coverage from rising sea levels. There is a very high correlation between those land areas that would be covered with water in a hurricane and the land areas that would be inundated by slowly rising sea levels (unless countered by dikes and levees).

An unpublished Pennsylvania State University master's thesis, "Modeling the Vulnerability of Coastal Communities to Hurricane Storm Surge Associated with Sea-Level Rise: A Case Study of Hampton Roads, Virginia" (PSU, Lisa M. Rygel, 2004), found that the areas with the highest risk of exposure to storm-surge flooding in Hampton Roads are the heavily developed portions of Norfolk, Portsmouth, Chesapeake, Virginia Beach and Hampton. It is not unoccupied, low-value land that will be covered with water as sea levels rise.

TABLE 2

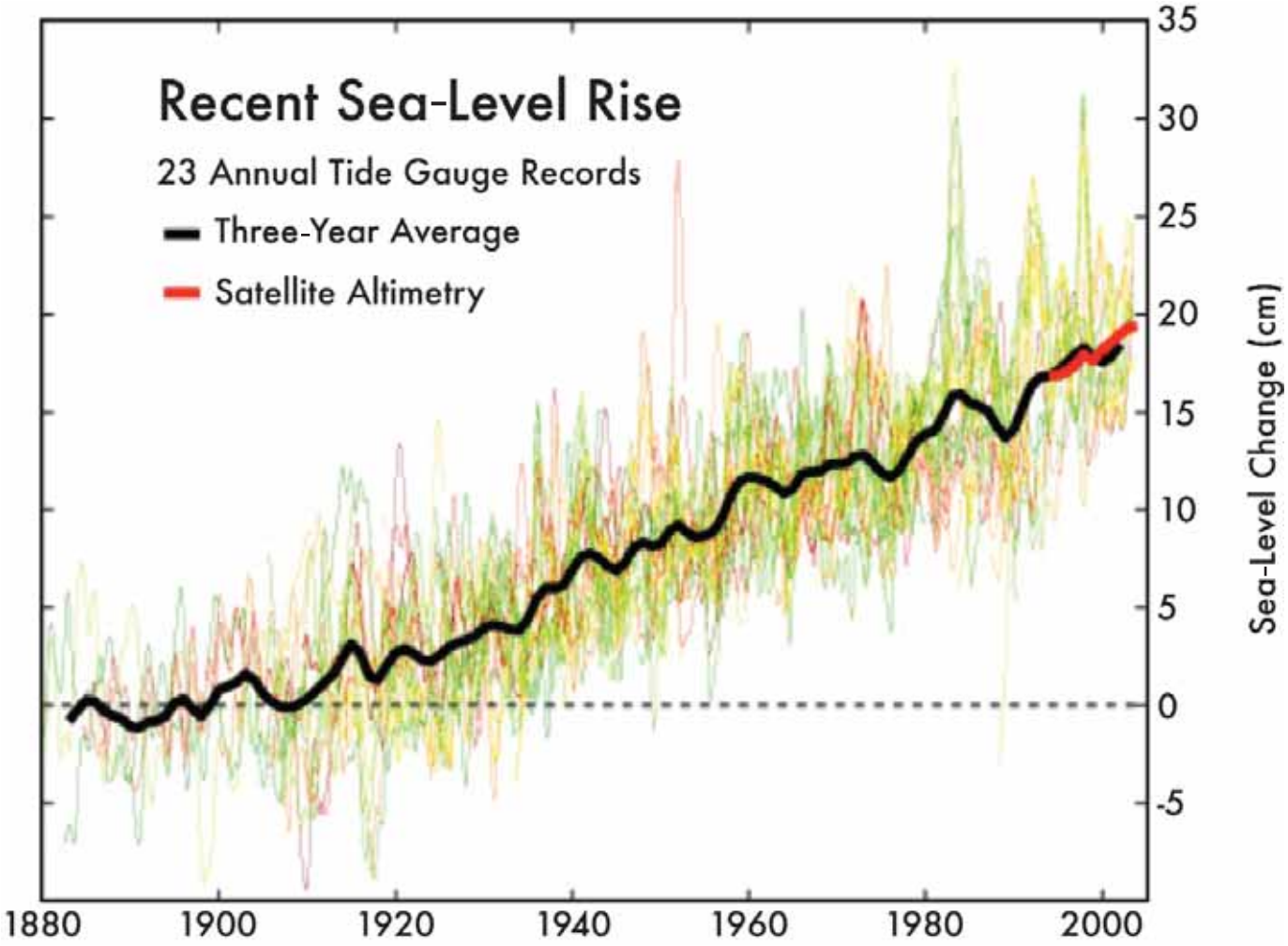
PROJECTED CHANGES IN COASTAL HABITAT BY 2100 WITH A 27.2-INCH SEA-LEVEL RISE SELECTED REGIONS OF TIDEWATER, VIRGINIA

	Upper Tidewater Region		Lower Tidewater Region (Norfolk and Virginia Beach)	
	Acres	Relative Change	Acres	Relative Change
Undeveloped dry land	-18460	-17%	-10780	-19%
Tidal fresh marsh	-8	-3%	-17	-38%
Tidal swamp	-680	-30%	-2290	-83%
Brackish marsh	-8130	-85%	-890	-29%
Tidal flats	-1940	-76%	-740	-67%
Estuarine beach	+1860	8-fold	+560	4-fold
Ocean beach	na	na	-87	-79%
Transitional salt marsh	+4370	11-fold	+1170	14-fold
Salt marsh	+2260	12-fold	+4040	255-fold
Estuarine open water	+15740	14%	+5360	10%

Source: "Sea-Level Rise and Coastal Habitats of the Chesapeake Bay," National Wildlife Federation, 2008

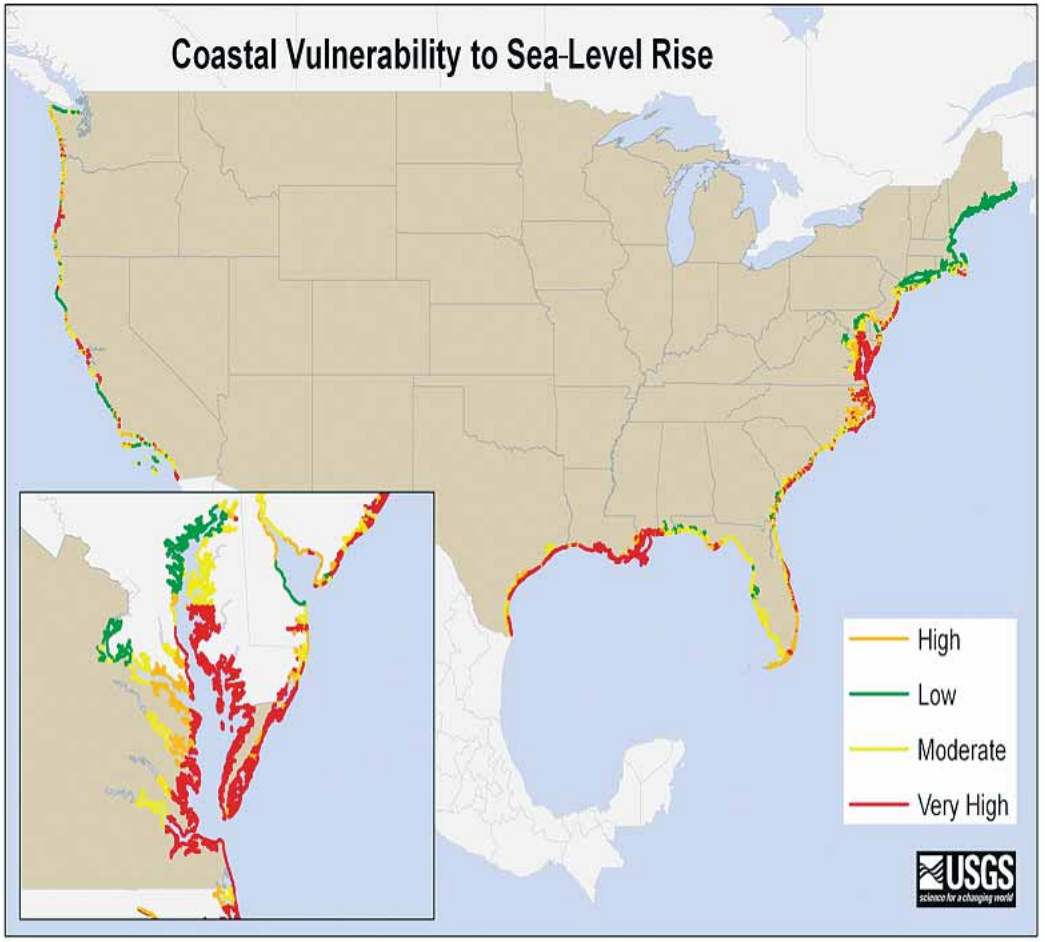
GRAPH 2

RISING WORLDWIDE SEA LEVELS



Source: Wikipedia.com

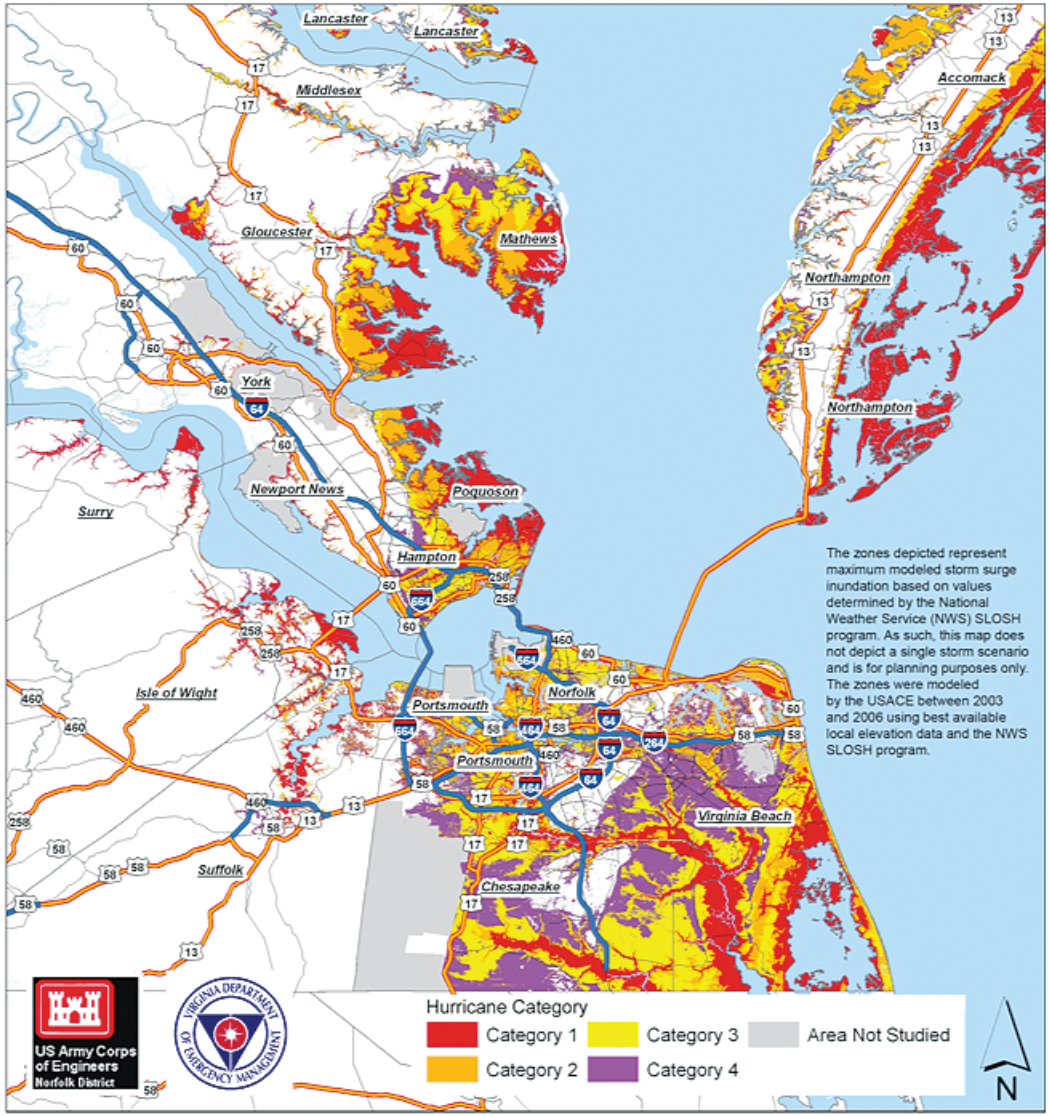
GRAPH 3



Source: Virginia Coastal Zone Management Program, Virginia Department of Environmental Quality

GRAPH 4

MAXIMUM STORM SURGE INUNDATION
2008 VIRGINIA HURRICANE EVACUATION STUDY



Source: Virginia Coastal Zone Management Program, Virginia Department of Environmental Quality

Adverse Impacts

Gov. Timothy Kaine's Commission on Climate Change ("Final Report: A Climate Change Action Plan," December 2008, available at www.deq.Virginia.gov) found that the impacts of climate change and global warming for the Hampton Roads region and the Commonwealth could include:

- Sea-level rise could pose a serious threat to roads, railways, ports, utilities and other critical infrastructure.
- National security could be affected, as several major military installations are located in low-lying areas.
- Insurance rates could continue to increase along coastal areas and the availability of insurance could become an increasing problem.
- Some of the region's "foundation species," such as blue crabs, eelgrass and oysters, could decline or disappear.
- Coastal wetlands that serve as a critical habitat for the Chesapeake Bay's plants and animals could be lost.
- An increase in extreme weather events would affect people's health, safety and homes.
- Responses to climate change mandated by all levels of government would affect the way people live, play and do business.

The National Wildlife Federation report "Global Warming and Virginia," updated in March 2008, offers some additional dire predictions for the Commonwealth:

- Warmer water temperatures due to global warming could encourage the spread of diseases among oysters in the Chesapeake Bay.
- Warmer average temperatures could increase concentrations of ground-level ozone, which is known to aggravate respiratory problems such as asthma.
- Loss of wildlife and habitat could mean a loss of tourism dollars.
- Sand replenishment costs for beaches would range between $200 million to $1.2 billion by 2100.

The greatest impact of climate change for transportation systems will be flooding of coastal roads, railways, transit systems and runways because of global rising sea levels, coupled with storm surges, and exacerbated in some locations by land subsidence, according to "Potential Impacts of Climate Change on U.S. Transportation," a 2008 report by the Transportation Research Board of the National Academies.

Crystal Ball Gazing

How accurate are the predictions that we have reported above? There are some naysayers. The Virginia Climate Change Council, a wing of the Virginia Manufacturers Association, issued a report in early 2009 titled "Simplifying Climate Change & Global Warming." In the report, the council argued that "thirty percent of climate scientists worldwide disagree that human introduced greenhouse gases are causing climate warming and slightly over 14 percent are undecided because the science of climate change and global warming is ever changing." They conclude that "due to the legitimate uncertainty about the precise causes we urge caution before deciding a course of action to implement solutions." The Cato Institute ran a full-page advertisement in The Washington Post on March 30, 2008, that included the names of 115 scientists who endorsed a statement that said in part that the "alarm regarding climate change is grossly overstated."

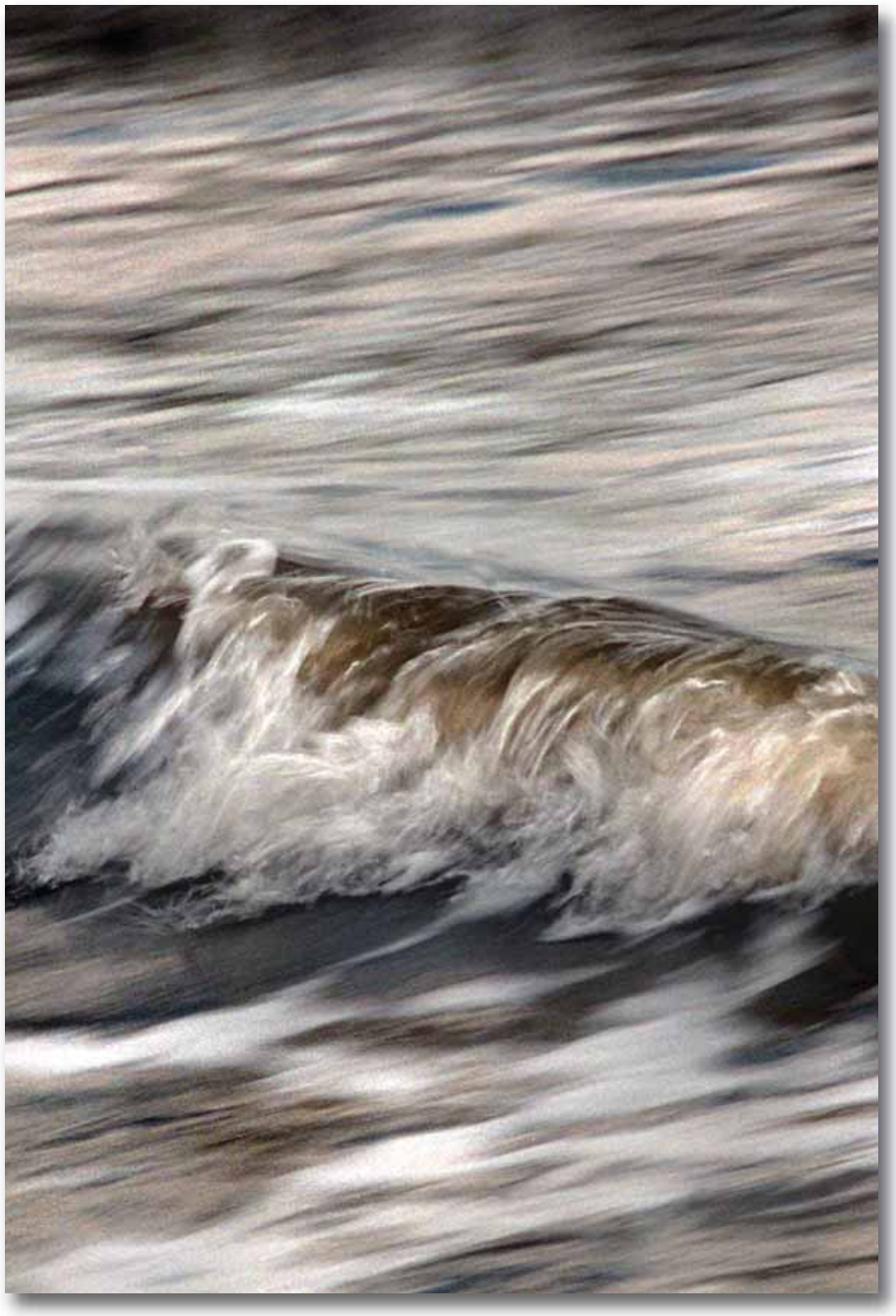
Nevertheless, very few reputable scientists dispute the contention that global warming is occurring, even though there is some disagreement over the precise causes of that warming. Further, in 2007 a group of three- and four-star flag and general officers from all the services – Army, Navy, Air Force, Marine Corps and Coast Guard – and representing all combatant commands, was convened by the Center for Naval Analyses to examine the issues relating to climate change and global warming. These participants, accompanied and sup-

ported by service scientists, had no axes to grind and probably would have preferred to issue a "no problems" report because of the competition for limited funding any global warming conclusion might encourage. Even so, their report, "National Security and the Threat of Climate Change," was strikingly clear in its tone:

> *As military leaders, we know we cannot wait for certainty. Failing to act because a warning isn't precise enough is unacceptable. The intelligence community should incorporate climate consequences into its National Intelligence Estimate. The National Security Strategy should directly address the threat of climate change to our national security interests.*

The 2008 National Intelligence Assessment reiterated these judgments and concluded that climate change is a serious threat to national security and long-term global stability. A Strategic Environmental Research and Development Program has been launched to evaluate sea-level rise and the ecological impacts on military installations posed by climate change.

The National Council for Science and the Environment in its January 2008 report, "Climate Change: Science and Solutions," lists its No. 1 reason why we must act now: "Global climate change is not a future or hypothetical situation; it is occurring now with some of its effects happening more rapidly than the scientific models have predicted."



Sobering Conclusions

Professor John P. Holdren of Harvard University, president and director of the Woods Hole Research Center, has placed the issue in perspective:

> *Global warming is a misnomer, because it implies something that is gradual, something that is uniform, something that is quite possibly benign. What we are experiencing with climate change is none of those things. It is certainly not uniform. It is rapid compared to the pace at which social systems and environmental systems can adjust. It is certainly not benign. We should be calling it "global climatic disruption" rather than "global warming."* ("Meeting the Climate-Change Challenge," National Council for Science and the Environment, Jan. 17, 2008)

The necessity for society to take a long-range view of global warming is emphasized in the Federal Coastal Zone Management Act (16 US Code § 1451), which provides that "because global warming may result in a substantial sea-level rise with serious adverse effects in the coastal zone, coastal states must anticipate and plan for such an occurrence." Alas, a key finding of the U.S. Climate Change Science Program report, "Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region," issued in January 2009, is that "the comprehensive high-resolution and precise analyses of the spatial distributions of population and infrastructure vulnerable to sea-level rise in the Mid-Atlantic required for planning and response do not exist at the present time."

Action is needed on three fronts. First, Hampton Roads as a region must do its part initially to control and subsequently to diminish carbon emissions. This will not be easily accomplished, but certainly will involve less vehicular travel and greater attention to green building practices.

Second, the Commonwealth of Virginia would be well advised (for a variety of reasons) to increase the taxes it imposes on gasoline and diesel fuel. These taxes have not risen since the 1980s. Higher fuel taxes easily are the most efficient way to decrease carbon emissions from vehicles, and this conclusion would hold even if Virginia and Hampton Roads did not need additional revenue to deal with road and rapid-transit transportation needs.

Third, Hampton Roads must prepare for gradual, but seemingly inexorable increases in ocean and river water levels. A century of evidence documenting rising water levels – international, national and regional – warns us about what is coming. If current trends continue, then sea levels in Hampton Roads in 2020 will be at least another 2 inches higher than today. We will see the ocean creep up into backyards and witness increased flooding during rainstorms and at high tide. Only those with no concern for the future can afford to ignore this development. This directly implies that we ought to be actively planning a system of dikes and levees unless we intend to forfeit huge portions of our land to the sea.

We belabor the obvious when we observe that the planning and construction of dikes and levees is so far removed from public attention in Hampton Roads that anyone who broaches the subject is likely to elicit a quizzical look. After all, isn't there a consensus regionally that transportation improvements actually constitute our major agenda item? Probably. However, we predict that increased flooding in future years, capped by some disaster, will inspire epiphanies on the subject among citizens, businesses, the defense community and elected officials. The region will then predictably move into crisis mode. In the meantime, we harbor the modest goal of increasing regional awareness of the looming issues associated with the rising sea levels that will occur because of global warming and other factors.

Traffic Congestion

TRAFFIC CONGESTION IN HAMPTON ROADS: IDENTIFYING AND MEASURING OUR BOTTLENECKS

If you're looking for a bright side to the past year's economic woes, take a drive on I-64 or any of our region's other interstate highways. In Hampton Roads and throughout the United States, traffic congestion decreased by nearly one-third between 2007 and 2008. This is the startling conclusion presented by the traffic information provider Inrix in its National Traffic Scorecard of 2008 (available at www.inrix.com). **The hours of weekly congestion on Hampton Roads' busiest stretches of interstate highway decreased by 10 percent, while drivers' average speeds at these bottlenecks (when congested) rose from 14.2 to 15.9 miles per hour.**

Such a significant drop in traffic volume is unprecedented in recent history. As longtime residents of Hampton Roads should easily recognize, traffic volume tends to rise from year to year, along with the population and size of the economy. But 2008 was no ordinary year, in Hampton Roads or elsewhere. The first half of the year witnessed a steady increase in U.S. fuel prices – from $3.11 per gallon in January to $4.11 in July ($2.54 to $3.53 in Virginia). Inrix data demonstrate that the rising cost of fuel had a direct and immediate effect on urban traffic congestion, as drivers sought to economize by scaling back their time on the road. Gasoline prices then plunged below $2 per gallon in the final weeks of 2008, as the global recession became fully apparent. Unemployment figures rose steadily throughout 2008, ending at a high of 7.2 percent in December. Unemployment in Hampton Roads increased at a similar rate, though ended the year much lower at 5.5 percent. Despite lower fuel prices at the year's end, fewer people traveling to and from jobs eased traffic congestion further, particularly during morning and afternoon peak travel hours.

Not all metropolitan areas experienced these trends in the same way. Although virtually all of the 100 most populous U.S. metropolitan areas witnessed a decline in traffic congestion (Baton Rouge, La., with a 6 percent increase, is the sole exception), the rates of this decline vary considerably. Smaller metro areas with fewer than 1 million residents often saw larger drops in congestion, since their traffic woes were typically less intense to begin with. (Toledo, Ohio, had the most dramatic decline in peak hour traffic, at 76 percent.) A notable exception is the Riverside, Calif., metro area, which claims more than 4 million residents – and one of the nation's highest foreclosure rates. Riverside's traffic congestion fell dramatically by 57 percent, the 7th-largest decrease among U.S. metro areas. Table 1 supplies comparative information on traffic congestion in Hampton Roads and other metropolitan areas.

Hampton Roads experienced a 29 percent decline in traffic congestion in 2008, matching precisely the average rate of decline among the 100 largest metro areas. In other respects, however, our traffic patterns deviate significantly from national averages. In this chapter, we'll take a closer look at Hampton Roads' rankings in the Inrix National Traffic Scorecard. We'll explore where and when our traffic congestion is at its worst – and how this has changed between 2007 and 2008. Finally, we'll suggest what implications the Inrix data might have for regional transportation policy.

TABLE 1

METROPOLITIAN RANKINGS — HOW WE COMPARE

				Peak Hour Congestion					Peak Hour Travel Time Index					Worst Hour			Congestion, All Hours/Days					
Metropolitan Area	Population Rank	Approx. Population (000)	Road Miles Analyzed	Congestion Rank	% Congested Compared to Worst (LA)	2007 Congestion Rank	Change in Rank, 2008 vs. 2007	% Change in Congestion, 2008 vs. 2007	Travel Time Index (TTI) Rank	Travel Time Index (TTI)	2007 Travel Time Index (TTI) Rank	Change in TTI Rank, 2008 vs. 2007	% Change in TTI, 2008 vs. 2007	Worst Hour (Day/Hr)	Worst Hour TTI	Worst Hour TTI Rank	Off Peak Congestion Rank	% Off Peak Congestion Compared to Worst (NY)	All Hours/Days Congestion Rank	% Total Congestion Compared to Worst (LA)	% of Total Congestion from Peak Hours	% of Total Congestion from Off Peak Hours
Summary Top 100 Markets		197,281	47,029					-29%		1.09			-3.5%	F 5pm	1.20						60%	40%
5 Most Congested Metro Areas																						
Los Angeles/Long Beach CA	2	12,876	1,560	**1**	100%	1	0	-24%	1	1.33	2	1	-8.2%	Th 5pm	1.63	2	2	82%	1	100%	68%	32%
NY/Northern NJ/Long Island	1	18,816	2,073	**2**	87%	2	0	-25%	5	1.22	5	0	-5.8%	F 5pm	1.48	5	1	100%	2	98%	60%	40%
Chicago-Naperville-Joliet IL-IN-WI	3	9,525	1,320	**3**	48%	3	0	-17%	9	1.19	10	1	-3.4%	Th 5pm	1.36	9	3	45%	3	50%	66%	34%
Dallas-Fort Worth-Arlington TX	4	6,145	1,618	**4**	39%	5	1	-13%	18	1.12	22	4	-2.4%	F 5pm	1.31	17	5	29%	4	38%	70%	30%
Wash DC Metro Area	8	5,307	903	**5**	36%	4	-1	-26%	7	1.20	8	1	-5.9%	Th 5pm	1.42	8	4	30%	5	36%	67%	33%
Hampton Roads and Other Southern Metro Areas																						
Charlotte-Gastonia-Concord NC-SC	35	1,652	444	**27**	8%	28	1	-25%	23	1.1	26	3	-3.0%	F 5pm	1.24	24	25	11%	24	10%	56%	44%
Hampton Roads	34	1,659	305	**32**	6%	32	0	-29%	20	1.11	21	1	-3.7%	F 4pm	1.32	14	46	6%	35	7%	65%	35%
Jacksonville FL	40	1,301	475	**44**	5%	34	-10	-47%	43	1.05	41	-2	-4.0%	T 5pm	1.10	53	32	8%	37	6%	50%	50%
Raleigh-Cary NC	49	1,048	295	**51**	3%	60	9	-26%	48	1.05	57	9	-1.6%	Th 5pm	1.12	45	64	4%	59	3%	53%	47%
Richmond VA	43	1,213	625	**60**	2%	56	-4	-47%	91	1.02	87	-4	-1.4%	Th 5pm	1.04	92	49	6%	54	4%	38%	62%
Charleston-North Charleston SC	81	630	90	**71**	1%	71	0	-45%	34	1.08	27	-7	-4.7%	Th 5pm	1.20	29	98	1%	89	1%	63%	37%

Source: Inrix National Traffic Scorecard: 2008 Annual Report

How Inrix Keeps Score

Inrix is a private, Seattle-area corporation that was established by former Microsoft executives Bryan Mistele and Craig Chapman in 2004. Inrix monitors traffic conditions on more than 800,000 miles of U.S. roads, using a data collection network composed of "hundreds of public and private sources, including traditional road sensors and the company's unique network of nearly a million GPS-enabled vehicles and cellular probes." Inrix works with Clear Channel Radio, Total Traffic Network and other partners to provide real-time traffic information for an array of different users, including the broadcast media and owners of portable navigation devices. The billions of data points collected by Inrix inform the National Traffic Scorecards of 2007 and 2008, which assess congestion on the major highways of the country's 100 largest metropolitan areas.

A key scorecard concept is the Travel Time Index (TTI), which can be defined as the "ratio of peak period travel time to free flow travel time." In other words, TTI expresses the average amount of extra time it takes to complete a trip during the busiest driving hours of the day, relative to overnight hours when traffic is freely flowing. (Inrix identifies peak travel hours as 6-10 a.m. and 3-7 p.m., Monday through Friday.) Hampton Roads' TTI is 1.11, which means that a trip during peak hours is likely to take 11 percent longer than when traffic flows freely. This means you'll take an extra 3.3 minutes to complete an otherwise 30-minute drive between Portsmouth and Virginia Beach at peak hours. Inrix has determined that Hampton Roads traffic is at its heaviest between 4-5 p.m. on Friday, when our "Worst Hour" TTI climbs to 1.32. Get in the car then, and you'll need an additional 9.6 minutes for the same drive.

Inrix determines the TTI for an entire metro area by aggregating the individual TTIs for each of the area's road segments. Road segments typically include "the interchange and the portion of linear road leading up to the interchange across all lanes in a single direction of traffic." Each segment is identified by a standardized location code. According to the 2008 Scorecard, Hampton Roads' worst bottleneck is "City Hall Ave./Exit 10" on westbound I-264, the final exit before the Downtown Tunnel. Only .15 miles long, this road segment is congested during 28 of 40 peak driving hours, with a sluggish average speed of 8.9 mph when congested. Inrix considers the TTI as well as length of all road segments such as this when calculating the overall congestion of a given metro area.

How Hampton Roads Measures Up

Unsurprisingly, Inrix identifies Los Angeles highways as the most congested in the United States, followed closely by those in and around New York City. Compared to these two metropolises, traffic congestion elsewhere seems minimal. Sixty-seven of the 100 most populous metro areas have a rate of congestion that is 5 percent or less that of Los Angeles. Hampton Roads (at 6 percent) doesn't quite make this cutoff, which places us within the top third of the most congested metro areas around the country. Given the size of Hampton Roads, our position on the scorecard is not unexpected. We are the 34th most populous metro area, and we rank 32nd in congestion.

A closer look at the Scorecard (see Graph 1), however, reveals some important idiosyncrasies about Hampton Roads traffic patterns. To begin, 65 percent of our total congestion derives from peak driving hours. (The national average is 60 percent.) Thus, our region's TTI – and particularly our Worst Hour TTI – is comparatively high. At 1.32, our Worst Hour TTI is, in fact, the 14th-highest in the country. By contrast, we rank only 46th in off-peak congestion. Together these figures suggest that a majority of our traffic woes are compressed into a few hours of intense congestion at particularly stubborn bottlenecks – a conclusion that should surprise few Hampton Roads residents who rely upon the Downtown Tunnel and Hampton Roads Bridge-Tunnel for their daily commutes.

In 2008 (as in 2007), our region's top 13 bottlenecks were located on either side of these two tunnels. Graph 2 illustrates this reality. Last year's most congested road segments were on westbound I-264 at the City Hall Avenue and

Waterside Drive exits, as well as on the Berkley Bridge just before the Downtown Tunnel. Eastbound I-264 at Effingham Street came in fourth place, followed by eastbound I-64 at the two exits immediately preceding the Hampton Roads Bridge-Tunnel. Table 2 lists the top 15 traffic bottlenecks in the region.

Our region's top six bottlenecks range between the 165th and 301st most congested nationwide. For a metro area of our size, this is a dubious distinction. Outside of the top seven most congested metro areas (all of which claim more than 4 million residents) only Seattle, Honolulu and Austin, Texas, have a larger number of the nation's 350 worst bottlenecks.

Thus, even by national standards, traffic conditions at the Downtown Tunnel and Hampton Roads Bridge-Tunnel are quite poor. What's more, our tunnel traffic has worsened relative to other bottlenecks around the country. Although both hours of weekly congestion and average driving speed when congested improved at our region's worst bottlenecks between 2007 and 2008, most of these bottlenecks also received a higher (which is to say, less favorable) congestion ranking in 2008. Congestion declined almost everywhere, but it declined less at the Downtown and Midtown tunnels than at other traffic hot spots around the country.

GRAPH 1

OVERALL CONGESTION

Congestion Compared to

2007: -28.6%

Worst Metro Area (L.A.): 6%

Travel Time Index (TTI)[1]

TTI: 1.11

National TTI Rank: 20

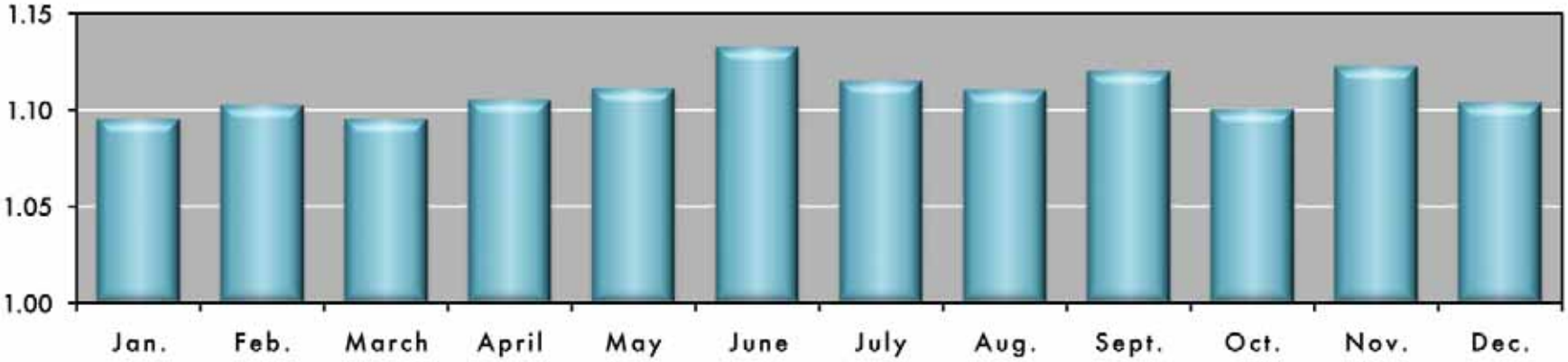
Compared to 2007: -3.7%

Peak Travel Hour[2]

2008 Worst: Friday, 4-5 PM (TTI=1.32)

2007 Worst: Friday, 4-5 PM (TTI=1.38)

TRAVEL TIME INDEX[1] BY MONTH



[1] TTI is the ratio of actual to uncongested travel time. A ratio of 1.10 means 10 percent additional trip time due to congestion.
[2] Peak hours are Monday to Friday, 6 to 10 a.m. and 3 to 7 p.m.

Source: Inrix National Traffic Scorecard: 2008 Annual Report

GRAPH 2

CBSA: VIRGINIA BEACH-NORFOLK-NEWPORT NEWS VA-NC

Source: Inrix National Traffic Scorecard: 2008 Annual Report

TABLE 2

HAMPTON ROADS' WORST BOTTLENECKS[3]

Regional Ranking		National Ranking		Road / Direction	Segment / Interchange	City	Length (Mi)	Hours of Congestion Per Week		Average Speed When Congested (mph)	
2008	2007	2008	2007					2008	2007	2008	2007
1	3	165	220	I 264 WB	CITY HALL AVE / EXIT 10	Norfolk	0.15	28	27	8.9	7.7
2	2	175	204	I 264 WB	WATERSIDE DR / EXIT 9	Norfolk	0.62	26	21	11.0	7.4
3	5	228	305	Berkley Brg / I 264 WB	BERKLEY BRG	Norfolk	0.39	31	32	12.6	11.9
4	4	231	258	I 264 EB	HWY 141 / EFFINGHAM ST / EXIT 7	Portsmouth	0.92	26	34	12.1	13.4
5	6	238	350	Hampton Roads Brg Tnl / I 64 EB	MALLORY ST / EXIT 268	Hampton	0.58	34	30	17.6	15.0
6	1	301	188	I 64 EB	US 60 / HWY 143 / EXIT 267	Hampton	1.79	27	35	16.7	13.6
7	7	687	580	I 64 WB	4TH VIEW ST / EXIT 273	Norfolk	1.25	20	21	20.2	14.8
8	8	917	1039	I 264 EB	DES MOINES AVE / EXIT 6	Portsmouth	0.67	9	13	10.5	12.0
9	9	1084	1057	I 64 WB	PATROL RD	Norfolk	0.63	12	13	16.5	12.7
10	11	1268	1801	I 264 WB	CLAIBORNE AVE / EXIT 11	Norfolk	0.09	8	8	11.3	10.4
11	12	1629	1916	Hampton Roads Brg Tnl / I 64 EB	HAMPTON ROADS BRG TNL (HAMPTON)	Hampton	0.77	14	17	23.8	22.4
12	10	1779	1526	I 64 WB	OCEAN AVE / EXIT 274	Norfolk	0.85	10	16	20.5	19.3
13	13	2146	1943	I 64 WB	OCEAN VIEW AVE / EXIT 272	Norfolk	1.61	10	17	24.7	24.5
14	14	2212	3939	I 64 WB	I 564/US 460/GRANBY ST/EXIT 276	Norfolk	0.46	7	10	18.3	21.0
15	15	2255	3891	I 664 SB	US 60/25TH ST/26 ST/EXIT 6	Newport News	0.17	6	9	15.6	18.1
								Total Hours of Congestion Per Week		Total Average Speed When Congested (mph)	
								268	303	16.0	14.9

[3] Bottleneck "congestion" is defined as times when average hourly speed is half or less than the uncongested speed for that road segment.
Source: Inrix National Traffic Scorecard: 2008 Annual Report

Implications for the Future

"While we all should cheer the reduction in congestion in 2008," conclude the authors of the Inrix Scorecard, "we should be under no illusion that this is permanent." Assuming that the economy gradually revives and fuel prices remain moderate in upcoming months, traffic congestion is likely to return to 2007 levels (and eventually to outstrip them). Last year's respite to our traffic woes should in no way discourage the development of a smart, proactive transportation policy that can help to alleviate congestion on our busiest roadways – something that our region and others in the Commonwealth of Virginia sorely need.

The following conclusions from the Inrix Scorecard are particularly pertinent for Hampton Roads:

SMALL CHANGES IN TRAFFIC VOLUME CAN HAVE A BIG IMPACT ON CONGESTION.

The 29 percent decline in peak hour congestion from 2007 to 2008 does not mean that there were 29 percent fewer vehicles on the road. Rather, the Federal Highway Administration estimates that total traffic volume on urban interstates decreased by a mere 3 percent in 2008. Because so many of our nation's major commuting roads operate at maximum capacity during peak travel hours, even a small reduction in vehicles eases traffic flow substantially. Thus, we should take care not to underestimate the positive effect that one or more of the much-discussed proposals to alleviate tunnel congestion might have on regional commuting times. Adding lanes to our existing tunnels, creating a "third crossing" or expanding public transportation all have the potential to reduce peak hour congestion dramatically.

THINGS CAN GET WORSE BEFORE THEY GET BETTER.

Major construction and road improvement projects make congestion worse in the short term. This should be readily apparent to anyone who drives in or near downtown Norfolk, where construction on the city's new light rail system has been under way for several months. The 2008 Scorecard reveals a clear linkage between work zones and bottlenecks, underscoring "the need to focus on managing work zones in ways that mitigate congestion." The current intensity of congestion at the Midtown, Downtown and Hampton Roads Bridge-Tunnels means that any future expansion or improvement projects at these sites must be undertaken with great care. It seems likely that some degree of increased congestion in the short term will be necessary to make our region's worst bottlenecks more drivable in the years to come.

The Tunnels that Connect Hampton Roads

THE TUNNELS THAT CONNECT HAMPTON ROADS: WONDERFUL ASSETS OR POTENTIAL ACHILLES' HEELS?

Achilles' Heel: a metaphor describing a potentially fatal weakness despite overall strength

Hampton Roads hosts the second-largest seaport on the Atlantic Coast and the largest naval base in the world. Its very existence is defined by the Atlantic Ocean and the many bodies of water that flow from many parts of Virginia into the ocean. Waterways such as the James River once profoundly divided the region. In 1930, an individual wishing to travel from downtown Hampton to downtown Norfolk faced two choices – a long and circuitous land trip that could approach 25 miles (via the James River Bridge on Route 17, which opened in 1928), or a boat ride.

The opening of the first major tunnel connecting the Peninsula with Southside (the 3.5-mile Hampton Roads Bridge-Tunnel in 1957) changed matters dramatically. Now it was possible for automobiles and trucks to travel back and forth between the Peninsula and Southside directly and with comparative ease. This cut many miles and considerable time off such a trip and might well be regarded as a definitive move in support of the notion of a region called Hampton Roads.

Four other major tunnels exist in our area: the .65-mile Downtown Tunnel (1952) and the .8-mile Midtown Tunnel (1962), connecting Norfolk and Portsmouth; the 17.6-mile Chesapeake Bay Bridge-Tunnel (1964), linking Virginia Beach to the Eastern Shore; and the 4.6-mile Monitor Merrimac Memorial Bridge-Tunnel (1992), connecting Suffolk and Newport News.

Taken together, these five bridge/tunnel complexes unite the region and stimulate commerce. Without them, the bustling Port of Hampton Roads would be a shadow of what we see today because trucks handle significant proportions of the goods that flow through the port. The bridges and tunnels also provide critical infrastructure to support the numerous Department of Defense installations and activities within the region. And, during hurricane season, they provide the promise of serving as evacuation routes.

A recitation of the positive impact of our region's bridges and tunnels on economic and social life in Hampton Roads virtually begs the question: What if they were closed, for whatever reason, or were rendered inoperable for long periods of time?

Are European Examples Relevant to Hampton Roads?

Tunnel incidents since 1995 have killed 713 people worldwide. Among the highly publicized have been:

- Mont Blanc Tunnel Fire (March 1999): The Mont Blanc Tunnel connects Italy and France. This disaster (41 deaths) occurred when a truck carrying nine tons of margarine and 12 tons of flour caught fire. All but seven of those who died stayed in their cars rather than attempt to access "escape" rooms located inside the tunnel, though it is not clear they could have survived even had they tried. The fires burned for two days. Opened in 1965, the Mont Blanc Tunnel was designed for

450,000 vehicles per year, but already was handling 1.1 million vehicles annually by 1997.

- Tauern Tunnel Accident/Fire (May 1999): The Tauern Tunnel is located near Salzburg, Austria, and was only two lanes at the time of the accident, which was caused by an early-morning collision and fire involving 60 trucks and killing 12 people.

- Gotthard Tunnel Accident/Fire (October 2001): Located in Switzerland, this tunnel is more than 10 miles long. A collision between two trucks resulted in fires that killed 12 people, primarily from smoke and heat that reached more than 1,800 degrees.

- Channel Tunnel Fires (November 1996, August 2006, September 2008): The Channel Tunnel connects the United Kingdom and France. Three significant fires aboard trains have closed the tunnel since it opened in 1994.

What lessons did Europeans learn from these accidents (none of which involved terrorism)?

- Tunnels are constantly vulnerable to accidents and mishaps that not only result in deaths, but also close them to traffic for periods of time – ranging up to three years, as was the case following the Mont Blanc Tunnel fire.

- Some fires in tunnels are virtually unavoidable and therefore are considered to be routine incidents. (The Lincoln and Holland tunnels in New York City each experience several car fires per year.) The possibility of fire requires that routine, easily implemented protocols exist to deal with such occurrences.

- Bidirectional (two-lane) tunnels are substantially more susceptible to accidents than dual (twin-tube) carriageway tunnels.

- Not surprisingly, tunnels that allow transiting vehicles to carry flammable and explosive materials are susceptible to much more destructive accidents. Convincing drivers not to carry illegal materials through tunnels is a never-ending task.

- Bad driving and unwise employee judgments have caused nearly every major tunnel accident. Terrorism might produce the same effects, but no major tunnel disaster has been the result of terrorism, although English authorities reported they foiled an attempt by Islamic terrorists to blow up the Channel Tunnel in 2006.

- The first 10 minutes are decisive when it comes to saving people's lives and limiting material damage (e.g., in the case of the Gotthard Tunnel accident, experts were surprised by how rapidly toxic fumes spread and visibility declined; this led to the loss of life).

- Tunnel users often fail to recognize emergency signs, which has resulted in fatal consequences for those trying to escape.

- The probability of a tunnel accident increases as the volume of traffic in the tunnel increases.

- It is possible to screen many, but not all, potentially dangerous cargoes before they enter tunnels; however, the costs associated with detecting sophisticated dangers (for example, those relating to radiation) can be very high.

- Among the most efficient and low-cost means of reducing the frequency and severity of tunnel accidents are: (1) mandating smaller fuel tanks for heavy-goods vehicles; (2) providing tunnels with heat-seeking cameras; (3) restricting the amount of fuel that heavy-goods vehicles may carry into a tunnel; (4) requiring certain vehicles to carry fire-extinguishing equipment; and (5) regulating distances between vehicles.

Readers will recognize that several of the recommended precautions could be implemented immediately in our region's tunnels, but others (such as regulating distances between vehicles) would cause immediate problems. We can only wish good luck to any authority that attempts to enforce meaningful "distance between vehicles" regulations in the Downtown and Midtown tunnels during weekday rush hours.

How Vulnerable Are We in Hampton Roads?

It should come as no surprise that regional authorities are paying increased attention to Hampton Roads' bridge-tunnel vulnerabilities and are actively involved in assessing emergency preparedness and critical infrastructure protection plans. Addressing these risks and mitigating their potential impacts remain top priorities, not only among the general public, but also with Hampton Roads policy makers.

Let's look at some of the considerations. The overall level of risk to one of our tunnels due to an adverse event is a function of three primary factors:

a. **Importance Factor** (I) – This is a straightforward measure of the socioeconomic importance of a tunnel and its operation. Typically, a quantitative measure is developed to account for the following attributes of the tunnel:

   1. Financial importance to the regional economy
   2. Importance to the regional transportation network
   3. Importance as an emergency evacuation route
   4. Exposed population in the tunnel when the adverse event occurs

b. **Occurrence Factor** (O) – This variable measures the probability of an adverse event occurring. Most often, this measure takes the following into account:

   1. Level of exposure to risk events
   2. Level of security
   3. Frequency of exposure to adverse events (e.g., frequency of large-truck traffic with potentially dangerous cargoes)

c. **Vulnerability Factor** (V) – This variable measures the consequences of an adverse event to the tunnel, its occupants and neighboring populations. It usually incorporates the following measures:

   1. Expected financial damage to the tunnel
   2. Expected replacement value
   3. Expected downtime or closure of the tunnel
   4. Expected number of casualties (deaths or severe injuries)
   5. Value of reduced economic activity.

The I, O and V factors enable risk evaluators to evaluate the impact of adverse events. Let's delve into this process in more detail to get a better sense of how this occurs.

Table 1 provides an example of how the Importance, Occurrence and Vulnerability factors might be defined and developed. It uses ranges (low to high), likelihoods and expected losses (denoted by red, yellow and green, which correspond to high, medium and low severity) to describe a given adverse event in one of the region's five tunnels. A 1-5 scale is used to assign probabilities (least likely to most likely) and losses (smallest to largest) to each adverse event to which a tunnel might be exposed.

Table 2 extends this analysis to the five tunnels in Hampton Roads for 2008 to reflect the size of monetary and human losses connected to an adverse event.

The next step is to translate Table 2's values into a scale that varies between 0 and 1. The translation in Table 3 is based upon a "fuzzy" equation where the translated factor is equivalent to the average of the values for all risk events, divided by 10. The translation for the importance factor is a one-to-one mapping where an assessment of "high" corresponds to a value of 1, an assessment of "medium" corresponds to .50 and an assessment of "low" corresponds to a value of 0, etc.

Finally, let's take the values of Table 3 and translate them into an overall risk prioritization score (RPS) that takes into account all three factors (importance, fre-

TABLE 1

CONNECTING RISK FACTORS TO AN EVENT'S IMPORTANCE

Risk Scale Example				
	Importance Factor	Occurrence Factor	Vulnerability Factor	
Scales	Low / High	Likelihood	Monetary Loss Severity (Dollars)	Human Loss Severity (Deaths)
1	Low	<1%		
2	Low to Medium	1-5%		
3	Medium	5-10%		
4	Medium to High	10-50%		
5	High	>50%		

quency of occurrence and vulnerability). The risk prioritization scores in Table 4 are the product of the equation **RPS = I • O • V**. These scores enable us to say that, all things considered, the Hampton Roads Bridge-Tunnel (HRBT) merits our greatest attention if and when we worry about adverse events. **Taking into account the HRBT's importance, the likelihood of an adverse event occurring there, and its potential vulnerability, the HRBT receives the highest risk ranking. The lowest risk ranking belongs to the Chesapeake Bay Bridge-Tunnel (CBBT) and hence it merits the least attention of any of the five tunnels when we consider how to deal with adverse events.** Note that "least attention" is not equivalent to "no attention." Adverse events (e.g., car and truck accidents, flooding, fire) are fully capable of causing significant problems at the CBBT. However, all things considered, these problems are much smaller for the CBBT than is the case for the HRBT and MMBT.

TABLE 2

ADVERSE EVENT EXAMPLES FOR THE FIVE HAMPTON ROADS TUNNELS

2008 Factor Translation Example				
Risk Events	Importance Factor	Occurrence Factor	Vulnerability Factor	
	Low – High	Likelihood	Monetary Loss (Dollars)	Human Loss (Deaths/Injuries)
HRBT				
Car Accident	High	5	1	2
Flooding		3	3	2
Fire		2	2	2
MMBT				
Car Accident	High	4	1	1
Flooding		3	3	1
Fire		2	2	1
Midtown Tunnel				
Car Accident	Medium	5	1	2
Flooding		4	3	2
Fire		2	2	2
Downtown Tunnel				
Car Accident	Medium	5	1	2
Flooding		4	3	2
Fire		2	2	2
CBBT				
Car Accident	Medium to High	3	1	1
Flooding		3	4	1
Fire		1	2	1

TABLE 3

A SCALE FOR ADVERSE EVENTS: THE FIVE HAMPTON ROADS TUNNELS

Importance Factor	Occurrence Factor	Vulnerability Factor
HRBT		
1	.33	.20
MMBT		
1	.30	.15
Midtown Tunnel		
.5	.37	.20
Downtown Tunnel		
.5	.37	.20
CBBT		
.75	.23	.17

TABLE 4

RELATIVE RISK RANKINGS: THE FIVE HAMPTON ROADS TUNNELS

Tunnel	Risk Prioritization Score	Risk Rank
HRBT	.0670	
MMBT	.0450	
Midtown Tunnel	.0370	
Downtown Tunnel	.0370	
CBBT	.0293	

Regional Infrastructure Independence

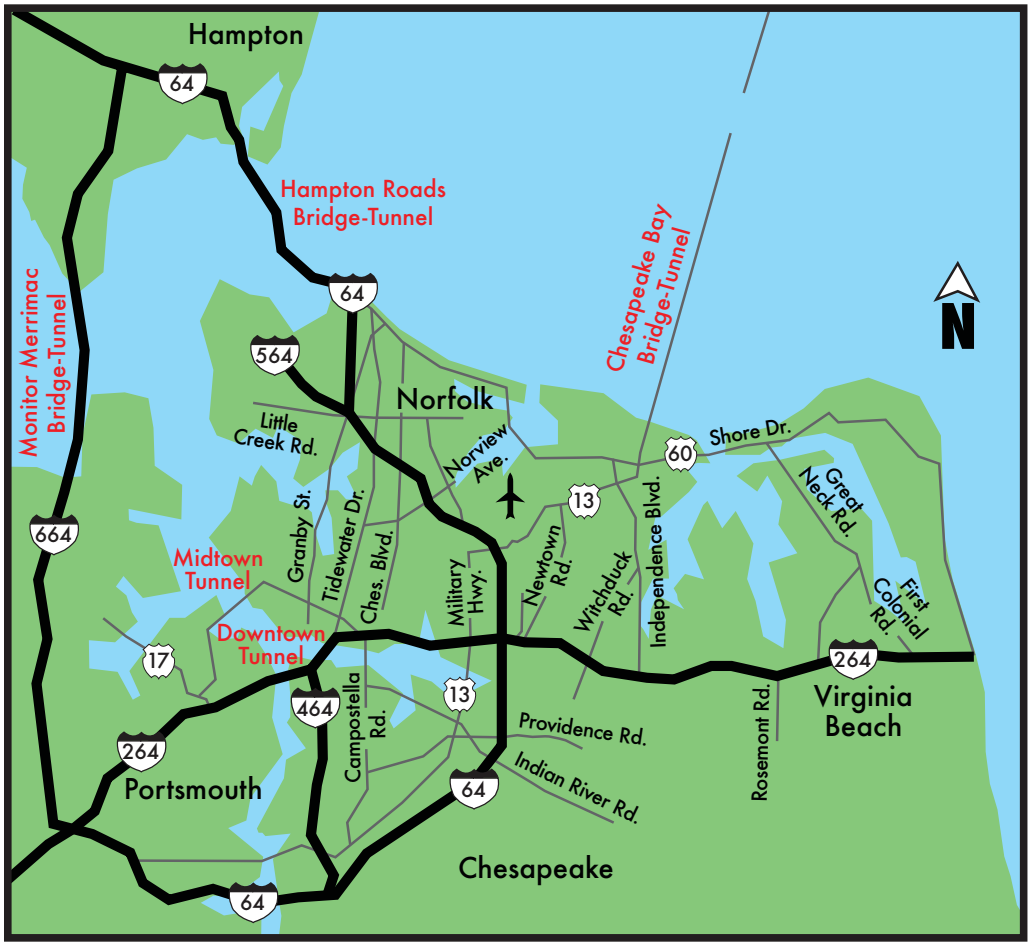
The tragic events of Sept. 11, 2001, in New York City and at the Pentagon served to re-emphasize what often is termed the "cascade" effect. The major building blocks of a modern urban civilization are interrelated and interdependent. When one part of New York City's infrastructure was destroyed or failed, this rippled into other parts of the city and knocked out other vital functions as well.

Suppose a destructive hurricane were to hit Hampton Roads. Likely, it would knock out electricity, disrupt natural gas delivery, diminish our ability to communicate, limit our ability to access television and radio, and perhaps flood or block off one or more tunnels. Clearly, our ability to deal with any one of these calamities depends at least partially upon the continuing operation of the remaining pieces of infrastructure.

Unfortunately, somewhat like a domino effect, the destruction of one piece of infrastructure (electrical service) often does impede or even knock down other pieces of infrastructure (television and radio reception and, in the case of New York City, subways). Hence, any analysis of the impact of adverse events upon our region's tunnels must be approached from an overall systems point of view. Everything is related and the experience of 9/11 reveals that infrastructure failures often cascade. Both foresight and wise planning are required to minimize the probability that infrastructure failures spread like a contagious disease.

Final Reflection: Accidents and Terrorism

All of the major European tunnel episodes that we described earlier were accidents and not the result of terrorist actions. Even so, a terrorist, especially a suicidal terrorist, could replicate the tragic results of these accidents. **In fact, Hampton Roads is vulnerable to terrorist attacks directed against many different key components of its infrastructure – not just bridges and tunnels, but also electrical, natural gas and water supplies, and tall buildings. The possibility of chemical and radiation attacks on the region, or even the detonation of small atomic weapons, cannot be discarded due to the overriding importance of the military installations located in our midst. Prudence requires that we be mindful of and prepare for such possibilities.**



The Chrysler Museum in 2009

THE CHRYSLER MUSEUM IN 2009

The Chrysler Museum contains artistic items that "any museum in the world would kill for."

– Art critic John Russell in The New York Times

John Russell was engaging in hyperbole (perhaps) when he averred that other museums would kill to have some of the items in the collections of the Chrysler Museum of Art. What is abundantly clear is that the Chrysler's collections are unparalleled in the Commonwealth of Virginia. The museum constitutes a cultural jewel whose activities attract almost 130,000 guests annually. Its many and varied programs provide ample demonstration that a major art museum acts as a magnet for a city, attracting corporations that value cultural amenities, residents that wish to return to the excitement of a revitalized downtown core, and national and international attention that fuels tourism.

The Chrysler's collections fall into six major areas: (1) American painting and sculpture, including works from American impressionists such as Mary Cassatt and Childe Hassam; (2) European painting and sculpture, including works by French impressionists such as Degas and Renoir; (3) contemporary art; (4) decorative arts; (5) a world-renowned glass collection; and (6) a highly regarded photography collection that includes venerable daguerreotypes as well as remarkable modern photographs.

Our focus here is upon the current status, health and prospects of the Chrysler Museum. This is a subject of particular interest because changing economic conditions have battered the ability of many nonprofit organizations to sustain their activities. Also, there is interest in whether the sometimes-controversial personnel reductions and decisions over the past few years have affected the quality and character of the institution's operations. Fortunately, as the succeeding analysis will argue, the Chrysler's wonderful resources continue to offer superb artistic experiences to the Hampton Roads region that are unmatched among many comparable metropolitan areas.

Some Early History

Like many museums founded in the early 20th century, the forerunner of the Chrysler was organized by small arts consortia interested in both the museum's social and aesthetic potential. Hence, in its early years, it included installations devoted to local history and the region's fauna. However, its recent history – as a museum dedicated to the comprehensive collection amassed by a single major donor – is unique.

What began through the efforts of the Irene Leache Art Association, which exhibited its members' work alongside a miscellaneous collection of artifacts in the Norfolk Public Library on Freemason Street starting in 1914, became the foundation of the Norfolk Museum of Arts and Sciences. In 1928, Florence Sloane, whose mansion on the Lafayette River would become the Hermitage Foundation, offered to head a committee to find an appropriate building. When the city donated a site on the Hague, contributions began to flow, ranging from pennies collected by schoolchildren to donations from the wealthy.

In 1938, a federal grant helped build an imposing Renaissance Revival structure with adequate room for growth. But for decades, the galleries continued to resemble a traditional chamber of curiosities, a Kunstkammer, exhibiting along with artworks, stuffed screech owls, Confederate relics and examples of Southern furniture in idiosyncratic assemblages. Prior to the Civil Rights era, Jim Crow laws kept many in the city from visiting the museum, and even after the social climate changed, William Parker, a powerful lawyer on its board, declared it a "private club," a statement flying in the face of national, state and municipal laws. Walter P. Chrysler Jr.'s arrival in 1971 would change the museum's name, its contents and its staff, but the turmoil would never completely disappear.

Son of the builder of the eponymous automotive empire as well as the premier Art Deco skyscraper in New York City, Chrysler had long been searching for a venue to house his personal eclectic collection. In 1958, he attempted to settle it in the freewheeling artists' colony of Provincetown, Mass., purchasing a large deconsecrated church, which locals came to refer to as "St. Walter's" or "First Church of Chrysler." The atmosphere lent an appropriate sanctuarial air to his rapidly expanding cache of Baroque paintings, but the church building was too small to fulfill its new owner's ambitions, leaving Chrysler determined to find a larger venue, preferably an equally ambitious, if likewise provincial, museum.

Not many such professional institutions were willing to take his offer seriously, given his list of requirements, which included his authoritative (some still deem it authoritarian) directorship, for he planned to be on-site and fully involved. Many potential locations demurred because of the controversial nature of some pieces in the collection, whose provenance seemed to be plucked from thin air rather than from traditional records of ownership, a perception that had long bedeviled Chrysler. His penchant for obsessive acquisitions that occasionally led to dubious purchases gave him a reputation as an undiscriminating accumulator. And yet, his desire to broker a deal served to make him quite prescient. He acquired French Art Nouveau furniture and glass, 19th-century French Academic paintings, and early works by mid-20th-century Americans when prices reflected the lack of interest in these now-important areas. But this desire for bargains could also mean hasty studio visits during which slightly damaged contemporary work could be had for a good price. The Chrysler still displays one of Frank Stella's hard-edge Protractor paintings, though it is rumored to have had a large hole in it on purchase. Stories of Chrysler's regular arrivals at the museum bearing paper grocery bags stuffed with additions to the glass galleries have circulated for years, becoming part of the "lore" that Rick Salzburg, now helming the Roanoke Arts Festival, so loved when he worked in public relations at the museum.

Walter Chrysler was obviously bringing a considerable – and often great – collection to Norfolk, but one freighted with controversial attributions to match its often-combative owner. After protracted encounters, the city finally capitulated to his demands and reached an agreement that satisfied many in local government. His wife, Jean Outland Chrysler, a Norfolk native, was happy to return to her hometown, and indulged her own desire to collect books, merging them with the old museum's holdings to create the exceptional library it now houses.

So began the life of Walter Chrysler Jr.'s museum and the tangled tale of the auto manufacturer's scion's success in his wife's hometown, a procession of events detailed in Peggy Earle's 2008 account, "Legacy: Walter Chrysler Jr. and the Untold Story of Norfolk's Chrysler Museum of Art." Unfortunately, the book, heavily (some might say "carefully") edited by William Hennessey, the museum's current director, leaves the struggles, personalities and vicissitudes of this man's life to our imagination, or to future chronicles. But many aspects of the collector's psyche are well known: Chrysler had a "take-no-prisoners" kind of mentality when it came to his new staff, the collection that was already in place and the city's culturati. He had developed a distrust of professionals in the art world, summarily firing all such members of the museum's staff en bloc.

In their stead, Chrysler imported friends from New York to play at curatorial work, notably the critic Mario Amaya, whose milieu included the soon-to-be scandalous photographer Robert Mapplethorpe and other denizens of Warhol's Factory scene. Amaya, who was in fact well educated and definitely an insider, in turn hired a new staff consisting of youthful curators-in-training like Brooks Johnson, who was able to build one of the best photography collections in the country despite Chrysler's occasional indifference to the medium. Meanwhile, Chrysler had scientific artifacts accumulated by the old museum thrown into dumpsters, and he sometimes fired personnel with abandon.

In the years between 1971 and his death in 1989, the museum's trustees valiantly contended with their new "board president," a title Chrysler preferred to any other, whose agreement with the city gave the municipality power to appoint 15 of the 28 board members, some of whom were content to let him have his way. According to Hennessey, this agreement continues to determine the nature of the board, and while the city heeds the museum's recommendations for its appointees, the municipality by necessity considers criteria other than aesthetics when it makes its decisions. Currently, the board includes in its mix corporate members alongside local art patrons and collectors.

More Recent Developments

Throughout the early years, the museum's most pressing need was to attain national certification, a problem that Chrysler himself refused to acknowledge in his hiring practices or in his sometimes inflated provenance decisions. The museum needed a resolute professional voice as director, strong enough to overrule the tough collector. Those characteristics were finally found in David Steadman, the director from 1980-89, who mollified Chrysler, and propelled both staff and facilities to accreditation with the American Museum Association, even while mounting an unprecedented capital campaign that enlarged and revitalized the original building.

In addition, Steadman attended to the kind of exhibition programming that would not interfere with Chrysler's own interests, bringing in another young curator, Tom Sokolowski, to continue a series of contemporary shows begun by Tom Styron, his predecessor. The urbane Sokolowski became one of the museum's most popular curators, with sold-out lectures detailing his cutting-edge choices. After his departure, he moved up in the museum world hierarchy, now holding the position of director of the Andy Warhol Museum in Pittsburgh.

Recent years have been less kind to the curatorial department. Beginning in 2003, the museum began to "downsize" across departments. Lynn Marsden-Atlass, then curator of the American collection and now director of the Arthur Ross Gallery at the University of Pennsylvania, and several other members of the staff were terminated.

About the same time, some Chrysler Museum members were perplexed by the institution's Ferrari exhibition, which involved dismantling part of an exterior wall to position automobiles in the gallery. The expenses surrounding this show, which failed to attract large numbers of visitors, were thought by some to be connected to the decision to reduce the staff. Most recently, glass curator Gary Baker and 28-year museum veteran and photography curator Brooks Johnson have left the staff. These downsizings of museum cadres and the internal reshuffling of duties caught the attention of the regional press. The Virginian-Pilot's Teresa Annas, for example, carefully described the non-transparent circumstances surrounding Johnson's departure on Aug. 30, 2008.

Prior to these departures, it would have been fair to characterize the lengthy tenure of much of Chrysler's curatorial staff as somewhat unusual. Many directors and curators play a professional game quite similar to Lewis Carroll's tea party in "Alice in Wonderland." They switch their positions in a sequence of moves, a "clean-cup-move-down (or up)" pattern that infuses each subsequent new institution with new energy and, often, new money. Even in the current recessionary period, as of this spring there were approximately 40 open positions nationwide for directors, though far fewer were demanding curatorial expertise. Lengthy employee tenure can be stabilizing to institutions and nurture strong relationships with supporters, or it can act as an anchor that stifles needed change. Which of these two interpretations is the more accurate concerning recent personnel changes at the Chrysler has been a matter of dispute.

The museum has had six directors since 1971 and many people associated with the Chrysler regard David Steadman's tenure in the 1980s as a high point in the institution's history. His achievements – establishing a professional credentialed staff and nationally approved procedures, along with an ambitious and successful capital campaign to raise funds for the facility's expansion – resulted in full accreditation by the American Association of Museums. The conversion of the open courtyard into the airy, glass-ceilinged Huber Court gave visitors a spectacular introduction to the galleries surrounding it. Second-floor visitors could overlook the space from the original windows, an architectural feature that preserves the spatial history of the building, while lending additional charm to the gallery experience.

Huber Court quickly became the heart of the museum and a notable venue for space rentals. Steadman was following a national trend, as these commodious public spaces are revenue boosters that attract large parties and weddings. New York's Metropolitan Museum placed its Temple of Dendur, a sizable Egyptian structure complete with 19th-century graffiti, off-center in a court obviously designed for such opportunities. Many a Hampton Roads couple has pledged undying devotion under the Huber's immense skylight, and other special events, dinners, parties and support-group activities continue to enjoy its spacious ambience, with rental fees adding to the museum's budget.

Yet, despite such heady successes, Steadman failed his third challenge: to convince the mortally ill Walter Chrysler to sign a new inclusive will that deeded his entire collection to the museum, as well as the additional support of a healthy endowment. Stubborn to the last, Chrysler waited for his favorite attorney, who was also hospitalized, to bring the document to him. The collector died in 1989, just hours before this could happen, thus depriving the museum of many of the objects on loan, including a number of superb Tiffany lamps, all of which had to be auctioned to pay estate taxes owed by

a hitherto unknown heir, a nephew, who sent many prized works to Sotheby's block. One of the most valuable works, a large moody landscape by the founder of French Realism, Theodore Géricault, best known for his "Raft of the Medusa," now belongs to New York's Metropolitan Museum of Art.

Steadman left the museum soon after the grand opening of its new facilities, and the top position has changed hands several times since, once quite forcefully when financial irregularities were discovered. If most of the directors were undistinguished, then they were strongly supported by excellent curators on the staff. A particularly successful team, Nick and Trinkett Clark, energized the American and contemporary areas. But even then traditions were abandoned, as the distaff Clark offered living artists a double-edged sword: Reluctant to continue hosting the biennial juried Irene Leache Memorial exhibitions, which required considerable time and effort, she mounted the last such show in 1998, but then compensated with opening the Parameters Gallery, showcasing emerging American artists, a series which helped the museum boost its contemporary collection.

During that time, the museum added several significant works from these one-person exhibitions, notably Jaune Quick-to-See Smith's "Trade (Gifts for Trading with White People)" of 1993. In the mid-'90s, the Clarks left first for the High Museum in Atlanta, and then for a northeastern museum devoted to children's book illustrators; their positions have since failed to attract long-term curators. The holders of these positions have come and gone quickly in the last 10 years. Besides the huge exhibition of works in storage, the primary in-house exhibitions since Hennessey's arrival in 1998 have been mounted around the photography collection. This steady and often exciting series of shows was balanced by one-person exhibitions such as those given to Bob Lerner and Ernest Withers. Their shows were the first to examine and evaluate their careers in the documentary field, and offered historical assessments of the medium's vast impact.

When William Hennessey arrived in 1998 from the University of Michigan's art museum, he appropriately began to examine the Chrysler's priorities – a lengthy list that included the potential expansion of the library's space and a number of necessary gallery reconfigurations. With this in mind, he initiated an ambitious capital campaign, using the omnibus installation of works chosen from storage by the three curators as a convincing argument. The public and board responded positively to this superb exhibition, and the campaign raised or obtained commitments for an impressive $35 million to support a variety of proposed alterations in space and programming. By all odds, the capital campaign was an important positive move forward for Hennessey and the museum.

Changes in Economic Fortunes and Related Adjustments

The past decade has seen a narrowing of the Chrysler's possibilities, primarily because of conditions of economic stagnancy and recession. It must be said that Hennessey and the board of trustees have been confronted with difficult choices at every turn. Indeed, while not all agree, the most persuasive explanation of events at the Chrysler over the past decade could be its challenge of having to deal with constant or declining revenues in certain years. As Table 1 below indicates, in the 2005-06 and 2007-08 fiscal years, the museum's total revenues were stagnant. Also, between June 30, 2008, and April 30, 2009, the value of the Chrysler's endowment declined from approximately $45 million to approximately $37 million (about 22 percent). It seems likely that this will negatively influence the institution's future budgets.

TABLE 1

THE CHRYSLER: THE FINANCIAL STORY

Year	Revenues	Percent Change
2004-2005	$5,774,229	—
2005-2006	$5,748,725	- 00.44%
2006-2007	$6,551,229	+13.96%
2007-2008	$6,603,395	+00.80%
2008-2009	$7,184,569	+08.80%
2004-2005 to 2008-2009 = +24.42% total increase, or a +5.62% annual compound rate of increase		
Source: Chrysler Museum of Art		

Even so, over the past four fiscal year budget cycles, the Chrysler's revenues have increased at the rate of 5.62 percent per year, compounded. This demonstrates that its fiscal problems have not been permanent. Hence, some of the significant changes in personnel and programs that have occurred appear to have been the result of choices made by the board and the director rather than solely a function of financial stress.

The new millennium has not been good for arts institutions in general and the ongoing recession has cut deeply into most museums' plans. February 2009 was particularly cruel, with The New York Times reporting almost daily on closings and cutbacks, including layoffs of 10 percent of the workforce at the Indianapolis Museum after its endowment lost $100 million in the last quarter of 2008. The long-suffering Detroit Institute of the Arts announced a 20 percent staff reduction and canceled plans for two major exhibitions on the Baroque and the mid-century trio of Robert Rauschenberg, Jasper Johns and Jim Dine, citing the expense for shipping and insurance. The Philadelphia Museum of Art announced pay cuts for staff along with staff reductions. The High Museum of Art in Atlanta was planning to cut its staff by 7 percent, with pay cuts for those remaining. And in Las Vegas, once a boom town for contemporary art, the Sun reported the Feb. 28, 2009, closure of the 13-year-old Las Vegas Art Museum, with its board president lamenting to The New York Times, "We've tried everything to keep it afloat. It's just a challenging time." Part of the financial challenge lies in diminishing endowment money tied to the markets; usually 4 percent to 5 percent of these funds are available for use, but when the market lost up to 50 percent of its value, these funds were reduced drastically.

Our region's flagship museum is not immune to these economic problems. Although the Obama and Kaine administrations say they strongly support the arts in general, and indications of increasing federal support for the National Endowments for the Arts and Humanities are contained within the stimulus package, it is not clear at the time of this writing that one-time-only federal grant money will reach the Chrysler, which has had trouble keeping its development officers in place; in six years, there have been six such employees. Brownie Hamilton, an award-winning grants writer and director of the Hamilton Group in Williamsburg, was contracted to prepare grants for the museum a total of eight

times. Her last success was an unusual one: $112,500 from the Institute of Museum and Library Services for operational support, which is used in part to speed the final stages in the digital transfer of the collection to the Chrysler's Web site. Normally, such operational grants are given to smaller arts organizations, but it was clear that, without a grant, this lengthy and essential task would have to be put on hold. In the current economic crisis, grants may be the only way that museums can continue to perform near peak efficiency, but the competition for these finite funding sources will be more intense than ever.

The Chrysler's 2008-09 budget, totaling $7,184,561, reflects declines in governmental funding (particularly from the Commonwealth), along with significant reductions in the value of the museum's endowment portfolios. In this light, the 2005 State of the Region study of the economic health of art galleries and museums in southeastern Virginia was prophetic, since the current situation differs by mere degrees from that of four years ago.

In the 1990s, when the Chrysler had committed allies in Richmond in Speaker of the House Thomas Moss and President Pro Tempore of the Senate Stanley Walker, the Commonwealth allocated $1 million a year to the museum's coffers. This sum may seem substantial, but must be weighed against the state's former allocation of $10 million to the Virginia Museum of Fine Arts in Richmond. After Moss and Walker left state government, no one with political heft took up the torch for the Chrysler, and Commonwealth funding diminished to $750,000 per year, then fell to amounts that would essentially match the internal budget allocation of $41,900 for 2008-09 shared by the curatorial and conservation departments. Peggy Baggett, executive director for the Virginia Commission for the Arts, does not have much hope for an increase in state monies, having recently overheard conversations between members of the state legislature questioning whether arts-related positions are "real jobs."

As a consequence, for several years, the Chrysler has been combining tasks for its curators. It has eliminated positions and cut its hours. The curatorial position in American art, vacated in 2003 when Lynn Marston-Atlass jumped to the Pennsylvania Academy of Fine Arts, remains unfilled at this writing six years later, and it has been joined in limbo by two other top positions, in photography and decorative arts. The latter position had become a threesome combined with glass and the historic houses (the Moses Myers House and the Willoughby-Baylor House, which the museum administers); a recent hire replaced only the glass curator, quite possibly with an eye to fulfilling the requirements of the museum's pivotal role in the second region-wide exhibition of contemporary glass that opened in April 2009. All positions are frozen as of this writing.

One recent initiative stimulated by the capital campaign has provoked disappointment, if not controversy. Several years ago, the nearby Wachovia Bank building at the corner of Duke and Grace streets was purchased as a potential site for the Jean Outland Chrysler Library, though members of the Friends of the Chrysler Library advised that two things argued against this move: the branch bank's small size and inadequate structural support for the weight of the books. Even so, in early 2008, the board approved the use of $25,000 for a full

architectural study. By April 2008, the completed renderings were ready, and plans were made to host an invitation-only soirée in the building to attract potential donors. The Friends of the Chrysler Library allocated $5,000 from its endowment for invitations to the event. The architect's elaborate renderings were displayed for those who crowded this fundraiser cum celebration, but the experience appears to have backfired, because one prominent board member bluntly informed the architect that the building was far too small to contain the library's 80,000 books and countless files, much less allow necessary expansion.

At the February 2009 meeting of the Friends of the Library, Hennessey presented an update in which he agreed that the Wachovia building had proven too small to house the current collection. He also explained that an expansion of the museum into the current parking lot, which seemed the most feasible solution, would call for the city's financial support, a doubtful prospect given the current economy. As a consequence, the library project was at a standstill. This meant that the $30,000 expended to examine the library possibility would not lead to a firm project.

Hennessey subsequently discussed with the Friends of the Library their organization's future. Suggesting that the Friends' social nature taxed the staff's time and that the organization did not raise significant funds, he offered that it might operate more effectively as a financial support group than as a conventional friends group. In any case, fees for membership in the group would rise in order to finance the hiring of a summer intern for the library.

The bank building's footprint may yet have a function, as its demolition would provide additional parking if current library space were to be extended into the lot adjacent to the museum. Then again, the building might not disappear at all, but instead change its purpose to accommodate the contents of a decrepit storage facility in Portsmouth long owned by the Chrysler. For the present, however, plans for the bank's future and the Jean Outland Chrysler Library appear to be on hold.

The most consistently successful area of the Chrysler Museum remains its photography collection. People "connect with the medium," says its ex-curator, Brooks Johnson. Johnson not only put the museum's collection securely within the nation's top 10, but his inclusive appreciation of documentary trends also led him to showcase the works of African Americans with regularity. Always well funded, the photo collection has several dedicated endowments – for exhibitions, collections, publications and discretionary spending (used for travel and networking) – all of which have kept that area the most vital in the museum.

Johnson was a proficient fundraiser, though increasing demands that the curators themselves raise money began to take him away from his curatorial duties, which were arguably more demanding than those of others at the museum. In his almost 30 years at the Chrysler, Johnson attracted major donors like Robert and Joyce Menschel, New Yorkers who have been on the boards of the Museum of Modern Art and the Metropolitan Museum and who have seeded the collection at the Chrysler.

An early show, "Appeal to This Age: Civil Rights and the African-American Community," which was destined to raise money by offering works on display for sale, helped to enlarge the museum's holdings in an under-appreciated area. This expressed a generational sea change in the region's sociopolitical awareness, and Johnson would continue to devote considerable energy to this segment of photographic history. His efforts led to the establishment of the Civil Rights Photo Collection and to further exhibitions of African American photographers. In 2000, a MetLife Foundation grant for $150,000 helped fund the first museum show ever devoted to Memphis documentarian Ernest C. Withers, who had chronicled civil rights battles in the Deep South since the 1950s.

Photographic subject matter has often been the flash point for controversy in modern museums. But it is undeniable that the Chrysler's collection, paired with Johnson's breadth in exhibitions (which included the first retrospective and scholarly catalog detailing the accomplishments of Civil War photographer Alexander Gardner), propelled the Chrysler to national status in the field.

Johnson provided the text for more than 15 scholarly catalogs for original exhibitions, a task traditionally left to the curators, who would also create didactic materials connected to the exhibitions: gallery brochures, labels and newsletter essays meant for monthly distribution to the membership. In addition, curators once took a large part in training docents to interpret works throughout the museum. In the last decade, these responsibilities have increasingly rested with the education department.

The Chrysler's realignments reflect an accelerating trend among museums nationally, many of which are adjusting to challenges brought by new and larger audiences, viewers who often have more education and art-historical sophistication. Even while museum budgets are stagnant or falling, gallery visitations and memberships are growing in many American museums. Museums frequently train docents to enlighten adult groups touring the galleries and special exhibitions, and have initiated programs for the schools that have been utilizing the collection for decades.

Scott Howe is now the director of education and public programs. With a small staff and a refurbished classroom for classes, the museum is able to offer programming to the region's schools. Howe also supervises the Jean Outland Chrysler Library and has editorial responsibility for all the information contained in the labels, programs and literature offered to the Chrysler's visitors.

LEADERSHIP

Whether public or private, for profit or nonprofit, any organization is heavily dependent upon the leadership of its chief executive officer. Leaders are capable of inspiring, motivating and moving organizations and constituents forward to new heights. They can proffer exciting agendas, unify otherwise disparate constituents, raise money, attract donors and change the atmosphere. Witness Presidents Reagan and Obama. Whether one voted for one or both of them, one must agree that they were (are) charismatic leaders who knew (know) how to pursue their agendas.

Hence, we turn to assessing the role of William Hennessey, who has served as the president and director of the Chrysler Museum since 1998. **Given the adverse fiscal winds that the museum has encountered in recent years, it is a credit to Hennessey and others that it has continued to function as an attractive cultural resource for the region. In 2007, more than 128,000 visitors entered the Chrysler and it received more than $600,000 in gifts and almost $870,000 in memberships. Both collections and facilities have been upgraded in recent years. It is apparent that the Hampton Roads community continues to believe in the museum and its purposes.**

Hennessey has found ways to continue most of the Chrysler's most vital programs and to economize in areas that he and the board have deemed less critical. He has persuaded the city of Norfolk to augment its financial support for the museum, no mean feat in these trying economic times. As a result, there is no sense in the general public that the quality and prominence of the Chrysler Museum have declined. Those more closely connected to it are aware that the institution is not able to do as much as before. They also know that significant personnel changes have been made as one means to deal with imposing financial constraints. Nevertheless, it is fair to say that the Chrysler continues to be regarded by admirers near and far as one of Hampton Roads' crown jewels.

It also should be noted that Hennessey has endeavored to see that the Chrysler Museum no longer is an enclave designed for what an early trustee, "Judge" Parker, deemed an institution "just as private … as the German Club." The museum once was a very different, segregated organization that sponsored the city's annual crop of (white) debutantes. Today, with Hennessey at the helm, it attempts to serve the larger community, reflecting the growth of tolerance typified by the entire country in all aspects of public life. In this regard, it is notable that the one group that does not perceive itself to be threatened with marginalization is the Friends of African-American Art. The youngest of the "friends" groups, it most recently has funded visits by the surviving quilters of Gee's Bend, Ala., in connection with the museum's installation of a popular show of large-scale utilitarian fiber art (still placed in the category of craft on the traditional hierarchic scale of importance). This project was entrusted to Gary Baker, whose airy installation – with free-hanging quilts complementing the more traditional wall-based presentation (the method chosen by the Whitney Museum in New York, which exhibited the show prior to the Chrysler) – was truly an inspired one, and the Alabama artists gave the Norfolk museum the highest marks of any of this landmark exhibition's many venues. Several years later, aficionados still continue to talk about the quality displayed at the Gee's Bend Quilt show, while exhibitions devoted to artists like John Singer Sargent are seldom, if ever, mentioned.

Even so, those familiar with the Chrysler Museum do not always speak with one voice about Hennessey's leadership. All things considered, this is not surprising given the economic stresses the museum has faced and the significant number of personnel changes that have occurred. The misgivings of some about personnel actions and procedures at the Chrysler impress others as constituting (to switch metaphorical universes) "inside baseball" – i.e., relevant only to the direct participants and largely not of interest to anyone else. "All organizations have some of these things going on," commented a major donor, "and the Chrysler isn't all that different." Further, while many donors and employees would like to see greater transparency where personnel changes are concerned, another donor queried, "What other major organizations in the region publicize their internal personnel changes?"

Summing It Up

Alas, as one art museum director has put it, "It's all about money." Hennessey struggles with a budget that slightly exceeds $7 million annually, while comparable peer institutions have budgets ranging from $12 million to $15 million each. The Chrysler receives most of its operating budget from the city of Norfolk, which deserves kudos for its continued support. Norfolk contributed $2,988,443 for the 2008-09 budget, a 5 percent increase over 2007 and considerably more than in 2006, when the museum received $2,481,100.

Staff salaries and exhibition expenses are justifiably the largest outlays in any museum's budget. At the Chrysler, salaries, payroll taxes and benefits together amounted to $3,677,658 for 2007-08; the 2008-09 budget shows a cost of $3,959,084, an increase of $281,426 from the previous year, indicating that the financial savings from the loss of the senior curatorial position in photography and other staffers has been reinvested in other positions and in maintaining staff fringe benefits.

The direct costs for exhibition expenses for 2009 came to $767,250, a spike from 2008, when this important outreach category was $473,683. The current increase is likely due to the expenses incurred by two shows: a Norman Rockwell exhibition and the region-wide Art of Glass show. If the economy remains lackluster, then the Chrysler, like many museums in the country, will reduce its requests for traveling exhibitions. Instead, the curatorial staff may mount a number of in-house exhibitions drawn from the collection in storage, perhaps augmented by loans from other institutions. The Chrysler's walls sometimes display a notice indicating that a particular work, such as Gauguin's masterly "Loss of Innocence," is on loan to another museum for a span of months. This is commendable and stands in contrast to other major national museums that have severely restricted loans to other museums. It also opens the door for the Chrysler to receive loans from other institutions.

With only two curators now on staff, the Chrysler has been hard-pressed to mount in-house shows, though the new glass curator is busy with the largest component of a second regional marathon of exhibitions devoted to the medium, bringing in pieces owned by the collection to balance those traveling to the site. Several traveling exhibitions have filled the gap, notably a substantial exhibition of John Singer Sargent's portraits and landscapes, a modestly successful show that did not quite offset a number of highly touted, though disappointingly thin, presentations of Impressionist and Soviet paintings. In 2008, the region's scholarly community was delighted by a fine exhibition of Rembrandt's etchings as well as a show devoted to the pioneering English photographer, Peter Henry Emerson, forerunner of the international Pictorialist movement. An intensive loan exhibition of many of illustrator Norman Rockwell's prolific works, timed for the holiday season of 2008-09, proved attractive to many who otherwise might not have entered the museum.

Over the past decade, the Chrysler Museum of Art has been the region's art powerhouse, a repository of acclaimed masterworks in all genres and periods that has become an educational and aesthetic hub on the Atlantic Coast.

The Chrysler and its director, William Hennessey, have been vexed by declining state support, tight budgets and deteriorating economic conditions. These adverse circumstances necessarily have resulted in personnel and programmatic reductions. It will suffice for us to note that this is not an easy time to lead and direct even an artistic gem such as the Chrysler.

On June 30, 2009, the Chrysler announced that six additional employees (four full-time, two part-time) were being terminated in order to save money. Director William Hennessey stated, "This is about finances and strategy, not individuals."
(The Virginian-Pilot, July 1, 2009)


CHRYSLER MUSEUM OF ART

Cover: Diane Cebula/Daily Press

Page 1: Chris Daniel (top row, center)
Chuck Thomas (bottom row, center)
Norm Shafer/The Virginian-Pilot (bottom row, right)

Page 6: U.S. Navy photo

Page 13: Jake Denton

Pages 45, 49 and 57: Chris Daniel

Pages 59, 103, 115 and 125: Chuck Thomas

Page 119: Steve Earley/The Virginian-Pilot

Page 123: Vicki Cronis-Nohe/The Virginian-Pilot

Page 133: The Chrysler Museum of Art's Joan P. Brock Galleries house many of the permanent collection's finest works by American and English artists. Photo by Ed Pollard, museum photographer

Page 135: The Chrysler rests at the end of the Hague, a picturesque branch of the Eastern Elizabeth River. Photo by Ed Pollard, museum photographer

Page 137: In 2009, the Chrysler taught more than 18,000 adults and children from Hampton Roads public and private schools through educational tours and gallery talks. Photo by Ed Pollard, museum photographer

Page 138: The Chrysler's Huber Court exudes Italianate influence with its sweeping marble staircase and Romanesque arches. Photo by Ed Pollard, museum photographer

Page 140: Katherine Gray's "Forest Glass" was one of the most popular installations of "Contemporary Glass Among the Classics," one of three "Art of Glass 2" exhibitions at the Chrysler. Photo by Jake Gillespie for the Chrysler Museum of Art

Page 142: The Chrysler's participation in the region-wide celebration "Art of Glass 2" featured live glassblowing at the museum throughout the month of May. Photo by Jake Gillespie for the Chrysler Museum of Art

Page 143: "Silea" was among 120 of Lino Tagliapietra's works on display during the exhibition honoring his 60-year career in glassblowing. "Lino Tagliapietra in Retrospect: A Modern Renaissance in Italian Glass" was the keynote show for the Chrysler's celebration of "Art of Glass 2." Photo by Jake Gillespie for the Chrysler Museum of Art

Page 145: Stephen Knapp's dancing light painting "Heritage Jitter" heralds the arrival of "Art of Glass 2" to the Chrysler. Knapp was one of four artists featured in the museum exhibition "Contemporary Glass Among the Classics." Photo by Cathy Dixson for the Chrysler Museum of Art

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