



*Issue Brief V:*

# The Concentration of Health Care Expenditures

THE RATE OF GROWTH of Personal Health Expenditures in the United States has raised alarm in many quarters. As a consequence, there has been a never-ending litany of causes supposed and solutions offered to stem the rise in incidence, procedures, technology utilization and unit price escalation. Some have focused on tort reform, others on variation in care, and still others on prevention and wellness. The underlying problem, however, is that a small but increasing number of people with high cost illness account for the vast majority of health expenditures. *The purpose of this Issue Brief is to provide a profile of this concentration of illness, including costs, growth rates and characteristics of the underlying populations.*

### POPULATION GROWTH AND EXPENSE DISTRIBUTION BY AGE

The total Personal Health Expenditures (PHE) estimated by MEPS grew from approximately \$628 billion in 2000 to \$1.13 trillion in 2007<sup>1</sup>, an increase of 79.3%. Over the same period, the total

U.S. population grew from 278.4 million to 301.3 million, an increase of only 8.2%. These are detailed in Table I below.

While population growth does not account for the significant escalation of PHE, an analysis of the changes in per capita PHE provides some insight. Table II reflects the per capita health cost data, isolating health care service spending increases from the effects of population growth.

*NB: The data utilized in this brief is sourced primarily from The Medical Expenditure Panel Survey (MEPS) conducted by the Health and Human Services (HHS) Agency for Healthcare Research and Quality (AHRQ). Because this is survey data, it does not reconcile with CMS National Health Expenditure Data. See MEPS explanatory note in Appendix.*

**TABLE I:  
POPULATION AND "PHE" CHANGES 2000 TO 2007**

AGE GROUP	POPULATION			PERSONAL HEALTH EXPENDITURES		
	2000 (thousands)	2007 (thousands)	% Change	2000 (millions)	2007 (millions)	% Change
<b>Total</b>	<b>278,406</b>	<b>301,309</b>	<b>8.2%</b>	<b>\$627,897</b>	<b>\$1,126,056</b>	<b>79.3%</b>
0-15	64,680	65,318	1.0%	\$ 58,252	\$ 90,011	54.5%
16-24	34,642	36,760	6.1%	\$ 33,057	\$ 53,338	61.4%
25-34	37,496	41,140	9.7%	\$ 56,544	\$ 88,236	56.0%
35-44	44,734	41,733	-6.7%	\$ 80,306	\$ 107,313	33.6%
45-54	38,258	42,927	12.2%	\$ 100,148	\$ 189,325	89.0%
55-64	23,813	34,738	45.9%	\$ 95,628	\$ 235,796	146.6%
65-80	27,534	28,958	5.2%	\$ 155,633	\$ 256,592	64.9%
Over 80	7,248	9,735	34.3%	\$ 48,331	\$ 105,445	118.2%

**TABLE II:**  
POPULATION AND PER CAPITA "PHE" CHANGE 2000 TO 2007

AGE GROUP	POPULATION CHANGE 2000 TO 2007	2000 PER CAPITA PHE	2007 PER CAPITA PHE	PER CAPITA PHE CHANGE
<b>Total</b>	<b>8.2%</b>	<b>\$2,255</b>	<b>\$3,737</b>	<b>65.7%</b>
0-15	1.0%	\$ 901	\$1,378	53.0%
16-24	6.1%	\$ 954	\$1,451	52.1%
25-34	9.7%	\$1,508	\$2,145	42.2%
35-44	-6.7%	\$1,795	\$2,571	43.2%
45-54	12.2%	\$2,618	\$4,410	68.5%
55-64	45.9%	\$4,016	\$6,788	69.0%
65-80	5.2%	\$5,652	\$8,861	56.8%
Over 80	34.3%	\$6,668	\$10,831	62.4%

Several observations can be made from this data:

- The change in per capita spending by age group is relatively evenly distributed— all age groups experienced per capita growth from 2000 to 2007, ranging from 42% for the 25 to 34 age group to 69% for the 55 to 64 age group.
- Similarly, a comparison of the 2000 and 2007 per capita expenditures demonstrates a consistent differential among age groups: in 2000 the over 80 age group spent 7.4 times as much as the 0 to 15

group, while in 2007 the multiple was 7.9 times.

- While the relationship between cost and age has been relatively constant, older persons have consistently greater health spending. In 2007 the average annual expenditure was \$1,378 for the youngest age group while it was \$10,831 for those over 80.

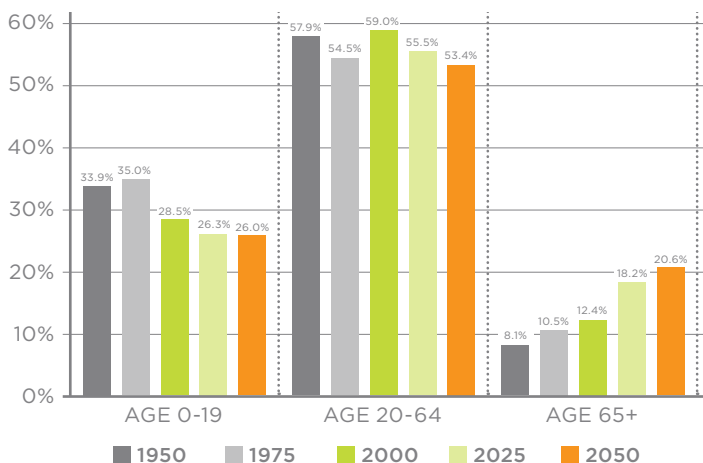
The per capita data demonstrates that any shift in relative population, in either direction, among the age groups would affect spending dramatically. Because per capita expenditures are so much higher for older age groups, a shift in the relative population from younger to older would have a leveraged impact on health expenditures. While not as great as in some other developed countries, this shift is in fact occurring in the United States.

The inevitable increase in the elder population attributable to the baby boomer generation has been and will continue to be significant. This age group, typically defined as those born from 1945 through 1964 (approximately 76 million births) is captured in the 35 to 54 age groups for the year 2000, and substantially captured in the 45 to 64 groups in year 2007.

The total health expenditures for those persons aged 35 to 54 increased by 65% from 2000 to 2007 (from \$180 billion to \$297 billion) while the total health expenditures for the 45 to 64 cohort increased by 117% (from \$196 billion to \$425 billion) over the same period. As this “boomer bubble” continues to age, and if it has health costs similar to existing older age groups, there will be a larger percentage of the population with high per capita costs.

The graph on the left provides historical and projected population distribution by

**GRAPH A:**  
PERCENTAGE OF U.S. POPULATION, BY AGE GROUP, 1950-2050



See End Note<sup>2</sup>

age group from 1950 to 2050. The age group of 65 and older is projected to increase from 12.4% of the total population in 2000 to over 20% in 2050.

### THE CONCENTRATION OF COST WITHIN THE POPULATION

The MEPS database permits analyses of the distribution of medical costs for various sub-segments of the U.S. population in a given year.

Reviewing selected sets of the population and their associated expenditures provides further clarity on cost distribution, which then allows focus on the problem of limiting continuing cost increases.

Through an iterative process of querying the MEPS data, various expense levels can be set and the number of people falling above or below this amount determined, illustrating concentrations of cost. These calculations then allow further analysis of the aggregate expenses of a population group.

For example, in 2007 a per capita PHE of \$44,480 or greater was incurred by

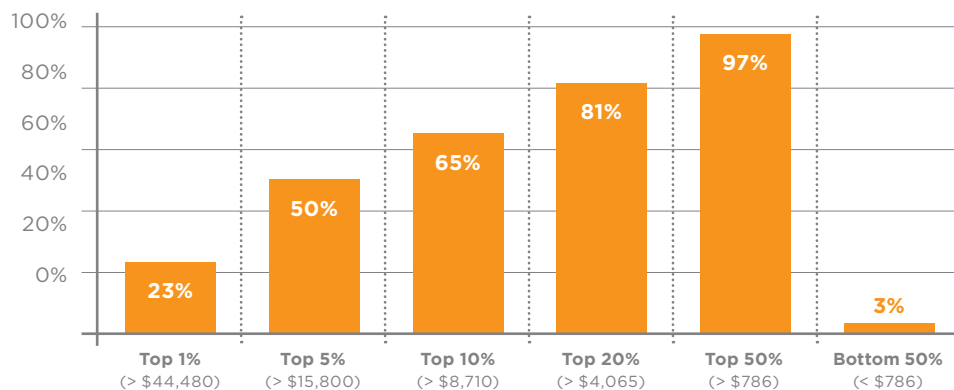
about 3.0 million people. This group accounts for 1% of the total population of 301.3 million in 2007. The aggregate health care expense for these 3.0 million people was \$257.6 billion, or 22.9% of the total spending of \$1.13 trillion. Hence, 1% of the population incurred 22.9% of the PHE. Applying this approach, the aggregate expenditures for the top 1%, 5%, 10%, 20% and 50% of

“Knowing where so much of the total spending is concentrated can facilitate development of programs designed to effectively manage the health and health care of these persons...”

the population are set forth in Graph B. This analysis is consistent with analyses of the MEPS data<sup>3</sup> for prior periods and affirms the widely-held notion that a very small percentage of the population incurs the vast majority of health care costs. It is striking that only 5% of the population of 301.3 million is incurring 50% of the total health expenses. Of equal note is that half of the population is incurring less than 3% of the total expenditures. Implicit in this analysis is the expectation that focusing clinical efforts on a small population could yield significant cost savings.

Each of the concentration of spending groups can be further parsed by age. An analysis of the 5% concentration group (15.1 million people, or 5% of the population, that had per capita expenses of \$15,800 or greater, accounting for

**GRAPH B:**  
CONCENTRATION OF 2007 PHE BY POPULATION GROUPS



**TABLE III: 2007 AGE DISTRIBUTION OF THE TOP 5% HEALTH COST PERSONS**

<b>AGE GROUP</b>	<i>Population in Top 5% (000's)</i>	<i>Total Population (000's)</i>	<i>5% Population as % Total Population</i>	<i>Age Group 5% Spend (billions)</i>	<i>Distribution of the High Cost Spending</i>	<i>Age Group Total Spend (billions)</i>	<i>5% Spend as Percent Total Spend</i>	<i>Average Spend of Top 5%</i>
<b>Total</b>	<b>15,067</b>	<b>301,309</b>	<b>5.0%</b>	<b>\$557.5</b>	<b>100.0%</b>	<b>\$1,126.1</b>	<b>49.5%</b>	<b>\$37,004</b>
0-15	615	65,318	0.9%	\$28.2	5.1%	\$90.0	31.4%	\$45,917
16-24	401	36,760	1.1%	\$12.5	2.2%	\$53.3	23.4%	\$31,221
25-34	907	41,140	2.2%	\$28.1	5.0%	\$88.2	31.8%	\$30,952
35-44	1,177	41,733	2.8%	\$39.4	7.1%	\$107.3	36.7%	\$33,493
45-54	2,598	42,927	6.1%	\$97.7	17.5%	\$189.3	51.6%	\$37,603
55-64	3,108	34,738	8.9%	\$133.1	23.9%	\$235.8	56.5%	\$42,833
65-80	4,269	28,958	14.7%	\$152.5	27.3%	\$256.6	59.4%	\$35,714
Over 80	1,990	9,735	20.4%	\$66.0	11.8%	\$105.4	62.5%	\$33,135

aggregate expenditures of \$557.5 billion or 50% of the \$1.13 trillion total costs) is presented by age group in Table 3 above. Only 1.1% of the 16 to 24 year-olds (401,000 of 36,760,000) had “high cost” total expenditures greater than \$15,800, while almost 12.8% of those 55 and older (9,367,000 of 73,431,000) had expenditures of at least this amount. Although the cost concentration is actually greater in the younger age group (1.1% of the age group accounting for 23.4% of its expenditures), the absolute dollars spent on high per capita individuals in the plus 55 age group is overwhelming.

While the conclusion of the previous section was that the older age groups incurred higher per capita costs and that a general demographic shift towards these older age cohorts will put meaningful pressure on total PHE, the data presented in this section indicate that small subsets of the total population are responsible for the vast majority of PHE and specifically that 12.8% of the 55 and older group, or approximately 9.4 million people, accounts for more than 30% of the total health spending. The next 2 sections will provide some insight as to why a larger percentage of elderly exhibit high costs.

### CONCENTRATION OF EXPENDITURES BY CONDITION

The MEPS surveys collect information on 61 conditions and include estimates of incidence and expenditures related to these conditions. The most recent set of MEPS data for the selected conditions was 2007. Table IV presents the MEPS data for the years 2000 and 2007, sorted by aggregate expense incurred in 2007.

Aggregate expenditures for the conditions included in the survey equaled \$567 billion in 2000 and \$1.03 trillion in 2007<sup>4</sup>, an increase of 82.7%, comparable to the overall increase in total PHE in that time period. The ten conditions with the greatest costs remained relatively constant, accounting for 52.3% of total expense in 2000 and 54.4% in 2007, although the percentage change in cost over this time varied among them. For example, Cancer increased more than 150% and Heart Conditions rose by 44%. Most of the 61 conditions included in MEPS data are considered chronic-conditions that are expected to last at least one year and result in limitations in self-care, independent living and social interactions or in the need for ongoing medical intervention<sup>5</sup>.

**TABLE IV: TOTAL EXPENSE FOR TREATMENT OF SELECTED CONDITIONS**

RANK	CONDITIONS	2007 (MILLIONS)	%		2000 (MILLIONS)	%	
1	Cancer	\$97,917	17.4%		\$38,902	13.1%	
2	Trauma-related disorders	\$83,178	14.8%		\$42,018	14.2%	
3	Heart conditions	\$82,167	14.6%		\$56,679	19.1%	
4	Mental disorders	\$61,348	10.9%		\$34,445	11.6%	
5	COPD, asthma	\$51,085	9.1%		\$36,488	12.3%	
6	Diabetes mellitus	\$41,182	7.3%		\$18,288	6.2%	
7	Hypertension	\$40,678	7.2%		\$23,396	7.9%	
8	Osteoarthritis/other joint disorders	\$40,175	7.1%		\$17,695	6.0%	
9	Normal birth/live born	\$33,353	5.9%		\$21,272	7.2%	
10	Hyperlipidemia	\$31,476	5.6%		\$7,743	2.6%	
<b>Top 10 Conditions</b>		<b>\$562,558</b>	<b>100%</b>	<b>54.4%</b>	<b>\$296,924</b>	<b>100%</b>	<b>52.3%</b>
<b>51 Other Conditions</b>		<b>\$472,412</b>		<b>45.6%</b>	<b>\$270,621</b>		<b>47.7%</b>
<b>TOTAL OF 61 CONDITIONS</b>		<b>\$1,034,970</b>		<b>100%</b>	<b>\$567,545</b>		<b>100%</b>

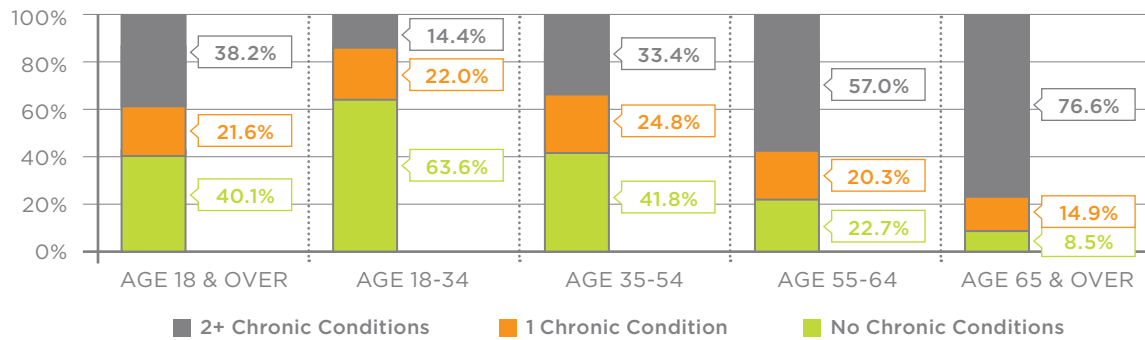
**TABLE V: TOTAL NUMBER OF CASES FOR SELECTED CONDITIONS**

RANK	CONDITIONS	2007 (THOUSANDS)	%		2000 (THOUSANDS)	%	
1	Cancer	12,738	2.3%		9,273	3.1%	
2	Trauma-related disorders	34,778	6.2%		34,205	11.5%	
3	Heart conditions	20,823	3.7%		17,270	5.8%	
4	Mental disorders	36,166	6.4%		23,865	8.0%	
5	COPD, asthma	45,900	8.2%		43,171	14.5%	
6	Diabetes mellitus	19,468	3.5%		11,852	4.0%	
7	Hypertension	50,471	9.0%		31,680	10.7%	
8	Osteoarthritis/other joint disorders	27,622	4.9%		19,384	6.5%	
9	Normal birth/live born	6,280	1.1%		6,847	2.3%	
10	Hyperlipidemia	36,673	6.5%		13,751	4.6%	
<b>Top 10 Conditions</b>		<b>290,919</b>	<b>100%</b>	<b>43.3%</b>	<b>211,298</b>	<b>100%</b>	<b>38.1%</b>
<b>51 Other Conditions</b>		<b>381,134</b>		<b>56.7%</b>	<b>343,402</b>		<b>61.9%</b>
<b>TOTAL OF 61 CONDITIONS</b>		<b>672,053</b>		<b>100%</b>	<b>554,700</b>		<b>100%</b>

Table V presents the number of incidences of treatment for conditions listed in Table IV. MEPS estimated that the total number of cases in 2000 was 554 million, compared to 672 million in 2007, an increase of 19%. Several conditions showed larger than average increases, including Mental Disorders, Hypertension, Diabetes Mellitus and Back Problems. The average increase of the “51 Other” conditions was 15.7%.

The data in Tables IV and V point to a significant increase in the cost of the top ten conditions which dramatically outpaced the change in the number of cases. While the incidence of the top ten conditions increased by about 37.7%, the cost of treating these conditions increased over 89.5% on average. The underlying cause is likely a combination of significant unit price increases and greater intensity within each case.

**GRAPH C: PREVALENCE OF CHRONIC CONDITIONS BY AGE GROUP** (percentage concentrations for 2005)



### CHRONIC CONDITIONS AND AGE GROUP CONCENTRATION

Several studies have been published utilizing data from the AHRQ 2005 full-year Consolidated Data File (HC-097) and 2005 Event Level Files that can be linked to condition data (HC-094A, HC-094D-H). Below is one finding from a 2008 Statistical Brief which utilized these data files.

*“In 2005 about 60 percent of the adult U.S. civilian non-institutionalized population age 18 and over had a least one chronic condition. The proportion of adults with at least one chronic condition increased dramatically with age, ranging from 36.4 percent of young adults age 18 to 34 to 91.5 percent of the elderly age 65 and over. The proportion of persons with two or more chronic conditions also rose dramatically with age, ranging from 14.4 percent among persons 18 to 34 to 76.6 percent of the elderly age 65 and over.”<sup>6</sup>*

Graph C is a reproduction of the data cited in the quote.

This chart reveals how the prevalence of chronic conditions increases dramatically with age. In 2005 there were approximately 36.4 million persons in the 18 to 34 year old age group; according to this study data approximately 36% (or 13.1 million) of that group had at least one chronic condition. By contrast, more than 91% of the 65 and older age group (or 83.3 million of 91.5 million elderly)

had at least one chronic condition. There is even greater disparity when comparing the same age groups in regard to multiple conditions. While 14% of the 18 to 34 year olds (or 5.1 million) had two or more chronic conditions, more than 76% of those 65 or older (or 69.5 million persons) have multiple chronic conditions.

This study further observed that medical expenses for chronic conditions were similarly much greater in the older age group. While approximately 29% of all medical expenses for persons 18 to 34 were for the treatment of chronic conditions, around 59% of all medical expenses for persons 65 and over were for such care.

### CONCLUSION

An analysis of the available data demonstrates that a relatively few persons with high per capita health costs account for a very large proportion of total PHE. The majority of this high cost subgroup consists of the elderly with multiple chronic conditions—and this cohort will increase by virtue of demographic trends as well as the persistent incidence of chronic illness. Knowing where so much of the total spending is concentrated can facilitate development of programs designed to effectively manage the health and health care of these persons, which could result in a meaningful lowering of at least the rate of growth of aggregate spending. •

## Appendix

The Medical Expenditure Panel Survey (MEPS) is a large, ongoing, nationally representative survey of households, medical providers, and employers conducted by the Agency for Healthcare Research and Quality (AHRQ).

MEPS is unique in its ability to link data on individuals and households (including demographics, health status, health conditions, health insurance, employment, and income) to detailed information on their use of and expenses for health care. MEPS interviewers ask households for detailed information about each health care visit, hospital stay, prescription drug fill, and other medical services, including out-of-pocket expenses and sources of payment. Follow-back surveys of the hospitals, physicians, and home health agencies used by MEPS' households provide further information about payments made by Medicaid, Medicare, private health plans, and other sources.

MEPS has been continuously conducted since 1996, and its design makes it possible to examine how health care use, expenses, sources of payment, and insurance coverage change over time. No other survey contains such a wide range of data essential for relating health spending and insurance coverage to individual and family characteristics such as age, race and ethnicity, health conditions and health status, and family income.

MEPS expenditure estimates are based on person-level survey data from a nationally representative sample of households. MEPS' estimate of health care expenses differ from the aggregate spending estimates contained in the National Health Expenditures Accounts (NHEA), primarily because MEPS covers the civilian non-institutionalized population and excludes some populations with high expenses, such as people residing in nursing homes.

Expenditures are defined as payments from all sources for hospital inpatient care, ambulatory care provided in offices and hospital outpatient departments, care provided in emergency departments, as well as prescribed medicine purchases reported by respondents. Sources include direct payments from individuals, private insurance, Medicare, Medicaid, Workers' Compensation, and miscellaneous other sources.

Data derived from MEPS and analyzed by AHRQ-funded and other researchers show where health care expenses are concentrated and how this distribution has changed over time. The distribution of medical expenses is determined by ranking individuals in descending order according to their total medical expenses and then determining aggregate spending at specific percentiles of the population.

## End Notes

<sup>1</sup> MEPS estimate of health care expenses differ from the aggregate spending estimates contained in the National Health Accounts (NHA), primarily because MEPS covers the civilian non-institutionalized population and excludes some populations with high expenses, such as people residing in nursing homes.


<sup>2</sup> Health Care Spending and the Aging of the Population [http://assets.opencrs.com/rpts/RS22619\\_20070313.pdf](http://assets.opencrs.com/rpts/RS22619_20070313.pdf)

<sup>3</sup> <http://www.ahrq.gov/research/ria19/expendria.pdf>

<sup>4</sup> The total expenditures used in calculating estimates in this brief are equal to \$929.9 billion because dental care (\$72.5 billion) and other medical equipment and supplies (\$21.3 billion) are excluded. These services cannot be linked to specific conditions in the survey.

<sup>5</sup> Perrin et al. 1993; Hwang et al. 2001, Conditions were classified as chronic or not chronic based on the AHRQ Healthcare Utilization Project Chronic Condition Indicator (see <http://www.hcup-us.ahrq.gov/toolssoftware/chronic/chronic.jsp#overview> for details). Expenditures for medical events that were linked to both types of conditions were included in the chronic category.

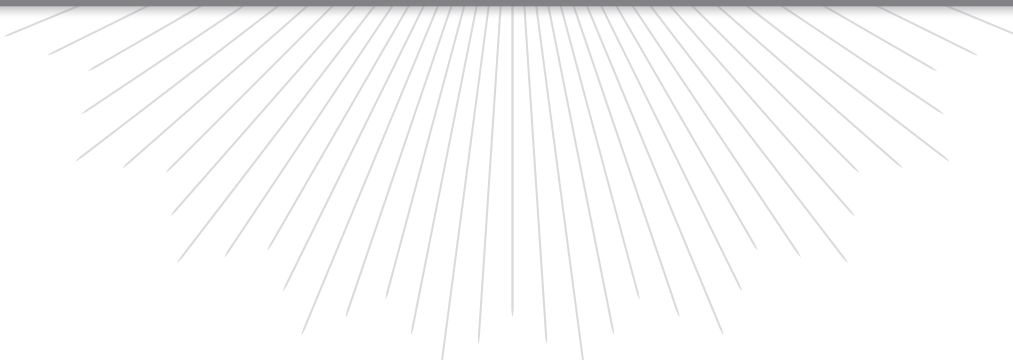
<sup>6</sup> <http://content.healthaffairs.org/cgi-reprint/20/6/233> and Statistical Brief 203: Health Care Expenses for Adults with Chronic Conditions, 2005 [http://meps.ahrq.gov/mepsweb/data\\_files/publications/st203/stat203.pdf](http://meps.ahrq.gov/mepsweb/data_files/publications/st203/stat203.pdf)



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