

# Mental Health and Substance Abuse Spending by Age, 2003

**Tami L. Mark, PhD, MBA**

**Henrick J. Harwood**

**David C. McKusick, PhD**

**Edward C. King**

**Rita Vandivort-Warren, MSW**

**Jeffrey A. Buck, PhD**

## Abstract

*This article presents national estimates of mental health and substance abuse (MHSA) spending in 2003 by age groups. Overall, \$121 billion was spent on MHSA treatment across all age groups in 2003. Of the total \$100 billion spent on MH treatment, about 17% was spent on children and adolescents, 68% on young and mid-age adults, and 15% on older adults. MH spending per capita by age was \$232 per youth, \$376 per young and mid-age adult, and \$419 per older adult. Of the total \$21 billion spent on SA treatment, about 9% was spent on children and adolescents, 86% on adults ages 18 through 64, and 5% on older adults age 65 and older. SA spending per capita by age was \$26 per youth, \$98 per mid-age adult, and \$28 per older adult.*

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## Introduction

Mental illness and substance use conditions can impact people at any age from the very young to those at older ages. These conditions may have varying manifestations, prevalence rates, treatment approaches, costs, and treatment financing sources at different ages. The Substance Abuse and Mental Health Services Administration (SAMHSA) has been producing estimates of national

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Address correspondence to Tami L. Mark, PhD, MBA, Thomson Healthcare, 4301 Connecticut Avenue, NW Suite 330, Washington, DC 20008, USA. Phone: +1-301-2142211; Fax: +1-301-5308698. Email: Tami.Mark@thomson.com.

Henrick J. Harwood, The Lewin Group, Inc, 3130 Fairview Park Drive, Suite 800, Falls Church, VA 22042, Canada.

David C. McKusick, PhD, Actuarial Research Corporation, 5513 Twin Knolls Road, Suite 213, Columbia, MD 21045, USA  
Edward C. King, Actuarial Research Corporation, 6928 Little River Turnpike, Suite E, Annandale, VA 22003, USA.

Rita Vandivort-Warren, MSW, Substance Abuse and Mental Health Services Administration, 1 Choke Cherry Lane, Rockville, MD 20857, USA.

Jeffrey A. Buck, PhD, Substance Abuse and Mental Health Services Administration, 1 Choke Cherry Lane, Rockville, MD 20857, USA.

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spending on mental health and substance abuse treatment at regular intervals. This article parses these national estimates for 2003 into spending by age groups and is an update to an earlier effort, which examined mental health and substance abuse spending in 1997.<sup>1</sup>

Other than the earlier SAMHSA age estimates, there has been little prior data compiled on spending or use of mental health or substance abuse service by age. Zuvekas<sup>2</sup> found that, in 1996, the percent using ambulatory mental health and substance abuse services was highest in the young and middle age adults, and lowest in the 65 and over population: 6–17: 6.2%; 18–44: 7.4%; 45–64: 7.3%; 65+: 5.2%.<sup>2</sup> The number of visits per user followed a similar pattern in these age groups: 6–17: 6.9 visits; 18–44: 10.8 visits; 45–64: 8.4 visits; 65+: 5.1 visits. In contrast, the percent using psychotropic medications increased with age: 6–17: 4.1%; 18–44: 5.0%; 45–64: 8.3%; 65+: 9.1%. There was a somewhat different variation in the amount spent on psychotropic drugs per person by age group, with the lowest spending in the oldest age group: 6–17: \$318; 18–44: \$411; 45–64: \$339; 65+: \$228.

Ringel and Sturm estimated mental health treatment expenditures on children in 1998 to be \$11.68 billion (\$172 per child).<sup>3</sup> Adolescents had the highest expenditures at \$293 per child followed by \$163 per child aged 6 to 11 and \$35 per preschool-aged child. Outpatient services accounted for 57% of the total, inpatient for 33%, and psychotropic medications for 9% of the total.

The goal of this study is to document US spending for mental health and substance abuse treatment in 2003 for three age groups: children and adolescents (younger than age 18), young and mid-age adults (age 18–64), and older adults (age 65 and older). Estimates are presented overall and by provider and service type.

## Methods

The approach taken to estimate national mental health and substance abuse (MHSA) spending is designed to be consistent with the National Health Expenditure Accounts (NHEA). The NHEA constitute the framework from which the estimates of spending for all health care are constructed by the Centers for Medicare and Medicaid Services.

Two basic methods are used to estimate MHSA treatment expenditures, depending on provider or service type. The first method relies on the SAMHSA's national surveys of specialty MHSA organizations. These surveys are the Survey of Mental Health Organizations (SMHO), formerly called the Inventory of Mental Health Organizations, and the National Survey of Substance Abuse Treatment Services (N-SSATS, formerly referred to as the Uniform Facilities Data Set). The surveys provide data on total revenues by type of specialty MHSA provider.

The second basic method carves out spending on MHSA from the NHEA. Services and providers not fully covered in the N-SSATS or SMHO but covered in the NHEA are general hospital care outside of psychiatric specialty units, physicians, other professionals, retail prescription drugs, nursing homes, and home health agencies. Estimates for these services are based on NHEA estimates of total spending by provider and payer. The proportion of that total spending allocated to MHSA is estimated mainly using numerous public-use, nationally representative, provider-based data sets, such as the National Ambulatory Medical Care Survey (NAMCS) and the Healthcare Cost and Utilization Project Nationwide Inpatient Sample. Allocations to MHSA typically involve first determining the proportion of total service utilization (e.g., inpatient days) that involve a primary MHSA disorder, then adjusting for differences in average charges and cost sharing. For example, if the NAMCS indicated that 10% of visits to physicians were for patients with a primary MHSA diagnosis and MHSA average physician prices were 50% lower than prices of all diagnoses, then we could calculate that 5% of total national spending on physicians was for treating MHSA conditions.

The determination of use and prices for particular age groups was based on patient age as indicated in the various data sets. Although estimates were created for the year 2003, the surveys used to assign expenditures to MHSA conditions by age group had relatively small sample sizes,

and there was substantial variation in year to year estimates. Therefore, utilization and price data from the year 1997 through 2004 were combined and applied to the 2003 NHEA to create the 2003 estimates.

The two methods—the SAMHSA survey and NHEA methods—were integrated by adding expenditures by provider after eliminating duplication across data sources.

To define MHSA disorders, we rely on diagnostic codes listed in the International Classification of Diseases 9th Revision (ICD-9-CM) as “mental disorders” (i.e., codes in sections 290 through 319). These codes exclude “cerebral degenerations” (e.g., Alzheimer’s disease, ICD-9 331.0). We also exclude several other codes related to dementia, as well as developmental delays, mental retardation, and tobacco abuse. The allocation to MHSA is based on principal or primary diagnoses. The diagnostic categories selected generally reflect what payers consider as MHSA conditions. They exclude costs not directly related to mental illness or substance abuse treatment, such as disability-related costs or cost of prevention efforts. They also exclude expenditures on non-MHSA conditions that are caused by MHSA problems, such as complications from intentional injuries.

The only category of service that is not allocated to MHSA based on diagnosis is retail prescription drugs. Expenditures are considered for MHSA treatment if the medication’s primary indication is a MHSA disorder.

## Findings

### MHSA findings

Overall, \$121 billion was spent on MHSA treatment across all age groups in 2003 (Table 1). About 16% was spent on treatment of youth, 71% on young to mid-age adults, and 13% on older adults (Table 1). As a percent of all disease health care spending by age, 9.3% of youth spending, 11.1% of adult spending, and 3.1% of older adult spending were for MHSA treatment.

### Overview

*Mental health spending* Of the total \$100 billion spent on MH treatment in 2003, about 17% was spent on children and adolescents, 68% on young and mid-age adults, and 15% on older adults (Table 1). In 2003, there were 73 million youth under age 18, 181.9 million adults ages 18 through 64, and 36.0 million older adults age 65 or older (<http://www.census.gov>). Overall, MH spending per US resident was \$345 in 2003. MH spending per capita by age was \$232 per youth, \$376 per young and mid-age adult, and \$419 per older adult (Table 1).

*Substance abuse spending* Of the total \$21 billion spent on SA treatment in 2003, about 9% was spent on children and adolescents, 86% on adults ages 18 through 64, and 5% on adults ages 65 and older (Table 1). Overall, SA spending per US resident was \$71 in 2003. SA spending per capita by age was \$26 per youth, \$98 per mid-age adult, and \$28 per older adult.

### Youth less than 18 years of age: spending by provider

*Mental health spending* Multiservice Mental Health Organizations (MSMHOs) received the largest share of MH treatment spending on youth, amounting to 30% of the \$17 billion spent on youth MH treatment in 2003 (Table 2). This was a much larger share than was spent on young and mid-age adults. MSMHOs are freestanding MH specialty providers other than hospitals, such as clinics and residential centers. Approximately 26% of youth spending on MH was for hospital treatment: 16%

**Table 1**

Aggregate and per capita mental health and substance abuse spending in 2003: amounts and percentages by age group and spending type

Spending type	All ages	Age groups		
		Children and adolescents (less than 18 years)	Young and mid-age adults (18–64 years)	Older adults (65 years and older)
Aggregate spending in millions				
All MHSA	\$121,062	\$18,800	\$86,191	\$16,070
MH only	\$100,321	\$16,920	\$68,346	\$15,055
SA only	\$20,740	\$1,880	\$17,845	\$1,015
Aggregate spending in percent (by column)				
MH only	83	90	79	94
SA only	17	10	21	6
Spending per capita (dollars)				
All MHSA	\$416	\$257	\$474	\$447
MH only	\$345	\$232	\$376	\$419
SA only	\$71	\$26	\$98	\$28
Population in millions	290.9	73.0	181.9	36.0
Population in percent (by row)		25	63	12
Aggregate spending in percent (by row)				
All MHSA		16	71	13
MH only		17	68	15
SA only		9	86	5
As a percent of total healthcare spending (by column)				
All MHSA	8.1%	9.3%	11.1%	3.1%
MH only	6.7%	8.4%	8.8%	2.9%
SA only	1.4%	0.9%	2.3%	0.2%

Source: SAMHSA Spending Estimates.

in general hospitals, with three fourths of this amount spent on care outside of general hospital specialty psychiatric units (i.e., in general medical units) and 10% in specialty psychiatric and substance abuse hospitals. The next largest share of dollars went to MH prescription medications (16%). Thirteen percent of total youth MH dollars was spent on physicians, the majority of which went to psychiatrists. Nine percent of youth MH dollars was spent on other professionals (e.g., nurses, social workers, psychologists).

*Substance abuse spending* The largest percentage (48%) of the \$1.88 billion dollars spent on children and adolescents for treatment of substance use conditions was for care provided in specialty substance abuse centers (Table 3), which are also the providers receiving the most spending overall. Specialty substance abuse centers focus on providing substance abuse services in outpatient or residential settings. The next largest proportion of youth SA treatment spending went to MSMHOs (15%). Thus, almost two thirds of dollars for treatment of substance use conditions

**Table 2**

Mental health spending by age group by provider, 2003

Provider type	All ages	Age groups		
		Children and adolescents (less than 18 years)	Young and mid-age adults (18–64 years)	Older adults (65 years and older)
<b>Expenditures in billions</b>				
Total expenditures	\$100,321	\$16,920	\$68,346	\$15,055
Total of all service providers and products	93,177	15,715	63,479	13,983
Total of all service providers	69,918	13,050	44,994	11,874
General, non-specialty hospitals	15,927	2,626	10,910	2,392
General hospital, specialty units	6,568	618	4,692	1,258
General hospital, non-specialty care	9,359	2,008	6,217	1,134
Specialty hospitals	11,673	1,756	8,796	1,120
All physicians	13,748	2,162	10,196	1,390
Psychiatrists	9,802	1,484	7,575	742
Non-psychiatrist physicians	3,946	678	2,620	648
Other professionals	8,370	1,478	6,096	796
Free-standing nursing homes	6,234	–	976	5,258
Free-standing home health	823	25	397	401
Multi-service mental health organizations	13,143	5,003	7,624	517
Specialty substance abuse centers	–	–	–	–
Retail prescription drugs	23,259	2,666	18,484	2,109
Insurance administration	7,145	1,205	4,867	1,072
<b>Percent distribution by provider</b>				
Total expenditures	100	100	100	100
Total of all service providers and products	93	93	93	93
Total of all service providers	70	77	66	79
General, non-specialty hospitals	16	16	16	16
General hospital, specialty units	7	4	7	8
General hospital, non-specialty care	9	12	9	8
Specialty hospitals	12	10	13	7
All physicians	14	13	15	9
Psychiatrists	10	9	11	5
Non-psychiatrist physicians	4	4	4	4
Other professionals	8	9	9	5
Free-standing nursing homes	6	–	1	35
Free-standing home health	1	0	1	3
Multi-service mental health organizations	13	30	11	3
Specialty substance abuse centers	–	–	–	–
Retail prescription drugs	23	16	27	14
Insurance administration	7	7	7	7

Source: SAMHSA Spending Estimates.

**Table 3**  
Substance abuse spending by age group by provider, 2003

Provider type	All ages	Age groups		
		Children and adolescents (less than 18 years)	Young and mid-age adults (18–64 years)	Older adults (65 years and older)
<b>Expenditures in billions</b>				
Total expenditures	20,740	1,880	17,845	1,015
Total of all service providers and products	19,433	1,762	16,721	951
Total all service providers	19,335	1,761	16,622	951
General, non-specialty hospitals	4,359	183	3,669	507
General hospital, specialty units	2,890	119	2,535	235
General hospital, non-specialty care	1,470	64	1,134	272
Specialty hospitals	676	74	588	14
All physicians	1,672	84	1,514	74
Psychiatrists	540	30	496	15
Non-psychiatrist physicians	1,131	55	1,018	59
Other professionals	2,636	230	2,362	44
Free-standing nursing homes	301	-	90	211
Free-standing home health	4	0	2	2
Multi-service mental health organizations	1,246	283	950	14
Specialty substance abuse centers	8,441	907	7,448	85
Retail prescription drugs	98	0	98	0
Insurance administration	1,307	118	1,125	64
<b>Percent distribution by provider</b>				
Total expenditures	100	100	100	100
Total all service providers and products	94	94	94	94
Total all service providers	93	94	93	94
General, non-specialty hospitals	21	10	21	50
General hospital, specialty units	14	6	14	23
General hospital, non-specialty care	7	3	6	27
Specialty hospitals	3	4	3	1
All physicians	8	4	8	7
Psychiatrists	3	2	3	1
Non-psychiatrist physicians	5	3	6	6
Other professionals	13	12	13	4
Free-standing nursing homes	1	-	1	21
Free-standing home health	0	0	0	0
Multi-service mental health organizations	6	15	5	1
Specialty substance abuse centers	41	48	42	8
Retail prescription drugs	0	0	1	0
Insurance administration	6	6	6	6

Source: SAMHSA Spending Estimates.

among youth went to specialty MH and SA organizations. Fourteen percent of youth SA dollars went to hospitals (10% in general hospitals and 4% in specialty hospitals). The proportion of SA treatment spending was greater for other professionals (e.g., nurses, psychologists, social workers) than for physicians (4% to physicians and 12% to other professionals).

### **Young and mid-age adults: spending by provider**

*Mental health spending* The largest percentage of the \$68.3 billion in spending for young and mid-age adult MH treatment went toward care in hospitals (29%; Table 2). General hospitals comprised 16% (7% in MHSA specialty units and 9% outside of MHSA specialty units), while specialty hospitals comprised 13% of total MH spending on adults, a higher proportion compared to other age groups. Another large share of spending (27%) was on prescription medications. This was a much larger percentage of total spending for this age group than for prescription medications for youth or for older adults. As with youth, more was spent on treatment by physicians (15%) than other professionals (9%). About 11% of total dollars was spent on MSMHOs.

*Substance abuse spending* Forty-two percent of the \$17.8 billion dollars spent on SA treatment for young and mid-age adults was spent on specialty substance abuse centers (Table 3), and only 5% was spent on treatment in MSMHOs.

About one fifth of all young and mid-age adult SA treatment dollars went to general hospitals. In contrast to MH, the majority (14%) was spent in general hospitals with specialty units, and only 6% was spent on medical units that do not specialize in psychiatric or SA treatment. Only 3% or about \$600 million was spent in specialty psychiatric or substance abuse hospitals.

Twenty-one percent of SA treatment dollars for young and mid-age adults was spent on independent practitioners (8% on physicians and 13% on other professionals such as nurses, psychologists, and social workers).

### **Older adults: spending by provider**

*Mental health spending* In stark contrast to younger adults and children, the largest share of MH treatment spending on older adults occurred in nursing homes (35% of the total \$15 billion; Table 2). Twenty-three percent of older-adult MH spending was on hospitals, with 16% of treatment in general hospitals (8% each in specialty units and outside of specialty units), and 7% in psychiatric specialty hospitals. Less was spent on prescription MH medications by older adults than by children or adults ages 18 to 64. Approximately 14% of older adult total MH spending was for prescription medications. Nine percent of dollars went to physicians and 5% to other professionals. Very little was spent on MSMHOs (about \$500 million or 3% of total MH spending on adults age 65 or older).

*Substance abuse spending* Of the \$1 billion spent on treatment of older adults for substance use disorders in 2003, half was spent in general hospitals (23% in specialty units and 27% in non-specialty units; Table 3). The next largest category was nursing homes, which comprised 21% of the total. Specialty MH and SA centers play a small role on a dollar basis in providing SA treatment to older adults. Only 8% or about \$85 million of older adult SA treatment dollars was spent in specialty substance abuse centers, and only 1% was spent in MSMHOs. Older adults also appear to rely less on other professionals for treatment, as compared to youth and mid-age adults. Seven percent of older adult SA treatment spending was on physicians and 4% on other non-physician professionals. The majority of physician spending was for care by those with non-psychiatric specialties (\$15 million for psychiatrists versus \$59 million on other types of physicians).

## Spending by age within providers

*Mental health spending* Finally, it is useful to examine the distribution of spending by age within provider and service types (Table 4). For MH, the majority of spending for most providers occurred in the largest cohort, the 18–64 age group. However, the percentages varied by provider and services. For nursing homes, 84% of MH spending was allocated to older adults. Most spending for prescription MH drugs (79%) was allocated to young and mid-age adults, with only 9% allocated to older adults. For MSMHOs, a disproportionately large share (38%) of spending went to youths.

*Substance abuse spending* Across all providers and services, with the exception of nursing homes and home health, 75% or more of SA treatment spending occurred among the largest cohort—adults ages 18 through 64 (Table 5). For MSMHOs, 23% of their revenues came from treating youth, 76% from young and middle-aged adults, and 1% from older adults.

## Implications for Behavioral Health

Data on the size and nature of MHSA treatment spending by age have a variety of policy implications, particularly when viewed in the context of other relevant information. One use of these data is to elucidate where most of the spending for care for different age groups is likely to be allocated. The data highlight important issues in each of the age groups.

Much of spending for children for MH and SA (30%) is concentrated in MSMHOs and substance abuse centers, highlighting the important role that these organizations play in serving the needs of children. The largest share (48%) of the dollars spent on children and adolescents for treatment of substance use conditions was for care provided in specialty substance abuse centers. This finding supports the argument that specialty mental health and substance abuse organizations must develop programs that are uniquely suited to treat children, whose cognitive, developmental, and pharmacological needs require treatment approaches that differ from those of adults. A recent study found that the majority of specialty substance abuse centers that treated large number of adolescents reported having specific programs for adolescents, although 13% did not, indicating some room for improvement.<sup>4</sup> In addition, many substance abuse organizations did not offer all of the specialty pregnancy or HIV services recommended for children and adolescents or co-occurring services, such as comprehensive mental health assessment. For multi-service mental health organizations, the need to focus on youth may be more apparent to providers, as 38% of MH dollars and 23% of SA dollars in MSMHOS go to treating youth. For SA centers, 11% of SA dollars were allocated to youth. However, these percentages may vary widely across providers.

Another important issue that this study highlights is the role of prescription drugs in mental health and substance abuse treatment of children. About 1 in 10 MH dollars spent on youth were for prescription drugs (about \$2.7 billion in 2003). The growing use of psychoactive drugs among children and the need for more research on their effectiveness and safety in children continues to be apparent.

While use of prescription medications among children is clearly an important issue, mid-age adults are by far the largest users of psychoactive medications. Retail prescription drug spending for MH is disproportionately concentrated in the mid-age adult populations. Adults ages 18 through 64 made up 62% of the US population in 2003 but were responsible for 79% of MH prescription drug dollars. In 2003, more than 1 in every \$4 spent on mid-age adult MH care was for prescription drugs. Clearly, prescription drugs have become a major method of clinical treatment for mid-aged adults, and the degree to which they are being provided in an adequate manner with the necessary ancillary services is a question for additional research.

Although most spending for MH is concentrated in the mid-age adult population, the per capita costs for MH are highest for older adults. This result may, at first glance, seem counter-intuitive: MHSA

**Table 4**  
Mental health spending by age group: percent within providers, 2003

Provider type	Age groups		
	Children and adolescents (less than 18 years)	Young and mid-age adults (18–64 years)	Older adults (65 years and older)
<b>Percent distribution by age</b>			
Total expenditures	17	68	15
Total all service providers and products	17	68	15
Total all service providers	17	68	15
General, non-specialty hospitals	16	68	15
General hospital, specialty units	9	71	19
General hospital, non-specialty care	21	66	12
Specialty hospitals	15	75	10
All physicians	16	74	10
Psychiatrists	15	77	8
Non-psychiatrist physicians	17	66	16
Other professionals	18	73	10
Free-standing nursing homes	–	16	84
Free-standing home health	3	48	49
Multi-service mental health organizations	38	58	4
Specialty substance abuse centers	–	–	–
Retail prescription drugs	11	79	9
Insurance administration	17	68	15

Source: SAMHSA Spending Estimates.

prevalence rates tend to fall at older ages. However, it might be explained by the different services used by the older adults. The majority of MH spending on older adults occurs in nursing homes and inpatient settings, which are relatively more expensive on a per episode basis than outpatient and pharmaceutical care. The extensive spending on MH care in these settings highlights the need for quality assurance measures for MH care to older adults by these providers.

Only 5% of the total SA spending was for treatment of older adults. However, given the aging of the baby boom generation, the spending on SA treatment for older adults may increase.<sup>5</sup> Gfroerer and colleagues estimate that the number of older adults that will need treatment for SA will increase from 1.7 million in 2001 to 4.4 million in 2020.<sup>6</sup> The aging baby boom population will place increasing demands on the SA treatment system in the next two decades and will require a shift in the focus of treatment and spending.

Estimates of MHSA spending by age were calculated previously for 1997.<sup>1</sup> Caution must be taken in comparing the 2003 estimates to prior estimates since the methods and underlying baseline data were updated. However, some general observations can be made. The percent distribution of spending by age changed slightly from 1997 to 2003, which is proportionally more dollars going to children and less to adults. In 1997, 13% of MHSA spending went to children, 72% to adults, and 15% to older adults. In 2003, 16% was spent on children, 71% on adults, and 13% on older adults. The percent of total health care spending within each age group going to MHSA remained about

**Table 5**

Substance abuse spending by age group: percent within providers, 2003

Provider type	Age groups		
	Children and adolescents (less than 18 years)	Young and mid-age adults (18–64 years)	Older adults (65 years and older)
<b>Percent distribution by age</b>			
Total expenditures	9	86	5
Total of all service providers and products	9	86	5
Total all service providers	9	86	5
General, non-specialty hospitals	4	84	12
General hospital, specialty units	4	88	8
General hospital, non-specialty care	4	77	19
Specialty hospitals	11	87	2
All physicians	5	91	4
Psychiatrists	5	92	3
Non-psychiatrist physicians	5	90	5
Other professionals	9	90	2
Free-standing nursing homes	–	30	70
Free-standing home health	3	51	46
Multi-service mental health organizations	23	76	1
Specialty substance abuse centers	11	88	1
Retail prescription drugs	0	100	0
Insurance administration	9	86	5

Source: SAMHSA Spending Estimates.

constant in the 1997 and 2003 estimates. The most notable difference between the two sets of estimates was the amount of spending allocated to prescription drugs, which more than doubled. In all the age groups, a much larger proportion of spending was for prescription drugs in 2003 as compared to 1997.

The SAMHSA spending estimates are an ongoing effort to estimate US spending on MHS services. Periodic updates to the age estimates—that can continue to inform policymakers and others about the unique MH and SA spending issues facing different age groups within the population—are planned for future work.

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