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**NAVAL
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MONTEREY, CALIFORNIA

THESIS

**ECONOMIC ANALYSIS OF A BASIC ALLOWANCE FOR
HEALTH CARE FOR ACTIVE DUTY AND RETIRED
MEMBERS OF THE ARMED FORCES**

by

Scott A. Stratman

December 2014

Thesis Advisor:
Second Reader:

David R. Henderson
Philip J. Candreva

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**ECONOMIC ANALYSIS OF A BASIC ALLOWANCE FOR HEALTH CARE
FOR ACTIVE DUTY AND RETIRED MEMBERS OF THE ARMED FORCES**

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ABSTRACT

In 2014, CBO reported health care expenditures consumed nearly 10 percent of the overall defense budget in 2012, up from 4 percent in 1990. Jansen, of the Congressional Research Service, noted in 2014 that moral hazard is considered one of the drivers of these increased costs; moral hazard results from lower out-of-pocket expenses. Adjustments to the administration of health benefits within DOD may reduce the DHP budget. Implementation of a basic allowance for health care (BAHC) for active duty dependents and retirees to use with a high deductible health plan (HDHP) and health savings account may provide incentives to use more cost-effective levels of care. The price elasticity of demand for health care is used to determine potential savings as the result of increased costs associated with the HDHP. The implementation of a BAHC is also examined from the point of view of the beneficiary to evaluate how they might respond to the changing incentives. This research found that while the plans are likely to invoke behavioral responses among beneficiaries and reduce moral hazard, unless they are widely adopted throughout the DOD they are unlikely to generate substantial cost savings as a percentage of current levels of spending.

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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	MILITARY HEALTH CARE SYSTEM.....	1
B.	PROBLEM	2
C.	OBJECTIVES	3
D.	RESEARCH QUESTION	3
E.	CONDUCT OF STUDY	4
II.	HISTORY OF MEDICAL COVERAGE FOR SERVICE MEMBERS AND THEIR DEPENDENTS.....	7
A.	BACKGROUND	7
B.	HISTORY	7
III.	COSTS TO BENEFICIARIES OF TRICARE	13
A.	OVERVIEW	13
1.	TRICARE Standard	13
2.	TRICARE Extra	14
3.	TRICARE Prime.....	15
4.	Supplemental TRICARE Options.....	16
B.	COST-SHARING LEGISLATIVE CHANGES FOR TRICARE	16
C.	BUDGETING FOR HEALTH CARE	17
IV.	REVIEW OF PAST STUDIES.....	19
A.	INTRODUCTION.....	19
B.	BACKGROUND	19
C.	HEALTH OUTCOMES AND THINKING ON THE MARGIN.....	20
D.	ELASTICITY OF DEMAND FOR HEALTH CARE	20
E.	THE IMPORTANCE OF OWNERSHIP AS AN INCENTIVE	21
F.	HEALTH SAVINGS ACCOUNTS	22
G.	HIGH DEDUCTIBLE HEALTH POLICY	23
H.	MORAL HAZARD REDUCTION	23
I.	INCENTIVE STRUCTURE	26
J.	SELECTION BIAS.....	28
K.	ADVERSE SELECTION	32
V.	BASIC ALLOWANCE FOR HEALTH CARE AS A MEANS FOR ALTERING THE INCENTIVES OF MILITARY HEALTH CARE.....	35
A.	THE CONCEPT.....	35
B.	STRUCTURE OF THE PROGRAM.....	36
C.	METHODOLOGY OF ANALYSIS.....	37
D.	DETERMINING COSTS FOR VARIOUS LEVELS OF CARE	37
E.	TRICARE INPATIENT AND OUTPATIENT DEMAND.....	42
1.	Inpatient Demand	43
2.	Outpatient Demand	43

F.	ELASTICITY OF DEMAND AND POTENTIAL COST REDUCTION	44
G.	PUTTING IT ALL TOGETHER	47
H.	IMPLICATIONS	50
VI.	CONSUMER POINT OF VIEW	53
A.	OVERVIEW	53
B.	ACTIVE DUTY DEPENDENTS	54
C.	RETIREEES AND THEIR DEPENDENTS	55
D.	IMPLICATIONS	59
1.	Active Duty with One Dependent	59
2.	Retirees with Families	63
E.	CONCLUSION	63
VII.	SUMMARY OF RESULTS	65
A.	OVERVIEW	65
B.	FINDINGS #1	65
C.	FINDINGS #2	66
D.	CONCLUSION	67
E.	AREAS FOR FURTHER STUDY	68
APPENDIX A. TRICARE STANDARD AND TRICARE EXTRA HEALTH CARE COSTS		69
APPENDIX B. TRICARE PRIME NETWORK PROVIDER COPAYS		71
APPENDIX C. CHARACTERISTICS OF PRIVATELY INSURED U.S. ADULTS BY PLAN TYPE		73
APPENDIX D. INPATIENT AND OUTPATIENT USE AND COSTS BY BENEFICIARY STATUS		75
APPENDIX E. DOD SAVINGS RESULTING FROM DIFFERENT PRICE INCREASES FOR VARIOUS ADOPTION RATES ACROSS VARYING VALUES OF ELASTICITY		77
LIST OF REFERENCES		79
INITIAL DISTRIBUTION LIST		83

LIST OF FIGURES

Figure 1.	Distribution of eligible population by beneficiary type (from Dolfini-Reed & Jebo, 2000, p. 10).....	9
Figure 2.	Number of beneficiaries eligible for TRICARE, 2000–2012 (from CBO, 2014, p. 11).	10
Figure 3.	Per capita use of TRICARE by retirees and their families relative to use by active duty service members and their families, 2010 (from CBO, 2014, p. 12).	11
Figure 4.	Funding for Defense Health Care per eligible TRICARE beneficiary (from CBO, 2014, p. 14).	12
Figure 5.	Coinsurance rates and cumulative health spending distributions (from Baiker et al., 2006, p. 467).	24
Figure 6.	Trend in retiree (<65) health insurance coverage (from Defense Health Agency, 2014c).	30
Figure 7.	Inpatient use rates: TRICARE Prime versus TRICARE non-Prime (after Defense Health Agency, 2014c)	31
Figure 8.	Outpatient use rates: TRICARE Prime versus non-Prime (after Defense Health Agency, 2014c).	31
Figure 9.	OOP expense profile for active duty member with one dependent and a \$625 BAHC annual (\$FY13).	56
Figure 10.	OOP expense profile for active duty member with more than one dependent and a \$1,250 annual BAHC (\$FY13).	57
Figure 11.	OOP expense profile for a retiree with one dependent and a \$300 annual BAHC (\$FY13).	58
Figure 12.	OOP expense profile for a retiree with more than one dependent and a \$600 annual BAHC (\$FY13).	58
Figure 13.	OOP expense profile for active duty member with one dependent and a \$700 annual BAHC (\$FY13).	62
Figure 14.	Characteristics of privately insured U.S. adults by plan type, 2007–2008 (from Kullgren et al., 2013, p. 4).	73
Figure 15.	Average annual inpatient RWP per 1,000 beneficiaries by FY (from Defense Health Agency, 2014c, p. 76).	75
Figure 16.	Average annual DOD inpatient costs per beneficiary by FY (from Defense Health Agency, 2014c, p. 77).	75
Figure 17.	Average annual outpatient RVU per beneficiary by FY (from Defense Health Agency, 2014c, p. 81).	76
Figure 18.	Average annual DOD outpatient costs per beneficiary by FY (from Defense Health Agency, 2014c, p. 82).	76

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LIST OF TABLES

Table 1.	Baseline military health care in 1956, by source of care and beneficiary status (from Dolfini-Reed & Jebo, 2000, p. 7).	8
Table 2.	Annual deductibles, cost shares and annual catastrophic caps for TRICARE Standard (from Defense Health Agency, 2014b).....	14
Table 3.	Various measures of predicted mean annual use of medical services, by plan (from Manning et al., 1987, p. 260).	21
Table 4.	Characteristics of typical individual health plans: traditional PPO versus HSA (from Baiker et al., 2006, p. 466).....	24
Table 5.	Percent changes in spending across the spending distribution (from Baiker et al., 2006, p. 470).	25
Table 6.	Annual BAHC allotments by service member status.	36
Table 7.	Premiums, deductibles, coinsurance rates and catastrophic caps used in calculating cost of care, \$FY14.	38
Table 8.	OOP expenses to government and individuals across various levels of total annual medical expenditures, with percent of total expenses covered by individual and effective after tax OOP costs to individual when not paid an annual BAHC.	40
Table 9.	OOP expenses to government and individuals across various levels of total annual medical expenditures, with percent of total expenses covered by individual and effective after tax OOP costs to individual when paid an annual BAHC.....	41
Table 10.	Percent change in OOP expenses of HDHP compared to TRICARE Standard and TRICARE Extra for varying levels of total annual health expense.....	42
Table 11.	Individual and aggregate demand for inpatient and outpatient care in 2013.....	44
Table 12.	Expected change in aggregate quantity demanded for inpatient health care across varying elasticity values, 000s RWP.	45
Table 13.	Expected change in aggregate quantity demanded for outpatient health care across varying elasticity values, 000s RVU.....	45
Table 14.	DOD savings under various adoption rates when price increases by 5 percent across varying elasticity values (000s \$FY13).....	46
Table 15.	DOD savings under various adoption rates when price increases by 25 percent across varying elasticity values (000s \$FY13).....	46
Table 16.	OOP expense to government and OOP expense to individual of first \$3,000 in total medical expenses.	48
Table 17.	Range of potential savings if entire population currently using TRICARE Standard / Extra elected to use the proposed HDHP across varying elasticity values, 000s \$FY13.	50
Table 18.	Number of beneficiaries by total medical spending level, from current TRICARE Standard / Extra population.	54

Table 19.	Percent differences in OOP expense in HDHP versus TRICARE Standard for active duty service members with one dependent across varying levels of total annual medical expenses with a annual BAHC of \$625.	61
Table 20.	Health care costs. (from Defense Health Agency, 2014b, p. 3).....	69
Table 21.	Costs for retirees, their families and all others (from Defense Health Agency, 2014a, p. 5).	71
Table 22.	DOD savings under various adoption rates when price increases by 10 percent across varying values of elasticity (000s \$FY13).	77
Table 23.	DOD savings under various adoption rates when price increases by 50 percent across varying values of elasticity (000s \$FY13).	77
Table 24.	DOD savings under various adoption rates when price increases by 75 percent across varying values of elasticity (000s \$FY13).	78
Table 25.	DOD savings under various adoption rates when price increases by 100 percent across varying values of elasticity (000s \$FY13).	78

LIST OF ACRONYMS AND ABBREVIATIONS

ADFM 1	Active duty member with one dependent
ADFM 2+	Active duty member with more than one dependent
AHIP	America's Health Insurance Plans, Center for Policy and Research
BAHC	Basic Allowance for Health Care
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
CBO	Congressional Budget Office
DHP	Defense Health Program
DOD	Department of Defense
HDHP	High deductible health policy
HIE	Health Insurance Experiment
HMO	Health Maintenance Organization
HSA	Health savings account
MMA	Medicare Prescription Drug, Improvement and Modernization Act
MHS	Military Health System
MTF	Military treatment facility
O&M	Operations and maintenance
OOP	Out-of-pocket expense
PPO	Preferred provider organization
PCM	Primary care physician
RDT&E	Research, development, test and evaluation
RET 1	Retiree with one dependent inclusive of retiree
RET 2+	Retiree with more than one dependent inclusive of retiree
RVU	Relative value units
RWP	Relative weighted product
TFL	TRICARE-for-Life

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I. INTRODUCTION

A. MILITARY HEALTH CARE SYSTEM

Since the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) was formed in 1966, the system has increased in size and cost. The extension of benefits to dependents was meant to aid retention and improve morale within the military services (Whipple & Maassen, 1975, p. 17). However, as the expenditure on health care within the United States has increased, the Congressional Budget Office (CBO) has found that the share of those expenditures borne by service members and retirees has remained relatively flat and substantially lower than that of their civilian counterparts (CBO, 2014, p. 24).

Various legislative decisions have continued to expand the benefits available to TRICARE beneficiaries. As an example, the early 2000s saw elimination of copays for active duty family members, as well as the introduction of TRICARE-for-Life (TFL), a free supplemental benefit to any Medicare-eligible military retiree current on their Medicare premiums without any offsetting cost increases to beneficiaries. Only the increase in TRICARE Prime enrollment fees for retirees in 2012 has directly addressed increasing the cost of benefits borne by beneficiaries as Congress has resisted increasing beneficiary cost sharing or reducing the level of service available to service members (CBO, 2014, p. 24).

The TRICARE insurance system consists of three primary options for beneficiaries: Prime, Standard and Extra. These three options account for approximately 66 percent of the eligible TRICARE population (Defense Health Agency, 2014c). Other programs supporting the rest of the beneficiary population include TFL, TRICARE Young Adult, TRICARE Reserve Select and TRICARE Retired Reserve (Defense Health Agency, 2014c). TRICARE Prime is free for active duty family members. Retirees and retiree families using TRICARE Prime pay annual premiums of \$273.84 per individual or \$547.68 per family, and have copays ranging from \$0 to \$40 (Defense Health Agency, 2014a, p. 5). Aside from these charges, there is no fee for service obtained within the

Prime network, which is made up of military treatment facilities and certain civilian providers (Defense Health Agency, 2014a).

TRICARE Standard and Extra have no annual premiums and have annual deductibles of \$150 or \$300 depending on the enrollee's status (Defense Health Agency, 2014b). Standard and Extra coinsurance rates, or the share of the cost borne by the beneficiary once their annual deductible has been reached, are between 15 percent and 25 percent (Defense Health Agency, 2014b). Both plans have catastrophic caps, the maximum annual out of pocket (OOP) expense a beneficiary is required to pay, of \$1,000 or \$3,000, again depending on the enrollee's status (Defense Health Agency, 2014b). TRICARE Standard and Extra are available to active duty family members, retirees, and retiree family members. Generally, for either TRICARE Standard or TRICARE Extra the cost is less than comparable civilian plans. For example, CBO found the average annual costs for a family using TRICARE Standard / Extra in 2012 were \$1,035, while a comparable civilian plan had annual costs of \$5,565 (2014, p. 15). All three primary TRICARE plans are discussed in detail in a subsequent chapter.

B. PROBLEM

The cost of health care borne by active duty dependents, retirees, and retiree dependents has remained at levels below those of comparable civilian plans (CBO, 2014, p. 15). Over the past 15 years, the share of health care expenditures covered by beneficiaries under TRICARE has fallen from 27 percent to 11 percent while civilian cost sharing has continued to climb in line with national health expenditures (Office of the Under Secretary of Defense Comptroller, 2014d, pp. 5–10). Moral hazard results when individuals take more risks or overuse resources because another party bears the burden of those actions. One could argue the current medical benefits structure provides little incentive for beneficiaries to think about how much and how often they are consuming health benefits, potentially leading to moral hazard. The past ten years have seen legislation expanding benefits to beneficiaries, but limited legislation to ensure that beneficiaries bear a portion of the burden via increased cost share mechanisms (CBO, 2014). If the military health care system continues to use an increasing portion of the

defense budget, there may be real effects on the department's ability to fund other requirements.

C. OBJECTIVES

The objective of this paper is to analyze the current TRICARE system incentive structure for active duty dependents, retirees, and retiree family members, and evaluate that incentive structure against a proposed system consisting of a Basic Allowance for Health Care (BAHC) coupled with a high deductible health policy (HDHP) and a health savings account (HSA). The goal of the proposed system is twofold. First, the introduction of HDHPs and HSAs as a TRICARE option coupled with a BAHC will raise costs for the average beneficiary, which should reduce demand for health services and lower aggregate costs for the Department of Defense (DOD) through a combination of a reduction in moral hazard supported by higher beneficiary cost sharing. Second, the BAHC places funds directly into the hands of beneficiaries, which should alter their decision making process. Because funds are allowed to accumulate over time in the HSA, and ultimately transfer with the individual when he or she departs the service, they provide a means for unused benefits to accrue to the individual. This may help reduce the effects of the increased health care costs because unused benefits were previously unavailable to the beneficiary.

D. RESEARCH QUESTION

In what ways do selection bias, moral hazard and adverse selection affect the effects of the proposed plan? Can the implementation of a BAHC, coupled with a HDHP and a HSA, reduce the quantity of health care demanded and thus the cost of health care to the DOD? The examination of current TRICARE beneficiary trends is used to evaluate how beneficiaries may respond to changing incentives. This examination looks to gain insights regarding potential future modifications to the health care benefit to keep it financially sustainable.

E. CONDUCT OF STUDY

The study begins by reviewing the history of the military health care system for beneficiaries to determine the economic effects of the proposed BAHC. Data was gathered from the 2014 Evaluation of the TRICARE System concerning the current costs to active duty dependents, retirees, and retiree dependents within the TRICARE system to determine the potential pool for savings (Defense Health Agency, 2014c). The same report was used to determine current levels of demand and the cost per unit of that demand. This data was then applied across a range of potential values of price elasticity of demand to quantify potential savings among various adoption rates. Selection bias, moral hazard reduction and adverse selection and their effects are then discussed. Accepted values for elasticity and adoption rates for HDHPs found in the literature (Manning, Newhouse, Duan, Keeler, Leibowitz, & Marquis, 1987; Eichner, 1998) were applied to the proposed program to determine its potential to reduce quantity demanded and lower costs within the DOD Military Health System (MHS).

Chapter II provides the historical background of the MHS as it pertains to access to care for active duty family members, retirees and, retiree family members. The chapter identifies changes to the system over time regarding access to care and how these beneficiaries responded to those changes.

Chapter III provides the current cost structure of the TRICARE program for active duty family members, retirees, and retiree family members. The chapter identifies the cost drivers impacting the TRICARE beneficiary population and compares those cost drivers to the proposed costs drivers of the new BAHC program.

Chapter IV is a review of the academic literature to determine relevant values for price elasticity of demand, selection bias, moral hazard reduction, and adverse selection. Baiker, Dow and Wolfson (2006) determined values for factors affecting the potential of a BAHC combined with a HDHP and HSA based upon the RAND Health Insurance Experiment (HIE) conducted in the 1970s and 1980s.

Chapter V analyzes a possible result from implementation of the proposed TRICARE HDHP option. The chapter covers the concept and design of the BAHC and

how it affects the cost sharing burden of beneficiaries compared to TRICARE Prime, Standard and Extra. The analysis then turns to the expected adoption rates based upon data culled from the academic literature to determine the proposed plan's viability as a cost reduction option.

Chapter VI evaluates the proposed HDHP from the standpoint of the beneficiary and provides a case study for expected beneficiary response to the new spending profile. The differences between the TRICARE Standard beneficiary spending profile and the hypothetical HDHP beneficiary spending profile are discussed.

Chapter VII summarizes the research conducted and identifies areas for further study where potential savings may exist.

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II. HISTORY OF MEDICAL COVERAGE FOR SERVICE MEMBERS AND THEIR DEPENDENTS

A. BACKGROUND

Health insurance coverage had become a large part of labor compensation packages in the 1950s as a result of the tax-exempt status of premiums from income and payroll taxation (Baiker et al., 2006, p. 463). The United States Congress passed the Dependents' Medical Care Act (1956), providing service members' dependents, retirees, and retiree dependents access to medical care at military treatment facilities (MTFs). Once Congress passed the Dependents' Medical Care Act, the military health care system began having a second mission. The first mission was and is ensuring the medical readiness of active duty service members during a time of war. The second mission is attending to the needs of active duty members during times of peace, as well as those of their dependents, retirees, and retiree dependents during times of war and peace (Dolfini-Reed & Jebo, 2000, p. 1).

B. HISTORY

Prior to 1956, active duty service members received priority care at MTFs and their dependents were seen only on a space-available basis (Dolfini-Reed & Jebo, 2000, p. 5). Following the Dependents' Medical Care Act passage, MTFs also became available to retirees, and retiree dependents. Services provided to active duty dependents and retirees, and retiree dependents, were limited in scope and, by law, the military services could charge a minimal fee in order to reduce moral hazard (Dependents Medical Care Act, 1956). The Secretary of Defense was also enabled to develop health insurance plans for inpatient use at hospitals, with beneficiaries responsible for the higher of a \$25 admission fee or a per diem amount for longer stays (Dolfini-Reed & Jebo, 2000). At this time the ability to use civilian practitioners did not apply to outpatient services or retirees (Dolfini-Reed & Jebo, 2000, p. 6). Table 1 shows the original coverage following implementation of the 1956 law.

Table 1. Baseline military health care in 1956, by source of care and beneficiary status (from Dolfini-Reed & Jebo, 2000, p. 7).

Source of care	Active duty dependents	Retirees, retiree dependents and survivors
MTF		
Access standard	On space-available basis	On space-available basis
Type of care	Outpatient/inpatient	Outpatient/inpatient
Covered services	Acute medical conditions Acute surgical conditions Contagious diseases Immunizations Obstetrics Emergencies	Acute medical condition Acute surgical conditions Contagious diseases Immunizations Obstetrics Emergencies
Cost-share		
Outpatient service	None	None
Inpatient service ^a	Per diem amount	Per diem amount
Civilian providers		
Access standard	Market demand	n/a
Type of care	Inpatient	none
Covered services	Medical and surgical care incident to a period of hospitalization	n/a
Cost-share ^b	The greater of a \$25 fee or per diem amount	
<p>a. In 1966, the per diem amount was \$1.75. Information on the rate before 1966 was not available.</p> <p>b. In then-year dollars.</p>		

Changes to the initial beneficiary eligibility in the health care system through the 1980s and into the early 1990s included spouse eligibility following the death of a service member, rights for handicapped children of service members, and the eligibility of pre-

adopted children and adopted children living with a service member (Dolfini-Reed & Jebo, 2000). During the 1980s, active duty members and their dependents were approximately 70 percent of the users of military health care services, decreasing to around 63 percent as the Cold War ended (Dolfini-Reed & Jebo, 2000, p. 9) (Figure 2). As shown in Figure 2, by the year 2000, approximately 55 percent of beneficiaries were retirees or dependents of retirees.

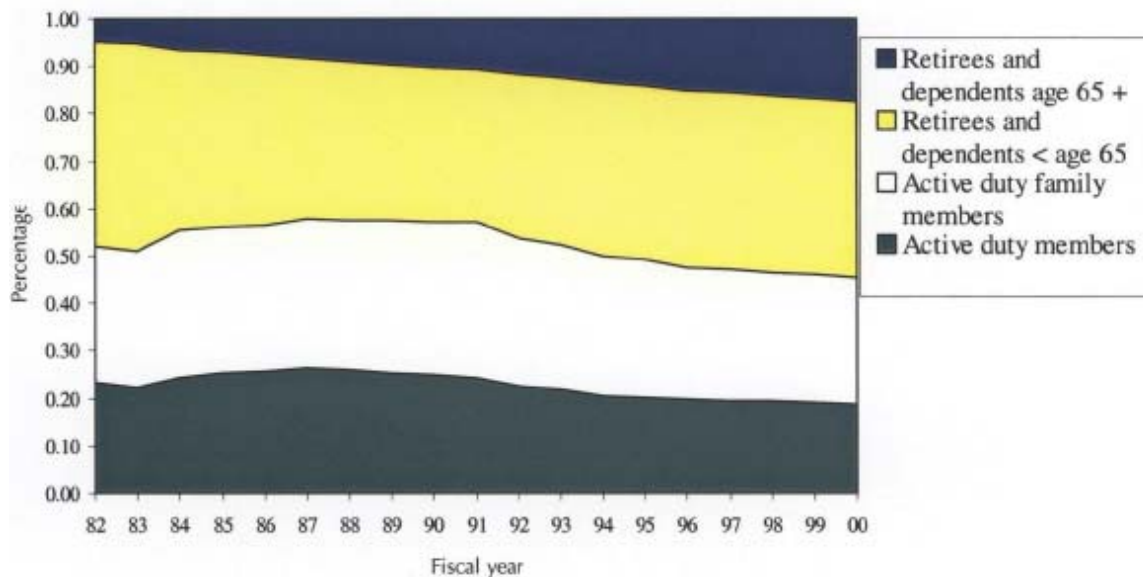


Figure 1. Distribution of eligible population by beneficiary type (from Dolfini-Reed & Jebo, 2000, p. 10).

The number of beneficiaries shrank from approximately 9.0 million in the 1980s to approximately 8.1 million during the 1990s (Dolfini-Reed & Jebo, 2000, p. 8). That trend reversed in the 2000s as eligibility was opened to more individuals and financial incentives led more retirees to sign up for TRICARE. Those factors and the high costs resulting from the recent wars led to faster growth in military health care spending compared to the broader United States economy (CBO, 2014, p. 10). CBO noted average annual growth of eligible beneficiaries between 2000 and 2012 of approximately 1 percent (2014, p.10) (Figure 2). Most of that growth occurred between 2002 and 2003 as National Guard and reserve units were mobilized (CBO, 2014, p. 10). Also evident in Figure 2 is that the number of retirees and retiree families increased by roughly 500,000

or 11 percent during the same period while the level of active duty service members and their families remained relatively flat. The growth of the retiree population can partly be attributed to the implementation of TFL for retirees, which provides supplemental coverage for Medicare-eligible retirees as long as they enroll in Medicare Part B (CBO, 2014, p. 10). There is no additional fee for retirees to use TFL aside from the annual Medicare Part B premium (CBO, 2014, p. 11).

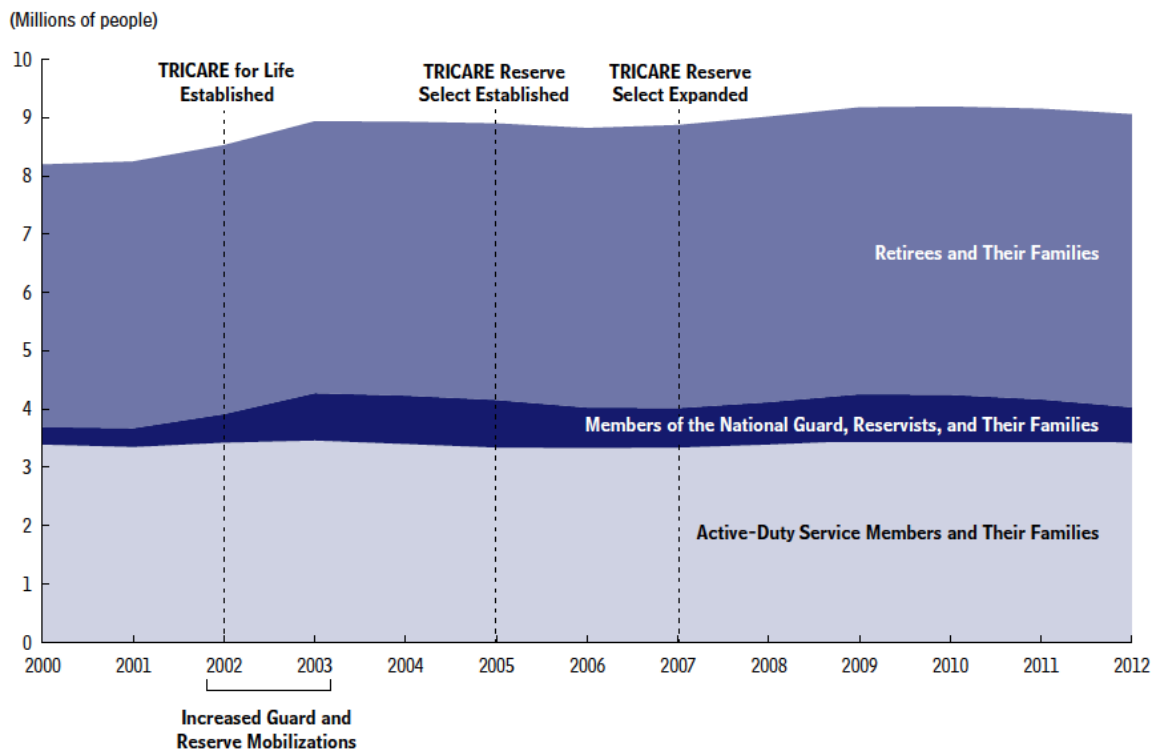


Figure 2. Number of beneficiaries eligible for TRICARE, 2000–2012 (from CBO, 2014, p. 11).

The growth in the number of retirees using the TRICARE system is compounded by the fact that per capita they use more care than their active duty counterparts, as shown in Figure 3. In Figure 3, use of care is indexed to active duty service members and their families, established at one unit as the benchmark. For example, the pharmaceutical column shows Medicare-eligible retirees use 6.5 times the number of 30-day equivalent prescriptions per member per year used by active duty service members and their families.

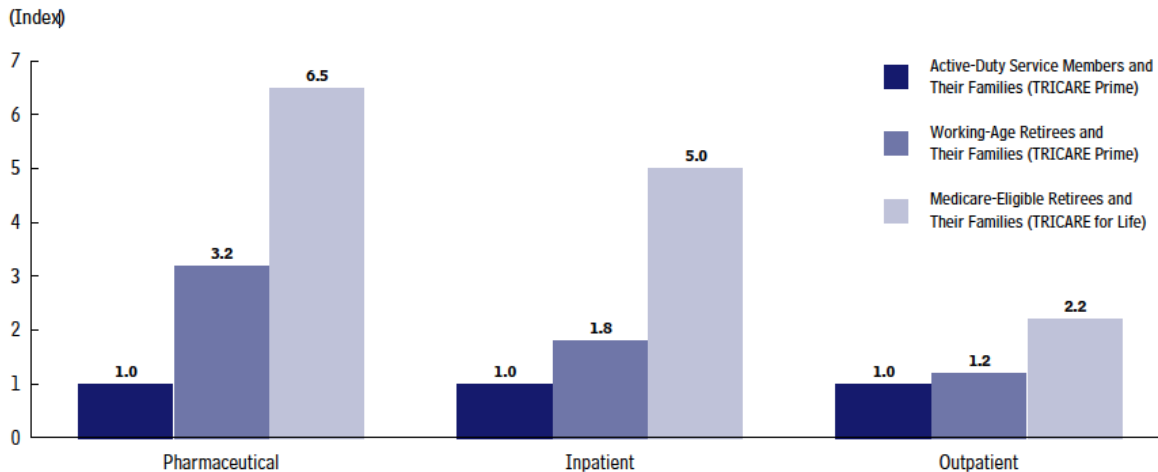


Figure 3. Per capita use of TRICARE by retirees and their families relative to use by active duty service members and their families, 2010 (from CBO, 2014, p. 12).

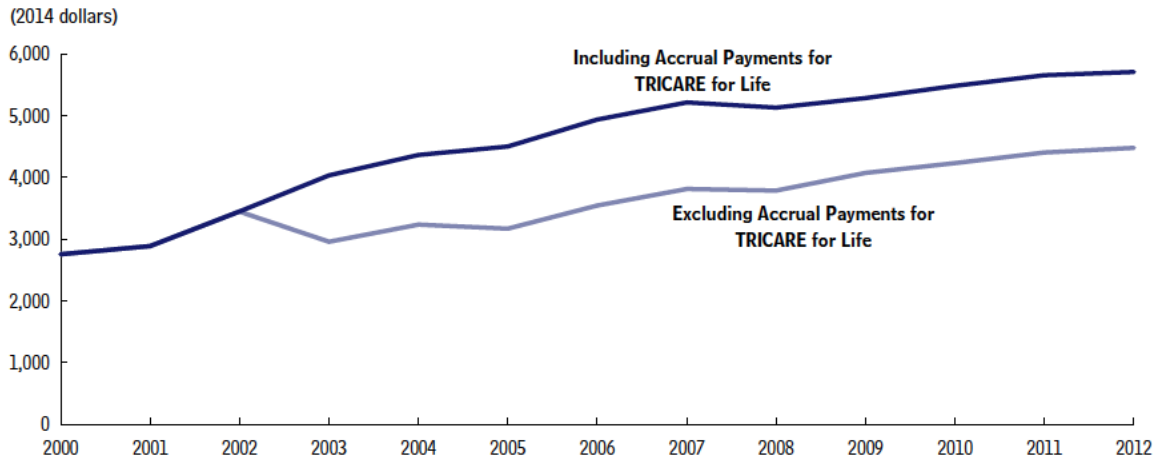
CBO cites the financial incentives as one of the key reasons for increased enrollment in TRICARE by beneficiaries (2014, p. 13). According to the CBO (2014, p. 13), TRICARE's fees remained largely unchanged for beneficiaries from 1995–2012, while most civilians' premiums and cost sharing increased in line with per capita health care costs nationwide. CBO notes two effects of these lower costs: 1) The relatively low rates have led beneficiaries to drop their more expensive civilian plans. 2) The relatively lower rates have led to higher use of health services by beneficiaries (2014, p. 13).

The CBO also analyzed the prices paid by TRICARE beneficiaries, specifically retirees, relative to a comparable family Health Maintenance Organization (HMO) plan. CBO found a military retiree could acquire TRICARE Prime for \$520 per year, plus \$445 in other fees, for total annual expenses of \$965. A comparable family HMO would run approximately \$6,080 per year, or roughly six times the cost to a TRICARE beneficiary (2014, p. 13).

Other factors keeping TRICARE costs low include:

- Reducing the annual catastrophic cap for TRICARE Standard enrollees from \$7,500 to \$3,000 in the year 2000
- Eliminating copays for outpatient visits to TRICARE Prime network providers for active duty dependents (CBO, 2014, p. 14).

DOD estimates that these lower OOP costs led the average individual enrolled in TRICARE Prime to use 50 percent more care than the average person in a civilian HMO (CBO, 2014, p. 15). The lower OOP expenses coupled with the increasing use of benefits led to increasing levels of funding for the DHP. Figure 4 shows the increase in funding for eligible TRICARE beneficiaries for the years 2000 to 2012.



Source: Congressional Budget Office.

Notes: This figure reflects the Department of Defense's spending for health care from its appropriations for operation and maintenance and military personnel.

Not all people who are eligible to use TRICARE do so; consequently, this measure is lower than the Department of Defense's spending per user.

Data on the number of users (as distinct from eligible beneficiaries) are not available for the entire 2000–2012 period.

Figure 4. Funding for Defense Health Care per eligible TRICARE beneficiary (from CBO, 2014, p. 14).

If DOD's estimate of increased use of health care services resulting from low OOP expenses is accurate, then it may be possible to curb DOD health expenditures by altering the incentives for using that care. The idea that OOP expenses are influencing health care expenditures is telling, and offers a natural experiment for developing a means to curb those expenditures via the use of HDHPs and HSAs.

III. COSTS TO BENEFICIARIES OF TRICARE

A. OVERVIEW

Today, there are three primary health insurance plans available to individuals enrolled in the TRICARE system: TRICARE Prime, TRICARE Standard and TRICARE Extra. TRICARE-for-Life is a supplemental plan available to Medicare-eligible retirees and has added to the overall cost of military medicine over the last decade, as seen in Figure 4, Chapter II. TRICARE Standard allows beneficiaries to be seen by any civilian practitioner who accepts TRICARE, with beneficiaries responsible for coinsurance rates and an annual deductible. TRICARE Extra provides beneficiaries a network of preferred providers available on a case-by-case basis (Stoloff et al., 2002, pp. 2–2). TRICARE Prime allows beneficiaries to be seen by a primary care physician at a MTF and functions much like a HMO. Each of these programs offers different incentives to beneficiaries.

1. TRICARE Standard

There is no enrollment requirement for TRICARE Standard. The plan is available to all beneficiaries except active duty military service members (Defense Health Agency, 2014b, p. 1). Cost to the beneficiary varies by status, with retirees and retiree dependents paying more than active duty dependents (Defense Health Agency, 2014b). Rates are shown in Table 2.

Civilian providers may be participating or non-participating with regard to TRICARE rates, and this decision can vary from visit to visit (Defense Health Agency, 2014b, 2014). Participating providers may charge up to the maximum TRICARE allowable rates and beneficiaries pay per the schedules in Table 2 (Defense Health Agency, 2014b). Non-participating providers are able to charge up to 15 percent above the max allowable TRICARE rates, a practice known as balance billing (Defense Health Agency, 2014b). If a beneficiary sees a non-participating provider that uses balance billing, the beneficiary is responsible for the extra charge, even if the individual's annual catastrophic cap has already been met. Depending on the provider, beneficiaries may have to cover their entire visit OOP and then file a claim with TRICARE for

reimbursement, while other providers provide filing services on behalf of the patient (Defense Health Agency, 2014b). TRICARE Standard offers the most options for beneficiaries regarding choice of provider and, as such, carries higher OOP expenses than TRICARE Prime or Extra (Defense Health Agency, 2014b).

Table 2. Annual deductibles, cost shares and annual catastrophic caps for TRICARE Standard (from Defense Health Agency, 2014b).

	Active Duty Dependents	Retirees and Dependents
Annual Deductible		
E-4 and below	\$50 / individual \$100 / family	\$150 / individual \$300 / family (regardless of rank)
E-5 and above	\$150 / individual \$300 / family	
Cost Share*	20 percent	25 percent
Annual Catastrophic Cap	\$1,000 / family	\$3,000 / family

*General rates. Specific percentages for different services can be found in Appendix A.

2. TRICARE Extra

As with TRICARE Standard, there are no annual enrollment fees for TRICARE Extra (Defense Health Agency, 2014b). TRICARE Extra is similar to TRICARE Standard in that beneficiaries are able to see civilian physicians; however, beneficiaries are restricted to an established network of providers when enrolled in TRICARE Extra (Defense Health Agency, 2014b). This network has agreed to accept reimbursement rates from the government that are lower than those of non-network providers (Defense Health Agency, 2014b). Because the rates paid by the government are lower than those paid to non-network providers, cost shares for beneficiaries are lowered to 15 percent and 20 percent for active duty dependents, and retirees and retiree dependents, respectively (Defense Health Agency, 2014b). All other costs remain the same as those listed in Table 2 (Defense Health Agency, 2014b). Beneficiaries are able to use TRICARE Standard and TRICARE Extra interchangeably, with beneficiaries responsible for any associated costs depending on which provider they choose (Defense Health Agency, 2014b). A complete

breakdown of cost sharing by service rendered under TRICARE Extra is shown in Appendix A.

3. TRICARE Prime

TRICARE Prime is the last of the three primary TRICARE options and it functions much like an HMO in that it requires beneficiaries to be seen by network providers. Enrollment in TRICARE Prime is mandatory for active duty service members, and it is also open to every other eligible beneficiary with the exception of Medicare enrollees. There are no annual premiums for active duty personnel and their dependents (Defense Health Agency, 2014a).

Retirees and retiree dependents pay annual enrollment fees of \$273.84 per individual or \$547.68 per family as of 2014. The annual enrollment fee is applied to the annual catastrophic cap of \$3,000 for retirees. In addition to these enrollment fees, retirees and retiree dependents are responsible for copays for services rendered by TRICARE Network providers (Defense Health Agency, 2014a). These network provider copays are listed in Appendix B.

For those opting for TRICARE Prime, Primary Care Managers (PCMs) are either assigned to or selected by the beneficiary. Beneficiaries see civilian practitioners only if their MTF is unable to provide the required services, usually of a specialized nature, unless individuals choose an allowable civilian Prime Network PCM. TRICARE Prime covers certain preventative care services for retirees free of charge at MTFs or network facilities. There is an option for members to receive point of service care from non-network providers if they do not have a referral; however the beneficiary is responsible for additional charges from providers outside of the network, which by law can be as high as 15 percent over the TRICARE allowable charge (Defense Health Agency, 2014a). Point of service deductibles are \$300 for individuals and \$600 for families, and the coinsurance rate is 50 percent after reaching the deductible (CBO, 2014, p. 35). These fees are not applied to their catastrophic cap (Defense Health Agency, 2014a).

4. Supplemental TRICARE Options

In addition to TRICARE Standard, Extra and Prime, there are supplemental options available to beneficiaries. Of the supplemental plans, TRICARE-for-Life (TFL) established in 2002 is the largest, at over 2 million enrollees and consumes the most resources of the supplemental plans, totaling \$8.3 billion in 2013 (Defense Health Agency 2014c; CBO 2014). Figure 4 shows that TFL expenses amount to approximately \$1,000 per year per beneficiary, or approximately \$10 billion annually. The DOD makes contributions each year to an accrual account established to help ensure that funding exists now and in the future for beneficiaries using the TFL option (CBO, 2014, p. 11). Those who enroll need to pay only the appropriate Medicare fees to receive the benefit (CBO, 2014, p. 10). TFL kicks in after all available coverage from Medicare has been used up and acts as a top-off mechanism to minimize the OOP costs for retirees (CBO, 2014, p. 11). Like the other TRICARE programs, the OOP costs of this program appear to provide little incentive for beneficiaries to limit their use of the health care system. Relatively lower OOP expenses compared to comparable civilian plans may also reduce the incentive to use privately acquired health insurance to bear some of the burdens of increased care that come later in life.

B. COST-SHARING LEGISLATIVE CHANGES FOR TRICARE

TRICARE Prime enrollment fees remained flat for well over a decade, with fees for retired individuals and retiree families at \$230 and \$460, respectively, from 1995 until 2011. In 2011, the fees were raised to \$260 and \$520, respectively, and beginning in 2012 the fees were indexed to inflation (CBO, 2012, p. 41). Outpatient copayments for active duty family members enrolled in TRICARE Prime were eliminated with the passing of the Floyd D. Spence National Defense Authorization Act of 2001 (CBO, 2012, p. 41). These copays had been \$6 for junior enlisted personnel dependents and \$12 for all others (CBO, 2012, p. 41). The same authorization was responsible for the reduction of the catastrophic cap from \$7,500 to \$3,000, as mentioned above for TRICARE Standard (CBO, 2012, p. 41).

Various DOD proposals dating back to 2006 have been presented to legislators to increase cost sharing for military retirees using TRICARE as a means to reduce costs including raising retiree TRICARE Prime enrollment fees to levels between \$1,100 and \$2,140 from between \$230 and \$460, increasing charges for office visits under TRICARE Prime, introducing enrollment fees for TRICARE Extra and TRICARE Standard, and raising annual deductibles for TRICARE Extra and TRICARE Standard (CBO, 2012, p. 33). All of these proposals were rejected. However, Congress did approve a smaller increase in Prime enrollment fees for FY12 and FY13 bringing the annual fees from \$230 to \$269 and \$460 to \$539 for retired individuals and families, respectively, in FY13 (CBO, 2012, p. 42).

Despite these increases, beneficiaries continue to pay a lower percentage of their health care than they did previously. For example, in 1996 a working-age military retiree contributed approximately 27 percent of his or her family of three's health care costs. Today that same individual contributes just less than 11 percent (Office of the Under Secretary of Defense Comptroller, 2014d, pp. 5–10).

C. BUDGETING FOR HEALTH CARE

Money for DOD health care is appropriated through the Planning, Programming, Budgeting and Execution process. The Unified Military Health System consists of the Defense Health Program (DHP) account, Military Personnel account, Military Construction account, and a Health Care Accrual account. Obligation authority falls under line item 0130D, Defense Health Program. The DHP consists of three budget activities: Operation and Maintenance (O&M), Research, Development, Test and Evaluation (RDT&E), and Procurement.

The O&M portion of the DHP budget requires and consumes the most resources. O&M consumed approximately 95 percent of the available resources in 2013 (Office of the Under Secretary of Defense Comptroller, 2014c). Within the O&M budget activity, In-house Care and Private Sector Care make up approximately 75 percent of the total O&M line (Office of the Under Secretary of Defense Comptroller, 2014c). The growth rate of defense health spending is demonstrated by an analysis of past presidents'

budgets. In 2005, DHP received \$18,388,481,000 (Office of the Under Secretary of Defense Comptroller, 2014a). That number grew to \$29,058,398,000 by 2010 and in 2015 has reached \$31,994,918,000 (Office of the Under Secretary of Defense Comptroller, 2014b; Office of the Undersecretary of Defense Comptroller, 2014c). These numbers do not include the accrual account, which adds to the total, bringing it to \$38,000,000,000 in FY15 (Office of the Undersecretary of Defense Comptroller, 2014c). The accrual account, which falls under the Military Personnel (MILPERS) account, was established to fund TFL. DOD makes deposits to the accrual account based upon actuarial estimates of dollar amounts required to fund future health benefits for current active duty members (CBO, 2014, p. 11). When the Military Personnel and Military Construction accounts are added in, the total MHS request for 2015 reaches \$47,400,000,000, or nearly 10 percent of the defense budget request (Office of the Undersecretary of Defense Comptroller, 2014c). The total MHS request for 2015 also assumes savings to TRICARE from benefit modification proposals, which historically, as shown above, have not made it through the Congress. The 2015 MHS budget total aims to serve the needs of the current 9.6 million eligible beneficiaries including active duty, retired members, retiree families, dependent survivors, and some of the reserve component (Office of the Under Secretary of Defense Comptroller, 2014d). Providing a more tangible sense of the true cost of care to the beneficiary might support serving the needs of the eligible beneficiaries. The remaining chapters evaluate the potential for MHS to reduce the quantity of care demanded, and thus overall expenses, by implementing HSAs and HDHPs in conjunction with a BAHC.

IV. REVIEW OF PAST STUDIES

A. INTRODUCTION

Following World War II, medical benefits paid to employees were made explicitly exempt from income taxes (Baiker et al., 2006). In 1965, the United States government introduced legislation providing its poor and elderly citizens medical coverage through Medicaid and Medicare (Social Security Acts Amendments, 1965). Around the same time theories of risk bearing that were current then were being applied to health insurance to determine insurance plans' optimal design (Feldstein, 1995, p. 29). At that time, health care spending as a share of gross domestic product (GDP) was approximately 6 percent in the United States. That number was 13.6 percent in 1995 and 17.9 percent in 2012, according to the World Bank (The World Bank, 2014).

B. BACKGROUND

Kenneth Arrow's 1963 paper "Uncertainty and the Welfare Economics of Medical Care" examined theoretical underpinnings of economics as it applies to the health care industry. Elements of Arrow's research include:

- Effects of risk aversion
- Unintended consequences resulting from good intentions
- The irregular and unpredictable nature of demand for health care
- The uncertainty of quality and outcomes
- Asymmetric information
- Moral hazard
- Pricing
- Restrictions on who may practice medicine.

Relevant to the focus of this thesis, Arrow commented on moral hazard as it relates to insurance products. Arrow states, "The physicians themselves are not under any control and it may be convenient for them or pleasing to their patients to prescribe more

expensive medication, private nurses, more frequent treatments and other marginal variations of care” (p. 146). Arrow also cited the observation that widespread insurance leads to higher demand for health care (Arrow, 2004, p. 146). Nahata, Ostaszewski and Sahoo (2005) based their research on the demand side of services on a similar perspective, stating, “A low level of consumer participation in purchase decisions affects not only the behavior of the consumer (which is the standard moral hazard argument), but also the behavior of the health care provider, for whom price increases become the natural profit-maximizing route” (p. 90).

C. HEALTH OUTCOMES AND THINKING ON THE MARGIN

Cutler (1995) suggests persons previously without health insurance would see improved health outcomes as a result of more health spending, while those already with insurance saw relatively little effect on their outcomes from spending at the margins (p. 32). Health outcomes also tend not to vary across reimbursement systems. Cutler notes beneficiaries using plans with more cost sharing and thus less care typically do not experience worse health outcomes than those with less cost sharing and more care (1995, p. 32). Cutler cited Newhouse et al. (1993), Miller and Luft (1994), Staiger and Gaumer (1991), Cutler (1995), and McClellan and Newhouse (1994), who all demonstrated the relatively small effects of increased health spending on health outcomes. The studies indicate that incentives may exist for health insurance beneficiaries to overuse health care with little concern for the cost, regardless of whether the expected benefit exceeds the expected cost.

D. ELASTICITY OF DEMAND FOR HEALTH CARE

In 1987, Manning et al. published their analysis of the results of the Rand Health Insurance Experiment (HIE). HIE was a five-year experiment testing the consumption of health care among families with different health insurance policies with coinsurance rates of 0, 25, 50, or 95 percent and upper limits for annual out-of-pocket expenses of 5, 10, or 15 percent up to a maximum of \$1,000. Manning et al. found “The per capita expenses on the free plan (no out-of-pocket costs) are 45 percent higher than those on the plan with a 95 percent coinsurance rate, subject to an upper limit on out-of-pocket expenses” (1987,

p. 258). Expenditures for the intermediate coinsurance rates fell in between the two extremes. Table 3 contains some of their findings, with standard errors shown in parentheses. The results of the HIE study indicate that as price to the patient increases, the amount of health care demanded behaves as predicted by economics.

Table 3. Various measures of predicted mean annual use of medical services, by plan (from Manning et al., 1987, p. 260).

Plan	Likelihood of Any Use (percent)	One or More Admissions (percent)	Medical Expenses (1984 \$)
Free	86.7 (0.67)	10.37 (0.420)	777 (32.8)
Family Pay (25 percent)	78.8 (0.99)	8.83 (0.379)	630 (29.0)
Family Pay (50 percent)	74.3 (1.86)	8.31 (0.400)	583 (32.6)
Family Pay (95 percent)	68.0 (1.48)	7.75 (0.354)	534 (27.4)
Individual Deductible	72.6 (1.14)	9.52 (0.529)	623 (34.6)

Manning et al. (1987) determined price elasticity between -0.20 and -0.10 for health care, based upon this data. Van Vliet (2004) in a separate study conducted in the Netherlands calculated elasticity to be approximately -0.14 (p. 297). Van Vliet’s research appears to contribute additional evidence to the effects of higher deductibles as found by Manning et al. (1987). If higher deductibles are capable of reducing consumption of health care, it is possible that ownership of funds for medical care may provide further incentive to reduce use. If the marginal benefit of the care individuals seek does not exceed the marginal cost, as measured by the consumers, then with funds in hand they may forgo the additional services and perhaps use those funds when they deem the benefits more in line with the costs.

E. THE IMPORTANCE OF OWNERSHIP AS AN INCENTIVE

Herzlinger (2004) noted that consumers did not like being told which practitioners they could see and also did not like the idea of gatekeepers whose only job was to “just

say no” to referral requests (p. 45). The result was legislation in the late 1990s and the beginning of a movement Herzlinger dubbed “Consumer-driven Health Care” in 1999. Consumer-driven health care, reasoned Herzlinger, “empowers consumers by offering them a wide variety of health insurance plans so they can select the one that most closely meets their needs” (2004, p. 45). Consumer-driven health care gained popularity when the U.S. Treasury gave health reimbursement accounts tax-exempt status in 2003 (Herzlinger, 2004, p. 45).

Some authors have made the case that HDHPs have the ability to alter consumer behavior and lower costs (Herzlinger, 2004; Feldstein, 1995). One of the possible drivers behind this behavioral response is that consumers may have a more direct connection to the funds they actually expend for health care, likely leading them to think much harder about how and for what purposes those funds are used. When OOP expenses are low, consumers of health care have little if any incentive not to obtain care because they do not bear the financial burden of those services. However, when consumers are faced with paying for the marginal cost of that care out of their own pocket, as opposed to the insurance company picking up the bill, they may think harder about whether the benefits are worth the cost.

F. HEALTH SAVINGS ACCOUNTS

The Medicare Prescription Drug, Improvement, and Modernization Act (MMA) of 2003 created health savings accounts. HSAs, coupled with HDHPs, offer advantages and incentives to promote a more prudent use of health care resources, such as lower premiums and taxes, incentives to conserve health care resources, and the ability to accumulate the cash savings for use in retirement (DePree & Jude, 2008). Baiker et al. (2006) note the importance of HSAs’ ability to reduce the tax bias offered by pre-paid, employer sponsored insurance since HSA funds are tax exempt when used to cover health expenses out of pocket. Because health insurance is deducted from payroll taxes and not included as part of an individual’s taxable income, insurance possesses a tax advantage over medical expenses paid for out of the beneficiary’s income, after taxes, if that individual is not using an HSA. HSAs function as a tax-exempt (provided

contributions are used for health care) savings account owned by the individual. They are able to accrue interest, they follow if an individual changes employers, they can be withdrawn from for purposes other than health care at age 65 with no penalty aside from income tax, and they can be passed on to beneficiaries upon death (Baiker et al., 2006).

G. HIGH DEDUCTIBLE HEALTH POLICY

The MMA requires a HDHP to establish an HSA. HDHPs must meet certain requirements to be used in association with an HSA. A plan must have an annual deductible of at least \$1,250 for an individual and \$2,500 for family coverage as of 2014 to be considered a HDHP. Annual OOP expenses are capped at \$6,350 and \$12,700 for individual and family coverage, respectively (U.S. Centers for Medicare and Medicaid Services, 2014). OOP expenses include things such as copays, deductibles and other expenses not including premiums. The higher OOP expenses that come with HDHPs are covered by funds from the policyholder's HSA. Annual contribution limits for HSAs are the lesser of (1) the deductible and (2) \$3,300 for individuals and \$6,550 for families with these amounts indexed to inflation (Internal Revenue Service, 2014).

H. MORAL HAZARD REDUCTION

Table 4 contains data showing how much spending occurs for traditional individual preferred provider organization (PPO) plans versus an HSA plan. Figure 5 displays expected spending distributions based upon the plans presented in Table 4 as calculated by Baiker et al. (2006). The lowest curve in Figure 5 represents the percent of the population that exceeds the associated dollar amount for total annual health expenditures shown on the horizontal axis. The middle curve shows the percent of total spending occurring after an individual has reached particular spending levels. For example, approximately 40 percent of an individual's spending occurs after an individual has incurred \$5,000 in medical expenses. The top curve represents the percent of total population spending incurred when total spending is above the associated horizontal axis level (Baiker et al., 2006).

Table 4. Characteristics of typical individual health plans: traditional PPO versus HSA (from Baiker et al., 2006, p. 466).

Policy	Deductible	Out-of-Pocket Maximum	Coinsurance	Imputed Premium
Traditional PPO	\$400	\$2,250	15 percent	\$4,150
HSA	\$2,400	\$3,400	15 percent	\$3,106

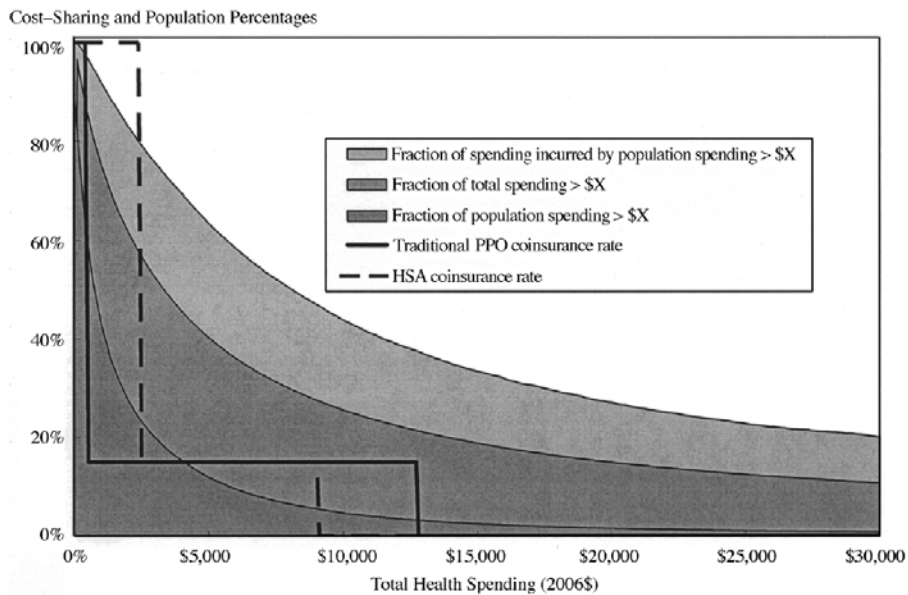


Figure 5. Coinsurance rates and cumulative health spending distributions (from Baiker et al., 2006, p. 467).

Figure 5 shows that approximately 10 percent of the population spends a total of more than \$5,000 annually (bottom curve) and that same 10 percent incurs approximately 70 percent of the total annual expenditures for the population (top curve). To see this, begin at \$5,000 on the horizontal axis. Going straight up from \$5,000 shows that approximately 10 percent of the population spends greater than \$5,000. Continuing to the top curve shows that the individuals who spend over \$5,000 account for approximately 70 percent of total medical spending. Despite the apparent limited effects of HSAs to effectively reduce costs when presented this way, Baiker et al. (2006) make three assertions:

- 35 percent of spending occurs between the two deductibles, where PPO has only 15 percent cost sharing and HSA has 100 percent; an HSA, therefore, is likely to lead to a behavioral response
- Only a small percentage of the population exceeds its HSA annual OOP maximum, usually caused by peculiar, unforeseen events, and an even smaller percentage ever exceeds it two years in a row
- Approximately 50 percent of spending is by those individuals spending less than \$8,100, well within the cost sharing range of a typical HSA plan, leaving room for potential reductions resulting from incentives provided by HSA plans (2006, p. 468).

Baiker et al. made these assertions because “there is significantly more cost-sharing under the HSA for a substantial portion of spending (2006, pg. 468). Baiker et al. (2006) quantified these assertions with their simulation model. Based upon the Newhouse et al. (1993) findings from the RAND HIE and assuming an elasticity of demand of -0.20, the authors found switching an average risk pool from a PPO policy to an HSA offered average potential reductions in health care expenditures of 5 percent (Baiker et al., 2006, p. 469). Variations in changes to spending ranged from -20.6 percent to 2.6 percent. Baiker et al. (2006) stratified these savings into specific spending ranges to delineate where the greatest potential for cost reductions exist across the spending distribution. These results are shown in Table 5.

Table 5. Percent changes in spending across the spending distribution
(from Baiker et al., 2006, p. 470).

Total Spending	<\$400	\$400–\$2,400	\$2,400–\$9,100	\$9,100–\$12,700	\$12,700+	Total
Percentage change in spending	0.0	-20.6	-7.7	2.4	2.6	-5.0
Percentage of population	36.6	39.4	18.5	2.2	3.3	100.0
Percentage of total spending	2.4	17.7	33.4	9.0	37.6	100.0

The second column shows that approximately 40 percent of the population accounts for approximately 18 percent of total spending, and that population is expected to reduce spending by 20 percent. Under that assumption, that 40 percent of the population has the potential to reduce spending by approximately 3.5 percent. If these levels of reductions are possible in the short-term, Baiker et al. argue, it is reasonable to expect even larger reductions in the future as health care consumers become accustomed to the implementation of health savings accounts and the effects of consumer habits also begin to play out on the supply side (2006, p. 471). “Play out on the supply side” refers to the idea that with potentially millions of health care “shoppers” comparing prices, providers will start advertising prices and competing more on price.

Cogan, Hubbard and Kessler (2005) calculated that full deductibility of OOP health care expenses could have reduced spending in 2004 by 6.2 percent (p. 1447). The key to the calculated reduction was an increase in cost sharing. Cogan et al. concluded that a rise in the typical coinsurance rate from 25 to 35 percent would increase out of pocket spending from \$149 to \$216 billion (2004 dollars) while private insurance spending would fall by \$110 billion, to \$390 from \$500 billion (2005, pp. 1447–48). To counter the potential barriers posed by the high deductibles of HSAs for new adopters, Cogan et al. proposed giving consumers options and allowing them to “choose the deductible level, make trade-offs between deductible and coinsurance amounts, and purchase insurance on their own rather than through an employer, all without tax penalty” (p. 1450). The proposed BAHC plan attempts to leverage the Cogan et al. (2005) research by evaluating a variety of methods for altering the potential incentive structure using varying levels of cost-sharing. This analysis is shown in Chapter VI.

I. INCENTIVE STRUCTURE

In the late 1970s, the Mendocino County Office of Education established a new incentive-based health care program for its employees (Heffley & Miceli, 1998). The plan replaced the first dollar plan, a plan that covered any medical expenses incurred as long as beneficiaries were current on their premiums, with a new plan with a \$500 deductible from the same insurer, Blue Shield. Mendocino County placed savings

resulting from reduced premiums into side funds for the employees. Employees then used the money in the side fund to self-insure for the first \$500 of care received. Employees were able to accrue their unused annual deductibles, which they could take with them upon separation or retirement from the county (Heffley & Miceli, 1998). This provides an early example of incentive-based health care. Heffley and Miceli noted mixed reviews regarding the plan, depending on the point of view. Generally, they found that employees and employers were satisfied, with insurers less so as a result of receiving lower premiums to support their risk pool (p. 446). Heffley and Miceli also questioned whether only healthy individuals would opt to use them—a phenomena known as self-selection—thus leaving only less healthy, riskier individuals in traditional plans, leading to higher premiums (1998, p. 446). Self-selection is addressed in a subsequent section.

While the underlying system proposed by Heffley and Miceli does not mirror the proposed BAHC, it does offer insights into expected consumer behavior under different health plans. Heffley and Miceli noted three plusses of incentive-based health care plans like Mendocino County's:

- Low use allowed employees to convert unused benefits into cash payments
- More use lowered the rebate to employees, effectively instilling a “shadow price” for care
- The incentive structure might encourage healthier lifestyles, reducing the need for care. (1998, p. 446).

There may be potential for savings by changing the incentive structure for individuals regarding their consumption of health care. Researchers have shown legitimate price elasticity of demand for health care as well as evidence of reduced costs and consumption when OOP costs are increased for individuals (Manning et al., 1987; Eichner, 1998). Cutler cited Newhouse et al. (1993), Miller and Luft (1994), Staiger and Gaumer (1991), and McClellan and Newhouse (1994) in his discussion of the limited effects on health outcomes of increased health care spending on the margin (1995, p. 32). With HSAs still relatively new, more research is needed, but the early research indicates a reduction in the quantity demanded and thus the cost of health care.

J. SELECTION BIAS

Selection bias results when a disproportionate number of individuals from certain groups enroll in a particular insurance plan. For instance, it is reasonable to assume healthier individuals expecting to use less health care will be more likely to opt into HDHPs coupled with HSAs, as the healthier will be able to accumulate their savings for later use while also experiencing lower premiums. The flip side is those individuals expecting higher demand for health care services are more likely to select the traditional insurance plan due to its more generous coverage and subsequently lower OOP expenses. If enough healthy individuals abandon the more generous plan, leaving less healthy individuals behind, it is possible that costs may actually increase, with some research even noting the possibility of premium spirals so high that the plan collapses (Encinosa & Seldon, 2001; Richardson & Seligman, 2007). This researcher has not found any data indicating the premium death spiral has been observed in practice. However, the importance of the research is the argument that because low risk individuals are likely to use more restrictive plans, the ability for healthy individuals' reductions in spending to reduce the total health care expenditures of the population may be limited. Richardson and Seligman (2007) noted that high administration costs associated with insurance contracts limit the ability of high deductibles to reduce premiums, perhaps leading healthy individuals to opt out of group insurance altogether and again leading to the adverse selection spiral.

Economics focusing on incentives and their ability to affect behavior has a number of academics believing HDHPs will provide enough incentive to alter peoples' health and lifestyle choices (Herzlinger, 2004; Feldstein, 1995). However, it is possible that selection bias is more important in the observations of relatively healthier behaviors than is the HDHP itself.

Kullgren, Volpp and Polsky (2013) studied whether individuals' health plans affected their decision to smoke. While their paper does not focus on an individual's demand for health care based upon lifestyle choices, it does address selection bias in HDHPs. Their study focused on three groups of individuals: (1) those with employer-sponsored insurance with no choice in plan, (2) those with employer-sponsored insurance

and a choice of plan, and (3) those individuals with privately obtained health insurance. The authors then established the number of individuals with HDHPs and the number using traditional insurance plans in each of those groups, while also controlling for other variables such as income, race, age, education, location, and marital status. Kullgren et al. concluded that enrollment in an HDHP was associated with lower incidence of smoking; however, these lower rates were only among individuals with a choice of health insurance plan, indicating the presence of selection bias (2013, p. 5). To clarify, when individuals had a choice between a HDHP and a traditional PPO plan, non-smokers tended to choose the HDHP over the PPO more often than smokers. However, while the effect was present, it was not very pronounced. The proportion of smokers in HDHPs was 75 percent of the proportion of smokers in traditional plans, and with a p-value of 0.02 is deemed statistically significant (Kullgren et al., 2013, p. 4).

Kullgren et al.'s findings indicate that HDHPs may not be as adept at curbing unhealthy lifestyle choices as previously argued by Herzlinger (2004) and Feldstein (1995). Their findings are also in line with the RAND HIE study that also found individuals' randomly assigned higher deductible policies were not observed to undertake healthier lifestyles. These findings may affect the effectiveness of a BAHC because primarily healthy individuals will abandon their plans that require premium payments for ones where they instead receive an allowance from the government, leaving the remaining pool made up primarily of sicker individuals now financed by fewer premiums. However, the research of Kullgren et al. (2013) indicates the effect is likely not as severe as originally thought. A table with some of the results of their study is found in Appendix C.

A study conducted at the Naval Postgraduate School in 2006 by Ryan and Wise found evidence of selection bias within the TRICARE system. Based on three studies (Jackson-Beeck & Kleinman, 1983; Etter, Perneger, & Rougemont, 1995; Gans & King, 2004), Ryan and Wise concluded TRICARE Standard enrollees shared common characteristics with others opting for fee-for-service care including "a history of high medical usage, high incomes, and attraction to services" (2006, p. 53). To come to this

conclusion, the authors compared inpatient and outpatient use between TRICARE Prime and TRICARE Standard beneficiaries (Ryan & Wise, 2006).

The underlying statistics of the 2006 Ryan and Wise study have remained stable. According to a 2014 TRICARE report, the number of active duty family members, and retirees and retiree family members enrolled in TRICARE Standard or Extra has remained at approximately 17 percent and 27 percent of the eligible TRICARE population (Defense Health Agency, 2014c). The data indicating TRICARE Standard beneficiaries use more inpatient care than their Prime counterparts, as noted by Ryan and Wise (2006), remains true as of 2014; however, TRICARE Prime enrollees now use twice as much outpatient care as their TRICARE Standard counterparts, which is a reversal from the Ryan and Wise (2006) findings (Defense Health Agency, 2014c) (Figures 7 and 8). Figures 7 and 8 compare MHS beneficiary inpatient and outpatient rates of use between TRICARE Prime and non-Prime. Of interest to this study is the inpatient and outpatient rate of use by TRICARE Prime enrollees compared to TRICARE Standard and Extra enrollees. Figures 7 and 8 show TRICARE Standard enrollees used approximately 1.5 times as much inpatient care, while TRICARE Prime enrollees use approximately two times as much outpatient care. Also note that with the exception of outpatient care demanded by non-Prime enrollees, TRICARE beneficiaries demand a significantly higher amount of health care compared to the civilian sector.

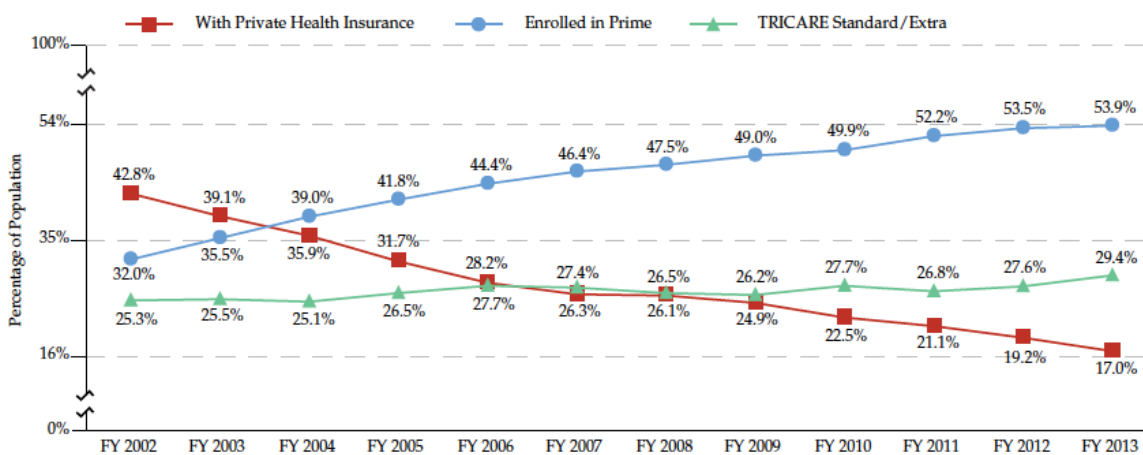


Figure 6. Trend in retiree (<65) health insurance coverage (from Defense Health Agency, 2014c).

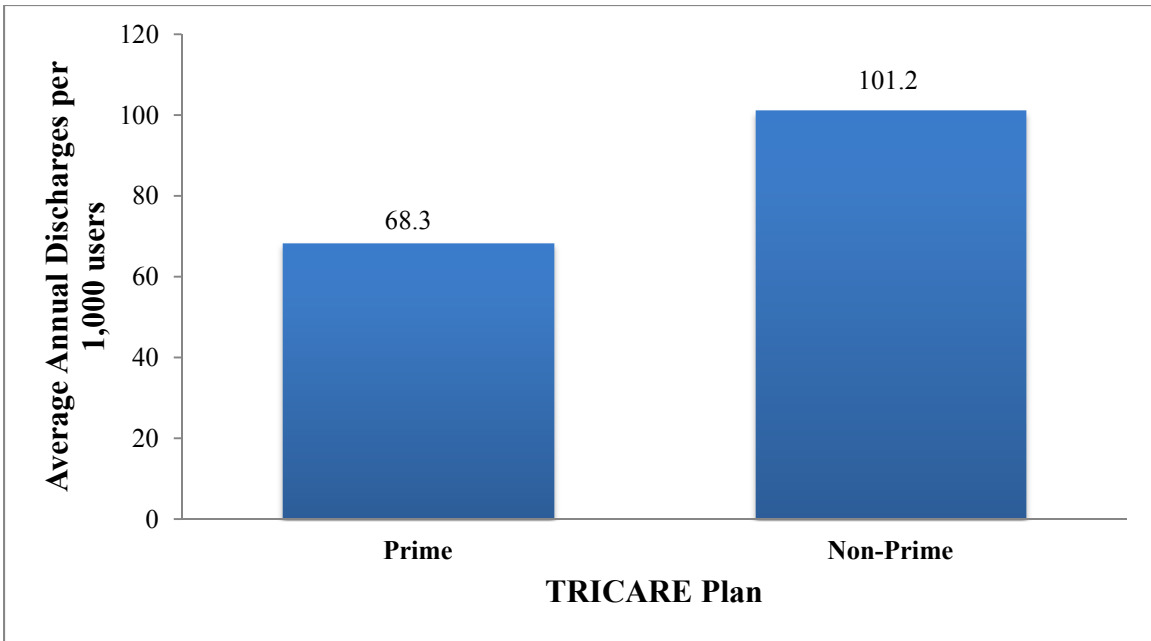


Figure 7. Inpatient use rates: TRICARE Prime versus TRICARE non-Prime (after Defense Health Agency, 2014c)

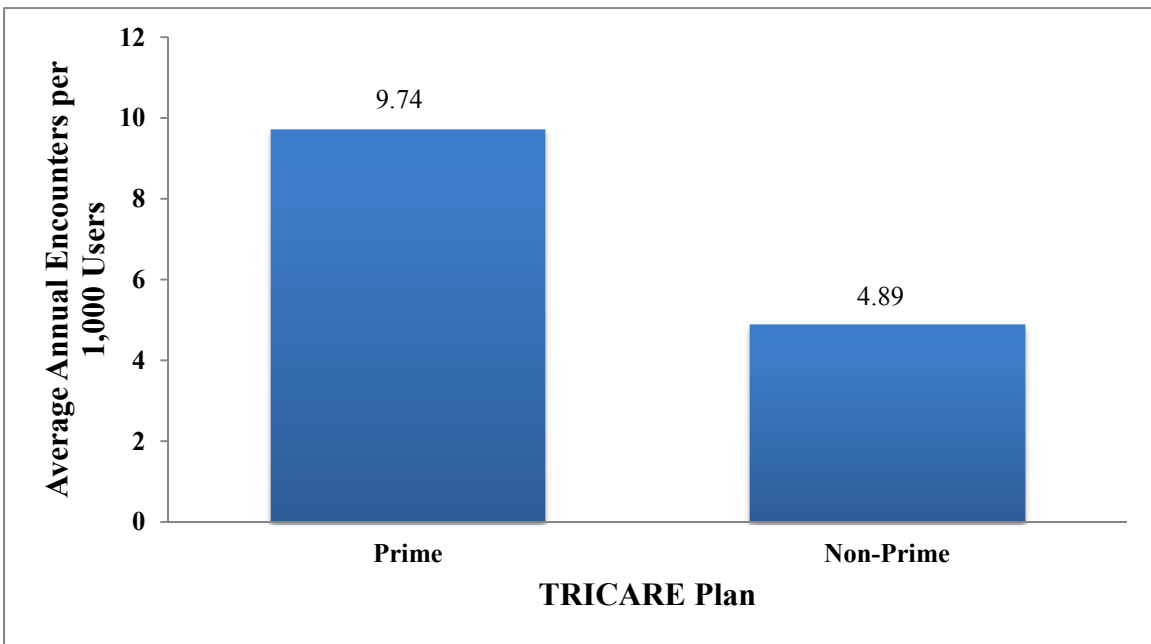


Figure 8. Outpatient use rates: TRICARE Prime versus non-Prime (after Defense Health Agency, 2014c).

K. ADVERSE SELECTION

Selection bias is closely associated with adverse selection, the idea that individuals have more information regarding their personal health situation than the parties insuring them when individuals enroll in an insurance plan. This potentially leads to risk pools made up of individuals enrolling in health insurance when they become sick and require services and are able to do so without the insurers' knowledge. Adverse selection leads to pools of insured individuals all with high demand for health care, which places a strain on the insurance system. Insurance plans need to find a way to encourage healthy individuals to enroll, even if they do not expect to use their benefits, in order to limit the negative effects of adverse selection. The Affordable Care Act attempts to limit these effects by making it mandatory to purchase insurance.

TRICARE's lower OOP expense relative to comparable civilian plans leaves the insurer susceptible to the effects of adverse selection. Retired individuals not currently enrolled in TRICARE who become sick can enroll with no restrictions and no negative effects on their premiums. The evidence presented in Figure 6 demonstrates that retirees have indeed been abandoning their private insurance for TRICARE over the past two decades, with MHS expenditures rising accordingly.

Adverse selection may have impacts on the implementation of a HDHP option. For individuals expecting to be healthy over the near to medium time horizon, the BAHC is potentially financially advantageous, as it allows those individuals to accrue funds otherwise not available via the allowance to use for future health expenses or to potentially withdraw for other uses upon separation from the service. If they do not need medical coverage, they will still receive their BAHC from the government for HSA contributions. While not a bad thing for beneficiaries, as accrued allowances will insure individuals against future medical expenses, health care allowances will increase the government's cost in the near term as they might not have otherwise been required to make an outlay. Couple these potentially unnecessary outlays with adverse selection among individuals expecting to be sick and thus signing up for the lower cost Prime option and costs can add up. As one potential example, the shrinking pool of Prime enrollees resulting from departing "healthy" individuals electing to use the HDHP and

accept the BAHC leaves only the premiums of the sick to cover their medical costs. The government in this scenario would go from funding health care using premiums gathered from a pool of healthy and sick individuals, to receiving premiums only from sick individuals. Not only would the government not receive the premiums from the healthy individuals using the HDHP, but also it would now pay out an allowance to the HDHP enrollees, effectively raising the total cost of health care to the government.

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V. BASIC ALLOWANCE FOR HEALTH CARE AS A MEANS FOR ALTERING THE INCENTIVES OF MILITARY HEALTH CARE

A. THE CONCEPT

It has been demonstrated that MHS beneficiaries have continued to use growing amounts of health care (see Figure 5) while the relative OOP cost to MHS consumers has remained lower than that for comparable civilian care (CBO, 2014). The establishment of a Basic Allowance for Health Care for the aforementioned beneficiaries offers one potential way to alter the existing incentive structure. A hypothetical structure for a BAHC is evaluated in this chapter to determine if it has the potential to improve the overall compensation package of the average active duty and retired military member by providing more control over the use of their benefits while simultaneously helping to curb military health care expenditures.

The framework is based upon the previously discussed concepts of the economics of health care and leverages the results from the Rand HIE and the Baiker et al. (2006) studies. The derivation of values for the BAHC is based upon historical spending data for the DOD within the MHS (Defense Health Agency, 2014c). Using these derived numbers and expected changes in behavior resulting from implementation of the BAHC, such as potentially reduced quantity of health care demanded, the potential for savings for the DOD and beneficiaries is evaluated. The ability to reduce health care costs for the DOD while still being able to maintain, if not improve upon, the benefits package available to current and past members of the armed forces is examined from an economic principle perspective.

There are fundamental economic flaws with the development of the HDHP model used in this chapter. It is based upon cost and quantity demanded data for an average individual within the MHS as reported in the Evaluation of the TRICARE System: Access, Cost, and Quality (Defense Health Agency, 2014c). In reality, individual insurance demand and individual medical spending are anything but uniform. This fact renders the application of averages less than ideal and paints an unrealistic representation

of the effects of implementing a HDHP within the DOD. This chapter is meant to provide a general explanation of what the implementation of such an insurance plan might look like and its ability to generate savings. Various adoption rates are shown to illustrate different levels of savings.

B. STRUCTURE OF THE PROGRAM

The BAHC would be established for active duty military members with at least one dependent, retirees and retiree dependents. The program would be an available option within the TRICARE system alongside Prime, Standard, and Extra, and allow members to opt in if they so choose. It is important to note that if members were to elect the HDHP they must remain in that plan, and would be unable to swap plans when planned medical expenses, such as the birth of a child, are imminent. This restriction reduces the occurrence of adverse selection discussed in the previous chapter. Just as with TRICARE Standard and Extra plans, there would be no annual premium paid by the beneficiaries. Once enrolled in the new plan, beneficiaries would receive a monthly BAHC deposited into their HSA based upon the number of dependents in their family. The proposed annual BAHC allotments are shown in Table 6. As a starting point for program structure, the values for the BAHC allotment are set to one half the annual deductible for active duty families and approximately 25 percent of the annual deductible for retirees, assuming that one dependent is treated as an individual and more than one dependent is treated as a family.

Table 6. Annual BAHC allotments by service member status.

Status	Annual BAHC allotment
Active duty w/ 1 dependent	\$625
Active duty w/ 2+ dependents	\$1250
Retiree	\$300
Retiree w/ 1+ dependents	\$600

These allowances would be exempt from taxation per HSA tax regulations (Internal Revenue Service, 2014). The beneficiary would simply make withdrawals from

the account when allowable health care services are obtained, provided they have not reached the appropriate annual catastrophic cap. Any unused funds continue to accrue until separation from the service or death. Currently, there is no requirement to close an HSA when an individual changes insurance plans, so it would also be possible for the member to keep it open and continue to use it to pay for covered expenses upon separation from the service or upon reaching age 65. If at any time money from the HSA is used for something other than health care, it becomes subject to income taxation, and potentially additional financial penalties per IRS regulations (Internal Revenue Service, 2014).

C. METHODOLOGY OF ANALYSIS

A number of steps were taken to determine the potential savings. Information regarding the current OOP expenses for beneficiaries for various levels of medical expenditures was calculated for comparison to OOP expenses under the hypothetical HDHP. These data provided a benchmark for general differences in costs between the various programs for both the government and beneficiaries. The quantity of health care demanded was also obtained (Defense Health Agency, 2014c). Quantity of health care demanded for inpatient and outpatient visits was extracted from the data and applied to the midpoint equation for price elasticity of demand to determine a new quantity demanded as a result of price increases. Using the cost per unit of demand for inpatient and outpatient care coupled with the potential change in quantity demanded, general levels of cost reductions were calculated to determine the overall potential of the program to reduce health care costs for the DOD.

D. DETERMINING COSTS FOR VARIOUS LEVELS OF CARE

The first step taken was to determine the current costs of health care experienced by TRICARE beneficiaries. The calculated costs are based on 2014 premiums, deductibles, coinsurance rates, and catastrophic caps as applicable under TRICARE Prime, TRICARE Standard, TRICARE Extra (Defense Health Agency, 2014a; Defense Health Agency, 2014b) and the hypothetical new TRICARE HDHP plan as shown in Table 7. In Tables 7, 8 and 9, ADFM represents an active duty member with one

dependent, ADFM 2+ represents an active duty member with more than one dependent, RET 1 represents a retiree with one dependent, inclusive of the retiree, and RET 2+ represents a retiree with more than one dependent inclusive of the retiree.

Table 7. Premiums, deductibles, coinsurance rates and catastrophic caps used in calculating cost of care, \$FY14.

		PRIME	STANDARD	EXTRA	HDHP
PREMIUM	ADFM 1	0	0	0	0
	ADFM 2+	0	0	0	0
	RET 1	273.84	0	0	0
	RET 2+	547.68	0	0	0
DEDUCTIBLE	ADFM 1	0	150	150	1,250
	ADFM 2+	0	300	300	2,500
	RET 1	0	150	150	1,250
	RET 2+	0	300	300	2,500
COINSURANCE RATE (percent)	ADFM 1	0	20	15	20
	ADFM 2+	0	20	15	20
	RET 1	0	25	20	25
	RET 2+	0	25	20	25
CATASTROPHIC CAP	ADFM 1	1,000	1,000	1,000	6,350
	ADFM 2+	1,000	1,000	1,000	12,700
	RET 1	3,000	3,000	3,000	6,350
	RET 2+	3,000	3,000	3,000	12,700

A simplified calculation of the current OOP costs to beneficiaries using TRICARE for various levels of expenditures is shown in Table 8 and Table 9. Table 8 and Table 9 evaluate a range of total annual medical expenditures from \$1,000 to \$9,000 in \$2,000 increments and the OOP expenses faced by beneficiaries based on the cost sharing data discussed in Chapter III. The cap of \$9,000 was chosen given 90 percent of the population is expected to spend less than this on an annual basis (Baiker et al., 2006, p. 470) as shown in Figure 5. The costs for retirees ignore copays because the data does not support the ability to determine if an individual had total medical expenses of \$1,000 from one visit and thus made only one copay of say, \$20, or if that person had

\$1,000 in total expenses from five visits requiring five different \$20 copays (Defense Health Agency, 2014c). Ignoring copays increases the difference between observed OOP expenses in TRICARE Prime and the HDHP, thus overstating the potential price increase resulting from implementation the HDHP.

Table 8 shows the costs when the HDHP plan is implemented with no annual BAHC paid to service members or retirees. Table 9 shows costs when the government pays BAHC allotments in accordance with Table 6. The left column shows costs to the government for each insurance plan, the second column shows costs to beneficiaries for each plan, and the third column shows the percentage of annual health costs paid for by the beneficiary under each plan. The fourth column shows the effective OOP cost after accounting for the tax-deductible nature of HSA deposits assuming a tax rate of 15 percent. Table 8 shows that without the allotment of a BAHC beneficiaries would incur significantly more costs under the proposed HDHP plan's deductibles and coinsurance rates. Table 9 shows that when the government subsidizes the beneficiary with a BAHC allotment, the burden imposed on the beneficiary in terms of percent of medical expenses covered OOP would be approximately the same as current TRICARE Standard or Extra plans at lower spending levels, and would increase as total medical expenses increase, after accounting for tax benefits (a marginal tax rate of 15 percent is used for this calculation as that rate is assumed to be the relevant one for the majority of military individuals given the tax-exempt nature of some aspects of their pay such as the basic allowance for housing).

The final column of Table 8 and Table 9 shows the percentage of costs covered by the beneficiary after accounting for tax deductions resulting from HSA contributions made by the beneficiary equal to the amount required out of the beneficiary's pocket. This percentage can be compared to the percent of costs paid out of pocket in TRICARE Prime, TRICARE Standard and TRICARE Extra plans in the third column to determine the overall cost effects on the beneficiary. The percentage difference between the OOP expenses in the HDHP with an allowance compared to TRICARE Standard and Extra in Table 9 provides a baseline to help determine the behavior of health care consumers

based on the review of previous studies presented above. These differences are shown in Table 10.

Table 8. OOP expenses to government and individuals across various levels of total annual medical expenditures, with percent of total expenses covered by individual and effective after tax OOP costs to individual when not paid an annual BAHC.

NOT ACCOUNTING FOR BAHC													EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	COST TO GOVT OF FIRST \$1000				COST TO IND. OF FIRST \$1000				% COVERED BY INDIVIDUAL					
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP		
ADFM (1)	1000	680	723	0	0	320	278	1000	0%	32%	28%	100%	850	85%
ADFM (2+)	1000	560	595	0	0	440	405	1000	0%	44%	41%	100%	850	85%
RET (1)	726	638	680	0	274	363	320	1000	27%	36%	32%	100%	850	85%
RET (2+)	452	525	560	0	548	475	440	1000	55%	48%	44%	100%	850	85%

NOT ACCOUNTING FOR BAHC													EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	COST TO GOVT OF FIRST \$3000				COST TO IND. OF FIRST \$3000				% COVERED BY INDIVIDUAL					
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP		
ADFM (1)	3000	2280	2423	1400	0	720	578	1600	0%	24%	19%	53%	1360	45%
ADFM (2+)	3000	2160	2295	400	0	840	705	2600	0%	28%	24%	87%	2210	74%
RET (1)	2726	2138	2280	1313	274	863	720	1688	9%	29%	24%	56%	1434	48%
RET (2+)	2452	2025	2160	375	548	975	840	2625	18%	33%	28%	88%	2231	74%

NOT ACCOUNTING FOR BAHC													EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	COST TO GOVT OF FIRST \$5000				COST TO IND. OF FIRST \$5000				% COVERED BY INDIVIDUAL					
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP		
ADFM (1)	5000	3880	4123	3000	0	1120	878	2000	0%	22%	18%	40%	1700	34%
ADFM (2+)	5000	3760	3995	2000	0	1240	1005	3000	0%	25%	20%	60%	2550	51%
RET (1)	4726	3638	3880	2813	274	1363	1120	2188	5%	27%	22%	44%	1859	37%
RET (2+)	4452	3525	3760	1875	548	1475	1240	3125	11%	30%	25%	63%	2656	53%

NOT ACCOUNTING FOR BAHC													EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	COST TO GOVT OF FIRST \$7000				COST TO IND. OF FIRST \$7000				% COVERED BY INDIVIDUAL					
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP		
ADFM (1)	7000	5480	5823	4600	0	1000	1000	2400	0%	14%	14%	34%	2040	29%
ADFM (2+)	7000	5360	5695	3600	0	1000	1000	3400	0%	14%	14%	49%	2890	41%
RET (1)	6726	5138	5480	4313	274	1863	1520	2688	4%	27%	22%	38%	2284	33%
RET (2+)	6452	5025	5360	3375	548	1975	1640	3625	8%	28%	23%	52%	3081	44%

NOT ACCOUNTING FOR BAHC													EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	COST TO GOVT OF FIRST \$9000				COST TO IND. OF FIRST \$9000				% COVERED BY INDIVIDUAL					
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP		
ADFM (1)	9000	8000	8000	6200	0	1000	1000	2800	0%	11%	11%	31%	2380	26%
ADFM (2+)	9000	8000	7395	5200	0	1000	1000	3800	0%	11%	11%	42%	3230	36%
RET (1)	8726	6638	7080	5813	274	2363	1920	3188	3%	26%	21%	35%	2709	30%
RET (2+)	8452	6525	6960	4875	548	2475	2040	4125	6%	28%	23%	46%	3506	39%

Table 9. OOP expenses to government and individuals across various levels of total annual medical expenditures, with percent of total expenses covered by individual and effective after tax OOP costs to individual when paid an annual BAHC.

ACCOUNTING FOR BAHC														
	COST TO GOVT OF FIRST 1000				COST TO IND. OF FIRST 1000				% COVERED BY INDIVIDUAL 1000				EFFECTIVE COST TO INDIVIDUAL AFTER TAX DEDUCTIONS	
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	HDHP	% COVERED
ADFM (1)	1000	680	723	625	0	320	278	375	0%	32%	28%	38%	319	32%
ADFM (2+)	1000	560	595	1250	0	440	405	0	0%	44%	41%	0%	0	0%
RET (1)	726	638	680	300	274	363	320	700	27%	36%	32%	70%	595	60%
RET (2+)	452	525	560	600	548	475	440	400	55%	48%	44%	40%	340	34%

	COST TO GOVT OF FIRST 3000				COST TO IND. OF FIRST 3000				% COVERED BY INDIVIDUAL 3000				HDHP % COVERED	
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	HDHP	% COVERED
ADFM (1)	3000	2280	2423	2025	0	720	578	975	0%	24%	19%	33%	829	28%
ADFM (2+)	3000	2160	2295	1650	0	840	705	1350	0%	28%	24%	45%	1148	38%
RET (1)	2726	2138	2280	1613	274	863	720	1388	9%	29%	24%	46%	1179	39%
RET (2+)	2452	2025	2160	975	548	975	840	2025	18%	33%	28%	68%	1721	57%

	COST TO GOVT OF FIRST 5000				COST TO IND. OF FIRST 5000				% COVERED BY INDIVIDUAL 5000				HDHP % COVERED	
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	HDHP	% COVERED
ADFM (1)	5000	4000	4123	3625	0	1000	878	1375	0%	20%	18%	28%	1169	23%
ADFM (2+)	5000	4000	4000	3250	0	1000	1000	1750	0%	20%	20%	35%	1488	30%
RET (1)	4726	3638	3880	3113	274	1363	1120	1888	5%	27%	22%	38%	1604	32%
RET (2+)	4452	3525	3760	2475	548	1475	1240	2525	11%	30%	25%	51%	2146	43%

	COST TO GOVT OF FIRST 7000				COST TO IND. OF FIRST 7000				% COVERED BY INDIVIDUAL 7000				HDHP % COVERED	
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	HDHP	% COVERED
ADFM (1)	7000	6000	6000	5225	0	1000	1000	1775	0%	14%	14%	25%	1509	22%
ADFM (2+)	7000	6000	6000	4850	0	1000	1000	2150	0%	14%	14%	31%	1828	26%
RET (1)	6726	5138	5480	4613	274	1863	1520	2388	4%	27%	22%	34%	2029	29%
RET (2+)	6452	5025	5360	3975	548	1975	1640	3025	8%	28%	23%	43%	2571	37%

	COST TO GOVT OF FIRST 9000				COST TO IND. OF FIRST 9000				% COVERED BY INDIVIDUAL 9000				HDHP % COVERED	
	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	PRIME	STANDARD	EXTRA	HDHP	HDHP	% COVERED
ADFM (1)	9000	8000	8000	6825	0	1000	1000	2175	0%	11%	11%	24%	1849	21%
ADFM (2+)	9000	8000	8000	6450	0	1000	1000	2550	0%	11%	11%	28%	2168	24%
RET (1)	8726	6638	7080	6113	274	2363	1920	2888	3%	26%	21%	32%	2454	27%
RET (2+)	8452	6525	6960	5475	548	2475	2040	3525	6%	28%	23%	39%	2996	33%

Table 10. Percent change in OOP expenses of HDHP compared to TRICARE Standard and TRICARE Extra for varying levels of total annual health expense.

	Percent change in price paid OOP	
	Standard	Extra
	\$1,000	
ADFM (1)	-0.39	14.86
ADFM (2+)	-100.00	-100.00
RET (1)	64.14	85.94
RET (2+)	-28.42	-22.73
	\$3,000	
ADFM (1)	15.10	43.51
ADFM (2+)	36.61	62.77
RET (1)	36.74	63.80
RET (2+)	76.54	104.91
	\$5,000	
ADFM (1)	16.88	33.19
ADFM (2+)	48.75	48.75
RET (1)	17.75	43.25
RET (2+)	45.51	73.08
	\$7,000	
ADFM (1)	50.88	50.88
ADFM (2+)	82.75	82.75
RET (1)	8.96	33.51
RET (2+)	30.19	56.78
	\$9,000	
ADFM (1)	84.88	84.88
ADFM (2+)	116.75	116.75
RET (1)	3.89	27.83
RET (2+)	21.06	46.88

E. TRICARE INPATIENT AND OUTPATIENT DEMAND

The Evaluation of the TRICARE System: Access, Cost and Quality (Defense Health Agency, 2014c) has data regarding the levels of use from FY2011–FY2013. Average inpatient and outpatient quantity demanded was taken across the entire

TRICARE population as described below to establish baseline levels of quantity demanded on an individual level. A unit cost was then calculated using annual average cost data per individual regarding inpatient and outpatient visits as drawn from the 2014 Evaluation of the TRICARE System: Access, Cost and Quality (Defense Health Agency, 2014c).

1. Inpatient Demand

TRICARE administrators measure the level of inpatient quantity demanded by calculating what is called the Relative Weighted Product (RWP) (Defense Health Agency, 2014c). RWP measures the level of cost by factoring in the nursing, technician, and facility costs such as room, laundry, administrative, and operating room expenses (TMA Uniform Business Office, 2006, slide 6). RWP does not include professional services such as doctors' rounds or inpatient procedures (TMA Uniform Business Office, 2006, slide 6). Inpatient quantity demanded as measured by RWP in 2013 was 133.5 RWP per 1,000 beneficiaries, or 0.1335 per individual (Defense Health Agency, 2014c). Average annual inpatient costs in 2013 were \$857 per beneficiary (Defense Health Agency, 2014c). Dividing \$857 by 0.1335 RWP puts the cost of one RWP at roughly \$6,419 in 2011 dollars. A table identifying inpatient demand and expenditure by TRICARE plan and provider is included in Appendix D. Multiplying inpatient quantity demanded per individual by the approximate 8.03 million beneficiaries who used the system in 2013 yields total 2013 quantity demanded of 1.072 million RWP at an approximate cost of \$6.9 billion. This data is presented along with outpatient data in Table 11.

2. Outpatient Demand

Outpatient data is measured in a similar fashion. However instead of RWP, administrators use Total Enhanced Relative Value Units (RVU) (Defense Health Agency, 2014c). RVU have a Work component and a Practice Expense component (Defense Health Agency, 2014c). "Work RVU measure the relative level of resources, skill, training, and intensity of services provided by a physician. Practice Expense RVU account for non-physician clinical labor (e.g., a nurse), medical supplies and equipment,

administrative labor, and office overhead expenses” (Defense Health Agency, 2014c).¹ Beneficiaries demanded an average of 35.8 RVU overall during 2013 at an average cost of \$1,897 (FY13) (Defense Health Agency, 2014c). That equates to a cost of roughly \$52.99 per RVU. Aggregate quantity of outpatient healthcare demanded based on 8.03 million beneficiaries using the system is approximately 287.5 million RVU at a total cost of approximately \$15.2 billion (\$FY13). A table presenting these numbers by TRICARE plan and provider is included in Appendix D. Per unit and aggregate data is presented alongside inpatient data in Table 11.

Table 11. Individual and aggregate demand for inpatient and outpatient care in 2013.

	Individual		Aggregate	
Inpatient	.1335 RWP	\$6,419 / RWP	1,072,005 RWP	\$6.9B
Outpatient	35.8 RVU	\$48 / RVU	287,474,000 RVU	\$15.2B

F. ELASTICITY OF DEMAND AND POTENTIAL COST REDUCTION

The elasticity of demand of -0.2 calculated by Manning et al. (1987) using the RAND HIE study data has been a value used by economists over the past 25 years (Baiker et al., 2006; van Vliet, 2004). The inclusion of additional elasticity values is used to establish variations in expected values over a range of possibilities. These expected values for change in quantity demanded for health care services are applied across a spectrum of potential HSA adoption rates to determine a range of possible potential savings for the DOD following implementation of a BAHC. To calculate the change in quantity demanded the following equation was used:

$$\eta = \% \Delta Q / \% \Delta P$$

where η is price elasticity of demand, $\% \Delta Q$ is the percent change in quantity demanded and $\% \Delta P$ is the percent change in price. Solving for $\% \Delta Q$ yields

$$\% \Delta Q = \eta \% \Delta P$$

¹ Identifying outpatient data as RVU may be misleading. Value is a measure of customer satisfaction that has little to do with the cost of inputs to each visit. Whether or not a customer is satisfied with the visit, resources were still consumed. Perhaps a more appropriate name is relative cost units.

$$(Q2 - Q1) / [(Q1 + Q2) / 2] = \eta \% \Delta P$$

and rearranging this equation to solve for Q2 yields

$$Q2 = [Q1(\eta \% \Delta P - 2)] / (2 - \eta \% \Delta P)$$

Table 12 shows the expected change in quantity demanded for inpatient care across increases in price ranging from 5 percent to 100 percent and elasticity values ranging from -.1 to -.6, measured in RWP. Table 13 shows the same data for outpatient care, measured in RVU. These elasticity values cover the range found in multiple studies evaluating the effect of price on demand for health care (Manning et al., 1987; Eichner, 1998).

Table 12. Expected change in aggregate quantity demanded for inpatient health care across varying elasticity values, 000s RWP.

	Percentage change in price					
η	5.0	10.0	25.0	50.0	75.0	100.0
-0.6	-32	-62	-150	-280	-394	-495
-0.5	-26	-52	-126	-238	-339	-429
-0.4	-21	-42	-102	-195	-280	-357
-0.3	-16	-32	-77	-150	-217	-280
-0.2	-11	-21	-52	-102	-150	-195
-0.1	-5	-11	-26	-52	-77	-102

Table 13. Expected change in aggregate quantity demanded for outpatient health care across varying elasticity values, 000s RVU.

	Percentage change in price					
η	5.0	10.0	25.0	50.0	75.0	100.0
-0.6	-8,497	-16,746	-40,113	-74,993	-105,603	-132,680
-0.5	-7,098	-14,023	-33,820	-63,883	-90,781	-114,990
-0.4	-5,693	-11,273	-27,378	-52,268	-74,993	-95,825
-0.3	-4,280	-8,497	-20,781	-40,113	-58,141	-74,993
-0.2	-2,860	-5,693	-14,023	-27,378	-40,113	-52,268
-0.1	-1,434	-2,860	-7,098	-14,023	-20,781	-27,378

The reduction in aggregate quantity demanded for inpatient and outpatient care is combined and adjusted to reflect potential cost reductions available to the DOD under varying adoption rates among TRICARE beneficiaries for different increases in price. For example, Table 14 shows potential savings for a 5 percent increase in price under various adoption rates. Table 15 shows potential savings from a 25 percent increase in price. Tables showing 10, 50, 75 and 100 percent adoption rates are found in Appendix E.

Table 14 and 15 provide a baseline for evaluating changes in quantity demanded and reductions in cost under varying scenarios. For example, if elasticity is -0.2, and consumer prices are assumed to rise by an average of 5 percent under the hypothetical plan with a 10 percent adoption rate, the DOD might see savings of \$22.005 million from the reduced quantity demanded assuming the same costs per RWP and RVU to the government for inpatient and outpatient care.

Table 14. DOD savings under various adoption rates when price increases by 5 percent across varying elasticity values (000s \$FY13).

η	Adoption Rate (percent)					
	5.00	10.00	15.00	20.00	50.00	100.00
-0.6	32,682	65,363	98,045	130,727	326,817	653,634
-0.5	27,302	54,604	81,906	109,208	273,020	546,040
-0.4	21,896	43,791	65,687	87,583	218,957	437,913
-0.3	16,462	32,925	49,387	65,850	164,625	329,250
-0.2	11,002	22,005	33,007	44,009	110,023	220,046
-0.1	5,515	11,030	16,545	22,059	55,149	110,297

Table 15. DOD savings under various adoption rates when price increases by 25 percent across varying elasticity values (000s \$FY13).

η	Adoption Rate (percent)					
	5.00	10.00	15.00	20.00	50.00	100.00
-0.6	154,288	308,576	462,864	617,152	1,542,880	3,085,761
-0.5	130,086	260,172	390,258	520,344	1,300,860	2,601,720
-0.4	105,308	210,615	315,923	421,231	1,053,077	2,106,154
-0.3	79,932	159,865	239,797	319,729	799,324	1,598,647
-0.2	53,938	107,876	161,814	215,752	539,381	1,078,762
-0.1	27,302	54,604	81,906	109,208	273,020	546,040

G. PUTTING IT ALL TOGETHER

The goal of the proposed BAHC coupled with a HDHP and an HSA is to put the money used to fund first dollar demand of health care into the hands of the beneficiary. As reviewed in the literature, using a HDHP plan provides an incentive for beneficiaries to think carefully about how and when they spend their health care dollars as they become financially responsible for more of their health care decisions. Because they are able to accrue unused funds in HSAs, members may make different decisions than they currently do regarding the use of their benefit. For example, if they are planning on having a baby, they can plan ahead and set aside funds in their HSA to cover future obstetrician expenses. Another example might be the simple accrual of a cash balance in their HSA for withdrawal upon separation from the service, subject to income taxes. In both instances beneficiaries are able to take advantage of the tax benefits of HSAs to effectively raise their current level of income and tap a part of their medical benefit previously unavailable via the cash payments. It is possible that the beneficiaries' behavior would reduce the amount of health care demanded and, thus, the strain on the MHS.

Tables 8, 9, and 10 show the changes in price faced by beneficiaries in the proposed HDHP. There are some important assumptions embedded in those tables, including:

- Preventative care covered under current plans for things such as well-child visits, common immunizations, and mammograms is considered irrelevant, as it would be covered the same under the HDHP. Therefore, the levels of expense used are for demand for medical care outside of preventative care visits.
- The data did not support the ability to extract copays paid by retirees across varying levels of care, and have thus been ignored for retired Prime enrollees, which should have marginal effects on the study, as those are not the members expected to adopt the plan.
- Coinsurance levels under the HDHP would remain the same as current TRICARE Standard amounts of 20 percent and 25 percent for active duty and retirees, respectively.

As one example, if the entire beneficiary population was told to adopt the proposed HDHP and elasticity is assumed to be -0.2, then, as Table 15 shows, there are potential savings of \$1.079 billion (\$FY13) in reduced quantity demanded if prices increase by an average of 25 percent. These savings are a result of reduced quantity demanded, and may understate the potential savings, because the government would also be outlaying less money to cover the cost of care due to the higher cost shares for beneficiaries. The case of \$3,000 in total annual medical expenses is examined to clarify the potential for additional savings. Table 16 shows that under the HDHP, the government would spend less than it did under TRICARE Prime, Standard or Extra for the first \$3,000 in total medical expenses. The left side of Table 16 presents the cost to the government under four alternatives: TRICARE Prime, TRICARE Standard, TRICARE Extra, and the HDHP. The right side of Table 16 shows the pretax cost to the individual under the same four alternatives. Of note, the costs to the individual shown in Table 16 do not account for the tax-deductible nature of the HSA, and are thus overstated by 17.6 percent. The savings to the government would be in addition to the savings from the reduced quantity demanded resulting from the price increase. Examination of Tables 8 and 9 shows that the government would pay less of the total expenses under the proposed HDHP with the exceptions being active duty individual dependents who demand less than \$900, active duty families who demand less than \$1,800, retired individuals who demand less than \$550, and retiree families who demand less than \$1,100.

Table 16. OOP expense to government and OOP expense to individual of first \$3,000 in total medical expenses.

	COST TO GOVT				PRETAX COST TO INDIVIDUAL			
	PRIME	STD	EXTRA	HDHP	PRIME	STD	EXTRA	HDHP
ADFM (1)	3000	2280	2423	2025	0	720	578	975
ADFM (2+)	3000	2160	2295	1650	0	840	705	1350
RET (1)	2726	2138	2280	1613	274	863	720	1388
RET (2+)	2452	2025	2160	975	548	975	840	2025

Assuming Ryan and Wise's (2006) finding that individuals using TRICARE Standard self select, a finding that is possibly open to question, the following may be more representative of potential savings for the government if the entire TRICARE Standard population were to self select into the proposed HDHP plan. In 2013, active duty family members using TRICARE Standard or Extra used an average of \$6,954 dollars of health care, while retirees and their families used approximately \$9,000 (Defense Health Agency, 2014c). At those total annual medical expenditure levels, beneficiaries who elected to use the proposed HDHP would see an effective OOP price increase of 83 percent and 35 percent for active duty and retirees, respectively, based upon a weighting of 46 percent Standard and 54 percent Extra (Defense Health Agency, 2014c). The active duty family members affected comprise roughly 5.3 percent of the total population of 8.03 million users in 2013, with retirees' and their families' use of TRICARE Standard or Extra making up about 11.6 percent, for a total of approximately 16.9 percent. The 5.3 percent of active duty dependents' response to the 83 percent price increase at an elasticity of -0.2 yields potential savings of \$179.6 million. The response of the 11.6 percent of the population (represented by retirees and their dependents) to a price increase of 35 percent at an elasticity of -0.2 yields potential savings of \$173.5 million. If the entire population currently enrolled in TRICARE Standard or Extra chose to opt into the new HDHP plan, potential savings for the DOD range from \$181.6 million to \$954.8 million, depending on the elasticity of demand for health care (Table 17). At the generally accepted level of -0.2 for elasticity, potential annual savings for the DOD are approximately \$353.1 million (\$FY13).

Table 17. Range of potential savings if entire population currently using TRICARE Standard / Extra elected to use the proposed HDHP across varying elasticity values, 000s \$FY13.

η	Adoption Rate (percent)		Total
	5.30	11.60	
-0.6	467,328	487,522	954,850
-0.5	402,825	412,806	815,631
-0.4	333,730	335,646	669,376
-0.3	259,535	255,920	515,455
-0.2	179,653	173,498	353,151
-0.1	93,406	88,241	181,647

H. IMPLICATIONS

The potential for the implementation of a BAHC coupled with a HDHP and an HSA depends on many factors, not the least of which involve the associated policies. The use of HDHP plans would entail making service members and retirees responsible for a larger share of their medical expenses, over 100 percent more than they are currently spending in some instances. However, it is possible the average active duty family would expend between \$1,500–\$1,800 (\$FY13) and retirees between \$2,400–\$3,000 in the hypothetical HDHP based on average 2013 expenses (Defense Health Agency, 2014c). Both the average ranges of \$1,500–\$1,800 and \$2,400–\$3,000 are still 51–70 percent less than those of their civilian counterparts who on average spent \$5,200–\$5,900 in 2013 in comparable civilian plans made up of pools considered akin to the MHS population, whether an HMO like TRICARE Prime, or a PPO, like TRICARE Standard (Defense Health Agency, 2014c).

Other implications include the fact that junior enlisted families would be bearing a disproportionate share of the cost increase as compared to their senior counterparts relative to their salaries because they BAHC is not based on rank. To avoid this dilemma, the BAHC could be higher for lower ranking individuals and decrease in value as rank is gained to keep the share of one’s income devoted to health care relatively constant across the military population.

As a reminder, the accuracy of this model is reduced because the author has treated the entire population as average, when in fact it is not when it comes to health insurance. This model is meant only to provide a generalized overview of the potential effects of such a program.

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VI. CONSUMER POINT OF VIEW

A. OVERVIEW

The previous chapter treated all individuals as average and used that assumption to develop a model for potential savings from a reduction in quantity demanded as the result of increasing the price of health care borne by consumers. This chapter evaluates the change in incentives when adopting the hypothetical HDHP from the point of view of the consumer. Baiker et al. (2006) presented potential changes in total spending across the spending distribution of an average risk pool when those individuals were moved from a standard indemnity plan, such as TRICARE Standard, to a HDHP, akin to the hypothetical plan presented in the previous chapter. This chapter assumes the TRICARE population spending distribution is aligned with the Baiker et al. (2006) study numbers to determine a reasonable level of beneficiaries potentially affected by the HDHP and what their new spending profiles might look like. This assumption was made because data was not obtained regarding the TRICARE population's spending distribution and the author assumes the TRICARE population mirrors the general civilian population.

As with the last chapter, there are assumptions made for this chapter that may have a material effect on the results. First, the researcher is treating the TRICARE population as an average risk pool for the purpose of breaking it down into various spending components as laid out in Table 5. Second, only individuals currently enrolled in TRICARE Standard or Extra are assumed to be interested in the new HDHP, as they have already made a rational personal decision to use civilian providers at higher cost to themselves. As such, the spending profile under the HDHP is examined relative only to the spending profile under TRICARE Standard.

Applying the information found in Table 5 and the assumptions made above to the current TRICARE Standard population yields the spending levels shown in Table 18. This table shows only the detail for the \$400–\$2,400 and \$2,400–\$9,100 spending levels because those are the populations most likely to have a material effect on the ability of DOD to reduce health expenditures as discussed by Baiker et al. (2006, p. 469). As a

reminder, Baiker et al. (2006) expected the \$400–\$2,400 group to reduce spending by 19.6 percent and the \$2,400–\$9,100 group to reduce spending by 7.7 percent. Their reason for higher reductions between these levels of spending is that beneficiaries are faced with larger OOP expenses than in the traditional PPO (Baiker et al., 2006). Where in the PPO individuals spending \$400–\$9,100 are above their deductible of \$400 and paying only the coinsurance rate of 15 percent, in the HDHP they are still below their deductible and thus bearing the full cost of care (Baiker et al., 2006, p. 469). The increased financial burden provides incentive for consumers to think harder about the decision to seek care, and they may only do so if they think they will realize a marginal benefit that justifies the increased marginal cost. The deductibles in the hypothetical HDHP vary slightly from the values used in the Baiker et al. (2006) study; however, it is reasonable to expect similar behavior when spending is between the lower deductible of TRICARE Standard and the higher deductible of the HDHP.

Table 18. Number of beneficiaries by total medical spending level, from current TRICARE Standard / Extra population.

	\$400–\$2,400	\$2,400–\$9,100
Percent of population	39.4	18.5
# ADFM	167,682	78,734
# Retirees / Dependents	367,003	172,324
Total	534,685	251,058

B. ACTIVE DUTY DEPENDENTS

At the low end of the spending distribution, \$400, active duty dependents would actually see a decrease in annual OOP medical expenses because the government would be providing them with an allowance adequate to cover those costs. In fact, with an allowance of \$625 from the government, active duty members with one dependent would be better off through the first \$950 of medical expenses. After the first \$950 of total medical expenses, individuals would face increased costs in the HDHP as compared to TRICARE Standard (Figure 9). Active duty families with more than one dependent who elect to use the HDHP and receive a \$1,250 annual allowance would be better off through

approximately the first \$2,000 of uncovered medical expenses. These families would be able to accrue a balance in their HSA entirely with funds provided by the government any time annual expenses are kept below the family's BAHC of \$1,250. Active duty families with more than one dependent would begin to face higher costs in the HDHP when total annual medical expenses are above \$2,000 (Figure 10). For individuals and families, once above the breakeven point, HDHP enrollees would face an increasing share of the cost until reaching their annual deductible of \$1,250 and \$2,500, respectively. Once beneficiaries reach the annual deductible, the difference in OOP expenses between the HDHP and TRICARE Standard begins declining for a brief range of total medical expenditures due to the tax-deductible nature of HSA deposits. This effect is evident by observing the decreasing area between the HDHP and TRICARE Standard curves in Figures 9–12, after the deductible is reached on the horizontal axis.

Note that active duty TRICARE Standard beneficiaries, whether individuals or families, face a marginal cost of \$20 per \$100 of care demanded beyond their deductible, and reach their catastrophic cap of \$1,000 at approximately \$4,400 in total annual medical expenditures using 2014 TRICARE fee schedules (Defense Health Agency, 2014b). HDHP enrollees would face a marginal cost of \$17.50 per extra hundred dollars of health care demanded after reaching their deductible until reaching the catastrophic cap of \$6,350 for individuals and \$12,700 for families, something that does not happen until just under \$30,000 or \$60,000 in total medical expenses, respectively.

C. RETIREES AND THEIR DEPENDENTS

The economics are different for retirees compared to active duty members as a result of higher coinsurance rates and higher catastrophic caps under TRICARE Standard and lower allowances paid by the government if enrolled in the potential HDHP. With a \$300 allowance paid by the government, an individual retired enrollee would be better off under the HDHP until reaching \$613 of total annual medical expenses (Figure 11). From that point until reaching the deductible of \$1,250, the beneficiary would pay an increasing amount OOP compared to TRICARE Standard, reaching a maximum difference of \$383 at the deductible. This equates to an increase in OOP expenses of

90 percent when total medical expenses are equal to the deductible. Retirees with more than one dependent enrolled in the hypothetical HDHP who receive an annual allowance of \$600 would be better off through the first \$1,225 in annual medical expenses. For either the individual or family plan, after reaching the deductible, the marginal cost of care is \$25 per \$100 in TRICARE Standard; however, those enrolled in the HDHP would be able to take advantage of its tax preference, and pay a marginal cost of \$21 per \$100 of care received.

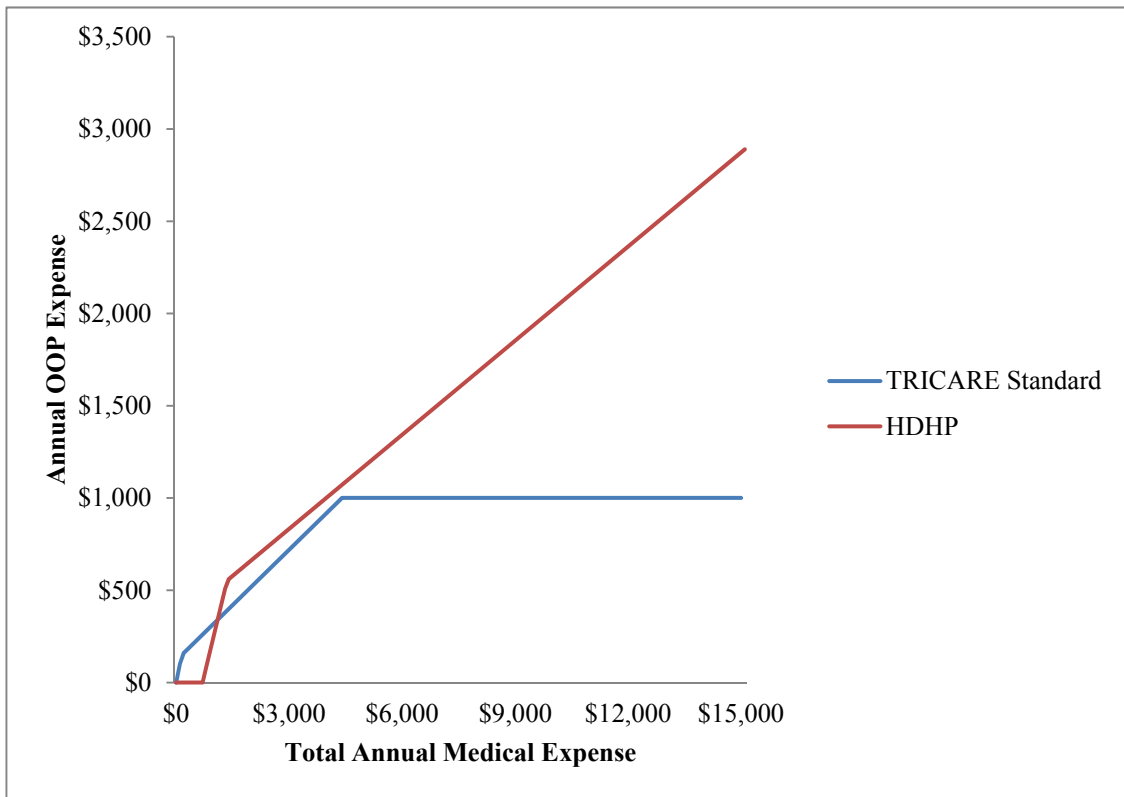


Figure 9. OOP expense profile for active duty member with one dependent and a \$625 BAHC annual (\$FY13).

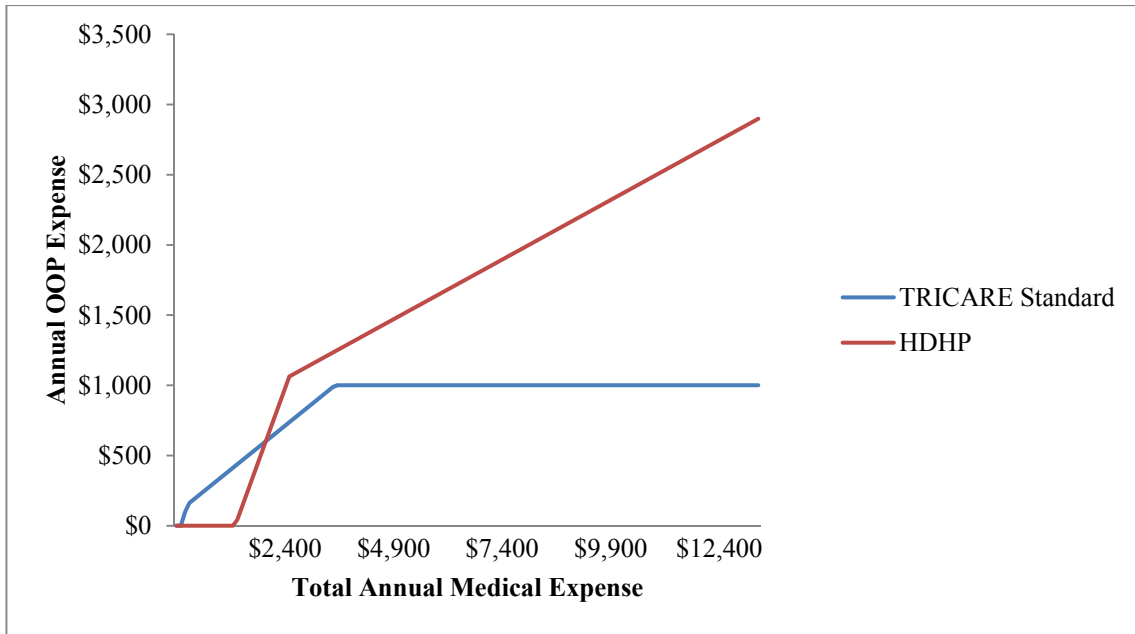


Figure 10. OOP expense profile for active duty member with more than one dependent and a \$1,250 annual BAHC (\$FY13).

Retirees, both individuals and those with families, using TRICARE Standard have annual catastrophic caps of \$3,000 (Defense Health Agency, 2014b). Based on current fee schedules, these caps are not reached until there are total medical expenditures of approximately \$11,500 (Defense Health Agency, 2014b). Catastrophic caps for HDHP enrollees would be \$6,350 and \$12,700, the maximum allowed in 2014 by the Affordable Care Act (U.S. Centers for Medicare and Medicaid Services, 2014), and would be reached at just under \$23,000 and \$46,000 in total medical expenses for individuals and families, respectively. Figure 11 shows that total OOP expense for individual retirees would be the same under either the HDHP or TRICARE Standard at \$11,500 in total expenditures, while retirees with families would pay more OOP at every point after the breakeven point. As a note, retirees would reach their catastrophic caps at lower dollar values of total care received in the HDHP compared to their active duty counterparts because of their lower BAHC and higher coinsurance rates.

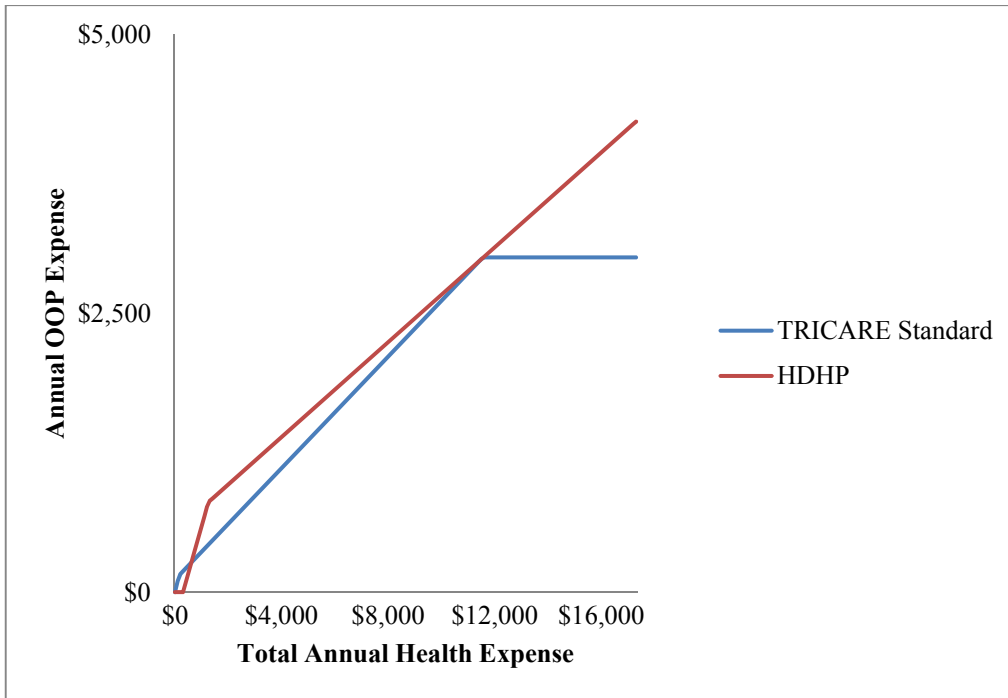


Figure 11. OOP expense profile for a retiree with one dependent and a \$300 annual BAHC (\$FY13).

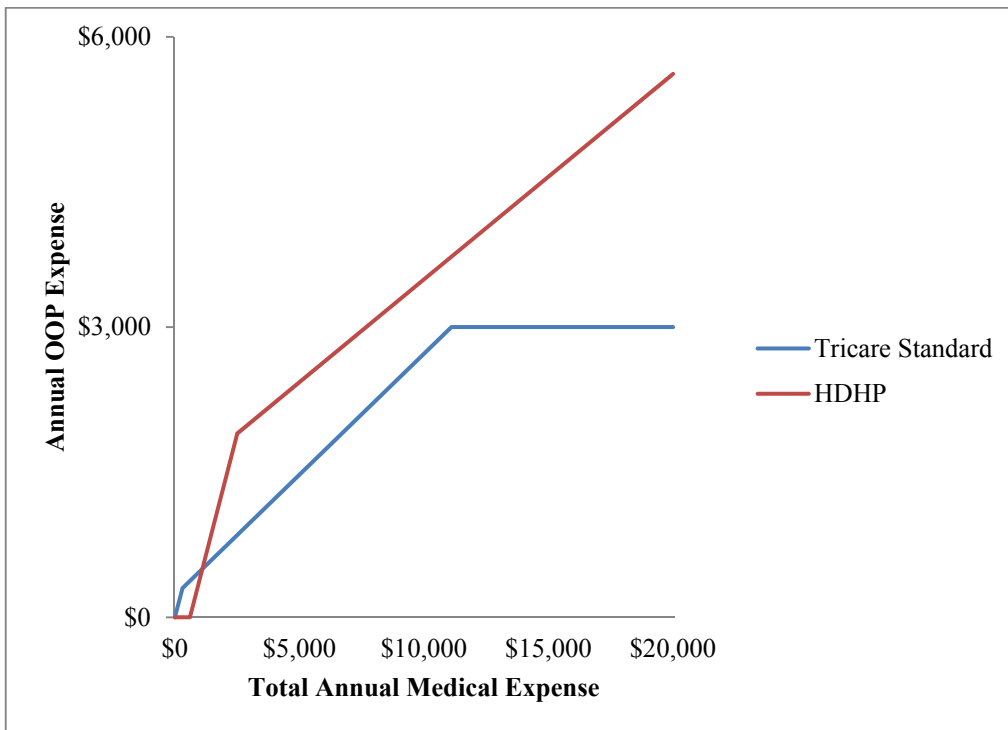


Figure 12. OOP expense profile for a retiree with more than one dependent and a \$600 annual BAHC (\$FY13).

D. IMPLICATIONS

The presentation of levels of medical spending by Baiker et al. (2006) is now applied to beneficiaries who adopt the HDHP to evaluate the changing incentive structure from the beneficiary point of view across the potential spending distribution. Two case studies are presented to examine the potential effects of such a change on beneficiaries: active duty members with one dependent and retirees with more than one dependent.

1. Active Duty with One Dependent

Chapter VI, Section B showed that active duty members with one dependent electing to use the HDHP would experience lower OOP expenses for the first \$950 of medical care received. Table 5 showed that 36.6 percent of the population spends less than \$400 annually on health care. If this level holds true for active duty members with one dependent, then 36.6 percent of that population enrolled in the HDHP would be able to pocket at least \$200 (the difference between their allowance and their expenditures) annually in their HSA and would have that available for future health care expenses. Individuals not requiring care outside of normally covered preventive services would likely be able to continually accrue their balances from year to year, barring unexpected health expenditures, which is exactly how insurance is designed to function.

The 39.4 percent of the population that spends \$400–\$2,400, shown in Table 5, would face different incentives than they do in TRICARE Standard, depending on where those beneficiaries fall between those two values. From \$400–\$625, the beneficiary would pay for care using funds from the HSA provided by the government. As above, if those beneficiaries are able to keep total expenses below \$625, they would be able to accrue unused funds. From \$625–\$950 individual active duty dependent beneficiaries in the HDHP would still be better off, even as they begin to use their own funds to pay for care; however, once spending exceeds \$950, beneficiaries would begin paying an increasing percentage of their health care expenditures. The increase in OOP expenses for the HDHP compared to TRICARE Standard peaks at 43.5 percent when total annual health spending is at the HDHP deductible of \$1,250. Between \$1,250 and \$2,400 the difference between the HDHP and TRICARE Standard OOP expense narrows to

21.1 percent as a result of the tax-favored status of the HSA funds used to pay for care under the HDHP.

The changes that occur between \$400–\$2,400 may alter consumer behavior on the margin because those changes should lead them to think more carefully about the marginal costs and marginal benefits of their health care decisions. Beneficiaries, knowing they would be responsible for a higher percentage of their total health care expenditures between \$950 and \$2,400, may think differently about how they spend between \$625–\$950 in an effort to preserve funds for future use that may provide higher value returns. Baiker et al. (2006) concluded that when consumers were faced with full cost sharing (i.e., between \$625–\$1,250 in this hypothetical plan), they reduced their total medical spending by nearly 20 percent. The increase in price from \$1,250–\$2,400 ranges from 43.5 percent at \$1,250 down to 21.1 percent at \$2,400, so it may not reduce spending behavior as drastically as the full cost sharing up to the deductible. However, there would possibly be some reduction in quantity demanded in response to the price increase as shown in the literature review. Assuming an elasticity of -0.2, the percentage decrease in quantity demanded as a result of these price increases may range from 8.7 to 4.2 percent, respectively.

Total spending between \$2,400 and \$9,100 for an active duty member with one dependent is now examined. Baiker et al. (2006) posited that people at these levels of spending constituted 18.5 percent of the population. The difference in OOP expenses between the HDHP and TRICARE Standard continues to decline from 21.1 percent at \$2,400 to a minimum of 6.7 percent at \$4,400 of total spending, the point at which a TRICARE Standard beneficiary reaches the annual catastrophic cap. In the HDHP, between \$4,400 and \$9,100 the beneficiary would face a marginal cost of care of \$17.50 per \$100 of health care services demanded and the difference in OOP expenses begins to increase, peaking at 635 percent when an individual in the HDHP reaches the annual catastrophic cap. For reference, \$9,100 in total annual health expenditures would require OOP expenses of \$1,866 in the HDHP, or an increase of 86 percent over the same level of spending in TRICARE Standard. To reach the maximum OOP expense of \$6,350 in the HDHP requires total annual spending of \$30,000. Baiker et al. (2006) stated that just

5 percent of the population is expected to have spending exceed \$9,100 in any given year, so these price levels would likely affect only a very small percent of the population. The percent differences in OOP expenses between the HDHP and TRICARE Standard are summarized in Table 19.

Table 19. Percent differences in OOP expense in HDHP versus TRICARE Standard for active duty service members with one dependent across varying levels of total annual medical expenses with a annual BAHC of \$625.

Total Annual Medical Spending	Percent Change in OOP Expense
\$0 - \$625	-100
\$626 - \$950	-100 to 0
\$951 - \$1,250	0 to 43.5
\$1,251 - \$4,400	43.5 to 6.7
\$4,400 - \$9,100	6.7 to 86
\$9,100 - \$30,000	86 to 635

Alternative versions of the HDHP provide a means of shaping the spending profile. Varying the level of the health allowance or altering the coinsurance rate controls the level of OOP expenses faced by a beneficiary. For example, if the annual BAHC is increased by \$75, from \$625 to \$700, an active duty member with one dependent would spend the same amount OOP for the first \$4,400 in total care that he or she did while using TRICARE Standard. The difference is that after initially being better off in the HDHP, the beneficiary would be faced with higher costs under the HDHP for total expenditures between \$1,100, the indifference point between the two plans, and \$4,400. The negative price elasticity of demand for health care should cause a reduction in the quantity demanded over this range of total annual health spending.

This effect is shown in Figure 13, where the HDHP spending profile is now tangent to the TRICARE Standard profile when total annual health spending is \$4,400. While not the subject of this case study, a similar effect can be achieved by increasing the annual BAHC for an active duty member with more than one dependent from \$1,250 to \$1,500. In both cases, increasing the BAHC would allow even more room for service members to potentially accrue unused allowances in their HSA for medical expenses that

may arise in subsequent years, reducing their OOP burden when they might need it most; or, if these funds are not required prior to separation from the service, allowing them to tap a benefit previously unavailable by taking unused health allowances with them as they enter the civilian sector.

This is all accomplished with a vast majority of the beneficiary population likely facing OOP increases for total annual health expenditures of no more than 43.5 percent, if Baiker et al.'s (2006) assumptions regarding spending levels are accurate. Beneficiaries would be able to deposit their own funds into their HSAs to take advantage of tax deferral and plan for future medical expenses if they desire. These deposits would lower their tax bills and effectively increase their annual income, improving their compensation, especially if they are able to remain healthy and accrue balances in their HSA.

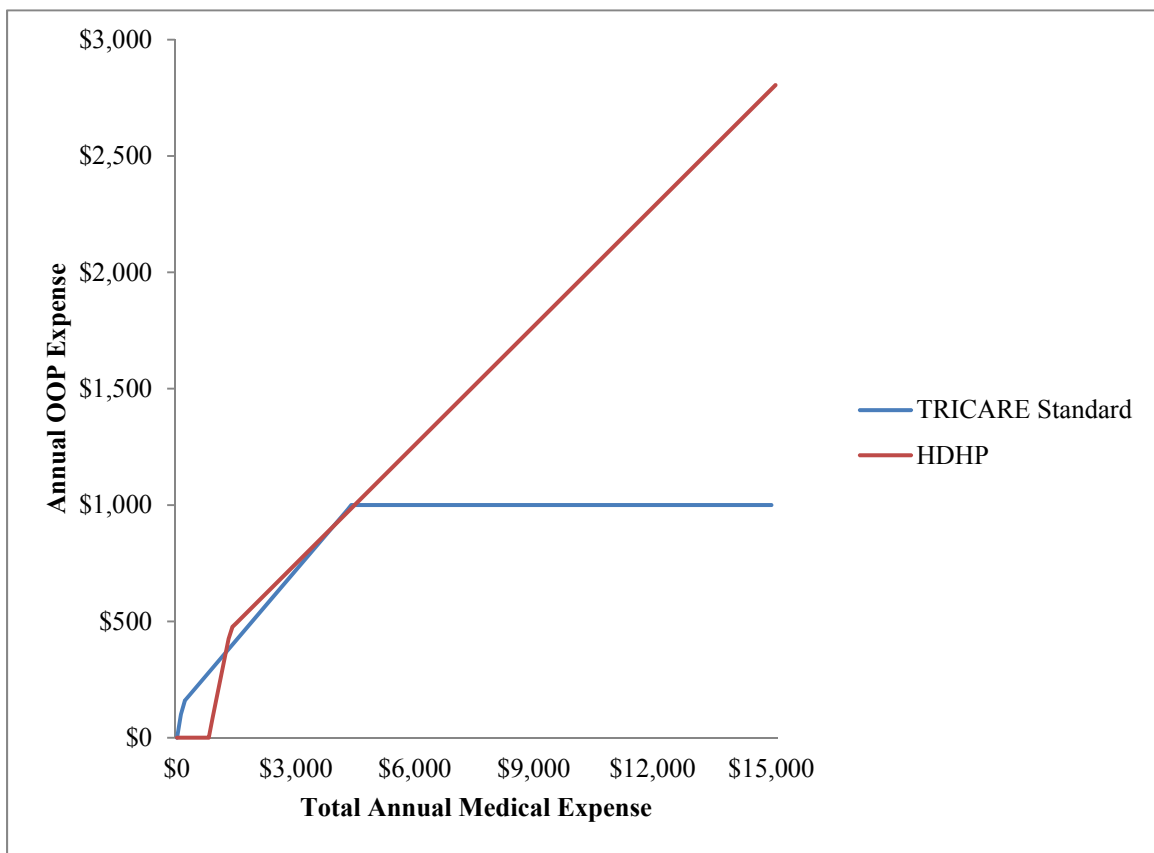


Figure 13. OOP expense profile for active duty member with one dependent and a \$700 annual BAHC (\$FY13).

2. Retirees with Families

Retirees enrolling in a family HDHP would receive an annual BAHC of \$600 and would be better off through the first \$1,100 in total health spending. The BAHC of \$600 would allow them to accrue funds any time total annual health expenses are below that level. A \$600 BAHC results in the spending profile, shown in Figure 12, where, after reaching the indifference point, \$1,100 in this case, beneficiaries would be required to spend more OOP in the HDHP compared to TRICARE Standard for any further annual medical expenses.

Just as before, adjusting the annual BAHC or the coinsurance rate can alter the spending profile. For the case of a retiree with a family, increasing the annual BAHC by \$500, from \$600 to \$1,100 results in an indifference point between the HDHP and TRICARE Standard of \$1,950 in total annual health expenditures and the same OOP expenses for the first \$11,100 of care, the level where a TRICARE Standard enrollee hits his catastrophic cap.

Again, families would be faced with a higher share of the costs at lower spending levels between the indifference point and their HDHP deductible of \$2,500. This increase in the marginal cost of care at lower levels should alter these families' thinking on the margin and reduce the quantity of health care they demand. For example, with a BAHC of \$1,100, after reaching the indifference point between TRICARE Standard and the HDHP at \$1,950 of total annual health spending, retirees would see marginal costs increase 5.5 percent at \$2,000 to 40.0 percent at the deductible of \$2,500. With a price elasticity of demand of -0.2, these price increases might reduce quantity of health care demanded by 1.1 percent to 8.0 percent. Just as with the active duty case study, not many members are expected to spend in excess of \$9,100 in any given year, limiting the downside for a large majority of the population.

E. CONCLUSION

The goal of the hypothetical HDHP is to place more financial responsibility for health care into the hands of consumers in order to alter their thinking on the margin by increasing marginal costs earlier in the spending profile and reducing moral hazard.

There are many ways of establishing a HDHP in order to achieve these ends. This section has discussed just a few of the possibilities. It was demonstrated that by varying different aspects of a HDHP coupled with a BAHC, financial incentives are altered in ways to invoke a behavioral response regarding quantity of health care demanded. Ideally, the goal would be lowering total medical expenditures for the MHS. Other options to alter the structure of the HDHP not discussed in this section include altering the catastrophic caps or changing the coinsurance rates. Each of the options can be manipulated in ways to align hypothetical OOP expenses with current plans, while altering the spending profile enough to perhaps achieve a behavioral response.

VII. SUMMARY OF RESULTS

A. OVERVIEW

This paper has attempted to achieve two goals. The first was to quantify the potential savings to the DOD resulting from the implementation of a BAHC coupled with a HDHP and a HSA, from the expected reduction in quantity of health care demanded. The second was to conduct an economic analysis of the changes to the TRICARE incentive structure resulting from implementation of a HDHP from the standpoint of the beneficiary.

B. FINDINGS #1

The proposed HDHP does not appear to offer significant cost savings to the DOD at expected rates of adoption. The hypothetical HDHP is designed to place more responsibility for health care expenses on the consumer earlier in his spending profile in order to generate behavioral responses. Values for elasticity of demand for health care were applied to average annual quantity demanded for health care from the MHS population to determine potential savings to the DOD. While these values were applied to average expenses, and are, therefore, not an ideal representation of actual savings, they provide a starting point for analyzing the potential of such a program.

There are a number of factors affecting the implementation and success of such a health care plan. For example, adoption rates, selection bias, and overall price increases are a few factors. It was shown in Chapter V that the DOD could save as much as \$10 billion (FY13), or approximately 20 percent of the MHS budget, annually in reduced quantity demanded (only if the entire MHS beneficiary population enrolled); however, the expected value is more likely to be between \$10 million and \$50 million (FY13), or 0.02 percent and 0.10 percent of the total MHS budget. There is a difference between the potential savings and the expected savings because only those who have already made a rational decision to enroll in TRICARE Standard are assumed to be willing to adopt a HDHP and not all of that population would be expected to adopt the program. Recall Chapter V assumed the entire TRICARE population to be average, so

the theoretical \$10 billion is an overstatement resulting from that assumption. After accounting for implementation costs and other administrative expenses, the range of savings will likely decrease further. Ultimately, unless widespread adoption of a HDHP is pressed upon the population, it appears that the ability of this particular program to generate significant savings by reducing quantity demanded among a small percentage of the population is limited.

C. FINDINGS #2

The second objective, an economic analysis of the effects of such a plan on beneficiaries and their potential behavioral response, shows promise as a means for altering health care incentives faced by beneficiaries. Increasing marginal costs for care to earlier points in the spending profile should reduce individuals' total health expenditures by reducing moral hazard, as demonstrated in chapters V and VI. Based on previous studies, the increases in marginal cost achieved under the hypothetical HDHP may reduce total health expenditures by as much as 20 percent.

The hypothetical HDHP coupled with a BAHC provides one means for altering those incentives, and the various adaptations of the HDHP evaluated demonstrated the flexibility of the program. Shifting BAHC levels, deductibles, and catastrophic caps provides a means for policy makers to adapt the policies to fit a wide range of beneficiaries. There are many ways to increase the marginal cost for care at lower levels of health expenditures while keeping total OOP expenses in line with current levels under TRICARE Standard. Each beneficiary category is different and may very well require a different set of allowances, deductibles, coinsurance rates, and catastrophic caps to find optimal plans for both the beneficiary and the MHS. Note that designing the new plan to keep OOP expenses in line with current levels limits its effectiveness at reducing costs. Adaptations limiting OOP were shown to demonstrate possibilities that may be more palatable to policy makers.

For a program like this to be effective requires policy shifts among leadership regarding the acceptable level of cost sharing by the MHS population. Ultimately, as originally presented with allowances of \$625 and \$1,250, and catastrophic caps of

\$6,350 and \$12,700, for active duty members with one dependent and active duty families, respectively, the HDHP leaves beneficiaries responsible for potentially much higher annual OOP medical costs. The situation is the same for retirees and their family members, though the increases were not as severe, as they already have higher coinsurance rates and catastrophic caps. Because the BAHC is deposited into beneficiary's accounts, which may provide a sense of ownership of those funds, the perceived cost shift could be considered even larger. Previous studies cited, however, demonstrated that 95 percent of the population is not expected to fall into categories requiring high levels of OOP expense.

D. CONCLUSION

The TRICARE system has become an increasing strain on the DOD budget, growing from 4 percent of defense spending in 1990 to approximately 9 percent in 2014 (CBO, 2014, p. 2). CBO projects that health spending will account for approximately 11 percent of defense spending by 2028 (2014, p. 2). This is partly the result of legislation that has continually expanded benefits while only minimally, if at all, increasing costs borne by beneficiaries. As the civilian population deals with the increasing costs of health care, health care insurers have been shifting the rising costs of health care onto consumers as the costs for such care have continued to rise. HDHPs are becoming an increasingly more popular means of shifting the increase in costs.

The America's Health Insurance Plan (AHIP) Center for Policy and Research reported that "the number of people with HSA / HDHP coverage rose to more than 13.5 million in January 2012, up from 11.4 million in January 2011, approximately 10 million in January 2010, 8 million in January 2009 and 6.1 million in January 2008" (2012, p. 1). They also reported that by 2012, 59 percent of individuals covered by HSA-qualified plans were in large group plans (2012, p. 7). AHIP also cited a 2009 Cigna study that "found slower growth of health costs among consumer-driven health plans" (2012, p. 3), with reductions of 7 percent for hypertension, 8 percent for diabetes and 21 percent for joint disease (2012, p. 9). Additionally, among individuals who had HSAs for more than one year in 2011, 72 percent rolled over unused funds from one year to the

next; of the remaining 28 percent, 15 percent did not know if they had, so the number rolling over funds may be higher than 72 percent (AHIP, 2012, p. 12). While the implementation of HDHPs and HSAs may appear daunting because of the potential for increased costs to beneficiaries, if the AHIP report is accurate, HDHPs and HSAs appear to be working in the civilian sector. As more individuals and families grow accustomed to the structure and inner workings of HDHPs and HSAs, the number of individuals and families using such plans may continue to grow. The growth in the number of individuals using HDHPs may offer a natural experiment for the DOD to evaluate the plans' effectiveness at reducing health care expenditures. In the meantime, it is recommended that DOD should consider a pilot program to evaluate the overall effects of such a plan on the level of health care used by individuals, as well as its effects on their overall compensation.

E. AREAS FOR FURTHER STUDY

This study has evaluated one potential solution for reducing health care costs for the DOD. It applied a systematic approach to the entire MHS population to determine the savings potential. Specific spending data for the MHS population is required to develop a more accurate model of potential savings, as such data would allow researchers to test for self-selection and better account for its effects. The calculations were based on data derived from the RAND HIE conducted in the 1970s. No study of that scope has been conducted since then, leaving open the possibility that results from a new study may prove to be entirely different. Also, while this research focused on the application of a HDHP with an HSA and a BAHC, various aspects of this idea may have merit when applied independently under different systems. Evaluation of income elasticity of demand for health care may provide insight as to the adoption of a graduated scale for the BAHC. Akin to the basic allowance for housing, a graduated scale could be used in order to develop a more level playing field for health care costs as a percent of beneficiary income.

APPENDIX A. TRICARE STANDARD AND TRICARE EXTRA HEALTH CARE COSTS

Table 20. Health care costs. (from Defense Health Agency, 2014b, p. 3).

Type of Care	TRICARE Standard ¹	TRICARE Extra ¹
Outpatient Visits	Active Duty Family Members (ADFM): 20% after the annual deductible is met Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: 15% after the annual deductible is met Retirees, Their Families, and All Others: 20% after the annual deductible is met
Clinical Preventive Services²	ADFM: 20% after the annual deductible is met Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: 15% after the annual deductible is met Retirees, Their Families, and All Others: 20% after the annual deductible is met
Durable Medical Equipment, Prosthetics, Orthotics, and Supplies	ADFM: 20% after the annual deductible is met Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: 15% after the annual deductible is met Retirees, Their Families, and All Others: 20% after the annual deductible is met
Hospitalization	ADFM: \$17.65 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: \$744 per day or 25% of billed charges for institutional services, whichever is less, plus 25% cost-share for separately billed services	ADFM: \$17.65 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: \$250 per day or 25% of billed charges for institutional services, whichever is less, plus 20% cost-share for separately billed services
Emergency Services	ADFM: 20% after the annual deductible is met Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: 15% after the annual deductible is met Retirees, Their Families, and All Others: 20% after the annual deductible is met
Ambulatory Surgery	ADFM: \$25 Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: \$25 Retirees, Their Families, and All Others: 20% after the annual deductible is met
Outpatient Behavioral Health	ADFM: 20% after the annual deductible is met Retirees, Their Families, and All Others: 25% after the annual deductible is met	ADFM: 15% after the annual deductible is met Retirees, Their Families, and All Others: 20% after the annual deductible is met
Inpatient Behavioral Health	ADFM: \$20 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: • High-volume hospital: 25% of the hospital-specific per diem • Low-volume hospital: \$218 per day or 25% of the billed charges, whichever is less	ADFM: \$20 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: 20% of the total charge, plus 20% cost-share for separately billed services
Inpatient Skilled Nursing³	ADFM: \$17.65 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: 25% of allowed charges for institutional services, plus 25% cost-share for separately billed services	ADFM: \$17.65 per day (\$25 minimum charge) ² Retirees, Their Families, and All Others: \$250 per day or 20% of billed charges for institutional services, whichever is less, plus 20% cost-share for separately billed services

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APPENDIX B. TRICARE PRIME NETWORK PROVIDER COPAYS

Table 21. Costs for retirees, their families and all others
(from Defense Health Agency, 2014a, p. 5).

Type of Care	Network Copayment
Ambulance Services	\$20 per occurrence
Ambulatory (<i>same day</i>) Surgery	\$25 per visit
Mental Health	Outpatient: \$25 (<i>individual visit</i>); \$17 (<i>group visit</i>) Hospitalization: \$40 per day (<i>no charge for separately billed professional charges</i>)
Clinical Preventive Services	\$0 per visit
Durable Medical Equipment, Prosthetics, Orthotics, and Supplies	20% of the negotiated fee
Emergency Room Visit	\$30 per visit
Home Health Care	\$0
Hospice Care	\$0
Hospitalization	\$11 per day (<i>\$25 minimum</i>)
Lab and X-ray Services	\$12 per visit (<i>unless billed as a clinical preventive service</i>)
Newborn Care	\$11 per day (<i>\$25 minimum</i>)
Outpatient Visit	\$12 per visit
Skilled Nursing Care	\$11 per day (<i>\$25 minimum</i>)

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APPENDIX C. CHARACTERISTICS OF PRIVATELY INSURED U.S. ADULTS BY PLAN TYPE

	Traditional plan	HDHP	<i>P</i> -value
N	5,830	1,111	
Weighted N	82,317,300	14,411,916	
Female, %	53.3	52.1	0.38
Age, %			
18–25 years old	13.2	12.8	0.76
26–45 years old	42.5	41.8	0.77
46–64 years old	44.3	45.4	0.58
Annual household income, %			
<\$50,000	27.6	25.0	0.20
\$50,000 to \$100,000	39.9	40.5	0.80
>\$100,000	28.4	29.6	0.59
Race/ethnicity, %			
White	76.3	81.4	0.02
African-American	9.5	5.1	0.001
Hispanic	8.8	7.4	0.33
Other non-Hispanic	5.4	6.1	0.56
College education, %†	36.6	40.1	0.08
Employment status, %			
Full time	57.7	55.2	0.13
Part time	18.1	16.5	0.22
Not working	24.2	28.3	0.008
Married, %	75.2	76.6	0.45
Parent, %	51.9	58.3	0.006
Census region, %			
Northeast	19.7	11.4	<0.001
Midwest	25.0	30.9	0.004
South	33.7	34.6	0.71
West	21.6	23.1	0.47
Metropolitan statistical area category, %			
Metropolitan	87.0	84.1	0.04
Micropolitan	8.2	9.8	0.14
Non-statistical area	4.8	6.1	0.18
Fair or poor health status, %	9.8	9.8	0.97
Chronic condition, %‡			
Daily smoker, %§	12.2	9.1	0.02

Figure 14. Characteristics of privately insured U.S. adults by plan type, 2007–2008 (from Kullgren et al., 2013, p. 4).

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APPENDIX D. INPATIENT AND OUTPATIENT USE AND COSTS BY BENEFICIARY STATUS

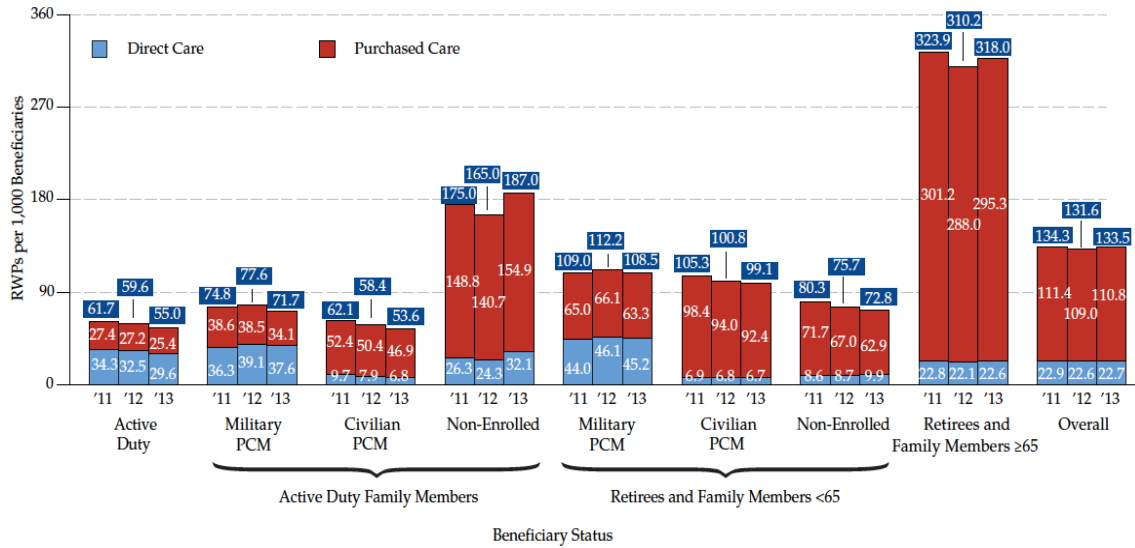


Figure 15. Average annual inpatient RWP per 1,000 beneficiaries by FY (from Defense Health Agency, 2014c, p. 76).

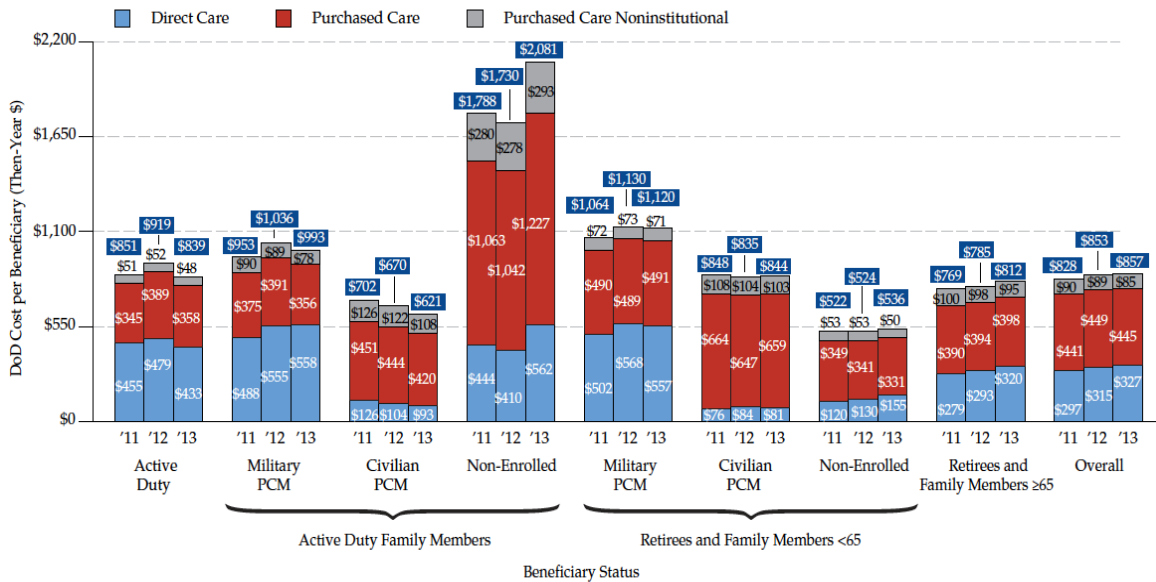


Figure 16. Average annual DOD inpatient costs per beneficiary by FY (from Defense Health Agency, 2014c, p. 77).

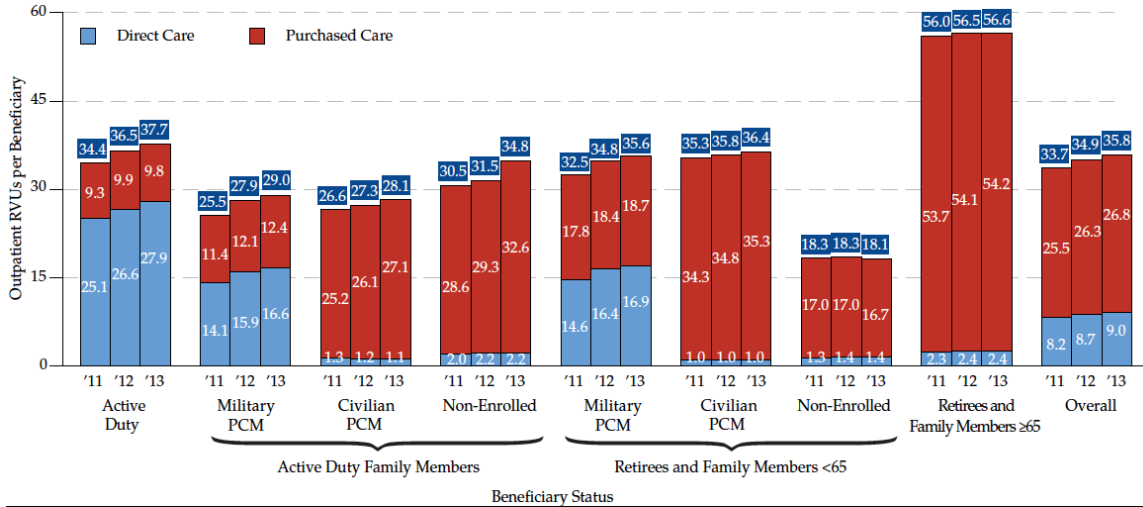


Figure 17. Average annual outpatient RVU per beneficiary by FY (from Defense Health Agency, 2014c, p. 81).

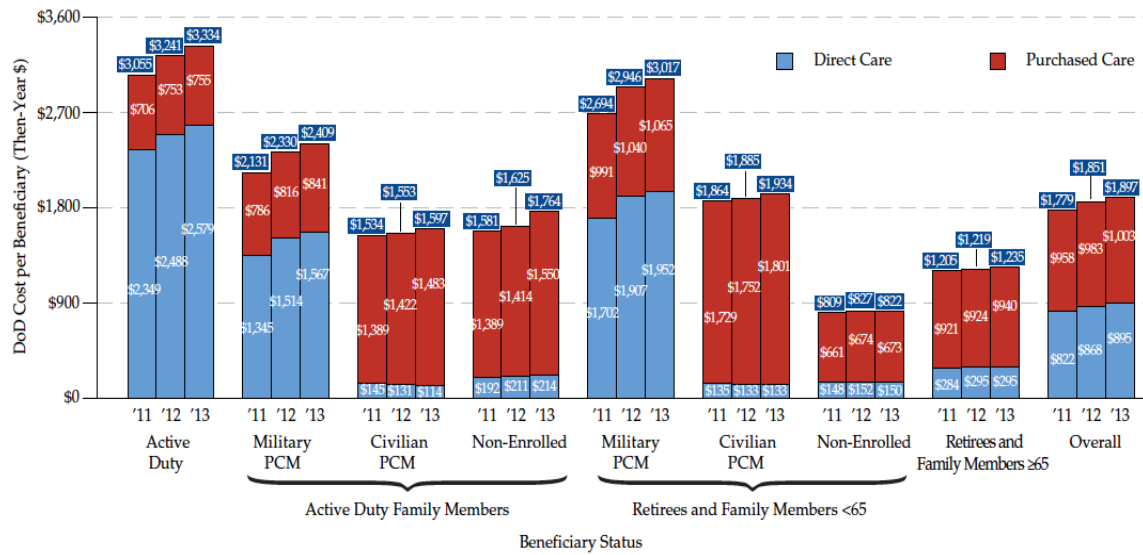


Figure 18. Average annual DOD outpatient costs per beneficiary by FY (from Defense Health Agency, 2014c, p. 82).

**APPENDIX E. DOD SAVINGS RESULTING FROM DIFFERENT
PRICE INCREASES FOR VARIOUS ADOPTION RATES ACROSS
VARYING VALUES OF ELASTICITY**

Table 22. DOD savings under various adoption rates when price increases by 10 percent across varying values of elasticity (000s \$FY13).

	Adoption Rate (percent)					
η	5.00	10.00	15.00	20.00	50.00	100.00
-0.6	64,412	128,823	193,235	257,646	644,115	1,288,230
-0.5	53,938	107,876	161,814	215,752	539,381	1,078,762
-0.4	43,362	86,724	130,086	173,448	433,620	867,240
-0.3	32,682	65,363	98,045	130,727	326,817	653,634
-0.2	21,896	43,791	65,687	87,583	218,957	437,913
-0.1	11,002	22,005	33,007	44,009	110,023	220,046

Table 23. DOD savings under various adoption rates when price increases by 50 percent across varying values of elasticity (000s \$FY13).

	Adoption Rate (percent)					
η	5.00	10.00	15.00	20.00	50.00	100.00
-0.6	288,452	576,903	865,355	1,153,806	2,884,516	5,769,031
-0.5	245,718	491,436	737,154	982,872	2,457,180	4,914,360
-0.4	201,042	402,084	603,126	804,168	2,010,420	4,020,840
-0.3	154,288	308,576	462,864	617,152	1,542,880	3,085,761
-0.2	105,308	210,615	315,923	421,231	1,053,077	2,106,154
-0.1	53,938	107,876	161,814	215,752	539,381	1,078,762

Table 24. DOD savings under various adoption rates when price increases by 75 percent across varying values of elasticity (000s \$FY13).

	Adoption Rate (percent)					
η	5.00	10.00	15.00	20.00	50.00	100.00
-0.6	406,187	812,374	1,218,561	1,624,748	4,061,869	8,123,738
-0.5	349,178	698,356	1,047,535	1,396,713	3,491,782	6,983,564
-0.4	288,452	576,903	865,355	1,153,806	2,884,516	5,769,031
-0.3	223,631	447,262	670,893	894,524	2,236,310	4,472,620
-0.2	154,288	308,576	462,864	617,152	1,542,880	3,085,761
-0.1	79,932	159,865	239,797	319,729	799,324	1,598,647

Table 25. DOD savings under various adoption rates when price increases by 100 percent across varying values of elasticity (000s \$FY13).

	Adoption Rate (percent)					
η	5.00	10.00	15.00	20.00	50.00	100.0
-0.6	510,337	1,020,675	1,531,012	2,041,350	5,103,374	10,206,748
-0.5	442,292	884,585	1,326,877	1,769,170	4,422,924	8,845,848
-0.4	368,577	737,154	1,105,731	1,474,308	3,685,770	7,371,540
-0.3	288,452	576,903	865,355	1,153,806	2,884,516	5,769,031
-0.2	201,042	402,084	603,126	804,168	2,010,420	4,020,840
-0.1	105,308	210,615	315,923	421,231	1,053,077	2,106,154

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